Tech Article Title	Author	Date
Unlocking the Secrets within the Climate Control Panel	**Mark Quinn**	**1998**

Changing Degree Temperature Display

Press and hold the recirculation button. Then press the temperature up ("+") button to switch between degrees Celsius & Fahrenheit on the Climate Control Temperature and Instrument Panel Outside Temperature displays.

Accessing On-Board Diagnostic codes

Press and hold the recirculation button. Then press the manual flow control up arrow. You should see a 1c. Press the temperature up ("+") or down ("-") buttons to select a code number. Then press the recirculation button again. The value should display. Press the temperature up or down button again to display another code.

NOTE: Air Flow Motor (V 71) and Potentiometer (G 113) are not installed in USA/Canada vehicles. Disregard values displayed for these components.

Code	Displayed Value
1	System malfunction - displayed as a Diagnostic Trouble Code (DTC), see chart below
2	Digital value of Interior Temperature Sensor, in Headliner (G 86)
3	Digital value of Interior Temperature Sensor, in Instrument Panel (G 56)
4	Digital value of Fresh Air Intake Duct Temperature Sensor (G 89)
5	Digital value of Outside Air (Ambient) Temperature Sensor (G 17), front
6	Digital value of Outside Air (Ambient) Temperature Sensor
7	Digital value of Ambient Temperature Sensor At Fresh Air Blower (G 109)
8	Digital value of Temperature Regulator Flap Motor Potentiometer (G 92)
9	Delta value of Temperature Regulator Flap
10	Non-corrected specified value of Temperature Regulator Flap
11	Digital value of Central Flap Motor Potentiometer (G 112)
12	Specified value of Central Flap
13	Digital value of Footwell/Defroster Flap Motor Potentiometer (G 114)
14	Specified value of Footwell/Defroster Flap

15	Digital value of Air Flow Flap Motor Potentiometer (G 113)
16	Specified value of Air Flow Flap
17	Vehicle Speed (km/h)
18	Actual Air Blower voltage (Volts)
19	Specified Fresh Air Blower voltage (Volts)
20	A/C Compressor (A/C Clutch) voltage (Volts)
21	Number of low voltage occurrences, non-transient
22	Cycle condition of A/C Refrigerant High Pressure Switch (F 118)
23	Cyclings of the A/C Refrigerant High Pressure Switch (F 118)
24	Cyclings of the switches, absolute non-fluctuating
25	Analog/Digital value, Kick-Down Switch
26	Analog/Digital value, Engine Coolant Temperature (ECT) Warning Light
27	Coding value
28	Engine Speed (RPM)
29	A/C Compressor speed in rpm (Equals Engine Speed x 1.28)
30	Software version
31	Display check (all segments of A/C Control Head display light up)
32	Potentiometer malfunction counter, Temperature Regulator Flap
33	Potentiometer malfunction counter, Central Flap
34	Potentiometer malfunction counter, Footwell/Defroster Flap
35	Potentiometer malfunction counter, Air Flow Map
36	Feedback value, cold end-stop, Temperature Regulator Flap Motor Potentiometer (G 92)
37	Feedback value, hot end-stop, Temperature Regulator Flap Motor Potentiometer (G 92), max. stop
38	Feedback value, cold end-stop, Central Flap Motor Potentiometer (G 112)
39	Feedback value, hot end-stop, Central Flap Motor Potentiometer (G 112)
40	Feedback value, cold end-stop, Footwell/Defroster Flap Motor Potentiometer (G114)
41	Feedback value, hot end-stop, Footwell/Defroster Flap Motor Potentiometer (G114)
42	Feedback value, cold end-stop, Air Flow Map Motor Potentiometer (G 113)
43	Feedback value, hot end-stop, Air Flow Map Motor Potentiometer (G 113)
44	Vehicle operation cycle counter
45	Calculated interior temperature (internal software, in digits)
46	Outside (ambient) temperature, filtered, for regulation (internal software)
47	Outside (ambient) temperature, unfiltered, (internal software, in deg C)
48	Outside (ambient) temperature, unfiltered, (in digits)

49	Malfunction counter for speedometer (vehicle speed) signal
50	Standing time (in minutes)
51	Engine Coolant Temperature (ECT) in deg C
52	Graphics channel 1 - A/C compressor switch-off conditions are identified by illuminated segments of the "88.8" display. See chart below.
53	Graphics channel 2 - Climate system electrical outputs are identified by illuminated segments of the "88.8" display. See chart below.
54	Control characteristics
55	Outside (ambient) temperature, in deg C or deg F depending on setting on A/C control head
56	Temperature in deg C, from Interior Temperature Sensor, in Headliner (G 86)
57	Temperature in deg C, from Interior Temperature Sensor, in Instrument Panel (G 56)
58	Temperature in deg C, from Fresh Air Intake Duct Temperature Sensor (G 89)
59	Temperature in deg C, from Outside Air (Ambient) Temperature Sensor (G 17), front
60	Temperature in deg C, from Ambient Temperature Sensor At Fresh Air Blower (G 109)
61	Software version (latest)

Diagnostic Trouble Code Meanings

Diagnostic Trouble Code (Sensor)	Malfunction Description
00.0	No malfunction present
02.1 (G86)	Interior Temperature Sensor, in Headliner, static open, *02.1 (see below)
02.2	Interior Temperature Sensor, in Headliner, static short, see 02.1
02.3	Interior Temperature Sensor, in Headliner, sporadic open
02.4	Interior Temperature Sensor, in Headliner, sporadic short
03.1 (G56)	Interior Temperature Sensor, in Instrument Panel, static open, see 02.1
03.2	Interior Temperature Sensor, in Instrument Panel, static short, see 02.1
03.3	Interior Temperature Sensor, in Instrument Panel, sporadic open
03.4	Interior Temperature Sensor, in Instrument Panel, sporadic short
04.1 (G89)	Fresh Air Intake Duct Temperature Sensor, static open, *04.1 (see below)
04.2	Fresh Air Intake Duct Temperature Sensor, static short, see 04.1
04.3	Fresh Air Intake Duct Temperature Sensor, sporadic open
04.4	Fresh Air Intake Duct Temperature Sensor, sporadic short
05.1 (G17)	Outside Air (Ambient) Temperature Sensor, front, static open, *05.1 (see below)

05.2	Outside Air (Ambient) Temperature Sensor, front, static short, see 05.1, *05.2 (see below)
05.3	Outside Air (Ambient) Temperature Sensor, front, sporadic open
05.4	Outside Air (Ambient) Temperature Sensor, front, sporadic short
06.1 (G110)	Engine Coolant Temperature (ECT), A/C static open, *06.1 (see below)
06.2	Engine Coolant Temperature (ECT), A/C static short, see 06.1
06.3	Engine Coolant Temperature (ECT), A/C sporadic open
06.4	Engine Coolant Temperature (ECT), A/C sporadic short
07.1 (G109)	Ambient Temperature Sensor at Fresh Air Blower, static open, *07.1 (see below)
07.2	Ambient Temperature Sensor at Fresh Air Blower, static short, see 07.1
07.3	Ambient Temperature Sensor at Fresh Air Blower, sporadic open
07.4	Ambient Temperature Sensor at Fresh Air Blower, sporadic short
08.1 (G92)	Temperature Regulator Flap Motor Potentiometer, static open, *08.1 (see below)
08.2	Temperature Regulator Flap Motor Potentiometer, static short, see 08.1
08.3	Temperature Regulator Flap Motor Potentiometer, sporadic open
08.4	Temperature Regulator Flap Motor Potentiometer, sporadic short
08.5	Temperature Regulator Flap, static block, *08.5 (see below)
08.6	Temperature Regulator Flap Motor Potentiometer, malfunction
08.7	Temperature Regulator Flap, sporadic block
11.1 (G112)	Central Flap Motor Potentiometer, static open, *11.1 (see below)
11.2	Central Flap Motor Potentiometer, static short, see 11.1
11.3	Central Flap Motor Potentiometer, sporadic open
11.4	Central Flap Motor Potentiometer, sporadic short
11.5	Central Flap, static block, *11.5 (see below)
11.6	Central Flap Motor Potentiometer, malfunction
11.7	Central Flap, sporadic block
13.1 (G114)	Footwell/Defroster Flap Motor Potentiometer, static open, *13.1 (see below)
13.2	Footwell/Defroster Flap Motor Potentiometer, static short, see 13.1
13.3	Footwell/Defroster Flap Motor Potentiometer, sporadic open
13.4	Footwell/Defroster Flap Motor Potentiometer, sporadic short
13.5	Footwell/Defroster Flap, static block, *13.5 (see below)
13.6	Footwell/Defroster Flap Motor Potentiometer, malfunction
13.7	Footwell/Defroster Flap, sporadic block
15.1 (G113)	Air Flow Flap Motor Potentiometer, static open, *15.1 (see below)
15.2	Air Flow Flap Motor Potentiometer, static short, see 15.1
15.3	Air Flow Flap Motor Potentiometer, sporadic open
15.4	Air Flow Flap Motor Potentiometer, sporadic short
15.5	Air Flow Flap, static block, see *15.5 (see below)
15.6	Air Flow Flap Motor Potentiometer, malfunction
15.7	Air Flow Flap, sporadic block
17.0	Vehicle Speed Signal faulty
18.1	Fresh air blower voltage, static
18.3	Fresh air blower voltage, sporadic
20.1	A/C compressor voltage not OK - static, *20.1 (see below)

20.3	A/C compressor voltage not OK - sporadic
22.1 (F118)	A/C Refrigerant High Pressure Switch, static open, *22.1 (see below)
22.3	A/C Refrigerant High Pressure Switch, sporadic open
22.5	A/C Refrigerant High Pressure Switch, 120X open, *22.5 (see below)
29.1	Belt slip detection "soft", static
29.2	Belt slip detection "hard", static
29.3	Belt slip detection "soft", sporadic
29.4	Belt slip detection "hard", sporadic

Diagnostic Trouble Code Notes:

*02.1 Digital default value of 128 is programmed if sensor fails
*04.1 Value supplied by Temp. Sensor is used if sensor fails
*05.1 Value supplied by Temp. Sensor is used if sensor fails
*05.2 Digital default value of 128 is programmed if sensors G89 & G17 both fail
*06.1 Engine Coolant Temperature is calculated is sensor should fail or is not installed; diagnosis occurs only above 0 degrees Celsius
*07.1 Programmed corrective value = 0
*08.1 Temperature Regulator Flap Motor will no longer be controlled automatically; manual adjustment only
*08.5 Motor is cycled; software attempts to eliminate block
*11.1 Central Flap Motor will no longer be controlled automatically; manual adjustment only
*11.5 Motor is cycled; software attempts to eliminate block
*13.1 Footwell/Defroster Flap Motor will no longer be controlled automatically; manual adjustment only
*13.5 Motor is cycled; software attempts to eliminate block
*15.1 Digital value is internally programmed for limp-home mode
*15.5 Motor is cycled; software attempts to eliminate block
*20.1 Compressor remains off until voltage is greater than 10.8V for at least 25 seconds
*22.1 Compressor remains off until switch closes
*22.5 Compressor re-engagement circuit, VAG 1551 Scan Tool function

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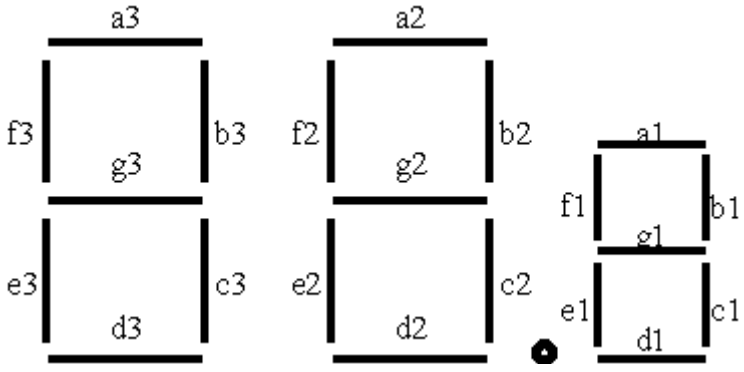
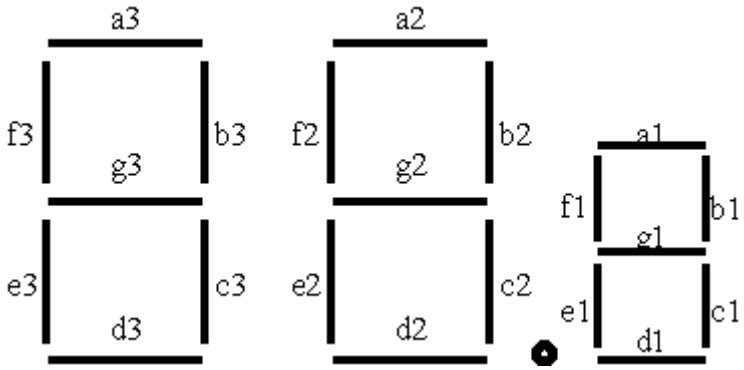
OBD Channel 52 - A/C Compressor switch-off codes



If an A/C compressor switch-off condition exists, a segment of the "88.8" display, indicated below as an alpha-numeric code, will illuminate.

Segment	Condition
a1	Slippage or blockage, A/C Refrigerant High Pressure Switch, 120x off
b1	Engine Speed (RPM) less than 200 - 500
c1	Engine Speed (RPM) greater than 6000
d1	Engine Speed (RPM) greater than 6000
e1	System function OK
f1	System function OK
a2	A/C manually switched off (A/C standby canceled)
b2	low voltage
c2	Kick-down switch, compressor off for 12secs max.
d2	Engine Coolant Temperature (ECT) warning light switched
e2	A/C Refrigerant Low Pressure Switch (F73)
f2	A/C Refrigerant High Pressure Switch (F118)
a3	ECON mode selected
b3	OFF selected
c3	Outside (ambient) temperature too low
d3	Engine management system (compressor will remain off for 3 -12 seconds)
e3	High pressure occurrences more than 30 times
f3	Ambient Temperature Sensor at Fresh Air Blower (G109) less than 27 degF (-3 degC)
g1,g2,g3	System function OK (g1+g2+g3 must illuminate simultaneously to indicate system is OK)
Decimal Point Lit	A/C compressor ON
Decimal Point Unlit	A/C compressor OFF

OBD Channel 53 - Climate system electrical output codes



When a NO system electrical output is activated, a segment of the "88.8" display,

indicated below as an alpha-numeric code, will illuminate. The decimal point in the "88.8" display will not illuminate in this channel.

Segment	Condition
a1	Fan for interior temperature sensor
b1	Fresh air/recirculation flap closed (recirculation mode)
c1	Heater valve closed
d1	Bi-directional wiring harness
e1	A/C compressor ON
f1	coolant fan first speed ON
a2	Air flow flap open
b2	Air flow flap open
c2	Air flow flap closed
d2	Footwell/Defroster flap in "Footwell" position
e2	Footwell/Defroster flap in "Footwell" position
f2	Footwell/Defroster flap in "Defroster" position
a3	Central flap in "instrument panel outlet" position
b3	Central flap in "instrument panel outlet" position
c3	Central flap in "footwell outlet/defrost" position
d3	Temperature flap in "cold air" position
e3	Temperature flap in "cold air" position
f3	Temperature flap in "warm air" position
g1,g2,g3	System function OK (g1+g2+g3 must illuminate simultaneously to indicate system is OK)