

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

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

- Without left/right independent air conditioning function (without high grade MFD)

Step	Check	Yes	No
<b>1</b> <b>SELECT SELF-DIAGNOSIS MODE IN THE CONTROL MODULE.</b> 1) Set the air flow control dial and fan dial to the AUTO position. 2) Start the engine with the A/C switch and the FRESH/RECIRC switch pressed.	Does the self-diagnosis mode operate?	Go to step 2.	<Ref. to AC(diag)-19, NOTHING IS DISPLAYED ON THE SCREEN. NO ILLUMINATION APPEARS ON THE INDICATOR, DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.>
<b>2</b> <b>CHECK THE LIGHTING OF THE LED.</b> Make sure that all switch LEDs on the control panel illuminate.	Do all LEDs blink eight times?	Go to step 3.	Replace the A/C control panel. <Ref. to AC-50, REMOVAL, Control Panel.>
<b>3</b> <b>CHECK SENSOR MALFUNCTION.</b> 1) Set the air flow control dial and fan dial to the AUTO position. 2) If the system has trouble for each sensor, the FRESH/RECIRC switch LED blinks or is turned off. 3) If the system has no malfunctions, the FRESH/RECIRC switch LED is illuminated.	Does the FRESH/RECIRC switch LED illuminate?	Go to step 5.	Go to step 4.
<b>4</b> <b>CONFIRM MALFUNCTIONING SENSOR.</b> 1) Set the air flow control dial to AUTO. 2) Turn the fan dial to each mode position, and check each switch LED illumination according to sensor check table. <Ref. to AC(diag)-13, SENSOR CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	When turning the fan dial to each mode position, does the FRESH/RECIRC switch LED go off?	Go to step 5.	Repair the defective sensor.
<b>5</b> <b>CHECK AIR MIX DOOR AND MODE DOOR POSITION OPERATION SIGNALS.</b> 1) Set the air flow control dial to FACE. 2) Turn the fan dial to AUTO. 3) If there is a system malfunction in the air mix door signal or the mode door position signal, the FRESH/RECIRC switch LED goes off or blinks. 4) If the system has no malfunctions, the FRESH/RECIRC switch LED is illuminated.	Does the FRESH/RECIRC switch LED illuminate?	Go to step 8.	Go to step 6.
<b>6</b> <b>CHECK AIR MIX DOOR POSITION DRIVE SIGNALS.</b> 1) Set the air flow control dial to FACE. 2) Place the fan dial in each position and then check each LED illumination conditions. <Ref. to AC(diag)-16, DRIVE SIGNAL CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Do the LEDs illuminate in accordance with operation signal table?	Go to step 7.	Check the air mix door actuator circuit.

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Step	Check	Yes	No
<b>7</b> <b>CHECK MODE DOOR POSITION DRIVE SIGNAL.</b> 1) Press the A/C switch. 2) Place the fan dial in each position and then check each LED illumination conditions. <Ref. to AC(diag)-16, DRIVE SIGNAL CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Do the LEDs illuminate in accordance with operation signal table?	Go to step <b>8</b> .	Check the mode door actuator circuit.
<b>8</b> <b>CHECK OPERATION OF EACH ACTUATOR, BLOWER FAN AND COMPRESSOR CLUTCH.</b> 1) Set the air flow control dial to B/L. 2) Turn the fan dial from AUTO to 7th, and select operating modes. 3) Check the operation of each mode according to operating mode table. <Ref. to AC(diag)-15, OPERATING MODE TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Does the operation of each mode match to operating mode table?	Turn the fan dial to OFF or the ignition switch to OFF in order to complete self-diagnosis.	Repair the malfunctioning part in accordance with each diagnostic chart.

# Diagnostic Chart for Self-Diagnosis

## HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

- Without left/right independent air conditioning function (with high grade MFD), with left/right independent air conditioning function

Step	Check	Yes	No
<b>1</b> <b>SELECT SELF-DIAGNOSIS MODE IN THE CONTROL MODULE.</b> Start the engine with the A/C switch and the FRESH/RECIRC switch pressed.	Does the self-diagnosis mode operate?	Go to step <b>2</b> .  <Ref. to AC(diag)-19, NOTHING IS DISPLAYED ON THE SCREEN. NO ILLUMINATION APPEARS ON THE INDICATOR, DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.>	
<b>2</b> <b>CHECK INDICATOR BLINKS.</b> Make sure that all switch indicators on the control panel blink.	Do all indicators blink eight times?	Go to step <b>3</b> .  <Ref. to AC-50, REMOVAL, Control Panel.>	Replace the A/C control panel.
<b>3</b> <b>CHECK SENSOR MALFUNCTION.</b> 1) The inspection mode for sensor is initiated by turning the fan dial one click to the right. (The auto switch indicator blinks two times.) 2) If all sensors have no malfunctions, the A/C switch indicator illuminates. If any sensor has a malfunction, the A/C switch indicator blinks. 3) Identify defective sensors according to the sensor check table. <Ref. to AC(diag)-13, SENSOR CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Does the A/C switch indicator illuminate?	Go to step <b>4</b> .	Repair the defective sensor.
<b>4</b> <b>CHECK ACTUATOR DRIVE SIGNAL.</b> 1) The inspection mode for actuator is initiated by turning the fan dial one click to the right. (The AUTO switch indicator blinks three times.) 2) If all actuators have no malfunctions, the defroster indicator illuminates. If any actuator has a malfunction, the defroster indicator blinks. 3) Identify defective actuator circuit according to the drive signal check table. <Ref. to AC(diag)-16, DRIVE SIGNAL CHECK TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Does the defroster switch indicator illuminate?	Go to step <b>5</b> .	Repair the defective actuator circuit.
<b>5</b> <b>CHECK OPERATION OF EACH ACTUATOR, BLOWER FAN AND COMPRESSOR CLUTCH.</b> 1) The inspection mode for blower fan, actuator and compressor is initiated by turning the fan dial one click to the right. (The AUTO switch indicator blinks four times.) 2) The number of blinking of A/C switch indicator changes and the operation mode changes each time the A/C switch is pressed. 3) Check each operation according to the operating mode table. <Ref. to AC(diag)-15, OPERATING MODE TABLE, OPERATION, Diagnostic Chart for Self-Diagnosis.>	Does each operation match to operating mode table?	System is normal. Press the OFF switch or turn the ignition switch to OFF in order to complete self-diagnosis.	Repair the defective part in accordance with each diagnostic chart.

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

## 2. SENSOR CHECK TABLE

- Without left/right independent air conditioning function (without high grade MFD)

### 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 at a location exposed to direct sunlight.
- Past malfunction will illuminate if four malfunctions or more were detected previously.
- To cancel the past malfunction, perform either of the following procedure: Disconnect the negative battery terminal or press and hold the FRESH/RECIRC switch for 5 seconds or more while performing self-diagnosis step 3 — 7.

Air flow control dial position	Fan dial position	Sensor to be checked	No trouble	Short circuit	Open circuit	When currently malfunctioning	When having malfunctioned in the past
AUTO	AUTO	In-vehicle sensor	FRESH/RECIRC switch LED is turned off	FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)	FRESH/RECIRC switch LED blinks (Illuminates for 1 sec. ↔ turns off for 1 sec.)	Rear window defogger switch LED is turned off	Rear window defogger switch LED illuminates
	1st	Ambient sensor		FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)			
	2nd	Evaporator sensor		FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)			
	3rd	Engine coolant temperature sensor		—			
	4th	Sunload sensor		FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)			
	5th	CAN communication		—			
	6th	FRESH/RECIRC potentiometer		FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)			

## Diagnostic Chart for Self-Diagnosis

### HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

- Without left/right independent air conditioning function (with high grade MFD), with left/right independent air conditioning function

#### 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 at a location exposed to direct sunlight.
- If there are multiple defective sensors, a malfunction is displayed in the sequence of priority (1, 2, 3, etc.). The display changes in the sequence of priority (1, 2, 3, etc.) each time the A/C switch is pressed.
- Past malfunction will illuminate if four malfunctions or more were detected previously.
- To cancel the past malfunction, perform either of the following procedure: Disconnect the negative battery terminal or press and hold the FRESH/RECIRC switch for 5 seconds or more while performing self-diagnosis step 3 — 4.

Sensor	A/C switch indicator	FRESH/RECIRC switch indicator				Rear defroster switch indicator *2	
		Open	Sequence of priority	Short	Sequence of priority	Current malfunction	Past malfunction
In-vehicle sensor	Once	Light OFF	1	Light ON	2	Light OFF	Light ON
Ambient sensor	Twice	Light OFF	3	Light ON	4	Light OFF	Light ON
Evaporator sensor	3 times	Light OFF	5	Light ON	6	Light OFF	Light ON
Engine coolant temperature sensor	4 times	Light OFF			7	Light OFF	Light ON
Sunload sensor	5 times	Light OFF*1	8	Light ON	9	Light OFF	Light ON
CAN communication	6 times	Light OFF	10	—		Light OFF	Light ON
FRESH/RECIRC potentiometer	7 times	Light OFF	11	Light ON	12	Light OFF	Light ON

\*1: Displays current malfunction only

\*2: If the same diagnostic object contains a current malfunction and a past malfunction, the current malfunctions is displayed.

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

## 3. OPERATING MODE TABLE

- Without left/right independent air conditioning function (without high grade MFD)

Operation	Fan dial position							
	AUTO	1st	2nd	3rd	4th	5th	6th	7th
Blower fan	4 V	4 V	4.9 V	5.9 V	7.0 V	8.3 V	9.8 V	14 V
FRESH/RECIRC door	RECIRC	RECIRC	MIX	FRESH	FRESH	FRESH	FRESH	FRESH
Air flow control door	FACE	FACE	FACE	B/L	HEAT	HEAT	D/H	DEF
Air mix door	0%	0%	0%	50%	50%	100%	100%	100%
A/C compressor	OFF	ON	ON	ON	ON	ON	ON	ON

- Without left/right independent air conditioning function (with high grade MFD), with left/right independent air conditioning function

Operation	Number of blinking of A/C switch indicator							
	Once	Twice	3 times	4 times	5 times	6 times	7 times	8 times
Blower fan	4 V	4 V	4.9 V	5.9 V	7.0 V	8.3 V	9.8 V	14 V
FRESH/RECIRC door	RECIRC	RECIRC	MIX	FRESH	FRESH	FRESH	FRESH	FRESH
Air flow control door	FACE	FACE	FACE	B/L	HEAT	HEAT	D/H	DEF
Air mix door *1 or air mix door RH *2	0%	0%	0%	50%	50%	100%	100%	100%
Air mix door LH *2	0%	0%	0%	50%	50%	100%	100%	100%
A/C compressor	OFF	ON	ON	ON	ON	ON	ON	ON

\*1: Without left/right independent air conditioning function

\*2: With left/right independent air conditioning function

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

## 4. DRIVE SIGNAL CHECK TABLE

- Without left/right independent air conditioning function (without high grade MFD)

NOTE:

- Past malfunction will illuminate if four malfunctions or more were detected previously.
- To cancel the past malfunction, perform either of the following procedure: Disconnect the negative battery terminal or press and hold the FRESH/RECIRC switch for 5 seconds or more while performing self-diagnosis step 3 — 7.

Air flow control dial position	Fan dial position	Drive signal to check	A/C switch LED	No trouble	Short circuit	Open circuit	When currently malfunctioning	When having malfunctioned in the past
FACE	AUTO	MIX #1	Blinking (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)	FRESH/RECIRC switch LED is turned off	FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)	FRESH/RECIRC switch LED blinks (Illuminates for 1 sec. ↔ turns off for 1 sec.)	Rear window defogger switch LED is turned off	Rear window defogger switch LED illuminates
	1st	MIX #2						
	2nd	MIX #3						
	3rd	MIX #4						
	4th to 7th	Intake door actuator lock						
	AUTO	MODE #1	Blinking (Illuminates for 1 sec. ↔ turns off for 1 sec.)	FRESH/RECIRC switch LED is turned off	FRESH/RECIRC switch LED blinks (Illuminates for 0.2 sec. ↔ turns off for 0.2 sec.)	FRESH/RECIRC switch LED blinks (Illuminates for 1 sec. ↔ turns off for 1 sec.)	Rear window defogger switch LED is turned off	
	1st	MODE #2						
	2nd	MODE #3						
	3rd	MODE #4						
	4th to 7th	Intake door actuator lock						

# Diagnostic Chart for Self-Diagnosis

HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)

- Without left/right independent air conditioning function (with high grade MFD), with left/right independent air conditioning function

**NOTE:**

- If there are multiple defective sensors, a malfunction is displayed in the sequence of priority (1, 2, 3, etc.). The display changes in the sequence of priority (1, 2, 3, etc.) each time the A/C switch is pressed.
- Past malfunction will illuminate if four malfunctions or more were detected previously.
- To cancel the past malfunction, perform either of the following procedure: Disconnect the negative battery terminal or press and hold the FRESH/RECIRC switch for 5 seconds or more while performing self-diagnosis step 3 — 4.

Drive signal	Defroster indicator	A/C switch indicator	FRESH/RECIRC switch indicator				Rear defogger switch indicator *3	
			Open	Sequence of priority	Short	Sequence of priority	Current malfunction	Past malfunction
Air mix door actuator *1 or air mix door actuator RH *2	#1	Once	Once	Light OFF	1	Light ON	2	Light OFF
	#2		Twice	Light OFF	3	Light ON	4	Light OFF
	#3		3 times	Light OFF	5	Light ON	6	Light OFF
	#4		4 times	Light OFF	7	Light ON	8	Light OFF
Air mix door actuator LH *2	#1	Twice	Once	Light OFF	9	Light ON	10	Light OFF
	#2		Twice	Light OFF	11	Light ON	12	Light OFF
	#3		3 times	Light OFF	13	Light ON	14	Light OFF
	#4		4 times	Light OFF	15	Light ON	16	Light OFF
Air flow control door actuator	#1	3 times	Once	Light OFF	17	Light ON	18	Light OFF
	#2		Twice	Light OFF	19	Light ON	20	Light OFF
	#3		3 times	Light OFF	21	Light ON	22	Light OFF
	#4		4 times	Light OFF	23	Light ON	24	Light OFF
Intake door actuator	4 times	Light ON	Light ON				—	Light ON

\*1: Without left/right independent air conditioning function

\*2: With left/right independent air conditioning function

\*3: If the same diagnostic object contains a current malfunction and a past malfunction, the current malfunctions is displayed.

## 5. DIAGNOSTIC PROCEDURE IF A/C CONTROL PANEL SELF DIAGNOSIS FAILS TO OPERATE

**NOTE:**

For the diagnostic procedures, refer to Diagnostics with Phenomenon “Nothing is displayed on the screen. No illumination appears on the indicator.” <Ref. to AC(diag)-19, NOTHING IS DISPLAYED ON THE SCREEN. NO ILLUMINATION APPEARS ON THE INDICATOR, DIAGNOSTIC PROCEDURE WITH PHENOMENON, Diagnostics with Phenomenon.>