

**Mack LRBE Cooling Box Refit**

**Service Category** Service

**Section** Function Group 2619

**Technician Skill Level** A

**Market** North America

**Applicability**

**MACK**

Years	Models
2022-2023	LRBE

**Introduction**

Mack Trucks has determined that certain LRBe trucks could exhibited insufficient cab heat. To improve cab heat a retro fit of trucks coolant circuit is needed. Please follow the instructions below to complete the needed retro fit of the coolant circuit.

**Production Change Information**

This bulletin applies to vehicles built within the specified production changes below.

Brand	Engine	Emission Level	Starting Build Date	Ending Build Date
Mack	BEV	EM-ZE	22-April-2021	19-September-2022

**Warranty Information**

<b>This repair is covered by an authorized Service Program. Reimbursement is obtained through the normal claim handling process.</b>		
Claim Type (used only when uploading from the Dealer Bus. Sys.)		<b>B</b>
Main Labor Code	Description	Hours
3100-09-01-03	Traction Voltage system Commissioning	1.3
3100-09-01-04	Traction Voltage system Decommissioning	1.0
3222-03-03-03	Charging Switch Unit (CSU) Replacement	1.6
2609-01-01-04	Coolant system Draining	1.0
2609-02-01-01	Coolant system fill	1.6
1720-16-09-01	Campaign General x95	0.1
<b>Causal Part</b>	<b>24129397</b>	
<b>SCC Authorization Code</b>	<b>S3036</b>	
<b>Expiration Date</b>	<b>June 30, 2024</b>	

## Parts Information

To order the following parts please send an email to [chris.mann@volvo.com](mailto:chris.mann@volvo.com). Please include the following in the email.

- Campaign Number
- Part numbers below
- Shipping address
- Point of contact

Part Number	Description	Qty
24491984	Wires	1
24150179	Tube	1
24143306	Tube	1
24134183	Tube	1

Order the following part using the normal process.

Part Number	Description	Qty
24150386	Restricting Valve	1
24134132	Support	1
24192569	Bracket	1
24170409	Hose	1
24134179	Hose	1
24143293	Hose	1
21320698	Hose	1
952630	Clamp	2
24129397	Solenoid Valve	1
995450	Flange Screw	2
990949	Flange Lock Nut	2
24134720	Pipe	1
24134116	Pipe	1
24128020	Pipe	1

24128006	PIPE	1
24134121	PIPE	1
24134126	PIPE	1
24128023	HOSE	1
24151688	HOSE	1
24128010	HOSE	1
24128013	HOSE	1
24128017	PIPE	1
24128029	PIPE	1
24151678	PIPE	1
995520	FLANGE SCREW	1
994847	WASHER	1
984726	FLANGE SCREW	4
984993	HOSE CLAMP	2
980881	CABLE TIE	5
20885496	RETAINER	2
990940	FLANGE NUT	1
984734	FLANGE SCREW	1
21078880	HOSE CLAMP	3

**Required Tools & Equipment**

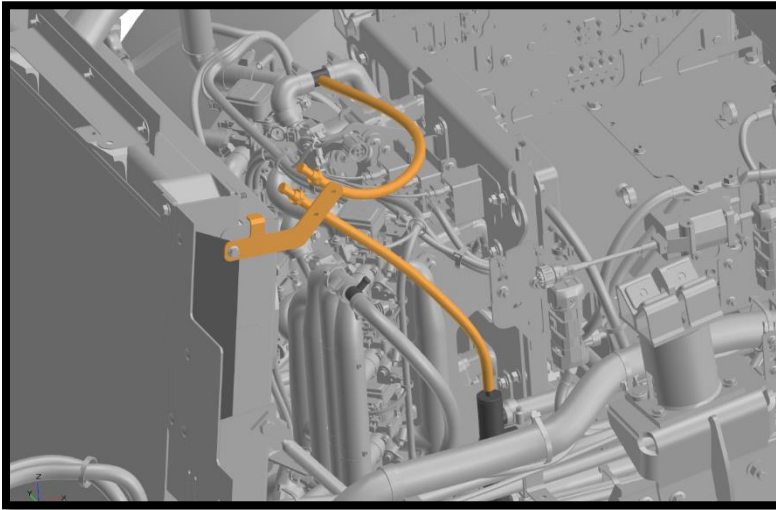
- Access to IMPACT & PTT

**Calibration Information**

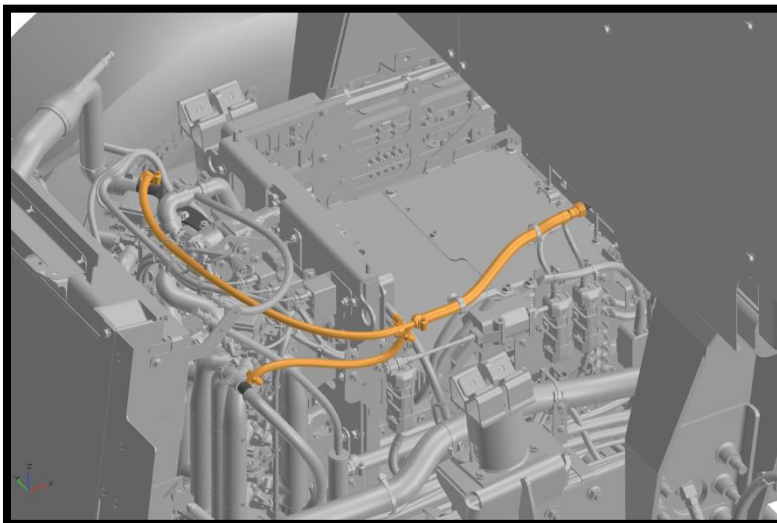
- None

## Refit Instructions

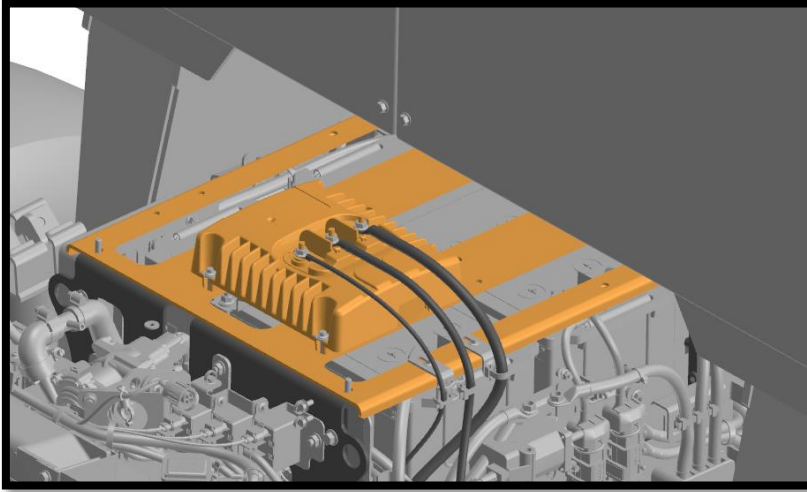
1. Follow Traction voltage system decommissioning instructions (ID 3100-09-01-04) in Impact.
2. Follow Coolant draining instructions (ID 2609-01-01-04) in Impact.
3. Follow Charging switch Unit (CSU) replacement (ID 3222-03-03-03) steps 1 through 29 in Impact.
4. Remove and discard the bleeders.



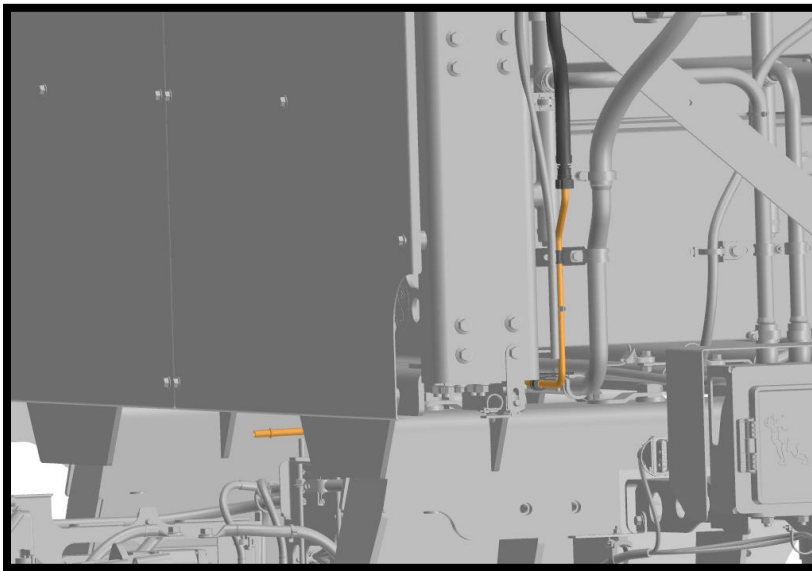
5. Remove and discard the deaeration lines.



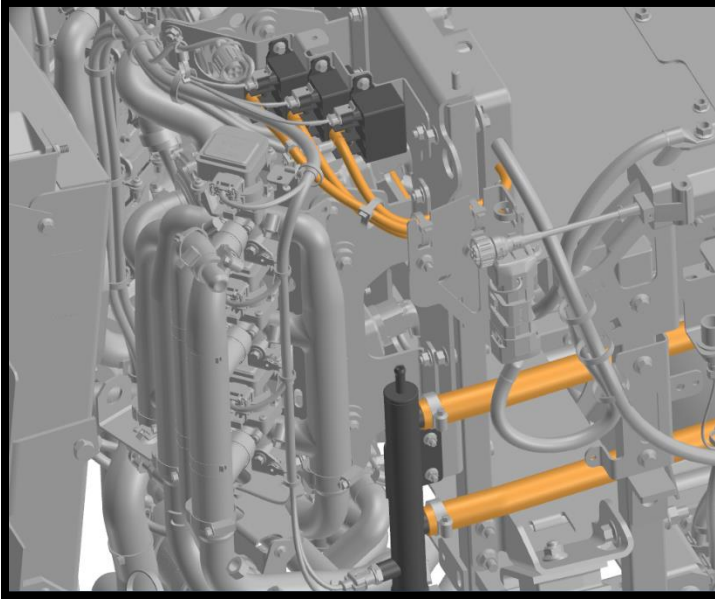
6. Remove the equalizer and bracket.



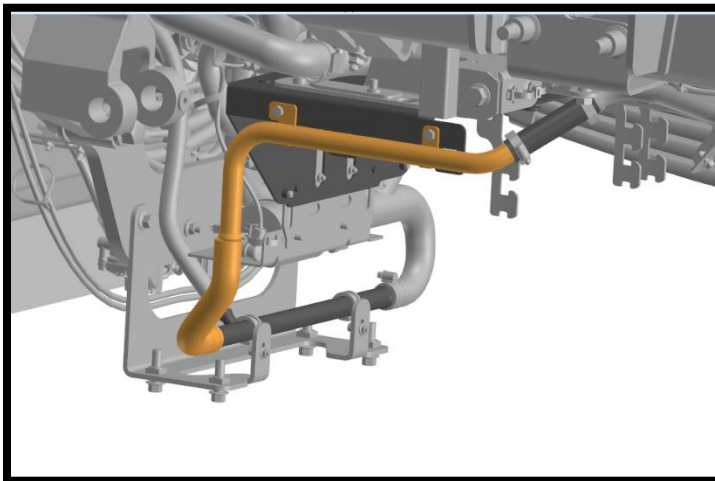
7. Remove and discard the pipe.



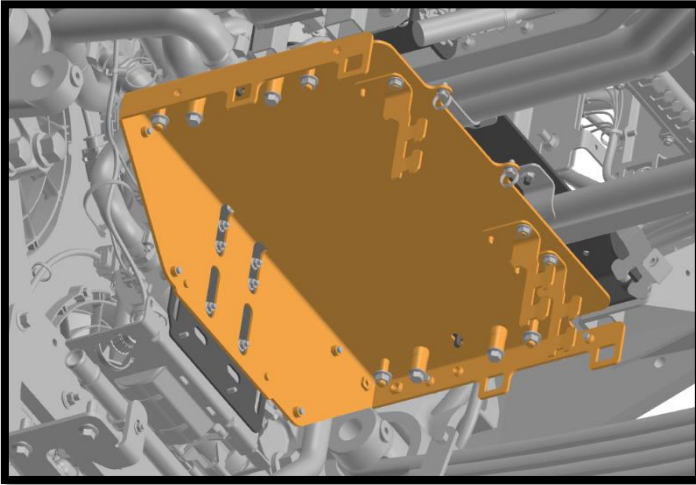
8. Remove the power connections to the heater relays. Disconnect the coolant lines.



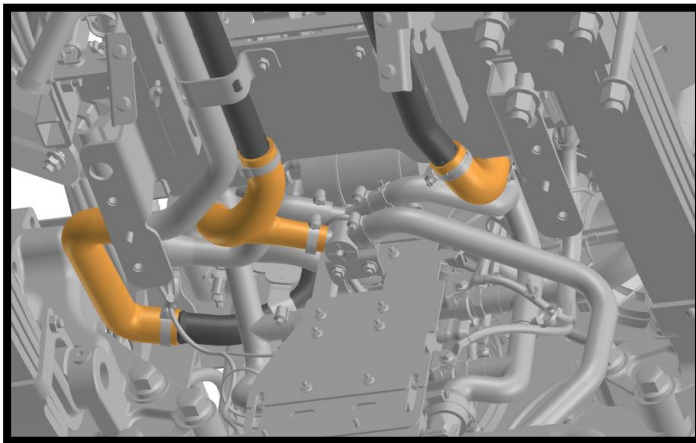
9. Remove and discard the hose and pipe.



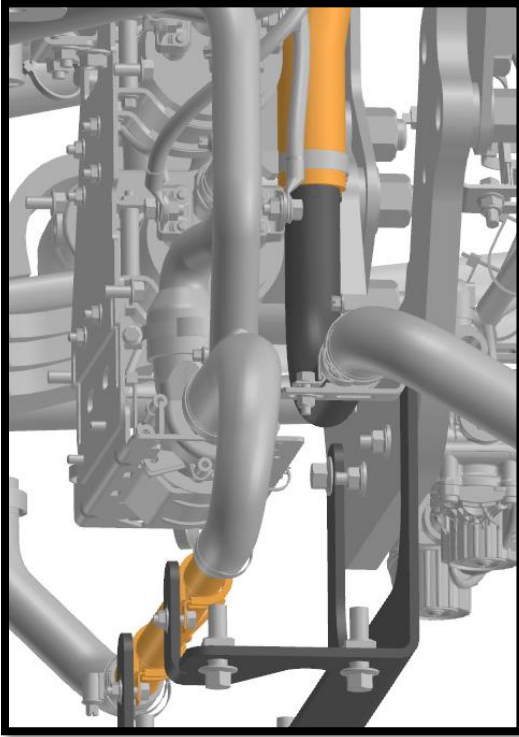
10. Remove the bracket.



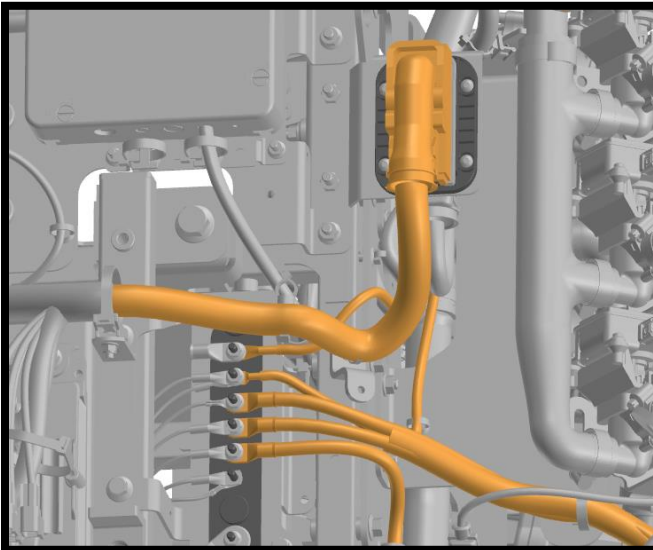
11. Disconnect the hoses.



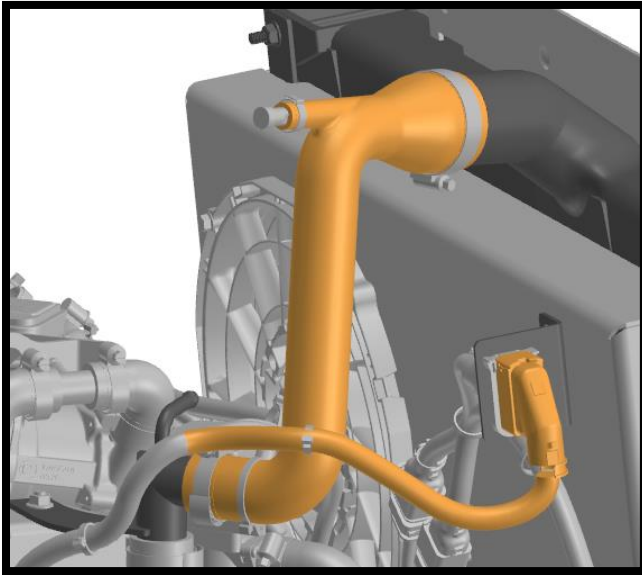
12. Disconnect the lower radiator hose. Remove the P clamps.



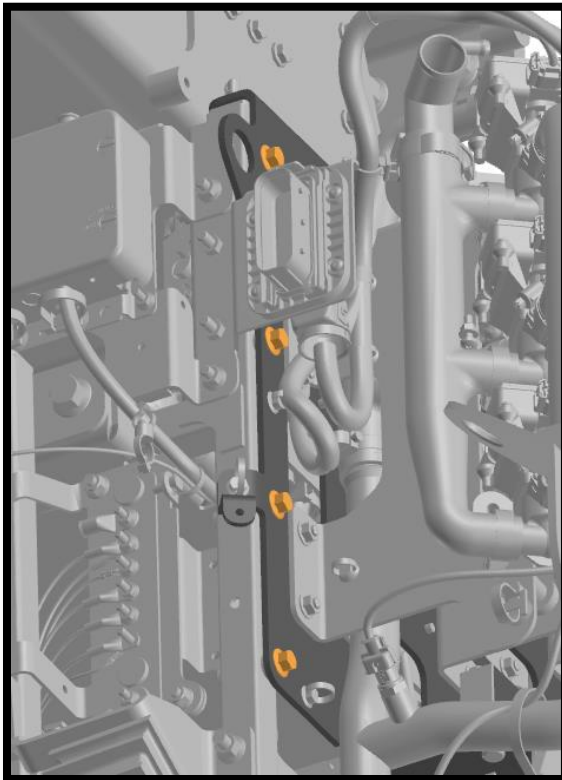
13. Disconnect the cooling box grounds and connector.



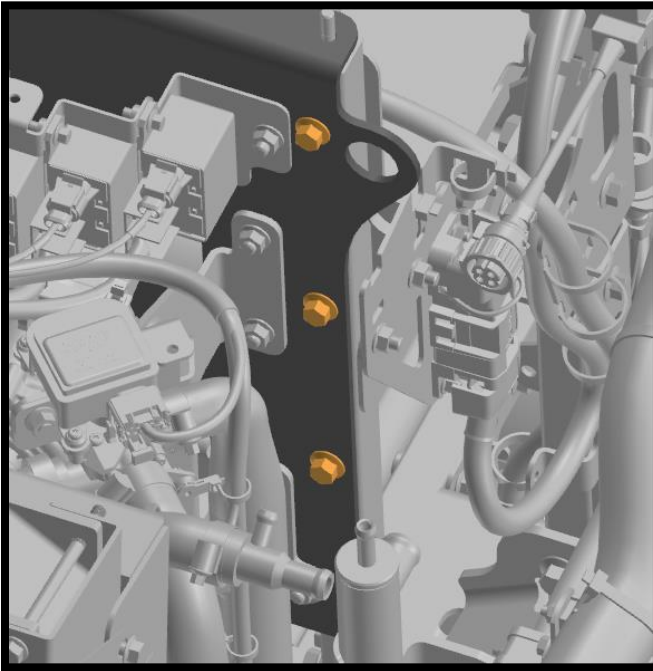
14. Disconnect the cooling fan connector. Remove the radiator hose.



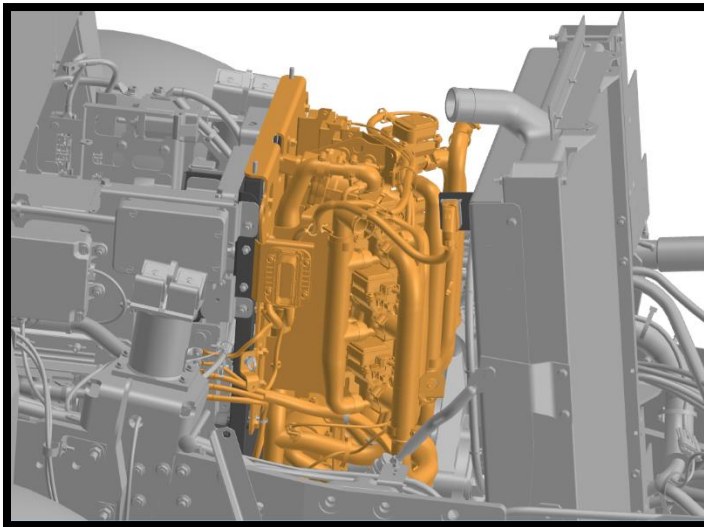
15. Remove the bolts.



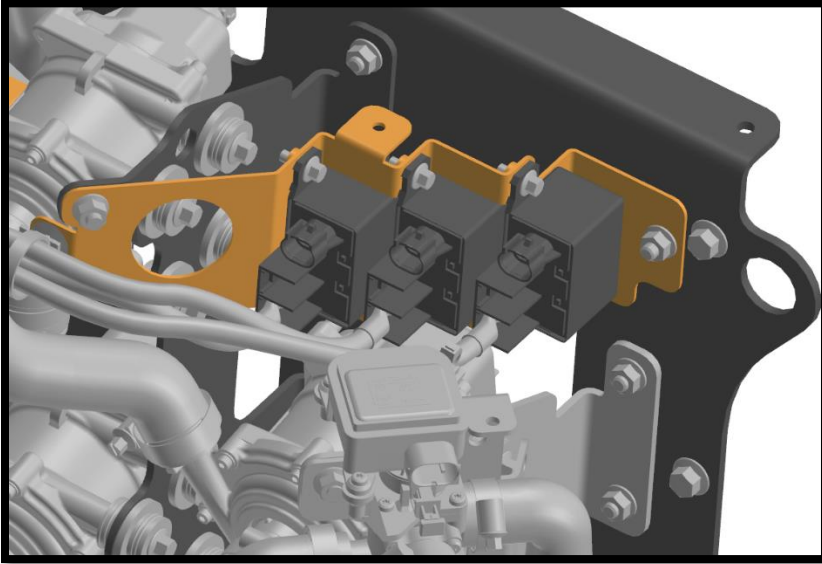
16. Remove the bolts.



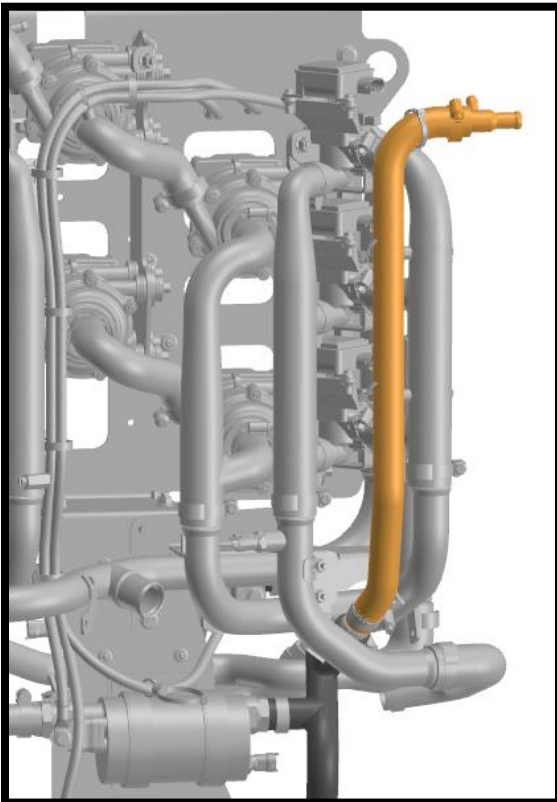
17. Remove the cooling box (octopus).



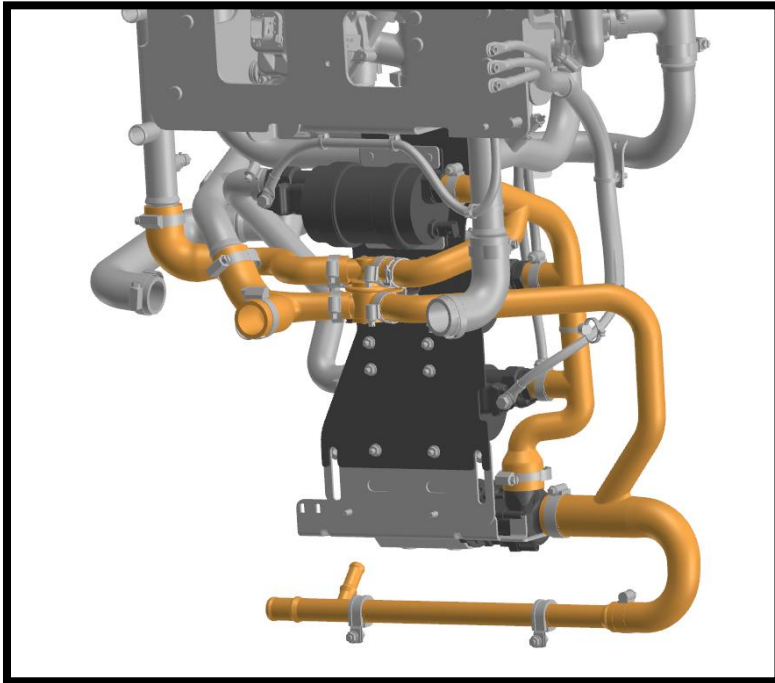
18. Remove and discard the relay mount. Keep the relays for reuse.



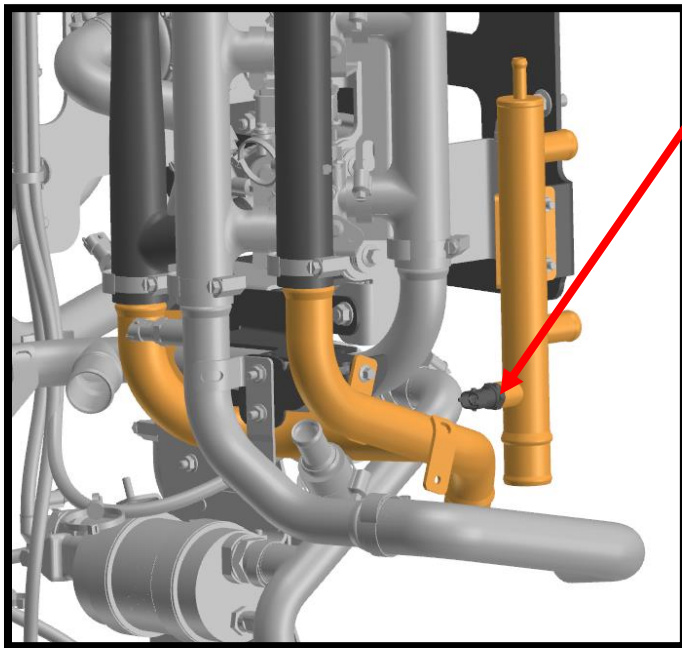
19. Remove and discard the hose and nipple.



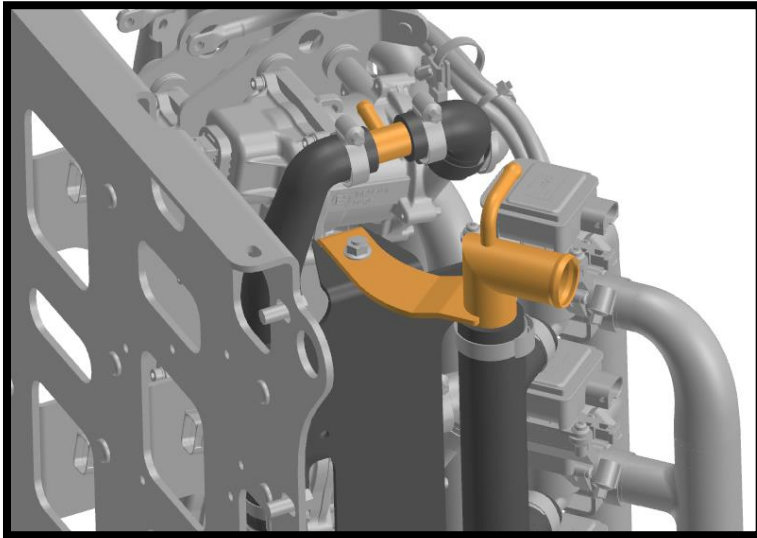
20. Remove and discard the hoses, valve and pipe.



21. Remove and discard the pipes. Remove and keep the temp sensor for reuse.

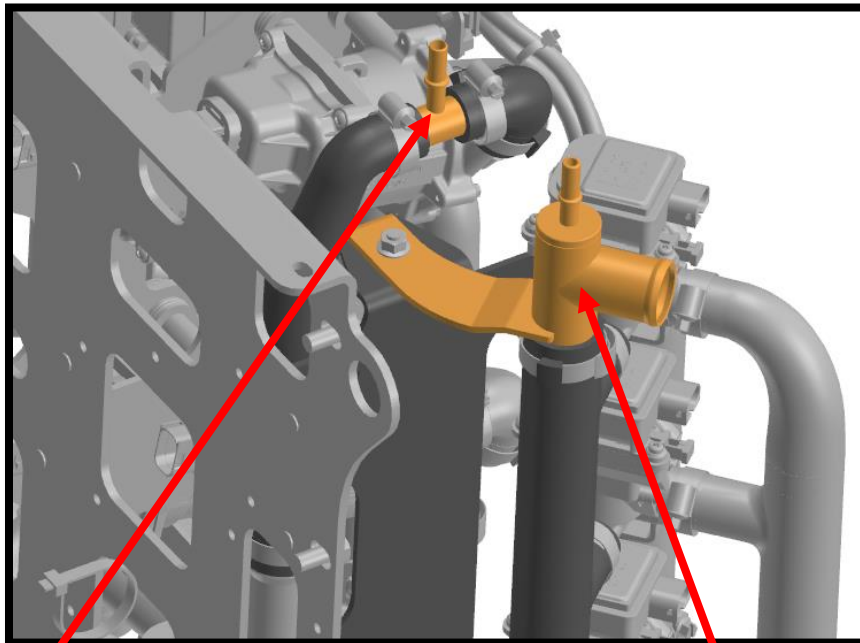


22. Remove and discard the pipes.



**Cooling box new part installation:**

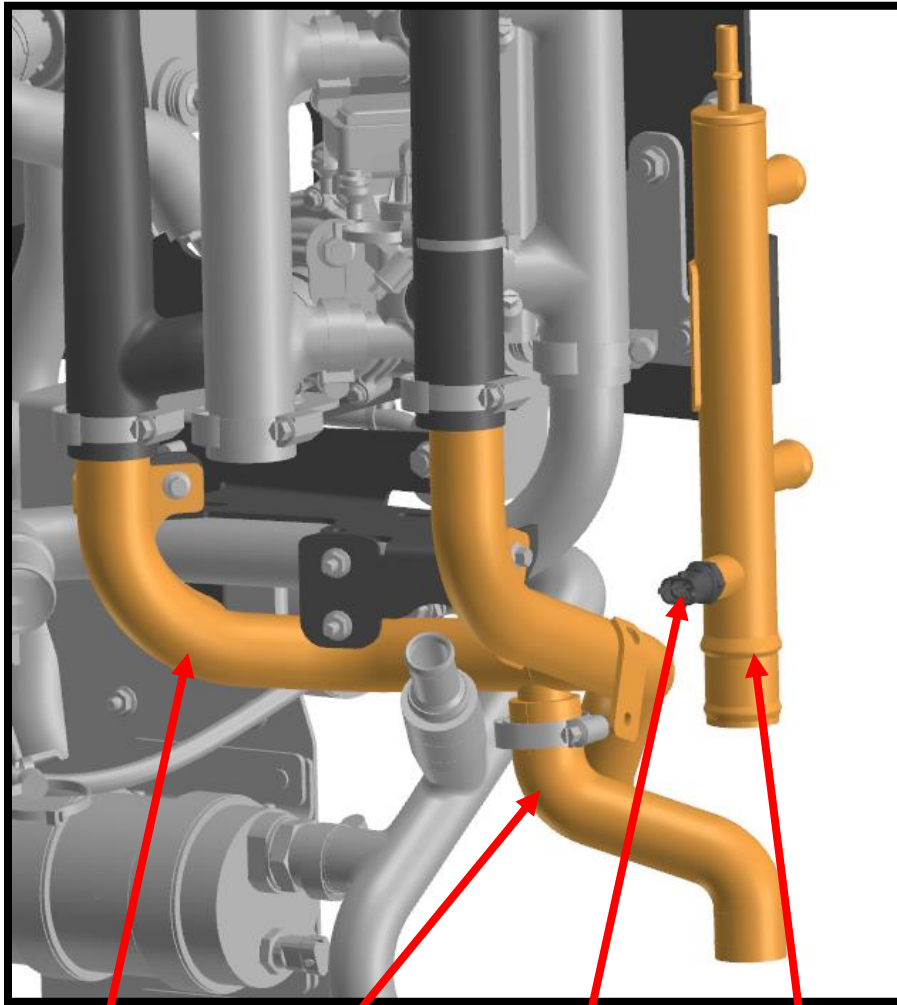
23. Install the new pipes.



**Part# 24134116**

**Part# 24134121**

24. Install the pipes and hose. Install the original coolant temp sensor.



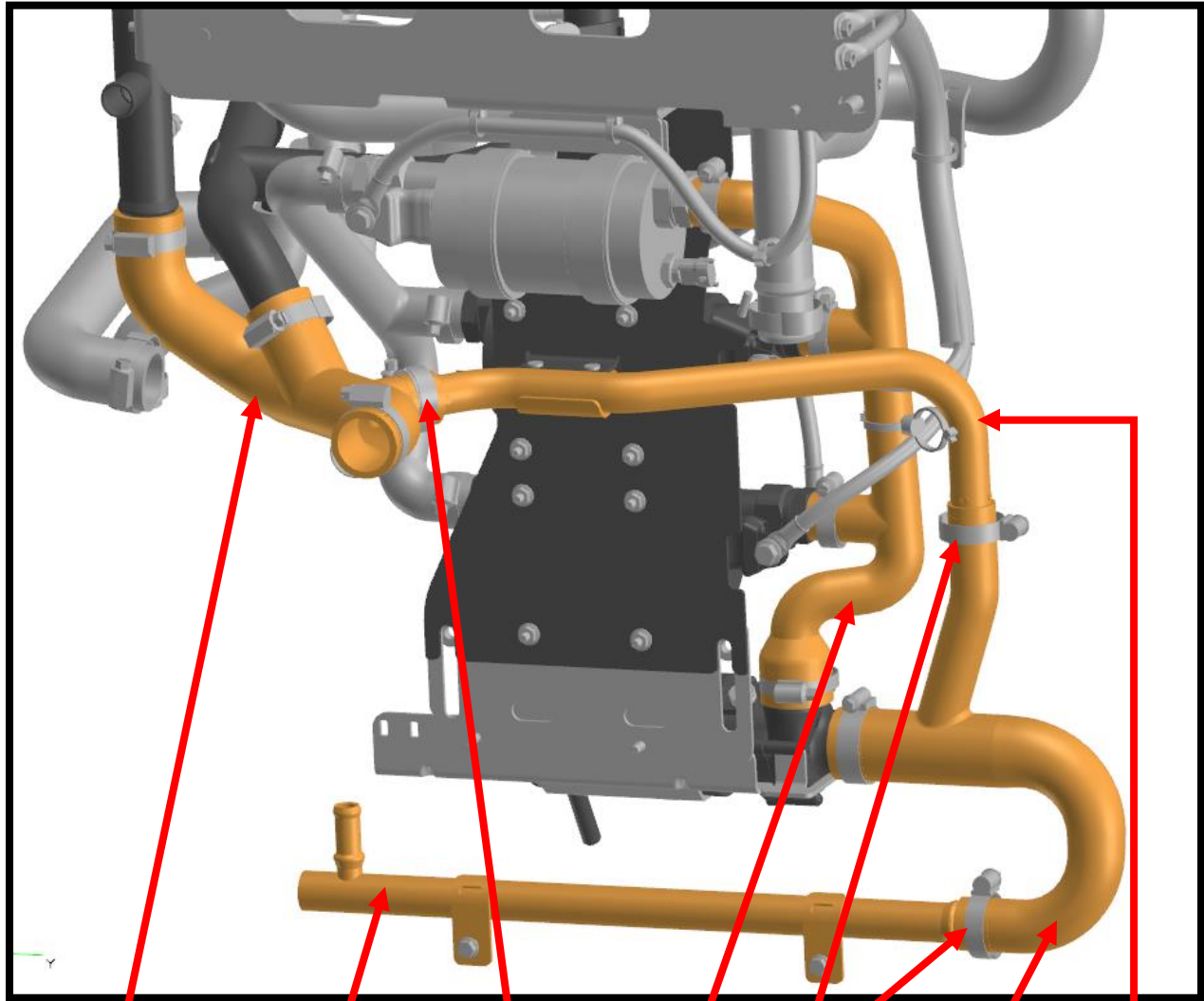
Part# 24128020

Part#24128010

Part#24134126

Reuse coolant temp sensor

25. Install the pipes and hoses.



Part # 24128023

Part # 24128006

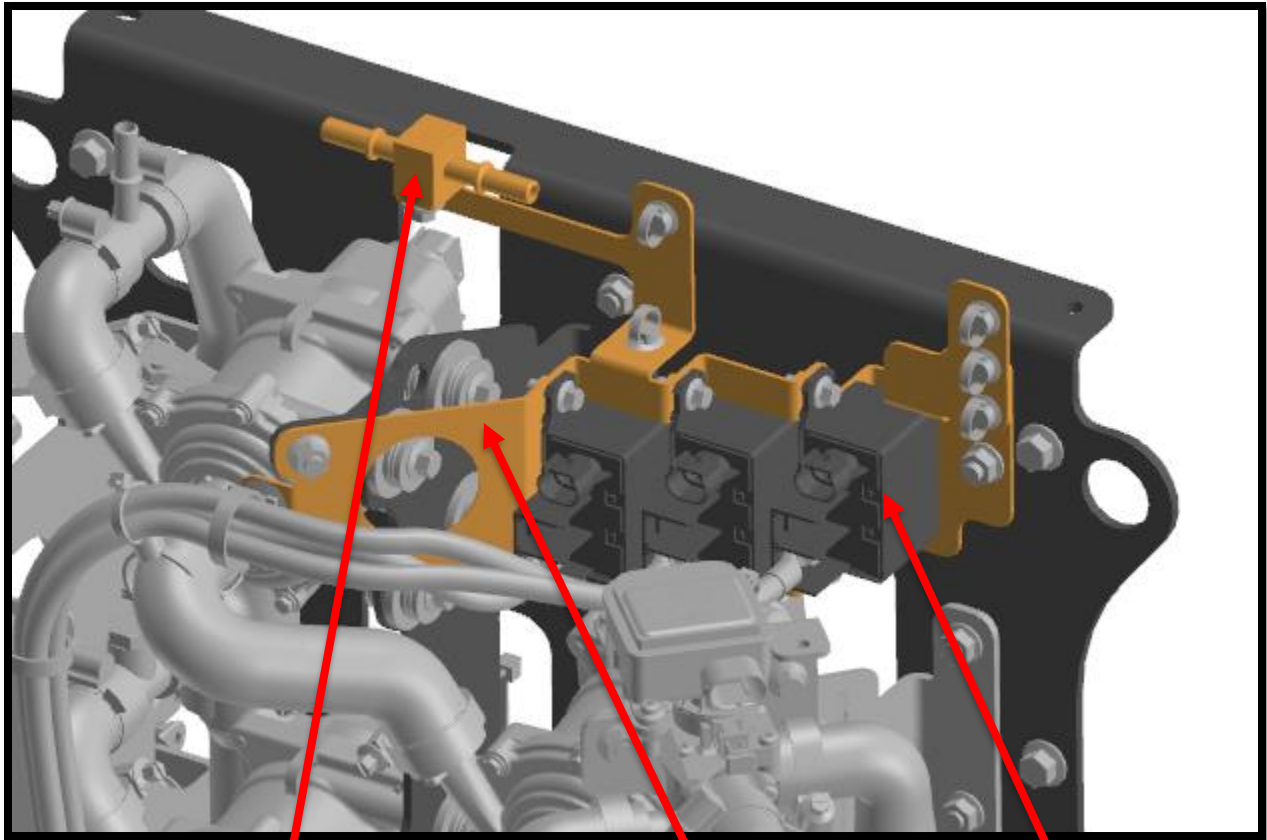
Part #24170409

Part # 21078880

Part # 24128013

Part # 24128029

26. Install the bracket and fitting. Install the original relays.



Part # 24150386, 994847, 995520

Part # 24134132

Reuse Original Relays

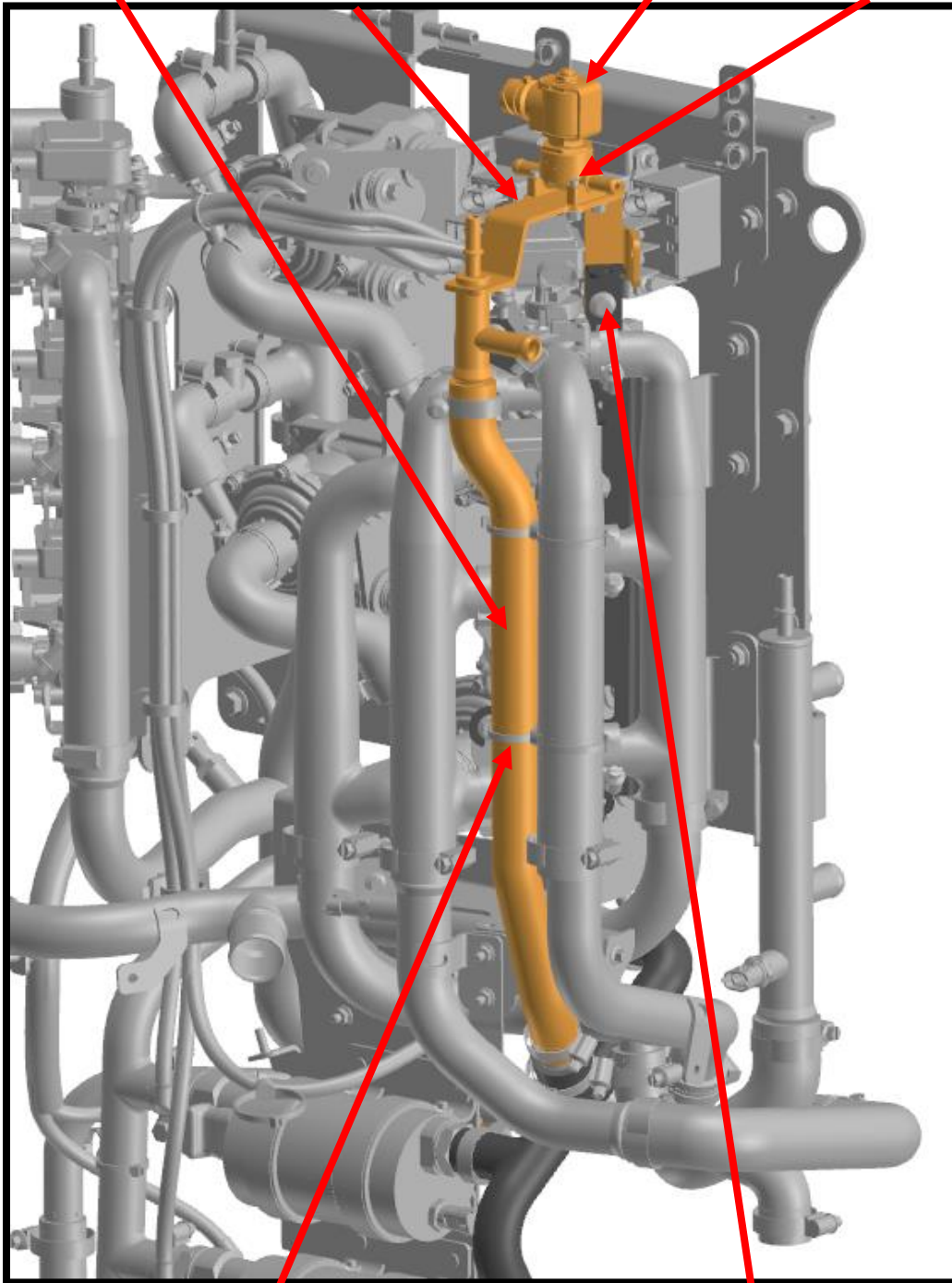
27. Install the bracket and solenoid. Install the hose.

Part # 24151688

Part # 24129397

Part # 24151678

Part # 984726 x 4



Part # 20885496 x 2

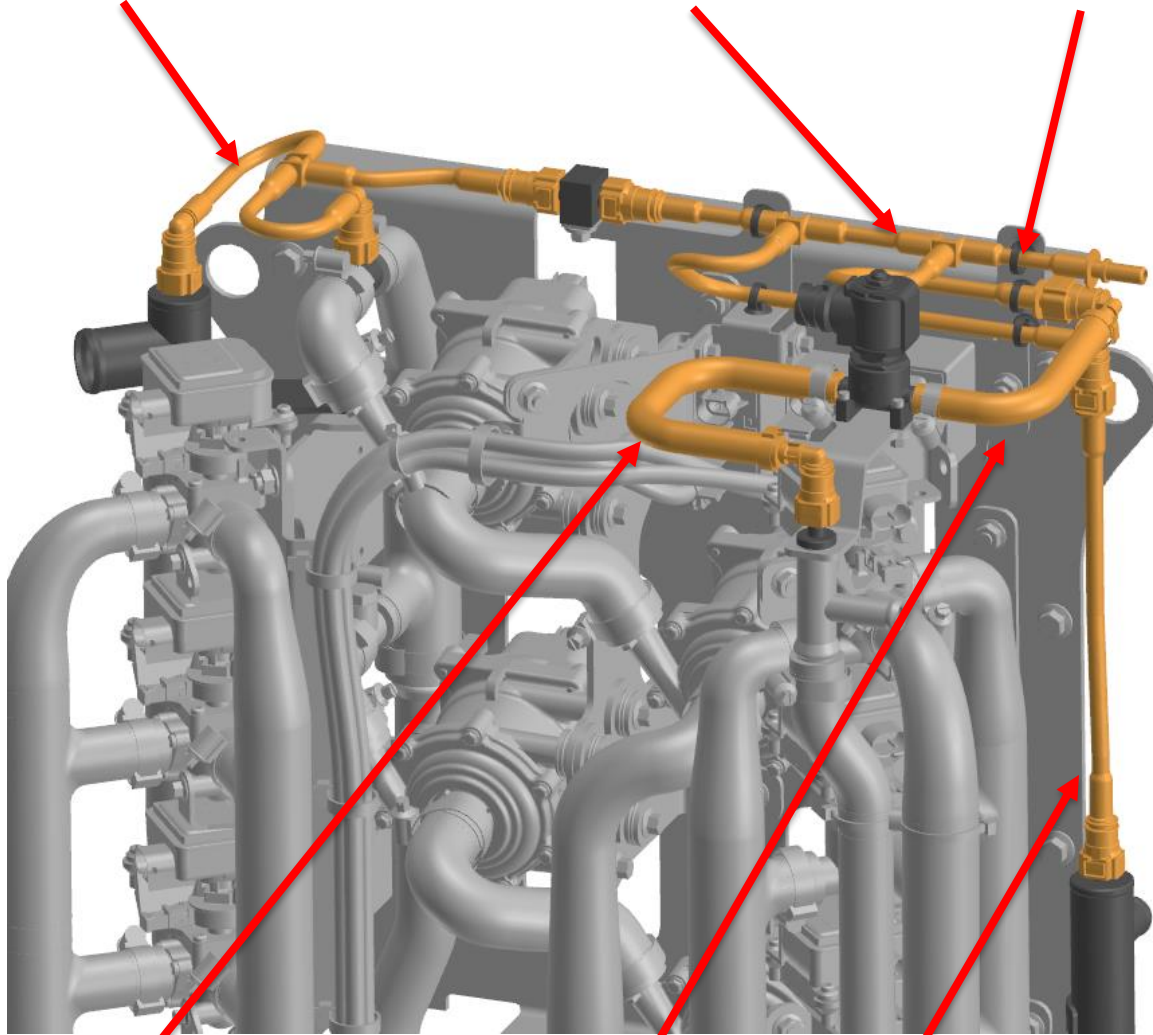
Part # 984734, 990940

28. Install the hoses.

Part # 24150179

Part # 24143306

Part 980881 x 5



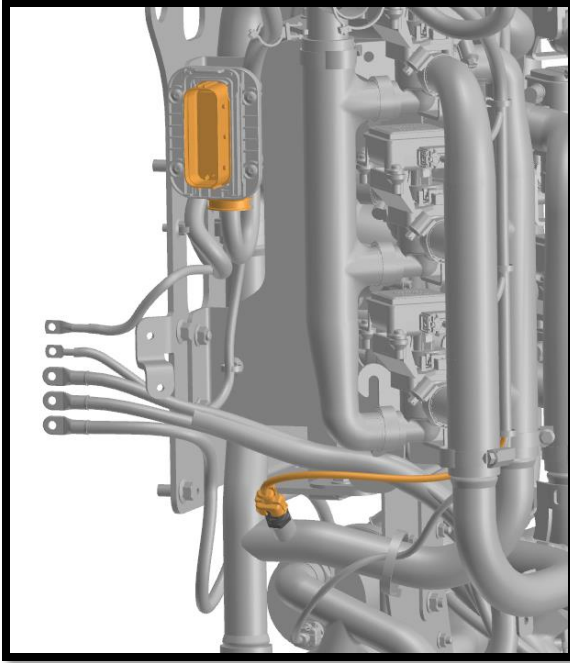
Part # 24134179

Part # 24143293

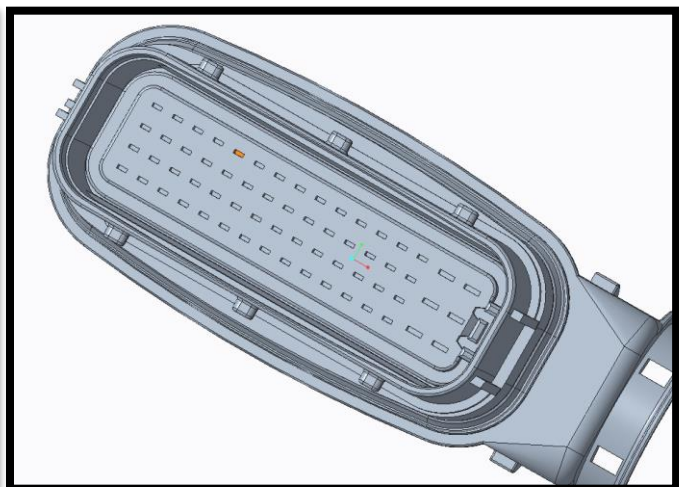
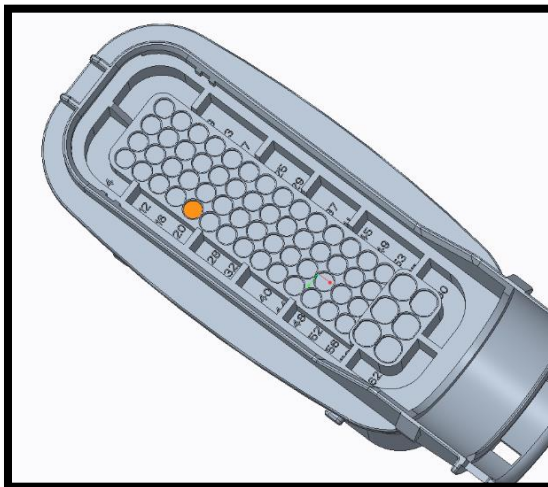
Part # 24134183

**Some trucks may have been built with coolant sensor labels and pinouts incorrect. Follow these steps to ensure coolant temp sensors are correctly connected.**

29. Check for continuity between the cooling box interface connector and the cooling temp sensor for the pump.



Check continuity between pin 20 of the interface connector and signal circuit on the sensor connector. (White wire orange tracer) Interface pin 20:

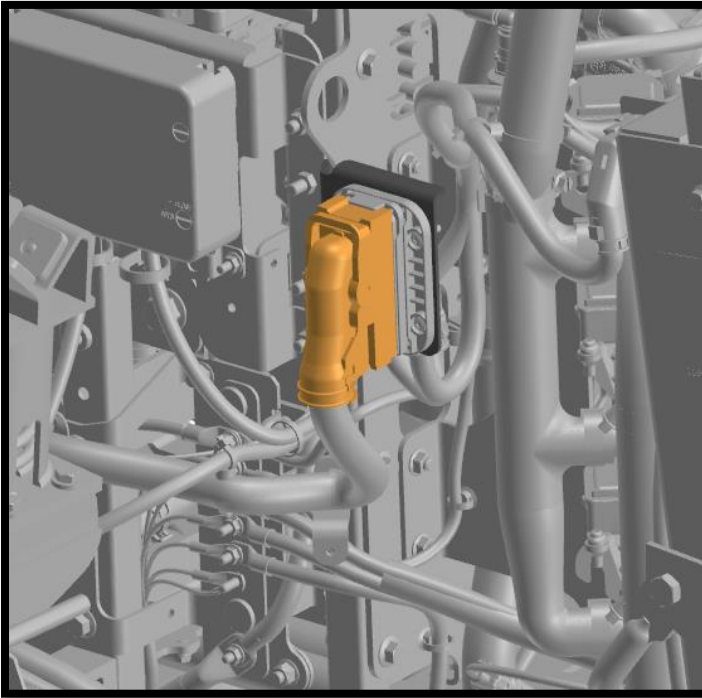


**If continuity exists between the terminals no further action is necessary.**

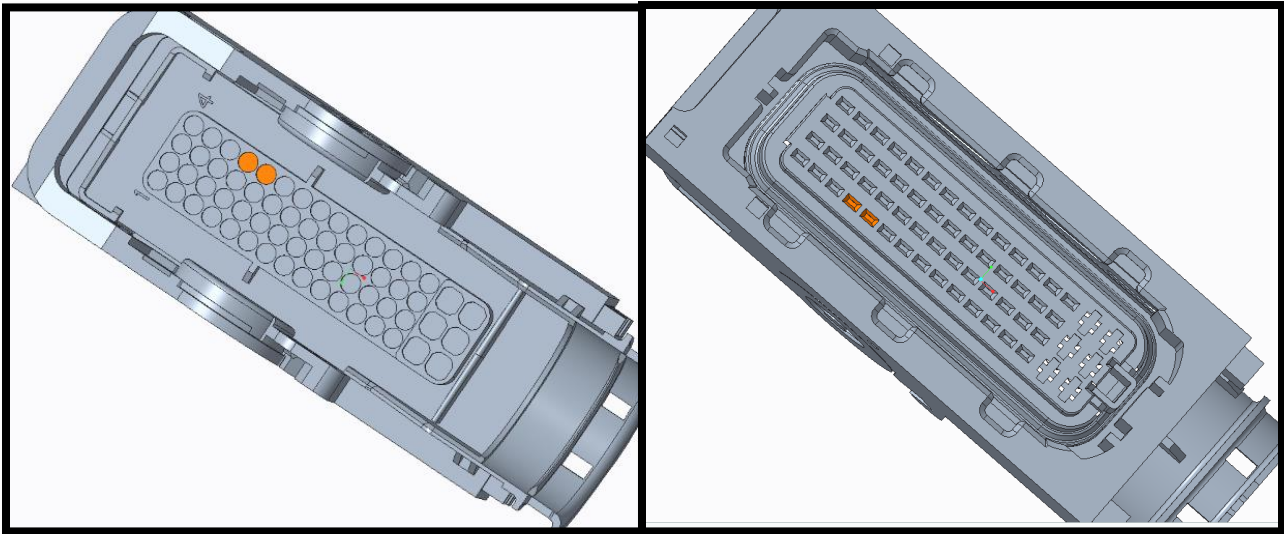
**If continuity does not exist, the interface connector will need to be corrected.**

**Only perform step 27 if checks from steps 26 did not show continuity**

30. If previous checks do not show continuity, swap pins 16 and 20 on the MPB harness side of the cooling box interface connection.



Pins to be swapped if issue found:



### LEAVYSEAL Connectors

#### How To Instructions

##### CONTACT INSERTION



**Step 1:**  
Grasp crimped contact approximately one inch behind the contact barrel.



**Step 2:**  
Verify the integrated secondary lock is in the unlocked position. Make sure the contact is in the correct orientation. Push contact straight into connector grommet until a click is felt. A slight tug will confirm that it is properly locked in place.



**Step 3:**  
Push the integrated secondary lock into the locked position with a DT-RT1 or a screwdriver.

##### CONTACT REMOVAL



**Step 1:**  
Using a DT-RT1 or a screwdriver, unlock the integrated secondary lock.



**Step 2:**  
Using the appropriate extraction tool, insert the blades into the contact cavity until they stop.

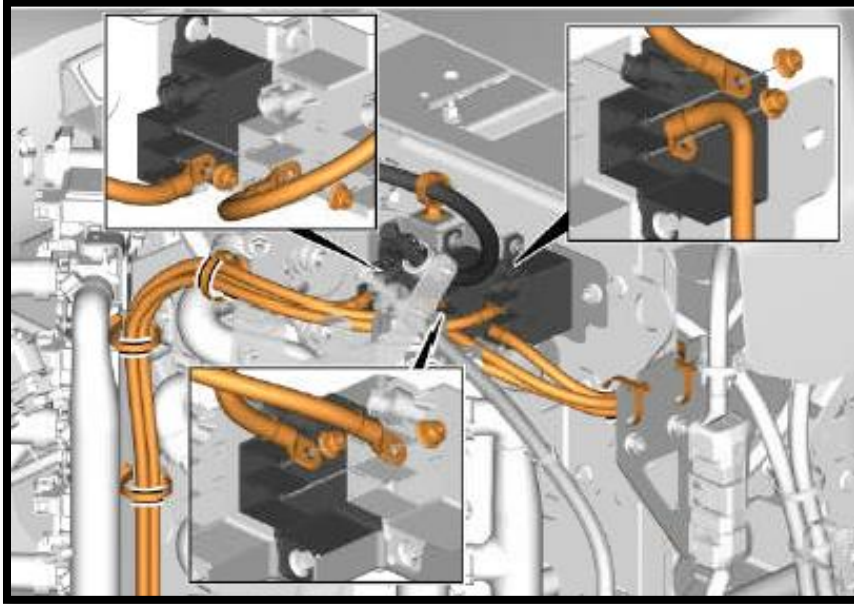


**Step 3:**  
Pull contact wire assembly out of connector.

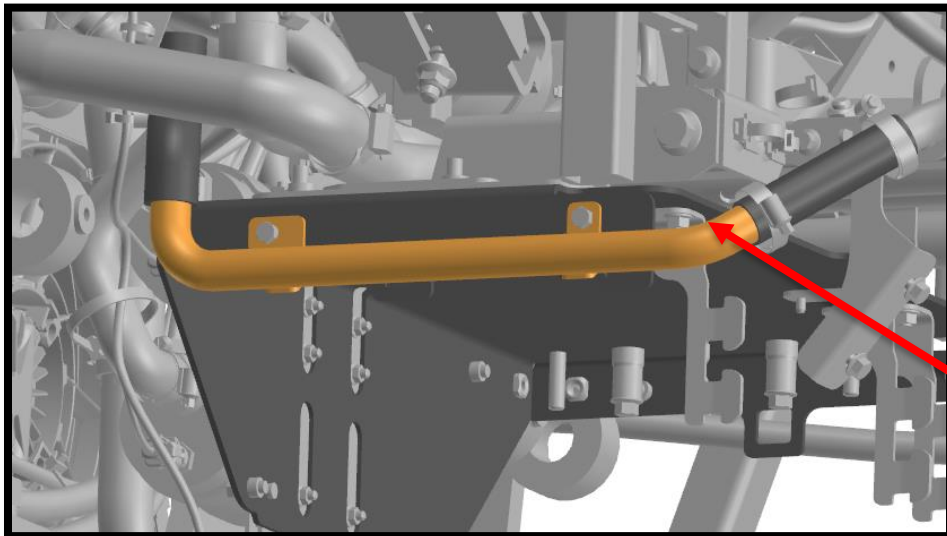
Cooling box upgrades are now complete. Follow removal instructions in reverse to install the cooling box.

31. During Cooling Box Installation, Torque Tighten Heater Relay Power Connections.

Tightening torque	
Cable terminal, relay, nut	10 ±1.5 Nm



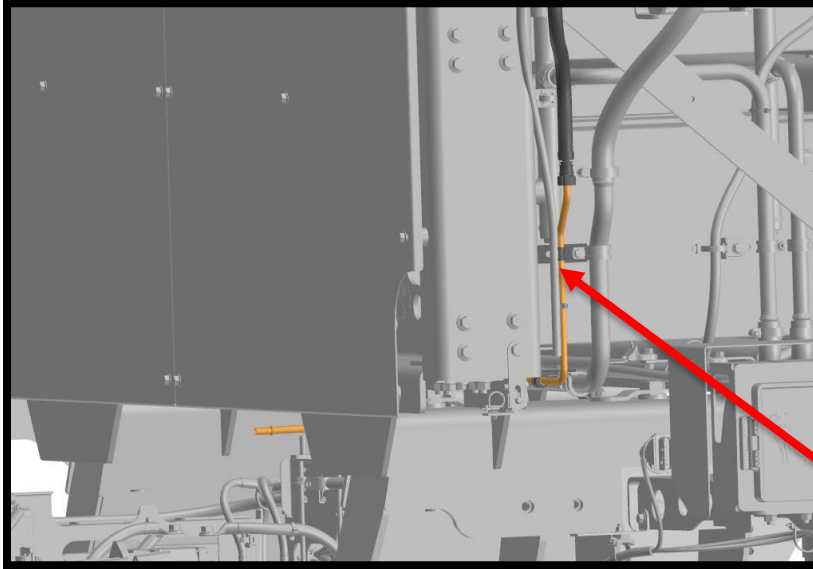
32. Install the pipe.



Part#  
24128017

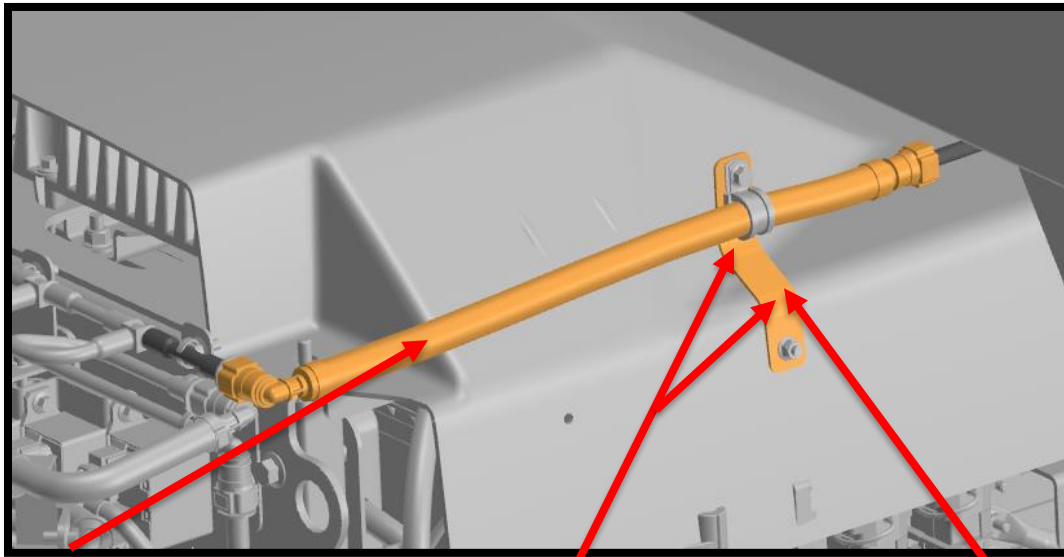
33. Follow Charging switch Unit (CSU) replacement (ID 3222-03-03-03) steps 30 through 63 in Impact.

34. Install the pipe.



Part # 24134720

35. Install the hose and bracket.



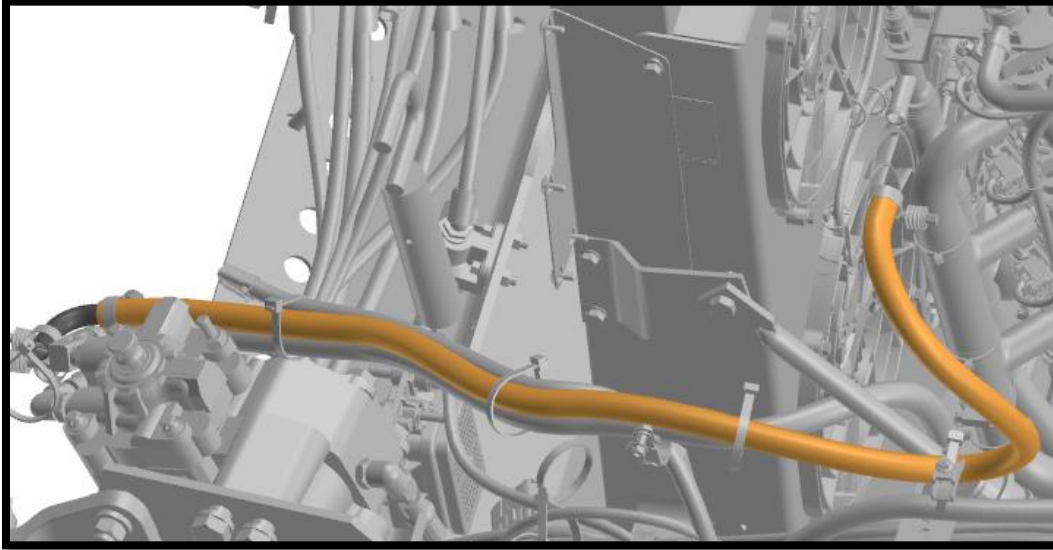
Part # 21320698

Part # 24192569

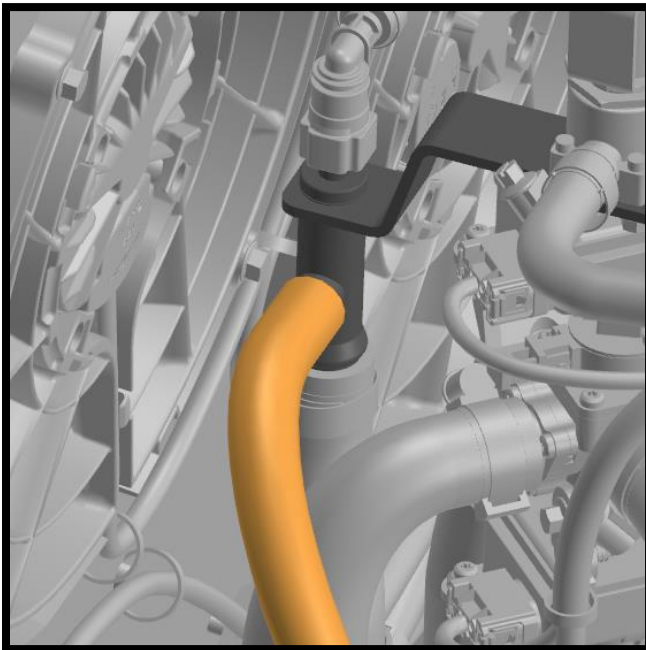
Part # 952630, 995450 x2, 990949 x2

36. Replace the heater hose. Use bulk hose 82149596 or equivalent 15mm ID silicone hose.

**Cut length = 45"**

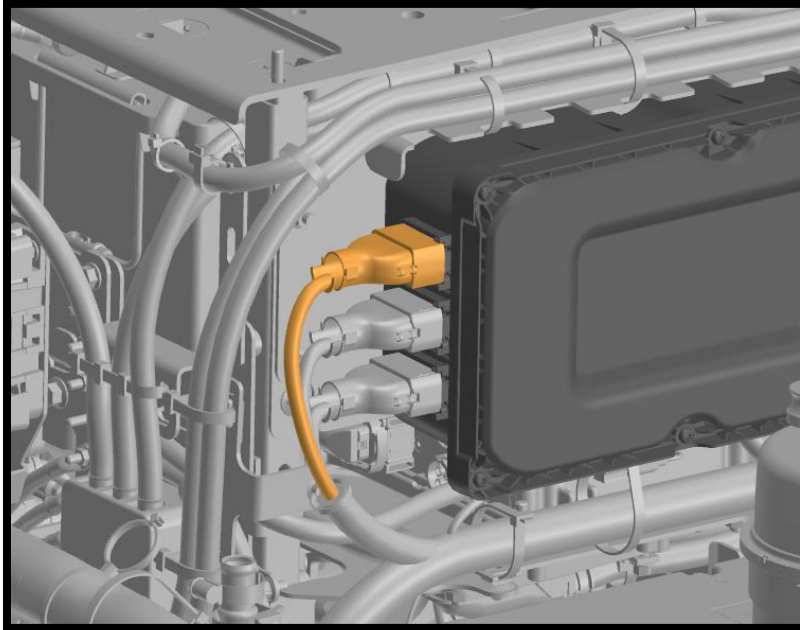


37. Connect the heater hoses.

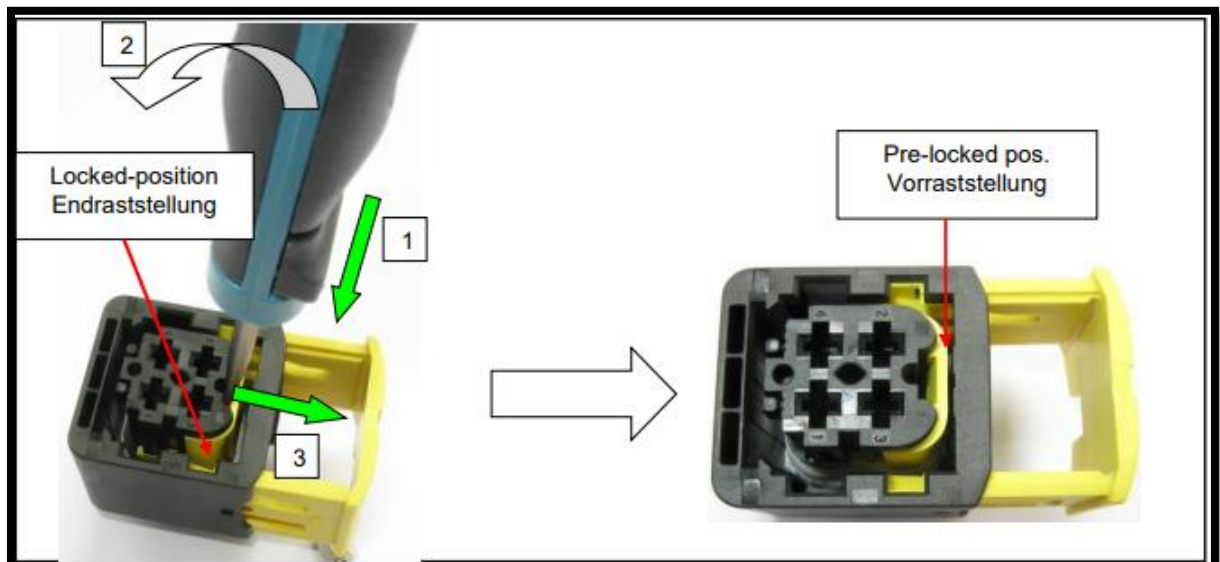


**Overlay harness, 24491984, installation.**

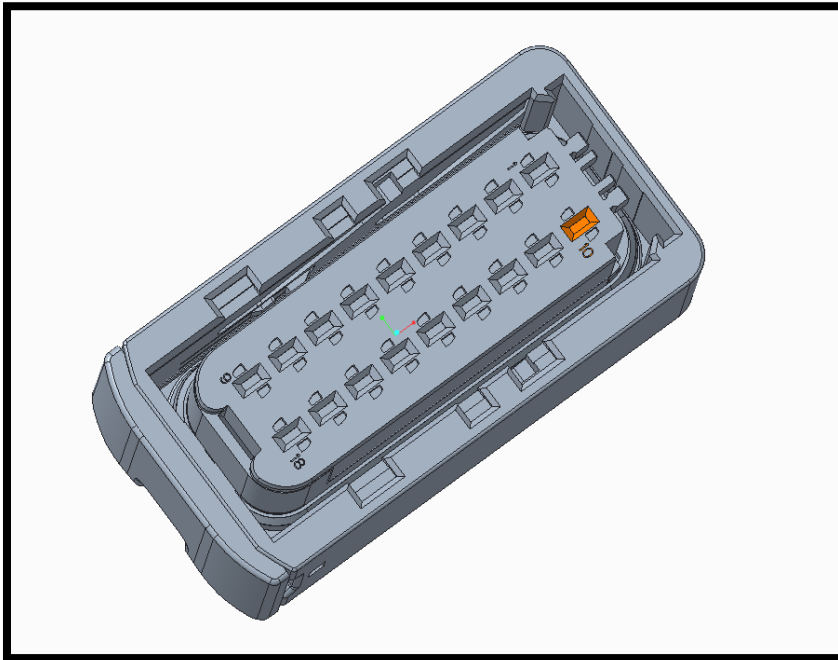
38. Disconnect connector B1 on the FRC(ECEC)



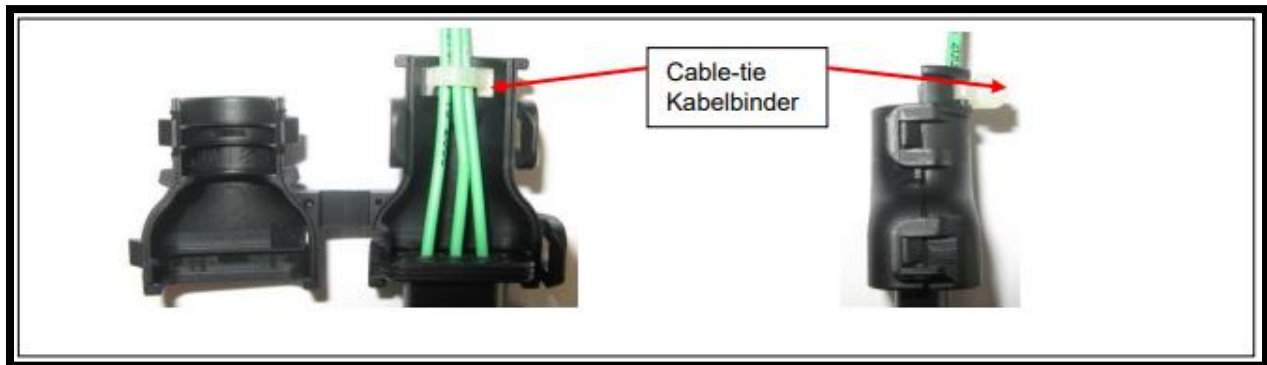
39. Remove the connector back shell. Move the secondary lock to the pre-locked position as shown.



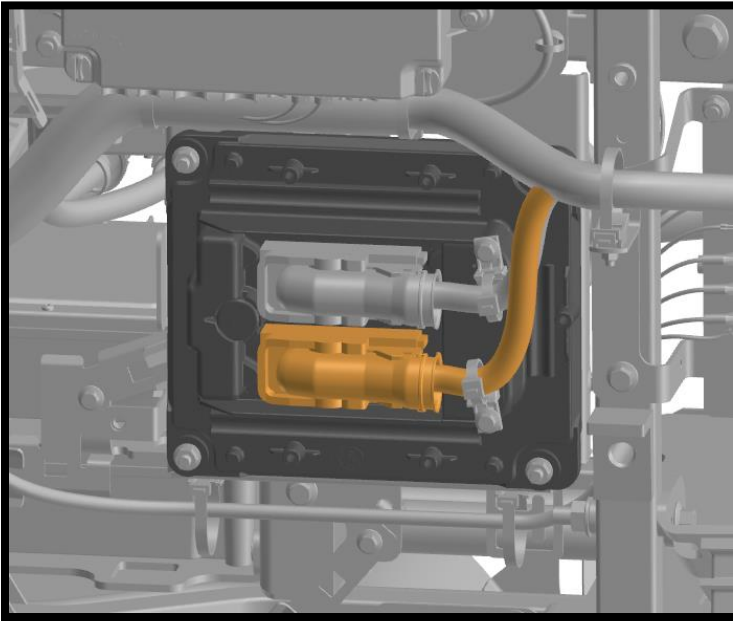
40. Insert circuit A399B1A1 into cavity 10. Move the secondary lock to the locked position.



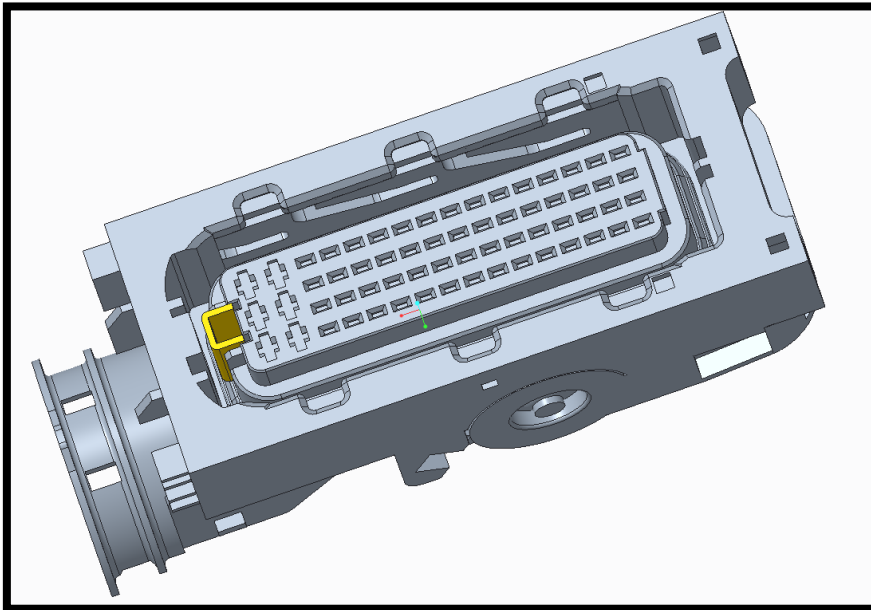
41. Install the back shell. Install the cable tie securing the existing harness and the new circuit to the back shell as shown.



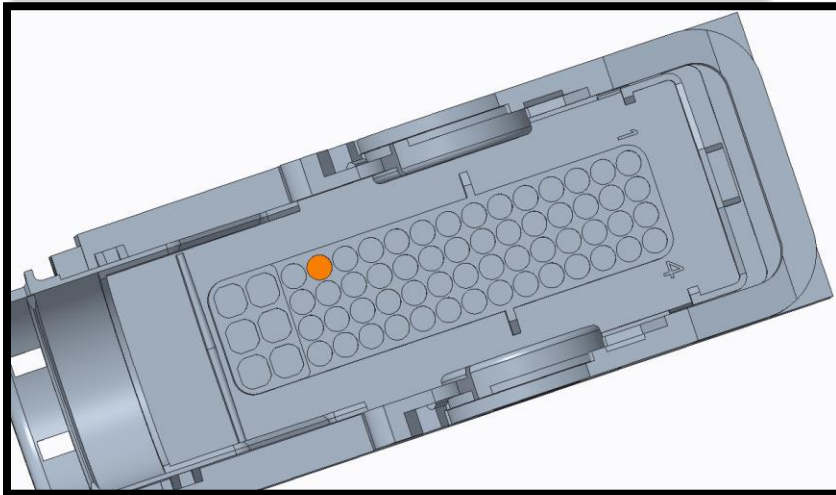
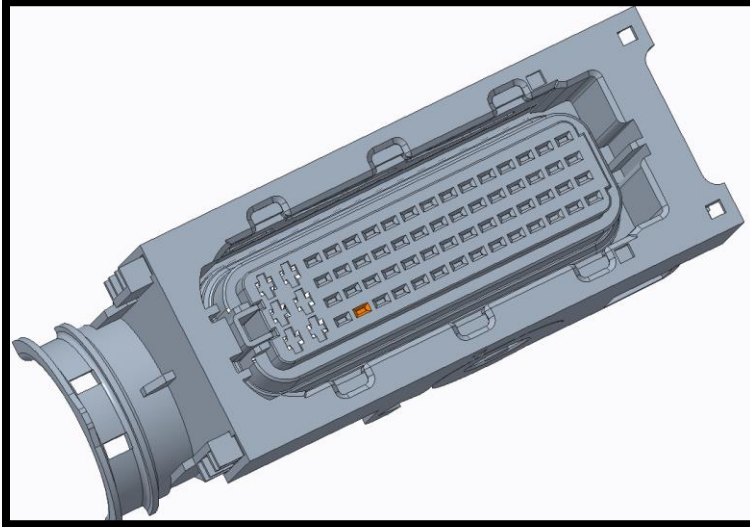
42. Disconnect connector B from the EVCM.



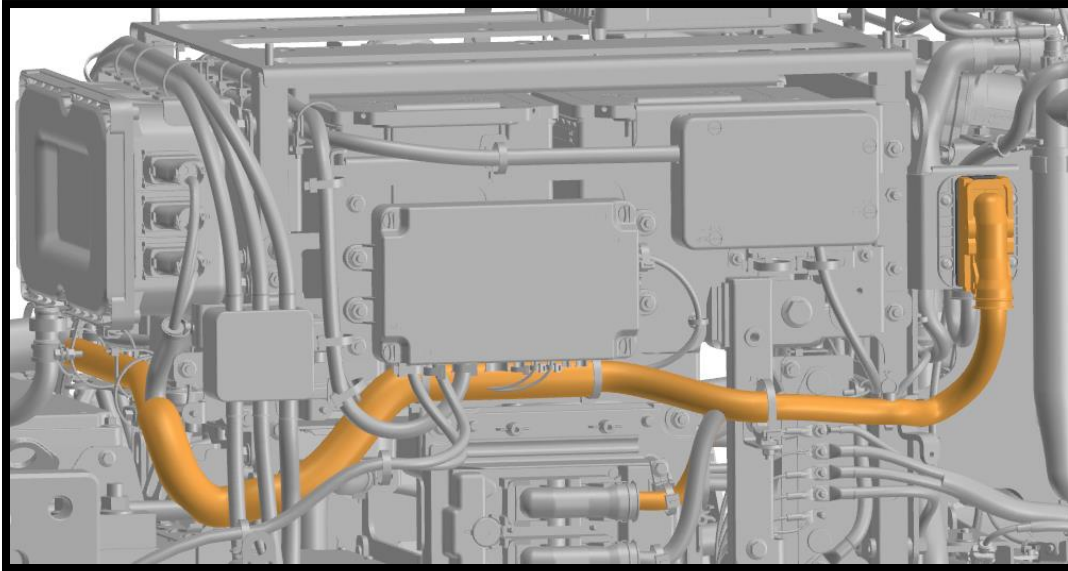
43. Remove the back shell. Move the secondary lock to the pre-locked position.



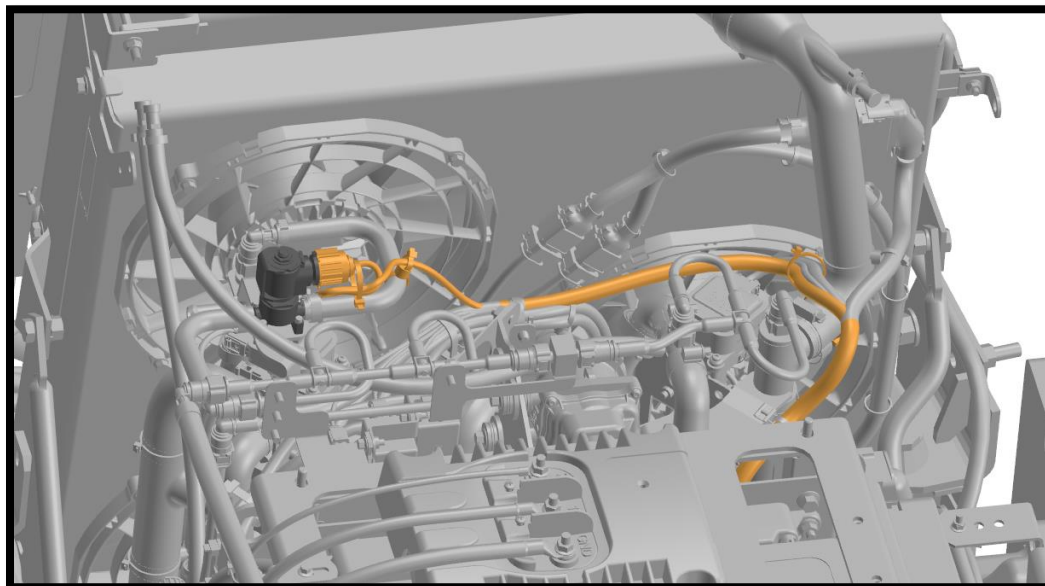
44. Insert circuit A397B49A1 into cavity 49. Move the secondary lock to the locked position. Install the tie band and back shell. Reconnect to the EVCM.



45. Secure the overlay harness to the MPB harness.



46. Route the jumper along the cooling box harness. Connect the solenoid and secure the jumper as shown.



47. Follow Traction voltage system commissioning instructions (ID 3100-09-01-03) in Impact.
48. Follow Coolant filling instructions (ID 2609-02-01-01) in Impact.
49. Connect to truck using PTT.
50. Installed Aftermarket conversion kit: 85165234
51. Release truck back to service.

The overlay harness and new cooling box harness is adding the circuit highlighted below.

