NAVISTAR®

# FIELD SERVICE CAMPAIGN – 22107

11 May 2022

**SUBJECT:**
Auto Neutral

**MODELS INVOLVED:**
International® HX® Series Trucks with Allison® transmission only

**DEFECT DESCRIPTION:**
Certain International® HX® Series trucks may have been built with the wrong feature code resulting in an inoperative auto neutral feature.

**ELIGIBILITY:**
This procedure applies ONLY to vehicles marked in the International® Service Portal℠ with FSC 22107. Also complete any other open campaigns listed on the Service Portal at this time.

**TOOLS REQUIRED:**

| Description | Tool Number |
|---|---|
| Battery Charger 55 Amp | PSC550CC |
| EZ-Tech® or EST with Allison® DOC® installed Software with programming rights | N/A |
| EZ-Tech® or EST with Diamond Logic® Builder Software with programming rights | N/A |
| Interface cable RP1210B-compliant supporting J1939 supporting 500k | N/A |
| Terminal Crimping Tool 14-24 AWG | Locally Sourced |
| Wire Stripper, 22 to 10 AWG | |
| Diagonal Cutting Pliers | |

**Table 1** Tools Information

**PARTS REQUIRED:**

| Part Number | Description | Quantity |
|---|---|---|
| 476074C1 | Nut, Battery Terminal 3/8-inch UNC (One Time Use) | 1 |
| 3571998C1 | Relay, General Control | 1 |
| 3522073C1 | Terminal, Elect, Cable Female M | 1 |
| 3613771C1 | Terminal, F Terminal | 1 |

 

| | | |
|---|---|---|
| 3768003C1 | Terminal, F Terminal | 2 |
| 3768007C1 | Terminal, F Terminal | 2 |
| 1661875C1 | Terminal, Elect, Fuse Panel, Cable Female Sealed | 2 |
| 3568570C1 | Plug, Sealing Cable WHITE | 2 |
| 4057689C4 | Housing, Switch, 6 Package Din Multiplex | 1 (As Needed) |
| 3766052C1 | Switch, Blank Plug | 5 (As Needed) |
| 4084815C1 | Light Indicator, Automatic Neutral | 1 |
| 3018266C1 | Tape, Polyken 277 | 1 (As Needed) |
| Locally Sourced | 18 AWG TAN TXL wire 130-inch long (3302 mm) | 1 |
| Locally Sourced | 18 AWG GREEN TXL wire 130-inch long (3302 mm) | 1 |
| Locally Sourced | 18 AWG RED TXL wire 87-inch long (2210 mm) | 1 |
| Locally Sourced | 18 AWG WHITE TXL wire 12-inch long (305 mm) | 1 |
| Locally Sourced | Cable Tie Strap | As Needed |

**Table 2** Parts Information

 

## WORK INSTRUCTIONS

**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 both directions.**

**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, 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 before disconnecting any electrical components. Always connect the ground cable last.**

1. Park vehicle on level surface.
2. Shift transmission to Park or Neutral and set parking brake.
3. Turn ignition to Key OFF position.
4. Install wheel chocks.

 

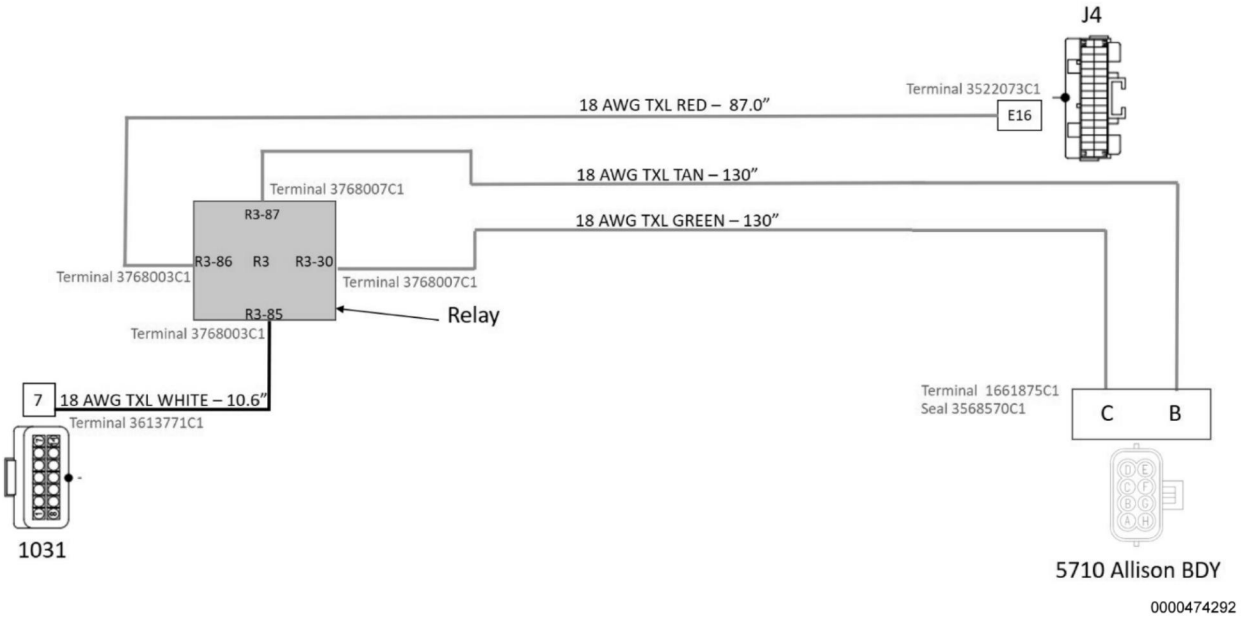


**Figure 1. HX Auto Neutral Overlay Harness Diagram**

5. Obtain and cut wire harness for procedure:

    - 18 AWG TAN TXL 130-inch length wire (3302 mm)
    - 18 AWG GREEN TXL 130-inch length wire (3302 mm)
    - 18 AWG RED TXL 87-inch length wire (2210 mm)
    - 18 AWG WHITE TXL 12-inch length wire (305 mm)

6. Using wire stripper, remove approximately 1/4-inch (64 mm) of insulation at each end of precut wire.

 


**Figure 2. 18 AWG TAN TXL 130-inch (3302 mm) Wire**

1. 3768007C1 cable terminal

7. Starting at one end of the 18 AWG TAN TXL 130-inch (3302 mm) wire, insert end of wire into barrel of cable terminal (Figure 2, Item 1).

**NOTE: Confirm proper crimping is performed on all terminals.**

8. Using crimping tool, crimp terminal to wire end.

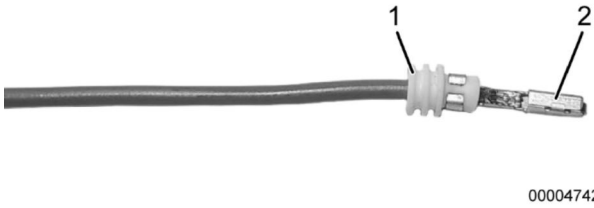


**Figure 3. 18 AWG TAN TXL 130-inch (3302 mm) Wire – Opposite End**

1. 3568570C1 cable terminal seal
2. 1661875C1 cable terminal

9. At the opposite end of 18 AWG TAN TXL 130-inch (3302 mm) wire, insert cable terminal seal (Figure 3, Item 1) over 18 AWG TAN TXL 130-inch (3302 mm) wire.

10. Insert exposed portion of 18 AWG TAN TXL 130-inch (3302 mm) wire into barrel of cable terminal (Figure 3, Item 2).

**NOTE: Confirm proper crimping is performed on all terminals.**

11. Using crimping tool, crimp terminal to wire end and cable terminal seal.

12. Repeat Step 7 through Step 11 for 18 AWG GREEN TXL 130-inch (3302 mm) length wire.

 


**Figure 4. 18 AWG RED TXL 87-inch (2210 mm) Wire**

1. 3768003C1 cable terminal

13. Using cut 18 AWG RED TXL 87-inch (2210 mm) wire, insert end of wire into the barrel of cable terminal (Figure 4, Item 1).

**NOTE: Confirm proper crimping is performed on all terminals.**

14. Using crimping tool, crimp terminal to wire end.


**Figure 5. 18 AWG RED TXL 87-inch (2210 mm) Length Wire – Opposite End**

1. 3522073C1 cable terminal

15. At opposite end of 18 AWG RED TXL 87-inch (2210 mm) wire, insert end of wire into barrel of cable terminal (Figure 5, Item 1).

**NOTE: Confirm proper crimping is performed on all terminals.**

16. Using crimping tool, crimp terminal to wire end.

 


**Figure 6. 18 AWG WHITE TXL 12-inch (305 mm) Wire**

1. 3613771C1 cable terminal

17. Using cut 18 AWG WHITE TXL 12-inch (305 mm) wire, insert end of wire into barrel of cable terminal (Figure 6, Item 1).

**NOTE: Confirm proper crimping is performed on all terminals.**

18. Using crimping tool, crimp terminal to wire end.


**Figure 7. 18 AWG WHITE TXL 12-inch (305 mm) Length Wire – Opposite End**

1. 3768003C1 cable terminal

19. At opposite end of 18 AWG WHITE TXL 12-inch (305 mm) wire, insert end of wire into barrel of cable terminal (Figure 7, Item 1).

**NOTE: Confirm proper crimping is performed on all terminals.**

20. Using crimping tool, crimp terminal to wire end.

**NOTE: Loom wires 10 inches away from all cable terminals on both ends of the wires.**

 

21. After creating overlay wires, loom the following wires together using wire loom tape:

    - 18 AWG TAN TXL 130-inch wire (3202 mm)
    - 16 AWG GREEN TXL 130-inch wire (3202 mm)
    - 18 AWG RED TXL 87-inch wire (2210 mm)

22. Disconnect and isolate negative battery cable on main vehicle battery. Discard battery terminal nut.

23. Unlatch and open hood.

 

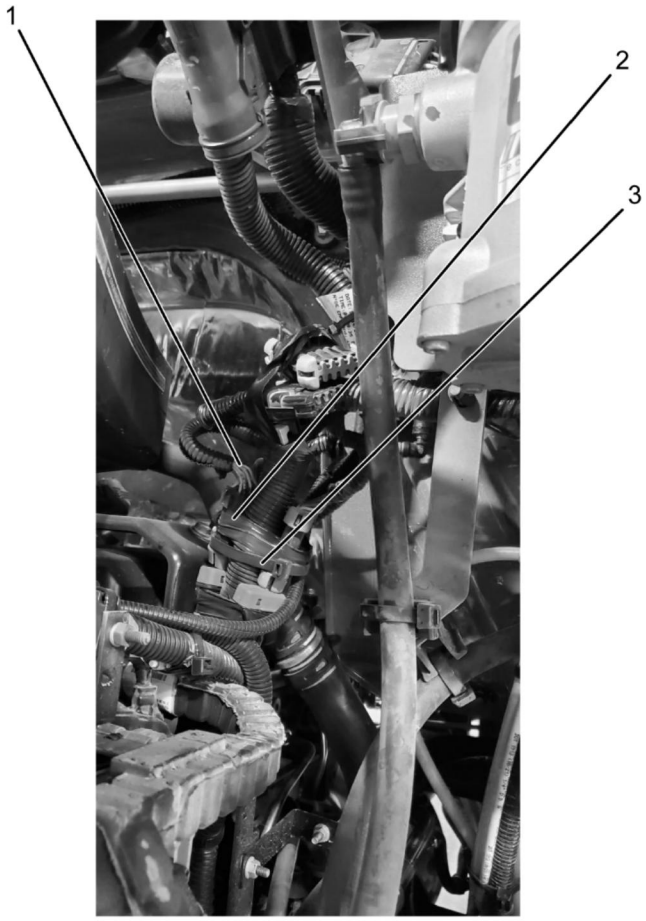


**Figure 8. Connector 5711 8-way connector – Allison® Body Builder**

1. Connector 5711 harness
2. Connector 5711 8-way connector – Allison® Body Builder
3. Cable tie strap

24. Obtain access to connector 5711 harness (Figure 8, Item 1) located in driver-side engine compartment.

25. Cut cable tie strap (Figure 8, Item 3).

**CAUTION: To prevent damage to property, use caution when removing connector harness insulation and / or wire loom tape to prevent damage to wires.**

 

26. Carefully remove connector 5711 harness insulation and / or electrical tape to expose wiring harness of connector 5711 (Figure 8, Item 2).

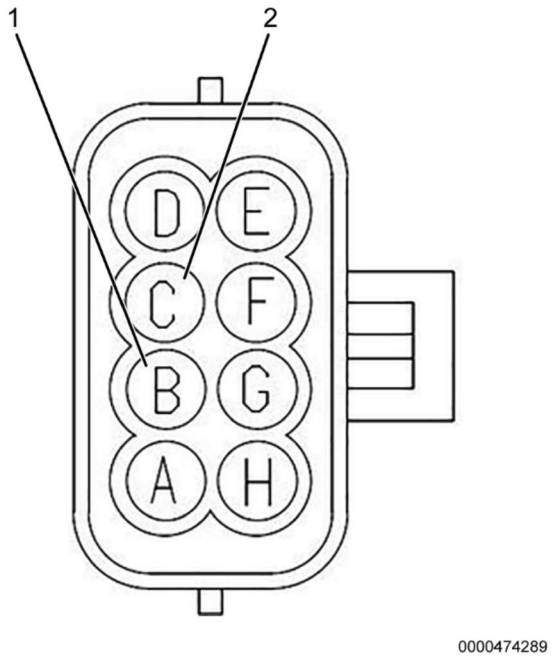


**Figure 9. Connector 5711 8-way connector – Allison® Body Builder**

1. Cavity B
2. Cavity C

27. Confirm if correct Allison® BDY connector 5711 has been identified:

- Locate wire K02-092#117B from cavity B (Figure 9, Item 1).
- Locate wire K02-092#103C from cavity C (Figure 9, Item 2).

 

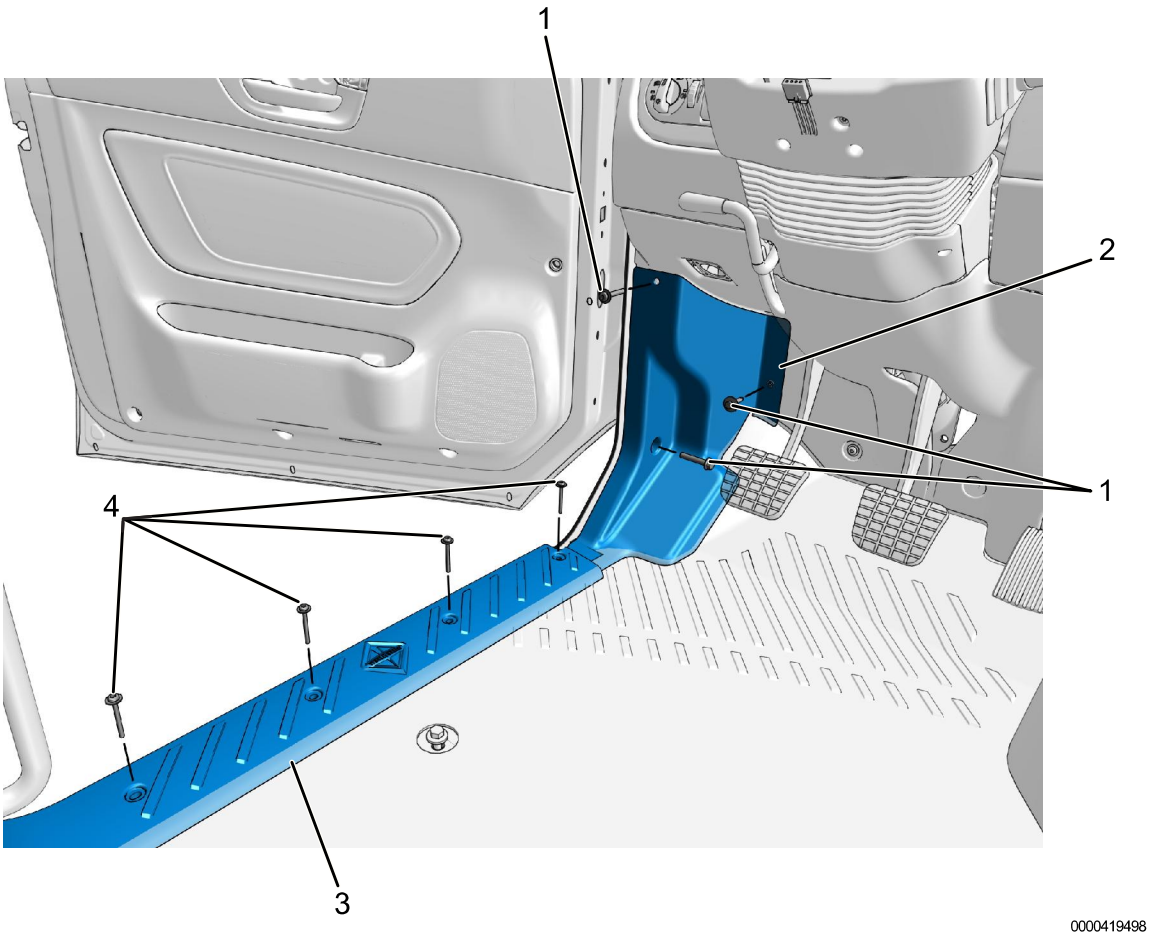


**Figure 10. Driver Side Scuff Plate and Kick Panel**

1. Kick panel bolt and screw (3)
2. Kick panel
3. Scuff plate
4. Scuff plate screw (4)

**CAUTION: To prevent damage to property, use caution when removing connector harness insultation and / or wire loom tape to prevent damage to wires.**

28. Remove scuff plate screws (Figure 10, Item 4). Save screws for reuse.

29. Remove scuff plate (Figure 10, Item 3).

30. Remove kick panel bolts and screw (Figure 10, Item 1). Save screw and bolts for reuse.

 

31. Remove kick panel (Figure 10, Item 2).

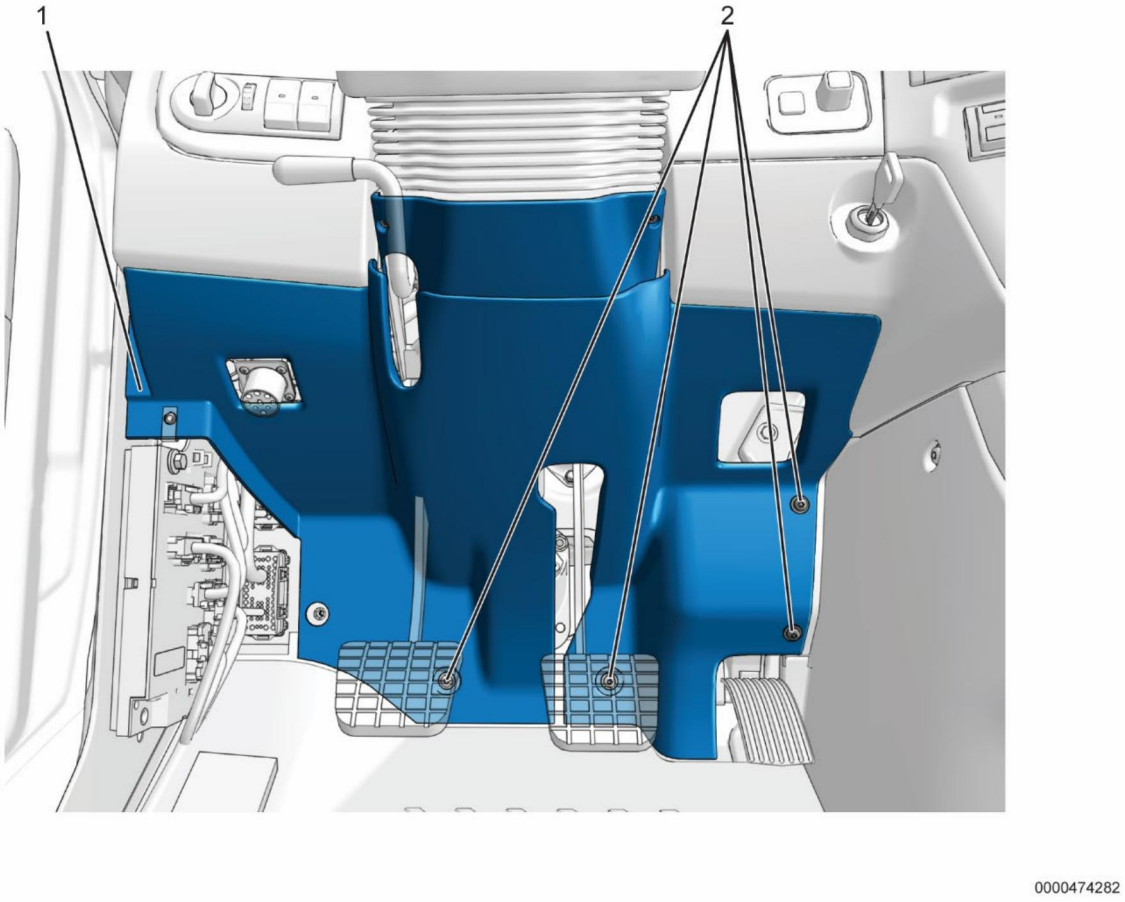


**Figure 11. Driver-Side Lower Covers**

1. Lower dash panel cover
2. Lower dash panel cover screws

32. Remove lower dash panel cover screws (Figure 11, Item 2). Save screws for reuse.

33. Remove lower dash panel cover (Figure 11, Item 1).

 


**Figure 12. Side Panel Trim (Wing Panel)**

1. Center dash bezel

34. Disengage and remove center dash bezel (Figure 12, Item 1).

 

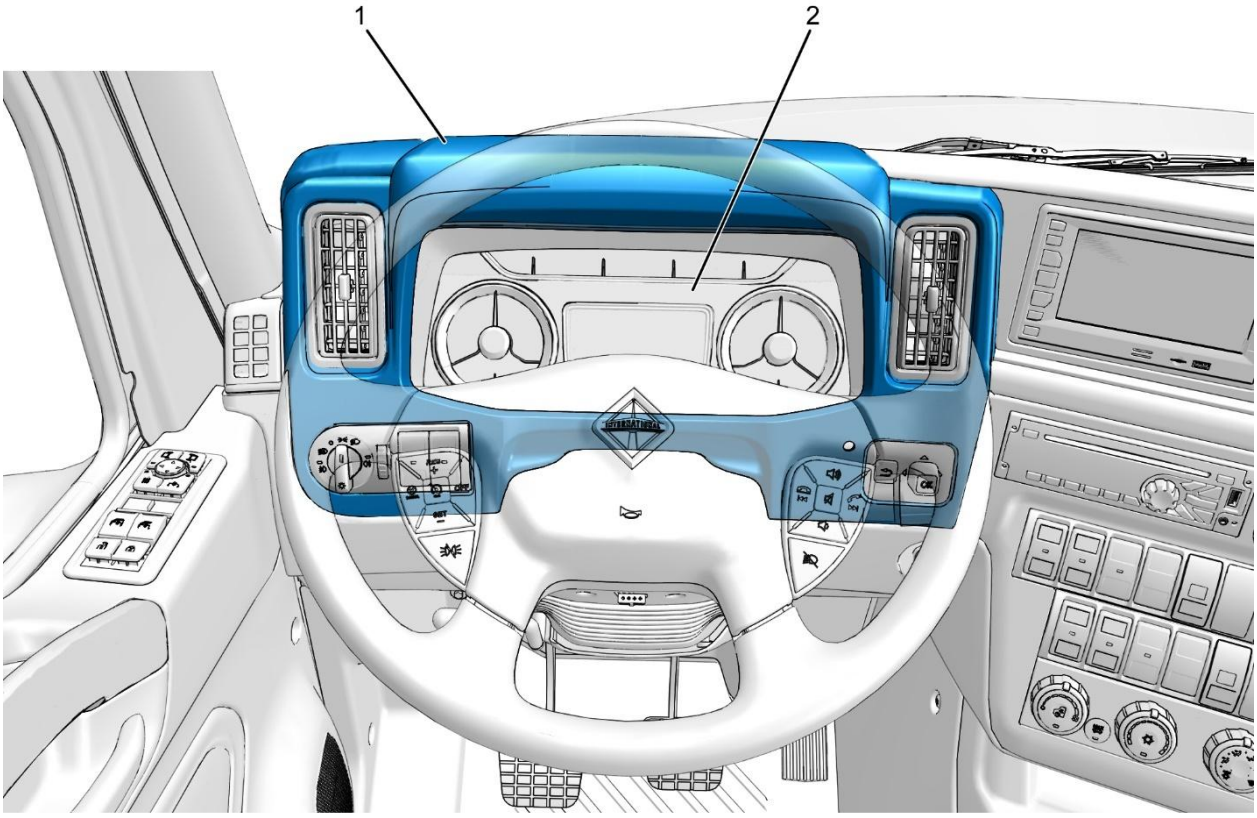


**Figure 13. Electronic Gauge Cluster (EGC) Bezel**

1. EGC bezel
2. Gauge cluster

35. Disengage and remove EGC bezel (Figure 13, Item 1).

36. Remove gauge cluster screws. Save screws for reuse.

37. Disconnect and remove gauge cluster (Figure 13, Item 2).

 


**Figure 14. Center Instrument Cluster Bezel Bolt**

1. Center instrument trim bezel bolt

38. Remove auxiliary gauge trim bezel bolt (Figure 14, Item 1). Save bolt for reuse.

 


**Figure 15. Center Instrument Cluster**

1. Center instrument cluster storage compartment
2. Center instrument cluster bezel

39. Disenage and remove center instrument cluster bezel (Figure 15, Item 2).

40. Remove center instrument cluster storage compartment bolts. Save bolts for reuse.

41. Remove center instrument cluster storage compartment (Figure 15, Item 1).

42. Remove Power Distribution Module (PDM) cover.

 

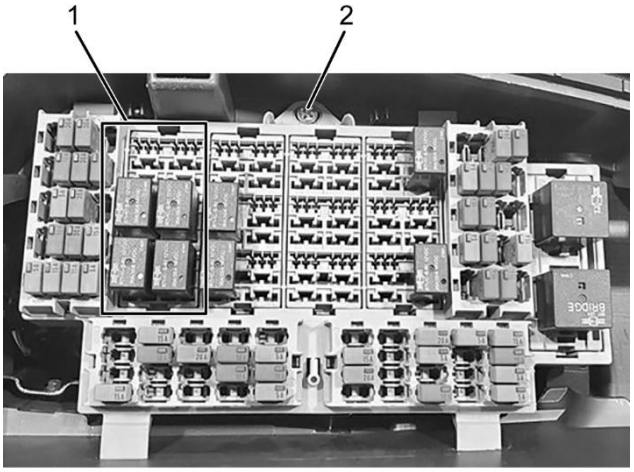


**Figure 16. In Cab PDM**

1. 1011 in cab PDM connector
2. Hold down bolt

43. Remove hold down bolt (Figure 16, Item 2). Save bolt for reuse.

44. Carefully remove cab PDM to access connector (Figure 16, Item 1).

45. Carefully remove connector 1011 in cab PDM.

46. Remove connector 1011 terminal lock. Save terminal lock for reuse.

 

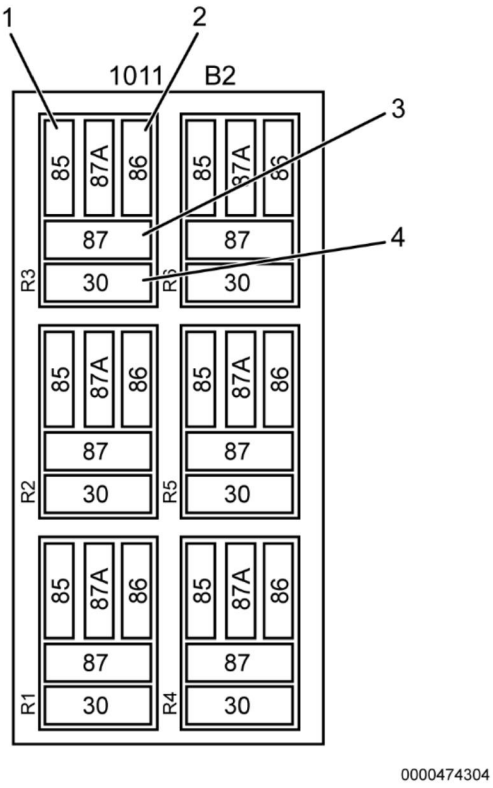


**Figure 17. Relay R3 of Connector 1011**

1. Cavity 85
2. Cavity 86
3. Cavity 87
4. Cavity 30

47. Populate preassembled wire 18 AWG WHITE TXL 12-inch (305 mm) wire terminal (Figure 7, Item 1) into cavity 85 (Figure 17, Item 1) of connector 1011.

48. Populate preassembled wire 18 AWH TAN TXL 130-inch (3302 mm) wire terminal (Figure 2, Item 1) into cavity 87 (Figure 17, Item 3) of connector 1011.

49. Populate preassembled wire 18 AWG GREEN TXL 130-inch (3302 mm) wire terminal (Figure 2, Item 1) into cavity 30 (Figure 17, Item 4) of connector 1011.

50. Populate preassembled wire 18 AWG RED TXL 87-inch (2210 mm) wire terminal (Figure 4, Item 1) into cavity 86 (Figure 17, Item 2) of connector 1011.

 

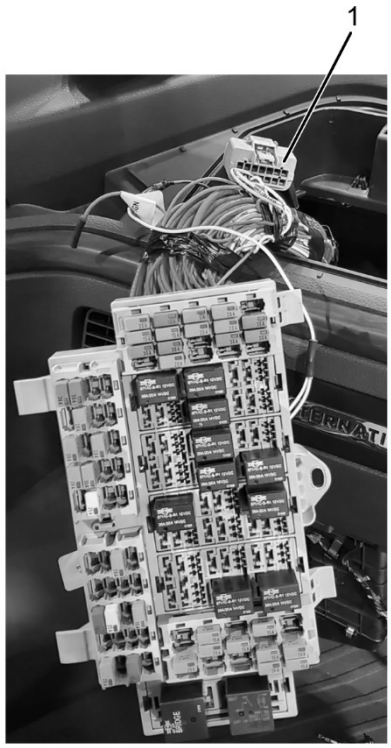


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**Figure 18. Ground Splice Pack**

1. Connector 1031

51. Disconnect connector 1031 (Figure 18, Item 1).

52. Remove connector 1031 terminal lock. Save terminal lock for reuse.

53. Populate opposite end of preassembled 18 AWG WHITE TXL 12-inch (305 mm) length wire terminal (Figure 6, Item 1) into cavity 7 of connector 1031.

54. Install terminal lock into connector 1031.

55. Reconnect connector 1031.

56. Using cable tie straps, secure preassembled 12-inch (305 mm) length wire to preexisting harness.

57. Install terminal lock into connector 1011.

58. Install connector 1011 into in cab PDM.

 

59. Install new relay (3571998C1) into R3 of connector 1011.

**NOTE: Secure overlay harness to existing harness with cable ties spaced 12 to 14 inches apart.**

60. Using fish tape or equivalent, route opposite end of overlay harness along existing dash harness to BCM and secure with cable tie straps.

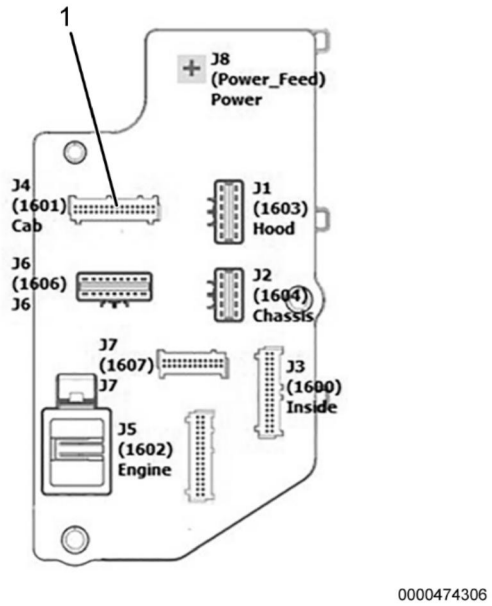


**Figure 19. Body Control Module (BCM)**

1. Connector J4

61. Disconnect BCM connector J4 (Figure 19, Item 1).

62. Remove connector J4 terminal lock. Save terminal lock for reuse.

 

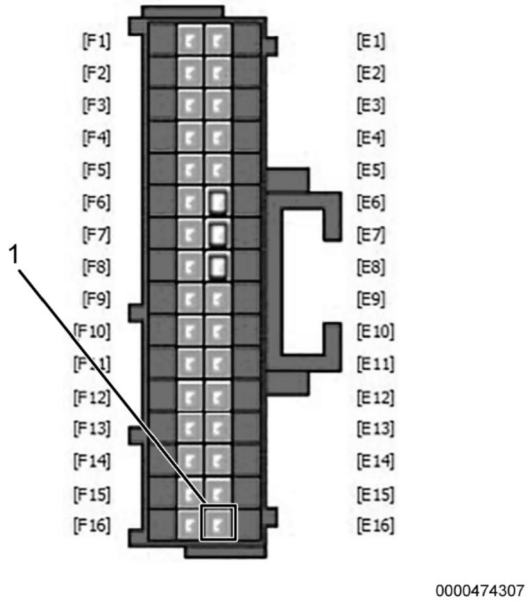


**Figure 20. Connector 1601-J4**

1. Cavity E16

63. Insert 18 AWG RED TXL 87-inch (2210 mm) length wire terminal (Figure 5, Item 1) into cavity E16 (Figure 20, Item 1) of connector J4.

64. Insert terminal lock into connector J4.

65. Install connector J4 into BCM.

 

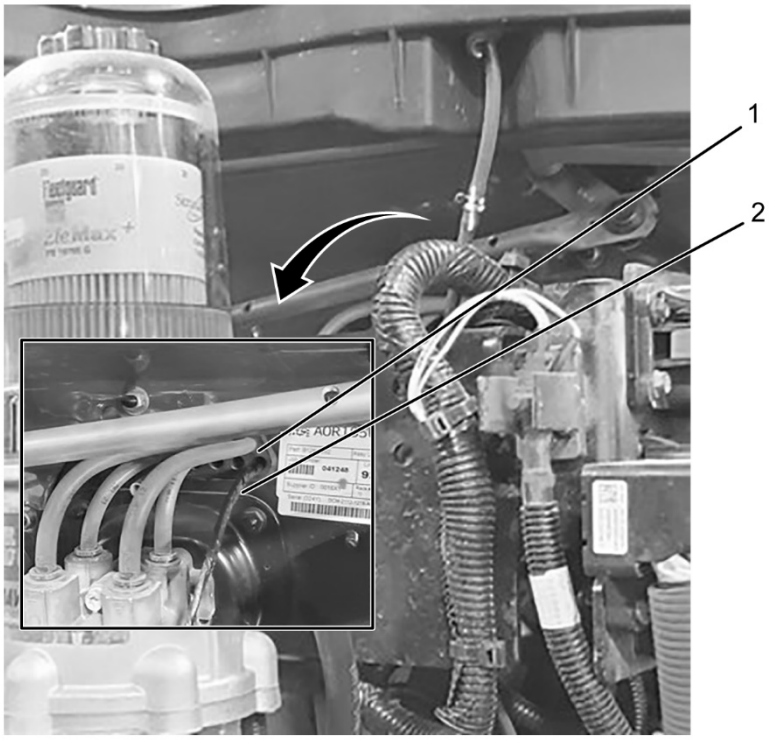


**Figure 21. Cab Bulkhead Seal**

1. Bulkhead rubber seal
2. 18 AWG TXL 130-inch (3302 mm) TAN and GREEN wires

66. Complete routing 18 AWG TXL 130-inch (3302 mm) TAN and GREEN wires (Figures 21, Item 2) to connector 5711, pass wires through the cab bulkhead rubber seal (Figure 21, Item 1).

 

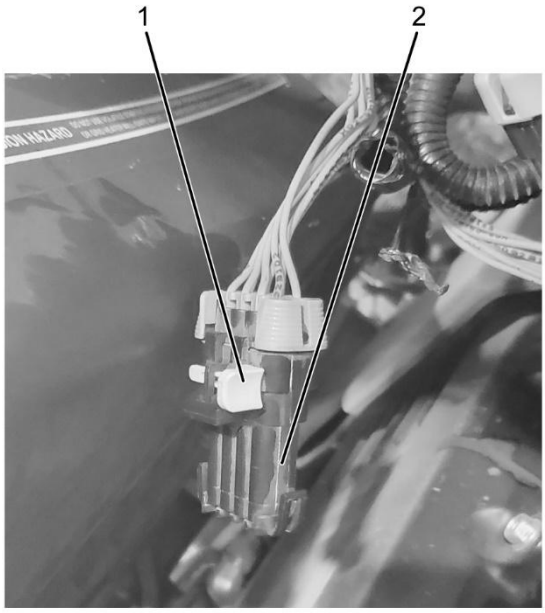


**Figure 22. 8-Way Connector – Allison® Body Builder**

1. Connector 5711
2. Connector 5710

67. Disconnect connector 5710 (Figure 22, Item 2) from connector 5711 (Figure 22, Item 1).

68. Remove connector 5710 terminal lock. Save terminal lock for reuse.

69. Remove cavity plug seals from cavity B and cavity C of connector 5710. Discard cavity plug seals.

70. Insert 18 AWG TXL TAN 130-inch (3302 mm) wire terminal (Figure 3, Item 1) into cavity B of connector 5710.

71. Insert 18 AWG TXL GREEN 130-inch (3302 mm) wire terminal (Figure 3, Item 1) into cavity C of connector 5710.

72. Insert terminal lock into connector 5710.

73. Install connector 5710 to connector 5711.

74. Using wire loom tape, loom exposed harness from connector 5711.

 

**NOTE: Secure overlay harness to existing harness with cable ties spaced 12 to 14 inches apart.**

75. Using cable tie straps, secure overlay harness to preexisting harness.

76. Secure body builder connectors with cable tie straps (Figure 8, Item 3).

77. Connect and install EGC. Torque screws to 6 lb-in (0.68 N•m).

78. Clean battery terminal with wire brush. Then clean with electrical contact cleaner and dry with shop air.

79. Apply BLUE dielectric grease to battery terminal stud, negative battery cable ring terminal, and threads of new battery stud nut.

80. Using new battery stud nut, reconnect negative battery cable to negative terminal on main vehicle battery and install new battery terminal nut.

81. Using torque wrench, tighten battery stud nut to 12-15 lb-ft (16 - 20 N•m).

82. Connect battery charger / maintainer to vehicle battery.

83. Using only compatible interface cables, connect EZ-Tech or EST to vehicle.

84. Turn vehicle ignition to Key ON, Engine OFF.

85. Launch Allison DOC® software.

 

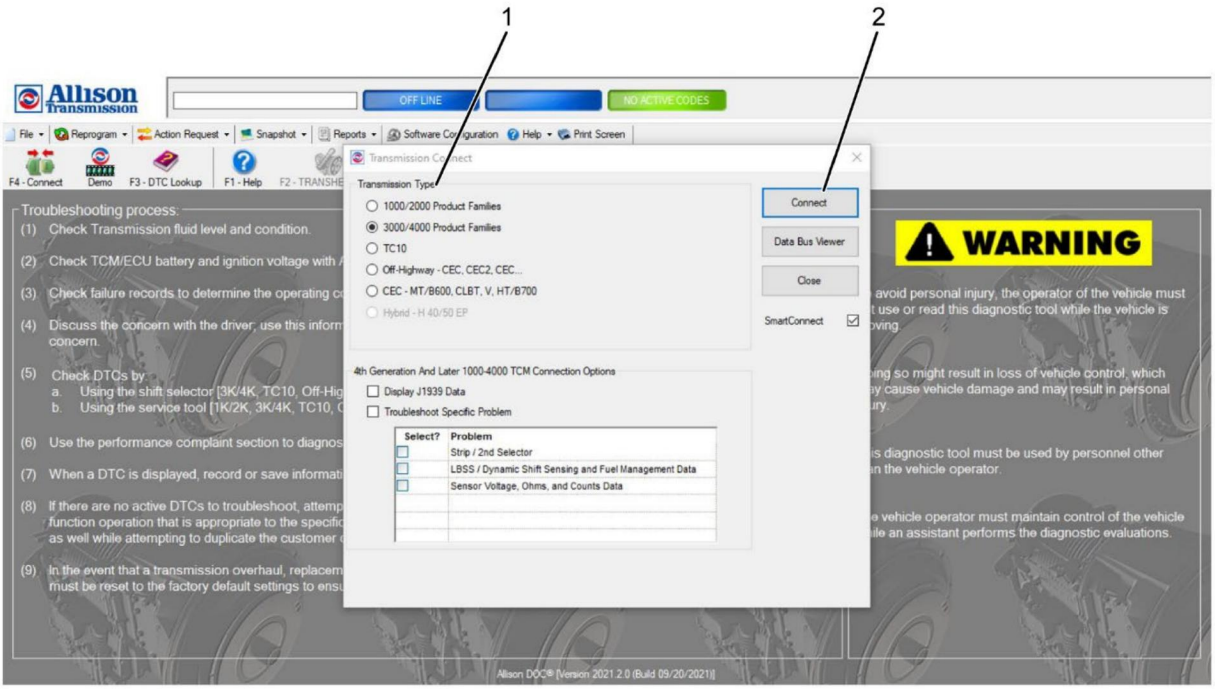


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**Figure 23. Allison® DOC® Navigation**

1. Transmission type
2. Connect

86. Select **Transmission Type** (Figure 23, Item 1) click **Connect** (Figure 23, Item 2).

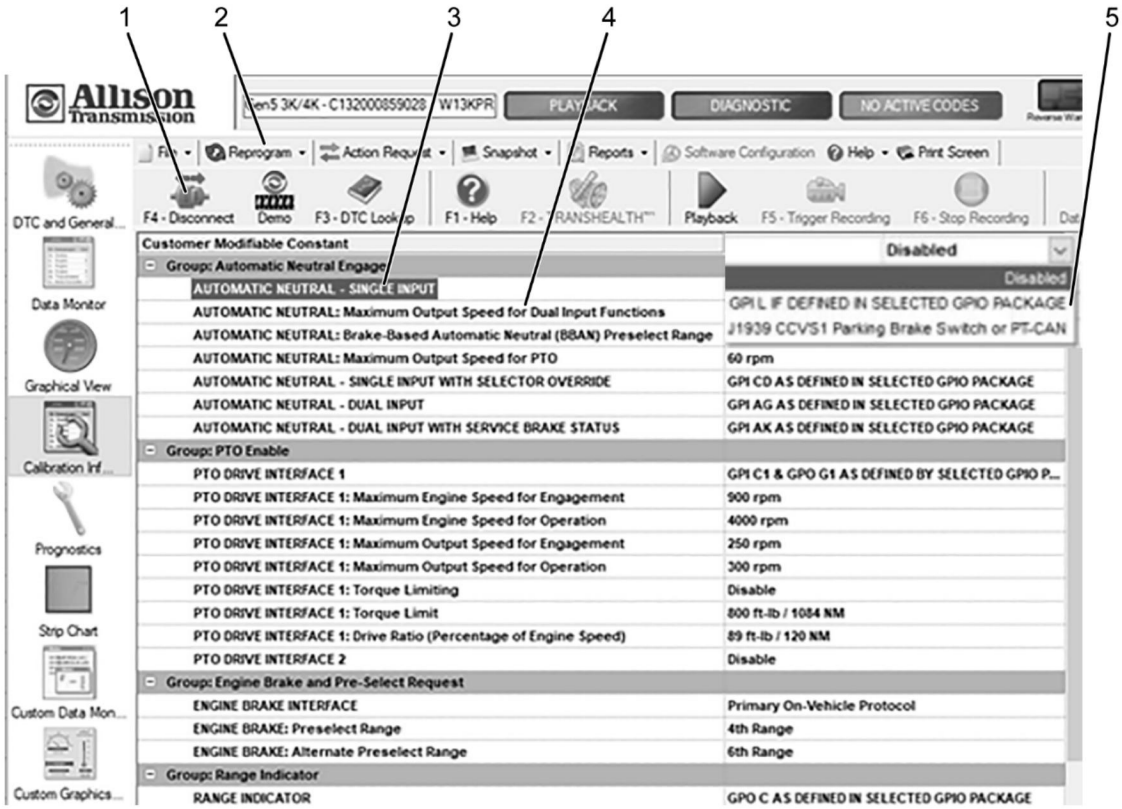



**Figure 24. Allison® DOC® Navigation**

1. Connection status
2. Reprogram
3. Group: Automatic Neutral Engage
4. Automation Neutral – Single Input parameter
5. Parameter value

87. Confirm Allison® DOC® software is connected to vehicle by looking at connection status (Figure 24, Item 1).

88. Select **Reprogram** tab (Figure 24, Item 2) located on top of screen.

89. Under Group: Automatic Neutral Engage (Figure 24, Item 3), search for Automatic Neutral-Single Input parameter (Figure 24, Item 4).

90. Select the arrow and from the drop-down menu select value 2 (GPI L if defined in selected GPI O package).

91. Select parameter then click **Reprogram TCM** tab.

92. Follow on-screen instructions.

**NOTE: Delete vehicle VIN from Diamond Logic® Builder (DLB) before proceeding. Deleting vehicles VIN enables DLB to be populated with vehicle latest BCM data.**

93. Connect compatible interface cables to the vehicle.

94. Launch DLB software and click **Select** tab.

95. Select correct VIN.

**NOTE: When there is a Campaign / eFix available on a VIN, a message will appear when VIN is selected.**

96. Click on **OK** icon to acknowledge Apply Campaign message.


**Figure 25. eFix Campaign**

1. Program tab
2. Campaign tab
3. Apply box
4. Apply Selected Campaign button

**NOTE: A technician should not apply the eFix if parts are not on hand and ready to install.**

97. Select **Campaign** button (Figure 25, Item 2).

98. Select **Apply** box (Figure 25, Item 3) to select campaign.

99. Select **Apply Selected Campaign** button (Figure 25, Item 4).

100. Select **Program** button (Figure 25, Item 1).

**NOTE: Once programming is completed, switch will be assigned to next available switch location.**

101. Follow next steps to install Auto Neutral indicator light.

    a. If assigned position does not have a preexisting Multiplexed (MUX) switch pack go to Step 102.

    b. If assigned position is in a preexisting MUX switch pack go to Step 109.

102. Remove blank MUX switch pack cover.

103. Connect new MUX switch pack (Part # 4057689C4) to original switch pack harness pigtail.

104. Obtain serial number from new MUX switch pack for programming purpose.

105. Install MUX switch pack.

106. Install Auto Neutral indicator light (Part # 4084815C1) to assigned location.

107. Using DLB, program new MUX switch pack. For detailed information pertaining to programming MUX switch pack, refer to:

    - Diamond Logic® Builder Software (Basic Programming and Diagnostics Only).
    - Navistar® Electrical Systems 2021 and Newer HX Integration Guide

108. Populate remaining open switch locations using blank switches (Part # 3766052C1). Go to Step 111.

**NOTE: Follow the next steps to install Auto Neutral Light indicator to preexisting MUX switch pack.**

109. Remove blank switch.

110. Install Auto Neutral indicator light to assigned location.

111. Install center dash panel.

112. Install center instrument cluster storage compartment. Torque bolts to 6 lb-in (0.68 N•m).

113. Install center instrument cluster bezel. Tighten bolt securely.

114. Install gauge cluster trim panel.

115. Install lower dash panel cover. Tighten screws to 62 lb-in (7 N•m).

116. Install driver-side kick panel. Tighten bolts and screws to 62 lb-in (7 N•m).

117. Install driver-side scuff plate. Tighten screws to 11 lb-in (1.2 N•m).

118. Using DLB, confirm Auto Neutral Switch light has been installed in the correct switch location. Turn vehicle iginition to Key ON, Engine OFF to allow all diagnostic trouble codes (DTCs) to be read.

119. Enter DIAGNOSTIC mode and select FAULTS tab. Clear any listed DTCs. Refer to Diamond Logic® Builder Software (Basic Programming and Diagnostics Only) Diagnosing and Clearing Fault Codes section for detailed instructions.

120. Repeat Step 119 as needed to clear all inactive DTCs.

121. Disconnect interface connector from diagnostic port.

122. Disconnect battery charger / maintainer from vehicle battery.

123. Clost and latch hood.

124. Remove wheel chocks.

125. Bring vehicle outside.

126. Confirm Auto Neutral functionality by following the next steps.

- Start vehicle
- Apply service brake
- Release parking brake
- Put gear selector in **Drive**
- Apply parking brake and transmission should shift into Neutral and Auto Neutral Light should illuminate.
- Release parking brake transmission should NOT shift into **Drive** until shift selector is cycled to **Neutral** then back to **Drive**.

**LABOR INFORMATION**

Operation number must appear on all claims.

| Operation Number | Description | Time |
|---|---|---|
| A40-22107-1 | Create / install overlay and perform all programming | 3.3 hrs. |

**Table 3** Labor Information

**WARRANTY CLAIMS**

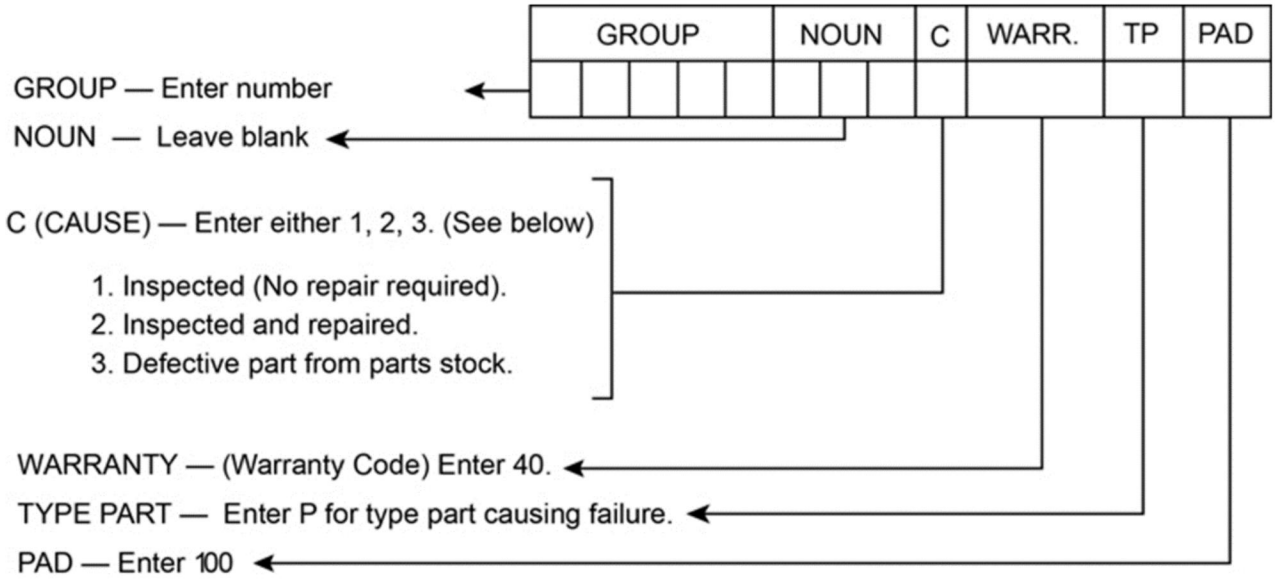
Warranty claim expense is to be charged to Warranty. Claims are to be submitted in the normal manner, making reference to Field Service Campaign 22107.

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.

To make sure this important improvement is made in a timely manner, all claims for 22107 activity must be submitted by 11 May 2023 or within the normal warranty period for the component repaired, if after 11 May 2023.

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