NAVISTAR®

FIELD SERVICE CAMPAIGN – 22105

26 April 2022

SUBJECT:
12V System Battery Draw

MODELS INVOLVED:
International® eMV™ Series truck

DEFECT DESCRIPTION:
Certain International® eMV™ Series trucks may experience a battery draw from the 12 volt battery system when vehicle is turned OFF. All other vehicles built during this period have either been repaired prior to shipment or determined to not require this repair.

ELIGIBILITY:
This procedure applies ONLY to vehicles marked in the International® Service Portal℠ with FSC 22105. Also complete any other open campaigns listed on the Service Portal at this time.

TOOLS REQUIRED:

Description	Tool Number
9-inch Ratchet Crimper, 20 to 10 AWG	Locally Sourced
Crimping Tool Metri Pack 150 Push and Pull to Seat 16-22Ga	
Wire Stripper, 22 to 10 AWG	
Diagonal Cutting Pliers	
Pistol-Grip Heat Guns for Polyolefin & PVC Shrink Wrap	
Modular Soldering Iron	

Table 1 Tools Information

NOTE: Please submit Tool Case File to order 3549417C1 and / or call the Product Support Center 1-800-336-4500.

PARTS REQUIRED:

Part Number	Description	Quantity
3549417C1	Terminal, Cable	1
3574285C1	Terminal, Elect, 76-Way Connector Wire, Female 16-Gauge	1
3574287C1	Terminal, Elect, Cable	1
3549415C1	Terminal, Elect, Cable	1

3768013C1	Terminal, Cable, MTA F280, 16-14 Gauge	1
3727577C1	Breaker, Circuit Give Amp And Volt If AV 10 Amp, Type III - RED	1
2644000R1	Sleeve, Heat Shrink	1
3517502C1	Terminal, Elect, Butt SPLC 16 – 14 AWG	1
2644094R1	Split Loom Conduit 1/4-inch lenth	1 (As Needed)
Locally Sourced	16 AWG RED TXL wire 33-inch length (838 mm)	1
Locally Sourced	16 AWG RED TXL wire 60-inch length (1524 mm)	1
Locally Sourced	16 AWG RED TXL wire 74.8-inch length (1900 mm)	1
Locally Sourced	Cable Tie Strap	25
Locally Sourced	Solder (60/40 rosin core)	1

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, or damage to property, 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, NEVER service a high-voltage vehicle without completing high-voltage safety training. Before working on vehicle, read and obey all High-Voltage Safety and Lock-Out Tag-Out procedures and information.

WARNING! To prevent personal injury and / or death, or damage to property, wear and use approved high-voltage Personal Protective Equipment (PPE) when near a high-voltage electric vehicle. Inspect PPE before use. Do not use gloves or other PPE with expired dates, holes, cracks, or damage. NEVER touch energized orange high-voltage cables or high-voltage components without wearing approved high-voltage PPE.

WARNING! To prevent personal injury and / or death, read all information in the Safety Information and High-Voltage Safety sections of the service manual.

WARNING! To prevent property damage, 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.

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.

1. Park vehicle on a level surface.

2. Shift transmission into Park or Neutral and set parking brake.

3. Turn ignition to Key OFF position.

4. Install wheel chocks.

5. Perform High-Voltage Isolation Level 1. Refer to eMV™ Technician Manual for detailed instructions.

6. Turn 12 volt disconnect switch OFF.

7. Obtain and cut wire harnesses for this procedure:
   - 16 AWG RED TXL wire cut to 33-inch length (838.20 mm)
   - 16 AWG RED TXL wire cut to 60-inch length (1524 mm)
   - 16 AWG RED TXL wire cut to 74.8-inch length (1900 mm)

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

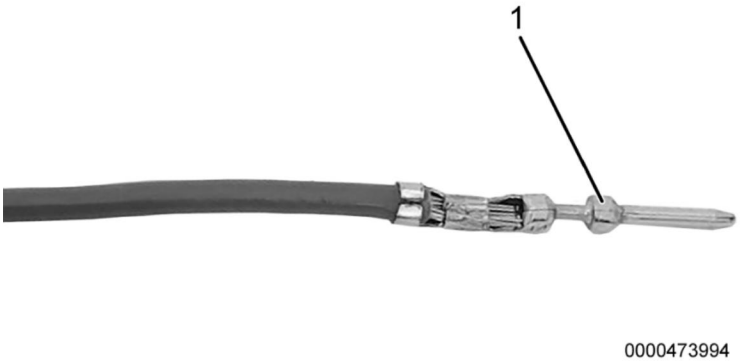

Figure 1. Cable Terminal to 33-inch length wire
1. 3549417C1 cable terminal

9. Using recently cut AWG RED TXL 33-inch wire, insert end of wire into barrel of cable terminal (Figure 1, Item 1).

   NOTE: Ensure proper crimping is performed on all terminals.

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

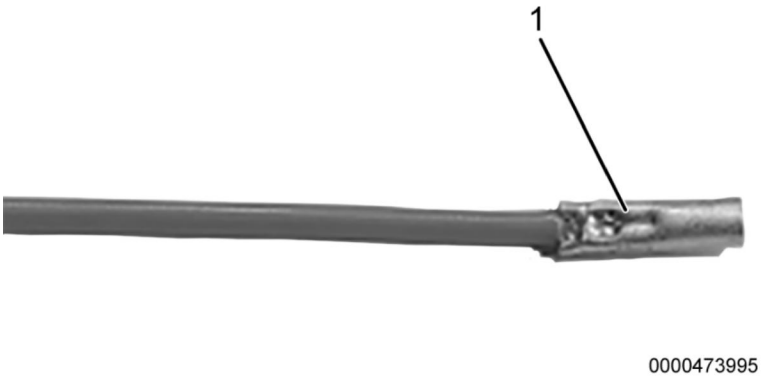

Figure 2. Butt Splice to 33-inch wire
1. 3517502C1 butt splice

11. At opposite end of 33-inch wire, insert end of wire into barrel of butt splice (Figure 2, Item 1).

NOTE: Ensure proper crimping is performed on all terminals.

12. Using crimping tool, crimp butt splice to wire.

Figure 3. Cable Terminal to 74.8-inch wire

1. 3574285C1 cable terminal

13. Using recently cut AWG RED TXL 74.8-inch wire, insert end of wire into barrel of cable terminal (Figure 3, Item 1).

NOTE: Ensure proper crimping is performed on all terminals.

14. Using crimping tool, crimp terminal to wire.

Figure 4. Cable Terminal to 74.8-inch Wire

1. 3549415C1 Cable terminal

15. At opposite end of 74.8-inch wire, insert end of wire into barrel of terminal (Figure 4, Item 1).

NOTE: Ensure proper crimping is performed on all terminals.

16. Using crimping tool, crimp terminal to wire.

Figure 5. Cable Terminal to 60-inch Wire

1. 3768013C1 Cable terminal

17. Using recently cut AWG RED TXL 60-inch wire, insert end of wire into barrel of cable terminal (Figure 5, Item 1).

NOTE: Ensure proper crimping is performed on all terminals.

18. Using crimping tool, crimp terminal to wire.

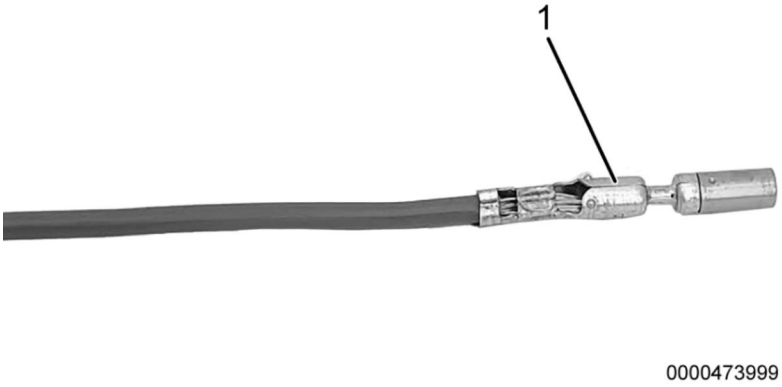

Figure 6. 16 AWG RED TXL 60-inch length wire

1. 3574287C1 Cable terminal

19. At opposite end of 60-inch wire, insert end of wire into barrel of terminal (Figure 6, Item 1).

NOTE: Ensure proper crimping is performed on all terminals.

20. Using crimping tool, crimp terminal to wire.

NOTE: The overlay harness that will pass through into the cab will only require Split Loom Conduit for the underhood section of the harness.

21. After creating overlay harness, install each wire into separate Split Loom Conduit of appropriate length.

22. Unlatch and open hood.

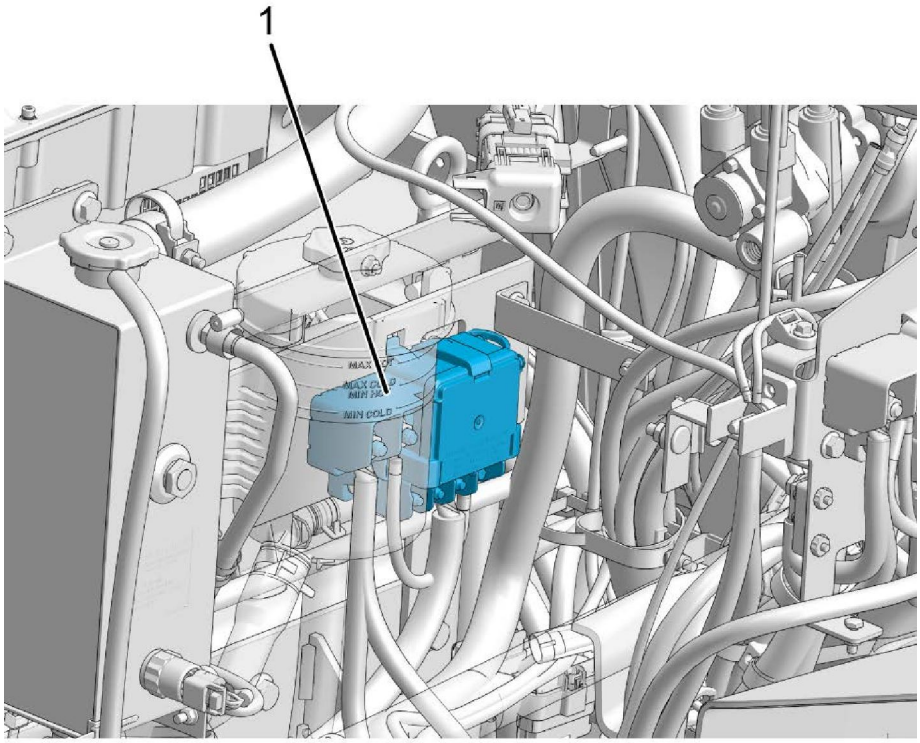

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Figure 7. Under Hood Power Distribution Module (PDM)
1. PDM

23. Access Under Hood PDM (Figure 7, Item 1).

24. Unlatch and remove PDM cover.

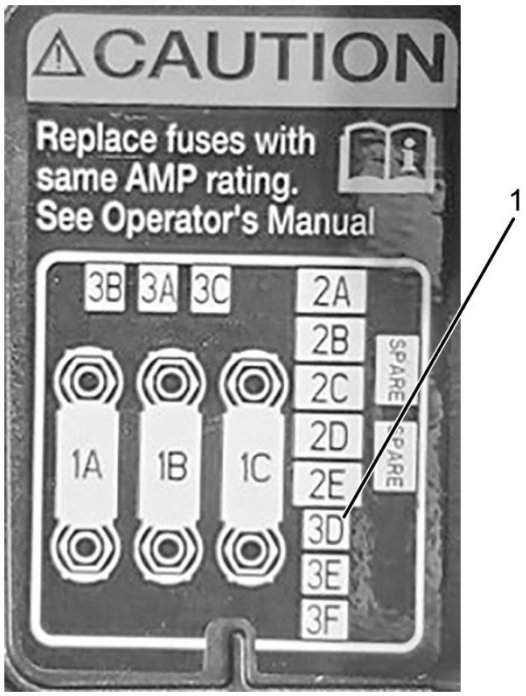

Figure 8. Under Hood PDM

1. Fuse location 3D

25. Remove fuse from location 3D (Figure 8, Item 1). Discard fuse.

26. Remove PDM; refer to Technician Manual for detailed instructions.

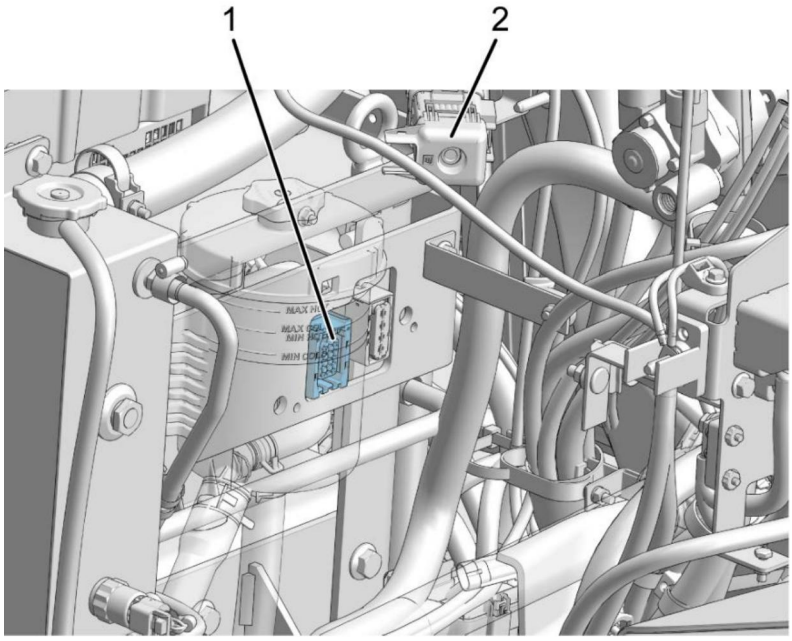

Figure 9. PDM Connector

1. 1702M VCU interconnect
2. 6081 Under Hood PDM connector

27. Remove under hood PDM connector (Figure 9, Item 2) cover.

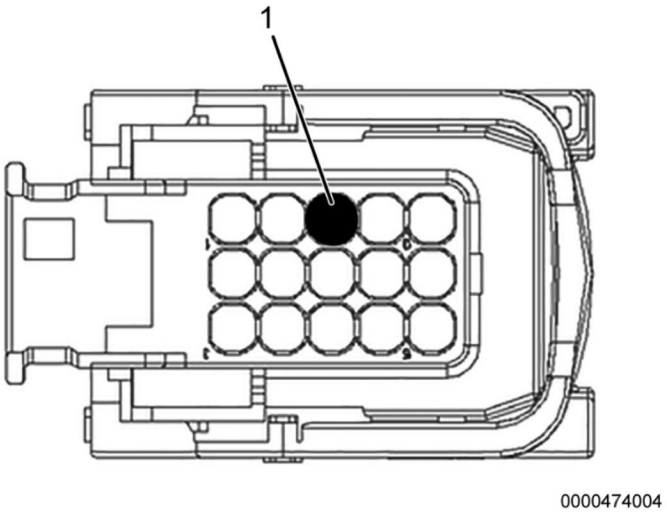

Figure 10. 6081 Under Hood PDM Connector

1. Cavity 7

NOTE: Identify correct wire at correct location before removing.

28. Remove terminal lock from connector and depopulate wire from Cavity 7 (Figure 10, Item 1).

29. Reinstall terminal lock to connector.

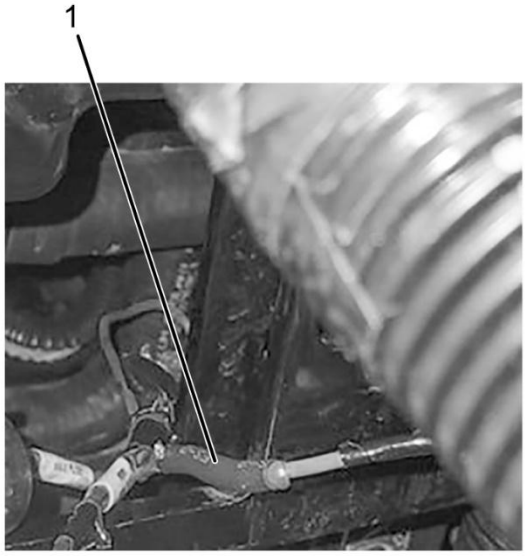

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Figure 11. Butt Splice Connection

1. Cavity 7 wire to HVDU

30. Cut terminal from Cavity 7. Strip wire insulation approximately 1/4-inch (64 mm) from Cavity 7 wire.

31. Insert heat shrink sleeve over recently-cut Cavity 7 wire from PDM connector.

32. Insert butt splice end of preassembled 33-inch wire (Figure 2, Item 1) into exposed wire of cavity 7 near PDM (Figure 11, Item 1).

33. Using crimping tool, crimp butt splice.

NOTE: Make certain that solder and conductor are hot enough to allow solder to flow into the individual conductors of the wire and inside of crimp splice.

34. Use a soldering iron, solder both conductors into crimped butt splice.

35. Slide heat shrink tube over the butt splice. Using a heat gun, apply sufficient heat to shrink tubing over butt splice and wire.

NOTE: When routing overlay harness, space cable tie straps every 12 to 14 inches apart.

36. Using cable tie straps, route and secure preassembled 33-inch harness from connector 6081 under hood PDM connector to 1702M VCU/CAB interconnect.

37. Install PDM. Refer to Technician Manual for detailed instruction.

38. Disconnect 1702M Vehicle Control Unit (VCU) interconnect (Figure 9, Item 1).

39. Carefully remove 1702M VCU interconnect cover. Save cover for reuse.

40. Remove 1702M VCU interconnect terminal lock. Save lock for reuse.

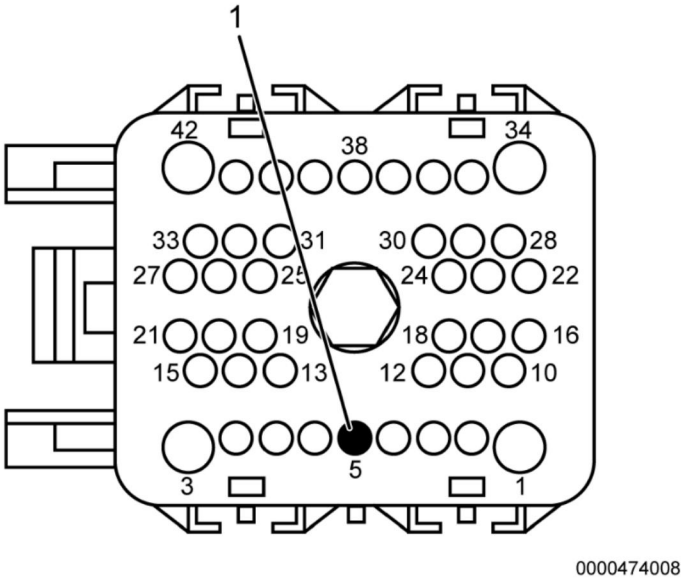

Figure 12. 1702M VCU/CAB Interconnect
1. Cavity 5

41. Populate opposite end of preassembled 33-inch length wire terminal into connector Cavity 5 (Figure 12, Item 1) of 1702M VCU Interconnect.

42. Insert 1702M VCU interconnect terminal lock.

43. Install 1702M VCU interconnect cover and secure with a tie strap.

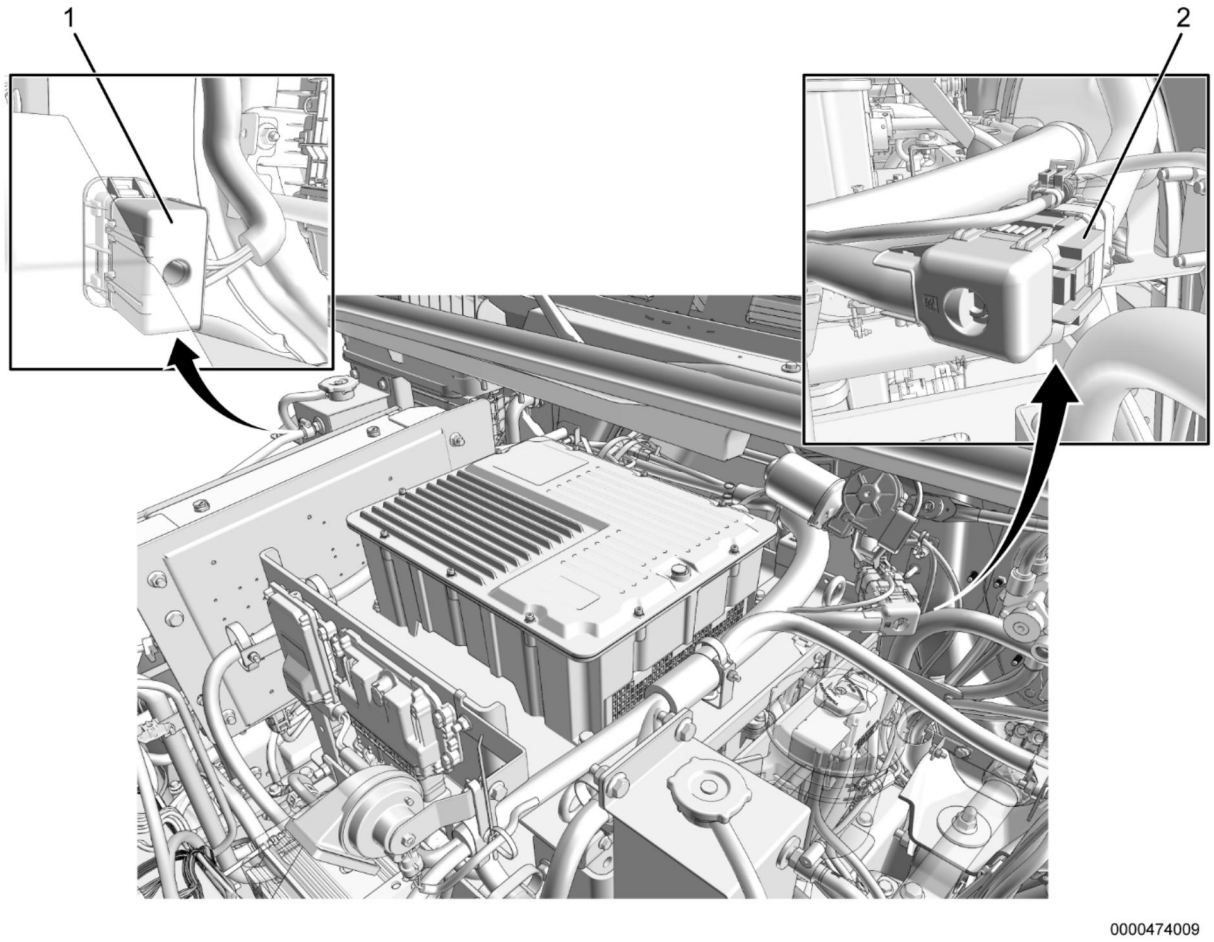

Figure 13. 1703F IP-Cowl Interconnect and 1702F IP-VCU

1. 1703F IP-Cowl Interconnect
2. 1702F IP-VCU Interconnect

44. Remove 1702F IP-VCU interconnect terminal lock (Figure 13, Item 1). Save lock for reuse.

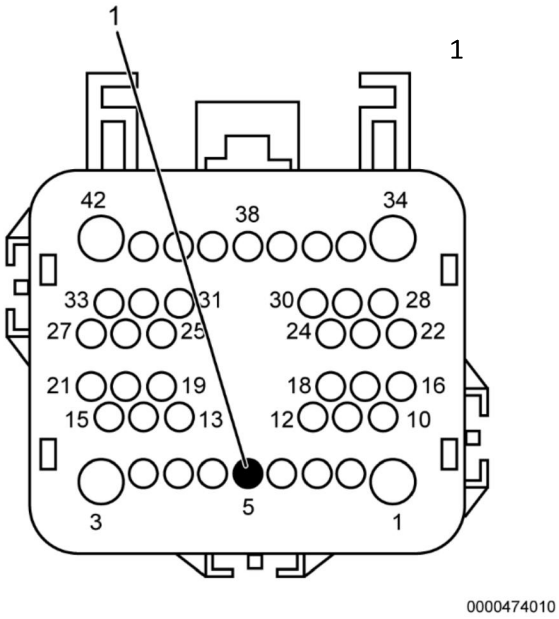

Figure 14. 1702F IP-VCU Interconnect

1. Cavity 5

NOTE: Ensure terminal is completely inserted into connector.

45. Using preassembeld 74.8-inch wire harness, populate terminal into Cavity 5 (Figure 14, Item 1) of 1702F IP-VCU Interconnect.

46. Insert 1702F IP-VCU interconnect terminal lock.

47. Reinstall 1702F IP-VCU interconnect to 1702M VCU Interconnect. Using torque wrench, tighten bolt to 44 lb-in. (5 N·m).

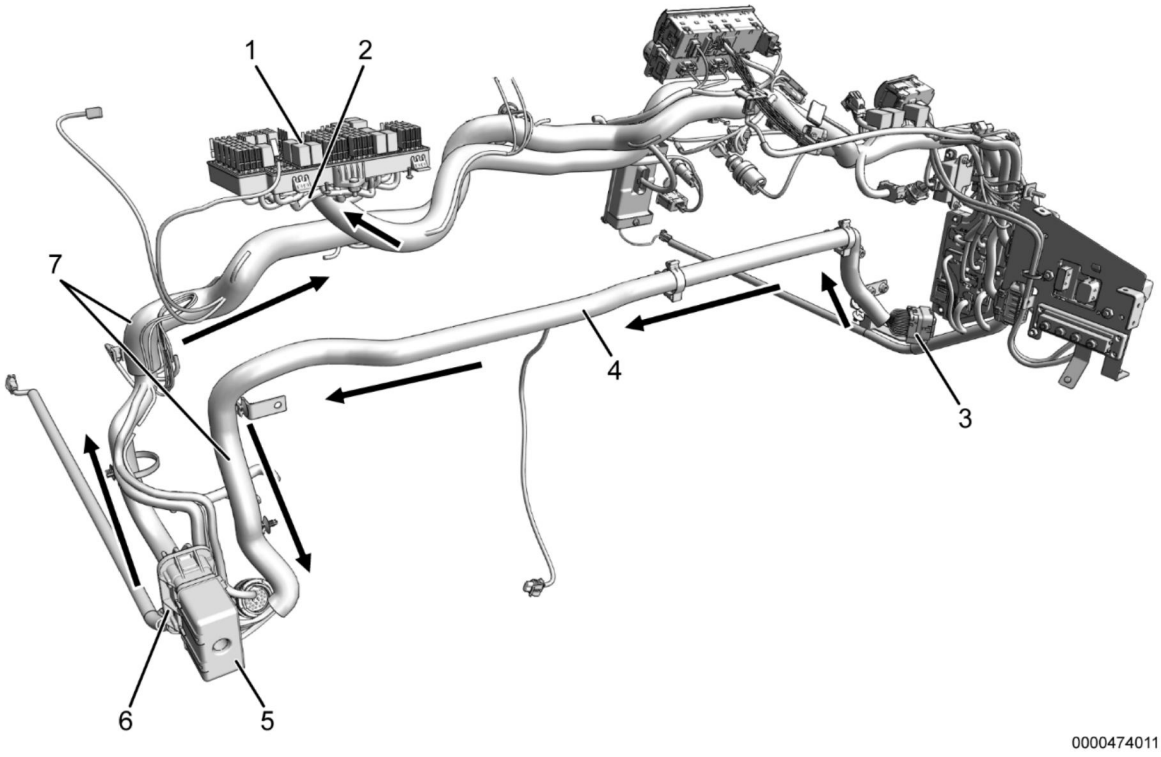

Figure 15. Rework Wire

1. In Cab PDM
2. 1015 in CAB PDM Connector
3. 1702F IP-VCU Interconnect
4. Preassembled 74.8-inch wire harness
5. 1703F IP-Cowl Interconnect
6. 1703M IP-Cowl Interconnect
7. Preassembled 60-inch wire harness

NOTE: For proper installation of the overlay harness, follow the overlay harness routing (Figure 15, Item 4) and secure with cable tie straps. Cable tie straps should be spaced 12 to 14 inches apart.

48. Working from driver-side of engine compartment, route preassembeld 74.8-inch wire (Figure 15, Item 4) from connector 1702F (Figure 15, Item 3) towards passenger-side of engine compartment at 1703F IP-Cowl Interconnect (Figure 15, Item 4).

49. Disconnect 1703F IP-Cowl Interconnect (Figure 15, Item 5) located in the under-hood compartment passenger-side. Save fastener for reuse.

50. Remove 1703F IP-Cowl Interconnect cover. Save cover for reuse.

51. Remove 1703F IP-Cowl Interconnect terminal lock. Save lock for reuse.

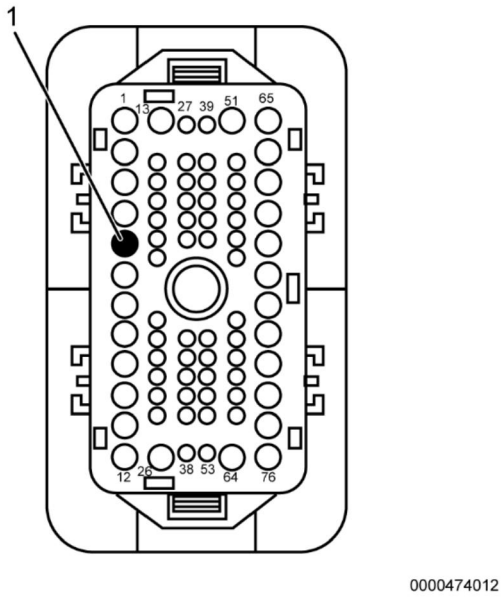

Figure 16. 1703F IP-Cowl Interconnect

1. Cavity 5

NOTE: Ensure terminal is completely inserted into connector.

52. Populate opposite end of preassembled 74.8-inch length wire into connector Cavity 5 (Figure 16, Item 1) of 1703F.

53. Insert terminal lock into 1703F.

CAUTION! To prevent damage to property, route and secure harness away from any sharp objects and / or moving parts.

NOTE: For proper installation of the overlay harness, follow overlay harness routing (15, Item 6) and secure with cable tie straps. Cable tie straps should be spaced 12 to 14 inches apart.

54. Using cable tie straps, secure presassembled 74.8-inch wire (Figure 15, Item 4) to existing harness.
55. Reinstall any components previously removed prior to obtain access to 1702F IP-VCU interconnect, 1702M VCU/CAB Interconnect and 6081 under hood PDM connector.

56. Open passenger-side door.

57. Remove screws and bolts from passenger-side lower dash cover, scuff plate and kick panel.

58. Carefully remove passenger-side lower dash cover, scuff plate and kick panel and place parts on a clean workbench.

Figure 17. Passenger-side cab

1. 1703M IP-Cowl Interconnect

59. From lower passenger-side of instrument panel, locate and access 1703M IP-Cowl Interconnect (Figure 17, Item 1).

60. Remove 1703M IP-Cowl Interconnect terminal lock. Save lock for reuse.

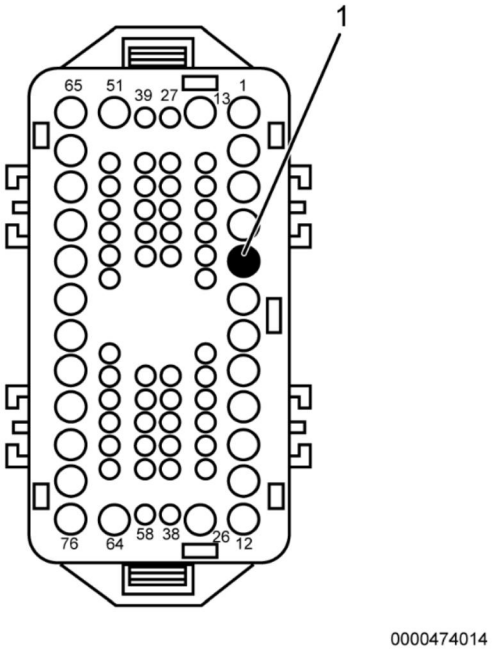

Figure 18. 1703M IP-Cowl Interconnect

1. Cavity 5

NOTE: Ensure terminal is completely inserted into connector.

61. Populate preassembled 60-inch length wire cable terminal into connector Cavity 5 (Figure 18, Item 1) of 1703M IP-Cowl Interconnect.

62. Insert terminal lock into 1703M IP-Cowl Interconnect.

63. Install 1703M IP-Cowl Interconnect.

64. Working from underhood compartment, connect 1703F IP-Cowl Interconnect to 1703M IP-Cowl Interconnect. Using torque wrench, tighten bolt to 44 lb-in. (5 N·m).

65. Remove in cab PDM cover.

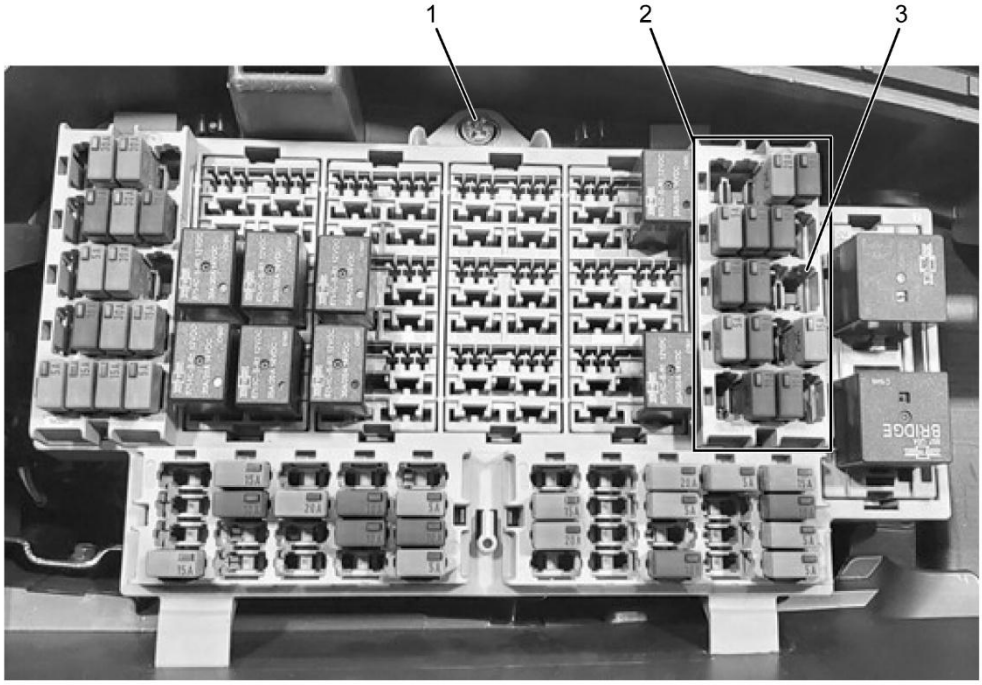

Figure 19. In Cab Power Distribution Module (PDM)

1. Hold down bolt
2. 1015 connector location
3. Connector lock

66. Remove hold down bolt (Figure 19, Item 1). Save bolt for reuse.

67. Carefully lift out cab PDM to obtain access to connector 1015 (Figure 15, Item 2).

68. Using fish tape or equivalent, route opposite end of preassembled 60-inch wire harness from connector 1703M IP-Cowl Interconnect (Figure 15, Item 6) through dash to 1015 in cab PDM connector (Figure 15, Item 2).

69. Carefully remove connector lock (Figure 19, Item 3) securing 1015 connector (Figure 19, Item 2). Save connector lock for reuse.

70. Carefully remove connector 1015 from in cab PDM.

71. Remove terminal lock from connector 1015. Save terminal lock for reuse.

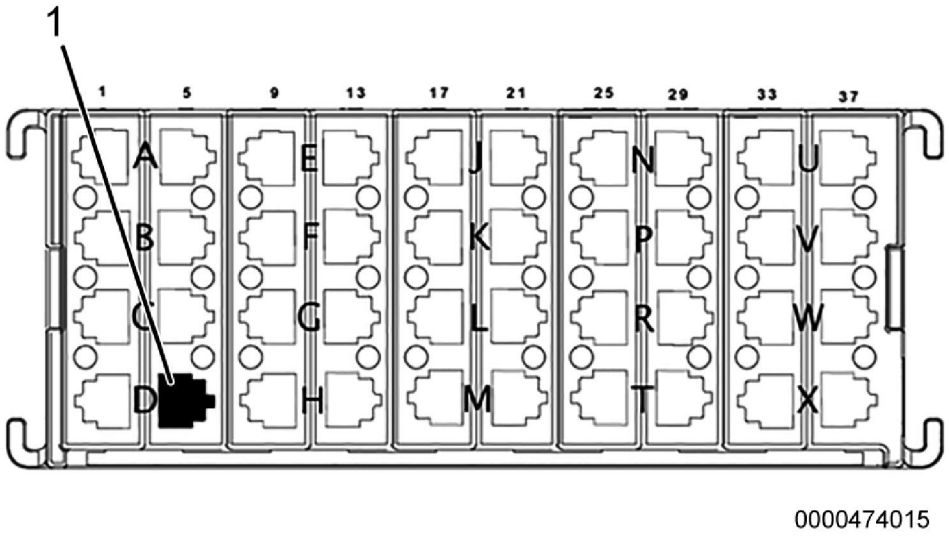

Figure 20. 1015 In Cab PDM connector

1. Cavity 8

NOTE: Ensure terminal is completely inserted into connector.

72. Populate opposite end of preassembled 60-inch length wire into connector Cavity 8 (Figure 20, Item 1).

73. Insert terminal lock into connector 1015.

74. Using previously removed connector lock, install connector 1015 into in cab PDM.

75. Using previously removed hold down bolt, reinstall in cab PDM. Tighten bolt securely.

CAUTION! To prevent damage to property, route and secure harness away from any sharp objects and / or moving parts.

NOTE: Follow proper routing and clipping standards of the overlay harness, cable tie straps should be spaced 12 to 14 inches apart.

76. Using cable tie straps, route and secure 60 inch length wire to existing instrument panel harness.

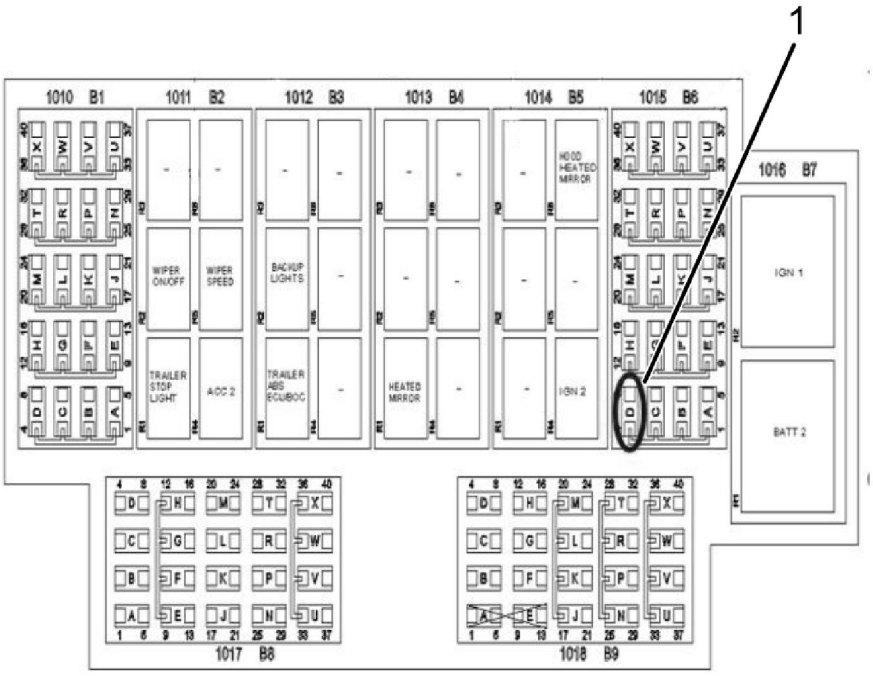

Figure 21. PDM Circuit Brake Fuse Location

1. Fuse location B6-D

77. Insert 10A circuit braker fuse into PDM circuit brake fuse location B6-D (Figure 21, Item 1).

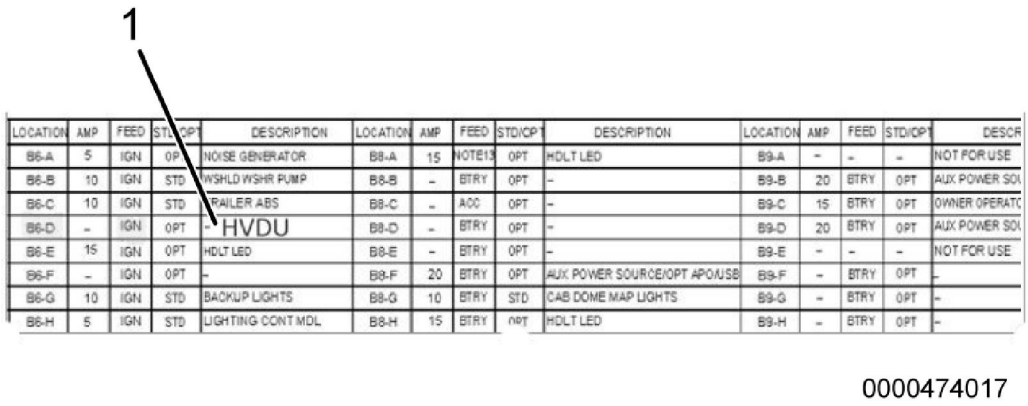

Figure 22. In Cab PDM Cover

1. PDM circuit brake fuse location B6-D

78. Using a black marker, write **HVDU** (Figure 22, Item 1) in new circuit breaker fuse location on PDM cover.

79. Install in cab PDM cover.

80. Install passenger-side kick panel.

81. Install passenger-side kick panel bolt. Tighten bolt to 62 lb-in. (7 N·m).

82. Install passenger-side scuff plate.

83. Install passenger-side scuff plate screws. Tighten screws to 11 lb-in. (1 N·m).

84. Install passenger-side lower dash cover.

85. Install passenger-side lower dash cover screws. Tighten screws to 18 lb-in. (2 N·m).

86. Close passenger-side door.

87. Close and latch hood.

88. Reconnect Level 1 Manual Service Disconnects (MSD).

89. Remove wheel chocks.

LABOR INFORMATION

Operation number must appear on all claims.

Operation Number	Description	Time
22105-1	Create And Install Overlay Harness	1.6 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 22105.

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 22105 activity must be submitted by 26 April 2022 or within the normal warranty period for the component repaired, if after 26 April 2022.