Introduction

Notes

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It is very important to positively identify the area of concern before starting a rectification procedure. A little time spent with your customer to identify the conditions under which a problem occurs will be beneficial. **See below for example:**

Condition(s):

No defrost

Possible Source(s):

- No airflow to windshield

Action(s) to take:

- Check blowers and flaps

Possible Source(s):

- No function in defrost mode

Action(s) to take:

- Check A/CCM

Possible Source(s):

- Mode selection not available

Action(s) to take:

- Check control panel communication

Possible Source(s):

- Airflow OK but no heat

Action(s) to take:

- Check water pump and valve

Relevant criteria are: Weather conditions, ambient temperature, intermittent or continuous fault, airflow fault, temperature control fault, distribution fault and air inlet problem.

2002 Jaguar XJ-8 Sedan V8-3996cc 4.0L DOHC (AJ27) SFI

Nippon Denso Climate Control System

Notes

PDU Diagnostic Trouble Codes (DTCs)
Use Toolbox to access the 5-character PDU DTCs.

NOTE:
PDU DTCs are more definitive than Panel Fault Codes.
Use PDU when diagnosing System Faults.
Not all PDU DTCs have equivalent Panel Fault Codes.

Reading and Clearing Diagnostic Trouble Codes

Notes

Control Panel Interrogation Procedure

The control panel has a self-diagnosis feature, and is capable of displaying and clearing stored fault codes.

Climate control is an integrated system, therefore it is recommended that the PDU is used for fault diagnosis. The fault codes displayed with the control panel self-diagnosis feature are not as comprehensive as those of the PDU. The PDU will display the relevant fault code, fault code description and information of the system peripherals at the time the fault occurred.

Fault Code Extraction and Deletion Procedure

Error information is stored in the A/CCM up to a maximum of 5 faults. Should a sensor fault occur there will be an audible beep and the message **Er** will be displayed on the control panel display for **5 seconds** after ignition on. Please note that this will happen only once in any ignition switch cycle. The error source may be accessed by the following procedure

This procedure must be completed through one complete cycle, 1 through 6

Step		Result
#1	Simultaneously hold AUTO & RECIRC - Switch ignition to ON	Display element check
#2	Press AUTO	Display of stored fault (NUMERIC) code. If ZERO appears, there are no stored codes
#3	Press FACE	Scroll through stored faults (maximum of 5)
#4	Simultaneously press FACE & R	Clear stored fault codes (may need to be repeated for each fault)
#5	Press RECIRC	Initiate actuator check
	(Press FAN to skip actuator check)	(Actuator codes 20 through 27*)

#6	Press FAN	Exit error check mode

NOTE: * Actuator codes do NOT equate to system fault codes.

NOTE: Only codes 11,15 & 21 (see Fault Code Listing) will cause audible beep and 'Er' display. See: Powertrain Management\Computers and Control Systems\Testing and Inspection\Diagnostic Trouble Code Descriptions\Manufacturer Code Charts

NOTE: If '0' is displayed, there are no stored fault codes, wait **30 seconds** to allow system self-test.

- The control panel display will flash repeatedly indicating a list of two digit numbers (see table for code analysis). See: Powertrain Management\Computers and Control Systems\Testing and Inspection\Diagnostic Trouble Code Descriptions\Manufacturer Code Charts
- Should a code be displayed accompanied by an audible beep, the fault is current and therefore still present within the system. A code displayed without an accompanying 'beep' indicates a fault had previously occurred but is not present within the system.

NOTE: It is advisable to check all areas indicated with cleared fault codes. Such faults may re-occur if intermittent problems are present in the system.

- To delete stored and cleared fault codes press 'R' and 'FACE' buttons simultaneously.
- After investigating and correcting all stored faults, press the 'Push Off' button to restore normal operation with default panel settings, ie AUTO at **24 °C** .

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Functional Check

Notes

Functional Check

This simple 'first line check' will allow you to ascertain whether the system is operating within its design parameters, without recourse to PDU.

1. With the engine at normal running temperature.
2. Press **AUTO** to display selected temperature and illuminate AUTO and A/C state lamps.
3. Rotate **FAN** to increase or decrease lower speed, verify bar graph representation.
4. Select **A/C** to toggle on or off. (The compressor may be inhibited by the ECM should either the engine temperature NOT be normal or the ambient be < **2 °C**).
5. Select **RECIRC** , state lamp should be lit and the recirculation flaps open.
6. Select distribution buttons in turn, verify correct air distribution and relevant state lamp.
7. Select **DEFROST** , check max fans and air to the windshield.
8. Cycle TEMPERATURE to '**HI** ' and '**LO** ' to verify demanded variations and display operation. Note that extremes will provide max heat or cold independent of in-car temperature.
9. Select **EXT** to toggle between ambient and control temperatures.
10. Select **F** (where fitted) and **R** - noting exterior mirror; verify timer and operation (glass may be warm to the touch)
11. Initiate system 'Self Test' to display stored faults should any of the above not perform as stated.

Electronic Climate Control Diagnostics

Notes

Panel Communication Check

The panel communication check verifies the inputs and outputs from the control panel to the A/CCM.

Step		Result
#1	Simultaneously hold FACE	Panel Communication with FACE,
	& FAN - Switch ignition to ON	Bi-LEVEL, FOOT, DEMIST, DEFROST & RECIRC lines checked - State lamps will illuminate if all is OK. Unlit state lamp indicates a continuity fault for that specific link
#2	Press ON	Exit check mode

Item	Check LED	Condition
Ignition	Defrost	IGN input at 12V, check LED is illuminated
Auxiliary	Face	AUX input at 12V, check LED is illuminated
Clock	Feet / face	Clock input normal, check LED is illuminated
Start input	Foot	Start input normal, check LED is illuminated
Data out	Screen / foot	Data out input normal, check LED is illuminated
Dimmer override	Recirc.	Dimmer override input ON, check LED is illuminated

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Actuator Check Procedure

The system self test procedure drives all the actuator motors, to check their operation. If an actuator is operating incorrectly or operating outside of its limits then a fault code will be present.

Before commencing with the actuator check procedure, ensure the car is operating under normal conditions.

1. Switch ignition OFF.
2. Press and hold the RECIRC & AUTO buttons simultaneously, switch ignition ON & run the engine.
3. All the control panel LEDs and all LCD segments will flash on and off. Any function LED indicator which does not flash on/off suggests a fault condition within that area of the panel or with the LED.
    - Any LCD element which fails to flash on/off indicates a fault within the display element or panel.
4. Press AUTO
5. Press RECIRC button to instigate actuator check mode.
6. Press FACE to cycle through the actuator mode conditions 20 to 27.
7. Press the FAN button to restore normal operation with default panel settings, ie AUTO @ **24 °C** .

Actuator Fault Codes

Code	Blower Level	Outlet Centre vent	Foot	Defrost	Cool air by-pass	Fresh / Recirc.	Compresso
20	0	open	closed	closed	closed	fresh	OFF
21	1	open	closed	closed	closed	fresh	OFF
22	10	open	closed	closed	open	half open	A/C ON
23	17	bleed	half open	closed	half open	half open	A/C ON
24	17	bleed	half open	closed	closed	recirc.	A/C ON
25	23	closed	open	bleed	closed	recirc.	A/C ON
26	23	closed	half open	half open	closed	recirc.	A/C ON
27	31	closed	closed	open	closed	open	A/C ON

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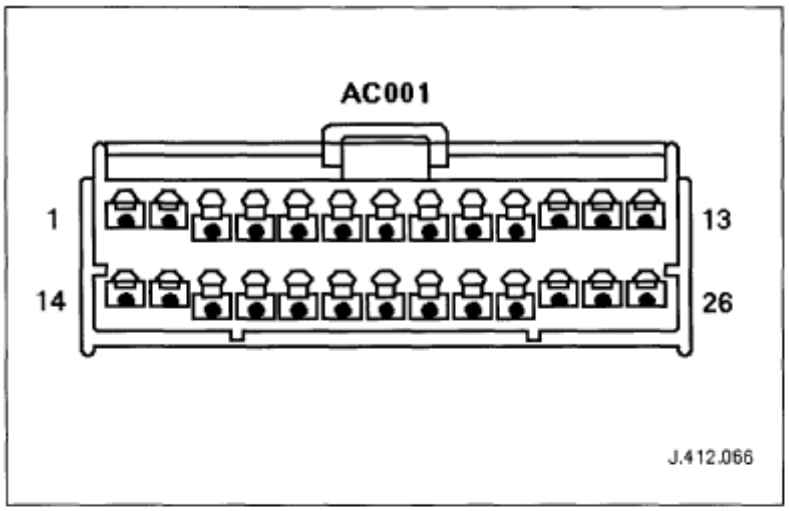
NOTE: * The water valve operates on a **6 second** pulse, ie **3 seconds** ON, **3 seconds** OFF.

Pinout Values and Diagnostic Parameters

Notes

Connector Pin Identity Chart for AC001



Pin Number	Circuit	Circuit Function
001		Compressor ON signal
002		Coolant valve
003		RH Blower motor relay
004		Heated windshield relays (where fitted)
005		Heated door mirror relay
006		Defrost servomotor (positive)
007		Center vent servomotor (positive)
008		LH air intake servomotor fresh / recirculation (positive)
009		RH air intake servomotor fresh / recirculation (positive)
010		Not used
011		Not used
012		Foot servomotor (positive)
013		Cool air bypass servomotor (positive)
014		Not used
015		Not used
016		LH Blower motor relay
017		Coolant pump motor relay
018		Heated backlight relay
019		Defrost servomotor (negative)
020		Center vent servomotor (negative)
021		LH air intake servomotor fresh / recirculation (negative)
022		RH air intake servomotor fresh / recirculation (negative)
023		Not used
024		Not used
025		Foot servomotor (negative)
026		Cool air bypass servomotor (negative)

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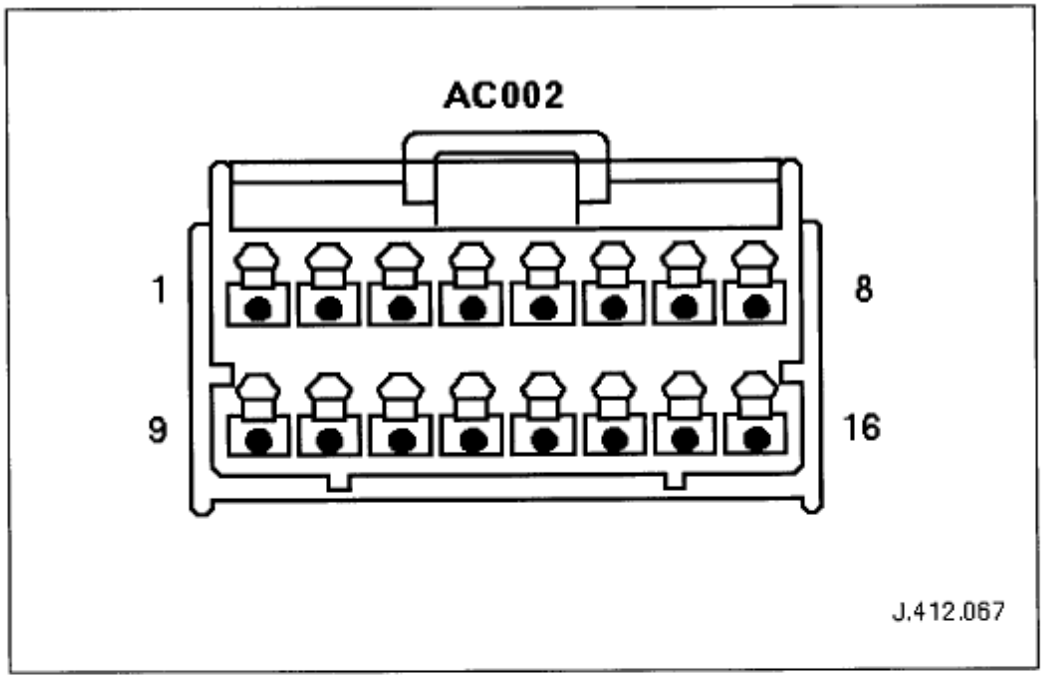
Connector Pin Identity Chart for AC002



Pin Number	Circuit	Circuit Function
001		Solar sensor
002		Center vent servomotor feedback potentiometer
003		RH air intake servomotor feedback potentiometer fresh / recirculation
004		Not used
005		Cool air bypass servomotor feedback potentiometer
006		Coolant temperature signal
007		RH blower motor voltage feedback
008		RH blower motor drive signal
009		Not used
010		Defrost servomotor feedback potentiometer
011		LH air intake servomotor feedback potentiometer fresh / recirculation
012		Not used
013		Foot servomotor feedback potentiometer
014		Not used
015		LH blower motor voltage feedback
016		LH blower motor drive signal

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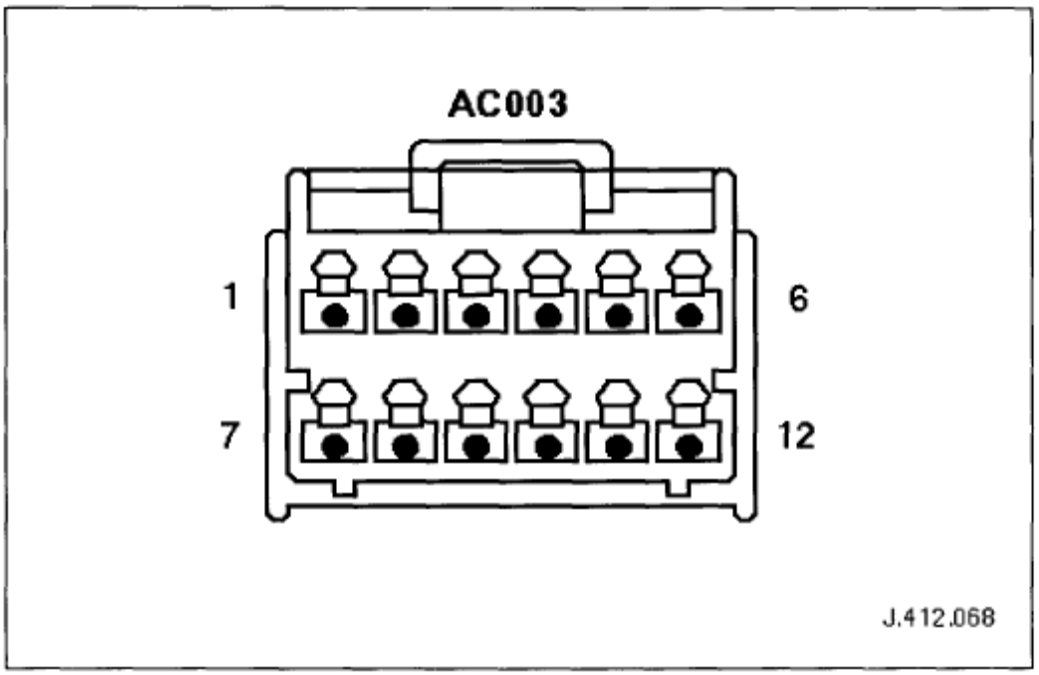
Connector Pin Identity Chart for AC003



Pin Number	Circuit	Circuit Function
001		Screen request to ECM
002		CLOCK signal to control panel
003		DATA OUT signal to control panel
004		Compressor lock signal
005		Exterior air temperature sensor
006		Heater matrix temperature sensor
007		DATA IN signal from control panel
008		START signal to control panel
009		Not used
010		Compressor lock select
011		In-car temperature sensor
012		Evaporator temperature sensor

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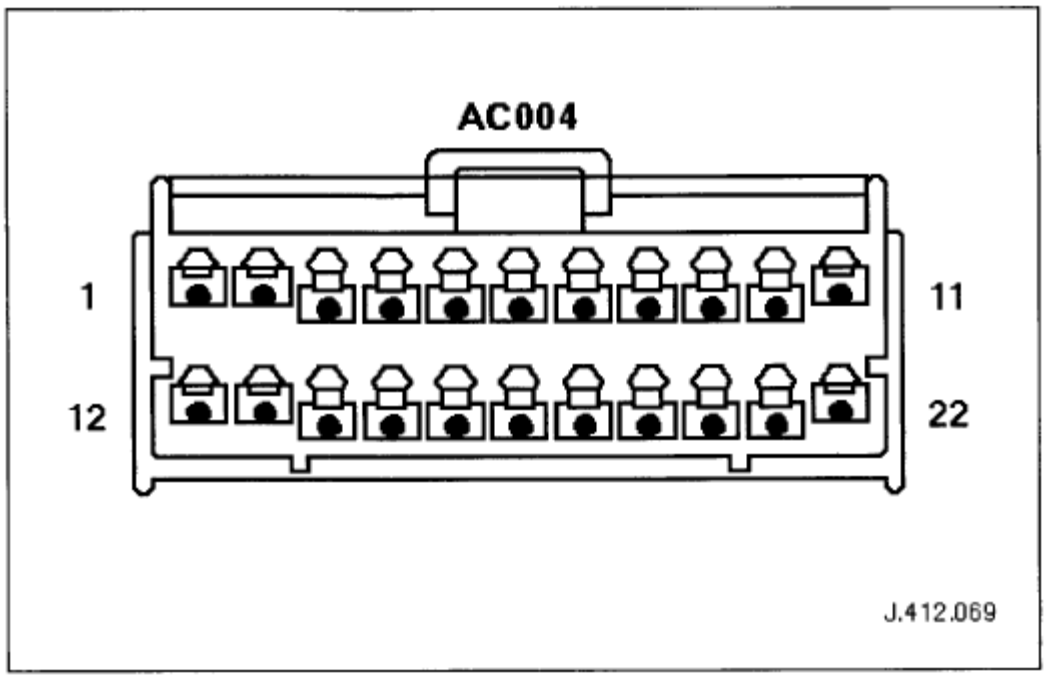
Connector Pin Identity Chart for AC004



Pin Number	Circuit	Circuit Function
001		Ignition positive supply
002		Battery isolate supply
003		Auxiliary ground
004		Auxiliary ground to control panel
005		Battery supply
006		Engine speed input
007		Electrical load drive inhibit
008		+5V sensors
009		Clutch request to ECM
010		Diagnostic L-line
011		Not used
012		Ignition (positive) to control panel
013		System ground
014		Ground to control panel
015		Air conditioning isolation relay
016		Vehicle speed
017		Pressure switch
018		Aspirator motor (In-car sensor)
019		Sensor ground
020		Logic ground for diagnostic lines
021		Diagnostic K-line
022		Not used

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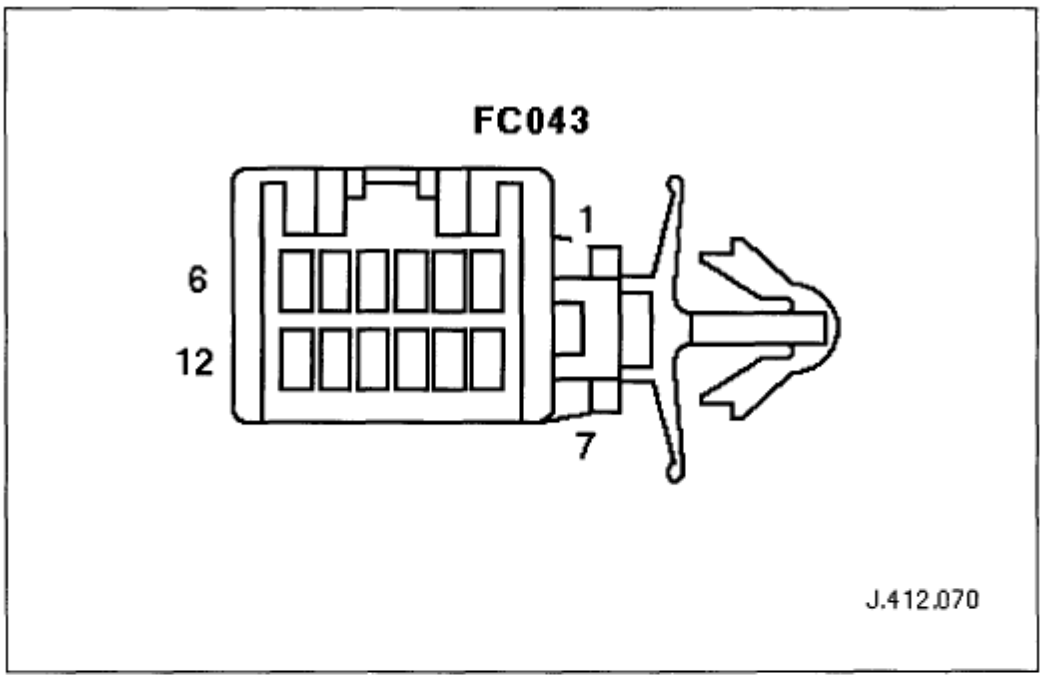
Connector Pin Identity Chart for FC043



Pin Number	Circuit	Circuit Function
1		Input CLOCK
2		Input START
3		Input DATA IN
4		Output DATA OUT
5		Input ignition (positive)
6		Input auxiliary (negative)
7		Ground
8		Dimmer
9		Dimmer override
10		Not used
11		Not used
12		Not used

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