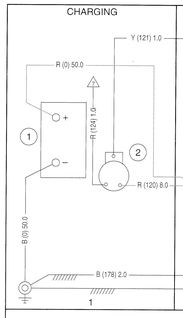
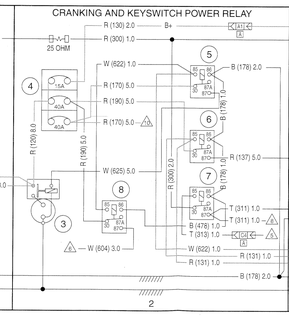
Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

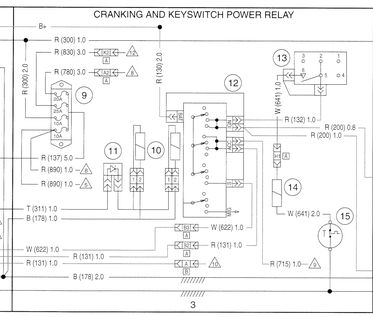
CHARGING



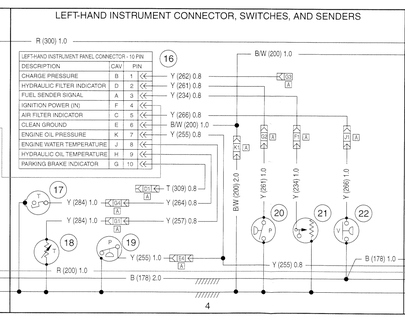
CRANKING AND KEYSWITCH POWER RELAY



CRANKING AND KEYSWITCH POWER RELAY



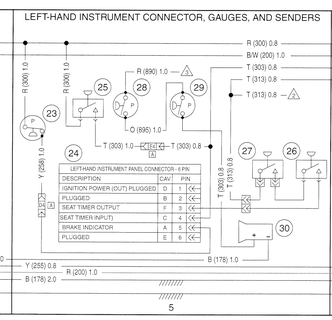
LEFT-HAND INSTRUMENT CONNECTOR, SWITCHES, AND SENDERS



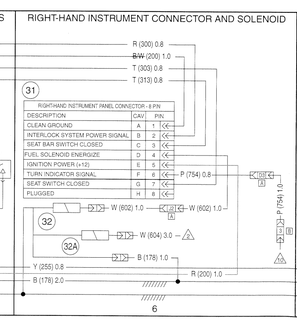
| LEFT-HAND INSTRUMENT PANEL CONNECTOR - 10 PIN | | | |
|---|---|---|---|
| DESCRIPTION | CAV | PIN | |
| CHARGE PRESSURE | B | 1 | |
| HYDRAULIC FILTER INDICATOR | D | 2 | |
| FUEL SENDER SIGNAL | A | 3 | |
| IGNITION POWER (IN) | F | 4 | |
| AIR FILTER INDICATOR | C | 5 | |
| CLEAN GROUND | E | 6 | |
| ENGINE OIL PRESSURE | K | 7 | |
| ENGINE WATER TEMPERATURE | J | 8 | |
| HYDRAULIC OIL TEMPERATURE | H | 9 | |
| PARKING BRAKE INDICATOR | G | 10 | |

| LEFT-HAND INSTRUMENT PANEL CONNECTOR - 6 PIN | | |
|---|---|---|
| DESCRIPTION | CAV | PIN |
| IGNITION POWER (OUT) PLUGGED | D | 1 |
| PLUGGED | B | 2 |
| SEAT TIMER OUTPUT | F | 3 |
| SEAT TIMER (INPUT) | C | 4 |
| BRAKE INDICATOR | A | 5 |
| PLUGGED | E | 6 |

LEFT-HAND INSTRUMENT CONNECTOR, GAUGES, AND SENDERS

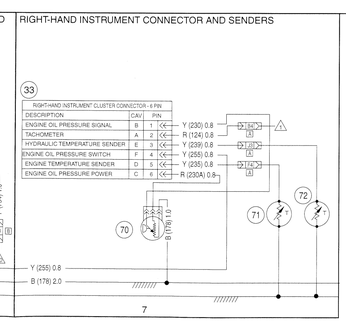


RIGHT-HAND INSTRUMENT CONNECTOR AND SOLENOID



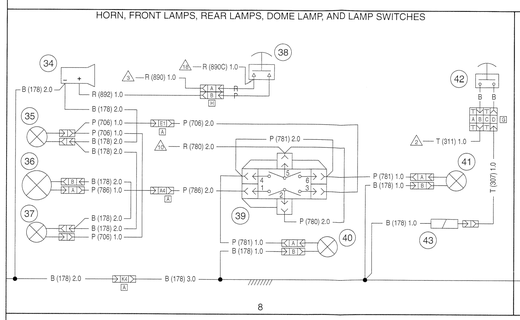
| RIGHT-HAND INSTRUMENT PANEL CONNECTOR - 8 PIN | | |
|---|---|---|
| DESCRIPTION | CAV | PIN |
| CLEAN GROUND | A | 1 |
| INTERLOCK SYSTEM POWER SIGNAL | B | 2 |
| SEAT BAR SWITCH CLOSED | C | 3 |
| FUEL SOLENOID ENERGIZE | D | 4 |
| IGNITION POWER (+12) | E | 5 |
| TURN INDICATOR SIGNAL | F | 6 |
| SEAT SWITCH CLOSED | G | 7 |
| PLUGGED | H | 8 |

RIGHT-HAND INSTRUMENT CONNECTOR AND SENDERS

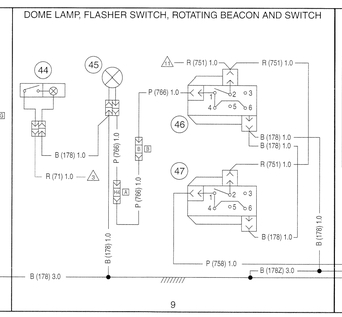


| RIGHT-HAND INSTRUMENT CLUSTER CONNECTOR - 6 PIN | | |
|---|---|---|
| DESCRIPTION | CAV | PIN |
| ENGINE OIL PRESSURE SIGNAL | B | 1 |
| TACHOMETER | A | 2 |
| HYDRAULIC TEMPERATURE SENDER | E | 3 |
| ENGINE OIL PRESSURE SWITCH | F | 4 |
| ENGINE TEMPERATURE SENDER | D | 5 |
| ENGINE OIL PRESSURE POWER | C | 6 |

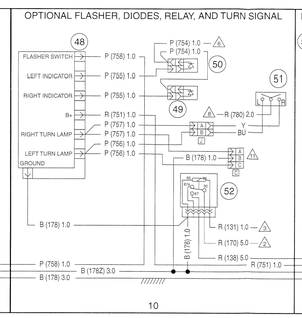
HORN, FRONT LAMPS, REAR LAMPS, DOME LAMP, AND LAMP SWITCHES



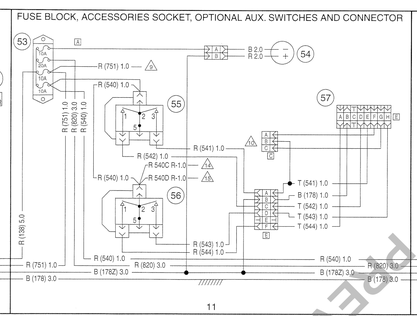
DOME LAMP, FLASHER SWITCH, ROTATING BEACON AND SWITCH



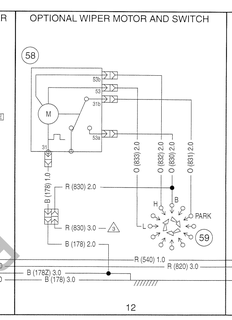
OPTIONAL FLASHER, DIODES, RELAY, AND TURN SIGNAL



FUSE BLOCK, ACCESSORIES SOCKET, OPTIONAL AUX. SWITCHES AND CONNECTOR

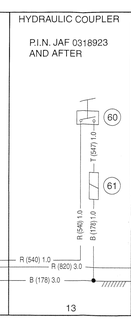


OPTIONAL WIPER MOTOR AND SWITCH



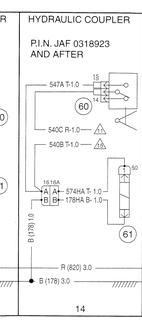
HYDRAULIC COUPLER

P.I.N. JAF 0318923 AND AFTER



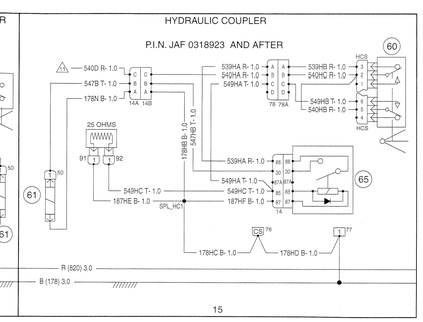
HYDRAULIC COUPLER

P.I.N. JAF 0318923 AND AFTER

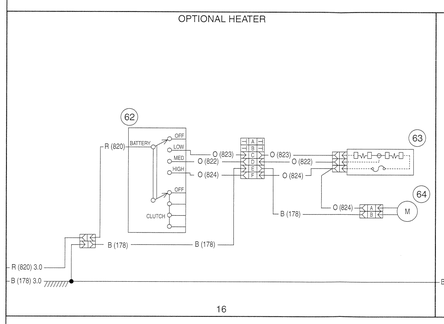


HYDRAULIC COUPLER

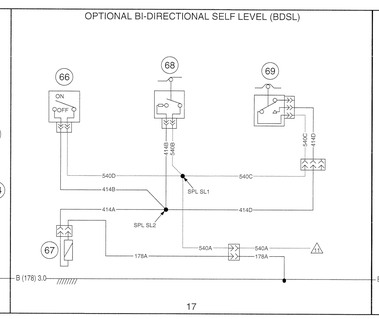
P.I.N. JAF 0318923 AND AFTER



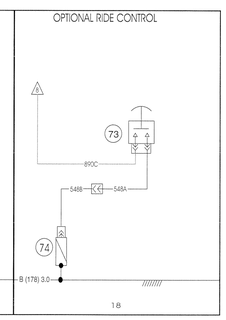
OPTIONAL HEATER



OPTIONAL BI-DIRECTIONAL SELF LEVEL (BDSL)

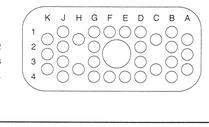


OPTIONAL RIDE CONTROL

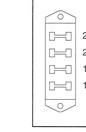


HARNESS CONNECTOR

| | K | J | H | G | F | E | D | C | B | A | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 200 | 266 | 641 | 257 | 234 | 706 | X | 303 | X | 130 | 1 |
| 2 | 830 | 602 | – | – | 261 | – | – | 300 | – | 131 | 780 | 2 |
| 3 | – | – | X | – | X | – | – | 754 | – | 622 | – | 3 |
| 4 | 178 | X | 766 | 264 | X | 255 | 258 | 313 | 124 | 786 | 4 |
| | K | J | H | G | F | E | D | C | B | A | |



FUSES



- 20 amperes (Lights)
- 25 amperes (Wiper)
- 10 amperes (Interlock system/alternator)
- 10 amperes (Right-hand handle/backup alarm)
- 10 amperes (Accessories)
- 20 amperes (Blower/air conditioning)
- 10 amperes (Beacon/flasher)
- 10 amperes (Auxiliary controls)

## WIRE CIRCUITS

| NO. | GA. | COLOR | FROM | TO |
|---|---|---|---|---|
| 0 | 50.0 | Black | Chassis Ground | Battery (–) |
| 0 | 50.0 | Red | Battery (+) | Starter (+) |
| 120 | 8.0 | Red | Alternator | Starter, Circuit Breakers |
| 120 | 8.0 | Red | Starter (+) | Buss Bar |
| 121 | 1.0 | Yellow | Alternator Resistor | Alternator Field Excite Terminal |
| 130 | 2.0 | Red | Buss Bar 15 Ampere Circuit Breaker | Key Switch through 30 pin connector |
| 131 | 1.0 | Red | Key Switch | Main Power Relay |
| 131 | 1.0 | Red | Main Power Supply | Connector B and Accessory Power Relay |
| 132 | 1.0 | Red | Key Switch | Cold Start Aid Switch |
| 137 | 5.0 | Red | Main Power Relay | Fuse Block |
| 138 | 5.0 | Red | Accessory Power Relay | Accessory Fuse Block |
| 170 | 5.0 | Red | Buss Bar 40 Ampere Circuit Breaker | Starter Relay |
| 170 | 5.0 | Red | Buss Bar 40 Ampere Circuit Breaker | Accessory Power Relay |
| 178 | 3.0 | Black | Splice | 30 Pin Connector and Engine Ground |
| 178 | 2.0 | Black | Chassis Ground Terminal | Chassis Ground |
| 178 | 2.0 | Black | Starter Relay (–) | Chassis Ground Terminal |
| 178 | 1.0 | Black | Main Power Relay (–) | Starter Relay (–) and Chassis Ground |
| 178 | 1.0 | Black | Interlock Relay (–) | Main Power Relay (–) and Chassis Ground |
| 178 | 1.0 | Black | Loader Control Valve Connector | Interlock Relay (–) and Chassis Ground |
| 178 | 1.0 | Black | Interlock Relay | Fuel Pull-in Relay |
| 178 | 1.0 | Black | Wiper Motor | Splice and Engine Ground |
| 178 | 1.0 | Black | Optional Lamp Switch | Splice |
| 178 | 1.0 | Black | Right-Hand Front Lamp | Optional Lamp Switch and Chassis Ground |
| 178 | 1.0 | Black | Left-Hand Front Lamp | Splice |
| 178 | 1.0 | Black | Optional Backup Alarm | Chassis Ground |
| 178 | 1.0 | Black | Air Filter Switch | Optional Backup Alarm (–) and Chassis Ground |
| 178 | 1.0 | Black | Rotating Beacon Connector | Splice |
| 178 | 1.0 | Black | Dome Lamp Connector | Rotating Beacon Connector and Chassis Ground |
| 178 | 1.0 | Black | Connector D | Splice and Engine Ground |
| 178 | 1.0 | Black | Auxiliary Front Attachment Connector E | Connector D |
| 178 | 2.0 | Black | Optional Horn | Chassis Ground |
| 178 | 2.0 | Black | Left-Hand Tail Lamp (–) | Optional Horn (–) and Chassis Ground |
| 178 | 2.0 | Black | Right-Hand Tail Lamp (–) | Left-Hand Tail Lamp (–) and Chassis Ground |
| 178 | 2.0 | Black | Rear Work Lamp (–) | Right-Hand Tail Lamp (–) and Chassis Ground |
| 178 | 1.0 | Black | Blower Connector | Splice and Engine Ground |
| 178 | 1.0 | Black | Electrical Accessory Connector | Splice and Engine Ground |
| 178 | - | Black | Blower Motor | Blower Connector |
| 178 | 1.0 | Black | Auxiliary Front Attachment Connector (Connector E) | Connector C |
| 178 | 1.0 | Black | Accessory Power Relay | Chassis Ground |
| 178 | 1.0 | Black | Flasher | Accessory Power Relay and Chassis Ground |
| 178 | 1.0 | Black | Rotating Beacon Switch | Chassis Ground |
| 178 | 1.0 | Black | Flasher Switch | Rotating Beacon Switch and Chassis Ground |
| 178 | 1.0 | Black | Turn Signal Lamps or Auxiliary Front Attachment | Chassis Ground |
| 178 | 1.0 | Black | Hydraulic Coupler Solenoid | Chassis Ground |
| 178 | 3.0 | Black | Chassis Ground | Engine Ground |
| 190 | 5.0 | Red | Buss bar 40 Ampere Circuit Breaker | Main Power Relay |
| 190 | 5.0 | Red | Buss bar 40 Ampere Circuit Breaker | Fuel Pull-in Relay |
| 200 | 0.8 | Red | Key Switch | 10 Pin Left-hand Instrument Cluster Connector (Ignition Power-in) |
| 200 | 1.0 | Red | Key Switch | 8 Pin Right-Hand Instrument Cluster Connector (Ignition Power-in) |
| 200 | 2.0 | Black/White | Splice and 30 Pin Connector | Chassis Ground |
| 200 | 1.0 | Black/White | Right-Hand Instrument Cluster (8 Pin Connector) | Splice and 30 Pin Connector |
| 234 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 234 | 1.0 | Yellow | 30 Pin Connector | Fuel Lever Sender |
| 255 | 0.8 | Yellow | Splice | 30 Pin Connector |
| 255 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | Splice |
| 255 | 0.8 | Yellow | Right-Hand Instrument Cluster (10 Pin Connector) | Splice |
| 255 | 1.0 | Yellow | 30 Pin Connector | Engine Oil Pressure Switch |
| 257 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | Splice |
| 257 | 1.0 | Yellow | Splice | Engine Temperature Switch |
| 258 | 1.0 | Yellow | Brake Pressure Switch | 30 Pin Connector, Plugged |
| 261 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 261 | 1.0 | Yellow | 30 Pin Connector | Return Filter Switch |
| 262 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 262 | 1.0 | Yellow | 30 Pin Connector | Charge Pressure Switch |
| 264 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 264 | 1.0 | Yellow | 30 Pin Connector | Hydraulic Oil Temperature Switch |
| 266 | 0.8 | Yellow | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 266 | 1.0 | Yellow | 30 Pin Connector | Air Filter Restriction Switch |
| 300 | 2.0 | Red | Fuse Block, 10 Ampere Fuse | Splice |
| 300 | 0.8 | Red | 30 Pin Connector | Right-Hand Instrument Cluster (8 Pin Connector) |
| 300 | 2.0 | Red | Splice | Interlock Relay |
| 300 | 1.0 | Red | Splice | Alternator Resistor |
| 300 | 1.0 | Red | Fuse Block, 10 Ampere Fuse | 30 Pin Connector |
| 300 | 1.0 | Red | Splice | Seat Switch |
| 300 | 1.0 | Red | Splice | Brake Pressure Switch |
| 300 | 1.0 | Red | Splice | 30 Pin Connector |
| 303 | 1.0 | Tan | Seat Switch | 30 Pin Connector |
| 303 | 0.8 | Tan | 30 Pin Connector | Right-Hand Instrument Cluster (8 Pin Connector) |
| 303 | 0.8 | Tan | Seat Bar Switch | Left-Hand Instrument Cluster (6 Pin Connector) |
| 303 | 0.8 | Tan | Left-Hand Instrument Cluster (6 Pin Connector) | 30 Pin Connector |
| 309 | 0.8 | Tan | Left-Hand Instrument Cluster (10 Pin Connector) | 30 Pin Connector |
| 311 | 1.0 | Tan | Interlock Relay | Left-Hand Handle 4 Pin Connector |
| 311 | 1.0 | Tan | Interlock Relay | Loader Valve Solenoid |
| 311 | 1.0 | Tan | Diode or Optional Loader Control Disconnect Switch | Loader valve Connector |
| 313 | 0.8 | Tan | Interlock Relay | Seat Bar Switch and 8 Pin Right-Hand Instrument Cluster |
| 540 | 1.0 | Red | Accessory Power Fuse Block | Hydraulic Coupler Switch |
| 540 | 2.0 | Red | Accessory Power Fuse Block | Left-Hand Auxiliary Switch |
| 540 | 1.0 | Red | Left-Hand Auxiliary Switch | Right-Hand Auxiliary Switch |
| 541 | 1.0 | Tan | Left-Hand Auxiliary Switch | Connector D |
| 541 | 1.0 | Tan | Connector D | Connector E (Auxiliary Front Attachment Connector) |
| 542 | 1.0 | Tan | Left-Hand Auxiliary Switch | Connector D |
| 542 | 1.0 | Tan | Connector D | Connector E (Auxiliary Front Attachment Connector) |
| 543 | 1.0 | Tan | Right-Hand Auxiliary Switch | Connector D |
| 543 | 1.0 | Tan | Connector D | Connector E (Auxiliary Front Attachment Connector) |
| 544 | 1.0 | Tan | Right-Hand Auxiliary Switch | Connector for Rear Auxiliary Controls (Load 4) |
| 544 | 1.0 | Tan | Connector D | Connector E (Auxiliary Front Attachment Connector) |
| 547 | 1.0 | Tan | Hydraulic Coupler Switch | Hydraulic Coupler Solenoid |
| 565 | 1.0 | Tan | Left-Hand Handle | Brake Solenoid |
| 602 | 1.0 | White | Right-Hand Instrument Cluster (8 Pin Connector) | 30 Pin Connector and Fuel Shutoff Solenoid |
| 604 | 3.0 | White | Fuel Shutoff Solenoid | Fuel Pull-in Relay |
| 641 | 1.0 | White | Optional Cold Start Switch | Optional ether Injection Solenoid |
| 641 | 2.0 | White | Optional Ether injection Solenoid | Accessory Power Relay |
| 622 | 1.0 | White | Key Switch through 30 Pin Connector | Starter Relay |
| 622 | 1.0 | White | Starter Relay | Fuel Pull-in Relay |
| 625 | 5.0 | White | Starter Relay | Starter Solenoid |
| 641 | 1.0 | White | Optional Cold Start Switch | Optional Ether Injection Solenoid |
| 641 | 2.0 | White | Optional Ether Injection Solenoid | Optional Temperature Switch |
| 706 | 1.0 | Pink | 30 Pin Connector | Left-Hand Tail Lamp |
| 706 | 1.0 | Pink | Left-Hand Tail Lamp | Right-Hand Tail Lamp |
| 706 | 2.0 | Pink | Lamp Switch | 30 Pin Connector |
| 715 | 1.0 | Red | Key Switch | Dome Lamp |
| 751 | 1.0 | Red | Accessory Power Fuse Block, 10 Ampere Fuse | Beacon Switch |
| 751 | 1.0 | Red | Accessory Power Fuse Block, 10 Ampere Fuse and Beacon Switch (Auxiliary Front Attachment Connector) | Flasher Switch |
| 754 | 1.0 | Pink | Connector B | 30 Pin Connector |
| 754 | 0.8 | Pink | 30 Pin Connector | Right-Hand Instrument Cluster (8 Pin Connector) |
| 754 | 1.0 | Pink | Left Turn Indicator Diode | Connector B |
| 754 | 1.0 | Pink | Right Turn Indicator Diode | Left Turn Indicator Diode |
| 754 | 1.0 | Pink | Left Turn Indicator Diode | Flasher |
| 755 | 1.0 | Pink | Optional Flasher | Left Turn Indicator Diode |
| 756 | 1.0 | Pink | Right Handle (Turn Signal Switch or Rear Auxiliary Hydraulic Control Load 8) | Flasher |
| 756 | 1.0 | Pink | Flasher | Turn Signal Harness and Left-Hand Turn Signal Lamp or Auxiliary Front Attachment Connector |
| 757 | 1.0 | Pink | Right-Hand Handle (Turn Signal Switch or Rear Aux Hydraulic Control Load 7) | Flasher |
| 757 | 1.0 | Pink | Flasher | Turn Signal Harness and Right-Hand Turn Signal Lamp or Auxiliary Front Attachment Connector |
| 758 | - | Pink | Flasher Switch | Flasher |
| 766 | 1.0 | Pink | Rotating Beacon Switch | Connector B, 30 Pin Connector, and Rotating Beacon |
| 780 | 3.0 | Red | Fuse Block 20 Ampere Fuse | 30 Pin Connector |
| 780 | 2.0 | Red | 30 Pin Connector | Lamp Switch |
| 780 | 2.0 | Red | Lamp Switch (T5) | Lamp Switch (T2) |
| 781 | 1.0 | Pink | Lamp Switch (T4) | Lamp Switch (T6) |
| 781 | 1.0 | Pink | Lamp Switch (T4) | Front Left-Hand Lamp |
| 781 | 1.0 | Pink | Lamp Switch (T6) | Front Right-Hand Lamp |
| 786 | 2.0 | Pink | Lamp Switch | 30 Pin Connector |
| 786 | 1.0 | Pink | 30 Pin Connector | Rear Work Lamp |
| 817 | 1.0 | Red | Accessory Power Fuse Block (10 Ampere Fuse) | Accessory Connector and Socket |
| 820 | 3.0 | Red | Accessory Power Fuse Block (20 Ampere Fuse) | Blower Connector |
| 822 | - | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 823 | - | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 824 | - | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 824A | - | Orange | Fan Speed Switch | Blower Motor Speed Resistor and Blower Motor |
| 830 | 3.0 | Red | Fuse Block, 25 Ampere Fuse | 30 Pin Connector and Wiper Harness Connector |
| 830A | 2.0 | Red | Wiper Harness Connector | Wiper Switch and Wiper Motor |
| 831 | 2.0 | Orange | Wiper Switch (Park Position) | Wiper Motor |
| 832 | 2.0 | Orange | Wiper Switch (High Position) | Wiper Motor |
| 833 | 2.0 | Orange | Wiper Switch Low Position) | Wiper Motor |
| 890 | 1.0 | Red | Fuse Block, 10 Ampere Fuse | Backup Alarm Switch #1 |
| 892 | 1.0 | Orange | Right-Hand Handle (Horn button) | Horn |
| 895A | 1.0 | Orange | Backup Alarm Switch #1 | Backup Alarm Switch #2 |
| 897 | 1.0 | Orange | Backup Alarm Switch #2 | Backup Alarm |

## COMPONENTS

1. BATTERY
2. ALTERNATOR
3. STARTER AND STARTER SOLENOID
4. BUSS BAR
5. STARTER RELAY
6. MAIN POWER RELAY
7. INTERLOCK RELAY
8. FUEL PULL-IN RELAY (Before P.I.N. JAF0255486)
9. FUSE BLOCK
10. LOADER VALVE SOLENOIDS
11. DIODE
12. KEY SWITCH
13. COLD START AID SWITCH
14. COLD START SOLENOID (OPTIONAL)
15. COLD STAR TEMPERATURE SWITCH (OPTIONAL)
16. LEFT-HAND INSTRUMENT CLUSTER - 10 PIN
17. HYDRAULIC OIL TEMPERATURE SWITCH
18. ENGINE TEMPERATURE SWITCH
19. ENGINE OIL PRESSURE SWITCH
20. RETURN FILTER SWITCH
21. FUEL SENDER
22. AIR FILTER SWITCH
23. BRAKE PRESSURE SWITCH
24. LEFT-HAND INSTRUMENT CLUSTER - 6 PIN
25. SEAT SWITCH
26. SEAT PLATE SWITCH
27. SEAT BAR SWITCH (EARLY PRODUCTION)
28. BACKUP ALARM SWITCH #1
29. BACKUP ALARM SWITCH #2
30. BACKUP ALARM
31. RIGHT-HAND INSTRUMENT CLUSTER - 8 PIN
32. FUEL SHUTOFF SOLENOID (Before P.I.N. JAF0255486)
33. RIGHT-HAND INSTRUMENT CLUSTER - 6 PIN
34. HORN
35. LEFT-HAND TAIL LAMP
36. REAR WORK LAMP
37. RIGHT-HAND TAIL LAMP
38. HORN BUTTON
39. LAMP SWITCH
40. FRONT LEFT-HAND LAMP
41. FRONT RIGHT-HAND LAMP
42. BRAKE BUTTON
43. BRAKE SOLENOID
44. DOME LAMP
45. ROTATING BEACON
46. ROTATING BEACON SWITCH
47. FLASHER SWITCH
48. FLASHER
49. LEFT TURN INDICATOR DIODE
50. RIGHT TURN INDICATOR DIODE
51. TURN SIGNAL SWITCH OR AUXILIARY CONTROL SWITCH
52. ACCESSORY POWER RELAY
53. ACCESSORY POWER FUSE BLOCK
54. ELECTRIC AUXILIARY SOCKET
55. LEFT-HAND AUXILIARY SWITCH
56. RIGHT-HAND AUXILIARY SWITCH
57. AUXILIARY FRONT ATTACHMENT CONNECTOR
58. WIPER MOTOR
59. WIPER SWITCH
60. HYDRAULIC COUPLER SWITCH
61. HYDRAULIC COUPLER SOLENOID
62. FAN SPEED SWITCH
63. BLOWER MOTOR SPEED RESISTOR WITH THERMAL FUSE
64. BLOWER MOTOR
65. HYDRAULIC COUPLER RELAY
66. SELF-LEVEL OVERRIDE SWITCH
67. SELF-LEVEL OVERRIDE SOLENOID
68. LOADER VALVE FLOAT SPOOL SWITCH
69. LOADER VALVE TIP SPOOL SWITCH
70. ENGINE OIL PRESSURE SENSOR (OPTIONAL)
71. ENGINE TEMPERATURE SENSOR (OPTIONAL)
72. HYDRAULIC TEMPERATURE SENSOR (OPTIONAL)
73. RIDE CONTROL SWITCH
74. RIDE CONTROL SOLENOID

## CIRCUIT DIAGRAM LEGEND




## WIRE IDENTIFICATION




| ABBREV | WIRE COLOR |
|---|---|
| B | BLACK |
| BR | BROWN |
| DB | DARK BLUE |
| DG | DARK GREEN |
| G | GRAY |
| LB | LIGHT BLUE |
| LG | LIGHT GREEN |
| O | ORANGE |
| P | PINK |
| R | RED |
| T | TAN |
| V | VIOLET (PURPLE) |
| W | WHITE |
| Y | YELLOW |

## ACTUATORS




## HOUSINGS




## CONTACT CONFIGURATIONS




## MISCELLANEOUS SYMBOLS




## NOTES

## LEGEND

- INDICATES CONSTANT POWER
- INDICATES POWER WHEN KEY SWITCH IS IN ON POSITION
- INDICATES MOMENTARY POWER WHEN KEY SWITCH IS IN START POSITION

# ELECTRICAL SCHEMATIC 75XT SKID STEER

Additional copies of this Hydraulic and Electrical Schematic can be ordered through Technical Publications Distribution System. The Part Number is 7-11903

80208207

# NOTES

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# Section

# 4002

4002

## ELECTRICAL SPECIFICATIONS, TROUBLESHOOTING, AND SCHEMATICS

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**CASE CORPORATION**
**700 State Street**
**Racine, WI 53404 U.S.A.**

**CASE CANADA CORPORATION**
**450 Sherman Avenue**
**Hamilton, ON L8N 4C4 CANADA**

Bur 7-11602

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July, 1999 (Revised October, 2000)

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# TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphities, Molydisulfide greases, or other extreme pressure lubricants are used.

## Grade 5 Bolts, Nuts, and Studs



| Size | Newton metres | Pound-Inches |
|---|---|---|
| 1/4 inch | 10 to 12 | 91 to 103 |
| 5/16 inch | 21 to 24 | 188 to 212 |
| 3/8 inch | 38 to 43 | 336 to 378 |
| | | **Pound-Feet** |
| 7/16 inch | 61 to 69 | 45 to 51 |
| 1/2 inch | 94 to 104 | 68 to 76 |
| 9/16 inch | 132 to 149 | 98 to 110 |
| 5/8 inch | 183 to 210 | 138 to 155 |
| 3/4 inch | 325 to 370 | 242 to 270 |
| 7/8 inch | 530 to 595 | 390 to 435 |
| 1.0 inch | 790 to 890 | 585 to 655 |
| 1-1/8 inch | 980 to 1100 | 725 to 805 |
| 1-1/4 inch | 1385 to 1555 | 1020 to 1145 |
| 1-3/8 inch | 1810 to 2030 | 1335 to 1495 |
| 1-1/2 inch | 2400 to 2700 | 1770 to 1990 |

## Grade 8 Bolts, Nuts, and Studs



| Size | Newton metres | Pound-Inches |
|---|---|---|
| 1/4 inch | 15 to 16 | 130 to 145 |
| 5/16 inch | 30 to 34 | 268 to 301 |
| 3/8 inch | 54 to 60 | 474 to 534 |
| | | **Pound-Feet** |
| 7/16 inch | 86 to 97 | 63 to 71 |
| 1/2 inch | 132 to 149 | 96 to 110 |
| 9/16 inch | 191 to 213 | 140 to 155 |
| 5/8 inch | 260 to 293 | 190 to 215 |
| 3/4 inch | 480 to 515 | 340 to 380 |
| 7/8 inch | 745 to 835 | 550 to 615 |
| 1.0 inch | 1120 to 1280 | 825 to 925 |
| 1-1/8 inch | 1585 to 1785 | 1170 to 1315 |
| 1-1/4 inch | 2215 to 2235 | 1650 to 1855 |
| 1-3/8 inch | 2930 to 3295 | 2160 to 2430 |
| 1-1/2 inch | 3895 to 4375 | 2870 to 3225 |

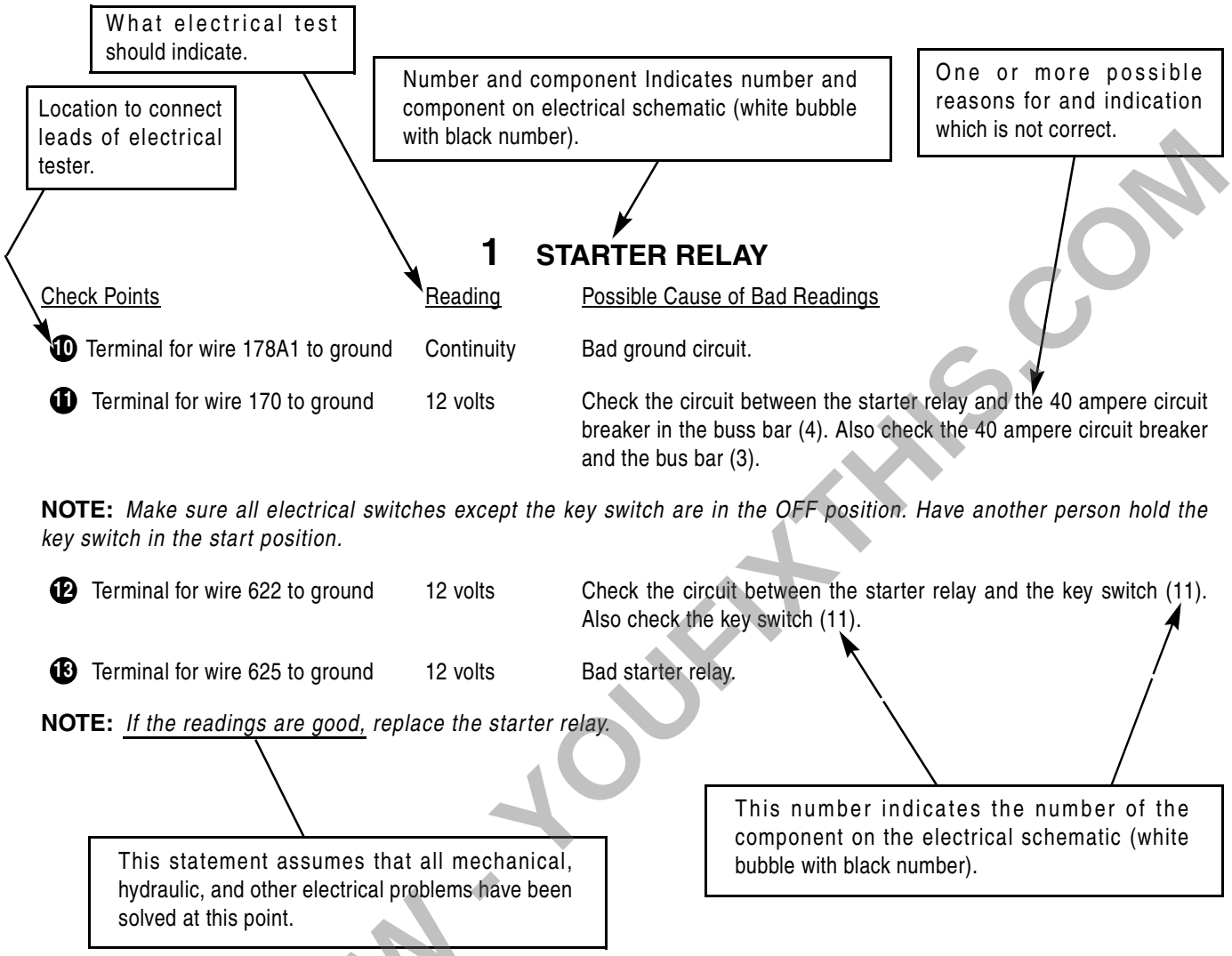
**NOTE:** *Use thick nuts with Grade 8 bolts.*

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# TROUBLESHOOTING EXAMPLE




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# CAPACITIES AND LUBRICANTS

FUEL TANK

Capacity ..... 65.5 litres (17.3 U.S. gallons)

Specifications ..... See diesel fuel specifications on page 5

COOLING SYSTEM

Capacity ..... 16.1 litres (17.0 quarts)

Recovery bottle capacity ..... 2 litres (2.1 quarts)

Specifications ..... 50% water and 50% ethylene glycol

..... (w/ a supplemental coolant additive for cavitation protection.)

HYDRAULIC SYSTEM

Capacity - System ..... 62.4 litres (16.5 gallons)

Specifications ..... Case AKCELA No. 1 Engine Oil SAE 10W30 60.5 litres (16 gallons)

..... w/ HTO additive 1.89 litres (0.5 gallons)

CHAIN COMPARTMENTS

Capacity - Each Side ..... 7.6 litres (8.0 quarts)

Specifications ..... Case AKCELA No. 1 Engine Oil, SAE 10W30

BATTERY

Quantity ..... As required

Specifications ..... Distilled water

GREASE FITTINGS

Quantity ..... As required

Attachments (If equipped) ..... Quantity as required

Specifications ..... Case AKCELA molydisulfide grease

ENGINE CRANKCASE OIL

Capacity - with filter change ..... 10.4 litres (11.0 quarts)

Capacity - without filter change ..... 9.5 litres (10.0 quarts)

Specifications ..... Case AKCELA No. 1 Engine Oil SAE 15W-40 (API service CH-4)

..... (See Oil Viscosity/Temperature Ranges Chart on page 4)

## ENVIRONMENT

Before you service this machine and dispose of oil, fluids and lubricants, always remember the environment. Do not put oil or fluids into the ground or into containers that can leak. Check with your local environmental, recycling center or your Case dealer for correct disposal information.

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# REMOVAL

**NOTE:** *The photos in this procedure are for reference only.*

## STEP 1

Park the machine on a level surface. Remove the bucket or attachment from the loader arms. Raise the loaders arms and lock the loader arms into the raised position. Tilt the cab forward.

## STEP 2

Turn the ignition switch and the master disconnect switch (if equipped) to the OFF position.

## STEP 3

Disconnect the negative battery cable from the battery.

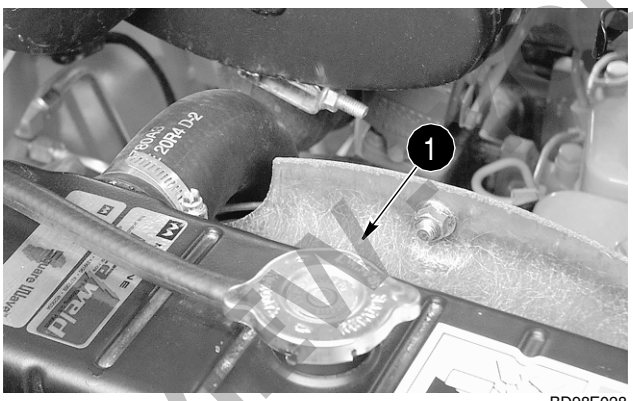
## STEP 4

Open the rear access door on the machine.

## STEP 5

Open the hood.

## STEP 6

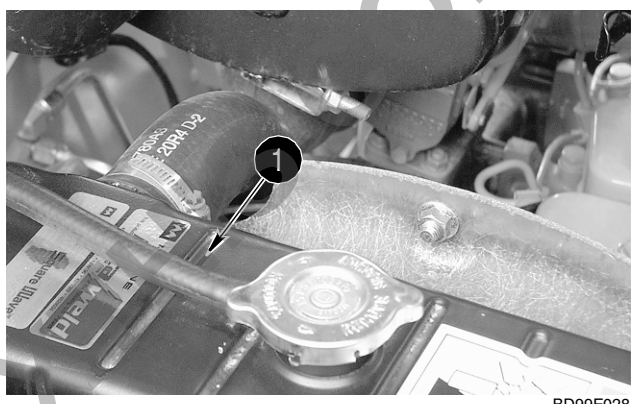



BD98E028

Slowly loosen the radiator cap (1). Install a hose on the drain valve and drain the radiator into a clean container that holds approximately 19 litres (5 gallons).

**NOTE:** *During installation, fill the radiator and coolant reservoir completely. See Section 1002 for coolant specifications. Start and run the engine until the coolant is at operating temperature. Stop the engine and check for leakage. When the coolant is cold, check the coolant reservoir level. Add coolant as required.*

## STEP 7



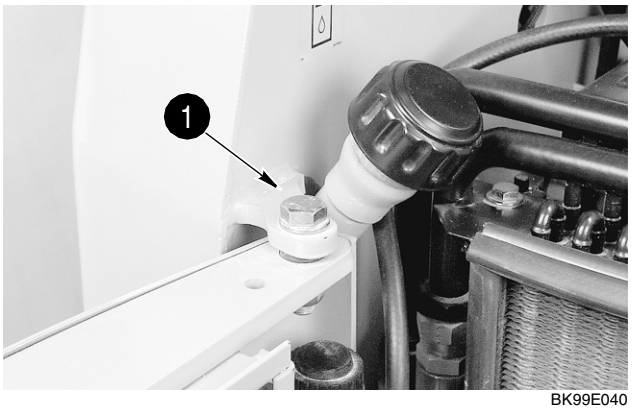

BD99E028

Disconnect the overflow hose (1) from the radiator neck.

## STEP 8

Connect acceptable lifting equipment to the rear access door.

## STEP 9




BK99E040

Loosen and remove the hardware (1) that fastens the top of the door to the frame.

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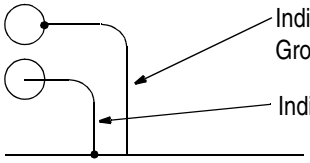
# GENERAL INFORMATION

## Circuit Diagram Legends

Earth connection terminal

Intersection of two wires with connecting points

Intersection of two wires without connecting points




Diode

5 Indicates test point

9 Indicates frame continued on

6 Indicates component number

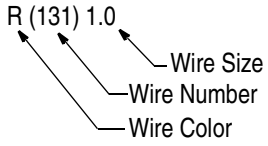
Bulb or lamp

33 Indicates where wire continued on next schematic

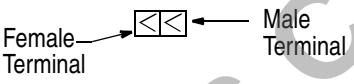
### Color Abbreviations

| | | |
|---|---|---|
| B---Black | LG--Light Green | T---Tan |
| BR-Brown | O---Orange | V---Violet |
| G---Gray | P---Pink | W---White |
| LB-Light Blue | R---Red | Y---Yellow |

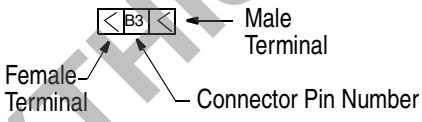
### Wire Identification:



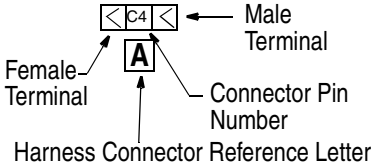

### Harness Connector:




### Harness Connector With Pin Number:

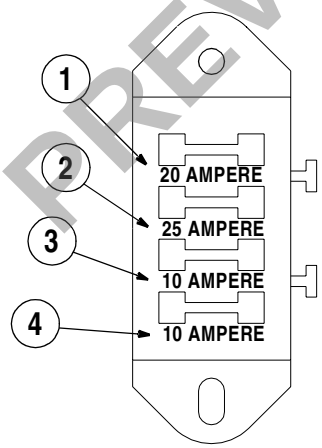



### Harness Connector With Pin Number And Connector Number:

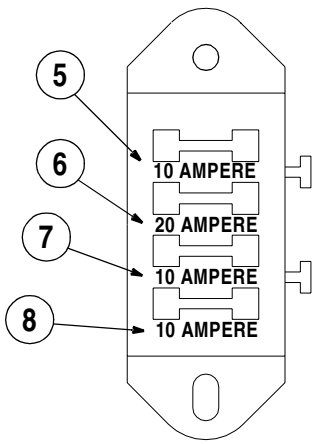



| WIRE SIZE IN MM | | WIRE SIZE IN STANDARD | |
|---|---|---|---|
| 0.8 mm | 2.0 mm | 18 - Gauge | 14 - Gauge |
| 1.0 mm | 5.0 mm | 16 - Gauge | 10 - Gauge |

## Fuses




1. Lights
2. Wiper
3. Interlock System/Alternator
4. RH Handle/Backup Alarm




5. Accessories Socket
6. Blower
7. Beacon/ Flasher
8. Auxiliary Controls

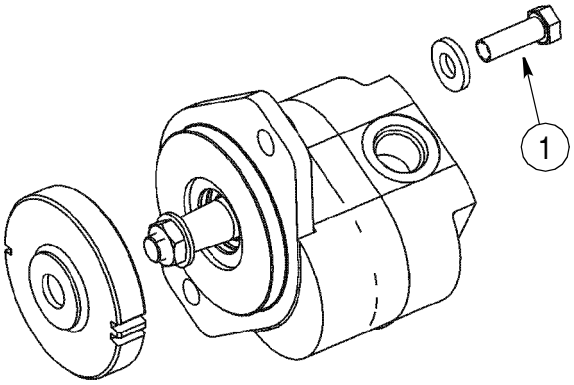
(5-8 only on units equipped with chassis option harness)

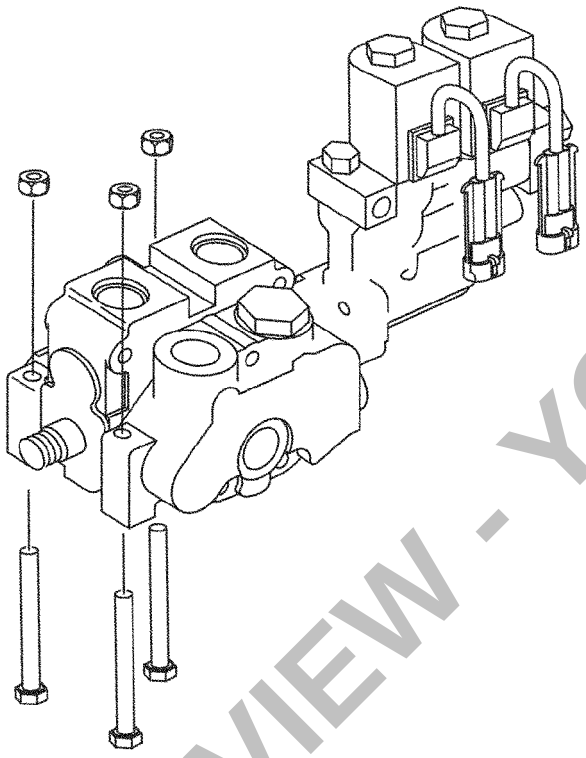


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## STEP 47

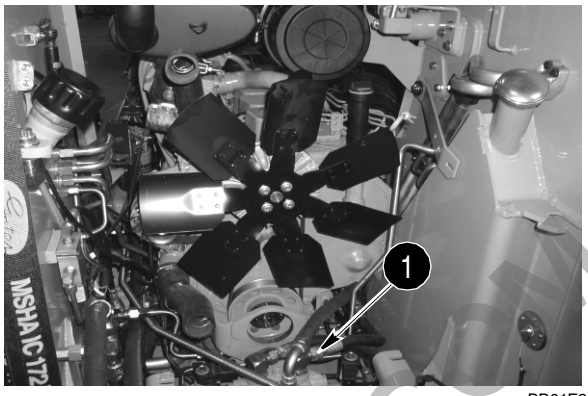
If the machine is equipped with a high flow gear pump and control valve, use the following procedure:



BS03D001

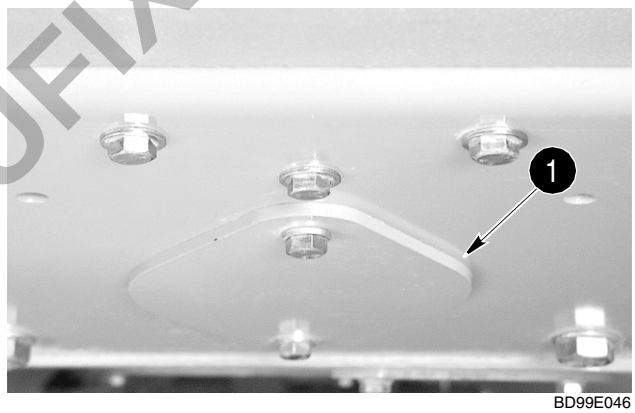
A. Find the gear pump mounted on the timing gear cover. Loosen and remove the bolts (1) that fasten the high flow gear pump to the timing gear cover. Remove the gear pump from the timing gear cover. Fasten the gear pump out of the way.




BD01E219

B. Locate the high flow control valve (1). Find the cap screws that fasten the mounting bracket for the high flow control valve to the frame. Loosen and remove the bolts, washers and self-locking nuts. Move the high flow control valve toward the rear of the machine and out of the way.

## STEP 48




BD99E046

Loosen and remove the cap screws and washers that fasten the cover plate to the frame. Remove the cover plate (1) for access to the rear motor mount.

## STEP 49

Connect lifting equipment capable of lifting 272 kg (600 pounds) to the lifting eyes on the engine.

**NOTE:** *Clean the hydraulic filter and the area around the hydraulic filter. Install caps and/or plugs in all fittings that are disconnected.*

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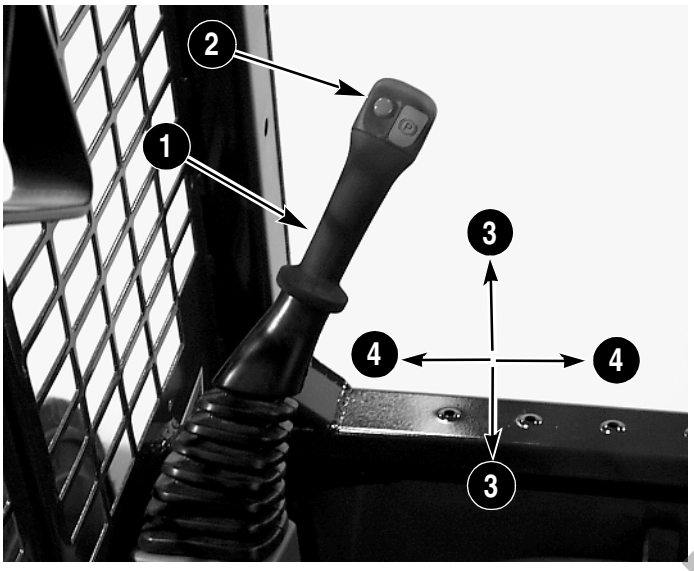
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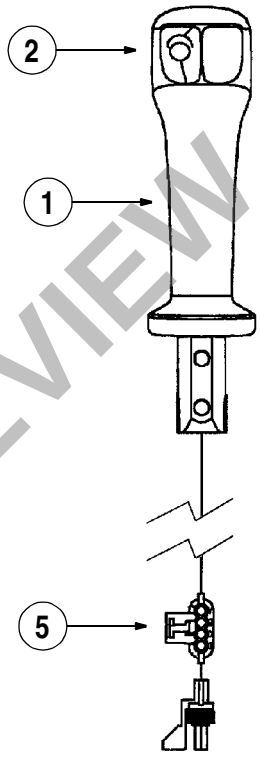
# CONTROL LEVERS (LATE PRODUCTION)

## Left Hand Control Lever



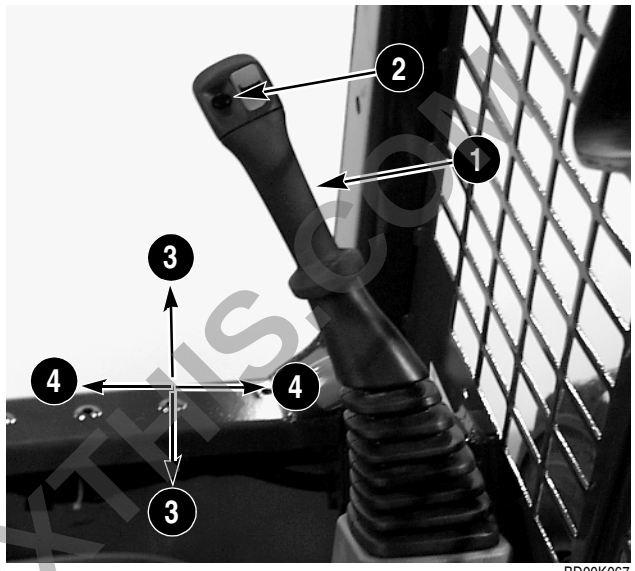

BD00K066

1. LEFT HAND CONTROL LEVER
2. BRAKE SWITCH (PUSH BUTTON, ALTERNATE ACTION)
3. LEFT SIDE STEERING
4. LEFT SIDE LOADER CONTROL
5. LEFT HAND CONTROL CONNECTOR



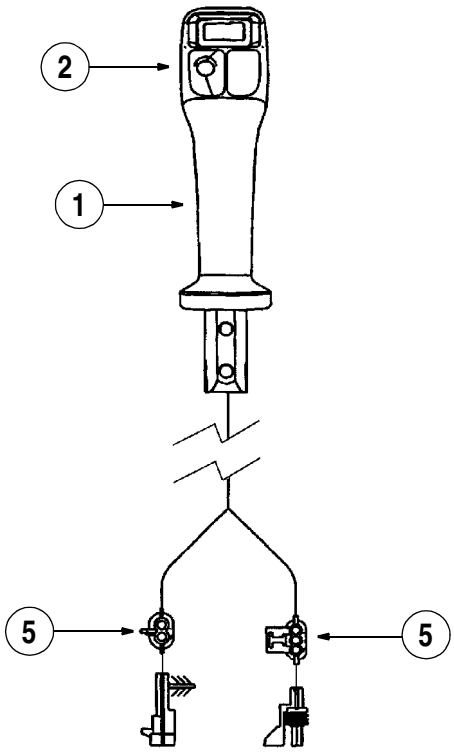

BS00K204

## Right Hand Control Lever




BD00K067

1. RIGHT HAND CONTROL LEVER
2. HORN BUTTON (PUSH BUTTON, MOMENTARY ACTION) (OPTIONAL)
3. RIGHT SIDE STEERING
4. BUCKET TILT CONTROL
5. RIGHT HAND CONTROL CONNECTORS

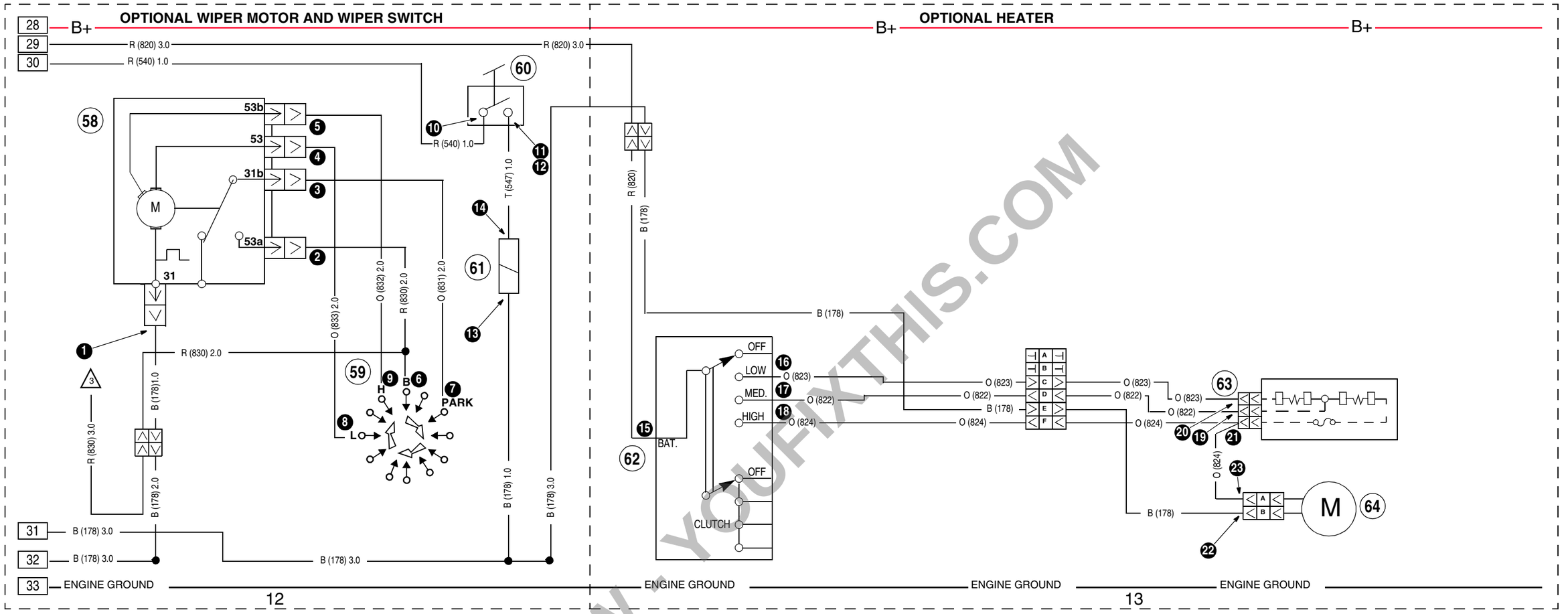



BS00K203

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## Components

58. Wiper Motor
59. Wiper Switch
60. Hydraulic Coupler Switch
61. Hydraulic Coupler Solenoid
62. Fan Speed Switch
63. Blower Motor Speed Resistor with Thermal Fuse
64. Blower Motor

## Circuits

| NO. | GA. | COLOR | FROM: | TO: |
|---|---|---|---|---|
| 178 | 3.0 | Black | Splice | 30 Pin Connector and Engine Ground |
| 178 | 1.0 | Black | Wiper Motor | Splice and Engine Ground |
| 178 | 3.0 | Black | Blower Connector | Splice and Engine Ground |
| 178 | | Black | Blower Motor | Blower Connector |
| 178 | 1.0 | Black | Hydraulic Coupler Solenoid | Chassis Ground |
| 178 | 3.0 | Black | Chassis Ground | Engine Ground |
| 540 | 1.0 | Red | Accessory Power Fuse Block | Hydraulic Coupler Switch |
| 547 | 1.0 | Tan | Hydraulic Coupler Switch | Hydraulic Coupler Solenoid |

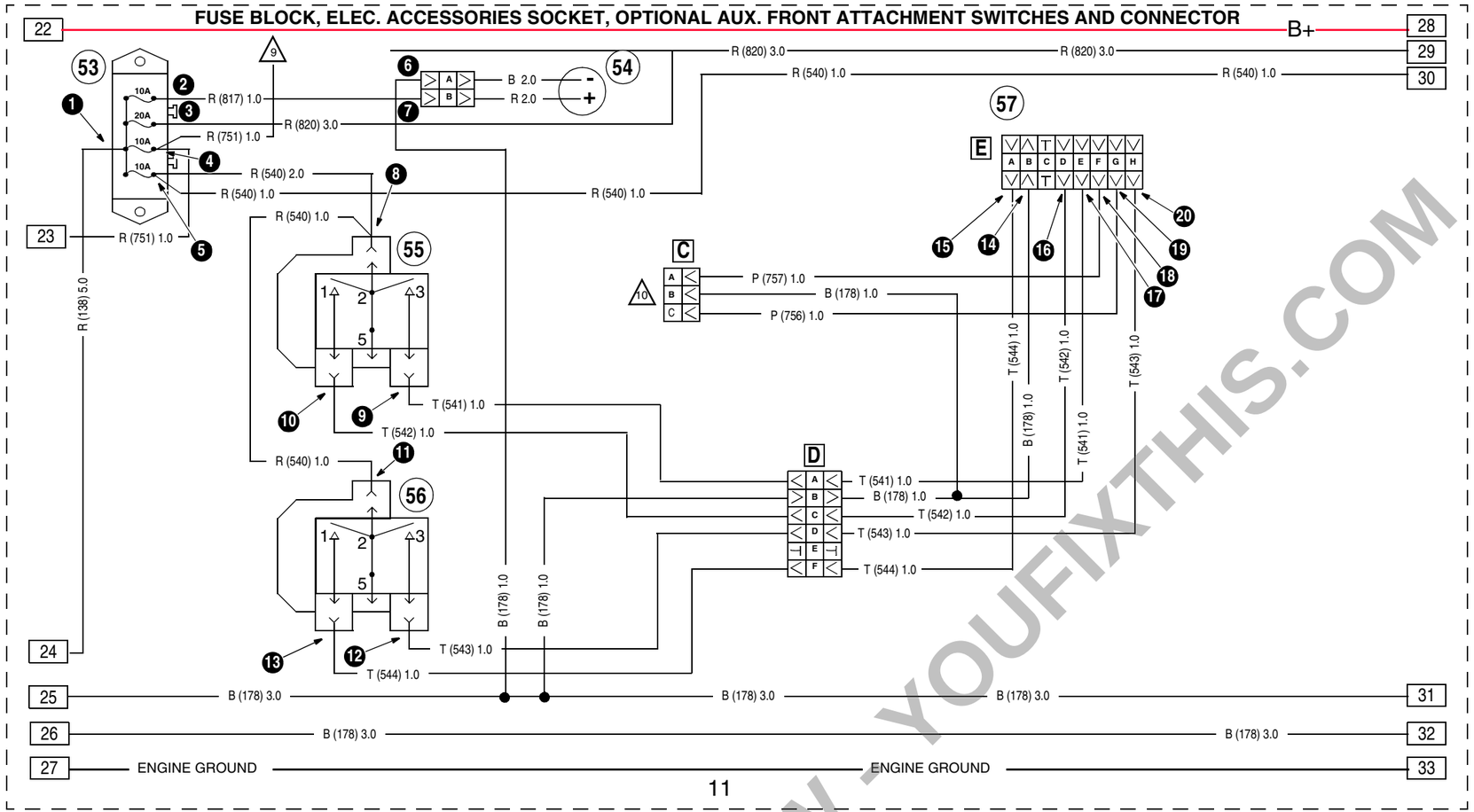
## Circuits

| NO. | GA. | COLOR | FROM: | TO: |
|---|---|---|---|---|
| 820 | 3.0 | Red | Accessory Power Fuse Block, 20 Ampere Fuse | Blower and Air Conditioning Connector |
| 822 | | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 823 | | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 824 | | Orange | Fan Speed Switch | Blower Motor Speed Resistor |
| 824 | | Orange | Fan Speed Switch | Blower Motor Speed Resistor and Blower Motor |
| 830 | 3.0 | Red | Fuse Block, 25 Ampere Fuse | 30 Pin Connector and Wiper Harness Connector |
| 830 | 2.0 | Red | Wiper Harness Connector | Wiper Switch and Wiper Motor |
| 831 | 2.0 | Orange | Wiper Switch (Park Position) | Wiper Motor |
| 832 | 2.0 | Orange | Wiper Switch (High Position) | Wiper Motor |
| 833 | 2.0 | Orange | Wiper Switch (Low Position) | Wiper Motor |

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## Components

53. Accessory Power Fuse Block
54. Electric Accessory Socket
55. LH Auxilliary Switch
56. RH Auxilliary Switch
57. Auxilliary Front Attachment Connector

## Circuits

| NO. | GA. | COLOR | FROM: | TO: |
|---|---|---|---|---|
| 138 | 5.0 | Red | Accessory Power Relay | Accessory Fuse Block |
| 178 | 3.0 | Black | Splice | 30 Pin Connector and Engine Ground |
| 178 | 1.0 | Black | Low Pressure High Flow Solenoids | Low Pressure High Flow Connector |
| 178 | 1.0 | Black | Connector D | Splice and Engine Ground |
| 178 | 1.0 | Black | Aux. Front Attachment Connector Connector E | Connector D |
| 178 | 1.0 | Black | Aux. Front Attachment Connector (Connector E) | Connector C |
| 178 | 3.0 | Black | Chassis Ground | Engine Ground |
| 540 | 1.0 | Red | Accessory Power Fuse Block | Hydraulic Coupler Switch |
| 540 | 2.0 | Red | Accessory Power Fuse Block | LH Auxiliary Switch |
| 540 | 1.0 | Red | LH Auxiliary Switch | RH Auxiliary Switch |

## Circuits

| NO. | GA. | COLOR | FROM: | TO: |
|---|---|---|---|---|
| 541 | 1.0 | Tan | LH Auxiliary Switch | Connector D) |
| 541 | 1.0 | Tan | Connector D | Connector E - Auxiliary Front Attachment Connector |
| 542 | 1.0 | Tan | LH Auxiliary Switch | Connector D |
| 542 | 1.0 | Tan | Connector D | Connector E - Auxiliary Front Attachment Connector |
| 543 | 1.0 | Tan | RH Auxiliary Switch | Connector D |
| 543 | 1.0 | Tan | Connector D | Connector E - Auxiliary Front Attachment Connector |
| 544 | 1.0 | Tan | RH Auxiliary Switch | Connector for Rear Auxiliary Controls (Load 4) |
| 544 | 1.0 | Tan | Connector D | Connector E - Auxiliary Front Attachment Connector |
| 751 | 1.0 | Red | Accessory Power Fuse Block, 10 Ampere Fuse | Flasher |
| 751 | 1.0 | Red | Accessory Power Fuse Block, 10 Ampere Fuse | Beacon Switch |
| 756 | 1.0 | Pink | Flasher | Turn Signal Harness and LH Turn Signal Lamp or Aux. Front Attachment Connector |

## Circuits

| NO. | GA. | COLOR | FROM: | TO: |
|---|---|---|---|---|
| 757 | 1.0 | Pink | Flasher | Turn Signal Harness and RH Turn Signsl Lamp or Aux. Front Attachment Connector |
| 817 | 1.0 | Red | Accessory Power Fuse Block, 10 Ampere Fuse | Electrical Accessory Connector and Electrical Accessories Socket |
| 820 | 3.0 | Red | Accessory Power Fuse Block, 20 Ampere Fuse | Blower and Air Conditioning Connector |

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## SECTION INDEX

# POWER TRAIN


| Section Title | Section Number |
|---|---|
| Hydrostatic “How It Works” | 6000 |
| Hydrostatic “How It Works” (Machines With P.I.N. JAF0318923 and After) | 6000 |
| Hydrostatic System Troubleshooting | 6001 |
| Hydrostatic System Troubleshooting (Machines With P.I.N. JAF0318923 and After) | 6001 |
| Removal and Installation of Hydrostatic Components | 6002 |
| Drive Coupling | 6003 |
| Piston Pump | 6004 |
| Drive Motors | 6005 |
| Drive Motors With Spring Applied-Hydraulic Release Brakes (Machines With P.I.N. JAF0318923 and After) | 6005 |
| Sprocket, Chains, and Axle Assemblies | 6007 |
| Wheels and Tires | 6011 |


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**CASE, LLC.**
**700 State Street**
**Racine, WI 53404 U.S.A.**

Bur 7-11612

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# HYDROSTATIC START-UP PROCEDURE

Failure of a pump or motor shortly after installation or after replacement of a failed hose normally indicates an improper start-up procedure.

After the machine is in service, the most common cause of hydraulic system failure is contamination. If the smallest particle of foreign material, such as dirt or a metal chip, is allowed to reach the precision moving parts contained within the hydrostatic system, rapid wear will result causing excessive downtime and costly maintenance. Therefore, when disconnecting hydraulic lines or removing one of the hydraulic components. **ALWAYS** clean and plug all ports and connections. Use lint free rags for cleaning to prevent contaminants from entering the system.

**WARNING:** *Hydrostatic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissue causing serious injury. Use a piece of wood or cardboard when looking for leaks. Never use your hands or other parts of your body.*

*Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.*

*If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.*

1. Prior to installation, inspect the pump, motor, hoses, adapters, and fittings for cleanliness. Check for proper pump rotation.
2. Install the pump and/or motor with attaching parts on the machine. Be sure to install hoses properly without twisting. See illustration below.
3. Fill reservoir with recommended clean hydraulic oil. See Operator's Manual.
4. Install a 40 bar (600 PSI) pressure gauge with a dampener valve in the charge pressure test port.
5. Disconnect the wire from the shutoff solenoid on the injection pump.
6. Center the control lever on the pump to insure the pump is in neutral.

**IMPORTANT:** *Raise the machine up on supports until the tires are up off of the floor. This will allow the ground drive to be operated to get the air out of the system. Clear the area of all unauthorized personnel and operate the starter from the operator's seat.*

**NOTE:** *Cranking the engine will get hydraulic oil into the circuit without harming the components.*

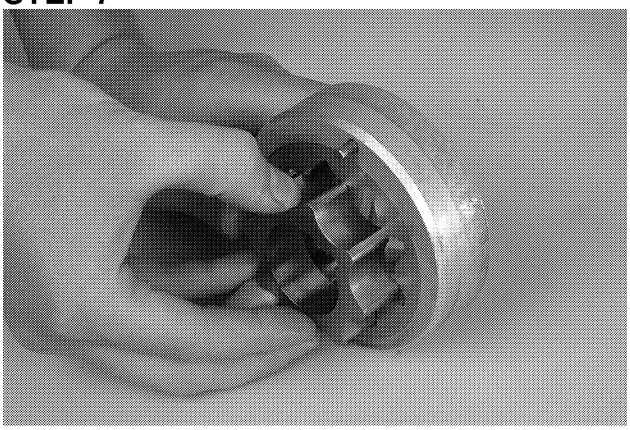
7. Crank the engine until pressure starts to build on the gauge.
8. Connect the wire for the fuel injection pump.
9. Start the engine and run at low idle until the 40 bar (600 PSI) pressure gauge rises and stabilizes above the minimum pressure specified in the charge pressure test.
10. After proper charge pressure has been reached, increase engine to full throttle and operate system to its fullest travel in all directions. If charge pressure remains stable, the system is satisfactory.
11. Stop the engine. Remove the pressure gauge and reinstall the plug. Check all fittings for leaks.
12. Check oil level in the reservoir. Add as necessary.

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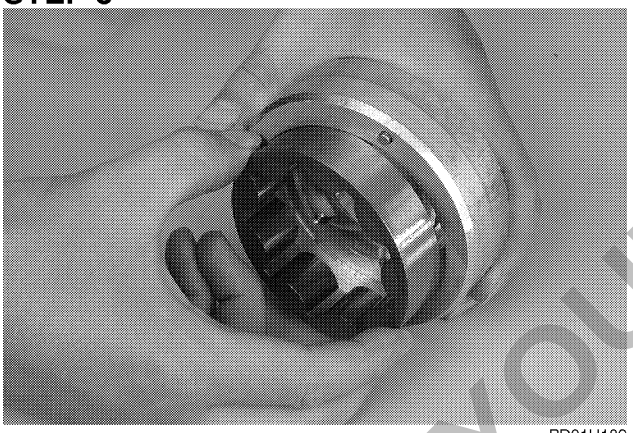
**STEP 7**



BD01H188

Remove the inner gear (33).

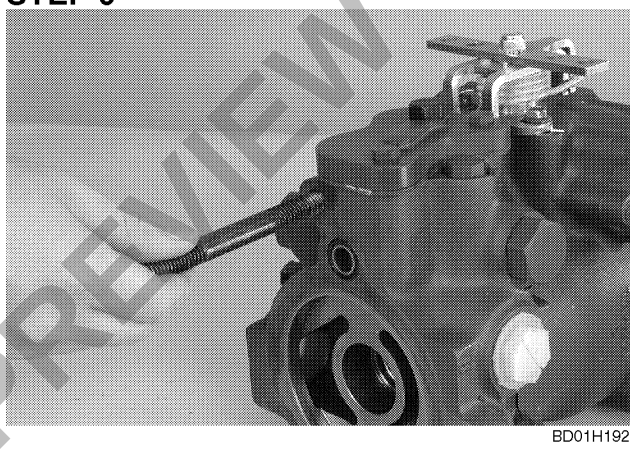
**STEP 8**



BD01H189

Remove the outer gear (34).

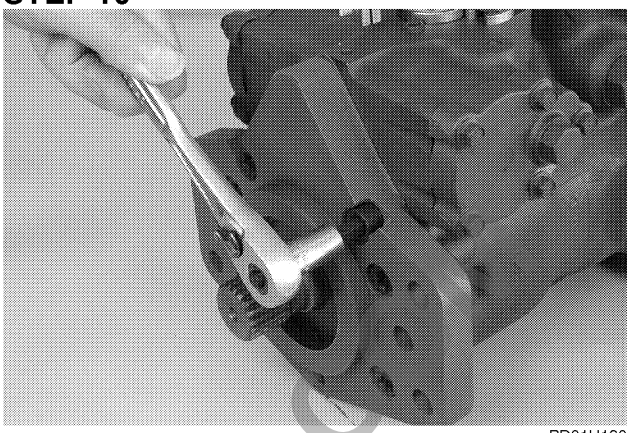
**STEP 9**



BD01H192

Remove the bolt stud.

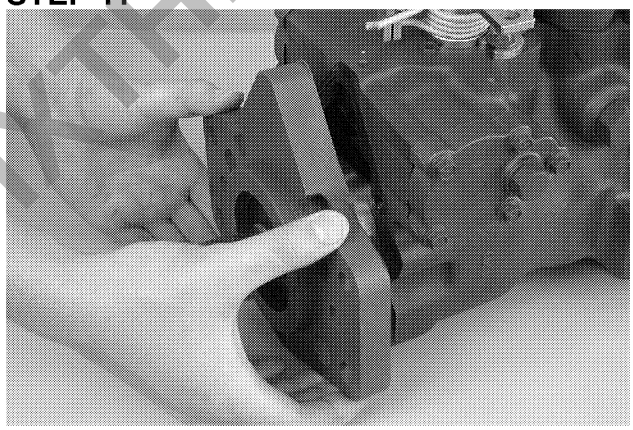
**STEP 10**



BD01H190

Remove the special bolts (6 and 7) from the cover (9).

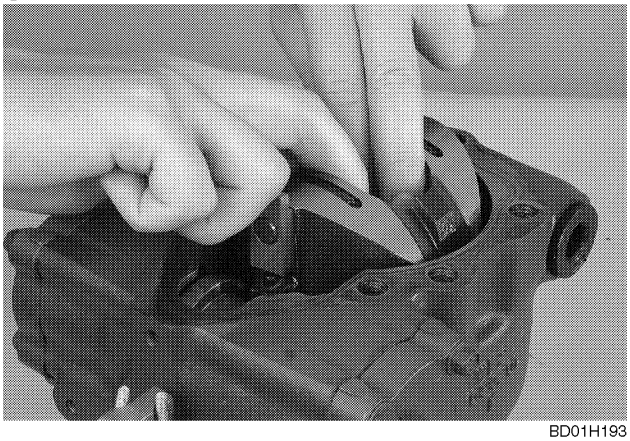
**STEP 11**



BD01H191

Remove the cover (9), gasket (29), and shaft (5).

**STEP 12**



BD01H193

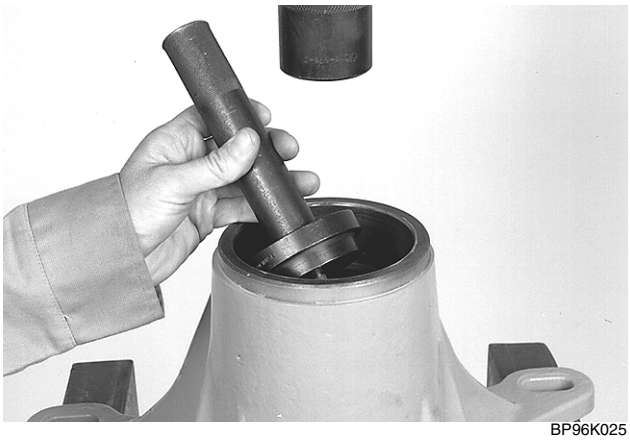
Remove the swash plate (13).

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**STEP 7**



BP96K025

Turn the axle housing over and install an acceptable driver on the inner bearing.

**STEP 8**



BP96K026

Press the inner plastic grease disc, bearing, and seal out of the axle housing.

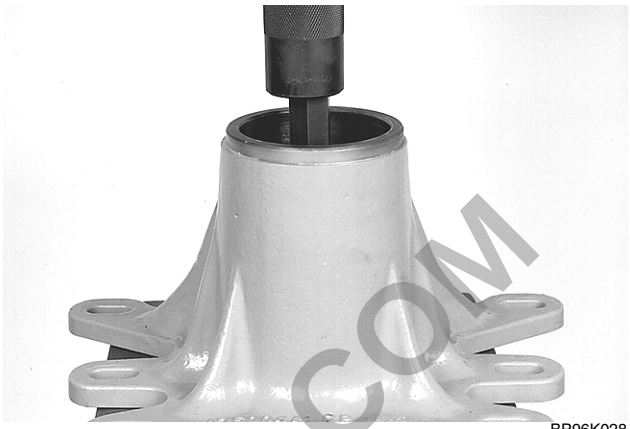
**STEP 9**



BP96K027

Turn the axle housing over and install an acceptable puller on the inner bearing cup.

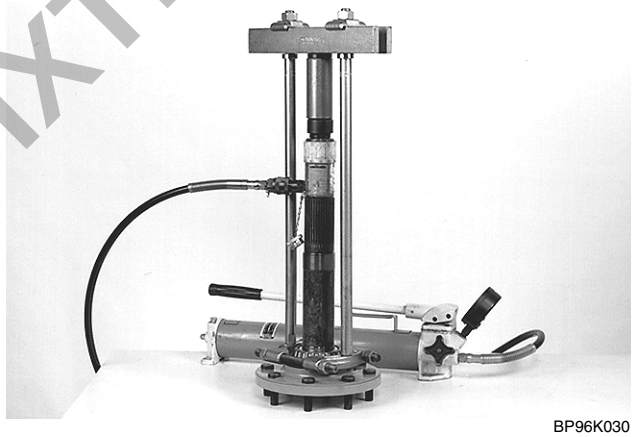
**STEP 10**



BP96K028

Turn axle housing over so that the puller is down. Install an acceptable driver on the puller and press the inner bearing cup out of the axle housing.

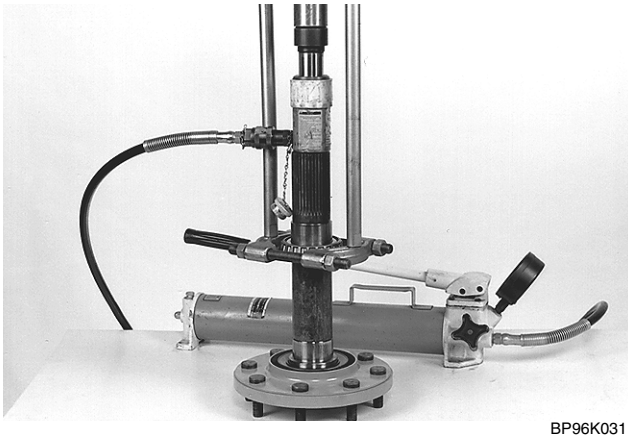
**STEP 11**



BP96K030

Install an acceptable puller on the outer bearing and pull the bearing from the first press fit area of the axle. Slide the bearing upward to the second press fit area.

**STEP 12**



BP96K031

Remove the outer bearing from the second press fit area of the axle.



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7. Remove the brake disc and park pin actuating cylinder / guide tube assembly. Apply Permatex Ultra Blue RTV, P/N B504324 to the mating surface of the guide tube mounting flange only. Do not apply RTV to the threaded holes of the mounting flange. Re-install the park pin actuating cylinder / guide tube assembly into the chain tank.
8. Apply Loctite 243 to the threads of the two guide tube retaining bolts (29) prior to installation and tighten to a torque of 94 to 106 Nm (69 to 78 pound-feet). Refer to the illustration on page 7002-10.
9. Install the 90 degree fitting (12) onto the brake actuating cylinder (25). Attach the hoses to the actuating cylinder fittings. Place the ROPS and seat back into the operating position.
10. Install the pin support bracket (31) into the mounting location in the chain tank. Install the bolt (32) into the pin support bracket (31). Tighten the bolt (32).
11. Install the park brake disc. When installing the park brake disc to the motor drive sprocket, use the following order of assembly. Refer to the illustration on page 6007-7 of this manual.
    A. Place the spacer washer P/N 496-11081 (.812 ID X 1.5 OD inches) between the retaining plate and the end of the motor shaft.
    B. Place washer P/N 496-81022 (.656 ID X 1.25 OD inches) inside the retaining plate opening.
    C. Place washer P/N 496-41801 (.812 ID X 1.75 OD inches) under the head of the large retaining bolt threaded into the end of the motor shaft. Apply Locktite 243 to the first 10 - 15 threads of the large retaining bolt. Install this bolt through the washers mentioned above and tighten to a torque of 247 to 320 Nm (185 to 235 pound-feet).
    D. Refer to photo on page 7002-7 and apply Loctite 243 to the threads of the retaining plate bolts (2). Install the bolts (2) and washers (2) into the retaining plate. Tighten the bolts (2) to a torque of 24 to 31 Nm (17 to 23 pound-feet).
12. Apply Permatex RTV sealer to the chain tank gasket and install the gasket and the chain tank cover to the chain tank. Install the 6 cap screws into the chain tank cover and tighten the cap screws to a torque of 101 to 113 Nm (75 to 83 pound-feet).
13. Make sure that the hydraulic lines are secure and free from kinks and pinching.
14. Clean up any spilled hydraulic fluid from the floor and equipment.
15. Start and run the engine at idle speed.
16. Operate the machine and then apply the park brakes to remove any air from the hydraulic system.
17. Stop the engine.
18. Check for oil leakage. Check the level of the oil in the hydraulic reservoir. Add oil as necessary.
19. Install the heel and floor plates in the operators compartment.

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# 75XT HYDRAULIC COMPONENTS

## Components Defined

**Reservoir** - Located in the left rear of chassis. Pressurized to 34.5 kpa (5 psi), with a -3.5 kpa (-0.5 psi) vacuum breaker. A 100 mesh suction screen is located near the bottom of the reservoir to supply filtered oil to the hydraulic gear pump.

**Hydraulic gear pump** - Supplies flow to operate the hydraulic system.

**Loader control valve** - Is a three spool valve controlling the loader, bucket and auxiliary circuits. The main relief valve is also part of the valve assembly.

**Bucket tip cylinders** - Used to control the movement of the bucket.

**Loader lift cylinders** - Used to raise and lower the loader frame with cushioning employed at the base end of the cylinder.

**Auxiliary disconnects** -Located on the left loader frame for the purpose of auxiliary hydraulic power to attachments.

**Hydraulic filter** - Provides 6 Micron filtration for return oil from the hydraulic system.

**Oil cooler** - Cools hydraulic system return oil and hydrostatic drains.

## Reservoir

The hydraulic system begins at the reservoir located in the left rear frame. The reservoir has a capacity of 21.7 litres (5.7 U.S. gallons) and is pressure limited to 34.5 kPa (5 psi). Pressure is controlled by the relief in the reservoir cap. A vacuum breaker is also employed in the cap to open at -3.5 kPa, (0.5 psi) allowing air to enter the reservoir. A 100 mesh strainer is located in the outlet port of the reservoir to assure that contamination larger than 150 Microns does not enter the inlet of the hydraulic gear pump. The strainer can be removed for cleaning.

## Hydraulic Pump

**A Danfoss gear pump**, with a capacity of 72.4 litres/min. (19.1 gpm) at engine rated at 2000 rpm, supplies oil for the hydraulic system. Pump flow, 72.4 liters/min. (19.1 gpm) is supplied to the equipment port for use in the hydraulic system, for loader, bucket, auxiliary and power beyond circuits. Return oil from the hydraulic system passes through the filter and cooler before returning to the reservoir.The hydraulic pump is mounted to and driven by the engine.

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# SPOOL LOCK SOLENOIDS

Two spool lock solenoids are part of the loader control valve assembly. The solenoids lock the loader and bucket spools in the neutral position. The loader and bucket spools are locked in the neutral position when the operator seat bar is raised, the operator is not in the seat, the ROPS is tilted, the front door (if equipped) is open or the machine is shut off. Each spool lock solenoid is positioned above an undercut area of the spool when the spool is in the neutral position.

The tip of the spool lock solenoid is extended by a spring as the solenoid is not activated. The tip of the solenoid engages the spool to secure it in the neutral position. When the operator is in the operators seat with the lap bar down and the ROPS is in the locked position and the front door (if equipped) is closed, power is supplied to each of the solenoids to allow the spools to actuate. The loader spool lock solenoid is equipped with an override stem at the top to allow the loader spool to be unlocked manually in case of a malfunction.

**Caution:** Use extreme caution when using this manual override feature. Overriding the interlock will allow the lift spool to be actuated resulting in loader arm movement.

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# BI-DIRECTIONAL SELF-LEVELING SYSTEM TROUBLESHOOTING

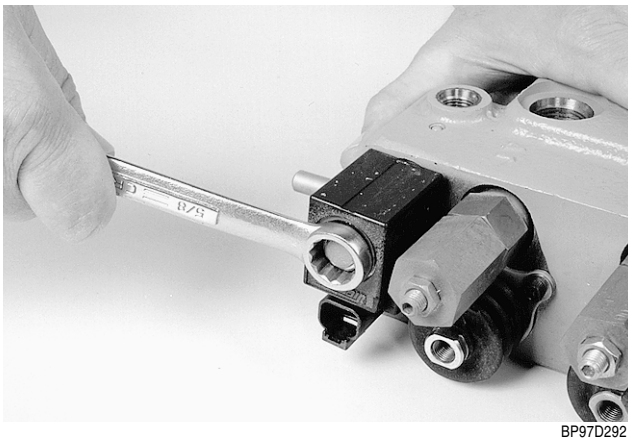
| SYMPTOM | POSSIBLE CAUSE | POSSIBLE SOLUTION |
|---|---|---|
| Bucket does not self-level at all. | Cab On-Off switch turned to OFF position. | Turn On-Off switch to the ON position. |
| | Bad bucket spool microswitch or out of adjustment. | Adjust, repair or replace the bucket spool microswitch. |
| | Bad float switch in the end cover of the loader lift spool. | Repair or replace the float switch. |
| | On-Off Solenoid Valve stuck in the OFF (energized) position. | Disconnect the electrical connector from the solenoid. If self-leveling is still not functioning, replace the solenoid cartridge. |
| Bucket dumps when the loader is powered down against the mechanical stops. | The leakage across the flow divider builds pressure on both ends of the bucket cylinder. The displacement differences of the base and rod end of the bucket cylinders force the bucket to dump. | This is how the BDSL feature works. Do not hold loader power down while against the stops.<br>Turn BDSL OFF. |
| Loader arms do not lower when powering down with the engine off (with- or without electrical power). | The lower counterbalance valve has no pilot pressure to open, so the loader cylinder base oil is blocked. | This is how the BDSL feature works. Move the lift spool to the float position. |
| Bucket self-levels when the ON/OFF switch is in the OFF position. | Bad ON/OFF switch or bad wiring. | Check power supply to the ON/OFF switch.<br>Check the ON/OFF switch and the wiring between the switch and the ON/OFF solenoid in the loader valve. |
| | Bad ON/OFF solenoid valve in the loader valve. | Check function of the ON/OFF solenoid valve. |
| Bucket does not maintain level while raising or lowering at engines speeds other then high idle. | Bucket self-leveling is designed to work optimally at high-idle. | Run engine at high idle. |
| | Bucket self-leveling works best when lift spool is fully stroked. | Fully stroke the lift spool. |
| Bucket does not maintain level while raising at high idle. | Flow divider cartridge stuck. | Check flow divider cartridge for free operation. |
| | Incorrect flow divider cartridge installed. | Check flow divider cartridge for correct part number. |
| | Raise counterbalance valve stuck. | Check raise counterbalance valve for free operation. |
| Bucket does not maintain level while lowering at high idle. | Flow divider cartridge stuck. | Check flow divider cartridge for free operation. |
| | Incorrect flow divider cartridge installed. | Check flow divider cartridge for correct part number. |
| | Lower counterbalance valve stuck | Check lower counterbalance valve for free operation. |

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## STEP 18



BP97D292

Loosen and remove the nut from the solenoid valve.

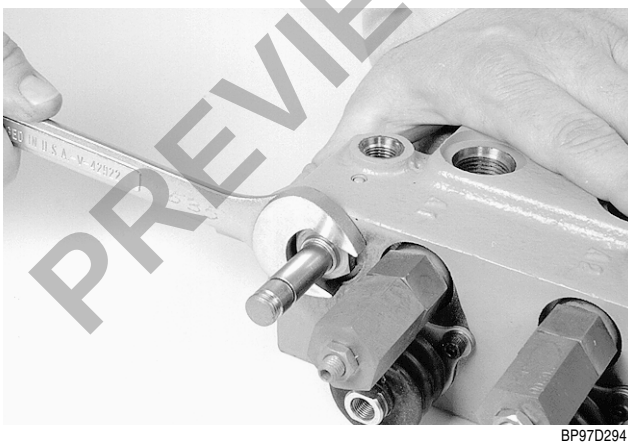
## STEP 19



BP97D293

Remove the coil assembly from the cartridge.

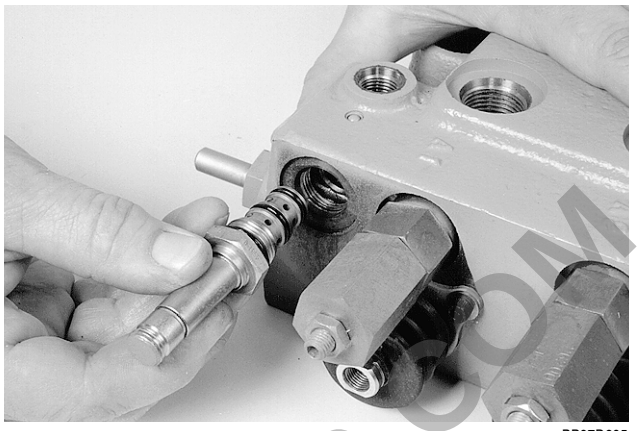
## STEP 20



BP97D294

Loosen the cartridge.

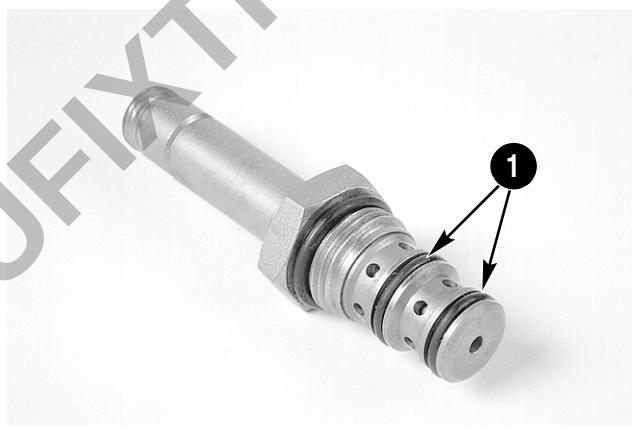
## STEP 21



BP97D295

Remove the cartridge from the valve body.

## STEP 22

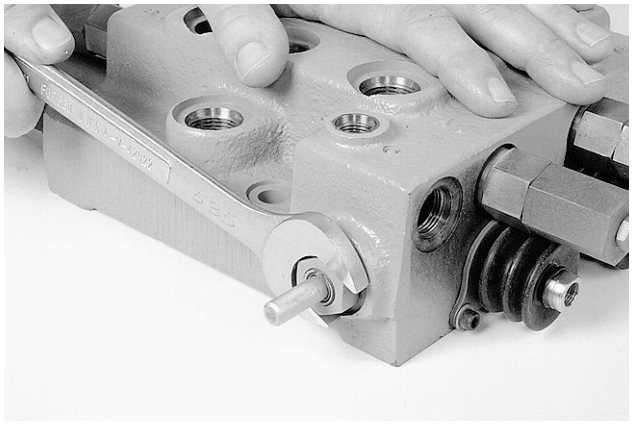



BP97D296

1. O-RING

Remove and discard the O-rings from the cartridge. Inspect the cartridge for wear or damage.

## STEP 23



BP97D297

Loosen the plug for the lock release assembly.



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## Assembly

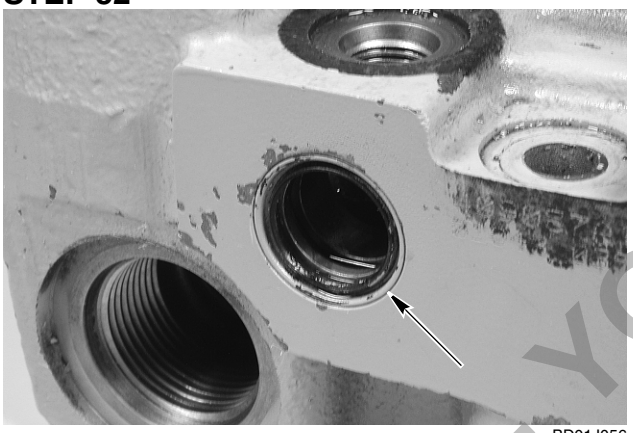
### STEP 51



BD01J058

Install a new O-ring into the loader lift port.

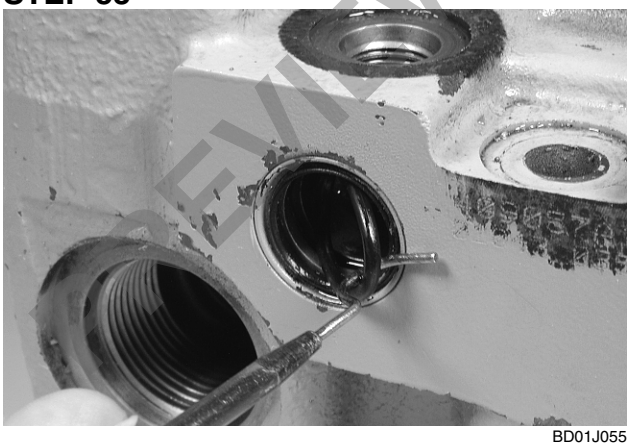
### STEP 52



BD01J056

Install a new seal into the spool port.

### STEP 53

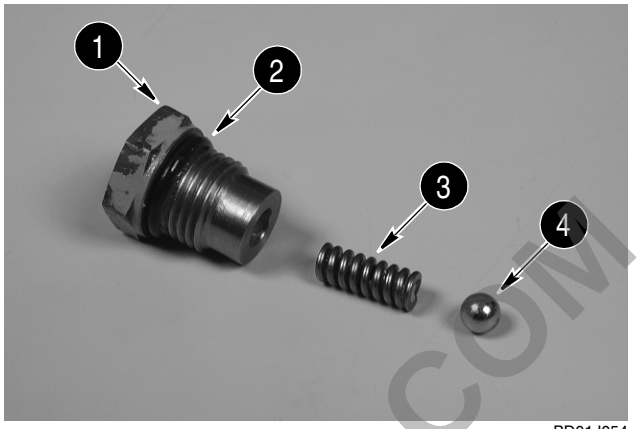


BD01J055

Install a new O-ring into the spool ports.

**NOTE:** *Repeat step 52 to 53 for the other spool port.*

### STEP 54

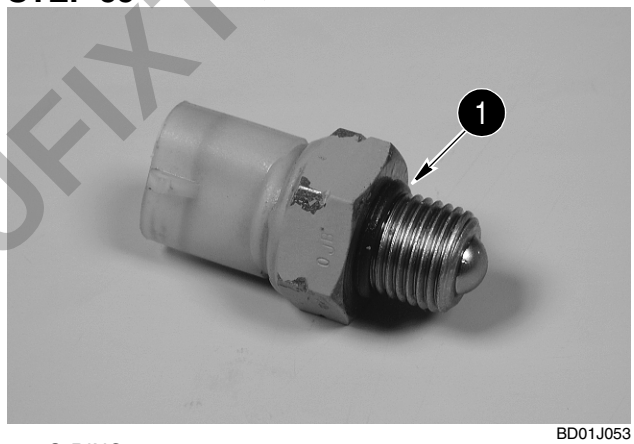



BD01J054

1. DETENT PLUG
2. O-RING
3. SPRING
4. DETENT BALL

Install a new O-ring onto the plug. Install the spring and detent into the detent plug.

### STEP 55

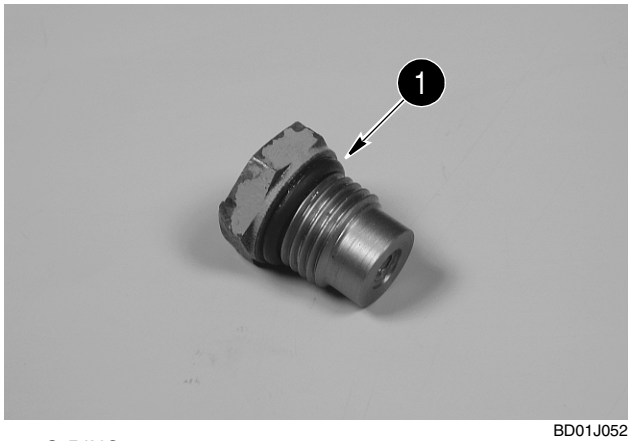



BD01J053

1. O-RING

Install the O-ring onto the float switch.

### STEP 56




BD01J052

1. O-RING

Install a new O-ring onto the plug.

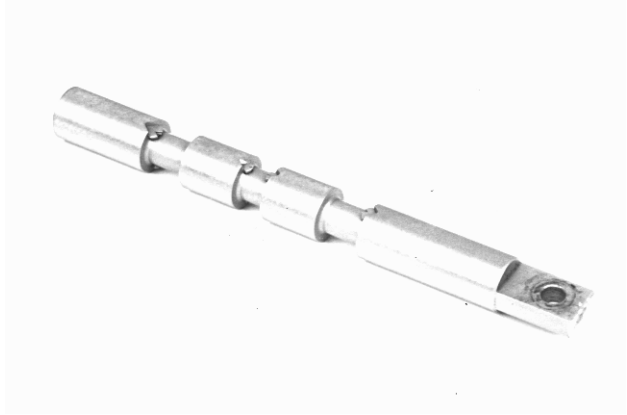


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## Inspection

Clean the parts in cleaning solvent. Inspect the housing for cracks, wear in the spool bores, or other damage.

### STEP 35



B9068834M

Inspect the spools for wear and damage.

### STEP 36



B9068828M

Inspect the parts of the load check valves.

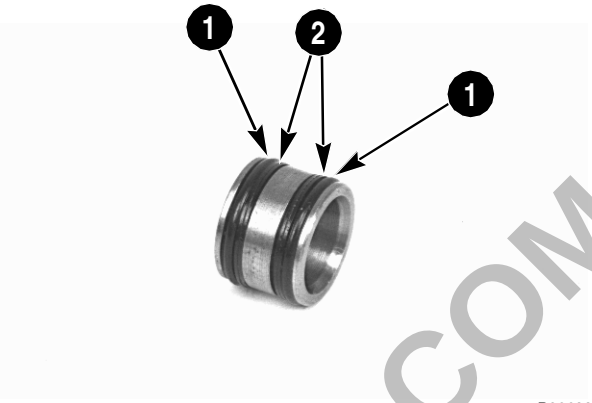
### STEP 37



B9068830M

Replace the O-ring on the plug.

### STEP 38




B9068824M

1. O-RING
2. BACKUP RING

Replace the O-rings and backup rings on the sleeves.

### STEP 39




B9109734M

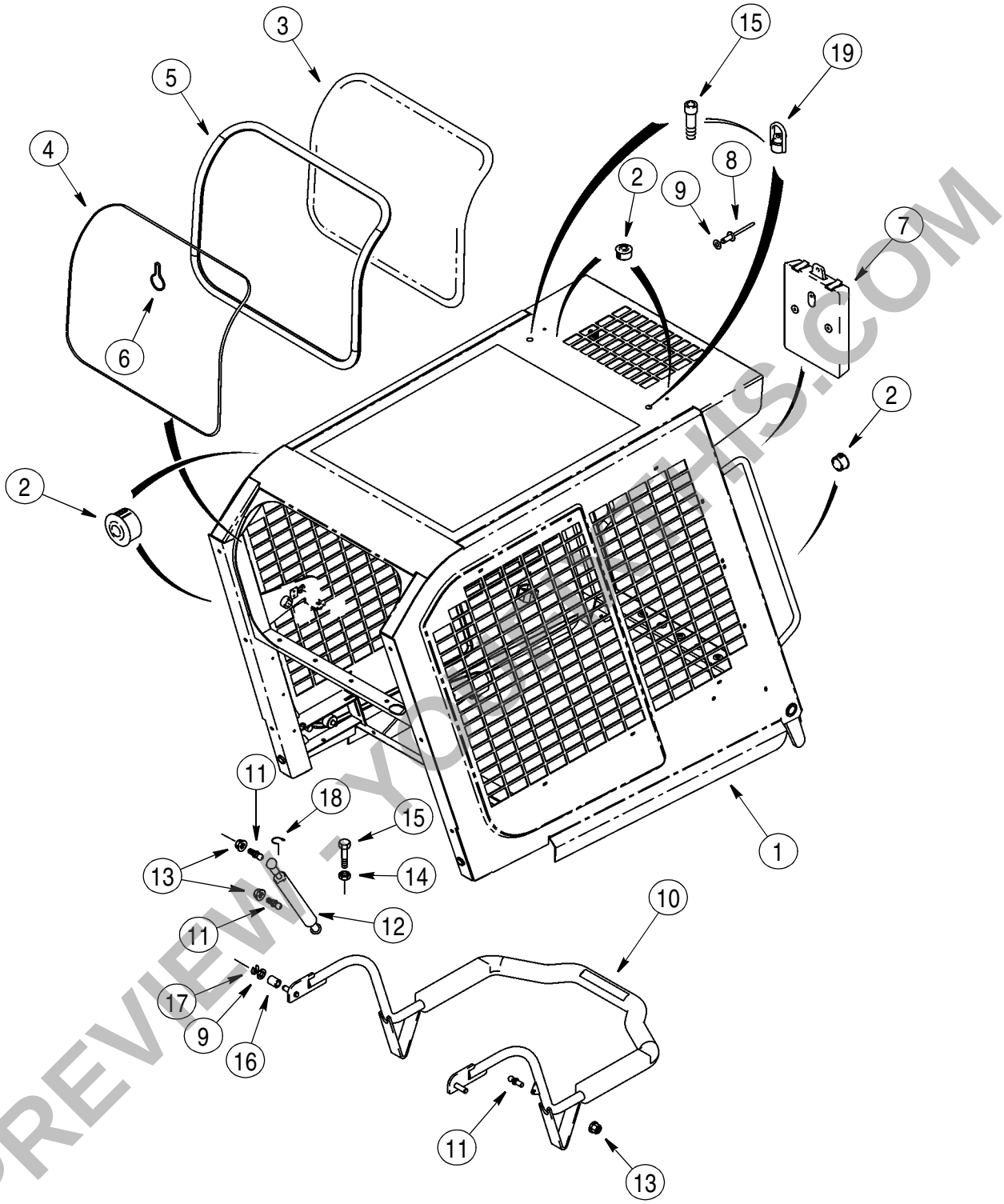
1. O-RING
2. BACKUP RING

Replace the O-rings and backup rings on the main relief valve.

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BT97H034

1. ROPS FRAME
2. PLUG
3. REAR GLASS
4. FILLING STRIP
5. SEALING STRIP
6. PULL RING
7. OPERATORS MANUAL BOX
8. RIVET
9. WASHER
10. SEAT BAR
11. BALL STUD
12. SPRING
13. FLANGE NUT
14. NUT
15. CAP SCREW
16. BUSHING
17. LOCK RING
18. RETAINER
19. LOAD HOOK



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