

DIAGNOSIS AND TESTING (Continued)

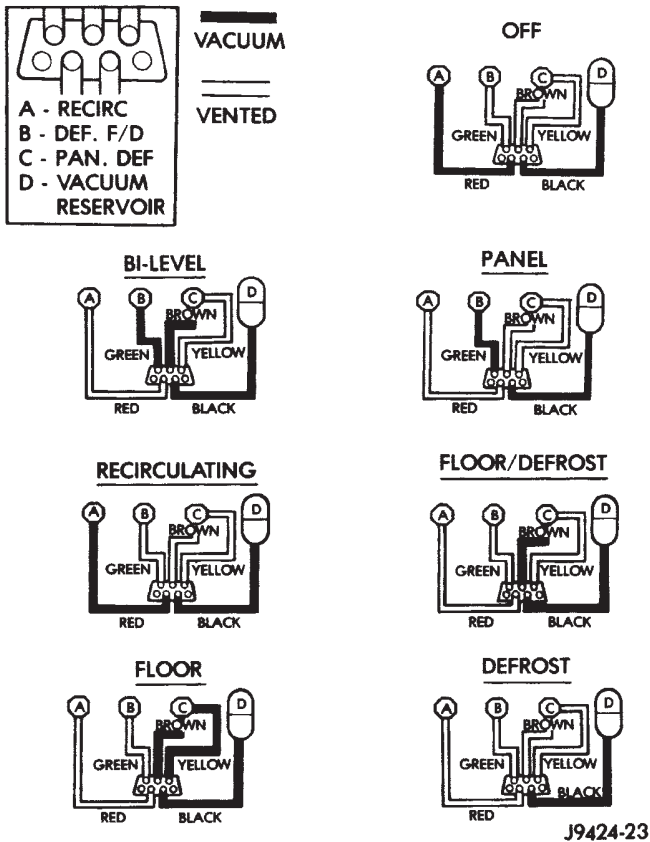


Fig. 12 Vacuum Circuits

ATC SYSTEM

The Automatic Temperature Control (ATC) controller has a system self-diagnostic mode. The controller is capable of troubleshooting each of its input and output circuits. When the controller detects a fault and places it in memory, an "Er" is momentarily displayed in the heater-A/C control panel vacuum fluorescent display area, but it will only be displayed once during each ignition cycle. The ATC controller is capable of three different types of self-diagnostic tests, as follows:

- Fault Code Tests
- Input Circuit Tests
- Output Circuit/Actuator Tests

The information that follows describes how to read the self-diagnostic display, how to enter the ATC controller self-diagnostic test mode, how to select the three self-diagnostic test types, and how to perform the three different tests.

SELF-DIAGNOSTIC DISPLAY

In the self-diagnostic mode, the test information is displayed in the vacuum fluorescent display area of the heater-A/C control. The area of the display where the temperature control comfort level is normally displayed is called the Test Selector. The Test Selector is used to display fault codes, identify the test mode,

and show the values of the circuits being tested. The following information describes how the values in the Test Selector display should be interpreted.

(1) The Select Test mode will have only 00 displayed in the Test Selector, and no stick man will be displayed. This is the self-diagnostic mode from which the various tests may be selected.

(2) If the stick man floor arrow (bottom) is showing, the displayed Test Selector value will be a range of numbers below zero (Fig. 13).

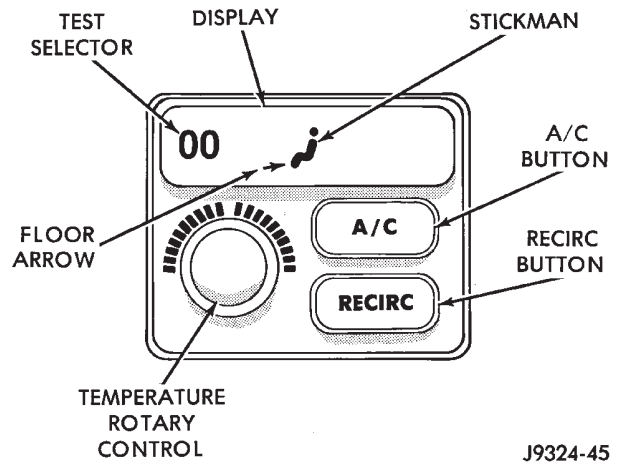


Fig. 13 Test Selector Values Below Zero

(3) If the stick man appears, but no arrows are showing, the displayed Test Selector value will be a range of numbers between zero and ninety-nine (Fig. 14).

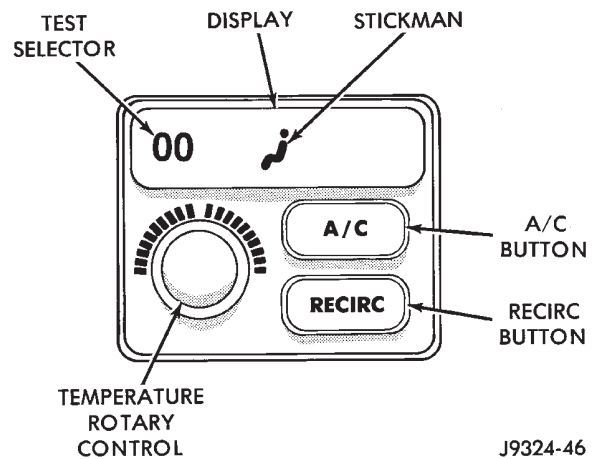


Fig. 14 Test Selector Values Between Zero and Ninety-Nine

(4) If the stick man panel arrow (middle) is showing, the displayed Test Selector value will be a range of numbers between 100 and 199 (Fig. 15).

(5) If the stick man panel (middle) and defrost (top) arrows are showing, the displayed Test Selector value will be a range of numbers between 200 and 255 (Fig. 16).

DIAGNOSIS AND TESTING (Continued)

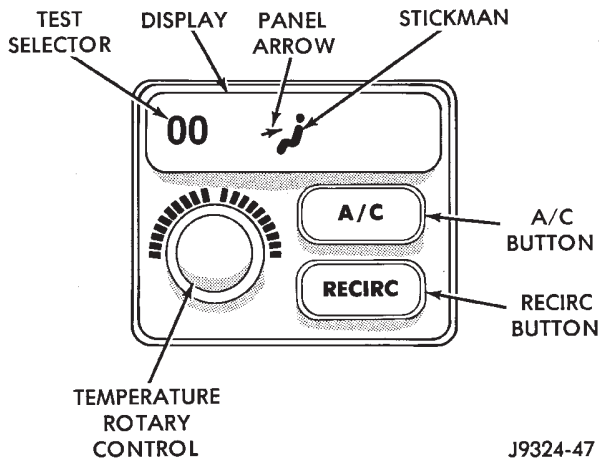


Fig. 15 Test Selector Values Between 100 and 199

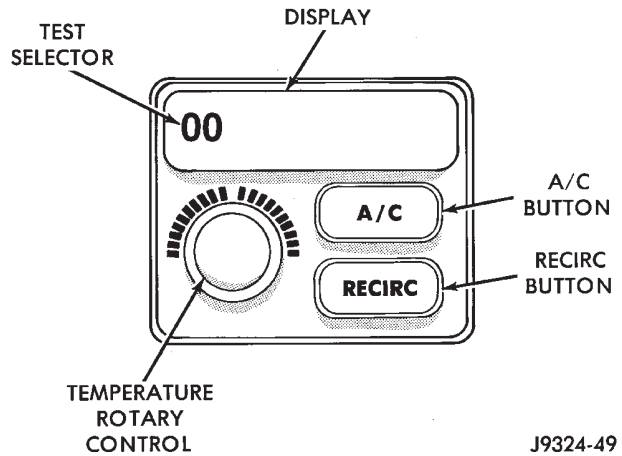


Fig. 17 Return to Select Test Mode

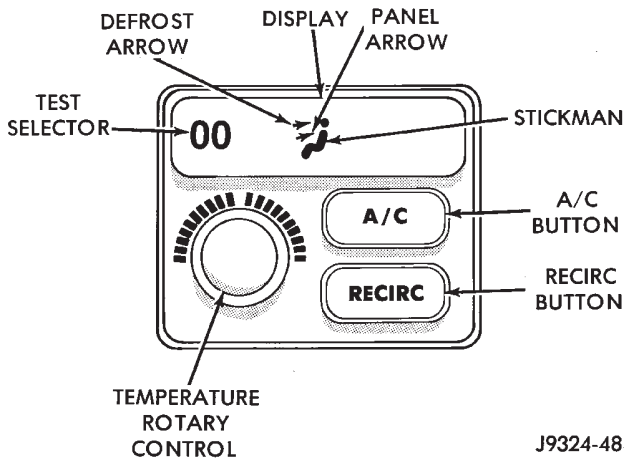


Fig. 16 Test Selector Values Between 200 and 255

(6) At any time during the self-diagnostic tests, you may return to the Select Test mode by turning the temperature rotary control one click in either direction. Again, the stick man and arrows are not shown in the Select Test mode. At this point, you have the option of monitoring or testing another circuit (Fig. 17).

ENTERING THE ATC SELF-DIAGNOSTIC MODE

To enter the ATC self-diagnostic mode, perform the following:

- (1) Depress the A/C and Recirc buttons at the same time and hold. Rotate the rotary temperature control knob clockwise one click.
- (2) If you continue to hold the A/C and Recirc buttons depressed, you will see all of the display segments illuminate. If a segment fails to illuminate, the vacuum fluorescent display is faulty.
- (3) After viewing the segment test, release the A/C and Recirc buttons. This will put the Test Selector value at 00, and no stick man will be displayed. This is the Select Test mode. At this point a number of

tests can be selected, however, the Fault Code Test should be performed first.

FAULT CODE TESTS

Fault codes are two-digit numbers that identify a circuit that is malfunctioning. There are two different kinds of fault codes.

1. **Current Fault Codes** - Current means the fault is present right now. There are two types of current faults: input faults, and system faults.
2. **Historical Fault Codes** - Historical or stored means the fault occurred previously, but is OK right now. A majority of historical fault codes are caused by intermittent wire harness or wire harness connector problems.

NOTE: A battery disconnect will erase all faults stored in Read Available Memory (RAM). It is recommended that all faults be recorded before they are erased.

RETRIEVING FAULT CODES

- (1) To begin the Fault Code Tests you must be in the Select Test mode. With 00 displayed in the Test Selector and no stick man, push either the A/C or Recirc button.
- (2) The stick man will appear indicating you have entered the Fault Code Tests. The values displayed in the Test Selector will range from 00 to 64.
- (3) Fault codes will appear and repeat if there are more than one. Record all of the fault codes, then see the Current and Historical Fault Code charts for the descriptions. If there are no fault codes, the display value remains at 00.
- (4) If a Fault Code 25 or 29 is displayed, the ATC control module must be replaced before any further testing is performed.
- (5) For more detailed information about a fault code, see the Input Circuit Tests or the Output Circuit/Actuator Tests.

DIAGNOSIS AND TESTING (Continued)

Fail Code/Description	Circuit Description
00 = No Faults	
02 = Circuit open	In-Vehicle Temperature Sensor
03 = Circuit open	Solar Sensor Input Circuit
04 = Circuit open	Front Panel Blower/Fan Control Input
05 = Circuit open	Front Panel Mode Control Input
06 = Circuit open	Blend Air Door Feedback Circuit
07 = Circuit open	Mode Door Feedback Circuit
08 = Feedback too high	Blower /Fan Feedback Circuit
10 = Circuit shorted	In-Vehicle Temperature Sensor
11 = Circuit shorted	Solar Sensor Input Circuit
12 = Circuit shorted	Front Panel Blower/Fan Control Input
13 = Circuit shorted	Front Panel Mode Control Input
14 = Circuit shorted	Blend Air Door Feedback Circuit
15 = Circuit shorted	Mode Door Feedback Circuit
16 = Feedback too low	Blower/ Fan Feedback Circuit
19 = Door not responding	Mode Door Feedback Circuit
20 = Door not responding	Blend Air Door Actuator Drive Circuit
21 = Door travel range too small	Mode Door Feedback Circuit
22 = Door travel range too large	Mode Door Feedback Circuit
23 = Door travel range too small	Blend Air Door Actuator Drive Circuit
24 = Door travel range too large	Blend Air Door Actuator Drive Circuit
25 = Calibration data error	Calibration and CPU Data
26 = BCM message missing	Collision Detection C2D Bus Inputs
27 = PCM message Missing	Collision Detection C2D Bus Inputs
29 = CPU error	Calibration and CPU Data
30 = Reserved	
31 = Reserved	
32 = Reserved	

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Current Fault Codes

DIAGNOSIS AND TESTING (Continued)

Fail Code/Description	Circuit Description
34 = Circuit was open	In-Vehicle Temperature Sensor
35 = Circuit was open	Solar Sensor Input Circuit
36 = Circuit was open	Front Panel Blower/Fan Control Input
37 = Circuit was open	Front Panel Mode Control Input
38 = Circuit was open	Blend Air Door Feedback Circuit
39 = Circuit was open	Mode Door Feedback Circuit
40 = Feedback was too high	Blower/Fan Feedback Circuit
42 = Circuit was shorted	In-Vehicle Temperature Sensor
43 = Circuit was shorted	Solar Sensor Input Circuit
44 = Circuit was shorted	Front Panel Blower/Fan Control Input
45 = Circuit was shorted	Front Panel Mode Control Input
46 = Circuit was shorted	Blend Air Door Feedback Circuit
47 = Circuit was shorted	Mode Door Feedback Circuit
48 = Feedback was too low	Blower/Fan Feedback Circuit
51 = Door was not responding	Mode Door Feedback Circuit
52 = Door was not responding	Blend Air Door Actuator Drive Circuit
53 = Door travel range was too small	Mode Door Feedback Circuit
54 = Door travel range was too large	Mode Door Feedback Circuit
55 = Door travel range was too small	Blend Air Door Actuator Drive Circuit
56 = Door travel range was too large	Blend Air Door Actuator Drive Circuit
57 = Calibration data was in error	Calibration and CPU Data
58 = BCM message was missing	Collision Detection C2D Bus Inputs
59 = PCM message was missing	Collision Detection C2D Bus Inputs
61 = CPU was in error	Calibration and CPU Data
62 = Reserved	
63 = Reserved	
64 = Reserved	

DIAGNOSIS AND TESTING (Continued)**CLEARING FAULT CODES**

Current faults are cleared whenever the problem goes away. To clear a historical fault, depress and hold either the A/C or Recirc button for at least three seconds. The faults have been cleared when two horizontal bars appear in the display.

INPUT CIRCUIT TESTS

In the Input Circuit Test mode, the status of input circuits can be viewed and monitored. If a failure occurs within an input circuit the controller will display a "?" for unknown values, "OC" for an open circuit, or "SC" for a short circuit.

(1) To begin the Input Circuit Tests you must be in the Select Test mode.

(2) With 00 displayed in the Test Selector and no stick man, turn the rotary temperature control knob until the test number you are looking for appears in the Test Selector display. See the Circuit Testing charts for a listing of the test numbers, test items, test types, system tested, and displayed values.

(3) To see the circuit input values, depress the A/C or Recirc button. The values displayed will represent the input seen by the ATC controller.

OUTPUT CIRCUIT/ACTUATOR TESTS

In the Output Circuit/Actuator Test mode, the output circuits can be viewed, monitored, overridden,

and tested. If a failure occurs in an output circuit, test the circuit by overriding the system. Test the actuator through its full range of operation. When the override control has been activated, the display will be flashing. The Test Selector will display feedback information about the output circuit being tested.

(1) To begin the Output Circuit/Actuator Tests you must be in the Select Test mode.

(2) With 00 displayed in the Test Selector and no stick man, turn the rotary temperature control knob until the test number you are looking for appears in the Test Selector display. See the Circuit Testing charts for a listing of the test numbers, test items, test types, system tested, and displayed values.

(3) To see the output value, depress the A/C or Recirc button. The values displayed will represent the output from the ATC controller.

(4) To enter the actuator test, depress the A/C or Recirc button. The display will blink, indicating you are in the actuator test mode. Manual tests are those in which you will have to depress and hold the A/C or Recirc button to control the output. Automatic tests are those in which you will have to depress the A/C or Recirc button once to generate the output.

DIAGNOSIS AND TESTING (Continued)

1997 Grand Cherokee
 Publication No. 81-370-7147
 TSB 26-12-96 December, 1996

Test No.	Test Item	Test Type	System Tested	Displayed Values
01	Blower Control Switch (A/D)	I	Blower System	"?" "OC" "SC" 00-255
02	Blower Feedback	I	Blower System	"?" 00-255
03	Blower Speed	O/A	Blower System	00-255
04	Hi Blower Relay	-	-	Not Equipped
05	Mode Control A/D	I	Mode Door System	"OC" "SC" 00-255
06	Mode Door Feedback	I	Mode Door System	"OC" "SC" 00-255
07	Panel Stop	I	Mode Door System	"?" 00-255 If "?" is displayed, activate Mode 11 to find panel stop position.
08	Defrost Stop	I	Mode Door System	"?" 00-255 If "?" is displayed, activate Mode 11 to find defrost stop position.
09	A/C Request	O/A	A/C System	00 = OFF 01 = ON
10	Mode Door Position	O/A	Mode Door System	00-255 It is possible to command the door position beyond the stops. The motor will try to move there.
11	Mode Motor	O/A	Mode Door System	Pressing A/C or RECIRC button for 3 sec. begins reinitialization. 00 = searching for panel stop 01 = searching for defrost stop 02 = moving toward panel 03 = moving toward defrost 04 = in position 05 = stalled moving toward panel 06 = stalled moving toward defrost 07 = feedback error
12	Mode Motor Drive Lines	O	Mode Door System	00 = stopped (lines low) 01 = toward defrost 02 = toward panel 03 = stopped (lines high)
13	Recirc Door	O/A	Recirc Door System	00 = continuous operation (lines grounded) 01 = fresh 02 = recirc. 03 = stopped (lines open)
14	In-Vehicle Temp. A/D	I	Temperature Inputs	"OC" "SC" 00-255
15	Blend Door Feedback	I	Blend Door System	"OC" "SC" 00-255
16	Blend Door Cold Stop	I	Blend Door System	"?" 00-255
17	Blend Door Hot Stop	I	Blend Door System	"?" 00-255

TEST TYPE: I = Input O = Output O/A = Output/Actuator

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Circuit Testing

DIAGNOSIS AND TESTING (Continued)

Test No.	Test Item	Test Type	System Tested	Displayed Values
19	In-Vehicle Temperature	I	Temperature Inputs	"OC" "SC" -40 to +60°C (-40 to + 140°F)
20	Ambient Sensor	I	CCD	-40 to +60°C (-40 to + 140°F)
21	Solar Sensor A/D	I	Sun Intensity Input	"OC" "SC" 00-255
22	Engine Coolant	I	CCD	"?" -40 to + 185°C (-40 to +260°F)
23	Vehicle Speed (MPH/KPM)	I	CCD	"?" 00-255
24	Engine RPM (x100)	I	CCD	00-82
25	Blend Door Motor	O/A	Blend Door System	Pressing A/C or RECIRC button for 3 sec. begins reinitialization.
				00 = searching for hot stop 01 = searching for cold stop 02 = moving to warmer 03 = moving to cooler 04 = in position 05 = stalled moving to warmer 06 = stalled moving to cooler 07 = feedback error
26	Blend Door Motor	O/A	Blend Door System	00-255
				It is possible to command the door position beyond the stops. The motor will try to move there.
27	Blend Door Motor Lines	O/A	Blend Door System	00 = stopped (lines low) 01 = toward cold 02 = toward hot 03 = stopped (lines high)
28	Lights On	I	Headlight Switch	00 = OFF 01 = ON
29	Dimming	I	PWD System	"?" 00-255
30	Dimming Level	O/A	Dimming System	"?" 00-255
31	ROM & EEPROM			00-FF
32	ROM & EEPROM			00-FF
33	ROM & EEPROM			00-FF
34	ROM & EEPROM			00-FF
35	ROM & EEPROM			00-FF
36	ROM & EEPROM			00-FF
37	ROM & EEPROM			00-FF
38	ROM & EEPROM			00-FF

TEST TYPE: I = Input O = Output O/A = Output/Actuator