SERVICE PROCEDURE

G-06504
July 2006

SUBJECT: SAFETY RECALL (U.S., EXPORT)
FULL POWER PARK BRAKE SYSTEM on 1300 FBC, 3300, CE and BE Models built 3/17/2004 thru 5/15/2006 with Feature Codes 0004085 AND 0004GAW

DEFECT DESCRIPTION

The spring applied, hydraulic release (SAHR) park brake actuator could experience a hydraulic lock condition that will not allow the park brake to apply or the park brake may activate while the vehicle is under normal operation. Although the vehicle is brought to a stop in a safe, controlled manner, the activation may occur without warning or input from the driver and may strand the vehicle in an active traffic lane. A vehicle roll away or a stranded vehicle in an active traffic lane may contribute to a **vehicle crash**, possibly resulting in **property damage**, **personal injury**, or **death**.

MODELS INVOLVED

This Safety Recall involves 1300 FBC, 3300, CE and BE bus models built 3/17/2004 thru 5/15/2006 with feature codes 0004085 AND 0004GAW.

PARTS INFORMATION

The parts required for this recall are:

Part Number	Part Description	Quantity
8000883R91	KIT, HARNESS ASM WABCO FULL POWER BRAKE	**1**

*The kit **8000883R91** contains the following parts:*

Part Number	Part Description	Quantity
2591031R2	INSTRUCTIONS	**1**
2592073C1	NYOGEL GREASE, 1OZ TUBE	**1**
2507598C1	CONNECTOR BODY LOCK	**3**
2591029C91	BRAKE HARNESS	**1**
3535430C1	PLUG, SEALING TERMINAL 16-WAY	**1**
3573076C1	PLUG, SEALING, 2.8MM AMPEX 14-WAY	**1**
289862C1	STRAP, CABLE LOCK	**12**
2591997C91	SWITCH, PARK BRAKE	**1**
2591028C91	HARNESS JUMPER PB SWITCH	**1**
3687938C1	PRODUCT GRAPHICS, HYDRAULIC	**2**
2644000R1	DUAL WALL HEAT SHRINK, 50MM	**2**

TOOL INFORMATION

The following tools are required to perform this campaign:

Part Number	Part Description	Quantity
2592689C91	TOOL,TERMINAL EXTR-AMP 24WAY C	**1**
Any Available	MILD DEGREASER, i.e. RUBBING ALCOHOL	**As Necessary**
Any Available	60/40 LEAD/TIN ROSIN CORE SOLDER	**As Necessary**
Any Available	Electrical Tape	**As Necessary**

There is a limited supply of the Terminal Extractor (2592689C91) available in the PDC's. Please only order 1 or 2 per service location.

SERVICE PROCEDURE

Due to the complex nature of this Recall Service Procedure, please refer to the following table to determine which steps to perform on each vehicle:

Procedure Description	Vehicle Build Date Range	Procedure Steps
Park Brake Switch Replacement	ALL VEHICLES	1 thru 17
Install Separate Power Feed	ALL VEHICLES	18 thru 32
Inspect, Clean and Repair Chassis Harness and Connectors	ALL VEHICLES	33 thru 62
Ignition Circuit Re-location	3/17/2004 thru 8/29/2004	63 thru 69
Separate Pump Grounds	3/17/2004 thru 5/15/2006 ***I-6 ENGINES ONLY***	70 thru 73
Vehicle ESC Re-Flash	3/17/2004 thru 2/13/2006	74 thru 75
Brake ECU Re-flash	3/17/2004 thru 4/26/2006	76 thru 99

Early versions of the Recall Service Kit (8000883R91) may contain an older version of the Instruction Sheet (2591031R2).

PLEASE FOLLOW THIS SERVICE PROCEDURE REGARDLESS OF INSTRUCTION SHEET IN KIT.

WARNING:

TO PREVENT SERIOUS EYE INJURY, ALWAYS WEAR SAFE EYE PROTECTION WHEN YOU PERFORM VEHICLE MAINTENANCE OR SERVICE.

WARNING:

TO PREVENT UNEXPECTED MOVEMENT OF THE VEHICLE AND POSSIBLE SERIOUS PERSONAL INJURY OR DEATH, BLOCK THE WHEELS TO PREVENT THE VEHICLE FROM MOVING IN BOTH DIRECTIONS.

WARNING:

BATTERIES EXPEL EXPLOSIVE GASES. KEEP SPARKS, FLAMES, BURNING CIGARETTS OR OTHER IGNITION SOURCES AWAY AT ALL TIMES. ALWAYS WEAR SAFETY GLASSES AND A FACE SHIELD WHEN WORKING NEAR BATTERIES TO AVOID PERSONAL INJURY OR DEATH.

WARNING:

TO PREVENT ELECTRICAL SHOCK THAT COULD RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH, ALWAYS DISCONNECT THE NEGATIVE BATTERY TERMINAL BEFORE WORKING ON THE ELECTRICAL SYSTEM.

Park Brake Switch Replacement

1. Disconnect the negative battery cables and the negative engine/transmission control module feeds from the batteries.

2. Remove the center dash instrument surround by removing the two Phillips head screws (Figure 1) on the lower edge and pulling the panel outward at the top.

Figure 1 - Panel Screws Located by Arrows

3. Remove the parking brake knob by twisting 1/8 turn counter clockwise.

4. Remove the right wing instrument panel surround by pulling the panel outward overcoming the retaining clips.

5. Remove the parking brake switch by removing the three Philips head screws (Figure 2) attaching it to the instrument panel.

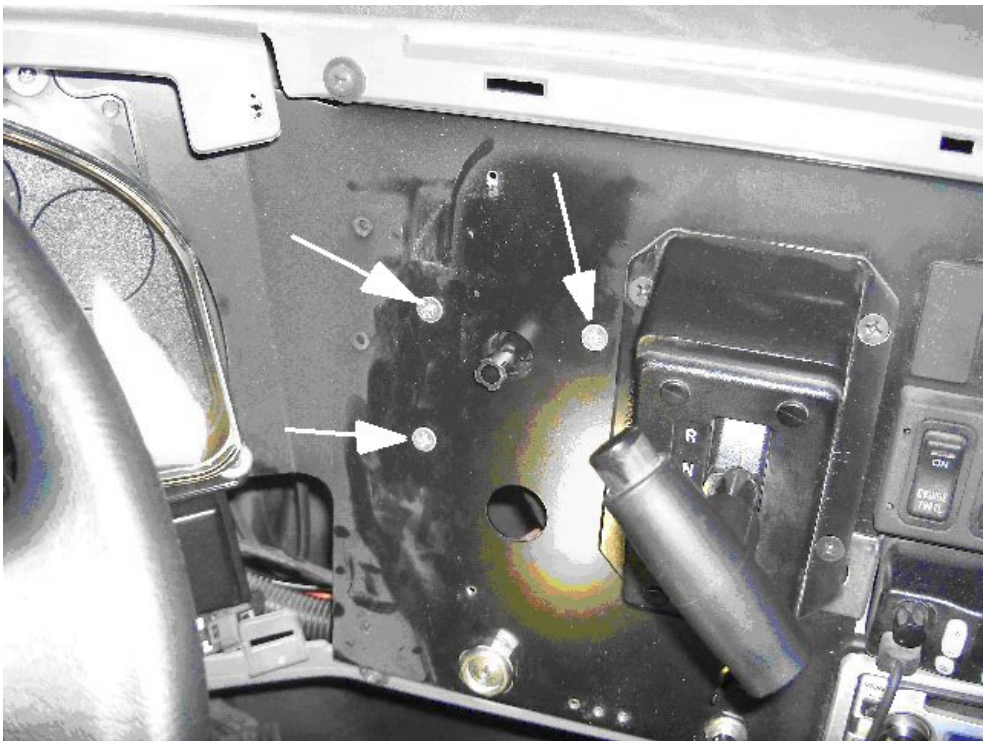


Figure 2 - Parking Brake Switch Mounting Screws Shown by Arrows

6. Cut the harness feeding the switch right at the switch connector (Figure 3).

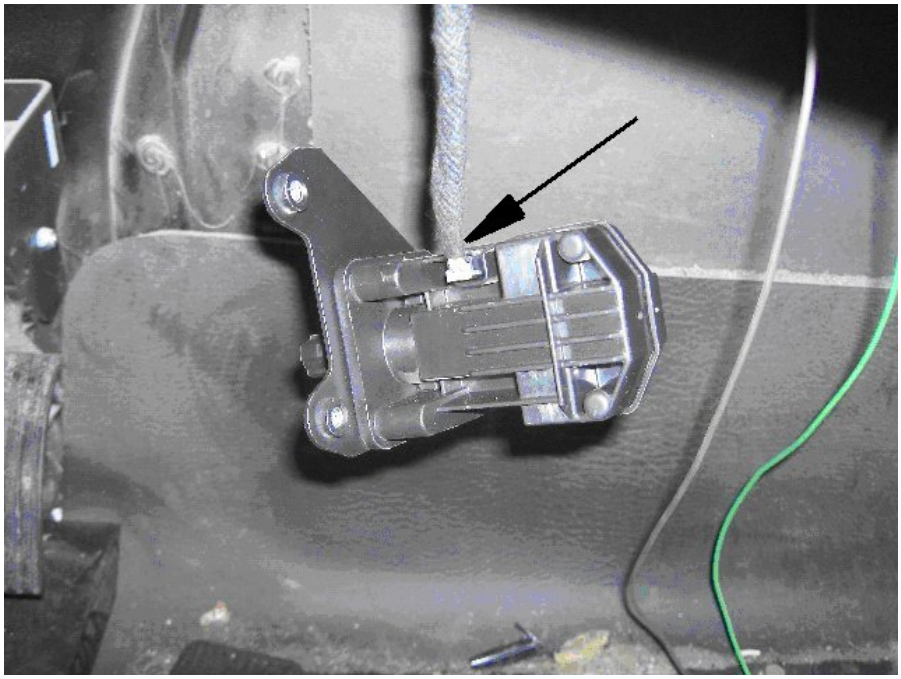


Figure 3 - Cut Harness at Arrow

7. Identify and strip the two remaining wires in the switch feed harness.

   NOTE: Cut one (1) 50mm piece of heat shrink tube in half to make 2 pieces for use in Step 8.

8. Matching circuits on the new park brake switch jumper harness (PN2591028C1) to the old harness wires, connect the new park brake switch jumper harness and remaining harness by crimping the wires, soldering with 60/40 tin/lead rosin core solder, and heat shrinking insulated sleeves to the solder joints.

OLD HARNESS	***PB switch jumper harness (PN2591028C1)***
44AA GY	44AA GY
90B WH	90B GY

Table 1

9. Connect the new park brake switch jumper harness to the connector supplied with the new parking brake switch as shown in Figure 4.

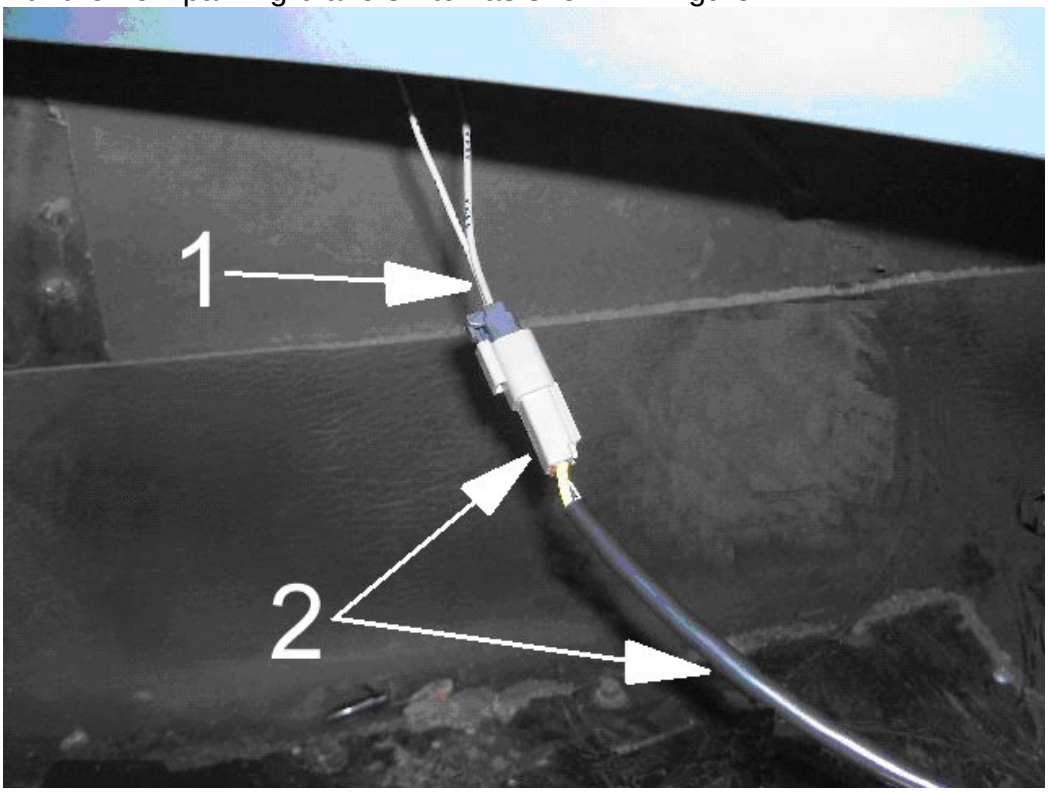


Figure 4 - Connect New Pigtail to Connector
1. Jumper Harness
2. New Switch and Pigtail

10. Install the new parking brake switch into the dash with the three Phillips head screws removed in Step 5 (Figure 2).

11. Tie Strap the extra switch harness length behind the dash panel to prevent chafing and/or abrading while providing strain relief on the connector.

12. Re-install the right wing dash surround.

13. Re-install the center dash surround and install the two screws at the lower corners.

14. Re-install the parking brake switch knob previously removed.

15. Clean the area of the dash directly above the park brake knob with a mild degreaser such as rubbing alcohol. Allow dash to dry.

16. Apply one of the new parking brake label shown in Figure 5 to the dash panel immediately above the knob.

Figure 5 - New Label

17. Install the second parking brake graphic to the upper right corner of the vehicle's operating manual front cover.

Separate Power Feed

NOTE: This procedure will remove one of the Wabco pump power feeds from the main chassis harness (Circuit N90A) and reroute the power feed from a new harness and fuse holder installed inside the battery box to the ECU 2-way connector.

18. Locate and remove the two 30 amp pump fuses in the engine compartment located above the center of the engine bulkhead. Figure 6 shows the panel with the fuses under the clear plastic covers.

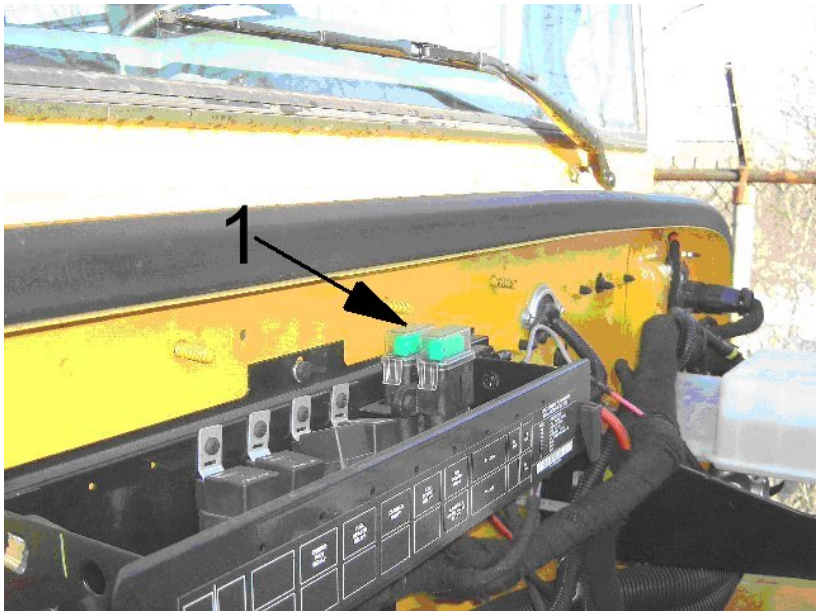


Figure 6 - Remove Two 30 Amp Pump Fuses

19. Refer to harness shown in Figure 7. Insert the single wire lead in conduit with terminal end for 2-way ECU connector from the inside of the battery box through the hole in the inboard side of the battery box.

NOTE: REMOVE FUSE FROM NEW FUSE HARNESS BEFORE….

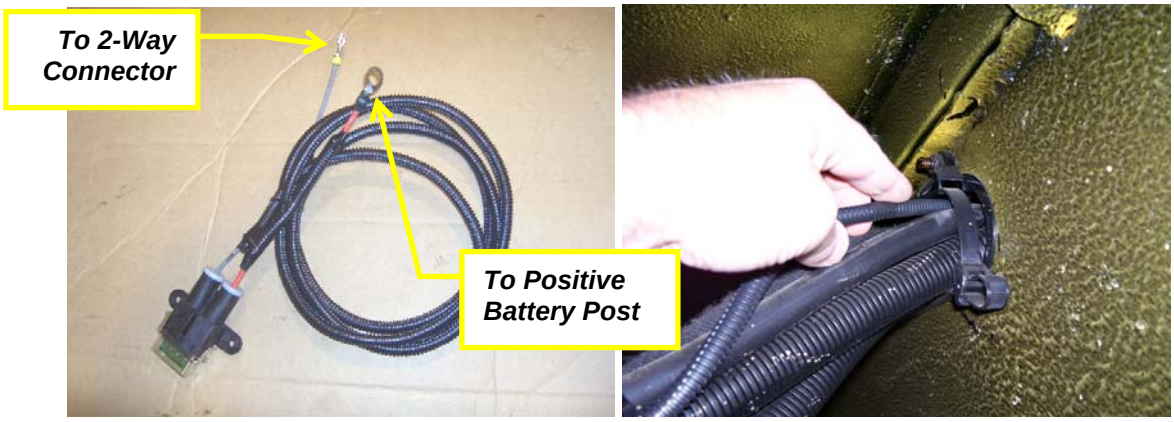


Figure 7 – New Fuse Harness (PN 2591029C1)

NOTE: Ensure the wire is led through the grommet on the outside of the box.

20. Continue the routing from the battery box:
    - Strap—lock new fuse harness to battery cables until just underneath the frame rail, then
    - Strap–lock to the main chassis harness, following rearward to general location of the brake ECU.

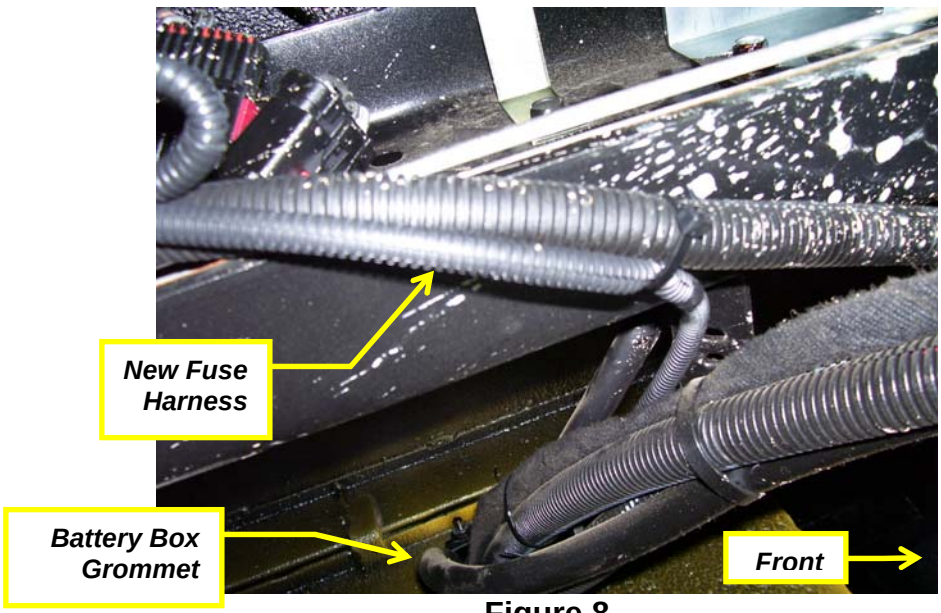


Figure 8

21. Release the red connector lock and pull out approximately 2 inches, until you feel the stop, and remove the 2-way connector (9510) at the brake ECU. See Figure 9.

Figure 9

22. Remove circuit N90A (gray wire) from cavity 2 using terminal extraction tool (259268C91), remove terminal from end of wire and seal using remaining dual wall heat shrink. See figure 10.

23. Insert the terminal of new fuse harness into the empty cavity (2) of the 2-way connector. Ensure the terminal snaps into place and that the wire seal is properly seated into the connector body.

- Inspect other terminal for corrosion and/or wear. Replace if necessary and use low pressure air to remove any debris from inside the connector.

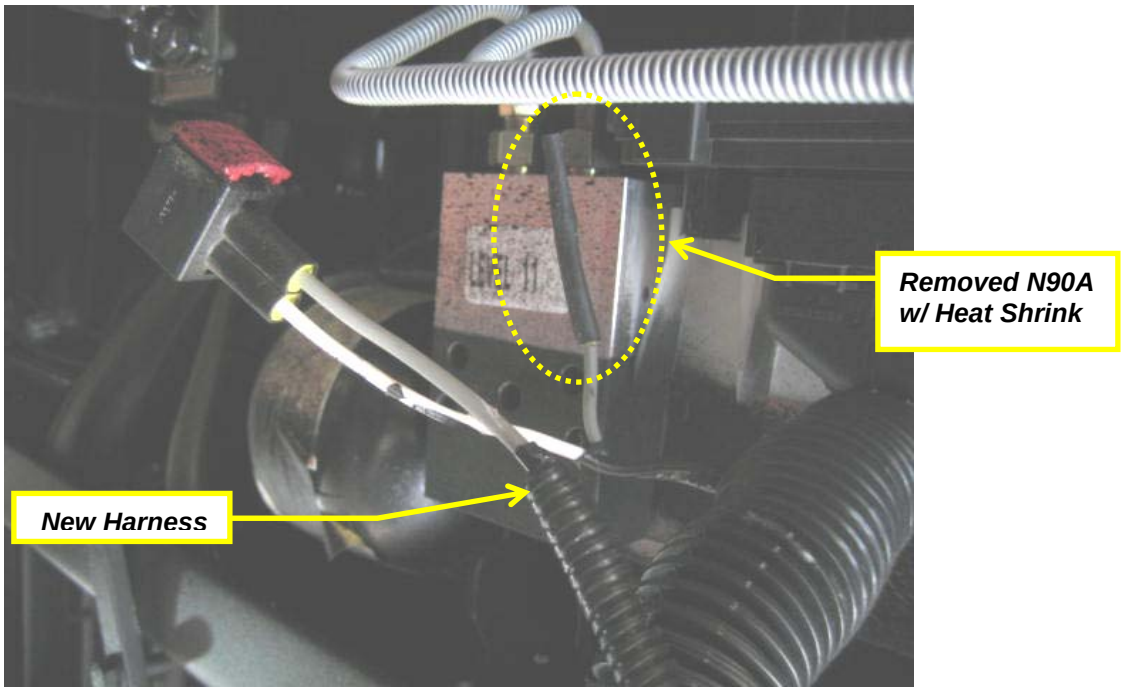


Figure 10

24. Use electrical tape to wrap unprotected and removed circuit as shown in Figure 11.

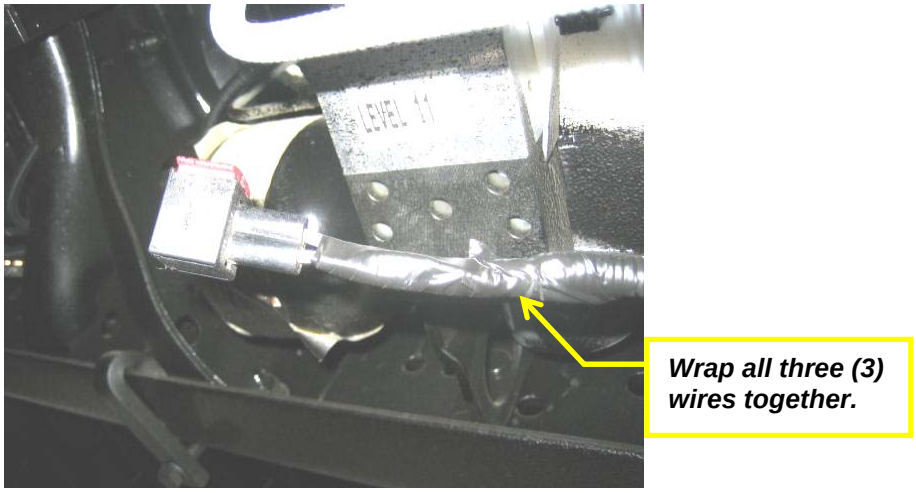


Figure 11

25. Coat the two way connector terminals with dielectric grease (included in Recall Service Kit) and reconnect to the ECU. Ensure the red lock is completely closed and the connector is firmly seated in place.

26. Strap-Lock the new fuse harness between the battery box and the ECU, eliminating any looseness or chafing.

Figure 12 – Excess Slack

27. Route the wire and fuse holder in the battery box and connect the ring terminal to a positive battery post that is ***NOT being used for the starter B+ feed.***

Figure 13

28. Strap-lock the fuse holder and any excess cable to the battery cables to keep it from vibrating and wearing into battery studs.

29. Reconnect the negative battery terminal.

30. Turn the ignition to the “ON” position.

31. Bleed down the brake pressure by pushing on the service brake pedal several times or by using the “Deplete Accumulators” function in the Wabco Toolbox. Listen for the brake pump operation, continue until the pump turns off.

32. Reinstall the rear fuse in the engine compartment and listen for the second pump to energize. If the pump does not actuate remove the fuse and place it into the other (front) fuse holder and verify pump operation. Leave the remaining fuse holder empty. Reinstall both clear fuse covers. Turn the ignition off and disconnect the negative battery terminal.

Inspect, Clean and Repair Chassis Harness and Connectors

33. Disconnect connectors labeled 1, 2 and 3 in Figure 14 and inspect for corrosion. Replace any corroded terminals.

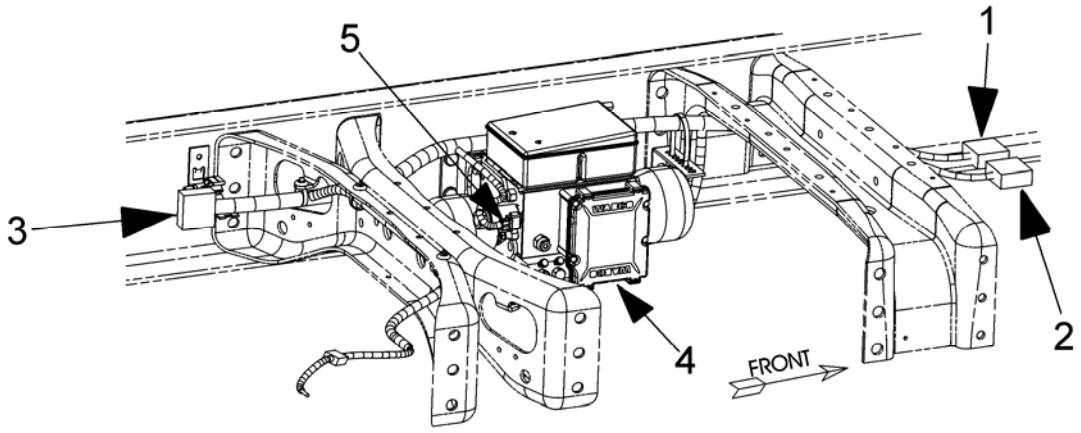


Figure 14 - Connector locations

34. Use low pressure air to remove any debris from the connector halves.

35. Make certain that all seals are in good condition and properly seated in the connector halves.

36. Apply a light coat of dielectric grease to the connector terminals.

37. Reconnect the connector halves making sure they are properly mated and tight. Install the secondary locks as shown below in Figures 15, Item A and B on the 16-way connectors.

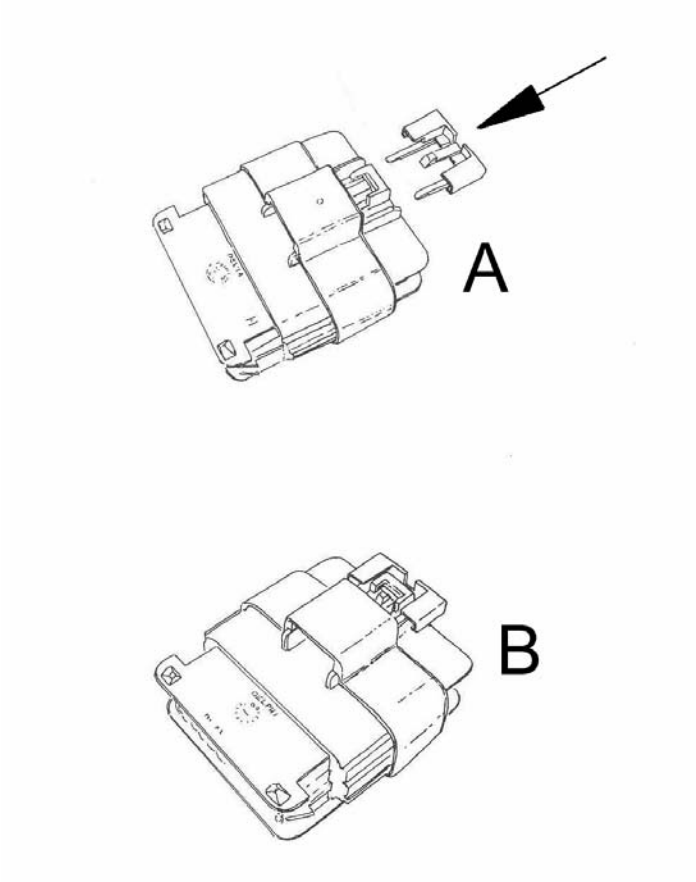


Figure 15 - Install Secondary Lock into Connector
A. Install Secondary Lock in Direction of Arrow
B. Make Sure Lock is Fully Inserted into Connector

38. Locate the ECU 31 pin connector labeled item 4 in Figure 14, release the red lock by inserting a screw driver into the end of the lock.

39. Inspect the connector for corrosion. Replace any corroded terminals.

40. Use low pressure air to remove any debris from the connector halves.

41. Make certain that all seals are in good condition and properly located.

42. Apply a light coat of dielectric grease to the connector terminals.

43. Prior to reconnecting adjust harness to provide a drip loop at the ECU to allow for connector strain relief while preventing water from wicking into the connector.

44. Inspect ECU for broken posts. If any posts are missing, contact Technical Services for further instructions.

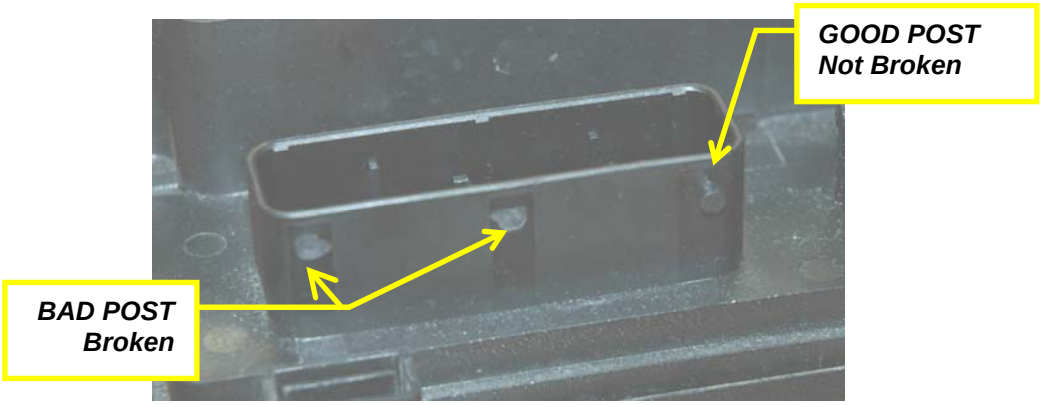


Figure 16 – 3 posts on each side – 6 total

ALL POSTS MUST BE PRESENT TO CONTINUE

NOTE: If ECU has broken posts, please call Technical Services @ 1-800-336-4500, select Option "4,", then option "1," for further instructions.

45. Reconnect the connector to the ECU making sure it is properly mated and tight. Make sure the red lock is properly seated and tight.

46. Locate the 2-pin supply valve connector labeled as 5 in Figure 14, remove the connector from the valve body.

47. Inspect the connector for corrosion. Replace any corroded terminals.

48. Use low pressure air to remove any debris from the connector halves.

49. Make certain that all seals are in good condition and properly located.

50. Apply a light coat of dielectric grease to the connector terminals.

51. Reconnect the connector making sure it is properly mated and tight.

52. Locate the SAHR canister mounted rearward of the power unit as illustrated in Figure 17.

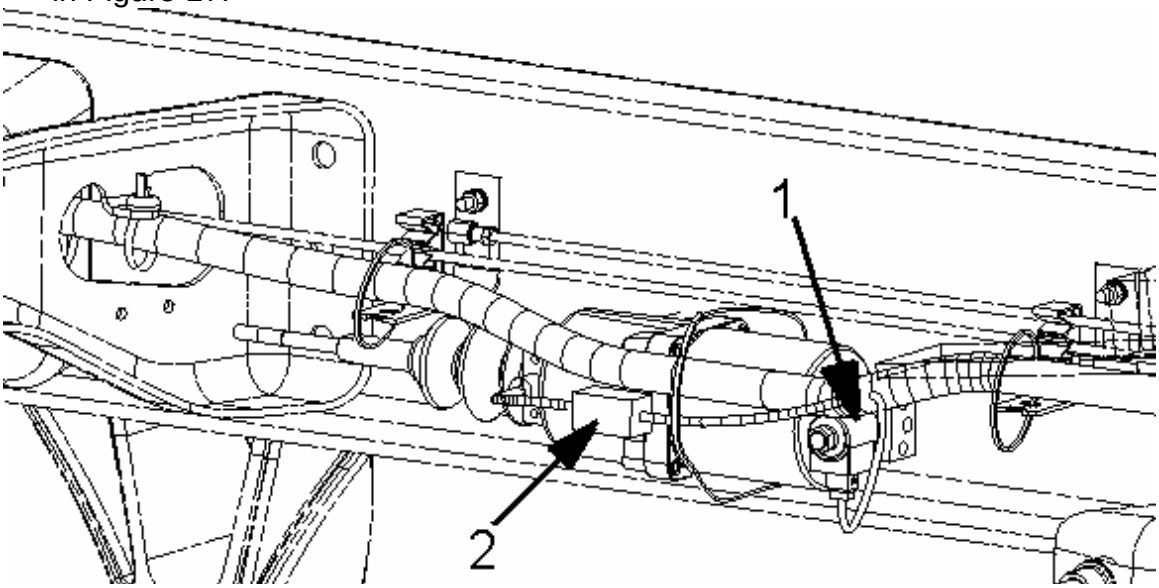


Figure 17 - Spring Apply Hydraulic Release (SAHR) Canister
1. 9778 Cut Off Valve
2. 9777 Travel Sensor

53. Disconnect the three pin Travel Sensor connector (9777), Figure 17, Item 2, and the two pin Cut-Off Valve connector (9778), Figure 17, Item 1, from the SAHR canister.

54. Inspect the connectors for corrosion. Replace any corroded terminals.

55. Use low pressure air to remove any debris from the connector halves.

56. Make certain that all seals are in good condition and properly located.

57. Apply a light coat of dielectric grease to the connector terminals.

58. Reconnect the connectors making sure they are properly mated and tight.

59. Follow the chassis harness from the bulkhead connectors to where it terminates in the two 16-way connectors (or the 14-way and 24-way) inside the drivers side frame rail and inspect for any areas where the harness may be rubbing and/or chafing against other harnesses and/or metal objects that may be wearing the insulation. See Figure 18, Item 3.

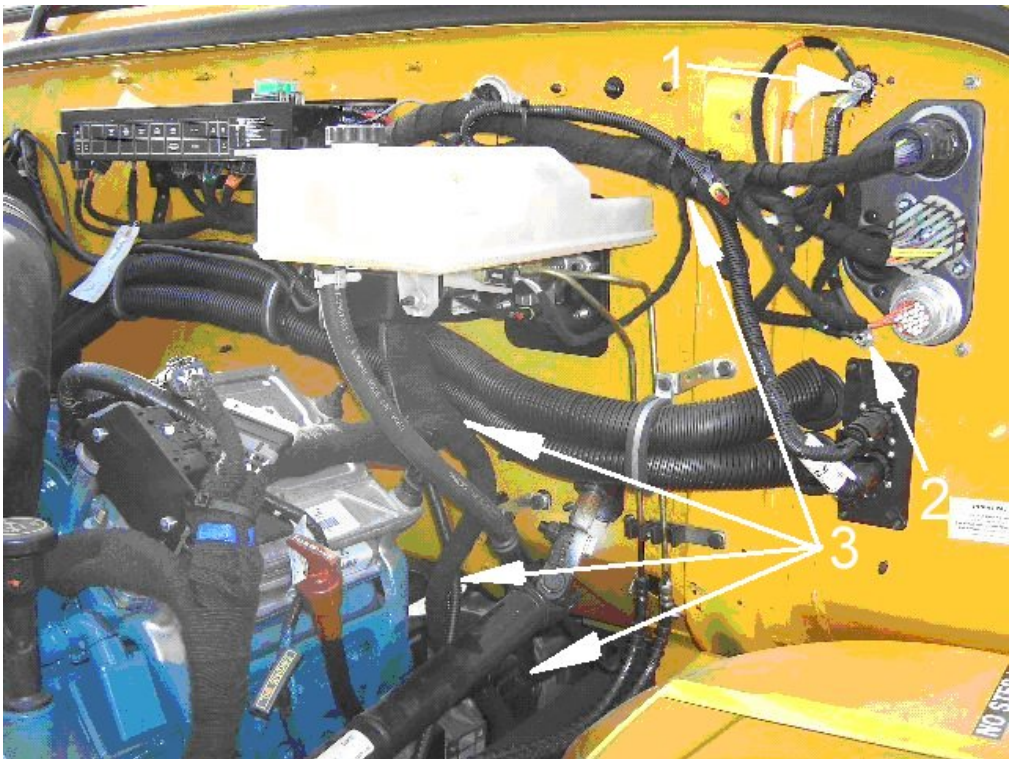


Figure 18
1. Ground Stud
2. Ground Stud
3. Areas Subject to Rubbing or Chafing

60. Repair and reroute the harness to prevent further wearing of the insulation.

61. Locate and inspect the ground studs shown in Figure 18 (Items 1 and 2). Ensure paint is sufficiently removed from cowl at base of ground stud for proper electrical connection.

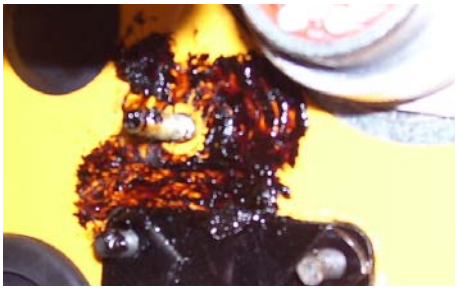


Figure 18a – Yellow Paint at Base of Ground Stud (Bad)

NOTE: When re-attaching ground studs, ensure stud nuts are tight and that there is sufficient grafo grease on the studs and eyelets to protect the connections from corrosion.

62. Locate the starter motor B+ stud and make sure stud nut and connections are tight.

Relocate the Wabco ECU Ignition Circuit (Vehicles Built before 8/30/04)

63. Verify that vehicle was built before 8/30/04. If built after this date proceed to Separate Pump One and Two Ground Feeds.

64. Open the electrical access door below the driver's side window.

65. In the chassis fuse block (left side of panel) verify that there is a 5amp fuse in location F12 and that location F25 is empty as shown in Figure 19.

Figure 19 - Chassis Fuse Block
1. Fuse Block Location F12 with 5 Amp Fuse
2. Fuse Block Location F25 (Empty)

66. Remove the two flange head nuts at either end of the fuse block.

67. From the backside of the fuse block move circuit A90E (gray wire) from cavity F12-B to F25-B. Figure 20 shows circuit A90E after it was moved to F25-B.

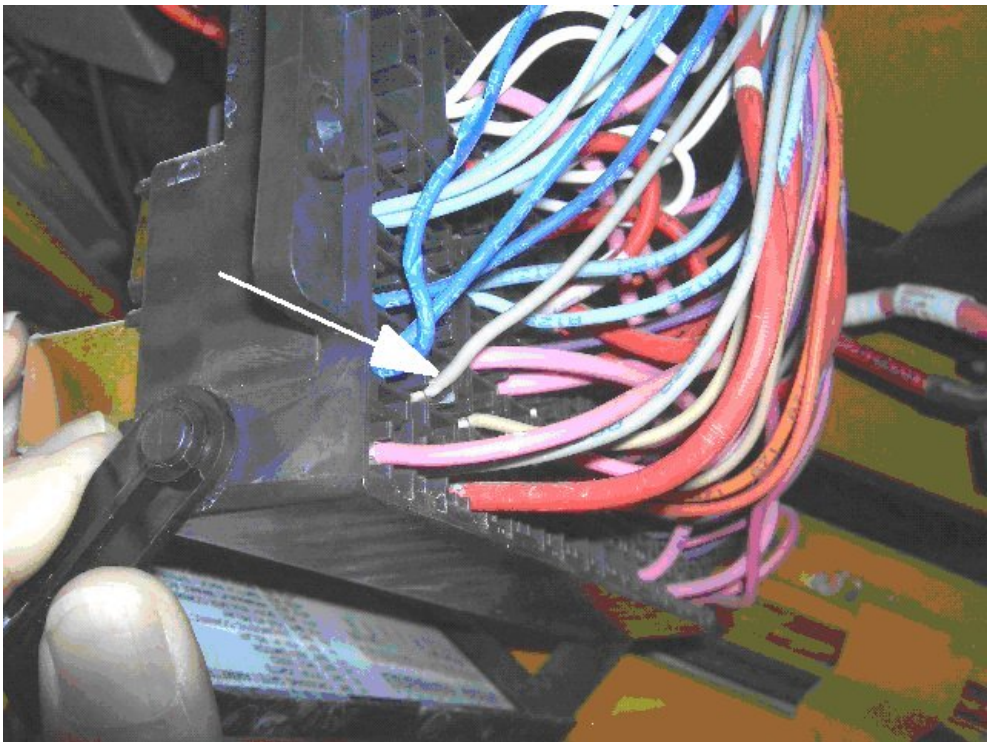


Figure 20 - Circuit A90E Shown in Cavity F25-B (Arrow)

68. Move the fuse from F12 to F25.

69. Remount the fuse block to the side panel, being sure not to pinch any wires.

Separate Pump One and Two Ground Feeds (I-6 Engines Only)

70. Locate the two ground studs on the driver's side of the engine bulkhead shown in Figure 18.

71. Locate the eyelet with circuits 94-GD and 90-G combined on the upper stud. Harness should have orange tape near the end.

72. Remove the eyelet from the upper ground stud and relocate to the lower ground stud.

73. Reconnect the negative battery cable at the battery box.

ESC Re-Flash (Vehicles Built 3/17/2004 thru 2/13/2006)

74. Refer to the *Diamond Logic® Builder Software User's Manual Dealer (Level 2)* for full instructions on the proper procedure for re-flashing the vehicle's ESC.
    - Refer to Section 14, Page 92 – *How do I program a vehicle?*
    - Click on this link for a PDF file of the user's manual:

    http://service.navistar.com/bodybuilder/general/training/DLB_PDF_Index.pdf

75. Ensure vehicle has latest ESC software revision. Update to most current revision.

Brake ECU Re-Flash (Vehicles Built 3/17/2004 thru 4/26/2006)

76. Before performing the Wabco Brake ECU re-flash, determine if vehicle's gauge cluster contains an ammeter.

Figure 21 – This example does *not* have an ammeter

77. If a vehicle is equipped with an ammeter, please remove its fuse (F4) from the chassis fuse block before continuing with this procedure.

78. Install the USB IC4 Adapter cable into your EZ-Tech or laptop computer and into the vehicle's 9-pin Diagnostic Connector.

79. Select and run the *HPB Programmer*.

Figure 22

80. Ensure that the IC4 USB is selected.

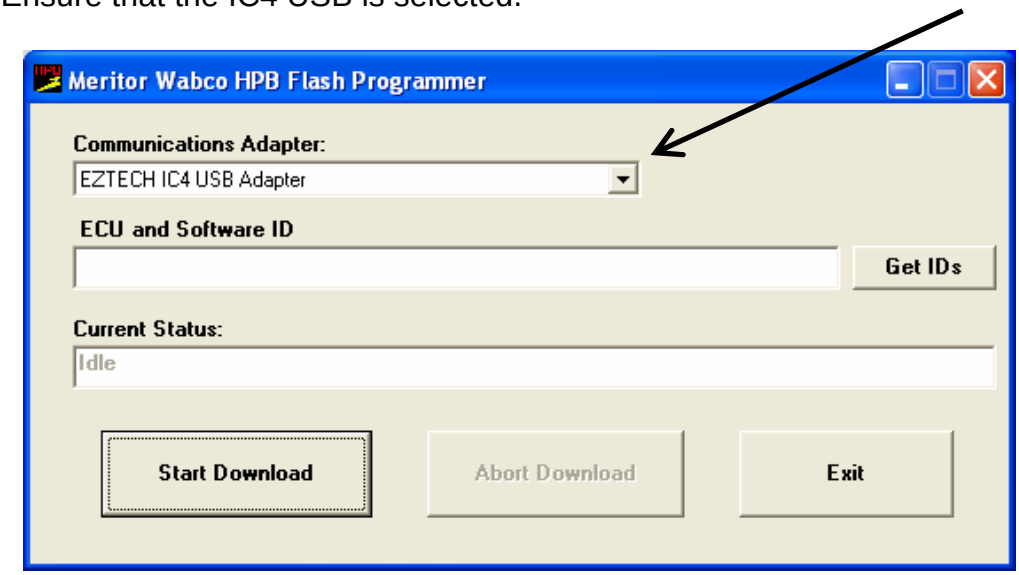


Figure 23

81. Once the *IC4 USB Adapter* is selected, press *Start Download.*

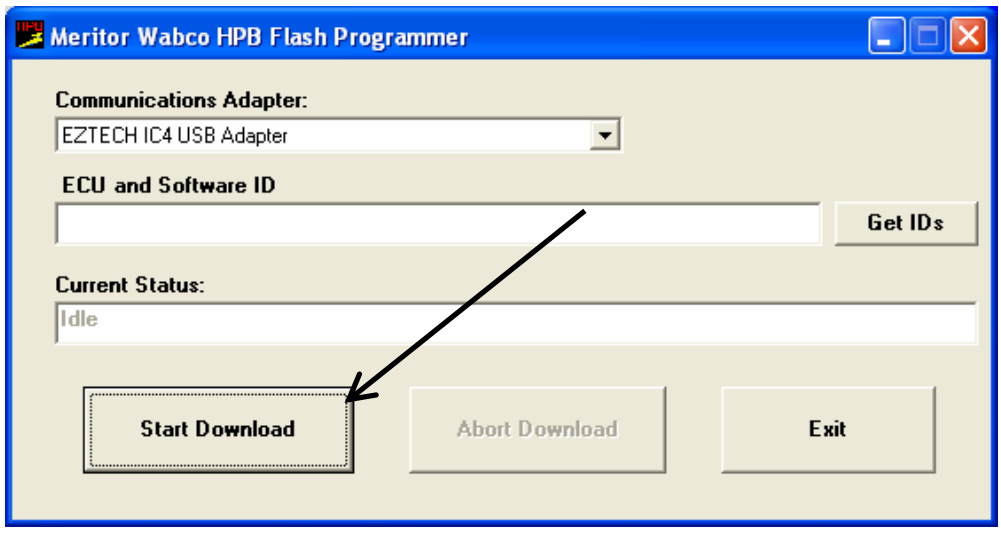


Figure 24

82. Following the on-screen instructions, with the ignition **OFF**, and brake pedal released, press *OK.*

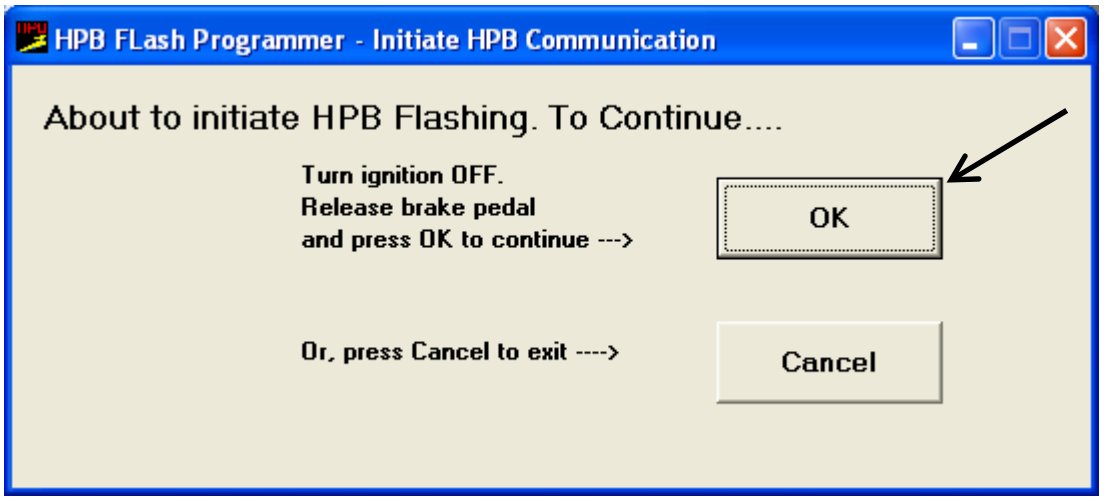


Figure 25

83. To initiate the ECU re-flash, depress and ***HOLD BRAKE PEDAL*** during entire process.

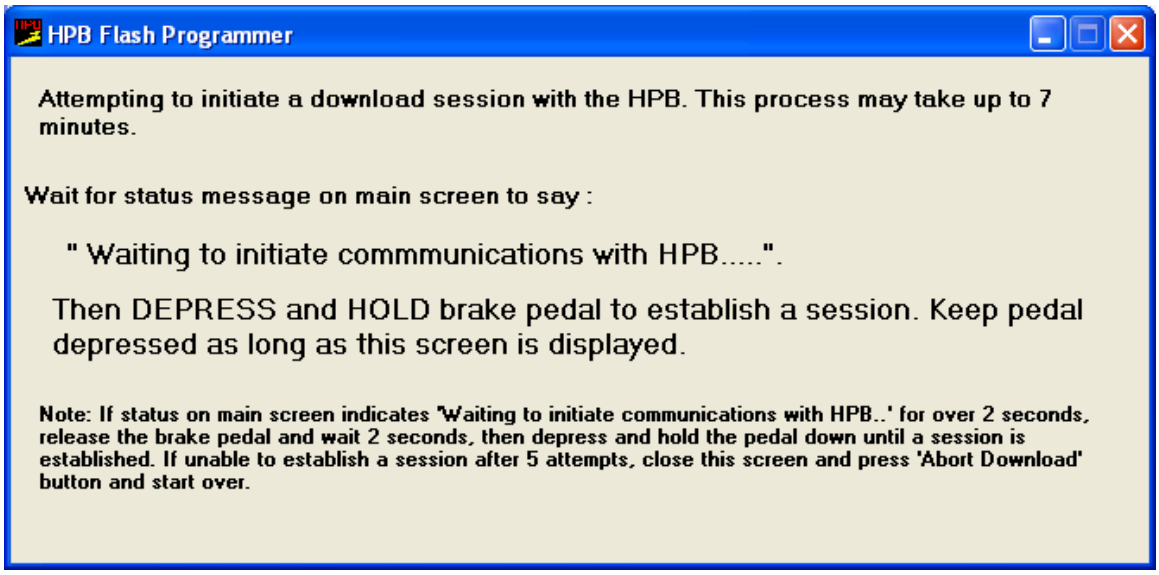


Figure 26 – Depress and HOLD Brake Pedal

NOTE: Keep brake pedal depressed throughout entire re-flash process or you will need to start the re-flash process over.

84. When the re-flash is complete, the following screen is displayed.
    - Release the brake pedal.
    - Wait three (3) seconds.
    - Re-apply brake pedal.

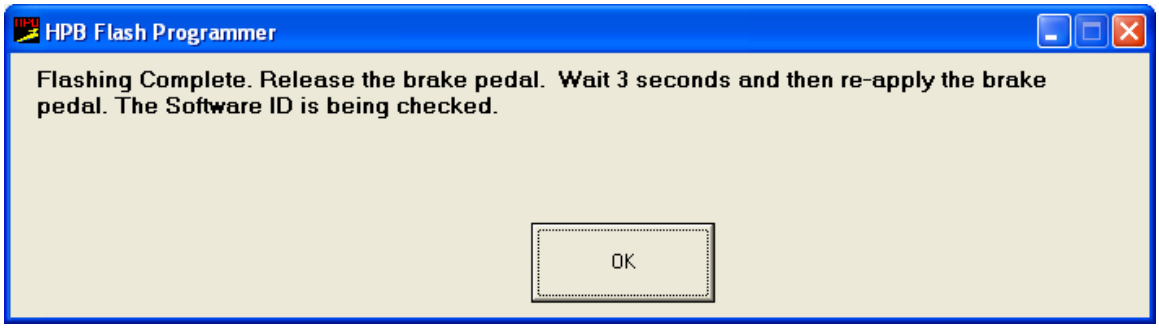


Figure 27

85. Ensure the Software ID is: **HEAB0007.**

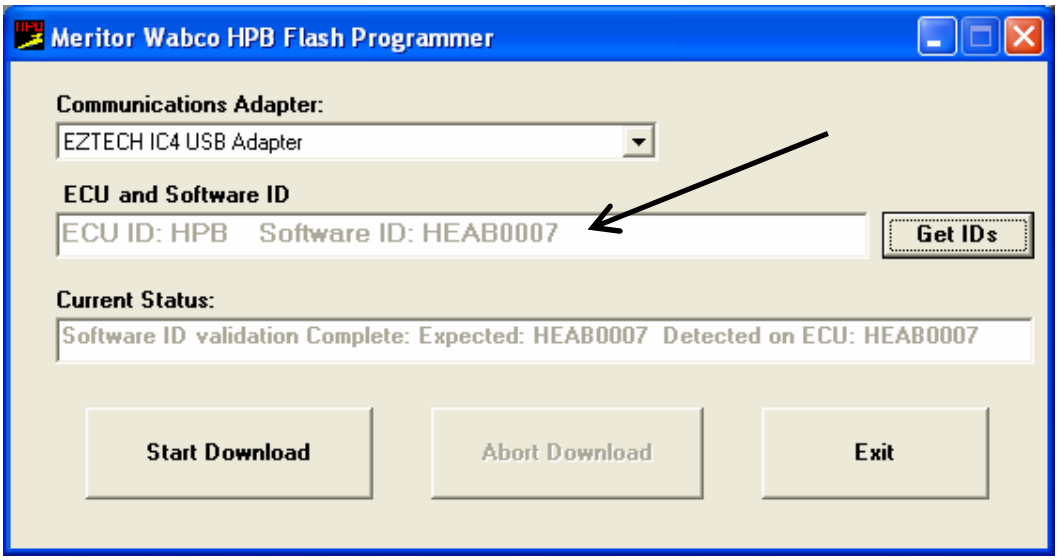


Figure 28

86. Brake ECU is now re-flashed. Press *OK*, close the HPB Programmer and continue to Step 87.

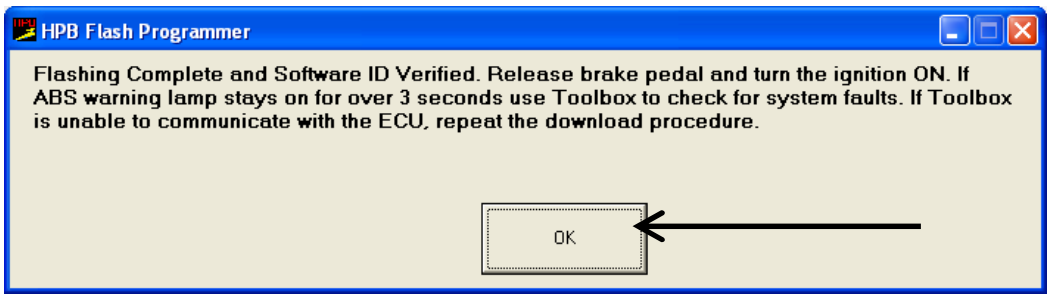


Figure 29

Clear Brake System Fault Codes

87. Select and run the *Meritor Wabco PC Diagnostics.*

Figure 30

88. Click *System Setup*, and select *COM PORT.*

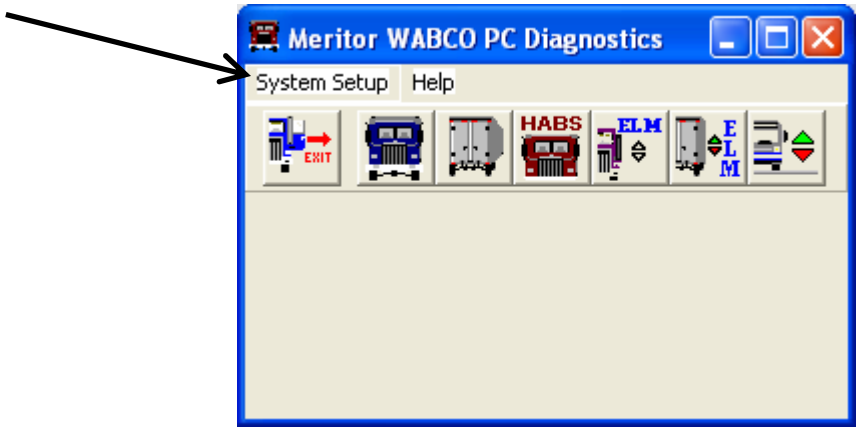


Figure 31

89. Ensure the IC4 Interface Device is selected and Protocol is set to J1708. Select *OK*

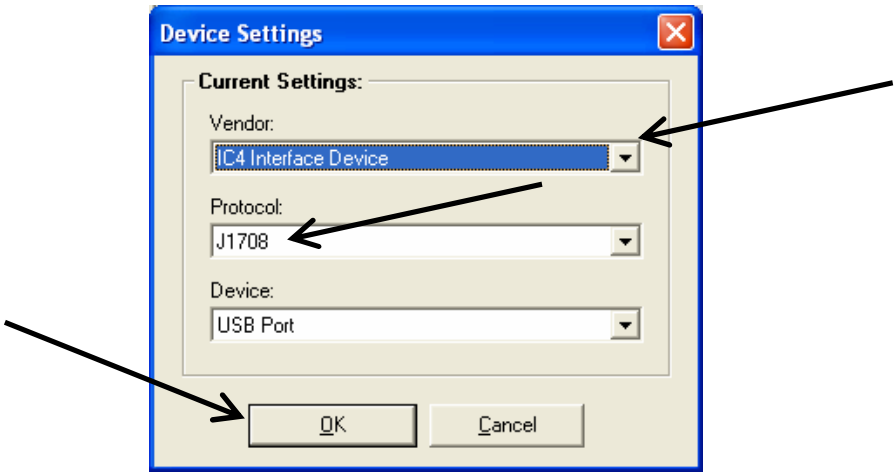


Figure 32

90. Turn the ignition to the “ON” position. Do not start the vehicle.

91. Select the *HABS* icon.

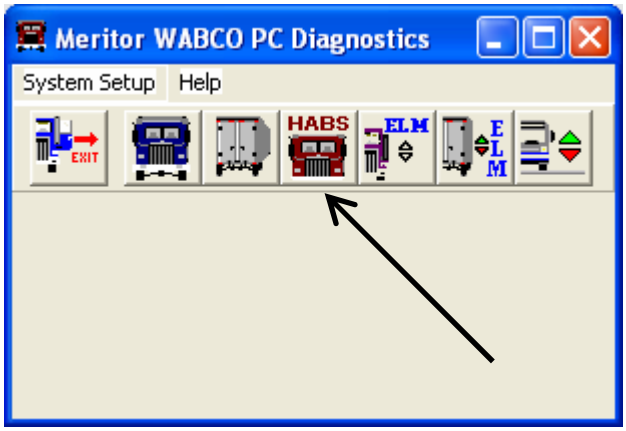


Figure 33

92. Verify the software revision level is **HEAB0007.**

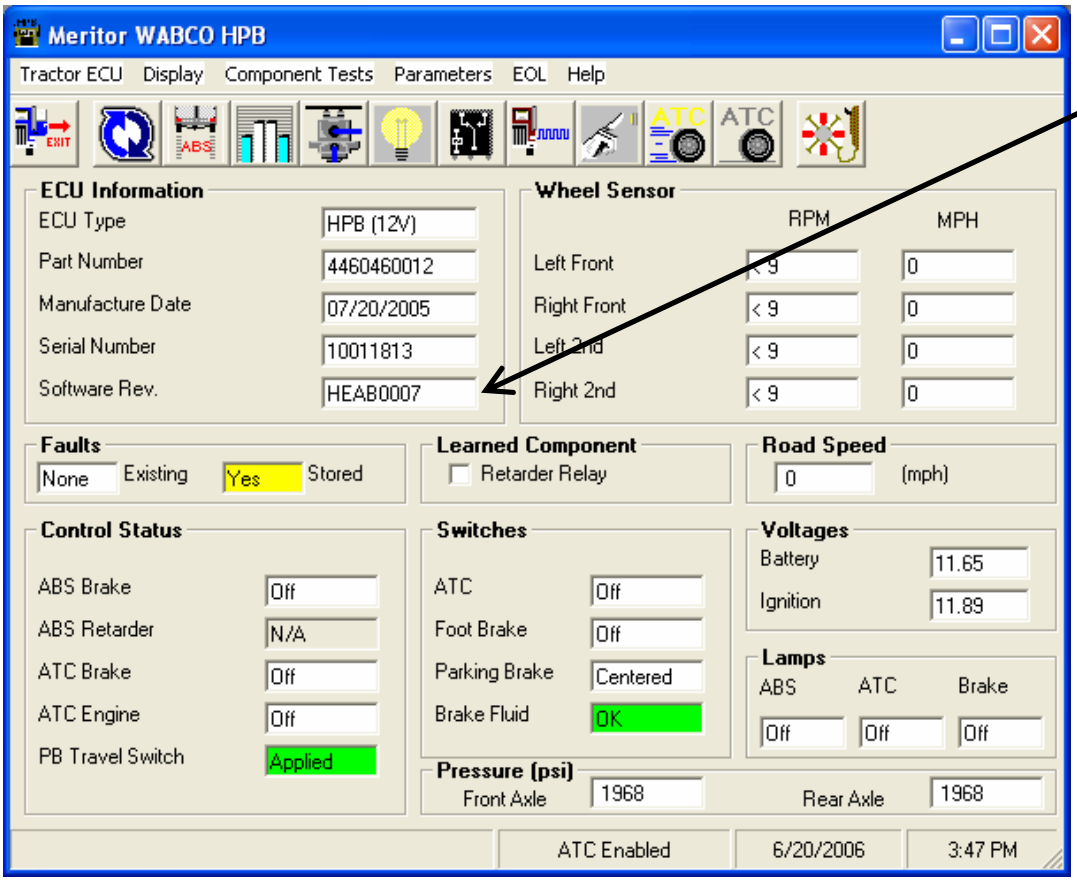


Figure 34

93. Open *DISPLAY*, then select *FAULTS.*

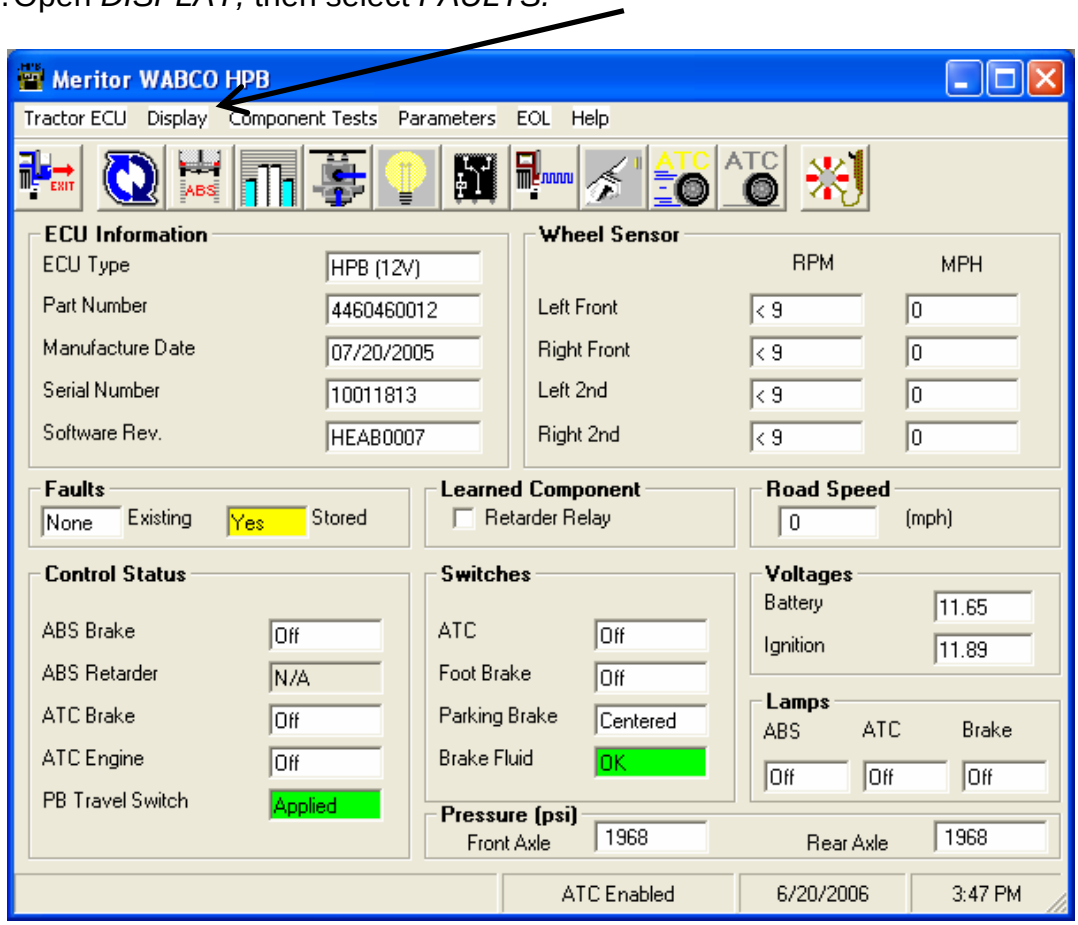


Figure 35

94. Press *CLEAR FAULTS.*

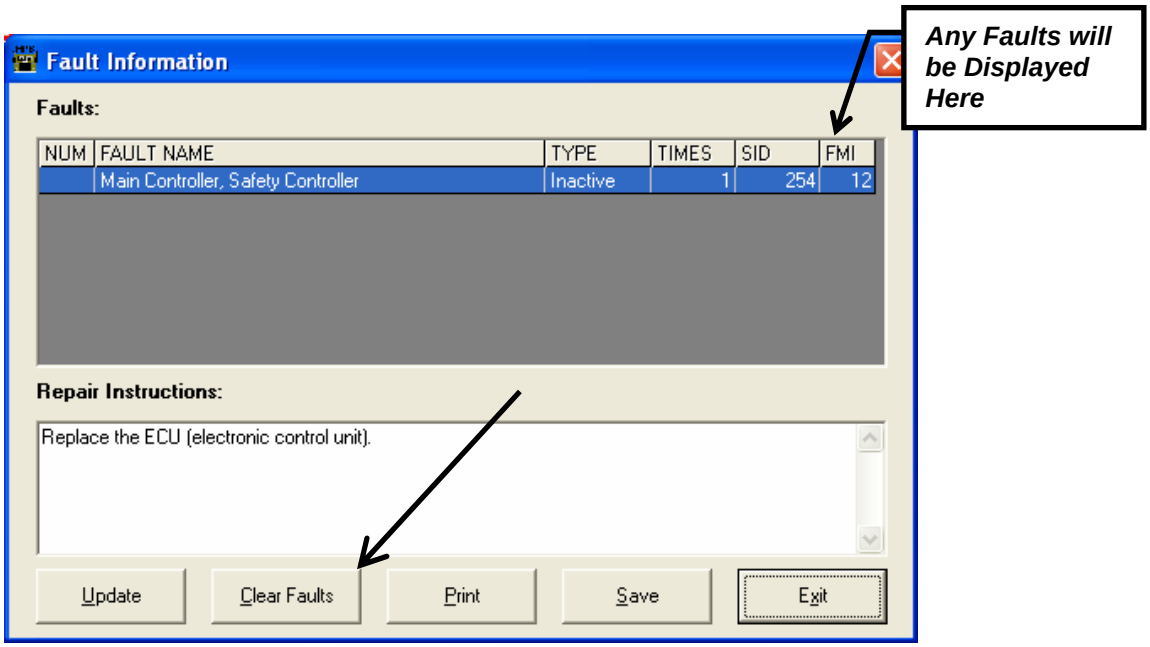


Figure 36

95. Once fault codes are cleared, press *EXIT* and close program.

96. Turn ignition ‘OFF.’

97. Disconnect IC4 USB cable from vehicle.

98. If you removed the F4 fuse from the vehicle in step 77, replace it.

99. Check brakes for proper operation.

END OF SERVICE PROCEDURE

LABOR INFORMATION

Operation No.	Description	Time
A40-06504-1	***Replace Park Brake Switch, Install Separate Power Feed and Perform Inspection/Repair on Chassis and Connectors***	1.2 hr
A40-06504-2	***ADD ON FOR:*** ***Relocate Ignition Circuit*** ***(Only on Vehicles built 3/17/2004 thru 8/29/2004)***	0.2 hr
A40-06504-3	***ADD ON FOR:*** ***Separate Pump Grounds*** ***(Only on I-6 Engines)***	0.2 hr
A40-06504-4	***ADD ON FOR:*** ***Re-Flash Wabco Brake ECU*** ***(Only for Vehicles built 3/17/2004 thru 4/26/2006)***	0.3 hr
A40-06504-5	***ADD ON FOR:*** ***Re-Flash Vehicle Electronic System Controller (ESC)*** ***(Only for Vehicles built 3/17/2004 thru 2/13/2006)***	0.3 hr

All vehicles require the labor operation **-1**.

Based on vehicle build date or engine type, you may need to add one orl more labor operations to the warranty claim.

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.

ADMINISTRATIVE/DEALER RESPONSIBILITIES (U.S. & POSSESSIONS)

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 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.

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.

However, consistent with the customer notification, dealers are expected to complete the repairs on the mutually agreed upon service date.

To avoid having to replace an owner vehicle or refund the purchase price, every effort must be made to promptly schedule an appointment with each owner to repair his or her vehicle as soon as possible.

During the recall process, a listing of owner names and addresses will be furnished to the involved dealers to enable dealers to follow up with owners and have the vehicles corrected. You must limit the use of this listing 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.

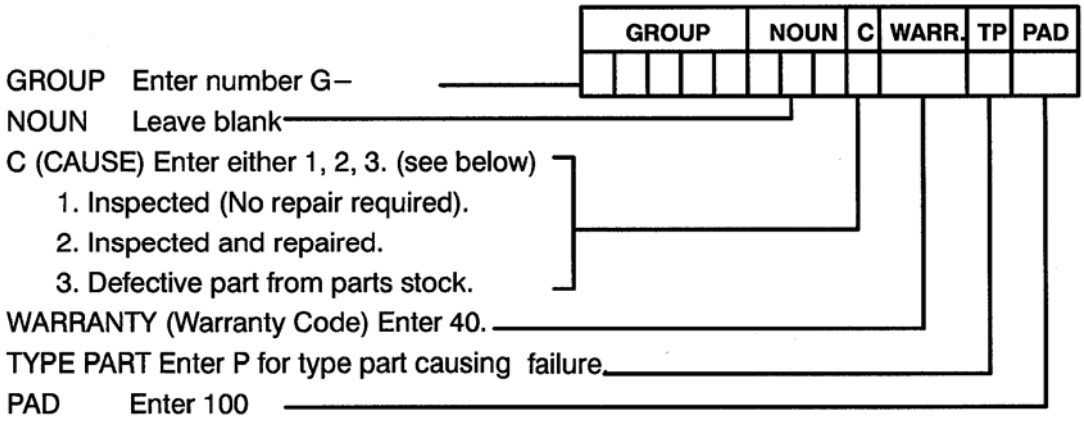
POSSIBLE CUSTOMER REIMBURSEMENT

There may be an occasion when a customer was charged for repairs related to this Recall prior to the Recall being released. The customer letter contains a statement for the customer to contact the Dealer if they believe they are entitled to reimbursement costs. The Dealer should follow the Customer Reimbursement guidelines in Warranty Policy Letter 03-001G. The Warranty Procedures and Administrative Policies manual (CTS1100) is in the process of being updated to include the information in Policy Letter 03-001G.

WARRANTY CLAIMS

Refer to Dealer Warranty Manual for procedures to conduct Recall Campaigns.

It is important that the Recall Coding be completed properly to assist in processing the warranty claim. Complete instructions will be found in the Warranty Manual, Section 7-1. Special attention should be given to Items 39 through 44:



ADMINISTRATIVE/DISTRIBUTOR RESPONSIBILITY (EXPORT)

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 from your distributor location.

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

We ask for your full cooperation and follow-up to this important subject matter. If you have any questions or need further assistance, please contact the Regional Service Manager at your regional office.

INTERNATIONAL TRUCK AND ENGINE CORPORATION