

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (DIAGNOSTICS)

## 1. A/C CONTROL SYSTEM SELF-DIAGNOSIS

Step	Check	Yes	No
<p><b>1 SET SELF-DIAGNOSIS MODE BY OPERATING A/C CONTROL PANEL.</b></p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Start the engine while holding down the AUTO switch and FRESH/RECIRC switch.</p> <p>NOTE: Self-diagnosis can also be performed with ignition switch ON, but start the engine because observing the compressor operation is difficult.</p> <p>3) All the indicators blink four times.</p>	<p>Does the self-diagnosis function operate and do all the indicators flash four times?</p>	<p>Go to step 2.</p>	<p>&lt;Ref. to AC(diag)-14, DIAGNOSTIC PROCEDURE WHEN SELF DIAGNOSIS USING A/C CONTROL PANEL DOES NOT OPERATE, OPERATION, Diagnostic Chart for Self-Diagnosis.&gt;</p>
<p><b>2 CHECK EACH SENSOR AND POTENTIOMETER.</b></p> <p>1) After the indicators stop blinking, automatically change to the Inspection Mode of sensor and potentiometer.</p> <p>NOTE: Display items can be changed each time the A/C switch is pressed. (Step Operation)</p> <p>2) Read the code appeared on the display. When no open circuit or short-circuit is found in each sensor and potentiometer, code "20" is displayed on the screen. When open circuit or short-circuit is found in each sensor and potentiometer, codes except "20" are displayed on the screen.</p> <p>NOTE: It takes one minute or more to complete all diagnostic steps after the engine has started.</p>	<p>Are other codes except "20" displayed?</p>	<p>Repair the defective circuit. &lt;Ref. to AC(diag)-10, SENSOR CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.&gt;</p>	<p>Go to step 3.</p>
<p><b>3 CHECK EACH ACTUATOR, BLOWER FAN AND COMPRESSOR.</b></p> <p>1) After completing each sensor and potentiometer inspection, change to the Inspection Mode of actuator, blower fan and compressor by pressing the defroster switch.</p> <p>2) Each mode will change and operate automatically every four seconds.</p> <p>NOTE: Operation mode items can be changed each time the A/C switch is pressed. (Step Operation)</p> <p>3) Check the operation of actuator, blower fan and compressor in each mode according to the operating mode table. &lt;Ref. to AC(diag)-13, OPERATING MODE TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.&gt;</p>	<p>Do the actuator, blower fan and compressor operate as described in the operating mode table?</p>	<p>A/C control system is normal. Press the OFF switch and complete the self-diagnosis function.</p>	<p>Repair each defective part.</p>

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### 2. SENSOR CHECK TABLE

**NOTE:**

- When the sunload sensor check is performed indoors or in the shade, it could be diagnosed as having an open circuit. Always check the sunload sensor with the sun shining on it.
- When currently malfunctioning, AUTO flashes on display.
- Past malfunction can be cleared by disconnecting the battery ground cable.

Display screen	Sensor	Trouble contents	Note
21	Open circuit in in-vehicle sensor	In-vehicle air temperature sensor circuit is open.	<Ref. to AC(diag)-55, DTC B1602 IN-VEHICLE SENSOR OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-21	Short-circuit in in-vehicle sensor	In-vehicle air temperature sensor circuit is shorted.	<Ref. to AC(diag)-54, DTC B1601 IN-VEHICLE SENSOR SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
22	Ambient sensor trouble or communication failure	Sensor trouble or communication failure	<Ref. to AC(diag)-85, DTC B1635 OUT SIDE TEMPERATURE SENSOR CIRCUIT ABNORMALITY (AIR CONDITIONER), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
23	Open circuit in evaporator sensor	Post evaporator sensor circuit is open.	<Ref. to AC(diag)-57, DTC B1604 EVAPORATOR SENSOR OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-23	Short-circuit in evaporator sensor	Post evaporator sensor circuit is shorted.	<Ref. to AC(diag)-56, DTC B1603 EVAPORATOR SENSOR SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
24	Engine coolant temperature sensor trouble or communication failure	Sensor trouble or communication failure	—
25	Open circuit in sunload sensor	Sunload sensor circuit is open. *1	<Ref. to AC(diag)-62, DTC B1608 SUNLOAD SENSOR OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-25	Short-circuit in sunload sensor	Sunload sensor circuit is shorted.	<Ref. to AC(diag)-61, DTC B1607 SUNLOAD SENSOR SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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Display screen	Sensor	Trouble contents	Note
26	Open circuit in air mix door actuator — potentiometer (driver's)	Air mix door actuator potentiometer circuit is open.	<Ref. to AC(diag)-64, DTC B1610 AIRMIX DOOR ACTUATOR POTENTIOMETER CIRCUIT OPEN (DRIVER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-26	Open circuit in air mix door actuator — potentiometer (passenger's)	Air mix door actuator potentiometer circuit is open.	<Ref. to AC(diag)-69, DTC B1613 AIRMIX DOOR ACTUATOR POTENTIOMETER CIRCUIT OPEN (PASSENGER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
27	Short-circuit in air mix door actuator — potentiometer (driver's)	Air mix door actuator potentiometer circuit is shorted.	<Ref. to AC(diag)-66, DTC B1611 AIRMIX DOOR ACTUATOR POTENTIOMETER CIRCUIT SHORT (DRIVER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-27	Short-circuit in air mix door actuator — potentiometer (passenger's)	Air mix door actuator potentiometer circuit is shorted.	<Ref. to AC(diag)-71, DTC B1614 AIRMIX DOOR ACTUATOR POTENTIOMETER CIRCUIT SHORT (PASSENGER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
28	Open circuit in mode door actuator — potentiometer	Mode door actuator potentiometer circuit is open.	<Ref. to AC(diag)-75, DTC B1620 MODE DOOR ACTUATOR POTENTIOMETER CIRCUIT OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
29	Short-circuit in mode door actuator — potentiometer	Mode door actuator potentiometer circuit is shorted.	<Ref. to AC(diag)-77, DTC B1621 MODE DOOR ACTUATOR POTENTIOMETER CIRCUIT SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
41	Open circuit in rear vent door actuator — potentiometer*2	Rear vent door actuator potentiometer circuit is open.	<Ref. to AC(diag)-80, DTC B1630 REAR VENT DOOR ACTUATOR POTENTIOMETER CIRCUIT OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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Display screen	Sensor	Trouble contents	Note
-41	Short-circuit in rear vent door actuator — potentiometer*2	Rear vent door actuator potentiometer circuit is shorted.	<Ref. to AC(diag)-82, DTC B1631 REAR VENT DOOR ACTUATOR POTENTIOMETER CIRCUIT SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
42	Open circuit in refrigerant pressure sensor	Pressure sensor circuit is open. *1	<Ref. to AC(diag)-58, DTC B1605 REFRIGERANT FLOW SENSOR CIRCUIT OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-42	Short-circuit in refrigerant pressure sensor	Pressure sensor circuit is shorted. *1	<Ref. to AC(diag)-60, DTC B1606 REFRIGERANT FLOW SENSOR CIRCUIT SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
43	Open circuit in refrigerant flow sensor	Refrigerant flow circuit is open. *1	<Ref. to AC(diag)-88, DTC B1642 REFRIGERANT FLOW SENSOR CIRCUIT OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-43	Short-circuit in refrigerant flow sensor	Refrigerant flow sensor circuit is shorted. *1	<Ref. to AC(diag)-87, DTC B1641 REFRIGERANT FLOW SENSOR CIRCUIT SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
44	Refrigerant flow sensor circuit failure	Refrigerant flow sensor is faulty.	—
45	Open circuit in sunload sensor (auto light control)	Sunload sensor circuit is open.	<Ref. to AC(diag)-62, DTC B1608 SUNLOAD SENSOR OPEN, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
-45	Short-circuit in sunload sensor (auto light control)	Sunload sensor circuit is shorted. *1	<Ref. to AC(diag)-61, DTC B1607 SUNLOAD SENSOR SHORT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
46	Variable flow change solenoid duty circuit failure	Variable flow change solenoid duty circuit is open or shorted. *1	<Ref. to AC(diag)-90, DTC B1643 VARIABLE FLOW CHANGE SOLENOID DUTY CIRCUIT ABNORMAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

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Display screen	Sensor	Trouble contents	Note
47	Air mix door actuator — lock (driver's)	Air mix door actuator does not operate due to being stuck or other reasons.	<Ref. to AC(diag)-67, DTC B1612 AIRMIX DOOR ACTUATOR LOCK (DRIVER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
48	Air mix door actuator — lock (passenger's)	Air mix door actuator does not operate due to being stuck or other reasons.	<Ref. to AC(diag)-73, DTC B1615 AIRMIX DOOR ACTUATOR LOCK (PASSENGER'S), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
49	Mode door actuator — lock	Mode door actuator does not operate due to being stuck or other reasons.	<Ref. to AC(diag)-78, DTC B1622 MODE DOOR ACTUATOR LOCK, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
53	Heater control panel communication failure	Communication with heater control panel is impossible. *1	<Ref. to AC(diag)-94, DTC U0028 HEATER CONTROL PANEL COMMUNICATION ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
54	CAN communication bus off	Bus off*1	<Ref. to AC(diag)-93, DTC U0001 CAN COMMUNICATION BUS OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
55	CAN communication error	Communication error*1	<Ref. to AC(diag)-93, DTC U0002 CAN COMMUNICATION ERROR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
20 blinking	When all conditions are normal		—

\*1: Displays current malfunction only.

\*2: Displays for vehicles with rear seat air conditioning only.

### 3. OPERATING MODE TABLE

Display screen	Blower fan	Mode door	FRESH/RECIRC door	A/C compressor	Air mix door
31	LO	FACE	FRESH	OFF	Maximum cool
32	LO	FACE	RECIRC	ON	Maximum cool
33	M1	FACE	RECIRC	ON	Maximum cool
34	M1	B/L	FRESH	ON	50%
35	M1	FOOT	FRESH	ON	50%
36	M3	FOOT	FRESH	ON	Maximum hot
37	M3	F/D	FRESH	ON	Maximum hot
38	HI	DEF	FRESH	ON	Maximum hot

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## 4. DIAGNOSTIC PROCEDURE WHEN SELF DIAGNOSIS USING A/C CONTROL PANEL DOES NOT OPERATE

NOTE:

For diagnostic procedure, refer to “Nothing is displayed on the screen or indicators do not illuminate.” in Diagnostics with Phenomenon. <Ref. to AC(diag)-16, NOTHING IS DISPLAYED ON THE SCREEN OR INDICATORS DO NOT ILLUMINATE, DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.>