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AIR CONDITIONING SYSTEM

PRECAUTION

1. **DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA OR NEAR AN OPEN FLAME**
2. **ALWAYS WEAR EYE PROTECTION**

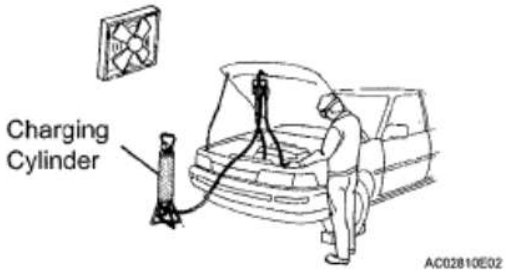


Fig. 1: Precaution For Handling Refrigerant In Enclosed Area
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **BE CAREFUL NOT TO GET LIQUID REFRIGERANT IN YOUR EYES OR ON YOUR SKIN**

If liquid refrigerant gets in your eyes or on your skin:

a. Wash the area with lots of 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.

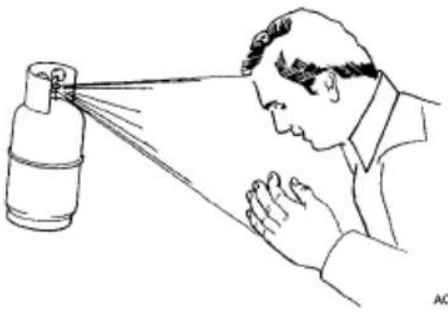


Fig. 2: Precaution For Protecting Eyes From Liquid Refrigerant

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **NEVER HEAT CONTAINER OR EXPOSE THE CONTAINER TO OPEN FLAME**
5. **BE CAREFUL NOT TO DROP CONTAINER OR APPLY PHYSICAL SHOCKS TO IT**
6. **DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT SYSTEM**

   If there is not enough refrigerant in the A/C system, the oil lubrication will be insufficient and the compressor may be damaged.

   Necessary care should be taken to avoid this.

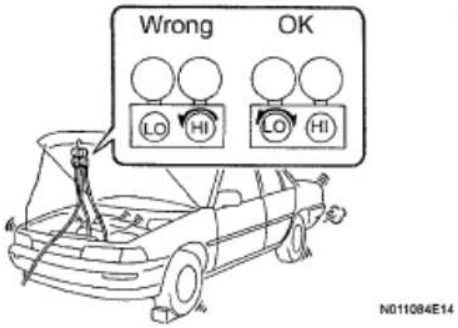


Fig. 3: Precaution Do Not Open High Pressure Manifold Valve While Compressor Operating
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **DO NOT OPEN HIGH PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATING**
   a. Open and close only the low pressure valve. If the high pressure valve is opened, refrigerant flows in the reverse direction causing the charging cylinder to rupture.
8. **BE CAREFUL NOT TO OVERCHARGE SYSTEM WITH REFRIGERANT**

   If the refrigerant is overcharged, it causes problems such as insufficient cooling, poor fuel economy, engine overheating, etc.

9. **DO NOT OPERATE ENGINE AND COMPRESSOR WITH NO REFRIGERANT**

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

PARTS LOCATION

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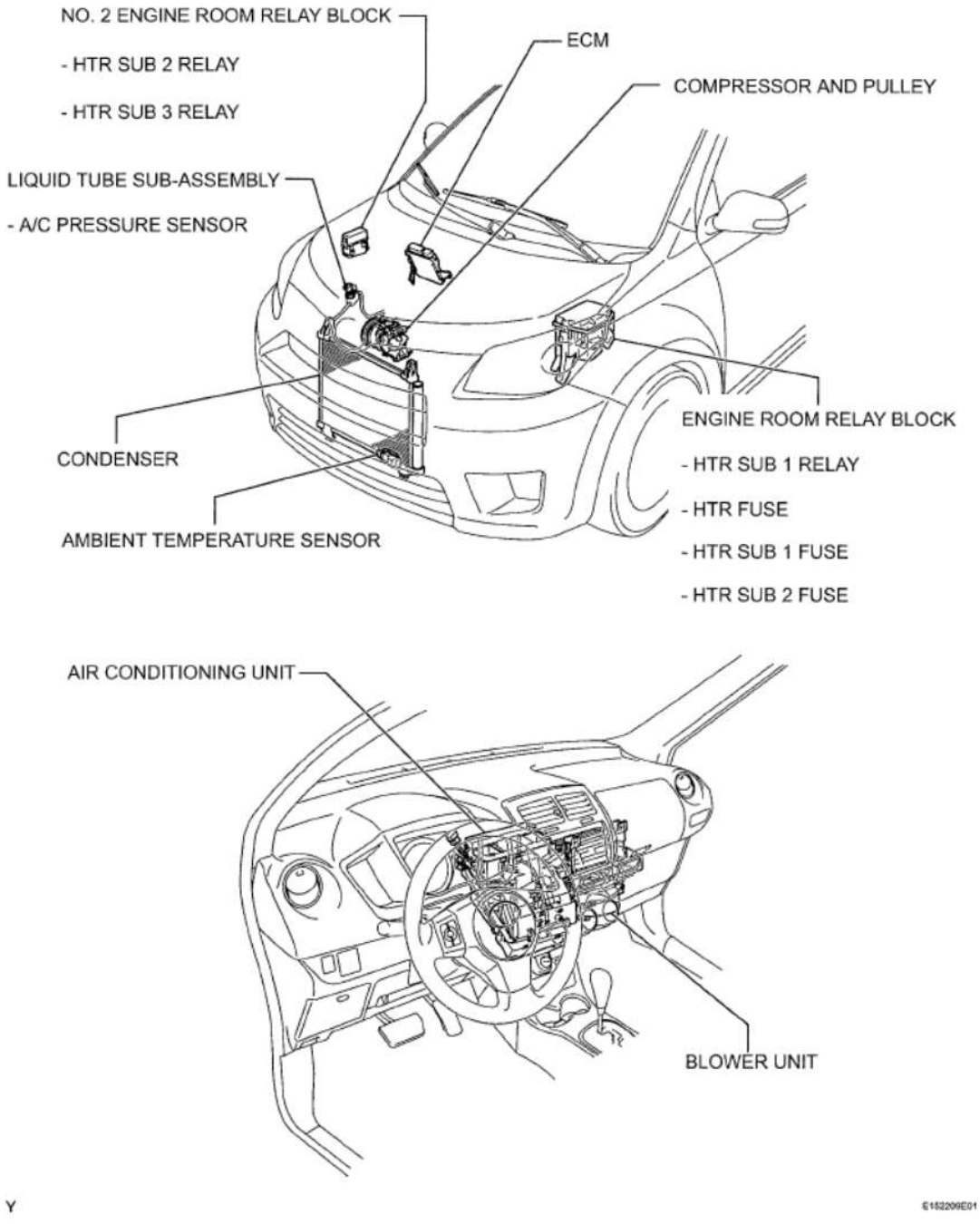


Fig. 4: Identifying Air Conditioning System Parts Location (1 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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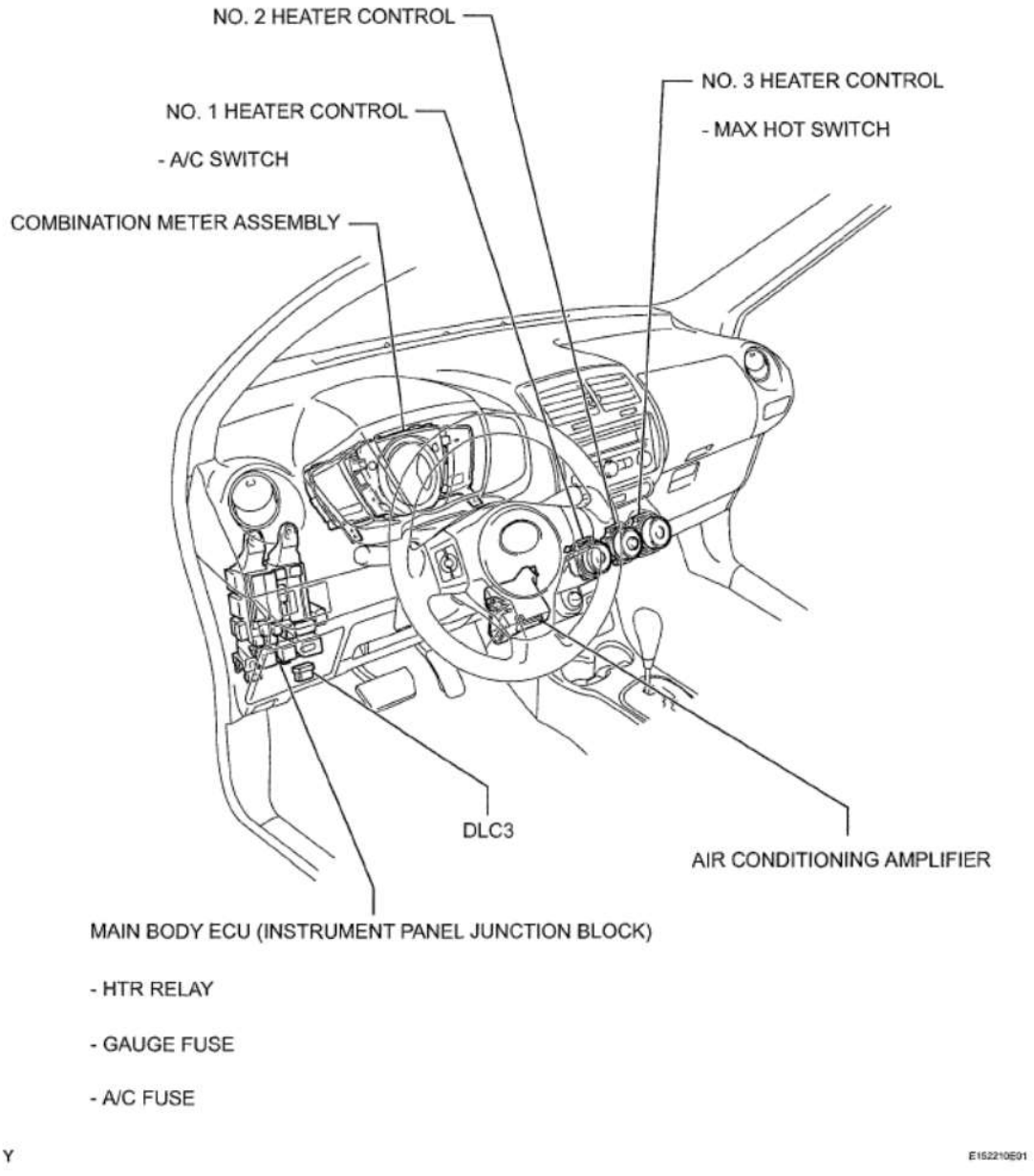


Fig. 5: Identifying Air Conditioning System Parts Location (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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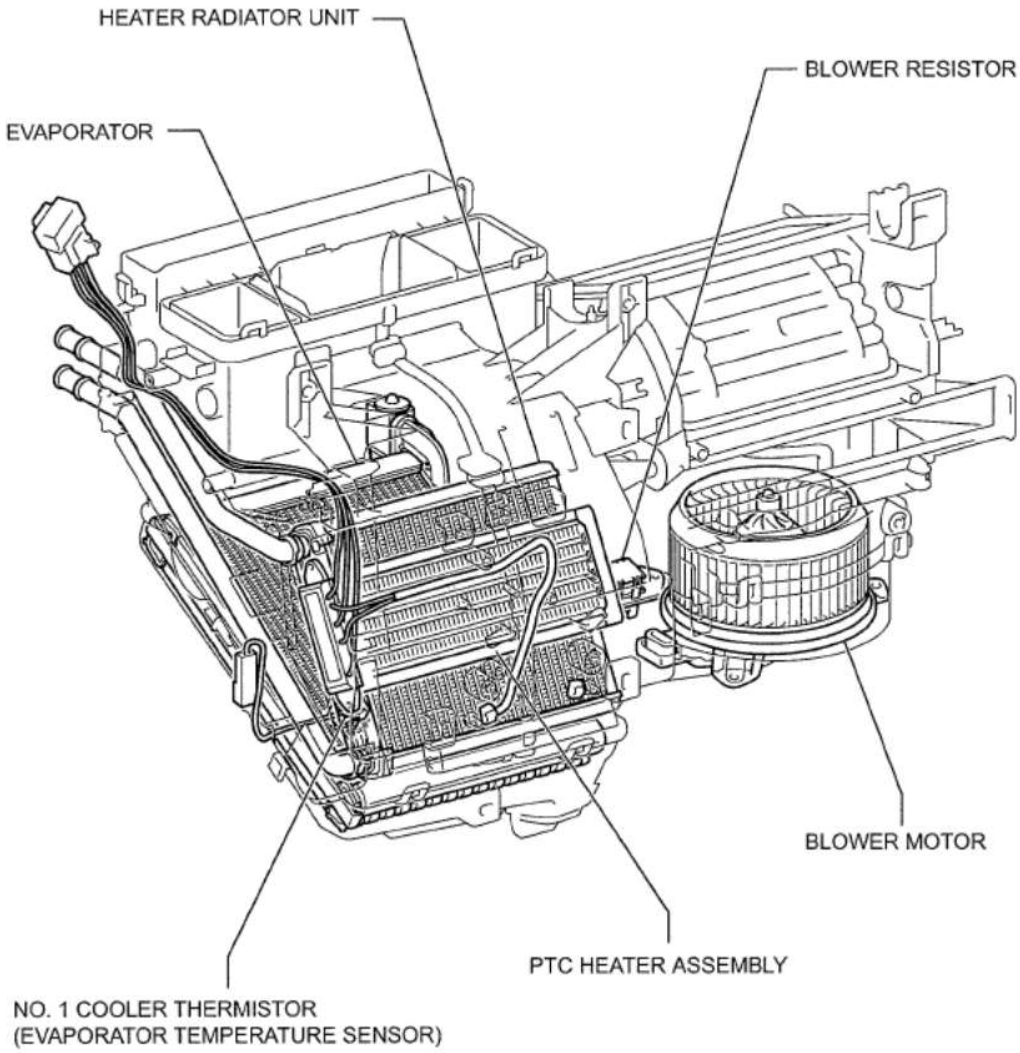


Fig. 6: Identifying Air Conditioning System Parts Location (3 Of 3)
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SYSTEM DIAGRAM

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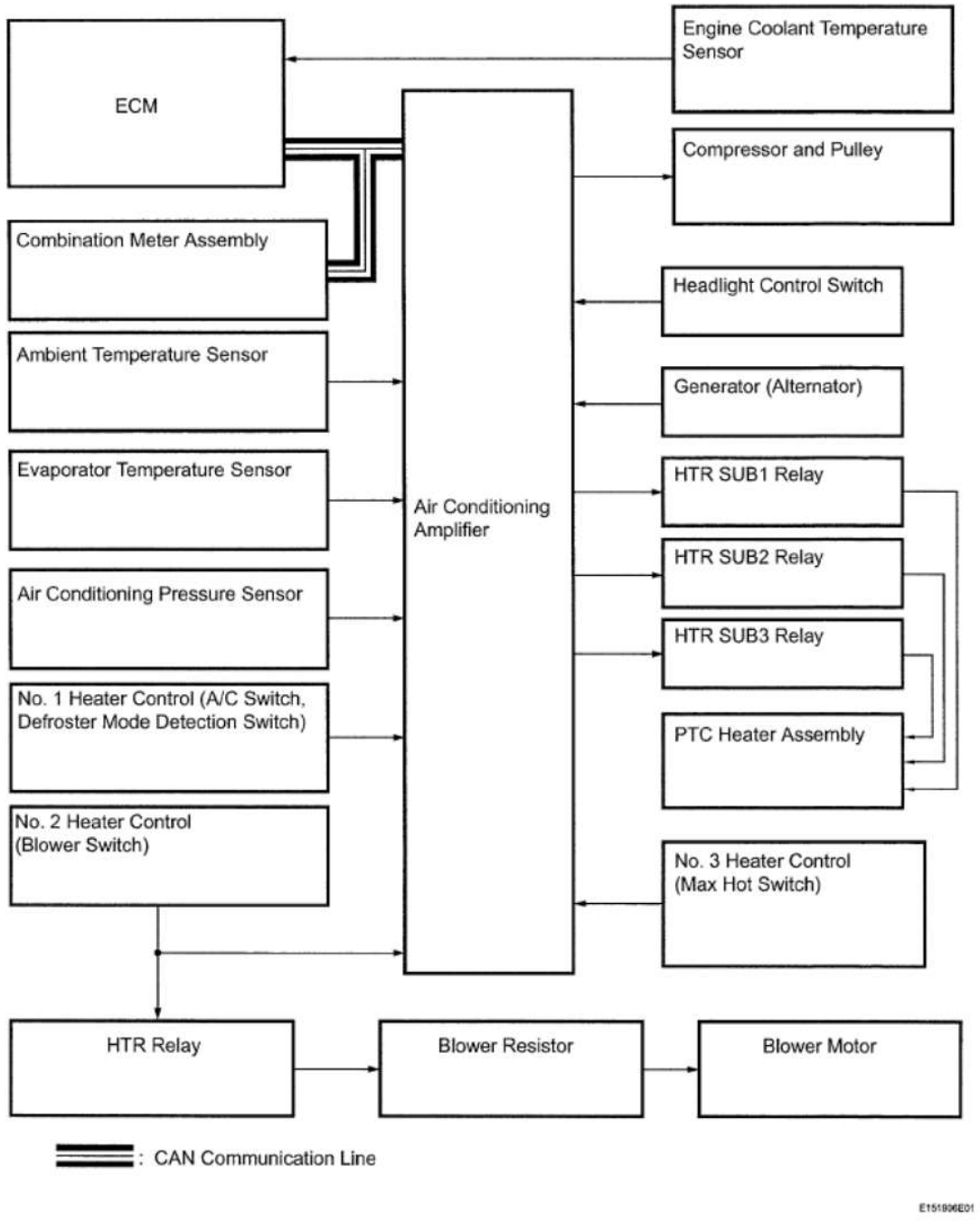


Fig. 7: Air Conditioning System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TRANSMITTER, RECEIVER AND SIGNAL REFERENCE

Transmitter	Receiver	Line	Signal
			A/C compressor control signal
			Idle up request signal

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Air Conditioning Amplifier	ECM	CAN	Cooling fan motor driving request
			Ambient temperature signal
			External Variable Control Solenoid Current Signal
			PTC driving number request signal
Combination Meter	Air Conditioning Amplifier	CAN	Vehicle speed signal
ECM	Air Conditioning Amplifier	CAN	Engine coolant temperature signal
			Engine revolution speed signal
			A/C control cut signal
			Variable control prohibition signal
			PTC heater permission number

SYSTEM DESCRIPTION

1. **GENERAL**

The air conditioning system has the following controls:

CONTROL OUTLINE

Control	Outline
Variable Capacity Compressor Control	Controls the compressor to turn ON or OFF and the discharge capacity based on the signals from various sensors.

2. **MODE POSITION AND DAMPER OPERATION**
   a. Mode Position and Damper Operation

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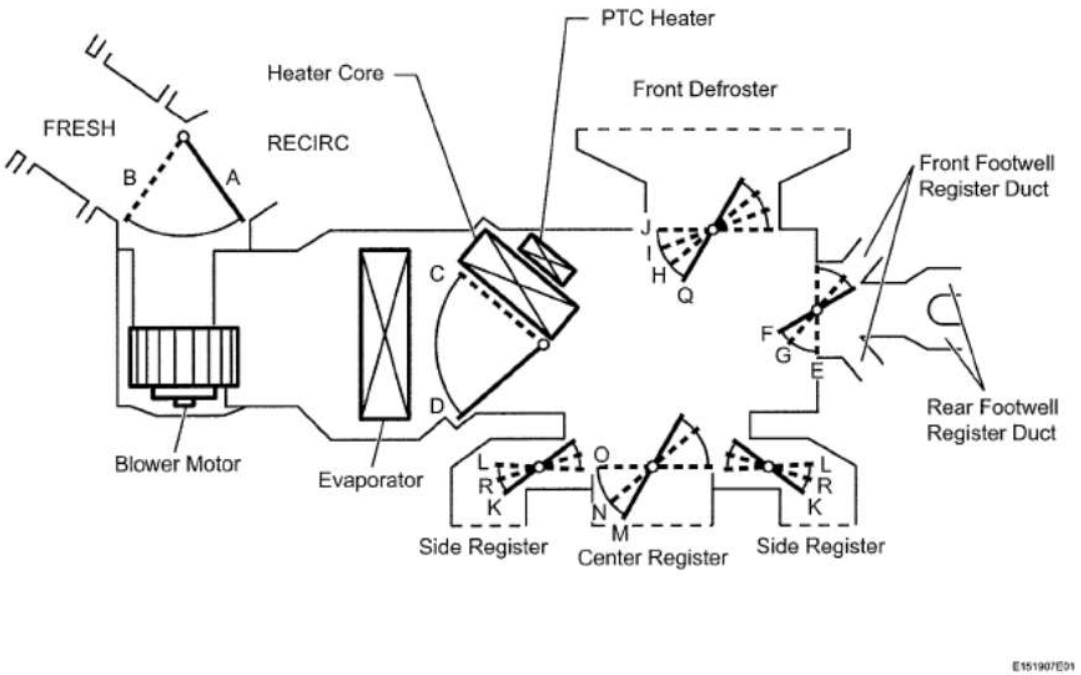


Fig. 8: Mode Position And Damper Operation Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Functions of Main Dampers:

Control Damper	Operation Position	Damper Position	Operation
Air Inlet Control Damper	FRESH	A	Brings in fresh air.
	RECIRC	B	Recirculates internal air.
Air Mix Control Damper	MAX COLD to MAX HOT Temperature Setting 16°C (61°F) to 30°C (86°F)	C, D	Continuously changes mix ratio of warm and cool air between COOL and HOT.
Mode Control Damper	DEF	O, R, E, Q	Blows air from front defroster and side registers.
	FOOT / DEF	O, K, G, H	Blows air from front defroster, side registers, front footwell register, and rear footwell register.
	FOOT	O, K, F, I	Blows air from side registers, front footwell register, and rear footwell register. Also, blows some air from front defroster.
	BI-LEVEL	N, R, F, J	Blows air from center register, side registers, front footwell register and rear footwell register.
	FACE	M, L, E, J	Blows air from center register and side registers.

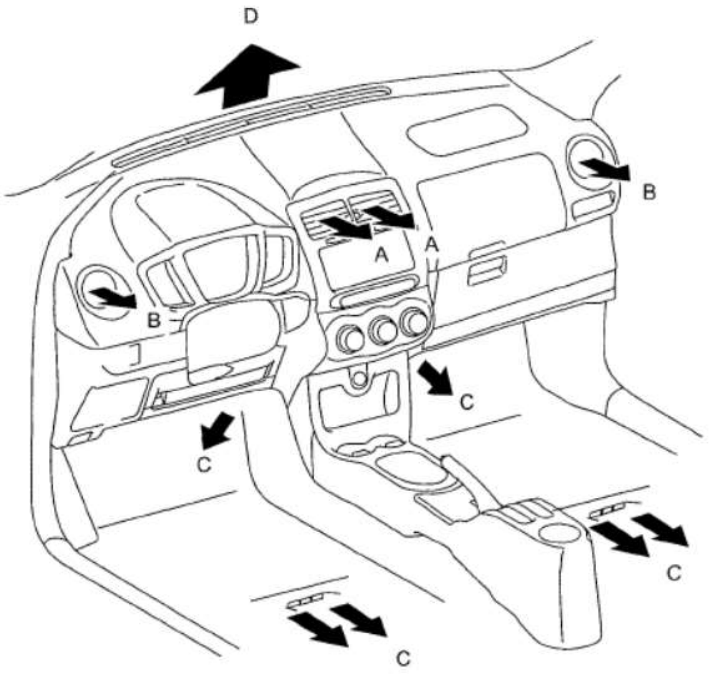
Fig. 9: Functions Of Main Dampers
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **AIR OUTLETS AND AIRFLOW VOLUME**
   a. Air Outlets and Airflow Volume

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INDICATION (MODE)	CTR	SIDE	FOOTWELL	DEFROSTER
	A	B	C	D
FACE	○	○	—	—
BI-LEVEL	○	○	○	—
FOOT	—	○	○	○
FOOT/DEF	—	○	○	○
DEF	—	○	—	○

Fig. 10: Identifying Air Outlets And Airflow Volume
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

The size of the circle O indicates the proportion of airflow volume.

4. **A/C COMPRESSOR**
   a. General
      1. The A/C compressor is a continuously variable capacity type in which its capacity varies in accordance with the cooling load of the air conditioner.
      2. This compressor consists of the shaft, lug plate, piston, shoe, crank chamber, cylinder, and solenoid control valve.

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3. The solenoid control valve adjusts the suction pressure so that the suction pressure can be controlled as desired.
4. A plastic DL (Damper Limiter) type A/C pulley is used.

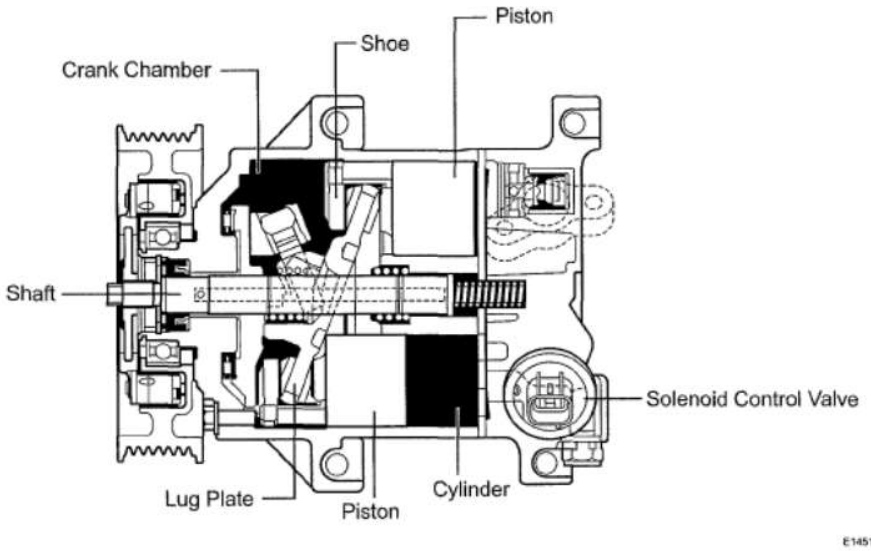
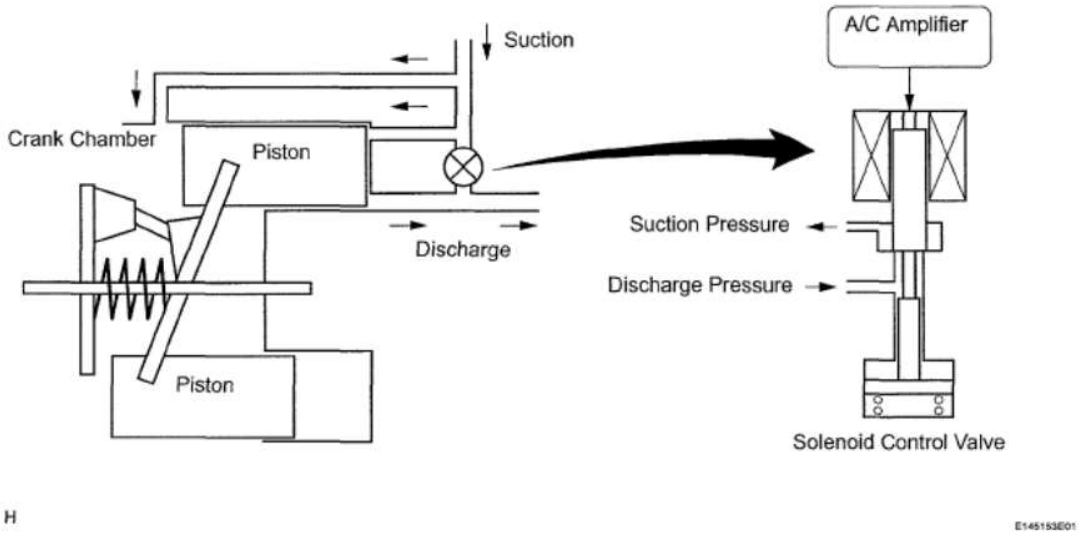


Fig. 11: Identifying A/C Compressor Components
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b. Operation
   1. The crank chamber is connected to the suction passage. A solenoid control valve is provided between the suction passage (low pressure) and the discharge passage (high pressure).
   2. The solenoid control valve operates under duty cycle control in accordance with the signals from the air conditioning amplifier.



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Fig. 12: A/C Compressor Operation Diagram
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3. When the solenoid control valve closes (solenoid coil is energized), a difference in pressure is created and the pressure in the crank chamber decreases. Then, the pressure that is applied to the right side of the piston becomes greater than the pressure that is applied to the left side of the piston. This compresses the spring and tilts the lug plate. As a result, the piston stroke increases and the discharge capacity increases.

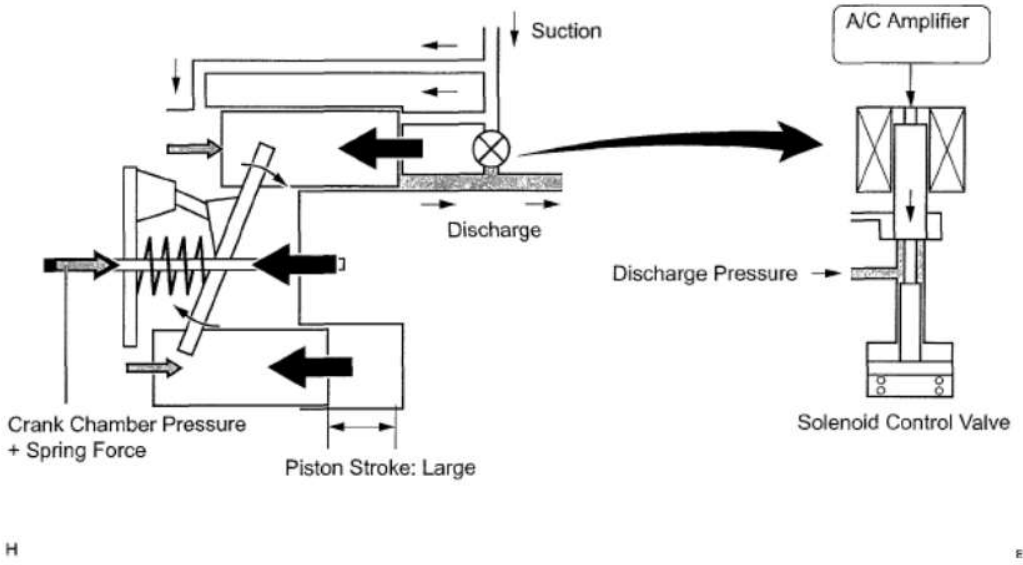


Fig. 13: A/C Compressor Operation Diagram (When Solenoid Control Valve Close)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. When the solenoid control valve opens (solenoid coil is not energized), the difference in pressure disappears. Then, the pressure that is applied to the left side of the piston becomes the same as the pressure that is applied to the right side of the piston. Thus, the spring elongates and eliminates the tilt of the lag plate. As a result, there is small piston stroke and the discharge capacity decreases.

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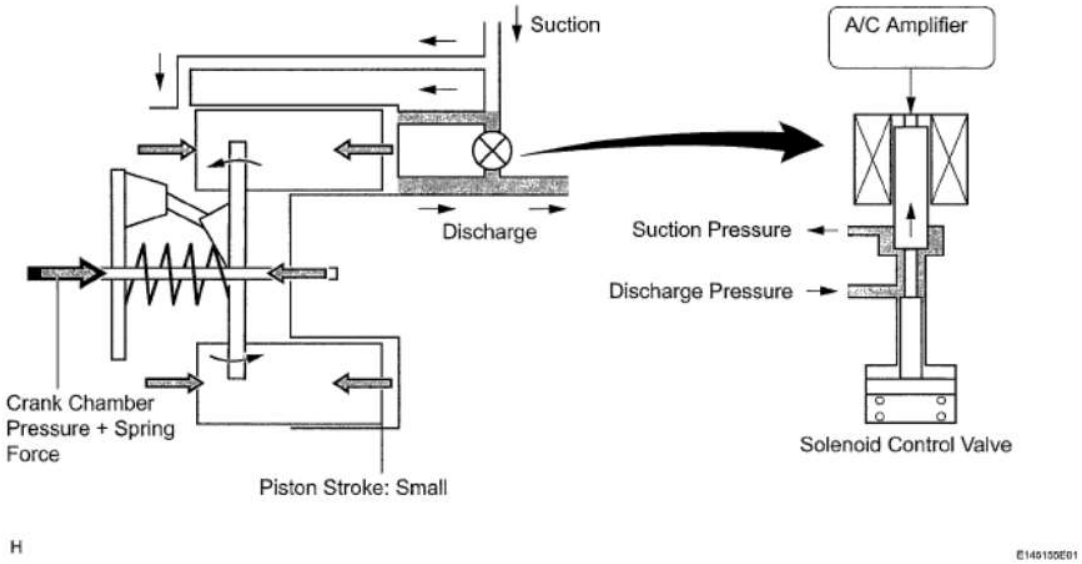


Fig. 14: A/C Compressor Operation Diagram (When Solenoid Control Valve Open)
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5. **AMBIENT TEMPERATURE SENSOR**

The ambient temperature sensor detects the outside temperature based on changes in the resistance of its built-in thermistor and sends a signal to the Air Conditioning amplifier.

6. **EVAPORATOR TEMPERATURE SENSOR**

The evaporator temperature sensor detects the temperature of the cool air immediately past the evaporator in the form of resistance changes, and outputs it to the Air Conditioning amplifier.

7. **A/C PRESSURE SENSOR**

The A/C pressure sensor detects the refrigerant pressure and outputs it to the Air Conditioning amplifier in the form of voltage changes.

8. **PTC HEATER**
   a. General
      1. The PTC heater is located above the heater core in the air conditioner unit.
      2. The PTC heater consists of a PTC element, aluminum fin, and brass plate. When current is applied to the PTC element, it generates heat to warm the air that passes through the unit.
   b. PTC Heater Operating Conditions
      1. The ON/OFF function of the PTC heater is controlled by the air conditioning amplifier in accordance with the water temperature, ambient temperature, engine speed, air mix setting, and electrical load (generator power ratio). For example, the number of the operating PTC heaters varies by the water temperature as in the graph below.

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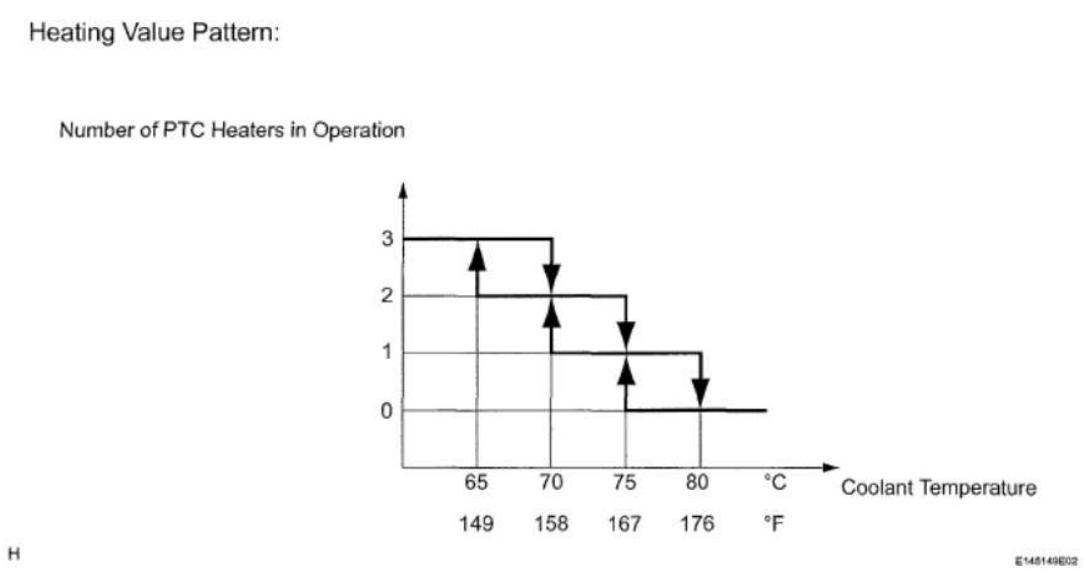


Fig. 15: Heating Value Pattern Graph
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the air conditioning system.
- *: Use a Techstream.

1. **VEHICLE BROUGHT TO WORKSHOP**
2. **INSPECT BATTERY VOLTAGE**
   a. Inspect the battery voltage.

      Standard voltage:

      11 to 14 V

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

3. **CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM***
   a. Use a Techstream to check if the CAN Communication System is functioning normally.

      Result

      RESULT REFERENCE

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

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B: Go to CAN COMMUNICATION SYSTEM (See **PROBLEM SYMPTOMS TABLE**)

A: Go to next step

4. **CHECK FOR DTC***
   a. Check for DTCs and note any codes that are output.

      HINT:

      Refer to the **DTC CHECK / CLEAR** .

   b. Delete the DTCs.
   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 REFERENCE

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

B: Go to step 7

A: Go to next step

5. **PROBLEM SYMPTOMS TABLE**
   a. Refer to the **PROBLEM SYMPTOMS TABLE** .

      Result

      RESULT REFERENCE

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B: Go to step 7

A: Go to next step

6. **OVERALL ANALYSIS AND TROUBLESHOOTING***
   a. DATA LIST / ACTIVE TEST (See **DIAGNOSIS SYSTEM**)
   b. TERMINALS OF ECU (See **TERMINALS OF ECU**)
   c. ON-VEHICLE INSPECTION

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d. INSPECTION

7. **ADJUST, REPAIR OR REPLACE**

NEXT : END

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the causes of the problem symptom. The potential cases 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.

AIR CONDITIONING SYSTEM

PROBLEM SYMPTOMS TABLE

Symptom	Suspected Area	See
All functions of the A/C system do not operate.	IG power source circuit	**IG POWER SOURCE CIRCUIT**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
Air Flow Control: No blower operation.	Blower motor circuit	**BLOWER MOTOR CIRCUIT**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
Air Flow Control: No blower control.	Blower motor circuit	**BLOWER MOTOR CIRCUIT**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
Air Flow Control: Insufficient air flow.	Blower motor circuit	**BLOWER MOTOR CIRCUIT**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
Temperature Control: No cool air comes out.	Refrigerant volume	-
	Refrigerant pressure	**REFRIGERANT**
	Compressor solenoid circuit	**DTC B1451 COMPRESSOR SOLENOID CIRCUIT**
	Evaporator temperature sensor circuit	**DTC B1413 EVAPORATOR TEMPERATURE SENSOR CIRCUIT**
	Ambient temperature sensor	**DTC B1412 AMBIENT TEMPERATURE SENSOR CIRCUIT**

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	circuit	
	Heater control switch circuit	**HEATER CONTROL SWITCH CIRCUIT**
	Air mix damper control cable	-
	Expansion valve	**REASSEMBLY**
Temperature Control: No warm air comes out.	Evaporator temperature sensor circuit	**DTC B1413 EVAPORATOR TEMPERATURE SENSOR CIRCUIT**
	Ambient temperature sensor circuit	**DTC B1412 AMBIENT TEMPERATURE SENSOR CIRCUIT**
	Engine coolant temperature sensor circuit	**DTC P0115 ENGINE COOLANT TEMPERATURE CIRCUIT MALFUNCTION; DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT; DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT**
	CAN communication system	**HOW TO PROCEED WITH TROUBLESHOOTING**
	PTC heater circuit	**PTC HEATER CIRCUIT**
	Headlight signal circuit	**HEADLIGHT SIGNAL CIRCUIT**
	Generator signal circuit	**GENERATOR SIGNAL CIRCUIT**
	No. 3 heater control (Max hot switch)	**REASSEMBLY**
	Air mix damper control cable	-
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
	ECM	**REMOVAL**
	Harness or connector	-
	Refrigerant volume	-
	Refrigerant pressure	**REFRIGERANT**
	Ambient temperature sensor circuit	**DTC B1412 AMBIENT TEMPERATURE SENSOR CIRCUIT**
	Engine coolant	**DTC P0115 ENGINE COOLANT TEMPERATURE CIRCUIT MALFUNCTION; DTC P0117 ENGINE**

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Temperature Control: Output air is warmer or cooler than the set temperature or response is slow.	temperature sensor circuit	**COOLANT TEMPERATURE CIRCUIT LOW INPUT; DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT**
	CAN communication system	**HOW TO PROCEED WITH TROUBLESHOOTING**
	Air mix damper control cable	-
	Radiator unit sub-assembly	-
	Expansion valve	**REASSEMBLY**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
	ECM	**REMOVAL**
Temperature Control: No temperature control (only Max. cool or Max. hot)	Ambient temperature sensor circuit	**DTC B1412 AMBIENT TEMPERATURE SENSOR CIRCUIT**
	Evaporator temperature sensor circuit	**DTC B1413 EVAPORATOR TEMPERATURE SENSOR CIRCUIT**
	Heater control switch circuit	**HEATER CONTROL SWITCH CIRCUIT**
	Engine coolant temperature sensor circuit	**DTC P0115 ENGINE COOLANT TEMPERATURE CIRCUIT MALFUNCTION; DTC P0117 ENGINE COOLANT TEMPERATURE CIRCUIT LOW INPUT; DTC P0118 ENGINE COOLANT TEMPERATURE CIRCUIT HIGH INPUT**
	CAN communication system	**HOW TO PROCEED WITH TROUBLESHOOTING**
	Air mix damper control cable	-
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
	ECM	**REMOVAL**
No air inlet control.	Air inlet damper control cable	-
No air flow mode control.	Defroster damper control cable	-
Engine idle speed increase does not occur, or is continuous	Compressor solenoid circuit	**DTC B1451 COMPRESSOR SOLENOID CIRCUIT**
	Air Conditioning amplifier	**AIR CONDITIONING AMPLIFIER**
	ECM	**REMOVAL**

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	CAN communication system	**HOW TO PROCEED WITH TROUBLESHOOTING**
A/C indicator blinking.	Compressor solenoid circuit	**DTC B1451 COMPRESSOR SOLENOID CIRCUIT**

TERMINALS OF ECU

1. **CHECK AIR CONDITIONING AMPLIFIER**

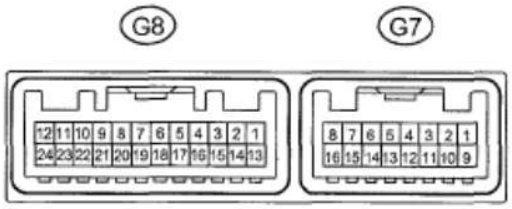


Fig. 16: Identifying Air Conditioning Amplifier Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Check from the rear of the connector while it is connected to the air conditioning amplifier.

VOLTAGE AND RESISTANCE SPECIFICATION

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
G7-1 (S5-3) - G7-12 (GND)	Y - W-B	Power supply for pressure sensor	Ignition switch: ON	4.5 to 5.5 V
G7-2 (TX+) - G7-12 (GND)	V - W-B	CAN communication line	Ignition switch: ON	Pulse generation (see waveform 1)
G7-3 (TX-) - G7-12 (GND)	W - W-B	CAN communication line	Ignition switch: ON	Pulse generation (see awaveform 2)
G7-4 (SG-2) - Body ground	L - Body ground	Ground for evaporator temperature sensor	Always	Below 1.0 ohms
G7-5 (TAM) - G7-11 (SG-1)	W-B	Ambient temperature sensor signal	Ignition switch: ON Ambient temperature: 25°C	1.35 to 1.75 V
G7-6 (PRE) - G7-11 (SG-1)	GR-B	A/C pressure sensor signal	Refrigerant pressure: normal	0.76 to 4.74 V
G7-6 (PRE) - G7-11 (SG-1)	GR-B	A/C pressure sensor signal	Refrigerant pressure: abnormal (less than 0.196 MPa [2.0 kgf/cm^2] or more than 3.14 MPa [32 kgf/cm^2])	Below 0.76 V or 4.74 V or more

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G7-7 (SOL+) - G7-12 (GND)	LG - W-B	A/C compressor operation signal	Engine idling Blower switch: 1 A/C switch: ON	Pulse generation (see bwaveform 3)
G7-8 (IG+) - G7-12 (GND)	Y - W-B	Power source (IG)	Ignition switch: ON	11 to 14 V
G7-9 (SBLW) - G7-12 (GND)	BR - W-B	Blower motor ON signal	Ignition switch: ON Blower switch: 0 --> 1	11 to 14 V --> 0 V
G7-10 (TE) - G7-4 (SG-2)	GR - L	Evaporator temperature sensor signal	Ignition switch: ON Temperature near evaporator: 15°C (59°F)	1.0 to 1.3 V
G7-11 (SG-1) - Body ground	B - Body ground	Ground for ambient temperature sensor	Always	Below 1.0 ohms
G7-12 (GND) - Body ground	W-B - Body ground	Ground for main power supply	Always	Below 1.0 ohms
G7-15 (A/C) - G7-12 (GND)	LG - W-B	A/C switch signal	Ignition switch: ON Defroster: OFF A/C switch: OFF --> ON	Below 1 V --> 11 to 14 V
		Defroster mode detection switch signal	Ignition switch: ON A/C switch: OFF Defroster: OFF --> ON	Below 1 V --> 11 to 14 V
G7-16 (LED) - Body ground	P - Body ground	A/C switch indicator signal	Engine idling A/C switch: ON Blower switch: 0 --> 1	11 to 14 V --> Below 4 V
G8-9 (PTC1) - G7-12 (GND)	V - W-B	PTC heater relay operation signal	Engine idling No. 3 heater control knob: Max Hot Engine coolant temperature: Below 65°C (149°F) Ambient temperature: Below 10°C (50°F) Blower switch: 0 --> 1 Waiting time: 10 seconds	Below 1 V --> 11 to 14 V
G8-10 (PTC2) - G7-12 (GND)	BR - W-B	PTC heater relay operation signal	Engine idling No. 3 heater control knob: Max Hot Engine coolant temperature: Below 65°C (149°F) Ambient temperature: Below 10°C (50°F) Blower switch: 0 --> 1 Waiting time: 20 seconds	Below 1 V --> 11 to 14 V
			Engine idling	

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G8-12 (PTC3) - G7-12 (GND)	R - W-B	PTC heater relay operation signal	No. 3 heater control knob: Max Hot Engine coolant temperature: Below 65°C (149°F) Ambient temperature: Below 10°C (50°F) Blower switch: 0 --> 1 Waiting time: 30 seconds	Below 1 V --> 11 to 14 V
G8-14 (HEAT) - Body ground	LG - Body ground	MAX HOT switch detection signal	Ignition switch: ON No. 3 heater control knob: Max Hot	11 to 14 V
G8-23 (HLS) - Body ground	LG - Body ground	Headlight control signal	Engine idling Light control switch: OFF --> HEAD	11 to 14 V --> Below 1 V
G8-24 (ALT) - G7-12 (GND)	P - W-B	Generator (Alternator) operation signal	Engine idling	Pulse generation

a. Waveform 1 (Reference): Using an oscilloscope

CAN communication signal

WAVEFORM REFERENCE (WAVEFORM 1)

Terminal Name	Between G7-2 (TX+) - G7-12 (GND)
Tester Range	1 V/DIV., 10 µsec./DIV.
Condition	Ignition switch ON

HINT:

The waveform varies depending on the CAN communication signal.

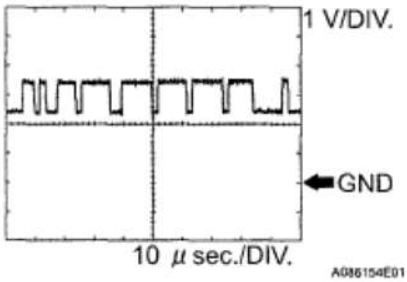


Fig. 17: Waveform Graph (Waveform 1)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Waveform 2 (Reference): Using an oscilloscope

CAN communication signal

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WAVEFORM REFERENCE (WAVEFORM 2)

Terminal Name	Between G7-3 (TX-) - G7-12 (GND)
Tester Range	1 V/DIV., 10 µsec./DIV.
Condition	Ignition switch ON

HINT:

The waveform varies depending on the CAN communication signal.

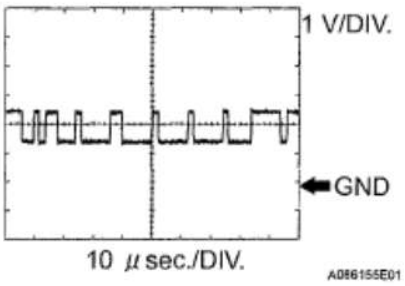


Fig. 18: Waveform Graph (Waveform 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Waveform 3 (Reference): Using an oscilloscope

Compressor and pulley operation signal

WAVEFORM REFERENCE (WAVEFORM 3)

Terminal Name	Between G7-7 (SOL+) - G7-12 (GND)
Tester Range	5 V/DIV., 500 µsec./DIV.
Condition	Engine idling, Blower switch 1, A/C switch ON

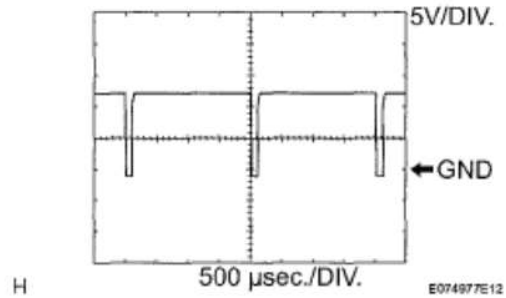


Fig. 19: Waveform Graph (Waveform 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIAGNOSIS SYSTEM

1. **CHECK DLC3**

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a. Check the DLC3 (See **HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS**)

DTC CHECK / CLEAR

1. **CHECK DTC**
   a. Connect a Techstream to the DLC3.
   b. Turn the ignition switch to ON.
   c. Turn the tester on.
   d. Enter the following menus: Body Electrical / Air conditioner / Trouble Codes /
   e. Read the DTCs.
2. **CLEAR DTC**
   a. Connect a Techstream to the DLC3.
   b. Turn the ignition switch to ON.
   c. Turn the tester on.
   d. Enter the following menus: Body Electrical / Air conditioner / Trouble Codes /
   e. Erase the DTCs.

DATA LIST / ACTIVE TEST

1. **DATA LIST**

   HINT:

   Using a Techstream to read the Data List allows the values or states of switches, sensor, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may by discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

   NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

   a. Warm up the engine.
   b. Turn the ignition switch to OFF.
   c. Connect the Techstream to the DLC3.
   d. Turn the ignition switch to ON.
   e. Turn the tester on.
   f. Enter the following menus: Body Electrical / Air Conditioner / Data List /
   g. According to the display on tester, read the "Data List".

   Air Conditioner:

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DATA LIST - AIR CONDITIONER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Ambient Temperature Sensor	Ambient temperature sensor / Min.: -23.3°C (-9.94°F) Max.: 65.95°C (150.71°F)	Actual ambient temperature is displayed	Open in circuit: -23.3°C (- 9.94°F) Short in circuit: 65.95°C (150.71°F)
Adjusted Ambient Temp	Adjusted ambient temperature / Min.: -30.8°C (-23.44°F), Max.: 50.8°C (123.44°F)	-	Open in circuit: -30.8°C (-23.44°F) Short in circuit: 50.8°C (123.44° F)
Evaporator Fin Thermistor	Evaporator fin thermistor / Min.: -29.7°C (-21.46°F), Max.: 59.55°C (139.19°F)	Actual evaporator temperature is displayed	Open in circuit: -29.7°C (-21.46°F) Short in circuit: 59.55°C (139.19°F)
Engine Coolant Temperature	Engine coolant temperature / Min.: 1.3°C (34.34°F), Max.: 90.55°C(194.99°F)	Actual engine coolant temperature is displayed while engine is warmed up	-
Regulator Pressure Sensor	Regulator pressure sensor/ Min.: 0 kgf/cm^2 G, Max.: 38.25 kgf/ cm^2 G	Actual refrigerant pressure is displayed	-
Regulator Control Current	Compressor variable output current / Min.: 0 A, Max.: 0.996 A	-	-
Number of Trouble Codes	Number of trouble codes /Min.: 0, Max.: 255	Number of DTCs will be displayed	-

2. **ACTIVE TEST**

HINT:

Using a Techstream to Perform the Active Tests allows relays, VSVs and actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

a. Connect a Techstream to the DLC3.
b. Turn the ignition switch to ON.
c. Turn the tester on.
d. Enter the following menus: Body Electrical / Air Conditioner / Active Test /
e. According to the display on tester, perform the "Active Test".

Air Conditioner:

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ACTIVE TEST DETAIL - AIR CONDITIONER

Tester Display	Test Part	Control Range	Normal Condition
Magnetic Clutch Relay	Magnetic clutch relay	ON/OFF	-
Heater Active Level	PTC heater active level	Min.: 0, Max.: 3	-

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

DTC Code	Detection Item	Trouble Area	Memory (*2)
B1412 *1	Ambient Temperature Sensor Circuit	○ Ambient temperature sensor ○ Harness or connector between ambient temperature sensor and air conditioning amplifier ○ Air Conditioning amplifier	Memorized (8.5 min. or more)
B1413	Evaporator Temperature Sensor Circuit	○ Evaporator temperature sensor ○ Harness or connector between evaporator temperature sensor and air conditioning amplifier ○ Air conditioning amplifier	Memorized (8.5 min. or more)
B1423	Pressure Sensor Circuit	○ Pressure sensor ○ Harness or connector between pressure sensor and air conditioning amplifier ○ Air conditioning amplifier ○ A/C system (leaks, blocked)	-
		○ A/C compressor (compressor solenoid) ○ Harness or	

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B1451	Compressor Solenoid Circuit	connector between A/C compressor (compressor solenoid) and air conditioning amplifier or Body ground ○ Air conditioning amplifier	-
B1499	Communication Malfunction (Engine and Meter ECU)	CAN communication system	Memorized
HINT: • *1: If the ambient temperature is approximately -52.9°C (-63.22°F) or lower, DTC B1412 may be output even though the system is normal. • *2: The A/C amplifier memorizes the DTC of the respective malfunction if it has occurred for the period of time indicated in the brackets.			

DTC B1412 AMBIENT TEMPERATURE SENSOR CIRCUIT

DESCRIPTION

The ambient temperature sensor is installed in the front part of the condenser to detect the ambient temperature and control the air conditioner. The sensor is connected to the air conditioning amplifier and detects fluctuations in the ambient temperature. This data is used for controlling the room temperature. The sensor sends a signal to the air conditioning amplifier. The resistance of the ambient temperature sensor changes in accordance with the ambient temperature. As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases. The air conditioning amplifier applies a voltage (5 V) to the ambient temperature sensor and reads voltage changes as the resistance of the ambient temperature sensor changes.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
B1412	Open or short in ambient temperature sensor circuit	• Ambient temperature sensor • Harness or connector between ambient temperature sensor and air conditioning amplifier • Air conditioning amplifier

WIRING DIAGRAM

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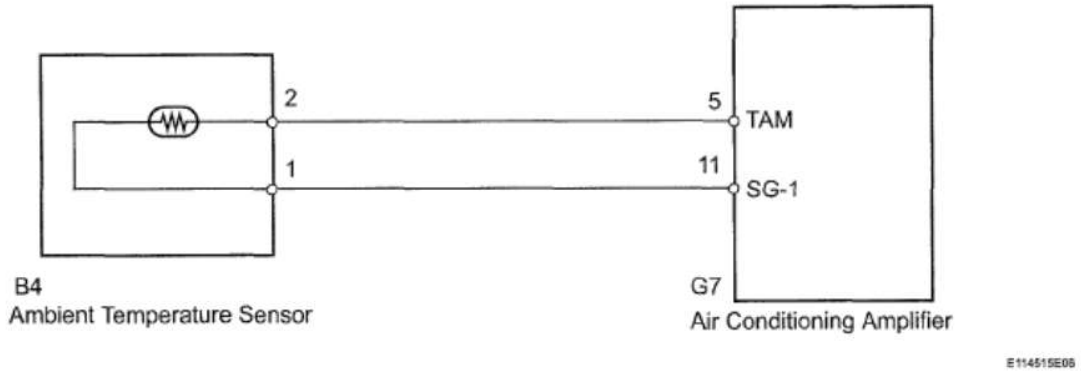


Fig. 20: Ambient Temperature Sensor - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **READ VALUE USING TECHSTREAM (AMBIENT TEMPERATURE SENSOR)**
   a. Connect the Techstream to DLC3.
   b. Turn the ignition switch to ON.
   c. Turn the tester on.
   d. Select the following menus: Body Electrical / Air Conditioner / Data List / Ambient Temp Sensor
   e. According to the display on tester, read the "Data List".

   Ambient Temp Sensor

   DATA LIST - AMBIENT TEMP SENSOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Ambient Temp Sensor	Ambient temperature sensor / Min: -23.3°C (-9.94°F), Max: 65.95°C (150.71°F)	Actual ambient temperature is displayed	Open in circuit: -3.3°C (-9.94°F) Short in circuit: 65.95°C (150.71°F)

   OK:

   The display is as specified in the normal condition column. Result

   RESULT REFERENCE

Result	Proceed to
NG	A
OK (When troubleshooting according to PROBLEM SYMPTOMS TABLE)	B
OK (When trouble shooting according to the DTC output)	C

B : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

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C : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

A: Go to next step

2. **INSPECT AMBIENT TEMPERATURE SENSOR**
   a. Remove the ambient temperature sensor (See **REMOVAL**).
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-2	10°C (50°F)	3.00 to 3.73 kohms
1-2	15°C (59°F)	2.45 to 2.88 kohms
1-2	20°C (68°F)	1.95 to 2.30 kohms
1-2	25°C (77°F)	1.60 to 1.80 kohms
1-2	30°C (86°F)	1.28 to 1.47 kohms
1-2	35°C (95°F)	1.00 to 1.22 kohms
1-2	40°C (104°F)	0.80 to 1.00 kohms
1-2	45°C (113°F)	0.65 to 0.85 kohms
1-2	50°C (122°F)	0.50 to 0.70 kohms
1-2	55°C(131°F)	0.44 to 0.60 kohms
1-2	60°C (140°F)	0.36 to 0.50 kohms

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Component without harness connected:
(Ambient Temperature Sensor)

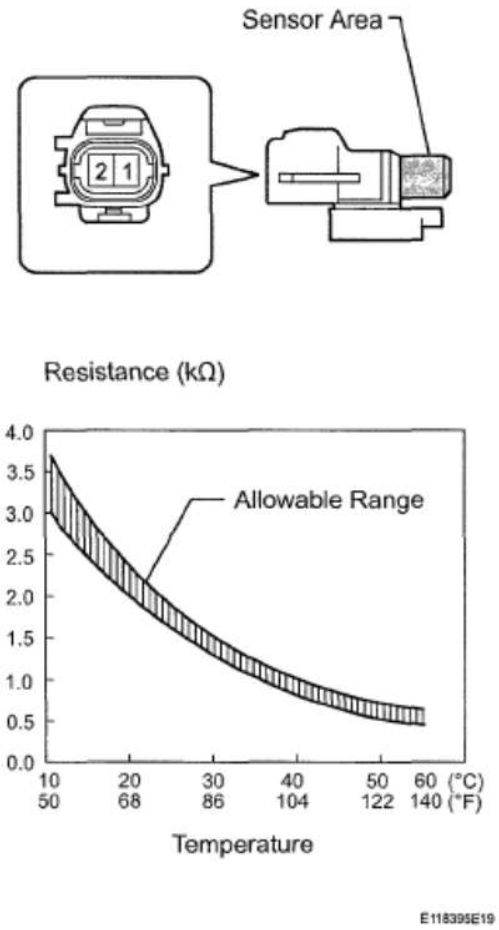


Fig. 21: Identifying Ambient Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- **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 the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases (see **Fig. 21**).

c. Reinstall the ambient temperature sensor.

NG: REPLACE AMBIENT TEMPERATURE SENSOR (See **REMOVAL**)

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OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (AMBIENT TEMPERATURE SENSOR COMBINATION METER)**
   a. Disconnect the B4 ambient temperature sensor connector.
   b. Disconnect the G7 air conditioning amplifier connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G7-5 (TAM) - B4-2	Always	Below 1 ohms
G7-11 (SG-1) - B4-1	Always	Below 1 ohms.
G7-5 (TAM) - Body ground	Always	10 kohms or higher
G7-11 (SG-1) - Body ground	Always	10 kohms or higher

   d. Reconnect the ambient temperature sensor connector.
   e. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Ambient Temperature Sensor)



Front view of wire harness connector:
(to Air Conditioning Amplifier)

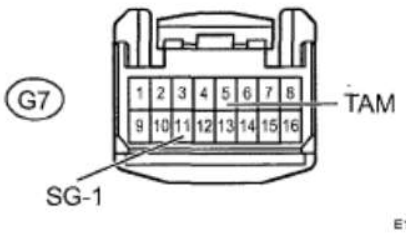


Fig. 22: Identifying Ambient Temperature Sensor And Air Conditioning Amplifier Connector Terminals

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

DTC B1413 EVAPORATOR TEMPERATURE SENSOR CIRCUIT

DESCRIPTION

The evaporator temperature sensor (A/C thermistor) is installed on the evaporator in the air conditioning unit. It detects the temperature of the cooled air that has passed through the evaporator and its signal is used to control the air conditioning. It sends a signal to the air conditioning amplifier. The resistance of the evaporator temperature sensor (A/C thermistor) 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 air conditioning amplifier applies voltage (5 V) to the evaporator temperature sensor (A/C thermistor) and reads voltage changes as the resistance of the evaporator temperature sensor (A/C thermistor) changes. This sensor is used to prevent the evaporator from freezing.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
B1413	Open or short in evaporator temperature sensor circuit	• Evaporator temperature sensor • Harness or connector between evaporator temperature sensor and air conditioning amplifier • Air conditioning amplifier

WIRING DIAGRAM

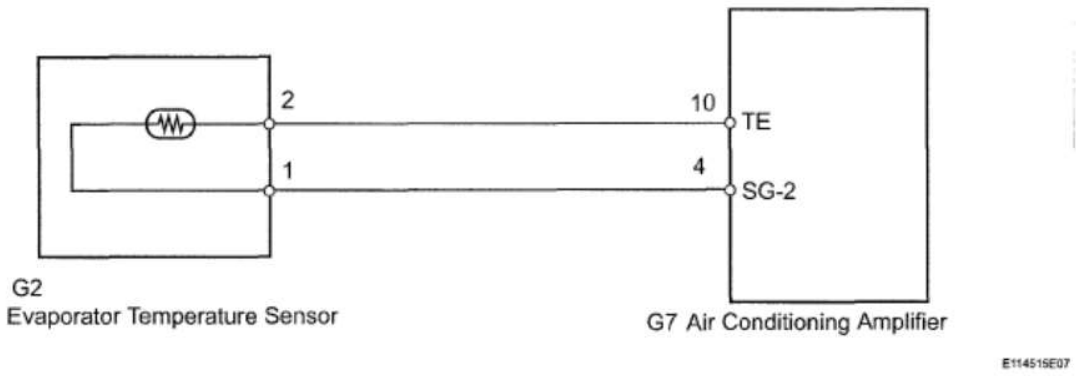


Fig. 23: Evaporator Temperature Sensor - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **READ VALUE USING TECHSTREAM (EVAPORATOR FIN THERMISTOR)**

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a. Connect the Techstream to the DLC3.
b. Turn the ignition switch to ON.
c. Turn the tester on.
d. Select the following menus: Body Electrical / Air Conditioner / Data List / Evaporator Fin Thermistor
e. According to the display on tester, read the "Data List".

Evaporator Fin Sensor

DATA LIST - EVAPORATOR FIN SENSOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Evaporator Fin Thermistor	Evaporator fin thermistor / Min.: -29.7°C (-21.46°F), Max.: 59.55°C (139.19°F)	Actual evaporator temperature is displayed	Open in circuit: -29.7°C (-21.46°F) Short in circuit: 59.55°C (139.19°F)

OK:

The display is as specified in the normal condition column.

Result

RESULT REFERENCE

Result	Proceed to
NG	A
OK (When troubleshooting according to PROBLEM SYMPTOMS TABLE)	B
OK (When troubleshooting according to the DTC output)	C

B : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

C : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

A: Go to next step

2. **INSPECT EVAPORATOR TEMPERATURE SENSOR**
   a. Disconnect the G2 evaporator temperature sensor connector.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-2	-10°C (14°F)	7.30 to 9.10 kohms

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

NOTE:

- **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 the same as the ambient temperature.**

HINT:

As the temperature increases, the resistance decreases (see **Fig. 24**).

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Component without harness connected:
(Evaporator Temperature Sensor)

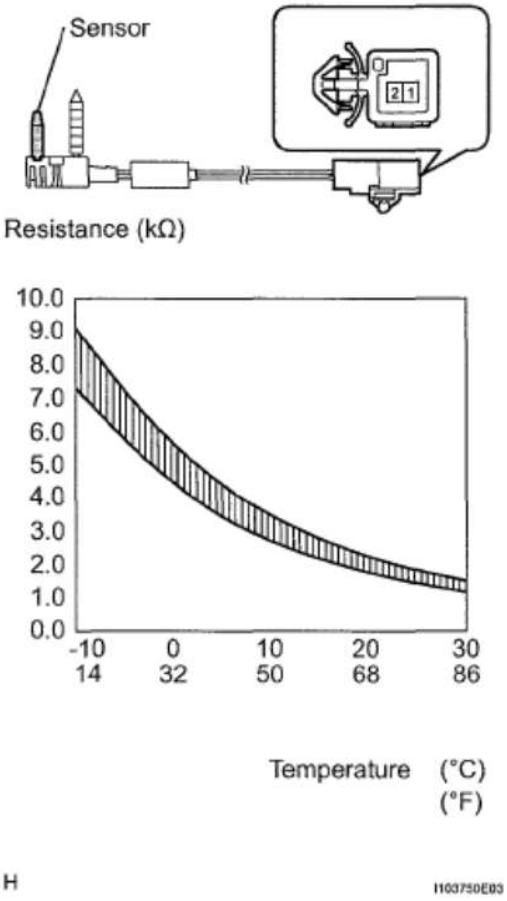


Fig. 24: Identifying Evaporator Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Reconnect the evaporator temperature sensor connector.

NG: REPLACE EVAPORATOR TEMPERATURE SENSOR (See **REMOVAL**)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - EVAPORATOR TEMPERATURE SENSOR)**
   a. Disconnect the G2 evaporator temperature sensor connector.
   b. Disconnect the G7 air conditioning amplifier connector.
   c. Measure the resistance according to the value(s) in the table below.

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Standard resistance

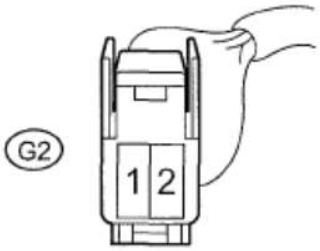
RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G7-10 (TE) - G2-2	Always	Below 1 ohms
G7-4 (SG-2) - G2-1	Always	Below 1 ohms
G7-10 (TE) - Body ground	Always	10 kohms or higher
G7-4 (SG-2) - Body ground	Always	10 kohms or higher

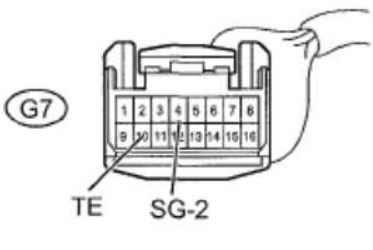
d. Reconnect the air conditioning amplifier connector.
e. Reconnect the evaporator temperature sensor connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Evaporator Temperature Sensor)



Front view of wire harness connector:
(to Air Conditioning Amplifier)



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Fig. 25: Identifying Air Conditioning Amplifier And Evaporator Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

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DTC B1423 PRESSURE SENSOR CIRCUIT

DESCRIPTION

This DTC is output when refrigerant pressure on the high pressure side is extremely low (0.19 MPa (2.0 kgf/cm^2 , 28 psi) or less) or extremely high (3.14 MPa (32.0 kgf/cm^2 , 455 psi) or more). The pressure sensor, which is installed on the pipe of the high pressure side to detect refrigerant pressure, outputs a refrigerant pressure signal to the air conditioning amplifier. The air conditioning amplifier converts this signal to pressure according to the sensor characteristics to control the compressor.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
B1423	• Open or short in pressure sensor circuit • Refrigerant pressure on the high pressure side is extremely low (0.19 MPa (2.0 kgf/cm^2 , 28 psi) or less) or extremely high (3.14 MPa (32.0 kgf/cm^2 , 455 psi) or more).	• Pressure sensor • Harness or connector between pressure sensor and air conditioning amplifier • Air conditioning amplifier • A/C system (leaks, blocked)

WIRING DIAGRAM

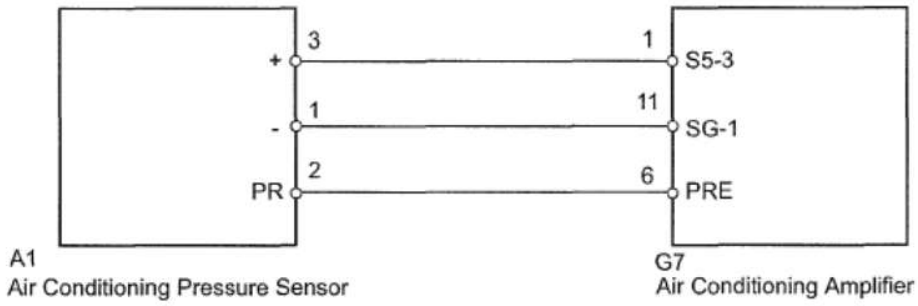


Fig. 26: A/C Pressure Sensor - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CHECK REFRIGERANT PRESSURE**
   a. Install the manifold gauge set (See **ON-VEHICLE INSPECTION**).
   b. Read the manifold gauge pressure when the following conditions are established.
      1. Prepare the vehicle in accordance with the chart below.

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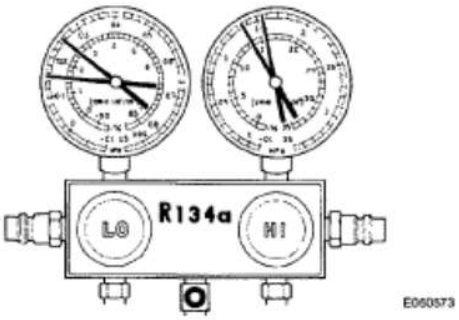


Fig. 27: Identifying Manifold Gauge Set
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ITEMS CONDITION

Item	Condition
Engine speed	1500 rpm
Vehicle doors	Fully open
Temperature setting	MAX COLD
Blower speed	HI
A/C switch	ON
Air inlet	RECIRC

2. When the refrigerant volume is correct, the gauge reading indicates as follows:

Low pressure side:

0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm^2 , 22 to 36 psi)

High pressure side:

1.37 to 1.57 MPa (14 to 16 kgf/cm^2 , 199 to 228 psi)

HINT:

Pressure varies in accordance with certain conditions (outside air temperature, sunlight and wind).

NG: Go to step 5

OK: Go to next step

2. **READ VALUE USING TECHSTREAM (REGULATOR PRESSURE SENSOR)**
   a. Warm up the engine.
   b. Turn the ignition switch to OFF.

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c. Connect the Techstream to the DLC3.
d. Turn the ignition switch to ON.
e. Turn the tester on.
f. Select the following menus: Body Electrical / Air Conditioner / Data List /
g. According to the display on tester, read the "Data List".

Regulator Pressure Sensor

DATA LIST - REGULATOR PRESSURE SENSOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Regulator Pressure Sensor	Regulator pressure sensor / Min.: 0 kgf/cm^2 G, Max.: 38.25 kgf/cm^2 G	Actual refrigerant pressure is displayed	-

OK:

The display is as specified in the normal condition column.

Result

RESULT REFERENCE

Result	Proceed to
NG	A
OK (When troubleshooting according to PROBLEM SYMPTOMS TABLE)	B
OK (When troubleshooting according to the DTC output)	C

B : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

C : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

A: Go to next step

3. **INSPECT LIQUID TUBE SUB-ASSEMBLY (A/C PRESSURE SENSOR)**
   a. Install the manifold gauge set (See **ON-VEHICLE INSPECTION**).
   b. Disconnect the A1 A/C pressure sensor connector.
   c. Connect the three 1.5 V dry cell batteries' positive (+) lead to terminal 3, and the negative (-) lead to terminal 1.
   d. Connect the voltmeter's positive (+) lead to terminal 2, and the negative (-) lead to terminal 1.
   e. Measure the voltage according to the value(s) in the table below.

Standard voltage

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VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-2	Refrigerant pressure: 0.39 to 3.187 MPa (4 to 32.5 kgf/cm^2 , 57 to 463 psi)	1.0 to 4.8 V

f. Reconnect the A/C pressure sensor connector.

NG: REPLACE LIQUID TUBE SUB-ASSEMBLY (See **REFRIGERANT LINE**)

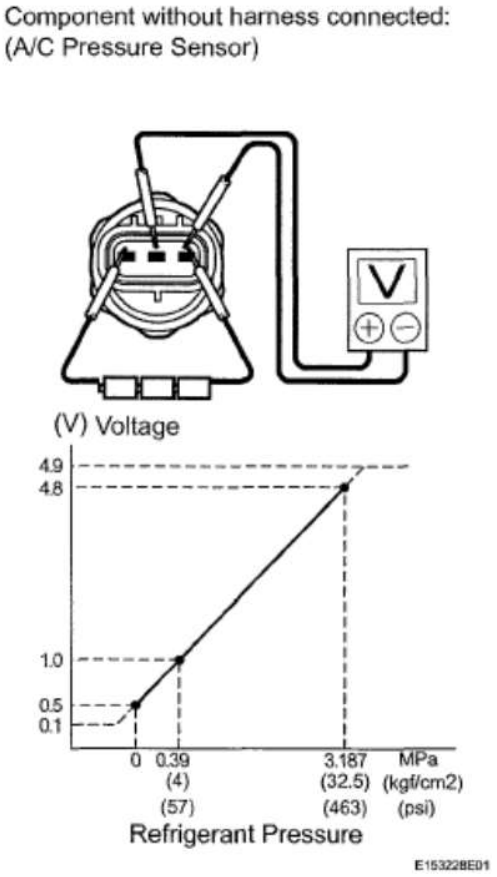


Fig. 28: Measuring Voltage Between A/C Pressure Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (A/C PRESSURE SENSOR - AIR CONDITIONING AMPLIFIER)**
   a. Disconnect the A1 A/C pressure sensor connector.
   b. Disconnect the G7 air conditioning amplifier connector.
   c. Measure the resistance according to the value(s) in the table below.

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Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
A1-1 (-) - G7-11 (SG-1)	Always	Below 1 ohms
A1-2 (PR) - G7-6 (PRE)	Always	Below 1 ohms
A1-3 (+)-G7-1 (S5-3)	Always	Below 1 ohms
A1-1 (-) - Body ground	Always	10 kohms or higher
A1-2 (PR) - Body ground	Always	10 kohms or higher
A1-3 (+) - Body ground	Always	10 kohms or higher

d. Reconnect the air conditioning amplifier connector.
e. Reconnect the A/C pressure sensor connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to A/C Pressure Sensor)



Front view of wire harness connector:
(to Air Conditioning Amplifier)



Fig. 29: Identifying A/C Pressure Sensor And Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

5. **CHECK FOR A/C SYSTEM LEAK**
   a. Install the manifold gauge set (See **ON-VEHICLE INSPECTION**).
   b. Recover the refrigerant from the A/C system using a refrigerant recovery unit.

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c. Evacuate the A/C system and check that vacuum can be maintained in it.

OK:

Vacuum can be maintained in the A/C system.

HINT:

If vacuum cannot be maintained in the A/C system, refrigerant may be leaking from it. In this case, it is necessary to repair or replace the leaking part of the A/C system.

NG: Go to step 8

OK: Go to next step

6. **CHARGE REFRIGERANT**
   a. Add an appropriate amount of refrigerant (See **REFRIGERANT LINE**).
7. **RECHECK DTC**
   a. Recheck for the DTC when the following conditions are satisfied.

ITEMS CONDITION

Item	Condition
Vehicle Doors	Fully open
Temperature Setting	MAX COLD
Blower Speed	HI
A/C Switch	ON
R/F Switch	RECIRCULATION
Interior Temperature	25 to 35°C (77 to 95°F) or higher
Engine Speed	2000 rpm

NOTE: **If refrigerant pressure on the high pressure side becomes high, the DTC will be set. Therefore, it is necessary to measure the voltage for a certain amount of time (approximately 10 minutes) because the DTC may be set after the A/C operates for a while.**

HINT:

When the outside air temperature is low (below -1.5°C (29.3°F)), the compressor stops due to operation of the ambient temperature sensor and the evaporator temperature sensor to prevent the evaporator from freezing. In this case, perform the inspection in a warm indoor environment.

Result

RESULT REFERENCE

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Result	Proceed to
DTC B1423 is output	A
DTC B1423 is not output	B

NOTE: **If the DTC was set due to an insufficient or excessive amount of refrigerant, the problem may have been solved after performing the previous step. However, the root cause of insufficient refrigerant may be refrigerant leaks. The root cause of excessive refrigerant may be adding refrigerant when the level was insufficient. Therefore, identify and repair the area where refrigerant leaks from as necessary.**

B : END

A : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

8. **REPAIR A/C SYSTEM LEAK**
   a. Identify the area where refrigerant leaks from (See **REPLACEMENT**).
   b. Repair the identified area of the A/C system.
   c. Evacuate the A/C system.
9. **CHARGE REFRIGERANT**
   a. Use a refrigerant recovery unit to recover refrigerant.
   b. Evacuate the A/C system.
   c. Add an appropriate amount of refrigerant (See **REPLACEMENT**).

   HINT:

   If refrigerant is added and the system has not been properly evacuated (insufficient vacuum time), moisture in the air remaining in the system may freeze in the expansion valve, blocking the flow on the high pressure side. Therefore, in order to confirm the problem, recover the refrigerant, properly evacuate the system, add an appropriate amount of refrigerant, and check for the DTC.

10. **RECHECK DTC**
    a. Recheck for the DTC when the following conditions are satisfied.

ITEMS CONDITION

Item	Condition
Vehicle Doors	Fully open
Temperature Setting	MAX COLD
Blower Speed	HI
A/C Switch	ON
R/F Switch	RECIRCULATION
Interior Temperature	25 to 35°C (77 to 95°F) or higher

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Engine Speed	2000 rpm

NOTE: **If refrigerant pressure on the high pressure side becomes high, the DTC will be set. Therefore, it is necessary to measure the voltage for a certain amount of time (approximately 10 minutes) because the DTC may be set after the A/C operates for a while.**

HINT:

- When the outside air temperature is low (below -1.5°C (29.3°F)), the compressor stops due to operation of the ambient temperature sensor and the evaporator temperature sensor to prevent the evaporator from freezing. In this case, perform the inspection in a warm indoor environment.
- If refrigerant is added and the system has not been properly evacuated (insufficient vacuum time), moisture in the air remaining in the system may freeze in the expansion valve, blocking the flow on the high pressure side. Therefore, in order to confirm the problem, recover the refrigerant, properly evacuate the system, add an appropriate amount of refrigerant, and check for the DTC. If the DTC is not output after this work, it indicates that the cooler dryer in the condenser is not able to absorb moisture in the refrigerant cycle. In this case, to complete the repair it is necessary to replace the cooler dryer.

Result

RESULT REFERENCE

Result	Proceed to
DTC B1423 is output	A
DTC B1423 is not output	B

B : END

A : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

DTC B1451 COMPRESSOR SOLENOID CIRCUIT

DESCRIPTION

In this circuit, the compressor receives a refrigerant compression demand signal from the air conditioning amplifier.

Based on this signal, the compressor changes the amount of compressor output.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
		• A/C compressor (compressor solenoid)

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B1451	Open or short in solenoid of the externally changeable compressor circuit	• Harness or connector between A/C compressor (compressor solenoid) and air conditioning amplifier or body ground • Air conditioning amplifier

WIRING DIAGRAM

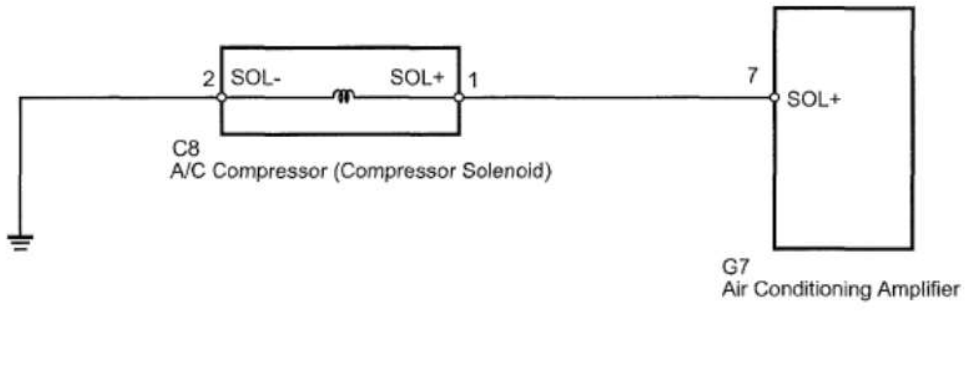


Fig. 30: A/C Compressor (Compressor Solenoid) - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **INSPECT A/C COMPRESSOR (COMPRESSOR SOLENOID)**
   a. Disconnect the C8 A/C compressor (compressor solenoid) connector.
   b. Measure the resistance according to the value(s) in the table below.

      Standard resistance

      RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1 (SOL+) - 2 (SOL-)	20°C (68°F)	10 to 11 ohms

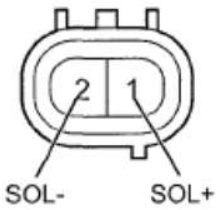
   c. Reconnect the A/C compressor (compressor solenoid) connector.

NG: REPLACE A/C COMPRESSOR (See **REMOVAL**)

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Component without harness connected:
(A/C Compressor (Compressor Solenoid))



H E116970E12

Fig. 31: Identifying A/C Compressor (Compressor Solenoid) Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (A/C COMPRESSOR - BODY GROUND)**
   a. Disconnect the C8 A/C compressor (compressor solenoid) connector.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
C8-2 (SOL-) - Body ground	Always	Below 1 ohms

   c. Reconnect the A/C compressor (compressor solenoid) connector.

Front view of wire harness connector: (to
A/C Compressor (Compressor solenoid))



E152212E01

Fig. 32: Identifying A/C Compressor (Compressor Solenoid) Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (A/C COMPRESSOR - AIR CONDITIONING AMPLIFIER)**
   a. Disconnect the C8 A/C compressor (compressor solenoid) connector.
   b. Disconnect the G7 air conditioning amplifier connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G7-7 (SOL+) - C8-1 (SOL+)	Always	Below 1 ohms
G7-7 (SOL+) - Body ground	Always	10 kohms or higher

Result

RESULT REFERENCE

Result	Proceed to
NG	A
OK (When troubleshooting according to the PROBLEM SYMPTOMS TABLE)	B
OK (When troubleshooting according to the DTC)	C

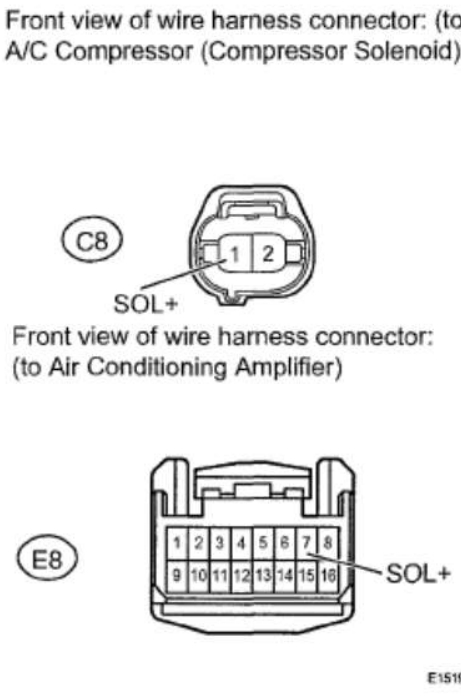


Fig. 33: Identifying A/C Compressor (Compressor Solenoid) And Air Conditioning Amplifier

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Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Reconnect the A/C compressor (compressor solenoid) connector.
e. Reconnect the air conditioning amplifier connector.

B : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

C : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

A : REPAIR OR REPLACE HARNESS OR CONNECTOR

DTC B1499 COMMUNICATION MALFUNCTION (ENGINE AND METER ECU)

DESCRIPTION

DTC DETECTING CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
B1499	Open in CAN communication circuit	CAN communication system

INSPECTION PROCEDURE

1. **CHECK FOR DTC**
   a. Clear the DTC (See **DTC CHECK / CLEAR**).
   b. Check the DTC (See **DTC CHECK / CLEAR**).

   Result

   RESULT REFERENCE

Result	Proceed to
DTC B1499 is output	A
DTC B1499 is not output	B

B : USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

A: Go to CAN COMMUNICATION SYSTEM (See **PROBLEM SYMPTOMS TABLE**)

BLOWER MOTOR CIRCUIT

DESCRIPTION

When the heater control (blower switch) is set to position 1 or higher, the contact of the HTR relay is closed, current flows to the blower motor, and the blower motor operates. The blower motor speed can be changed by

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exchanging the ground and the blower resistor circuit with the heater control (blower switch).

WIRING DIAGRAM

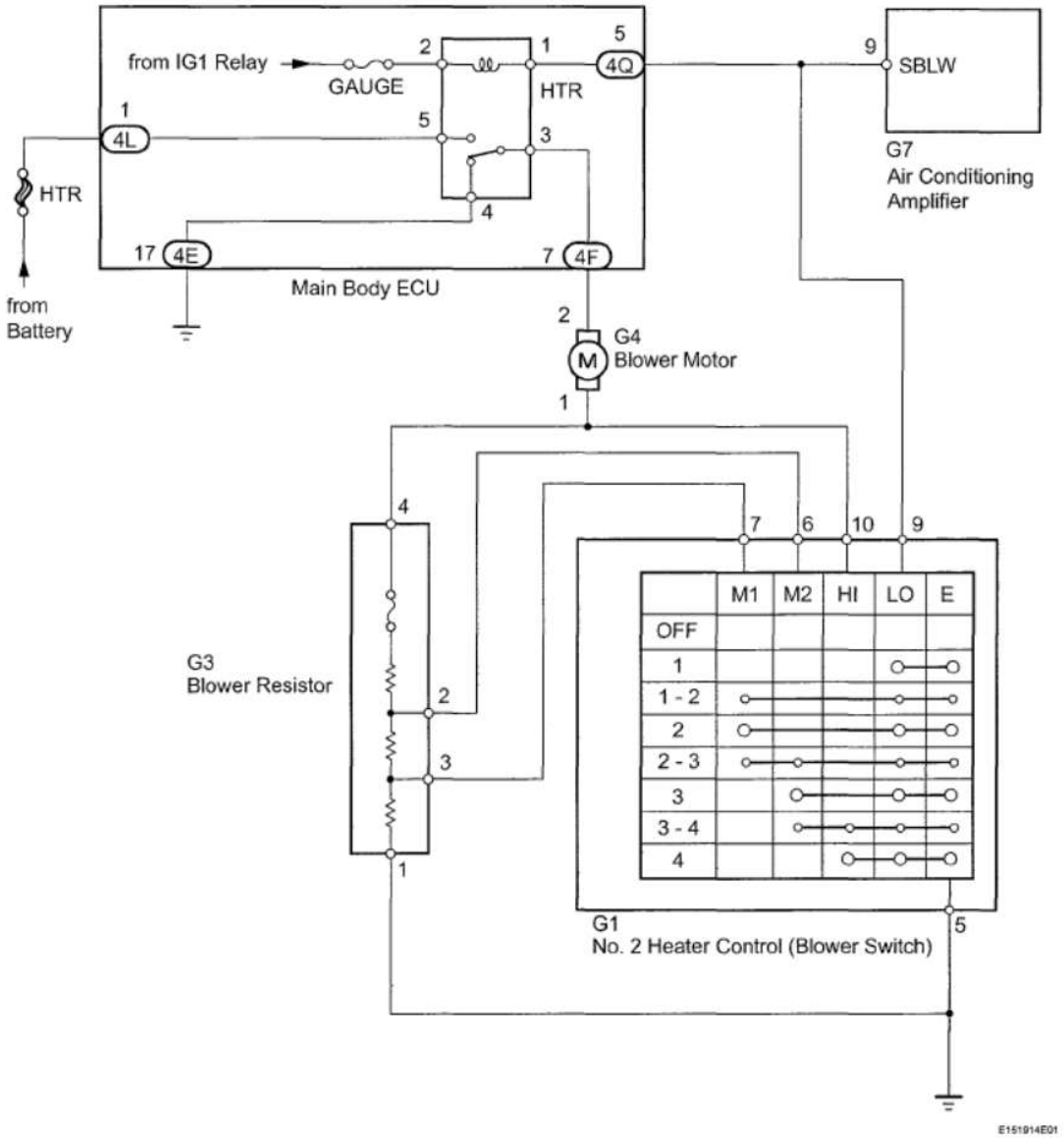


Fig. 34: Blower Motor - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **INSPECT FUSES (GAUGE, HTR)**
   a. Remove the HTR fuse from the engine room relay block.
   b. Remove the GAUGE fuse from the main body ECU.
   c. Measure the resistance according to the value(s) in the table below.

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Standard resistance

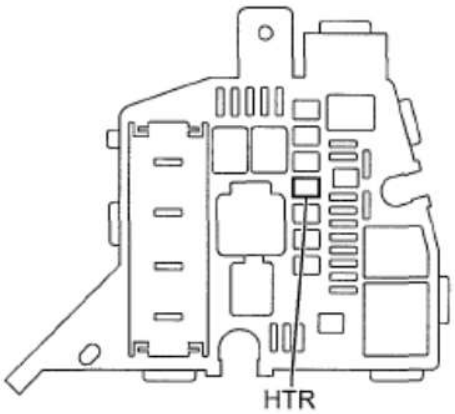
RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR fuse	Always	Below 1 ohms
GAUGE fuse	Always	Below 1 ohms

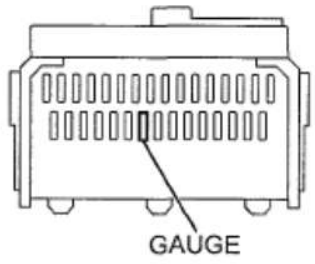
d. Reinstall the GAUGE fuse.
e. Reinstall the HTR fuse.

NG: REPLACE FUSE (See **PARTS LOCATION**)

Engine Room Relay Block:



Main Body ECU:



E148648E04

Fig. 35: Identifying GAUGE And HTR Fuse
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **INSPECT HTR RELAY**
   a. Remove the HTR relay from the main body ECU.
   b. Measure the resistance according to the value(s) in the table below.

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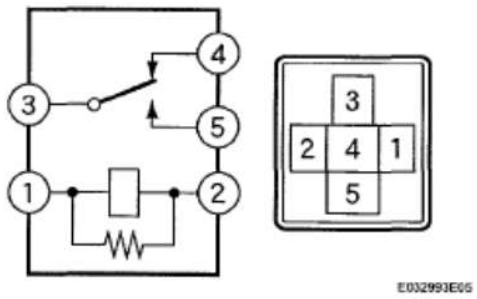


Fig. 36: Identifying HTR Relay Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
3-4	Voltage is not applied between terminals 1 and 2	Below 1 ohms
3-5	Voltage is not applied between terminals 1 and 2	10 kohms or higher
3-4	Apply the battery voltage between terminals 1 and 2	10 kohms or higher
3-5	Apply the battery voltage between terminals 1 and 2	Below 1 ohms

c. Reinstall the HTR relay.

NG: REPLACE HTR RELAY (See **PARTS LOCATION**)

OK: Go to next step

3. **INSPECT BLOWER MOTOR**
   a. Remove the blower motor (See **REMOVAL**).
   b. Apply battery voltage to the terminals and check that the blower motor operates.

OK

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Specified Condition
Positive battery - 2 Negative battery - 1	The blower motor operates smoothly.

c. Reinstall the blower motor.

NG: REPLACE BLOWER MOTOR (See **REMOVAL**)

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Component without harness connected:
(Blower Motor)

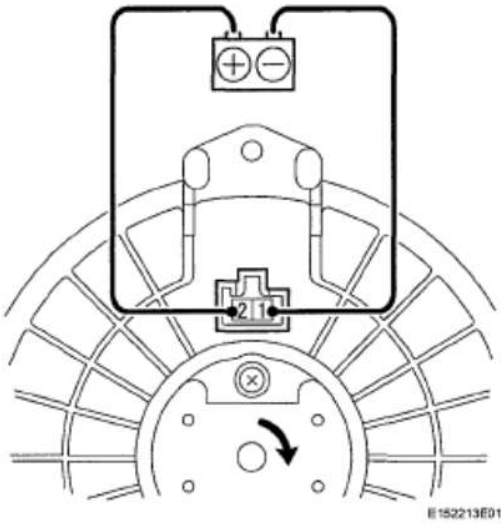


Fig. 37: Inspecting Blower Motor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (HTR FUSE - MAIN BODY ECU)**
   a. Disconnect the 4L main body ECU connector.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
4L-1 - Body ground	Always	11 to 14 V

   c. Reconnect the main body ECU connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Back view of wire harness connector:
(to Main Body ECU)

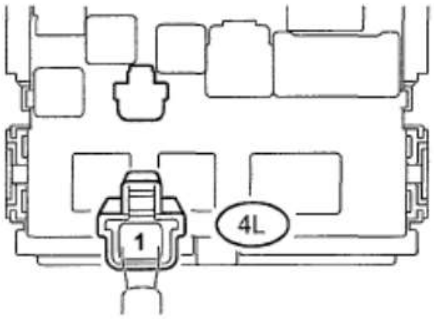


Fig. 38: Identifying 4L Main Body ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

5. **INSPECT MAIN BODY ECU**
   a. Remove the HTR relay from the main body ECU.
   b. Disconnect the 4E and 4F main body ECU connectors.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
4E-17 - HTR-4	Always	Below 1 ohms
4F-7 - HTR-3	Always	Below 1 ohms

   d. Reconnect the main body ECU connectors.
   e. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR-5 - Body ground	Always	11 to 14 V

   f. Reinstall the HTR relay.
   g. Measure the voltage according to the value(s) in the table below.

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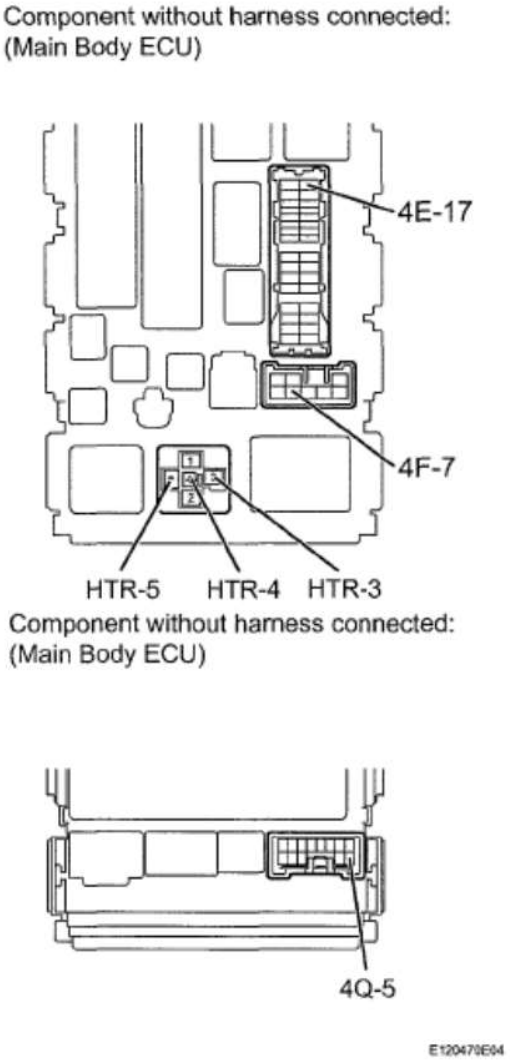


Fig. 39: Identifying Main Body ECU Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
4Q-5 - Body ground	Ignition switch ON	11 to 14 V

NG: REPLACE MAIN BODY ECU

OK: Go to next step

6. **CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - NO. 2 HEATER CONTROL)**
   a. Disconnect the G1 No. 2 heater control connector.

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b. Measure the voltage according to the value(s) in the table below.

Standard voltage

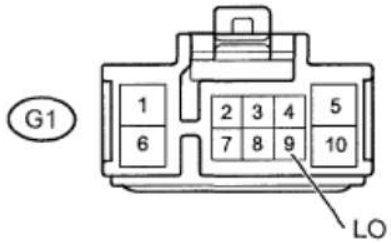
VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G1-9 (LO) - Body ground	Ignition switch ON	11 to 14 V

c. Reconnect the No. 2 heater control connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to No. 2 Heater Control)



E120224E06

Fig. 40: Identifying Heater Control Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

7. **CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - BLOWER MOTOR)**
   a. Disconnect the G4 blower motor connector.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G4-2 - Body ground	Ignition switch ON Blower switch ON	11 to 14 V

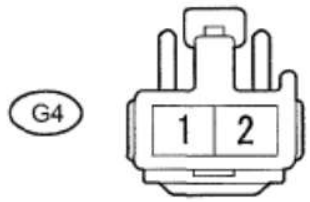
c. Reconnect the blower motor connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Blower Motor)



E119793E06

Fig. 41: Identifying Blower Motor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

8. **CHECK HARNESS AND CONNECTOR (BLOWER RESISTOR - BLOWER MOTOR)**
   a. Disconnect the G3 blower resistor connector.
   b. Disconnect the G4 blower motor connector.
   c. Measure the resistance according to the value(s) in the table below.

   Standard resistance

   RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G3-4 - G4-1	Always	Below 1 ohms

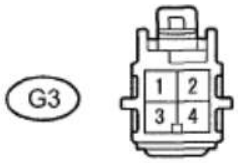
   d. Reconnect the blower resistor connector.
   e. Reconnect the blower motor connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

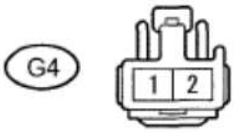
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Front view of wire herness connector:
(to Blower Resistor)



Front view of wire herness connector:
(to Blower Motor)



E120282E05

Fig. 42: Identifying Blower Motor And Blower Resistor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

9. **INSPECT BLOWER RESISTOR**
   a. Remove the blower resistor (See **REMOVAL**).
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-4	Always	3.12 to 3.60 ohms
2-4	Always	0.52 to 0.60 ohms
3-4	Always	1.45 to 1.67 ohms

   c. Reinstall the blower resistor.

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Component without harness connected:
(Blower Resistor)



E120977E07

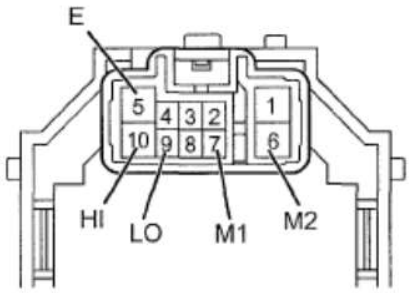
Fig. 43: Identifying Blower Resistor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NG: REPLACE BLOWER RESISTOR (See **REMOVAL**)

OK: Go to next step

10. **INSPECT NO. 2 HEATER CONTROL (BLOWER SWITCH)**
    a. Remove the No. 2 heater control (See **DISASSEMBLY**).
    b. Measure the resistance according to the value(s) in the table below.

Component without harness connected:
(No. 2 Heater Control)



E117010E10

Fig. 44: Identifying Heater Control Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
ALL - 5 (E)	0	10 kohms or higher
5 (E) - 9 (LO)	1	Below 1 ohms
5 (E) - 7 (M1) - 9 (LO)	1 - 2	Below 1 ohms

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5 (E) - 7 (M1) - 9 (LO)	2	Below 1 ohms
5 (E) - 6 (M2) - 7 (M1) - 9 (LO)	2-3	Below 1 ohms
5 (E) - 6 (M2) - 9 (LO)	3	Below 1 ohms
5 (E) - 6 (M2) - 9 (LO) -10 (HI)	3-4	Below 1 ohms
5 (E) - 9 (LO) - 10 (HI)	4	Below 1 ohms

c. Reinstall the No. 2 heater control.

NG: REPLACE NO. 2 HEATER CONTROL (See **DISASSEMBLY**)

OK: Go to next step

11. **CHECK HARNESS AND CONNECTOR (NO. 2 HEATER CONTROL - BLOWER RESISTOR)**
    a. Disconnect the G1 No. 2 heater control connector.
    b. Disconnect the G3 blower resistor connector.
    c. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G1-5 (E) - G3-1	Always	Below 1 ohms
G1-6 (M2) - G3-2	Always	Below 1 ohms
G1-7 (M1) - G3-3	Always	Below 1 ohms
G1-10 (HI) - G3-4	Always	Below 1 ohms

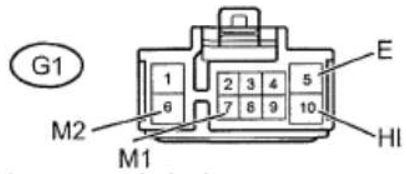
    d. Reconnect the No. 2 heater control connector.
    e. Reconnect the blower resistor connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

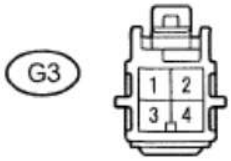
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Front view of wire harness connector:
(to No. 2 Heater Control)



Front view of wire harness connector:
(to Blower Resistor)



E120283E07

Fig. 45: Identifying Heater Control And Blower Resistor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPAIR OR REPLACE HARNESS OR CONNECTOR (BLOWER RESISTOR - BODY GROUND)

HEATER CONTROL SWITCH CIRCUIT

DESCRIPTION

The No. 1 heater control is powered through the A/C fuse. The No. 1 heater control transmits operational signals of each switch to the air conditioning amplifier.

WIRING DIAGRAM

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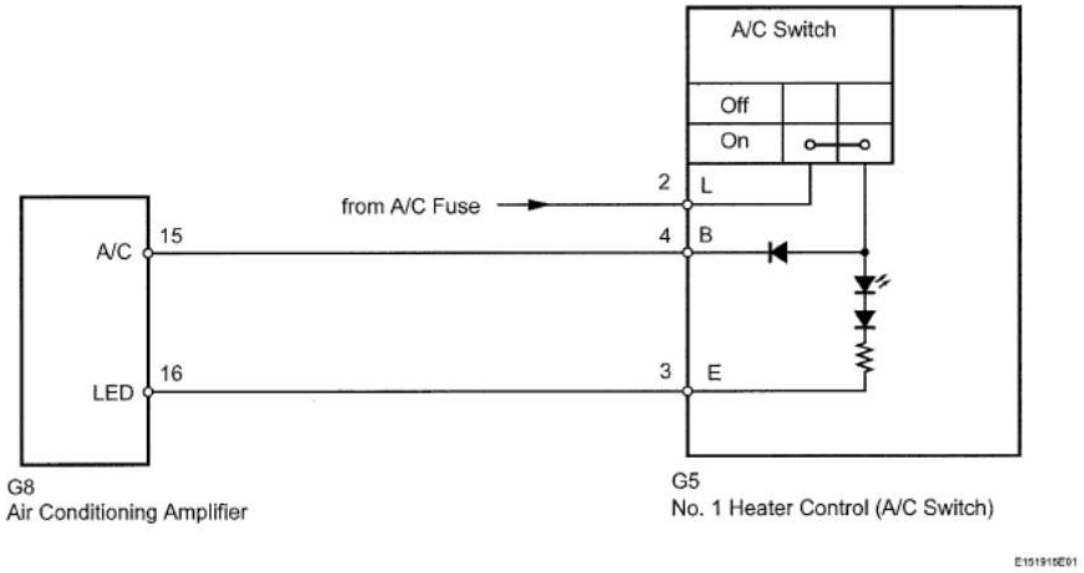


Fig. 46: Heater Control Switch - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **INSPECT FUSE (A/C)**
   a. Remove the A/C fuse from the main body ECU.
   b. Measure the resistance according to the value(s) in the table below.

      Standard resistance

      RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified condition
A/C fuse	Always	Below 1 ohms

   c. Reinstall the A/C fuse. NG

Main Body ECU:

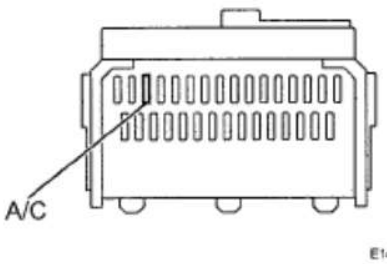


Fig. 47: Identifying A/C Fuse
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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NG: REPLACE FUSE (See **PARTS LOCATION**)

OK: Go to next step

2. **INSPECT NO. 1 HEATER CONTROL**
   a. Remove the No. 1 heater control (See **DISASSEMBLY**).
   b. Measure the resistance.
      1. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
2 (L) - 4 (E)	A/C Switch: off	10 kohms or higher
2 (L) - 4 (E)	A/C Switch: on	Below 1 ohms.

   c. Check that the indicator light comes on.

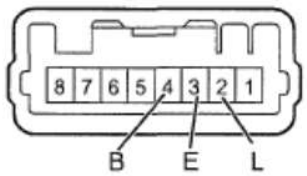
OK

TESTER CONNECTION AND SPECIFIED CONDITION

Tester Connection	Switch Condition	Specified Condition
Positive battery - 2 (L) Negative battery - 3 (E)	A/C Switch: Off	Indicator light off
	A/C Switch: On	Indicator light comes on

   d. Reinstall the No. 1 heater control.

Component without harness connected:
(No. 1 Heater Control)



E145243E06

Fig. 48: Identifying Heater Control Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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NG: REPLACE NO. 1 HEATER CONTROL (See **DISASSEMBLY**)

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (NO. 1 HEATER CONTROL - BATTERY)**
   a. Disconnect the G5 No. 1 heater control connector.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G5-2 (L) - Body ground	Ignition switch OFF	Below 1 V
G5-2 (L) - Body ground	Ignition switch ON	11 to 14 V

   c. Reconnect the No. 1 heater control connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to No. 1 Heater Control)

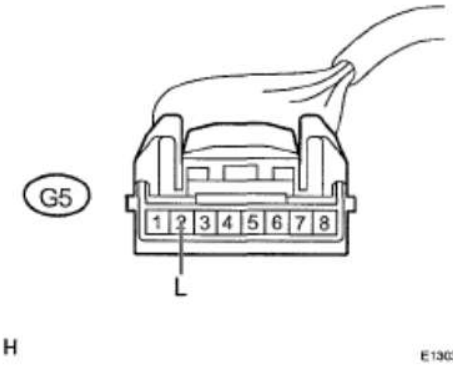


Fig. 49: Identifying Heater Control Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (NO. 1 HEATER CONTROL - AIR CONDITIONING AMPLIFIER)**
   a. Disconnect the G5 No. 1 heater control connector.
   b. Disconnect the G8 air conditioning amplifier connector.
   c. Measure the resistance according to the value(s) in the table below.

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Standard resistance

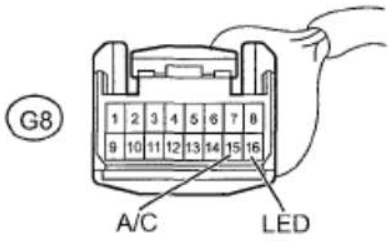
RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G5-3 (E) - G7-16 (LED)	Always	Below 1 ohms
G5-4 (B) - G7-15 (A/C)	Always	Below 1 ohms
G5-3 (E) - Body ground	Always	10 kohms or higher
G5-4 (B) - Body ground	Always	10 kohms or higher

d. Reconnect the No. 1 heater control connector.
e. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to A/C Amplifier)



Front view of wire harness connector:
(to No. 1 Heater Control)

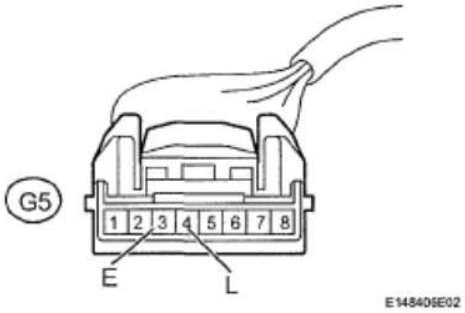


Fig. 50: Identifying Heater Control And Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

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PTC HEATER CIRCUIT

DESCRIPTION

PTC heater relays are closed in accordance with signals from the air conditioning amplifier assembly and power is supplied to the PTC heater assembly installed on the radiator heater unit.

WIRING DIAGRAM

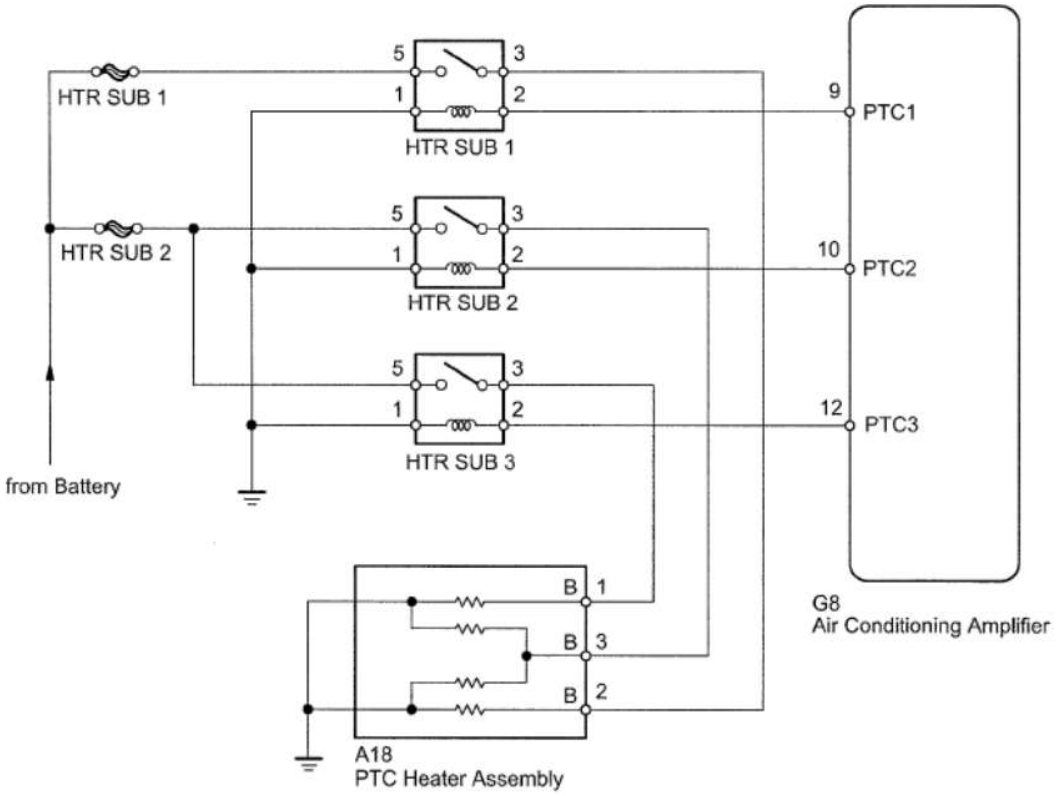


Fig. 51: PTC Heater Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **INSPECT FUSES (HTR SUB 1, HTR SUB 2)**
   a. Remove the HTR SUB 1 and HTR SUB 2 fuses from the engine room relay block.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

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RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR SUB 1 fuse	Always	Below 1 ohms
HTR SUB 2 fuse	Always	Below 1 ohms

c. Reinstall the HTR SUB 1 and HTR SUB 2 fuses.

NG: REPLACE FUSE

Engine Room Relay Block:

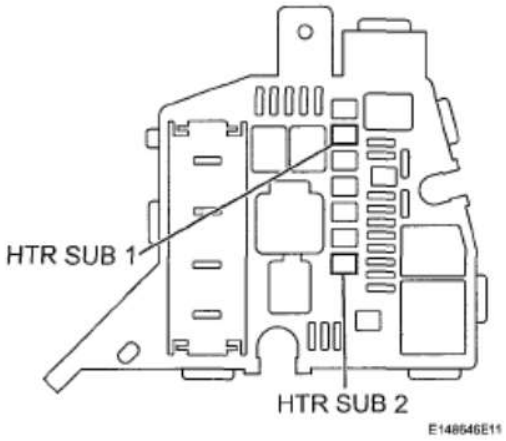


Fig. 52: Identifying HTR SUB 1 And HTR SUB 2 Fuse
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **INSPECT HTR SUB RELAY (HTR SUB 1, HTR SUB 2, HTR SUB 3)**
   a. Remove the HTR SUB 1 relay from the engine room relay block.
   b. Remove the HTR SUB 2 and HTR SUB 3 relays from the No. 2 engine room relay block.
   c. Measure the resistance according to the value(s) in the table below.

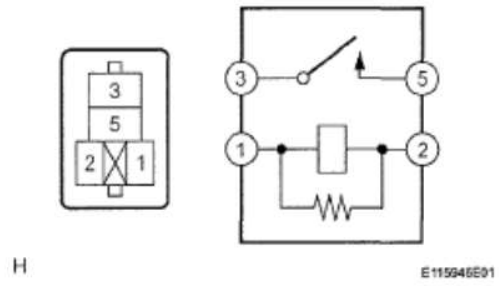


Fig. 53: Identifying HTR SUB Relays Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
3-5	Voltage is not applied between terminals 1 and 2	10 kohms or higher
3-5	Apply the battery voltage between terminals 1 and 2	Below 1 ohms

d. Reinstall the HTR SUB 1 relay.
e. Reinstall the HTR SUB 2 and HTR SUB 3 relays.

NG: REPLACE HTR SUB RELAY

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (FUSE - PTC HEATER RELAY)**
   a. Remove the HTR SUB 1 relay from the engine room relay block.
   b. Remove the HTR SUB 2 and HTR SUB 3 relays from the No. 2 engine room relay block.
   c. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR SUB 1-5 - Body ground	Always	11 to 14 V
HTR SUB 2-5 - Body ground	Always	11 to 14 V
HTR SUB 3-5 - Body ground	Always	11 to 14 V

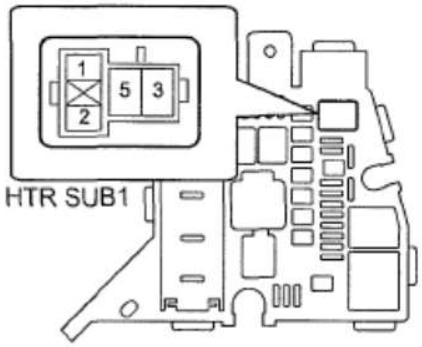
d. Reinstall the HTR SUB 1 relay.
e. Reinstall the HTR SUB 2 and HTR SUB 3 relays.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Component without relay installed:
(Engine Room Relay Block)



Component without relay installed:
(No. 2 Engine Room Relay Block)

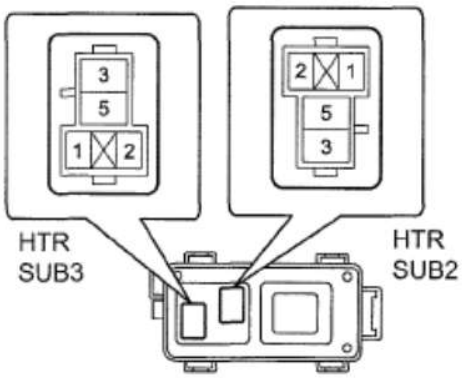


Fig. 54: Identifying HTR SUB Relays Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (PTC HEATER RELAY - BODY GROUND)**
   a. Remove the HTR SUB 1 relay from the engine room relay block.
   b. Remove the HTR SUB 2 and HTR SUB 3 relays from the No. 2 engine room relay block.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR SUB 1-1 - Body ground	Always	Below 1 ohms

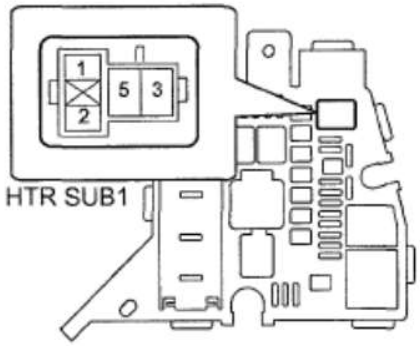
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HTR SUB 2-1 - Body ground	Always	Below 1 ohms
HTR SUB 3-1 - Body ground	Always	Below 1 ohms

d. Reinstall the HTR SUB 1 relay.
e. Reinstall the HTR SUB 2 and HTR SUB 3 relays.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Component without relay installed:
(Engine Room Relay Block)



Component without relay installed:
(No. 2 Engine Room Relay Block)

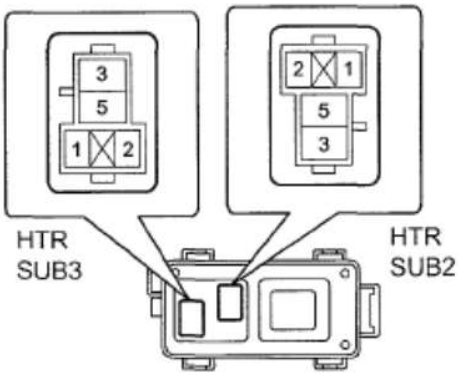


Fig. 55: Identifying HTR SUB Relays Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

5. **PERFORM ACTIVE TEST USING TECHSTREAM (HEATER ACTIVE LEVEL)**
   a. Remove the HTR SUB 1 relay from the engine room relay block.

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b. Remove the HTR SUB 2 and HTR SUB 3 relays from the No. 2 engine room relay block.
c. Connect the Techstream to the DLC3.
d. Turn the ignition switch to ON.
e. Turn the tester on.
f. Select the following menus: Body Electrical / Air Conditioner / Active Test / Heater Active Level
g. Measure the voltage when changing the control range with a Techstream, according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

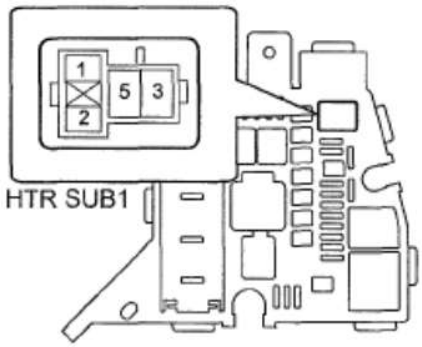
Tester Connection	Condition	Specified Condition
HTR SUB 1-2-Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	11 to 14 V
	Heater Active Level 2	11 to 14 V
	Heater Active Level 3	11 to 14 V
HTR SUB 2-2 - Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	Below 1 V
	Heater Active Level 2	11 to 14 V
	Heater Active Level 3	11 to 14 V
HTR SUB 3-2 - Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	Below 1 V
	Heater Active Level 2	Below 1 V
	Heater Active Level 3	11 to 14 V

h. Reinstall the HTR SUB1 relay.
i. Reinstall the HTR SUB2 and HTR SUB3 relays.

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Component without relay installed:
(Engine Room Relay Block)



Component without relay installed:
(No. 2 Engine Room Relay Block)

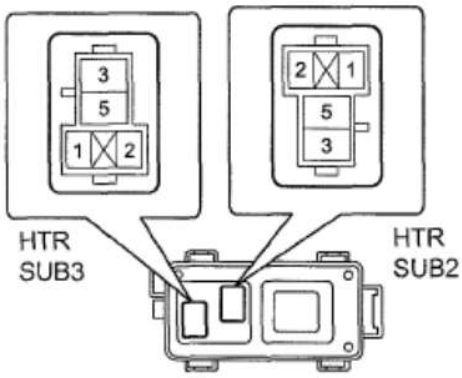


Fig. 56: Identifying HTR SUB Relays Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NG: Go to step 8

OK: Go to next step

6. **INSPECT PTC HEATER ASSEMBLY**
   a. Disconnect the A18 PTC heater assembly connector.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition

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1 - Ground terminal	Always	Below 1 ohms
2 - Ground terminal	Always	Below 1 ohms
3 - Ground terminal	Always	Below 1 ohms

c. Reconnect the PTC heater assembly connector.

NG: REPLACE PTC HEATER ASSEMBLY (See **DISASSEMBLY**)

Component without harness connected:
(PTC Heater)



Component without harness connected:
(Ground Terminal (for PTC Heater))



E152203E01

Fig. 57: Identifying PTC Heater Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

7. **PERFORM ACTIVE TEST USING TECHSTREAM (HEATER ACTIVE LEVEL)**
   a. Disconnect the A18 PTC heater assembly connector.
   b. Connect the Techstream to the DLC3.
   c. Turn the ignition switch to ON.
   d. Turn the tester on.
   e. Select the following menus: Body Electrical / Air Conditioner / Active Test / Heater Active Level
   f. Measure the voltage when changing the control range with a Techstream, according to the value(s) in the table below.

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Front view of wire harness connector:
(to PTC Heater)

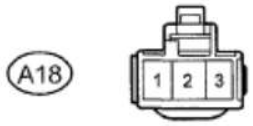


Fig. 58: Identifying PTC Heater Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard voltage.

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
A18-1 - Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	Below 1 V
	Heater Active Level 2	Below 1 V
	Heater Active Level 3	11 to 14V
A18-2 - Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	11 to 14V
	Heater Active Level 2	11 to 14V
	Heater Active Level 3	11 to 14V
A18-3 - Body ground	Heater Active Level 0	Below 1 V
	Heater Active Level 1	Below 1 V
	Heater Active Level 2	11 to 14V
	Heater Active Level 3	11 to 14V

g. Reconnect the PTC heater assembly connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR (HTR SUB RELAY - PTC HEATER)

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

8. **CHECK HARNESS AND CONNECTOR (PTC HEATER RELAY - AIR CONDITIONING AMPLIFIER)**
   a. Remove the HTR SUB 1 relay from the engine room relay block.
   b. Remove the HTR SUB 2 and HTR SUB 3 relays from the No. 2 engine room relay block.
   c. Disconnect the G8 air conditioning amplifier connector.
   d. Measure the resistance.

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Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
HTR SUB 1-2 - G8-9 (PTC1)	Always	Below 1 ohms
HTR SUB 2-2 - G8-10 (PTC2)	Always	Below 1 ohms
HTR SUB 3-2 - G8-12 (PTC3)	Always	Below 1 ohms

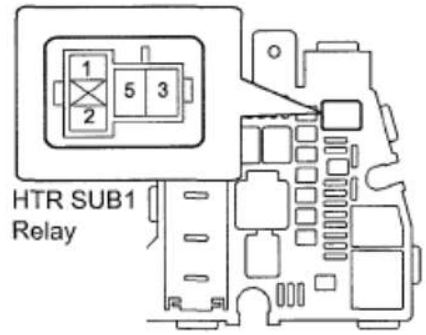
e. Reinstall the HTR SUB 1 relay.
f. Reinstall the HTR SUB 2 and HTR SUB 3 relays.
g. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

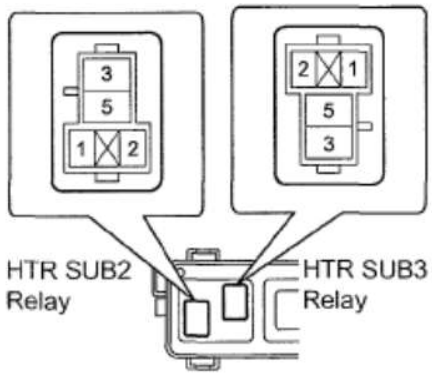
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Component without relay installed:
(Engine Room Relay Block)



Component without relay installed:
(No. 2 Engine Room Relay Block)



Front view of wire harness connector:
(to Air Conditioning Amplifier)

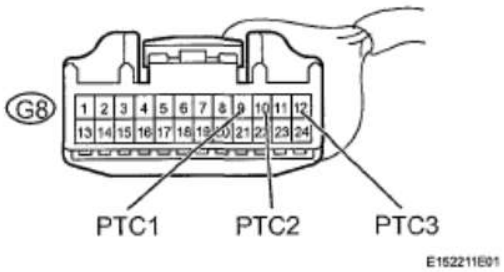


Fig. 59: Identifying HTR SUB Relays And Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

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HEADLIGHT SIGNAL CIRCUIT

DESCRIPTION

The air conditioning amplifier receives headlight operational signals to determine electrical load conditions. The electrical load condition signals are used for controlling the number of the PTC heater elements to be heated.

WIRING DIAGRAM

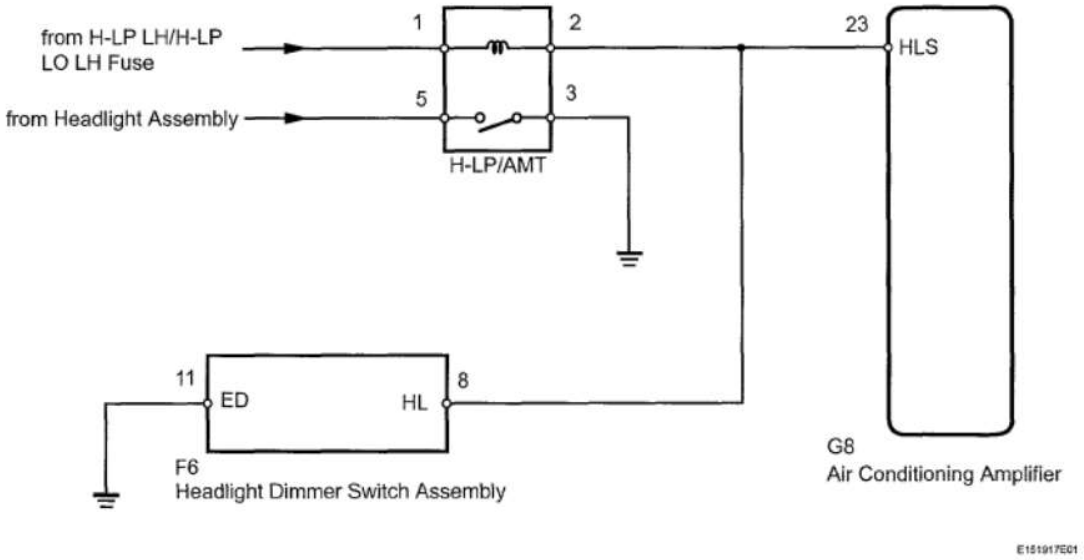


Fig. 60: Headlight Dimmer Switch - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **INSPECT HEADLIGHT ASSEMBLY**
   a. Check that the headlight comes on when the light control switch is turned to the HEAD position.

      OK:

      The headlight comes on.

   NG: GO TO LIGHTING SYSTEM (See **HEADLIGHT RELAY CIRCUIT**)

   OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (H-LP RELAY - AIR CONDITIONING AMPLIFIER)**
   a. Disconnect the G8 air conditioning amplifier connector.
   b. Measure the voltage according to the value(s) in the table below.

      Standard voltage

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VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G8-23 (HLS) - Body ground	Light control switch: OFF	11 to 14 V
G8-23 (HLS) - Body ground	Light control switch: HEAD	Below 1 V

c. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Air Conditioning Amplifier)

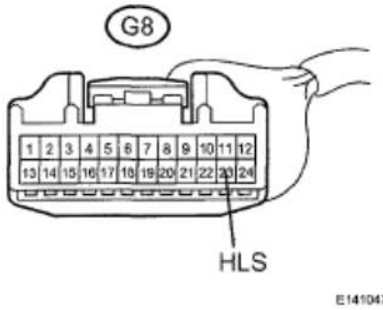


Fig. 61: Identifying Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

GENERATOR SIGNAL CIRCUIT

DESCRIPTION

When the engine is started, the generator rotates and a pulsed voltage signal is generated. This signal is used by the air conditioning amplifier. The generated voltage signals sent from the generator are used for controlling the number of the heater elements to be heated.

WIRING DIAGRAM

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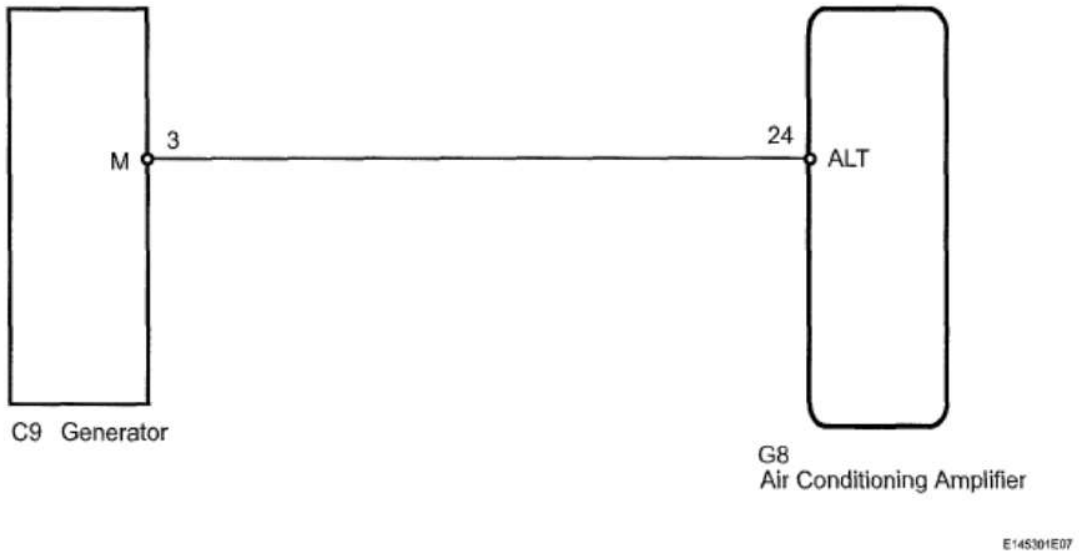


Fig. 62: Generator - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - GENERATOR)**
   a. Disconnect the G8 air conditioning amplifier connector.
   b. Disconnect the C9 generator connector.
   c. Measure the resistance according to the value(s) in the table below.

   Standard resistance

   RESISTANCE SPECIFICATION

Tester connection	Condition	Specified condition
G8-24 (ALT) - C9-3 (M)	Always	Below 1 ohms
GG8-24 (ALT) - Body ground	Always	10 kohms or higher

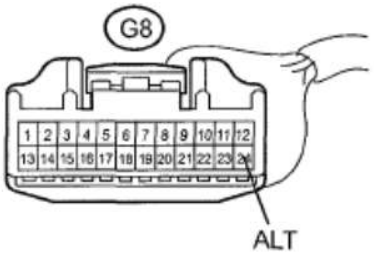
   d. Reconnect the generator connector.
   e. Disconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Air Conditioning Amplifier)



Front view of wire harness connector:
(to Generator)



E145302E04

Fig. 63: Identifying Generator And Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **INSPECT GENERATOR**
   a. Inspect the generator (See **INSPECTION** for ON-VEHICLE INSPECTION, **INSPECTION** for INSPECTION).

NG: REPLACE GENERATOR (See **REMOVAL**)

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

IG POWER SOURCE CIRCUIT

DESCRIPTION

The main power source is supplied to the air conditioning amplifier when the ignition switch is turned to ON.

The power source is used for operating the air conditioning amplifier and servo motor, etc.

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WIRING DIAGRAM

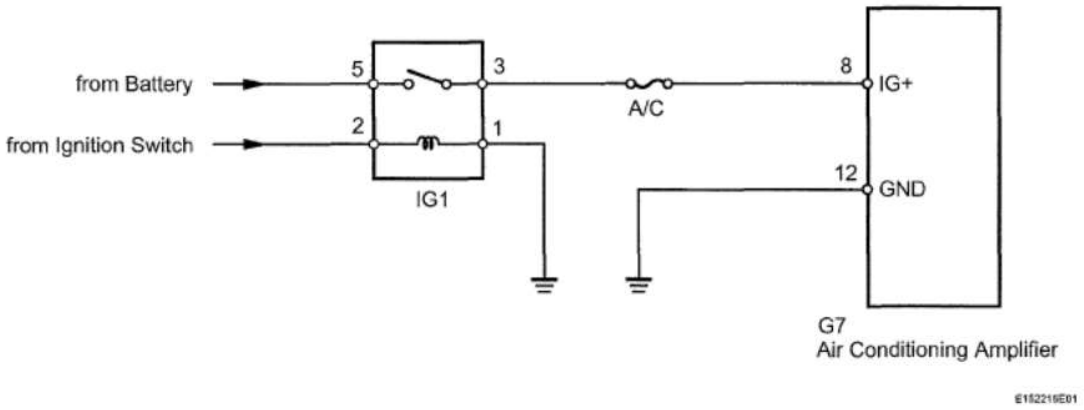


Fig. 64: IG Power Source Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

HINT:

Start the engine before inspection. Check the IG1 relay or battery if the engine does not start.

1. **INSPECT FUSE (A/C)**
   a. Remove the A/C fuse from the main body ECU.
   b. Measure the resistance according to the value(s) in the table below.

      Standard resistance

      RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
A/C fuse	Always	Below 1 ohms

   c. Reinstall the A/C fuse.

NG: REPLACE FUSE

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Main Body ECU:

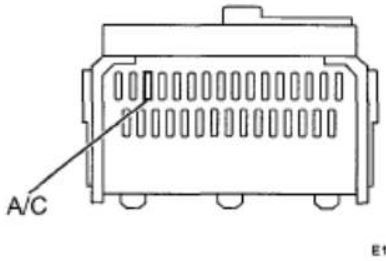


Fig. 65: Identifying A/C Fuse
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **INSPECT AIR CONDITIONING AMPLIFIER (IG+ - GND)**
   a. Remove the air conditioning amplifier with the connectors still connected (See **REMOVAL**).
   b. Turn the ignition switch to ON.
   c. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G7-8 (IG+) - G7-12 (GND)	Ignition switch ON	11 to 14 V

   d. Reinstall the air conditioning amplifier.

NG: Go to step 3

Component with harness connected:
(Air Conditioning Amplifier)

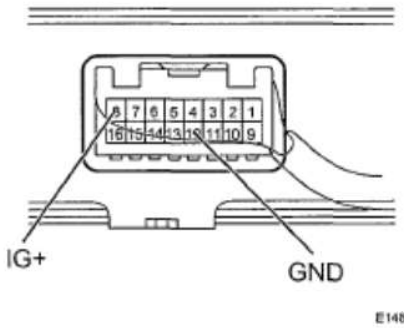


Fig. 66: Identifying Air Conditioning Amplifier Connector Terminals

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

3. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - BATTERY)**
   a. Disconnect the G7 air conditioning amplifier connector.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
G7-8 (IG+) - Body ground	Ignition switch OFF	Below 1 V
	Ignition switch ON	11 to 14 V

   c. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Air Conditioning Amplifier)

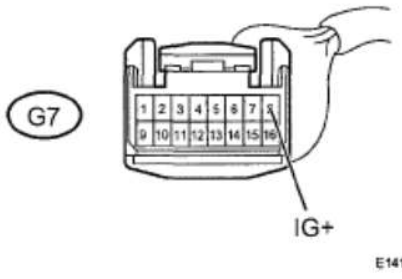


Fig. 67: Identifying Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER - BODY GROUND)**
   a. Disconnect the G7 air conditioning amplifier connector.
   b. Measure the resistance according to the value(s) in the table below.

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Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
G7-12 (GND) - Body ground	Always	Below 1 ohms

c. Reconnect the air conditioning amplifier connector.

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Air Conditioning Amplifier)

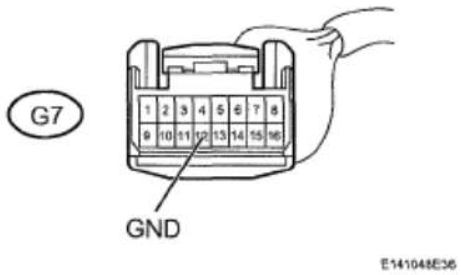


Fig. 68: Identifying Air Conditioning Amplifier Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE AIR CONDITIONING AMPLIFIER (See **REMOVAL**)

REFRIGERANT

ON-VEHICLE INSPECTION

1. **INSPECT REFRIGERANT VOLUME**
   a. Check the sight glass on liquid tube sub-assembly A.

      Test conditions:

      - Engine running at 1,500 rpm.
      - Blower speed control switch at HI.
      - A/C switch ON.
      - Temperature control lever in MAX. COLD position.
      - All doors fully open.

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Fig. 69: Identifying Sight Glass On Liquid Tube
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REFRIGERANT VOLUME INSPECTION CHART

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 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 turned OFF, refrigerant foams and then becomes clear	Correct	-

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

2. **CHECK REFRIGERANT PRESSURE USING MANIFOLD GAUGE SET**

a. This is a method to identify trouble areas by using a manifold gauge set. Read the manifold gauge pressure under the following conditions.

Test conditions:

- Engine warm.
- All doors fully open.
- A/C switch ON.
- Blower speed control switch at HI.
- Engine running at 1,500 rpm.
- Air inlet mode damper set at RECIRC.
- Temperature control lever in MAX. COLD position.
- Air temperature at air inlet 30 to 35°C (86 to 95°F).

1. When the refrigerant volume is correct, the gauge reading indicates as follows:

Gauge reading

REFRIGERANT VOLUME SPECIFICATION

Pressure side	Refrigerant volume
Low	0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm^2 , 22 to 36 psi)
High	1.37 to 1.57 MPa (14 to 16 kgf/cm^2 , 199 to 228 psi)

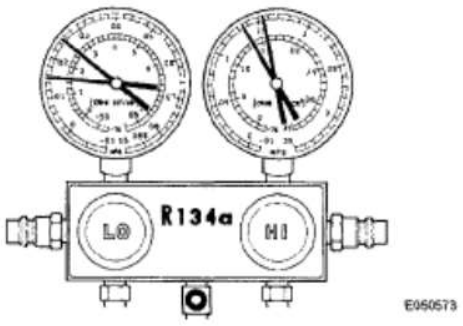


Fig. 70: Identifying Manifold Gauge Set
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Pressure varies in accordance with certain conditions (outside air temperature, sunlight and

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wind).

2. When there is moisture in the refrigeration system:

Condition: Air conditioning system periodically cools and then fails to cool.

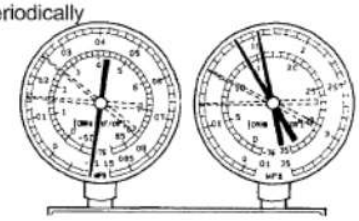


Fig. 71: Checking Refrigerant Pressure (When Moisture In Refrigeration System)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

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 interruption of cycle However, when melted, returns to normal condition	• Receiver dryer oversaturated • Moisture in refrigeration system freezes at expansion valve orifice and blocks refrigerant circulation	1. Replace receiver dryer 2. Remove moisture from cycle by repeatedly evacuating air 3. Supply appropriate volume of new refrigerant

3. When cooling is insufficient:

Condition: Air conditioning system does not function effectively.

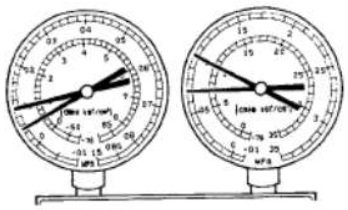


Fig. 72: Checking Refrigerant Pressure (When Cooling Insufficient)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

Symptoms	Probable Cause	Diagnosis	Corrective Actions

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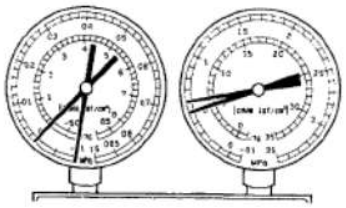
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• Pressure low on both low and high pressure sides • Bubbles are seen through sight glass continuously • Cooling performance insufficient	Gas leakage from refrigeration system	• Insufficient refrigerant • Refrigerant leakage	1. Check for gas leakage using gas leak detector, and repair if necessary 2. Supply appropriate volume of new refrigerant 3. If indicated pressure value close to 0 when connected to gauge, create vacuum after inspecting and repairing location of leakage

4. When the circulation of the refrigerant is poor:

Condition: Air conditioning system does not function effectively.



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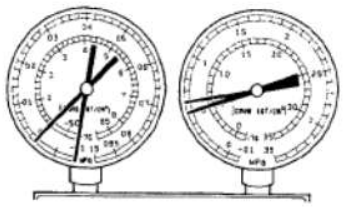
Fig. 73: Checking Refrigerant Pressure (When Poor Circulation Of Refrigerant)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

Symptoms	Probable Cause	Diagnosis	Corrective Action
• 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

5. When the refrigerant does not circulate:

Condition: Air conditioning system does not function or functions intermittently.



I022120E16

Fig. 74: Checking Refrigerant Pressure (When Refrigerant Not Circulate)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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PROBLEM SYMPTOMS CHART

Symptoms	Probable Causes	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 with compressed air 3. Replace condenser 4. Evacuate air and then supply appropriate volume of new refrigerant 5. For gas leakage from expansion valve, replace expansion valve

6. When the refrigerant is overcharged or cooling of condenser is insufficient:

Condition: Air conditioning system does not function effectively.

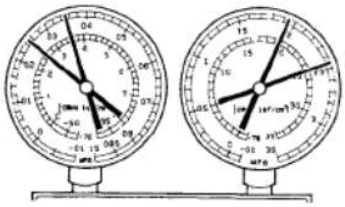


Fig. 75: Checking Refrigerant Pressure (When Refrigerant Overcharged)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

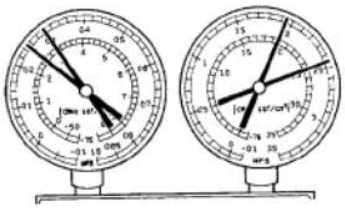
Symptoms	Probable Causes	Diagnosis	Corrective Actions
• Pressure extremely high on both sides • No air bubbles are seen through sight glass even when engine rpm lowers	• Excessive refrigerant • Cooling performance of condenser insufficient	• Excessive refrigerant • Cooling performance of condenser insufficient	1. Clean condenser fins 2. Check condenser fan motor operation by switching A/C ON 3. If 1 and 2 normal, check amount of refrigerant and supply appropriate

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			volume of refrigerant

7. When there is air in the refrigeration system:

Condition: Air conditioning system does not function.



NOTE: These gauge indications occur when the refrigeration system opens and the refrigerant is supplied without performing vacuum purging.

I022122E02

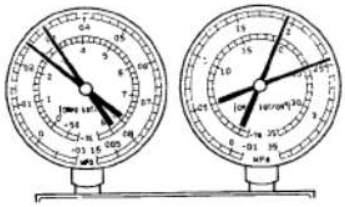
Fig. 76: Checking Refrigerant Pressure (When Air In Refrigeration System)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

Symptoms	Probable Causes	Diagnosis	Corrective Actions
• Pressure extremely high on both low and high pressure sides • Low pressure piping too hot to touch • Bubbles can be seen through sight glass	Air in refrigeration system	• Air in refrigeration system • Insufficient vacuum purging	1. Check whether compressor oil dirty or insufficient 2. Evacuate air and supply new refrigerant

8. When the expansion valve malfunctions:

Condition: Air conditioning system does not function effectively.



I022123E02

Fig. 77: Checking Refrigerant Pressure (When Expansion Valve Malfunctions)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

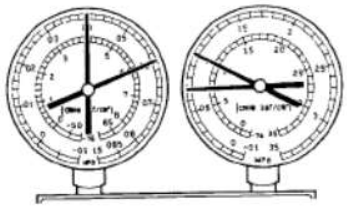
Symptoms	Probable Causes	Diagnosis	Corrective Actions

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• Pressure extremely high on both low and high pressure sides • Frost or condensation on piping on low pressure side	Expansion valve malfunction	• Excessive refrigerant in low pressure piping • Expansion valve opening too wide	Replace expansion valve

9. When the compressor is defective:

Condition: Air conditioning system does not function.



I022124E02

Fig. 78: Checking Refrigerant Pressure (When Compressor Defective)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PROBLEM SYMPTOMS CHART

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 of compressor • Leakage from damaged valve or broken sliding parts in compressor	Repair or replace compressor

3. **INSPECT IDLING SPEED**
   a. Warm up the engine.
   b. Inspect idling speed when these conditions are established.

Standard:

for 2ZR-FE manual transaxle

IDLING SPEED SPECIFICATION

Condition	Idling Speed
Switch A/C OFF	650 to 750 rpm
Switch A/C ON (A/C Lo --> Hi)	750 --> 850 rpm

for 2ZR-FE automatic transaxle

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IDLING SPEED SPECIFICATION

Condition	Idling Speed
Switch A/C OFF	650 to 750 rpm
Switch A/C ON (A/C Lo --> Hi)	700 --> 850 rpm

If the idling speed is not as specified, check the idle control system.

REPLACEMENT

NOTE: When recharging refrigerant, collect together all the refrigerant remaining in the cycle, then recharge and seal the refrigerant as described below. (Do not overcharge.)

1. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM**
   a. Start up the engine.
   b. Switch A/C ON.
   c. Turn the blower switch to ON.
   d. Operate the cooler compressor with an engine speed of approximately 1,000 rpm for 5 to 6 minutes to circulate the refrigerant and collect the remaining compressor oil from each component, in the cooler compressor.
   e. Stop the engine.
   f. Remove the caps from the service valves on the refrigerant line.
   g. Connect the refrigerant recovery unit.
   h. Recover the refrigerant from the air conditioning system using a refrigerant recovery unit.

NOTE: Use the refrigerant recovery unit in accordance with the manufacturer's instruction manual.

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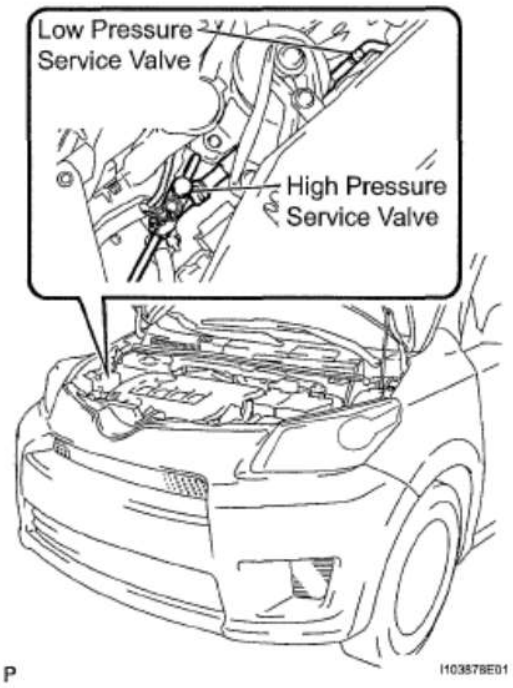


Fig. 79: Identifying High And Low Pressure Service Valve
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **CHARGE REFRIGERANT**

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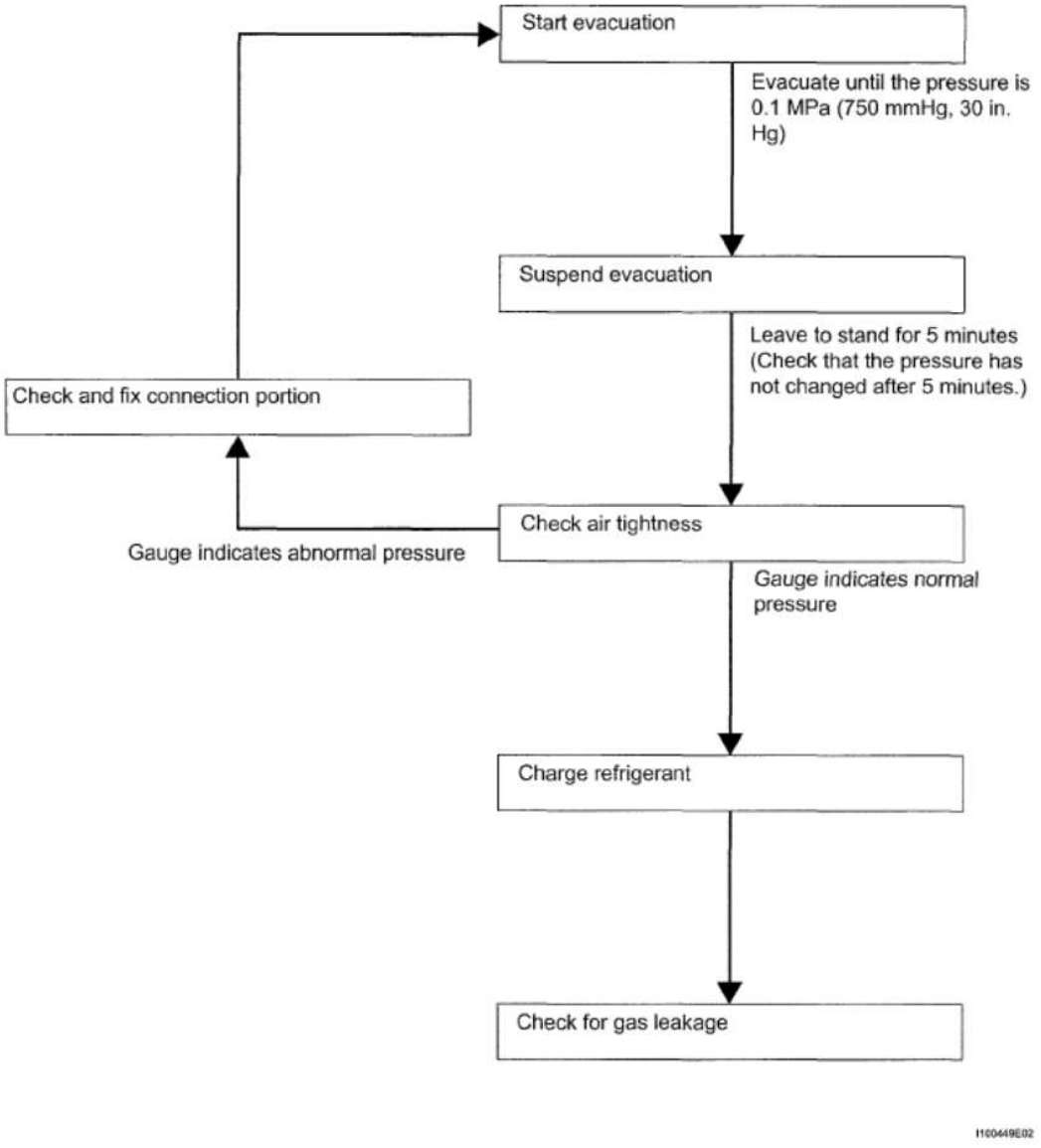


Fig. 80: Refrigerant Charging Procedure Chart
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Charge refrigerant in accordance with the equipment manual.

a. Perform vacuum purging using a vacuum pump.
b. Charge refrigerant HFC-134a (R134a).

SST 07110-58060 (07117-58060, 07117-58070, 07117-58080, 07117-58090, 09985-02100, 09985-02120, 07117-78050, 07117-88060, 07117-88070, 07117-88080)

Standard:

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330 to 390 g (11.6 to 13.8 oz.)

NOTE: Do not start the engine before charging it with refrigerant as the cooler compressor does not work properly without sufficient refrigerant. This could cause the compressor to overheat.

HINT:

- The relationship between the refrigerant charge amount and the pressure is as follows.

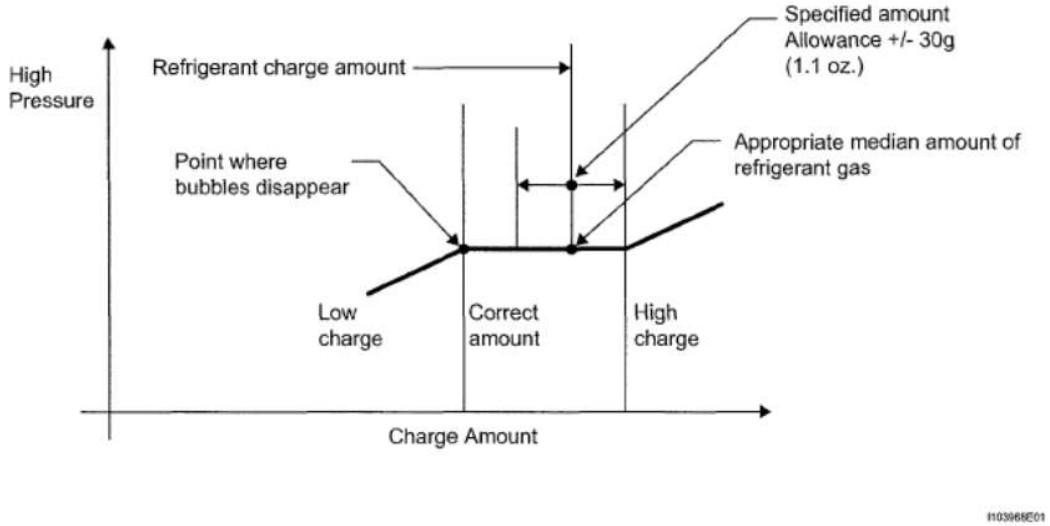


Fig. 81: Refrigerant Charge Amount Graph
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- High Charge Range:

  If the refrigerant is overcharged, the pressure rises on the high-pressure side. High-pressure cut off frequently occurs. This causes insufficient cooling performance and also insufficient compressor lubrication.

- Low Charge Range:

  A shortage of refrigerant causes insufficient cooling performance and low circulation of refrigerant oil, which shortens the compressor life. Operation with insufficient refrigerant raises the refrigerant temperature and causes heat deterioration of the rubber seals and hoses. Cracking and subsequent refrigerant leakage may occur.

1. Install the caps onto the service valves on the refrigerant line.

3. **WARM UP ENGINE**

NOTE: Warm up the engine at less than 2,000 rpm for 1 minute or more after

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charging it with refrigerant.

4. **INSPECT FOR REFRIGERANT LEAK**
   a. After recharging the refrigerant gas, check for refrigerant gas leakage using a halogen leak detector.
   b. Perform the operation as follows:
      - Stop the engine.
      - Secure good ventilation (the halogen leak detector may react to volatile gases other than refrigerant, such as evaporated gasoline or exhaust gas).
      - Repeat the test 2 or 3 times.
      - Make sure that some refrigerant remains in the refrigeration system.

      When the compressor is off: approximately 392 to 588 kPa (4 to 6 kgf*cm^2 , 57 to 85 psi)

      HINT:

      It is impossible for the above pressure to be maintained if there is leakage.

   c. Using the halogen leak detector, check the refrigerant line, especially at the connection points, for leakage.



Fig. 82: Checking Refrigerant Leakage Using Halogen Leak Detector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   d. Bring the halogen leak detector close to the drain hose before performing the test.

      HINT:

      - After the blower motor has stopped, leave the cooling unit for at least 15 minutes.
      - Place the halogen leak detector sensor under the drain hose.
      - When bringing the halogen leak detector close to the drain hose, make sure that the halogen leak detector does not react to the volatile gases.

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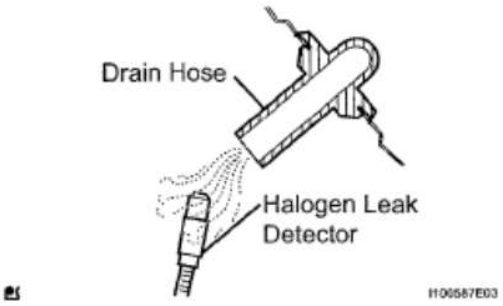


Fig. 83: Bringing Halogen Leak Detector Close To Drain Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If such a reaction is unavoidable, the vehicle must be lifted up.

e. If no gas leakage is detected from the drain hose, remove the blower motor from the cooling unit.

   Insert the halogen leak detector sensor into the unit and perform the test.

f. Disconnect the pressure switch connector and leave it for approximately 20 minutes. Bring the halogen leak detector close to the pressure switch and perform the test.

REFRIGERANT LINE

COMPONENTS

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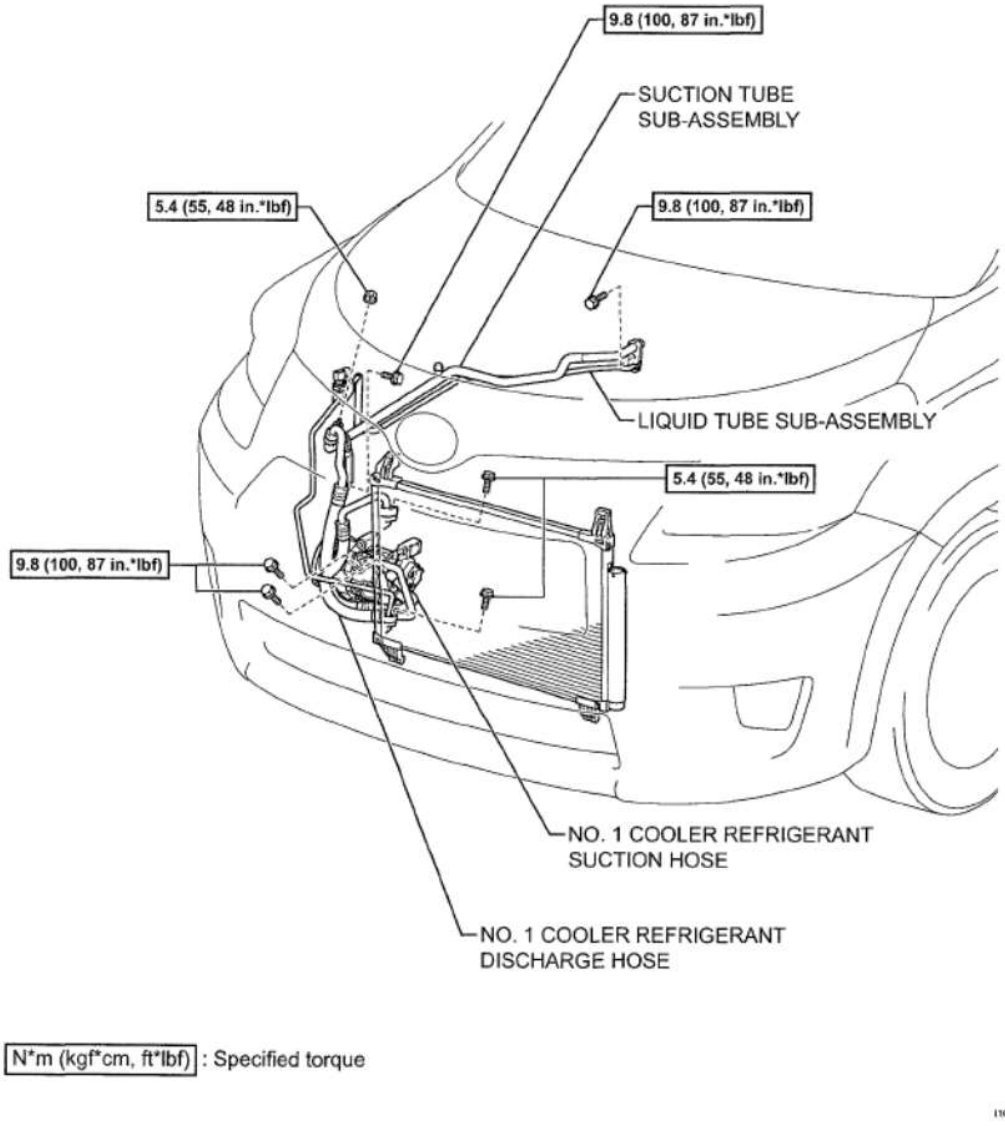


Fig. 84: Identifying Refrigerant Line Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

AIR CONDITIONING UNIT

COMPONENTS

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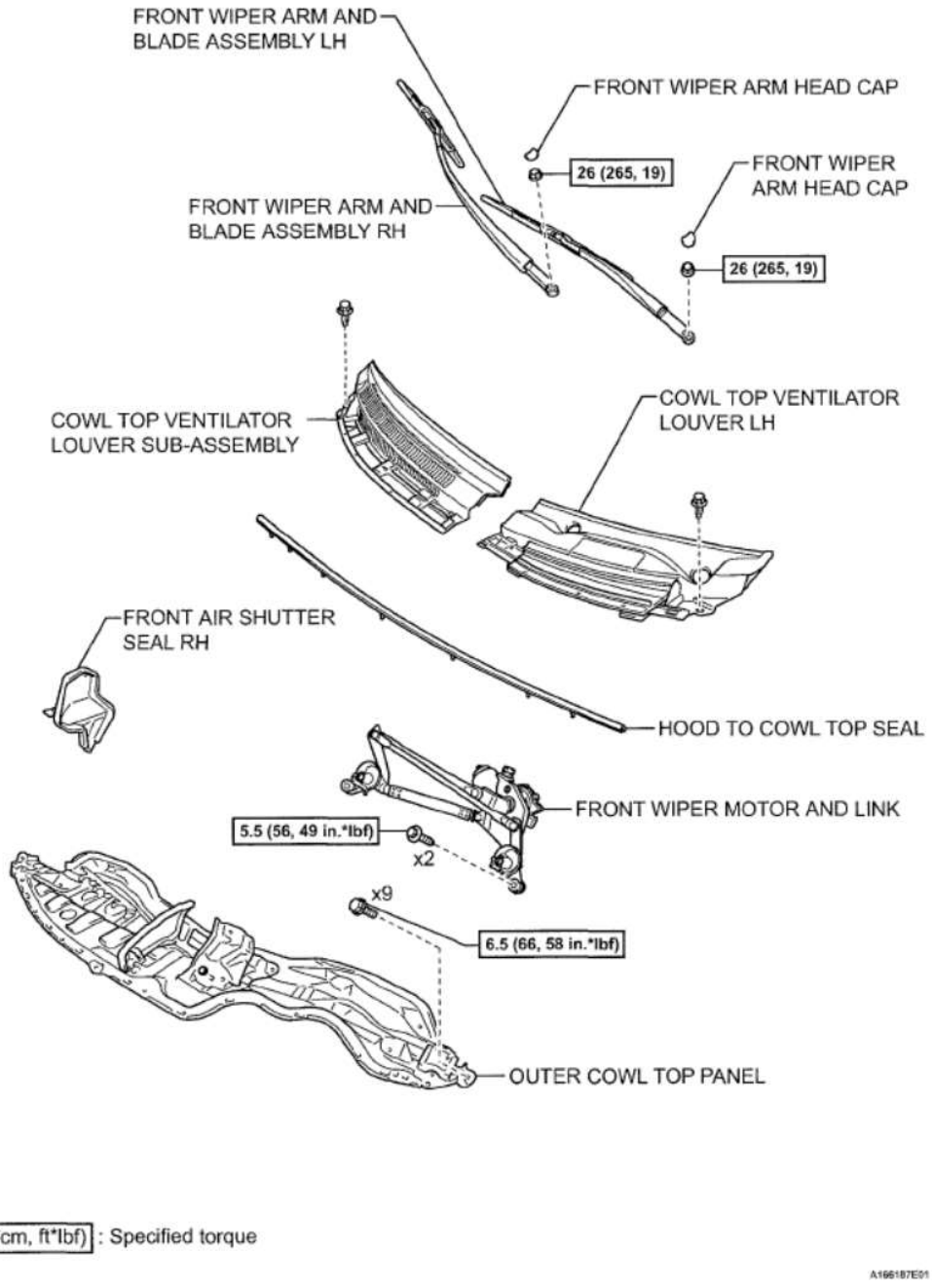


Fig. 85: Identifying Air Conditioning Unit Components With Torque Specifications (1 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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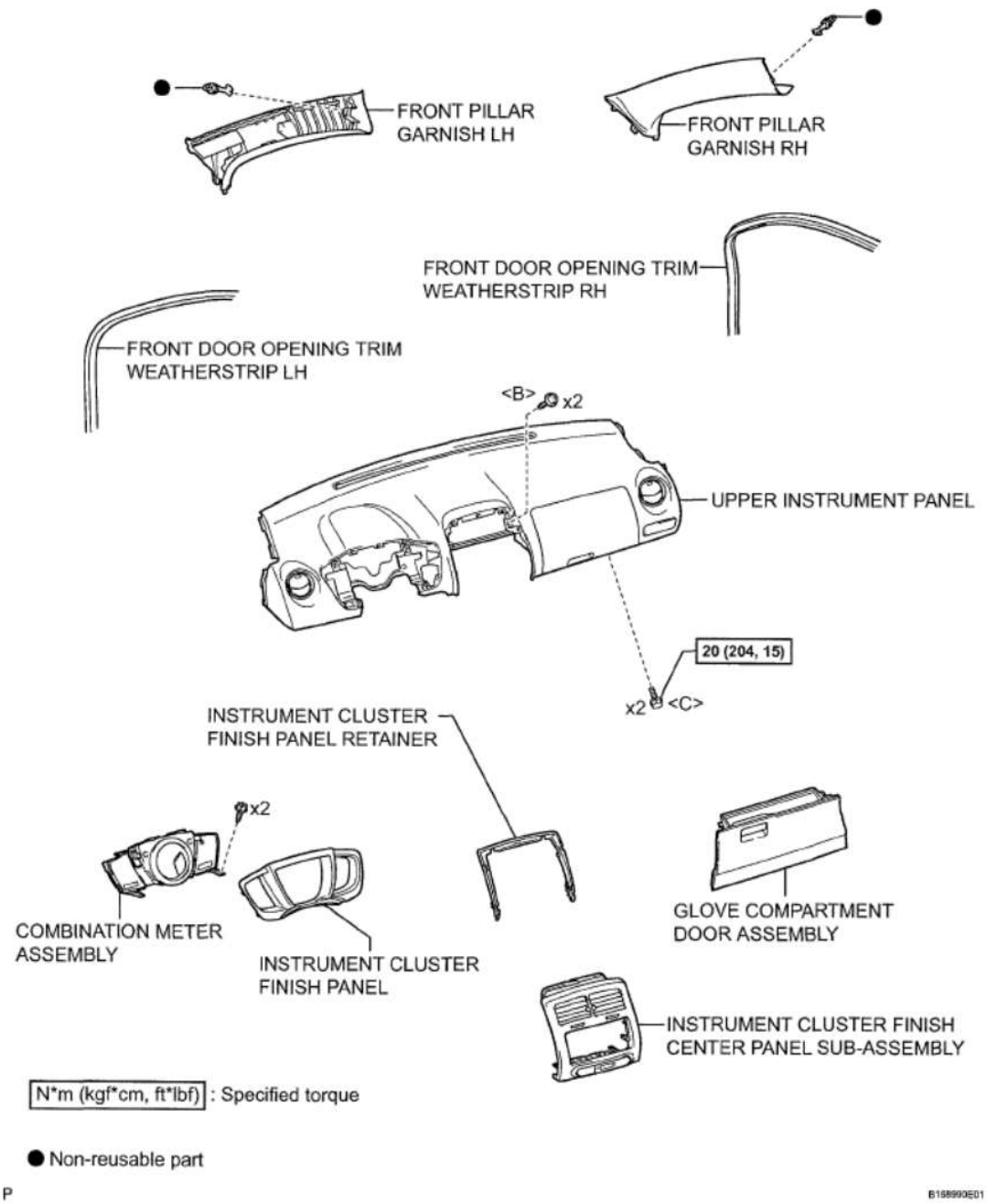


Fig. 86: Identifying Air Conditioning Unit Components With Torque Specification (2 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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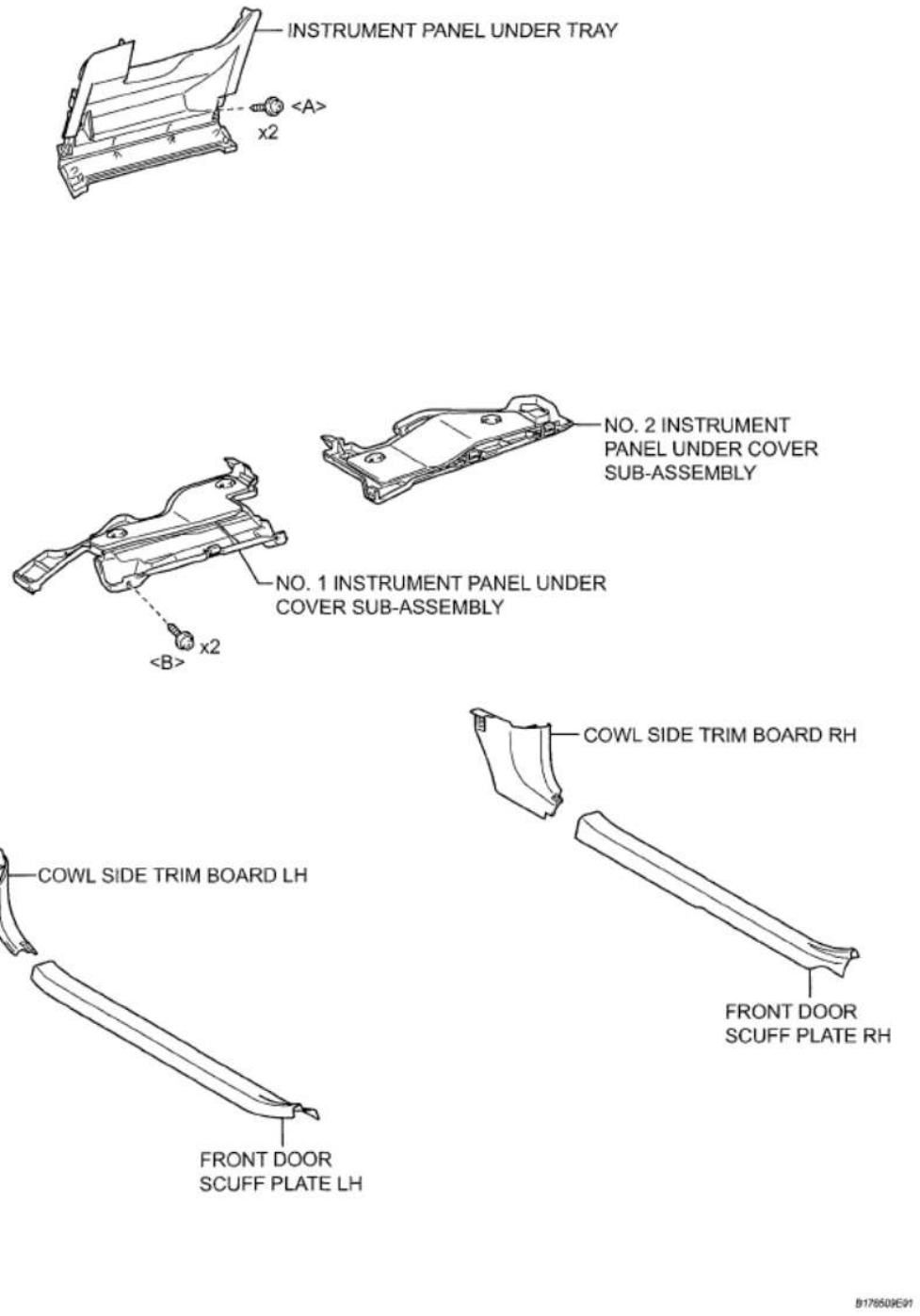


Fig. 87: Identifying Air Conditioning Unit Components (3 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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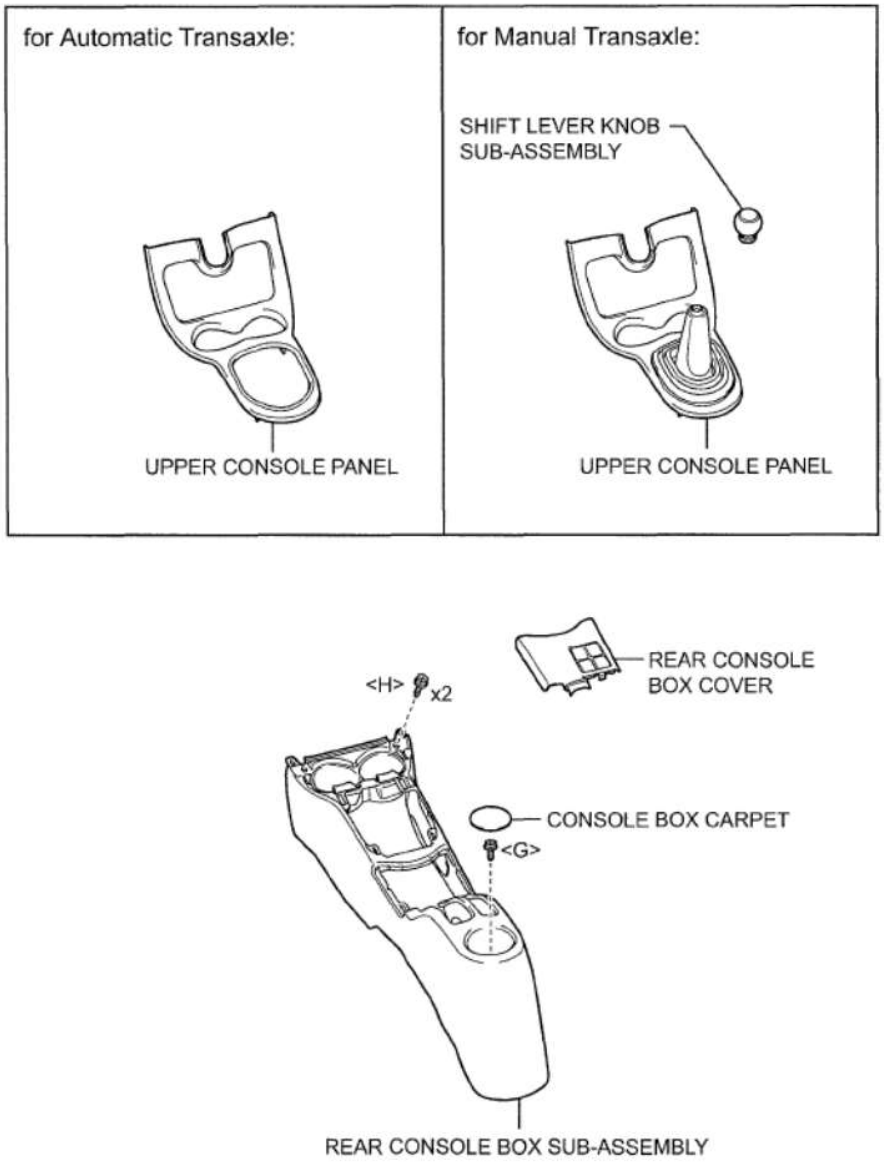


Fig. 88: Identifying Air Conditioning Unit Components (4 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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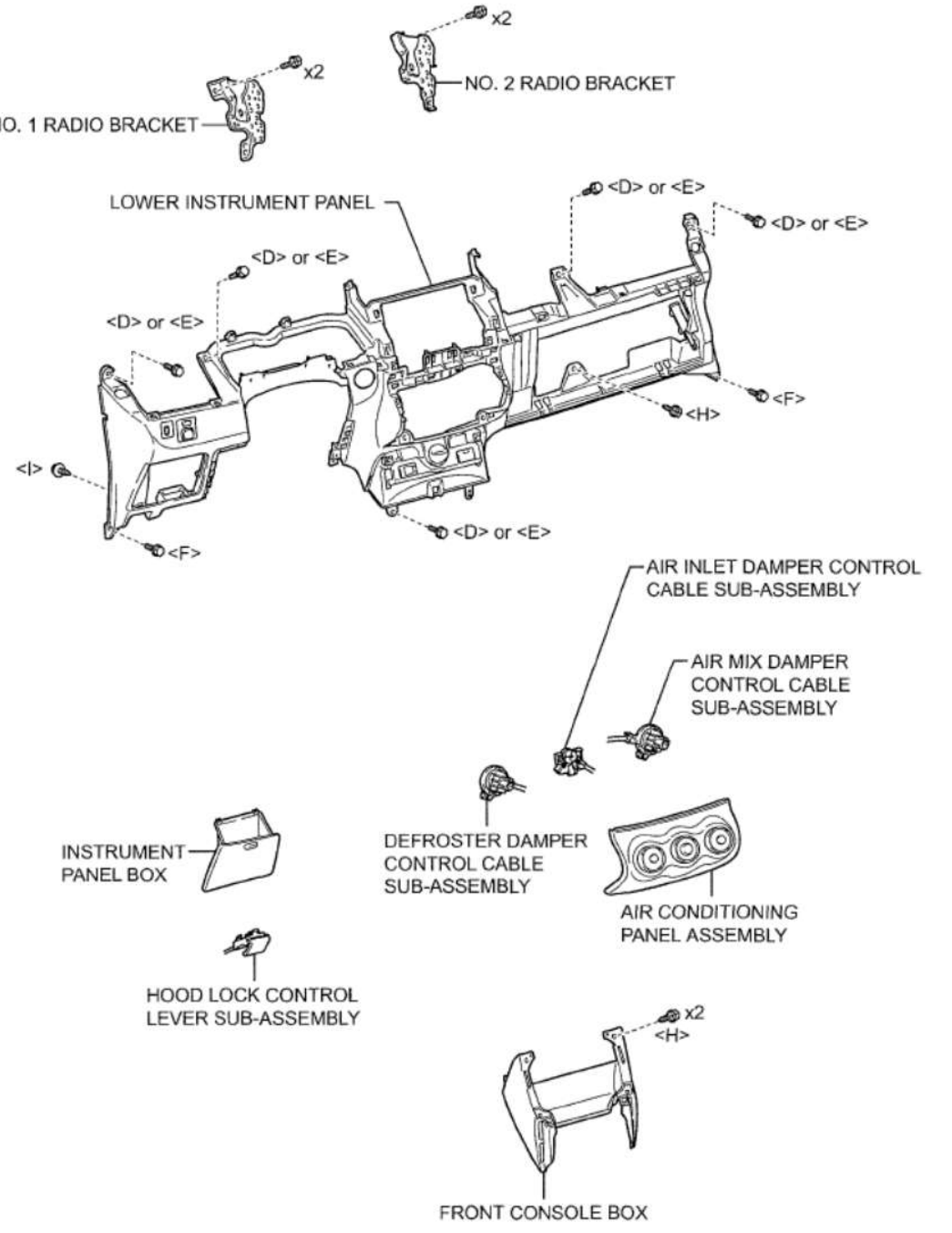


Fig. 89: Identifying Air Conditioning Unit Components (5 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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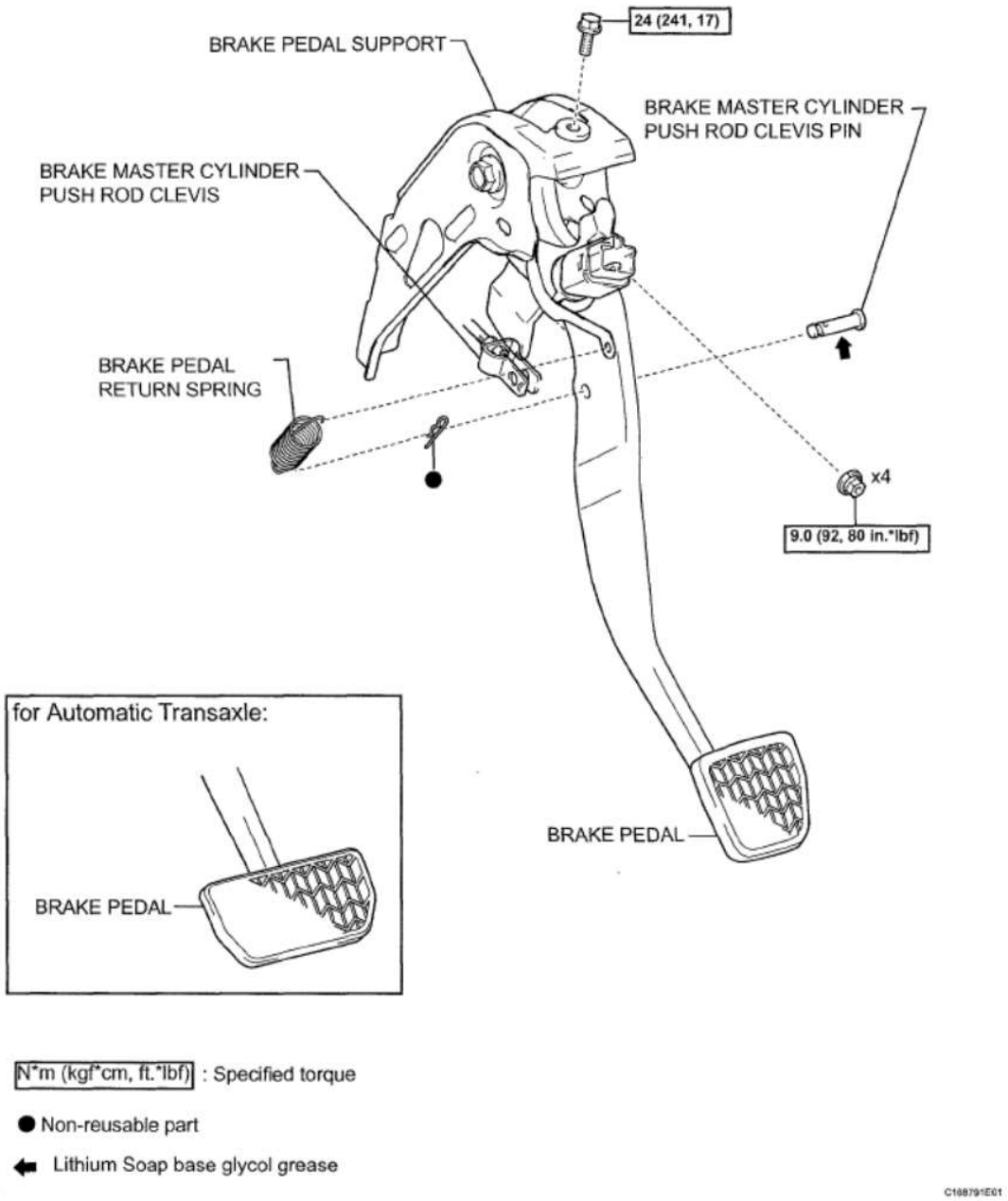


Fig. 90: Identifying Air Conditioning Unit Components With Torque Specifications (6 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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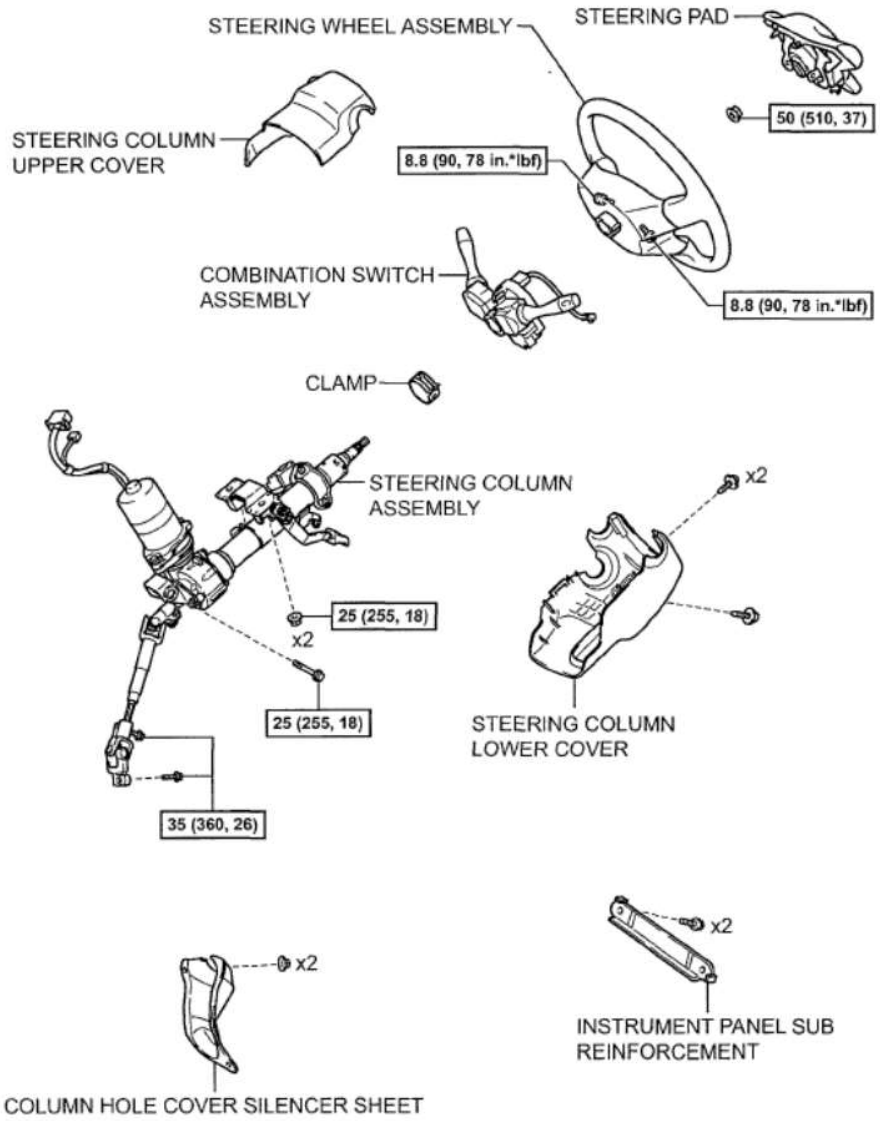


Fig. 91: Identifying Air Conditioning Unit Components With Torque Specifications (7 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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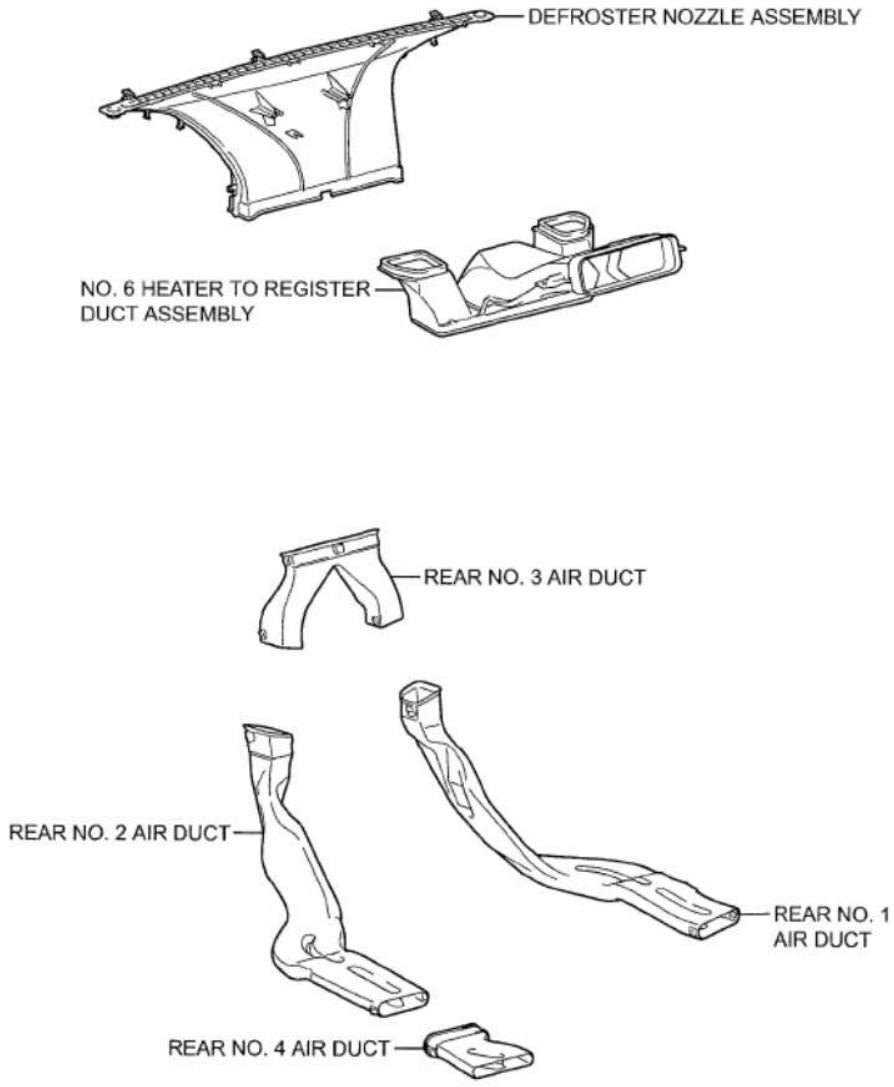


Fig. 92: Identifying Air Conditioning Unit Components (8 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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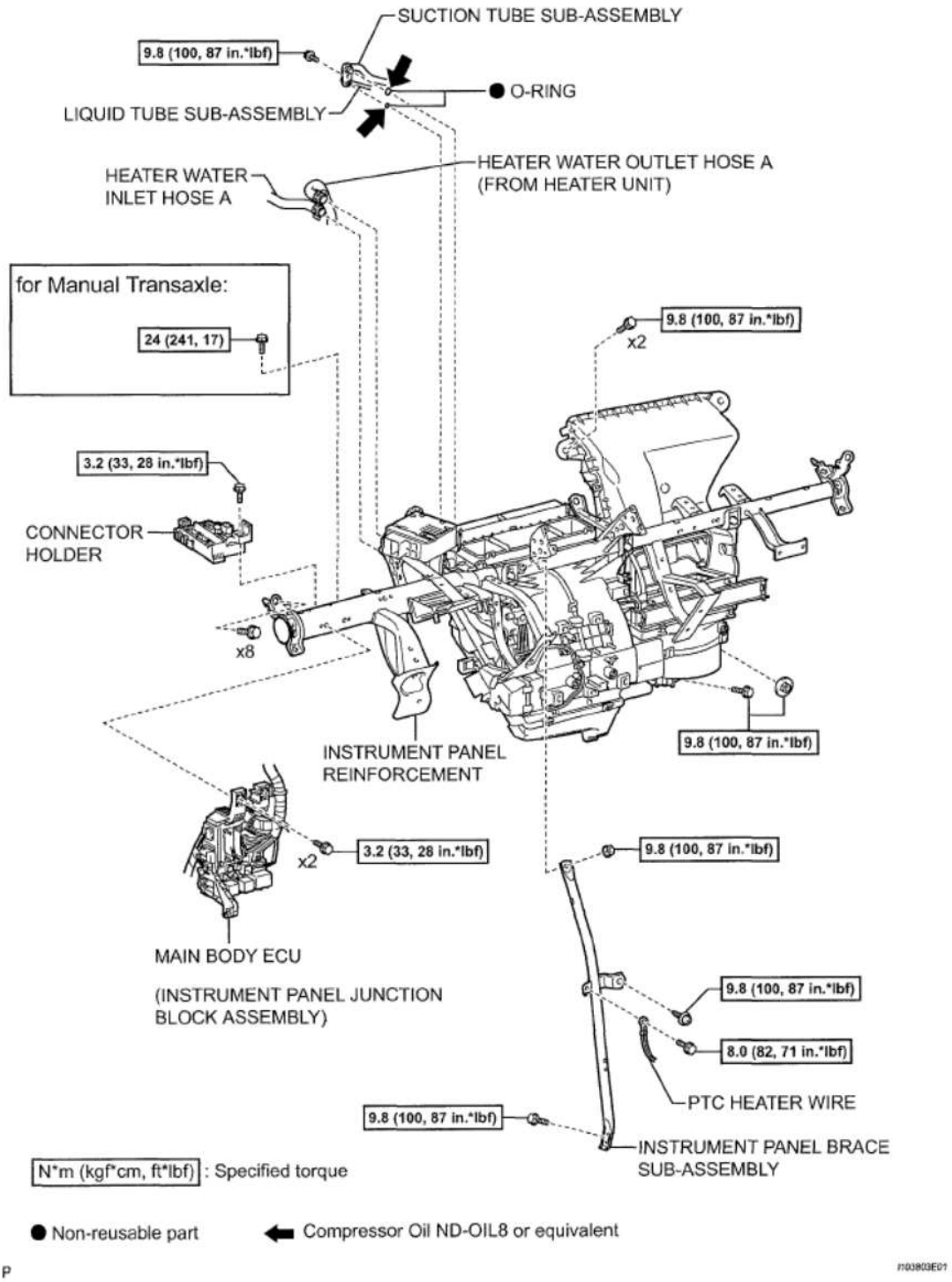


Fig. 93: Identifying Air Conditioning Unit Components With Torque Specifications (9 Of 11)
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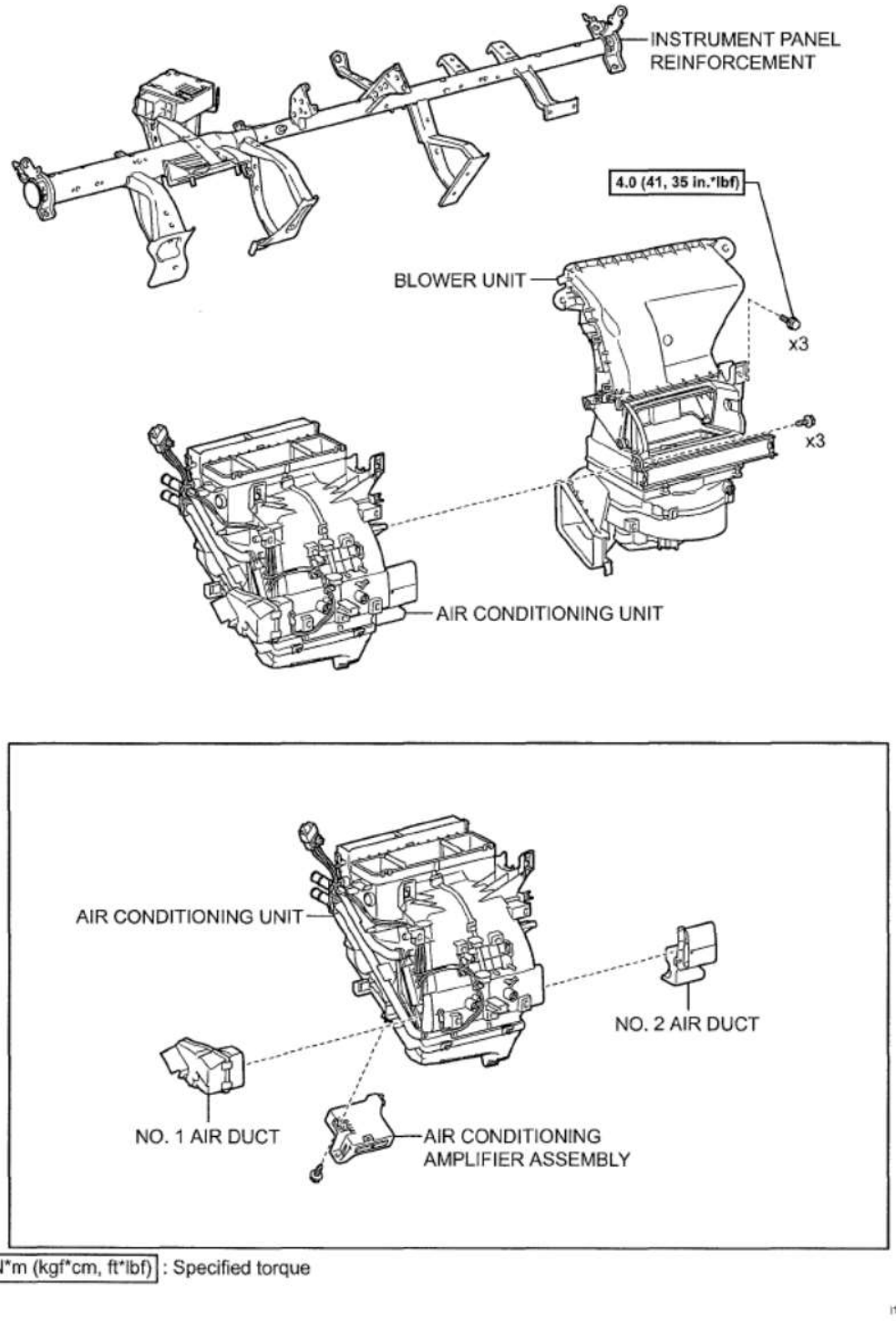


Fig. 94: Identifying Air Conditioning Unit Components With Torque Specification (10 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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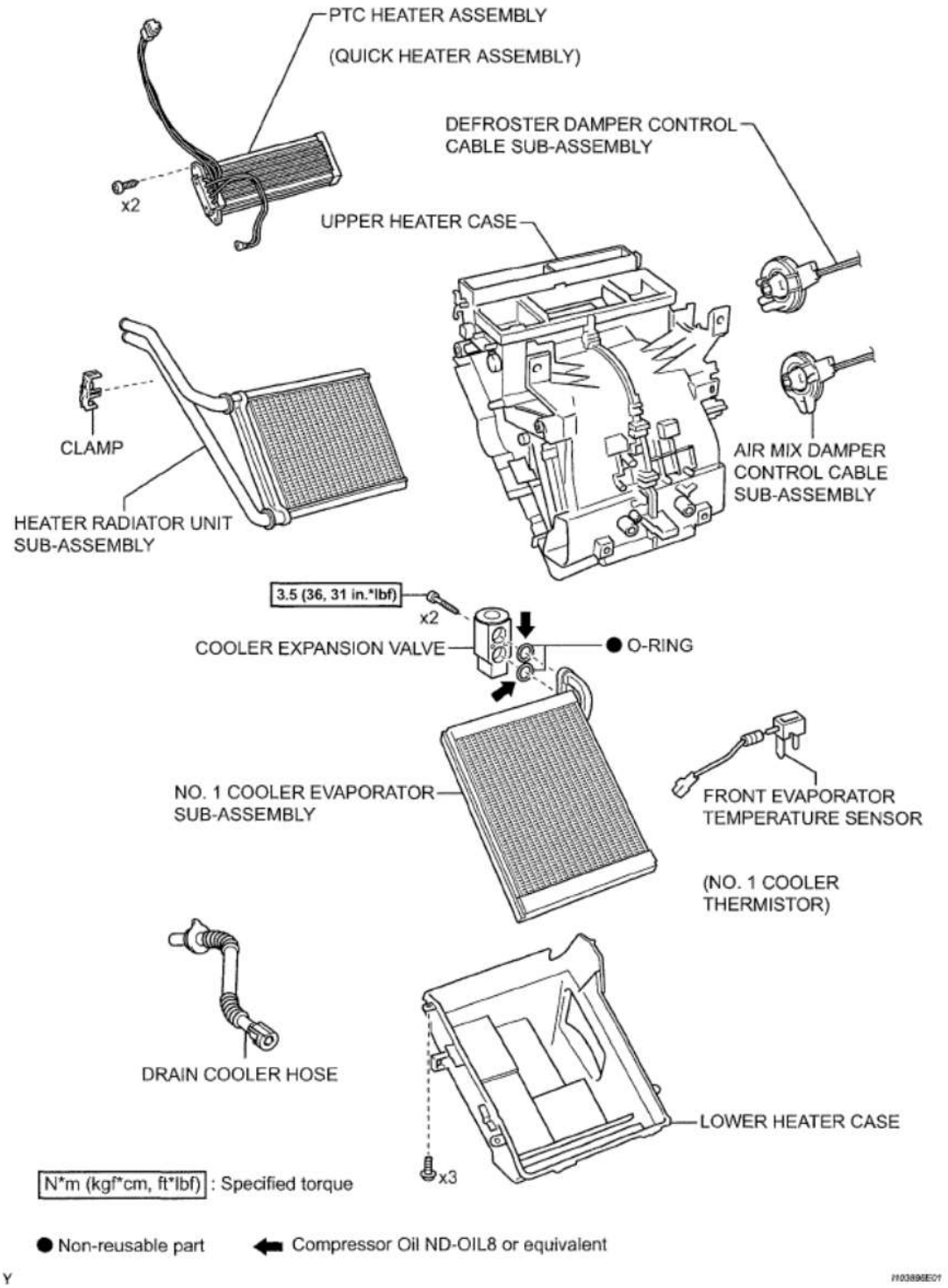


Fig. 95: Identifying Air Conditioning Unit Components With Torque Specification (11 Of 11)
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CAUTION: Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing (See PRECAUTION).

HINT:

Use the same procedure for both the RH and LH sides.

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

   Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

2. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM** (See **REPLACEMENT**)
3. **DRAIN ENGINE COOLANT** (See **REPLACEMENT**)
4. **REMOVE FRONT WIPER ARM HEAD CAP** (See **REMOVAL**)
5. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **REMOVAL**)
6. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **REMOVAL**)
7. **REMOVE HOOD TO COWL TOP SEAL** (See **REMOVAL**)
8. **REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **REMOVAL**)
9. **REMOVE COWL TOP VENTILATOR LOUVER LH** (See **REMOVAL**)
10. **REMOVE FRONT WIPER MOTOR AND LINK** (See **REMOVAL**)
11. **REMOVE FRONT AIR SHUTTER SEAL RH** (See **REMOVAL**)
12. **REMOVE OUTER COWL TOP PANEL** (See **REMOVAL**)
13. **DISCONNECT SUCTION TUBE SUB-ASSEMBLY**
    a. Remove the bolt.
    b. Turn the hook connector clockwise and disconnect the suction tube.

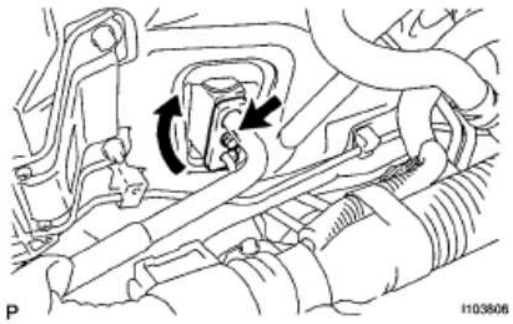


Fig. 96: Disconnecting Suction Tube
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    c. Remove the O-ring from the suction tube.

NOTE: Seal the openings of the disconnected parts using vinyl tape to

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prevent moisture and foreign matter from entering.

14. **DISCONNECT LIQUID TUBE SUB-ASSEMBLY**
    a. Disconnect the liquid tube.
    b. Remove the O-ring from the liquid tube.

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

15. **DISCONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)**
    a. Using pliers, grip the claws of the clip, slide the clip and disconnect the heater water outlet hose from the heater unit.

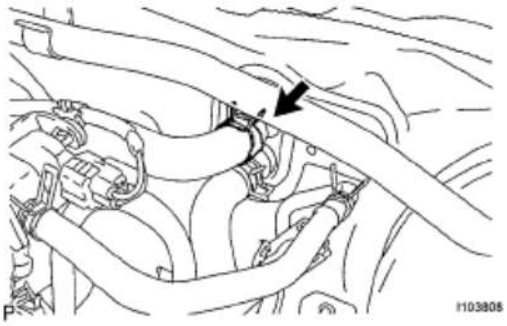


Fig. 97: Locating Heater Water Outlet Hose A
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

16. **DISCONNECT HEATER WATER INLET HOSE A**
    a. Using pliers, grip the claws of the clip, slide the clip and disconnect the heater water inlet hose from the heater unit.

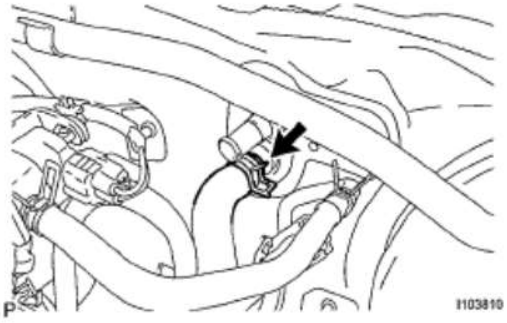


Fig. 98: Locating Heater Water Inlet Hose A
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

17. **TABLE OF BOLTS, SCREWS AND NUTS** (See **REMOVAL**)
18. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **REMOVAL**)

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19. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **REMOVAL**)
20. **REMOVE FRONT PILLAR GARNISH RH** (See **REMOVAL**)
21. **REMOVE FRONT PILLAR GARNISH LH** (See **REMOVAL**)
22. **REMOVE INSTRUMENT CLUSTER FINISH PANEL** (See **REMOVAL**)
23. **REMOVE COMBINATION METER ASSEMBLY** (See **REMOVAL**)
24. **REMOVE INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **REMOVAL**)
25. **REMOVE INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **REMOVAL**)
26. **REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY** (See **REMOVAL**)
27. **REMOVE UPPER INSTRUMENT PANEL** (See **REMOVAL**)
28. **REMOVE FRONT DOOR SCUFF PLATE RH** (See **REMOVAL**)
29. **REMOVE FRONT DOOR SCUFF PLATE LH** (See **REMOVAL**)
30. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
31. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
32. **REMOVE COWL SIDE TRIM BOARD RH** (See **REMOVAL**)
33. **REMOVE COWL SIDE TRIM BOARD LH** (See **REMOVAL**)
34. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **REMOVAL**)
35. **REMOVE UPPER CONSOLE PANEL** (See **REMOVAL**)
36. **REMOVE REAR CONSOLE BOX COVER** (See **REMOVAL**)
37. **REMOVE CONSOLE BOX CARPET** (See **REMOVAL**)
38. **REMOVE REAR CONSOLE BOX SUB-ASSEMBLY** (See **REMOVAL**)
39. **SEPARATE AIR CONDITIONING PANEL ASSEMBLY** (See **REMOVAL**)
40. **DISCONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **REMOVAL**)
41. **DISCONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
42. **DISCONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
43. **REMOVE FRONT CONSOLE BOX** (See **REMOVAL**)
44. **REMOVE INSTRUMENT PANEL UNDER TRAY** (See **REMOVAL**)
45. **REMOVE INSTRUMENT PANEL BOX** (See **REMOVAL**)
46. **REMOVE NO. 2 RADIO BRACKET** (See **REMOVAL**)
47. **REMOVE NO. 1 RADIO BRACKET** (See **REMOVAL**)
48. **SEPARATE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **REMOVAL**)
49. **SEPARATE ANTENNA CORD SUB-ASSEMBLY** (See **REMOVAL**)
50. **REMOVE LOWER INSTRUMENT PANEL** (See **REMOVAL**)
51. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**
52. **REMOVE STEERING PAD** (See **REMOVAL**)

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53. **REMOVE STEERING WHEEL ASSEMBLY** (See **REMOVAL**)
54. **REMOVE STEERING COLUMN LOWER COVER** (See **REMOVAL**)
55. **REMOVE STEERING COLUMN UPPER COVER** (See **REMOVAL**)
56. **REMOVE COMBINATION SWITCH ASSEMBLY** (See **REMOVAL**)
57. **DISCONNECT POWER STEERING ECU** (See **REMOVAL**)
58. **REMOVE INSTRUMENT PANEL SUB REINFORCEMENT** (See **REMOVAL**)
59. **REMOVE COLUMN HOLE COVER SILENCER SHEET** (See **REMOVAL**)
60. **SEPARATE STEERING SLIDING YOKE SUB-ASSEMBLY**
    a. Place matchmarks on the sliding yoke of the steering intermediate shaft and the power steering link.

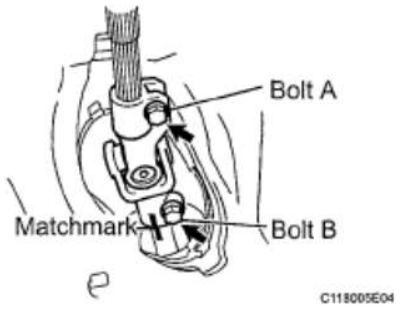


Fig. 99: Identifying Matchmarks On Sliding Yoke Of Steering Intermediate Shaft And Power Steering Link
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    b. Loosen bolt A, remove bolt B and separate the steering yoke.
61. **REMOVE BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **REMOVAL**)
62. **REMOVE BRAKE PEDAL SUPPORT** (See **REMOVAL**)
63. **REMOVE STEERING COLUMN ASSEMBLY** (See **REMOVAL**)
64. **REMOVE NO. 6 HEATER TO REGISTER DUCT ASSEMBLY**
    a. Disengage the 3 claws and remove the heater to register duct.

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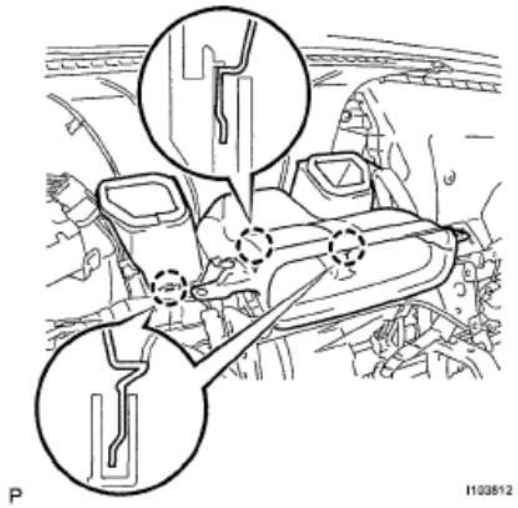


Fig. 100: Identifying Heater And Register Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

65. **REMOVE DEFROSTER NOZZLE ASSEMBLY**
    a. Disengage the 5 claws and remove the defroster nozzle.

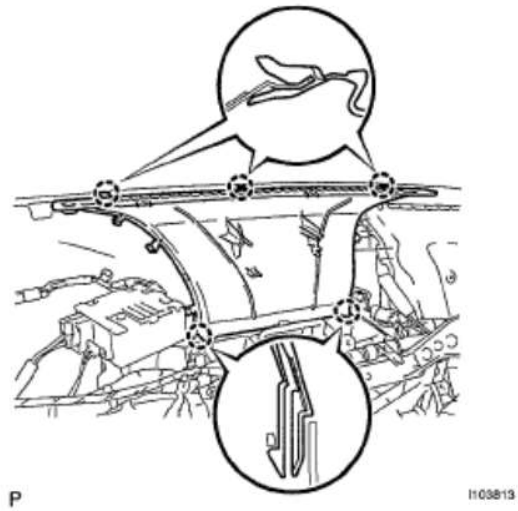


Fig. 101: Identifying Defroster Nozzle Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

66. **REMOVE REAR NO. 1 AIR DUCT**
    a. Disengage the 2 claws and remove the air duct.

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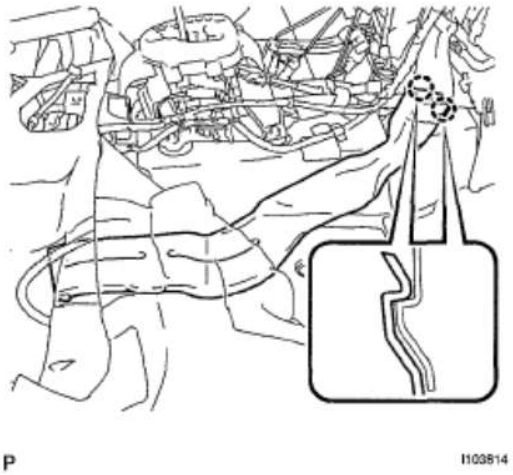


Fig. 102: Identifying Rear No 1 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

67. **REMOVE REAR NO. 2 AIR DUCT**
    a. Disengage the 4 claws and remove the air duct.

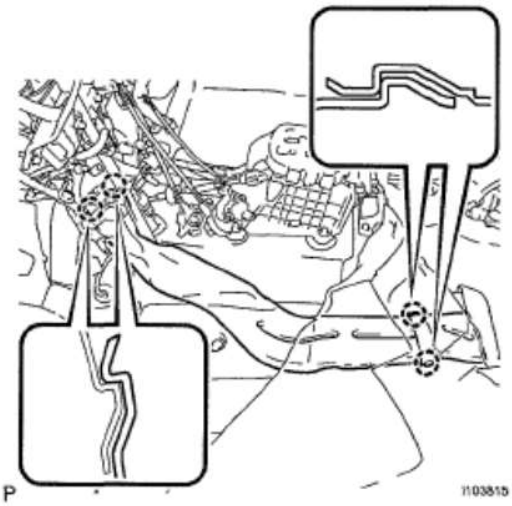


Fig. 103: Identifying Rear No 2 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

68. **REMOVE INSTRUMENT PANEL BRACE SUB-ASSEMBLY**
    a. Disengage the 3 clamps.
    b. Remove the bolt and separate the PTC heater wire.
    c. Remove bolt, screw and nut and remove the instrument panel brace.

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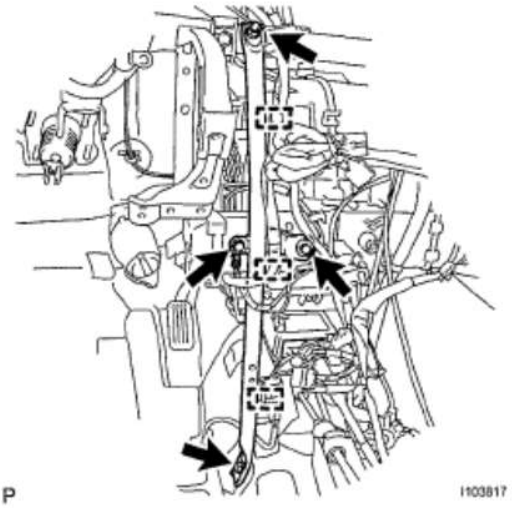


Fig. 104: Locating Instrument Panel Brace Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

69. **REMOVE REAR NO. 3 AIR DUCT**
    a. Disengage the 4 claws and remove the air duct.

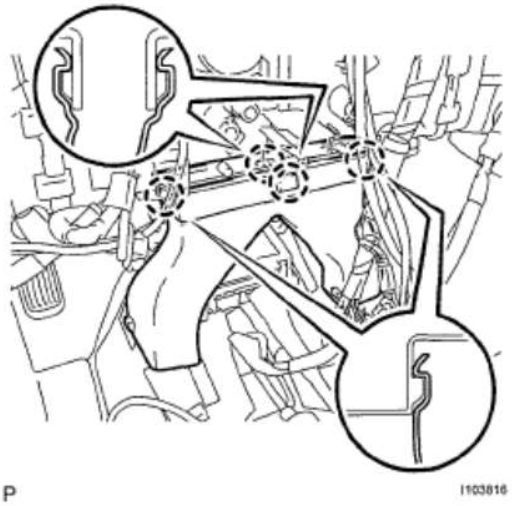


Fig. 105: Identifying Rear No 3 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

70. **DISCONNECT DRAIN COOLER HOSE**
    a. Disconnect the drain hose.

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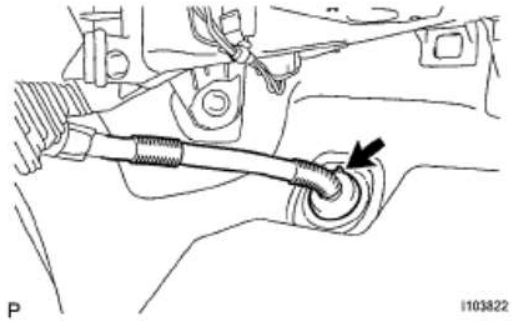


Fig. 106: Locating Drain Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

71. **SEPARATE MAIN BODY ECU**
    a. Disconnect the 5 connectors and 3 clamps.

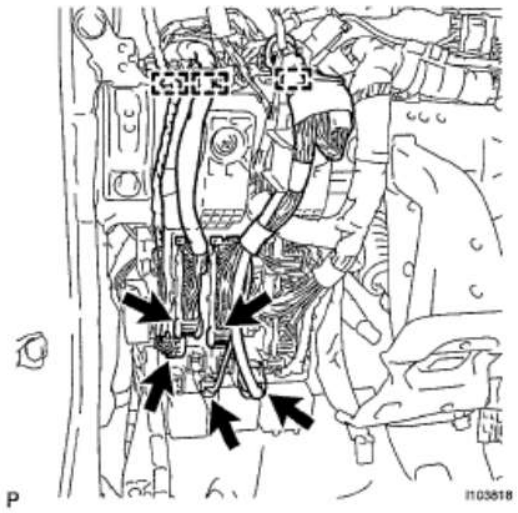
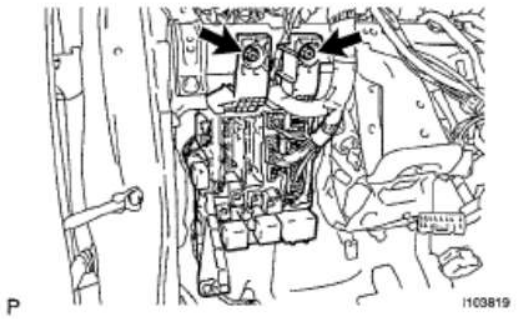


Fig. 107: Locating Main Body ECU Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    b. Remove the 2 bolts and separate the main body ECU.



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Fig. 108: Locating Main Body ECU Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

72. **SEPARATE INSTRUMENT PANEL WIRE**
    a. Remove the bolt.

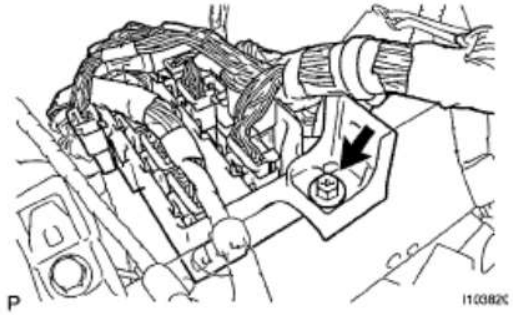


Fig. 109: Locating Connector Holder Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    b. Disconnect the connectors and separate the connector holder.

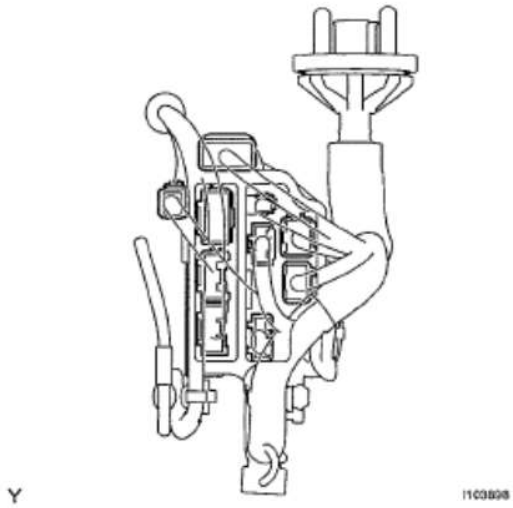


Fig. 110: Identifying Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    c. Remove the bolt and disconnect the ground wire.

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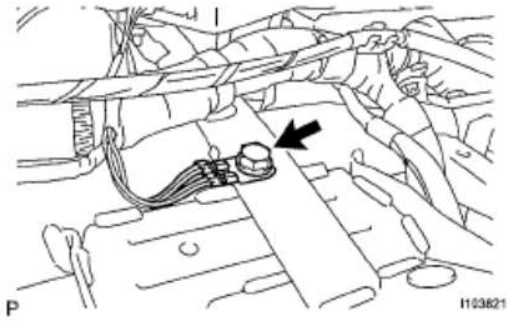


Fig. 111: Locating Ground Wire Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Disconnect the connectors and clamps.

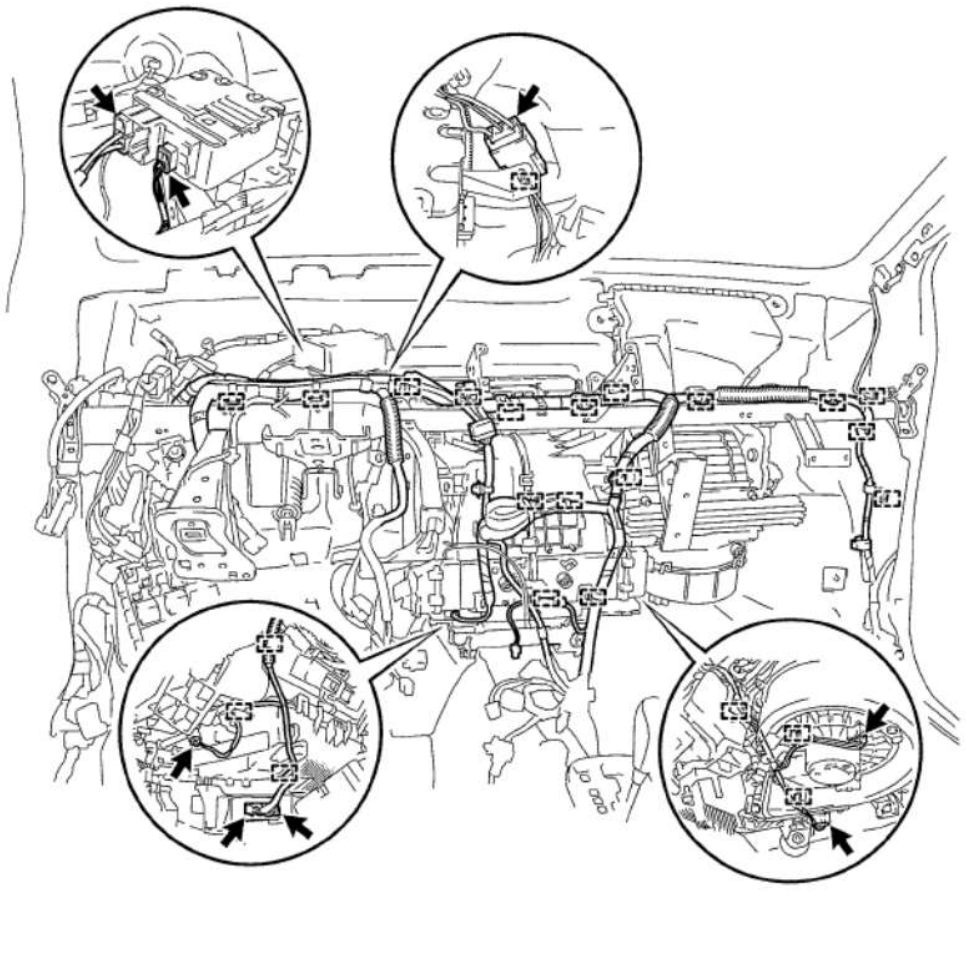


Fig. 112: Locating Connectors And Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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73. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)**

a. Remove the 3 bolts and the nut.

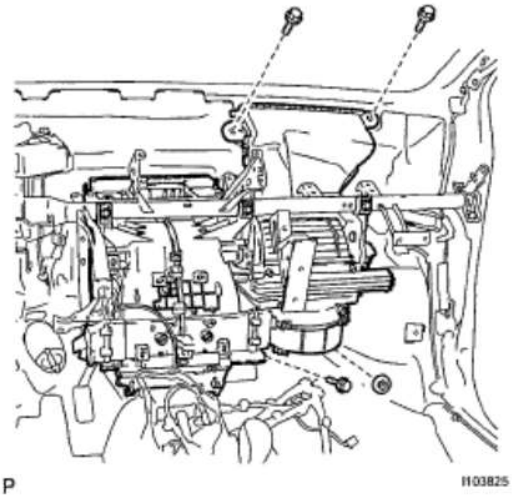


Fig. 113: Identifying Instrument Panel Reinforcement Bolts And Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the 9 bolts and remove the instrument panel reinforcement together with the air conditioning unit.

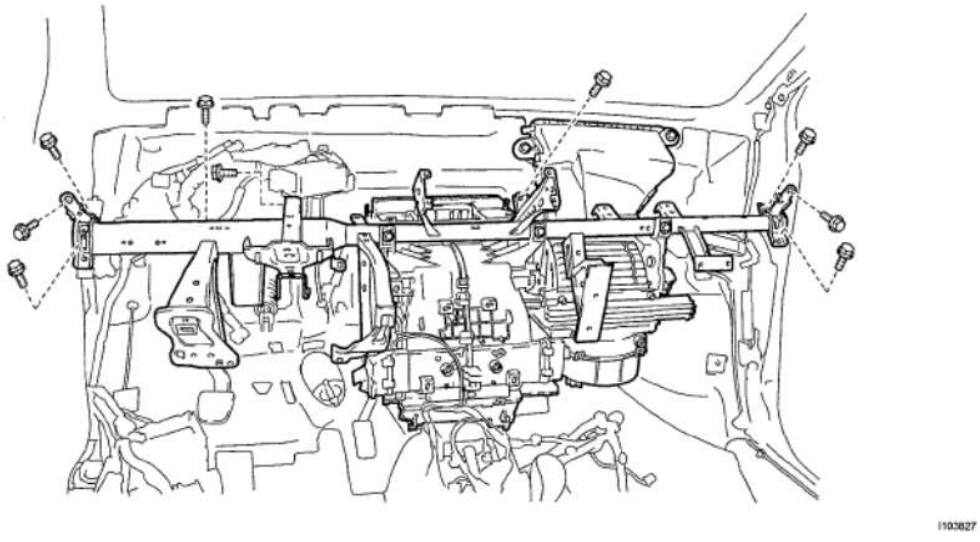


Fig. 114: Identifying Instrument Panel Reinforcement Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Remove the 3 screws and the air conditioning unit.

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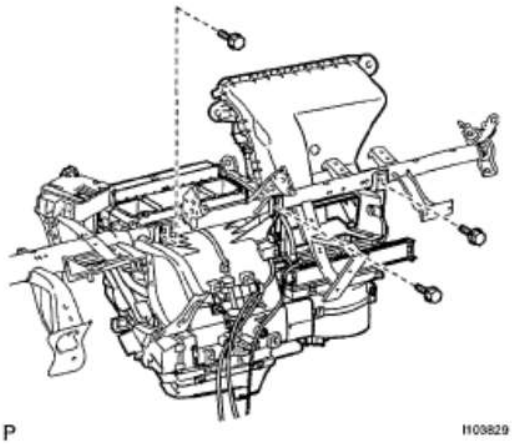


Fig. 115: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

74. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)**
    a. Remove the 3 bolts and the nut.

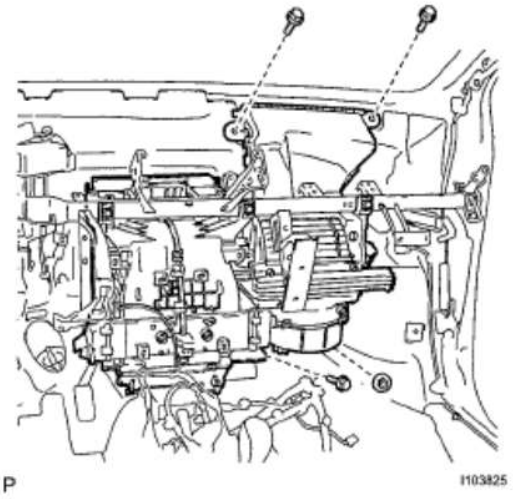


Fig. 116: Identifying Instrument Panel Reinforcement Bolts And Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    b. Remove the 8 bolts and remove the instrument panel reinforcement together with the air conditioning unit.

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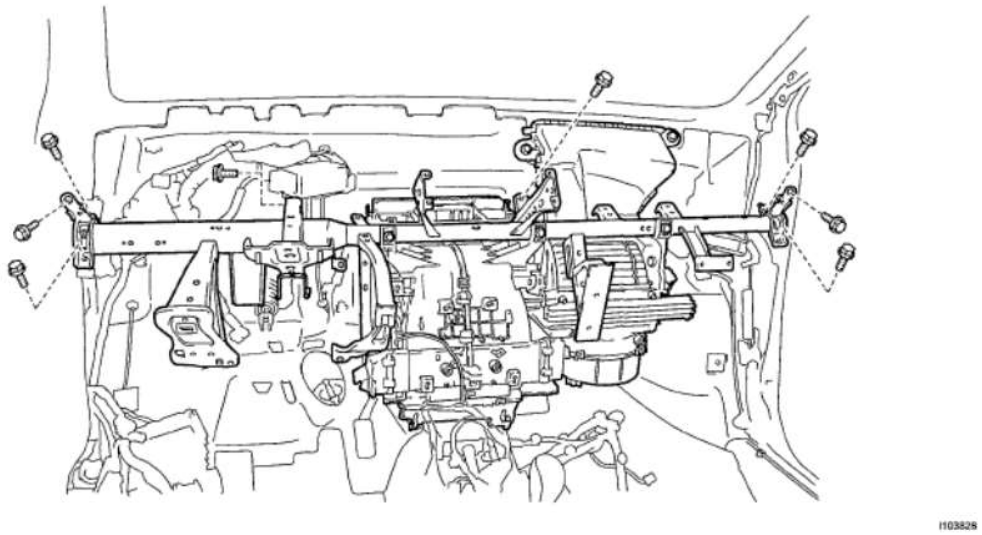


Fig. 117: Identifying Instrument Panel Reinforcement Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Remove the 3 screws and the air conditioning unit.

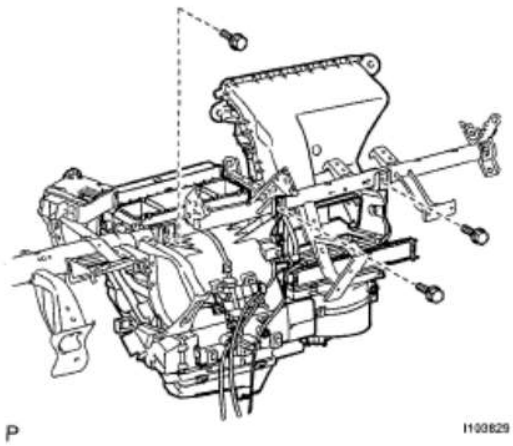


Fig. 118: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

75. **REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY**

a. Remove the screw.

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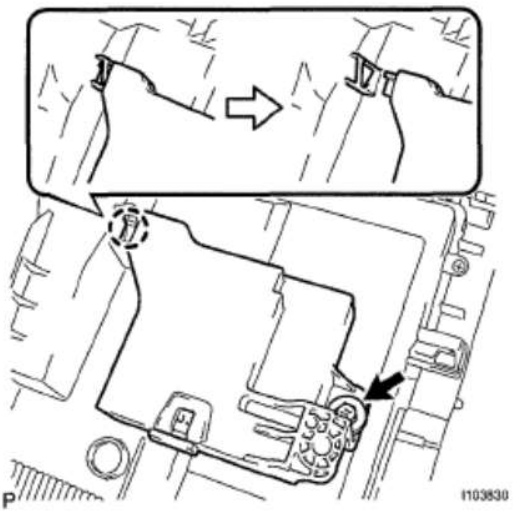


Fig. 119: Locating Air Conditioning Amplifier Assembly Screw
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disengage the claw and remove the air conditioning amplifier as shown in the illustration.

76. **REMOVE AIR CONDITIONING UNIT**

a. Remove the 3 screws and the air conditioning unit.

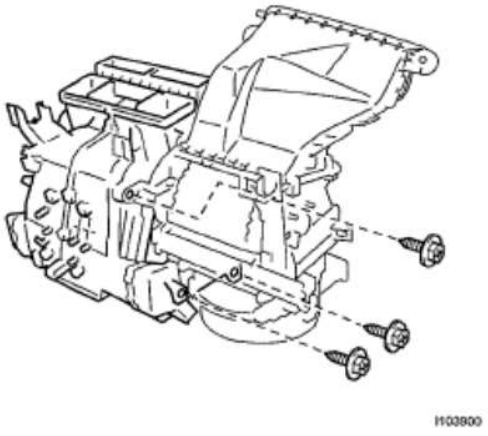


Fig. 120: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

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

a. Using a screwdriver with its tip wrapped in protective tape, disengage the claw and remove the defroster damper control cable.

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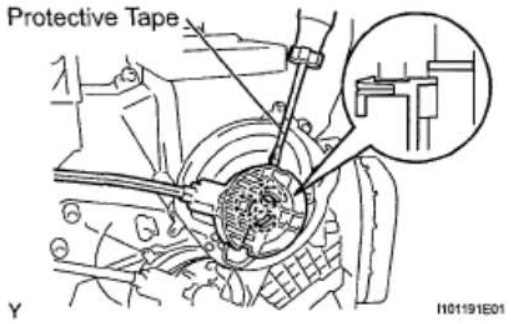


Fig. 121: Removing Defroster Damper Control Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **REMOVE AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Using a screwdriver with its tip wrapped in protective tape, disengage the claw and remove the air mix damper control cable.

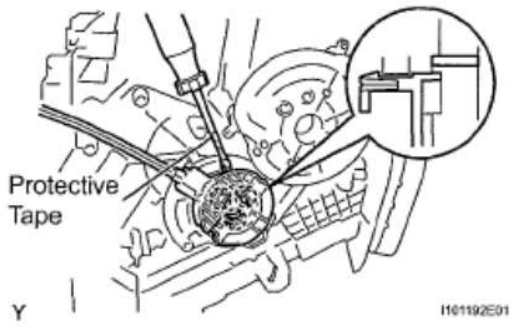


Fig. 122: Removing Air Mix Damper Control Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **REMOVE NO. 1 AIR DUCT**
   a. Disengage the 3 claws and remove the air duct.

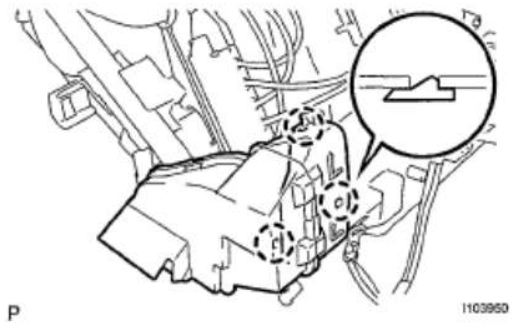


Fig. 123: Identifying No 1 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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4. **REMOVE NO. 2 AIR DUCT**
   a. Disengage the 3 claws and remove the air duct.

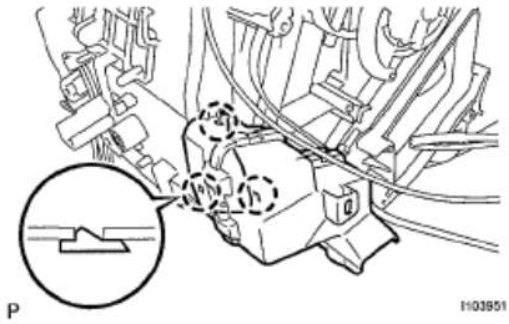


Fig. 124: Identifying No 2 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **REMOVE PTC HEATER ASSEMBLY**
   a. Disengage the clamp.
   b. Remove the 2 screws and PTC heater from the air conditioning unit.

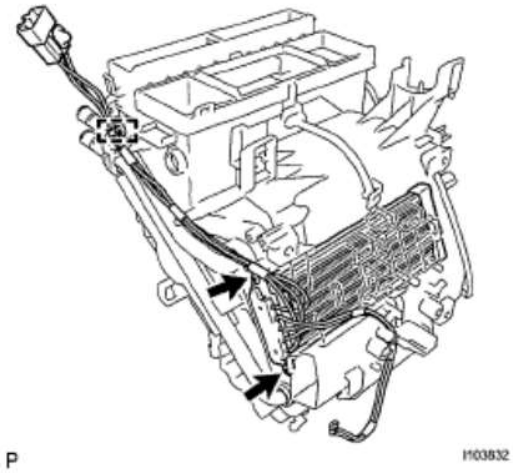


Fig. 125: Locating PTC Heater Assembly Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **REMOVE HEATER RADIATOR UNIT SUB-ASSEMBLY**
   a. Disengage the 3 claws and remove the clamp.

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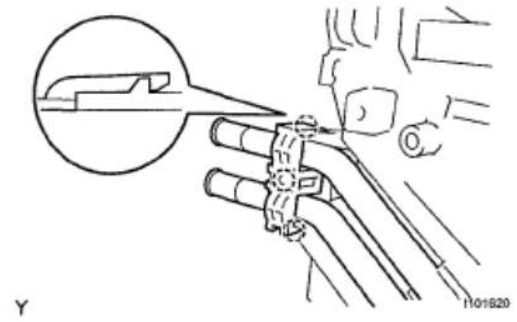


Fig. 126: Identifying Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the heater radiator unit from the air conditioning unit.

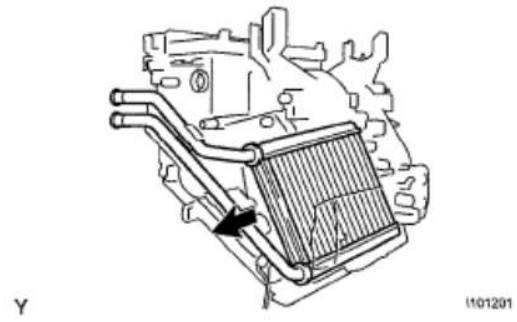


Fig. 127: Removing Heater Radiator Unit From Air Conditioning Unit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **REMOVE COOLER EXPANSION VALVE**
   a. Using a 4 mm hexagon wrench, remove the 2 hexagon bolts and detach the cooler expansion valve.

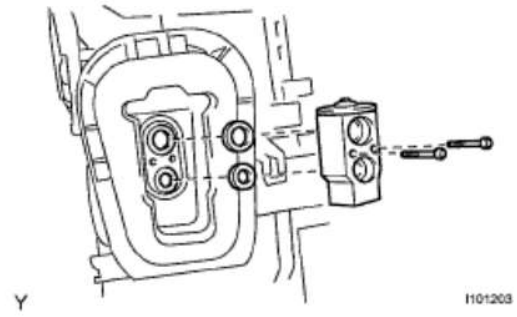


Fig. 128: Identifying Cooler Expansion Valve Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the 2 O-rings from the cooler evaporator.
8. **REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY**

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a. Disengage the evaporator temperature sensor connector clamp.

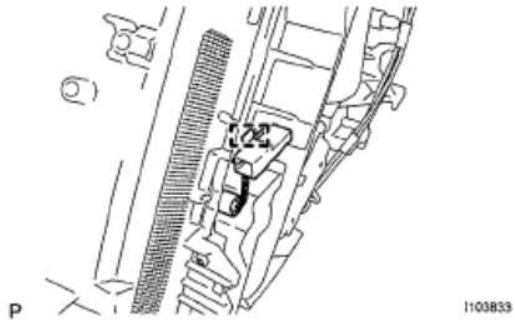


Fig. 129: Identifying Evaporator Temperature Sensor Connector Clamp
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the 3 screws.
c. Disengage the 4 claws and remove the heater case lower.

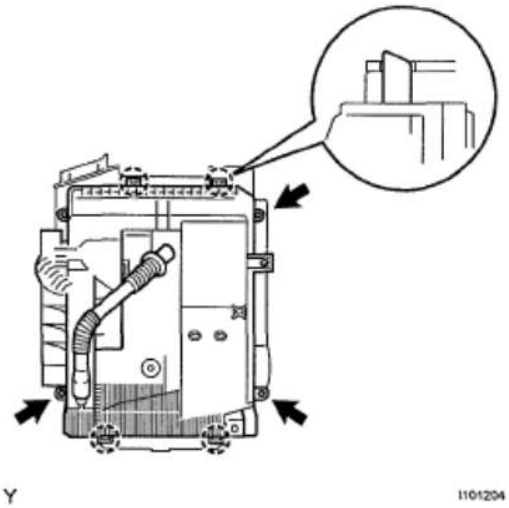


Fig. 130: Identifying Heater Case Lower Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Remove the cooler evaporator.

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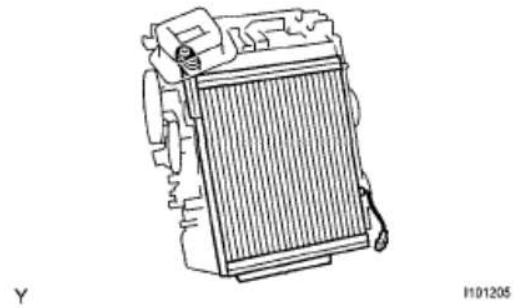


Fig. 131: Identifying Cooler Evaporator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. **REMOVE DRAIN COOLER HOSE**
   a. Remove the drain cooler hose.

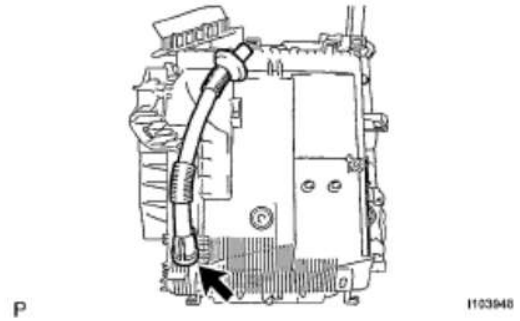


Fig. 132: Locating Drain Cooler Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. **REMOVE FRONT EVAPORATOR TEMPERATURE SENSOR** (See **REMOVAL**)

REASSEMBLY

1. **INSTALL FRONT EVAPORATOR TEMPERATURE SENSOR** (See **INSTALLATION**)
2. **INSTALL DRAIN COOLER HOSE**
   a. Install the drain cooler hose.

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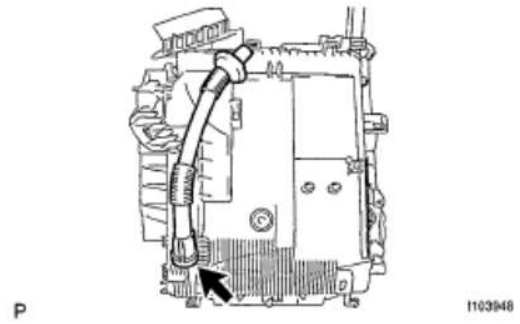


Fig. 133: Locating Drain Cooler Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY**

HINT:

If a new cooler evaporator is installed, add compressor oil to the cooler evaporator as follows.

Compressor oil:

ND-OIL8 or equivalent. Add 40 cc (1.35 fl. oz.)

a. Install the cooler evaporator.

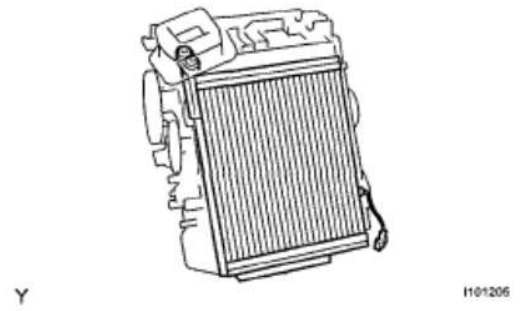


Fig. 134: Identifying Cooler Evaporator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the 4 claws and install the heater case lower.

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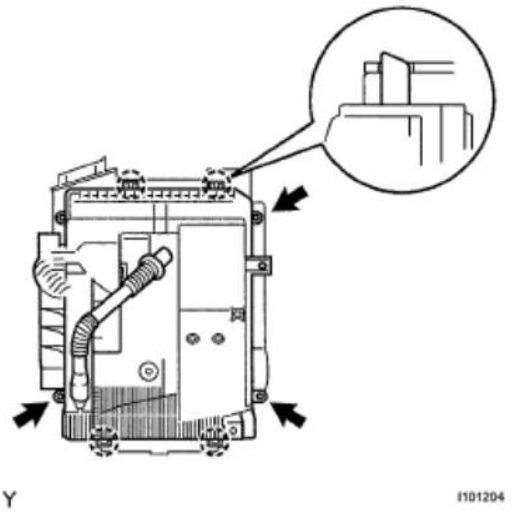


Fig. 135: Identifying Heater Case Lower Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Install the 3 screws.
d. Engage the evaporator temperature sensor connector clamp.

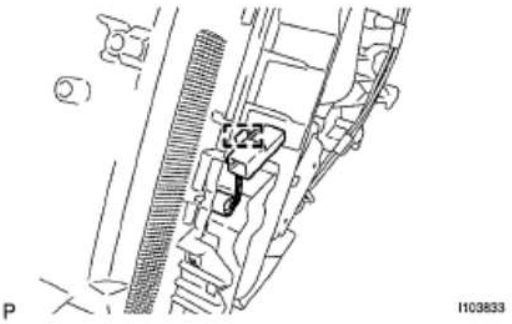


Fig. 136: Identifying Evaporator Temperature Sensor Connector Clamp
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL COOLER EXPANSION VALVE**
   a. Apply sufficient compressor oil (ND-OIL8) to 2 new O-rings and the fitting surface of the cooler expansion valve.

      Compressor oil:

      ND-OIL8 or equivalent

   b. Install the 2 O-rings onto the cooler evaporator.
   c. Using a 4 mm hexagon wrench, install the cooler expansion valve with the 2 hexagon bolts.

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Torque: 3.5 N*m (36 kgf*cm, 31 in.*lbf)

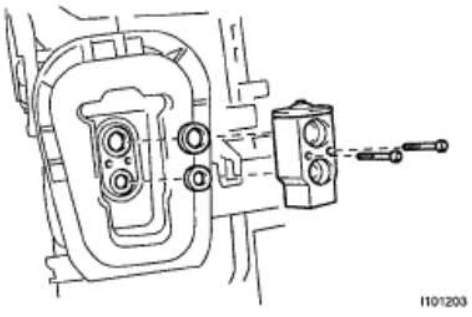


Fig. 137: Identifying Cooler Expansion Valve Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **INSTALL HEATER RADIATOR UNIT SUB-ASSEMBLY**
   a. Install the radiator heater unit onto the air conditioning unit.

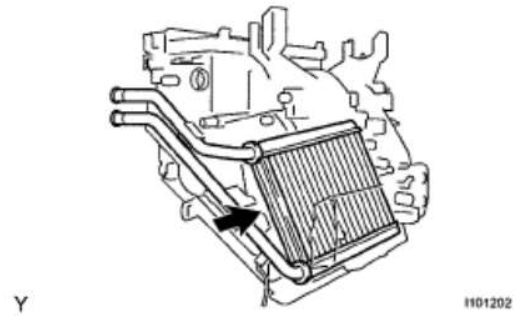


Fig. 138: Installing Radiator Heater Unit Onto Air Conditioning Unit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Engage the 3 clips and install the clamp.

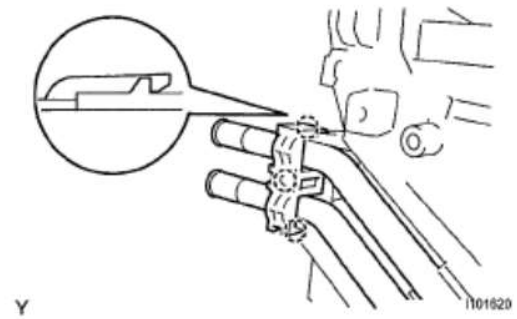


Fig. 139: Identifying Clips
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **INSTALL PTC HEATER ASSEMBLY**

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a. Install the PTC heater with the 2 screws.

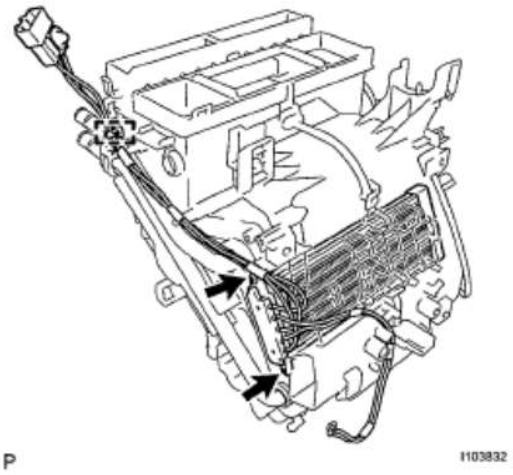


Fig. 140: Locating PTC Heater Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the clamp.

7. **INSTALL NO. 2 AIR DUCT**
   a. Engage the 3 claws and install the air duct.

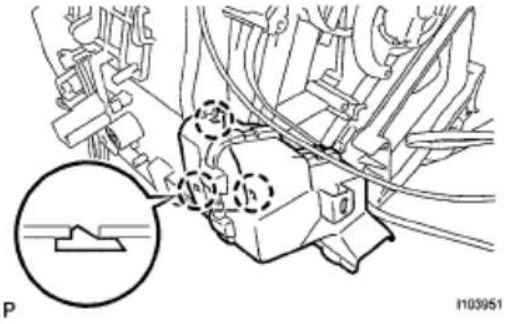


Fig. 141: Identifying No 2 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. **INSTALL NO. 1 AIR DUCT**
   a. Engage the 3 claws and install the air duct.

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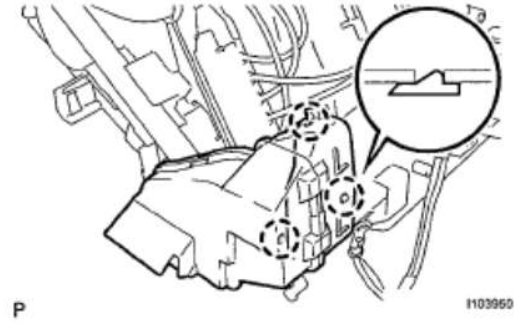


Fig. 142: Identifying No 1 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. **INSTALL AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Engage the claw and install the air mix damper control cable.

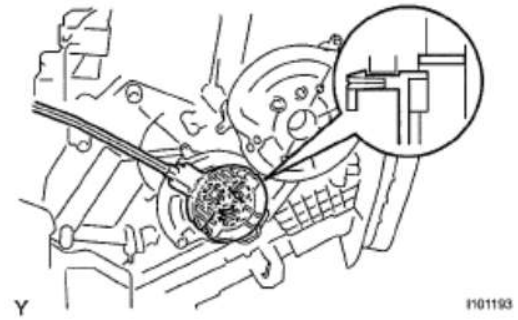


Fig. 143: Identifying Air Mix Damper Control Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. **INSTALL DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY**
    a. Engage the claw and install the defroster damper control cable.

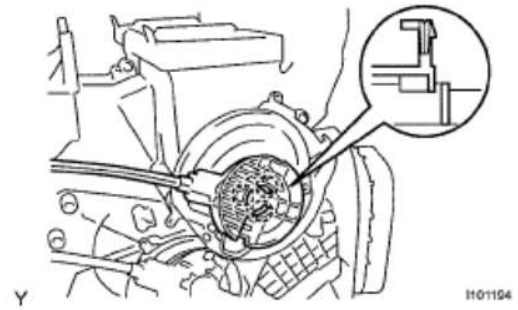


Fig. 144: Identifying Defroster Damper Control Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

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1. **INSTALL AIR CONDITIONING UNIT**
   a. Install the air conditioning unit with the 3 screws.

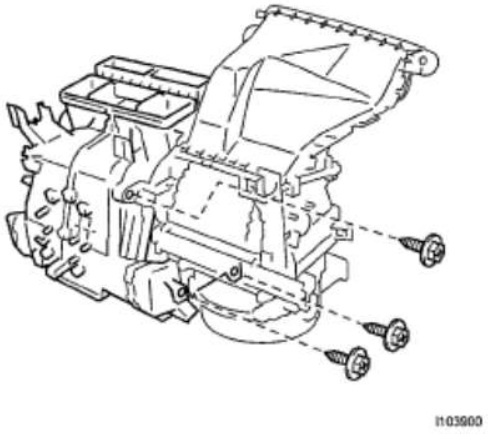


Fig. 145: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY**
   a. Engage the claw and install the air conditioning amplifier as shown in the illustration.

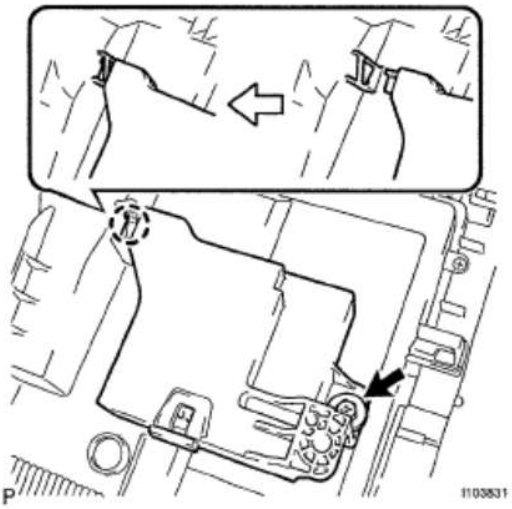


Fig. 146: Identifying Air Conditioning Amplifier Screw
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Install the screw.
3. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)**
   a. Temporarily tighten the air conditioning unit with the 3 screws.

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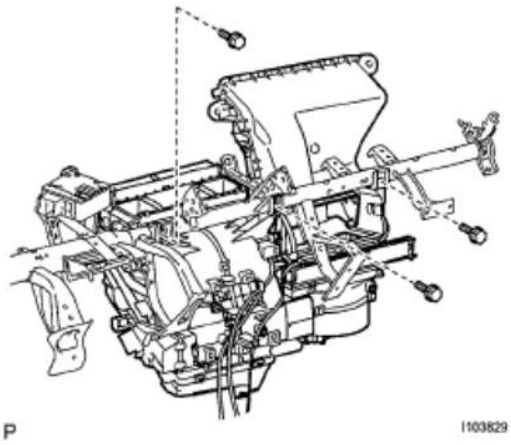


Fig. 147: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the instrument panel reinforcement and the air conditioning unit with the 9 bolts.

Torque: 24 N*m (241 kgf*cm, 17 ft.*lbf) for Bolt A

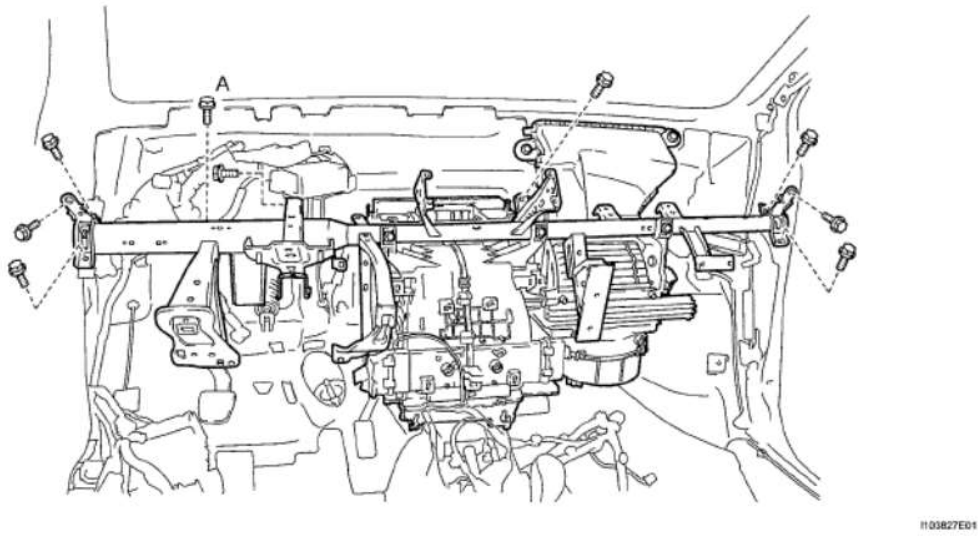


Fig. 148: Identifying Instrument Panel Reinforcement Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Install the 3 screws, 3 bolts and nut in the sequence shown in the illustration.

Torque: 4.0 N*m (41 kgf*cm, 35 in.*lbf) for screw 9.8 N*m (100 kgf*cm, 87 in.*lbf) for nut 9.8 N*m (100 kgf*cm, 87 in.*lbf) for bolt

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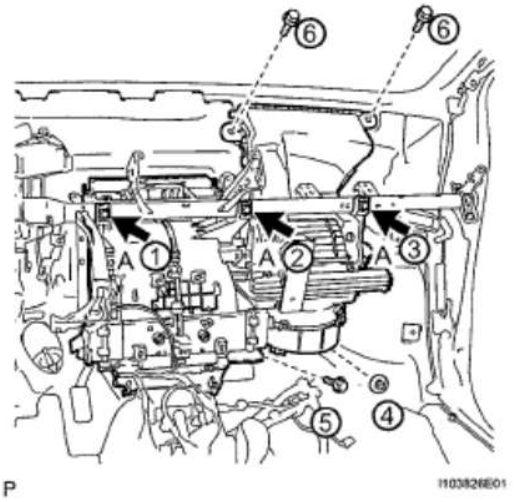


Fig. 149: Identifying Tightening Sequence Of Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)**
   a. Temporarily tighten the air conditioning unit with the 3 screws.

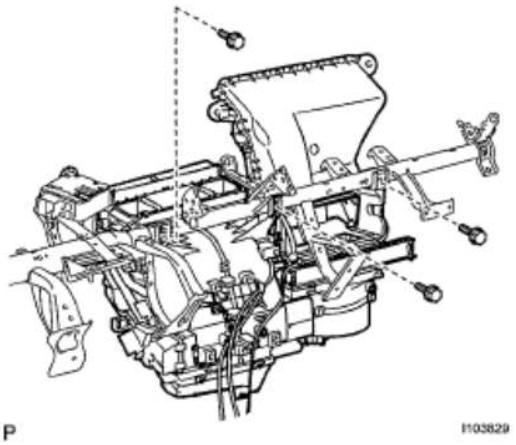


Fig. 150: Identifying Air Conditioning Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Install the instrument panel reinforcement and the air conditioning unit with the 8 bolts.

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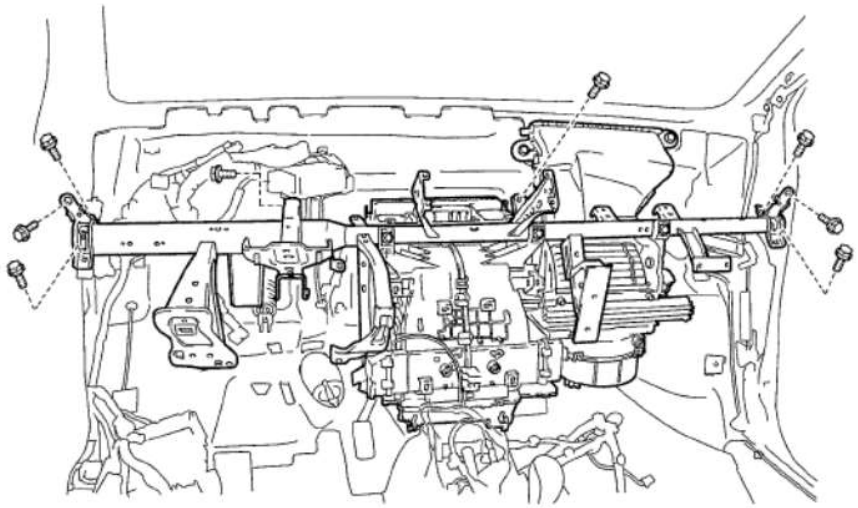


Fig. 151: Identifying Instrument Panel Reinforcement And Air Conditioning Unit Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Install the 3 screws, 3 bolts and nut in the sequence shown in the illustration.

Torque: 4.0 N*m (41 kgf*cm, 35 in.*lbf) for screw A

9.8 N*m (100 kgf*cm, 87 in.*lbf) for nut

9.8 N*m (100 kgf*cm, 87 in.*lbf) for bolt

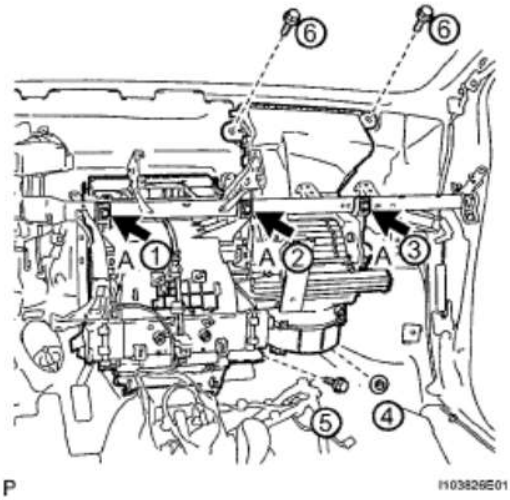


Fig. 152: Identifying Tightening Sequence Of Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

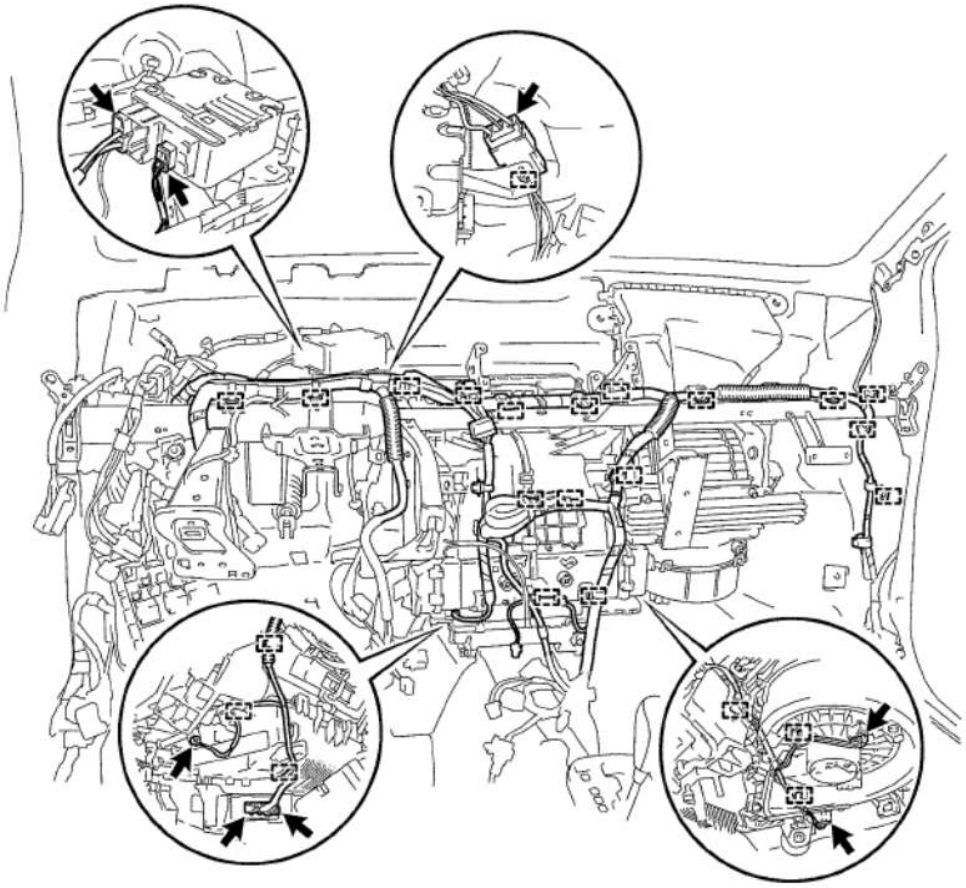
5. **INSTALL INSTRUMENT PANEL WIRE**

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a. Install the wire harness with the clamps and connectors.



P

Fig. 153: Locating Connectors And Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the ground wire with the bolt.

Torque: 8.4 N*m (86 kgf*cm, 74 in.*lbf)

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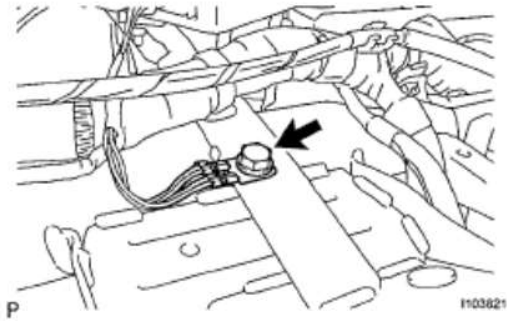


Fig. 154: Locating Ground Wire Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Connect the connectors and install the wire harness.

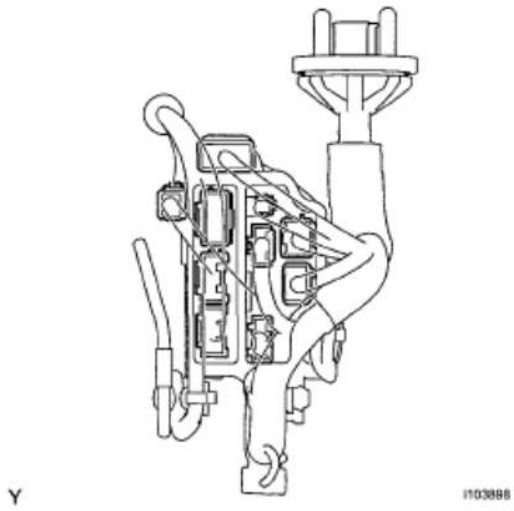
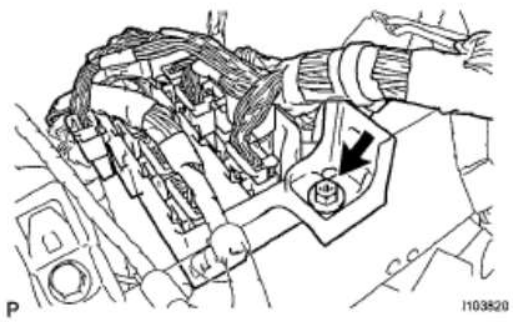


Fig. 155: Identifying Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Install the connector holder with the bolt.

Torque: 3.2 N*m (33 kgf*cm, 28 in.*lbf)



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Fig. 156: Locating Connector Holder Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **INSTALL MAIN BODY ECU**
   a. Install the main body ECU with the 2 bolts.

Torque: 3.2 N*m (33 kgf*cm, 28 in.*lbf)

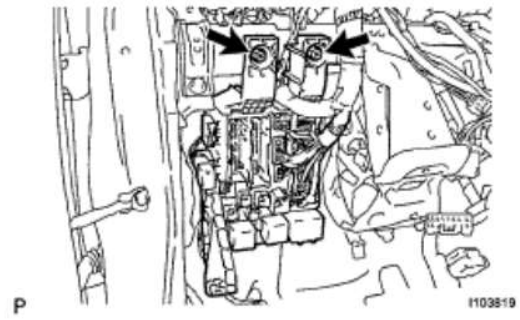


Fig. 157: Locating Main Body ECU Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Connect the 5 connectors and the 3 clamps.

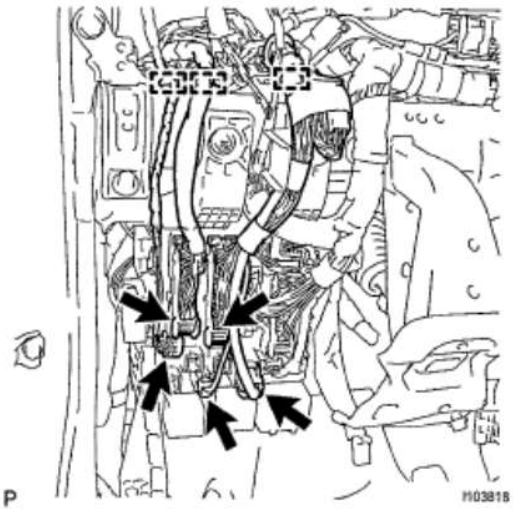


Fig. 158: Locating Main Body ECU Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **CONNECT DRAIN COOLER HOSE**
   a. Install the drain hose into the position shown in the illustration.

NOTE:
- **Install the drain hose with its UP mark facing upward, within the**

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90 degree range shown in the illustration.

- **Install the drain hose without twisting it.**

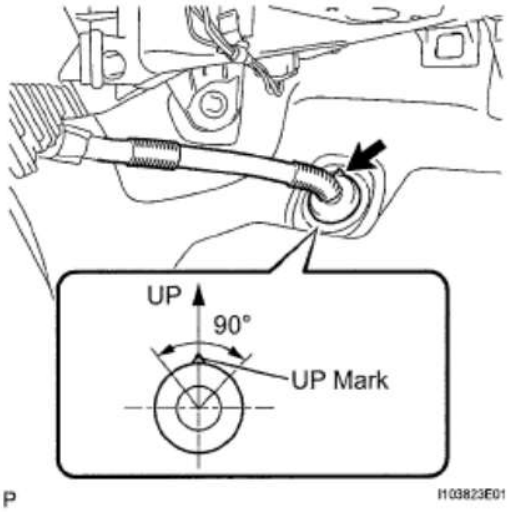


Fig. 159: Identifying Installation Position Of Drain Cooler Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. **INSTALL REAR NO. 3 AIR DUCT**
   a. Engage the 4 claws and install the air duct.

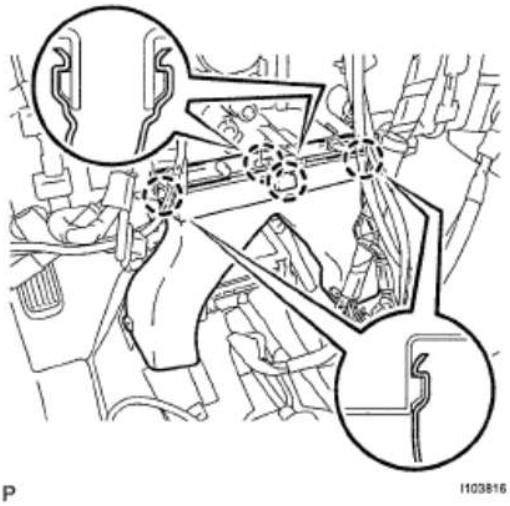


Fig. 160: Identifying Rear No 3 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. **INSTALL INSTRUMENT PANEL BRACE SUB-ASSEMBLY**
   a. Install the instrument panel brace with the bolt, screw and nut.

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Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

b. Install the PTC heater wire with the bolt.

Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

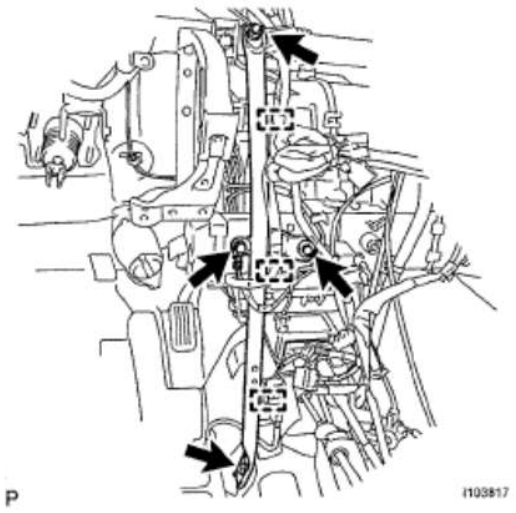


Fig. 161: Locating Instrument Panel Brace Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Engage the 3 clamps.

10. **INSTALL REAR NO. 2 AIR DUCT**

a. Engage the 4 claws and install the air duct.

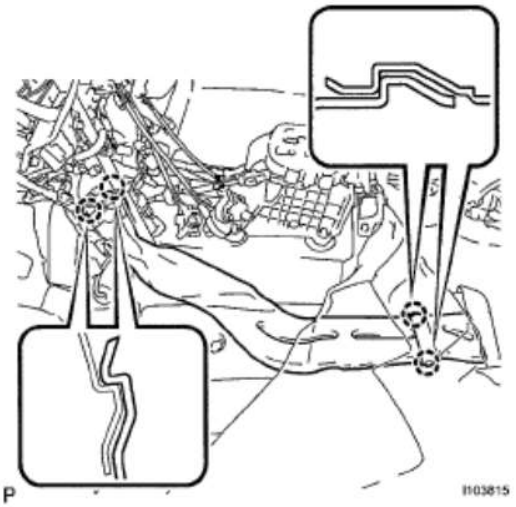


Fig. 162: Identifying Rear No 2 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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11. **INSTALL REAR NO. 1 AIR DUCT**
    a. Engage the 2 claws and install the air duct.

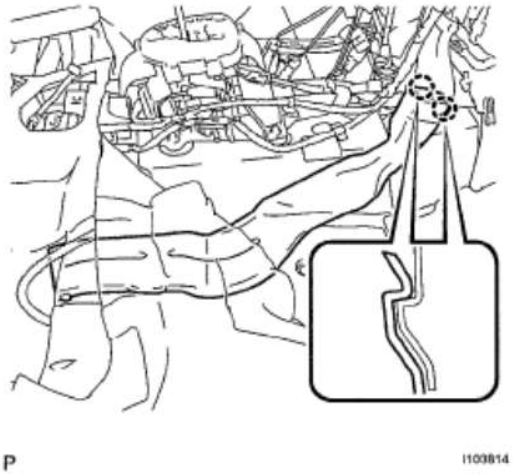


Fig. 163: Identifying Rear No 1 Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. **INSTALL DEFROSTER NOZZLE ASSEMBLY**
    a. Engage the 5 claws and install the defroster nozzle.

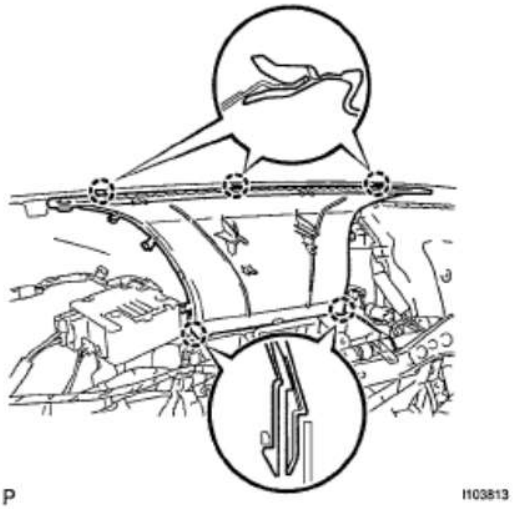


Fig. 164: Identifying Defroster Nozzle Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. **INSTALL NO. 6 HEATER TO REGISTER DUCT ASSEMBLY**
    a. Engage the 3 claws and install the heater to register duct.

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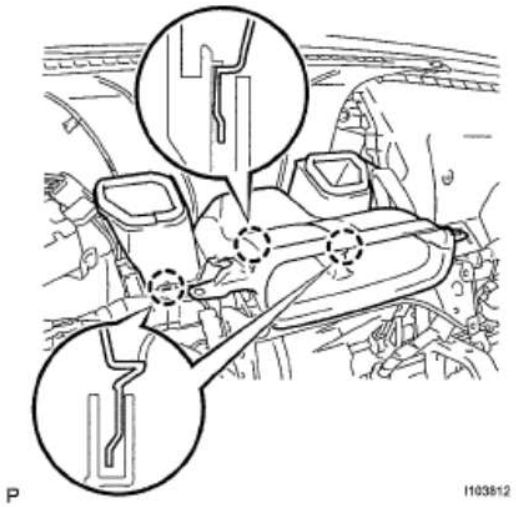


Fig. 165: Identifying Heater And Register Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. **INSTALL STEERING COLUMN ASSEMBLY** (See **INSTALLATION**)
15. **INSTALL BRAKE PEDAL SUPPORT** (See **INSTALLATION**)
16. **INSTALL BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **INSTALLATION**)
17. **INSTALL STEERING SLIDING YOKE SUB-ASSEMBLY**
    a. Align the matchmarks and install the sliding yoke onto the steering gear assembly with bolt B.

    Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)

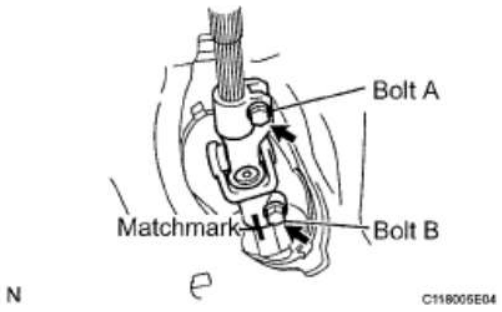


Fig. 166: Identifying Matchmarks On Sliding Yoke Of Steering Intermediate Shaft And Power Steering Link
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

    b. Tighten bolt A.

    Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)

18. **INSTALL COLUMN HOLE COVER SILENCER SHEET** (See **INSTALLATION**)

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19. **INSTALL INSTRUMENT PANEL SUB REINFORCEMENT** (See **INSTALLATION**)
20. **CONNECT POWER STEERING ECU ASSEMBLY** (See **INSTALLATION**)
21. **INSTALL COMBINATION SWITCH ASSEMBLY** (See **INSTALLATION**)
22. **INSTALL STEERING COLUMN UPPER COVER** (See **INSTALLATION**)
23. **INSTALL STEERING COLUMN LOWER COVER** (See **INSTALLATION**)
24. **INSTALL STEERING WHEEL ASSEMBLY** (See **INSTALLATION**)
25. **INSTALL STEERING PAD** (See **INSTALLATION**)
26. **INSTALL LOWER INSTRUMENT PANEL** (See **INSTALLATION**)
27. **CONNECT ANTENNA CORD SUB-ASSEMBLY** (See **INSTALLATION**)
28. **CONNECT HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **INSTALLATION**)
29. **INSTALL NO. 1 RADIO BRACKET** (See **INSTALLATION**)
30. **INSTALL NO. 2 RADIO BRACKET** (See **INSTALLATION**)
31. **INSTALL INSTRUMENT PANEL BOX** (See **INSTALLATION**)
32. **INSTALL INSTRUMENT PANEL UNDER TRAY** (See **INSTALLATION**)
33. **INSTALL FRONT CONSOLE BOX** (See **INSTALLATION**)
34. **CONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
35. **CONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
36. **CONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
37. **INSTALL AIR CONDITIONING PANEL ASSEMBLY** (See **INSTALLATION**)
38. **INSTALL REAR CONSOLE BOX SUB-ASSEMBLY** (See **INSTALLATION**)
39. **INSTALL CONSOLE BOX CARPET** (See **INSTALLATION**)
40. **INSTALL REAR CONSOLE BOX COVER** (See **INSTALLATION**)
41. **INSTALL UPPER CONSOLE PANEL** (See **INSTALLATION**)
42. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **INSTALLATION**)
43. **INSTALL COWL SIDE TRIM BOARD RH** (See **INSTALLATION**)
44. **INSTALL COWL SIDE TRIM BOARD LH** (See **INSTALLATION**)
45. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
46. **INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
47. **INSTALL FRONT DOOR SCUFF PLATE RH** (See **INSTALLATION**)
48. **INSTALL FRONT DOOR SCUFF PLATE LH** (See **INSTALLATION**)
49. **INSTALL UPPER INSTRUMENT PANEL** (See **INSTALLATION**)
50. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See **INSTALLATION**)
51. **INSTALL INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **INSTALLATION**)

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52. **INSTALL INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **INSTALLATION**)
53. **INSTALL COMBINATION METER ASSEMBLY** (See **INSTALLATION**)
54. **INSTALL INSTRUMENT CLUSTER FINISH PANEL** (See **INSTALLATION**)
55. **INSTALL FRONT PILLAR GARNISH RH** (See **INSTALLATION**)
56. **INSTALL FRONT PILLAR GARNISH LH** (See **INSTALLATION**)
57. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **INSTALLATION**)
58. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **INSTALLATION**)
59. **CONNECT HEATER WATER INLET HOSE A**
    a. Install the heater water inlet hose onto the heater unit.

NOTE: **Perform the installation with the hose clip and mark at the correct angle.**

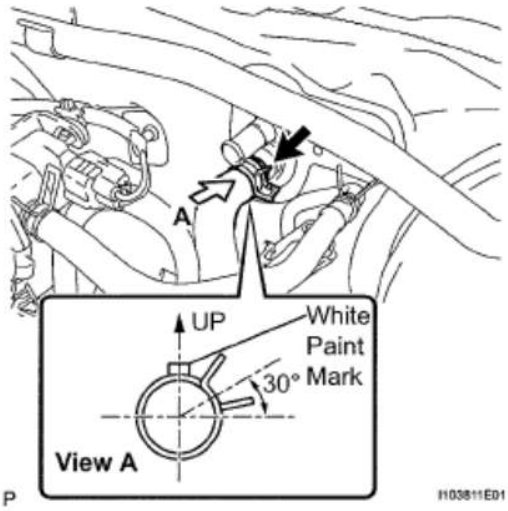


Fig. 167: Connecting Heater Water Inlet Hose A
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

60. **CONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)**
    a. Install the heater water outlet hose onto the heater unit.

NOTE: **Perform the installation with the hose clip and mark at the correct angle.**

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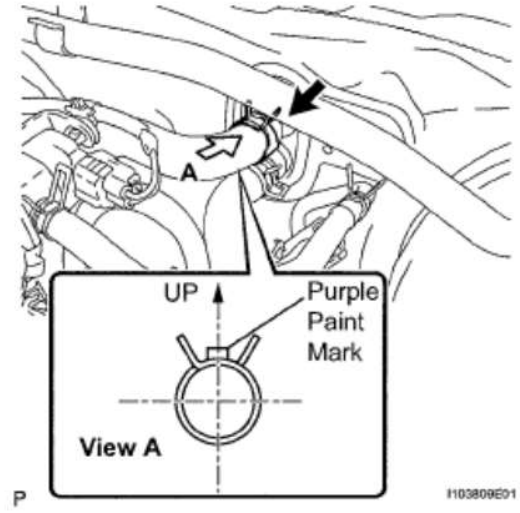


Fig. 168: Connecting Heater Water Outlet Hose A
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

61. **INSTALL LIQUID TUBE SUB-ASSEMBLY**
    a. Remove the vinyl tape from liquid tube and the connecting portion of the unit.
    b. Apply sufficient compressor oil (ND-OIL8) to a new O-ring and the connecting part of the liquid tube.

       Compressor oil:

       ND-OIL8 or equivalent

    c. Install the O-ring onto the liquid tube.
    d. Connect the liquid tube to the unit.
62. **INSTALL SUCTION TUBE SUB-ASSEMBLY**
    a. Remove the vinyl tape from the suction tube and the connecting part of the unit.
    b. Apply sufficient compressor oil (ND-OIL8) to a new O-ring and the connecting part of the suction tube.

       Compressor oil:

       ND-OIL8 or equivalent

    c. Install the O-ring onto the suction tube.
    d. Turn the hook connector in the direction indicated by the arrow in the illustration.

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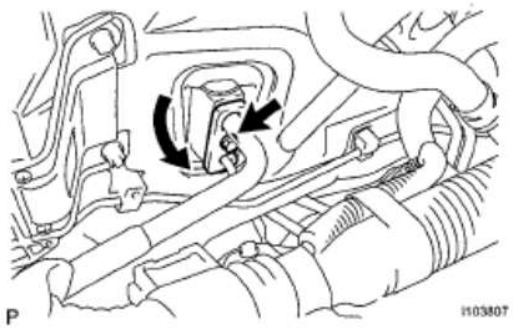


Fig. 169: Installing Suction Tube
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

e. Insert the pipe joints securely into the fitting holes and tighten the bolt.

Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

63. **INSTALL OUTER COWL TOP PANEL** (See **INSTALLATION**)
64. **INSTALL FRONT AIR SHUTTER SEAL RH** (See **INSTALLATION**)
65. **INSTALL FRONT WIPER MOTOR AND LINK** (See **INSTALLATION**)
66. **INSTALL COWL TOP VENTILATOR LOUVER LH** (See **INSTALLATION**)
67. **INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **INSTALLATION**)
68. **INSTALL HOOD TO COWL TOP SEAL** (See **INSTALLATION**)
69. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **INSTALLATION**)
70. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **INSTALLATION**)
71. **INSTALL FRONT WIPER ARM HEAD CAP** (See **INSTALLATION**)
72. **ADD ENGINE COOLANT** (See **REPLACEMENT**)
73. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

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

74. **INSPECT SRS WARNING LIGHT**

    (See **DIAGNOSIS SYSTEM**)

75. **CHARGE REFRIGERANT** (See **REFRIGERANT LINE**)
76. **WARM UP ENGINE** (See **REPLACEMENT**)
77. **INSPECT FOR COOLANT LEAK** (See **ON-VEHICLE INSPECTION**)
78. **INSPECT FOR REFRIGERANT LEAK** (See **REPLACEMENT**)
79. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**

BLOWER UNIT

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COMPONENTS

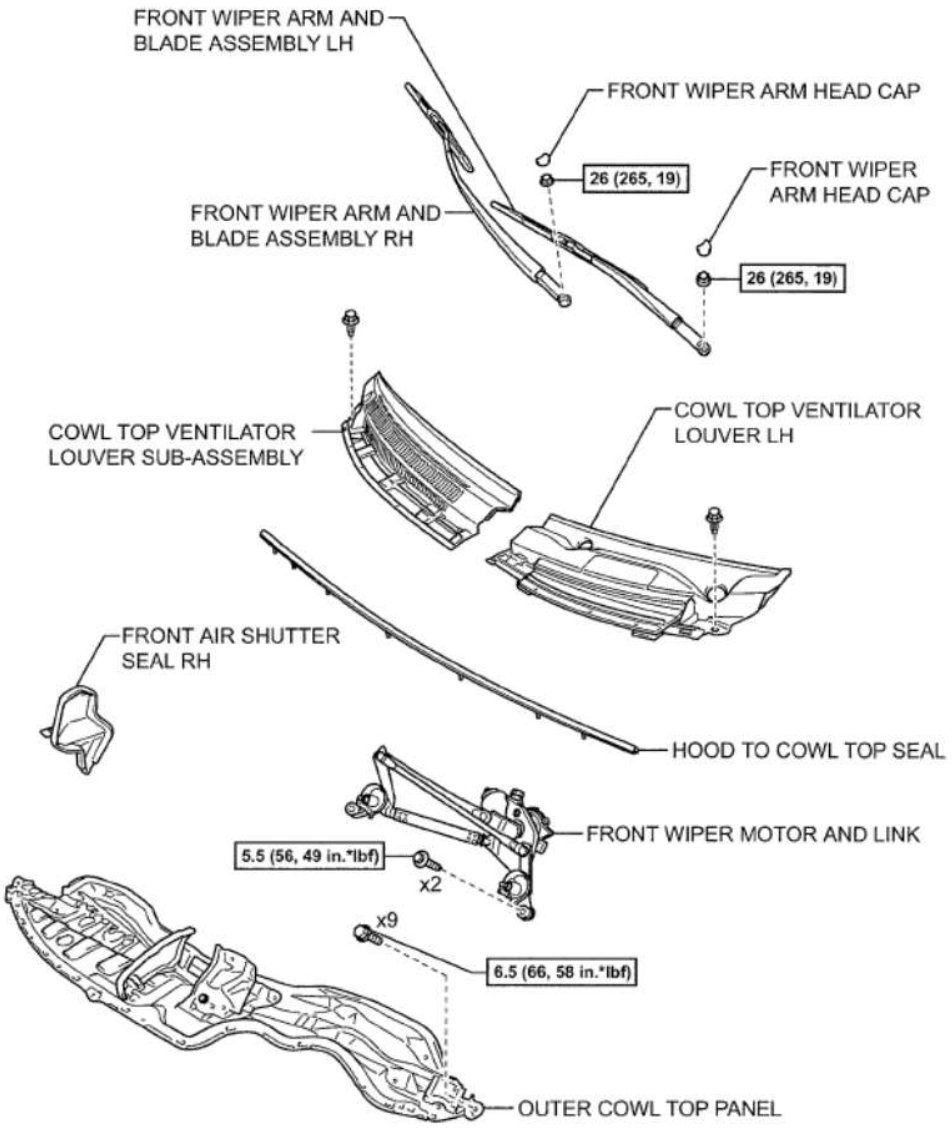


Fig. 170: Identifying Blower Unit Components With Torque Specifications (1 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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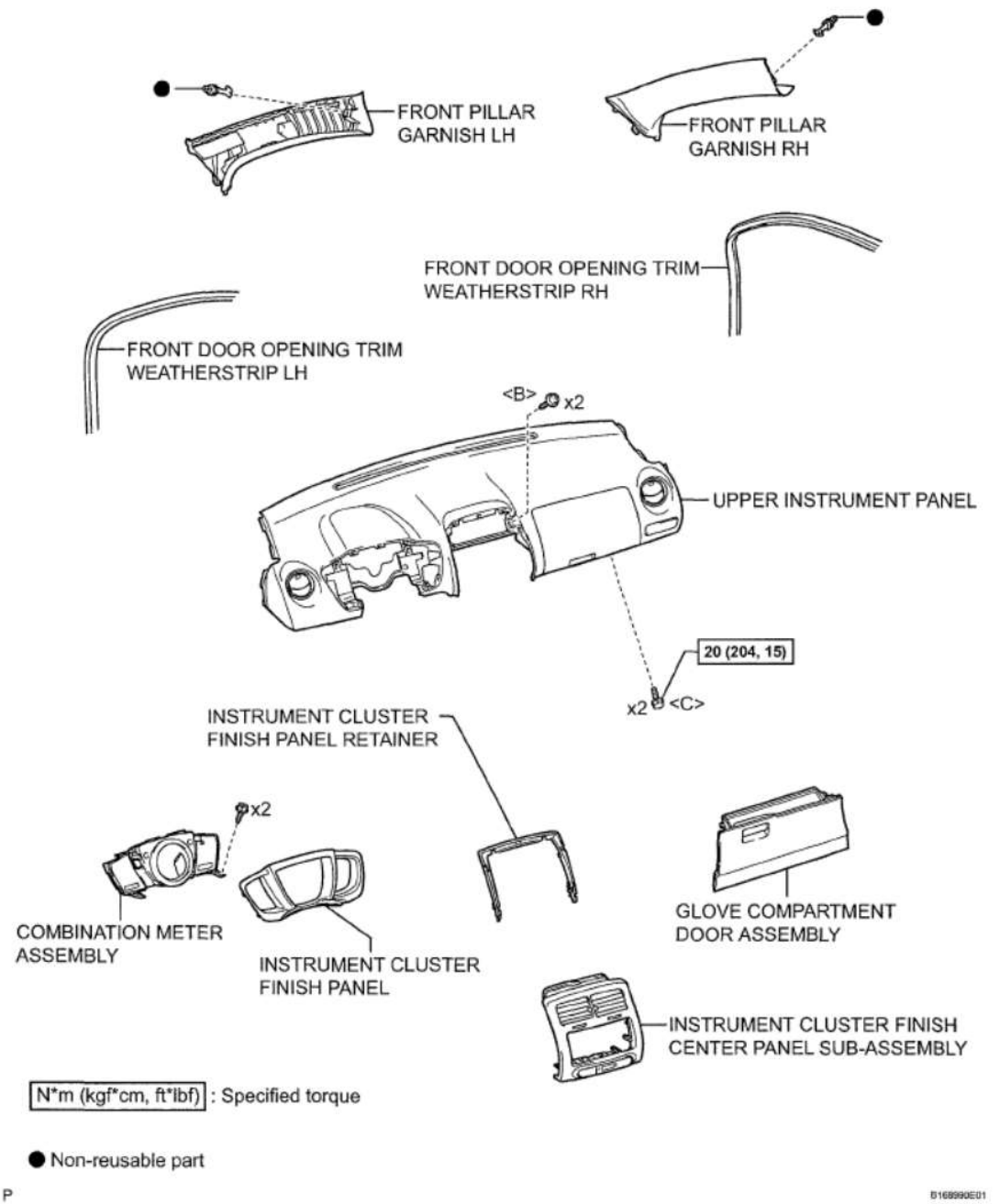


Fig. 171: Identifying Blower Unit Components With Torque Specification (2 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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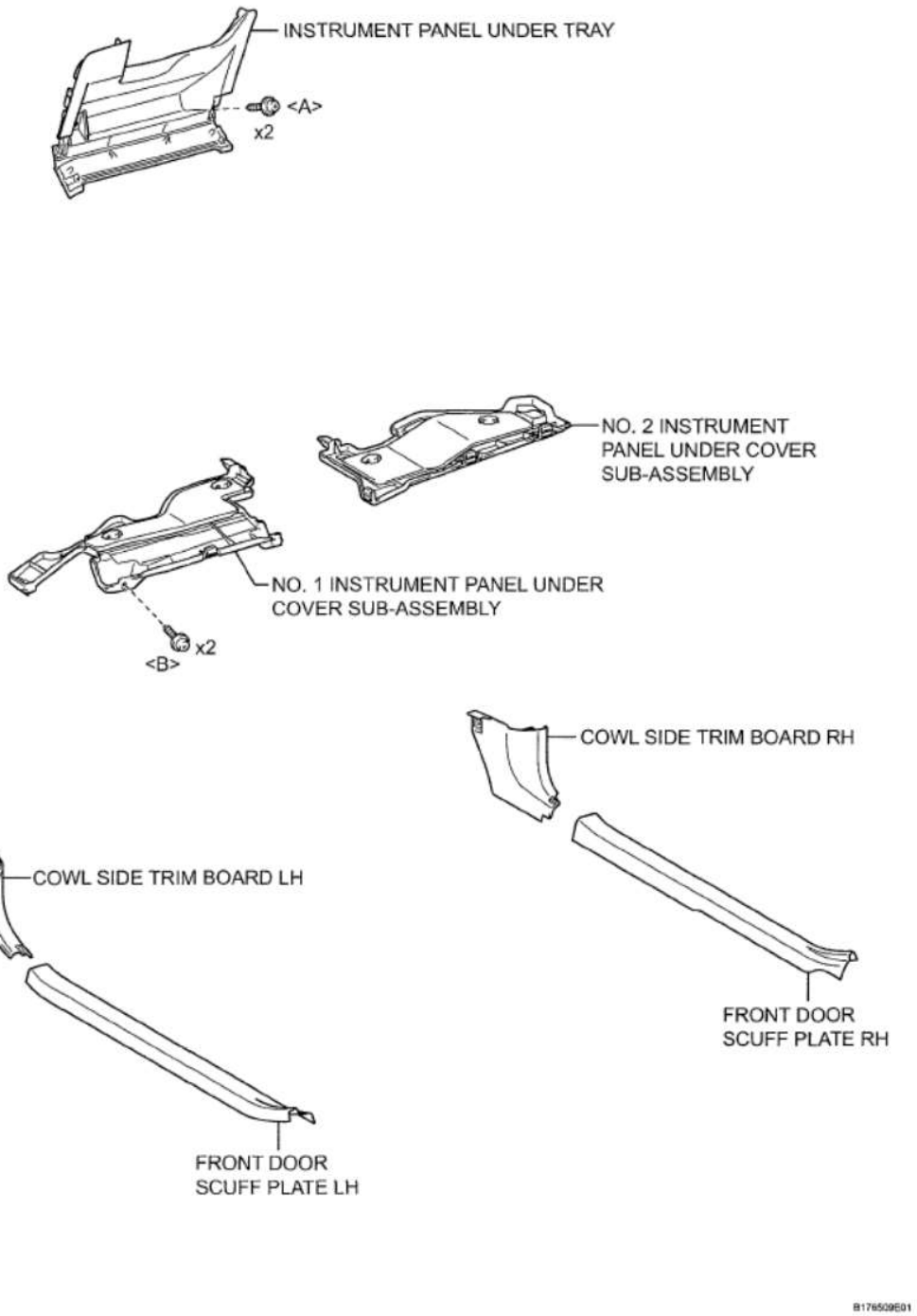


Fig. 172: Identifying Blower Unit Components (3 Of 11)
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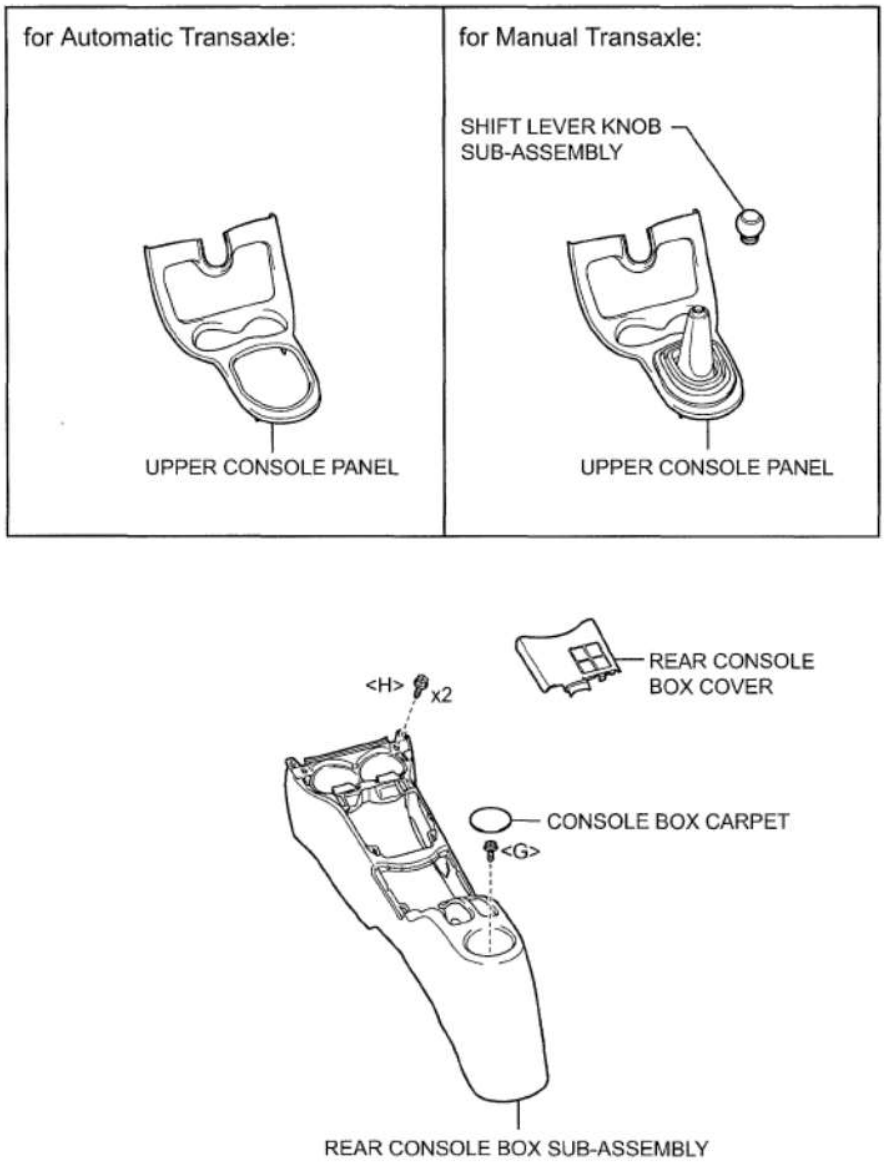


Fig. 173: Identifying Blower Unit Components (4 Of 11)
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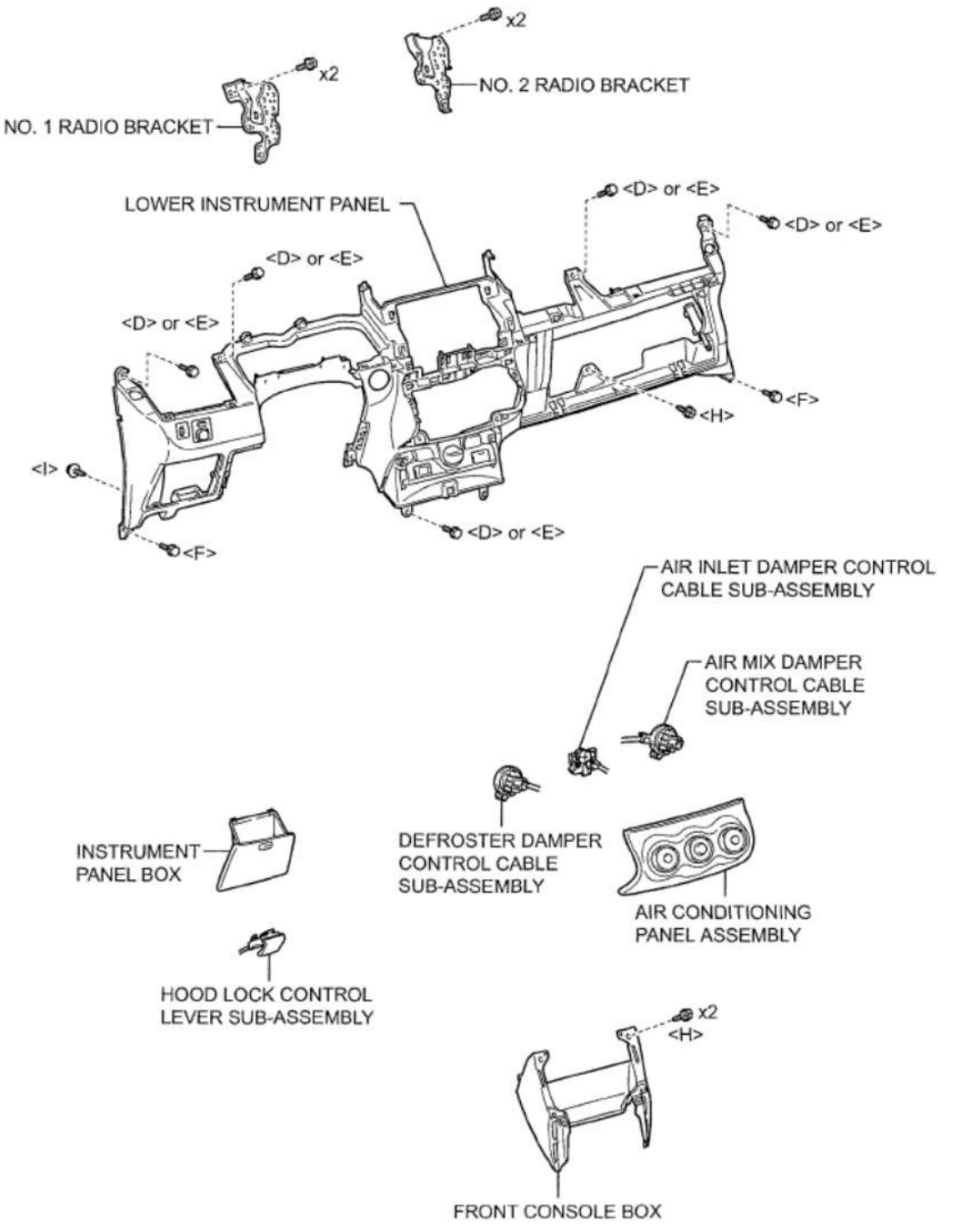


Fig. 174: Identifying Blower Unit Components (5 Of 11)
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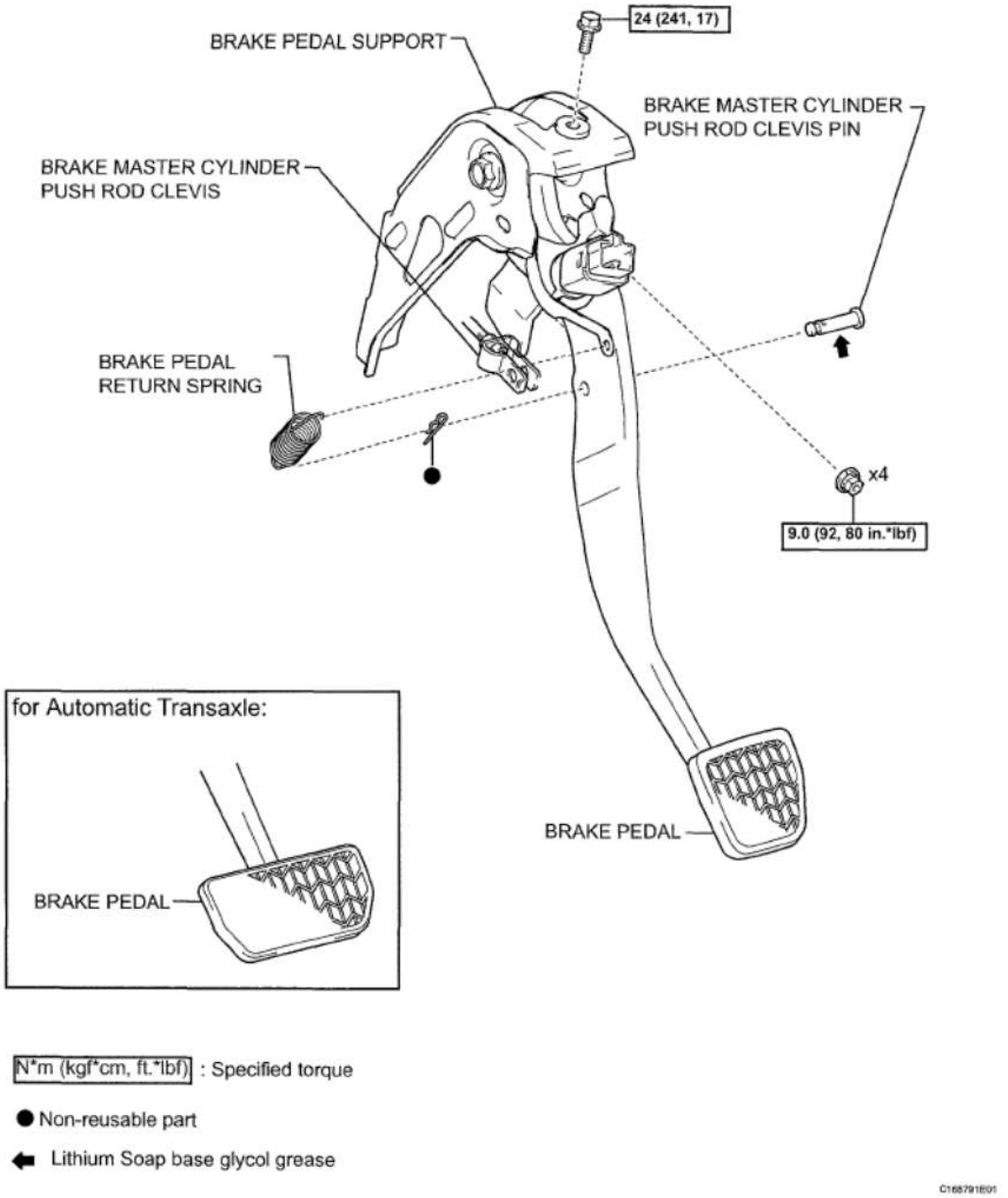


Fig. 175: Identifying Blower Unit Components With Torque Specifications (6 Of 11)
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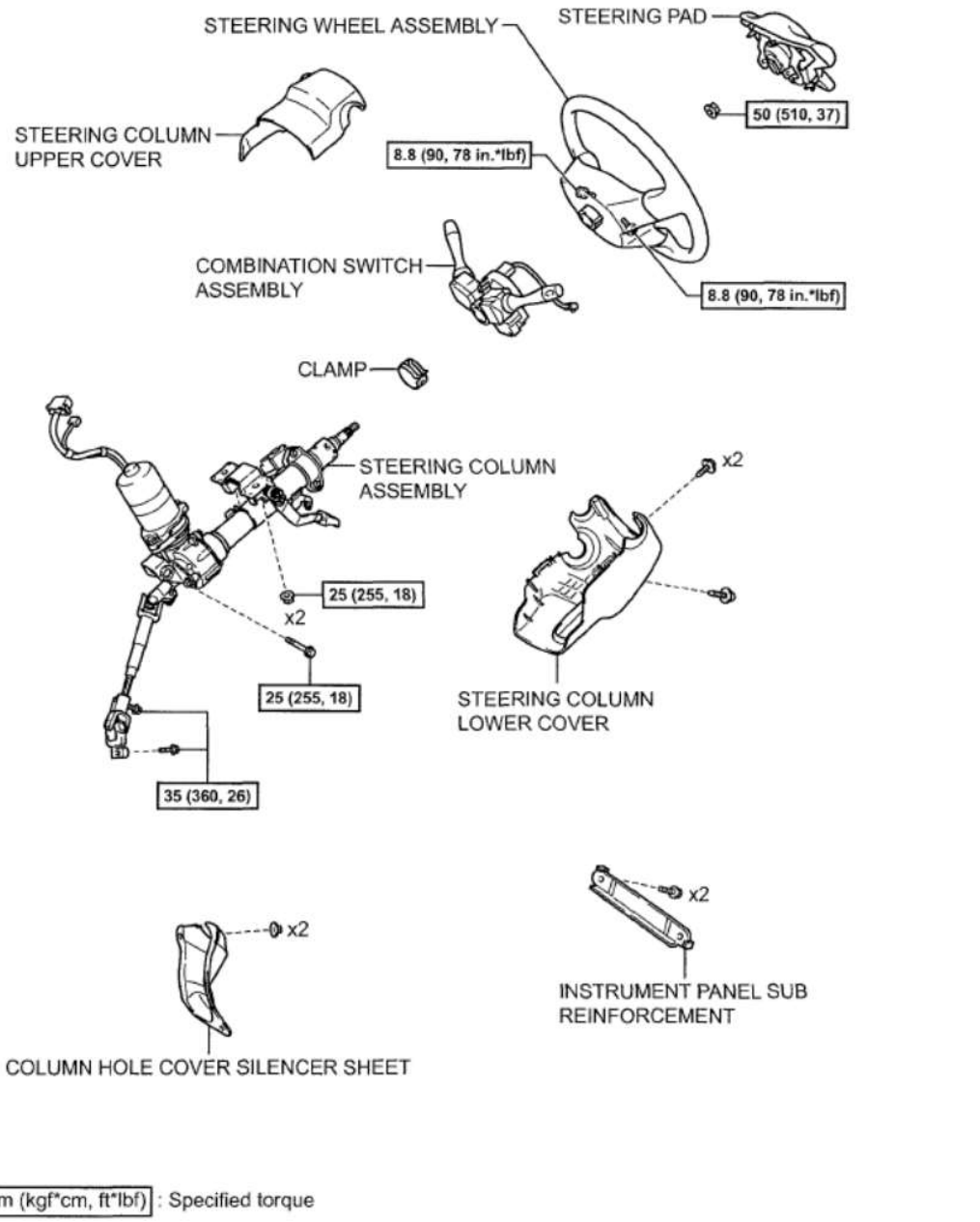


Fig. 176: Identifying Blower Unit Components With Torque Specifications (7 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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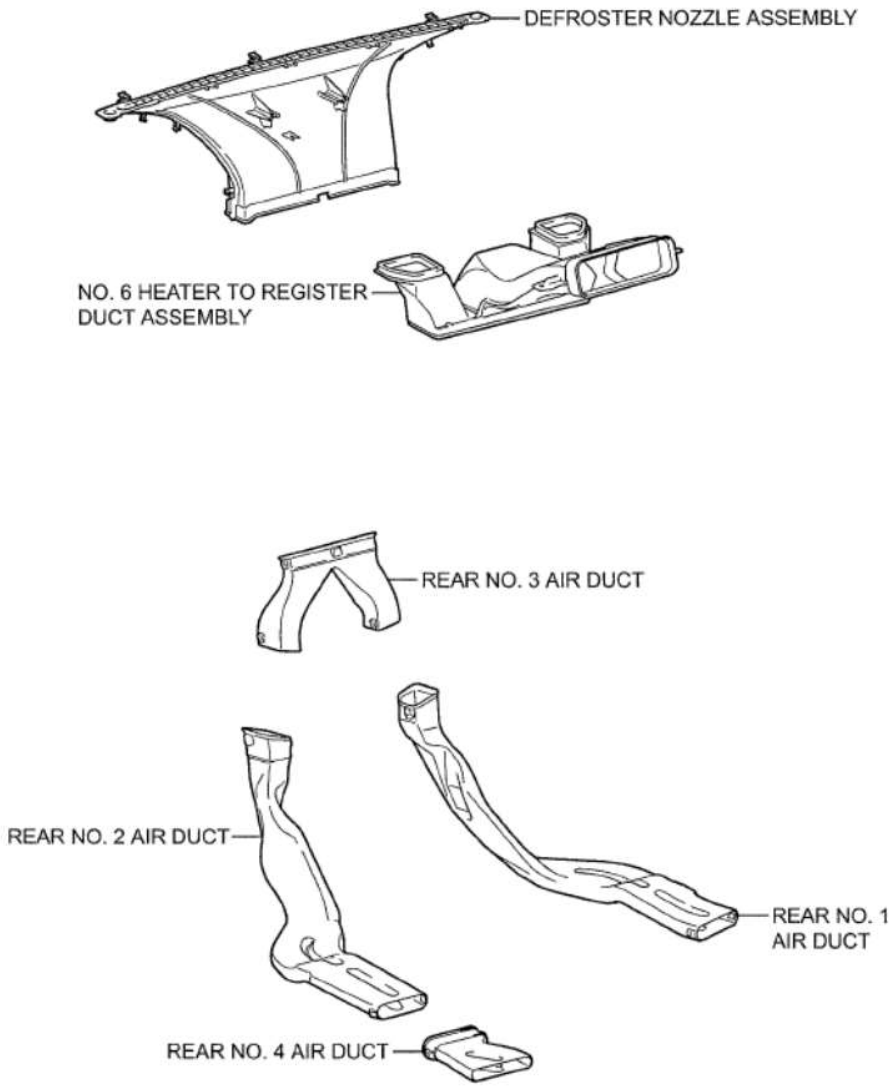


Fig. 177: Identifying Blower Unit Components (8 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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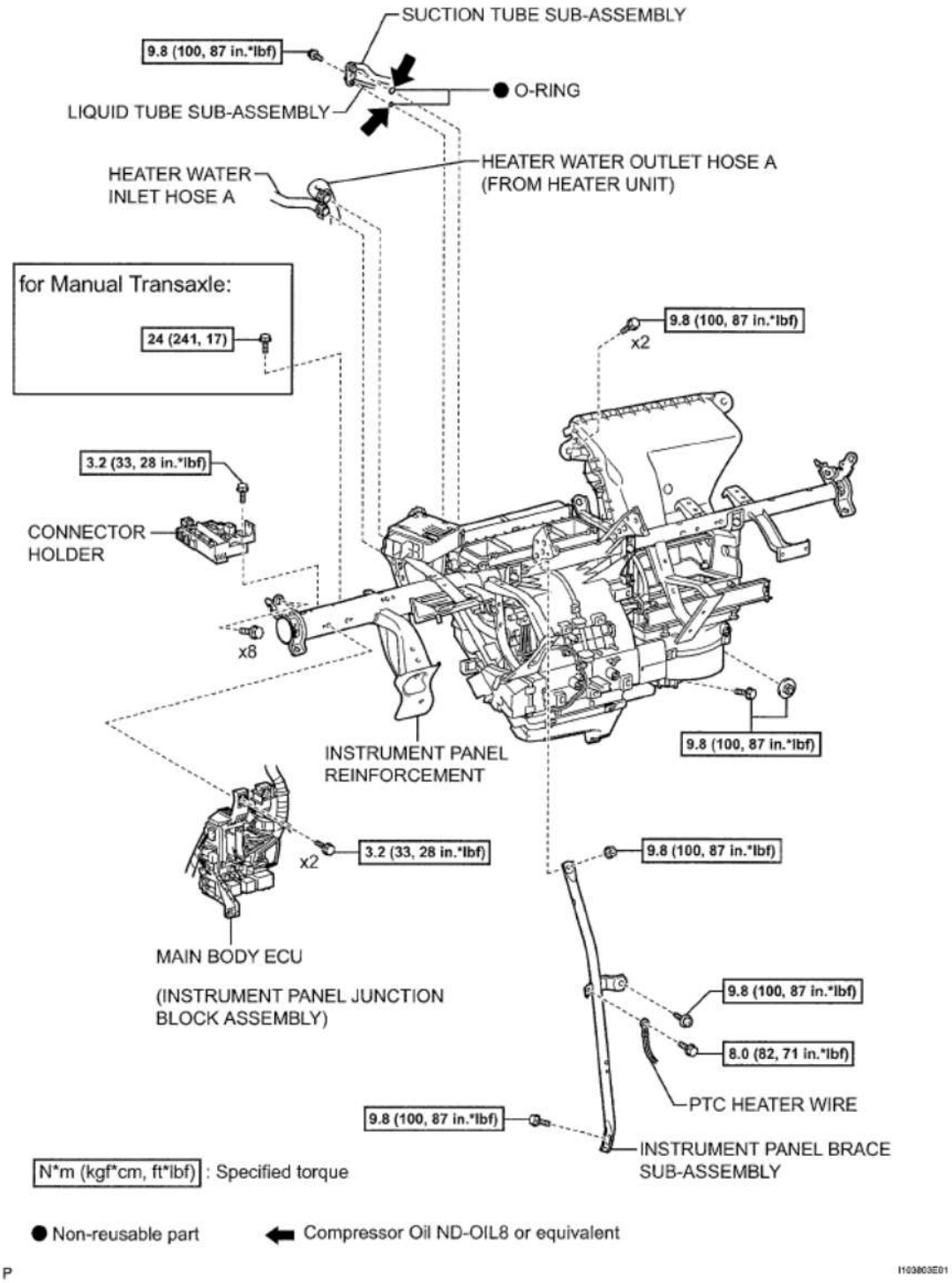
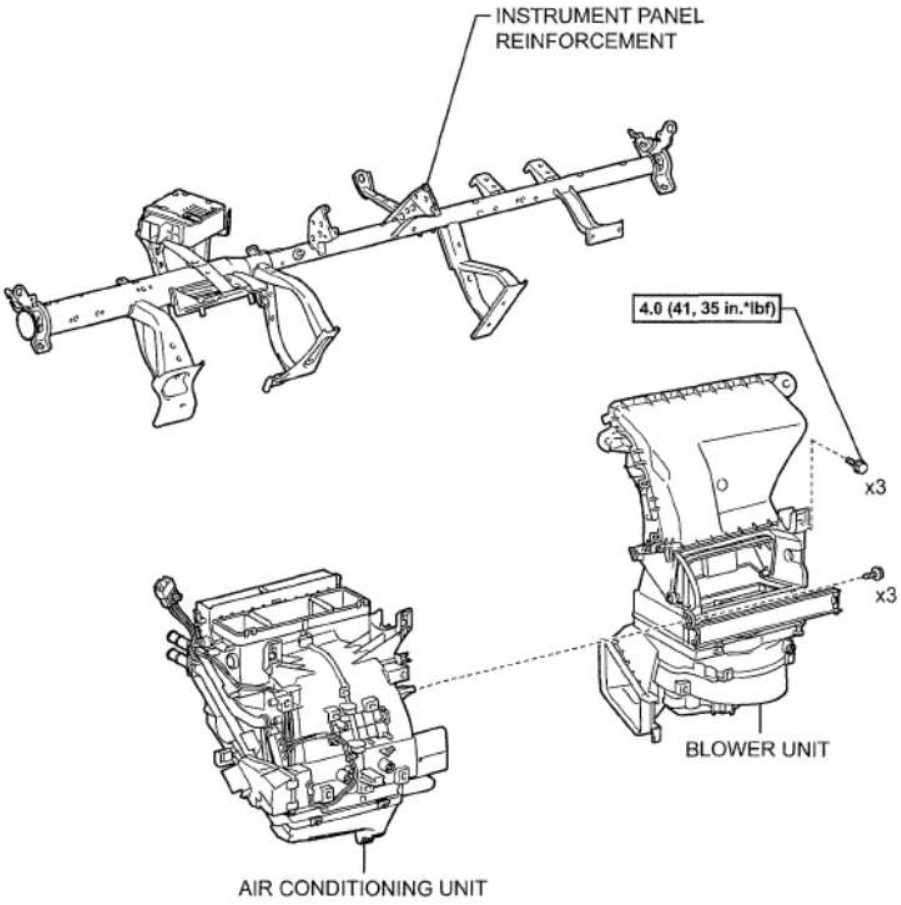


Fig. 178: Identifying Blower Unit Components With Torque Specifications (9 Of 11)
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N*m (kgf*cm, ft*lbf) : Specified torque

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Fig. 179: Identifying Blower Unit Components With Torque Specification (10 Of 11)
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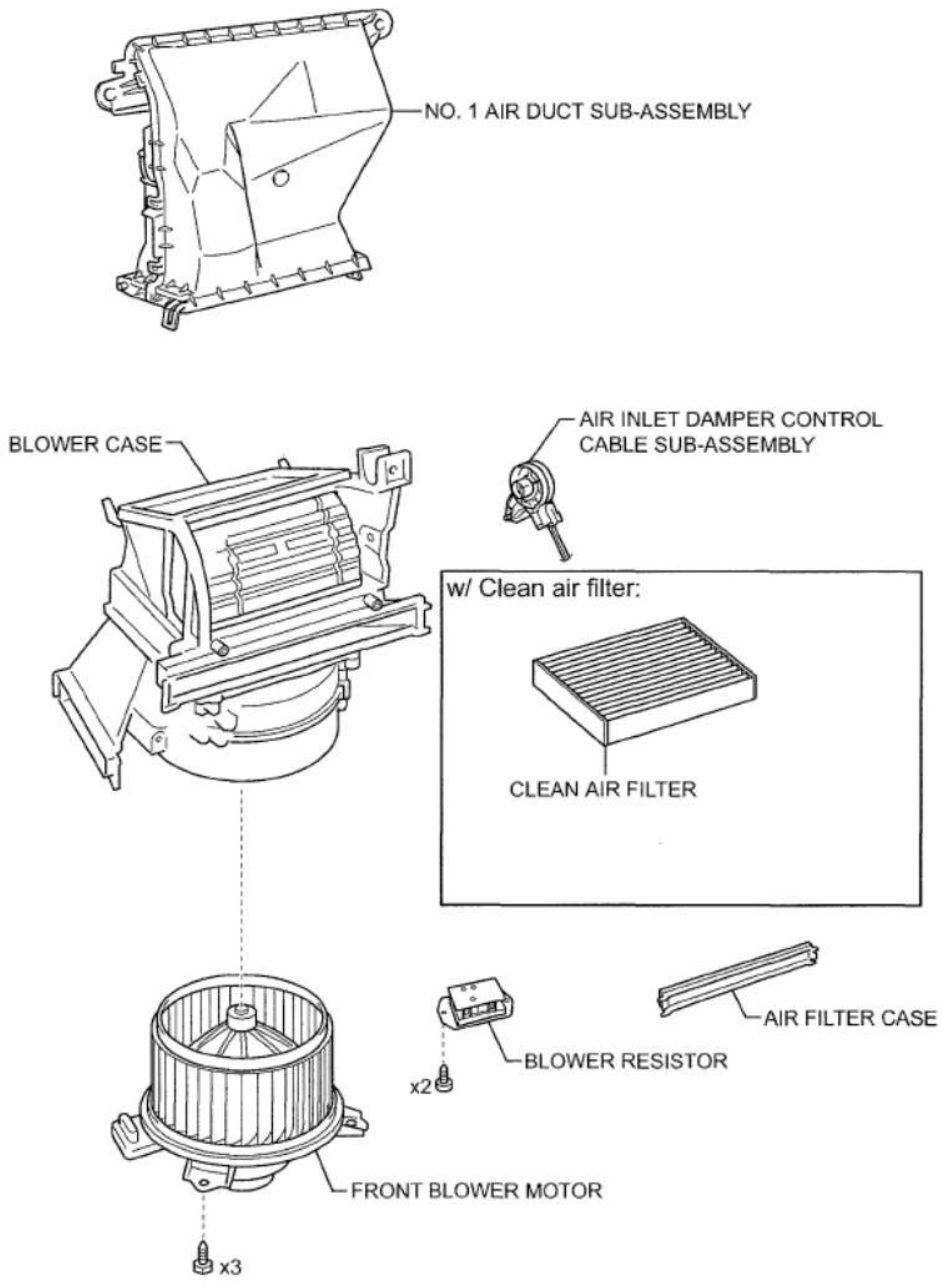


Fig. 180: Identifying Blower Unit Components (11 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

CAUTION: Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing

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(See PRECAUTION).

HINT:

Use the same procedure for both the RH and LH sides.

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

   Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

2. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM** (See **REPLACEMENT**)
3. **DRAIN ENGINE COOLANT** (See **REPLACEMENT**)
4. **REMOVE FRONT WIPER ARM HEAD CAP** (See **REMOVAL**)
5. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **REMOVAL**)
6. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **REMOVAL**)
7. **REMOVE HOOD TO COWL TOP SEAL** (See **REMOVAL**)
8. **REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **REMOVAL**)
9. **REMOVE COWL TOP VENTILATOR LOUVER LH** (See **REMOVAL**)
10. **REMOVE FRONT WIPER MOTOR AND LINK** (See **REMOVAL**)
11. **REMOVE FRONT AIR SHUTTER SEAL RH** (See **REMOVAL**)
12. **REMOVE OUTER COWL TOP PANEL** (See **REMOVAL**)
13. **DISCONNECT SUCTION TUBE SUB-ASSEMBLY** (See **REMOVAL**)
14. **DISCONNECT LIQUID TUBE SUB-ASSEMBLY** (See **REMOVAL**)
15. **DISCONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)** (See **REMOVAL**)
16. **DISCONNECT HEATER WATER INLET HOSE A** (See **REMOVAL**)
17. **TABLE OF BOLTS, SCREWS AND NUTS** (See **REMOVAL**)
18. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **REMOVAL**)
19. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **REMOVAL**)
20. **REMOVE FRONT PILLAR GARNISH RH** (See **REMOVAL**)
21. **REMOVE FRONT PILLAR GARNISH LH** (See **REMOVAL**)
22. **REMOVE INSTRUMENT CLUSTER FINISH PANEL** (See **REMOVAL**)
23. **REMOVE COMBINATION METER ASSEMBLY** (See **REMOVAL**)
24. **REMOVE INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **REMOVAL**)
25. **REMOVE INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **REMOVAL**)
26. **REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY** (See **REMOVAL**)
27. **REMOVE UPPER INSTRUMENT PANEL** (See **REMOVAL**)
28. **REMOVE FRONT DOOR SCUFF PLATE RH** (See **REMOVAL**)

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29. **REMOVE FRONT DOOR SCUFF PLATE LH** (See **REMOVAL**)
30. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
31. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
32. **REMOVE COWL SIDE TRIM BOARD RH** (See **REMOVAL**)
33. **REMOVE COWL SIDE TRIM BOARD LH** (See **REMOVAL**)
34. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **REMOVAL**)
35. **REMOVE UPPER CONSOLE PANEL** (See **REMOVAL**)
36. **REMOVE REAR CONSOLE BOX COVER** (See **REMOVAL**)
37. **REMOVE CONSOLE BOX CARPET** (See **REMOVAL**)
38. **REMOVE REAR CONSOLE BOX SUB-ASSEMBLY** (See **REMOVAL**)
39. **SEPARATE AIR CONDITIONING PANEL ASSEMBLY** (See **REMOVAL**)
40. **DISCONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **REMOVAL**)
41. **DISCONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
42. **DISCONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
43. **REMOVE FRONT CONSOLE BOX** (See **REMOVAL**)
44. **REMOVE INSTRUMENT PANEL UNDER TRAY** (See **REMOVAL**)
45. **REMOVE INSTRUMENT PANEL BOX** (See **REMOVAL**)
46. **REMOVE NO. 2 RADIO BRACKET** (See **REMOVAL**)
47. **REMOVE NO. 1 RADIO BRACKET** (See **REMOVAL**)
48. **SEPARATE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **REMOVAL**)
49. **SEPARATE ANTENNA CORD SUB-ASSEMBLY** (See **REMOVAL**)
50. **REMOVE LOWER INSTRUMENT PANEL** (See **REMOVAL**)
51. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**
52. **REMOVE STEERING PAD** (See **REMOVAL**)
53. **REMOVE STEERING WHEEL ASSEMBLY** (See **REMOVAL**)
54. **REMOVE STEERING COLUMN LOWER COVER** (See **REMOVAL**)
55. **REMOVE STEERING COLUMN UPPER COVER** (See **REMOVAL**)
56. **REMOVE COMBINATION SWITCH ASSEMBLY** (See **REMOVAL**)
57. **DISCONNECT POWER STEERING ECU** (See **REMOVAL**)
58. **REMOVE INSTRUMENT PANEL SUB REINFORCEMENT** (See **REMOVAL**)
59. **REMOVE COLUMN HOLE COVER SILENCER SHEET** (See **REMOVAL**)
60. **SEPARATE STEERING SLIDING YOKE SUB-ASSEMBLY** (See **REMOVAL**)
61. **REMOVE BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **REMOVAL**)
62. **REMOVE BRAKE PEDAL SUPPORT** (See **REMOVAL**)
63. **REMOVE STEERING COLUMN ASSEMBLY** (See **REMOVAL**)

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64. **REMOVE NO. 6 HEATER TO REGISTER DUCT ASSEMBLY** (See **REMOVAL**)
65. **REMOVE DEFROSTER NOZZLE ASSEMBLY** (See **REMOVAL**)
66. **REMOVE REAR NO. 1 AIR DUCT** (See **REMOVAL**)
67. **REMOVE REAR NO. 2 AIR DUCT** (See **REMOVAL**)
68. **REMOVE INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **REMOVAL**)
69. **REMOVE REAR NO. 3 AIR DUCT** (See **REMOVAL**)
70. **DISCONNECT DRAIN COOLER HOSE** (See **REMOVAL**)
71. **SEPARATE MAIN BODY ECU** (See **REMOVAL**)
72. **SEPARATE INSTRUMENT PANEL WIRE** (See **REMOVAL**)
73. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)** (See **REMOVAL**)
74. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)** (See **REMOVAL**)
75. **REMOVE BLOWER UNIT**
    a. Remove the 3 screws and the blower unit.

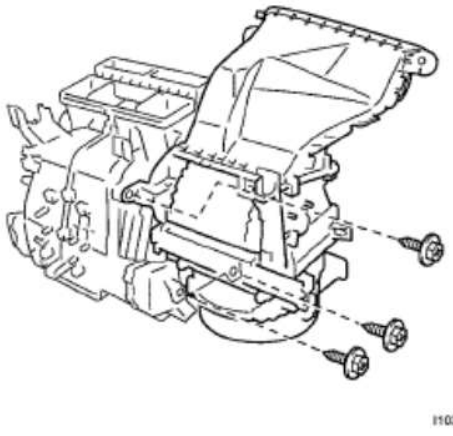


Fig. 181: Identifying Blower Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. **REMOVE NO. 1 AIR DUCT SUB-ASSEMBLY**
    a. Disengage the 2 claws and remove the air duct.

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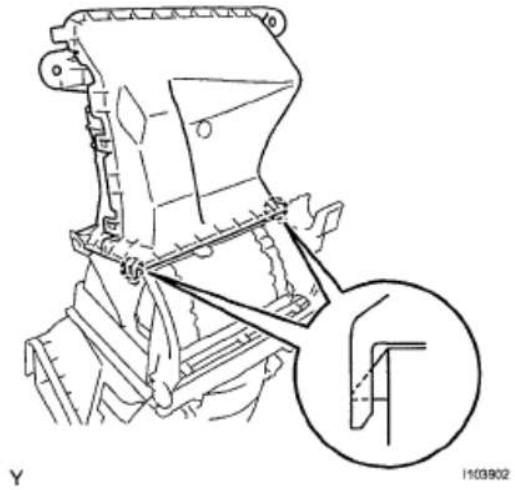


Fig. 182: Identifying Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **REMOVE AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Disengage the 3 claws and remove the air inlet damper control cable.

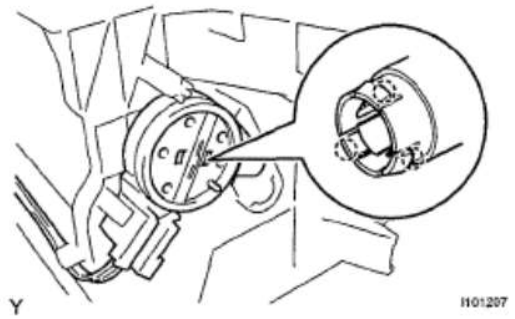
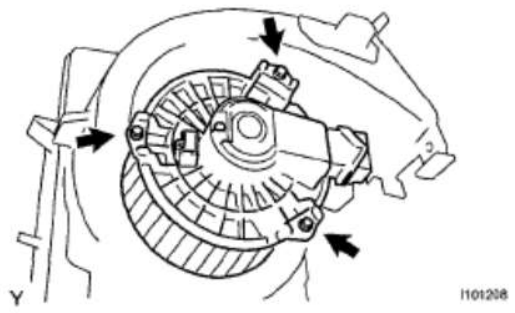


Fig. 183: Identifying Air Inlet Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **REMOVE FRONT BLOWER MOTOR**
   a. Remove the 3 screws and the blower motor.



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Fig. 184: Locating Front Blower Motor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **REMOVE BLOWER RESISTOR**
   a. Remove the 2 screws and the blower resistor.

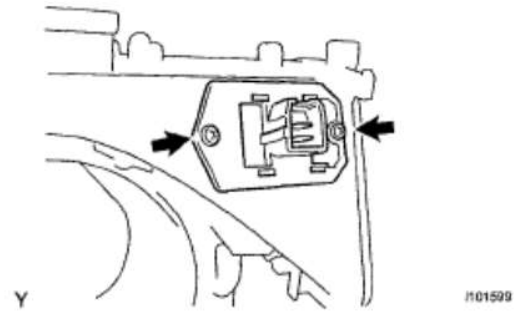


Fig. 185: Locating Blower Resistor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **REMOVE AIR FILTER CASE**
   a. Pinch portion A to disengage the claw and remove the air filter case.



Fig. 186: Disengaging Claw
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **REMOVE CLEAN AIR FILTER (w/ Clean Air Filter)**
   a. Remove the clean air filter from the blower unit.

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Fig. 187: Removing Clean Air Filter From Blower Unit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. **INSTALL CLEAN AIR FILTER (w/ Clean Air Filter)**
   a. Install the clean air filter into the blower unit.

NOTE: Install the clean air filter with its UP marks oriented in the correct direction.



Fig. 188: Installing Clean Air Filter Into Blower Unit
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL AIR FILTER CASE**
   a. Insert the rib of the air filter case into the blower unit.

NOTE: Install the air filter case with its UP mark oriented in the correct direction.

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b. Pinch portion A to engage the claw and install the air filter case.

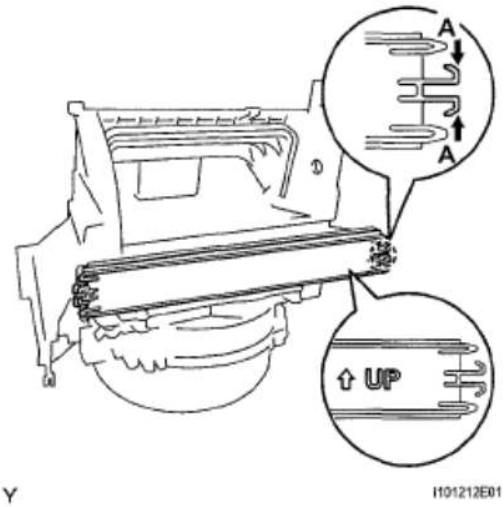


Fig. 189: Engaging Claw
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSTALL BLOWER RESISTOR**
   a. Install the blower resistor with the 2 screws.

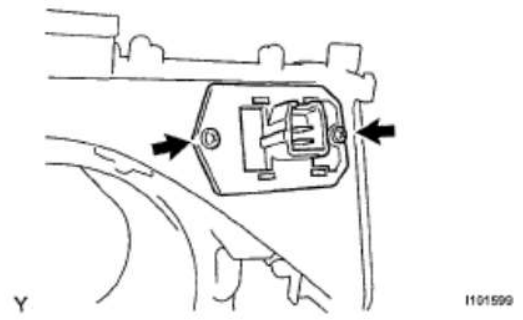


Fig. 190: Locating Blower Resistor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL FRONT BLOWER MOTOR**
   a. Install the blower motor with the 3 screws.

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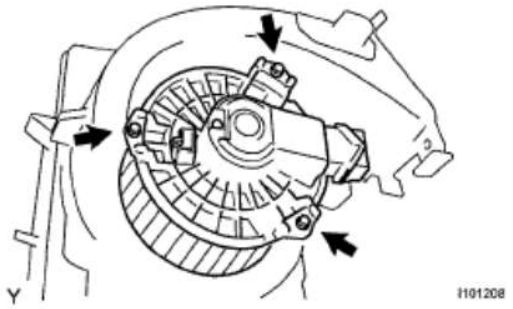


Fig. 191: Locating Front Blower Motor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **INSTALL AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Engage the 3 claws and install the air inlet damper control cable.

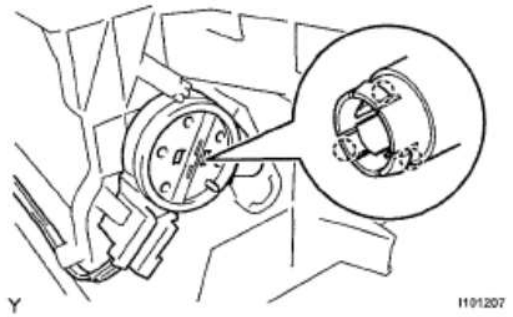
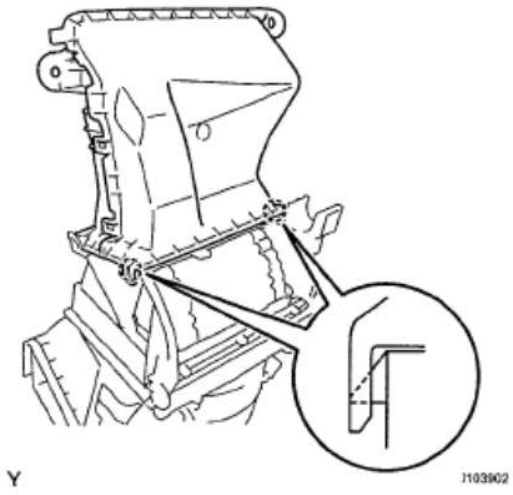


Fig. 192: Identifying Air Inlet Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. **INSTALL NO. 1 AIR DUCT SUB-ASSEMBLY**
   a. Engage the 2 claws and install the air duct.



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Fig. 193: Identifying Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL BLOWER UNIT**
   a. Install the blower unit with the 3 screws.

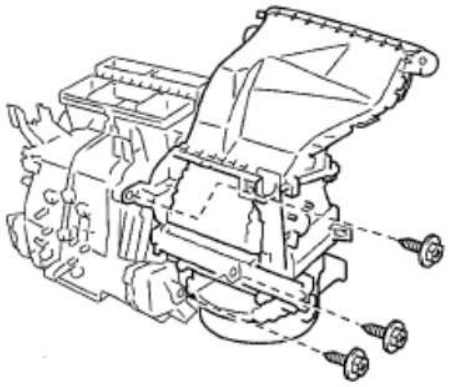


Fig. 194: Identifying Blower Unit Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)** (See **INSTALLATION**)
3. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)** (See **INSTALLATION**)
4. **INSTALL INSTRUMENT PANEL WIRE** (See **INSTALLATION**)
5. **INSTALL MAIN BODY ECU** (See **INSTALLATION**)
6. **CONNECT DRAIN COOLER HOSE** (See **INSTALLATION**)
7. **INSTALL REAR NO. 3 AIR DUCT** (See **INSTALLATION**)
8. **INSTALL INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **INSTALLATION**)
9. **INSTALL REAR NO. 2 AIR DUCT** (See **INSTALLATION**)
10. **INSTALL REAR NO. 1 AIR DUCT** (See **INSTALLATION**)
11. **INSTALL DEFROSTER NOZZLE ASSEMBLY** (See **INSTALLATION**)
12. **INSTALL NO. 6 HEATER TO REGISTER DUCT ASSEMBLY** (See **INSTALLATION**)
13. **INSTALL STEERING COLUMN ASSEMBLY** (See **INSTALLATION**)
14. **INSTALL BRAKE PEDAL SUPPORT** (See **INSTALLATION**)
15. **INSTALL BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **INSTALLATION**)
16. **INSTALL STEERING SLIDING YOKE SUB-ASSEMBLY** (See **INSTALLATION**)
17. **INSTALL COLUMN HOLE COVER SILENCER SHEET** (See **INSTALLATION**)

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18. **INSTALL INSTRUMENT PANEL SUB REINFORCEMENT** (See **INSTALLATION**)
19. **CONNECT POWER STEERING ECU ASSEMBLY** (See **INSTALLATION**)
20. **INSTALL COMBINATION SWITCH ASSEMBLY** (See **INSTALLATION**)
21. **INSTALL STEERING COLUMN UPPER COVER** (See **INSTALLATION**)
22. **INSTALL STEERING COLUMN LOWER COVER** (See **INSTALLATION**)
23. **INSTALL STEERING WHEEL ASSEMBLY** (See **INSTALLATION**)
24. **INSTALL STEERING PAD** (See **INSTALLATION**)
25. **INSTALL LOWER INSTRUMENT PANEL** (See **INSTALLATION**)
26. **CONNECT ANTENNA CORD SUB-ASSEMBLY** (See **INSTALLATION**)
27. **CONNECT HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **INSTALLATION**)
28. **INSTALL NO. 1 RADIO BRACKET** (See **INSTALLATION**)
29. **INSTALL NO. 2 RADIO BRACKET** (See **INSTALLATION**)
30. **INSTALL INSTRUMENT PANEL BOX** (See **INSTALLATION**)
31. **INSTALL INSTRUMENT PANEL UNDER TRAY** (See **INSTALLATION**)
32. **INSTALL FRONT CONSOLE BOX** (See **INSTALLATION**)
33. **CONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
34. **CONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
35. **CONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
36. **INSTALL AIR CONDITIONING PANEL ASSEMBLY** (See **INSTALLATION**)
37. **INSTALL REAR CONSOLE BOX SUB-ASSEMBLY** (See **INSTALLATION**)
38. **INSTALL CONSOLE BOX CARPET** (See **INSTALLATION**)
39. **INSTALL REAR CONSOLE BOX COVER** (See **INSTALLATION**)
40. **INSTALL UPPER CONSOLE PANEL** (See **INSTALLATION**)
41. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **INSTALLATION**)
42. **INSTALL COWL SIDE TRIM BOARD RH** (See **INSTALLATION**)
43. **INSTALL COWL SIDE TRIM BOARD LH** (See **INSTALLATION**)
44. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
45. **INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
46. **INSTALL FRONT DOOR SCUFF PLATE RH** (See **INSTALLATION**)
47. **INSTALL FRONT DOOR SCUFF PLATE LH** (See **INSTALLATION**)
48. **INSTALL UPPER INSTRUMENT PANEL** (See **INSTALLATION**)
49. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See **INSTALLATION**)
50. **INSTALL INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **INSTALLATION**)

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51. **INSTALL INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **INSTALLATION**)
52. **INSTALL COMBINATION METER ASSEMBLY** (See **INSTALLATION**)
53. **INSTALL INSTRUMENT CLUSTER FINISH PANEL** (See **INSTALLATION**)
54. **INSTALL FRONT PILLAR GARNISH RH** (See **INSTALLATION**)
55. **INSTALL FRONT PILLAR GARNISH LH** (See **INSTALLATION**)
56. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **INSTALLATION**)
57. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **INSTALLATION**)
58. **CONNECT HEATER WATER INLET HOSE A** (See **INSTALLATION**)
59. **CONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)** (See **INSTALLATION**)
60. **INSTALL LIQUID TUBE SUB-ASSEMBLY** (See **INSTALLATION**)
61. **INSTALL SUCTION TUBE SUB-ASSEMBLY** (See **INSTALLATION**)
62. **INSTALL OUTER COWL TOP PANEL** (See **INSTALLATION**)
63. **INSTALL FRONT AIR SHUTTER SEAL RH** (See **INSTALLATION**)
64. **INSTALL FRONT WIPER MOTOR AND LINK** (See **INSTALLATION**)
65. **INSTALL COWL TOP VENTILATOR LOUVER LH** (See **INSTALLATION**)
66. **INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **INSTALLATION**)
67. **INSTALL HOOD TO COWL TOP SEAL** (See **INSTALLATION**)
68. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **INSTALLATION**)
69. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **INSTALLATION**)
70. **INSTALL FRONT WIPER ARM HEAD CAP** (See **INSTALLATION**)
71. **ADD ENGINE COOLANT** (See **REPLACEMENT**)
72. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

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

73. **INSPECT SRS WARNING LIGHT**

    (See **DIAGNOSIS SYSTEM**)

74. **CHARGE REFRIGERANT** (See **REFRIGERANT LINE**)
75. **WARM UP ENGINE** (See **REPLACEMENT**)
76. **INSPECT FOR COOLANT LEAK** (See **ON-VEHICLE INSPECTION**)
77. **INSPECT FOR REFRIGERANT LEAK** (See **REPLACEMENT**)
78. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**

FRONT BLOWER MOTOR

COMPONENTS

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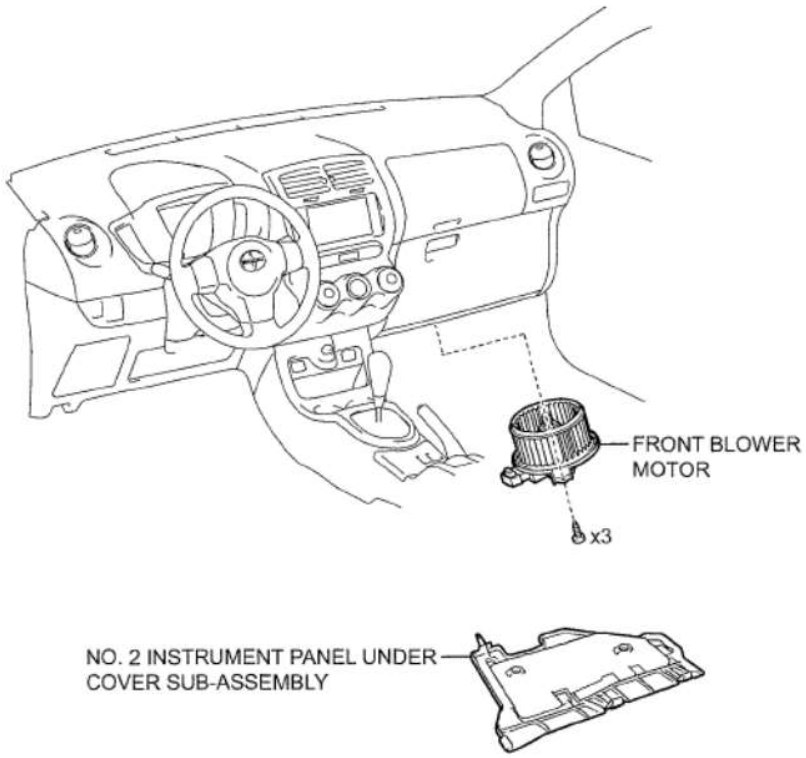


Fig. 195: Identifying Front Blower Motor Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
2. **REMOVE FRONT BLOWER MOTOR**
   a. Disconnect the connector and clamp.
   b. Remove the 3 screws and the blower motor.

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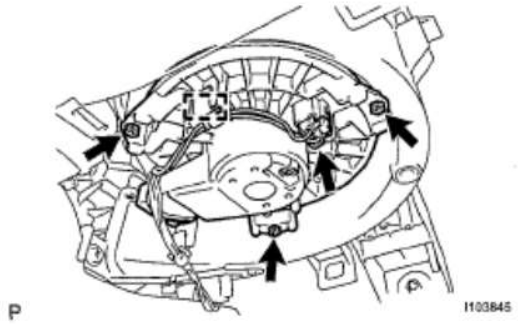


Fig. 196: Locating Front Blower Motor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT FRONT BLOWER MOTOR**
   a. Connect the positive (+) lead from the battery to terminal 2 and negative (-) to terminal 1, and check that the motor operates.

      OK:

      The blower motor operates smoothly.

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

Component without harness connected:
(Blower Motor)

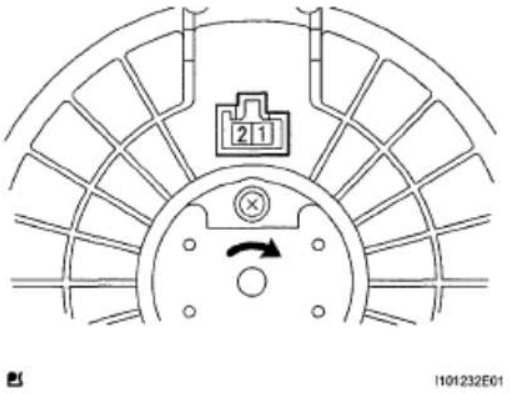


Fig. 197: Inspecting Front Blower Motor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL FRONT BLOWER MOTOR**

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a. Install the blower motor with the 3 screws.

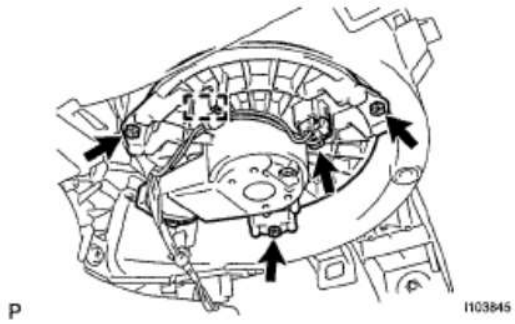


Fig. 198: Locating Front Blower Motor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Connect the connector and clamp.

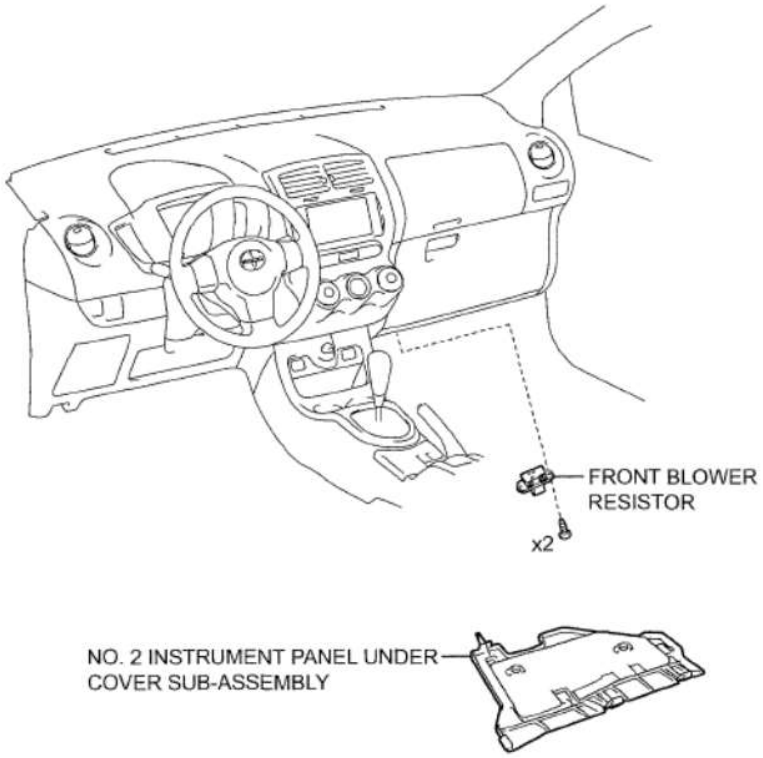
2. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)

FRONT BLOWER RESISTOR

COMPONENTS

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P I103844E01

Fig. 199: Identifying Front Blower Resistor Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
2. **REMOVE FRONT BLOWER RESISTOR**
   a. Pull back the floor carpet.

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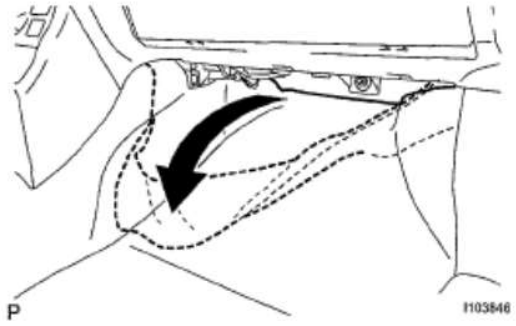


Fig. 200: Pulling Back Floor Carpet
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the connector.
c. Remove the 2 screws and the blower resistor.

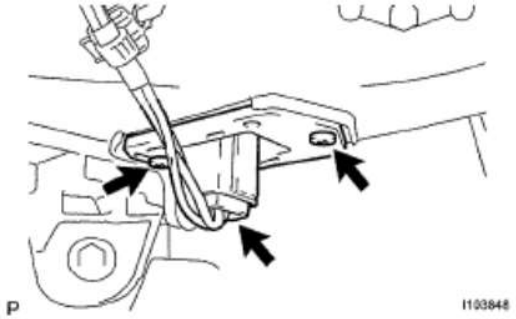


Fig. 201: Locating Blower Resistor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT FRONT BLOWER RESISTOR**
   a. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-4	Always	3.12 to 3.60 ohms
3-4	Always	1.45 to 1.67 ohms
2-4	Always	0.52 to 0.60 ohms

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

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Component without harness connected:
(Blower resistor)

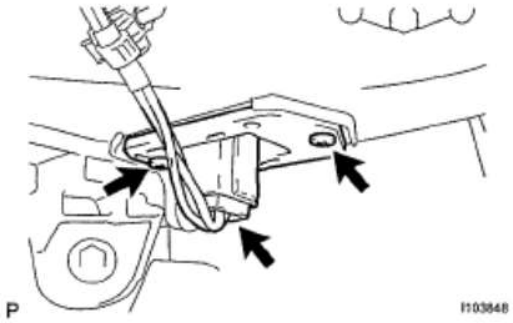


H I103752E01

Fig. 202: Identifying Blower Resistor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL FRONT BLOWER RESISTOR**
   a. Install the blower resistor with the 2 screws.



P I103848

Fig. 203: Locating Blower Resistor Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Connect the connector.
   c. Install the floor carpet.

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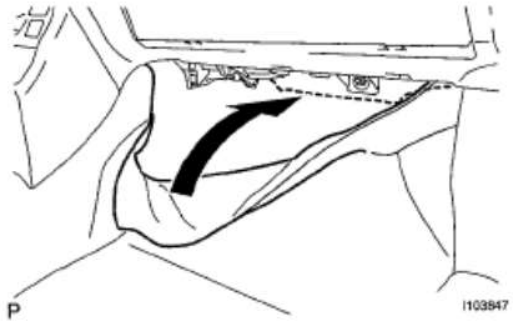


Fig. 204: Installing Floor Carpet
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)

PTC HEATER ASSEMBLY

COMPONENTS

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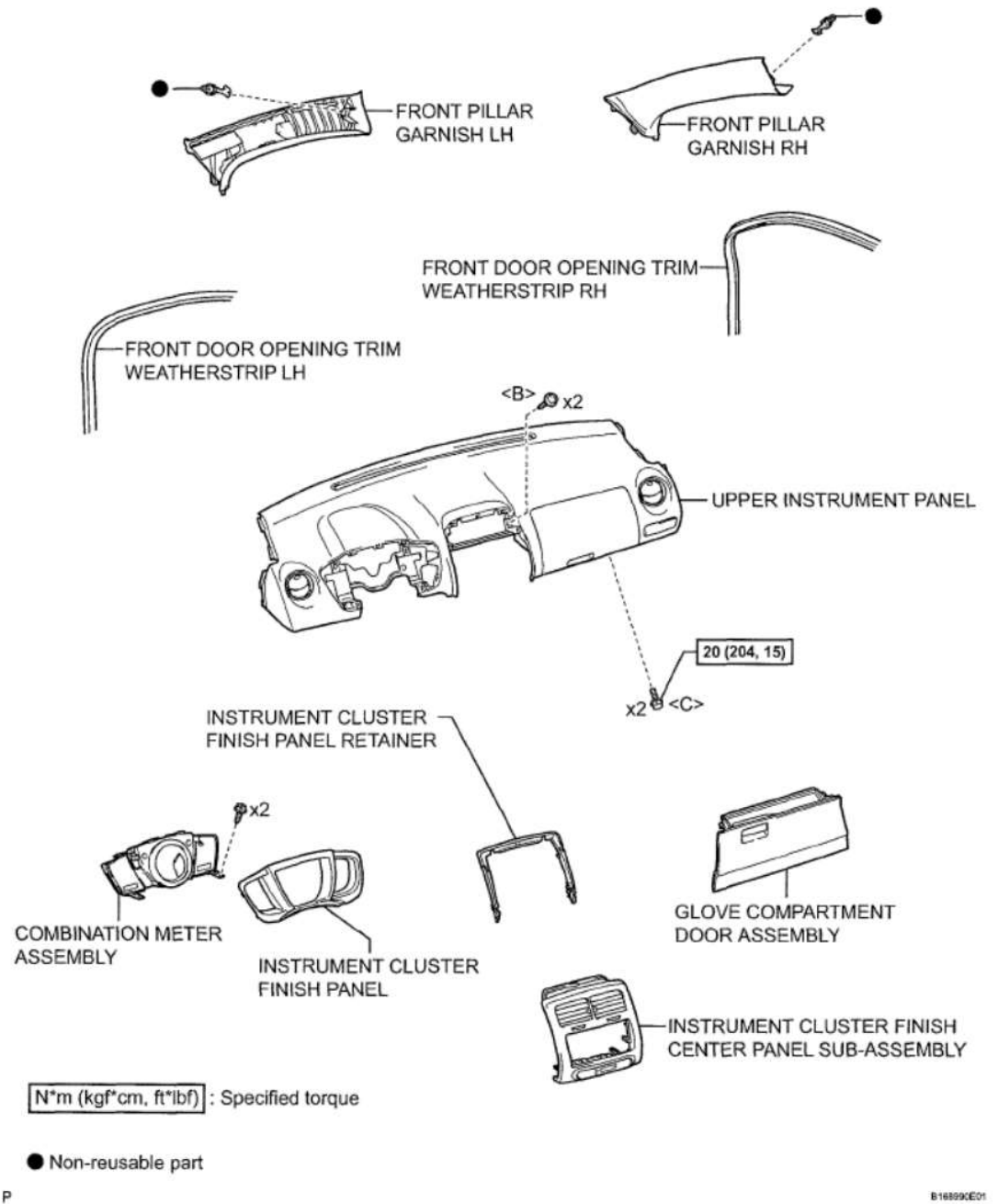


Fig. 205: Identifying PTC Heater Assembly Components With Torque Specification (1 Of 7)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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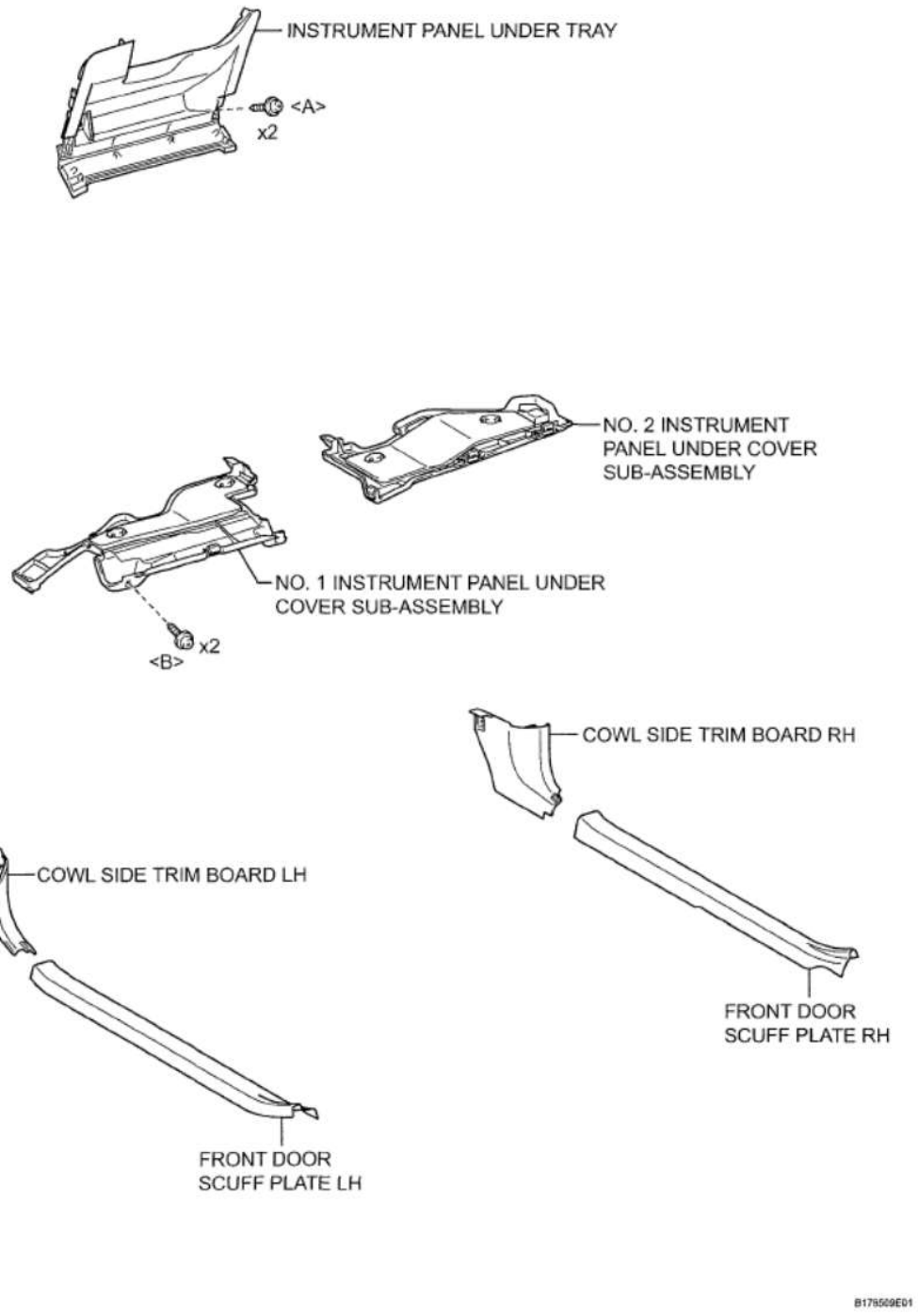


Fig. 206: Identifying PTC Heater Assembly Components (2 Of 7)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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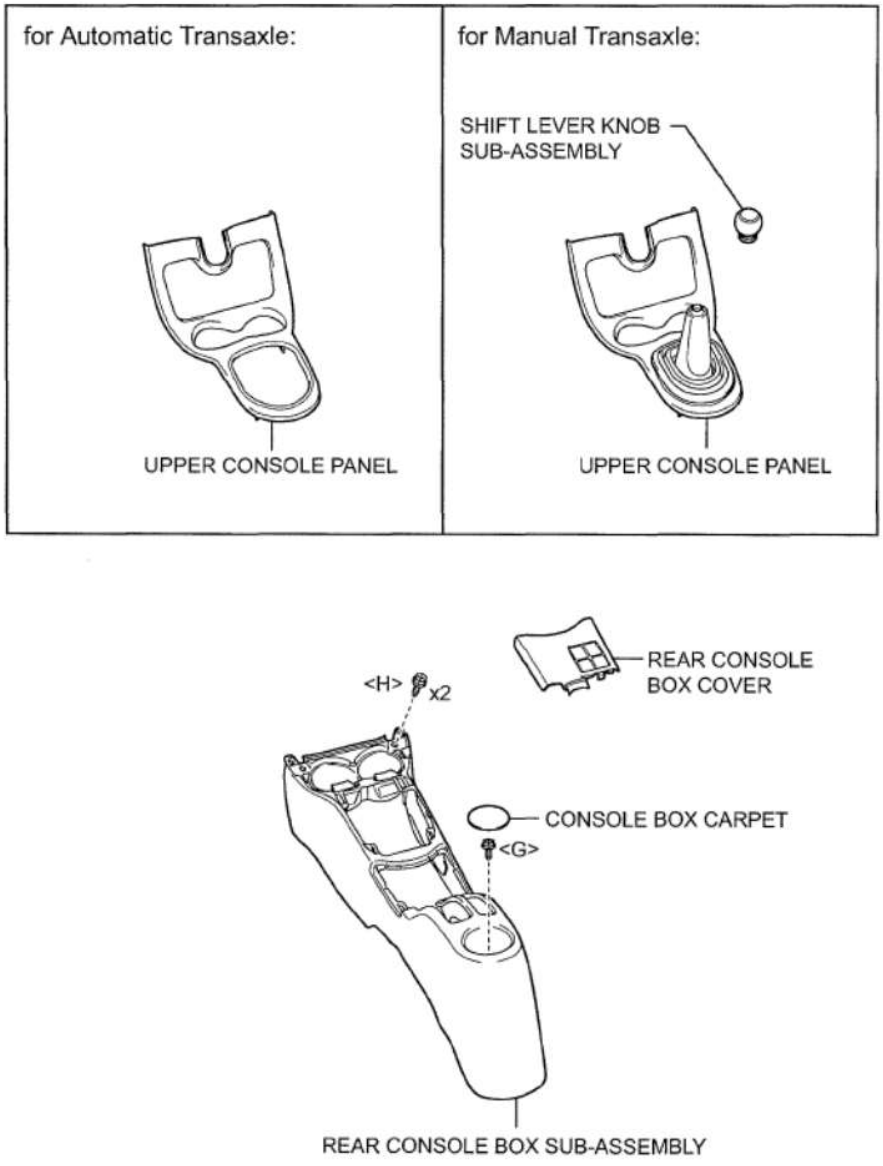


Fig. 207: Identifying PTC Heater Assembly Components (3 Of 7)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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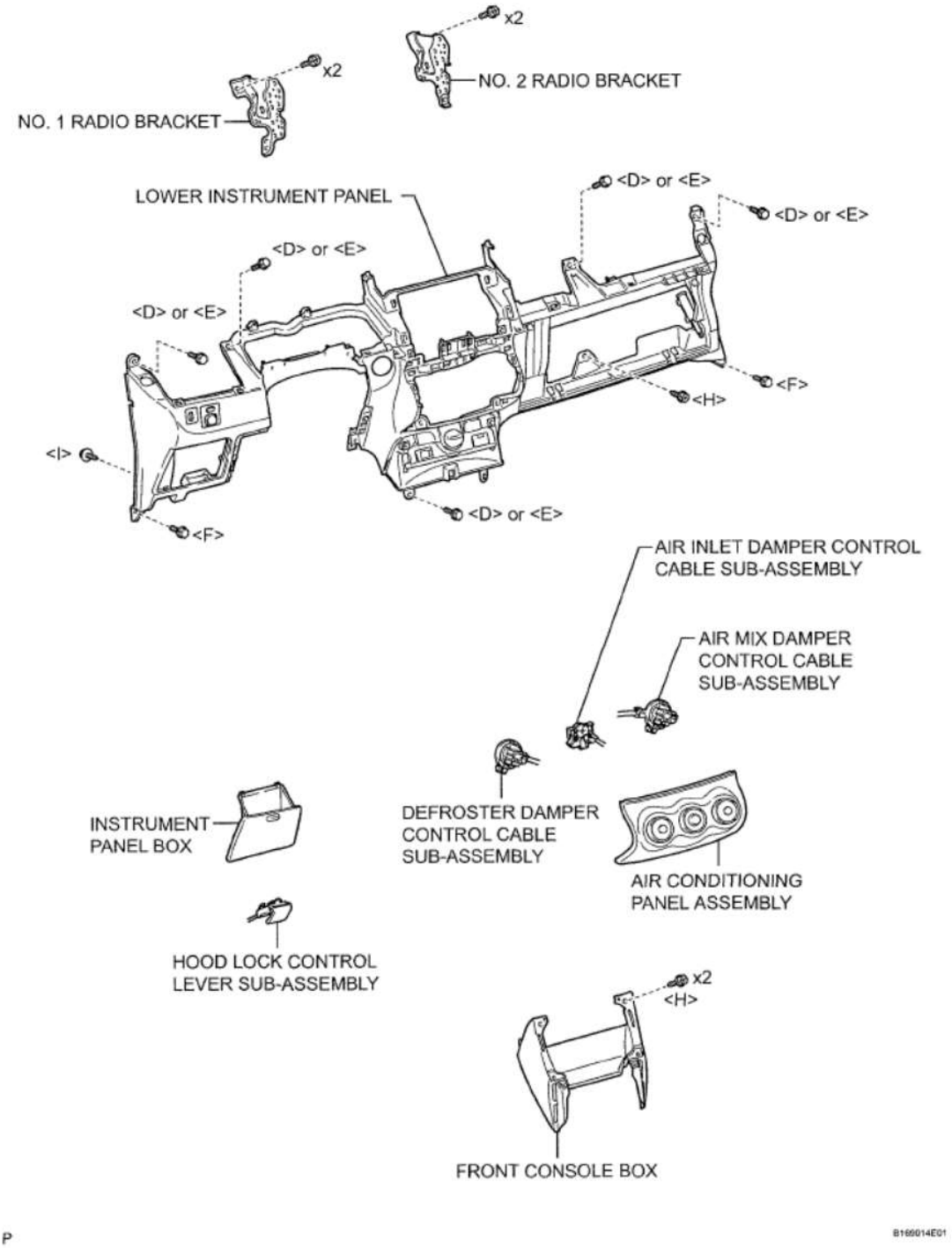


Fig. 208: Identifying PTC Heater Assembly Components (4 Of 7)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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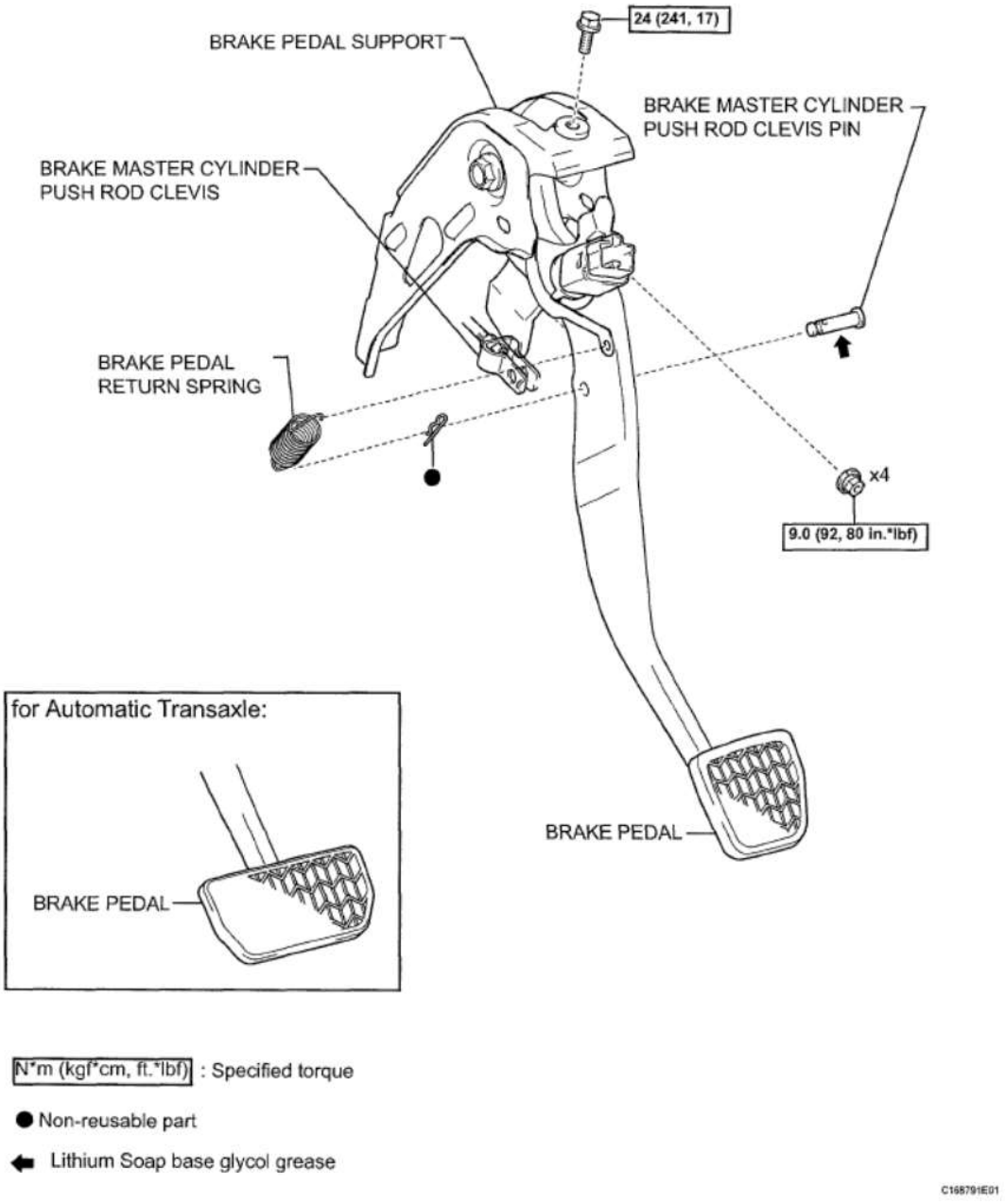


Fig. 209: Identifying PTC Heater Assembly Components With Torque Specifications (5 Of 7)
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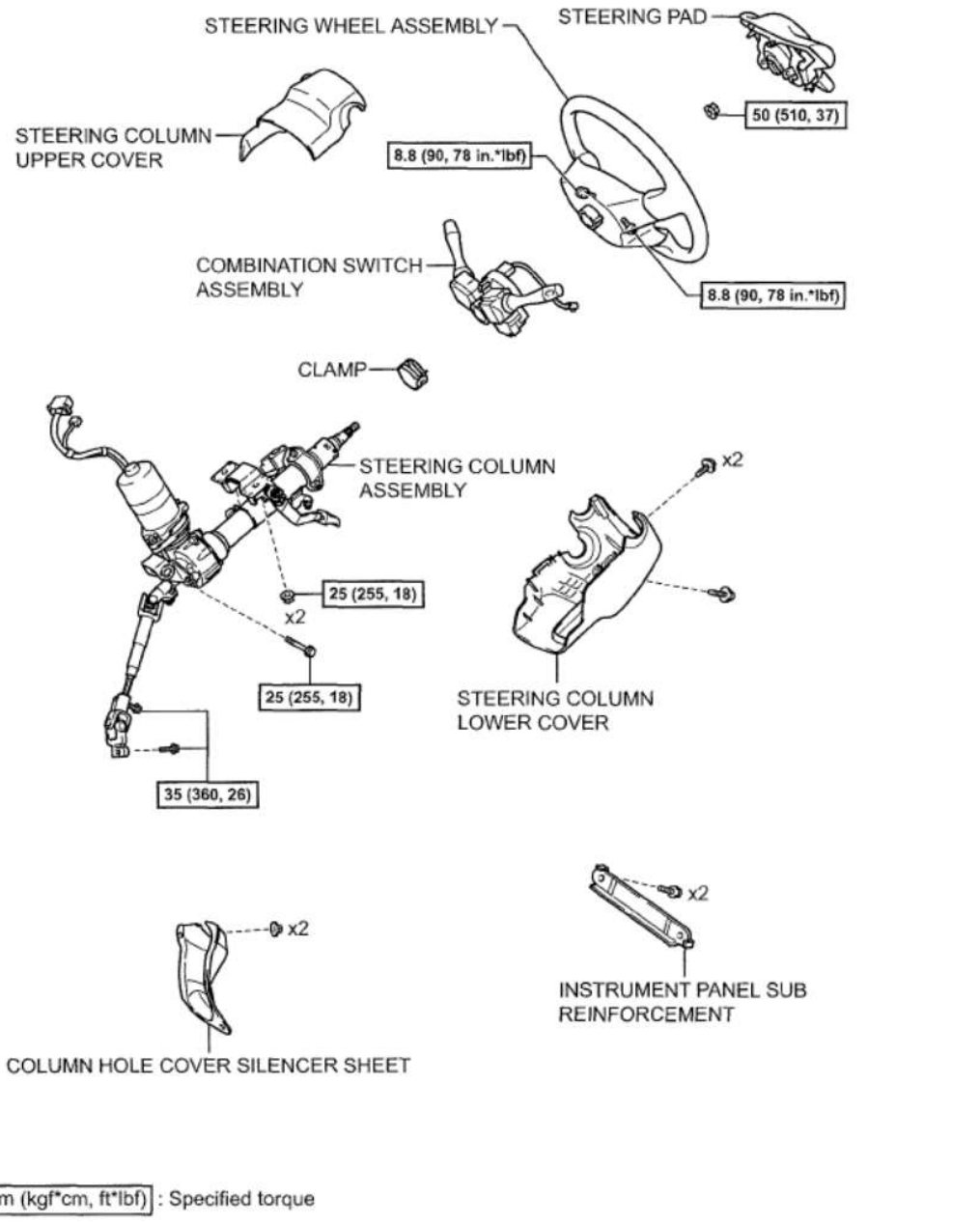


Fig. 210: Identifying PTC Heater Assembly Components With Torque Specifications (6 Of 7)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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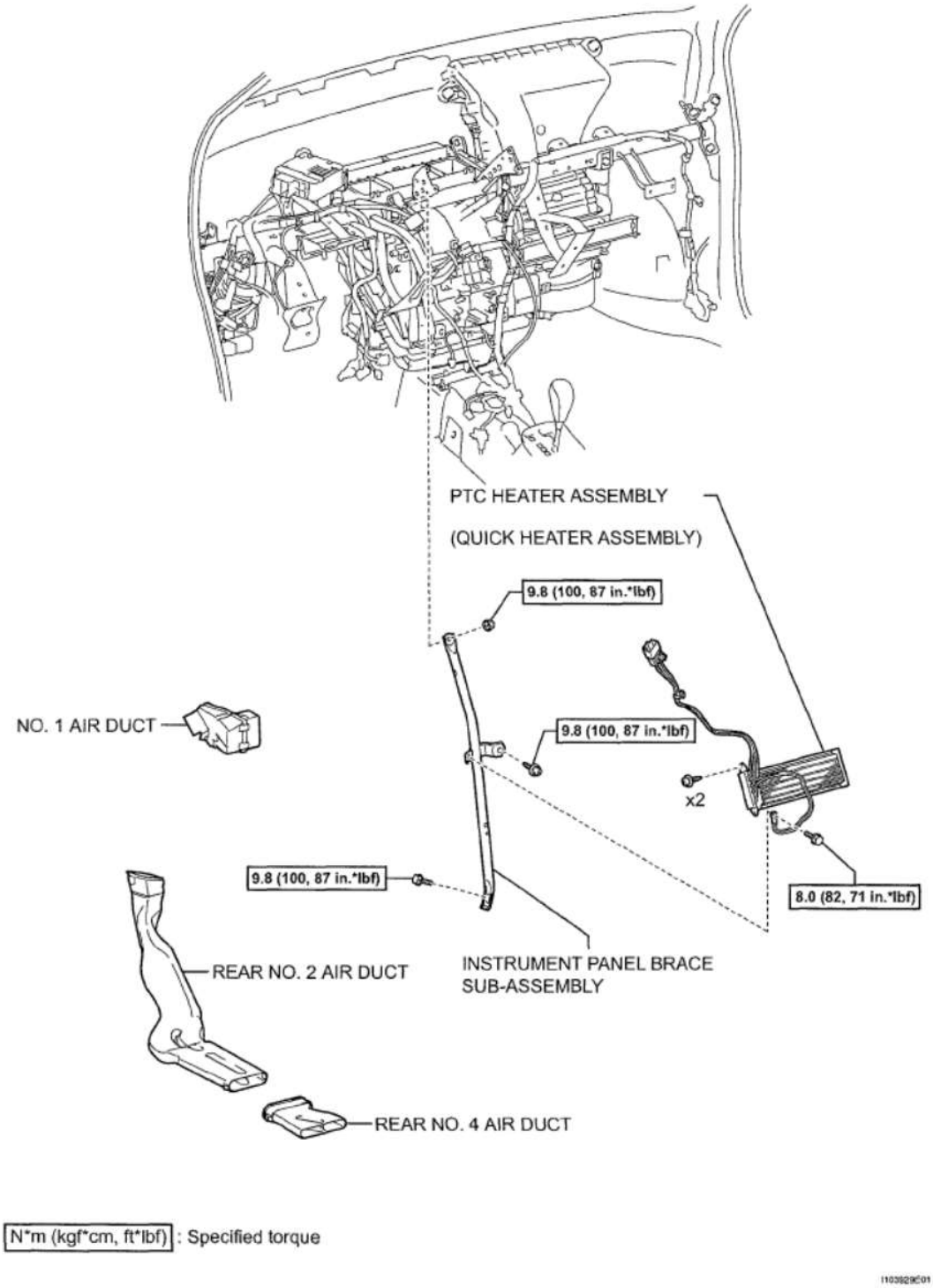


Fig. 211: Identifying PTC Heater Assembly Components With Torque Specifications (7 Of 7)
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REMOVAL

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CAUTION: Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing (See PRECAUTION).

HINT:

Use the same procedure for both the RH and LH sides.

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

   Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

2. **BOLTS, SCREWS AND NUTS TABLE** (See **REMOVAL**)
3. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **REMOVAL**)
4. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **REMOVAL**)
5. **REMOVE FRONT PILLAR GARNISH RH** (See **REMOVAL**)
6. **REMOVE FRONT PILLAR GARNISH LH** (See **REMOVAL**)
7. **REMOVE INSTRUMENT CLUSTER FINISH PANEL** (See **REMOVAL**)
8. **REMOVE COMBINATION METER ASSEMBLY** (See **REMOVAL**)
9. **REMOVE INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **REMOVAL**)
10. **REMOVE INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **REMOVAL**)
11. **REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY** (See **REMOVAL**)
12. **REMOVE UPPER INSTRUMENT PANEL** (See **REMOVAL**)
13. **REMOVE FRONT DOOR SCUFF PLATE RH** (See **REMOVAL**)
14. **REMOVE FRONT DOOR SCUFF PLATE LH** (See **REMOVAL**)
15. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
16. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
17. **REMOVE COWL SIDE TRIM BOARD RH** (See **REMOVAL**)
18. **REMOVE COWL SIDE TRIM BOARD LH** (See **REMOVAL**)
19. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **REMOVAL**)
20. **REMOVE UPPER CONSOLE PANEL** (See **REMOVAL**)
21. **REMOVE REAR CONSOLE BOX COVER** (See **REMOVAL**)
22. **REMOVE CONSOLE BOX CARPET** (See **REMOVAL**)
23. **REMOVE REAR CONSOLE BOX SUB-ASSEMBLY** (See **REMOVAL**)
24. **SEPARATE AIR CONDITIONING PANEL ASSEMBLY** (See **REMOVAL**)
25. **DISCONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **REMOVAL**)
26. **DISCONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)

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27. **DISCONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
28. **REMOVE FRONT CONSOLE BOX** (See **REMOVAL**)
29. **REMOVE INSTRUMENT PANEL UNDER TRAY** (See **REMOVAL**)
30. **REMOVE INSTRUMENT PANEL BOX** (See **REMOVAL**)
31. **REMOVE NO. 2 RADIO BRACKET** (See **REMOVAL**)
32. **REMOVE NO. 1 RADIO BRACKET** (See **REMOVAL**)
33. **SEPARATE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **REMOVAL**)
34. **SEPARATE ANTENNA CORD SUB-ASSEMBLY** (See **REMOVAL**)
35. **REMOVE LOWER INSTRUMENT PANEL** (See **REMOVAL**)
36. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**
37. **REMOVE STEERING PAD** (See **REMOVAL**)
38. **REMOVE STEERING WHEEL ASSEMBLY** (See **REMOVAL**)
39. **REMOVE STEERING COLUMN LOWER COVER** (See **REMOVAL**)
40. **REMOVE STEERING COLUMN UPPER COVER** (See **REMOVAL**)
41. **REMOVE COMBINATION SWITCH ASSEMBLY** (See **REMOVAL**)
42. **DISCONNECT POWER STEERING ECU** (See **REMOVAL**)
43. **REMOVE INSTRUMENT PANEL SUB REINFORCEMENT** (See **REMOVAL**)
44. **REMOVE COLUMN HOLE COVER SILENCER SHEET** (See **REMOVAL**)
45. **SEPARATE STEERING SLIDING YOKE SUB-ASSEMBLY** (See **REMOVAL**)
46. **REMOVE BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **REMOVAL**)
47. **REMOVE BRAKE PEDAL SUPPORT** (See **REMOVAL**)
48. **REMOVE STEERING COLUMN ASSEMBLY** (See **REMOVAL**)
49. **REMOVE REAR NO. 2 AIR DUCT** (See **REMOVAL**)
50. **REMOVE INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **REMOVAL**)
51. **REMOVE NO. 1 AIR DUCT**
    a. Disengage the 3 claws and remove the air duct.

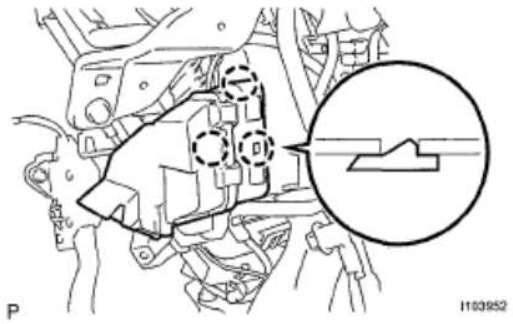


Fig. 212: Identifying Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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52. **REMOVE PTC HEATER ASSEMBLY**
    a. Disconnect the connector and 2 clamps.
    b. Remove the 2 screws and PTC heater from the air conditioning unit.



Fig. 213: Locating PTC Heater Assembly Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT PTC HEATER ASSEMBLY**
    a. Disconnect the connector from the PTC heater.

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Component without harness connected:
(PTC Heater)



Component without harness connected:
(Ground Terminal (for PTC Heater))



E152203E01

Fig. 214: Identifying PTC Heater Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1 - Ground terminal	Always	Below 1 ohms
2 - Ground terminal	Always	Below 1 ohms
3 - Ground terminal	Always	Below 1 ohms

If the result is not as specified, replace the PTC heater assembly.

INSTALLATION

1. **INSTALL PTC HEATER ASSEMBLY**
   a. Install the PTC heater with the 2 screws.

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Fig. 215: Locating PTC Heater Assembly Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Connect the connector and 2 clamps.

2. **INSTALL NO. 1 AIR DUCT**
   a. Engage the 3 claws and install the air duct.
3. **INSTALL INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **INSTALLATION**)
4. **INSTALL REAR NO. 2 AIR DUCT** (See **INSTALLATION**)
5. **INSTALL STEERING COLUMN ASSEMBLY** (See **INSTALLATION**)
6. **INSTALL BRAKE PEDAL SUPPORT** (See **INSTALLATION**)

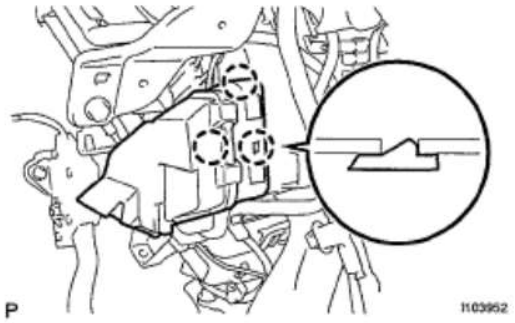


Fig. 216: Identifying Air Duct Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. **INSTALL BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **INSTALLATION**)
8. **INSTALL STEERING SLIDING YOKE SUB-ASSEMBLY** (See **INSTALLATION**)
9. **INSTALL COLUMN HOLE COVER SILENCER SHEET** (See **INSTALLATION**)
10. **INSTALL INSTRUMENT PANEL SUB REINFORCEMENT** (See **INSTALLATION**)
11. **CONNECT POWER STEERING ECU ASSEMBLY** (See **INSTALLATION**)

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12. **INSTALL COMBINATION SWITCH ASSEMBLY** (See **INSTALLATION**)
13. **INSTALL STEERING COLUMN UPPER COVER** (See **INSTALLATION**)
14. **INSTALL STEERING COLUMN LOWER COVER** (See **INSTALLATION**)
15. **INSTALL STEERING WHEEL ASSEMBLY** (See **INSTALLATION**)
16. **INSTALL STEERING PAD** (See **INSTALLATION**)
17. **INSTALL LOWER INSTRUMENT PANEL** (See **INSTALLATION**)
18. **CONNECT ANTENNA CORD SUB-ASSEMBLY** (See **INSTALLATION**)
19. **CONNECT HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **INSTALLATION**)
20. **INSTALL NO. 1 RADIO BRACKET** (See **INSTALLATION**)
21. **INSTALL NO. 2 RADIO BRACKET** (See **INSTALLATION**)
22. **INSTALL INSTRUMENT PANEL BOX** (See **INSTALLATION**)
23. **INSTALL INSTRUMENT PANEL UNDER TRAY** (See **INSTALLATION**)
24. **INSTALL FRONT CONSOLE BOX** (See **INSTALLATION**)
25. **CONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
26. **CONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
27. **CONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
28. **INSTALL AIR CONDITIONING PANEL ASSEMBLY** (See **INSTALLATION**)
29. **INSTALL REAR CONSOLE BOX SUB-ASSEMBLY** (See **INSTALLATION**)
30. **INSTALL CONSOLE BOX CARPET** (See **INSTALLATION**)
31. **INSTALL REAR CONSOLE BOX COVER** (See **INSTALLATION**)
32. **INSTALL UPPER CONSOLE PANEL** (See **INSTALLATION**)
33. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **INSTALLATION**)
34. **INSTALL COWL SIDE TRIM BOARD RH** (See **INSTALLATION**)
35. **INSTALL COWL SIDE TRIM BOARD LH** (See **INSTALLATION**)
36. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
37. **INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
38. **INSTALL FRONT DOOR SCUFF PLATE RH** (See **INSTALLATION**)
39. **INSTALL FRONT DOOR SCUFF PLATE LH** (See **INSTALLATION**)
40. **INSTALL UPPER INSTRUMENT PANEL** (See **INSTALLATION**)
41. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See **INSTALLATION**)
42. **INSTALL INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **INSTALLATION**)
43. **INSTALL INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **INSTALLATION**)

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44. **INSTALL COMBINATION METER ASSEMBLY** (See **INSTALLATION**)
45. **INSTALL INSTRUMENT CLUSTER FINISH PANEL** (See **INSTALLATION**)
46. **INSTALL FRONT PILLAR GARNISH RH** (See **INSTALLATION**)
47. **INSTALL FRONT PILLAR GARNISH LH** (See **INSTALLATION**)
48. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **INSTALLATION**)
49. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **INSTALLATION**)
50. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

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

51. **INSPECT SRS WARNING LIGHT**

    (See **DIAGNOSIS SYSTEM**)

52. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**

COMPRESSOR (FOR 2ZR-FE)

COMPONENTS

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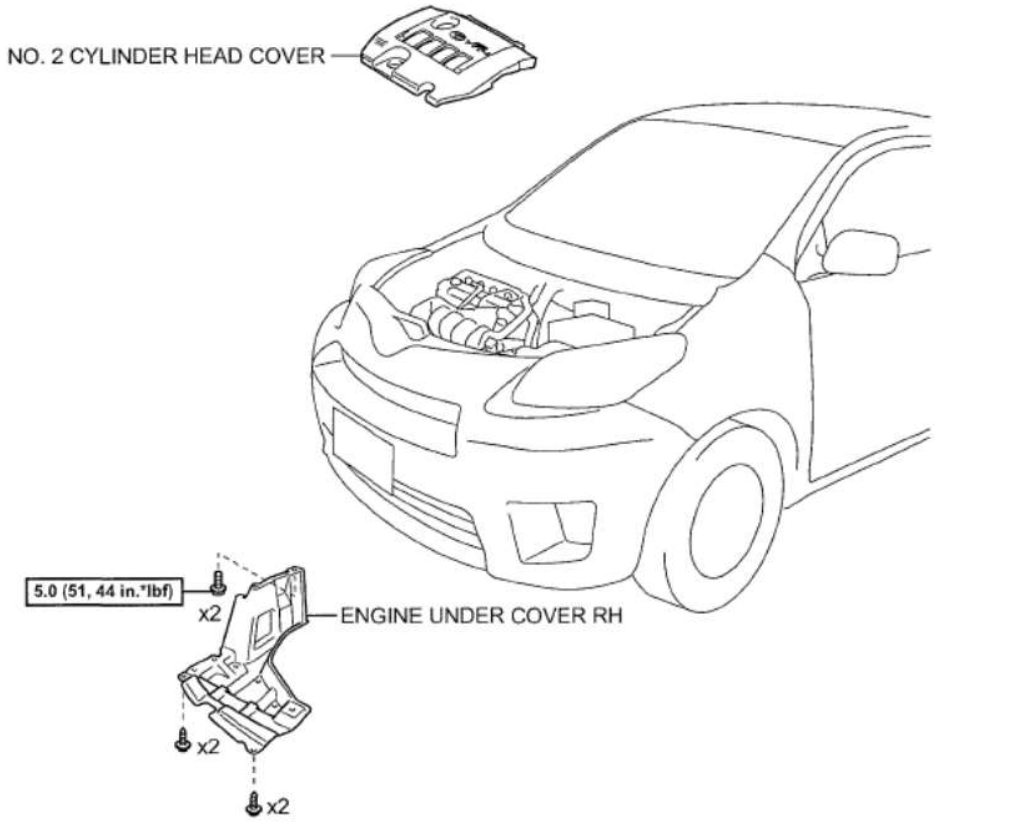


Fig. 217: Identifying Compressor Components With Torque Specification (1 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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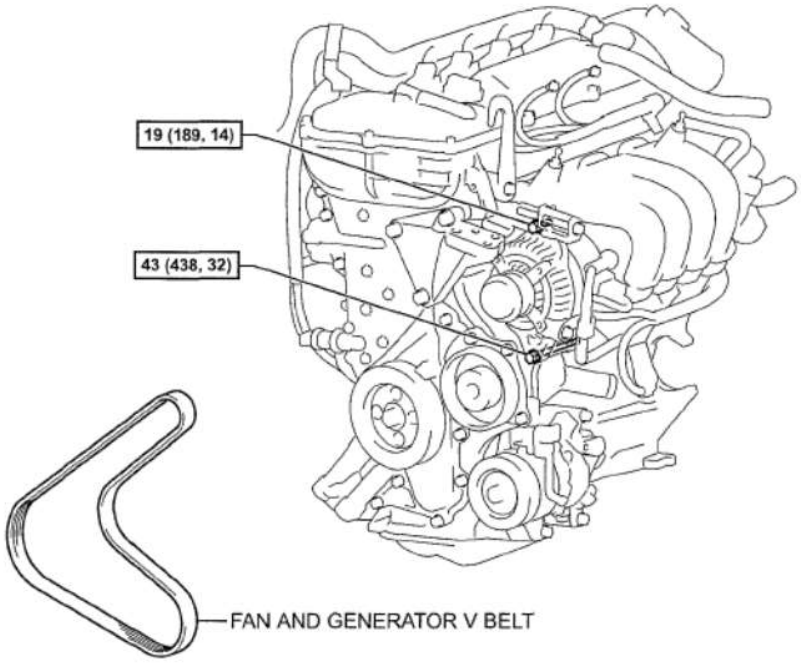


Fig. 218: Identifying Compressor Components With Torque Specifications (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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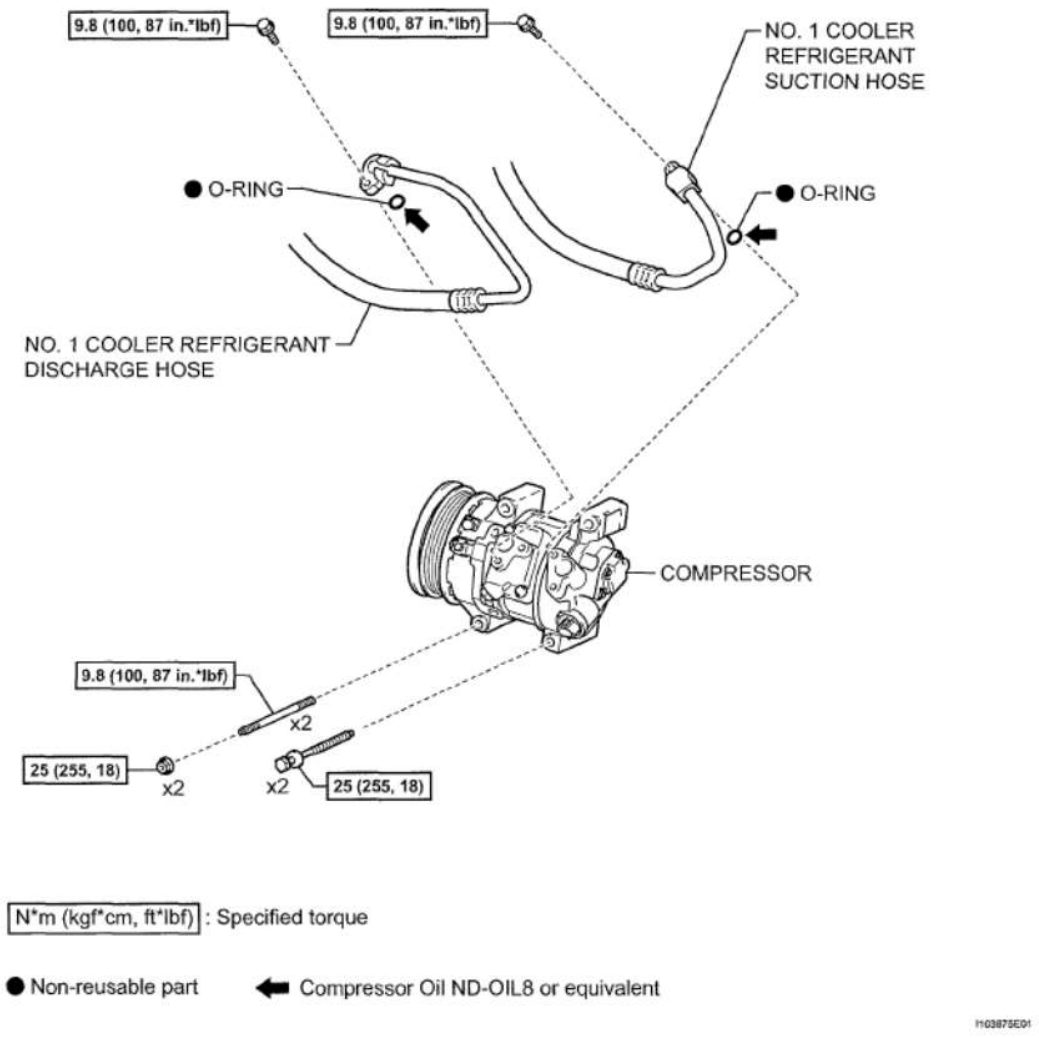


Fig. 219: Identifying Compressor Components With Torque Specifications (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION

1. **INSPECT COMPRESSOR FOR METALLIC SOUND**
   a. Check if there is any abnormal metallic sounds from the compressor when the A/C switch is on and the compressor operates.

      If any abnormal metallic sound is heard, replace the compressor.

2. **INSPECT REFRIGERANT PRESSURE**

   HINT:

   (See **ON-VEHICLE INSPECTION**)

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3. **INSPECT FOR LEAKAGE OF REFRIGERANT**
   a. Using a gas leak detector, check for leakage of refrigerant.

      If there is any leakage, replace the compressor.

4. **INSPECT COMPRESSOR**
   a. Check operation of compressor.
      1. Start the engine.
      2. Inspect the compressor.

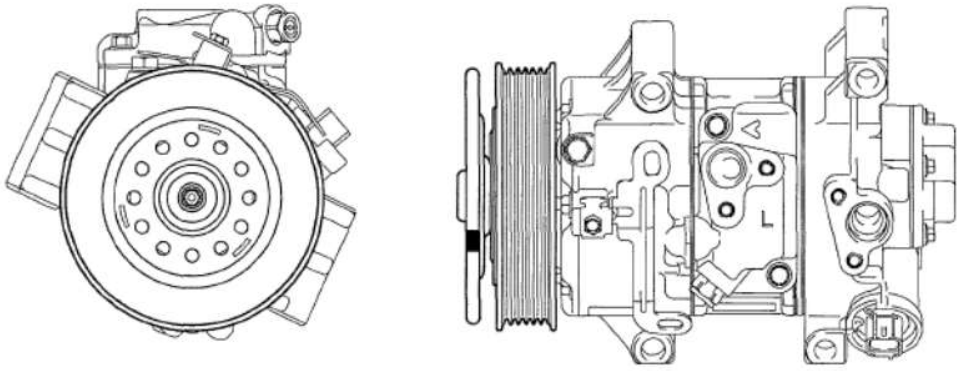


Fig. 220: Identifying Compressor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK:

The compressor shaft rotates along with the pulley.

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

REMOVAL

1. **RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM** (See **REPLACEMENT**)
2. **REMOVE ENGINE UNDER COVER RH**
3. **REMOVE NO. 2 CYLINDER HEAD COVER** (See **REMOVAL**)
4. **REMOVE FAN AND GENERATOR V BELT** (See **REMOVAL**)
5. **DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE**
   a. Remove the bolt and disconnect the discharge hose from the compressor.

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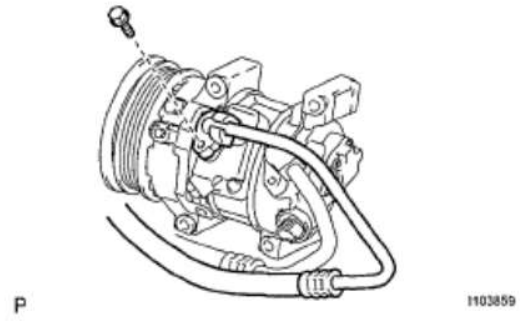


Fig. 221: Identifying Cooler Refrigerant Discharge Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the O-ring from the discharge hose.

NOTE: Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

6. **DISCONNECT NO. 1 COOLER REFRIGERANT SUCTION HOSE**
   a. Remove the bolt and disconnect the suction hose from the compressor.

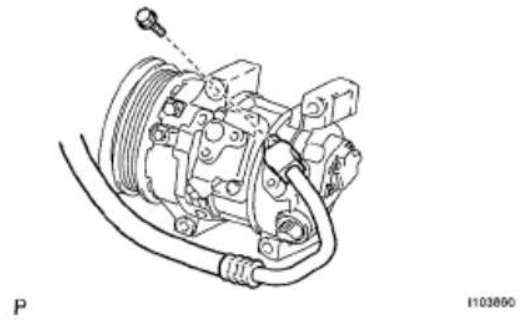


Fig. 222: Identifying Cooler Refrigerant Suction Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the O-ring from the suction hose.

NOTE: Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

7. **REMOVE COMPRESSOR**
   a. Disconnect the connector and 2 clamps.

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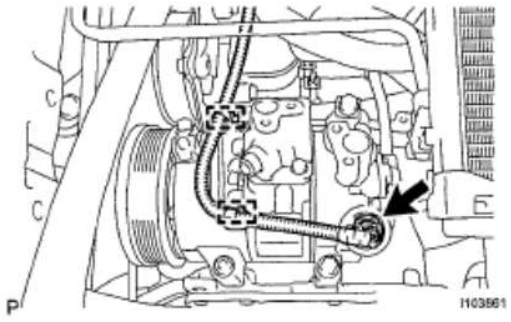


Fig. 223: Locating Compressor Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the 2 bolts and the 2 nuts.

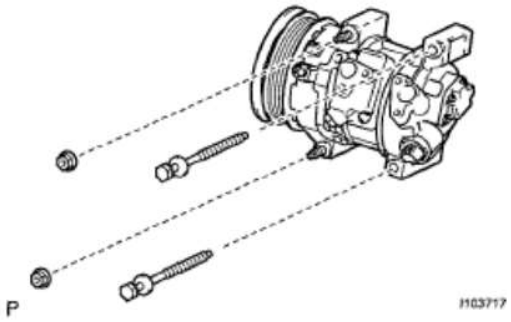


Fig. 224: Identifying Compressor Bolts And Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Using a "TORX" socket wrench (E8), remove the 2 stud bolts and the compressor.

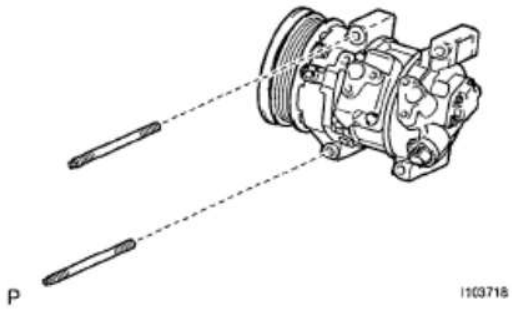


Fig. 225: Identifying Compressor Stud Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

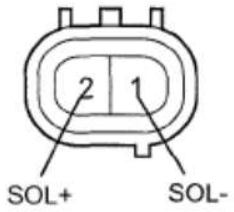
INSPECTION

1. **inspect compressor assembly**
   a. Measure the resistance according to the value(s) in the table below.

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Component without harness connected:
(Compressor)



H E116870E13

Fig. 226: Identifying Compressor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
2 (SOL+) -1 (SOL-)	20°C (68°F)	10 to 11 ohms

If the resistance is not as specified, replace the compressor.

INSTALLATION

1. **ADJUST COMPRESSOR OIL LEVEL**
   a. When replacing the cooler compressor with a new one, gradually discharge the inert gas (helium) from the service valve, and drain the following amount of oil from the vents indicated by the arrows in the illustration before installation.

      HINT:

      The drain bolt and washer can be reused.

      Standard:

      (The amount of oil inside a new compressor: 90 (+15) cc (3 (+0.51) fl.oz.)) - (The amount of oil remaining in the removed compressor) = The amount of oil to be removed when replacing the compressor

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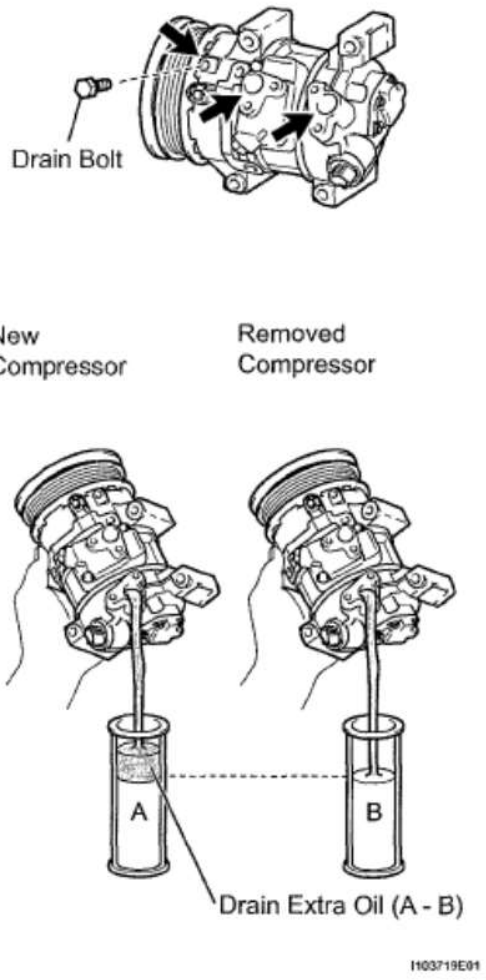


Fig. 227: Draining Compressor Oil
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- **When checking the compressor oil level, observe the precautions for cooler removal/ installation.**
- **If a new compressor is installed without removing the same amount of oil as is remaining in the vehicle pipes, the amount of oil will be too large. This prevents heat exchange in the refrigerant cycle and will cause a refrigeration failure.**
- **If the amount of oil remaining in the removed compressor is too low, check for oil leakage.**
- **Use ND-OIL8 or equivalent for compressor oil**

2. **INSTALL COMPRESSOR**
   a. Using a "TORX" socket wrench (E8), install the compressor with the 2 stud bolts.

Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

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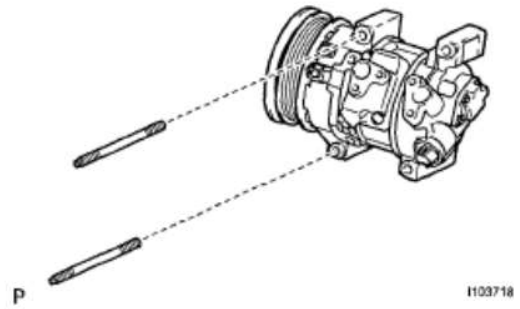


Fig. 228: Identifying Compressor Stud Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the compressor with the 2 bolts and the 2 nuts.

HINT:

Tighten the bolts and the nuts in the order shown in the illustration.

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

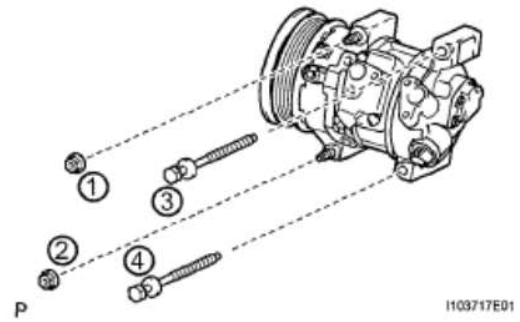


Fig. 229: Identifying Compressor Bolts And Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Connect the connector and 2 clamps.

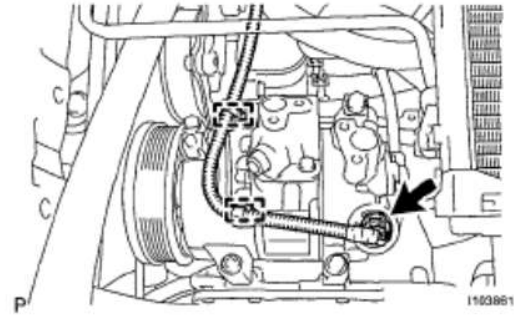


Fig. 230: Locating Compressor Connector

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3. **CONNECT NO. 1 COOLER REFRIGERANT SUCTION HOSE**
   a. Remove the attached vinyl tape from the hose.
   b. Apply sufficient 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 onto the suction hose.
   d. Install the suction hose onto the compressor with the bolt.

      Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

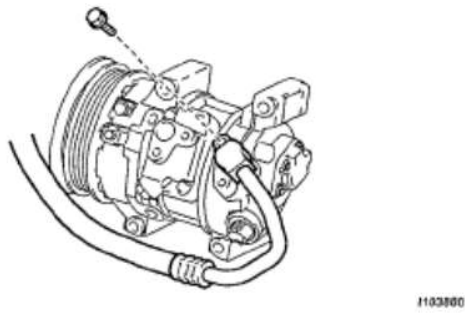


Fig. 231: Identifying Cooler Refrigerant Suction Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE**
   a. Remove the attached vinyl tape from the hose.
   b. Apply sufficient 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 onto the discharge hose.
   d. Install the discharge hose onto the compressor with the bolt.

      Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

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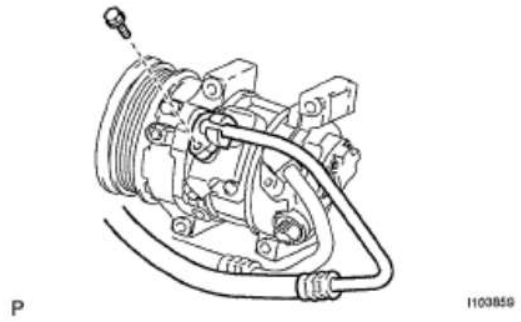


Fig. 232: Identifying Cooler Refrigerant Discharge Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **INSTALL FAN AND GENERATOR V BELT** (See **INSTALLATION**)
6. **ADJUST FAN AND GENERATOR V BELT** (See **INSTALLATION**)
7. **INSPECT FAN AND GENERATOR V BELT** (See **INSTALLATION**)
8. **INSTALL NO. 2 CYLINDER HEAD COVER** (See **INSTALLATION**)
9. **CHARGE WITH REFRIGERANT** (See **REFRIGERANT LINE**)
10. **WARM UP ENGINE** (See **REPLACEMENT**)
11. **INSPECT FOR REFRIGERANT LEAK** (See **REPLACEMENT**)
12. **INSTALL ENGINE UNDER COVER RH** (See **INSTALLATION**)

CONDENSER

COMPONENTS

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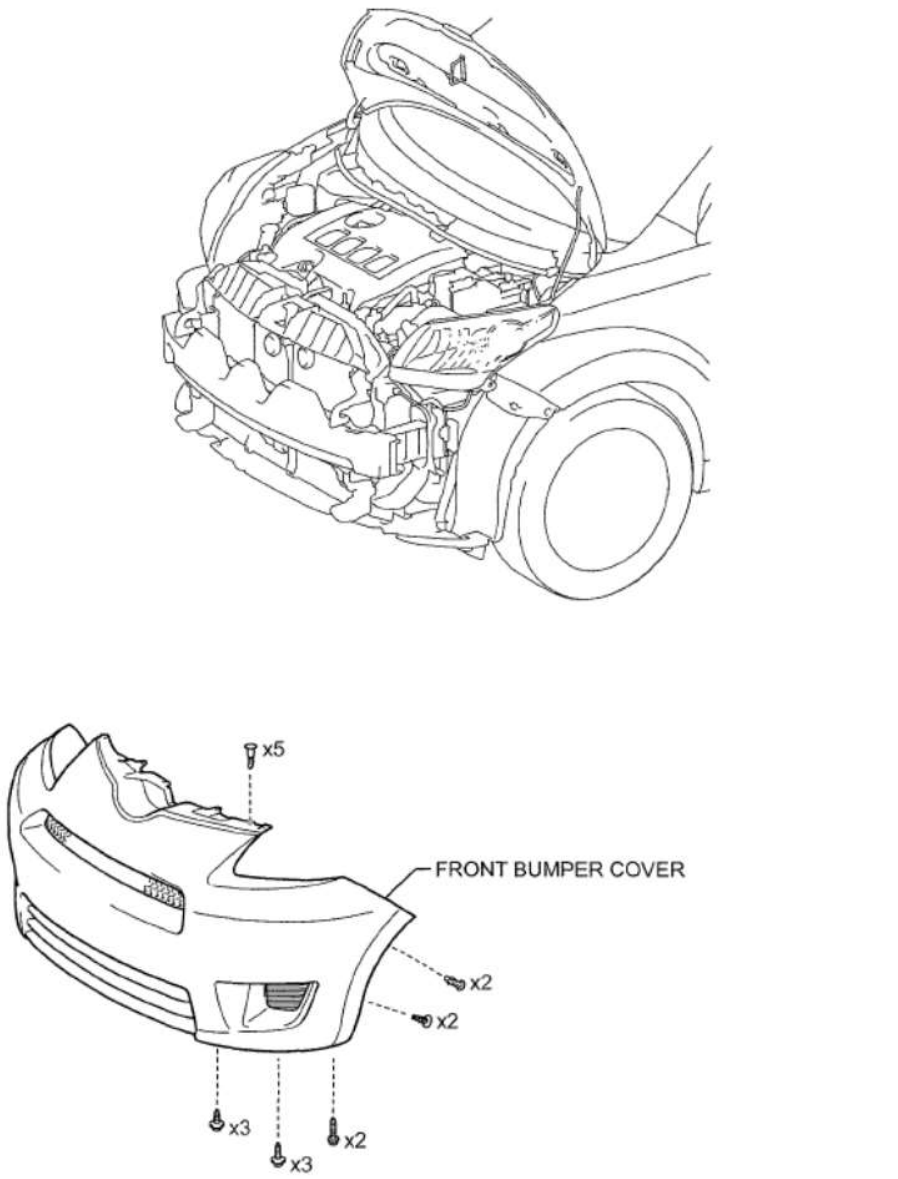


Fig. 233: Identifying Condenser Components (1 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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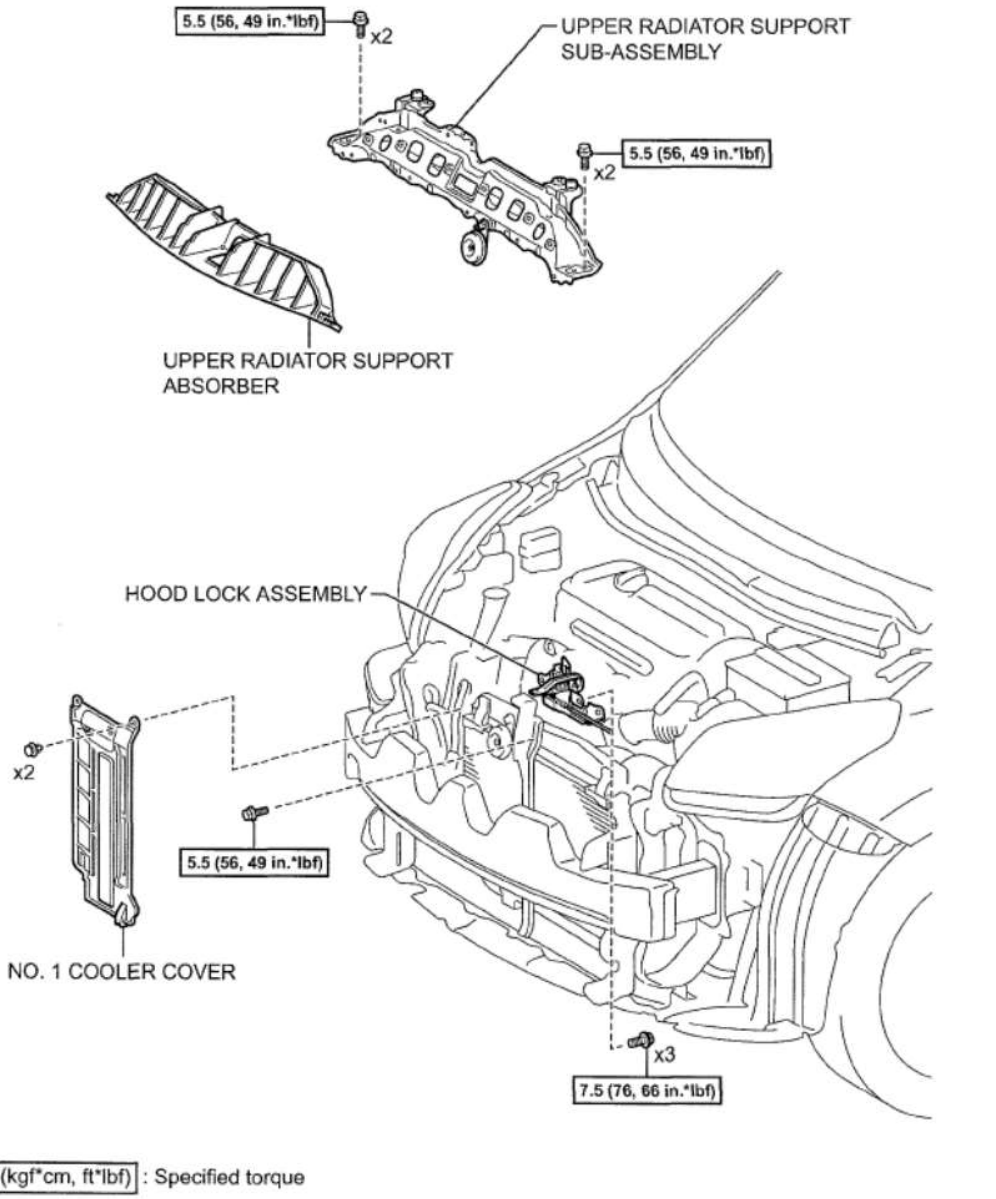


Fig. 234: Identifying Condenser Components With Torque Specifications (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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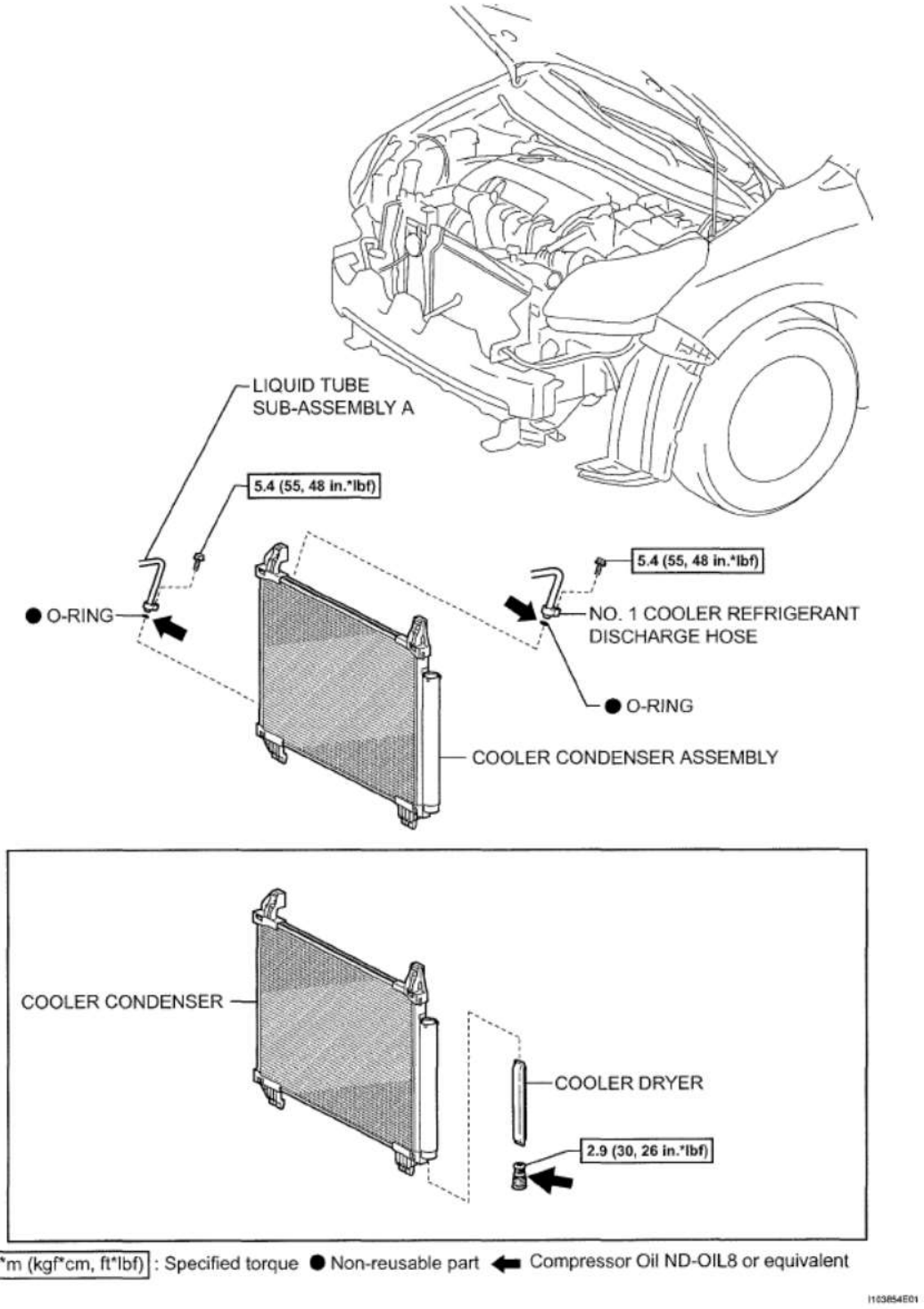


Fig. 235: Identifying Condenser Components With Torque Specifications (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION

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1. **INSPECT CONDENSER ASSEMBLY**
   a. If the fins of the cooler condenser are dirty, clean them with water and dry them with compressed air.

      NOTE: Do not damage the fins of the condenser assembly.

   b. If the fins of the cooler condenser are bent, straighten them using a screwdriver or pliers.
2. **CHECK CONDENSER FOR REFRIGERANT LEAKAGE**
   a. Check the pipe joints for gas leakage, using a halogen leak detector.
   b. Check the tightening torque of the joints if gas leakage is detected from any pipe joints.

REMOVAL

1. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM** (See **REPLACEMENT**)
2. **REMOVE FRONT BUMPER COVER** (See **REMOVAL**)
3. **REMOVE UPPER RADIATOR SUPPORT ABSORBER** (See **DISASSEMBLY**)
4. **REMOVE NO. 1 COOLER COVER** (See **REMOVAL**)
5. **SEPARATE HOOD LOCK ASSEMBLY** (See **REMOVAL**)
6. **REMOVE UPPER RADIATOR SUPPORT SUB-ASSEMBLY** (See **REMOVAL**)
7. **DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE**
   a. Remove the bolt and disconnect the discharge hose from the cooler condenser.

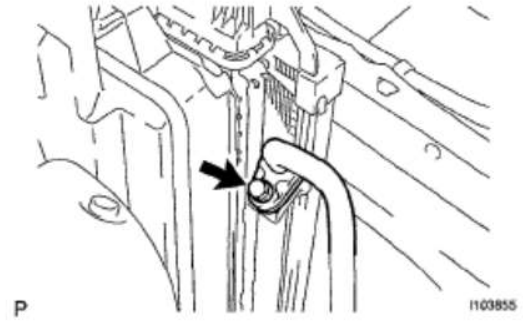


Fig. 236: Locating Cooler Refrigerant Discharge Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the O-ring from the discharge hose.

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

8. **DISCONNECT LIQUID TUBE SUB-ASSEMBLY A**
   a. Remove the bolt and disconnect the air conditioning tube from the cooler condenser.

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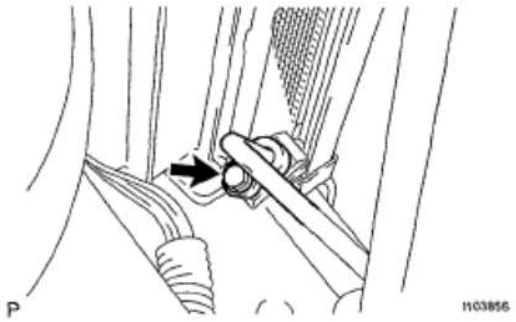


Fig. 237: Locating Air Conditioning Tube Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the O-ring from the air conditioning tube.

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

9. **REMOVE COOLER CONDENSER ASSEMBLY**

a. Disengage the 2 claws and remove the cooler condenser from the vehicle.

NOTE: Do not damage the condenser or radiator when removing the cooler condenser.

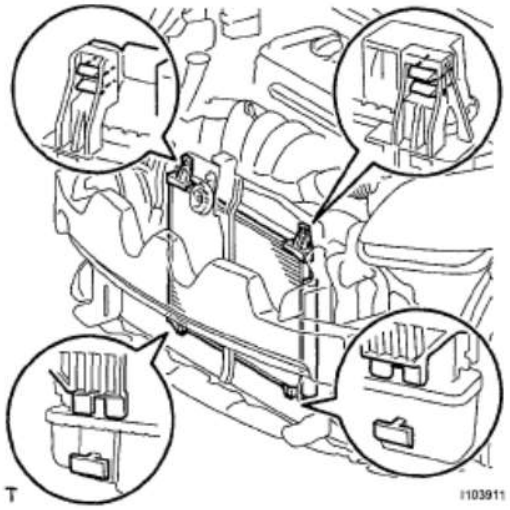


Fig. 238: Identifying Cooler Condenser Assembly
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DISASSEMBLY

1. **REMOVE COOLER DRYER**

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a. Using a 14 mm straight hexagon wrench, remove the cap from the modulator.

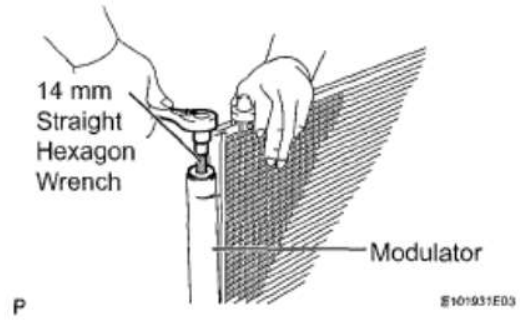


Fig. 239: Removing Cap From Modulator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Using pliers, remove the cooler dryer.

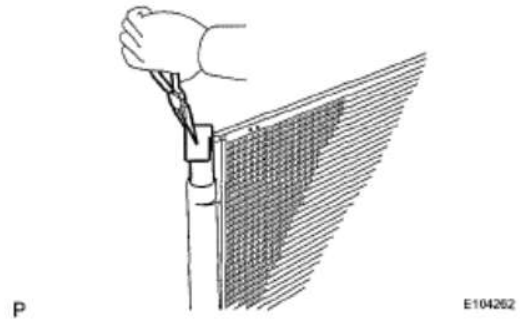


Fig. 240: Removing Cooler Dryer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. **INSTALL COOLER DRYER**
   a. Using pliers, install the cooler dryer onto the modulator.

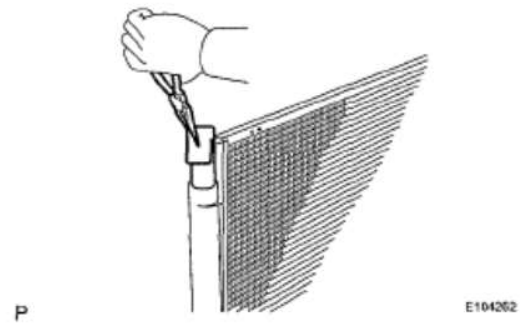


Fig. 241: Installing Cooler Dryer Onto Modulator

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Apply sufficient compressor oil to the O-ring and the fitting surface of the cap.

Compressor oil:

ND-OIL 8 or equivalent

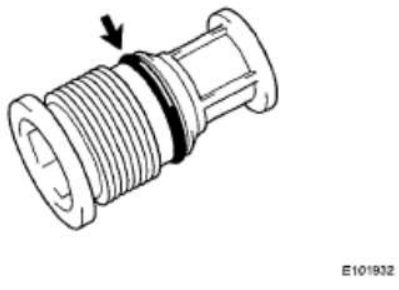


Fig. 242: Locating O-Ring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Using a 14 mm straight hexagon wrench, install the cap onto the cooler condenser core.

Torque: 2.9 N*m (30 kgf*cm, 26 in.*lbf)

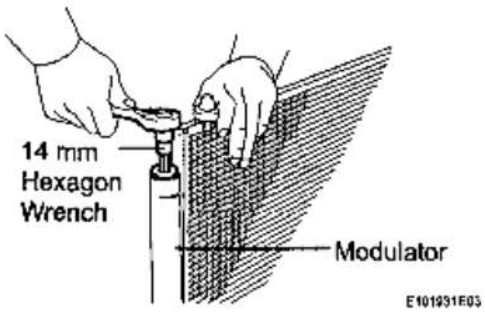


Fig. 243: Installing Cap Onto Cooler Condenser Core
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL COOLER CONDENSER ASSEMBLY**
   a. Engage the 2 claws and install the cooler condenser into the vehicle.

NOTE: **Do not damage the condenser or radiator when installing the condenser.**

HINT:

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If a new cooler condenser is installed, add compressor oil to the condenser as follows.

Capacity:

Add 40 cc(1.35 fl.oz.)

Compressor oil:

ND-OIL8 or equivalent.

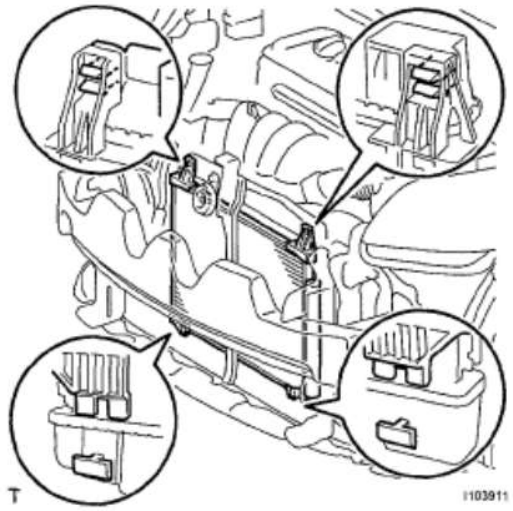


Fig. 244: Identifying Cooler Condenser Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **CONNECT LIQUID TUBE SUB-ASSEMBLY A**
   a. Remove the attached vinyl tape from the pipe and the connecting part of the cooler condenser.
   b. Apply sufficient compressor oil to a new O-ring and the fitting surface of the tube joint.

      Compressor oil:

      ND-OIL8 or equivalent

   c. Install the O-ring onto the air conditioning tube.
   d. Install the air conditioning tube onto the cooler condenser with the bolt.

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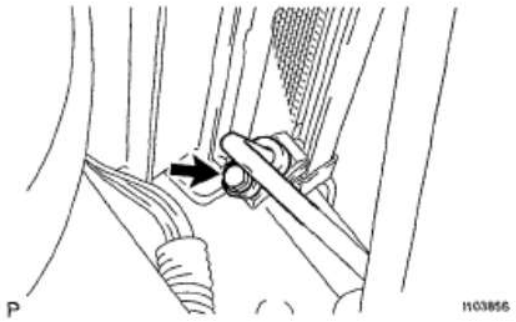


Fig. 245: Locating Air Conditioning Tube Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

3. **CONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE**
   a. Remove the attached vinyl tape from the hose and the connecting part of the cooler condenser.
   b. Apply sufficient compressor oil to a new O-ring and the fitting surface of the hose joint.

      Compressor oil:

      ND-OIL8 or equivalent

   c. Install the O-ring onto the discharge hose.
   d. Install the discharge hose onto the cooler condenser with the bolt.

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

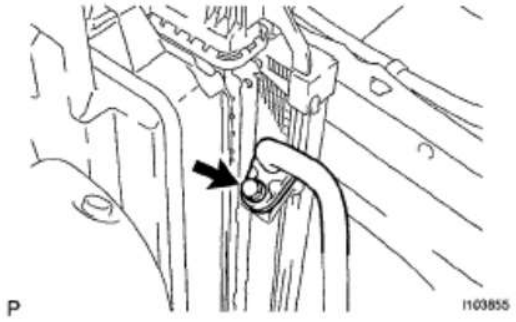


Fig. 246: Locating Cooler Refrigerant Discharge Hose Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL UPPER RADIATOR SUPPORT SUB-ASSEMBLY** (See **INSTALLATION**)
5. **INSTALL NO. 1 COOLER COVER** (See **INSTALLATION**)
6. **INSTALL HOOD LOCK ASSEMBLY** (See **INSTALLATION**)
7. **INSTALL UPPER RADIATOR SUPPORT ABSORBER** (See **REASSEMBLY**)

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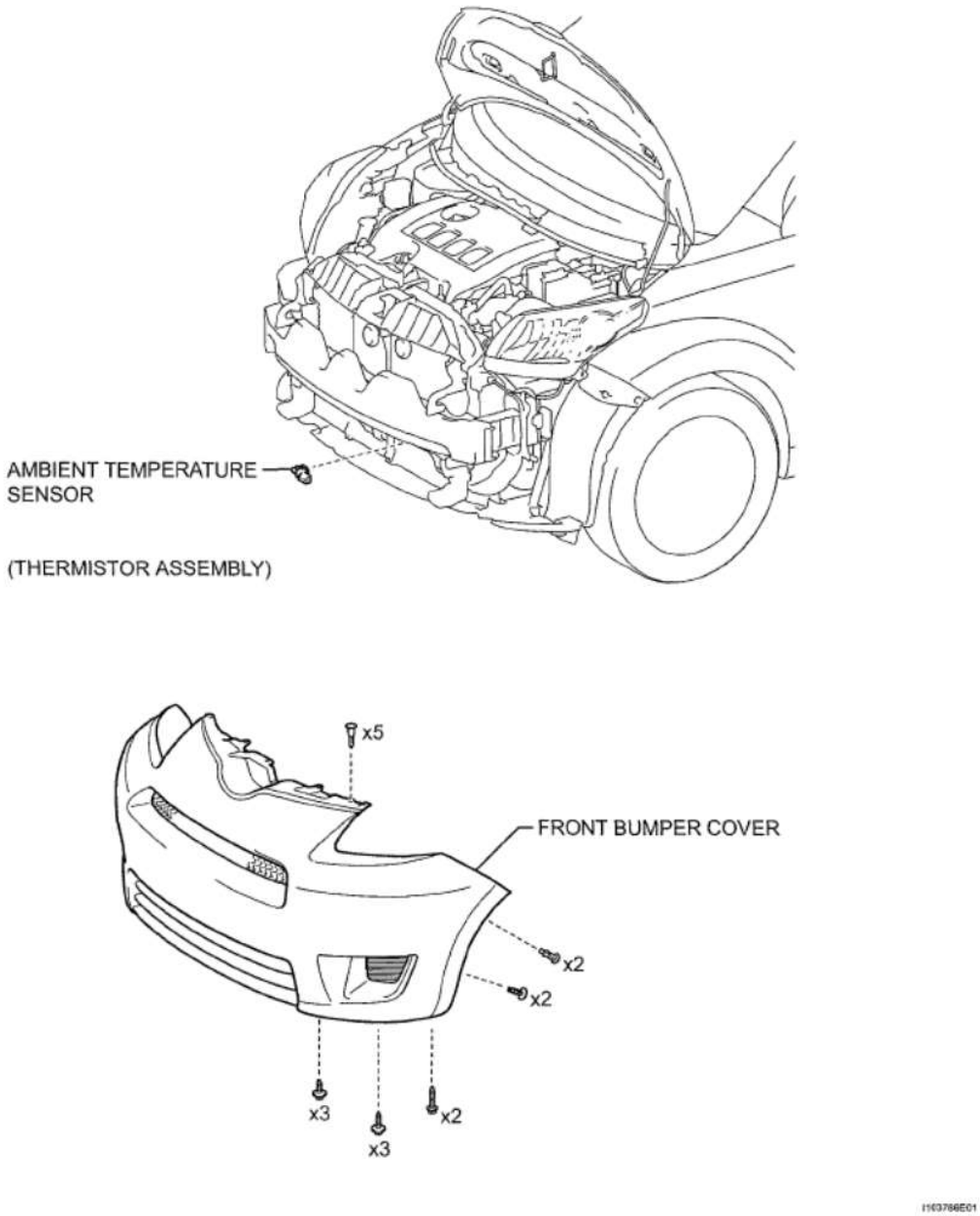
8. **INSTALL FRONT BUMPER COVER** (See **INSTALLATION**)
9. **INSPECT HOOD** (See **ADJUSTMENT**)
10. **ADJUST HOOD** (See **ADJUSTMENT**)
11. **CHARGE REFRIGERANT** (See **REFRIGERANT LINE**)
12. **WARM UP ENGINE** (See **REPLACEMENT**)
13. **INSPECT FOR REFRIGERANT LEAK** (See **REPLACEMENT**)

AMBIENT TEMPERATURE SENSOR

COMPONENTS

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Fig. 247: Identifying Ambient Temperature Sensor Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE FRONT BUMPER COVER** (See **REMOVAL**)
2. **REMOVE AMBIENT TEMPERATURE SENSOR**
   a. Disconnect the connector.

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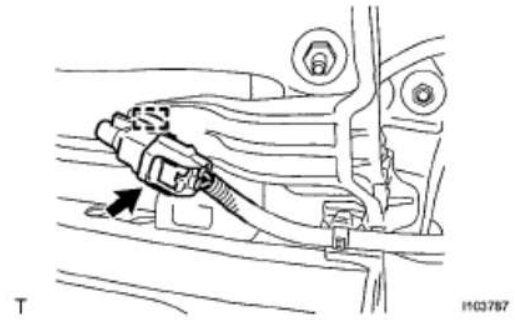


Fig. 248: Locating Ambient Temperature Sensor Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disengage the clamp and the ambient temperature sensor.

INSPECTION

1. **INSPECT AMBIENT TEMPERATURE SENSOR**
   a. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-2	10°C (50°F)	3.00 to 3.73 kohms
1-2	15°C(59°F)	2.45 to 2.88 kohms
1-2	20°C (68°F)	1.95 to 2.30 kohms
1-2	25°C (77°F)	1.60 to 1.80 kohms
1-2	30°C (86°F)	1.28 to 1.47 kohms
1-2	35°C (95°F)	1.00 to 1.22 kohms
1-2	40°C(104°F)	0.80 to 1.00 kohms
1-2	45°C(113°F)	0.65 to 0.85 kohms
1-2	50°C (122°F)	0.50 to 0.70 kohms
1-2	55°C(131°F)	0.44 to 0.60 kohms
1-2	60°C (140°F)	0.36 to 0.50 kohms

NOTE:

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

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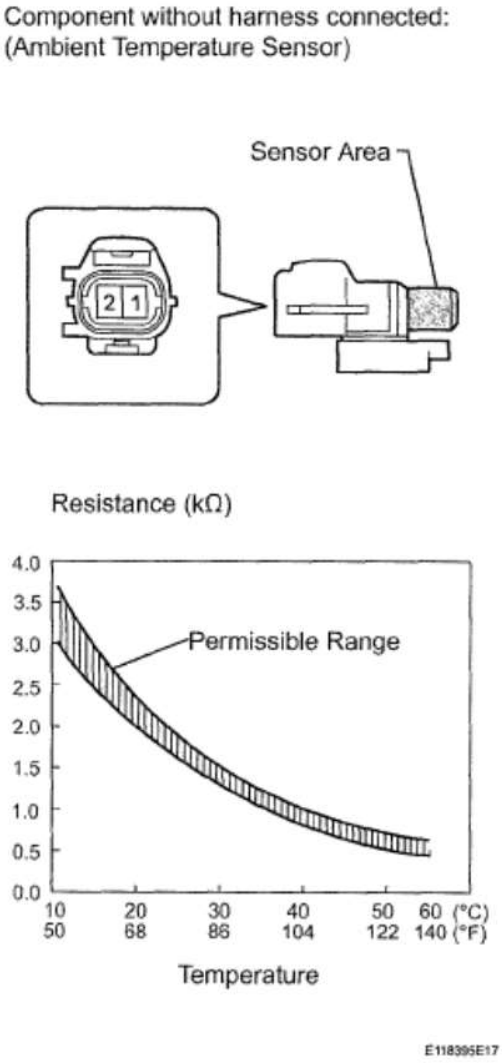


Fig. 249: Identifying Ambient Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

As the temperature increases, the resistance decreases (see **Fig. 249**).

If the resistance is not as specified, replace the ambient temperature sensor.

INSTALLATION

1. **INSTALL AMBIENT TEMPERATURE SENSOR**
   a. Engage the clamp and install the ambient temperature sensor.
   b. Connect the connector.

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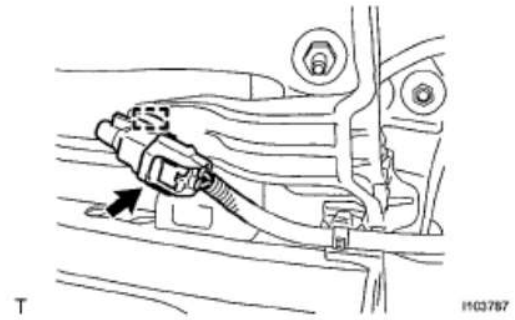


Fig. 250: Locating Ambient Temperature Sensor Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL FRONT BUMPER COVER** (See **INSTALLATION**)

FRONT EVAPORATOR TEMPERATURE SENSOR

COMPONENTS

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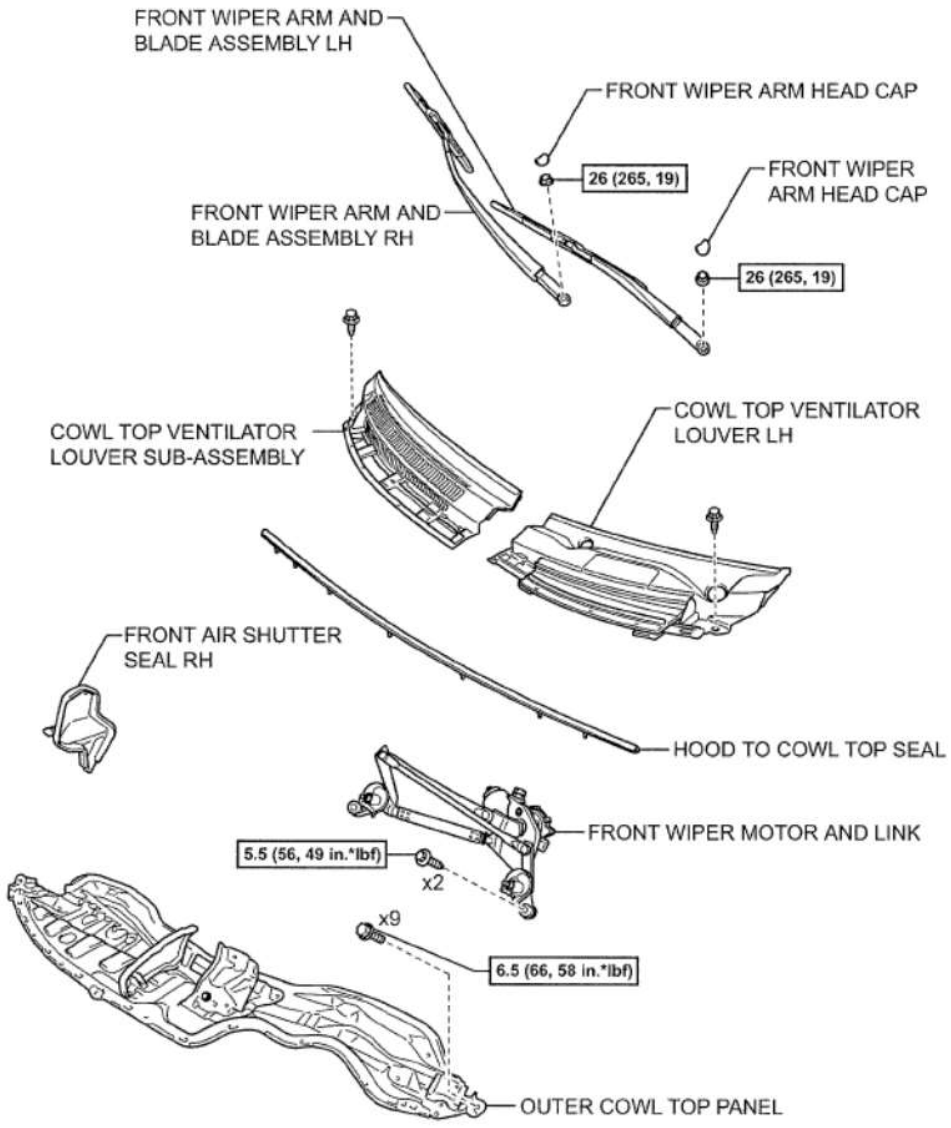


Fig. 251: Identifying Front Evaporator Temperature Sensor Components With Torque Specifications (1 Of 11)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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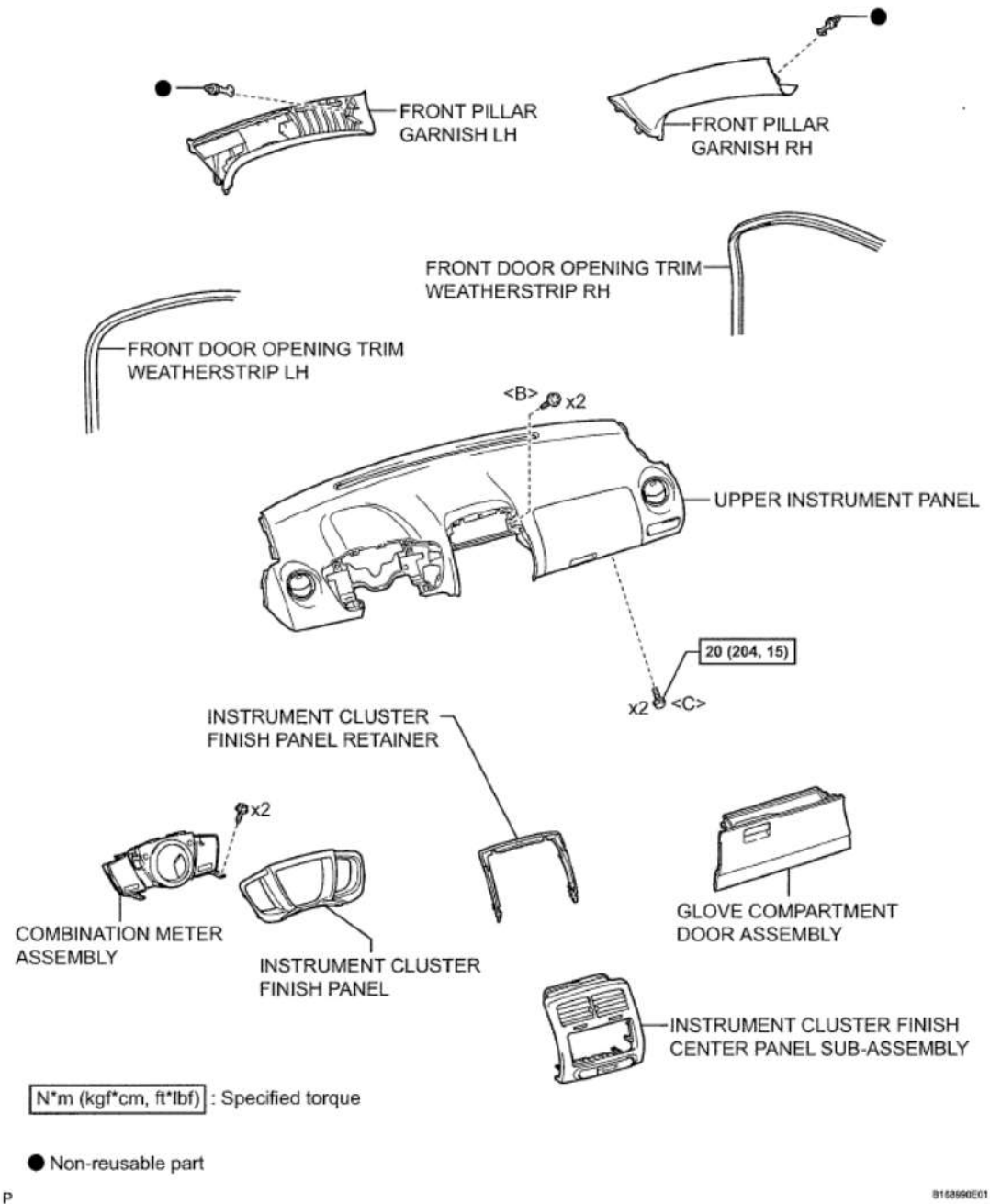


Fig. 252: Identifying Front Evaporator Temperature Sensor Components With Torque Specification (2 Of 11)

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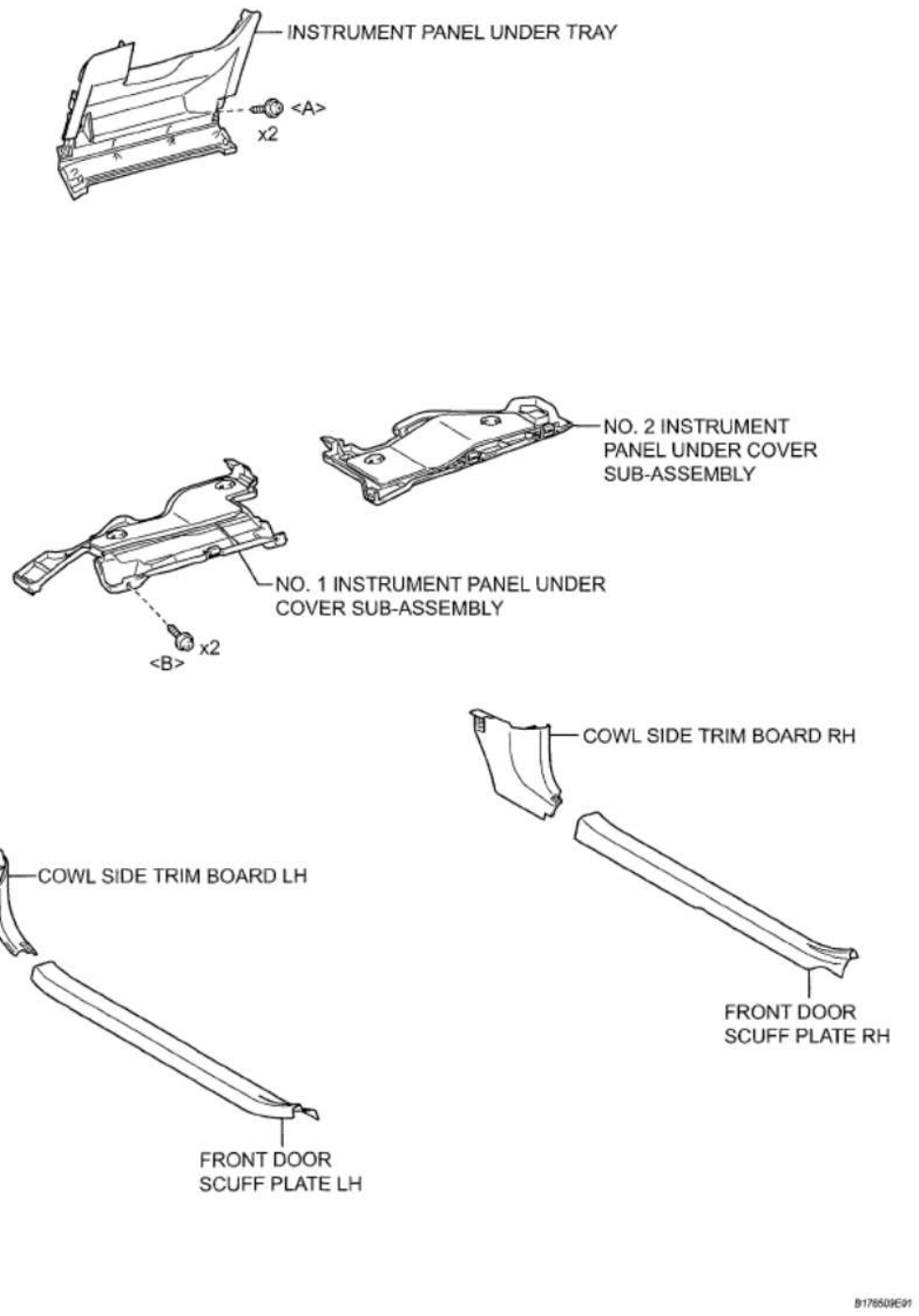


Fig. 253: Identifying Front Evaporator Temperature Sensor Components (3 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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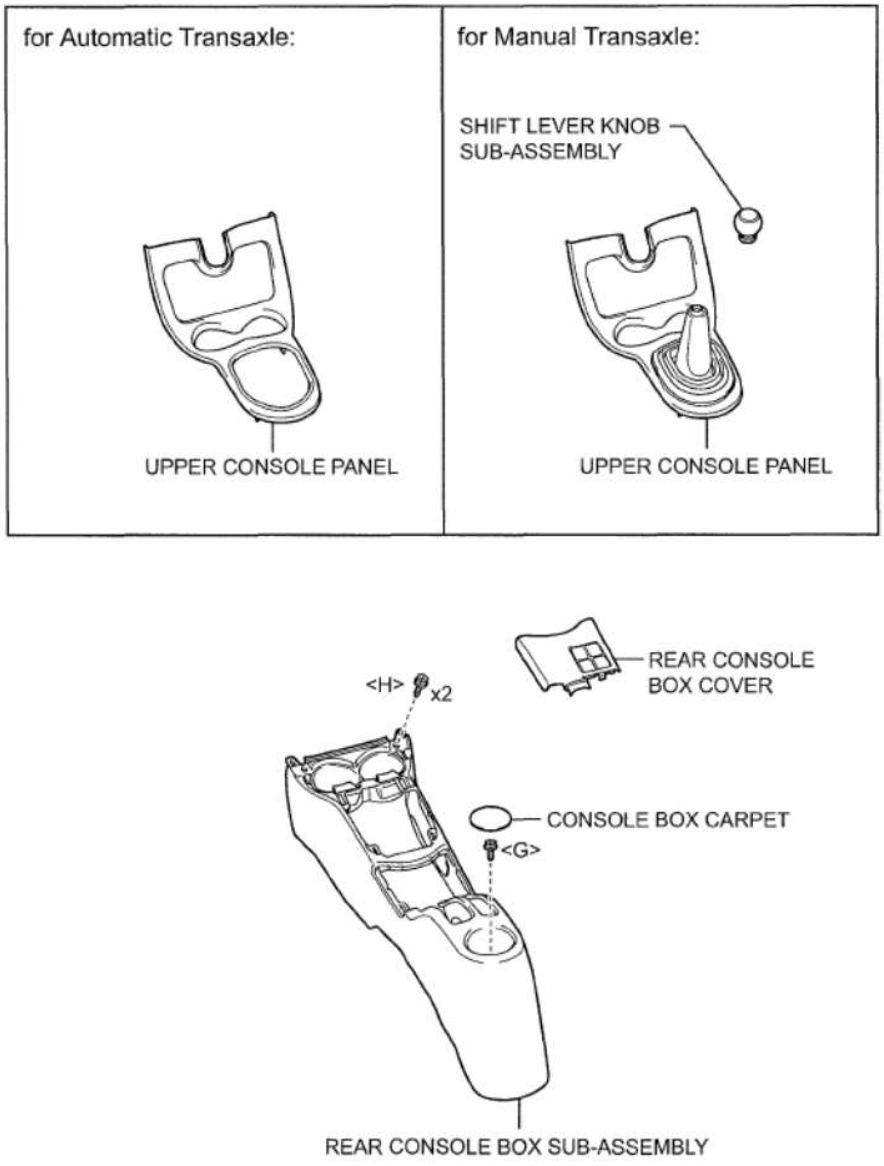


Fig. 254: Identifying Front Evaporator Temperature Sensor Components (4 Of 11)
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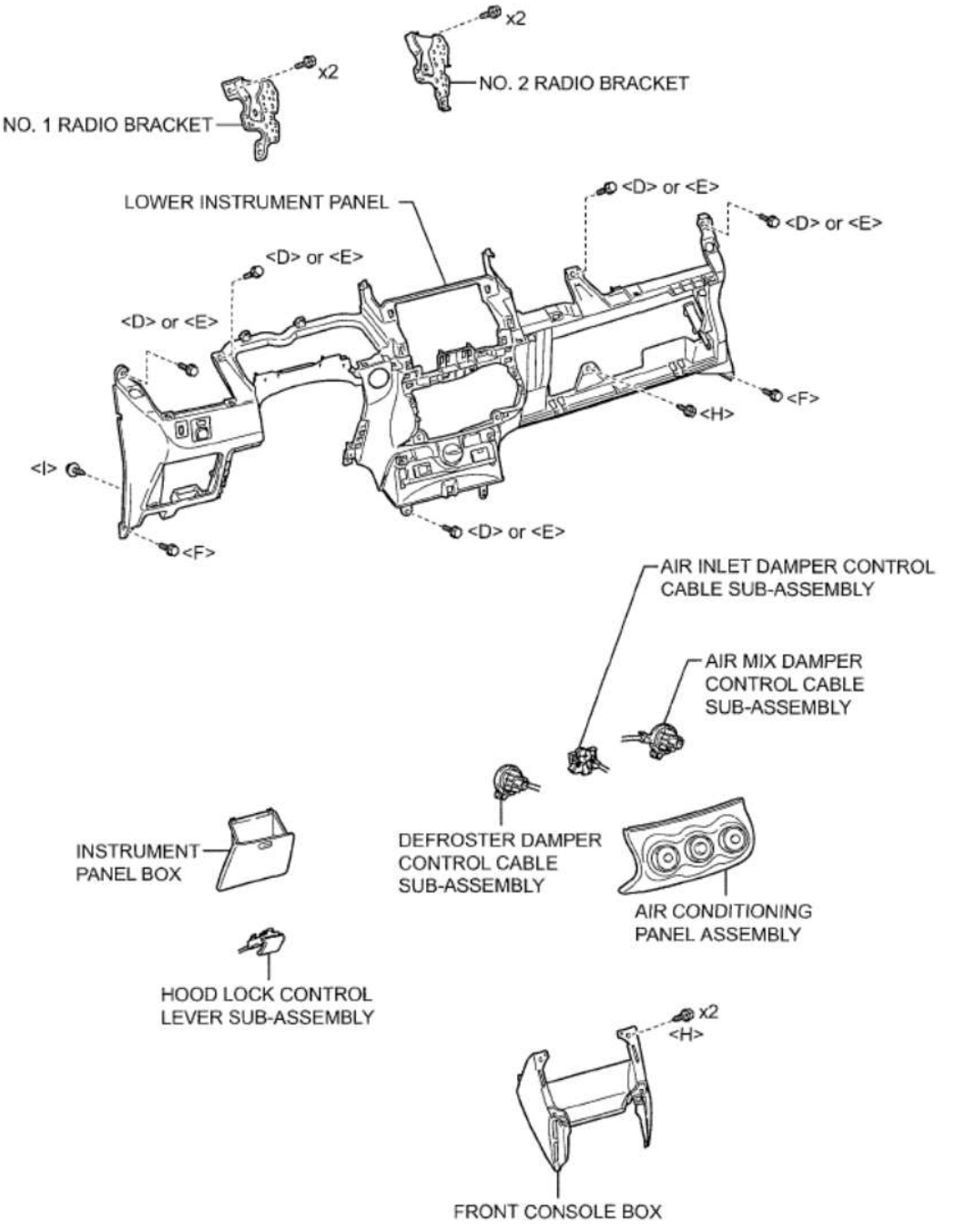


Fig. 255: Identifying Front Evaporator Temperature Sensor Components (5 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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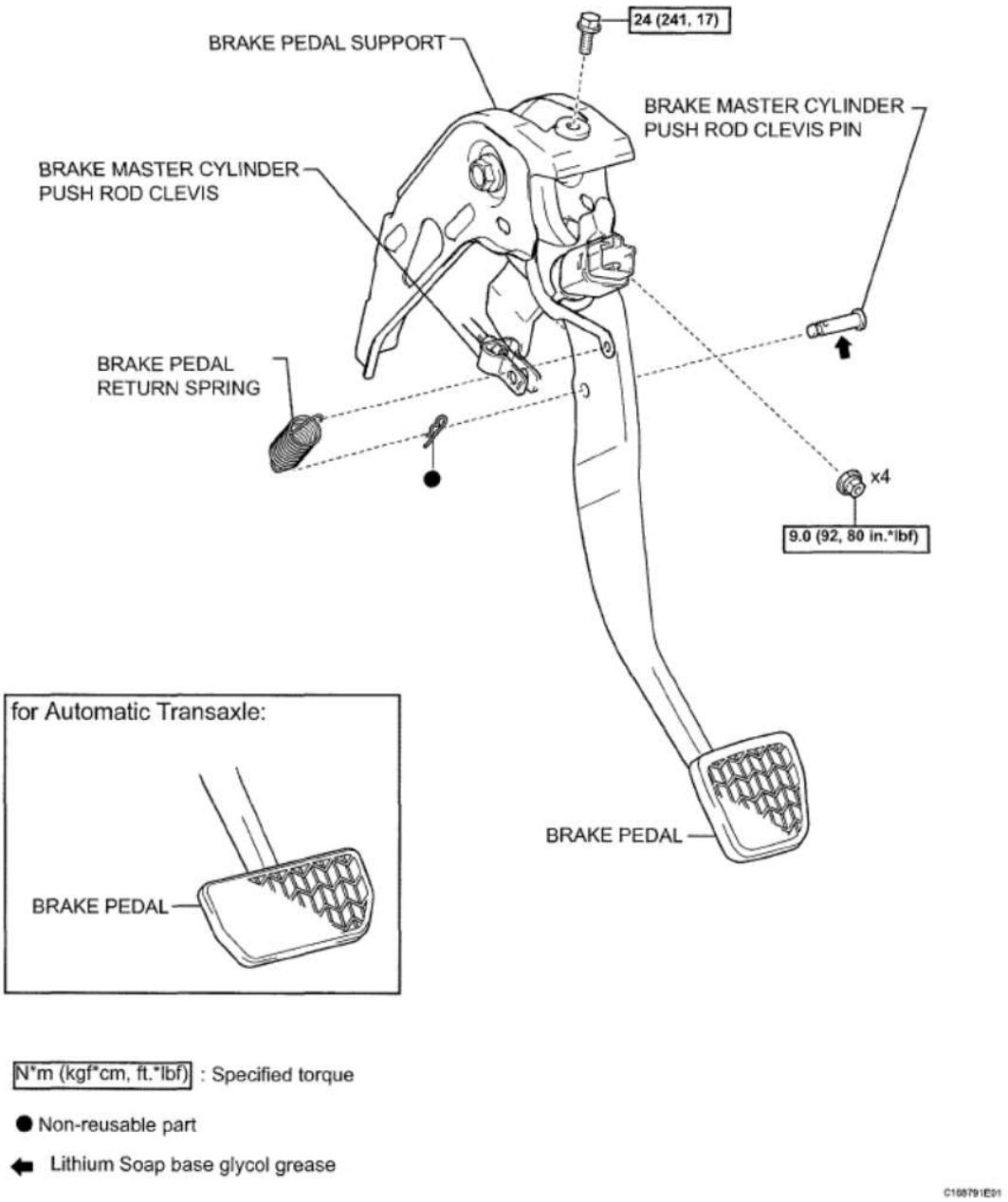


Fig. 256: Identifying Front Evaporator Temperature Sensor Components With Torque Specifications (6 Of 11)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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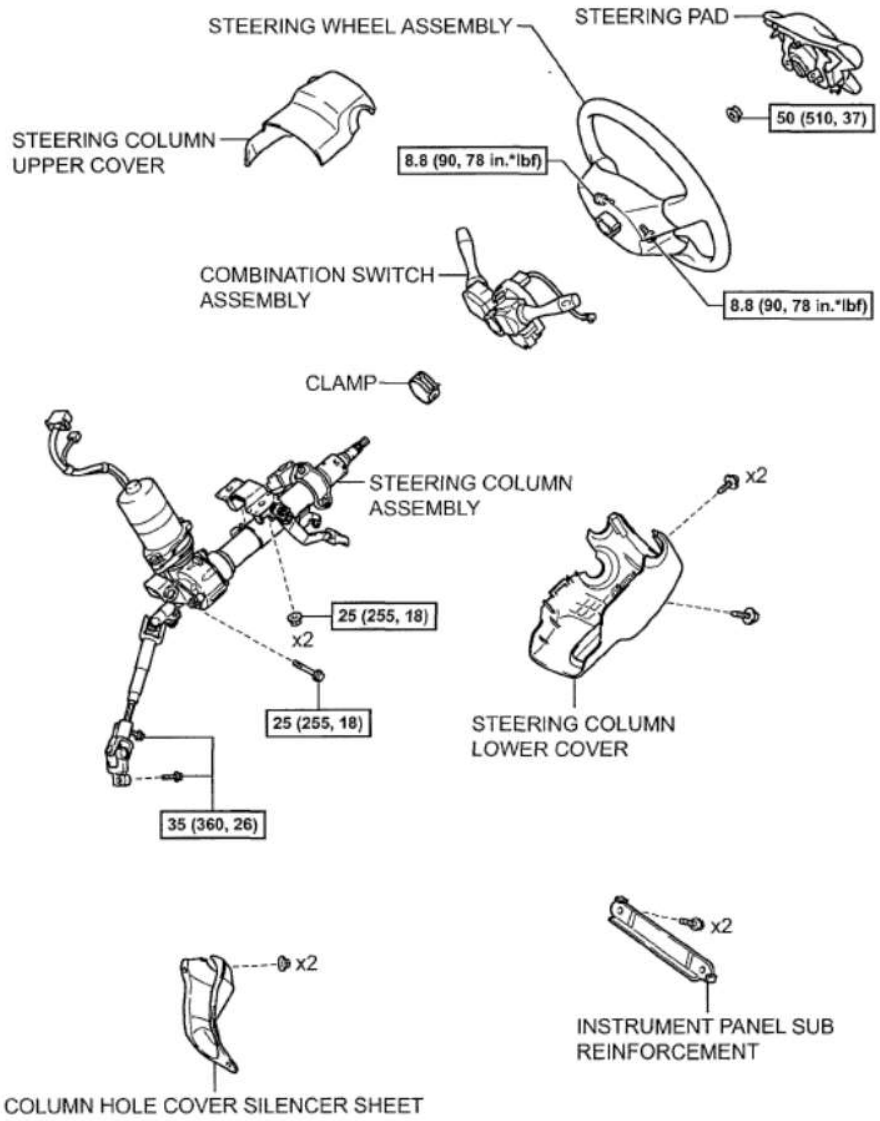


Fig. 257: Identifying Front Evaporator Temperature Sensor Components With Torque Specifications (7 Of 11)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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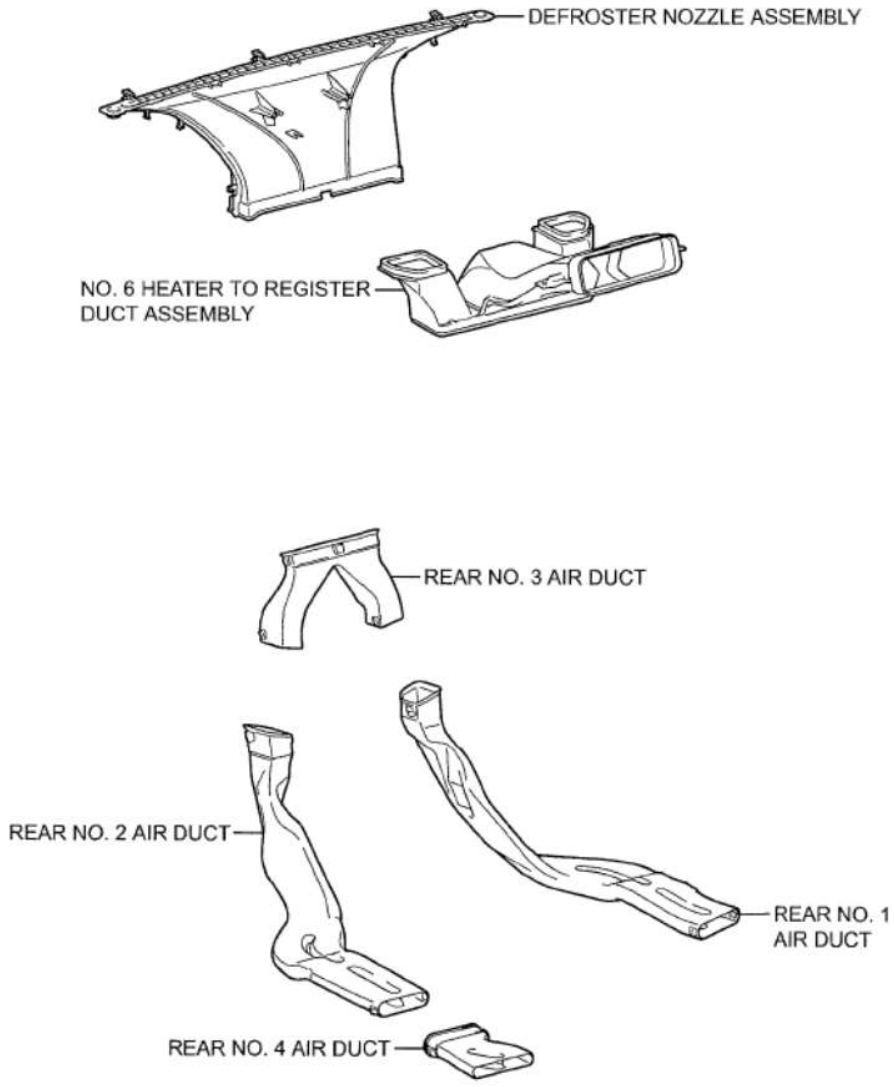


Fig. 258: Identifying Front Evaporator Temperature Sensor Components (8 Of 11)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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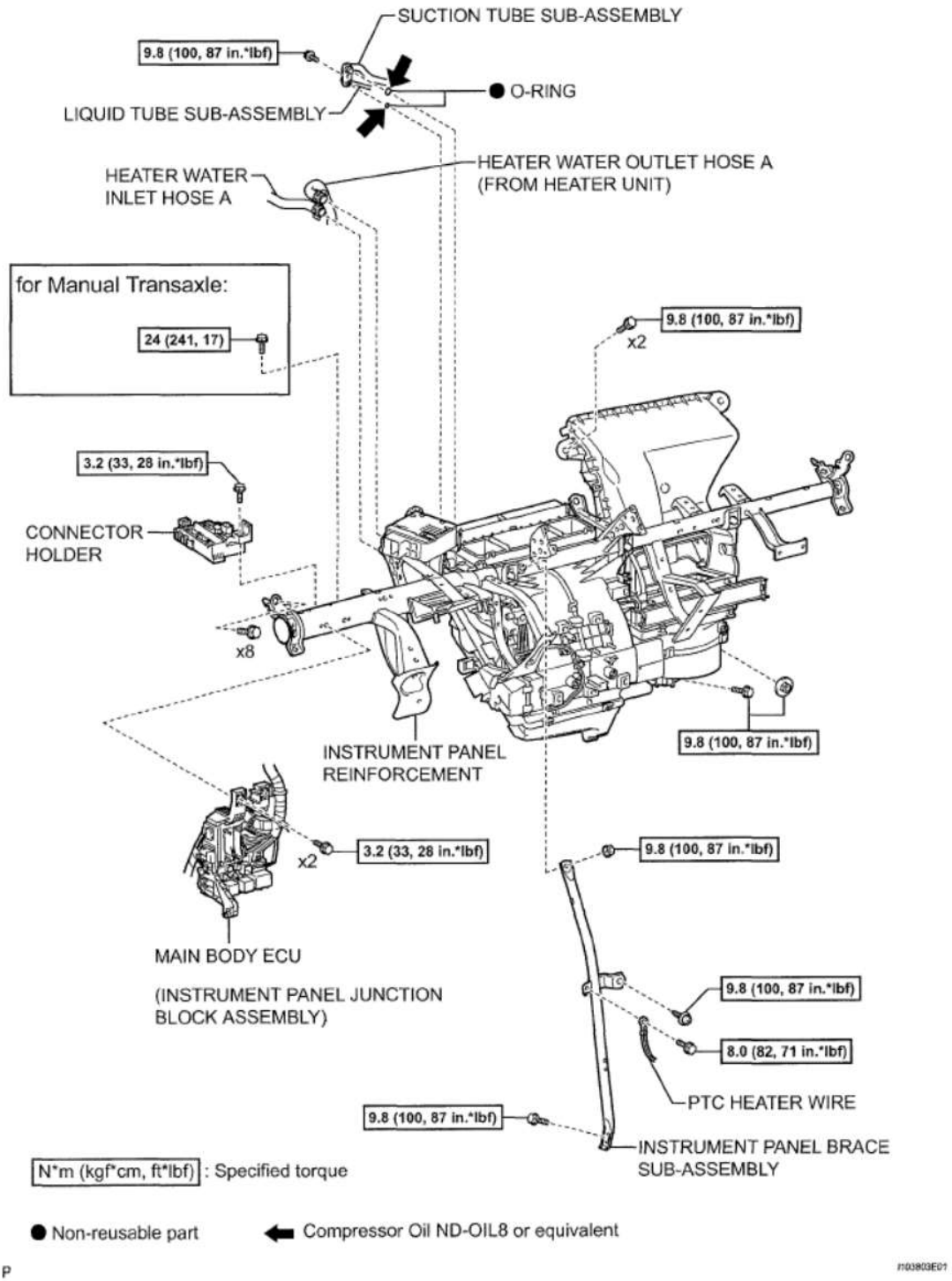
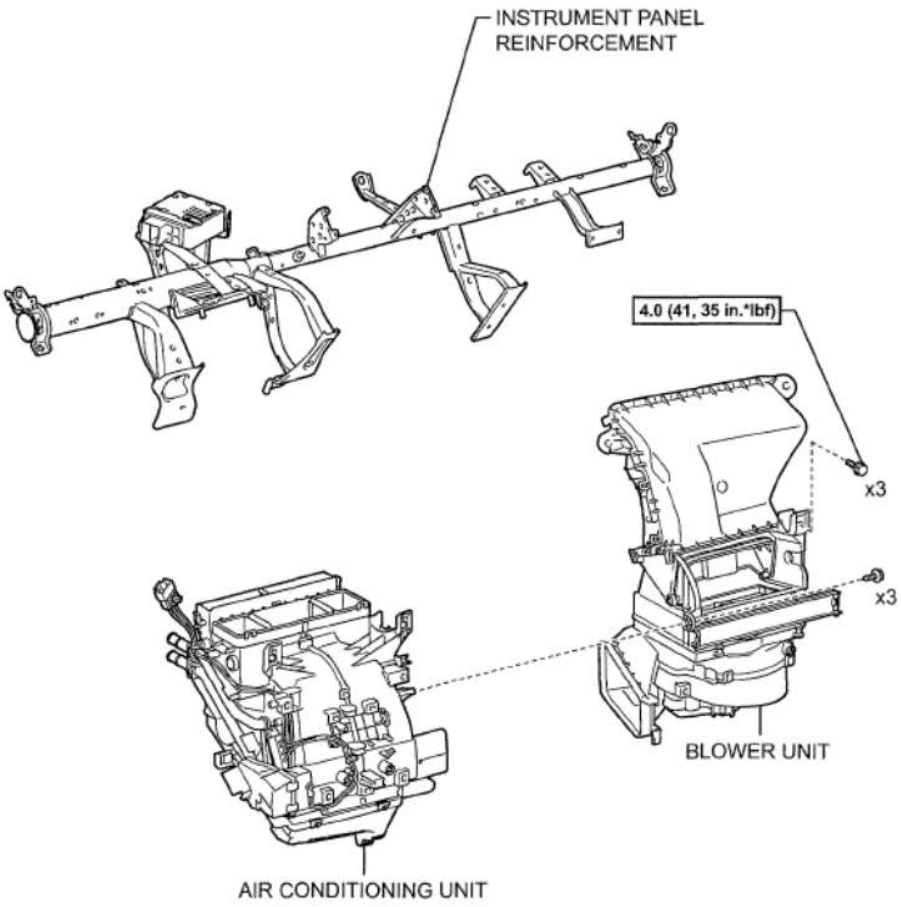


Fig. 259: Identifying Front Evaporator Temperature Sensor Components With Torque Specifications (9 Of 11)

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N*m (kgf*cm, ft*lbf) : Specified torque

P I103805E01

Fig. 260: Identifying Front Evaporator Temperature Sensor Components With Torque Specification (10 Of 11)
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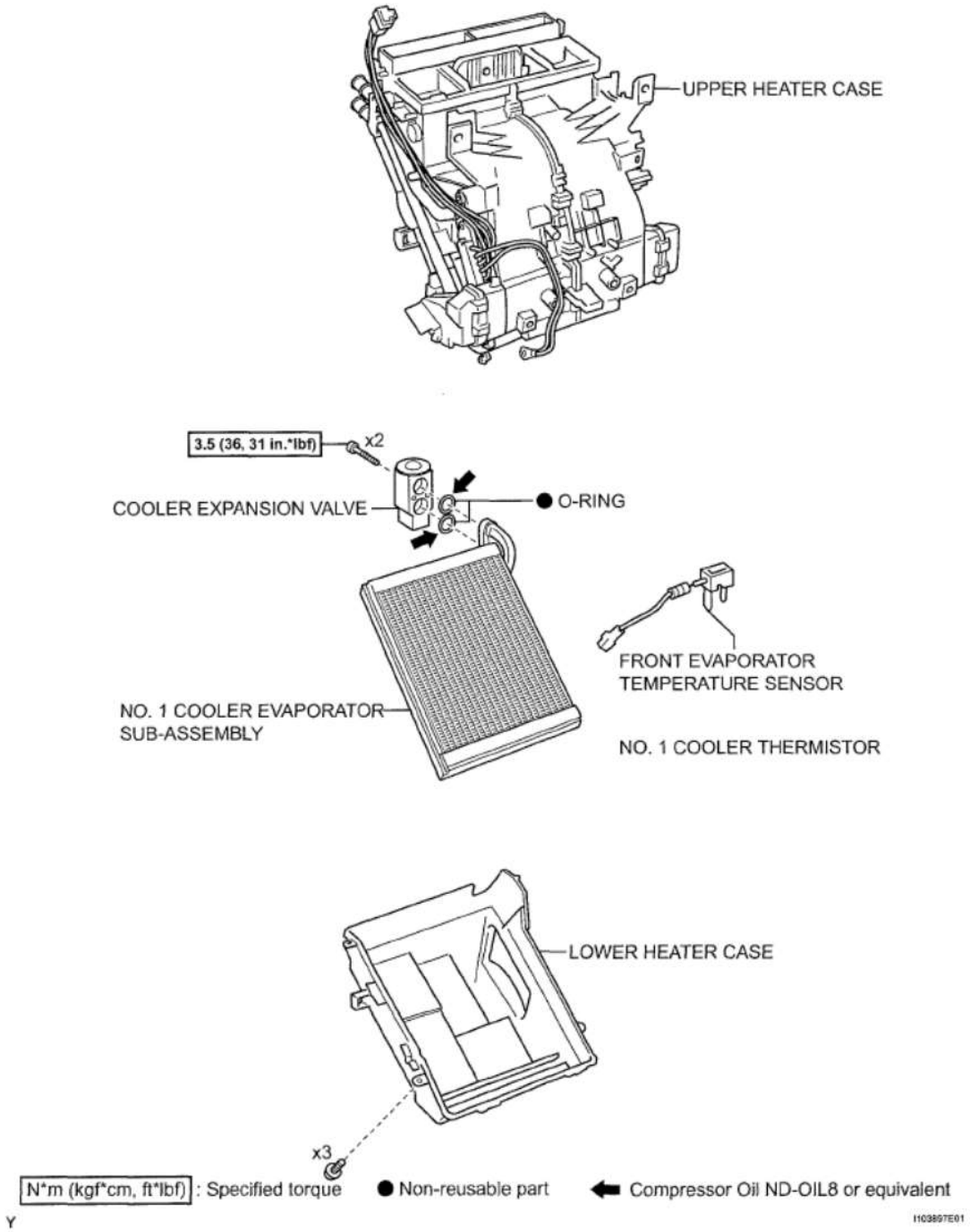


Fig. 261: Identifying Front Evaporator Temperature Sensor Components With Torque Specification (11 Of 11)
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REMOVAL

CAUTION: Some of these service operations affect the SRS airbag system. Read the

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precautionary notices concerning the SRS airbag system before servicing (See PRECAUTION).

HINT:

Use the same procedure for both the RH and LH sides.

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

   Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

2. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM** (See **REPLACEMENT**)
3. **DRAIN ENGINE COOLANT** (See **REPLACEMENT**)
4. **REMOVE FRONT WIPER ARM HEAD CAP** (See **REMOVAL**)
5. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **REMOVAL**)
6. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **REMOVAL**)
7. **REMOVE HOOD TO COWL TOP SEAL** (See **REMOVAL**)
8. **REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **REMOVAL**)
9. **REMOVE COWL TOP VENTILATOR LOUVER LH** (See **REMOVAL**)
10. **REMOVE FRONT WIPER MOTOR AND LINK** (See **REMOVAL**)
11. **REMOVE FRONT AIR SHUTTER SEAL RH** (See **REMOVAL**)
12. **REMOVE OUTER COWL TOP PANEL** (See **REMOVAL**)
13. **DISCONNECT SUCTION TUBE SUB-ASSEMBLY** (See **REMOVAL**)
14. **DISCONNECT LIQUID TUBE SUB-ASSEMBLY** (See **REMOVAL**)
15. **DISCONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)** (See **REMOVAL**)
16. **DISCONNECT HEATER WATER INLET HOSE A** (See **REMOVAL**)
17. **TABLE OF BOLTS, SCREWS AND NUTS** (See **REMOVAL**)
18. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **REMOVAL**)
19. **SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **REMOVAL**)
20. **REMOVE FRONT PILLAR GARNISH RH** (See **REMOVAL**)
21. **REMOVE FRONT PILLAR GARNISH LH** (See **REMOVAL**)
22. **REMOVE INSTRUMENT CLUSTER FINISH PANEL** (See **REMOVAL**)
23. **REMOVE COMBINATION METER ASSEMBLY** (See **REMOVAL**)
24. **REMOVE INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **REMOVAL**)
25. **REMOVE INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **REMOVAL**)
26. **REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY** (See **REMOVAL**)
27. **REMOVE UPPER INSTRUMENT PANEL** (See **REMOVAL**)
28. **REMOVE FRONT DOOR SCUFF PLATE RH** (See **REMOVAL**)

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29. **REMOVE FRONT DOOR SCUFF PLATE LH** (See **REMOVAL**)
30. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
31. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
32. **REMOVE COWL SIDE TRIM BOARD RH** (See **REMOVAL**)
33. **REMOVE COWL SIDE TRIM BOARD LH** (See **REMOVAL**)
34. **REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **REMOVAL**)
35. **REMOVE UPPER CONSOLE PANEL** (See **REMOVAL**)
36. **REMOVE REAR CONSOLE BOX COVER** (See **REMOVAL**)
37. **REMOVE CONSOLE BOX CARPET** (See **REMOVAL**)
38. **REMOVE REAR CONSOLE BOX SUB-ASSEMBLY** (See **REMOVAL**)
39. **SEPARATE AIR CONDITIONING PANEL ASSEMBLY** (See **REMOVAL**)
40. **DISCONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **REMOVAL**)
41. **DISCONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
42. **DISCONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **DISASSEMBLY**)
43. **REMOVE FRONT CONSOLE BOX** (See **REMOVAL**)
44. **REMOVE INSTRUMENT PANEL UNDER TRAY** (See **REMOVAL**)
45. **REMOVE INSTRUMENT PANEL BOX** (See **REMOVAL**)
46. **REMOVE NO. 2 RADIO BRACKET** (See **REMOVAL**)
47. **REMOVE NO. 1 RADIO BRACKET** (See **REMOVAL**)
48. **SEPARATE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **REMOVAL**)
49. **SEPARATE ANTENNA CORD SUB-ASSEMBLY** (See **REMOVAL**)
50. **REMOVE LOWER INSTRUMENT PANEL** (See **REMOVAL**)
51. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**
52. **REMOVE STEERING PAD** (See **REMOVAL**)
53. **REMOVE STEERING WHEEL ASSEMBLY** (See **REMOVAL**)
54. **REMOVE STEERING COLUMN LOWER COVER** (See **REMOVAL**)
55. **REMOVE STEERING COLUMN UPPER COVER** (See **REMOVAL**)
56. **REMOVE COMBINATION SWITCH ASSEMBLY** (See **REMOVAL**)
57. **DISCONNECT POWER STEERING ECU** (See **REMOVAL**)
58. **REMOVE INSTRUMENT PANEL SUB REINFORCEMENT** (See **REMOVAL**)
59. **REMOVE COLUMN HOLE COVER SILENCER SHEET** (See **REMOVAL**)
60. **SEPARATE STEERING SLIDING YOKE SUB-ASSEMBLY** (See **REMOVAL**)
61. **REMOVE BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **REMOVAL**)
62. **REMOVE BRAKE PEDAL SUPPORT** (See **REMOVAL**)
63. **REMOVE STEERING COLUMN ASSEMBLY** (See **REMOVAL**)

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64. **REMOVE NO. 6 HEATER TO REGISTER DUCT ASSEMBLY** (See **REMOVAL**)
65. **REMOVE DEFROSTER NOZZLE ASSEMBLY** (See **REMOVAL**)
66. **REMOVE REAR NO. 1 AIR DUCT** (See **REMOVAL**)
67. **REMOVE REAR NO. 2 AIR DUCT** (See **REMOVAL**)
68. **REMOVE INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **REMOVAL**)
69. **REMOVE REAR NO. 3 AIR DUCT** (See **REMOVAL**)
70. **DISCONNECT DRAIN COOLER HOSE** (See **REMOVAL**)
71. **SEPARATE MAIN BODY ECU** (See **REMOVAL**)
72. **SEPARATE INSTRUMENT PANEL WIRE** (See **REMOVAL**)
73. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)** (See **REMOVAL**)
74. **REMOVE INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)** (See **REMOVAL**)
75. **REMOVE AIR CONDITIONING UNIT** (See **REMOVAL**)
76. **REMOVE COOLER EXPANSION VALVE** (See **DISASSEMBLY**)
77. **REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY** (See **DISASSEMBLY**)
78. **REMOVE FRONT EVAPORATOR TEMPERATURE SENSOR**
    a. Remove the evaporator temperature sensor from the cooler evaporator.

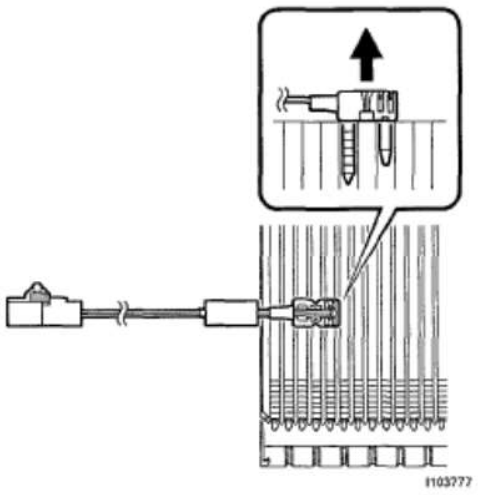


Fig. 262: Removing Evaporator Temperature Sensor From Cooler Evaporator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT FRONT EVAPORATOR TEMPERATURE SENSOR**
    a. Measure the resistance according to the value(s) in the table below.

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Standard resistance

RESISTANCE SPECIFICATION

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

NOTE:

- **Touching the sensor even slightly may change the resistance value. Hold the sensor connector.**
- **When measuring the resistance, the temperature of the sensor and the cooler thermistor must be the same.**

HINT:

As the temperature increases, the resistance decreases (see **Fig. 263**).

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

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Component without harness connected:
(No. 1 Cooler Thermistor)

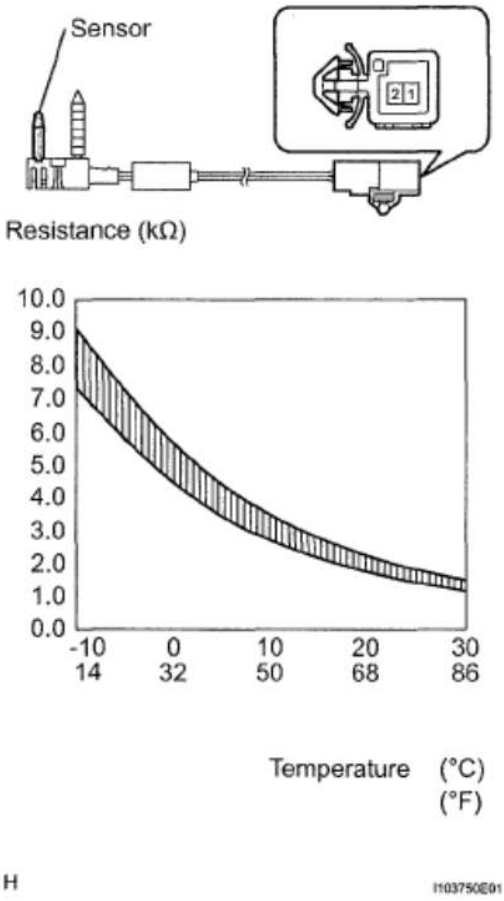


Fig. 263: Identifying Evaporator Temperature Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL FRONT EVAPORATOR TEMPERATURE SENSOR**
   a. Install evaporator temperature sensor as shown in the illustration.

Standard

PARTS LENGTH SPECIFICATION

Part	Length	
A	34.3 mm	1.35 in.
B	20.9 mm	0.82 in.
C	50 mm	1.96 in.

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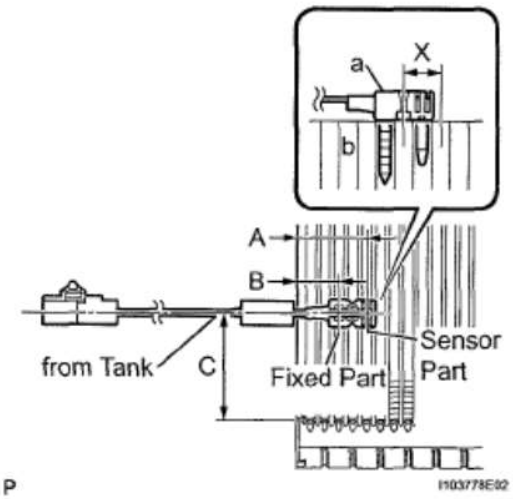


Fig. 264: Installing Front Evaporator Temperature Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE:

- **Be sure to insert the sensor only once because reinserting it will not allow it to be firmly secured.**
- **When reusing the evaporator, insert the sensor one row next to the one that has been used previously (X in the illustration).**
- **After inserting the sensor, do not apply excessive force to the wire.**
- **Directly insert the sensor until the edge of the plastic case "a" comes into contact with the evaporator "b".**

2. **INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY** (See **REASSEMBLY**)
3. **INSTALL COOLER EXPANSION VALVE** (See **INSTALLATION**)
4. **INSTALL AIR CONDITIONING UNIT** (See **INSTALLATION**)
5. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Manual Transaxle)** (See **INSTALLATION**)
6. **INSTALL INSTRUMENT PANEL REINFORCEMENT (for Automatic Transaxle)** (See **INSTALLATION**)
7. **INSTALL INSTRUMENT PANEL WIRE** (See **INSTALLATION**)
8. **INSTALL MAIN BODY ECU** (See **INSTALLATION**)
9. **CONNECT DRAIN COOLER HOSE** (See **INSTALLATION**)
10. **INSTALL REAR NO. 3 AIR DUCT** (See **INSTALLATION**)
11. **INSTALL INSTRUMENT PANEL BRACE SUB-ASSEMBLY** (See **INSTALLATION**)
12. **INSTALL REAR NO. 2 AIR DUCT** (See **INSTALLATION**)
13. **INSTALL REAR NO. 1 AIR DUCT** (See **INSTALLATION**)
14. **INSTALL DEFROSTER NOZZLE ASSEMBLY** (See **INSTALLATION**)

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15. **INSTALL NO. 6 HEATER TO REGISTER DUCT ASSEMBLY** (See **INSTALLATION**)
16. **INSTALL STEERING COLUMN ASSEMBLY** (See **INSTALLATION**)
17. **INSTALL BRAKE PEDAL SUPPORT** (See **INSTALLATION**)
18. **INSTALL BRAKE MASTER CYLINDER PUSH ROD CLEVIS** (See **INSTALLATION**)
19. **INSTALL STEERING SLIDING YOKE SUB-ASSEMBLY** (See **INSTALLATION**)
20. **INSTALL COLUMN HOLE COVER SILENCER SHEET** (See **INSTALLATION**)
21. **INSTALL INSTRUMENT PANEL SUB REINFORCEMENT** (See **INSTALLATION**)
22. **CONNECT POWER STEERING ECU ASSEMBLY** (See **INSTALLATION**)
23. **INSTALL COMBINATION SWITCH ASSEMBLY** (See **INSTALLATION**)
24. **INSTALL STEERING COLUMN UPPER COVER** (See **INSTALLATION**)
25. **INSTALL STEERING COLUMN LOWER COVER** (See **INSTALLATION**)
26. **INSTALL STEERING WHEEL ASSEMBLY** (See **INSTALLATION**)
27. **INSTALL STEERING PAD** (See **INSTALLATION**)
28. **INSTALL LOWER INSTRUMENT PANEL** (See **INSTALLATION**)
29. **CONNECT ANTENNA CORD SUB-ASSEMBLY** (See **INSTALLATION**)
30. **CONNECT HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See **INSTALLATION**)
31. **INSTALL NO. 1 RADIO BRACKET** (See **INSTALLATION**)
32. **INSTALL NO. 2 RADIO BRACKET** (See **INSTALLATION**)
33. **INSTALL INSTRUMENT PANEL BOX** (See **INSTALLATION**)
34. **INSTALL INSTRUMENT PANEL UNDER TRAY** (See **INSTALLATION**)
35. **INSTALL FRONT CONSOLE BOX** (See **INSTALLATION**)
36. **CONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
37. **CONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
38. **CONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY** (See **INSTALLATION**)
39. **INSTALL AIR CONDITIONING PANEL ASSEMBLY** (See **INSTALLATION**)
40. **INSTALL REAR CONSOLE BOX SUB-ASSEMBLY** (See **INSTALLATION**)
41. **INSTALL CONSOLE BOX CARPET** (See **INSTALLATION**)
42. **INSTALL REAR CONSOLE BOX COVER** (See **INSTALLATION**)
43. **INSTALL UPPER CONSOLE PANEL** (See **INSTALLATION**)
44. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle)** (See **INSTALLATION**)
45. **INSTALL COWL SIDE TRIM BOARD RH** (See **INSTALLATION**)
46. **INSTALL COWL SIDE TRIM BOARD LH** (See **INSTALLATION**)
47. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
48. **INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See

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INSTALLATION)

49. **INSTALL FRONT DOOR SCUFF PLATE RH** (See **INSTALLATION**)
50. **INSTALL FRONT DOOR SCUFF PLATE LH** (See **INSTALLATION**)
51. **INSTALL UPPER INSTRUMENT PANEL** (See **INSTALLATION**)
52. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See **INSTALLATION**)
53. **INSTALL INSTRUMENT CLUSTER FINISH PANEL RETAINER** (See **INSTALLATION**)
54. **INSTALL INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **INSTALLATION**)
55. **INSTALL COMBINATION METER ASSEMBLY** (See **INSTALLATION**)
56. **INSTALL INSTRUMENT CLUSTER FINISH PANEL** (See **INSTALLATION**)
57. **INSTALL FRONT PILLAR GARNISH RH** (See **INSTALLATION**)
58. **INSTALL FRONT PILLAR GARNISH LH** (See **INSTALLATION**)
59. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH** (See **INSTALLATION**)
60. **INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH** (See **INSTALLATION**)
61. **CONNECT HEATER WATER INLET HOSE A** (See **INSTALLATION**)
62. **CONNECT HEATER WATER OUTLET HOSE A (FROM HEATER UNIT)** (See **INSTALLATION**)
63. **INSTALL LIQUID TUBE SUB-ASSEMBLY** (See **INSTALLATION**)
64. **INSTALL SUCTION TUBE SUB-ASSEMBLY** (See **INSTALLATION**)
65. **INSTALL OUTER COWL TOP PANEL** (See **INSTALLATION**)
66. **INSTALL FRONT AIR SHUTTER SEAL RH** (See **INSTALLATION**)
67. **INSTALL FRONT WIPER MOTOR AND LINK** (See **INSTALLATION**)
68. **INSTALL COWL TOP VENTILATOR LOUVER LH** (See **INSTALLATION**)
69. **INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY** (See **INSTALLATION**)
70. **INSTALL HOOD TO COWL TOP SEAL** (See **INSTALLATION**)
71. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH** (See **INSTALLATION**)
72. **INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH** (See **INSTALLATION**)
73. **INSTALL FRONT WIPER ARM HEAD CAP** (See **INSTALLATION**)
74. **ADD ENGINE COOLANT** (See **REPLACEMENT**)
75. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

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

76. **INSPECT SRS WARNING LIGHT**

    (Seep age RS-31)

77. **CHARGE REFRIGERANT** (See **REFRIGERANT LINE**)
78. **WARM UP ENGINE** (See **REPLACEMENT**)

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79. **INSPECT FOR COOLANT LEAK** (See **ON-VEHICLE INSPECTION**)
80. **INSPECT FOR REFRIGERANT LEAK** (See **REPLACEMENT**)
81. **POSITION FRONT WHEELS FACING STRAIGHT AHEAD**

AIR CONDITIONING PRESSURE SENSOR

ON-VEHICLE INSPECTION

1. **INSPECT PRESSURE SENSOR**
   a. Check the wire harness.
      1. Disconnect the connector of the pressure sensor.
      2. Using an ohmmeter, measure the resistance of the wire harness side connector.

Front view of wire harness connector:
(to Pressure Sensor)



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Fig. 265: Identifying A/C Pressure Sensor Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
1 - Body ground	Always	Below 1 ohms

3. Turn the ignition switch to ON.
4. Measure the voltage of the wire harness side connector.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
1-3	Ignition switch ON	4.7 to 5.3 V

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b. Check the pressure sensor.
   1. Set the manifold gauge.
   2. Connect the connector to the pressure sensor.
   3. Warm up the engine.
   4. Switch A/CON.
   5. Using a voltmeter, measure the voltage between connector terminals 6 (PRE) and 11 (SG-1) of the air conditioner amplifier.

      HINT:

      Check from the rear of the connector while it is connected to the air conditioning amplifier.

      Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Refrigerant Pressure	Specified Condition
6 (PRE)-11 (SG-1)	0.196 to 3.14 MPa (2.0 to 32 kgf/cm^2)	0.76 to 4.74 V

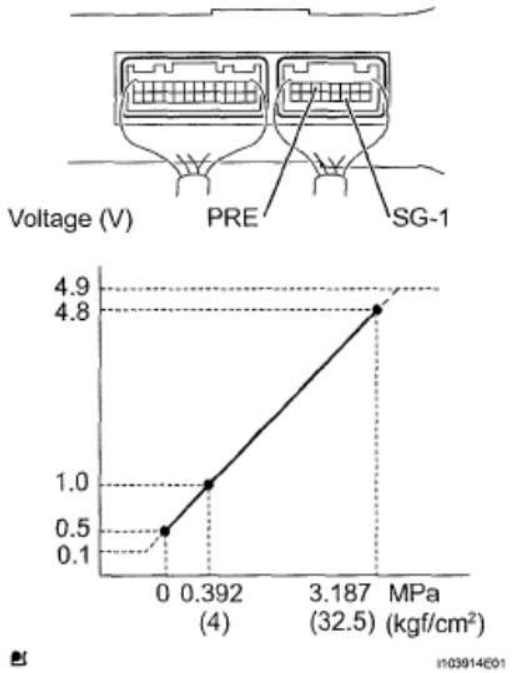


Fig. 266: Identifying Air Conditioner Amplifier Connector Terminals

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HEATER BLOWER MOTOR RELAY

ON-VEHICLE INSPECTION

1. **INSPECT HEATER BLOWER MOTOR RELAY**
   a. Check the resistance.
      1. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
3-4	When battery voltage is absent	Below 1 ohms
3-4	When battery voltage applied to terminals 1 and 2	10 kohms or higher
3-5	When battery voltage is absent	10 kohms or higher
3-5	When battery voltage applied to terminals 1 and 2	Below 1 ohms

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

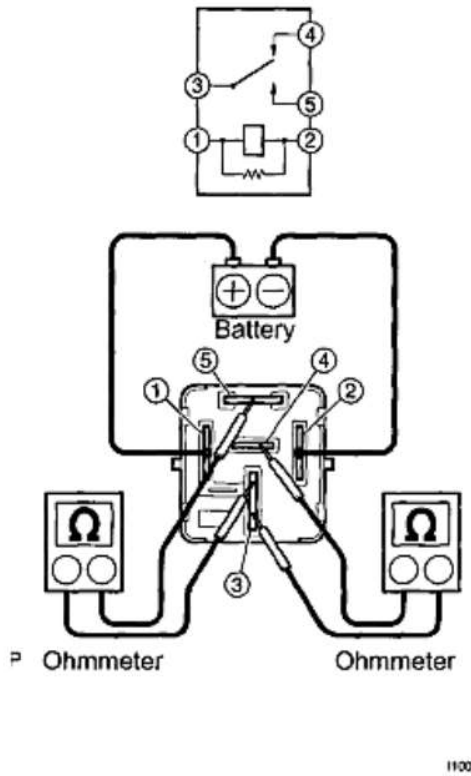


Fig. 267: Measuring Resistance Between Heater Blower Motor Relay Connector

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Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PTC HEATER RELAY

ON-VEHICLE INSPECTION

1. **INSPECT PTC HEATER RELAY**
   a. Check the resistance.
      1. Measure the resistance according to the value(s) in the table below.

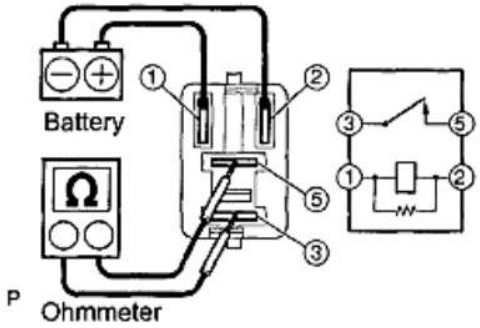


Fig. 268: Measuring Resistance Between PTC Heater Relay Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
3-5	When battery voltage is absent	10 kohms or higher
3-5	When battery voltage applied to terminals 1 and 2	Below 1 ohms

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

AIR CONDITIONING AMPLIFIER

COMPONENTS

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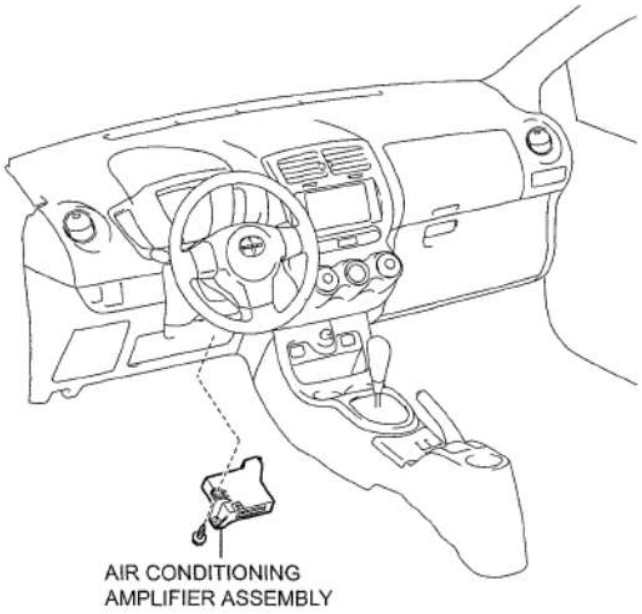


Fig. 269: Identifying Air Conditioning Amplifier Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY**
   a. Pull back the floor carpet.

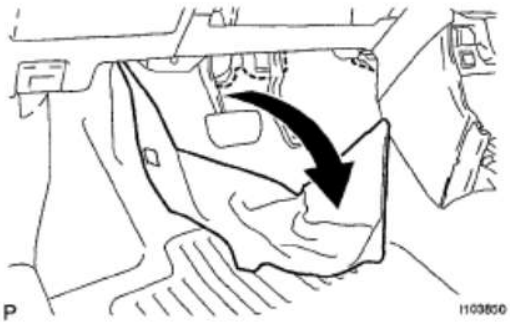


Fig. 270: Pulling Back Floor Carpet
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the 2 connectors.

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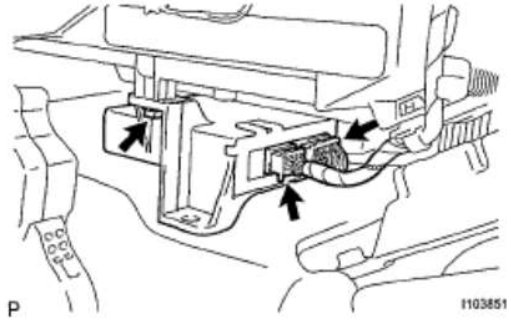


Fig. 271: Locating Air Conditioning Amplifier Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Remove the screw.
d. Remove the air conditioning amplifier as shown in the illustration.

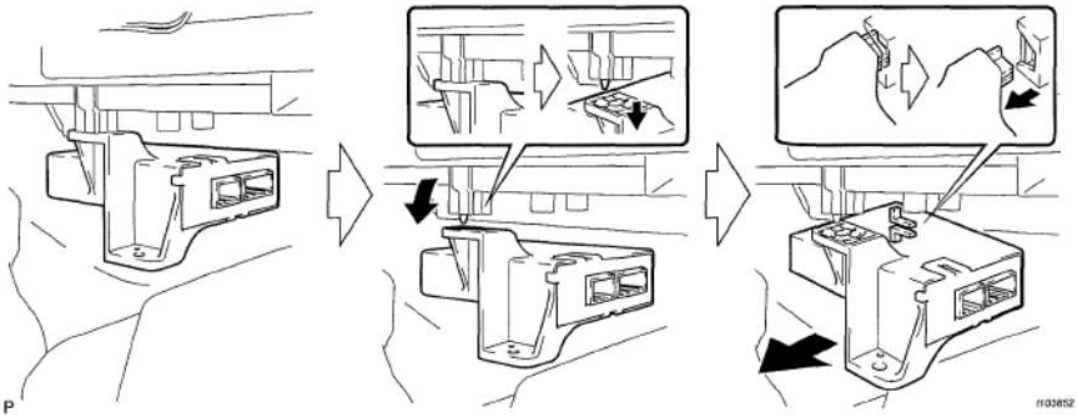


Fig. 272: Removing Air Conditioning Amplifier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY**
   a. Install the air conditioning amplifier as shown in the illustration.

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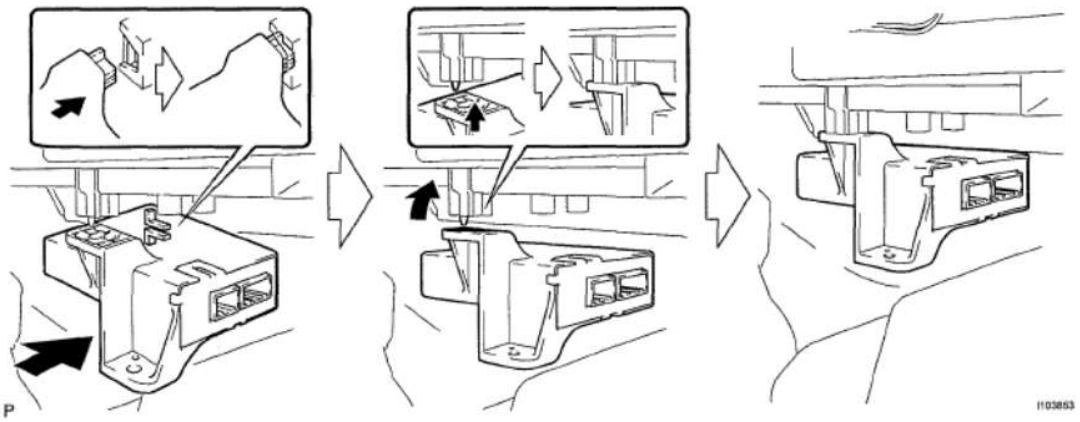


Fig. 273: Installing Air Conditioning Amplifier
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the screw.
c. Connect the 2 connectors.

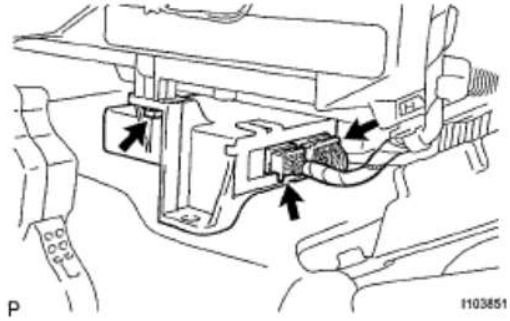


Fig. 274: Locating Air Conditioning Amplifier Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Install the floor carpet.

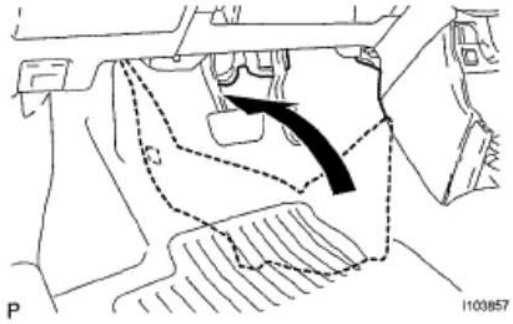


Fig. 275: Installing Floor Carpet
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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AIR CONDITIONING PANEL ASSEMBLY

COMPONENTS

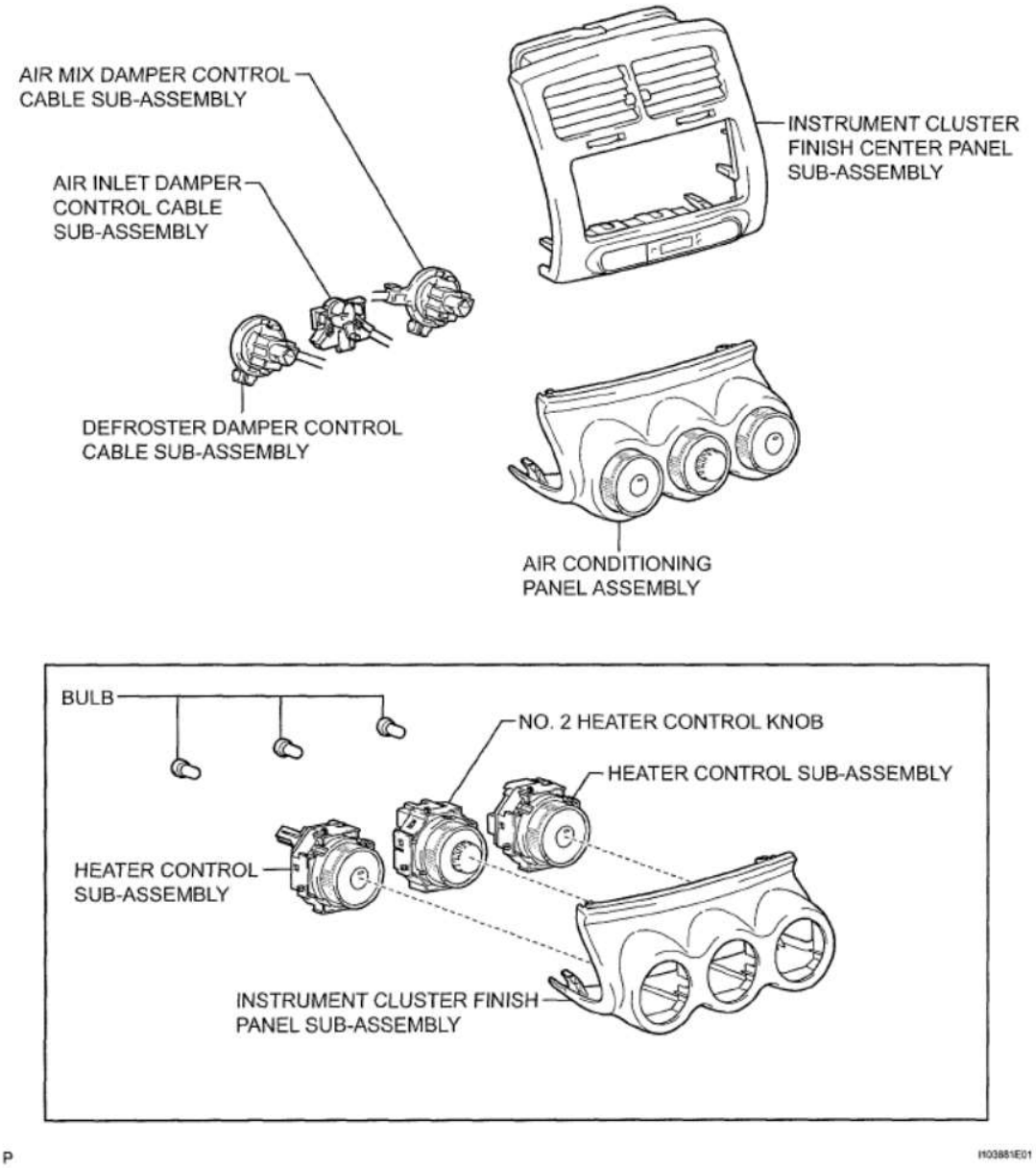


Fig. 276: Identifying Air Conditioning Panel Assembly Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **REMOVAL**)

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2. **SEPARATE AIR CONDITIONING PANEL ASSEMBLY**
   a. Disengage the 4 clips and separate the air conditioning panel.

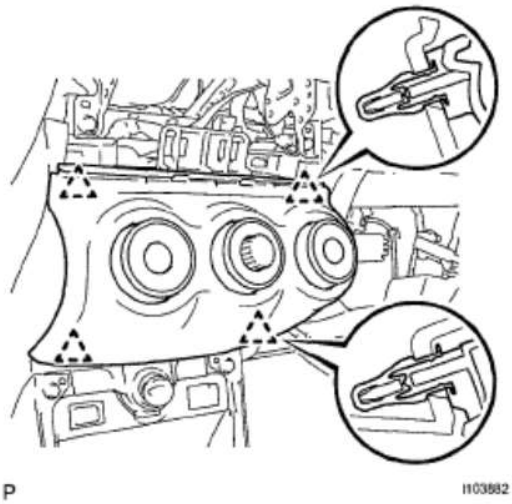


Fig. 277: Identifying Air Conditioning Panel Clips
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Disconnect the 3 connectors and clamp.

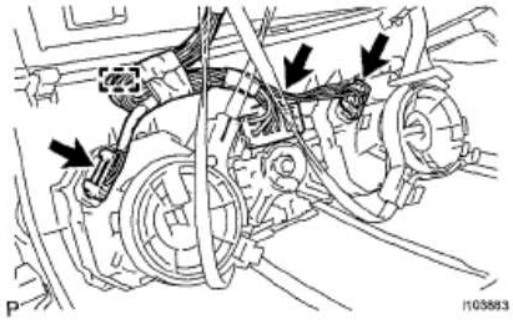


Fig. 278: Locating Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **DISCONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Disengage the 2 claws and disconnect the defroster damper control cable.

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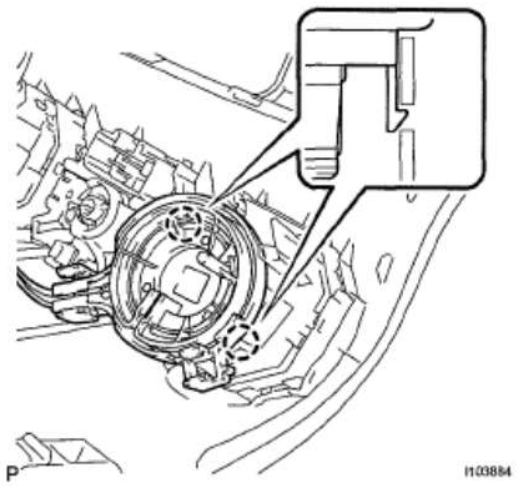


Fig. 279: Identifying Defroster Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **DISCONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Disengage the 2 claws and disconnect the air inlet damper control cable.

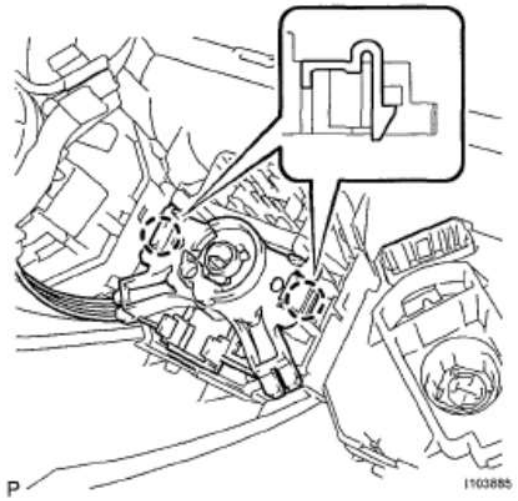


Fig. 280: Identifying Air Inlet Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **DISCONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Disengage the 2 claws and disconnect the air mix damper control cable.

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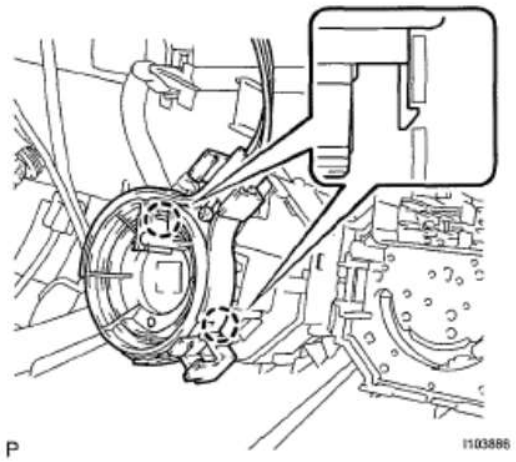


Fig. 281: Identifying Air Mix Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. **REMOVE NO. 2 HEATER CONTROL KNOB**
   a. Disengage the 2 claws and remove the heater control knob.

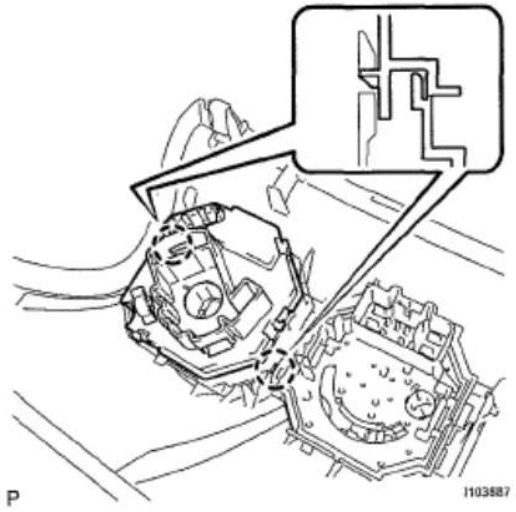


Fig. 282: Identifying Heater Control Knob Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the bulb.

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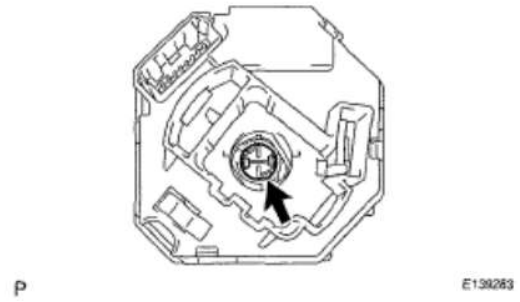


Fig. 283: Locating Bulb
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **REMOVE HEATER CONTROL SUB-ASSEMBLY**
   a. Disengage the 2 claws and remove the heater control.

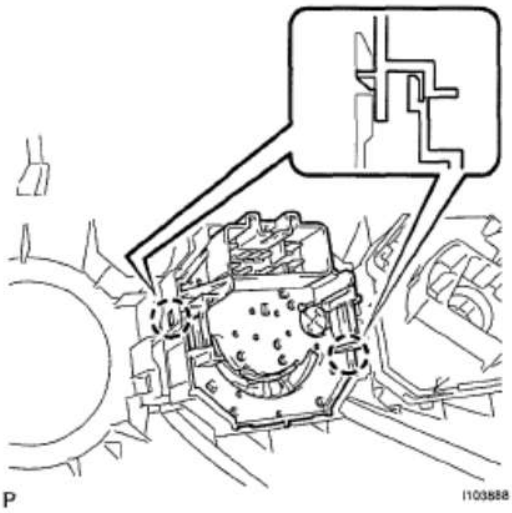


Fig. 284: Identifying Heater Control Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the bulb.

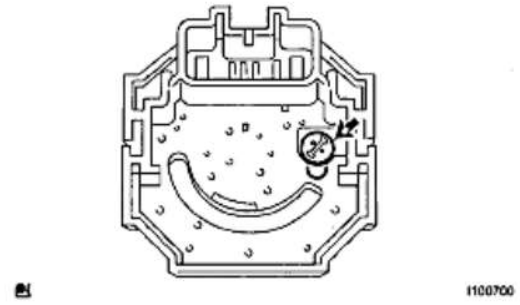


Fig. 285: Locating Bulb

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **REMOVE HEATER CONTROL BASE SUB-ASSEMBLY**
   a. Disengage the 2 claws and remove the heater control base.

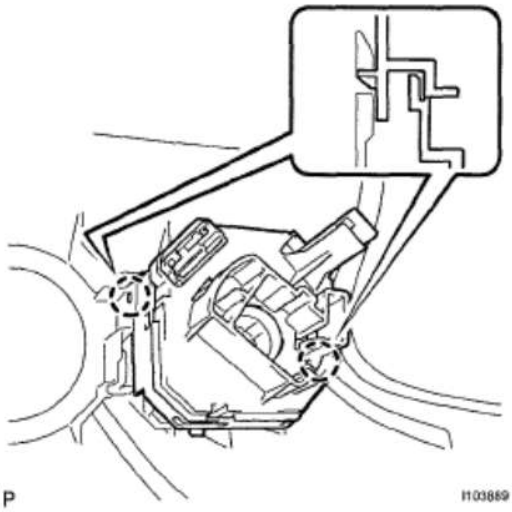


Fig. 286: Identifying Heater Control Base Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the bulb.



Fig. 287: Locating Bulb
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT HEATER CONTROL BASE**
   a. Check the heater control base resistance.
      1. Measure the resistance according to the value(s) in the table below.

Standard resistance

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RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
2 (L) - 4 (B)	A/C switch OFF	10 kohms or higher
2 (L) - 4 (B)	A/C switch ON	Below 1 ohms

If the result is not as specified, replace the heater control base.

b. Check the A/C indicator operation.

1. Connect the positive (+) lead from the battery to terminal 2 (L) and the negative (-) lead to terminal 3 (E).
2. Push the air conditioning switch in and check that the indicator lights up.

OK:

Indicator lights up

If the result is not as specified, replace the heater control base.

c. Check the illumination operation.

1. Connect the positive (+) lead from the battery to terminal 5 (ILL+) and the negative (-) lead to terminal 6 (ILL-), then check that the bulb illuminates.

OK:

Bulb illuminates

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

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Component without harness connected:
(Heater control base)

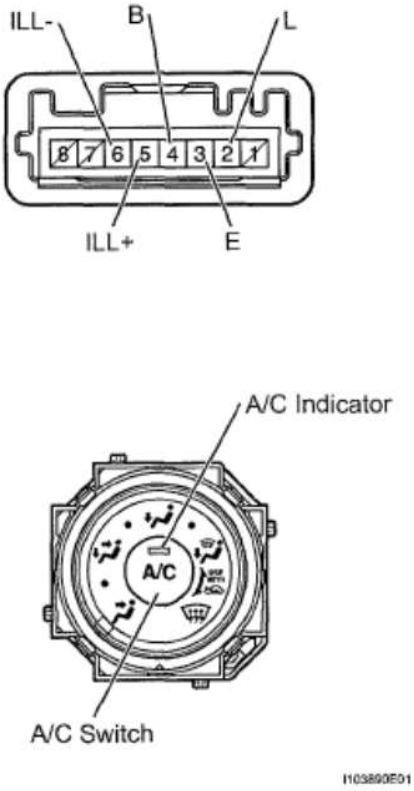


Fig. 288: Identifying Heater Control Base Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSPECT HEATER CONTROL**
   a. Check the heater control resistance.
      1. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
ALL - 5 (E)	OFF	10 kohms or higher
9 (LO) - 5 (E)	LO	Below 1 ohms
9 (LO) - 5 (E) - 7 (M1)	LO-M1	Below 1 ohms
9 (LO) - 5 (E) - 7 (M1)	M1	Below 1 ohms

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9 (LO) - 5 (E) - 7 (M1)-6 (M2)	M1-M2	Below 1 ohms
9 (LO) - 5 (E) - 6 (M2)	M2	Below 1 ohms
9 (LO) - 5 (E) - 6 (M2) -10 (HI)	M2-HI	Below 1 ohms
9 (LO) - 5 (E) - 10 (HI)	HI	Below 1 ohms

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

b. Check the illumination operation.

1. Connect the positive (+) lead from the battery to terminal 2 (ILL+) and the negative (-) lead to terminal 1 (ILL-), then check that the bulb illuminates.

OK:

Bulb illuminates

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

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Component without harness connected:
(Heater control)

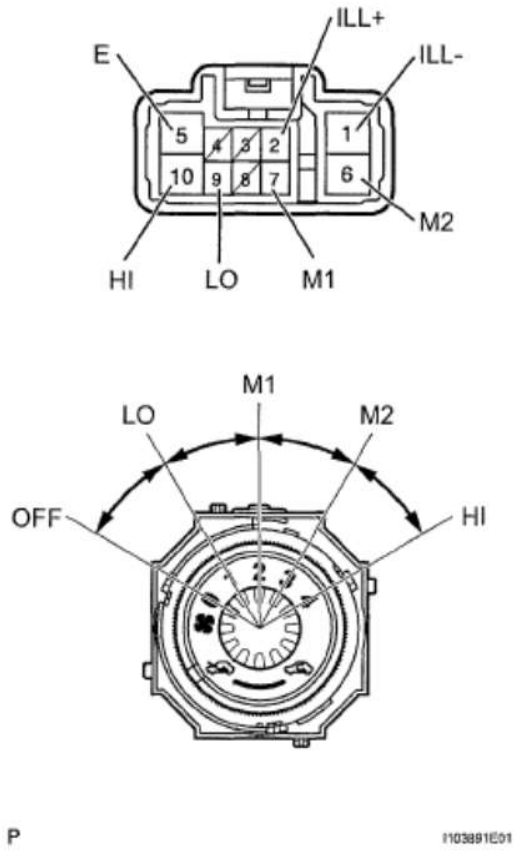


Fig. 289: Identifying Heater Control Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSPECT NO. 2 HEATER CONTROL KNOB**
   a. Check the No. 2 heater control knob resistance.
      1. Measure the resistance according to the value(s) in the table below.

Standard resistance

RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
2 (RrDEF) -1 (E)	Rear Window Defogger switch OFF	10 kohms or higher
2 (RrDEF) -1 (E)	Rear Window Defogger switch ON	Below 1 ohms
3 (IG) - 6 (MAX HOT)	Except MAX HOT	10 kohms or higher

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3 (IG) - 6 (MAX HOT)	MAX HOT	Below 1 ohms
7 (V/B) - 8 (SG)	Always	Below 1 ohms

If the result is not as specified, replace the No. 2 heater control knob.

b. Check the rear window defogger indicator operation.
   1. Connect the positive (+) lead from the battery to terminal 3 (IG) and the negative (-) lead to terminal 1 (E).
   2. Push the rear window defogger switch in and check that the indicator lights up.

      OK:

      Indicator lights up

      If the result is not as specified, replace the No. 2 heater control knob.

c. Check the illumination operation.
   1. Connect the positive (+) lead from the battery to terminal 5 (ILL+) and the negative (-) lead to terminal 4 (ILL-), then check that the bulb illuminates.

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Component without harness connected:
(No. 2 Heater control knob)

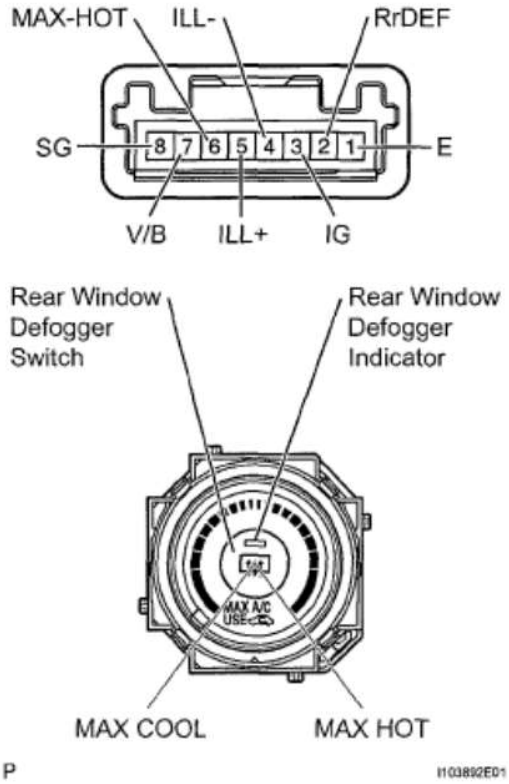


Fig. 290: Identifying Heater Control Knob Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK:

Bulb illuminates

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

REASSEMBLY

1. **INSTALL HEATER CONTROL BASE SUB-ASSEMBLY**
   a. Install the bulb.

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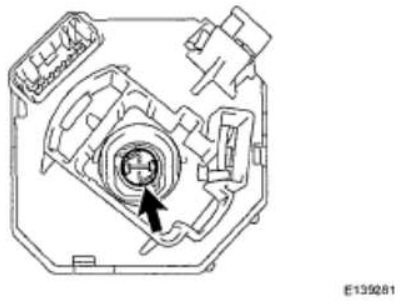


Fig. 291: Locating Bulb
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the 2 claws and install the heater control base.

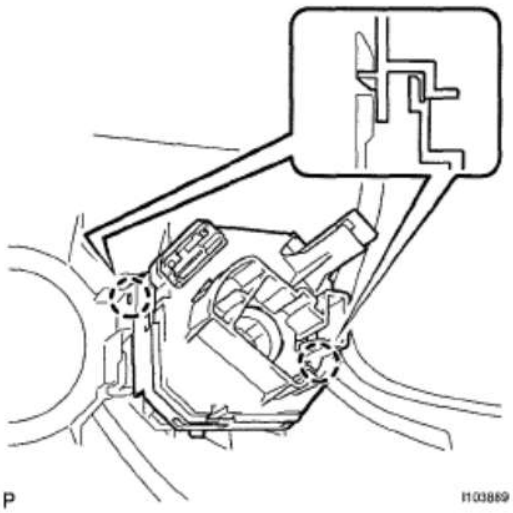


Fig. 292: Identifying Heater Control Base Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL HEATER CONTROL SUB-ASSEMBLY**
   a. Install the bulb.

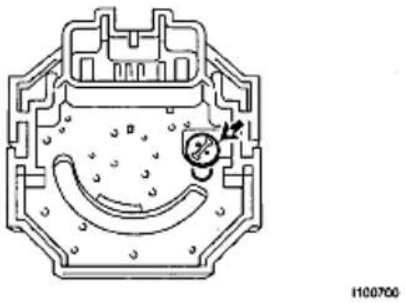


Fig. 293: Locating Bulb

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Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the 2 claws and install the heater control.

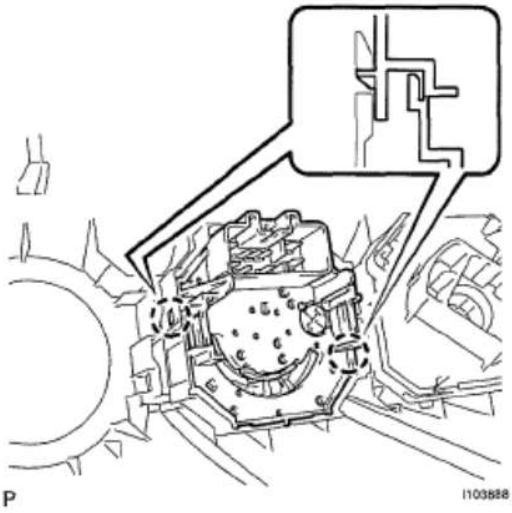


Fig. 294: Identifying Heater Control Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSTALL NO. 2 HEATER CONTROL KNOB**

a. Install the bulb.

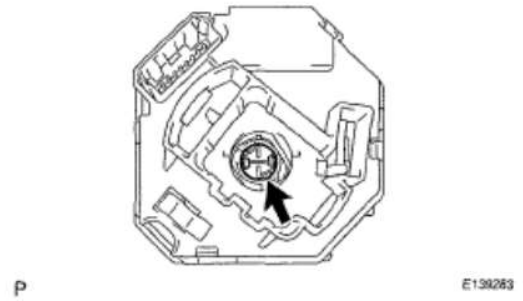


Fig. 295: Locating Bulb
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the 2 claws and install the heater control knob.

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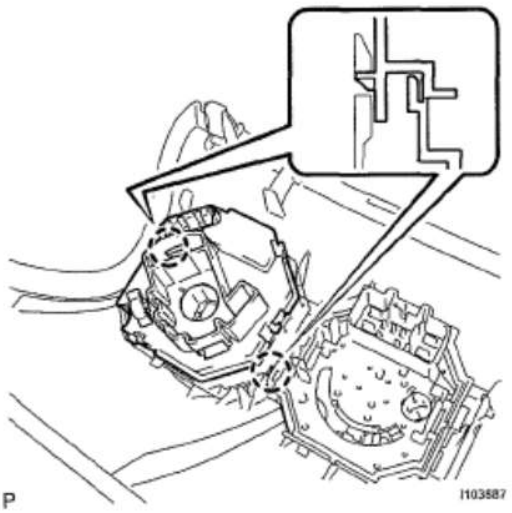


Fig. 296: Identifying Heater Control Knob Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **CONNECT AIR MIX DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Engage the 2 claws and connect the air mix damper control cable.

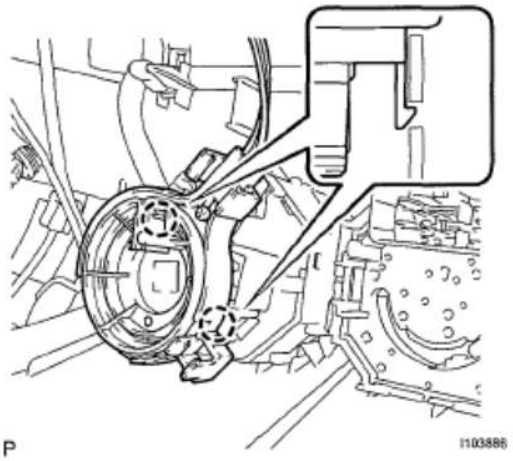


Fig. 297: Identifying Air Mix Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **CONNECT AIR INLET DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Engage the 2 claws and connect the air inlet damper control cable.

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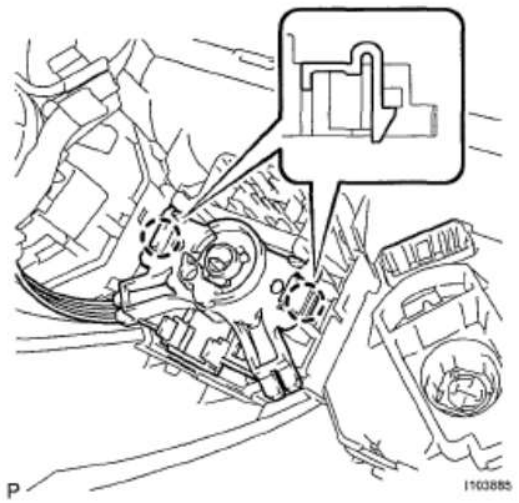


Fig. 298: Identifying Air Inlet Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **CONNECT DEFROSTER DAMPER CONTROL CABLE SUB-ASSEMBLY**
   a. Engage the 2 claws and connect the defroster damper control cable.

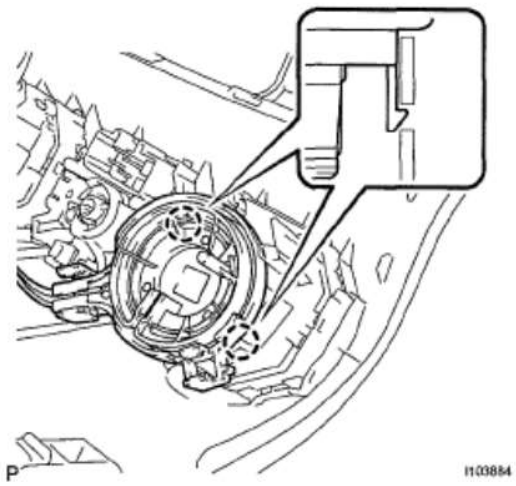


Fig. 299: Identifying Defroster Damper Control Cable Claws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. **INSTALL AIR CONDITIONING PANEL ASSEMBLY**
   a. Connect the 3 connectors and clamp.

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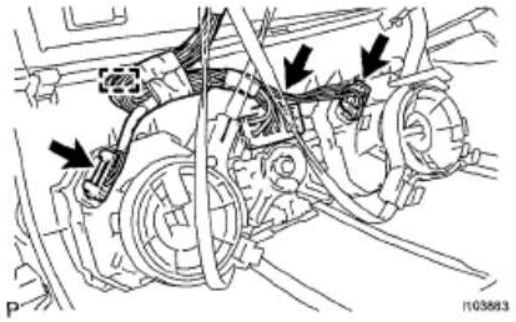


Fig. 300: Locating Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Engage the 4 clips and install the air conditioning panel.

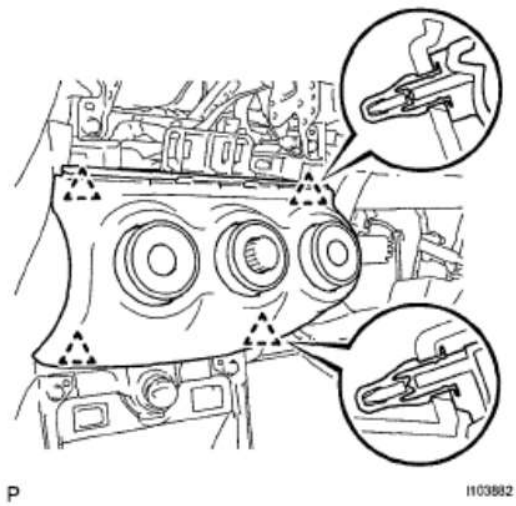


Fig. 301: Identifying Air Conditioning Panel Clips
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **INSTALL INSTRUMENT CLUSTER FINISH CENTER PANEL SUB-ASSEMBLY** (See **INSTALLATION**)

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