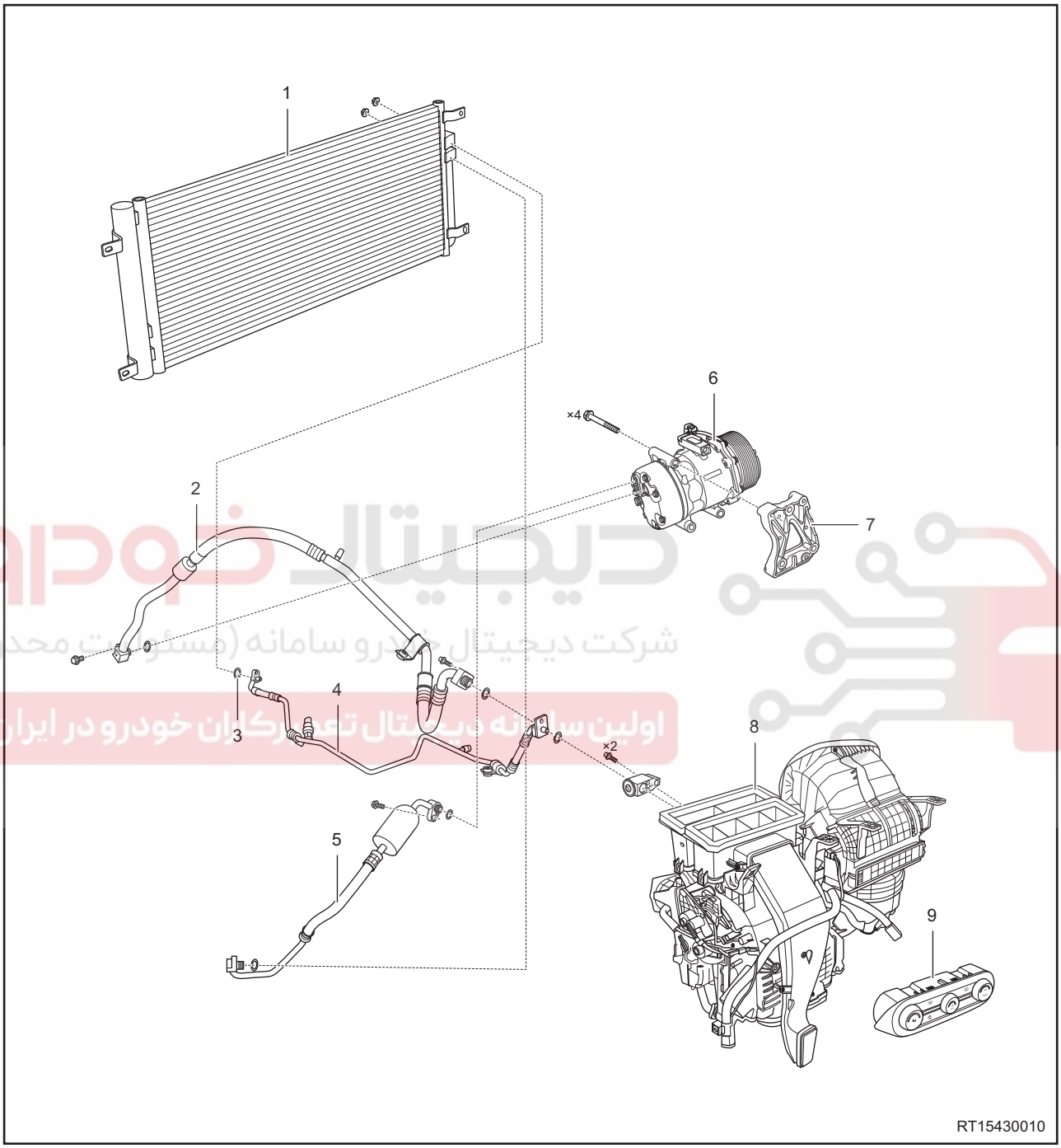
AIR CONDITIONING

GENERAL INFORMATION

Description



1 - Condenser Assembly (w/Receiver Drier)	2 - Evaporator to Compressor Line Assembly
3 - O-ring	4 - Condenser to Evaporator Line Assembly
5 - Compressor to Condenser Line Assembly	6 - Compressor Assembly
7 - Compressor Assembly Fixing Bracket	8 - HVAC Assembly
9 - A/C Control Panel Assembly	

1. System composition

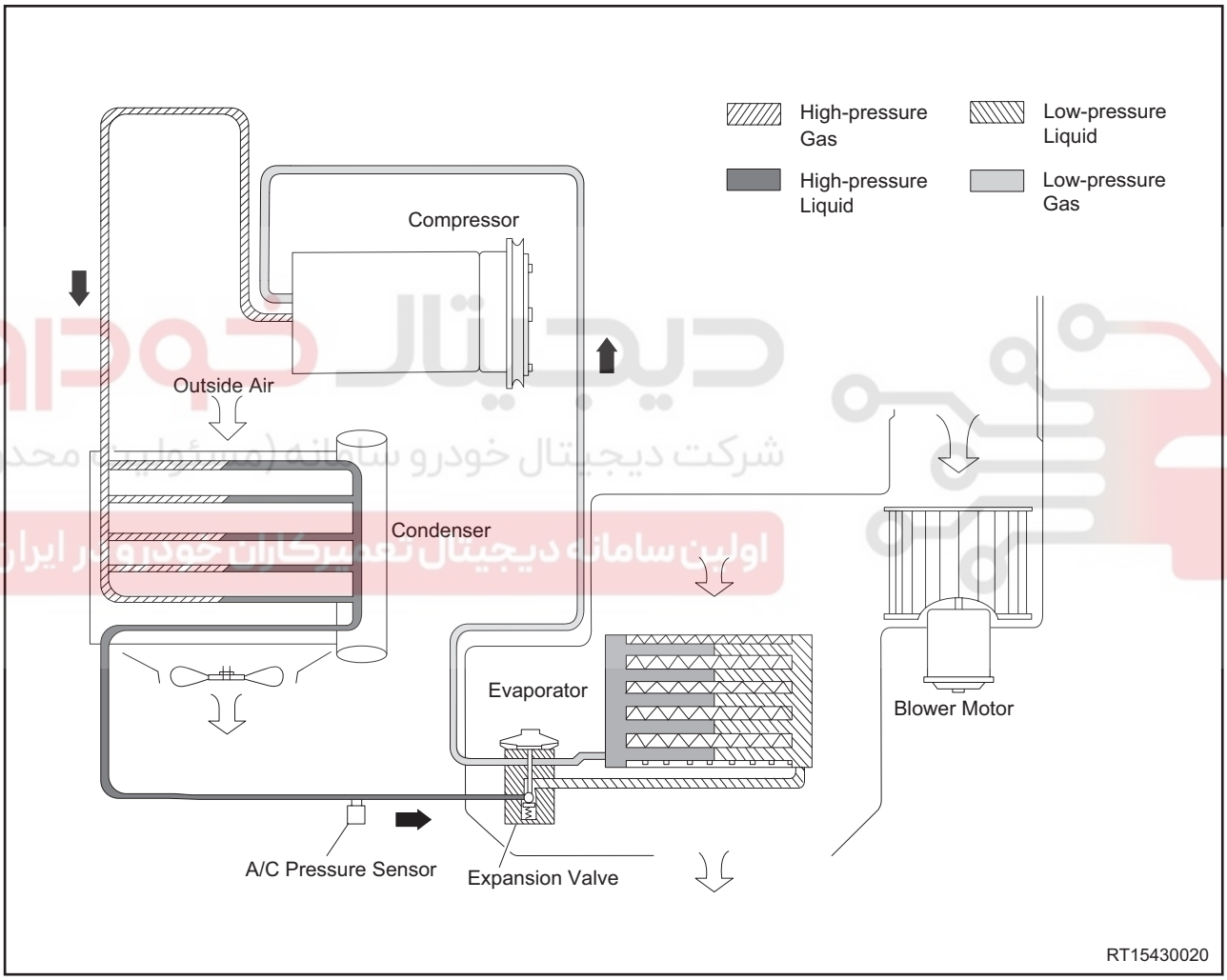
   Power A/C and automatic A/C are available for this model. A/C system consists of following four parts:

   Air conditioning and distribution system: air mixing and distributor part of HVAC, inner/outer circulation inlet, outlet and air filter. Control system: center control integration panel assembly, A/C control module assembly (automatic A/C), left mix damper motor, mode damper motor, right mix damper motor, mix damper servo motor, inner/outer circulation motor, blower, blower speed resistor, A/C pressure sensor, evaporator temperature sensor, left room temperature sensor (automatic A/C), right room temperature sensor (automatic A/C), outside temperature sensor (automatic A/C) and solar sensor (automatic A/C).

   Heating system: heater core assembly, heating inlet hose, heating outlet hose and engine cooling circulation system.

   Cooling system: compressor assembly, condenser assembly (w/receiver drier), expansion valve, evaporator core assembly and A/C high/low pressure line.

2. Operation



Outside fresh air enters air inlet filter assembly through cowl top opening at the right side of windshield base. Fresh air flows through evaporator core and heater core, and then enters vehicle through outlets on instrument panel and floor. Intake air volume can be adjusted by blower speed switch on center control integration panel assembly. Turn on the compressor assembly by pressing A/C switch on center control integration panel assembly. Refrigerant is compressed by compressor assembly and converted into high temperature/pressure gas, which is then condensed into high pressure liquid in the condenser. Then the liquid is filtered and dried by receiver drier (integrated with condenser) and delivered to expansion valve and becomes low-pressure liquid through throttling and depressurization. Finally the liquid enters evaporator in vehicle and absorbs heat and evaporates, thus refrigeration is achieved. A/C heating is realized by engine coolant circulation system. Heater core is a main component of heating system. With engine running, engine coolant flows from engine water pump to heater core, and the heater core

transmits the heat from engine coolant to the air that flows through heater core. At this time, A/C switch is off. The air flowing through heater core becomes hot wind through heat exchanging, thus providing heating. Temperature adjustment control mechanism can be controlled by rotating temperature adjustment knob. Mix damper closes when temperature adjustment knob is rotated counterclockwise to MAX COOL position. If airflow does not flow through heater core, the heat transmission will not occur. When rotating temperature adjustment knob clockwise from MAX COOL position, the mix damper will open slowly, allowing air to flow through gap of heater core. Most of airflow is heated in this way and discharged air becomes warmer. When temperature adjustment knob is rotated counterclockwise to MAX HOT position, the mix damper is fully opened and all air flows through heat core, thus air is heated. Mode knob on A/C control panel is used to direct air with temperature adjusted through selected outlets.

Specifications

Torque Specifications

Description	Torque (N·m)
Hose Clamp Fixing Bolt	9 ± 1
Connecting Pressure Plate Fixing Nut	9 ± 1
Compressor Fixing Bolt	25 ± 3
Compressor Intake and Exhaust Line Fixing Bolt	25 ± 3
Condenser Fixing Nut	9 ± 1
A/C Line Fixing Bolt	9 ± 1
Blower Fixing Screw	5 ± 1
HAVC Self-tapping Screw	3.5 ± 0.5

Refrigerant Charging Specification

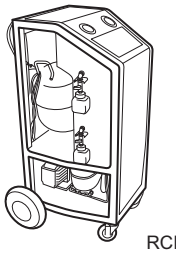
Description	Charging Capacity (g)
Description	350 ± 10 g

Refrigerant Oil Charging Specifications

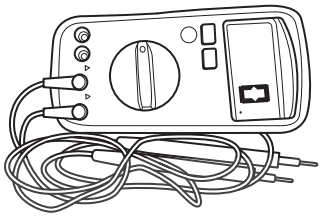
Description	Charging Capacity (ml)
Evaporator Replacement	20
Compressor Assembly Replacement	Supplement according to actual pouring amount
Condenser Replacement	20
A/C Line Replacement	10

Tools

Special Tool

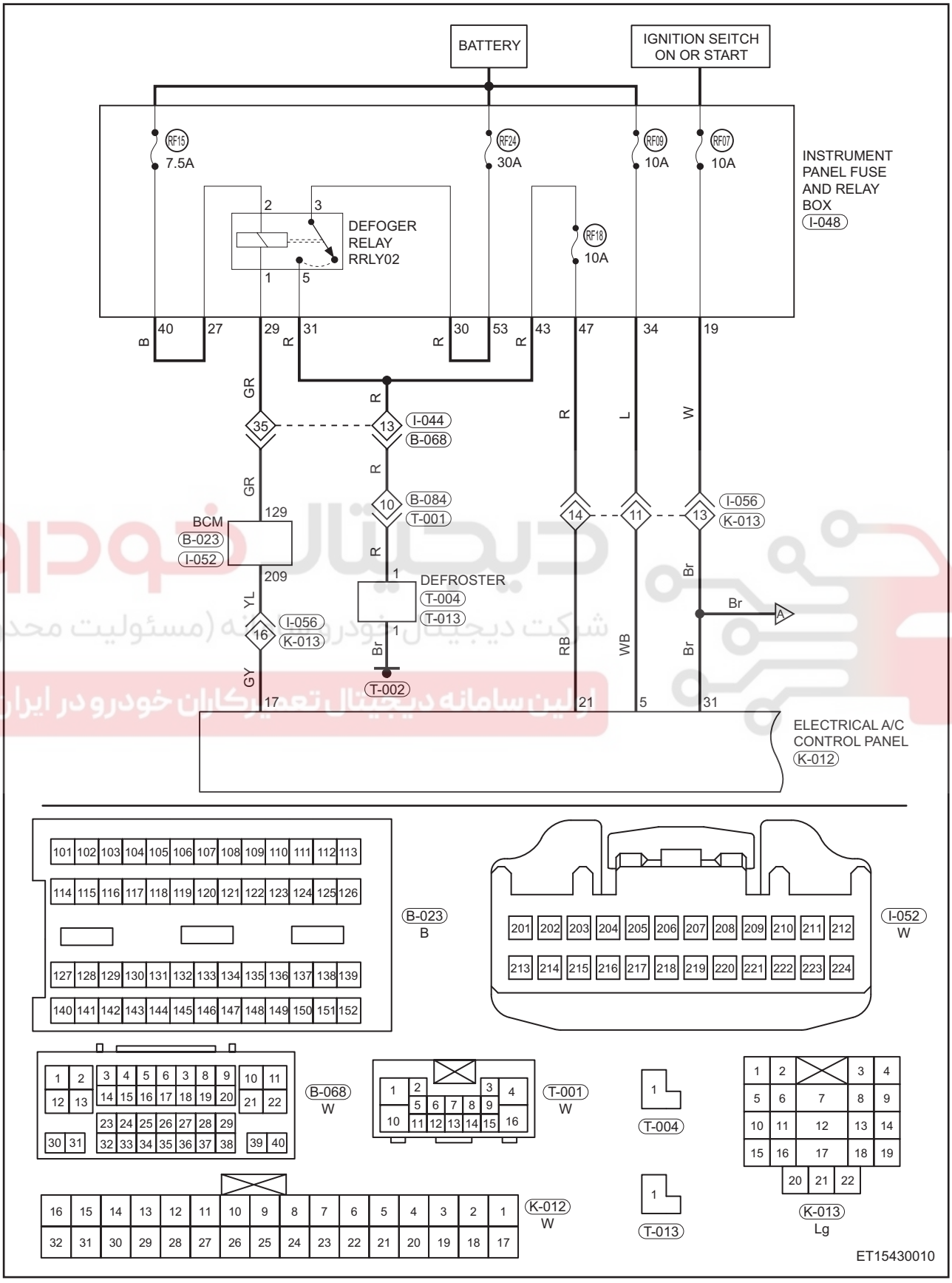
Refrigerant Recycling Machine	 RCH0000046

General Tool

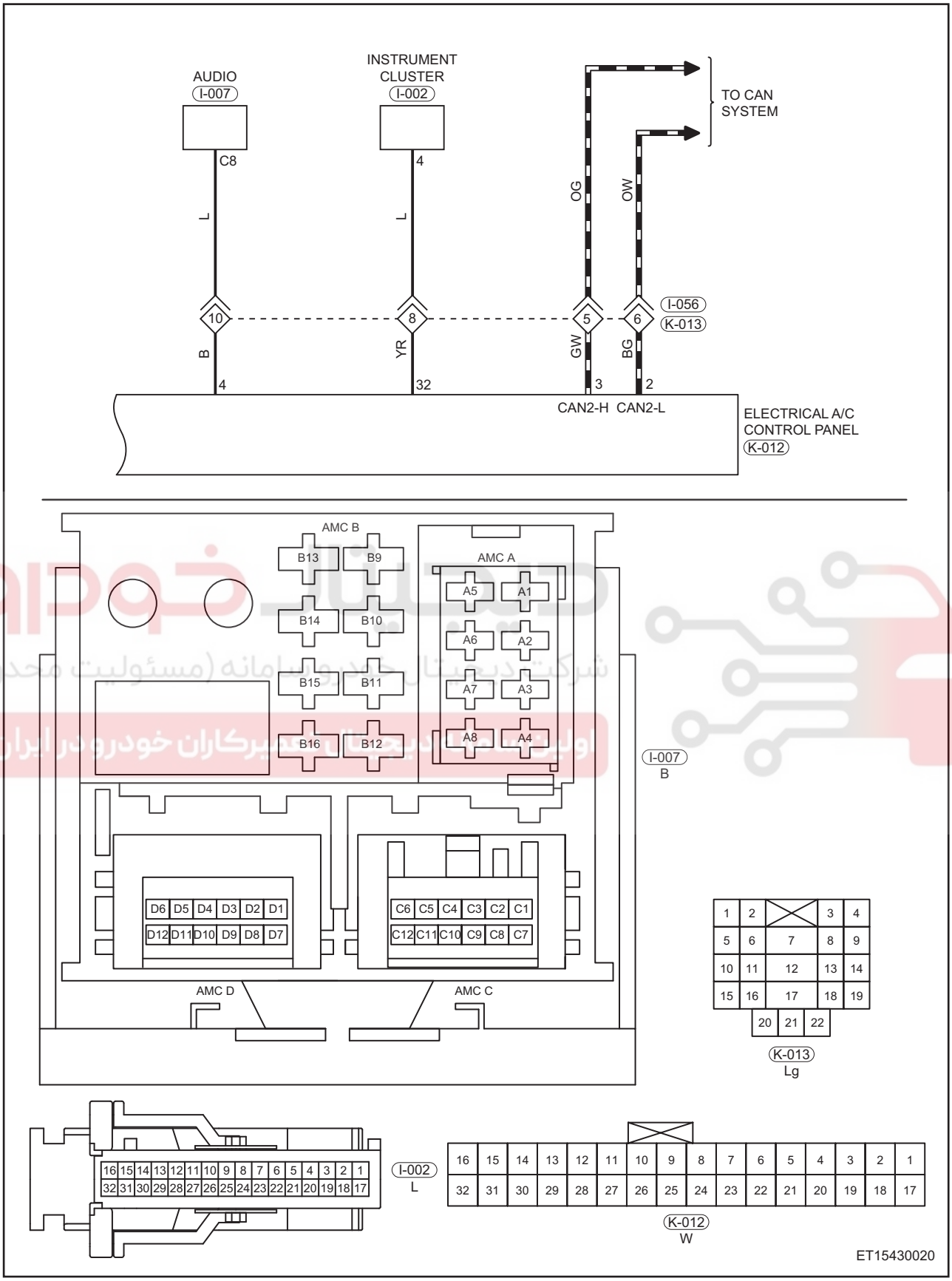
Digital Multimeter	 RCH0000002

Circuit Diagram

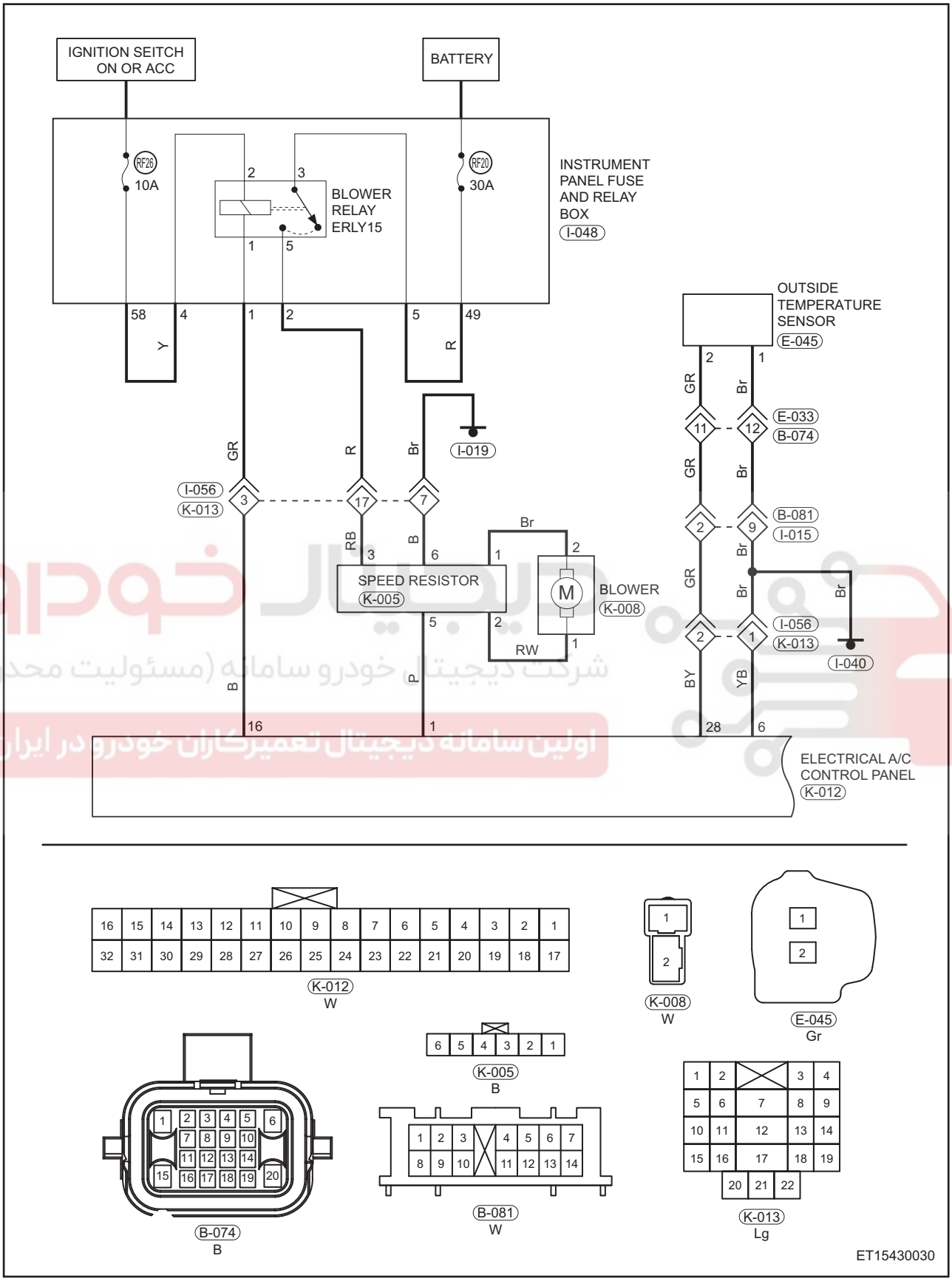
Power A/C System (Page 1 of 5)



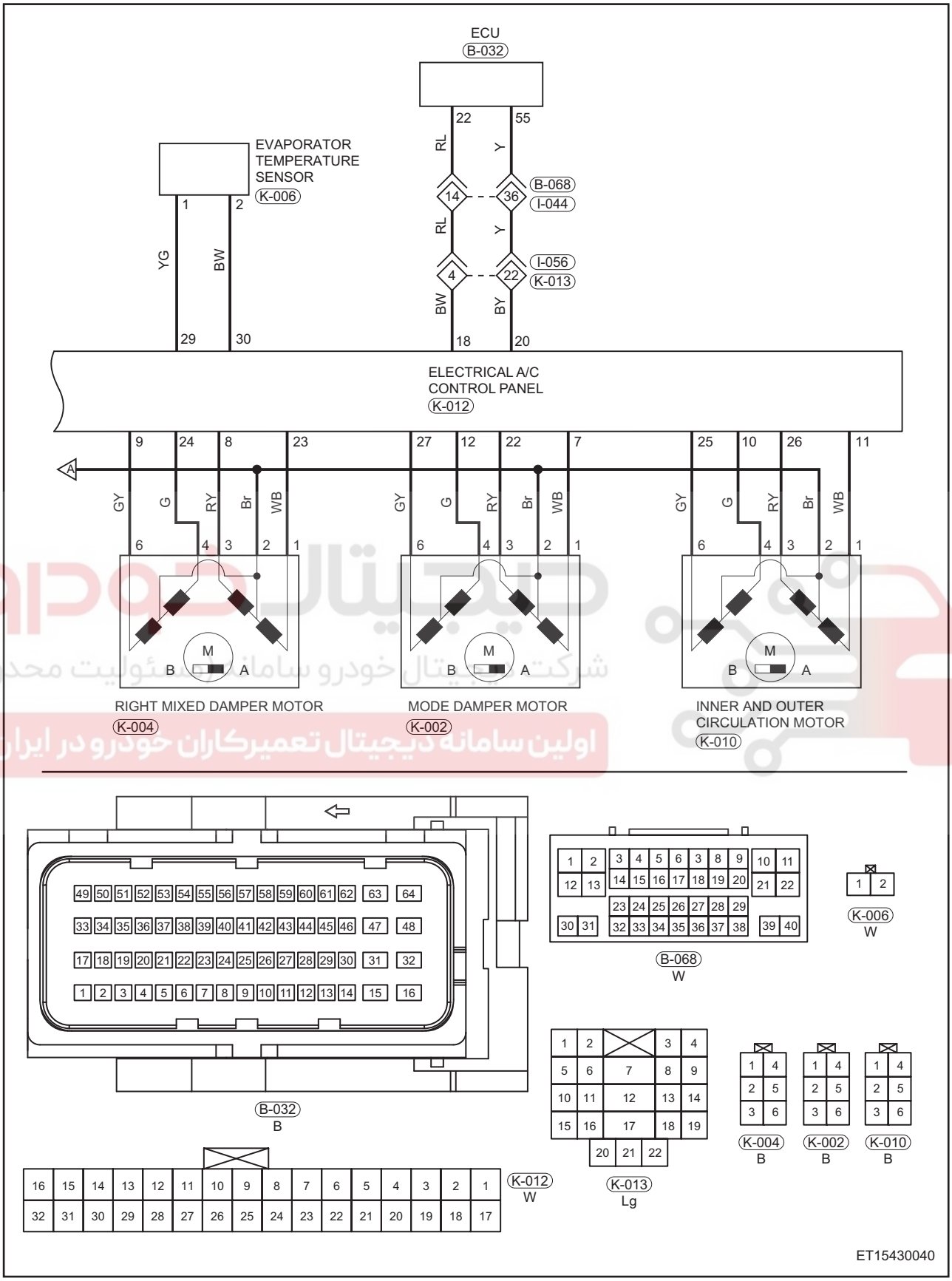
Power A/C System (Page 2 of 5)



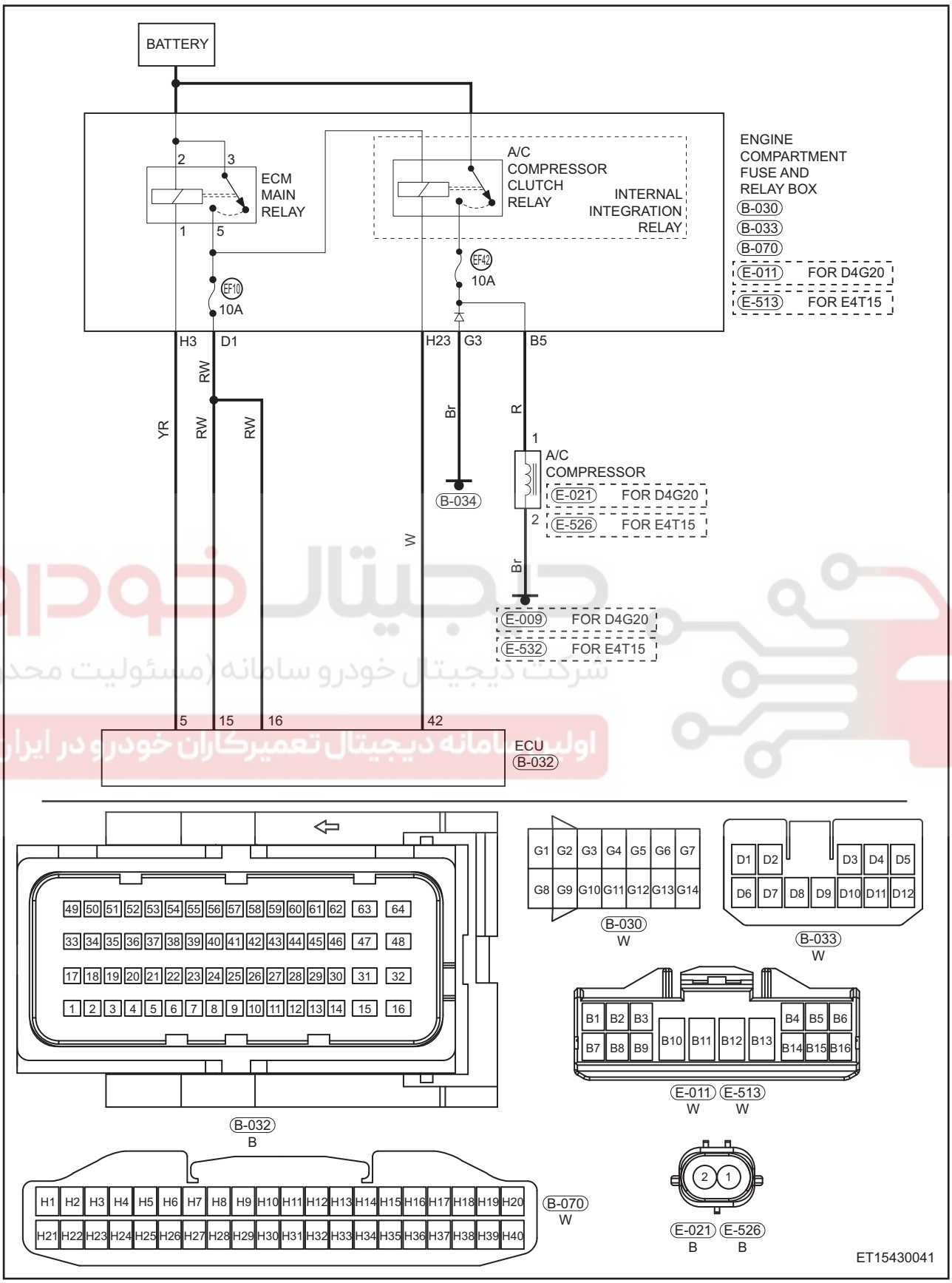
Power A/C System (Page 3 of 5)



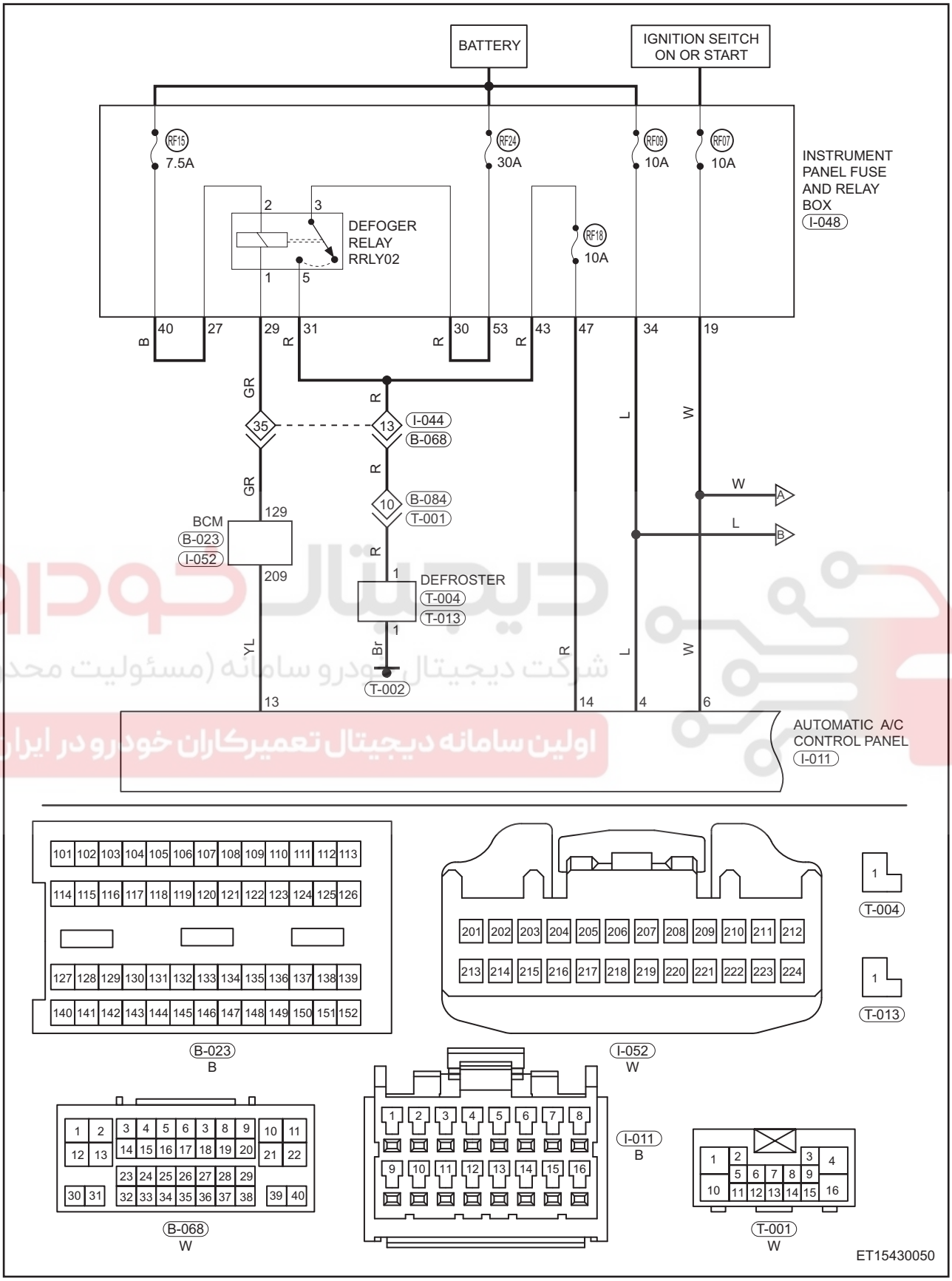
Power A/C System (Page 4 of 5)



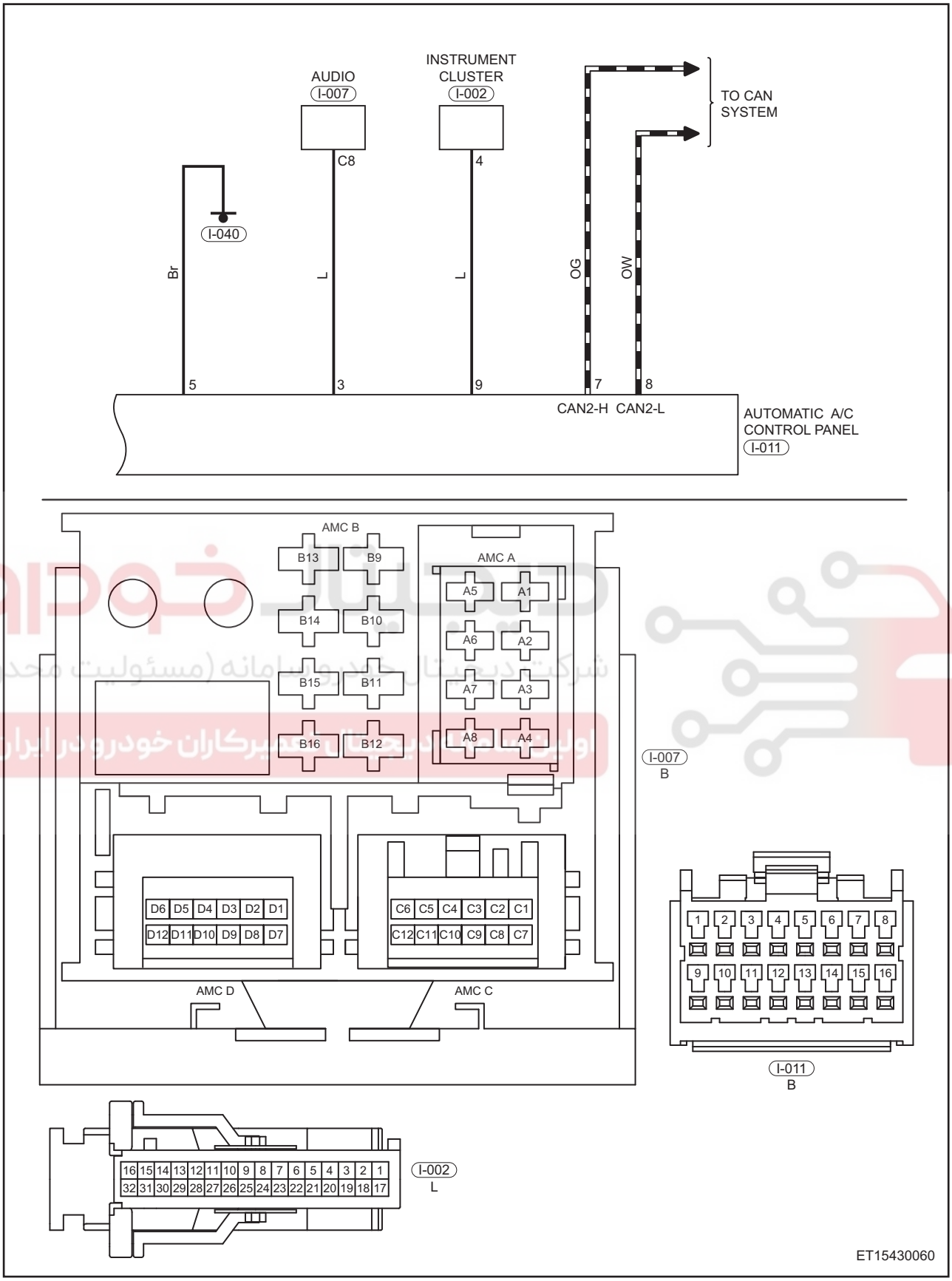
Power A/C System (Page 5 of 5)



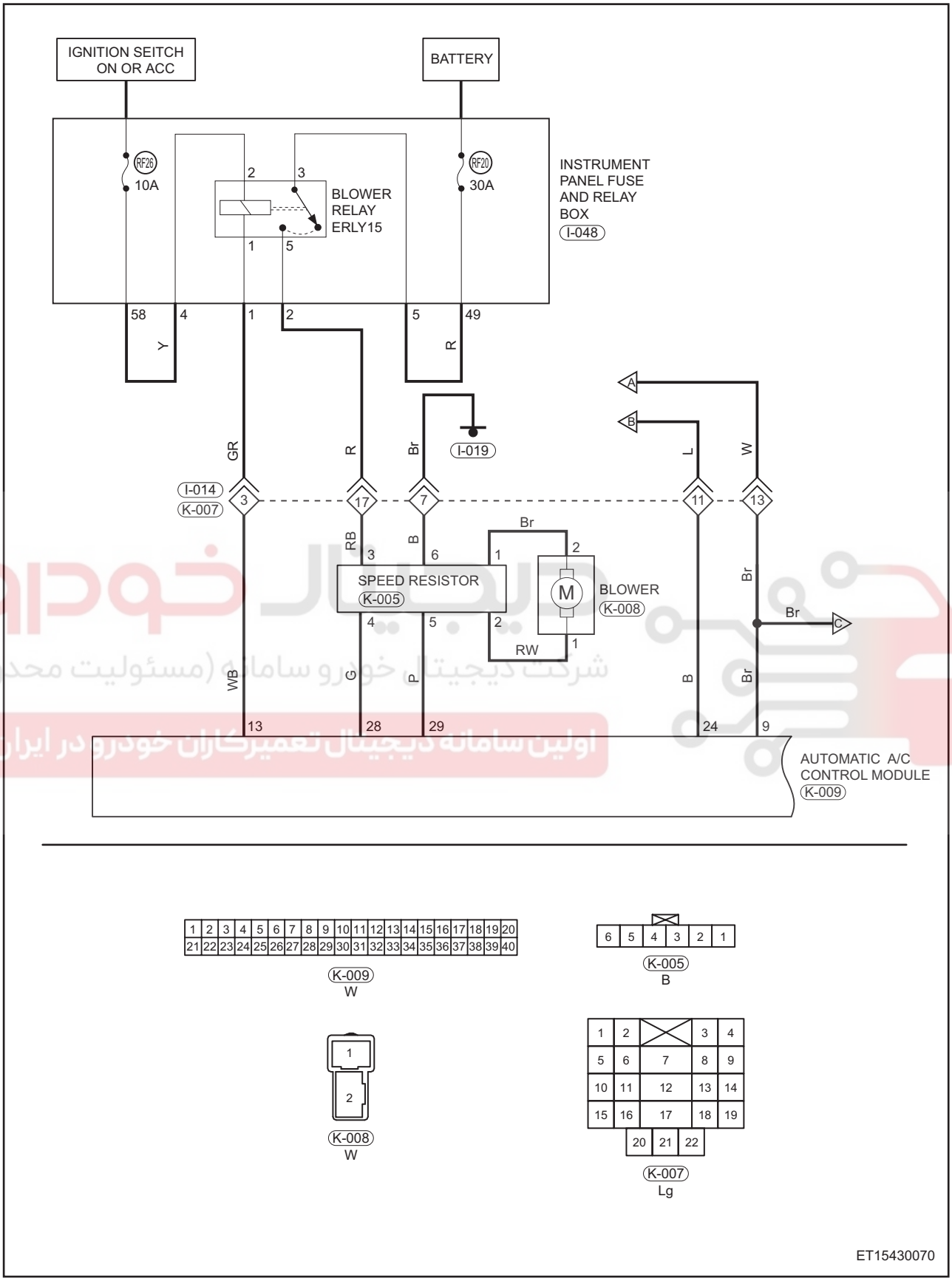
Automatic A/C System (Page 1 of 6)



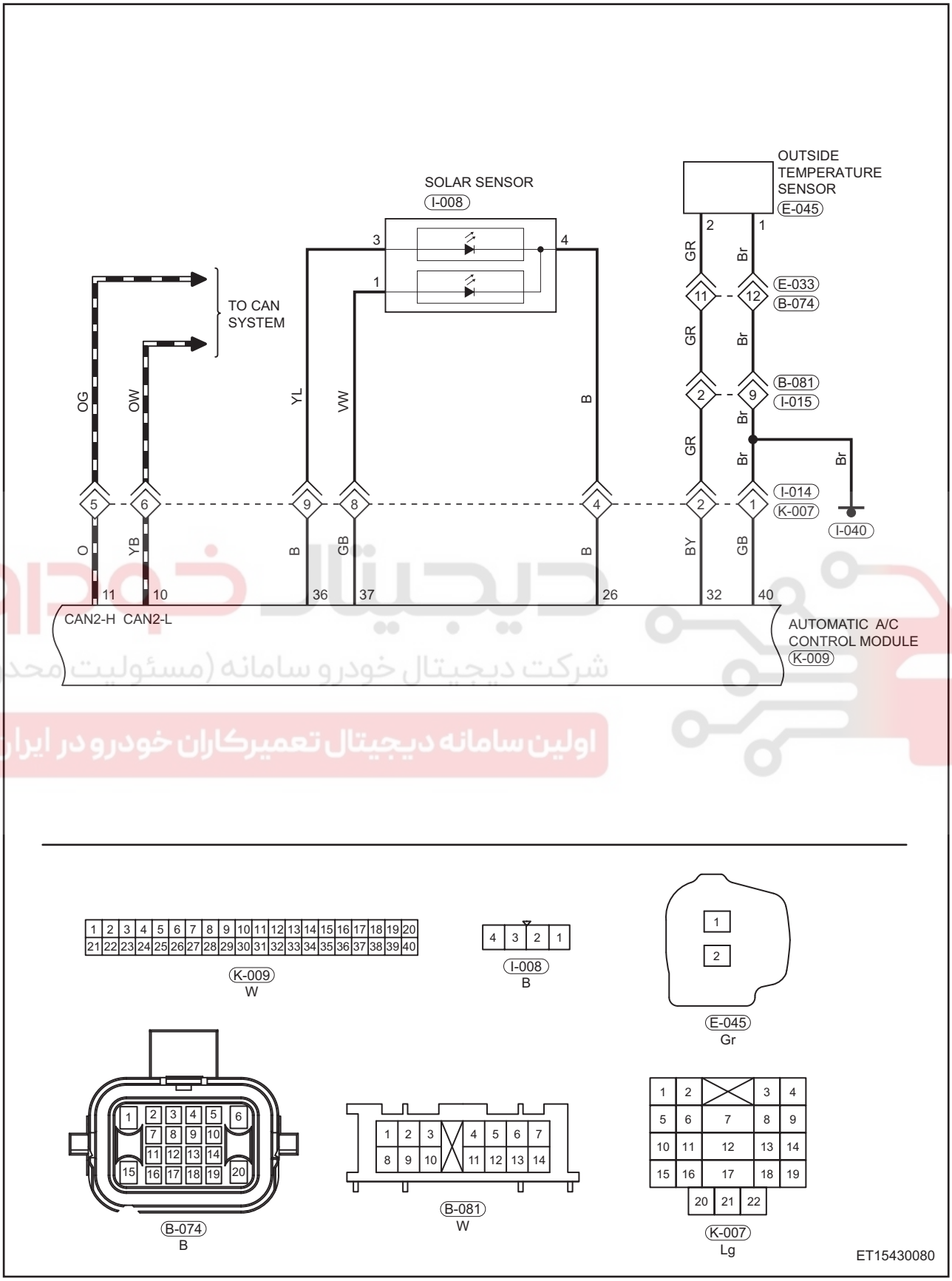
Automatic A/C System (Page 2 of 6)



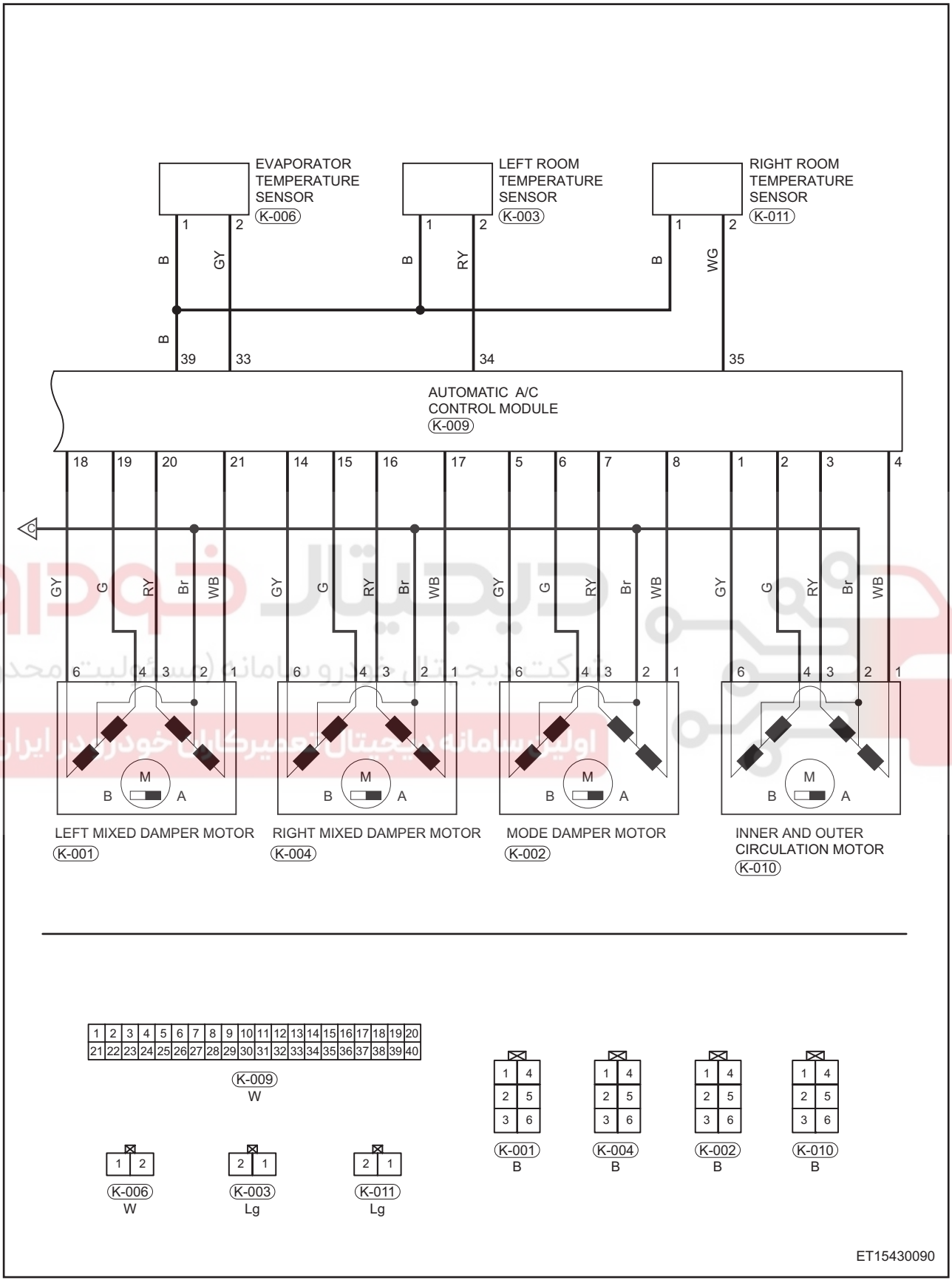
Automatic A/C System (Page 3 of 6)



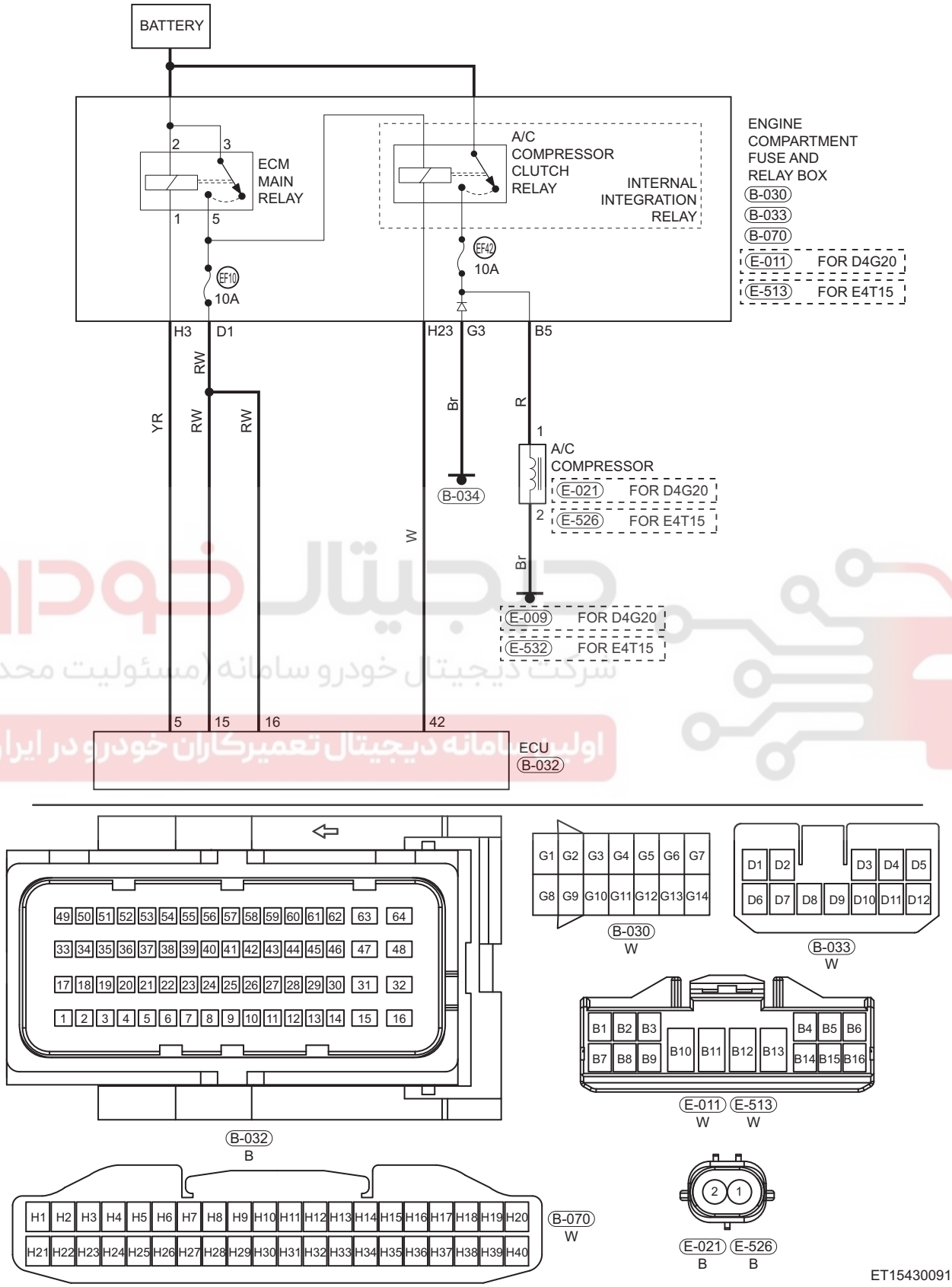
Automatic A/C System (Page 4 of 6)



Automatic A/C System (Page 5 of 6)



Automatic A/C System (Page 6 of 6)



DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:
Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair or adjust faulty components, or replace as necessary.

Symptom	Suspected Area	See page
A/C no heating	Blower fuse (damaged)	68-36
	Blower relay (damaged)	68-36
	Blower speed switch (damaged)	44-92
	Blower motor (damaged)	44-94
	Mix damper control mechanism (stuck or damaged)	44-102
	Heating pipe (blocked or damaged)	44-101
	Heater core assembly (blocked or damaged)	44-102
	Wire harness or connector (open or short)	-
A/C no cooling	Leak in system	44-86
	Refrigerant (overcharged)	44-88
	A/C pressure sensor (damaged)	44-115
	Evaporator temperature sensor (damaged)	44-102
	A/C switch (damaged)	44-92
	Compressor assembly fuse (damaged)	68-36
	Compressor assembly relay (damaged)	68-36
	Compressor assembly belt (loose)	09-19
	Compressor assembly (damaged)	44-119
	Condenser assembly (blocked or damaged)	44-124
	Expansion valve (blocked or frosted)	44-102
	Evaporator core assembly (blocked or damaged)	44-102
	Wire harness or connector (open or short)	-
A/C intermittent cooling	Moisture in system	44-89

Symptom	Suspected Area	See page
A/C insufficient cooling	Leak in system	44-86
	Refrigerant (insufficient)	44-89
	Refrigerant (overcharged)	44-88
	Air in refrigerant	44-89
	Moisture in refrigerant	44-89
	Condenser (dirty or blocked)	44-124
	Expansion valve (dirty or blocked)	44-102
	Evaporator core (dirty or blocked)	44-102
	A/C high/low pressure line (dirty or blocked)	44-113
	Blower speed switch (damaged)	44-92
	Blower motor (damaged)	44-94
	Compressor assembly belt (loose)	09-19
Too much noise in system	Compressor assembly belt (slip)	09-19
	Compressor assembly clutch bearing (worn and excessive clearance)	-
	Compressor assembly solenoid coil (faulty or loose joint)	-
	Compressor assembly belt (over tightened)	09-19
	Compressor assembly mounting bolt (loose)	44-119
	Cooling fan blade (distorted)	-
	Refrigerant oil (insufficient)	44-91
Pressure at low pressure side switches between normal and vacuum during operation	Moisture in refrigerant (excessive)	44-89
Pressure is too low for low pressure side and high pressure side, cooling performance is insufficient	A/C system (leaked)	44-86
	Refrigerant (insufficient)	44-89
Pressure is too low for low pressure side and high pressure side, frost exists on line from condenser to A/C unit	Condenser (dirty or blocked)	44-124
Vacuum occurs at low pressure side, and pressure at high pressure side is too low, frost exists on lines on both sides of condenser or expansion valve	Moisture in refrigerant (excessive)	44-89
	Expansion valve (dirty or blocked)	44-102
	A/C line (leaked)	44-113
	Condenser (dirty or blocked)	44-124
Pressure is too high for low pressure side and high pressure side	Expansion valve (faulty)	-
	Refrigerant oil (excessive)	44-90

Symptom	Suspected Area	See page
Pressure at low pressure side is normal or slightly low, and pressure at high pressure side is too high	Condenser surface (dirty)	44-124
	Cooling fan (not operating)	-
	Refrigerant (overcharged)	44-88
	Air in refrigerant	44-89
	Engine (overheating)	-
Pressure at low pressure side is too high and pressure at high pressure side is too low	Compressor assembly belt (slip)	09-19
	Compressor assembly (faulty)	44-119
Pressure at low pressure side is too low, and pressure at high pressure side is too high	A/C high pressure line (blocked)	44-115
	Expansion valve (faulty)	-

Diagnosis Procedure

HINT:
Use following procedures to troubleshoot the A/C system.

1	**Vehicle brought to workshop**

NEXT

2	**Check battery voltage**

Standard voltage: 11 to 14 V

If voltage is below 11 V, recharge or replace battery before proceeding to next step.

NEXT

3	**Customer problem analysis**

NEXT

4	**Check for DTCs (current DTC and history DTC)**

DTC occurs	**For current DTC, go to step 6**
No DTC	**For history DTC, go to step 7**

5	**Problem repair (no DTC), then go to step8**

NEXT

6	Troubleshoot according to Diagnostic TroubleCode (DTC) chart, then go to step 8

NEXT

7	Troubleshoot according to Problem SymptomsTable, then go to step 8

NEXT

8	Adjust, repair or replace

NEXT

9	Conduct test and confirm malfunction hasbeen repaired

NEXT

10	End

A/C System Function

1. Self-diagnosis Function
   a. Power A/C
      - Enter self-diagnosis button definition: Front defroster + CLIMATE button, starting method: long press combination button 5S.

      Self-diagnosis DTC definition:

Symbol	Malfunction Content
00	System is normal (power A/C)
01	Outside temperature sensor error (open or short) (power A/C)
02	Room temperature sensor error (open or short)
03	Room right temperature sensor error (open or short)
04	Solar sensor (left) error (open or short)
05	Solar sensor error (open or short)
06	Humidity sensor error
07	Air mass sensor error
08	Evaporator temperature sensor error (short or open) (power A/C)
09	Heater temperature sensor error (short or open) (power A/C)
10	-
11	Blower error (adjustment fails) (power A/C)
12	Circulation damper motor error (adjustment fails) (power A/C)
13	Mode damper motor error (adjustment fails) (power A/C)
14	-
15	Temperature mix damper motor error (adjustment fails) (power A/C)
16	Right temperature mix damper motor error (adjustment fails)
17	-
18	-
19	-
20	-
21	Control panel CAN communication error (CAN communication is interrupted) (power A/C)
22	Communication with BCM error (power A/C)

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

1. Turn engine switch to OFF.
2. Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
3. Turn engine switch to ON.
4. Using X-431 3G diagnostic tester, record and clear DTCs stored in A/C control module assembly.
5. Turn engine switch to OFF and wait for a few seconds.
6. Using X-431 3G diagnostic tester, select Read Code.
7. If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
8. If DTC is not detected, malfunction indicated by DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connectors are loose.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Wiggle related wire harnesses and connectors and observe if signal in related circuit is interrupted.
- Look for the data that has changed or the DTC to be reset during wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect A/C system sensors and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all wire harness connectors and grounding parts related to current DTC.
- Remove A/C control panel assembly from malfunctioning vehicle, then install it to a new vehicle and perform a test. If DTC cannot be cleared, A/C control panel assembly is malfunctioning. If DTC can be cleared, reinstall A/C control panel assembly to original vehicle.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
- Refer to Technical Bulletin that may apply to the malfunction.

Ground Inspection

Groundings are very important to entire circuit system, which are normal or not can seriously affect the entire circuit system. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) and oxidation may increase load resistance. This case will seriously affect normal operation of circuit. Check the ground points as follows:

1. Remove ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contacting is in good condition.
4. Reinstall ground bolt or nut securely.
5. Check if add-on accessories interfere with ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check if they are installed correctly. Make sure all wire harnesses are clean, securely fastened and providing a good ground path.

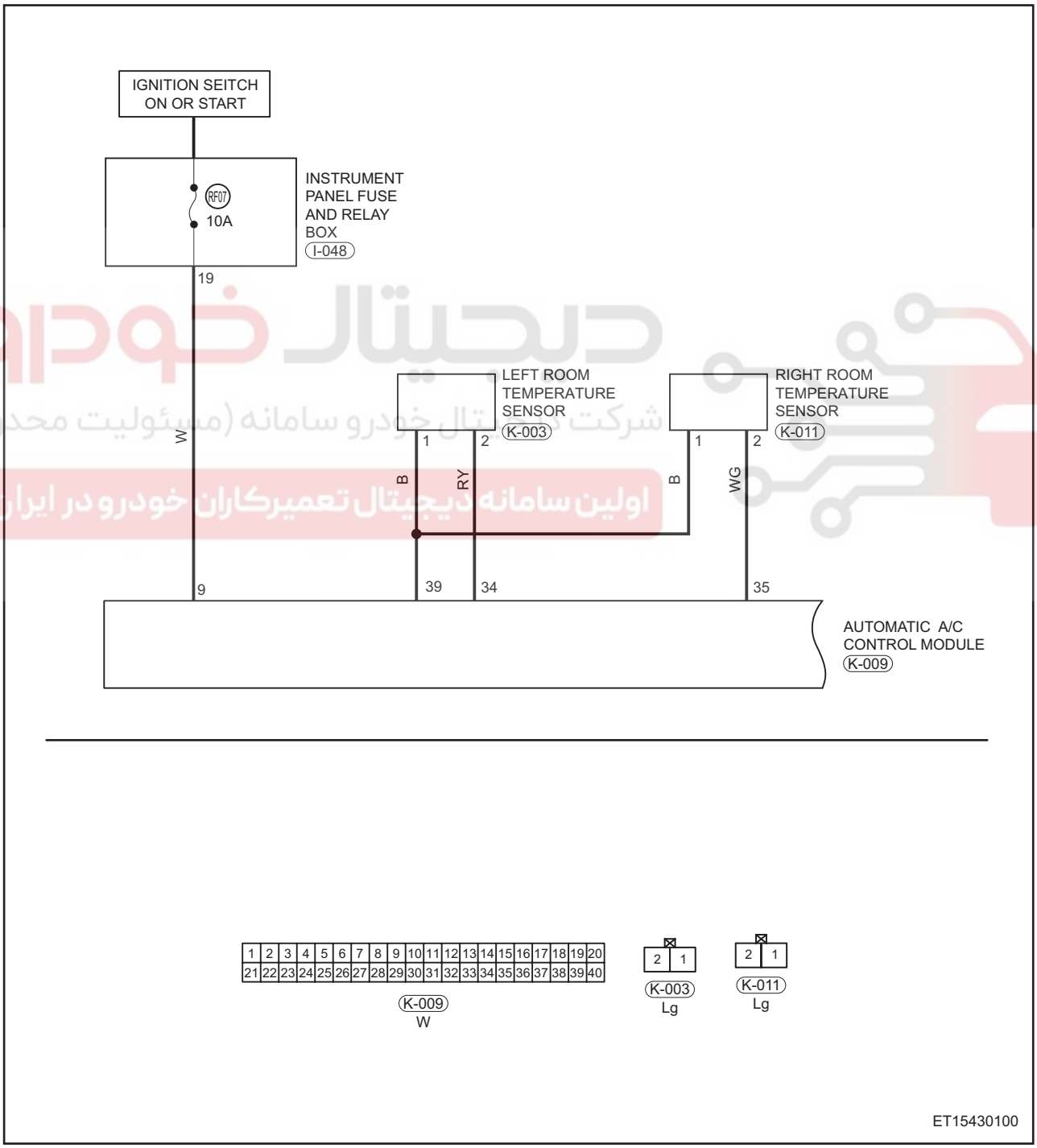
Diagnostic Trouble Code (DTC) Chart

Failure Type Byte (Hex)	Description
11	Circuit short to ground
13	Circuit open
12	Circuit short to battery
14	Circuit short to ground or open
15	Circuit short to battery or open
16	Circuit voltage below threshold
17	Circuit voltage above threshold
1A	Circuit resistance below threshold
1B	Circuit resistance above threshold
1F	Circuit intermittent
47	Watchdog/safety µC failure
48	Supervision software failure
71	Actuator stuck
79	Mechanical linkage failure
86	Signal invalid
87	Missing message
91	Parametric
92	Performance or incorrect operation
95	Incorrect assembly
96	Component internal failures

DTC	DTC Definition
B1401-11	Filtered Incar Temperature (Left Side)
B1401-13	Filtered Incar Temperature (Left Side)
B1402-11	Filtered Incar Temperature (Right)
B1402-13	Filtered Incar Temperature (Right)
B1403-11	Filtered Ambient Temperature
B1403-13	Filtered Ambient Temperature
B1404-11	Filtered Evaporator Temperature
B1404-13	Filtered Evaporator Temperature
B1406-11	Solar Radiation (Left Side)
B1406-13	Solar Radiation (Left Side)
B1407-11	Solar Radiation (Right Side)
B1407-13	Solar Radiation (Right Side)
B1408-29	Blower Voltage
B1408-31	Blower Voltage

DTC	DTC Definition
B1409-11	Mode Motor Step
B1409-13	Mode Motor Step
B1410-11	Rec Motor Step
B1410-13	Rec Motor Step
B1412-11	Mix Flap Motor Step (Left Side)
B1412-13	Mix Flap Motor Step (Left Side)
B1414-11	Mix Flap Motor Step (Right Side)
B1414-13	Mix Flap Motor Step (Right Side)
U0140-87	Lost Communication with Body Control Module
U0155-87	Lost Communication with Instrument Cluster Module
U0151-87	Lost Communication with Air Bag Module
U0245-87	Lost Communication with Radio Receiver Module
U0100-87	Lost Communication with Engine Control System Engine Control System Module
U0129-87	Lost Communication with BSM

DTC	B1401-11	Filtered Incar Temperature (Left Side) - Circuit Short to Ground
DTC	B1401-13	Filtered Incar Temperature (Left Side) - Circuit Open
DTC	B1402-11	Filtered Incar Temperature (Right) - Circuit Short to Ground
DTC	B1402-13	Filtered Incar Temperature (Right) - Circuit Open



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1401-11	Filtered Incar Temperature (Left Side) - Circuit Short to Ground	Engine switch ON	• Left zone temperature sensor • Right zone temperature sensor • Automatic A/C control module • Wire harness or connector
B1401-13	Filtered Incar Temperature (Left Side) - Circuit open		
B1402-11	Filtered Incar Temperature (Right) - Circuit Short to Ground		
B1402-13	Filtered Incar Temperature (Right) - Circuit open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect left zone temperature sensor connector K-003, right zone temperature sensor connector K-011 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace automatic A/C wire harness**

OK

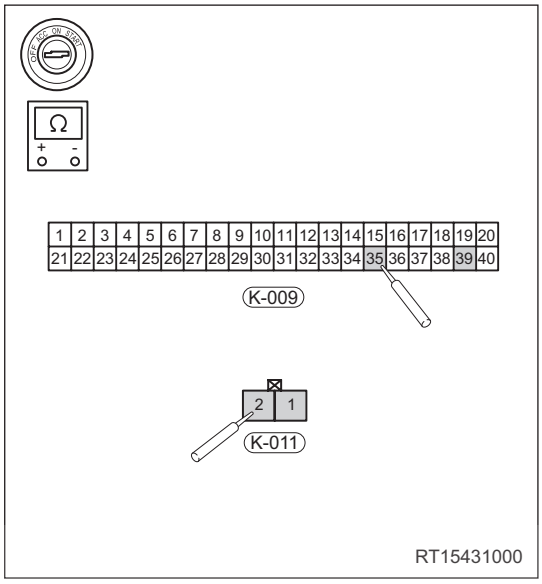
2	Check automatic A/C wire harness

a. Disconnect right zone temperature sensor connector K-011 and automatic A/C control module connector K-009.

b. Using a digital multimeter, check for continuity between right zone temperature sensor connector K-011 and automatic A/C control module connector K-009 according to value (s) in table below.

Standard Condition

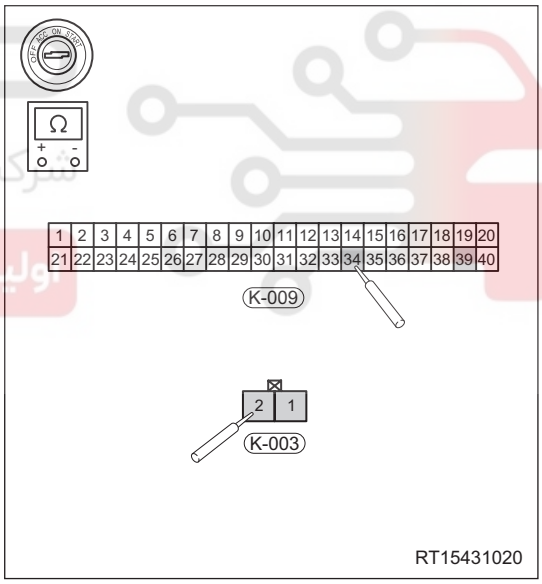
Multimeter Connection	Condition	Specified Condition
K-011 (2) - K-009 (35)	Always	Continuity
K-011 (1) - K-009 (39)	Always	Continuity



c. Using a digital multimeter, check for continuity between left zone temperature sensor connector K-003 and automatic A/C control module connector K-009 according to value (s) in table below.

Standard Condition

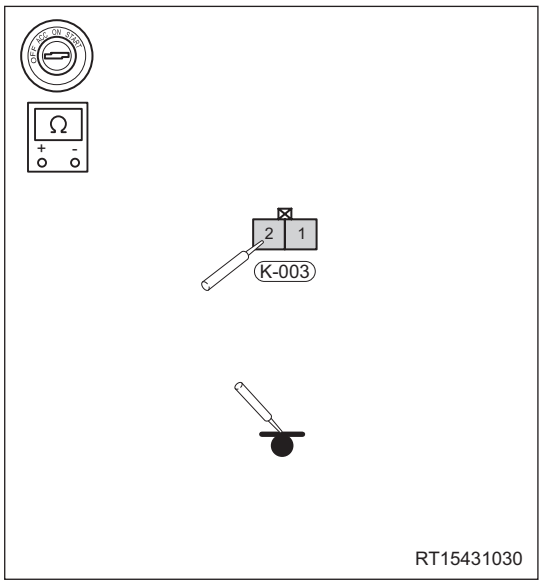
Multimeter Connection	Condition	Specified Condition
K-003 (2) - K-009 (34)	Always	Continuity
K-003 (1) - K-009 (39)	Always	Continuity



d. Using a digital multimeter, check for continuity between left zone temperature sensor connector K-003 and body ground to check if left zone temperature sensor is short to ground according to value (s) in table below.

Standard Condition

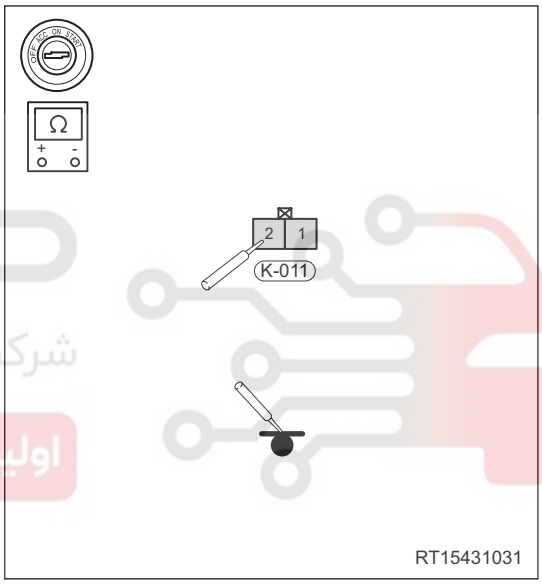
Multimeter Connection	Condition	Specified Condition
K-003 (2) - Body ground	Always	No continuity
K-003 (1) - Body ground	Always	No continuity



e. Using a digital multimeter, check for continuity between right zone temperature sensor connector K-011 and body ground to check if right zone temperature sensor is short to ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-011 (2) - Body ground	Always	No continuity
K-011 (1) - Body ground	Always	No continuity



NG → **Replace automatic A/C wire harness assembly**

OK

3	Check left zone temperature sensor and rightzone temperature sensor

a. Check if left zone temperature sensor and right zone temperature sensor are installed in place.

b. Check left zone temperature sensor and right zone temperature sensor for dirt.

c. Check that resistances of left zone temperature sensor and right zone temperature sensor are 9.35 KΩ at normal temperature, or remove left zone temperature sensor and right zone temperature sensor to perform test on a new vehicle.

NG → **Replace left zone temperature sensor and rightzone temperature sensor**

OK

4	Reconfirm DTCs

a. Connect all connectors.
b. Connect the negative battery cable.
c. Turn engine switch to ON.
d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.
e. Turn engine switch to OFF and wait for a few seconds.
f. Turn engine switch to ON.
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

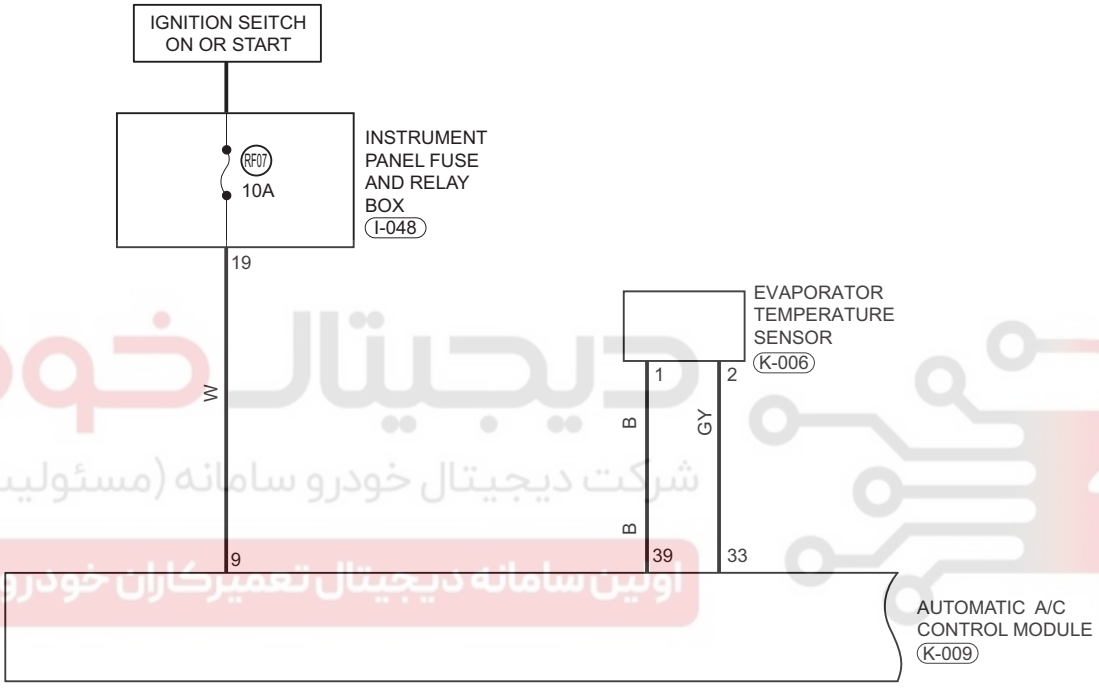
NG → **Replace automatic A/C control module**

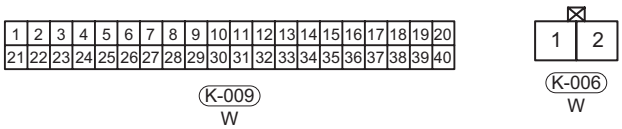
OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1404-11	Filtered Evaporator Temperature - Circuit Short to Ground

DTC	B1404-13	Filtered Evaporator Temperature - Circuit Open





ET15430120

44

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1404-11	Filtered Evaporator Temperature - Circuit Short to Ground	Engine switch ON	• Evaporator temperature sensor • Automatic A/C control module • Wire harness or connector
B1404-13	Filtered Evaporator Temperature - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check wire harness and connector**

44

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect evaporator temperature sensor connector K-006 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	**Check evaporator temperature sensor**

a. Remove the evaporator temperature sensor.

b. Install a new outside temperature sensor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → Remove evaporator temperature sensor

OK

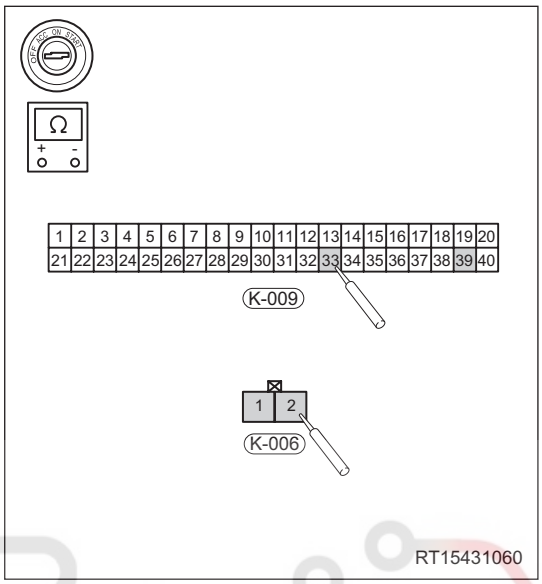
3	Check wire harness connector

a. Disconnect the negative battery cable.

b. Using a digital multimeter, check for continuity between evaporator temperature sensor connector K-006 and automatic A/C control module connector K-009 according to value (s) in table below.

Standard Condition

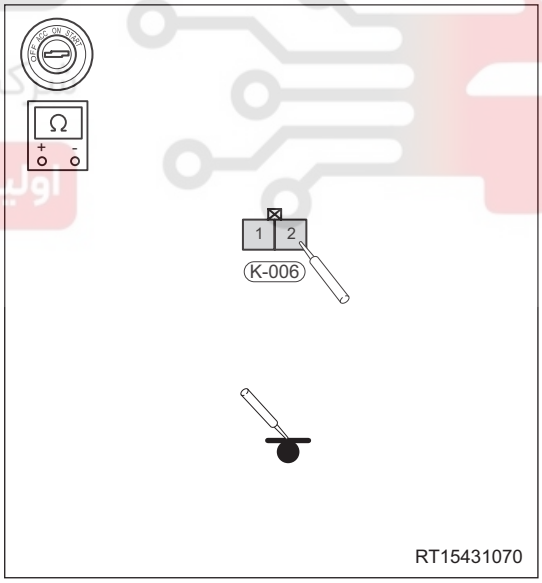
Multimeter Connection	Condition	Specified Condition
K-006 (2) - K-009 (33)	Always	Continuity
K-006 (1) - K-009 (39)	Always	Continuity



c. Using a digital multimeter, check for continuity between evaporator temperature sensor connector K-006 and body ground to check if evaporator temperature sensor is short to ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-006 (2) - Body ground	Always	No continuity
K-006 (1) - Body ground	Always	No continuity



NG → Replace related wire harness assembly

OK

4	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

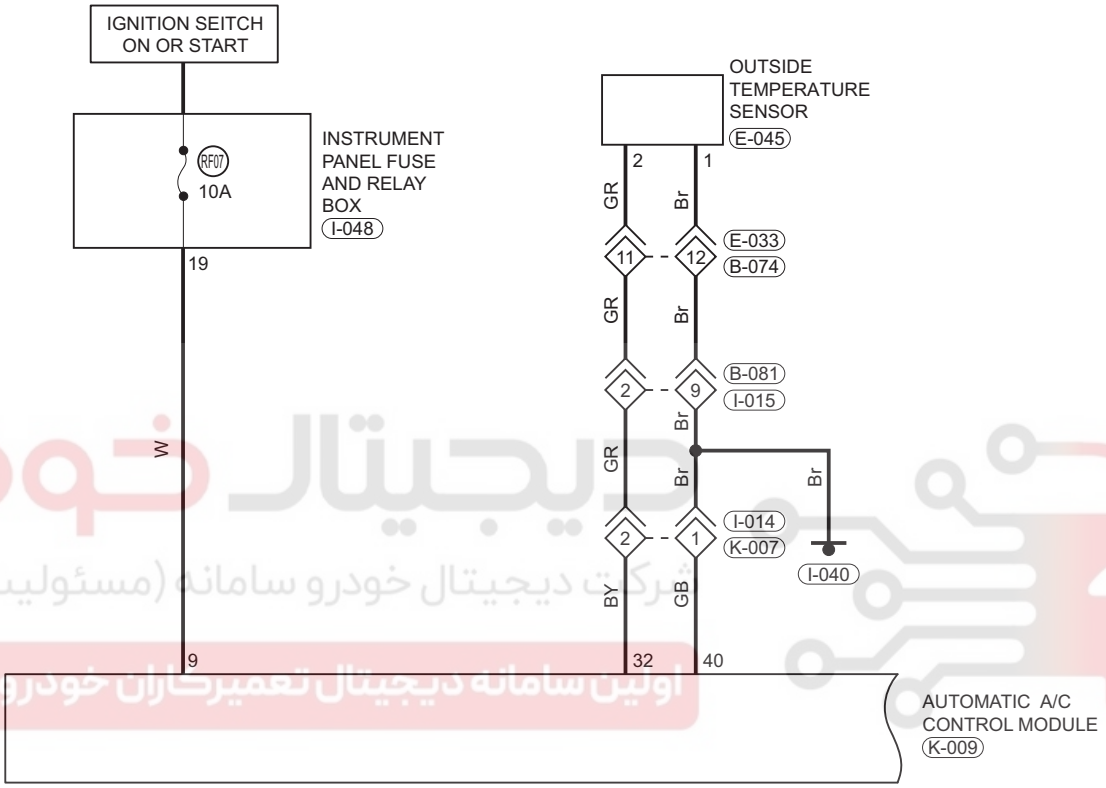
NG → **Replace automatic A/C control module**

OK

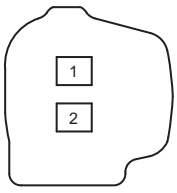
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1403-11	Filtered Ambient Temperature - Circuit Short to Ground

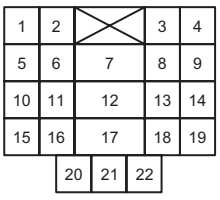
DTC	B1403-13	Filtered Ambient Temperature - Circuit Open



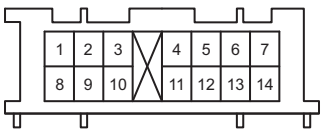
B-074
B



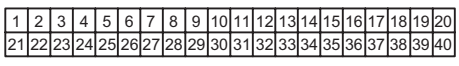
E-045
Gr



K-007
Lg



B-081
W



K-009
W

ET15430125

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1403-11	Filtered Ambient Temperature - Circuit Short to Ground	Engine switch ON	• Ambient temperature sensor • Automatic A/C control module • Wire harness or connector
B1403-13	Filtered Ambient Temperature - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect ambient temperature sensor connector E-045 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	Check ambient temperature sensor

a. Remove the outside temperature sensor.

b. Install a new outside temperature sensor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → Replace outside temperature sensor

OK →

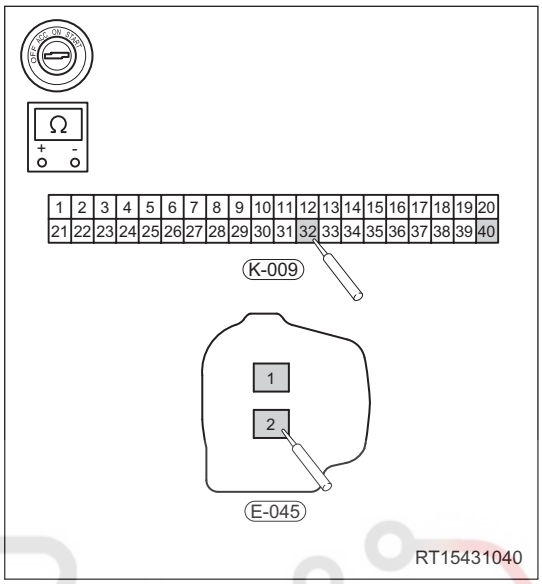
3	Check wire harness connector

a. Disconnect the negative battery cable.

b. Using a digital multimeter, check for continuity between ambient temperature sensor connector E-045 and automatic A/C control module connector K-009 according to value (s) in table below.

Standard Condition

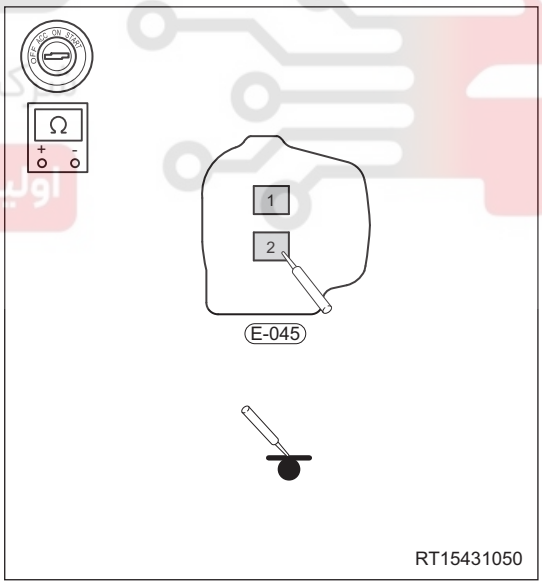
Multimeter Connection	Condition	Specified Condition
E-045 (2) - K-009 (32)	Always	Continuity
E-045 (1) - K-009 (40)	Always	Continuity



c. Using a digital multimeter, check for continuity between ambient temperature sensor connector E-045 and body ground to check if ambient temperature sensor is short to ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
E-045 (2) - Body ground	Always	No continuity
E-045 (1) - Body ground	Always	Continuity



NG → Replace related wire harness assembly

OK →

4	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

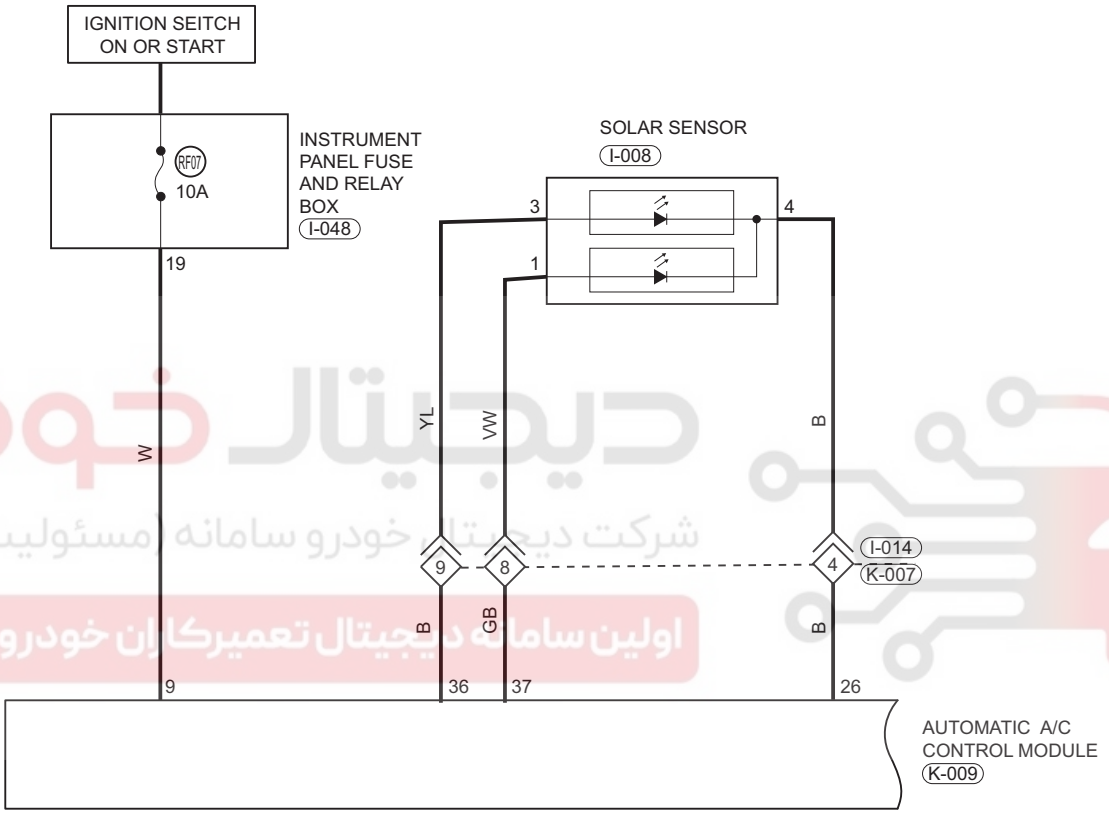
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

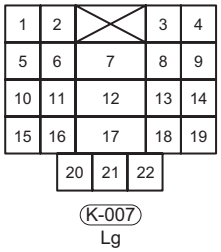
NG → **Replace automatic A/C control module**

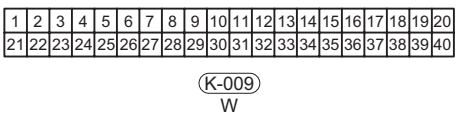
OK

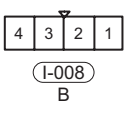
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1406-11	Solar Radiation (Left Side) - Circuit Short to Ground
DTC	B1406-13	Solar Radiation (Left Side) - Circuit Open
DTC	B1407-11	Solar Radiation (Right Side) - Circuit Short to Ground
DTC	B1407-13	Solar Radiation (Right Side) - Circuit Open









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DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1406-11	Solar Radiation (Left Side) - Circuit Short to Ground	Engine switch ON	• Solar sensor • Automatic A/C control module • Wire harness or connector
B1406-13	Solar Radiation (Left Side) - Circuit Open		
B1407-11	Solar Radiation (Right Side) - Circuit Short to Ground		
B1407-13	Solar Radiation (Right Side) - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect solar sensor connector I-008 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → Repair or replace wire harness

OK

2	Check solar sensor

a. Remove the solar sensor.

b. Install a new solar sensor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace solar sensor**

OK

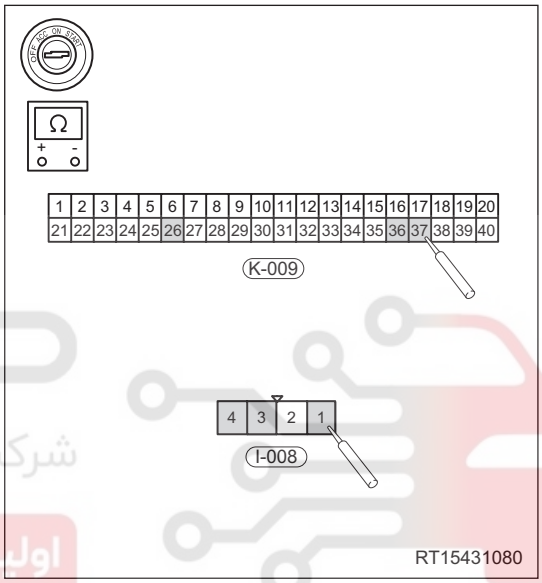
3	Check wire harness connector

a. Disconnect the negative battery cable.

b. Using a digital multimeter, check for continuity between solar sensor connector I-008 and automatic A/C control module connector K-009 according to value (s) in table below.

Standard Condition

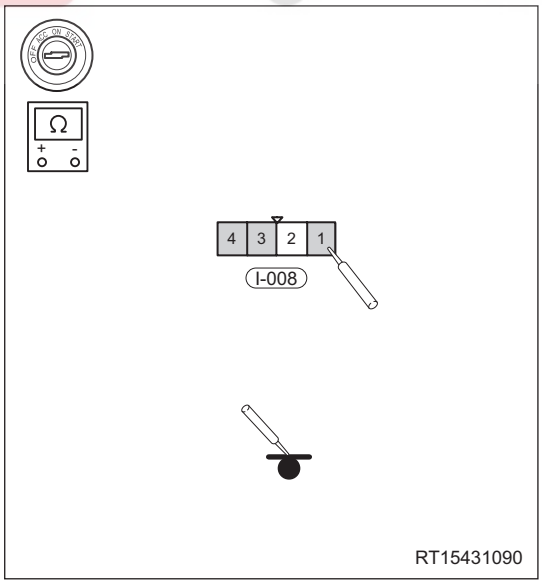
Multimeter Connection	Condition	Specified Condition
I-008 (1) - K-009 (37)	Always	Continuity
I-008 (3) - K-009 (36)	Always	Continuity
I-008 (4) - K-009 (26)	Always	Continuity



c. Using a digital multimeter, check for continuity between solar sensor connector I-008 and body ground to check if solar sensor is short to ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-008 (1) - Body ground	Always	No continuity
I-008 (3) - Body ground	Always	No continuity
I-008 (4) - Body ground	Always	No continuity



NG → **Replace related wire harness assembly**

OK

4	Reconfirm DTCs

a. Connect all connectors.
b. Connect the negative battery cable.
c. Turn engine switch to ON.
d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.
e. Turn engine switch to OFF and wait for a few seconds.
f. Turn engine switch to ON.
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

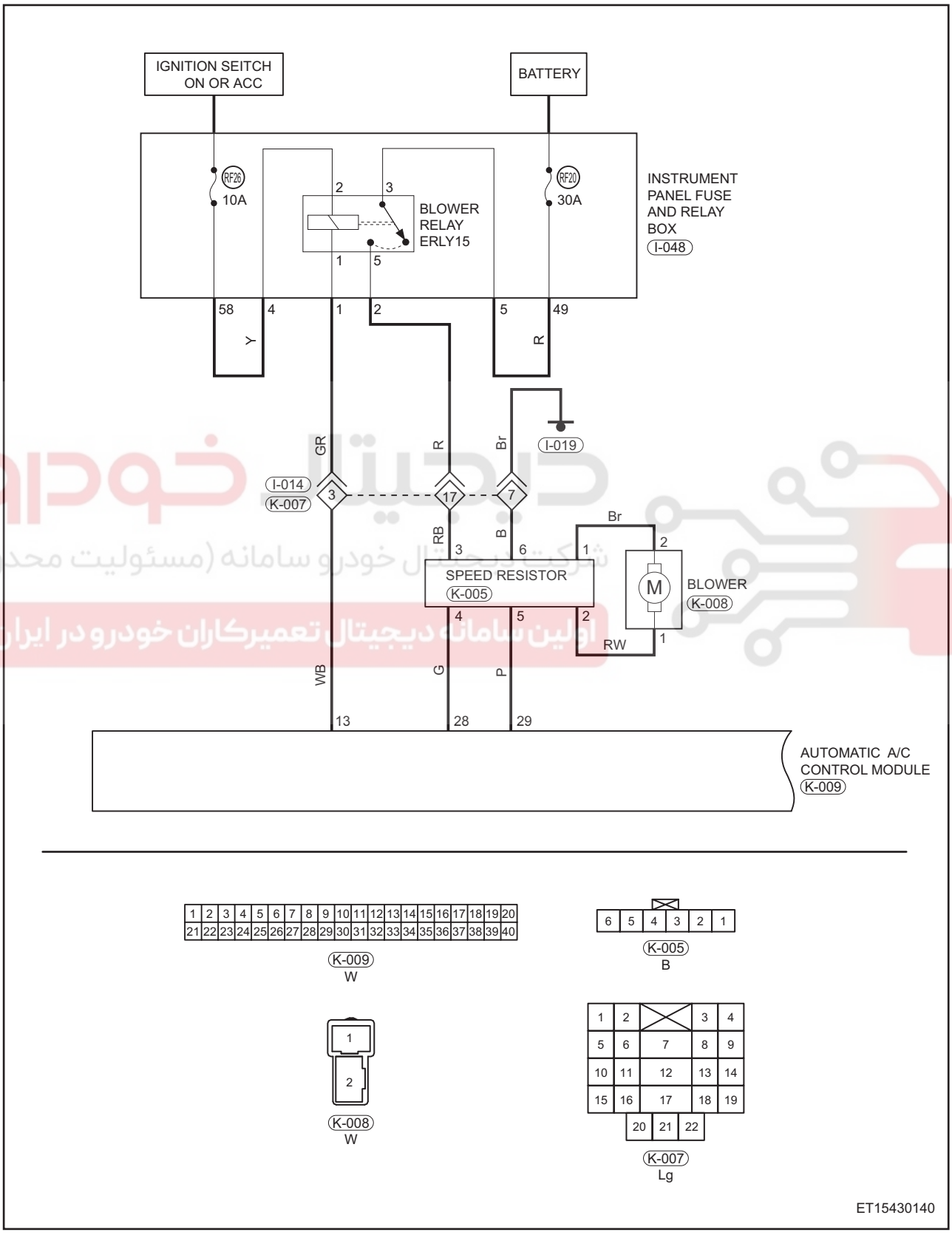
NG → **Replace automatic A/C control module**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1408-29	Blower Voltage - Signal Invalid

DTC	B1408-31	Blower Voltage



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1408-29	Blower Voltage - Signal Invalid	Engine switch ON	• Blower • Blower speed module • Automatic A/C control module • Wire harness or connector
B1408-31	Blower Voltage		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect blower connector K-006 and blower speed resistor connector K-005.
d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	**Check blower**

a. Remove the blower.
b. Install a new blower to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace blower**

OK

3	Check wire harness connector

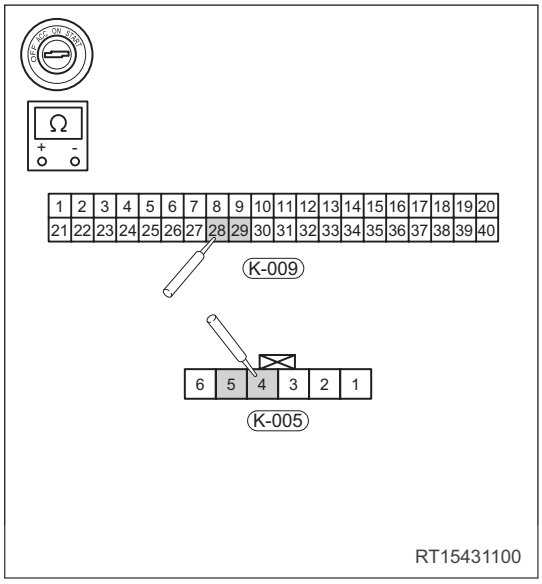
a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and automatic A/C control module K-005 according to value (s) in table below.

Standard Condition

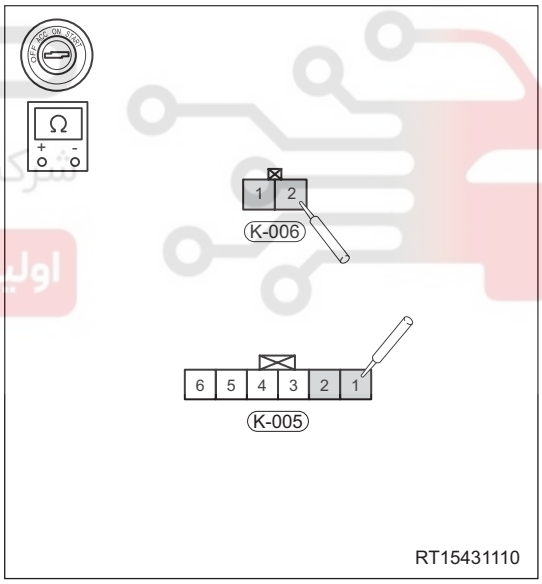
Multimeter Connection	Condition	Specified Condition
K-009 (28) - K-005 (4)	Always	Continuity
K-009 (29) - K-005 (5)	Always	Continuity



d. Using a digital multimeter, check for continuity between blower connector K-006 and blower speed resistor connector K-005 according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-006 (2) - K-005 (1)	Always	Continuity
K-006 (1) - K-005 (2)	Always	Continuity



NG → Replace related wire harness assembly

OK

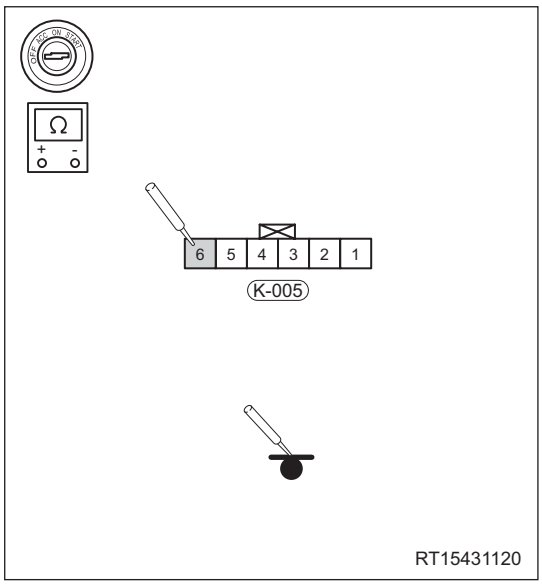
4	Check ground circuit of blower speed module

a. Disconnect the blower speed resistor connector K-005.

b. Using a digital multimeter, check for continuity between blower speed resistor connector K-005 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-005 (6) - Body ground	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

5	Check power supply circuit of blower speedmodule

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect blower speed resistor connector K-005 and automatic A/C control module connector K-009.

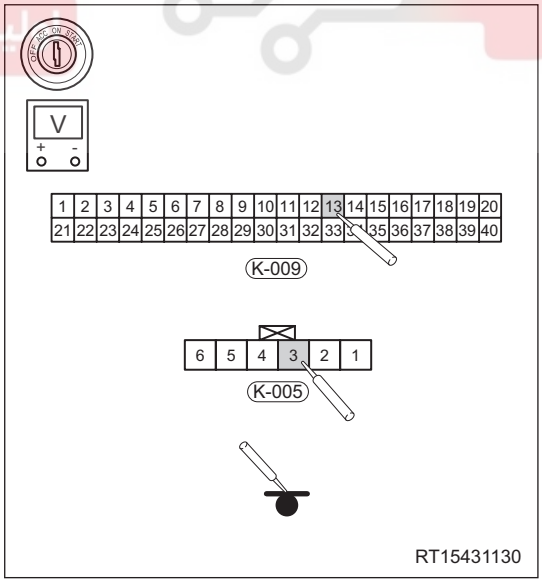
d. Connect the negative battery cable.

e. Turn engine switch to ON and turn on blower.

f. Using a digital multimeter, measure voltage between terminal 3 of blower connector K-005 and body ground, and voltage between terminal 13 of automatic A/C control module connector K-009 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-005 (3) - Body ground	Engine switch ON	9 to 16 V
K-009 (13) - Body ground	Engine switch ON	9 to 16 V



NG → **Check wire harness connector, blower relay andfuse RF26, instrument panel relay box**

OK ↓

6	Reconfirm DTCs

a. Connect all connectors.
b. Connect the negative battery cable.
c. Turn engine switch to ON.
d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.
e. Turn engine switch to OFF and wait for a few seconds.
f. Turn engine switch to ON.
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

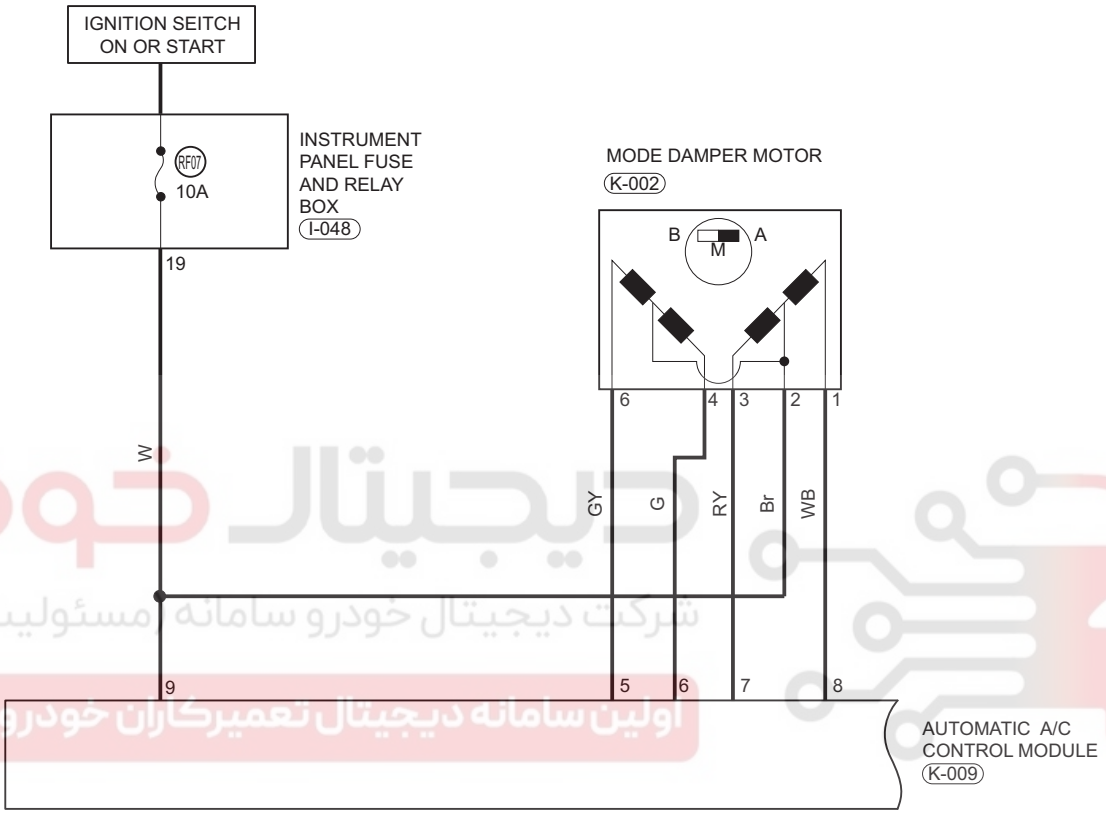
NG → **Replace automatic A/C control module**

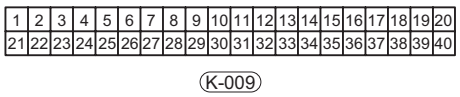
OK ↓

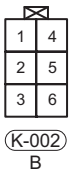
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1409-11	Mode Motor Step - Circuit Short to Ground

DTC	B1409-13	Mode Motor Step - Circuit Open







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DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1409-11	Mode Motor Step - Circuit Short to Ground	Engine switch ON	• Mode motor • Automatic A/C control module • Wire harness or connector
B1409-13	Mode Motor Step - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect mode motor connector K-002 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	**Check mode motor**

a. Remove the mode motor.

b. Install a new mode motor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace mode motor**

OK

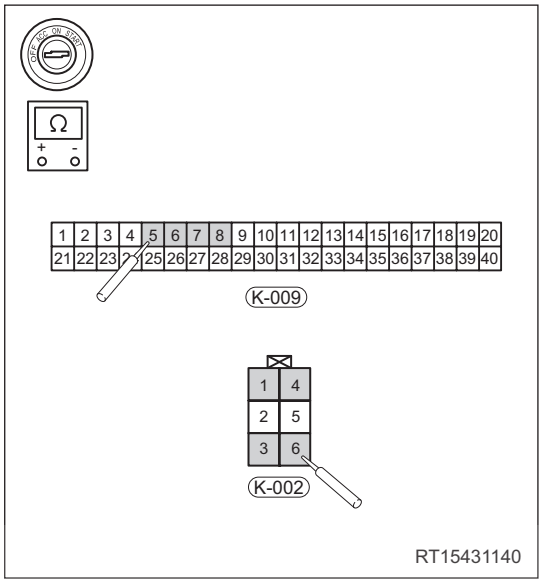
3	Check automatic A/C wire harness and modemotor connector

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and mode motor connector K-002.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and mode motor connector K-002 according to value (s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (5) - K-002 (6)	Always	Continuity
K-009 (6) - K-002 (4)	Always	Continuity
K-009 (7) - K-002 (3)	Always	Continuity
K-009 (8) - K-002 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
K-009 (5) - Body ground	Always	No continuity
K-009 (6) - Body ground	Always	No continuity
K-009 (7) - Body ground	Always	No continuity
K-009 (8) - Body ground	Always	No continuity

NG → Replace related wire harness assembly

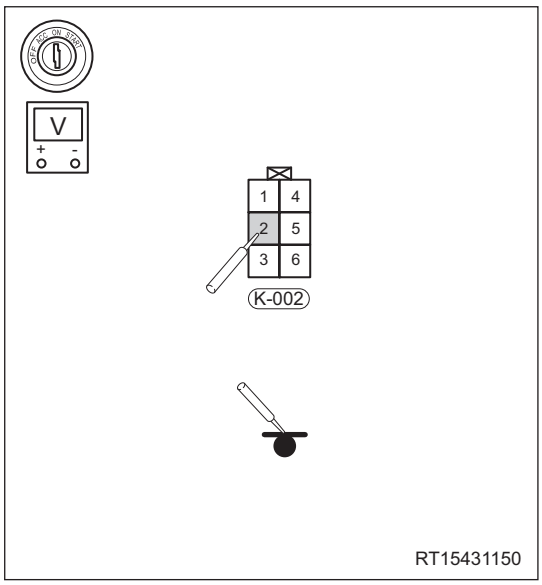
OK

4	Check power supply circuit of mode motor

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect the mode motor connector K-002.
d. Connect the negative battery cable.
e. Turn engine switch to ON and turn on blower.
f. Using a digital multimeter, measure voltage between terminal 2 of mode motor connector K-002 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-002 (2) - Body ground	Engine switch ON	9 to 16 V



NG → **Check wire harness connector, blower relay andfuse RF07, instrument panel relay box**

OK

5	Reconfirm DTCs

a. Connect all connectors.
b. Connect the negative battery cable.
c. Turn engine switch to ON.
d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.
e. Turn engine switch to OFF and wait for a few seconds.
f. Turn engine switch to ON.
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

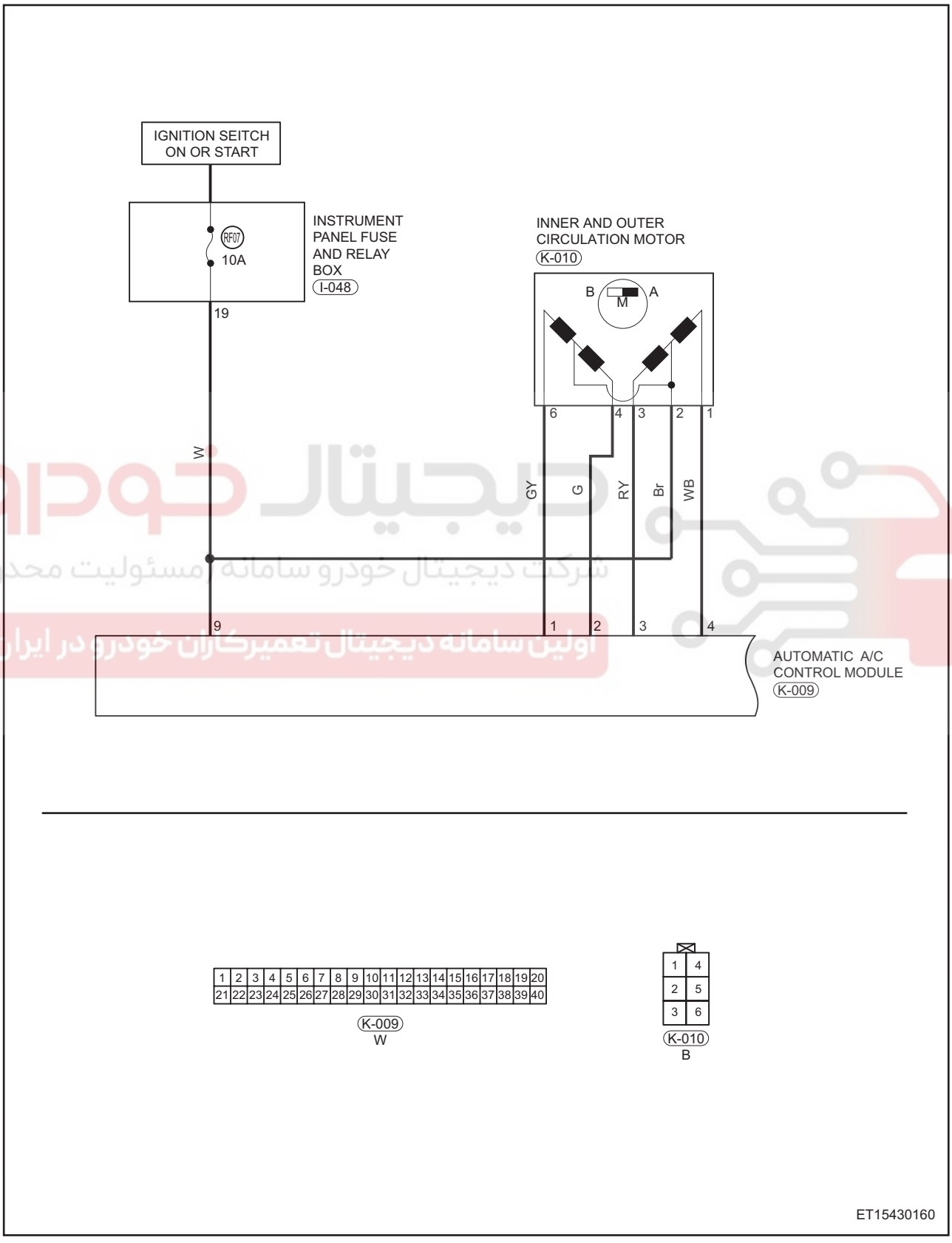
NG → **Replace automatic A/C control module**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1410-11	Rec Motor Step - Circuit Short to Ground

DTC	B1410-13	Rec Motor Step - Circuit Open



ET15430160

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1410-11	Rec Motor Step - Circuit Short to Ground	Engine switch ON	• Inner/outer circulation motor • Automatic A/C control module • Wire harness or connector
B1408-31	Rec Motor Step - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect inner/outer circulation motor connector K-010 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	**Check inner/outer circulation motor**

a. Remove the inner/outer circulation motor.

b. Install a new inner/outer circulation motor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace inner/outer circulation motor**

OK

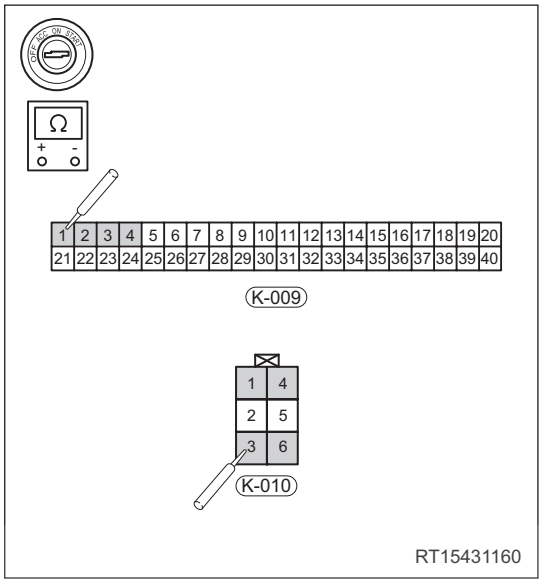
3	Check automatic A/C wire harness and inner/outercirculation motor connector

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and inner/outer circulation motor connector K-010.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and inner/outer circulation motor connector K-010 according to value (s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (1) - K-010 (6)	Always	Continuity
K-009 (2) - K-010 (4)	Always	Continuity
K-009 (3) - K-010 (3)	Always	Continuity
K-009 (4) - K-010 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
K-009 (1) - Body ground	Always	No continuity
K-009 (2) - Body ground	Always	No continuity
K-009 (3) - Body ground	Always	No continuity
K-009 (4) - Body ground	Always	No continuity

NG → Replace related wire harness assembly

OK

4	Check power supply circuit of inner/outercirculation motor

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect inner/outer circulation motor connector K-010 and automatic A/C control module connector K-009.

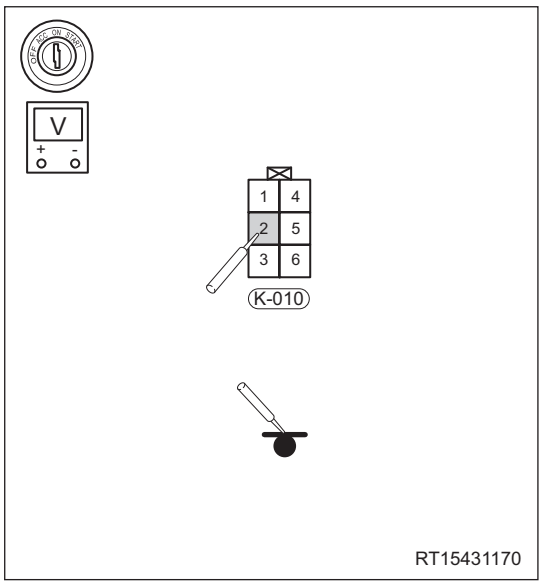
d. Connect the negative battery cable.

e. Turn engine switch to ON and turn on blower.

f. Using a digital multimeter, measure voltage between terminal 2 of inner/outer circulation motor connector K-010 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-010 (2) - Body ground	Engine switch ON	9 to 16 V



NG → **Check wire harness connector, blower relay andfuse RF20 (30A), instrument panel relay box**

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

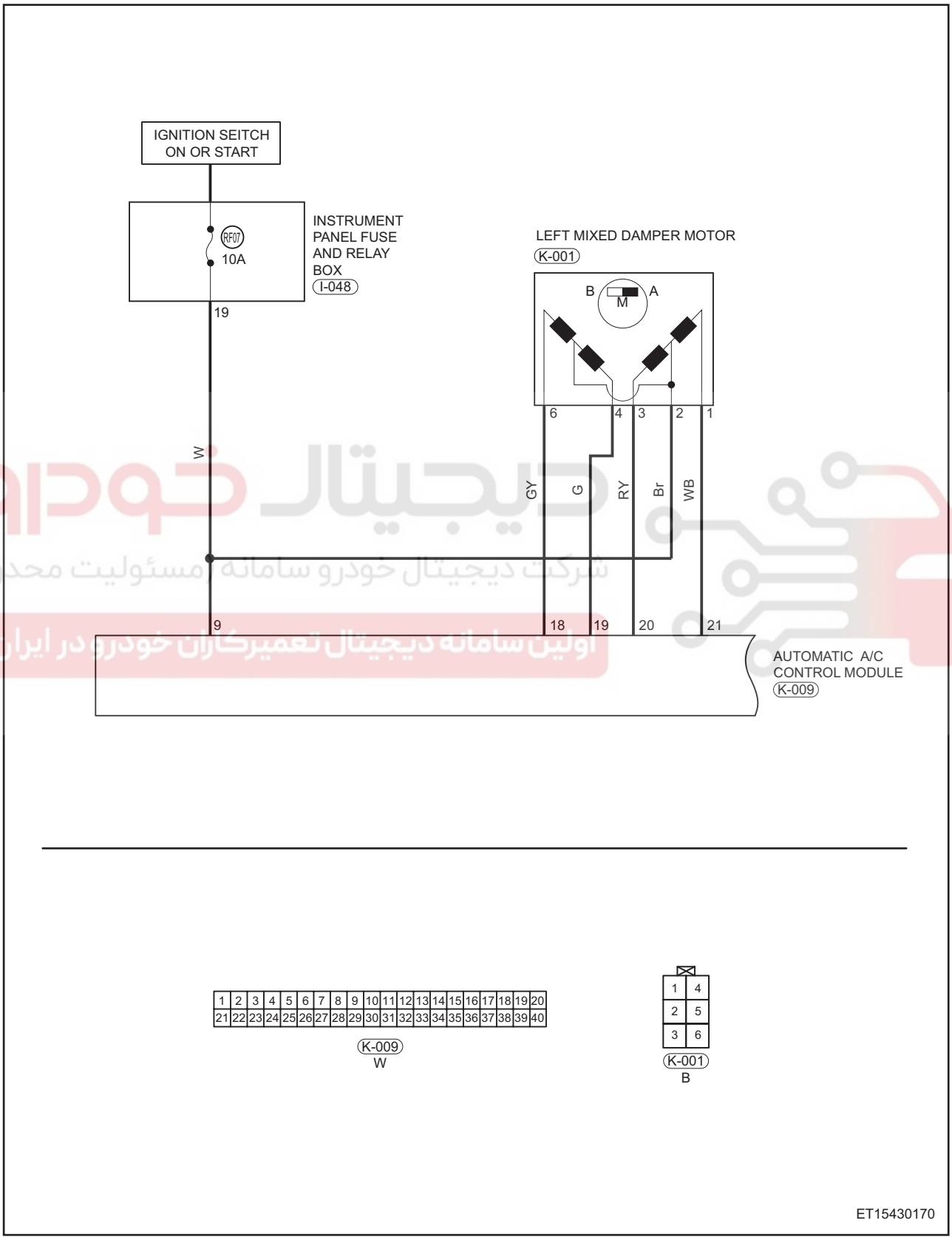
NG → **Replace automatic A/C control module**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1412-11	Mix Flap Motor Step (Left Side) - Circuit Short to Ground

DTC	B1412-13	Mix Flap Motor Step (Left Side) - Circuit Open



ET15430170

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1412-11	Mix Flap Motor Step (Left Side) - Circuit Short to Ground	Engine switch ON	• Left mix motor • Automatic A/C control module • Wire harness or connector
B1408-31	Mix Flap Motor Step (Left Side) - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect left mix motor connector K-001 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	**Check left mix motor**

a. Remove left mix motor.

b. Install a new left mix motor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace the left mix motor**

OK

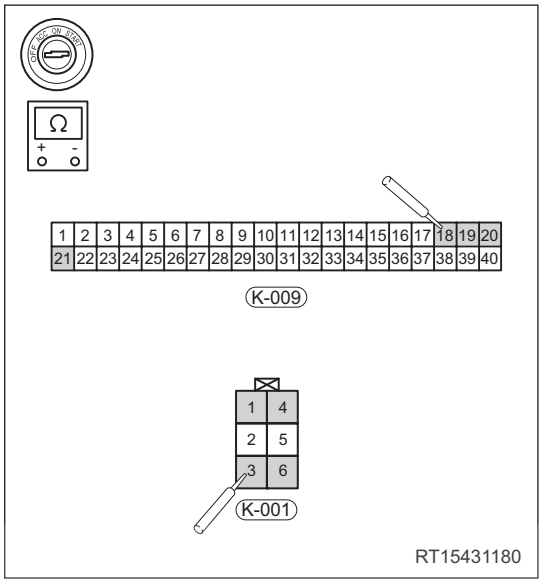
3	Check automatic A/C wire harness and leftmix motor connector

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and left mix motor connector K-001.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and left mix motor connector K-001 according to value (s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (18) - K-001 (6)	Always	Continuity
K-009 (19) - K-001 (4)	Always	Continuity
K-009 (20) - K-001 (3)	Always	Continuity
K-009 (21) - K-001 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
K-009 (18) - Body ground	Always	No continuity
K-009 (19) - Body ground	Always	No continuity
K-009 (20) - Body ground	Always	No continuity
K-009 (21) - Body ground	Always	No continuity

NG → Replace related wire harness assembly

OK

4	Check power supply circuit of left mix motor

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect left mix motor connector K-001 and automatic A/C control module connector K-009.

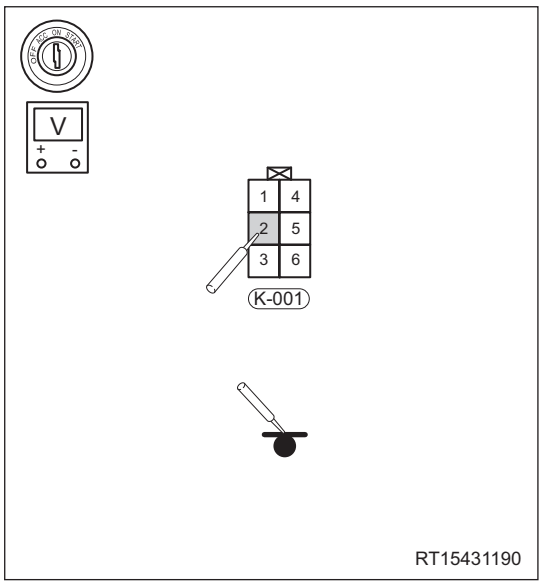
d. Connect the negative battery cable.

e. Turn engine switch to ON and turn on blower.

f. Using a digital multimeter, measure voltage between terminal 2 of left mix motor connector K-001 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-001 (2) - Body ground	Engine switch ON	9 to 16 V



NG → **Check wire harness connector, blower relay andfuse RF07, instrument panel relay box**

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

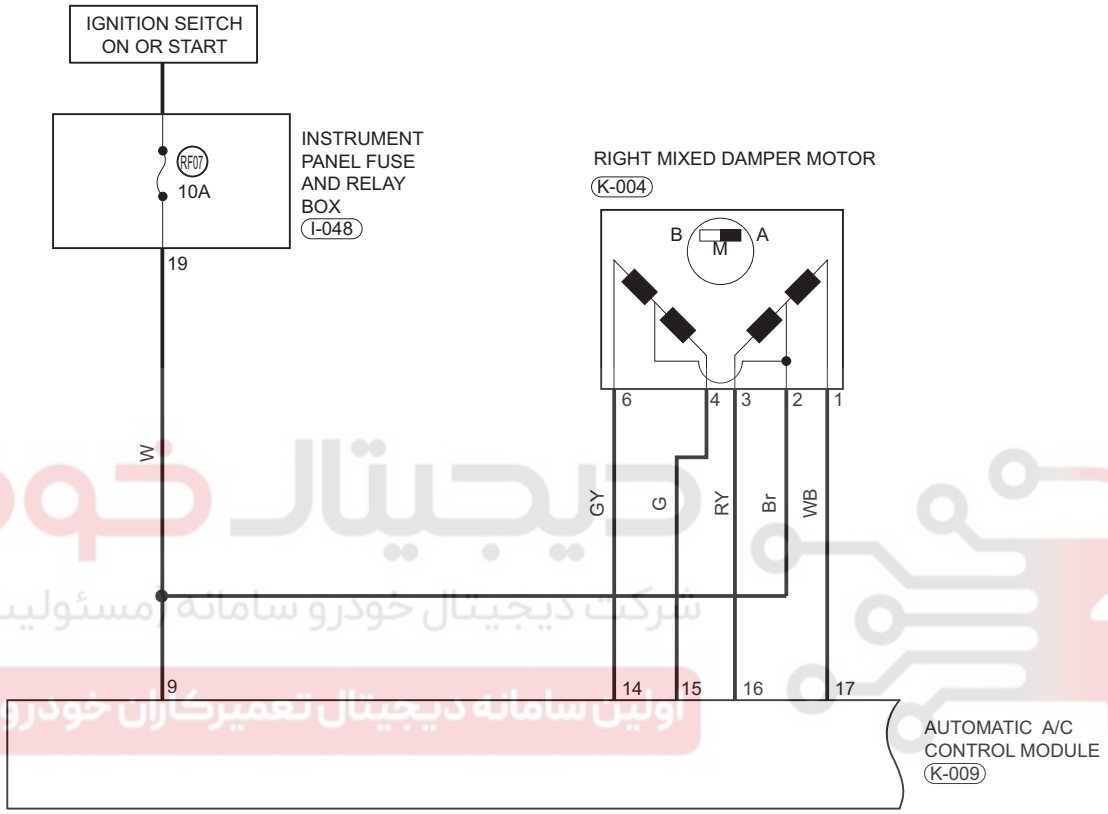
NG → **Replace automatic A/C control module**

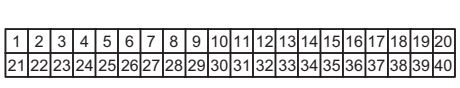
OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	B1414-11	Mix Flap Motor Step (Right Side) - Circuit Short to Ground

DTC	B1414-13	Mix Flap Motor Step (Right Side) - Circuit Open





K-009
W

K-004
B

ET15430180

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1414-11	Mix Flap Motor Step (Right Side) - Circuit Short to Ground	Engine switch ON	• Right mix motor • Automatic A/C control module • Wire harness or connector
B1408-31	Mix Flap Motor Step (Right Side) - Circuit Open		

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect right mix motor connector K-004 and automatic A/C control module connector K-009.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace wire harness**

OK

2	Check right mix motor

a. Remove the right mix motor.

b. Install a new right mix motor to vehicle.

c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NG → **Replace right mix motor**

OK

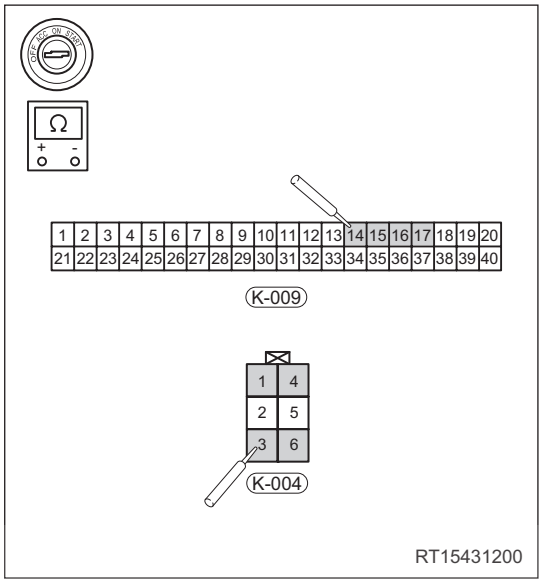
3	Check automatic A/C wire harness and rightmix motor connector

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and right mix motor connector K-004.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and right mix motor connector K-004 according to value (s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (14) - K-004 (6)	Always	Continuity
K-009 (15) - K-004 (4)	Always	Continuity
K-009 (16) - K-004 (3)	Always	Continuity
K-009 (17) - K-004 (1)	Always	Continuity

Check for Short

Multimeter Connection	Condition	Specified Condition
K-009 (14) - Body ground	Always	No continuity
K-009 (15) - Body ground	Always	No continuity
K-009 (16) - Body ground	Always	No continuity
K-009 (17) - Body ground	Always	No continuity

NG → Replace related wire harness assembly

OK

4	Check power supply circuit of right mix motor

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect right mix motor connector K-004 and automatic A/C control module connector K-009.

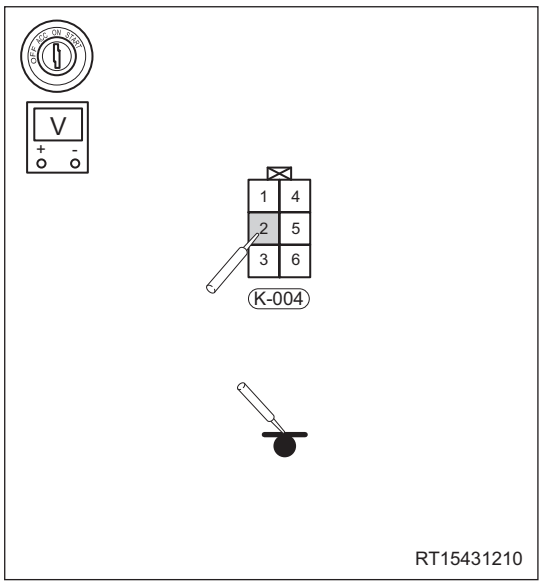
d. Connect the negative battery cable.

e. Turn engine switch to ON and turn on blower.

f. Using a digital multimeter, measure voltage between terminal 2 of right mix motor connector K-004 and body ground according to value (s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-004 (2) - Body ground	Engine switch ON	9 to 16 V



NG → **Check wire harness connector, blower relay andfuse RF07, instrument panel relay box**

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

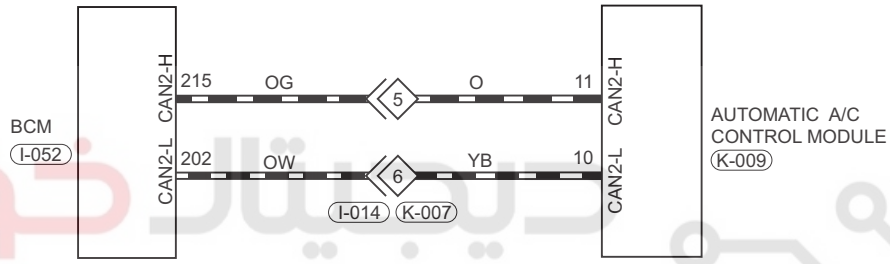
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

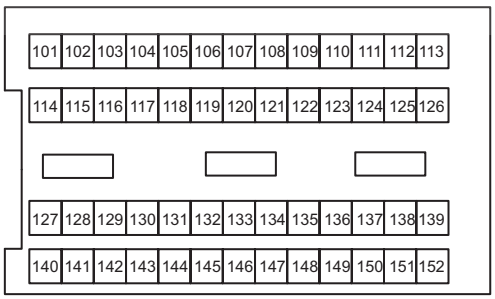
NG → **Replace automatic A/C control module**

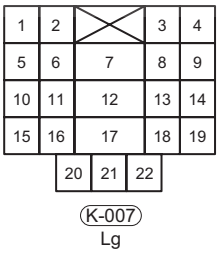
OK

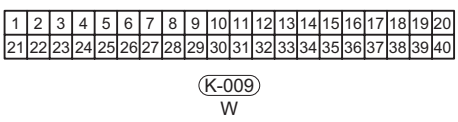
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	U0140-87	Lost Communication with Body Control Module









ET15430190

DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0140 - 87	Lost Communication with Body Control Module	Engine switch ON	• Body Control Module (BCM) • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check Body Control Module (BCM)

a. Remove Body Control Module (BCM) from malfunctioning vehicle, then install it to a new vehicle and perform a test.
b. Connect all connectors.
c. Connect negative battery cable, and turn engine switch to ON.
d. Check operation of Body Control Module (BCM).

NG → **Replace Body Control Module (BCM)**

OK

2	Check connector and terminal

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect the Body Control Module (BCM) connector I-052.
d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - BCM)

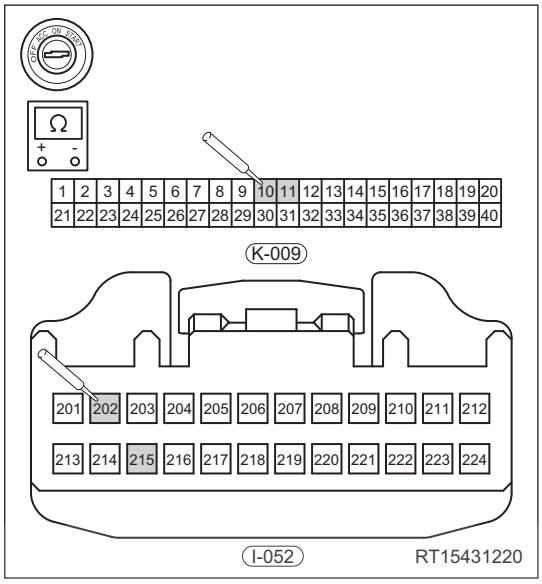
a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open



Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-052 (202)	Always	Continuity
K-009 (11) - I-052 (215)	Always	Continuity

NG → Repair or replace CAN line

OK

4	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

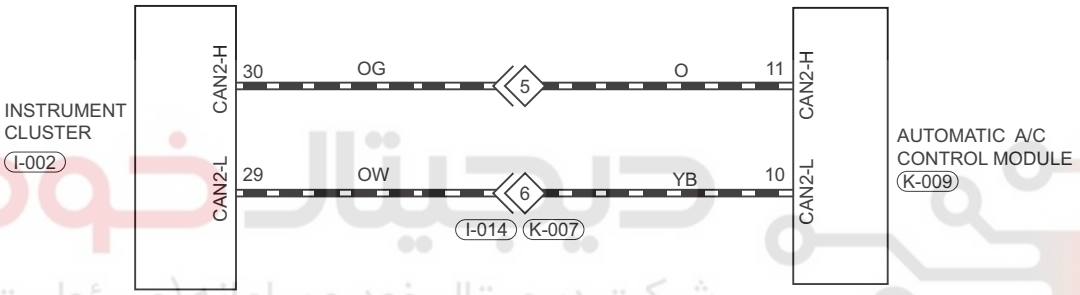
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

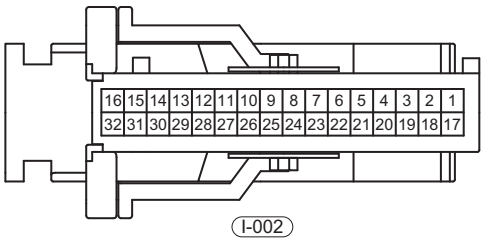
NG → Replace automatic A/C control module

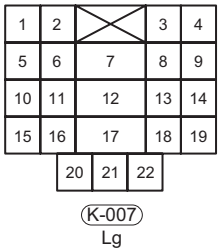
OK

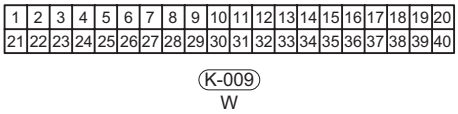
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	U0155-87	Lost Communication with Instrument Cluster Module - MissingMessage









ET15430200

DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0155-87	Lost Communication with Instrument Cluster Module - Missing Message	Engine switch ON	• Instrument cluster • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check instrument cluster**

a. Remove instrument cluster from malfunctioning vehicle, then install it to a new vehicle and perform a test.
b. Connect all connectors.
c. Connect negative battery cable, and turn engine switch to ON.
d. Check operating condition of instrument cluster.

NG → **Replace instrument cluster**

OK

2	**Check connector and terminal**

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect the instrument cluster connector I-002.
d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - BCM)

a. Turn engine switch to OFF.

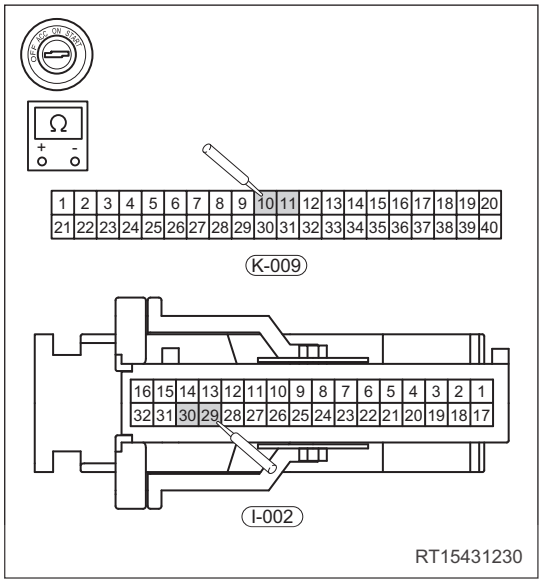
b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and instrument cluster connector I-002.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and instrument cluster connector I-002 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-002 (29)	Always	Continuity
K-009 (11) - I-002 (30)	Always	Continuity



NG → Repair or replace CAN line

OK

4	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

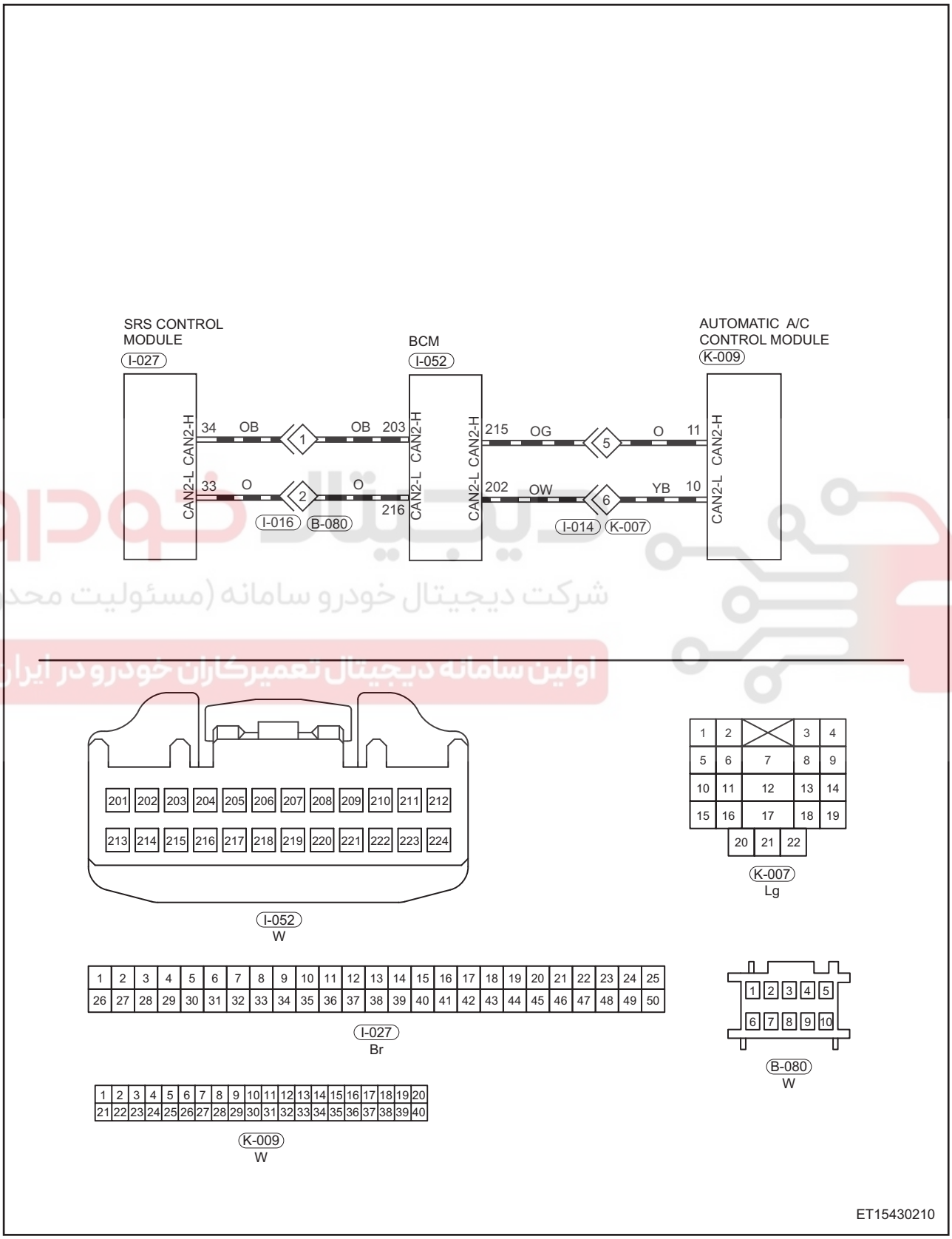
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

NG → Replace automatic A/C control module

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	U0151-87	Lost Communication with Air Bag Module - Missing Message



DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0151-87	Lost Communication with Air Bag Module - Missing Message	Engine switch ON	• Airbag control module • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check airbag control module**

a. Remove airbag control module from malfunctioning vehicle, then install it to a new vehicle and perform a test.

b. Connect all connectors.

c. Connect negative battery cable, and turn engine switch to ON.

d. Check operating condition of airbag control module.

NG → **Replace airbag control module**

OK

2	**Check connector and terminal**

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect the airbag control module connector I-027.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - BCM)

a. Turn engine switch to OFF.

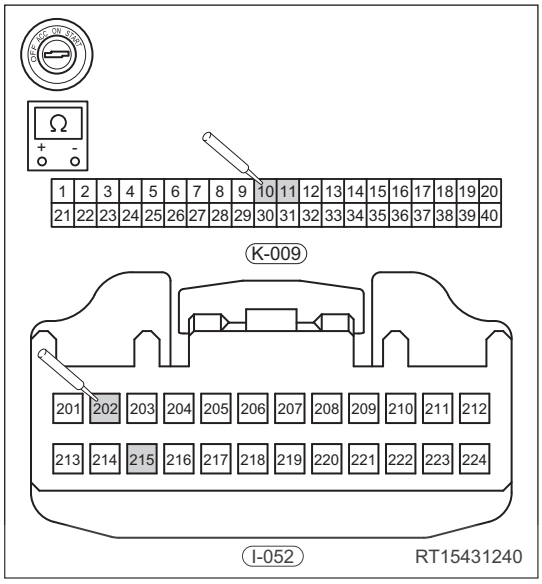
b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-052 (202)	Always	Continuity
K-009 (11) - I-052 (215)	Always	Continuity



NG → Repair or replace CAN line

OK

4	Check CAN line (Airbag module (SRS) - BCM)

a. Turn engine switch to OFF.

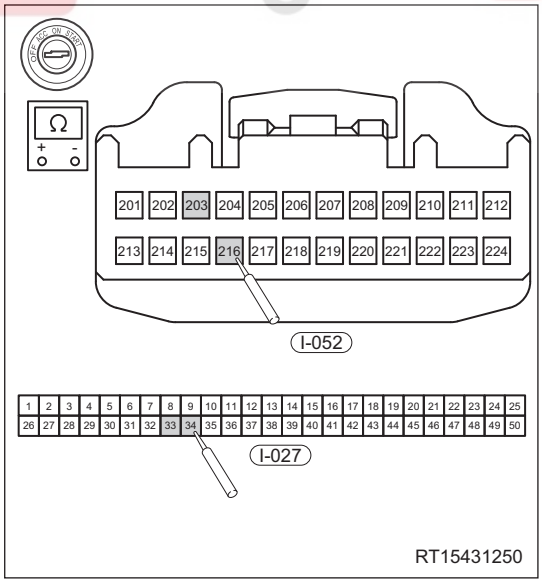
b. Disconnect the negative battery cable.

c. Disconnect airbag module (SRS) connector I-027 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between airbag module (SRS) connector I-027 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
I-027 (34) - I-052 (216)	Always	Continuity
I-027 (33) - I-052 (203)	Always	Continuity



NG → Repair or replace CAN line

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

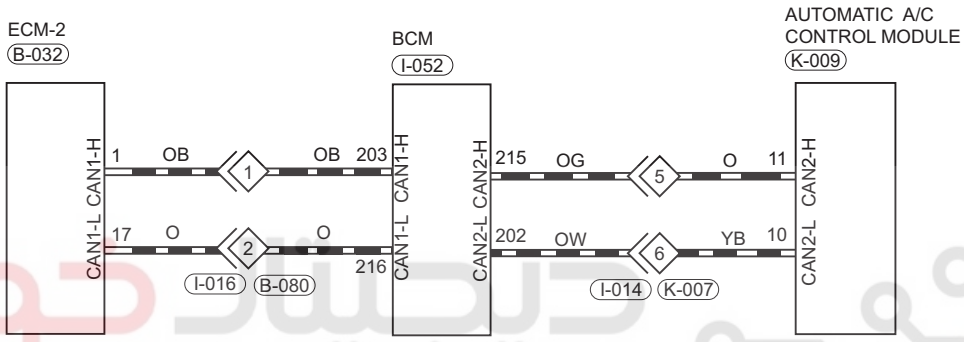
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

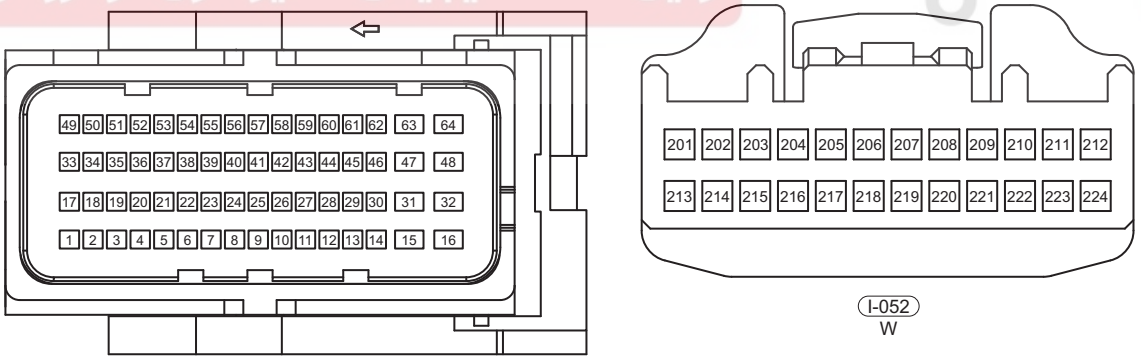
NG → **Replace automatic A/C control module**

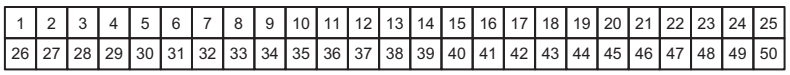
OK

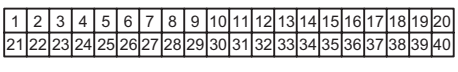
System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

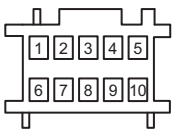
DTC	U0100-87	Lost Communication with Engine Control System Engine ControlSystem Module - Missing Message

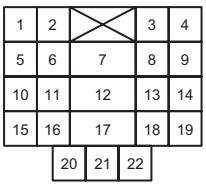












ET15430220

DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0100-87	Lost Communication with Engine Control System Engine Control System Module - Missing Message	Engine switch ON	• Engine Control Module (ECM) • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check Engine Control Module (ECM)**

a. Remove Engine Control Module (ECM) from malfunctioning vehicle, then install it to a new vehicle and perform a test.

b. Connect all connectors.

c. Connect negative battery cable, and turn engine switch to ON.

d. Check operating condition of Engine Control Module (ECM).

NG → **Replace Engine Control Module (ECM)**

OK

2	**Check connector and terminal**

a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect the Engine Control Module (ECM) connector B-032.

d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - BCM)

a. Turn engine switch to OFF.

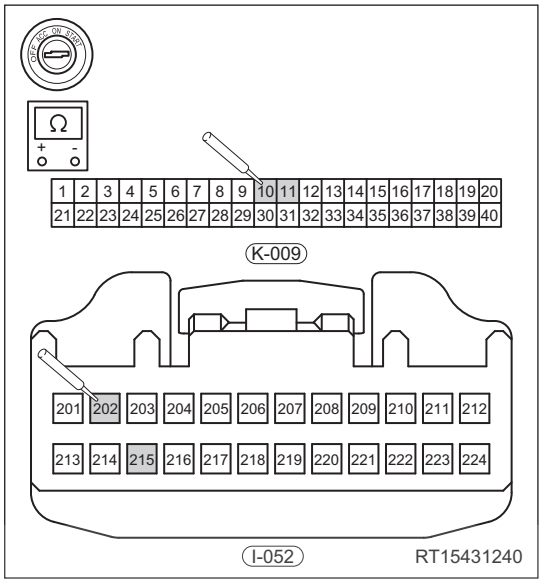
b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-052 (202)	Always	Continuity
K-009 (11) - I-052 (215)	Always	Continuity



NG → Repair or replace CAN line

OK

4	Check CAN line (Engine Control Module (ECM) - BCM)

a. Turn engine switch to OFF.

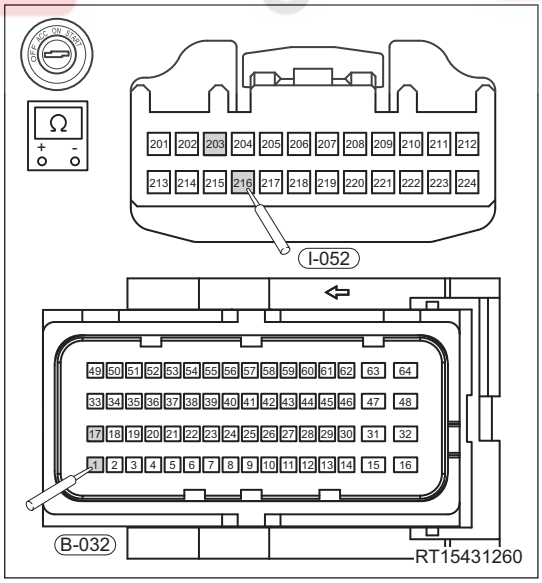
b. Disconnect the negative battery cable.

c. Disconnect Engine Control Module (ECM) connector B-032 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between Engine Control Module (ECM) connector B-032 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-032 (1) - I-052 (216)	Always	Continuity
B-032 (17) - I-052 (203)	Always	Continuity



NG → Repair or replace CAN line

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

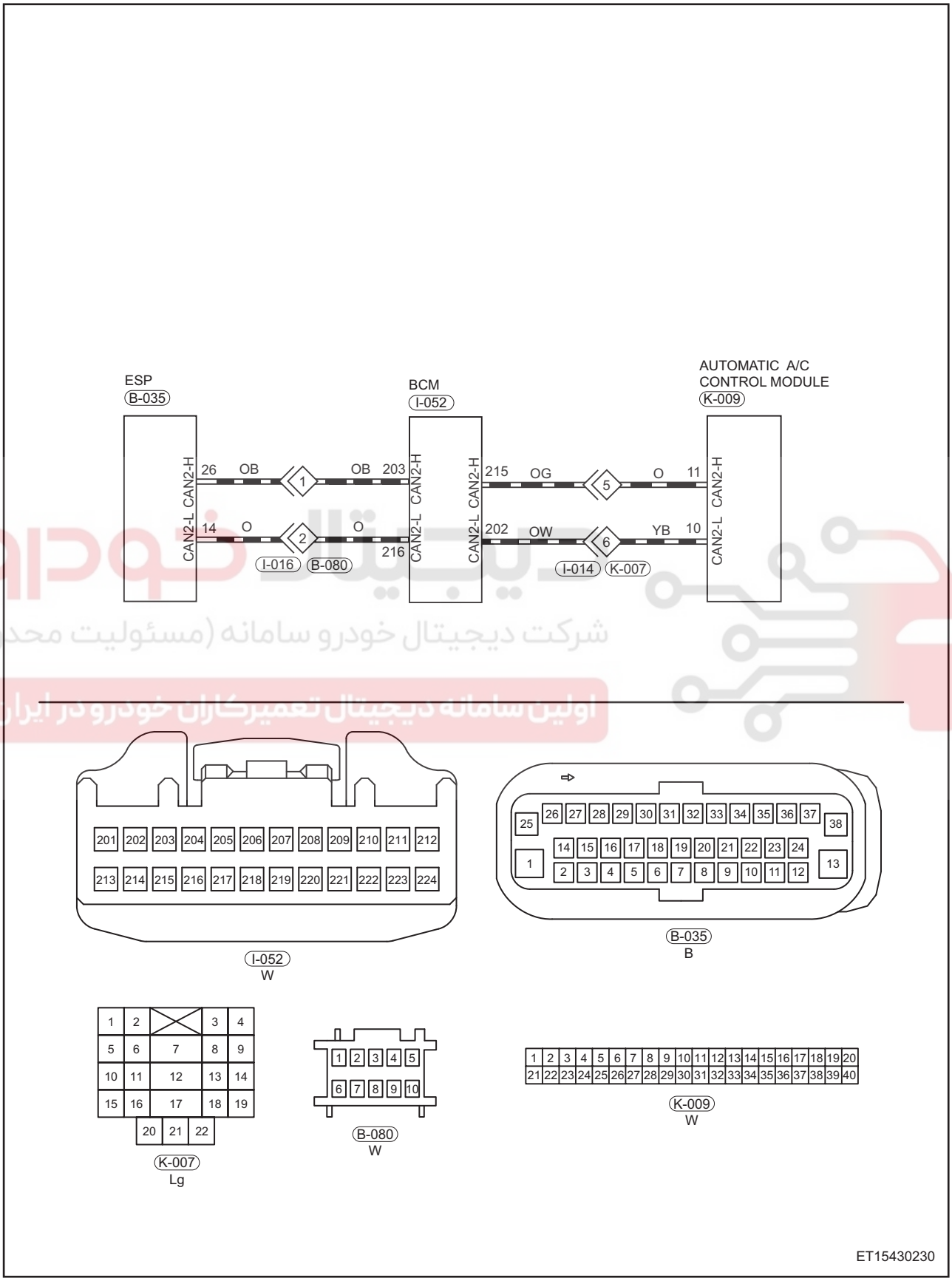
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

NG → **Replace automatic A/C control module**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	U0129-87	Lost Communication with BSM



DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0129-87	Lost Communication with BSM	Engine switch ON	• Brake control system module (ABS/ESP) • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	**Check brake control system module (ABS/ESP)**

a. Remove brake control system module (ABS/ESP) from malfunctioning vehicle, then install it to a new vehicle and perform a test.
b. Connect all connectors.
c. Connect negative battery cable, and turn engine switch to ON.
d. Check operating condition of brake control system module (ABS/ESP).

NG → **Replace brake control system module (ABS/ESP)**

OK

2	**Check connector and terminal**

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect the brake control system module (ABS/ESP) connector B-035.
d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - BCM)

a. Turn engine switch to OFF.

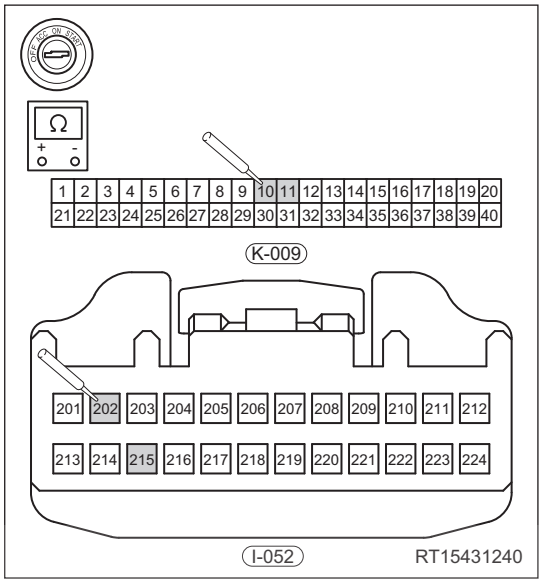
b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-052 (202)	Always	Continuity
K-009 (11) - I-052 (215)	Always	Continuity



NG → Repair or replace CAN line

OK

4	Check CAN line (Brake control system module (ABS/ESP) - BCM)

a. Turn engine switch to OFF.

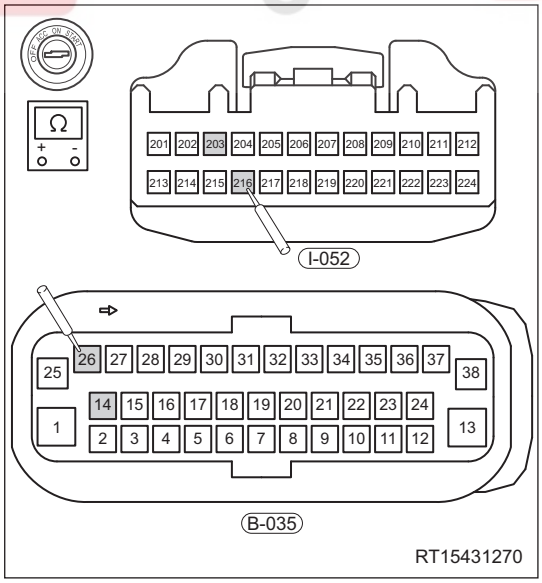
b. Disconnect the negative battery cable.

c. Disconnect brake control system module (ABS/ESP) connector B-035 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between brake control system module (ABS/ESP) connector B-035 and Body Control Module (BCM) connector I-052 according to value (s) in table below.

Check for Open

Multimeter Connection	Condition	Specified Condition
B-035 (26) - I-052 (216)	Always	Continuity
B-035 (14) - I-052 (203)	Always	Continuity



NG → Repair or replace CAN line

OK

5	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

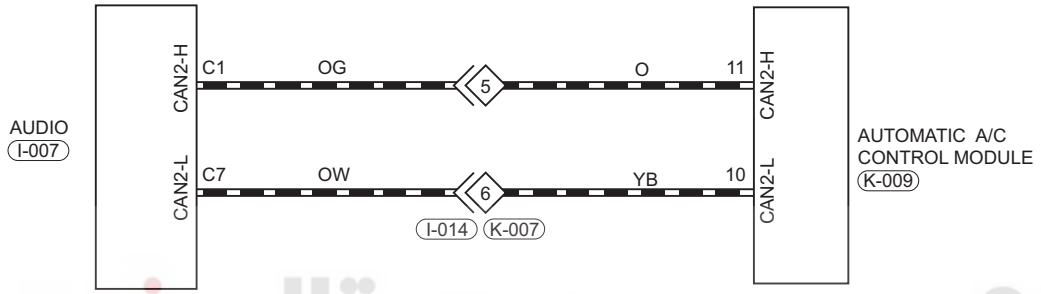
g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

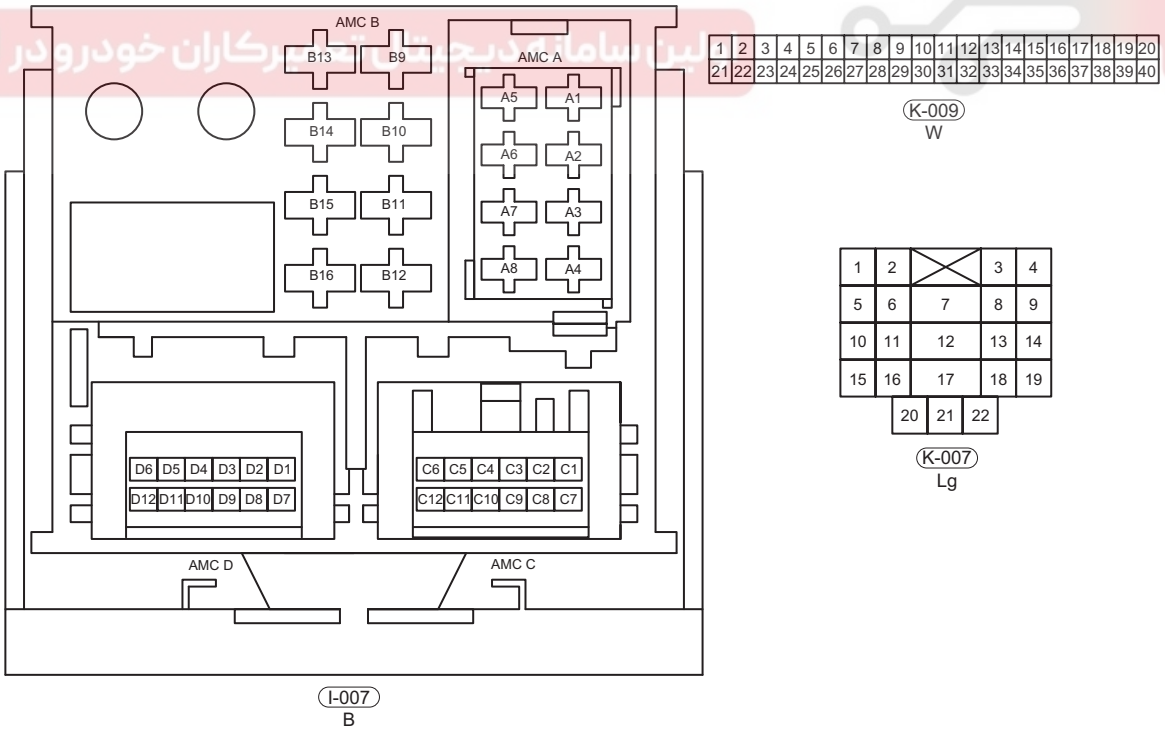
NG → **Replace automatic A/C control module**

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

DTC	U0245-87	Lost Communication with Radio Receiver Module





ET15430240

DTC	DTC Definition	DTC Detection Condition	Possible Cause
U0245-87	Lost Communication with Radio Receiver Module	Engine switch ON	• Audio control module • Automatic A/C control module • CAN line communication

DTC Confirmation Procedure

Confirm that battery voltage is 11 to 14 V before performing following procedures.

- Turn engine switch to OFF.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC), and make it communicate with vehicle electronic module through data network.
- Turn engine switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in automatic A/C control system.
- Turn engine switch to OFF and wait for a few seconds.
- Turn engine switch to ON, and then select Read Code.
- If DTC is detected, malfunction indicated by DTC is current. Go to diagnosis procedure - Step 1.
- If DTC is not detected, malfunction indicated by DTC is intermittent (See page 44-23).

CAUTION

- When performing circuit diagnosis and test, always refer to circuit diagram for specific circuit and component information.

Diagnosis Procedure

1	Check audio control module

a. Remove audio control module from malfunctioning vehicle, then install it to a new vehicle and perform a test.
b. Connect all connectors.
c. Connect negative battery cable, and turn engine switch to ON.
d. Check operating condition of audio control module.

NG → **Replace audio control module**

OK

2	Check connector and terminal

a. Turn engine switch to OFF.
b. Disconnect the negative battery cable.
c. Disconnect the audio control module connector I-007.
d. Check wire harness, connector and terminal for deformation, bend or damage.

NG → **Repair or replace connector and terminal**

OK

3	Check CAN line (Automatic A/C control module - Audio module)

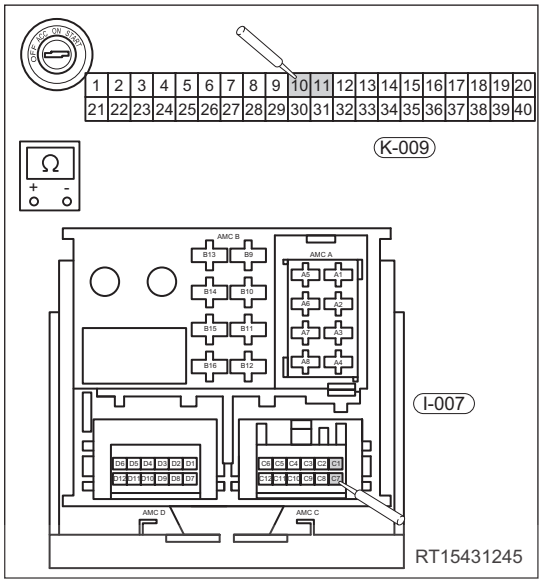
a. Turn engine switch to OFF.

b. Disconnect the negative battery cable.

c. Disconnect automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-052.

d. Using a digital multimeter, check for continuity between automatic A/C control module connector K-009 and Body Control Module (BCM) connector I-007 according to value (s) in table below.

Check for Open



Multimeter Connection	Condition	Specified Condition
K-009 (10) - I-007 (C7)	Always	Continuity
K-009 (11) - I-007 (C1)	Always	Continuity

NG → Repair or replace CAN line

OK

4	Reconfirm DTCs

a. Connect all connectors.

b. Connect the negative battery cable.

c. Turn engine switch to ON.

d. Using X-431 3G diagnostic tester (the latest software), record and clear DTCs stored in automatic A/C system.

e. Turn engine switch to OFF and wait for a few seconds.

f. Turn engine switch to ON.

g. Using X-431 3G diagnostic tester (the latest software), read DTCs stored in automatic A/C system again.

NG → Replace automatic A/C control module

OK

System is operating normally. Reassemble vehicleand perform a road test to confirm that malfunction reported by customerhas been repaired.

ON-VEHICLE SERVICE

On-vehicle Inspection

HINT:

- A/C refrigerant lines and hoses are used to transfer refrigerant among A/C system components. Any twist or bend in refrigerant lines and hoses will reduce performance of A/C system and refrigerant flow in system.
- There remains high pressure in refrigerant when A/C compressor assembly is operating. It is necessary to ensure that each connecting part in A/C system is sealed well. Check all system lines at least once a year to ensure that they are in good condition and properly routed. Refrigerant lines and hoses cannot be repaired and must be replaced if leakage or damage exists.

1. General inspection.
   a. Check if there is any oil or dust in each joint of A/C line. If this occurs, leakage may exist.
   b. Check if condenser surface is dirty and if fins are deformed.
   c. Check if there are harsh noises while compressor assembly is operating normally.
   d. Temperature difference should be noticeable by touching intake line and exhaust line of compressor assembly with hand. Normally, temperature of low pressure line is relatively low and that of high pressure line is relatively high. If you feel the temperature of intake duct and exhaust duct of condenser with hand, under normal conditions, temperature of intake duct is higher than that of exhaust duct. If you feel the temperature difference between expansion valve inlet and outlet lines with hand, under normal conditions, temperature of expansion valve inlet line is relatively high and that of outlet line is relatively low, and the temperature difference between them is noticeable.
2. Using pressure gauge set, check refrigerant pressure.
   a. Connect the manifold pressure gauge set. After following conditions are met, read pressure values on pressure gauge. Measurement condition:
      - Inner/Outer circulation switch is in outer circulation position.
      - Engine runs at approximately 2000 rpm.
      - Adjust temperature control knob to Max. Cool.
      - Set blower speed control switch to highest band.
      - Turn on A/C switch.

      Observe pressure values on pressure gauge. In normal condition, low pressure value is 0.15 to 0.20 Mpa and high pressure value is 1.3 to 1.7 Mpa.

Compressor Assembly Noise Inspection

When checking noise related to A/C system, you must first know the conditions under which noise occurs. These conditions include: weather, vehicle speed, engine speed, engine temperature and any other special conditions. Loud noises during A/C operation can often mislead someone. For example, some sounds, like a failed bearing, may be caused by loose bolts, mounting brackets or a loose compressor assembly.

CAUTION

- A/C compressor assembly must be replaced if any abnormal noise is heard from compressor assembly.
- Noise may occur from drive belt at different engine speeds, and you may mistake it for a noise from A/C compressor assembly.

1. Select a quiet place for testing.
2. Duplicate customer's feedback information as much as possible.

3. Turn A/C on and off several times to clearly identify compressor assembly noise.
4. Check the condition of compressor assembly belt.
5. Check compressor assembly hub, pulley and bearing assembly. Make sure that hub and pulley are aligned correctly, and pulley bearing is securely installed to A/C compressor assembly.
6. Check if refrigerant line routes incorrectly, and if it is damaged or has an interference that could result in an abnormal noise. Also, check refrigerant line for twist or bend, otherwise the refrigerant will be limited to flow, which will cause a noise.
7. Loosen all compressor assembly tightening bolts and retighten them.
8. If noise occurs when liquid refrigerant in A/C suction line is under a slugging condition, replace condenser and check refrigerant oil level and charging condition for refrigerant.
9. If slugging condition still exists after replacing condenser, replace the A/C compressor assembly.

⚠ WARNING

- DO NOT race engine when vacuum pump operates or vacuum exists in A/C system. Failure to do so may result in a serious damage to A/C compressor assembly.

Refrigerant Leakage Inspection

⚠ WARNING

- DO NOT perform pressure test or a leakage test to R134a service device or vehicle A/C system with compressed air. Mixture of air and R134a is inflammable at high pressure. This mixture has potential danger, and it may cause a fire or explosion, resulting in vehicle damage, personal injury or death.
- Avoid inhaling vapor or moisture from the A/C refrigerant and refrigerant oil.
- Only use special service device to discharge R134a system. If system discharges unexpectedly, ventilate work place before servicing.

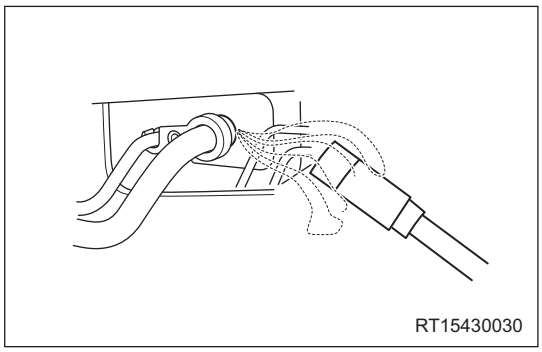
CAUTION

- If A/C refrigerant filling amount is empty or low, A/C system may have leak. Check all A/C lines, joints and parts for remaining oil. The remaining oil is indication mark of A/C system leaking position.

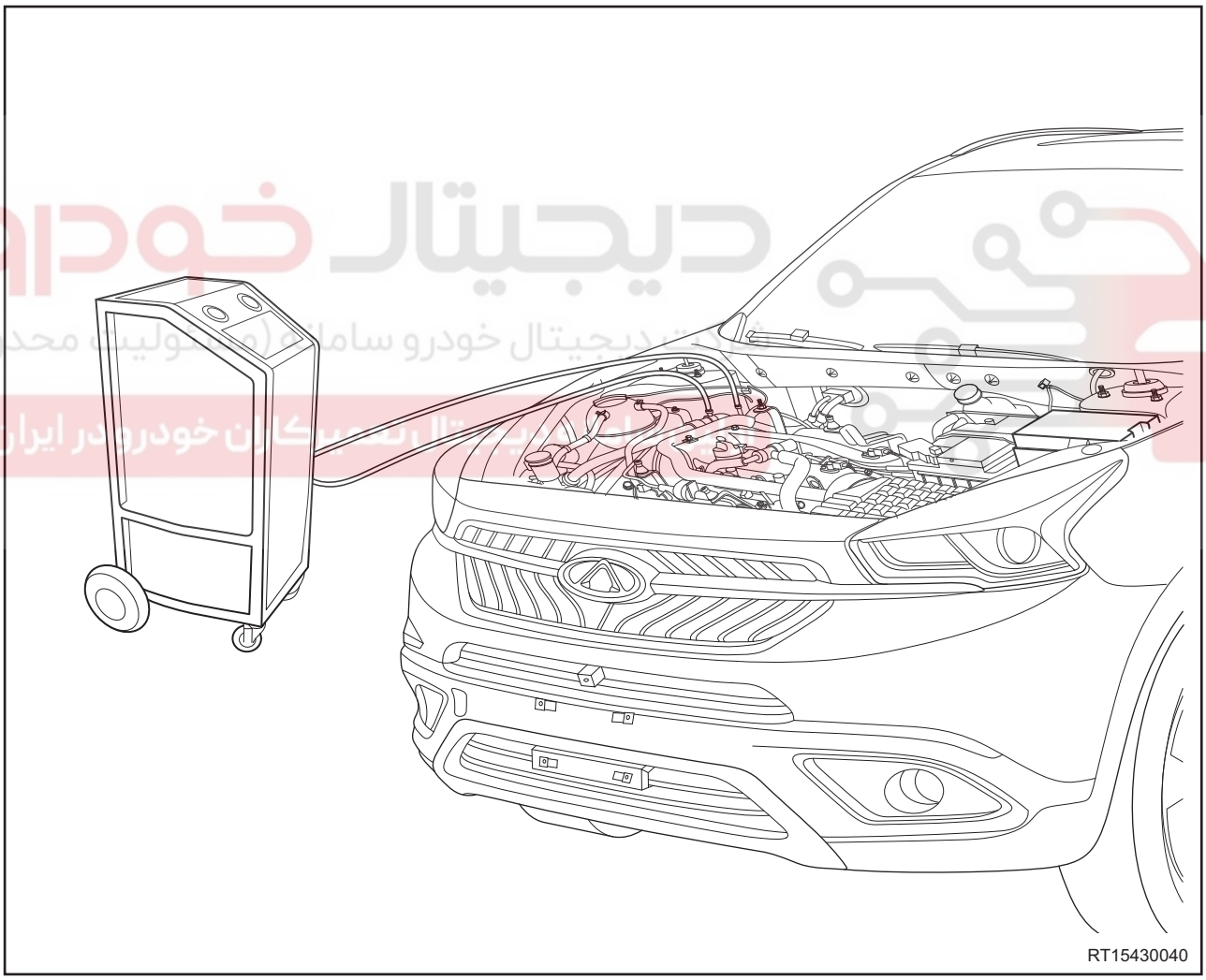
Check refrigerant for leakage.

1. After recharging refrigerant, use gas leak detector to check refrigerant gas for leakage.
2. Perform operations under following conditions:
   - Stop engine.
   - Ensure the ventilation is well (gas leak detector may react to volatile gases which are not from refrigerant, such as gasoline vapor or exhaust gas).
   - Repeat test for 2 or 3 times.
   - Make sure that there is some refrigerant remaining in refrigeration system.

3. Place gas leak detector near the joint of A/C line, and check A/C line for leakage. If gas leak detector makes a sound, it indicates that a leakage exists. Repair or replace leaked A/C line as necessary.


RT15430030

4. Disconnect A/C pressure sensor connector, and use same procedures to check A/C pressure sensor for leakage. Replace A/C pressure sensor as necessary.
5. Insert gas leak detector into evaporator tank assembly, and use same procedures to check evaporator for leakage. Clean or replace evaporator core assembly as necessary.
6. Use same procedures to check condenser for leakage. Clean or replace condenser assembly as necessary.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Refrigerant Recovering/Draining

WARNING

- Take extra care when servicing A/C system under high pressure.
- There is refrigerant under high pressure in A/C system. It must be serviced by professional technician. Otherwise, a wrong service procedure may cause a serious danger or fatal injury.
- If A/C system pressure is released unexpectedly, ventilate work area before servicing. In a closed work place, if a large amount of refrigerant is discharged, it may cause oxygen reduction and result in smothering, causing a serious or fatal injury.

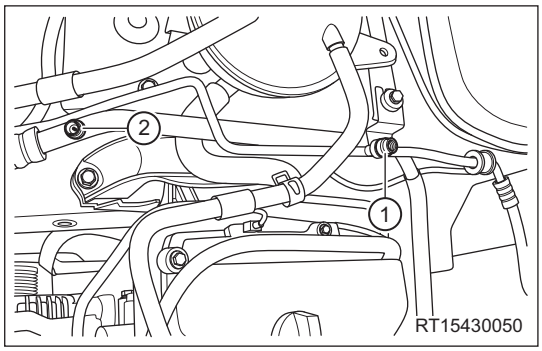
CAUTION

- It is necessary to recover refrigerant with R134a refrigerant special recycling machine.
- DO NOT work near open flames.
- Always dispose of recovered refrigerant as specified.
- Never charge R-12 to refrigerant system which is designed to use R134a. This refrigerant is incompatible, which could damage A/C system.
- DO NOT race engine when vacuum pump operates or vacuum exists in A/C system. Otherwise, A/C compressor assembly will be damaged seriously.

ENVIRONMENTAL PROTECTION

- Never drain refrigerant in A/C system into the atmosphere directly, and avoid environmental contamination.

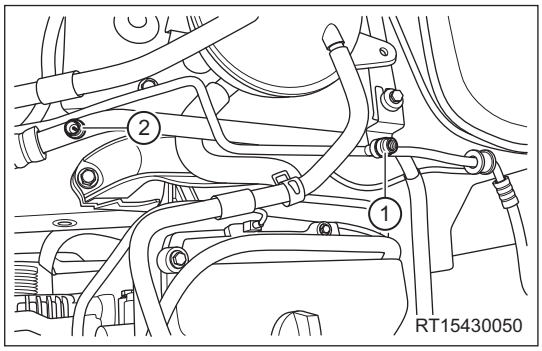
1. Open hood and loosen joint cover of A/C high/low pressure line.
2. Connect refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect red connector to A/C high pressure line joint (1).
   b. Connect blue connector to A/C low pressure line joint (2).



3. Open high pressure valve and low pressure valve of refrigerant recycling machine.
4. Choose "recovering" item on machine and make it start to operate.
5. Check low pressure value on pressure gauge to ensure that recycling is completed, and then turn off machine.
6. Disconnect connection between refrigerant recycling machine and A/C line joint.
7. Reinstall cover onto refrigerant line joint.

Vacuum Pumping

1. Open hood and loosen joint cover of A/C high/low pressure line.
2. Connect refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect red connector to A/C high pressure line joint (1).
   b. Connect blue connector to A/C low pressure line joint (2).



3. Open high pressure valve and low pressure valve of refrigerant recycling machine.
4. Choose "vacuum pumping" item on machine and the time setting is 15 minutes, then choose OK and make it start to operate.
5. Wait for about 10 minutes after completing operation, and check if there is any change in A/C system vacuum. If there is any change, the A/C system leakage may exist, you should check and repair the A/C system. If there is no change, proceed to perform refrigerant charging procedures.

Refrigerant Recharging

CAUTION

- A small amount of refrigerant oil in A/C system will be discharged when recovering and draining refrigerant. When filling A/C system, be sure to supplement refrigerant oil, as some amount of oil is lost during recovering.
- DO NOT fill excessive refrigerant. Otherwise, it will cause excessive pressure to compressor assembly, resulting in compressor assembly noise and A/C system failure.
- Always perform vacuum pumping before recharging refrigerant.

1. Perform vacuum pumping with a vacuum pump.
2. Add refrigerant oil after checking that there is no leakage in A/C system.
3. Perform vacuum pumping for 3 minutes again after adding refrigerant oil, then charge refrigerant.
4. Choose "charging" item on machine and set the amount of charging to specified value, then choose OK and make it start to operate.
5. Open suction valve and close discharging valve, and then open the charging valve to allow refrigerant to flow into system.
6. When delivery of refrigerant has stopped, close charging valve.
7. If charged refrigerant is not delivered to specified position, start the engine to operate A/C compressor assembly.
8. Open charging valve to deliver the remaining refrigerant to A/C system.

WARNING

- At this time, do not open exhaust (high pressure) valve. Failure to do so may result in personal injury or even death.

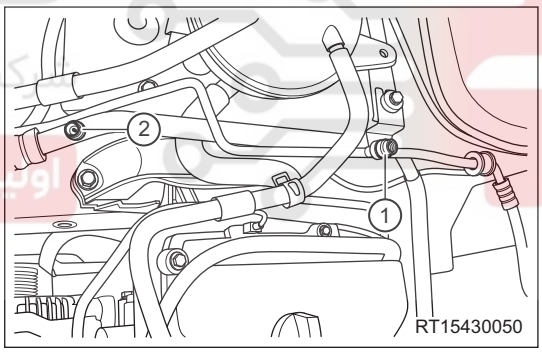
9. Perform A/C system pressure test after charging.
10. Remove connecting pipe for refrigerant charging after test is completed.
11. Reinstall cover onto A/C line joint.

Refrigerant Oil Recovering

CAUTION

- Special service equipment for R134a refrigerant must be used.
- Always keep work area in good ventilation, because A/C system is easy to leak.
- Always dispose of recovered refrigerant as specified.
- Refrigerant oil must be charged after replacing A/C system components or recovering refrigerant.

1. Open engine hood and loosen joint cover of A/C high/low pressure line.
2. Connect refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect red connector to A/C high pressure line joint (1).
   b. Connect blue connector to A/C low pressure line joint (2).



3. Open high pressure valve and low pressure valve of refrigerant recycling machine.
4. Recover refrigerant oil according to instructions on the machine.
5. Record amount of recovered refrigerant oil.
6. Disconnect connection between refrigerant recycling machine and A/C line joint.
7. Reinstall joint cover onto refrigerant line joint.

Refrigerant Oil Charging

Refrigerant Oil Charging Amount Specifications

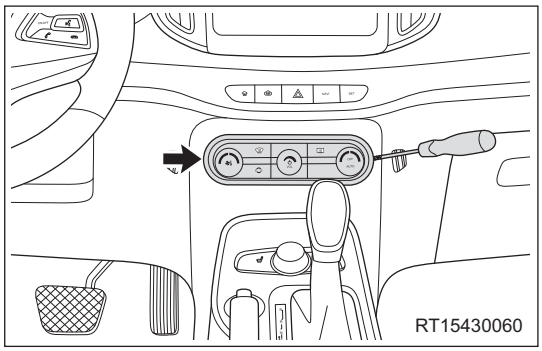
Item	A/C Compressor Assembly Replacement	Condenser Replacement	Evaporator Replacement	Line Replacement
Refrigerant Oil Charging Amount	Supplement according to actual pouring amount	20 ml	20 ml	10 ml

1. Perform vacuum pumping with a vacuum pump. Wait for about 10 minutes after completing operation, check if there is any change in A/C system pressure. If there is any change, the A/C system leakage may exist, you should check and repair the A/C system. If there is no change, proceed to perform refrigerant oil charging procedures.
2. Open suction valve and close exhaust valve, and then open the charging valve to allow refrigerant oil to flow into system.
3. Close charging valve after refrigerant oil charging is completed.
4. Perform vacuum pumping again for 3 minutes.
5. Continue to perform refrigerant charging procedures after operation is completed.

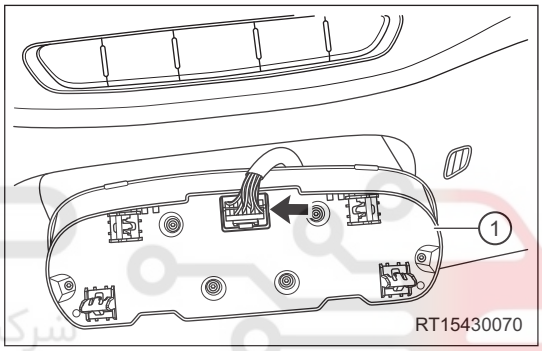
A/C Control Panel Assembly

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the A/C control panel.
   a. Using a screwdriver wrapped with protective tape, pry off A/C control panel assembly (arrow).



   b. Disconnect A/C control panel assembly connector (arrow) and remove A/C control panel assembly (1).



Installation

Installation is in the reverse order of removal.

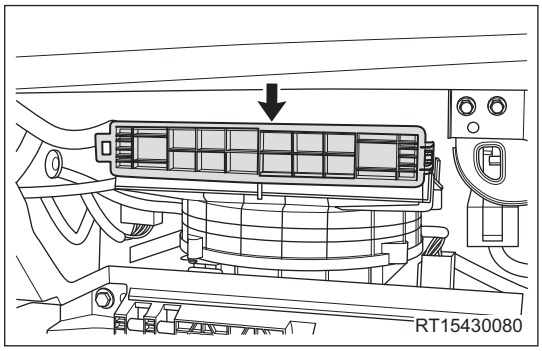
CAUTION

- Be sure to install fixing clips on upper part of the center control integration panel assembly in place when installing.
- Be sure to align dowel pin on upper part of the center control integration panel with positioning hole on instrument panel when installing.

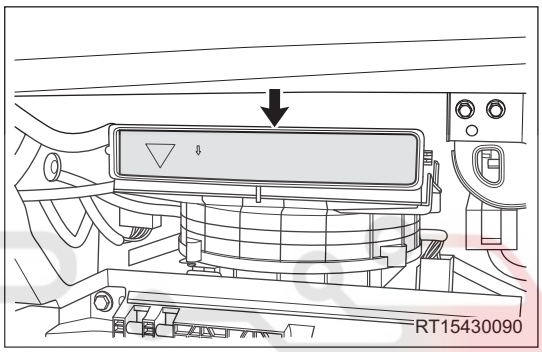
A/C Element

Removal

1. Remove the glove box assembly (See page 60-14).
2. Remove the A/C element.
   a. Detach claws on both sides of A/C element cover, and remove A/C element cover (arrow) from air inlet assembly.



   b. Pull out A/C element (arrow) slowly from air inlet assembly.



Installation

Installation is in the reverse order of removal.

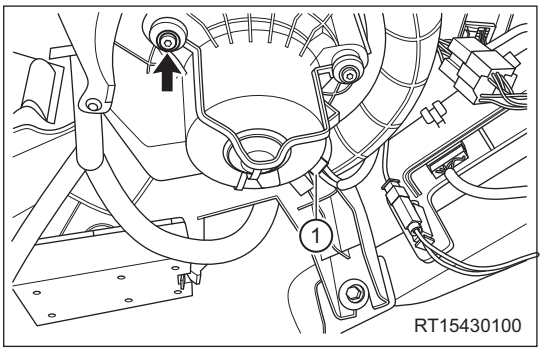
CAUTION

- Be sure to check A/C element for dirt when installing. Clean it as necessary.
- If A/C element is too dirty or damaged, replace it with a new one.

Blower Assembly

Removal

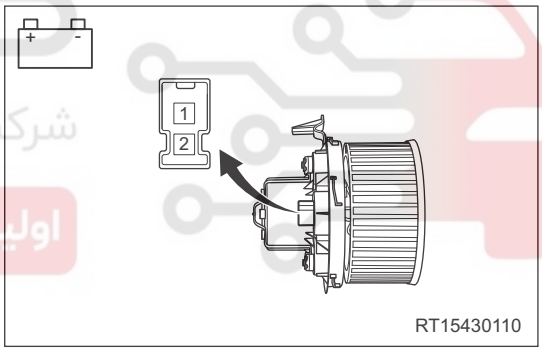
1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the blower assembly.
   a. Disconnect blower assembly connector (1), remove fixing screw from blower and loosen clip (arrow).
   (Tightening torque: 5 ± 1 N·m)



   b. Remove the blower assembly.

Inspection

1. Check the blower motor.
   a. Remove the blower assembly.
   b. Connect positive (+) battery lead to terminal 1 and negative (-) battery lead to terminal 2. Check that blower motor operates smoothly.



Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing screws to specified torque.

Blower Speed Resistor

Removal

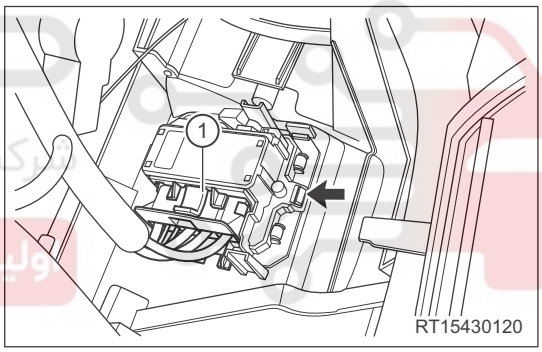
WARNING

- During normal operation, blower speed resistor may be very hot. Turn off blower and wait for a few minutes to cool it before diagnosing or servicing, in order to avoid burns.

CAUTION

- DO NOT operate blower assembly, when removing blower speed resistor from vehicle. Failure to do so may result in damage to blower assembly.

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 60-14).
4. Remove the blower speed resistor.
   a. Disconnect the blower speed resistor connector (1).
   b. Remove 6 fixing clips (arrow) from blower speed resistor.



   c. Remove the blower speed resistor assembly.

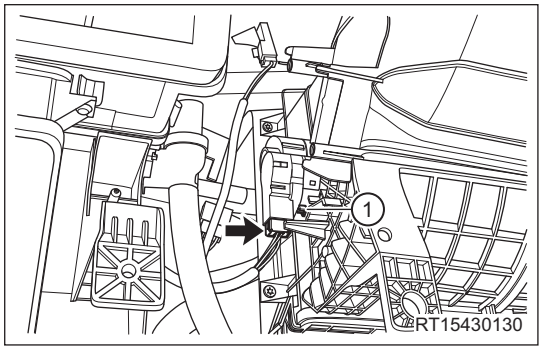
Installation

Installation is in the reverse order of removal.

Inner/Outer Circulation Damper Motor

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 60-14).
4. Remove the inner/outer circulation damper motor.
   a. Disconnect the inner/outer circulation damper motor connector (arrow).
   b. Detach the inner/outer circulation damper motor fixing clip (1).



   c. Rotate inner/outer circulation damper motor counterclockwise to remove it.

Installation

Installation is in the reverse order of removal.

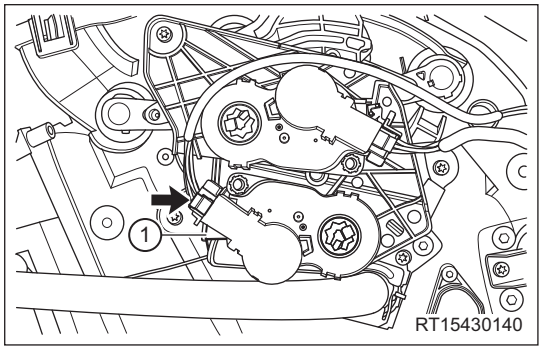
CAUTION

- When installing, apply a small amount of grease to contact surface between inner/outer circulation damper servo motor lever and inner/outer circulation damper set, to ensure the motor operates smoothly.

Mode Damper Motor

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the instrument panel left lower protector assembly (See page 60-14).
4. Remove the mode damper motor.
   a. Disconnect the mode damper motor connector (arrow).
   b. Detach the mode damper motor fixing clip (1).



   c. Rotate mode damper servo motor counterclockwise to remove it.

Installation

Installation is in the reverse order of removal.

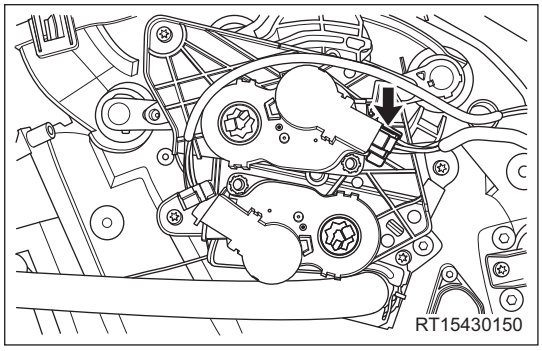
CAUTION

- When installing, apply a small amount of grease to contact surface between mode damper motor lever and mode damper set, to ensure the motor operates smoothly.

Left Mix Damper Motor (Automatic A/C)

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the instrument panel left lower protector assembly (See page 60-14).
4. Remove the left mix damper motor.
   a. Disconnect the left mix damper motor connector (arrow).
   b. Detach the left mix damper motor fixing clip (1).



   c. Rotate left mix damper motor counterclockwise to remove it.

Installation

Installation is in the reverse order of removal.

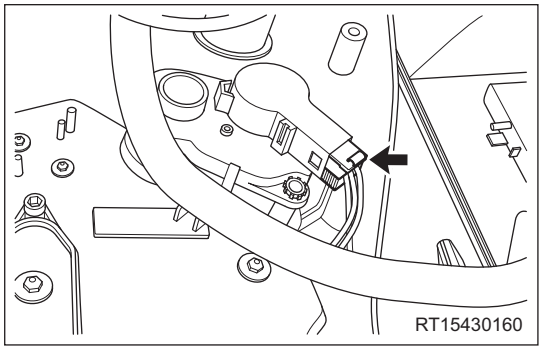
CAUTION

- When installing, apply a small amount of grease to contact surface between left mix damper motor lever and left mix damper set, to ensure the motor operates smoothly.

Right Mix Damper Motor

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 60-14).
4. Remove the right mix damper motor.
   a. Disconnect the right mix damper motor connector (arrow).



   b. Loosen clip, rotate right mix damper motor counterclockwise to remove it.

Installation

Installation is in the reverse order of removal.

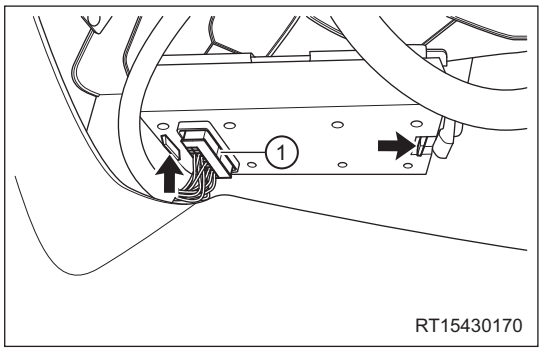
CAUTION

- When installing, apply a small amount of grease to contact surface between right mix damper motor lever and right mix damper set, to ensure the motor operates smoothly.

Automatic A/C Control Module

Removal

1. Turn off all electrical equipment and the engine switch.
2. Disconnect the negative battery cable.
3. Remove the automatic A/C control module.
   a. Disconnect the automatic A/C control module connector (1).
   b. Loosen 2 fixing clips (arrow) and remove automatic A/C control module.



Installation

Installation is in the reverse order of removal.

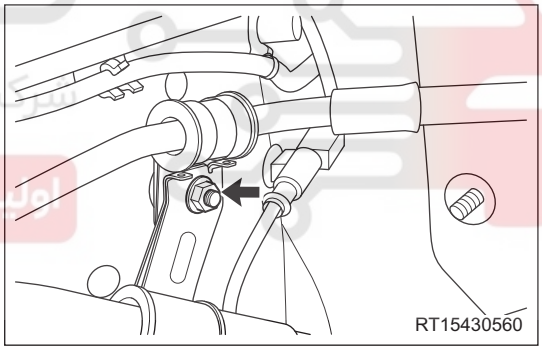
HVAC Assembly

Removal

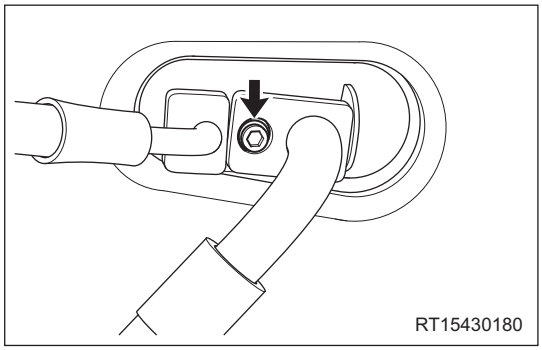
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Be careful not to damage hoses during removal and installation.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.

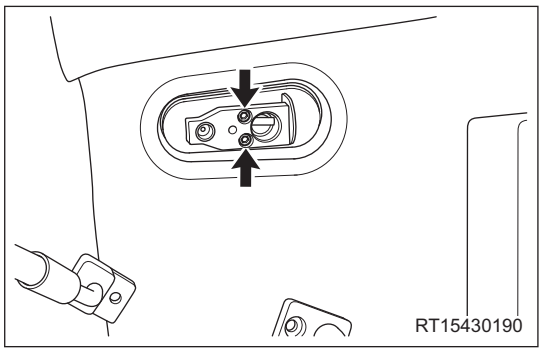
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the driver airbag (See page 45-88).
5. Remove the steering wheel assembly (See page 41-8).
6. Remove the auxiliary fascia console assembly (See page 60-8).
7. Remove the instrument panel body assembly (See page 60-14).
8. Remove the instrument panel crossmember assembly (See page 60-22).
9. Remove the HVAC assembly.
   a. Remove fixing nut (arrow) from A/C high/low pressure line.
      (Tightening torque: 9 ± 1 N·m)



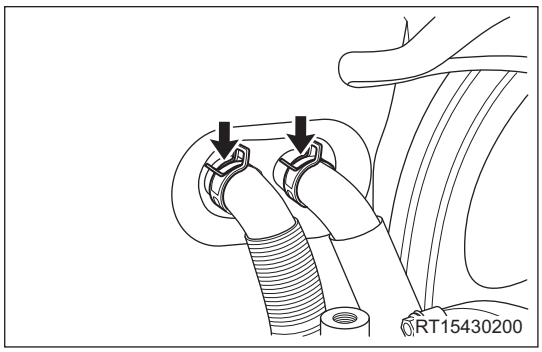
   b. Remove fixing bolt (arrow) from A/C high/low pressure line.
      (Tightening torque: 9 ± 1 N·m)



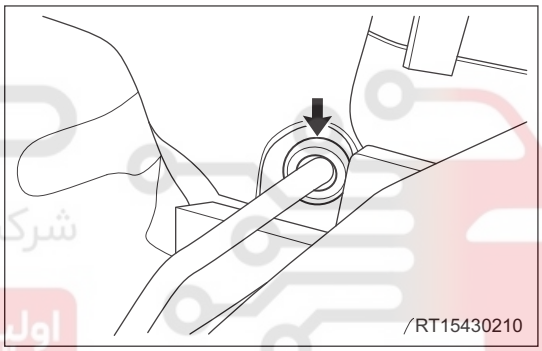
c. Remove 2 fixing bolts (arrow) from expansion valve, and remove expansion valve assembly.
(Tightening torque: 9 ± 1 N·m)



d. Using snap spring calipers, disengage fixing clamps (arrow) from heating inlet and outlet hoses to detach inlet and outlet hoses.



e. Detach fixing rubber bush (arrow) between outlet hose of HAVC and body.

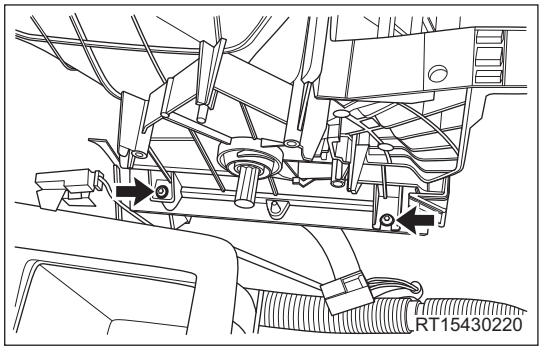


f. Carefully take off HVAC assembly from cabin.

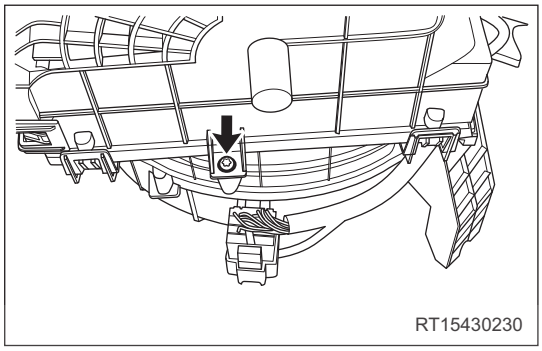
Disassembly

1. Remove the blower assembly (See page 44-94)
2. Remove the blower speed resistor (See page 44-95).
3. Remove the inner/outer circulation damper motor (See page 44-96).
4. Remove the left mix damper motor (automatic A/C) (See page 44-98).
5. Remove the mode damper motor (See page 44-97).
6. Remove the right mix damper motor (See page 44-99).
7. Remove the automatic A/C control module (See page 44-100).
8. Remove the A/C element assembly (See page 44-93).

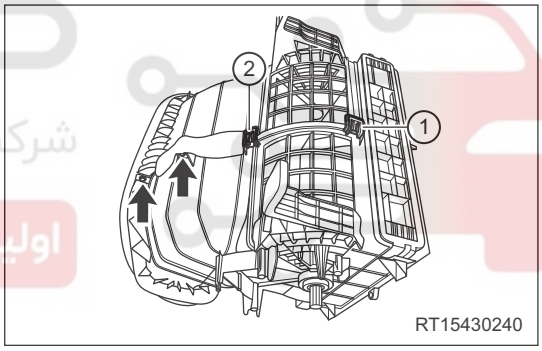
9. Remove the inner/outer damper set.
   a. Remove 2 fixing screws (arrow) from inlet air connecting duct assembly.
      (Tightening torque: 3.5 ± 0.5 N·m)



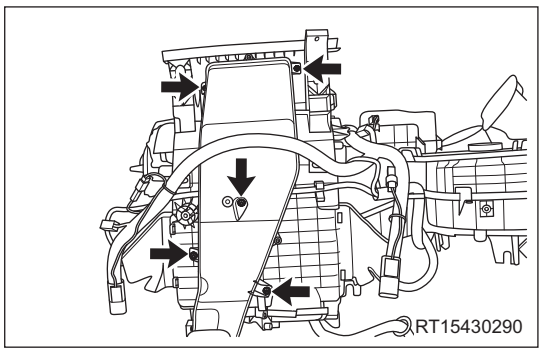
   b. Remove fixing screw (arrow) from inlet air connecting duct assembly.
      (Tightening torque: 3.5 ± 0.5 N·m)



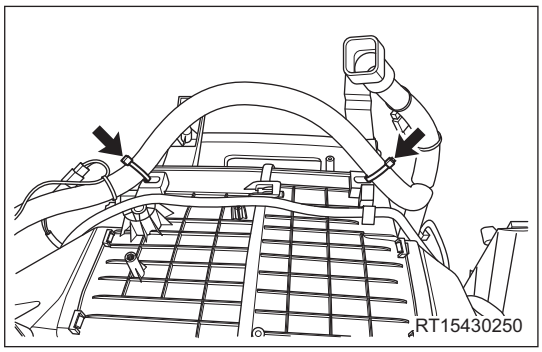
   c. Remove the inlet air connecting duct assembly.
   d. Remove 2 fixing screws (arrow) from inner/outer damper set, and detach 2 fixing clips.
      (Tightening torque: 3.5 ± 0.5 N·m)



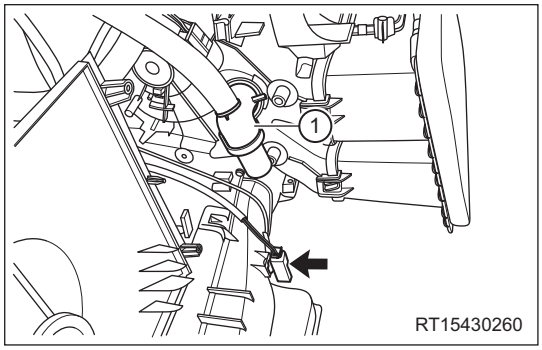
10. Remove the automatic A/C wire harness assembly.
    a. Remove 5 fixing screws (arrow) from rear air duct.



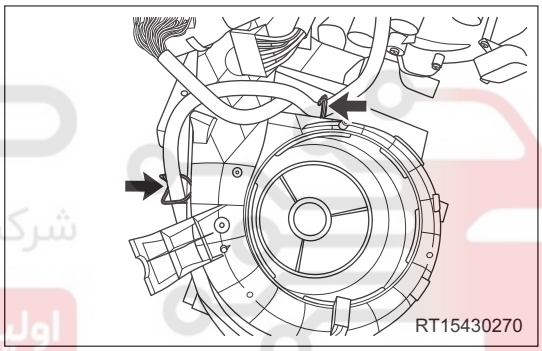
b. Detach 2 wire harness fixing clips (arrow).



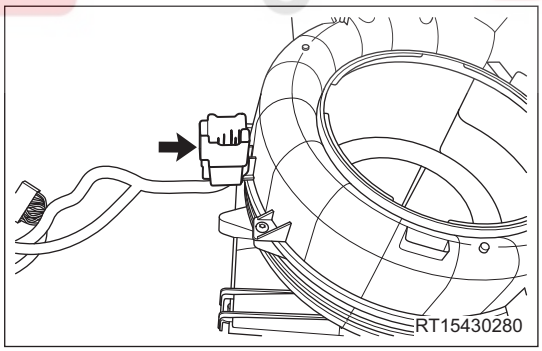
c. Detach room temperature ripple pipe (1) from HAVC, and disconnect evaporator tank temperature sensor (arrow).



d. Detach 2 fixing clips (arrow) of A/C wire harness from HAVC.



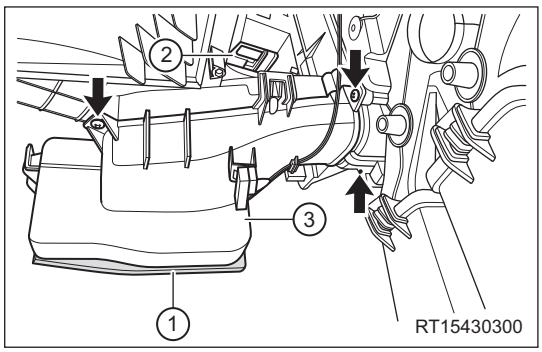
e. Detach connector (arrow) of A/C wire harness from HAVC.



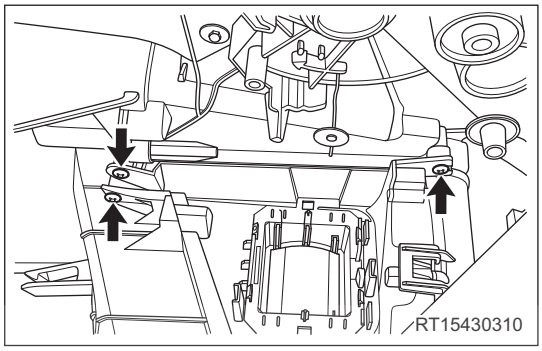
f. Remove the automatic A/C wire harness.

11. Remove the blower case.

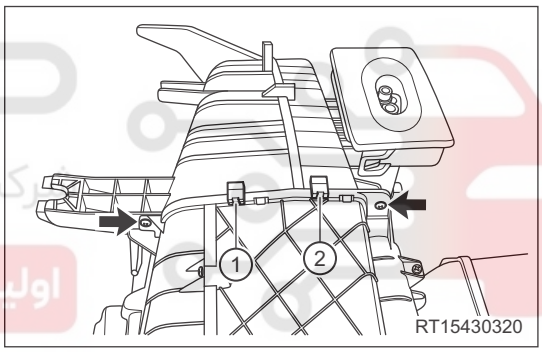
a. Remove sponge body (1), 3 fixing screws (arrow), detach fixing clip (2) and open housing (3).



b. Remove 3 fixing screws (arrow).



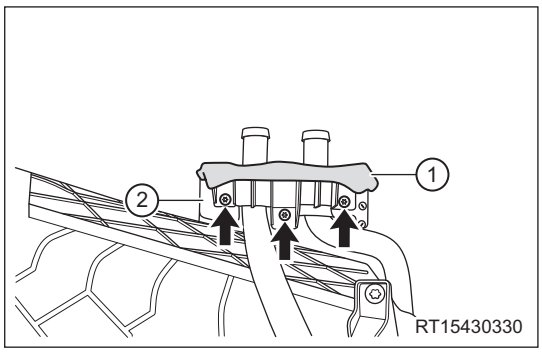
c. Remove 2 fixing screws (arrow), and detach 2 fixing clips (1) and (2).



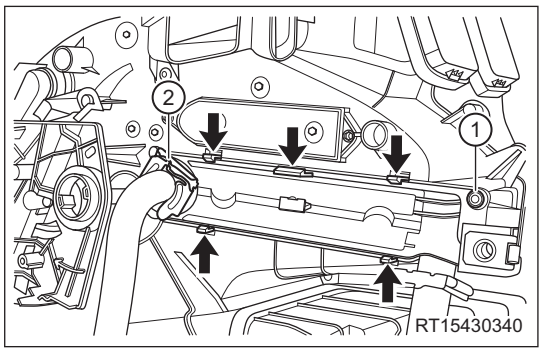
d. Remove the blower case.

12. Remove the heater core assembly.

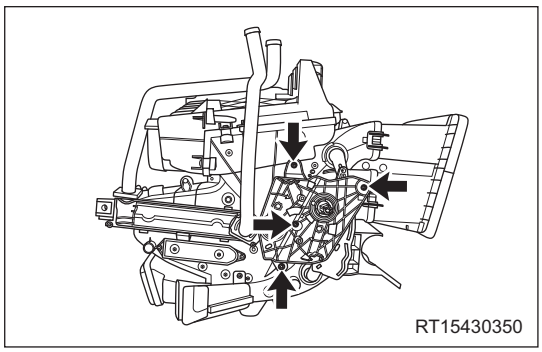
a. Remove 3 fixing screws (arrow), detach sponge body (1) and open pressure plate (2).



b. Remove 2 fixing screws (1) and (2) from heater core set plate, and detach 5 fixing clips (arrow) from heater core set plate.



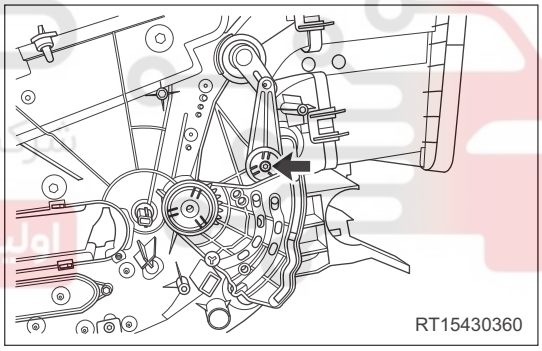
c. Remove 4 fixing screws (arrow) from damper set pressure plate, and remove pressure plate.



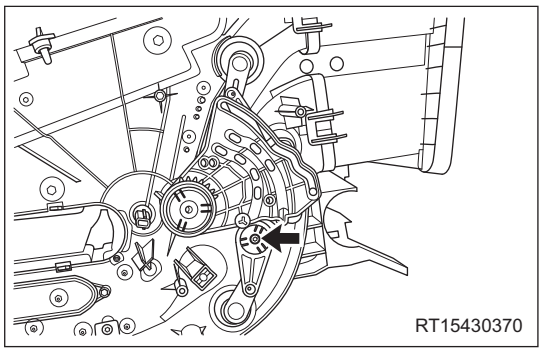
d. Remove heater core assembly from evaporator tank body.

13. Remove the damper drive set.

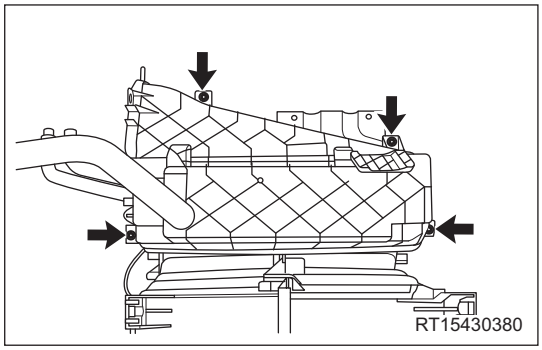
a. Remove fixing screw (arrow) from damper drive set.
(Tightening torque: 3.5 ± 0.5 N·m)



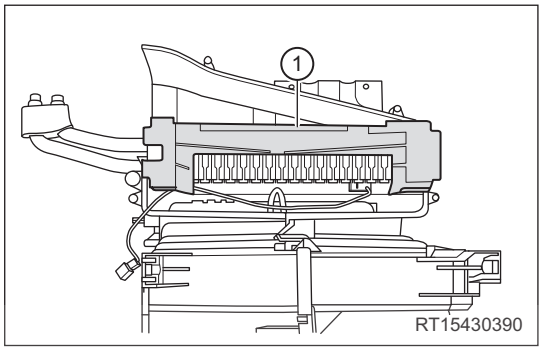
b. Remove fixing screw (arrow) from damper drive set.
(Tightening torque: 3.5 ± 0.5 N·m)



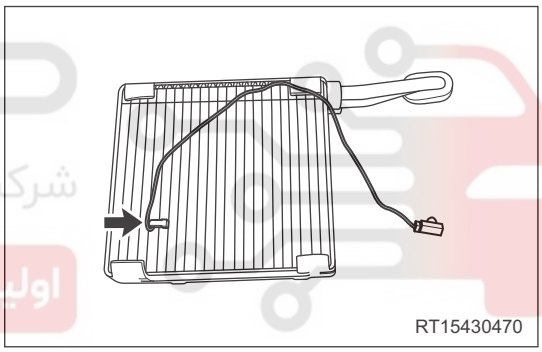
14. Remove the evaporator assembly.
    a. Remove 4 fixing screws (arrow) between evaporator upper and lower housings.



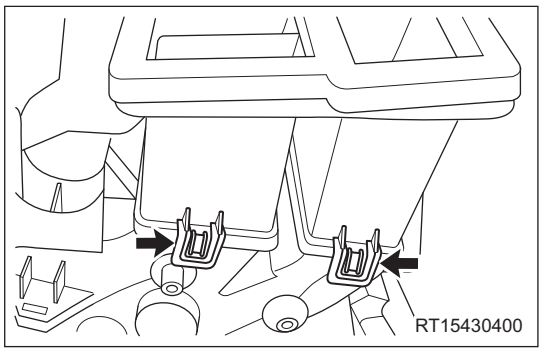
    b. Remove evaporator assembly (1) from evaporator tank.



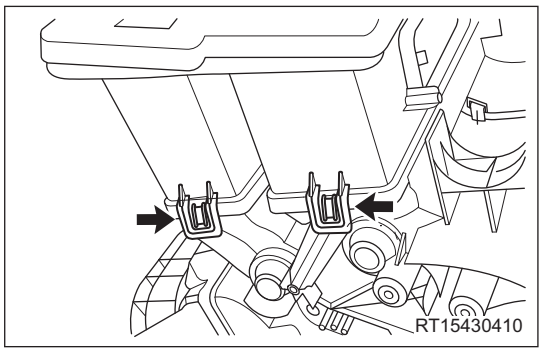
    c. Remove evaporator tank temperature sensor (arrow) from evaporator assembly.



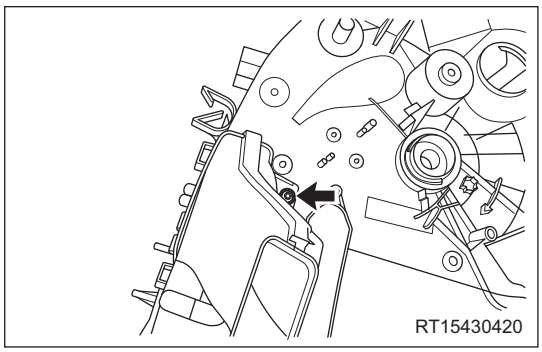
15. Remove the damper set.
    a. Detach 2 fixing clips (arrow) from outlet cover.



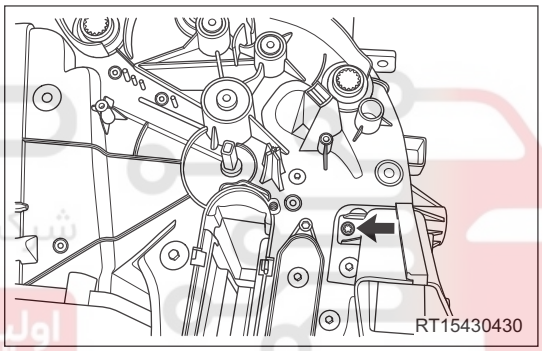
b. Detach 2 fixing clips (arrow) from outlet cover.



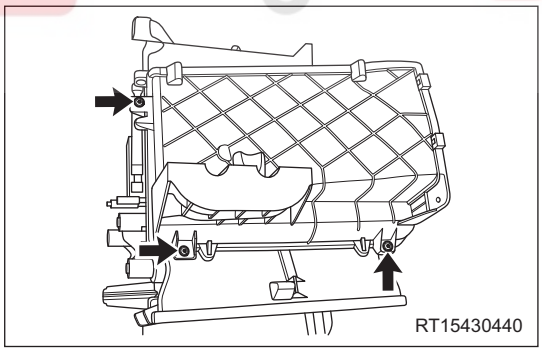
c. Remove fixing screw (arrow) from rear right outlet, and remove rear right outlet.
(Tightening torque: 3.5 ± 0.5 N·m)



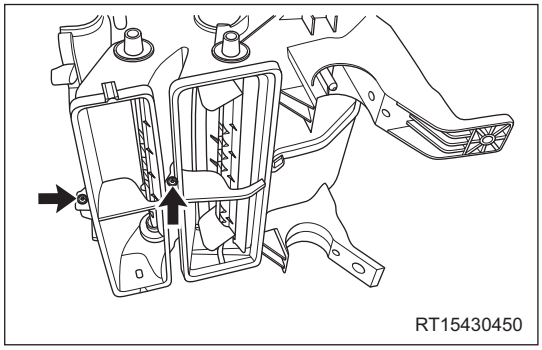
d. Remove fixing screw (arrow) from rear left outlet, and remove rear left outlet.
(Tightening torque: 3.5 ± 0.5 N·m)



e. Remove 3 fixing screws (arrow) from evaporator housing.
(Tightening torque: 3.5 ± 0.5 N·m)



f. Remove 2 fixing screws (arrow) from damper set housing.
(Tightening torque: 3.5 ± 0.5 N·m)



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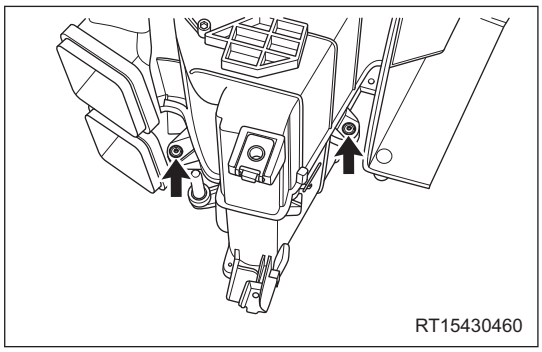
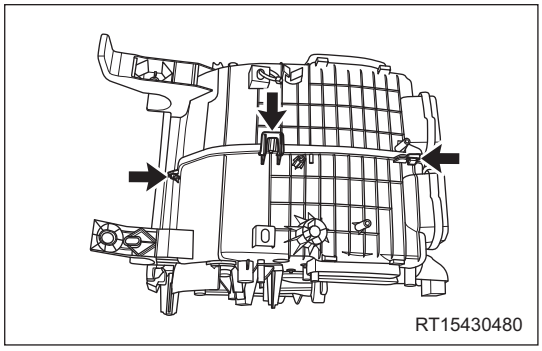
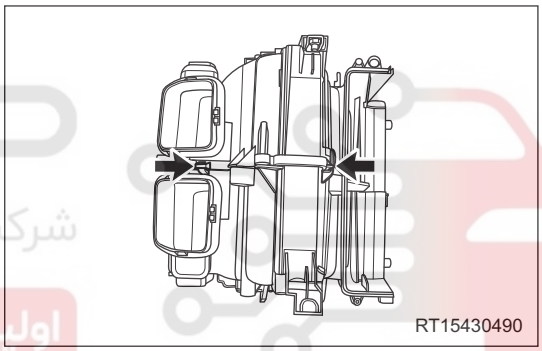
g. Remove 2 fixing screws (arrow) from damper set housing.
(Tightening torque: 3.5 ± 0.5 N·m)


RT15430460

h. Detach 3 fixing clips (arrow) from damper set housing.

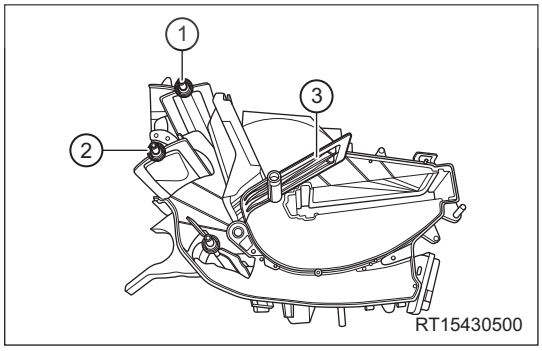

RT15430480

i. Detach 2 fixing clips (arrow) from damper set housing.


RT15430490

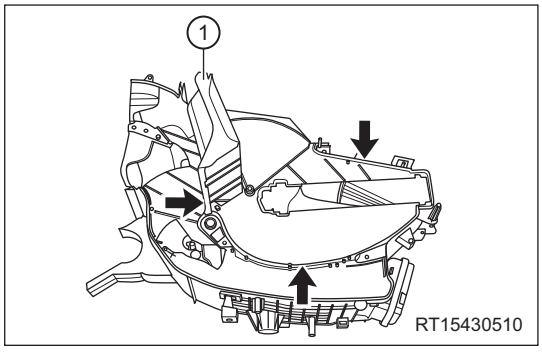
j. Separate the damper set housing.

k. Remove defroster damper set (1), face damper set (2) and right room damper set (3).



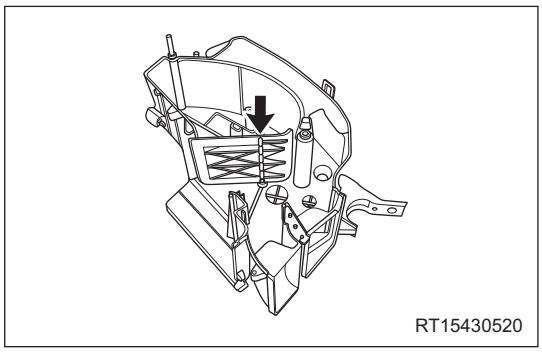
RT15430500

l. Remove 3 locating plates (arrow) and air deflector (1) from damper housing.



RT15430510

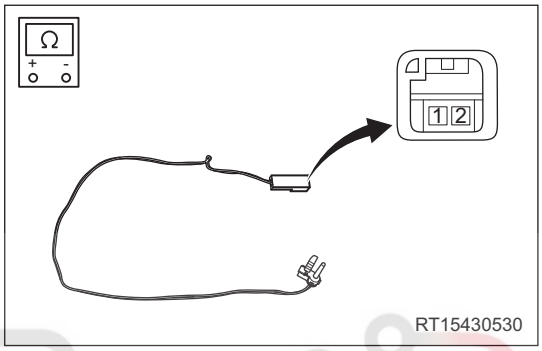
m. Remove the right room damper set (arrow).



Inspection

1. Check the evaporator temperature sensor.
   a. Using ohm band of digital multimeter, measure resistance of evaporator temperature sensor according to table below.

      Standard Resistance



Multimeter Connection	Temperature (°C)	Specified Condition
Terminal 1 - Terminal 2	-5	7716
Terminal 1 - Terminal 2	0	6194
Terminal 1 - Terminal 2	5	4963
Terminal 1 - Terminal 2	10	4007
Terminal 1 - Terminal 2	15	3259
Terminal 1 - Terminal 2	20	2669

HINT:
Resistance decreases as temperature increases.

CAUTION

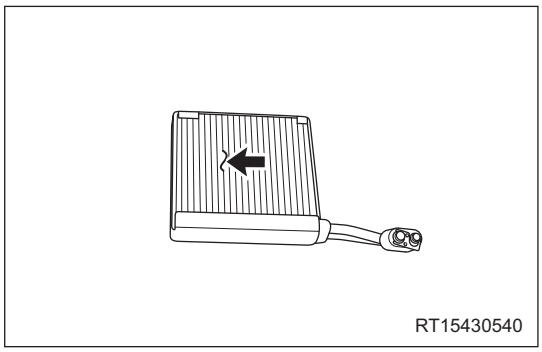
- Resistance value may change even if sensor is touched slightly. Make sure that connector of sensor is held firmly.
- During measurement, sensor temperature must be almost the same as ambient temperature.

If result is not as specified, replace evaporator temperature sensor.

2. Check the evaporator core assembly.
   a. Check if evaporator core assembly is cracked, damaged and leaked.
      If any problem is found, replace evaporator core assembly.

b. Check fin for bends.

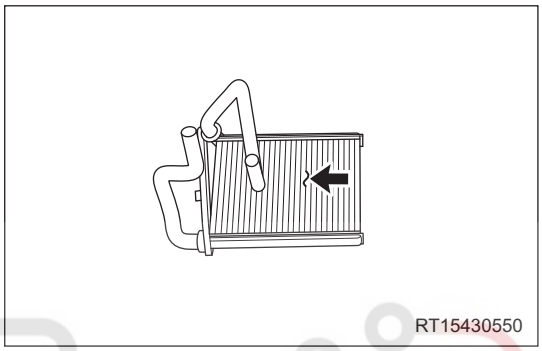
If any fin is bent, carefully straighten it with a screwdriver or pliers.


RT15430540

3. Check the heater core assembly.
   a. Check if heater core assembly is cracked, damaged or leaked.

      If any problem is found, replace heater core assembly.
   b. Check fin for bends.

      If any fin is bent, carefully straighten it with a screwdriver or pliers.


RT15430550

4. Check the damper control mechanism assembly.
   a. Check if inner/outer circulation damper adjustment mechanism is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
   b. Check if left/right room damper adjustment mechanism is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
   c. Check if face/defroster damper set is stuck, deformed, damaged or if it has fallen out. Replace as necessary.

Assembly

Assembly is in the reverse order of disassembly.

CAUTION

- If evaporator core is to be reused, do not insert the evaporator temperature sensor into a location where it was previously inserted. Insert it to a location that is 1 fin to the right or left of its previous location.
- During installation, apply a small amount of grease to contact surface of the inner/outer circulation damper adjustment mechanism, to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the mix damper adjustment mechanism set, to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the face damper adjustment mechanism, to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the defroster damper adjustment mechanism, to ensure that it can operate smoothly.
- Always check that inner/outer circulation damper mechanism assembly operates normally after installation.
- Always check that mix damper mechanism assembly operates normally after installation.
- Always check that face damper mechanism assembly operates normally after installation.
- Always check that defroster damper mechanism assembly operates normally after installation.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Be sure to recharge refrigerant and check for refrigerant leakage after installation.
- Refill the engine cooling system and check coolant for leakage after installation.

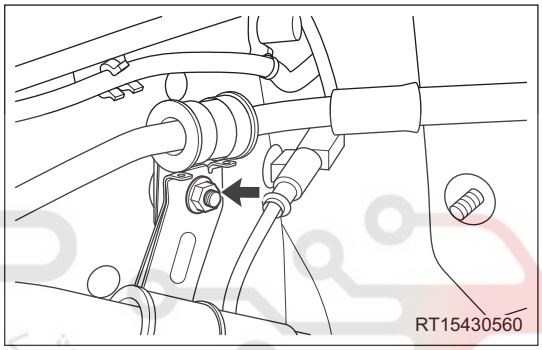
A/C Low Pressure Line

Removal

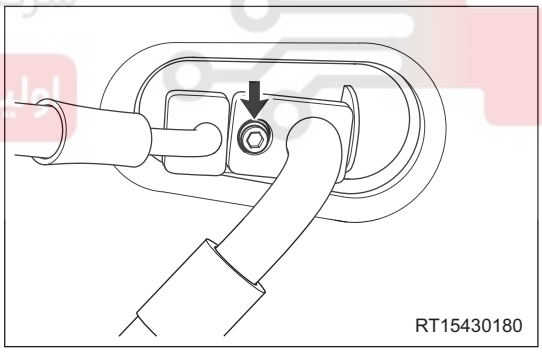
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.

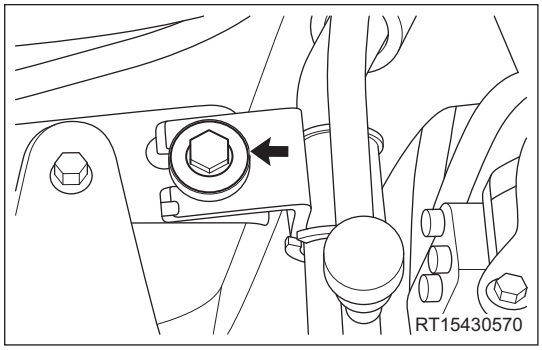
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the A/C low pressure line (compressor to expansion valve).
   a. Remove the A/C high/low pressure line fixing nut (arrow).
      (Tightening torque: 9 ± 1 N·m)



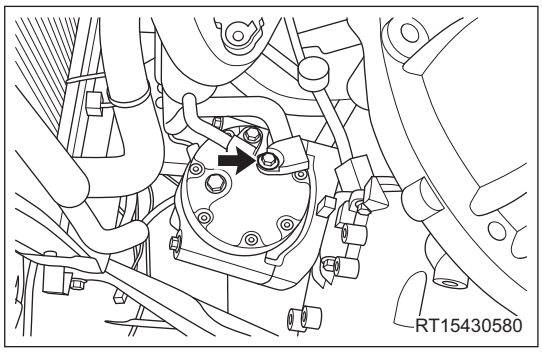
   b. Remove fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage A/C high/low pressure line.
      (Tightening torque: 9 ± 1 N·m)



   c. Remove fixing bolt (arrow) from A/C low pressure line.
      (Tightening torque: 9 ± 1 N·m)



d. Remove fixing bolt (arrow) between A/C low pressure line and compressor assembly, and disengage A/C low pressure line from compressor assembly.
(Tightening torque: 25 ± 3 N·m)



e. Remove the A/C low pressure line.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Perform recharging for A/C system and check for refrigerant leakage.

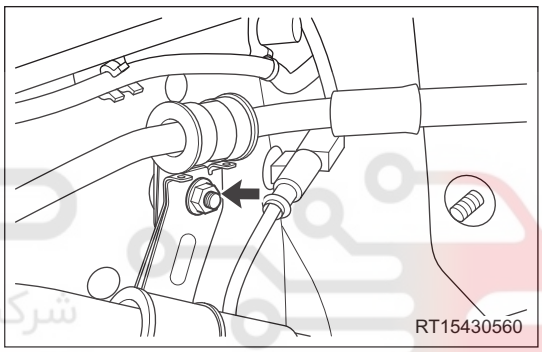
A/C High Pressure Line

Removal

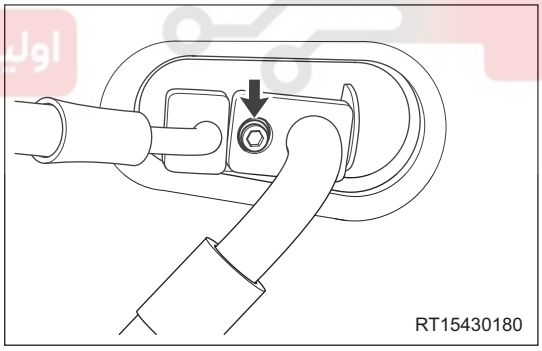
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.

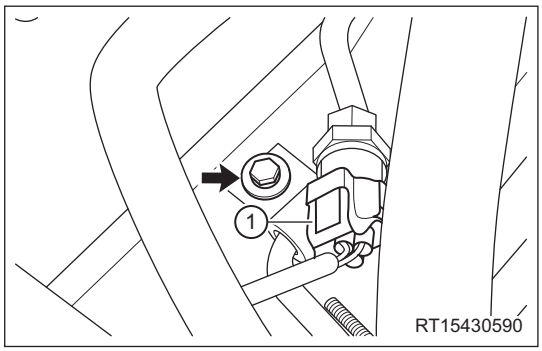
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 63-6).
5. Remove the A/C high pressure line (expansion valve to condenser).
   a. Remove the A/C high/low pressure line fixing nut (arrow).
      (Tightening torque: 9 ± 1 N·m)



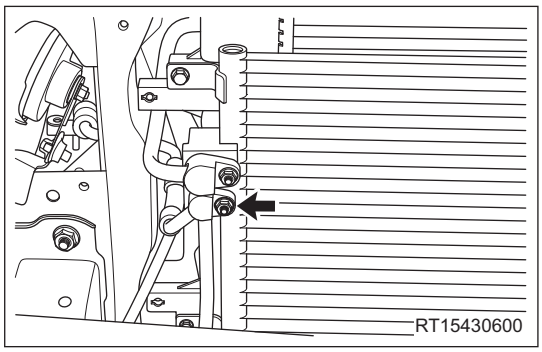
   b. Remove fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage A/C high/low pressure line.
      (Tightening torque: 9 ± 1 N·m)



   c. Remove coupling bolt (arrow) between A/C high/low pressure line fixing bracket and body, and disengage A/C pressure switch connector (1).
      (Tightening torque: 9 ± 1 N·m)



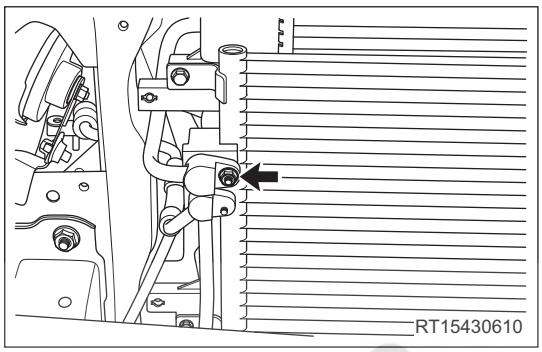
d. Remove fixing bolt (arrow) between A/C high pressure line I and condenser assembly, and disengage A/C high pressure line I from condenser assembly.
(Tightening torque: 9 ± 1 N·m)



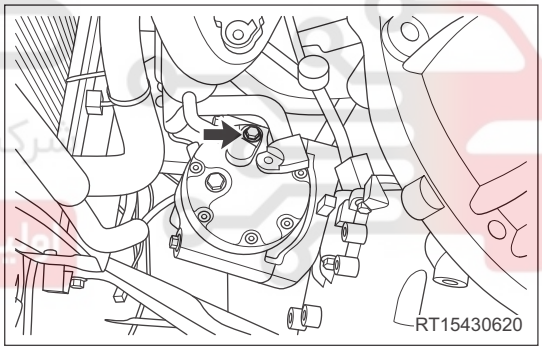
e. Remove the A/C high pressure line I (condenser to evaporator).

6. Remove the A/C high pressure line II (compressor to condenser).

a. Remove fixing bolt (arrow) between A/C high pressure line II and condenser assembly, and disengage A/C high pressure line II from condenser assembly.
(Tightening torque: 9 ± 1 N·m)



b. Remove fixing bolt (arrow) between A/C high pressure line II and compressor assembly, and disengage A/C high pressure line II from compressor assembly.
(Tightening torque: 25 ± 3 N·m)



c. Remove the A/C high pressure line II (compressor to condenser).

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Perform recharging for A/C system and check for refrigerant leakage.

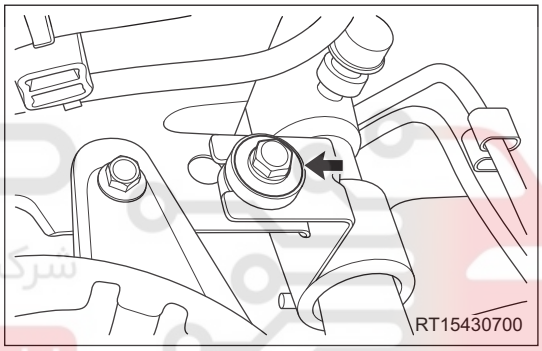
A/C High/Low Pressure Coaxial Line

Removal

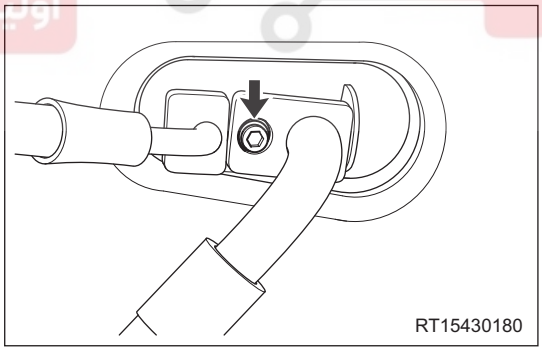
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.

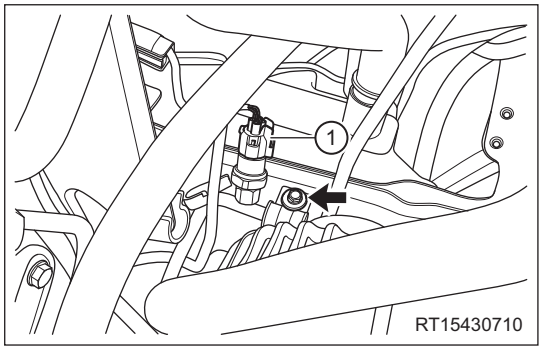
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 63-6).
5. Remove the washer fluid reservoir guide pipe (See page 50-33).
6. Remove the A/C high/low pressure coaxial line.
   a. Remove the A/C igh/low pressure coaxial line fixing bolt (arrow).
      (Tightening torque: 9 ± 1 N·m)



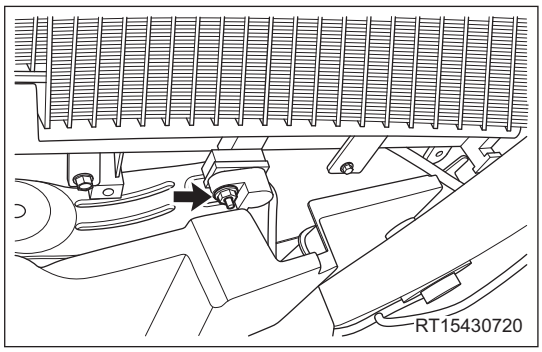
   b. Remove fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage A/C high/low pressure line.
      (Tightening torque: 9 ± 1 N·m)



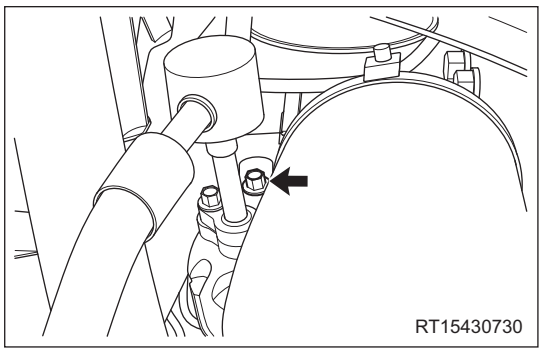
   c. Remove coupling bolt (arrow) between A/C high pressure line fixing bracket and body, and disengage A/C pressure switch connector (1).
      (Tightening torque: 9 ± 1 N·m)



d. Remove fixing nut (1) between A/C high pressure line I and condenser assembly, and disengage A/C high pressure line I from condenser assembly.
(Tightening torque: 9 ± 1 N·m)



e. Remove fixing bolt (arrow) between A/C high pressure line II and compressor assembly, and disengage A/C high pressure line II from compressor assembly.
(Tightening torque: 25 ± 3 N·m)



f. Remove the A/C high/low pressure coaxial line.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Perform recharging for A/C system and check for refrigerant leakage.

Compressor Assembly

WARNING

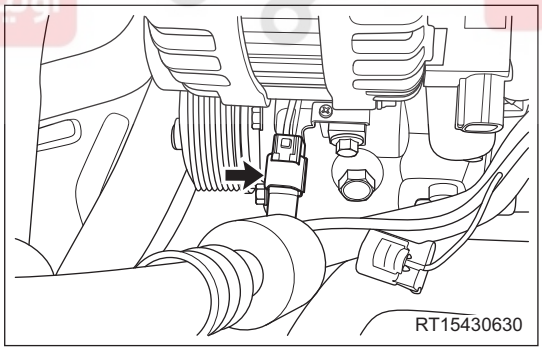
- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.

CAUTION

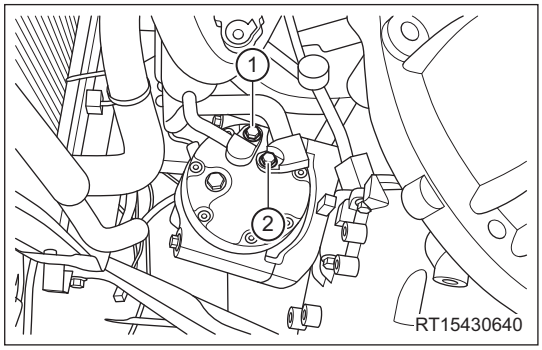
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.
- If A/C compressor assembly has an internal malfunction, it is necessary to replace A/C fluid line. Failure to do so may result in serious damage to A/C compressor assembly after replacing.
- When replacing compressor assembly, it is necessary to measure the refrigerant oil amount removed from new A/C compressor assembly.

Removal

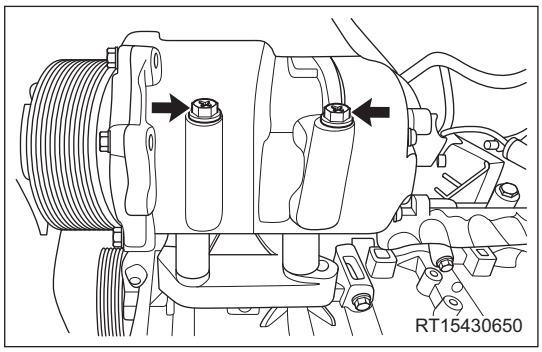
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the accessory drive belt (See page 09-19).
5. Remove the engine lower protector assembly (See page 63-28).
6. Remove the compressor assembly
   a. Disconnect the compressor assembly wire harness connector (arrow).



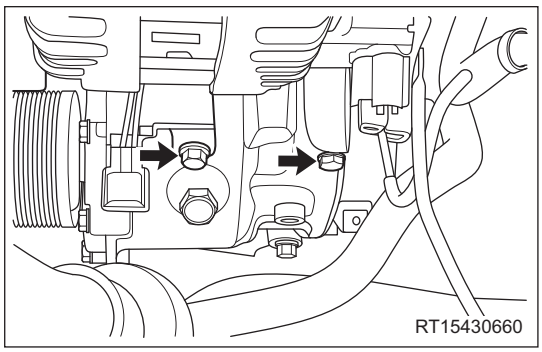
   b. Remove fixing bolt (1) between A/C low pressure line and compressor assembly, and disengage A/C low pressure line from compressor assembly.
   (Tightening torque: 25 ± 3 N·m)
   c. Remove fixing bolt (2) between A/C high pressure line and compressor assembly, and disengage A/C high pressure line from compressor assembly.
   (Tightening torque: 25 ± 3 N·m)



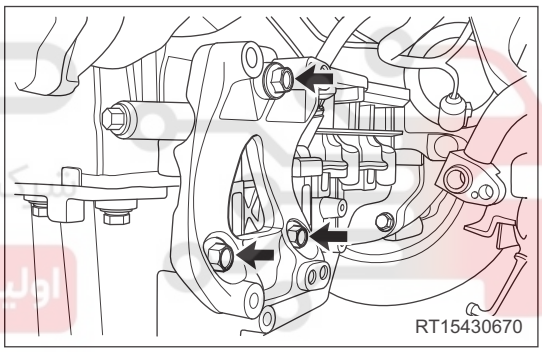
d. Remove 2 fixing bolts (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 25 ± 3 N·m)



e. Remove 2 fixing bolts (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 25 ± 3 N·m)



7. Remove the compressor assembly mounting bracket.
   a. Remove 3 fixing bolts (arrow) between compressor mounting bracket and engine.



   b. Remove the compressor assembly mounting bracket.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- When installing a new compressor assembly, always remove a certain amount of refrigerant oil from new A/C compressor assembly as specified.
- Perform recharging for A/C system and check for refrigerant leakage.

Compressor Assembly (Coaxial Line)

WARNING

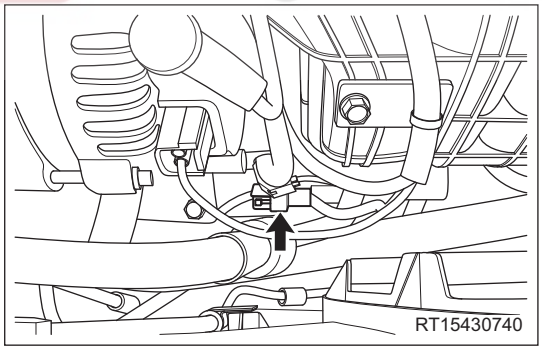
- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.

CAUTION

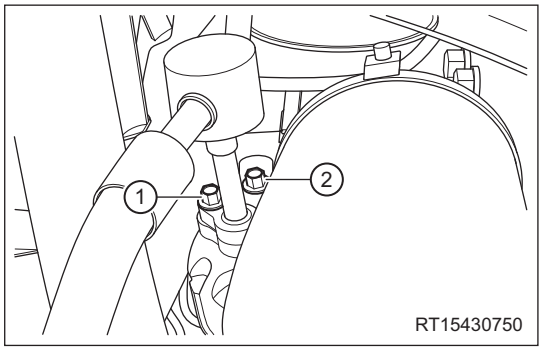
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.
- If A/C compressor assembly has an internal malfunction, it is necessary to replace A/C fluid line. Failure to do so may result in serious damage to A/C compressor assembly after replacing.
- When replacing compressor assembly, it is necessary to measure the refrigerant oil amount removed from new A/C compressor assembly.

Removal

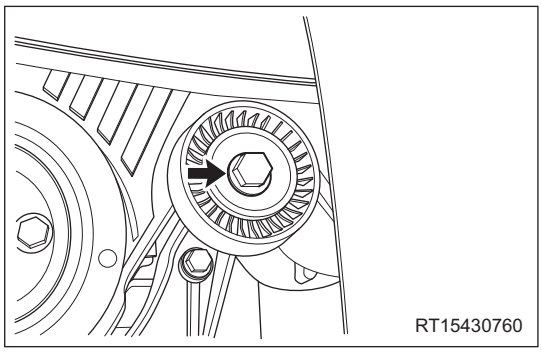
1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the accessory drive belt (See page 09-19).
5. Remove the alternator assembly (See page 27-10).
6. Remove the engine lower protector assembly (See page 63-28).
7. Remove the compressor assembly
   a. Disconnect the compressor assembly wire harness connector (arrow).



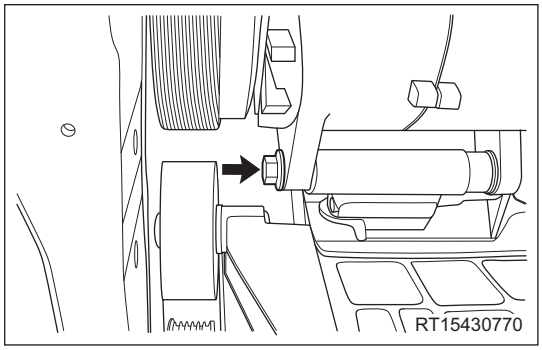
   b. Remove fixing bolt (1) between A/C low pressure line and compressor assembly, and disengage A/C low pressure line from compressor assembly.
   (Tightening torque: 25 ± 3 N·m)
   c. Remove fixing bolt (2) between A/C high pressure line and compressor assembly, and disengage A/C high pressure line from compressor assembly.
   (Tightening torque: 25 ± 3 N·m)



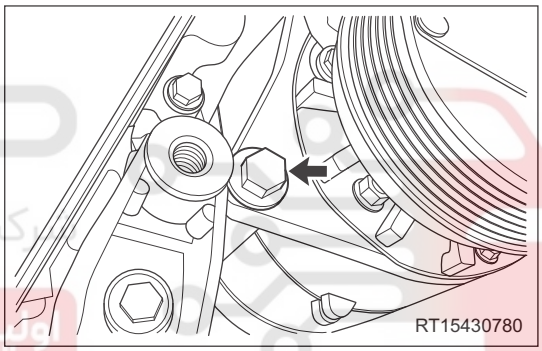
d. Remove the accessory drive belt idler pulley fixing bolt (arrow).



e. Remove fixing bolt (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 25 ± 3 N·m)

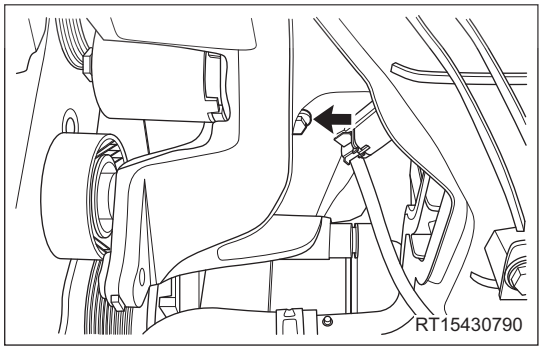


f. Remove fixing bolt (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 25 ± 3 N·m)

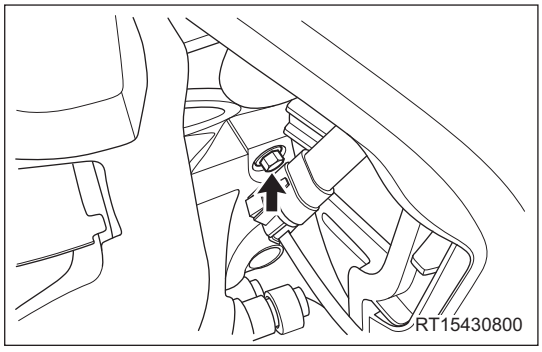


8. Remove the compressor assembly mounting bracket.

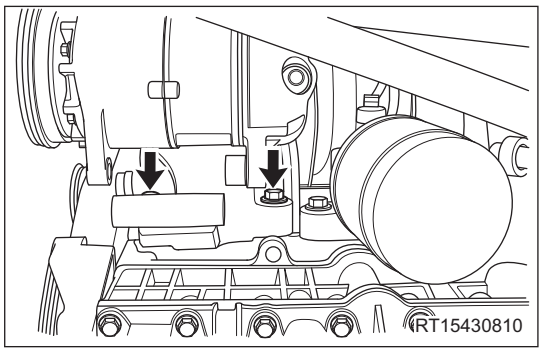
a. Remove fixing bolt (arrow) between compressor mounting bracket and engine.



b. Remove fixing bolt (arrow) between compressor mounting bracket and engine.

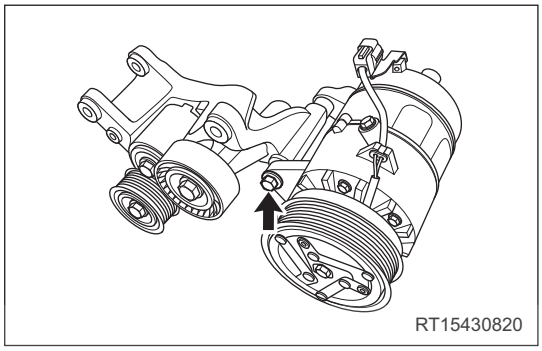


c. Remove 2 fixing bolts (arrow) between compressor mounting bracket and engine.



d. Remove compressor assembly and mounting bracket.

e. Remove fixing bolt (arrow) between compressor mounting bracket and engine, separate compressor and mounting bracket.



Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- When installing a new compressor assembly, always remove a certain amount of refrigerant oil from new A/C compressor assembly as specified.
- Perform recharging for A/C system and check for refrigerant leakage.

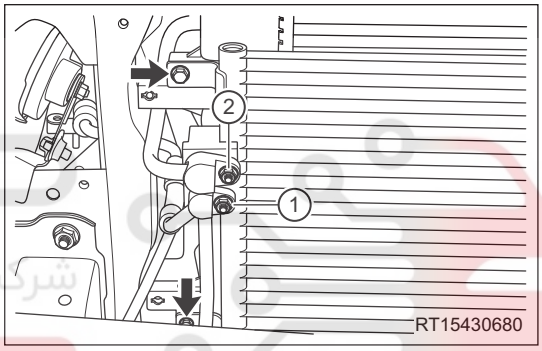
Condenser Assembly

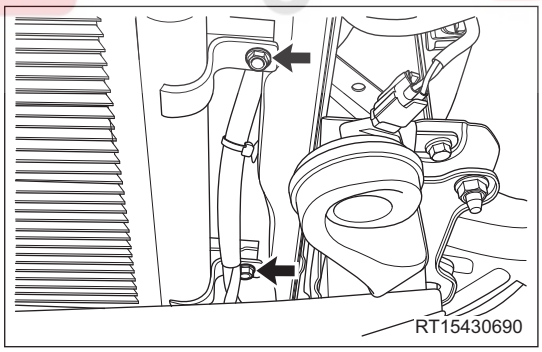
Removal

WARNING

- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed, to prevent foreign matter from entering.

1. Recover refrigerant from A/C system (See page 44-88).
2. Turn off all electrical equipment and the engine switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 63-6).
5. Remove the condenser assembly.
   a. Remove fixing nut (1) between A/C high pressure line I and condenser assembly, and disengage A/C high pressure line I from condenser assembly.
      (Tightening torque: 9 ± 1 N·m)
   b. Remove the fixing nut (2) between A/C high pressure line II and condenser assembly, and disengage A/C high pressure line II from condenser assembly.
      (Tightening torque: 9 ± 1 N·m)
   c. Remove 2 fixing bolts (arrow) between radiator assembly and condenser assembly.
      (Tightening torque: 5 ± 1 N·m)
   d. Remove 2 fixing bolts (arrow) between radiator assembly and condenser assembly.
      (Tightening torque: 5 ± 1 N·m)





   e. Carefully remove the condenser assembly (w/receiver drier) from below.

Inspection

1. Check the condenser fins.
   a. If condenser fins are dirty, wash with water. And then dry fins with compressed air.

CAUTION

- DO NOT damage condenser fins.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torque.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leakage.
- Lubricate new rubber O-ring with clean refrigerant oil and install it to refrigerant line joint.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Perform recharging for A/C system and check for refrigerant leakage.

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