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Argosy
Cargo
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Coronado
Business Class M2
> Cascadia
> New Cascadia

**Freightliner
Service Bulletin**

Description of Revisions: *This bulletin replaces the version dated May 2015. The note in General Information has been revised to include New Cascadia. Espar information has been changed to reflect a company name change to Eberspächer.*

General Information

NOTE: The following information applies to the Cascadia and New Cascadia ParkSmart™ system, but Eberspächer Airtronic heaters used for New Cascadia Dual Evaporator Auxiliary HVAC Systems, NITE systems, and stand-alone auxiliary heaters would use the same diagnostic tool, with similar adapters and procedures.

This service bulletin gives a general overview of the Eberspaecher heater system and assists in locating, diagnosing, and repairing an auxiliary heater malfunctions using the Eberspaecher diagnostic manual.

Eberspaecher Service Literature

For service information for any Eberspächer heater, refer to the service literature available on the Eberspächer website.

1. Go to the Eberspächer web site at <https://www.eberspaecher-na.com/> shown in **Fig. 1**.
2. Select "Warranty" at the top of the Eberspächer home page.

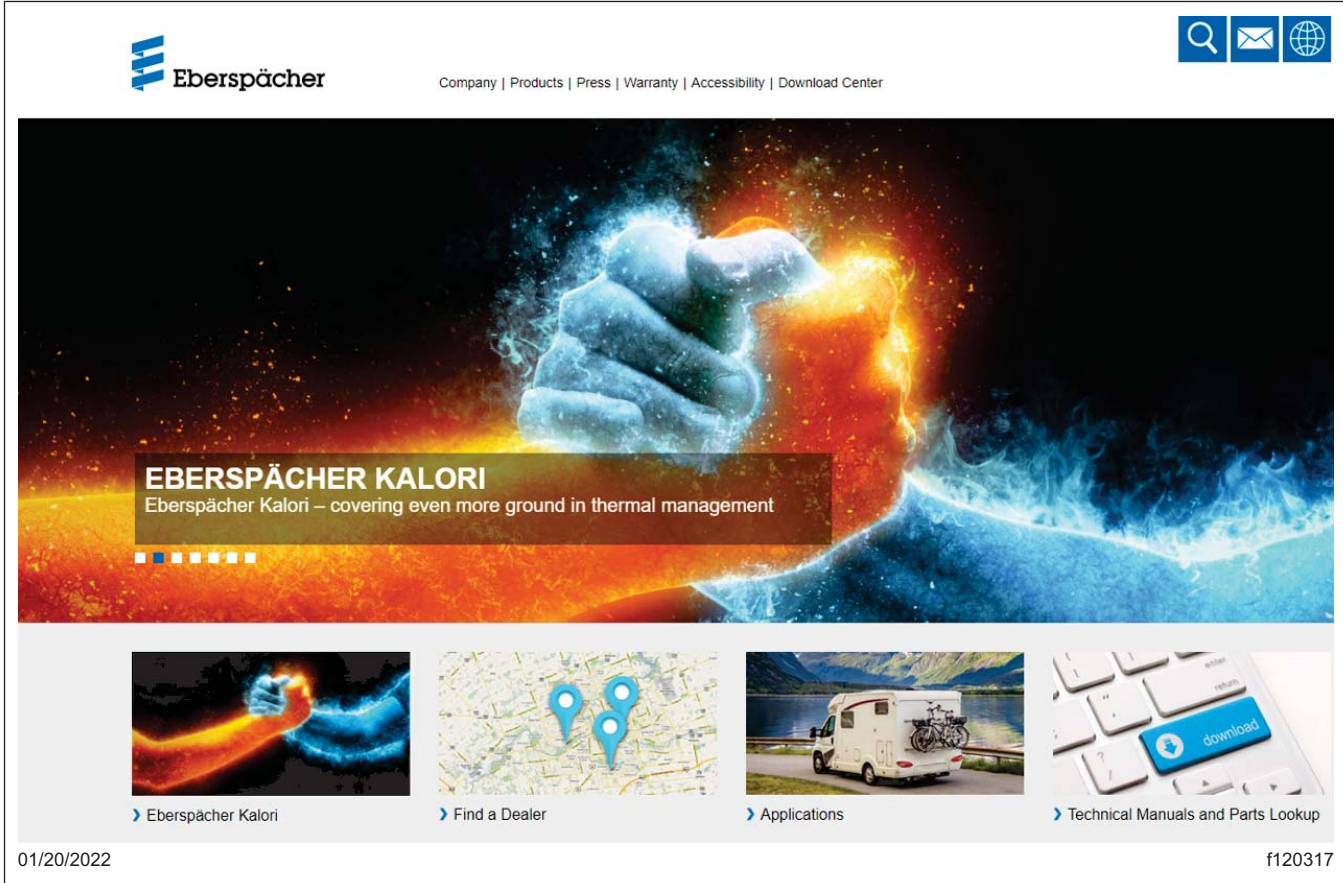


Fig. 1, Eberspaecher Home Page

- On the Warranty screen, select the manual for the heater model being serviced (ParkSmart uses Hydronic 5).

This manual provides all Eberspaecher-specific information and troubleshooting procedures needed. If the issue is with the wiring to the Eberspaecher unit, refer to the appropriate vehicle workshop manual and wiring diagrams for more information.

Eberspaecher Special Tools

The ParkSmart system requires a special tool for troubleshooting the Eberspaecher coolant heater. See **Fig. 2**. **Table 1** lists these tools and the associated part numbers. Dealers can place direct-ship orders through normal parts ordering channels. These tools, with similar part numbers, are also available from Eberspaecher. These are the only tools needed for reading and clearing Eberspaecher fault codes.

Eberspaecher Special Tools	
Description	Part Number
Y-Adaptor (ParkSmart only)	ESP 2527867000010A

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Eberspaecher Special Tools	
Description	Part Number
Diagnostic Tool	ESP 202900705020

Table 1, Eberspaecher Special Tools

EDiTH Diagnostic Tool and Software package

As an alternative to the diagnostic tool listed above, the EDiTH diagnostic tool and software package can be used. See Fig. 3. The EDiTH package delivers more information. However, it is not required to read or clear fault codes. The standard Eberspaecher control module or a fault code retrieval device will perform the basic functions for diagnosing most unit issues. The EDiTH tool requires the use of the ParkSmart Y-adaptor to communicate with the Eberspaecher heater in a ParkSmart system.

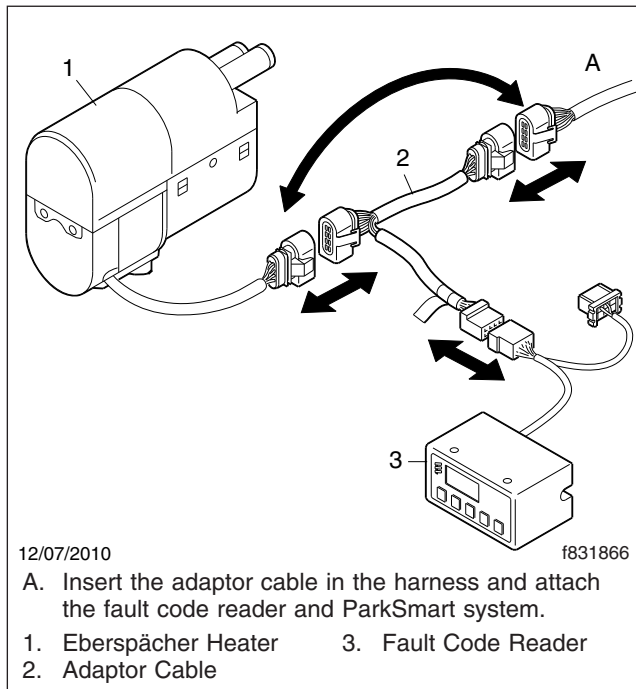


Fig. 2, Adaptor Cable and Fault Code Reader

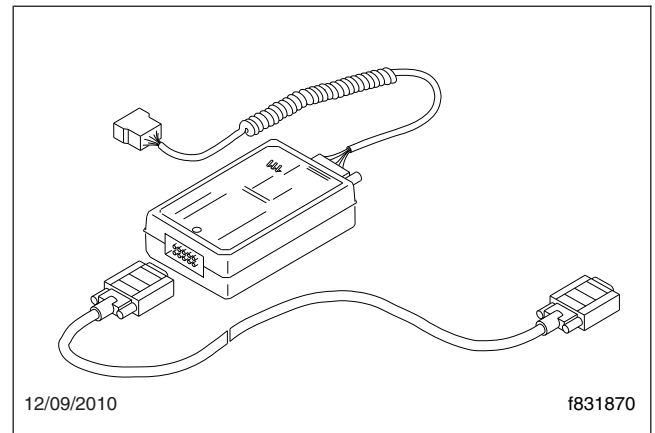


Fig. 3, EDiTH Diagnostic Tool

Periodic Maintenance

The following checks should be performed on the Eberspaecher heater system during regularly scheduled maintenance of the vehicle, and after any repairs are made.

- Check coolant hoses and clamps and make sure all valves are open. Maintain the engine manufacturer's recommended coolant level. Ensure that the heater is properly bled after servicing the coolant system.
- Check the heater intake and exhaust for blockages.
- Check all of the heater fuel lines for leaks.
- Check and replace the fuel filter inserts, if necessary.

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- Check the electrical lines and connections for corrosion.
- Run the heater for a minimum of 15 minutes, at least once per month throughout the year to avoid filter fouling.
- Maintain the batteries and ensure all electrical connections are in good condition. The heater will not start without sufficient power. Low and high voltage cutouts will shut the heater down automatically.
- Check the glow pin and replace, if necessary.

Heater Troubleshooting

Use [Table 2](#) to diagnose the Eberspaecher heater used in the ParkSmart system.

ParkSmart System General Heating Test		
Set Up	Expected Result	Results
Engine off Park brake set Temperature control set to full heat Blower set to 4 Press the PARK button See Fig. 4 .	The blower should turn on at medium speed. The condenser fan should start and run for approximately 30 seconds. The heater should begin operation (and should be audible) within two minutes. You should be able to feel the exhaust at the pipe exit below the back of the cab. See Fig. 5 .	If the heater does not start and run, perform the heater test to determine which system to diagnose.

Table 2, ParkSmart System General Heating Test

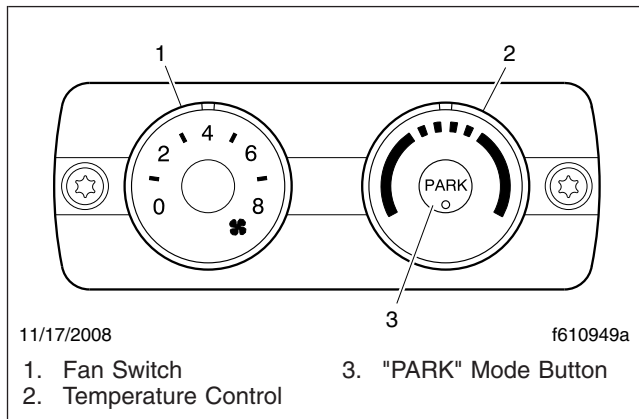


Fig. 4, ParkSmart Control Module

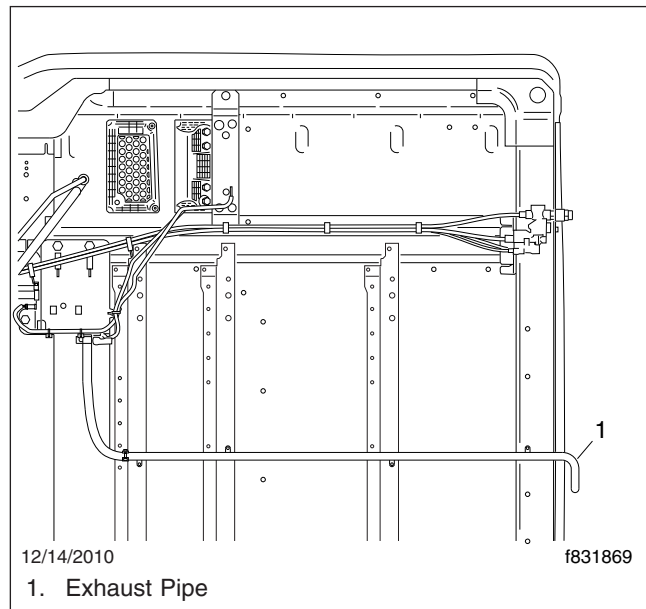


Fig. 5, Exhaust Pipe Installation

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Heater Test

The Eberspaecher heater requires three conditions to work.

- Power and ground at the connector on the exhaust basket
- 12V on the yellow signal wire at the connector
- Fuel in the tank

Test the heater function as follows.

1. Verify that there is power and ground at the connector.
2. Jump the power from the red wire to the yellow wire (so that both supply 12V to the heater). See [Fig. 6](#).

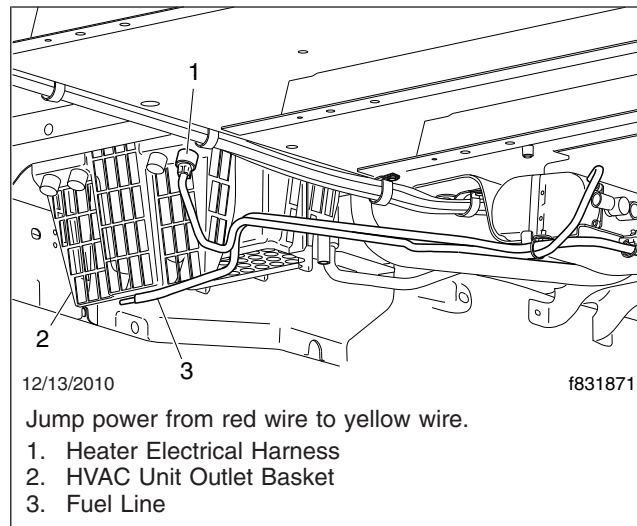


Fig. 6, Testing the Heater Function

3. If the heater powers up and begins to run, the ParkSmart system is not providing the request message needed. The Eberspaecher heater is not faulty; continue diagnosis using the ParkSmart Controls Test that follows.

If the heater does not turn on, refer to the Eberspaecher Hydronic 4-5 manual, and use the Eberspaecher diagnostic tool to diagnose the issue. See [Table 3](#) for common problems with the system.

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Fuel Operated Coolant Heater Troubleshooting: "No Start" and "Heater Stops" Conditions		
Problem	Description of the Problem	Possible Reason and Method of Repair
1	Absolutely nothing happens when the heater is turned on. Coolant pump is not pumping.	<p>1. Check the voltage at the heater harness connector pins 1 and 2. Turn the heater ON and make sure that the voltage is still OK. Repair the harness and connections, if necessary.</p> <p>2. If the voltage is OK, try to start the heater by connecting the red and yellow wires together using a jumper wire.</p> <p>If the heater starts, go to step 3.</p> <p>If the heater does not start, go to step 4.</p> <p>3. If the heater starts, check that the park brake pressure switch in the "PK2" position at the front wall pass through. It must be an N.O. switch. If not, replace the switch. Go to "Park Brake Pressure Switch Test" below.</p> <p>4. If the heater still does not start, then most likely the ECU is locked or the start-up self test fails.</p> <p>NOTE: Use the 7-Day Timer, EDiTH, or diagnostic tool to retrieve fault codes from the heater's memory and to unlock the ECU, if locked. Follow the heater manufacturer's service manual for the fault code's description and repair methods.</p>
2	When turned on, heater just pumps coolant, never stops, and never performs a start attempt. No fault codes found in memory.	<p>1. Check and replace the temperature sensor.</p> <p>2. If the sensor is good, replace the ECU.</p>
3	Heater switches into shutdown phase 20 seconds after being turned on (most likely, fault code 11 is found in the memory).	Check the voltage at the heater harness connector pins 1 and 2. Turn the heater ON and make sure that the voltage is still OK. Repair the harness and connections, if necessary.
4	Heater makes two attempts to start with no success, and then stops completely. No smoke comes from the exhaust pipe. Some smoke can be seen between the exhaust pipe and heater.	<p>1. Check if the exhaust pipe is plugged with ice. Reroute it if this is the case.</p> <p>2. Check the combustion air intake pipe. If the exhaust and combustion air intake pipes are OK, see problem 5 below.</p>
5	Heater makes two attempts to start, may smoke for awhile, and then stops.	<p>1. Do the fuel quantity check. If the amount of fuel is insufficient, check the fuel pick-up pipe, fuel lines and connections, and the fuel filter on the pump. Replace the filter or pump, if necessary.</p> <p>2. Check the glow pin and replace the atomizing screen. Clean the combustion tube (including all airways) and the heat exchanger.</p>
6	Heater starts and runs, but smokes excessively. NOTE: Minor smoking at startup is normal, but large amounts of continued smoke indicates a combustion problem.	<p>1. The heater's combustion screen/chamber needs to be serviced.</p> <p>2. A combustion air flow restriction is causing a rich running condition.</p>
7	Heater makes two attempts to start, then stops. Both times it sounds like the ignition takes place and then combustion process stops together with the fuel metering pump. Usually no smoke comes from the exhaust pipe.	<p>1. The heater ignited but the flame was not detected. Check the flame sensor and replace it, if necessary.</p> <p>2. Replace the ECU if the flame sensor is good.</p>

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Fuel Operated Coolant Heater Troubleshooting: "No Start" and "Heater Stops" Conditions		
Problem	Description of the Problem	Possible Reason and Method of Repair
8	Heater ignites normally, but often stops. (codes 52-56 are found in memory)	1. Check the fuel lines for gaps in the connections inside the connection pieces. 2. If the heater stops only when the vehicle is in motion, reroute the combustion air intake and exhaust pipes, or bend their ends toward the rear of the vehicle.
9	Heater overheats and stops soon after being turned on. The temperature of the heat exchanger raises quickly after starting.	1. Bleed the air from the coolant lines and heat exchanger. Check the plumbing to ensure there are no restrictions to coolant flow. 2. Check to see if the coolant pump spins. Unblock and clean, if necessary.
10	Heater does not provide enough power. Mostly working on low-power level, which can be detected by measuring electrical current draw.	1. Check the coolant pump for a blockage. 2. Check the heater plumbing for a blockage or damage.
11	Ground wire burned out.	The vehicle starter was turned on, or a short circuit happened in the vehicle power circuits while the vehicle power switch in the battery ground wire was turned off. Fix the wire or replace the ECU.

Table 3, Fuel Operated Coolant Heater Troubleshooting: "No Start" and "Heater Stops" Conditions

ParkSmart Controls Test

If the heater worked during the "Heater Test" but does not power up with the ParkSmart controls, check the following.

- The park brake switch is operating correctly and parking brake is set. See the "Park Brake Pressure Switch Test" below.
- The engine must be off (J1939 report of engine rpm will also cause the unit not to run).
- The internal controller must be waking up. The light must stay illuminated on the control head when the fan is set to anything but 0 and the "PARK" button is pressed.

If the three above conditions are met, test for 12V on the yellow wire when the heat request is initiated. If the yellow wire does not show 12V, but the Eberspächer unit will function when yellow wire is jumped to 12V, there is an internal problem with the ParkSmart unit. Diagnose the issue using the published information in the applicable troubleshooting manual.

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When the Eberspaecher coolant heater will not start, it is possible that the parking brake switch, shown in [Fig. 7](#), is not operating correctly. This switch is normally open (infinite resistance across the terminals) when the parking brake is set. The Eberspächer coolant heater will not operate if this circuit is closed. In order to test the circuit and switch when the heater is not otherwise operational:

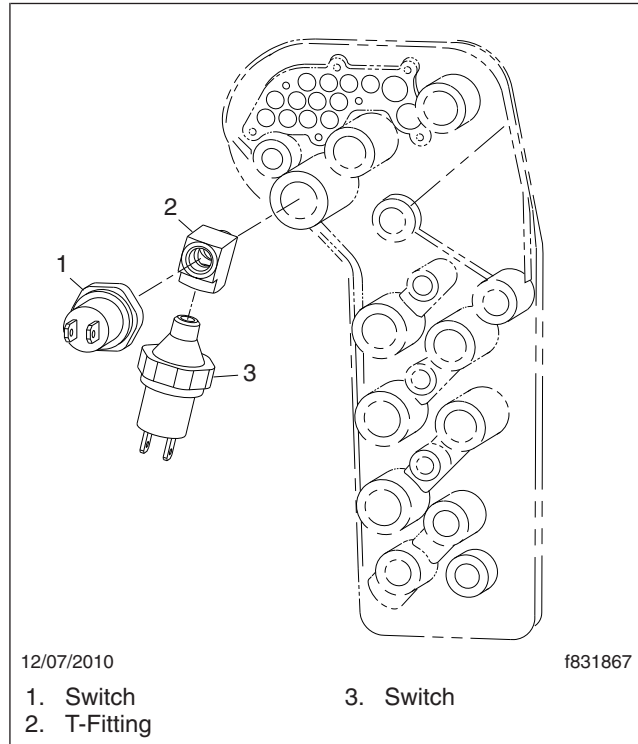


Fig. 7, Park Brake Pressure Switch Location (typical)

1. Park the vehicle on a level surface, shut down the engine, and apply the parking brakes. Chock the tires.
2. Remove the covers in the driver footwell that cover the air brake distribution panel.

NOTE: The wiring to the switches is labeled. The ParkSmart switch has the number of the harness on it (this can be found in Parts Pro if necessary). This switch does not report on the J1939 databus, thus the value on the databus is not indicative of the status of this switch.

3. Disconnect one of the wires from the switch.
4. Set the ParkSmart unit on full heat with the blower set at 4. Press the PARK button.

The blower should start. After approximately two minutes, you will be able to hear and feel the Eberspaecher fuel operated heater exhaust at the pipe. If the heater does not operate at this time, the switch is not the problem.

To verify that the switch is operating correctly:

- 4.1 Disconnect both wires from the switch.
- 4.2 With the parking brake set, place a multimeter across the terminals. There should be infinite resistance.
- 4.3 Verify that the wheels are securely chocked and then release the parking brake. There should be 0 resistance.

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ParkSmart Controller Lockout

Under certain conditions, the ParkSmart controller may lock out inputs and outputs. To reset the ParkSmart controller, disconnect the two red power wires and the black power wire at the outlet basket on the underside of the vehicle for two minutes. See [Fig. 8](#).

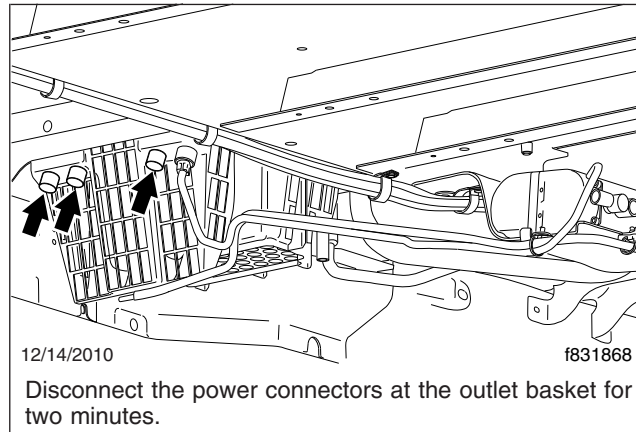


Fig. 8, Resetting the Controller

Warranty

This is an informational bulletin only. Warranty does not apply.