Preview Solution CBR-2419-1

Mack Chassis - Battery Electric Vehicle (BEV) Cab Heater Diagnostics

Published 11 November 2024

Valid For

Mack Chassis - LRe

Model year 2021 to present

Solution

NOTE: Fault code C102571 and C102572 can be a result of insufficient coolant flow through the cab heater system.

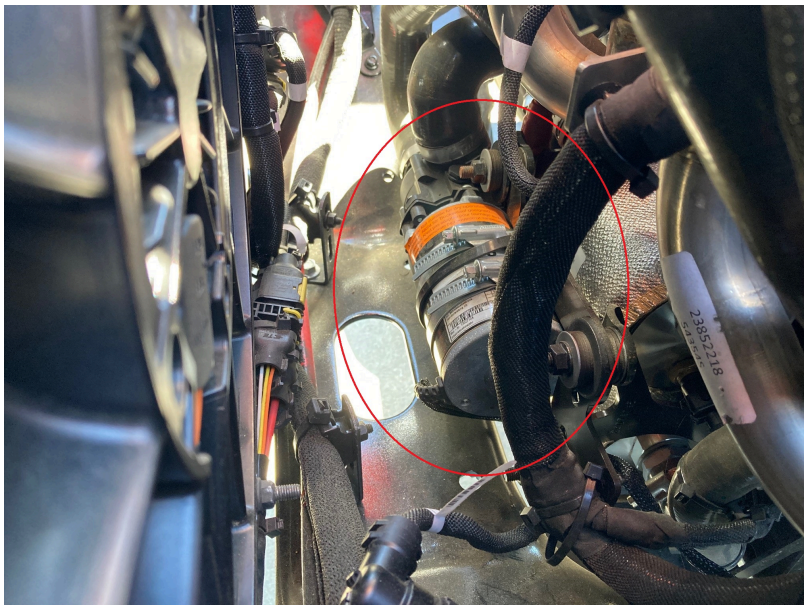
Diagnostic Steps:

1. Is the coolant system full and system been bled?
- **a.** If No, fill coolant and perform bleeding procedures.
- **b.** If Yes, continue to step 2.

2. Do you have any heat out of the vents?
- **a.** No Heat- See step 3
- **b.** Some heat- See step 4

3. If no heat, please check the power to component M122, which is at the bottom of the coolant piping.

Live UI

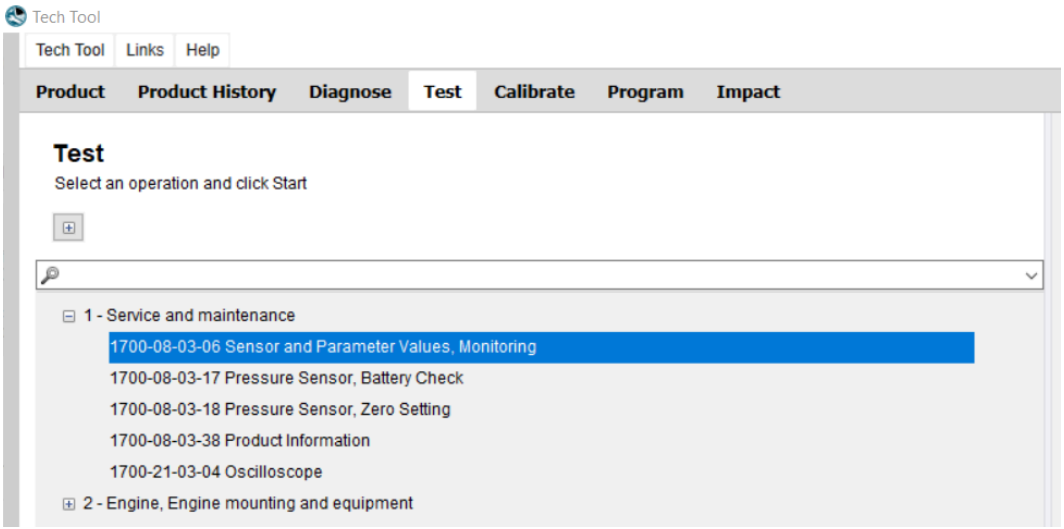


This is the Cab Heater Coolant Pump. It draws fluid through the cab heaters and pumps it into the cab. Unplug the connector and check for power and ground on the harness side. You should have 24v and a good ground when the heater system is active.

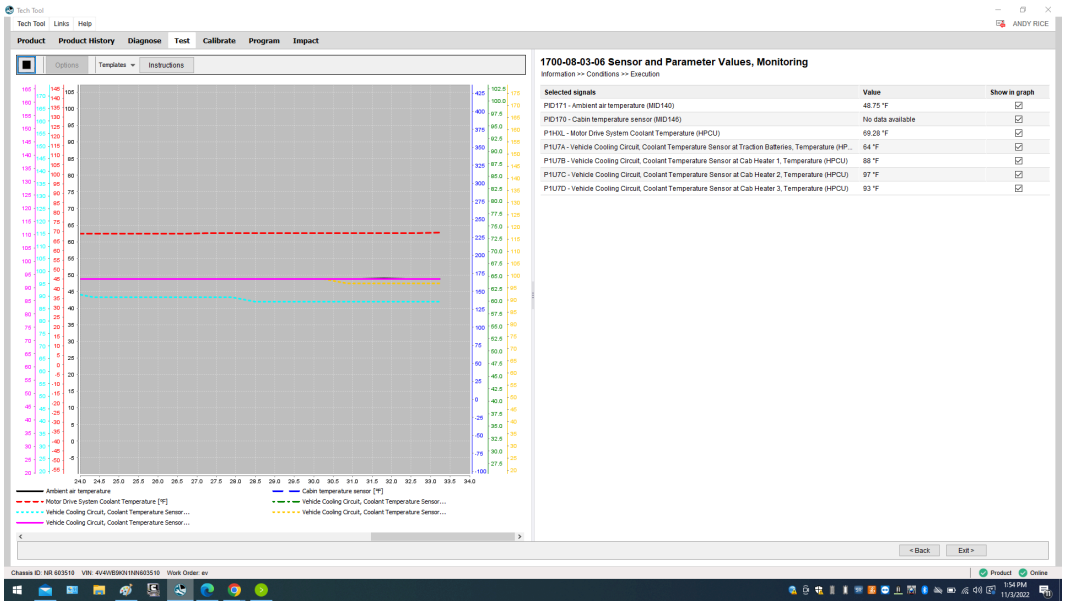
a. No 24v- See step 5
b. No Ground- See step 6
c. 24v and Ground OK- See step 4

4. Checking the heaters - The truck is equipped with 3 heaters in the front for Cab Heat. Each heater draws around 75 amps and has a temperature sensor mounted into the housing.

a. Check heater temperatures with Tech Tool Function **1700-08-03-06**.



Live UI



You should see temperatures more than 140 degrees F and all 3 heaters should have similar temperatures.

Note - the accuracy of these temperatures requires the pump to be functional.

No coolant flow will show unequal or lower temperatures.

i. If They are not equal, check the relay and amperage draw for whichever unit is not. See step 4b for amperage draw test.

b. Check amperage to each heater. This can be done at the bundle where the 3 heater cables are together. You will be looking for approximately 75 amps per wire, which would be ~225amps if measuring all three at once.

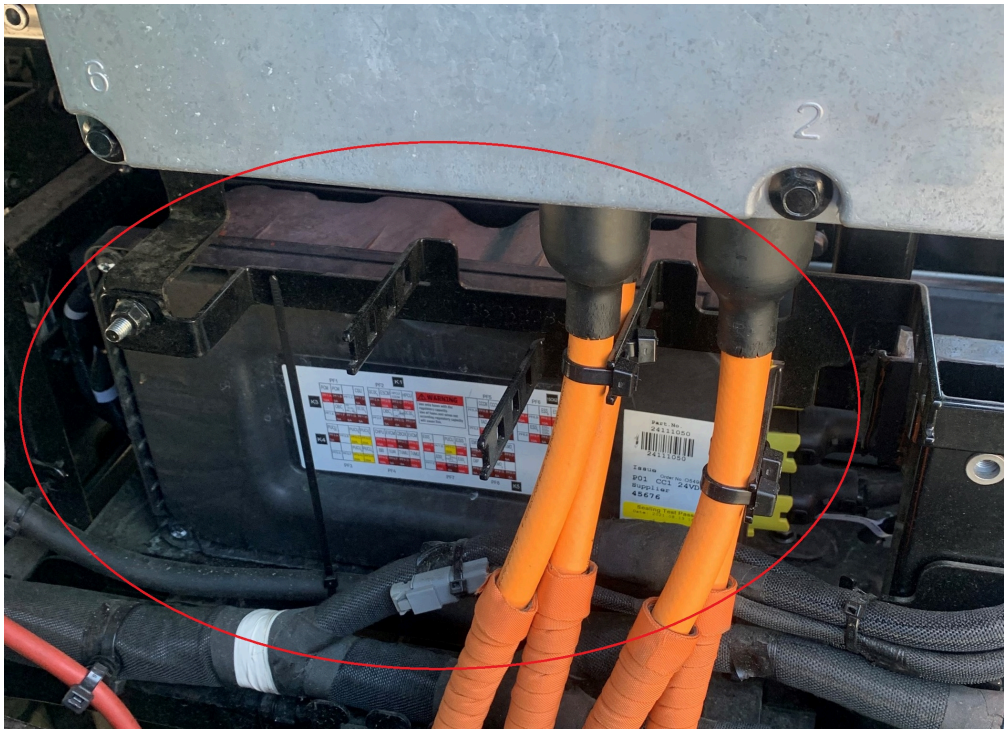
i. If amperage is equal but temperature is not, please replace the heater with low temps.

ii. If amperage is low or zero on a heater, check its supply voltage at the relay and make sure the relay is activating.

1. Relay inop - replace

2. Relay working but no 24 volts to the relay, inspect the wiring back to the batteries.

5. No 24v to M122- first we need to check the fuse for being in good condition and having 24v. The fuse is located ON the back of the MPB(Modular Power Box).



Fuse labeled CHPU in section PF4(10amp) and should have 24v to both side.

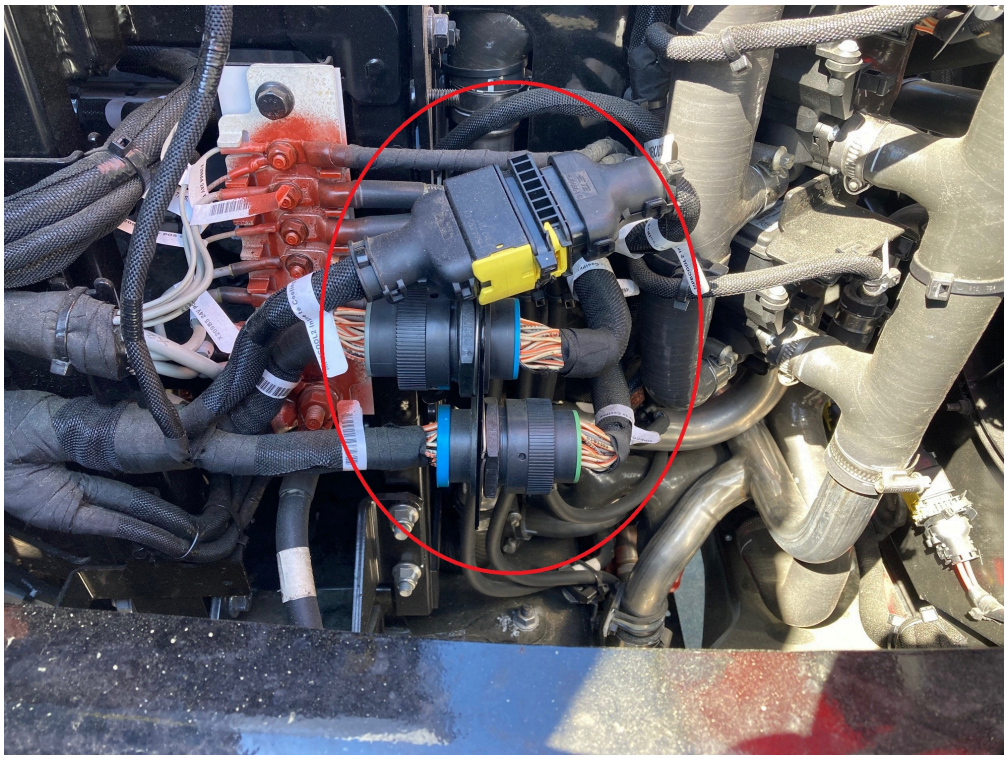
a. Fuse blown - Replace with 15a fuse and perform continuity checks from fuse to pump. You want to see close to 0 ohms on the wire. Also check for a short to ground in the wiring. If tests are good, retest the heater functionality

b. No 24v to fuse- Check relay K4 in the ECEC for powers and ground. You should have 24v to two pins and ground to one when heater active. Then the output pin to the fuse.

i. No 24v at relay - check for 24v supply to the ECEC. If ok, replace ECEC

ii. No Ground- This is fed by the EVCM. Check for continuity to pin B:53 at the EVCM. If no continuity, check wiring back to the EVCM for any faults. Repair or replace as needed. If continuity is ok, see Step 6

c. Fuse good- Check continuity from fuse to pump for open circuits. The harness comes out of the rear of the ECEC and then goes forward to 2 round connectors. Connector MPBCOOL1 contains the 24v(Pin 7) and ground(Pin 8) wire for the M122.



Visually inspect those connectors for damaged or pushed pins. Test for continuity back to the fuse and from the connector to the pump.

i. No continuity to fuse- Check continuity from ECEC connector to MPBCOOL1 connector.

1. Good continuity- inspect both sides of the connection and replace ECEC if no issues are seen.

2. NO or Poor continuity- check harness for faults and repair/replace as needed.

6. No Ground to Pump - As mentioned in step 5c, the ground wire comes from the pump and goes through the MPBCOOL1 connector pin 8.

a. Check pin 8 at MPBCOOL for any issues.

i. If OK, continue to step 6b

ii. If Not Ok, repair or replace as needed.

b. Check continuity from Pin 8 to pump.

i. If OK, continue to step 6c

ii. If Not OK, inspect the harness for any issues. Repair or replace as needed

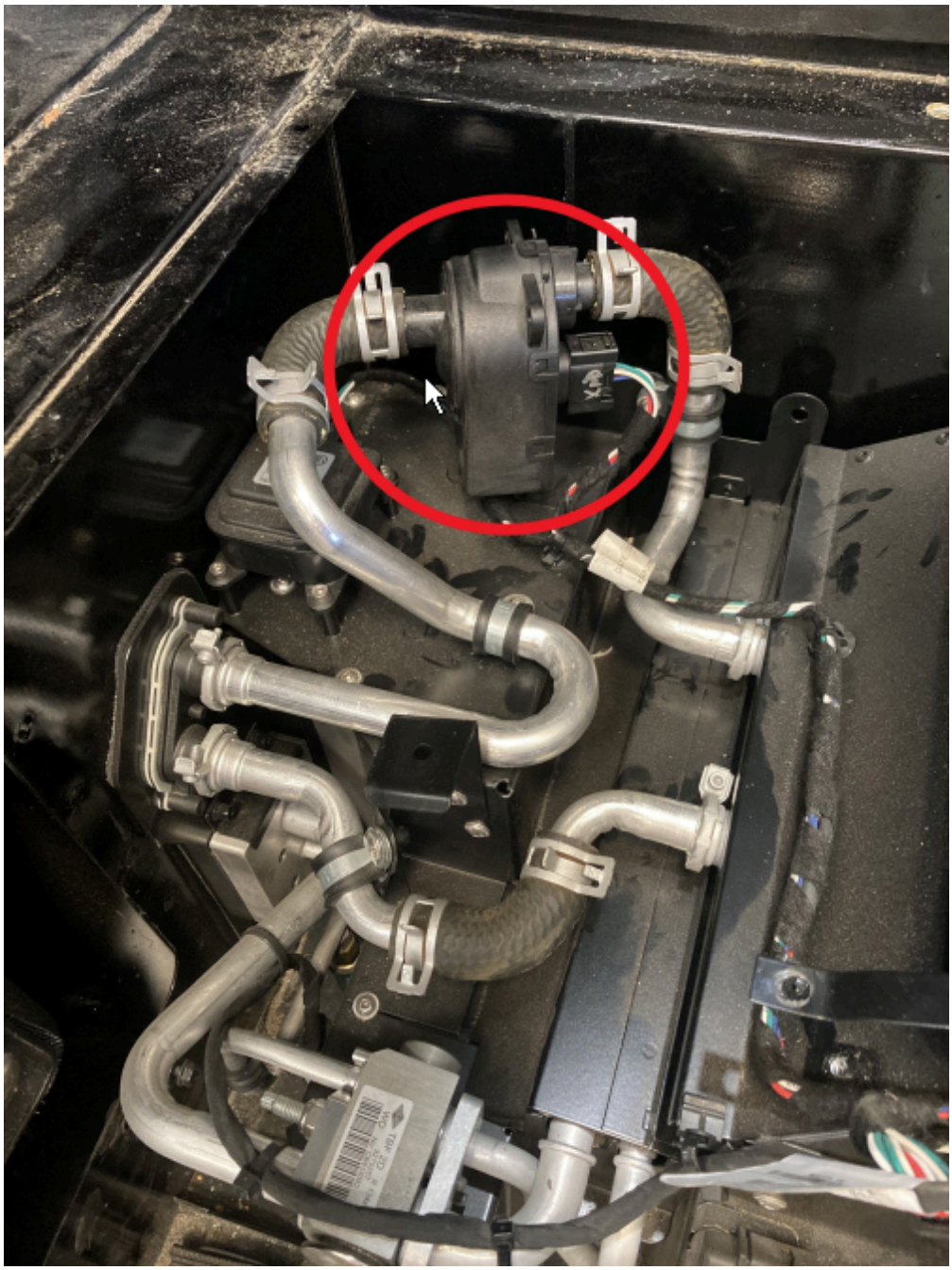
c.Check continuity from pin 8 to B6 at the Low Voltage Grounds

i. If Ok, confirm that the grounds to the Low Voltage Grounds rail are ok

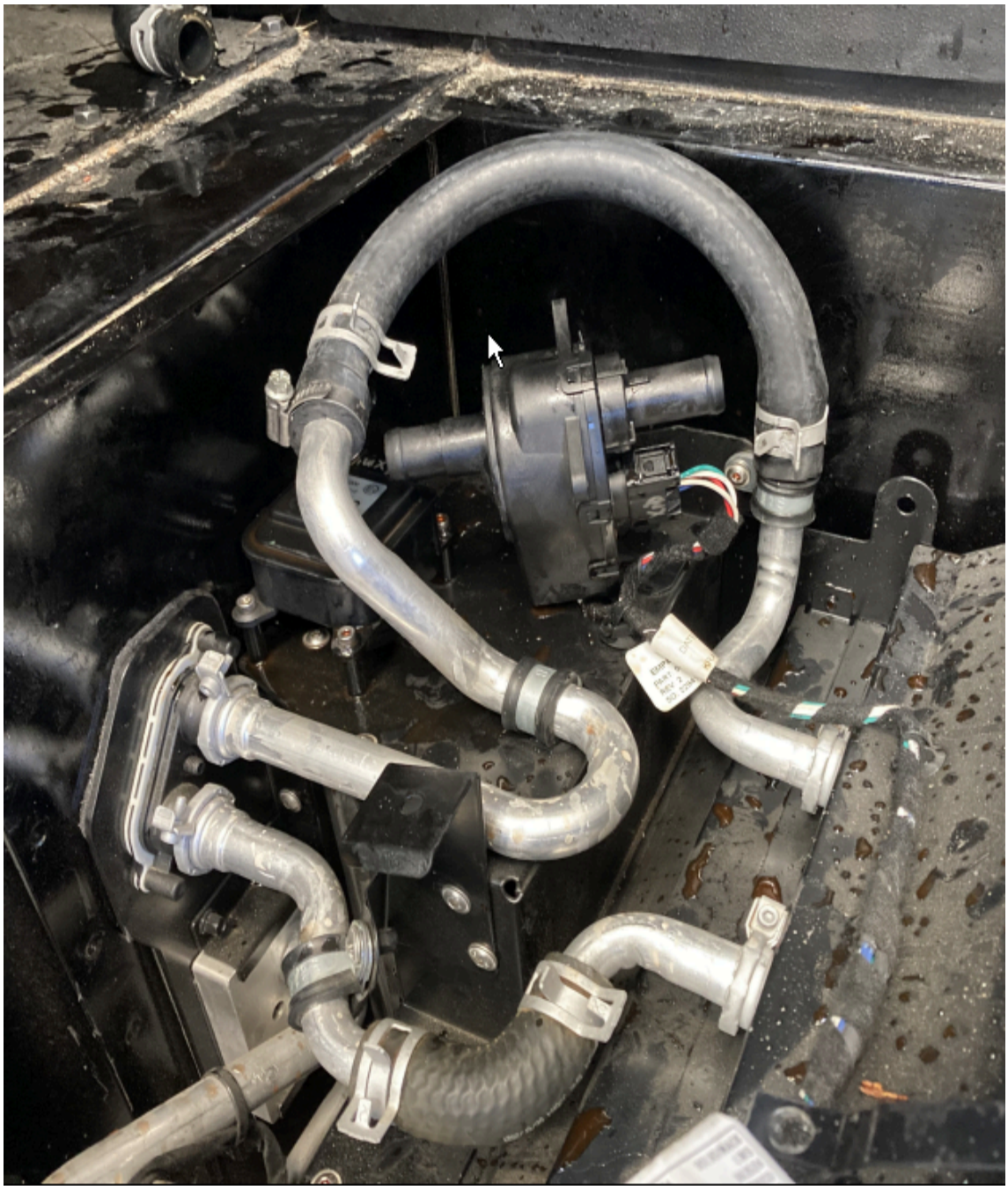
ii. If Not OK, check the harness for issues. Repair or replace as needed.

Live UI

7. Inspect the cab heater valve for correct operation.



8. If the valve appears to be functioning correctly, bypass it using a hose and retest its operation. See image below.



Live UI

Related links and attachments

VNe Cabin heater update

Share
to others that might find it helpful

Feedback
Give feedback
to help improve the content of this article

Live UI