

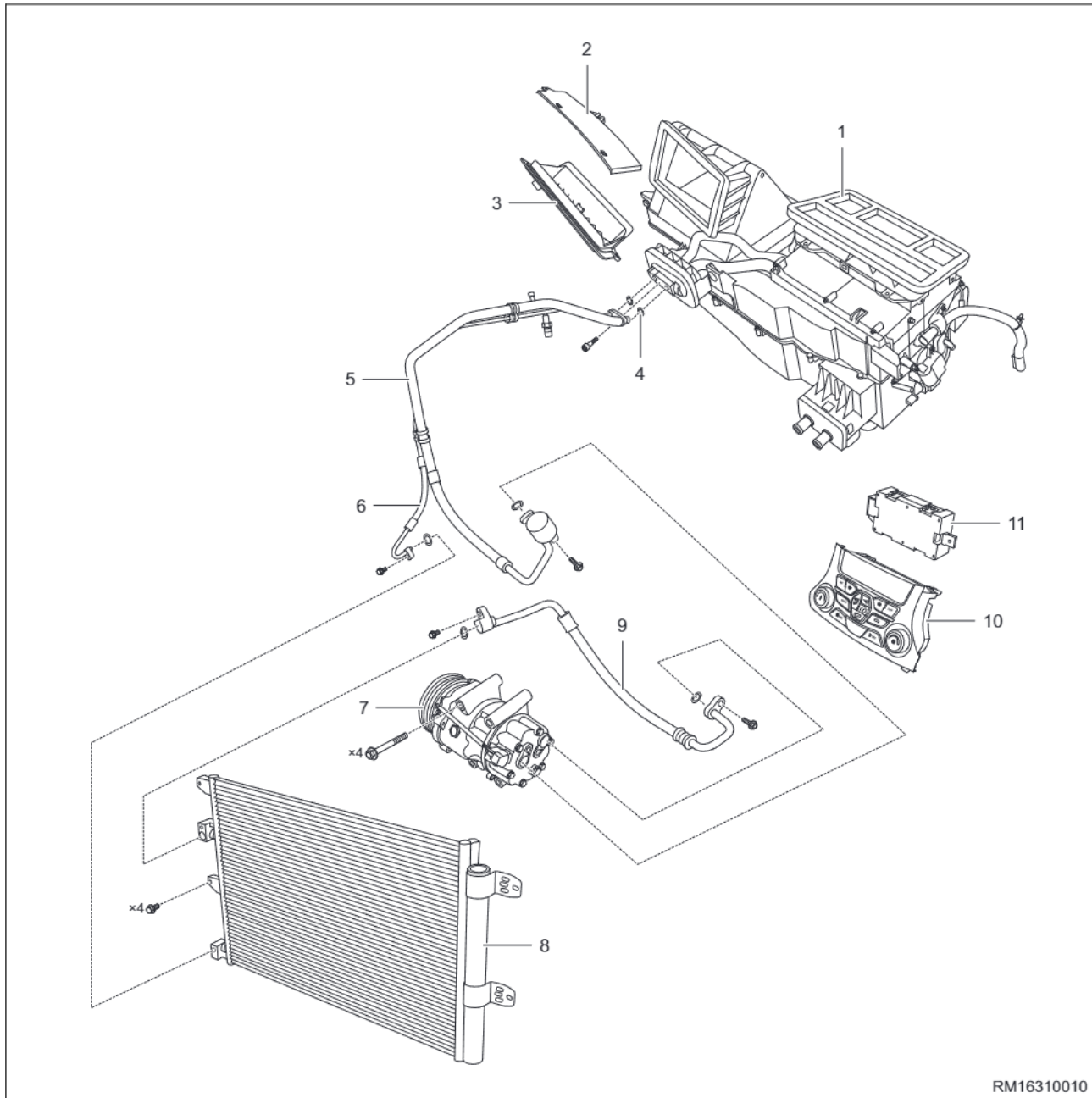
AIR CONDITIONING

GENERAL INFORMATION	31-3	A/C Inlet Guide Plate	31-82
Description	31-3	Removal	31-82
Specifications	31-5	Installation	31-82
Tools	31-7	A/C Inlet Waterproof Board	31-83
Circuit Diagram	31-8	Removal	31-83
DIAGNOSIS & TESTING	31-15	Installation	31-83
Problem Symptoms Table	31-15	A/C Element	31-84
Diagnosis Procedure	31-17	Removal	31-84
A/C System Function	31-19	Installation	31-84
Automatic A/C Control Module		Blower Assembly	31-85
Assembly Terminal List	31-20	Removal	31-85
DTC Confirmation Procedure	31-21	Inspection	31-85
Intermittent DTC Troubleshooting	31-21	Installation	31-86
Ground Inspection	31-22	Blower Speed Resistor	31-87
Diagnostic Trouble Code (DTC)		Removal	31-87
Chart	31-22	Installation	31-87
B2120	31-23	Inner/Outer Circulation Damper	
B2126	31-28	Servo Motor	31-88
B2127	31-33	Removal	31-88
B2133	31-38	Inspection	31-88
B2160	31-42	Installation	31-89
B2166	31-49	Mix Damper Servo Motor	31-90
B2169	31-56	Removal	31-90
B2172	31-62	Inspection	31-90
U0073	31-68	Installation	31-91
U0140	31-68	Mode Damper Servo Motor	31-92
ON-VEHICLE SERVICE	31-72	Removal	31-92
On-vehicle Inspection	31-72	Inspection	31-93
Compressor Assembly Noise		Installation	31-93
Inspection	31-72	HVAC Assembly	31-94
Refrigerant Leakage Inspection	31-73	Removal	31-94
Refrigerant Recovering/Draining	31-75	Disassembly	31-96
Vacuum Pumping	31-76	Inspection	31-106
Refrigerant Recharging	31-76	Assembly	31-107
Refrigerant Oil Recovering	31-77	Installation	31-108
Refrigerant Oil Charging	31-78	A/C Low Pressure Line	31-109
Center Control Integration Panel		Removal	31-109
Assembly	31-79	Installation	31-110
Removal	31-79	A/C High Pressure Line	31-111
Inspection	31-80	Removal	31-111
Installation	31-80	Installation	31-113
A/C Control Module Assembly		Compressor Assembly	31-114
(for Automatic A/C)	31-81	Removal	31-114
Removal	31-81	Installation	31-115
Installation	31-81	Condenser Assembly	
		(w/ Receiver Drier)	31-116
		Removal	31-116

Inspection	31-117	Outside Temperature Sensor	
Installation	31-117	(for Automatic A/C)	31-126
Evaporator Temperature Sensor	31-118	Removal	31-126
Inspection	31-118	Inspection	31-127
Room Temperature Sensor		Installation	31-130
(for Automatic A/C)	31-122	Solar Sensor (for Automatic A/C)	31-131
Inspection	31-122	Removal	31-131
		Installation	31-131

GENERAL INFORMATION

Description



RM16310010

1 - HVAC Assembly	2 - A/C Inlet Guide Plate
3 - A/C Inlet Waterproof Board	4 - O-ring
5 - Evaporator to Compressor Line Assembly	6 - Condenser to Evaporator Line Assembly
7 - Compressor Assembly	8 - Condenser Assembly (w/ Receiver Drier)
9 - Compressor to Condenser Line Assembly	10 - Center Control Integration Panel Assembly
11 - Control Module Assembly (for Automatic A/C)	

1. System composition

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

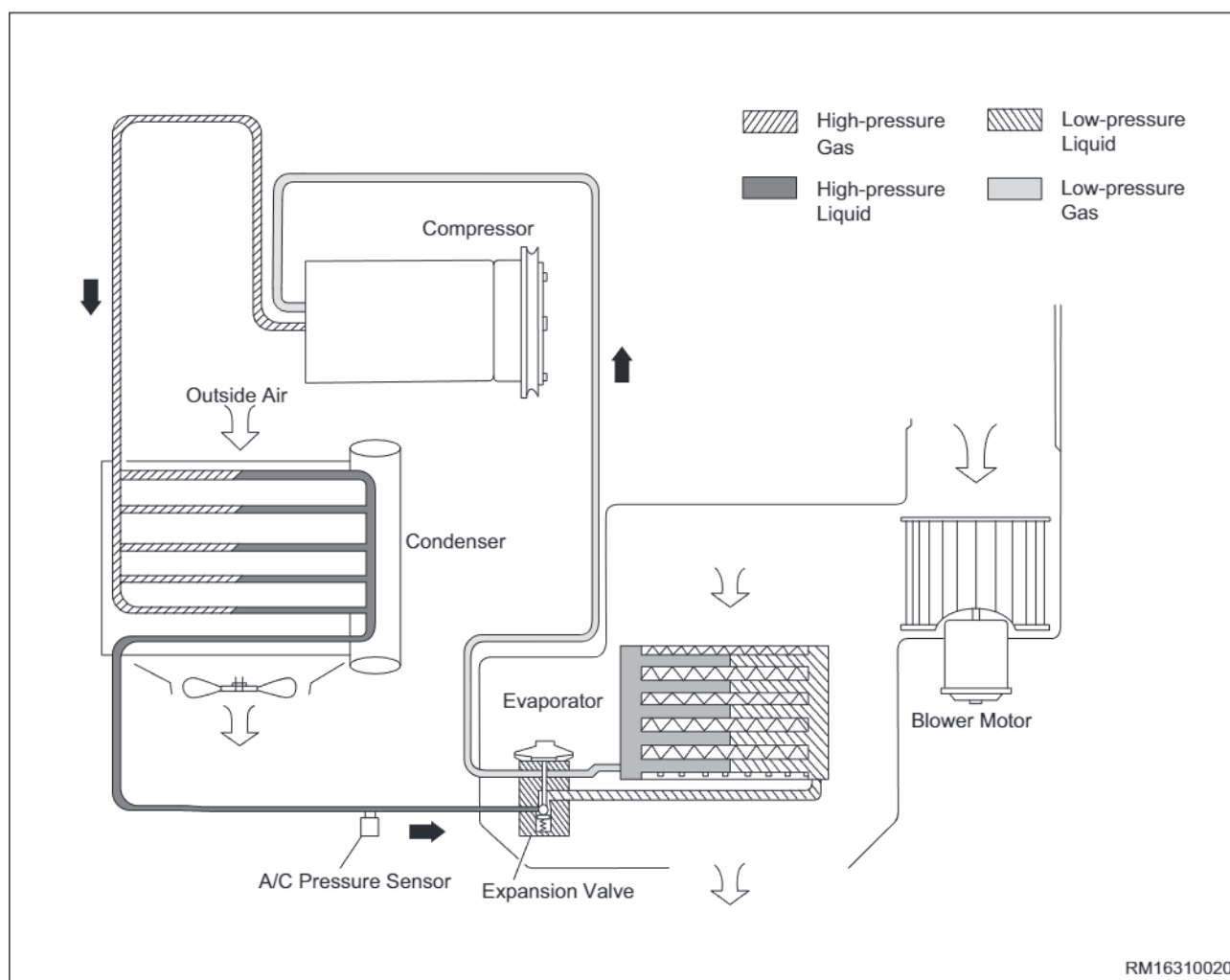
Air conditioning and distribution system: air mixing and distributor part of HVAC, inner/outer circulation inlet, outlet and air filter.

Control system: center control integration panel assembly, A/C control module assembly (for automatic A/C), inner/outer circulation damper servo motor, mode damper servo motor, mix damper servo motor, blower, blower speed resistor, A/C pressure sensor, evaporator temperature sensor, room temperature sensor (for automatic A/C), outside temperature sensor (for automatic A/C) and solar sensor (for 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

31

Torque Specifications

Description	Torque (N·m)
Center Control Integration Panel Assembly Fixing Screw	1.5 ± 0.5
Automatic A/C Control Module Assembly Fixing Screw	1.5 ± 0.5
A/C Inlet Guide Plate Fixing Screw	5 ± 1
A/C Inlet Guide Plate Fixing Nut	5 ± 1
A/C Inlet Waterproof Board Fixing Nut	5 ± 1
Blower Assembly Fixing Screw	1.2 - 2
Blower Speed Resistor Fixing Screw	1.2 - 2
Inner/Outer Circulation Damper Servo Motor Fixing Screw	1.2 - 2
Mix Damper Servo Motor Fixing Screw	1.2 - 2
Mode Damper Servo Motor Fixing Screw	1.2 - 2
Mode Damper Servo Motor Bracket Fixing Screw	1.2 - 2
Coupling Bolt Between A/C High/Low Pressure Line and Expansion Valve	9 ± 1.5
Fixing Nut Between HVAC Assembly and Body	5 ± 1
Fixing Bolt Between HVAC Assembly and Body	5 ± 1
A/C Wire Harness Assembly Ground Nut	7 ± 1.5
Air Inlet Assembly Front Fixing Screw	1.2 - 2
Air Inlet Assembly Rear Fixing Screw	1.2 - 2
Left Foot Fan Shield Fixing Screw	1.2 - 2
Right Foot Fan Shield Fixing Screw	1.2 - 2
Heater Core Line Pressure Plate Fixing Screw	1.2 - 2
Heater Core Line Cover Plate Fixing Screw	1.2 - 2
Room Temperature Sensor Fixing Screw	1.2 - 2
Coupling Bolt Between Expansion Valve and Expansion Valve Mounting Pressure Plate	7 ± 1

Description	Torque (N·m)
Evaporator Core Assembly Line Pressure Plate Fixing Screw	1.2 - 2
Upper Fixing Screw Between Distributor Housing Assembly and Evaporator Housing Assembly	1.2 - 2
Left Fixing Screw Between Distributor Housing Assembly and Evaporator Housing Assembly	1.2 - 2
Lower Fixing Screw Between Distributor Housing Assembly and Evaporator Housing Assembly	1.2 - 2
Mode Damper Adjustment Mechanism Set Fixing Screw	1.2 - 2
Evaporator Assembly Front Fixing Screw	1.2 - 2
Evaporator Assembly Rear Fixing Screw	1.2 - 2
Evaporator Assembly Lower Fixing Screw	1.2 - 2
Coupling Nut Between A/C High/Low Pressure Line Set Bracket and Body	9 ± 1.5
Coupling Bolt Between A/C High/Low Pressure Line Set Bracket and Body	9 ± 1.5
Fixing Bolt Between A/C Low Pressure Line and Compressor Assembly	25 ± 4
Fixing Bolt Between A/C High Pressure Line I and Condenser Assembly	9 ± 1.5
Fixing Bolt Between A/C High Pressure Line II and Condenser Assembly	9 ± 1.5
Fixing Bolt Between A/C High Pressure Line II and Compressor Assembly	25 ± 4
Fixing Bolt Between Compressor Mounting Bracket and Engine	40 ± 5
Fixing Bolt Between Radiator Assembly and Condenser Assembly	7 ± 1

Refrigerant Charging Specification

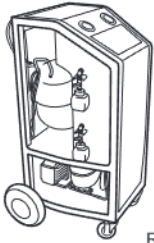
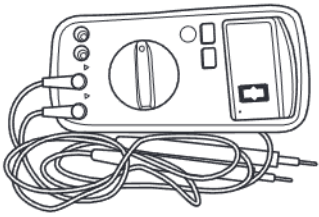
Description	Charging Capacity (g)
R134a Refrigerant	530 ± 10

Refrigerant Oil Charging Specifications

Description	Charging Capacity (ml)
Compressor Assembly Replacement	It is necessary to pour out 50 ml of refrigerant oil from new compressor assembly
Condenser Replacement	30
Evaporator Replacement	30
A/C Line Replacement	10

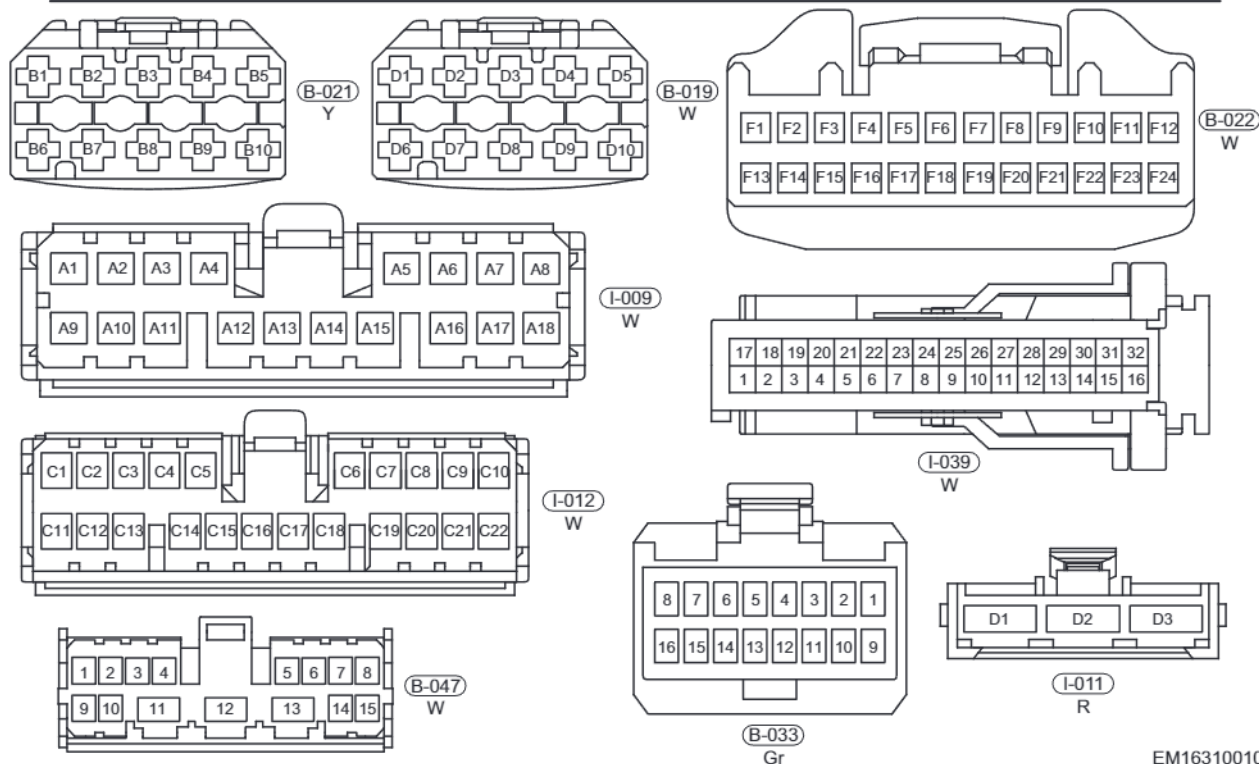
Tools

General Tools

Refrigerant Recycling Machine	 RCH0000046
Digital Multimeter	 RCH0000002

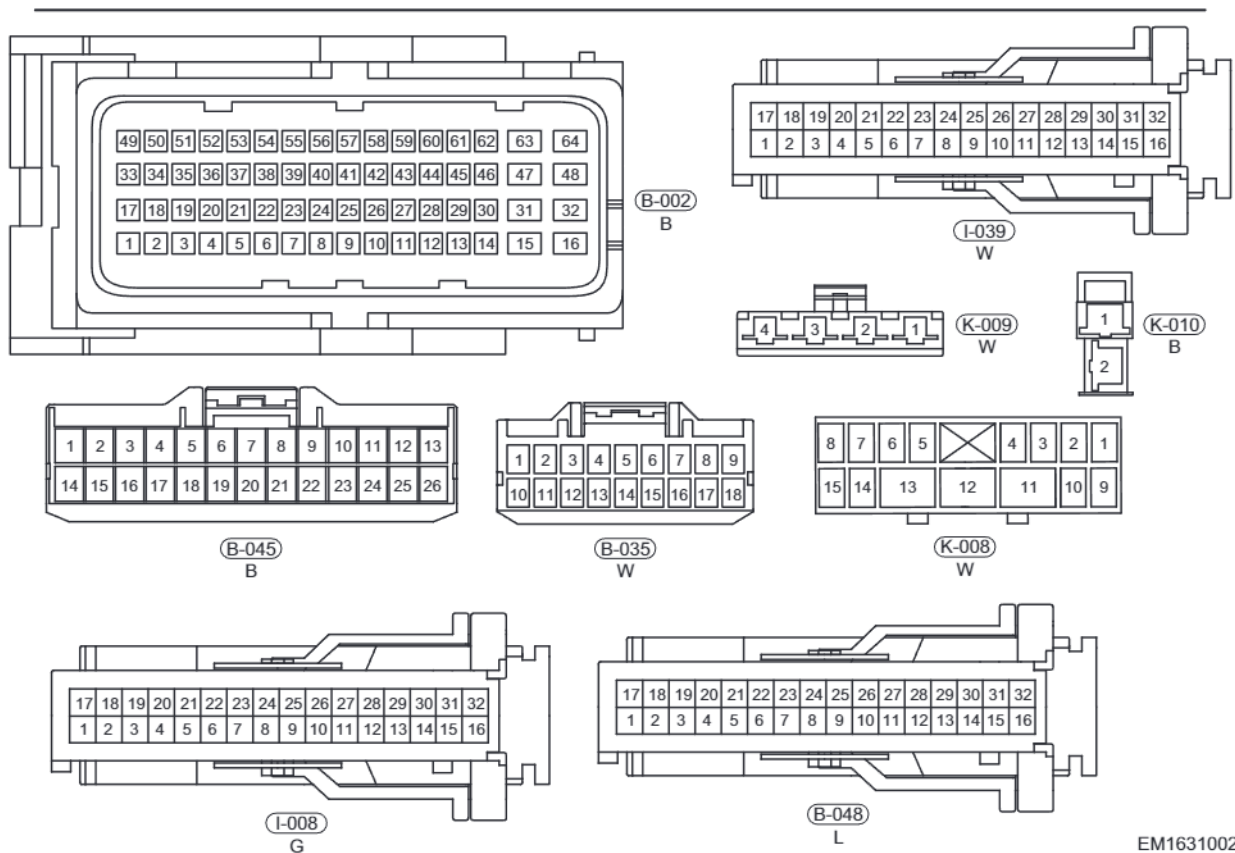
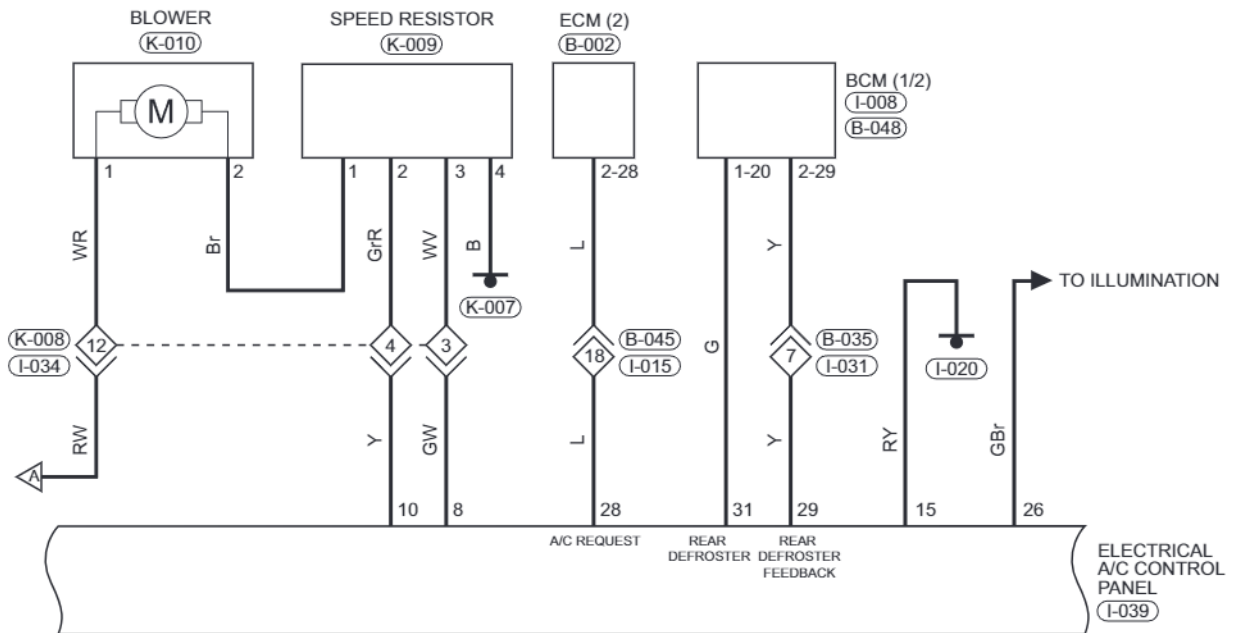
31

Power A/C System (Page 1 of 3)



Power A/C System (Page 2 of 3)

31

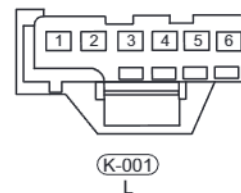
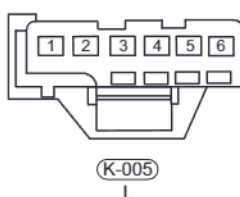
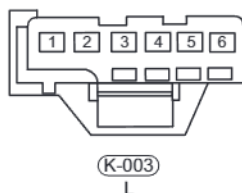
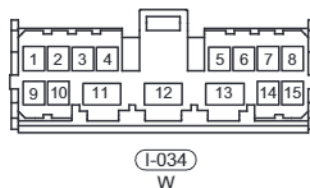
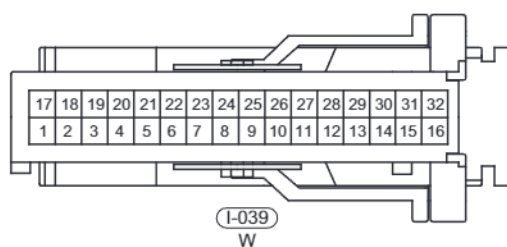
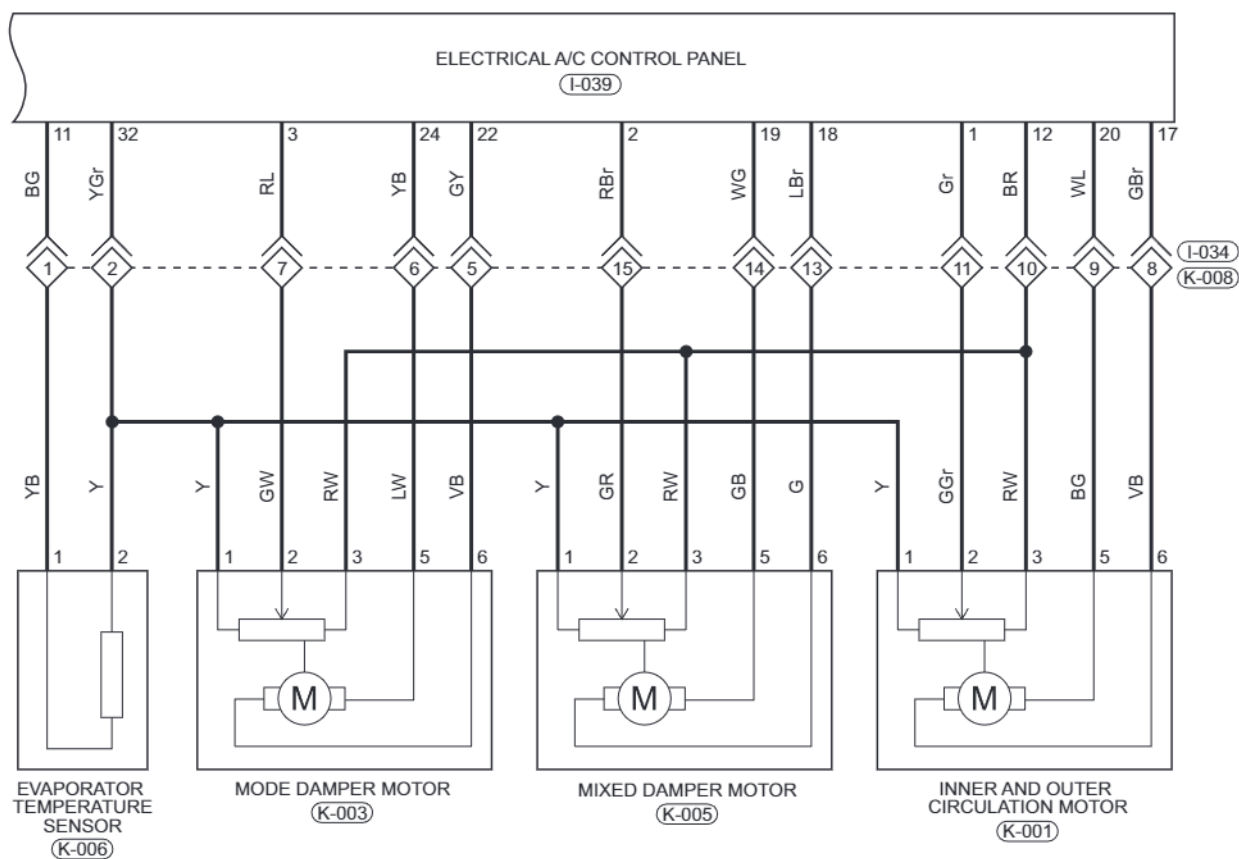


EM16310020



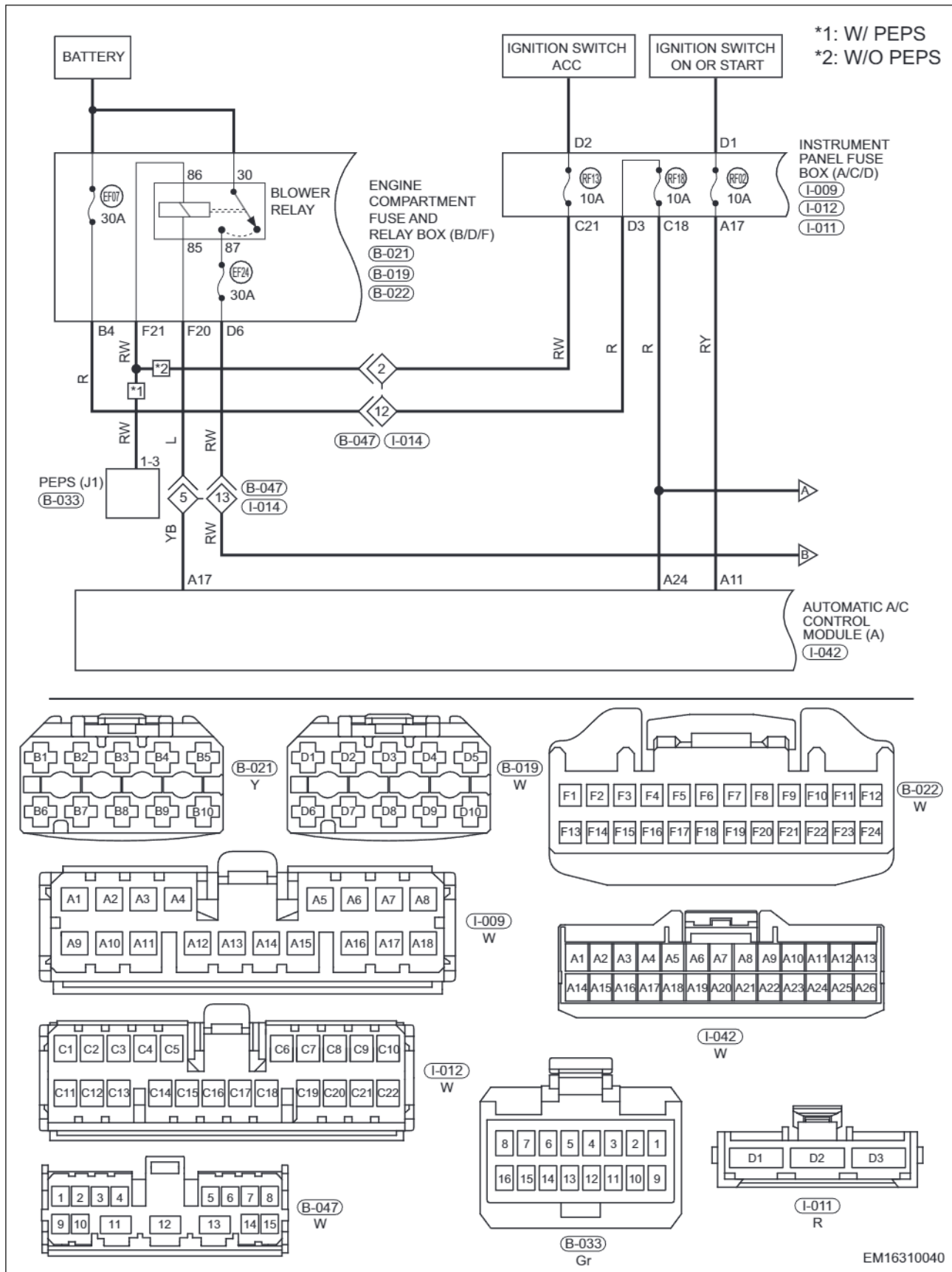
Power A/C System (Page 3 of 3)

31



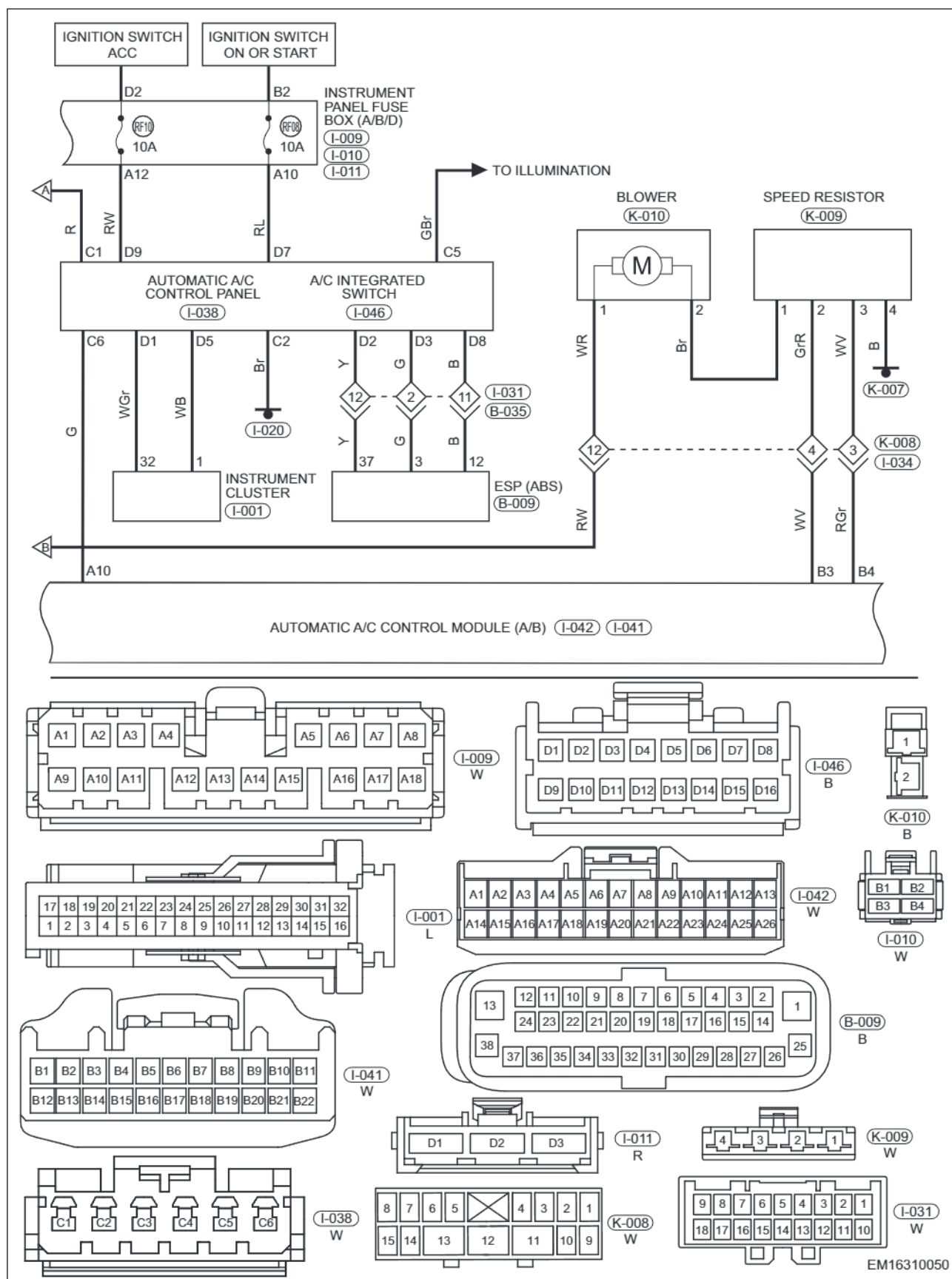
EM16310030

Automatic A/C System (Page 1 of 4)

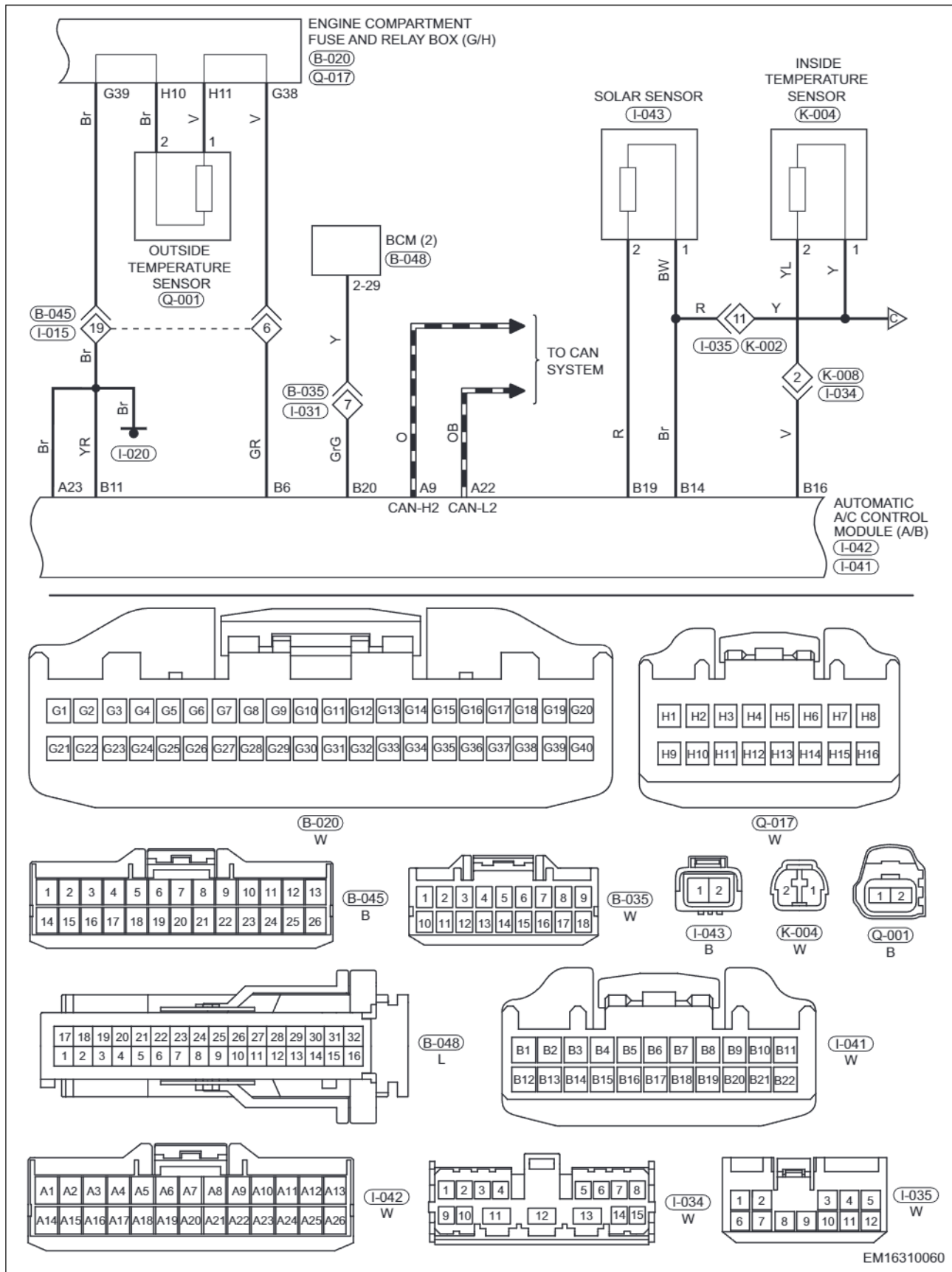


Automatic A/C System (Page 2 of 4)

31

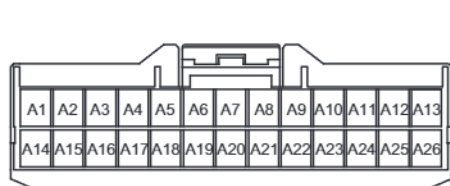
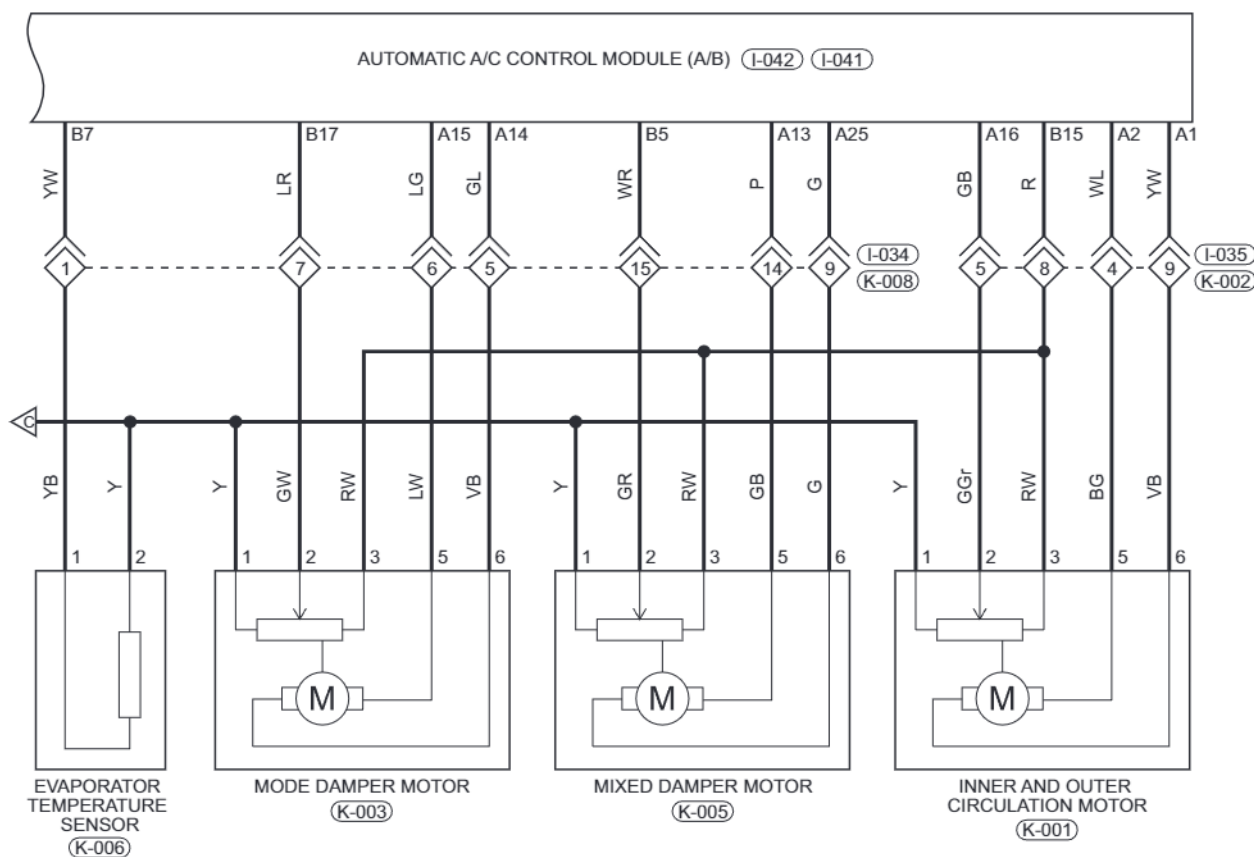
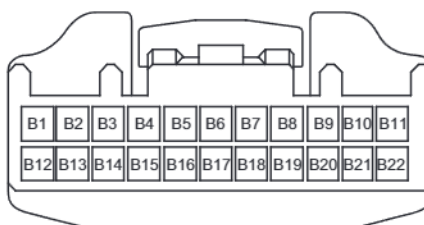
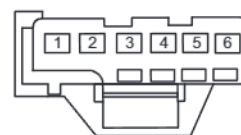
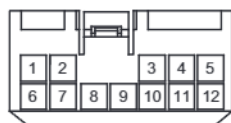
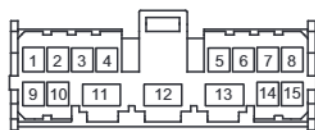
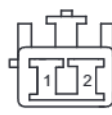
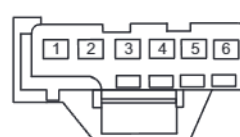
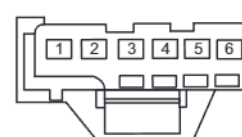


Automatic A/C System (Page 3 of 4)



Automatic A/C System (Page 4 of 4)

31

I-042
WI-041
WK-003
LI-035
WI-034
WK-006
WK-005
LK-001
L

EM16310070

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)	53-36
	Blower relay (damaged)	53-36
	Blower speed switch (damaged)	31-79
	Blower motor (damaged)	31-85
	Mix damper control mechanism (stuck or damaged)	31-96
	Mix damper control knob (stuck or damaged)	31-79
	Heating pipe (blocked or damaged)	31-94
	Heater core assembly (blocked or damaged)	31-96
	Wire harness or connector (open or short)	-
A/C no cooling	Leak in system	31-73
	Refrigerant (overcharged)	31-75
	A/C pressure sensor (damaged)	-
	Evaporator temperature sensor (damaged)	31-96
	A/C switch (damaged)	31-79
	Compressor assembly fuse (damaged)	53-36
	Compressor assembly relay (damaged)	53-36
	Compressor assembly belt (loose)	07-21
	Compressor assembly (damaged)	31-114
	Condenser assembly (blocked or damaged)	31-116
	Expansion valve (blocked or frosted)	31-96
	Evaporator core assembly (blocked or damaged)	31-96
	Wire harness or connector (open or short)	-
A/C intermittent cooling	Moisture in system	-

Symptom	Suspected Area	See page
A/C insufficient cooling	Leak in system	31-73
	Refrigerant (insufficient)	31-75
	Refrigerant (overcharged)	31-75
	Air in refrigerant	31-76
	Moisture in refrigerant	-
	Condenser (dirty or blocked)	31-116
	Expansion valve (dirty or blocked)	31-96
	Evaporator core (dirty or blocked)	31-96
	A/C high/low pressure line (dirty or blocked)	31-109
	Blower speed switch (damaged)	31-79
	Blower motor (damaged)	31-85
	Compressor assembly belt (loose)	07-21
Too much noise in system	Compressor assembly belt (slip)	07-21
	Compressor assembly clutch bearing (worn and excessive clearance)	-
	Compressor assembly solenoid coil (faulty or loose joint)	-
	Compressor assembly belt (over tightened)	07-21
	Compressor assembly mounting bolt (loose)	31-114
	Cooling fan blade (distorted)	-
	Refrigerant oil (insufficient)	31-77
Pressure at low pressure side switches between normal and vacuum during operation	Moisture in refrigerant (excessive)	-
Pressure is too low for low pressure side and high pressure side, cooling performance is insufficient	A/C system (leaked)	31-73
	Refrigerant (insufficient)	31-75
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)	31-116
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)	-
	Expansion valve (dirty or blocked)	31-96
	A/C line (leaked)	31-109
	Condenser (dirty or blocked)	31-116
Pressure is too high for low pressure side and high pressure side	Expansion valve (faulty)	-
	Refrigerant oil (excessive)	31-76

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)	31-116
	Cooling fan (not operating)	-
	Refrigerant (overcharged)	31-75
	Air in refrigerant	31-76
	Engine (overheating)	-
Pressure at low pressure side is too high and pressure at high pressure side is too low	Compressor assembly belt (slip)	07-21
	Compressor assembly (faulty)	31-114
Pressure at low pressure side is too low, and pressure at high pressure side is too high	A/C high pressure line (blocked)	31-111
	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 the battery before proceeding to next step.

NEXT

3 Customer problem analysis

NEXT

4 Check panel diagnosis

a. Check each actuator and sensor code ([See page 31-19](#)).

- Indicator inspection
- Sensor inspection

NEXT

5 Check and clear DTCs, then read DTCs again

DTC
occurs

For current DTC, go to step 7

No
DTC

For history DTC, go to step 8

6 Overall analysis and troubleshooting

- a. On-vehicle inspection
b. Inspection

NEXT

7 Troubleshoot according to Diagnostic Trouble Code (DTC) chart, then go to step 9

NEXT

8 Troubleshoot according to Problem Symptoms Table, then go to step 9

NEXT

9 Conduct test and confirm malfunction has been repaired

NEXT

10 End

A/C System Function

1. Self-diagnosis Function

a. Power A/C

- Self-diagnosis operation: Press and hold front defroster + rear defroster buttons at the same time for more than 2 seconds, then A/C enters self-diagnosis mode.
- Malfunction display: When control panel enters self-diagnosis mode, A/C system displays malfunction information after running each actuator automatically. Malfunction will be displayed on temperature display area of control panel (if there are more than one malfunctions, malfunction symbols will be displayed in cycle with 2 seconds interval). System will exit self-diagnosis mode automatically after displaying symbols in cycle for 2 times. If there is no malfunction, system will exit self-diagnosis mode in 2 seconds. System enters the state before diagnosis after exiting self-diagnosis mode.
- Deactivation condition: Press and hold front defroster button and rear defroster button at different times for 2 seconds.

Detail correspondence of symbols and malfunction is as follows:

Symbols	Definition	Symbols	Definition
	No malfunction, system operates properly		Mix damper motor stuck (all segments displayed)
	Evaporator temperature sensor error		Mix damper motor short circuit (4 segments displayed)
	Blower malfunction (all segments displayed)		Mix damper motor exceeds limit (10 segments displayed)
	Circulation damper motor stuck		Mode damper motor stuck
	Circulation damper motor short circuit		Mode damper motor short circuit
	Circulation damper motor exceeds limit		Mode damper motor exceeds limit

b. Automatic A/C

- Self-diagnosis operation: Press and hold front defroster + rear defroster buttons at the same time for more than 2 seconds, then A/C enters self-diagnosis mode.
- Malfunction display: When control panel enters self-diagnosis mode, A/C system displays malfunction information after running each actuator automatically. Malfunction will be displayed on temperature display area of control panel (if there are more than one malfunctions, malfunction code will be displayed in cycle with 2 seconds interval). System will exit self-diagnosis mode automatically after displaying codes in cycle for 2 times. If there is no malfunction, system will display 00, and it will exit self-diagnosis mode after 2 seconds. System enters the state before diagnosis after exiting self-diagnosis mode.
- Deactivation condition: Press and hold front defroster button and rear defroster button at different times for 2 seconds.

Detail correspondence of codes and malfunction is as follows:

Code	Definition	Code	Definition
00	No malfunction, system operates properly	11	Circulation damper motor stuck
01	Outside temperature sensor error	12	Circulation damper motor short circuit
02	Room temperature sensor error	13	Circulation damper motor exceeds limit
03	Solar sensor error	14	Mix damper motor stuck
04	Evaporator temperature sensor error	15	Mix damper motor short circuit
05	-	16	Mix damper motor exceeds limit
06	-	17	Mode damper motor stuck
07	-	18	Mode damper motor short circuit
08	-	19	Mode damper motor exceeds limit
09	-	20	Center control panel LIN communication malfunction
10	Blower Malfunction	21	Automatic A/C control module CAN communication malfunction

2. Malfunction Compensation Function

To guarantee proper work of A/C system, when control module detects an invalid or defective sensor in A/C system, the system will work based on sensor failure alternative value.

Definition of sensor failure alternative value is as follows:

Description	Failure Alternative Value	Description	Failure Alternative Value
Outside Temperature Sensor	25°C	Coolant Temperature Sensor	85°C
Room Temperature Sensor	25°C	Evaporator Temperature Sensor	0°C
Solar Sensor	0 W/m ²	Vehicle Speed Sensor	10 km/h

Automatic A/C Control Module Assembly Terminal List

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
A1	Inner/Outer Circulation Damper Motor P+	A25	Mix Damper Motor P+
A2	Inner/Outer Circulation Damper Motor P-	A26	Reserve
A3	-	B1	Reserve
A4	-	B2	-
A5	-	B3	Blower Speed Control
A6	Reserve	B4	Blower Speed Feedback
A7	Reserve	B5	Mix Damper Motor Position Feedback

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
A8	Reserve	B6	Outside Temperature Sensor
A9	CAN-H2	B7	Evaporator Temperature Sensor
A10	LIN bus	B8	Reserve
A11	Power Supply (Ignition Switch)	B9	-
A12	Reserve	B10	Reserve
A13	Mix Damper Motor P-	B11	Signal Ground
A14	Mode Damper Motor P+	B12	-
A15	Mode Damper Motor P-	B13	Reserve
A16	Circulation Damper Motor Position Feedback Signal	B14	Signal Ground
A17	Blower Relay Control Signal	B15	Sensor Reference Power Supply (+ 5 V)
A18	-	B16	Room Temperature Sensor
A19	Reserve	B17	Mode Damper Motor Position Feedback
A20	-	B18	Reserve
A21	-	B19	Solar Sensor
A22	CAN-L2	B20	Rear Defroster Feedback
A23	Ground	B21	-
A24	Power Supply (Battery)	B22	Reserve

DTC Confirmation Procedure

Confirm that battery voltage is normal before performing following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch to ON.
- Using X-431 3G diagnostic tester, record and clear DTCs stored in A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Using X-431 3G diagnostic tester, 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. 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 is interrupted in the related circuit.
- If possible, try to duplicate the conditions under which DTC was set.
- Look for the data that has changed or the DTC to reset during the 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 grounds related to the current DTC.
- Remove A/C control panel assembly from malfunctioning vehicle and install it to a new vehicle and perform a test. If DTC cannot be cleared, the A/C control panel assembly is malfunctioning. If DTC can be cleared, reinstall the 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 any Technical Bulletin that may apply to the malfunction.

31

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 situation may change the way in which a circuit works. Circuits are very sensitive to proper grounding. A loose or corroded ground can affect the control circuit. Check the ground points as follows:

1. Remove the 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 the 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 eyelet terminal, check if they are installed correctly. Make sure all wire harnesses are clean, securely fastened and providing a good ground path.

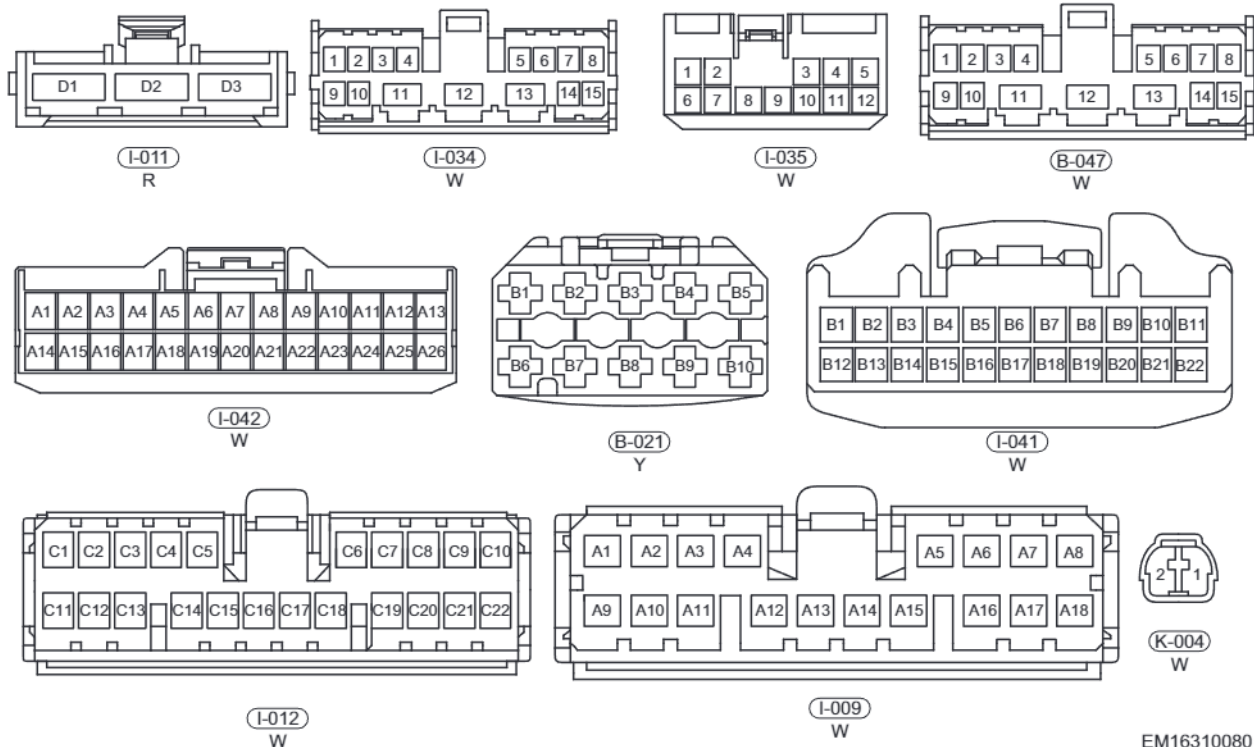
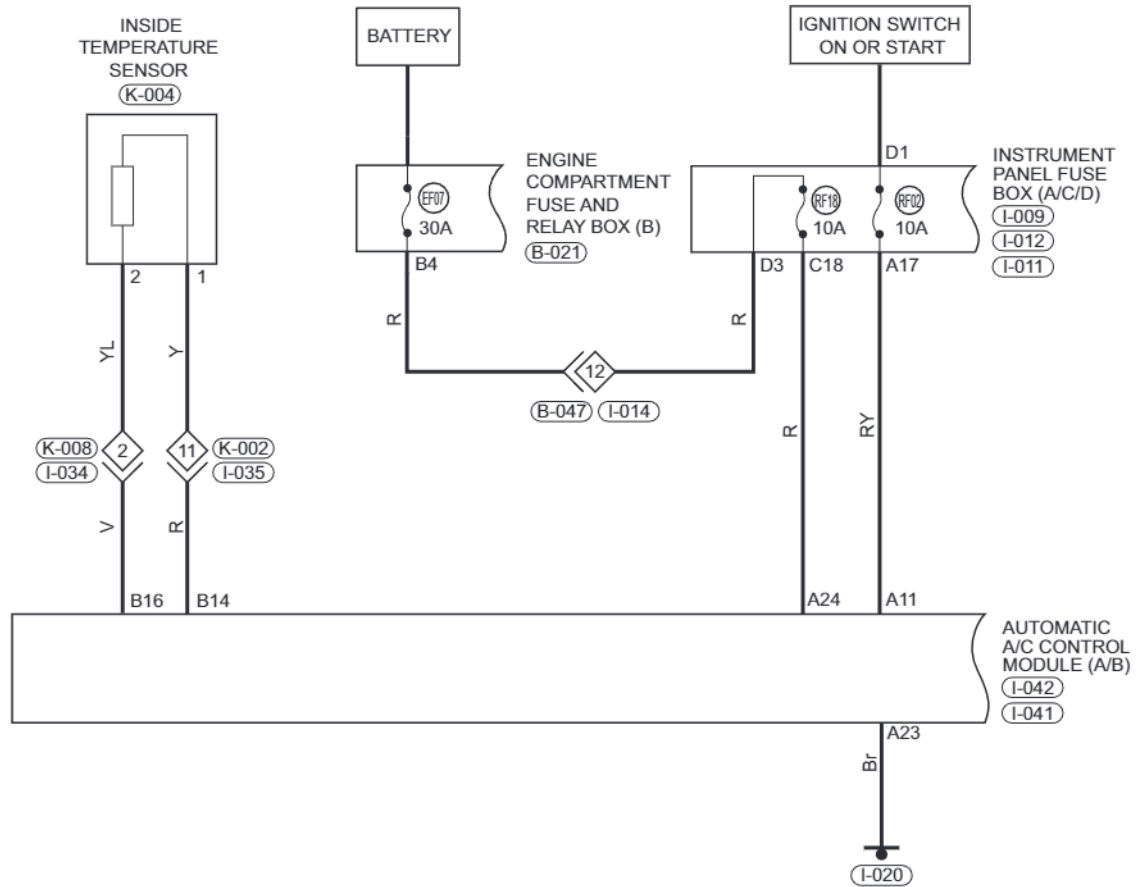
Diagnostic Trouble Code (DTC) Chart

DTC Code	DTC Definition
B2120	A/C in Car Temperature Sensor Short to Ground or Open Circuit
B2126	A/C Ambient Temperature Sensor Short to Ground or Open Circuit
B2127	A/C Evaporator Temperature Sensor Short to Ground or Open Circuit
B2133	A/C Solar Sensor Short to Ground or Open Circuit
B2160	A/C Mix Actuator Short to Ground or Open Circuit
B2166	Error of A/C Mode Actuator
B2169	Error of Blower
B2172	Recirculate Actuator Error
U0073	Control Module Communication Bus Off
U0140	Lost Communication with Body Control Module

DTC

B2120

A/C in Car Temperature Sensor Short to Ground or Open Circuit



EM16310080



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2120	A/C in Car Temperature Sensor Short to Ground or Open Circuit	Ignition switch ON	- Room temperature sensor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

31

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

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the room temperature sensor connector K-004.
- Disconnect the A/C wire harness connectors K-008 and K-002.
- Disconnect the instrument panel wire harness connectors I-034 and I-035.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

2 Check room temperature sensor

- Remove the room temperature sensor.
- Install a new room temperature sensor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace room temperature sensor

YES

3

Check wire harness and connector (automatic A/C control module assembly - room temperature sensor)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the room temperature sensor connector K-004.
- Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-004 to check for an open in room temperature sensor circuit according to the table below.

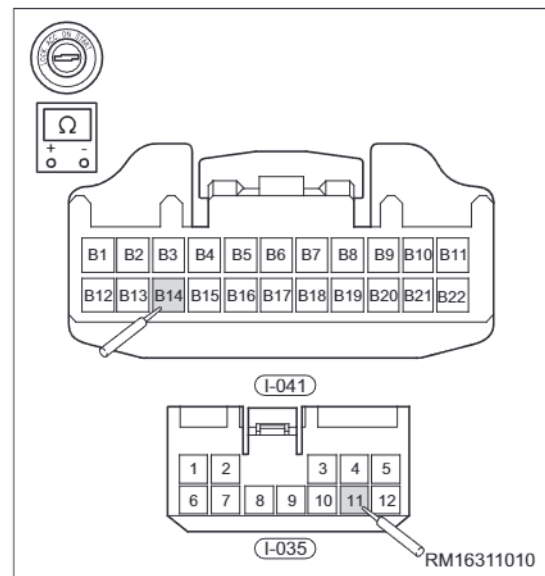
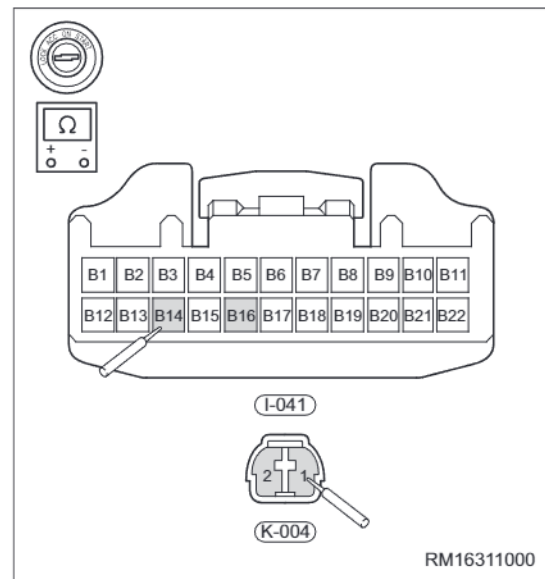
Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - K-004 (1)	Always	Continuity
I-041 (B16) - K-004 (2)	Always	Continuity

- Disconnect the instrument panel wire harness connector I-035 and A/C wire harness connector K-002.
- Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-041 to check for an open in room temperature sensor circuit according to the table below.

Standard Condition

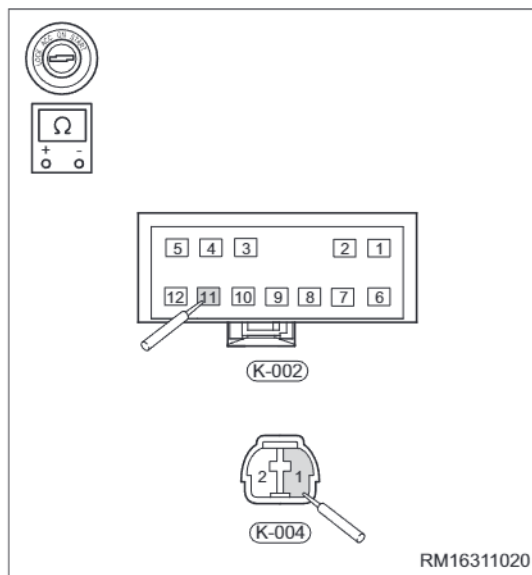
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-035 (11)	Always	Continuity



- h. Using a digital multimeter, check for continuity between terminals of connectors K-002 and K-004 to check for an open in room temperature sensor circuit according to the table below.

Standard Condition

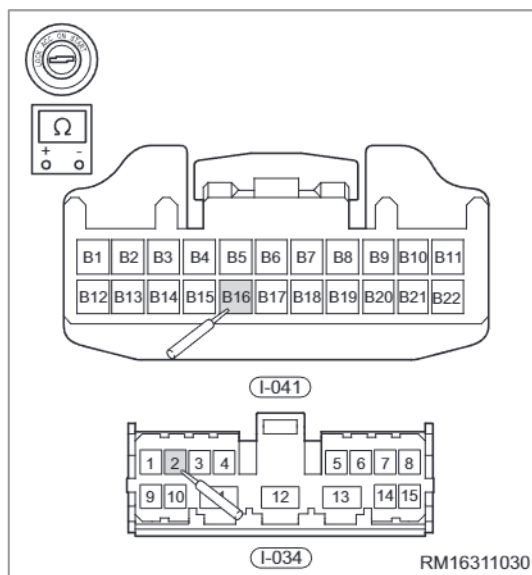
Multimeter Connection	Condition	Specified Condition
K-004 (1) - K-002 (11)	Always	Continuity



- i. Disconnect the instrument panel wire harness connector I-034 and A/C wire harness connector K-008.
- j. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-041 to check for an open in room temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B16) - I-034 (2)	Always	Continuity



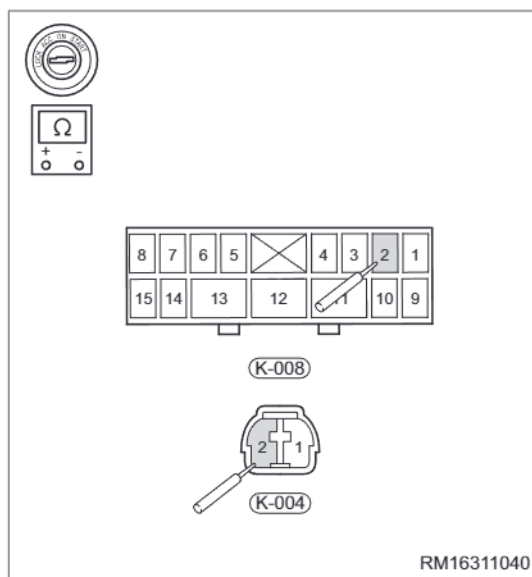
- k. Using a digital multimeter, check for continuity between terminals of connectors K-008 and K-004 to check for an open in room temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-004 (2) - K-008 (2)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector



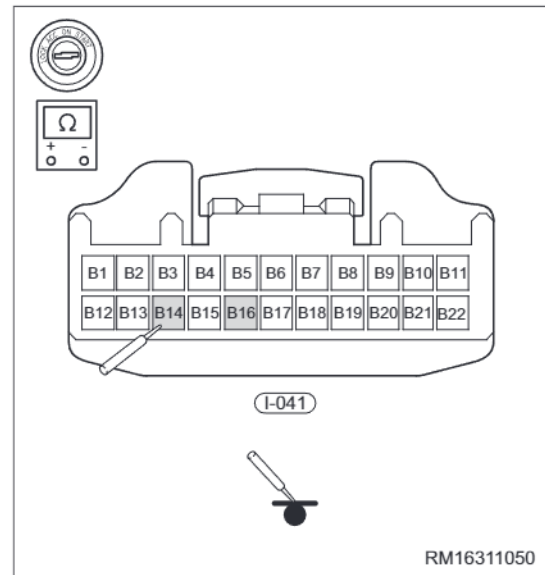
OK

4 Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if room temperature sensor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B16) - Body ground	Always	No continuity



NG

Repair or replace A/C wire harness and connector

OK

5 Reconfirm DTCs

- Reconnect all disconnected connectors securely.
- Connect the negative battery cable.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG

Replace automatic A/C control module assembly

OK

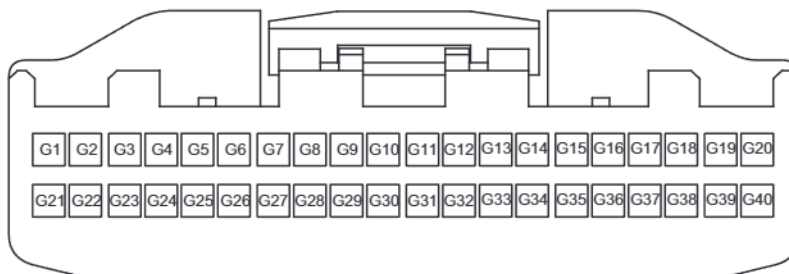
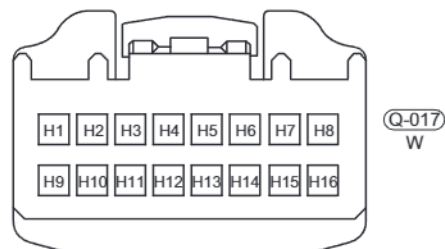
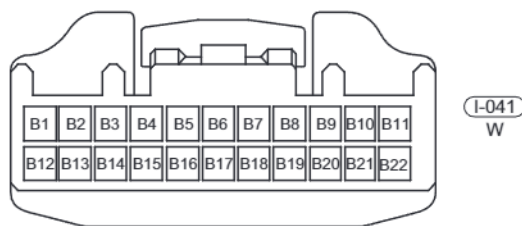
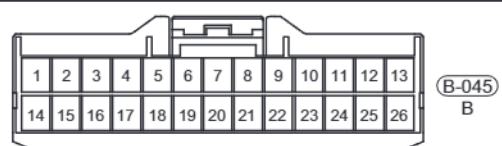
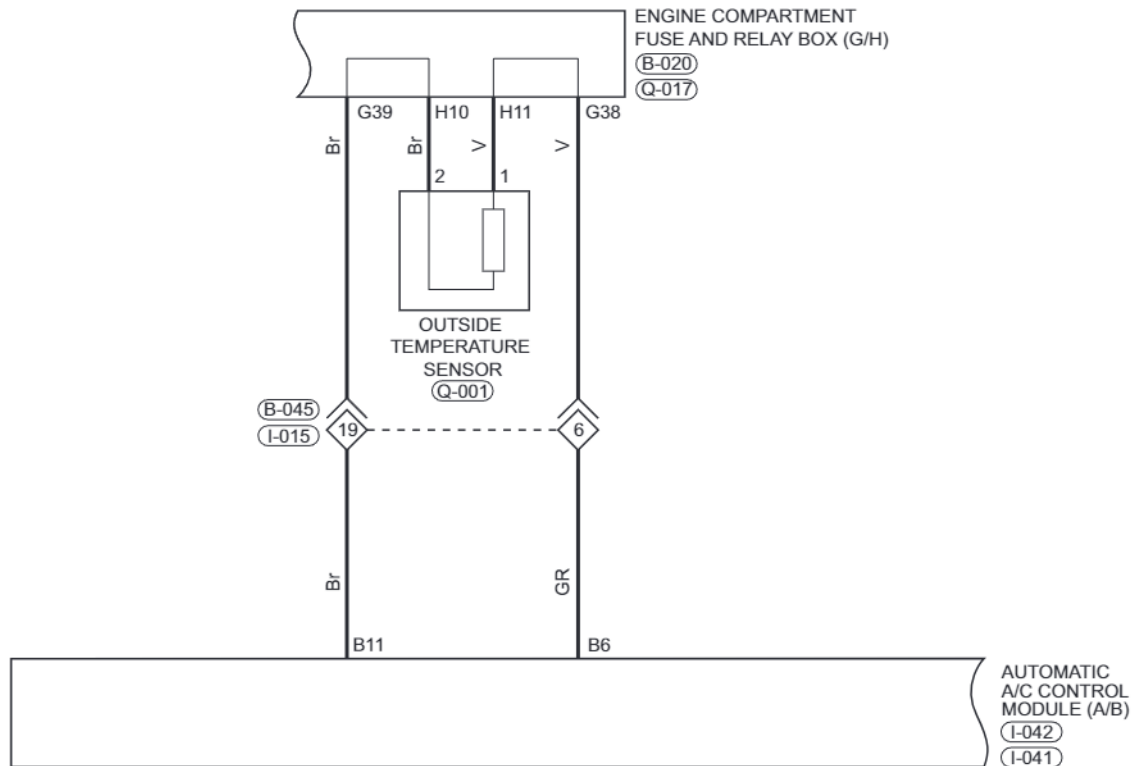
System operates normally

DTC

B2126

A/C Ambient Temperature Sensor Short to Ground or Open Circuit

31



EM16310090

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2126	A/C Ambient Temperature Sensor Short to Ground or Open Circuit	Ignition switch ON	- Outside temperature sensor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

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

31

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the outside temperature sensor connector Q-001.
- Disconnect the body wire harness connectors B-045 and B-020.
- Disconnect the instrument panel wire harness connector I-015.
- Disconnect the front bumper wire harness connector Q-017.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace related wire harness and connector

OK

2 Check outside temperature sensor

- Remove the outside temperature sensor.
- Install a new outside temperature sensor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace outside temperature sensor

YES

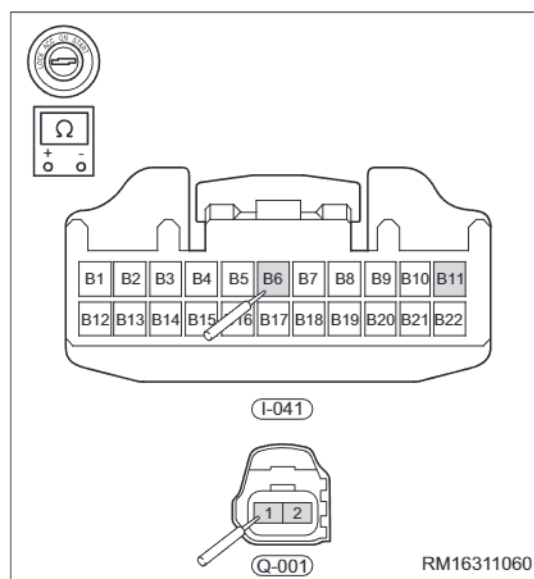
3

Check wire harness and connector (automatic A/C control module assembly - outside temperature sensor)

- a. Turn ignition switch to LOCK.
- b. Disconnect the negative battery cable.
- c. Disconnect the automatic A/C control module assembly connector I-041 and outside temperature sensor connector Q-001.
- d. Using a digital multimeter, check for continuity between terminals of connectors I-041 and Q-001 to check for an open in outside temperature sensor circuit according to the table below.

Standard Condition

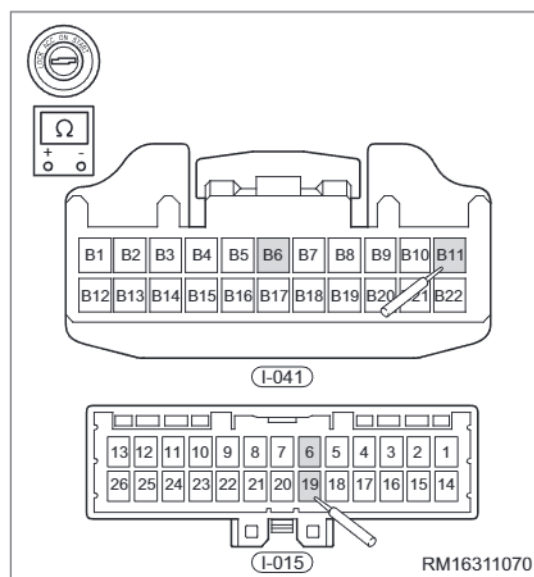
Multimeter Connection	Condition	Specified Condition
I-041 (B6) - Q-001 (1)	Always	Continuity
I-041 (B11) - Q-001 (2)	Always	Continuity



- e. Disconnect the instrument panel wire harness connector I-015.
- f. Using a digital multimeter, check for continuity between terminals of connectors I-041 and I-015 to check for an open in outside temperature sensor circuit according to the table below.

Standard Condition

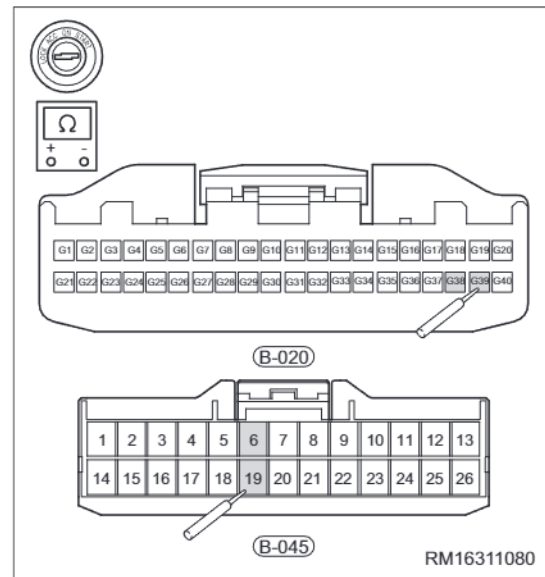
Multimeter Connection	Condition	Specified Condition
I-041 (B6) - I-015 (6)	Always	Continuity
I-041 (B11) - I-015 (19)	Always	Continuity



- g. Disconnect the body wire harness connectors B-045 and B-020.
- h. Using a digital multimeter, check for continuity between terminals of connectors B-045 and B-020 to check for an open in outside temperature sensor circuit according to the table below.

Standard Condition

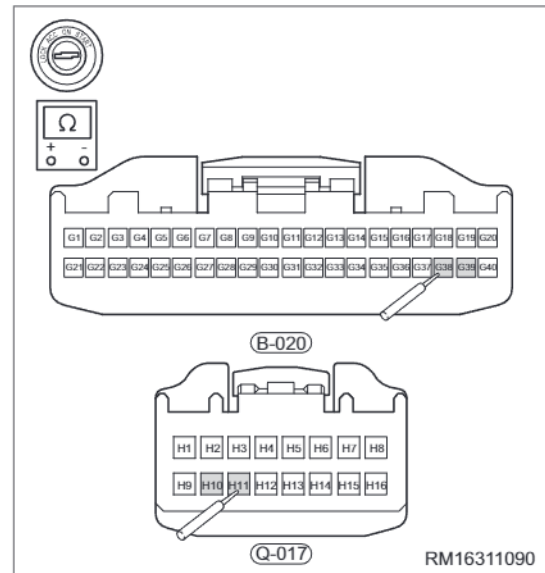
Multimeter Connection	Condition	Specified Condition
B-045 (6) - B-020 (G38)	Always	Continuity
B-045 (19) - B-020 (G39)	Always	Continuity



- i. Disconnect the front bumper wire harness connector Q-017.
- j. Using a digital multimeter, check for continuity between terminals of connectors Q-017 and B-020 to check for an open in outside temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
Q-017 (H11) - B-020 (G38)	Always	Continuity
Q-017 (H10) - B-020 (G39)	Always	Continuity



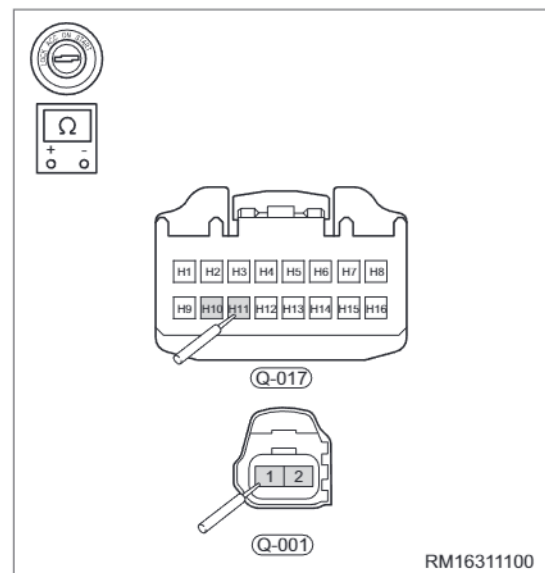
- k. Using a digital multimeter, check for continuity between terminals of connectors Q-017 and Q-001 to check for an open in outside temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
Q-017 (H11) - Q-001 (1)	Always	Continuity
Q-017 (H10) - Q-001 (2)	Always	Continuity

NG

Repair or replace related wire harness and connector



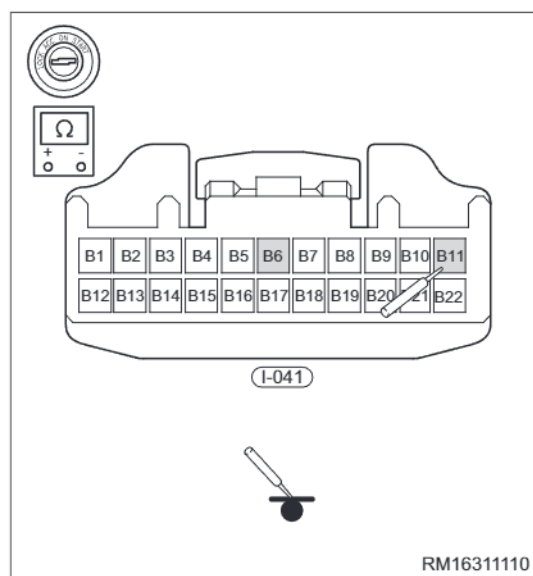
OK

4 Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if outside temperature sensor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B6) - Body ground	Always	No continuity
I-041 (B11) - Body ground	Always	Continuity



NG

Repair or replace A/C wire harness and connector

OK

5 Reconfirm DTCs

- Reconnect all disconnected connectors securely.
- Connect the negative battery cable.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG

Replace automatic A/C control module assembly

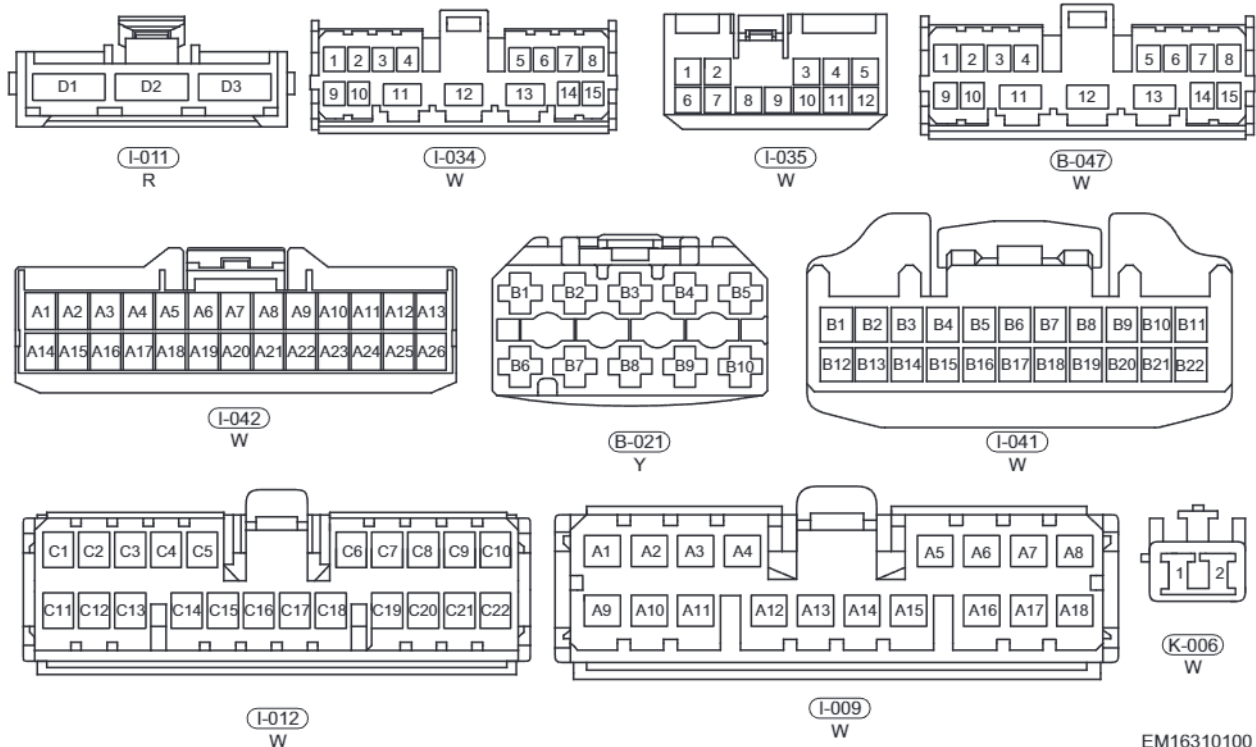
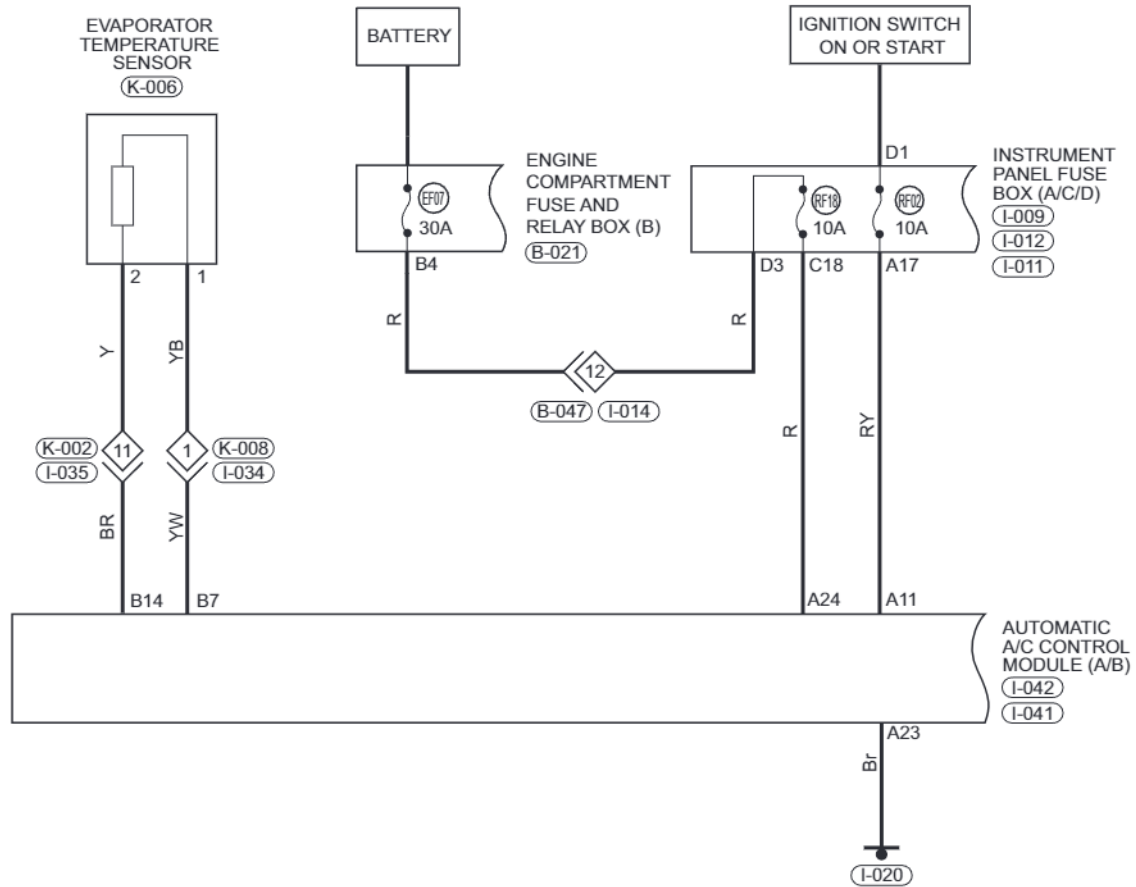
OK

System operates normally

DTC

B2127

A/C Evaporator Temperature Sensor Short to Ground or Open Circuit



EM16310100



DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2127	A/C Evaporator Temperature Sensor Short to Ground or Open Circuit	Ignition switch ON	- Evaporator temperature sensor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

31

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

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the evaporator temperature sensor connector K-006.
- Disconnect the A/C wire harness connectors K-008 and K-002.
- Disconnect the instrument panel wire harness connectors I-034 and I-035.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

2 Check evaporator temperature sensor

- Remove the evaporator temperature sensor.
- Install a new evaporator temperature sensor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace evaporator temperature sensor

YES

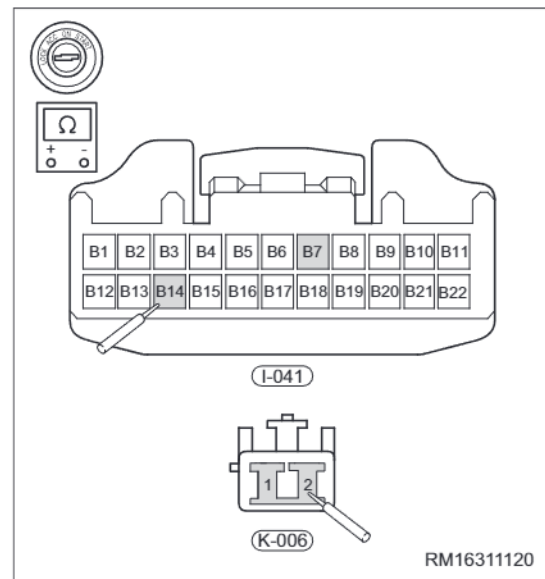
3

Check wire harness and connector (automatic A/C control module assembly - evaporator temperature sensor)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the evaporator temperature sensor connector K-006.
- Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-006 to check for an open in evaporator temperature sensor circuit according to the table below.

Standard Condition

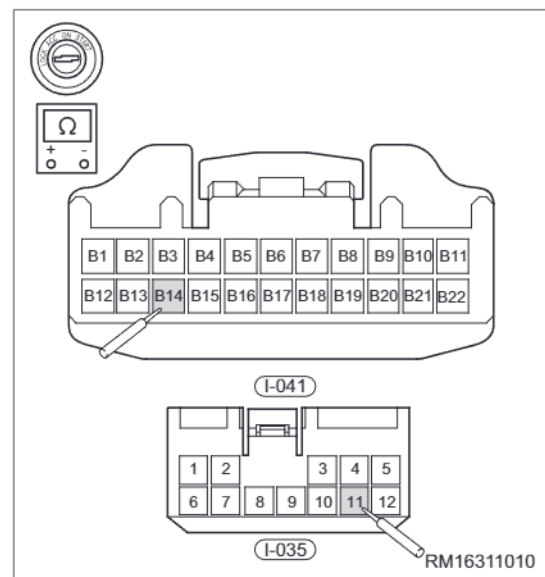
Multimeter Connection	Condition	Specified Condition
I-041 (B7) - K-006 (1)	Always	Continuity
I-041 (B14) - K-006 (2)	Always	Continuity



- Disconnect the instrument panel wire harness connector I-035 and A/C wire harness connector K-002.
- Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-041 to check for an open in evaporator temperature sensor circuit according to the table below.

Standard Condition

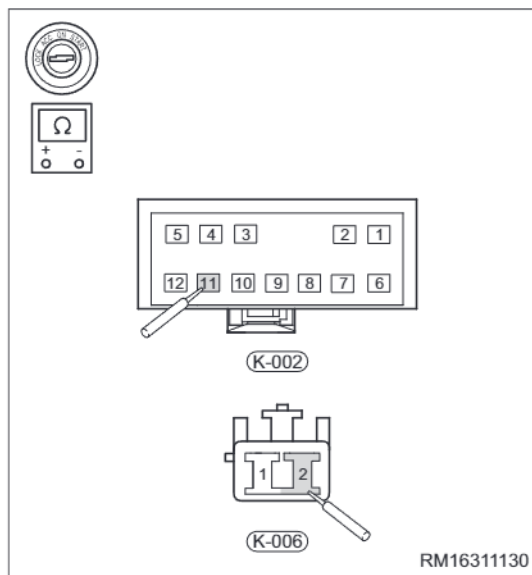
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-035 (11)	Always	Continuity



- h. Using a digital multimeter, check for continuity between terminals of connectors K-002 and K-006 to check for an open in evaporator temperature sensor circuit according to the table below.

Standard Condition

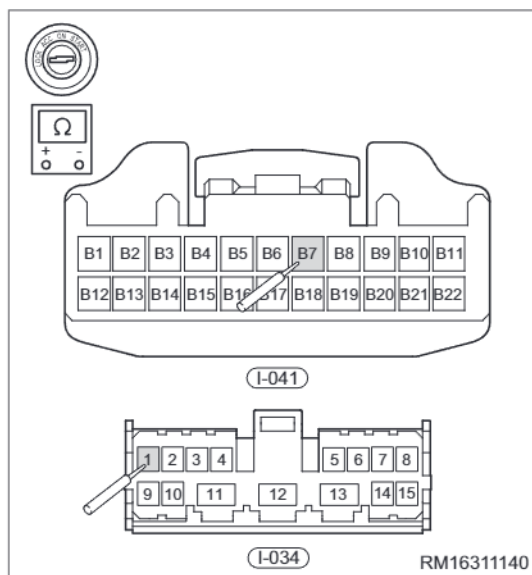
Multimeter Connection	Condition	Specified Condition
K-006 (2) - K-002 (11)	Always	Continuity



- i. Disconnect the instrument panel wire harness connector I-034 and A/C wire harness connector K-008.
- j. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-041 to check for an open in evaporator temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B7) - I-034 (1)	Always	Continuity



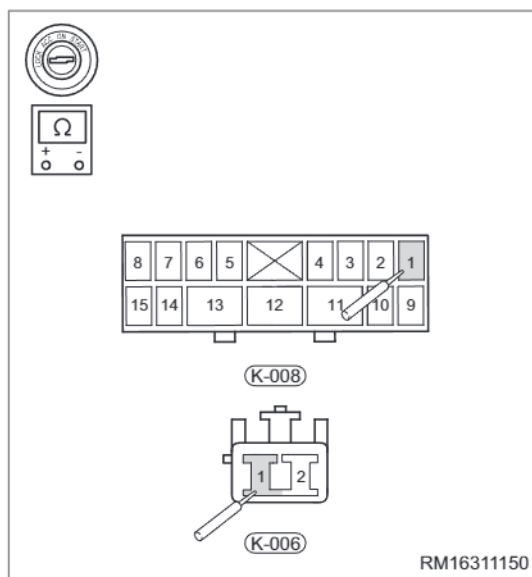
- k. Using a digital multimeter, check for continuity between terminals of connectors K-008 and K-006 to check for an open in evaporator temperature sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-006 (1) - K-008 (1)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector



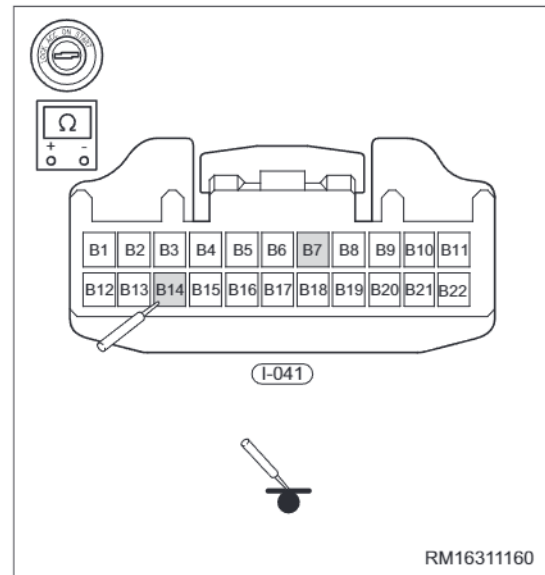
OK

4 Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if evaporator temperature sensor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B7) - Body ground	Always	No continuity



NG

Repair or replace A/C wire harness and connector

OK

5 Reconfirm DTCs

- Reconnect all disconnected connectors securely.
- Connect the negative battery cable.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG

Replace automatic A/C control module assembly

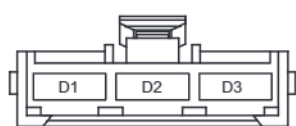
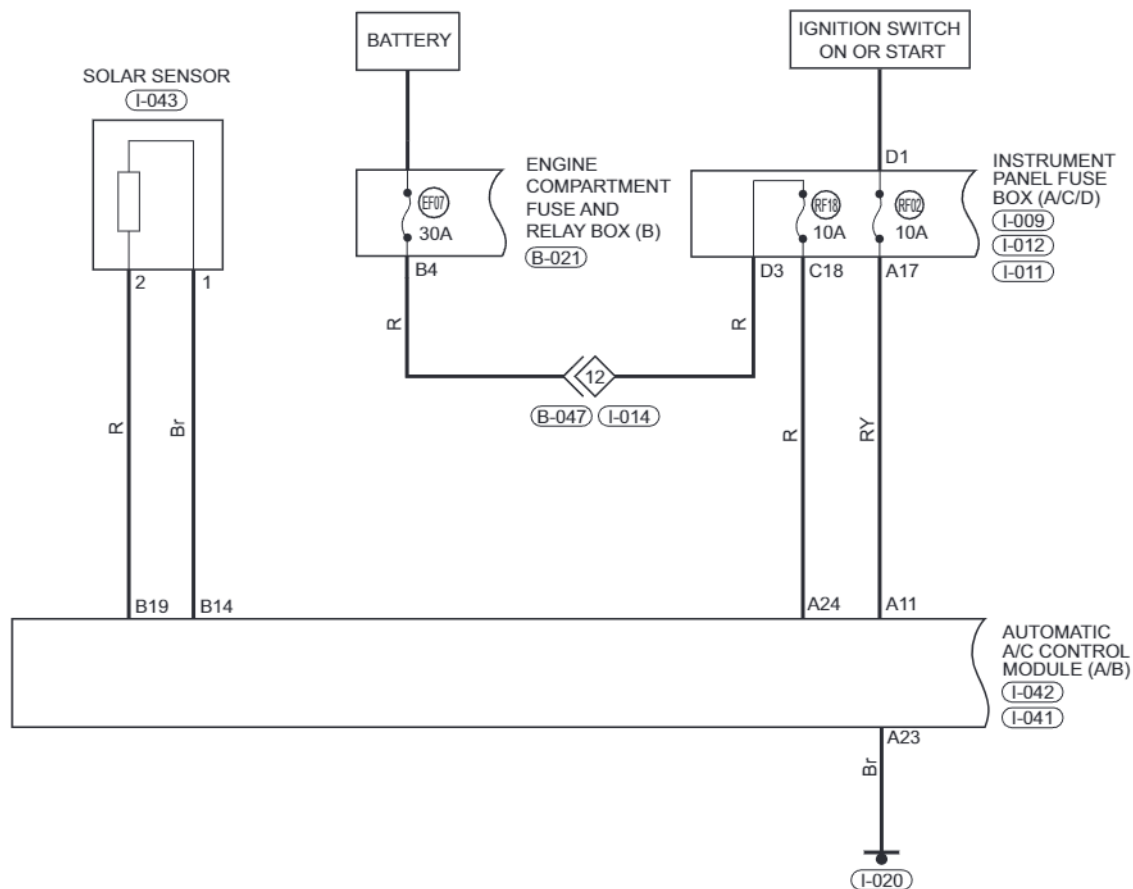
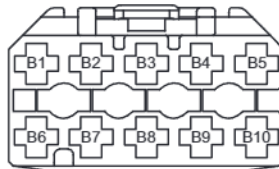
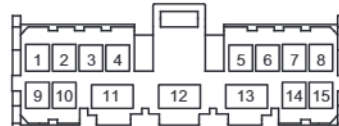
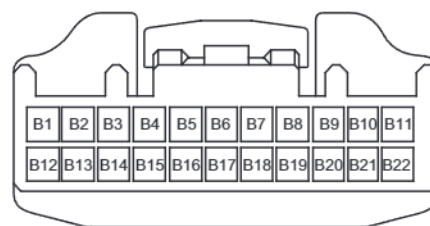
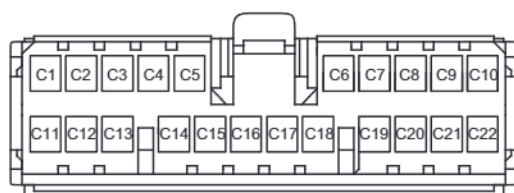
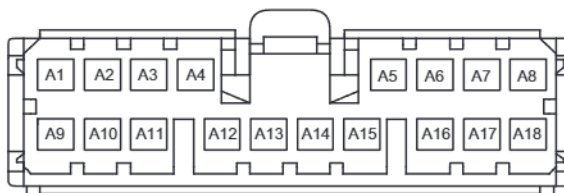
OK

System operates normally

DTC

B2133

A/C Solar Sensor Short to Ground or Open Circuit

I-011
RB-021
YB-047
WI-042
WI-043
BI-041
WI-012
WI-009
W

EM16310110

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2133	A/C Solar Sensor Short to Ground or Open Circuit	Ignition switch ON	- Solar sensor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

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

31

Diagnosis Procedure**1 Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect solar sensor connector I-043.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

OK**2 Check solar sensor**

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

NO

Replace solar sensor

YES

3

Check wire harness and connector (automatic A/C control module assembly - solar sensor)

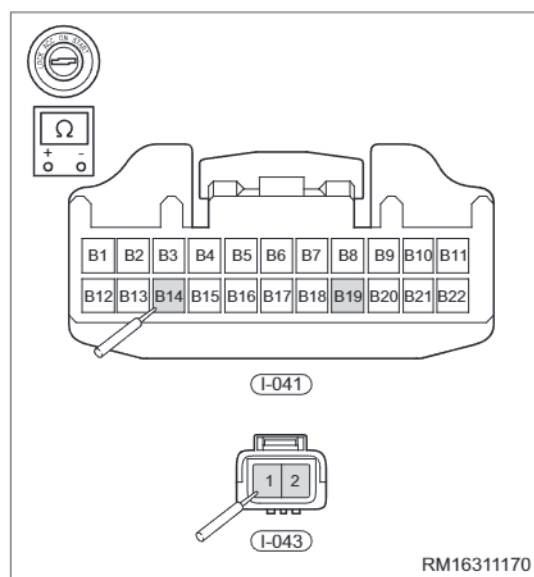
- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041 and solar sensor connector I-043.
- Using a digital multimeter, check for continuity between terminals of connectors I-041 and I-043 to check for an open in solar sensor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-043 (1)	Always	Continuity
I-041 (B19) - I-043 (2)	Always	Continuity

NG

Repair or replace instrument panel wire harness and connector



OK

4

Check wire harness and connector (automatic A/C control module assembly - body ground)

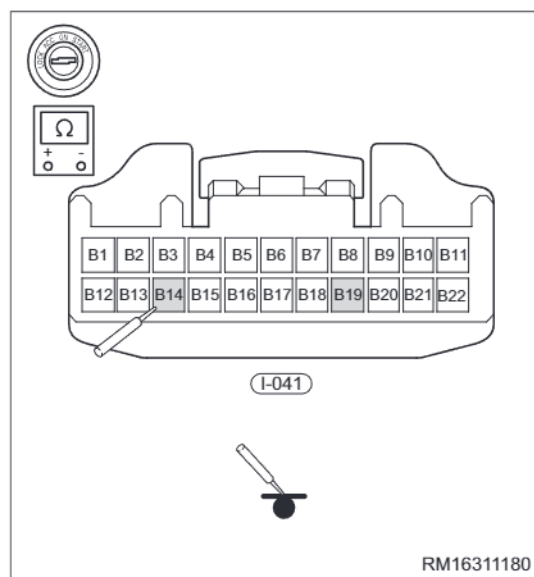
- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if solar sensor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B19) - Body ground	Always	No continuity

NG

Repair or replace instrument panel wire harness and connector



OK

5**Reconfirm DTCs**

- a. Reconnect all disconnected connectors securely.
- b. Connect the negative battery cable.
- c. Turn ignition switch to ON.
- d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- e. Turn ignition switch to LOCK and wait for a few seconds.
- f. Turn ignition switch to ON.
- g. Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

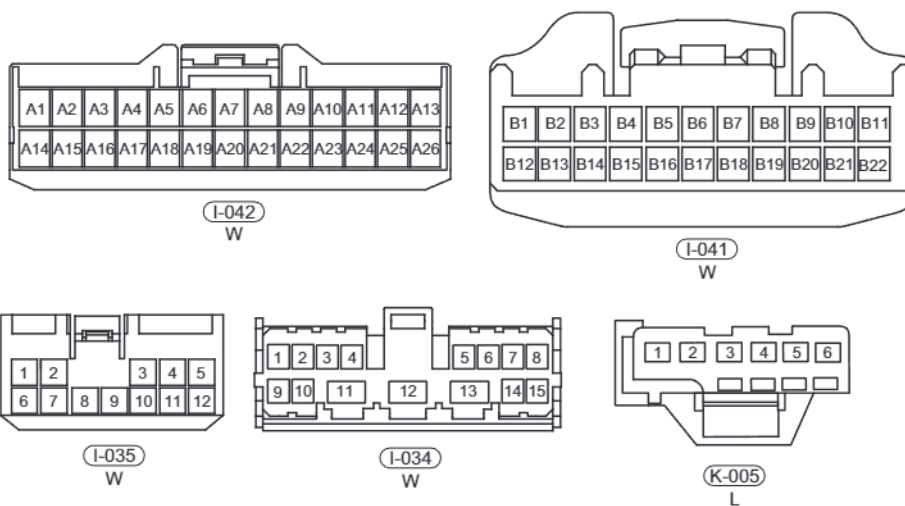
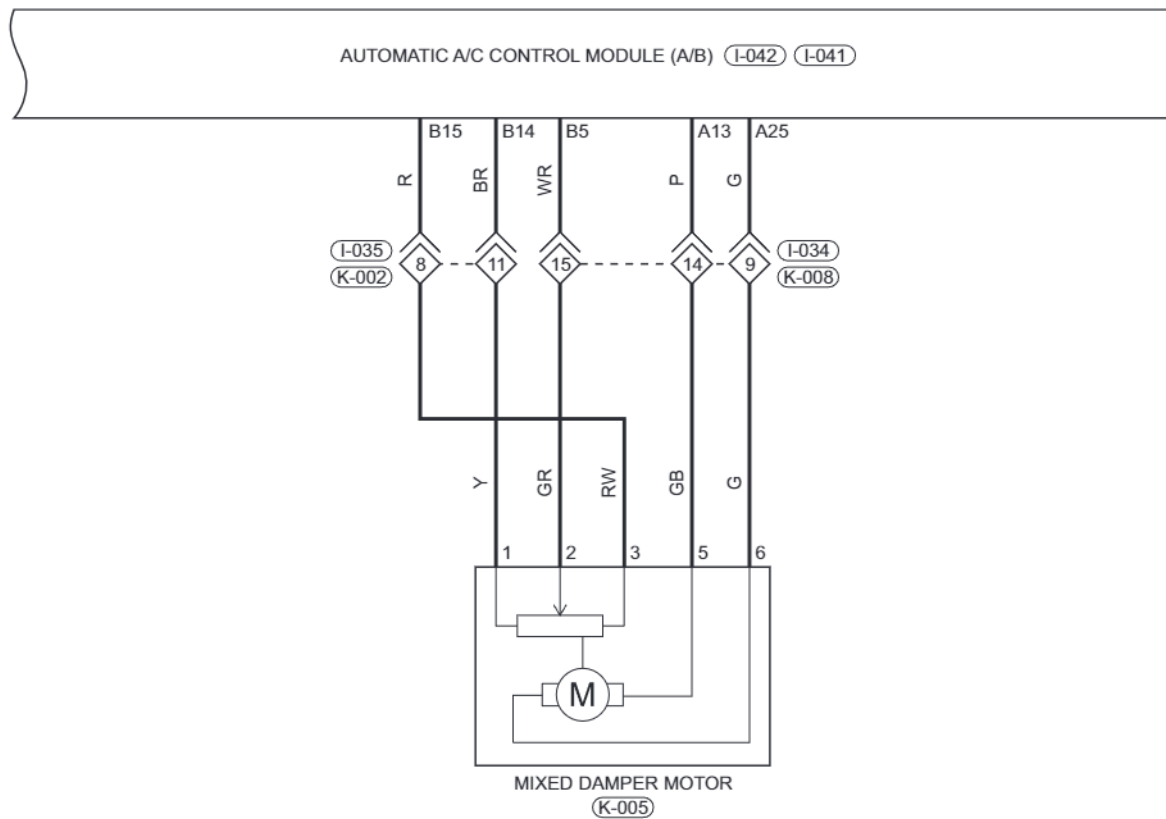
NG**Replace automatic A/C control module assembly****OK****System operates normally****31**

DTC

B2160

A/C Mix Actuator Short to Ground or Open Circuit

31



EM16310120

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2160	A/C Mix Actuator Short to Ground or Open Circuit	Ignition switch ON	- Mix damper servo motor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

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

31

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Disconnect mix damper servo motor connector K-005.
- Disconnect the A/C wire harness connector K-008 and K-002.
- Disconnect the instrument panel wire harness connectors I-034 and I-035.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

2 Check mix damper servo motor

- Remove the mix damper servo motor.
- Install a new mix damper servo motor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace mix damper servo motor

YES



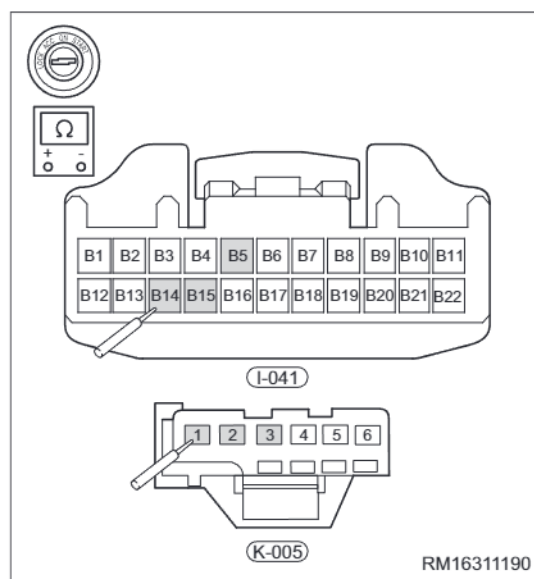
3

Check wire harness and connector (automatic A/C control module assembly - mix damper servo motor)

- a. Turn ignition switch to LOCK.
- b. Disconnect the negative battery cable.
- c. Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- d. Disconnect the mix damper servo motor connector K-005.
- e. Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-005 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

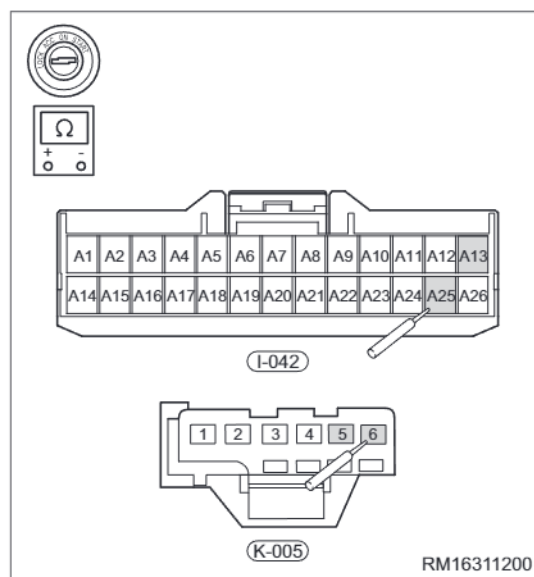
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - K-005 (1)	Always	Continuity
I-041 (B5) - K-005 (2)	Always	Continuity
I-041 (B15) - K-005 (3)	Always	Continuity



- f. Using a digital multimeter, check for continuity between terminals of connectors I-042 and K-005 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

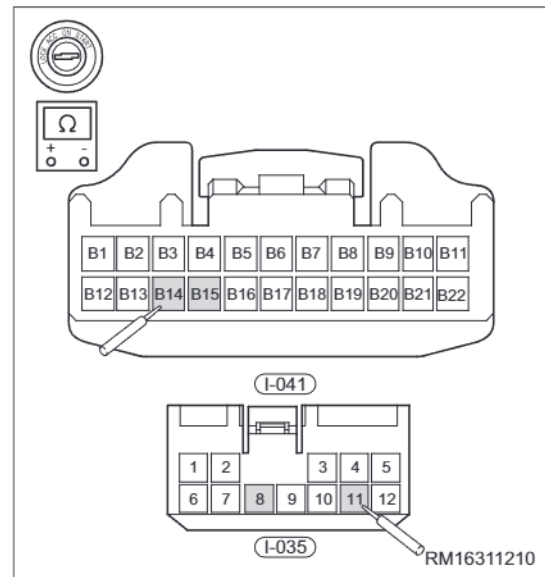
Multimeter Connection	Condition	Specified Condition
I-042 (A13) - K-005 (5)	Always	Continuity
I-042 (A25) - K-005 (6)	Always	Continuity



- g. Disconnect the instrument panel wire harness connectors I-035 and A/C wire harness connector K-002.
- h. Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-041 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

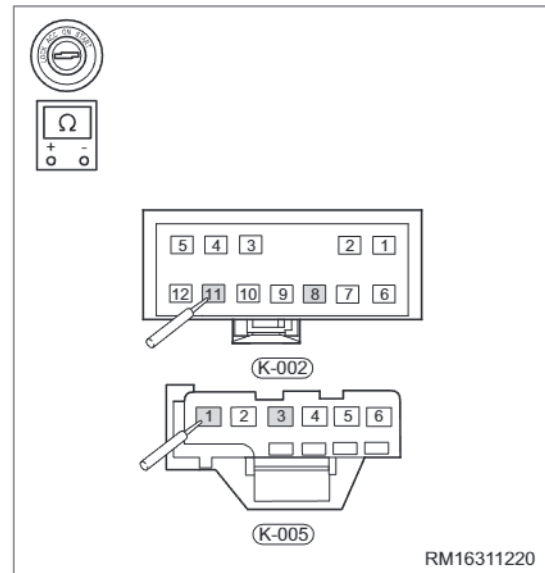
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-035 (11)	Always	Continuity
I-041 (B15) - I-035 (8)	Always	Continuity



- i. Using a digital multimeter, check for continuity between terminals of connectors K-002 and K-005 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

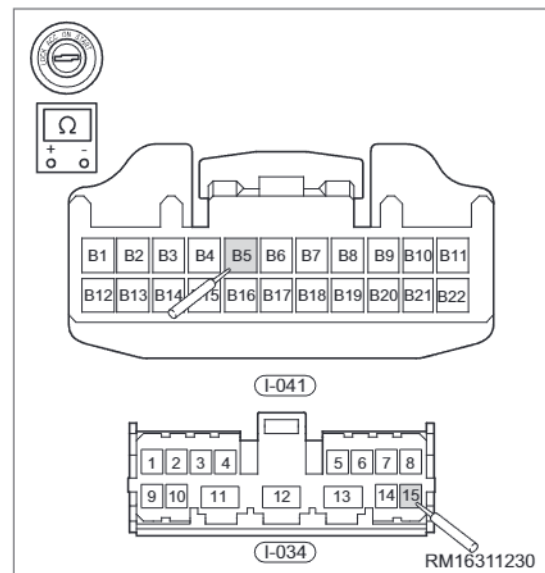
Multimeter Connection	Condition	Specified Condition
K-005 (1) - K-002 (11)	Always	Continuity
K-005 (3) - K-002 (8)	Always	Continuity



- j. Disconnect the instrument panel wire harness connector I-034 and A/C wire harness connector K-008.
- k. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-041 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B5) - I-034 (15)	Always	Continuity

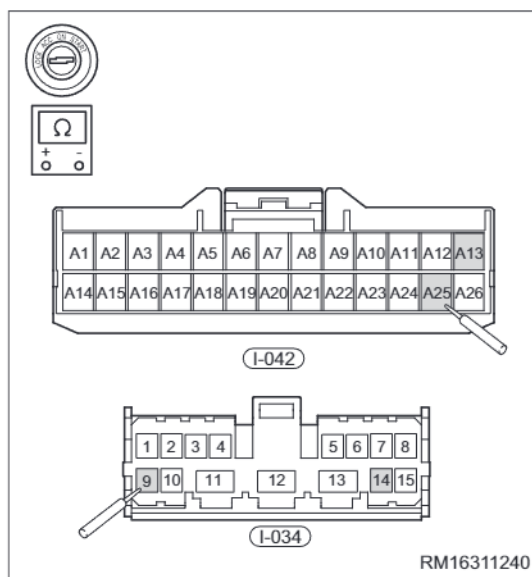


- l. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-042 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A13) - I-034 (14)	Always	Continuity
I-042 (A25) - I-034 (9)	Always	Continuity

31



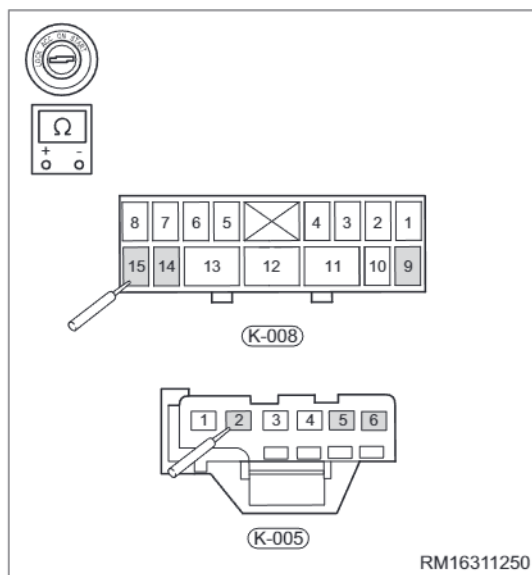
- m. Using a digital multimeter, check for continuity between terminals of connectors K-008 and K-005 to check for an open in mix damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-005 (2) - K-008 (15)	Always	Continuity
K-005 (5) - K-008 (14)	Always	Continuity
K-005 (6) - K-008 (9)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector



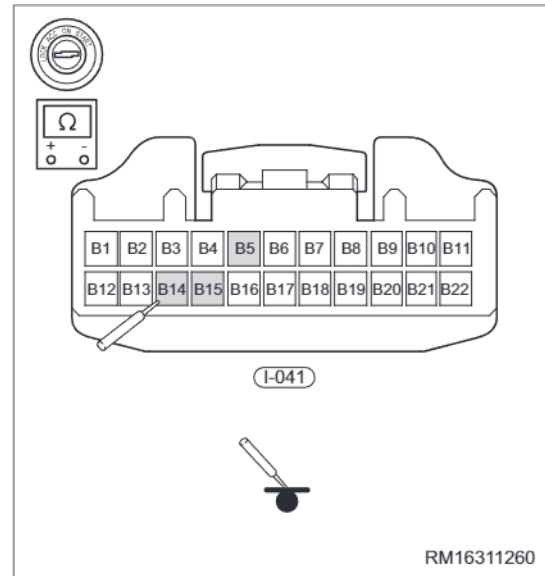
OK

4 Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if mix damper servo motor is short to ground according to the table below.

Standard Condition

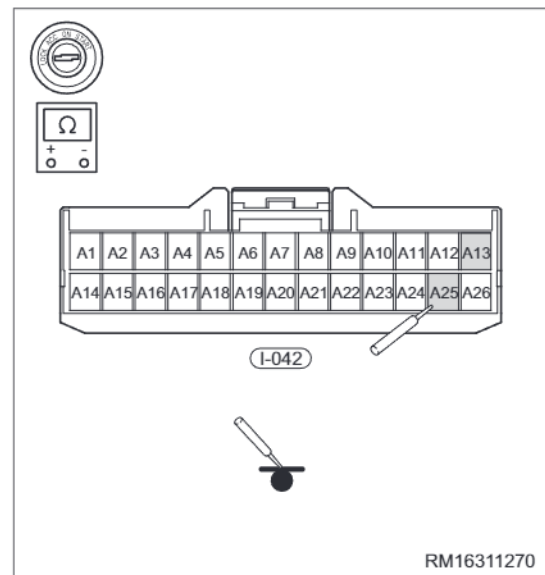
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B5) - Body ground	Always	No continuity
I-041 (B15) - Body ground	Always	No continuity



- Using a digital multimeter, check for continuity between connector I-042 and body ground to check if mix damper servo motor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A13) - Body ground	Always	No continuity
I-042 (A25) - Body ground	Always	No continuity



NG

Repair or replace A/C wire harness and connector

OK

5**Reconfirm DTCs**

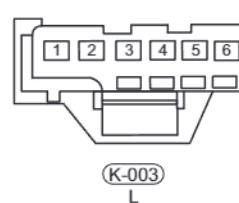
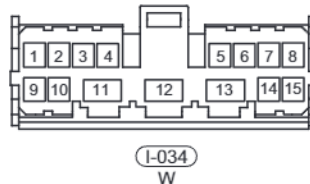
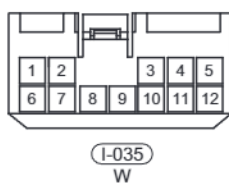
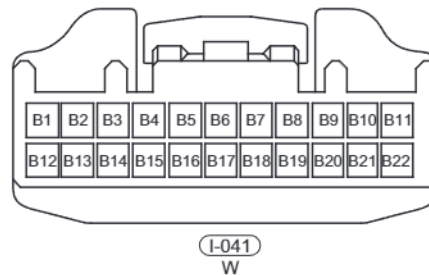
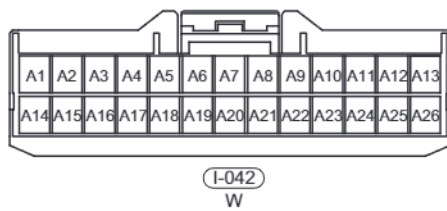
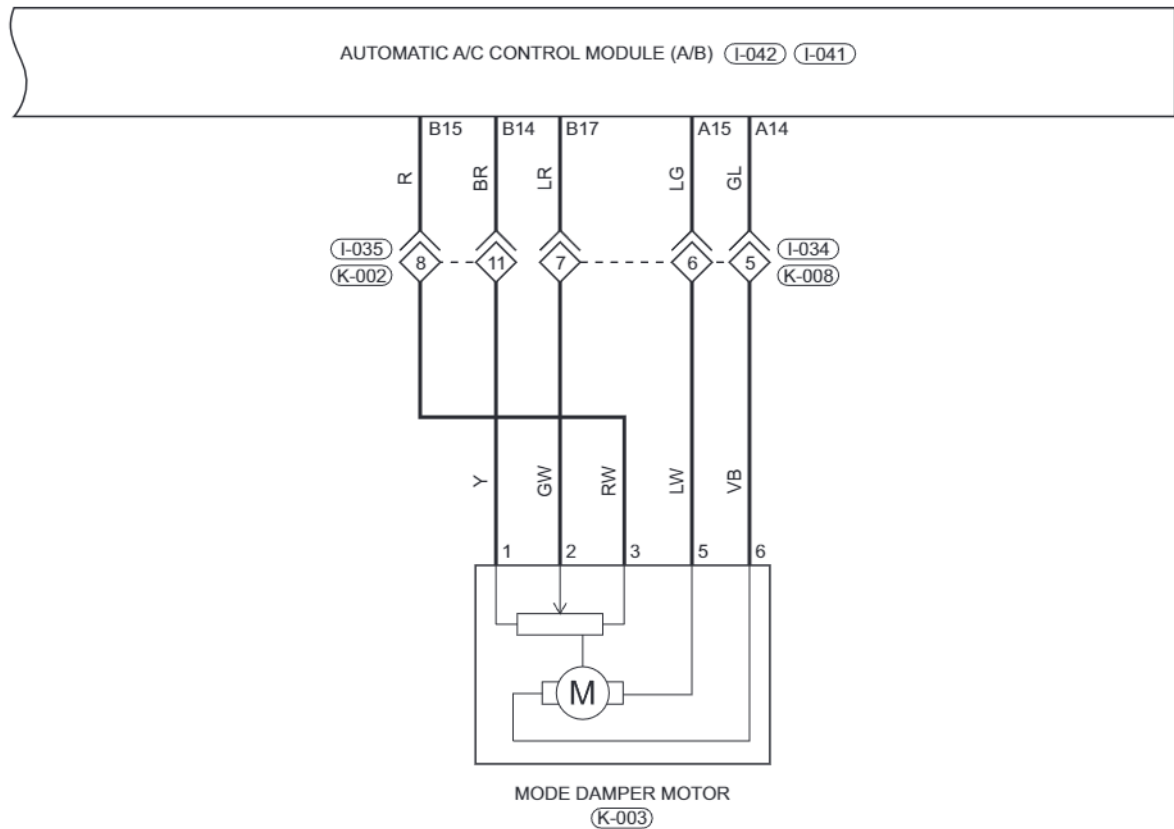
- a. Reconnect all disconnected connectors securely.
- b. Connect the negative battery cable.
- c. Turn ignition switch to ON.
- d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- e. Turn ignition switch to LOCK and wait for a few seconds.
- f. Turn ignition switch to ON.
- g. Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG**Replace automatic A/C control module assembly****OK****System operates normally**

DTC

B2166

Error of A/C Mode Actuator



EM16310130

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2166	Error of A/C Mode Actuator	Ignition switch ON	- Mode damper servo motor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

31

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

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Disconnect the mode damper servo motor connector K-003.
- Disconnect the A/C wire harness connectors K-008 and K-002.
- Disconnect the instrument panel wire harness connectors I-034 and I-035.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

2 Check mode damper servo motor

- Remove the mode damper servo motor.
- Install a new mode damper servo motor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace mode damper servo motor

YES

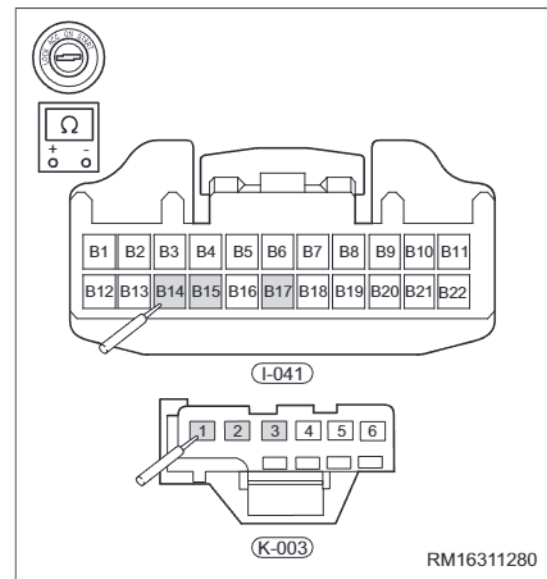
3

Check wire harness and connector (automatic A/C control module assembly - mode damper servo motor)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Disconnect the mode damper servo motor connector K-003.
- Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-003 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

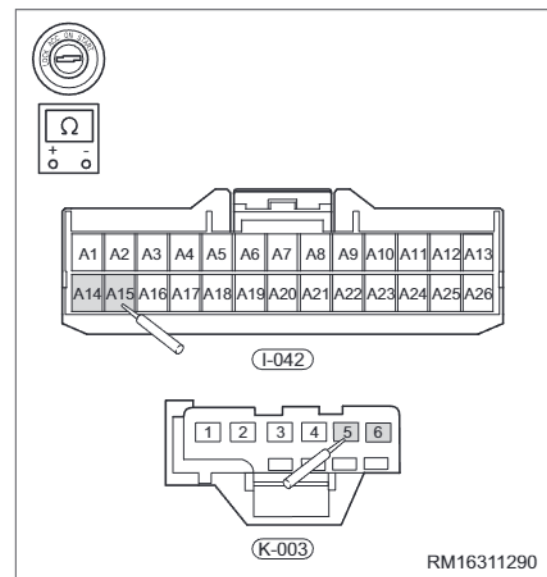
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - K-003 (1)	Always	Continuity
I-041 (B17) - K-003 (2)	Always	Continuity
I-041 (B15) - K-003 (3)	Always	Continuity



- Using a digital multimeter, check for continuity between terminals of connectors I-042 and K-003 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

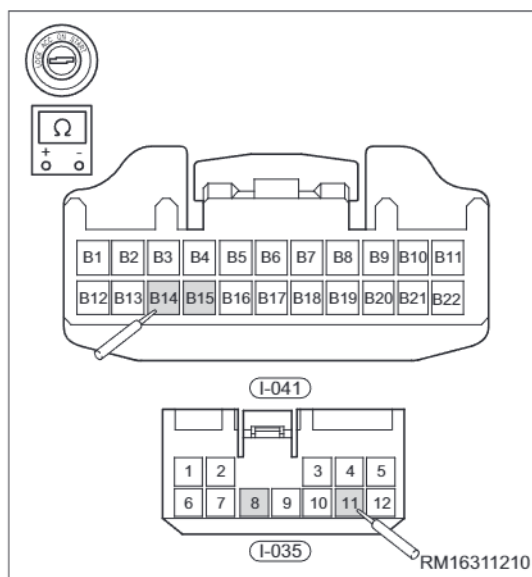
Multimeter Connection	Condition	Specified Condition
I-042 (A15) - K-003 (5)	Always	Continuity
I-042 (A14) - K-003 (6)	Always	Continuity



- g. Disconnect the instrument panel wire harness connector I-035 and A/C wire harness connector K-002.
- h. Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-041 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

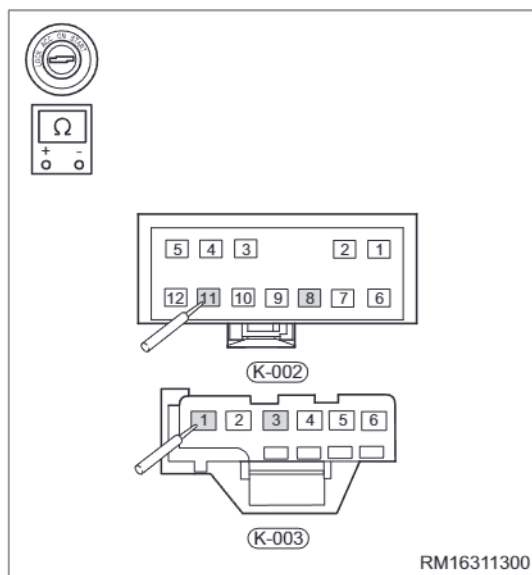
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-035 (11)	Always	Continuity
I-041 (B15) - I-035 (8)	Always	Continuity



- i. Using a digital multimeter, check for continuity between terminals of connectors K-002 and K-003 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

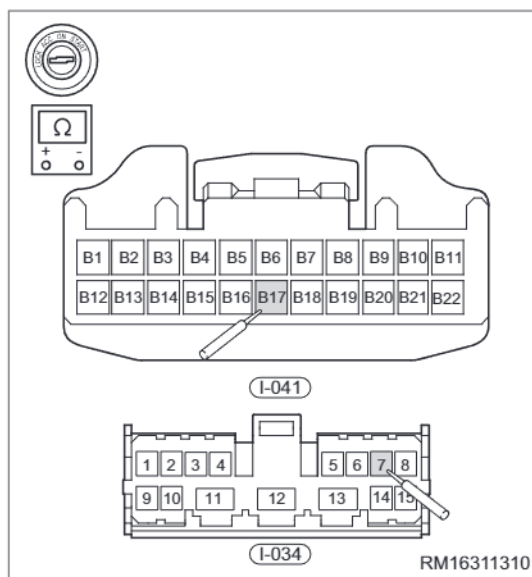
Multimeter Connection	Condition	Specified Condition
K-003 (1) - K-002 (11)	Always	Continuity
K-003 (3) - K-002 (8)	Always	Continuity



- j. Disconnect the instrument panel wire harness connector I-034 and A/C wire harness connector K-008.
- k. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-041 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

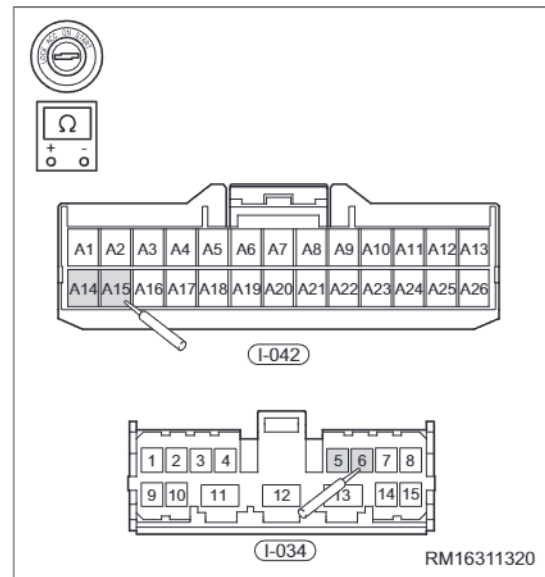
Multimeter Connection	Condition	Specified Condition
I-041 (B17) - I-034 (7)	Always	Continuity



- l. Using a digital multimeter, check for continuity between terminals of connectors I-034 and I-042 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A14) - I-034 (5)	Always	Continuity
I-042 (A15) - I-034 (6)	Always	Continuity



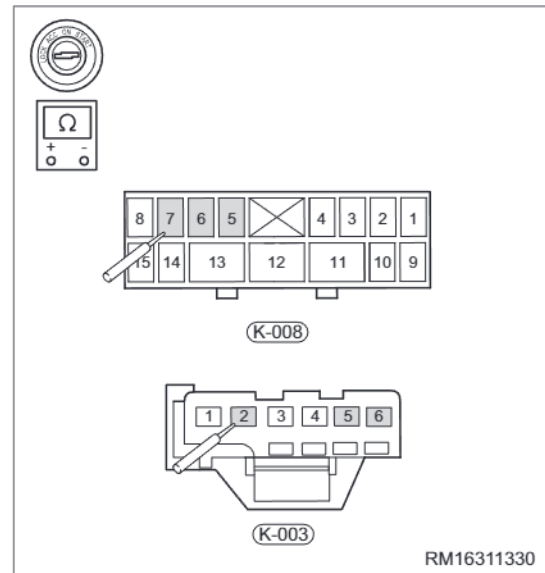
- m. Using a digital multimeter, check for continuity between terminals of connectors K-008 and K-003 to check for an open in mode damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-003 (2) - K-008 (7)	Always	Continuity
K-003 (5) - K-008 (6)	Always	Continuity
K-003 (6) - K-008 (5)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector



OK

4

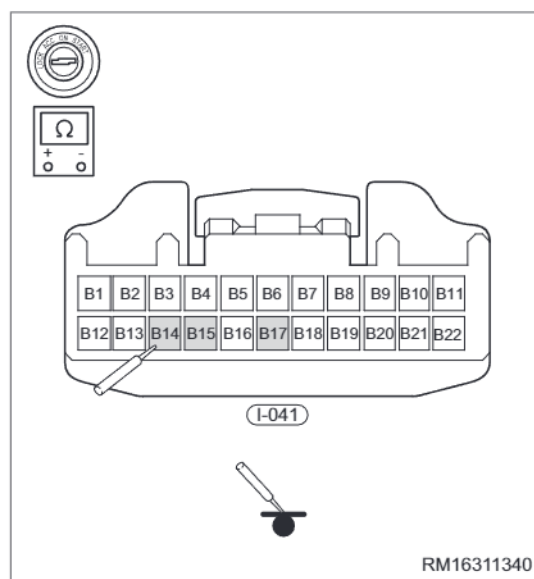
Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if mode damper servo motor is short to ground according to the table below.

31

Standard Condition

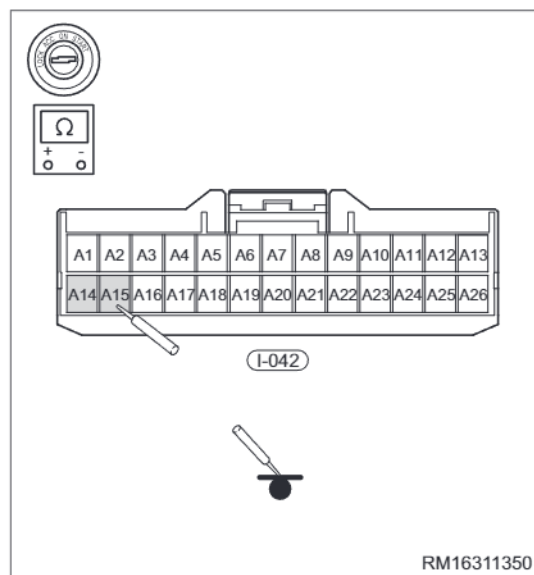
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B15) - Body ground	Always	No continuity
I-041 (B17) - Body ground	Always	No continuity



- Using a digital multimeter, check for continuity between connector I-042 and body ground to check if mode damper servo motor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A14) - Body ground	Always	No continuity
I-042 (A15) - Body ground	Always	No continuity



NG

Repair or replace A/C wire harness and connector

OK

5**Reconfirm DTCs**

- a. Reconnect all disconnected connectors securely.
- b. Connect the negative battery cable.
- c. Turn ignition switch to ON.
- d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- e. Turn ignition switch to LOCK and wait for a few seconds.
- f. Turn ignition switch to ON.
- g. Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

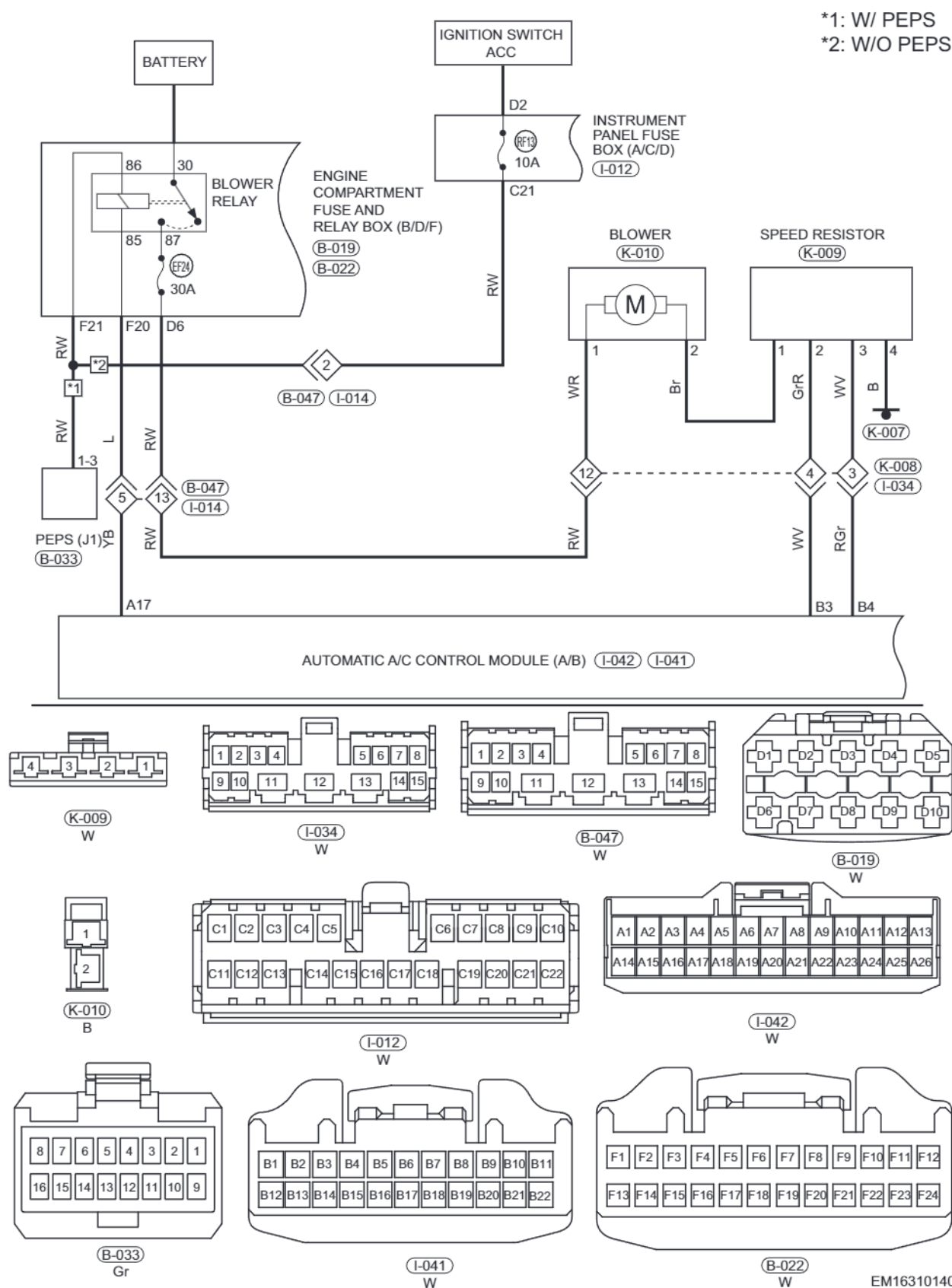
NG**Replace automatic A/C control module assembly****OK****System operates normally****31**

DTC

B2169

Error of Blower

31



EM16310140

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B2169	Error of Blower	Ignition switch ON	• Fuse • Relay • Blower motor • Blower speed resistor • Wire harness and connector • Automatic A/C control module assembly

31

CAUTION

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

Diagnosis Procedure**1 Check wire harness and connector**

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-041.
- Disconnect the blower connector K-010 and blower speed resistor connector K-009.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK**2 Check blower**

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

NO

Replace blower

YES

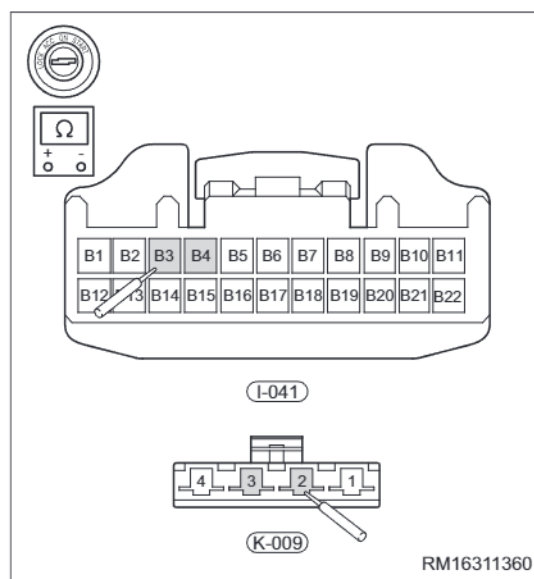
3

Check wire harness and connector (automatic A/C control module assembly - blower speed resistor)

- a. Turn ignition switch to LOCK.
- b. Disconnect the negative battery cable.
- c. Disconnect the automatic A/C control module assembly connector I-041.
- d. Disconnect the blower speed resistor connector K-009.
- e. Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-009 to check for an open in system circuit according to the table below.

Standard Condition

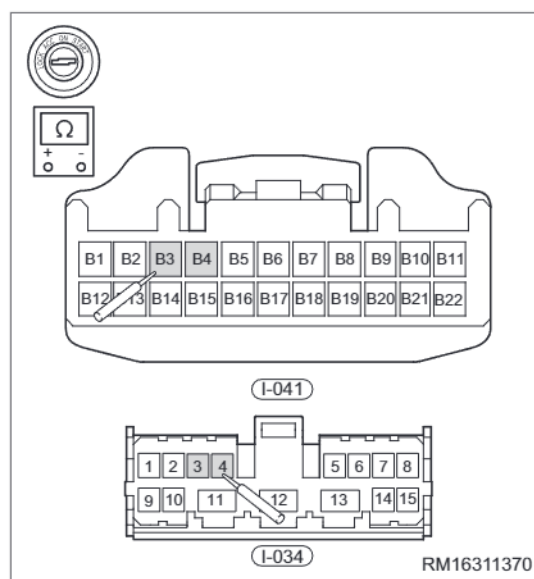
Multimeter Connection	Condition	Specified Condition
I-041 (B3) - K-009 (2)	Always	Continuity
I-041 (B4) - K-009 (3)	Always	Continuity



- f. Disconnect the instrument panel wire harness connector I-034 and A/C wire harness connector K-008.
- g. Using a digital multimeter, check for continuity between terminals of connectors I-041 and I-034 to check for an open in system circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B3) - I-034 (4)	Always	Continuity
I-041 (B4) - I-034 (3)	Always	Continuity



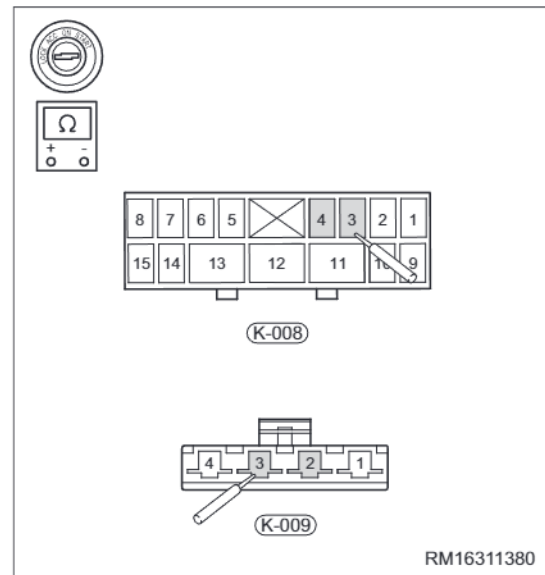
- h. Using a digital multimeter, check for continuity between terminals of connectors K-008 and K-009 to check for an open in system circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-008 (4) - K-009 (2)	Always	Continuity
K-008 (3) - K-009 (3)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector



OK

4

Check wire harness and connector (blower - blower speed resistor)

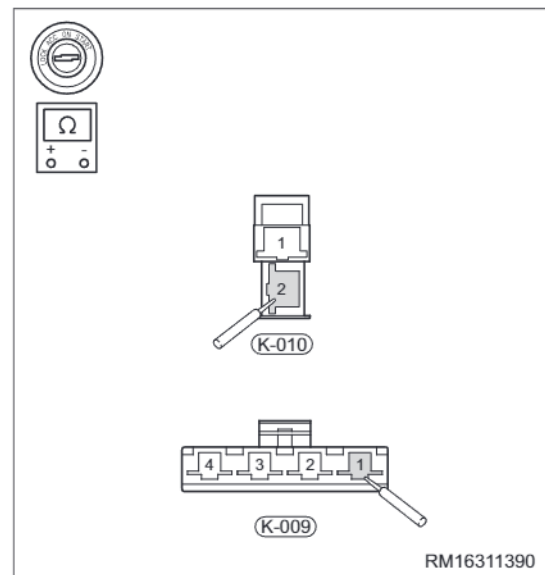
- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the blower connector K-010.
- Disconnect the blower speed resistor connector K-009.
- Using a digital multimeter, check for continuity between terminals of connectors K-010 and K-009 to check for an open in system circuit according to the table below.

Standard Condition

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

NG

Repair or replace A/C wire harness and connector



OK

5 Check wire harness and connector (blower speed resistor - body ground)

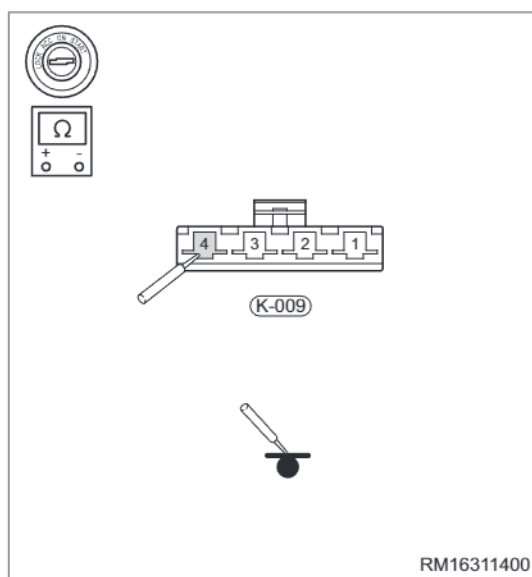
- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the blower speed resistor connector K-009.
- Using a digital multimeter, check for continuity between terminal 4 of connector K-009 and body ground to check if ground circuit is in good condition according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-009 (4) - Body ground	Always	Continuity

NG

Repair or replace A/C wire harness and connector

**OK****6 Check wire harness and connector (blower - battery)**

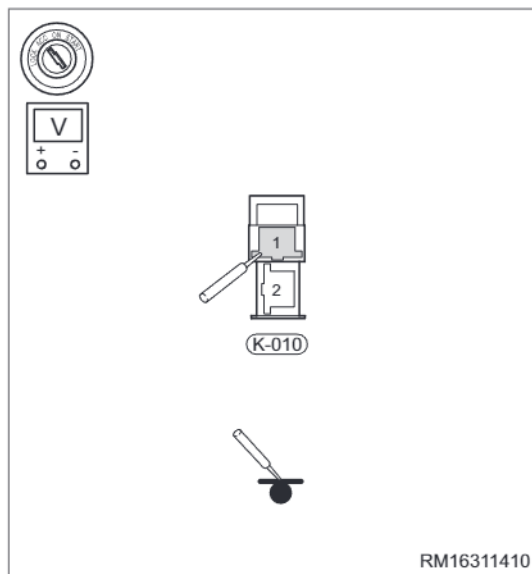
- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the blower connector K-010.
- Disconnect the negative battery cable.
- Turn ignition switch to ACC.
- Using a digital multimeter, check for continuity between terminal 1 of connector K-010 and body ground to check if ground circuit is in good condition according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-010 (1) - Body ground	Ignition switch ACC	9 to 16 V

NG

Check wire harness and connector between blower relay, fuse MF24, engine compartment fuse and relay box and blower

**OK**

7 Check blower speed resistor.

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

NO**Replace blower speed resistor****YES****8 Reconfirm DTCs**

- a. Reconnect all disconnected connectors securely.
- b. Connect the negative battery cable.
- c. Turn ignition switch to ON.
- d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- e. Turn ignition switch to LOCK and wait for a few seconds.
- f. Turn ignition switch to ON.
- g. Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

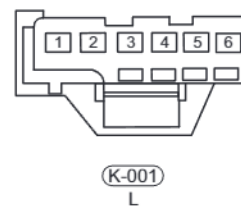
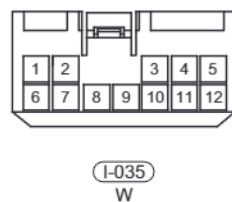
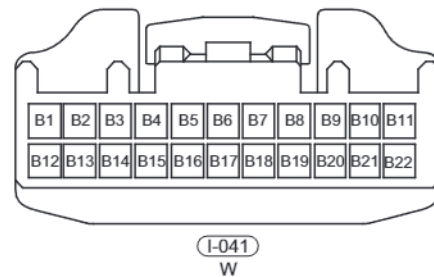
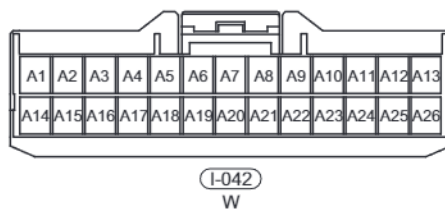
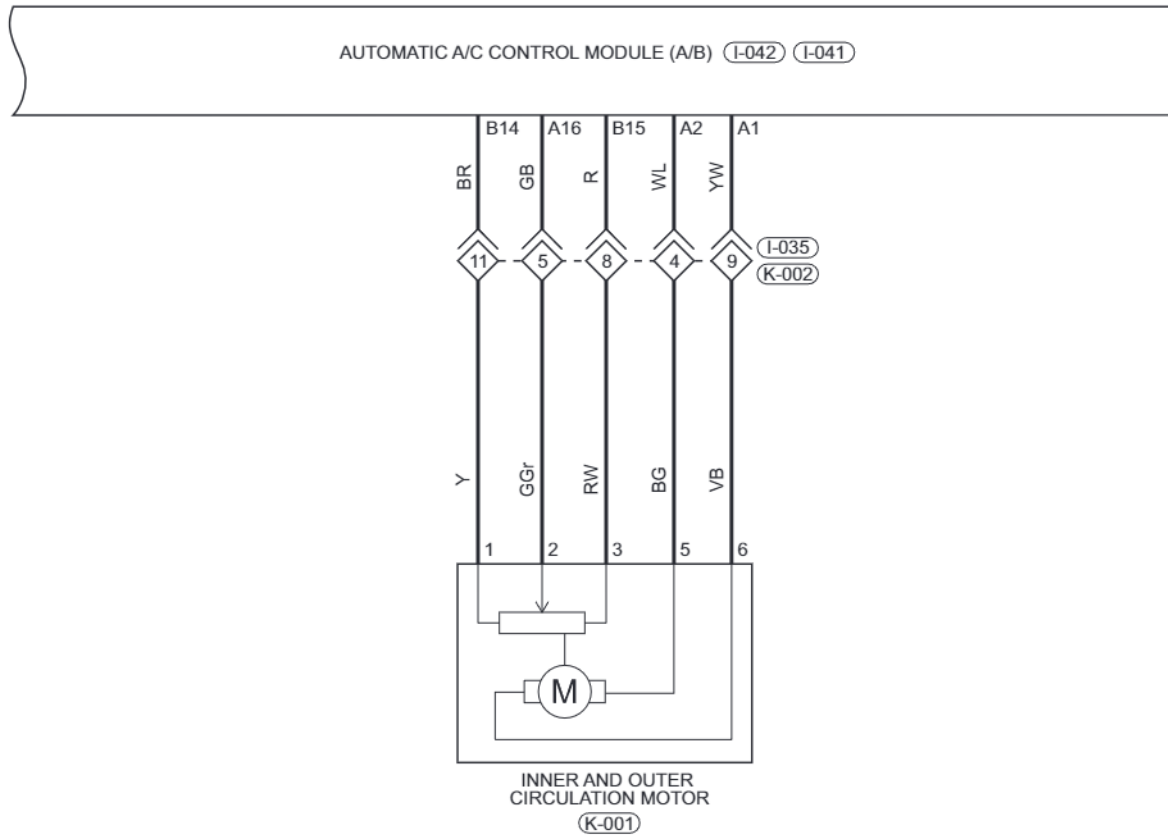
NG**Replace automatic A/C control module assembly****OK****System operates normally****31**

DTC

B2172

Recirculate Actuator Error

31



EM16310150

DTC	DTC Definitions	DTC Detection Conditions	Possible Cause
B2172	Recirculate Actuator Error	Ignition switch ON	- Inner/Outer circulation damper servo motor - Wire harness and connector - Automatic A/C control module assembly

CAUTION

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

31

Diagnosis Procedure

1 Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Disconnect inner/outer circulation damper servo motor connector K-001.
- Disconnect the A/C wire harness connector K-002.
- Disconnect the instrument panel wire harness connector I-035.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

2 Check inner/outer circulation damper servo motor

- Remove inner/outer circulation damper servo motor.
- Install a new inner/outer circulation damper servo motor to vehicle.
- Use X-431 3G diagnostic tester to check if DTCs are still output.

NO

Replace inner/outer circulation damper servo motor

YES



3

Check wire harness and connector (automatic A/C control module assembly - inner/outer circulation damper servo motor)

- a. Turn ignition switch to LOCK.
- b. Disconnect the negative battery cable.
- c. Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- d. Disconnect the inner/outer circulation damper servo motor connector K-001.
- e. Using a digital multimeter, check for continuity between terminals of connectors I-041 and K-001 to check for an open in inner/outer circulation damper servo motor circuit according to the table below.

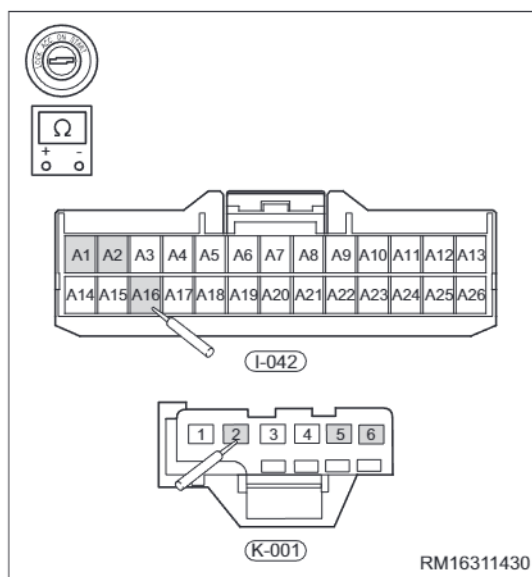
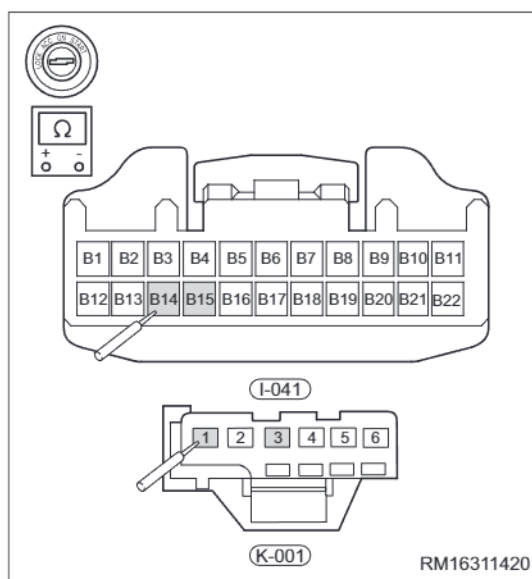
Standard Condition

Multimeter Connection	Condition	Specified Condition
I-041 (B14) - K-001 (1)	Always	Continuity
I-041 (B15) - K-001 (3)	Always	Continuity

- f. Using a digital multimeter, check for continuity between terminals of connectors I-042 and K-001 to check for an open in inner/outer circulation damper servo motor circuit according to the table below.

Standard Condition

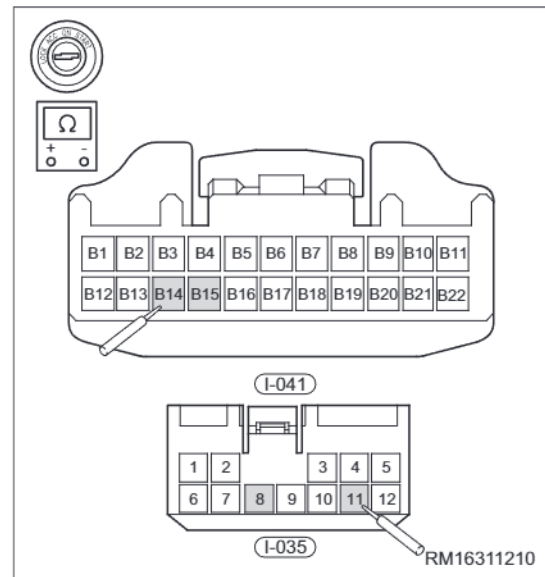
Multimeter Connection	Condition	Specified Condition
I-042 (A16) - K-001 (2)	Always	Continuity
I-042 (A2) - K-001 (5)	Always	Continuity
I-042 (A1) - K-001 (6)	Always	Continuity



- g. Disconnect the instrument panel wire harness connector I-035 and A/C wire harness connector K-002.
- h. Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-041 to check for an open in inner/outer circulation damper servo motor circuit according to the table below.

Standard Condition

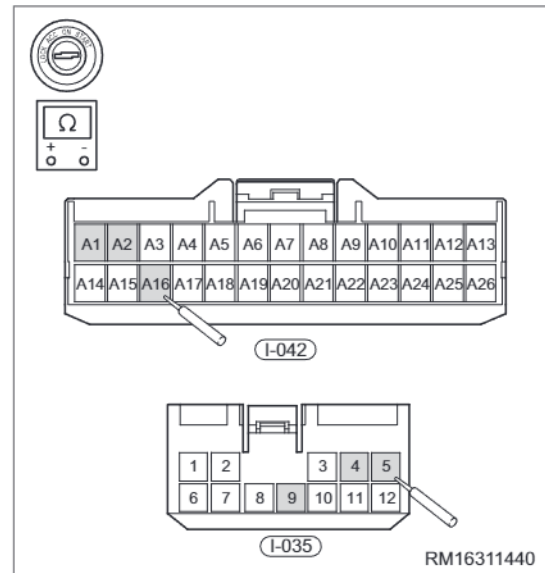
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - I-035 (11)	Always	Continuity
I-041 (B15) - I-035 (8)	Always	Continuity



- i. Using a digital multimeter, check for continuity between terminals of connectors I-035 and I-042 to check for an open in inner/outer circulation damper servo motor circuit according to the table below.

Standard Condition

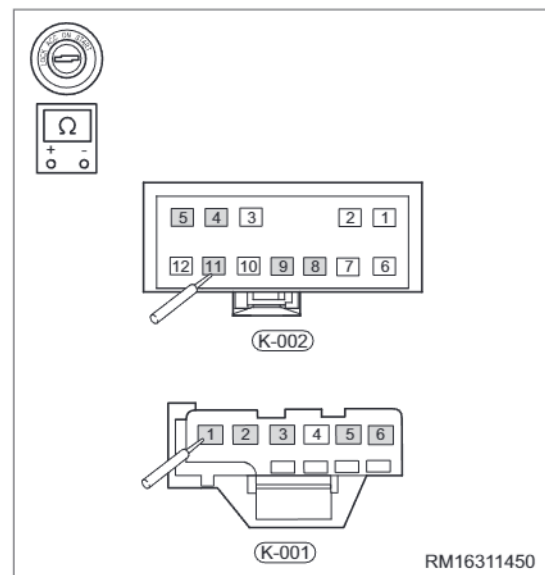
Multimeter Connection	Condition	Specified Condition
I-042 (A1) - I-035 (9)	Always	Continuity
I-042 (A2) - I-035 (4)	Always	Continuity
I-042 (A16) - I-035 (5)	Always	Continuity



- j. Using a digital multimeter, check for continuity between terminals of connectors K-002 and K-001 to check for an open in inner/outer circulation damper servo motor circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-001 (1) - K-002 (11)	Always	Continuity
K-001 (2) - K-002 (5)	Always	Continuity
K-001 (3) - K-002 (8)	Always	Continuity
K-001 (5) - K-002 (4)	Always	Continuity



Multimeter Connection	Condition	Specified Condition
K-001 (6) - K-002 (9)	Always	Continuity

NG

Repair or replace A/C / instrument panel wire harness and connector

OK

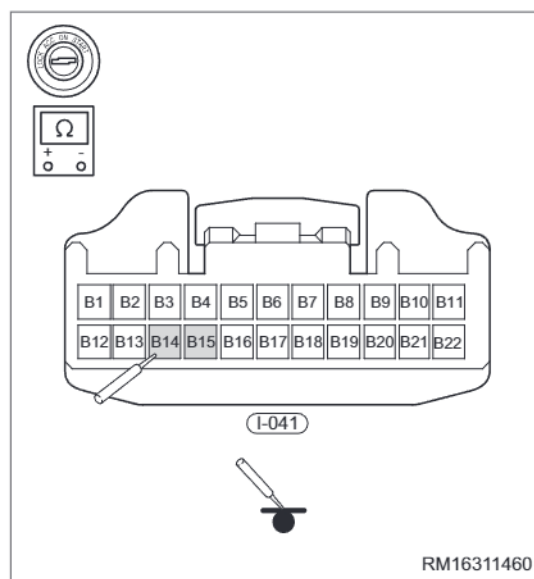
31

4 Check wire harness and connector (automatic A/C control module assembly - body ground)

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connectors I-041 and I-042.
- Using a digital multimeter, check for continuity between connector I-041 and body ground to check if inner/outer circulation damper servo motor is short to ground according to the table below.

Standard Condition

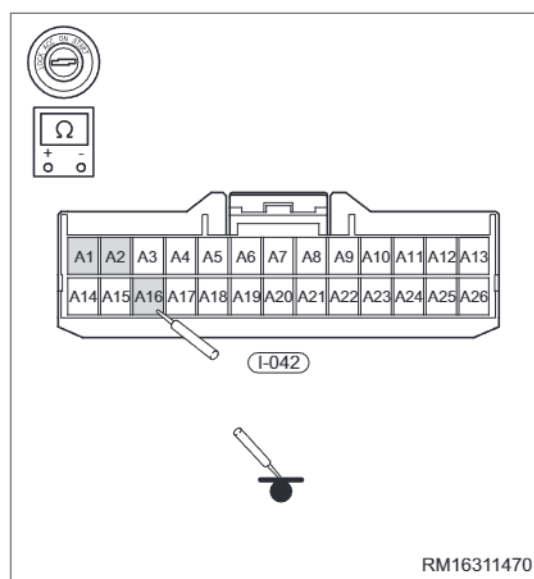
Multimeter Connection	Condition	Specified Condition
I-041 (B14) - Body ground	Always	Continuity
I-041 (B15) - Body ground	Always	No continuity



- Using a digital multimeter, check for continuity between connector I-042 and body ground to check if inner/outer circulation damper servo motor is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A1) - Body ground	Always	No continuity
I-042 (A2) - Body ground	Always	No continuity
I-042 (A16) - Body ground	Always	No continuity



NG

Repair or replace A/C wire harness and connector

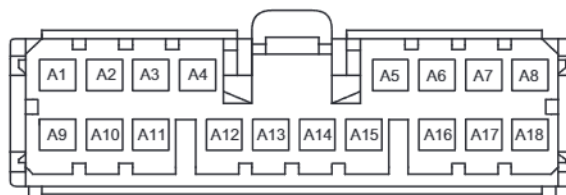
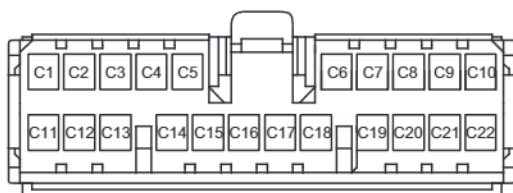
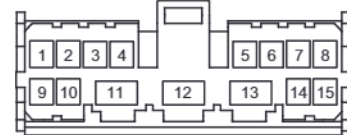
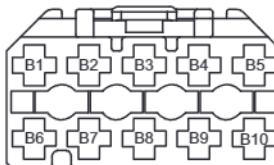
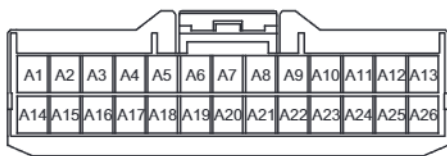
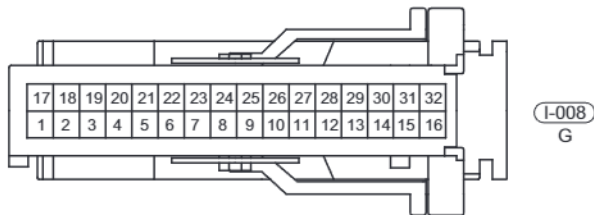
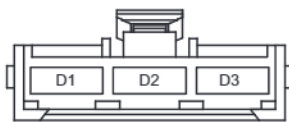
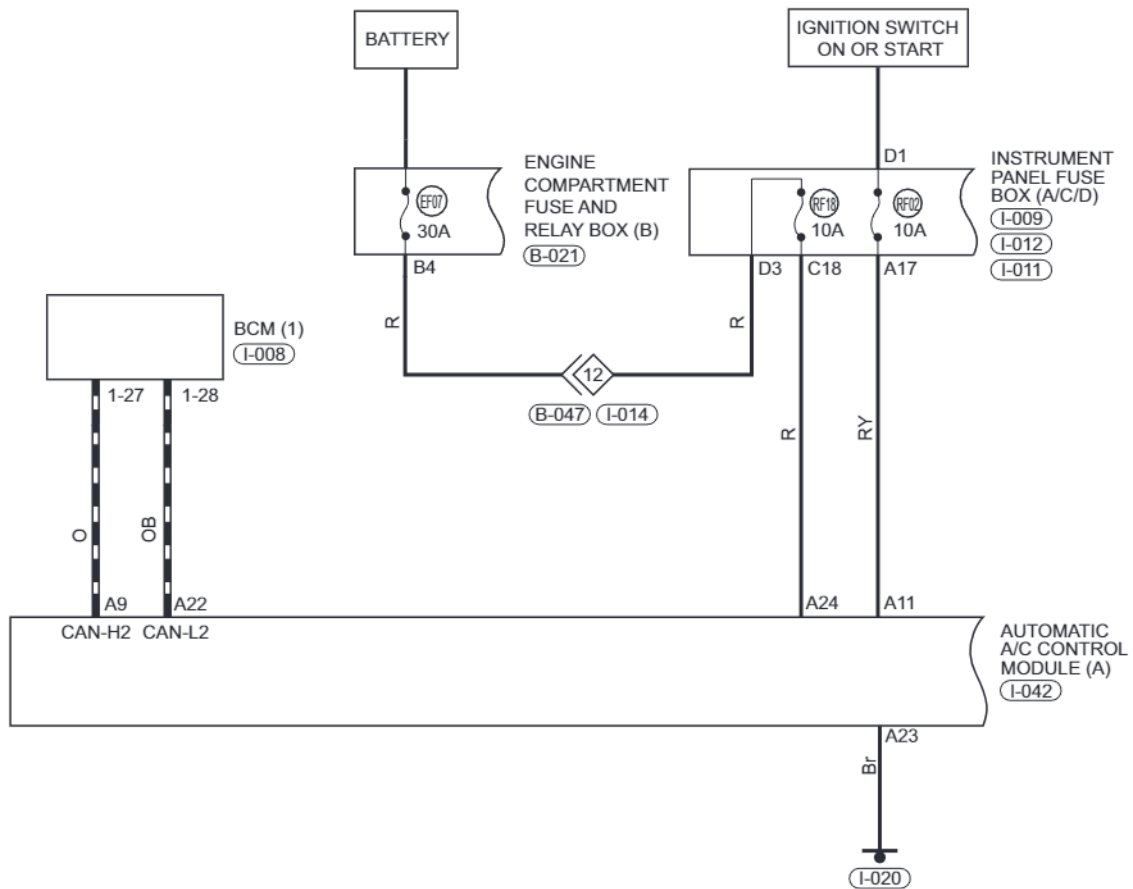
OK

5**Reconfirm DTCs**

- a. Reconnect all disconnected connectors securely.
- b. Connect the negative battery cable.
- c. Turn ignition switch to ON.
- d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- e. Turn ignition switch to LOCK and wait for a few seconds.
- f. Turn ignition switch to ON.
- g. Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG**Replace automatic A/C control module assembly****OK****System operates normally****31**

DTC	U0073	Control Module Communication Bus Off
DTC	U0140	Lost Communication with Body Control Module



EM16310160

DTC	DTC Definitions	DTC Detection Conditions	Possible Cause
U0073	Control Module Communication Bus Off	Ignition switch ON	- Body Control Module (BCM) - Wire harness and connector - Automatic A/C control module assembly
U0140	Lost Communication with Body Control Module		

31

 CAUTION

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

Diagnosis Procedure

1

Check wire harness and connector

Use circuit diagram as a guide to perform following procedures:

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-042.
- Disconnect the Body Control Module (BCM) connector I-008.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if related connector pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

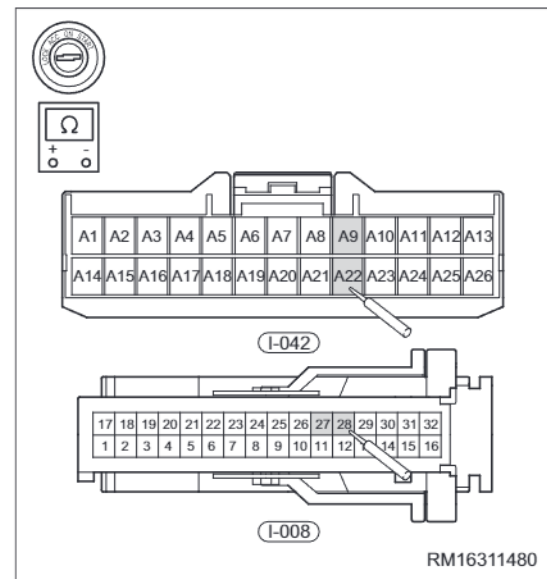
OK

2**Check wire harness and connector (automatic A/C control module assembly - Body Control Module (BCM))**

- Turn ignition switch to LOCK.
- Disconnect the negative battery cable.
- Disconnect the automatic A/C control module assembly connector I-042.
- Disconnect the Body Control Module (BCM) connector I-008.
- Using a digital multimeter, check for continuity between terminals of connectors I-042 and I-008 to check for an open in CAN communication circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-042 (A9) - I-008 (27)	Always	Continuity
I-042 (A22) - I-008 (28)	Always	Continuity

**NG**

Repair or replace instrument panel wire harness and connector

OK**3****Reconfirm DTCs**

- Reconnect all disconnected connectors securely.
- Connect the negative battery cable.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in automatic A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Turn ignition switch to ON.
- Use X-431 3G diagnostic tester to read DTCs stored in automatic A/C control module assembly again.

NG

Replace automatic A/C control module assembly

OK

System operates normally



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.

31

1. General inspection
 - a. Check if there exists any oil or dust in each joint of A/C line. If this occurs, there may exist leak.
 - 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 intake line is relatively low and that of exhaust line is relatively hot. 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 line with hand, under normal conditions, temperature of expansion valve inlet line is relatively hot and that of outlet line is relatively cool, and the temperature difference between them is noticeable.
2. Using pressure gauge set, check the refrigerant pressure.
Connect manifold pressure gauge set. After following conditions are met, read pressure values on pressure gauge. Measurement Condition:
 - a. Inner/Outer circulation switch is in outer circulation position.
 - b. Engine runs at approximately 2000 rpm.
 - c. Adjust temperature knob to Max. Cool.
 - d. Set blower speed control switch to highest band.
 - e. Turn on A/C switch.
 - f. Observe pressure values on pressure gauge. In normal condition, low pressure value is 0.20 Mpa and high pressure value is 1.3 Mpa.

Compressor Assembly Noise Inspection

When checking noise related to A/C system, you must first know the conditions under which the 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 system 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 the 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 the condenser and check refrigerant oil level and charging condition for refrigerant.
9. If the 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 the 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 a 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 technical service device to discharge R134a system. If system discharges unexpectedly, ventilate work place before servicing.

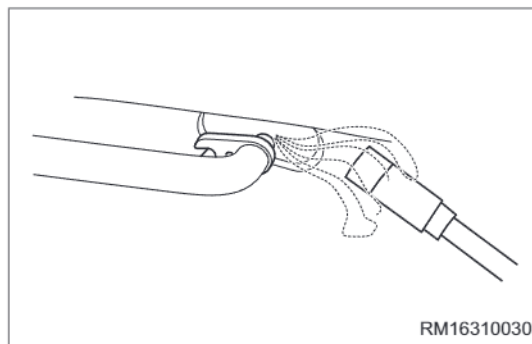
CAUTION

- 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.

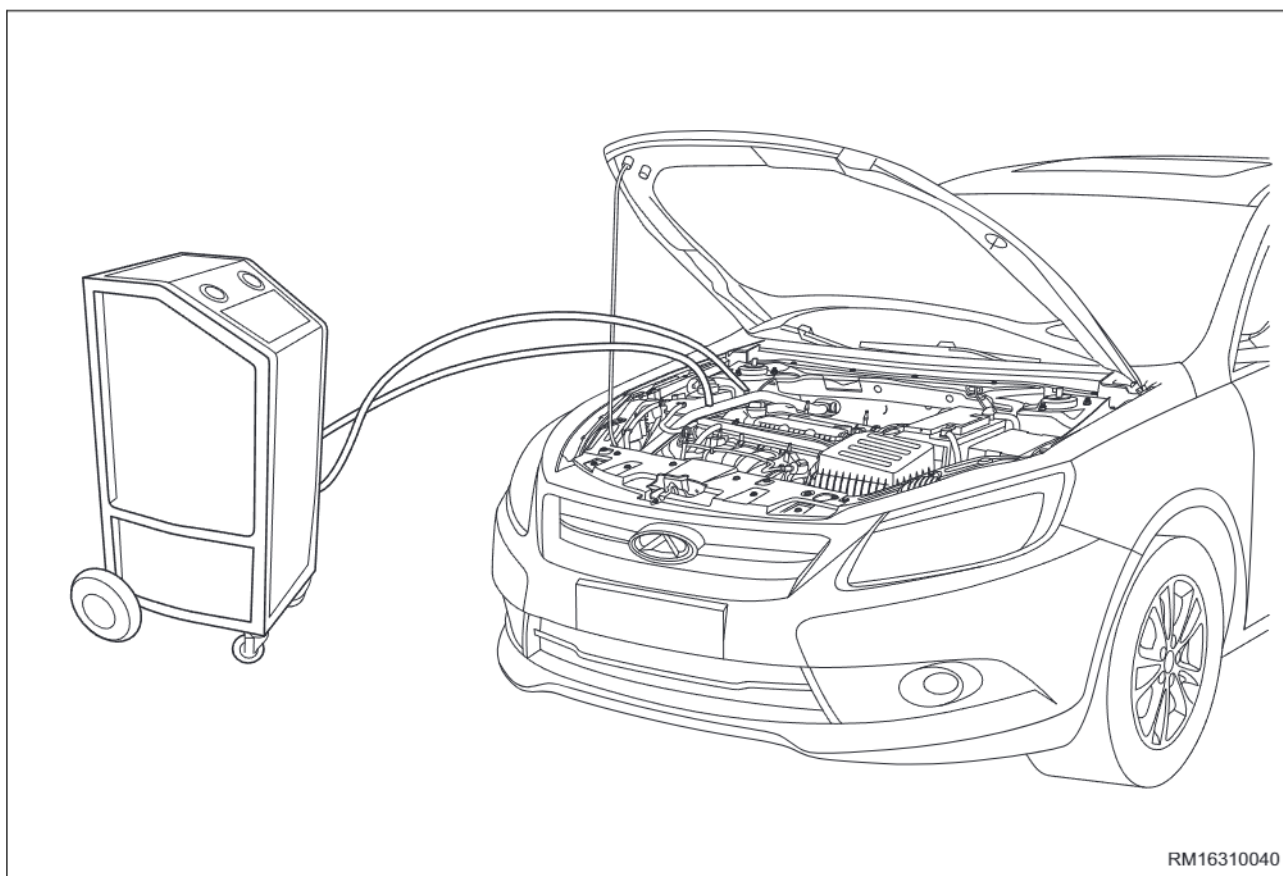
Check the refrigerant for leakage.

1. After recharging refrigerant, use gas leak detector to check refrigerant gas for leakage.
2. Perform operations under following conditions:
 - a. Stop engine.
 - b. 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).
 - c. Repeat the test for 2 or 3 times.
 - d. Make sure that there is some refrigerant remaining in the refrigeration system.

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



- 31**
4. Disconnect A/C pressure sensor connector, and use same procedures to check A/C pressure sensor for leakage. Replace the 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 the evaporator core assembly as necessary.
 6. Use same procedures to check condenser for leakage. Clean or replace the condenser assembly as necessary.



Refrigerant Recovering/Draining

WARNING

- Take extra care when servicing A/C system under high pressure.
- Because 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.

31

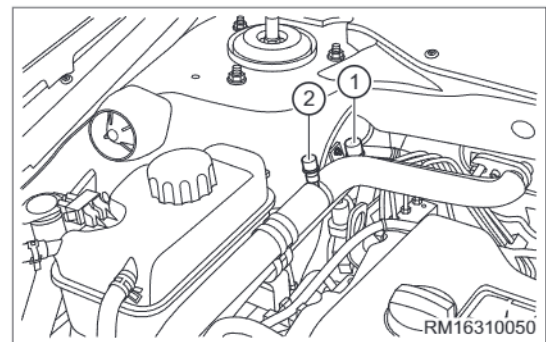
CAUTION

- 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 the 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.

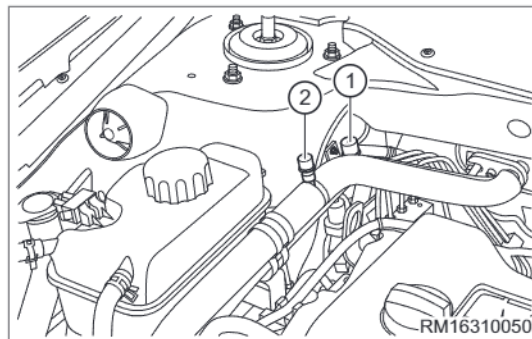
1. Open the hood and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
 - a. Connect the red connector to A/C high pressure line joint (1).
 - b. Connect the blue connector to A/C low pressure line joint (2).



3. Open the 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 the low pressure value on pressure gauge to ensure that recycling is completed, and then turn off machine.
6. Disconnect the connection between refrigerant recycling machine and A/C line joint.
7. Reinstall the cover onto refrigerant line joint.

Vacuum Pumping

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



3. Open the 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 10 minutes after completing operation, 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. Be sure to supplement the lost refrigerant oil during recovering when filling the A/C system.
- 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 the suction valve and close the discharging valve, and then open the charging valve to allow refrigerant to flow into the system.
6. When the delivery of refrigerant has stopped, close the charging valve.
7. If charged refrigerant is not delivered to specified position, start the engine to operate the A/C compressor assembly.
8. Open the 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 the connecting pipe for refrigerant charging after the test is completed.
11. Reinstall the cover onto A/C line joint.

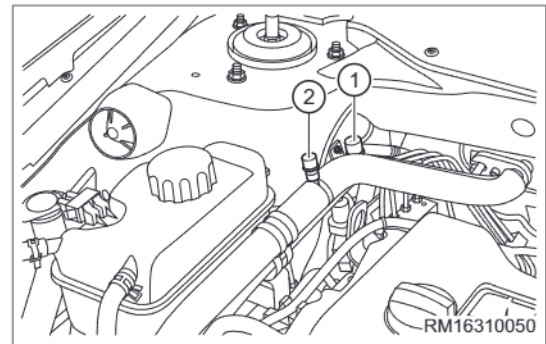
Refrigerant Oil Recovering

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.

31

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



3. Open the 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 the connection between refrigerant recycling machine and A/C line joint.
7. Reinstall the 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
Charging Capacity (ml)	It is necessary to pour out 50 ml of refrigerant oil from new compressor assembly	30 ml	30 ml	10 ml

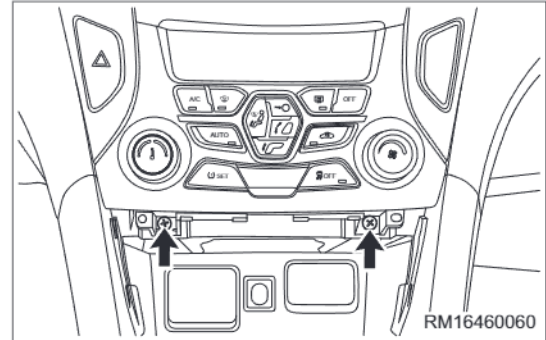
31

1. Perform vacuum pumping with a vacuum pump. Wait for 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 the suction valve and close the exhaust valve, and then open the charging valve to allow refrigerant oil to flow into the system.
3. Close the 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.

Center Control Integration Panel Assembly

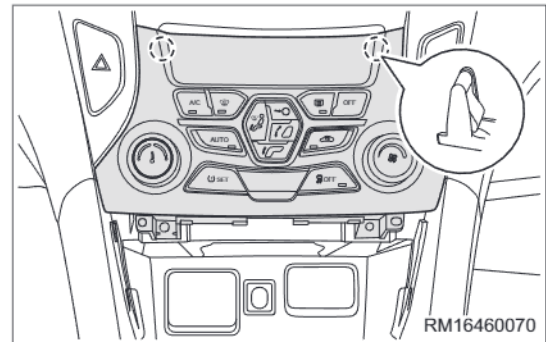
Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the lower center storage box assembly (See page 46-10).
4. Remove the center control integration panel assembly.
 - a. Remove 2 fixing screws (arrow) from center control integration panel assembly.
(Tightening torque: $1.5 \pm 0.5 \text{ N}\cdot\text{m}$)

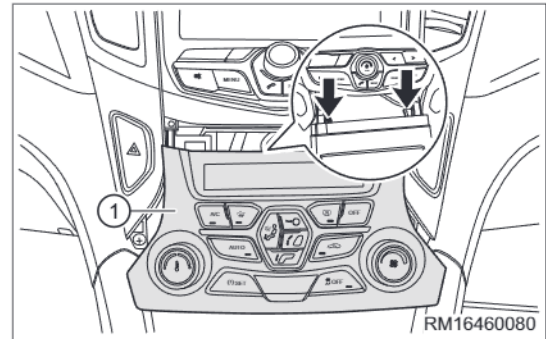


31

- b. Using a screwdriver wrapped with protective tape, pry off the fixing clips on center control integration panel assembly.



- c. Disconnect the connectors (arrow) from center control integration panel assembly.



- d. Remove the center control integration panel assembly.

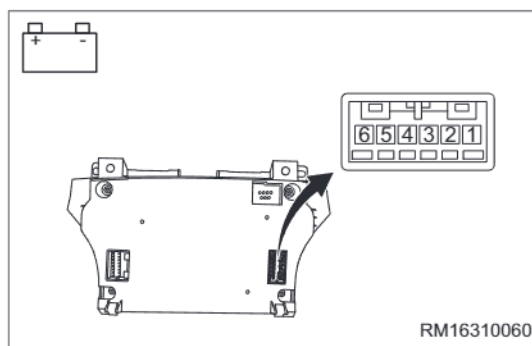
Inspection

1. Check center control integration panel assembly (for automatic A/C).

- Remove the center control integration panel assembly.
- Connect the positive (+) battery lead to terminal 5 and negative (-) lead to terminal 2, then check if center control integration panel assembly switch backlight comes on.

OK: Light comes on.

If result is not as specified, replace center control integration panel assembly.

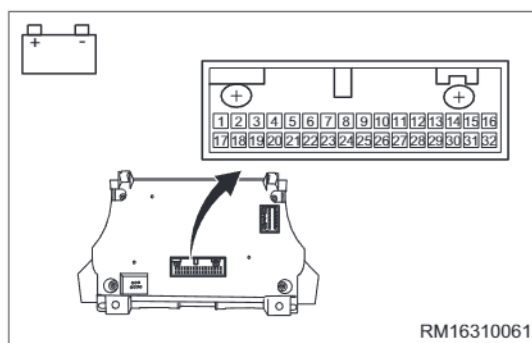


2. Check center control integration panel assembly (power A/C).

- Remove the center control integration panel assembly.
- Connect the positive (+) battery lead to terminal 26 and negative (-) lead to terminal 15, then check if center control integration panel assembly switch backlight comes on.

OK: Light comes on.

If result is not as specified, replace center control integration panel assembly.



Installation

Installation is in the reverse order of removal.

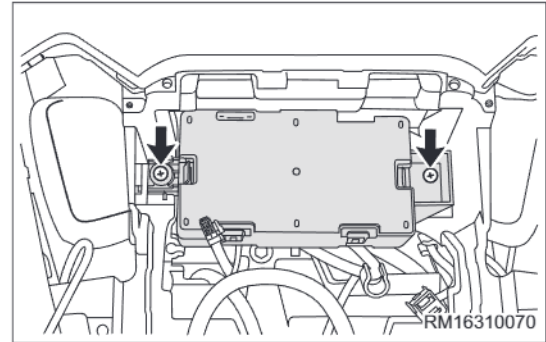
CAUTION

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

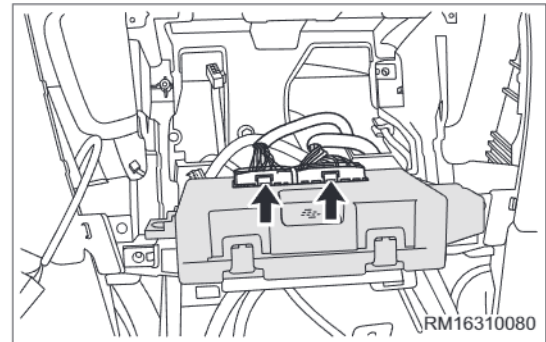
A/C Control Module Assembly (for Automatic A/C)

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the lower center storage box assembly (See page 46-10).
4. Remove the center control integration panel assembly (See page 31-79).
5. Remove the center outlet panel assembly (See page 40-33).
6. Remove the TFT display and no disc DVD control panel (See page 40-32).
7. Remove the A/C control module assembly (for automatic A/C).
 - a. Remove 2 fixing screws (arrow) from A/C control module assembly.
(Tightening torque: $1.5 \pm 0.5 \text{ N}\cdot\text{m}$)



- b. Disconnect the A/C control module assembly connectors (arrow) (for automatic A/C).



- c. Remove the A/C control module assembly (for Automatic A/C).

Installation

Installation is in the reverse order of removal.

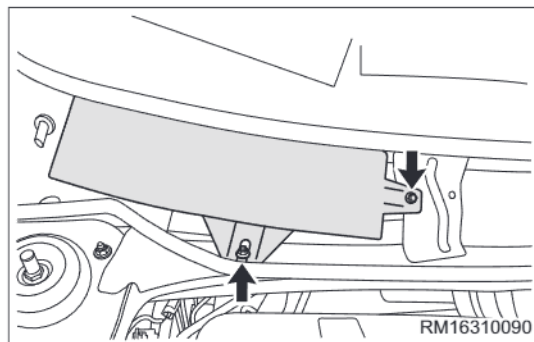
CAUTION

- Tighten fixing screws to specified torque.

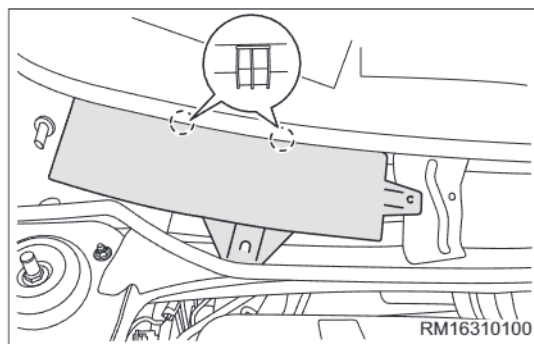
A/C Inlet Guide Plate

Removal

1. Remove the front windshield lower garnish assembly ([See page 49-33](#)).
2. Remove the A/C inlet guide plate.
 - a. Remove the fixing bolt and nut (arrow) from A/C inlet guide plate.
(Tightening torque: 5 ± 1 N·m)



- b. Detach the A/C inlet guide plate upper claws (arrow) on both sides from body.



- c. Remove the A/C inlet guide plate.

Installation

Installation is in the reverse order of removal.

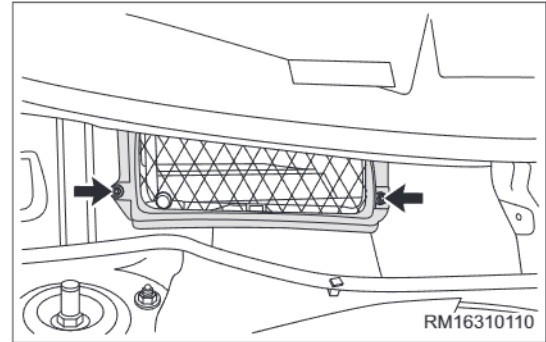
CAUTION

- Make sure to tighten fixing bolt and nut to specified torque during installation.
- Make sure to correctly install A/C inlet guide plate upper claws on both sides.

A/C Inlet Waterproof Board

Removal

1. Remove the front windshield lower garnish assembly ([See page 49-33](#)).
2. Remove the A/C inlet guide plate ([See page 31-82](#)).
3. Remove the A/C inlet waterproof board.
 - a. Remove 2 fixing nuts (arrow) from A/C inlet waterproof board.
(Tightening torque: $5 \pm 1 \text{ N}\cdot\text{m}$)



31

- b. Remove the A/C inlet waterproof board.

Installation

Installation is in the reverse order of removal.

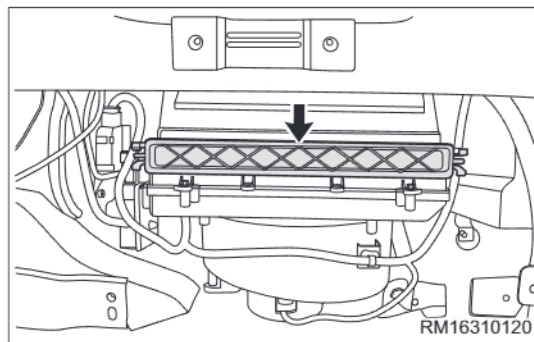
CAUTION

- Tighten fixing nuts to specified torque.

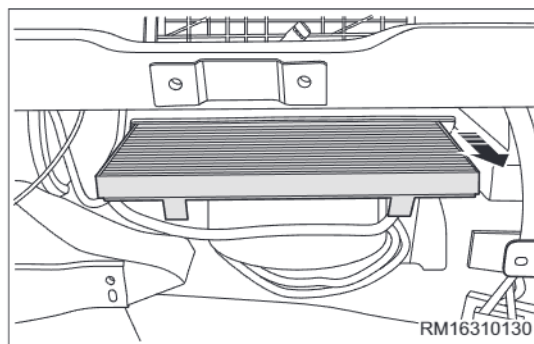
A/C Element

Removal

1. Remove the glove box assembly ([See page 46-20](#)).
2. Remove the A/C element.
 - a. Detach the claws on both sides of A/C element cover, and remove the A/C element cover (arrow) from air inlet assembly.



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



Installation

Installation is in the reverse order of removal.

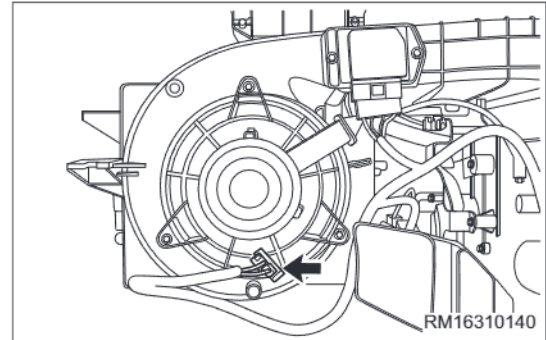
CAUTION

- 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.

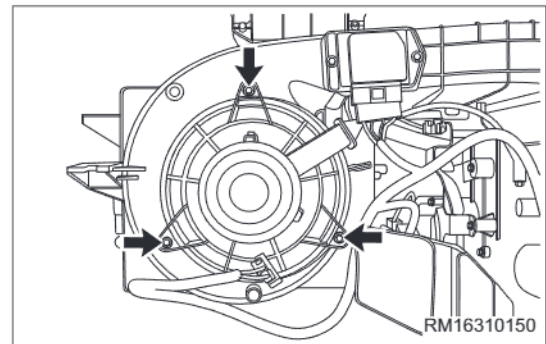
Blower Assembly

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the blower assembly.
 - a. Disconnect the blower assembly connector (arrow).



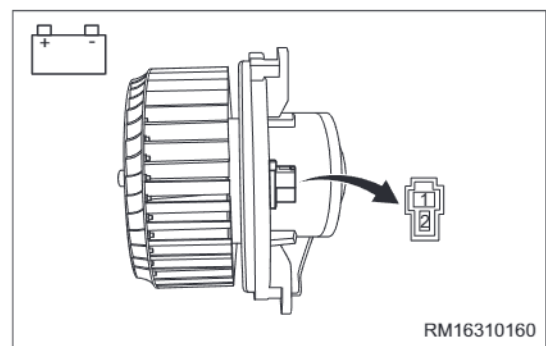
- b. Remove 3 fixing screws (arrow) from blower assembly.
(Tightening torque: 1.2 - 2 N·m)



- c. Remove the blower assembly.

Inspection

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



If operation is not as specified, replace the blower assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing screws to specified torque.

Blower Speed Resistor

Removal

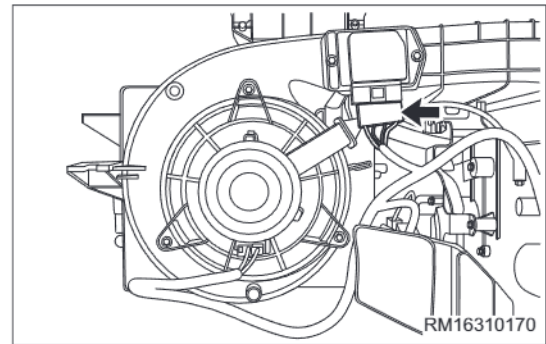
WARNING

- 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.

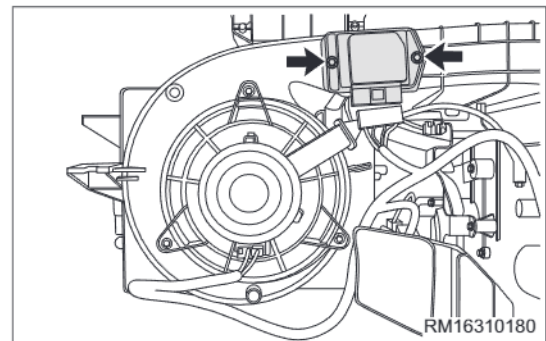
CAUTION

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

- Turn off all electrical equipment and the ignition switch.
- Disconnect the negative battery cable.
- Remove the blower speed resistor.
 - Disconnect the blower speed resistor connector (arrow).



- Remove 2 fixing screws (arrow) from blower speed resistor.
(Tightening torque: 1.2 - 2 N·m)



- Remove the blower speed resistor.

Installation

Installation is in the reverse order of removal.

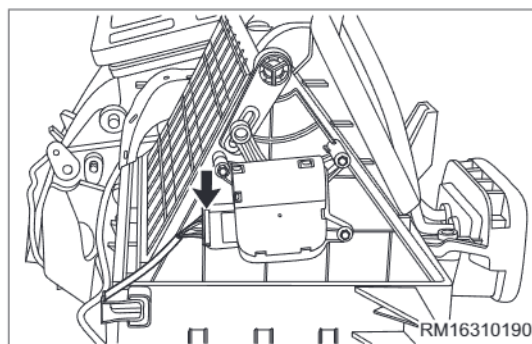
CAUTION

- Tighten fixing screws to specified torque.

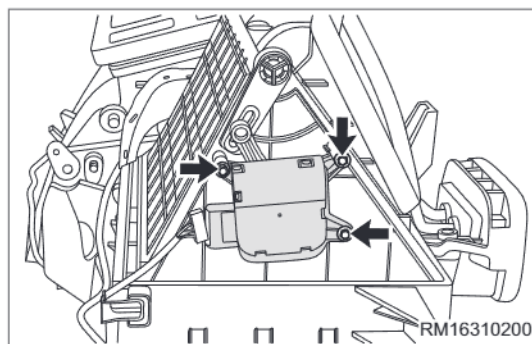
Inner/Outer Circulation Damper Servo Motor

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly ([See page 46-20](#)).
4. Remove the inner/outer circulation damper servo motor.
 - a. Disconnect the inner/outer circulation damper servo motor connector (arrow).



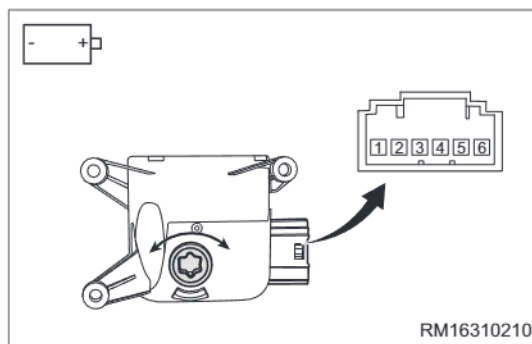
- b. Remove 3 fixing screws (arrow) from inner/outer circulation damper servo motor. (Tightening torque: 1.2 - 2 N·m)



- c. Detach the inner/outer circulation damper adjustment set, and remove the inner/outer circulation damper servo motor.

Inspection

1. Check the inner/outer circulation damper servo motor.
 - a. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 5 and negative (-) lead to terminal 6. Check that inner/outer circulation damper motor operates smoothly clockwise.
 - b. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 6 and negative (-) lead to terminal 5. Check that inner/outer circulation damper motor operates smoothly counterclockwise.



If operation is not as specified, replace the inner/outer circulation damper motor.

Installation

Installation is in the reverse order of removal.

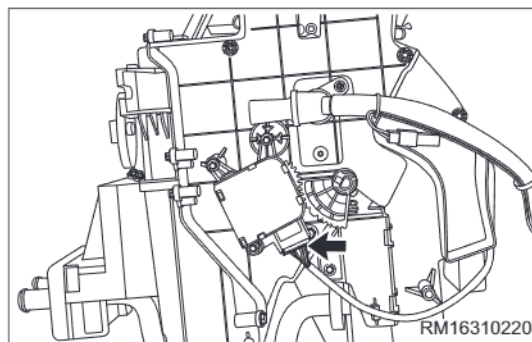
CAUTION

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

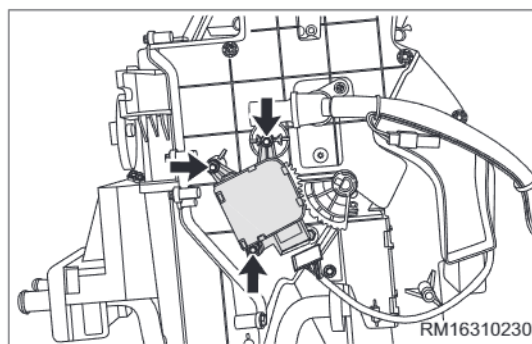
Mix Damper Servo Motor

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the mix damper servo motor.
 - a. Disconnect the mix damper servo motor connector (arrow).



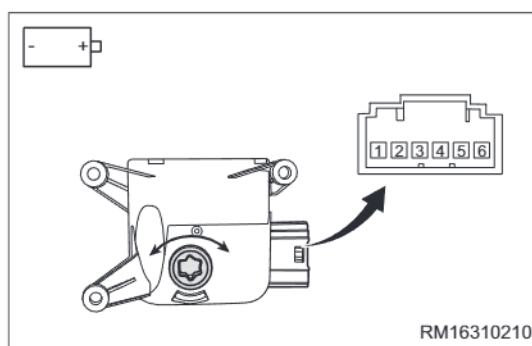
- b. Remove 3 fixing screws (arrow) from mix damper servo motor.
(Tightening torque: 1.2 - 2 N·m)



- c. Detach the mix damper adjustment set and remove the mix damper servo motor.

Inspection

1. Check the mix damper servo motor.
 - a. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 5 and negative (-) lead to terminal 6. Check that mix damper servo motor operates smoothly clockwise.
 - b. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 6 and negative (-) lead to terminal 5. Check that mix damper servo motor operates smoothly counterclockwise.



If operation is not as specified, replace the mix damper servo motor.

Installation

Installation is in the reverse order of removal.

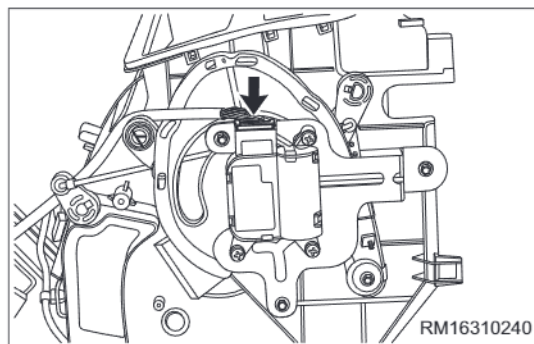
CAUTION

- Tighten fixing screws to specified torque.
- When installing, apply a small amount of grease to contact surface of the mix damper servo motor lever and the mix damper adjustment mechanism set to ensure the motor operates smoothly.

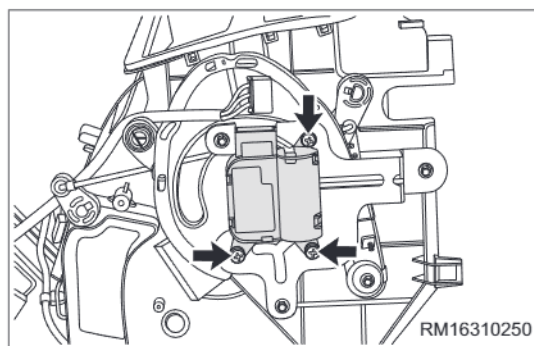
Mode Damper Servo Motor

Removal

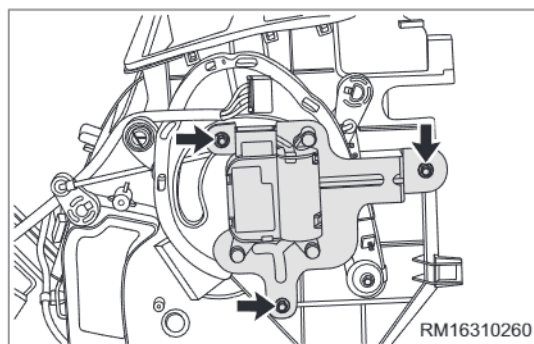
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the mode damper servo motor.
 - a. Disconnect the mode damper servo motor connector (arrow).



- b. Remove 3 fixing screws (arrow) from mode damper servo motor.
(Tightening torque: 1.2 - 2 N·m)



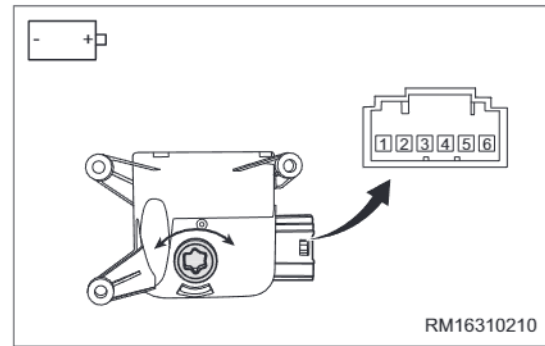
- c. Remove 3 fixing screws (arrow) from mode damper servo motor set bracket.
(Tightening torque: 1.2 - 2 N·m)



- d. Detach the mode damper adjustment set and remove the mode damper servo motor and bracket.

Inspection

1. Check the mode damper servo motor.
 - a. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 5 and negative (-) lead to terminal 6. Check that mode damper servo motor operates smoothly clockwise.
 - b. Connect a few dry batteries (approximately 5 V) in series. Connect the positive (+) battery lead to terminal 6 and negative (-) lead to terminal 5. Check that mode damper servo motor operates smoothly counterclockwise.



31

If operation is not as specified, replace the mode damper servo motor.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing screws to specified torque.
- When installing, apply a small amount of grease to contact surface of the mode damper servo motor lever and the mode damper adjustment mechanism set to ensure the motor operates smoothly.

HVAC Assembly

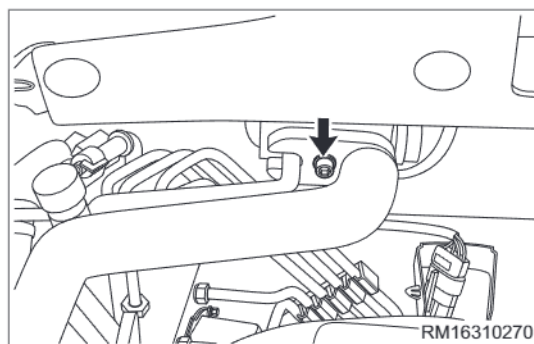
Removal

CAUTION

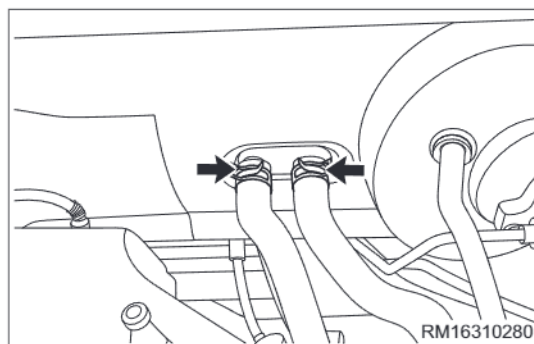
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Be careful not to damage hoses during removal and installation.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

31

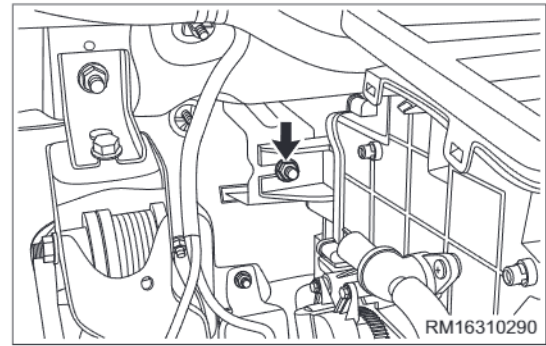
1. Recover the refrigerant from A/C system ([See page 31-75](#)).
2. Turn off all electrical equipment and the ignition switch.
3. Disconnect the negative battery cable.
4. Remove the steering wheel assembly ([See page 28-25](#)).
5. Remove the steering column ([See page 28-30](#)).
6. Remove the instrument panel assembly ([See page 46-20](#)).
7. Remove the instrument panel crossmember assembly ([See page 46-30](#)).
8. Remove the HVAC assembly.
 - a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high/low pressure line.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



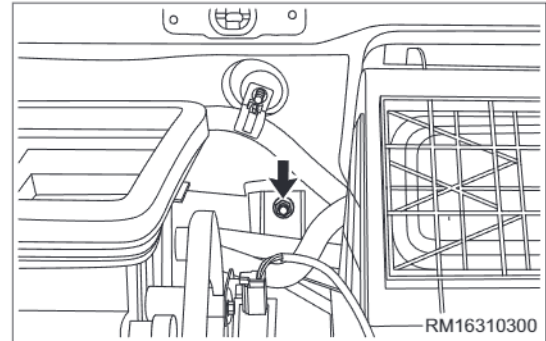
- b. Using snap spring calipers, disengage the fixing clamps (arrow) from heating inlet and outlet hoses to detach the inlet and outlet hoses.



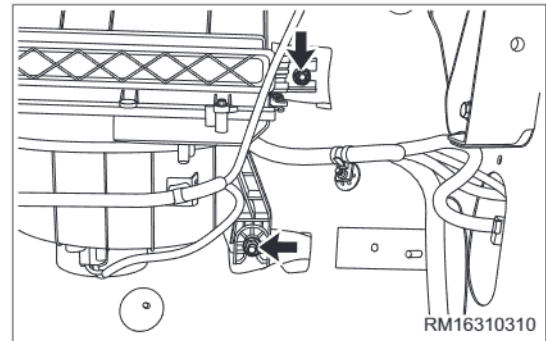
- c. Remove the fixing nut (arrow) between the upper left of HVAC assembly and the body.
(Tightening torque: 5 ± 1 N·m)



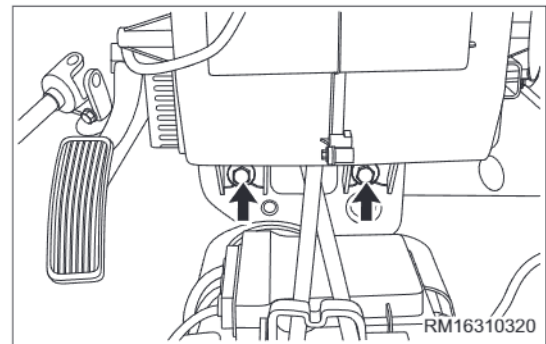
- d. Remove the fixing nut (arrow) between the upper center of HVAC assembly and the body.
(Tightening torque: 5 ± 1 N·m)



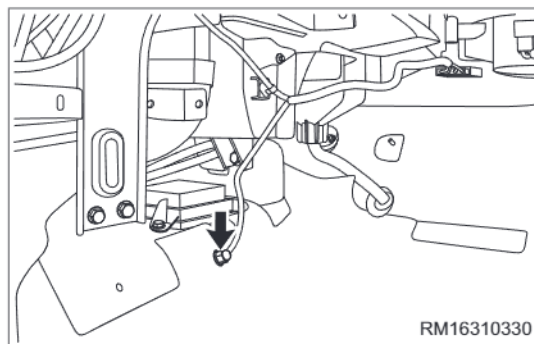
- e. Remove 2 fixing nuts (arrow) between the right of HVAC assembly and the body.
(Tightening torque: 5 ± 1 N·m)



- f. Remove 2 fixing bolts (arrow) between the lower part of HVAC assembly and the body.
(Tightening torque: 5 ± 1 N·m)

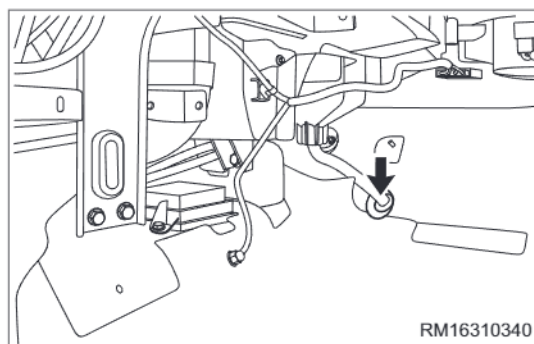


- g. Remove the fixing nut (arrow) between A/C wire harness assembly ground wire and body, and disengage the ground wire (arrow).
(Tightening torque: 7 ± 1.5 N·m)

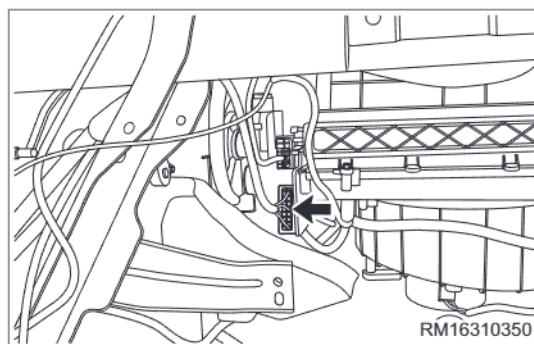


31

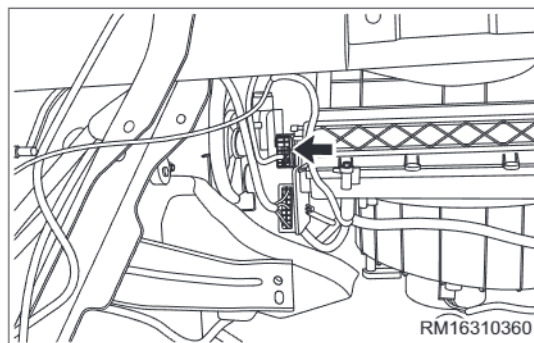
- h. Detach the A/C drain pipe (arrow) from body positioning hole.



- i. Disconnect the connector (arrow) between A/C wire harness assembly and instrument panel wire harness assembly (only for automatic A/C).



- j. Disconnect the connector (arrow) between A/C wire harness assembly and instrument panel wire harness assembly (only for automatic A/C).

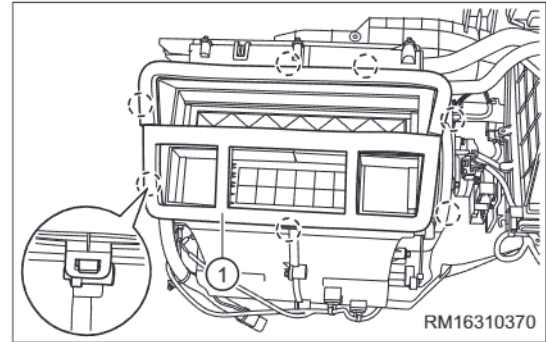


- k. Carefully take off the HVAC assembly from cabin.

Disassembly

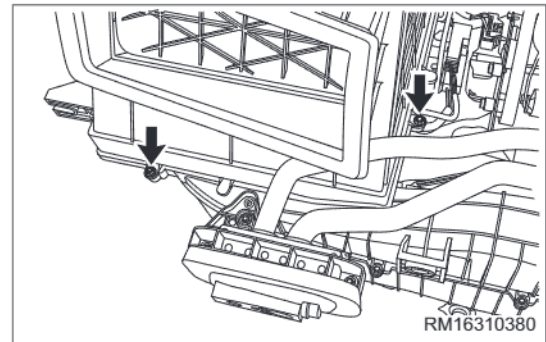
1. Remove the A/C element ([See page 31-84](#))
2. Remove the blower assembly ([See page 31-85](#))
3. Remove the blower speed resistor ([See page 31-87](#)).
4. Remove the inner/outer circulation damper servo motor ([See page 31-88](#)).
5. Remove the mix damper servo motor ([See page 31-90](#)).

6. Remove the mode damper servo motor ([See page 31-92](#)).
7. Remove the HVAC assembly transition duct.
 - a. Detach the claws (arrow) around and remove the transition duct (1) from HVAC assembly.

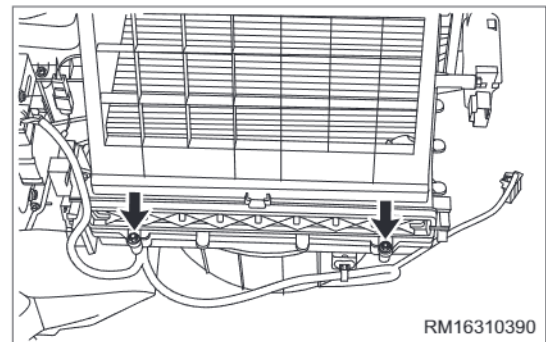


31

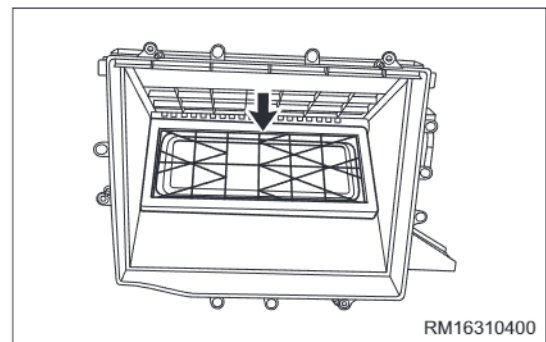
8. Remove the air inlet assembly.
 - a. Remove 2 fixing screws (arrow) from front part of air inlet assembly.
(Tightening torque: 1.2 - 2 N·m)



- b. Remove 2 fixing screws (arrow) from rear part of air inlet assembly.
(Tightening torque: 1.2 - 2 N·m)

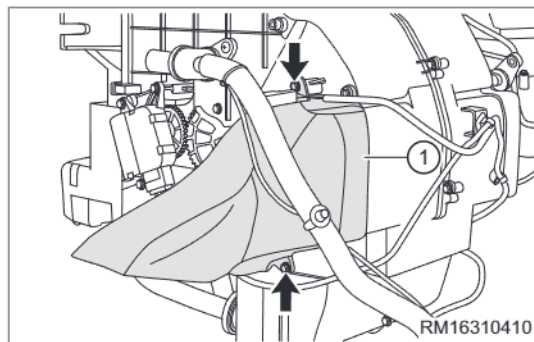


- c. Remove the air inlet assembly.
9. Remove the inner/outer circulation damper set.
 - a. Detach the inner/outer circulation damper adjustment set, and remove the inner/outer circulation damper set (arrow).



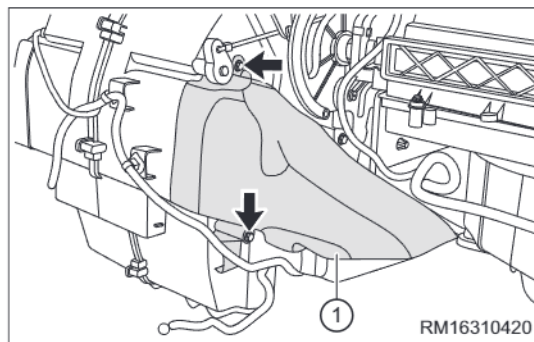
10. Remove the left foot fan shield.

- a. Remove 2 fixing screws (arrow), and disengage the left foot fan shield (1) from HVAC assembly. (Tightening torque: 1.2 - 2 N·m)



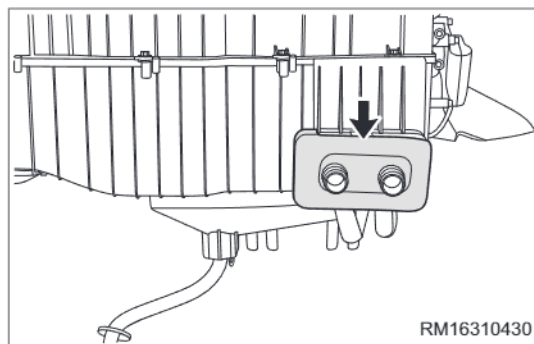
11. Remove the right foot fan shield.

- a. Remove 2 fixing screws (arrow), and disengage the right foot fan shield (1) from HVAC assembly. (Tightening torque: 1.2 - 2 N·m)

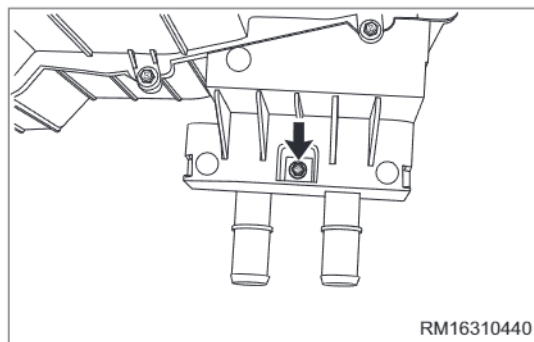


12. Remove the heater core assembly.

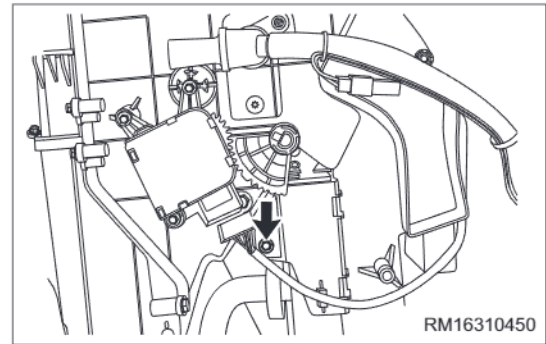
- a. Remove the heater core line grommet (arrow).



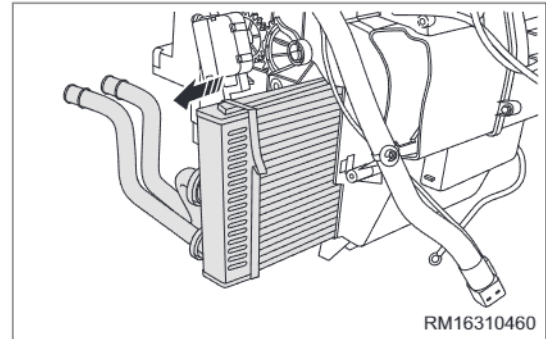
- b. Remove the fixing screw (arrow) from heater core line pressure plate and detach the fixing claws on both sides. (Tightening torque: 1.2 - 2 N·m)



- c. Remove the fixing screw (arrow) from heater core line cover plate and detach the fixing claws.
(Tightening torque: 1.2 - 2 N·m)



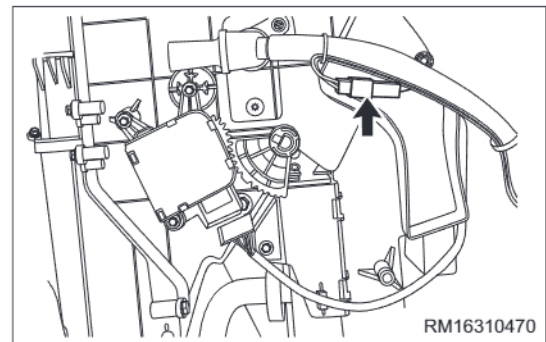
- d. Carefully remove the heater core assembly.



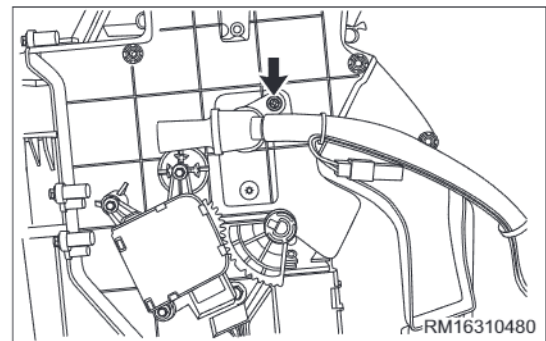
31

13. Remove the room temperature sensor.

- a. Disconnect the room temperature sensor wire harness connector (arrow).



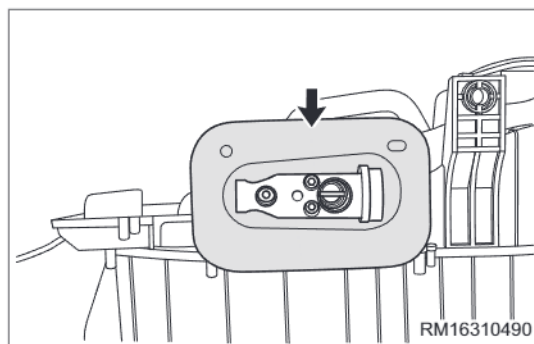
- b. Remove the room temperature sensor fixing screw (arrow).
(Tightening torque: 1.2 - 2 N·m)



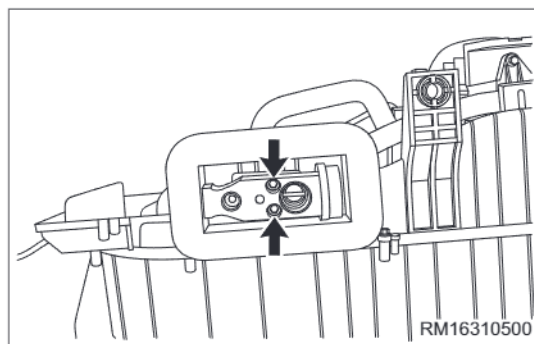
- c. Remove the room temperature sensor.

14. Remove the evaporator core assembly.

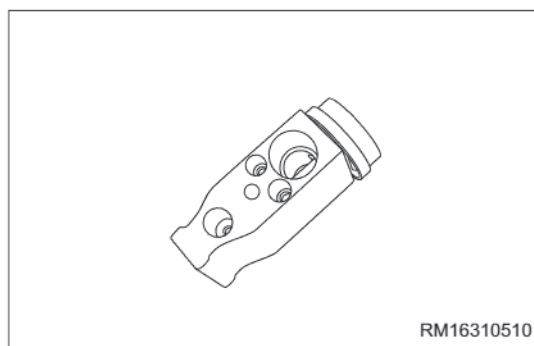
- a. Remove the evaporator core line gasket (arrow).



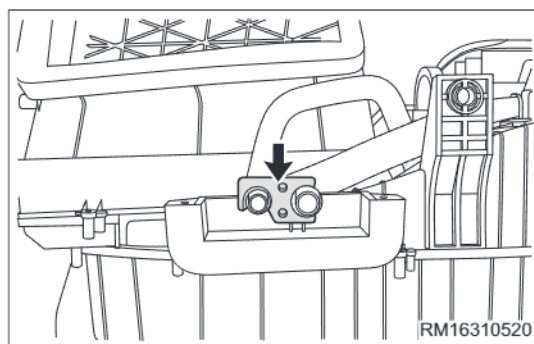
- b. Remove 2 fixing bolts (arrow) between expansion valve and expansion valve mounting pressure plate. (Tightening torque: 7 ± 1 N·m)



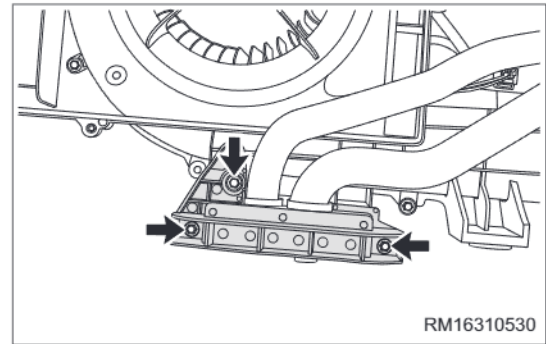
- c. Disengage the A/C high/low pressure line and remove the expansion valve carefully.



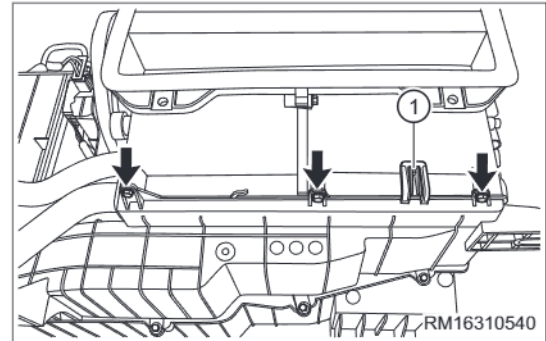
- d. Remove the expansion valve mounting pressure plate (arrow) from evaporator core line.



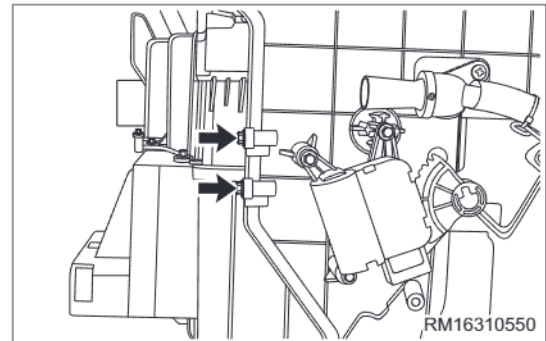
- e. Remove 3 fixing screws (arrow) from evaporator core assembly line pressure plate.
(Tightening torque: 1.2 - 2 N·m)



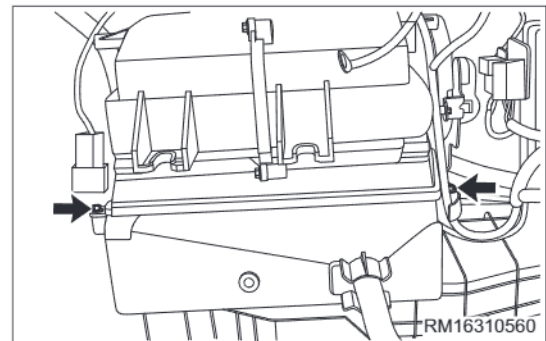
- f. Remove 3 upper fixing screws (arrow) between distributor housing assembly and evaporator housing assembly, and detach the fixing claw (1).
(Tightening torque: 1.2 - 2 N·m)



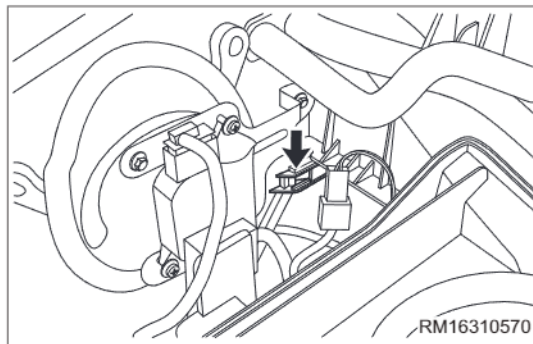
- g. Remove 2 left fixing screws (arrow) between distributor housing assembly and evaporator housing assembly.
(Tightening torque: 1.2 - 2 N·m)



- h. Remove 2 lower fixing screws (arrow) between distributor housing assembly and evaporator housing assembly.
(Tightening torque: 1.2 - 2 N·m)

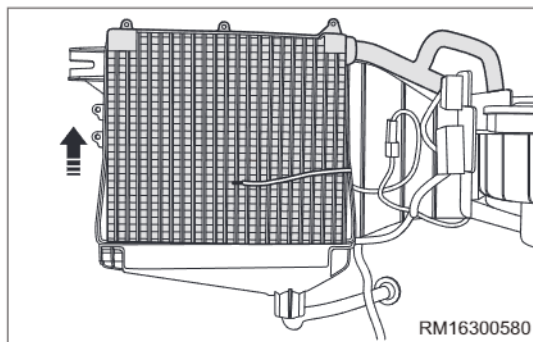


- i. Detach the right fixing claw (arrow) between distributor housing assembly and evaporator housing assembly.



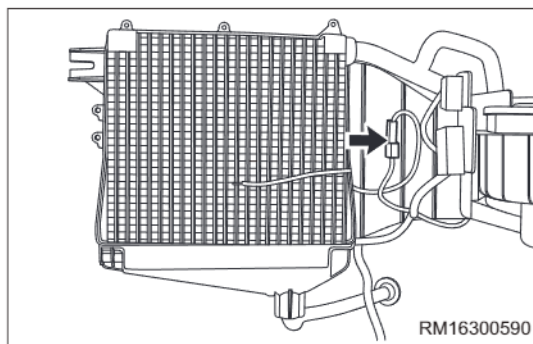
31

- j. Separate the distributor housing assembly and evaporator housing assembly, and remove the evaporator core (arrow) carefully.

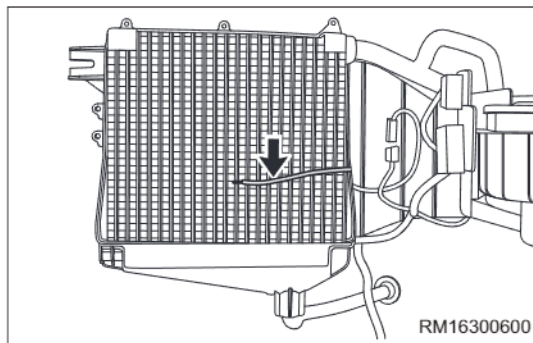


15.Remove the evaporator temperature sensor.

- a. Disconnect the evaporator temperature sensor connector (arrow).

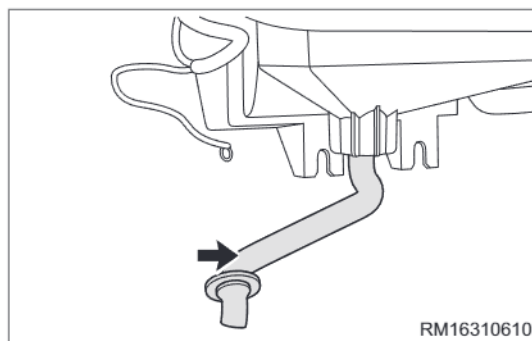


- b. Remove the evaporator temperature sensor (arrow) from evaporator core.



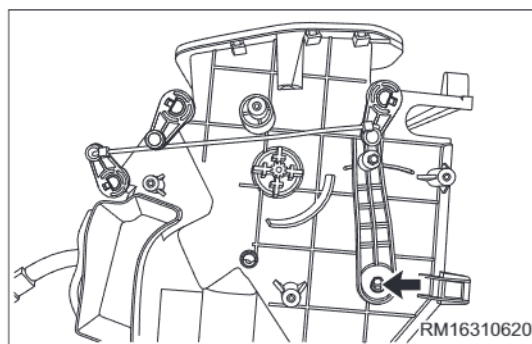
16. Remove the A/C drain pipe.

- a. Remove the A/C drain pipe (arrow) from the bottom of of evaporator tank assembly.

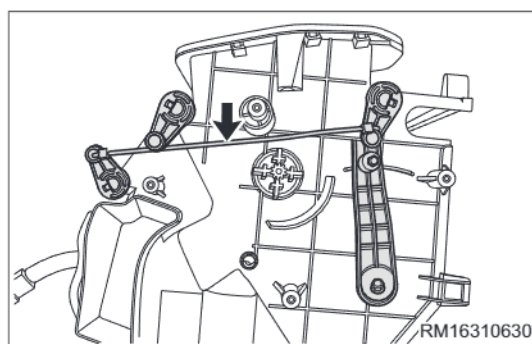


17. Remove the mode damper adjustment mechanism set.

- a. Remove the fixing screw (arrow) from mode damper adjustment mechanism set.
(Tightening torque: 1.2 - 2 N·m)

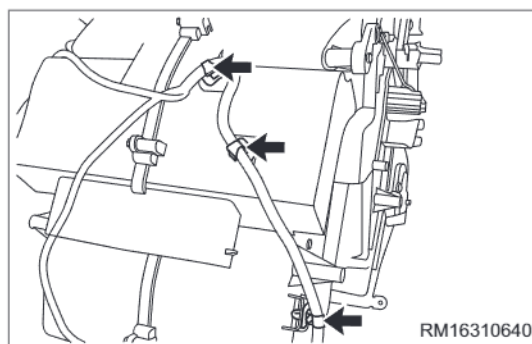


- b. Remove the mode damper adjustment mechanism set (arrow) from distributor housing assembly.

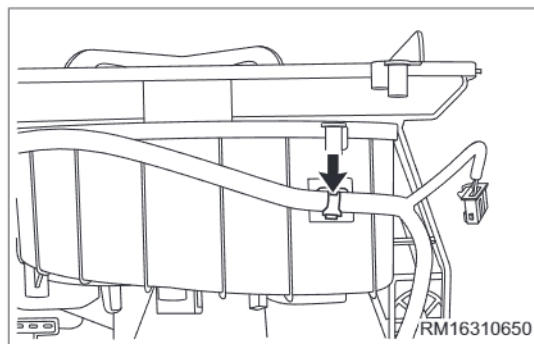


18. Remove the A/C wire harness assembly.

- a. Detach the A/C wire harness assembly fixing clips (arrow) from distributor housing assembly.

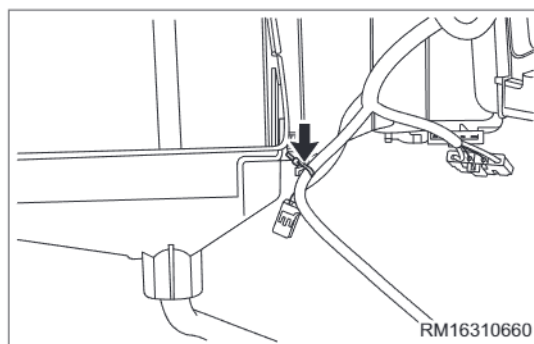


- b. Detach the A/C wire harness assembly fixing clamp (arrow) from right side of distributor housing assembly.

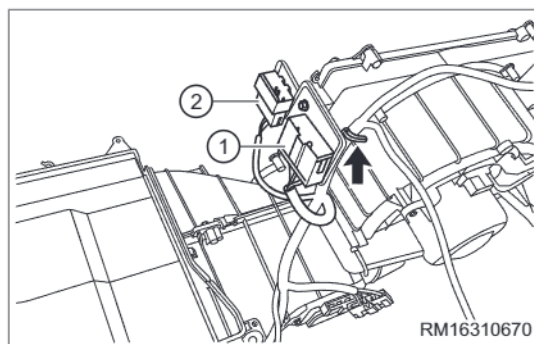


31

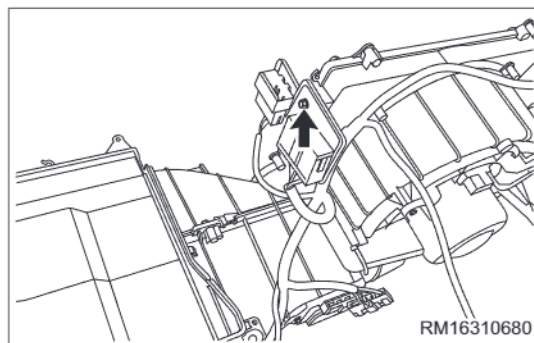
- c. Detach the A/C wire harness assembly fixing clip (arrow) from distributor housing assembly.



- d. Detach the A/C wire harness assembly fixing part (arrow) from distributor housing assembly, and remove connectors (1) and (2) (for automatic A/C).



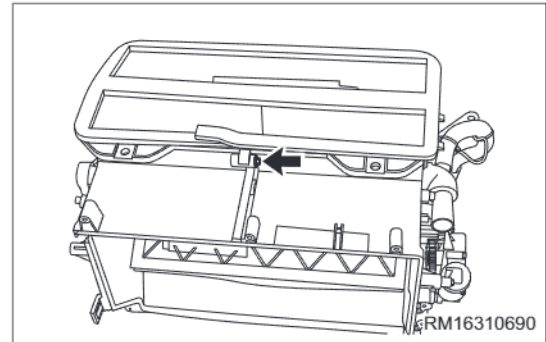
- e. Remove the A/C wire harness connector fixing bracket fixing screw (arrow).



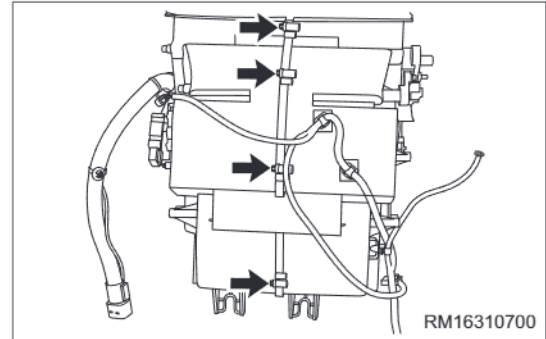
- f. Remove the A/C wire harness assembly and fixing bracket.

19. Remove the mix/face/defrost/foot damper set.

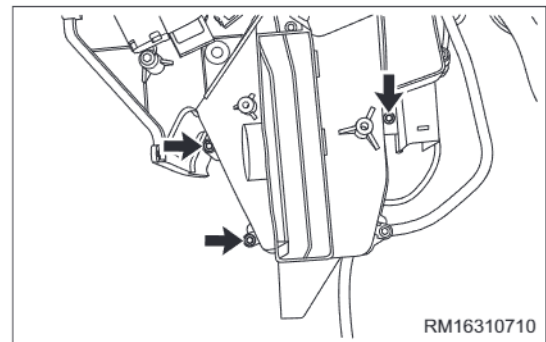
- a. Remove the fixing screw (arrow) from the front part of evaporator tank assembly.
(Tightening torque: 1.2 - 2 N·m)



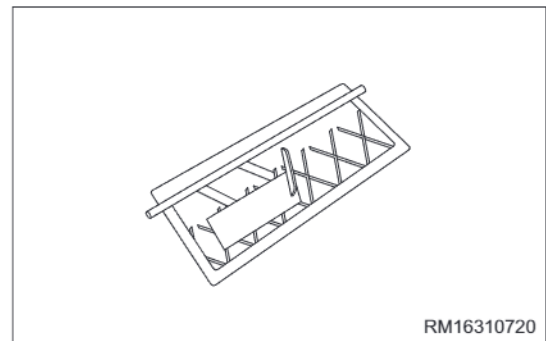
- b. Remove 4 fixing screws (arrow) from the rear part of evaporator tank assembly.
(Tightening torque: 1.2 - 2 N·m)



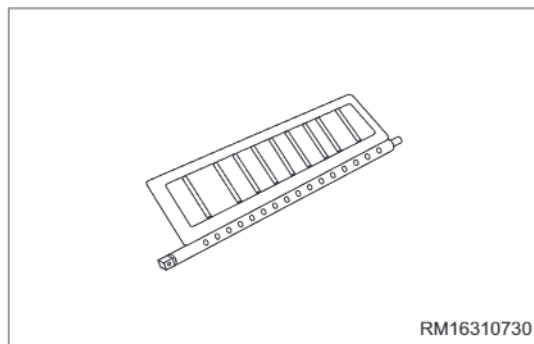
- c. Remove 3 fixing screws (arrow) from the lower part of evaporator tank assembly.
(Tightening torque: 1.2 - 2 N·m)



- d. Disengage the fixing clamp and detach the evaporator tank case, and remove the mix damper set.

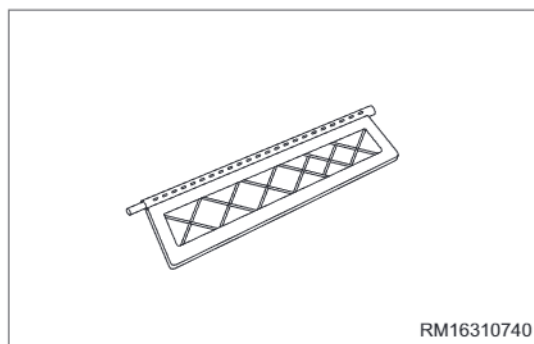


e. Remove the face damper set.

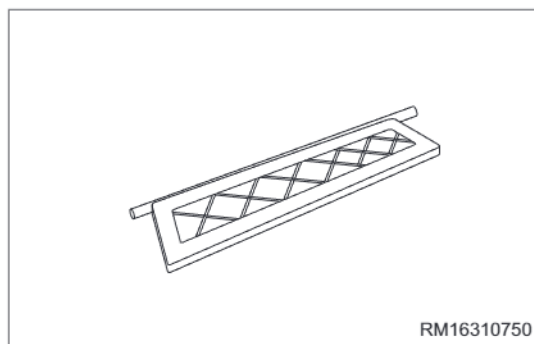


31

f. Remove the defrost damper set.

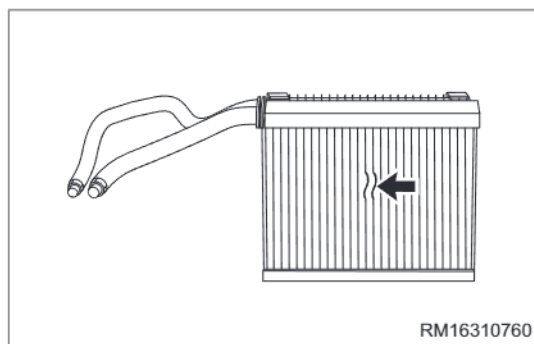


g. Remove the foot damper set.

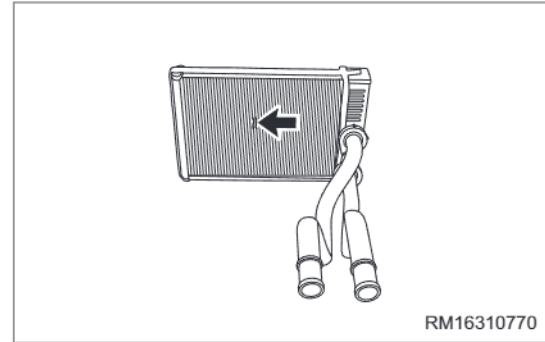


Inspection

1. Check the evaporator core assembly.
 - a. Check if evaporator core assembly is cracked, damaged and leaked.
If any problem is found, replace the evaporator core assembly.
 - b. Check the fin for bends.
If any fin (arrow) is bent, carefully straighten it with a screwdriver or pliers.



2. Check the heater core assembly.
 - a. Check if heater core assembly is cracked, damaged or leaked.
If any problem is found, replace the heater core assembly.
 - b. Check the fin for bends.
If any fin (arrow) is bent, carefully straighten it with a screwdriver or pliers.



31

3. Check the damper control mechanism assembly.
 - a. Check if mode damper adjustment mechanism set is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
 - b. Check if mix damper adjustment mechanism set is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
 - c. Check if inner/outer circulation/temperature/face/defrost/foot 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 mode damper adjustment mechanism set 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.
- Always check that inner/outer circulation damper mechanism assembly operates normally after installation.
- Always check that mode damper mechanism assembly operates normally after installation.
- Always check that mix damper mechanism assembly operates normally after installation.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and screws to specified torques.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- 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.

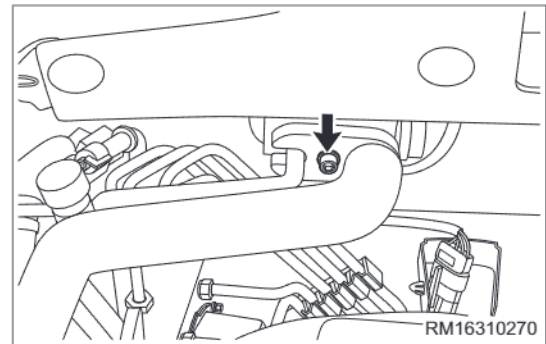
A/C Low Pressure Line

Removal

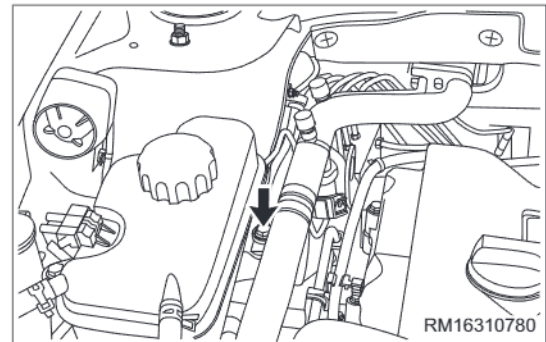
CAUTION

- 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.

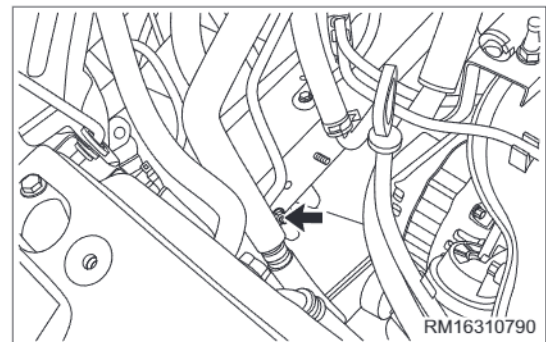
1. Recover the refrigerant from A/C system ([See page 31-75](#)).
2. Turn off all electrical equipment and the ignition switch.
3. Disconnect the negative battery cable.
4. Remove the A/C low pressure line (compressor to evaporator).
 - a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high/low pressure line.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



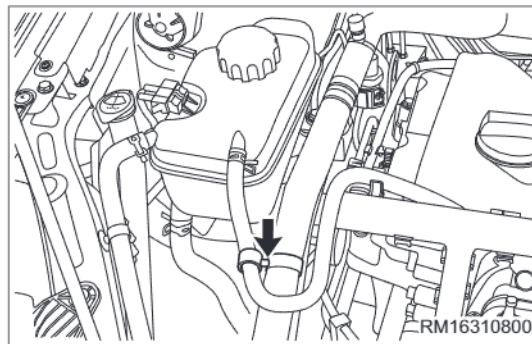
- b. Remove the coupling bolt (arrow) between A/C high/low pressure line set bracket and body, and disengage the A/C low pressure line.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



- c. Remove the coupling nut (arrow) between A/C high/low pressure line set bracket and body, and disengage the A/C low pressure line.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)

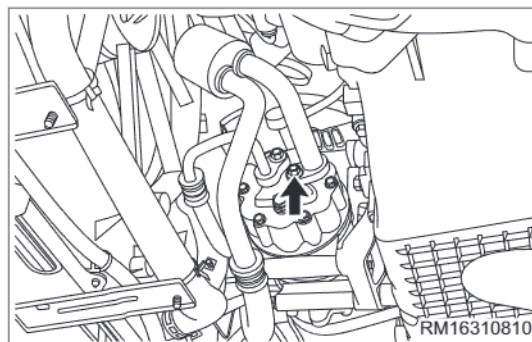


- d. Disengage the fixing clamp (arrow) between A/C low pressure line and cooling circulation lines.



31

- e. Remove the fixing bolt (arrow) between A/C low pressure line and compressor assembly, and disengage the A/C low pressure line from compressor assembly.
(Tightening torque: 25 ± 4 N·m)



- f. Remove the A/C low pressure line (compressor to evaporator).

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and nuts to specified torques.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- 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.

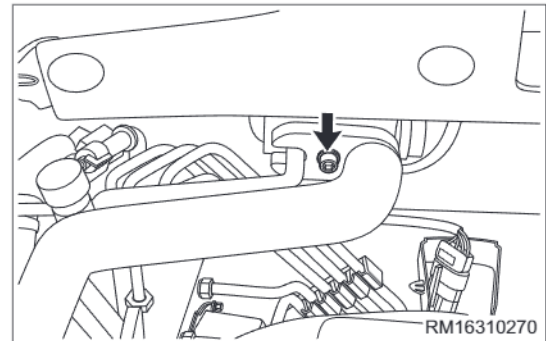
A/C High Pressure Line

Removal

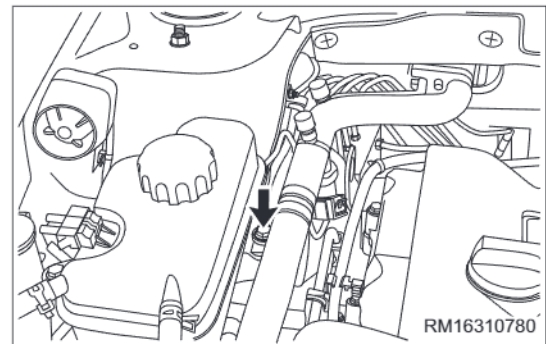
CAUTION

- 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.

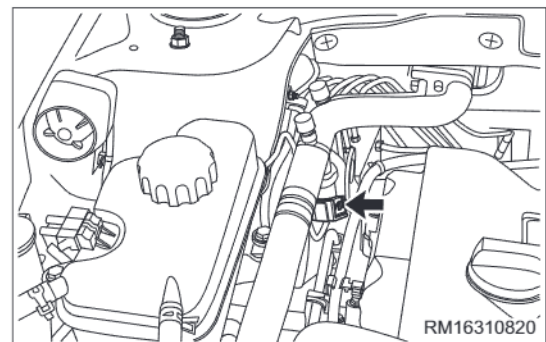
1. Recover the refrigerant from A/C system ([See page 31-75](#)).
2. Turn off all electrical equipment and the ignition switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly ([See page 49-8](#)).
5. Remove the A/C high pressure line I (condenser to evaporator).
 - a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high/low pressure line.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



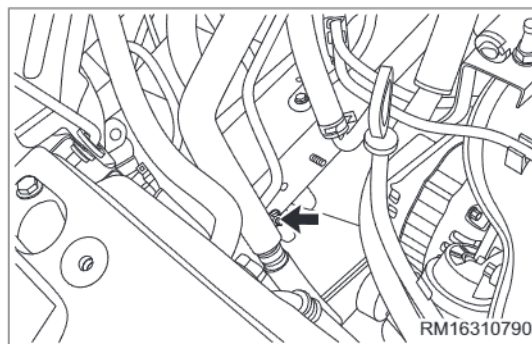
- b. Remove the coupling bolt (arrow) between A/C high/low pressure line set bracket and body, and disengage the A/C high pressure line I.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



- c. Disconnect the A/C pressure sensor wire harness connector (arrow).

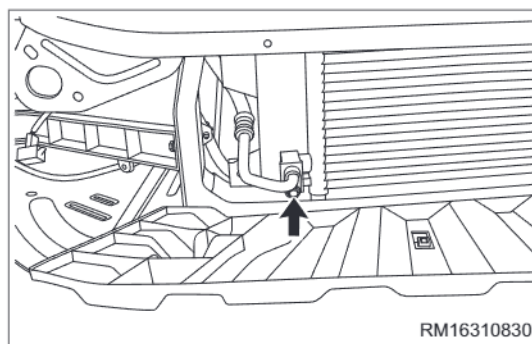


- d. Remove the coupling nut (arrow) between A/C high/low pressure line set bracket and body, and disengage the A/C high pressure line I. (Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



31

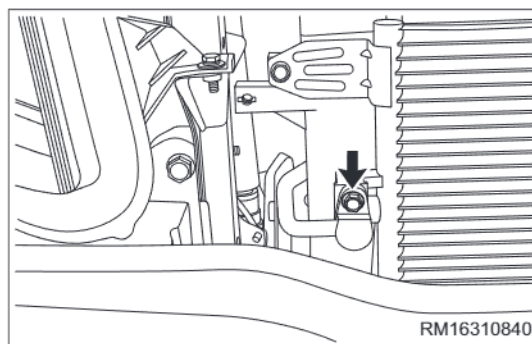
- e. Remove the fixing bolt (arrow) between A/C high pressure line I and condenser assembly, and disengage the A/C high pressure line I from condenser assembly. (Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



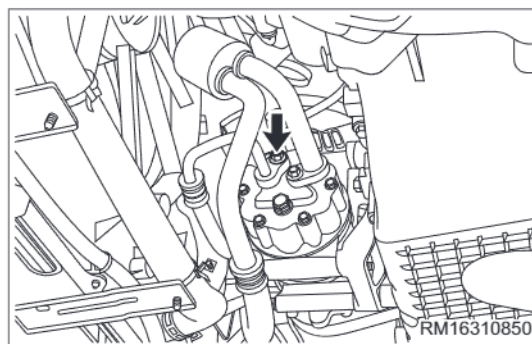
- f. Remove the A/C high pressure line I (condenser to evaporator).

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

- a. Remove the fixing bolt (arrow) between A/C high pressure line II and condenser assembly, and disengage the A/C high pressure line II from condenser assembly. (Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



- b. Remove the fixing bolt (arrow) between A/C high pressure line II and compressor assembly, and disengage the A/C high pressure line II from compressor assembly. (Tightening torque: $25 \pm 4 \text{ N}\cdot\text{m}$)



- 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 torques.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- 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.

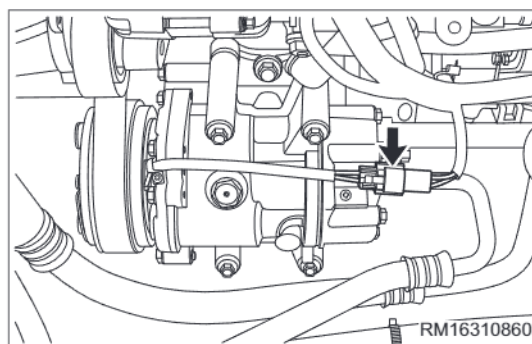
CAUTION

31

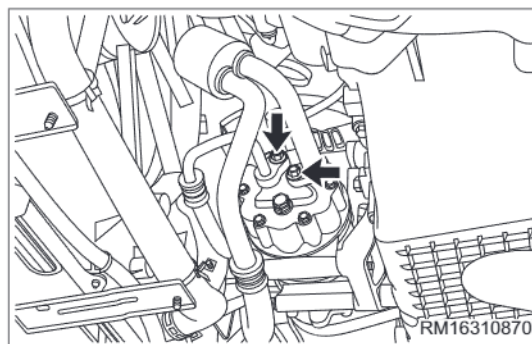
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.
- If A/C compressor assembly has an internal malfunction, it is necessary to replace the 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

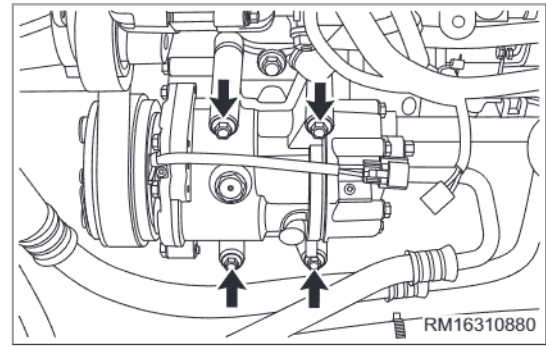
1. Recover the refrigerant from A/C system ([See page 31-75](#)).
2. Turn off all electrical equipment and the ignition switch.
3. Disconnect the negative battery cable.
4. Remove the engine lower protector assembly ([See page 49-22](#)).
5. Remove the accessory drive belt ([See page 7-21](#)).
6. Remove the compressor assembly.
 - a. Disconnect the compressor assembly wire harness connector (arrow).



- b. Remove 2 fixing bolts (arrow) between A/C high/low pressure line and compressor assembly, and disengage the A/C high/low pressure line from compressor assembly.
(Tightening torque: 25 ± 4 N·m)



- c. Remove 4 fixing bolts (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 25 ± 4 N·m)

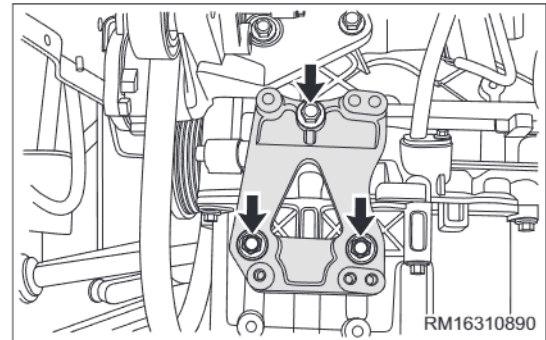


- d. Carefully remove the compressor assembly from below.

31

7. Remove the compressor assembly mounting bracket.

- a. Remove 3 fixing bolts (arrow) between compressor mounting bracket and engine.
(Tightening torque: 40 ± 5 N·m)



- b. Remove the compressor assembly mounting bracket.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts to specified torques.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- 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 (w/ Receiver Drier)

Removal

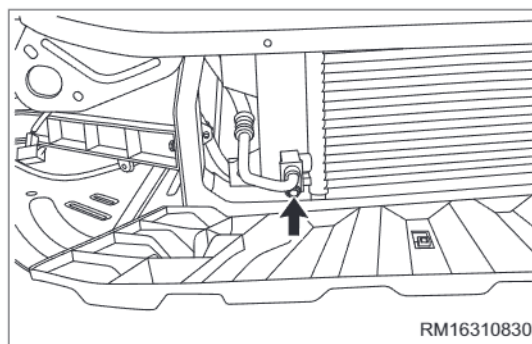
CAUTION

- 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.

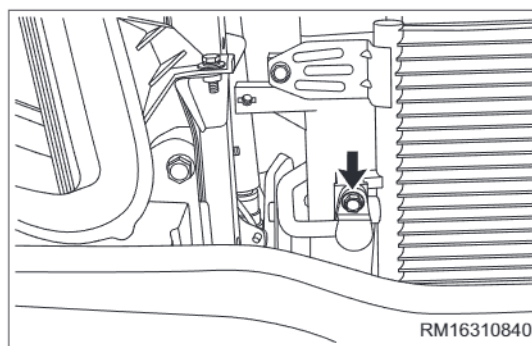
31

1. Recover the refrigerant from A/C system (See page 31-75).
2. Turn off all electrical equipment and the ignition switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 49-8).
5. Remove the condenser assembly (w/ receiver drier).

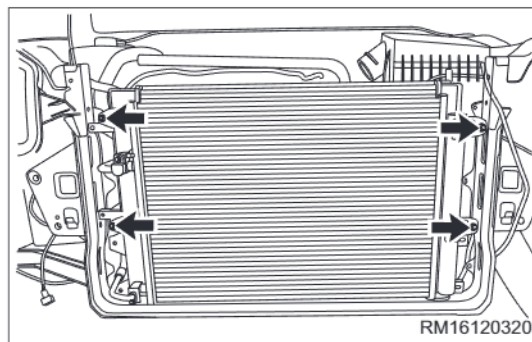
- a. Remove the fixing bolt (arrow) between A/C high pressure line I and condenser assembly, and disengage the A/C high pressure line I from condenser assembly.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



- b. Remove the fixing bolt (arrow) between A/C high pressure line II and condenser assembly, and disengage the A/C high pressure line II from condenser assembly.
(Tightening torque: $9 \pm 1.5 \text{ N}\cdot\text{m}$)



- c. Remove 4 fixing bolts (arrow) between radiator assembly and condenser assembly.
(Tightening torque: $7 \pm 1 \text{ N}\cdot\text{m}$)



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

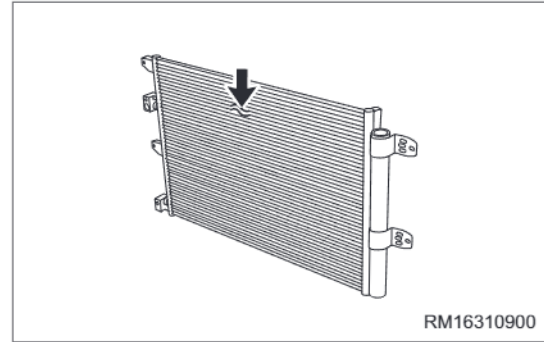
Inspection

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.

- b. If condenser fins are bent, straighten them with screwdriver or pliers.



31

Installation

Installation is in the reverse order of removal.

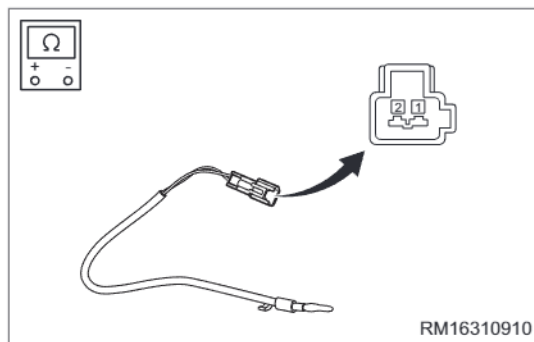
CAUTION

- Tighten fixing bolts to specified torques.
- It is necessary to replace refrigerant line O-ring, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- 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.

Evaporator Temperature Sensor

Inspection

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



Standard Resistance

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-40	44.8897	49.5074	54.4545	28	1.1604	1.3044	1.4516
Terminal 1 - Terminal 2	-39	42.0896	46.3579	50.9235	29	1.1105	1.2494	1.3916
Terminal 1 - Terminal 2	-38	39.4815	43.4283	47.6434	30	1.0629	1.1969	1.3343
Terminal 1 - Terminal 2	-37	37.0513	40.7020	44.5948	31	1.0177	1.1470	1.2797
Terminal 1 - Terminal 2	-36	34.7856	38.1637	41.7600	32	0.9747	1.0994	1.2276
Terminal 1 - Terminal 2	-35	32.6724	35.7992	39.1229	33	0.9337	1.0540	1.1780
Terminal 1 - Terminal 2	-34	30.7005	33.5957	36.6683	34	0.8946	1.0108	1.1306
Terminal 1 - Terminal 2	-33	28.8597	31.5413	34.3827	35	0.8574	0.9695	1.0854
Terminal 1 - Terminal 2	-32	27.1404	29.6249	32.2553	36	0.8219	0.9302	1.0422
Terminal 1 - Terminal 2	-31	25.5339	27.8366	30.2687	37	0.7881	0.8927	1.0010
Terminal 1 - Terminal 2	-30	24.0322	26.1669	28.4181	38	0.7559	0.8569	0.9616
Terminal 1 - Terminal 2	-29	22.6278	24.6074	26.6917	39	0.7251	0.8227	0.9240
Terminal 1 - Terminal 2	-28	21.3139	23.1502	25.0804	40	0.6958	0.7900	0.8880
Terminal 1 - Terminal 2	-27	20.0841	21.7879	23.5760	41	0.6678	0.7589	0.8537

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-26	18.9325	20.5138	22.1707	42	0.6411	0.7291	0.8209
Terminal 1 - Terminal 2	-25	17.8538	19.3218	20.8574	43	0.6156	0.7006	0.7894
Terminal 1 - Terminal 2	-24	16.8428	18.2060	19.6297	44	0.5912	0.6735	0.7594
Terminal 1 - Terminal 2	-23	15.8950	17.1612	18.4813	45	0.5680	0.6475	0.7307
Terminal 1 - Terminal 2	-22	15.0061	16.1824	17.4068	46	0.5457	0.6226	0.7032
Terminal 1 - Terminal 2	-21	14.1721	15.2651	16.4010	47	0.5245	0.5998	0.6768
Terminal 1 - Terminal 2	-20	13.3892	14.4051	15.4591	48	0.5042	0.5761	0.6516
Terminal 1 - Terminal 2	-19	12.6541	13.5895	14.5767	49	0.4848	0.5543	0.6275
Terminal 1 - Terminal 2	-18	11.9635	12.8417	13.7497	50	0.4662	0.5335	0.6044
Terminal 1 - Terminal 2	-17	11.3146	12.1313	12.9744	51	0.4485	0.5137	0.5824
Terminal 1 - Terminal 2	-16	10.7046	11.4643	12.2471	52	0.4317	0.4947	0.5613
Terminal 1 - Terminal 2	-15	10.1309	10.8377	11.5648	53	0.4155	0.4765	0.5410
Terminal 1 - Terminal 2	-14	9.5913	10.2489	10.9243	54	0.4000	0.4591	0.5216
Terminal 1 - Terminal 2	-13	9.0883	9.6954	10.3228	55	0.3852	0.4424	0.5030
Terminal 1 - Terminal 2	-12	8.6052	9.1749	9.7579	56	0.3710	0.4264	0.4852
Terminal 1 - Terminal 2	-11	8.1549	8.6852	9.2270	57	0.3574	0.4111	0.4680
Terminal 1 - Terminal 2	-10	7.7306	8.2244	8.7279	58	0.3444	0.3964	0.4516
Terminal 1 - Terminal 2	-9	7.3308	7.7906	8.2586	59	0.3319	0.3823	0.4359
Terminal 1 - Terminal 2	-8	6.9538	7.3820	7.8171	60	0.3199	0.3688	0.4207
Terminal 1 - Terminal 2	-7	6.5983	6.9972	7.4016	61	0.3084	0.3558	0.4062
Terminal 1 - Terminal 2	-6	6.2629	6.6345	7.0104	62	0.2974	0.3433	0.3922



Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-5	5.9464	6.2925	6.6421	63	0.2868	0.3314	0.3788
Terminal 1 - Terminal 2	-4	5.6477	5.9701	6.2951	64	0.2767	0.3199	0.3660
Terminal 1 - Terminal 2	-3	5.3655	5.6659	5.9861	65	0.2670	0.3088	0.3536
Terminal 1 - Terminal 2	-2	5.0990	5.3788	5.6599	66	0.2576	0.2982	0.3417
Terminal 1 - Terminal 2	-1	4.8471	5.1079	5.3692	67	0.2487	0.2881	0.3303
Terminal 1 - Terminal 2	0	4.6090	4.8520	5.0950	68	0.2401	0.2783	0.3193
Terminal 1 - Terminal 2	1	4.3642	4.6115	4.8585	69	0.2318	0.2689	0.3087
Terminal 1 - Terminal 2	2	4.1339	4.3844	4.6343	70	0.2239	0.2599	0.2985
Terminal 1 - Terminal 2	3	3.9171	4.1699	4.4218	71	0.2162	0.2512	0.2888
Terminal 1 - Terminal 2	4	3.7129	3.9672	4.2204	72	0.2089	0.2428	0.2793
Terminal 1 - Terminal 2	5	3.5207	3.7756	4.0293	73	0.2018	0.2348	0.2703
Terminal 1 - Terminal 2	6	3.3395	3.5943	3.8480	74	0.1951	0.2271	0.2616
Terminal 1 - Terminal 2	7	3.1688	3.4229	3.6759	75	0.1885	0.2196	0.2532
Terminal 1 - Terminal 2	8	3.0077	3.2607	3.5125	76	0.1823	0.2125	0.2451
Terminal 1 - Terminal 2	9	2.8559	3.1071	3.3573	77	0.1763	0.2056	0.2373
Terminal 1 - Terminal 2	10	2.7125	2.9616	3.2099	78	0.1705	0.1989	0.2298
Terminal 1 - Terminal 2	11	2.5772	2.8239	3.0698	79	0.1649	0.1926	0.2226
Terminal 1 - Terminal 2	12	2.4495	2.6933	2.9366	80	0.1595	0.1864	0.2156
Terminal 1 - Terminal 2	13	2.3288	2.5696	2.8100	81	0.1543	0.1805	0.2089
Terminal 1 - Terminal 2	14	2.2148	2.4523	2.6896	82	0.1493	0.1748	0.2024
Terminal 1 - Terminal 2	15	2.1070	2.3410	2.5750	83	0.1446	0.1693	0.1962

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	16	2.0091	2.2343	2.4599	84	0.1399	0.1640	0.1902
Terminal 1 - Terminal 2	17	1.9163	2.1331	2.3507	85	0.1355	0.1589	0.1844
Terminal 1 - Terminal 2	18	1.8283	2.0370	2.2469	86	0.1312	0.1539	0.1788
Terminal 1 - Terminal 2	19	1.7449	1.9459	2.1483	87	0.1271	0.1492	0.1734
Terminal 1 - Terminal 2	20	1.6658	1.8593	2.0546	88	0.1231	0.1446	0.1681
Terminal 1 - Terminal 2	21	1.5906	1.7770	1.9655	89	0.1192	0.1402	0.1631
Terminal 1 - Terminal 2	22	1.5193	1.6989	1.8807	90	0.1155	0.1359	0.1582
Terminal 1 - Terminal 2	23	1.4516	1.6246	1.8001	91	0.1120	0.1318	0.1536
Terminal 1 - Terminal 2	24	1.3873	1.5540	1.7234	92	0.1085	0.1278	0.1490
Terminal 1 - Terminal 2	25	1.3262	1.4869	1.6504	93	0.1052	0.1240	0.1447
Terminal 1 - Terminal 2	26	1.2681	1.4230	1.5809	94	0.1020	0.1203	0.1404
Terminal 1 - Terminal 2	27	1.2129	1.3623	1.5147	95	0.0989	0.1167	0.1363

HINT:

Resistance decreases as temperature increases.

CAUTION

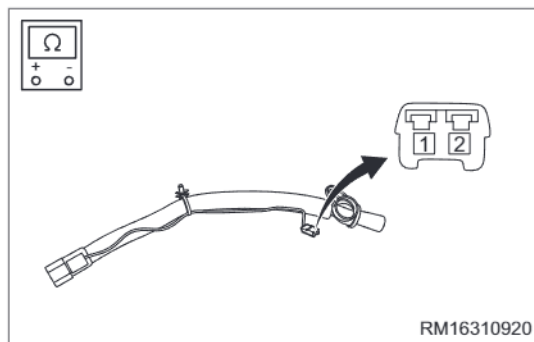
- Resistance value may change even if sensor is touched slightly. Make sure that connector of sensor is held firmly.
- During measurement, sensor temperature must be almost the same as the ambient temperature.

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

Room Temperature Sensor (for Automatic A/C)

Inspection

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



Standard Resistance

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-40	317.4	332.1	347.3	23	10.82	10.93	11.05
Terminal 1 - Terminal 2	-39	297.2	310.9	324.9	24	10.35	10.45	10.56
Terminal 1 - Terminal 2	-38	278.7	291.2	304.1	25	9.900	10.00	10.10
Terminal 1 - Terminal 2	-37	261.3	272.8	284.8	26	9.470	9.570	9.669
Terminal 1 - Terminal 2	-36	245.1	255.7	266.8	27	9.061	9.160	9.259
Terminal 1 - Terminal 2	-35	230.0	239.9	250.1	28	8.672	8.770	8.869
Terminal 1 - Terminal 2	-34	216.0	225.0	234.5	29	8.302	8.400	8.498
Terminal 1 - Terminal 2	-33	202.8	211.2	220.0	30	7.949	8.047	8.114
Terminal 1 - Terminal 2	-32	190.6	198.4	206.4	31	7.614	7.710	7.807
Terminal 1 - Terminal 2	-31	179.2	186.4	193.8	32	7.294	7.390	7.486
Terminal 1 - Terminal 2	-30	168.5	175.2	182.0	33	6.990	7.085	7.180
Terminal 1 - Terminal 2	-29	158.5	164.7	171.7	34	6.701	6.794	6.888
Terminal 1 - Terminal 2	-28	149.2	154.9	160.8	35	6.424	6.517	6.610
Terminal 1 - Terminal 2	-27	140.5	145.8	151.2	36	6.161	6.252	6.344

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-26	132.3	137.2	142.3	37	5.910	6.000	6.091
Terminal 1 - Terminal 2	-25	126.4	130.0	134.7	38	5.671	5.759	5.849
Terminal 1 - Terminal 2	-24	118.3	122.5	126.9	39	5.442	5.530	5.618
Terminal 1 - Terminal 2	-23	111.7	115.6	119.6	40	5.225	5.310	5.397
Terminal 1 - Terminal 2	-22	105.4	109.1	112.8	41	5.017	5.101	5.186
Terminal 1 - Terminal 2	-21	99.56	102.9	106.4	42	4.818	4.901	4.985
Terminal 1 - Terminal 2	-20	95.82	99.03	102.3	43	4.628	4.710	4.793
Terminal 1 - Terminal 2	-19	90.42	93.39	96.45	44	4.447	4.527	4.069
Terminal 1 - Terminal 2	-18	85.36	88.11	90.95	45	4.274	4.353	4.433
Terminal 1 - Terminal 2	-17	80.61	83.17	85.79	46	4.109	4.186	4.264
Terminal 1 - Terminal 2	-16	76.16	78.53	80.96	47	3.951	4.027	4.103
Terminal 1 - Terminal 2	-15	71.99	74.18	76.43	48	3.799	3.874	3.949
Terminal 1 - Terminal 2	-14	68.06	70.10	72.19	49	3.655	3.728	3.802
Terminal 1 - Terminal 2	-13	64.38	66.26	68.20	50	3.513	3.588	3.661
Terminal 1 - Terminal 2	-12	60.91	62.67	64.46	51	3.384	3.454	3.526
Terminal 1 - Terminal 2	-11	57.66	59.28	60.95	52	3.257	3.326	3.396
Terminal 1 - Terminal 2	-10	54.60	56.10	57.65	53	3.136	3.204	3.272
Terminal 1 - Terminal 2	-9	51.72	53.12	54.54	54	3.020	3.086	3.153
Terminal 1 - Terminal 2	-8	49.01	50.30	51.63	55	2.909	2.974	3.040
Terminal 1 - Terminal 2	-7	46.45	47.66	48.89	56	2.802	2.866	2.930
Terminal 1 - Terminal 2	-6	44.05	45.17	46.31	57	2.700	2.762	2.826



Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-5	41.78	42.82	43.88	58	2.602	2.663	2.725
Terminal 1 - Terminal 2	-4	39.65	40.61	41.59	59	2.509	2.568	2.629
Terminal 1 - Terminal 2	-3	37.64	38.53	39.44	60	2.419	2.477	2.537
Terminal 1 - Terminal 2	-2	35.74	36.56	37.41	61	2.333	2.390	2.448
Terminal 1 - Terminal 2	-1	33.94	34.71	35.49	62	2.250	2.306	2.363
Terminal 1 - Terminal 2	0	32.24	32.97	33.70	63	2.171	2.225	2.281
Terminal 1 - Terminal 2	1	30.66	31.32	31.99	64	2.094	2.148	2.203
Terminal 1 - Terminal 2	2	29.15	29.76	30.38	65	2.021	2.074	2.127
Terminal 1 - Terminal 2	3	27.72	28.29	28.87	66	1.951	2.002	2.005
Terminal 1 - Terminal 2	4	26.37	26.90	27.43	67	1.884	1.934	1.985
Terminal 1 - Terminal 2	5	25.10	25.59	26.08	68	1.819	1.868	1.818
Terminal 1 - Terminal 2	6	23.89	24.35	24.80	69	1.757	1.805	1.854
Terminal 1 - Terminal 2	7	22.75	23.17	23.60	70	1.697	1.744	1.792
Terminal 1 - Terminal 2	8	21.67	22.06	22.45	71	1.640	1.686	1.733
Terminal 1 - Terminal 2	9	20.65	21.01	21.37	72	1.585	1.630	1.676
Terminal 1 - Terminal 2	10	19.68	20.02	20.35	73	1.532	1.576	1.621
Terminal 1 - Terminal 2	11	18.76	19.07	19.38	74	1.481	1.524	1.568
Terminal 1 - Terminal 2	12	17.90	18.18	18.47	75	1.432	1.474	1.517
Terminal 1 - Terminal 2	13	17.07	17.33	17.60	76	1.384	1.426	1.468
Terminal 1 - Terminal 2	14	16.29	16.53	16.78	77	1.339	1.379	1.420
Terminal 1 - Terminal 2	15	15.55	15.77	16.00	78	1.295	1.335	1.375

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	16	14.84	15.05	15.26	79	1.253	1.292	1.331
Terminal 1 - Terminal 2	17	14.18	14.37	14.56	80	1.213	1.250	1.289
Terminal 1 - Terminal 2	18	13.54	13.72	13.89	81	1.174	1.221	1.248
Terminal 1 - Terminal 2	19	12.94	13.10	13.26	82	1.136	1.172	1.209
Terminal 1 - Terminal 2	20	12.37	12.52	12.67	83	1.098	1.135	1.171
Terminal 1 - Terminal 2	21	11.82	11.96	12.10	84	1.065	1.110	1.135
Terminal 1 - Terminal 2	22	11.31	11.43	11.56	85	1.032	1.065	1.110

31

HINT:

Resistance decreases as temperature increases.

CAUTION

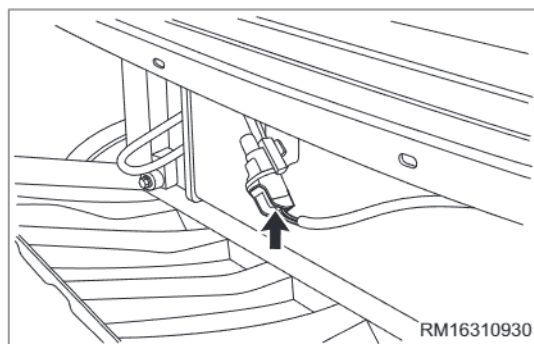
- Resistance value may change even if sensor is touched slightly.
- During measurement, sensor temperature must be almost the same as the ambient temperature.

If result is not as specified, replace the room temperature sensor.

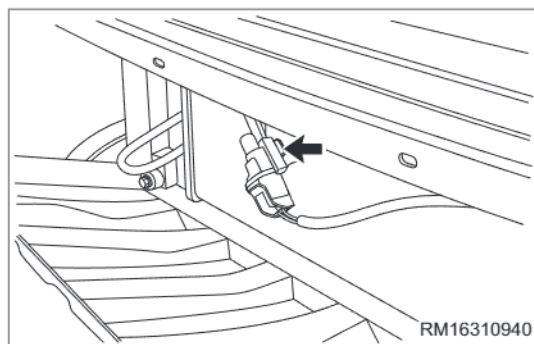
Outside Temperature Sensor (for Automatic A/C)

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the front bumper assembly (See page 49-8).
4. Remove the outside temperature sensor (for automatic A/C)
 - a. Disconnect the outside temperature sensor wire harness connector (arrow).

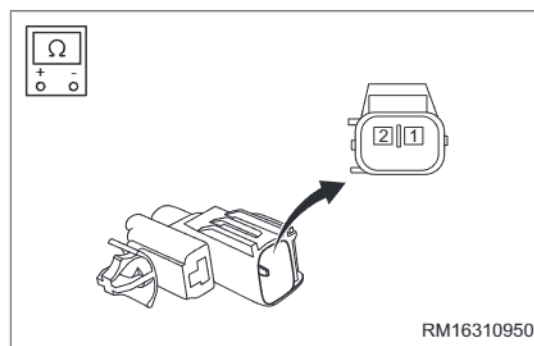


- b. Detach the fixing clip (arrow) and remove the outside temperature sensor.



Inspection

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



31

Standard Resistance

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-40	317.4	332.1	347.3	23	10.82	10.93	11.05
Terminal 1 - Terminal 2	-39	297.2	310.9	324.9	24	10.35	10.45	10.56
Terminal 1 - Terminal 2	-38	278.7	291.2	304.1	25	9.900	10.00	10.10
Terminal 1 - Terminal 2	-37	261.3	272.8	284.8	26	9.470	9.570	9.669
Terminal 1 - Terminal 2	-36	245.1	255.7	266.8	27	9.061	9.160	9.259
Terminal 1 - Terminal 2	-35	230.0	239.9	250.1	28	8.672	8.770	8.869
Terminal 1 - Terminal 2	-34	216.0	225.0	234.5	29	8.302	8.400	8.498
Terminal 1 - Terminal 2	-33	202.8	211.2	220.0	30	7.949	8.047	8.114
Terminal 1 - Terminal 2	-32	190.6	198.4	206.4	31	7.614	7.710	7.807
Terminal 1 - Terminal 2	-31	179.2	186.4	193.8	32	7.294	7.390	7.486
Terminal 1 - Terminal 2	-30	168.5	175.2	182.0	33	6.990	7.085	7.180
Terminal 1 - Terminal 2	-29	158.5	164.7	171.7	34	6.701	6.794	6.888
Terminal 1 - Terminal 2	-28	149.2	154.9	160.8	35	6.424	6.517	6.610
Terminal 1 - Terminal 2	-27	140.5	145.8	151.2	36	6.161	6.252	6.344
Terminal 1 - Terminal 2	-26	132.3	137.2	142.3	37	5.910	6.000	6.091

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-25	126.4	130.0	134.7	38	5.671	5.759	5.849
Terminal 1 - Terminal 2	-24	118.3	122.5	126.9	39	5.442	5.530	5.618
Terminal 1 - Terminal 2	-23	111.7	115.6	119.6	40	5.225	5.310	5.397
Terminal 1 - Terminal 2	-22	105.4	109.1	112.8	41	5.017	5.101	5.186
Terminal 1 - Terminal 2	-21	99.56	102.9	106.4	42	4.818	4.901	4.985
Terminal 1 - Terminal 2	-20	95.82	99.03	102.3	43	4.628	4.710	4.793
Terminal 1 - Terminal 2	-19	90.42	93.39	96.45	44	4.447	4.527	4.069
Terminal 1 - Terminal 2	-18	85.36	88.11	90.95	45	4.274	4.353	4.433
Terminal 1 - Terminal 2	-17	80.61	83.17	85.79	46	4.109	4.186	4.264
Terminal 1 - Terminal 2	-16	76.16	78.53	80.96	47	3.951	40.27	4.103
Terminal 1 - Terminal 2	-15	71.99	74.18	76.43	48	3.799	3.874	3.949
Terminal 1 - Terminal 2	-14	68.06	70.10	72.19	49	3.655	3.728	3.802
Terminal 1 - Terminal 2	-13	64.38	66.26	68.20	50	3.513	3.588	3.661
Terminal 1 - Terminal 2	-12	60.91	62.67	64.46	51	3.384	3.454	3.526
Terminal 1 - Terminal 2	-11	57.66	59.28	60.95	52	3.257	3.326	3.396
Terminal 1 - Terminal 2	-10	54.60	56.10	57.65	53	3.136	3.204	3.272
Terminal 1 - Terminal 2	-9	51.72	53.12	54.54	54	3.020	3.086	3.153
Terminal 1 - Terminal 2	-8	49.01	50.30	51.63	55	2.909	2.974	3.040
Terminal 1 - Terminal 2	-7	46.45	47.66	48.89	56	2.802	2.866	2.930
Terminal 1 - Terminal 2	-6	44.05	45.17	46.31	57	2.700	2.762	2.826
Terminal 1 - Terminal 2	-5	41.78	42.82	43.88	58	2.602	2.663	2.725

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	-4	39.65	40.61	41.59	59	2.509	2.568	2.629
Terminal 1 - Terminal 2	-3	37.64	38.53	39.44	60	2.419	2.477	2.537
Terminal 1 - Terminal 2	-2	35.74	36.56	37.41	61	2.333	2.390	2.448
Terminal 1 - Terminal 2	-1	33.94	34.71	35.49	62	2.250	2.306	2.363
Terminal 1 - Terminal 2	0	32.24	32.97	33.70	63	2.171	2.225	2.281
Terminal 1 - Terminal 2	1	30.66	31.32	31.99	64	2.094	2.148	2.203
Terminal 1 - Terminal 2	2	29.15	29.76	30.38	65	2.021	2.074	2.127
Terminal 1 - Terminal 2	3	27.72	28.29	28.87	66	1.951	2.002	2.005
Terminal 1 - Terminal 2	4	26.37	26.90	27.43	67	1.884	1.934	1.985
Terminal 1 - Terminal 2	5	25.10	25.59	26.08	68	1.819	1.868	1.818
Terminal 1 - Terminal 2	6	23.89	24.35	24.80	69	1.757	1.805	1.854
Terminal 1 - Terminal 2	7	22.75	23.17	23.60	70	1.697	1.744	1.792
Terminal 1 - Terminal 2	8	21.67	22.06	22.45	71	1.640	1.686	1.733
Terminal 1 - Terminal 2	9	20.65	21.01	21.37	72	1.585	1.630	1.676
Terminal 1 - Terminal 2	10	19.68	20.02	20.35	73	1.532	1.576	1.621
Terminal 1 - Terminal 2	11	18.76	19.07	19.38	74	1.481	1.524	1.568
Terminal 1 - Terminal 2	12	17.90	18.18	18.47	75	1.432	1.474	1.517
Terminal 1 - Terminal 2	13	17.07	17.33	17.60	76	1.384	1.426	1.468
Terminal 1 - Terminal 2	14	16.29	16.53	16.78	77	1.339	1.379	1.420
Terminal 1 - Terminal 2	15	15.55	15.77	16.00	78	1.295	1.335	1.375
Terminal 1 - Terminal 2	16	14.84	15.05	15.26	79	1.253	1.292	1.331

Multimeter Connection	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)	Temperature (°C)	Lower Limit (kΩ)	Standard Value (kΩ)	Upper Limit (kΩ)
Terminal 1 - Terminal 2	17	14.18	14.37	14.56	80	1.213	1.250	1.289
Terminal 1 - Terminal 2	18	13.54	13.72	13.89	81	1.174	1.221	1.248
Terminal 1 - Terminal 2	19	12.94	13.10	13.26	82	1.136	1.172	1.209
Terminal 1 - Terminal 2	20	12.37	12.52	12.67	83	1.0100	1.135	1.171
Terminal 1 - Terminal 2	21	11.82	11.96	12.10	84	1.065	1.110	1.135
Terminal 1 - Terminal 2	22	11.31	11.43	11.56	85	1.032	1.065	1.110

HINT:

Resistance decreases as temperature increases.

CAUTION

- Resistance value may change even if sensor is touched slightly.
- During measurement, sensor temperature must be almost the same as the ambient temperature.

If result is not as specified, replace the outside temperature sensor.

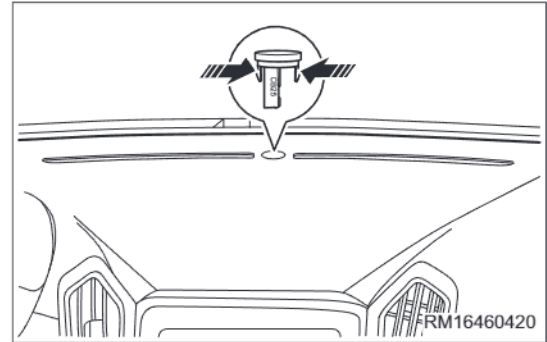
Installation

Installation is in the reverse order of removal.

Solar Sensor (for Automatic A/C)

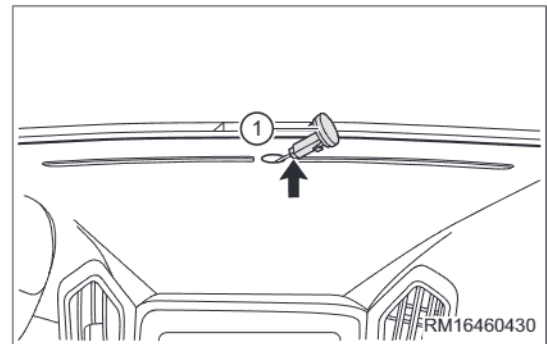
Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the solar sensor (for automatic A/C)
 - a. Press the fixing claws (arrow) on both sides and remove the solar sensor from the upper part of instrument panel.



31

- b. Disconnect the solar sensor wire harness connector (arrow).



- c. Remove the solar sensor.

Installation

Installation is in the reverse order of removal.

