Heating, Ventilation & Air Conditioning

AIR CONDITIONING SYSTEM

INSTRUCTIONS EAABFE54

WHEN HANDLING REFRIGERANT

1. R-134a liquid refrigerant is highly volatile. A drop on the skin of your hand could result in localized frostbite. When handling the refrigerant, be sure to wear gloves.

2. It is standard practice to wear goggles or glasses to protect your eyes, and gloves to protect your hands. If the refrigerant splashes into your eyes, wash them with clean water immediately.

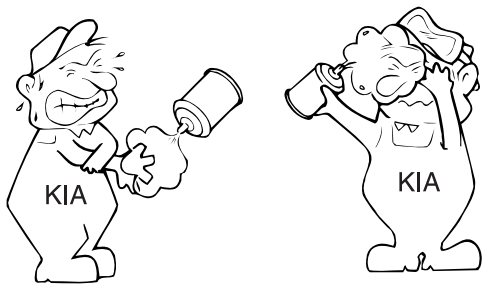
3. The R-134a container is highly pressurized. Never leave it in a hot place, and check that the storage temperature is below 52°C (126°F)

4. An electronic leak detector should be used to check the system for refrigerant leakage. Bear in mind that the R-134a, upon coming into contact with flame, produces phosgene, a highly toxic gas.

5. Use only recommended the lubricant for R-134a systems. If lubricants other than the recommended one used, system failure may occur.

6. PAG lubricant absorbs moisture from the atmosphere at a rapid rate, therefore the following precautions must be observed:
   - When removing refrigerant components from a vehicle, cap immediately the components to prevent from the entry of moisture.
   - When installing refrigerant components to a vehicle, do not remove the cap until just before connecting the components.
   - Complete the connection of all refrigerant tubes and hoses without delay to prevent the A/C system from taking on moisture.
   - Use the recommended lubricant from a sealed container only.

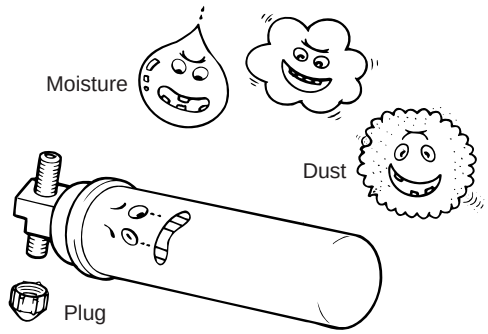
7. If an accidental discharge in the system occurs, ventilate the work area before resuming service.



LQAC003A

WHEN REPLACING PARTS ON A/C SYSTEM

1. Never open or loosen a connection before discharging the system.
2. Seal the open fittings of components with a cap or plug immediately to prevent intrusion of moisture or dust.
3. Do not remove the sealing caps from a replacement component until it is ready to be installed.
4. Before connecting an open fitting, always install a new sealing ring. Coat the fitting and seal with refrigerant oil before making the connection.

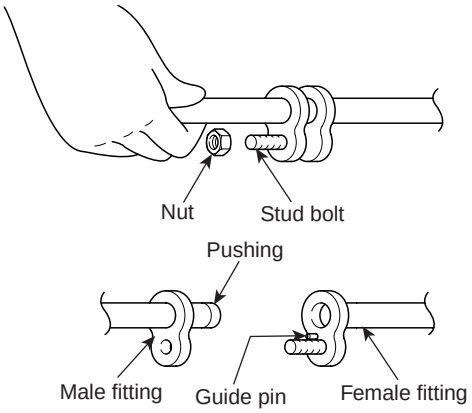


LQAC003B

WHEN INSTALLING CONNECTING PARTS

FLANGE WITH GUIDE PIN

Check the new O-ring for damage (use only the specified) and lubricate it using compressor oil. Tighten the nut to specified torque.



LQAC003C

Size	Tightening torque [N.m (kg.m, lbf.ft)]	
	General bolt, nut	
	4T	7T
M6	5-6 (0.5 - 0.6, 3.6 - 4.3)	9-11 (0.9 - 1.1, 6.5 - 7.9)a
M8	12-14 (1.2 - 1.4, 8.7 - 10)	20 - 26 (2.0 - 2.6, 14 - 18)
M10	25 - 28 (2.5 - 2.8, 18 - 20)	45 - 55 (4.5 - 5.5, 32 - 39)
Size	Flange bolt, nut	
	4T	7T
M6	5-7 (0.5 - 0.7, 3.6 - 5.0)	8-12 (0.8 - 1.2, 5.8 - 8.6)
M8	10-15 (1.0 - 1.5, 7 - 10)	19 - 28 (1.9 - 2.8, 14 - 20)
M10	21 - 31 (2.1 - 3.1, 15 - 22)	39 - 60 (3.9 - 6.0, 28 - 43)

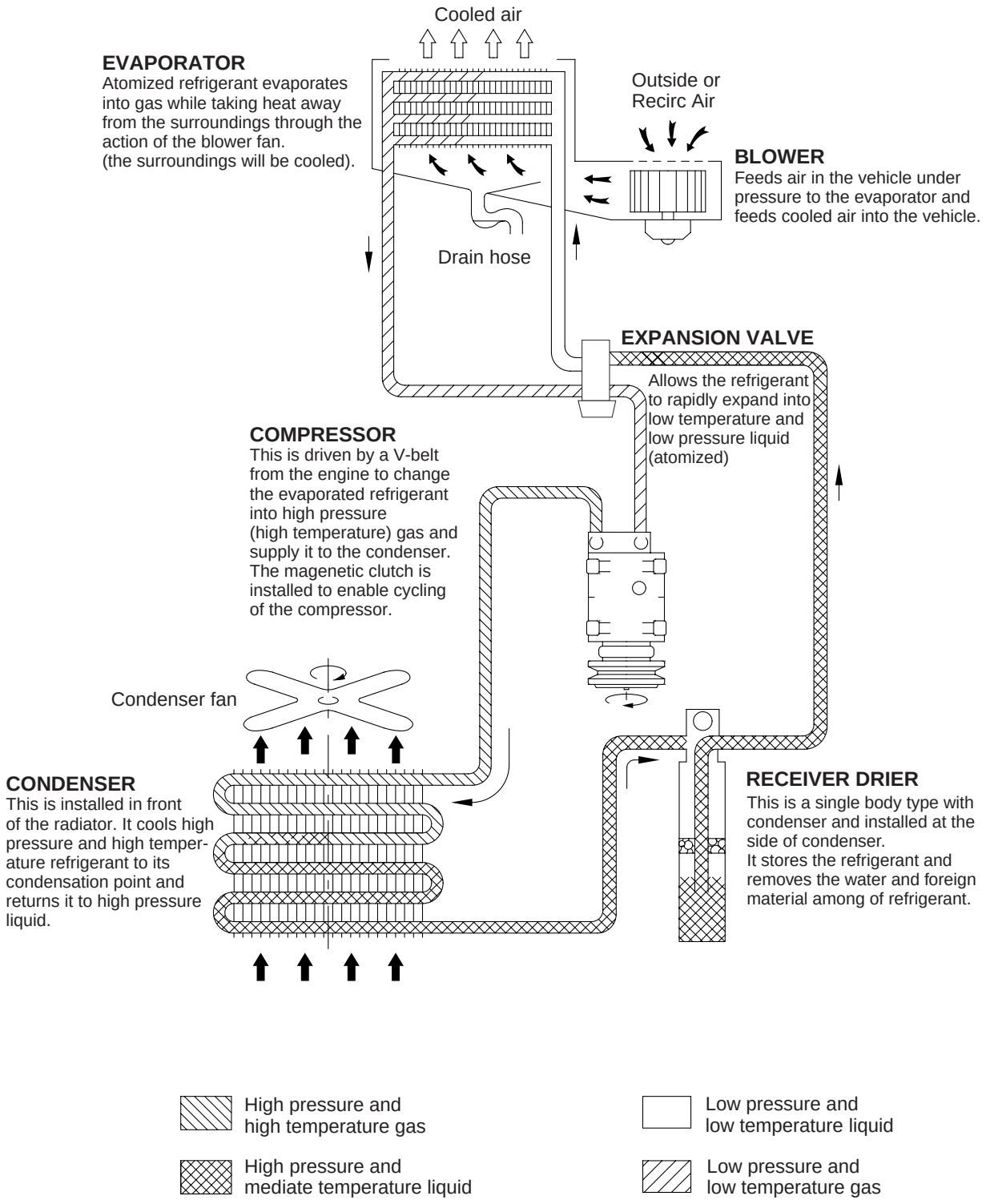
HANDLING TUBING AND FITTINGS

The internal parts of the refrigeration system will remain in a state of chemical stability as long as pure moisture-free refrigerant and refrigerant oil are used. Abnormal amounts of dirt, moisture or air can upset the chemical stability and cause problems or serious damage.

THE FOLLOWING PRECAUTIONS MUST BE OBSERVED

1. When it is necessary to open the refrigeration system, have everything you will need to service the system ready so the system will not be left open any longer than necessary.
2. Cap or plug all lines and fittings as soon as they are opened to prevent the entrance of dirt and moisture.
3. All lines and components in parts stock should be capped or sealed until they are ready to be used.
4. Never attempt to rebind formed lines to fit. Use the correct line for the installation you are servicing.
5. All tools, including the refrigerant dispensing manifold, the gauge set manifold and test hoses, should be kept clean and dry.

REFRIGERATION CYCLE ECDF3EA3



EQRF004A

REFRIGERANT SYSTEM SERVICE BASICS EDF2CBDC

REFRIGERANT RECOVERY

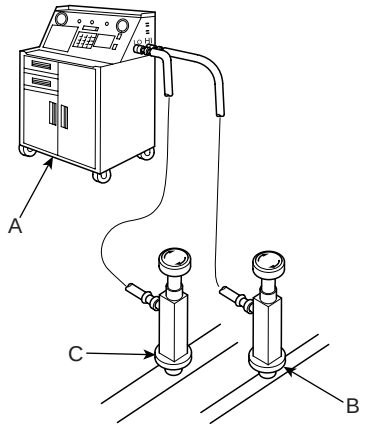
Use only service equipment that is U.L-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a(R-134a) from the air conditioning system.

CAUTION

- ***Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.***
- ***Be careful when connecting service equipment.***
- ***Do not breathe refrigerant or vapor.***

If accidental system discharge occurs, ventilate work area before resuming service.
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant Recovery/Recycling/Charging System (A) to the high-pressure service port (B) and the low-pressure service port (C) as shown, following the equipment manufacturer's instructions.



EQKE004A

2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to install the same amount of new refrigerant oil back into the A/C system before charging.

SYSTEM EVACUATION

Use only service equipment that is U.L-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a(R-134a) from the air conditioning system.

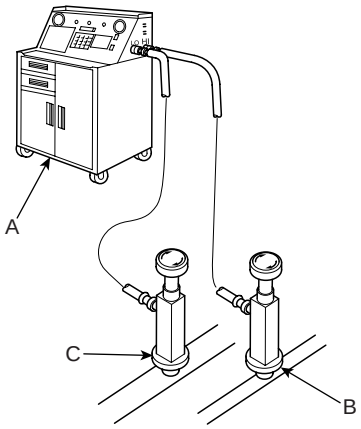
CAUTION

- ***Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.***
- ***Be careful when connecting service equipment.***
- ***Do not breathe refrigerant or vapor.***

If accidental system discharge occurs, ventilate work area before resuming service.
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant Recovery/Recycling/Charging System. (If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.)

2. Connect an R-134a refrigerant Recovery/Recycling/Charging System (A) to the high-pressure service port (B) and the low-pressure service port (C) as shown, following the equipment manufacturer's instructions.



EQKE004A

3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 10 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see Leak Test.).

4. Remove the low pressure valve from the low-pressure service port.

SYSTEM CHARGING

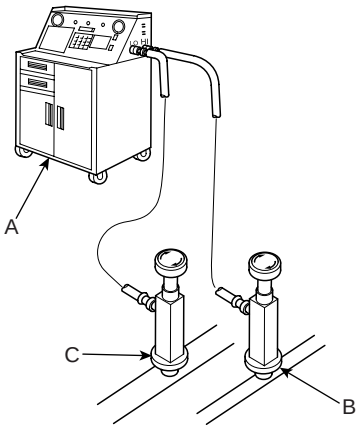
Use only service equipment that is U.L-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a(R-134a) from the air conditioning system.

CAUTION

- ***Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.***
- ***Be careful when connecting service equipment.***
- ***Do not breathe refrigerant or vapor.***

If accidental system discharge occurs, ventilate work area before resuming service.
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant Recovery/Recycling/Charging System (A) to the high-pressure service port (B) as shown, following the equipment manufacturer's instructions.



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2. Add the same amount of new refrigerant oil to system that was removed during recovery. Use only specified refrigerant oil. Charge the system with 18.25 ± 0.85 oz. (540 ± 25g) of R-134a refrigerant. Do not overcharge the system the compressor will be damaged.

REFRIGERANT LEAK TEST

Always conduct a leak test with an electronic leak detector whenever leakage or refrigerant is suspected and when conducting service operations which are accompanied by disassembly or loosening or connection fittings.

NOTE

In order to use the leak detector properly, read the manual supplied by the manufacturer.

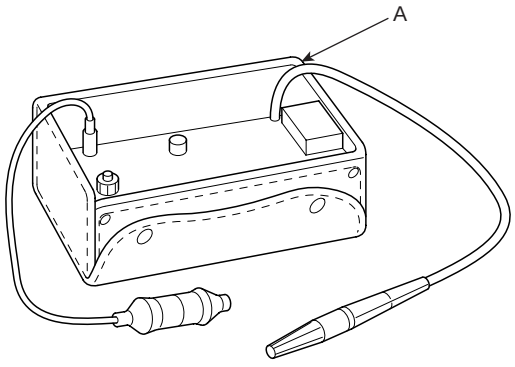
If a gas leak is detected, proceed as follows:

1. Check the torque on the connection fittings and, if too loose, tighten to the proper torque. Check for gas leakage with a leak detector (A).

2. If leakage continues even after the fitting has been tightened, discharge the refrigerant from the system, disconnect the fittings, and check their seating faces for damage. Always replace, even if the damage is slight.

3. Check the compressor oil and add oil if required.

4. Charge the system and recheck for gas leaks. If no leaks are found, evacuate and charge the system again.



EQKE007A

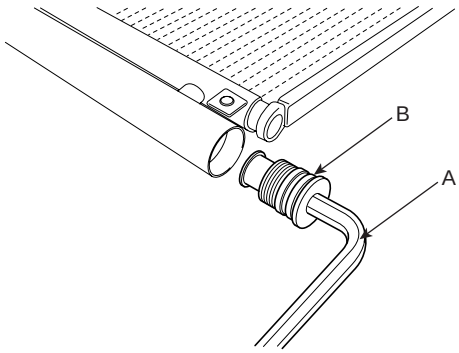
A/C COMPRESSOR CONTROLS (MANUAL)

RECEIVER／DRIER

REPLACEMENT E533AAC0

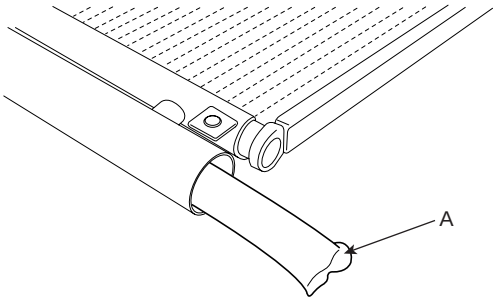
1. Remove the condenser, and then remove the bottom cap (B) with L wrench (A) from the condenser.

TORQUE: 2.76~3.25N.m (0.28~0.33kgf.m, 2.03~2.4lb-ft)



KQRE108D

2. Remove the desiccant (A) from condenser using a long nose plier. Check for crumbled desiccant and clogged bottom cap filter.



KQRE108E

3. Apply air conditioning compressor oil along the O-rings and threads of the new bottom cap.

4. Insert the new desiccant into the receiver drier tank. The desiccant must be sealed in vacuum before it is exposed to air for use.

5. Install the new bottom cap to the condenser.

NOTE

- *Always replace the desiccant and bottom cap at the same time.*
- *Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for R-134a to avoid leakage.*
- *Be careful not to damage the radiator and condenser fins when installing the condenser.*
- *Be sure to install the lower mount cushions of condenser securely into the holes.*
- *Charge the system, and test its performance.*

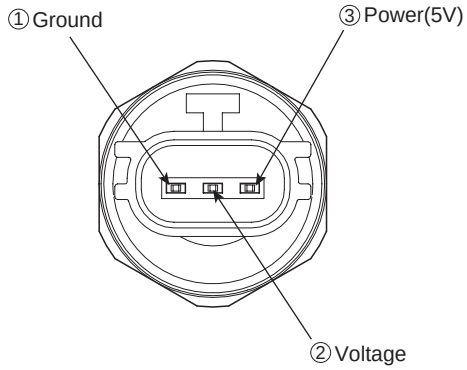
A/C PRESSURE TRANSDUCER

DESCRIPTION E541C6CF

A/C pressure transducer convert the pressure value of high pressure line into voltage value after measure it. By converted voltage value, engine ECU controls cooling fan by operating it high speed or low speed. Engine ECU stop the operation of compressor when the temperature of refrigerant line is so high or so low irregularly to optimize air conditioning system.

INSPECTION EAA1CD5F

1. Measure the pressure of high pressure line by measuring voltage output between NO.1 and NO.2 terminals.



EQRF116B

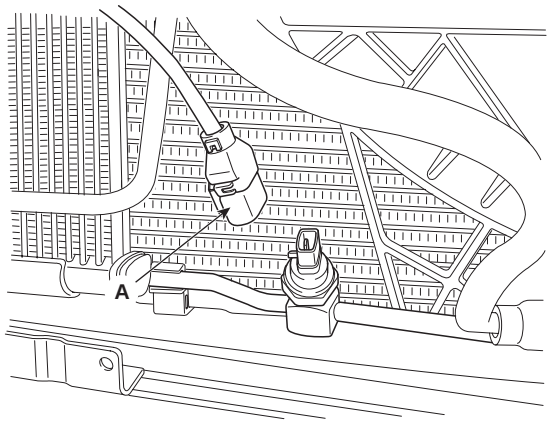
2. Inspect the voltage value whether it is sufficient to be regular value or not.

Voltage = Vdd*(0.025*P+0.1) [Kgf/cm2] Voltage = Vdd*(0.254929*P+0.1) [Mpa] Voltage = Vdd*(0.001758*P+0.074162 [PSIA]

3. If the measured voltage value is not specification, replace the A/C pressure transducer.

REPLACEMENT EB2CE8B5

1. Disconnect the negative (-) battery terminal.
2. Recover the refrigerant with a recovery/charging station.
3. Remove the front bumper(Refer to BD group-front bumper).
4. Disconnect A/C pressure transducer connector (3P) (A).



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5. Remove the A/C pressure transducer.

CAUTION

Take care that liquid & suction pipe are not bent.

6. Installation is the reverse order of removal.

TORQUE: 10~12N.m (1.0~1.2kgf.m, 7.4~8.8lbf.ft)

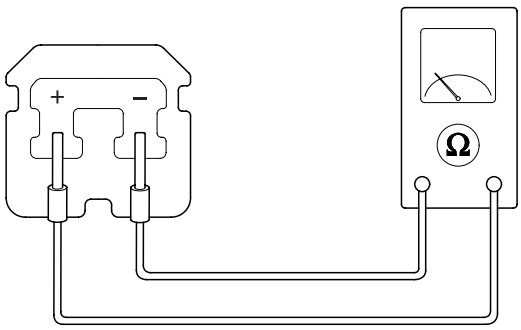
EVAPORATOR TEMPERATURE SENSOR

DESCRIPTION EE7EE3DF

The evaporator temperature sensor will detect the evaporator core temperature and interrupt compressor relay power in order to prevent evaporator freezing by excessive cooling.
It is a negative type thermistor whose resistance is inversely proportional to temperature.

INSPECTION EDADCE4E

1. Engine "ON", Aircon s/w "ON"
2. Using the multi-tester, Measure resistance between terminal "1" and "2" of evaporator temperature sensor.



AQJF206B

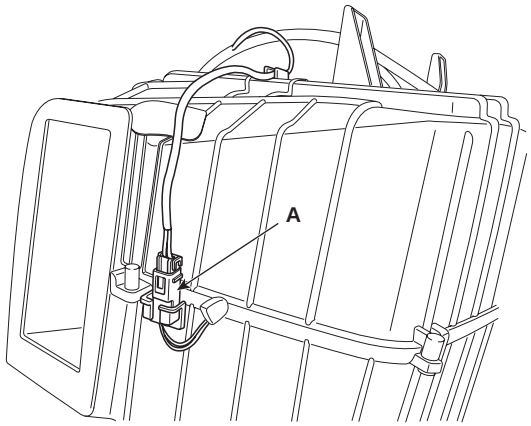
[SPECIFICATION]

Evaporator core temperature [°C (°F)]	Resistance [kΩ]
-10(14)	18.01
-5(23)	14.25
0(32)	11.36
5(41)	9.12
10(50)	7.37
15(59)	5.99
20(68)	4.9
25(77)	4.03
30(86)	3.33
35(95)	2.77
40(104)	2.31

3. If the measured resistance is not specification, substitute with a known-good evaporator temperature sensor and check for proper operation.
4. If the problem is corrected, replace the evaporator temperature sensor.

REPLACEMENT E520700F

1. Remove cresh pad(Refer to BD group-creshpad).
2. Remove the cowl cross bar(Refer to BD group-cresh pad).
3. Remove the blower unit.
4. Disconnect the evaporator connector(A).



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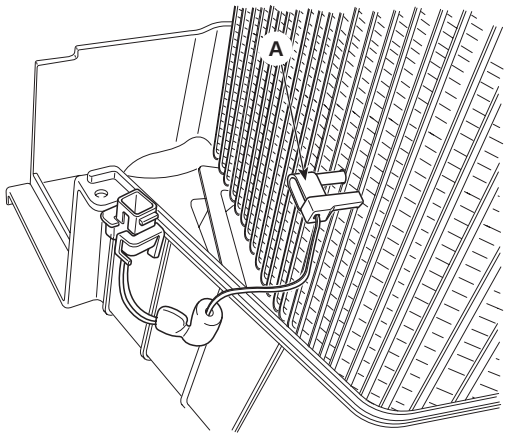
5. Remov the blower unit case(Refer to blower unit)
6. Remove the evaporator sensor(A).



SBLHA6008D

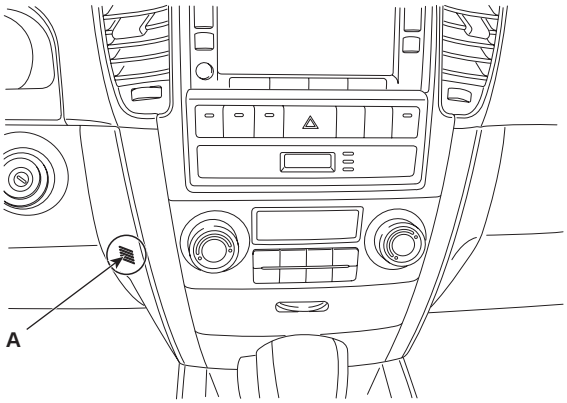
7. Installation is the reverse order of removal.

A/C COMPRESSOR CONTROLS (FULL AUTO)

IN CAR SENSOR

DESCRIPTION E9FDCDE8

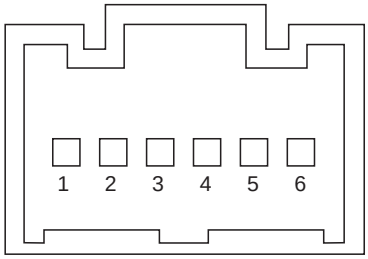
1. In-car air temperature sensor is located at the center facia lower panel.
2. The sensor contains a thermistor which measures the temperature of the inside. The signal decided by the resistance value which changes in accordance with perceived inside temperature, is delivered to heater control unit and according to this signal the control unit regulates incar temperature to intended value.



SBLHA6002D

INSPECTION EDADABFD

1. Ignition "ON"
2. Blow air with changing temperature to the in car sensor air inlet. Measure sensor resistance between 2 and 4 terminals.



1. Motor (-)
2. Sensor ground (-)
3. Humidity sensor signal
4. In-car sensor signal
5. Sensor power (+)
6. Motor (+)

SBLHA6309L

[SPECIFICATION]

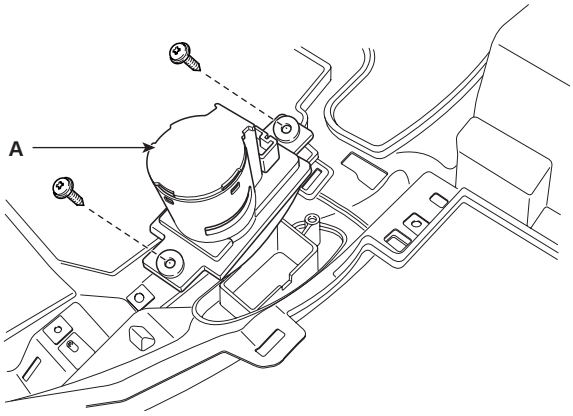
Temperature[°C (°F)]	Resistance between terminals 2and 4 (kΩ)
-35(-31)	723.44
-30(-22)	258.174
-15(5)	218.237
0(32)	97.83
15(59)	47.117
25(77)	30
35(95)	19.61
45(113)	13.116
55(131)	8.972

NOTE

In car sensor is negative type thermistor that resistance will rise with lower temperature, and reduce with higher temperature.

REPLACEMENT EAAAAF3D

1. Disconnect the negative (-) battery terminal.
2. Remove the cresh pad (Refer to BD group-cresh pad).
3. Disconnect the connector of in-car sensor .Loosen the mounting 2 screws and then remove the in-car sensor (A).



SBLHA6003D

4. Installation is the reverse order of removal.

PHOTO SENSOR

DESCRIPTION E5DA57EF

1. The photo sensor (A) is located at the center of defrost nozzle.
2. The photo sensor contains a photovoltaic (sensitive to sunlight) diode. The solar radiation received by its light receiving portion, generates an electromotive force in proportion to the amount of radiation received which is transferred to the automatic temperature control module so that the solar radiation compensation will be performed.

INSPECTION E96A7A76

1. Ignition "ON"
2. Emit intensive light toward photo sensor using a lamp, and check the output voltage change between terminal 2 and 1.
3. Check the output voltage change between terminal 2 and 3.
4. The voltage will rise with higher intensive light and reduce with lower intensive light.

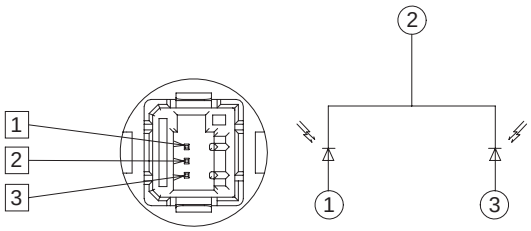


PHOTO SENSOR

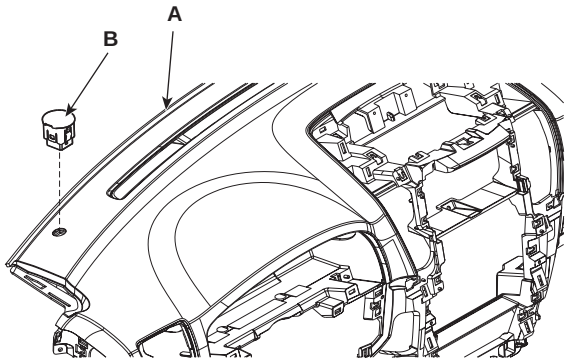
* CONNECTOR PIN.

TERMINAL NO.	FUNCTION
1	PHOTO DR (-)
2	PHOTO (+)
3	PHOTO PS (-)

SBLHA6100D

REPLACEMENT E9588DE0

1. Disconnect the negative (-) battery terminal.
2. With the (-) driver, remove the photo sensor (B) from the left of defrost nozzle (A).



SBLHA6101D

3. Install in the reverse order of removal.

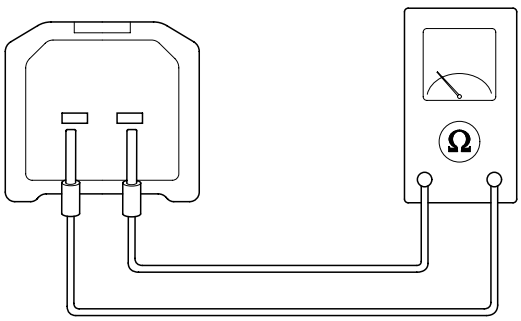
WATER TEMPERATURE SENSOR

DESCRIPTION E1E05321

1. Water temperature sensor is located at the heater unit.
2. It detects coolant temperature. Its signal is used for cold engine lockout control. When the driver operates the heater before the engine is warmed up, the signal from sensor causes the heater control unit to reduce blower motor speed until coolant temperature reaches the threshold value.

INSPECTION E8C92980

1. Ignition "ON"
2. Using the multi-tester, Measure resistance between terminal "1" and "2" of water temperature sensor.



AQIE203D

[SPECIFICATION]

Coolant temperature [°C(F°)]	Resistance (kΩ)
-30(-22)	176.3
-20(-4)	96.44
-10(14)	54.99
0(32)	32.51
10(50)	19.85
20(68)	12.48
30(86)	8.061
40(104)	5.334

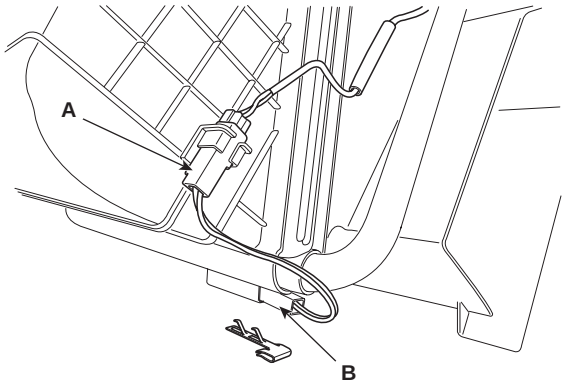
3. If the measured resistance is not specification, substitute with a known-good water temperature sensor and check for proper operation.
4. If the problem is corrected, replace the water temperature sensor.

NOTE

Negative type thermistor that resistance will rise with lower temperature, and reduce with higher temperature.

REPLACEMENT EDADF26E

1. Disconnect the negative (-) battery terminal.
2. Remove the grove box. (Refer to BD group)
3. Disconnect the connector (A) of water temperature sensor (B) and then remove the water temperature sensor by pulling out.



SBLHA6005D

4. Installation is the reverse order of removal.

NOTE

Take care that wire of water temperature sensor is not to be damaged

AMBIENT TEMPERATURE SENSOR

DESCRIPTION ED7A4756

1. The ambient temperature sensor is located at the front of the condenser and detects ambient air temperature. It is a negative type thermistor; resistance will increase with lower temperature, and decrease with higher temperatures.
2. The sensor output will be used for discharge temperature control, temperature regulation door control, blower motor level control, mix mode control and in-car humidity control.

NOTE

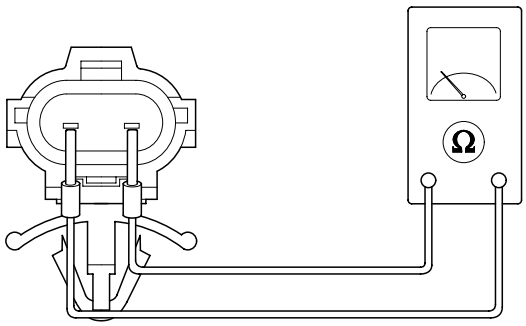
If the ambient temperature is below 2.0℃ (35.6°F), the A/C compressor will be stopped.
The compressor will be operated by manual operating.

INSPECTION EF194BAD

1. Ignition "OFF"
2. Disconnect ambient temperature sensor.
3. Check the resistance of ambient temperature sensor between terminals 1 and 2 whether it is changed by changing of the ambient temperature.

[SPECIFICATION]

Ambient temperature [°C(°F)]	Resistance between terminals 1and 2 (kΩ)
-30(-22)	507
-20(-4)	284.5
-10(14)	164.2
0(32)	97.5
10(50)	59.6
20(68)	37.46
30(86)	24.18
40(104)	16
50(122)	10.83
60(140)	7.481

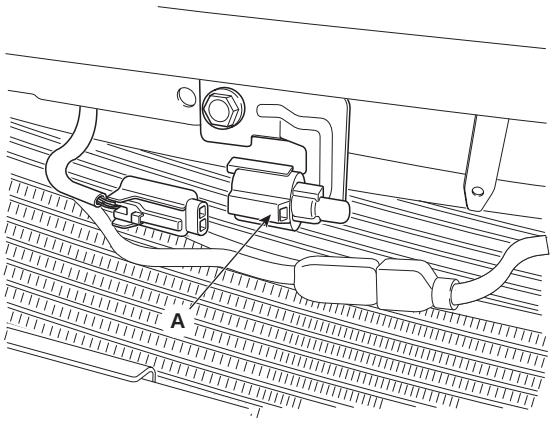


AQJF204B

4. If the measured resistance is not specification, substitute with a known-good ambient temperature sensor and check for proper operation.
5. If the problem is corrected, replace the ambient temperature sensor.

REPLACEMENT EFFE9B5C

1. Disconnect the negative (-) battery terminal.
2. Remove the front bumper. (Refer to BD group - Front bumper)
3. Remove the ambient temperature sensor (A).



SBLHA6006D

4. Installation is the reverse order of removal.

A.Q.S (AIR QUALITY SENSOR)

DESCRIPTION E7C2288B

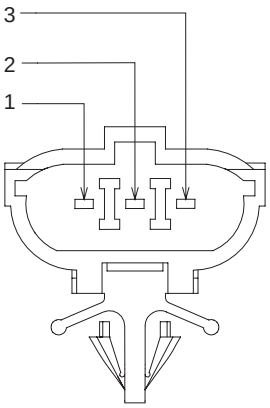
1. A.Q.S is located at center support in front of the engine radiator, and detects hazardous elements in ambient air providing output signal to control.
2. It will detect sulfurous acid gas, carbon dioxide, carbon monoxide, hydrocarbon and allergen.

INSPECTION EC50B78F

1. Ignition "ON"
2. Using the scan tool.
3. Check the output voltage of AQS between terminals 2 and 3.

[SPECIFICATION]

Condition	Output signal(2-3)	Fresh/recirculation
Normal condition	4 ~ 5V	Fresh
Hazardous gas detection	0 ~ 1V	Recirculation



TERMINAL NO.	WIRE COLOR	FUNCTION
1	B/R	DC 12V (IGN)
2	BLACK	GND
3	B/R	SIGNAL OUTPUT

SBLHA6102D

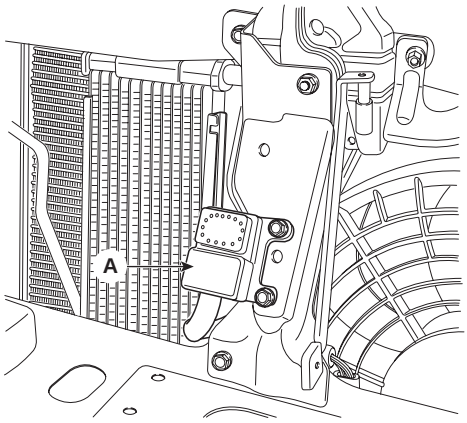
4. AQS diagnosis and fail safe
   Detect the open of signal for 7 seconds without choosing the AQS switch when IG on.
   If 2.5V or more is detected for 3.5 seconds or more among 7 seconds, be judged the open of AQS signal. Operate as below fail safe function, while choosing AQS.
   Fail safe: Release the AQS (AQS cannot be selected), Fresh/recirculation maintains previous situation of AQS selection.

NOTE

When IG is turned ON, AQS heats for 34±5 seconds, it will output below 1.0 voltage during this time.

REPLACEMENT EC663B3D

1. Disconnect the negative (-) battery terminal.
2. Remove the front bumper. (Refer to BD group - Front bumper)
3. Remove the AQS (A) after loosening the mounting screws.



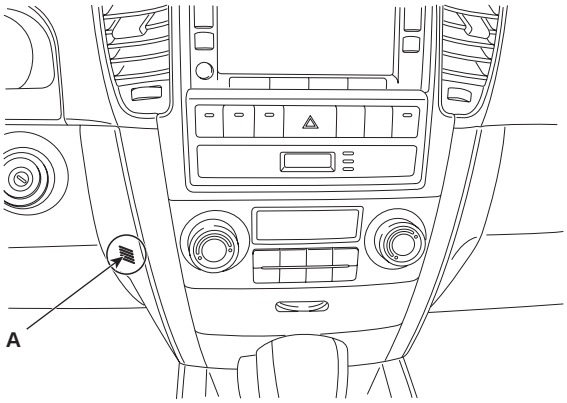
SBLHA6009D

4. Installation is the reverse order of removal.

HUMIDITY SENSOR

DESCRIPTION E6FE389E

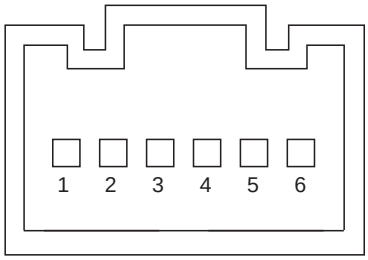
1. Humidity sensor is located at the lower crush pad and detected in-car humidity for in-car humidity control.
2. If ambient air temperature or in-car humidity is outside certain range, it will turn on A/C to control in-car humidity preventing in car fogging.
   Air conditioner operation depends on ambient temperature and humidity.



SBLHA6002D

INSPECTION E68074DF

1. Ignition "ON"
2. Using the scan tool.
3. Check the frequency of humidity sensor between terminals 2 and 3.



1. Motor (-)
2. Sensor ground (-)
3. Humidity sensor signal
4. In-car sensor temp.signal
5. Sensor power (+)
6. Motor (+)

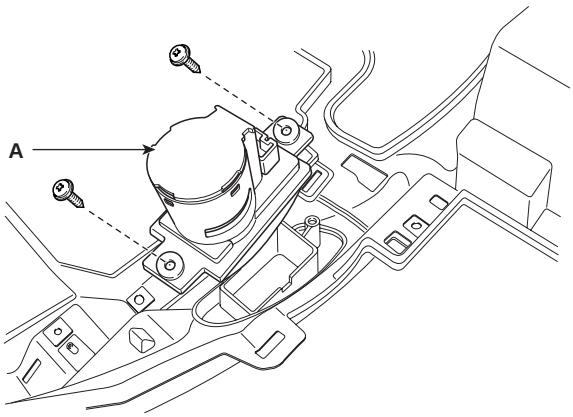
EQRF201B

Humidity (%)	Frequency between terminals 2and 3 (Hz)
30	6976 ± 5%
50	6728 ± 5%
60	6600 ± 5%
70	6468 ± 5%
80	6330 ± 5%
90	6186 ± 5%

4. If the measured resistance is not specification, substitute with a known-good humidity sensor and check for proper operation.
5. If the problem is corrected, replace the Humidity sensor.

REPLACEMENT EF407EEF

1. Disconnect the negative (-) battery terminal.
2. Remove the cresh pad (Refer to BD group-crash pad)
3. Loosen 2 screws and then remove the humidity sensor (A).



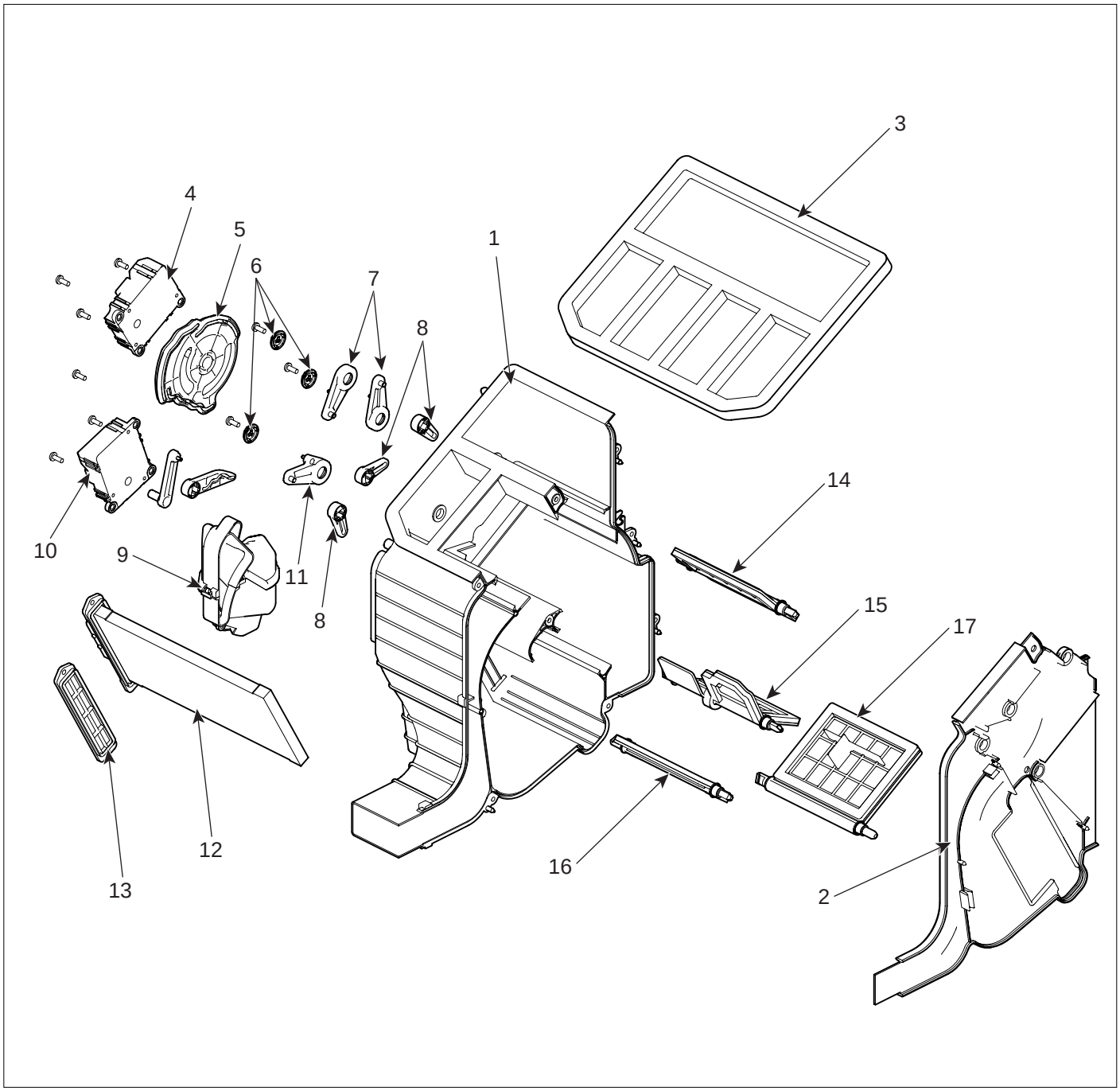
SBLHA6003D

4. Installation is the reverse order of removal.

HEATER

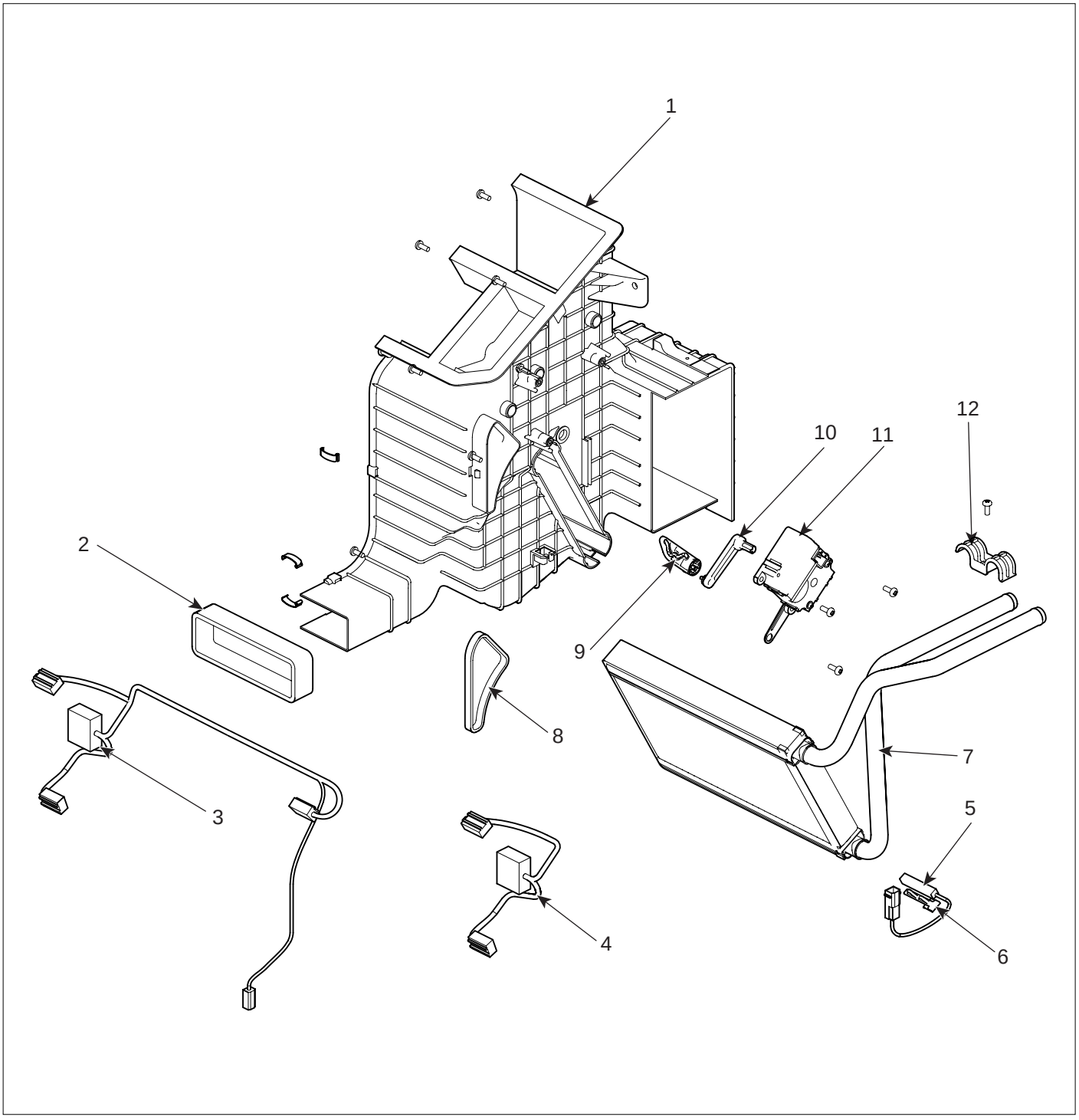
HEATER UNIT

COMPONENTS EE002BD7



1. Heater case (L)
2. Heater separator (Dual type)
3. Heater seal
4. Mode actuator
5. Mode actuator lever
6. Washer
7. Vent / Def sub lever
8. Vent / Foot Def lever
9. Shower duct (L)
10. Temp actuator
11. Foot sub lever
12. PTC heater core
13. PTC cover
14. Def door
15. Vent door
16. Foot door
17. Temp door

SBLHA6104L

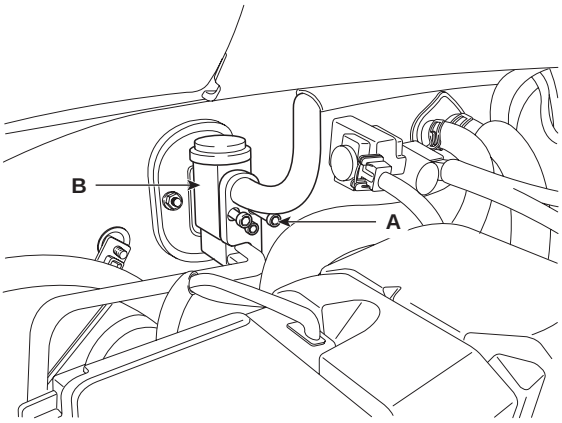


1. Heater case(R)
2. Foot seal
3. Wire haness
4. Wire haness
5. Water temperature sensor
6. Water temperature sensor stopper
7. Heater core
8. Foot lining seal
9. Temp actuator door
10. Temp actuator door lever
11. Temp actuator
12. Heater core cover

SBLHA6105L

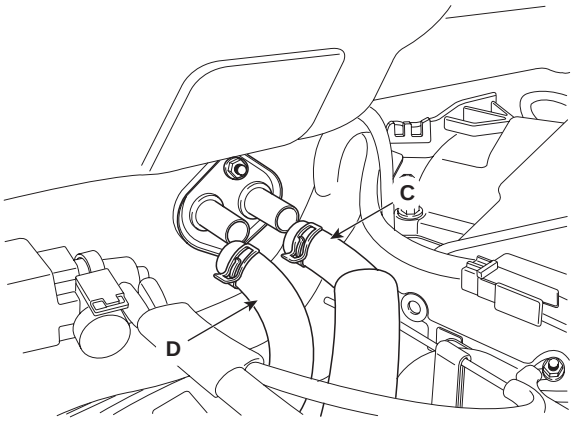
REPLACEMENT E525DE73

1. Disconnect the negative (-) battery terminal.
2. Recover the refrigerant with a recovery/ recycling/ charging station.
3. When the engine is cool, drain the engine coolant from the radiator.
4. Remove the bolts (A) and the expansion valve (B) from the evaporator core.
   Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



SBLHA6010D

5. Disconnect the inlet (C) and outlet (D) heater hoses from the heater unit.

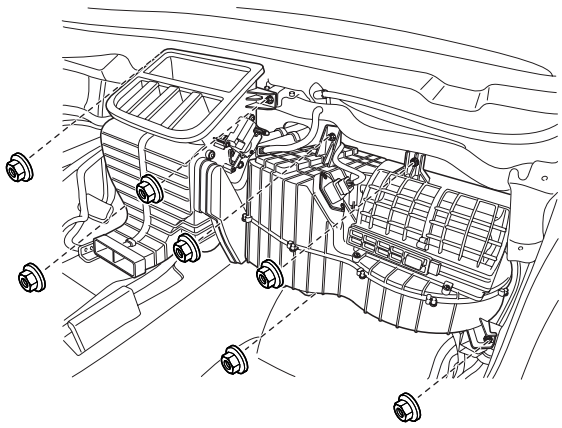


SBLHA6011D

CAUTION

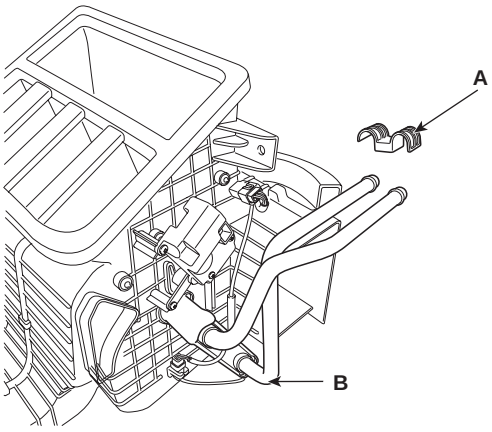
Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on electrical parts or painted surfaces. If any coolant spills, rinse it off immediately.

6. Remove the crash pad (Refer to BD group-cresh pad).
7. Remove the cowl cross bar assembly. (Refer to BD group-cresh pad)
8. Disconnect the connectors from the temperature control actuator, the mode control actuator and the evaporator temperature sensor.
9. Remove the heater & blower unit after loosening 7 mounting nuts.



SBLHA6012D

10. Remove the heater core (B) after remove the cover (A).

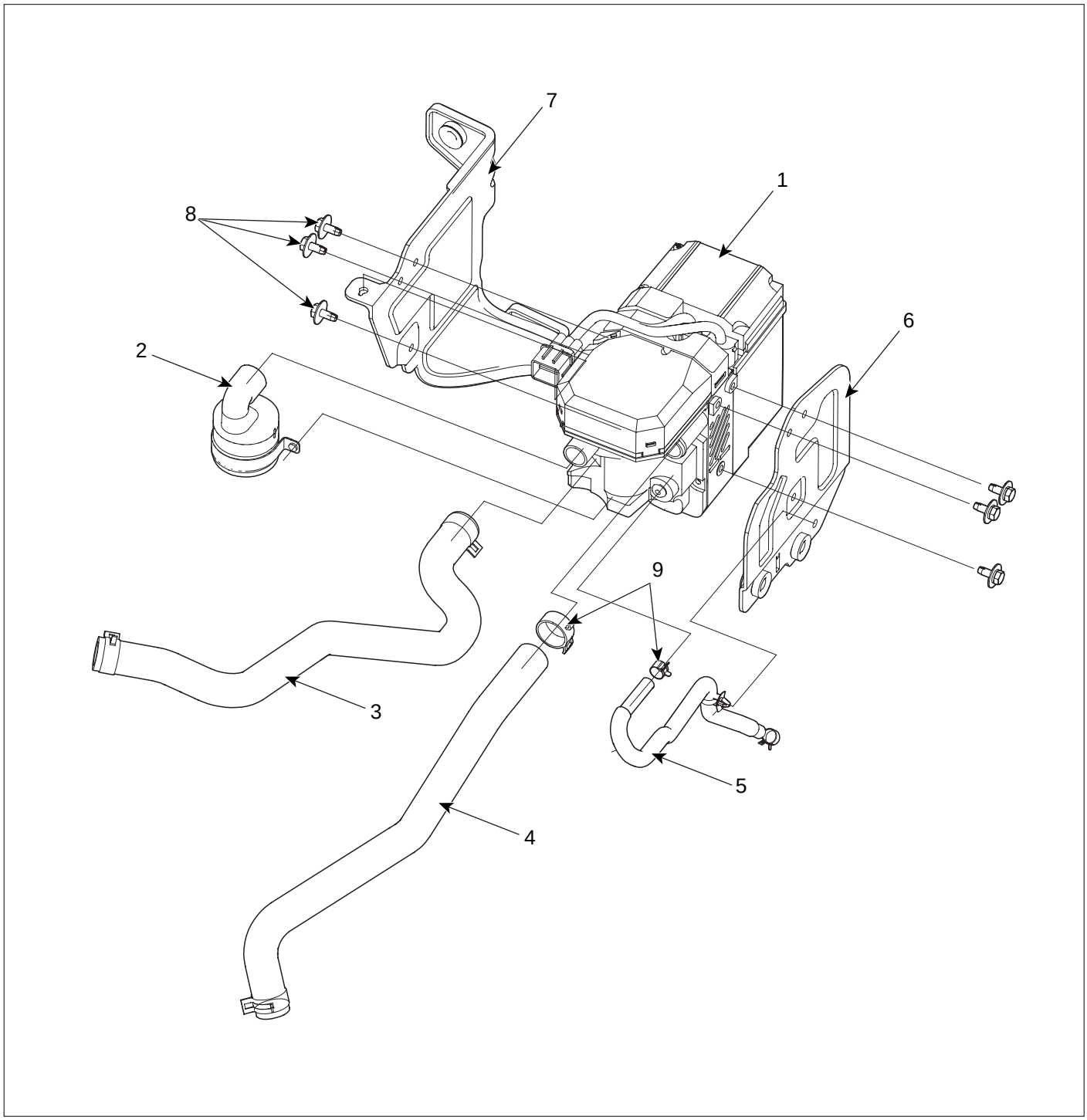


SBLHA6013D

11. Installation is the reverse order of removal, and note these items :
    - If you're installing a new evaporator, add refrigerant oil (ND-OIL8).
    - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for R-134a to avoid leakage.
    - Immediately after using the oil, replace the cap on the container, and seal it to avoid moisture absorption.
    - Do not spill the refrigerant oil on the vehicle ; it may damage the paint ; if the refrigerant oil contacts the paint, wash it off immediately
    - Apply sealant to the grommets.
    - Make sure that there is no air leakage.
    - Charge the system and test its performance.
    - Do not interchange the inlet and outlet heater hoses and install the hose clamps securely.
    - Refill the cooling system with engine coolant.

FUEL FIRED HEATER

COMPONENT E29C50A7



1. Fuel fired heater assembly
2. Intake air silencer
3. Water hose(Inlet)
4. Water hose(Outlet)
5. Fuel hose
6. Braket(No.1)
7. Braket(No.2)
8. Bolt
9. Clamp

LQKG333C

SPECIFICATIONS E2C4C14B

ITEM		OPERATION STATE	SPECIFICATION
Fuel fired heater body	Heater discharge	Full load	5.0kw
		Half load	2.5kw
	Full load		Diesel
	Fuel consumption	Full load	0.63 l/h
		Half load	0.32 l/h
	Rated voltage		12.0V
	Operation voltage range		9.5V~15.0V
	Power consumption	Full load	37w(Normal)
		Half load	13w(Normal)
	Permissible ambient temperature	At operation	-40°C~80°C
		At storage	-40°C~120°C
	Permissible operation pressure		0.4bar ~ 2.5bar
	Minimum coolant flow volume		250 l/h
	Permissible CO_2 value		8~13 vol %

ITEM		SPECIFICATION
Dosing pump	Rated voltage	12.0V
	Operation voltage range	9.0V ~ 15.0V
	Maximum power consumption	4w(Normal)

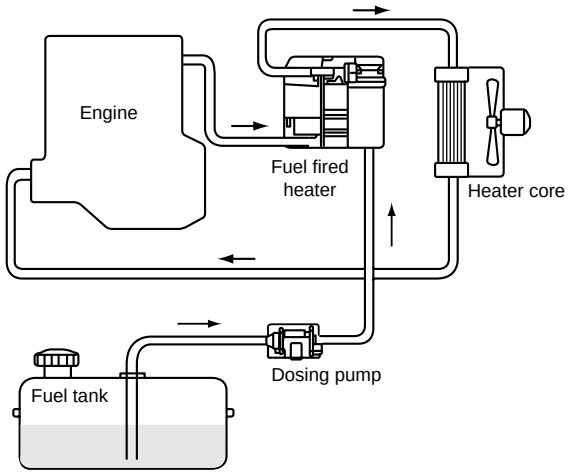
ITEM		SPECIFICATION
Ambient switch	Rated voltage	12.0V
	Temperature of ON/OFF	ON : 2°C(Tolerance : + 3°C, -2°C)
		OFF : 8°C(Tolerance : + 2°C, -3°C)

TROUBLESHOOTING E35E7E09

SYMPTOM	REMEDY
Fuel smell	Check fuel system on vehicle.
	Check the fuel supply line in the fuel fired heater for fuel leaking and fuel hose for twisting or clogging.
	If none of above is affected, there is likelihood of fuel leaking from the heater inner. Repair the heater after removing it.
Heater does not work at full load	Repair the heater after removing it.
White smoke occurs continuously during operation	Repair the heater after removing it.
Shortage of coolant Smoke occurs during operation Excessive exhaust gas smell	Check coolant hose for leaking, twisting and hose clamp for looseness.
	If above items are normal, leaks from the heater inner may cause these symptoms. Repair the heater after removing it.
Loss of fuel	Check fuel system on vehicle.
	Check the fuel supply line in the fuel fired heater for fuel leaking and fuel hose for twisting or clogging.
	If above items are normal, there is likelihood of fuel leaking from the heater inner. Repair the heater after removing it.

DESCRIPTION E1BDA73D

The fuel fired heater has been applied to the diesel engine (CRDi) to increase heating capability by using diesel only in cold weather



▷Coolant route : Engine → Heating burner → Heating core → Engine
▷Fuel route : Fuel tank → Dosing pump → Heating burner → Combustion

LQKG051N

CAUTION

- ***Follow the procedures specified in this bulletin during service or it may cause personal injury.***
- ***Be sure to turn the fuel fired heater off when refueling at station.***
- ***The fuel fired heater must be mounted at designated position, never in the passenger compartment.***
- ***The fuel fired heater must be kept below 120°C or a permanent failure on the components may occur.***
- ***Operational principle : The following 3 conditions should be met at the same time for automatic operation of the fuel fired heater.***
  - ***Engine runs.***
  - ***Ambient temperature is lower than 2°C (Winter)***
  - ***Coolant temperature is lower than 68°C***

- ***Cleaning process***
  - ***A cleaning process of the fuel fired heater will be performed automatically when the heater is not operated due to increase of coolant temperature and ignition off.***
  - ***During cleaning process, supplied fuel in the heater will be burnt completely and any smoke will be expelled.***
    It is a necessary process for next operation and durability of the heater and takes about 3 minutes.

- ***Others***
  The following symptoms should be explained to customers or technicians as a normal occurrence.
  - ***A white smoke may come out from the fuel fired heater exhaust pipe installed at the front side of the right front tire during operation of the heater.***
    This is not an exhaust fumes.
    When moisture in the fuel and air is discharged from the heater and is met cold ambient air, it is condensed and looks like a white smoke however, when an excessive black smoke is discharged, the fuel fired heater should be inspected.
  - ***A "buk-buk" noise from the heater is a noise to form flame for combustion. This is a normal operation.***
  - ***When the heater is operated at full load, a "Wooing" noise is occurred.***
  - ***When shutting off the engine during heater operation, a "Wing" noise is occurred to perform the cleaning process.***

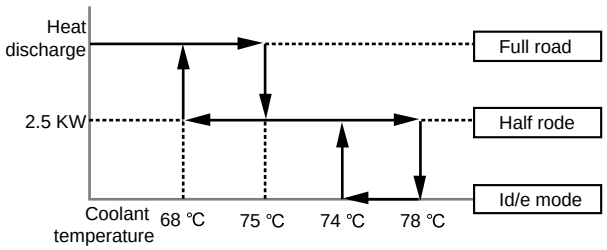
OVERVIEW

1. This fuel fired heater supplies additional heat to the interior compartment with a low fuel consumption to compensate the heat provided by engine alone.

2. The fuel fired heater has been adopted to warm up the interior compartment in a short time.

3. The two coolant temperature sensors are installed to the heater inner. The sensor valves determine heater operation.

4. One of the temperature sensors functions to prevent the heater from overheating.
   If the sensor temperature valve exceeds 125°C, the fuel will be cut and the heater will be deactivated by the determination of the overheating of the heater.
   The other temperature sensor determines the operation mode of the fuel fired heater.The temperature of this sensor enables to activate the heater at full load(5kw) or half load(2.5kw).
   ? The coolant temperature shown on the above Figure is the value of the inner sensor and the actual coolant temperature is higher about 5°C ~7°C than the above value.



LQKG051B

OPERATION ED56CBA7

SWITCH ON/ OPERATION START

The fuel fired heater is operated when the coolant temperature is below 68°C and the ambient temperature is below 2°C after starting the engine.
At this time, the glow plug and combustion air fan are operated first and after 30 seconds, the dosing pump is operated with stopping the combustion fan for 3 seconds.
After that, the operation of the fan increases continuously until it approaches to full load within 56 seconds. If fuel supply reaches to full load the glow plug does not operate and the operation of the fan reaches to full load.
After that the glow plug monitors ignition condition as a flame sensor for 45 seconds.
The above operation procedure is done automatically and in case the ignition fails, the above operation will be done again automatically.
If the condition of ignition failure sustains continuously, fuel supply and fan operation will be stopped and error codes will be stored to find cause of failure.
Generally, the cause of ignition failure during combustion is caused by the automatic re-operation of the above procedure.

OPERATION FOR HEATING

The fuel fired heater operates at full load when the coolant temperature is below 68°C and the ambient temperature is below 2°C after starting the engine.
It operates at half load when the coolant temperature is 74°C and it operates at idle mode when the coolant temperature is 78°C.
The fuel fired heater during the transformation process does a cleaning function from the half mode to the idle mode.
At idle mode, all components do not work.
The fuel fired heater operating at idle mode turns into the half load when the coolant temperature is 74°C. At this time, if the coolant temperature drops again below 68°C, the heater operates with full load and turns into the idle mode if the temperature is 78°C.
This serial operating process is performed automatically.

KEY SWITCH OFF / OPERATION STOP

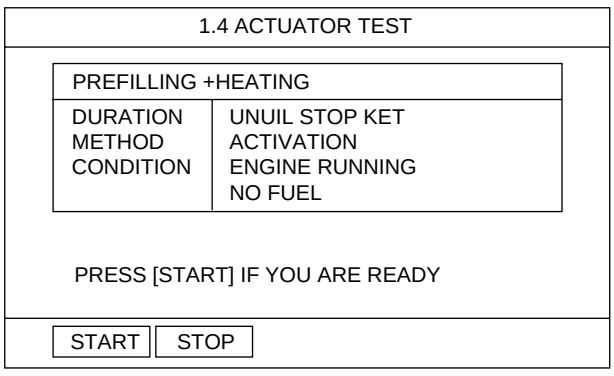
The fuel fired heater ECU stops the operation of the fuel pump and cuts fuel supply when shutting off the engine during the heater operation.
The heater conducts cleaning operation at this time.
This is a process of burning the fuel completely supplied in the heater inner.
In this process, the glow plug and combustion air fan are operated.
When the cleaning process is over, the operation of the heater is stopped.
The time for cleaning when the engine is turned off during the operation of the heater at full load is about 175 seconds.
About 100 seconds are required to conduct the cleaning of the heater at half load condition.
The operating sound of cleaning the heater is heard from the outside of the heater after turning the engine off and this is a normal process of operation

INSPECTION EBEF4E3B

OPERATION TEST

FUEL-FIRED HEATER OPERATION TEST BY FORCE USING HI-SCAN

1. Start the engine.
2. Connect the Hi-Scan to the vehicle.
3. Select "SORENTO" and then select "FUEL FIRED HEATER".
4. Select "04. ACTUATION TEST" mode.
5. Select "PREFILLING + HEATING" to conduct the performance test after replacing the fuel fired heater system.
   Fuel supply and heating will be initiated if the "F1 key STRT" is pressed.
   However, a repair or replacement of the components related to the fuel line system in the fuel-fired heater were not done, operate the component by force after selecting the appropriate item from the menu screen.



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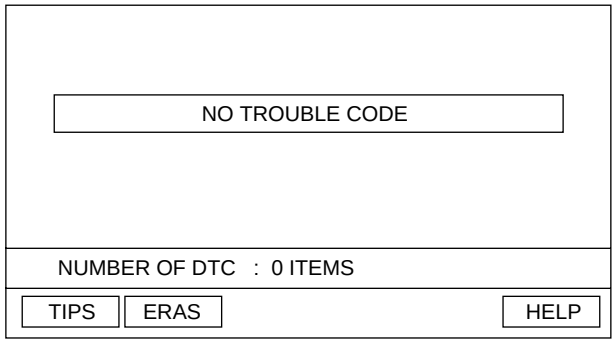
NOTE

Do not operate the system by force with selecting the " PREFILLING + HEATING " option if no repair for the fuel line relating components has been done.
This means the fuel is in the fuel line.If an excessive fuel is supplied, it may cause smoke and abnormal "Banging" noise when the fuel is burned.
If the "F2 KEY STOP" is pressed, operation test is stopped.
For self-diagnosis test and sensors outputs during compulsory operation test, press "ESC KEY".
When a self-diagnosis test is completed, disconnect the self-diagnosis connector or press "F2 KEY STOP" from the "PREFILLING + HEATING" menu to stop the compulsory operation.
In case of selecting the individual part (ex. Combustion air fan, water pump,), press "ESC KEY" to stop the test.
In case of selecting the "PREFILLING + HEATING" option, about 2 minutes are required to conduct cleaning process after pressing the "F2 KEY STOP".
It is a normal process to burn the fuel left in the fuel line.

6. To conduct self diagnosis test, press "ESC" and then "01. DIAGNOSTIC TROUBLE CODES" option.



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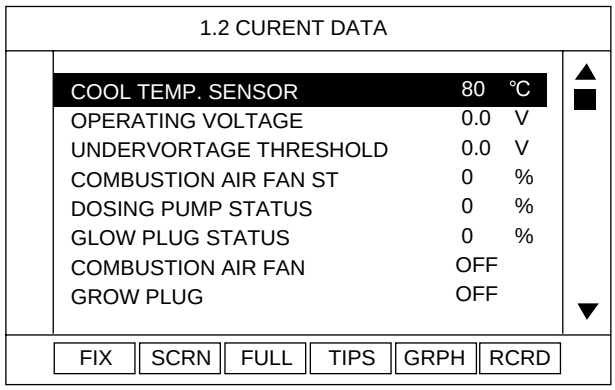
7. Select "02. CURRENT DATA" to view the current status of the components.



LQKG051P

COMPONENT TEST

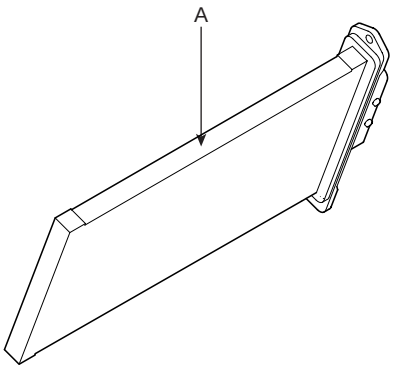
1. Using the Hi-Scan, conduct component test after selecting "FUEL FIRED HEATER" and "ACTUATION TEST" mode.
2. After conducting component test, perform self-diagnosis test.
3. It is recommended to conduct the fuel fired heater system test after completing the component test.
4. Test values for glow plug.

Resistance : 0.324 W ~ 0.360 W Current : Below 5mA

PTC (POSITIVE TEMPERATURE COEFFICIENT) HEATER

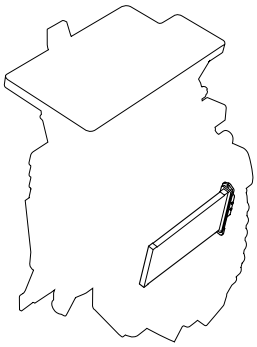
DESCRIPTION EC8920F5

PTC (Positive Temperature Coefficient) heater (A) is an electric heater using a PTC element as an auxiliary heating device that supplements deficiency of interior heat source in highly effective diesel engine.



AQJF301B

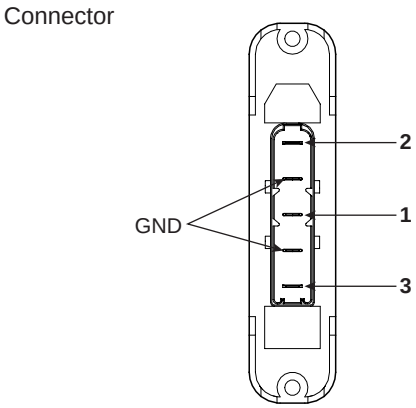
An electric heater heats up the interior by directly heating the air that passes through the heater.
PTC = positive Temperature Coefficient
The name itself implies that the element has a proportional resistance change sensitive to temperature. PTC heater is installed at the exit or the backside of heater core.



AQJF301A

OPERATION PRINCIPLE

ECM outputs a PTC on signal. Operate PTC from 1st setting to 3rd setting with an interval of 15 seconds.
Heat up the air, which passes through a heater core.



LQJF301C

OPERATION CONDITION

Judge the condition by ambient temperature is below 5°C, coolant temperature is below 70°C, and battery voltage is above 11V and engine RPM is above 700RPM.

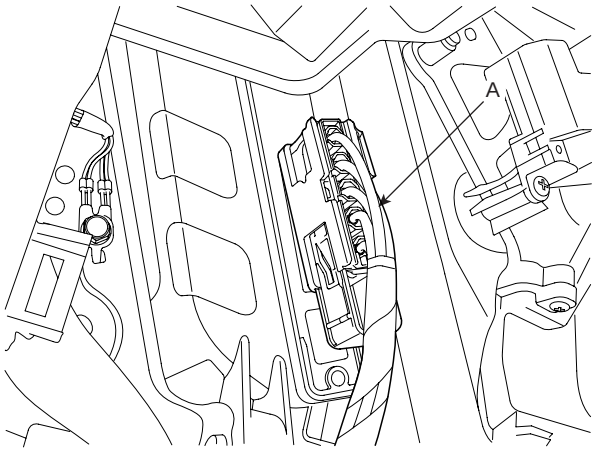
INSPECTION EA706AA9

Inspect the PTC operation by confirmation logic as below.

1. Entering method
   1) Set the floor mode, maximum heating
   2) Turn off the blower switch
   3) Press the intake button more than 5 times.
   4) Indicator of entire button is flashed with an interval of 0.5 seconds continuously (Manual). Graphics of the entire LCD display switch on and off with an interval of 0.5 seconds continuously (Automatic)
   5) Confirm the PTC operation by operating the blower switch
      Manual: 1~4 step, Automatic: 1~8step.
   6) Each PTC relay is operated with an interval of 3 seconds.
   7) Execute the PTC operation by confirmation logic for 30 seconds.
2. Cancellation method
   1) Select the A/C button or intake button.
   2) IG "OFF"
   3) Cancel the logic after 30 seconds automatically.
3. If the PTC operation is not operated, substitute with a known-good PTC and check for proper operation.
   If the problem is corrected, replace the PTC.

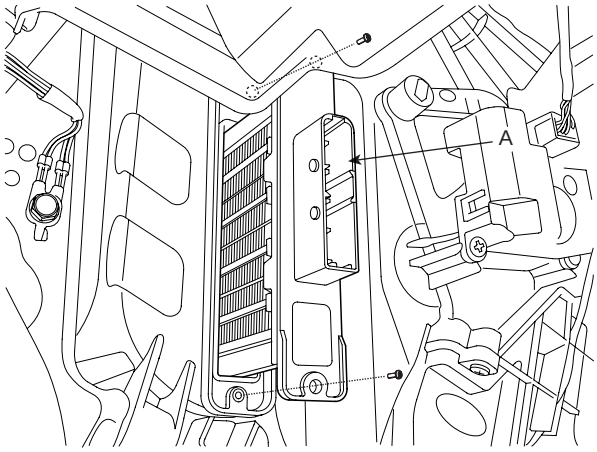
REPLACEMENT E15C0CEC

1. Remove the cresh pad(Refer to BD group -Crash pad)
2. Disconnect the connector from the PTC heater.



AQKF301D

3. Remove the self-tapping screws (A) and the PTC heater (A).

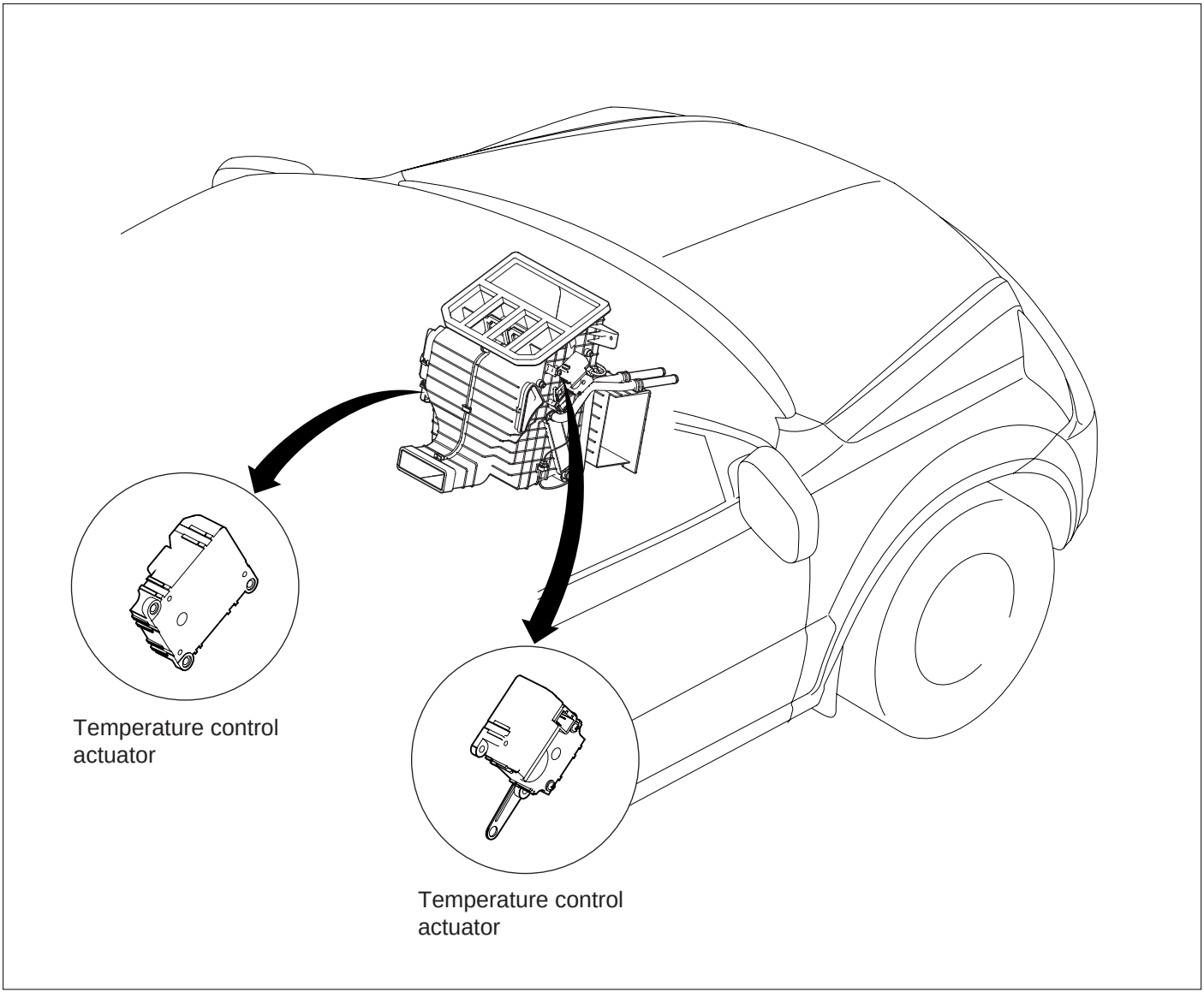


AQKF301E

4. Install the PTC heater in the reverse order of removal.

TEMPERATURE CONTROL ACTUATOR

COMPONENT LOCATION E9ADF938



SBLHA6110L

DESCRIPTION E070137D

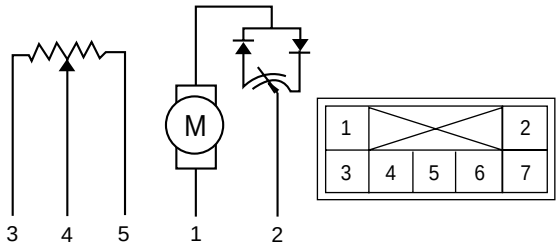
1. Heater unit includes mode control actuator and temperature control actuator.
2. Temperature control actuator is located at the heater unit. It regulates the temperature by the procedure as follows. Signal from control unit adjusts position of temperature door by operating temperature switch and then temperature will be regulated by the hot/cold air ratio decided by position of temperature door.

INSPECTION EA6EBDC2

[LHD]

1. Ignition "OFF"
2. Disconnect the connector of temperature control actuator.
3. Verify that the temperature control actuator operates to the hot position when connecting 12V to the terminal 1 and grounding terminal 2.
   Verify that the temperature control actuator operates to the cool position when connecting in the reverse.

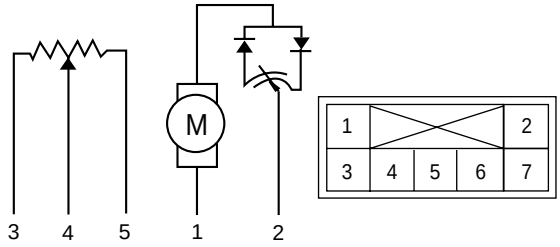
[DRIVE]



1. Cool position
2. Hot position
3. 5V (Vcc)
4. Feedback signal
5. Sensor ground
6. -
7. -

SBLHA6300L

[PASSENGER]



1. Hot position
2. Cool position
3. Sensor ground
4. Feedback signal
5. 5V (Vcc)
6. -
7. -

SBLHA6301L

4. Check the voltage between terminals 3 and 4.

[SPECIFICATION]

Door position	Voltage (3-4)	Error detecting
Max. cooling	0.3 ± 0.15V	Low voltage : 0.1V or less
Max. heating	4.7 ± 0.15V	High voltage : 4.9V or more

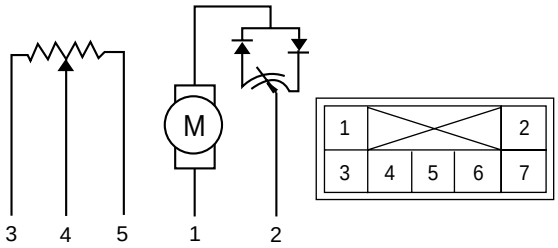
It will feedback current position of actuator to controls.

5. If the measured voltage is not specification, substitute with a known-good temperature control actuator and check for proper operation.
6. If the problem is corrected, replace the temperature control actuator.

[RHD]

1. Ignition "OFF"
2. Disconnect the connector of temperature control actuator.
3. Verify that the temperature control actuator operates to the hot position when connecting 12V to the terminal 3 and grounding terminal 4.
   Verify that the temperature control actuator operates to the cool position when connecting in the reverse.

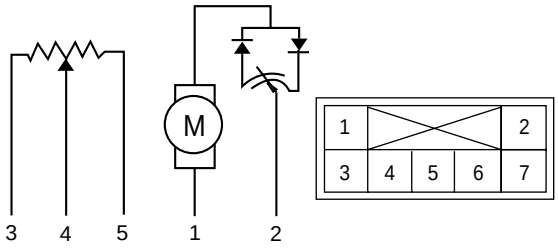
[DRIVE]



1. -
2. -
3. Hot position
4. Cool position
5. Sensor GND
6. Feed back signal
7. 5V (VCC)

SBLHA6300N

[PASSENGER]



1. -
2. -
3. Hot position
4. Cool position
5. Sensor GND
6. Feed back signal
7. 5V (VCC)

SBLHA6301N

4. Check the voltage between terminals 5 and 6.

[SPECIFICATION]

Door position	Voltage (5-6)	Error detecting
Max. cooling	0.3 ± 0.15V	Low voltage : 0.1V or less
Max. heating	4.7 ± 0.15V	High voltage : 4.9V or more

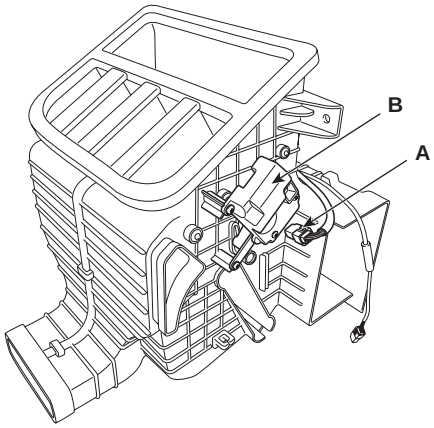
It will feedback current position of actuator to controls.

5. If the measured voltage is not specification, substitute with a known-good temperature control actuator and check for proper operation.
6. If the problem is corrected, replace the temperature control actuator.

REPLACEMENT EE73CABF

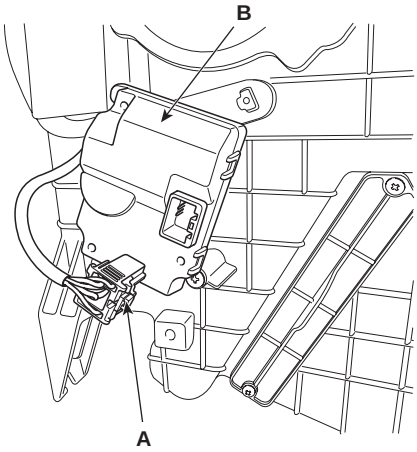
1. Disconnect the negative (-) battery terminal.
2. Remove the driver's crush pad lower panel (Refer to BD group).
3. Disconnect the temperature control actuator connector (A) after removing the air duct.
4. Loosen the mounting screw and then remove the temperature control actuator (B).

[DRIVE]



SBLHA6014D

[PASSENGER]

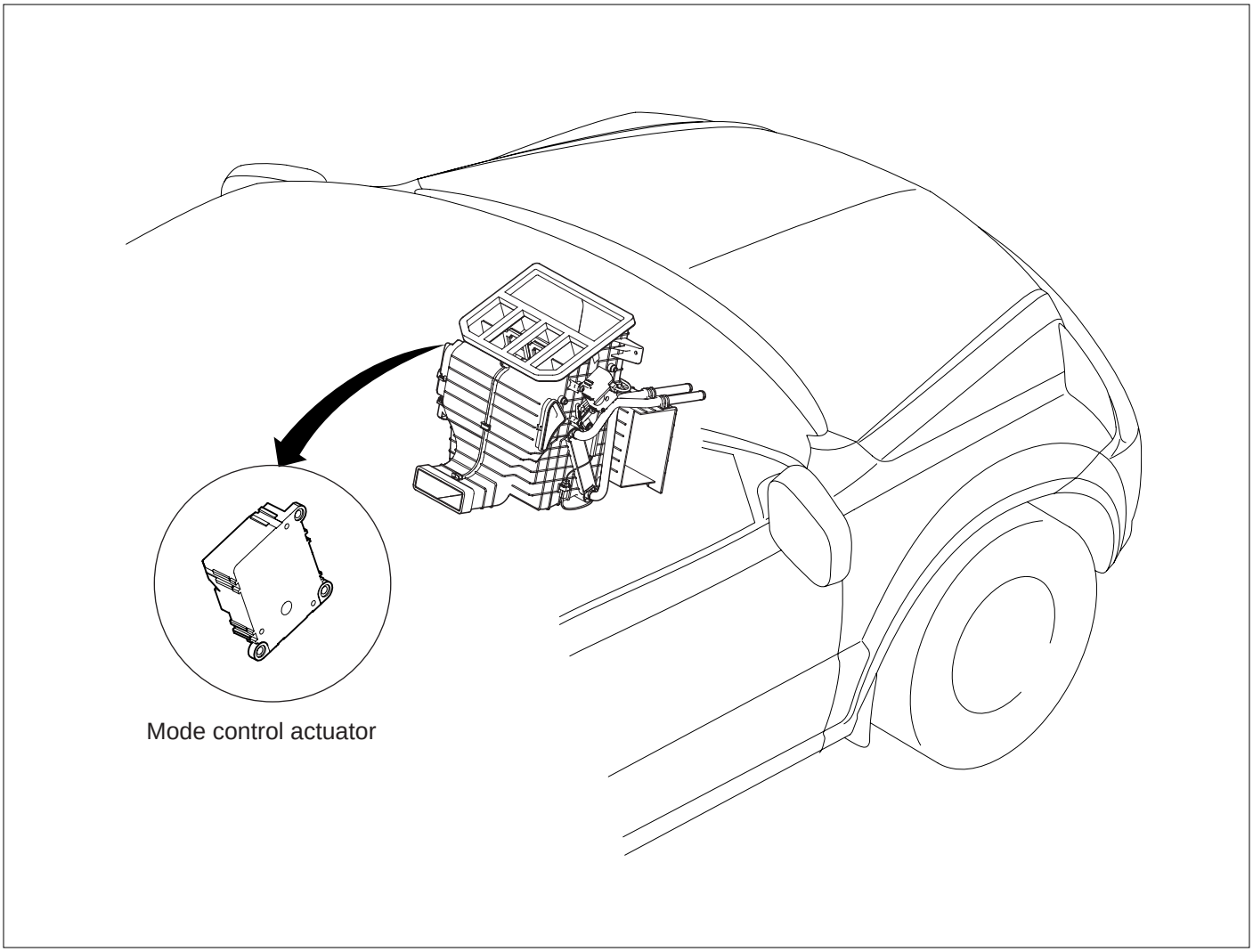


SBLHA6015D

5. Installation is the reverse order of removal.

MODE CONTROL ACTUATOR

COMPONENT LOCATION ED5D3E34



SBLHA6111L

DESCRIPTION EFCA0412

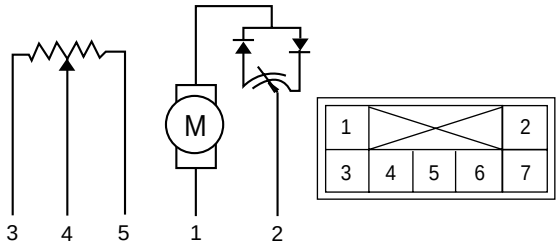
The mode control actuator is located at the heater unit. It adjusts position of mode door by operating mode control actuator based on signal of A/C control unit. Pressing mode select switch makes the mode control actuator shift in order of vent→ B/L → floor → mix.

INSPECTION

[LHD]

ED11C62B

1. Ignition "OFF"
2. Disconnect the connector of mode control actuator.
3. Verify that the mode control actuator operates to the defrost mode when connecting 12V to the terminal 1 and grounding terminal 2.
4. Verify that the mode control actuator operates to the vent mode when connecting in the reverse.



1. Vent mode
2. Defrost mode
3. 5V(VCC)
4. Feedback signal
5. Sensor ground
6. -
7. -

SBLHA6306L

5. Check the voltage between terminals 4 and 5.

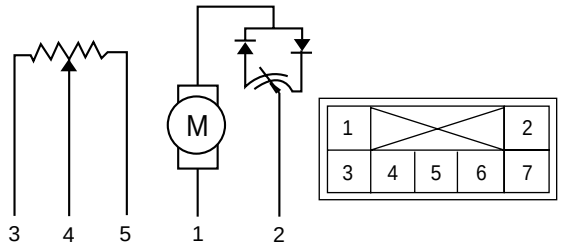
Door position	Voltage (4-5)	Error detecting
Vent	0.3 ± 0.15V	Low voltage : 0.1V or less
Defrost	4.7 ± 0.15V	High voltage : 4.9V or more

It will feedback current position of actuator to controls.

6. If the measured voltage is not specification, substitute with a known-good mode control actuator and check for proper operation.
7. If the problem is corrected, replace the mode control actuator.

[RHD]

1. Ignition "OFF"
2. Disconnect the connector of mode control actuator.
3. Verify that the mode control actuator operates to the defrost mode when connecting 12V to the terminal 3 and grounding terminal 4.
4. Verify that the mode control actuator operates to the vent mode when connecting in the reverse.



1. -
2. -
3. Defrost mode
4. Vent mode
5. Sensor GND
6. Feed back signal
7. 5V (VCC)

SBLHA6306N

5. Check the voltage between terminals 5 and 6.

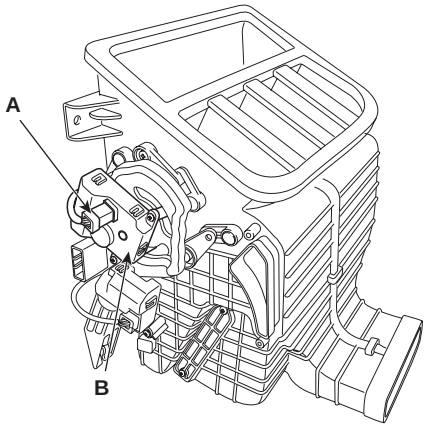
Door position	Voltage (5-6)	Error detecting
Vent	0.3 ± 0.15V	Low voltage : 0.1V or less
Defrost	4.7 ± 0.15V	High voltage : 4.9V or more

It will feedback current position of actuator to controls.

6. If the measured voltage is not specification, substitute with a known-good mode control actuator and check for proper operation.
7. If the problem is corrected, replace the mode control actuator.

REPLACEMENT ED24AC0D

1. Disconnect the negative (-) battery terminal.
2. Remove the driver's crush pad lower panel. (Refer to BD group -Cresh pad).
3. Disconnect the mode control actuator connector(A) after removing the air duct.
4. Loosen the mounting screws and then remove the mode control actuator (B).



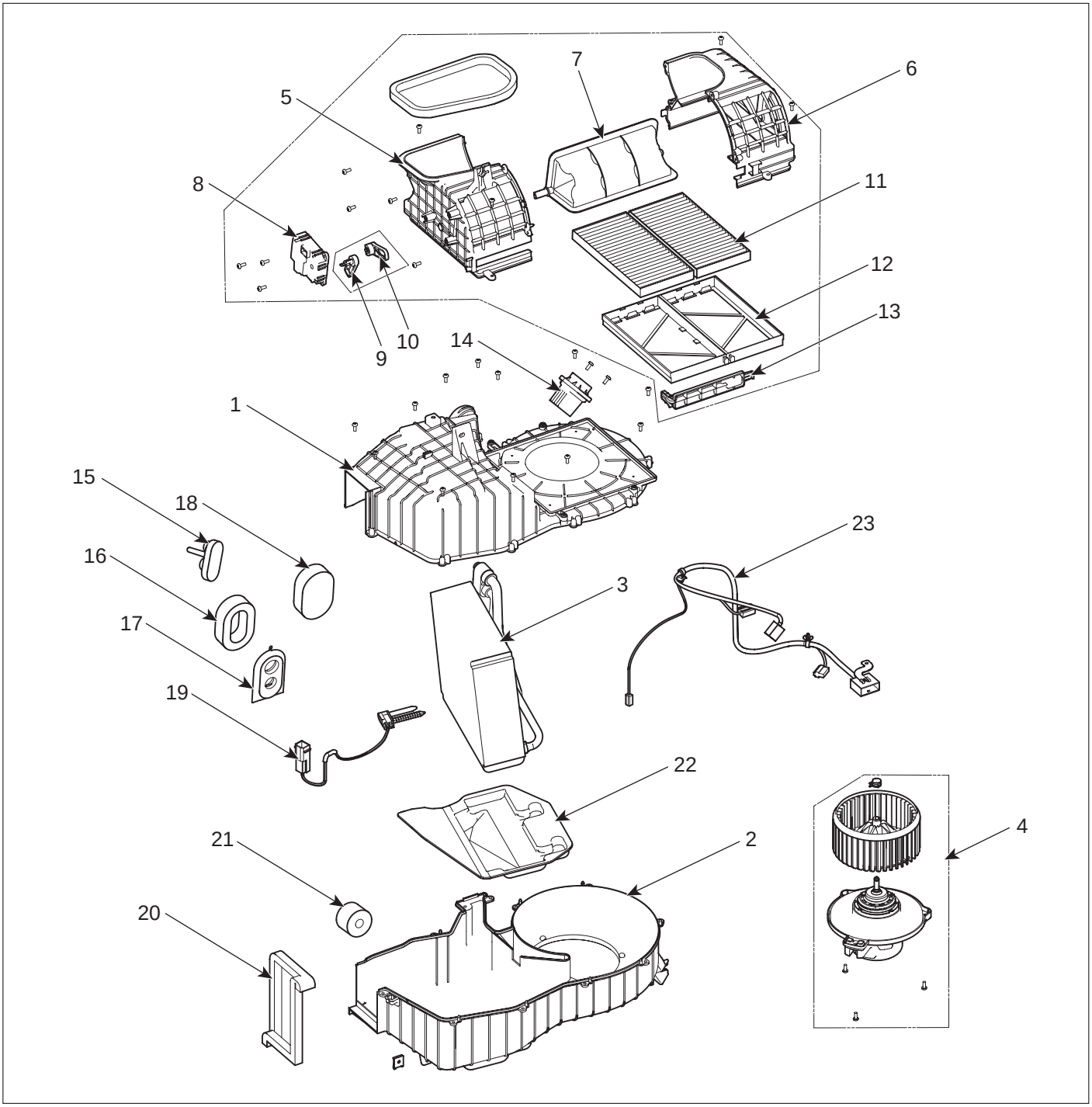
SBLHA6016D

5. Installation is the reverse order of removal.

BLOWER CONTROLS

BLOWER UNIT

COMPONENTS E1E2C6C1

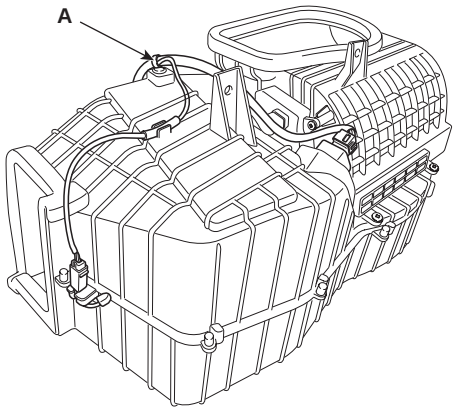


1. Evaporator & Blower upper case
2. Evaporator & Blower lower case
3. Evaporator core
4. Blower motor
5. Intake case (L)
6. Intake case (R)
7. Intake door
8. Intake actuator
9. Intake actuator
10. Intake door lever
11. Climate control air filter
12. Filter case
13. Climate control air filter cover
14. Power mosfet
15. Flange cap
16. Flange seal
17. Evaporator pipe seal
18. Flange seal
19. Evaporator sensor
20. Matching lining
21. Drain seal
22. Lower lining case
23. Wire haness

SBLHA6112L

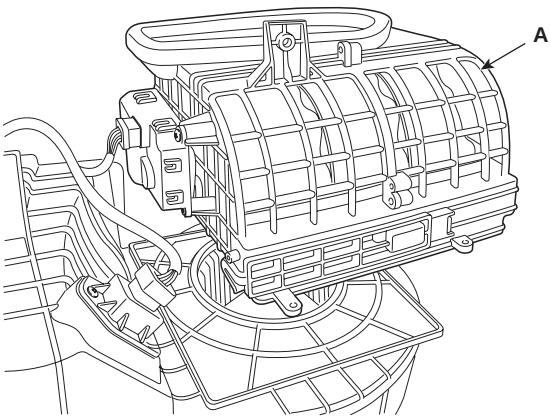
REPLACEMENT E6AF2E4E

1. Disconnect the negative (-) battery terminal.
2. Remove the crush pad.(Refer to BD group-cresh pad)
3. Remove the cowl cross bar assembly.(Refer to BD group-Cresh pad)
4. Remove the evaporator & blower unit.
5. Disconnect the connectors from the intake actuator, the blower motor and power mosfet.



SBLHA6017D

6. Remove the intake duct assemble (A) from the heater unit after loosening a mounting bolt and 4 screws.

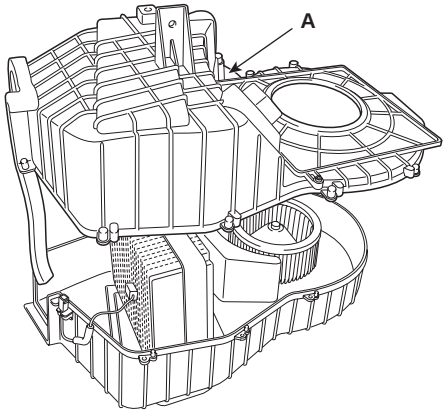


SBLHA6018D

NOTE

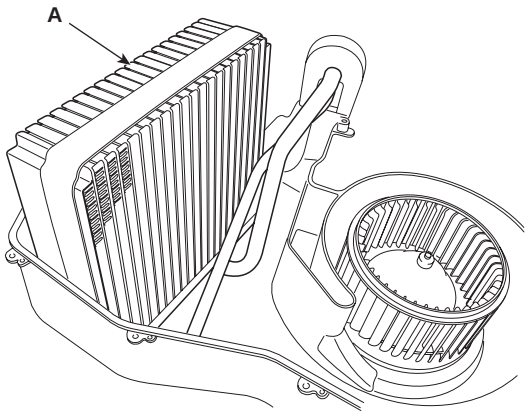
Make sure that there is no air leaking out of the blower and duct joints.

7. Remove the lower case(A) from the evaporator & blower unit assembly arfer unscrewing 8screws.



SBLHA6019D

8. Remove the evaporator core(A).



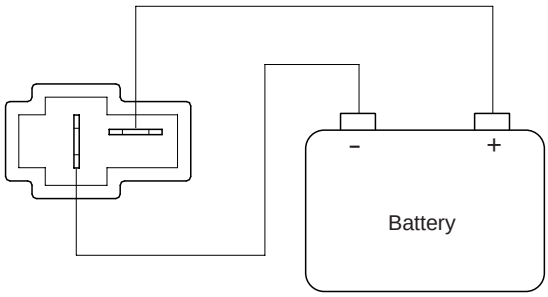
SBLHA6020D

9. Installation is the reverse order of removal.

BLOWER MOTOR

INSPECTION E0BC0F3E

1. Connect the battery voltage and check the blower motor rotation.

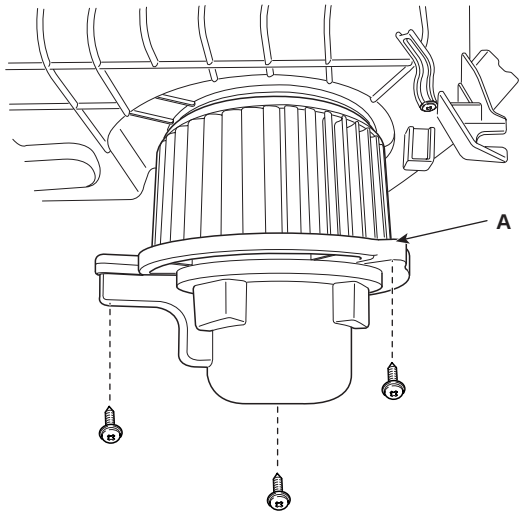


SBLHA6308D

2. If the blower motor voltage is not operated well, substitute with a known-good blower motor and check for proper operation.
3. If the problem is corrected, replace the blower motor.

REPLACEMENT EDECACA7

1. Disconnect the negative (-) battery terminal.
2. Disconnect the connector of the blower motor.
3. Remove the blower motor (A) after loosening the mounting screws.



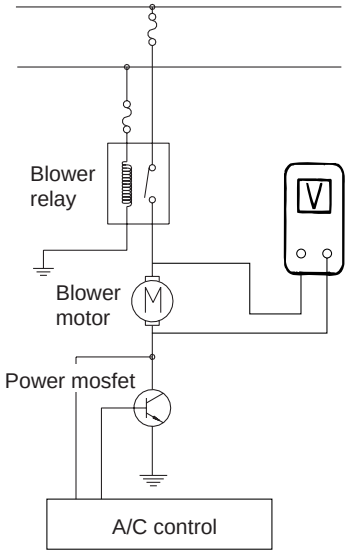
SBLHA6021L

4. Installation is the reverse order of removal.

POWER MOSFET

INSPECTION EA42B21A

1. Ignition "ON"
2. Manually operate the control switch and measure the voltage of blower motor.
3. Select the control switch to raise voltage until high speed.



BQKF355B

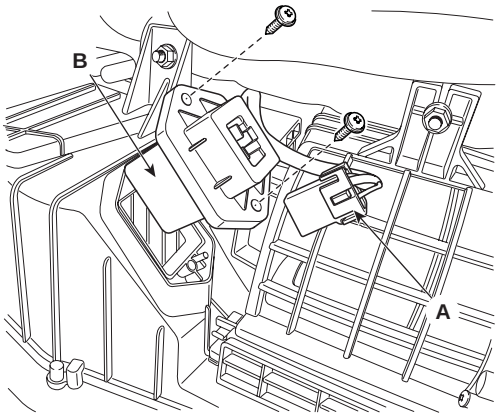
[SPECIFICATION]

Fan	Motor Voltage	
	Manual	AUTO
First speed	4.0 ± 0.5	4.50~4.79
Second speed	5.0 ± 0.5	4.80~5.79
Third speed	6.2 ± 0.5	5.80~6.89
Fourth speed	7.4 ± 0.5	6.90~8.09
Fifth speed	8.6 ± 0.5	8.10~9.29
Sixth speed	9.8 ± 0.5	9.30~10.49
Seventh speed	11.0 ± 0.5	10.50~11.99
eighth speed	Battery(+)	Battery(+)

4. If the measured voltage is not specification, substitute with a known-good power mosfet and check for proper operation.
5. If the problem is corrected, replace the power mosfet.

REPLACEMENT ECE7C1B8

1. Disconnect the negative (-) battery terminal.
2. Remove the cresh pad.
3. Disconnect the power mosfet connector (A).
4. Remove the power mosfet (B) after loosening the mounting screws.



SBLHA6022L

5. Installation is the reverse order of removal.

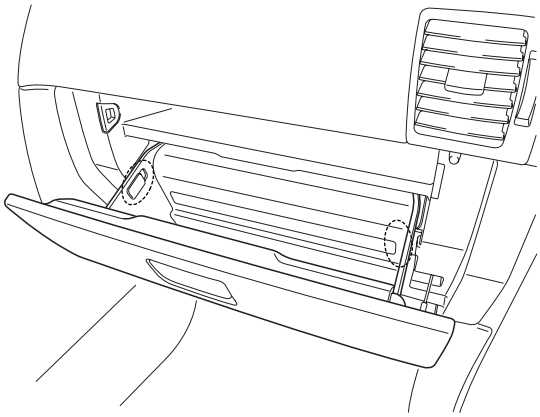
CLIMATE CONTROL AIR FILTER

DESCRIPTION E57FFE4F

This has particle filter which eliminates foreign materials and odor. The particle filter includes odor filter as well as conventional dust filter to ensure comfortable interior environment.

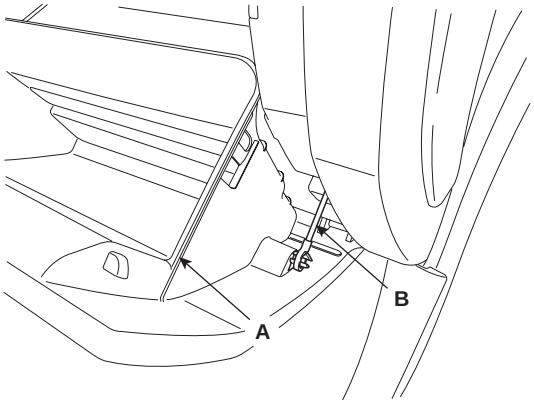
REPLACEMENT ECEF17A6

1. Open the glove box (B). Lower the glove box down completely by removing the glove box stopper (A) to the glove box.



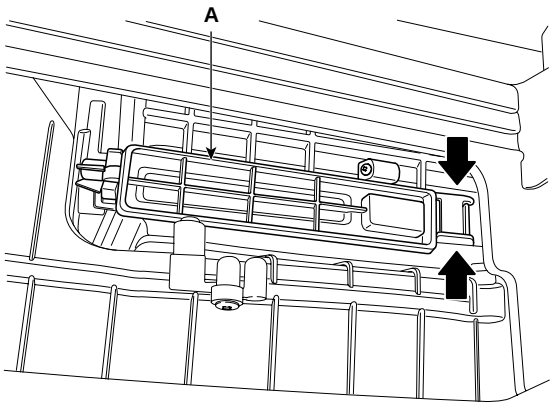
SBLHA6305D

2. Remove the glove box(A) from the lift(B).



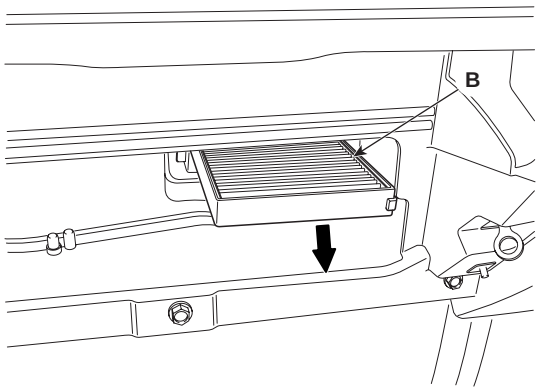
SBLHA6302D

3. Remove the filter cover (A) with pushing the knob.



SBLHA6023D

4. Replace the air filter (B), install it after making sure of the direction of air filter.



SBLHA6024L

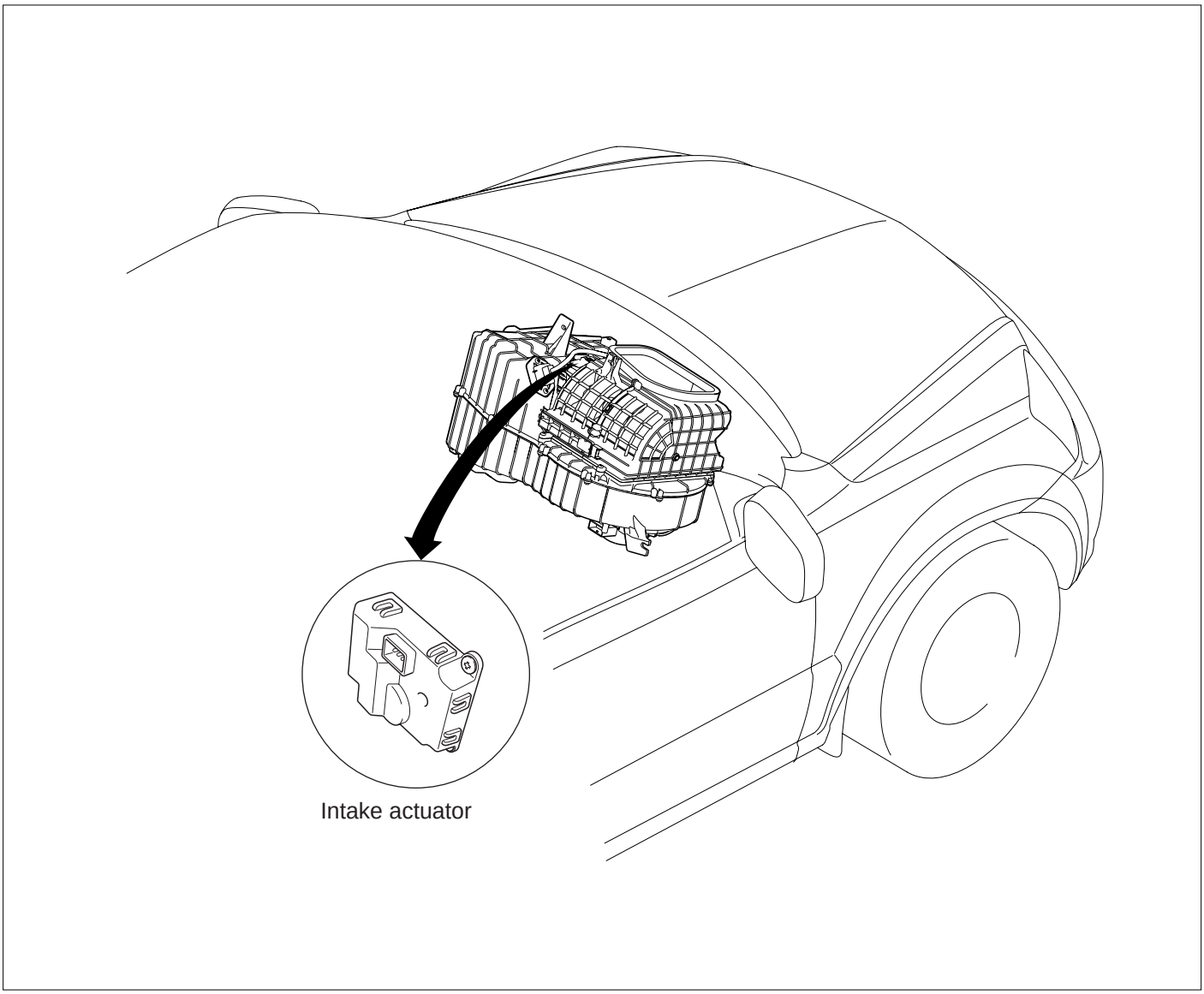
NOTE

In case of driving in an air-polluted area or rugged terrain, check and replace the air filter as frequently as possible.

Replacement period: 15,000 km (9320 mile)

INTAKE ACTUATOR

COMPONENT LOCATION EC4265E6



SBLHA6113L

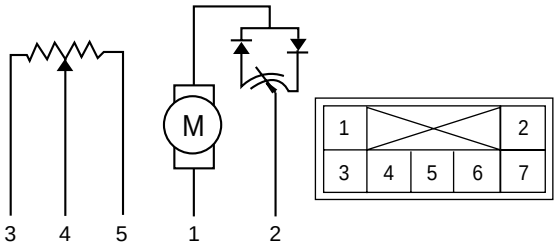
DESCRIPTION E3AE5AEA

1. The intake actuator is located at the blower unit.
2. It regulates the intake door by signal from control unit.
3. Pressing the intake selection switch will shift between recirculation and fresh air modes.

INSPECTION EC3314EB

[RHD]

1. Ignition "OFF"
2. Disconnect the intake actuator connector.
3. Verify that the actuator operates to the recirculation position when connecting 12V to the terminal 1 and grounding terminal 2.
4. Verify that the intake actuator operates to the fresh position when connecting in the reverse.



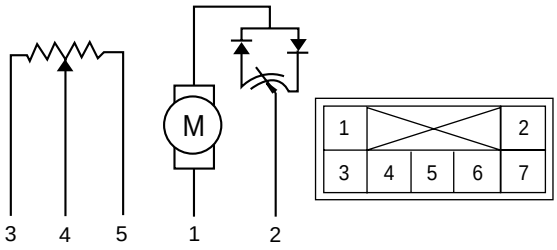
1. Recirculation
2. Fresh
3. Sensor ground
4. Feed back signal
5. Vcc(+5v)
6. -
7. -

SBLHA6304L

5. If the intake actuator is not operated well, substitute with a known-good intake actuator and check for proper operation.
6. If the problem is corrected, replace the intake actuator.

[LHD]

1. Ignition "OFF"
2. Disconnect the intake actuator connector.
3. Verify that the actuator operates to the recirculation position when connecting 12V to the terminal 3 and grounding terminal 4.
4. Verify that the intake actuator operates to the fresh position when connecting in the reverse.



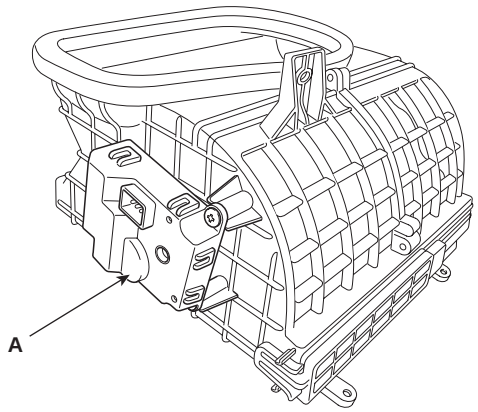
1. -
2. -
3. REC mode
4. FRE mode
5. Sensor GND
6. Feed back signal
7. 5V (VCC)

SBLHA6304N

5. If the intake actuator is not operated well, substitute with a known-good intake actuator and check for proper operation.
6. If the problem is corrected, replace the intake actuator.

REPLACEMENT EB13A243

1. Disconnect the negative (-) battery terminal.
2. Remove the cresh pad (Refer to BD group-cresh pad).
3. Disconnect the intake actuator connector.
4. Loosen the mounting screw and then remove the intake actuator (A) from the blower unit.



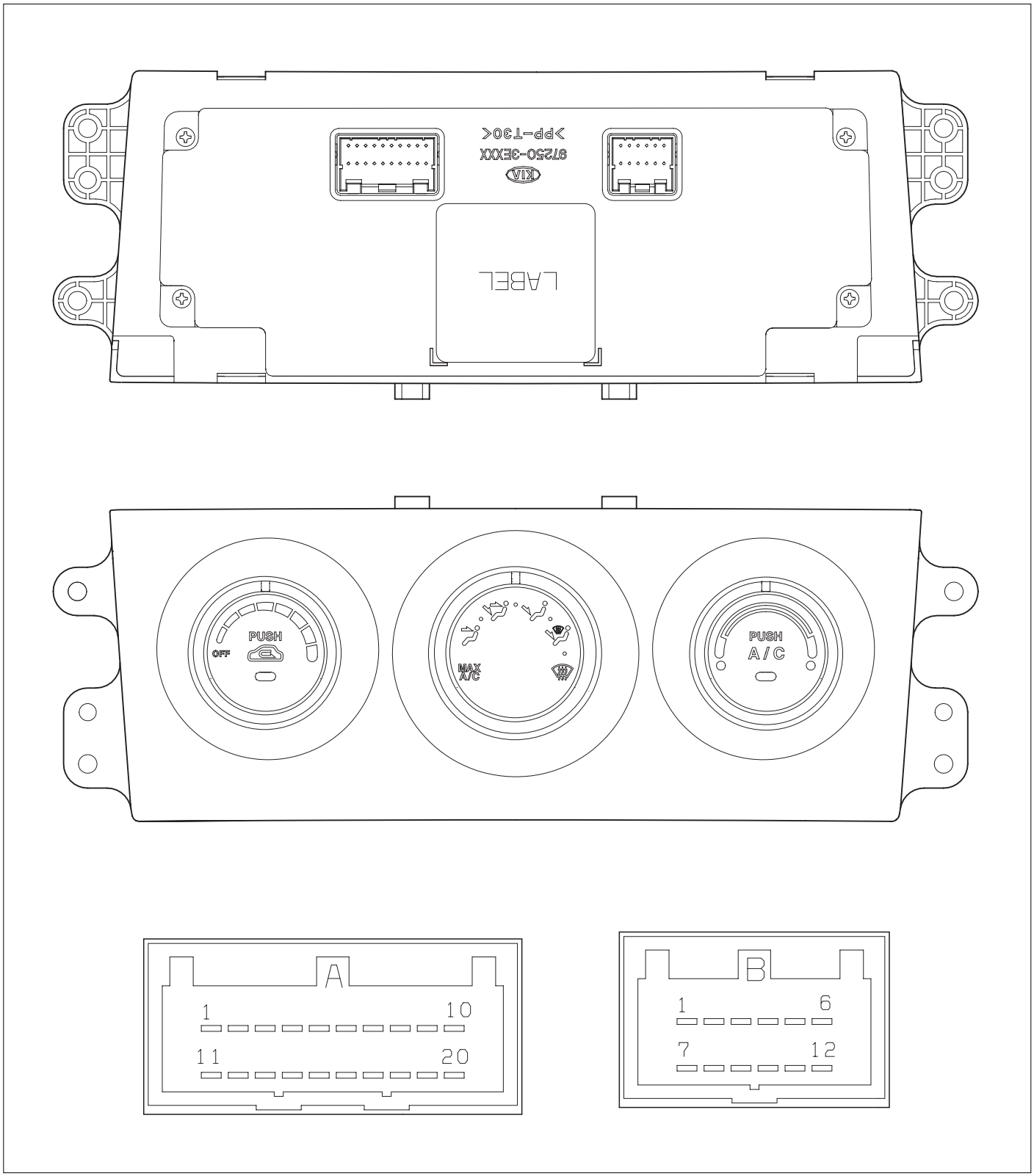
SBLHA6025D

5. Installation is the reverse order of removal.

BLOWER AND A/C CONTROLS (MANUAL)

CONTROL PANEL

COMPONENT ED50188D



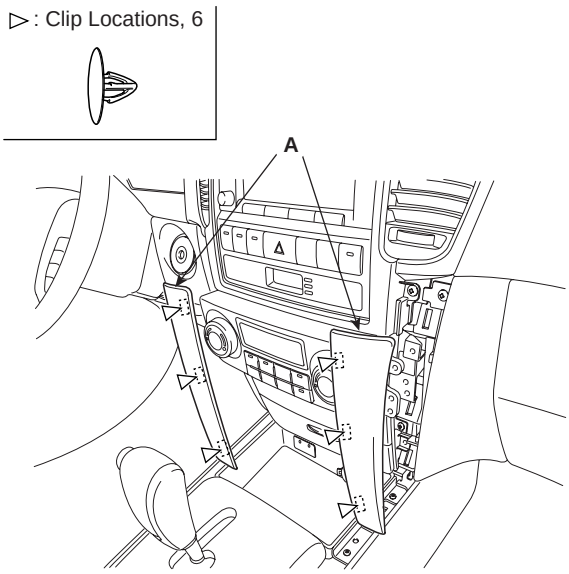
SBLHA6120D

[CONNECTOR PIN FUNCTION]

CON-NEC-TOR	PIN	FUNCTION	CON-NEC-TOR	PIN	FUNCTION
Connec-tor(A)	1	IGN2	Connec-tor(B)	1	Vref(5V)
	2	TAIL LAMP		2	A/C SELECTOR (HIGH)
	3	BATT(12V)		3	A/C OUTPUT(HIGH)
	4	FET(B)		4	TEMP ACTUATOR(F/BACK)
	5	BLOWER MOTOR		5	MODE ACTUATOR(F/BACK)
	6	-		6	INTAKE ACTUATOR(F/BACK)
	7	TEMP ACTUATOR(COOL)		7	IGN2
	8	INTAKE ACTUATOR(FRE)		8	-
	9	RHEOSTAT		9	-
	10	GND		10	EVAPORATOR SENSOR
	11	-		11	SENSOR GND
	12	MODE ACTUATOR(DEF)		12	GND
	13	FET(D)			
	14	PTC ON SIGNAL			
	15	PTC RELEY 2			
	16	PTC RELEY 3			
	17	MODE ACTUATOR(VENT)			
	18	TEMP ACTUATOR(WARM)			
	19	INTAKE ACTUATOR(REC)			
	20	BLOWER SELECTOR			

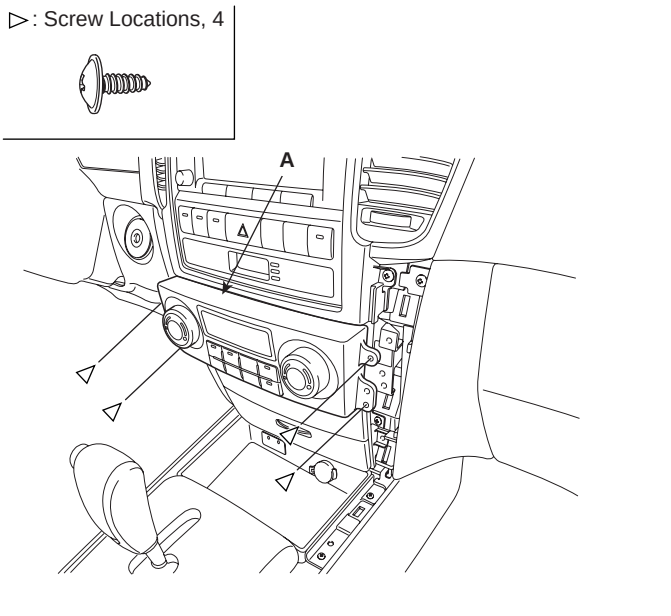
REPLACEMENT EE021D24

1. Disconnect the negative (-) battery terminal.
2. Remove the side garnish (A).



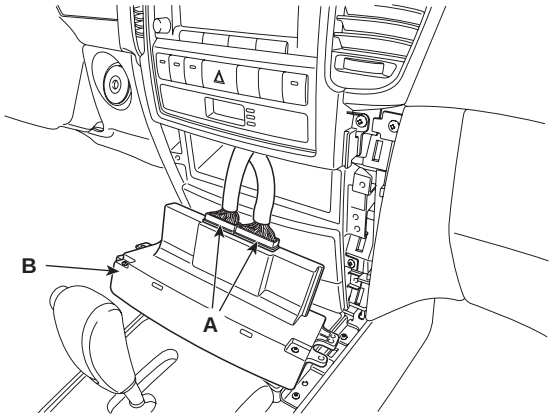
SBLHA6121L

3. After loosening the heater control mounting screw, remove the heater control unit(A).



SBLHA6122L

4. After disconnect the connector(A), remove the heater control unit(B).



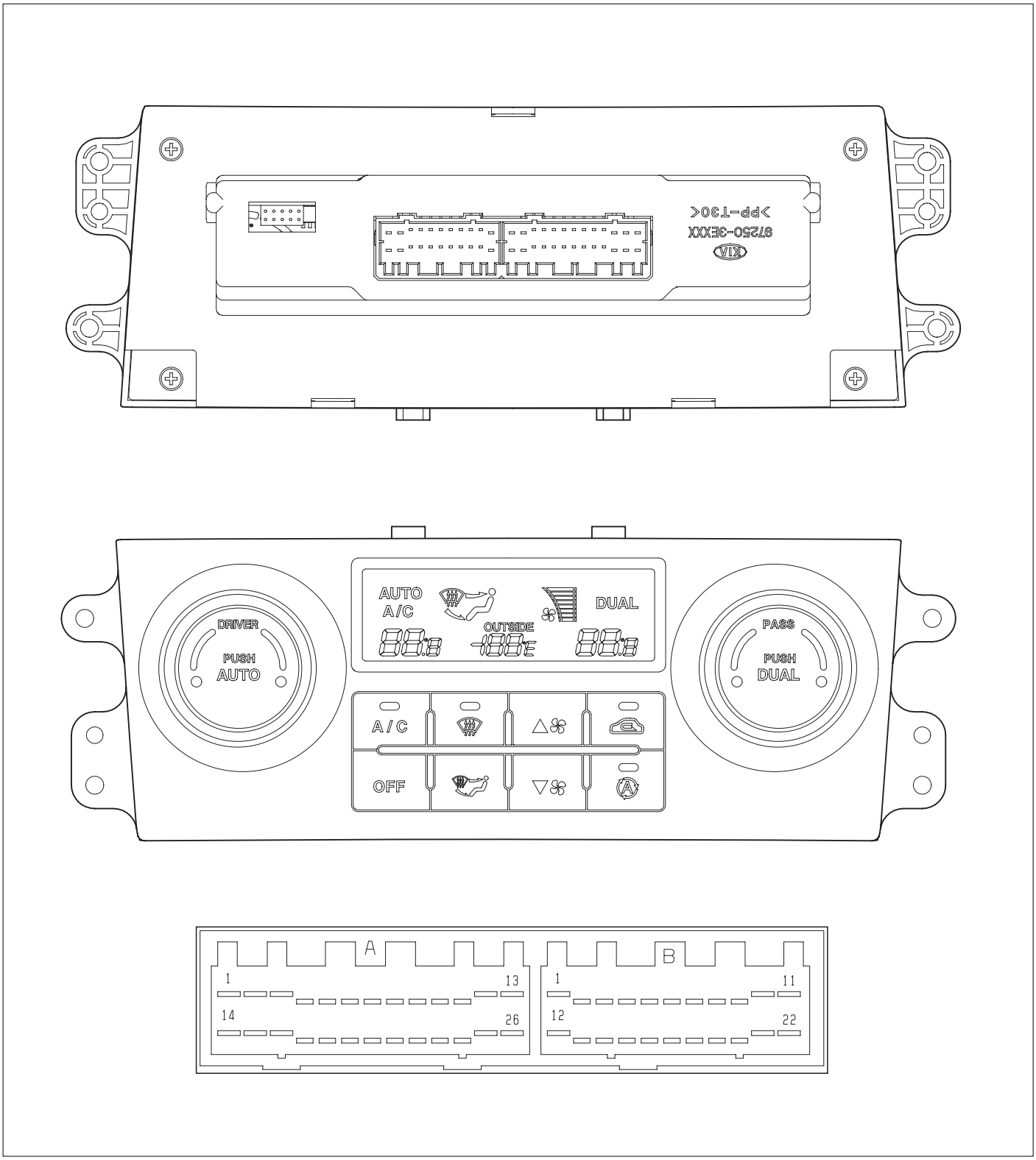
SBLHA6123L

5. Installation is the reverse order of removal.

BLOWER AND A/C CONTROLS (AUTOMATIC)

CONTROL PANEL

COMPONENT E4FA33EB



SBLHA6124D

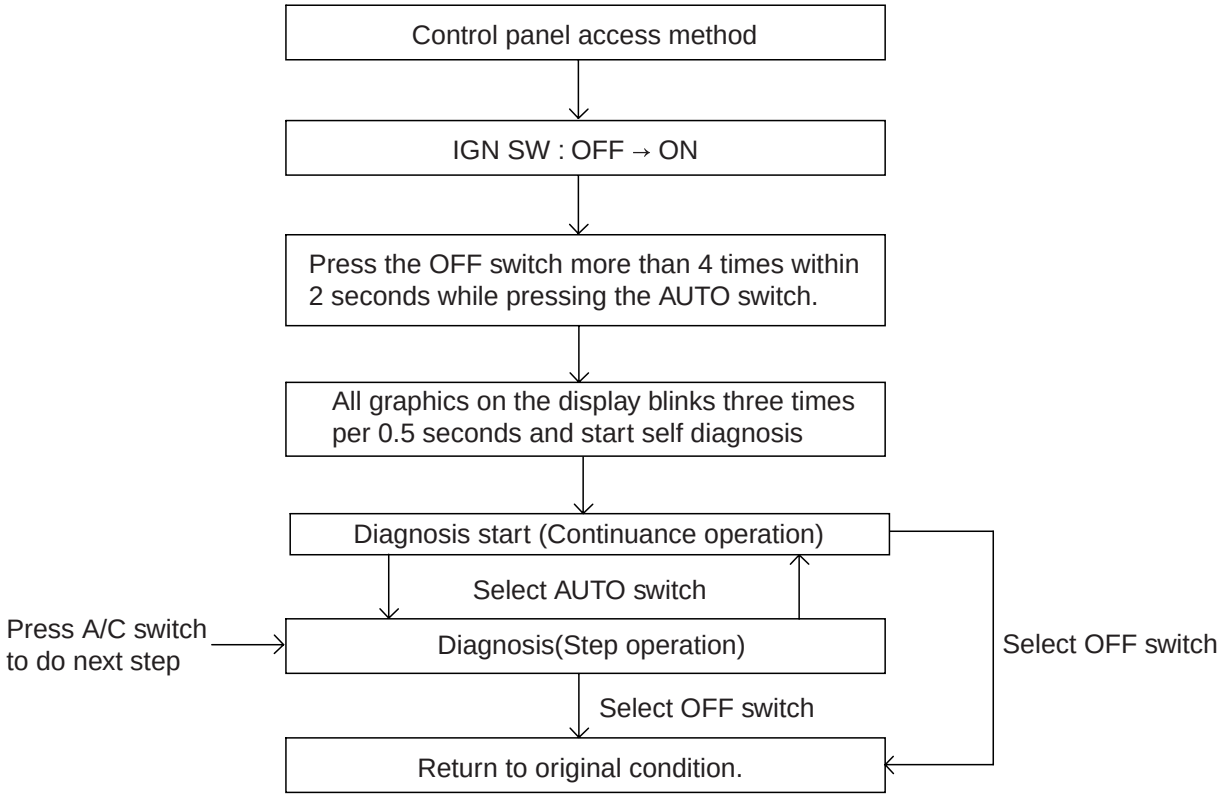
[CONNECTOR PIN FUNCTION]

CON-NEC-TOR	PIN	FUNCTION	CON-NEC-TOR	PIN	FUNCTION
CON-NEC-TOR (A)	1	IGN2	CON-NEC-TOR (B)	1	REF(+5V)
	2	TAIL LAMP		2	IG2
	3	Battery (+)		3	SUN SENSOR(-)
	4	Power mosfet (Gate)		4	EVAPORATOR SENSOR
	5	BLOWER MOTOR		5	SPEED SENSOR
	6	PTC ON SIGNAL(LOW)		6	K-LINE
	7	INCAR MOTOR(+)		7	HUMIDIT SENSOR
	8	PS TEMP ACTUATOR(COOL)		8	INCAR SENSOR
	9	DR TEMP ACTUATOR(COOL)		9	AQS SIGNAL
	10	INTAKE ACTUATOR(FRESH)		10	DR TEMP ACTUATOR F/B
	11	-		11	MODE ACTUATOR F/B
	12	RHEOSTAT		12	AMB SENSOR
	13	GND		13	DR SUN SENSOR(-)
	14	A/C SELECT(HIGH)		14	WATER TEMP SENSOR
	15	MOSE ACTUATOR(DEF)		15	INTAKE ACTUATOR F/B
	16	FET(DRAIN)		16	PS TEMP ACTUATOR F/B
	17	A/C THERMO(HIGH)		17	PS SUN SENSOR
	18	-		18	PS TEMP ACTUATOR(WARM)
	19	PTC RELAY2		19	-
	20	PTC RELAY3		20	-
	21	MODE ACTUATOR(VENT)		21	GND
	22	DR TEMP ACTUATOR(WARM)		22	SENSOR GND
	23	INTAKE ACTUATOR(REC)			
	24	BLOWER SELECT(LOW)			
	25	INCAR MOTOR(-)			
	26	-			

SELFDIAGNOSIS EA8EAF77

1. Self-diagnosis process

The F.A.T.C. module self test feature will detect electrical malfunction and provide error codes for system components with suspected failures.



LQJF500E

NOTE

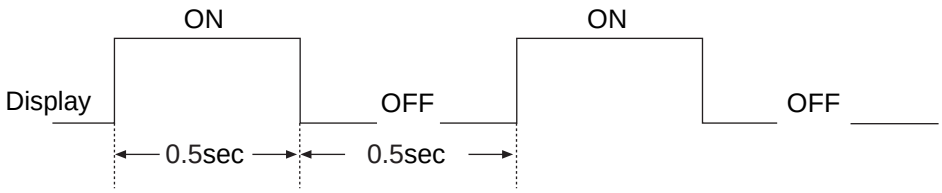
DTC data can be retrieved from the control panel directly or from the DLC using the Hi-Scan Pro.

2. How to read self-diagnostic code
After the display panel flickers three times every 0.5 second, the corresponding fault code flickers on the setup temperature display panel every 0.5 second and will show two figures. Codes are displayed in numerical format

FAULT CODE

Fault code Control unit	Fail description
0	Normal
11	IN-COR TEMPERATURE SENSOR OPEN (High)
12	IN-COR TEMPERATURE SENSOR SHORT (Low)
13	AMBIENT TEMPERATURE SENSOR OPEN (High)
14	AMBIENT TEMPERATURE SENSOR SHORT (Low)
15	WATER TEMPERATURE SENSOR OPEN (High)
16	WATER TEMPERATURE SENSOR SHORT (Low)
17	EVAPORATOR TEMPERATURE SENSOR OPEN (High)
18	EVAPORATOR TEMPERATURE SENSOR SHORT (Low)
19	TEMP POTENTIOMETER OPEN or SHORY (Drive)
20	TEMP POTENTIOMETER FAULT (Drive)
21	MODE POTENTIOMETER OPEN or SHORT
22	MODE POTENTIOMETER FAULT
23	HUMIDITY SENSOR OPEN (Open)
24	HUMIDITY SENSOR SHORT (Short)
25	INTAKE POTENTIOMETER OPEN or SHORT
26	INTAKE POTENTIOMETER FAULT
32	TEMP POTENTIOMRTER OPEN or SHORT (Passenger)
33	TEMP POTENTIOMETER FAULT (Passenger)

3. Fault code display.



BQKF500C

4. If fault codes are displayed during the check, Inspect malfunction causes by referring to fault codes.

5. Fail safe

   1) In-car temperature sensor: Control with the value of 23℃ (73.4°F)

   2) Ambient temperature sensor: Control with the value of 20℃ (67°F)

   3) Evaporator temperature sensor: Control with the value of -2℃ (28.4°F)

   4) Humidity sensor: Doesn’ t control.

   5) Photo sensor: None correction

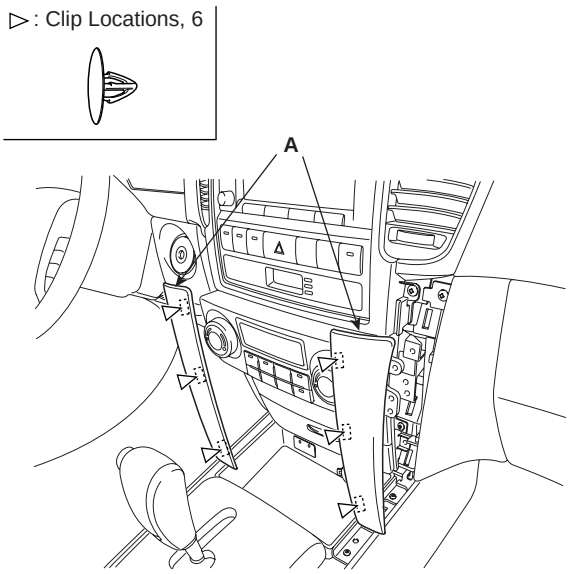
   6) Temperature control actuator (Air mix potentiometer):
      - If temperature set 17℃-24.5℃, fix at maximum cooling position.
      - If temperature set 25℃-32℃, fix at maximum heating position.

   7) Mode control actuator (Direction potentiometer):
      - Fix vent position, while selecting vent mode.
      - Fix defrost position, while selecting all except vent mode.

   8) A.Q.S sensor: Doesn’t control.

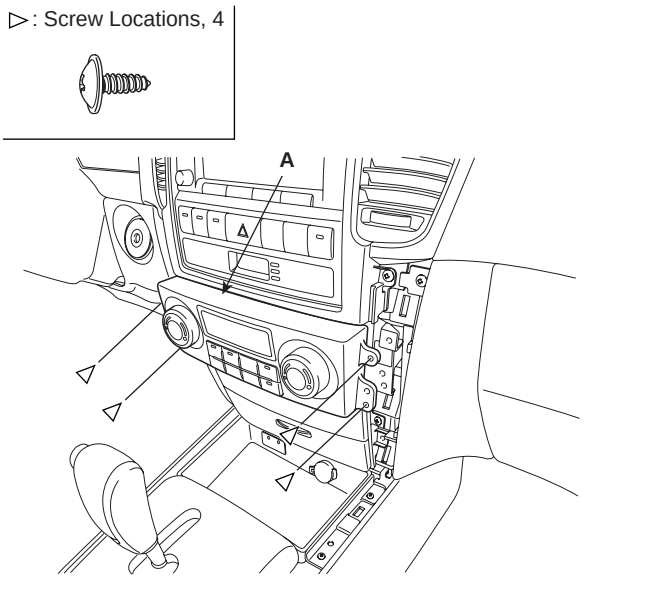
REPLACEMENT EA1F0C06

1. Disconnect the negative (-) battery terminal.
2. Remove the side garnish (A).



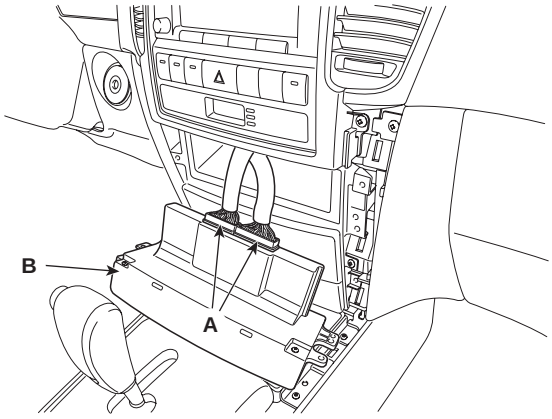
SBLHA6121L

3. After loosening the heater control mounting screw, remove the heater control unit(A).



SBLHA6122L

4. After disconnect the connector(A), remove the heater control unit(B).

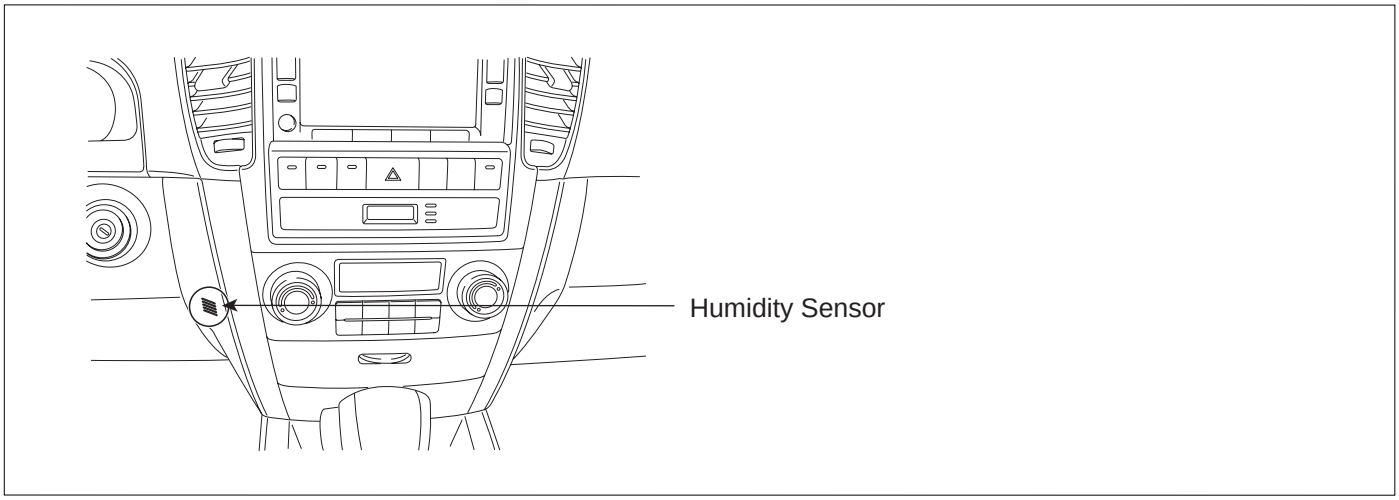


SBLHA6123L

5. Installation is the reverse order of removal.

DTC B1200 HUMIDITY SENSOR OPEN (HIGH)

COMPONENT LOCATION E55A86D0



SBLHA6500L

GENERAL DESCRIPTION E813CFB8

Humidity sensor located at crush pad, detects in-car humidity for in-car humidity control. If ambient air temperature or in-car humidity is outside certain range, it will turn on A/C to control in-car humidity for preventing in-car fogging. Air conditioner operation depends on ambient temperature and humidity.

DTC DESCRIPTION E26F8FC5

The A/C controller sets DTC B1200 if there is an open circuit in humidity sensor signal harness or the measured frequency value of sensor is more than threshold value(about 7,100㎐)

DTC DETECTING CONDITION E609B0DF

Item	Detecting Condition	Possible cause
DTC Strategy	• Frequency check	• Open Circuit in signal harness • Faulty Humidity Sensor • Faulty A/C control unit
Threshold value	• ＞ 7,100 Hz	
Detecting time	• 10msec	
FAIL SAFE	• Control with the value of 10%	

SPECIFICATION EF7B8179

Relative humidity(%)	Frequency(Hz)	Relative humidity(%)	Frequency(Hz)
20	7,100	60	6,600
30	6,976	70	6,468
40	6,853	80	6,330
50	6,728	90	6,186

MONITOR SCANTOOL DATA EA55BAF5

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "Humidity Sensor" Parameter on the Scantool while drying the humidity sensor with a hair drier or heat gun adjusted to a low heat setting.

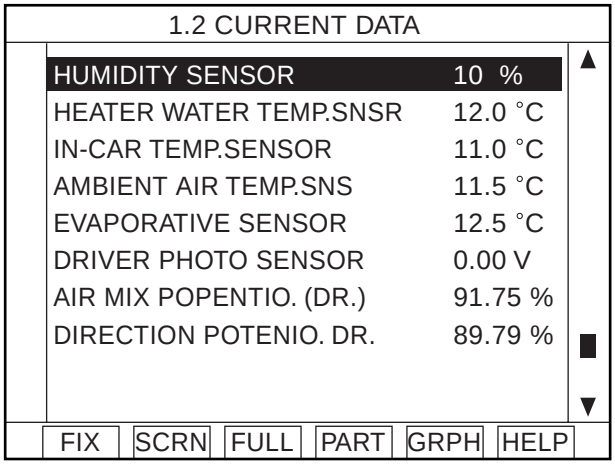


Fig. 1

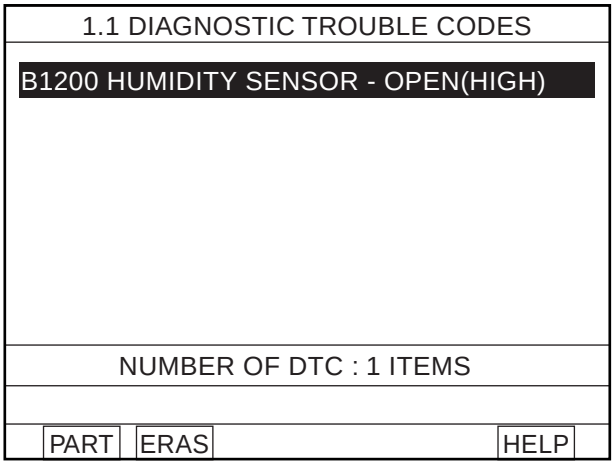


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1200.

EQBF510B

4. Are the DTC B1200 present and is parameter of "Humidity Sensor" fixed?
   ※ Parameter of "Humidity Sensor" will be fixed at 10%, if there is any fault in Humidity Sensor.

   YES

   Go to "Inspection" procedure.

   NO

   Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E5F388B6

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

   YES

   Repair as necessary and go to "Verification of Vehicle Repair" procedure.

NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EE9EA63F

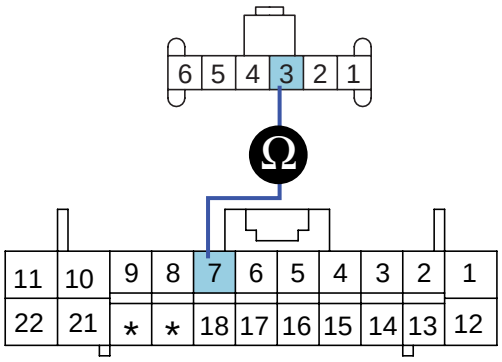
1. Check for open in harness.

   1) Ignition "OFF"

   2) Disconnect Humidity Sensor.

   3) Measure resistance between terminal "3" of Humidity Sensor and terminal "7" of A/C Control Unit.

Specification : Approx. 0 Ω



1. Motor(-)
2. Sensor ground
3. **Humidity sensor signal**
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

SBLHA6501L

   4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection " procedure.

NO

Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION E607AF32

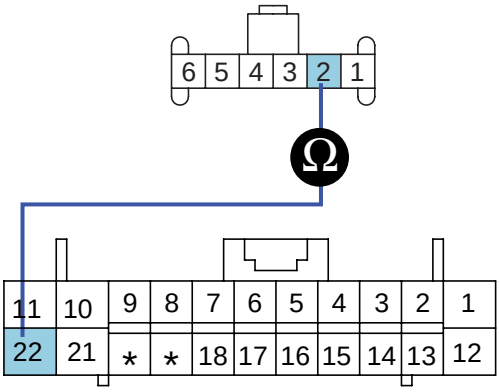
1. Check for open in ground harness.

   1) Ignition "OFF"

   2) Disconnect Humidity Sensor.

   3) Measure resistance between terminal "2" of Humidity Sensor and terminal "22" of A/C Control Unit.

Specification :Approx. 0 Ω



1. Motor(-)
2. **Sensor ground**
3. Humidity sensor signal
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

SBLHA6502L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E3A920B6

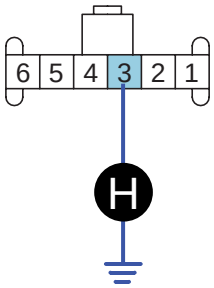
1. Check Humidity Sensor.

   1) Engine "ON"

   2) Connect Humidity Sensor.

   3) Measure Frequency between terminal "3" of Humidity sensor while increasing humidity.

Specification : Refer the specifications in fig 5.



1. Motor(-)
2. Sensor ground
3. **Humidity sensor signal**
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

SBLHA6503L

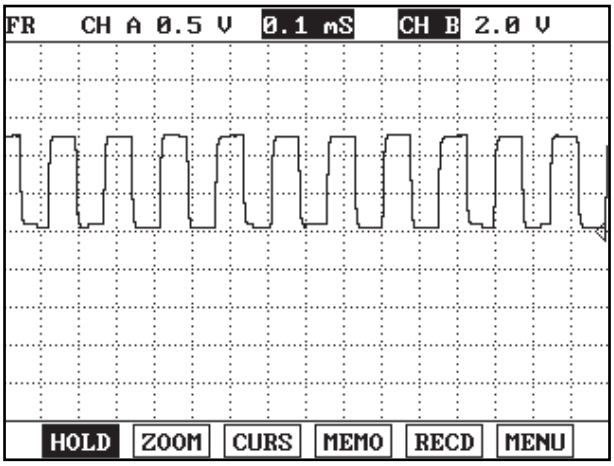


Fig. 3

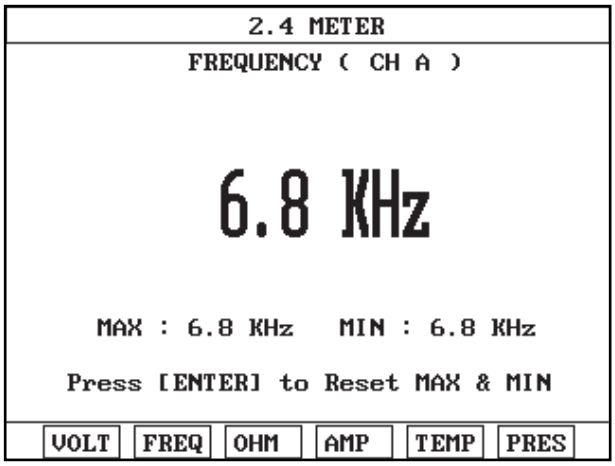


Fig. 4

Fig 3 : Signal waveform of Humidity sensor.
Fig 4 : Frequency of Humidity sensor Measured by scantool.

EQBF510F

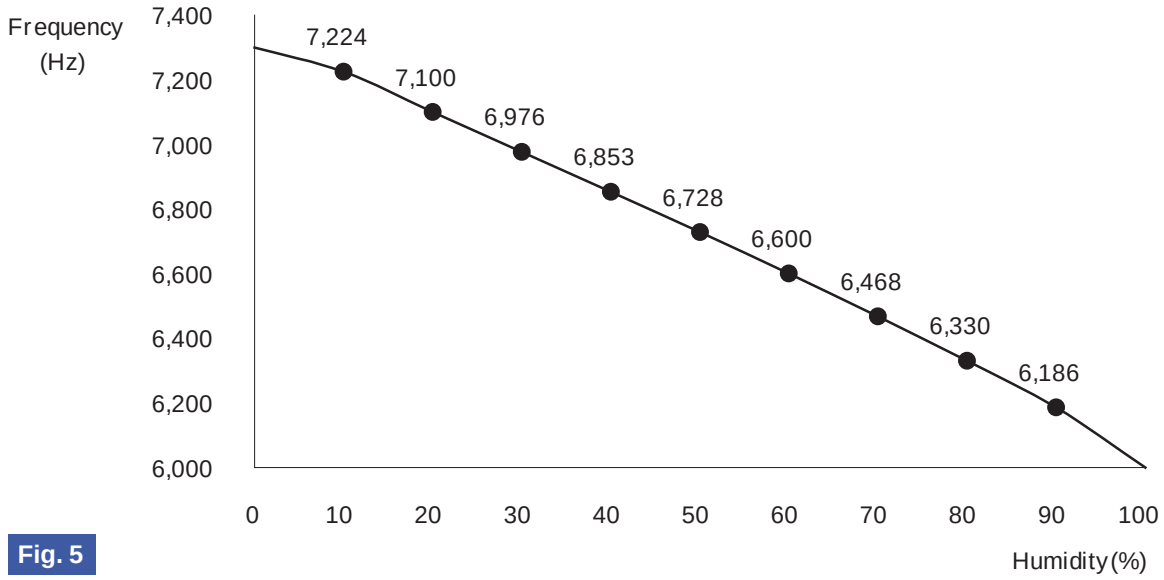


Fig. 5

Fig 5) Specifications : Frequency value of humidity sensor as a function of Relative humidity.

EQBF510Q

4) Is the measured frequency within specifications in fig 5? (tolerance limits ± 5%)

YES

Go to "Check A/C Control Unit" procedure.

NO

Substitute with a known-good Humidity sensor and check for proper operation.
If the problem is corrected, replace Humidity sensor and then go to "Verification of Vehicle Repair" procedure.

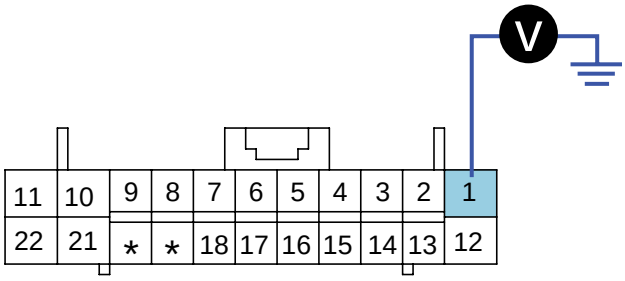
2. Check A/C Control Unit

   1) Engine "ON"

   2) Disconnect Humidity Sensor.

   3) Measure voltage value between terminal "1" of A/C control unit and chassis ground.

Specification : 5V



1. Humidity sensor signal

SBLHA6504L

   4) Is the measured voltage within specification?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E0FE9B19

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

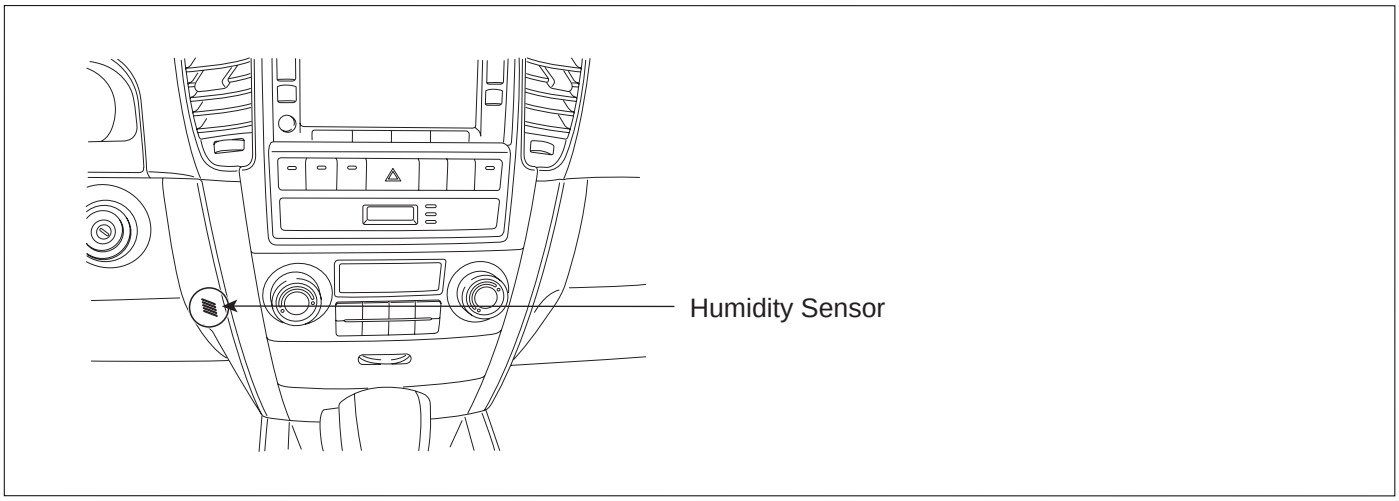
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1201 HUMIDITY SENSOR SHORT (LOW)

COMPONENT LOCATION E7DBA350



SBLHA6500L

GENERAL DESCRIPTION E40CCE08

Refer to DTC B1200.

DTC DESCRIPTION ED9AB2BE

The A/C controller sets DTC B1201 if there is a short circuit in humidity sensor signal harness or the measured frequency value of sensor is less than threshold value(about 6,186㎐)

DTC DETECTING CONDITION ED9D02C4

Item	Detecting Condition	Possible cause
DTC Strategy	• Frequency check	• Open Circuit in power harness • Short Circuit in signal harnes • Faulty Humidity Sensor • Faulty A/C control unit
Threshold value	• ＜ 6,186 Hz	
Detecting time	• 10msec	
FAIL SAFE	• Control with the value of 10%	

SPECIFICATION E39EABFF

Refer to DTC B1200.

MONITOR SCANTOOL DATA E1282110

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "Humidity Sensor" Parameter on the Scantool while drying the humidity sensor with a hair drier or heat gun adjusted to a low heat setting.

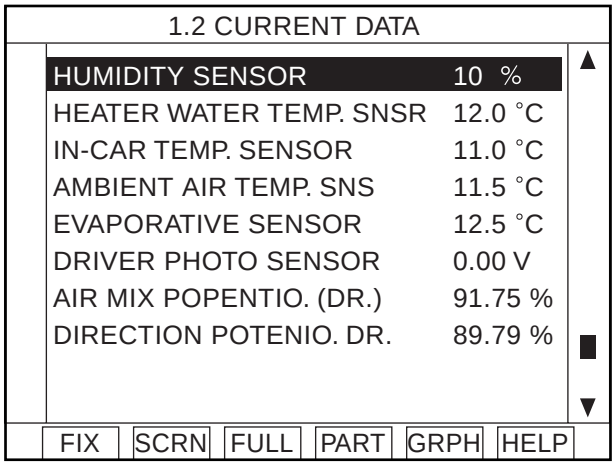


Fig. 1

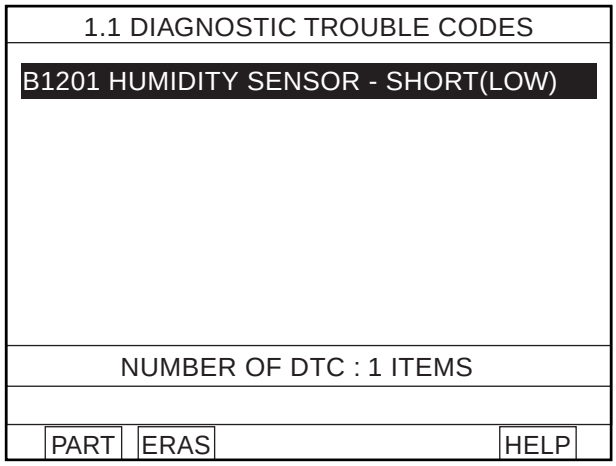


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1201.

EQBF511A

4. Are the DTC B1201 present and is parameter of "Humidity Sensor" fixed?
※ Parameter of "Humidity Sensor" will be fixed at 10%, if there is any fault in Humidity Sensor.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E46CEF9E

Refer to DTC B1200.

SIGNAL CIRCUIT INSPECTION ECC3D1A0

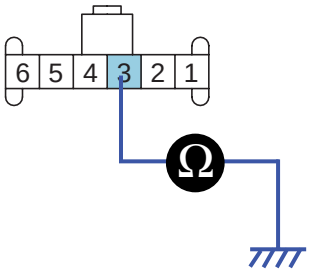
1. Check for short to ground in harness.

   1) Ignition "OFF"

   2) Disconnect Humidity Sensor.

   3) Measure resistance between terminal "3" of Humidity Sensor and chassis ground.

Specification : Approx. ∞ Ω



1. Motor(-)
2. Sensor ground
3. **Humidity sensor signal**
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

LQLG511B

4) Is the measured resistance within specifications?

YES

Go to "Power circuit Inspection " procedure.

NO

Check for short to ground in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

POWER SUPPLY CIRCUIT INSPECTION ED180193

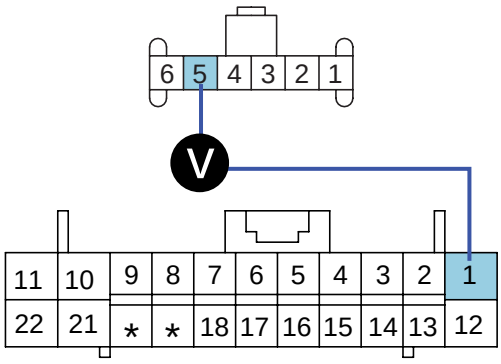
1. Check for open in power harness.

1) Ignition "ON"

2) Disconnect Humidity Sensor.

3) Measure resistance value between terminal "5" of Humidity Sensor and terominal "1" of A/C control unit.

Specification : 0Ω



1. Motor(-)
2. Sensor ground
3. Humidity sensor signal
4. In-car sensor temp. signal
5. **Sensor power (5V)**
6. Motor(+)

SBLHA6505L

4) Is the measured voltage within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in power harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E21ABF1E

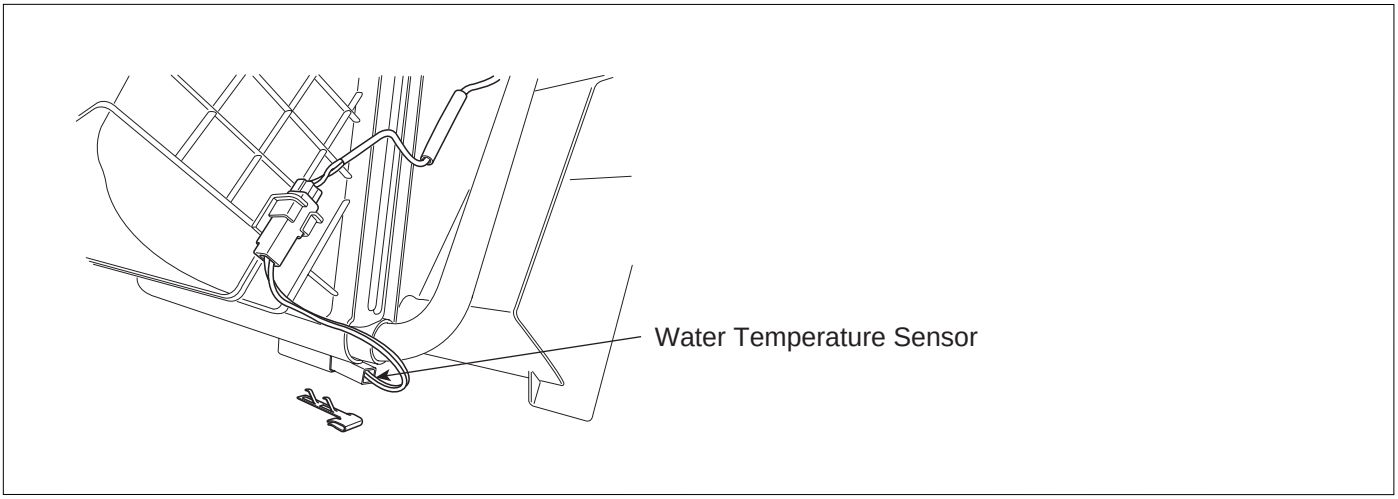
Refer to DTC B1200.

VERIFICATION OF VEHICLE REPAIR ECEB8038

Refer to DTC B1200.

DTC B1202 WATER TEMPERATURE SENSOR OPEN (HIGH)

COMPONENT LOCATION ECDA84B4



SBLHA6507L

GENERAL DESCRIPTION E79C5561

A water temp. sensor located at heater unit, detects coolant temperature. Its signal is used for cold engine lockout control. When the driver operates the heater before the engine is warmed up, the signal from sensor causes the heater control unit to reduce blower motor speed until coolant temperature reaches the threshold value.

DTC DESCRIPTION EFAC8202

The A/C controller sets DTC B1202 if there is an open circuit in water temp. sensor signal harness or the measured resistance value of the sensor is more than the threshold value(about 176.3kΩ)

DTC DETECTING CONDITION EDDA37B8

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Open Circuit in harness • Faulty water temp. Sensor • Faulty A/C control unit
Threshold value	• ＞ 176.3 kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of -2°C(28.4°F)	

SPECIFICATION EEDFF0BB

Temperature[°C(°F)]	Resistance(kΩ)	Temperature[°C(°F)]	Resistance(kΩ)
-30(-22)	176.3	10(50)	19.85
-20(-4)	96.44	20(68)	12.48
-10(14)	54.99	30(86)	8.06
0(32)	32.51	40(104)	5.33

MONITOR SCANTOOL DATA E23A4490

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "WATER TEMP. SENSOR" Parameter on the Scantool.

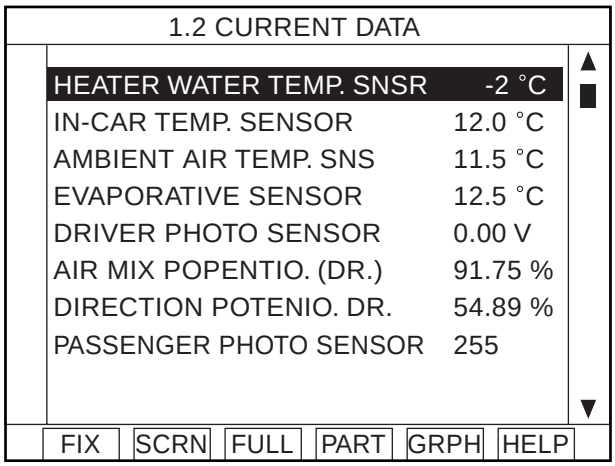


Fig. 1

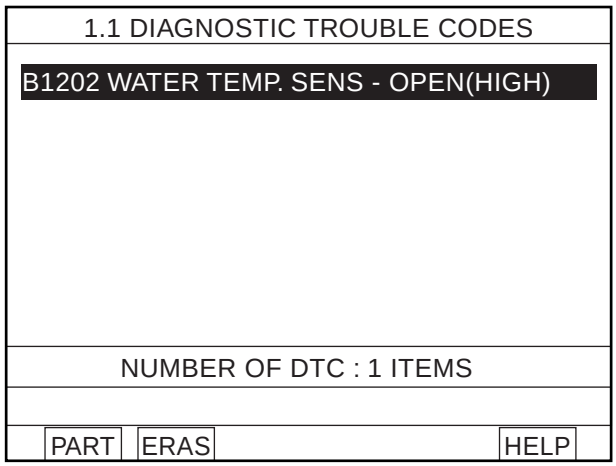


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1202.

EQBF512B

4. Are the DTC B1202 present and is parameter of "WATER TEMP. SENSOR" fixed?
※ Parameter of "WATER TEMP. SENSOR" will be fixed at -2℃(28.4°F), if there is any fault in WATER TEMP. SENSOR.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION EC92E599

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EE5CF56F

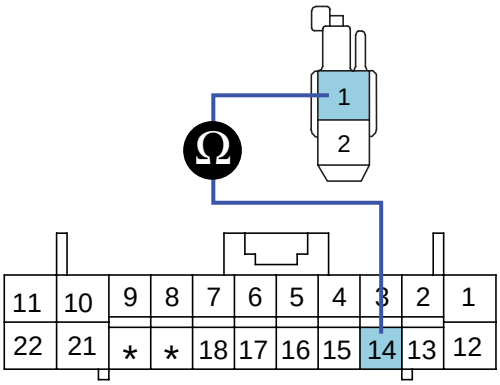
1. Check for open in harness.

   1) Ignition "OFF"

   2) Disconnect water temp. sensor.

   3) Measure resistance between terminal "1" of water temp. sensor and terminal "14" of A/C Control Unit.

Specification : Approx. 0 Ω



1. Water temp. sensor signal
2. Sensor ground

SBLHA6508L

   4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection " procedure.

NO

Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION E20A6934

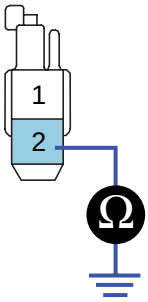
1. Check for open in ground harness.

   1) Ignition "OFF"

   2) Disconnect water temp. sensor.

   3) Measure resistance between terminal "2" of water temp. sensor and chassis ground.

Specification : Approx. 0 Ω



1. Water temp. sensor signal
2. Sensor ground

LQLG512D

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E8B1ACAD

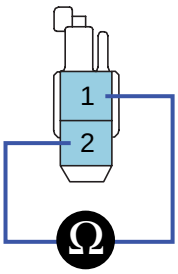
1. Check water temp. sensor.

1) Ignition "OFF"

2) Disconnect water temp. sensor.

3) Measure resistance between terminal "1" and "2" of water temp. sensor.

Specification : Refer the specifications in fig 3.



1. Water temp. sensor signal
2. Sensor ground

LQLG512E

4) Is the measured resistance within specifications in fig 3)? (tolerance limits ± 3%)

YES

Go to "Check A/C Control Unit" procedure.

NO

Substitute with a known-good water temp. sensor and check for proper operation.
If the problem is corrected, replace water temp. sensor and then go to "Verification of Vehicle Repair" procedure.

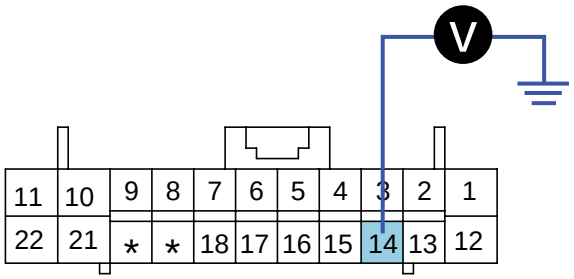
2. Check A/C Control Unit

   1) Engine "ON"

   2) Disconnect water temp. sensor.

   3) Measure Voltage between terminal "14" of A/C Control Unit and chassis ground.

Specification : Approx. 5V



14. Water temp. sensor signal

SBLHA6509L

   4) Is the measured voltage within specifications?

   YES

   Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

   NO

   Substitute with a known-good A/C Control Unit and check for proper operation.
   If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E60A09C9

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

   YES

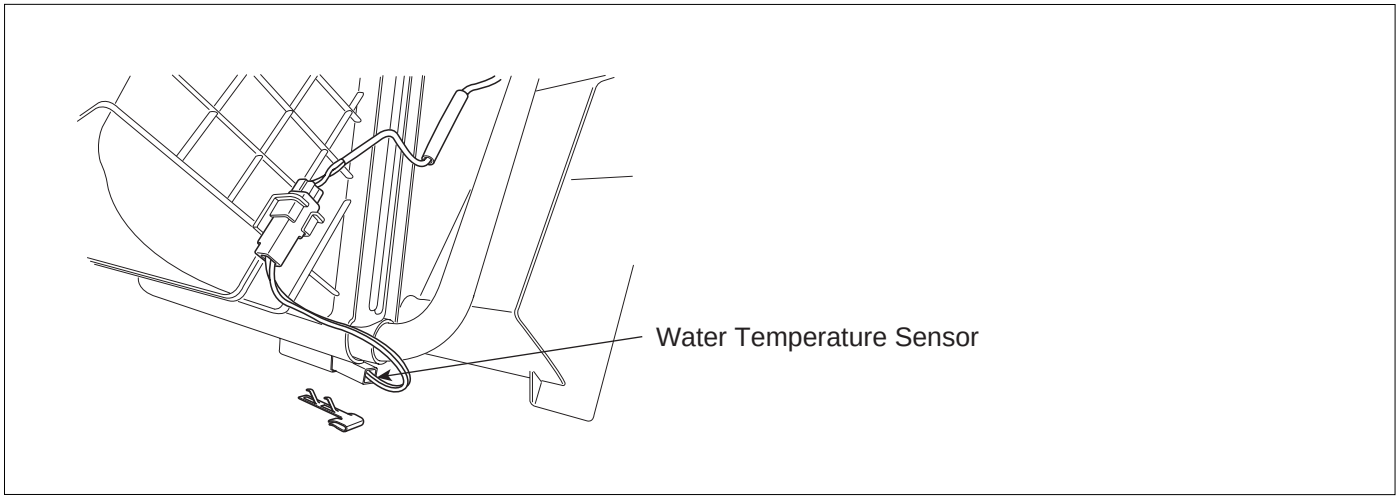
   Go to the applicable troubleshooting procedure.

   NO

   System is performing to specification at this time.

DTC B1203 WATER TEMPERATURE SENSOR SHORT (LOW)

COMPONENT LOCATION E0E2BC32



SBLHA6507L

GENERAL DESCRIPTION EFE4C535

Refer to DTC B1202.

DTC DESCRIPTION EA17C85B

The A/C controller sets DTC B1203 if there is a short circuit in water temp. sensor signal harness or the measured resistance value of sensor is less than threshold value(about 1.2kΩ)

DTC DETECTING CONDITION EF2E3145

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Short circuit in harness • Faulty water temp. Sensor • Faulty A/C control unit
Threshold value	• < 1.2 kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of -2°C(28.4°F)	

SPECIFICATION E6B0F9BF

Refer to DTC B1202.

MONITOR SCANTOOL DATA EADCD72B

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "WATER TEMP. SENSOR" Parameter on the Scantool.

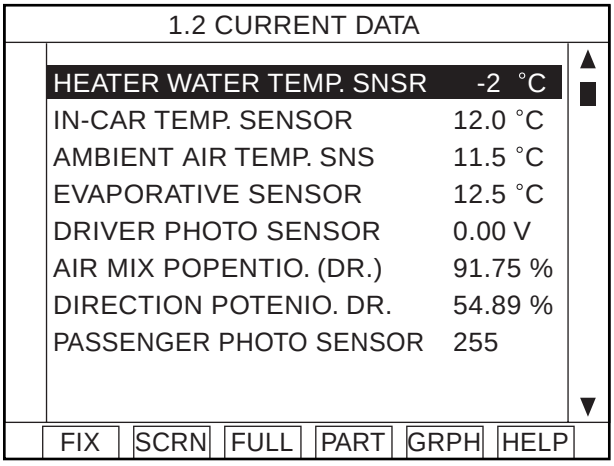


Fig. 1

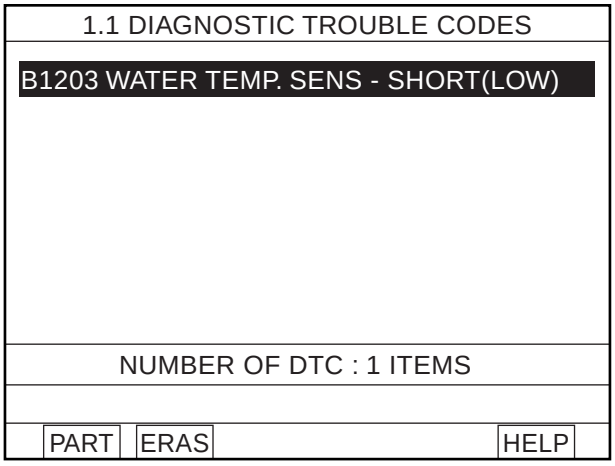


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1203.

EQBF513A

4. Are the DTC B1203 present and is parameter of "WATER TEMP. SENSOR" fixed?
   ※ Parameter of "WATER TEMP. SENSOR" will be fixed at -2℃(28.4°F), if there is any fault in WATER TEMP. SENSOR.

   YES

   Go to "Inspection" procedure.

   NO

   Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

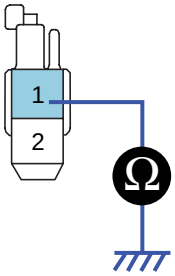
TERMINAL AND CONNECTOR INSPECTION E4A5AB7F

Refer to DTC B1202.

SIGNAL CIRCUIT INSPECTION E5290ACF

1. Check for short to ground in harness.
   1) Ignition "OFF"
   2) Disconnect water temp. sensor.
   3) Measure resistance between terminal "1" of water temp. sensor and chassis ground.

Specification : Approx. ∞Ω



1. Water temp. sensor signal
2. Sensor ground

LQLG513B

   4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for short to ground in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E688EEF4

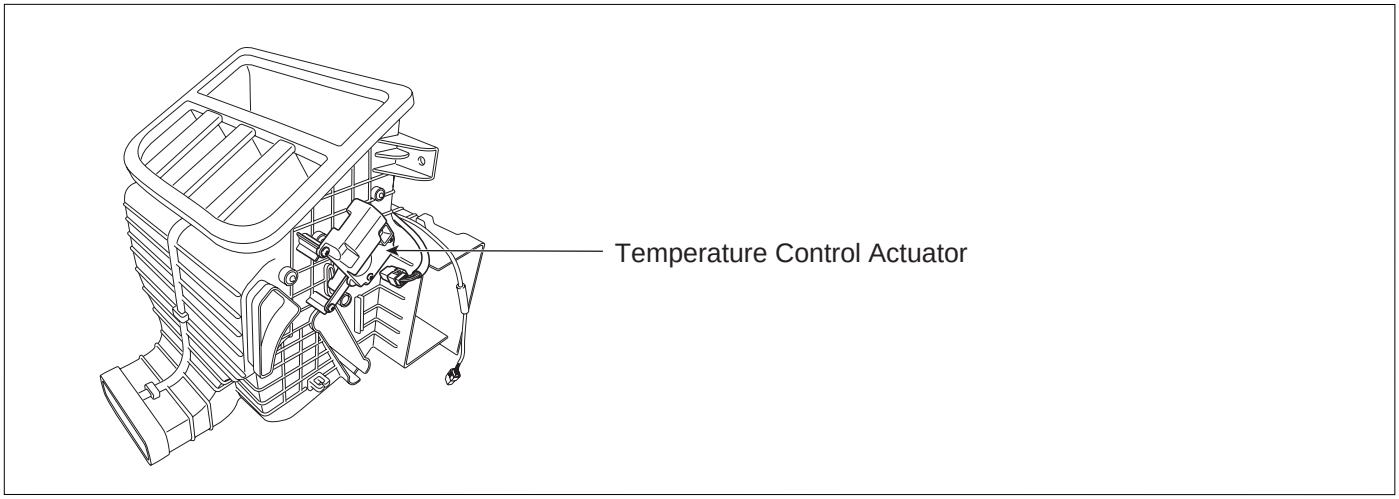
Refer to DTC B1202.

VERIFICATION OF VEHICLE REPAIR ED6AB445

Refer to DTC B1202.

DTC B1204 AIR MIX POTENTIOMETER OPEN (LOW) - PASSENGER'S

COMPONENT LOCATION ECDA6CAE



SBLHA6510L

GENERAL DESCRIPTION E6FDAF92

Temperature control actuator located at heater unit, regulates the temperature by the procedure as follows. Signal from control unit adjusts position of temp. door by operating temp. motor and then temperature will be regulated by the hot/cold air ratio decided by position of temp. door.

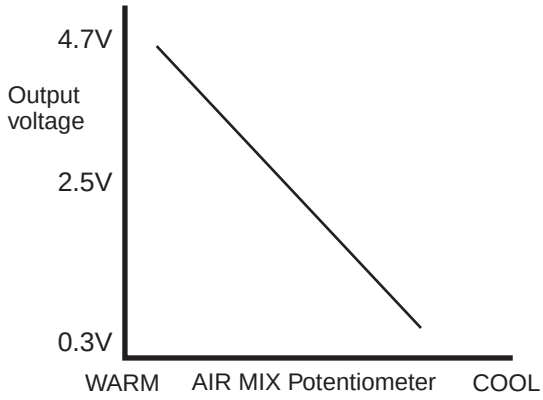
DTC DESCRIPTION E4F166A6

The A/C controller sets DTC B1204 if there is an open circuit or poor connection in the air mix potentiometer.

DTC DETECTING CONDITION E8DA37FC

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver Air Mix potentiometer
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	• If temperature setting 17~24.5°C(63~76°F) fix at max. cooling position. • If temperature setting 25~32°C(77~90°F) fix at max. heating position.	

SPECIFICATION E927FFAF



EQBF521B

MONITOR SCANTOOL DATA EF8DAA6E

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Passenger's Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

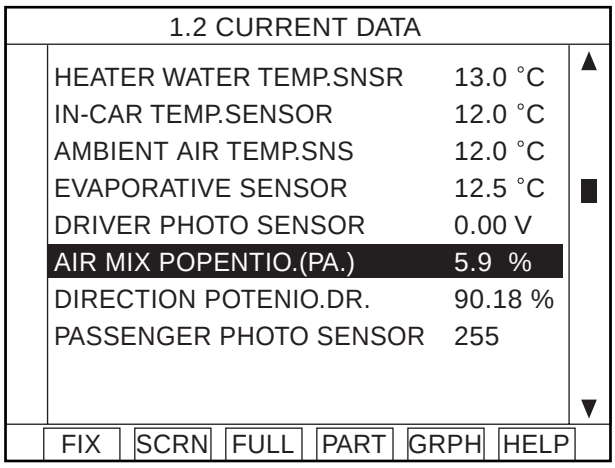


Fig. 1

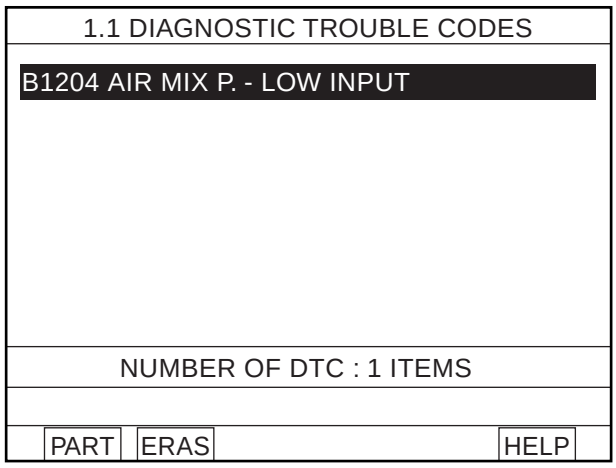


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1204.

EQBF521K

4. Are the DTC B1204 present and is parameter of "Passenger's Air Mix Potentiometer" fixed?
※ Parameter of "Passenger's Air Mix Potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Passenger's Air Mix potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E27080F9

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

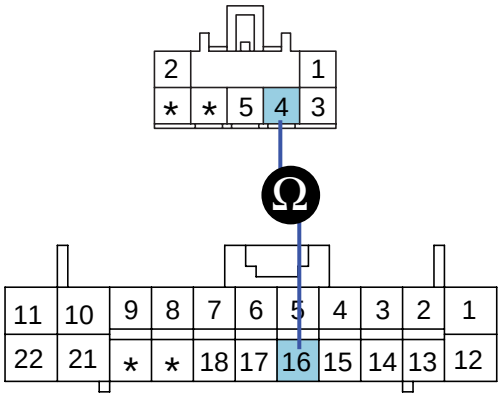
NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EEC01ECA

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect Passenger's Air Mix potentiometer.
   3) Measure resistance between terminal "4" of Passenger's Air Mix Potentiometer and terminal "16" of A/C control unit.

Specification : Approx. 0 Ω



1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. **Potentiometer signal**
5. Sensor reference voltage(+5V)

SBLHA6511L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

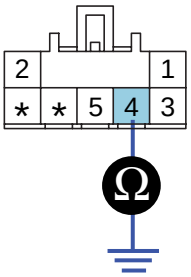
2. Check for short to ground in harness.

1) Ignition "OFF"

2) Disconnect Passenger's Air Mix potentiometer.

3) Measure resistance between terminal "4" of Passenger's Air Mix Potentiometer and chassis ground.

Specification : Approx. ∞ Ω



1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. **Potentiometer signal**
5. Sensor reference voltage(+5V)

SBLHA6512L

4) Is the measured resistance within specifications?

YES

Go to "Power circuit Inspection" procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

POWER SUPPLY CIRCUIT INSPECTION EED3C936

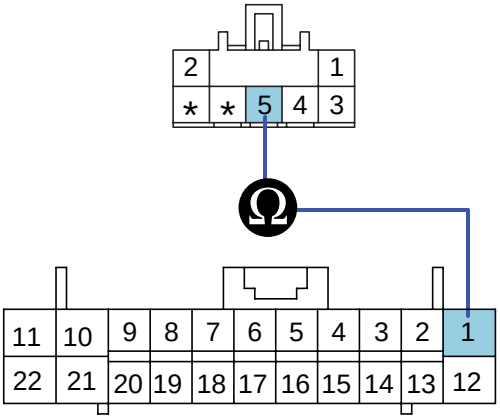
1. Check for open in harness.

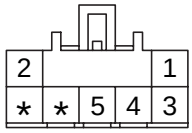
1) Ignition "ON"

2) Connect Passenger's Air Mix Potentiometer.

3) Measure resistance between terminal "5" of Passenger's Air Mix Potentiometer and terminal "1"A/C control unit.

Specification : 0Ω





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. Potentiometer signal
5. **Sensor reference voltage(+5V)**

SBLHA6513L

4) Is the measured voltage within specifications?

YES

Go to "Component inspection" procedure.

NO

Check for short or open in power harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E3EE5ADD

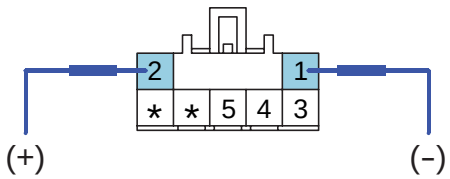
1. Check actuator motor.

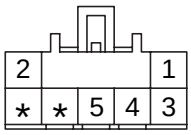
1) Ignition "OFF"

2) Disconnect Passenger's Air Mix Potentiometer.

3) Verify that the temperature actuator operates to the hot position when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the temperature actuator operates to the cool position when the connections are reversed.





1. **Motor (Warm)**
2. **Motor (Cool)**
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6514L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

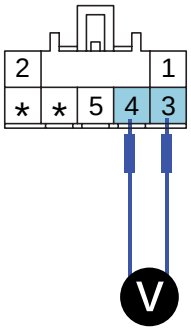
2. Check potentiometer

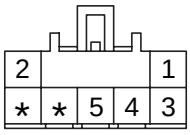
1) Ignition "ON"

2) Connect Passenger's Air Mix potentiometer.

3) Measure voltage between terminal "3" and "4" of Passenger's Air Mix potentiometer while operating the temp. switch.

Specification : Refer the specifications in fig 3)





1. Motor (Warm)
2. Motor (Cool)
3. **Potentiometer ground**
4. **Potentiometer signal**
5. Sensor reference voltage(+5V)

SBLHA6515L

Door position	Voltage (3-4)	Error detecting
MAX. Cooling	0.3 ± 0.15V	Low voltage : 0.08V or less
MAX. Heating	4.7 ± 0.15V	High voltage : 4.9V or more

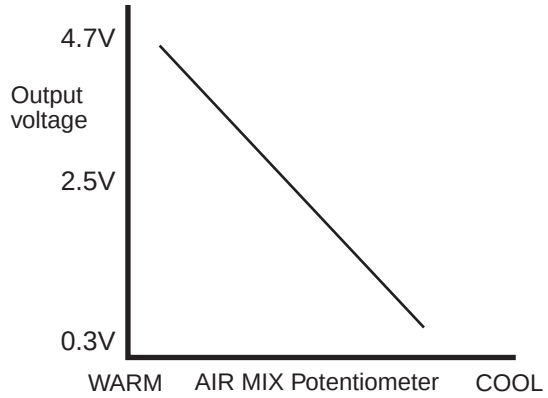


Fig. 3

Fig 3) Specifications : Voltage value of air mix potentiometer as a function of position of setting temperature.

EQBF521J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E960BEBC

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

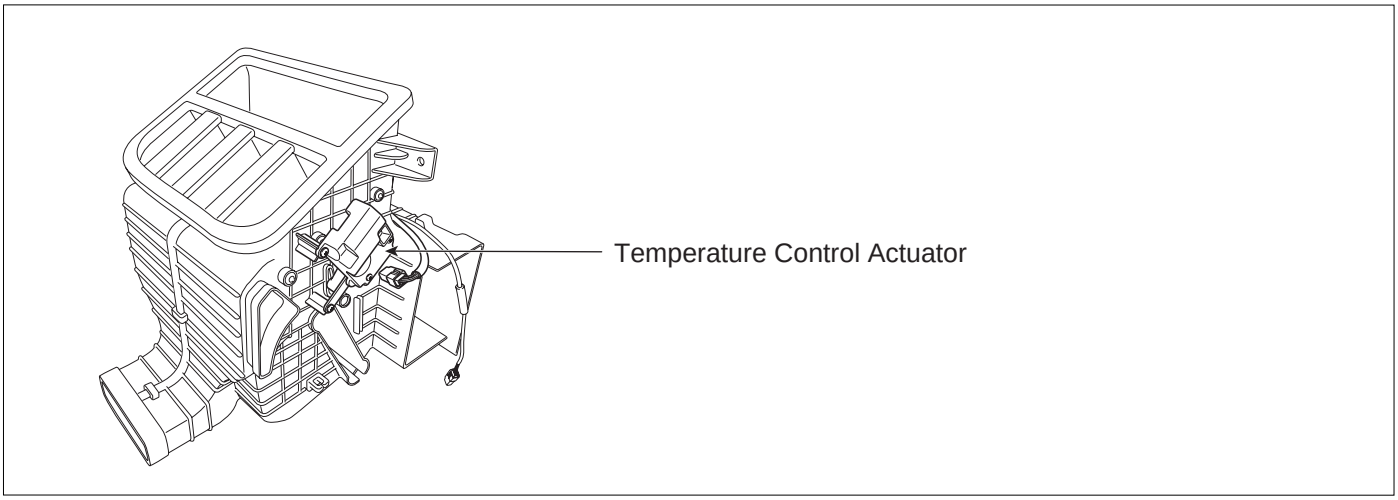
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1205 AIR MIX POTENTIOMETER SHORT (HIGH) - PASSENGER'S

COMPONENT LOCATION E3CE4D5C



SBLHA6510L

GENERAL DESCRIPTION EBBBA148

Refer to DTC B1204.

DTC DESCRIPTION EEFEA86B

The A/C controller sets DTC B1205 if there is a short to power in the air mix potentiometer.

DTC DETECTING CONDITION E0C85E40

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Short circuit in harness • Faulty driver Air Mix potentiometer
Threshold value	• > 4.9V	
Detecting time	• 0.3 sec	
FAIL SAFE	• If temperature setting 17~24.5°C(63~76°F) fix at max. cooling position. • If temperature setting 25~32°C(77~90°F) fix at max. heating position.	

SPECIFICATION EE47778F

Refer to DTC B1204.

MONITOR SCANTOOL DATA E7CFD25C

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Passenger's Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

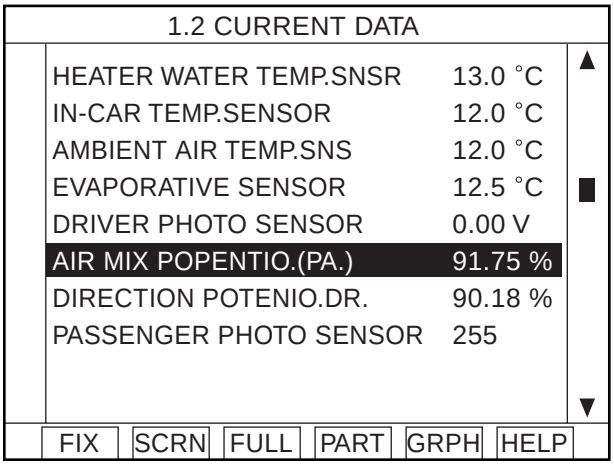


Fig. 1

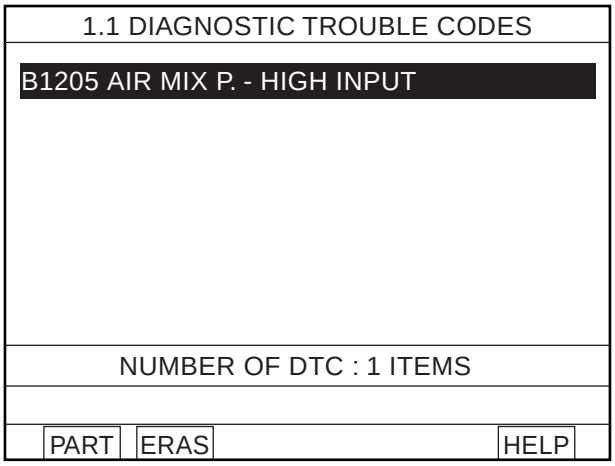


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1205.

EQBF522F

4. Are the DTC B1205 present and is parameter of "Passenger's Air Mix potentiometer" fixed?
※ Parameter of "Passenger's Air Mix potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Passenger's Air Mix potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E283B9EA

Refer to DTC B1204.

SIGNAL CIRCUIT INSPECTION E5E91EAA

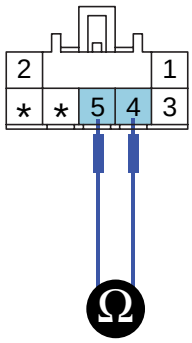
1. Check for short in harness.

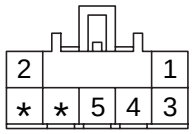
   1) Ignition "OFF"

   2) Disconnect Passenger's Air Mix potentiometer.

   3) Measure resistance between terminal "4" and "5" of Passenger's Air Mix potentiometer.

Specification : Approx. ∞ Ω





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. **Potentiometer signal**
5. **Sensor reference voltage(+5V)**

SBLHA6516L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection" procedure.

NO

Check for short to power harness in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION EE38C85A

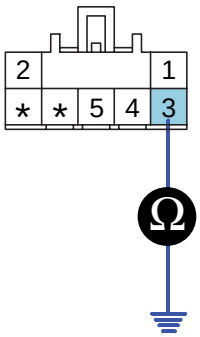
1. Check for open in harness.

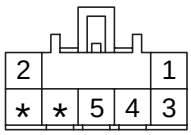
1) Ignition "OFF"

2) Disconnect Passenger's Air Mix Potentiometer.

3) Measure resistance between terminal "3" of Passenger's Air Mix Potentiometer and chassis ground.

Specification : Approx. 0 Ω





1. Motor (Warm)
2. Motor (Cool)
3. **Potentiometer ground**
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6517L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EE9D88DB

Refer to DTC B1204.

VERIFICATION OF VEHICLE REPAIR ECF5DABA

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

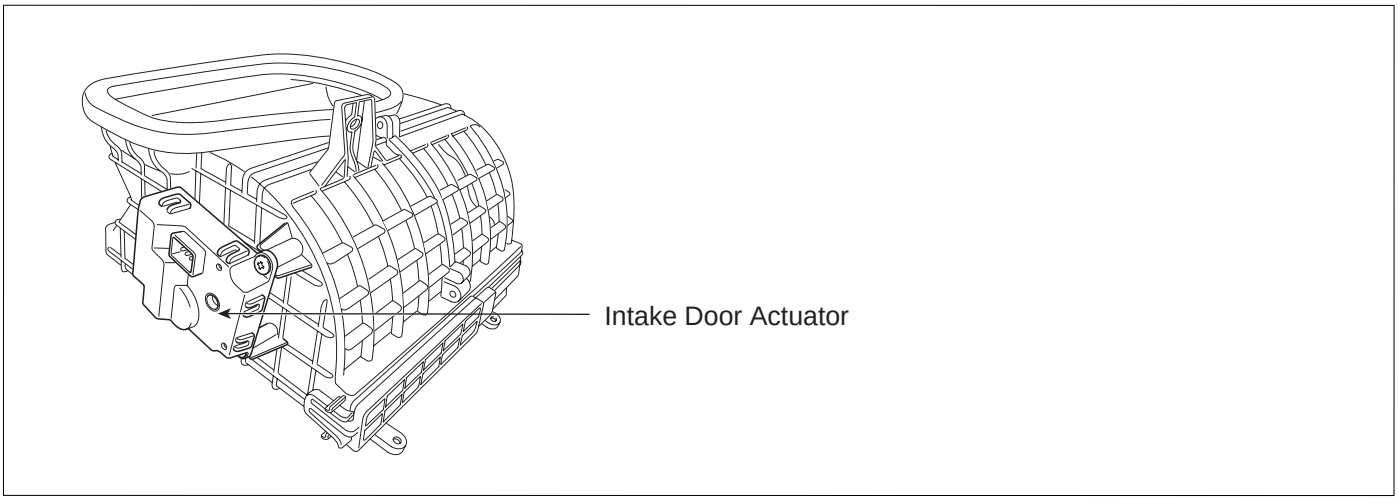
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1208 INTAKE POTENTIOMETER OPEN

COMPONENT LOCATION EF749215



SBLHA6518L

GENERAL DESCRIPTION EA50D8D5

Intake door located at heater unit controls the inlet of car. When driver operates the intake switch, A/C controller recirculationeives mode signal from intake switch and operates intake door actuator to turn intake door to intended position. (with fresh mode signal, intake door is closed and with fresh mode signal, intake door is opened).

DTC DESCRIPTION E6782025

The A/C controller sets DTC B1208 if there is an open circuit or poor connection in the intake potentiometer.

DTC DETECTING CONDITION E0CD3E1C

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver intake potentiometer
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	• If temperature setting 17~24.5°C(63~76°F) fix at max. cooling position. • Fix at fresh	

SPECIFICATION E6D66101

※ Voltage value of Intake potentiometer as a function of position of Intake door

Door position	Voltage	Threshold value
Fresh	0.3±0.15V	Voltage value < 0.08V
Recirculation	4.7±0.15V	Voltage value > 4.9V

MONITOR SCANTOOL DATA EBF0EE9F

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Intake Potentiometer" Parameter on the Scantool while operating intake switch.

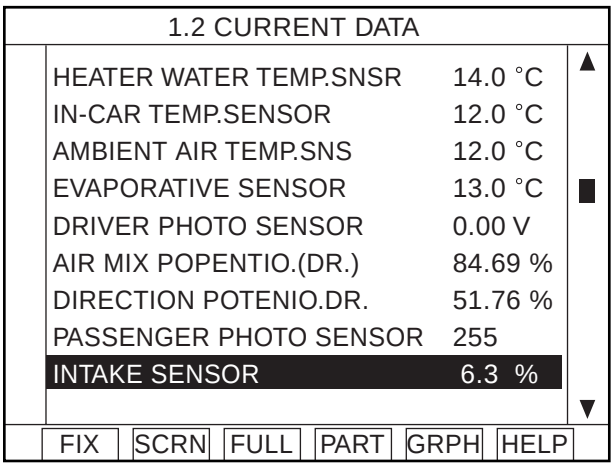


Fig. 1

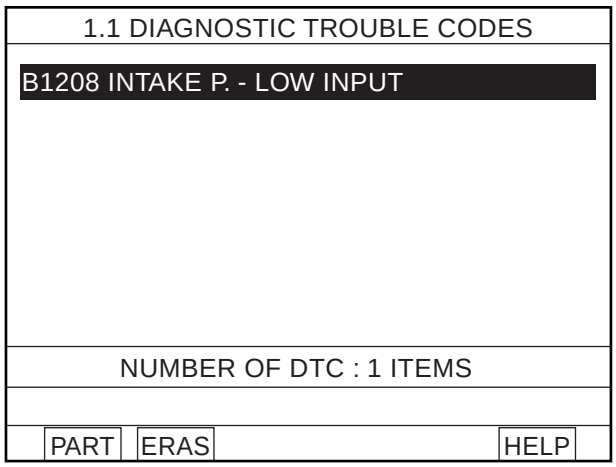


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1208.

EQBF590C

4. Are the DTC B1208 present and is parameter of "Intake Potentiometer" fixed?
※ Parameter of "Intake Potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Intake potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E0353933

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION E9A2AB82

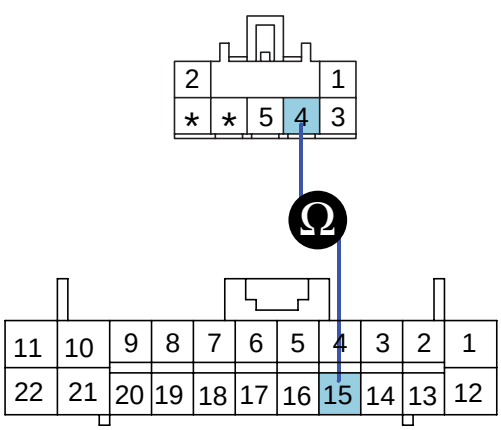
1. Check for open in harness.

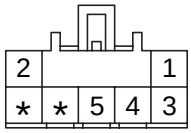
   1) Ignition "OFF"

   2) Disconnect Intake potentiometer.

   3) Measure resistance between terminal "4" of Intake Potentiometer and terminal "15" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. **Potentiometer signal**
5. Sensor reference voltage(+5V)

SBLHA6519L

   4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

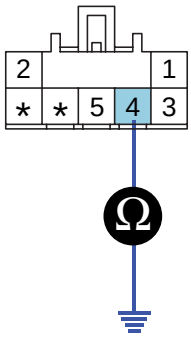
2. Check for short to ground in harness.

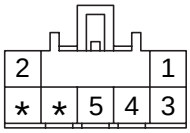
   1) Ignition "OFF"

   2) Disconnect Intake potentiometer.

   3) Measure resistance between terminal "4" of Intake Potentiometer and chassis ground.

Specification : Approx. ∞ Ω





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. **Potentiometer signal**
5. Sensor reference voltage(+5V)

SBLHA6520L

4) Is the measured resistance within specifications?

YES

Go to "Power circuit Inspection" procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

POWER SUPPLY CIRCUIT INSPECTION E638022A

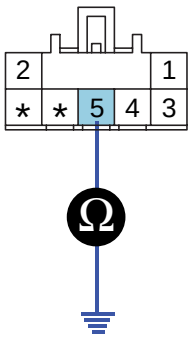
1. Check for short or open in harness.

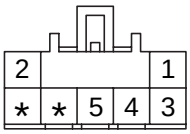
   1) Ignition "ON"

   2) Connect Intake Potentiometer.

   3) Measure resistance between terminal "5" of Intake Potentiometer and chassis ground.

Specification : ∞Ω





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. **Sensor reference voltage(+5V)**

SBLHA6521L

4) Is the measured voltage within specifications?

YES

Go to "Component inspection" procedure.

NO

Check for short or open in power harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E4DCDE12

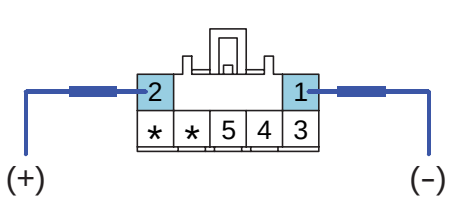
1. Check actuator motor.

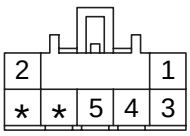
1) Ignition "OFF"

2) Disconnect Intake Potentiometer.

3) Verify that the temperature actuator operates to the fresh position when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the temperature actuator operates to the recirculation position when the connections are reversed.





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6522L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

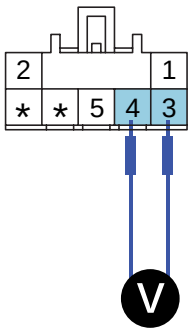
2. Check potentiometer

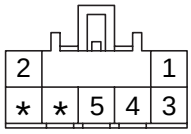
1) Ignition "ON"

2) Connect Intake potentiometer.

3) Measure voltage between terminal "3" and "4" of Intake potentiometer while operating Intake switch.

Specification : Refer to the specifications





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6523L

Door position	Voltage (3-4)	Error detecting
Fresh	0.3 ± 0.15V	Low voltage : 0.08V or less
Recirculation	4.7 ± 0.15V	High voltage : 4.9V or more

Specifications : Voltage value of Intake potentiometer as a function of position of Intake.

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E5797203

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

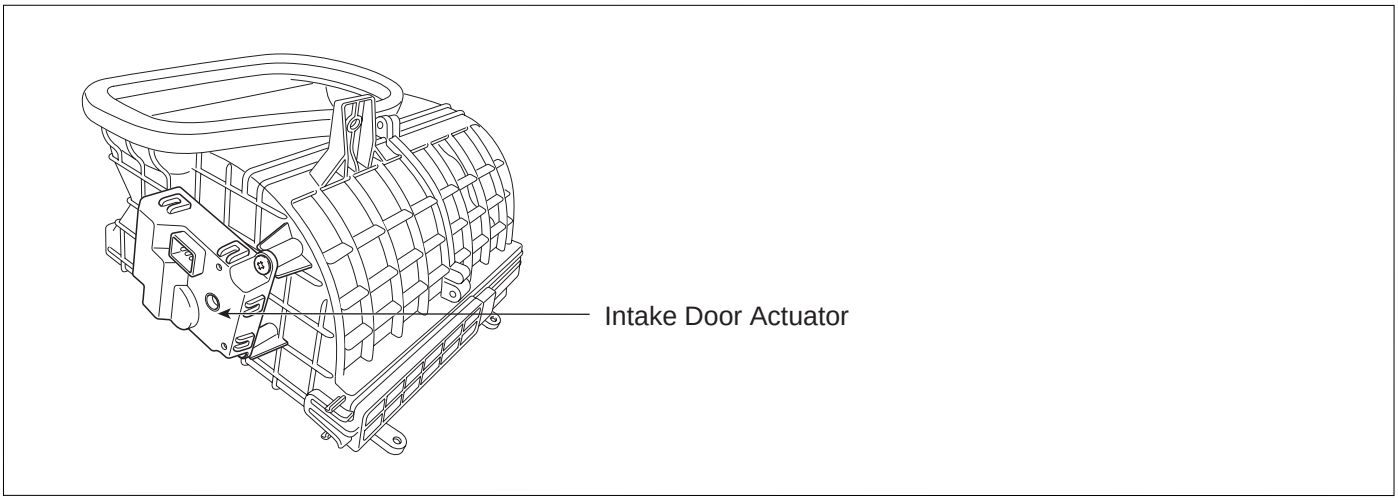
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1209 INTAKE POTENTIOMETER SHORT

COMPONENT LOCATION E093235F



SBLHA6518L

GENERAL DESCRIPTION EE9BD028

Refer to DTC B1208.

DTC DESCRIPTION E2770B43

The A/C controller sets DTC B1209 if there is a short to power in the Intake potentiometer.

DTC DETECTING CONDITION EEE85217

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Short circuit in harness • Faulty Intake potentiometer • Open circuit in harness
Threshold value	• > 4.9V	
Detecting time	• 0.3 sec	
FAIL SAFE	• Fix at fresh	

SPECIFICATION E39D5040

Refer to DTC B1208.

MONITOR SCANTOOL DATA E43084A0

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Intake Potentiometer" Parameter on the Scantool while operating Intake switch.

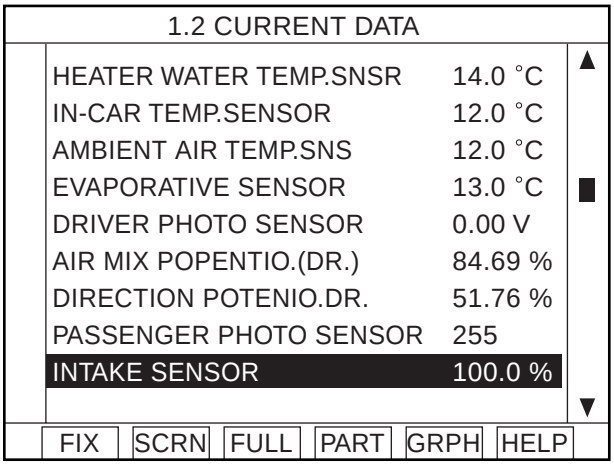


Fig. 1

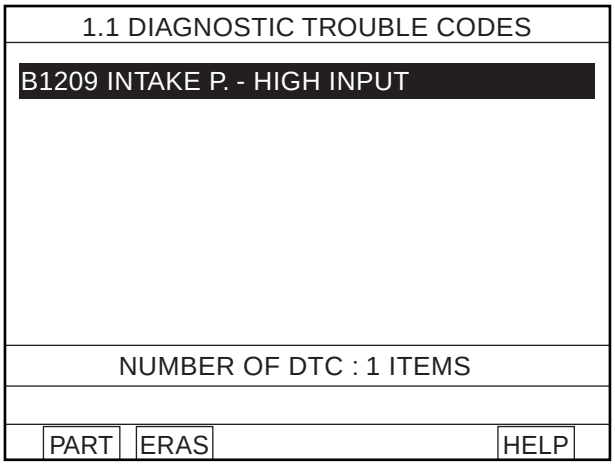


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1209.

EQBF590D

4. Are the DTC B1209 present and is parameter of "Intake potentiometer" fixed?
※ Parameter of "Intake potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Intake potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E38A07A2

Refer to DTC B1208.

SIGNAL CIRCUIT INSPECTION E7CCC554

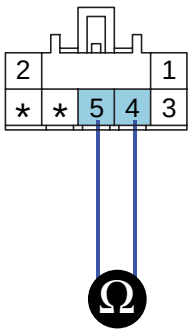
1. Check for short in harness.

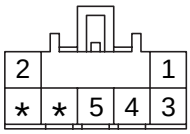
   1) Ignition "OFF"

   2) Disconnect Intake potentiometer.

   3) Measure resistance between terminal "4" and "5" of Intake potentiometer.

Specification : Approx. ∞ Ω





1. Motor
2. Motor
3. Potentiometer ground
4. **Potentiometer signal**
5. **Sensor reference voltage(+5V)**

SBLHA6524L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection" procedure.

NO

Check for short to power harness in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION E226B4E7

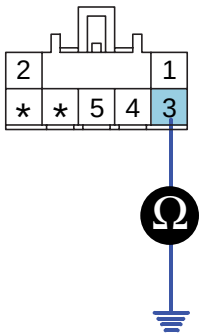
1. Check for open in harness.

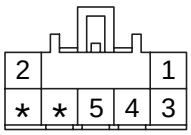
1) Ignition "OFF"

2) Disconnect Intake Potentiometer.

3) Measure resistance between terminal "3" of Intake Potentiometer and chassis ground.

Specification : Approx. 0 Ω





1. Motor (Rec)
2. Motor (Fre)
3. **Potentiometer ground**
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6525L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EF55F62B

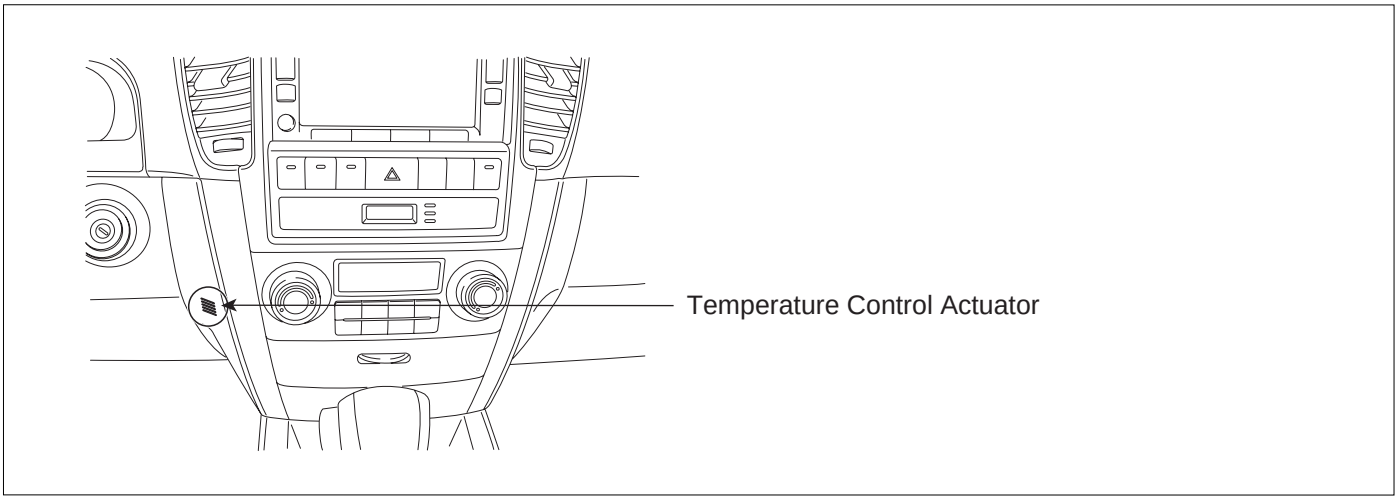
Refer to DTC B1208.

VERIFICATION OF VEHICLE REPAIR E43701D1

Refer to DTC B1208.

DTC B1233 IN-CAR TEMPERATURE SENSOR SHORT (LOW)

COMPONENT LOCATION EB57D004



SBLHA6526L

GENERAL DESCRIPTION EC43DDF5

The incar temperature sensor located at crush pad, control unit contains a thermistor which measures the temperature of the inside. The signal, decided by the resistance value which changes in accordance with perceived inside temperature, is delivered to heater control unit and according to this signal, the control unit regulates incar temperature to intended value.

DTC DESCRIPTION EB63EFE3

The A/C controller sets DTC B1233 if there is a short circuit in incar temp. sensor signal harness or the measured resistance value of sensor is less than threshold value(about 7.46kΩ)

DTC DETECTING CONDITION E1046384

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Short circuit in harness • Faulty incar temp. Sensor • Faulty A/C control unit
Threshold value	• < 7.46 kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of 25°C(77°F)	

SPECIFICATION E4823648

Temperature[°C(°F)]	Resistance(kΩ)	Temperature[°C(°F)]	Resistance(kΩ)
-30(-22)	528.17	25(77)	30
-15(5)	218.24	35(95)	19.61
0(32)	97.83	45(113)	13.12
15(59)	47.12	55(131)	8.97

MONITOR SCANTOOL DATA E2472961

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "INCAR TEMP. SENSOR" Parameter on the Scantool.

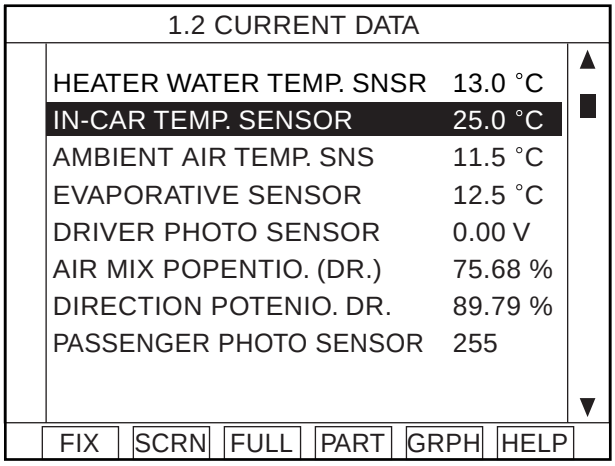


Fig. 1

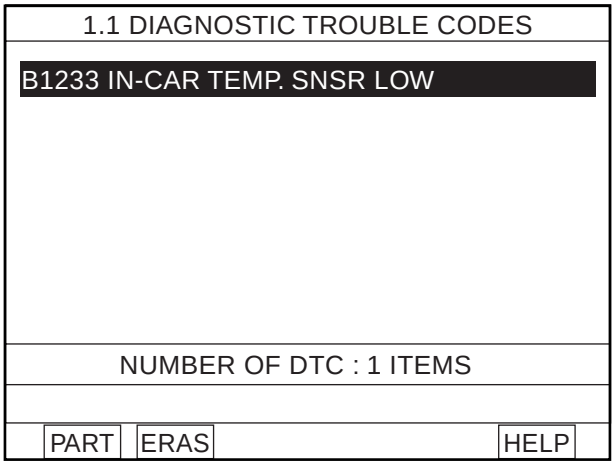


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1233.

EQBF514A

4. Are the DTC B1233 present and is parameter of "INCAR TEMP. SENSOR" fixed?
   ※ Parameter of "INCAR TEMP. SENSOR" will be fixed at 25℃(77°F), if there is any fault in INCAR TEMP. SENSOR.

   YES

   Go to "Inspection" procedure.

   NO

   Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION EB821E5B

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

   YES

   Repair as necessary and go to "Verification of Vehicle Repair" procedure.

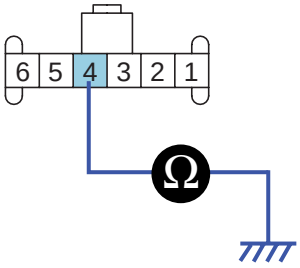
NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EBF88FB5

1. Check for short to ground in harness.
   1) Ignition "OFF"
   2) Disconnect incar sensor.
   3) Measure resistance between terminal "4" of incar sensor and chassis ground.

Specification : Approx. ∞Ω



1. Motor(-)
2. Sensor ground
3. Humidity sensor signal
4. **In-car sensor temp. signal**
5. Sensor power (5V)
6. Motor(+)

LQLG514B

   4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

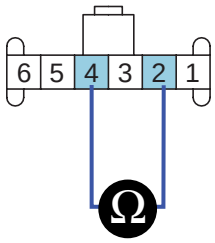
NO

Check for short to ground in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E6BB9B31

1. Check incar temp. sensor.
   1) Ignition "OFF"
   2) Disconnect incar sensor.
   3) Measure resistance between terminal "4" and "2" of incar sensor.

Specification : Refer the specifications in fig 3.



1. Motor(-)
2. **Sensor ground**
3. Humidity sensor signal
4. **In-car sensor temp. signal**
5. Sensor power (5V)
6. Motor(+)

LQLG514F

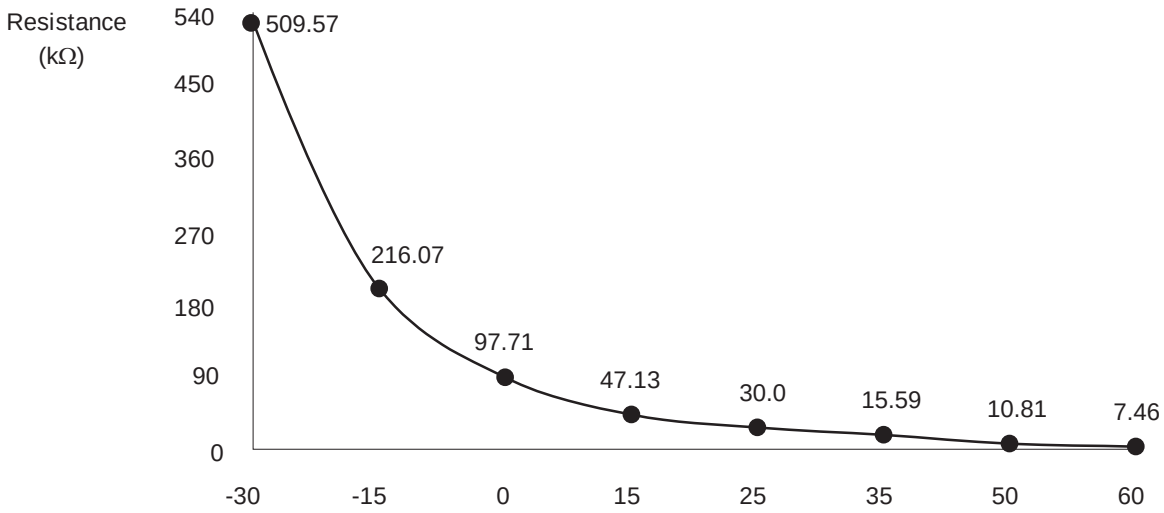


Fig. 3

Fig 3) Specifications : Resistance value of incar temp. sensor as a function of temperature.

EQBF514G

4) Is the measured resistance within specifications in fig3? (tolerance limits ± 3%)

YES

Go to "Check A/C Control Unit" procedure.

NO

Substitute with a known-good incar sensor and check for proper operation.
If the problem is corrected, replace incar sensor and then go to "Verification of Vehicle Repair" procedure.

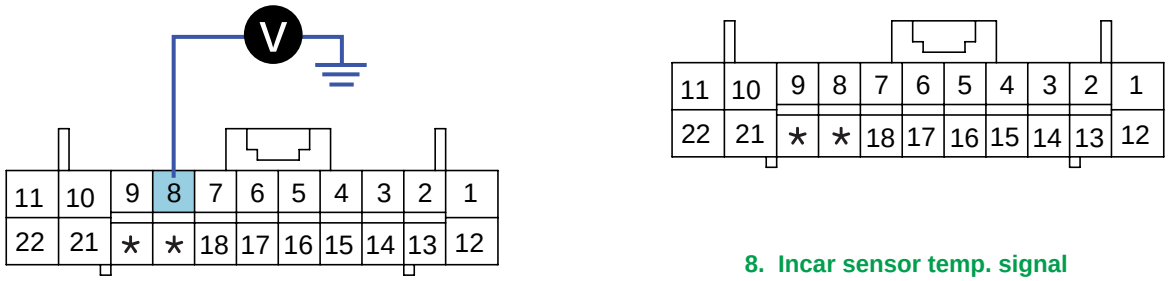
2. Check A/C Control Unit

1) Engine "ON"

2) Disconnect incar sensor.

3) Measure Voltage between terminal "8" of A/C Control Unit and chassis ground.

Specification : Approx. 5V



SBLHA6527L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E5F6DCB4

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

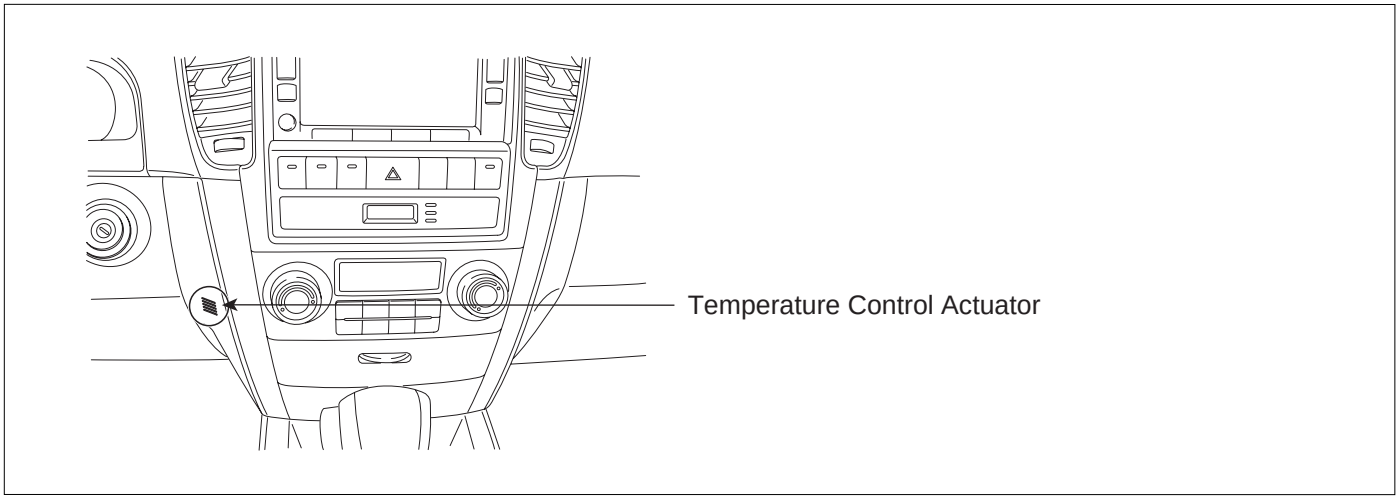
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1234 IN-CAR TEMPERATURE SENSOR OPEN (HIGH)

COMPONENT LOCATION EE9B6B17



SBLHA6526L

GENERAL DESCRIPTION E9F794B3

Refer to DTC B1233.

DTC DESCRIPTION E11DE569

The A/C controller sets DTC B1234 if there is an open circuit in incar temp. sensor signal harness or the measured resistance value of sensor is more than threshold value(about 509.57kΩ)

DTC DETECTING CONDITION E854B0E4

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Open Circuit in harness • Faulty incar temp. Sensor • Faulty A/C control unit
Threshold value	• ＞ 509.57 kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of 25°C(77°F)	

SPECIFICATION E1AB1CCB

Refer to DTC B1233.

MONITOR SCANTOOL DATA E60EDB2F

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "INCAR TEMP. SENSOR" Parameter on the Scantool.

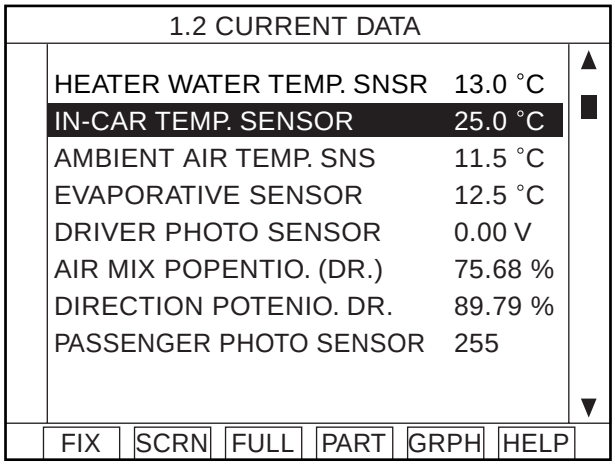


Fig. 1

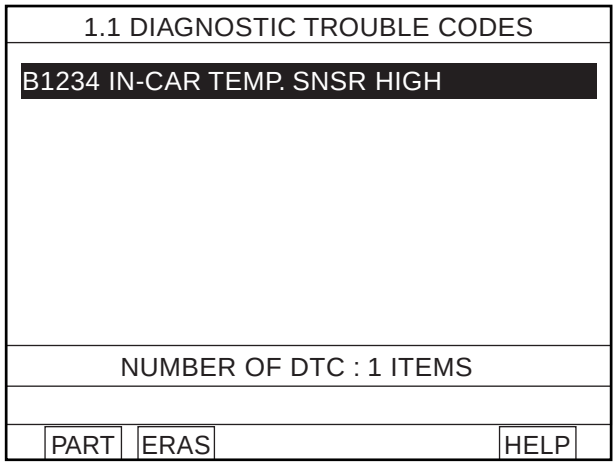


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1234.

EQBF515A

4. Are the DTC B1234 present and is parameter of "INCAR TEMP. SENSOR" fixed?
※ Parameter of "INCAR TEMP. SENSOR" will be fixed at 25℃(77°F), if there is any fault in INCAR TEMP. SENSOR.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E941866C

Refer to DTC B1233.

SIGNAL CIRCUIT INSPECTION E1781154

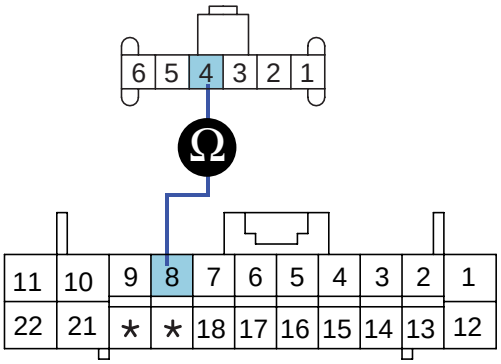
1. Check for open in harness.

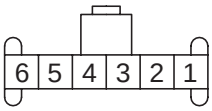
   1) Ignition "OFF"

   2) Disconnect incar temp. sensor.

   3) Measure resistance between terminal "4" of incar temp. sensor and terminal "8" of A/C Control Unit..

Specification : Approx. 0 Ω





1. Motor(-)
2. Sensor ground
3. Humidity sensor signal
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

SBLHA6528L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection " procedure.

NO

Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION EF779270

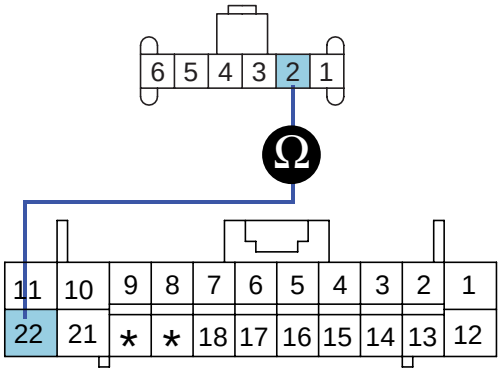
1. Check for open in ground harness.

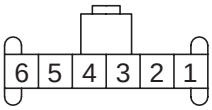
1) Ignition "OFF"

2) Disconnect incar temp. sensor.

3) Measure resistance between terminal "2" of incar temp. sensor and terminal "22" of A/C Control Unit.

Specification : Approx. 0 Ω





1. Motor(-)
2. Sensor ground
3. Humidity sensor signal
4. In-car sensor temp. signal
5. Sensor power (5V)
6. Motor(+)

SBLHA6529L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EB9720FD

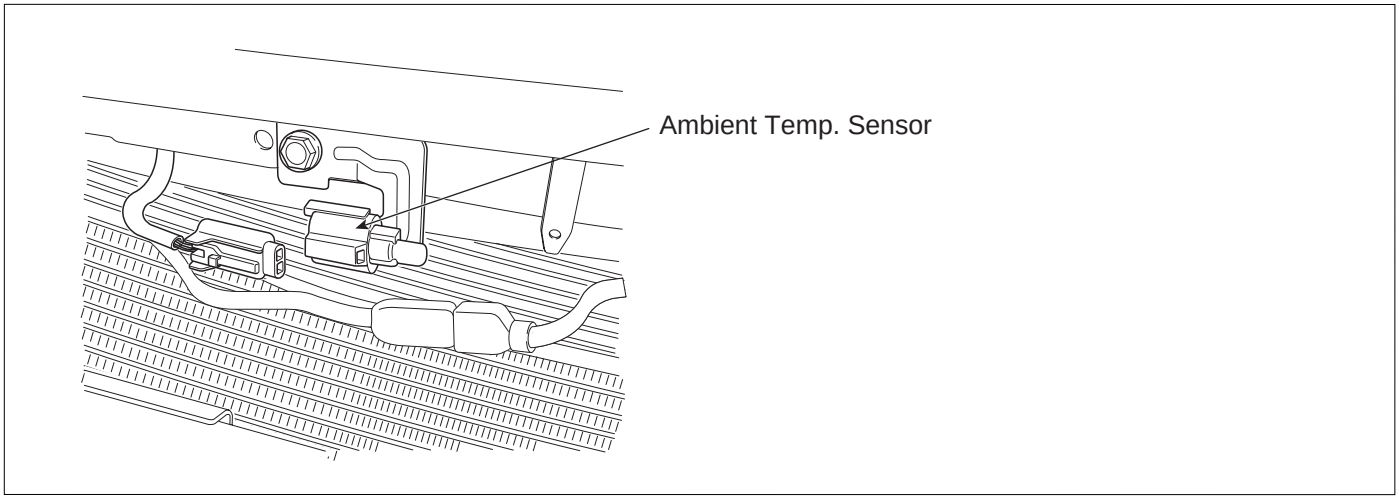
Refer to DTC B1233.

VERIFICATION OF VEHICLE REPAIR E10F3C2D

Refer to DTC B1233.

DTC B1237 AMBIENT TEMPERATURE SENSOR SHORT (LOW)

COMPONENT LOCATION ED485BBE



SBLHA6531L

GENERAL DESCRIPTION E2ABCF83

The ambient temperature senor located at the center stay of the condenser, detects ambient air temperature. It is a negative type thermistor whose resistance is inversely proportional to temperature. Its output is used for discharge temperature sensor, sensor fail-safe, temperature regulation door lock, blower motor level control, mix mode control and in-car humidity control.

DTC DESCRIPTION EF007347

The A/C controller sets DTC B1237 if there is a short circuit in ambient temp. sensor signal harness or the measured resistance value of sensor is less than threshold value(about 7.48kΩ)

DTC DETECTING CONDITION E76C2039

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Short circuit in harness • Faulty ambient temp. Sensor • Faulty A/C control unit
Threshold value	• < 7.48kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of 20°C(68°F)	

SPECIFICATION EA51C1AC

Temperature[°C(°F)]	Resistance(kΩ)	Temperature[°C(°F)]	Resistance(kΩ)
-40(-40)	927.5	20(68)	37.5
-20(-4)	284.5	40(104)	16.0
0(32)	97.5	60(140)	7.5

MONITOR SCANTOOL DATA E30FCFE7

1. Connect scantool to data link connector(DLC).
2. Engine "ON"
3. Monitor the "AMBIENT TEMP. SENSOR" Parameter on the Scantool.
   ※ Parameter of "AMBIENT TEMP. SENSOR" will be fixed at 20°C, if there is any fault in AMBIENT TEMP. SENSOR.

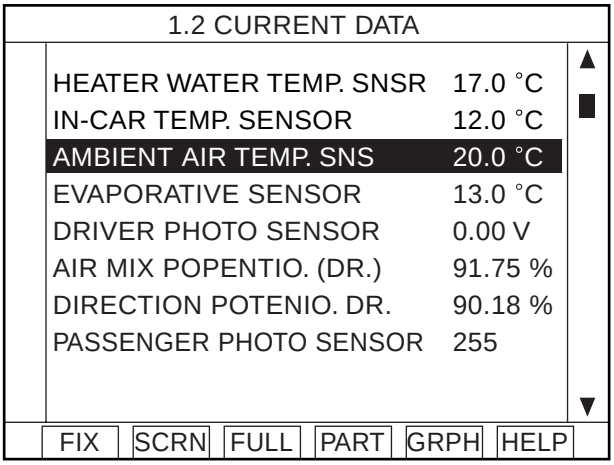


Fig. 1

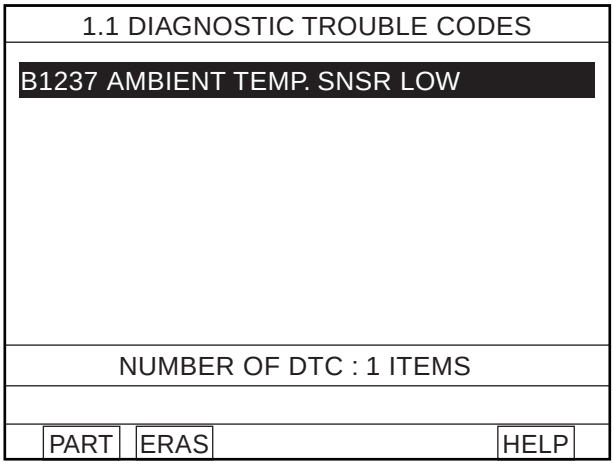


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1237.

EQBF516B

4. Are the DTC B1237 present and is parameter of "AMBIENT TEMP. SENSOR" fixed?

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E20274CA

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EC50D358

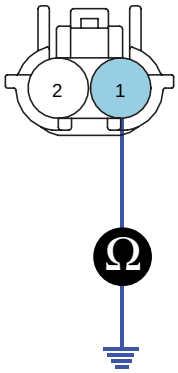
1. Check for short to ground in harness.

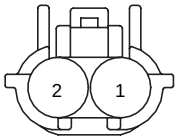
   1) Ignition "OFF"

   2) Disconnect ambient temp. sensor.

   3) Measure resistance between terminal "1" of ambient temp. sensor and chassis ground.

Specification : Approx. ∞Ω





1. Ambient temp. sensor signal(+)
2. Ambient temp. sensor ground

LQLG516C

   4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for short to ground in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E3B39A1B

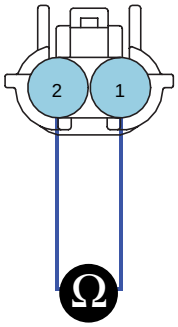
1. Check Ambient temp. sensor.

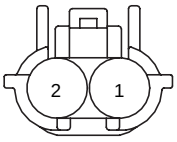
   1) Ignition "OFF"

   2) Disconnect ambient temp. sensor.

   3) Measure resistance between terminal "1" and "2" of ambient temp. sensor.

Specification : Refer the specifications in fig 3.





1. Ambient temp. sensor signal
2. Ambient temp. sensor ground

LQLG516D

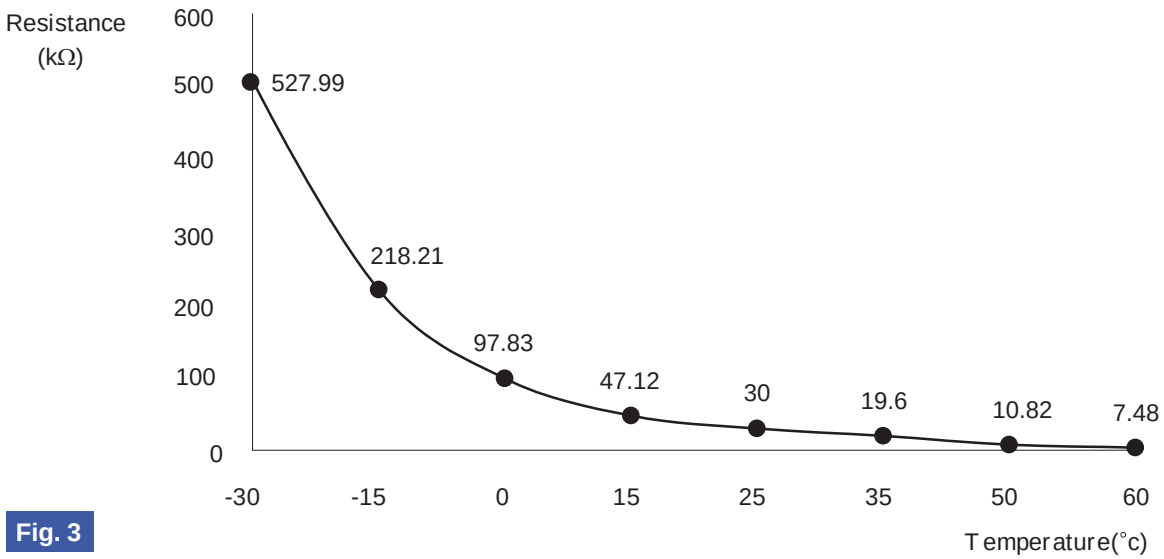


Fig. 3

Fig 3) Specifications : Resistance value of ambient temp. sensor as a function of temperature.

EQBF516F

4) Is the measured resistance within specifications in fig3? (tolerance limits ±3%)

YES

Go to "Check A/C Control Unit" procedure.

NO

Substitute with a known-good ambient temp. sensor and check for proper operation.
If the problem is corrected, replace ambient temp. sensor and then go to "Verification of Vehicle Repair" procedure.

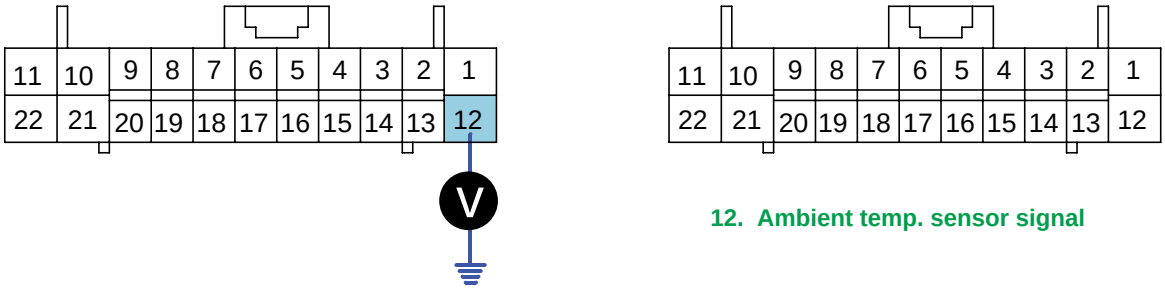
2. Check A/C Control Unit

1) Engine "ON"

2) Disconnect ambient temp. sensor.

3) Measure voltage between terminal "12" of A/C Control Unit and chassis ground.

Specification : Approx. 5V



SBLHA6532L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR EC81091E

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

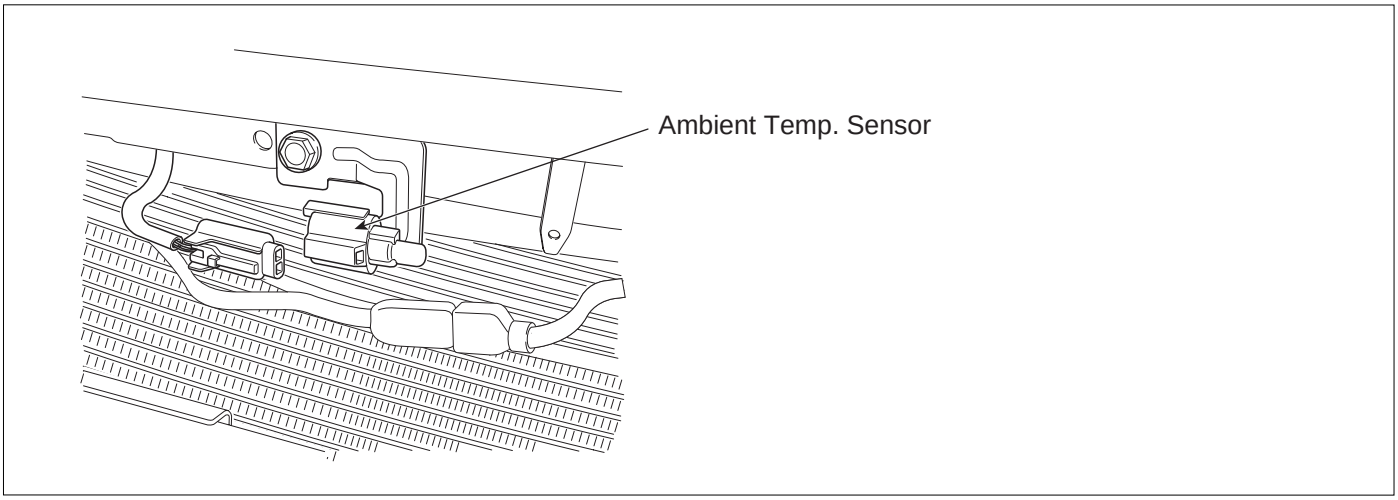
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1238 AMBIENT TEMPERATURE SENSOR OPEN (HIGH)

COMPONENT LOCATION EDF1649A



SBLHA6531L

GENERAL DESCRIPTION E4951473

Refer to DTC B1237.

DTC DESCRIPTION EBEAF741

The A/C controller sets DTC B1238 if there is an open circuit in ambient temp. sensor signal harness or the measured resistance value of sensor is more than threshold value(about 527kΩ)

DTC DETECTING CONDITION ECC7468F

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Open Circuit in harness • Faulty ambient temp. Sensor • Faulty A/C control unit
Threshold value	• ＞ 527kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of 20°C(67°F)	

SPECIFICATION E611C585

Refer to DTC B1237.

MONITOR SCANTOOL DATA E1C87A66

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "AMBIENT TEMP. SENSOR" Parameter on the Scantool.
   ※ Parameter of "AMBIENT TEMP. SENSOR" will be fixed at 20°C(67°F), if there is any fault in AMBIENT TEMP. SENSOR.

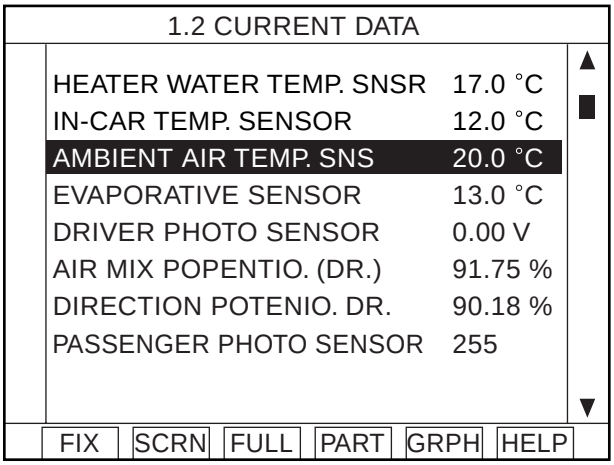


Fig. 1

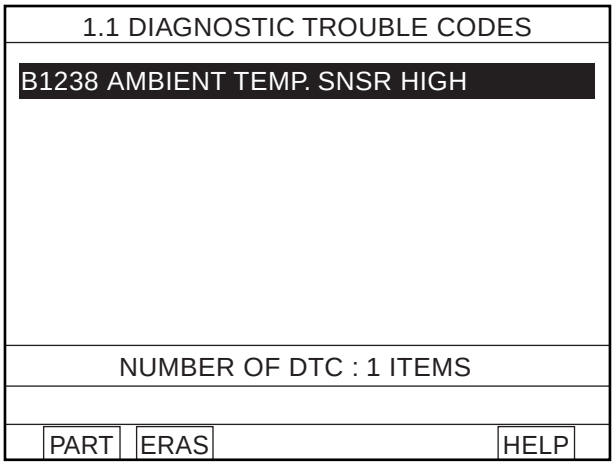


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1238.

EQBF517A

4. Are the DTC B1238 present and is parameter of "AMBIENT TEMP. SENSOR" fixed?

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

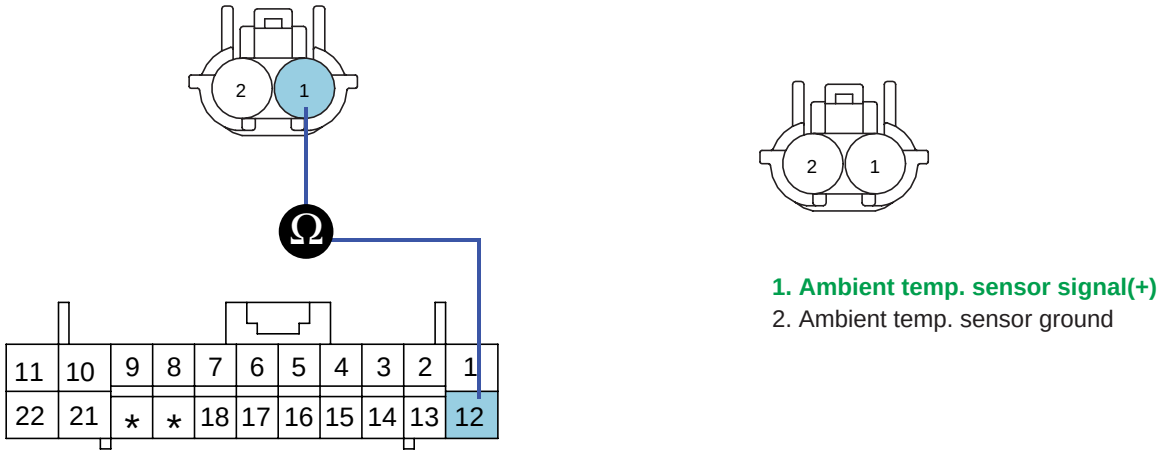
TERMINAL AND CONNECTOR INSPECTION E7F0FB77

Refer to DTC B1237.

SIGNAL CIRCUIT INSPECTION E124C6B6

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect ambient temp. sensor.
   3) Measure resistance between terminal "1" of ambient temp. sensor and terminal "12" of A/C Control Unit.

Specification : Approx. 0 Ω



1. Ambient temp. sensor signal(+)
2. Ambient temp. sensor ground

SBLHA6533L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection " procedure.

NO

Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION EA9F4A89

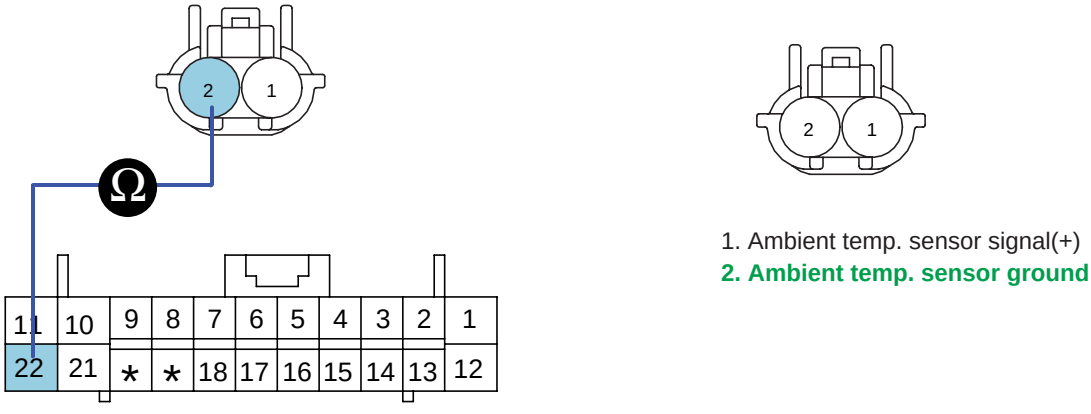
1. Check for open in ground harness.

1) Ignition "OFF"

2) Disconnect ambient temp. sensor.

3) Measure resistance between terminal "2" of ambient temp. sensor and terminal "22" of A/C contr unit.

Specification : Approx. 0 Ω



1. Ambient temp. sensor signal(+)
2. Ambient temp. sensor ground

SBLHA6534L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E513CAB3

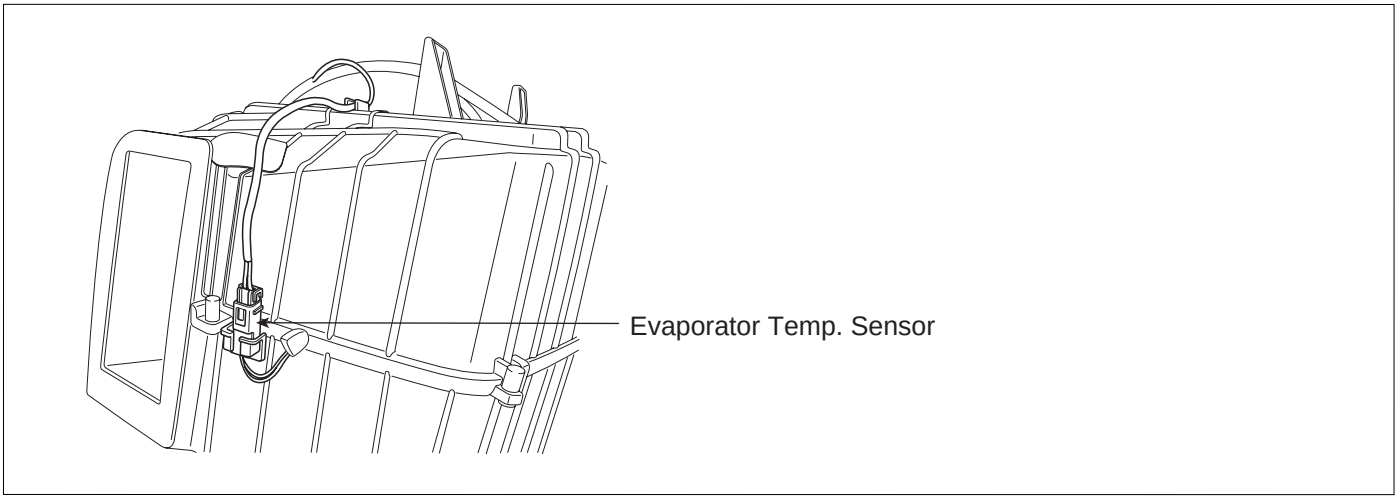
Refer to DTC B1237.

VERIFICATION OF VEHICLE REPAIR E58CEDF6

Refer to DTC B1237.

DTC B1241 EVAPORATOR TEMPERATURE SENSOR SHORT (LOW)

COMPONENT LOCATION E486BCF6



SBLHA6535L

GENERAL DESCRIPTION E8813265

The Evaporator temperature sensor located on heater unit, detects the core temperature and interrupts compressor relay power, in order to prevent evaporator freezing by excessive cooling. It is a negative type thermistor whose resistance is inversely proportional to temperature.

DTC DESCRIPTION E059C248

The A/C controller sets DTC B1241 if there is a short circuit in evaporator temp. sensor signal harness or the measured resistance value of sensor is less than threshold value(about 0.9kΩ)

DTC DETECTING CONDITION E71F012F

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Short circuit in harness • Faulty Evaporator temp. Sensor • Faulty A/C control unit
Threshold value	• ＜ 0.9kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of -2°C(28.4°F)	

SPECIFICATION E8C0ABD9

※ Resistence value of evaporator sensor as a function of temperature.

Temperature[°C(°F)]	Resistance(kΩ)	Temperature[°C(°F)]	Resistance(kΩ)
-10(14)	13.56	20(68)	3.06
0(32)	8	30(86)	1.97
10(50)	4.87	40(104)	1.31

MONITOR SCANTOOL DATA E6823FFB

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "EVAPORATIVE SENSOR" Parameter on the Scantool.

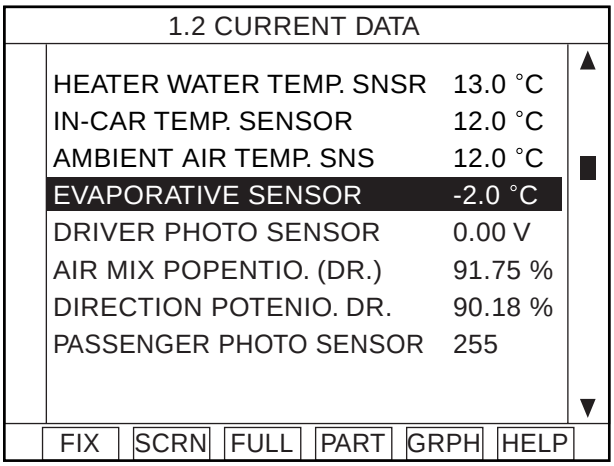


Fig. 1

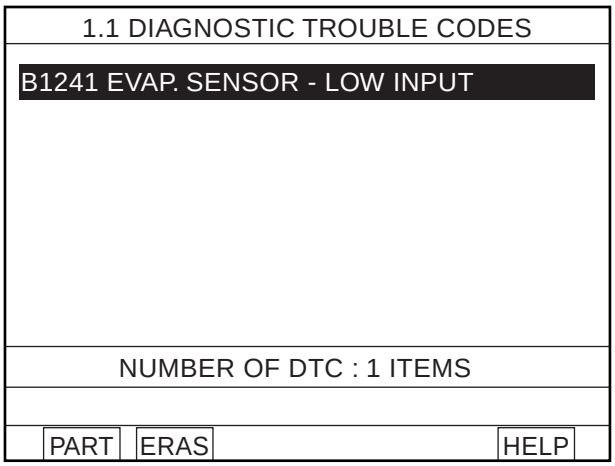


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1241.

EQBF519B

4. Are the DTC B1241 present and is parameter of "EVAPORATIVE SENSOR" fixed?
※ Parameter of "EVAPORATIVE SENSOR" will be fixed at -2℃(28.4°F), if there is any fault in EVAPORATIVE SENSOR.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION EAF84DC8

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

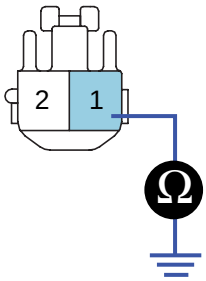
NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EAF42A6E

1. Check for short to ground in harness.
   1) Ignition "OFF"
   2) Disconnect evaporator temp. sensor.
   3) Measure resistance between terminal "1" of evaporator temp. sensor and chassis ground.

Specification : Approx. ∞Ω



1. Evaporator temp. sensor signal
2. Evaporator temp. sensor ground

LQLG519C

   4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

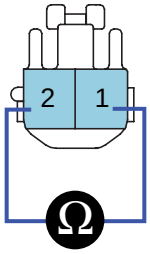
NO

Check for short to ground in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EB45B875

1. Check evaporator temp. sensor.
   1) Ignition "OFF"
   2) Disconnect evaporator temp. sensor.
   3) Measure resistance between terminal "1" and "2" of evaporator temp. sensor.

Specification : Refer the specifications in fig 3.



1. Evaporator temp. sensor signal
2. Evaporator temp. sensor ground

LQLG519D

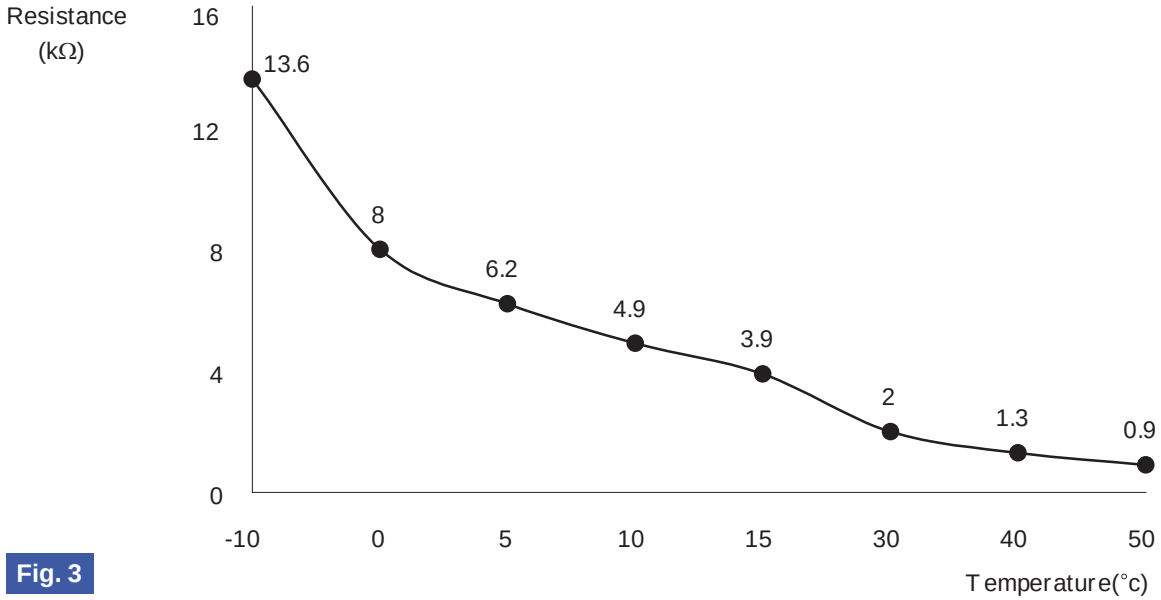


Fig. 3

Fig 3) Specifications : Resistance value of evaporator temp. sensor as a function of temperature.

EQBF519F

4) Is the measured resistance within specifications in fig3? (tolerance limits ±3%)

YES

Go to "Check A/C Control Unit" procedure.

NO

Substitute with a known-good evaporator temp. sensor and check for proper operation.
If the problem is corrected, replace evaporator temp. sensor and then go to "Verification of Vehicle Repair" procedure.

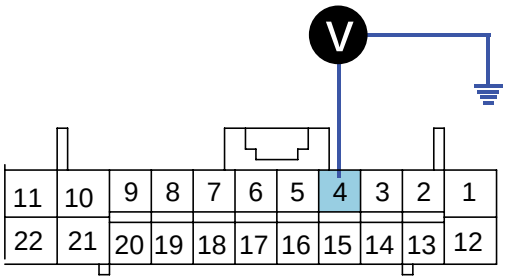
2. Check A/C Control Unit

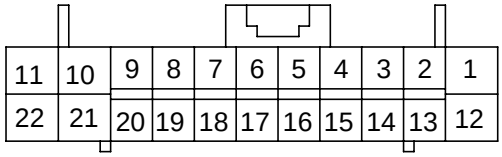
1) Engine "ON"

2) Disconnect evaporator temp. sensor.

3) Measure voltage between terminal "4" of A/C Control Unit and chassis ground.

Specification : Approx. 5V





4. Evaporator temp. sensor signal

SBLHA6536L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E32624E3

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

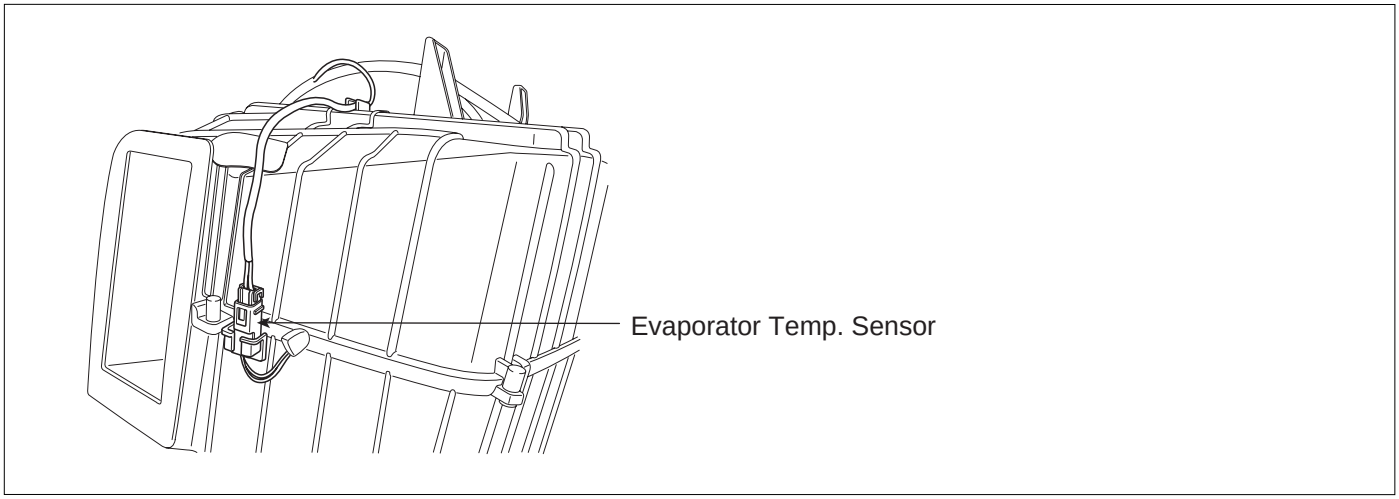
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1242 EVAPORATOR TEMPERATURE SENSOR OPEN (HIGH)

COMPONENT LOCATION EB9F7C1F



SBLHA6535L

GENERAL DESCRIPTION E073E679

Refer to DTC B1241.

DTC DESCRIPTION E9354B2A

The A/C controller sets DTC B1242 if there is an open circuit in evaporator temp. sensor signal harness or the measured resistance value of sensor is more than threshold value(about 13.6kΩ)

DTC DETECTING CONDITION E61B9B78

Item	Detecting Condition	Possible cause
DTC Strategy	• Resistance check	• Open Circuit in harness • Faulty Evaporator temp. Sensor • Faulty A/C control unit
Threshold value	• ＞ 13.6kΩ	
Detecting time	• 0.3 sec	
FAIL SAFE	• Control with the value of -2°C(28.4°F)	

SPECIFICATION E70F7716

Refer to DTC B1241.

MONITOR SCANTOOL DATA E1C7971C

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "EVAPORATIVE SENSOR" Parameter on the Scantool.

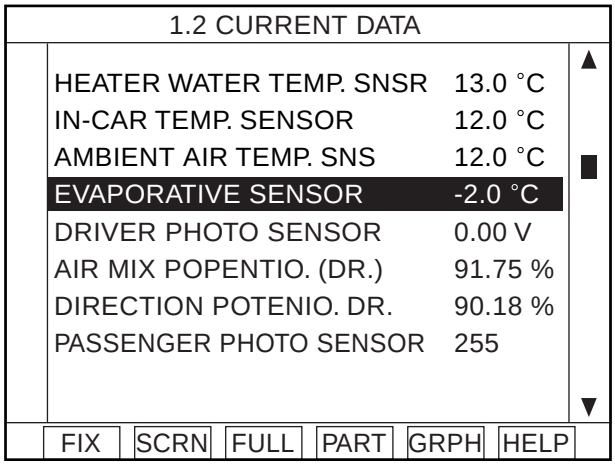


Fig. 1

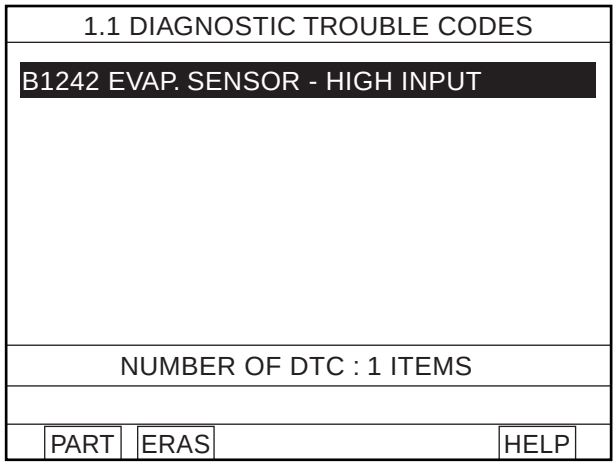


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1242.

EQBF520A

4. Are the DTC B1242 present and is parameter of "EVAPORATIVE SENSOR" fixed?
※ Parameter of "EVAPORATIVE SENSOR" will be fixed at -2℃(28.4℉), if there is any fault in EVAPORATIVE SENSOR.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E2790250

Refer to DTC B1241.

SIGNAL CIRCUIT INSPECTION EE8145E7

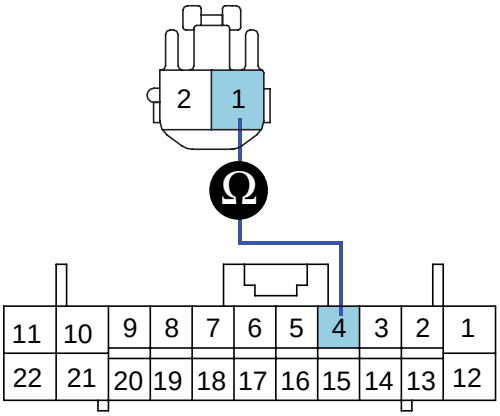
1. Check for open in harness.

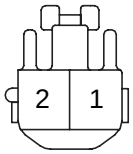
   1) Ignition "OFF"

   2) Disconnect evaporator temp. sensor.

   3) Measure resistance between terminal "1" of evaporator temp. sensor and terminal "4" of A/C Control Unit.

Specification : Approx. 0 Ω





1. Evaporator temp. sensor signal
2. Evaporator temp. sensor ground

SBLHA6537L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection " procedure.

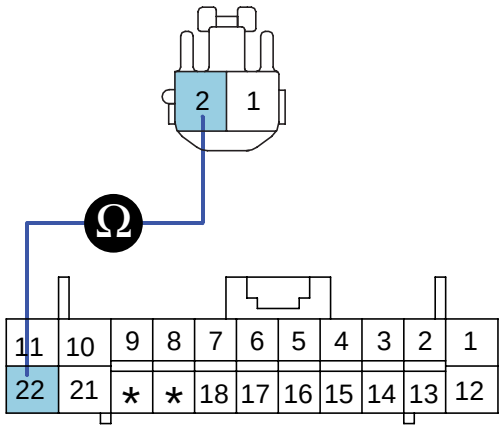
NO

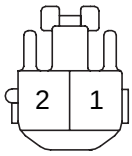
Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION ED7ACE72

1. Check for open in ground harness.
   1) Ignition "OFF"
   2) Disconnect evaporator temp. sensor.
   3) Measure resistance between terminal "2" of evaporator temp. sensor and terminal "22" A/C control unit.

Specification : Approx. 0 Ω





1. Evaporator temp. sensor signal
2. Evaporator temp. sensor ground

SBLHA6538L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EAB63ADA

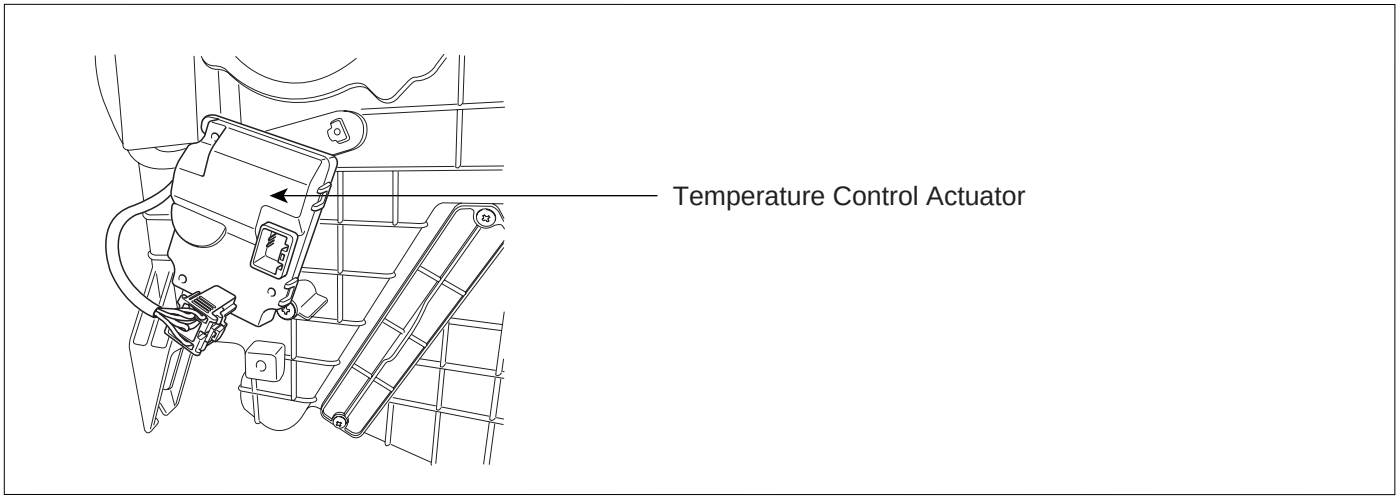
Refer to DTC B1241.

VERIFICATION OF VEHICLE REPAIR E70127E7

Refer to DTC B1241.

DTC B1245 AIR MIX POTENTIOMETER OPEN (LOW) - DRIVER

COMPONENT LOCATION E719A3CD



SBLHA6539L

GENERAL DESCRIPTION E1CAAD32

Temperature control actuator located at heater unit, regulates the temperature by the procedure as follows. Signal from control unit adjusts position of temp. door by operating temp. motor and then temperature will be regulated by the hot/cold air ratio decided by position of temp. door.

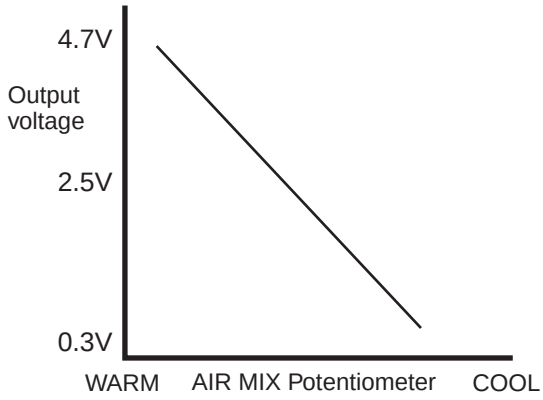
DTC DESCRIPTION E60167C1

The A/C controller sets DTC B1245 if there is an open circuit or poor connection in the air mix potentiometer.

DTC DETECTING CONDITION E5EC5C4F

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver Air Mix potentiometer
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	• If temperature setting 17~24.5°C(63~76°F) fix at max. cooling position. • If temperature setting 25~32°C(77~90°F) fix at max. heating position.	

SPECIFICATION E0B2DE0B



EQBF521B

MONITOR SCANTOOL DATA ED7CC1EA

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Driver Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

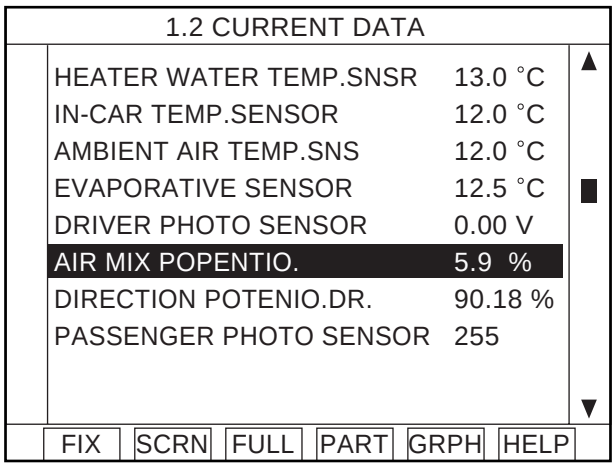


Fig. 1

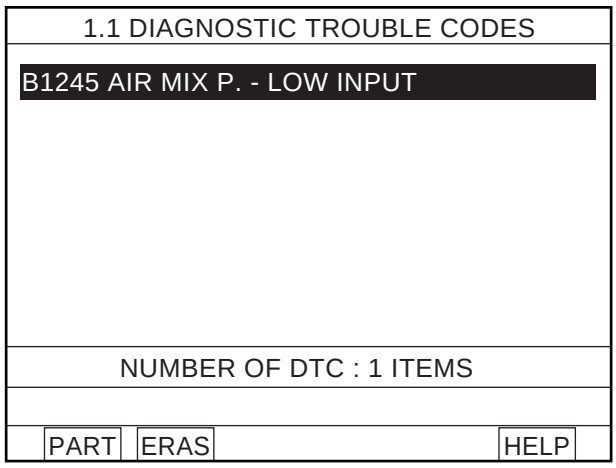


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1245.

LQLG521C

4. Are the DTC B1245 present and is parameter of "Driver Air Mix Potentiometer" fixed?
※ Parameter of "Driver Air Mix Potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Driver Air Mix potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E3032942

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

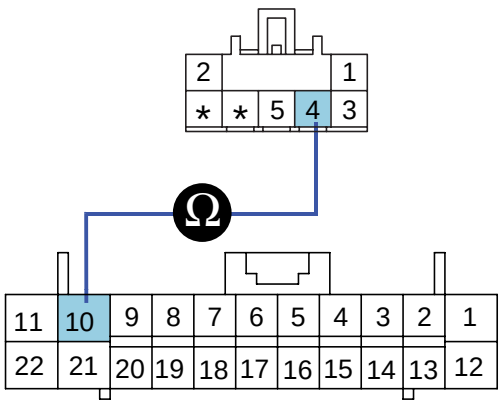
NO

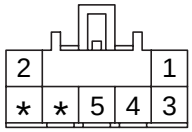
Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EC98F659

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect Driver Air Mix potentiometer.
   3) Measure resistance between terminal "4" of Driver Air Mix Potentiometer and terminal "10" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. Potentiometer ground

SBLHA6540L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

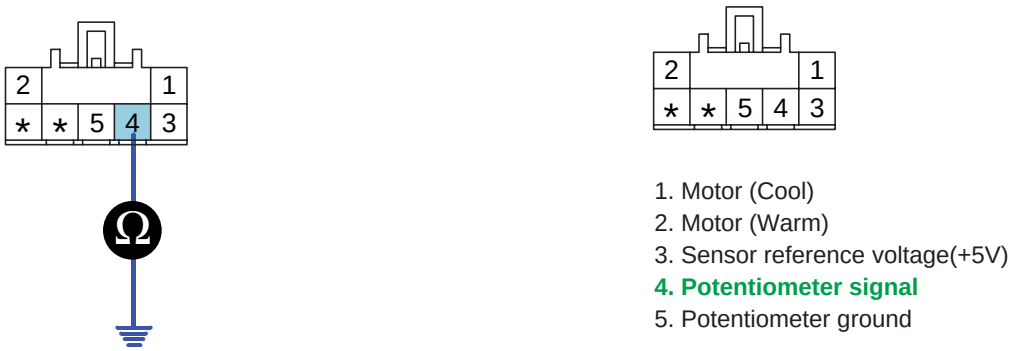
2. Check for short to ground in harness.

1) Ignition "OFF"

2) Disconnect Driver Air Mix potentiometer.

3) Measure resistance between terminal "4" of Driver Air Mix Potentiometer and chassis ground.

Specification : Approx. ∞ Ω



1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. Potentiometer ground

SBLHA6541L

4) Is the measured resistance within specifications?

YES

Go to "Power circuit Inspection" procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

POWER SUPPLY CIRCUIT INSPECTION E2387022

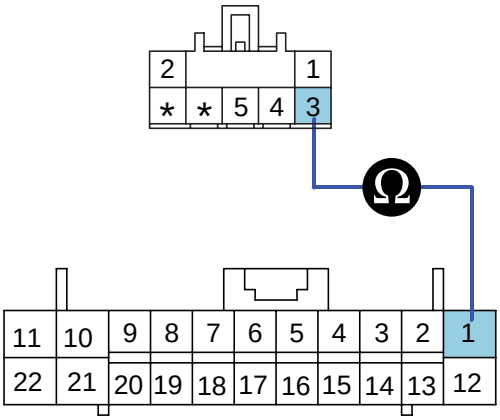
1. Check for open in harness.

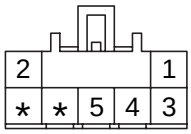
1) Ignition "ON"

2) Connect Driver Air Mix Potentiometer.

3) Measure resistance between terminal "3" of Driver Air Mix Potentiometer and terminal "1" of A/C control unit.

Specification : 0Ω





1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. **Potentiometer ground**

SBLHA6542L

4) Is the measured voltage within specifications?

YES

Go to "Component inspection" procedure.

NO

Check for short or open in power harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EFB9A59D

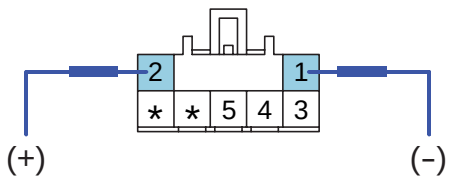
1. Check actuator motor.

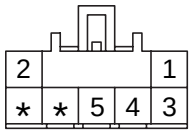
1) Ignition "OFF"

2) Disconnect Driver Air Mix Potentiometer.

3) Verify that the temperature actuator operates to the hot position when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the temperature actuator operates to the cool position when the connections are reversed.





1. **Motor (Cool)**
2. **Motor (Warm)**
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6543L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

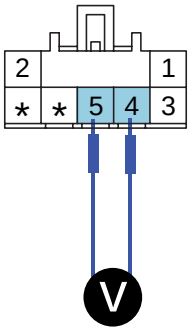
2. Check potentiometer

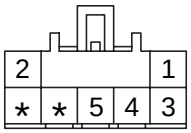
1) Ignition "ON"

2) Connect Driver Air Mix potentiometer.

3) Measure voltage between terminal "4" and "5" of Driver Air Mix potentiometer while operating the temp. switch.

Specification : Refer the specifications in fig 3)





1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. **Potentiometer ground**

SBLHA6544L

Door position	Voltage (4-5)	Error detecting
MAX. Cooling	0.3 ± 0.15V	Low voltage : 0.08V or less
MAX. Heating	4.7 ± 0.15V	High voltage : 4.9V or more

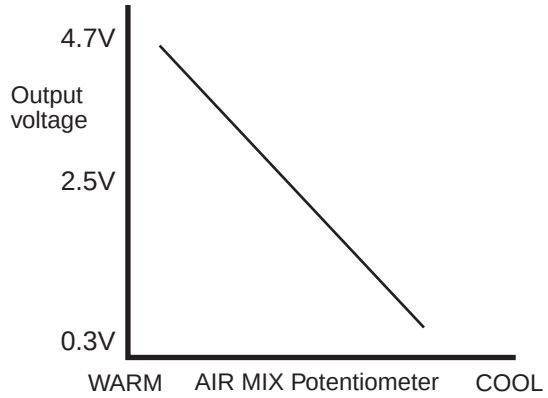


Fig. 3

Fig 3) Specifications : Voltage value of air mix potentiometer as a function of position of setting temperature.

EQBF521J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E883B840

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

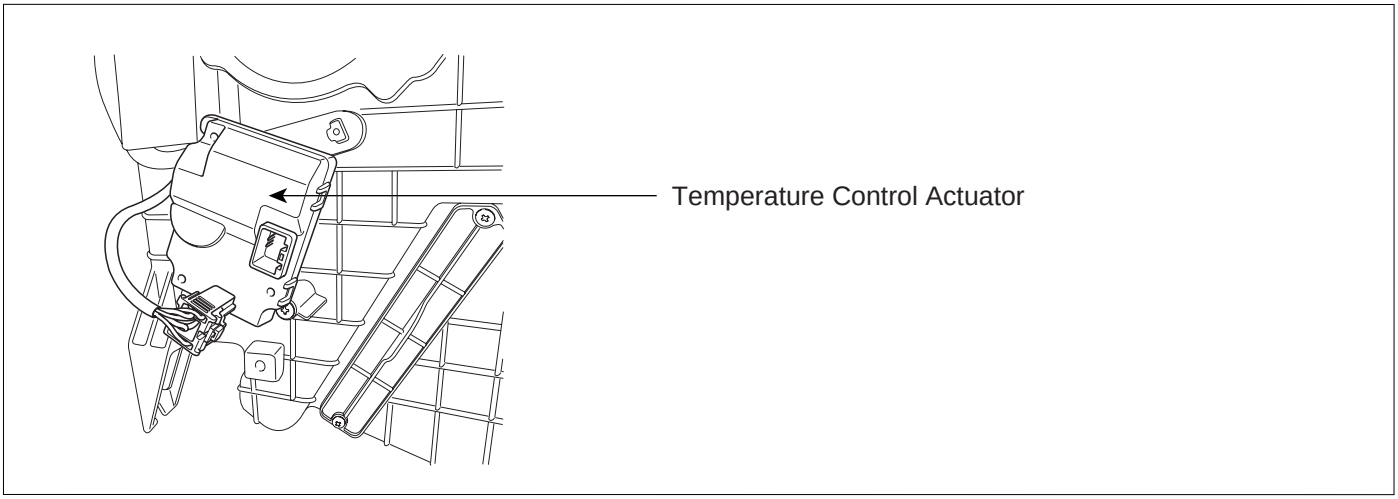
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1246 AIR MIX POTENTIOMETER SHORT (HIGH) - DRIVER

COMPONENT LOCATION E3948C9B



SBLHA6539L

GENERAL DESCRIPTION E8B15D5D

Refer to DTC B1245.

DTC DESCRIPTION ECABD6D9

The A/C controller sets DTC B1246 if there is a short to power in the air mix potentiometer.

DTC DETECTING CONDITION E946FDCA

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Short circuit in harness • Faulty driver Air Mix potentiometer
Threshold value	• > 4.9V	
Detecting time	• 0.3 sec	
FAIL SAFE	• If temperature setting 17~24.5°C(63~76°F) fix at max. cooling position. • If temperature setting 25~32°C(77~90°F) fix at max. heating position.	

SPECIFICATION ED6C5BE4

Refer to DTC B1245.

MONITOR SCANTOOL DATA E0F5D9A1

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Driver Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

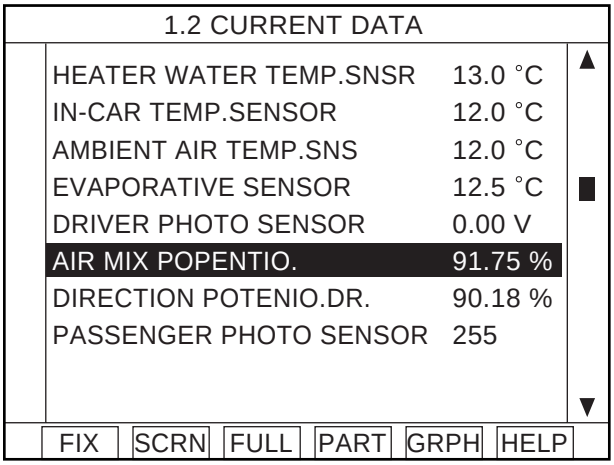


Fig. 1

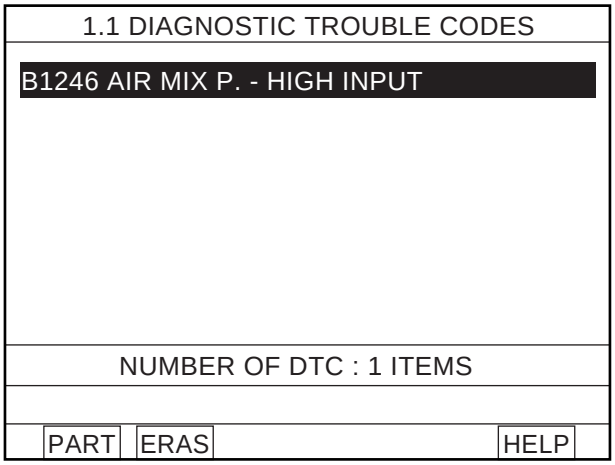


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1246.

LQLG522A

4. Are the DTC B1246 present and is parameter of "Driver Air Mix potentiometer" fixed?
   ※ Parameter of "Driver Air Mix potentiometer" will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Driver Air Mix potentiometer.

   YES

   Go to "Inspection" procedure.

   NO

   Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION EFE9FA90

Refer to DTC B1245.

SIGNAL CIRCUIT INSPECTION EC608CD7

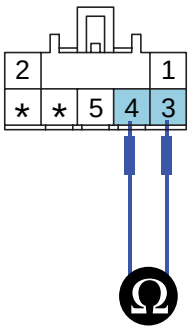
1. Check for short in harness.

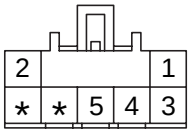
   1) Ignition "OFF"

   2) Disconnect Driver Air Mix potentiometer.

   3) Measure resistance between terminal "3" and "4" of Driver Air Mix potentiometer.

Specification : Approx. ∞ Ω





1. Motor (Cool)
2. Motor (Warm)
3. **Sensor reference voltage(+5V)**
4. **Potentiometer signal**
5. Potentiometer ground

SBLHA6545L

   4) Is the measured resistance within specifications?

YES

Go to "Ground circuit Inspection" procedure.

NO

Check for short to power harness in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION E4163DA5

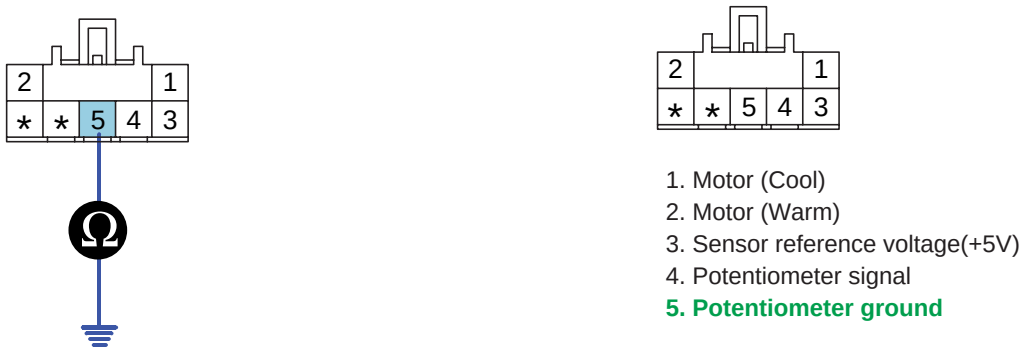
1. Check for open in harness.

   1) Ignition "OFF"

   2) Disconnect Driver Air Mix Potentiometer.

   3) Measure resistance between terminal "5" of Driver Air Mix Potentiometer and chassis ground.

Specification : Approx. 0 Ω



SBLHA6546L

   4) Is the measured resistance within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E74FBEDE

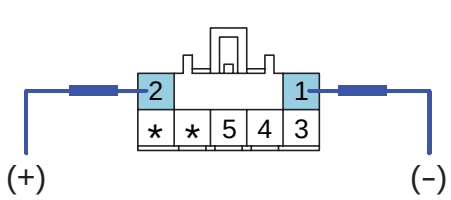
1. Check actuator motor.

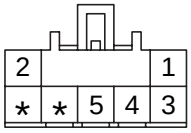
   1) Ignition "OFF"

   2) Disconnect Driver Air Mix Potentiometer.

   3) Verify that the temperature actuator operates to the hot position when connecting 12V to the terminal "1" and grounding terminal "2".

   4) Verify that the temperature actuator operates to the cool position when the connections are reversed.





1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6543L

   5) Does the actuator work properly?

   YES

   Go to "Check potentiometer" procedure.

   NO

   Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

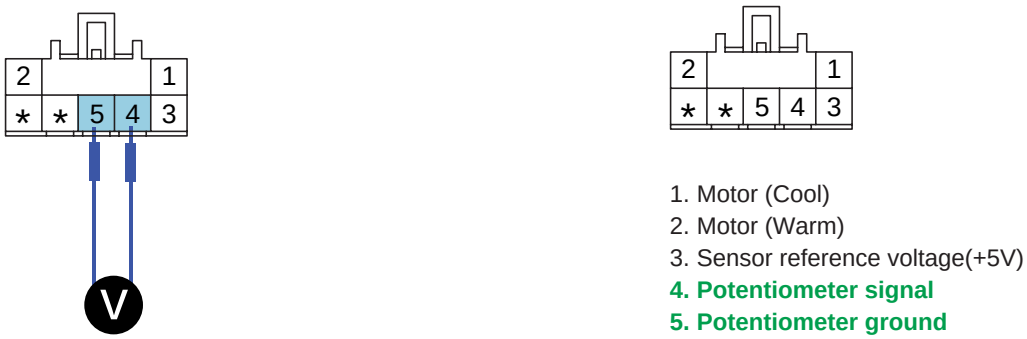
2. Check potentiometer

   1) Ignition "ON"

   2) Connect Driver Air Mix potentiometer.

   3) Measure voltage between terminal "4" and "5" of Driver Air Mix potentiometer while operating the temp. switch.

Specification : Refer the specifications in fig 3)



SBLHA6544L

Door position	Voltage (4-5)	Error detecting
MAX. Cooling	0.3 ± 0.15V	Low voltage : 0.08V or less
MAX. Heating	4.7 ± 0.15V	High voltage : 4.9V or more

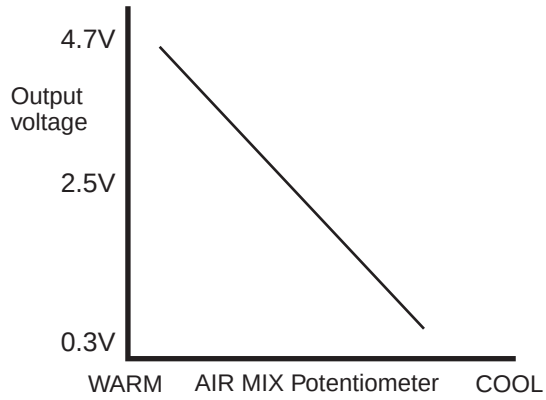


Fig. 3

Fig 3) Specifications : Voltage value of air mix potentiometer as a function of position of setting temperature.

EQBF521J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

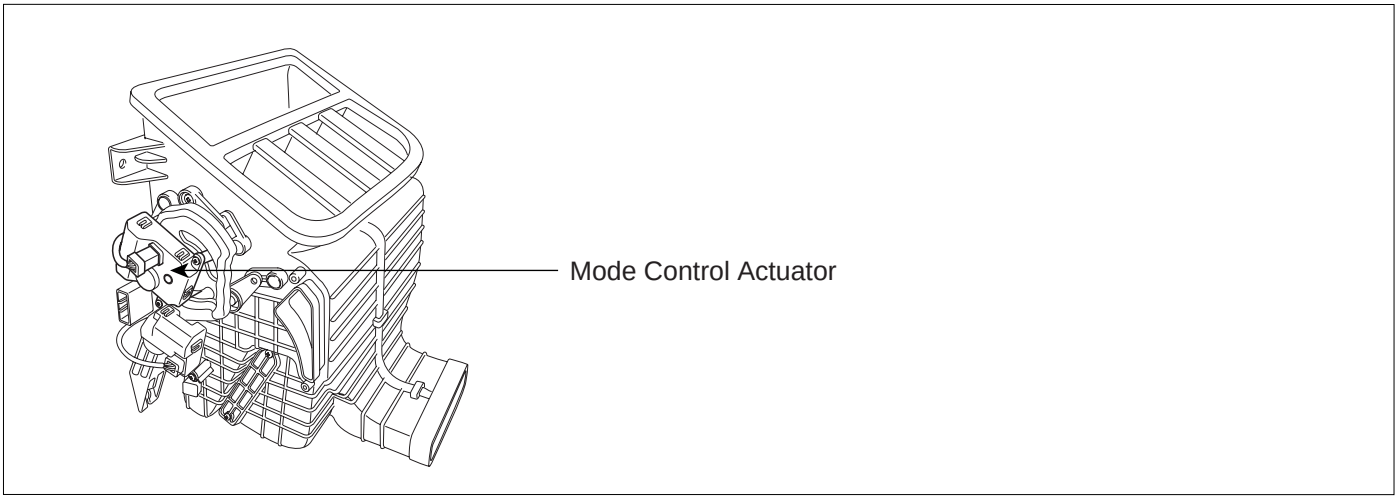
Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR EB8C6BA5

Refer to DTC B1245.

DTC B1249 DIRECTION POTENTIOMETER OPEN (LOW)

COMPONENT LOCATION E1A16B4D



SBLHA6547L

GENERAL DESCRIPTION E25C3DBB

The mode control actuator mounted on heater unit, adjusts position of mode door by operating Direction Motor based on signal of A/C control unit. Pressing mode select switch makes the mode control actuator shift in order of vent→ B/L → floor → mix.

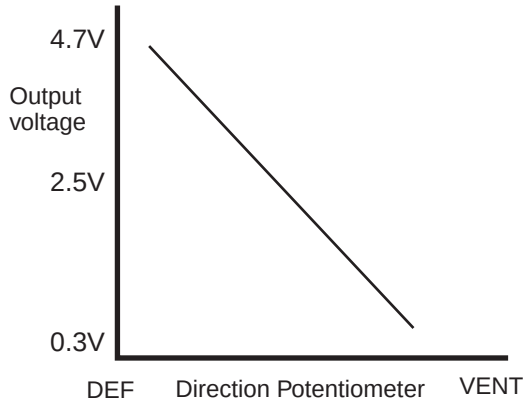
DTC DESCRIPTION E2F32A26

The A/C controller sets DTC B1249 if there is an open circuit or poor connection in the Direction potentiometer.

DTC DETECTING CONDITION E699D917

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver direction potentiometer
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	• Fix vent position, while selecting vent mode. • Fix defrost position while selecting except vent mode.	

SPECIFICATION E0101031



EQBF523B

MONITOR SCANTOOL DATA E63388EE

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "DIRECTION POTENTIO." parameter on the scantool while operating mode switch.

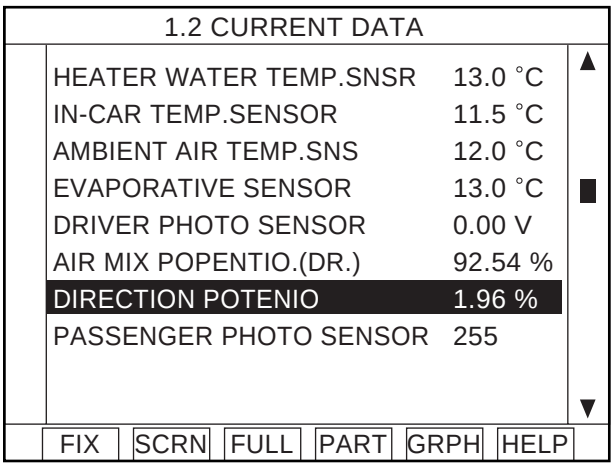


Fig. 1

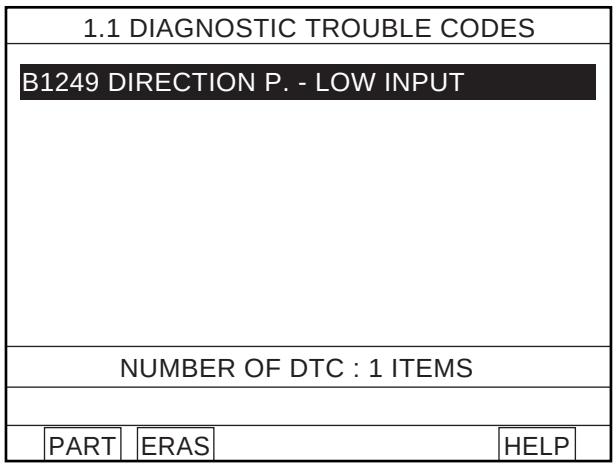


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1249.

SBLHA6570L

4. Are the DTC B1249 present and is parameter of "DR. DIRECTION POTENTIO." fixed?
※ Parameter of "DR. DIRECTION POTENTIO." will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Driver Direction potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E3E72485

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

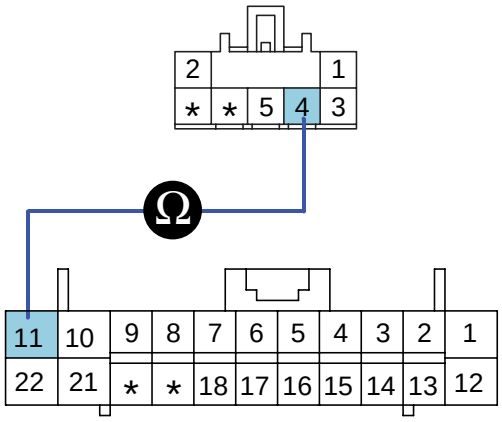
NO

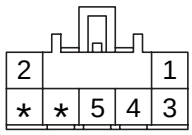
Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EEDADDD6

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect mode Actuator.
   3) Measure resistance between terminal "4" of Direction potentiometer and terminal "11" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. Potentiometer ground

SBLHA6548L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

2. Check for short to ground in harness.

1) Ignition "OFF"

2) Disconnect Driver mode Actuator.

3) Measure resistance between terminal "4" of Direction potentiometer and chassis ground.

Specification : Approx. ∞ Ω

SBLHA6549L

4) Is the measured resistance within specifications?

YES

Go to "Power circuit Inspection" procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

POWER SUPPLY CIRCUIT INSPECTION E7CE5F7A

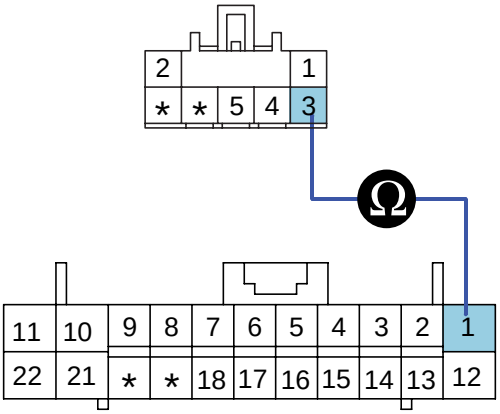
1. Check for open in harness.

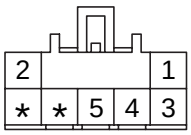
1) Ignition "ON"

2) Connect Direction potentiometer.

3) Measure resistance between terminal "3" of Direction potentiometer and terminal "1" of A/C control unit.

Specification : Approx. 5V





1. Motor (Vent)
2. Motor (Def)
3. Sensor REF +5V
4. Potentiometer signal
5. Potentiometer GND

SBLHA6550L

4) Is the measured voltage within specifications?

YES

Go to "Component Inspection" procedure.

NO

Check for short or open in power harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E1CC0BF4

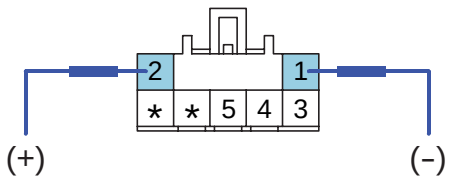
1. Check actuator.

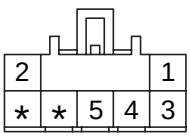
1) Ignition "OFF"

2) Disconnect Direction potentiometer.

3) Verify that the mode actuator operates to the vent mode when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the mode actuator operates to the def mode when the connections are reversed.





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6551L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

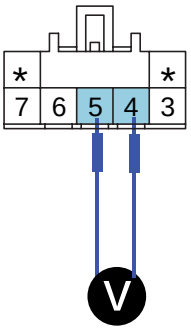
2. Check potentiometer

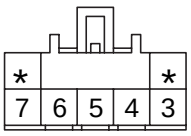
1) Ignition "ON"

2) Connect Direction potentiometer.

3) Measure voltage between terminal "4" and "5" of Direction potentiometer as the mode switch is operated.

Specification : Refer the specifications in fig 3





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. **Potentiometer ground**

SBLHA6552L

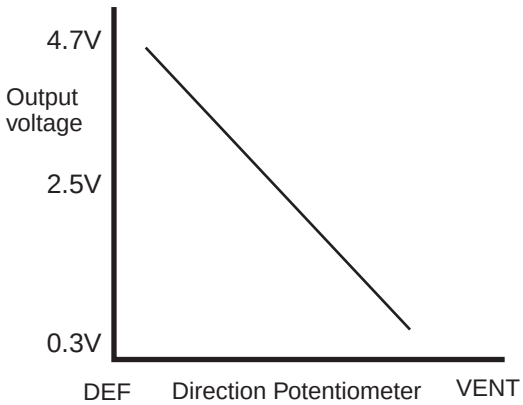


Fig. 3

Fig 3) Specifications : Voltage value as a function of position of direction potentiometer.

EQBF523J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E17B27B5

After a repair, it is essential to verify that the fault has been corrected.

1. Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode and then clear DTC.
2. Operate the vehicle and monitor the DTC on the scantool.
3. Are any DTCs present?

YES

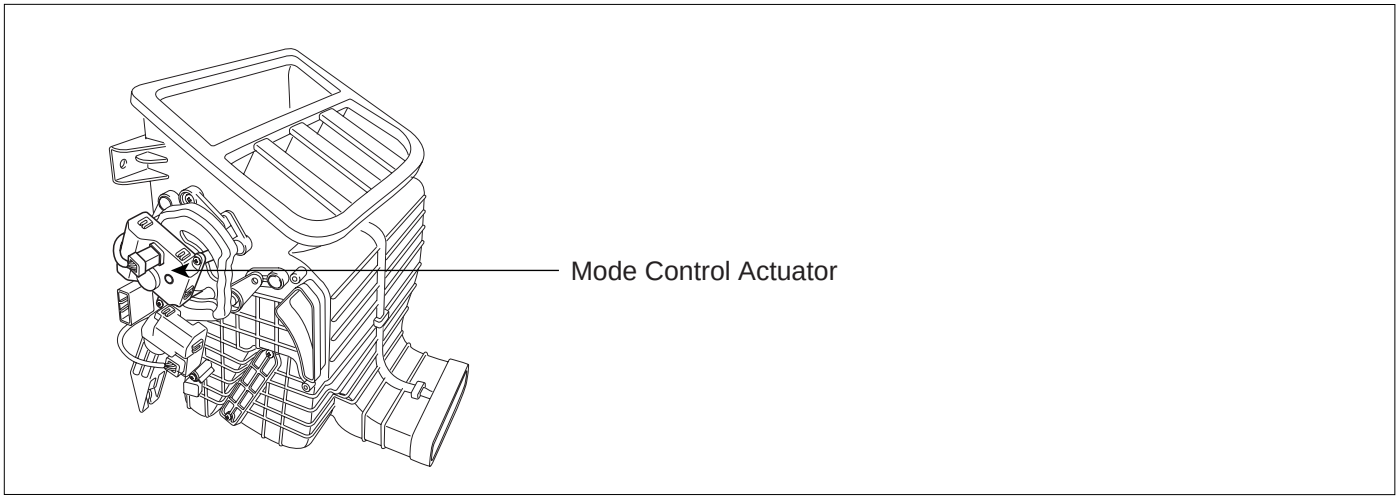
Go to the applicable troubleshooting procedure.

NO

System is performing to specification at this time.

DTC B1250 DIRECTION POTENTIOMETER SHORT (HIGH)

COMPONENT LOCATION EAAF06F7



SBLHA6547L

GENERAL DESCRIPTION E42DB595

Refer to DTC B1249.

DTC DESCRIPTION E506ACD5

The A/C controller sets DTC B1250 if there is a short to power in the Direction potentiometer.

DTC DETECTING CONDITION E6521921

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Short circuit in harness • Faulty driver direction potentiometer • Open circuit in harness
Threshold value	• > 4.9V	
Detecting time	• 0.3 sec	
FAIL SAFE	• Fix vent position	

SPECIFICATION E80F0A06

Refer to DTC B1249.

MONITOR SCANTOOL DATA E6C26D12

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the " DIRECTION POTENTIO." parameter on the scantool while operating mode switch.

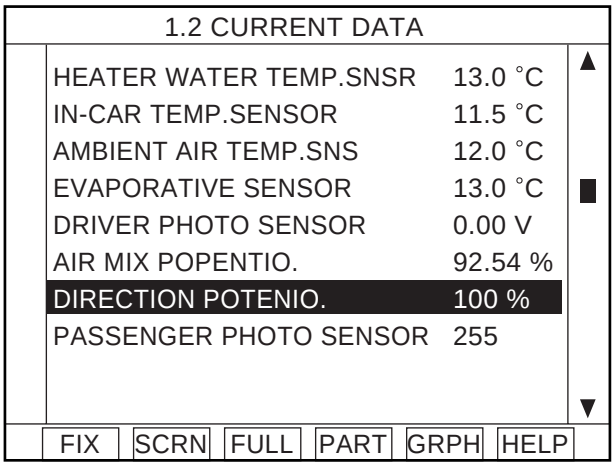


Fig. 1

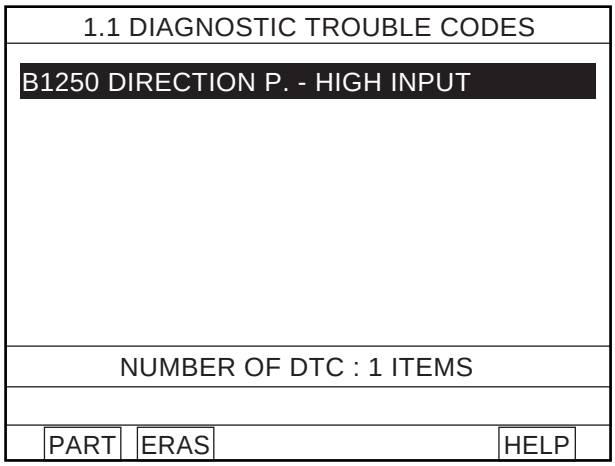


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B1250.

LQLG524A

4. Are the DTC B1250 present and is parameter of "DIRECTION POTENTIO." fixed?
※ Parameter of "DIRECTION POTENTIO." will be fixed at 100%(or any value above 90%), or 0% (or any value below 10%), if there is any fault in Driver Direction potentiometer.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E7C9EC9A

Refer to DTC B1249.

SIGNAL CIRCUIT INSPECTION EBA6FBEC

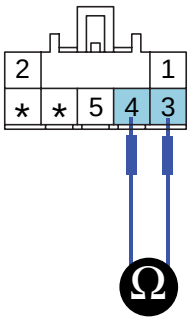
1. Check for short in harness.

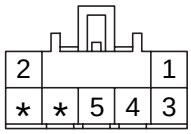
   1) Ignition "OFF"

   2) Disconnect mode Actuator.

   3) Measure resistance between terminal "3" and "4" of Direction potentiometer.

Specification : Approx. ∞ Ω





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6553L

4) Is the measured resistance within specifications?

YES

Go to "Ground circuit inspection" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

GROUND CIRCUIT INSPECTION E64B7078

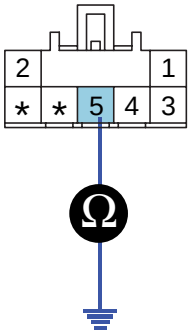
1. Check for open in ground harneS.

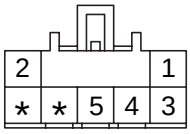
1) Ignition "OFF"

2) Disconnect mode Actuator.

3) Measure resistance between terminal "5" of evaporator sensor and chassis ground.

Specification :Approx. 0 Ω





1. Motor (Vent)
3. Motor (Def)
4. Sensor REF +5V
5. Potentiometer signal
6. Potentiometer GND

SBLHA6554L

4) Is the measured resistance within specifications?

YES

Go to "Component Inspection " procedure.

NO

Check for open in ground harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E48D945D

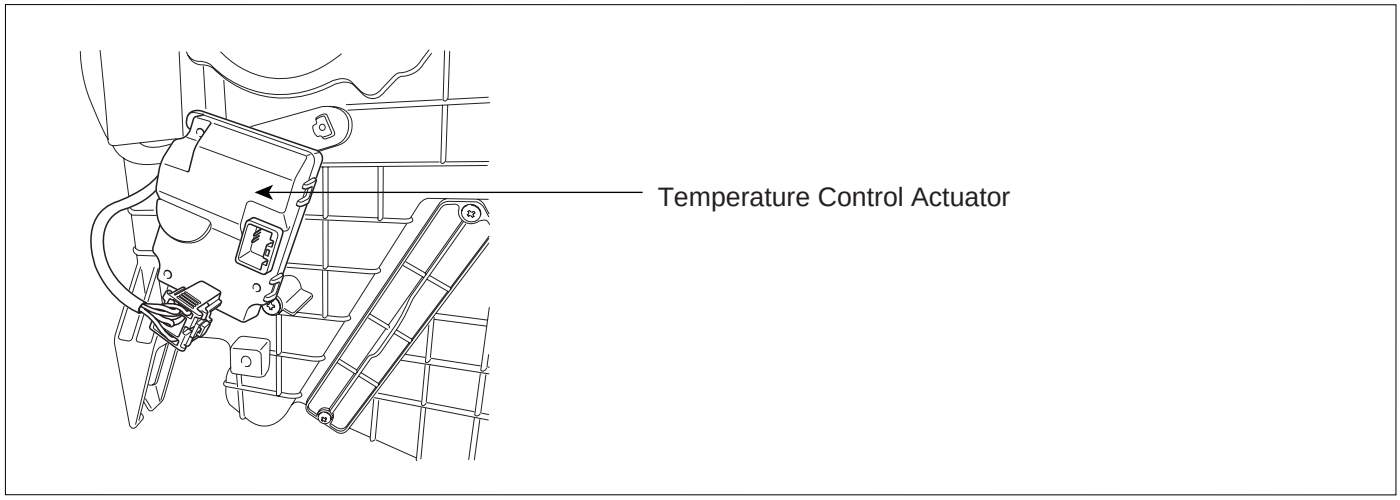
Refer to DTC B1249.

VERIFICATION OF VEHICLE REPAIR E41A230A

Refer to DTC B1249.

DTC B2406 AIR MIX MOTOR (DRIVER)

COMPONENT LOCATION EFE0376F



SBLHA6555L

GENERAL DESCRIPTION E64AC948

Refer to DTC B1245.

DTC DESCRIPTION E2ABFEF5

The A/C controller sets DTC B2406 if the air mix actuator doesn't move to intended position within 40sec (In this case, A/C controller try to move temp. door for 2sec. 3 times, every 20 sec. before setting DTC).

DTC DETECTING CONDITION EA8F2B90

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver Air Mix potentiometer • Fault A/C Control Unit
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	-	

SPECIFICATION EC47D91F

Refer to DTC B1245.

MONITOR SCANTOOL DATA E41751B0

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Driver Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

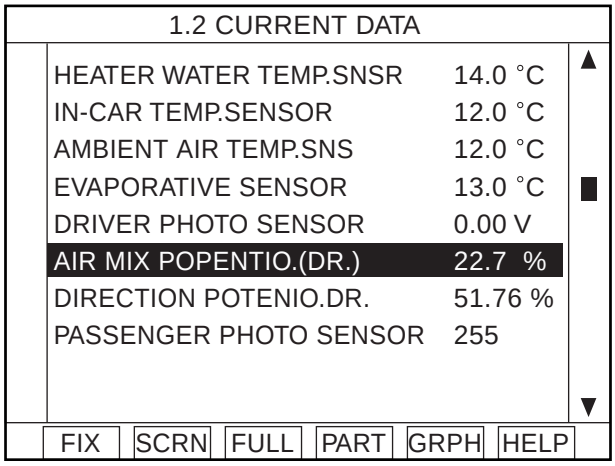


Fig. 1

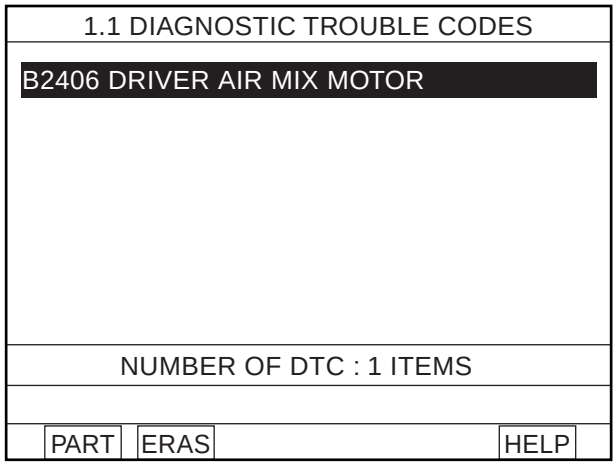


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B2406.

EQBF525A

4. Are the DTC B2406 present and is parameter of "Driver AIR MIX Potentiometer" fixed?
※ There is any fault in Driver AIR MIX Motor. If the parameter of "Driver AIR MIX DOOR" is 30% or less when the actuator operates to the hot position, or If the parameter is 60% and more when the actuator operates to the cold position.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E7F42C7B

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.

2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.

3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

NO

Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION EAE92A03

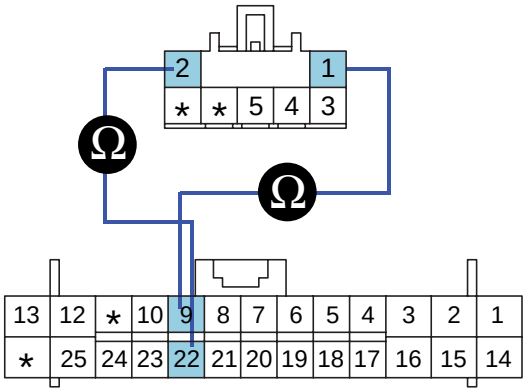
1. Check for open in harness.

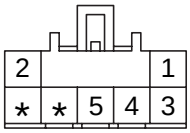
   1) Ignition "OFF"

   2) Disconnect Driver Air Mix potentiometer.

   3) Measure resistance between terminal "1,2" of Driver Air Mix Motor and terminal "9,22" of A/C control unit.

Specification : Approx. 0 Ω





3. Motor (Cool)
4. Motor (Warm)
5. Sensor reference voltage(+5V)
6. Potentiometer signal
7. Potentiometer ground

SBLHA6556L

   4) Is the measured resistance within specifications?

   YES

   Go to "Check for short to ground in harness" procedure.

   NO

   Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

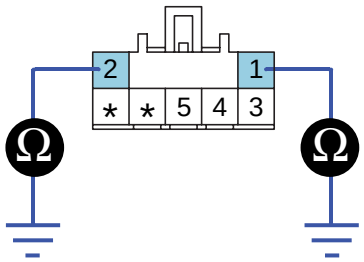
2. Check for short to ground in harness.

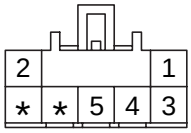
   1) Ignition "OFF"

   2) Disconnect Driver Air Mix Actuator.

   3) Measure resistance between terminal "1,2" of Driver Air Mix Motor and chassis ground.

Specification : Approx. ∞ Ω





1. Motor (Cool)
2. Motor (Warm)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6557L

4) Is the measured resistance within specifications?

YES

Go to "Visual/Physical Inspection " procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

VISUAL/PHYSICAL INSPECTION E991C1F7

1. Check actuator.
   ※ Check if Driver Air Mix Actuator works properly through ACTUATION TEST.

   1) Ignition : ON

   2) Connect Scantool and select " ACTUATION TEST" mode and press [F1]

1.3 ACTUATION TEST	
DRIVER AIR MIX DOOR - DRIVE 50%	
DURATION	UNTIL STOP KEY
METHOD	ACTIVATION
CONDITION	IG. KEY ON ENGINE RUNNING
PRESS [STRT], IF YOU ARE READY!	
STRT STOP	

Fig. 3

Fig 3 : Selecting "ACTUATION TEST" mode.

EQBF525D

3) Does Driver Air Mix Actuator work properly?

YES

Go to "Component Inspection" procedure.

NO

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E076DD0D

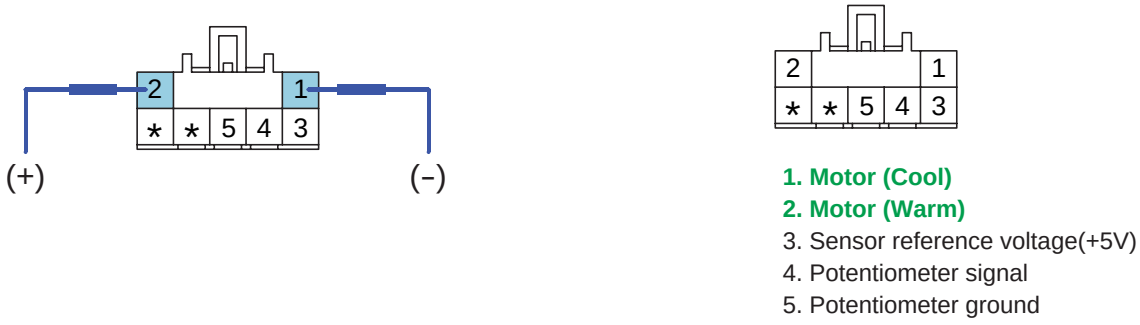
1. Check actuator motor.

1) Ignition "OFF"

2) Disconnect Driver Air Mix Potentiometer.

3) Verify that the temperature actuator operates to the hot position when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the temperature actuator operates to the cool position when the connections are reversed.



SBLHA6558L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

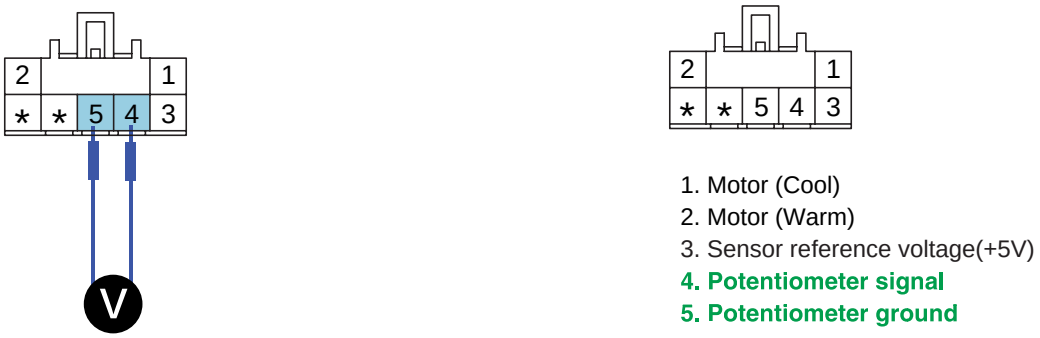
2. Check potentiometer

1) Ignition "ON"

2) Connect Driver Air Mix potentiometer.

3) Measure voltage between terminal "4" and "5" of Driver Air Mix potentiometer while operating the temp. switch.

Specification : Refer the specifications in fig 3)



SBLHA6559L

Door position	Voltage (4-5)	Error detecting
MAX. Cooling	0.3 ± 0.15V	Low voltage : 0.08V or less
MAX. Heating	4.7 ± 0.15V	High voltage : 4.9V or more

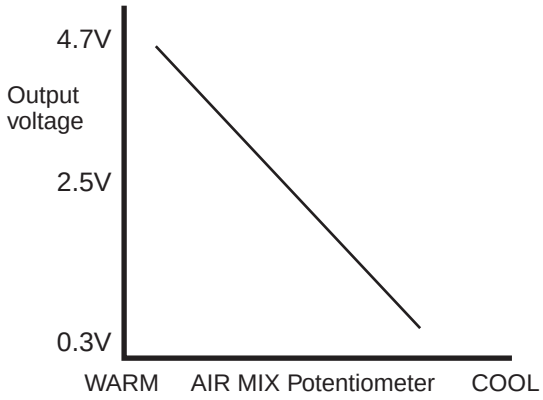


Fig. 3

Fig 3) Specifications : Voltage value of air mix potentiometer as a function of position of setting temperature.

EQBF521J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

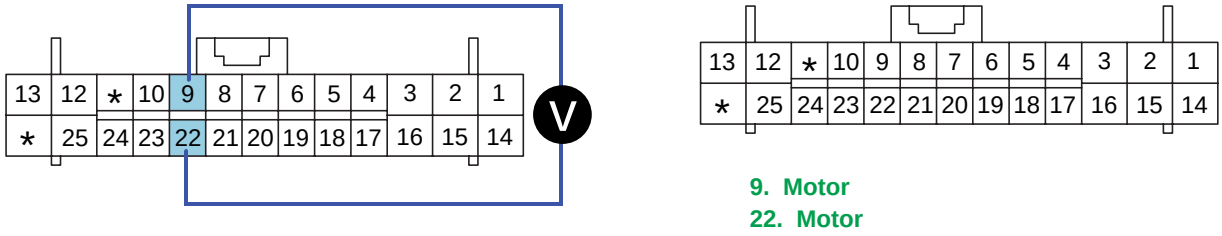
3. Check A/C Control Unit.

1) Engine "ON"

2) Connect A/C Control Unit.

3) Measure voltage between terminal "9" and "22" of A/C Control Unit while operating the temp. switch.

Specification :Approx. 12V



SBLHA6560L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

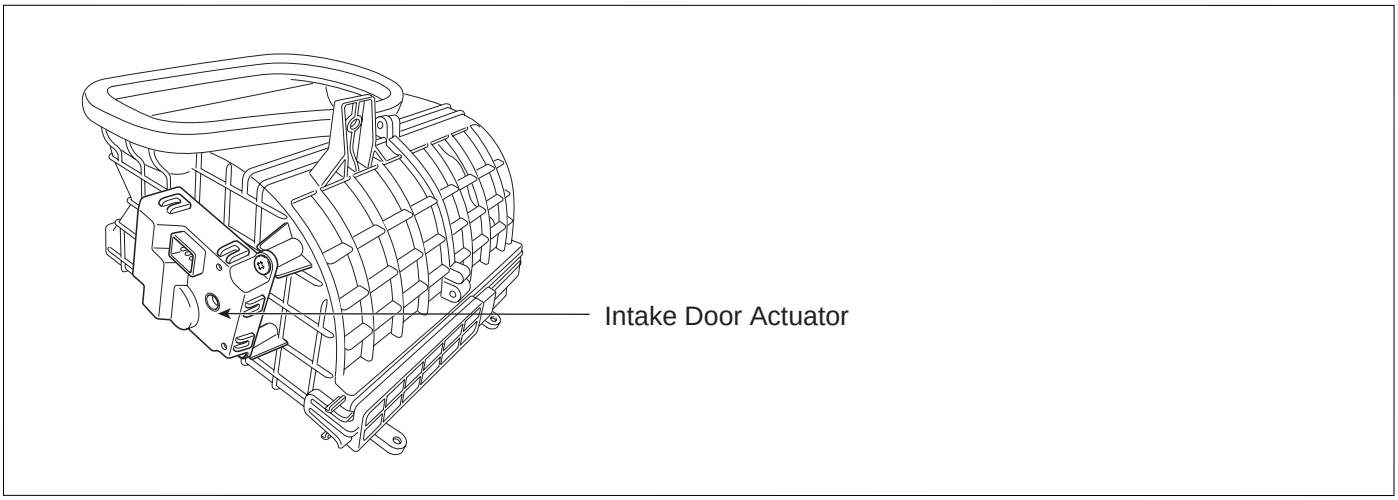
Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E9F02EC4

Refer to DTC B1245.

DTC B2408 INTAKE MOTOR FAILURE

COMPONENT LOCATION EF1AEBEF



SBLHA6518L

GENERAL DESCRIPTION EBF43D13

Refer to DTC B1208.

DTC DESCRIPTION EDEFA576

The A/C controller sets DTC B2408 if the intake motor Doesn't move to intended position within 40sec(The A/C controller attempts to move the intake door for a 2 second duration at a freshquency of 3 times every 20 seconds before storing a DTC.)

DTC DETECTING CONDITION E70DC6B0

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty Intake potentiometer
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	-	

SPECIFICATION E6B3190E

※ Voltage value of Intake potentiometer as a function of position of Intake door

Door position	Voltage	Threshold value
Fresh	0.3±0.15V	Voltage value 0.08V or less
Recirculation	4.7±0.15V	Voltage value 4.9V or more

MONITOR SCANTOOL DATA E73BFCC6

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Intake Potentiometer" Parameter on the Scantool while operating Intake switch.

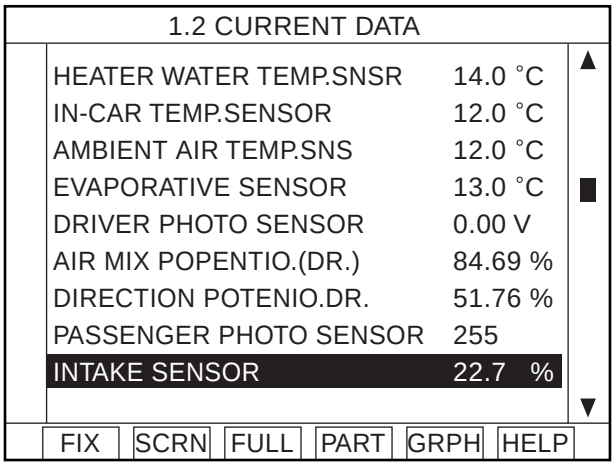


Fig. 1

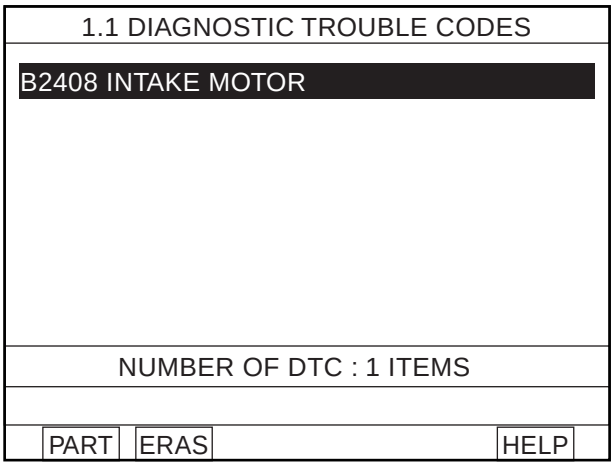


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B2408.

EQBF529A

4. Are the DTC B2408 present and is parameter of "Intake Potentiometer" fixed?
   ※ There is any fault in Intake potentiometer. If the parameter of "Intake potentiometer" is 30% or less when the actuator operates to the fresh position, or If the parameter is 60% and more when the actuator operates to the recirculation position.

   YES

   Go to "Inspection" procedure.

   NO

   Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E0CEF15E

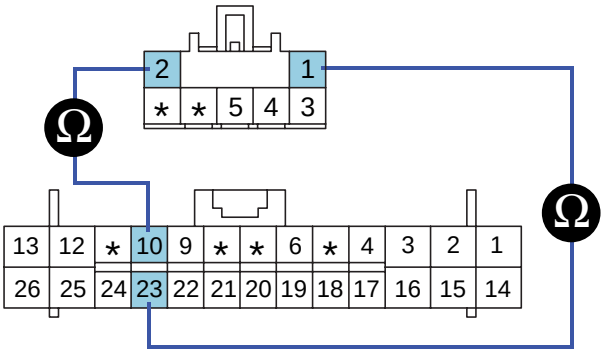
Refer to DTC B1208.

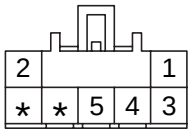
SIGNAL CIRCUIT INSPECTION E0DD314B

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect Intake potentiometer.

3) Measure resistance between terminal "1,2" of Intake potentiometer and terminal "23,10" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6561L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

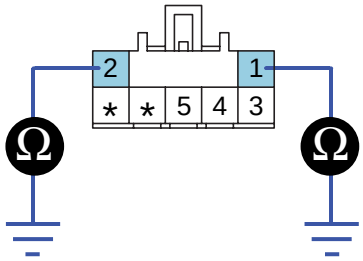
2. Check for short to ground in harness.

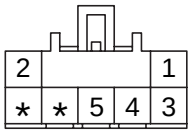
1) Ignition "OFF"

2) Disconnect Driver Air Mix Actuator.

3) Measure resistance between terminal "1,2" of Driver Air Mix Motor and chassis ground.

Specification : Approx. ∞ Ω





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6562L

4) Is the measured resistance within specifications?

YES

Go to "Visual/Physical Inspection " procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

VISUAL/PHYSICAL INSPECTION E43EAB6A

1. Check actuator.
   ※ Check if Driver Air Mix Actuator works properly through ACTUATION TEST.

   1) Ignition : ON

   2) Connect Scantool and select " ACTUATION TEST" mode and press [F1]

1.3 ACTUATION TEST	
DRIVER AIR MIX DOOR - DRIVE 50%	
DURATION	UNTIL STOP KEY
METHOD	ACTIVATION
CONDITION	IG. KEY ON ENGINE RUNNING
PRESS [STRT], IF YOU ARE READY!	
STRT STOP	

Fig. 3

Fig 3 : Selecting "ACTUATION TEST" mode.

EQBF525D

   3) Does Intake Actuator work properly?

YES

Go to "Component Inspection" procedure.

NO

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION EC3D4A88

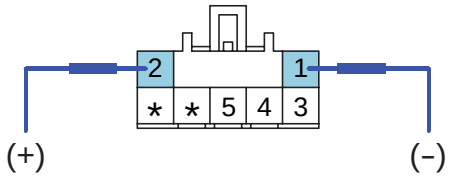
1. Check actuator motor.

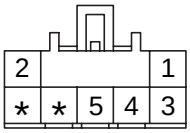
   1) Ignition "OFF"

   2) Disconnect Intake Potentiometer.

3) Verify that the temperature actuator operates to the fresh position when connecting 12V to the terminal "1" and grounding terminal "2".

4) Verify that the temperature actuator operates to the recirculation position when the connections are reversed.





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6522L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

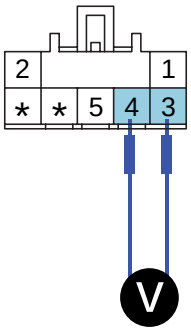
2. Check potentiometer

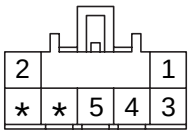
1) Ignition "ON"

2) Connect Intake potentiometer.

3) Measure voltage between terminal "3" and "4" of Intake potentiometer while operating Intake switch.

Specification : Refer the specifications





1. Motor (Rec)
2. Motor (Fre)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6523L

Door position	Voltage (3-4)	Error detecting
Fresh	0.3 ± 0.15V	Low voltage : 0.08V or less
Recirculation	4.7 ± 0.15V	High voltage : 4.9V or more

Specifications : Voltage value of Intake potentiometer as a function of position of Intake.

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

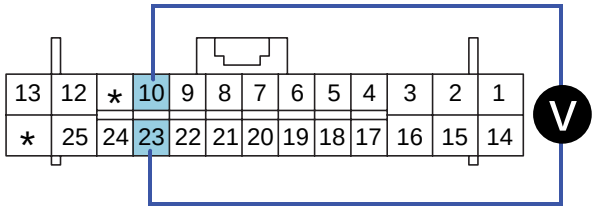
3. Check A/C Control Unit.

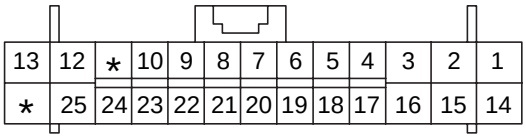
1) Engine "ON"

2) Connect A/C Control Unit.

3) Measure voltage between terminal "10" and "23" of A/C Control Unit while operating the Intake switch.

Specification :Approx. 12V





10. Motor
23. Motor

SBLHA6569L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

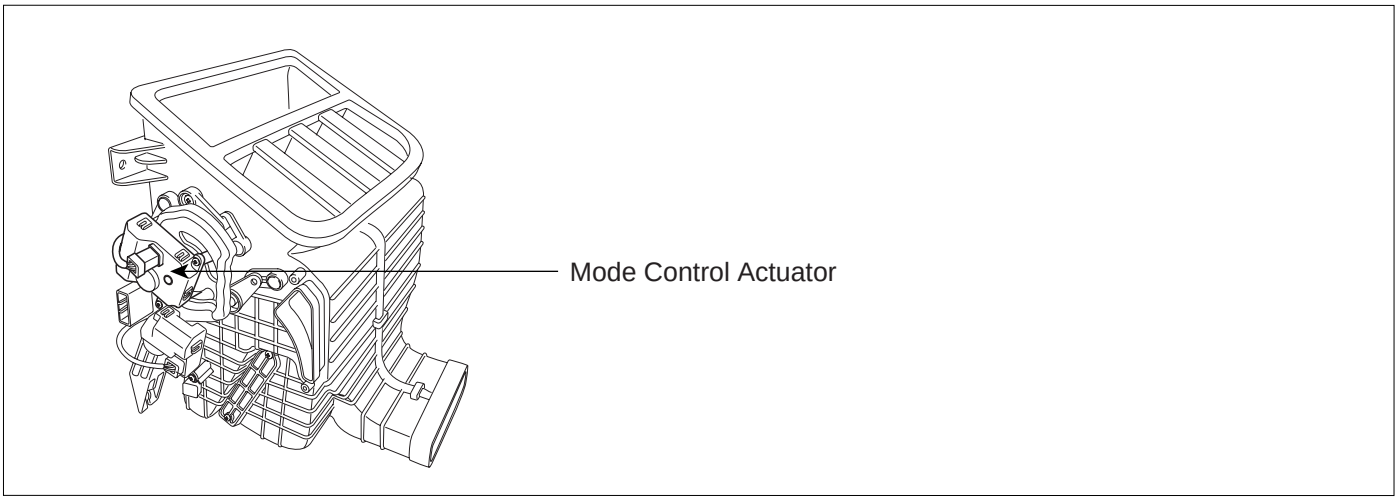
Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E0DD17DE

Refer to DTC B1208.

DTC B2409 DIRECTION CONTROL MOTOR

COMPONENT LOCATION E106240B



SBLHA6547L

GENERAL DESCRIPTION EF5781CF

Refer to DTC B1249.

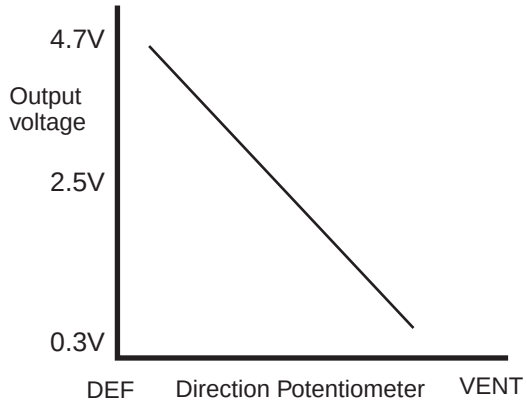
DTC DESCRIPTION EC2E4DF8

The A/C controller sets DTC B2409 if the direction motor doesn't move to intended position within 40sec(In this case, A/C controller try to move mode door for 2sec. 3 times, every 20 sec. before setting DTC).

DTC DETECTING CONDITION EC90DC02

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver direction potentiometer • Fault A/C Control Unit.
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	-	

SPECIFICATION E463272E



EQBF523B

MONITOR SCANTOOL DATA E65417DD

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "DIRECTION POTENTIO" parameter on the scantool while operating mode switch.

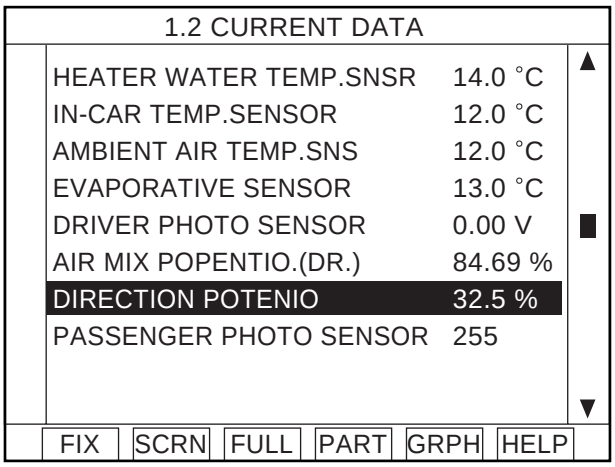


Fig. 1

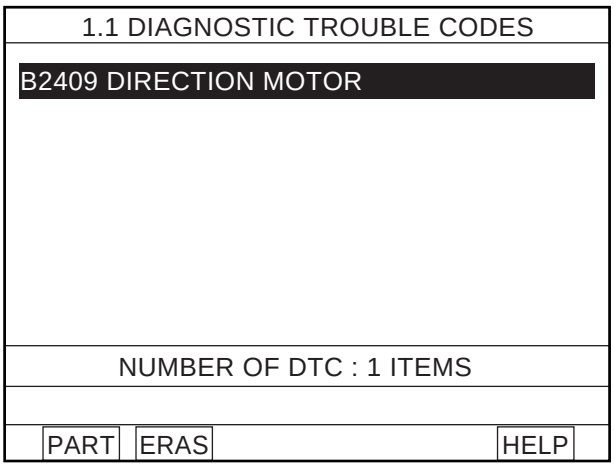


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B2409.

SBLHA6571L

4. Are the DTC B2409 present and is parameter of "DIRECTION POTENTIO." fixed?
※ There is any fault in Driver Direction Motor. If the parameter of "Driver DIRECTION POTENTIO." is 10% or less on "VENT" mode, or If the parameter is 90% or more on "DEF" mode.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E445635C

Refer to DTC B1249.

SIGNAL CIRCUIT INSPECTION E1953B5C

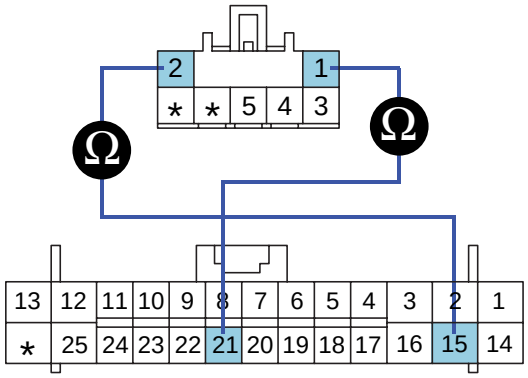
1. Check for open in harness.

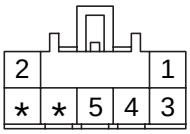
   1) Ignition "OFF"

   2) Disconnect mode Actuator.

   3) Measure resistance between terminal "1,2" of Direction Motor and terminal "21,15" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6563L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

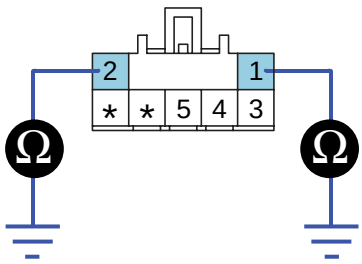
2. Check for short to ground in harness.

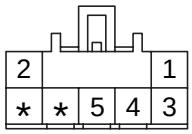
   1) Ignition "OFF"

   2) Disconnect mode Actuator.

   3) Measure resistance between terminal "1,2" of Direction Motor and chassis ground.

Specification : Approx. ∞ Ω





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6564L

   4) Is the measured resistance within specifications?

YES

Go to "Visual/Physical Inspection " procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

VISUAL/PHYSICAL INSPECTION E50E56B6

1. Check actuator.
   ※ Check if Direction Actuator works properly through ACTUATION TEST.

   1) Ignition : ON

   2) Connect Scantool and select " ACTUATION TEST" mode and press [F1]

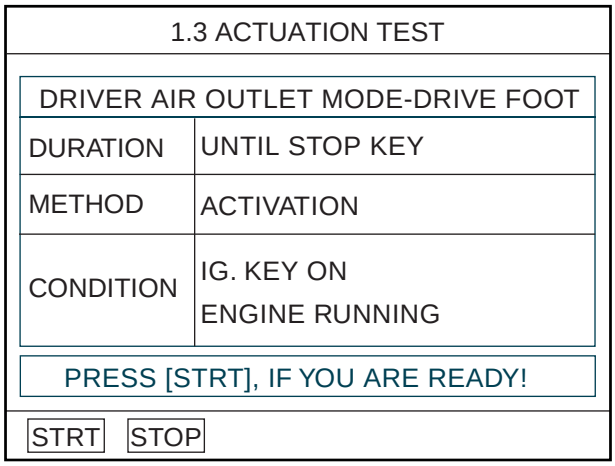


Fig. 3

Fig 3 : Selecting "ACTUATION TEST" mode.

EQBF526D

   3) Does Direction Actuator work properly?

   YES

   Go to "Component Inspection" procedure.

   NO

   Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E2354556

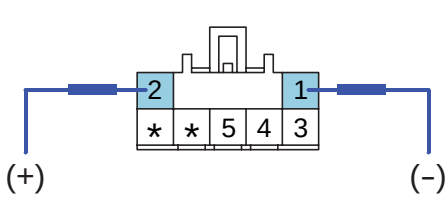
1. Check actuator.

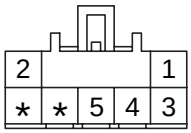
   1) Ignition "OFF"

   2) Disconnect Direction potentiometer.

   3) Verify that the mode actuator operates to the vent mode when connecting 12V to the terminal "1" and grounding terminal "2".

   4) Verify that the mode actuator operates to the def mode when the connections are reversed.





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. Potentiometer signal
5. Potentiometer ground

SBLHA6551L

   5) Does the actuator work properly?

   YES

   Go to "Check potentiometer" procedure.

   NO

   Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

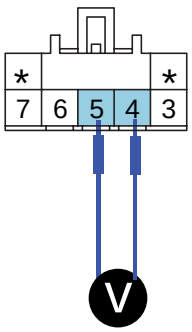
2. Check potentiometer

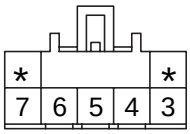
   1) Ignition "ON"

   2) Connect Direction potentiometer.

   3) Measure voltage between terminal "4" and "5" of Direction potentiometer as the mode switch is operated.

Specification : Refer the specifications in fig 3





1. Motor (Vent)
2. Motor (Def)
3. Sensor reference voltage(+5V)
4. **Potentiometer signal**
5. **Potentiometer ground**

SBLHA6552L

Door position	Voltage (4-5)	Error detecting
VENT	0.3 ± 0.15V	Under voltage : 0.08V or less Over voltage : 4.92V or more
BI-LEVEL(1)	1.35 ± 0.4V	
BI-LEVEL(2)	2.25 ± 0.4V	
FLOOR	3.0 ± 0.4V	
MIX	3.6 ± 0.4V	
DEF	4.7 ± 0.15V	

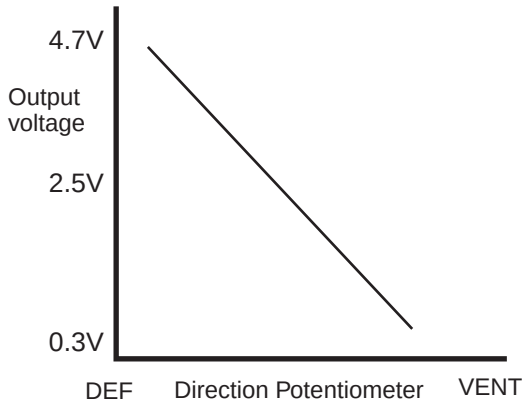


Fig. 3

Fig 3) Specifications : Voltage value as a function of position of direction potentiometer.

EQBF523J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

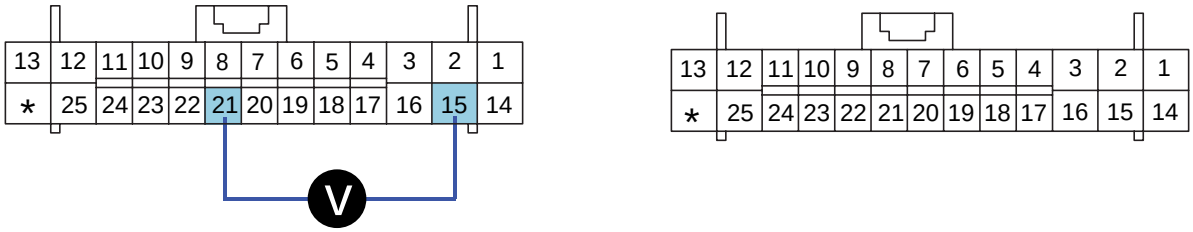
3. Check A/C Control Unit.

   1) Engine : "ON"

   2) Connect A/C Control Unit.

   3) Measure voltage between terminal "15" and "21" of A/C Control Unit while operating the mode switch.

Specification :Approx. 12V



15. Motor
21. Motor

SBLHA6565L

   4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

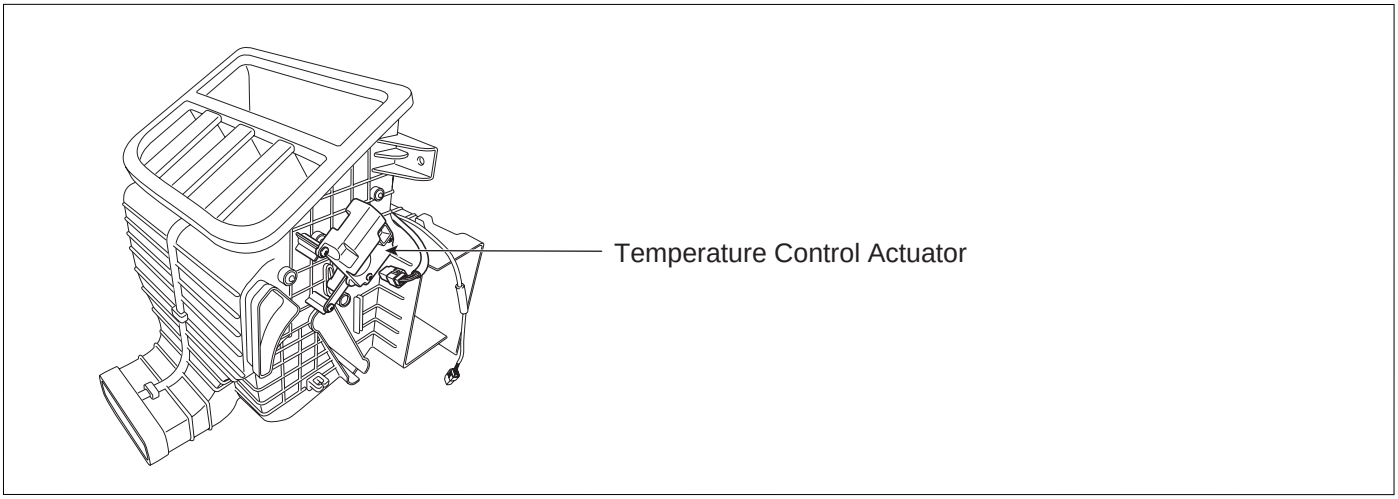
Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR ED389E33

Refer to DTC B1249.

DTC B2415 AIR MIX MOTOR (PASSENGER)

COMPONENT LOCATION E8B6758A



SBLHA6510L

GENERAL DESCRIPTION ECC6FEEE

Refer to DTC B1204.

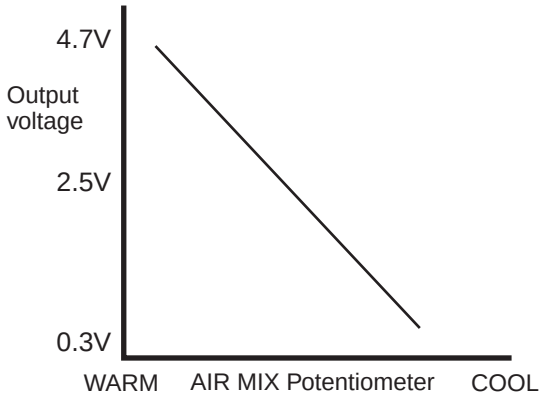
DTC DESCRIPTION E9CEC9DA

The A/C controller sets DTC B2415 if the air mix actuator doesn't move to intended position within 40sec (In this case, A/C controller try to move temp. door for 2sec. 3 times, every 20 sec. before setting DTC).

DTC DETECTING CONDITION EF3351EF

Item	Detecting Condition	Possible cause
DTC Strategy	• Voltage check	• Poor connection of connected part • Open circuit in harness • Short circuit in harness • Faulty driver Air Mix potentiometer • Fault A/C Control Unit
Threshold value	• < 0.1V	
Detecting time	• 0.3 sec	
FAIL SAFE	-	

SPECIFICATION EF5771E4



EQBF521B

MONITOR SCANTOOL DATA E080E9AB

1. Connect scantool to Data Link Connector(DLC).
2. Engine "ON"
3. Monitor the "Passenger Air Mix Potentiometer" Parameter on the Scantool while operating temp. switch.

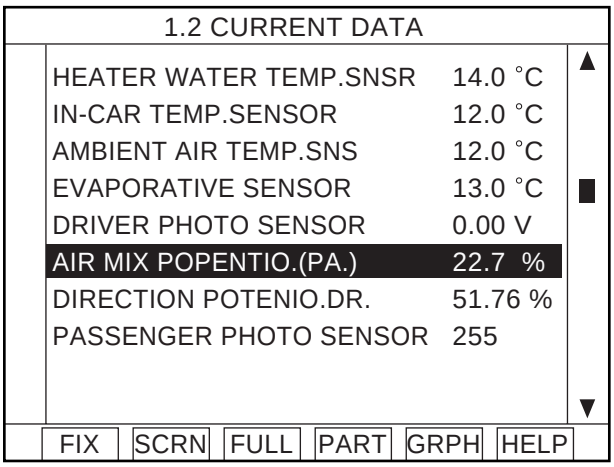


Fig. 1

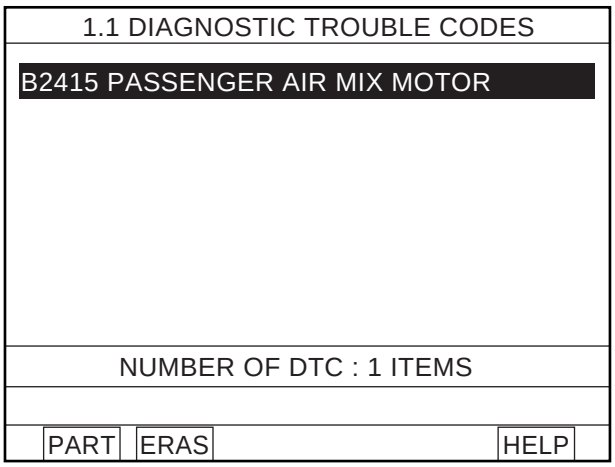


Fig. 2

Fig 1 : The current data in abnormal state.
Fig 2 : DTC B2415.

LQKG990J

4. Are the DTC B2415 present and is parameter of "Passenger AIR MIX Potentiometer" fixed?
※ There is any fault in Passenger AIR MIX Motor. If the parameter of "Passenger AIR MIX DOOR" is 30% or less when the actuator operates to the hot position, or If the parameter is 60% and more when the actuator operates to the cold position.

YES

Go to "Inspection" procedure.

NO

Fault is intermittent caused by poor contact in the sensor's and/or A/C controller's connector or was repaired and A/C controller memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

TERMINAL AND CONNECTOR INSPECTION E3270973

1. Many malfunctions in the electrical system are caused by poor harness and terminals.
   Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
2. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.
3. Has a problem been found?

YES

Repair as necessary and go to "Verification of Vehicle Repair" procedure.

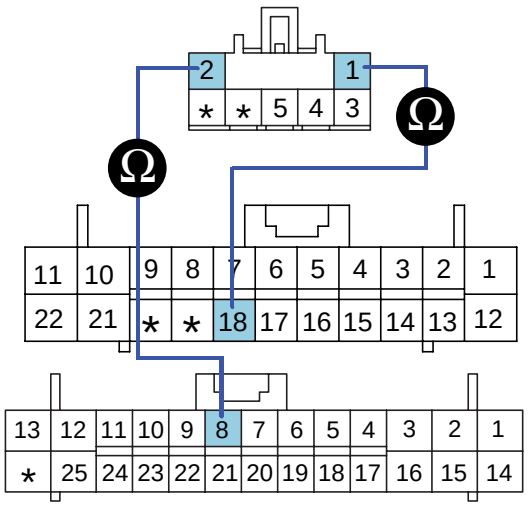
NO

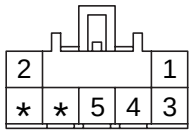
Go to "Signal circuit inspection" procedure.

SIGNAL CIRCUIT INSPECTION E7D7A9BC

1. Check for open in harness.
   1) Ignition "OFF"
   2) Disconnect Passenger Air Mix potentiometer.
   3) Measure resistance between terminal "1,2" of Passenger Air Mix Motor and terminal "18,8" of A/C control unit.

Specification : Approx. 0 Ω





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6566L

4) Is the measured resistance within specifications?

YES

Go to "Check for short to ground in harness" procedure.

NO

Check for open in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

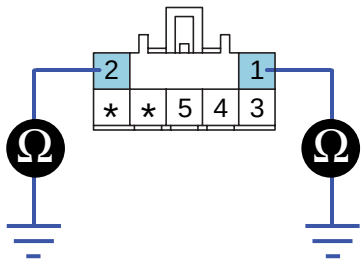
2. Check for short to ground in harness.

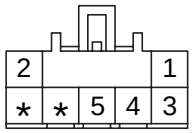
1) Ignition "OFF"

2) Disconnect Passenger Air Mix Actuator.

3) Measure resistance between terminal "1,2" of Passenger Air Mix Motor and chassis ground.

Specification : Approx. ∞ Ω





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6567L

4) Is the measured resistance within specifications?

YES

Go to "Visual/Physical Inspection " procedure.

NO

Check for short to ground in signal harness. Repair as necessary and go to "Verification of Vehicle Repair" procedure.

VISUAL/PHYSICAL INSPECTION E24C54B8

1. Check actuator.
※ Check if Passenger Air Mix Actuator works properly through ACTUATION TEST.

1) Ignition : ON

2) Connect Scantool and select " ACTUATION TEST" mode and press [F1]

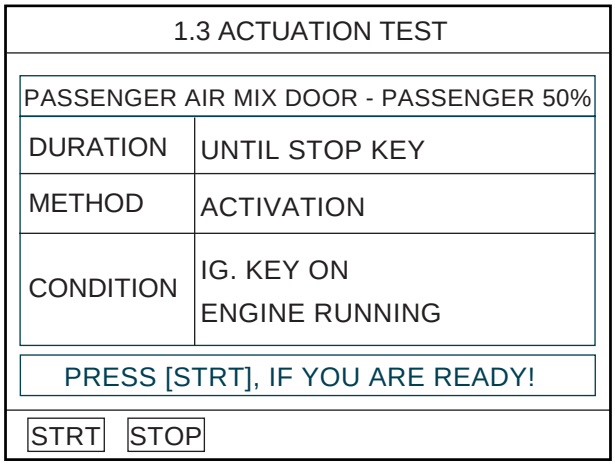


Fig. 3

Fig 3 : Selecting "ACTUATION TEST" mode.

LQKG525D

3) Does Passenger Air Mix Actuator work properly?

YES

Go to "Component Inspection" procedure.

NO

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION E760C3E3

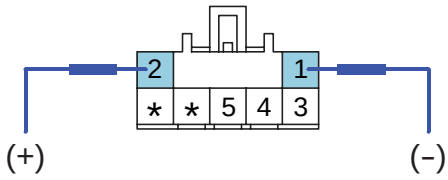
1. Check actuator motor.

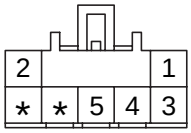
   1) Ignition "OFF"

   2) Disconnect Passenger Air Mix Potentiometer.

   3) Verify that the temperature actuator operates to the hot position when connecting 12V to the terminal "1" and grounding terminal "2".

   4) Verify that the temperature actuator operates to the cool position when the connections are reversed.





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6514L

5) Does the actuator work properly?

YES

Go to "Check potentiometer" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

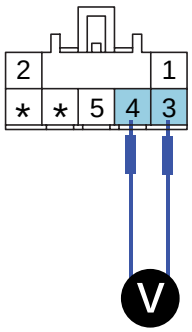
2. Check potentiometer

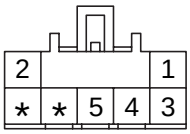
1) Ignition "ON"

2) Connect Passenger Air Mix potentiometer.

3) Measure voltage between terminal "3" and "4" of Passenger Air Mix potentiometer while operating the temp. switch.

Specification : Refer the specifications in fig 3)





1. Motor (Warm)
2. Motor (Cool)
3. Potentiometer ground
4. Potentiometer signal
5. Sensor reference voltage(+5V)

SBLHA6515L

Door position	Voltage (3-4)	Error detecting
MAX. Cooling	0.3 ± 0.15V	Low voltage : 0.08V or less
MAX. Heating	4.7 ± 0.15V	High voltage : 4.9V or more

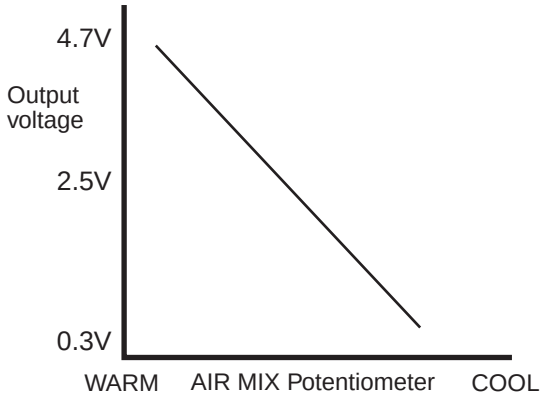


Fig. 3

Fig 3) Specifications : Voltage value of air mix potentiometer as a function of position of setting temperature.

EQBF521J

4) Is the measured voltage within specifications in fig3?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good actuator and check for proper operation. If the problem is corrected, replace actuator and then go to "Verification of Vehicle Repair" procedure.

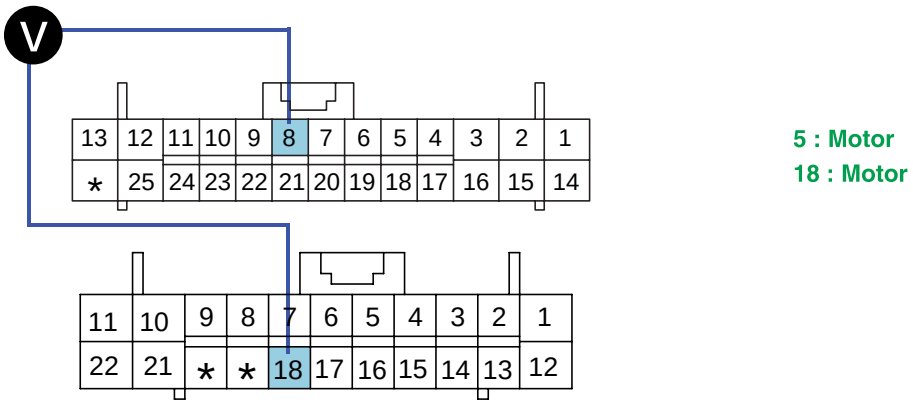
3. Check A/C Control Unit.

1) Engine "ON"

2) Connect A/C Control Unit.

3) Measure voltage between terminal "8" and "18" of A/C Control Unit while operating the temp. switch.

Specification :Approx. 12V



SBLHA6568L

4) Is the measured voltage within specifications?

YES

Check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

Substitute with a known-good A/C Control Unit and check for proper operation.
If the problem is corrected, replace A/C Control Unit and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR E9BA69FB

Refer to DTC B1204.