

# SEATING

## DIAGNOSIS AND TESTING

### PRINCIPLE OF OPERATION

For a detailed description of the seating systems and operation, refer to the relevant description and operation section of the workshop manual.

### 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 the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the warranty policy and procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
- Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests
- If DTCs 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
- The DTC index containing an actions list is for guidance only any reference to “check and install new blower unit” should only be carried out following failure confirmation using the pin out diagnostics and/or the over temperature and fluid/air leak diagnostics contained below. The recording of a DTC does NOT signify a permanently failed unit
- The climate system functions in a manner that means any detected error state either intermittent or permanent will shut down the complete seat climate system until the next ignition cycle, this does not mean that both climate units within the one seat have failed. This shut down is design intent to protect the system to ensure that the fault detected does not damage the units, it is possible that both units are functioning correctly and that the fault lies elsewhere within the system. The following process can be carried out without removing either the seats or the climate units from the vehicle and should correctly identify any failed units, this should ensure that only failed units are changed under warranty. Any units exhibiting the correct reading as per process below, should NOT be changed under warranty. If all units have a correct reading then re-confirm customer symptom, if customer symptom is still present then carry out further system checks

1. Verify the customer concern
2. Visually inspect for obvious signs of mechanical or electrical damage

#### Visual Inspection

MECHANICAL	ELECTRICAL
<ul style="list-style-type: none"> <li>• Seat heater switch condition and installation</li> </ul>	<ul style="list-style-type: none"> <li>• Battery condition and state of charge</li> <li>• Fuses</li> <li>• Harnesses and connectors</li> <li>• Seat heater switch(es)</li> <li>• Seat heater elements</li> <li>• Seat module(s)</li> <li>• Automatic temperature control module</li> <li>• Ignition switch</li> <li>• Battery junction box</li> <li>• Central junction box</li> <li>• LIN circuit</li> </ul>

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, carry out normal dealer warranty process, perform on-demand self test, check for DTCs and refer to the relevant DTC index
5. Allow 30 mins since the last seat/cooled operation prior to carrying out pin testing detailed below in the section "Connector and Pin Information"
6. Locate climate seat module, (refer to Electrical Information - Electrical Reference Library, contained in TOPIx) for guidance on how to gain access to the connector(s)
7. Locate and disconnect relevant connector prior to pin test
8. Using ohm-meter to probe each heat/cooled unit pins (at rear of connector), reading should achieve no greater than 10 ohms after 1 minute (initial fluctuations in readings may occur using ohm-meter, post 1 minute readings will have stabilized)

## CONNECTOR AND PIN INFORMATION

<b>Range Rover Evoque (14MY onwards)</b>								
<b>Climate Seat Unit Location</b>	Right Cushion	Right Cushion	Right Backrest	Right Backrest	Left Cushion	Left Cushion	Left Backrest	Left Backrest
<b>Terminal ID-Left</b>	<b>Circuit PASS CUSH</b>	<b>Circuit PASS CUSH</b>	<b>Circuit PASS BACK</b>	<b>Circuit PASS BACK</b>	<b>Circuit DRIV CUSH</b>	<b>Circuit DRIV CUSH</b>	<b>Circuit DRIV BACK</b>	<b>Circuit DRIV BACK</b>

<b>Hand Drive Vehicles</b>	<b>TED + (Connector C3HS08 A, Pin 07)</b>	<b>TED - (Connector C3HS08 A, Pin 19)</b>	<b>TED + (Connector C3HS08 A, Pin 02)</b>	<b>TED - (Connector C3HS08 A, Pin 10)</b>	<b>TED + (Connector C3HS03 A, Pin 07)</b>	<b>TED - (Connector C3HS03 A, Pin 19)</b>	<b>TED + (Connector C3HS03 A, Pin 02)</b>	<b>TED - (Connector C3HS03 A, Pin 10)</b>
<b>Wiring Colour - Left Hand Drive Vehicles</b>	GY-BU - Grey/Blue	BU - Blue	BU-BN - Blue/Brown	WH - White	YE-BU - Yellow/Blue	BU-OG - Blue/Orange	GY-VT - Grey/Violet	WH-VT - White/Violet
<b>Terminal ID-Right Hand Drive Vehicles</b>	<b>Circuit DRIV CUSH TED + (Connector C3HS03 A, Pin 07)</b>	<b>Circuit DRIV CUSH TED - (Connector C3HS03 A, Pin 19)</b>	<b>Circuit DRIV BACK TED + (Connector C3HS03 A, Pin 02)</b>	<b>Circuit DRIV BACK TED - (Connector C3HS03 A, Pin 10)</b>	<b>Circuit PASS CUSH TED + (Connector C3HS08 A, Pin 07)</b>	<b>Circuit PASS CUSH TED - (Connector C3HS08 A, Pin 19)</b>	<b>Circuit PASS BACK TED + (Connector C3HS08 A, Pin 02)</b>	<b>Circuit PASS BACK TED - (Connector C3HS08 A, Pin 10)</b>
<b>Wiring Colour - Right Hand Drive Vehicles</b>	YE-BU - Yellow/Blue	BU-OG - Blue/Orange	GY-VT - Grey/Violet	WH-VT - White/Violet	GY-BU - Grey/Blue	BU - Blue	BU-BN - Blue/Brown	WH - White

1. If any unit reads greater than 10 ohms, replace only that defective unit
2. If all units read less than 10 ohms but faults are still suspected, do not replace any units. Refer to step 4 below
3. As a final check, when a faulty unit has been identified strip the seat to access unit connector, REFER to: Seats (501-10, Removal & Installation) and re-check ohm reading to confirm greater than 10 ohms prior to removing unit
4. In cases where the above diagnostic routine does NOT identify a failed unit, please refer to the pinpoint tests below. Also check for any live technical service bulletins referring to the seat climate system

## SEAT CLIMATE ASSEMBLY - FURTHER DIAGNOSTICS

In the event of suspected climate seat faults use the pinpoint tests detailed below

### Connector Checks

First, check the integrity of the three seat climate control module harness connectors:

1. Disconnect each connector
2. Inspect each connector for cracks and breaks, replace as required
3. Check the integrity of connector terminals for bent terminals, backed-out or badly crimped wires. Rectify as required
4. Reconnect all connectors and retest. If seat climate functions are still faulty, note any DTCs that have been logged by the automatic temperature control module and refer to the table and pinpoint tests below:

## SYMPTOM CHARTS

### Heating and Cooling

SYMPTOM	POSSIBLE CAUSES	ACTION
Heating And Cooling - Inoperative	<ul style="list-style-type: none"> <li>• Carry out the pinpoint test associated to this symptom</li> </ul>	GO to Pinpoint Test <b>A.</b>
Heating And Cooling - Noisy operation	<ul style="list-style-type: none"> <li>• Carry out the pinpoint test associated to this symptom</li> </ul>	GO to Pinpoint Test <b>B.</b>
Heating And Cooling - Poor heat or cool efficiency	<ul style="list-style-type: none"> <li>• Carry out the pinpoint test associated to this symptom</li> </ul>	GO to Pinpoint Test <b>C.</b>
Heating And Cooling - Heat or cool operation slow	<ul style="list-style-type: none"> <li>• Carry out the pinpoint test associated to this symptom</li> </ul>	GO to Pinpoint Test <b>D.</b>
Heating And Cooling - Intermittent operation	<ul style="list-style-type: none"> <li>• Carry out the pinpoint test associated to this symptom</li> </ul>	GO to Pinpoint Test <b>E.</b>

## PINPOINT TESTS

### WARNING:

Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual

### NOTES:

- The climate controlled seat's (heat and cool) functions will only operate when the vehicle's engine is running
- If a fault is identified and repaired, check for correct operation of the driver and front-passenger climate controlled seat (heat and cool) functions

**PINPOINT TEST A : HEATER AND COOLING - INOPERATIVE**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>A1: CHECK FOR STORED DTCS</b>	
	<b>1</b> Check the automatic temperature control module for stored DTCs
	Are there any stored DTCs? <b>Yes</b> For information on stored DTCs refer to the information in the automatic temperature control module DTC index. <b>No</b> <b>GO to A2.</b>
<b>A2: SEAT BACKREST CLIMATE ASSEMBLY - FUNCTIONALITY CHECK</b>	
	<b>1</b> Check the heat and cool function of the backrest
	Does the backrest heat and cool function operate correctly? <b>Yes</b> <b>GO to A3.</b> <b>No</b> <b>GO to A5.</b>
<b>A3: SEAT CUSHION CLIMATE ASSEMBLY - FUNCTIONALITY CHECK</b>	
	<b>1</b> Check the heat and cool function at the cushion
	Does the cushion heat and cool function operate correctly? <b>Yes</b> If there are no faults evident, verify the customer concern <b>No</b> <b>GO to A4.</b>
<b>A4: CUSHION BELLOWS</b>	
	<b>1</b> Check the condition of the bellows
	Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows

**PINPOINT TEST A : HEATER AND COOLING - INOPERATIVE**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>A1: CHECK FOR STORED DTCS</b>	
	<p><b>No</b> Suspect an internal fault with the climate controlled seat assembly. Replace as required</p>
<b>A5: BACKREST BELLOWS DUCT</b>	
	<p><b>1</b> Check the security of the bellows duct</p>
	<p>Is the bellows duct correctly installed? <b>Yes</b> <b>GO to A6.</b> <b>No</b> Securely reconnect the bellows duct</p>
<b>A6: BACKREST BELLOWS</b>	
	<p><b>1</b> Check the security of the bellows</p>
	<p>Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows <b>No</b> Suspect an internal fault with the climate controlled seat. Replace as required. Follow the link below to check operation of the driver or front passenger seat cushion climate assembly <b>GO to A2.</b></p>

**WARNING:**

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**NOTES:**

- The climate controlled seat's (heat and cool) functions will only operate when the vehicle's engine is running
- If a fault is identified and repaired, check for correct operation of the driver and front-passenger climate controlled seat (heat and cool) functions

**PINPOINT TEST B : HEATING AND COOLING - NOISY OPERATION**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>B1: CHECK FOR STORED DTCS</b>	
	<p><b>1</b> Check the automatic temperature control module for stored DTCs</p>
	<p>Are there any stored DTCs?  <b>Yes</b>            For information on stored DTCs refer to the information in the automatic temperature control module DTC index  <b>No</b>  <b>GO to B2.</b></p>
<b>B2: SEAT BACKREST CLIMATE ASSEMBLY - NOISE</b>	
	<p><b>1</b> There is a known issue which affects a limited number of vehicles where under acceleration of the vehicle the occupant of seat can deform the suspension mat (snake wire) which then presses on the casing of the seat backrest climate assembly, this causes the casing to distort and the noise issue to occur. If contact has occurred there will be a witness mark on the casing. Carry out visual inspection of the seat backrest climate assembly that has been identified as noisy by the customer</p>
	<p>Is there a witness mark on the casing?  <b>Yes</b>            Contact the local in market support for further information  <b>No</b>  <b>GO to B3.</b></p>
<b>B3: SEAT CLIMATE ASSEMBLY - NOISE 2</b>	
	<p><b>1</b> Operate the heat and cool function of the seat. Listen for a 'WAH WAH' noise (the fan speeds up and slows down repeatedly)</p>
	<p>Does the fan speed up and slow down repeatedly?  <b>Yes</b>            Confirm the latest Strategy and Calibration software is installed, using the manufacturer approved diagnostic system update the automatic temperature control module software if required. If the noise is still evident after software update follow link below <b>GO to B4.</b>  <b>No</b>  <b>GO to B4.</b></p>

**PINPOINT TEST B : HEATING AND COOLING - NOISY OPERATION**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>B1: CHECK FOR STORED DTCS</b>	
<b>B4: SEAT BACKREST CLIMATE ASSEMBLY - NOISE LEVEL COMPARISON</b>	
	<p><b>1</b> Compare the noise level of the suspect climate seat assembly to another climate seat assembly</p>
	<p>Is the noise level equal between the two seats?  <b>Yes</b>                      The noise level is standard and comparable to the design intent  <b>No</b>                      Suspect an internal fault with the climate controlled seat assembly. Replace as required</p>

**WARNING:**

Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual

**NOTES:**

- The climate controlled seat's (heat and cool) functions will only operate when the vehicle's engine is running
- If a fault is identified and repaired, check for correct operation of the driver and front-passenger climate controlled seat (heat and cool) functions

**PINPOINT TEST C : HEATING AND COOLING - POOR HEAT OR COOL EFFICIENCY**

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>C1: CHECK FOR STORED DTCS</b>	
	<p><b>1</b> Check the automatic temperature control module for stored DTCs</p>
	<p>Are there any stored DTCs?  <b>Yes</b>                      For information on stored DTCs refer to the information in the automatic temperature control module DTC index  <b>No</b>  <b>GO to C2.</b></p>



**PINPOINT TEST C : HEATING AND COOLING - POOR HEAT OR COOL EFFICIENCY**

**TEST  
CONDITIONS**

**DETAILS/RESULTS/ACTIONS**

**C1: CHECK FOR STORED DTCS**

**C2: SEAT BACKREST CLIMATE ASSEMBLY - FUNCTIONALITY CHECK**

	<b>1</b> Check the heat and cool function of the backrest
	Does the backrest heat and cool function operate correctly? <b>Yes</b> <b>GO to C3.</b> <b>No</b> <b>GO to C5.</b>

**C3: SEAT CUSHION CLIMATE ASSEMBLY - FUNCTIONALITY CHECK**

	<b>1</b> Check the heat and cool function at the cushion
	Does the cushion heat and cool function operate correctly? <b>Yes</b> If there are no faults evident, verify the customer concern <b>No</b> <b>GO to C4.</b>

**C4: SEAT CUSHION BELLOWS**

	<b>1</b> Check the condition of the bellows
	Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows <b>No</b> <b>GO to C7.</b>

**C5: BACKREST BELLOWS DUCT**

	<b>1</b> Check the security of the bellows duct
	Is the bellows duct correctly installed? <b>Yes</b>

**PINPOINT TEST C : HEATING AND COOLING - POOR HEAT OR COOL EFFICIENCY**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>C1: CHECK FOR STORED DTCS</b>	
	<b>GO to C6.</b> <b>No</b> Securely reconnect the bellows duct
<b>C6: BACKREST BELLOWS</b>	
	<b>1</b> Check the security of the bellows
	Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows <b>No</b> Suspect an internal fault with the climate controlled seat assembly. Replace as required. Follow the link below to check operation of the seat cushion climate assembly <b>GO to C2.</b>
<b>C7: SEAT BACKREST CLIMATE ASSEMBLY - EFFICIENCY COMPARISON</b>	
	<b>1</b> Compare the efficiency of the suspect climate seat assembly to another climate seat assembly
	Is the efficiency equal between the two seats? <b>Yes</b> The efficiency is standard and comparable to the design intent <b>No</b> Suspect an internal fault with the climate controlled seat assembly. Replace as required

**WARNING:**

Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual

**NOTES:**

- The climate controlled seat's (heat and cool) functions will only operate when the vehicle's engine is running
- If a fault is identified and repaired, check for correct operation of the driver and front-passenger climate controlled seat (heat and cool) functions

**PINPOINT TEST D : HEATING AND COOLING - HEAT OR COOL OPERATION SLOW**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>D1: CHECK FOR STORED DTCS</b>	
	<b>1</b> Check the automatic temperature control module for stored DTCs
	Are there any stored DTCs? <b>Yes</b> For information on stored DTCs refer to the information in the automatic temperature control module DTC index <b>No</b> <b>GO to D2.</b>
<b>D2: SEAT BACKREST CLIMATE ASSEMBLY - FUNCTIONALITY CHECK</b>	
	<b>1</b> Check the heat and cool function of the backrest?
	Does the backrest heat and cool function operate correctly? <b>Yes</b> <b>GO to D3.</b> <b>No</b> <b>GO to D5.</b>
<b>D3: SEAT CUSHION CLIMATE ASSEMBLY - FUNCTIONALITY CHECK</b>	
	<b>1</b> Check the heat and cool function at the cushion
	Does the cushion heat and cool function operate correctly? <b>Yes</b> If there are no faults evident, verify the customer concern <b>No</b> <b>GO to D4.</b>
<b>D4: SEAT CUSHION BELLOWS</b>	
	<b>1</b> Check the condition of the bellows
	Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows

**PINPOINT TEST D : HEATING AND COOLING - HEAT OR COOL OPERATION SLOW**

<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>D1: CHECK FOR STORED DTCS</b>	
	No GO to D7.
<b>D5: BACKREST BELLOWS DUCT</b>	
	<b>1</b> Check the security of the bellows duct
	Is the bellows duct correctly installed? <b>Yes</b> GO to D6. <b>No</b> Securely reconnect the bellows duct
<b>D6: BACKREST BELLOWS</b>	
	<b>1</b> Check the security of the bellows
	Are the bellows obstructed, have they collapsed? <b>Yes</b> Remove the obstruction or replace collapsed bellows <b>No</b> Suspect an internal fault with the climate controlled seat assembly. Replace as required. Follow the link below to check operation of the seat cushion climate assembly GO to D2.
<b>D7: SEAT BACKREST CLIMATE ASSEMBLY - OPERATION COMPARISON</b>	
	<b>1</b> Compare the operation of the suspect climate seat assembly to another climate seat assembly
	Is the operation equal between the two seats? <b>Yes</b> The operation is standard and comparable to the design intent <b>No</b> Suspect an internal fault with the climate controlled seat assembly. Replace as required

**WARNING:**

Before work is carried out, make the air bag supplemental restraint system safe. For additional information, refer to Standard Workshop Practices section of workshop manual

**NOTES:**

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- If a fault is identified and repaired, check for correct operation of the driver and front-passenger climate controlled seat (heat and cool) functions

<b>PINPOINT TEST E : HEATING AND COOLING - INTERMITTENT OPERATION</b>	
<b>TEST CONDITIONS</b>	<b>DETAILS/RESULTS/ACTIONS</b>
<b>E1: CHECK FOR STORED DTCS</b>	
	<p><b>1</b> Check the automatic temperature control module for stored DTCs</p>
	<p>Are there any stored DTCs?  <b>Yes</b>            For information on stored DTCs refer to the information in the automatic temperature control module DTC index  <b>No</b>  <b>GO to E2.</b></p>
<b>E2: CABLE CONNECTION CHECK</b>	
	<p><b>1</b> Identify from customer concern or stored DTCs which Seat Climate Assembly is operating intermittently and confirm the harness connector is fully connected</p>
	<p>Is the harness connector is fully connected?  <b>Yes</b>            Suspect an internal fault with the climate controlled seat assembly. Replace as required  <b>No</b>            Disconnect the harness connector, inspect connector and terminals for damage. Repair or replace if required. Reconnect connector and check operation</p>
<b>DTC INDEX</b>	

For a complete list of all diagnostic trouble codes that could be logged on this vehicle, please refer to Section 100-00.