Preview Solution CBR-2516-6

CMS Black Screen Troubleshooting - VN (4) - PR (4) - AN (4)

Published 2 January 2026

Valid For

Volvo Chassis - VN (4)
Mack Chassis - PR (4) - AN (4)
Model Year - 2025 to Current

The purpose of this CBR is to provides guidance on identifying problems with the Camera Monitoring System Black Screen and Permanent Red Warning Pop up.

To assist in troubleshooting the CMS system, please reference this CMS Troubleshooting Guide.

Related links and attachments

No links or attachments available

Share
to others that might find it helpful

Feedback
Give feedback
to help improve the content of this article

Live UI

CMS Black Screen and CMS IC warning Troubleshooting

Abstract

This CBR solution provides guidance on identifying problems with the Camera Monitoring System Black Screen and Permanent Red Warning Pop up.

Content

Published 18 December 2025

Valid For

Volvo VN(4) model year 2025 to current.

MACK Pioneer, Model year 2025 to current.

The purpose of this CBR is to provide guidance and solutions for troubleshooting the Camera Monitoring System Black Screen and Permanent Red Warning Pop Up

Contents

Troubleshooting CMS Black Screen and Red Warning Pop up

Note: Do **NOT** clear fault codes at this time.

1 Abbreviation, required tools, ECU pinouts & work sheet

1.1 Abbreviations and definitions:

CMS – Camera Monitoring System (Digital Mirror System)

ECU – Electronic Control Unit

PTT – Premium Tech Tool

MDS – Maintenance Disconnect Switch

Class II/IV - Driver and Passenger side cameras

Class V – Passenger Side or curb view camera

Jumper Harness – Camera Cable/Connectors in between In Cab Overlay and Wing Cables/connectors

In Cab Overlay – CMS Display and Camera Cable harness containing the following connectors (Class II/IV ECU side, Class V ECU side, Class II/IV

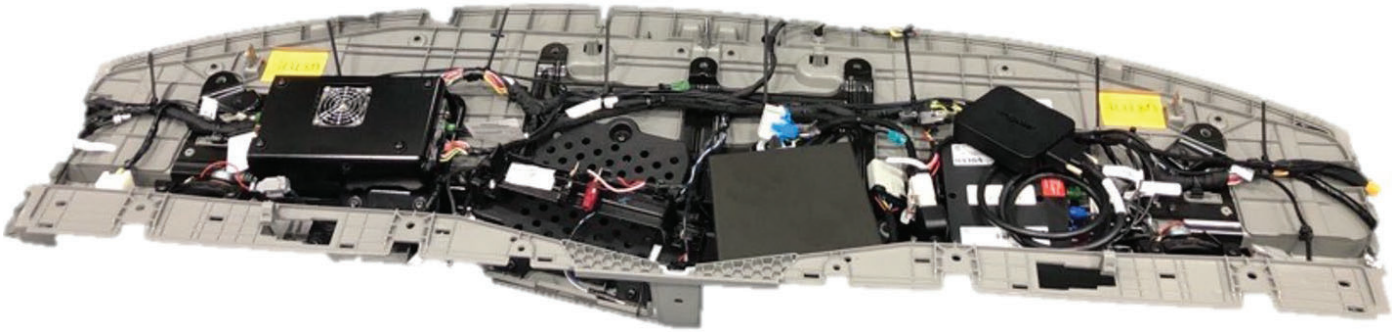
Permanent black Screen

Temporary Black Screen

Permanent Red Pop up

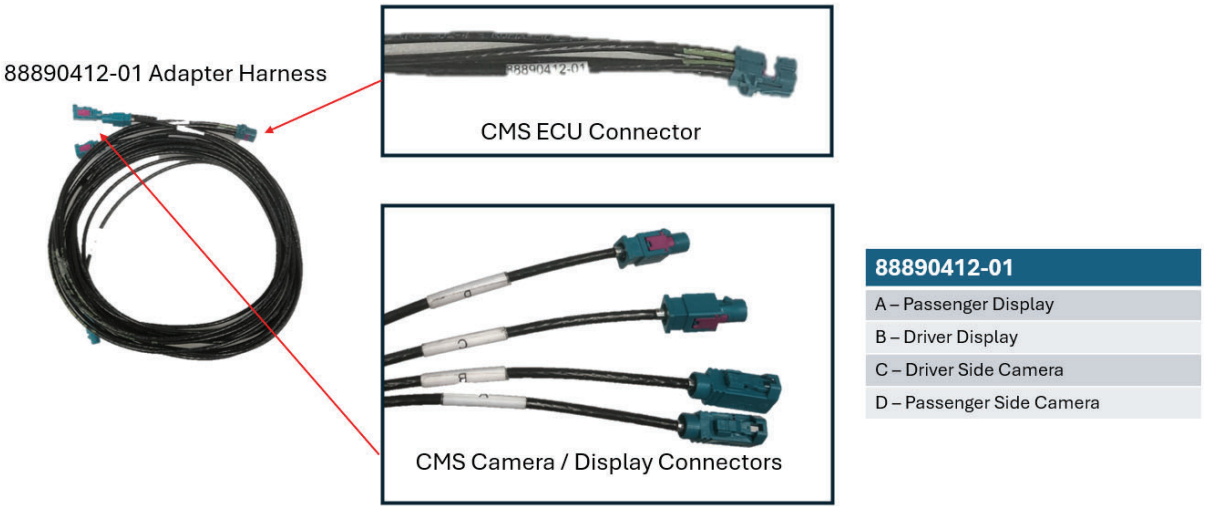
Temporary Red Pop up

Picture overview of the overhead shelf to be added by David



1.2 Required tools

CMS Cable Special Tool Number 88890412



88890412-01
A – Passenger Display
B – Driver Display
C – Driver Side Camera
D – Passenger Side Camera

CMS Cable Special Tool Number 88890412

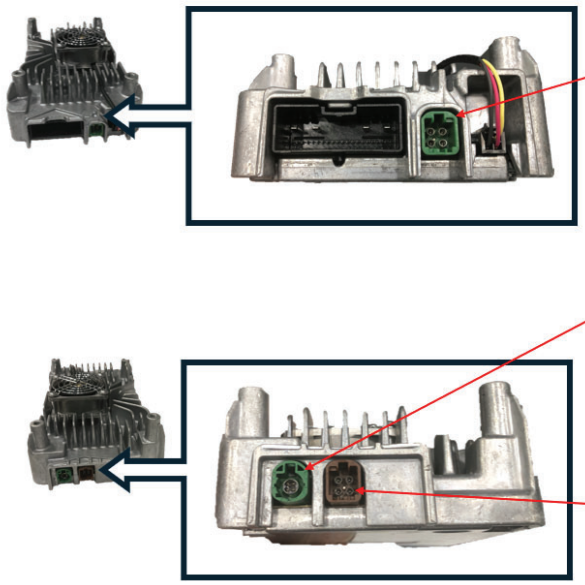
88890412-02 Adapter Harness

88890412-03 Adapter Harness

88890412-04 Adapter Harness

1.3 ECU connector and pinout view

CMS ECU Connector Pin Designations



Connector A388.C	
Schematic	Special Tool 8890412
A388 C:1	A – Passenger Side Display Screen
A388 C:2	B – Driver Side Display Screen
A388 C:3	C – Passenger Side Camera (Class II and IV Camera)
A388 C:4	D – Passenger Side Camera (Class II and IV Camera)

Connector A388.D	
Schematic	Special Tool 88890412
A388 D:1	A –
A388 D:2	B – Broad Reach Data +
A388 D:3	C – Broad Reach Data -
A388 D:4	D –

Connector A388.E	
Schematic	Special Tool 88890412
A388 E:1	A – Empty
A388 E:2	B – Curb Camera (Class V Camera)
A388 E:3	C – Empty
A388 E:4	D – Empty

Please fill out this worksheet before opening an SR case or diagnosis

1.4 VOLVO VN4 – Camera Monitoring System (CMS) Work Sheet

Please complete the following information to submit to the SR case. Ensure all sections are filled out accurately and screenshots are attached where required.

VIN: _____
Active Fault Codes:

Inactive Fault Codes:

Customer Complaint:

Can Complaint Be Duplicated:
☐ Yes ☐ No (Provide details if applicable)

CMS Hardware and Sub-Hardware Part Numbers:

1. ECU: _____
2. Driver Side Camera: _____
3. Passenger Side Camera: _____
4. Passenger Side Curb Camera: _____

Screenshots:
Attach screenshots of **Premium Tech Tool CMS mismatches** here.
CMS Software Part Numbers (Hardware and Sub-Hardware):

- Check if update available for CMS SW. If yes, update software after CBR performing SWDL via PTT or workshop toolbox.

2 Description of issue

Two Issues are being seen

a) CMS Black Screen Occurring on either Driver **OR** Passenger displays (temporary black screen)

b) Permanent Red Warning Pop up in Instrument Cluster (Permanent Red Warning Until Battery Disconnect is completed using the maintenance disconnect switch)

3 Fault Codes

The Fault codes should be checked first for the CMS; this will help in determining what the root cause is for the issue.

From the list of fault codes below, if they appear as **INACTIVE** in PTT and issue cannot be duplicated, then proceed to section *3.1 Fault codes - INACTIVE*. Prioritize fault codes with high occurrence counts.

All **ACTIVE** fault codes should be fault traced via respective fault trace section in CBR (ECU, Monitor/Display, Camera, Wiring) section *3.2 Fault Codes – ACTIVE*.

3.1 Fault codes – INACTIVE

In the event of there being the following CMS **INACTIVE** fault codes with most occurrence counts, then perform the listed corrective actions associated with each fault code

Inactive Fault Codes for Driver and/or Passenger Side Displays

IF you have any of the following high occurrence Inactive fault codes in the table below, perform the following part replacements

- Class II/IV overlay (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)

DTC	Fault Description
U1004-08	Lost Communication With Left Side View Monitor - Bus Signal / Message Failures
U100A-08	Lost Communication with Right Side View Monitor - Bus Signal / Message Failures
B1005-13	Right Side View Monitor Circuit - Circuit Open
B1004-13	Left Side View Monitor Circuit - Circuit Open
B1004-19	Left Side View Monitor Circuit - Circuit Current Above Threshold
B1004-1C	Left Side View Monitor Circuit - Circuit Voltage Out of Range
B1005-02	Right Side View Monitor Circuit - General Signal Failure
B1005-19	Right Side View Monitor Circuit - Circuit Current Above Threshold

B1005-1C	Right Side View Monitor Circuit - Circuit Voltage Out of Range

Inactive Fault Codes for Driver Side Camera

IF you have any of the following high occurrence Inactive fault codes in the table below, perform the following part replacements

- Class II/IV overlay (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
- Driver Side Jumper Harness (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)
- Driver Side Camera arm (Corrective action #4: Camera arm replacement)

DTC	Fault Description
B1002-19	Driver Side Camera Circuit – Circuit Current Above Threshold
B1002-13	Driver Side Camera Circuit – Circuit Open
U1001-08	Lost Communication with Driver Side Camera – Bus Signal/Message Failures

Inactive Fault Codes for Passenger Side Camera

IF you have any of the following high occurrence Inactive fault codes in the table below, perform the following part replacements

- Class II/IV overlay (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
- Passenger Side Jumper Harness (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)
- Passenger Side Camera arm (Corrective action #4: Camera arm replacement)

DTC	Fault Description
B1000-19	Right Side Camera Circuit - Circuit Current Above Threshold
B1000-13	Right Side Camera Circuit - Circuit Open
U1009-08	Lost Communication With Right Side Camera - Bus Signal / Message Failures

Inactive Fault Codes for Passenger Side Curb Camera

IF you have any of the following high occurrence Inactive fault codes in the table below, perform the following part replacements

- Class V overlay (Corrective action #3: Class V Overlay (PN# 24408193) installation)
- Passenger Side Jumper Harness (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)
- Passenger Side Camera arm (Corrective action #4: Camera arm replacement)

DTC	Fault Description
B1001-19	Right Side Kerb Camera Circuit - Circuit Current Above Threshold
B1001-13	Right Side Kerb Camera Circuit - Circuit Open
U1002-08	Lost Communication With Right Side Kerb Camera - Bus Signal / Message Failures

3.2 Fault Codes – ACTIVE

1. **ECU Related Active Fault Codes**

For ECU related Fault codes, follow diagnostic procedure in PTT.

For Black screen occurring on both Driver **AND** Passenger displays at the same time, ECU Fault codes should be addressed first.

DTC	Fault Description
U3000-04	Electronic control unit - System Internal Failures
U3000-01	Electronic control unit - General Electrical Failure
U3000-A2	Electronic control unit - System Voltage Low
U3000-61	Electronic control unit - Signal Calculation Failure

2. **Monitor/Display HW Active Related Fault Codes**

For Display HW active related fault codes, follow PTT Diagnostics and Impact Instructions

DTC	Fault Description
B1005-09	Right Side View Monitor Circuit - Component Failures
B1005-2B	Right Side View Monitor Circuit - Signal Cross Coupled
B1005-41	Right Side View Monitor Circuit - General Checksum Failure
B1004-09	Left Side View Monitor Circuit - Component Failures
B1004-41	Left Side View Monitor Circuit - General Checksum Failure
B1004-00	Left Side View Monitor Circuit - No Sub Type Information
B1004-2B	Left Side View Monitor Circuit - Signal Cross Coupled
B1004-26	Left Side View Monitor Circuit - Signal Rate of Change Below Threshold
B1004-44	Left Side View Monitor Circuit - Data Memory Failure
B1005-00	Right Side View Monitor Circuit - No Sub Type Information
B1005-02	Right Side View Monitor Circuit - General Signal Failure
B1005-44	Right Side View Monitor Circuit - Data Memory Failure

3. Camera HW Related Active Fault Codes

For Camera HW related active fault codes, follow PTT Diagnostics and Impact Instructions.

DTC	Fault Description
B1000-04	Right Side Camera Circuit - System Internal Failures

B1000-09	Right Side Camera Circuit - Component Failures
B1001-09	Right Side Kerb Camera Circuit - Component Failures
B1001-04	Right Side Kerb Camera Circuit - System Internal Failures
B1002-09	Left Side Camera Circuit - Component Failures
B1002-04	Left Side Camera Circuit - System Internal Failures
U3000-61	Electronic control unit - Signal Calculation Failure

4. Wiring Related Active Fault Codes

For Wiring related active Fault codes, the wiring section of this CBR must be followed 4. Wiring.

IF fault tracing does not reveal a root cause to the technician, then the full wire harness corrective action must be completed:

- Class II/IV overlay (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
- Class V overlay (Corrective action #3: Class V Overlay (PN# 24408193) installation)
- Driver Side Jumper Harness (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)
- Driver Side Camera arm (Corrective action #4: Camera arm replacement)
- Passenger Side Jumper Harness (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)
- Passenger Side Camera arm (Corrective action #4: Camera arm replacement)

DTC	Fault Description
U1002-08	Lost Communication With Right Side Kerb Camera - Bus Signal / Message Failures

U1009-08	Lost Communication With Right Side Camera - Bus Signal / Message Failures
U1001-08	Lost Communication With Left Side Camera - Bus Signal / Message Failures
U1004-08	Lost Communication With Left Side View Monitor - Bus Signal / Message Failures
U100A-08	Lost Communication with Right Side View Monitor - Bus Signal / Message Failures
B1000-13	Right Side Camera Circuit - Circuit Open
B1001-13	Right Side Kerb Camera Circuit - Circuit Open
B1002-13	Left Side Camera Circuit - Circuit Open
B1005-13	Right Side View Monitor Circuit - Circuit Open
B1004-13	Left Side View Monitor Circuit - Circuit Open
B1000-19	Right Side Camera Circuit - Circuit Current Above Threshold
B1001-19	Right Side Kerb Camera Circuit - Circuit Current Above Threshold
B1004-19	Left Side View Monitor Circuit - Circuit Current Above Threshold
B1004-1C	Left Side View Monitor Circuit - Circuit Voltage Out of Range
B1005-02	Right Side View Monitor Circuit - General Signal Failure
B1005-19	Right Side View Monitor Circuit - Circuit Current Above Threshold
B1005-1C	Right Side View Monitor Circuit - Circuit Voltage Out of Range
B1002-19	Left Side Camera Circuit - Circuit Current Above Threshold
U3000-61	Electronic control unit - Signal Calculation Failure

4 Wiring

4.1 Fault tracing and corrective actions

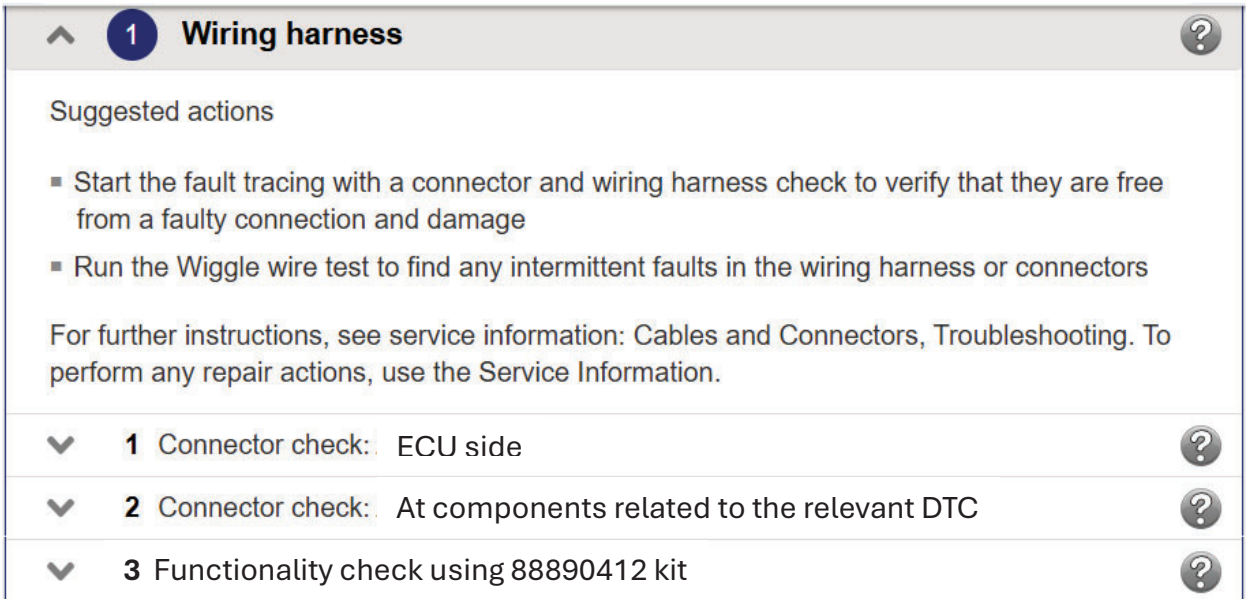
4.1.1 Driver camera wiring

Related Fault Codes:

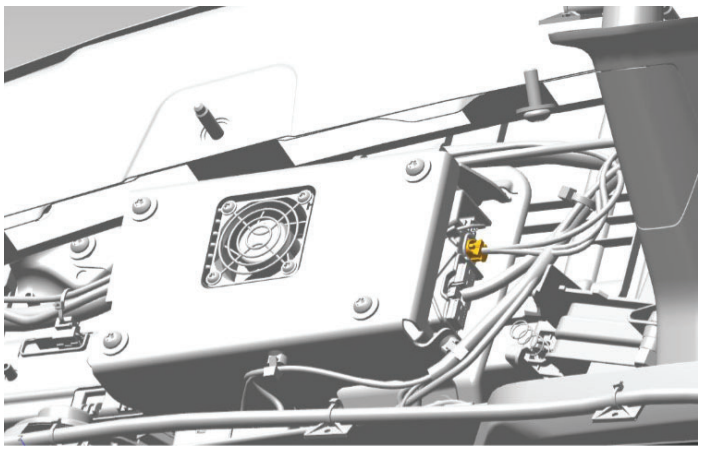
- U1001-08
- B1002-13
- B1002-19

- Symptoms:
  - Permanent or Temporary Black screen on Driver Display
  - Red CMS pop up in instrument cluster in addition to black screen on driver side display

Perform basic checks and visual inspections for all connectors in the CMS system.

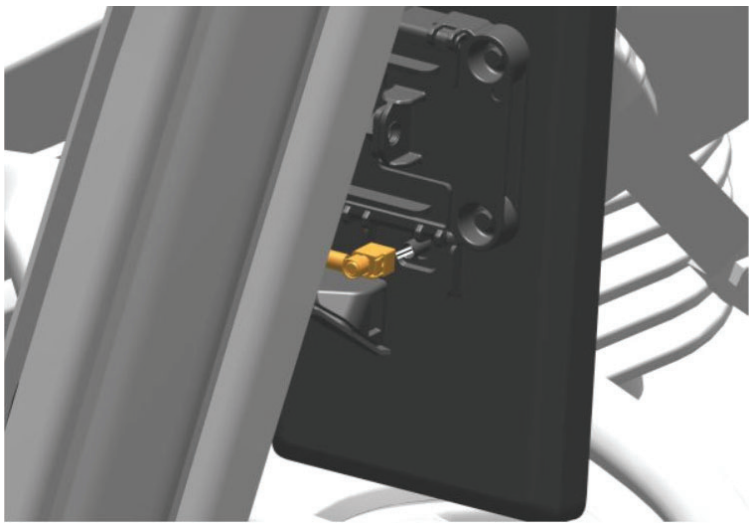


1. Perform Class II/IV function test using breakout harness for overlay cables (88890412-01) - Driver Side
   a. Take DTC report
   b. Use 88890412-01 to CMS ECU A388.C



c. Connect 88890412-01 Connector D to the blue passenger side jumper connector

d. Connect 88890412-01 connector A to passenger side monitor/Display

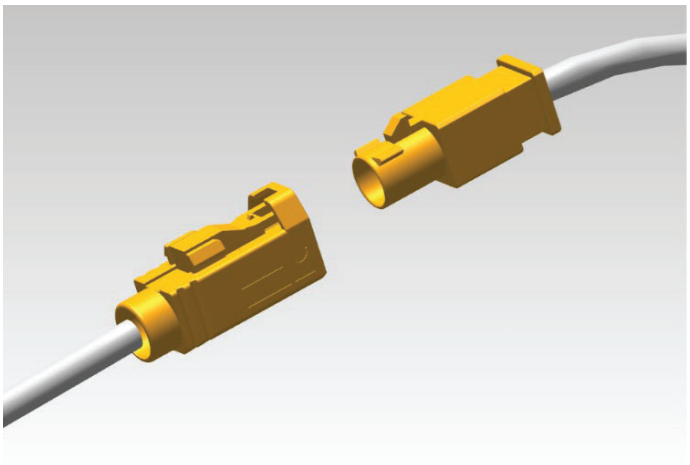


e. Connect 88890412-01 connector C to blue driver side jumper connector.

f. Connect 88890412-01 connector B to drivers' side monitor/display

g. Perform 50 mile test drive with breakout harness
    i. If issue returns, abort test drive
h. Pull new DTC report and compare the previous DTC report
i. If fault count increases, then proceed to step 4
j. If fault count does not increase replace the main overlay **(PN# 24408229)** **Refer to Corrective Action #1** (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
k. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

2. Perform Class II/IV function test using breakout harness for jumper cables (88890412-01 and 88890412-02) - Driver Side
    a. Take DTC report
    b. Keep Connections from Above Steps
    c. Connect 8890412-01 connector C to 88890412-02

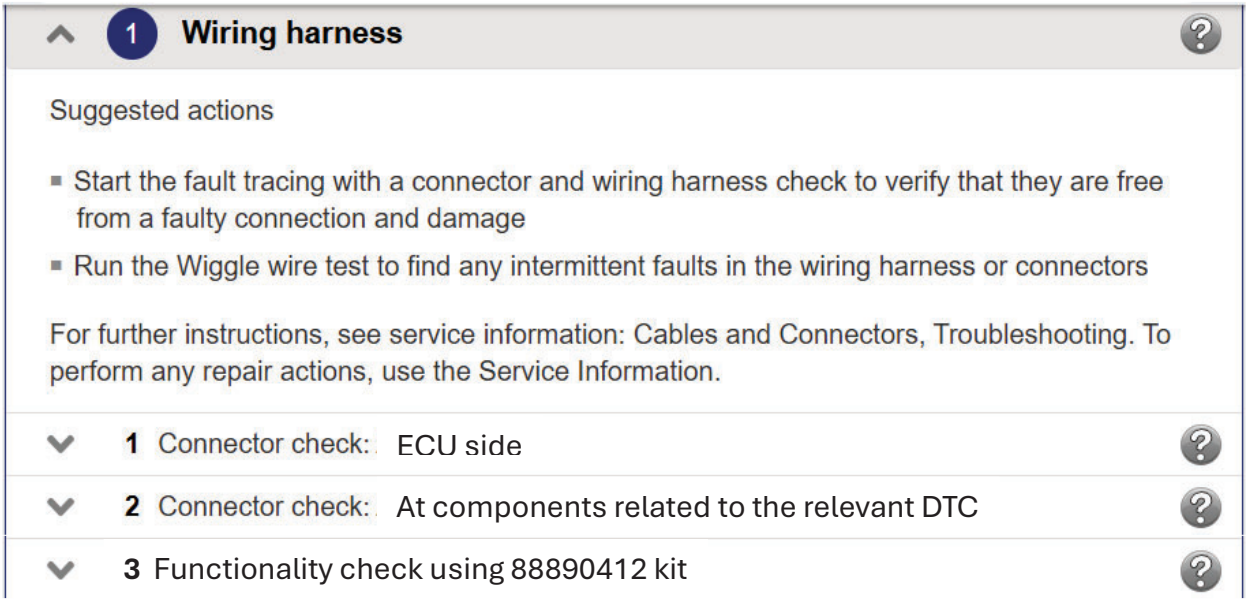


    d. Connect 88890412-02 to brown connector in wing

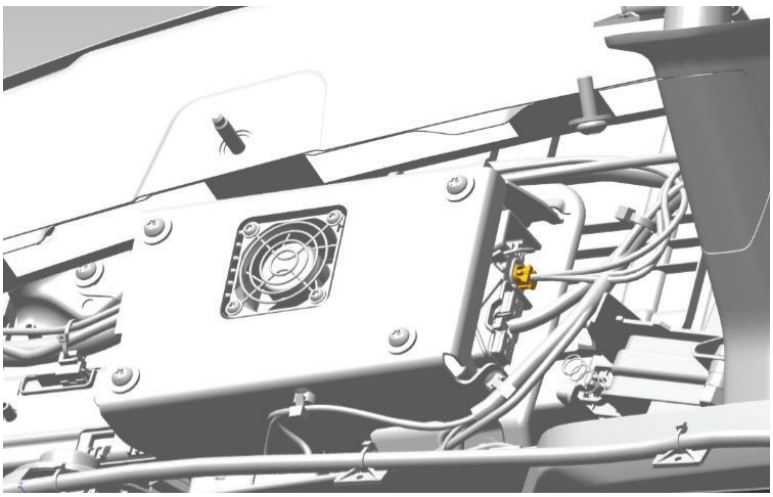
    e. <u>Perform 50 mile test drive with breakout harness</u>
        i. If issue returns, abort test drive
    f. Pull new DTC report and compare the previous DTC report
    g. If fault still active or fault count increases, replace the corresponding wing
    h. If fault count does not increase, replace the driver side jumper cable **(PN# 85170523). Refer to Corrective Action #2** (<u>Jumper Harness Driver side PN# 85170523 + VIN number or Jumper Harness Passenger side PN# 85170524 + VIN number installation</u>)
    i. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

4.1.2 Passenger camera wiring

- Related Fault codes
  - U1009-08
  - B1000-13
  - B1000-19
- Symptoms:
  - Permanent or Temporary Black screen on Passenger Display
  - Red CMS pop up in instrument cluster in addition to black screen on Passenger side display
  - No Curb view camera (Class V) in secondary information display

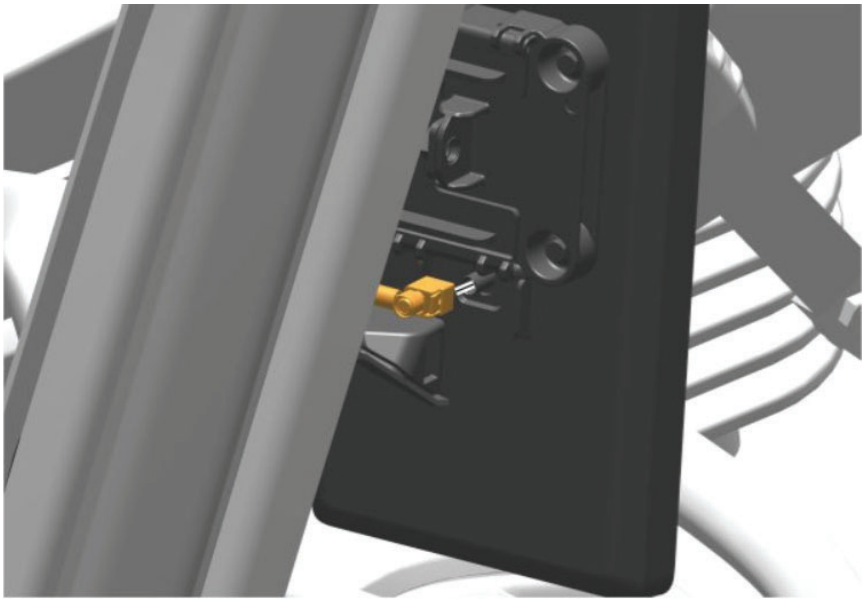


1. Perform Class II/IV function test using breakout harness for overlay cables (88890412-01) - Passenger Side
   a. Take DTC report
   b. Use 88890412-01 to CMS ECU A388.C



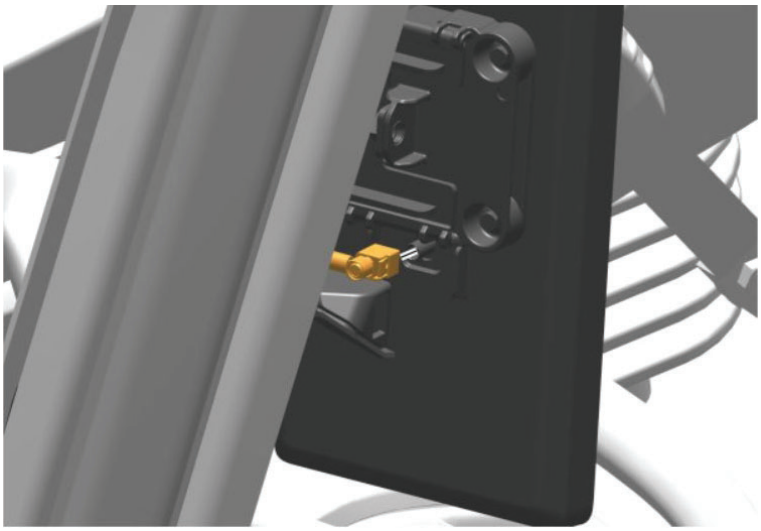
c. Connect 88890412-01 Connector D to the blue passenger side jumper connector

d. Connect 88890412-01 connector A to passenger side monitor/Display



e. Connect 88890412-01 connector C to blue driver side jumper connector.

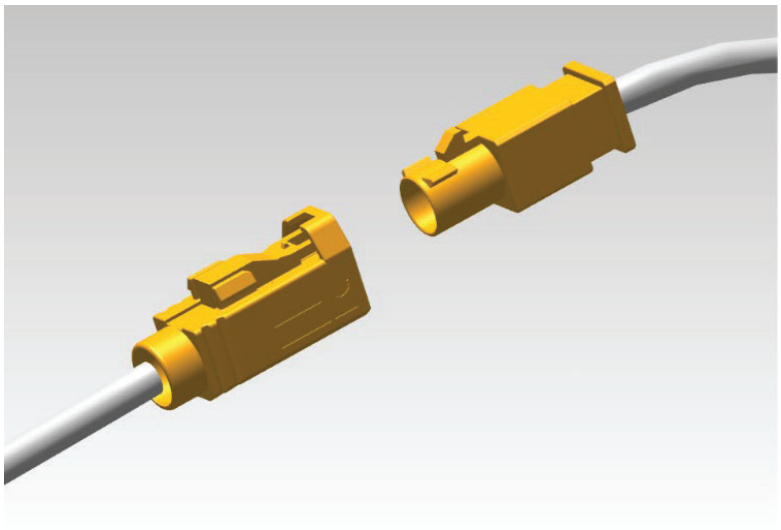
f. Connect 88890412-01 connector B to drivers' side monitor/display



g. **Perform 50 mile test drive with breakout harness**
    i. If issue returns, abort test drive
h. Pull new DTC report and compare the previous DTC report
i. If fault count increase, then proceed to step 2
j. If fault count does not increase, replace the main overlay **(PN# 24408229)** **Refer to Corrective Action #1** (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
k. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

2. Perform Class II/IV function test using breakout harness for jumper cables (88890412-01 and 88890412-02) - Passenger Side
    a. Take DTC report
    b. Keep the Above Connections in place

c. Connect 8890412-01 connector D to 88890412-02



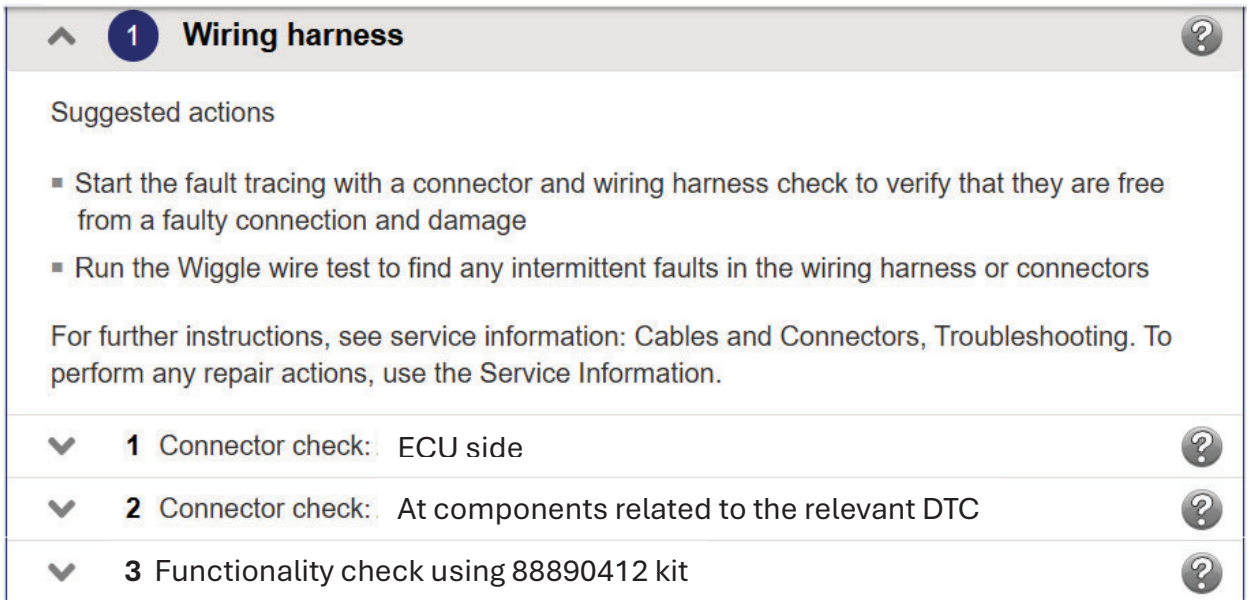
d. Connect 88890412-02 to brown connector in wing

e. Perform 50 mile test drive with breakout harness
    i. If issue returns, abort test drive
f. Pull new DTC report and compare the previous DTC report
g. If fault count increases, replace the corresponding wing following **Corrective action #4** (Corrective action #4: Camera arm replacement)
h. If fault count does not increase, replace the passenger side jumper cable **(PN# 85170524). Refer to Corrective Action #2** (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)

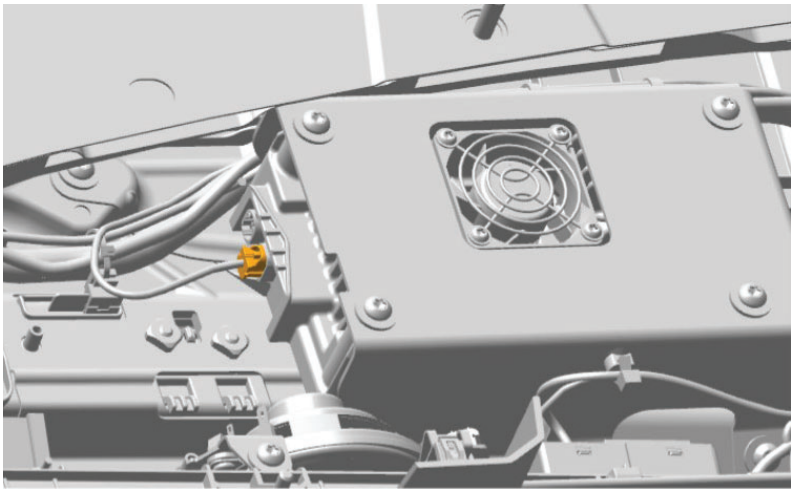
i. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

4.1.3 Curb (Class V) passenger camera wiring

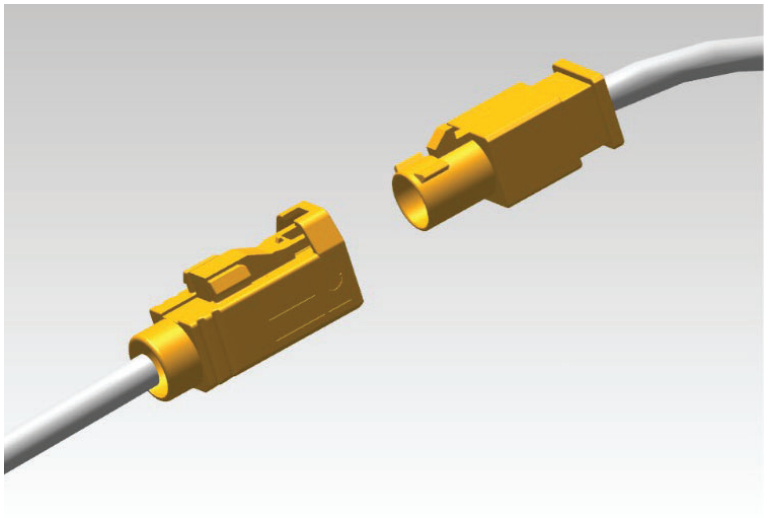
- Related Fault codes:
  - U1002-08
  - B1001-13
  - B1001-19
- Symptoms:
  - Permanent or Temporary Black screen on Passenger Display
  - Red CMS pop up in instrument cluster in addition to black screen on Passenger side display
  - No Curb view camera (Class V) in secondary information display



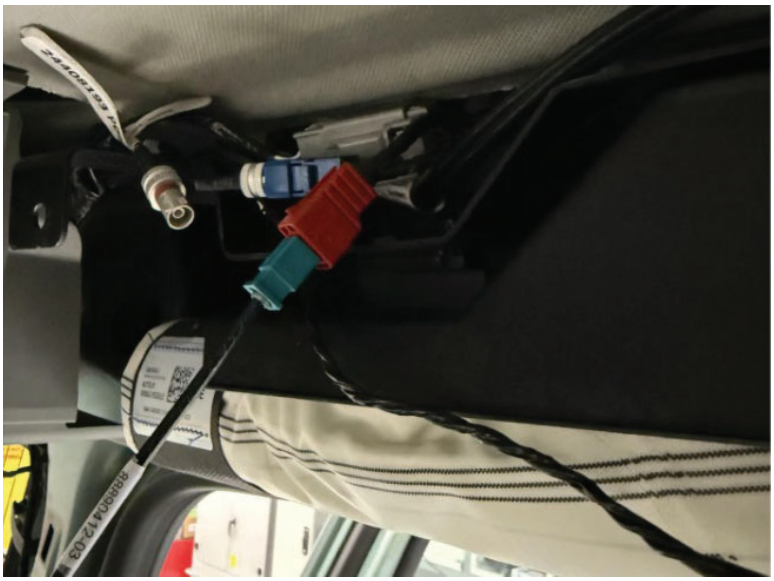
1. Perform Class V function test using breakout harness for main overlay cables (88890412-01 + 88890412-03)
   a. Take DTC report
   b. Connect 88890412-01 to CMS ECU A388.E



c. Connect 88890412-01 connector B to adapter 88890412-03

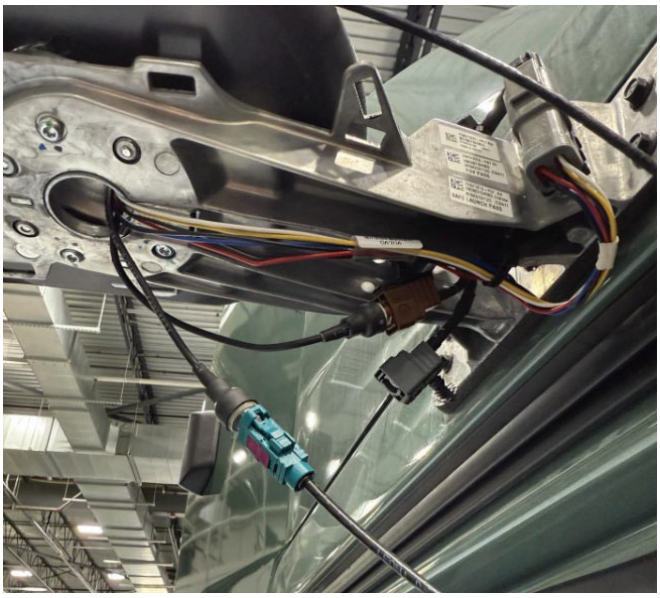


d. Connect adapter 88894012-03 to red jumper connector



e. Perform 50 mile test drive with breakout harness
    i. If issue returns, abort test drive
f. Pull new DTC report and compare the previous DTC report
g. If fault count increases, then proceed to step 2
h. If fault count does not increase, replace the class V overlay **(PN# 24408193). Refer to Corrective Action #3** (Corrective action #3: Class V Overlay (PN# 24408193) installation)
i. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

2. Perform function test using breakout harness for jumper cables (88890412-01) (ECU to wing side connector)
    a. Take DTC report
    b. Remove Adapter 88894012-03
    c. Connect 88890412-01 to the grey connector in the wing.

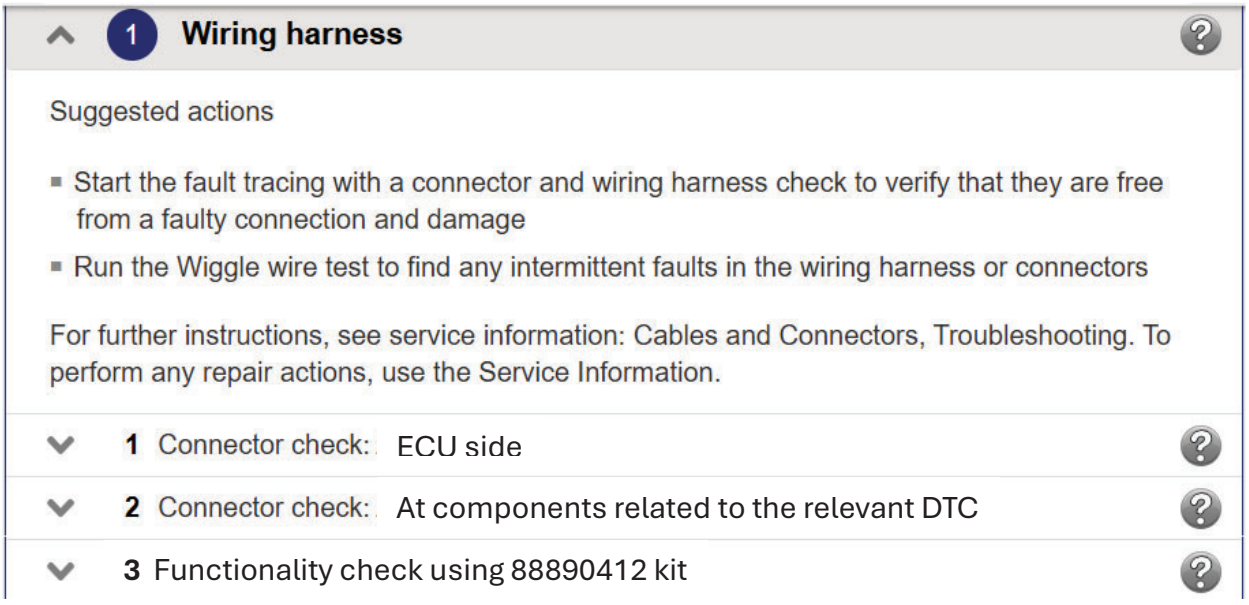


    d. Perform 50 mile test drive with breakout harness
        i. If issue returns, abort test drive
    e. Pull new DTC report and compare the previous DTC report
    f. If fault count increases, replace the corresponding camera arm following **Corrective action #4** (Corrective action #4: Camera arm replacement)
    g. If fault count does not increase, replace the passenger side jumper cable **(PN# 85170524). Refer to Corrective Action #2** (Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation)

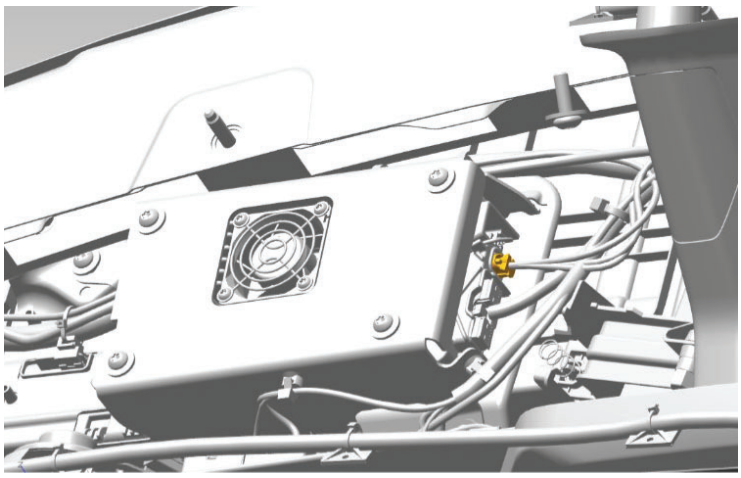
h. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

4.1.4 Driver and/or Passenger display wiring

- Related Fault codes:
  - Driver Display:
    - U1004-08
    - B1004-13
    - B1004-19
    - B1004-1C
  - Passenger Display:
    - U100A-08
    - B1005-13
    - B1005-02
    - B1005-19
    - B1005-1C
- Symptoms:
  - Permanent or Temporary Black screen on Driver Display
  - Permanent or Temporary Black screen on Passenger Display
  - Red CMS pop up in instrument cluster in addition to black screen on driver side display

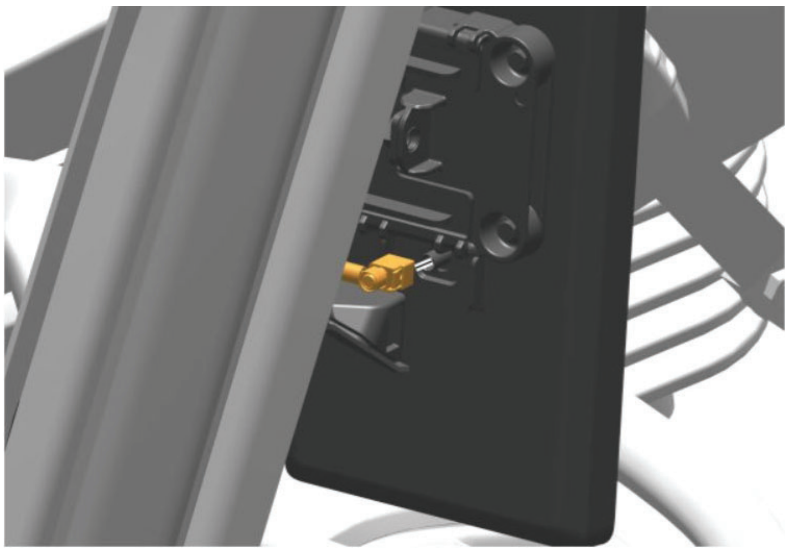


1. Perform Class II/IV function test using breakout harness for main overlay cables (88890412-01) - Driver Side
   a. Take DTC report
   b. Use 88890412-01 to CMS ECU A388.C



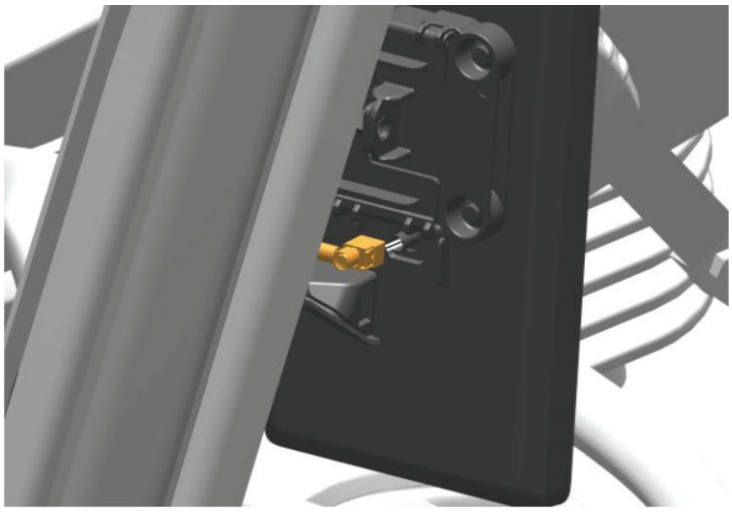
c. Connect 88890412-01 Connector D to the blue passenger side jumper connector

d. Connect 88890412-01 connector A to passenger side monitor/Display



e. Connect 88890412-01 connector C to blue driver side jumper connector.

f. Connect 88890412-1 connector B to drivers' side monitor/display



g. Perform 50 mile test drive with breakout harness
    i. If issue returns, abort test drive
h. Pull new DTC report and compare the previous DTC report
i. If fault count increases, then proceed to the next step
j. If fault count does not increase, replace the class II/IV overlay **(PN#24408229). Refer to Corrective Action #1** (Corrective action #1: Class II/IV overlay (PN# 24408229) installation)
k. Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

4.2 Full harness instructions

- Follow operation 3759-03-02-06 Overhead harness, replace (IMPACT)
- Part numbers to be ordered by dealers
    i. 85166118 w/ VIN (front overhead harness)
    ii. 85170523 w/ VIN (jumper harness driver side)
    iii. 85170524 w/ VIN (jumper harness passenger side)
- Truck Battery Restart (Maintenance disconnect switch) after any components are replaced through corrective actions

Note: Check if update available for CMS SW

- If yes, then then perform SWDL via PTT or workshop toolbox

4.3 Overlay instructions

As a reference to drop the overhead shelf follow Impact operation 3759-03-02-06 **Overhead Harness, Replacement**.

After the overhead shelf was dropped, follow the instructions below to install the overlay options based on the fault tracing results.

- Corrective action #1: Class II/IV overlay (PN# 24408229) installation
- Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation
- Corrective action #3: Class V Overlay (PN# 24408193) installation

Note: Original connectors and harness/cable will need to be secured per instructions to obtain correct routing for new overlay harness/cable and connectors.

Do not overtighten the cable tie for class II/IV and V cable corrective actions.

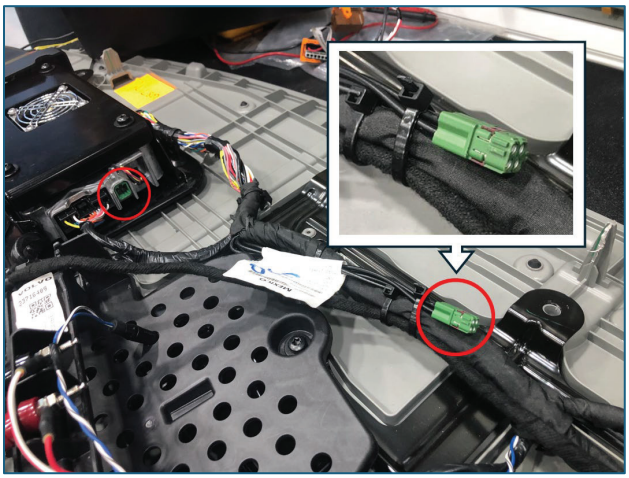
Note: When installing the new overlay harness with cables ties, vinyl tape (Electrical tape) must be wrapped around at least 2 times to the coax cable where the cable tie is to be secured and then a cable tie secured at that location. A cable tie should not be in direct contact with the coax cable insulation after the cable tie is secured.

4.3.1 Corrective action #1: Class II/IV overlay (PN# 24408229) installation

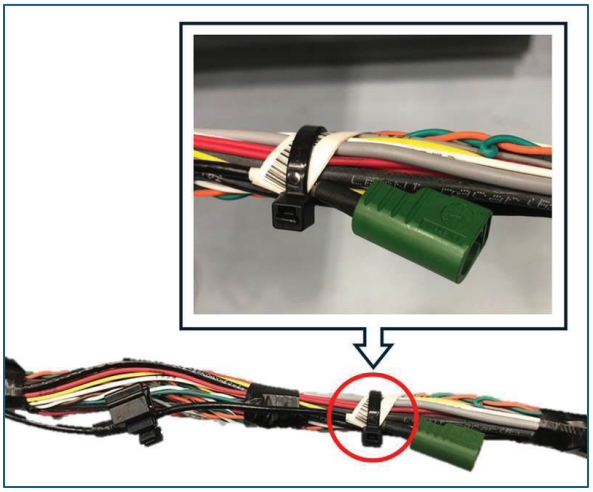
Note: Below are the instructions for securing existing cables to the main harness, do not install the new cables until directed.

1. As a reference to drop the overhead shelf follow Impact operation 3759-03-02-06 **Overhead Harness, Replacement**.

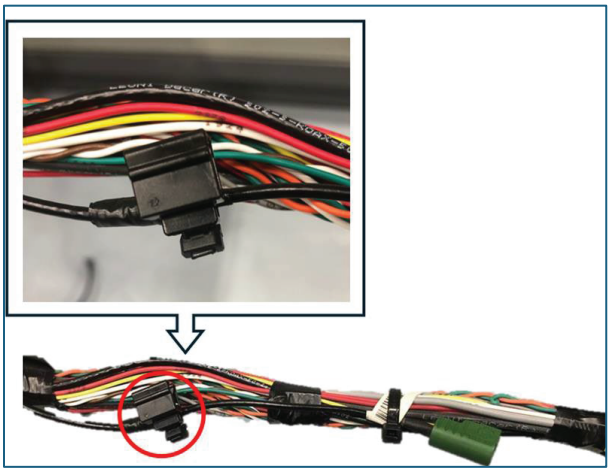
2. Disconnect original CMS ECU connector (A388.C) and use cable ties to secure it to the main harness.



3. Secure the passenger and driver side display connectors to existing harness using cable ties. Remove edge clip from both sides



(repeat process on driver side display connector)



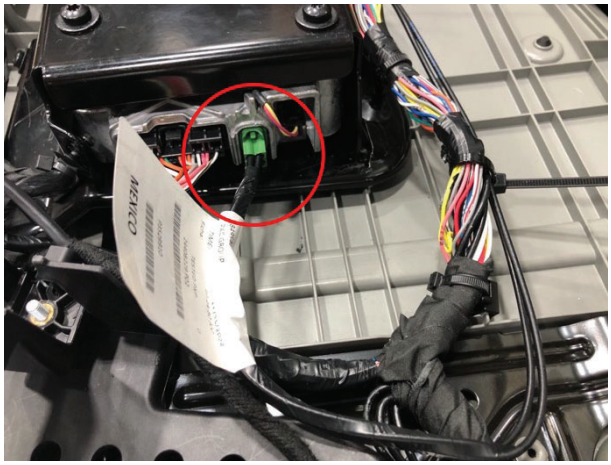
Remove edge clip on passenger side monitor connector.
(repeat process on driver side display retaining clip)

4. Secure existing driver and passenger side camera coax cables to the existing harness using cable ties.
   Passenger side: Class II/IV

   Driver side: Class II/IV

   Note: Install the new class II/IV cables as per below instructions.

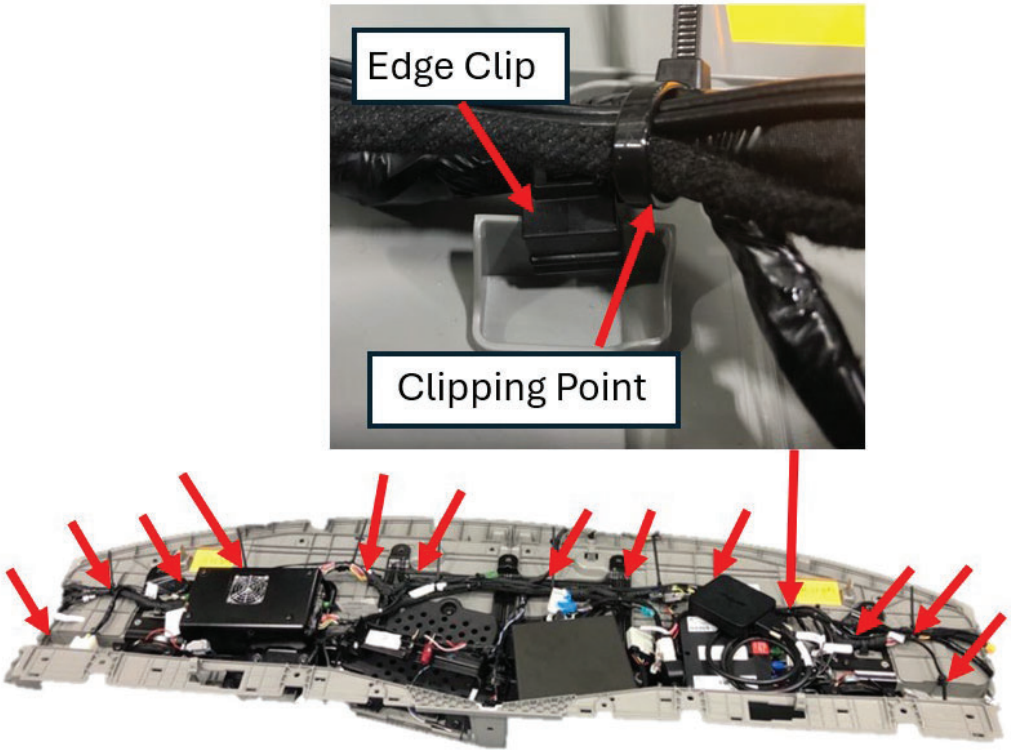
5. Connect A388.C connector to the CMS ECU and route cables along the passenger and driver side following main harness bundle.



6. Follow below image for routing and cable tie points starting from CMS ECU.
   Note: Avoid contact with CB radio. Follow below cable path highlighted.

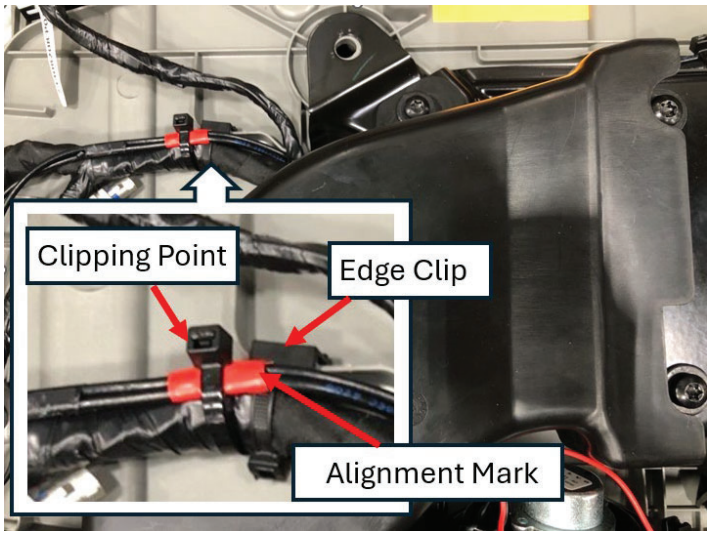
   Note: Verify that vinyl tape is applied at cable tie locations prior to the cable tie being pulled tight.

7. Secure the overlay cables with cable ties every 7.8in (200mm) (reference) starting from the CMS ECU.
   Note: Verify that vinyl tape is applied at cable tie locations prior to the cable tie being pulled tight.

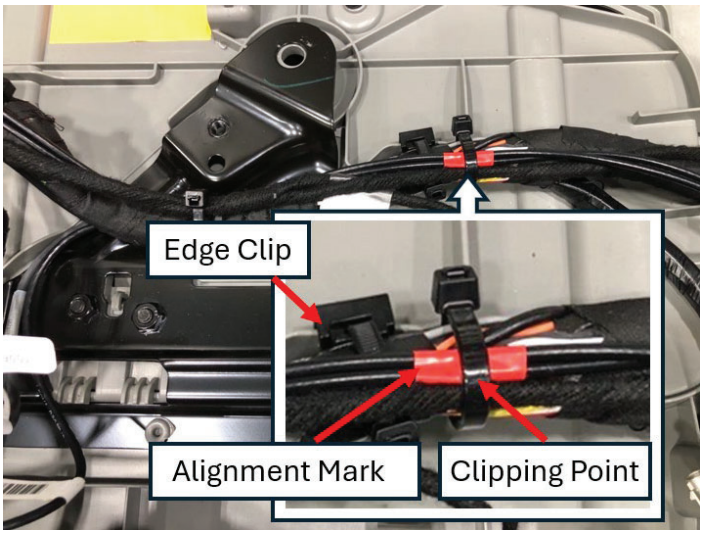


8. Ensure cable is tied on red tape marks on main harness. (pictures below for reference)

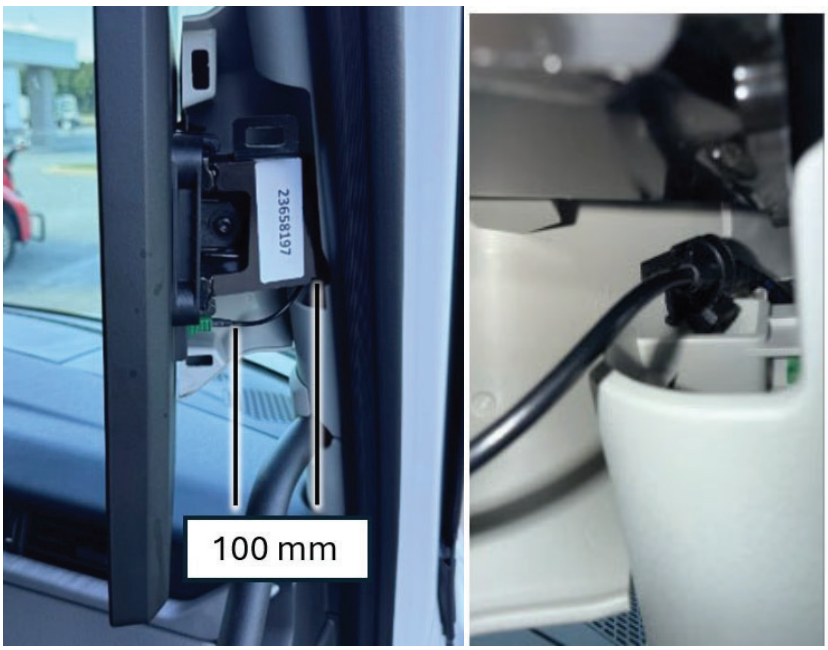
   Driver side:



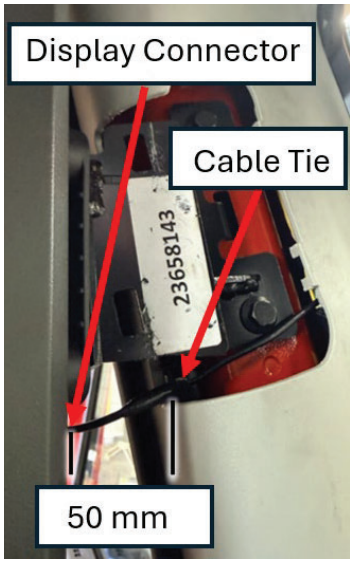
   Passenger side:



9. Install overhead shelf following impact instructions 3759-03-02-06 **Overhead Harness, Replacement (reference)**.
10. Passenger side display connection should resemble images below, ensure 100mm from clip to the connector heat shrink.



11. Passenger side display connection should resemble images below, ensure 100mm from clip to the connector heat shrink

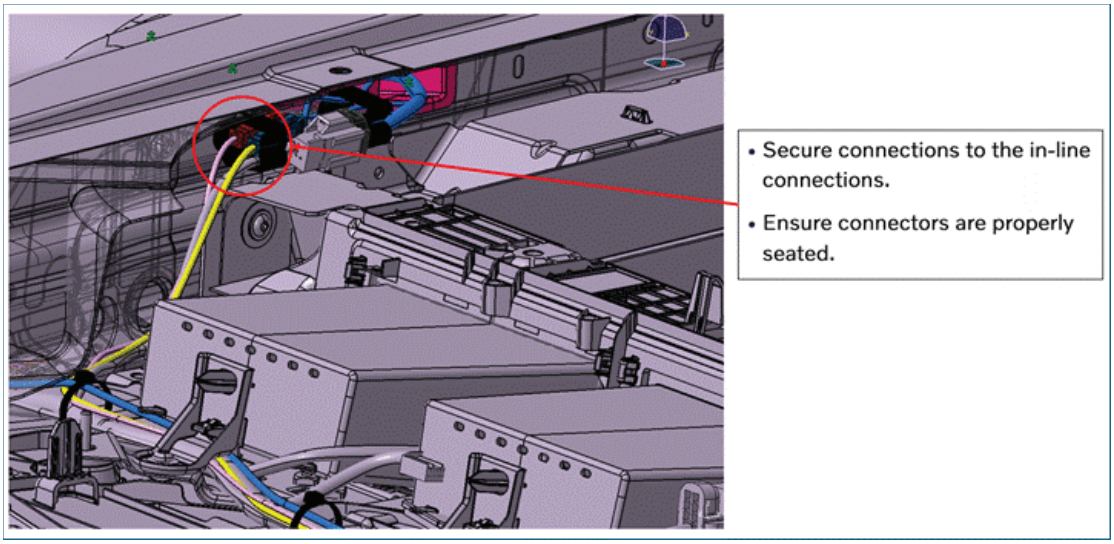


12. Route coax cable to the driver side junction above the door for connection with the wing Jumper Harness
13. Repeat on the passenger side
14. Secure the rest of the overlay cables to the existing main overhead harness following the existing routing and clipping
15. If the CMS ECU was previously removed it should be reinstalled
16. Connect Class II/IV and V cables to the ECU

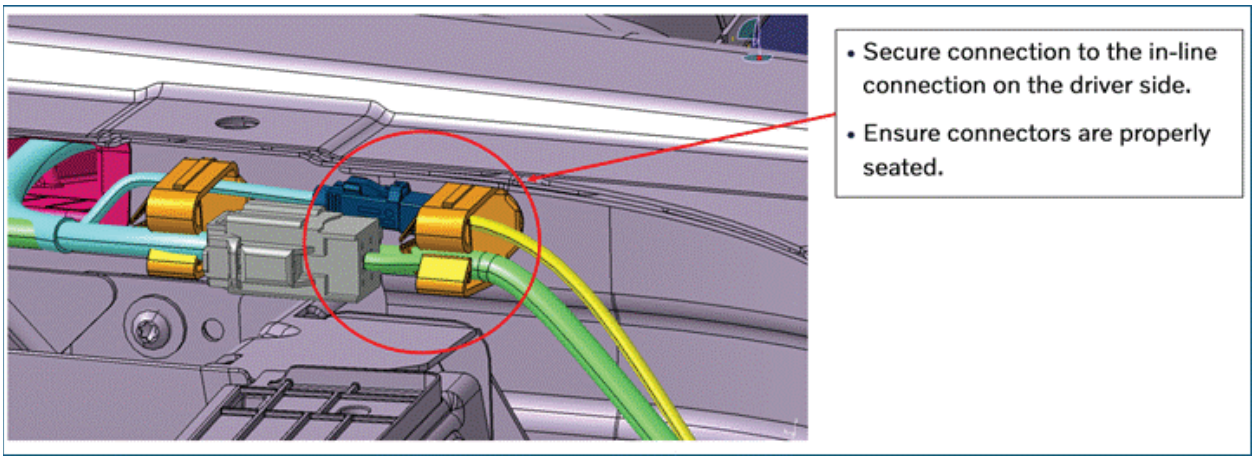
Notes:

- Connectors are fully seated when a click sounds is heard
- Securing the coax cables too tight with the cable-tie can damage the cables.

17. Connect jumper cables to the in-cab overlay on both sides



(Passenger side above)



(Driver side above)

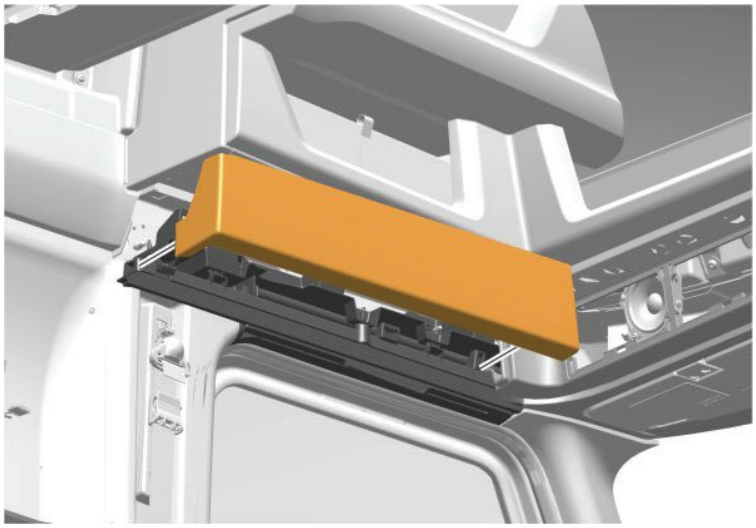
18. Test the CMS system by turning on the power. Image should appear after a few seconds on both displays without any warning icons on the display on in the IC
19. Reassemble trim panels
20. Clear all fault codes
21. Road test

4.3.2 Corrective action #2: Jumper Harness Driver side (PN# 85170523 + VIN number) or Jumper Harness Passenger side (PN# 85170524 + VIN number) installation

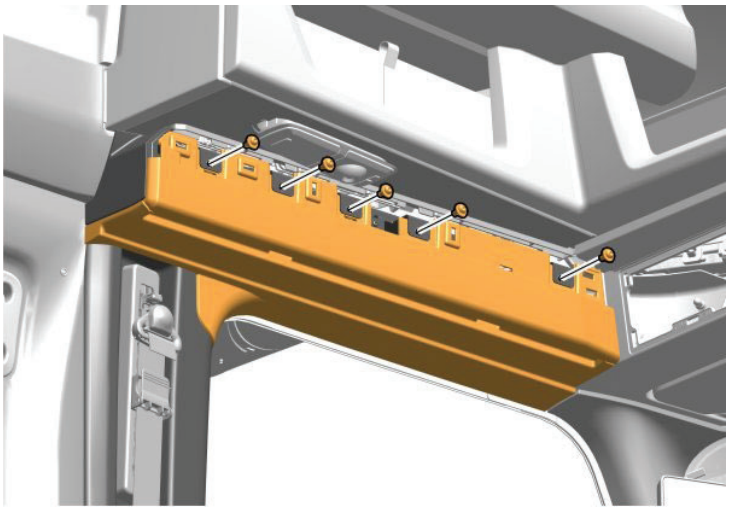
Note: Below are the instructions for securing existing cables to the main harness, do not install the new cables until directed.

To remove existing jumper and replace with new one on the driver side follow these instructions:

1. Truck to be disconnected from all external power sources
2. Turn off MDS switch, if equipped
3. Disconnect batteries
4. Remove trim panel.



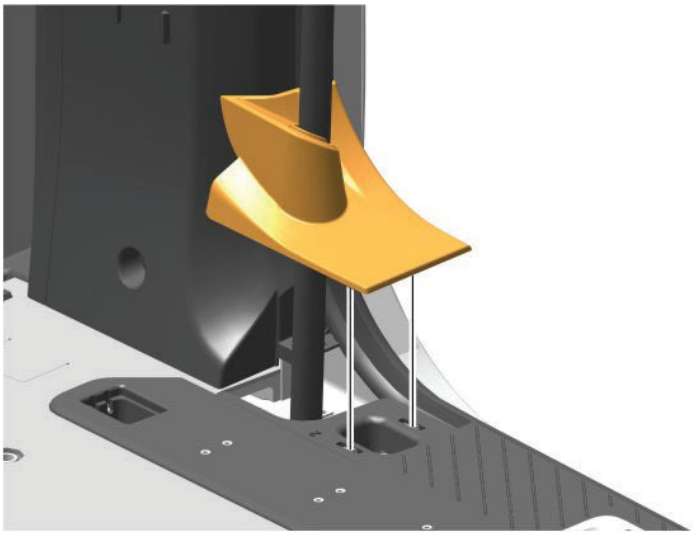
5. Remove the screws.
6. Remove the trim panel.



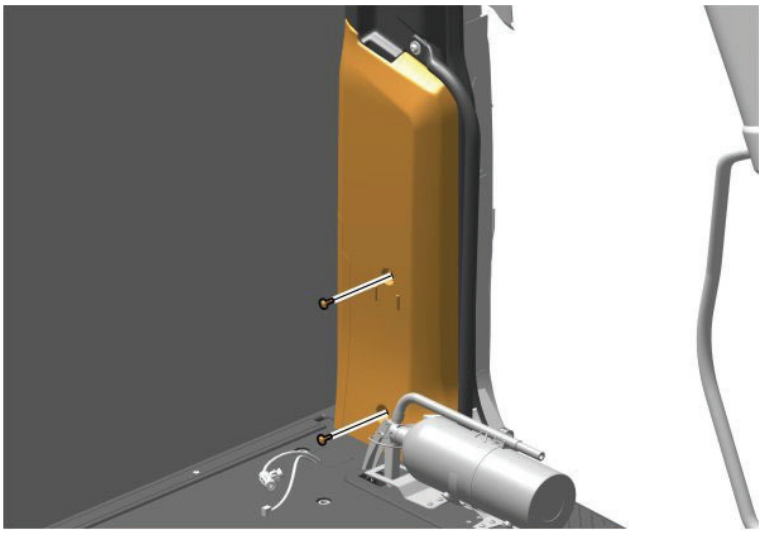
7. Lift the trim panel.

Note
Use a suitable tool.

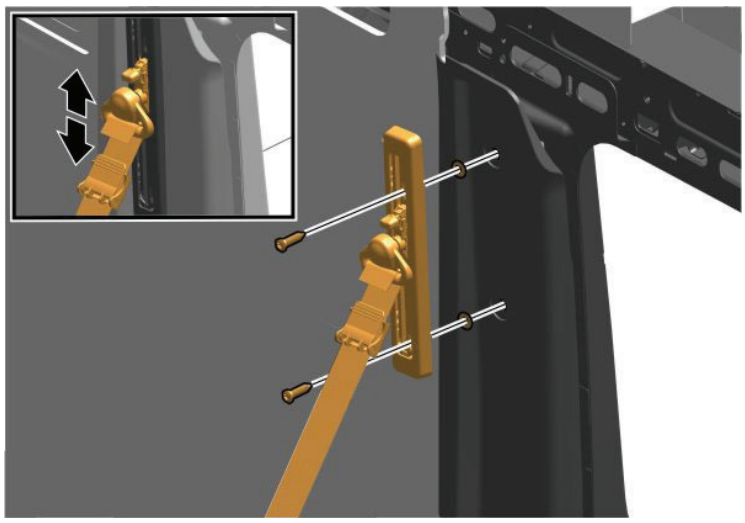
Note
Do not damage the clips.



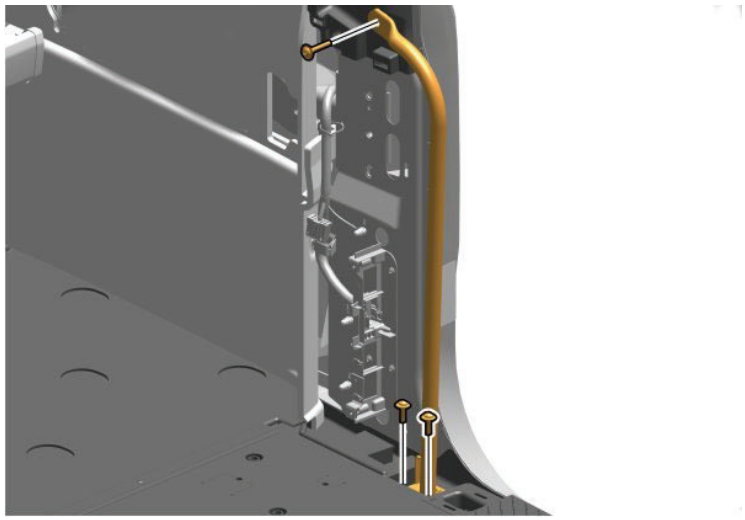
8. Remove the screws.
9. Remove the panel.



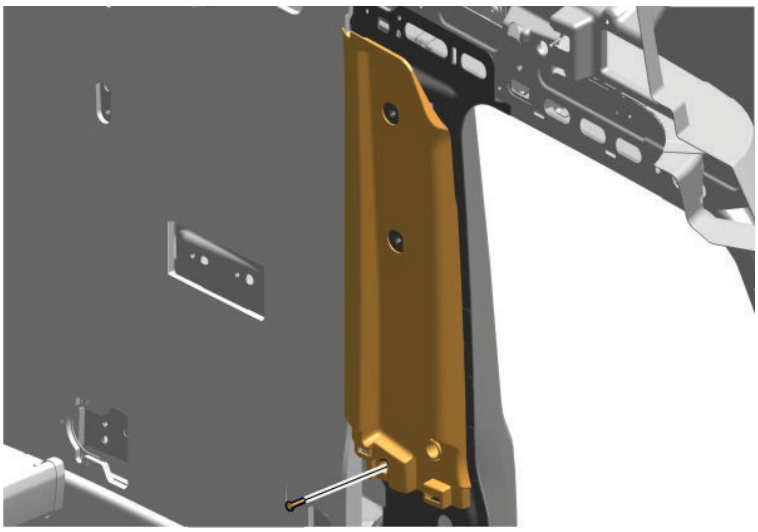
10. Move the seat belt to access the screws.
11. Remove the screws.
12. Remove the seat belt assembly.
13. Remove the washers.



14. Remove the screws.
15. Remove the grab handle.

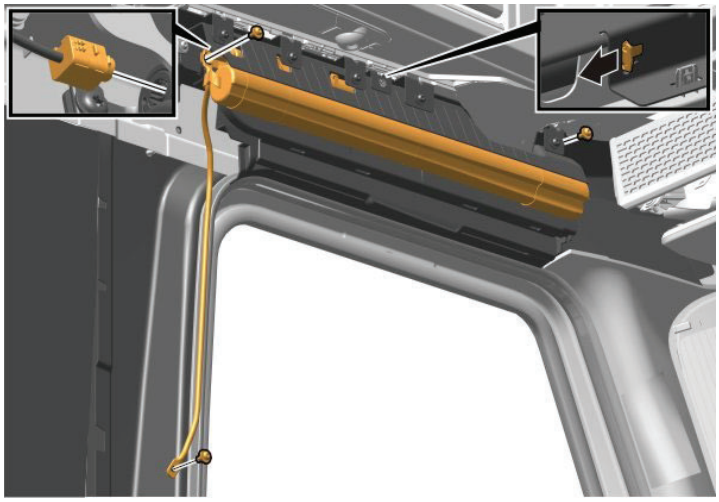


16. Remove the screw.
17. Remove the trim panel.

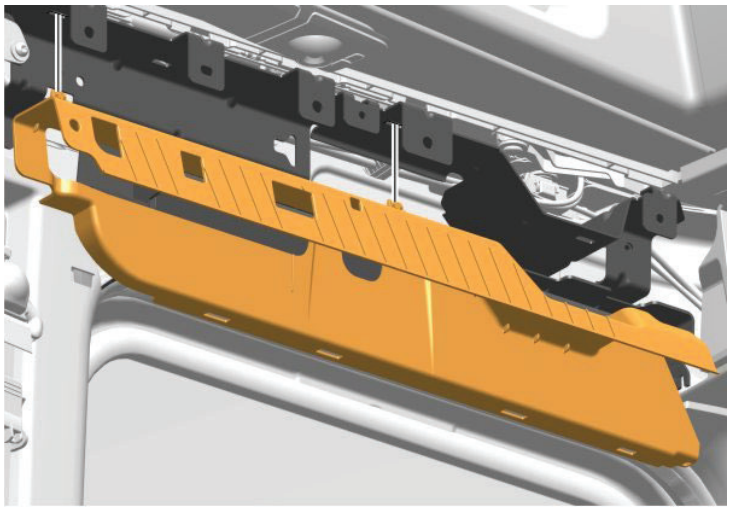


18. Disconnect the air bag module connector, if equipped.
19. Remove the screws.
20. Remove the airbag module, if equipped.

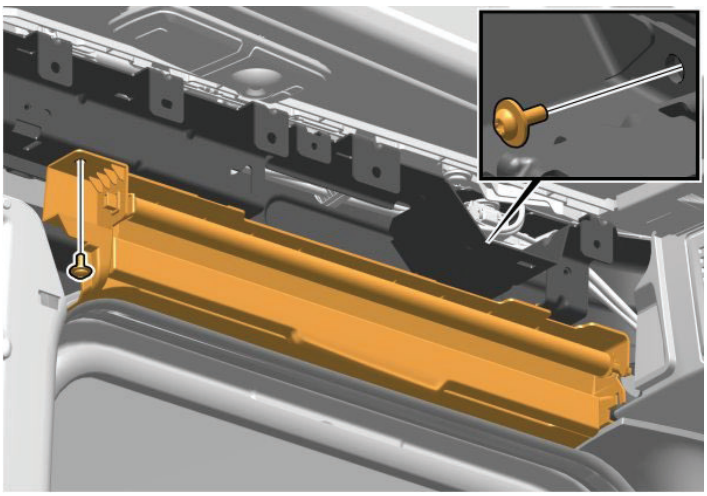
Note
Make sure that the hook is disengaged.



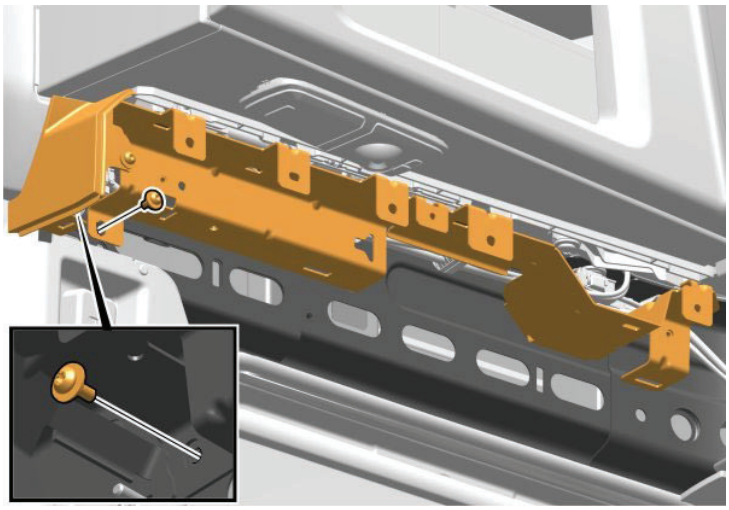
21. Remove the shield.



22. Remove the screws.
23. Remove the roller blind, if equipped.



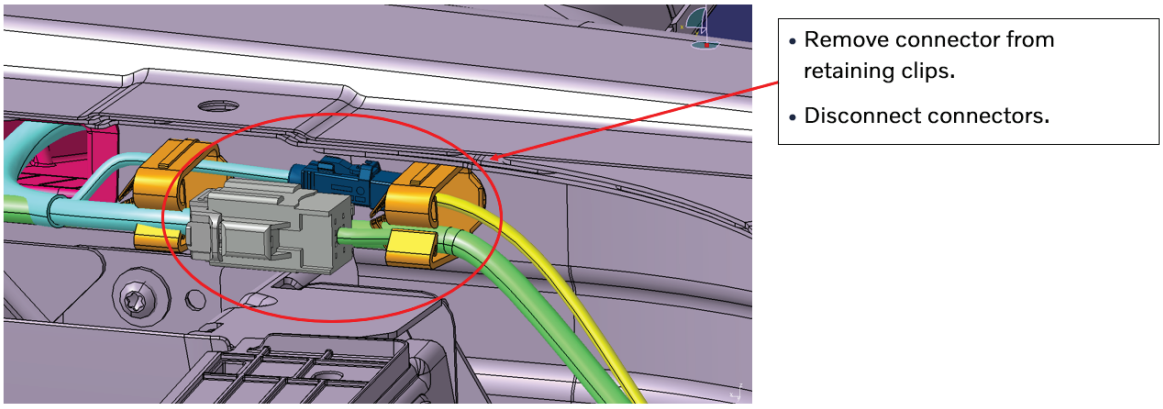
24. Remove the screws.
25. Remove the bracket.



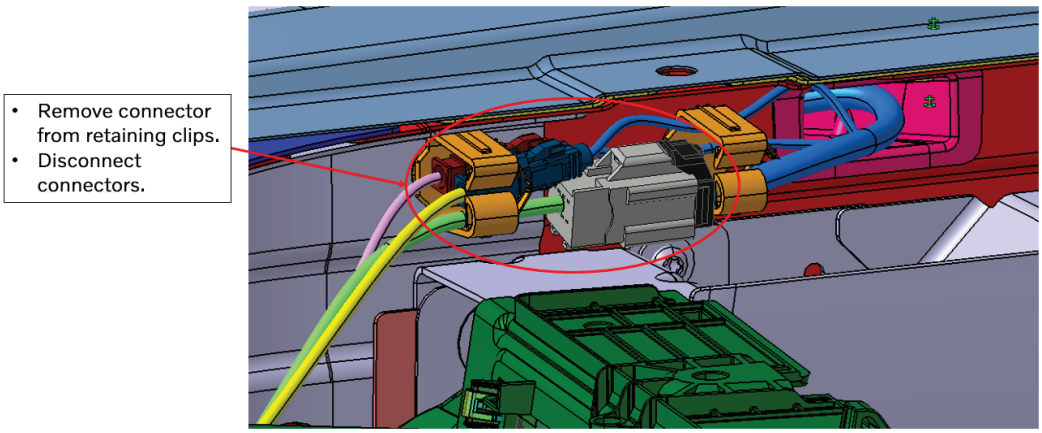
26. Disconnect the jumper harness connectors.
27. Remove the cable tie.
28. Disconnect the connector. And the clips to remove the connector.

Note
Press the locking clip.

Driver side jumper harness

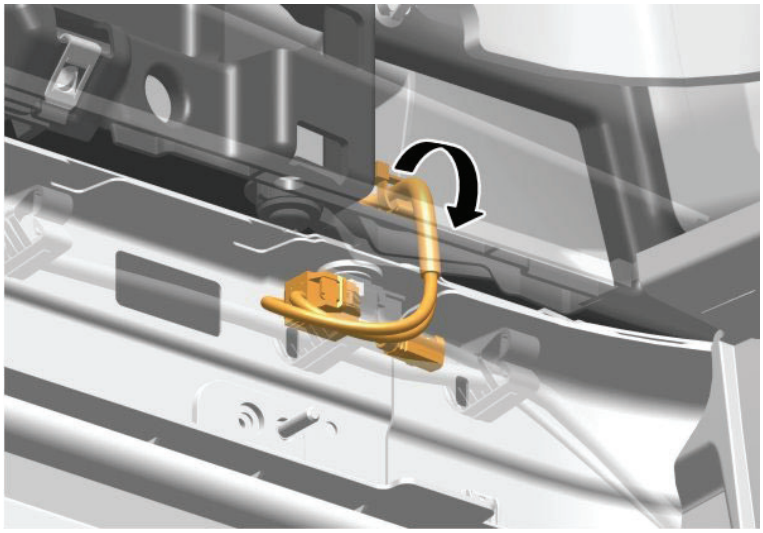


Passenger side jumper harness



29. Remove camera arm following Corrective action #4 (Camera arm replacement)
30. Install the jumper wiring harness.

Note
As noted.

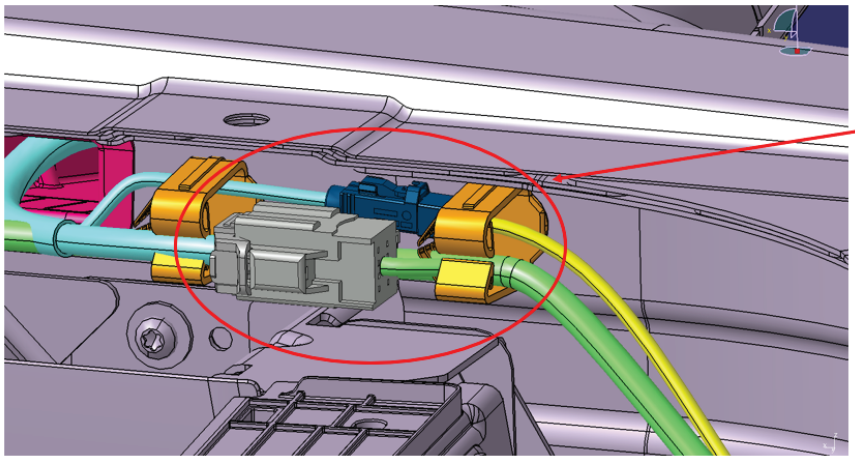


31. Install the cable tie.

Note
Use a new part.

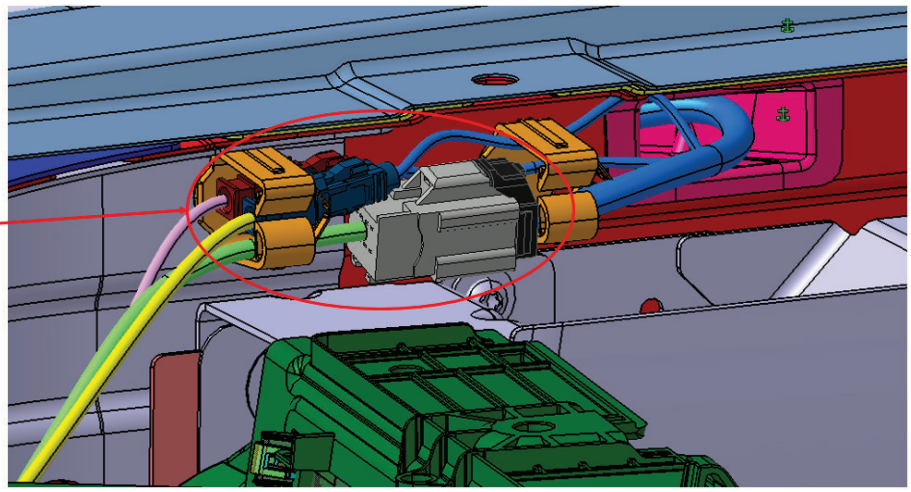
32. Connect the jumper harness connectors.

Driver side jumper harness connectors



- Secure connection to the in-line connector on driver side.
- Ensure connectors are properly seated.
- Listen for audible click.

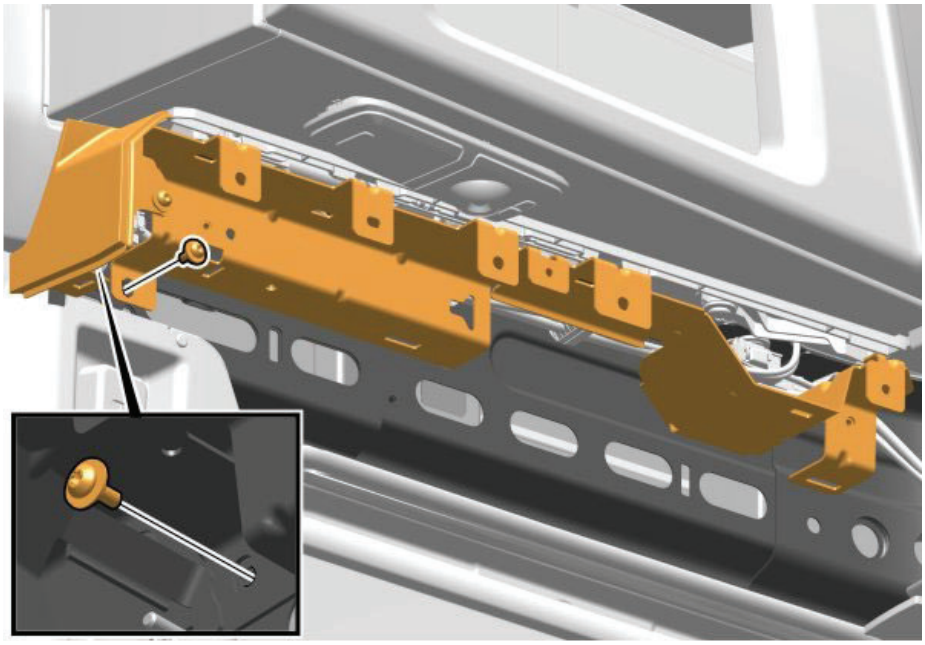
Passenger side jumper harness connectors



- Secure connection to the in-line connector on passenger side.
- Ensure connectors are properly seated.
- Listen for audible click.

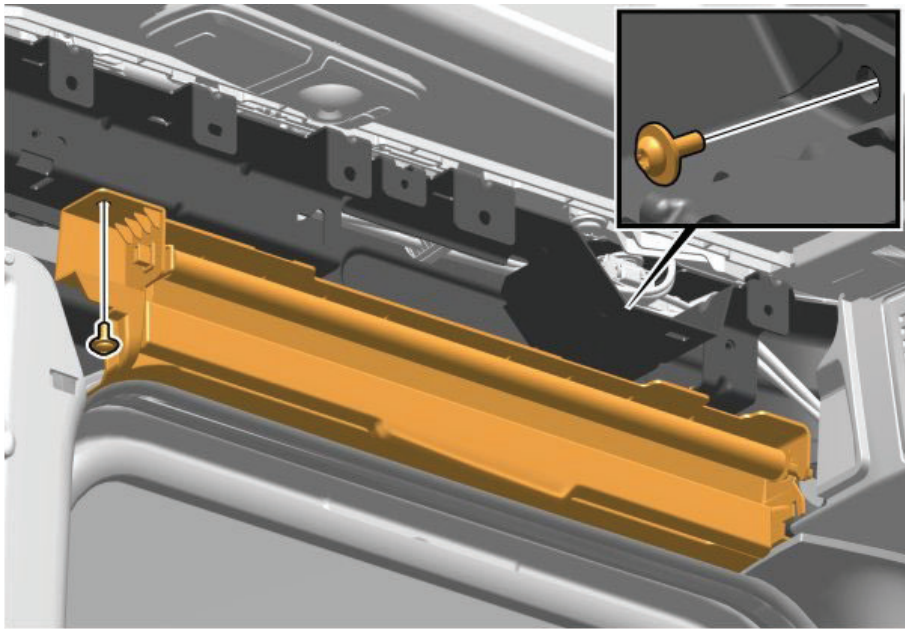
33. Install the bracket.
34. Install the screws.
35. Tighten the screws to torque.

Tightening torque	
Bracket, screw	10 ±2 Nm (7 ±1 lb_f·ft)

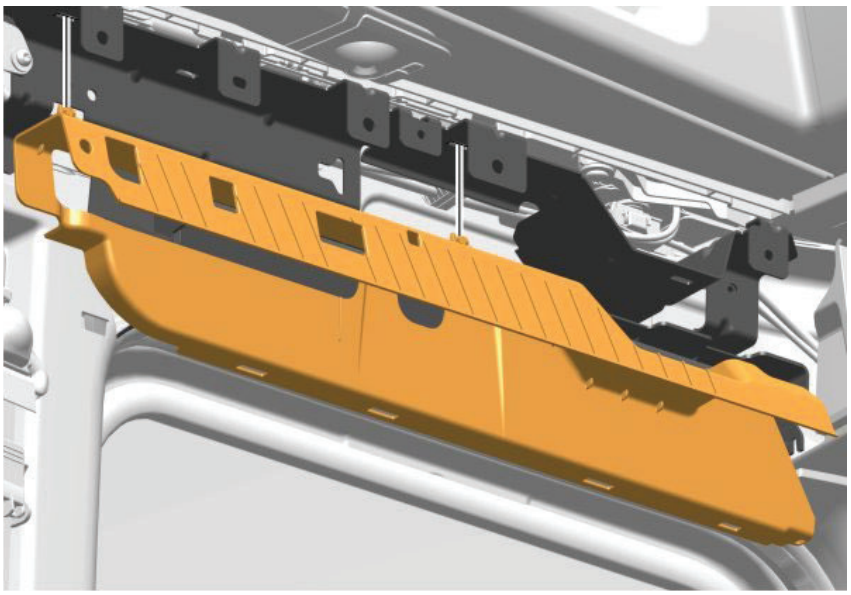


36. Install the roller blind, if equipped.
37. Install the screws.
38. Tighten the screws to torque.

Tightening torque	
Roller blind, screw	10 ±2 Nm (7 ±1 lb_f·ft)



39. Install the shield.



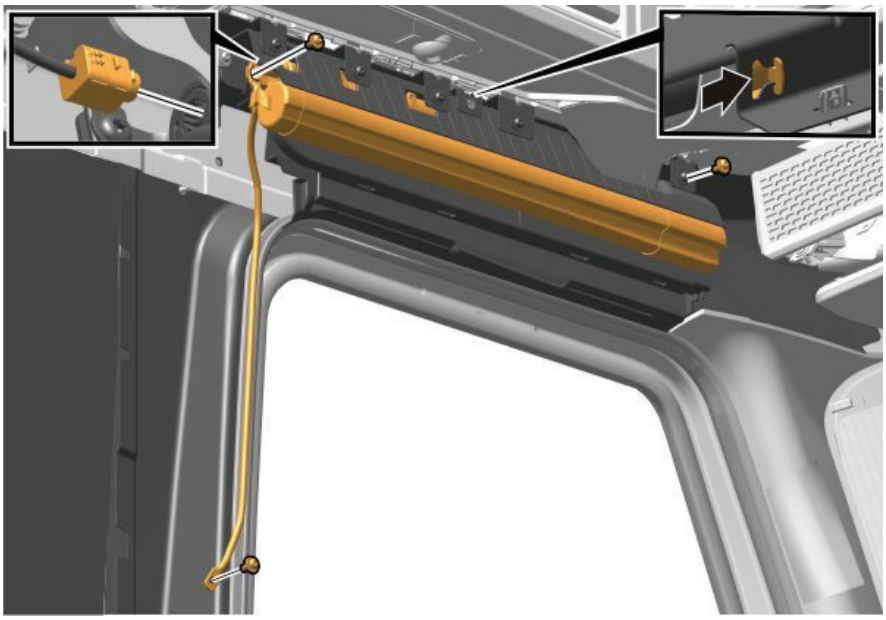
40. Install the airbag module, if equipped.

Note
Make sure that the hook is correctly engaged.

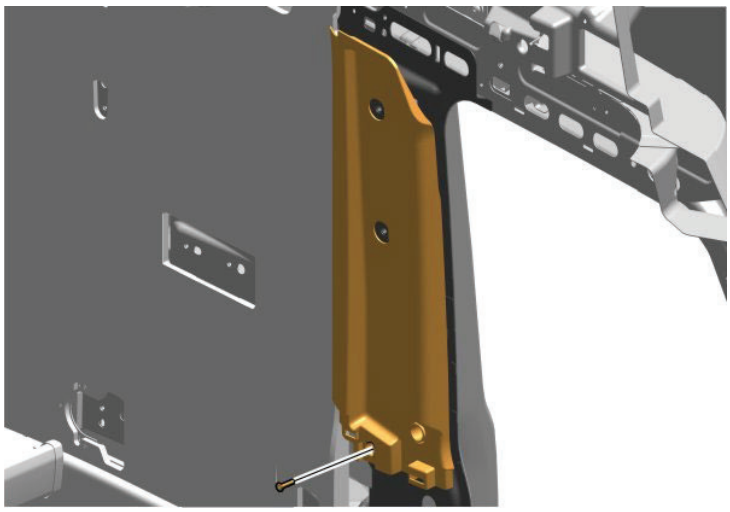
41. Install the screws.
42. Tighten the screws to torque.

Tightening torque	
Airbag module, screw	10 ±1.5 Nm (7 ±1 lb_f·ft)

43. Connect the air bag module connector, if equipped.

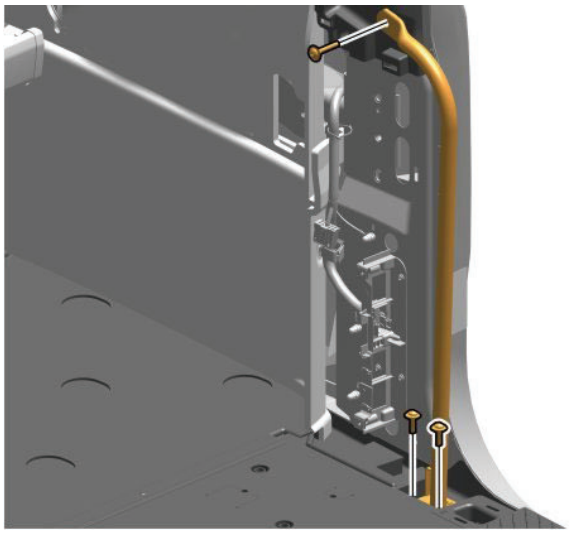


44. Install the trim panel.
45. Install the screw.



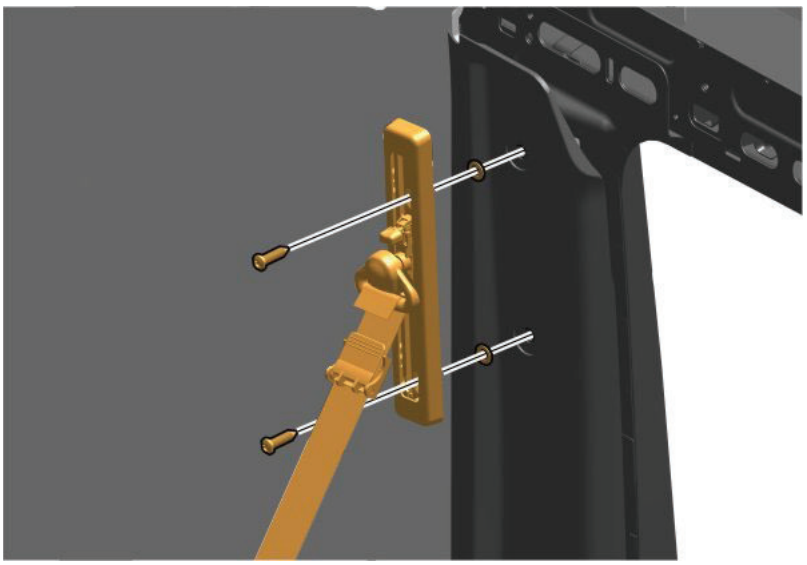
46. Install the grab handle.
47. Install the screws.
48. Tighten the screws.

Tightening torque	
Grab handle, screw	M8
	24 ±4 Nm (18 ±3 lb_f ft)

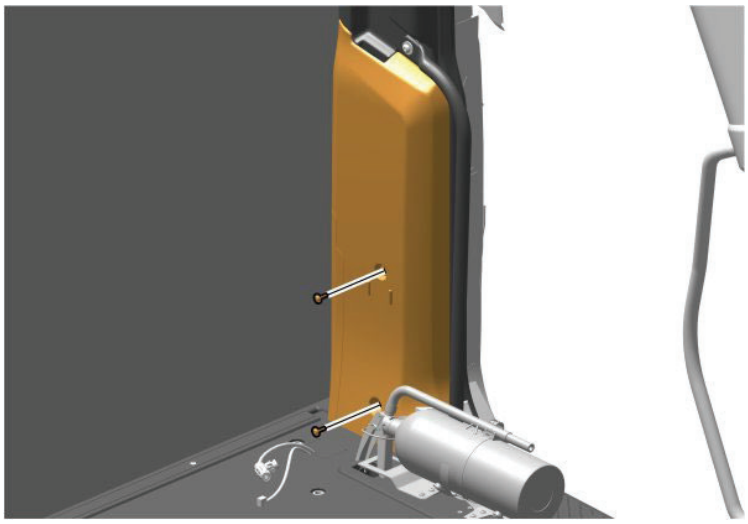


49. Install the washers.
50. Install seat belt assembly.
51. Install the screws.
52. Tighten the screws to torque.

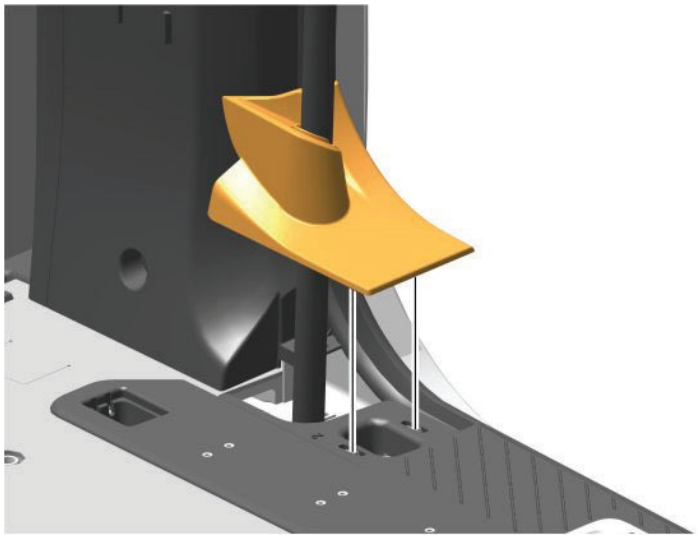
Tightening torque	
Seat belt, screw	50 ±7 Nm (37 ±5 lb_f ft)



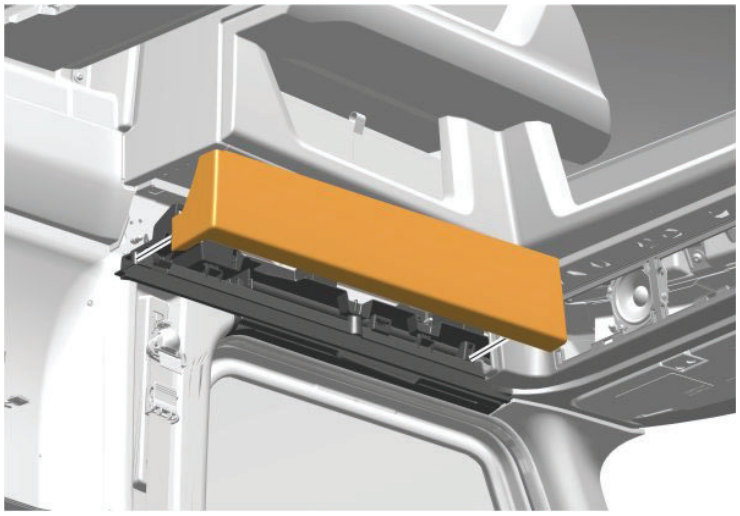
53. Install the panel.
54. Install the screws.



55. Lower the panel.



56. Install the trim panel.



57. Install the screws.
58. Tighten the screws to torque.

Tightening torque	
Trim panel, screw	3.5 ±0.5 Nm (3 ±0.4 lb_f·ft)

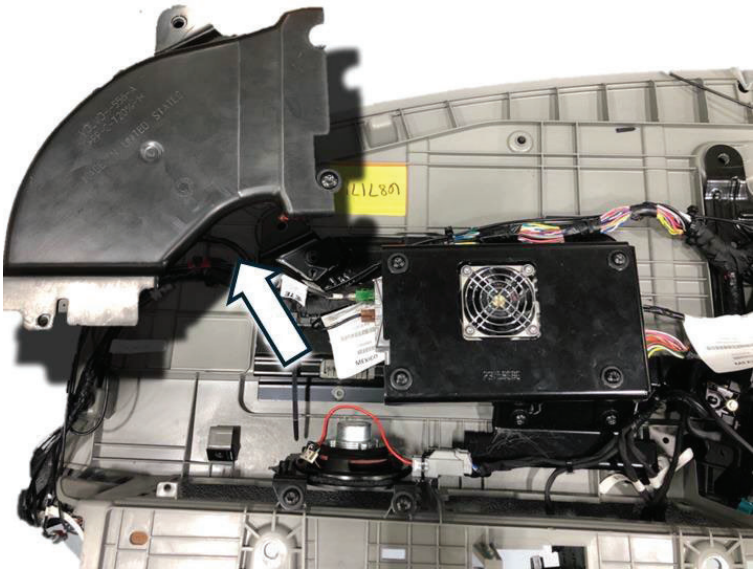
59. Test the CMS system by turning on the power. Image should appear after a few seconds on both displays without any warning icons on the display on in the IC
60. Reassemble trim panels
61. Clear all fault codes
62. Road test

4.3.3 Corrective action #3: Class V Overlay (PN# 24408193) installation

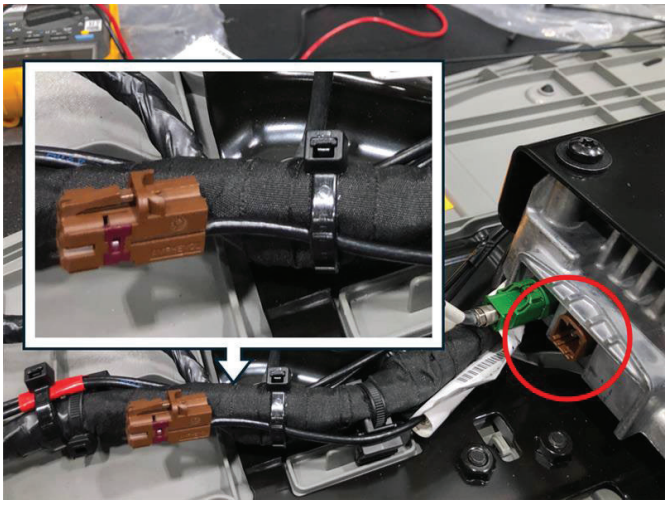
Note: Below are the instructions for securing existing cables to the main harness, do not install the new cables until directed.

Note: When installing the new overlay harness with cables ties, vinyl tape (Electrical tape) must be applied at the location the cable tie is to be installed for added protection. Wrap vinyl tape at least 2 times around the coax cables. A cable tie should not be in direct contact with the coax cable insulation after the cable tie is secured.

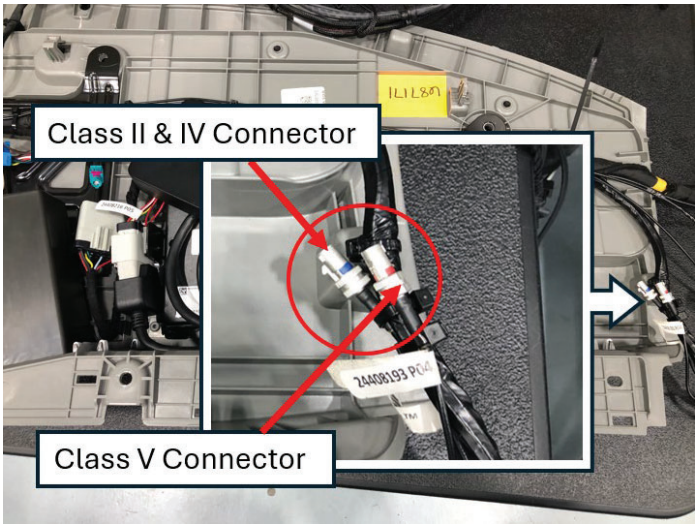
1. As a reference to drop the overhead shelf follow Impact operation 3759-03-02-06 **Overhead Harness, Replacement**.
2. Remove the CMS duct to access the brown class V cable



3. Disconnect class V cable connector (A388.E) (brown) and use cable ties to secure it to the main harness.

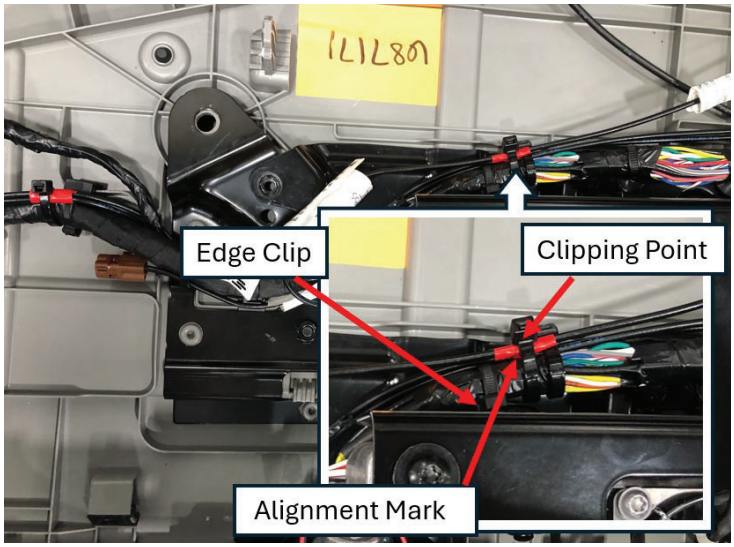


4. Secure original passenger side Class V camera coax cables to main harness using cable ties. (as seen below)

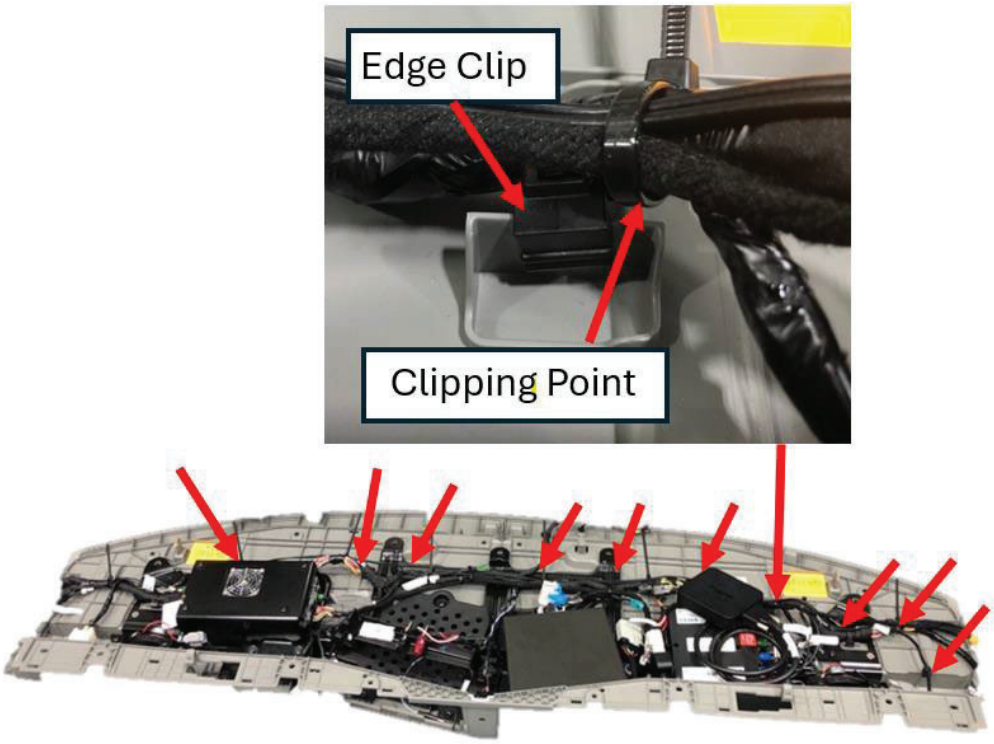


Note: Install the new class V cables as per below instructions.

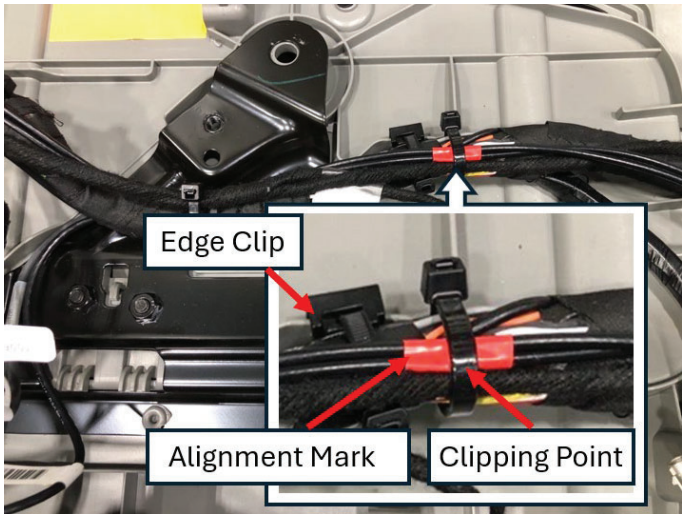
5. Connect A388.E connector to the CMS ECU and route new cable along the passenger side following main harness bundle.
   Note: Avoid sharp bends or kinks, this may damage the cable



6. Secure the overlay cables with cable ties every edge clip starting from the CMS ECU. Do not overtighten the cable tie.
   Note: Verify that vinyl tape is applied at cable tie locations prior to the cable tie being pulled tight.



7. Ensure overlay class V cable is tied on red tape marks on main harness. (picture below for reference)
   Passenger side:

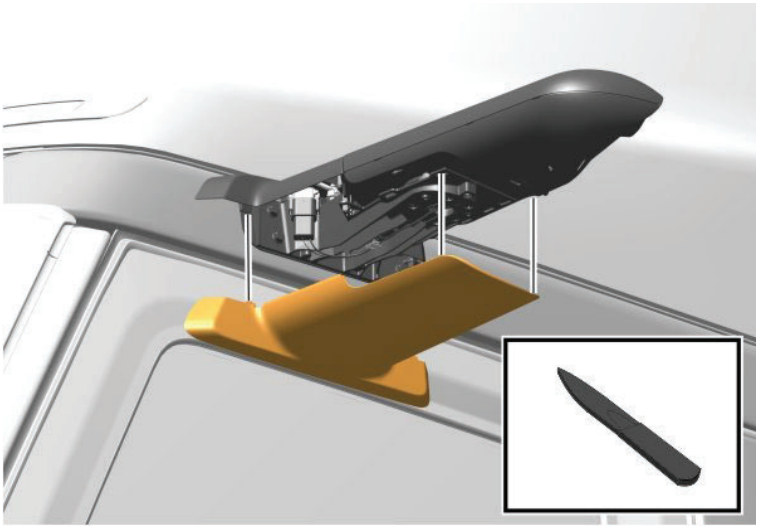


8. Install overhead shelf following impact instructions 3759-03-02-06 **Overhead Harness, Replacement (reference)**.
9. Connect the class V cable to jumper harness.
10. Test the CMS system by turning on the power. Image should appear after a few seconds on both displays without any warning icons on the display on in the IC
11. Reassemble trim panels
12. Clear all fault codes
13. Road test

4.3.4 Corrective action #4: Camera arm replacement

1. Remove the lower cover.

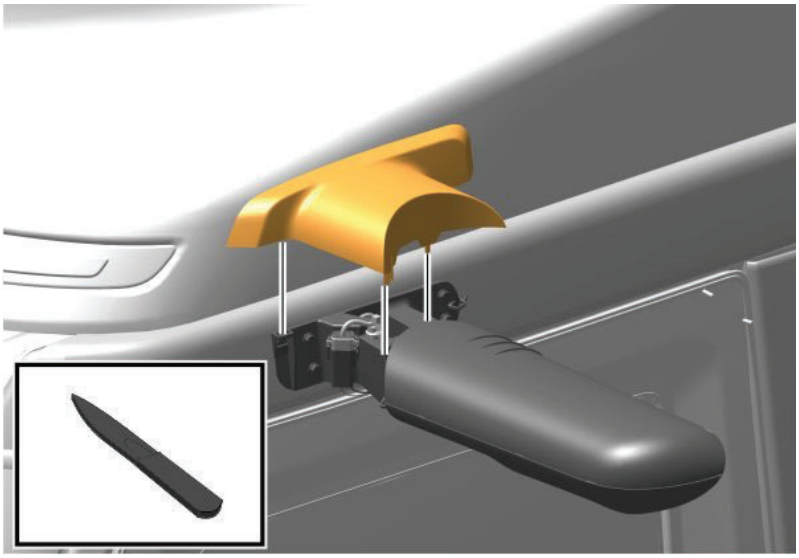
Note
Use a suitable tool.



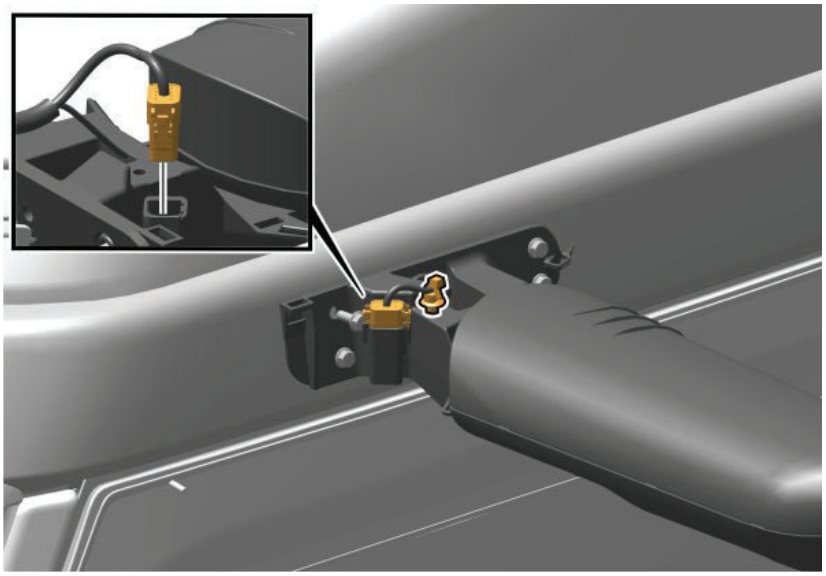
2. Remove the upper cover.

Note
Use a suitable tool.

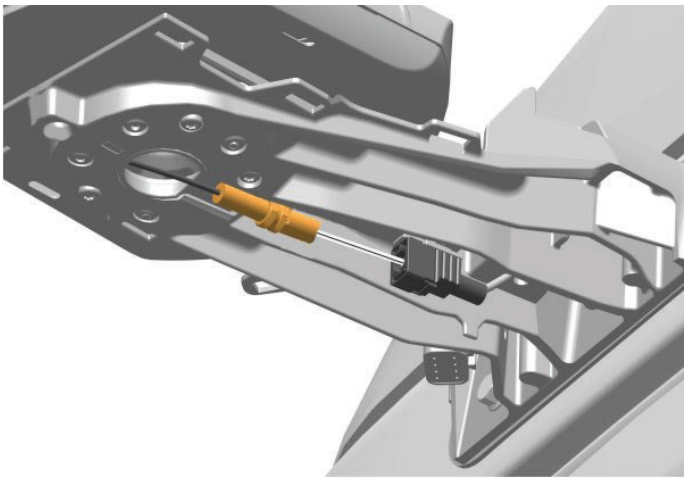
Service hint
Pushing up on the mounting clips from the bottom will aid in the release of the cover.



3. Remove the cable tie.
4. Disconnect the connector.

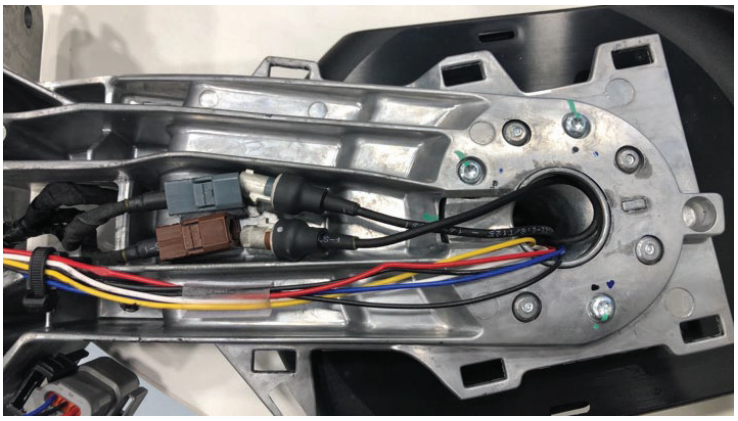


5. Disconnect the camera connector (driver side).



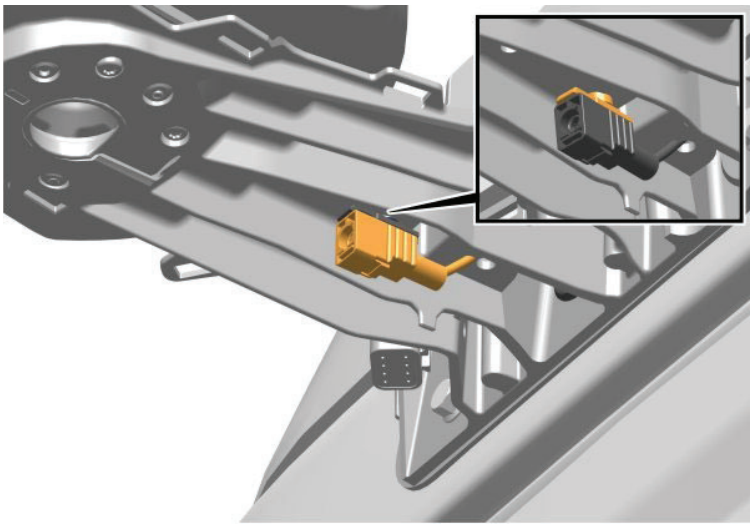
OR.

Disconnect the camera connector (passenger side) with optional class V curb side camera cable (grey).

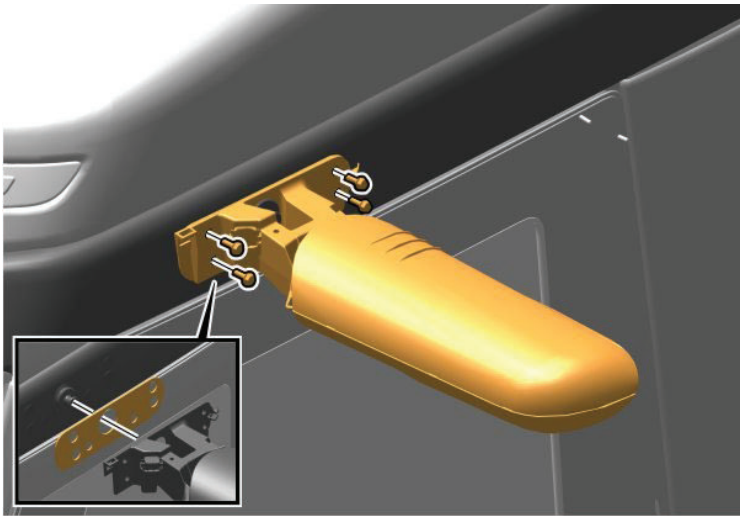


6. Remove the jumper harness connector from locking clip (2 clips for passenger side).

Note
Press down on the locking clip to release it.

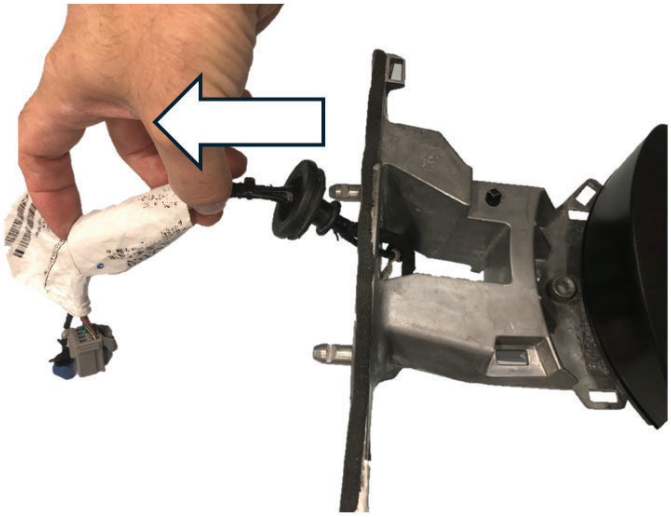


7. Remove the camera mounting screws.



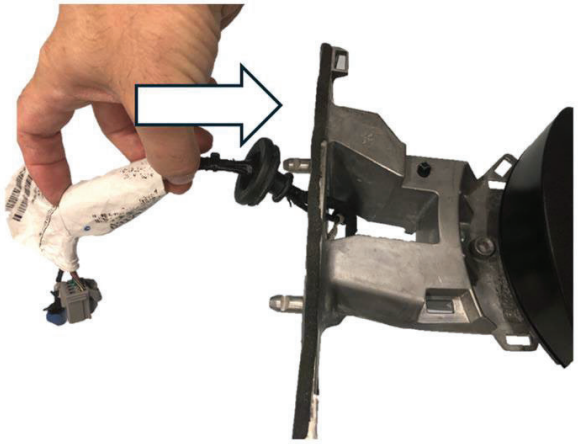
8. Remove the camera arm along with the jumper harness by pulling on the camera arm.

9. Remove the jumper cable from the camera arm

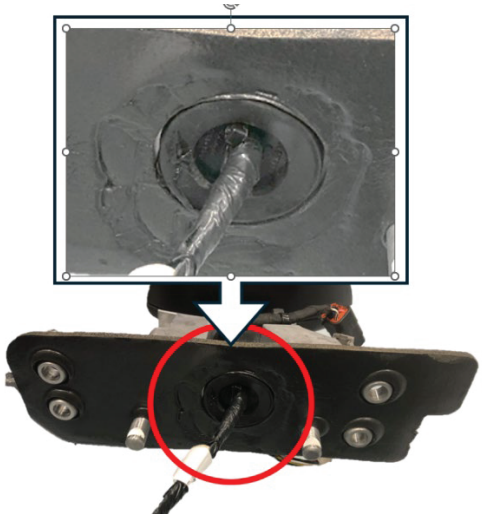


Note: Install the new jumper harness cables as per the instructions below.

10. Feed new jumper harness connectors through the opening in the camera arm

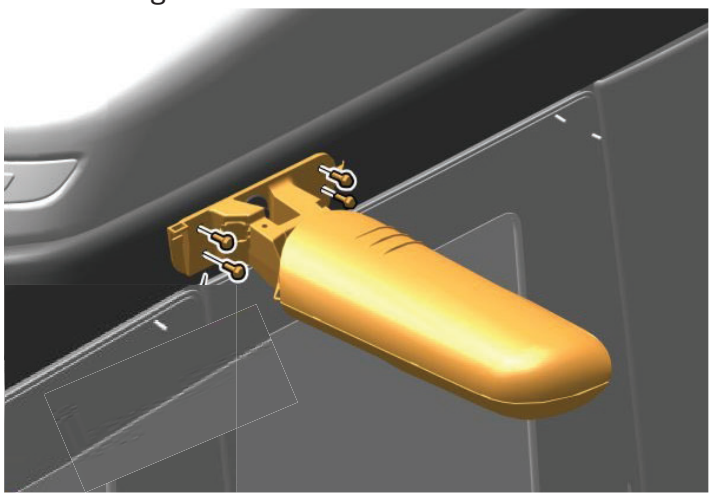


11. Example of a correctly installed grommet below.

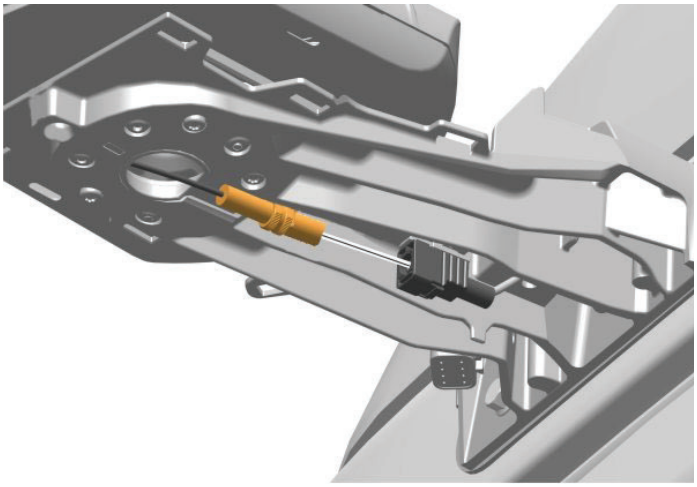


12. Inspect mounting gasket and replace as necessary
13. Install camera arm to the truck.

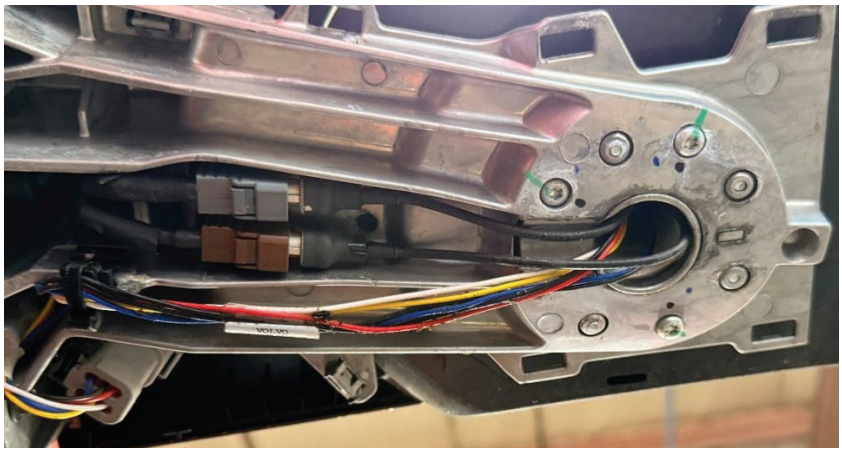
14. Install camera mounting screws



15. Connect the jumper harness connector (driver side).

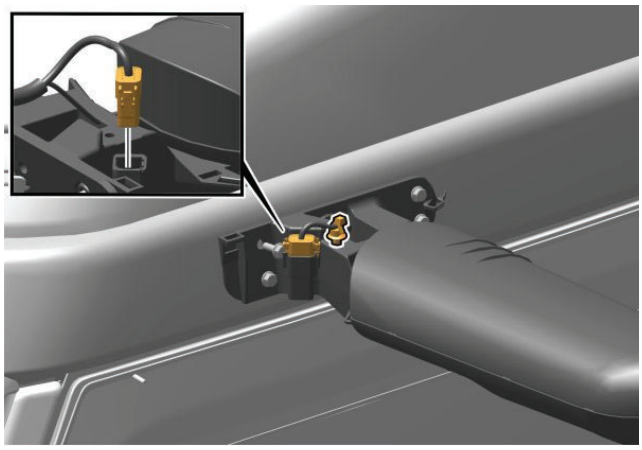


OR.
Connect the jumper harness connectors (passenger side) with optional class V curb side camera cable (grey).

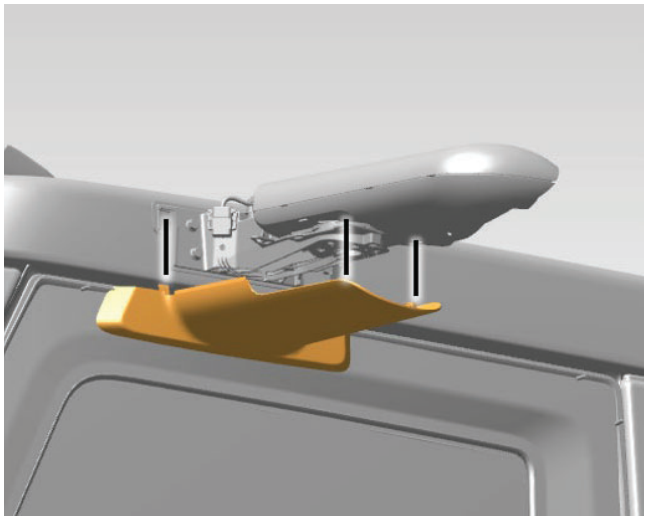


16. Connect the connector.
17. Install the cable tie.

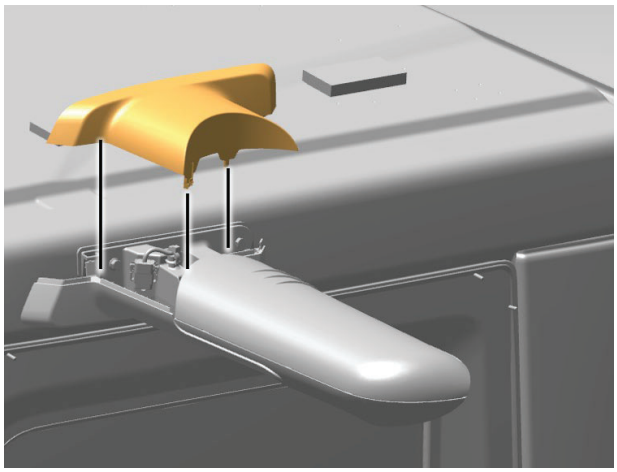
Note
Use a new part.



18. Install lower cover



19. Install the upper cover.



Tags:

mack volvo vn4 vn 4 pr 4 pr4 an4 an 4 cms camera camera monitoring system black screen red popup

List of DTCs to be added to tags

- CMS - U3000-04 - Electronic control unit – System Internal Failures
- CMS - U3000-01 - Electronic control unit – General Electrical Failure
- CMS - U3000-A2 - Electronic control unit – System Voltage Low
- CMS – U3000-61 – Electronic control unit – Signal Calculation Failure
- CMS - B1005-09 - Passenger Side View Monitor Circuit – Component Failures
- CMS - B1005-2B - Passenger Side View Monitor Circuit – Signal Cross Coupled
- CMS - B1005-41 - Passenger Side View Monitor Circuit – General Checksum Failure
- CMS - B1004-09 - Driver Side View Monitor Circuit – Component Failure
- CMS - B1004-41 - Driver Side View Monitor – General Checksum Failure
- CMS - B1004-00 - Driver Side View Monitor Circuit – No Sub Type Information
- CMS - B1004-2B - Driver Side View Monitor Circuit – Signal Cross Coupled
- CMS – B1004-26 - Driver Side View Monitor Circuit – Signal Rate of Change Below Threshold
- CMS – B1004-44 - Driver Side View Monitor Circuit – Data Memory Failure
- CMS – B1005-00 - Passenger Side View Monitor Circuit – No Sub Type Information
- CMS – B1005-02 - Passenger Side View Monitor Circuit – General Signal Failure
- CMS – B1005-44 - Passenger Side View Monitor Circuit – Data Memory Failure
- CMS - B1000-04 - Passenger Camera Unit – System Internal Failures
- CMS - B1000-09 - Passenger Camera Unit – Component Failure
- CMS - B1001-09 - Side Camera Unit – Component Failures
- CMS - B1001-04 - Side Camera Unit – System Internal Failures
- CMS – B1002-09 - Driver Side Camera Circuit – Component Failures
- CMS – B1002-04 - Driver Side Camera Circuit – System Internal Failures
- CMS - U1002-08 – Lost Communication With Passenger Side Kerb (Curb) Camera – Bus Signal/Message Failures
- CMS - U1009-08 - Lost Communication With Passenger Side Camera – Bus Signal/Message Failures
- CMS - U1001-08 - Lost Communication With Driver Side Camera – Bus Signal/Message Failures
- CMS - U1004-08 - Lost Communication With Driver Side View Monitor – Bus Signal/Message Failures

- CMS - U100A-08 - Lost Communication with Passenger Side View Monitor – Bus Signal/Message Failures
- CMS - B1000-13 - Passenger Camera Unit – Circuit Open
- CMS - B1001-13 - Side Camera Unit – Circuit Open
- CMS - B1002-13 - Driver Side Camera Circuit – Circuit Open
- CMS - B1005-13 - Passenger Side View Monitor Circuit – Circuit Open
- CMS - B1004-13 - Driver Side View Monitor Circuit – Circuit Open
- CMS – B1000-19 - Passenger Camera Unit – Circuit Current Above Threshold
- CMS – B1001-19 - Side Camera unit – Circuit Current Above Threshold
- CMS – B1004-19 - Driver Side View Monitor Circuit – Circuit Current Above Threshold
- CMS – B1004-1C - Driver Side View Monitor Circuit – Circuit Voltage out of Range
- CMS – B1005-02 - Passenger Side View Monitor Circuit – General Signal Failure
- CMS – B1005-19 - Passenger Side View Monitor Circuit – Circuit Current Above Threshold
- CMS – B1005-1C - Passenger Side View Monitor Circuit – Circuit Voltage Out of Range
- CMS – B1002-19 - Driver Side Camera Circuit – Circuit Current Above Threshold