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CLIMATE CONTROL SYSTEM – GENERAL INFORMATION

AUXILIARY CLIMATE CONTROL (G2400994)

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PRINCIPLES OF OPERATION

For a detailed description of the auxiliary climate control system and operation, refer to the relevant description and operation section of the workshop manual. REFER to:(412-02 Auxiliary Climate Control)

[Electric Booster Heater](#) (Description and Operation),

[Fuel Fired Booster Heater](#) (Description and Operation),

[Auxiliary Climate Control](#) (Description and Operation).

INSPECTION AND VERIFICATION

 CAUTION:

Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault and may also cause additional faults in the vehicle being checked and/or the donor vehicle

 NOTES:

- If a control module or a component is at fault and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual, or determine if any prior approval program is in operation, prior to the installation of a new module/component.
- Generic scan tools may not read the codes listed, or may read only 5-digit codes. Match the 5 digits from the scan tool to the first 5 digits of the 7-digit code listed to identify the fault (the last 2 digits give extra information read by the Jaguar Land Rover approved diagnostic equipment).
- When performing voltage or resistance tests, always use a digital multimeter that has the resolution ability to view 3 decimal places. For example, on the 2 volts range can measure 1mV or 2 K Ohm range can measure 1 Ohm. When testing resistance always take the resistance of the digital multimeter leads into account.
- Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.
- Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.
- If Diagnostic Trouble Code(s) (DTC)s are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

1. Verify the customer concern

2. Visually inspect for obvious signs of mechanical or electrical damage

Visual Inspection

MECHANICAL	ELECTRICAL
■ Electric booster heater ■ Fuel fired booster heater assembly ■ Combustion air fan ■ Coolant inlet/outlet ■ Heat exchanger ■ Temperature sensor ■ Exhaust ■ Fuel inlet ■ Air inlet ■ Evaporator ■ Auxiliary fuel pump and lines ■ Auxiliary coolant pump ■ Coolant hoses	■ Fuses ■ Harnesses ■ Electrical connector(s) ■ Electric booster heater ■ HVAC control module (HVAC) ■ Rear HVAC Control Module (RHVAC)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step

4. If the cause is not visually evident, check for diagnostic trouble codes and refer to the DTC index

5. Check Jaguar Land Rover claims submission system for open campaigns. Refer to the corresponding bulletins and SSMs which may be valid for the specific customer complaint and complete the recommendations as required

SYMPTOM CHART

SYMPTOM	POSSIBLE CAUSE	ACTION
Fuel Fired Booster Heater (FFBH) producing excessive smoke	■ New car oils and materials left from the manufacturing process burning off ■ Water vapor in the FFBH exhaust ■ FFBH intake obstructed ■ FFBH evaporative emission canister (where specified) blocked ■ FFBH exhaust obstructed	■ GO to Pinpoint Test A.

SYMPTOM	POSSIBLE CAUSE	ACTION
	- Internal blockage to FFBH unit - Fuel delivery to FFBH obstructed - Fuel contamination	
Customer reports of unpleasant or excessive odor in the passenger compartment	- Saturated HVAC Control Module (HVAC) carbon filter - HVAC module software out of date (missing recirculation odor exclusion routine) - FFBH exhaust leaking or blocked - FFBH air intake restricted or blocked - FFBH evaporative emission canister (where specified) blocked - Fuel delivery rate to FFBH out of specification - Poor sealing of secondary bulkhead to body - Climate control system recirculation flaps not operating as intended	GO to Pinpoint Test B.
Unexplained passenger compartment odours	- HVACC module software out of date (missing evaporator purge routine) - Water ingress in vehicle passenger compartment - Climate control system recirculation flaps not operating as intended - Fuel leakage - Coolant leakage - Contamination spilt or stowed in passenger compartment area - New car smell	GO to Pinpoint Test C.
FFBH inoperable or malfunctioning	FFBH intake obstructed	GO to Pinpoint Test A. Start from A6 and follow the pinpoint test through to A23. If the fault persists after A23 has been completed, stop the pinpoint test and raise a Technical Assistance (TA)

SYMPTOM	POSSIBLE CAUSE	ACTION
	■ FFBH evaporative emission canister (where specified) blocked ■ FFBH exhaust obstructed ■ Internal blockage to FFBH unit ■ Fuel delivery to FFBH obstructed ■ Fuel contamination	

PINPOINT TEST

PINPOINT TEST A : FUEL FIRED BOOSTER HEATER (FFBH) PRODUCING EXCESSIVE SMOKE	
A1: ANALYSE THE VEHICLE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Observe the vehicle to locate the source of the excessive smoke
	Is the source of the excessive smoke located behind the instrument panel or in the engine compartment? No The Fuel Fire Booster Heater (FFBH) is not the source of the smoke. Further checks of the exhaust system are required Yes GO toA2.
A2: ACTIVATE THE FUEL FIRED BOOSTER HEATER (FFBH)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Activate the Fuel Fired Booster Heater (FFBH)
	Is the Smoke present when the Fuel Fired Booster Heater is active? Yes GO toA3. No The FFBH is unlikely to be the source of the smoke. Further checks under the hood are required. Look for fluid leaks on or around any hot surfaces. Check the exhaust and the Exhaust Gas Recirculation (EGR) system for leaks. If any faults are found, refer to the correct area of the Workshop Manual
A3: VEHICLE OBSERVATIONS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check the vehicles odometer
	Is the vehicle relatively new or low mileage (odometer reading less than 600 miles / 1000 km)? Yes GO toA4. No GO toA5.

A4: VEHICLE ODOMETER READS LESS THAN 600 MILES / 1000 KM

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 NOTES: ■ The smoke from the Fuel Fire Booster Heater (FFBH) may be produced when the vehicle is new. This is normal and the result of oils and other materials used in the manufacturing process. This smoke should cease after 20 minutes of continuous operation. The smoke should not reappear when this process is complete ■ The smoke may be water vapor that is produced when the FFBH exhaust is cold. This smoke should not be visible in a typical work shop environment when the FFBH is active	
	1 Run the FFBH for at least 20 minutes of continuous operation
	2 Conduct the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Is the smoke still present after the Pathfinder Auxiliary Heater (AHCM) Activation Test? Yes GO to A6. No Advise customer that the smoke was evident due to the FFBH's initial operation. The smoke should no longer be visible as a result of the extended activation test. Advise customer that the FFBH may produce water vapor. This is a natural phenomena and is a bi-product of combustion and will cease when the FFBH is warm. Water vapor should not be confused with smoke. Advise the customer that if the vehicles FFBH is inactive for a long period of time (4 - 6 weeks), the initial start up could cause excess smoke to be produced due to the deterioration of fuel over a long period of time. The smoke should cease after 1 - 2 minutes.

A5: VEHICLE ODOMETER READS MORE THAN 600 MILES / 1000 KM

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 NOTES: ■ The smoke from the Fuel Fire Booster Heater (FFBH) may be produced when the vehicle is new. This is normal and the result of oils and other materials used in the manufacturing process. This smoke should cease after 20 minutes of continuous operation. The smoke should not reappear when this process is complete ■ The smoke may be water vapor that is produced when the FFBH exhaust is cold. This smoke should not be visible in a typical work shop environment when the FFBH is active.	
	1 Run the FFBH for at least 20 minutes of continuous operation
	2 Conduct the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Is the smoke still present after the Pathfinder Auxiliary Heater (AHCM) Activation Test? Yes GO to A6. No Advise customer that the smoke was evident due to the FFBH's initial operation. The smoke should no longer be visible as a result of the extended activation test. Advise customer that the FFBH may produce water vapor. This is a natural phenomena and is a bi-product of combustion and will cease when the FFBH is warm. Water vapor should not be confused with smoke. Advise the customer that if the vehicles FFBH is inactive for a long period of time (4 - 6 weeks), the initial start up could cause excess smoke to be produced due to the deterioration of fuel over a long period of time. The smoke should cease after 1 - 2 minutes.

A6: ANALYSIS OF THE FUEL FIRED BOOSTER HEATER (FFBH)

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check for any obstructions of the Fuel Fire Booster Heater (FFBH). Check the air intake system of the FFBH is

A6: ANALYSIS OF THE FUEL FIRED BOOSTER HEATER (FFBH)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	routed correctly and not trapped underneath the burner
	2 Check for any obstructions of the Fuel Fire Booster Heater (FFBH). Check the exhaust system of the FFBH
	Are there any obstructions stopping the FFBH from operating correctly? Yes GO toA7. No GO toA22.
A7: OBSTRUCTION(S) BLOCKING THE FUEL FIRED BOOSTER HEATER (FFBH)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Clear the obstruction(s) that are restricting the air intake system and / or the exhaust system of the Fuel Fired Booster Heater (FFBH) from operating correctly
	2 Check for any obstructions of the Fuel Fire Booster Heater (FFBH). Check for internal blockages, hose kinks, restricted intake and check for a blocked evaporative emission canister (where specified). Remove / repair accordingly
	3 Conduct the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the FFBH Still produce smoke when operating? Yes GO toA22. No The problem has been rectified. Report the findings to the customer and release the vehicle
A8: CHECK OF THE FUEL FIRED BOOSTER HEATER (FFB) FUEL LINES	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check the Fuel Fire Booster Heater (FFBH) fuel lines for kinks, distortion, heat damage or incorrectly assembled joints. Check for signs of fuel leakage in or around the area of FFBH and the exhaust
	Are there any defects found with the fuel lines or joints? Yes GO toA12. No GO toA10.
A9: CHECK OF THE FUEL FIRED BOOSTER HEATER (FFB) FUEL LINES	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check the Fuel Fire Booster Heater (FFBH) fuel lines for kinks, distortion, heat damage or incorrectly assembled joints. Check for signs of fuel leakage in or around the area of FFBH and the exhaust
	Are there any problems found with the fuel lines or joints? Yes GO toA12. No GO toA13.

A10: RETEST THE ROUTINE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes GO to A11. No The problem has been rectified. Report the findings to the customer and release the vehicle
A11: REPLACE THE EXHAUST OF THE FUEL FIRED BOOSTER HEATER (FFBH)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 NOTE: The Fuel Fired Booster Heater (FFBH) may be contaminated with excess fuel	
	1 Replace the exhaust system of the Fuel Fired Booster Heater (FFBH)
	2 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes GO to A9. No The problem has been rectified. Report the findings to the customer and release the vehicle
A12: RECTIFICATION OF THE DEFECTS FOUND ON THE FUEL LINES	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Rectify the defect(s) found on the fuel lines of the Fuel Fired Booster Heater (FFBH)
	2 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes GO to A13. No The problem has been rectified. Report the findings to the customer and release the vehicle
A13: PATHFINDER FUEL PRIMING ROUTINE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Investigate to see if the Fuel Fired Booster Heater (FFBH) has been subject to the Pathfinder Fuel Priming routine during the fault diagnosis
	Has the Pathfinder Fuel Priming routine previously been performed? Yes GO to A14. No GO to A18.

A14: THE PATHFINDER FUEL PRIMING ROUTING HAS PREVIOUSLY BEEN PERFORMED**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****CAUTION:**

The Fuel Priming Routine must not be used during any other FFBH service, replacement or diagnostic activity

**NOTES:**

- The Fuel Priming Routine must **ONLY** be used when replacing the Fuel Fired Booster Heater (FFBH) fuel delivery pipe for example dosing pump to FFBH
- This routine will discharge fuel into the FFBH and exhaust system and will generate a significant quantity of smoke
- The Extended Activation Test may not be capable of removing the excess fuel and may necessitate the replacement of the FFBH and exhaust system

1 Conduct the Pathfinder Auxiliary Heater (AHCM) Activation Test

Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated?

Yes

GO to A15.

No

GO to A16.

A15: RUN THE PATHFINDER ACTIVATION TEST**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS**

1 Conduct the Pathfinder Auxiliary Heater (AHCM) Activation Test

Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated?

Yes

GO to A17.

No

GO to A16.

A16: CHECK THE ADJACENT COMPONENTS FOR FUEL CONTAMINATION**TEST
CONDITIONS****DETAILS/RESULTS/ACTIONS**

1 Replace the HEVAC filter and check the wheel arch liner, aero tray and any other adjacent components for fuel contamination

Are any components contaminated with fuel?

Yes

Change Parts only if necessary, report the findings to the customer and release the vehicle

No

The problem has been rectified, report the findings to the customer and release the vehicle

A17: REPLACE THE COMPONENTS**TEST CONDITIONS****DETAILS/RESULTS/ACTIONS****NOTES:**

- The Fuel Fired Booster Heater (FFBH) may be contaminated with excess fuel that the Pathfinder Auxiliary Heater (AHCM) Activation Test is unable to remove.
- If the FFBH Exhaust system has previously been replaced as part of this Pinpoint Test (test step A11), only replace the Fuel Fired Booster Heater (FFBH).

A17: REPLACE THE COMPONENTS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Replace the Fuel Fired Booster Heater (FFBH)
	2 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes Contact the Jaguar Land Rover Service Desk for technical support No GO toA16.
A18: THE PATHFINDER FUEL PRIMING ROUTINE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Conduct the Pathfinder Fuel Priming routine
	Is the volume of fuel that is delivered to the Fuel Fired Booster Heater (FFBH) within the limits specified in Pathfinder? Yes Contact the Jaguar Land Rover Service Desk for technical support No GO toA19.
A19: INVESTIGATE WHY THE FUEL WAS OUT OF THE PATHFINDER SPECIFIED LIMITS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check fuel pipes and hoses for damage, kinks, leakages or defective components
	2 Rectify any defect(s) found on the Fuel Fired Booster Heater's (FFBH) fuel system
	3 Repeat the Pathfinder Fuel Priming routine
	Is the volume of fuel that is delivered to the Fuel Fired Booster Heater (FFBH) within the limits specified in Pathfinder? Yes GO toA20. No GO toA21.
A20: REPEAT THE PATHFINDER AUXILIARY HEATER (AHCM) ACTIVATION TEST	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes Contact the Jaguar Land Rover Service Desk for technical support No GO toA21.
A21: REPLACE THE FUEL DOSING PUMP	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Replace the fuel dosing pump
	2 Run the Pathfinder Auxiliary Heater (AHCM) Activation Test

A21: REPLACE THE FUEL DOSING PUMP	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	Does the Fuel Fired Booster Heater (FFBH) still produce smoke when activated? Yes Contact the Jaguar Land Rover Service Desk for technical support No The problem has been rectified, report the findings to the customer and release the vehicle
A22: FFBH CLEANSING ROUTINE 1	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Remove the evaporative emission canister and discard appropriately
	2 Run the Fuel Fired Booster Heater for 30 minutes
	3 Replace the Interior passenger compartment Air Filter and the evaporative emission canister with new components
	Does the Fuel Fired Booster Heater still smoke when operating? Yes GO to A23. No The problem has been rectified. Report the findings to the customer and release the vehicle
A23: FFBH CLEANSING ROUTINE 2	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Remove the Fuel Fired Booster Heater from the vehicle
	2 Strip down the burner and thoroughly clean all saturation/contaminants
	3 Reassemble the burner and re-install to the vehicle. Take care to make sure that the air intake pipe is routed correctly
	Does the Fuel Fired Booster Heater still smoke when operating? Yes GO to A11. No The problem has been rectified. Report the findings to the customer and release the vehicle

PINPOINT TEST B : CUSTOMER REPORTS OF UNPLEASANT OR EXCESSIVE ODOR IN THE PASSENGER COMPARTMENT	
B1: REPORTS OF UNPLEASANT OR EXCESSIVE ODOR	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Confirm the specification of the vehicle
	Is the vehicle fitted with a Fuel Fired Booster Heater (FFBH)? Yes GO to B2. No GO to Pinpoint Test C.

B2: VEHICLE AGE CHECK	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Confirm the age/mileage of the vehicle
	Is the vehicle a new vehicle (ie: a vehicle that has a mileage of less than 600 miles / 1000 kms)? Yes The FFBH may create an odor when new. This is normal and the result of the removal of oils and other materials used in the manufacturing process. This smell should cease after 20-30 minutes of continuous operation and should not reappear. Run the FFBH continuously for 30 minutes and recheck for odours within the passenger compartment space. If odours are cleared, the problem has been rectified. Report the findings to the customer and release the vehicle. If odours persist, GO toB3. No GO toB3.
B3: FFBH ODOR VS ENGINE EXHAUST ODOR CHECKS (1)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Start the engine and operate the FFBH
	2 Briefly check the nature of the problem odor within the passenger compartment
	Could the odor be characterised as an "exhaust gas" smell? Yes GO toB4. No GO toB7.
B4: FFBH ODOR VS ENGINE EXHAUST ODOR CHECKS (2)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Isolate the FFBH power supply (either by removing the power feed fuse or uncoupling the FFBH harness connector)
	2 Drive the vehicle under normal conditions (using forward and reverse gears) and under the driving conditions reported by the customer as the passenger compartment odours were first noted
	Can the "exhaust gas" smell be detected when driving the vehicle as instructed above? Yes The FFBH is unlikely to be the cause of the odor. Check the integrity of secondary bulkhead body sealing, grommets, leaf screen and rectify as required. Check the operation of the climate control system recirculation flaps and rectify as required. Check the integrity of the vehicle exhaust system and rectify as required. Check the integrity of the exhaust gas recirculation pipes/joints and rectify as required. Recheck for odours within the passenger compartment space. If odours are cleared, the problem has been rectified. Activate the FFBH power supply (either by reinstalling the power feed fuse or recoupling the FFBH harness connector). Report the findings to the customer and release the vehicle. If odours persist, GO toB7. No GO toB7.
B5: FFBH ODOR VS ENGINE EXHAUST ODOR CHECKS (3)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Activate the FFBH power supply (either by reinstalling the power feed fuse or recoupling the FFBH harness connector)
	2 Start the engine and operate the FFBH
	3 Drive the vehicle under normal conditions (using forward and reverse gears) and under the driving conditions reported by the customer as the passenger compartment odours were first noted

B5: FFBH ODOR VS ENGINE EXHAUST ODOR CHECKS (3)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	Can the "exhaust gas" smell be detected when driving the vehicle as instructed above? Yes GO toB6. No The FFBH is unlikely to be the cause of the odor. Check the integrity of secondary bulkhead body sealing, grommets, leaf screen and rectify as required. Check the operation of the climate control system recirculation flaps and rectify as required. Check the integrity of the vehicle exhaust system and rectify as required. Check the integrity of the exhaust gas recirculation pipes/joints and rectify as required. Recheck for odours within the passenger compartment space. If odours are cleared, the problem has been rectified. Activate the FFBH power supply (either by reinstalling the power feed fuse or recoupling the FFBH harness connector). Report the findings to the customer and release the vehicle. If odours persist, GO toB7.
B6: FFBH AND HVAC CHECKS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Using the Jaguar Land Rover approved diagnostic equipment, check for FFBH related DTCs and refer to the relevant DTC index
	2 Check that the HVAC module software is up to date and includes the recirculation odor exclusion routine. Update software as required
	3 Check the integrity of the secondary bulkhead body sealing, grommets, leaf screen and rectify as required. Check the operation of the climate control system recirculation flaps and rectify as required
	4 Check the HVAC charcoal filter for signs of saturation and rectify as required
	5 Check the FFBH exhaust for significant signs of leakage and rectify as required
	6 Check the FFBH air intake for signs of restriction, kinking, blockage, etc and rectify as required
	7 Run the Pathfinder Fuel Priming routine and confirm the fuel delivery rate to the FFBH
	8 Drive the vehicle under normal conditions (using forward and reverse gears) and under the driving conditions reported by the customer as the passenger compartment odours were first noted
	Can the passenger compartment odor still be detected when driving the vehicle? Yes GO toB7. No If odours are cleared, the problem has been rectified. Report the findings to the customer and release the vehicle
B7: FFBH ODOR - FUEL ODOR CHECKS (1)	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Attempt to classify the nature of the odor within the passenger compartment space
	Could the odor be characterised as a "petrol type" smell? Yes GO toB8. No Go to Pinpoint Test C5
B8: FFBH ODOR - FUEL ODOR CHECKS - CHECK FFBH EXHAUST PIPE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Visually check if the FFBH exhaust tailpipe is blocked or restricted with debris

B8: FFBH ODOR - FUEL ODOR CHECKS - CHECK FFBH EXHAUST PIPE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	Is the FFBH exhaust tailpipe blocked or restricted with debris? Yes Remove any debris/blockages from the FFBH exhaust system. If debris cannot be removed, replace the FFBH exhaust system. Then, GO toB11. No GO toB9.
B9: FFBH ODOR - FUEL ODOR CHECKS - CHECK FFBH EXHAUST GAS FLOW	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Visually check the FFBH exhaust gas flow path for restrictions
	Is the FFBH exhaust gas flow restricted by the aero tray, engine tray or other adjacent component? Yes Remove any debris/blockages and/or reposition any vehicle components that may be impeding the from the FFBH exhaust gas flow path. Then, GO toB11. No GO toB10.
B10: FFBH ODOR - FUEL ODOR CHECKS - CHECK FFBH AIR INTAKE HOSE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Visually check the FFBH air intake hose for blockages and/or restrictions
	Is the FFBH air intake hose blocked/kinked or restricted? Yes Remove any debris/blockages/kinks from the FFBH air intake hose. If debris cannot be removed, replace the FFBH air intake hose. Then, GO toB11. No GO toB12.
B11: FFBH ODOR - FUEL ODOR CHECKS - REPLACE ANCILLARY COMPONENTS AND RETEST	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Replace the FFBH air intake evaporative emission canister (where fitted)
	2 Replace the HVAC carbon filter
	3 Check for signs of fuel contamination on the wheel arch liner. If contamination is evident, replace the wheel arch liner
	4 Run the FFBH continually for 30 minutes (this allows any un-burnt fuel to be purged from the FFBH combustion chamber and exhaust system)
	5 Recheck the passenger compartment space for odours
	Can the passenger compartment odor still be detected? Yes GO toB12. No If odours are cleared, the problem has been rectified. Report the findings to the customer and release the vehicle

B12: FFBH ODOR - FUEL ODOR CHECKS - FFBH FUEL DELIVERY CHECKS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Check the FFBH fuel line connection adjacent to the FFBH exhaust silencer for signs of leakage and rectify as required
	2 Check the FFBH fuel line routing relative to sources of heat (excessive heat may cause fuel vaporization and emission). Adjust routing as required
	3 Conduct FFBH fuel delivery routine to confirm correct delivery rate
	4 Run the FFBH continually for 30 minutes (this allows any un-burnt fuel to be purged from the FFBH combustion chamber and exhaust system)
	5 Recheck the passenger compartment space for odours
	Can the passenger compartment odor still be detected? Yes Go to Pinpoint Test C4 No If odours are cleared, the problem has been rectified. Report the findings to the customer and release the vehicle

PINPOINT TEST C : UNEXPLAINED PASSENGER COMPARTMENT ODOURS - FURTHER CHECKS IN OTHER VEHICLE SYSTEMS	
C1: VEHICLE AGE CHECK - "NEW CAR" ODOR?	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Confirm the age/mileage of the vehicle
	Is the vehicle a new vehicle (ie: a vehicle that has a mileage of less than 600 miles / 1000 kms)? Yes If the problem odor might be characterised as a "new car" smell, the odor may be the result of the removal of adhesive labels, oils or other fluids used during the vehicle manufacturing process. It may also be the result of the discharge of plasticizers and release agents used in the manufacture of interior components. These should disappear after the first 500 miles or so. Report the findings to the customer and release the vehicle No GO to C2.
C2: DAMP OR MUSTY ODOR?	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Attempt to classify the nature of the odor within the passenger compartment space
	Could the odor be characterised as a "damp or musty" smell? Yes Check that the HVAC module software is up to date and includes the evaporator purge routine. Update software as required. Check the vehicle interior for signs of water ingress and rectify as required. Check that HVAC condensate drain tubes for blockages/restrictions and rectify as required. Check the pollen filter for signs of saturation and rectify as required. Check the operation of the climate control system recirculation flaps and rectify as required. If any of these checks revealed an issue that has now been rectified, the issue(s) may be the likely cause of the passenger compartment odor. Report the findings to the customer and release the vehicle No GO to C3.

C3: EXHAUST GAS ODOR?	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Attempt to classify the nature of the odor within the passenger compartment space
	Could the odor be characterised as an “exhaust gas” smell? Yes Check the integrity of the vehicle exhaust system and rectify as required. Check the integrity of the exhaust gas recirculation pipes/joints and rectify as required. Check the operation of the climate control system recirculation flaps and rectify as required. If any of these checks revealed an issue that has now been rectified, the issue(s) may be the likely cause of the passenger compartment odor. Report the findings to the customer and release the vehicle No GO toC4.
C4: FUEL RELATED ODOR?	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Attempt to classify the nature of the odor within the passenger compartment space
	Could the odor be characterised as an “fuel-related” smell? Yes Check the integrity and security of all fuel line, fuel filter and fuel cooler system connections and rectify as required. Check the fuel filler area for signs of over-fill or spillage and rectify as required. Check for signs of fuel leakage onto under trays, wheel arch liners and/or any other absorbent trim components. If fuel contamination is noted, thoroughly clean or replace the affected components. If any of these checks revealed an issue that has now been rectified, the issue (s) may be the likely cause of the passenger compartment odor. Report the findings to the customer and release the vehicle No GO toC5.
C5: COOLANT RELATED ODOR?	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	1 Attempt to classify the nature of the odor within the passenger compartment space
	Could the odor be characterised as a “hot coolant” smell? Yes Check the security and integrity of all coolant line connections and rectify as required. Check the engine compartment for signs of coolant discharge onto hot surfaces and remove any traces of historical coolant contamination or leakage. Check the coolant expansion tank for signs of discharge or over fill and rectify as required. If any of these checks revealed an issue that has now been rectified, the issue(s) may be the likely cause of the passenger compartment odor. Report the findings to the customer and release the vehicle No Systematic checks of all of the vehicle systems that are likely to have been the cause of the passenger compartment odor have not revealed any vehicle-related faults that can account for the passenger compartment odor. This suggests that the odor may have been caused by some other form of contamination or other materials that may have been spilt or stowed in the passenger compartment area. Report the findings to the customer and release the vehicle

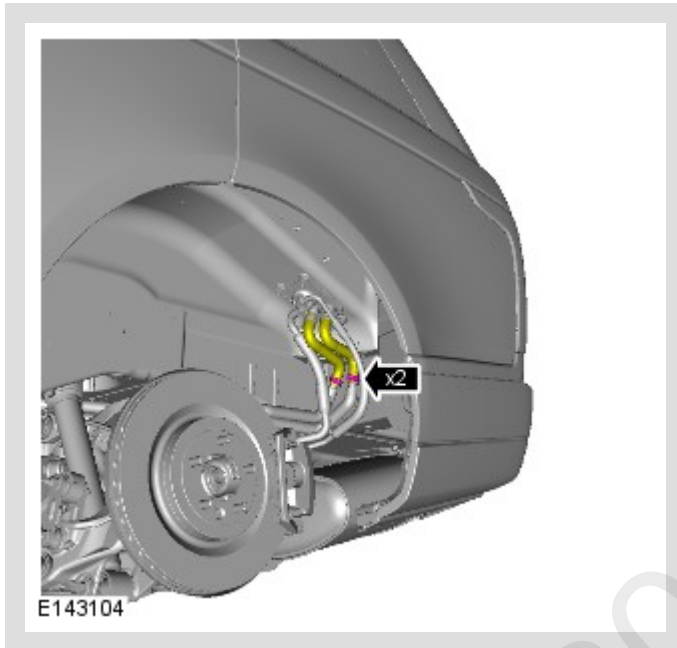
REAR CLIMATE CONTROL INSUFFICIENT TEMPERATURE

1. Complete the coolant system bleeding procedure REFER to: [Cooling System Partial Draining and Vacuum Filling](#) (303-03A Engine Cooling - INGENIUM I4 2.0L Diesel, General Procedures). and follow the procedure

 NOTE:

Important points are 30 to 33 when the engine is fully warmed up

2. Complete the above procedure 3 times if warm air is not felt from the rear HVAC
3. After the 3rd attempt, confirm if the rear HVAC is blowing warm air

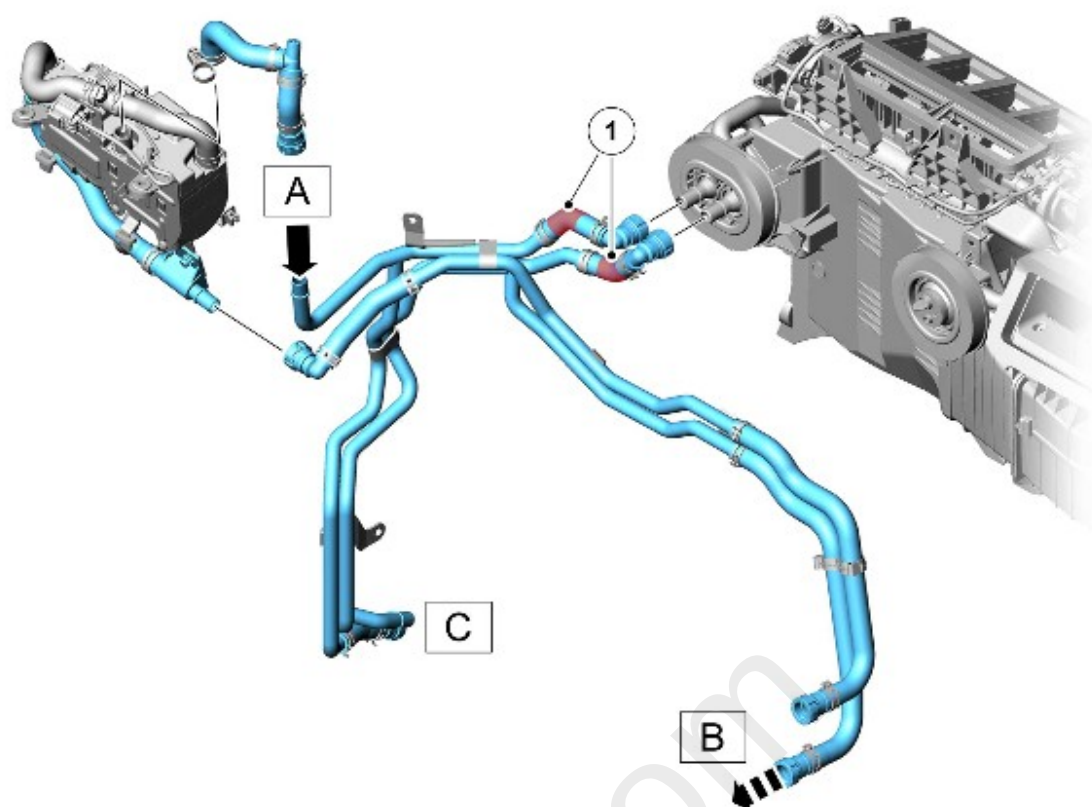


4. If no warm air is felt, remove the rear left wheel arch liner. REFER to: [Rear Wheel Arch Liner](#) (501-08 Exterior Trim and Ornamentation, Removal and Installation). Confirm that the two coolant pipes as shown in the image above are warm. If both coolant pipes are warm proceed to step 11. If one or both pipes are cold proceed to step 5

 CAUTION:

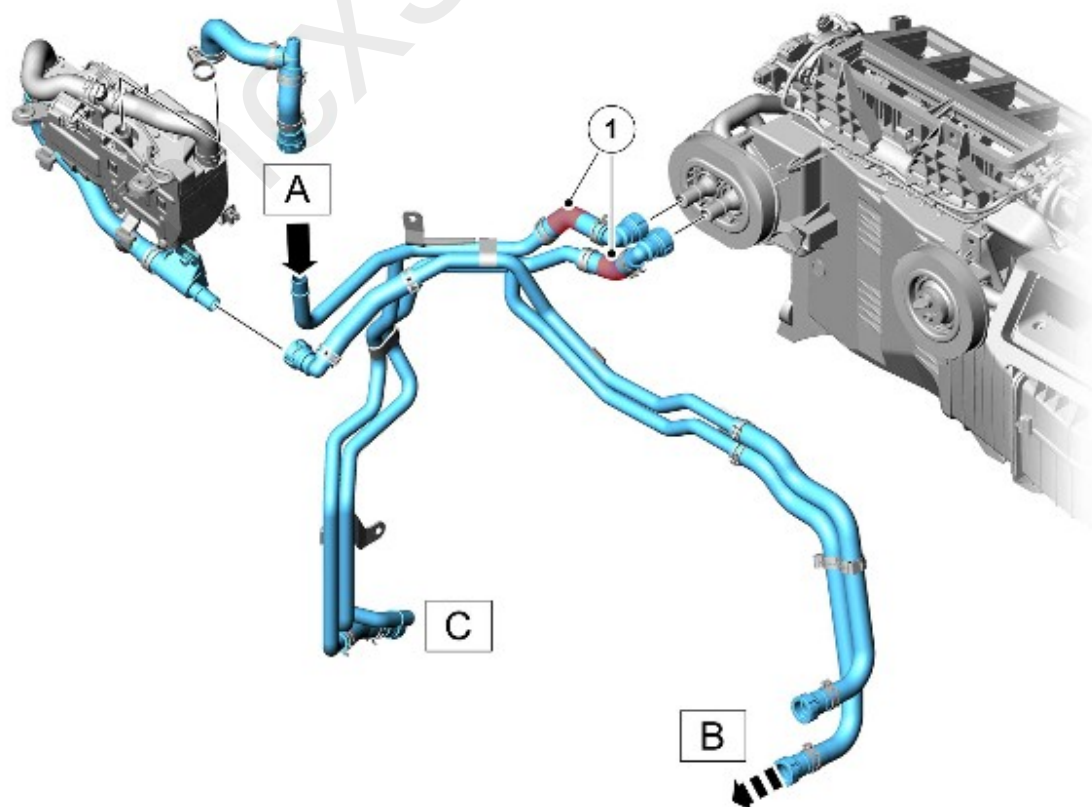
Pipes could be hot so take adequate precautions

5. Attach the Jaguar Land Rover approved chassis ears to the rear HVAC cooling pipes and confirm if fluid can be heard passing around the system



E242802

6. Refer to image above and confirm if both the coolant pipes at point C increased in temperature up to the upper coolant hoses



E242802

7. If after performing the bleed procedure 3 times there is still no warm air coming from the rear HVAC, clamp off both the front heater core hoses at point 1 shown in the image above and re-perform the bleed procedure
8. Monitor the coolant level and top up as required. The level could drop up to 2 litres when the rear HVAC system is bled correctly
9. If the pipes are now hot, remove the clamps from the front heater core pipes and run the engine for a further 15 minutes checking heat is now coming from both the front and rear HVAC
10. Allow the vehicle to cool then perform a road test. Re-check both coolant pipes to the rear heater core are hot and warm air is blowing from the front and rear HVAC
11. If after performing the procedure 3 times with the front heater core coolant pipes clamped off, the rear coolant pipes are warm, but the rear HVAC is still blowing cold air, there is an issue with the rear HVAC unit. Using the Jaguar Land Rover approved diagnostic equipment, check the HVAC control module for related DTCs and refer to the relevant DTC index

DTC INDEX

For a list of diagnostic trouble codes that could be set on this vehicle, please refer to Section 100-00. REFER to: [Diagnostic Trouble Code Index - DTC: HVAC Control Module \(HVAC\)](#) (100-00 General Information, Description and Operation).

cmjjaGFyZG1vbnRvbjsyMDIwLTA5LTE3VDlyOjIwOjEwLjg4MFo7OTAuMTk5LjEyMS4xMTc7