



FIELD SERVICE CAMPAIGN – 23109

12 May 2023

SUBJECT:

High-Voltage Cabin Heater Replacement

MODELS INVOLVED:

IC Bus® Electric CE Series Bus

DEFECT DESCRIPTION:

Certain IC Bus® Electric CE Series bus high-voltage cabin heaters may cause excessive cycling of the HVDU (High-Voltage Distribution Unit), which can result in premature HVDU contactor failure.

ELIGIBILITY:

This procedure applies ONLY to vehicles marked in the International® Service PortalSM with FSC 23109. Also complete any other open campaigns listed on the Service Portal at this time.

TOOLS REQUIRED:

Description	Tool Number
Coolant Management System	KL5007NAV
Cooling System Adapter	09-040-03
Radiator Cap Adapter	ZTSE23841
Fluke Insulation Multimeter Kit	1587-62MAX-FC-WWG

Table 1 Tools Information

PARTS REQUIRED:

Part Number	Description	Quantity
4296999C91	Heater, Water 10KW	1
4280164C92	Module, High-Voltage Distribution Unit (HVDU)	1 (If Needed)

Table 2 Parts Information

WORK INSTRUCTIONS

GOVERNMENT REGULATION: Engine fluid (oil, fuel, and coolant) may be a hazard to human health and the environment. Handle all fluid and other contaminated materials (such as filters and rags) in accordance with applicable regulations. Recycle or dispose of engine fluids, filters, and other contaminated materials according to applicable regulations.

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, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent personal injury and / or death, 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, 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, NEVER service a high-voltage vehicle without completing high-voltage safety training. Before working on a vehicle, read and obey all High-Voltage Safety and Lock-Out Tag-Out procedures and information.

WARNING! To prevent personal injury and / or death, 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.

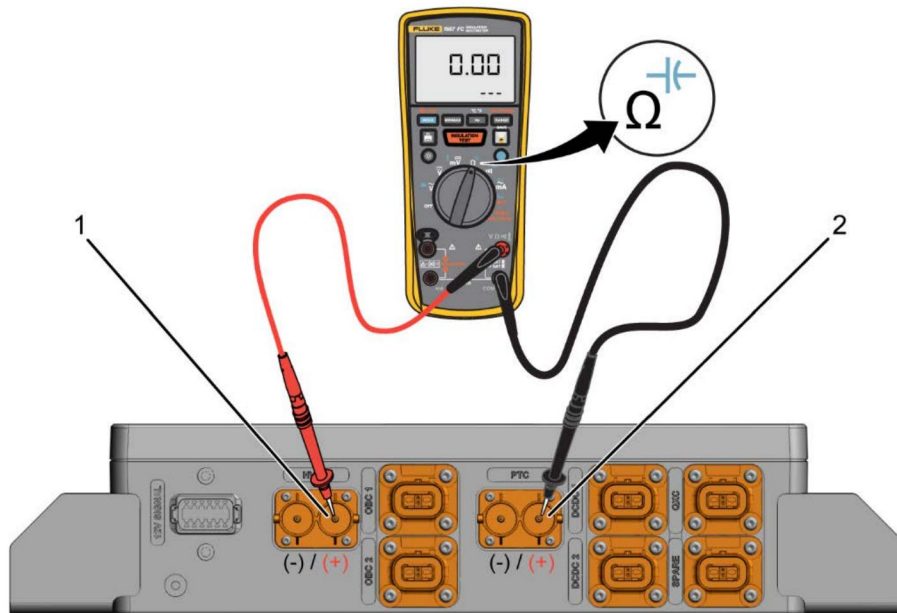
WARNING! To prevent personal injury and / or death, read all information in the Safety Information and High-Voltage Safety sections of the service manual.

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. Turn OFF 12V disconnect.
6. Perform High-Voltage Isolation Level 3. Refer to IC Bus® Electric CE Series Technician Manual for detailed instructions.
7. Unlatch and open hood.
8. Remove high voltage cabin heater. Refer to relevant service manual for proper removal.

CAUTION: To prevent damage to property, ensure DVOM (Digital Volt-Ohm Meter), test probes, and DVOM fuse are working properly.

CAUTION: To prevent damage to property, ensure DVOM is turned to the resistance, or ohms setting.

9. Before installing new high-voltage cabin heater, test HVDU module.



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Figure 1. HVDM Test 1

1. HVDM (+)
2. PTC (Positive Temperature Coefficient) (+)

10. Using a DVOM, test resistance between HVDM connector PTC (+) (Figure 1, Item 2) and connector HVDM (+) (Figure 1, Item 1). Document resistance.

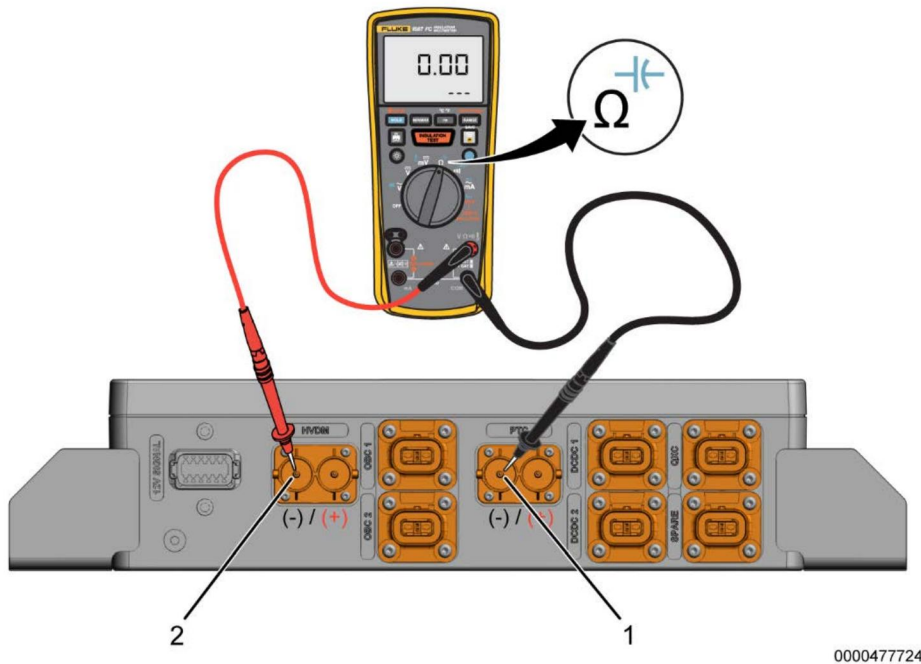


Figure 2. HVDM Test 2

1. HVDM (-)
2. PTC (-)

11. Using a DVOM, test resistance between HVDM connector PTC (-) (Figure 2, Item 1) and connector HVDM (-) (Figure 2, Item 2). Document resistance.
12. If resistance is OL (open), then HVDM contactor is not welded. Proceed to Step 14.
13. If resistance tests show between 1–4, ohms, then the contactor is welded. If either contactor is welded, replace HVDM. Refer to relevant service manual for removal and installation instructions.
14. Install new high-voltage cabin heater. Refer to relevant service manual for installation instructions.
15. Reconnect High-Voltage Isolation Level 3. Refer to IC Bus® Electric CE Series Technician Manual for detailed instructions.
16. Close and latch hood.
17. Remove wheel chocks.

LABOR INFORMATION

Operation number must appear on all claims.

Operation Number	Description	Time
A40-23109-1	High-Voltage Isolation Level 3 / Zone 3	1.3 hrs
A40-23109-2	High-Voltage Cabin Heater, Replace	0.9 hrs
A40-23109-3	Perform Resistance check on HVDU PTC Contactor	0.5 hrs
A40-23109-4	Replace HVDU; if necessary	1.0 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 23109.

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 23109 activity must be submitted by 12 May 2024 or within the normal warranty period for the component repaired, if after 12 May 2024.

GROUP	NOUN	C	WARR.	TP	PAD

GROUP — Enter number ←

NOUN — Leave blank ←

C (CAUSE) — Enter either 1, 2, 3. (See below)

1. Inspected (No repair required).
2. Inspected and repaired.
3. Defective part from parts stock.

WARRANTY — (Warranty Code) Enter 40. ←

TYPE PART — Enter P for type part causing failure. ←

PAD — Enter 100 ←

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