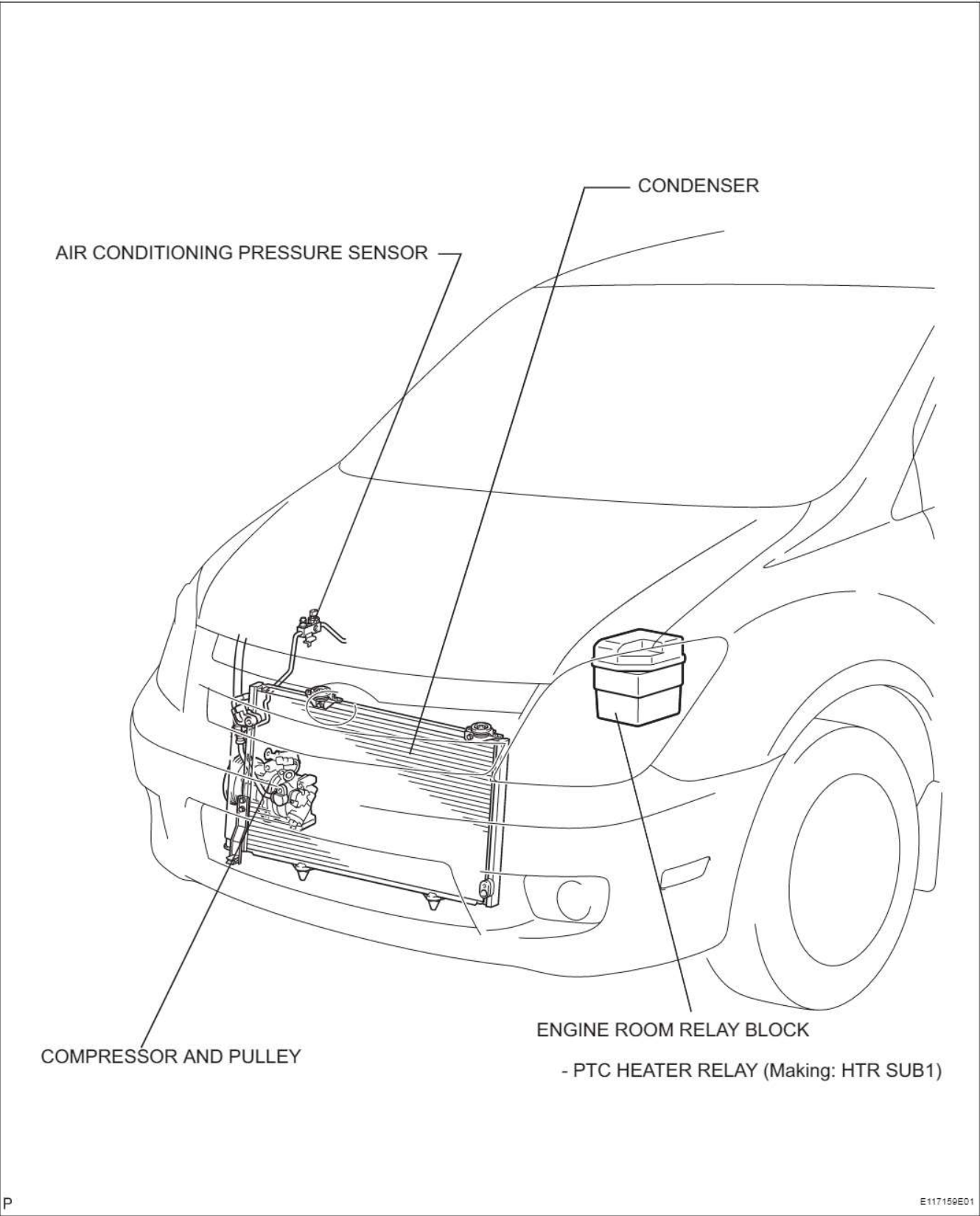
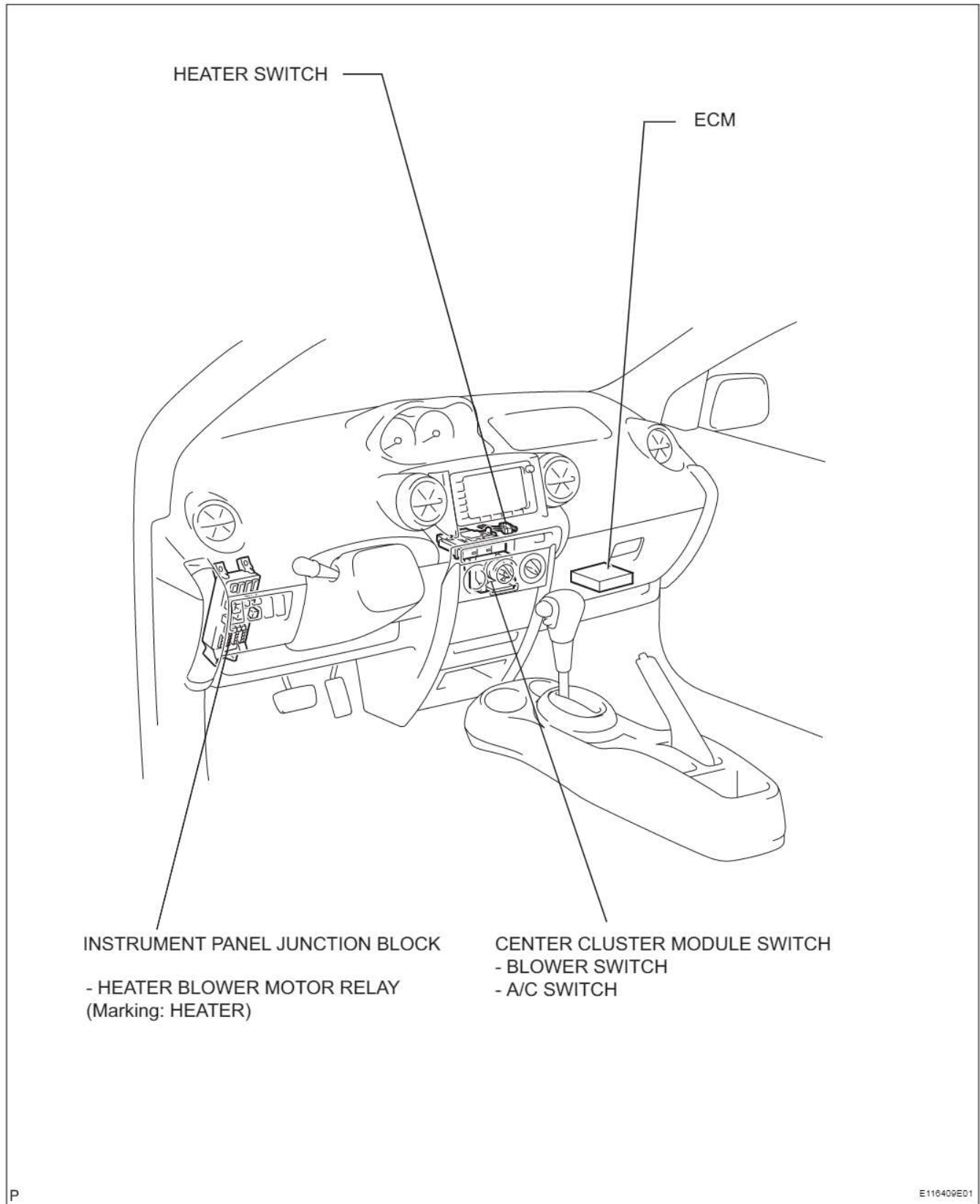


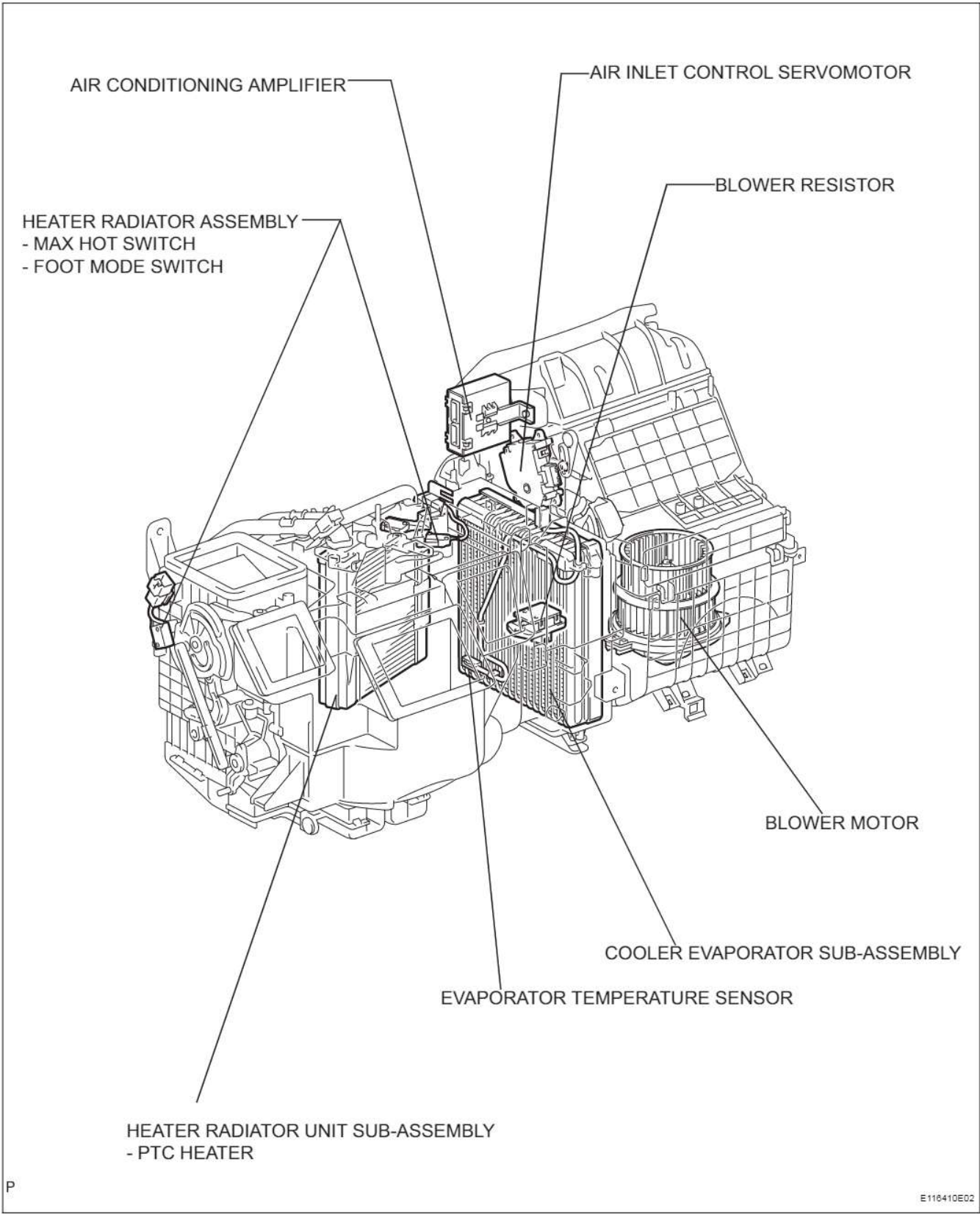
PARTS LOCATION



AC-4**AIR CONDITIONING – AIR CONDITIONING SYSTEM**

AIR CONDITIONING – AIR CONDITIONING SYSTEM

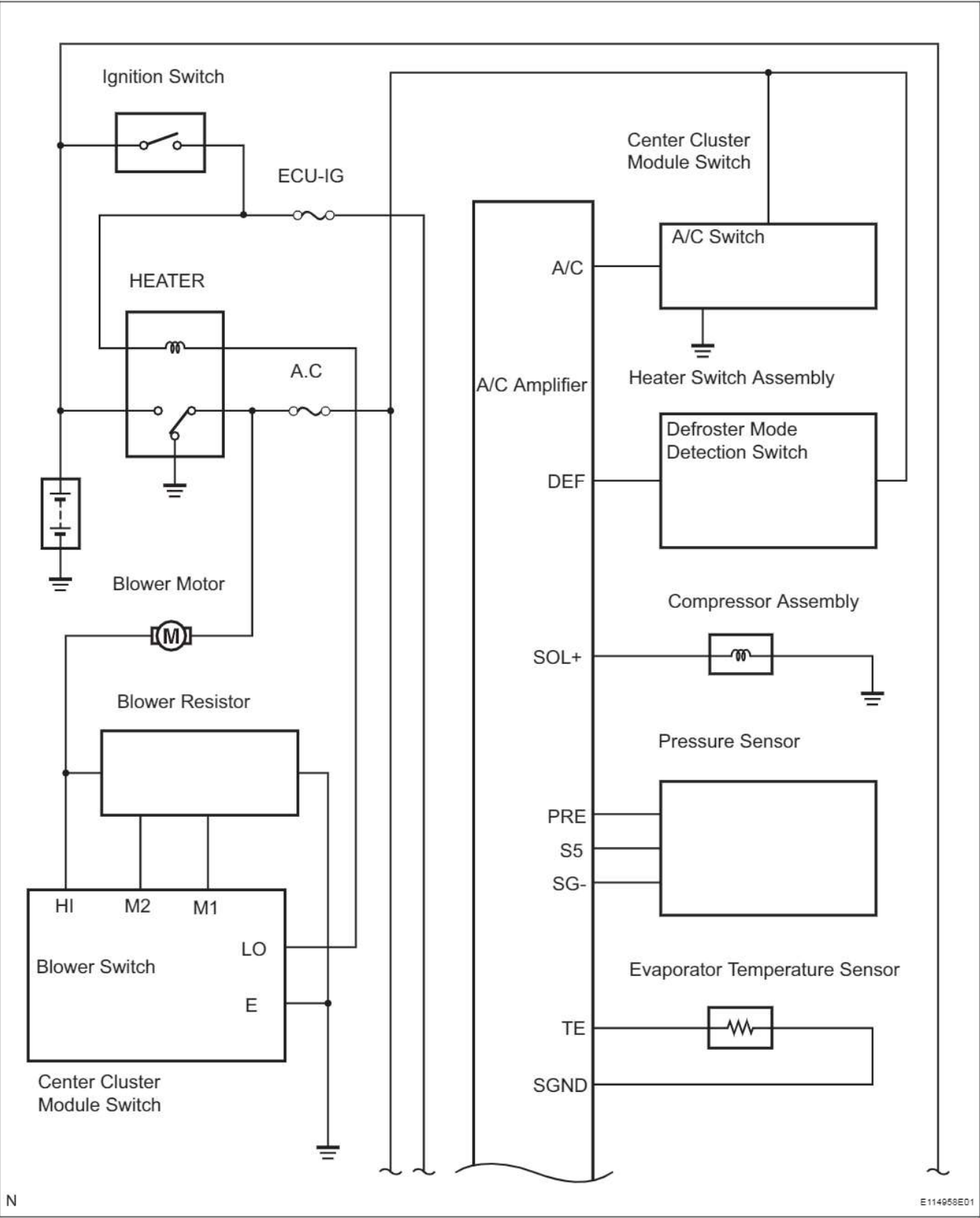
AC-5



AC-6

AIR CONDITIONING – AIR CONDITIONING SYSTEM

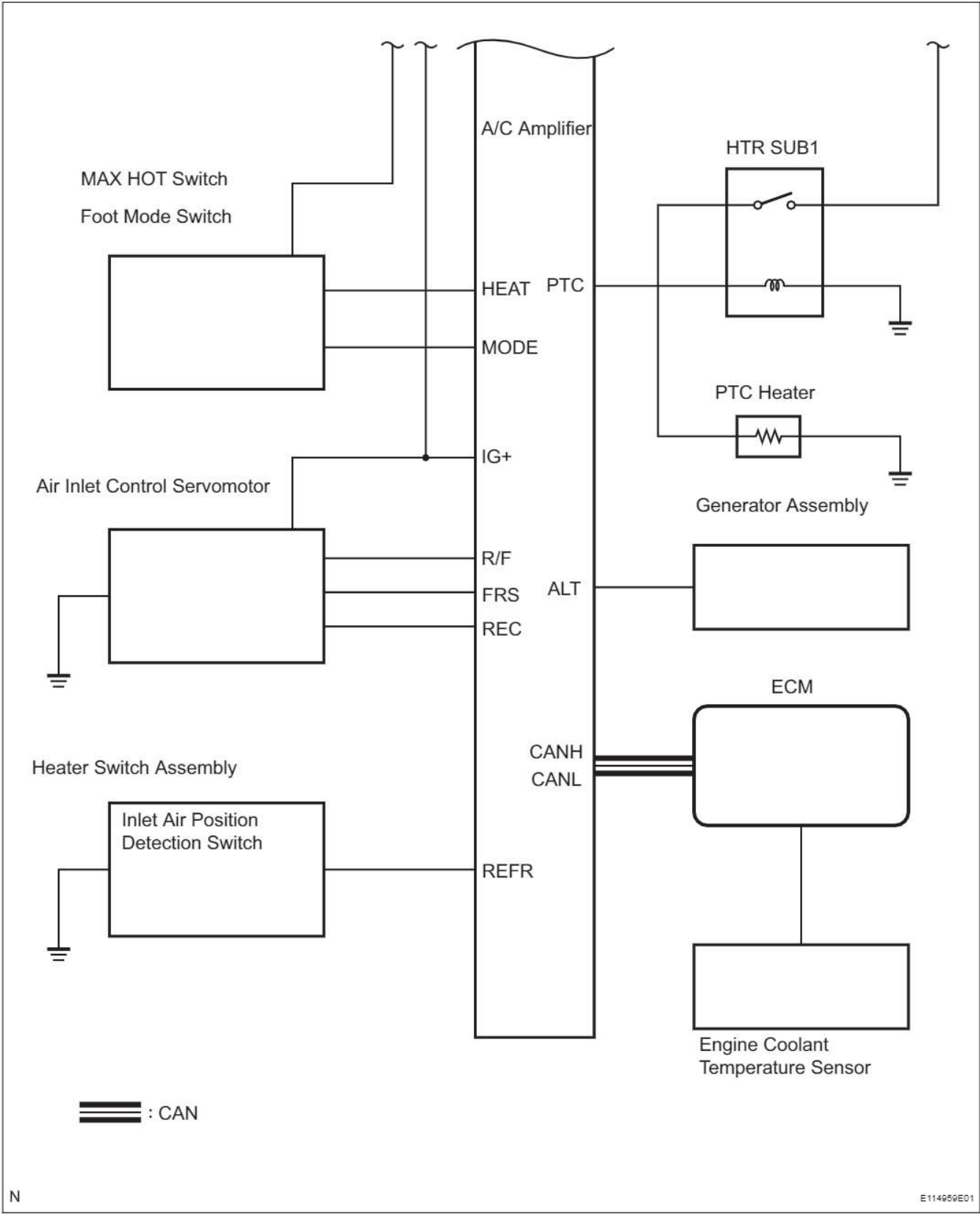
SYSTEM DIAGRAM



AC

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-7



AC

SYSTEM DESCRIPTION

1. GENERAL

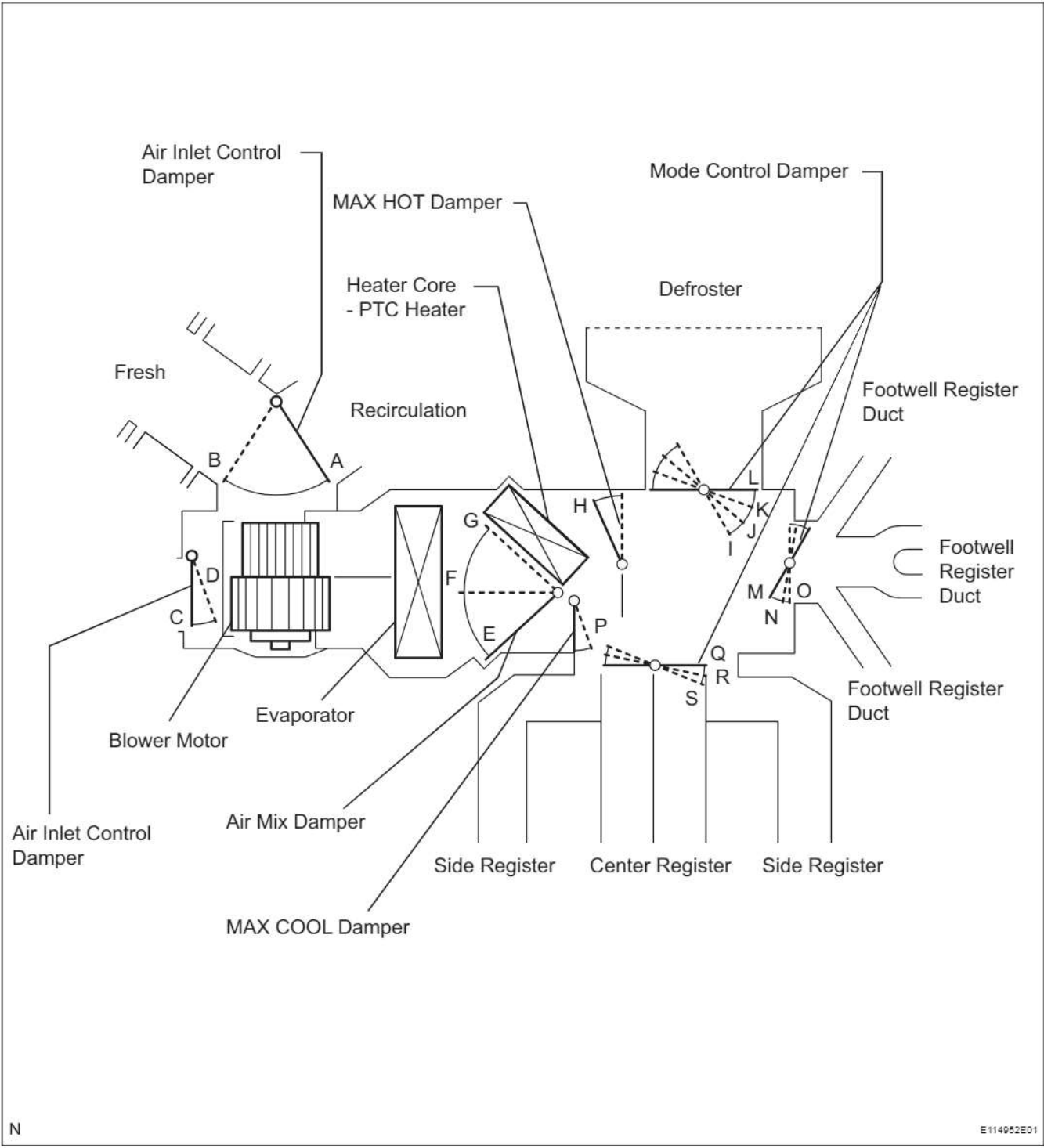
(a) Air Conditioning Unit

- The evaporator body has been coated with a type of resin that contains an antibacterial agent in order to minimize foul odor and the propagation of bacteria.
- An MS (Multi-tank, Super-slim) structure evaporator consists of the top and bottom tanks and inner fin.
- A compact, lightweight, and highly efficient straight flow (full-path flow) aluminum heater core is used.
- A 2-way flow type air conditioning unit changes the 2-way flow operation if specified conditions are met. Under 2-way flow operation, the system introduces external air and internal air simultaneously as follows: 1) warm internal air is discharged to the foot area; and 2) fresh, dry, external air is discharged to the upper area. Thus, it realizes both excellent heating performance and demisting performance.
- The PTC (Positive Temperature Coefficient) heater contains electrodes that are interposed with a PTC element, to which current is applied in order to warm the air that passes through the fin.

(b) Other Equipment

- The compressor is a continuously variable capacity type in which its capacity varies in accordance with the cooling load of the air conditioner.
- The A/C amplifier assembly is equipped with a self-diagnosis function. If there is a malfunction in the system, it stores DTC(s) in its memory.
- When the A/C amplifier assembly uses the CAN communication line, necessary data is shared with the ECM.

2. MODE POSITION AND DAMPER OPERATION

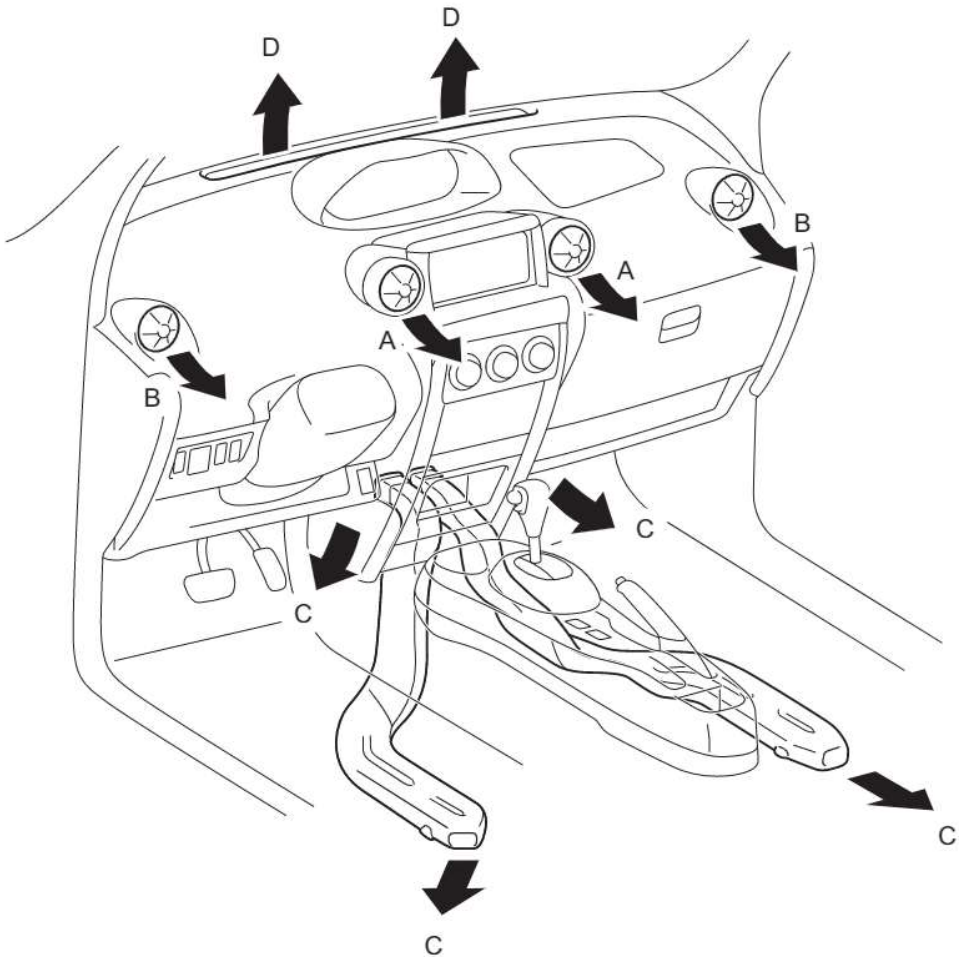


Control Damper	Control Position	Damper Position	Operation
Air Inlet Control Damper	FRESH	A, C	Brings in fresh air
	FRESH (During 2-way flow control)	A, D	Brings in fresh air and recirculates internal air
	RECIRCULATION	B, D	Recirculates internal air
Air Mix Control Damper	HOT TO COOL	E, F, G	Varies mixture ratio of fresh air and recirculation air in order to regulate temperature continuously from HOT to COLD

AC-10**AIR CONDITIONING – AIR CONDITIONING SYSTEM**

Control Damper	Control Position	Damper Position	Operation
Mode Control Damper	FACE 	L, O, S	Air blows out of center register and side register
	BI-LEVEL 	L, N, R	Air blows out of center register, side register and footwell register duct
	FOOT 	K, M, Q	Air blows out of footwell register duct, and side register. In addition, air blows out slightly from center defroster.
	FOOT/DEF 	J, N, Q	Defrosts windshield through center defroster and side register, while air is also blown out from footwell register duct
	DEF 	I, O, Q	Defrosts windshield through center defroster and side register
MAX COOL Damper	MAX COOL	P	Operates during MAX COOL to improve maximum cooling performance
MAX HOT Damper	MAX HOT	H	Operates during MAX HOT to improve maximum heating performance

3. AIR OUTLETS AND AIRFLOW VOLUME



P

E114951E01

Air Outlet Mode		A	B	C	D
		Center Face	Side Face	Foot	Defroster
FACE		☐	☐	-	-
BI-LEVEL		☐	☐	☐	-
FOOT		MAX COOL only ☐	☐	☐	☐

AC

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AIR CONDITIONING – AIR CONDITIONING SYSTEM

		A	B	C	D
Air Outlet Mode		Center Face	Side Face	Foot	Defroster
FOOT / DEF		MAX COOL only 			
DEF		MAX COOL only 		-	

HINT:
The circle size (○) indicates the proportion of air flow volume.
There are 4 sizes.

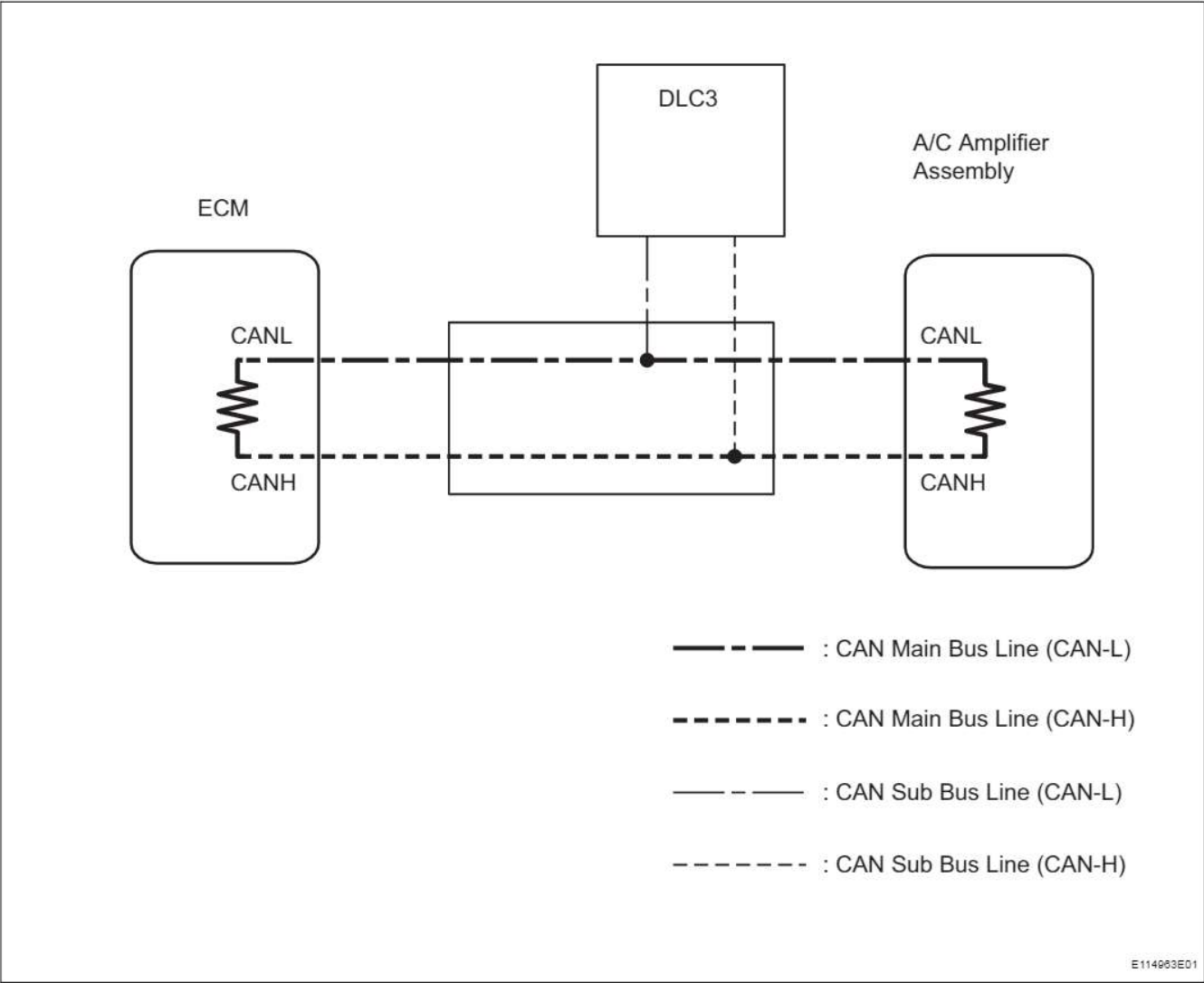
DTC	B1499	Multiplex Communication Circuit
-----	-------	---------------------------------

DESCRIPTION

The A/C amplifier assembly communicates data with the ECM through the CAN communication system.

DTC No.	DTC Detection Condition	Trouble Area
B1499	Communication stop between ECM and A/C amplifier assembly	• A/C amplifier assembly • ECM • CAN communication line

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK INTELLIGENT TESTER VIA CAN VIM
---	--------------------------------------

- (a) Connect the intelligent tester to the DLC3 with the ignition switch turned OFF.
- (b) Turn the ignition switch ON and turn the intelligent tester on.

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AIR CONDITIONING – AIR CONDITIONING SYSTEM

(c) Select "BUS CHECK".

Display	Proceed to
ENGINE is not indicated on the tester display (A/C AMPLIFIER is indicated)	A
A/C AMPLIFIER is not indicated on the tester display (ENGINE is indicated)	B
Neither ENGINE nor A/C AMPLIFIER are indicated on the tester display	C

B

GO TO A/C AMPLIFIER COMMUNICATION STOP MODE (CAN COMMUNICATION SYSTEM)

C

GO TO CAN COMMUNICATION SYSTEM

A

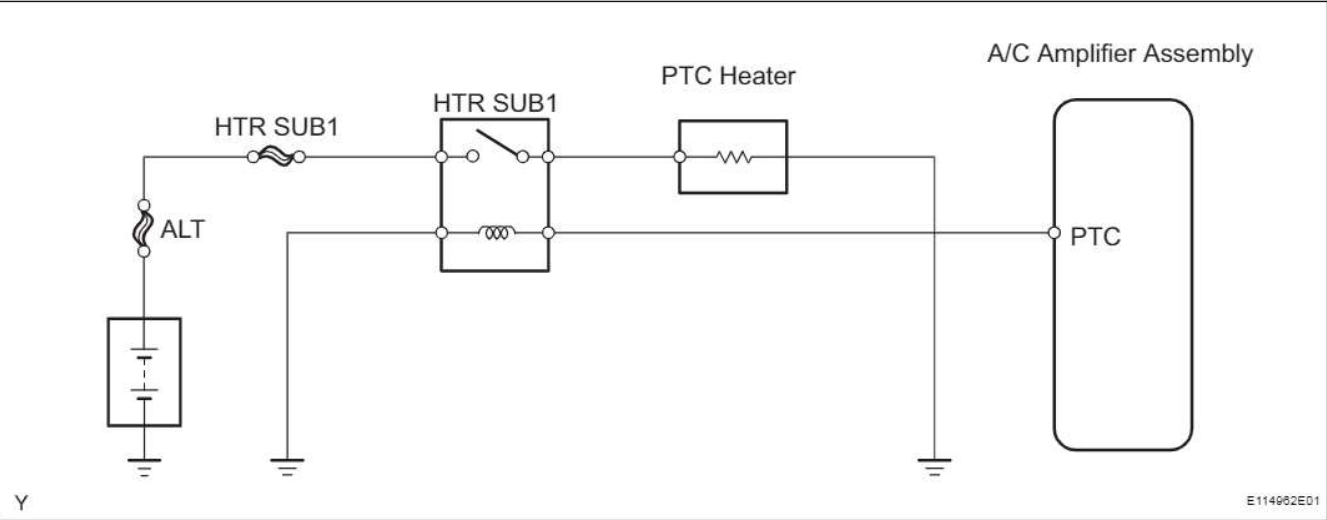
GO TO ECM COMMUNICATION STOP MODE (CAN COMMUNICATION SYSTEM)

PTC Heater Circuit

DESCRIPTION

The PTC relay turns on when it receives a signal from the A/C amplifier. As a result, power is supplied to the PTC heater installed on the heater radiator unit sub-assembly.

WIRING DIAGRAM



INSPECTION PROCEDURE

1

INSPECT FUSE (HTR SUB1)

- (a) Remove the HTR SUB1 H-fuse from the engine room relay block.
- (b) Measure the resistance of the fuse.
Standard resistance:
Below 1 Ω

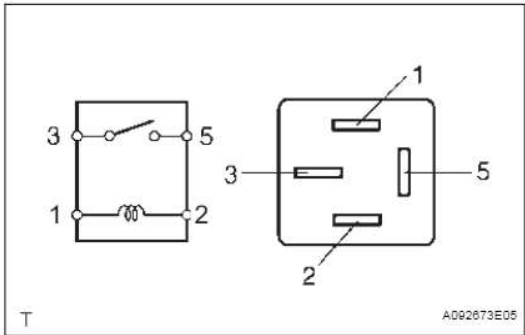
NG

REPLACE FUSE

OK

2

INSPECT PTC HEATER RELAY (Marking: HTR SUB1)



- (a) Remove the PTC heater relay from the engine room relay block.
- (b) Measure the resistance of the relay.
Standard resistance

Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

NG

REPLACE PTC HEATER RELAY

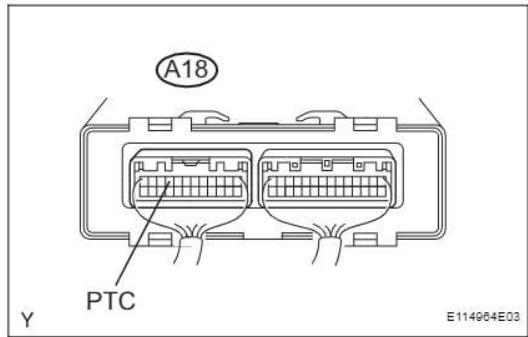
AC-40

AIR CONDITIONING – AIR CONDITIONING SYSTEM

OK

3

CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (PTC VOLTAGE)



- (a) Remove the A/C amplifier assembly but do not disconnect its connector.
 - (b) Turn the ignition switch ON.
 - (c) While the PTC operating conditions are met (engine rpm is at idle rpm or more, engine coolant temperature is 70°C (158°F) or less, air mix control knob setting is MAX HOT), turn the blower switch to the Lo setting.
 - (d) Measure the voltage of the connector.
- Standard voltage**

Tester Connection	Specified Condition
A18-9 (PTC) - Body ground	Below 1 V

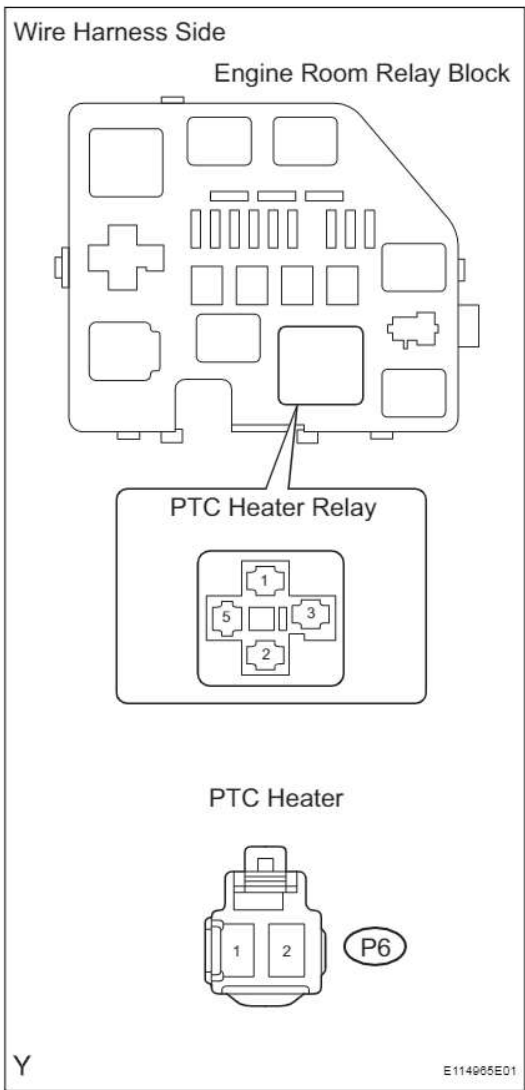
NG

Go to step 6

OK

4

CHECK WIRE HARNESS (PTC HEATER RELAY - PTC HEATER AND BATTERY)



- (a) Remove the PTC heater relay from the engine room relay block.
- (b) Disconnect the P6 heater connector.
- (c) Measure the voltage of the wire harness side connector.
- Standard voltage**

Tester Connection	Specified Condition
PTC heater relay terminal 3 - Body ground	10 to 14 V

- (d) Measure the resistance of the wire harness side connector.
- Standard resistance**

Tester Connection	Specified Condition
PTC heater relay terminal 5 - P6-1	Below 1 Ω

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

5

CHECK PTC HEATER

- (a) After replacing the PTC heater with a normal one, check that the PTC heater function operates normally.

OK:

PTC heater function operates normally.

NG

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

OK

REPLACE HEATER RADIATOR UNIT SUB-ASSEMBLY

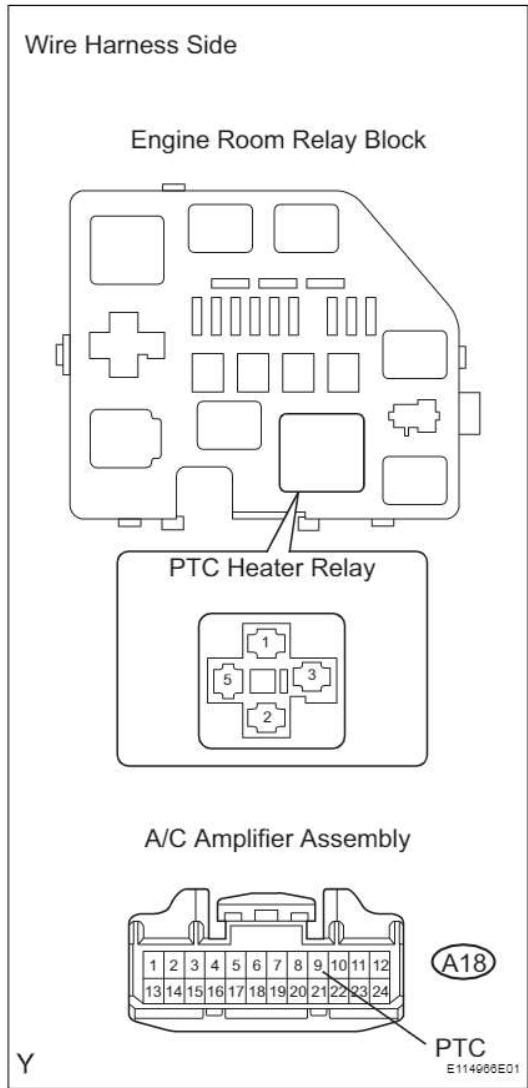
AC

AC-42

AIR CONDITIONING – AIR CONDITIONING SYSTEM

6

CHECK WIRE HARNESS (PTC HEATER RELAY - AMPLIFIER AND BODY GROUND)



- (a) Remove the PTC heater relay from the engine room relay block.
- (b) Disconnect the A18 amplifier connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
PTC heater relay terminal 2 - A18-9 (PTC)	Below 1 Ω
PTC heater relay terminal 1 - Body ground	Below 1 Ω

NG REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

7

CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY

- (a) After replacing the A/C amplifier assembly with a normal one, check that the PTC heater function operates normally.

OK:

PTC heater function operates normally.

NG PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

OK

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

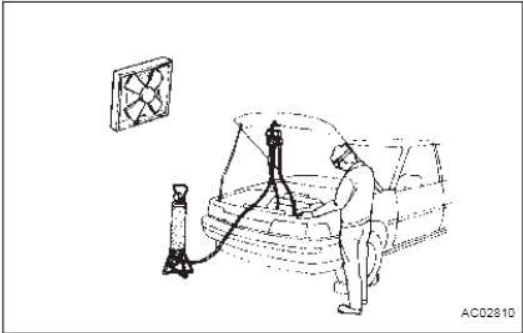
AC

AIR CONDITIONING SYSTEM

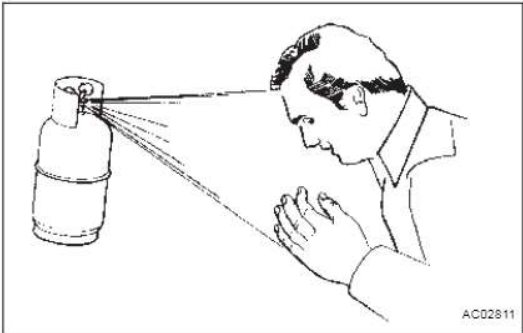
PRECAUTION

NOTICE:
When disconnecting the cable from the negative (-) battery terminal, initialize the following system(s) after the cable is reconnected.

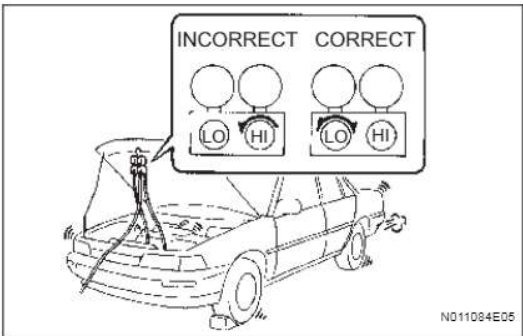
System Name	See procedure
Sliding Roof System	IN-5



1. DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA OR NEAR AN OPEN FLAME
2. ALWAYS WEAR PROTECTIVE GLASSES



3. AVOID SKIN OR EYE CONTACT WITH LIQUID REFRIGERANT
If liquid refrigerant comes in contact with your eyes or skin:
 - (a) Rinse the area thoroughly with cold water.**CAUTION:**
Do not rub your eyes or skin.
 - (b) Apply clean petroleum jelly to the skin.
 - (c) Go immediately to a hospital or see a physician for professional treatment.



4. NEVER HEAT CONTAINER OR EXPOSE IT TO OPEN FLAME
5. DO NOT DROP OR STRIKE CONTAINER OF REFRIGERANT
6. DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT SYSTEM
If there is not enough refrigerant in the refrigerant system, oil lubrication will be insufficient and the compressor may burn out. Care should be taken to avoid this.
7. DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATING
Only open and close the low pressure valve. If the high pressure valve is opened, refrigerant flows in the reverse direction and causes the charging cylinder to rupture.
8. BE CAREFUL NOT TO OVERCHARGE SYSTEM WITH REFRIGERANT
Overcharged refrigerant will cause problems such as insufficient cooling, poor fuel economy, engine overheating, etc.

AC-2**AIR CONDITIONING – AIR CONDITIONING SYSTEM**

- 9. DO NOT OPERATE ENGINE AND COMPRESSOR WITHOUT REFRIGERANT IN REFRIGERANT SYSTEM**

NOTICE:

This may damage the inside of the compressor because the compressor parts move regardless of whether the A/C system is turned on or off.

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AIR CONDITIONING – REFRIGERANT

REPLACEMENT**1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM**

- (a) Start up the engine.
- (b) Turn the A/C switch ON.
- (c) Operate the cooler compressor with the engine running at approximately 1,000 rpm for 5 to 6 minutes to circulate the refrigerant and collect the compressor oil remaining in each component into the cooler compressor.
- (d) Stop the engine.
- (e) Using SST, discharge the refrigerant gas.

SST 07110-58060 (07117-58060, 07117-58070, 07117-58080, 07117-58090, 07117-78050, 07117-88060, 07117-88070, 07117-88080)

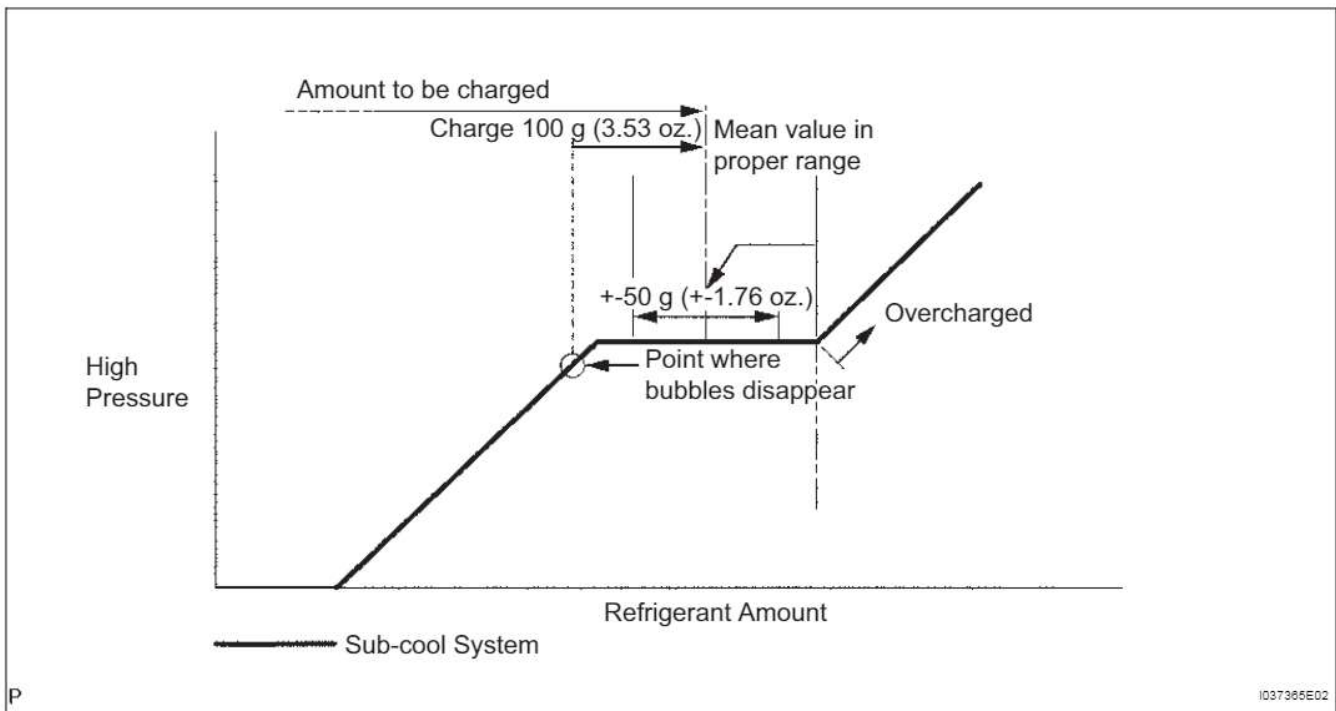
2. CHARGE REFRIGERANT

- (a) Perform vacuum purging using a vacuum pump.
- (b) Using SST, charge refrigerant HFC-134a (R134a).

Standard amount:

460 $\pm$ 30 g (16.2 $\pm$ 1.1 oz.)

SST 07110-58060 (07117-58060, 07117-58070, 07117-58080, 07117-58090, 07117-78050, 07117-88060, 07117-88070, 07117-88080)

**NOTICE:**

- Do not operate the cooler compressor before charging refrigerant as the cooler compressor will not work properly without any refrigerant, and will overheat.

AIR CONDITIONING – REFRIGERANT

AC-47

- Approximately 100 g (3.53 oz.) of refrigerant may need to be charged after bubbles disappear. The refrigerant amount should be checked by measuring its quantity, not with the sight glass.

3. WARM UP ENGINE

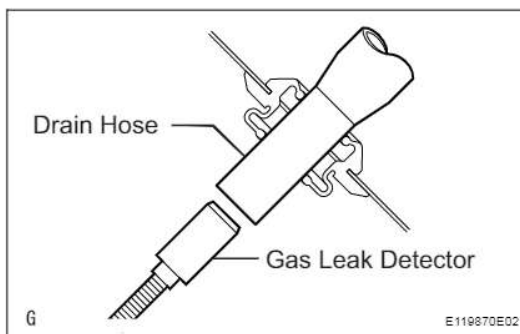
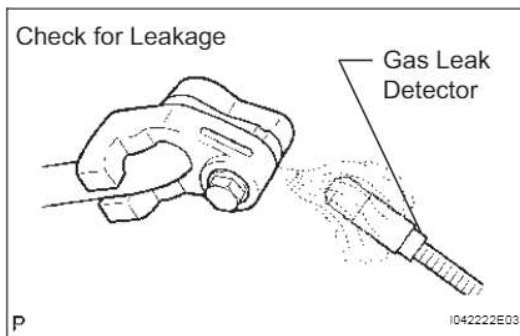
- (a) Warm up the engine at less than 1,850 rpm for 2 minutes or more after charging the refrigerant.

NOTICE:

After removing and installing the cooler refrigerant lines (with the compressor), be sure to warm up the compressor when turning the A/C switch ON. This is done to prevent damage to the compressor.

4. CHECK FOR LEAKAGE OF REFRIGERANT

- (a) After recharging the refrigerant gas, prepare the vehicle for a refrigerant gas leakage check by making sure the following conditions are met.
- The ignition switch is OFF.
 - The vehicle is in a place with good air ventilation and without any volatile gases, such as evaporated gasoline or exhaust gas. The detector is very sensitive to volatile gases. If volatile gases are unavoidable, the vehicle must be lifted up.
 - Some refrigerant is remaining in the refrigerant system.
 - The compressor is OFF and its pressure is approximately 392 to 588 kPa (4 to 6 kgf/cm²).
- (b) Check for refrigerant gas leakage from the refrigerant line.
- (1) After the blower motor stops, wait at least 15 minutes.
 - (2) Using a gas leak detector, check that gas is not leaking from the refrigerant line.
If leakage is found, tighten parts or replace damaged parts as necessary to stop the leak.



- (c) Check for refrigerant gas leakage from the drain hose.
- (1) Hold the gas leak detector so that the sensor is under the drain hose, as shown in the illustration.
 - (2) Check that gas is not leaking from the drain hose.
If leakage is found, tighten parts or replace damaged parts as necessary to stop the leak.

AC

AC-48**AIR CONDITIONING – REFRIGERANT**

- (d) Check for refrigerant gas leakage from the cooling unit.
 - (1) Remove the blower motor control from the unit. Insert the gas leak detector's sensor into the unit.
 - (2) Check that gas is not leaking from the unit. If leakage is found, tighten parts or replace damaged parts as necessary to stop the leak.
- (e) Check for refrigerant gas leakage from the pressure switch.
 - (1) Disconnect the pressure switch connector and wait approximately 20 minutes.
 - (2) Using a gas leak detector, check that gas is not leaking from the pressure switch. If leakage is found, tighten parts or replace damaged parts as necessary to stop the leak.
- (f) Repeat all steps above 2 to 3 times.

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AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

3. DISCONNECT SUCTION HOSE SUB-ASSEMBLY

(a) Install SST to the piping clamp.

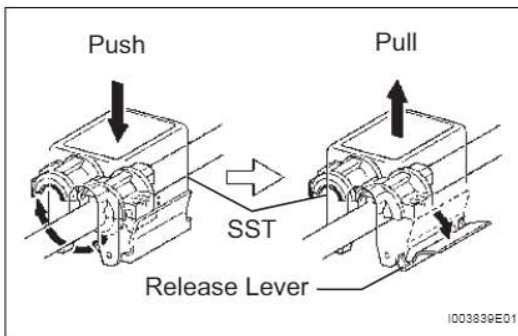
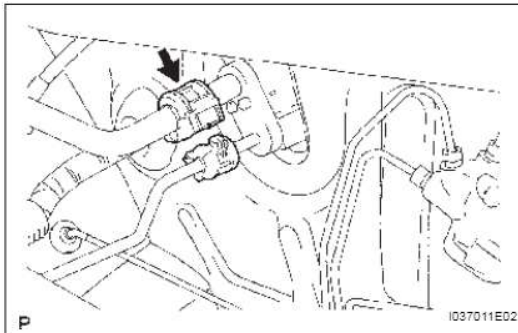
SST 09870-00015

NOTICE:

Be careful not to deform the hose when pushing down on SST.

HINT:

Confirm the direction of the piping clamp claw and SST by referring to the illustration shown on the caution label.

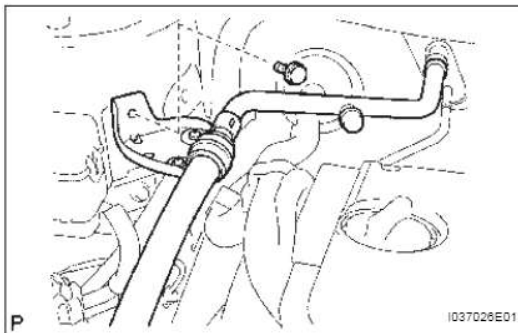


(b) Push down on SST and detach the clamp lock.

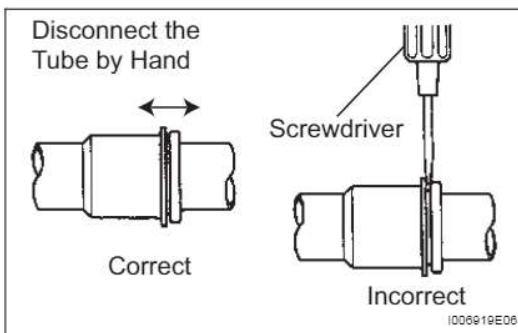
NOTICE:

Be careful not to deform the hose when pushing down on SST.

(c) Pull SST slightly, push the release lever, and then remove the piping clamp with SST.



(d) Remove the bolt and disconnect the bracket.



(e) Disconnect the suction hose.

NOTICE:

- Do not use tools, such as a screwdriver, to remove the tube.
- Cap the open fittings immediately to keep moisture or dirt out of the system.

(f) Remove the 2 O-rings from the suction hose.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent moisture and foreign matter from entering.

4. DISCONNECT LIQUID TUBE SUB-ASSEMBLY**HINT:**

Use the same procedures described for the suction hose.

5. REMOVE INSTRUMENT PANEL SUB-ASSEMBLY

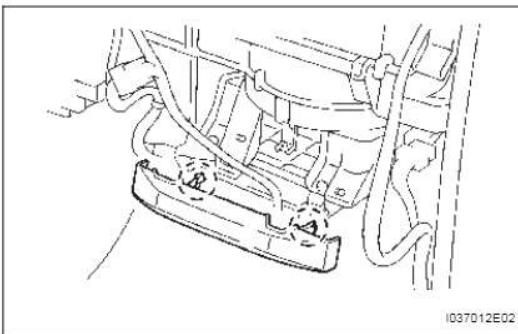
(a) Remove the instrument panel (see page [IP-4](#)).

6. REMOVE LOWER INSTRUMENT PANEL ASSEMBLY

(a) Remove the instrument panel (see page [IP-17](#)).

7. REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY**8. REMOVE ECM COVER**

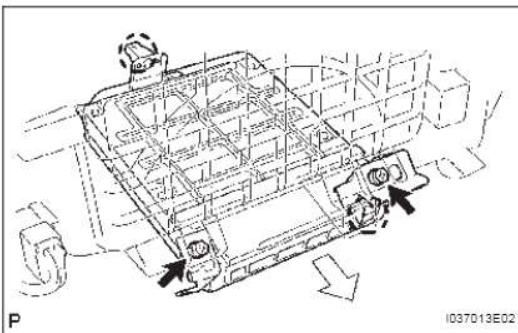
(a) Detach the 2 claws and remove the cover.

**9. REMOVE ECM**

(a) Disconnect the connectors.

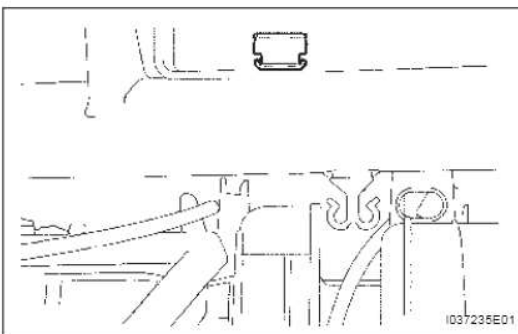
(b) Remove the 2 screws.

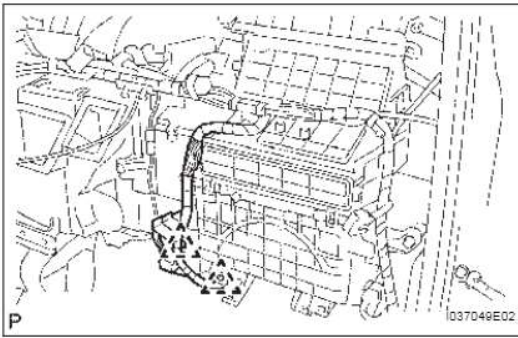
(c) Detach the 2 claws and remove the ECM.

**10. REMOVE AIR CONDITIONING BLOWER ASSEMBLY**

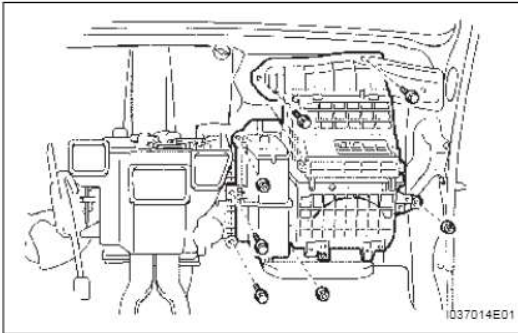
(a) Remove the clamp.

(b) Disconnect the connectors.

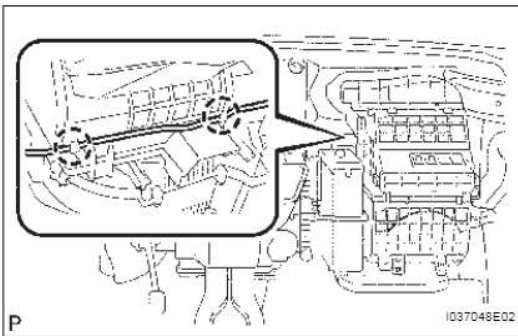


AC-54**AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**

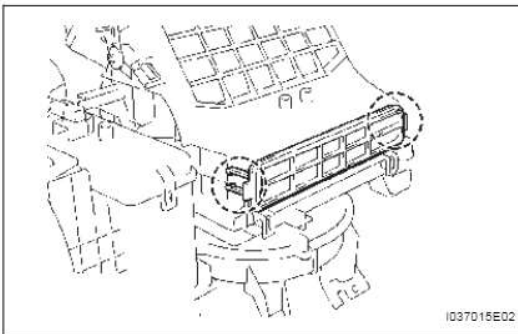
- (c) Detach the 2 clamps and disconnect the wire harness.



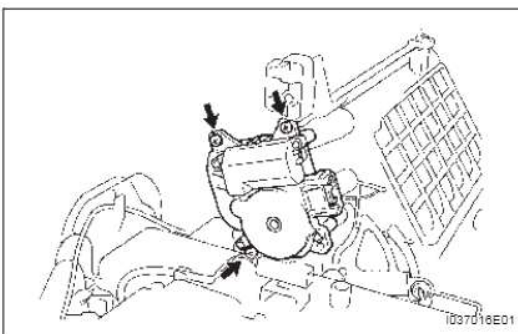
- (d) Remove the 4 bolts and 3 nuts. Then remove the A/C blower.



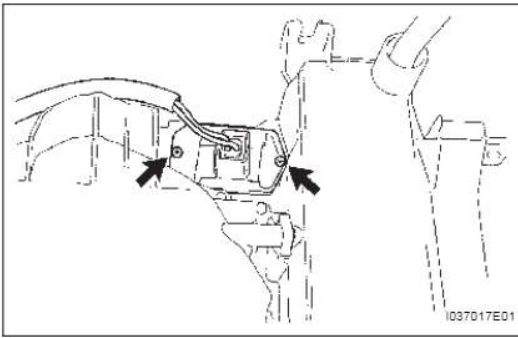
- (e) Disconnect the 2 clamps and remove the wire harness.

**DISASSEMBLY****1. REMOVE AIR FILTER CASE**

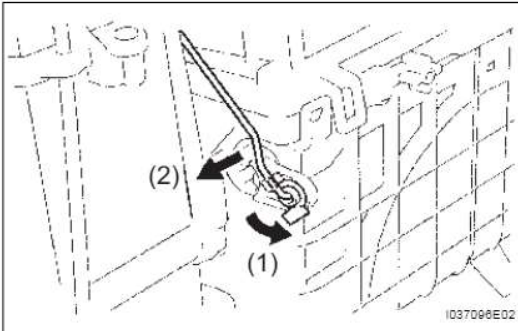
- (a) Detach the 2 claws and remove the air filter case.

**2. REMOVE DAMPER SERVO SUB-ASSEMBLY**

- (a) Remove the 3 screws and damper servo.

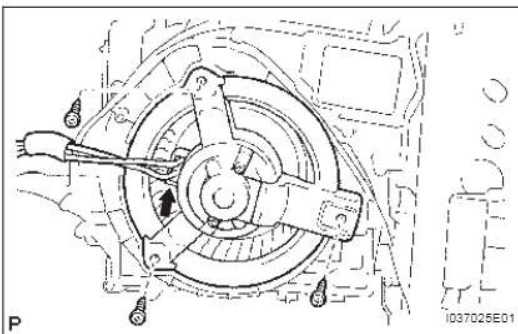
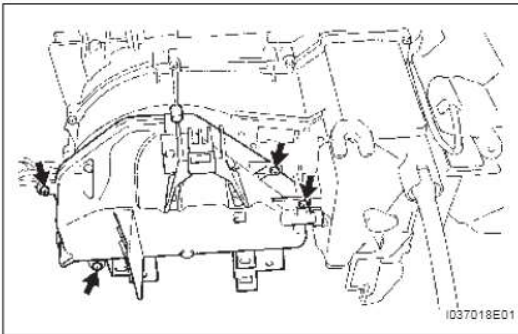
AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**AC-55****3. REMOVE BLOWER RESISTOR**

- (a) Disconnect the connector.
- (b) Remove the 2 screws and blower resistor.

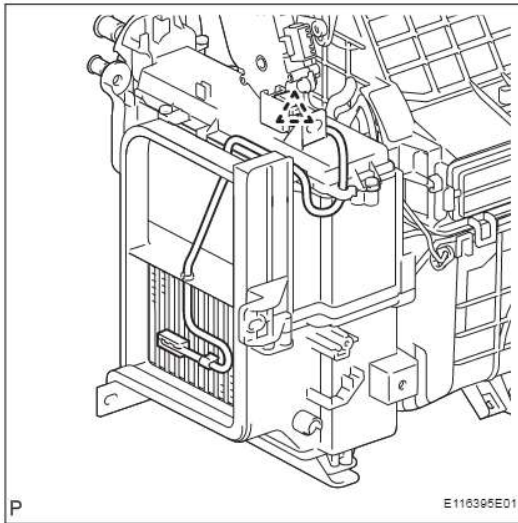
**4. REMOVE BLOWER MOTOR COVER**

- (a) Disconnect the rod in the order shown in the illustration.

- (b) Remove the 4 screws and blower motor cover.

**5. REMOVE BLOWER WITH FAN MOTOR SUB-ASSEMBLY**

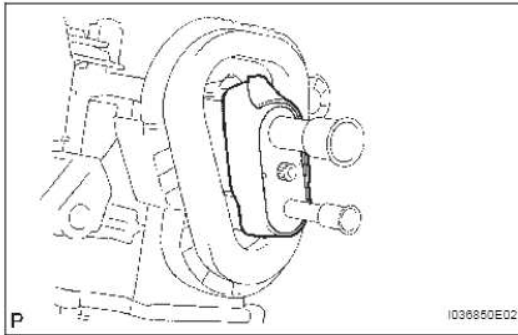
- (a) Disconnect the connector.
- (b) Remove the 3 screws and blower motor.

AC-56**AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT****6. REMOVE COOLER THERMISTOR**

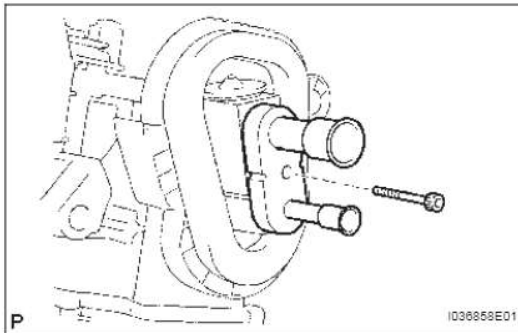
- (a) Detach the clamp and remove the cooler thermistor.

NOTICE:

Do not damage the packing when removing the thermistor.

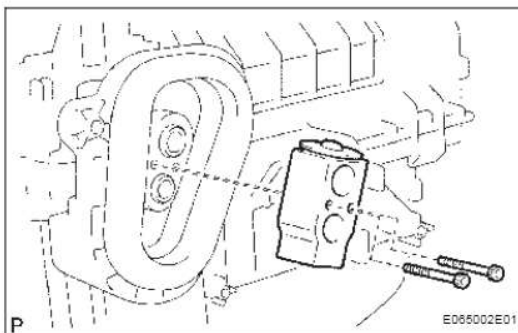
**7. REMOVE AIR CONDITIONING TUBE ASSEMBLY**

- (a) Remove the packing.

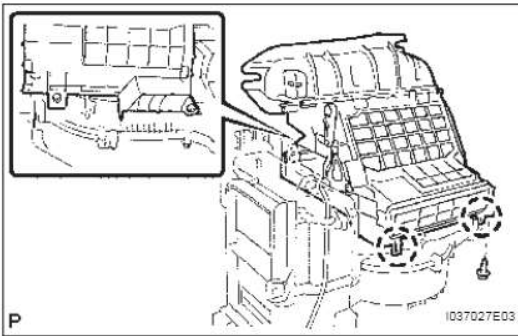


- (b) Using a 5 mm hexagon wrench, remove the bolt and A/C tube.

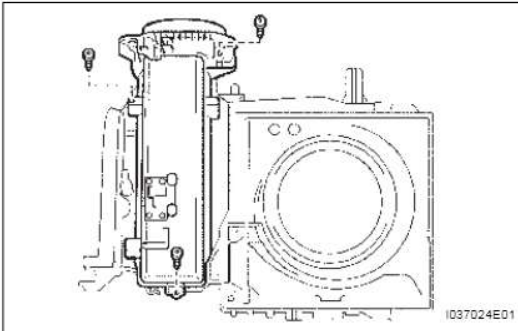
- (c) Remove the 2 O-rings from the A/C tube.

**8. REMOVE COOLER EXPANSION VALVE**

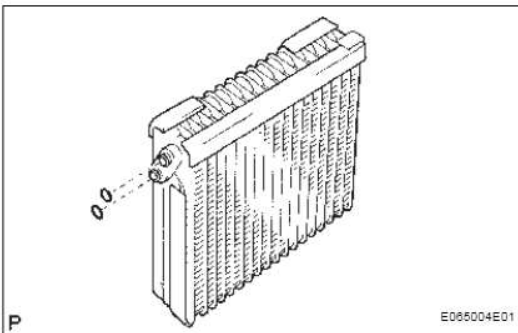
- (a) Using a 4 mm hexagon wrench, remove the 2 bolts and cooler expansion valve.

AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**AC-57****9. REMOVE COOLER EVAPORATOR SUB-ASSEMBLY**

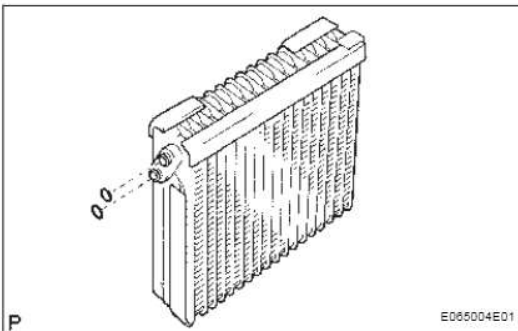
- (a) Remove the screw.
- (b) Detach the 2 claws and remove the air duct.



- (c) Remove the 3 screws and evaporator cover.
- (d) Remove the cooler evaporator.



- (e) Remove the 2 O-rings from the cooler evaporator.

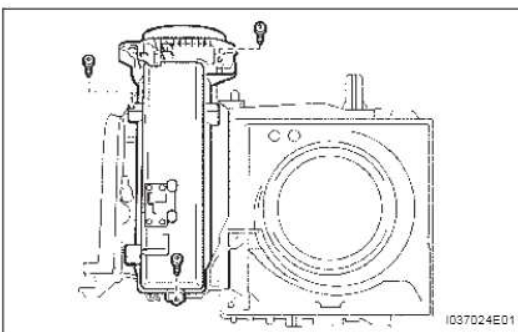
**REASSEMBLY****1. INSTALL COOLER EVAPORATOR SUB-ASSEMBLY**

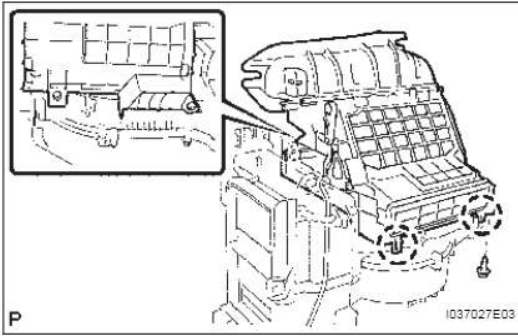
- (a) Sufficiently apply compressor oil to the contact surfaces of 2 new O-rings and install them in the cooler evaporator.

Compressor oil:**ND-OIL 8 or equivalent**

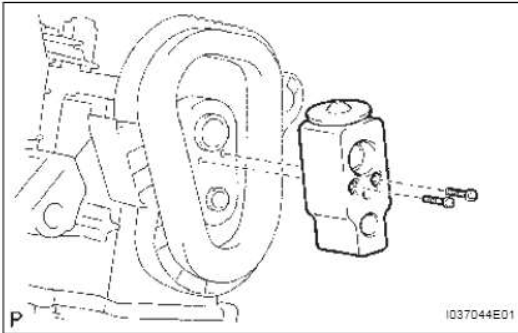
- (b) Install the cooler evaporator on the blower unit.

- (c) Install the evaporator cover with the 3 screws.

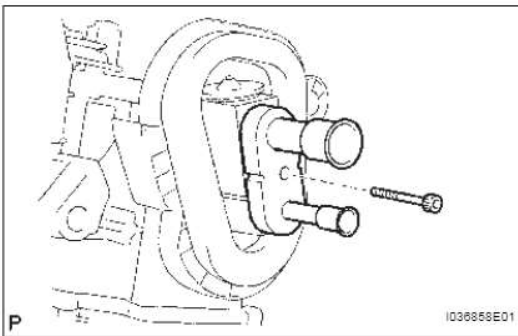
**AC**

AC-58**AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**

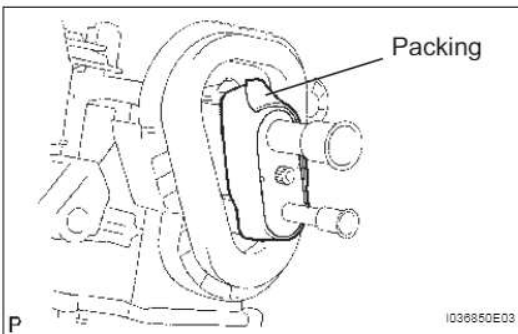
- (d) Attach the 2 claws to install the air duct.
- (e) Install the screw.

**2. INSTALL COOLER EXPANSION VALVE**

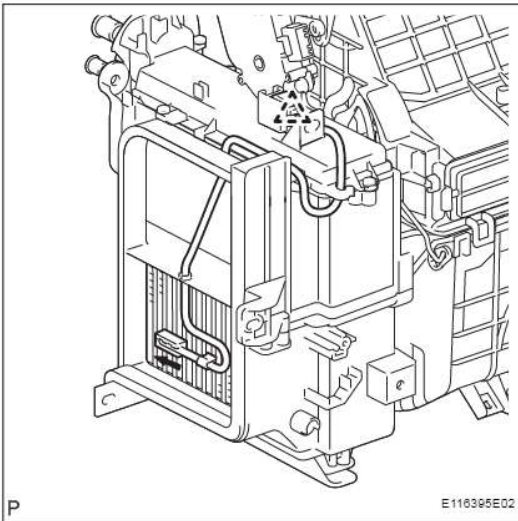
- (a) Using a 4 mm hexagon wrench, install the cooler expansion valve with the 2 bolts.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

**3. INSTALL AIR CONDITIONING TUBE ASSEMBLY**

- (a) Sufficiently apply compressor oil to the contact surfaces of 2 new O-rings and install them in the A/C tube.
Compressor oil:
ND-OIL 8 or equivalent
- (b) Using a 5 mm hexagon wrench, install the A/C tube with the bolt.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)



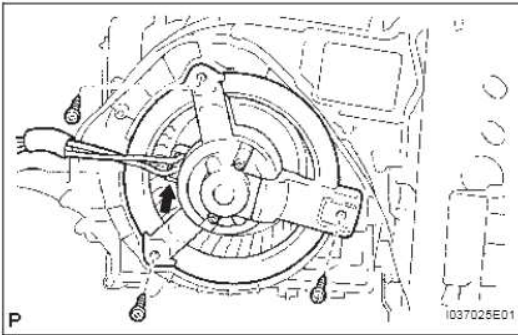
- (c) Install the packing.

AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**AC-59****4. INSTALL COOLER THERMISTOR**

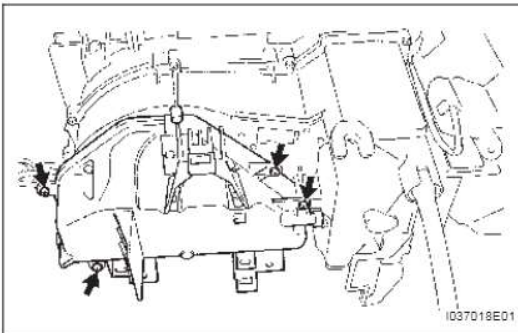
- (a) Install the cooler thermistor and attach the clamp.

NOTICE:

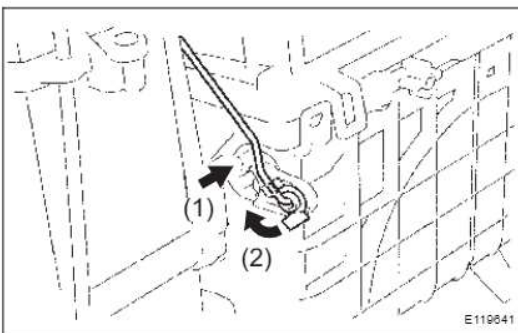
- When installing the thermistor, move it one fin horizontally toward the front of the vehicle from its former position. Do not install it to its former position, as that fin may be bent and the thermistor may not function properly.
- Do not install the thermistor to a position that is horizontally toward the rear of the vehicle.

**5. INSTALL BLOWER WITH FAN MOTOR SUB-ASSEMBLY**

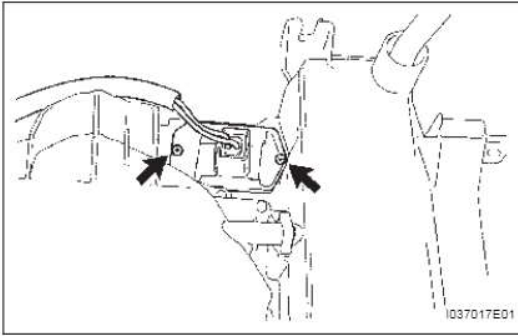
- (a) Install the blower motor with the 3 screws.
(b) Connect the connector.

**6. INSTALL BLOWER MOTOR COVER**

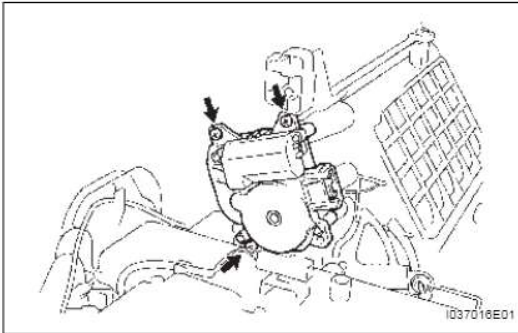
- (a) Install the blower motor cover with the holding spring and 4 screws.



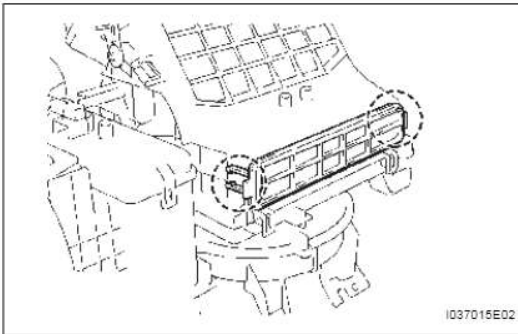
- (b) Connect the rod in the order shown in the illustration.

AC-60**AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT****7. INSTALL BLOWER RESISTOR**

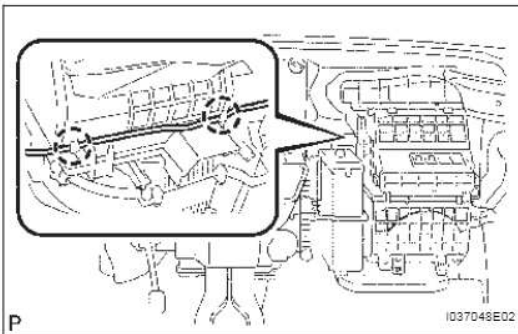
- (a) Install the blower resistor with the 2 screws.
- (b) Connect the connector.

**8. INSTALL DAMPER SERVO SUB-ASSEMBLY**

- (a) Install the damper servo with the 3 screws.

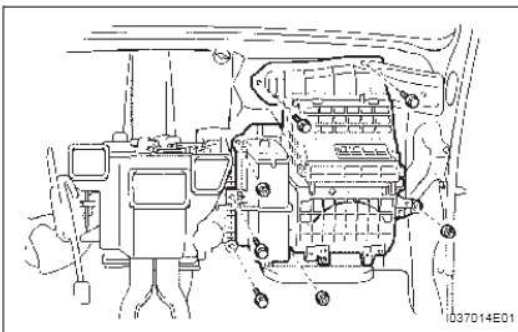
**9. INSTALL AIR FILTER CASE**

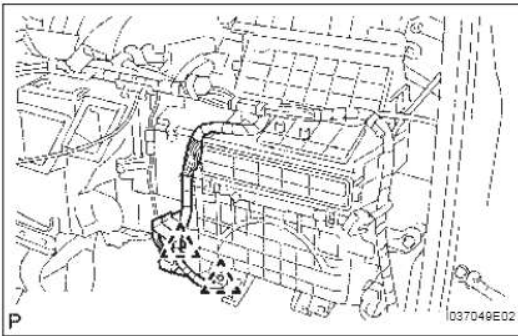
- (a) Attach the 2 claws to install the air filter case.

**INSTALLATION****1. INSTALL AIR CONDITIONING BLOWER ASSEMBLY**

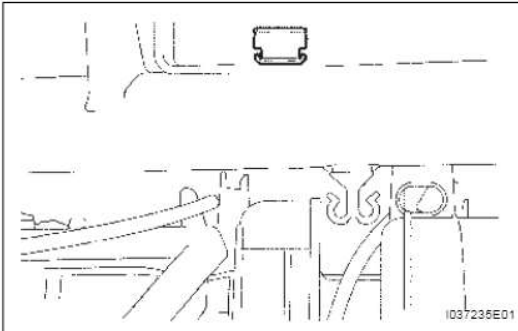
- (a) Install the wire harness and connect the 2 clamps.

- (b) Install the A/C blower with the 4 bolts and 3 nuts.

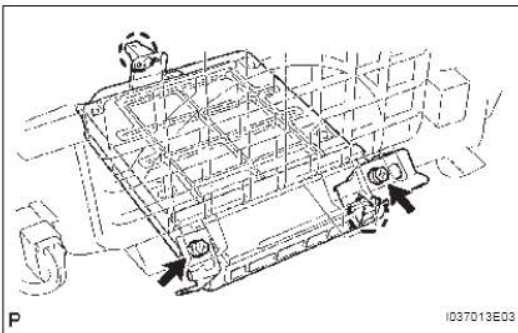
**AC**

AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT**AC-61**

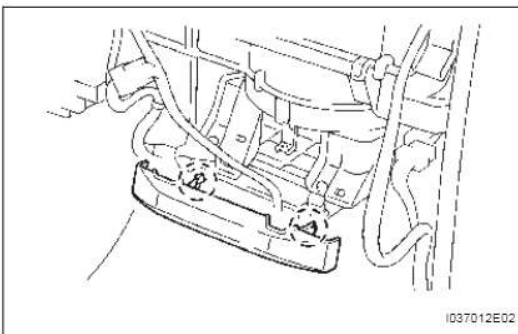
- (c) Attach the 2 clamps to connect the wire harness.
- (d) Connect the connectors.

**2. INSTALL ECM**

- (e) Install the clamp.
- (a) Attach the 2 claws to install the ECM.



- (b) Install the 2 screws.
- (c) Connect the connectors.

**3. INSTALL ECM COVER**

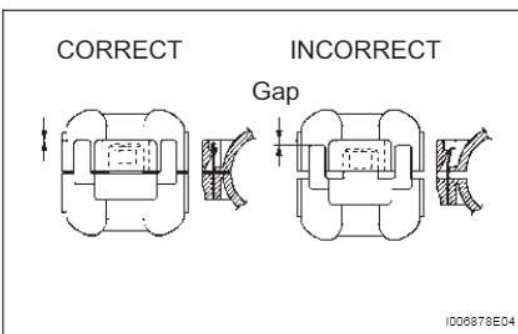
- (a) Attach the 2 claws to install the cover.

4. INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY**5. INSTALL LOWER INSTRUMENT PANEL ASSEMBLY**

- (a) Install the instrument panel (see page [IP-22](#)).

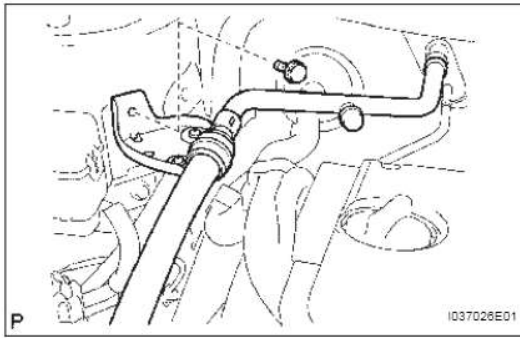
6. INSTALL INSTRUMENT PANEL SUB-ASSEMBLY

- (a) Install the instrument panel (see page [IP-10](#)).

**7. CONNECT LIQUID TUBE SUB-ASSEMBLY**

- (a) Remove the vinyl tape attached to the liquid tube and condenser.
 - (1) Lubricate 2 new O-rings with compressor oil and install them to the liquid tube.
Compressor oil:
ND-OIL 8 or equivalent
 - (2) Connect the liquid tube and piping clamp.

AC

AC-62**AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT****8. CONNECT SUCTION HOSE SUB-ASSEMBLY**

- (a) Remove the vinyl tape attached to the hose and condenser.

- (1) Lubricate 2 new O-rings with compressor oil and install them to the hose.

Compressor oil:

ND-OIL 8 or equivalent

- (b) Connect the suction hose and piping clamp.

- (1) Connect the bracket with the bolt.

Torque: 9.8 N*m (100 kgf*cm, 7 ft.*lbf)

9. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**10. PERFORM INITIALIZATION**

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

11. CHECK SRS WARNING LIGHT

- (a) Check the SRS warning light (see page [RS-28](#)).

12. CHARGE REFRIGERANT (See page [AC-46](#))**13. WARM UP ENGINE (See page [AC-47](#))****14. CHECK FOR LEAKAGE OF REFRIGERANT (See page [AC-47](#))**

REMOVAL

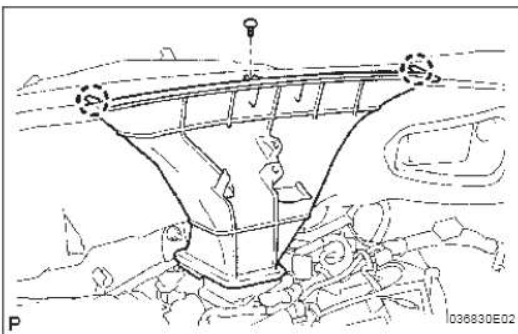
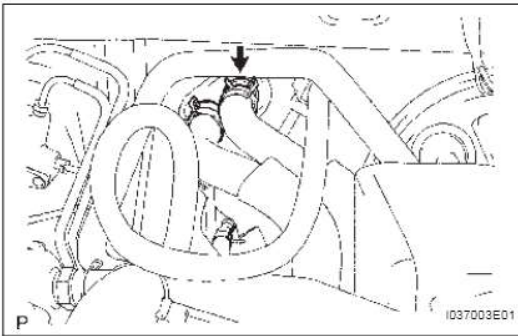
1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

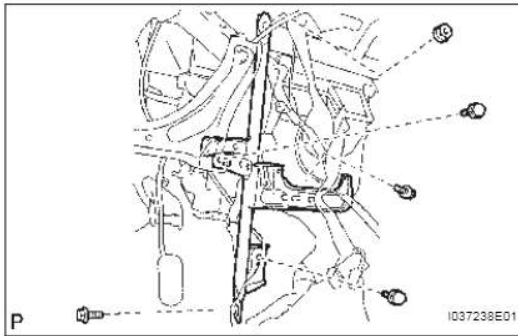
CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

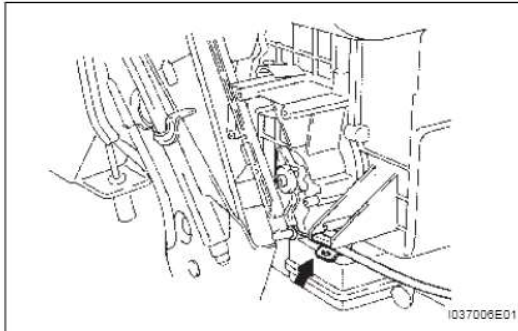
2. **DRAIN ENGINE COOLANT**
3. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM** (See page [AC-46](#))
4. **DISCONNECT SUCTION HOSE SUB-ASSEMBLY** (See page [AC-52](#))
5. **DISCONNECT LIQUID TUBE SUB-ASSEMBLY** (See page [AC-53](#))
6. **DISCONNECT HEATER WATER INLET HOSE**
 - (a) Using pliers, grip the claw of the clip and slide the clip to disconnect the heater water hose.
7. **DISCONNECT HEATER WATER OUTLET HOSE**

HINT:
Use the same procedures described for the inlet hose.
8. **REMOVE INSTRUMENT PANEL SUB-ASSEMBLY**
 - (a) Remove the instrument panel (see page [IP-4](#)).
9. **REMOVE LOWER INSTRUMENT PANEL ASSEMBLY**
 - (a) Remove the instrument panel (see page [IP-17](#)).
10. **REMOVE ECM** (See page [ES-362](#))
11. **REMOVE AIR CONDITIONING BLOWER ASSEMBLY** (See page [AC-53](#))
12. **REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY**
13. **REMOVE DEFROSTER NOZZLE ASSEMBLY**
 - (a) Remove the clip.
 - (b) Detach the 2 claws and remove the defroster nozzle.

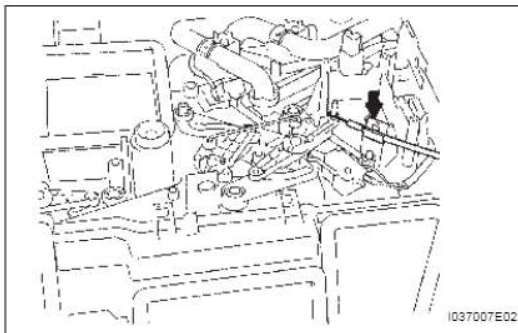


AC-72**AIR CONDITIONING – HEATER RADIATOR ASSEMBLY****14. REMOVE NO. 1 INSTRUMENT PANEL BRACE SUB-ASSEMBLY**

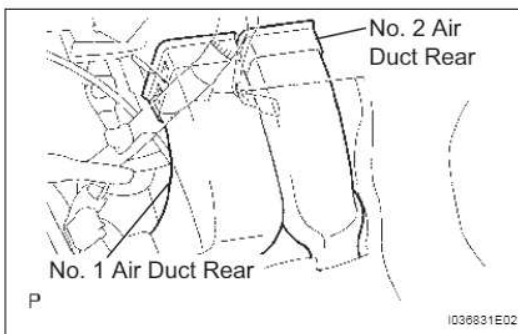
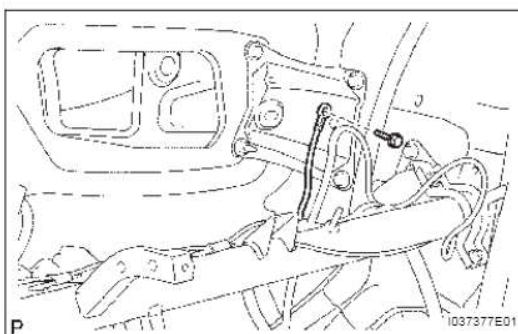
- (a) Disconnect the wire harness.
- (b) Remove the 4 bolts, nut and instrument panel brace.

**15. REMOVE DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY**

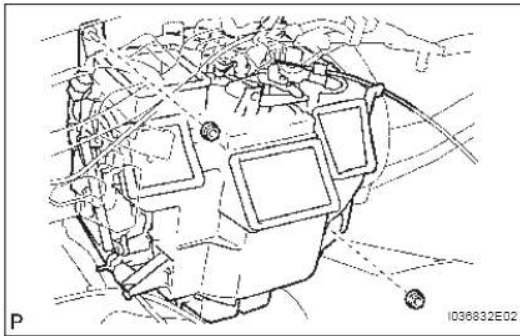
- (a) Disconnect the outer cable.
- (b) Disconnect the inner cable and remove the defroster damper control cable.

**16. REMOVE AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**

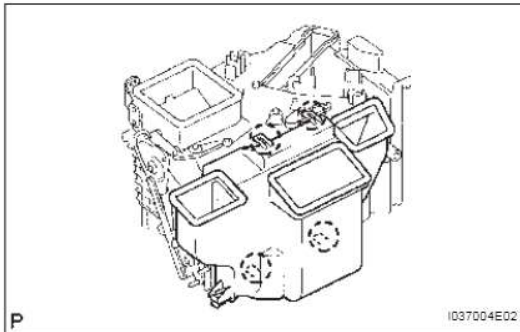
- (a) Disconnect the air outer cable.
- (b) Disconnect the inner cable and remove the air mix damper control cable.

**17. DISCONNECT NO. 2 AIR DUCT REAR****18. DISCONNECT NO. 1 AIR DUCT REAR****19. REMOVE HEATER RADIATOR ASSEMBLY**

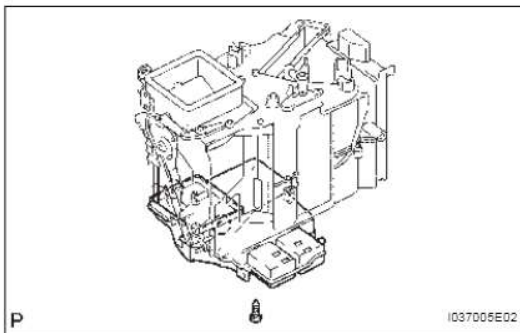
- (a) Disconnect the 3 connectors.
- (b) Remove the bolt and disconnect the ground wire from the PTC heater.

AIR CONDITIONING – HEATER RADIATOR ASSEMBLY**AC-73**

(c) Remove the 2 nuts and heater radiator.

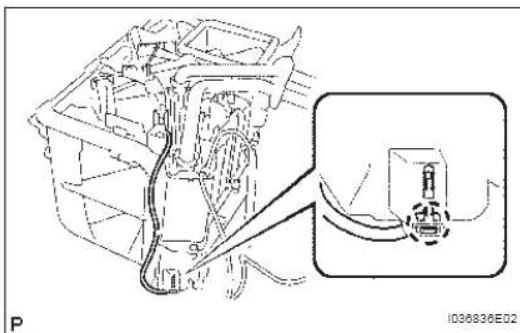
**DISASSEMBLY****1. REMOVE AIR DUCT ASSEMBLY**

(a) Detach the 4 claws and remove the air duct.

**2. REMOVE HEATER COVER**

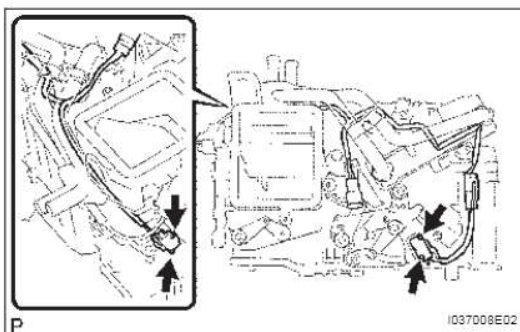
(a) Remove the screw.

(b) Detach the 2 claws and remove the heater cover.

**3. REMOVE THERMISTOR ASSEMBLY**

(a) Detach the claw and remove the clamp.

(b) Remove the thermistor.

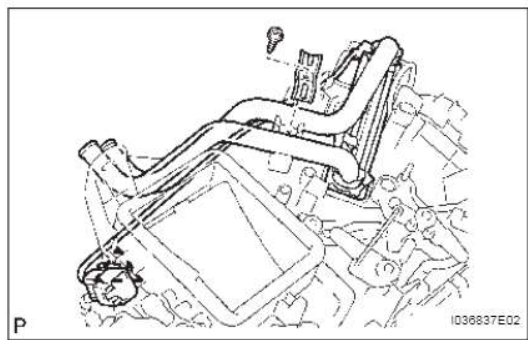
**4. REMOVE HEATER RADIATOR UNIT SUB-ASSEMBLY**

(a) Remove the 4 screws and No. 2 cooler wiring.

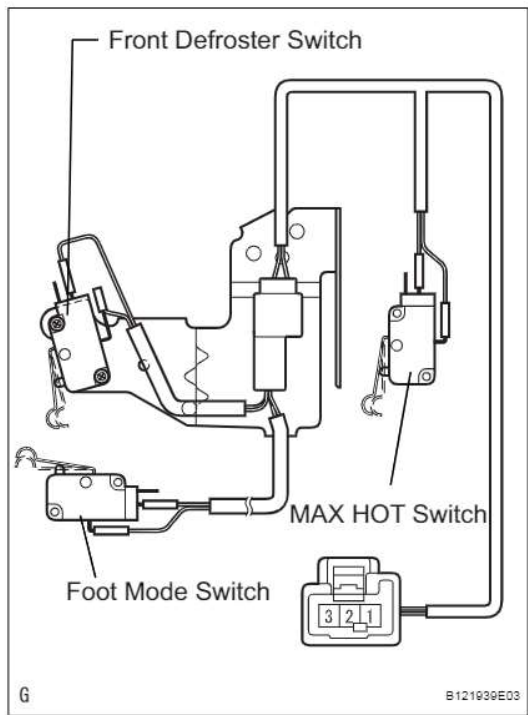
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AIR CONDITIONING – HEATER RADIATOR ASSEMBLY



- (b) Remove the screw and bracket.
- (c) Detach the clamp and disconnect the connector.
- (d) Remove the heater radiator unit.



INSPECTION

1. INSPECT NO. 2 COOLER WIRING

- (a) Measure the resistance of the switch.

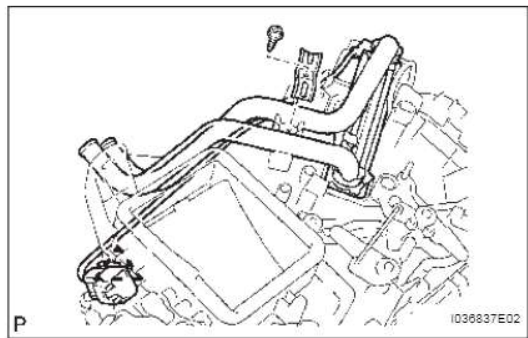
Standard resistance
MAX HOT switch

Tester Connection	Switch Condition	Specified Condition
2 - 3	ON	Below 1 Ω
2 - 3	OFF	10 kΩ or higher

Foot mode switch

Tester Connection		Switch Condition	Specified Condition
Front Defroster Switch	1 - 3	ON	Below 1 Ω
	1 - 3	OFF	10 kΩ or higher
Foot Mode Switch	1 - 3	ON	Below 1 Ω
	1 - 3	OFF	10 kΩ or higher

If the result is not as specified, replace the No. 2 cooler wiring.

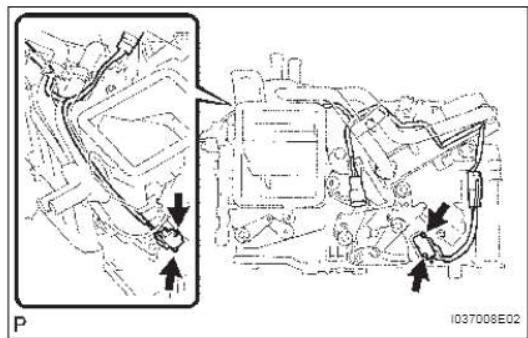


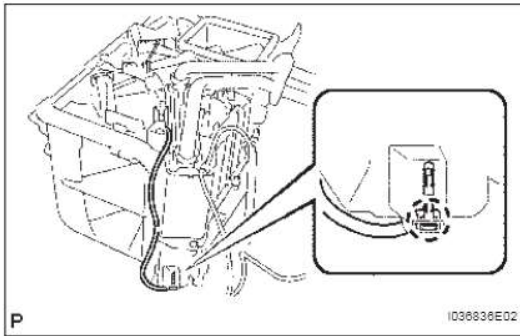
REASSEMBLY

1. INSTALL HEATER RADIATOR UNIT SUB-ASSEMBLY

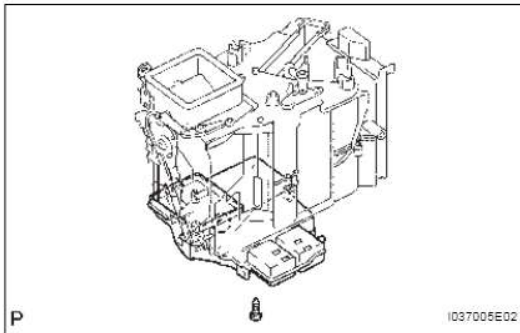
- (a) Install the heater radiator unit sub-assembly.
- (b) Attach the clamp to connect the connector.
- (c) Install the bracket with the screw.

- (d) Install the No. 2 cooler wiring with the 4 screws.

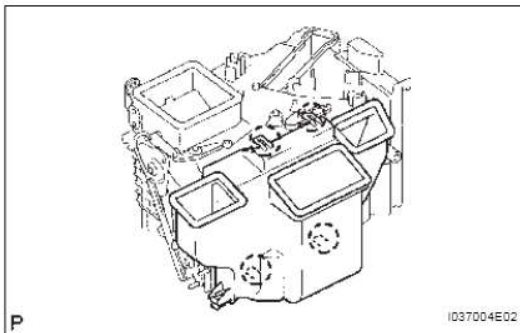


AIR CONDITIONING – HEATER RADIATOR ASSEMBLY**AC-75****2. INSTALL THERMISTOR ASSEMBLY**

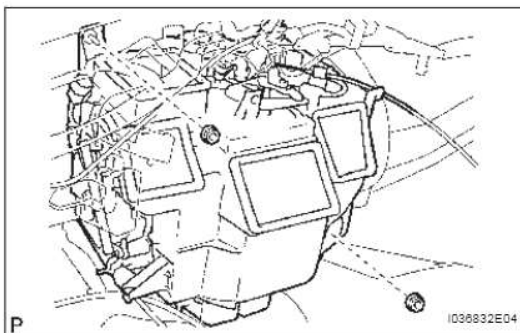
- (a) Install the thermistor.
- (b) Install the clamp and attach the claw.

**3. INSTALL HEATER COVER**

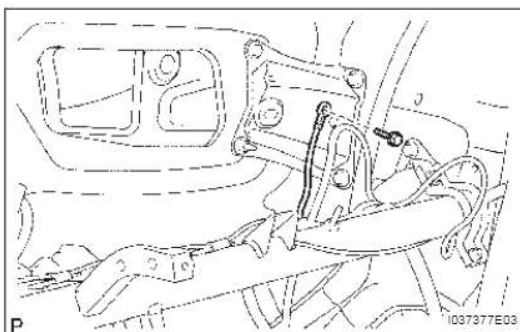
- (a) Attach the 2 claws to install the heater cover.
- (b) Install the screw.

**4. INSTALL AIR DUCT ASSEMBLY**

- (a) Attach the 4 claws to install the air duct.

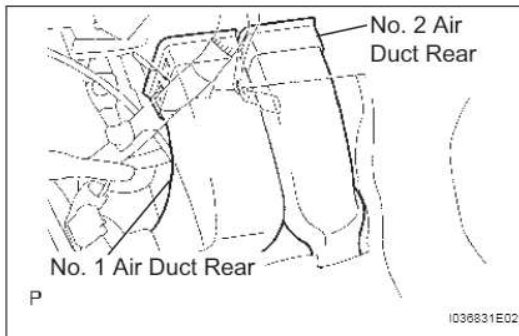
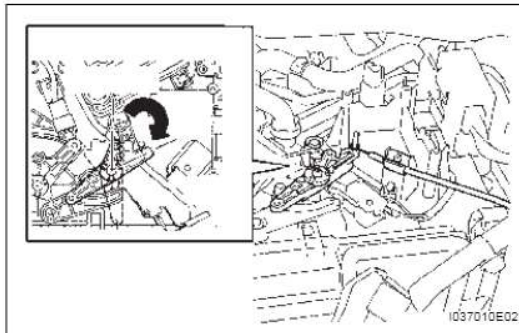
**INSTALLATION****1. INSTALL HEATER RADIATOR ASSEMBLY**

- (a) Install the heater radiator with the 2 nuts.

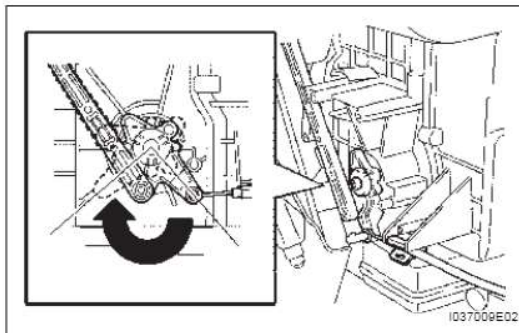


- (b) Install the bolt to connect the ground wire to the PTC heater.
- (c) Connect the 3 connectors.

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AC-76**AIR CONDITIONING – HEATER RADIATOR ASSEMBLY****2. CONNECT NO. 1 AIR DUCT REAR****3. CONNECT NO. 2 AIR DUCT REAR****4. INSTALL AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**

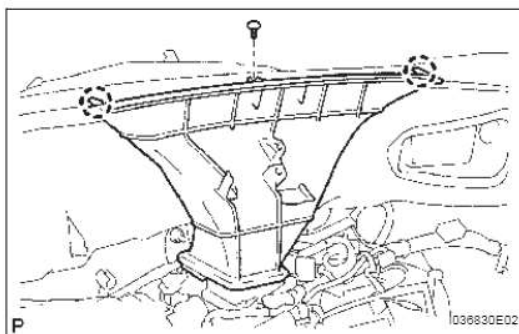
- (a) Connect the inner cable and install the air mix damper control cable.
- (b) Connect the outer cable.

**5. INSTALL DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY**

- (a) Connect the inner cable and install the defroster damper control cable.
- (b) Connect the outer cable.

6. INSTALL NO. 1 INSTRUMENT PANEL BRACE SUB-ASSEMBLY

- (a) Install the instrument panel brace with the 4 bolts and nut.
- (b) Connect the wire harness.

**7. INSTALL DEFROSTER NOZZLE ASSEMBLY**

- (a) Attach the 2 claws to install the defroster nozzle.
- (b) Install the clip.

8. INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY (See page [AC-113](#))**9. INSTALL AIR CONDITIONING BLOWER ASSEMBLY (See page [AC-60](#))****10. INSTALL ECM (See page [ES-362](#))****11. INSTALL LOWER INSTRUMENT PANEL ASSEMBLY**

- (a) Install the instrument panel (see page [IP-22](#)).

12. INSTALL INSTRUMENT PANEL SUB-ASSEMBLY

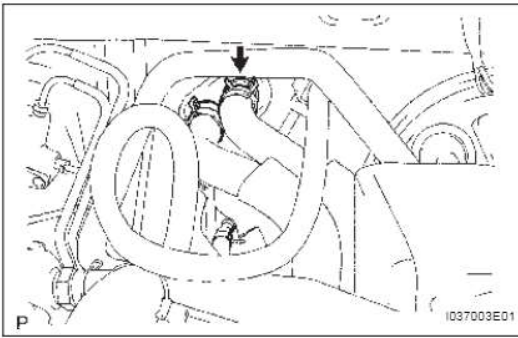
- (a) Install the instrument panel (see page [IP-10](#)).

13. CONNECT HEATER WATER OUTLET HOSE

- (a) Using pliers, grip the claw of the clip and slide the clip to connect the heater water hose.

AIR CONDITIONING – HEATER RADIATOR ASSEMBLY

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**14. CONNECT HEATER WATER INLET HOSE****HINT:**

Use the same procedures described for outlet hose.

15. CONNECT LIQUID TUBE SUB-ASSEMBLY**16. CONNECT SUCTION HOSE SUB-ASSEMBLY****17. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL****18. PERFORM INITIALIZATION**

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

19. CHECK SRS WARNING LIGHT

- (a) Check the SRS warning light (see page [RS-28](#)).

20. ADD ENGINE COOLANT**21. CHARGE REFRIGERANT (See page [AC-46](#))****22. WARM UP ENGINE (See page [AC-47](#))****23. CHECK FOR ENGINE COOLANT LEAKS****24. CHECK FOR LEAKAGE OF REFRIGERANT (See page [AC-47](#))**

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AIR CONDITIONING – COMPRESSOR AND PULLEY

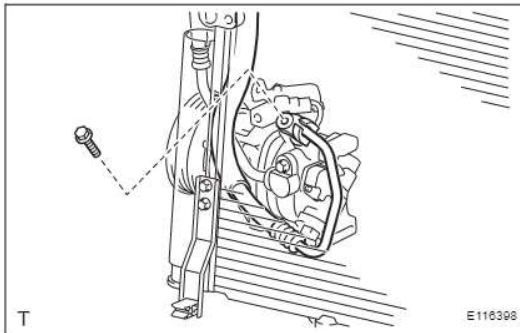
REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page [AC-46](#))
3. REMOVE FAN AND GENERATOR V BELT (See page [EM-7](#))

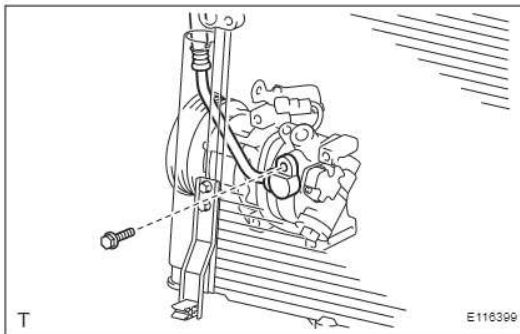


4. DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the bolt and disconnect the cooler refrigerant discharge hose from the compressor.
- (b) Remove the O-ring from the cooler refrigerant discharge hose.

NOTICE:

Seal the openings of the disconnected parts using vinyl tape to prevent moisture and foreign matter from entering.



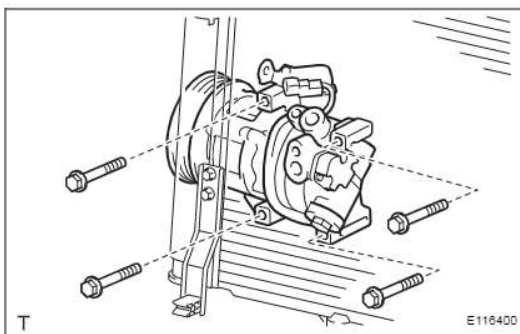
5. DISCONNECT SUCTION HOSE SUB-ASSEMBLY

- (a) Remove the bolt and disconnect the suction hose from the compressor.
- (b) Remove the O-ring from the suction hose.

NOTICE:

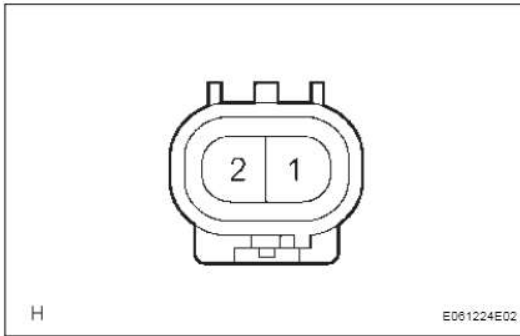
Seal the openings of the disconnected parts using vinyl tape to prevent moisture and foreign matter from entering.

6. REMOVE ENGINE UNDER COVER RH



7. REMOVE COMPRESSOR WITH PULLEY ASSEMBLY

- (a) Disconnect the connector.
- (b) Remove the 4 bolts and compressor.



INSPECTION

1. INSPECT COMPRESSOR WITH PULLEY ASSEMBLY

- (a) Measure the resistance between terminals 1 and 2.

Standard resistance:

160 to 320 Ω at 20°C (68°F)

If the value is not as specified, replace the compressor assembly.

AC-82

AIR CONDITIONING – COMPRESSOR AND PULLEY

INSTALLATION

1. INSPECT COMPRESSOR OIL

- (a) When replacing the compressor with a new one, after gradually removing the refrigerant gas from the service valve, drain the following amount of oil from the new compressor before installation.

Standard amount:

(Oil capacity inside new compressor and magnetic clutch: 60 + 15 cc (2.0 + 0.5 fl. oz.)) -
(Remaining oil amount in the removed compressor and magnetic clutch) = (Oil amount to be removed when replacing)

NOTICE:

- When checking the compressor oil level, observe the precautions for cooler removal/installation.
- Since compressor oil remains in the pipes of the vehicle, do not install a new compressor without removing some oil from the vehicle. Excessive oil prevents heat exchange in the refrigerant cycle and causes refrigerant failure.
- If the remaining oil in the removed compressor and magnetic clutch is too low, check for oil leakage.
- Be sure to use ND-OIL 8 or equivalent for compressor oil.

2. INSTALL ENGINE UNDER COVER RH

3. INSTALL COMPRESSOR WITH PULLEY ASSEMBLY

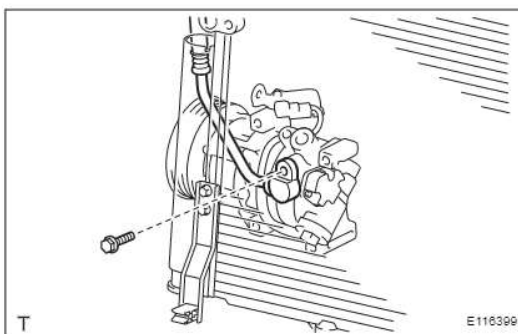
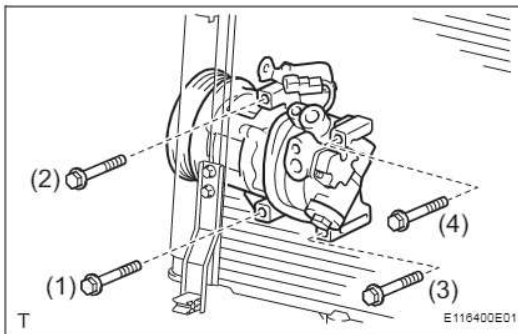
- (a) Install the compressor with the 4 bolts.

Torque: 25 N*m (255 kgf*cm, 18 ft.*lbf)

NOTICE:

Tighten the bolts in the order shown in the illustration to install the compressor.

- (b) Connect the connector.



4. CONNECT SUCTION HOSE SUB-ASSEMBLY

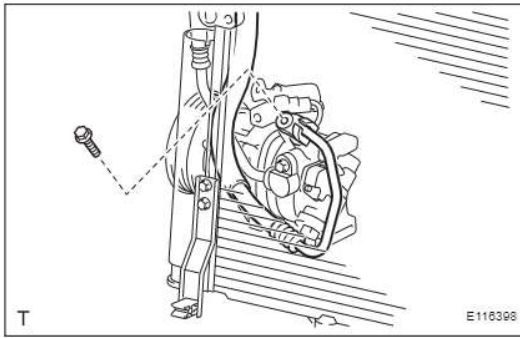
- (a) Remove the vinyl tape attached to the hose and condenser.
(b) Apply a sufficient amount of compressor oil to a new O-ring and the fitting surface of the compressor.

Compressor oil:

ND-OIL 8 or equivalent

- (c) Install the O-ring on the suction hose.
(d) Connect the suction hose on the compressor with the bolt.

Torque: 9.8 N*m (100 kgf*cm, 7 ft.*lbf)



5. CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the vinyl tape attached to the hose and condenser.
- (b) Apply a sufficient amount of compressor oil to a new O-ring and the fitting surface of the compressor.

Compressor oil:

ND-OIL 8 equivalent

- (c) Install the O-ring on the No. 1 cooler refrigerant discharge hose.
- (d) Connect the No. 1 cooler refrigerant discharge hose on the compressor with the bolt.

Torque: 9.8 N*m (100 kgf*cm, 7 ft.*lbf)

6. INSTALL FAN AND GENERATOR V BELT (See page [EM-7](#))

7. ADJUST FAN AND GENERATOR V BELT (See page [EM-7](#))

8. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

9. PERFORM INITIALIZATION

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

10. CHARGE REFRIGERANT (See page [AC-46](#))

11. WARM UP ENGINE (See page [AC-47](#))

12. CHECK FOR LEAKAGE OF REFRIGERANT (See page [AC-47](#))

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-13

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the air conditioning system.
- *: Use the intelligent tester.

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 INSPECT BATTERY VOLTAGE

Standard voltage:**11 to 14 V**

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3 CHECK CAN COMMUNICATION SYSTEM*

- (a) Use the intelligent tester to check if the CAN communication system is functioning.

Result

Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	B

HINT:

The amplifier of this system is connected to the CAN communication system. Therefore, before starting troubleshooting, make sure to check that there is no trouble in the CAN communication system.

B

Go to CAN COMMUNICATION SYSTEM

A

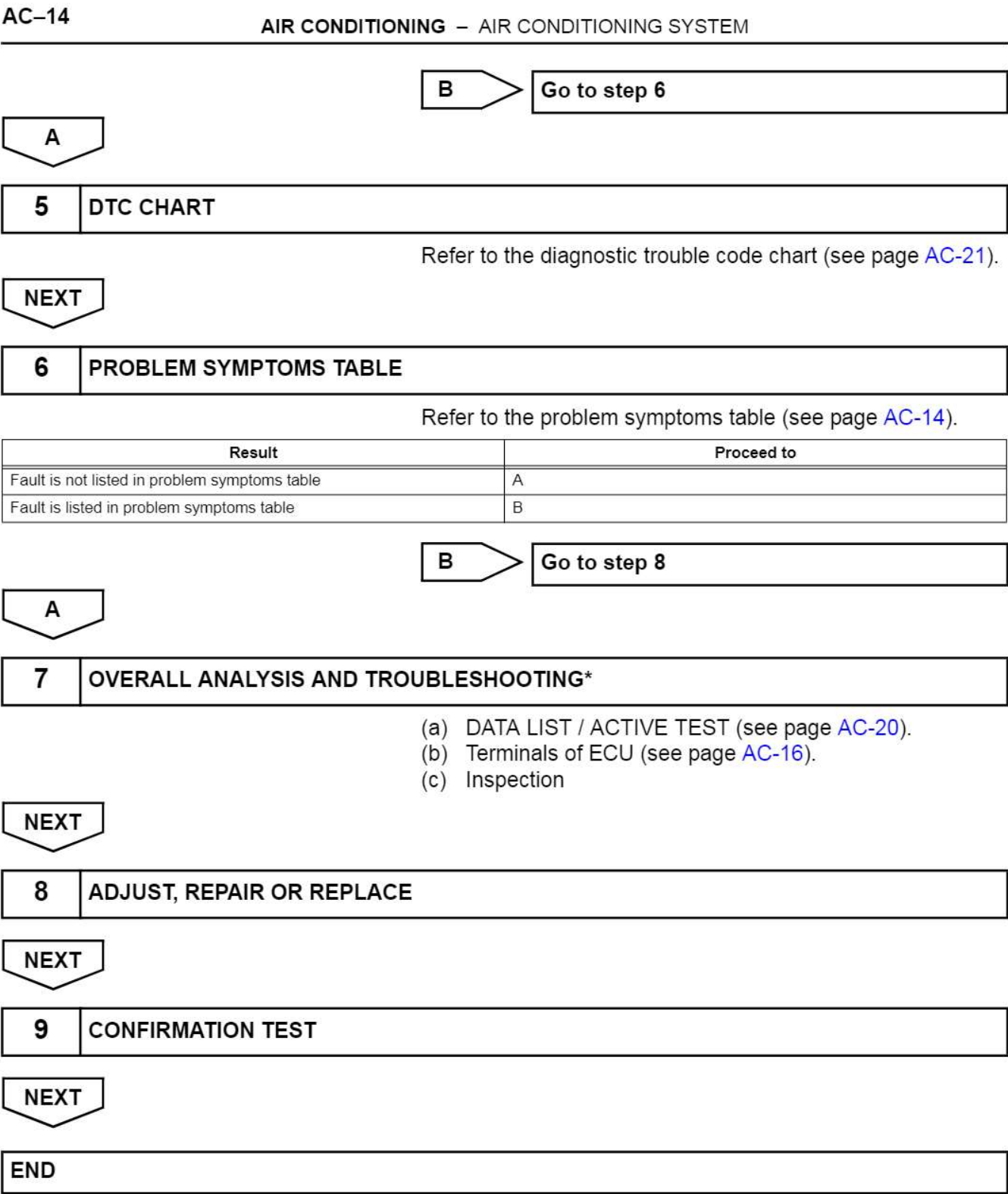
4 CHECK DTC

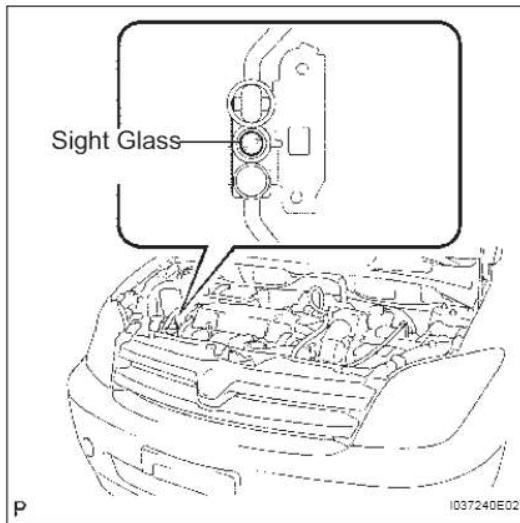
- (a) Check for DTCs and note any codes that are output.
 (b) Delete the DTC.
 (c) Recheck for DTCs. Based on the DTCs output above, try to force output of the A/C system DTC by simulating the operation indicated by the DTC.

Result

Result	Proceed to
DTC is output	A
DTC is not output	B

AC





REFRIGERANT

ON-VEHICLE INSPECTION

1. INSPECT REFRIGERANT VOLUME

(a) Check the sight glass on the liquid tube.

Test conditions:

- Engine is running at 1,500 rpm.
- Blower switch is at HI.
- A/C switch is ON.
- Temperature control switch is at the MAX. COOL position.
- Doors are fully open.

Item	Symptom	Amount of Refrigerant	Corrective Procedures
1	Bubbles visible	Insufficient*	(1) Check for gas leakage with gas leak detector and repair if necessary (2) Add refrigerant until bubbles disappear
2	No bubbles visible	Empty, insufficient or too much	Refer to items 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	(1) Check for gas leakage with gas leak detector and repair if necessary (2) Add refrigerant until bubbles disappear
4	Considerable temperature difference between compressor inlet and outlet	Correct or too much	Refer to items 5 and 6
5	Immediately after A/C is turned OFF, refrigerant becomes clear	Too much	(1) Drain or discharge refrigerant (2) Bleed air and supply proper amount of purified refrigerant
6	Immediately after A/C is turned OFF, refrigerant foams and then becomes clear	Correct	-

HINT:

*: If the ambient temperature is higher than usual but cooling is sufficient, bubbles in the sight glass are permissible.

2. INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

(a) This method uses a manifold gauge set to locate problem areas. Read the manifold gauge pressure when the following conditions are established:

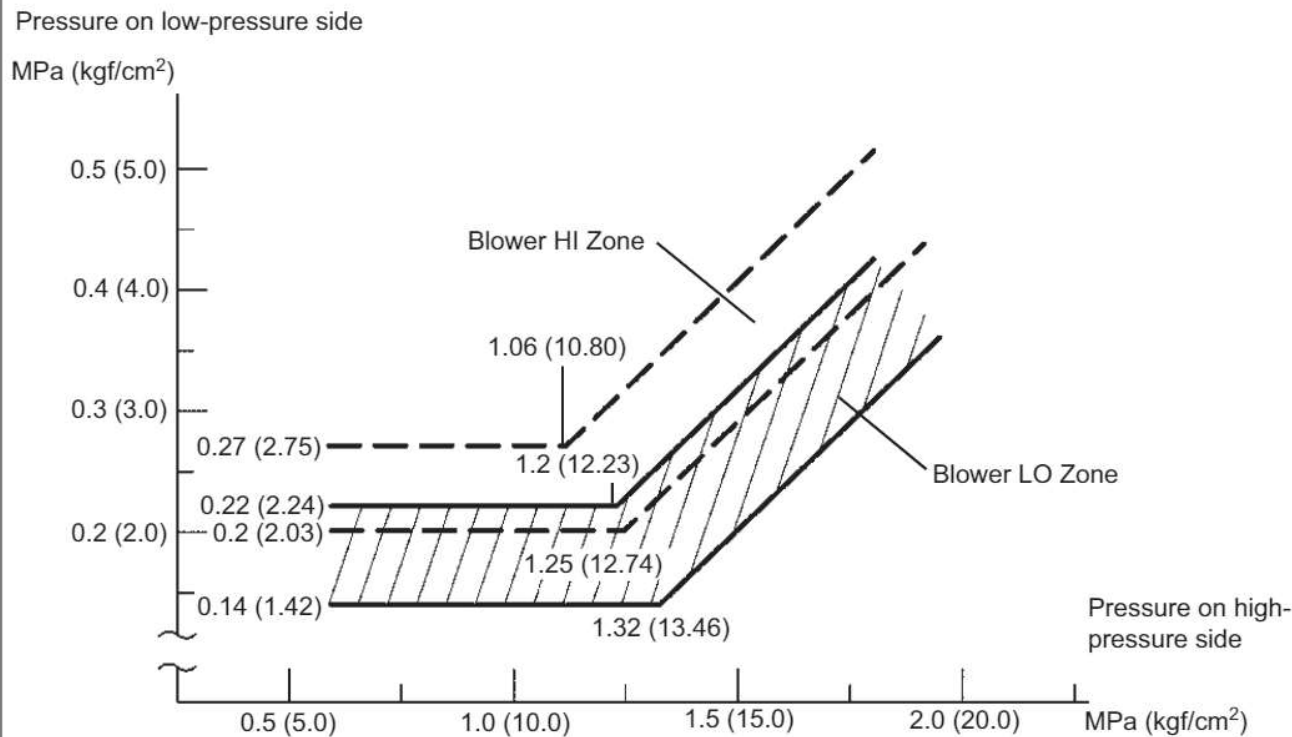
- Temperature at the air inlet is 30 to 35°C (86 to 95°F).
- Engine is running at 1,500 rpm.
- All doors are fully open.
- Blower switch is at HI.
- Temperature control switch is at MAX. COOL.
- A/C switch is ON.

Gauge readings (reference)

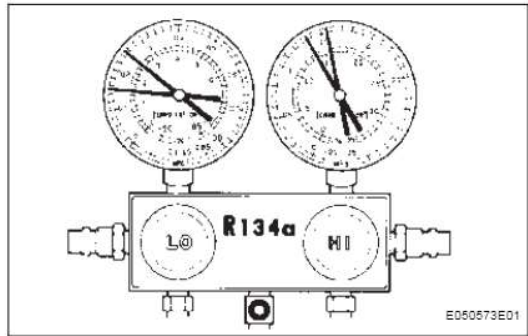
AC

AC-42

AIR CONDITIONING – REFRIGERANT



1030081E04

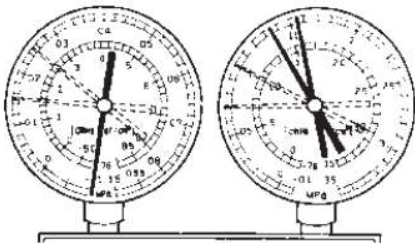


E060673E01

- (1) If the refrigeration system is functioning normally, the gauge readings are as shown in the table below.
- Gauge reading**

Pressure Side	Refrigerant Volume
Low	0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm ²)
High	1.37 to 1.57 MPa (14 to 16 kgf/cm ²)

- (2) The A/C system periodically changes between normal and improper function due to moisture in the refrigeration system.



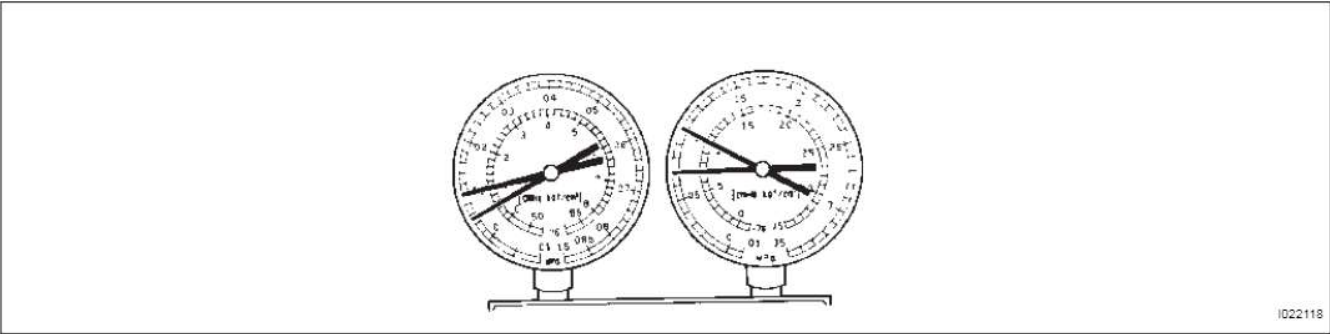
1022117

AIR CONDITIONING – REFRIGERANT

AC-43

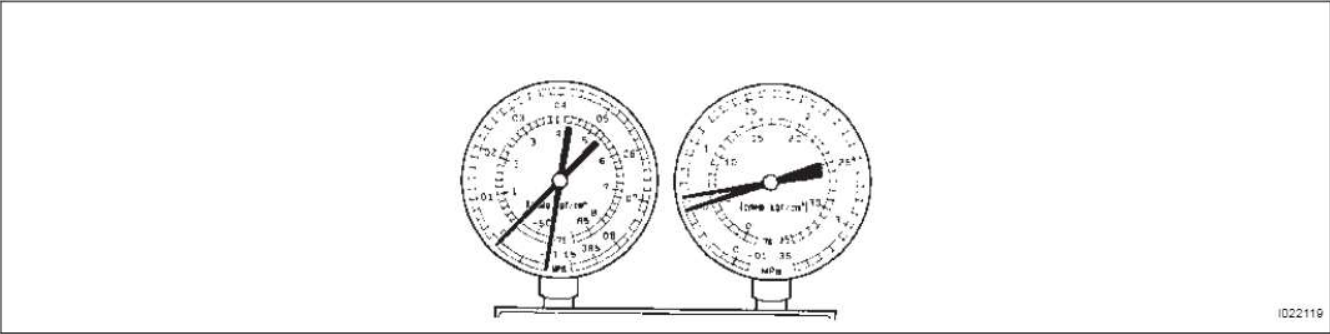
Symptoms	Probable Cause	Diagnosis	Corrective Actions
During operation, pressure on low-pressure side cycles between normal and vacuum	Moisture in refrigeration system freezes at expansion valve orifice, causing temporary stop of cycle. However, when melted, normal state is restored.	- Dryer is overly saturated - Moisture in refrigeration system freezes at expansion valve orifice and blocks refrigerant circulation	1. Replace cooler dryer 2. Remove moisture from cycle by repeatedly evacuating air 3. Supply appropriate volume of new refrigerant

(3) The A/C system does not function effectively due to insufficient cooling.



Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Pressure low on both low and high-pressure sides - Cooling performance insufficient	Gas leakage from refrigeration system	- Insufficient refrigerant - Refrigerant leakage	1. Check for gas leakage and repair if necessary 2. Supply appropriate volume of new refrigerant 3. If indicated pressure value is close to 0 when connected to gauge, create vacuum after inspecting and repairing location of leakage

(4) The A/C system does not function effectively due to poor circulation of the refrigerant.

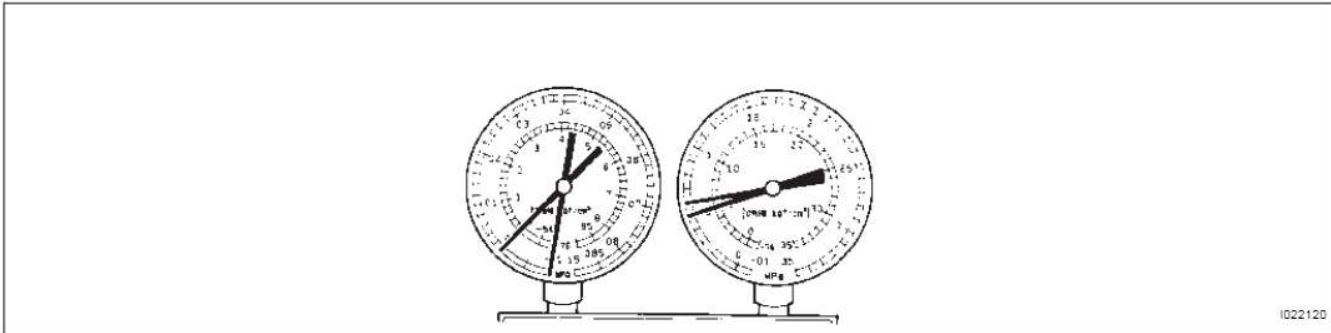


Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Pressure low on both low and high-pressure sides - Frost exists on piping from condenser to A/C unit	Refrigerant flow obstructed by dirt in condenser	Condenser clogged	Replace condenser

AC-44

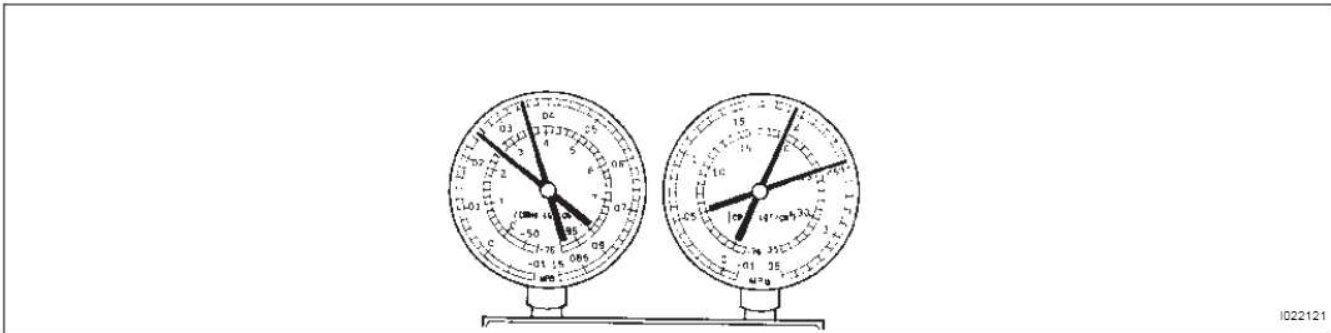
AIR CONDITIONING – REFRIGERANT

(5) The A/C system functions intermittently because the refrigerant does not circulate.



Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Vacuum indicated on low-pressure side, and extremely low pressure indicated on high-pressure side - Frost or condensation seen on piping on both sides of condenser or expansion valve	- Refrigerant flow obstructed by moisture or dirt in refrigeration system - Refrigerant flow obstructed by gas leakage from expansion valve	Refrigerant does not circulate	1. Check expansion valve 2. Clean expansion valve by blowing air 3. Replace condenser 4. Evacuate air and charge appropriate volume of new refrigerant 5. For gas leakage from expansion valve, replace expansion valve

(6) The A/C system does not function effectively due to overcharged refrigerant or insufficient cooling of the condenser.



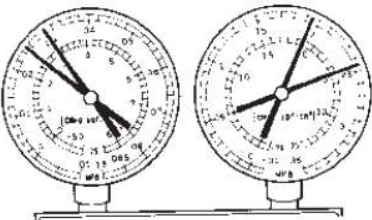
Symptoms	Probable Cause	Diagnosis	Corrective Actions
Pressure extremely high on both low and high-pressure sides	- Excessive refrigerant - Cooling performance of condenser insufficient	- Condenser is dirty - Condenser fan motor is malfunctioning - Excessive refrigerant	1. Clean condenser 2. Check condenser fan motor operation 3. If 1 and 2 are normal, check amount of refrigerant and supply appropriate volume of refrigerant

(7) The A/C system does not function due to air in the refrigeration system.

CAUTION:
The low-pressure piping may be very hot and cause serious burns.

AIR CONDITIONING – REFRIGERANT

AC-45

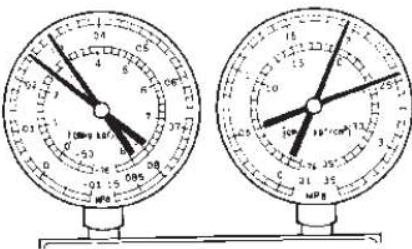


HINT: These gauge indications occur when the refrigeration system opens and the refrigerant is charged without vacuum purging

1022122E03

Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Pressure extremely high on both low and high-pressure sides - Low-pressure piping is too hot to touch	Air in refrigeration system	- Air in refrigeration system - Vacuum purging insufficient	1. Check if compressor oil is dirty or insufficient 2. Evacuate air and charge new refrigerant

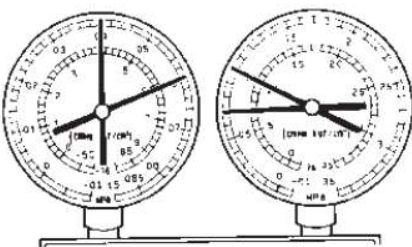
(8) The A/C system does not function effectively due to an expansion valve malfunction.



1022123

Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Pressure extremely high on both low and high-pressure sides - Frost or condensation on piping on low-pressure side	Problem with expansion valve	- Excessive refrigerant in low pressure piping - Expansion valve too wide open	Replace expansion valve

(9) The A/C system does not function due to a defective compressor.



1022124

Symptoms	Probable Cause	Diagnosis	Corrective Actions
- Pressure extremely high on both low and high-pressure sides - Pressure extremely low on high-pressure side	Internal leakage in compressor	- Compression failure - Leakage from damaged valve or broken sliding parts	Repair or replace compressor

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-15

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.
- If the malfunction still exists even after checking and confirming that all the circuits are normal, replace the A/C amplifier.

A/C system

Symptom	Suspected area	See page
All functions of A/C system do not operate	1. Center cluster module switch	AC-107
	2. A/C amplifier assembly	AC-16
	3. Wire harness or connector	-
Air Flow Control: No blower operation	1. Blower resistor	AC-66
	2. Blower w/ fan motor sub-assembly	AC-64
	3. Center cluster module switch	AC-107
	4. Wire harness or connector	-
Air Flow Control: No blower control	1. Blower resistor	AC-66
	2. Blower w/ fan motor sub-assembly	AC-64
	3. Center cluster module switch	AC-107
	4. Wire harness or connector	-
Air Flow Control: Insufficient air comes out	1. Blower w/ fan motor sub-assembly	AC-64
	2. Blower resistor	AC-66
	3. Center cluster module switch	AC-107
	4. Wire harness or connector	-
Temperature Control: No cool air comes out	1. Volume of refrigerant	AC-41
	2. Drive belt tension	-
	3. Refrigerant pressure	AC-41
	4. Compressor solenoid circuit	AC-32
	5. Compressor assembly	AC-79
	6. Pressure switch circuit	AC-27
	7. Condenser fan	CO-4
	8. Evaporator temperature sensor	AC-23
	9. Heater control and accessory assembly	-
	10. ECM	ES-29
	11. CAN communication system	CA-6
	12. Wire harness or connector	-
Temperature Control: No warm air comes out	1. Engine coolant volume	-
	2. Evaporator temperature sensor	AC-23
	3. Heater control and accessory assembly	-
	4. Heater radiator unit sub-assembly	-
	5. A/C amplifier assembly	AC-16
	6. Wire harness or connector	-
Temperature Control: Output air is warmer or cooler than set temperature or response is slow	1. Heater control and accessory assembly	-
	2. Air mix damper control cable	-

AC

AC-16**AIR CONDITIONING – AIR CONDITIONING SYSTEM**

Symptom	Suspected area	See page
Temperature Control: No temperature control	1. Heater control and accessory assembly	-
	2. Air mix damper control cable	-
No air inlet control	1. Air inlet control servomotor	AC-68
	2. Heater switch assembly	AC-111
	3. Heater control and accessory assembly	-
No air outlet control	1. Heater control and accessory assembly	-
	2. Defroster damper control cable	-
Engine idle-up does not occur, or is continuous	1. Center cluster module switch	AC-107
	2. Compressor solenoid circuit	AC-32
	3. Compressor assembly	AC-79
	4. A/C amplifier assembly	AC-16
	5. ECM	ES-29
	6. CAN communication system	CA-6
	7. Wire harness or connector	-
Diagnostic trouble codes are not recorded. Set mode is cleared when ignition switch turn OFF.	1. A/C amplifier assembly	AC-16
	2. Wire harness or connector	-

PTC heater

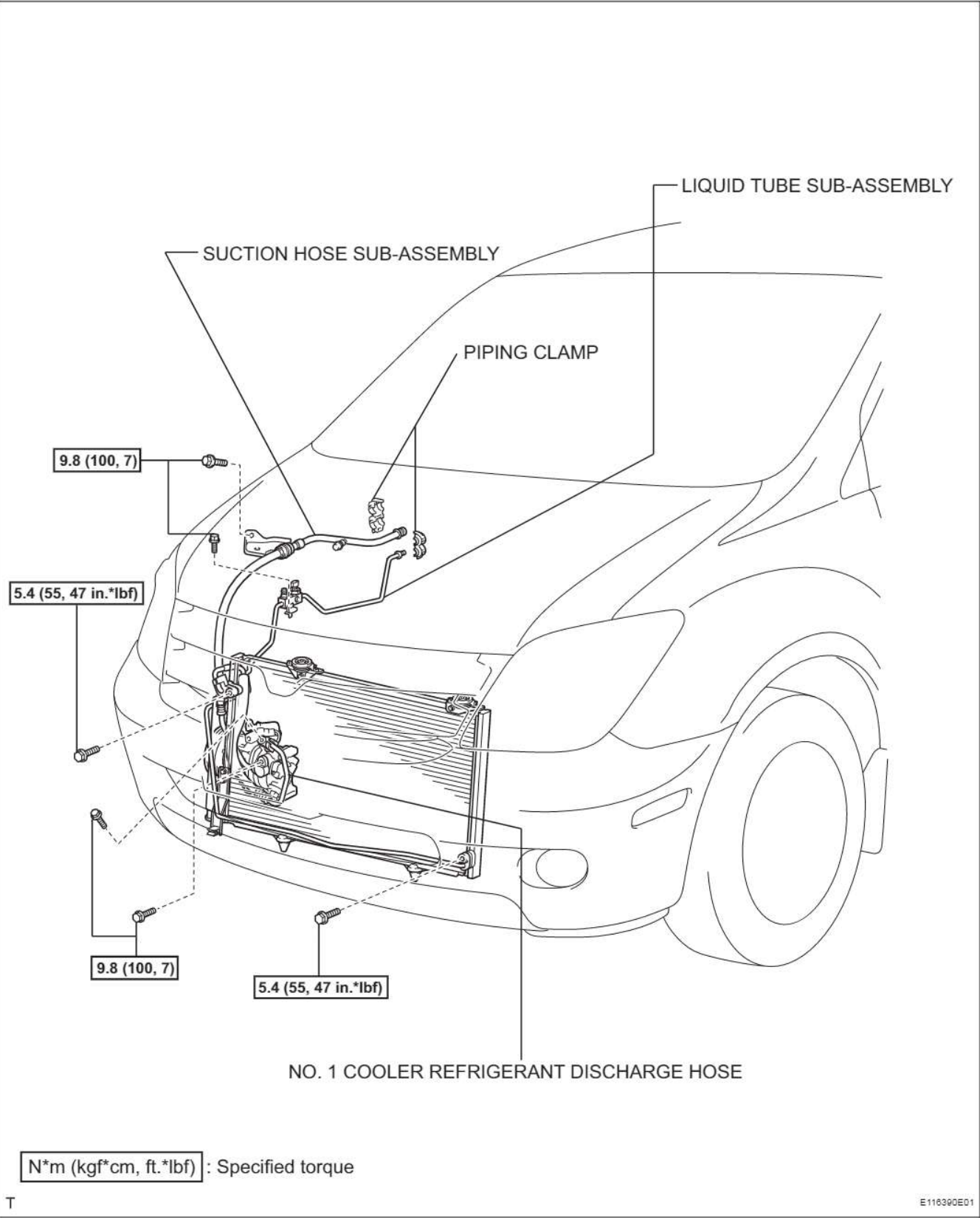
Symptom	Suspected area	See page
Warm air does not come out even if temperature control knob is MAX HOT before engine coolant temperature rises*	1. Heater switch assembly	AC-111
	2. PTC heater circuit	AC-37
	3. Generator assembly	CH-11
	4. A/C amplifier assembly	AC-16
	5. ECM	ES-29
	6. CAN communication system	CA-6
	7. Wire harness or connector	-

HINT:

*: PTC heater does not operate in these conditions:

- Engine coolant temperature: 70°C (158°F) or below
- Engine rpm is at idle rpm or more
- Air mix control knob is at MAX HOT

REFRIGERANT LINE
COMPONENTS

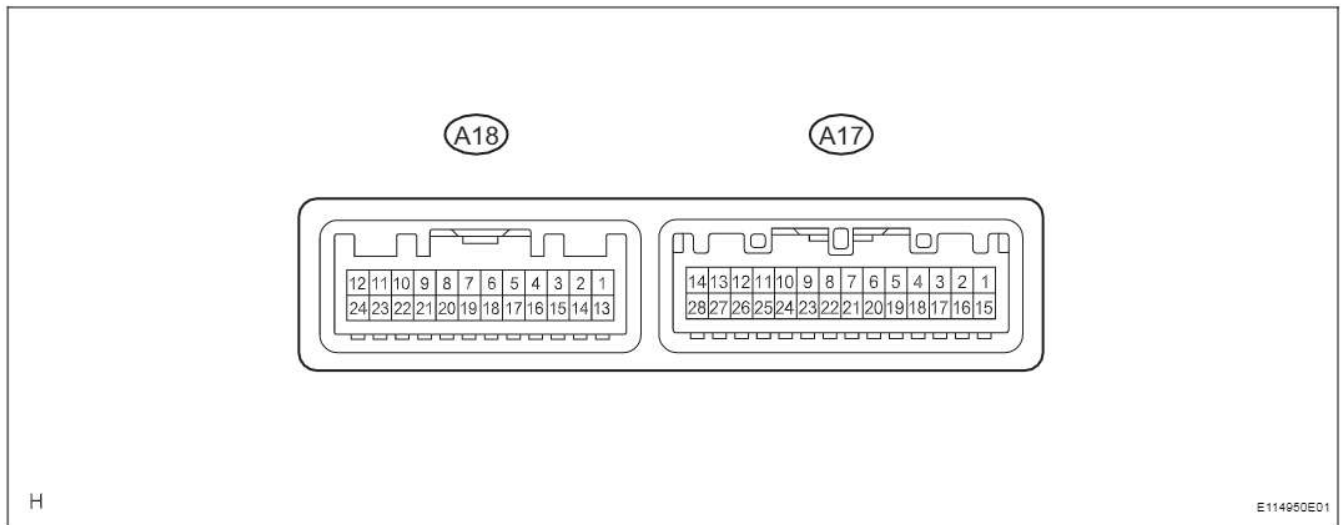


AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-17

TERMINALS OF ECU

1. CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY



(a) Measure the voltage and resistance of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IG+ (A17-14) - GND (A17-24)	L - W-B	Power source (IG)	Ignition switch OFF	0 V
IG+ (A17-14) - GND (A17-24)	L - W-B	Power source (IG)	Ignition switch ON	10 to 14 V
GND (A17-24) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
A/C (A17-27) - GND (A17-24)	O - W-B	A/C switch input signal	Ignition switch ON, blower switch ON, A/C switch ON	10 to 14 V
DEF (A17-26) - GND (A17-24)	B-Y - W-B	Defroster switch input signal	Ignition switch ON, blower switch ON, mode control knob DEF (defroster mode detection switch ON)	10 to 14 V
HEAT (A18-14) - GND (A17-24)	L-B - W-B	MAX HOT switch input signal	Ignition switch ON, blower switch ON, air mix control knob MAX HOT (MAX HOT switch ON)	10 to 14 V
MODE (A18-17) - GND (A17-24)	W - W-B	FOOT or FOOT/DEF switch input signal	Ignition switch ON, blower switch ON, air mix control knob MAX HOT (MAX HOT switch ON), mode control knob either FOOT or FOOT/DEF (foot mode switch ON)	10 to 14 V
REFR (A17-20) - GND (A17-24)	L-Y - W-B	Air inlet control signal	Air inlet control knob FRESH (inlet air position detection switch OFF)	10 to 14 V
REFR (A17-20) - GND (A17-24)	L-Y - W-B	Air inlet control signal	Air inlet control knob RECIRCULATION (inlet air position detection switch ON)	Below 1 V
FRS (A17-16) - GND (A17-24)	L-R - W-B	Air inlet control servomotor operation signal	Ignition switch ON, air inlet control knob FRESH (inlet air position detection switch OFF)	Below 1 V
REC (A17-28) - GND (A17-24)	L-D - W-B	Air inlet control servomotor operation signal	Ignition switch ON, air inlet control knob RECIRCULATION (inlet air position detection switch ON)	Below 1 V
R/F (A17-18) - GND (A17-24)	G - W-B	Air inlet control servomotor operation signal	Ignition switch ON, blower switch ON, air mix control knob MAX HOT (MAX HOT switch ON), mode control knob either FOOT or FOOT/DEF (foot mode switch ON), air inlet control knob FRESH (inlet air position detection switch OFF)	Below 1 V

AC

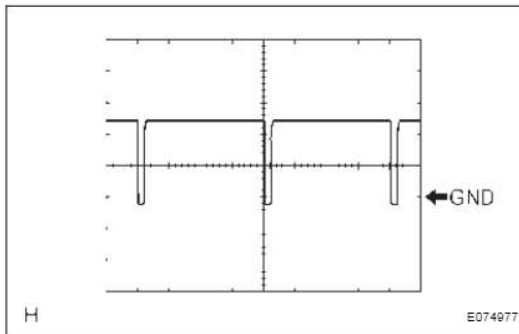
AC-18

AIR CONDITIONING – AIR CONDITIONING SYSTEM

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
PTC (A18-9) - GND (A17-24)	L-W - W-B	PTC heater relay signal	Generator is generating, engine rpm is at idle rpm or more, engine coolant temperature is below 65°C (149°F), air mix control knob MAX HOT (MAX HOT switch ON)	Below 1 V
S5 (A17-7) - GND (A17-24)	R-W - W-B	Power supply for pressure sensor	Ignition switch ON	4.5 to 5.5 V
PRE (A17-12) - SG- (A17-10)	B-R - BR	Pressure sensor signal	Refrigerant pressure: normal pressure 0.176 MPa (1.8 kgf/cm ² , 25 psi) to 3.025 MPa (32.0 kgf/cm ² , 455 psi)	0.76 to 4.74 V
			Refrigerant pressure: abnormal pressure less than 0.176 MPa (1.8 kgf/cm ² , 25 psi)	Below 0.76 V
			Refrigerant pressure: abnormal pressure more than 3.025 MPa (32.0 kgf/cm ² , 455 psi)	Above 4.74 V
TE (A17-22) - SGND (A17-23)	B-W - BR	Evaporator temperature sensor signal	Ignition switch ON, evaporator temperature: 0°C (32°F)	2.3 to 2.7 V
TE (A17-22) - SGND (A17-23)	B-W - BR	Evaporator temperature sensor signal	Ignition switch ON, evaporator temperature: 15°C (59°F)	1.8 to 2.2 V
SOL+ (A17-13) - GND (A17-24)	L-B - W-B	Compressor signal	Engine idling, blower switch Lo, A/C switch ON	Pulse generation (see waveform 1)
ALT (A18-24) - GND (A17-24)	L - W-B	Generator input signal	Engine idling	Pulse generation
CANH (A17-8) - GND (A17-24)	B - W-B	CAN communication line	Ignition switch ON	Pulse generation (see waveform 2)
CANL (A17-9) - GND (A17-24)	W - W-B	CAN communication line	Ignition switch ON	Pulse generation (see waveform 3)

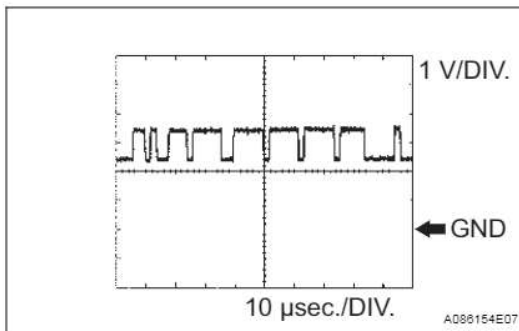
If the result is not as specified, the A/C amplifier may have a malfunction.

(1) Waveform 1 (Reference)



Item	Content
Symbols (Terminal No.)	SOLT (A17-13) - GND (A17-24)
Tool Setting	5 V/DIV., 500 μsec./DIV.
Conditions	Engine idling, blower switch Lo, A/C switch ON

(2) Waveform 2 (Reference)



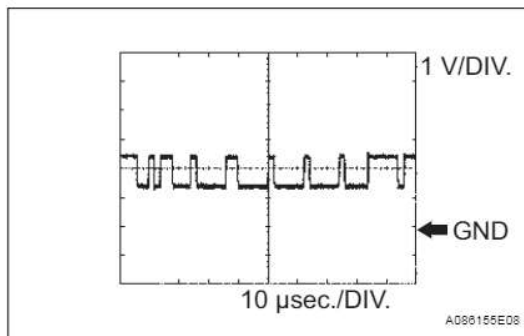
Item	Content
Symbols (Terminal No.)	CANH (A17-8) - GND (A17-24)
Tool Setting	1 V/DIV., 10 μsec./DIV.
Conditions	Engine stopped and ignition switch ON

HINT:

The waveform varies depending on the CAN communication signal.

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-19



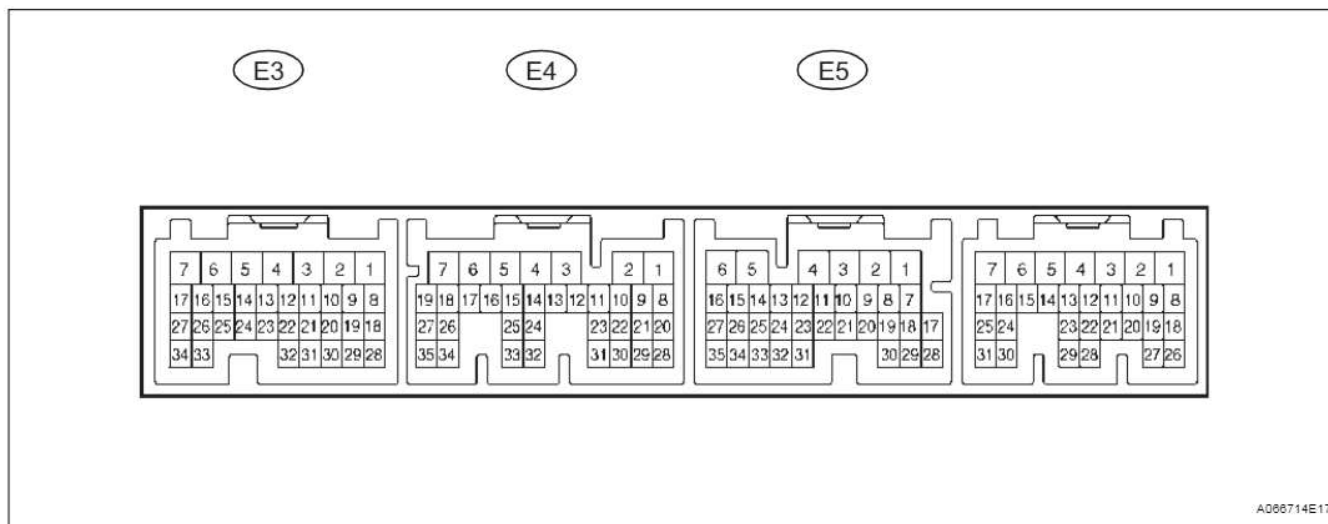
(3) Waveform 3 (Reference)

Item	Content
Symbols (Terminal No.)	CANL (A17-9) - GND (A17-24)
Tool Setting	1 V/DIV., 10 μsec./DIV.
Conditions	Engine stopped and ignition switch ON

HINT:

The waveform varies depending on the CAN communication signal.

2. CHECK ECM

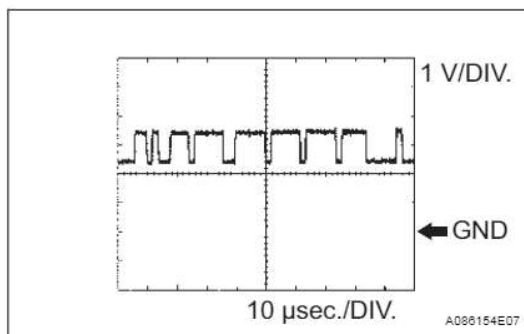


(a) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
THW (E3-32) - E2 (E3-28)	R-L - BR	Engine coolant temperature sensor	Idling, engine coolant temperature 80°C (176°F)	0.2 to 1.0 V
CANH (E5-33) - E1 (E4-3)	B - BR	CAN communication line	Ignition switch ON	Pulse generation (see waveform 1)
CANL (E5-34) - E1 (E4-3)	W - BR	CAN communication line	Ignition switch ON	Pulse generation (see waveform 2)

If the result is not as specified, the ECM may have a malfunction.

(1) Waveform 1 (Reference)



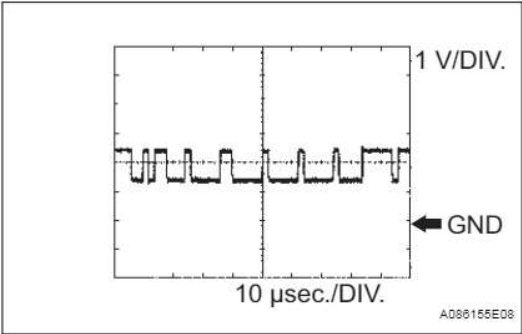
Item	Content
Symbols (Terminal No.)	CANH (E5-33) - E1 (E4-3)
Tool Setting	1 V/DIV., 10 μsec./DIV.
Conditions	Engine stopped and ignition switch ON

HINT:

The waveform varies depending on the CAN communication signal.

AC-20

AIR CONDITIONING – AIR CONDITIONING SYSTEM



(2) Waveform 2 (Reference)

Item	Content
Symbols (Terminal No.)	CANL (E5-34) - E1 (E4-3)
Tool Setting	1 V/DIV., 10 μsec./DIV.
Conditions	Engine stopped and ignition switch ON

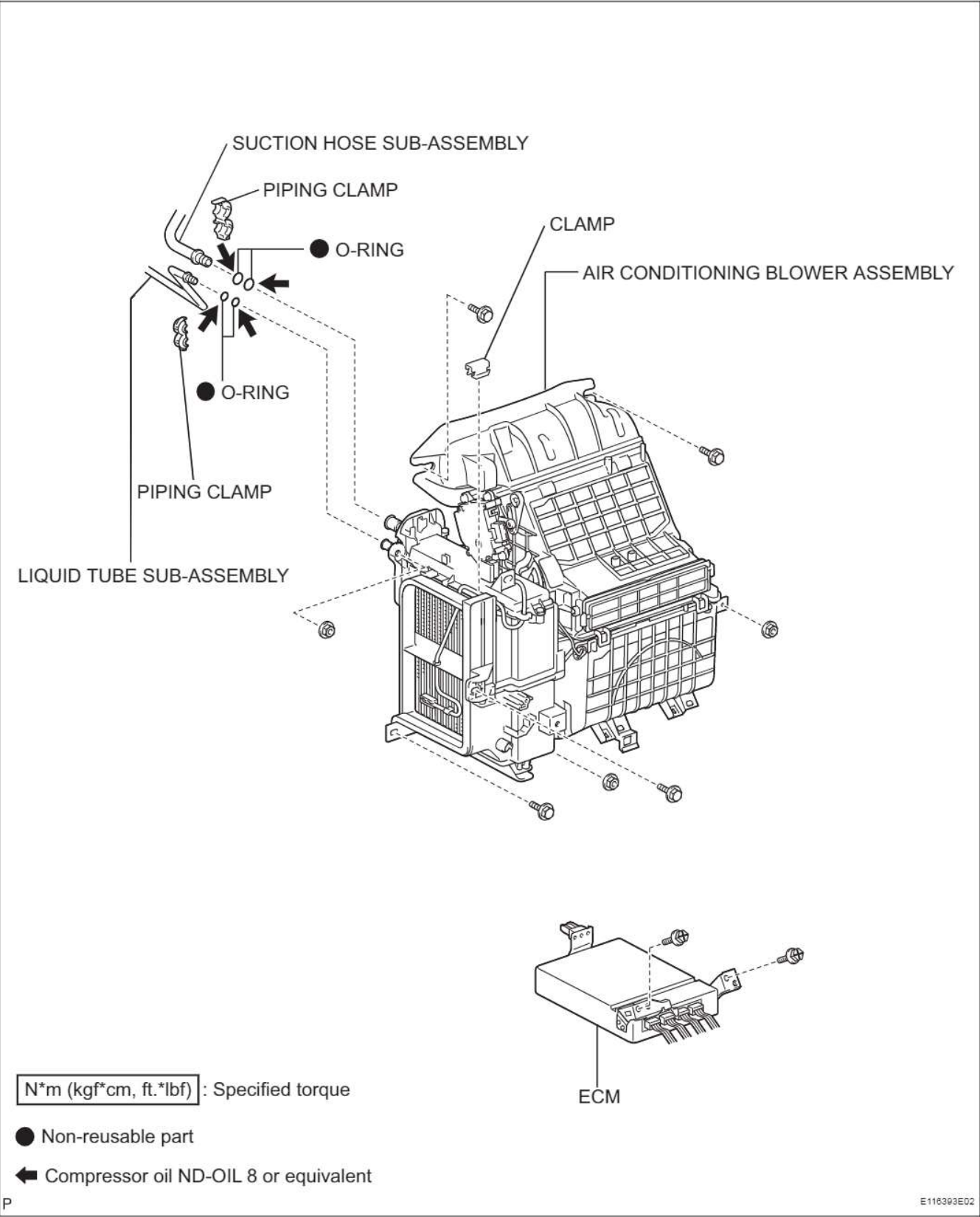
HINT:
The waveform varies depending on the CAN communication signal.

AC-50

AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT

AIR CONDITIONING AND BLOWER UNIT

COMPONENTS



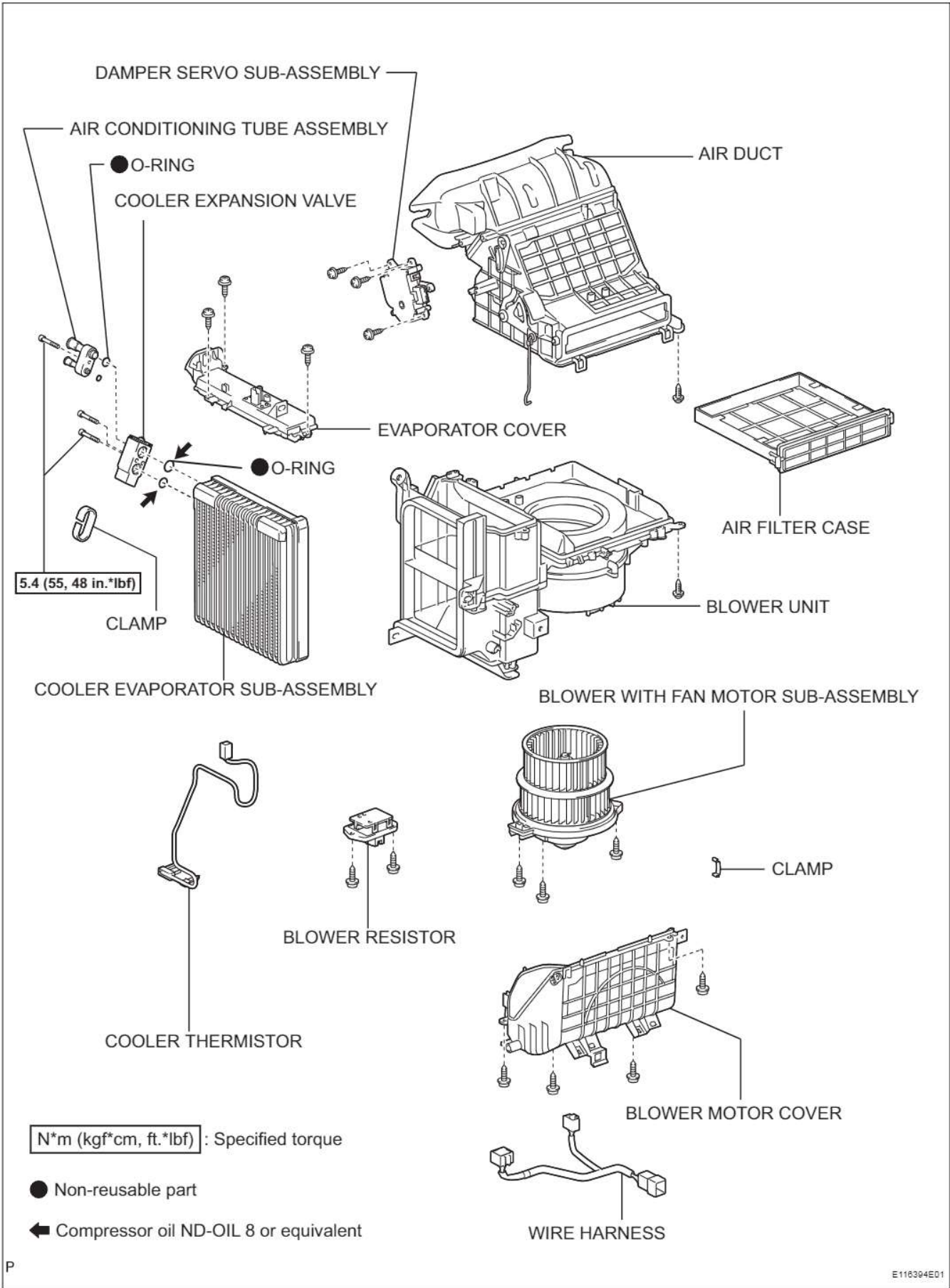
AC

P

E116393E02

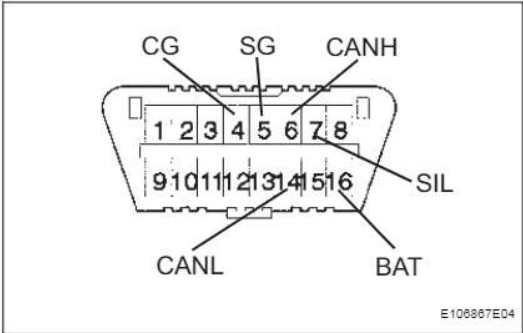
AIR CONDITIONING – AIR CONDITIONING AND BLOWER UNIT

AC-51



DIAGNOSIS SYSTEM

1. DESCRIPTION
- Air conditioning system data and the Diagnostic Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.
2. CHECK DLC3
- The vehicle's ECM uses the ISO 9141-2 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



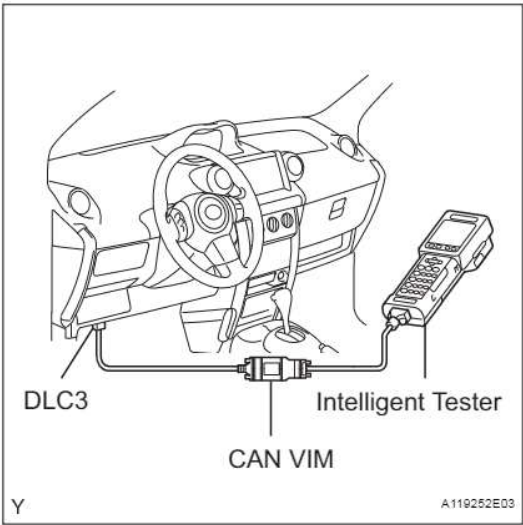
Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Ignition switch OFF	54 to 67 Ω
CANH (6) - Battery positive	HIGH-level CAN bus line	Ignition switch OFF	1 MΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch OFF	3 kΩ or higher
CANL (14) - Battery positive	LOW-level CAN bus line	Ignition switch OFF	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch OFF	3 kΩ or higher

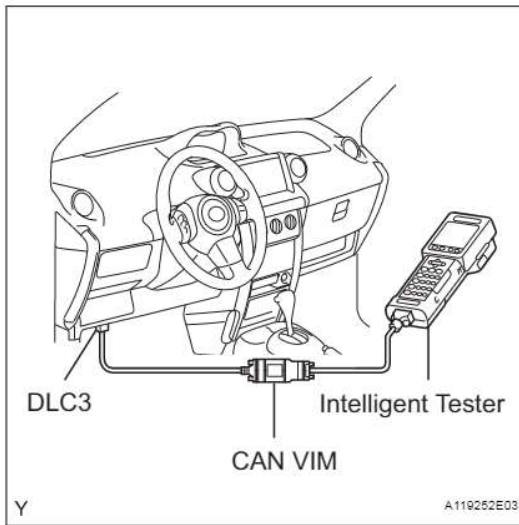
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the ignition switch ON and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction manual.



AC-22**AIR CONDITIONING – AIR CONDITIONING SYSTEM****DTC CHECK / CLEAR****1. CHECK DTC**

- (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Read the DTCs by following the prompts on the tester screen.

HINT:

Refer to the intelligent tester operator's manual for further details.

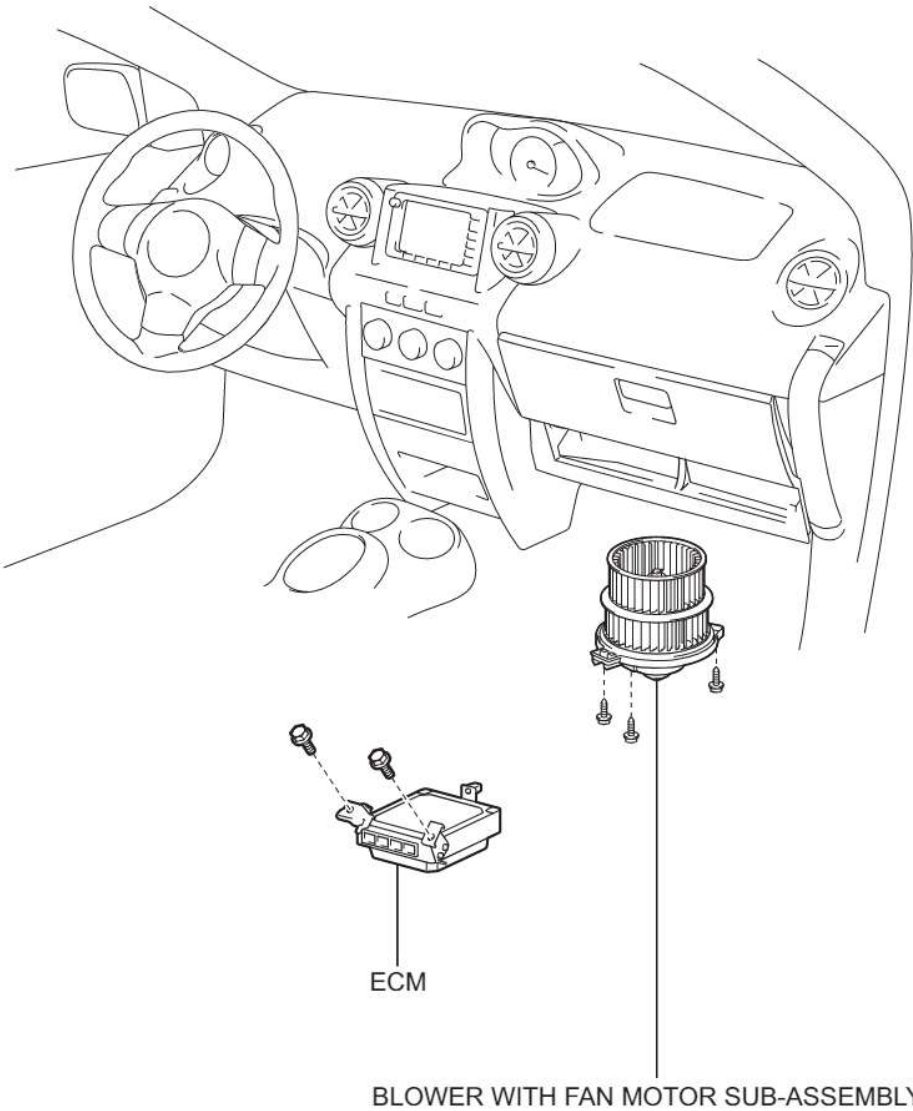
2. CLEAR DTC

- (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Operate the intelligent tester to erase the codes.

HINT:

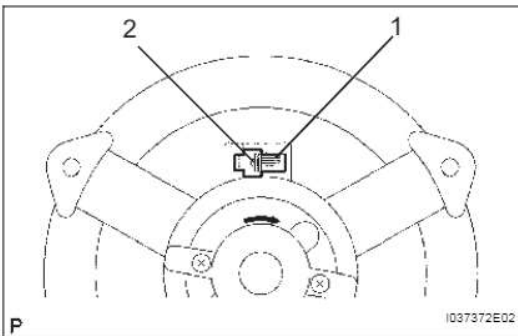
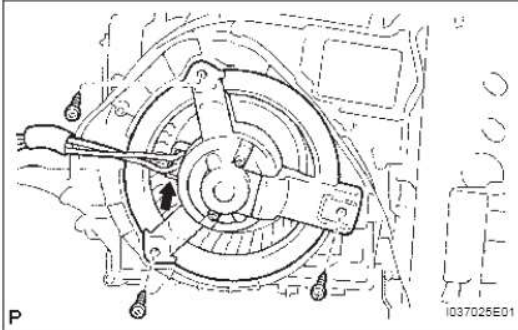
Refer to the intelligent tester operator's manual for further details.

**BLOWER MOTOR
COMPONENTS**



AC-64**AIR CONDITIONING – BLOWER MOTOR****REMOVAL**

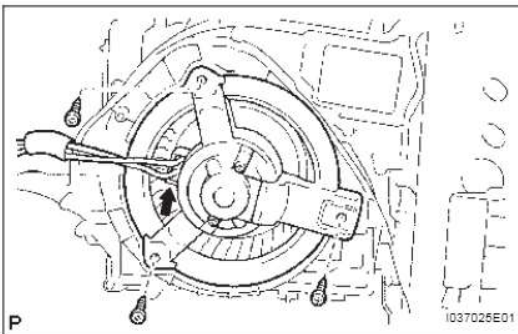
1. REMOVE ECM COVER (See page [AC-53](#))
2. REMOVE ECM (See page [AC-53](#))
3. REMOVE BLOWER WITH FAN MOTOR SUB-ASSEMBLY
 - (a) Disconnect the connector.
 - (b) Remove the 3 screws and blower motor.

**INSPECTION**

1. INSPECT BLOWER WITH FAN MOTOR SUB-ASSEMBLY
 - (a) Connect the positive (+) lead from the battery to terminal 2 and negative (-) lead to terminal 1, then check that the motor operates smoothly. If the result is not as specified, replace the blower motor.

INSTALLATION

1. INSTALL BLOWER WITH FAN MOTOR SUB-ASSEMBLY
 - (a) Install the blower motor with the 3 screws.
 - (b) Connect the connector.
2. INSTALL ECM (See page [AC-61](#))
3. INSTALL ECM COVER (See page [AC-61](#))



AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-23

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

- (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Read the DATA LIST.

A/C amplifier assembly

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
COOLANT TEMP (Engine Coolant Temperature)	Engine coolant temperature / Min.: 1.3°C (34.34°F), Max.: 90.55°C (194.99°F)	Actual engine coolant temperature	-
EVAP TEMP (Evaporator Temperature Sensor)	Evaporator temperature / Min.: -29.7°C (-21.46°F), Max.: 59.55°C (139.01°F)	Actual evaporator temperature is displayed	Open in circuit: -29.7°C (-21.46°F) (continuous, regardless of actual temperature) Short in circuit: 59.55°C (139.19°F) (continuous, regardless of actual temperature)
REG PRESS SENS (Regulator Pressure Sensor)	Regulator pressure sensor / Min.: 0 kgf/cm ² G Max.: 38.19 kgf/cm ² G	Actual regulator pressure is displayed	Open in circuit: 32.5 kgf/cm ² G (continuous, regardless of actual temperature) Short in circuit: 0 kgf/cm ² G (continuous, regardless of actual temperature)
REG CTRL CURRENT (Regulator Control Current)	Regulator control current / Min.: 0 A, Max.: 0.996 A	-	-

ECM

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
A/C SIG (A/C Signal)	A/C signal / ON or OFF	ON: A/C ON OFF: A/C OFF	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

- (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Perform the ACTIVE TEST.

A/C amplifier assembly

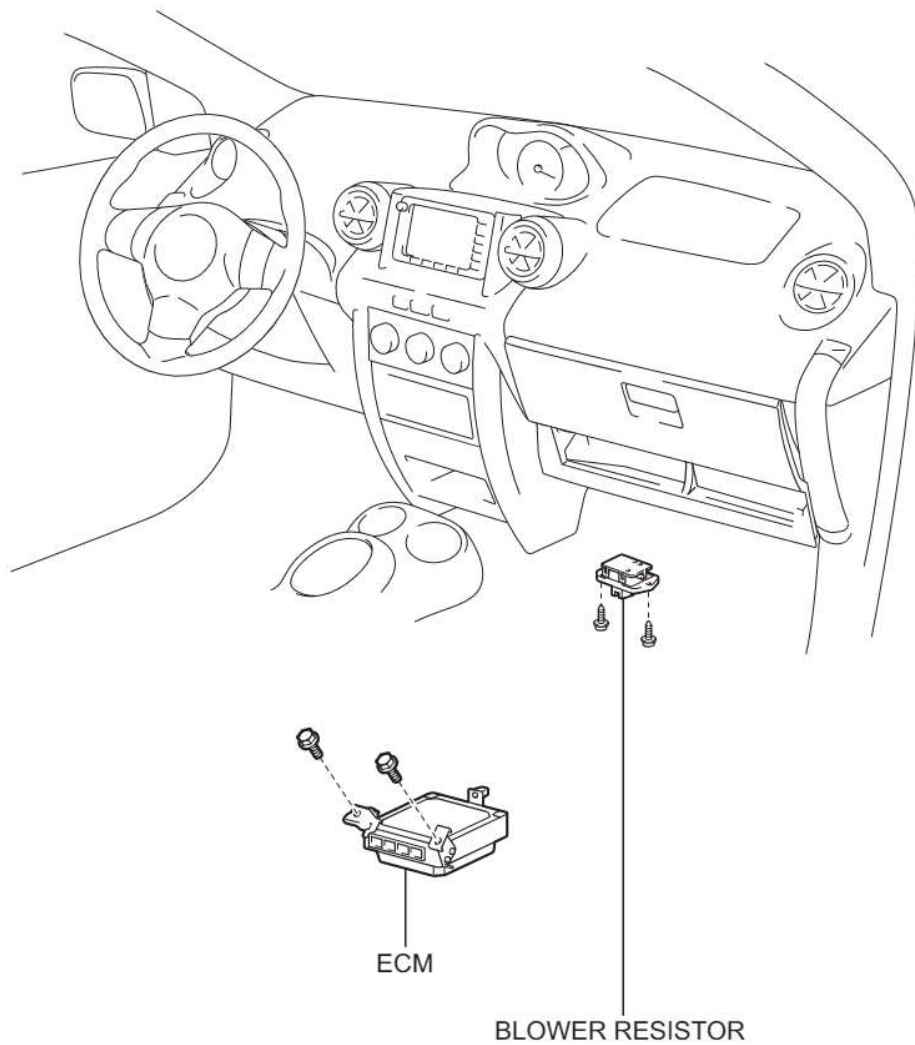
Item	Test Details / Display (Range)	Diagnostic Note
HEATER LEVEL (Heater Active Level)	Heater Active Level / Min.: 0, Max.: 3	-

AC

AC-24**AIR CONDITIONING – AIR CONDITIONING SYSTEM****DIAGNOSTIC TROUBLE CODE CHART**

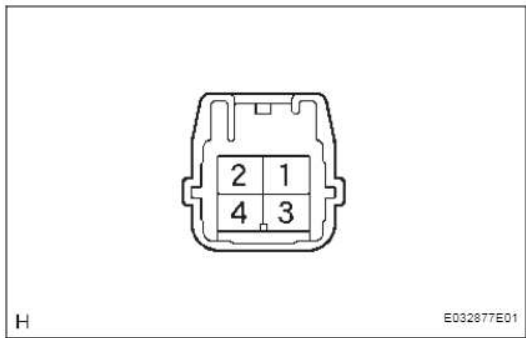
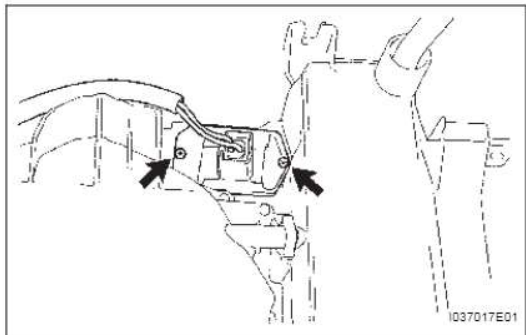
DTC No.	Detection Item	Trouble Area	See page
B1413	Evaporator Temperature Sensor Circuit	- Cooler thermistor (evaporator temperature sensor) - Harness and connector between evaporator temperature sensor and A/C amplifier assembly - A/C amplifier assembly	AC-23
B1423	Pressure Switch Circuit	- Pressure sensor - Refrigerant line - Harness and connector between pressure sensor and A/C amplifier assembly - A/C amplifier assembly	AC-27
B1451	Compressor Solenoid Circuit	- Compressor assembly - Harness and connector between A/C amplifier assembly and compressor assembly - A/C amplifier assembly	AC-32
B1499	Multiplex Communication Circuit	- A/C amplifier assembly - ECM - CAN communication line	AC-35

BLOWER RESISTOR COMPONENTS



REMOVAL

- 1. REMOVE ECM COVER (See page AC-53)
- 2. REMOVE ECM (See page AC-53)
- 3. REMOVE BLOWER RESISTOR
 - (a) Disconnect the connector.
 - (b) Remove the 2 screws and blower resistor.



INSPECTION

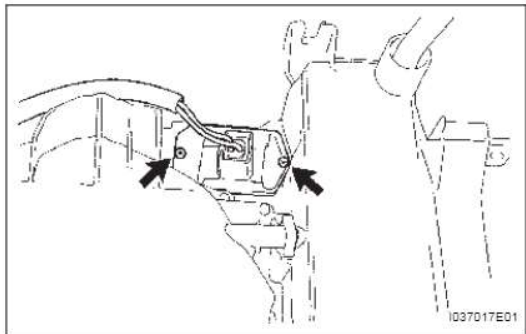
- 1. INSPECT BLOWER RESISTOR
 - (a) Measure the resistance of the resistor.
- Standard resistance**

Tester Connection	Specified Condition
1 - 2	1.386 to 1.595 Ω
1 - 3	0.363 to 0.418 Ω
1 - 4	2.595 to 2.986 Ω

If the result is not as specified, replace the blower resistor.

INSTALLATION

- 1. INSTALL BLOWER RESISTOR
 - (a) Install the blower resistor with the 2 screws.
 - (b) Connect the connector.
- 2. INSTALL ECM (See page AC-61)
- 3. INSTALL ECM COVER (See page AC-61)



DTC	B1413	Evaporator Temperature Sensor Circuit
-----	-------	---------------------------------------

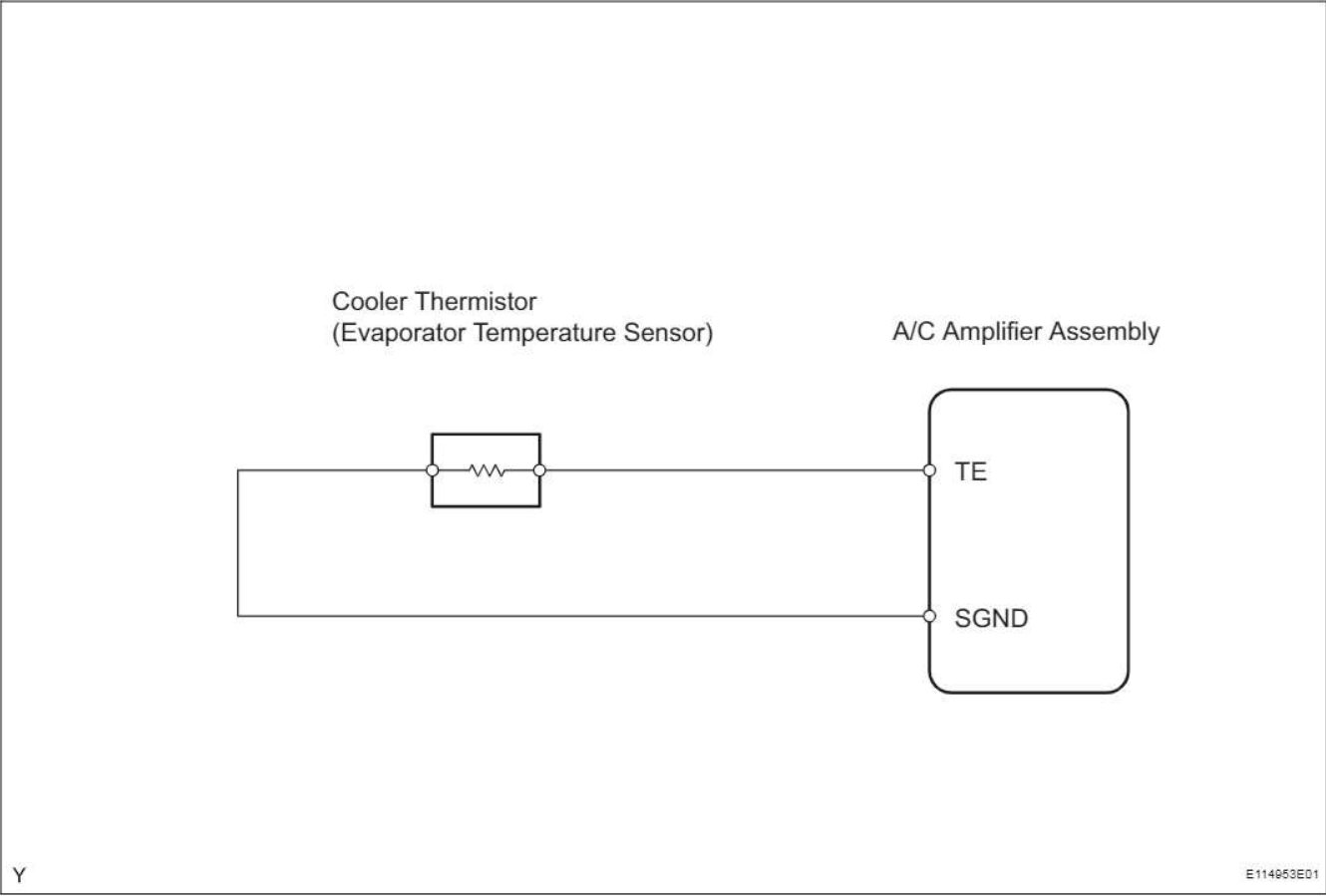
DESCRIPTION

The evaporator temperature sensor is installed on the evaporator in the A/C unit. It detects the temperature of the cooled air that has passed through the evaporator and controls the air conditioning. Then it sends appropriate signals to the A/C amplifier assembly. The resistance of the evaporator temperature sensor changes in accordance with the temperature of the cooled air that has passed through the evaporator. As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases.

The A/C amplifier assembly applies voltage (5 V) to the evaporator temperature sensor and reads voltage changes as the resistance of the evaporator temperature sensor changes. This sensor is used for frost prevention.

DTC No.	DTC Detection Condition	Trouble Area
B1413	Open or short in evaporator temperature sensor circuit	• Cooler thermistor • Harness and connector between cooler thermistor and A/C amplifier • A/C amplifier assembly

WIRING DIAGRAM



INSPECTION PROCEDURE

1

READ VALUE OF INTELLIGENT TESTER (COOLER THERMISTOR)

- (a) Check the DATA LIST for proper functioning of the cooler thermistor (evaporator temperature sensor).

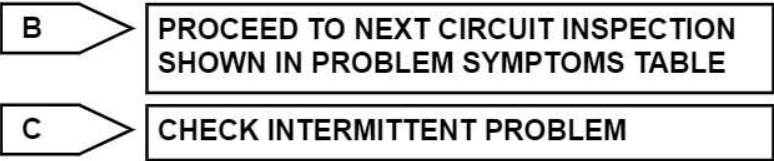
A/C amplifier assembly

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
EVAP TEMP (Evaporator temperature sensor)	Evaporator temperature / Min.: -29.7°C (-21.46°F), Max.: 59.55°C (139.019°F)	Actual evaporator temperature is displayed	Open in circuit: -29.7°C (-21.46°F) (continuous, regardless of actual temperature) Short in circuit: 59.55°C (139.19°F) (continuous, regardless of actual temperature)

OK:
The display is as specified in the normal condition.

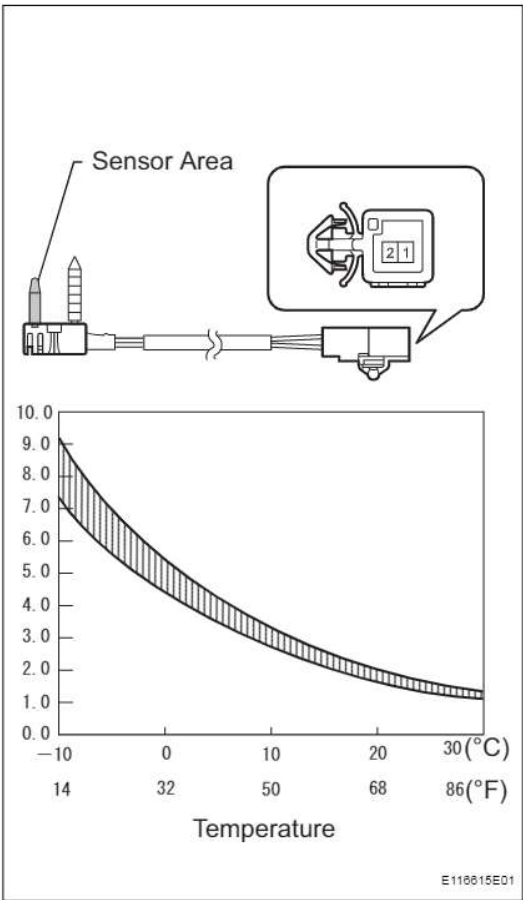
Result

Result	Proceed to
NG	A
OK (when troubleshooting according to Problem Symptoms Table)	B
OK (when troubleshooting according to DTC Chart)	C



2

INSPECT COOLER THERMISTOR



- (a) Remove the cooler thermistor (evaporator temperature sensor).
- (b) Measure the resistance of the thermistor.
- Standard resistance

Tester Connection	Condition	Specified Condition
1 - 2	-10°C (14°F)	7.30 to 9.10 kΩ
1 - 2	-5°C (23°F)	5.65 to 6.95 kΩ
1 - 2	0°C (32°F)	4.40 to 5.35 kΩ
1 - 2	5°C (41°F)	3.40 to 4.15 kΩ
1 - 2	10°C (50°F)	2.70 to 3.25 kΩ
1 - 2	15°C (59°F)	2.14 to 2.58 kΩ
1 - 2	20°C (68°F)	1.71 to 2.05 kΩ
1 - 2	25°C (77°F)	1.38 to 1.64 kΩ
1 - 2	30°C (86°F)	1.11 to 1.32 kΩ

- NOTICE:
- Even slightly touching the thermistor may change the resistance value. Be sure to hold the connector of the sensor.

• When measuring the resistance, the thermistor temperature must be the same as the ambient temperature.

HINT:

As the temperature increases, the resistance decreases (see graph).

NG

REPLACE COOLER THERMISTOR

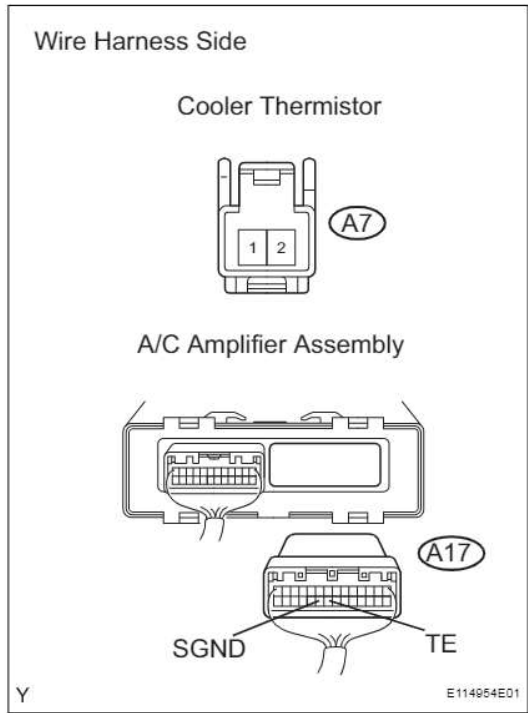
OK

AC-28

AIR CONDITIONING – AIR CONDITIONING SYSTEM

3

CHECK WIRE HARNESS (COOLER THERMISTOR - AIR CONDITIONING AMPLIFIER)



- (a) Disconnect the A7 thermistor connector.
- (b) Disconnect the A17 amplifier connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
A17-22 (TE) - A7-2	Below 1 Ω
A17-23 (SGND) - A7-1	Below 1 Ω

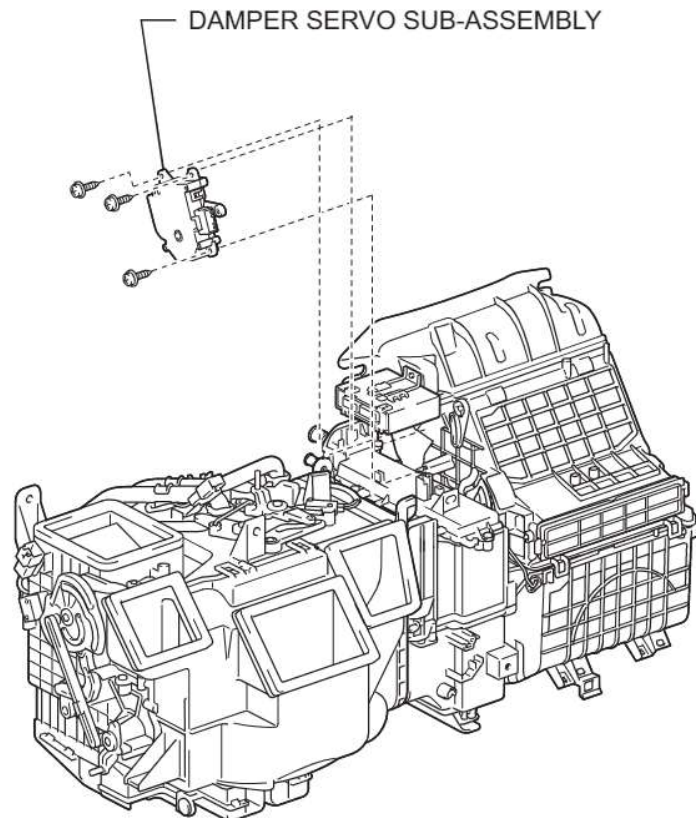
NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

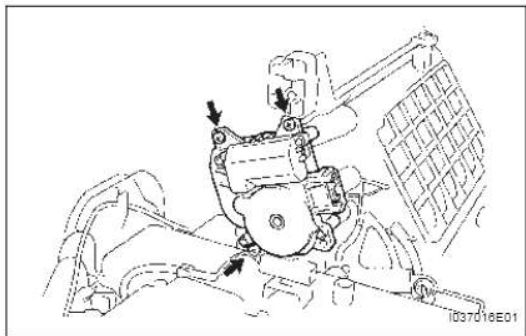
AIR INLET CONTROL SERVO MOTOR COMPONENTS



E119788E01

REMOVAL

- 1. REMOVE INSTRUMENT PANEL SUB-ASSEMBLY
 - (a) Remove the instrument panel (see page IP-4).
- 2. REMOVE LOWER INSTRUMENT PANEL ASSEMBLY
 - (a) Remove the instrument panel (see page IP-17).
- 3. REMOVE DAMPER SERVO SUB-ASSEMBLY
 - (a) Disconnect the connector.
 - (b) Remove the 3 screws and damper servo.

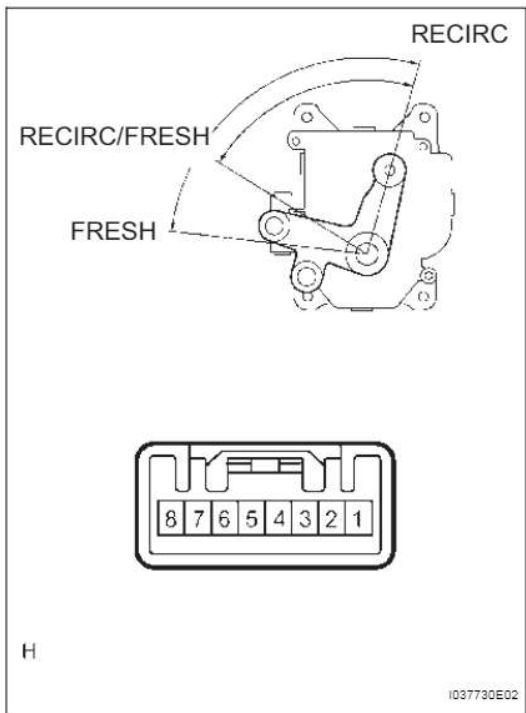


INSPECTION

- 1. INSPECT DAMPER SERVO SUB-ASSEMBLY
 - (a) Check that the damper servo moves as follows.
OK

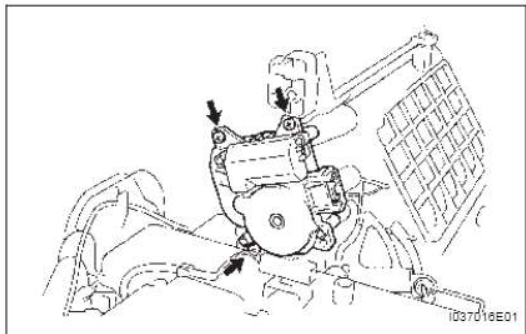
Measuring Condition	Specified Condition
Battery positive (+) → Terminal 7 Battery negative (-) → Terminal 1, 8	RECIRC
Battery positive (+) → Terminal 7 Battery negative (-) → Terminal 2, 8	RECIRC/FRESH
Battery positive (+) → Terminal 7 Battery negative (-) → Terminal 3, 8	FRESH

If the result is not as specified, replace the damper servo.



INSTALLATION

- 1. INSTALL DAMPER SERVO SUB-ASSEMBLY
 - (a) Install the damper servo with the 3 screws.
 - (b) Connect the connector.
- 2. INSTALL LOWER INSTRUMENT PANEL ASSEMBLY
 - (a) Install the instrument panel (see page IP-22).
- 3. INSTALL INSTRUMENT PANEL SUB-ASSEMBLY
 - (a) Install the instrument panel (see page IP-10).



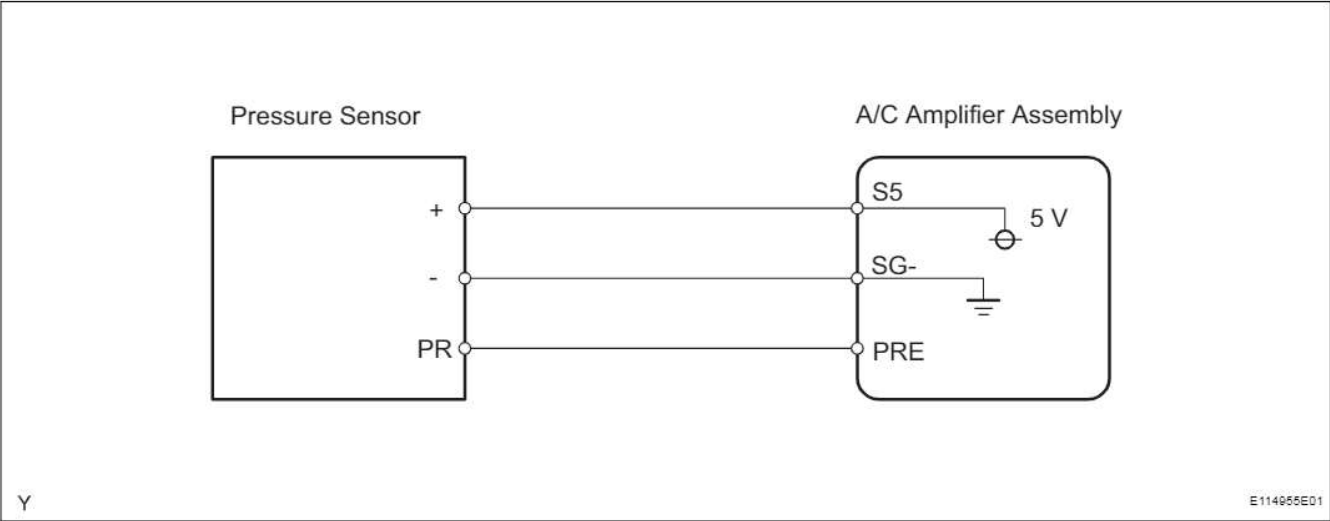
DTC	B1423	Pressure Switch Circuit
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DESCRIPTION

This DTC is output when refrigerant pressure is extremely low (0.176 MPa (1.8 kgf/cm², 25 psi) or less) or extremely high (3.025 MPa (32.0 kgf/cm², 455 psi) or more). The pressure sensor, which is installed on the pipe of the high pressure side to detect refrigerant pressure, outputs refrigerant pressure signals to the A/C amplifier assembly. The A/C amplifier assembly converts the signals to pressure according to the sensor characteristics to control the compressor.

DTC No.	DTC Detection Condition	Trouble Area
B1423	When either condition below is met: • Open or short in pressure switch circuit • Abnormal refrigerant pressure Below 0.176 MPa (1.8 kgf/cm ² , 25 psi) Over 3.025 MPa (32.0 kgf/cm ² , 455 psi)	• Pressure sensor • Refrigerant line • Harness and connector between pressure sensor and A/C amplifier • A/C amplifier assembly

WIRING DIAGRAM

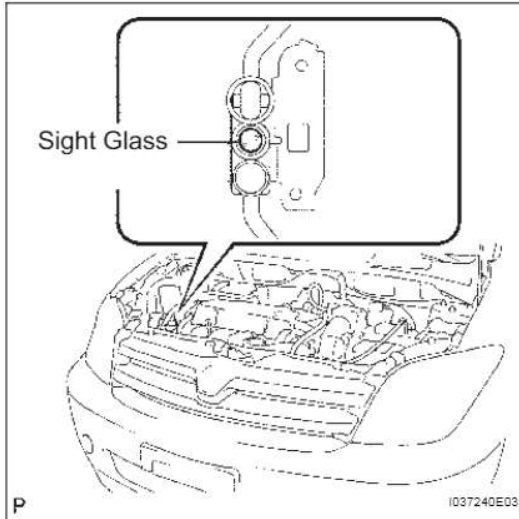


AC-30

AIR CONDITIONING – AIR CONDITIONING SYSTEM

INSPECTION PROCEDURE

1 CHECK REFRIGERANT VOLUME



(a) Check the sight glass on the liquid tube sub-assembly.

Test conditions:

- Engine is running at 1,500 rpm.
- Blower switch is at HI.
- A/C switch is ON.
- Air mix control knob is at the MAX COOL position.
- Doors are fully open.

Item	Symptom	Amount of Refrigerant	Corrective Procedures
1	Bubbles visible	Insufficient*	1. Check for gas leakage and repair if necessary 2. Add refrigerant until bubbles disappear
2	No bubbles visible	Empty, insufficient or too much	Refer to items 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	1. Check for gas leakage with gas leak detector and repair if necessary 2. Add refrigerant until bubbles disappear
4	Considerable temperature difference between compressor inlet and outlet	Correct or too much	Refer to items 5 and 6
5	Immediately after A/C is turned OFF, refrigerant becomes clear	Too much	1. Drain or discharge refrigerant 2. Bleed air and supply proper amount of purified refrigerant
6	Immediately after A/C is turned OFF, refrigerant foams and then becomes clear	Correct	-

HINT:

*: If the ambient temperature is higher than usual but cooling is sufficient, bubbles in the sight glass are permissible.

NG

CHARGE REFRIGERANT

OK

2 READ VALUE OF INTELLIGENT TESTER (PRESSURE SENSOR)

- (a) Start the engine.
(b) Turn the A/C switch ON.

AC

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-31

- (c) Check the DATA LIST for proper functioning of the pressure sensor.

A/C amplifier assembly

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
REG PRESS SENS (Regulator pressure sensor)	Regulator Pressure Sensor / Min.: 0 kgf/cm ² G, Max.: 38.19 kgf/cm ² G	Actual regulator pressure is displayed	Open in circuit: 32.5 kgf/cm ² G (continuous, regardless of actual temperature) Short in circuit: 0 kgf/cm ² G (continuous, regardless of actual temperature)

OK:

The display is as specified in the normal condition.

Result

Result	Proceed to
NG	A
OK (when troubleshooting according to Problem Symptoms Table)	B
OK (when troubleshooting according to DTC Chart)	C

B

**PROCEED TO NEXT CIRCUIT INSPECTION
SHOWN IN PROBLEM SYMPTOMS TABLE**

C

CHECK INTERMITTENT PROBLEM

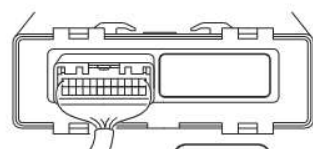
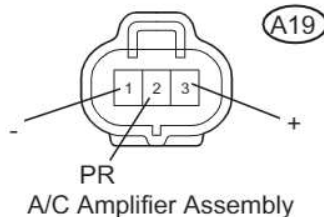
A

3

CHECK WIRE HARNESS (PRESSURE SENSOR - AIR CONDITIONING AMPLIFIER)

Wire Harness Side

Pressure Sensor



Y

E114958E01

- (a) Disconnect the A19 sensor connector.
(b) Disconnect the A17 amplifier connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
A19-3 (+) - A17-7 (S5)	Below 1 Ω
A19-2 (PR) - A17-12 (PRE)	Below 1 Ω
A19-1 (-) - A17-10 (SG-)	Below 1 Ω

NG

**REPAIR OR REPLACE HARNESS AND
CONNECTOR**

OK

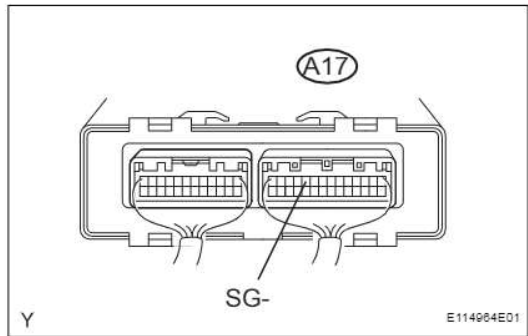
AC

AC-32

AIR CONDITIONING – AIR CONDITIONING SYSTEM

4

CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY



- (a) Remove the A/C amplifier but do not disconnect the connectors.
- (b) Measure the resistance of the connector.
- Standard resistance**

Tester Connection	Specified Condition
A17-10 (SG-) - Body ground	Below 1 Ω

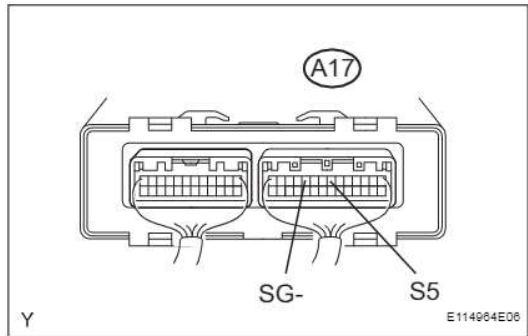
NG

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

OK

5

CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (S5 VOLTAGE)



- (a) Remove the A/C amplifier but do not disconnect the connectors.
- (b) Measure the voltage of the connector.
- Standard voltage**

Tester Connection	Condition	Specified Condition
A17-7 (S5) - A17-10 (SG-)	Ignition switch ON	4.5 to 5.5 V
	Ignition switch OFF	Below 1 V

NG

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

OK

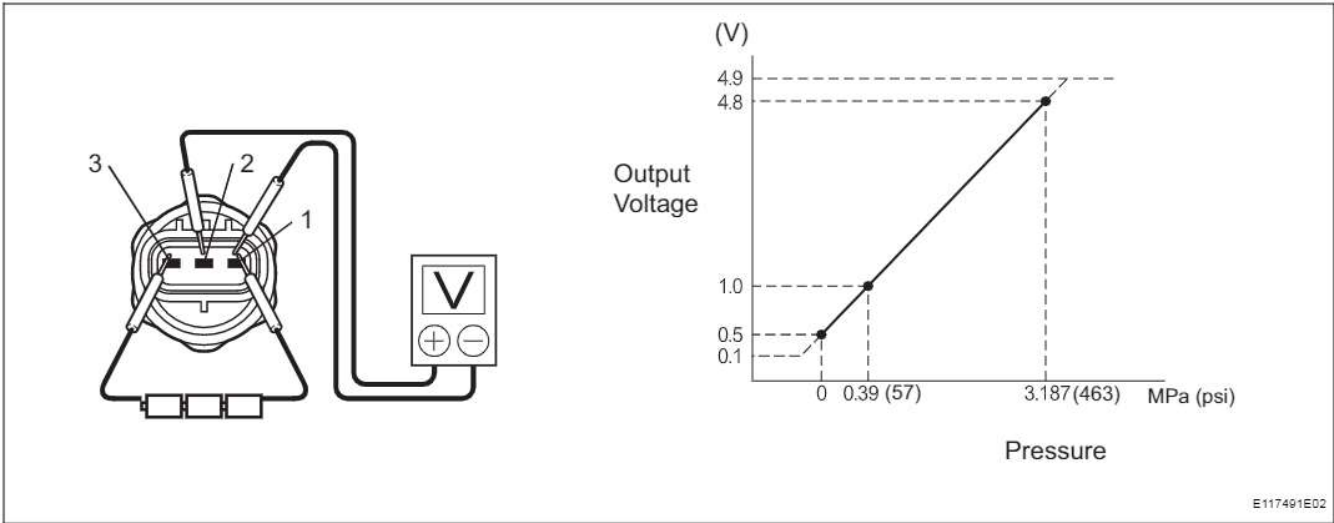
6

CHECK PRESSURE SENSOR

- (a) Install the manifold gauge set.
- (b) Connect the three 1.5 V dry cell batteries' positive (+) lead to terminal 3 and the negative (-) lead to terminal 1. Then connect the voltmeter's positive (+) lead to terminal 2 and the negative (-) lead to terminal 1. Measure the voltage.

AIR CONDITIONING – AIR CONDITIONING SYSTEM

AC-33



OK:
The voltage changes according to refrigerant pressure, as shown in the graph.

HINT:
The graph shows the relationship between pressure and output voltage when the pressure sensor is used with an input voltage of 5 V. When using three 1.5 V dry cell batteries connected in series, the output voltage will be 90% of the output voltage in the 5 V input voltage case.

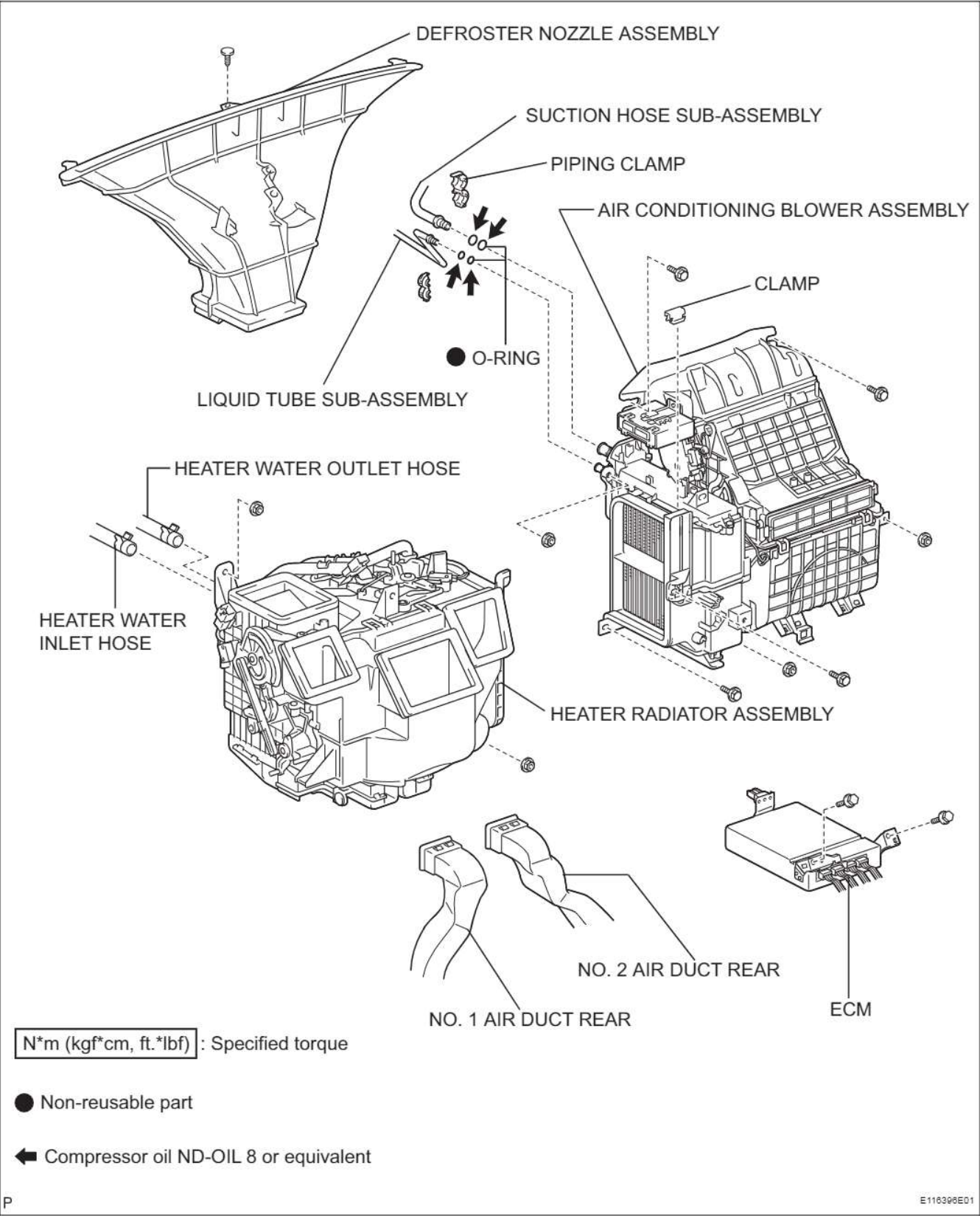
NG **REPLACE LIQUID TUBE SUB-ASSEMBLY**

OK

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

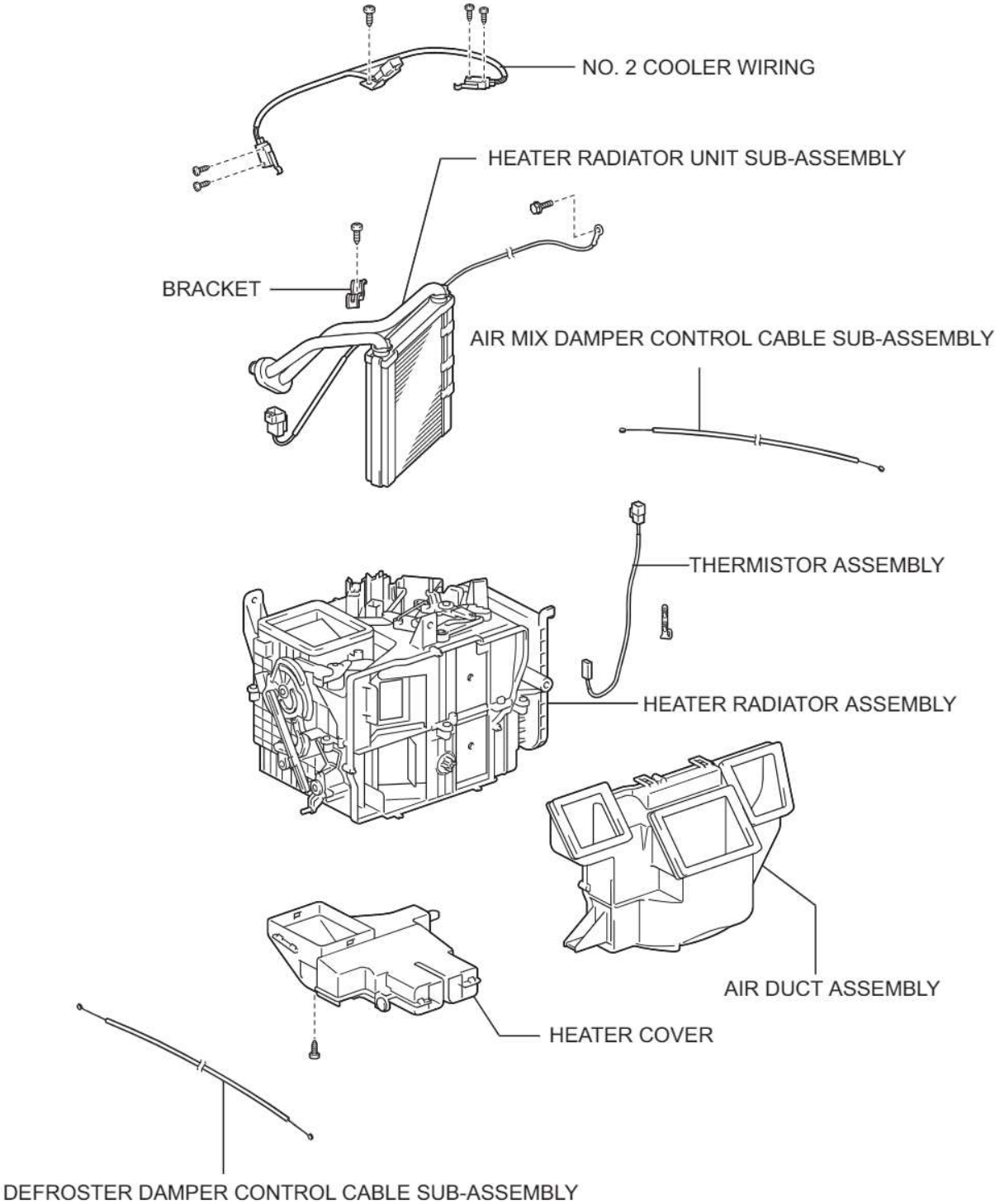
HEATER RADIATOR ASSEMBLY

COMPONENTS



AC-70

AIR CONDITIONING – HEATER RADIATOR ASSEMBLY



AC

P

E116397E01

AC-34

AIR CONDITIONING – AIR CONDITIONING SYSTEM

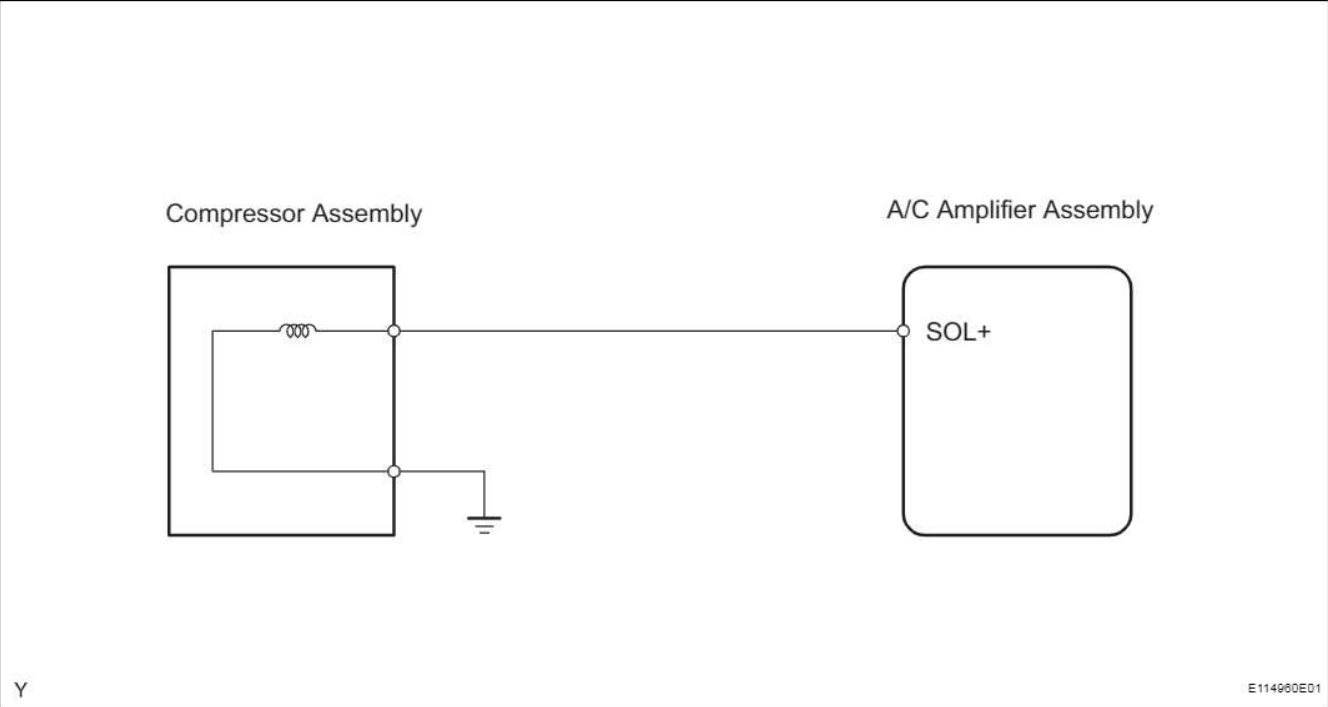
DTC	B1451	Compressor Solenoid Circuit
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DESCRIPTION

The compressor assembly regulates the amount of refrigerant to discharge according to signals from the A/C amplifier assembly. The A/C amplifier assembly controls the compressor by using heat load variance and engine rpm variance data to determine the amount of refrigerant to discharge, and then converts the data to a signal.

DTC No.	DTC Detection Condition	Trouble Area
B1451	Open or short in solenoid of the externally changeable compressor circuit	- Compressor assembly - Harness and connector between A/C amplifier and compressor - A/C amplifier assembly

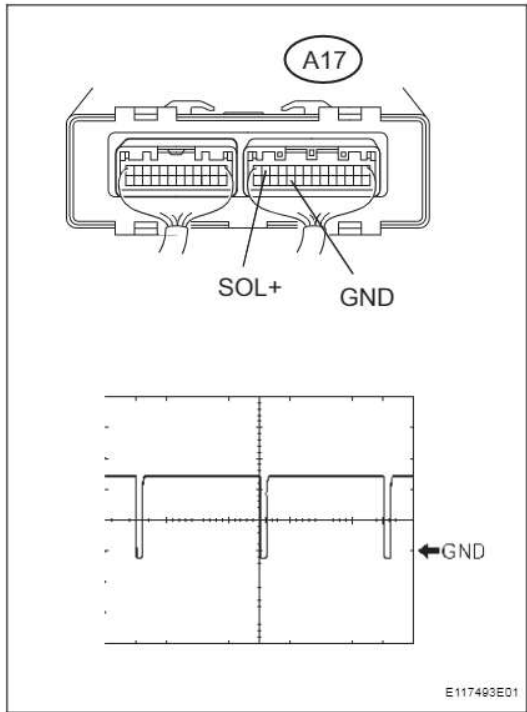
WIRING DIAGRAM



INSPECTION PROCEDURE

1

CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (SOLT VOLTAGE)



- (a) Remove the A/C amplifier but do not disconnect the connectors.
- (b) Start the engine.
- (c) Turn the A/C switch ON and blower switch ON.
- (d) Using an oscilloscope, check the waveform of the amplifier.

Item	Content
Tester Connection	SOL+ (A17-13) - GND (A17-24)
Tool Setting	5 V/DIV., 500μsec./DIV.
Conditions	Engine idling

OK:
Waveform is as shown in the illustration.

Result

Result	Proceed to
NG	A
OK (when troubleshooting according to Problem Symptoms Table)	B
OK (when troubleshooting according to DTC Chart)	C

B

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

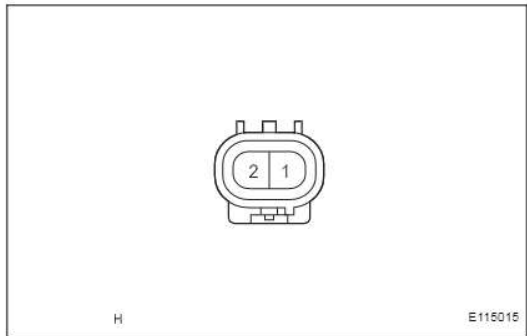
C

CHECK INTERMITTENT PROBLEM

A

2

INSPECT COMPRESSOR ASSEMBLY



- (a) Remove the compressor.
 - (b) Measure the resistance of the compressor.
- Standard resistance**

Tester Connection	Specified Condition
1 - 2	10.1 to 11.1 Ω

NG

REPLACE COMPRESSOR ASSEMBLY

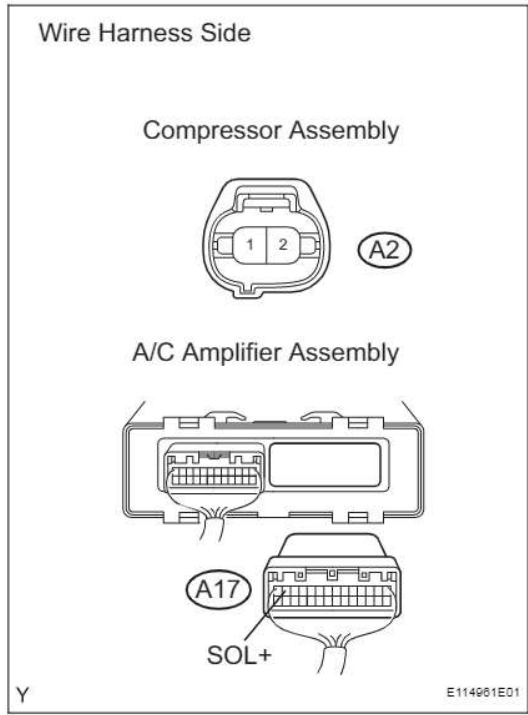
AC-36

AIR CONDITIONING – AIR CONDITIONING SYSTEM

OK

3

CHECK WIRE HARNESS (COMPRESSOR - AIR CONDITIONING AMPLIFIER)



- (a) Disconnect the A2 compressor connector.
 - (b) Disconnect the A17 amplifier connector.
 - (c) Measure the resistance of the wire harness side connectors.
- Standard resistance**

Tester Connection	Specified Condition
A2-2 - A17-13 (SOL+)	Below 1 Ω

NG

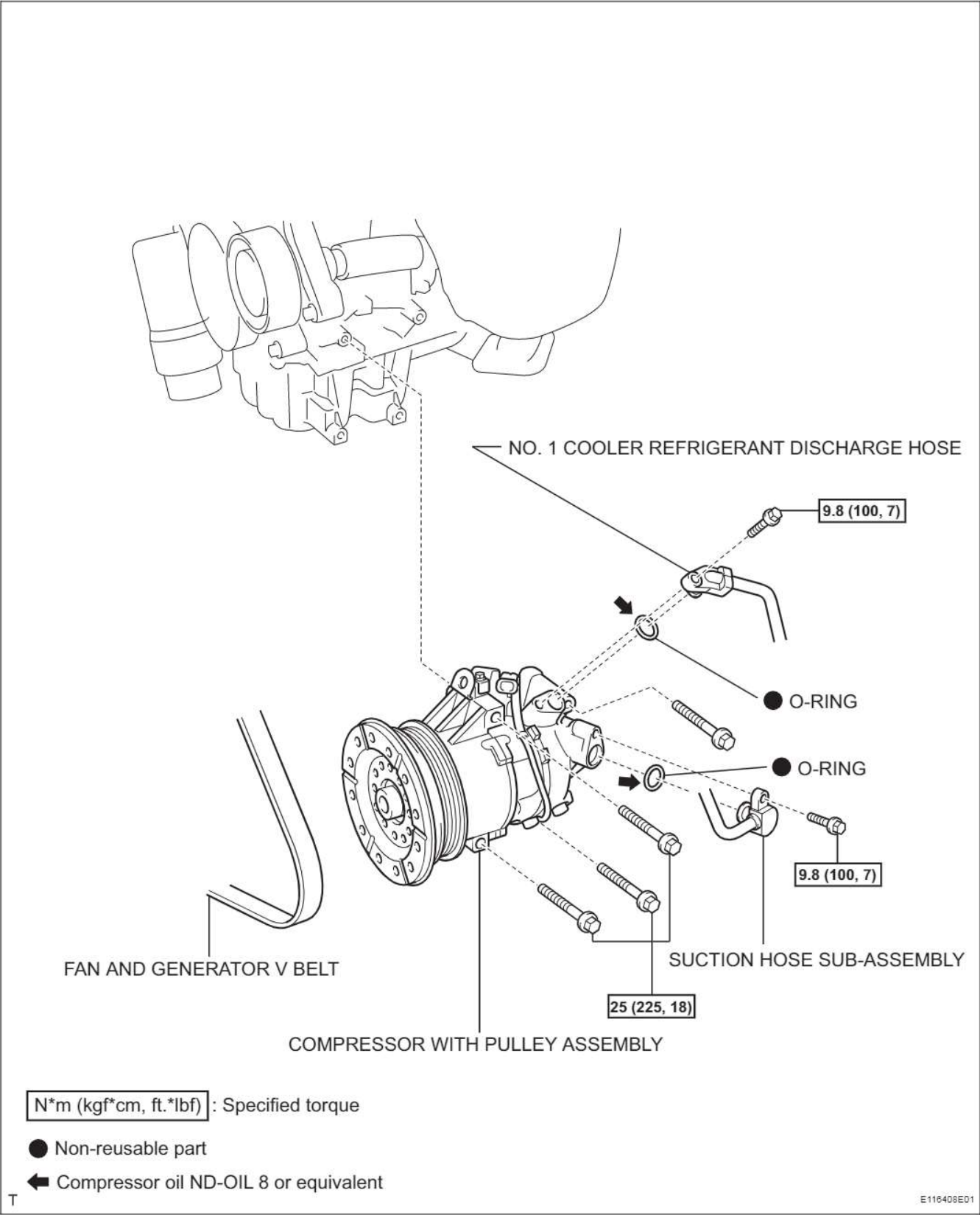
REPAIR OR REPLACE HARNESS AND CONNECTOR

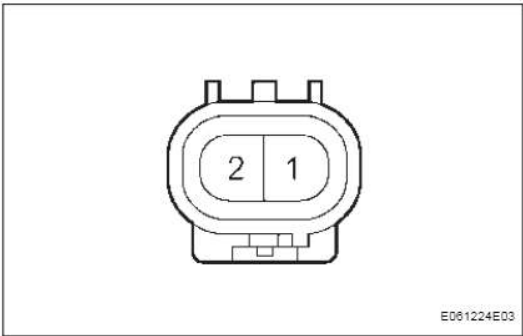
OK

REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY

COMPRESSOR AND PULLEY

COMPONENTS





ON-VEHICLE INSPECTION

1. CHECK COMPRESSOR WITH PULLEY ASSEMBLY

- (a) Inspect compressor resistance.
- (1) Disconnect the connector.
 - (2) Measure the resistance according to the value(s) in the table below.

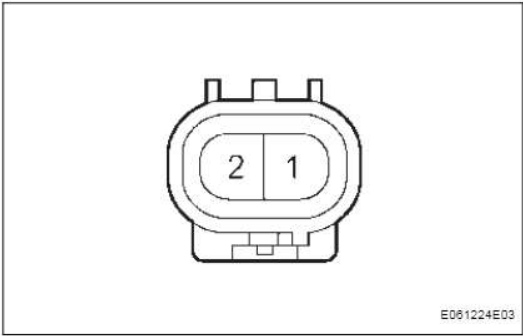
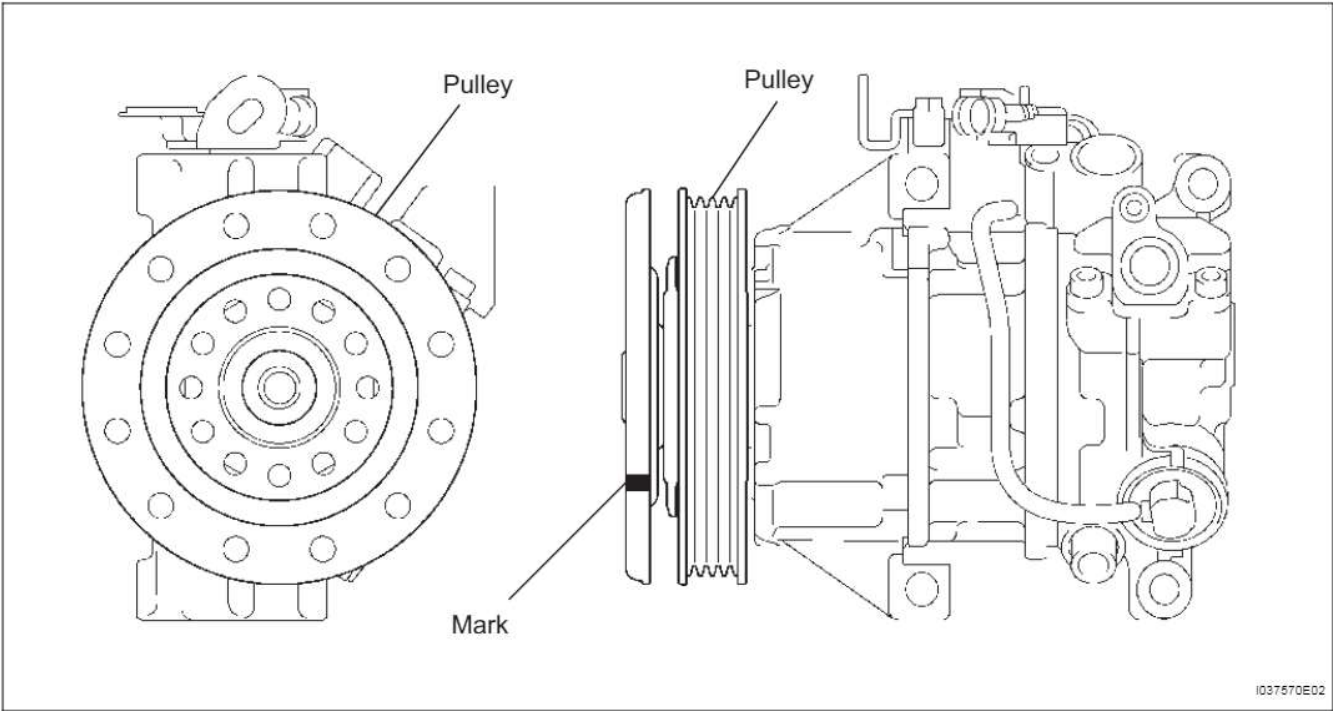
Standard resistance

Tester Connection	Specified Condition
1 - 2	10.1 to 11.1 Ω

- (b) Check the operation.
- (1) Start the engine.
 - (2) Check the compressor pulley.

OK:

The compressor shaft rotates along with the pulley.



- (3) When the refrigerant amount and congestion of A/C cycle cannot be checked by the condition of the sight glass and manifold gauge, connect the positive battery cable to terminal 1 of the connector and the negative battery cable to the terminal 2 of the connector. Then check if cold air comes out while setting the blower switch to the "LO" position.

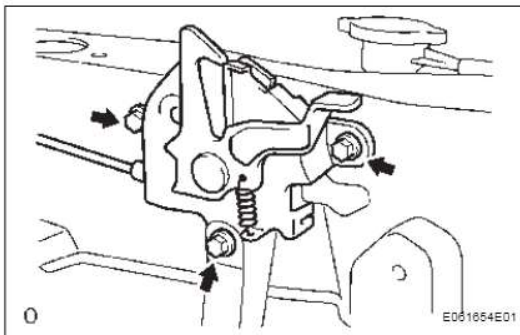
REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

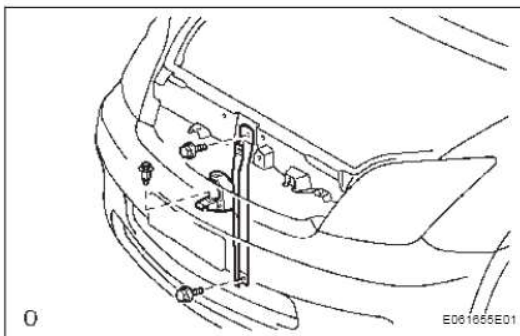
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page [AC-46](#))
3. REMOVE RADIATOR GRILLE (See page [ET-13](#))
4. REMOVE LOW PITCHED HORN ASSEMBLY (See page [HO-5](#))
5. REMOVE HIGH PITCHED HORN ASSEMBLY (See page [HO-7](#))
6. REMOVE HOOD LOCK ASSEMBLY
 - (a) Remove the 3 bolts and hood lock.



7. REMOVE HOOD LOCK SUPPORT SUB-ASSEMBLY

- (a) Remove the clip.
- (b) Remove the 2 bolts and hood lock support.

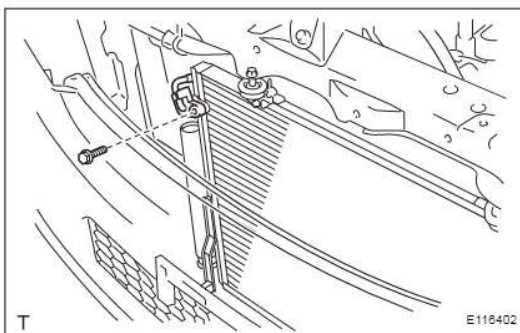


8. DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the bolt and disconnect the cooler refrigerant discharge hose from the condenser.
- (b) Remove the O-ring from the cooler refrigerant discharge hose.

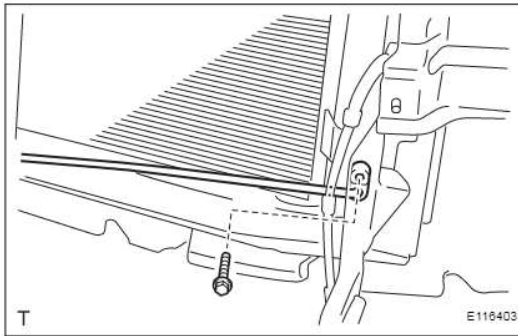
NOTICE:

Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matter from entering.



AC-86

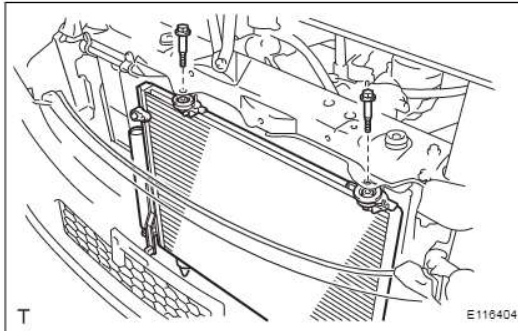
AIR CONDITIONING – CONDENSER

**9. DISCONNECT LIQUID TUBE SUB-ASSEMBLY**

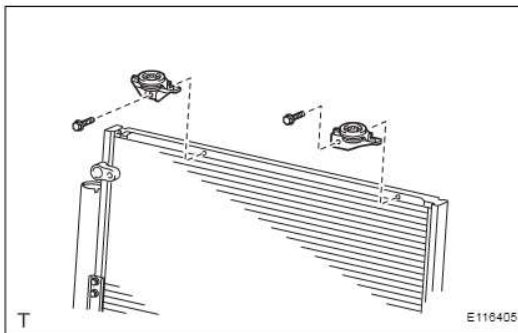
- (a) Remove the bolt and liquid tube from the condenser.
- (b) Remove the O-ring from the liquid tube.

NOTICE:

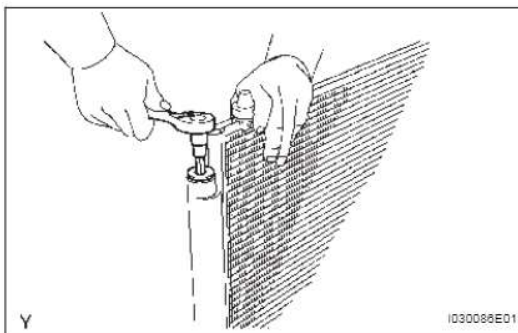
Seal the opening of the disconnected parts using vinyl tape to prevent moisture and foreign matter from entering.

**10. REMOVE CONDENSER WITH RECEIVER ASSEMBLY**

- (a) Remove the 2 bolts and condenser.

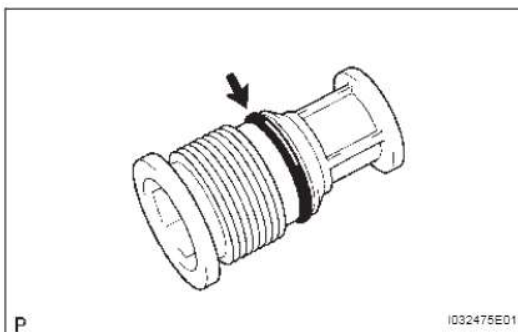
**DISASSEMBLY****1. REMOVE NO. 1 CONDENSER BRACKET COLLAR**

- (a) Remove the 2 bolts and 2 condenser bracket collars.

**2. REMOVE COOLER DRYER**

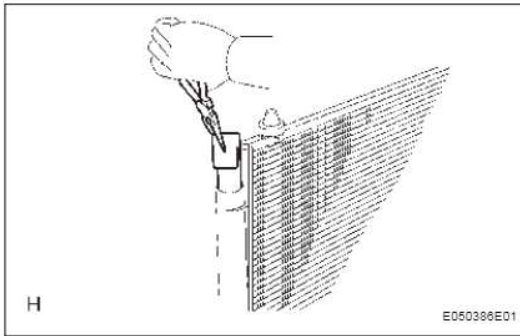
- (a) Using a 14 mm socket hexagon wrench, remove the cap from the modulator.

- (b) Remove the O-ring from the cap.

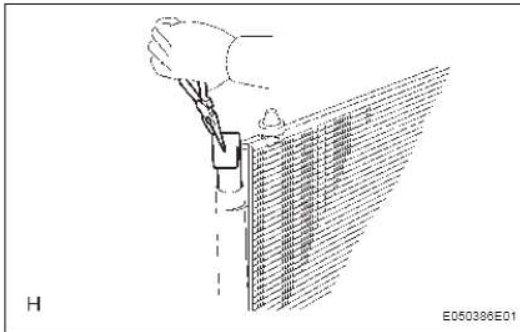


AIR CONDITIONING – CONDENSER

AC-87



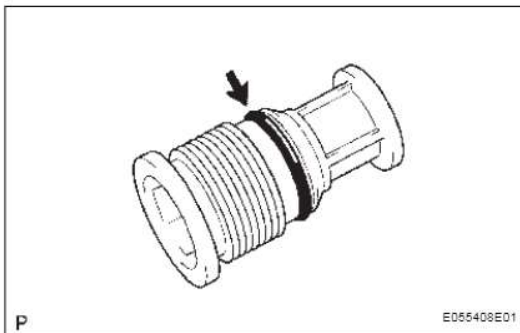
(c) Using pliers, remove the cooler dryer.



REASSEMBLY

1. INSTALL COOLER DRYER

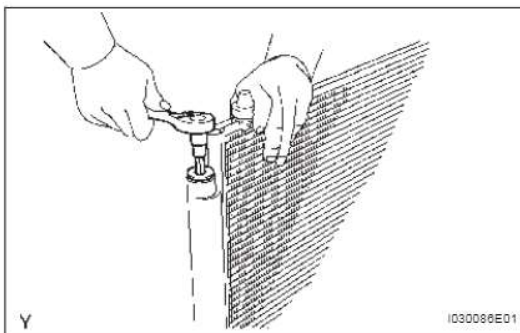
(a) Using pliers, install the cooler dryer.



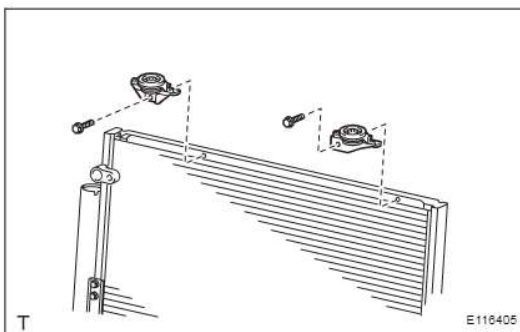
(b) Apply a sufficient amount of compressor oil to the contact surfaces of a new O-ring and the cap.

Compressor oil:**ND-OIL 8 or equivalent**

(c) Install the O-ring to the cap.



(d) Using a 14 mm socket hexagon wrench, install the cap to the modulator.

Torque: 2.9 N*m (29 kgf*cm, 25 in.*lbf)

2. INSTALL NO.1 CONDENSER BRACKET COLLAR

(a) Install the 2 condenser bracket collars with the 2 bolts.

Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

AC

AC-88

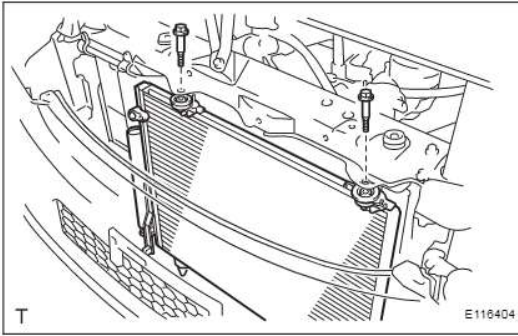
AIR CONDITIONING – CONDENSER

INSTALLATION

1. INSTALL CONDENSER WITH RECEIVER ASSEMBLY

- (a) Install the condenser w/ receiver with the 2 bolts.

Torque: 9.8 N*m (100 kgf*cm, 7 ft.*lbf)



2. CONNECT LIQUID TUBE SUB-ASSEMBLY

- (a) Remove the vinyl tape attached to the liquid tube and condenser.

- (b) Sufficiently apply compressor oil to a new O-ring and liquid tube.

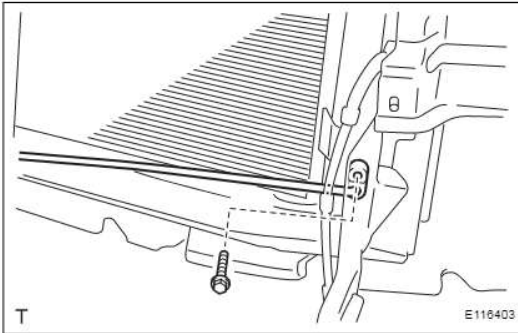
Compressor oil:

ND-OIL 8 or equivalent

- (c) Install the O-ring to the liquid tube.

- (d) Install the liquid tube sub-assembly to the condenser with the bolt.

Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)



3. CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

- (a) Remove the vinyl tape attached to the hose and condenser.

- (b) Sufficiently apply compressor oil to a new O-ring and hose joint.

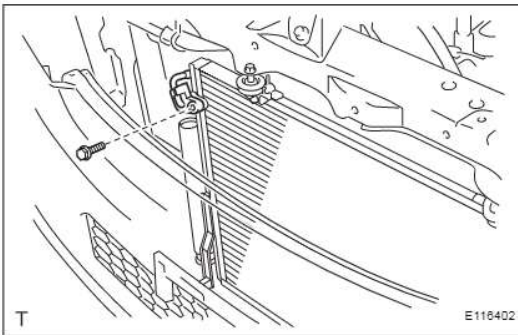
Compressor oil:

ND-OIL 8 or equivalent

- (c) Install the O-ring to the cooler refrigerant discharge hose.

- (d) Connect the No. 1 cooler refrigerant discharge hose to the condenser with the bolt.

Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

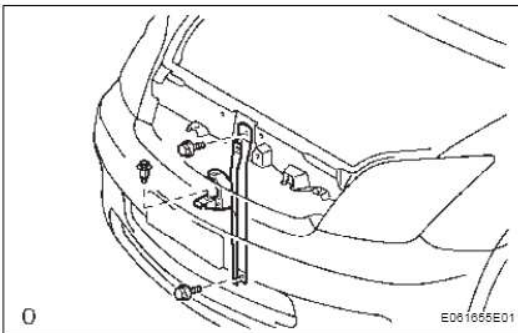


4. INSTALL HOOD LOCK SUPPORT SUB-ASSEMBLY

- (a) Install the hood lock support with the 2 bolts.

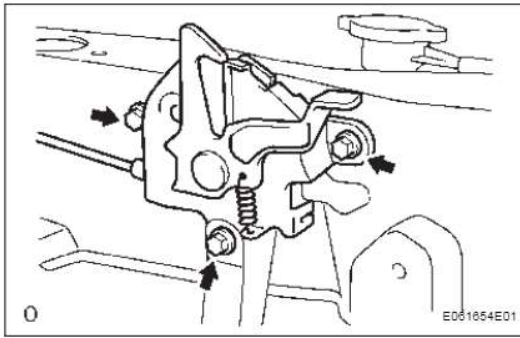
Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)

- (b) Install the clip.



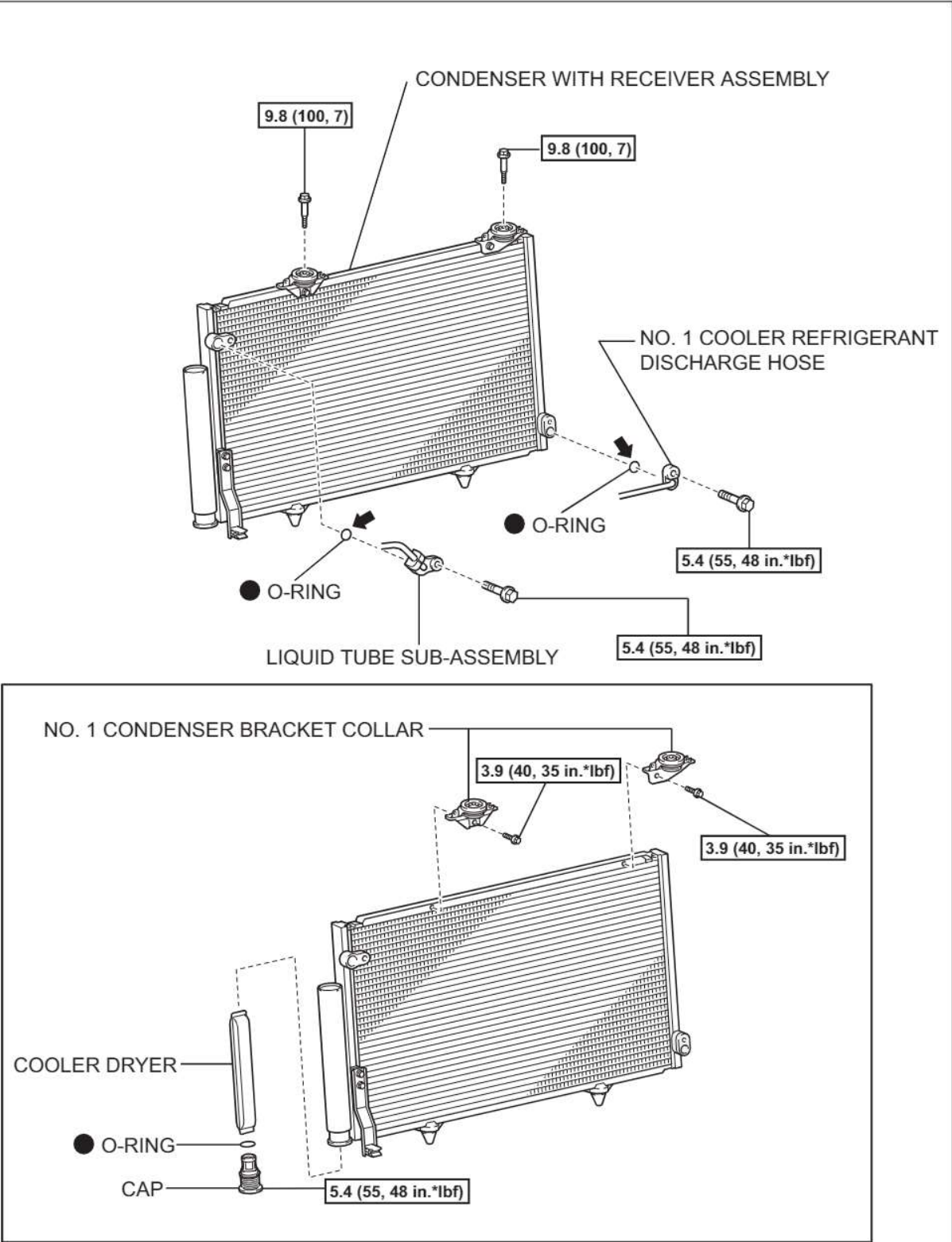
AIR CONDITIONING – CONDENSER

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5. **INSTALL HOOD LOCK ASSEMBLY**
(a) Install the hood lock with the 3 bolts.
6. **INSTALL HIGH PITCHED HORN ASSEMBLY** (See page [HO-8](#))
7. **INSTALL LOW PITCHED HORN ASSEMBLY** (See page [HO-6](#))
8. **INSTALL RADIATOR GRILLE**
9. **ADJUST HOOD SUB-ASSEMBLY**
10. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
11. **PERFORM INITIALIZATION**
(a) Perform initialization (see page [IN-23](#)).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.
12. **CHARGE REFRIGERANT** (See page [AC-46](#))
13. **WARM UP ENGINE** (See page [AC-47](#))
14. **CHECK FOR LEAKAGE OF REFRIGERANT** (See page [AC-47](#))

CONDENSER
COMPONENTS



N*m (kgf*cm, ft.*lbf) : Specified torque ● Non-reusable part ← Compressor oil ND-OIL 8 or equivalent

T

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AC

ON-VEHICLE INSPECTION

1. INSPECT CONDENSER WITH RECEIVER ASSEMBLY

- (a) If the fins of the condenser are dirty, clean them with water. Dry the fins with compressed air.

NOTICE:

Be careful not to damage the condenser.

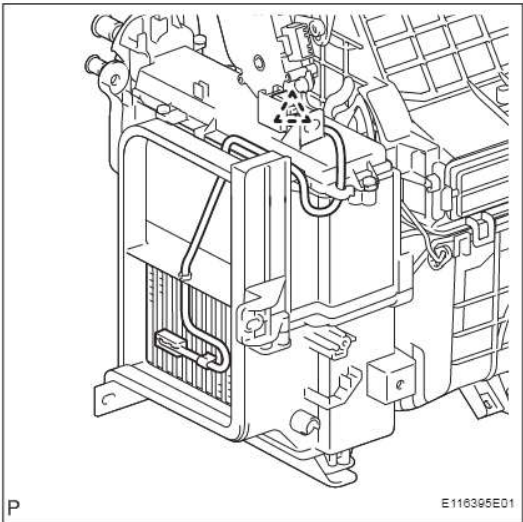
- (b) If a fin of the condenser is bent, use a screwdriver or pliers to straighten it.

2. CHECK CONDENSER FOR LEAKAGE OF REFRIGERANT

- (a) Using a gas leak detector, check the pipe joints for gas leakage.
If gas leakage is detected in a joint, check the torque of the joint.

REMOVAL

1. REMOVE AIR CONDITIONING BLOWER ASSEMBLY
- (a) Remove the A/C blower (see page AC-52).
2. REMOVE COOLER THERMISTOR
- (a) Detach the clamp and remove the cooler thermistor.
- NOTICE:
- Do not damage the packing when removing the thermistor.



INSPECTION

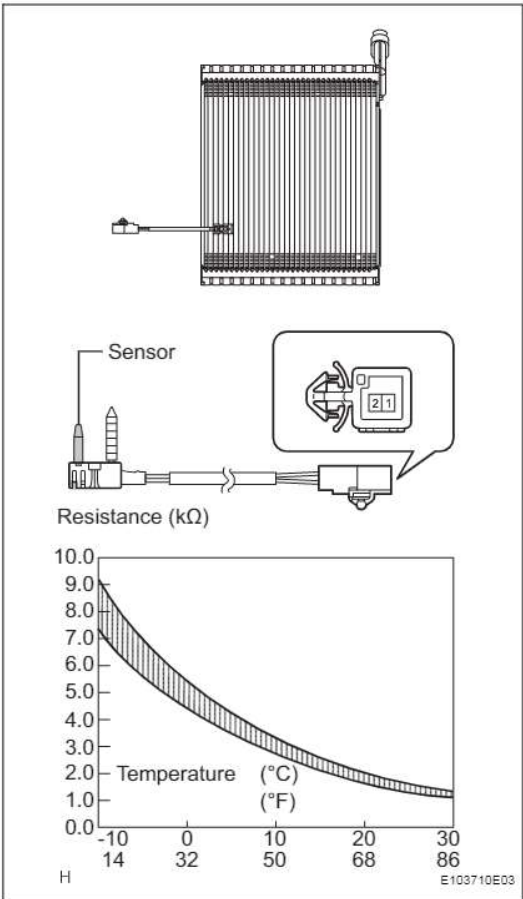
1. INSPECT COOLER THERMISTOR
- (a) Measure the resistance of the thermistor.
- Standard resistance

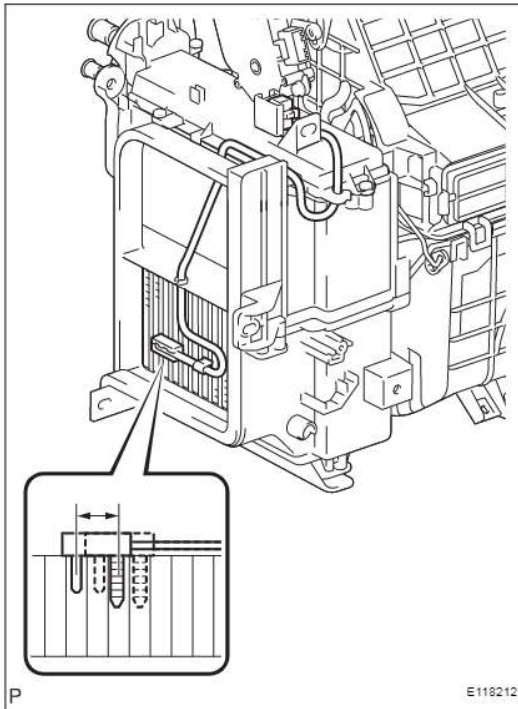
Tester Connection	Condition	Specified Condition
1 - 2	-10°C (14°F)	7.40 to 9.20 kΩ
1 - 2	-5°C (23°F)	5.65 to 7.00 kΩ
1 - 2	0°C (32°F)	4.35 to 5.40 kΩ
1 - 2	5°C (41°F)	3.40 to 4.20 kΩ
1 - 2	10°C (50°F)	2.68 to 3.30 kΩ
1 - 2	15°C (59°F)	2.10 to 2.60 kΩ
1 - 2	20°C (68°F)	1.66 to 2.10 kΩ
1 - 2	25°C (77°F)	1.32 to 1.66 kΩ
1 - 2	30°C (86°F)	1.05 to 1.35 kΩ

- NOTICE:
- Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.
 - When measuring, the sensor temperature must be almost the same as the ambient temperature.

HINT:

As the temperature increases, the resistance decreases (see the graph). If the resistance value is not as specified, replace the sensor.



AC-92**AIR CONDITIONING – EVAPORATOR TEMPERATURE SENSOR****INSTALLATION****1. INSTALL COOLER THERMISTOR**

- (a) Install the cooler thermistor and attach the clamp.

NOTICE:

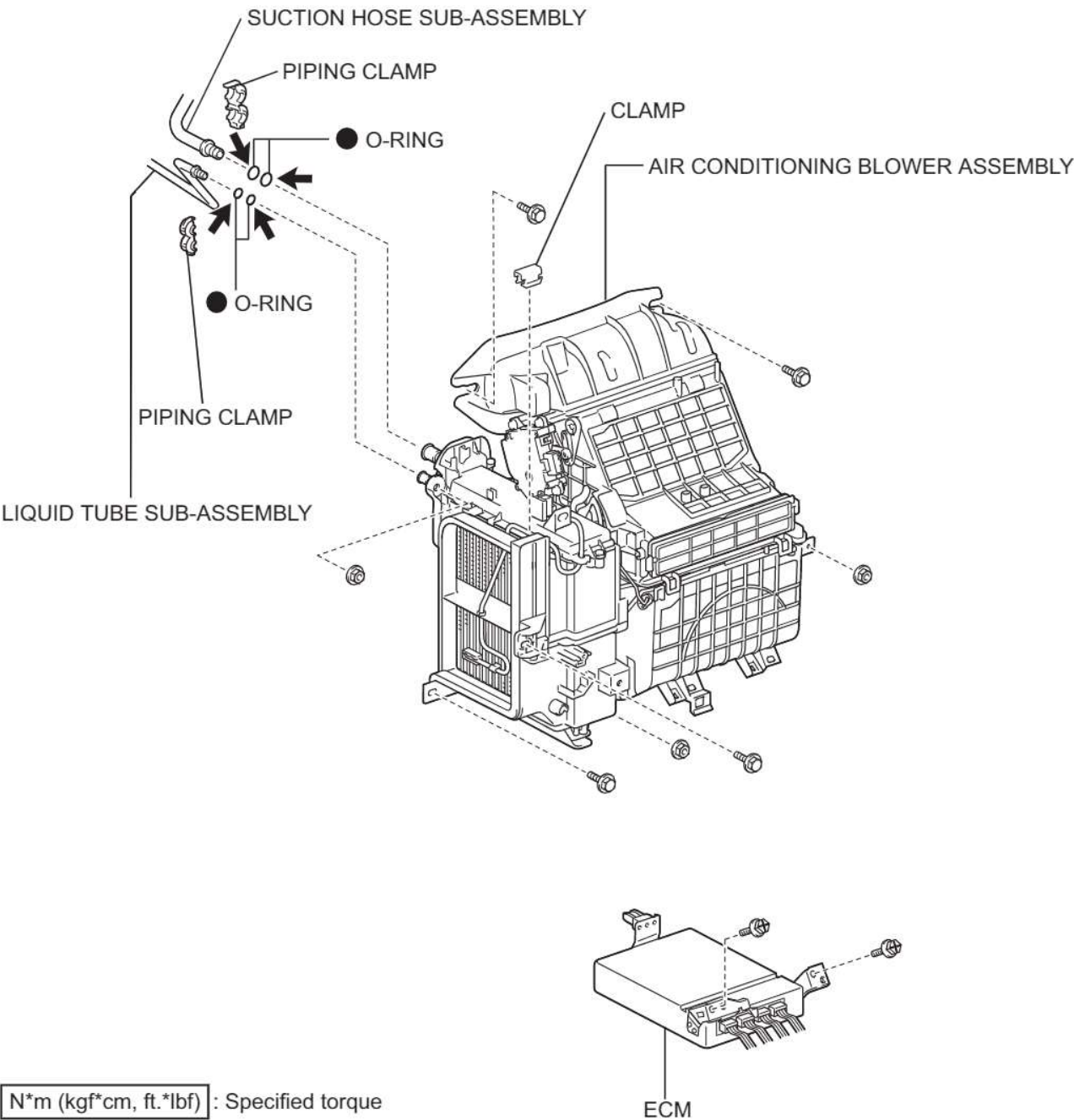
- When installing the thermistor, move it one fin horizontally toward the front of the vehicle from its former position. Do not install it to its former position, as that fin may be bent and the thermistor may not function properly.
- Do not install the thermistor to a position that is horizontally toward the rear of the vehicle.

2. INSTALL AIR CONDITIONING BLOWER ASSEMBLY

- (a) Install the A/C blower (see page [AC-60](#)).

EVAPORATOR TEMPERATURE SENSOR

COMPONENTS



- N*m (kgf*cm, ft.*lbf)

:

Specified torque
- Non-reusable part
- ←

Compressor oil ND-OIL 8 or equivalent

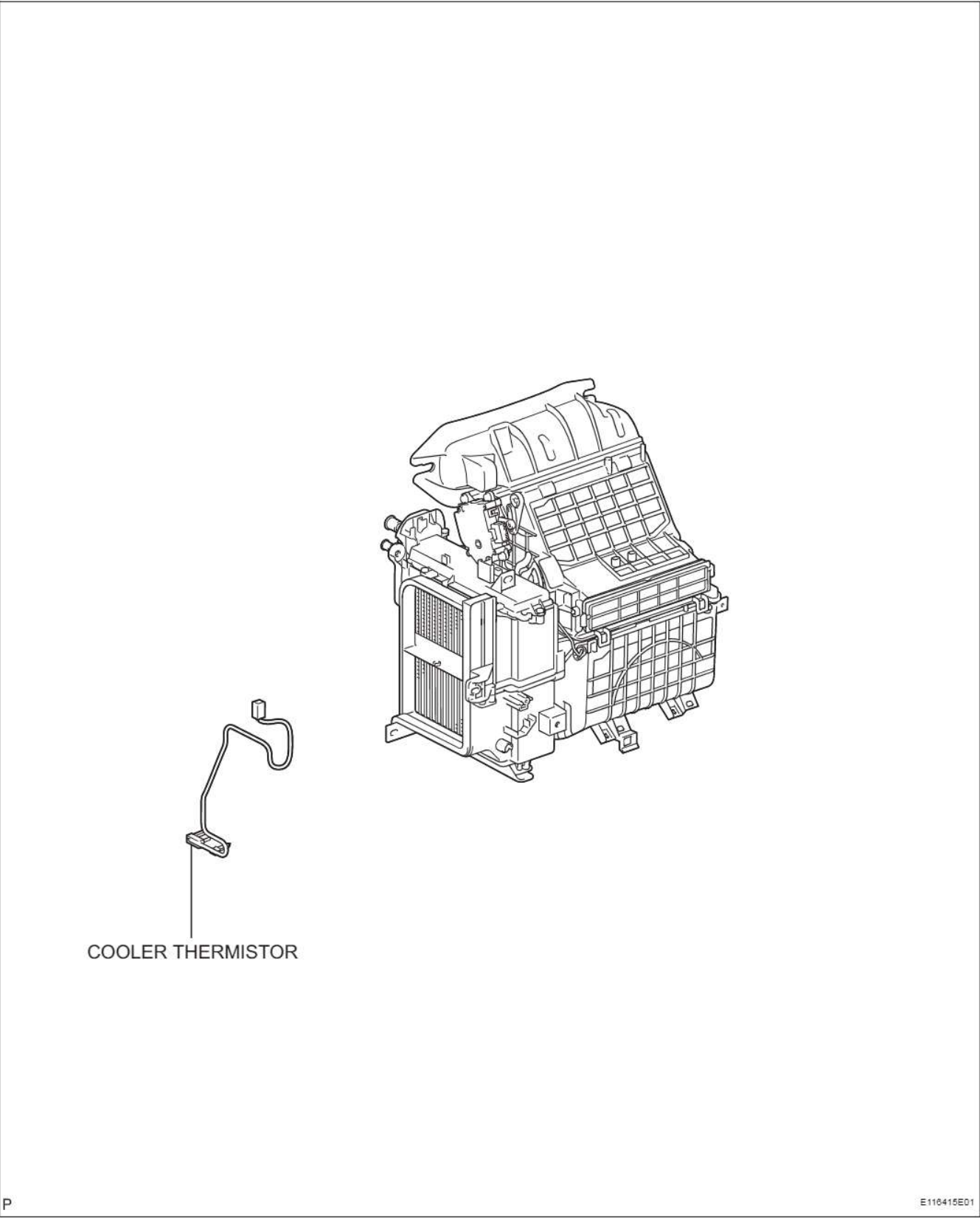
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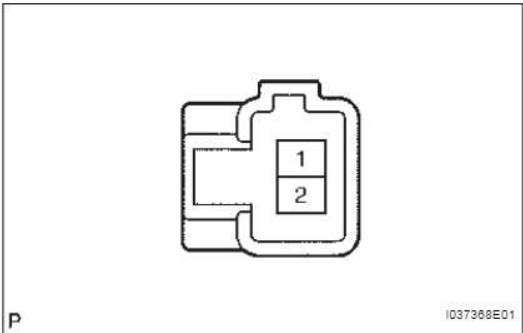
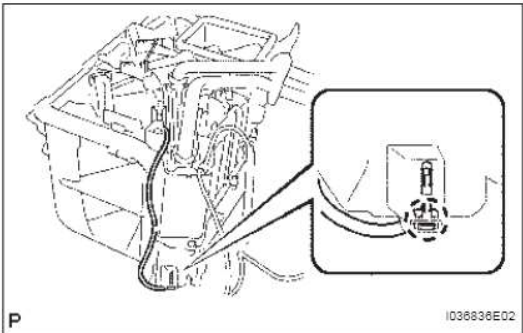
AC-90

AIR CONDITIONING – EVAPORATOR TEMPERATURE SENSOR



REMOVAL

1. REMOVE HEATER RADIATOR ASSEMBLY
- (a) Remove the heater radiator (see page AC-71).
2. REMOVE THERMISTOR ASSEMBLY
- (a) Detach the claw and remove the clamp.
- (b) Remove the thermistor.



INSPECTION

1. INSPECT THERMISTOR ASSEMBLY
- (a) Measure the resistance between terminals 1 and 2 of thermistor.

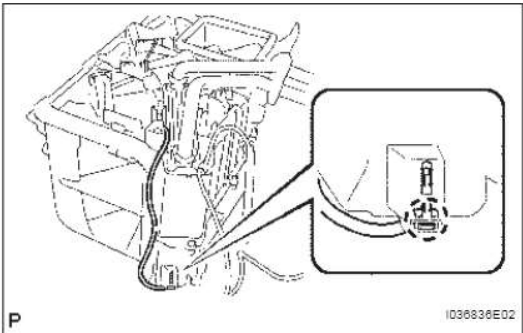
Standard resistance

Condition	Specified Condition
Approx. -30°C (-86°F)	80 to 100 kΩ
Approx. 25°C (77°F)	4.8 to 5.2 kΩ
Approx. 40°C (104°F)	2.507 to 2.807 kΩ
Approx. 100°C (212°F)	0.3 to 0.37 kΩ

If the result is not as specified, replace the thermistor.

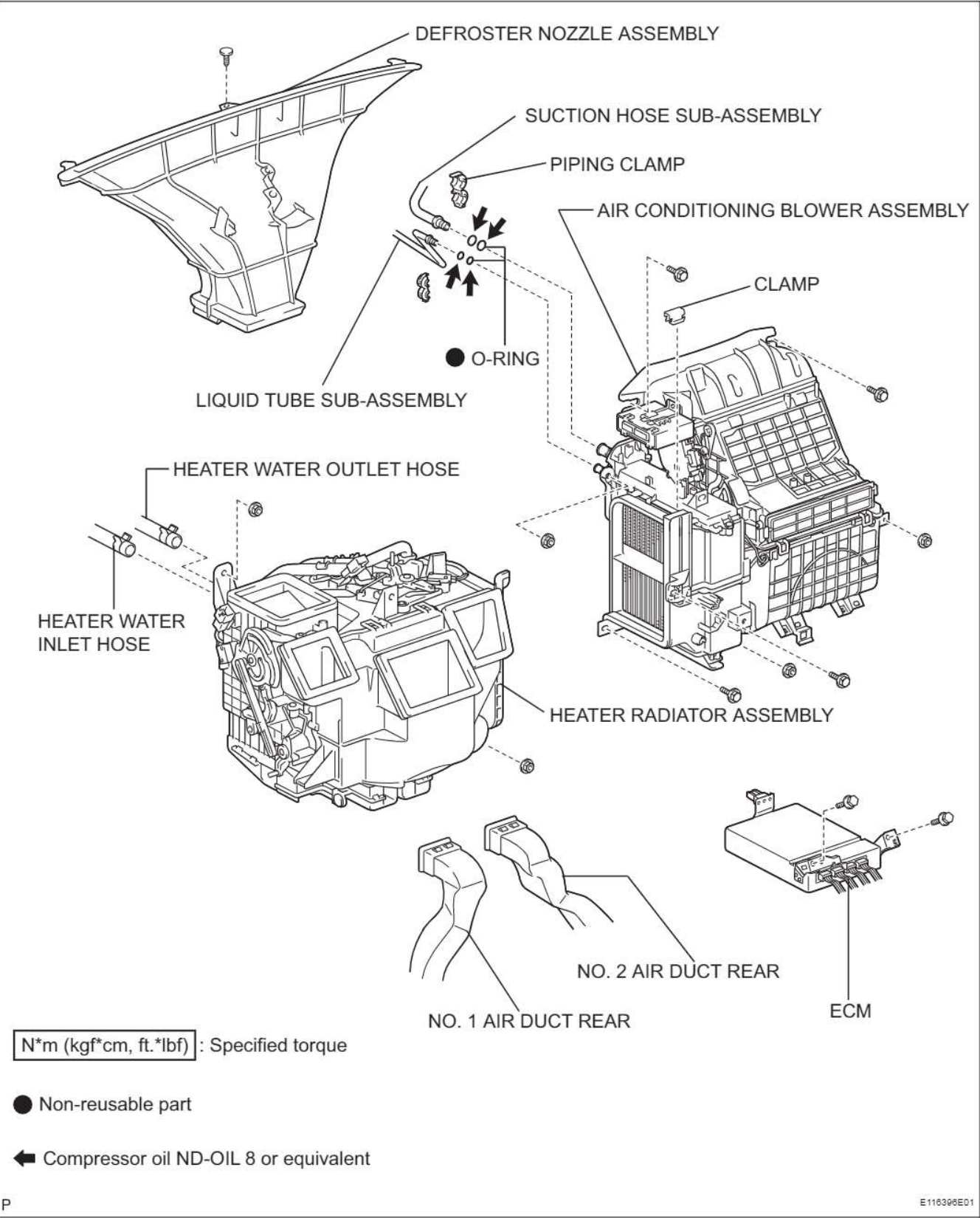
INSTALLATION

1. INSTALL THERMISTOR ASSEMBLY
- (a) Install the thermistor.
- (b) Install the clamp and attach the claw.
2. INSTALL HEATER RADIATOR ASSEMBLY
- (a) Install the heater radiator (see page AC-75).



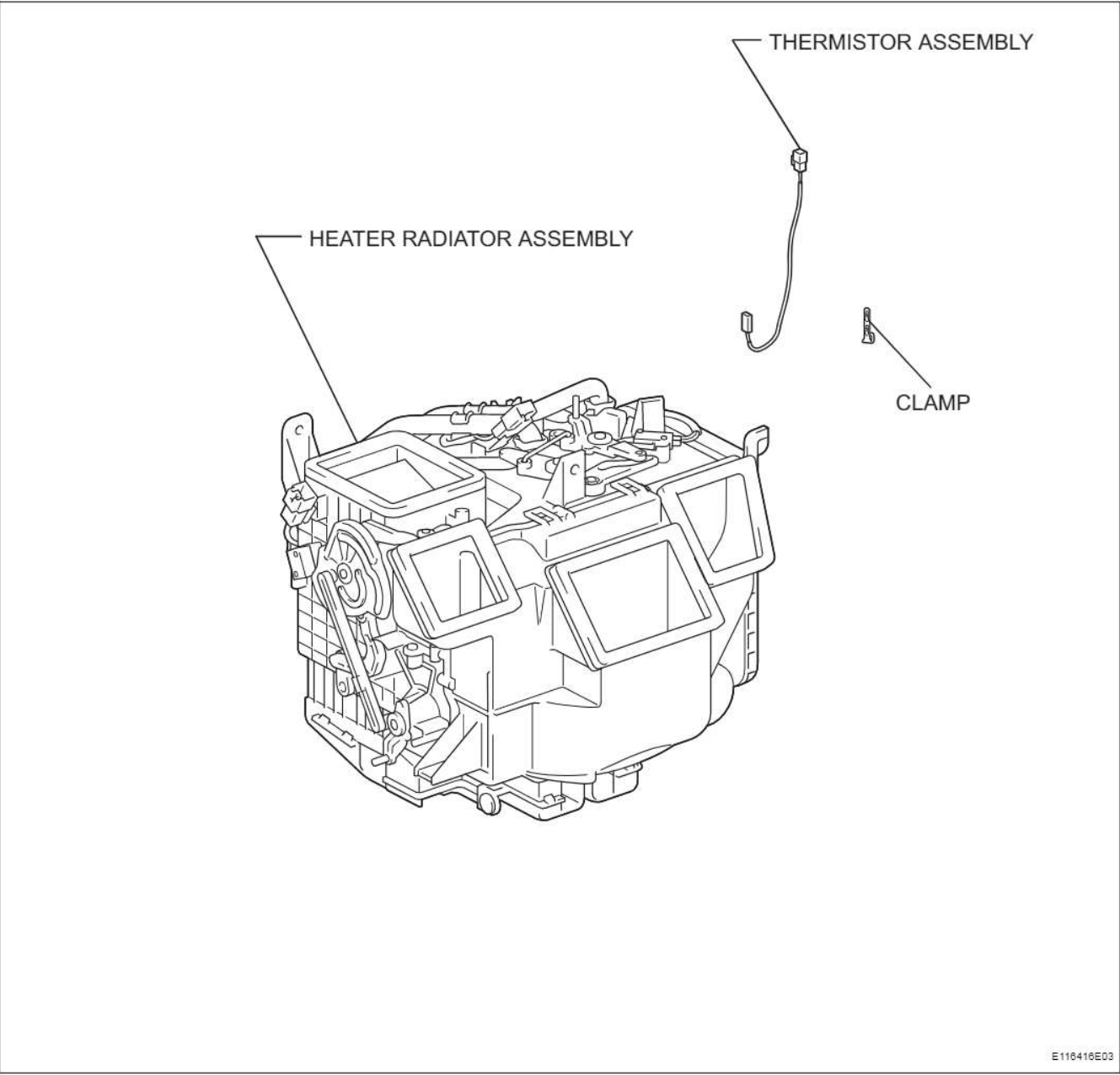
THERMISTOR ASSEMBLY

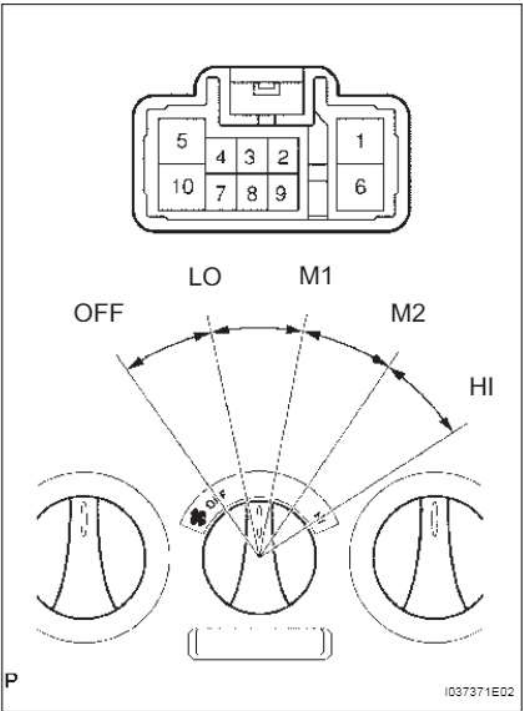
COMPONENTS



AC-94

AIR CONDITIONING – THERMISTOR ASSEMBLY





INSPECTION

1. INSPECT CENTER CLUSTER MODULE SWITCH

- (a) Inspect the blower switch resistance.
(1) Measure the resistance of the switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2 - 6 - 7 - 10	OFF	10 kΩ or higher
1 - 2	LO	Below 1 Ω
1 - 2 - 7	LO to M1	Below 1 Ω
1 - 2 - 7	M1	Below 1 Ω
1 - 2 - 7 - 6	M1 to M2	Below 1 Ω
1 - 2 - 6	M2	Below 1 Ω
1 - 2 - 6 - 10	M2 to HI	Below 1 Ω
1 - 2 - 10	HI	Below 1 Ω

If the result is not as specified, replace the center cluster module switch.

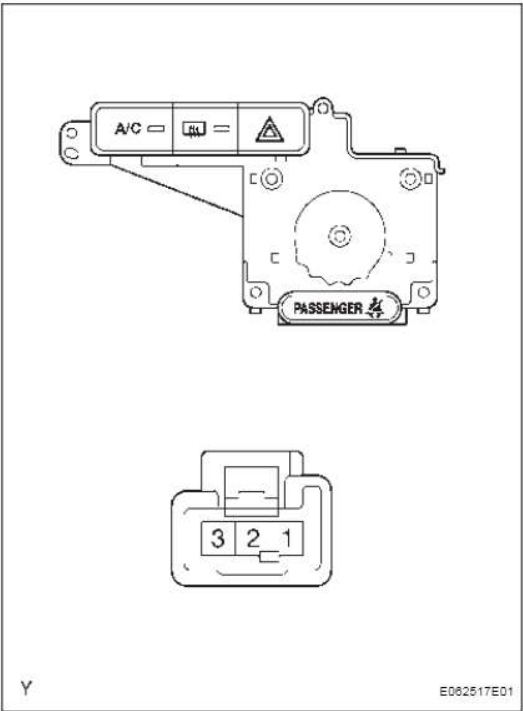
- (b) Inspect the illumination operation.
Connect the positive (+) lead from the battery to terminal 4 and negative (-) lead to terminal 5, then check that the illuminations come on.
If there is a bulb that does not come on, replace the bulb.
- (c) Inspect the A/C switch resistance.
(1) Measure the resistance of the switch.

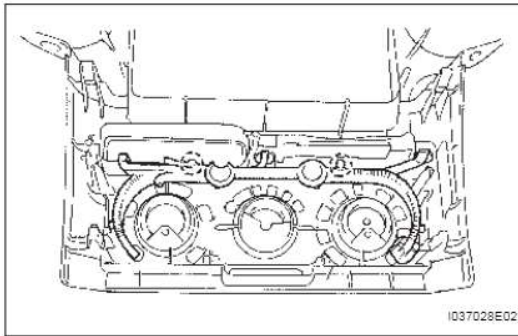
Standard resistance

Tester Connection	Switch Condition	Specified Condition
3 - 2	ON	Below 1 Ω
3 - 2	OFF	10 kΩ or higher

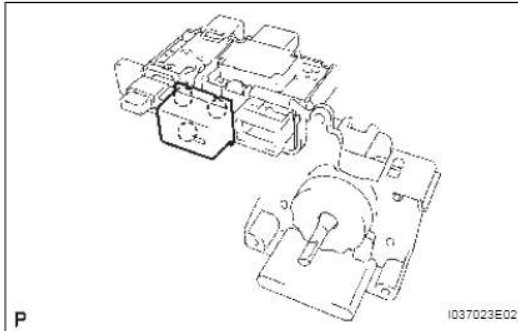
If the result is not as specified, replace the A/C switch.

- (d) Inspect the indicator operation.
(1) Connect the positive (+) lead from the battery to terminal 3 and the negative (-) lead to terminal 1.
(2) Push the A/C switch and then check that the indicator comes on.
If the result is not as specified, replace the A/C switch.

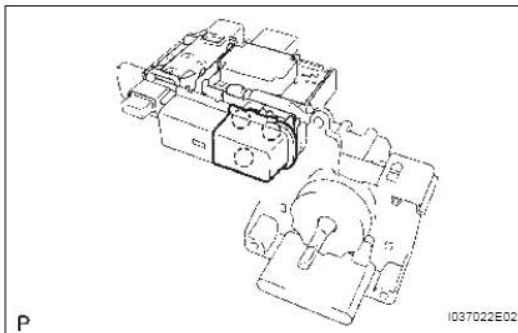


AC-108**AIR CONDITIONING – CENTER CLUSTER MODULE SWITCH****REASSEMBLY****1. INSTALL CENTER CLUSTER MODULE INDICATOR LENS ASSEMBLY**

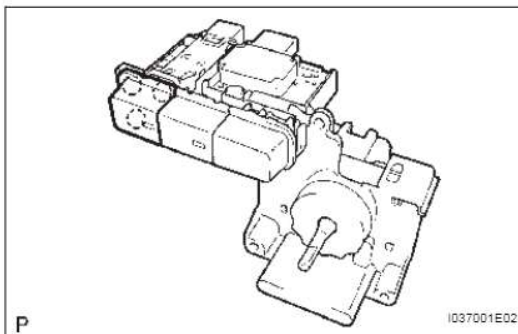
- (a) Attach the 2 claws to install the center cluster module indicator lens.

**2. INSTALL NO. 6 CENTER CLUSTER MODULE KNOB**

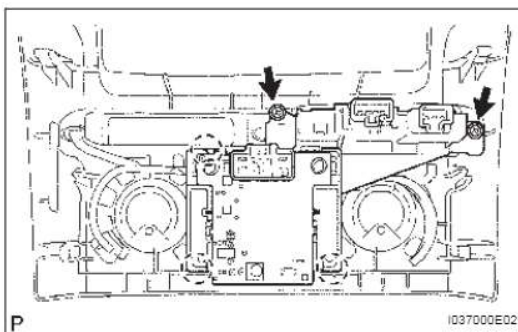
- (a) Attach the 3 claws to install the center cluster module knob.

**3. INSTALL NO. 5 CENTER CLUSTER MODULE KNOB**

- (a) Attach the 3 claws to install the center cluster module knob.

**4. INSTALL NO. 7 CENTER CLUSTER MODULE KNOB**

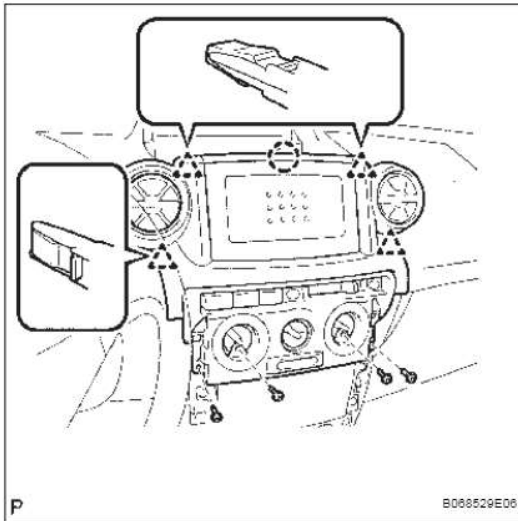
- (a) Attach the 3 claws to install the center cluster module knob.

**INSTALLATION****1. INSTALL CENTER CLUSTER MODULE SWITCH**

- (a) Attach the 3 claws to install the center cluster module switch.
(b) Install the 2 screws.

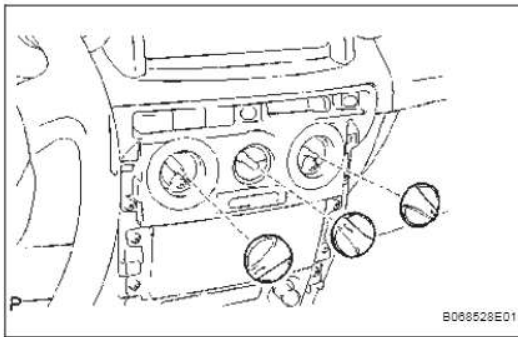
AIR CONDITIONING – CENTER CLUSTER MODULE SWITCH

AC-109



2. INSTALL INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY CENTER

- (a) Connect the connectors.
- (b) Attach the 4 clips and claw to install the instrument cluster finish panel.
- (c) Install the 4 screws.



3. INSTALL HEATER CONTROL KNOB

- (a) Install the 3 heater control knobs.

4. INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))

5. INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))

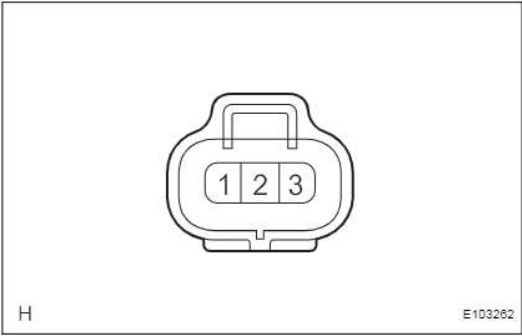
6. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

7. PERFORM INITIALIZATION

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.



AIR CONDITIONING PRESSURE SENSOR

ON-VEHICLE INSPECTION

1. CHECK PRESSURE SENSOR

- (a) Check the wire harness.
- (1) Disconnect the connector from the pressure sensor.
 - (2) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
1 - Body ground	Below 1 Ω

- (3) Measure the voltage of the wire harness side connector.

Standard voltage

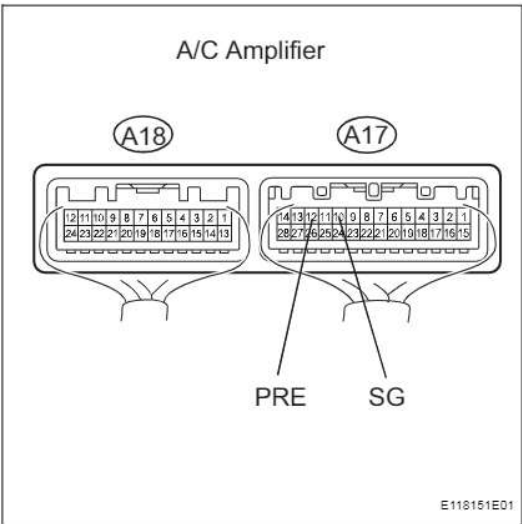
Tester Connection	Specified Condition
1 - 3	10 to 14 V

- (b) Check the pressure sensor.
- (1) Set the manifold gauge.
 - (2) Connect the connector to the pressure sensor.
 - (3) Warm up the engine.
 - (4) Turn the A/C switch ON.
 - (5) Measure the voltage of the sensor connector.

Standard voltage

Tester Connection	Condition	Specified Condition
A17-12 (PRE) - A17-10 (SG-1)	0.176 to 3.025 MPa (1.8 to 32 kgf/cm ² , 25 to 455 psi)	0.76 to 4.74 V

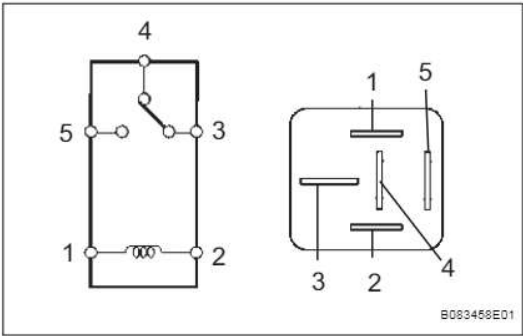
If the result is not as specified, replace the sensor.



HEATER BLOWER MOTOR RELAY

ON-VEHICLE INSPECTION

1. REMOVE HEATER BLOWER MOTOR RELAY
(Marking: HEATER)
(a) Remove the relay from the instrument panel junction block.
2. INSPECT HEATER BLOWER MOTOR RELAY
(a) Measure the resistance of the relay.
Standard resistance



Tester Connection	Specified Condition
3 - 4	Below 1 Ω
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

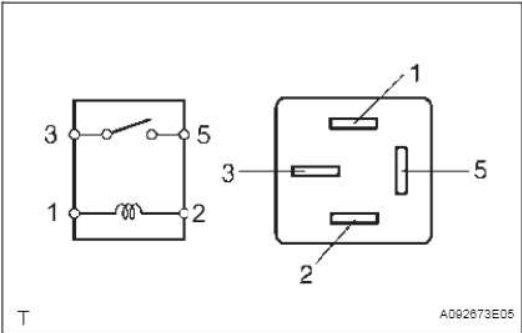
If the result is not as specified, replace the relay.

3. INSTALL HEATER BLOWER MOTOR RELAY

PTC HEATER RELAY

ON-VEHICLE INSPECTION

1. REMOVE PTC HEATER RELAY (Marking: HTR SUB1)
- (a) Remove the heater relay from the engine room relay block.
2. INSPECT PTC HEATER RELAY
- (a) Measure the resistance of the relay.
- Standard resistance

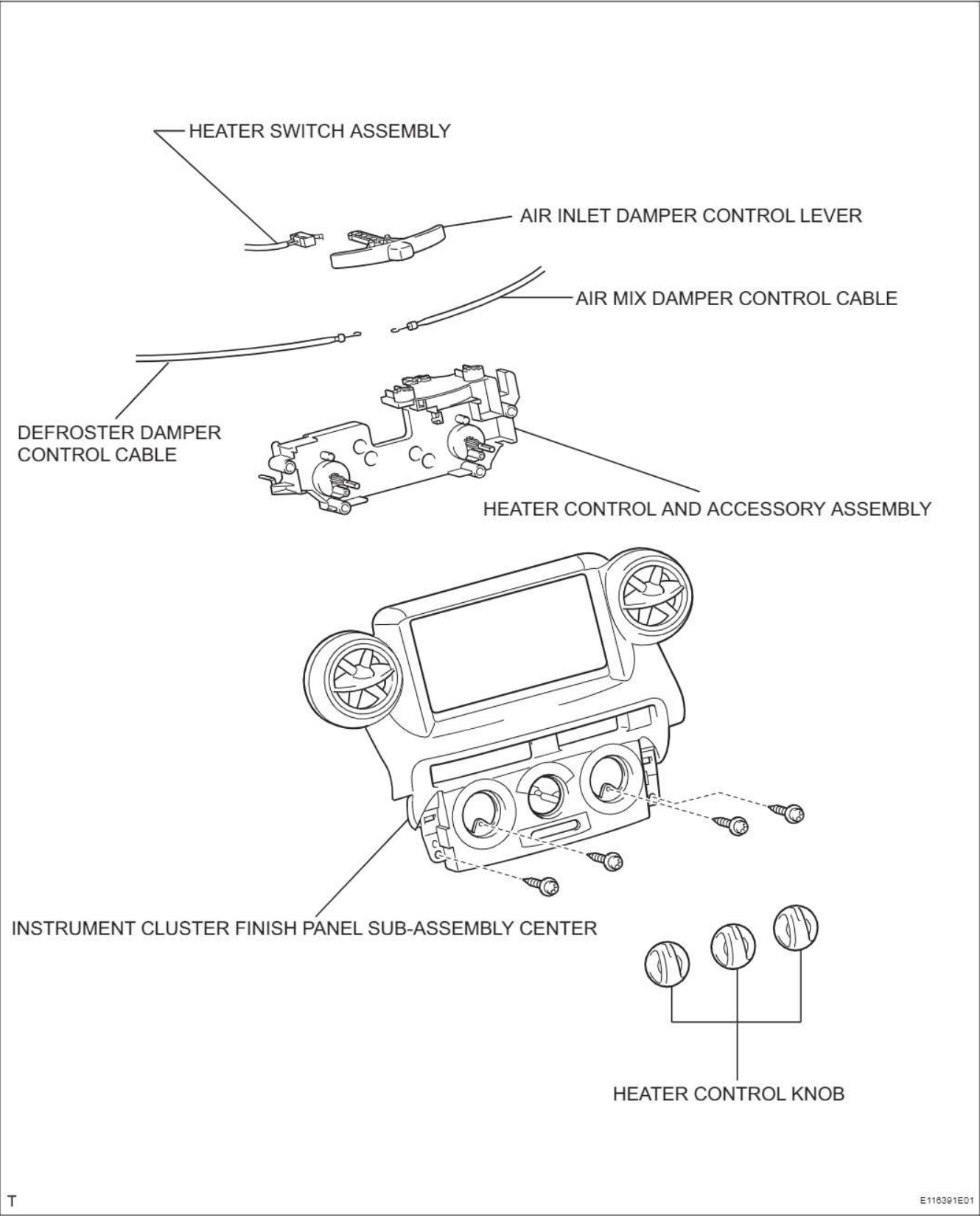


Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

If the value is not as specified, replace the PTC heater relay.

3. INSTALL PTC HEATER RELAY

HEATER CONTROL ASSEMBLY
COMPONENTS



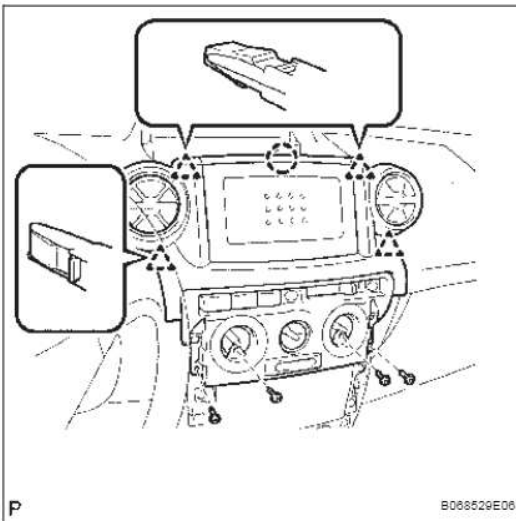
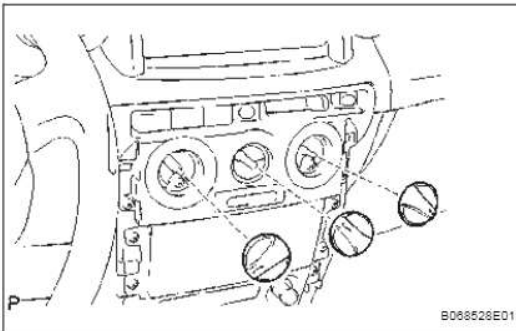
AC-100**AIR CONDITIONING – HEATER CONTROL ASSEMBLY****REMOVAL**

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

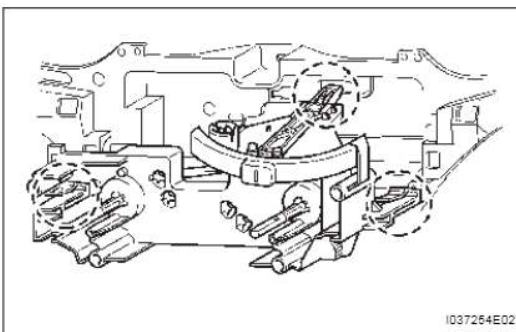
CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. **REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH** (See page [IP-5](#))
3. **REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH** (See page [IP-5](#))
4. **REMOVE HEATER CONTROL KNOB**
 - (a) Remove the 3 heater control knobs.



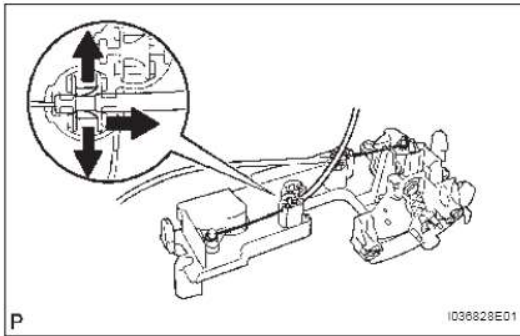
5. **REMOVE INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY CENTER**
 - (a) Remove the 4 screws.
 - (b) Detach the 4 clips and claw, and then remove the instrument cluster finish panel.
 - (c) Disconnect the connectors.



6. **REMOVE HEATER CONTROL AND ACCESSORY ASSEMBLY**
 - (a) Detach the 3 screws and disconnect the heater control and accessory assembly.
 - (b) Disconnect the connector.

AIR CONDITIONING – HEATER CONTROL ASSEMBLY

AC-101



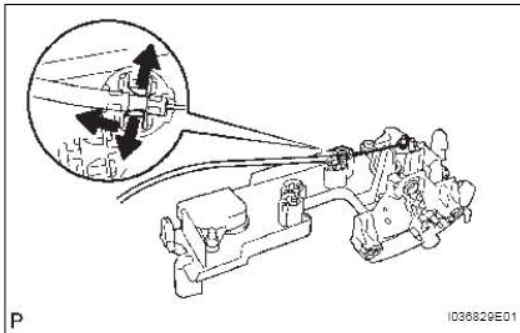
- (c) Using a screwdriver, detach the claw of the cable clamp and disconnect the defroster damper control cable.

NOTICE:

- Be careful not to bend the cable wire.
- If the cable wire bends, the defroster damper control cable operation may be affected.

HINT:

Tape the screwdriver tip before use.



- (d) Using a screwdriver, detach the claw of the cable clamp and disconnect the air mix damper control cable.

NOTICE:

- Be careful not to bend the cable wire.
- If the cable wire bends, the air mix damper control cable operation may be affected.

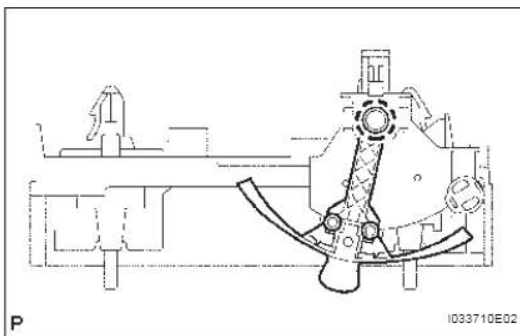
HINT:

Tape the screwdriver tip before use.

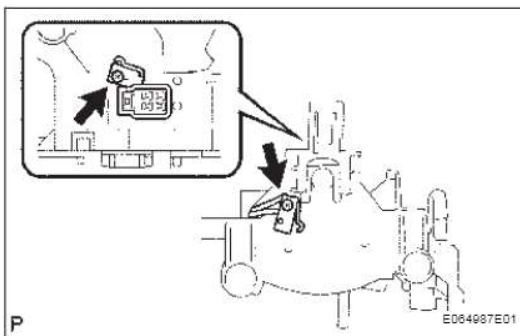
- (e) Remove the heater control and accessory assembly.

7. REMOVE AIR INLET DAMPER CONTROL LEVER

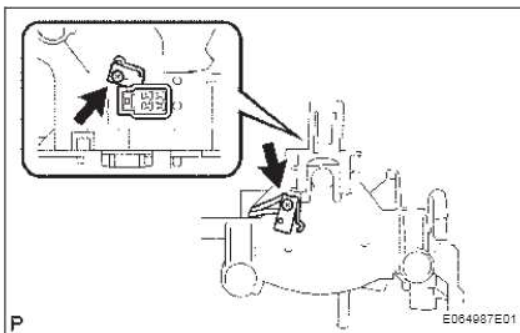
- (a) Detach the claw, and remove the air inlet damper control lever.

**8. REMOVE HEATER SWITCH ASSEMBLY**

- (a) Remove the 2 screws and heater switch.

**INSTALLATION****1. INSTALL HEATER SWITCH ASSEMBLY**

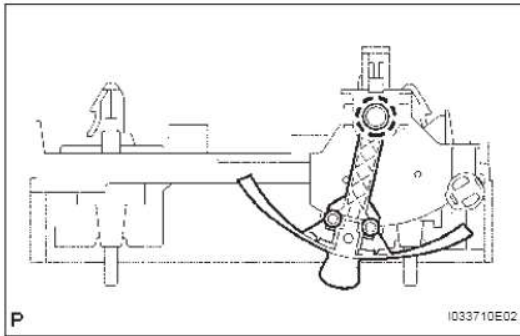
- (a) Install the heater switch with the 2 screws.



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AC-102

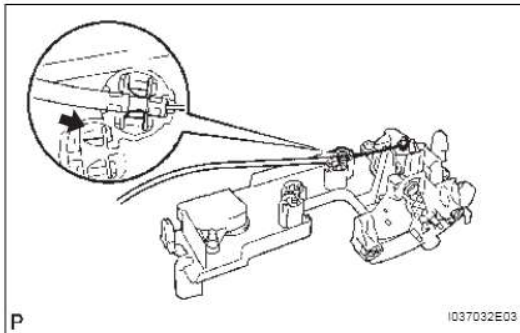
AIR CONDITIONING – HEATER CONTROL ASSEMBLY

**2. INSTALL AIR INLET DAMPER CONTROL LEVER**

- (a) Attach the claw to install the air inlet damper control lever.

3. INSTALL HEATER CONTROL AND ACCESSORY ASSEMBLY

- (a) Connect the inner cable end of the air mix damper control cable on the heater control and accessory assembly.



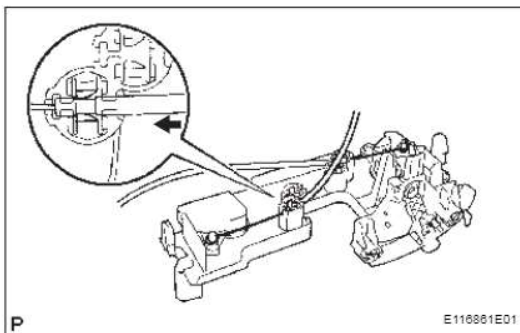
- (b) Connect the outer cable of the air mix damper control cable on the cable clamp.

NOTICE:

- Be careful not to bend the cable wire.
- If the cable wire bends, the air mix damper control cable operation may be affected.

HINT:

- Operating the heater control knob, check that it properly stops at both ends of MAX. COOL and MAX. HOT, and no recoil is identified.
- Check that the outer cable is not detached (moved) from the heater control and accessory assembly when the cable is pulled.



- (c) Connect the inner cable end of the defroster damper control cable on the heater control and accessory assembly.

- (d) Connect the outer cable of the defroster damper control cable on the cable clamp.

NOTICE:

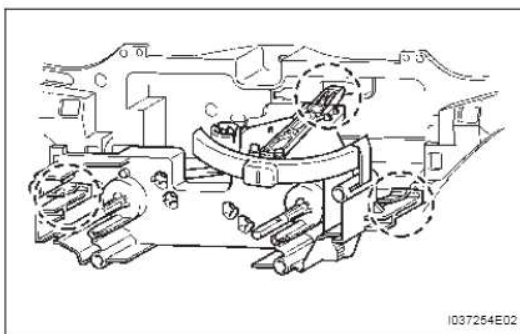
- Be careful not to bend the cable wire.
- If the cable wire bends, the heater control and accessory assembly operation may be affected.

HINT:

- Operating the heater control knob, check that it properly stops at both ends of FACE and DEF, and no recoil is identified.
- Check that the outer cable is not detached (moved) from the heater control and accessory assembly when the cable is pulled.

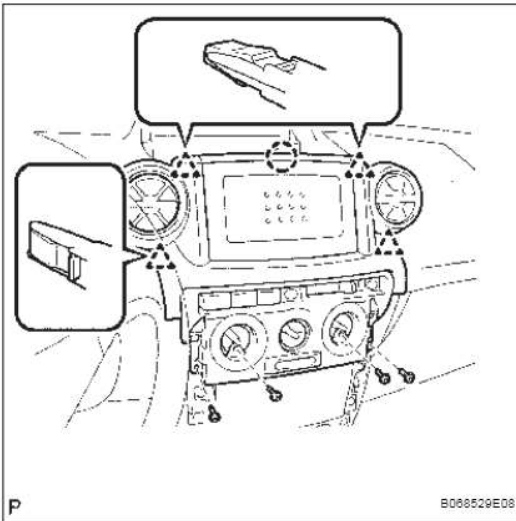
- (e) Connect the connector and install the heater control and accessory assembly.

- (f) Connect the heater control and accessory assembly, and attach the 3 screws.



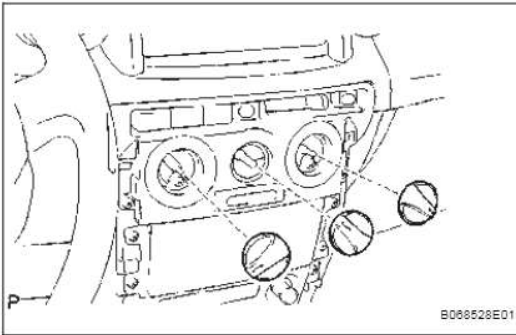
AIR CONDITIONING – HEATER CONTROL ASSEMBLY

AC-103



4. INSTALL INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY CENTER

- (a) Connect the connectors.
- (b) Attach the 4 clips and claw to install the instrument cluster finish panel.
- (c) Install the 4 screws.



5. INSTALL HEATER CONTROL KNOB

- (a) Install the 3 heater control knobs.

6. INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))

7. INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))

8. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

9. PERFORM INITIALIZATION

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

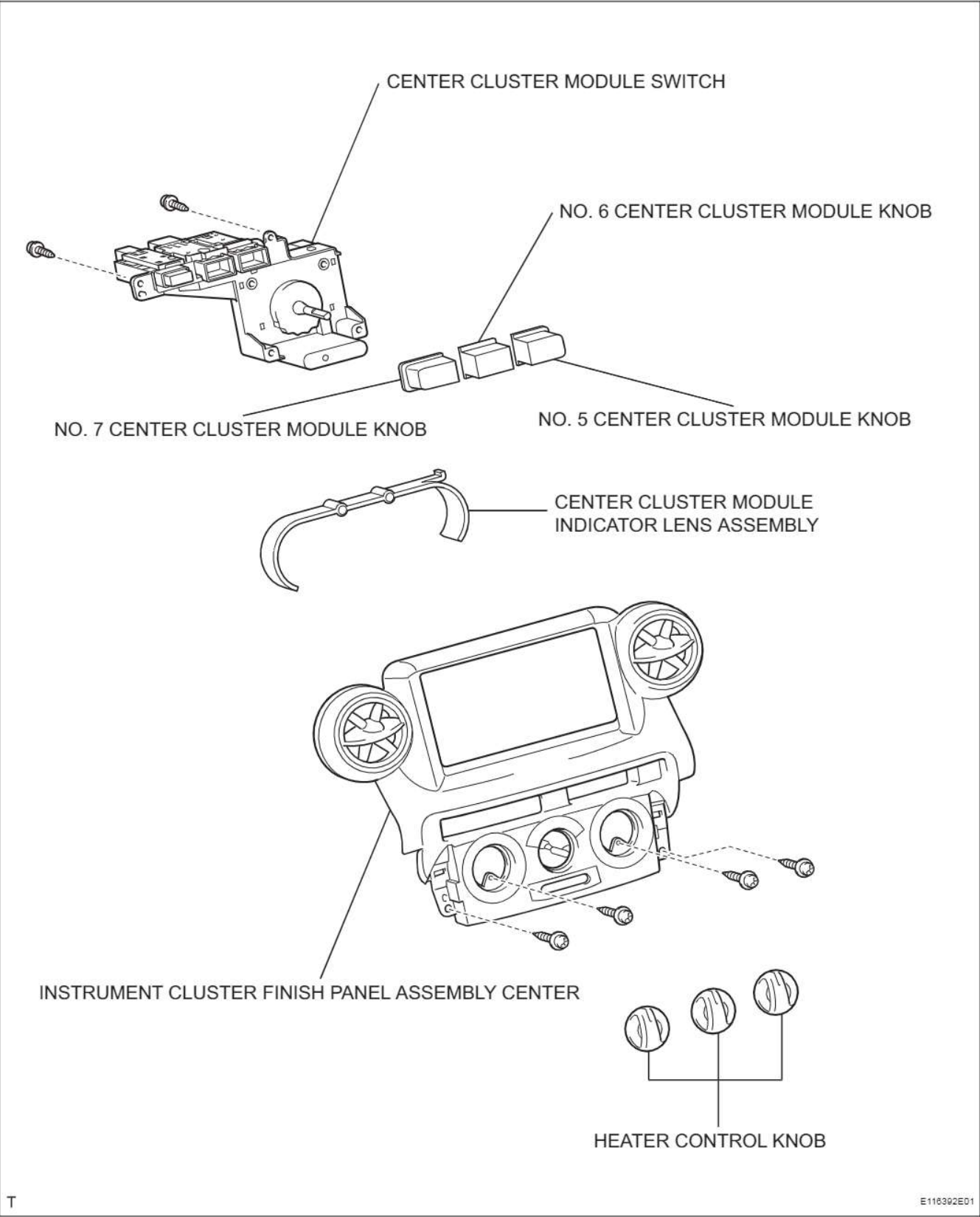
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

AC-104

AIR CONDITIONING – CENTER CLUSTER MODULE SWITCH

CENTER CLUSTER MODULE SWITCH

COMPONENTS



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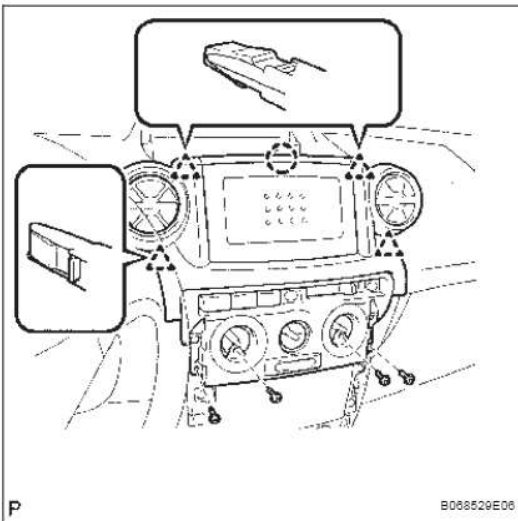
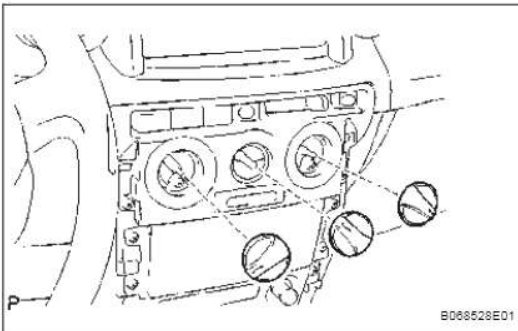
REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

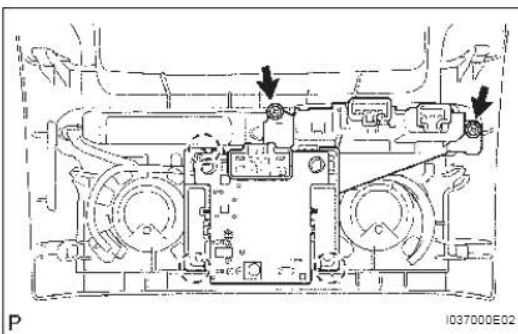
CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. **REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH** (See page [IP-5](#))
3. **REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH** (See page [IP-5](#))
4. **REMOVE HEATER CONTROL KNOB**
 - (a) Remove the 3 heater control knobs.



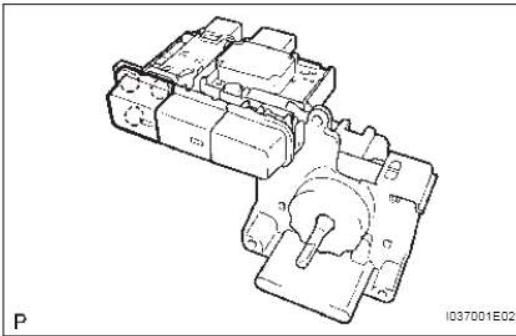
5. **REMOVE INSTRUMENT CLUSTER FINISH PANEL ASSEMBLY CENTER**
 - (a) Remove the 4 screws.
 - (b) Detach the 4 clips and claw, and then remove the instrument cluster finish panel.
 - (c) Disconnect the connectors.



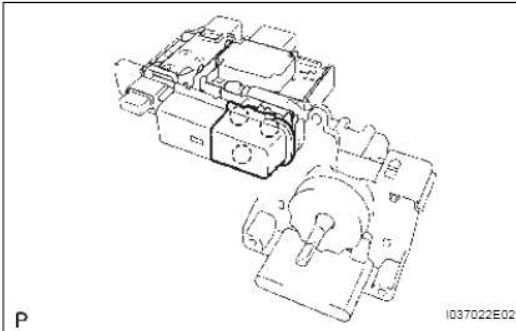
6. **REMOVE CENTER CLUSTER MODULE SWITCH**
 - (a) Remove the 2 screws.
 - (b) Detach the 3 claws and remove the center cluster module switch.

AC-106**AIR CONDITIONING – CENTER CLUSTER MODULE SWITCH****DISASSEMBLY****1. REMOVE NO. 7 CENTER CLUSTER MODULE KNOB**

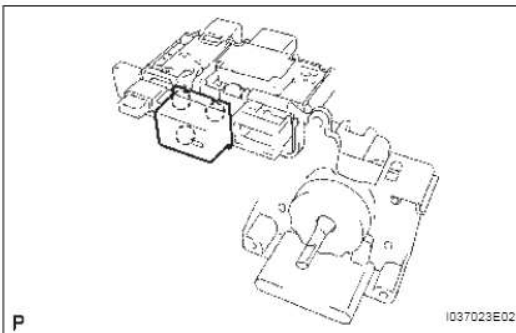
- (a) Detach the 3 claws and remove the center cluster module knob.

**2. REMOVE NO. 5 CENTER CLUSTER MODULE KNOB**

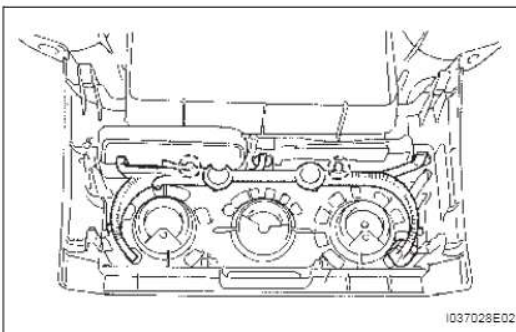
- (a) Detach the 3 claws and remove the center cluster module knob.

**3. REMOVE NO. 6 CENTER CLUSTER MODULE KNOB**

- (a) Detach the 3 claws and remove the center cluster module knob.

**4. REMOVE CENTER CLUSTER MODULE INDICATOR LENS ASSEMBLY**

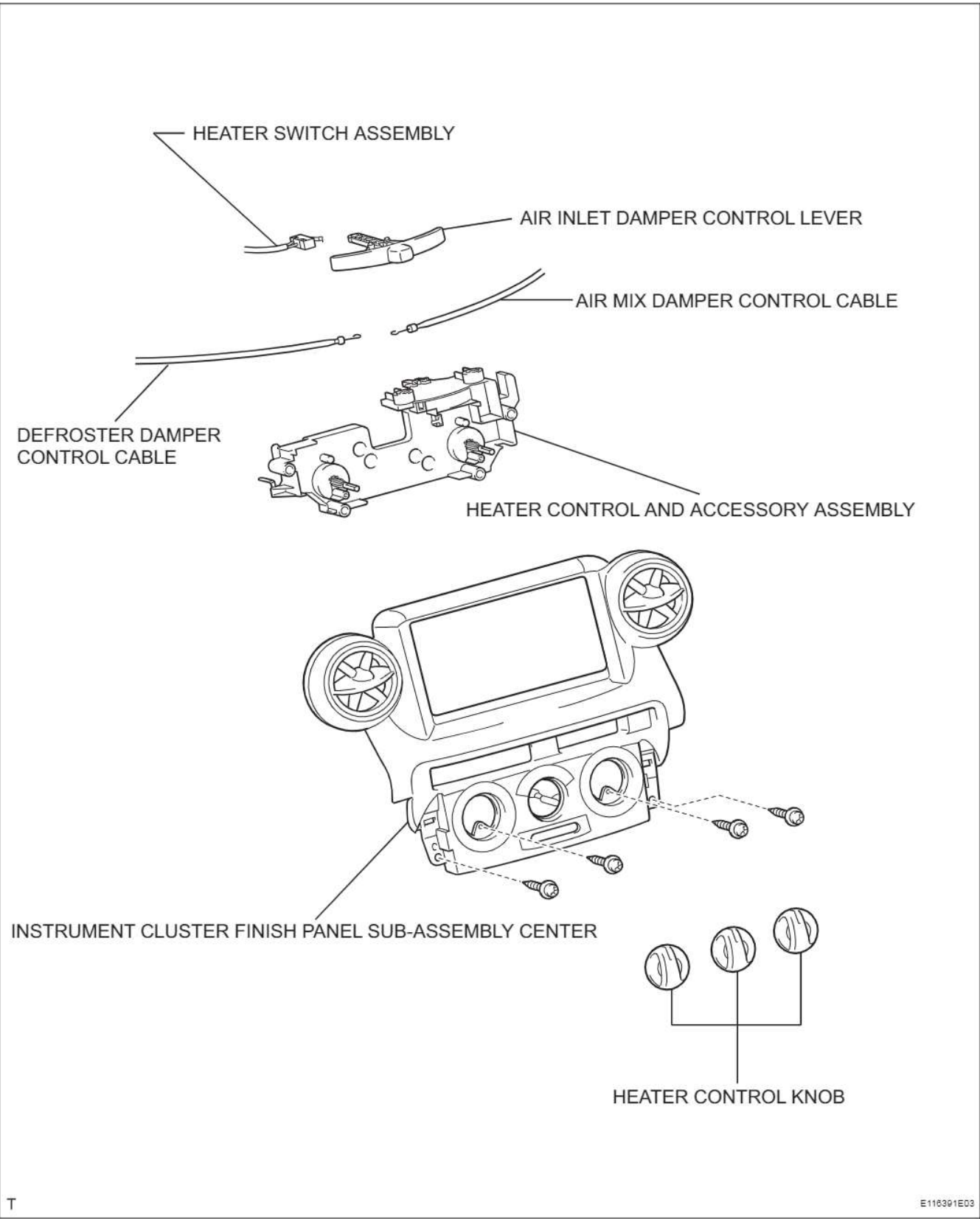
- (a) Detach the 2 claws, and then remove the center cluster module indicator lens.



AC-110

AIR CONDITIONING – HEATER SWITCH

HEATER SWITCH
COMPONENTS



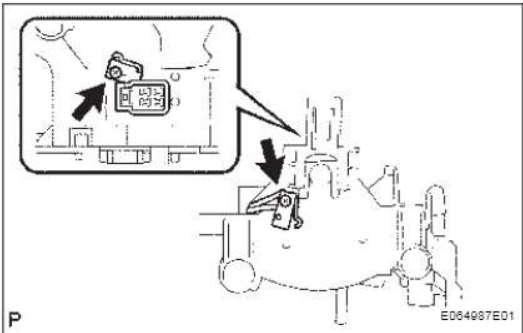
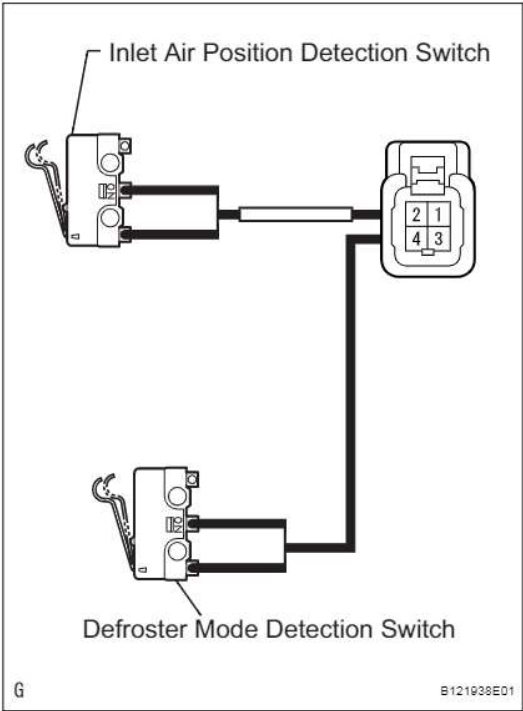
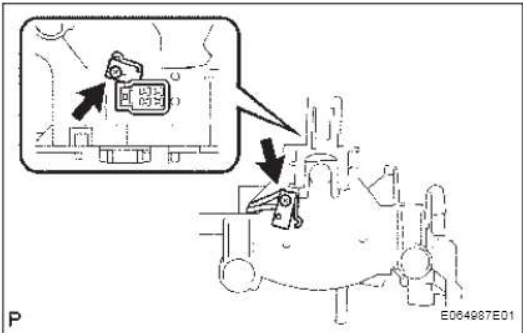
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REMOVAL

1. REMOVE HEATER CONTROL AND ACCESSORY ASSEMBLY
- (a) Remove the heater control and accessory (see page AC-100).
2. REMOVE HEATER SWITCH ASSEMBLY
- (a) Remove the 2 screws and heater switch.



INSPECTION

1. INSPECT HEATER SWITCH ASSEMBLY
- (a) Measure the resistance of the switch.
- Standard resistance

Tester Connection		Switch Condition	Specified Condition
Inlet Air Position Detection Switch	1 - 2	OFF	10 k Ω or higher
	1 - 2	ON	Below 1 Ω
Defroster Mode Detection Switch	3 - 4	OFF	10 k Ω or higher
	3 - 4	ON	Below 1 Ω

If the result is not as specified, replace the heater switch.

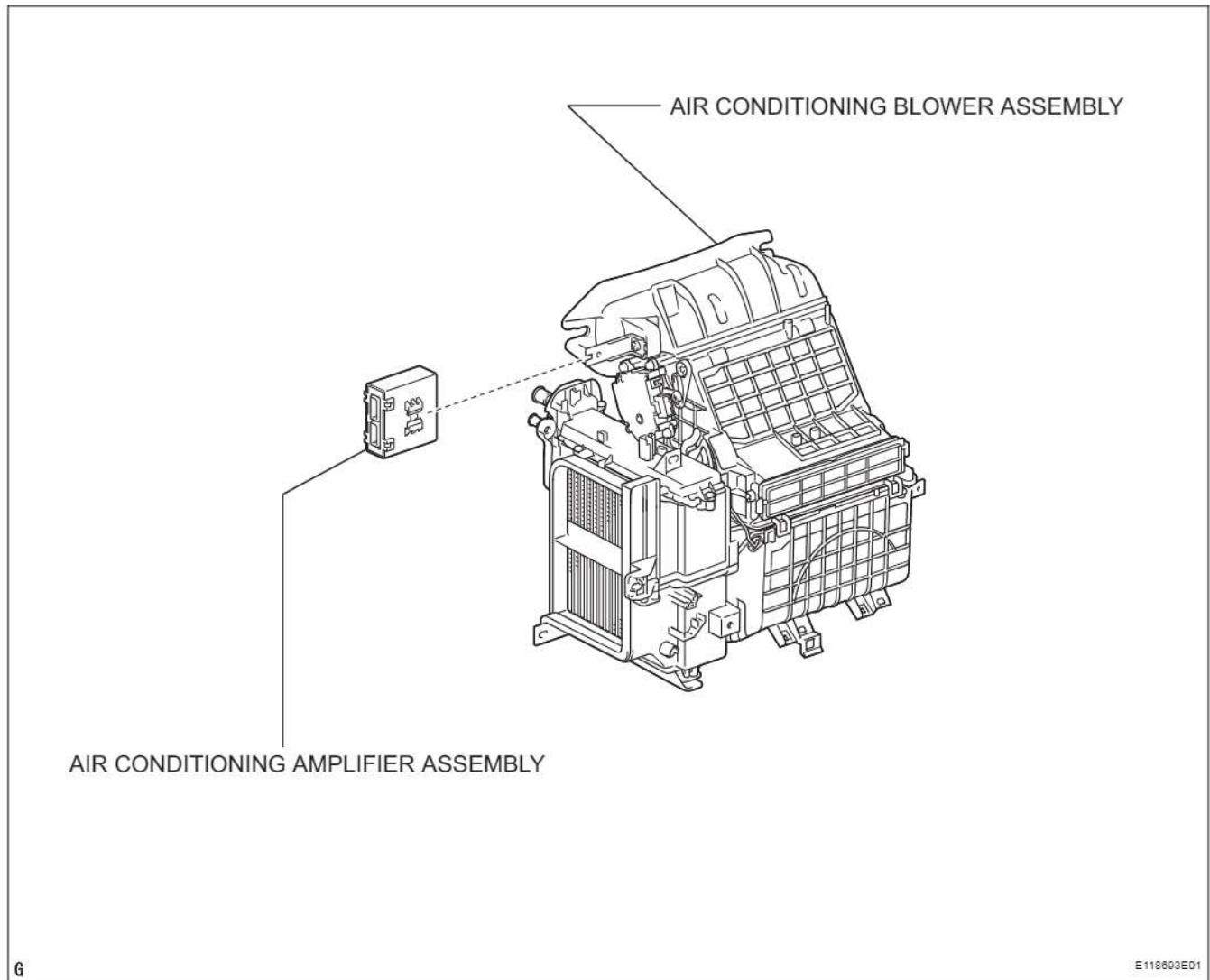
INSTALLATION

1. INSTALL HEATER SWITCH ASSEMBLY
- (a) Install the heater switch with the 2 screws.
2. INSTALL HEATER CONTROL AND ACCESSORY ASSEMBLY
- (a) Install the heater control and accessory (see page AC-101).

AC-112

AIR CONDITIONING – AIR CONDITIONING AMPLIFIER

AIR CONDITIONING AMPLIFIER COMPONENTS



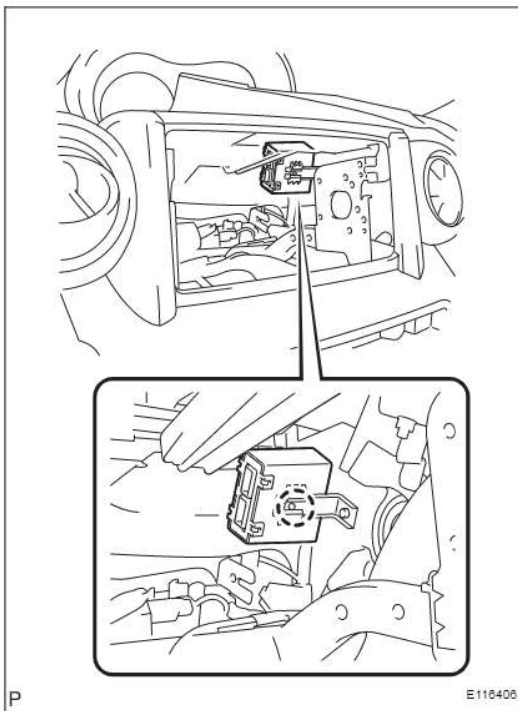
REMOVAL

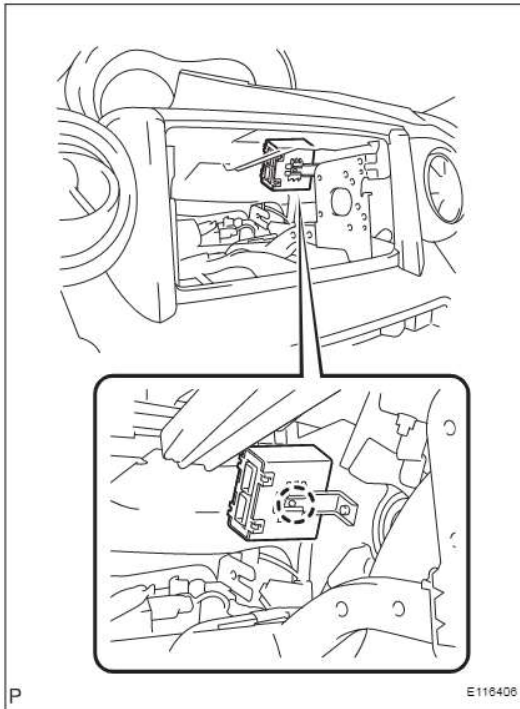
1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-5](#))
3. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-5](#))
4. REMOVE HEATER CONTROL KNOB (See page [AC-105](#))
5. REMOVE INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY CENTER (See page [AC-105](#))
6. REMOVE RADIO RECEIVER ASSEMBLY
7. REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY
 - (a) Disconnect the connector.
 - (b) Detach the claw and remove the A/C amplifier.



AC-114**AIR CONDITIONING – AIR CONDITIONING AMPLIFIER****INSTALLATION****1. INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY**

- (a) Attach the claw to install the A/C amplifier.
- (b) Connect the connector.

2. INSTALL RADIO RECEIVER ASSEMBLY**3. INSTALL INSTRUMENT CLUSTER FINISH PANEL SUB-ASSEMBLY CENTER (See page [AC-109](#))****4. INSTALL HEATER CONTROL KNOB (See page [AC-109](#))****5. INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))****6. INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page [IP-11](#))****7. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL****8. PERFORM INITIALIZATION**

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.