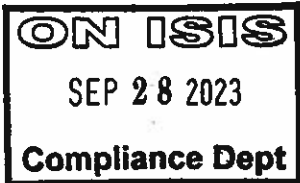


SERVICE PROCEDURE

23518
September 2023

SUBJECT: SAFETY RECALL



Brake Pressure Switch on certain 2016 IC Bus® CE Series school buses built on 06/04/2015 and certain 2018 through 2024 IC Bus® CE Series school buses built 12/15/2016 through 05/18/2023 with feature code 04100 (Brake system, hydraulic)

CUSTOMER LETTER

Print ready (PDF file) copy of the [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 2016 IC Bus® CE Series school buses built on 06/04/2015 and certain 2018 through 2024 IC Bus® CE Series school buses built 12/15/2016 through 05/18/2023 with feature code 04100 (Brake system, hydraulic).

ELIGIBILITY

This procedure applies ONLY to vehicles marked in the International® Service PortalSM with Safety Recall 23518. Also complete any other open campaigns listed on the Service Portal at this time.

VEHICLE RECALL 23518

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
8900350R91	Harness, Brake Jumper, CE Series	1; If Required
306132C1	Strap, Cable, 14-inch	As Needed
Source Locally	DOT 3 Brake Fluid	As Needed
476074C1	Nut, Battery Terminal 3/8-inch UNC	1
NANO2133005	Dielectric Grease Coating (BLUE)	If Required
4053287C5	Connector, Tubing, Special	If Required

Table 2 Parts Information

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.

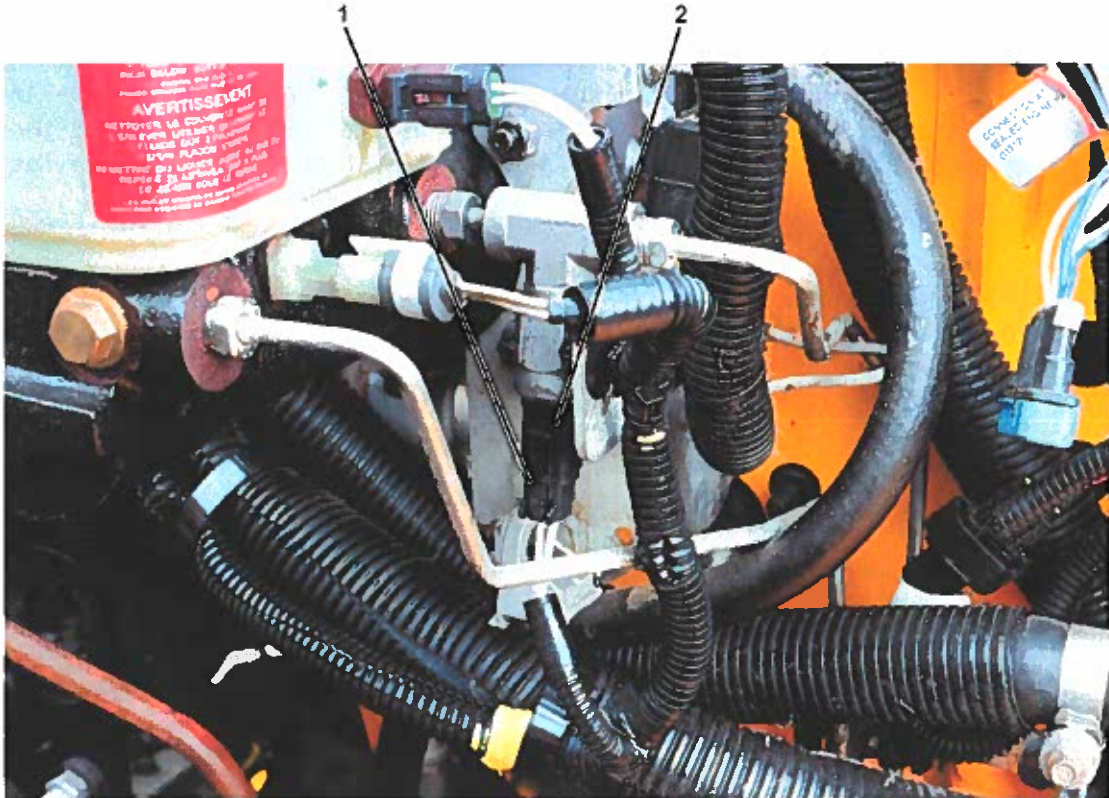
WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

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.

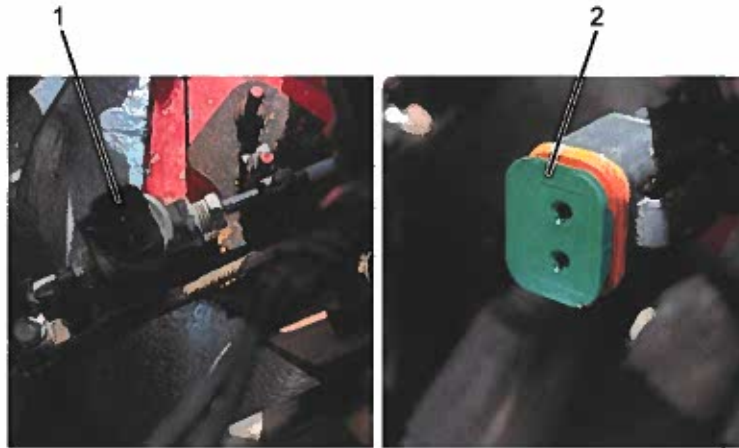
1. Park vehicle on flat surface.
2. Shift transmission to Park or Neutral and set parking brake.
3. Turn vehicle ignition to Key OFF position.
4. Install wheel chocks.
5. Unlatch and open hood.
6. Disconnect and isolate negative battery cable on main vehicle battery.
Discard terminal nut.



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Figure 1. Brake Pressure Switch Connector Location

1. Brake pressure switch connector
 2. Brake pressure switch
7. 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.

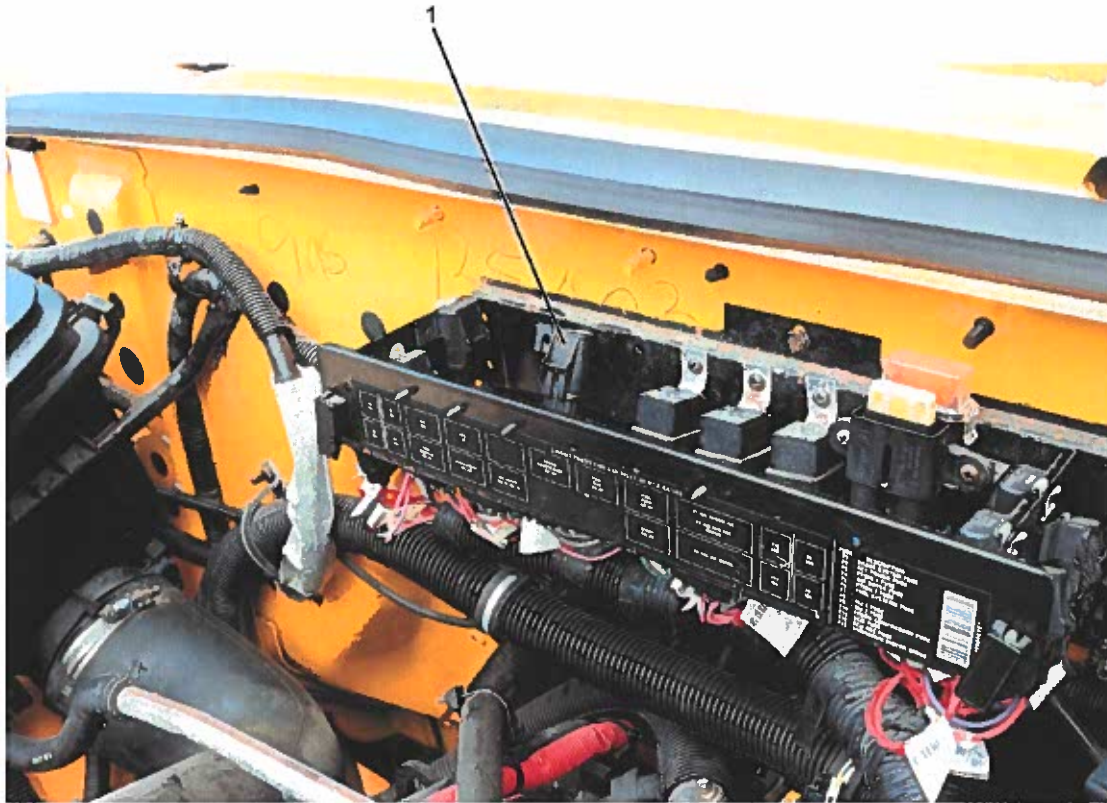
8. Inspect for presence of brake fluid in brake pressure switch terminals (Figure 2, Item 1) and at disconnected harness connector (Figure 2, Item 2).
 - a. If there is no brake fluid in switch terminals or harness connector, proceed to Step 9 to inspect fuses.
 - b. If brake fluid is present in switch terminals, proceed to Step 11 to replace brake pressure switch and proceed to Steps 17-95 to complete harness replacement and brake bleed.



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Figure 3. 5 Amp Fuse and Cover

1. 5 amp Hydro-Max pressure fuse assembly
9. Locate and uninstall Hydro-Max pressure fuse assembly (Figure 3, Item 1)
If necessary, cut cable tie strap, remove protective cover, 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 10.
 - b. If brake fluid is present in fuse connector, proceed to Step 11 to replace brake pressure switch and proceed to Steps 16-94 to complete harness replacement and brake bleed.

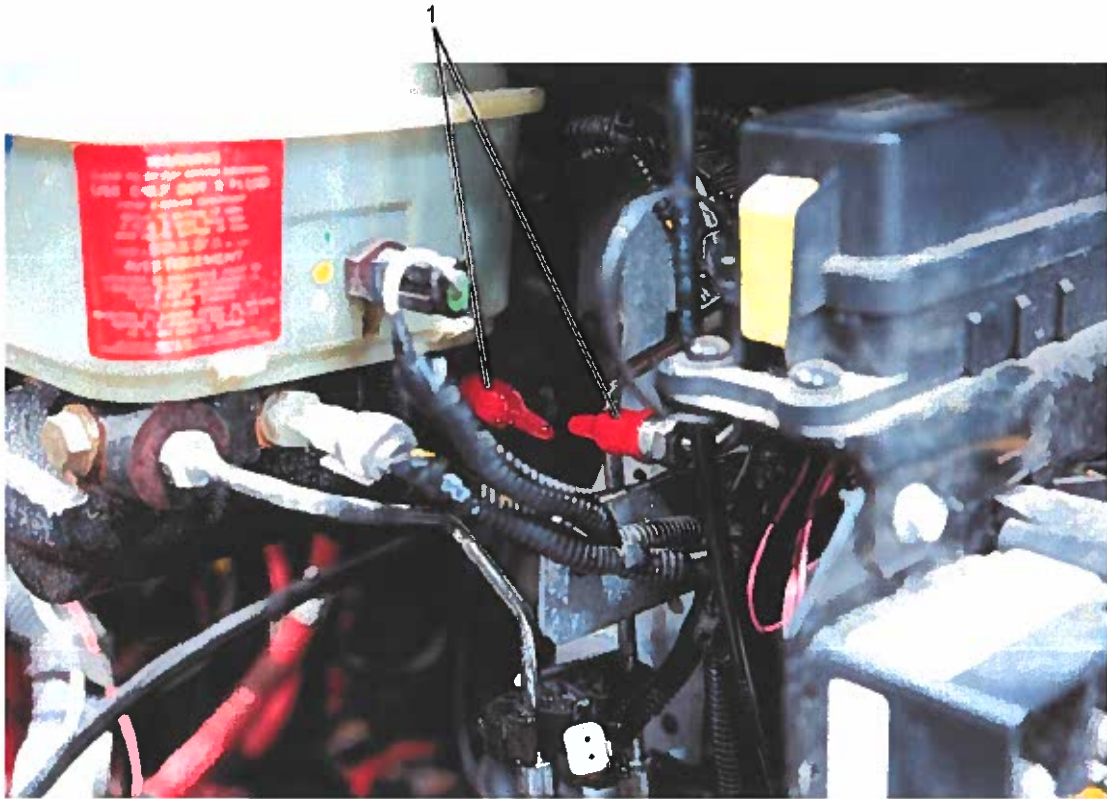


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Figure 4. 5 Amp Fuse and Cover

1. 5 amp Hydro-Max motor sense fuse assembly
10. Locate Hydro-Max motor sense fuse assembly (Figure 4, 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. Reinstall fuse and protective cover and complete Steps 11-14 to replace brake pressure switch and Steps 59-95 to bleed brakes.
 - b. If brake fluid is present in fuse connector, proceed to Step 11 to replace brake pressure switch and proceed to Steps 17-94 to complete harness replacement and brake bleed.

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.



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Figure 5. Capped Brake Lines

1. Cap (2)
11. Using a 9/16-in line wrench and a 19 mm backup wrench, remove brake line routed to T- fitting and remove T-fitting from master cylinder.
12. Cap master cylinder and brake line (Figure 5, Item 1).



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Figure 6. T-fitting Secured

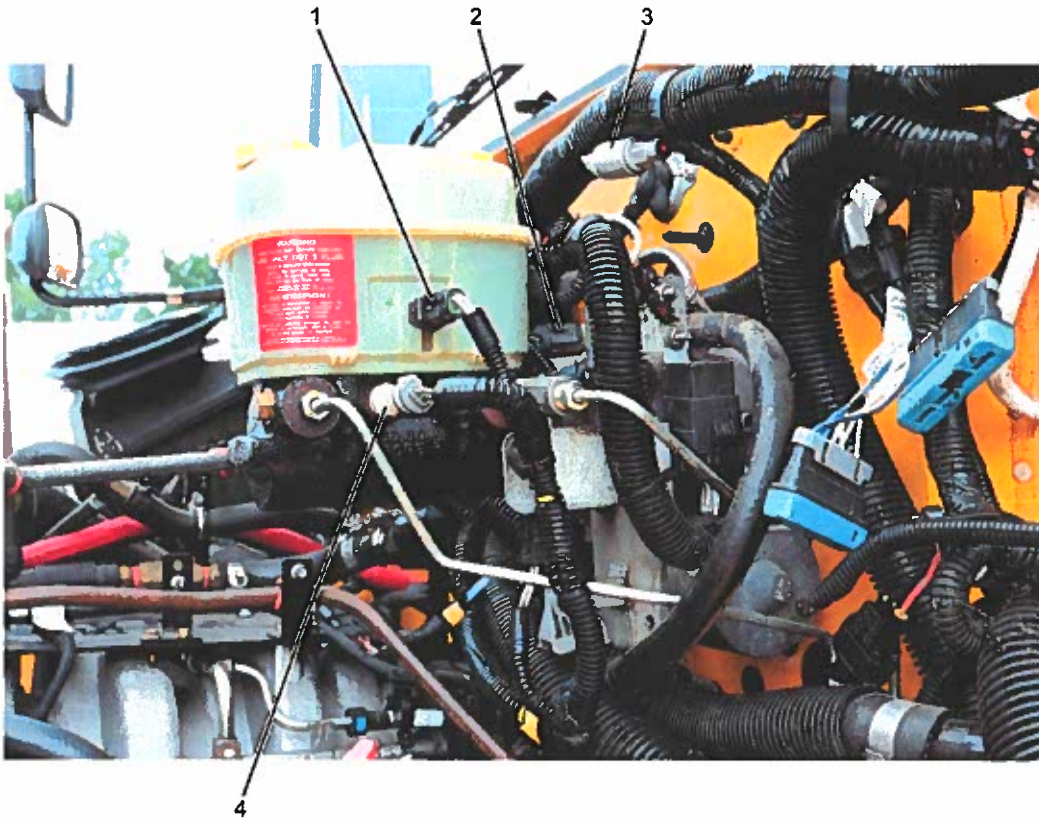
CAUTION! To prevent damage to property, ensure T-fitting is positioned in a manner to avoid any damage to the flared fittings.

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.

13. Place T-fitting and brake pressure switch in vise (Figure 6) and using a 15/16-in socket wrench, remove existing hydraulic brake pressure switch.
14. Using a socket and torque wrench, install new hydraulic brake pressure switch and tighten sensor to 35 lb-ft (48 N·m).
15. Finger tighten T-fitting to master cylinder and tighten fitting to 13 – 17 lb-ft (17 – 23 N·m).

16. Finger tighten brake line to T-fitting and tighten to 13 – 17 lb-ft (17 – 23 N·m).
17. Apply Blue Bear to remove graffo grease, dielectric grease, or RED enamel paint from ground wire fasteners, Hydro-Max ground terminal, Hydro-Max upper ground terminal, booster backup motor power fastener, and booster backup motor power terminal. Let sit for 15 minutes while performing Steps 18-32.



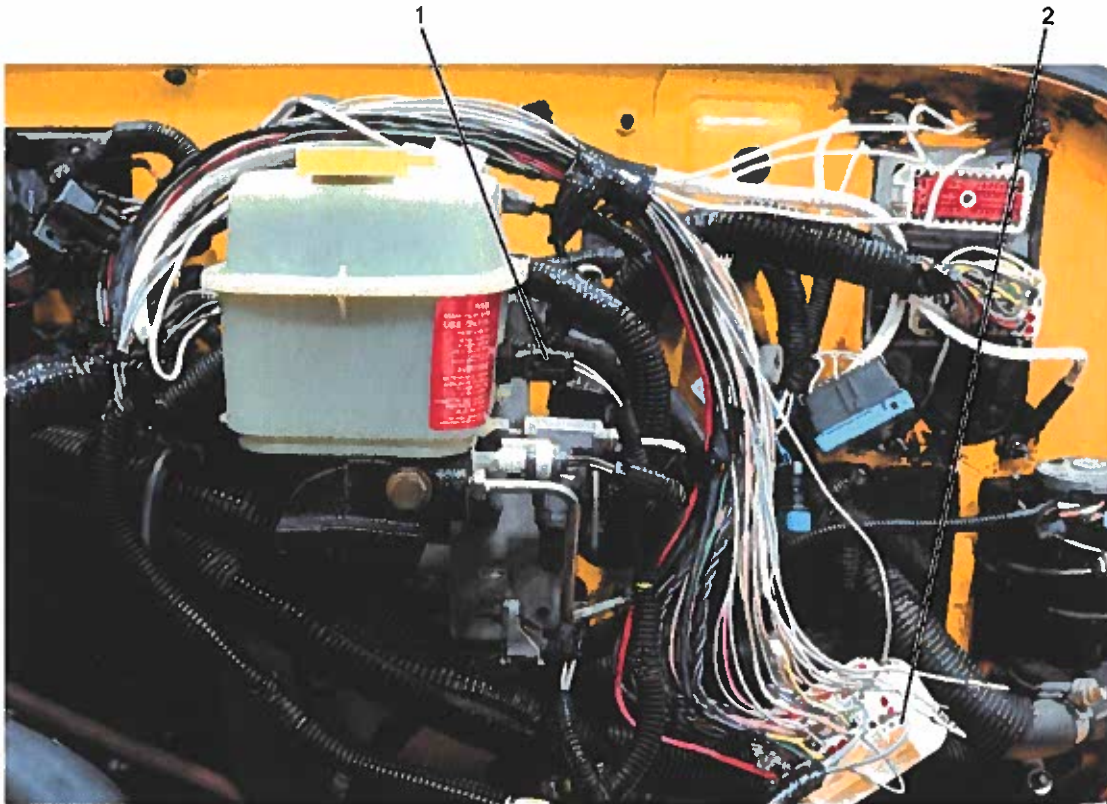
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Figure 7. Hydraulic Brake System Electrical Components

1. Low brake fluid switch
2. Brake booster flow switch
3. Redundant power feed connector
4. Differential brake pressure switch

18. Disconnect redundant power feed connector (Figure 7, Item 3) from instrument panel (IP) cowl harness, low brake fluid switch connector (Figure 7, Item 1), brake booster flow switch connector (Figure 7, Item 2), and differential brake pressure switch connector (Figure 7, Item 4).

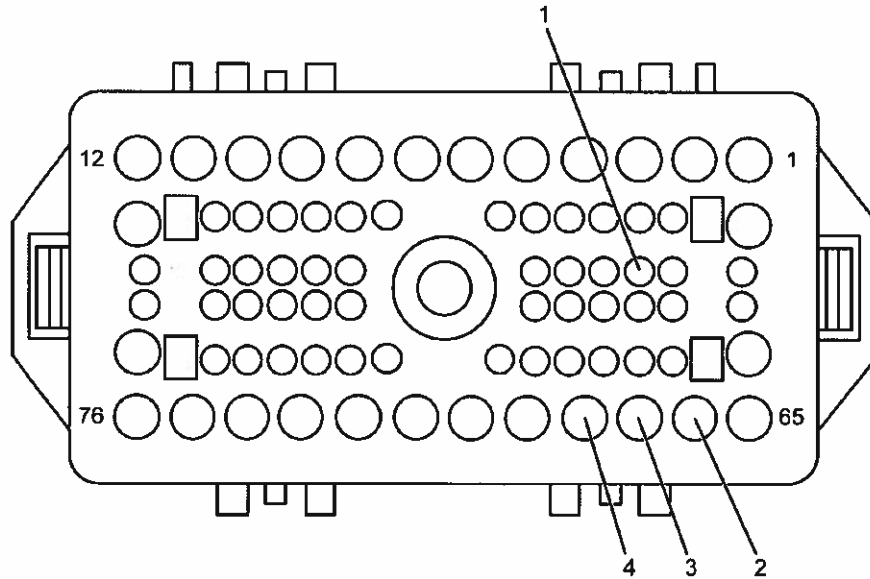
19. Record routing and clipping locations of IP cowl harness and cut cable tie straps securing the IP cowl harness leading to bulkhead connector 1701 and disconnect connector.



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Figure 8. Cowl Loom Removal

1. Low brake fluid switch
 2. Bulkhead connector 1701
20. Using a plastic blade or equivalent, remove loom from IP cowl harness between low brake fluid switch (Figure 8, Item 1) and bulkhead connector 1701 (Figure 8, Item 2) and isolate low brake fluid switch.



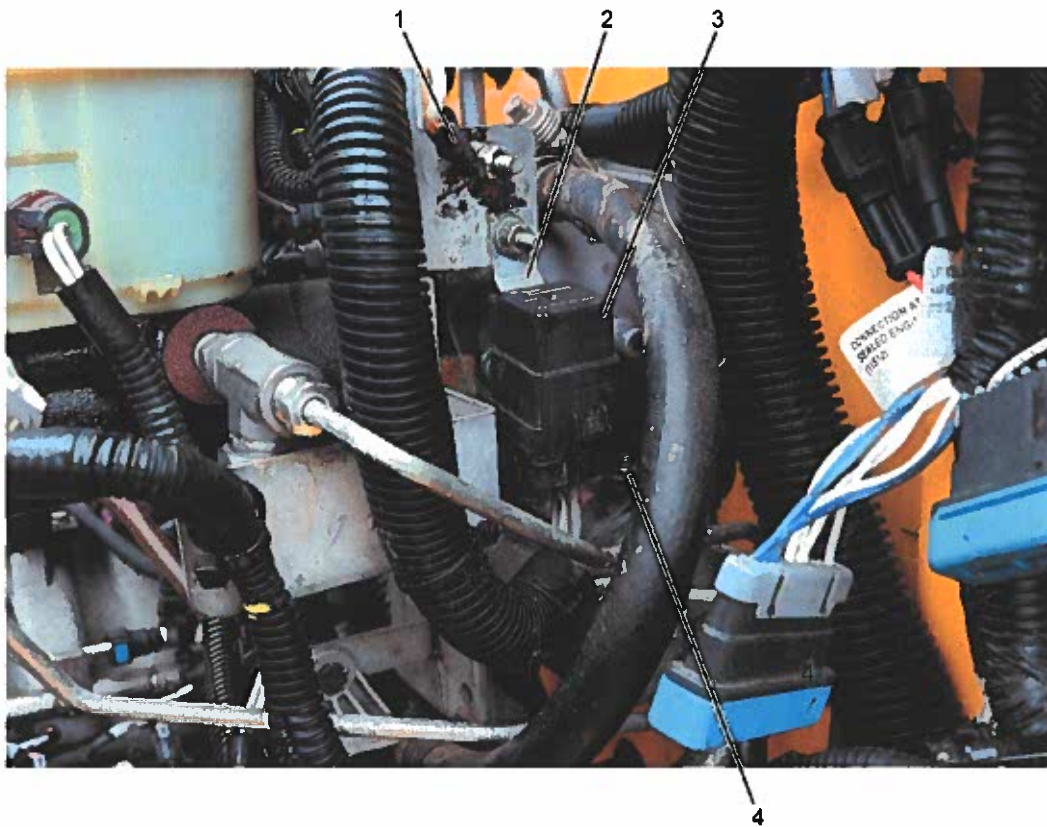
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Figure 9. Bulkhead Connector 1701

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

21. Disengage and unlock 1701 terminal lock.
22. Identify terminal cavities 29, 66, 67, and 68 (Figure 9, Items 1-4) and verify correct circuit numbers.
23. Release terminal retention finger and depopulate existing terminal and wire from cavity 29 (Figure 9, Item 1).
24. Populate new wire KU90H from brake jumper harness into cavity 29.
25. Release terminal retention finger and depopulate existing terminal and wire from cavity 66 (Figure 9, Item 2).
26. Populate new wire KU90P from brake jumper harness into cavity 66.
27. Release terminal retention finger and depopulate existing terminal and wire from cavity 67 (Figure 9, Item 3).
28. Populate new wire KU90C from brake jumper harness into cavity 67.
29. Release terminal retention finger and depopulate existing terminal and wire from cavity 68 (Figure 9, Item 4).

30. Populate new wire KU90G from brake jumper harness into cavity 68.
31. Reinstall the terminal lock.



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Figure 10. Relay Mount and Ground Wire

1. Hydro-Max ground terminal
 2. Relay mounting bracket
 3. Relay assembly
 4. Hydro-Max backup pump motor terminal
32. 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).
 33. 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.
 34. 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).

35. 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.
36. Position heat shrink tube over end of KU90P, KU90Y. Tubing must extend 1/2 inch past end of wires.
37. Using heat gun and pliers, apply heat to shrink tubing and pinch ends closed.
38. Cut circuit wires leading to Hydro-Max motor sense fuse from IP cowl harness. Remove and discard fuse.
39. Position heat shrink tube over end of cut fuse wire. Tubing must extend 1/2 inch past end of wire.
40. Using heat gun and pliers, apply heat to shrink tubing and pinch end closed.



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Figure 11. Hydro-Max Motor Sense Fuse Assembly Body Removal

1. Wires with heat shrink installed
41. Cut Hydro-Max motor sense fuse assembly body from IP cowl harness.
42. 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.
43. Using heat gun and pliers, apply heat to shrink tubing and pinch ends closed (Figure 11, Item 1).



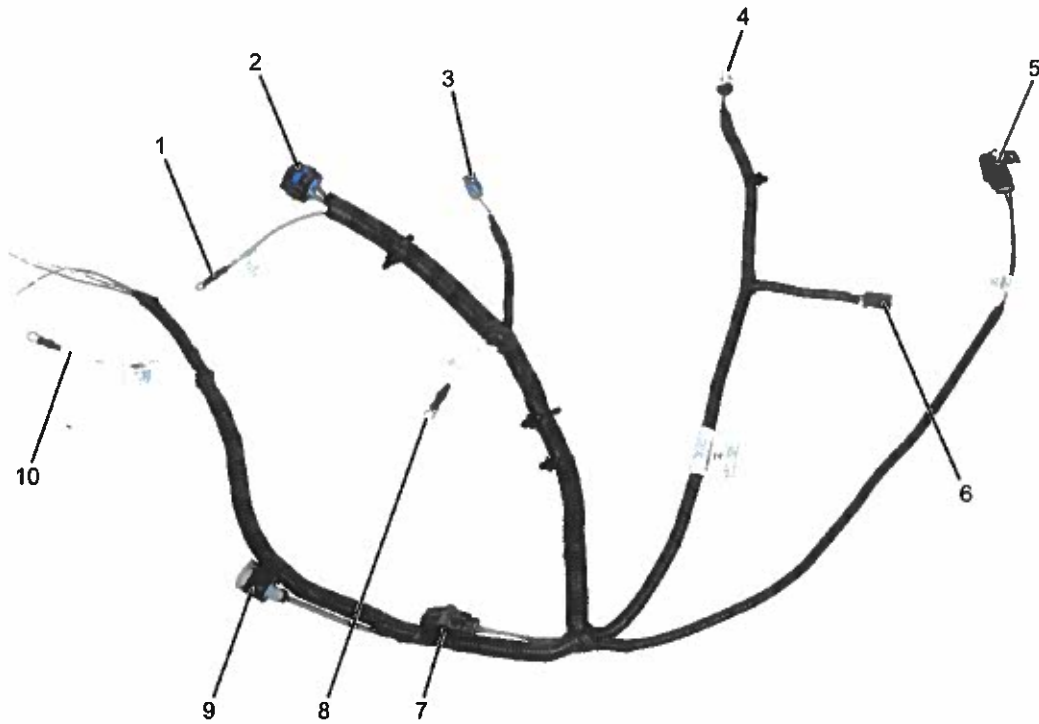
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Figure 12. New Low Brake Fluid Switch Connector Routing

1. Low Brake Fluid Switch Connector
44. Isolate existing low brake fluid switch connector and route along the IP cowl harness. Connect low level fluid sensor to low fluid level switch and ensure enough slack (approximately 8 inches) to secure to existing IP cowl harness.
45. Secure both the low brake fluid switch connector and IP cowl harness in loom and tape closed. Disconnect low brake level fluid switch connector (Figure 12, 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 13. 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

46. Route brake jumper harness following original IP cowl harness.

47. Connect the redundant power feed connector (Figure 13, Item 9) from the brake jumper harness to the redundant power feed switch from IP cowl harness.
48. Install backup motor relay socket (Figure 13, Item 2) from jumper harness into relay connector.
49. Connect bulkhead connector 1701 and secure bolt to 3.7 lb-ft (4.8 ± 0.8 N·m).
50. Install Hydro-Max upper ground terminal (Figure 13, 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.

51. Install Hydro-Max ground terminal (Figure 13, Item 8) and tighten to 14.5 – 17.7 lb-ft (19.6 – 24 N·m).
52. Position motor sense power terminal ring from harness (Figure 13, Item 1) 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).
53. Cover all three ground and power locations in Steps 50-52 in even application of dielectric grease, graffo grease, or RED enamel paint.
54. Install backup motor relay assembly on relay mounting bracket.
55. Connect brake booster flow switch connector (Figure 13, Item 3), brake differential pressure switch connector (Figure 13, Item 4), and hydraulic brake pressure switch (Figure 13, Item 6) from brake jumper harness and connect low brake fluid switch connector from IP cowl harness.
56. Install Hydro-Max motor sense fuse assembly (Figure 13, Item 5) inside the fuse panel in slot F13 (Figure 4, Item 4).
57. Secure brake jumper harness following the IP cowl harness with tie straps.
58. Using a wire brush, electronic contact cleaner, and compressed shop air, clean negative battery terminal components.
59. Apply BLUE dielectric grease to battery terminal stud, negative battery cable ring terminal, and threads of new battery stud nut.

60. Using new battery stud nut, reconnect negative battery cable to negative terminal on main vehicle battery and install new battery terminal nut.
61. Using torque wrench, tighten battery stud nut to 12 – 15 lb-ft (16 – 20 N·m).

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.

62. Lift front axle of vehicle and support on jack stands.
63. Remove lug nuts and front wheels to access brake calipers.
64. Ensure that the Power Bleeder has the proper brake bleed adapter installed and that Power Bleeder is clean and free of debris or contaminants.
65. Remove cap from fluid reservoir on master cylinder.
66. Attach Power Bleeder cap to vehicle master cylinder fluid reservoir, ensuring that gasket is properly installed, and gasket is not worn or cracked.
67. 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.

68. 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.

69. Reattach Power Bleeder reservoir cap or tighten hose connections and re-pressurize Power Bleeder to 20 – 30 psi.
70. If no leaks are found, slowly unscrew pump cap and add up to 2 quarts of new hydraulic fluid from a sealed container.

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

71. Fill brake bleeder reservoir to the MAX fill line.

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

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

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

74. Start bleed procedure on the passenger side (farthest from ABS module).
75. 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.
76. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
77. Close bleeder fitting.
78. Pressurize Power Bleeder to 20 – 30 psi by pumping brake bleeder handle.
79. Attach hose to outboard caliper brake bleed fitting and submerge end of hose in suitable container.
80. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
81. Close bleeder fitting.

82. Pressurize Power Bleeder to 20 – 30 psi by pumping brake bleeder handle.
83. Attach hose to inboard caliper brake bleed fitting and submerge end of hose in suitable container.
84. Loosen bleeder fitting until fluid begins to flow. Allow fluid to flow until flow is free of bubbles and contamination.
85. Close bleeder fitting.
86. Repeat Steps 75-85 for each brake caliper bleeder on driver side starting with inboard brake bleed fitting.
87. When brake bleeder procedure is complete, release pressure from Power Bleeder by slowly loosening pump cap.
88. Remove Power Bleeder assembly from fluid reservoir on master cylinder.
89. Check that fluid level is at MAX fill level. Add additional brake fluid if necessary. Install fluid reservoir cap on master cylinder.
90. Close and latch hood.

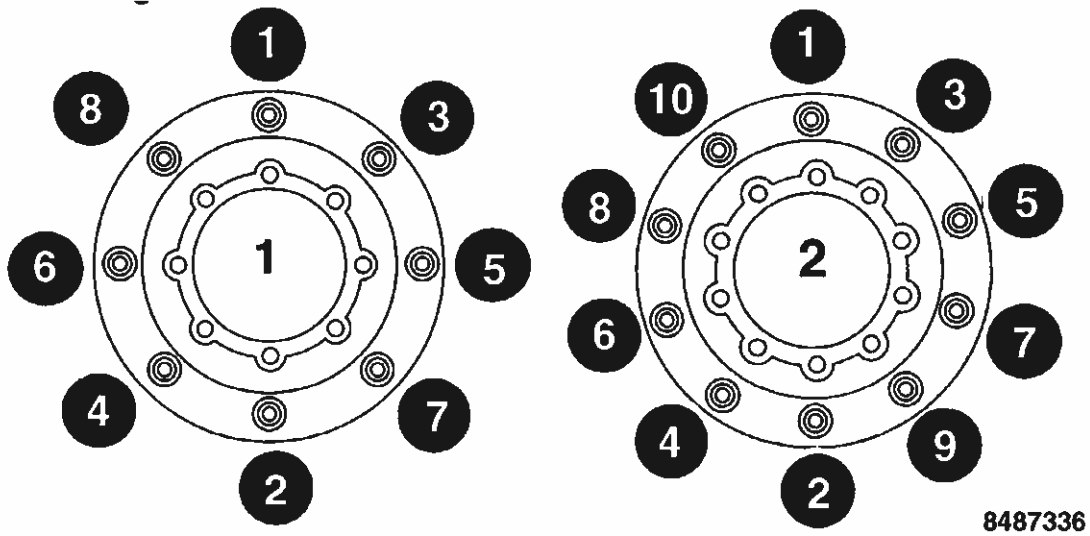


Figure 13. Brake Jumper Harness

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

NOTE: To ensure 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.

91. Install front wheel assemblies and wheel nuts. Tighten wheel nuts alternately following crisscross pattern sequence (Figure 13).
92. Raise vehicle off jack stands, remove stands, and lower front axle of vehicle.
93. Using torque wrench, tighten lug nuts to 400 – 500 lb-ft (610 – 678 N·m).
94. Remove wheel chocks.

END OF SERVICE PROCEDURE

LABOR INFORMATION

Operation Number	Description	Time
A40-23518-1	Inspect and Replace Brake Pressure Switch and Bleed System	2.2 hrs
A40-23518-2	Replace Brake Jumper Harness, If Required	1.8 hrs

Table 3 Labor Information

VEHICLE RECALL 23518

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 23518.

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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VEHICLE RECALL 23518

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.

