

## Ford EA/EB/ED, EF/EL, AU Climate Control Diagnostic Mode

This Document describes the Climate Control Diagnostic Mode, and the information that can be obtained regarding problems with the module.

The Self test mode completes the following,

- Calibrates the Blend Servo Mode Door
- Completes a continuity check on the sensors, and wiring loom.
- Returns an Error code if an error has been detected.

### Testing Procedures

The microcomputer of the control unit self diagnoses incorrect function and will memorise certain faults, should they occur. This aids in the accurate identification and rapid rectification of a fault.

Depending on the Nature of the fault, the microcomputer will compensate to reduce the effects of the detected fault.

The Detection of the fault is indicated by the display flashing for a period of 6 (six) seconds, after the vehicle has been started.

If a permanent fault occurs in the control unit itself, the system switches off, and outside air is directed to the screen without fan assistance.

Once a fault has been detected, the system retains the error code in the memory and uses the default value until the SELF TEST is run and the fault is rectified.

Self-test can be run again to verify that the problem has been rectified, and is not intermittent.

During the test, the blend door motor is calibrated, and the full hot and full cold motor positions are recorded in the memory of the control unit.

The test also conducts a continuity check on the system to ensure that all the electrical sensors are functioning Correctly.

All the errors should be noted, and the corresponding diagnostic information should be used to help rectify the problem.

Once the fault has been rectified, the self-test should be re-initiated to verify the system is functioning correctly.

The system reverts to 22°C after completing the self test.

## Initiating the Climate Control Monitor Mode

The Climate Control Monitor Mode allows viewing of the Actual Climate Control Sensor Readings and settings, Real time. It also allows bypassing of some of the Climate Control Basic Functions, for assisting in any Diagnostic troubles, and Climate Control Performance Issues.

At Present, this mode of operation is only covered within the AU Factory Workshop manuals, but does in fact actually work on EF/EL and AU model falcons fitted with Climate Control.

Obviously because of this, it is unknown what the buttons other than the Fan Speed Buttons actually do, whilst in this mode of operation.

If anybody has any ideas or opinions on what the other buttons achieve whilst in this mode, then please let myself know, and I will update these pages with the relevant information

### To enter Monitor Mode (EF/EL/AU Models)

- Turn the Ignition switch to the "On" Position
- Press the "MODE", "A/C", and "AUTO" Buttons together
- Release the "MODE", "A/C" Buttons together and the "AUTO" Button Last.

### To enter Monitor Mode (EA/EB/ED Fairlane/LTD models)

- Turn the Ignition switch to the "On" Position
- Press the "Recirculate", "Face/Floor", and "AUTO" Buttons together
- Release the "Recirculate", "Face/Floor" Buttons together and the "AUTO" Button Last.

This will now bring you in to the Climate control monitor mode.

Pressing the Fan Up and Down Buttons will toggle the reading that is currently being viewed

The Reading Number that is currently being displayed is shown by the Fan Speed on the LCD Panel.

The Test Readouts available are,

- **L - (1 Bar)** - Operator Set Temperature in degrees Celsius (°C)
- **2 - (2 Bars)** - Cabin Temperature in degrees Celsius (°C)
- **3 - (3 Bars)** - Ambient Temperature in degrees Celsius (°C)
- **4 - (4 Bars)** - Evaporator Temperature in degrees Celsius (°C)
- **5 - (5 Bars)** - Engine Coolant Temperature in degrees Celsius (°C)
- **6 - (6 Bars)** - Sun load Sensor Reading
- **7 - (7 Bars)** - Fan Speed percent (%)
- **8 - (8 Bars)** - Temperature Blend Door Flap percentage (%) opening
- **9 - (9 Bars)** - Aircon and Vent Selection (00 A/C Off Floor) (11 A/C On Face) (22 A/C Off Face/Floor) (33 A/C On Screen/Floor) (4 Screen)
- **H - (10 Bars)** - Water Heater Valve operation (1=On, 0=Off)

To exit this mode, simply switch off the ignition.

As mentioned above, I have very little information on this mode of operation

Any extra information, or feedback in to any other features within this mode are greatly appreciated !

## Initiating Diagnostic Mode

- Ensure that the engine is warm (At least 45°C) Coolant temperature
- Turn the ignition switch to the "ON" Position.
- For EA-ED Models, Press the "Floor" and "Off" Buttons Simultaneously and Release. After which, all the Climate Control Panel LED's should illuminate.
- For EF/EL/AU Models, Press the "MODE" and the "OFF" Buttons on the climate control module simultaneously and then release.
- The control will display 88.8\* during the time required for the self-test to be completed.
- When the self-test is complete, and the system checks are OK the display will read "OFF". If the system has a fault the display will read "E" and a number from 1 to 8. In the event that multiple errors have been recorded, they can be viewed by pressing the "AUTO" Button.
- rectify the problem and clear the fault from the controller memory by initiating the self-test mode twice.
- The self-test can be initiated at any time with the resulting error codes being displayed. Normal operation of the system stops when the self-test is activated. To exit self-test and restart the system, push the "AUTO" button. Self-test should be deactivated before shutting the system off. Refer to the Error Code Key in Table 1 for an explanation of error codes.

<b>Diagnostic Error Codes (EA-ED-EF-EL-AU Models Only)</b>				
<b>ERROR CODE</b>	<b>DESCRIPTION</b>	<b>CONDITION DETECTED</b>	<b>DEFAULT VALUE</b>	<b>COMMENT</b>
E1	Electronic Control Unit	Faulty Electronic Control Unit	RAM air to screen	Replace unit
E2	Blend Door Servo Motor	Movement of Blend Door out of Range	Poor Temperature Modulation	Check if motor is disconnected, door movement obstructed, or incorrect wiring
E3	Cabin Sensor	Open Circuit	Set point directly controls thermal control valve	Check for disconnected cabin sensor
E4	Solar Sensor	Short Circuit	No sun load compensation	Check for short in wiring or sensor
E5	Ambient Sensor	Open Circuit	Assumes ambient is 20°C	Check for disconnected sensor
E6	Evaporator Temperature Sensor	Open circuit between sensor and EEC V Module	A/C Clutch does not engage	Check for disconnected sensor
E7	Engine Temperature sensor	Short Circuit between sensor and EEC V Module	Assumes hot engine, I.E. 93°C	Check for short in wiring or sensor

E8	(EF/EL/AU Only) - EEC V Communication Line Fault	Faulty Line	All values from EEC V set at default value of 1*C	Check EEC V communication line to ACC
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## Functional Test

Functional Test	Instructions	Result and Action
1	<ul style="list-style-type: none"> <li>Start the engine</li> <li>Press the Auto Button</li> <li>Set control to 30* Setting</li> </ul>	<ul style="list-style-type: none"> <li>Control Unit Powers Up - Go to test 2</li> <li>Control unit doesn't light up - Go to Test G</li> </ul>
2	<ul style="list-style-type: none"> <li>Verify that fan starts on low speed</li> </ul>	<ul style="list-style-type: none"> <li>Fan on low speed - Go to test 3</li> <li>Fan off - Go to Test C</li> <li>Fan high speed - Go to test D</li> </ul>
3	<ul style="list-style-type: none"> <li>Warm engine to normal operating temperature</li> </ul>	<ul style="list-style-type: none"> <li>Warm air is discharged from floor ducts - Go to test 4</li> <li>Cool air is discharged - go to test A</li> </ul>
4	<ul style="list-style-type: none"> <li>Set control to 18*C setting</li> </ul>	<ul style="list-style-type: none"> <li>Cold air is discharged from face ducts - go to test 5</li> <li>Air is not cold - Go to Test B</li> </ul>
5	<ul style="list-style-type: none"> <li>Set control to 22*C setting</li> <li>Press the Demist Button</li> </ul>	<ul style="list-style-type: none"> <li>Air is discharged from the demist area, on to the screen and fresh/recirc door is in the fresh position - go to test 6</li> <li>Air is not discharged from the demist area - Check Vacuum hoses</li> <li>Fresh/Recirc door is not in the fresh position - Check Vacuum Hoses</li> </ul>
6	<ul style="list-style-type: none"> <li>Press the AUTO button</li> <li>Press the RECIRC Button</li> </ul>	<ul style="list-style-type: none"> <li>Fresh/Recirc door is in the Recirc position - Go to test 7</li> <li>Fresh/Recirc door is in the Fresh Position - Check vacuum hoses</li> </ul>
7	<ul style="list-style-type: none"> <li>Set to face mode</li> </ul>	<ul style="list-style-type: none"> <li>Air is discharged from the face outlets - Go to test 8</li> <li>Air is not discharged from the face outlets - Check vacuum hoses</li> </ul>
8	<ul style="list-style-type: none"> <li>Repeat step 7 for Face/Floor, Floor/Screen, and Floor Modes</li> </ul>	<ul style="list-style-type: none"> <li>Air is discharged from the appropriate outlets - Go to test 9</li> <li>Air is not discharged from the appropriate outlets - Check Vacuum hoses</li> </ul>
9	<ul style="list-style-type: none"> <li>Press the Auto button</li> <li>Press the manual fan speed override</li> <li>Adjust to low speed</li> </ul>	<ul style="list-style-type: none"> <li>Fan goes to low speed - Go to test 10</li> <li>Fan does not go to low speed - Check diagnostic tests C and D</li> </ul>
10	<ul style="list-style-type: none"> <li>Ramp the fan speed to high speed, i.e. until the "H" is displayed</li> </ul>	<ul style="list-style-type: none"> <li>Fan goes to high speed - Go to test 11</li> <li>Fan doesn't go to high speed - Go to test E</li> </ul>
11	<ul style="list-style-type: none"> <li>Press the Auto Button</li> </ul>	<ul style="list-style-type: none"> <li>The word Auto is displayed on the climate control screen</li> </ul>

## Diagnostic Test

Diagnostic Test	Symptom	Possible Cause and Repair Procedure
A	<ul style="list-style-type: none"> <li>Cool discharge air when system is set to 30°C</li> </ul>	<ul style="list-style-type: none"> <li>Heater Malfunction - Check if hot water valve is open, if not check vacuum hoses</li> <li>Blend door not in maximum heat position - Check blend door motor</li> <li>Cabin sensor is shorted - Check sensor and sensor wiring loom</li> </ul>
B	<ul style="list-style-type: none"> <li>Warm discharge air when system is set to 18°C</li> </ul>	<ul style="list-style-type: none"> <li>Air conditioning clutch malfunction - Check air conditioning clutch, and wiring loom</li> <li>Blend door not in maximum cold position - Check blend door motor</li> <li>Low refrigerant level - Refill air-conditioning refrigerant</li> </ul>
C	<ul style="list-style-type: none"> <li>No Fan</li> </ul>	<ul style="list-style-type: none"> <li>Faulty wiring - Check wiring</li> <li>Faulty Fan Controller - Replace</li> <li>Faulty fan motor - replace</li> <li>Faulty control unit - replace</li> </ul>
D	<ul style="list-style-type: none"> <li>High Fan only</li> </ul>	<ul style="list-style-type: none"> <li>Faulty wiring - Check wiring</li> <li>Faulty fan controller - replace</li> <li>faulty control unit - replace</li> </ul>
E	<ul style="list-style-type: none"> <li>Fan will not go to high speed</li> </ul>	<ul style="list-style-type: none"> <li>Faulty wiring - Check wiring</li> <li>Faulty fan controller - replace</li> <li>faulty control unit - replace</li> </ul>
F	<ul style="list-style-type: none"> <li>A/C is on continually</li> </ul>	<ul style="list-style-type: none"> <li>Short circuit in evaporator sensor - Check resistance across sensor terminals. Change if sensor shorted</li> <li>Faulty wiring - Check wiring</li> <li>Faulty control unit - replace</li> </ul>
G	<ul style="list-style-type: none"> <li>Control head digits and LED's do not light up</li> </ul>	<ul style="list-style-type: none"> <li>Fuse - Check and replace fuse</li> <li>Ignition circuit - Check wiring</li> <li>Illumination circuit - Check backlight globe and replace</li> <li>Illumination dimming circuit - Check Body electronics module</li> <li>Ground circuit - Check wiring</li> <li>Faulty control unit - replace</li> </ul>
H	<ul style="list-style-type: none"> <li>System stays in cold engine lockout air to screen low fan speed when engine has reached normal operating temperature</li> </ul>	<ul style="list-style-type: none"> <li>Engine sensor open circuit - Check sensor is connected - Check circuit - Check sensor resistance should be less than 5KOhm</li> </ul>

I	<ul style="list-style-type: none"> <li>System does not control temperature</li> </ul>	<ul style="list-style-type: none"> <li>Cabin sensor hose not connected to sensor or air hose - Inspect and repair cabin sensor vacuum hose</li> <li>Cabin engine vacuum line sensor obstructed or not installed properly - Inspect and repair</li> <li>Cabin sensor hose kinked or damaged - Inspect and repair</li> <li>Vacuum line disconnected - Check and connect</li> </ul>
J	<ul style="list-style-type: none"> <li>System runs hot during high sun load conditions</li> </ul>	<ul style="list-style-type: none"> <li>Sun load sensor open circuit - check if sensor is connected - Check sensor is not covered - Check sensor function - Check wiring</li> </ul>
K	<ul style="list-style-type: none"> <li>System overcools at normal comfort setting</li> </ul>	<ul style="list-style-type: none"> <li>Ambient temperature short circuit - Check circuit - Check circuit - Check resistance across sensor terminals, change sensor if shorted</li> </ul>

## Document Summary

Document description: Instructions on Testing and repairing the Climate Control Module on EA-ED-EF-EL-AU model Falcons

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