General Information

Specification

Air Conditioner

Item		Specification
Compressor	Type	DVE16
	Oil type & Capacity	PAG OIL 120±10
	Pulley type	6PK-TYPE
	Displacement	160cc/rev
Condenser	Heat rejection	14,000 ±5% kcal/hr
A/C Pressure transducer	The method to measure the pressure	Voltage= 0.00878835 * Pressure (psig) + 0.5
Expansion valve	Type	Block type
Refrigerant	Type	R-134a
	Capacity [oz.(g)]	510±25 (17.9±0.88)

Blower Unit

Item		Specification
Fresh and recirculation	Operating method	Actuator
Blower	Type	Sirocco
	Speed step	Auto + 8 speed (Automatic), 1~4speed (Manual)
	Speed control	Power mosfet (Auto), Resistor(manual)
Air filter	Type	Particle filter

Heater And Evaporator Unit

Item		Specification
Heater	Type	Pin & Tube type
	Heating capacity	4,600 - 5% kcal/hr
	Mode operating method	Actuator
	Temperature operating method	Actuator
Evaporator	Temperature control type	Evaporator temperature sensor
	A/C ON/OFF [℃(˚F)]	ON : 1.5 ± 0.5 (34.7 ± 32.9) OFF: -0.5 ± 0.5 (32.9 ± 32.9)

Troubleshooting

Problem Symptoms Table

Before replacing or repairing air conditioning components, first determine if the malfunction is due to the refrigerant charge, air flow or compressor.

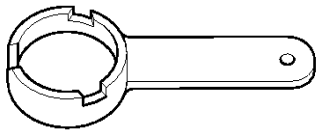
Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

After correcting the malfunction, check the complete system to ensure that performance is satisfactory.

Symptom	Suspect Area
No blower operation	1. Blower fuse
	2. Blower motor
	3. Power mosfet, Blower resistor
	4. Blower speed control switch
	5. Wire harness
No air temperature control	1. Engine coolant capacity
	2. Heater control assembly
No compressor operation	1. Refrigerant capacity
	2. A/C Fuse
	3. Magnetic clutch
	4. Compressor
	5. A/C pressure transducer
	6. A/C switch
	7. Evaporator temperature sensor
	8. Wire harness
No cool comes out	1. Refrigerant capacity
	2. Refrigerant pressure
	3. Drive belt.
	4. Magnetic clutch.
	5. Compressor
	6. A/C pressure transducer
	7. Evaporator temperature sensor.
	8. A/C switch.
	9. Heater control assembly
	10. Wire harness

Symptom	Suspect Area
Insufficient cooling	1. Refrigerant capacity
	2. Drive belt
	3. Magnetic clutch
	4. Compressor
	5. Condenser
	6. Expansion valve
	7. Evaporator
	8. Refrigerant lines
	9. A/C pressure transducer
	10. Heater control assembly
No engine idle-up when A/C switch ON	1. Engine ECM
	2. Wire harness
No air inlet control	1. Heater control assembly
No mode control	1. Heater control assembly
	2. Mode actuator
No cooling fan operation	1. Cooling fan fuse
	2. Fan motor
	3. Engine ECM
	4. Wire harness

Special Service Tools

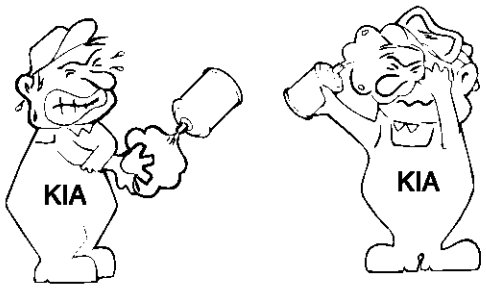
Tool (Number and name)	Illustration	Use
09977-29000 Disc & hub assembly bolt remover	 EQA9002A	Removal and installation of disc & hub assembly.

Air Conditioning System

Instructions

When Handling Refrigerant

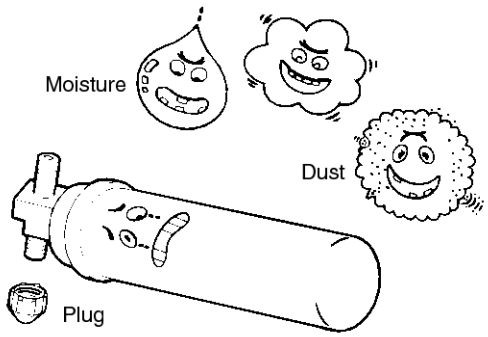
1. R-134a liquid refrigerant is highly volatile. A drop on the skin of your hand could result in localized frostbite. When handling the refrigerant, be sure to wear gloves.
2. It is standard practice to wear goggles or glasses to protect your eyes, and gloves to protect your hands. If the refrigerant 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 storage temperature is below 52℃ (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 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 the components immediately to prevent 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 resum of 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.



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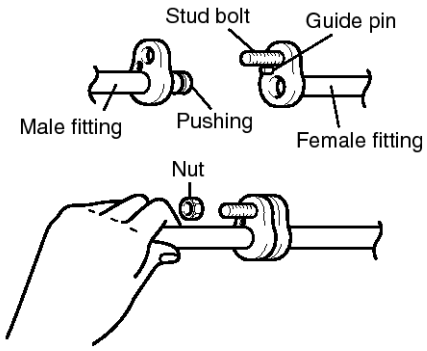
When Installing Connecting Parts

Flange With Guide Pin

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



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Size	Tightening torque [N.m (kgf.m, lb.ft)]	
	General bolt, nut	
	Bolt(4T),Nut(4T)	Bolt(8T), Nut(6T)
M6	4 - 6 (0.4 - 0.6, 2.9 - 4.3)	8 - 12 (0.8 - 1.2, 5.7 – 8.6)
M8	9 - 14 (0.9 - 1.4, 6.5 - 10)	20 - 30 (2.0 – 3.0, 14 – 21.6)
M10	19 - 28 (1.9 - 2.8, 13.7 - 20)	45 - 60 (4.5 – 6.0, 32 – 43.3)
Size	Flange bolt, nut	
	Bolt(4T), Nut(4T)	Bolt(8T), Nut(6T)
M6	4 - 6 (0.4 - 0.6, 2.9 – 4.3)	9 - 14 (0.9 – 1.4, 6.5 – 10.1)
M8	10 - 15 (1.0 - 1.5, 7 - 10)	22 - 33 (2.2 – 3.3, 15.9 –23.8)
M10	21 - 31 (2.1 - 3.1, 15 - 22)	50 - 65 (5.0 - 6.5, 36.1 – 7.0)

NOTICE

- *T means tensile intensity, which is stamped on the head of bolt only numeral.*

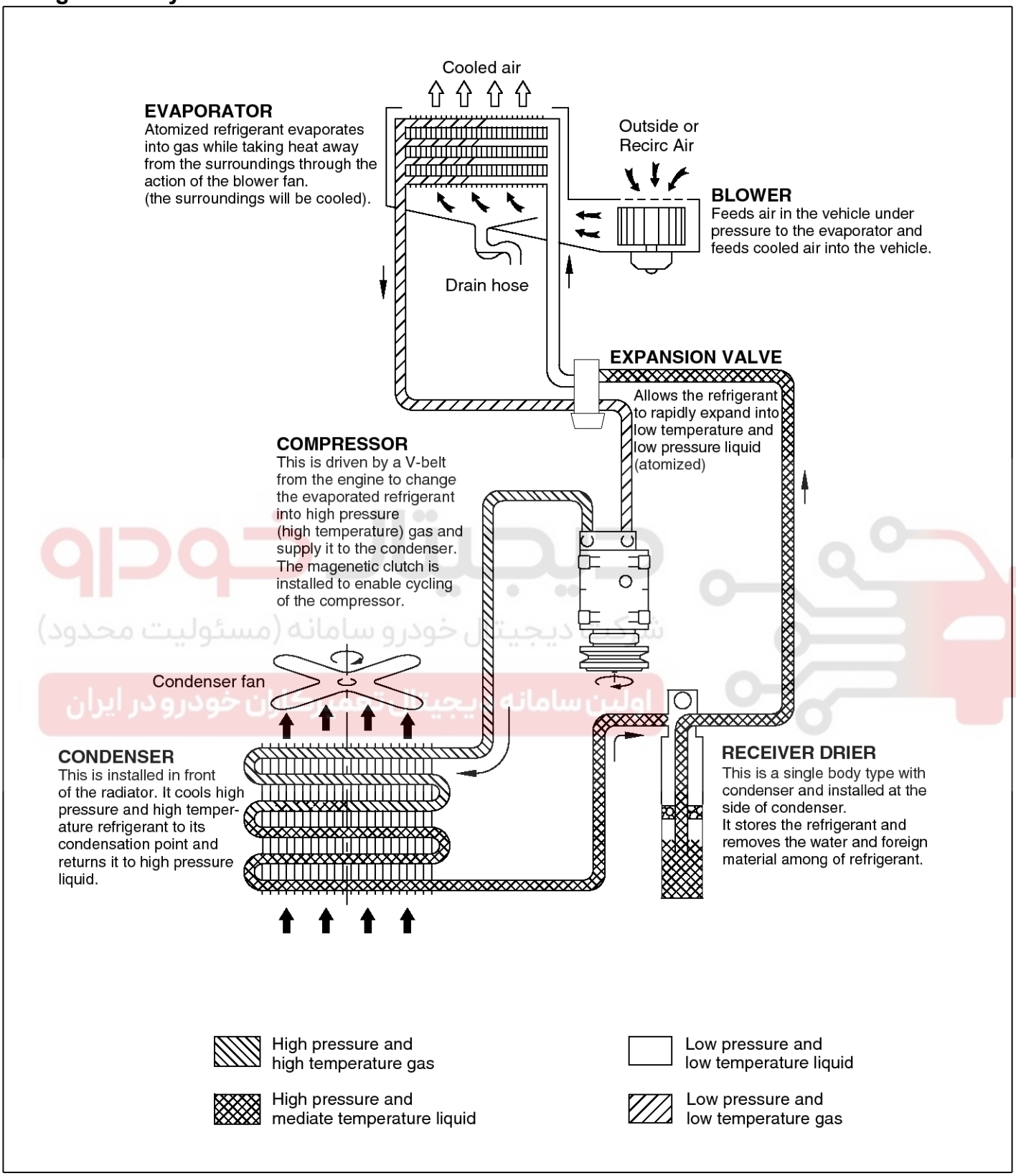
Handling tubing and fittings

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



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Refrigerant System Service Basics

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

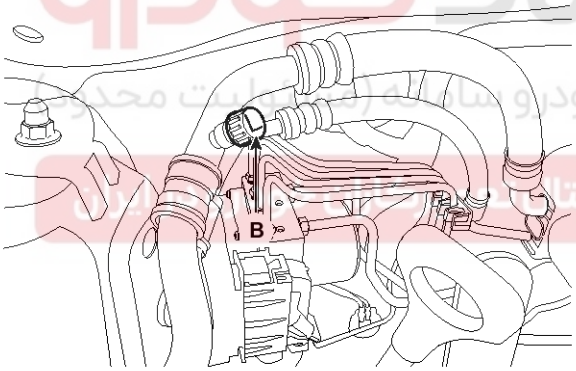
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

If accidental system discharge occurs, ventilate work area before resume of 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.



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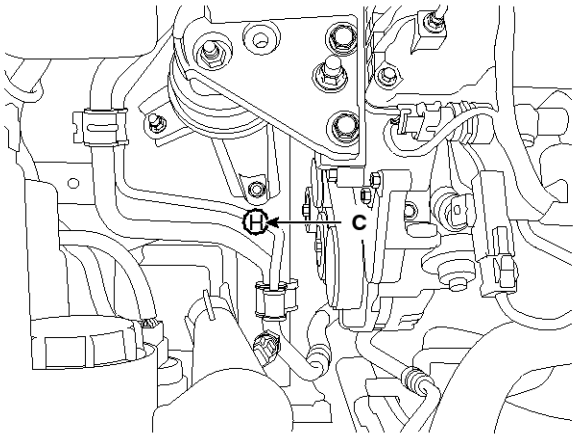

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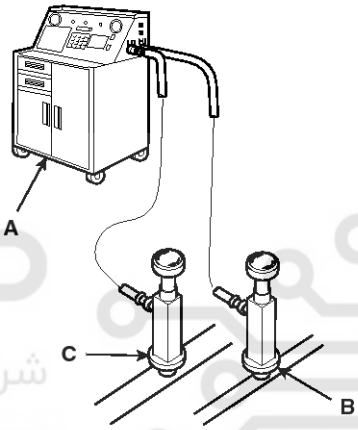

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2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to install the same amount of new refrigerant oil back into the A/C system before charging.

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.

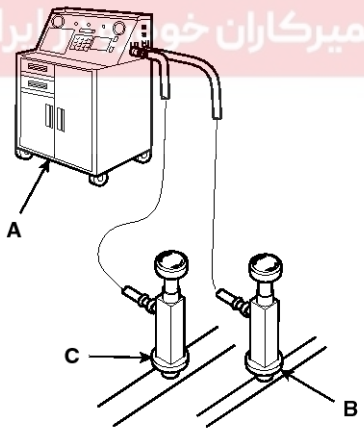
⚠CAUTION

- **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 resume of 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.



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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

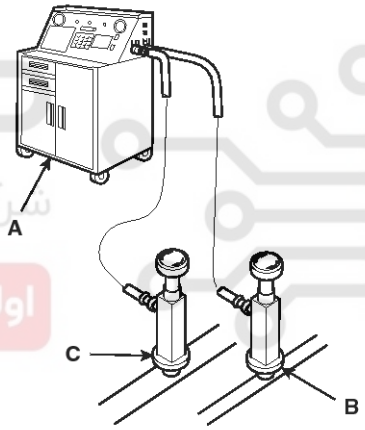
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

If accidental system discharge occurs, ventilate work area before resume of 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 18.0 ± 0.88 oz. (510 ± 25g) of R-134a refrigerant. Do not overcharge the system the compressor will be damaged.

Refrigerant Leak Test

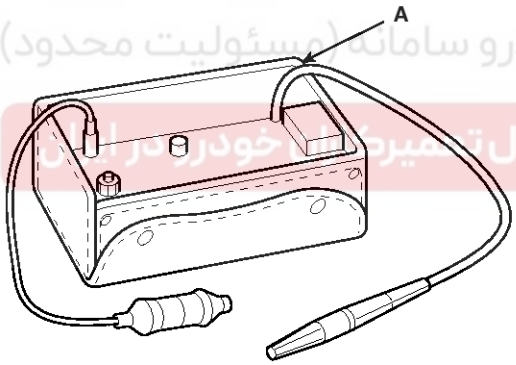
Always conduct a leak test with an electronic leak detector whenever leakage or refrigerant is suspected and when conducting service operations which are accompanied by disassembly or loosening or connection fittings.

NOTICE

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.



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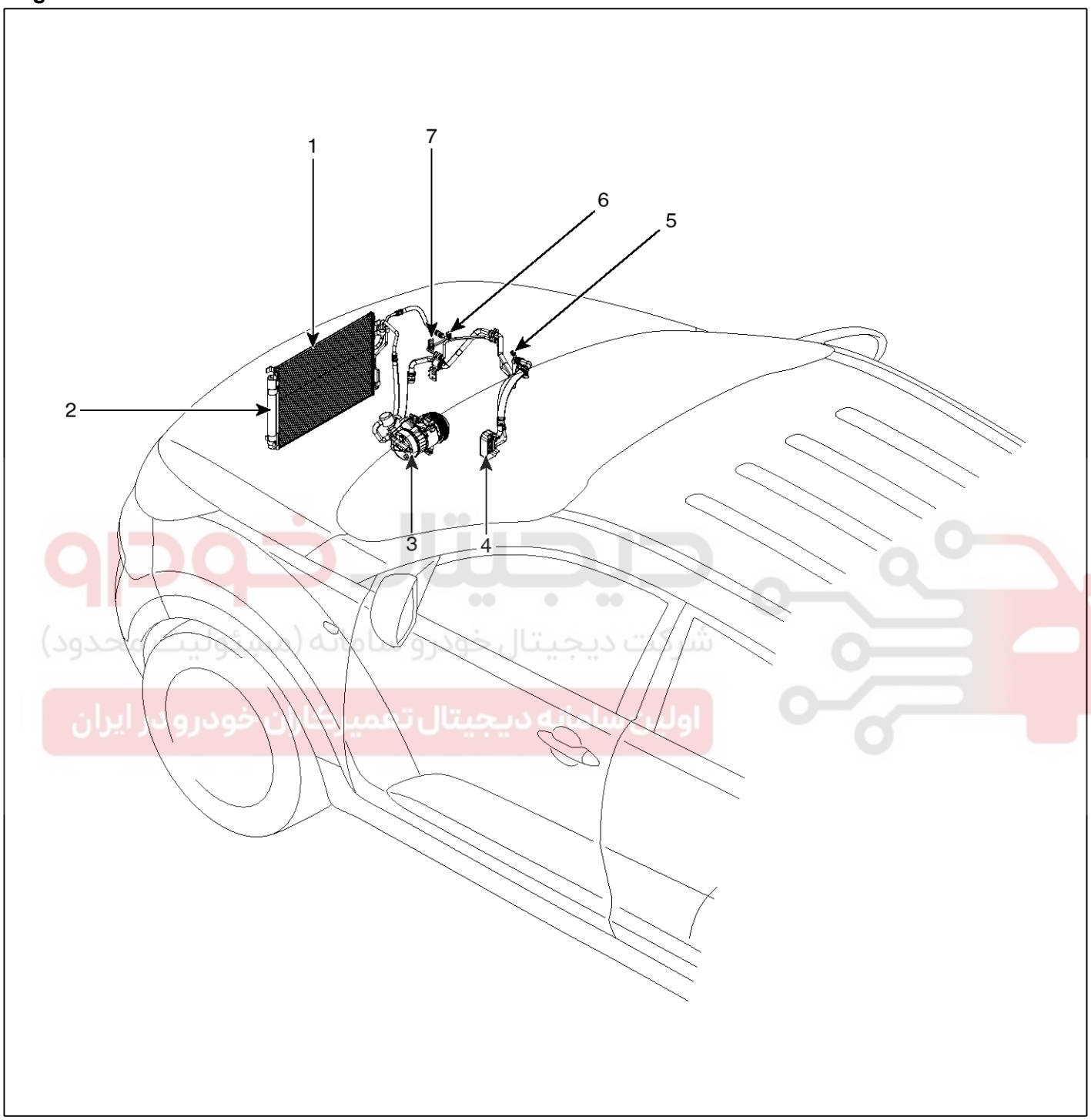
Component Location Index

Engine Room



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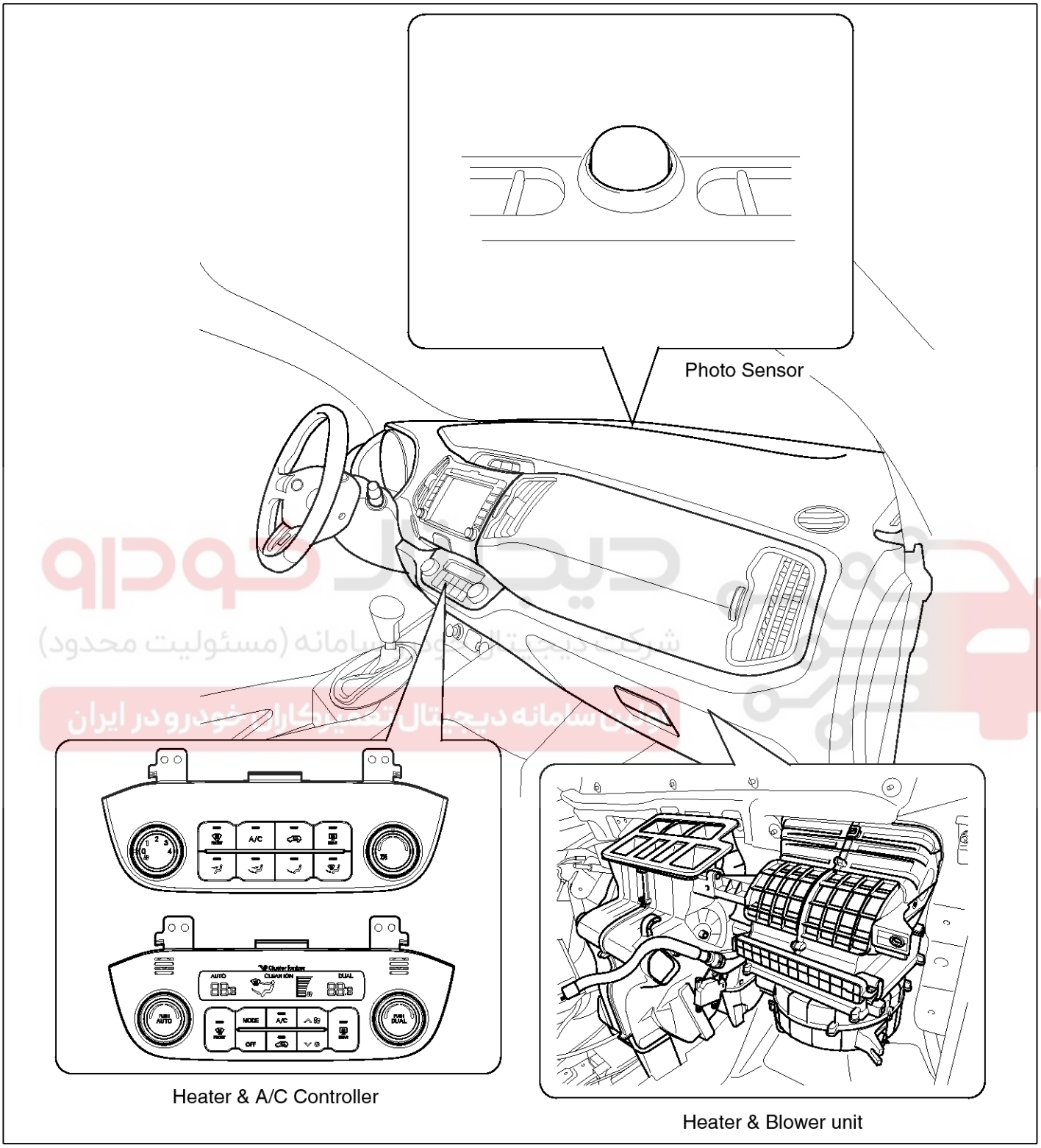
1. Condenser
2. Receiver-drier
3. Compressor
4. Expansion Valve
5. Service port (High)
6. Service port (Low)
7. A/C Pressure Transducer

Interior



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Compressor Oil

Oil Specification

1. The HFC-134a system requires synthetic (PAG) compressor oil whereas the R-12 system requires mineral compressor oil. The two oils must never be mixed.
2. Compressor (PAG) oil varies according to compressor model. Be sure to use oil specified for the model of compressor.

Handling of Oil

1. The oil should be free from moisture, dust, metal powder, etc.
2. Do not mix with other oil.
3. The water content in the oil increases when exposed to the air. After use, seal oil from air immediately. (HFC-134a Compressor Oil absorbs moisture very easily.)
4. The compressor oil must be stored in steel containers, not in plastic containers.

Compressor Oil Check

The oil used to lubricate the compressor is circulating with the refrigerant.

Whenever replacing any component of the system or a large amount of gas leakage occurs, add oil to maintain the original amount of oil.

Oil total volume in system
PAG OIL : 120 ± 10 cc

Oil Return Operation

There is close affinity between the oil and the refrigerant.

During normal operation, part of the oil recirculation with the refrigerant in the system. When checking the amount of oil in the system, or replacing any component of the system, the compressor must be run in advance for oil return operation. The procedure is as follows:

1. Open all the doors and the engine hood.
2. Start the engine and air conditioning switch to "ON" and set the blower motor control knob at its highest position.
3. Run the compressor for more than 20 minutes between 800 and 1,000 rpm in order to operate the system.
4. Stop the engine.

Replacement of Component Parts

When replacing the system component parts, supply the following amount of oil to the component parts to be installed.

Component parts to be installed	Amount of Oil
Evaporator	50 cc (1.70 fl.oz)
Condenser	30 cc (1.02 fl.oz)
Receiver/dryer	30 cc (1.02 fl.oz)
Refrigerant line (One piece)	10 cc (0.34 fl.oz)

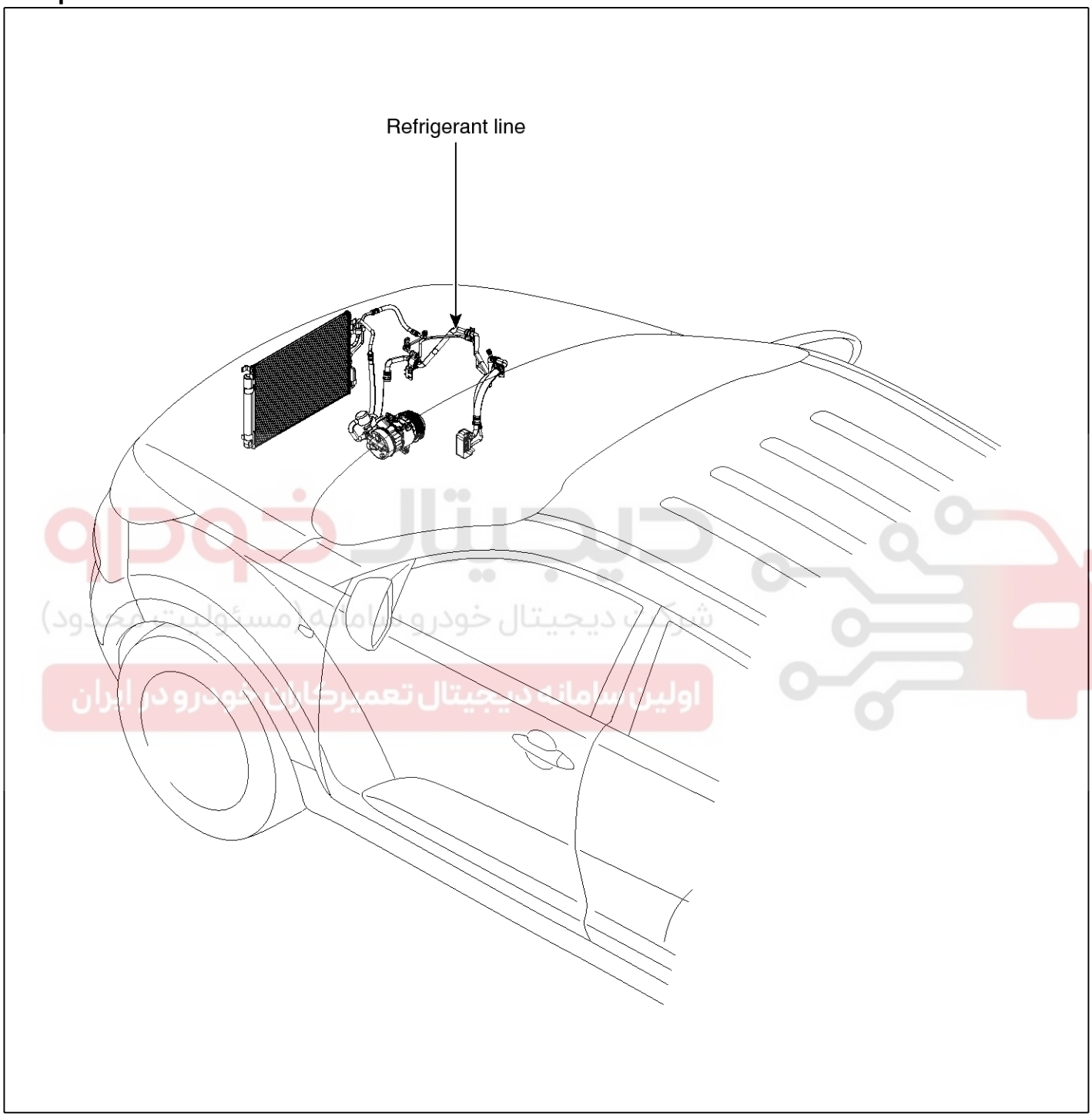
For compressor Replacement, subtract the volume of oil drained from the removed compressor from the specified volume, and drain the calculated volume of oil from the new compressor:

The specified volume - volume of removed compressor = volume to drain from the new compressor.

NOTICE
Even if no oil is drained from the removed compressor, don't drain more than 50cc from new compressor.

Refrigerant line

Component Location



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Replacement

1. Discharge refrigerant from refrigeration system.
2. Replace faulty tube or hose.

   CAUTION
   Cap the open fittings immediately to keep moisture or dirt out of the system.
3. Tighten joint of bolt or nut to specified torque.

   CAUTION
   Connections should not be torque tighter than the specified torque.

Part tightened	N.m	Kgf.m	lb-ft
Condenser - Discharge hose	5.8~9.8	0.6~1.0	4.3~7.2
Condenser - Liquid tube			
Compressor - Discharge hose	19.6~24.5	2.0~2.5	14.4~18.0
Compressor - Suction hose			
Expansion valve - Evaporator	11.8~14.7	1.2~1.5	8.7~10.9

4. Evacuate air in refrigeration system and charge system with refrigerant.

Specified amount : 510 ± 25g (17.9 ± 0.88oz)

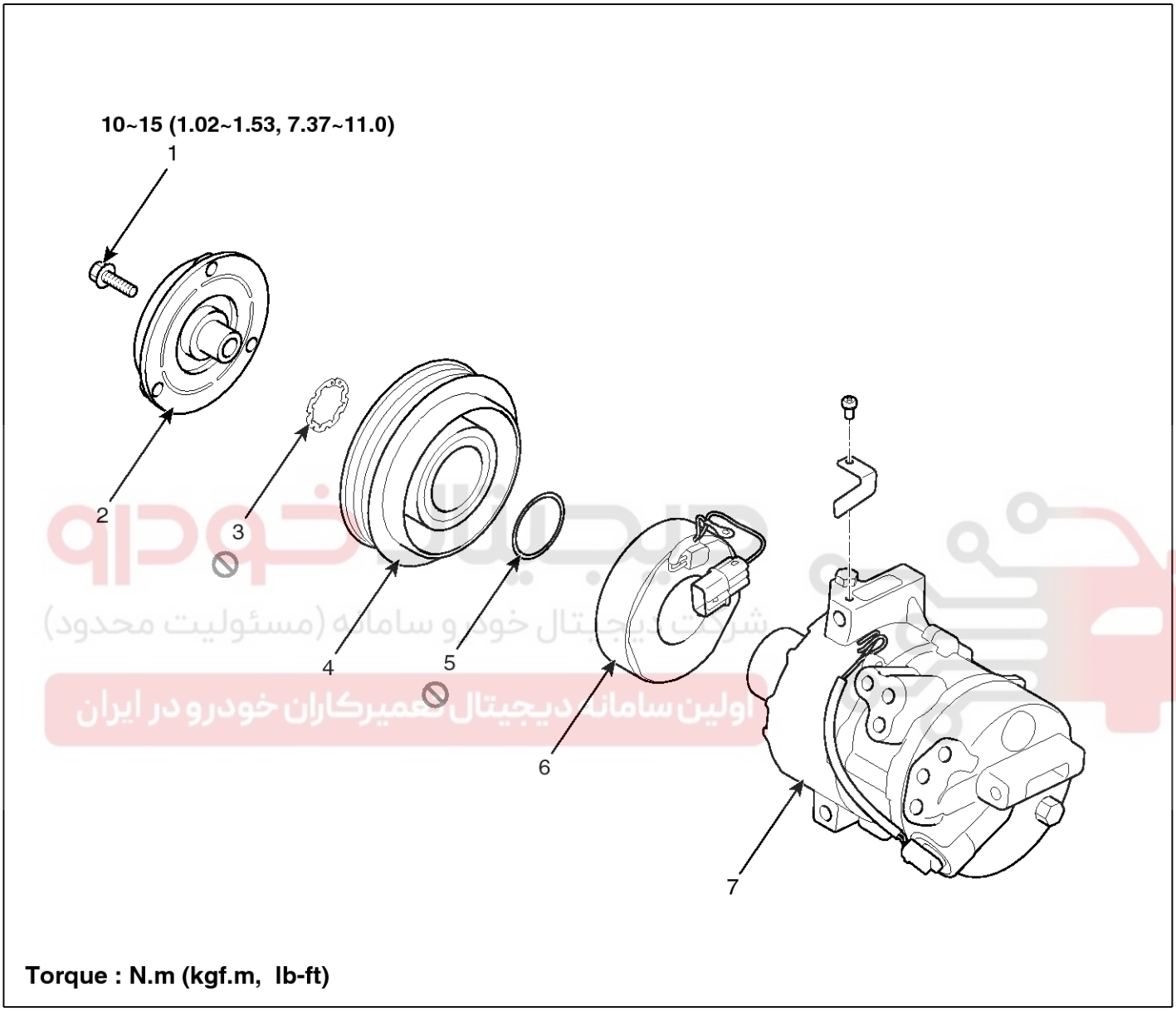
5. Inspect for leakage of refrigerant.

   Using a gas leak detector, check for leakage of refrigerant.
6. Inspect A/C operation.

Compressor

Components

[Diesel]



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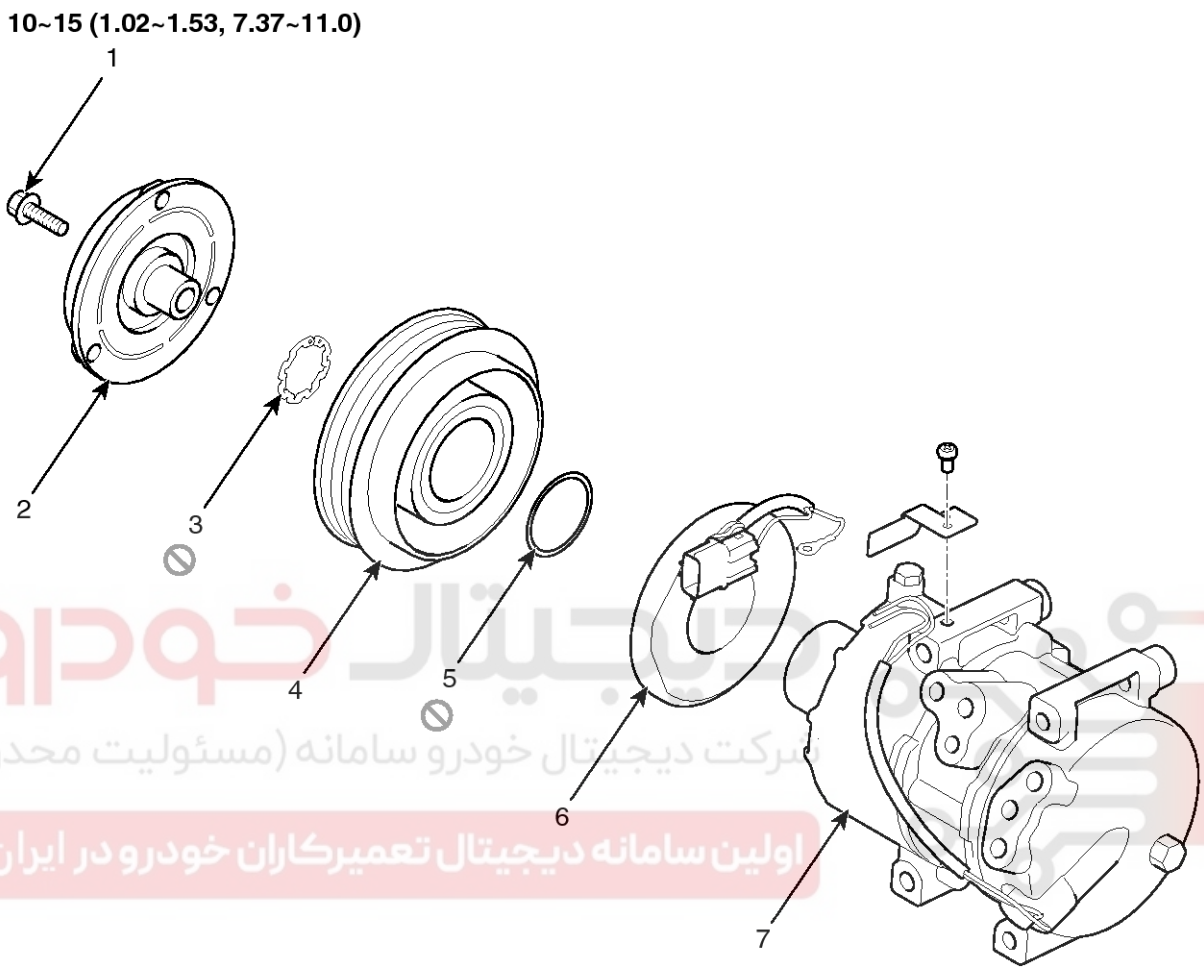
1. Bolt
2. Disc & Hub Assembly
3. Retainer Ring (Pully)
4. Pully
5. Retainer Ring (Field coil)
6. Field Coil
7. Compressor Assembly

[Gasoline]



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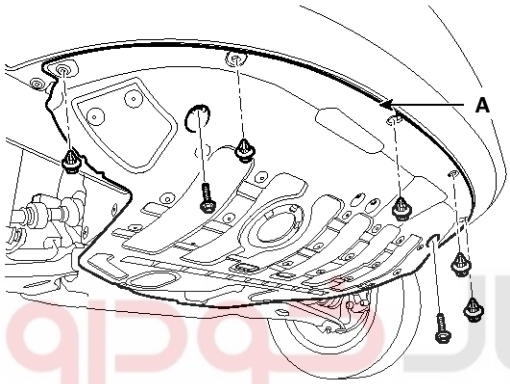
1. Bolt
2. Disc & Hub Assembly
3. Retainer Ring (Pully)
4. Pully
5. Retainer Ring (Field coil)
6. Field Coil
7. Compressor Assembly

Removal

1. If the compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Disconnect the negative cable from the battery.
3. Recover the refrigerant with a recovery/charging station.
4. 4.Loosen the drive belt.
   (Refer to EM group-Drive belt)
5. Loosen the mount bolts and then remove the under cover (A).



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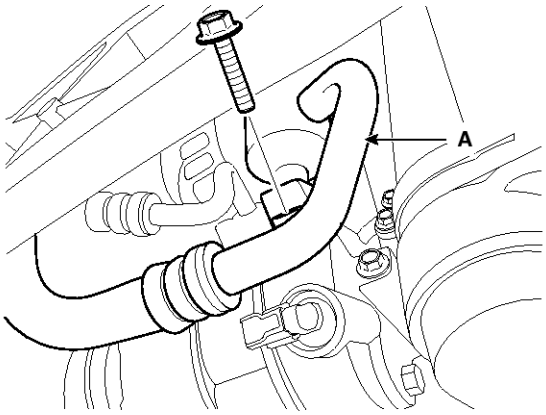
6. Remove the bolts, then disconnect the suction line (A) and discharge line (B) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

[Diesel]



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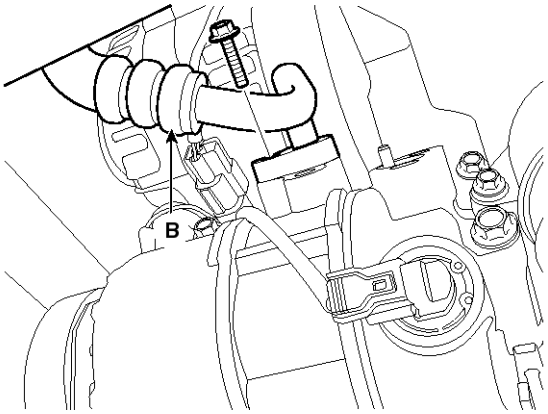
[Diesel]



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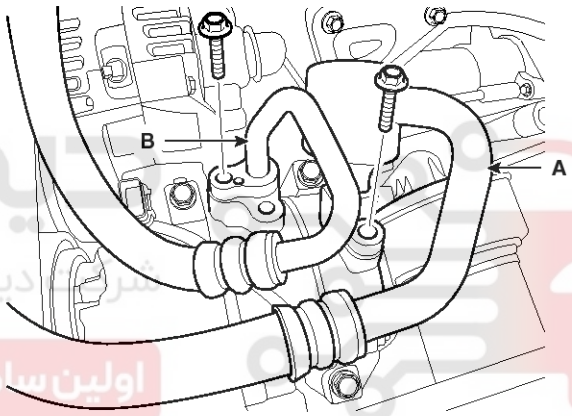
[Gasoline]



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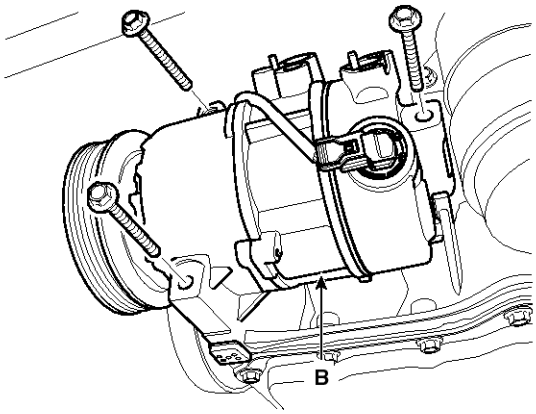
7. Disconnect the compressor clutch connector, and then remove mounting bolts and the compressor(B).

[Diesel]



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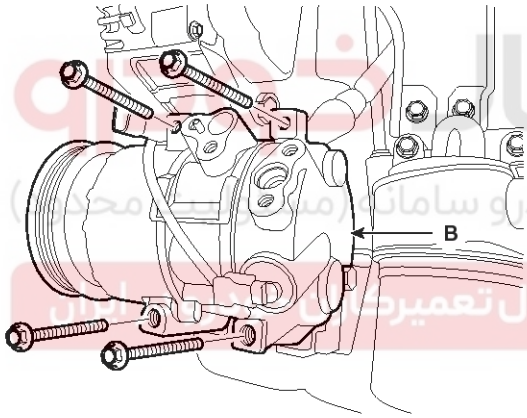
[Gasoline]



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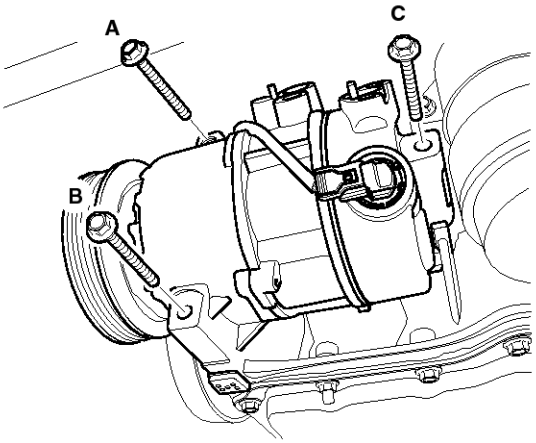
Installation

1. Make sure of the length of compressor mounting bolts, and then tighten it A→B→C→D order.

Tightening torque :
19.6~24.5N.m (2.0~2.5kgf.m, 14.4~18.0lbf.ft)

[Diesel]



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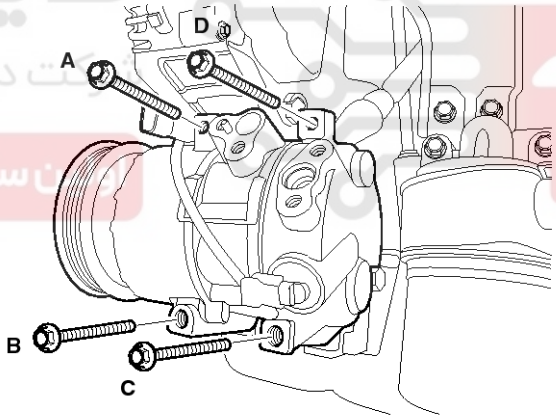
[Gasoline]



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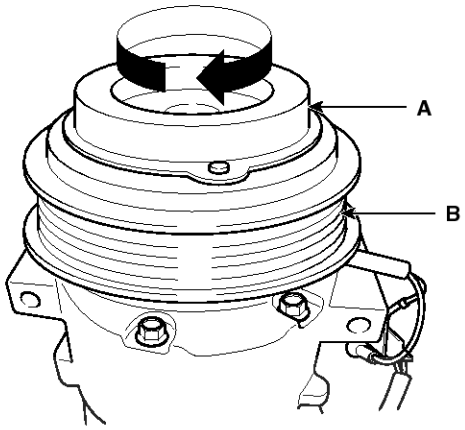
2. Install in the reverse order of removal, and note these items.
   - If you're installing a new compressor, drain all the refrigerant oil from the removed compressor, and measure its volume, Subtract the volume of drained oil from 120cc(4.20 oz.) the result is the amount of oil you should drain from the new compressor (through the suction fitting).
   - 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.
   - To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
   - 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.
   - Adjust the drive belt
   - Charge the system and test its performance.

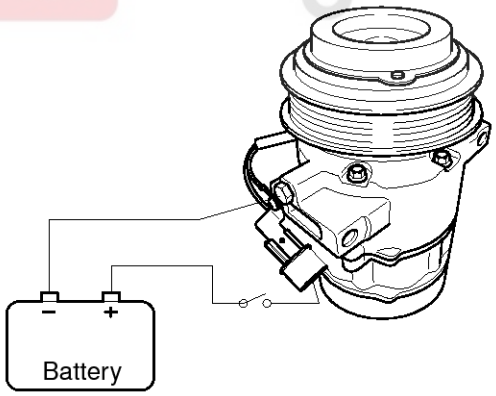
Inspection

1. Check the plated parts of the disc & hub assembly (A) for color changes, peeling or other damage. If there is damage, replace the clutch set.
2. Check the pulley (B) bearing play and drag by rotating the pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag.



SLMHA0009D

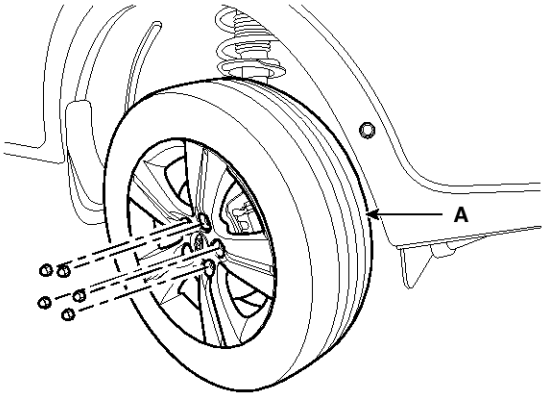
3. Check operation of the magnetic clutch. Connect the compressor side terminals to the battery (+) terminal and the ground battery (-) terminal to the compressor body. Check the magnetic clutch operating noise to determine the condition.



SLMHA0012D

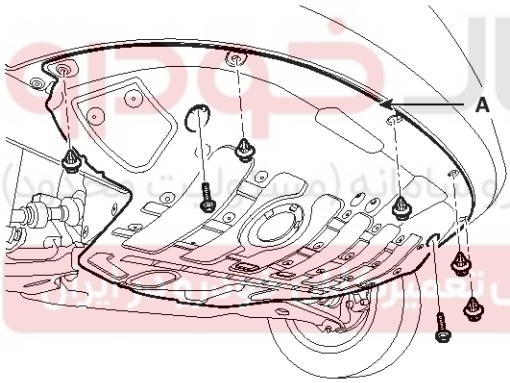
Disassembly

1. Remove the front left tire (A).



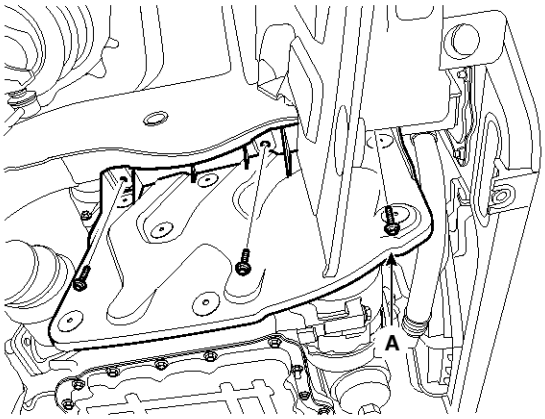
SSLHA1013D

2. Loosen the mount bolts and then remove the under cover (A).



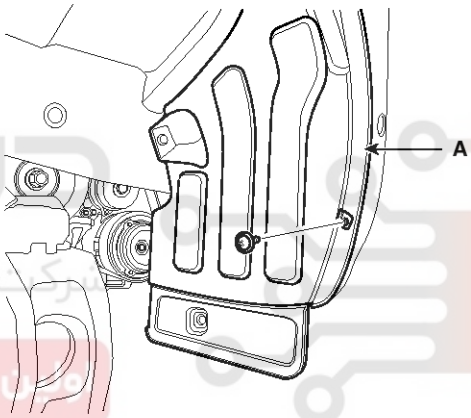
SSLHA1007D

3. Remove the engine side cover (A).



SSLHA1014D

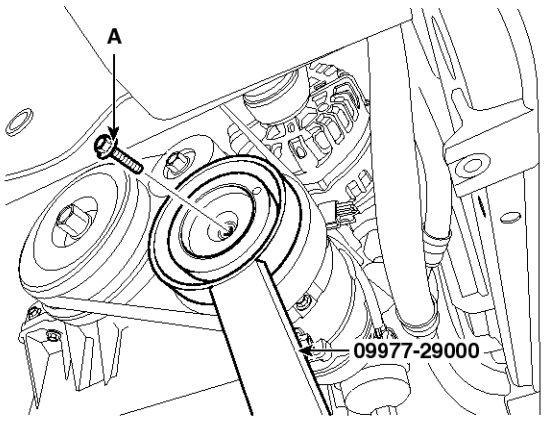
4. Remove the wheel house (A).



SSLHA1015D

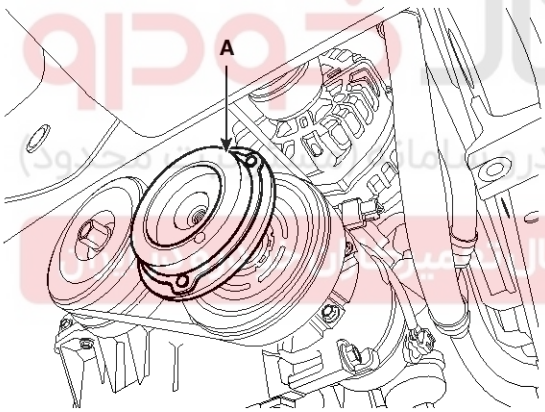
5. Remove the center bolt (A) while holding the disc & hub assembly with SST(09977-29000).

Tightening torque :
10~15N.m (1.02~1.53kgf.m, 7.37~11lbf.ft)



SSLHA1016D

6. Remove the disc & hub assembly (A).

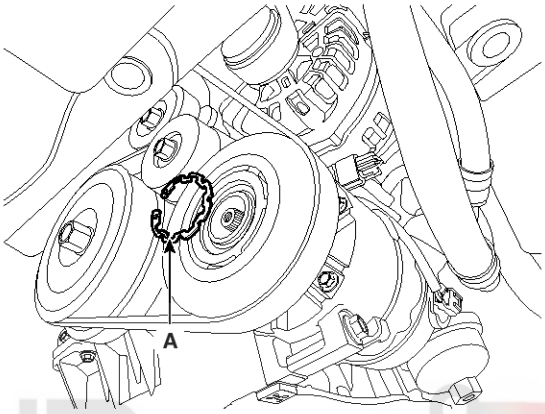


SSLHA1017D

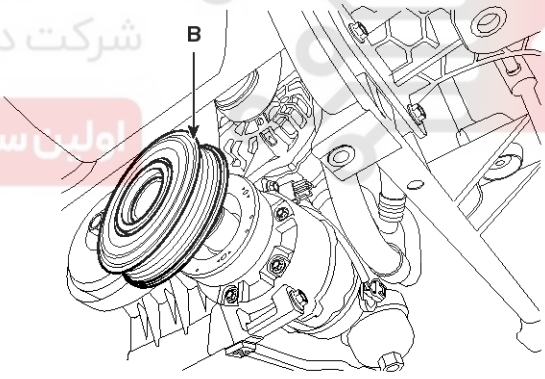
7. Loosen the drive belt.
   (Refer to EM group - "Drive belt")
8. Disconnect the retainer ring (A) and then remove the pulley (B).

NOTICE

- *Be careful not to damage the pulley (B) and compressor during removal/installation.*
- *Once retainer ring (A) is removed, replace it with a new one.*

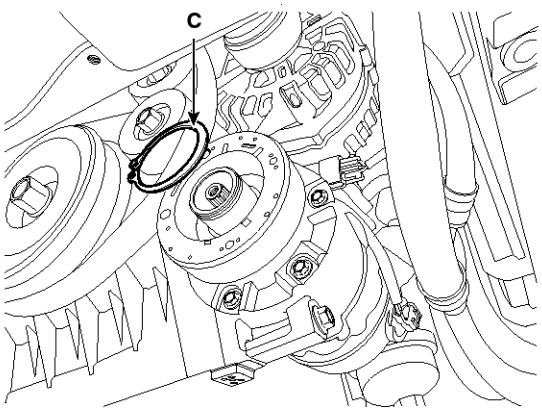


SSLHA1018D



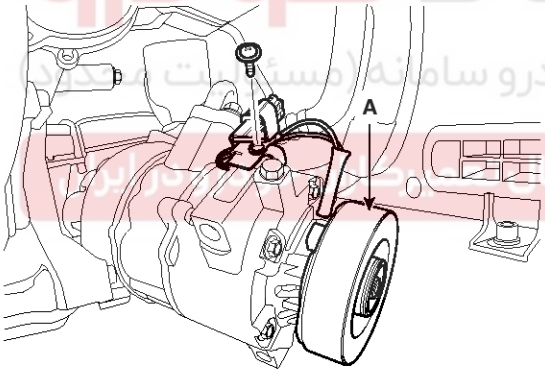
SSLHA1019D

9. Remove the retainer ring (C) and then remove the field coil. Be careful not to damage the coil and compressor.



SSLHA1020D

10. To prepare work space, loosen the compressor mounting bolts.
11. Disconnect the connector and ground screw and than remove the field coil (A).

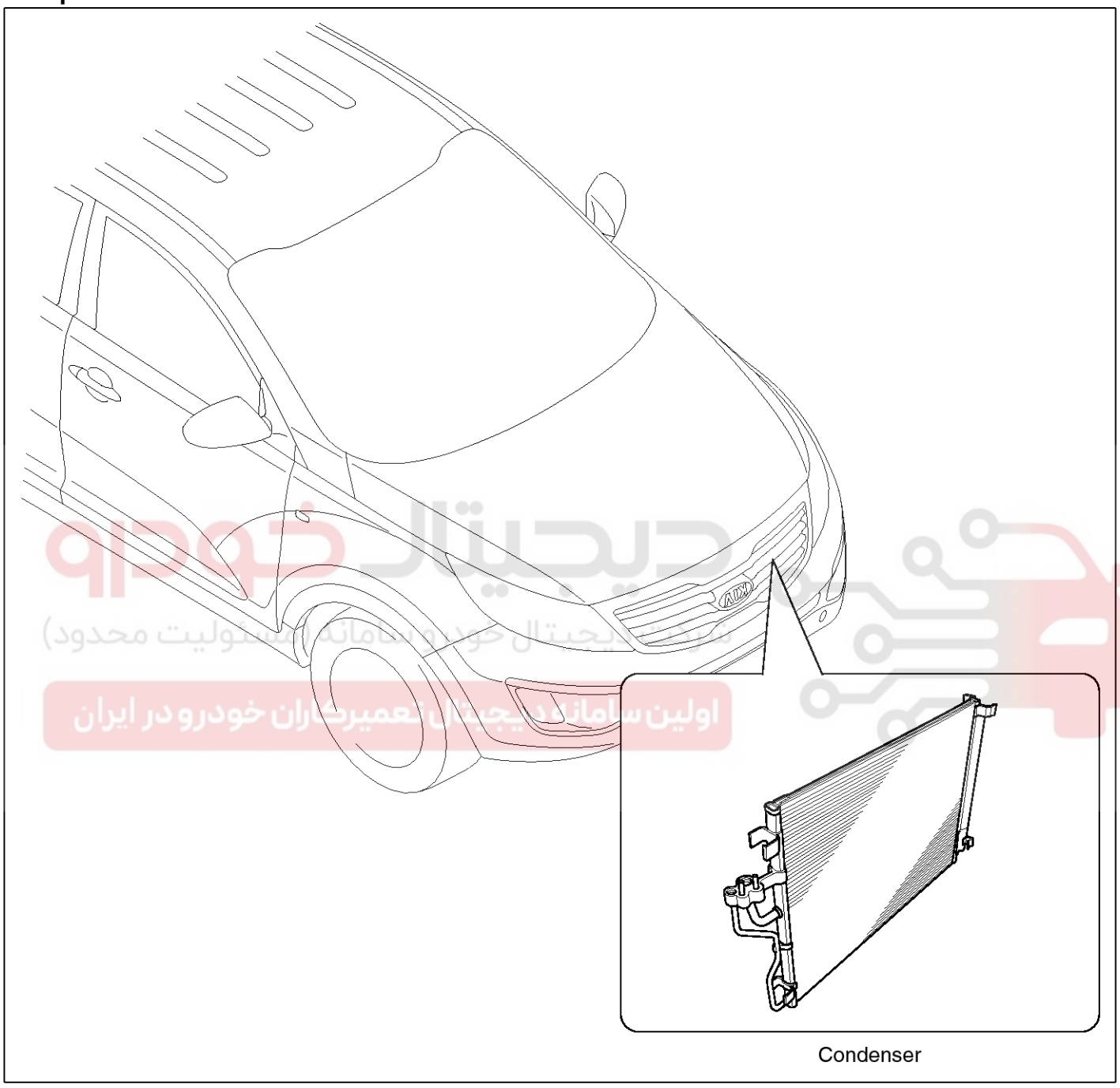


SSLHA1021D

12. Reassemble the compressor clutch in the reverse order of disassembly, and note these items :
    - Clean the pulley and compressor sliding surfaces with non-petroleum solvent.
    - Install new retainer rings, and make sure they are fully seated in the groove.
    - Make sure that the pulley turns smoothly after its reassembled.

Condenser

Component Location



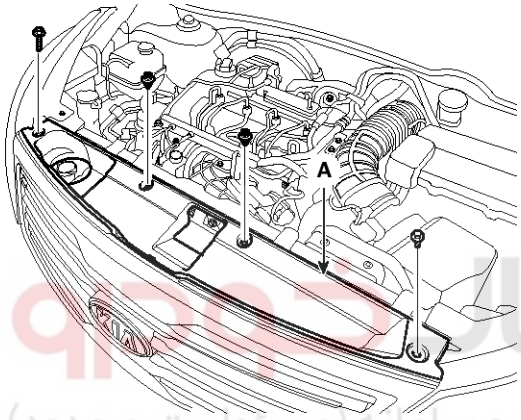
SSLHA1004L

Inspection

1. Check the condenser fins for clogging and damage. If clogged, clean them with water, and blow them with compressed air. If bent, gently bend them using a screwdriver or pliers.
2. Check the condenser connections for leakage, and repair or replace it, if required.

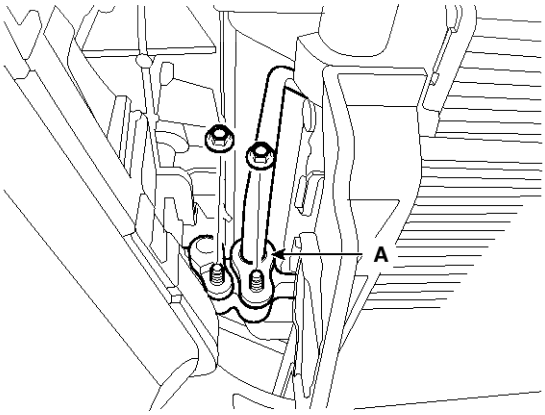
Replacement

1. Recover the refrigerant with a recovery/ recycling/ charging station.
2. Disconnect the negative (-) battery terminal.
3. Remove the front bumper upper cover (A).



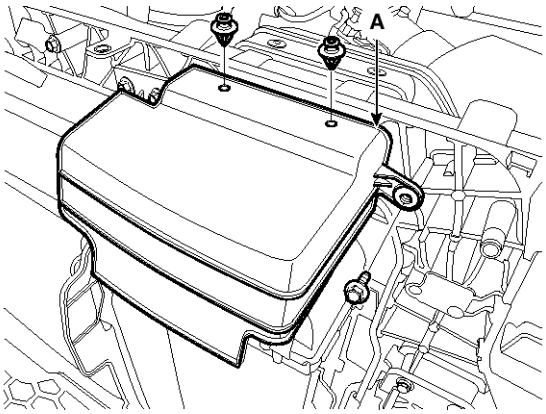
SSLHA1023D

4. Remove the discharge line and liquid line (A) from the condenser.



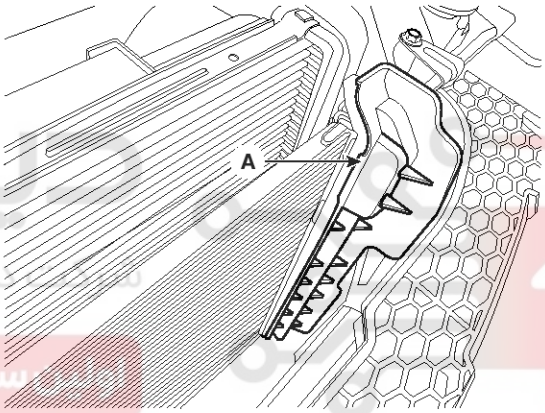
SSLHA1024D

5. Remove the intercooler cover (A).



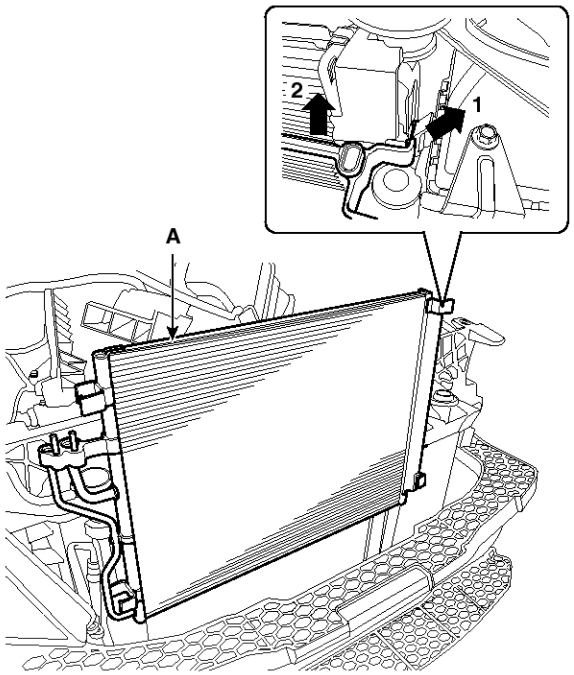
SSLHA1025D

6. Remove the condenser side cover (A).



SSLHA1026D

7. Remove the condenser (A) from radiator.



SSLHA1027D

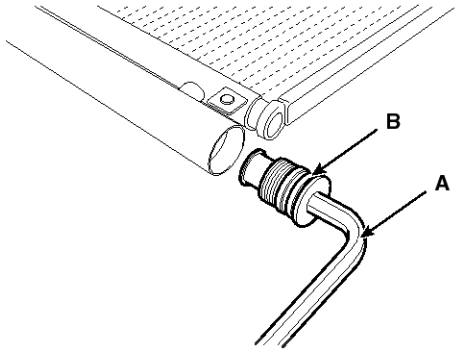
8. Install in the reverse order of removal, and note these items :
   - If you're installing a new condenser, add refrigerant oil ND-OIL8.
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the right O-rings for R-134a to avoid leakage.
   - 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.

Receiver-Drier

Replacement

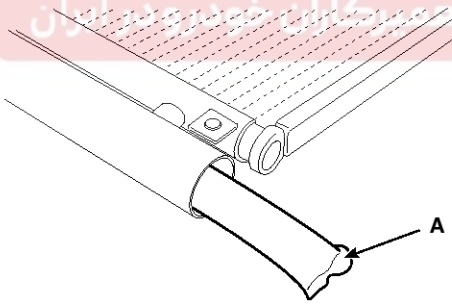
1. Remove the condenser, and then remove the bottom cap (B) with L wrench (A) from the condenser.

Tightening torque :
20~25N.m (2.0~2.5kgf.m, 14.5~18.2lb-ft)



KQRE108D

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



KQRE108E

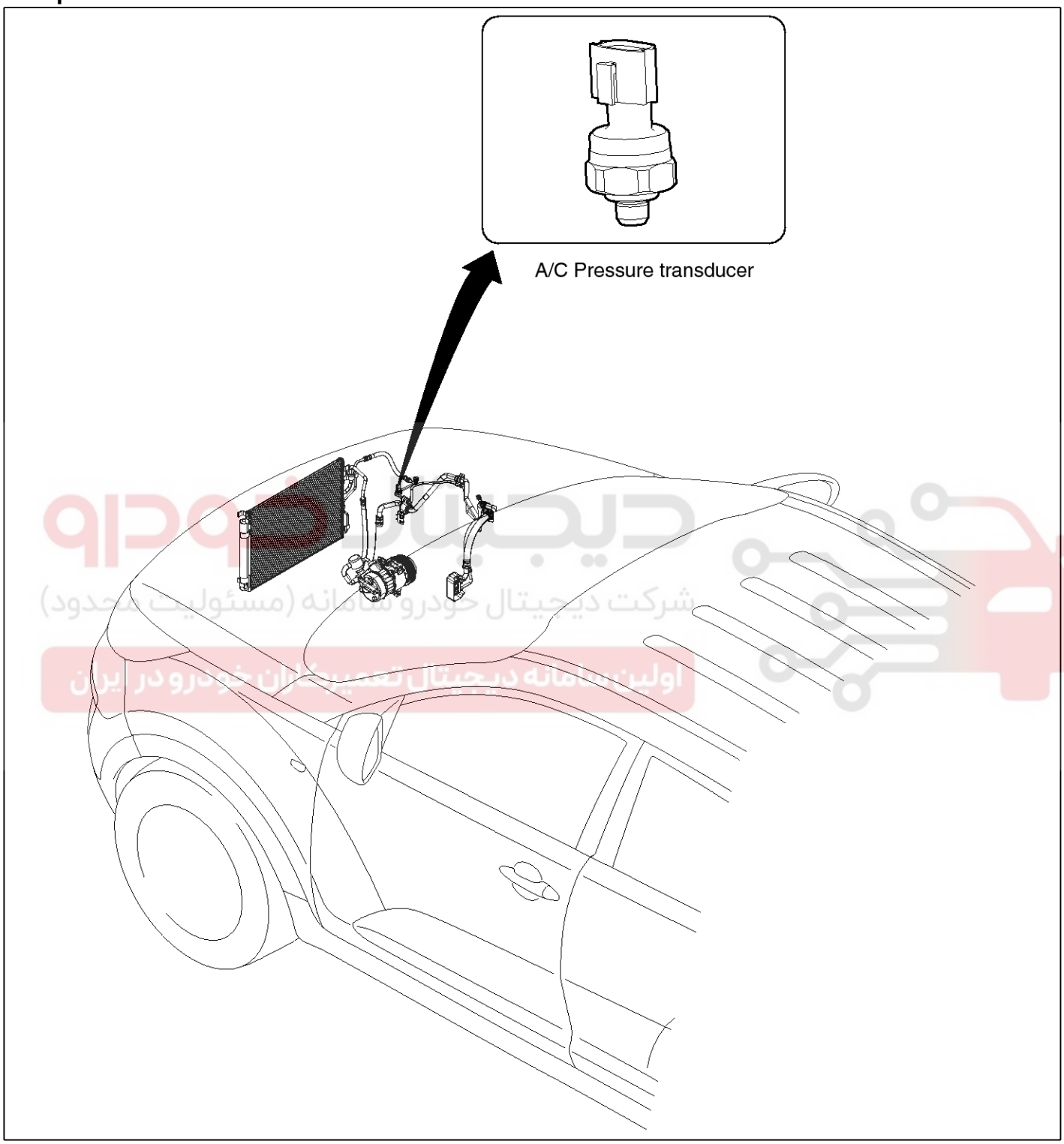
3. Apply air conditioning compressor oil along the O-rings and threads of the new bottom cap.
4. Insert the new desiccant into the receiver drier tank. The desiccant must be sealed in vacuum before it is exposed to air for use.
5. Install the new bottom cap to the condenser.

NOTICE

- *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

Component Location



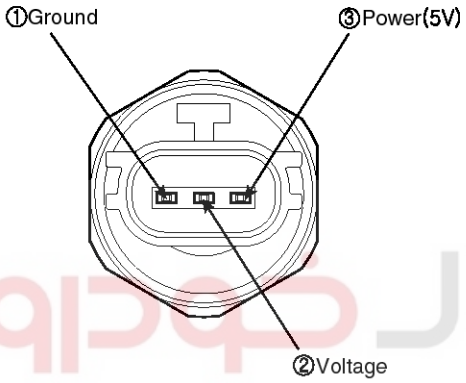
SSLHA1005L

Description

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

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.

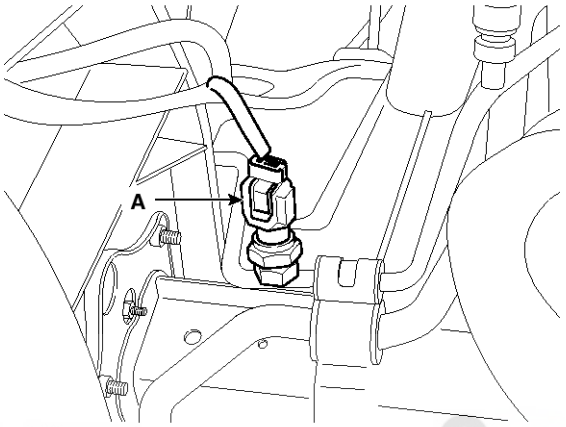
Voltage = 0.00878835 * Pressure + 0.5 [PSIA]

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

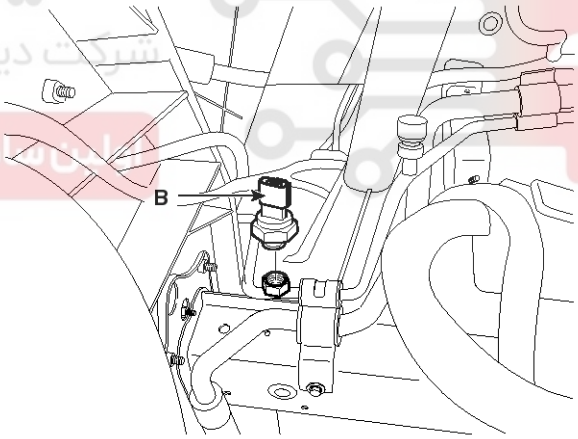
Replacement

1. Disconnect the negative (-) battery terminal.
2. Recover the refrigerant with a recovery/charging station.
3. Disconnect the A/C pressure transducer connector (3P) (A).

Tightening torque:
10~12 N.m (1.0~1.2 kgf.m, 7.4~8.8 lb-ft)



SLMHA0021D



SLMHA0022D

⚠CAUTION
Take care that liquid & suction pipe are not bent.

4. Installation is the reverse order of removal.

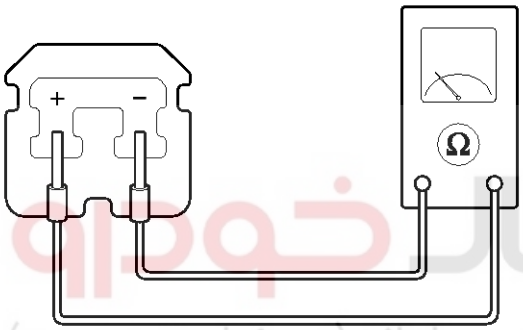
Evaporator Temperature Sensor

Description

The evaporator temperature sensor will detect the evaporator core temperature and interrupt compressor relay power in order to prevent evaporator freezing by excessive cooling

Inspection

1. Ignition "OFF".
2. Disconnect evaporator temperature sensor.
3. Using the multi-tester, Measure resistance between terminal "1" and "2" of evaporator temperature sensor.



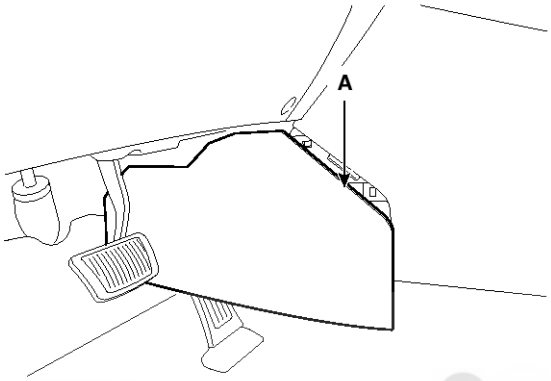
AQJF206B

Specification

Evaporator core temperature [˚C(˚F)]	Resistance[KΩ]	Voltage[V]
-10(14)	17.93	3.22 ± 0.5
-5(23)	14.22	2.94 ± 0.5
0(32)	11.36	2.67 ± 0.5
5(41)	9.14	2.39 ± 0.5
10(50)	7.40	2.13 ± 0.5
15(59)	6.02	1.88 ± 0.5
20(68)	4.94	1.66 ± 0.5
25(77)	4.066	1.45 ± 0.5
30(86)	3.369	1.26 ± 0.5
35(95)	2.85	1.1 ± 0.5
40(104)	2.348	0.95 ± 0.5
45(113)	1.975	0.83 ± 0.5
50(122)	1.668	0.72 ± 0.5

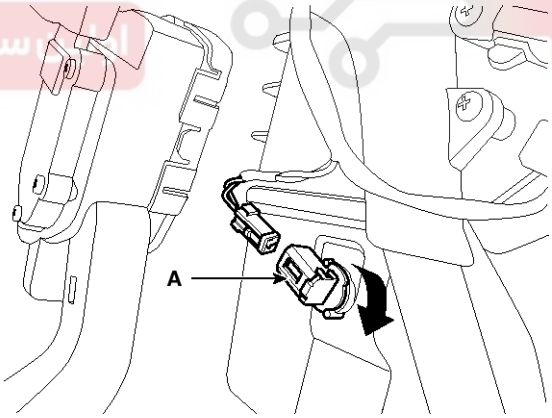
Replacement

1. Remove the console side cover (A).



SSLHA1030D

2. Remove the evaporator temperature sensor (A), by pulling it after rotating 90˚ in a clockwise direction.



SSLHA1031D

3. Installation is the reverse order of removal.

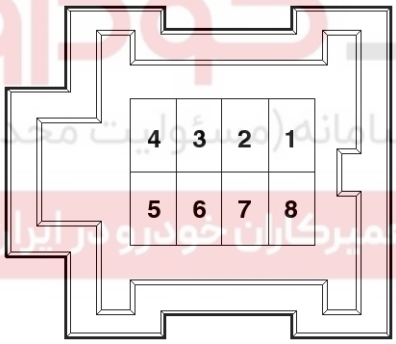
Photo Sensor

Description

1. The photo sensor is located at the right 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

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

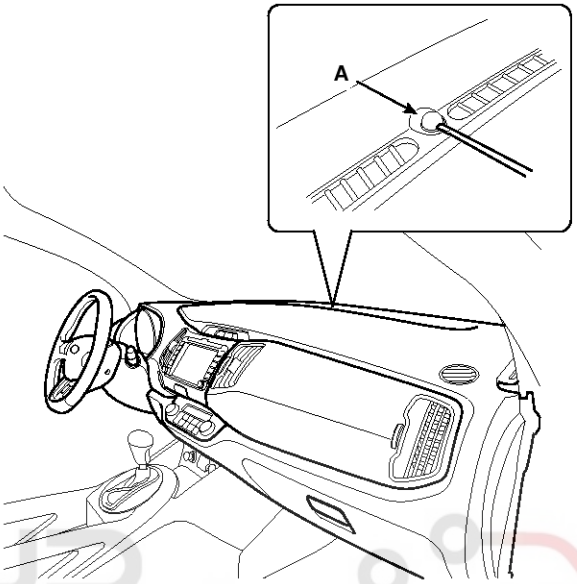


SSLHA1253D

1. Sensor Ground
2. Photo Sensor Signal
3. -
4. -
5. -
6. DR Photo Sensor (-)
7. PA Photo Sensor (-)
8. 5V (Vcc)

Replacement

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



SSLHA1032D

3. Install in the reverse order of removal.

Ambient Sensor

Description

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.

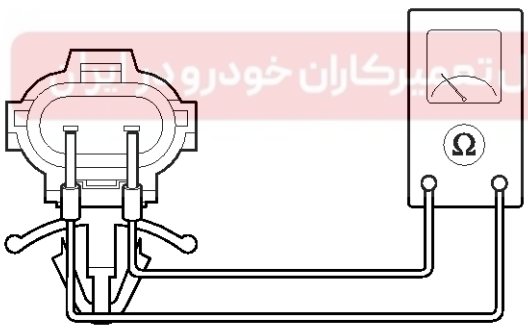
NOTICE

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

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.



AQJF204B

1. Sensor Ground
2. Ambient Sensor Signal

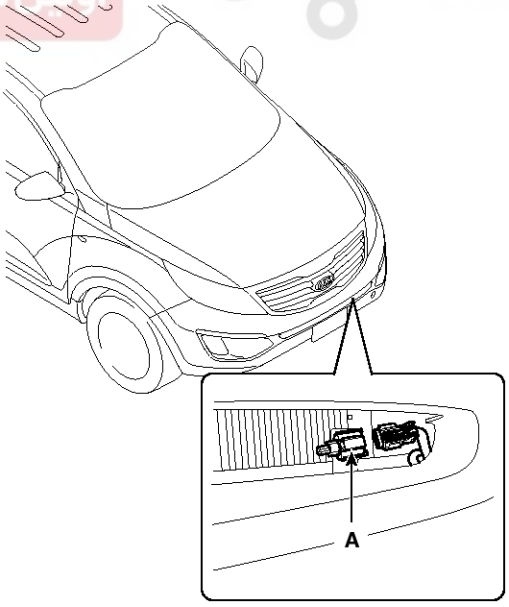
Specification

Ambient temperature [℃(˚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

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

1. Disconnect the negative (-) battery terminal.
2. Disconnect the connector and then remove the ambient temperature sensor (A).

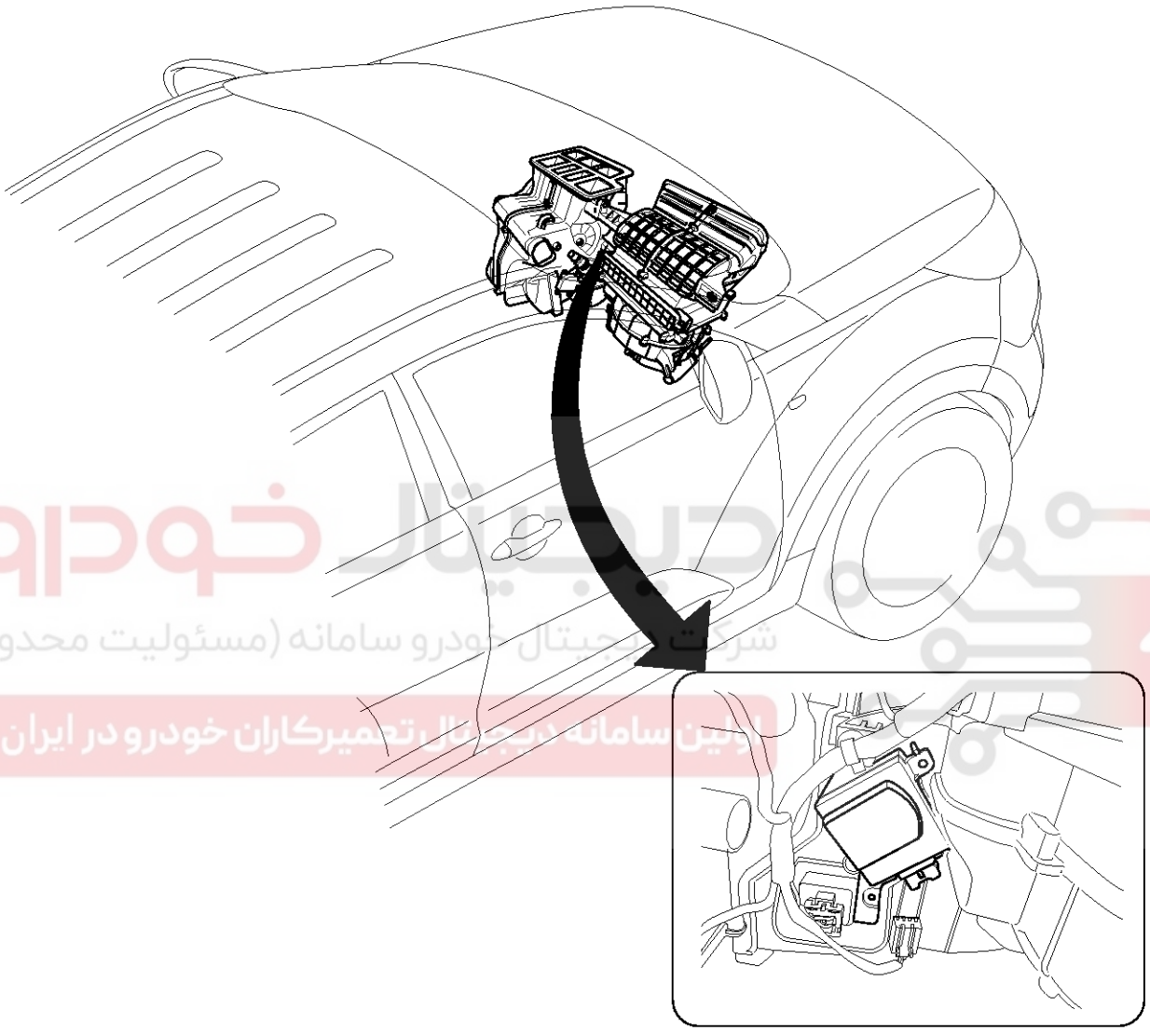


SSLHA1033D

3. Installation is the reverse order of removal.

Cluster ionizer

Component Location



SSLHA1006L

Description

1. The function of cluster ionizer is cleaning air by sterilizing and dissolving of air conditioner.
2. The function of cluster ionizer is controlling mold caused by stench of air conditioner and external inflow of air.

Inspection

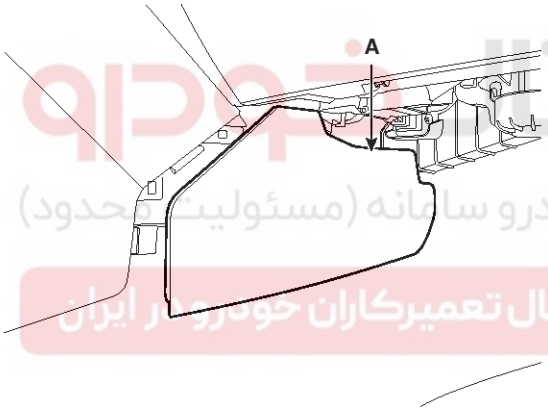
1. Press the OFF switch more then 4 times within 2 seconds while pressing the MODE switch.

Display	Fail description
00	Normal
50	Cluster ionizer fault

* Diagnostic procedure refer to DTC code.

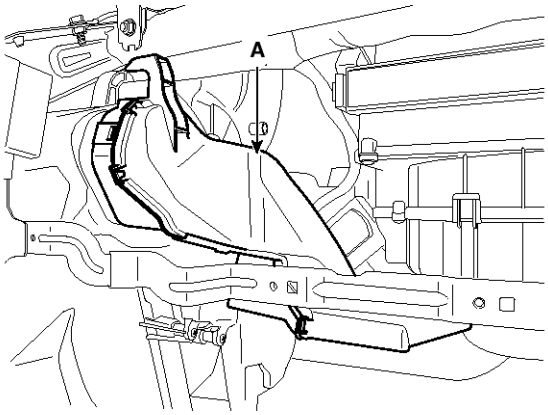
Replacement

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



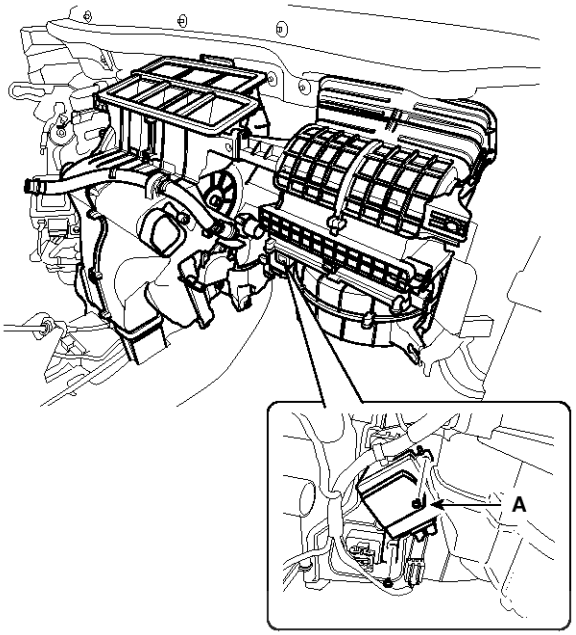
SSLHA1035D

3. Remove the shower duct (A).



SSLHA1073D

4. Loosen the screws and then remove the cluster ionizer (A).



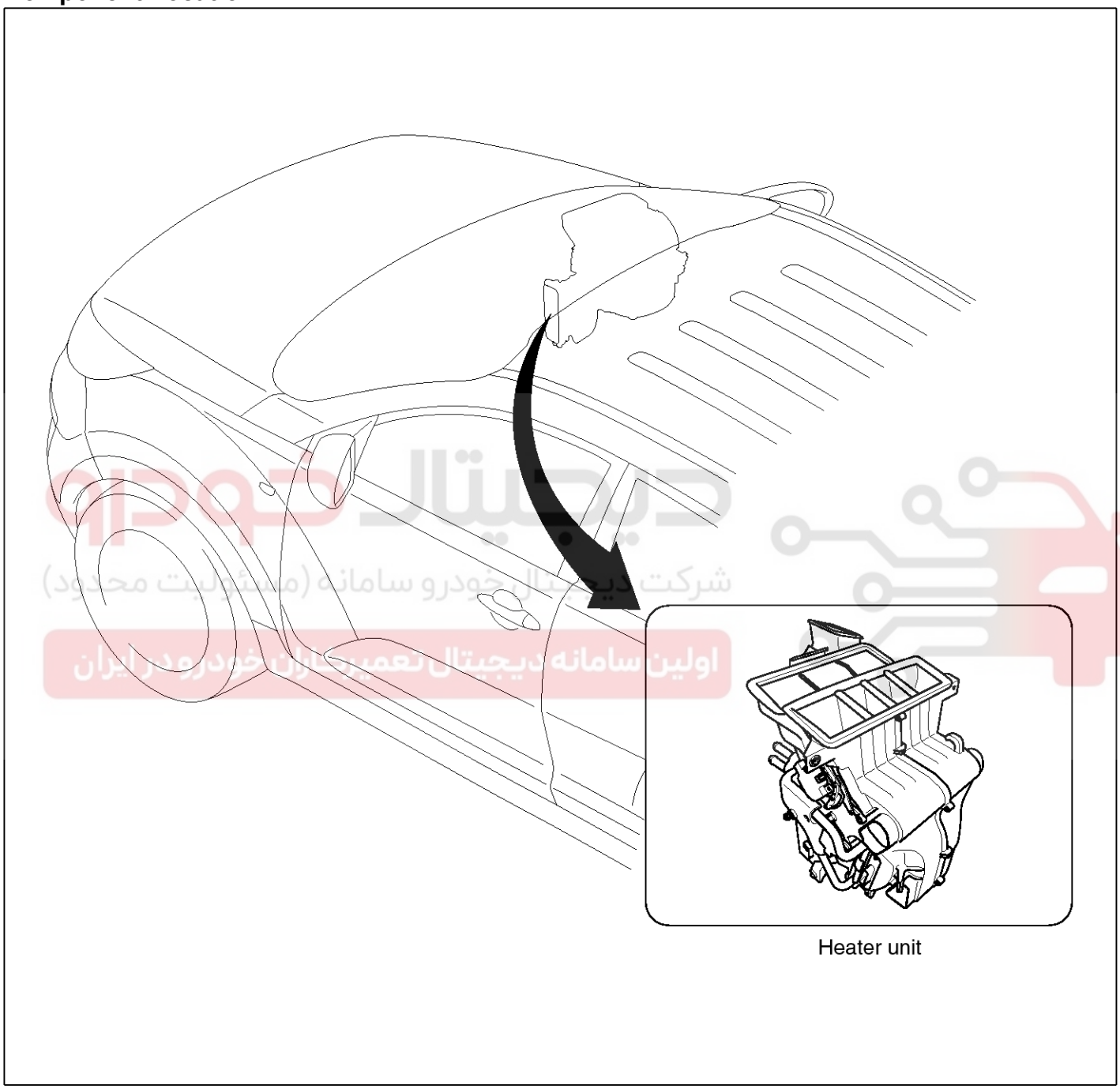
SSLHA1037D

5. Installation is the reverse order of removal.

Heater

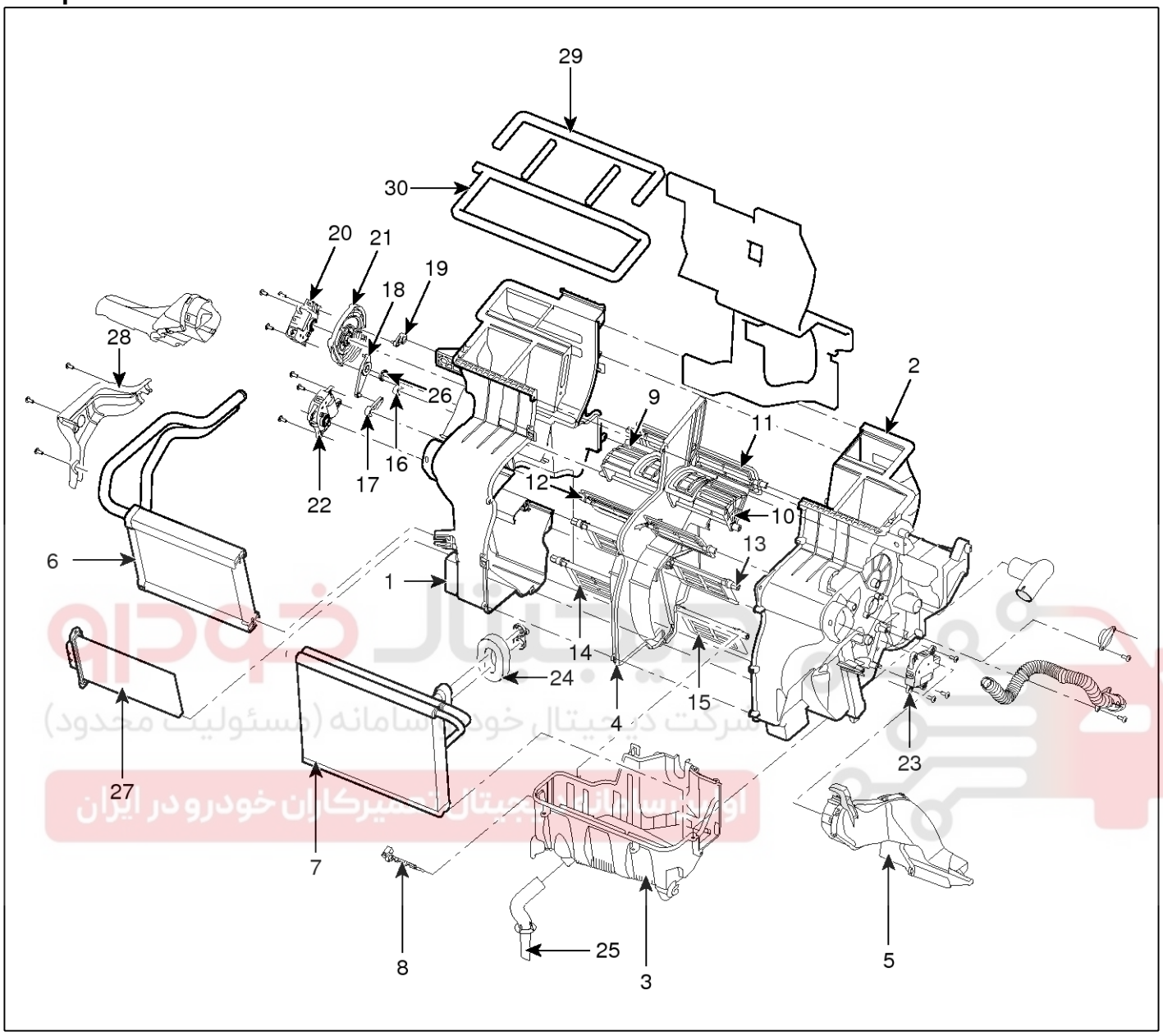
Heater Unit

Component Location



SSLHA1007L

Components

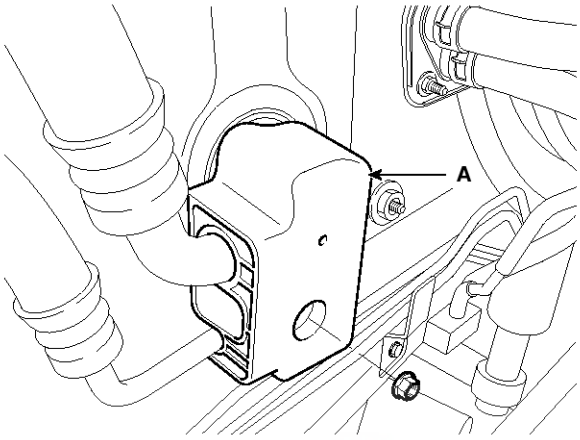


SSLHA1040D

1. Heater Case (LH)
2. Heater Case (RH)
3. Heater Lower Case
4. Separator
5. Shower Duct
6. Heater Core
7. Evaporator Core
8. Evaporator Sensor
9. Vent Door
10. Vent Door
11. Def Door
12. Foot Door
13. Temp Control Door
14. Temp Control Door
15. Temp Control. Door
16. Vent Door Arm
17. Foot Lever
18. Foot Door Arm
19. Def Lever
20. Mode Control Actuator
21. Mode Cam
22. Temp Control Actuator
23. Temp Control Actuator
24. Flange Seal
25. Drain Hose
26. Washer Spring
27. PTC Heater Core
28. Heater Core Cover
29. Flange Seal
30. Flange Seal

Replacement

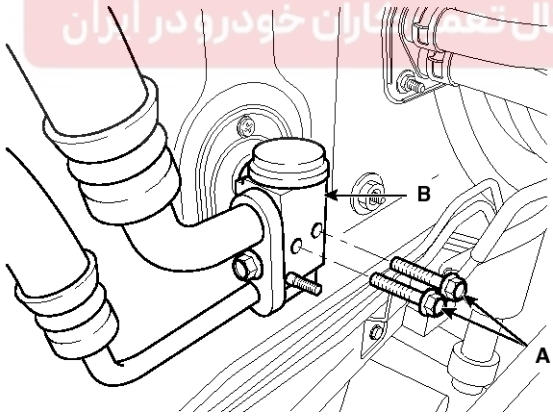
1. Disconnect the negative (-) battery terminal.
2. Recover the refrigerant with a recovery/ recycling/ charging station.
3. When the engine is cool, drain the engine coolant from the radiator.
4. Remove the expansion valve cover (A).



SSLHA1042D

5. Remove the bolts (A) and the expansion valve (B) from the evaporator core.

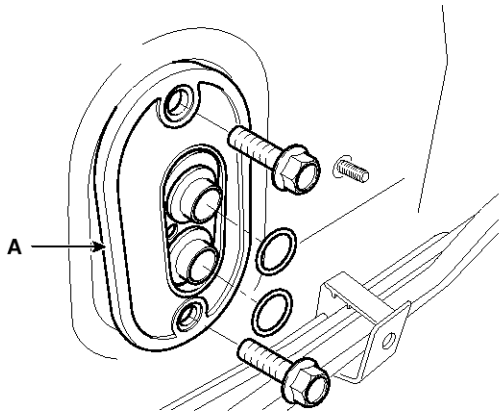
Tightening torque :
7.8 ~ 11.7 N.m (0.8 ~ 1.2 kgf.m, 5.7 ~ 8.6 lb-ft)



SSLHA1043D

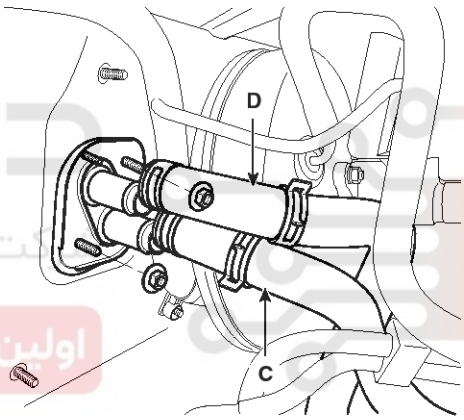
⚠CAUTION
Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

6. Remove the expansion valve flange (A).



SSLHA1014L

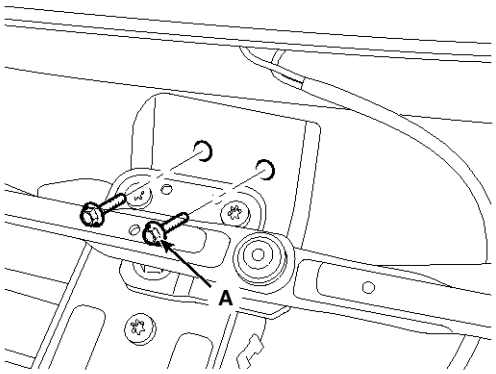
7. Disconnect the inlet (C) and outlet (D) heater hoses from the heater unit.



SSLHA1046D

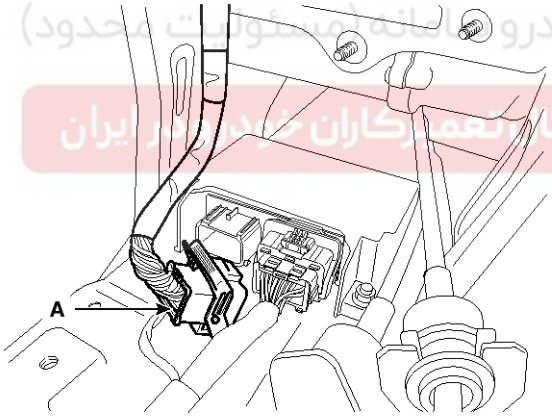
⚠CAUTION
Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on electrical parts or painted surfaces. If any coolant spills, rinse it off immediately.

8. Remove the cowl top cover.
   (Refer to BD group - "Cowl Top Cover").
9. Loosen the cowl cross member mounting bolts (A).



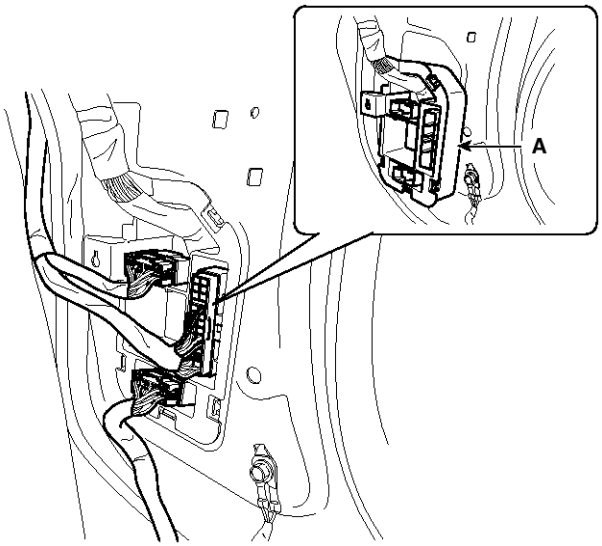
SSLHA1048D

10. Remove the steering handle and column.
    (Refer to ST group - "Steering Column")
11. Remove the center console.
    (Refer to BD group - "Center Console")
12. Disconnect the airbag connector (A).

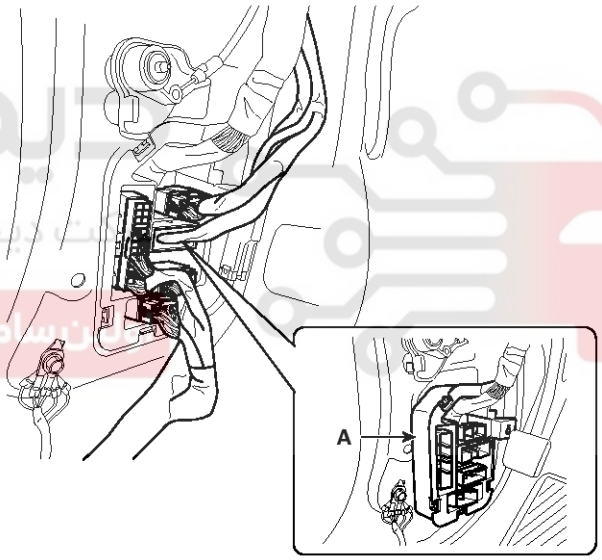


SSLHA1049D

13. Disconnect the connectors and than remove the left & right multi box (A).

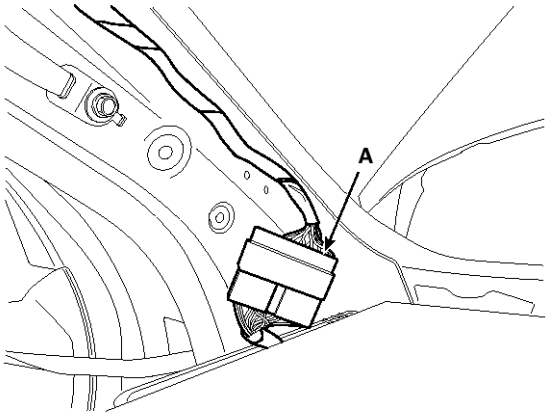


SSLHA1050D

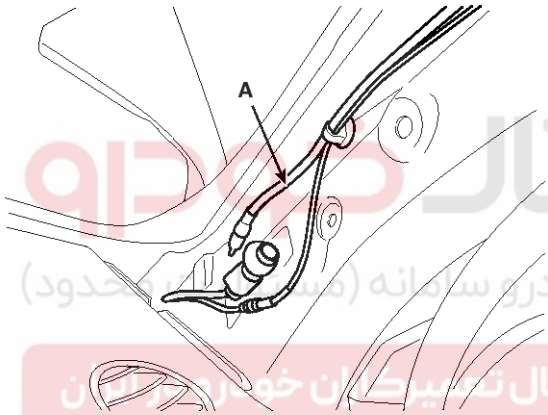


SSLHA1051D

14. Remove the left & right filler trim and than disconnect the connector (A).

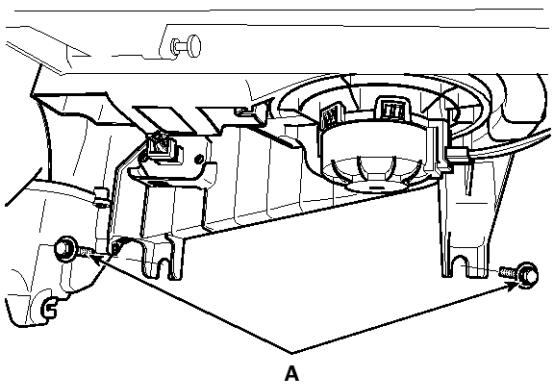


SSLHA1052D



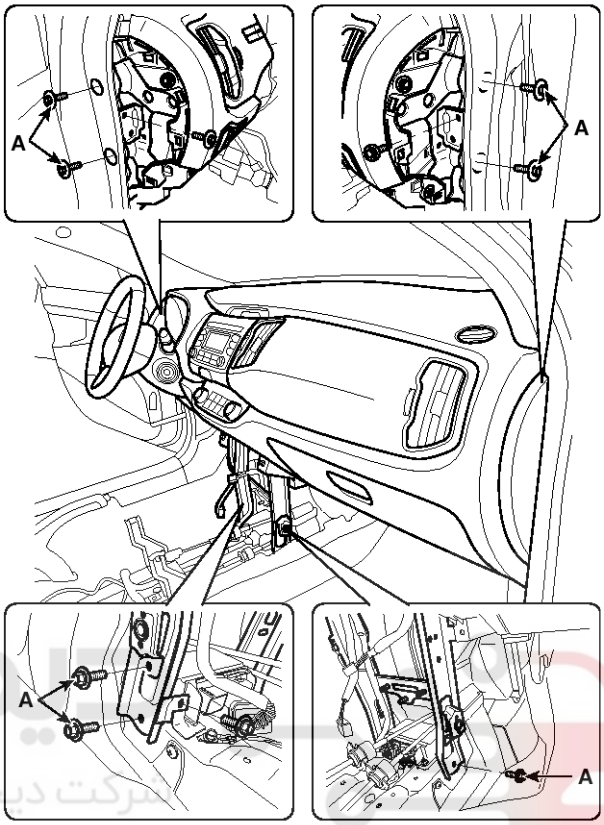
SSLHA1053D

15. Remove the heater & blower unit after loosening mounting bolts.



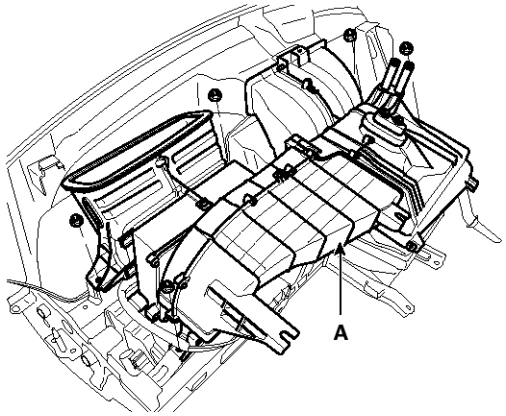
SSLHA1054D

16. Loosen the cowl cross member mounting bolts (A) and than remove the crash pad and heater blower unit.



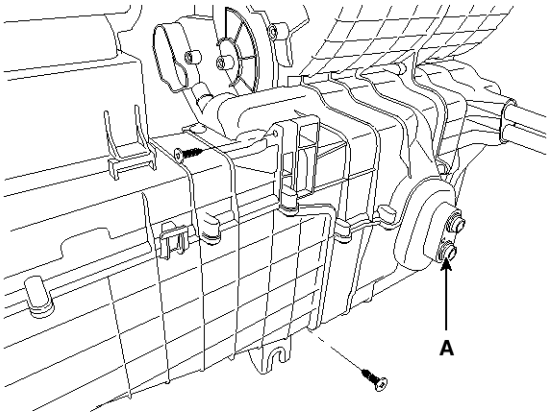
SSLHA1055D

17. Disconnect the connectors and than remove the heater blower unit (A) from crash pad.

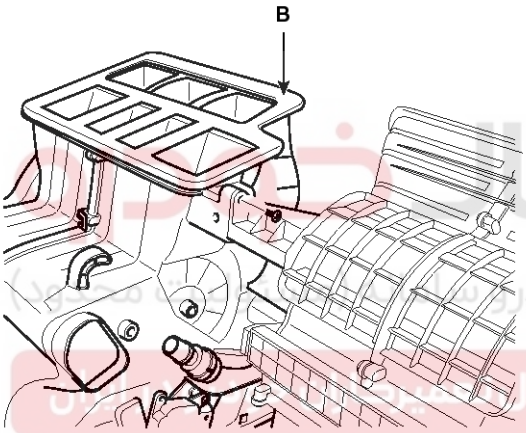


SSLHA1060D

18. Remove the blower unit (A) from heater unit (B) after loosening screws.

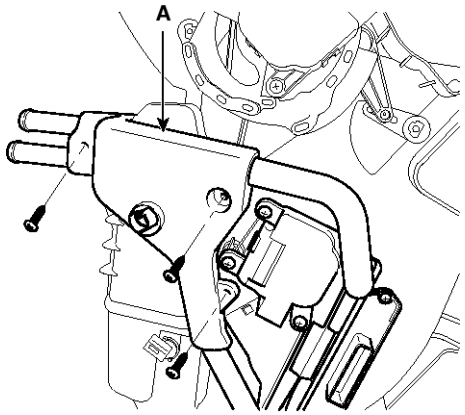


SSLHA1061D



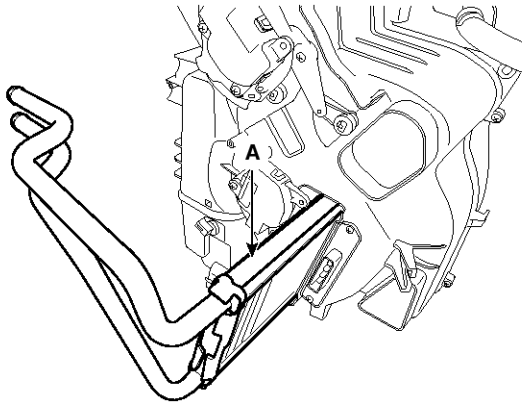
SSLHA1004N

19. Loosen the mounting screw and then remove the heater core cover (A).



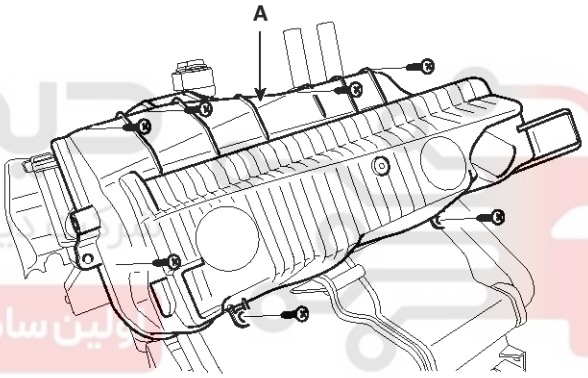
SSLHA1063D

20. Disconnect the heater core (A) from heater unit.



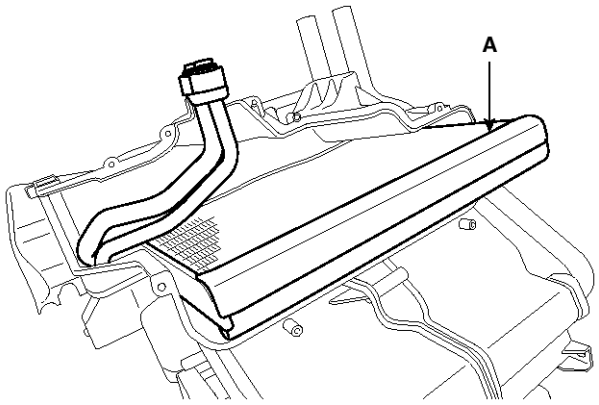
SSLHA1064D

21. Loosen the heater unit lower case mount screw and then remove the heater unit lower case (A).



SSLHA1065D

22. Remove the evaporator core (A).

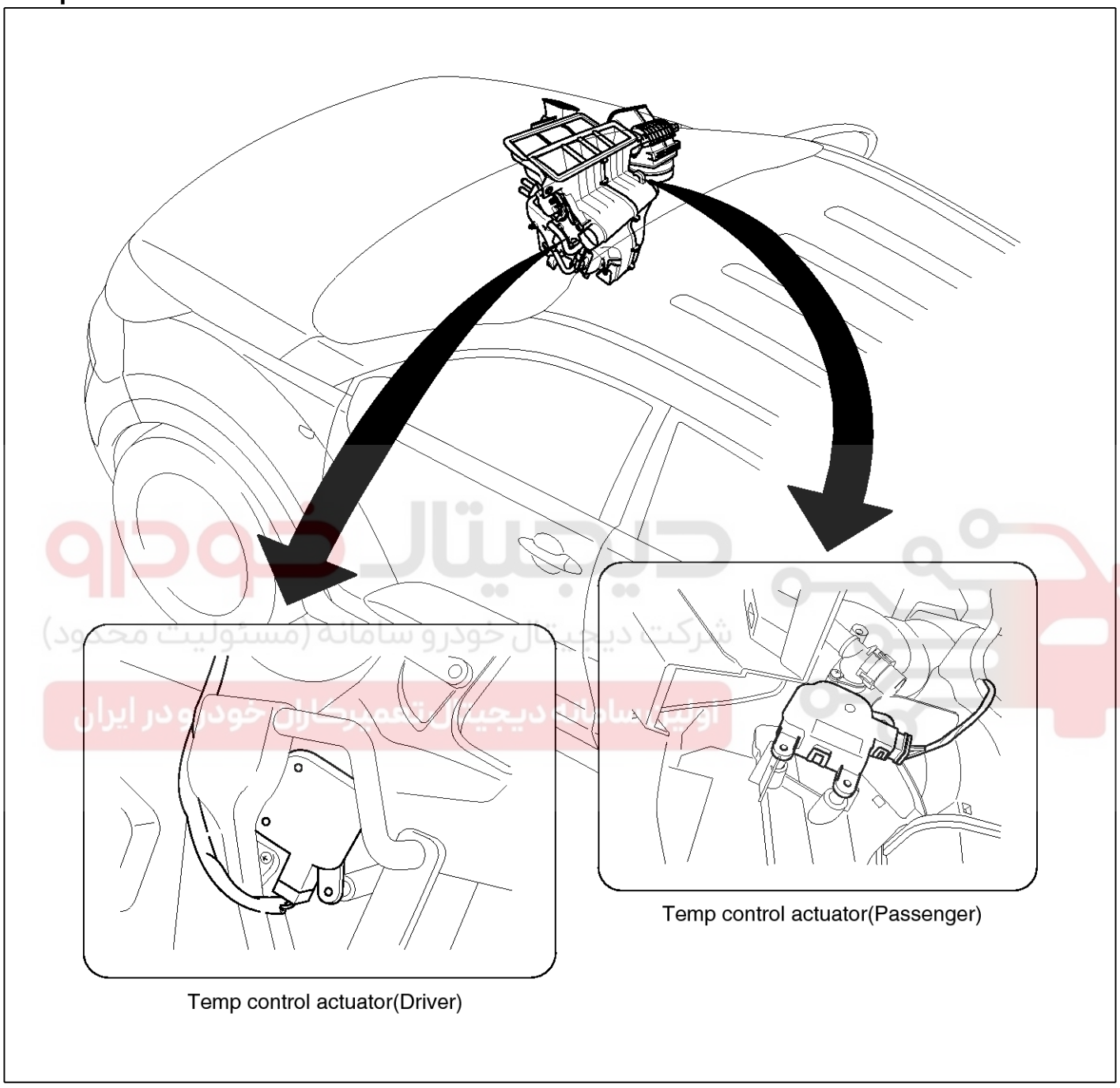


SSLHA1066D

23. Be careful that the inlet and outlet pipe are not bent during heater core removal, and pull out the heater core.
24. Installation is the reverse order of removal.
25. 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

Temperature Control Actuator

Component Location



SSLHA1008L

Description

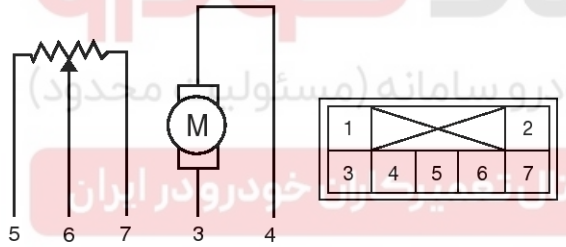
1. Heater unit includes mode control actuator and temperature control actuator.
2. Temperature control actuator is located at the heater unit. It regulates the temperature by the procedure as follows. Signal from control unit adjusts position of temperature door by operating temperature switch and then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

Inspection

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]



SSLHA1068D

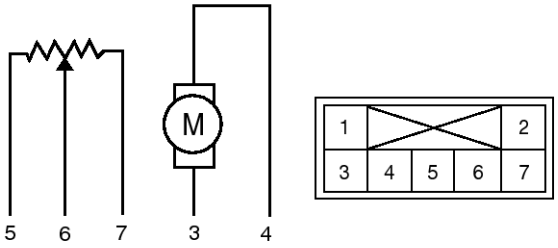
1. -
2. -
3. Hot position
4. Cool position
5. Sensor ground
6. Feedback signal
7. 5V (Vcc)

4. Check the voltage between terminals 5 and 6(Drive).

Specification

Door position	Voltage(5-6)	Error detecting
Max. cooling	0.4 ± 0.15V	Low voltage : 0.1 V or less
Max. heating	4.6 ± 0.15V	High voltage : 4.9 V or more

[Passenger]



SSLHA1069D

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

5. Check the voltage between terminals 6 and 7(Passenger).

Specification

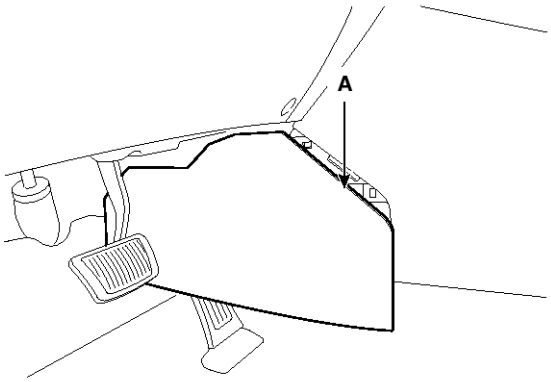
Door position	Voltage(6-7)	Error detecting
Max. cooling	0.4 ± 0.15V	Low voltage : 0.1 V or less
Max. heating	4.6 ± 0.15V	High voltage : 4.9 V or more

It will feedback current position of actuator to controls.

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

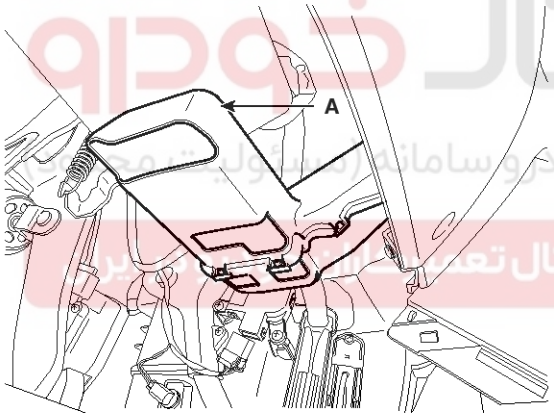
Replacement

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



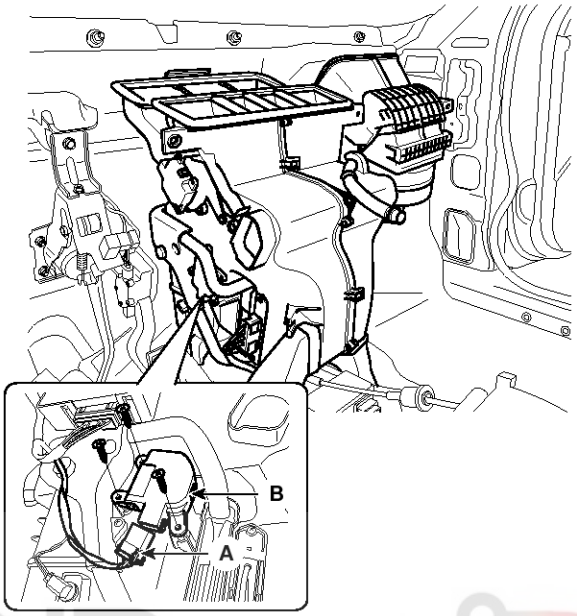
SSLHA1030D

3. Disconnect the temperature control actuator connector (A).



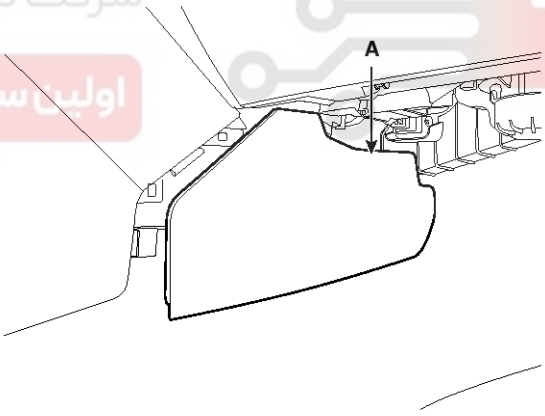
SSLHA1070D

4. Disconnect the temperature control actuator connector (A).
5. Loosen the mounting screw and then remove the temperature control actuator (B).



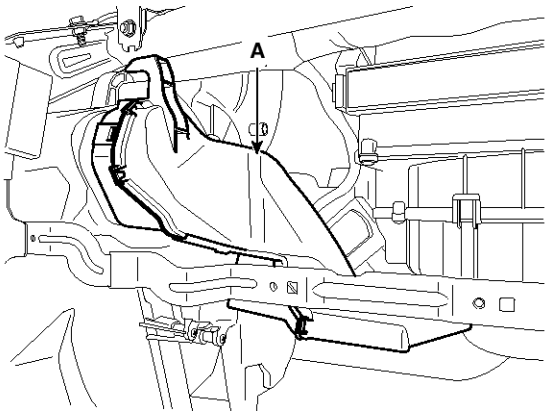
SSLHA1071D

6. Remove the right side cover (A).



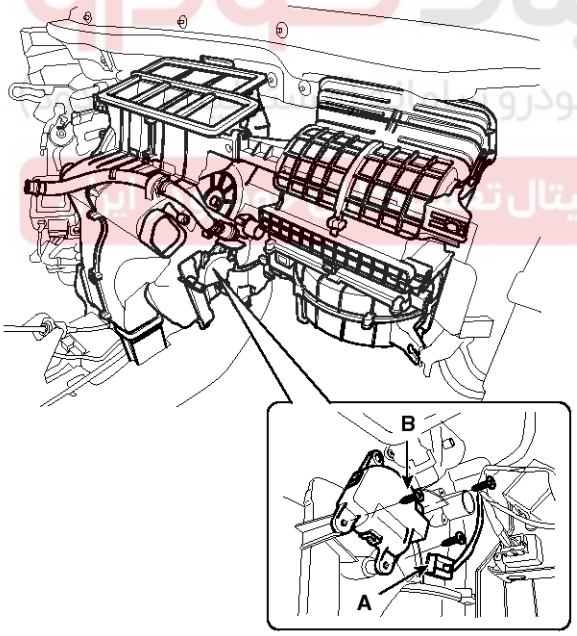
SSLHA1035D

7. Remove the main crash pad.
   (Refer to BD group - "Crash Pad")
8. Remove the shower duct (A).



SSLHA1073D

9. Disconnect the temperature control actuator connector (A).
10. Loosen the mounting screw and then remove the temperature control actuator (B).

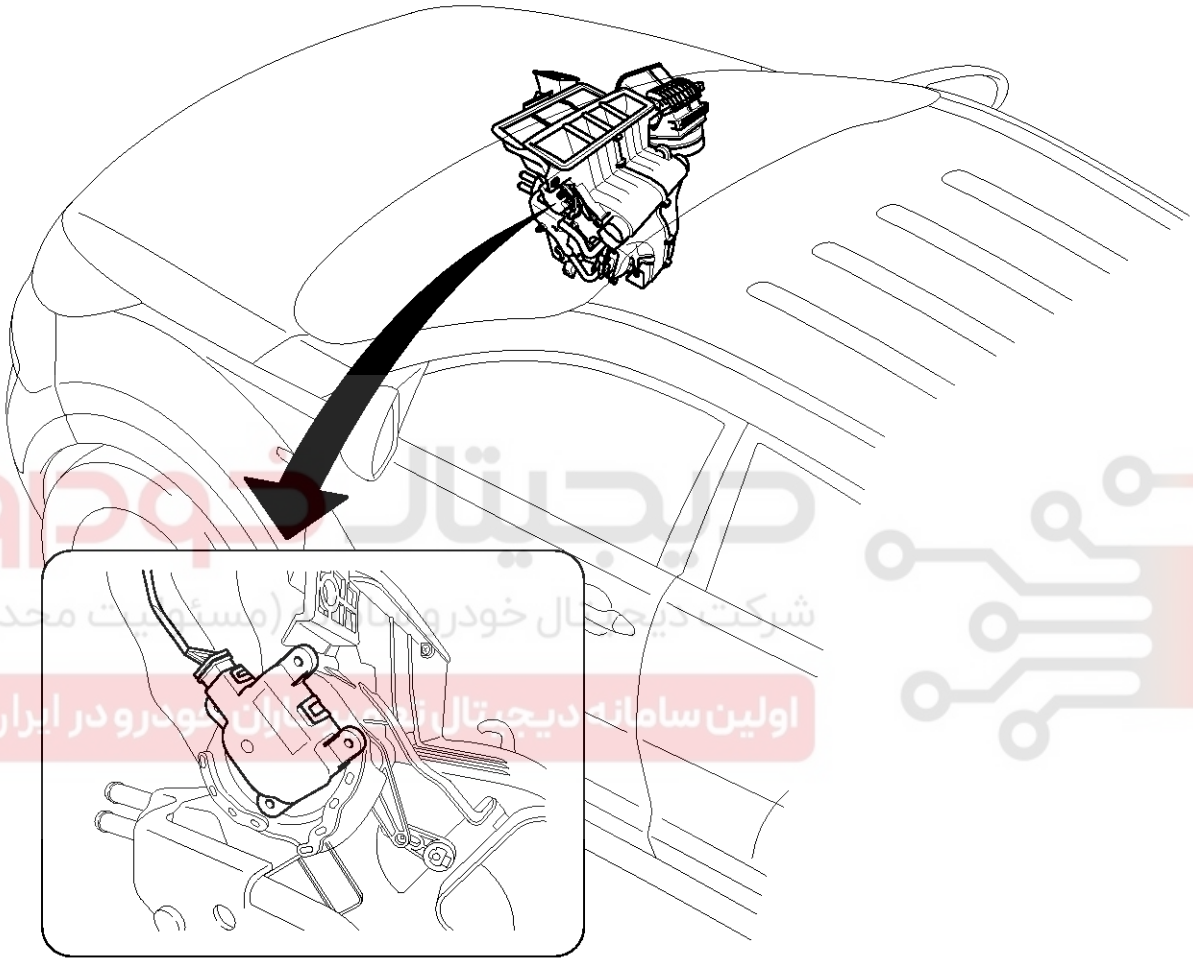


SSLHA1074D

11. Installation is the reverse order of removal.

Mode Control Actuator

Component Location



Mode control actuator

SSLHA1009L

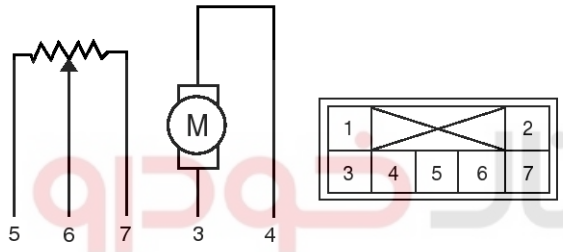
Description

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

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 3and grounding terminal 4.
4. Verify that the mode control actuator operates to the vent mode when connecting in the reverse.



SLMHA0053D

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

5. Check the voltage between terminals 5 and 6.

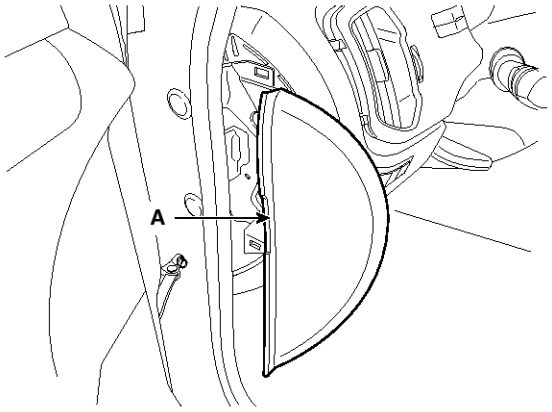
Door position	Voltage (5-6)	Error detecting
Vent	0.4 ± 0.15V	Low voltage : 0.1 V or less
Defrost	4.6 ± 0.15V	High voltage : 4.9 V or more

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.

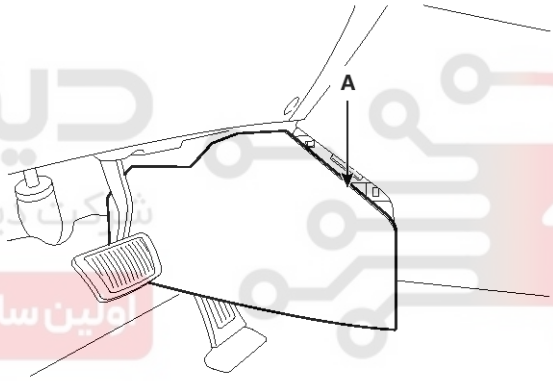
Replacement

1. Disconnect the negative (-) battery terminal.
2. Remove the crash pad left side cover (A).



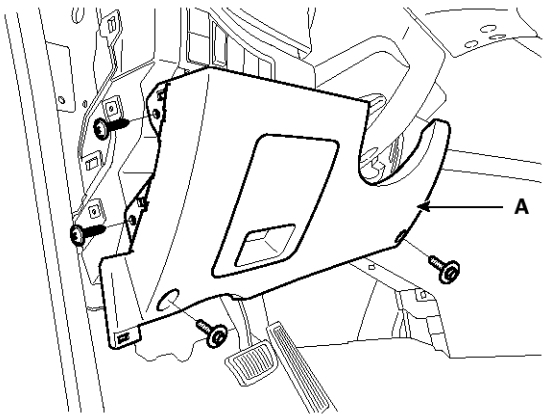
SSLHA1076D

3. Remove the side cover(A).



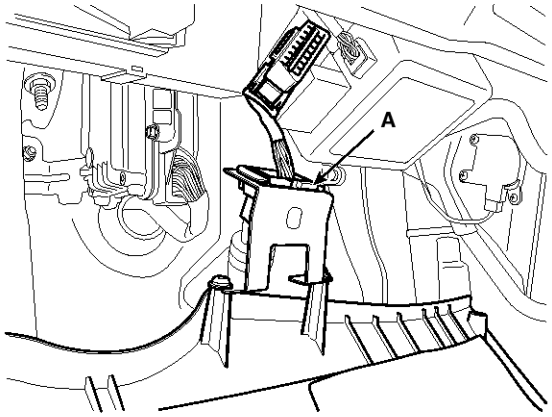
SSLHA1030D

4. Remove the crash pad lower cover (A).



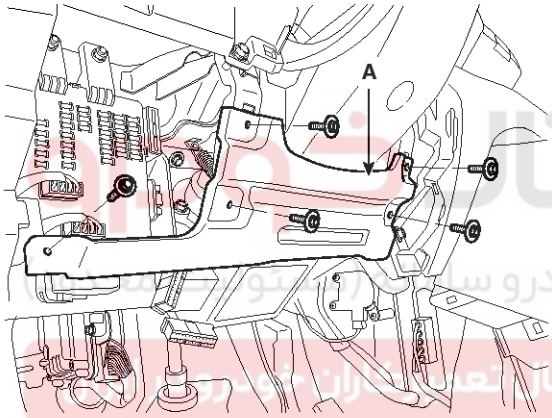
SSLHA1077D

5. Disconnect the diagnosis connector (A).



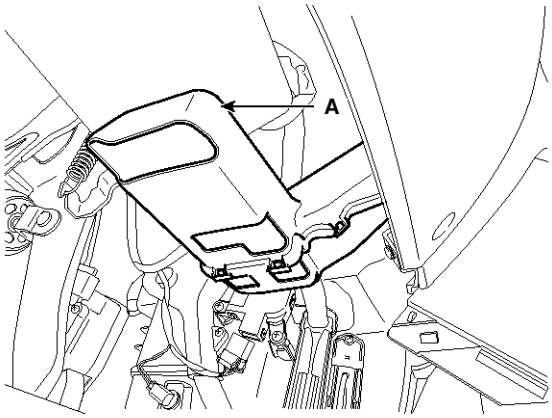
SSLHA1078D

6. Remove the reinforcing panel (A).



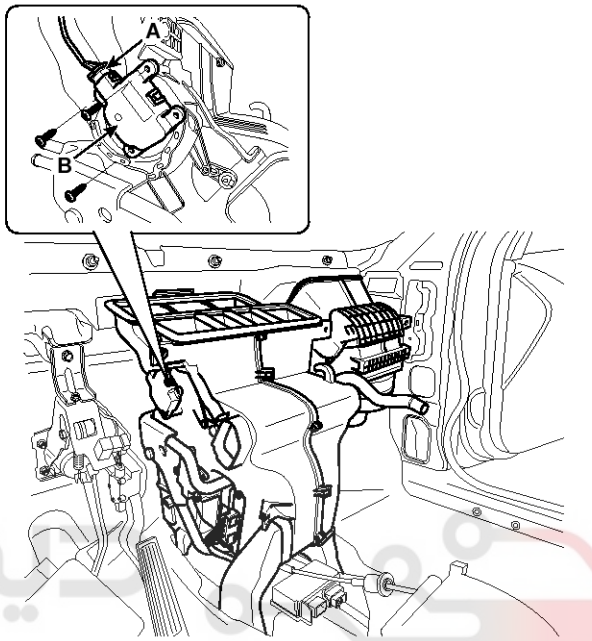
SSLHA1079D

7. Remove the shower duct (A).



SSLHA1070D

8. Remove the BCM.
   (Refer to BE group - "BCM")
9. Disconnect the temperature control actuator connector (A).
10. Loosen the mounting screw and then remove the temperature control actuator (B).



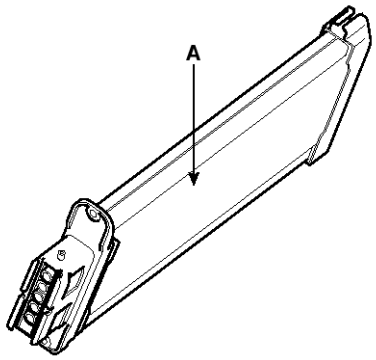
SSLHA1080D

11. Installation is the reverse order of removal.

PTC (Positive Temperature Coefficient)

Description

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.



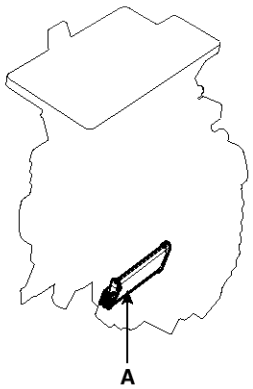
AQIE301B

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

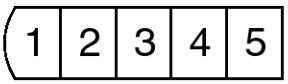


AQIE301A

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.



SSLHA1251D

1. PTC2
2. GND
3. PTC1
4. GND
5. PTC3

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

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).

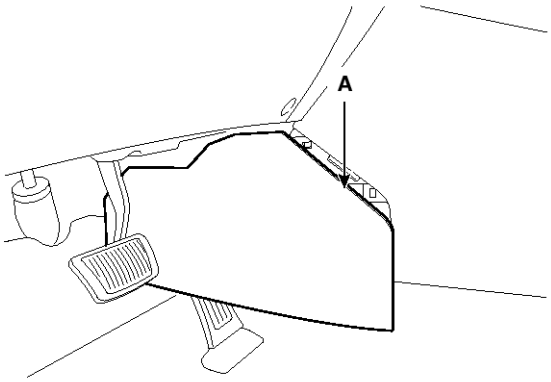
      Graphics of the entire LCD display switch on and off with an interval of 0.5 seconds continuously (Automatic)
   5) Confirm the PTC operation by operating the blower switch

      Manual : 1~8 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.

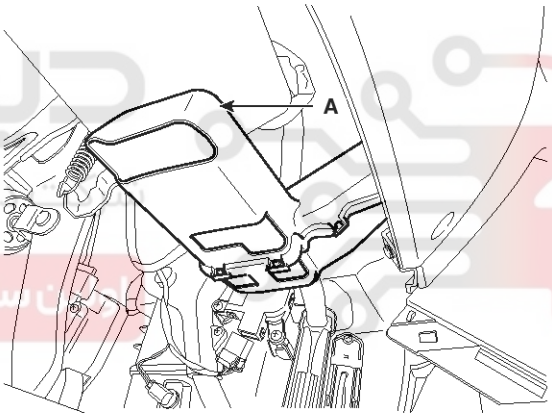
Replacement

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



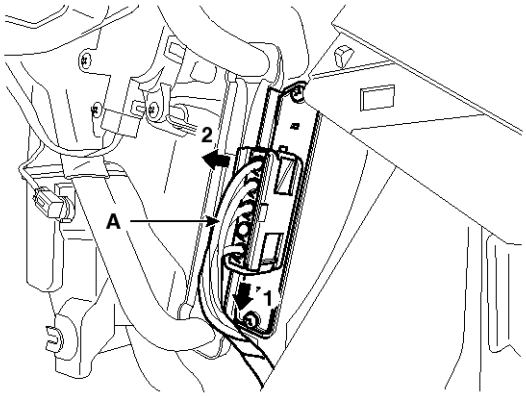
SSLHA1030D

3. Remove the shower duct (A).



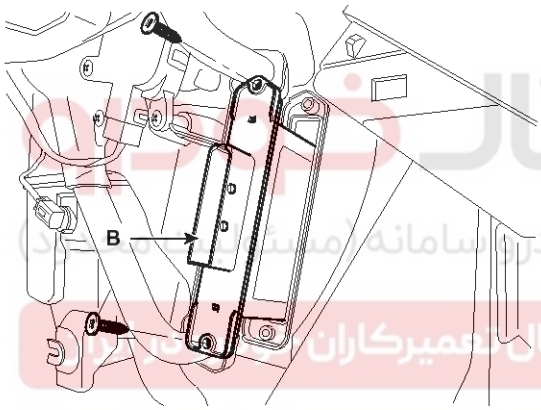
SSLHA1070D

4. Disconnect the PTC heater connector (A).



SSLHA1081D

5. Loosen the PTC heater mounting screw and then remove the PTC heater core(B).



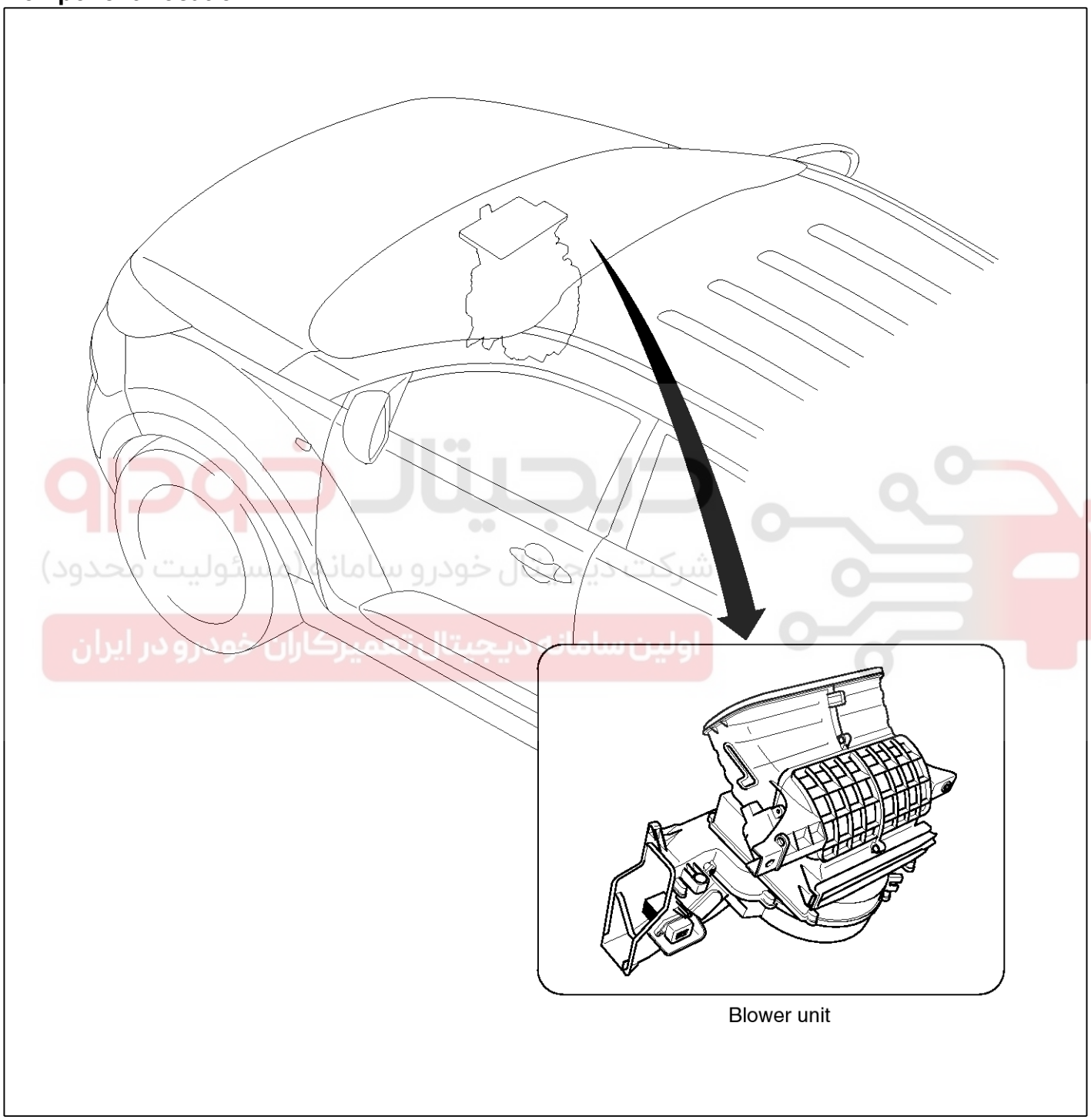
SSLHA1082D

6. Installation is the reverse order of removal.

Blower

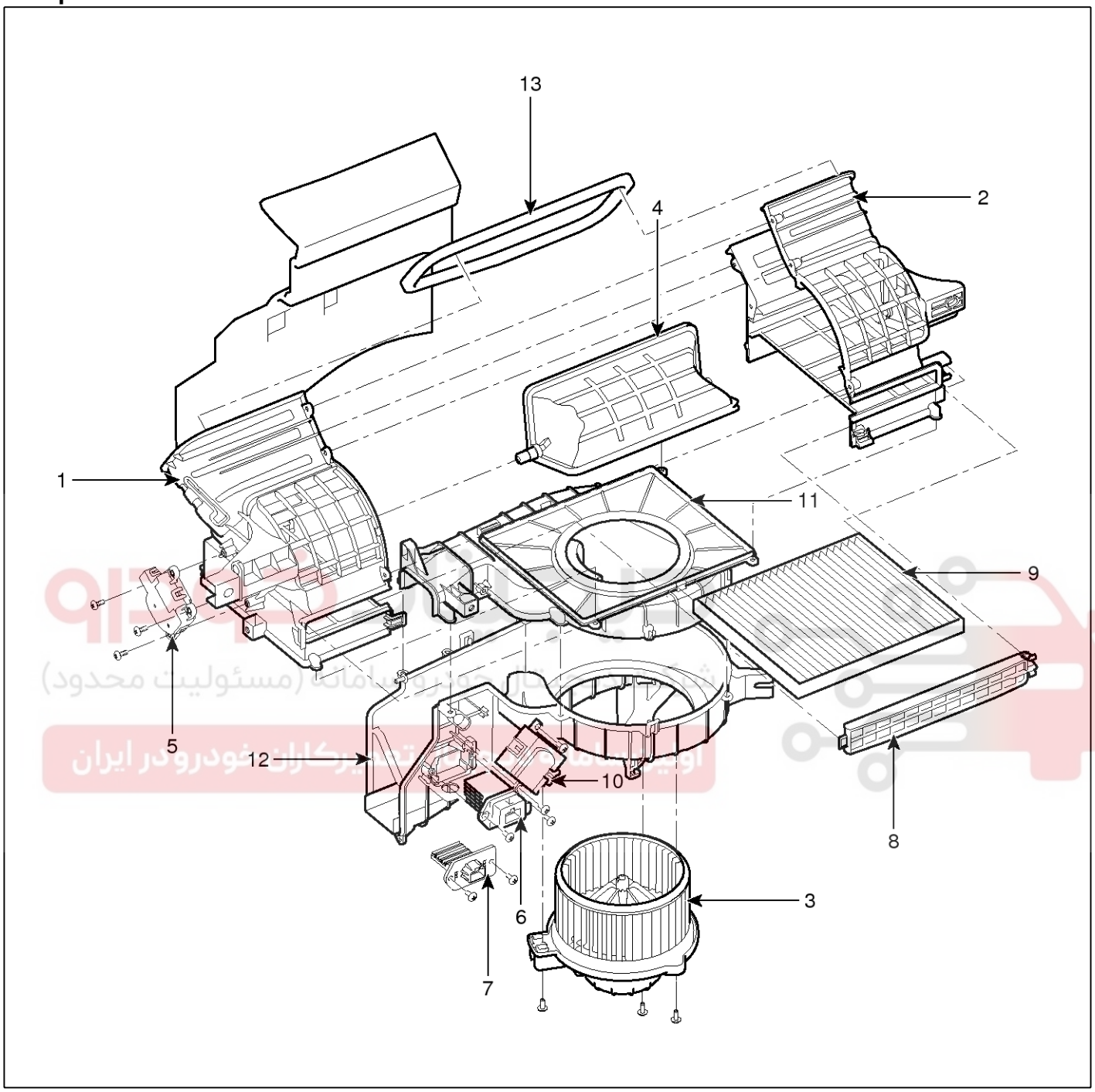
Blower Unit

Component Location



SSLHA1010L

Components

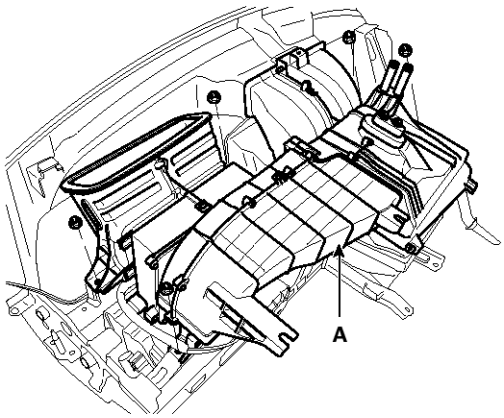


SSLHA1084D

1. Intake case (LH)
2. Intake case (RH)
3. Blower motor
4. Intake door
5. Intake actuator
6. Mofet [Auto type]
7. Resistor [Manual type]
8. Climate control air filter cover
9. Climate control air filter
10. Ionizer
11. Blower case (Upper)
12. Blower case (Lower)
13. Intake seal

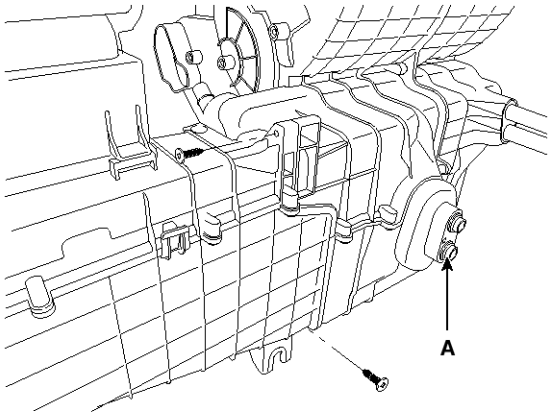
Replacement

1. Disconnect the negative (-) battery terminal.
2. Remove the crash pad and heater blower unit. (Refer to HA group - "Heater Unit")
3. Remove the heater blower unit (A) from crash pad.

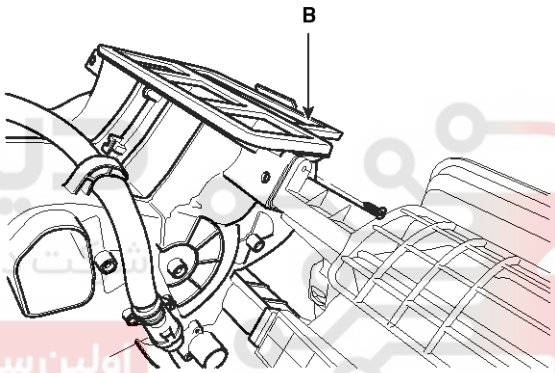


SSLHA1060D

4. Remove the blower unit (A) from the heater unit (B) after loosening a mounting bolt and screws.



SSLHA1061D



SSLHA1015L

NOTICE

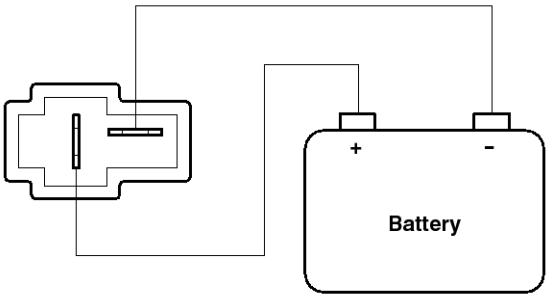
Make sure that there is no air leaking out of the blower and duct joints.

5. Installation is the reverse order of removal.

Blower Motor

Inspection

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

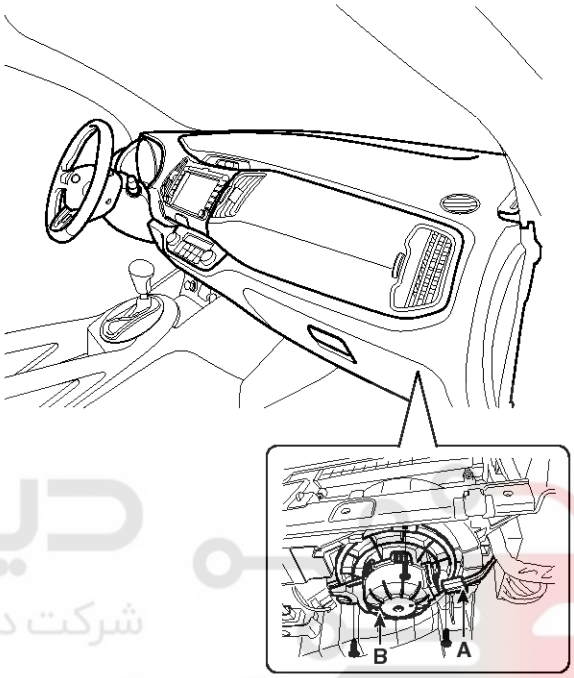


AQIE352C

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

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



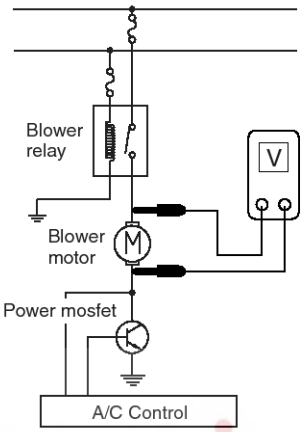
SSLHA1085D

4. Installation is the reverse order of removal.

Power Mosfet

Inspection

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.



EQRF355C

Specification

Fan	Motor Voltage
	Manual
First speed	4.0 ±0.5V
Second speed	5.1 ±0.5V
Third speed	6.2 ±0.5V
Fourth speed	7.4 ±0.5V
Fifth speed	8.6 ±0.5V
Sixth speed	9.7 ±0.5V
Seventh speed	10.8 ±0.5V
eighth speed	Battery

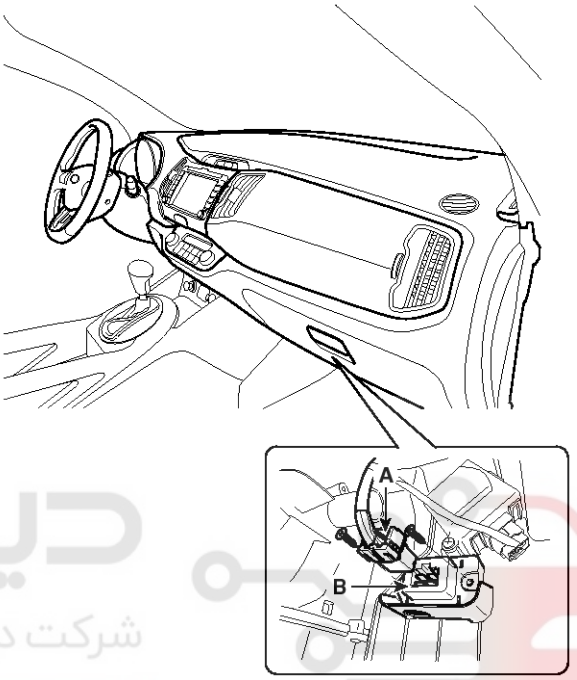
*AUTO COOLING : Auto speed (4.5V~B+)

*AUTO HEATING : Auto speed (4.5V~11.0V)

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

1. Disconnect the negative (-) battery terminal.
2. Disconnect the power mosfet connector (A) and then remove the power mosfet (B) after loosening the mounting screws.



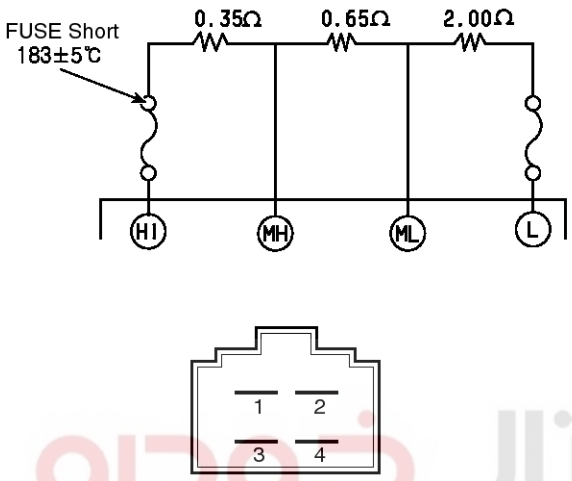
SSLHA1086D

3. Installation is the reverse order of removal.

Blower Resistor

Inspection

1. Measure terminal-to-terminal resistance of the blower resistor.
2. measured resistance is not within specification, the blower resistor must be replaced. (After removing the resistor)

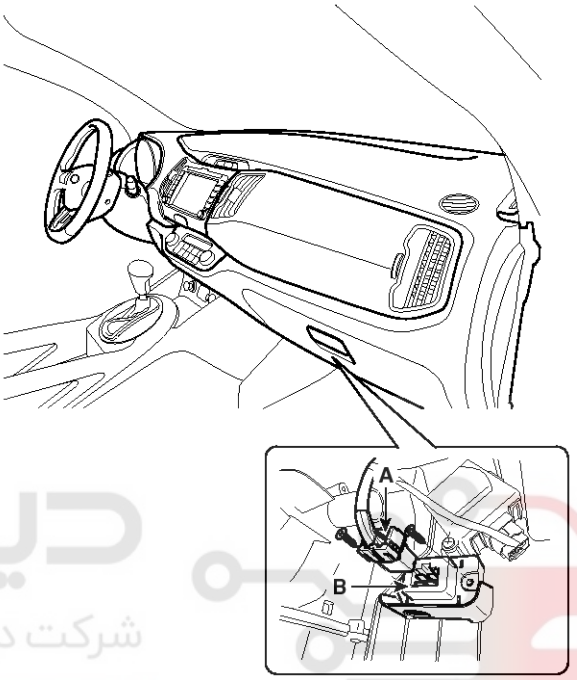


SSLHA1011L

1. ML
2. MH
3. LO
4. HI

Replacement

1. Disconnect the negative (-) battery terminal.
2. Disconnect the blower resistor connector (A) and then remove the blower resistor (B) after loosening the mounting screws.



SSLHA1086D

3. Installation is the reverse order of removal.

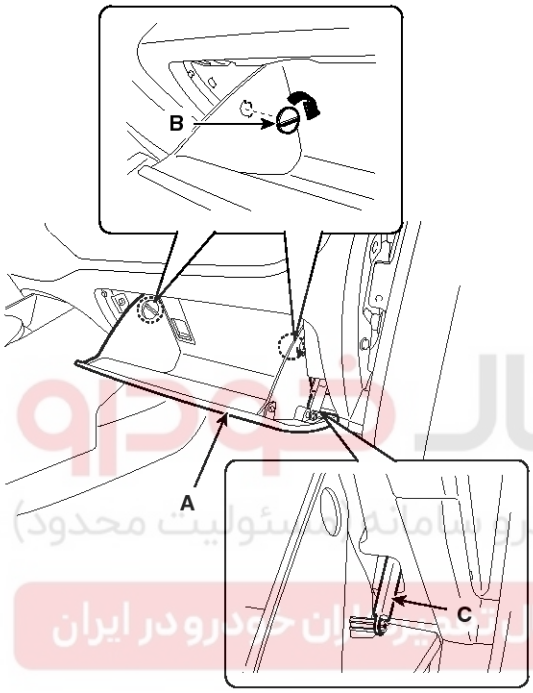
Climate Control Air Filtar

Description

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.

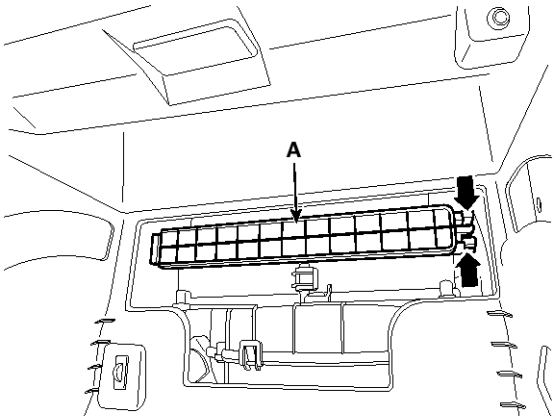
Replacement

1. Disconnect the damper (B) and glove box lift (C) from the glove box (A).



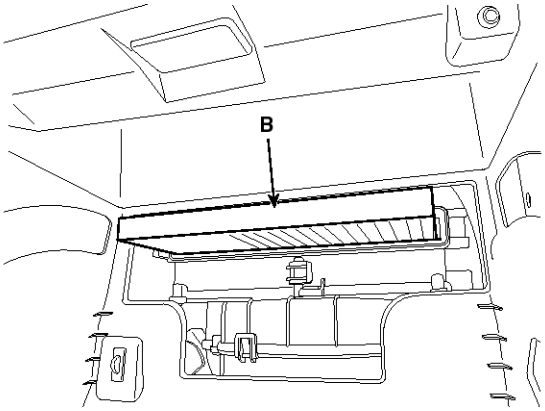
SSLHA1028D

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



SSLHA1088D

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



SSLHA1089D

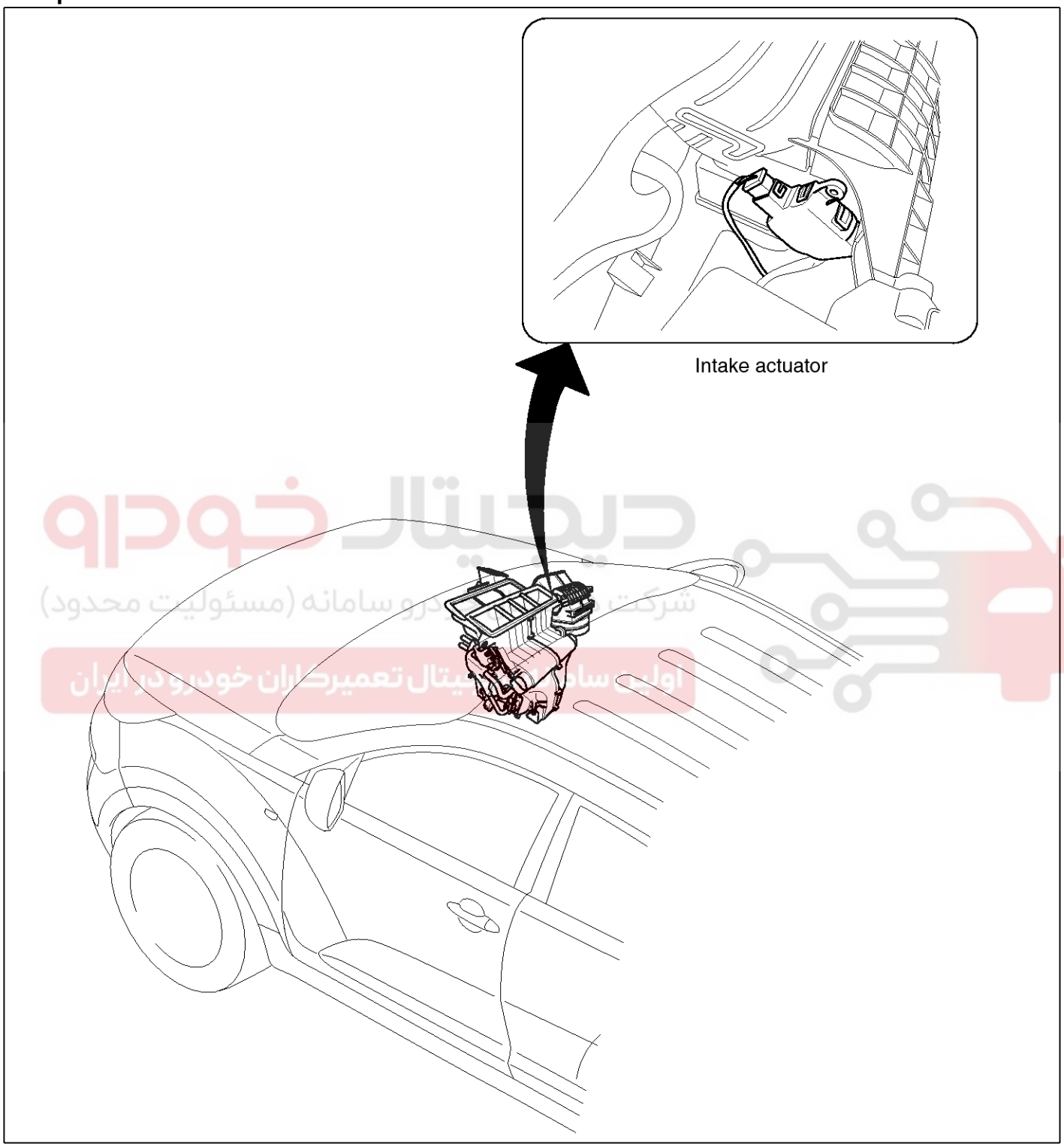
NOTICE

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

4. Installation is the reverse order of removal.

Intake Actuator

Component Location



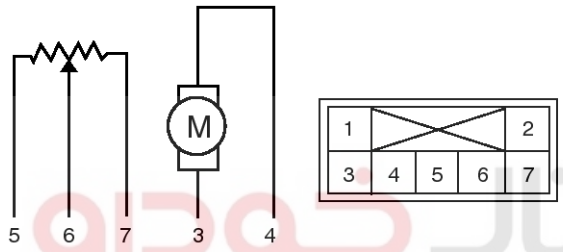
SSLHA1012L

Description

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

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.



SSLHA1091D

1. -
2. -
3. Recirculation
4. Fresh
5. 5V (Vcc)
6. Feedback Signal
7. Sensor Ground

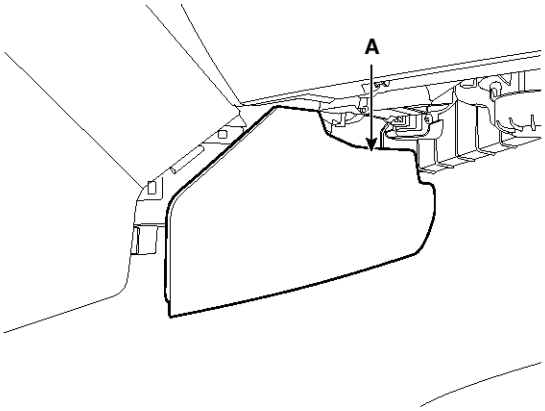
5. Check the voltage between terminals 6 and 7.

Door position	Voltage(6-7)	Error detecting
Recircualtion	0.4 ± 0.15V	Low voltage : 0.1 V or less
Fresh	4.6 ± 0.15V	High voltage : 4.9 V or more

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

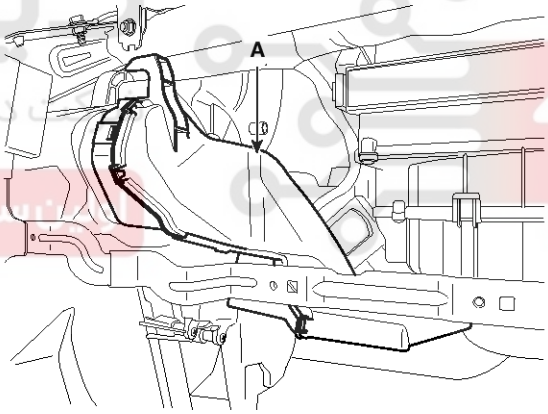
Replacement

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



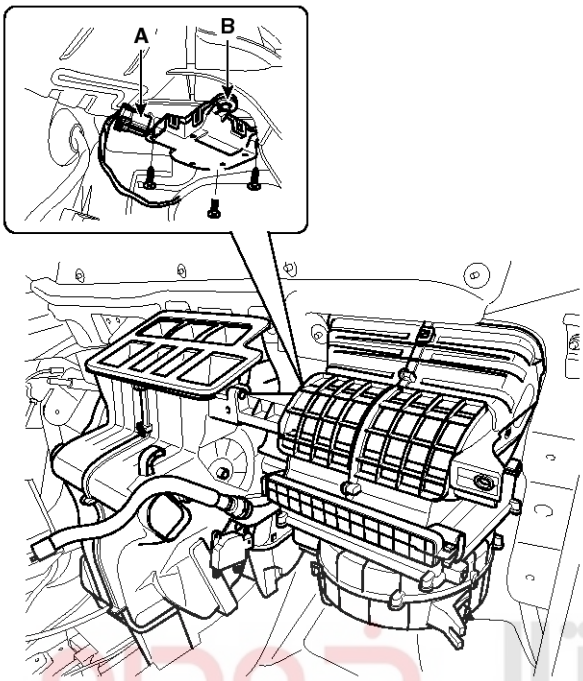
SSLHA1035D

3. Remove the crash pad.
   (Refer to BD group - "Crash Pad")
4. Remove the shower duct (A).



SSLHA1073D

5. Disconnect the Intake actuator connector (A).
6. Loosen the mounting screw and then remove the intake actuator (B).



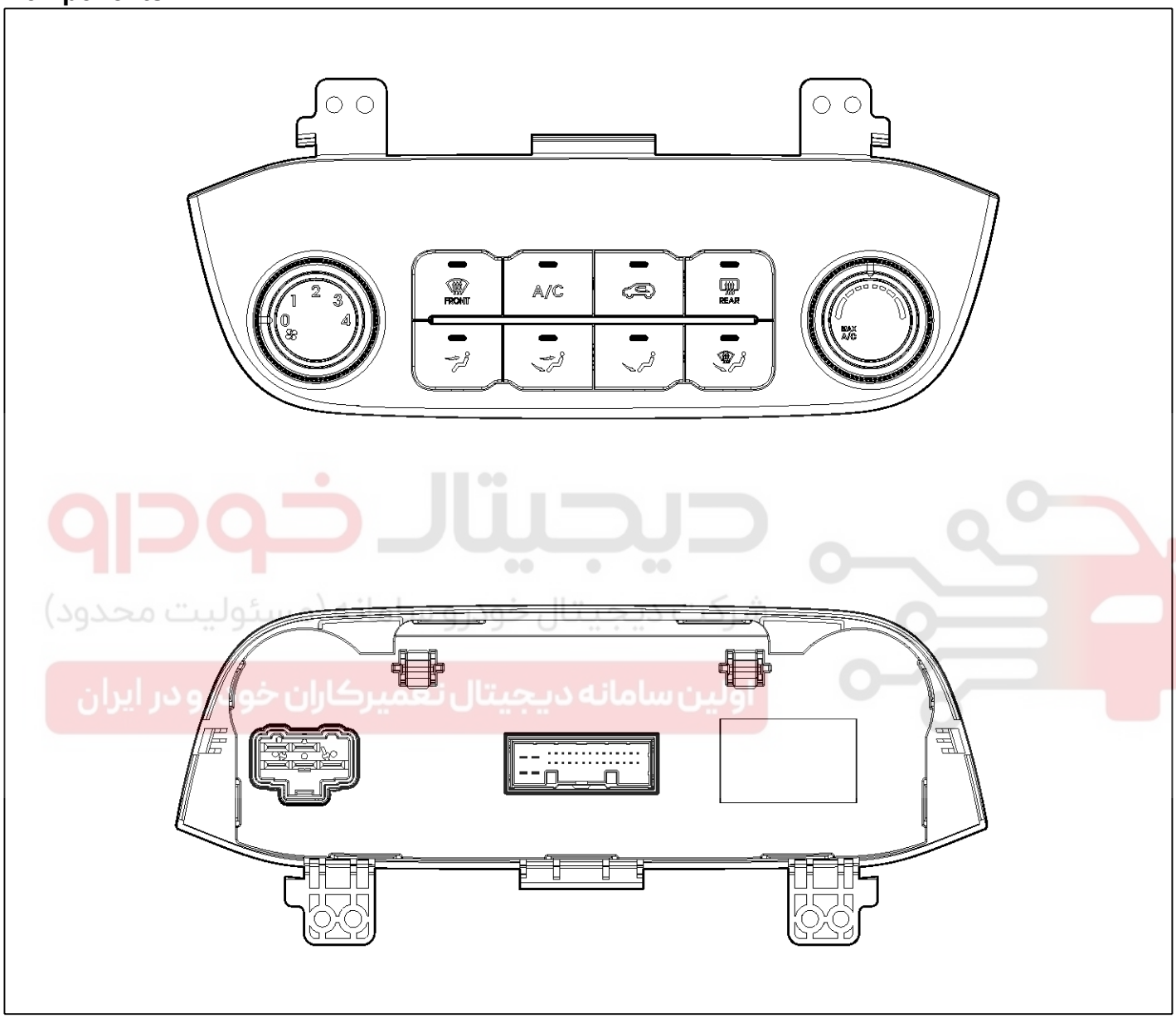
SSLHA1092D

7. Installation is the reverse order of removal.

Controller

Heater & A/C Control Unit(Manual)

Components



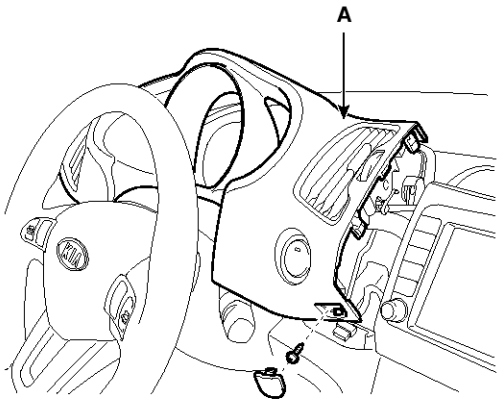
SSLHA1093D

Connector Pin Function

Connector	Pin No	Function	Connector	Pin NO	Function
Connector(A)	1	High	Connector(B)	1	Tail Lamp (ILL+)
	2	Middle High		2	Battery
	3	Middle Low		3	Mode Actuator (VENT)
	4	-		4	Mode Actuator (DEF)
	5	GND		5	Temp Actuator (COOL)
	6	Low		6	Temp Actuator (WARM)
				7	Intake Actuator (FRE)
				8	Intake Actuator (REC)
				9	-
				10	Detent
				11	Mode Actuator (F/B)
				12	Temp Actuator (F/B)
				13	Intake Actuator (F/B)
				14	Blower Motor Common (-)
				15	Blower F/B
				16	Rheostat (ILL-)
				17	IG2
				18	IG1
				19	Can (HIGH)
				20	Can (LOW)
				21	HTD(Rear DEF IND.)
				22	ECV IN
				23	ECV OUT
				24	-
				25	Vref (+5V)
				26	Evaporator Sensor
				27	Ambient Sensor
				28	PTC ON Signal (LOW)
				29	PTC Relay (2)
				30	PTC Relay (3)
				31	Sensor GND
				32	GND

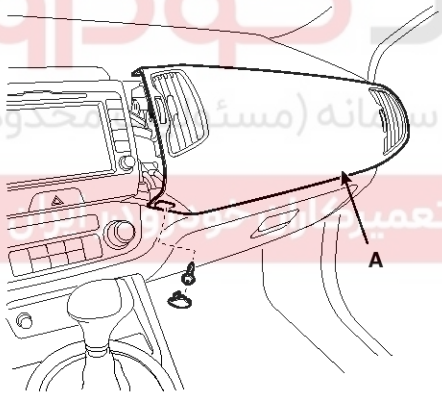
Replacement

1. Disconnect the negative (-) battery terminal.
2. Using the screwdriver, remove the cluster facia panel (A).



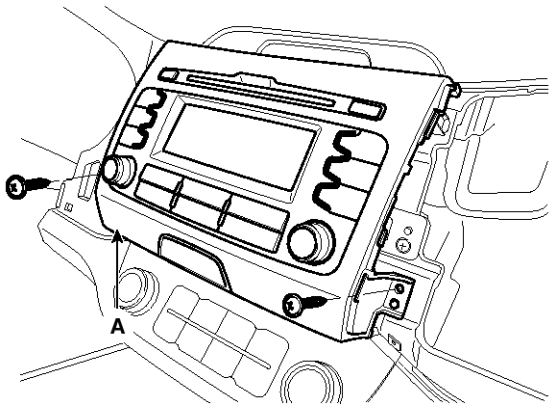
SSLHA1103D

3. Using the screwdriver, remove the crash pad garnish (A).



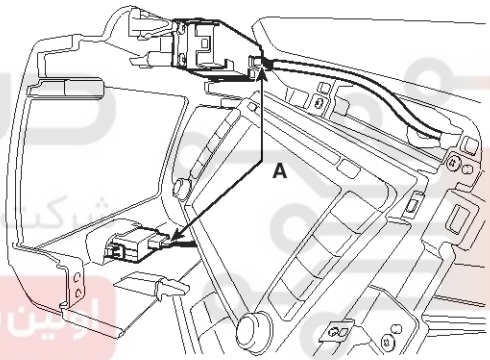
SSLHA1104D

4. Using the screwdriver, remove the center facia panel (A).



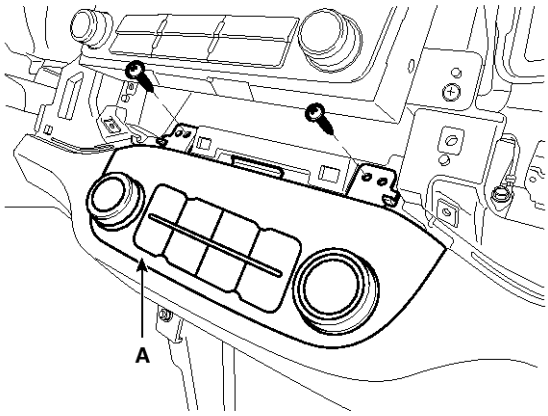
SSLHA1096D

5. Disconnect the center facia connectors (A).



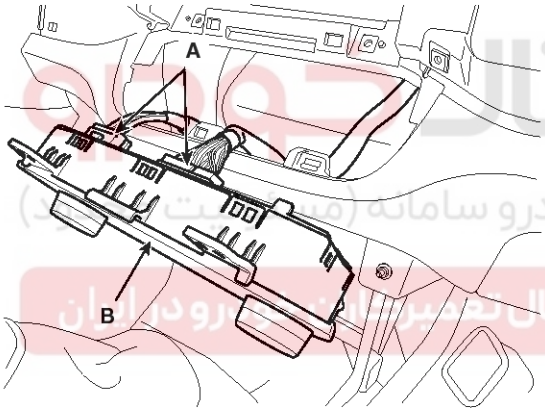
SSLHA1106D

6. Loosen the control panel mounting screws and then remove the control panel (A).



SSLHA1099D

7. Disconnect the connectors (A) and then remove the control panel(B).

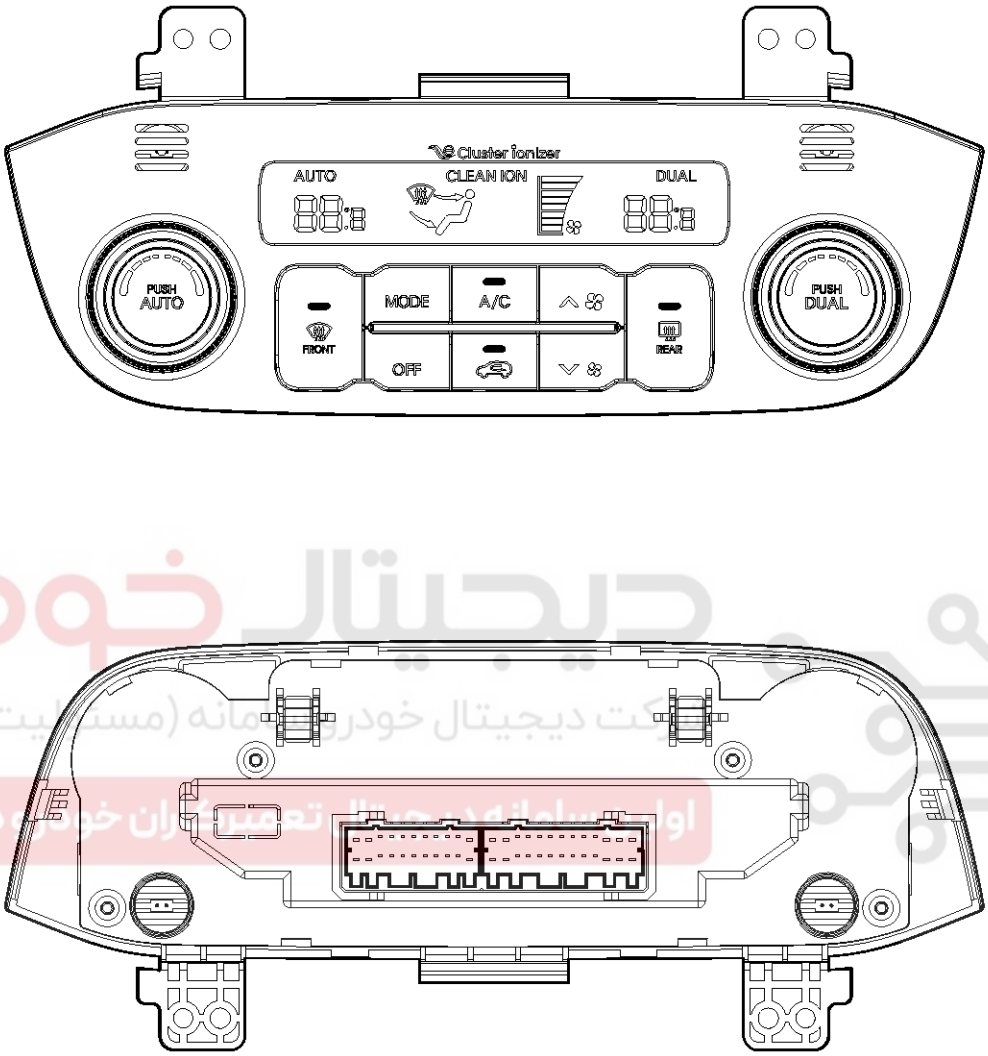


SSLHA1016L

8. Installation is the reverse order of removal.

Heater & A/C Control Unit(Full Automatic)

Component



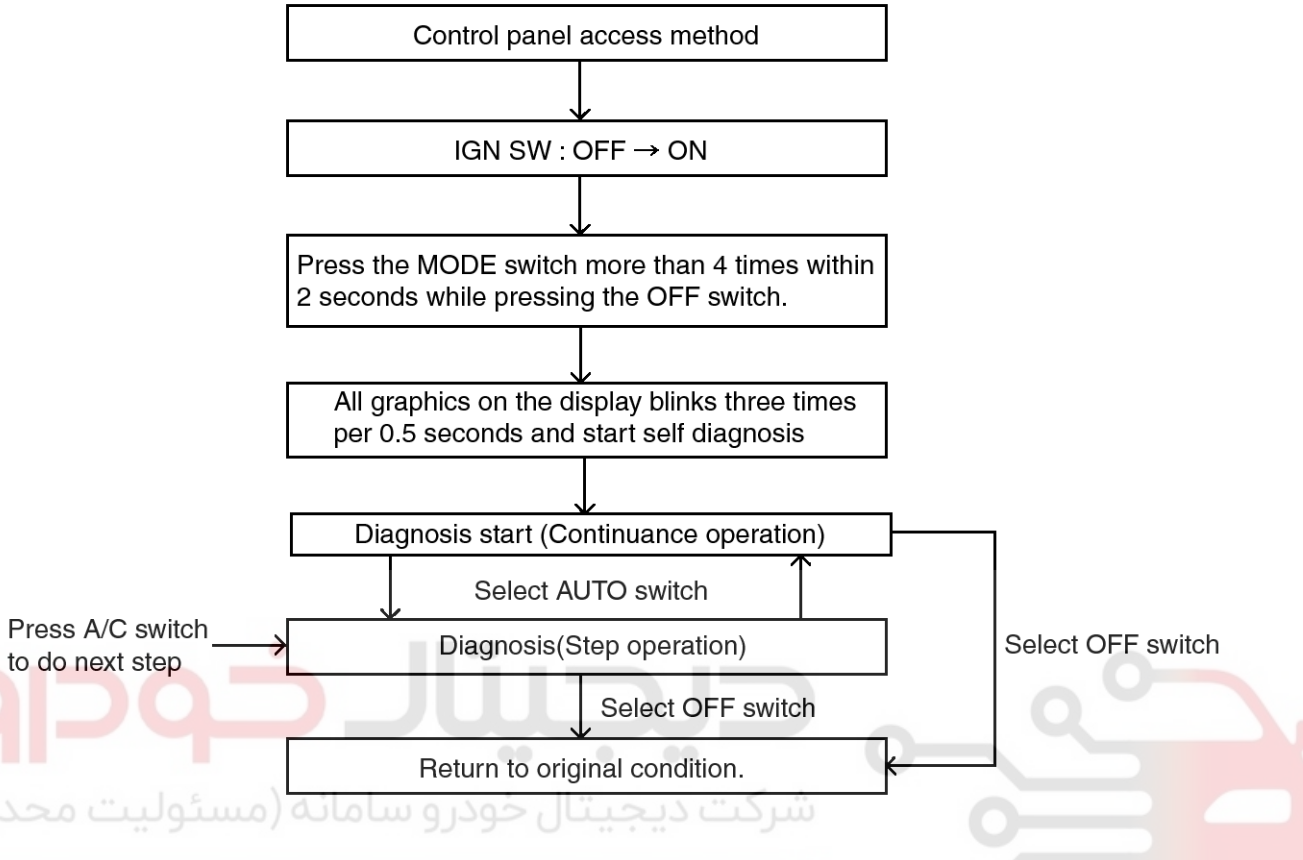
SSLHA1101D

Connector Pin Function

Connector	Pin NO	Function	Connector	Pin NO	Function
Connector(A)	1	Battery	Connector(B)	1	CAN (LOW)
	2	Tail Lamp (ILL+)		2	CAN (HIGH)
	3	IG2		3	Intake Actuator (F/B)
	4	DR Temp Actuator (COOL)		4	Mode Actuator (F/B)
	5	DR Temp Actuator (WARM)		5	PS Temp Actuator (F/B)
	6	Detent		6	DR Temp Actuator (F/B)
	7	Mode Actuator (VENT)		7	Diagnosis (Cluster Ion)
	8	Mode Actuator (DEF)		8	V Ref (+5V)
	9	PTC Relay (2)		9	-
	10	PTC Relay (3)		10	-
	11	PTC ON Signal (LOW)		11	ECV IN
	12	Rheostat (ILL-)		12	GND
	13	GND		13	HI- Scan(L-line)
	14	IG1		14	Evaporator Sensor
	15	Ion Signal		15	Ambient Sensor
	16	Intake Actuator (FRE)		16	-
	17	Intake Actuator (REC)		17	LH Photo (-)
	18	Clean Signal		18	RH Photo (-)
	19	Blower Motor (+)		19	-
	20	PS Temp Actuator (COOL)		20	-
	21	PS Temp Actuator (WARM)		21	-
	22	Power Mosfet (GATE)		22	ECV Out
	23	Power Mosfet (DRAIN)			
	24	HTD(Rear Def Ind.)			
	25	Rear Def S/W (Low)			
	26	Sensor GND			

Self Diagnosis

1. Self-diagnosis process



2. How to read self-diagnostic code

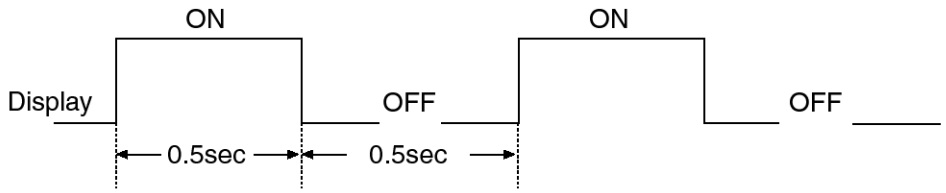
   After the display panel flickers three times every 0.5 second, the corresponding fault code flickers on the setup temperature display panel every 0.5 second and will show two figures. Codes are displayed in numerical format

Fault Code

Display	Fail description
00	Normal
11	In-car sensor open
12	In-car sensor short
13	Ambient sensor open
14	Ambient sensor short
17	Evaporator sensor open
18	Evaporator sensor short
19	Temp door potentiometer open/short- Drive
20	Temp door potentiometer fault- Drive
21	Mode door potentiometer open/short
22	Mode door potentiometer fault
25	Intake door potentiometer open
26	Intake door potentiometer short
32	Temp door potentiometer open/short - Passenger
33	Temp door potentiometer fault - Passenger
45	APT CAN signal fault
46	-
47	RPM CAN signal fault
48	Vehicle speed CAN signal fault
49	Engine coolant temp CAN signal fault
50	Cluster ion generator fault

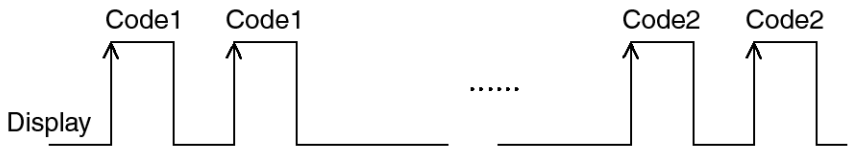
3. Fault code display

1) Continuance operation : DTC code is one.



BQKF500C

2) Continuance operation : DTC code is more two.



BQKF500D

3) STEP operation

A. Nomal or one fault code is same as a continuance operation.

B. DTC code os more two.

BQKF500E

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˚C(73.4˚F)
   2) Ambient temperature sensor: Control with the value of 20˚C(67˚F)
   3) Evaporator temperature sensor: Control with the value of -2˚C(28.4˚F)
   4) Water temperature sensor: Control with the value of 85˚C(185˚F)
   5) Temperature control actuator (Air mix potentiometer):

      If temperature setting 17˚C-24.5˚C, fix at maximum cooling position.

      If temperature setting 25˚C-32˚C, fix at maximum heating position.
   6) Mode control actuator (Direction potentiometer):

      Fix vent position, while selecting vent mode.

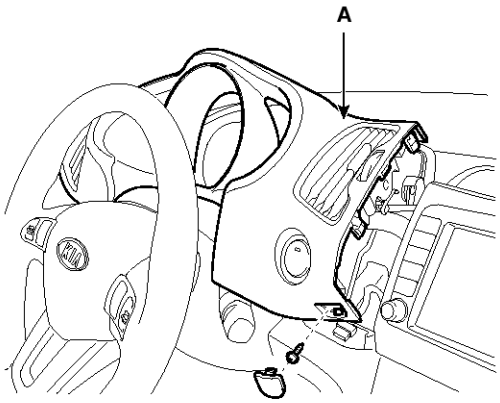
      Fix defrost position, while selecting all except vent mode.
   7) Intake control actuator :

      Fix fresh position, while selecting fresh mode.

      Fix recirculation position, while selecting recirculation mode.

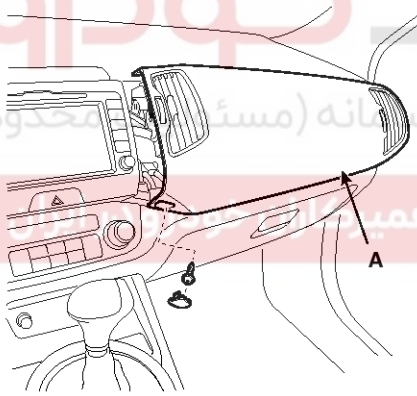
Replacement

1. Disconnect the negative (-) battery terminal.
2. Using the screwdriver, remove the cluster facia panel (A).



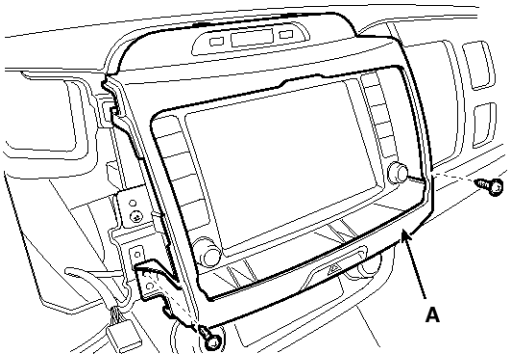
SSLHA1103D

3. Using the screwdriver, remove the crash pad garnish (A).



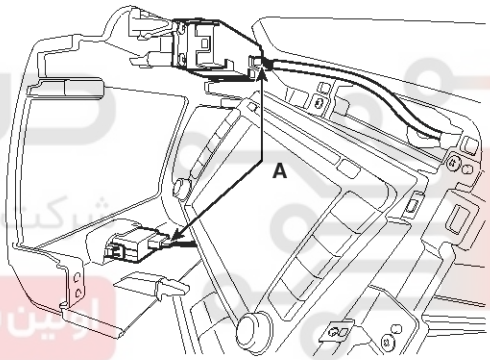
SSLHA1104D

4. Using the screwdriver, remove the center facia panel (A).



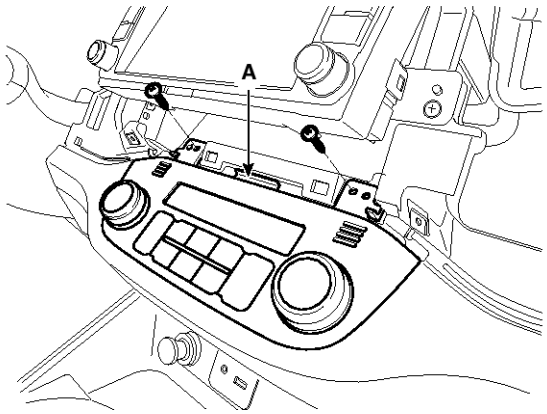
SSLHA1105D

5. Disconnect the center facia connectors.



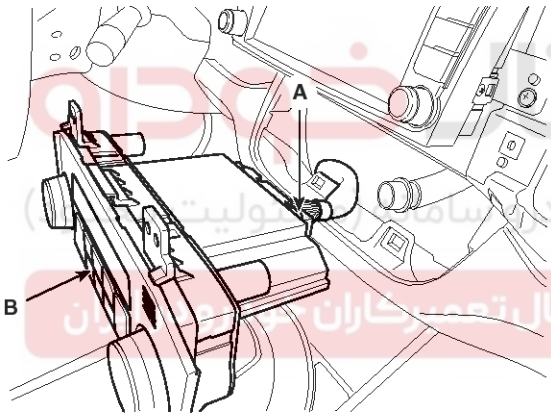
SSLHA1106D

6. Loosen the control panel mounting screws and then remove the control panel (A).



SSLHA1107D

7. Disconnect the connectors (A) and then remove the control panel (B).



SSLHA1018L

8. Installation is the reverse order of removal.