

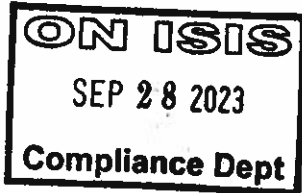
SERVICE PROCEDURE

23517

September 2023

SUBJECT: SAFETY RECALL

Brake Pressure Switch on certain International® FBC1300 stripped chassis built 11/29/2017 thru 08/09/2019, and 03/04/2022 thru 05/19/2023, International® DuraStar® model trucks built 01/07/2015 thru 01/29/2015 and 08/16/2017 thru 01/21/2019, International® MV™ Series trucks built 08/16/2017 thru 01/21/2019, IC Bus® CE commercial buses built 11/26/2018 thru 01/05/2022, and IC Bus® TC commercial buses built 05/24/2018 thru 05/15/2023 with feature code 04100 (Brake system, hydraulic)



CUSTOMER LETTER

Print ready (PDF file) copy of the International [Customer Letter](#)

Print ready (PDF file) copy of the IC Bus [Customer Letter](#)

DEFECT DESCRIPTION

The brake pressure switch may allow brake fluid to seep past the diaphragm seal into the brake pressure switch electrical connector and associated fuse, which can short the switch and / or fuse. A shorted switch or fuse may cause the circuit to generate excessive heat, which can result in a fire, increasing the risk of property damage or personal injury to the operator.

Vehicle owners have been advised that until the remedy can be performed, they are to park their vehicles outdoors.

MODELS INVOLVED

This safety recall involves certain 2018 thru 2020 International® FBC1300 stripped chassis built 11/29/2017 thru 08/09/2019, 2023 thru 2024 International® FBC1300 stripped chassis built 03/04/2022 thru 05/19/2023, 2016 International® DuraStar® model trucks built 01/07/2015 thru 01/29/2015, 2018 thru 2020 International® DuraStar® model trucks built 08/16/2017 thru 01/21/2019, 2019 thru 2024 International® MV™ Series trucks built 08/16/2017 thru 01/21/2019,

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2019 thru 2022 IC Bus® CE commercial buses built 11/26/2018 thru 01/05/2022, and 2019 thru 2024 IC Bus® TC commercial buses built 05/24/2018 thru 05/15/2023 with feature code 04100 (Brake system, hydraulic).

ELIGIBILITY

This procedure applies ONLY to vehicles marked in the International® Service PortalSM with Safety Recall 23517. Also complete any other open campaigns listed on the Service Portal at this time.

TOOLS REQUIRED

Description	Tool Number
Adapter, Reservoir Cap Kit	11-101-01
Pressure Brake Bleeder	ZTSE6087NAV

Table 1 Tool Information

PARTS INFORMATION

Part Number	Part Description	Quantity
4052584C2	Switch, Brake Pressure	1
8900340R91	Harness, Brake Jumper; MV™ Series, TC Commercial Bus	1; If Needed
8900350R91	Harness, Brake Jumper; CE Commercial Bus, 1300 FBC	1; If Needed
8900360R91	Harness, Brake Jumper; DuraStar® trucks	1; If Needed
306132C1	Strap, Cable, 14-inch	As Needed
Source Locally	DOT 3 Brake Fluid	As Needed
476074C1	Nut, Battery Terminal 3/8" UNC	1
NANO2133005	Dielectric Grease Coating (BLUE)	If Required
4053287C5	Connector, Tubing, Special	If Required

Table 2 Parts Information

VEHICLE RECALL 23517

SERVICE PROCEDURE

WARNING! To prevent personal injury and / or death, or damage to property, park vehicle on hard flat surface, turn the engine off, set the parking brake and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING! To prevent personal injury and / or death, or damage to property, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent personal injury and / or death, or damage to property, allow engine / vehicle components to cool before servicing engine or vehicle.

WARNING! To prevent personal injury and / or death, or damage to property, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

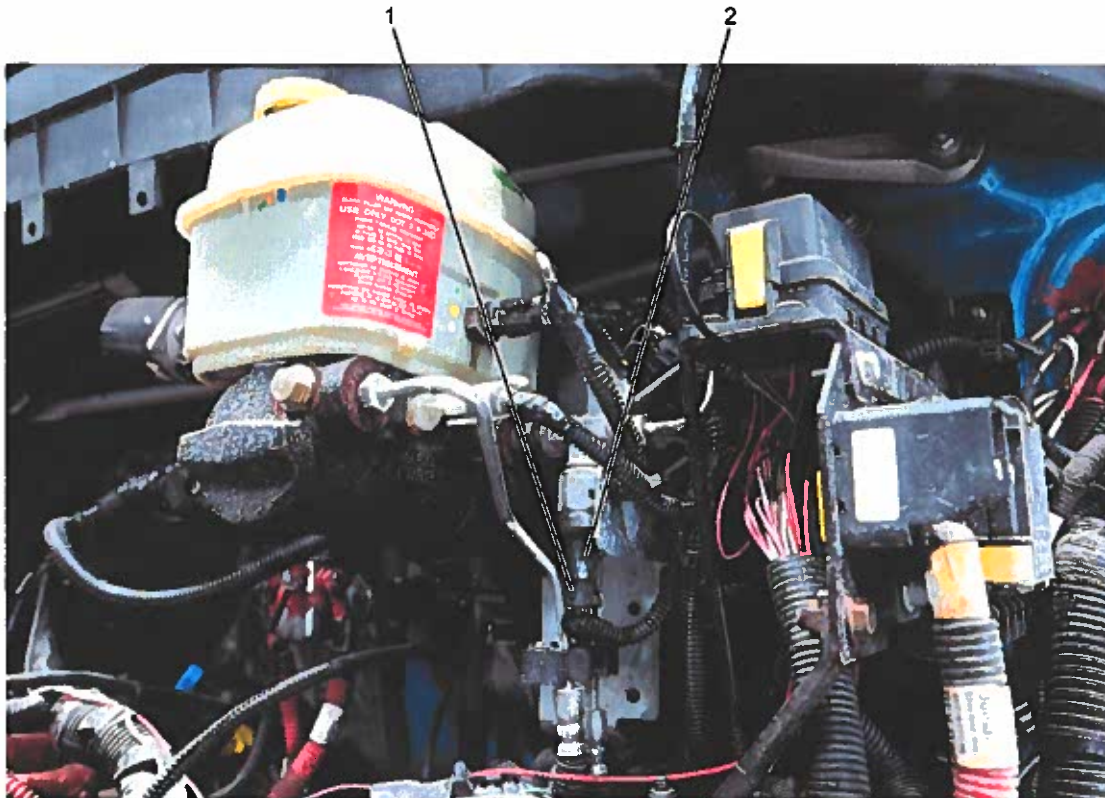
WARNING! To prevent personal injury and / or death, or damage to property, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

1. Park vehicle on flat surface.
2. Shift transmission to Park or Neutral and set parking brake.
3. Turn vehicle ignition to Key OFF position.
4. Install wheel chocks.
5. Unlatch and open hood.
6. Disconnect and isolate negative battery cable on main vehicle battery.
Discard terminal nut.

NOTE: Proceed with inspection Steps 7 – 10 for DuraStar® trucks, MV™ Series, and TC commercial bus and inspection Steps 11 – 14 for CE commercial bus and 1300 FBC.

DuraStar® Trucks, MV™ Series, AND CE Commercial Bus Harness And Brake Switch Inspection

7. Remove driver-side front fender extension.

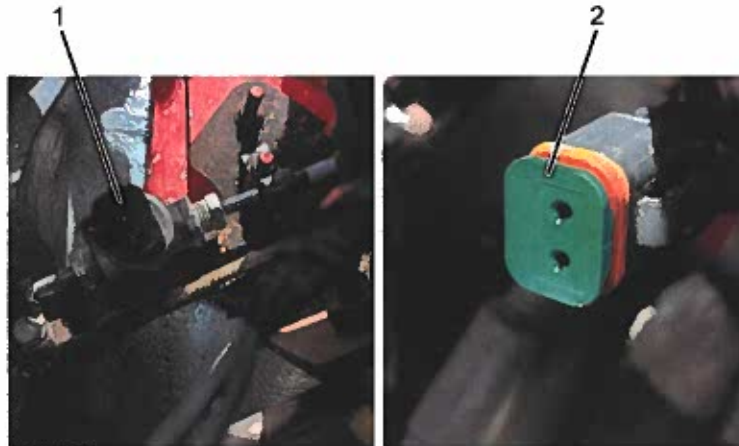


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Figure 1. Brake Pressure Switch Connector Location

1. Brake pressure switch connector
2. Brake pressure switch

8. Locate and disconnect the brake pressure switch connector (Figure 1, Item 1) from hydraulic brake pressure switch (Figure 1, Item 2) located near vehicle master cylinder.



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Figure 2. Harness Connector and Brake Pressure Switch

1. Brake pressure switch
2. Harness connector

NOTE: DO NOT connect harness to new brake pressure switch prior to inspection steps.

9. Inspect for presence of brake fluid at removed brake pressure switch terminals (Figure 2, Item 1) and at disconnected harness connector (Figure 2, Item 2).
 - a. If there is no brake fluid in switch terminals or harness connector, proceed to Step 10 to inspect fuses.
 - b. If there is brake fluid present in switch terminals or harness connector, proceed to Step 15 to replace brake pressure switch, Steps 63 – 114 to replace MV™ Series and TC commercial bus harness, and Step 115 – 179 to replace DuraStar® harness.

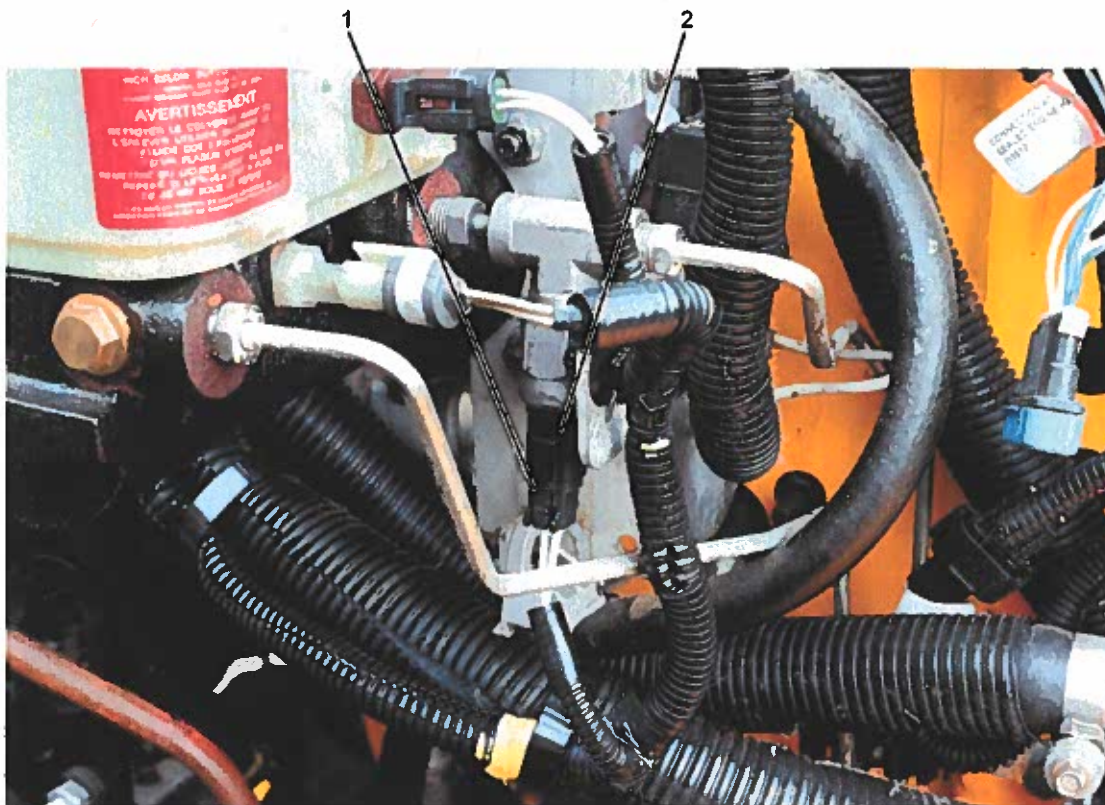


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Figure 3. 5 Amp Fuse and Cover

1. 5 amp fuse (2, 1 shown)
10. Locate 5 amp fuse(s) and, if necessary, cut cable tie strap, remove protective cover (Figure 3, Item 1), and remove fuse. Inspect for presence of brake fluid inside fuse connector and fuse.
 - a. If no brake fluid is present in fuse connector, you will not need to replace the harness. Proceed to Steps 15 – 20 for brake pressure switch replacement, followed by Steps 180 – 217 for brake bleed procedure.
 - b. If there is brake fluid present in switch terminals or harness connector, proceed to Steps 15 – 20 to replace brake pressure switch, Steps 63 – 114 to replace MV™ Series and TC commercial bus harness, and Steps 115 – 179 to replace DuraStar® harness.

CE Commercial Bus and 1300 FBC Harness and Brake Pressure Switch Inspection

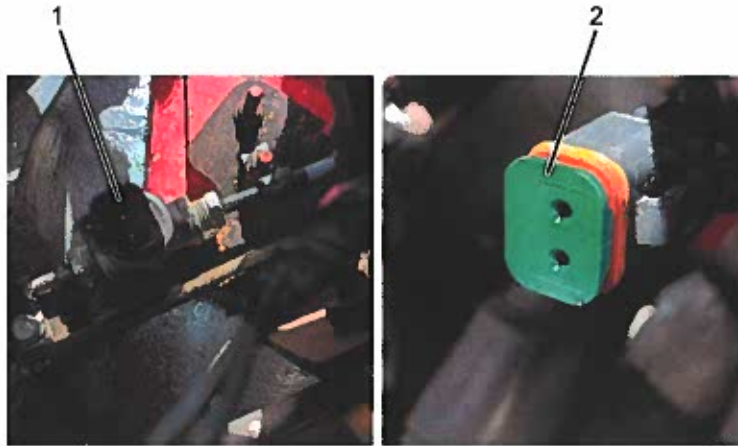


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Figure 4. Brake Pressure Switch Connector Location

1. Brake pressure switch connector
2. Brake pressure switch

11. Locate and disconnect the brake pressure switch connector (Figure 4, Item 1) from hydraulic brake pressure switch (Figure 4, Item 2) located near vehicle master cylinder.



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Figure 5. Harness Connector and Brake Pressure Switch

1. Brake pressure switch
2. Harness connector

NOTE: DO NOT connect harness to new brake pressure switch prior to inspection steps.

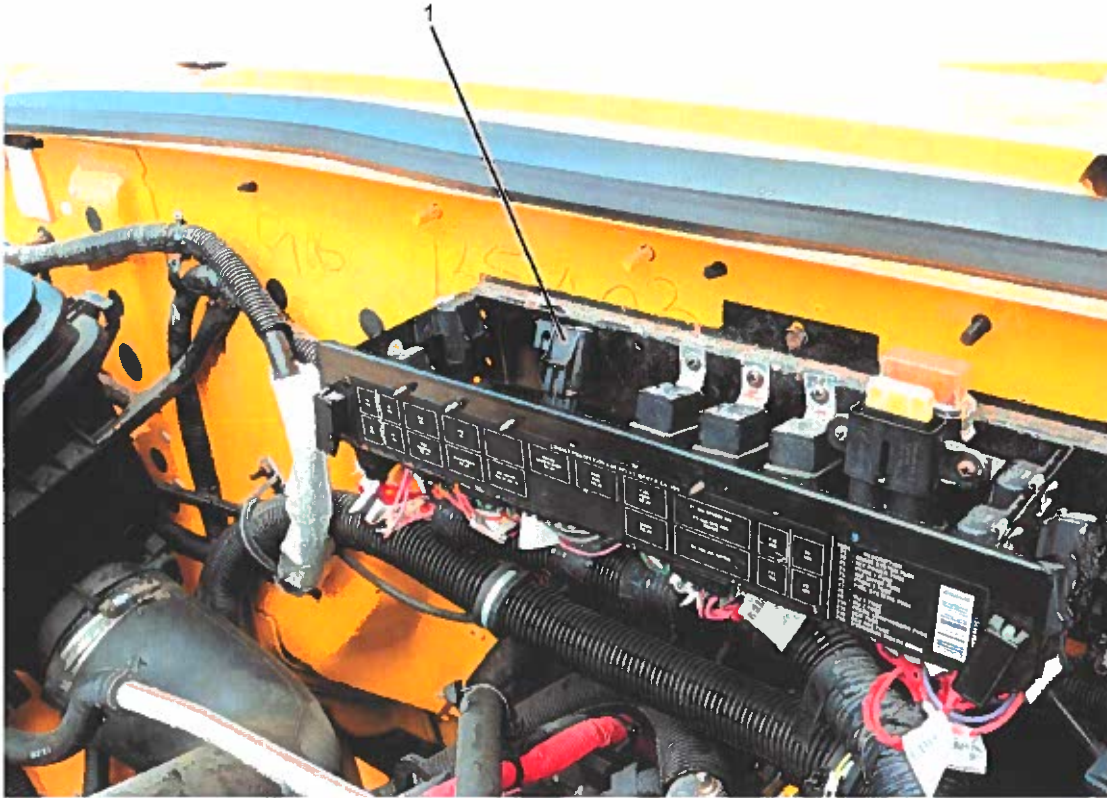
12. Inspect for presence of brake fluid at removed brake pressure switch terminals (Figure 5, Item 1) and at disconnected harness connector (Figure 5, Item 2).
 - a. If no brake fluid is present in switch terminals or harness connector, proceed to Steps 13 – 14 to inspect fuses.
 - b. If brake fluid is present in connector, proceed to Steps 15 – 20 to replace brake pressure switch and Steps 21 – 62 to replace CE commercial bus and 1300 FBC harness.



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Figure 6. 5 Amp Fuse and Cover

1. 5 amp Hydro-Max pressure fuse assembly location
13. Locate and uninstall Hydro-Max pressure fuse assembly. If necessary, cut tie strap, remove protective cover (Figure 6, Item 1), and remove fuse. Inspect for presence of brake fluid inside fuse connector and fuse.
 - a. If no brake fluid is present in fuse connector, reinstall fuse and protective cover and proceed to Step 14.
 - b. If brake fluid is present in connector, proceed to Steps 15 – 20 to replace brake pressure switch and Steps 21 – 62 to replace CE commercial bus and 1300 FBC harness.

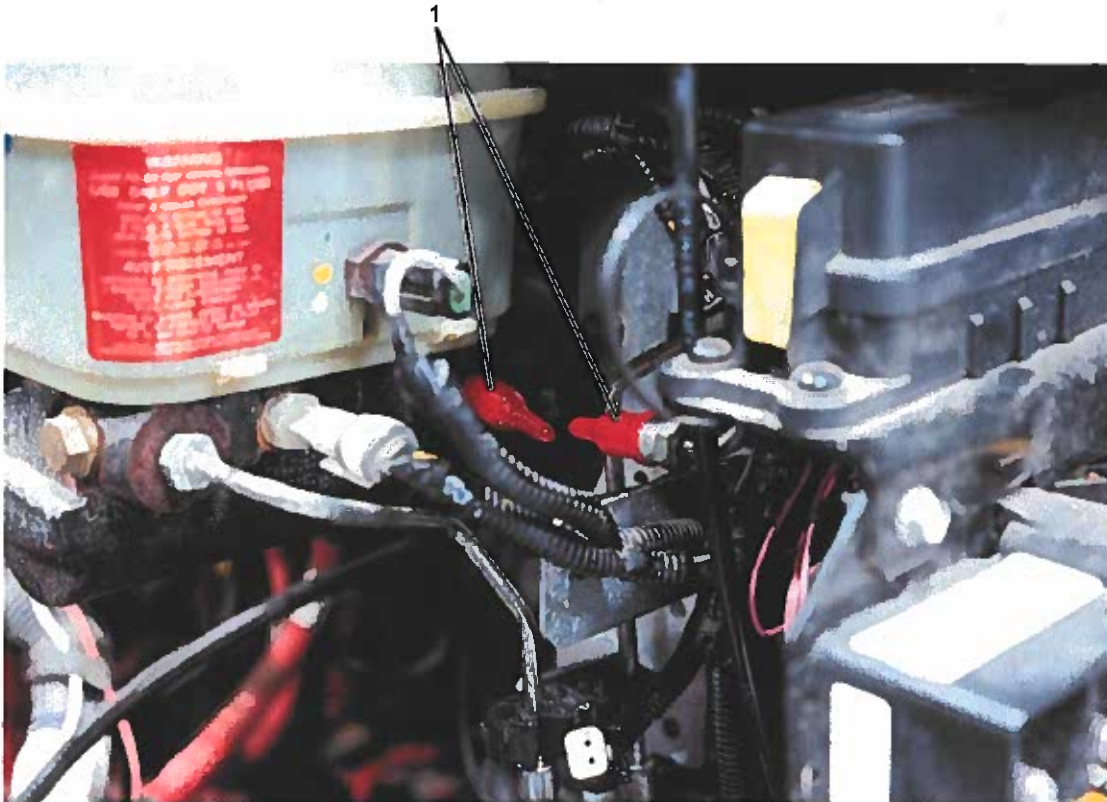


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Figure 7. 5 Amp Fuse and Cover

1. 5 amp Hydro-Max motor sense fuse assembly location
14. Locate Hydro-Max motor sense fuse assembly (Figure 7, Item 1) and unclip from inside the fuse panel in slot F13. Inspect for presence of brake fluid inside fuse connector and fuse.
- a. If no brake fluid is present in fuse connector, you will not need to replace the harness. Proceed to Steps 15 – 20 for brake pressure switch replacement, followed by Steps 180 – 217 for brake bleed procedure.
 - b. If brake fluid is present in connector, proceed to Steps 15 – 20 to replace brake pressure switch and Steps 21 – 62 to replace CE commercial bus and 1300 FBC harness.

Hydraulic Brake Pressure Switch Replacement



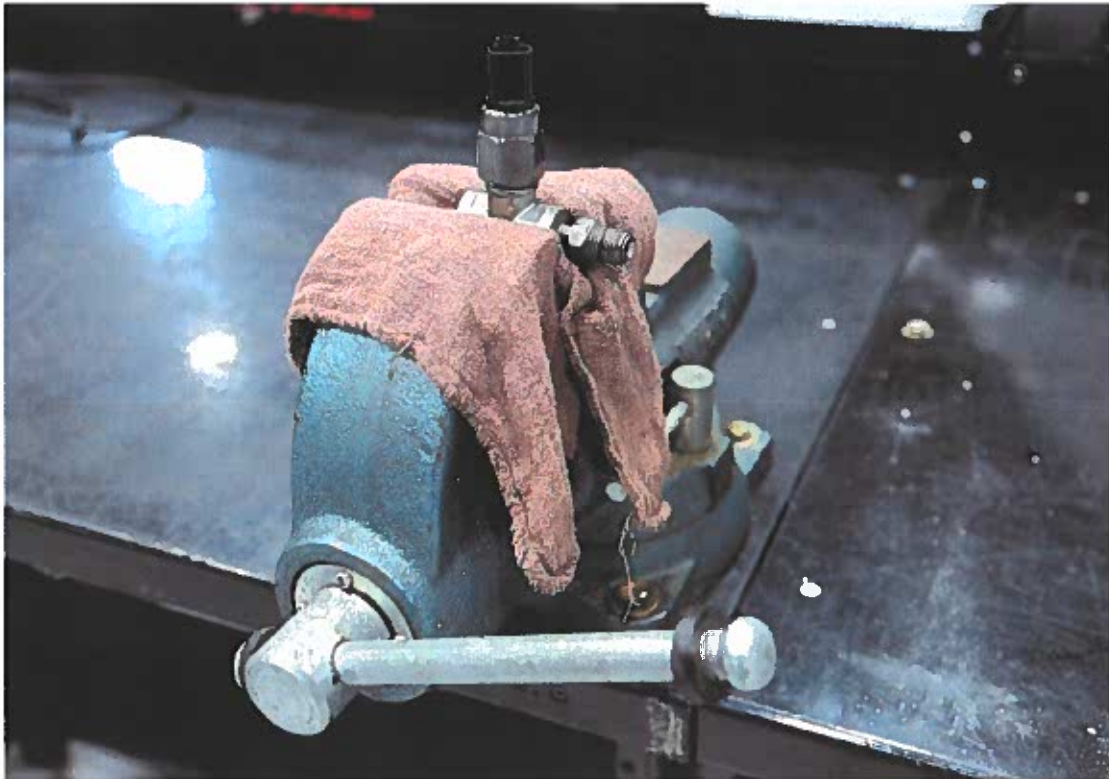
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Figure 8. Capped Brake Lines

1. Cap (2)

CAUTION! To prevent damage to property, utilize a back-up style wrench to prevent brake line damage. Failure to do so can result in damage to the brake line.

15. Using a 9/16 in line wrench and a 19 mm backup wrench, remove brake line from T- fitting and remove T-fitting from master cylinder.
16. Cap master cylinder and brake line (Figure 8, Item 1).



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Figure 9. T-fitting Secured

CAUTION! To prevent damage to property, ensure T-fitting is positioned in a manner to avoid any damage to the flared fittings.

CAUTION! To prevent damage to property, ensure brake pressure switch connector is shielded from fluids, debris, and other contaminants. Failure to do so can result in damage to property.

NOTE: Use a soft-jaw vise or wrap T-fitting in shop rag to protect from damage.

17. Place T-fitting and brake pressure switch in vise (Figure 9) and using a 15/16 in socket wrench, remove existing hydraulic brake pressure switch.
18. Using a socket and torque wrench, install new hydraulic brake pressure switch and tighten sensor to 35 lb-ft (48 N·m).
19. Finger tighten T-fitting to master cylinder and tighten fitting to 13 – 17 lb-ft (17 – 23 N·m).

20. Finger tighten brake line to T-fitting and tighten to 13 – 17 lb-ft (17 – 23 N·m).

NOTE: For CE commercial bus and 1300 FBC harness replacement, follow Steps 21 – 62. For MV™ Series and TC commercial bus harness replacement, follow Steps 63 – 114. For DuraStar® harness, follow Steps 115 – 179.

CE Commercial Bus and 1300 FBC Harness Replacement Procedure

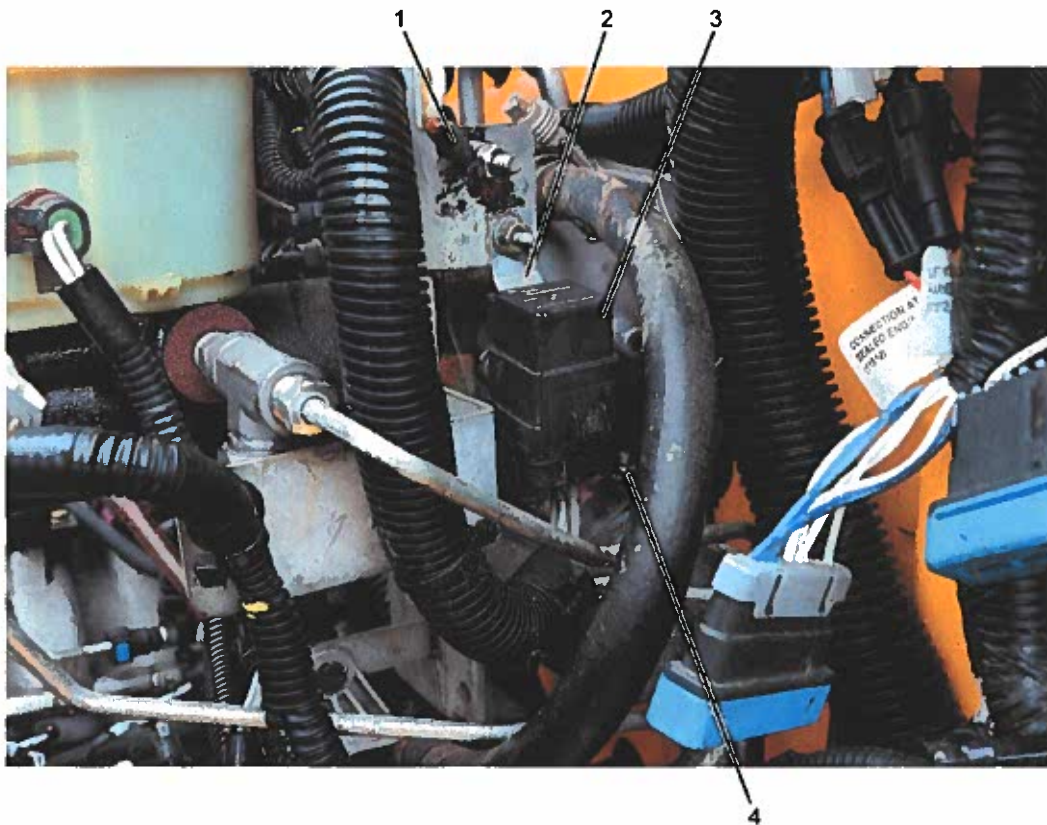
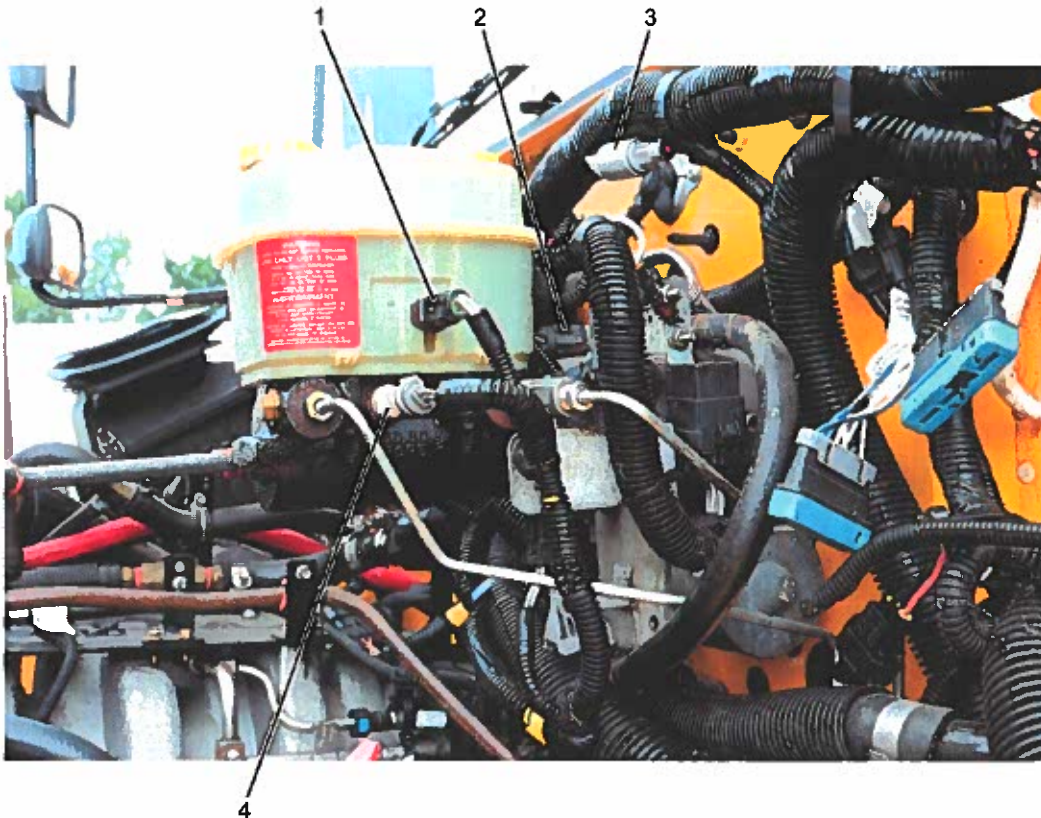


Figure 10. Relay Mount and Ground Wire

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1. Hydro-Max ground terminal
2. Relay mounting bracket
3. Relay assembly
4. Hydro-Max backup pump motor terminal

21. Apply Blue Bear to remove graffo grease, dielectric grease, or RED enamel paint from Hydro-Max upper ground terminal and fastener, Hydro-Max ground terminal and fastener (Figure 10, Item 1), and Hydro-Max backup pump motor power terminal and fastener (Figure 10, Item 4). Let sit for 15 minutes while performing Steps 22 – 36.



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Figure 11. Hydraulic Brake System Electrical Components

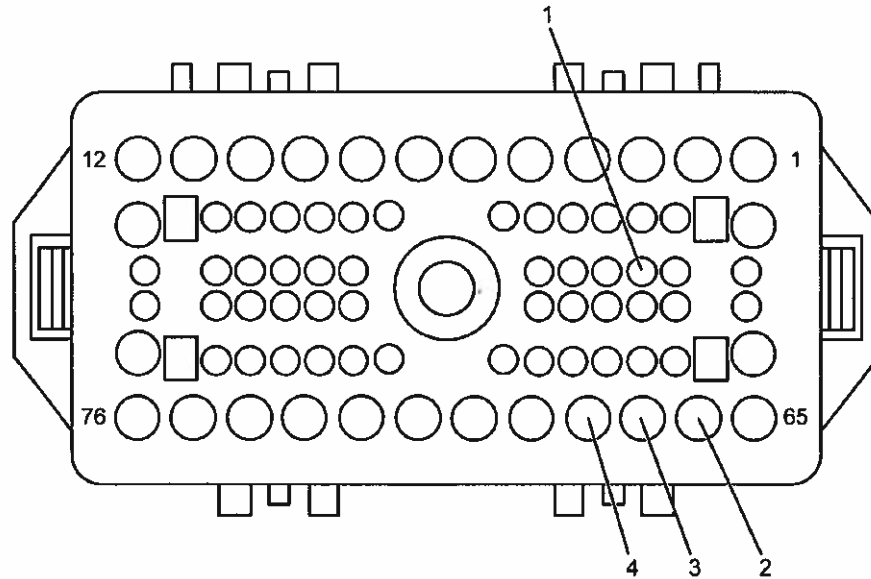
1. Low brake fluid switch
 2. Brake booster flow switch
 3. Redundant power feed connector
 4. Differential brake pressure switch
22. Disconnect redundant power feed connector (Figure 11, Item 3) from instrument panel (IP) cowl harness, low brake fluid switch connector (Figure 11, Item 1), brake booster flow switch connector (Figure 11, Item 2), and differential brake pressure switch connector (Figure 11, Item 4).
 23. Record routing and clipping locations of IP cowl harness and cut cable tie straps securing the IP cowl harness leading to bulkhead connector 1701 and disconnect connector.



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Figure 12. Cowl Loom Removal

1. Low brake fluid switch
 2. Bulkhead connector 1701
24. Using a plastic blade or equivalent, remove loom from IP cowl harness between low brake fluid switch connector (Figure 12, Item 1) and bulkhead connector 1701 (Figure 12, Item 2) and isolate low brake fluid switch connector.



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Figure 13. Bulkhead Connector 1701

1. Cavity 29
2. Cavity 66
3. Cavity 67
4. Cavity 68

25. Disengage and unlock 1701 terminal lock.
26. Identify terminal cavities 29, 66, 67, and 68 (Figure 13, Items 1 – 4) and verify correct circuit numbers.
27. Release terminal retention finger and depopulate existing terminal and wire from cavity 29 (Figure 13, Item 1).
28. Populate new wire KU90H from brake jumper harness into cavity 29.
29. Release terminal retention finger and depopulate existing terminal and wire from cavity 66 (Figure 13, Item 2).
30. Populate new wire KU90P from brake jumper harness into cavity 66.
31. Release terminal retention finger and depopulate existing terminal and wire from cavity 67 (Figure 13, Item 3).
32. Populate new wire KU90C from brake jumper harness into cavity 67.
33. Release terminal retention finger and depopulate existing terminal and wire from cavity 68 (Figure 13, Item 4).

34. Populate new wire KU90G from brake jumper harness into cavity 68.
35. Reinstall the terminal lock.
36. Using brake cleaner and a small wire brush, remove the remaining RED enamel paint and Blue Bear degreaser from Hydro-Max upper ground terminal and Hydro-Max ground terminal (Figure 10, Item 1), and Hydro-Max backup pump motor terminal (Figure 10, Item 4).
37. Slide relay assembly (Figure 10, Item 3) off relay mounting bracket (Figure 10, Item 2) and press tab to remove relay from IP cowl harness relay connector.
38. Remove Hydro-Max backup pump motor terminal (Figure 10, Item 4) located behind relay assembly, Hydro-Max upper ground terminal, and Hydro-Max ground terminal (Figure 10, Item 1).
39. Cut circuit wire KU90P, KU90Y from IP cowl harness and remove and discard redundant power feed connector, brake pressure booster flow switch, differential brake pressure switch, backup pump relay connector, Hydro-Max pressure fuse assembly, and ground terminals.
40. Position heat shrink tube over end of KU90P, KU90Y. Tubing must extend 1/2 in past end of wire.
41. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.
42. Cut circuit wires leading to Hydro-Max motor sense fuse from IP cowl harness. Remove and discard fuse.
43. Position heat shrink tube over end of cut fuse wire. Tubing must extend 1/2 in past end of wire.
44. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.



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Figure 14. Hydro-Max Motor Sense Fuse Assembly Body Removal

1. Wires with heat shrink installed
45. Cut Hydro-Max motor sense fuse assembly body from IP cowl harness.
46. Position heat shrink tube over end of cut wires from Hydro-Max motor sense fuse assembly body. Tubing must extend 1/2 inch past end of wire.
47. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed (Figure 14, Item 1).



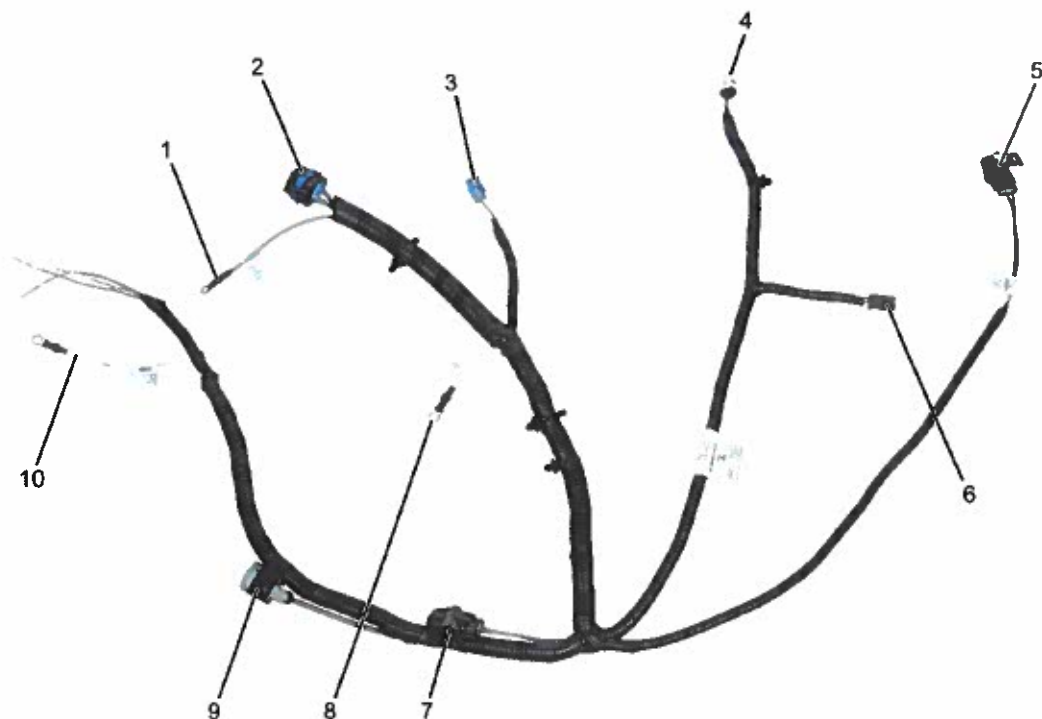
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Figure 15. New Low Level Sensor Connector Routing

1. Low level sensor
48. Isolate existing low level fluid sensor connector and route along the IP cowl harness. Connect low level fluid sensor to low fluid level switch and ensure enough slack (approximately 8 in) to secure to existing IP cowl harness.
49. Secure both the low level fluid switch connector and IP cowl harness in loom and tape closed. Disconnect low level fluid switch connector (Figure 15, Item 1).

WARNING! To prevent personal injury and / or death, or damage to property, ensure to route harness away from any moving components or high-heat components.

CAUTION! To prevent damage to property, use caution while routing harness. Failure to do so can lead to damage to harness.



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Figure 16. Brake Jumper Harness

1. Motor sense power terminal
2. Backup motor relay socket
3. Brake booster flow switch
4. Brake differential pressure switch
5. Hydro-Max motor sense fuse
6. Hydraulic brake pressure switch
7. Hydro-Max brake pressure fuse
8. Hydro-Max ground terminal
9. Redundant power feed
10. Hydro-Max upper ground terminal

50. Route brake jumper harness following original IP cowl harness.
51. Connect the redundant power feed connector (Figure 16, Item 9) from the brake jumper harness to the redundant power feed switch from IP cowl harness.
52. Install backup motor relay (Figure 16, Item 2) from jumper harness into relay connector.

53. Connect bulkhead connector 1701 and secure bolt to 3.7 lb-ft (4.8 ± 0.8 N·m).
54. Install Hydro-Max upper ground terminal (Figure 16, Item 10) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).

CAUTION! To prevent damage to property, ensure to coat grounds with the same type of non-conductive material that was used on vehicle prior to removal.

55. Install Hydro-Max ground terminal (Figure 16, Item 8) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).
56. Position motor sense power terminal ring (Figure 16, Item 1) from harness over Hydro-Max backup pump motor terminal. Install lock washer and nut and tighten to 17.7 – 22.1 lb-in (2.0 – 2.5 N·m).
57. Cover all three ground and power locations in Steps 54 – 56 in even application of dielectric grease, graffo grease, or RED enamel paint.
58. Install backup motor relay assembly on relay mounting bracket.
59. Connect brake booster flow switch connector (Figure 16, Item 3), brake differential pressure switch connector (Figure 16, Item 4), and hydraulic brake pressure switch (Figure 16, Item 6) from brake jumper harness and connect low brake fluid switch connector from IP cowl harness.
60. Install Hydro-Max motor sense fuse assembly (Figure 16, Item 5) inside the fuse panel in slot F13 (Figure 7, Item 1).
61. Secure brake jumper harness following the IP cowl harness with tie straps.
62. Proceed to Step 180 to reconnect negative battery cable and primary brake system brake bleed procedure (front axle).

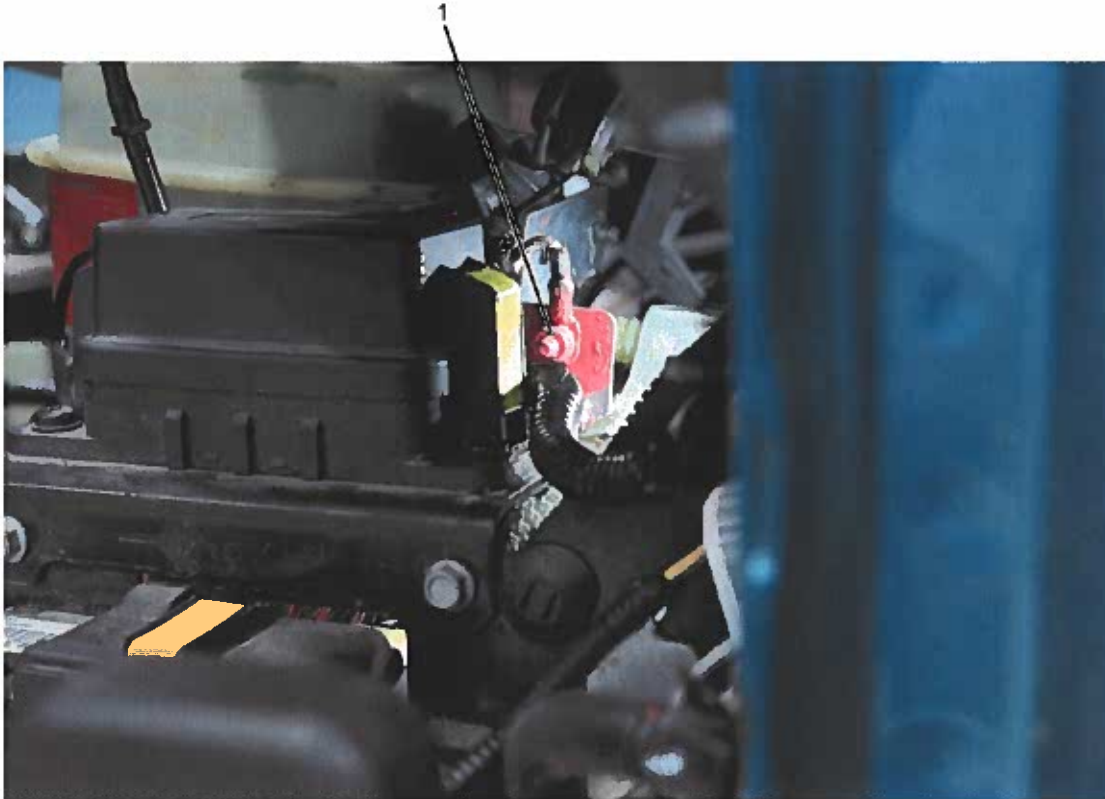
MV™ Series and TC Commercial Bus Harness Replacement Procedure



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Figure 17. Hydro-Max Upper Ground

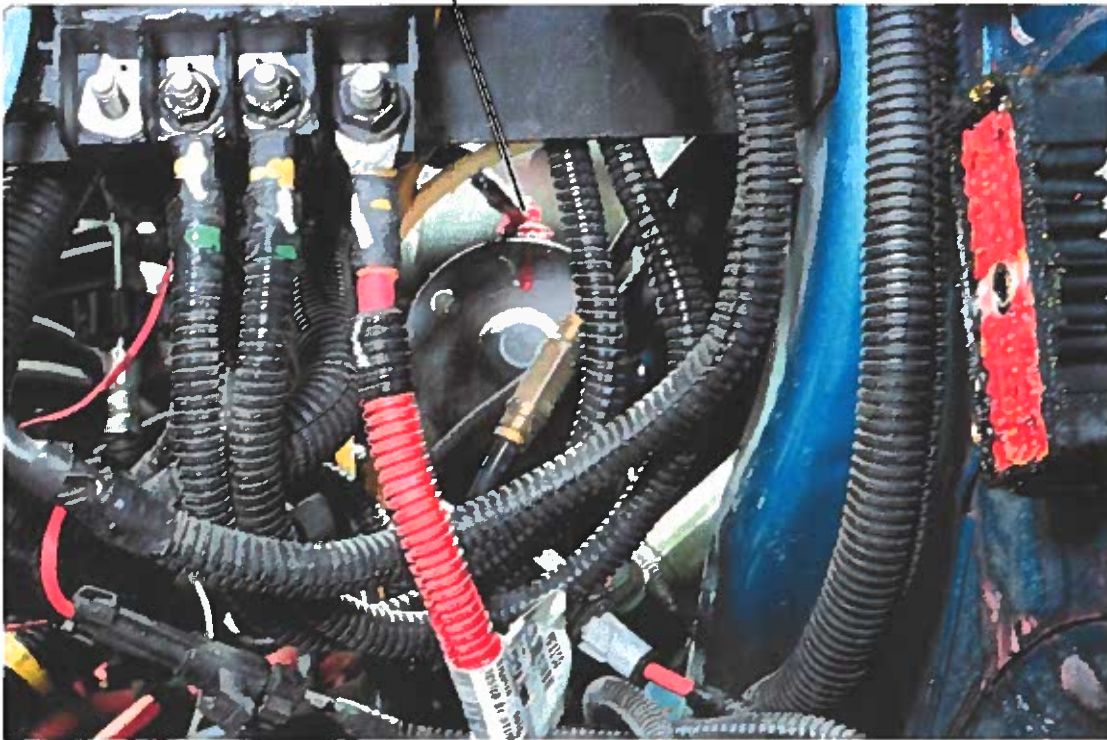
1. Hydro-Max upper ground terminal and fastener location



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Figure 18. Hydro-Max Ground

1. Hydro-Max ground terminal and fastener location



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Figure 19. 1703F Hydro-Max Backup Pump Motor Terminal

1. Hydro-Max backup pump motor terminal and fastener location

63. Apply Blue Bear to remove graffo grease, dielectric grease, or RED enamel paint from Hydro-Max upper ground terminal and fastener (Figure 17, Item 1), Hydro-Max ground terminal and fastener (Figure 18, Item 1), and Hydro-Max backup pump motor power terminal and fastener (Figure 19, Item 1). Let sit for 15 minutes while performing Steps 64 – 83.



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Figure 20. Brake Jumper Harness Protective Cap

WARNING! To prevent personal injury and / or death, or damage to property, ensure to route harness away from any moving components or high-heat components.

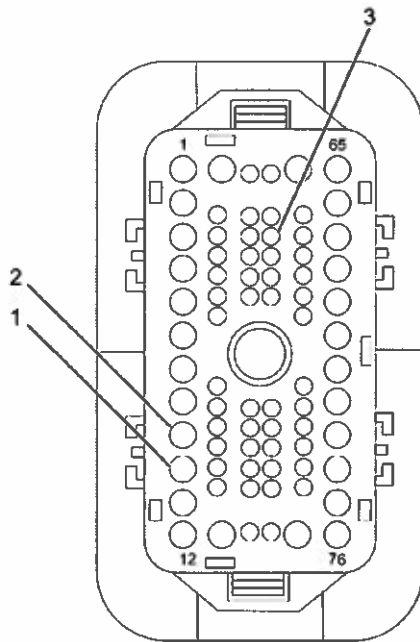
64. Install protective cap over open-ended terminals from new brake jumper harness (Figure 20).
65. Route harness behind HVAC box following existing routing of IP cowl harness.
66. Cut cable tie straps securing the IP cowl harness leading to bulkhead connector 1703F, remove cover, and disconnect connector.



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Figure 21. Cowl Loom Removal

1. IP cowl harness loom removal location
67. Using a plastic blade or equivalent, remove loom from IP cowl harness at point where brake jumper harness meets (Figure 21, Item 1).
68. Disengage and unlock 1703F terminal lock.



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Figure 22. 1703F Bulkhead Connector

- 1. Cavity 10
- 2. Cavity 9
- 3. Cavity 41

- 69. Identify terminal cavities 9, 10, and 41 (Figure 22, Items 1 – 3) and verify correct circuit numbers.
- 70. Starting with cavity 9 (Figure 22, Item 2), release terminal retention finger and depopulate existing terminal and wire.
- 71. Populate new wire A90K into cavity 9.
- 72. Release terminal retention finger and depopulate existing terminal and wire from cavity 10 (Figure 22, Item 1).
- 73. Populate new wire A90L into cavity 10.
- 74. Release terminal retention finger and depopulate existing terminal and wire from cavity 41 (Figure 22, Item 41).
- 75. Populate new wire A90MA into cavity 41.
- 76. Reinstall the terminal lock.

77. Cut and discard terminals from recently depopulated wires.
78. Position heat shrink tube over end of recently depopulated wires. Tubing must extend 1/2 in past end of wire.
79. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.
80. Fold ends of wires back on themselves, and using loom tape, secure to IP cowl harness.

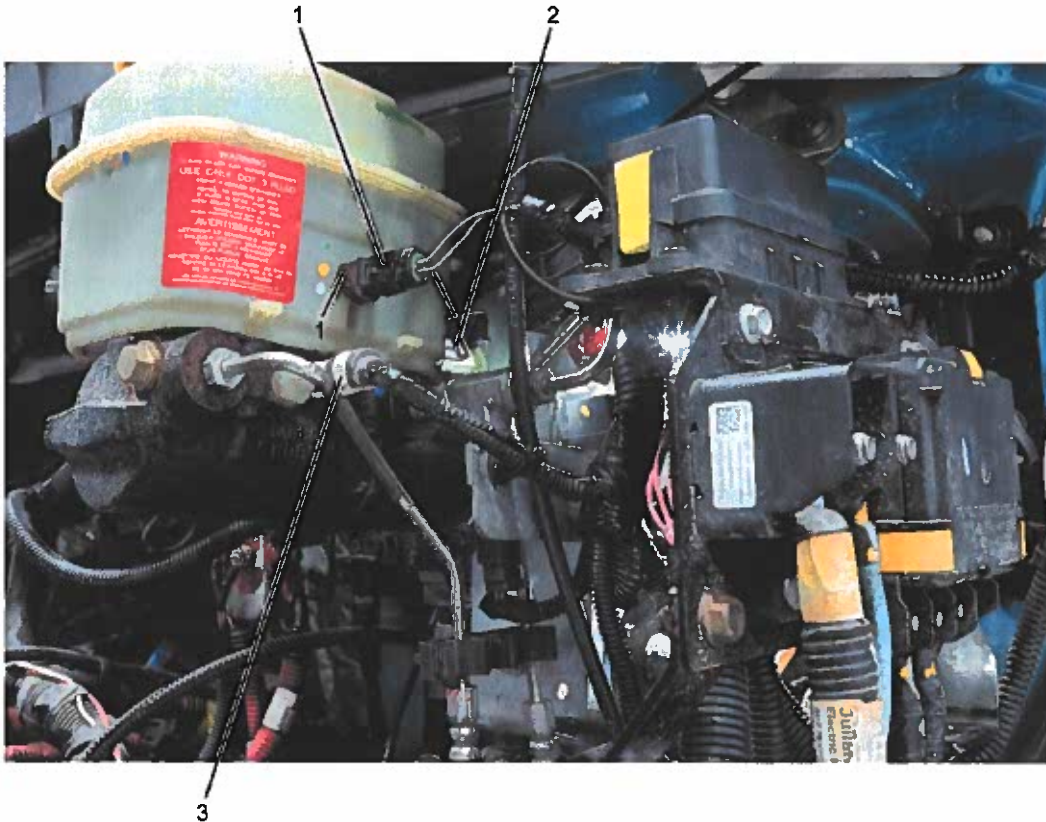


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Figure 23. 1703F Bulkhead Connector with Jumper Harness Installed

81. Secure both the IP cowl harness and brake jumper harness in loom (Figure 23).
82. Reconnect bulkhead connector 1703 and secure bolt to 3.7 lb-ft (4.8 ± 0.8 N·m) and reinstall connector cover.

83. Using brake cleaner and a small wire brush, remove the remaining RED enamel paint and Blue Bear from Hydro-Max upper ground terminal (Figure 17, Item 1), Hydro-Max ground terminal (Figure 18, Item 1), and Hydro-Max backup pump motor terminal (Figure 19, Item 1).
84. Cut cable straps securing IP cowl harness in place.



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Figure 24. Low Brake Fluid Switch, Differential Brake Pressure Switch, and Brake Booster Flow Switch Locations

1. Low brake fluid switch
 2. Brake booster flow switch
 3. Differential brake pressure switch
85. Disconnect low brake fluid switch (Figure 24, Item 1), brake booster flow switch (Figure 24, Item 2), and differential brake pressure switch (Figure 24, Item 3).
 86. Slide relay assembly off relay mounting bracket.
 87. Press tab to remove relay from IP cowl harness relay connector.

88. Remove Hydro-Max upper ground terminal, Hydro-Max ground terminal, and Hydro-Max backup pump motor terminal.
89. Disconnect redundant power feed connector.
90. Remove loom from low brake fluid switch connector, brake booster flow switch connector, differential brake pressure switch connector, and Hydro-Max pressure sense 5 amp fuse.
91. Isolate the low fluid switch connector circuit (A090F) between Hydro-Max 5 amp fuse holder and Hydro-Max backup pump motor terminal from IP cowl harness.
92. Cut circuit A090F 3 inches back from terminal.
93. Position heat shrink tube over end of A090F. Tubing must extend 1/2 in past end of wire.
94. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.
95. Isolate 3 circuits (A90K, A90L, and A90MA) disconnected from 1703F bulkhead connector and cut from IP cowl harness, removing the Hydro-Max brake pressure fuse, differential brake pressure switch connector, redundant power feed connector, hydraulic brake pressure switch connector, backup pump relay socket, fluid flow switch, backup pump ground, and Hydro-Max upper ground.
96. Position heat shrink tube over ends of A90K, A90L, and A90MA. Tubing must extend 1/2 in past end of wire.
97. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.



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Figure 25. Modified Low Fluid Switch Connector, Hydro-Max Brake Pressure Terminal and 5 Amp Fuse from IP Cowl Harness (Ground and Low Level Sensor Harness)

1. Hydro-Max brake pressure fuse
 2. Low level sensor connector
 3. Hydro-Max brake pressure terminal
98. Fold A90K, A90L, and A90MA back and secure to the remaining portion to ground and low level sensor harness.
 99. Position the loom back into place over Hydro-Max brake pressure terminal (Figure 25, Item 3) and low level sensor connector (Figure 25, Item 2) up to Hydro-Max brake pressure fuse holder (Figure 25, Item 1).
 100. Starting at 5 amp fuse, use 3/8 inch split loom to cover exposed circuit wires to low fluid level sensor and booster backup power terminal.
 101. Before taping loom closed, remove 8 inches of the backup motor power sensing circuit from split loom. Cover this length with 3/8 inch split loom tubing.

102. Secure newly added sections of 3/8 inch split loom tubing in place with loom tape.

WARNING! To prevent personal injury and / or death, or damage to property, ensure to route harness away from any moving components or high-heat components.

CAUTION! To prevent damage to property, use caution while routing harness. Failure to do so can lead to damage to harness.

103. Route modified power and low level sensor connector into position.

104. Route new brake jumper harness into position.

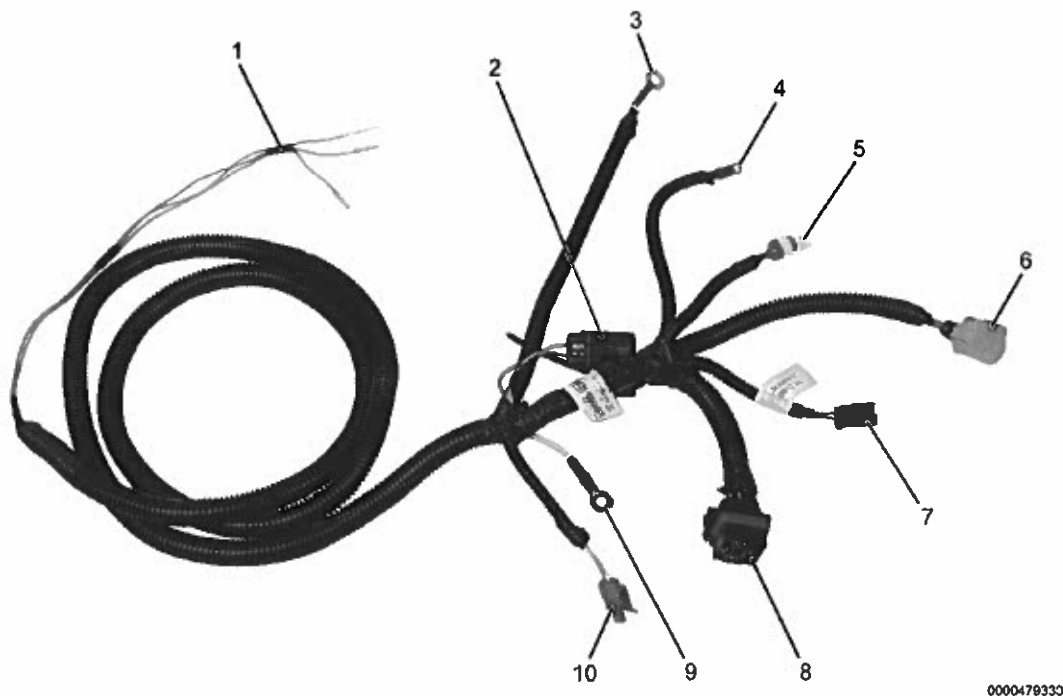
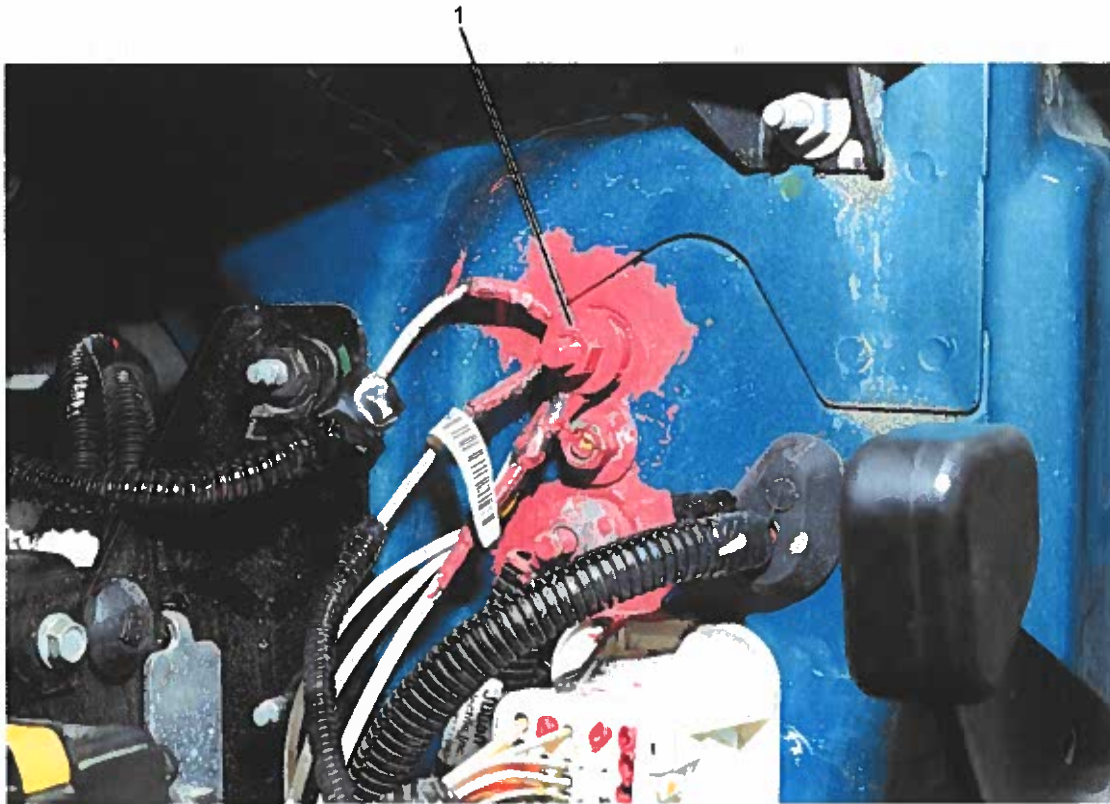


Figure 26. MV Brake Jumper Harness

1. Terminal (3)
 2. Hydro-Max brake pressure fuse assembly
 3. Hydro-Max upper ground
 4. Backup booster motor power sense terminal
 5. Brake differential pressure switch connector
 6. Redundant power feed connector
 7. Hydraulic brake pressure switch connector
 8. Backup pump relay socket
 9. Hydro-Max ground
 10. Brake booster flow switch connector
105. Position ring terminal of power wires from IP cowl harness and brake jumper harness over booster pump motor terminal. Install lock washer and nut and tighten to 17.7 – 22.1 lb-in (2.0 – 2.5 N·m).
-
106. Install Hydro-Max upper ground terminal (Figure 26, Item 3) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).
107. Install Hydro-Max ground terminal (Figure 26, Item 9) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).
108. Cover all three ground and power locations in Steps 105 – 107 in even application of dielectric grease, graffo grease, or RED enamel paint.

109. Connect backup pump relay socket (Figure 26, Item 8) and install relay assembly on relay mounting bracket.
110. Connect the redundant power feed connector (Figure 26, Item 6) from brake jumper harness.
111. Connect brake booster flow switch connector (Figure 26, Item 10), hydraulic brake pressure switch (Figure 26, Item 7), brake differential pressure switch connector (Figure 26, Item 5) from brake jumper harness and connect low brake fluid switch connector from IP cowl harness.
112. Secure brake jumper harness and IP cowl harness with tie straps.
113. Secure both 5 amp inline fuses to brake jumper harness.
114. Proceed to Step 180 to reconnect negative battery cable and for primary brake system bleed procedure (front axle).

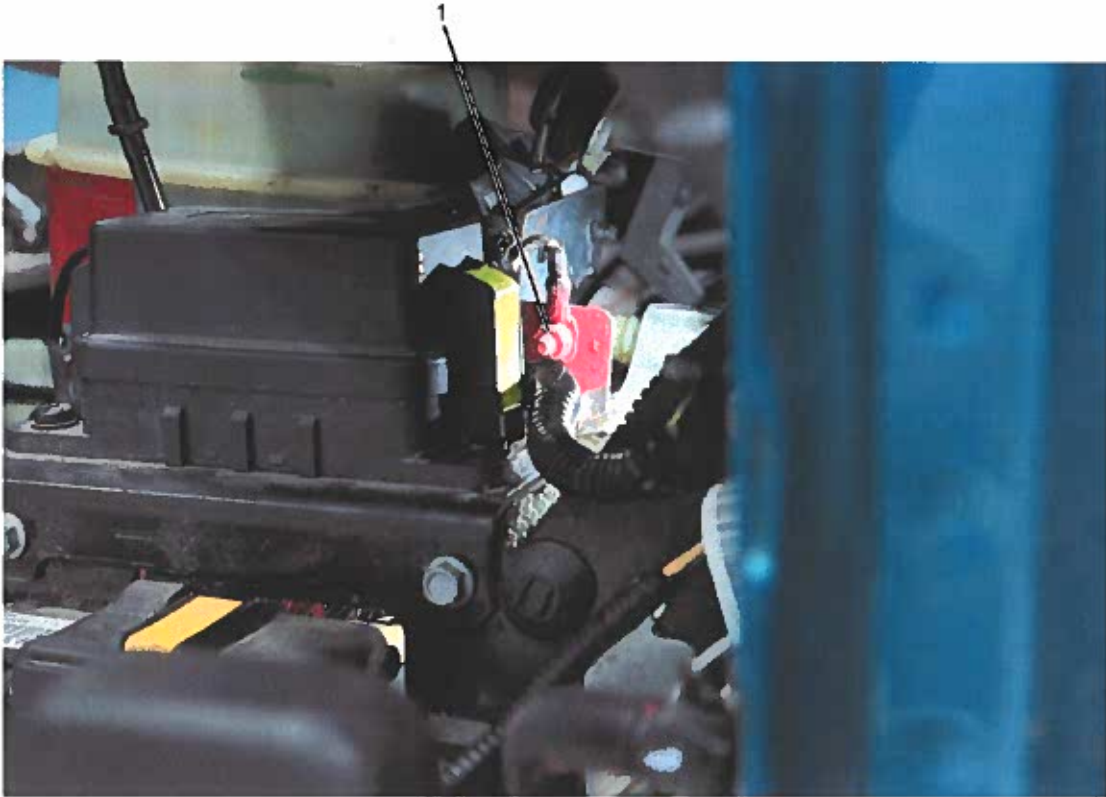
DuraStar® Harness Replacement Procedure



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Figure 27. Hydro-Max Upper Ground

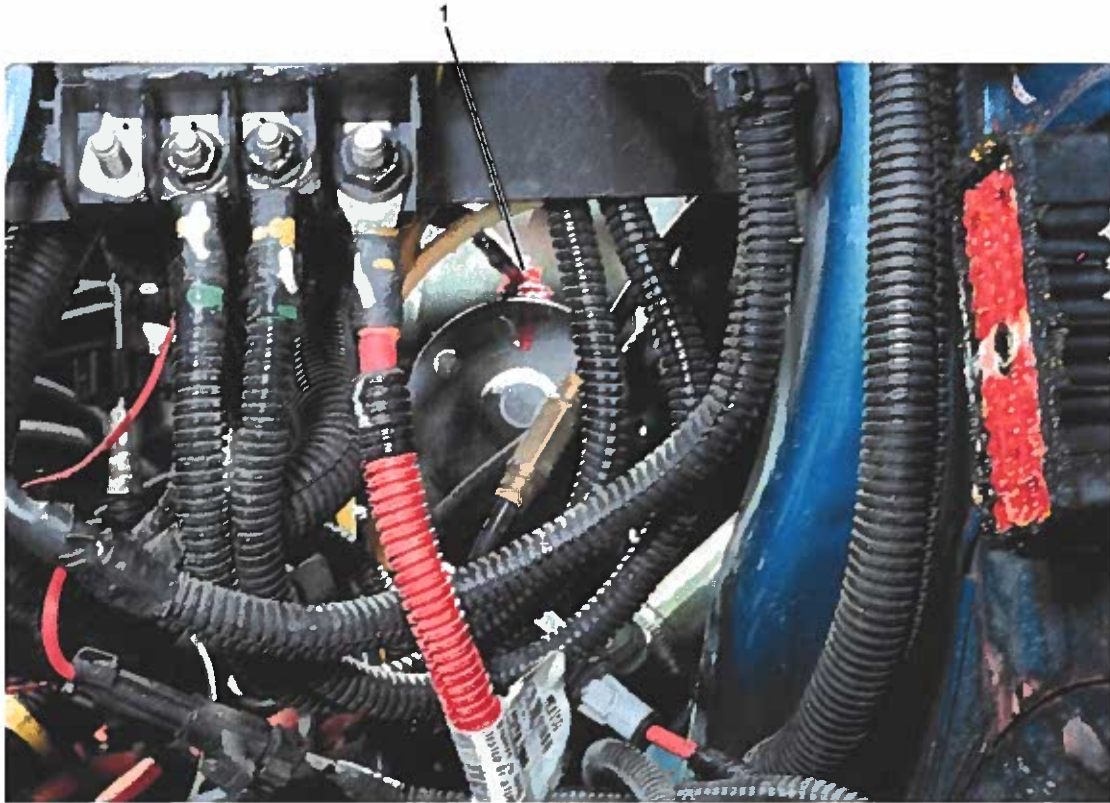
1. Hydro-Max upper ground terminal location



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Figure 28. Hydro-Max Ground

1. Hydro-Max ground terminal location

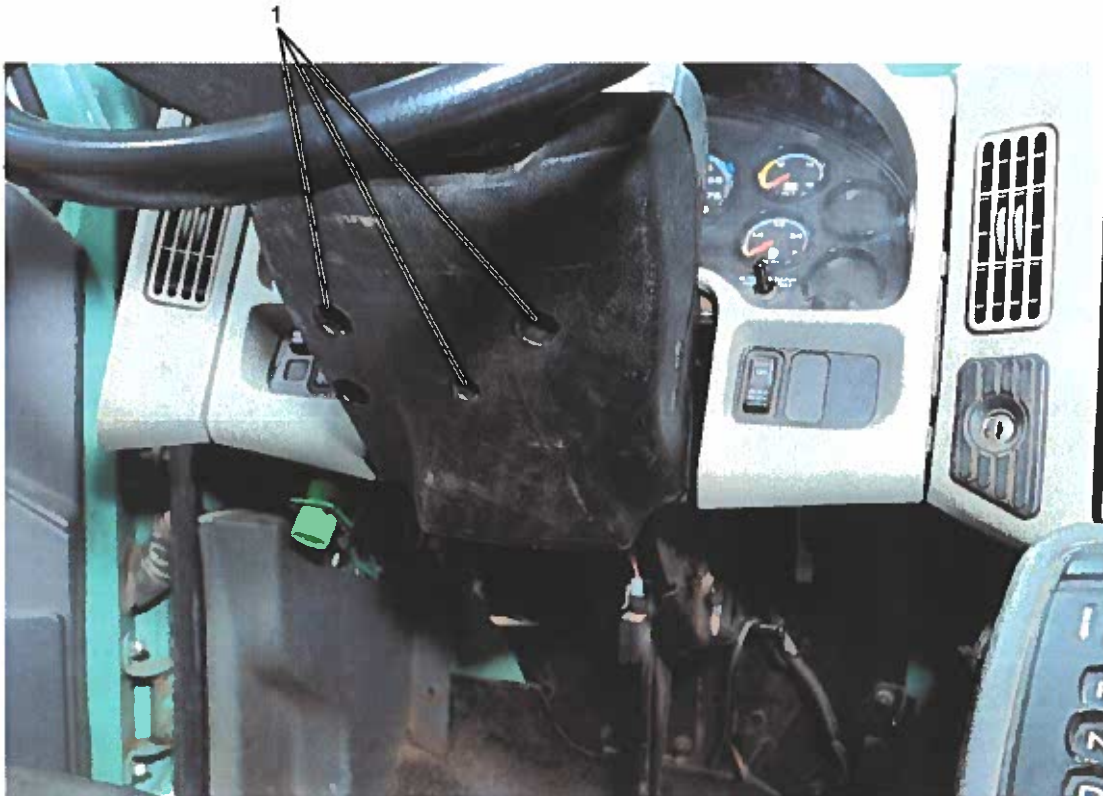


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Figure 29. 1703F Hydro-Max Backup Pump Motor Terminal

1. Hydro-Max backup pump motor terminal location

115. Apply Blue Bear to remove graffo grease, dielectric grease, or RED enamel paint from Hydro-Max upper ground terminal and fastener (Figure 27, Item 1), Hydro-Max ground terminal and fastener (Figure 28, Item 1), and Hydro-Max backup pump motor power terminal and fastener (Figure 29, Item 1). Let sit for 15 minutes while performing Steps 116 – 142.



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Figure 30. Steering Column Cover Screws Locations

1. Screw (3)
116. Remove steering column cover screws (Figure 30, Item 1) and remove top and bottom covers from steering column.
117. Remove instrument panel trim bezel by gently pulling the panel from the bottom, popping the clips, then pull from the top.



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Figure 31. Instrument Panel Cluster Screw Locations

1. Screw (4)

118. Remove screws (Figure 31, Item 1) securing instrument panel cluster.
119. Reposition the instrument panel cluster forward to disconnect the two connectors located on the back of the instrument cluster.



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Figure 32. Driver-Side Kick Panel Screw Location

1. Bolt (2)
2. Nut

120. Remove driver-side kick panel bolts (Figure 32, Item 2) and nut (Figure 32, Item 1) to access BCM.



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Figure 33. Passenger-Side Kick Panel Screw Location

1. Screw (2)

121. Remove front-most screw from passenger-side sill plate (Figure 33, Item 1). Remove passenger-side kick panel screws.



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Figure 34. Passenger-Side Kick Panel Clip Location

1. Clip
122. Disengage clip (Figure 34, Item 1) and remove panel to access diode.



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Figure 35. Power Distribution Module Cover

1. Cover

123. Remove Power Distribution Module (PDM) cover (Figure 35, Item 1) from passenger side.

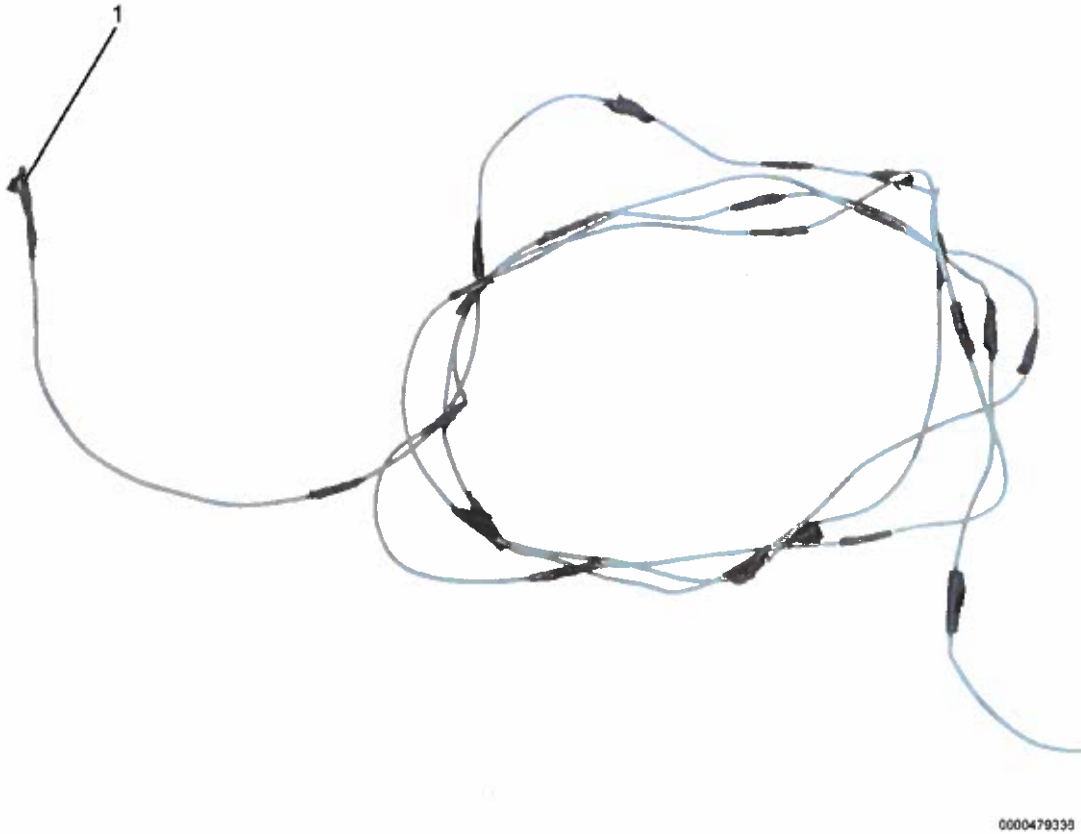


Figure 36. Brake Jumper Open-Ended Terminals Loom Taped

1. Taped terminal

NOTE: DO NOT cut loom until length of circuit wire has been routed to diode and BCM.

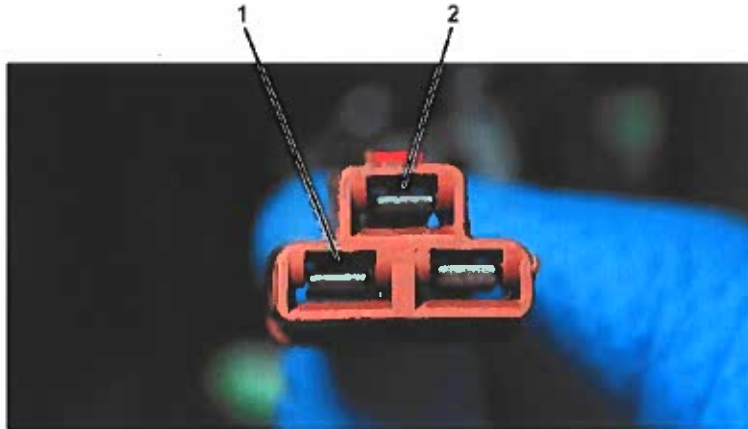
124. Install electrical tape and wire fish over terminals from new brake jumper harness (Figure 36, Item 1).



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Figure 37. Grommet Location

1. Grommet
125. Route circuit wires X590K, X590L, and A90M through grommet (Figure 37, Item 1). Remove circuit wires from loom to appropriate length to reach the diode and BCM.
126. Using existing harness, route diode wires X590K and X590L to diode 6071.
127. Remove diode cover, exposing terminals A, B, and C.



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Figure 38. Diode Cavities

1. A
2. C

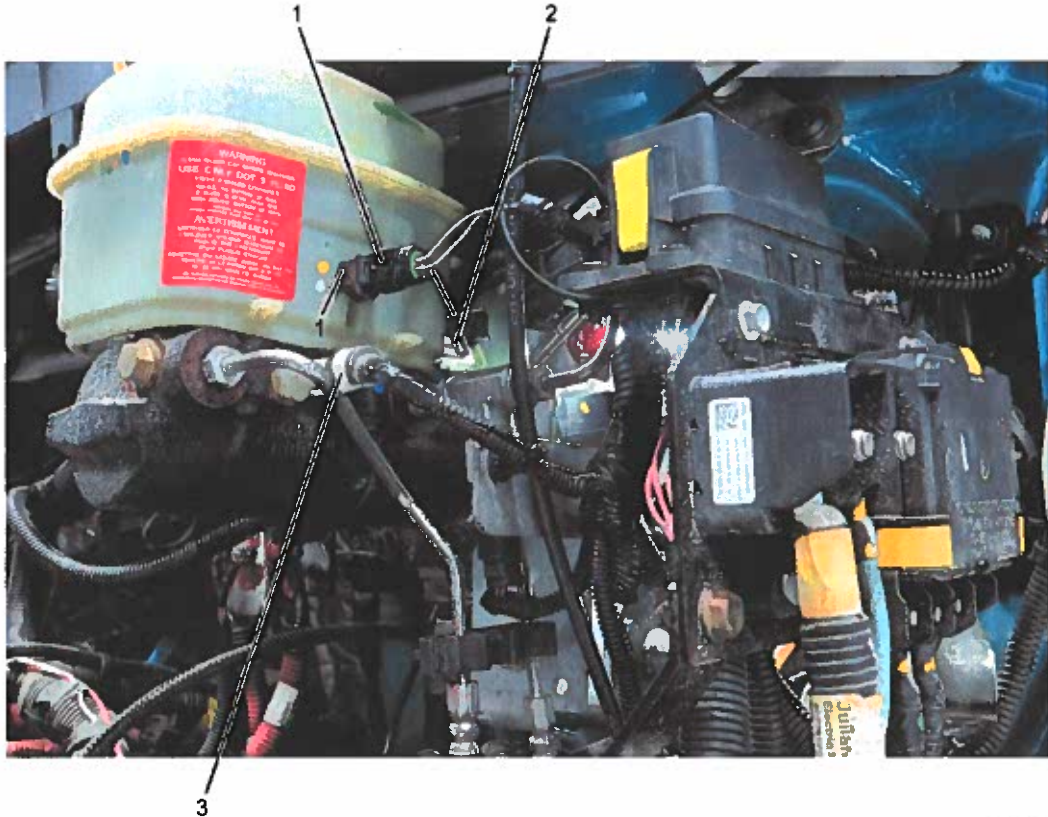
128. Identify diode terminal cavities A (Figure 38, Item 1) and C (Figure 38, Item 2) and verify circuit numbers A90K and A90L.
129. Starting with cavity A, depopulate existing terminal and wire A90L.
130. Populate new wire X590L into cavity A.
131. Depopulate existing terminal and wire A90K from cavity C.
132. Populate new wire X590K into cavity C.
133. Cut and discard terminals from recently depopulated wires.
134. Position heat shrink tube over end of recently depopulated wires. Tubing must extend 1/2 in past end of wire.
135. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.
136. Fold ends of A90K and A90L wires back and secure X590L and X590K to existing diode harness with electrical tape.



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Figure 39. BCM

1. Connector J3
137. Disconnect BCM connector J3 (Figure 39, Item 1).
138. Remove terminal lock from row B.
139. Depopulate existing terminal and wire, A90M, from cavity B6.
140. Populate new wire, A90M, from jumper harness into cavity B6.
141. Reinstall terminal lock on connector J3 and reconnect BCM connector J3.
142. Using brake cleaner and a small wire brush, remove the remaining RED enamel paint and Blue Bear from Hydro-Max upper ground terminal (Figure 37, Item 1), Hydro-Max ground terminal (Figure 38, Item 1), and Hydro-Max backup pump motor terminal (Figure 39, Item 1).
143. Cut cable tie straps securing IP cowl harness in place.



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Figure 40. Low Brake Fluid Switch, Differential Brake Pressure Switch, and Booster Flow Switches Locations

1. Low brake fluid switch
2. Brake booster flow switch
3. Differential brake pressure switch

144. Disconnect low brake fluid switch (Figure 40, Item 1), brake booster flow switch (Figure 40, Item 2), and differential brake pressure switch (Figure 40, Item 3).
145. Slide relay assembly off relay mounting bracket.
146. Press tab to remove relay from IP cowl harness relay connector.
147. Remove Hydro-Max upper ground terminal, Hydro-Max ground terminal, and Hydro-Max backup pump motor sense terminal.
148. Disconnect redundant power feed connector.

149. Remove loom from low brake fluid switch connector, brake booster flow switch connector, differential brake pressure switch connector, and Hydro-Max pressure sense 5 amp fuse.
150. Isolate the low fluid switch connector circuit (A090F) between Hydro-Max 5 amp fuse holder and Hydro-Max backup pump motor sense terminal from IP cowl harness.
151. Cut circuit A090F 3 inches back from terminal.
152. Position heat shrink tube over end of A090F. Tubing must extend 1/2 in past end of wire.



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Figure 41. Circuit A090F with Heat Shrink

1. Low brake fluid switch

153. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed (Figure 41, Item 1).



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Figure 42. Circuits A90K, A90L, A90M

154. Isolate 3 circuits A90K, A90L, and A90M (Figure 42).
155. Cut circuit wires A90K, A90L, and A90M from IP cowl harness removing the Hydro-Max brake pressure fuse, differential brake pressure switch connector, redundant power feed connector, hydraulic brake pressure switch connector, backup pump relay socket, fluid flow switch, backup pump ground, and Hydro-Max upper ground.
156. Position heat shrink tube over ends of A90K, A90L, and A90M. Tubing must extend 1/2 in past end of wire.
157. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.
158. Fold A90K, A90L, and A90M back and secure to the remaining portion to IP cowl harness.
159. Starting at 5 amp fuse, use 3/8 in split loom to cover exposed circuit wires to low fluid level sensor and booster backup power terminal.
160. Secure newly added sections of 3/8 inch split loom tubing in place with loom tape.

161. Remove excess loom from brake jumper harness located in engine compartment.

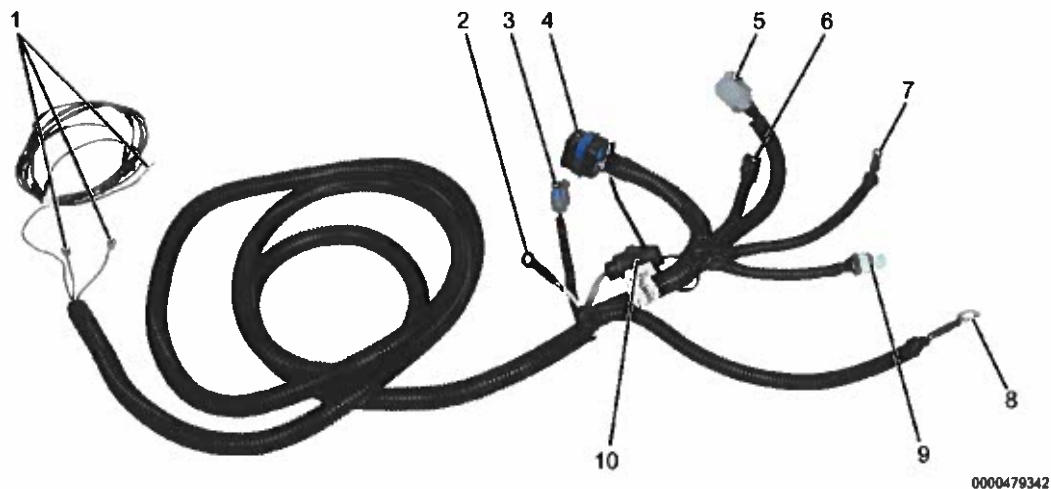


Figure 43. DuraStar® Brake Jumper Harness

1. Terminal (3)
2. Hydro-Max ground terminal
3. Brake booster flow switch connector
4. Backup pump relay socket
5. Redundant power feed connector
6. Hydraulic brake pressure switch
7. Backup booster motor power sense terminal
8. Hydro-Max upper ground terminal
9. Brake differential pressure switch connector
10. Hydro-Max brake pressure fuse assembly

WARNING! To prevent personal injury and / or death, or damage to property, ensure to route harness away from any moving components or high-heat components.

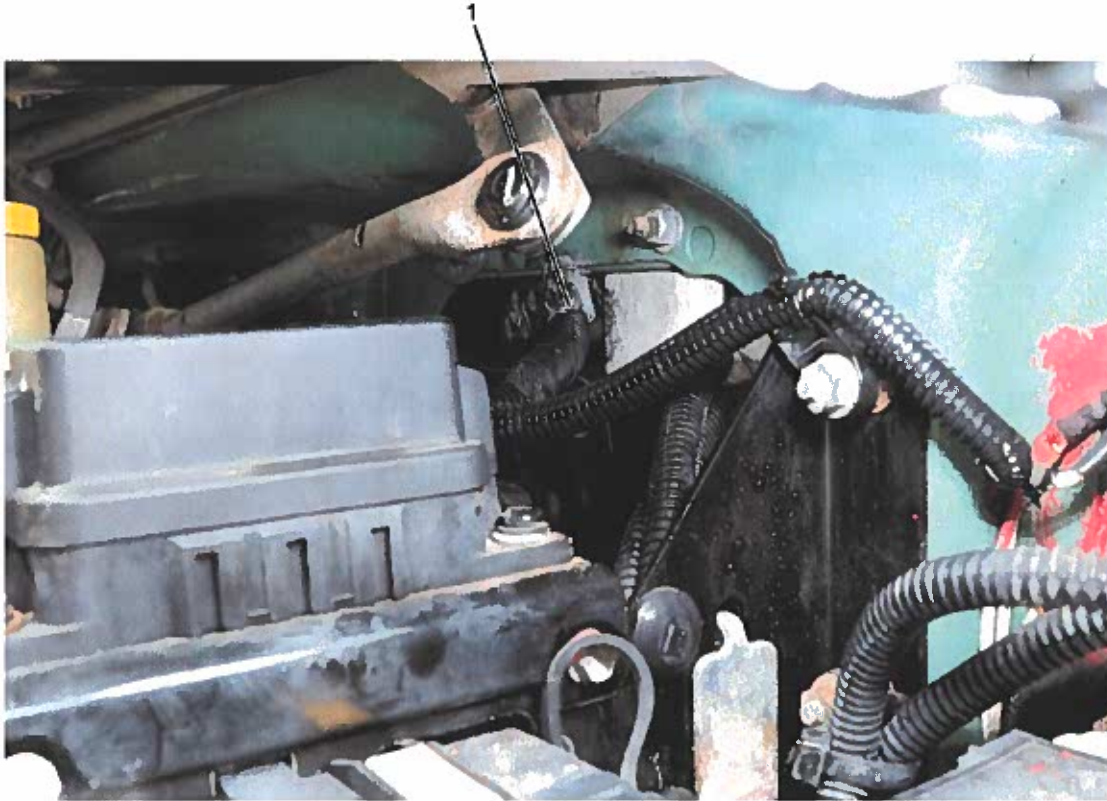
CAUTION! To prevent damage to property, use caution while routing harness. Failure to do so can lead to damage to harness.

162. Position ring terminal of backup booster motor power sense terminal from both IP cowl harness and brake jumper harness (Figure 43, Item 7) over booster pump motor terminal. Install lock washer and nut and tighten to 17.7 – 22.1 lb-in (2.0 – 2.5 N·m).

163. Install Hydro-Max upper ground terminal (Figure 43, Item 8) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).

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164. Connect backup pump relay socket (Figure 43, Item 4) and install relay assembly on relay mounting bracket.
165. Connect the redundant power feed connector (Figure 32, Item 5) from brake jumper harness.
166. Connect brake booster flow switch connector (Figure 43, Item 3), hydraulic brake pressure switch (Figure 43, Item 6), brake differential pressure switch connector (Figure 43, Item 9) from brake jumper harness, and connect low brake fluid switch connector from IP cowl harness.
167. Secure brake jumper harness and IP cowl harness with tie straps.
168. Secure 5 amp inline fuse to brake jumper harness.
169. Reinstall Hydro-Max ground terminal (Figure 43, Item 2) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).
170. Cover all three ground and power locations in Steps 162 – 163 and Step 169 in even application of dielectric grease, graffo grease, or RED enamel paint.



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Figure 44. Sealed Grommet Location

1. Sealed grommet
171. Secure brake jumper harness loom with loom tape and seal grommet (Figure 44, Item 1) with silicone caulk.
172. Using cable tie straps, secure brake jumper harness to chassis harness inside the cab.
173. Reinstall PDM cover from passenger side.
174. Install driver-side kick panel screws and nuts.
175. Install passenger-side kick panel screw.
176. Reconnect the connectors to the instrument panel cluster and reinstall 4 screws securing instrument panel cluster (Figure 28).
177. Reinstall instrument panel bezel by aligning the clips of the instrument panel bezel to the instrument panel and gently press the bottom and top of panel until seated.

178. Install upper panel, then bottom panel of steering column cover and install screws.
179. Proceed to Step 180 to reconnect negative battery cable and continue to primary brake bleed procedure (front axle).

Reconnect Negative Battery Cable

180. Using a wire brush, electronic contact cleaner, and compressed shop air, clean negative battery terminal components.
181. Apply BLUE dielectric grease to battery terminal stud, negative battery cable ring terminal, and threads of new battery stud nut.
182. Using new battery stud nut, reconnect negative battery cable to negative terminal on main vehicle battery and install new battery terminal nut.
183. Using torque wrench, tighten battery stud nut to 12 – 15 lb-ft (16 – 20 N·m).
184. Follow Steps 185 – 217 for primary brake system (front axle) bleed procedure.

Primary Brake Bleed Procedure (Front Axle)

WARNING! To prevent personal injury and / or death, or damage to property, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

CAUTION! To prevent damage to property, ensure brake fluid does not contact painted surfaces. Failure to do so can result in damage to property.

NOTE: This procedure only requires that the primary brakes (front axle) need to be bled. The following procedure only applies to the primary brake bleed procedure (front axle).

NOTE: Verify brake fluid level is filled to the maximum (MAX) fill line with NEW DOT 3 brake fluid before performing brake bleeding procedure.

185. Lift front axle of vehicle and support on jack stands.
186. Remove lug nuts and front wheels to access brake calipers.
187. Ensure that the Power Bleeder has the proper brake bleed adapter installed and that Power Bleeder is clean and free of debris or contaminants.
188. Remove cap from fluid reservoir on master cylinder.
189. Attach Power Bleeder cap to vehicle master cylinder fluid reservoir, ensuring that gasket is properly installed, and gasket is not worn or cracked.
190. Pressurize the Power Bleeder to 20 – 30 psi by pumping Power Bleeder handle and check for leaks at fluid reservoir and at Power Bleeder fluid hose connections.

NOTE: DO NOT remove reservoir cap before depressurizing Power Bleeder tank.

191. If reservoir cap or hose connections are leaking, release accumulated pressure in Power Bleeder by slowly unscrewing the pump cap from fluid reservoir on master cylinder.
192. Reattach Power Bleeder reservoir cap or tighten hose connections and re-pressurize Power Bleeder to 20 – 30 psi.
193. If no leaks are found, slowly unscrew pump cap and add up to 2 quarts of new brake fluid from a sealed container.

NOTE: Ensure brake fluid in brake bleeder reservoir is above minimum fill level at all times.

194. Fill brake master cylinder reservoir to the MAX fill line.

CAUTION! To prevent damage to property, limit Hydraulic Clutch and Brake Bleeder pressure to 30 psi or less.

195. Tighten Power Bleeder pump cap on Power Bleeder and pressurize to 20 – 30 psi by pumping brake bleeder handle.
196. Open brake bleeder valve on Power Bleeder.

NOTE: ALWAYS start bleed procedure on brake calipers farthest from ABS Module and ALWAYS start bleed procedure on inboard brake bleed fitting, followed by the outboard fitting, and ending on inboard fitting.

197. Start bleed procedure on the passenger side (farthest from ABS module).
198. Attach hose to inboard caliper brake bleed fitting and submerge end of hose in suitable container. If necessary, add new brake fluid to bottom of container to observe air bubbles.
199. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
200. Close bleeder fitting.
201. Pressurize Power Bleeder to 20 – 30 psi by pumping brake bleeder handle.
202. Attach hose to outboard caliper brake bleed fitting and submerge end of hose in suitable container.
203. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
204. Close bleeder fitting.
205. Pressurize Power Bleeder to 20 – 30 psi by pumping brake bleeder handle.
206. Attach hose to inboard caliper brake bleed fitting and submerge end of hose in suitable container.
207. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
208. Close bleeder fitting.
209. Repeat Steps 198 – 208 for each brake caliper bleeder on driver side starting with inboard brake bleed fitting.
210. When brake bleeder procedure is complete, release pressure from Power Bleeder by slowly loosening pump cap.
211. Remove Power Bleeder assembly from fluid reservoir on master cylinder.
212. Check that fluid level is at MAX level. Add additional brake fluid if necessary. Install fluid reservoir cap on master cylinder.
213. Close and latch hood.

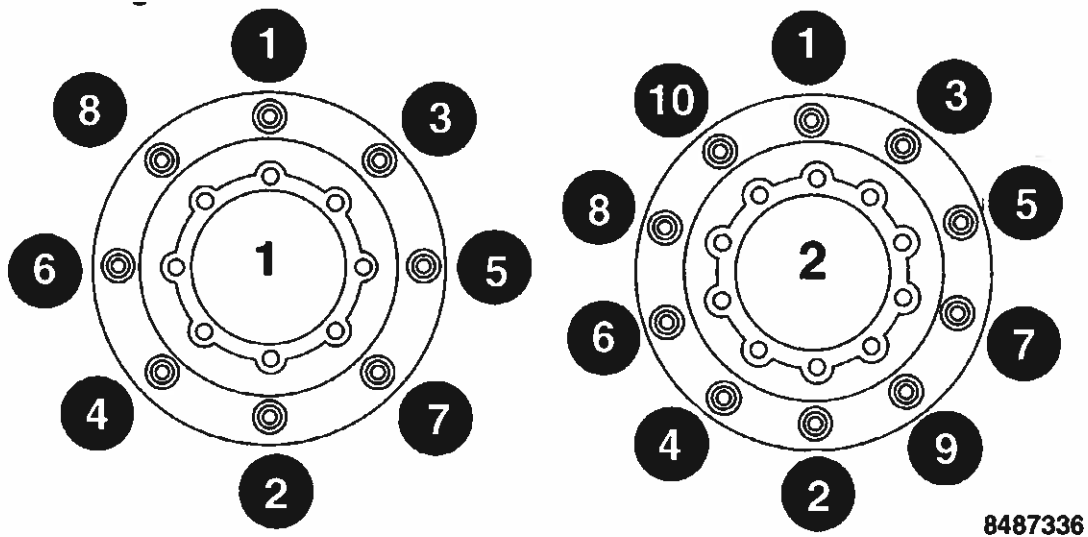


Figure 45. Brake Jumper Harness

1. Flange stud mount (8)
2. Flange stud mount (10)

NOTE: To ensure that uniform seating of nuts and even face-to-face contact of wheel and hub, DO NOT fully tighten nuts until vehicle has been lowered from jack stands.

214. Install front wheel assemblies and wheel nuts. Tighten wheel nuts alternately following crisscross pattern sequence (Figure 45).
215. Raise vehicle off jack stands, remove stands, and lower front axle of vehicle.
216. Using torque wrench, tighten lug nuts to 400 – 500 lb-ft (610 – 678 N·m).
217. Remove wheel chocks.

END OF SERVICE PROCEDURE

LABOR INFORMATION

Operation Number	Description	Time
A40-23517-1	Replace switch, inspect harness, and bleed brakes	2.2 Hrs.
A40-23517-2	Replace harness; MV™ Series / TC commercial Bus – if required	2.1 Hrs.
A40-23517-3	Replace harness; DuraStar® Trucks – if required	1.8 Hrs.
A40-23517-4	Replace harness; CE commercial bus / FBC 1300 – if required	1.8 Hrs.

Table 3 Labor Information

CAMPAIGN IDENTIFICATION LABEL

Each vehicle corrected in accordance with this campaign must be marked with a CTS-1075 Campaign Identification Label.

Complete the label and attach on a clean surface next to the vehicle identification number (VIN) plate.

DO NOT REMOVE

INTERNATIONAL

Campaign No. _____

VIN _____

Eng.# _____

COMPLETED

Service Location Code # _____

DO NOT REMOVE

ADMINISTRATIVE / DEALER RESPONSIBILITIES

WARRANTY CLAIMS

Warranty claim expense is to be charged to Warranty. Claims are to be submitted in the normal manner, making reference to Safety Recall 23517.

Section 7 of the Warranty Policy and Procedures Manual contains further information related to the submission and processing of AFC / Recall claims.

As with all claim submissions, items acquired locally must be submitted in the "Other Charges" tab. The cost of any bulk items (such as a bag of cable tie straps, roll of wire, barrel of oil, or tube of silicone) should be prorated for the cost of the individual pieces / amount used during each repair.

	GROUP	NOUN	C	WARR.	TP	PAD

GROUP — Enter number ←

NOUN — Leave blank ←

C (CAUSE) — Enter either 1, 2, 3. (See below)

1. Inspected (No repair required).
2. Inspected and repaired.
3. Defective part from parts stock.

WARRANTY — (Warranty Code) Enter 40. ←

TYPE PART — Enter P for type part causing failure. ←

PAD — Enter 100 ←

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UNITED STATES AND POSSESSIONS

The National Traffic and Motor Vehicle Safety Act, as amended, provides that each vehicle that is subject to a vehicle recall campaign must be adequately repaired within a reasonable time after the owner has tendered it for repair. A failure to adequately repair within 60 days after a tender of a vehicle is prima facie evidence of failure to repair within a reasonable time. If the condition is not adequately repaired within 60 days, the owner may be entitled to replacement with an identical or reasonable equivalent vehicle at no charge, or to a refund of the purchase price less a reasonable allowance for depreciation.

Dealers must correct all vehicles subject to this campaign at no charge to the owner, regardless of mileage, age of vehicle, or ownership, from this time forward.

Dealers should proceed immediately to make necessary correction to units in inventory. Federal law prohibits a dealer from delivering under a sale or lease, a new motor vehicle or any new or used item of motor vehicle equipment (including a tire) covered by the notification of a recall until the defect or noncompliance is remedied.

Dealers must make every effort to promptly schedule an appointment with each owner to repair his or her vehicle as soon as possible. However, consistent with the customer notification, dealers are expected to complete the repairs on the mutually agreed upon service date.

Dealers involved in the recall process will be furnished a listing of owner names and addresses to enable them to follow up with owners and have the vehicles corrected. Use of this listing must be limited to this campaign because the list may contain information obtained from state motor vehicle registration records, and the use of such motor vehicle registration data for purposes other than this campaign is a violation of law in several states.

CANADA

Dealers must correct all vehicles subject to this campaign at no charge to the owner, regardless of mileage, age of vehicle, or ownership, from this time forward.

Dealers should proceed immediately to make necessary correction to units in inventory. All inventory vehicles subject to this recall campaign must be corrected prior to sale, transfer or delivery. If vehicles have been sold or transferred and you are in receipt of Customer Notification Letters and Authorization for Recall Service cards for those vehicles, the transfer location or customer must be notified immediately from your dealer location.

Dealers must make every effort to promptly schedule an appointment with each owner to repair his or her vehicle as soon as possible. However, consistent with the customer notification, dealers are expected to complete the repairs on the mutually agreed upon service date.

Dealers involved in the recall process will be furnished a listing of owner names and addresses to enable them to follow up with owners and have the vehicles corrected. Use of this listing must be limited to this campaign because the list may contain information obtained from state motor vehicle registration records, and the use of such motor vehicle registration data for purposes other than this campaign is a violation of law in several states.

EXPORT

Export Distributors should proceed immediately to make necessary correction to units in inventory. All inventory vehicles subject to this recall campaign must be corrected prior to sale, transfer or delivery. If vehicles have been sold or transferred and you are in receipt of Customer Notification Letters and Authorization for Recall Service cards for those vehicles, the transfer location or customer must be notified immediately from your distributor location.

Export Distributors are to submit warranty claims in the usual manner making reference to this recall number.

Export Distributors are expected to provide full cooperation and follow-up with respect to this important subject matter. If you have any questions or need further assistance, please contact the Regional Service Manager at your regional office.

NAVISTAR, INC.

