HVAC SYSTEM
(AUTO A/C) (DIAGNOSTICS)

1. Basic Diagnostic Procedure

A: PROCEDURE

Step		Check	Yes	No
1	**START INSPECTIONS.** 1) Perform the pre-inspection. <Ref. to AC(diag)-3, INSPECTION, General Description.> 2) Perform the self-diagnosis. <Ref. to AC(diag)-9, OPERATION, Diagnostic Chart for Self-diagnosis.>	Does the self-diagnosis operate?	Go to step **2**.	<Ref. to AC(diag)-12, A/C OR SELF-DIAGNOSIS SYSTEMS DO NOT OPERATE, Diagnostics for A/C System Malfunction.>
2	**IDENTIFY MALFUNCTION PART.** Identify the malfunction part with self-diagnosis.	Can the malfunction part be confirmed?	Repair the malfunctioning part in accordance with each diagnostic chart.	Go to step **3**.
3	**CHECK COMPARTMENT TEMPERATURE.** 1) Turn the A/C switch to ON. 2) Turn the temperature control dial at maximum cool position. 3) Check the compartment temperature change.	Does the compartment temperature change?	Go to step **4**.	<Ref. to AC(diag)-16, COMPARTMENT TEMPERATURE DOES NOT CHANGE, OR A/C SYSTEM DOES NOT RESPOND PROMPTLY, Diagnostics for A/C System Malfunction.>
4	**CHECK A/C SYSTEM RESPONSE.** Change the temperature setting, and check the response of A/C system.	Does the A/C system respond quickly?	A/C system is normal.	<Ref. to AC(diag)-16, COMPARTMENT TEMPERATURE DOES NOT CHANGE, OR A/C SYSTEM DOES NOT RESPOND PROMPTLY, Diagnostics for A/C System Malfunction.>

2. General Description

A: CAUTION

1) Never connect the battery in reverse polarity.
Doing so may immediately damage the auto A/C control module.
2) Do not disconnect the battery terminals while the engine is running.
A large counter electromotive force will be generated in the generator, and this voltage may damage electronic parts such as auto A/C control module etc.
3) Before disconnecting the connectors of sensors and the auto A/C control module, be sure to turn off the ignition switch.
Auto A/C control module may be damaged.
4) Every A/C-related part is a precision part. Do not drop them.
5) Airbag system wiring harness is routed near the A/C control panel (auto A/C control module) and junction box.

CAUTION:
• Do not use the electrical test equipment on the airbag system wiring harnesses and connector circuits.
• Be careful not to damage the airbag system wiring harness when servicing the A/C control panel (auto A/C control module) and junction box.

B: INSPECTION

Before performing the diagnosis, check the following items which may cause problems in the A/C system.

1. BATTERY

1) Measure the battery voltage and check electrolyte.

Standard voltage:
12 V

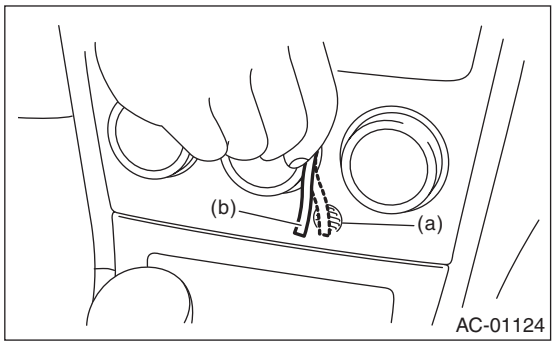
Specific gravity:
1.260 or more

2) Check the condition of the fuses for A/C system power supply and other fuses.
3) Check the condition of harness and harness connector connections.

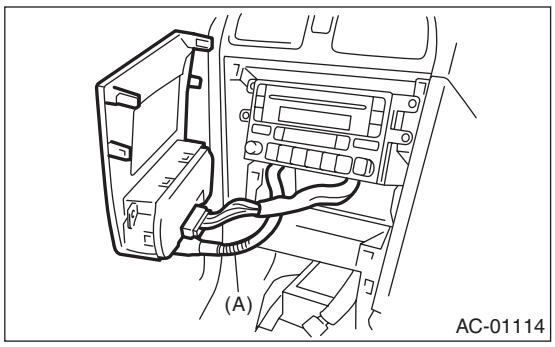
2. ASPIRATOR HOSE

1) Turn the ignition switch to ON, and press the A/C switch.
2) Turn the temperature control dial to maximum hot position.
3) Turn the air flow control dial to “DEF” position.
4) Set the fan speed control dial to the MAX position.
5) Put a strip of paper (b) close to the front side of in-vehicle sensor suction port (a) located in the auto A/C control module, and check that air is being sucked into the port by seeing the paper moving towards the port.

NOTE:
Be careful not to let the paper get sucked into the port.

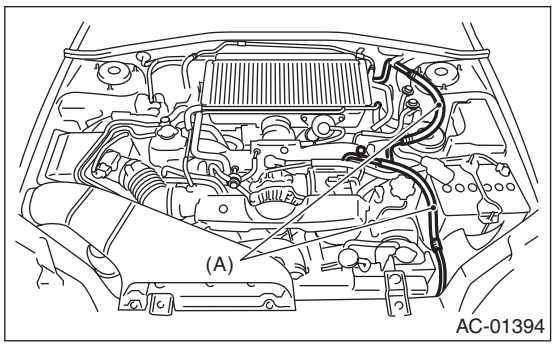


6) If the paper does not move at all, remove the auto A/C control module <Ref. to AC-30, REMOVAL, Control Unit (Auto A/C Model).> and check for poor connection of the aspirator hose (A), auto A/C control module and heater unit, and set them if necessary.



3. A/C LINE

Check the connection for A/C line (A) and lower side high-pressure pipe.



4. CONTROL LINKAGE

1) Check the state of mode door linkage.
2) Check the state of air mix door linkage.
3) Check the state of intake door linkage.

5. CONTROL SWITCHES

Start the engine and warm-up completely.

1) Inspection using switches

No.	Point to check	Switch operation	Judgment standard
1	Air flow control dial	Turn the dial to the right.	Outlet opening (mode) switches AUTO → VENT → BI-LEVEL → HEAT → DEF/HEAT → DEF each time turning the dial.
2	Fan speed control dial	Turn the dial to the right.	Fan speed switches OFF → AUTO → 1st — 25th each time turning the dial.
3	FRESH/RECIRC switch	Press the FRESH/RECIRC switch.	Inlet opening switches RECIRC → FRESH → RECIRC each time pressing the switch. (LED illuminates at RECIRC)
		Keep the FRESH/RECIRC switch pressed for a while. (1.0 second or more)	The LED blinks twice and the system switches to AUTO.
4	A/C switch	Turn the A/C switch to ON with the fan speed control dial set to except for OFF position.	The LED lights and the compressor operates.
		Keep the A/C switch pressed for a while. (1.0 second or more)	The LED blinks twice and the system switches to AUTO.
5	Auto function Operate in order from 1).	1) Set the following dial and switch to AUTO. • Mode control dial • Fan speed control dial • FRESH/RECIRC switch • A/C switch 2) Turn the temperature control dial completely to the left, and set to the maximum cool position.	• Outlet air temperature: COOL • Fan speed: Max. • Outlet opening: VENT • Inlet opening: RECIRC • Compressor: AUTO
		3) Turn the temperature control dial to the right slowly up to the maximum warm position.	• Outlet air temperature: COOL → HOT • Fan speed: AUTO • Outlet opening: AUTO • Inlet opening: AUTO • Compressor: AUTO
		4) Turn the temperature control dial fully to the right, to the maximum hot position.	• Outlet air temperature: HOT • Fan speed: Max. • Outlet opening: HEAT • Inlet opening: FRESH • Compressor: AUTO
6	Defroster Interlock Function	Set the air flow control dial to the DEF or the DEF/HEAT position.	• Outlet opening: AUTO • Fan speed: AUTO • Outlet opening: DEF or DEF/HEAT • Inlet opening: FRESH • Compressor: ON
7	Rear defogger switch	Press the rear defogger switch.	LED illuminates.

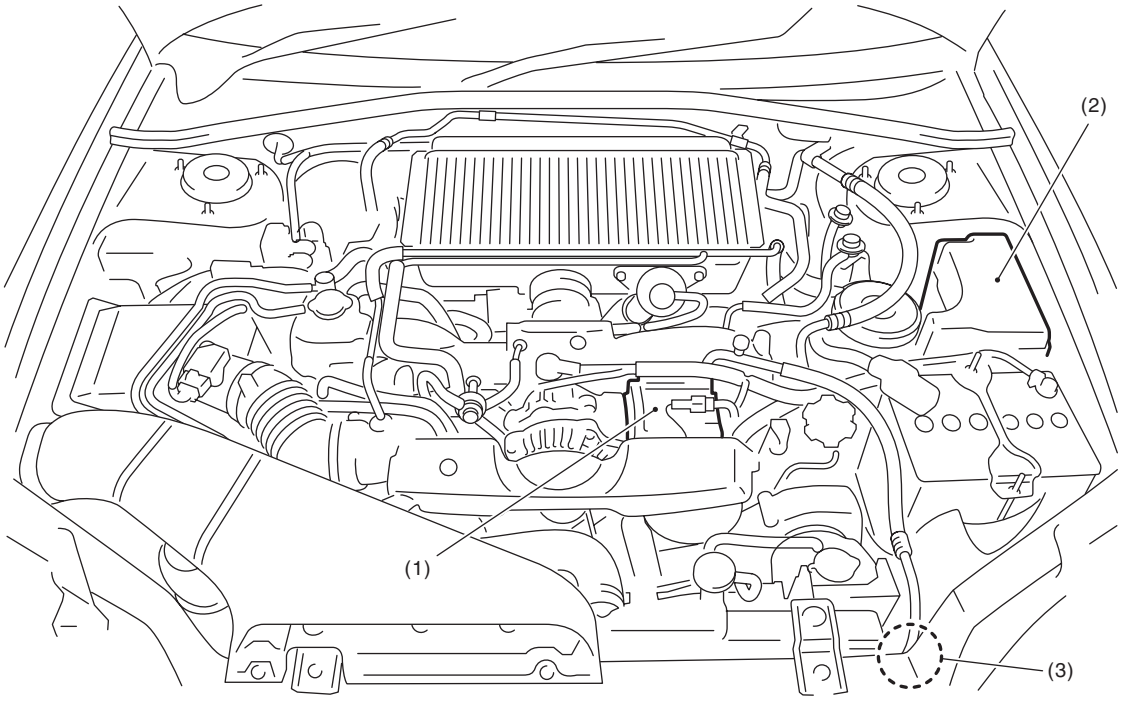
2) Inspection of illumination control

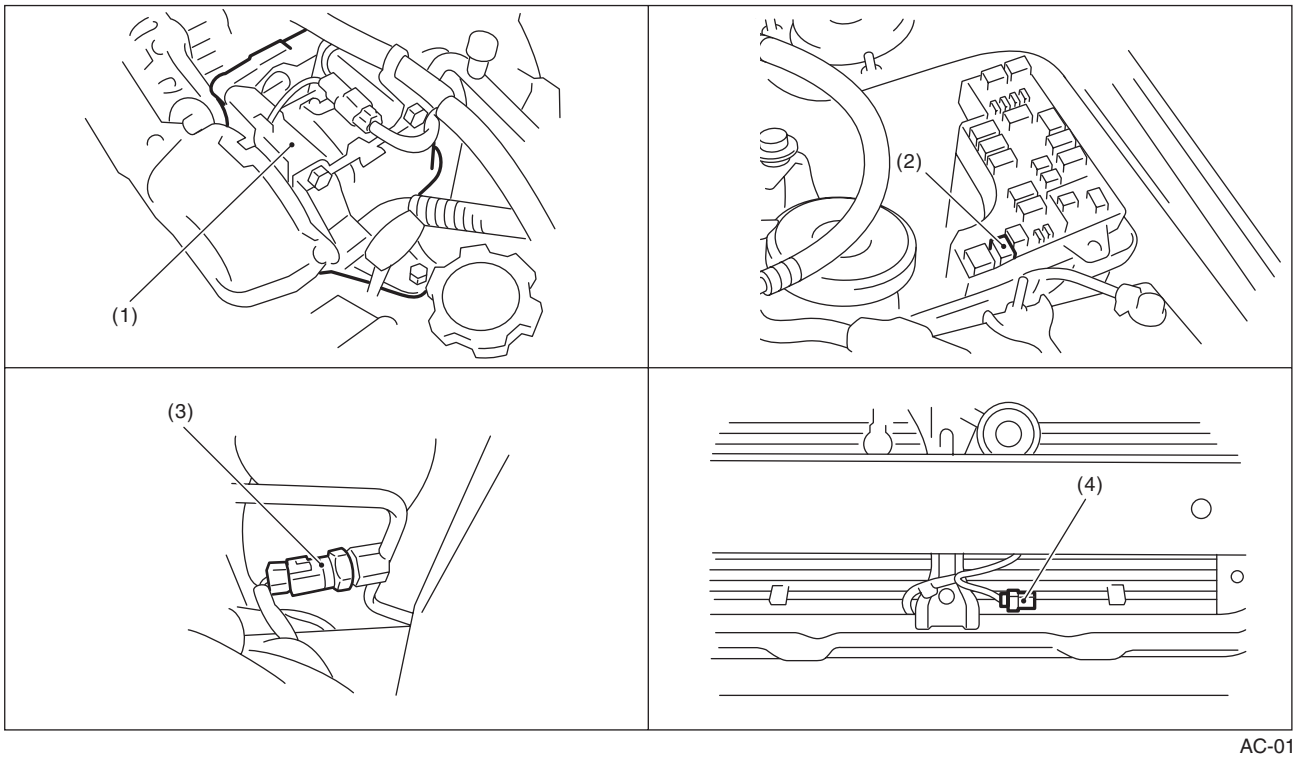
No.	Point to check	Switch operation	Judgment standard
1	Illumination	Turn the lighting switch to ON.	Illumination becomes lit. If the LED lights, the LED will dim.

3. Electrical Component Location

A: LOCATION

1. ENGINE COMPARTMENT

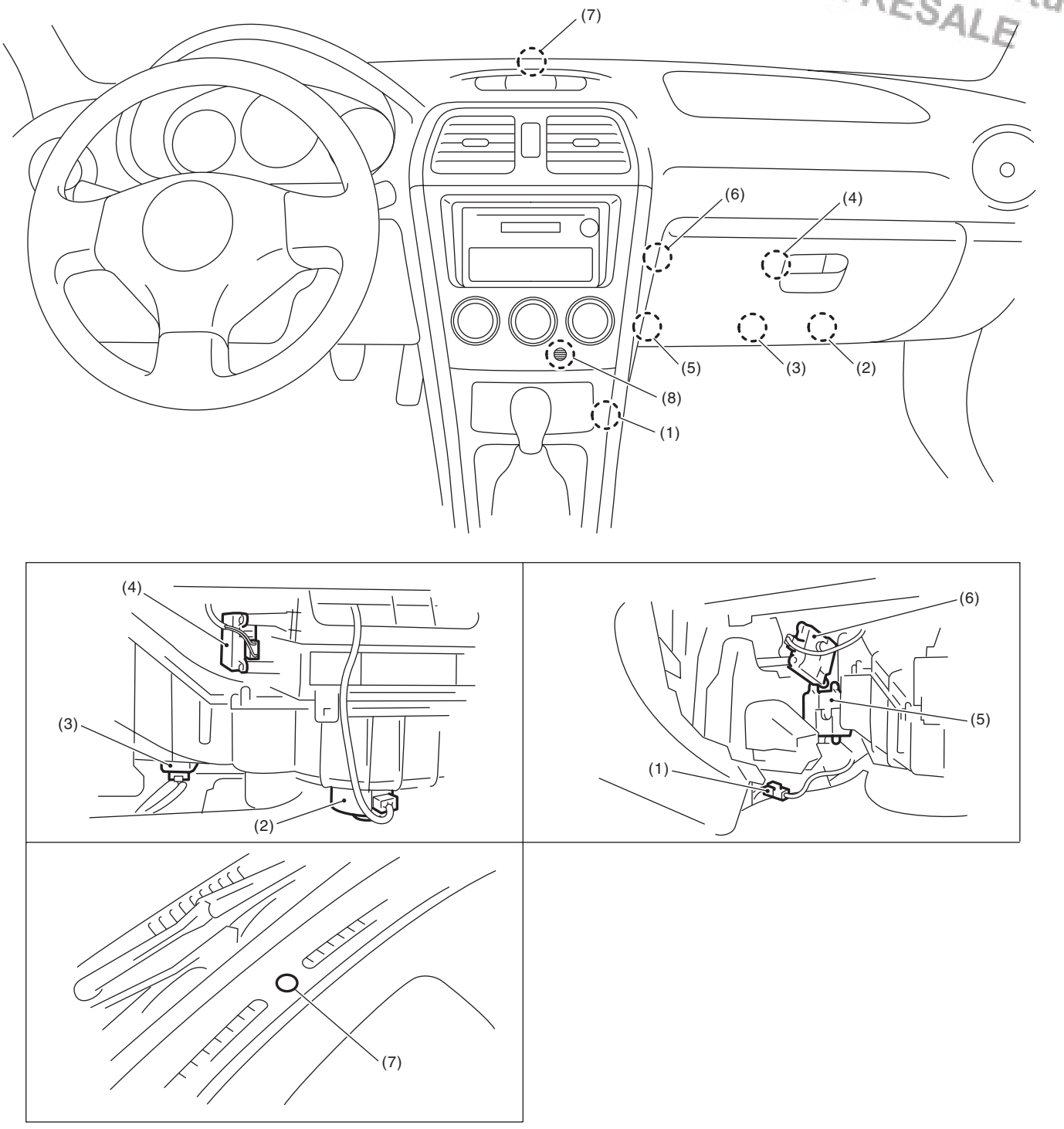




AC-01393

(1) A/C compressor
(2) A/C relay
(3) Pressure switch
(4) Ambient sensor

2. COMPARTMENT

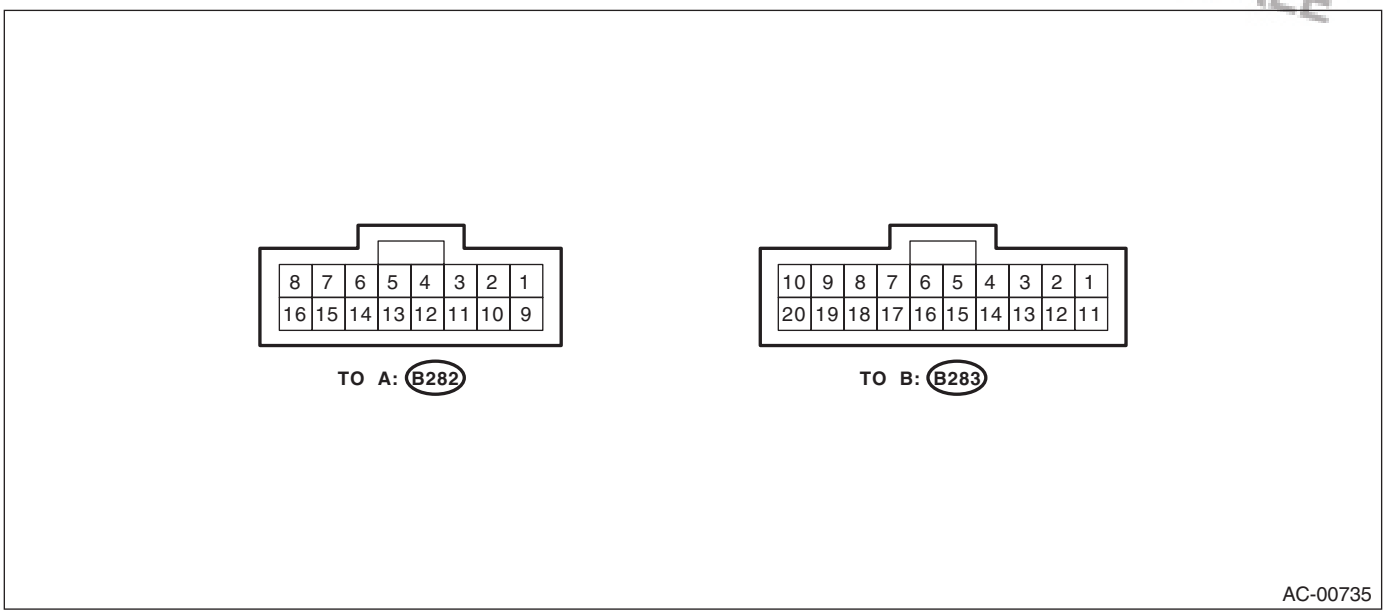


AC-01127

(1) Evaporator sensor
(2) Blower motor
(3) Blower motor resistor
(4) Intake door actuator
(5) Air mix door actuator
(6) Mode door actuator
(7) Sunload sensor
(8) In-vehicle sensor (built in to the auto A/C control module)

4. Auto A/C Control Module I/O Signal

A: ELECTRICAL SPECIFICATION



Contents	Connector & Terminal No.	Signal (V)
Battery power supply (memory back-up)	B1 — B12	Battery voltage 13 — 14 (engine running)
Ignition power supply	A8 — B12	Battery voltage (ignition switch ON) 13 — 14 (engine running)
ACC power supply	B2 — B12	Battery voltage, 0 (engine cranking), Battery voltage (engine running)
A/C control module ground circuit	B12 — chassis ground	0 (ignition switch ON) — circuit constantly grounded to chassis
Sensor ground circuit	B17 — chassis ground	0 (ignition switch ON) — circuit constantly grounded to chassis
Ambient sensor	B9 — B17	Approx. 5 (disconnect connector, and the ignition switch is ON)
Evaporator sensor	B7 — B17	
Engine coolant temperature sensor	B15 — B12	
Sunload sensor	B16 — B17	Approx. 5 (disconnect connector, and the ignition switch is ON)
Air mix door actuator	B5 — chassis ground	Battery voltage (ignition switch ON)
Air mix door actuator P.B.R.	A4 — B17	LAN communication
Mode door actuator	B6 — chassis ground	Battery voltage (ignition switch ON)
Mode door actuator P.B.R.	A12 — B17	LAN communication
Intake door FRS voltage	A15 — A7	Battery voltage (FRESH/RECIRC switch OFF)
Intake door CIRC voltage	A7 — A15	Battery voltage (FRESH/RECIRC switch ON)
Blower fan relay	B14 — chassis ground	Battery voltage (ignition switch ON)
A/C relay	B3 — chassis ground	0 (ignition and A/C switches ON) Battery voltage (A/C switch OFF)
Illumination control signal	B10 — B20	Battery voltage (ignition and lighting switches ON)
Rear window defogger	A13 — chassis ground	0 (ignition switch ON, rear window defogger switch ON)

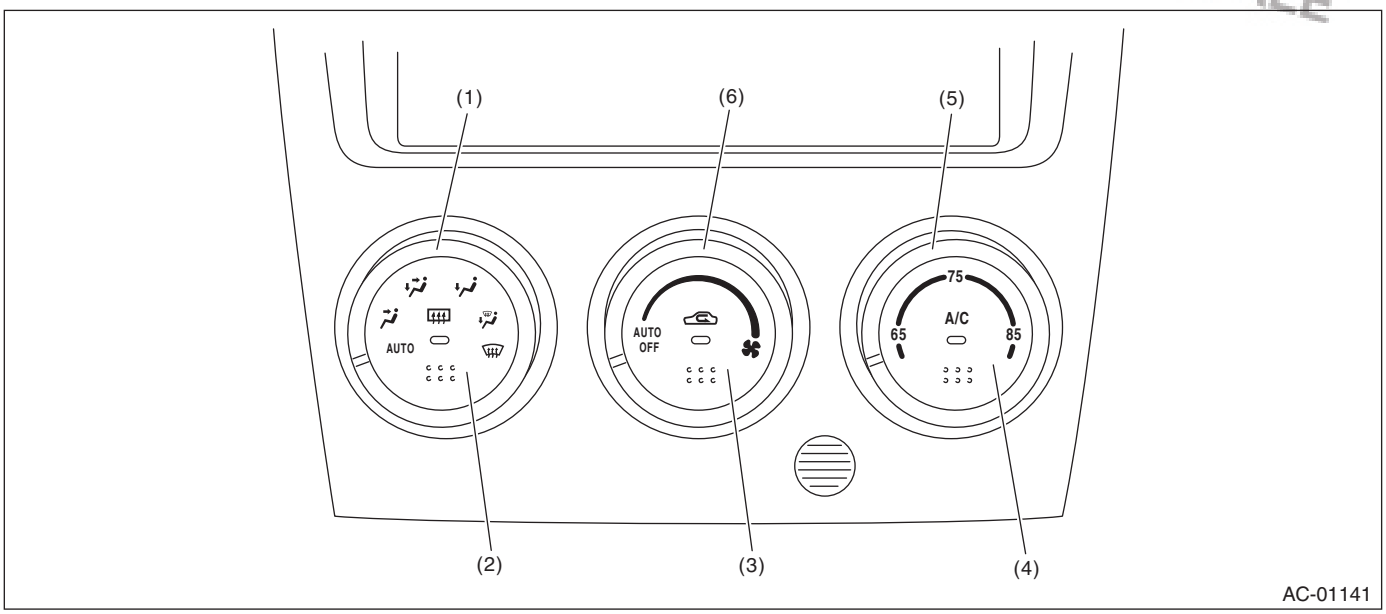
B: WIRING DIAGRAM

1. AIR CONDITIONER AUTO A/C MODEL

<Ref. to WI-94, AUTO A/C MODEL, WIRING DIAGRAM, Air Conditioning System.>

5. Diagnostic Chart for Self-diagnosis

A: OPERATION



(1) Air flow control dial
(2) Rear window defogger switch
(3) FRESH/RECIRC switch
(4) A/C switch
(5) Temperature adjustment dial
(6) Fan speed control dial

Diagnostic Chart for Self-diagnosis

	Step	Check	Yes	No
1	**SELECT SELF-DIAGNOSIS MODE IN THE CONTROL PANEL.** 1) Set the fan speed control dial to the OFF position. 2) Start the engine and press the A/C switch for at least 5 seconds. Be sure to press the A/C switch within 10 seconds after starting engine.	Does the self-diagnosis mode operate?	Go to step **2**.	<Ref. to AC(diag)-12, A/C OR SELF-DIAGNOSIS SYSTEMS DO NOT OPERATE, Diagnostics for A/C System Malfunction.>
2	**CHECK THE LIGHTING OF THE LED.** Make sure that all switch LEDs on the control panel illuminate.	Do all LEDs illuminate?	Go to step **3**.	Check the switch LED.
3	**CHECK SENSOR MALFUNCTION.** 1) Set the fan speed control dial to the AUTO position. 2) If the system has trouble for each sensor, rear window defogger switch LED is turned off. (Blinks during diagnosis) 3) If the system has no trouble, rear window defogger switch LED is illuminated.	Does the rear window defogger switch LED illuminate?	Go to step **5**.	Go to step **4**.
4	**CONFIRM MALFUNCTIONING SENSOR.** 1) Turn the fan speed control dial to 1st — 6th position. 2) Turn the mode switch dial to each mode position, and check each switch LED illumination according to sensor check table. <Ref. to AC(diag)-11, SENSOR CHECK TABLE, OPERATION, Diagnostic Chart for Self-diagnosis.>	Do FRESH/RECIRC and A/C switch LEDs illuminate when turning the dial to each mode position?	Go to step **5**.	Repair the defective sensor. <Ref. to AC(diag)-25, Diagnostic Procedure for Sensors.>
5	**CHECK MODE DOOR POSITION SIGNAL.** 1) Turn the fan speed control dial to 7th — 12th position. 2) If the system has trouble for mode door position signal, rear window defogger switch LED is turned off. 3) If the system has no trouble, rear window defogger switch LED is illuminated.	Does the rear window defogger switch LED illuminate?	Go to step **6**.	Check the mode door actuator circuit. <Ref. to AC(diag)-21, MODE DOOR ACTUATOR, Diagnostic Procedure for Actuators.>
6	**CHECK BLOWER FAN OPERATION.** 1) Turn the fan speed control dial to 13th — 18th position. 2) Turn the temperature control dial and check that blower fan speed changes depending on set temperature.	Does the blower fan speed change?	Go to step **7**.	Check the blower motor circuit. <Ref. to AC(diag)-14, BLOWER FAN DOES NOT ROTATE, Diagnostics for A/C System Malfunction.>
7	**CHECK OPERATION OF EACH ACTUATOR, BLOWER FAN AND COMPRESSOR CLUTCH.** 1) Turn the fan speed control dial to 19th — 25th position. 2) Select the operating mode by turning air flow control dial. 3) Check the operation of each mode according to operating mode table. <Ref. to AC(diag)-11, OPERATING MODE TABLE, OPERATION, Diagnostic Chart for Self-diagnosis.> • Air inlet • Air outlet • Air mix door • Blower fan • A/C compressor	Does the operation of each mode match to operating mode table?	Press the A/C switch or turn the ignition switch to OFF in order to finish the self-diagnosis.	Repair the malfunctioning part in accordance with each diagnostic chart.

1. 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 at a location exposed to direct sunlight.

Air flow control dial position	Sensor	No trouble	Short circuit	Open circuit
VENT	Ambient sensor	A/C switch LED and FRESH/ RECIRC switch LED illuminate	A/C switch LED illuminates	FRESH/RECIRC switch LED illuminates
BI-LEVEL	In-vehicle sensor	A/C switch LED and FRESH/ RECIRC switch LED illuminate	A/C switch LED illuminates	FRESH/RECIRC switch LED illuminates
HEAT	Evaporator sensor	A/C switch LED and FRESH/ RECIRC switch LED illuminate	A/C switch LED illuminates	FRESH/RECIRC switch LED illuminates
DEF/HEAT	Sunload sensor	A/C switch LED and FRESH/ RECIRC switch LED illuminate	A/C switch LED illuminates	FRESH/RECIRC switch LED illuminates
DEF	Air mix door motor (potentio balance resistor)	A/C switch LED and FRESH/ RECIRC switch LED illuminate	A/C switch LED illuminates	

2. OPERATING MODE TABLE

Operation	Air flow control dial position				
	VENT	BI-LEVEL	HEAT	DEF/HEAT	DEF
Air outlet	VENT	BI-LEVEL	HEAT	DEF/HEAT	DEF
Air inlet	RECIRC	RECIRC	RECIRC	FRESH	FRESH
Air mix door	Maximum cool	Maximum cool	Maximum hot	Maximum hot	Maximum cool
Blower fan	5 V	5 V	8 V	10 V	Power supply voltage
A/C compressor	ON	OFF	OFF	ON	ON

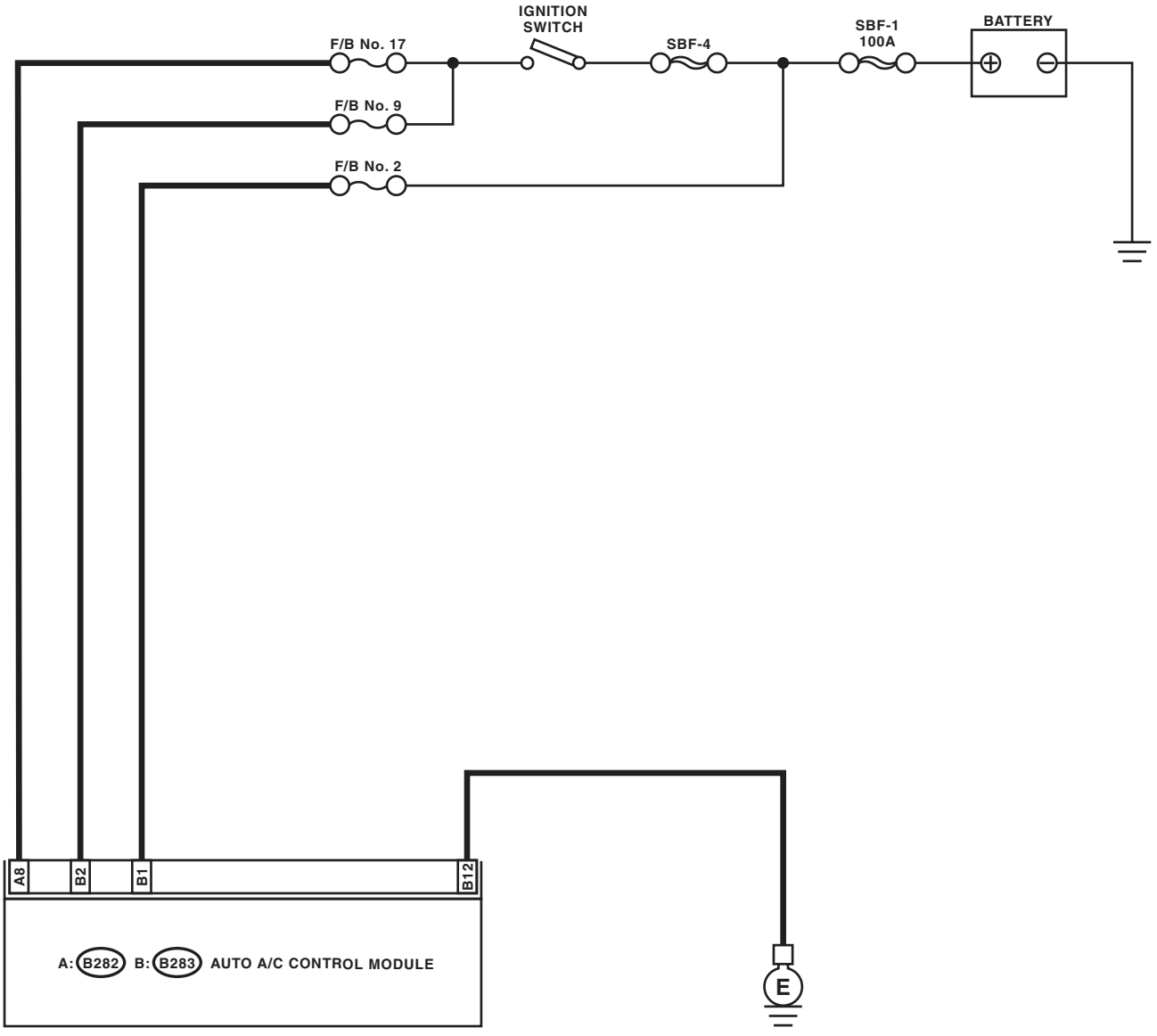
6. Diagnostics for A/C System Malfunction

A: A/C OR SELF-DIAGNOSIS SYSTEMS DO NOT OPERATE

TROUBLE SYMPTOM:

- Switch LED fails, or switch does not operate.
- Self-diagnosis system does not operate.

WIRING DIAGRAM:



AC-01142

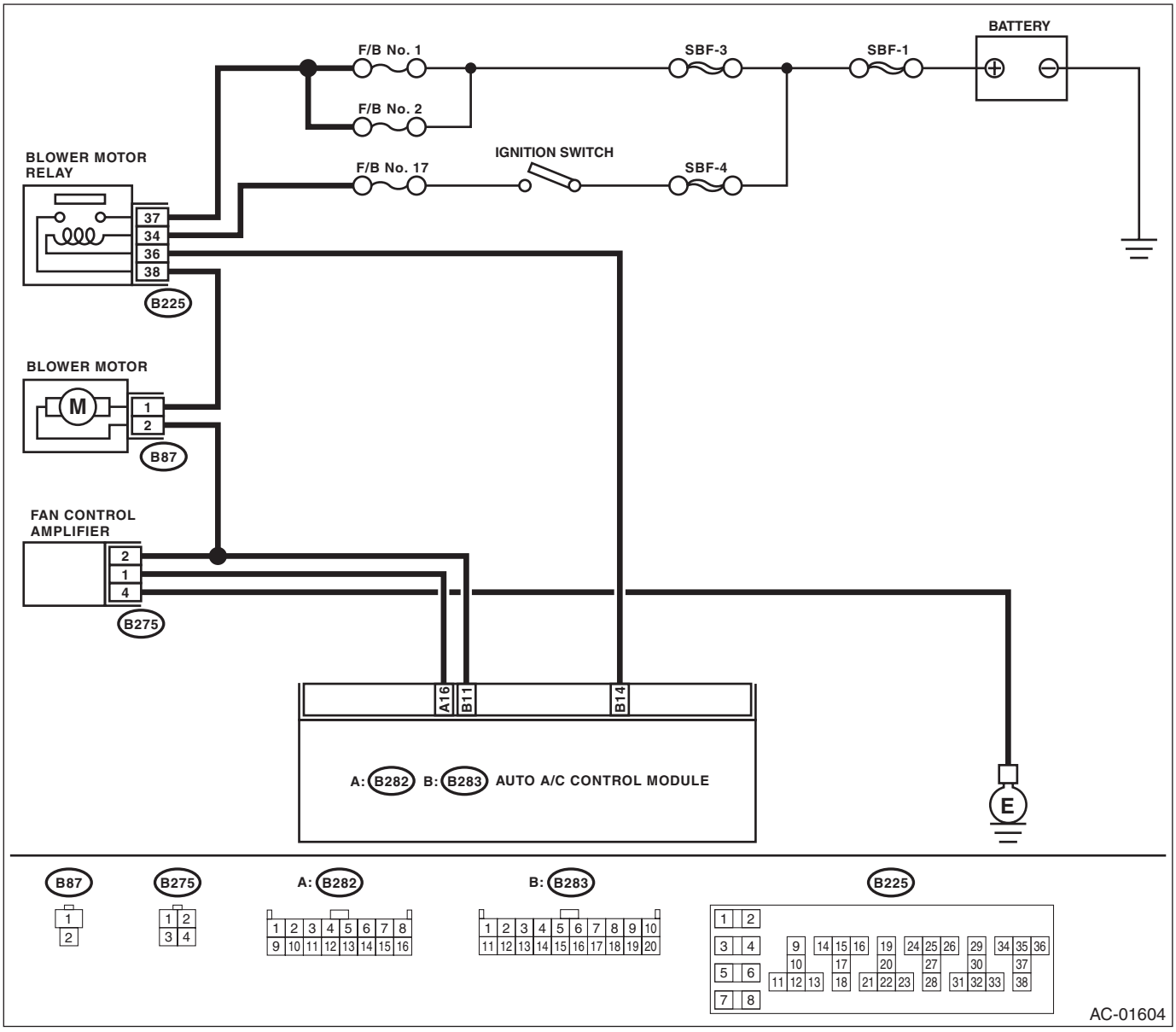
Step		Check	Yes	No
1	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 2 from main fuse box. 3) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **2**.
2	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 9 and No. 17 from fuse & relay box. 3) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **3**.
3	**CHECK AUTO A/C CONTROL MODULE POWER CIRCUIT.** 1) Pull out the auto A/C control module connector. 2) Measure the voltage between auto A/C control module connector terminal and chassis ground after turning the ignition switch to OFF. ***Connector & terminal*** ***(B283) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Check open or short circuit of harness between auto A/C control module and fuse.
4	**CHECK AUTO A/C CONTROL MODULE POWER CIRCUIT.** Measure the voltage between auto A/C control module connector terminal and chassis ground after turning the ignition switch to ACC. ***Connector & terminal*** ***(B283) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **5**.	Check open or short circuit of harness between auto A/C control module and fuse.
5	**CHECK AUTO A/C CONTROL MODULE POWER CIRCUIT.** Measure the voltage between auto A/C control module connector terminal and chassis ground after turning the ignition switch to the ON position. ***Connector & terminal*** ***(B282) No. 8 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **6**.	Check open or short circuit of harness between auto A/C control module and fuse.
6	**CHECK AUTO A/C CONTROL MODULE GROUND CIRCUIT.** Measure the resistance of harness between auto A/C control module and chassis ground. ***Connector & terminal*** ***(B283) No. 12 — Chassis ground:***	Is the resistance less than 5 Ω?	Go to step **7**.	Repair the ground line harness.
7	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

B: BLOWER FAN DOES NOT ROTATE

TROUBLE SYMPTOM:

- Blower motor does not rotate.
- Blower motor does not rotate in “HI”.

WIRING DIAGRAM:



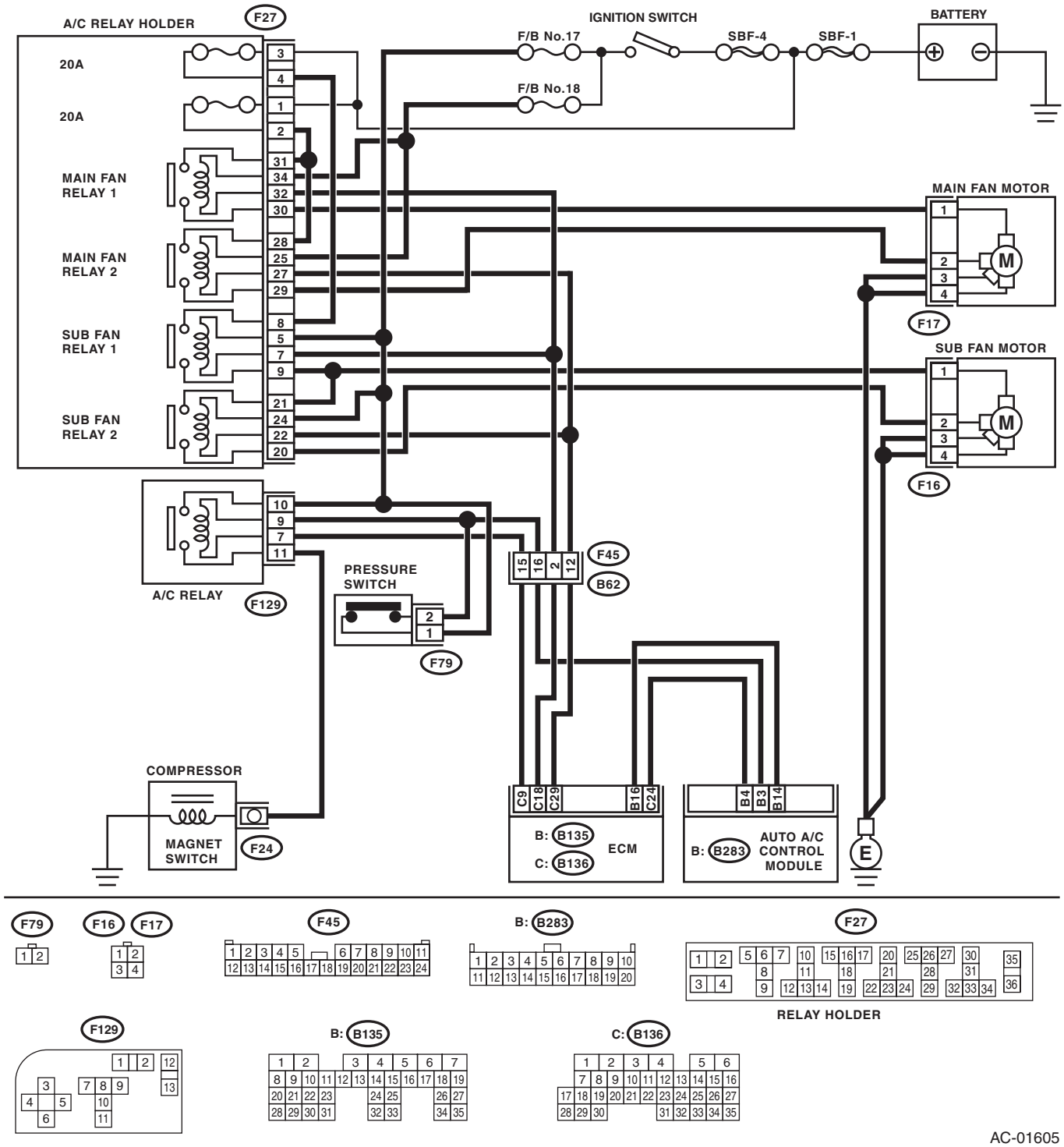
	Step	Check	Yes	No
1	**CHECK FUSE.** 1) Remove fuses No. 1, 2 and 17 from fuse & relay box. 2) Check the condition of fuse.	Is any fuse blown out?	Replace the fuse.	Go to step **2**.
2	**CHECK POWER SUPPLY FOR BLOWER MOTOR.** 1) Turn the ignition switch to ON. 2) Turn the fan speed control dial clockwise. 3) Measure the voltage between blower motor and chassis ground. ***Connector & terminal*** ***(B87) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair the open circuit of blower motor power supply line harness.
3	**CHECK BLOWER MOTOR RELAY.** 1) Turn the ignition switch to OFF. 2) Remove the blower motor relay. 3) Connect the battery positive (+) terminal to the terminal No. 34 of blower motor connector, and negative (–) terminal to terminal No. 36. 4) Measure the resistance between terminals. ***Terminals*** ***No. 37 — No. 38:***	Is the resistance less than 1 Ω?	Go to step **4**.	Replace the blower motor relay.
4	**CHECK BLOWER MOTOR.** 1) Disconnect the connector from the blower motor. 2) Connect the battery positive (+) terminal to the terminal No. 1 of blower motor connector, and negative (–) terminal to terminal No. 2. 3) Make sure the blower motor runs.	Does the blower motor run?	Go to step **5**.	Replace the blower motor.
5	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

C: COMPARTMENT TEMPERATURE DOES NOT CHANGE, OR A/C SYSTEM DOES NOT RESPOND PROMPTLY

TROUBLE SYMPTOM:

- The compartment temperature does not change. (Cold air does not come out.)
- The A/C system does not respond quickly.

WIRING DIAGRAM:



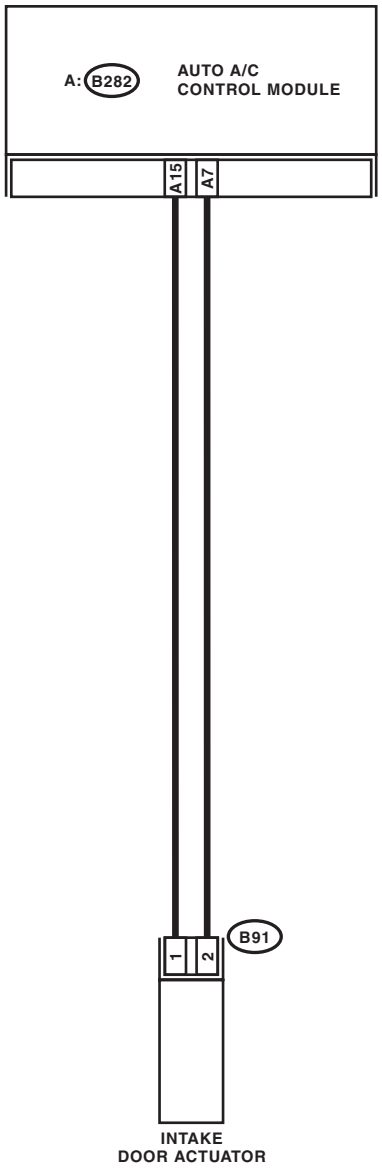
	Step	Check	Yes	No
1	**CHECK FUSE.** 1) Turn the ignition switch to OFF. 2) Remove the fuse No. 2 from the main fuse box. 3) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **2**.
2	**CHECK POWER SUPPLY TO MAGNET CLUTCH OF A/C COMPRESSOR.** 1) Start the engine and turn the A/C switch to ON. 2) Turn the temperature control dial at maximum cool position. 3) Measure the voltage between the magnet clutch connector and chassis ground. ***Connector & terminal*** ***(F24) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair the open circuit of A/C compressor power supply line harness.
3	**CHECK SIGNAL VOLTAGE TO A/C RELAY.** 1) Turn the ignition switch to ON. 2) Turn the A/C switch to ON. 3) Measure the signal voltage between A/C relay and chassis ground. ***Connector & terminal*** ***(F129) No. 9 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **4**.	Repair the open circuit in harness of the A/C relay signal circuit.
4	**CHECK A/C RELAY.** Check the A/C relay. <Ref. to AC-36, INSPECTION, Relay and Fuse.>	Does the relay operate normally?	Go to step **5**.	Replace the A/C relay.
5	**CHECK MAIN FAN MOTOR OPERATION.** 1) Start the engine. 2) Turn the A/C switch to ON. 3) Check the operation of the main fan motor.	Does the radiator main fan operate?	Go to step **10**.	Go to step **6**.
6	**CHECK POWER SUPPLY TO MAIN FAN MOTOR.** **CAUTION:** **Be careful not to overheat the engine during repair.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the main fan motor. 3) Start the engine, and warm it up until engine coolant temperature rise to 95°C (203°F) higher. 4) Stop the engine and turn the ignition switch to ON. 5) Measure the voltage between main fan motor connector and chassis ground. ***Connector & terminal*** ***(F17) No. 1 (+) — Chassis ground (–):*** ***(F17) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **7**.	Repair the open circuit of main fan motor power supply circuit harness.
7	**CHECK MAIN FAN MOTOR GROUND CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between main fan motor connector and chassis ground. ***Connector & terminal*** ***(F17) No. 3 — Chassis ground:*** ***(F17) No. 4 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **8**.	Repair the open circuit of the harness between main fan motor connector and chassis ground.
8	**CHECK POOR CONTACT.** Check poor contact of the main fan motor connector.	Is there poor contact in the main fan motor connector?	Repair the poor contact of main fan motor connector.	Go to step **9**.

	Step	Check	Yes	No
9	**CHECK MAIN FAN MOTOR.** Connect the battery positive (+) terminal to terminals No. 1 and No. 2, and the ground (–) terminal to terminals No. 3 and No. 4.	Does the main fan rotate?	Repair the poor contact of main fan motor connector.	Replace the main fan motor with a new part.
10	**CHECK SUB FAN MOTOR OPERATION.** Check the operation of the sub fan motor.	Does the radiator sub fan operate?	Go to step **15**.	Go to step **11**.
11	**CHECK POWER SUPPLY TO SUB FAN MOTOR.** **CAUTION:** **Be careful not to overheat the engine during repair.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the sub fan motor. 3) Start the engine, and warm it up until engine coolant temperature rise to 100°C (212°F) higher. 4) Stop the engine and turn the ignition switch to ON. 5) Measure the voltage between sub fan motor connector and chassis ground. ***Connector & terminal*** ***(F16) No. 1 (+) — Chassis ground (–):*** ***(F16) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **12**.	Repair the open circuit of sub fan motor power supply circuit harness.
12	**CHECK SUB FAN MOTOR GROUND CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Measure the resistance between sub fan motor connector and chassis ground. ***Connector & terminal*** ***(F16) No. 3 — Chassis ground:*** ***(F16) No. 4 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **13**.	Repair the open circuit of harness between sub fan motor connector and chassis ground.
13	**CHECK POOR CONTACT.** Check for poor contact of sub fan motor connector.	Is there poor contact in the sub fan motor connector?	Repair the poor contact of sub fan motor connector.	Go to step **14**.
14	**CHECK SUB FAN MOTOR.** Connect the battery positive (+) terminal to terminals No. 1 and No. 2, and the ground (–) terminal to terminals No. 3 and No. 4.	Does the sub fan rotate?	Repair the poor contact of sub fan motor connector.	Replace the sub fan motor with a new part.
15	**CHECK EACH SENSOR AND POTENTIOMETER.** Check the sensors and potentiometer for proper operation using the self-diagnostic function. <Ref. to AC(diag)-9, Diagnostic Chart for Self-diagnosis.>	Do each sensors and potentiometer operate normally?	Go to step **16**.	Check the sensor and circuit. <Ref. to AC(diag)-25, Diagnostic Procedure for Sensors.>
16	**CHECK CONNECTION OF ASPIRATOR HOSE.** Make sure that the aspirator hose is connected normally.	Is the aspirator hose connected normally?	Go to step **17**.	Repair the aspirator hose connection.
17	**CHECK EACH ACTUATOR.** Check the actuators for proper operation using the self-diagnostic function. <Ref. to AC(diag)-9, Diagnostic Chart for Self-diagnosis.>	Do the actuators operate normally?	Go to step **18**.	Check the actuator and circuit. <Ref. to AC(diag)-19, Diagnostic Procedure for Actuators.>
18	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

7. Diagnostic Procedure for Actuators

A: INTAKE DOOR ACTUATOR

TROUBLE SYMPTOM:
FRESH/RECIRC mode is not changed.
WIRING DIAGRAM:



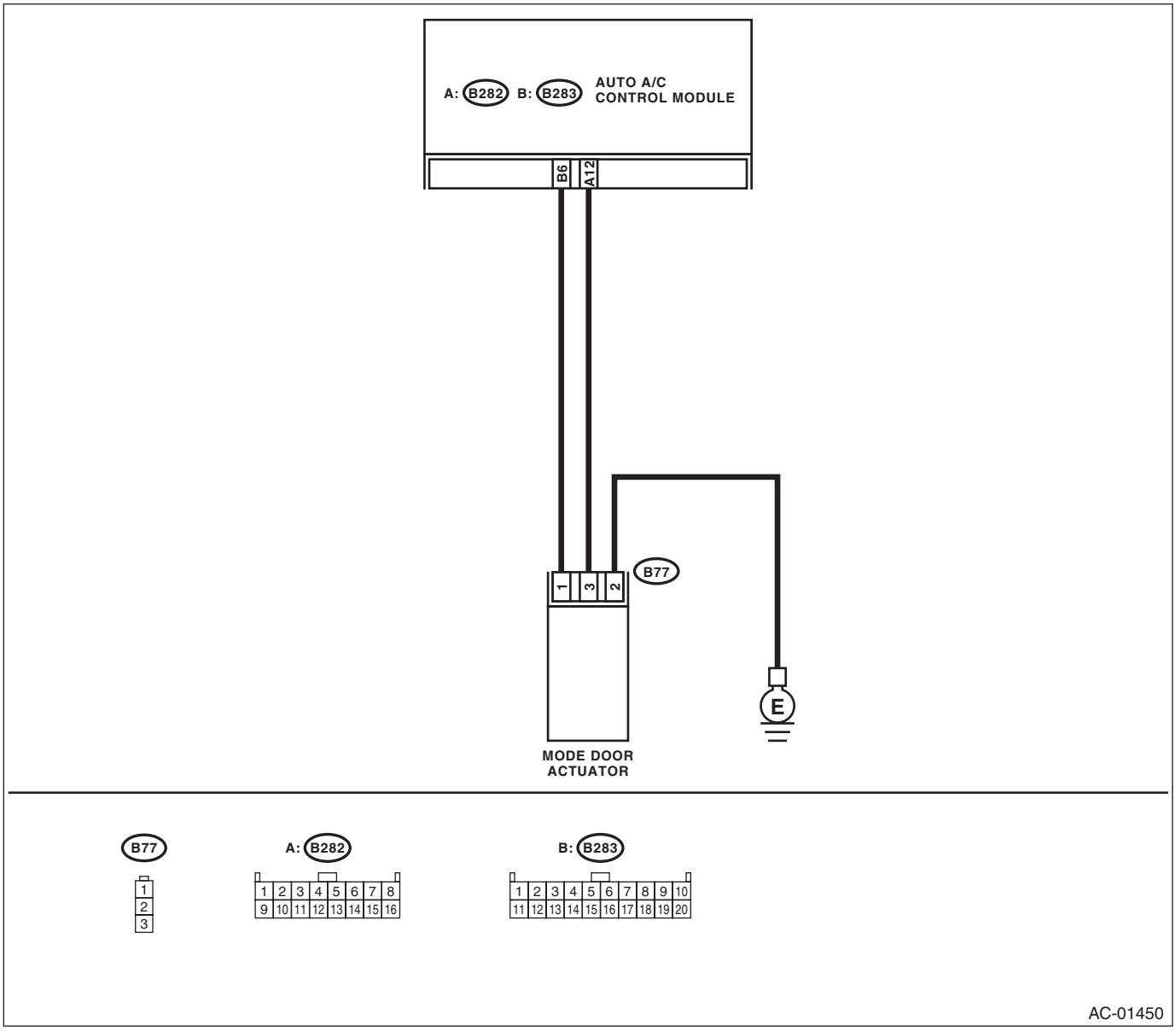
AC-01424

Diagnostic Procedure for Actuators

	Step	Check	Yes	No
1	**CHECK FUSE.** 1) Remove the fuse No. 17 from fuse & relay box. 2) Check the condition of fuse.	Is the fuse blown out?	Replace the fuse.	Go to step **2**.
2	**CHECK SIGNAL VOLTAGE.** 1) Change the air intake to RECIRC by pushing the FRESH/RECIRC switch. 2) Measure the voltage between auto A/C control module and chassis ground. ***Connector & terminal*** ***(B282) No. 15 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **3**.	Repair the short circuit of the harness for power supply line.
3	**CHECK SIGNAL VOLTAGE.** 1) Change the air intake to FRESH by pushing the FRESH/RECIRC switch. 2) Measure the voltage between auto A/C control module and chassis ground. ***Connector & terminal*** ***(B282) No. 7 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **4**.	Repair the short circuit of the harness for power supply line.
4	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND INTAKE DOOR ACTUATOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the auto A/C control module and intake door actuator. 3) Measure the resistance of the harness between auto A/C control module and intake door actuator. ***Connector & terminal*** ***(B282) No. 15 — (B91) No. 1:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of harness between auto A/C control module and intake door actuator.
5	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND INTAKE DOOR ACTUATOR.** Measure the resistance of the harness between auto A/C control module and intake door actuator. ***Connector & terminal*** ***(B282) No. 7 — (B91) No. 2:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between auto A/C control module and intake door actuator.
6	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

B: MODE DOOR ACTUATOR

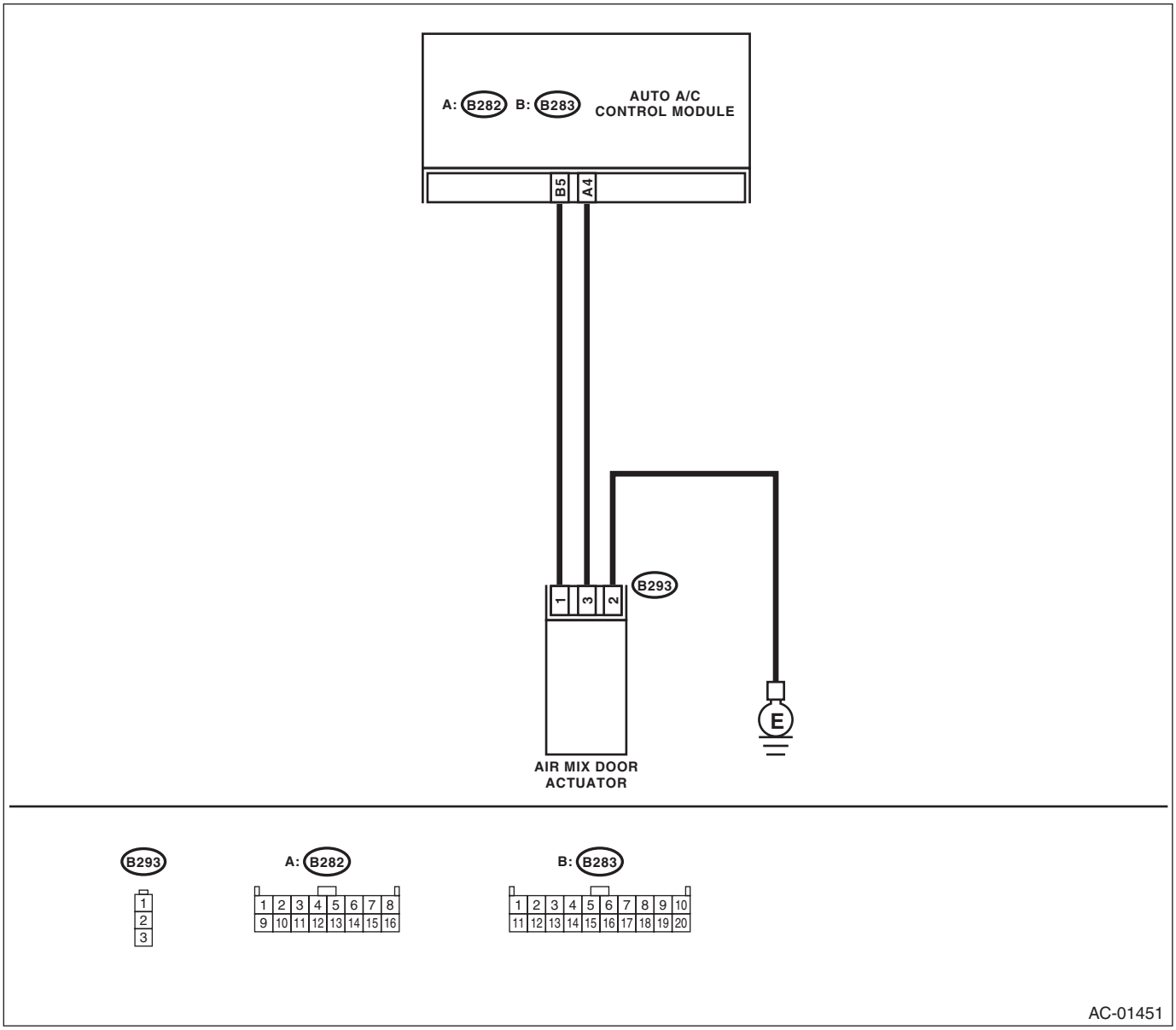
TROUBLE SYMPTOM:
Air flow outlet is not changed.
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK THE POWER SUPPLY OF THE AUTO A/C CONTROL MODULE.** 1) Turn the ignition switch to ON. 2) Turn the A/C switch to ON. 3) Measure the voltage between auto A/C control module harness connector terminal and chassis ground. ***Connector & terminal*** ***(B283) No. 6 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Replace the auto A/C control module.
2	**CHECK THE POWER SUPPLY OF THE ACTUATOR.** Measure the voltage between mode door actuator harness connector terminal and chassis ground. ***Connector & terminal*** ***(B77) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair the open circuit of harness between auto A/C control module and mode door actuator.
3	**CHECK AUTO A/C CONTROL MODULE SIGNALS.** Measure the voltage between auto A/C control module harness connector terminal and chassis ground using oscilloscope. ***Connector & terminal*** ***(B282) No. 12 (+) — Chassis ground (–):***	Is the voltage approx. 5.5 V?	Go to step **4**.	Replace the auto A/C control module.
4	**CHECK THE SIGNALS OF THE ACTUATOR.** Measure the voltage between mode door actuator harness connector terminal and chassis ground. ***Connector & terminal*** ***(B77) No. 3 (+) — Chassis ground (–):***	Is the voltage approx. 5.5 V?	Go to step **5**.	Repair the open circuit of harness between auto A/C control module and mode door actuator.
5	**CHECK ACTUATOR GROUND CIRCUIT.** 1) Turn the ignition switch and A/C switch to OFF. 2) Measure the resistance between mode door actuator harness connector terminal and chassis ground. ***Connector & terminal*** ***(B77) No. 2 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between mode door actuator and chassis ground.
6	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

C: AIR MIX DOOR ACTUATOR

TROUBLE SYMPTOM:
Outlet air temperature does not change.
WIRING DIAGRAM:

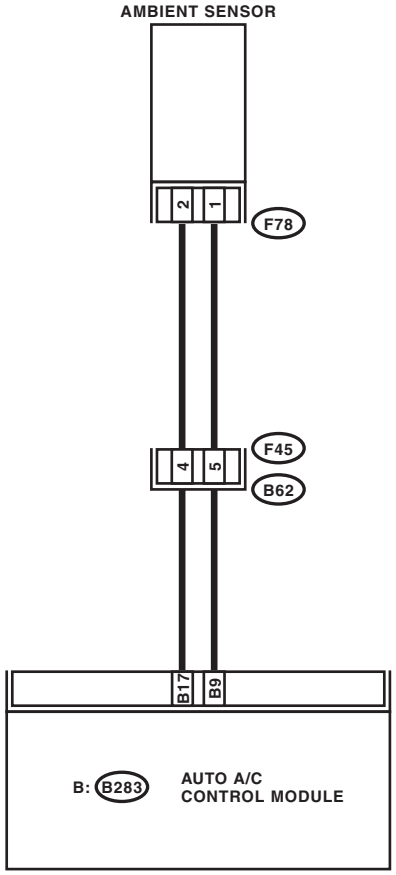


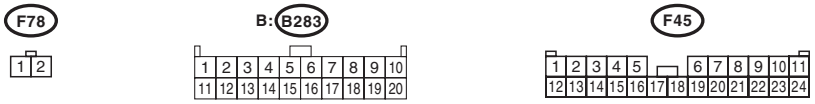
	Step	Check	Yes	No
1	**CHECK THE POWER SUPPLY OF THE AUTO A/C CONTROL MODULE.** 1) Turn the ignition switch to ON. 2) Turn the A/C switch to ON. 3) Measure the voltage between auto A/C control module harness connector terminal and chassis ground. ***Connector & terminal*** ***(B283) No. 5 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Replace the auto A/C control module.
2	**CHECK THE POWER SUPPLY OF THE ACTUATOR.** Measure the voltage between air mix door actuator harness connector terminal and chassis ground. ***Connector & terminal*** ***(B293) No. 1 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair the open circuit of harness between auto A/C control module and air mix door actuator.
3	**CHECK SIGNAL FOR AUTO A/C CONTROL MODULE SIDE.** Measure the voltage between auto A/C control module harness connector terminal and chassis ground using oscilloscope. ***Connector & terminal*** ***(B282) No. 4 (+) — Chassis ground (–):***	Is the voltage approx. 5.5 V?	Go to step **4**.	Replace the auto A/C control module.
4	**CHECK THE SIGNALS OF THE ACTUATOR.** Measure the voltage between air mix door actuator harness connector terminal and chassis ground using oscilloscope. ***Connector & terminal*** ***(B293) No. 3 (+) — Chassis ground (–):***	Is the voltage approx. 5.5 V?	Go to step **5**.	Repair the open circuit of harness between auto A/C control module and air mix door actuator.
5	**CHECK ACTUATOR GROUND CIRCUIT.** 1) Turn the ignition switch and A/C switch to OFF. 2) Measure the resistance between air mix door actuator harness connector terminal and chassis ground. ***Connector & terminal*** ***(B293) No. 2 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between air mix door actuator and chassis ground.
6	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

8. Diagnostic Procedure for Sensors

A: AMBIENT SENSOR

TROUBLE SYMPTOM:
Fan speed is not switched when the fan speed control dial is in AUTO position.
WIRING DIAGRAM:





AC-01148

	Step	Check	Yes	No
1	**CHECK AMBIENT SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ambient sensor. 3) Measure the resistance between connector terminals of ambient sensor. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance approximately 2.2 kΩ at 25°C (77°F)?	Go to step **2**.	Replace the ambient sensor.
2	**CHECK INPUT SIGNAL FOR AMBIENT SENSOR.** 1) Turn the ignition to ON. 2) Measure the voltage between connector (F78) terminals. ***Connector & terminal*** ***(F78) No. 1 (+) — No. 2 (–):***	Is the voltage approx. 5 V?	Go to step **6**.	Go to step **3**.
3	**CHECK AUTO A/C CONTROL MODULE OUTPUT SIGNAL.** 1) Turn the ignition switch to OFF. 2) Pull out the auto A/C control module. 3) Disconnect the connector from ambient sensor. 4) Turn the ignition switch to ON. 5) Measure the voltage between connector terminals of auto A/C control module. ***Connector & terminal*** ***(B283) No. 9 (+) — No. 17 (–):***	Is the voltage approx. 5 V?	Go to step **4**.	Go to step **6**.
4	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND AMBIENT SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the auto A/C control module. 3) Measure the resistance of the harness between auto A/C control module and ambient sensor. ***Connector & terminal*** ***(F78) No. 1 — (B283) No. 9:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of the harness between auto A/C control module and ambient sensor.
5	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND AMBIENT SENSOR.** Measure the resistance of the harness between auto A/C control module and ambient sensor. ***Connector & terminal*** ***(F78) No. 2 — (B283) No. 17:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of the harness between auto A/C control module and ambient sensor.
6	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

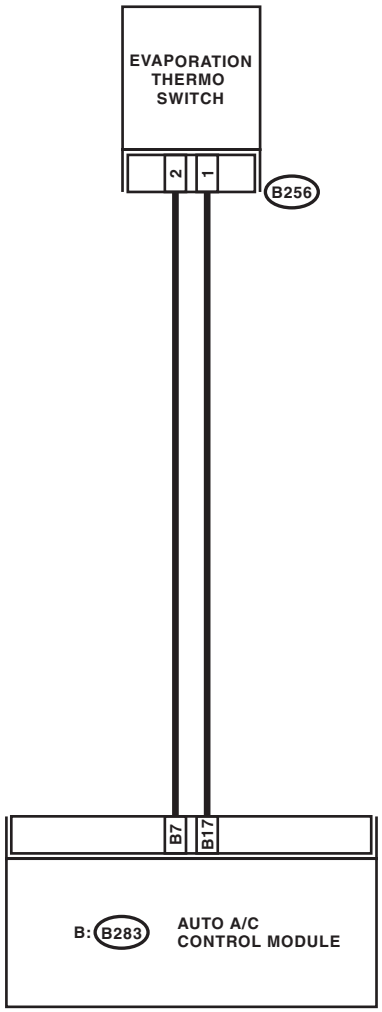
B: IN-VEHICLE SENSOR

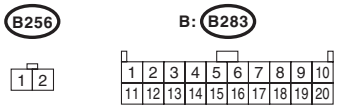
TROUBLE SYMPTOM:

- Blower fan speed, outlet port and inlet port do not change after turning the AUTO switch to ON
- If the switch LED indicates that the malfunction occurs in sensor, replace the auto A/C control module. The in-vehicle sensor is built into the auto A/C control module and cannot be replaced as a single unit.

C: EVAPORATOR SENSOR

WIRING DIAGRAM:





AC-01152

	Step	Check	Yes	No
1	**CHECK EVAPORATOR SENSOR.** 1) Turn the ignition switch to OFF. 2) Remove the glove box. 3) Disconnect the connector from evaporator sensor. 4) Measure the resistance between connector terminals of the evaporator sensor. ***Terminals*** ***No. 1 — No. 2:***	Is the resistance approximately 3.3 kΩ at 20°C (68°F)?	Go to step **2**.	Replace the evaporator sensor.
2	**CHECK INPUT SIGNAL FOR EVAPORATOR SENSOR.** 1) Turn the ignition switch to ON. 2) Measure the voltage between connector (B256) terminal and chassis ground. ***Connector & terminal*** ***(B256) No. 2 (+) — Chassis ground (–):***	Is the voltage approx. 5 V?	Go to step **6**.	Go to step **3**.
3	**CHECK AUTO A/C CONTROL MODULE OUTPUT SIGNAL.** 1) Turn the ignition switch to OFF. 2) Pull out the auto A/C control module. 3) Turn the ignition switch to ON. 4) Measure the voltage between connector terminals of auto A/C control module. ***Connector & terminal*** ***(B283) No. 7 (+) — No. 17 (–):***	Is the voltage approx. 5 V?	Go to step **4**.	Go to step **6**.
4	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND EVAPORATOR SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the auto A/C control module. 3) Measure the resistance of harness between auto A/C control module and evaporator sensor. ***Connector & terminal*** ***(B256) No. 2 — (B283) No. 7:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of harness between auto A/C control module and evaporator sensor.
5	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND EVAPORATOR SENSOR.** Measure the resistance of harness between auto A/C control module and evaporator sensor. ***Connector & terminal*** ***(B256) No. 1 — (B283) No. 17:***	Is the resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between auto A/C control module and evaporator sensor.
6	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

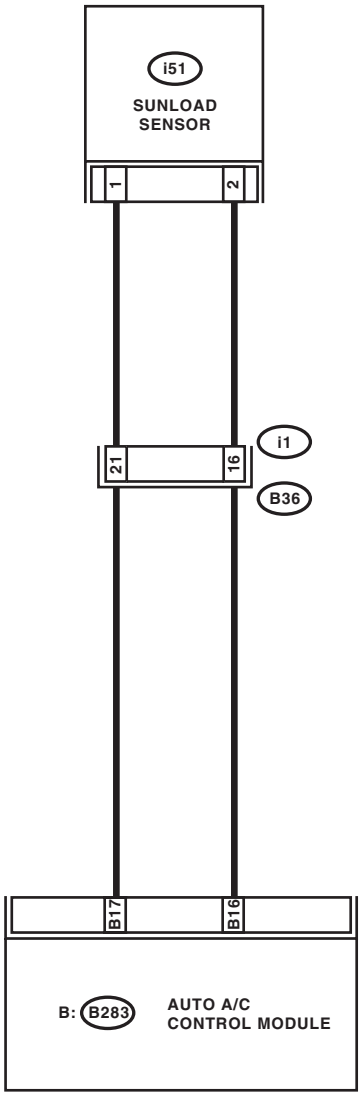
D: SUNLOAD SENSOR

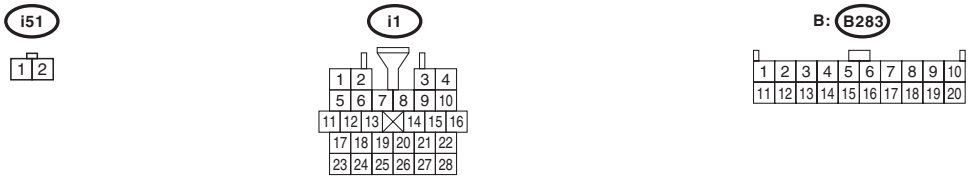
TROUBLE SYMPTOM:

- Sensor identifies that sunlight is at maximum. Then, A/C system is controlled to COOL side.
- Sensor identifies that sunlight is at minimum. Then, A/C system is controlled to HOT side.

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.

WIRING DIAGRAM:





AC-01153

	Step	Check	Yes	No
1	**CHECK INPUT VOLTAGE TO SUNLOAD SENSOR.** 1) Turn the ignition switch to ON. 2) Measure the input voltage to the sunload sensor. ***Connector & terminal*** ***(i51) No. 2 (+) — Chassis ground (–):***	Is the voltage approx. 5 V?	Go to step **3**.	Go to step **2**.
2	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND SUNLOAD SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from the auto A/C control module. 3) Measure the resistance of the harness between the auto A/C control module and sunload sensor. ***Connector & terminal*** ***(i51) No. 2 — (B283) No. 16:***	Is the resistance less than 1 Ω?	Go to step **3**.	Repair the harness between auto A/C control module and sunload sensor.
3	**CHECK HARNESS CONNECTOR BETWEEN AUTO A/C CONTROL MODULE AND SUNLOAD SENSOR.** Measure the resistance of the harness between the auto A/C control module and sunload sensor. ***Connector & terminal*** ***(i51) No. 1 — (B283) No. 17:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the harness between auto A/C control module and sunload sensor.
4	**CHECK INPUT VOLTAGE FOR AUTO A/C CONTROL MODULE.** 1) Connect the auto A/C control module connector. 2) Turn the ignition switch to ON. 3) Measure the voltage between connector terminals of auto A/C control module. ***Connector & terminal*** ***(B283) No. 16 (+) — (B283) No. 17 (–):***	Is the voltage approx. 2.5 V?	Go to step **5**.	Replace the sunload sensor.
5	**CHECK POOR CONTACT.** Check poor contact of auto A/C control module connector.	Is there any poor contact in connector?	Repair the connector.	Replace the auto A/C control module.

9. Diagnostics with Phenomenon

A: INSPECTION

Symptom	Problem parts
A/C system fails to operate.	• Fuse (M/B No. 5, F/B No. 17) • Connector (Poor contact) • Ground • Auto A/C control module • Blower fan motor • Blower fan relay • A/C relay • Compressor (Magnet clutch) • Evaporator sensor
Fuse is blown out.	• Fuse (M/B No. 5, F/B No. 17) • Connector (Poor contact)
Illumination cannot dim.	• Fuse (M/B No. 5, F/B No. 17) • Connector (Poor contact) • Auto A/C control module
Blower fan does not rotate or fan speed cannot be controlled.	• Fuse (M/B No. 7, F/B No. 17) • Connector (Poor contact) • Ground • Auto A/C control module • Blower fan motor • Blower fan relay
Unable to switch suction vents.	• Connector (Poor contact) • Auto A/C control module • Intake door actuator
Unable to switch vents.	• Connector (Poor contact) • Auto A/C control module • Mode door actuator
The compartment temperature does not rise. (Warm air does not come out.)	• Connector (Poor contact) • Auto A/C control module • Air mix door actuator • In-vehicle sensor, ambient sensor, evaporator sensor and sunload sensor • In-vehicle sensor aspirator hose
The compartment temperature does not lower. (Cold air does not come out.)	• Connector (Poor contact) • Auto A/C control module • Air mix door actuator • A/C relay • Compressor (Magnet clutch) • Radiator fan motor • Radiator fan relay • In-vehicle sensor, ambient sensor, evaporator sensor and sunload sensor • In-vehicle sensor aspirator hose
Compartment temperature is higher or lower than setting temperature.	• Auto A/C control module • Air mix door actuator • In-vehicle sensor, ambient sensor, evaporator sensor and sunload sensor • In-vehicle sensor aspirator hose
Compartment temperature does not quickly respond to setting temperature.	• Air mix door actuator • In-vehicle sensor, ambient sensor, evaporator sensor and sunload sensor • In-vehicle sensor aspirator hose
Radiator fan does not rotate during A/C operation.	• Radiator fan motor • Radiator fan relay