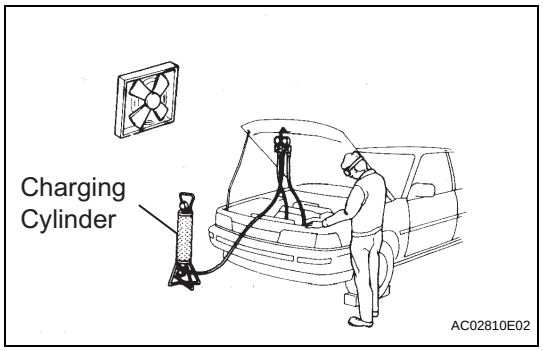
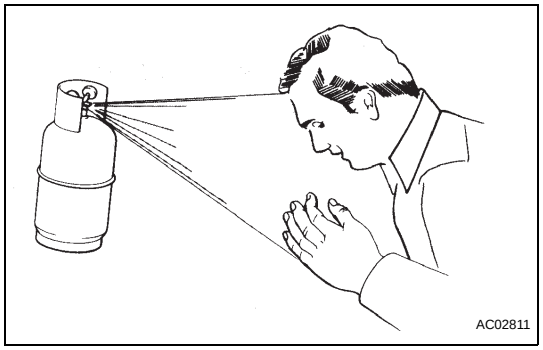


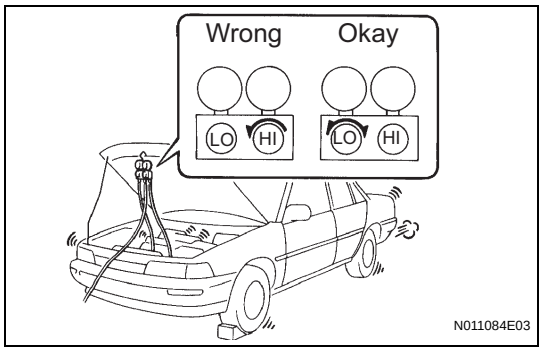
AIR CONDITIONING SYSTEM

PRECAUTION

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



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.
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, oil lubrication will be insufficient and the compressor may be damaged.
   Necessary care should be taken to avoid this.
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 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 always move regardless of whether the A/C system is turned on or off.

10. SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

(a) This vehicle is equipped with an SRS (Supplemental Restraint System) such as the driver, front passenger, side, and curtain shield air bags. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notices (See page RS-1).

11. GENERAL PRECAUTION

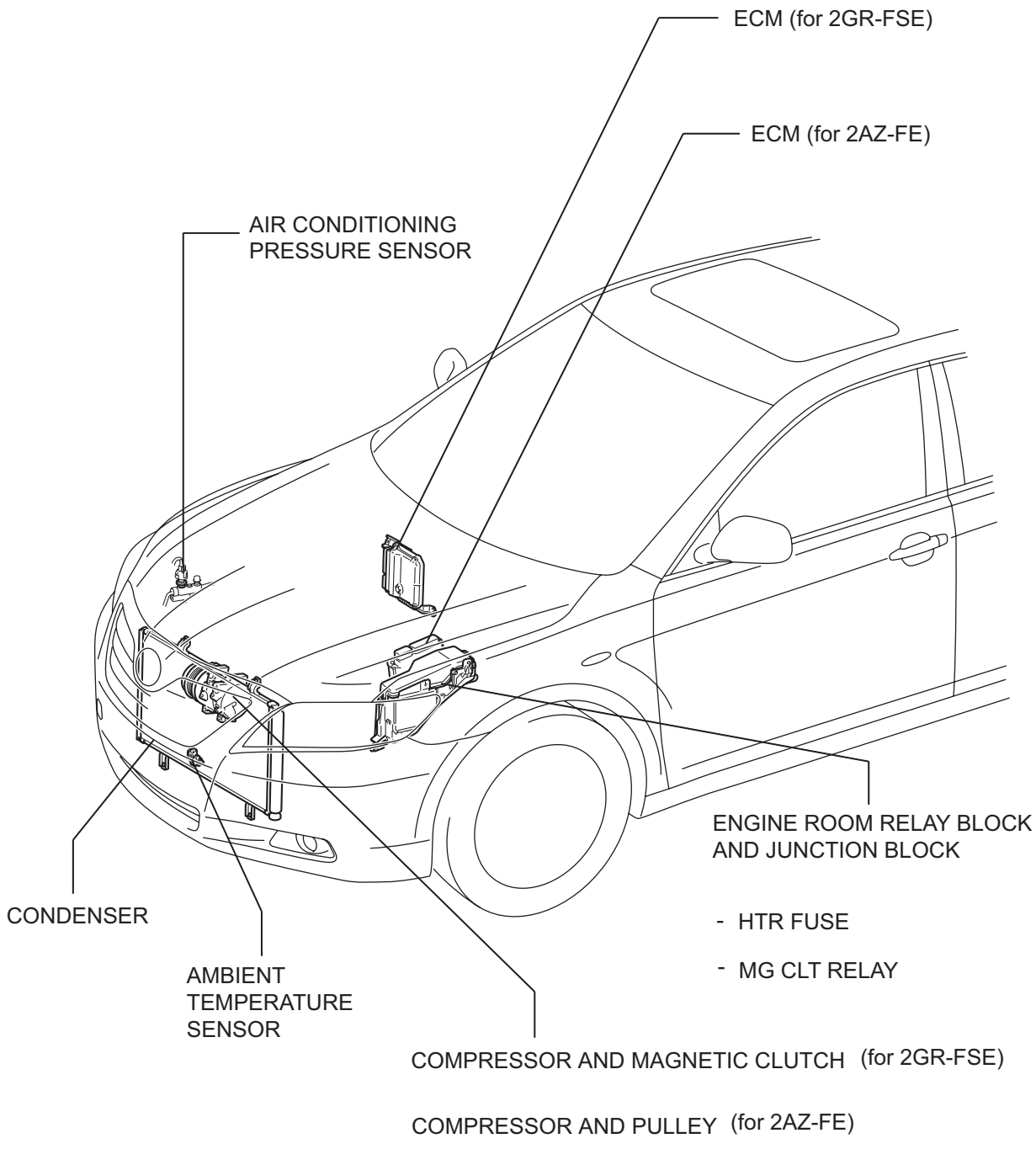
(a) While using the battery during inspection, do not bring the positive and negative tester probes too close to each other as a short circuit may occur.

12. EXPRESSIONS OF IGNITION SWITCH

(a) The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

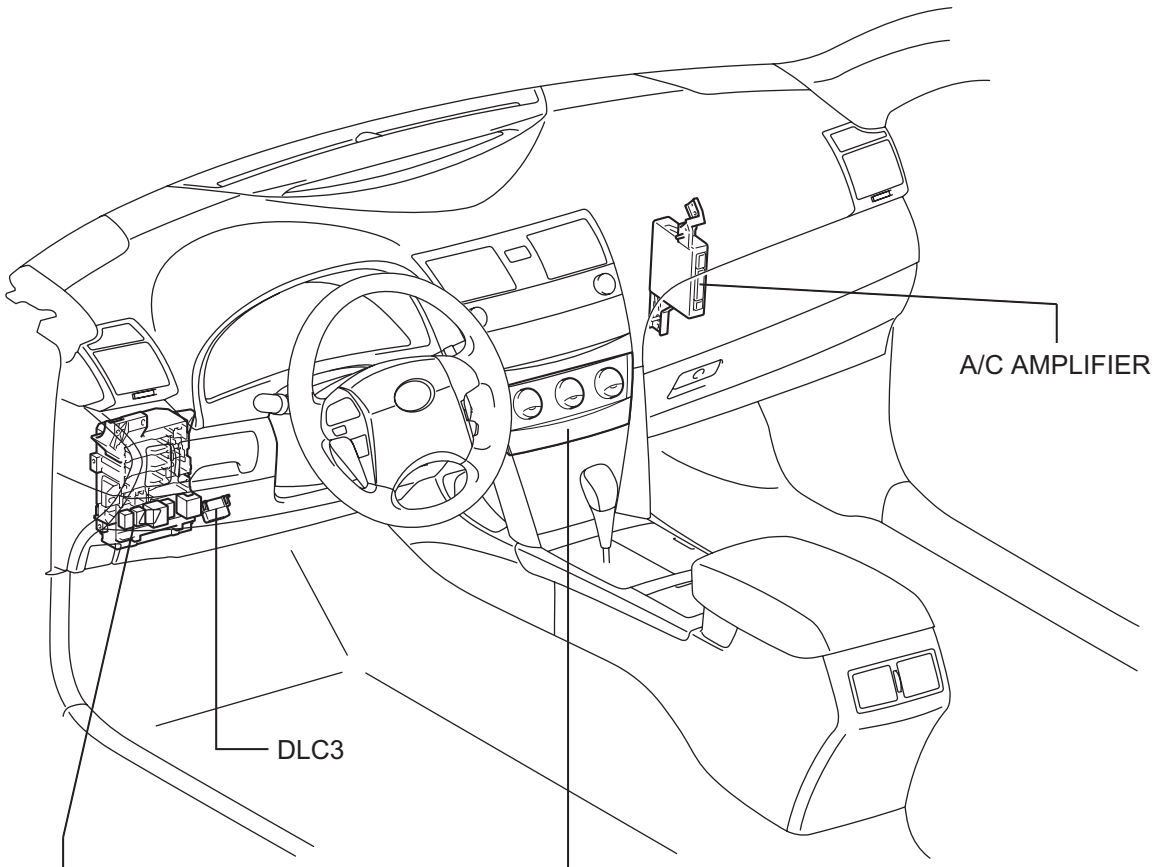
Switch Type		Ignition Switch (Position)	Engine Switch (Condition)
Expression	Ignition switch off	LOCK	Off
	Ignition switch on (IG)	ON	On (IG)
	Ignition switch on (ACC)	ACC	On (ACC)
	Engine start	START	Start

PARTS LOCATION



AC

MANUAL A/C:



- A/C NO. 2 FUSE
- A/C FUSE

H

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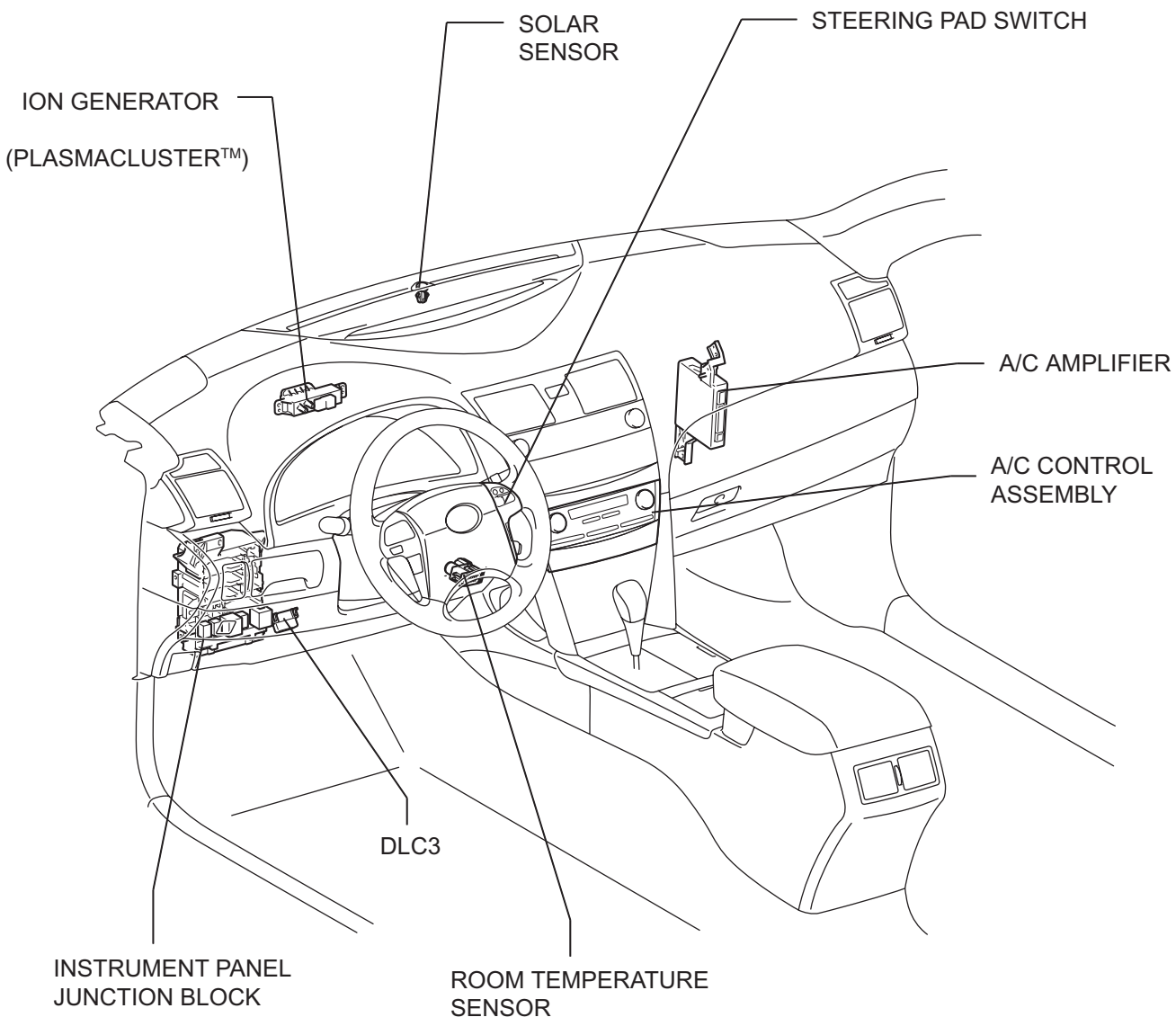
AUTO A/C:

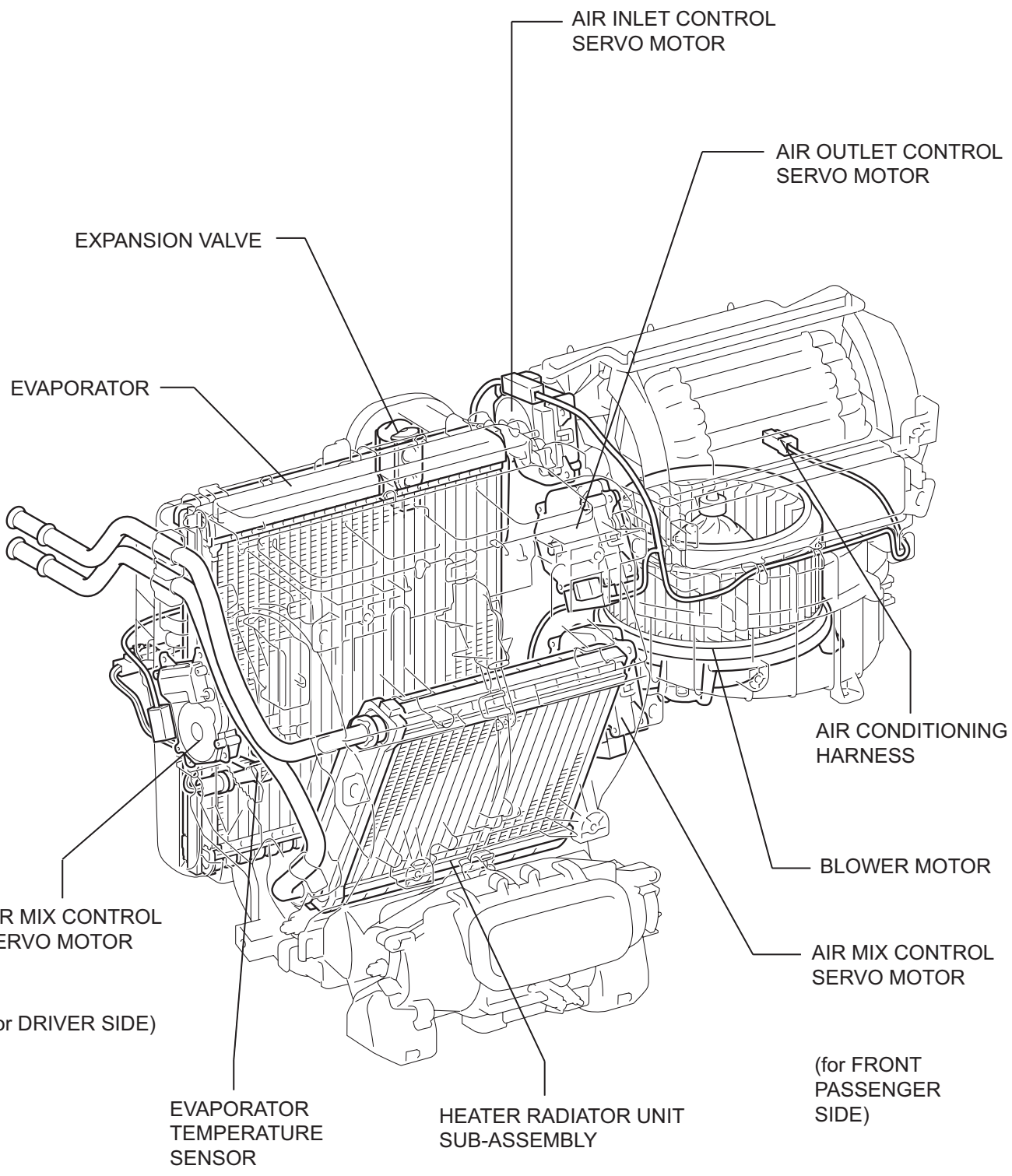


- MAIN BODY ECU
- A/C NO. 2 FUSE
- A/C FUSE

H

E124496E01

AC



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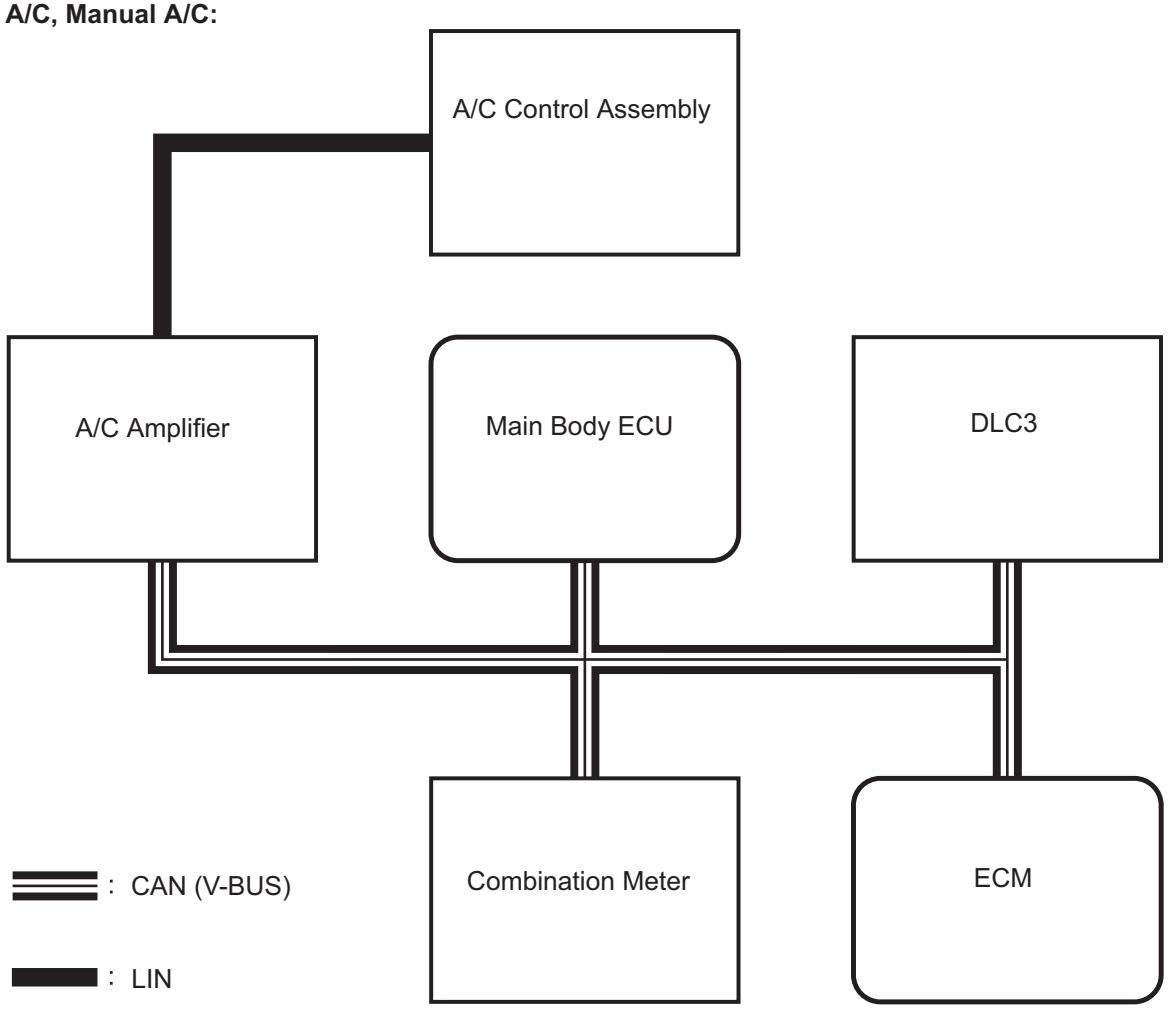
SYSTEM DIAGRAM

Auto A/C, Manual A/C:



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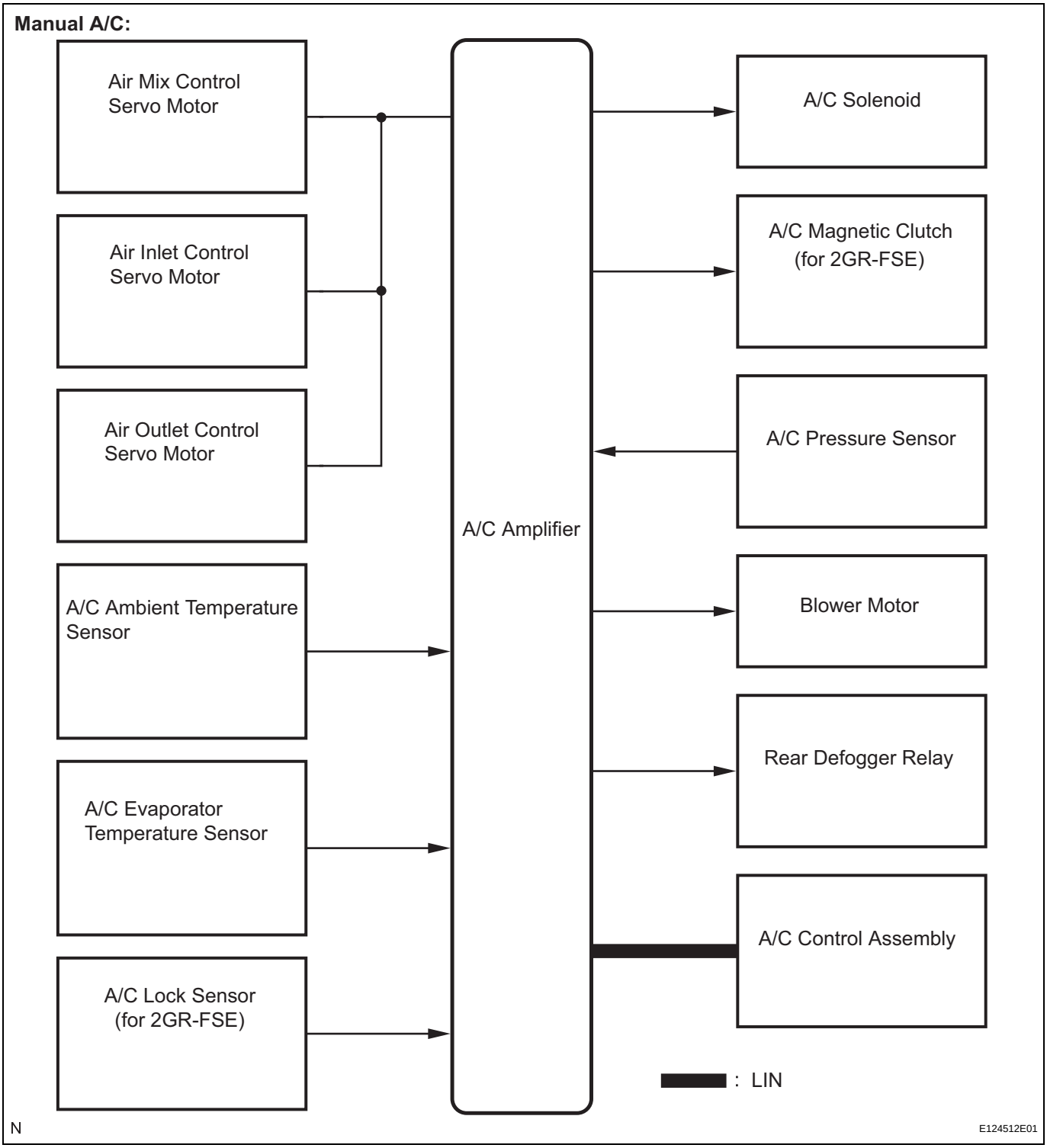
AC

Transmitter	Receiver	Line	Signal
A/C Amplifier	ECM	CAN	Magnetic Clutch Request Signal
			Heater Idle Up Request Signal
			A/C Idle Up Request Signal
			Outside Temperature Data
			External Variable Control Solenoid Current Signal
			Prior A/C Control Request Signal
			Refrigerant Gas Pressure Sensor Signal
A/C Amplifier	Combination Meter	CAN	Outside Temperature Data
A/C Amplifier	DLC3	CAN	Diagnostic Tool Response
A/C Amplifier	A/C Control Assembly	LIN	A/C Operating State Signal
Main Body ECU	A/C Amplifier	CAN	Auto Dimmer Signal
			Destination Package
			Destination Symbol Steering Wheel
Combination Meter	A/C Amplifier	CAN	Vehicle Speed Signal

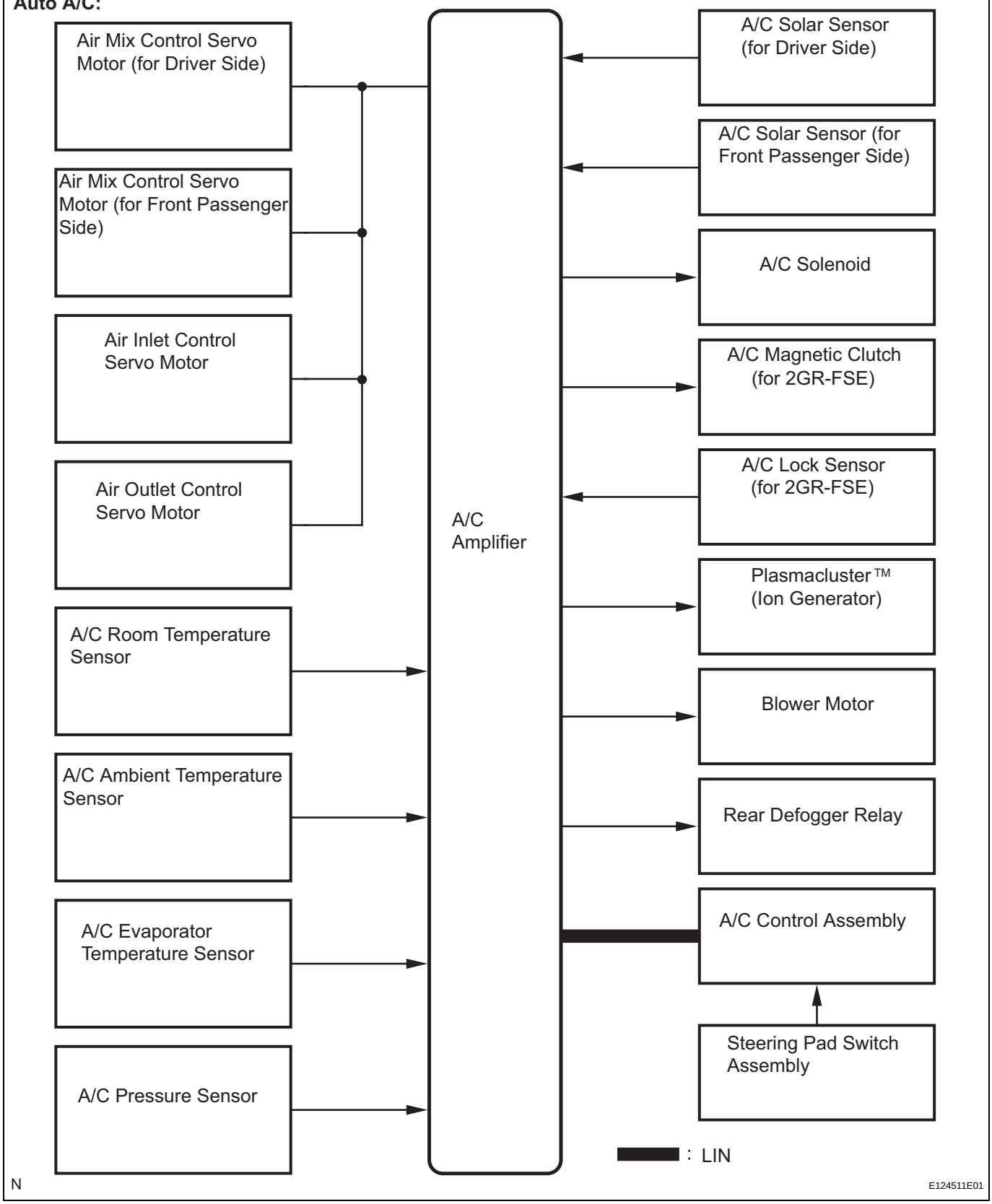
Transmitter	Receiver	Line	Signal
ECM	A/C Amplifier	CAN	Engine Coolant Temperature Signal
			Engine rpm Data
			A/C Control Cut-off Signal
			A/C-E/G Cooperation Control
A/C Control Assembly	A/C Amplifier	LIN	A/C Operation Signal

Manual A/C:



AC

Auto A/C:


Air Mix Control Servo Motor (for Driver Side)
Air Mix Control Servo Motor (for Front Passenger Side)
Air Inlet Control Servo Motor
Air Outlet Control Servo Motor
A/C Room Temperature Sensor
A/C Ambient Temperature Sensor
A/C Evaporator Temperature Sensor
A/C Pressure Sensor
A/C Amplifier
A/C Solar Sensor (for Driver Side)
A/C Solar Sensor (for Front Passenger Side)
A/C Solenoid
A/C Magnetic Clutch (for 2GR-FSE)
A/C Lock Sensor (for 2GR-FSE)
Plasmacluster™ (Ion Generator)
Blower Motor
Rear Defogger Relay
A/C Control Assembly
Steering Pad Switch Assembly
: LIN
N
E124511E01

AC

SYSTEM DESCRIPTION

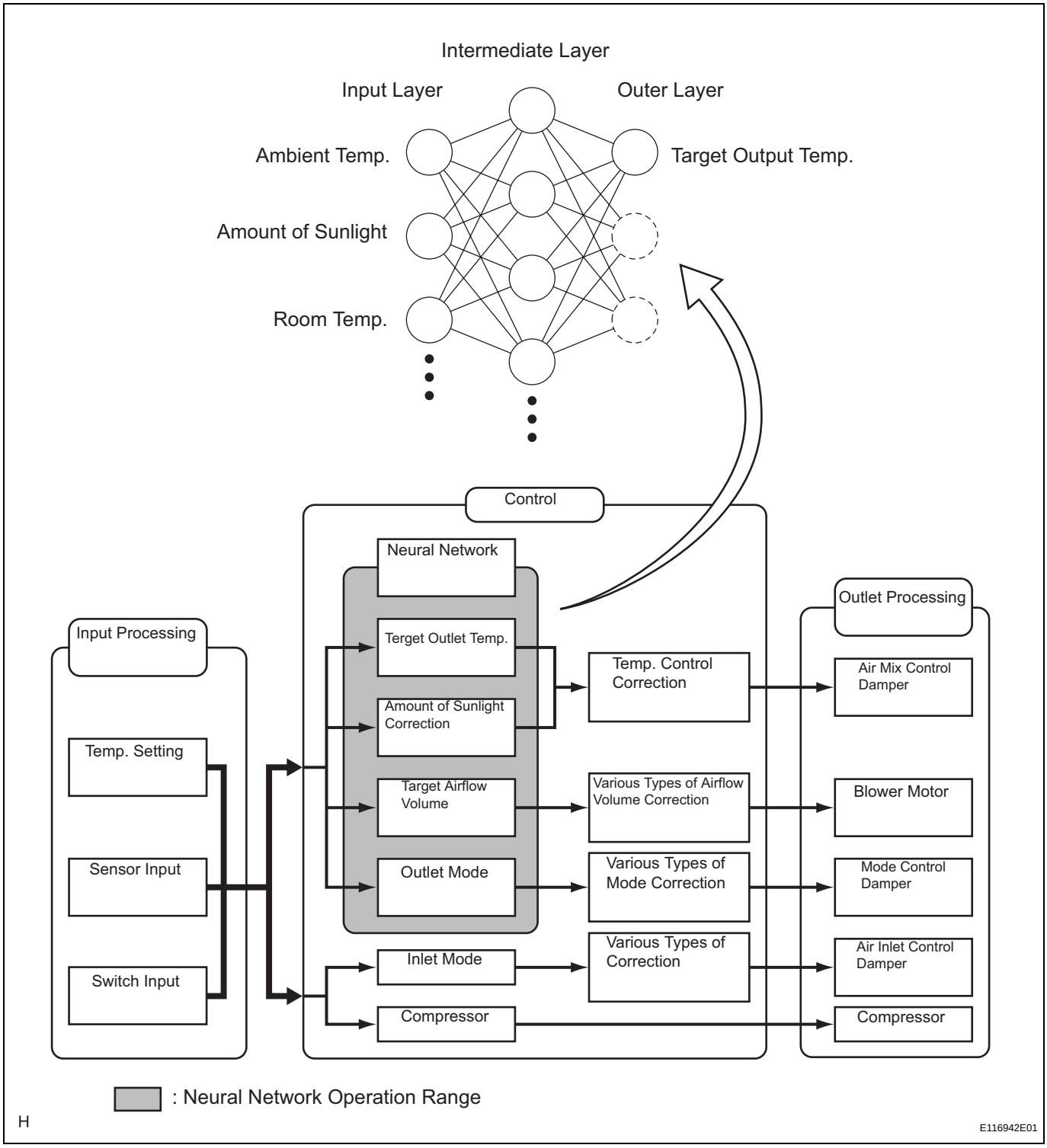
1. GENERAL

The air conditioning system has the following controls:

Control	Outline	Manual A/C	Automatic A/C
Neural Network Control	This control is capable of effecting complex control by artificially simulating the information processing method of the nervous system of living organisms in order to establish a complex input / output relationship that is similar to a human brain.	-	○
Manual Control	The A/C amplifier controls the damper positions (air inlet control damper, air mix control damper and mode control damper) and blower speed in accordance with the positions of the switches (temperature control switch, blower switch, mode select switch and air inlet control switch).	○	-
Outlet Air Temp. Control	Based on the temperature set at the temperature control switch, the neural network control calculates the outlet air temperature based on the input signals from various sensors.	-	○
	The temperature setting for the driver and front passenger are controlled independently in order to provide a separate vehicle interior temperatures for the right and left side of the cabin. Thus, air conditioning that accommodates the occupants' preferences has been realized.	-	○
Blower Control	Controls the blower motor in accordance with the airflow volume that has been calculated by the neural network control based on the input signals from various sensors.	-	○
Air Outlet Control	Automatically switches the air outlets in accordance with the outlet mode that has been calculated by the neural network control based on the input signals from various sensors.	-	○
	In accordance with the engine coolant temperature, outside air temperature, amount of sunlight, required blower, outlet temperature, and vehicle speed conditions, this control automatically switches the blower outlet to the FOOT / DEF mode to prevent the windows from becoming fogged when the outside air temperature is low.	-	○
Air Inlet Control	Automatically controls the air inlet control damper to achieve the calculated required outlet air temperature.	-	○
	Drives the servo motor (for air inlet) according to the operation of the air inlet control switch and moves the dampers to the FRESH or RECIRC position.	-	○
Compressor Control	Through the calculation of the target evaporator temperature based on various sensor signals, the A/C amplifier optimally controls the discharge capacity by regulating the opening extent of the A/C compressor solenoid valve.	○	○
	The A/C amplifier compares the A/C pulley speed signals, which are transmitted by the lock sensor located on the A/C compressor, with the engine speed signals, which are transmitted by the ECM (crankshaft position sensor). When the A/C amplifier determines that the A/C pulley is locked, it turns off the magnetic clutch. (for 2GR-FE)	○	○
MAX A/C Control	When the temperature control switch is in the MAX A/C position, the A/C amplifier turns the compressor on and activates the servomotor (air inlet) to set the air inlet control damper to the RECIRC position, improving the cooling efficiency.	○	-
Rear Window Defogger Control	Switches the rear defogger and outside rear view mirror heaters on for 15 minutes when the rear defogger button is pressed. Switches them off if the button is pressed while they are operating.	○	○
Outside Temperature Indication Control	Calculates the outside temperature using signals transmitted by the outside temperature sensor. Calculated values are corrected by the A/C amplifier and then indicated on the multi-information display.	○	○
Self-Diagnosis	A DTC (Diagnostic Trouble Code) is stored in the memory when the A/C amplifier detects a problem with the air conditioning system.	○	○

2. NEURAL NETWORK CONTROL

- In previous automatic air conditioning systems, the A/C amplifier determined the required outlet air temperature and blower air volume in accordance with the calculation formula that has been obtained based on information received from the sensors. However, because the senses of a person are rather complex, a given temperature is sensed differently, depending on the environment in which the person is situated. For example, a given amount of solar radiation can feel comfortably warm in a cold climate, or extremely uncomfortable in a hot climate. Therefore, as a technique for effecting a higher level of control, a neural network has been adopted in the automatic air conditioning system. With this technique, the data that has been collected under varying environmental conditions is stored in the A/C amplifier. The A/C amplifier can then effect control to provide enhanced air conditioning comfort.
- The neural network control consists of neurons in the input layer, intermediate layer, and output layer. The input layer neurons process the input data of the outside temperature, the amount of sunlight, and the room temperature based on the outputs of the switches and sensors, and output them to the intermediate layer neurons. Based on this data, the intermediate layer neurons adjust the strength of the links among the neurons. The sum of these is then calculated by the output layer neurons in the form of the required outlet temperature, solar correction, target airflow volume, and outlet mode control volume. Accordingly, the A/C amplifier controls the servo motors and blower motor in accordance with the control volumes that have been calculated by the neural network control.


Intermediate Layer
Input Layer
Outer Layer
Ambient Temp.
Amount of Sunlight
Room Temp.
Target Output Temp.
Control
Neural Network
Input Processing
Terget Outlet Temp.
Amount of Sunlight Correction
Target Airflow Volume
Outlet Mode
Inlet Mode
Compressor
Temp. Setting
Sensor Input
Switch Input
Temp. Control Correction
Various Types of Airflow Volume Correction
Various Types of Mode Correction
Various Types of Correction
Outlet Processing
Air Mix Control Damper
Blower Motor
Mode Control Damper
Air Inlet Control Damper
Compressor
: Neural Network Operation Range
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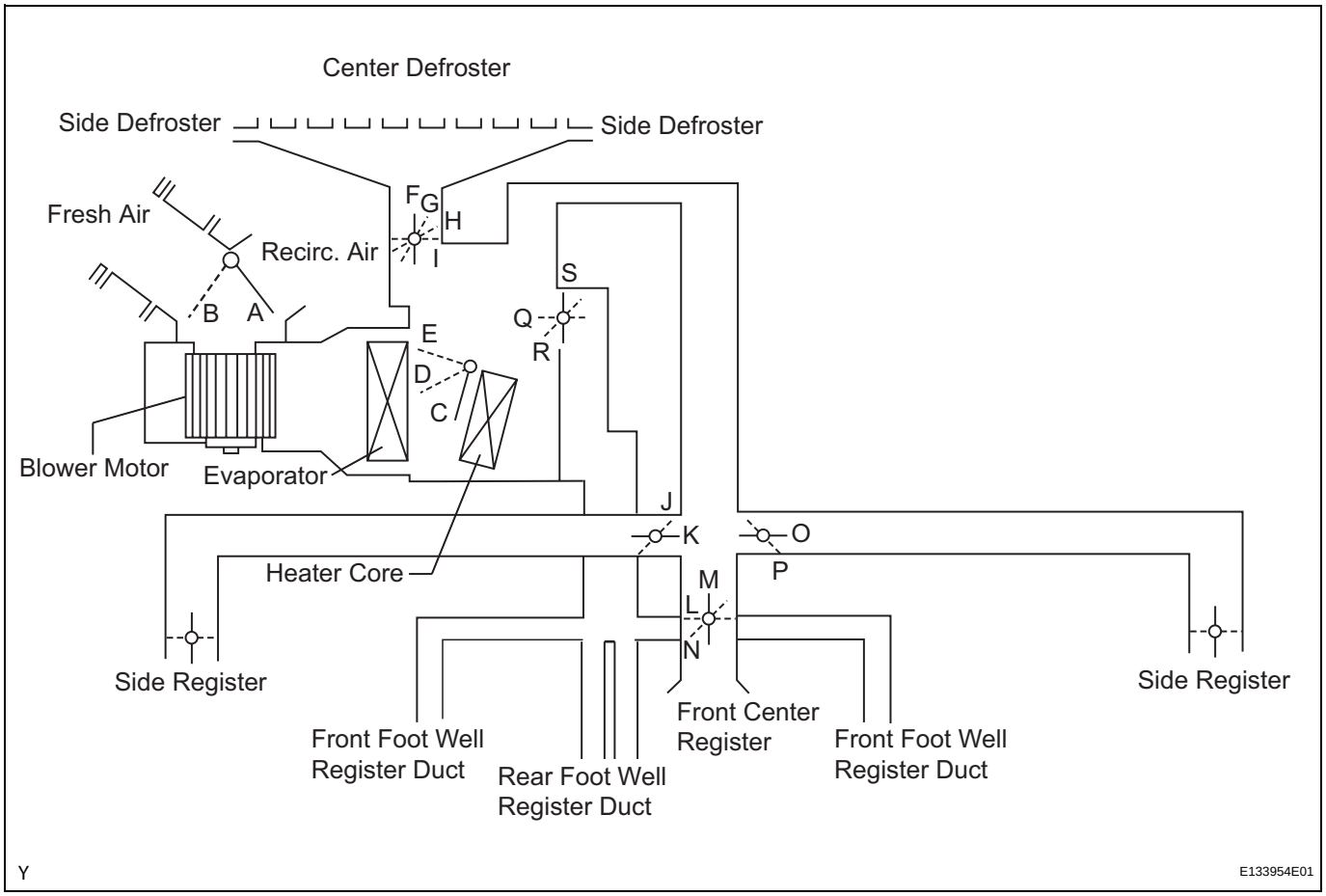
AC

3. MODE POSITION AND DAMPER OPERATION

(a) Mode Position and Damper Operation (for Manual A/C)



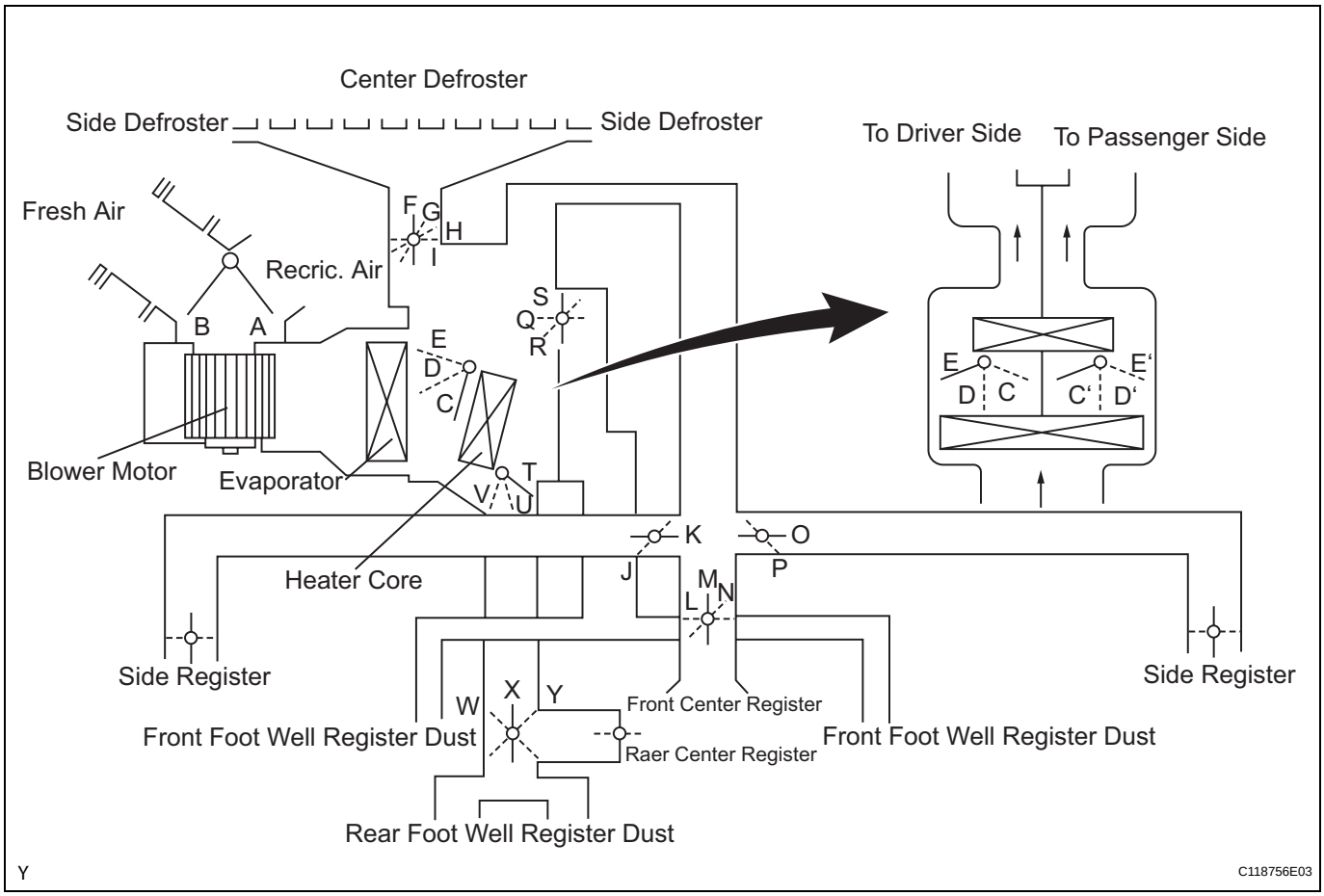
Functions of Main Dampers:

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	C - D - E	Varies the mixture ratio of the fresh air and the recirculation air in order to regulate the temperature continuously from HOT to COLD.

AC

Control Damper	Operation Position	Damper Position	Operation
Air Outlet Control Damper	DEF 	F, J, L, P, S	Defrosts the windshield through the center defroster, side defroster, side register, and rear register.
	FOOT / DEF 	G, J, L, P, Q	Defrosts the windshield through the center defroster, side defroster, side register, and rear register, while air is also blown out from the front and rear foot well register ducts.
	FOOT 	H, J, L, P, Q	Air blows out of the foot well register duct and side register. In addition, air blows out slightly from the center defroster and side defroster.
	BI-LEVEL 	I, K, N, O, R	Air blows out of the front center register, side register and front and rear foot well register ducts.
	FACE 	I, K, M, O, S	Air blows out of the front center register and side register.

(b) Mode Position and Damper Operation (for Automatic A/C)



Functions of Main Dampers:

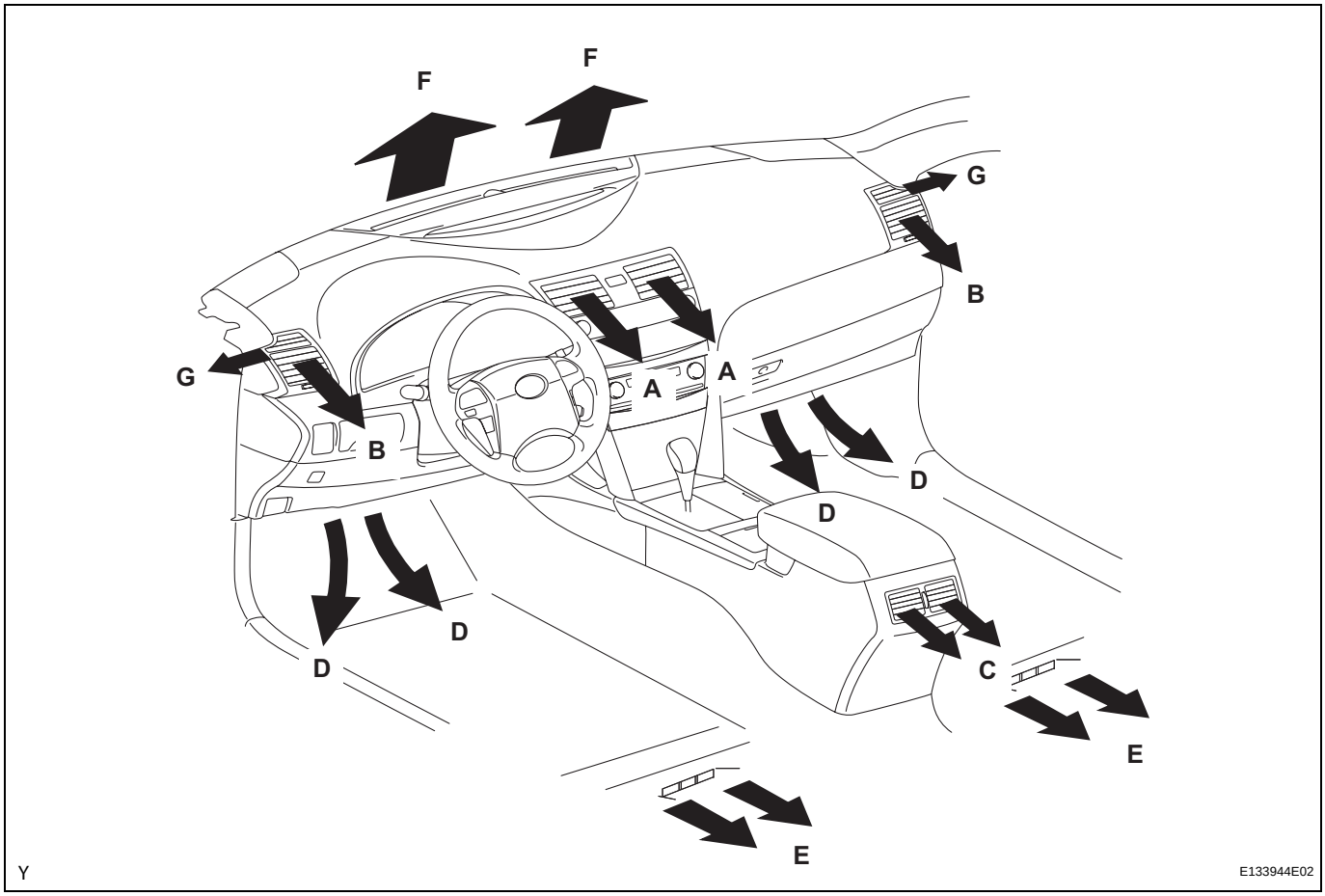
Control Damper	Operation Position	Damper Position	Operation
Air Inlet Control Damper	FRESH	A	Brings in fresh air.
	RECIRC	B	Recirculates internal air.

Control Damper	Operation Position	Damper Position	Operation
Air Mix Control Damper	MAX COLD to MAX HOT Temperature Setting	C - D - E (C' - D' - E') T - U - V	Varies the mixture ratio of the fresh air and the recirculation air in order to regulate the temperature continuously from HOT to COLD.
Air Outlet Control Damper	DEF	F, J, L, P, S, Y	Defrosts the windshield through the center defroster, side defroster, and side register.
	FOOT / DEF	G, J, L, P, Q, X	Defrosts the windshield through the center defroster, side defroster, side register, and rear center register, while air is also blown out from the front and rear foot well register ducts.
	FOOT	H, J, L, P, Q, X	Air blows out of the foot well register dust, and side register. In addition, air blows out slightly from the center defroster and side defroster.
	BI-LEVEL	I, K, N, O, R, X	Air blows out of the front and rear center registers, side register and front and rear foot well register ducts.
	FACE	I, K, M, O, S, W	Air blows out of the front and rear center registers, and side register.

4. AIR OUTLETS AND AIRFLOW VOLUME

(a) Air Outlets and Airflow Volume

AC



INDICATION (MODE)	SELECTION (Auto / Manual)	FACE			FOOT		DEF	
		CTR	SIDE	RR	FR	RR	CTR	SIDE
		A	B	C*6	D	E	F	G
FACE 	○ / ○	◯	◯	◯	—	—	—	—
B/L-U*1 	○ / ○	◯	◯	◯	○	○	—	—
B/L-L*2 	○ / -	○	○	○	◯	◯	—	—
FOOT-F*3 	○ / ○	—	○	○	◯	○	○	○
FOOT-R*4 	○ / -	—	○	○	◯	◯	○	○
FOOT-D*5 	○ / -	—	○	○	○	○	○	○
F/D 	○ / ○	—	○	○	◯	◯	○	○
DEF 	○ / ○	—	○	—	—	—	◯	◯

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

*1: Greater airflow volume at the upper area
*2: Greater airflow volume at the lower area
*3: Greater airflow volume at the front
*4: Greater airflow volume at the rear
*5: Greater airflow volume at the defroster
*6: Only for models with automatic air conditioning.

5. PLASMACLUSTER ION GENERATOR CONTROL

(a) General:

(1) A Plasmacluster ion generator is provided inside the air duct of the side register on the driver seat side to improve the air quality and comfort in the cabin.

(2) This generator is controlled by the A/C amplifier and operates in conjunction with the blower motor.

NOTICE:

- **The Plasmacluster ion generator uses a high voltage, which is hazardous. Therefore, if the Plasmacluster ion generator requires repairs, be sure to have them done at a TOYOTA dealer.**

AC

- **Do not apply any type of spray (such as a cleaning solvent or hair spray) or stick any foreign matter into the Plasmacluster ion outlet, as this could cause improper operation or a malfunction.**
- **After use, dust may accumulate around the side register on the driver seat side. If this occurs, press the OFF switch on the heater control panel to stop the blower motor before cleaning the area.**
- **It is normal for the Plasmacluster ion generator to emit a slight sound during operation. This sound is created when electrons collide with the electrode while Plasmacluster ions are being generated.**

HINT:

Plasmacluster™, plasmacluster, and plasmacluster ions are a trademark of the SHARP Corporation.

(b) Operation:

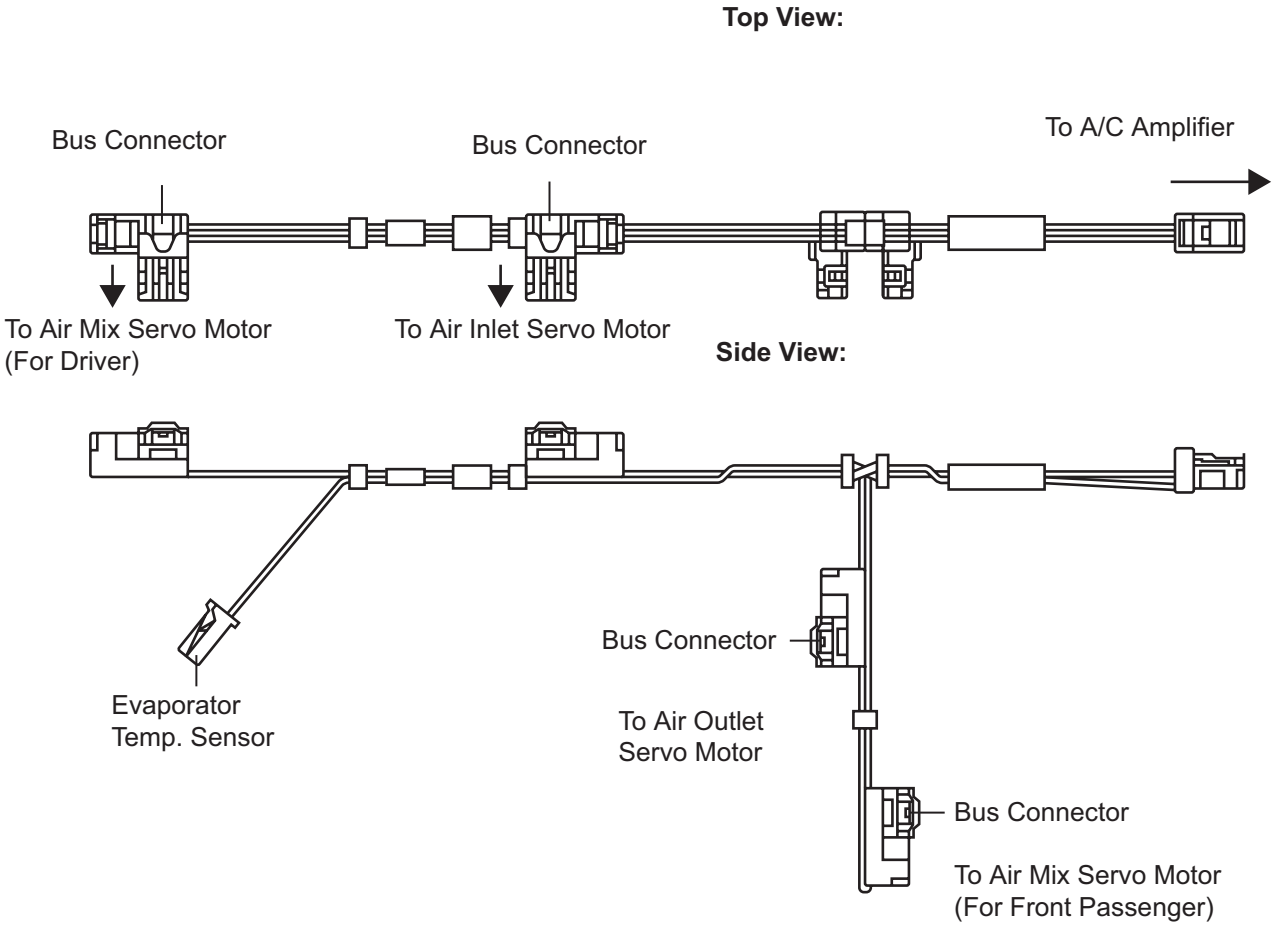
(1) The Plasmacluster ion generator produces positive and negative ions from the water molecules (H2O) and oxygen molecules (O2) in the air, and emits them into the air. These ions reduce airborne germs.

6. BLOWER MOTOR

The blower motor has a built-in blower controller, and is controlled with duty control from the A/C amplifier.

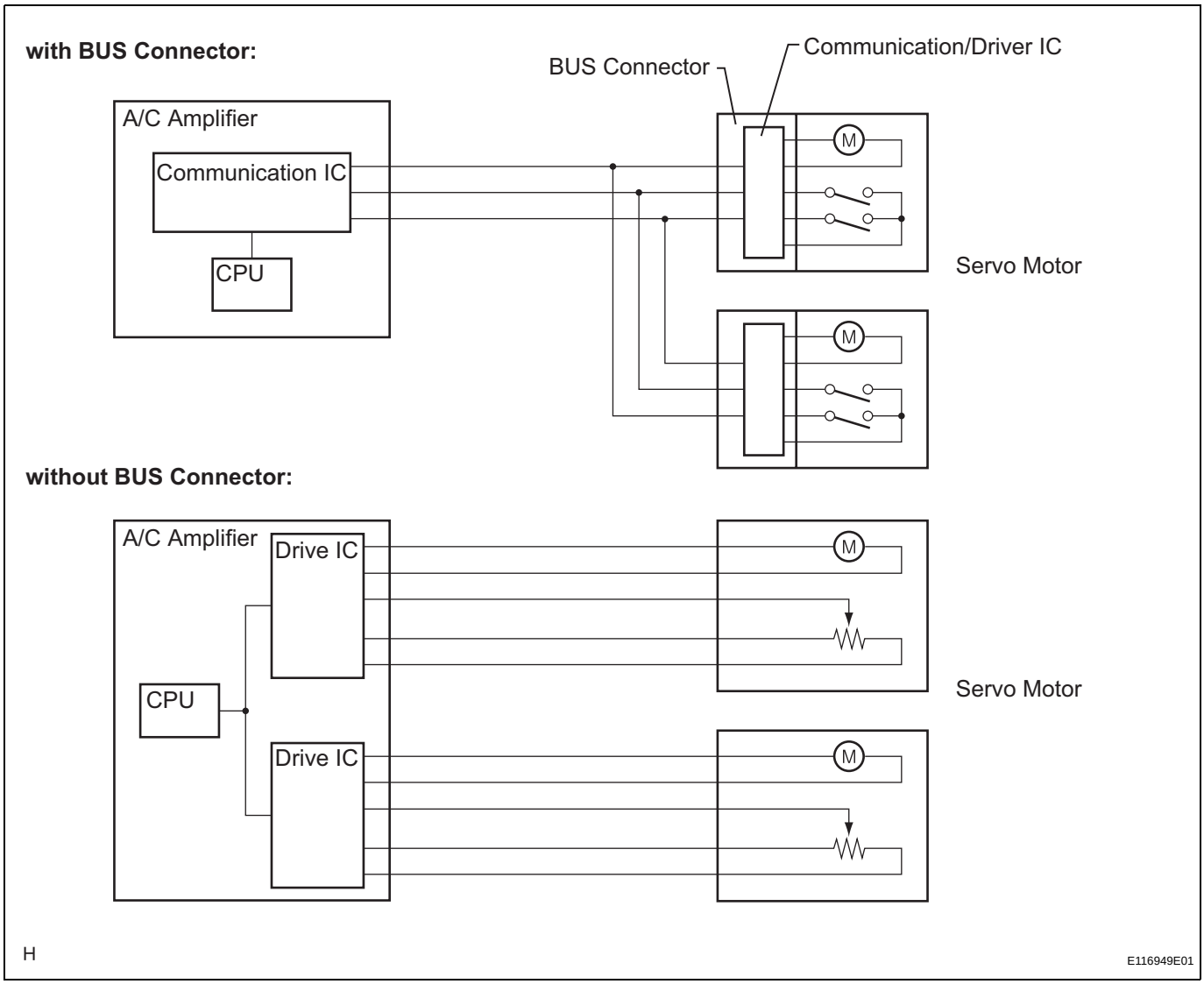
7. BUS CONNECTOR

(a) A BUS connector is used in the wire harness connection that connects the servo motor from the A/C amplifier.



AC

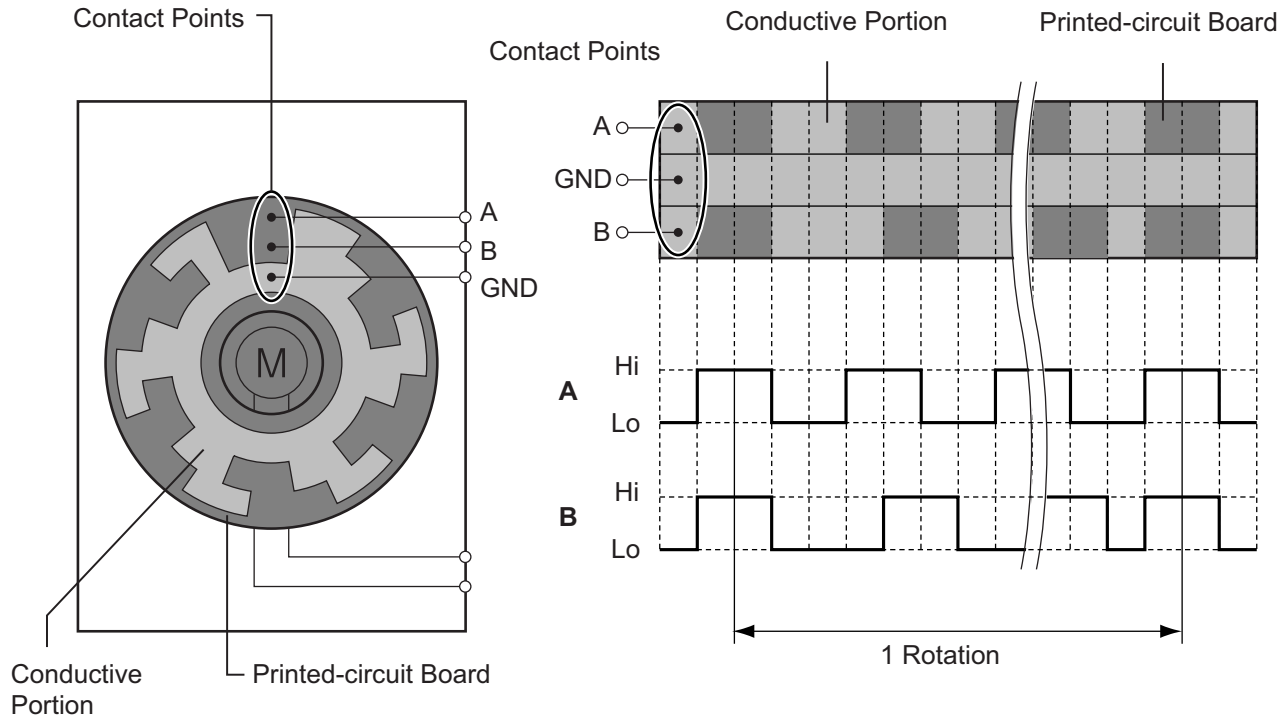
(b) The BUS connector has a built-in communication/ driver IC which communicates with each servo motor connector, actuates the servo motor, and has a position detection function. This enables bus communication for the servo motor wire harness, for a more lightweight construction and a reduced number of wires.



AC

8. SERVO MOTOR

(a) The pulse pattern type servo motor consists of a printed circuit board and servo motor. The printed circuit board has three contact points, and transmits to the A/C amplifier two ON-OFF signals for the difference of the pulse phase. The BUS connector detects the damper position and movement direction with this signal.



9. A/C COMPRESSOR

(a) General

(1) The A/C compressor is a continuously variable capacity type in which its capacity can be varied in accordance with the cooling load of the air conditioning.

(2) This compressor consists of the A/C pulley, shaft, lug plate, swash plate, piston, shoe, crank chamber, cylinder, and solenoid valve.

(3) The A/C pulley with built-in magnetic clutch and the lock sensor that detects whether the magnetic clutch is locked are installed on models with the 2GR-FE.

(4) The DL (Damper Limiter) type A/C pulley is installed on models with the 2AZ-FE.

(5) A solenoid valve that adjusts the suction pressure so that the compressor capacity can be controlled as desired is provided.

AC

(6) The internal valve is provided on models with 2AZ-FE to improve the A/C compressor durability under the high speed and large thermal load conditions. The internal valve is integrated into the solenoid valve.

(b) Solenoid Valve Operation

(1) The crank chamber is connected to the discharge passage. A solenoid valve is provided between the discharge passage (LO pressure) and the discharge passage (HI pressure).

(2) The solenoid valve operates under duty cycle control in accordance with the signals from A/C amplifier.

(3) When the solenoid 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 swash plate. As a result, the piston stroke increases and the discharge capacity increases.

(4) When the solenoid 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 swash plate. As a result, there is no piston stroke and the discharge capacity is reduced.

(c) Internal Valve Operation (for 2AZ-FE)

(1) The internal valve operates when the A/C compressor speed has increased rapidly, the A/C compressor speed is high, or when thermal load has suddenly changed. As a result, the A/C compressor capacity is reduced, increasing the durability of the A/C compressor.

(d) DL type A/C Pulley (for 2AZ-FE)

(1) This pulley contains a damper to absorb the torque fluctuations of the engine and a limiter mechanism to protect the drive belt in case the compressor locks. In the event that the compressor locks, the limiter mechanism causes the spoke portion of the pulley to break, thus separating the pulley from the compressor.

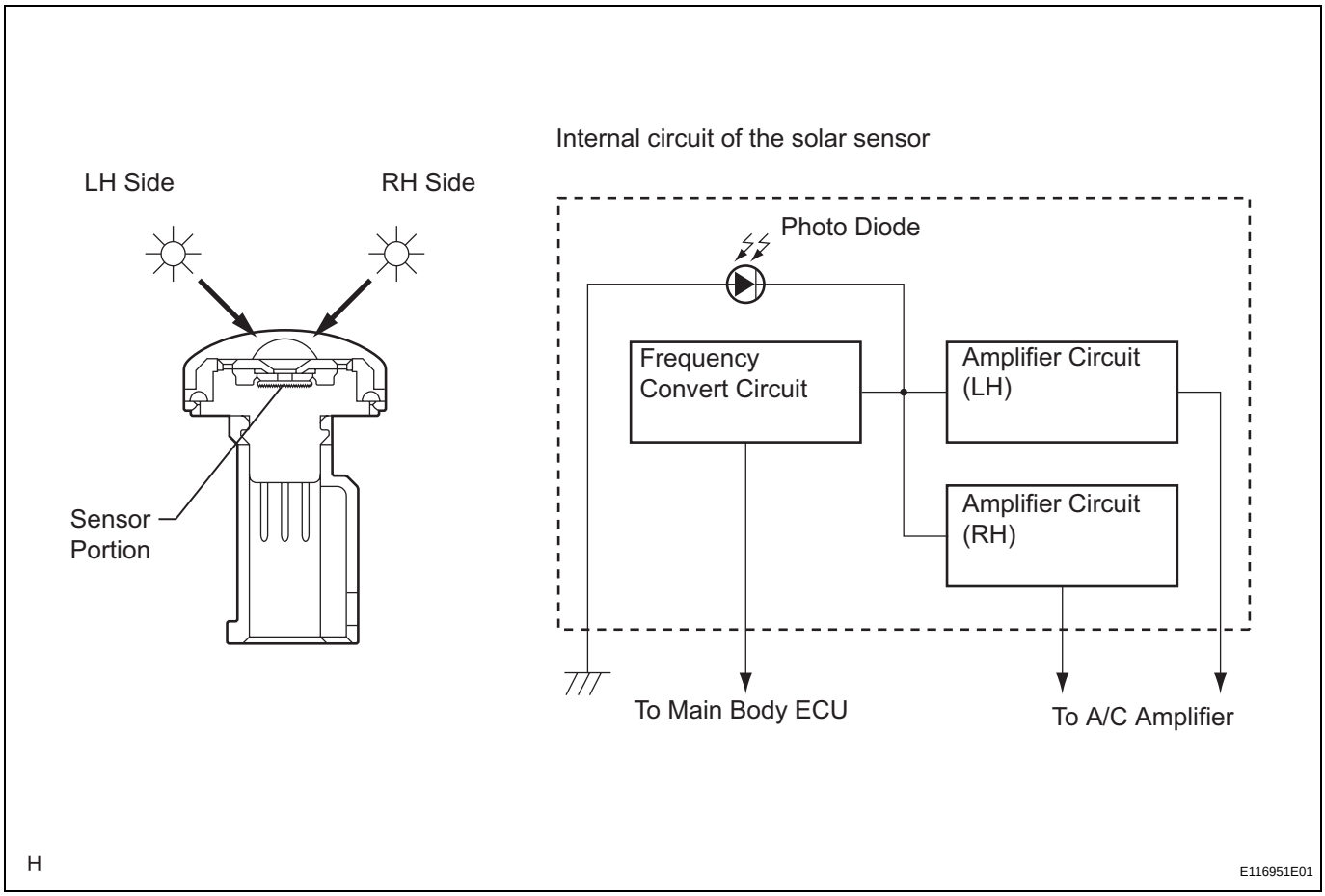
10. LOCK SENSOR (for 2GR-FE)

The lock sensor sends A/C pulley speed signals to the A/C amplifier. The A/C amplifier determines whether the magnetic clutch is locked or not by using those signals and engine speed signals.

11. ROOM TEMPERATURE SENSOR (for AUTO A/C)
The room temperature sensor detects the cabin temperature based on changes in the resistance of its built-in thermistor and sends a signal to the A/C amplifier.

12. 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 A/C amplifier.

13. SOLAR SENSOR (for AUTO A/C)
(a) The solar sensor consists of a photo diode, two amplifier circuits for the solar sensor, and frequency converter circuit for the light control sensor.
(b) A solar sensor detects (in the form of changes in the current that flows through the built-in photo diode) the changes in the amount of sunlight from the LH and RH sides (2 directions) and outputs these sunlight strength signals to the A/C amplifier.



14. 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 A/C amplifier.

15. A/C PRESSURE SENSOR

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

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

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

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

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.

NEXT

3	CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*

AC

(a) Use the intelligent tester to check if the CAN Communication System is functioning normally.
Result

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

B → Go to CAN COMMUNICATION SYSTEM

A

4	CHECK FOR DTC*

(a) Check for DTCs and note any codes that are output.
HINT:
Refer to the DTC CHECK / CLEAR (See page AC-32).
(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	Proceed to
DTC is not output	A
DTC is output	B

B → Go to step 7

A

5	PROBLEM SYMPTOMS TABLE

(a) Refer to the problem symptoms table (See page AC-25).

Result

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

B → Go to step 8

A

6	OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) Actuator Check (See page AC-43 for AUTO A/C)
(b) DATA LIST / ACTIVE TEST (See page AC-38)
(c) Terminals of ECU (See page AC-29)
(d) On-vehicle Inspection
(e) Inspection

NEXT

7	ADJUST, REPAIR OR REPLACE

AC

NEXT

END

CUSTOMIZE PARAMETERS

HINT:
The following items can be customized.
NOTICE:

- **When the customer requests a change in a function, first make sure that the function can be customized.**
- **Be sure to make a note of the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

AIR CONDITIONER (AUTO A/C)

DISPLAY (ITEM)	DEFAULT	CONTENTS	SETTING
SET TEMP SHIFT (Set Temperature Shift)	NORMAL	To shift the temperature against the displayed temperature	+2 C / +1 C / NORMAL / -1 C / -2 C
AIR INLET MODE (Air Inlet Mode)	AUTO	In case of turning the A/C ON when you desire to make the compartment cool down quickly, this is the function to change the mode automatically to RECIRCULATION mode	MANUAL / AUTO
COMPRESSOR MODE (Compressor Mode)	AUTO	Function to turn the A/C ON automatically by pressing the AUTO button when the blower is ON and the A/C is OFF	MANUAL / AUTO
COMPRS / DEF OPER (Compressor / Air Inlet DEF Operation)	LINK	Function to turn the A/C ON automatically linked with the FRONT DEF button when the A/C is OFF	NORMAL / LINK
EVAP CTRL (Evaporator Control)	AUTO	Function to set the evaporator control to the AUTOMATIC position (AUTO) to save power, or to the coldest position (MANUAL) to dehumidify the air and to prevent the windows from fogging up	MANUAL / AUTO
FOOT / DEF MODE (Foot / DEF auto mode)	ON	Function to turn the airflow from FOOT / DEF ON automatically when AUTO MODE is ON	OFF / ON
AUTO BLOW UP (Foot / DEF automatic blower up function)	ON	Function to change the blower level automatically when the defroster is ON	OFF / ON
AMBIENT TMP SFT (Ambient Temperature Shift)	NORMAL	Function to shift the ambient temperature against the displayed ambient temperature	+3 C / +2 C / +1 C / NORMAL / -1 C / -2 C / -3 C

PROBLEM SYMPTOMS TABLE

MANUAL A/C:

Symptom	Suspected area	See page
All functions of the A/C system do not operate	1. IG power source circuit	AC-113
	2. Back-up power source circuit	AC-116
	3. Heater control panel power source circuit	AC-98
	4. LIN communication circuit	AC-118
	5. A/C control assembly	AC-255
	6. A/C amplifier	AC-258
Air Flow Control: No blower operation	1. Blower motor circuit	AC-91
	2. Heater control panel power source circuit	AC-98
	3. LIN communication circuit	AC-118
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
Air Flow Control: No blower control	1. Blower motor circuit	AC-91
	2. Heater control panel power source circuit	AC-98
	3. LIN communication circuit	AC-118
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
Air Flow Control: Insufficient air flow	1. Blower motor circuit	AC-91
	2. A/C amplifier	AC-258
Temperature Control: No cool air comes out	1. Refrigerant volume	AC-120
	2. Refrigerant pressure	AC-120
	3. Pressure switch circuit	AC-65
	4. Air conditioning compressor magnetic clutch circuit (for 2GR-FSE)	AC-100
	5. Compressor lock sensor circuit (for 2GR-FSE)	AC-61
	6. Compressor solenoid circuit	AC-84
	7. Air mix control servo motor circuit	AC-74
	8. Evaporator temperature sensor circuit	AC-53
	9. Ambient temperature sensor circuit	AC-49
	10. Heater control panel power source circuit	AC-98
	11. LIN communication circuit	AC-118
	12. Expansion valve	AC-159
	13. A/C control assembly	AC-255
	14. A/C amplifier	AC-258
	15. ECM (for 2AZ-FE)	ES-432
	16. ECM (for 2GR-FSE)	ES-518
Temperature Control: No warm air comes out	1. Air mix control servo motor circuit	AC-74
	2. Evaporator temperature sensor circuit	AC-53
	3. Ambient temperature sensor circuit	AC-49
	4. A/C amplifier	AC-258
Temperature Control: Output air is warmer or cooler than the set temperature or response is slow.	1. Refrigerant volume	AC-120
	2. Refrigerant pressure	AC-120
	3. Ambient temperature sensor circuit	AC-49
	4. Air mix control servo motor circuit	AC-74
	5. Radiator unit sub-assembly	AC-159
	6. Expansion valve	AC-159
	7. A/C amplifier	AC-258

Symptom	Suspected area	See page
Temperature control: No temperature control (only Max. cool or Max. warm)	1. Air mix control servo motor circuit	AC-74
	2. Ambient temperature sensor circuit	AC-49
	3. Evaporator temperature sensor circuit	AC-53
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
No air inlet control	1. Air inlet control servo motor circuit	AC-77
	2. A/C amplifier	AC-258
No air flow mode control	1. Air outlet control servo motor circuit	AC-79
	2. A/C amplifier	AC-258
Engine idle up does not occur, or is continuous	1. Air conditioning compressor magnetic clutch circuit (for 2GR-FSE)	AC-100
	2. Compressor lock sensor circuit (for 2GR-FSE)	AC-61
	3. Compressor solenoid circuit	AC-84
	4. Heater control panel power source circuit	AC-98
	5. LIN communication circuit	AC-118
	6. A/C control assembly	AC-255
	7. A/C amplifier	AC-258
	8. ECM (for 2AZ-FE)	ES-432
	9. ECM (for 2GR-FSE)	ES-518
Diagnostic trouble codes are not recorded. Set mode is cleared when ignition switch is turned OFF.	1. Back-up power source circuit	AC-116
	2. A/C amplifier	AC-258

AUTO A/C:

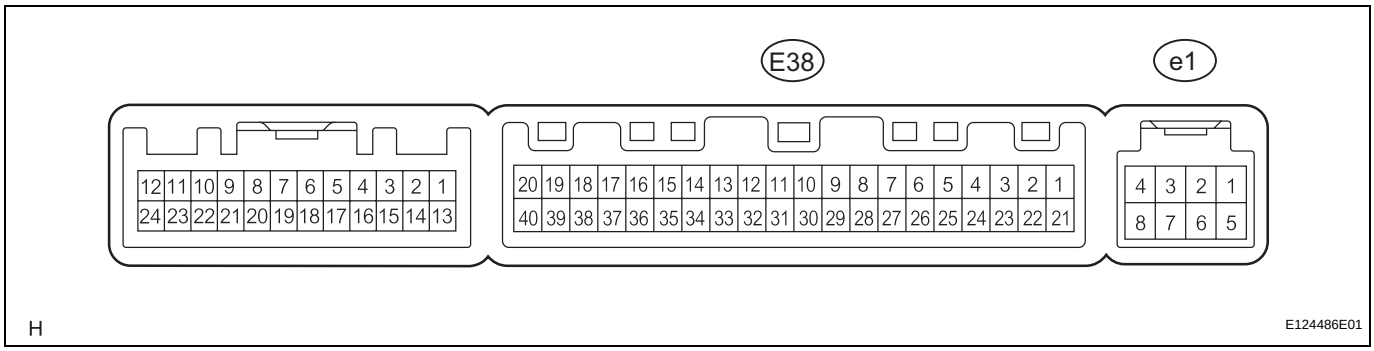
Symptom	Suspected area	See page
All functions of the A/C system do not operate	1. IG power source circuit	AC-113
	2. Back-up power source circuit	AC-116
	3. Heater control panel power source circuit	AC-98
	4. LIN communication circuit	AC-118
	5. Steering pad switch circuit	AC-108
	6. A/C control assembly	AC-255
	7. A/C amplifier	AC-258
Air Flow Control: No blower operation	1. Blower motor circuit	AC-91
	2. Heater control panel power source circuit	AC-98
	3. LIN communication circuit	AC-118
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
Air Flow Control: No blower control	1. Blower motor circuit	AC-91
	2. Heater control panel power source circuit	AC-98
	3. LIN communication circuit	AC-118
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
Air Flow Control: Insufficient air flow	1. Blower motor circuit	AC-91
	2. A/C amplifier	AC-258

Symptom	Suspected area	See page
Temperature Control: No cool air comes out	1. Refrigerant volume	AC-120
	2. Refrigerant pressure	AC-120
	3. Pressure switch circuit	AC-65
	4. Air conditioning compressor magnetic clutch circuit (for 2GR-FSE)	AC-100
	5. Compressor lock sensor circuit (for 2GR-FSE)	AC-61
	6. Compressor solenoid circuit	AC-84
	7. Air mix control servo motor circuit (Driver side)	AC-82
	8. Air mix control servo motor circuit (Passenger side)	AC-74
	9. Evaporator temperature sensor circuit	AC-53
	10. Room temperature sensor circuit	AC-45
	11. Ambient temperature sensor circuit	AC-49
	12. Heater control panel power source circuit	AC-98
	13. LIN communication circuit	AC-118
	14. Expansion valve	AC-159
	15. A/C control assembly	AC-255
	16. A/C amplifier	AC-258
	17. ECM (for 2AZ-FE)	ES-432
	18. ECM (for 2GR-FSE)	ES-518
Temperature Control: No warm air comes out	1. Air mix control servo motor circuit (Driver side)	AC-82
	2. Air mix control servo motor circuit (Passenger side)	AC-74
	3. Evaporator temperature sensor circuit	AC-53
	4. Room temperature sensor circuit	AC-45
	5. Ambient temperature sensor circuit	AC-49
	6. A/C amplifier	AC-258
Temperature Control: Output air is warmer or cooler than the set temperature or response is slow.	1. Refrigerant volume	AC-120
	2. Refrigerant pressure	AC-120
	3. Solar sensor circuit (Driver side)	AC-69
	4. Solar sensor circuit (Passenger side)	AC-56
	5. Room temperature sensor circuit	AC-45
	6. Ambient temperature sensor circuit	AC-49
	7. Air mix control servo motor circuit (Driver side)	AC-82
	8. Air mix control servo motor circuit (Passenger side)	AC-74
	9. Radiator unit sub-assembly	AC-159
	10. Expansion valve	AC-159
	11. A/C amplifier	AC-258
Temperature control: No temperature control (only Max. cool or Max. warm)	1. Air mix control servo motor circuit (Driver side)	AC-82
	2. Air mix control servo motor circuit (Passenger side)	AC-74
	3. Room temperature sensor circuit	AC-45
	4. Ambient temperature sensor circuit	AC-49
	5. Evaporator temperature sensor circuit	AC-53
	6. Solar sensor circuit (Driver side)	AC-69
	7. Solar sensor circuit (Passenger side)	AC-56
	8. A/C control assembly	AC-255
	9. A/C amplifier	AC-258
No air inlet control	1. Air inlet control servo motor circuit	AC-77
	2. A/C amplifier	AC-258
No air flow mode control	1. Air outlet control servo motor circuit	AC-79
	2. A/C amplifier	AC-258

Symptom	Suspected area	See page
Engine idle up does not occur, or is continuous	1. Air conditioning compressor magnetic clutch circuit (for 2GR-FSE)	AC-100
	2. Compressor lock sensor circuit (for 2GR-FSE)	AC-61
	3. Compressor solenoid circuit	AC-84
	4. Heater control panel power source circuit	AC-98
	5. LIN communication circuit	AC-118
	6. A/C control assembly	AC-255
	7. A/C amplifier	AC-258
	8. ECM (for 2AZ-FE)	ES-432
	9. ECM (for 2GR-FSE)	ES-518
Blinking of A/C indicator	1. Compressor solenoid circuit	AC-84
	2. A/C amplifier	AC-258
Unable to control A/C with the steering pad switch	1. Steering pad switch circuit	AC-108
	2. Heater control panel power source circuit	AC-98
	3. LIN communication circuit	AC-118
	4. A/C control assembly	AC-255
	5. A/C amplifier	AC-258
Plasmacluster indicator does not come on (Plasmacluster does not operate)	1. Blower motor circuit	AC-91
	2. Plasmacluster circuit	AC-105
	3. A/C amplifier	AC-258
Diagnostic trouble codes are not recorded. Set mode is cleared when ignition switch is turned OFF.	1. Back-up power source circuit	AC-116
	2. A/C amplifier	AC-258

TERMINALS OF ECU

1. A/C AMPLIFIER



HINT:
Check from the rear of the connector while it is connected to the A/C amplifier.

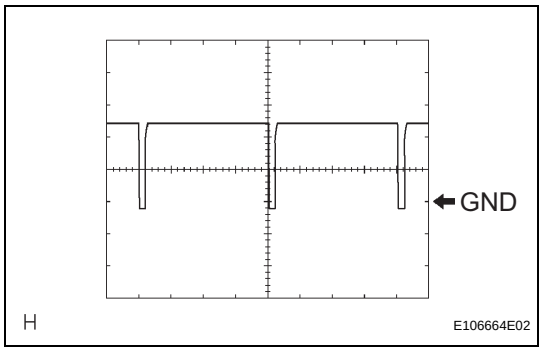
Terminal No. (Symbols)	Wiring Color	Terminal Description	Condition	Specified Condition
E38-1 (IG+) - E38-14 (GND)	V - W-B	Power source (IG)	Ignition switch on (IG)	10 to 14 V
E38-1 (IG+) - E38-14 (GND)	V - W-B	Power source (IG)	Ignition switch off	Below 1 V
E38-2 (SOL+) - E38-14 (GND)	W - W-B	A/C compressor operation signal	Engine is running A/C switch: ON Blower switch: LO	Pulse generation (See waveform 1)
E38-5 (TAM) - E38-14 (GND)	P - W-B	A/C ambient temperature sensor signal	Ignition switch on (IG) at 25°C (77°F)	1.35 to 1.75 V
E38-5 (TAM) - E38-14 (GND)	P - W-B	A/C ambient temperature sensor signal	Ignition switch on (IG) at 40°C (104°F)	0.9 to 1.2 V
E38-8 (LOCK)*1 - E38-14 (GND)	G - W-B	A/C compressor lock sensor signal	Engine is running Blower switch: LO A/C switch: ON	Pulse generation (See waveform 2)
E38-9 (PRE) - E38-13 (SG-2)	V - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (more than 3,140 kPa (32.0 kgf/cm^2, 455 psi))	4.74 V or higher
E38-9 (PRE) - E38-13 (SG-2)	V - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (less than 196 kPa (2.0 kgf/cm^2, 28 psi))	Below 0.76 V
E38-9 (PRE) - E38-13 (SG-2)	V - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (more than 3,140 kPa (32.0 kgf/cm^2, 455 psi) and less than 196 kPa (2.0 kgf/cm^2, 28 psi))	0.76 to 4.74 V
E38-10 (S5-3) - E38-13 (SG-2)	BR - L	Power supply for A/C pressure sensor	Ignition switch on (IG) A/C switch: ON	4.5 to 5.5 V
E38-10 (S5-3) - E38-13 (SG-2)	BR - L	Power supply for A/C pressure sensor	Ignition switch on (IG) A/C switch: OFF	Below 1 V
E38-11 (CANH) - E38-12 (CANL)	B - W	CAN communication system	CAN communication circuit	Pulse generation
E38-13 (SG-2) - Body ground	L - Body ground	Ground for A/C pressure sensor, A/C ambient temperature sensor, A/C lock sensor	Always	Below 1 V
E38-14 (GND) - Body ground	W-B - Body ground	Ground for main power supply	Always	Below 1 V

AC

Terminal No. (Symbols)	Wiring Color	Terminal Description	Condition	Specified Condition
E38-20 (MGC)*1 - E38-14 (GND)	LG - W-B	A/C compressor magnetic clutch operation signal	Ignition switch on (IG) Blower switch: LO A/C switch: OFF	10 to 14 V
E38-20 (MGC)*1 - E38-14 (GND)	LG - W-B	A/C compressor magnetic clutch operation signal	Ignition switch on (IG) Blower switch: LO A/C switch: ON	Below 1 V
E38-21 (B) - E38-14 (GND)	GR - W-B	Power source (Back-up)	Always	10 to 14 V
E38-23 (BLW) - E38-14 (GND)	R - W-B	Blower motor speed control signal	Ignition switch on (IG) Blower switch: ON	Pulse generation (See waveform 3)
E38-29 (TR)*2 - E38-34 (SG-1)	P - LG	A/C room temperature sensor signal	Ignition switch on (IG) Cabin temperature at 25°C (77°F)	1.8 to 2.2 V
E38-29 (TR)*2 - E38-34 (SG-1)	P - LG	A/C room temperature sensor signal	Ignition switch on (IG) Cabin temperature at 40°C (104°F)	1.2 to 1.6 V
E38-32 (TSP)*2 - E38-14 (GND)	Y - W-B	A/C solar sensor signal (for Front passenger side)	Ignition switch on (IG) Solar sensor is subjected to electric light.	0.8 to 4.3 V
E38-32 (TSP)*2 - E38-14 (GND)	Y - W-B	A/C solar sensor signal (for Front passenger side)	Ignition switch on (IG) Solar sensor is covered with a cloth.	Below 0.8 V
E38-33 (TSD)*2 - E38-14 (GND)	O - W-B	A/C solar sensor signal (for Driver side)	Ignition switch on (IG) Solar sensor is subjected to electric light.	0.8 to 4.3 V
E38-33 (TSD)*2 - E38-14 (GND)	O - W-B	A/C solar sensor signal (for Driver side)	Ignition switch on (IG) Solar sensor is covered with a cloth.	Below 0.8 V
E38-34 (SG-1)*2 - Body ground	LG - Body ground	Ground for A/C room temperature sensor	Always	Below 1 V
E38-37 (LIN1) - E38-14 (GND)	GR - W-B	LIN communication signal	Ignition switch on (IG)	Pulse generation
E38-38 (RDFG) - E38-14 (GND)	G - W-B	DEF relay signal	Ignition switch on (IG) REAR DEF switch: ON	Below 1 V
E38-38 (RDFG) - E38-14 (GND)	G - W-B	DEF relay signal	Ignition switch on (IG) REAR DEF switch: OFF	10 to 14 V
E38-39 (PCD1)*2 - E38-14 (GND)	R - W-B	Plasmacluster™ operation signal	Ignition switch on (IG) Blower switch: OFF (plasmacluster™ not operating)	10 to 14 V
E38-39 (PCD1)*2 - E38-14 (GND)	R - W-B	Plasmacluster™ operation signal	Ignition switch on (IG) Blower switch: ON (plasmacluster™ operating)	Below 1 V
e1-2 (BUS G) - Body ground	-	Ground for BUS IC	Always	Below 1 V
e1-3 (BUS) - e1-2 (BUS G)	-	BUS IC control signal	Ignition switch off → on (IG)	Pulse generation
e1-4 (B BUS) - e1-2 (BUS G)	-	Power supply for BUS IC	Ignition switch off	Below 1 V
e1-4 (B BUS) - e1-2 (BUS G)	-	Power supply for BUS IC	Ignition switch on (IG)	10 to 14 V
e1-5 (SGA) - Body ground	-	Ground for evaporator temperature sensor	Always	Below 1 V
e1-6 (TEA) - e1-5 (SGA)	-	A/C evaporator temperature sensor signal	Ignition switch on (IG) Evaporator temperature at 0°C (32°F)	1.7 to 2.1 V
e1-6 (TEA) - e1-5 (SGA)	-	A/C evaporator temperature sensor signal	Ignition switch on (IG) Evaporator temperature at 15°C (59°F)	0.7 to 1.3 V

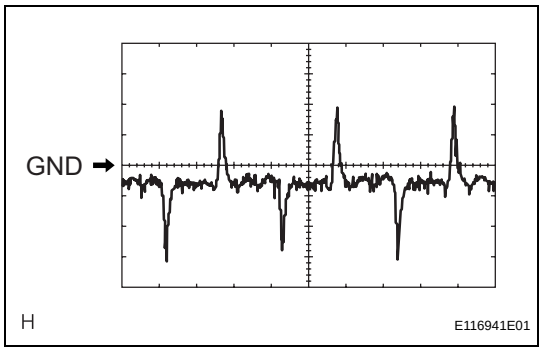
*1: For 2GR-FSE
*2: For AUTO A/C

AC



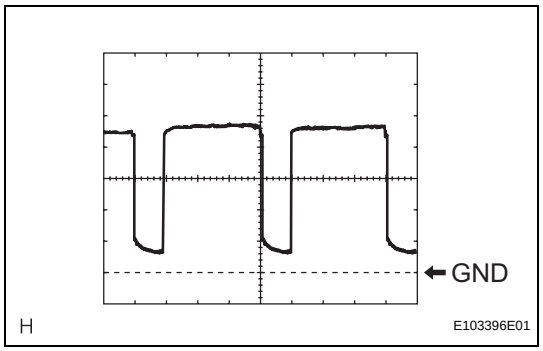
(a) Waveform 1:

Item	Contents
Terminal No. (Symbols)	E38-2 (SOL+) - E38-14 (GND)
Tool Setting	5 V/DIV., 500 μs/DIV.
Vehicle Condition	Engine is running A/C switch: ON



(b) Waveform 2:

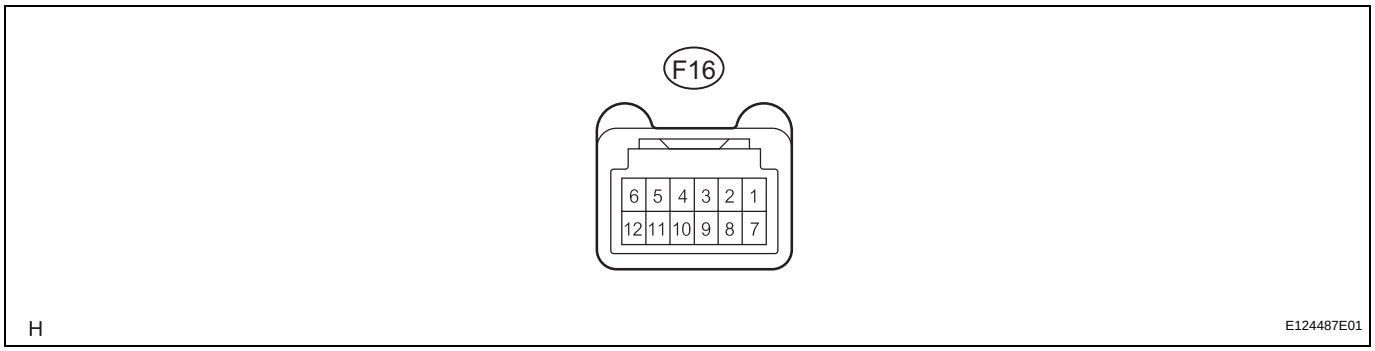
Item	Contents
Terminal No. (Symbols)	E38-8 (LOCK) - E38-14 (GND)
Tool Setting	200 mV/DIV., 10 ms./DIV.
Vehicle Condition	Engine is running Blower switch: LO A/C switch: ON



(c) Waveform 3:

Item	Contents
Terminal No. (Symbols)	E38-23 (BLW) - E38-14 (GND)
Tool Setting	1 V/DIV., 500 μs/DIV.
Vehicle Condition	Ignition switch on (IG) Blower switch: ON

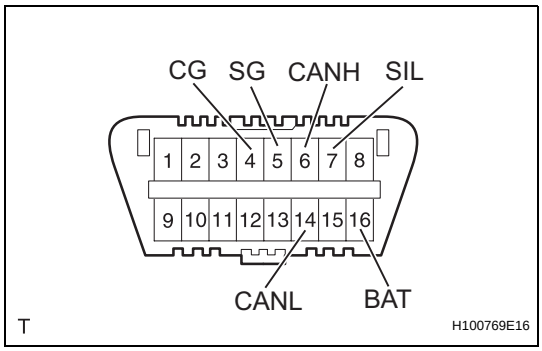
2. A/C CONTROL ASSEMBLY



HINT:
Check from the rear of the connector while it is connected to the A/C control assembly.

Terminal No. (Symbols)	Wiring Color	Terminal Description	Condition	Specified Condition
F16-3 (GND) - Body ground	W-B - Body ground	Ground for A/C control assembly	Always	Below 1 V
F16-4 (TX+) - F16-3 (GND)	L - W-B	LIN communication circuit	Ignition switch on (IG)	Pulse generation
F16-5 (IG+) - F16-3 (GND)	V - W-B	Power source (IG)	Ignition switch off	Below 1 V
F16-5 (IG+) - F16-3 (GND)	V - W-B	Power source (IG)	Ignition switch on (IG)	10 to 14 V

AC



DIAGNOSIS SYSTEM

1. CHECK DLC3

(a) The vehicle's ECU uses the ISO 15765-4 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.

Symbol (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	10 to 14 V
CANH (6) - CANL (14)	CAN bus line	Ignition switch off*	54 to 69 Ω
CANH (6) - BAT (16)	HIGH-level CAN bus line	Ignition switch off*	6 kΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch off*	200 Ω or higher
CANL (14) - BAT (16)	LOW-level CAN bus line	Ignition switch off*	6 kΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch off*	200 Ω or higher

NOTICE:

***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, any other switches, or the doors.**

HINT:

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

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

AC

DTC CHECK / CLEAR

HINT:
*: For AUTO A/C

1. DTC CHECK (SENSOR CHECK)*

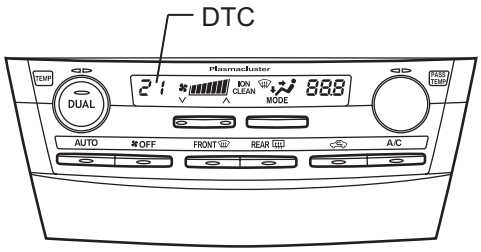
(a) Start the engine and warm it up.

(b) Perform the indicator check (See page AC-34).
HINT:
After the indicator check is completed, the system enters the DTC check mode automatically.

(c) Read the code displayed on the panel. (Trouble codes are output on the temperature display.)
NOTICE:
- **In the sensor check mode, which is automatically transferred from the indicator check mode, troubleshooting may be partially performed. Be sure to perform the actuator check, and then the sensor check again.**
- **If the check is performed in a dark place, DTC 21 or 24 may be displayed even though the system is normal.**

HINT:
Refer to the DTC chart (Diagnostic Trouble Code chart) for details of the codes (See page AC-41).
- When there are no problems, DTC 00 is output.
- As an example, the illustration shows that display code 21 is output.

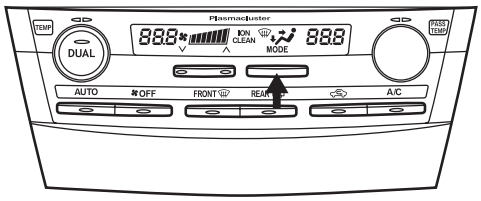
A/C Control Assembly:



H E124467E01

(d) If the steps are difficult to read because they change automatically, push the "MODE" switch to display the steps one at a time so that they can be read easily. The items are displayed step by step each time the "MODE" switch is pushed.
- Push the "OFF" switch to finish panel diagnosis.
- Push the "R/F" switch to enter the actuator check mode.

A/C Control Assembly:



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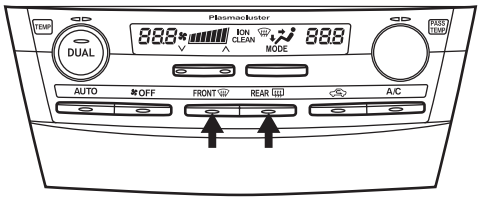
AC

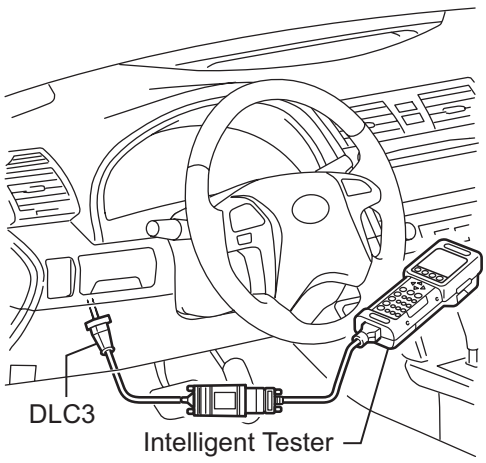
A/C Control Assembly:



H E124466E04

2. CLEARING DTC*

(a) During the sensor check, press the "FRONT DEF" switch and "REAR DEF" switch at the same time.



H C131977E01

3. DTC CHECK USING INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG).
(c) Turn the tester ON.
(d) Enter the following menu items: DIAGNOSIS / OBD/ MOBD / DTC INFO / CURRENT CODES.
HINT:
Refer to the intelligent tester operator's manual for further details.
(e) Check the details of the DTCs.
(f) Clear the DTCs.
HINT:
After repairing the malfunctions, clear the DTC.
(1) Connect the intelligent tester to the DLC3.
(2) Turn the ignition switch on (IG).
(3) Enter the following menu items: DIAGNOSIS / OBD/MOBD / DTC INFO / CLEAR CODES.
HINT:
Refer to the intelligent tester operator's manual for further details.
(4) Press the YES button.

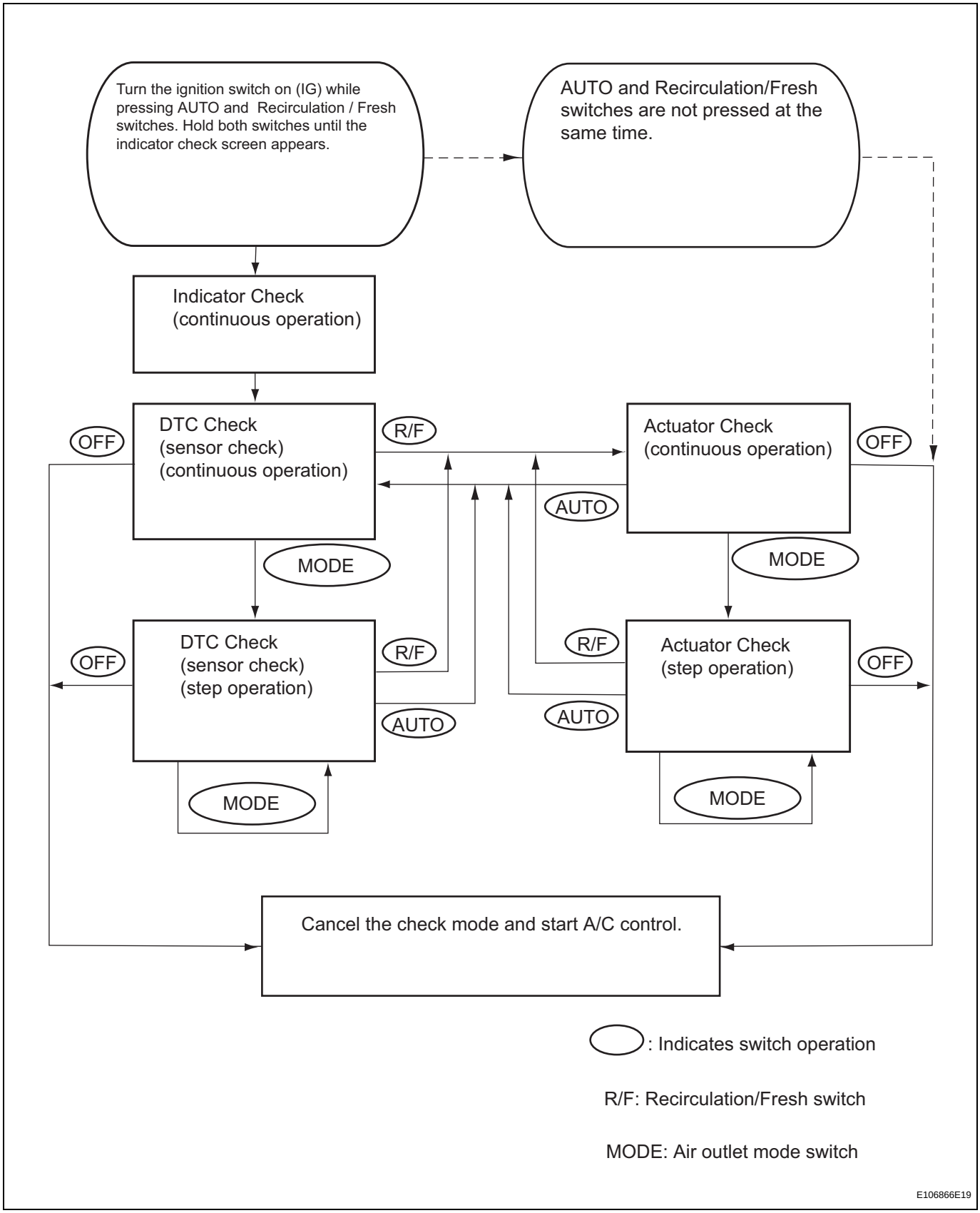
AC

CHECK MODE PROCEDURE

HINT:
*: For AUTO A/C

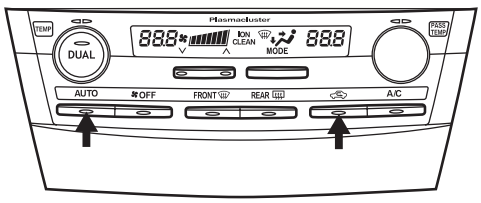
1. LIST OF OPERATION METHODS*

(a) By operating each of the A/C control switches as shown in the diagram below, it is possible to enter the diagnostic check mode.



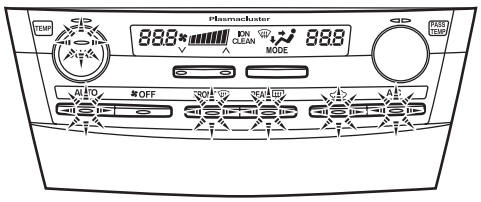
AC

A/C Control Assembly:

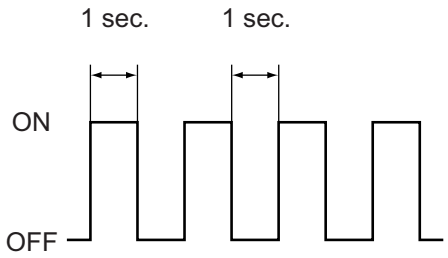


H E124466E05

A/C Control Assembly:



Indicator Blinking Pattern:



H E124468E01

2. INDICATOR CHECK*

(a) Turn the ignition switch off.

(b) Turn the ignition switch on (IG) while pressing the A/C control "AUTO" switch and "R/F" switch simultaneously. Hold both switches until the indicator check screen appears.

(c) The indicator check is automatically performed when panel diagnosis is activated. Check that the indicators light up and go off at 1 second intervals 4 times in succession.
HINT:
- The sensor check automatically starts when the indicator check is completed.
- Press the "OFF" switch to cancel the check mode.
- If a navigation system is installed, the indicator will blink and the buzzer will sound.

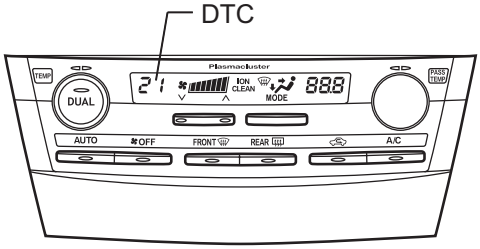
3. DTC CHECK (SENSOR CHECK)*

(a) Start the engine and warm it up.

(b) Perform the indicator check.
HINT:
After the indicator check is completed, the system enters the DTC check mode automatically.

AC

A/C Control Assembly:

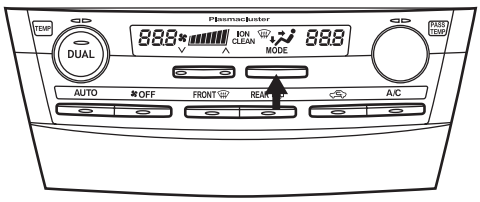


H E124467E01

(c) Read the code displayed on the panel.
NOTICE:
- **In the sensor check mode, which is automatically transferred from the indicator check mode, troubleshooting may be partially performed. Be sure to perform the actuator check, and then the sensor check again.**
- **If the check is performed in a dark place, DTC 21 or 24 may be displayed even though the system is normal.**

HINT:
Refer to the DTC chart (Diagnostic Trouble Code chart) for details of the codes (See page AC-41).
- When there are no problems, DTC 00 is output.
- As an example, the illustration shows that display code 21 is output.

A/C Control Assembly:



H E124466E03

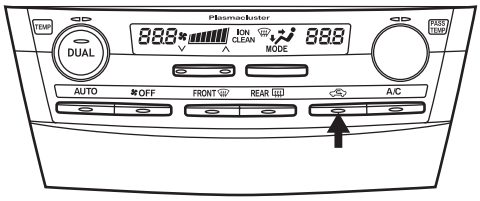
(d) If the steps are difficult to read because they change automatically, push the "MODE" switch to display the steps one at a time so that they can be read easily. The items are displayed step by step each time the "MODE" switch is pushed.
- Push the "OFF" switch to finish panel diagnosis.
- Push the "R/F" switch to enter the actuator check mode.

4. ACTUATOR CHECK*

(a) Start the engine and warm it up.

(b) Perform the indicator check.

A/C Control Assembly:

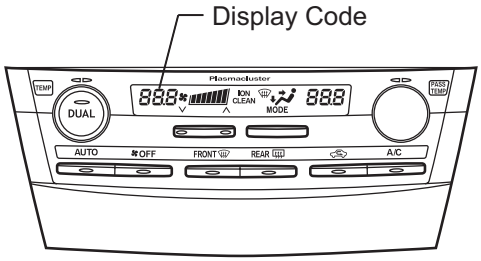


H E124466E02

(c) Push the "R/F" switch to perform the actuator check.
HINT:
Be sure to perform the actuator check after starting the engine.

AC

A/C Control Assembly:

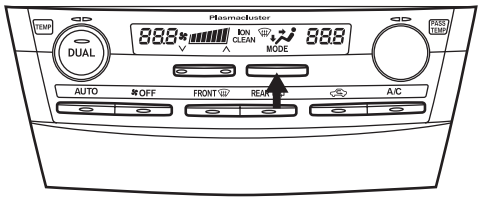


H E124466E06

(d) As the actuator check is repeated from steps 1 to 10 at 1 second intervals, check the temperature and air flow visually and by hand.
HINT:
- The display blinks at 1 second intervals in the step operation.
- Push the "OFF" switch to finish panel diagnosis.
- Push the "AUTO" switch to enter the sensor check mode.

Step No.	Display Code	Conditions				
		Blower Level	Air Mix Damper	Airflow Vent	Air Inlet Damper	Compressor
1	0	0	0% open	FACE	FRESH	OFF
2	1	1	0% open	FACE	FRESH	OFF
3	2	17	0% open	FACE	RECIRCULATION / FRESH	ON
4	3	17	0% open	FACE	RECIRCULATION	ON
5	4	17	50% open	B/L	RECIRCULATION	ON
6	5	17	50% open	B/L	RECIRCULATION	ON
7	6	17	50% open	FOOT	FRESH	ON
8	7	17	100% open	FOOT-0	FRESH	ON
9	8	17	100% open	F/D	FRESH	ON
10	9	31	100% open	DEF	FRESH	ON

A/C Control Assembly:



H E124466E03

(e) If the steps are difficult to read because they change automatically, push the "MODE" switch to display the steps one at a time so that they can be read easily. The items are displayed step by step each time the "MODE" switch is pushed.
HINT:
- Push the "OFF" switch to finish panel diagnosis.
- Push the "R/F" switch to enter the sensor check mode.

AC

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

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

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG).
(c) Turn the tester on.
(d) Enter the following menus: DIAGNOSIS / OBD/ MOBD / AIR CONDITIONER / DATA LIST.
(e) Check the value(s) by referring to the table below.

AIR CONDITIONER (for MANUAL A/C)

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
AMBI TEMP SENS (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	-
AMBI TEMP (Adjusted ambient temperature)	Adjusted ambient temperature / Min.: -30.8°C (-23.44°F), Max.: 50.8°C (123.44°F)	-	-
EVAP FIN TEMP (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	-
COOLANT TEMP (Engine coolant temperature)	Engine coolant temperature / Min.: 1.3°C (34.34°F), Max.: 90.55°C (194.99°F)	Actual engine coolant temperature is displayed while engine is warmed up	-
REG PRESS SENS (Regulator pressure sensor)	Regulator pressure sensor / Min.: -0.5 kgf/cm^2G, Max.: 37.75 kgf/cm^2G	Actual refrigerant pressure is displayed	-
REG CTRL CURRNT (Regulator control current)	Compressor variable output current / Min.: 0 A, Max.: 0.996 A	-	-
AIR MIX PULSE-D (Air mix servomotor target pulse (D side))	Driver side air mix servo motor target pulse / Min.: 0, Max.: 255	MAX. COLD: 105 (pulse) MAX. HOT: 7 (pulse)	-
AIR OUT PULSE-D (Air out pulse-D)	Driver side air outlet servo motor target pulse / Min.: 0, Max.: 255	FACE: 8 (pulse) B/L: 30 to 38 (pulse) FOOT: 50 to 74 (pulse) FOOT/DEF: 80 (pulse) DEF: 97 (pulse)	-
A/I DAMP PLS (Air inlet damper target pulse)	Air inlet damper target pulse / Min.: 0, Max.: 255	RECIRCULATION: 7 (pulse) FRESH: 28 (pulse)	-
#CODES (Number of trouble codes)	Number of trouble codes / Min.: 0, Max.: 255	Number of DTCs will be displayed	-

AIR CONDITIONER (for AUTO A/C)

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
ROOM TEMP (Room temperature sensor)	Room temperature sensor / Min.: -6.5°C (20.3°F), Max.: 57.25°C (135.05°F)	Actual cabin temperature is displayed	-
AMBI TEMP SENS (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	-
AMBI TEMP (Adjusted ambient temperature)	Adjusted ambient temperature / Min.: -30.8°C (-23.44°F), Max.: 50.8°C (123.44°F)	-	-

AC

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
EVAP FIN TEMP (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	-
SOLAR SENS-D (Solar sensor (D side))	Driver side solar sensor / Min.: 0, Max.: 255	Driver side solar sensor value increases as brightness increases	-
SOLAR SENS-P (Solar sensor (P side))	Passenger side solar sensor / Min.: 0, Max.: 255	Passenger side solar sensor value increases as brightness increases	-
COOLANT TEMP (Engine coolant temperature)	Engine coolant temperature / Min.: 1.3°C (34.34°F), Max.: 90.55°C (194.99°F)	Actual engine coolant temperature is displayed while engine is warmed up	-
SET TEMP-D (Set temperature (D - side))	Driver side set temperature / Min.: 0°C (32°F), Max.: 30°C (54°F)	Driver side set temperature is displayed	-
SET TEMP-P (Set temperature (P - side))	Passenger side set temperature / Min.: 0°C (32°F), Max.: 30°C (54°F)	Passenger side set temperature is displayed	-
ESTIMATE TEMP-D (Estimate temperature (D side)	Driver side estimate temperature / Min.: -358.4°C (-613.12°F), Max.: 358.4°C (677.12°F)	Damper is at "MAX. COOL": -358.4°C (-613.12°F) Damper is at "MAX. HOT": 358.4°C (677.12°F)	-
ESTIMATE TEMP-P (Estimate temperature (P side)	Passenger side estimate temperature / Min.: -358.4, Max.: 358.4	Damper is at "MAX. COOL": -358.4°C (-613.12°F) Damper is at "MAX. HOT": 358.4°C (677.12°F)	-
HAND FREE TEL (Hand free telephone)	Hands free telephone / OFF or ON	-	-
BLOWER LEVEL (Blower motor speed level)	Blower motor speed level / Min.: 0 level, Max.: 31 level	Increases in the range between 0 and 31 as the blower motor speed increases	-
REG PRESS SENS (Regulator pressure sensor)	Regulator pressure sensor / Min.: -0.5 kgf/cm^{2}G, Max.: 37.75 kgf/cm^{2}G	Actual refrigerant pressure is displayed	-
REG CTRL CURRNT (Regulator control current)	Compressor variable output current / Min.: 0 A, Max.: 0.996 A	-	-
AIR MIX PULSE-D (Air mix servomotor target pulse (D side))	Driver side air mix servo motor target pulse / Min.: 0, Max.: 255	MAX. COLD: 5 (pulse) MAX. HOT: 103 (pulse)	-
AIR MIX PULSE-P (Air mix servomotor target pulse (P side))	Passenger side air mix servo motor target pulse / Min.: 0, Max.: 255	MAX. COLD: 105 (pulse) MAX. HOT: 7 (pulse)	-
AIR OUT PULSE-D (Air out pulse-D)	Driver side air outlet servo motor target pulse / Min.: 0, Max.: 255	FACE: 8 (pulse) B/L: 30 to 38 (pulse) FOOT: 50 to 74 (pulse) FOOT/DEF: 80 (pulse) DEF: 97 (pulse)	-
A/I DAMP PLS (Air inlet damper target pulse)	Air inlet damper target pulse / Min.: 0, Max.: 255	RECIRCULATION: 7 (pulse) FRESH: 28 (pulse)	-
#CODES (Number of trouble codes)	Number of trouble codes / Min.: 0, Max.: 255	Number of DTCs will be displayed	-

ENGINE

Item	Measurement Item / (Range) Display	Normal Condition	Diagnostic Note
A/C SIGNAL (A/C signal)	A/C signal / ON or OFF	ON: A/C ON OFF: A/C OFF	-
A/C MAG CLUTCH (A/C magnetic clutch relay)	A/C magnetic clutch relay / ON or OFF	ON: A/C magnetic clutch ON OFF: A/C magnetic clutch OFF	-

2. ACTIVE TEST

HINT:

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

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG).
(c) Turn the tester on.
(d) Enter the following menus: DIAGNOSIS / OBD/ MOBD / AIR CONDITIONER / ACTIVE TEST.
(e) Perform the ACTIVE TEST by referring to the table below.

AIR CONDITIONER (for MANUAL A/C)

Item	Test Details / Display (Range)	Diagnostic Note
DEFOGER RLY-R (Defogger relay (Rear))	Defogger relay (Rear) / OFF, ON	-
AIR MIX PULSE-D (Air mix servomotor pulse (D side))	Driver side air mix servo motor pulse / Min.: 0, Max.: 255	-
AIR OUT PULSE-D (Air outlet servomotor pulse (D side)	Driver side air outlet servo motor pulse / Min.: 0, Max.: 255	-
A/I DAMP PLS (Air inlet damper target pulse)	Air inlet damper target pulse / Min.: 0, Max.: 255	-

AIR CONDITIONER (for AUTO A/C)

Item	Test Details / Display (Range)	Diagnostic Note
BLOWER MOTOR (Blower motor)	Blower motor / Min.: Level 0, Max.: Level 31	-
DEFOGER RLY-R (Defogger relay (Rear))	Defogger relay (Rear) / OFF, ON	-
AIR MIX PULSE-D (Air mix servomotor pulse (D side))	Driver side air mix servo motor pulse / Min.: 0, Max.: 255	-
AIR MIX PULSE-P (Air mix servomotor pulse (P side))	Passenger side air mix servo motor pulse / Min.: 0, Max.: 255	-
AIR OUT PULSE-D (Air outlet servomotor pulse (D side)	Driver side air outlet servo motor pulse / Min.: 0, Max.: 255	-
A/I DAMP PLS (Air inlet damper target pulse)	Air inlet damper target pulse / Min.: 0, Max.: 255	-

ENGINE

Item	Test Details / Display (Range)	Diagnostic Note
A/C MAG CLUTCH (Magnetic clutch relay)	Magnetic clutch relay / ON or OFF	-

DIAGNOSTIC TROUBLE CODE CHART

AIR CONDITIONING SYSTEM

DTC No.	Detection Item	Trouble Area	Memory *4	See page
B1411/11 *1, *5	Room Temperature Sensor Circuit	1. Room temperature sensor 2. Harness or connector between room temperature sensor and A/C amplifier 3. A/C amplifier	Memorized (8.5 min. or more)	AC-45
B1412/12	Ambient Temperature Sensor Circuit	1. Ambient temperature sensor 2. Harness or connector between ambient temperature sensor and A/C amplifier 3. A/C amplifier	Memorized (8.5 min. or more)	AC-49
B1413/13	Evaporator Temperature Sensor Circuit	1. Air conditioning harness (evaporator temperature sensor) 2. A/C amplifier	Memorized (8.5 min. or more)	AC-53
B1421/21 *3, *5	Solar Sensor Circuit (Passenger Side)	1. Solar sensor 2. Harness or connector between solar sensor and A/C amplifier 3. Harness or connector between solar sensor and main body ECU 4. A/C amplifier 5. Main body ECU	Memorized (8.5 min. or more) (only when circuit is shorted)	AC-56
B1422/22	Compressor Lock Sensor Circuit	1. A/C compressor (A/C lock sensor) 2. Compressor drive belt 3. Harness or connector between compressor and magnetic clutch (A/C lock sensor) 4. A/C amplifier 5. CAN communication system	-	AC-61
B1423/23	Pressure Switch Circuit	1. Pressure sensor 2. Harness or connector between pressure sensor and A/C amplifier 3. Refrigerant pipe line 4. A/C amplifier	-	AC-65
B1424/24 *3, *5	Solar Sensor Circuit (Driver Side)	1. Solar sensor 2. Harness or connector between solar sensor and A/C amplifier 3. Harness or connector between solar sensor and main body ECU 4. A/C amplifier 5. Main body ECU	Memorized (8.5 min. or more) (only when circuit is shorted)	AC-69
B1441/41	Air Mix Damper Control Servo Motor Circuit (Passenger Side)	1. A/C amplifier 2. Air conditioning harness 3. Air mix control servo motor	Memorized (30 sec.)	AC-74
B1442/42	Air Inlet Damper Control Servo Motor Circuit	1. A/C amplifier 2. Air conditioning harness 3. Air inlet control servo motor	Memorized (30 sec.)	AC-77

DTC No.	Detection Item	Trouble Area	Memory *4	See page
B1443/43	Air Outlet Damper Control Servo Motor Circuit	1. A/C amplifier 2. Air conditioning harness 3. Air outlet control servo motor	Memorized (30 sec.)	AC-79
B1446/46 *5	Air Mix Damper Control Servo Motor Circuit (Driver Side)	1. A/C amplifier 2. Air conditioning harness 3. Air mix control servo motor	Memorized (30 sec.)	AC-82
B1451/51	Compressor Solenoid Circuit	1. A/C compressor 2. Harness or connector between A/C amplifier and solenoid of externally changeable compressor 3. A/C amplifier	-	AC-84
B1497/97	BUS IC Communication Malfunction	1. Air conditioning harness 2. A/C amplifier	Memorized (10 sec. or more)	AC-87
B1499/99	Multiplex Communication Circuit	CAN communication system	Memorized	AC-90

*1: If the room temperature is approx. -18.6°C (-1.48°F) or lower, DTC B1411/11 may be output even though the system is normal.

*2: If the ambient temperature is approx. -52.9°C (-63.22°F) or lower, DTC B1412/12 may be output even though the system is normal.

*3: If the check is performed in a dark place, DTC B1421/21 or B1424/24 (solar sensor circuit abnormal) may be output even though the system is normal.

*4: The A/C amplifier memorizes the DTC of the respective malfunction if it has occurred for the period of time indicated in the brackets.

*5: For AUTO A/C

ACTUATOR CHECK

HINT:
*: For AUTO A/C

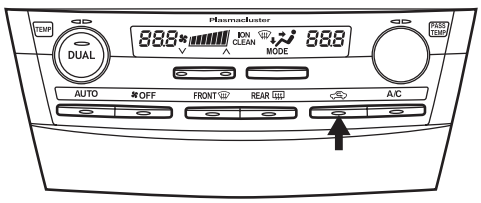
1. ACTUATOR CHECK*

(a) Start the engine and warm it up.

(b) Perform the indicator check (See page AC-34).

(c) Push the "R/F" switch to perform the actuator check.
HINT:
Be sure to perform the actuator check after starting the engine.

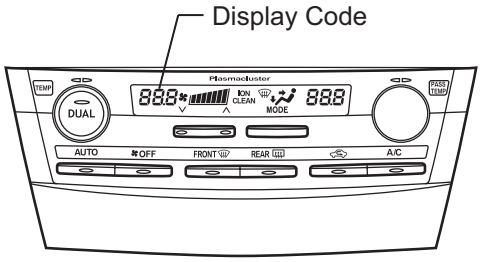
A/C Control Assembly:



H E124466E02

(d) As the actuator check is repeated from steps 1 to 10 at 1 second intervals, check the temperature and air flow visually and by hand.
HINT:
- The display blinks at 1 second intervals in the step operation.
- Push the "OFF" switch to finish panel diagnosis.
- Push the "AUTO" switch to enter the sensor check mode.

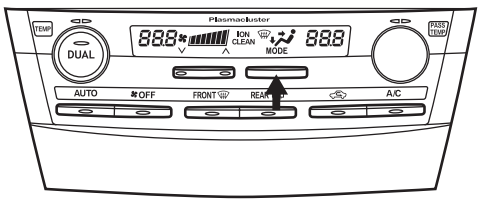
A/C Control Assembly:



H E124466E06

Step No.	Display Code	Conditions				
		Blower Level	Air Mix Damper	Airflow Vent	Air Inlet Damper	Compressor
1	0	0	0% open	FACE	FRESH	OFF
2	1	1	0% open	FACE	FRESH	OFF
3	2	17	0% open	FACE	RECIRCULATION / FRESH	ON
4	3	17	0% open	FACE	RECIRCULATION	ON
5	4	17	50% open	B/L	RECIRCULATION	ON
6	5	17	50% open	B/L	RECIRCULATION	ON
7	6	17	50% open	FOOT	FRESH	ON
8	7	17	100% open	FOOT-0	FRESH	ON
9	8	17	100% open	F/D	FRESH	ON
10	9	31	100% open	DEF	FRESH	ON

A/C Control Assembly:



H E124466E03

(e) If the steps are difficult to read because they change automatically, push the "MODE" switch to display the steps one at a time so that they can be read easily. The items are displayed step by step each time the "MODE" switch is pushed.
HINT:
- Push the "OFF" switch to finish panel diagnosis.
- Push the "R/F" switch to enter the sensor check mode.

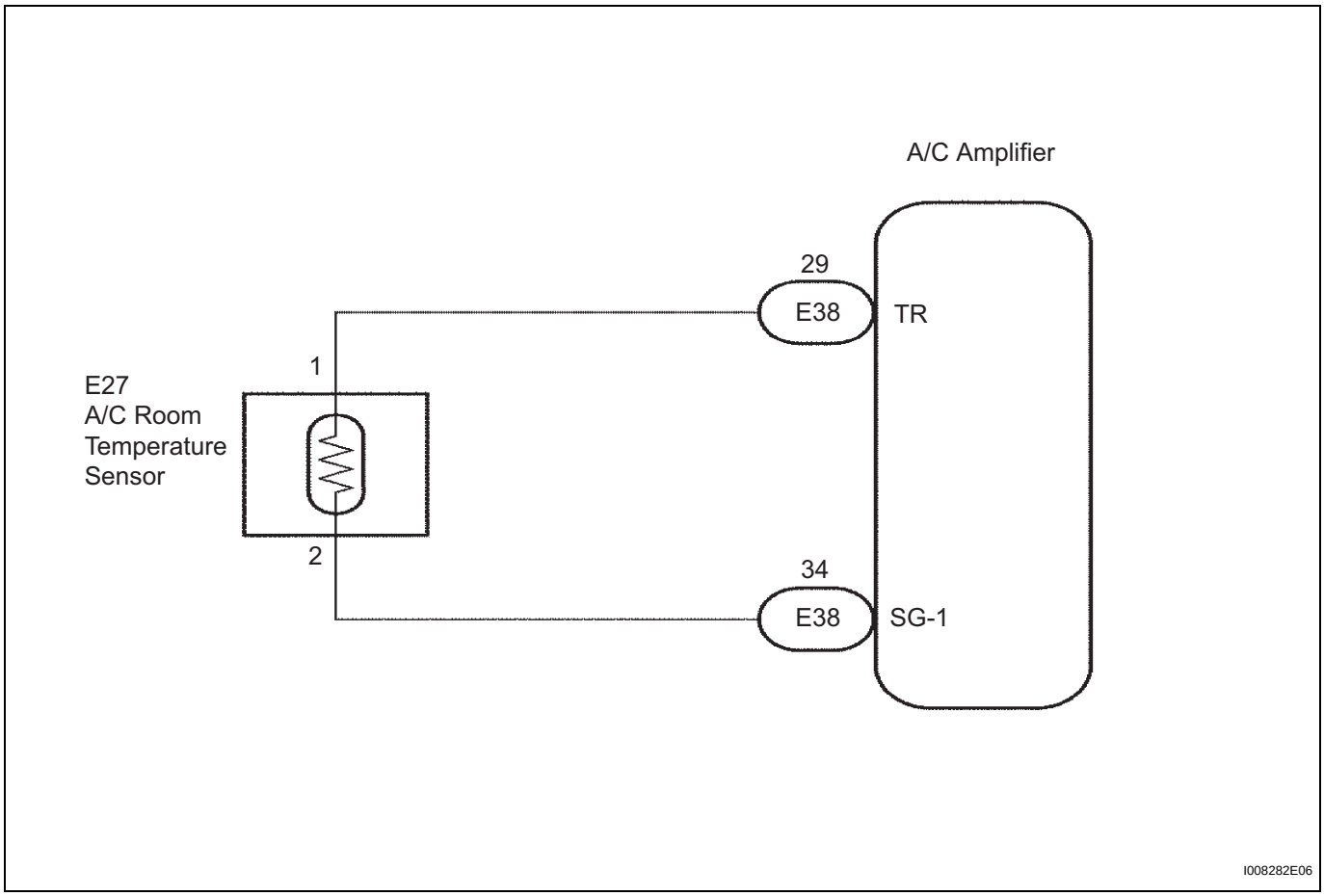
DTC	B1411/11	Room Temperature Sensor Circuit

DESCRIPTION

This sensor detects the cabin temperature that is used as the basis for temperature control and sends a signal to the A/C amplifier.

DTC No.	DTC Detection Condition	Trouble Area
B1411/11	Room temperature sensor circuit (Open or short)	• A/C room temperature sensor • Harness or connector between A/C room temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.

(c) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
ROOM TEMP (Room temperature sensor)	Room temperature sensor / min.: -6.5°C (20.3°F), max.: 57.25°C (135.05°F)	Actual cabin temperature is displayed	-

OK:

The display is as specified in the normal condition column.

Result

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

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

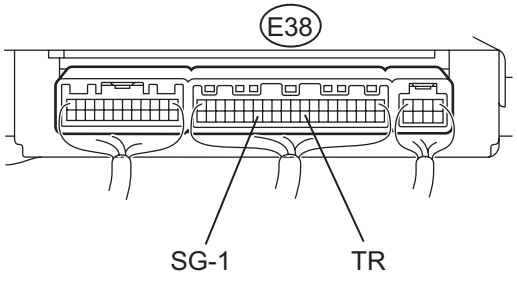
C → **REPLACE AIR CONDITIONING AMPLIFIER**

A

2 INSPECT AIR CONDITIONING AMPLIFIER

AC

Air Conditioning Amplifier Connector Wire Harness View:



H E124471E02

(a) Remove the A/C amplifier with the connectors still connected.
(b) Turn the ignition switch on (IG).
(c) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
E38-29 (TR) - E38-34 (SG-1)	Ignition switch on (IG) at 25°C (77°F)	1.35 to 1.75 V
E38-29 (TR) - E38-34 (SG-1)	Ignition switch on (IG) at 40°C (104°F)	0.9 to 1.2 V

HINT:

As the temperature increases, the voltage decreases.

Result

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

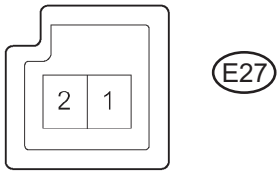
B → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

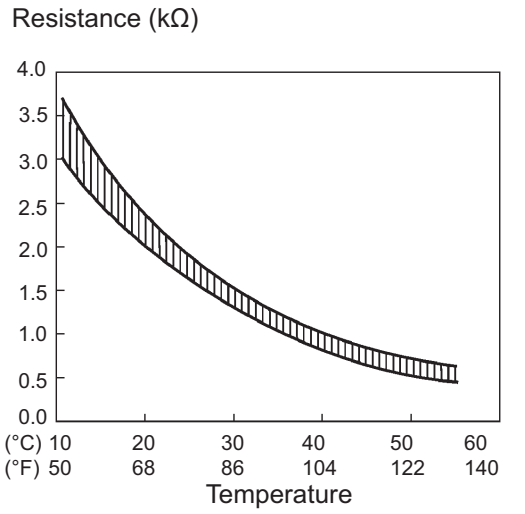
C → **REPLACE AIR CONDITIONING AMPLIFIER**

A

3 INSPECT A/C ROOM TEMPERATURE SENSOR

A/C Room Temperature Sensor Connector Front View:





(a) Remove the A/C room temperature sensor.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E27-1 - E27-2	10°C (50°F)	3.00 to 3.73 kΩ
E27-1 - E27-2	15°C (59°F)	2.45 to 2.88 kΩ
E27-1 - E27-2	20°C (68°F)	1.95 to 2.30 kΩ
E27-1 - E27-2	25°C (77°F)	1.60 to 1.80 kΩ
E27-1 - E27-2	30°C (86°F)	1.28 to 1.47 kΩ
E27-1 - E27-2	35°C (95°F)	1.00 to 1.22 kΩ
E27-1 - E27-2	40°C (104°F)	0.80 to 1.00 kΩ
E27-1 - E27-2	45°C (113°F)	0.65 to 0.85 kΩ
E27-1 - E27-2	50°C (122°F)	0.50 to 0.70 kΩ
E27-1 - E27-2	55°C (131°F)	0.44 to 0.60 kΩ
E27-1 - E27-2	60°C (140°F)	0.36 to 0.50 kΩ

NOTICE:

- **Hold the sensor only by its connector. Touching the sensor may change the resistance value.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

HINT:

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

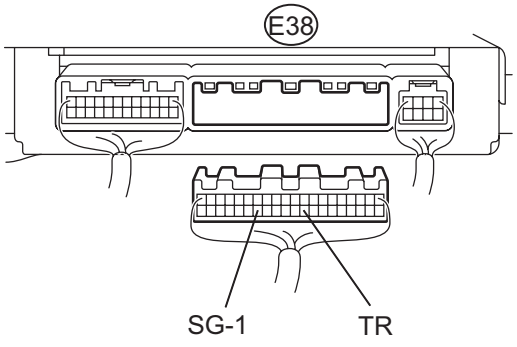
NG → **REPLACE A/C ROOM TEMPERATURE SENSOR**

OK

AC

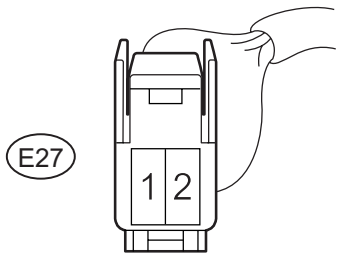
4	CHECK HARNESS AND CONNECTOR (A/C ROOM TEMPERATURE SENSOR - AIR CONDITIONING AMPLIFIER)

A/C Amplifier Connector Wire Harness View:



(a) Disconnect the connector from the A/C amplifier.

A/C Room Temperature Sensor Connector Front View:



(b) Disconnect the connector from the A/C room temperature sensor.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E38-29 (TR) - E27-1	Always	Below 1 Ω
E38-34 (SG-1) - E27-2	Always	Below 1 Ω
E38-29 (TR) - Body ground	Always	10 kΩ or higher
E38-34 (SG-1) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE AIR CONDITIONING AMPLIFIER

AC

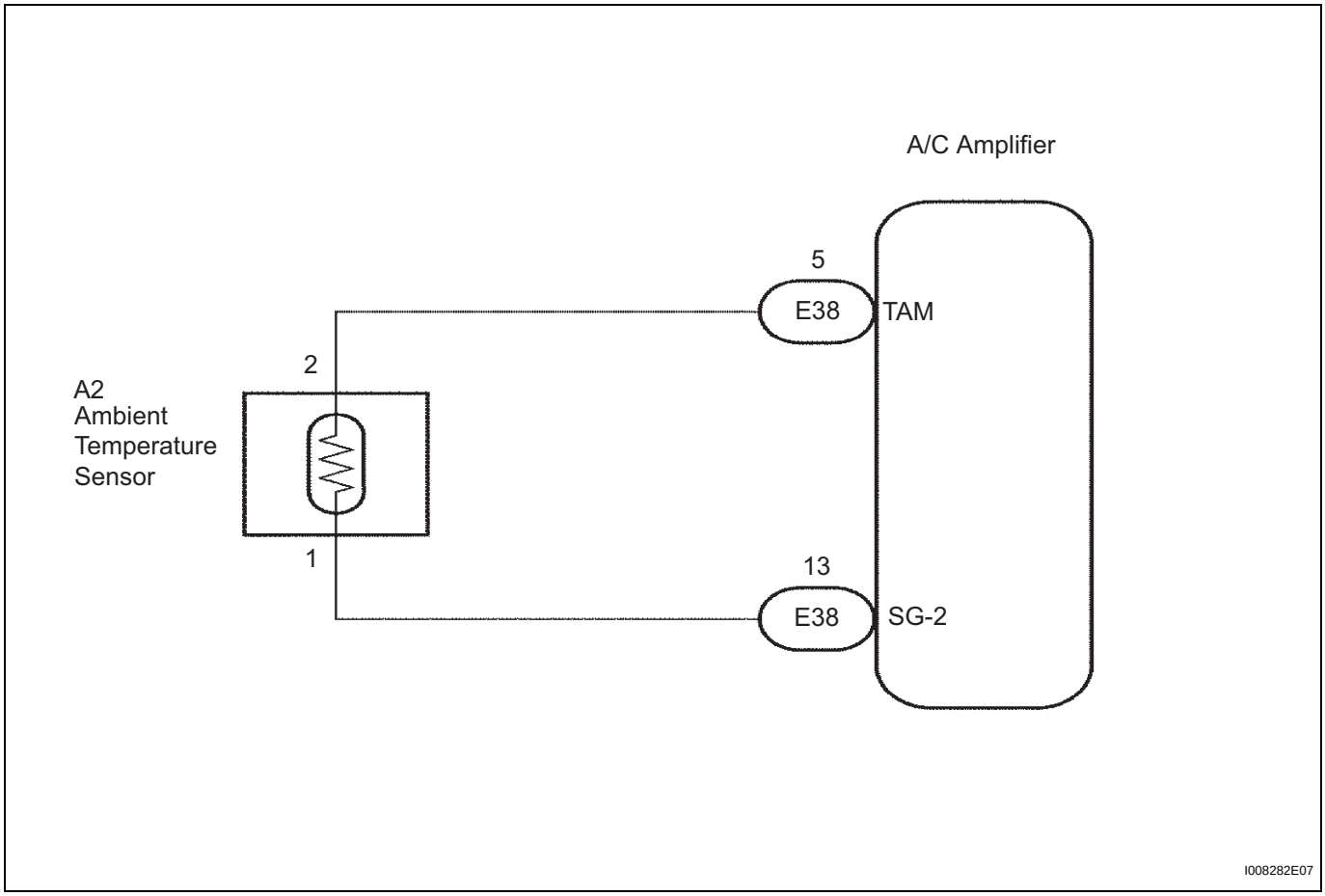
DTC	B1412/12	Ambient Temperature Sensor Circuit

DESCRIPTION

The ambient temperature sensor is installed in front of the condenser to detect the ambient temperature which is used to control the air conditioner "AUTO" mode. This sensor is connected to the A/C amplifier and detects fluctuations in the ambient temperature. This data is used for controlling the cabin temperature. The sensor sends a signal to the A/C 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 A/C amplifier applies voltage (5 V) to the ambient temperature sensor and reads voltage changes as the resistance of the ambient temperature sensor changes.

DTC No.	DTC Detection Condition	Trouble Area
B1412/12	Open or short in ambient temperature sensor circuit	• Ambient temperature sensor • Harness or connector between ambient temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.

(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
AMBI TEMP SENS (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)

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

Result

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

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

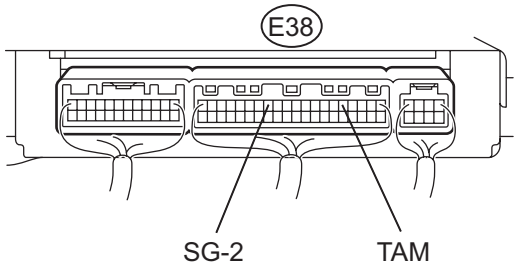
C → **REPLACE AIR CONDITIONING AMPLIFIER**

A

AC

2 INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



H E124471E15

(a) Remove the A/C amplifier connectors still connected.
(b) Turn the ignition switch on (IG).
(c) Measure the voltage according to the value(s) in the table below.
Standard voltage

Tester Connection	Condition	Specified Condition
E38-5 (TAM) - E38-13 (SG-2)	Ignition switch on (IG) at 25°C (77°F)	1.35 to 1.75 V
E38-5 (TAM) - E38-13 (SG-2)	Ignition switch on (IG) at 40°C (104°F)	0.9 to 1.2 V

HINT:
As the temperature increases, the voltage decreases.
Result

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

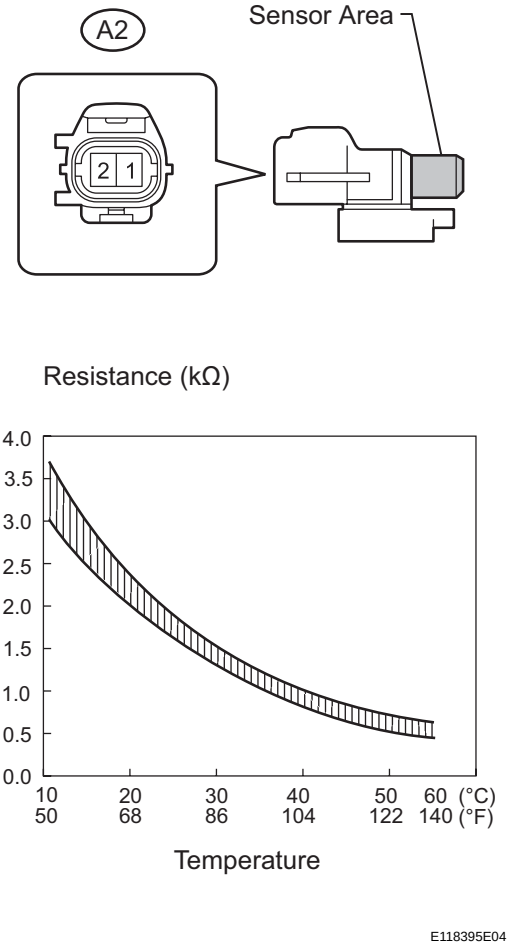
B → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

C → REPLACE AIR CONDITIONING AMPLIFIER

A

3 INSPECT AMBIENT TEMPERATURE SENSOR

Ambient Temperature Sensor Connector Front View:



(a) Remove the ambient temperature sensor.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A2-1 - A2-2	10°C (50°F)	3.00 to 3.73 kΩ
A2-1 - A2-2	15°C (59°F)	2.45 to 2.88 kΩ
A2-1 - A2-2	20°C (68°F)	1.95 to 2.30 kΩ
A2-1 - A2-2	25°C (77°F)	1.60 to 1.80 kΩ
A2-1 - A2-2	30°C (86°F)	1.28 to 1.47 kΩ
A2-1 - A2-2	35°C (95°F)	1.00 to 1.22 kΩ
A2-1 - A2-2	40°C (104°F)	0.80 to 1.00 kΩ
A2-1 - A2-2	45°C (113°F)	0.65 to 0.85 kΩ
A2-1 - A2-2	50°C (122°F)	0.50 to 0.70 kΩ
A2-1 - A2-2	55°C (131°F)	0.44 to 0.60 kΩ
A2-1 - A2-2	60°C (140°F)	0.36 to 0.50 kΩ

NOTICE:

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

HINT:

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

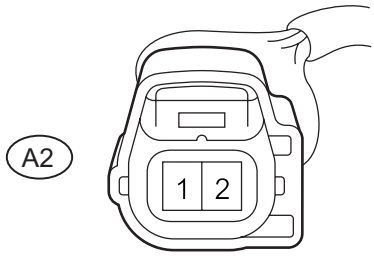
NG → REPLACE AMBIENT TEMPERATURE SENSOR

OK

AC

4	CHECK HARNESS AND CONNECTOR (AMBIENT TEMPERATURE SENSOR - A/C AMPLIFIER)

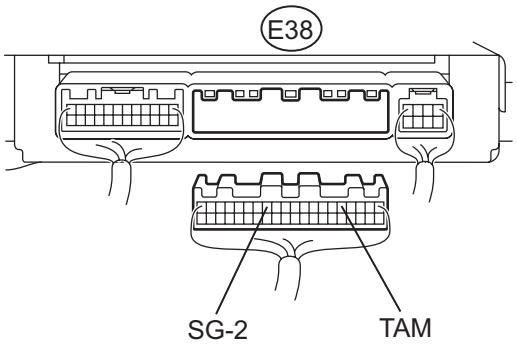
Ambient Temperature Sensor Connector Front View:



H E124473E02

(a) Disconnect the ambient temperature sensor connector.

Air Conditioning Amplifier Connector Wire Harness View:



H E124470E03

(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A2-2 - E38-5 (TAM)	Always	Below 1 Ω
A2-1 - E38-13 (SG-2)	Always	Below 1 Ω
E38-5 (TAM) - Body ground	Always	10 kΩ or higher
E38-13 (SG-2) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE AIR CONDITIONING AMPLIFIER

AC

DTC	B1413/13	Evaporator Temperature Sensor Circuit

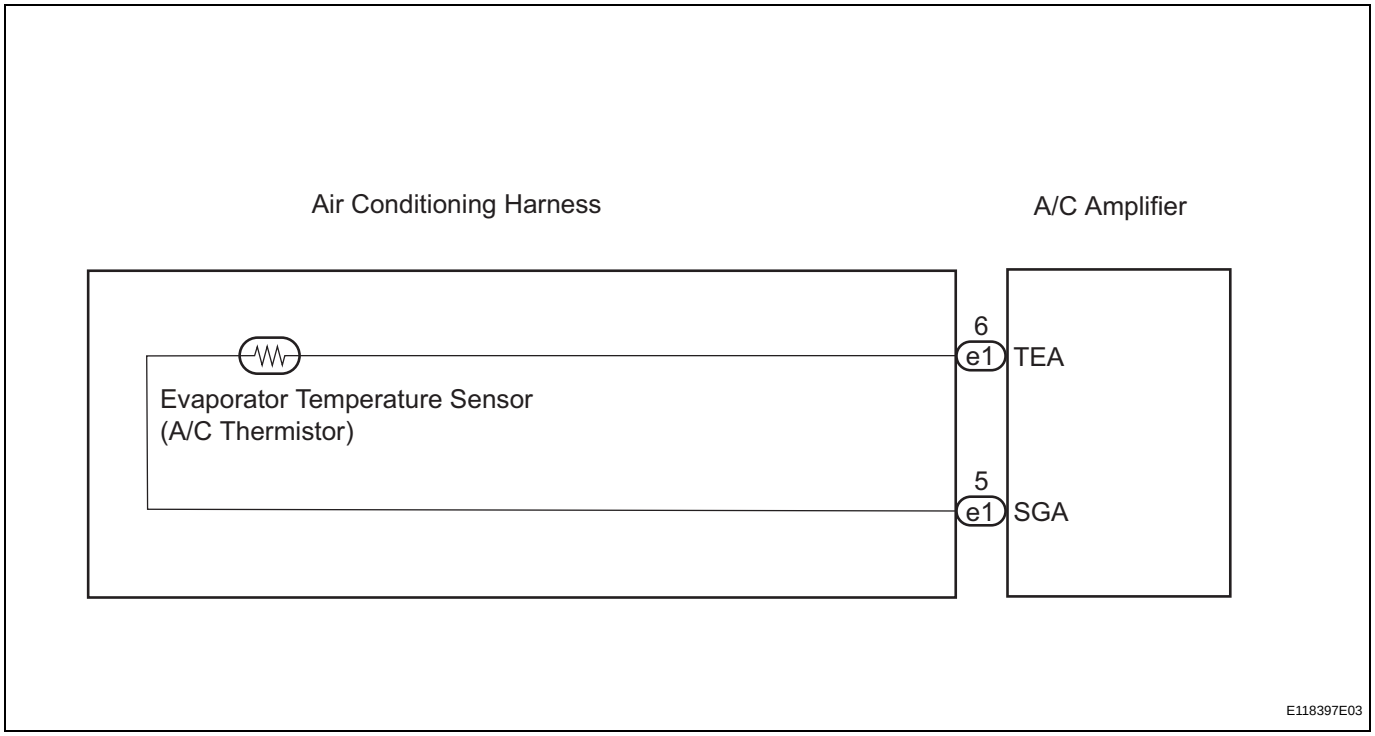
DESCRIPTION

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 A/C 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 A/C 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 No.	DTC Detection Condition	Trouble Area
B1413/13	Open or short in evaporator temperature sensor circuit	• Air conditioning harness (evaporator temperature sensor) • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.

(c) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
EVAP FIN TEMP (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	Proceed to
NG	A
OK (When troubleshooting according to the PROBLEM SYMPTOMS TABLE)	B
OK (When troubleshooting according to the DTC)	C

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

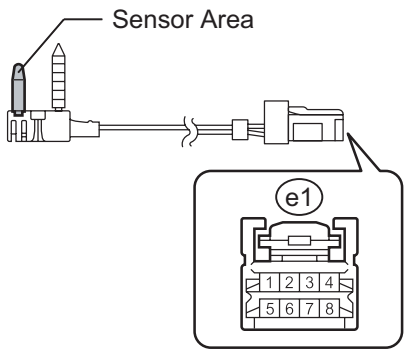
C → REPLACE AIR CONDITIONING AMPLIFIER

A

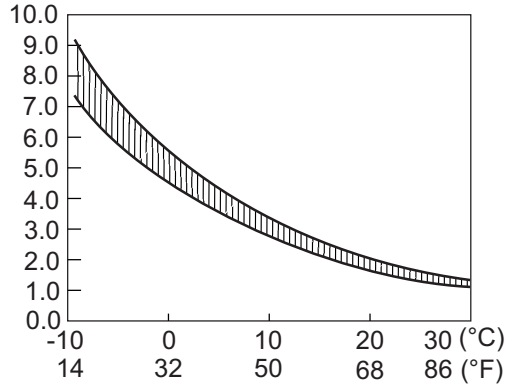
2	INSPECT AIR CONDITIONING HARNESS

Air Conditioning Harness:

(A/C Evaporator Temperature Sensor)



Resistance (kΩ)



Temperature

H

E124474E01

(a) Remove the air conditioning harness (evaporator temperature sensor).

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

Standard resistance

Tester Connection	Condition	Specified Condition
e1-5 - e1-6	-10°C (14°F)	7.30 to 9.10 kΩ
e1-5 - e1-6	-5°C (23°F)	5.65 to 6.95 kΩ
e1-5 - e1-6	0°C (32°F)	4.40 to 5.35 kΩ
e1-5 - e1-6	5°C (41°F)	3.40 to 4.15 kΩ
e1-5 - e1-6	10°C (50°F)	2.70 to 3.25 kΩ
e1-5 - e1-6	15°C (59°F)	2.14 to 2.58 kΩ
e1-5 - e1-6	20°C (68°F)	1.71 to 2.05 kΩ
e1-5 - e1-6	25°C (77°F)	1.38 to 1.64 kΩ
e1-5 - e1-6	30°C (86°F)	1.11 to 1.32 kΩ

NOTICE:

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

HINT:

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

NG → **REPLACE AIR CONDITIONING HARNESS**

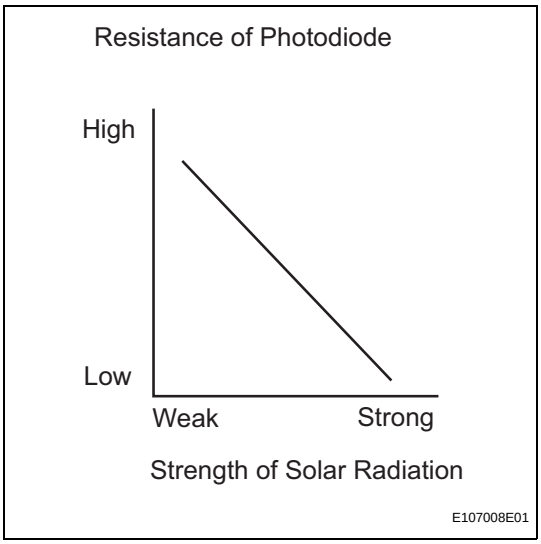
OK

REPLACE AIR CONDITIONING AMPLIFIER

AC

DTC	B1421/21	Solar Sensor Circuit (Passenger Side)

DESCRIPTION

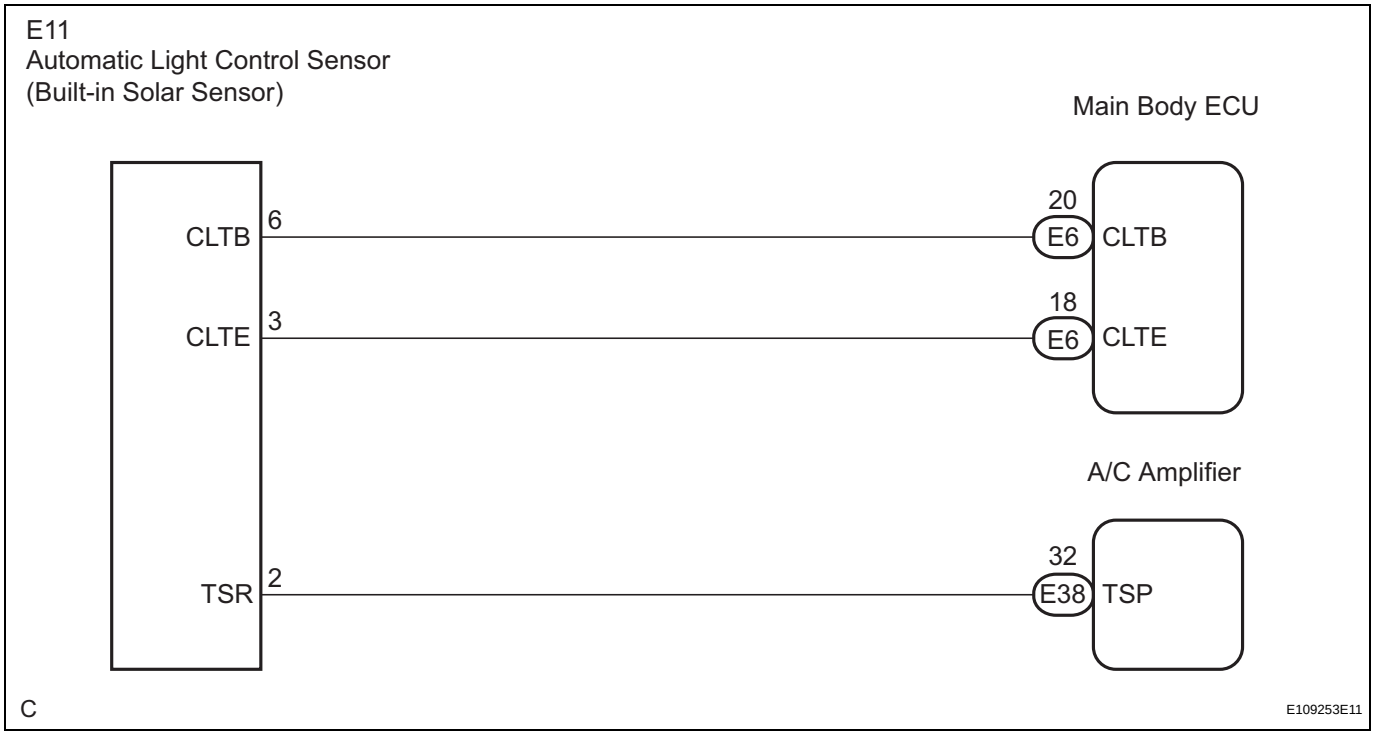


The solar sensor, which is installed on the upper side of the instrument panel, detects sunlight and controls the air conditioning in AUTO mode. The output voltage from the solar sensor varies according to the amount of sunlight. When the sunlight increases, the output voltage increases. As the sunlight decreases, the output voltage decreases. The A/C amplifier detects voltage output from the solar sensor.

DTC No.	DTC Detection Condition	Trouble Area
B1421/21	Open or short in passenger side solar sensor circuit	• Solar sensor • Harness or connector between solar sensor and A/C amplifier • Harness or connector between solar sensor and main body ECU • A/C amplifier • Main body ECU

AC

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC B1244 is output at the same time, troubleshoot DTC B1244 first (See page LI-23).
- If the check is performed in a dark place, DTC B1421/21 or B1424/24 (solar sensor circuit abnormal) may be output even though the system is normal.

AC

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Expose the sensing portion of the solar sensor to light.
HINT:
Use an incandescent light for inspection.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measure Item / Display (Range)	Normal Condition	Diagnostic Note
SOLAR SENS-P (Solar sensor (P side))	Passenger side solar sensor / Min.: 0, Max.: 255	Passenger side solar sensor value increases as brightness increases	-

OK:

The display is as specified in the normal condition column.

Result

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

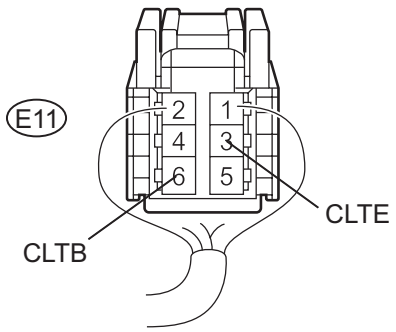
B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2 CHECK HARNESS AND CONNECTOR (SOLAR SENSOR)

A/C Solar Sensor Connector Wire Harness View:



H E124476E02

(a) Disconnect the solar sensor connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
E11-6 (CLTB) - E11-3 (CLTE)	Ignition switch off	Below 1 V
E11-6 (CLTB) - E11-3 (CLTE)	Ignition switch on (IG)	10 to 14 V

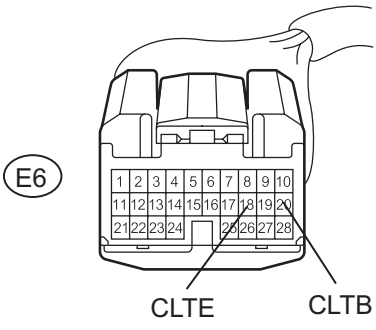
OK → Go to step 4

NG

AC

3 CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - SOLAR SENSOR)

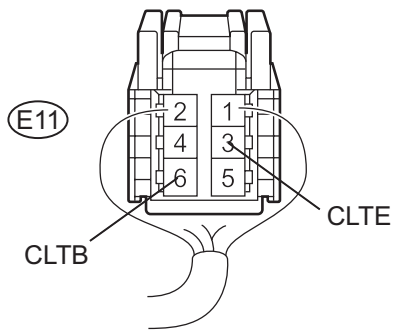
Main Body ECU Connector Front View:



H E124475E02

(a) Disconnect the main body ECU connector.

A/C Solar Sensor Connector Wire Harness View:



H E124476E02

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

Standard resistance

Tester Connection	Condition	Specified Condition
E6-20 (CLTB) - E11-6 (CLTB)	Always	Below 1 Ω
E6-18 (CLTE) - E11-3 (CLTE)	Always	Below 1 Ω
E6-20 (CLTB) - Body ground	Always	10 kΩ or higher
E6-18 (CLTE) - Body ground	Always	10 kΩ or higher

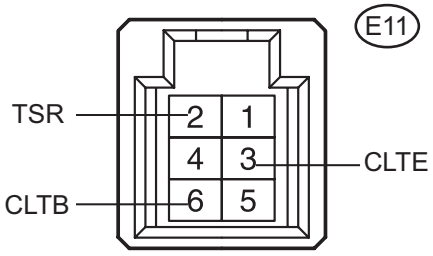
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE MAIN BODY ECU

4 CHECK SOLAR SENSOR

Solar Sensor Connector Front View:



P E109215E12

(a) Remove the solar sensor with its connector still connected.

(b) Connect the positive (+) lead from the battery to terminal 6 (CLTB), and the negative (-) lead to terminal 3 (CLTE) of the solar sensor.

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

Standard voltage

Tester Connection	Condition	Specified Condition
E11-2 (TSR) - E11-3 (CLTE)	Sensor is subjected to electric light	0.8 to 4.3 V
E11-2 (TSR) - E11-3 (CLTE)	Sensor is covered with a cloth	Below 0.8 V

NOTICE:

- **The connection procedure for using a digital tester such as a TOYOTA electrical tester is shown above. When using an analog tester, connect the negative (-) lead to terminal 6, and the positive (+) lead to terminal 3 of the solar sensor.**
- **While using the battery during inspection, do not bring the positive and negative tester probes too close to each other as a short circuit may occur.**

HINT:

- Use an incandescent light for inspection. Bring it within about 30 cm (11.8 in.) of the solar sensor.
- As the inspection light is moved away from the sensor, the voltage increases.

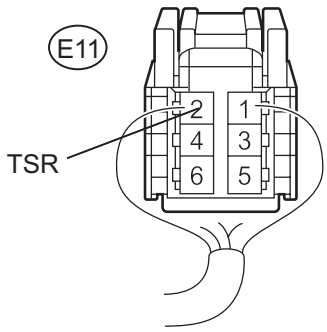
NG → **REPLACE SOLAR SENSOR**

AC

OK

5	CHECK HARNESS AND CONNECTOR (SOLAR SENSOR - A/C AMPLIFIER)

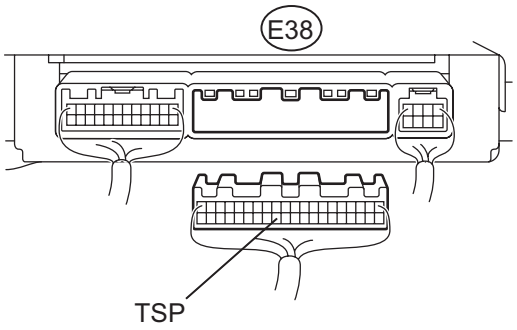
A/C Solar Sensor Connector Wire Harness View:



H E124476E03

(a) Disconnect the solar sensor connector.

Air Conditioning Amplifier Connector Wire Harness View:



H E124470E04

(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E38-32 (TSP) - E11-2 (TSR)	Always	Below 1 Ω
E38-32 (TSP) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE AIR CONDITIONING AMPLIFIER

AC

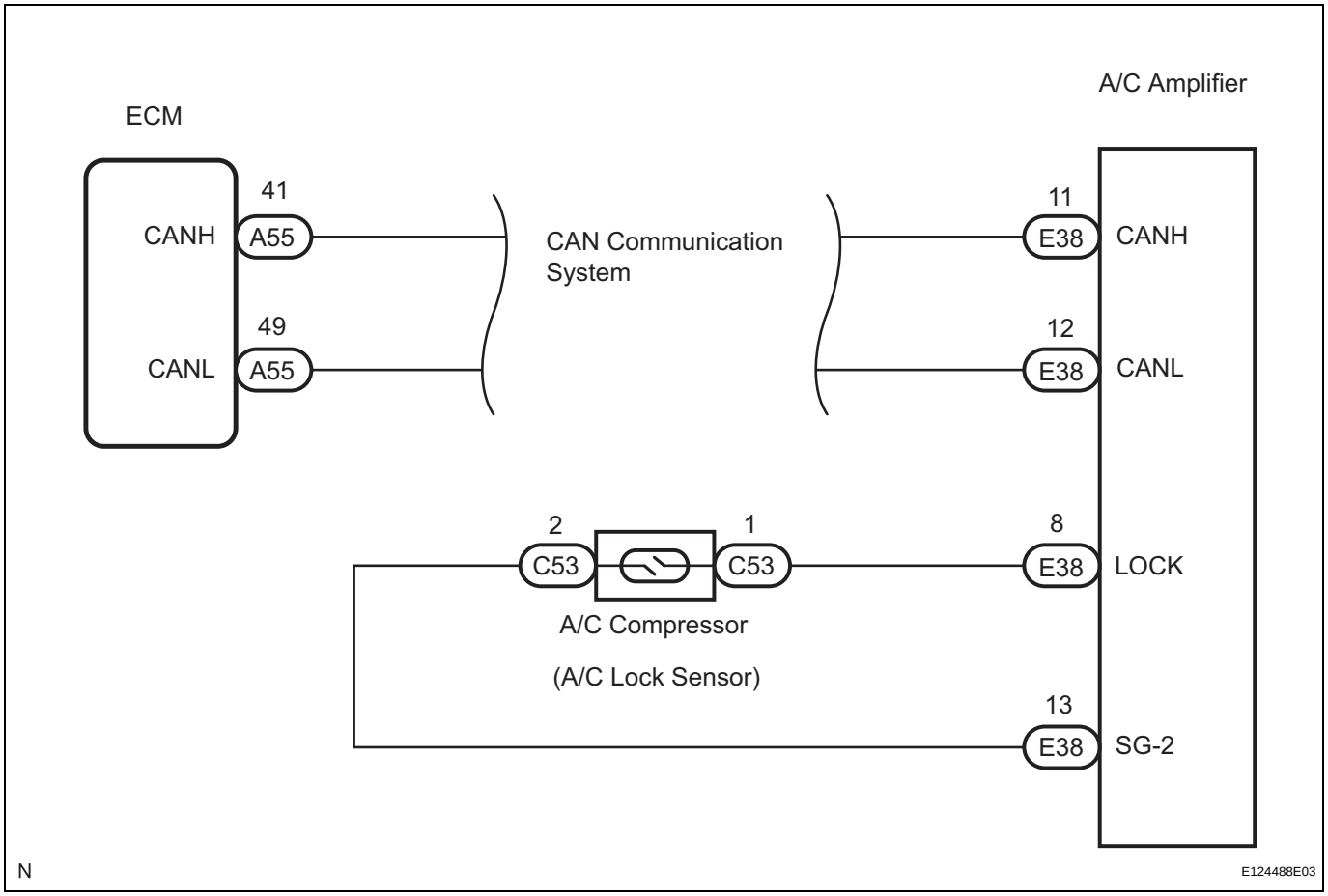
DTC	B1422/22	Compressor Lock Sensor Circuit

SYSTEM DESCRIPTION

The ECM sends a signal to the A/C amplifier via CAN communication.
The A/C amplifier reads the difference between compressor speed and engine speed. When the difference becomes too large, the A/C amplifier determines that the compressor locks, and turns the magnetic clutch off.

DTC No.	DTC Detection Condition	Trouble Area
B1422/22	Open or short in compressor lock sensor circuit	• A/C compressor (A/C lock sensor) • Compressor drive belt • Harness or connector between compressor and magnetic clutch (A/C lock sensor) • A/C amplifier • CAN communication system

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK CAN COMMUNICATION SYSTEM

(a) Use the intelligent tester to check if the CAN Communication System is functioning normally.

Result

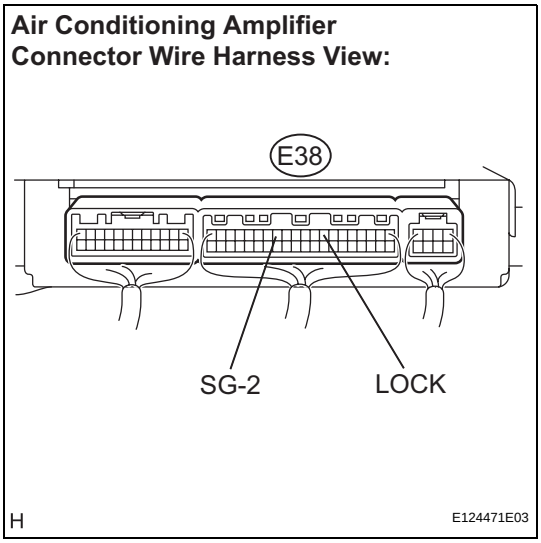
Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	B

B → GO TO CAN COMMUNICATION SYSTEM

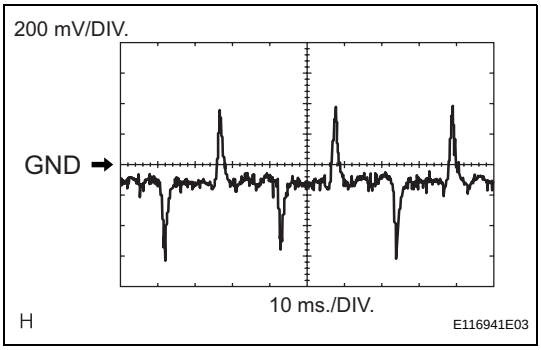
A

2 INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



(a) Remove the A/C amplifier with the connectors still connected.



(b) Measure the waveform of the connector.

Item	Contents
Tool setting	200 mV/DIV., 10 ms./DIV.
Vehicle condition	Engine is running A/C switch: ON Blower switch: LO

Standard

Tester Connection (Symbols)	Condition	Specified Condition
E38-8 (LOCK) - E38-13 (SG-2)	Engine is running A/C switch: ON Blower switch: LO	Pulse generation

Result

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

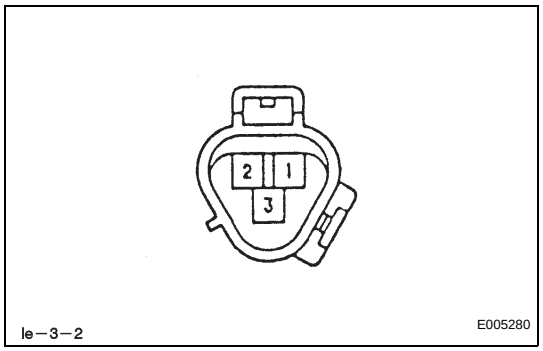
B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

AC

A

3 INSPECT COMPRESSOR AND MAGNETIC CLUTCH (A/C LOCK SENSOR)



(a) Disconnect the connector from the A/C compressor.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

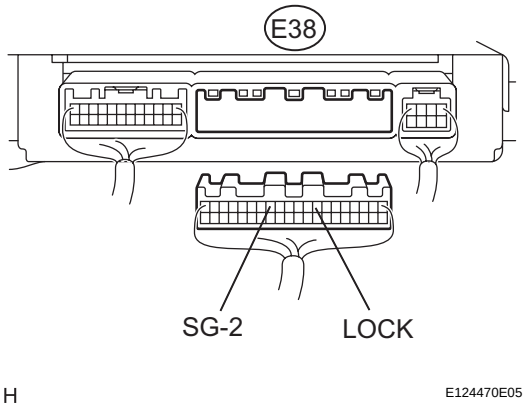
Tester Connection	Condition	Specified Condition
C53-1 (SSR+) - C53-2 (SSR-)	Always (at 20°C (68°F))	165 to 205 Ω

NG → **REPLACE COMPRESSOR AND MAGNETIC CLUTCH (A/C LOCK SENSOR)**

OK

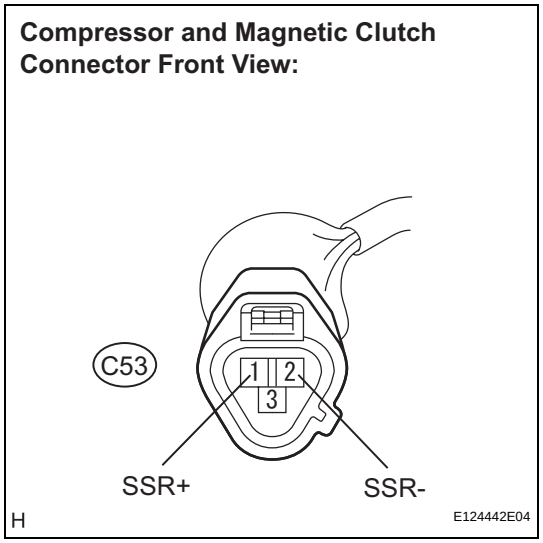
4 CHECK HARNESS AND CONNECTOR (A/C AMPLIFIER - A/C LOCK SENSOR)

Air Conditioning Amplifier Connector Wire Harness View:



(a) Disconnect the connector from the A/C amplifier.

Compressor and Magnetic Clutch Connector Front View:



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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E38-8 (LOCK) - C53-1 (SSR+)	Always	Below 1 Ω
E38-13 (SG-2) - C53-2 (SSR-)	Always	Below 1 Ω
E38-8 (LOCK) - Body ground	Always	10 kΩ or higher
E38-13 (SG-2) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

AC

OK

REPLACE AIR CONDITIONING AMPLIFIER

DTC	B1423/23	Pressure Sensor Circuit

DESCRIPTION

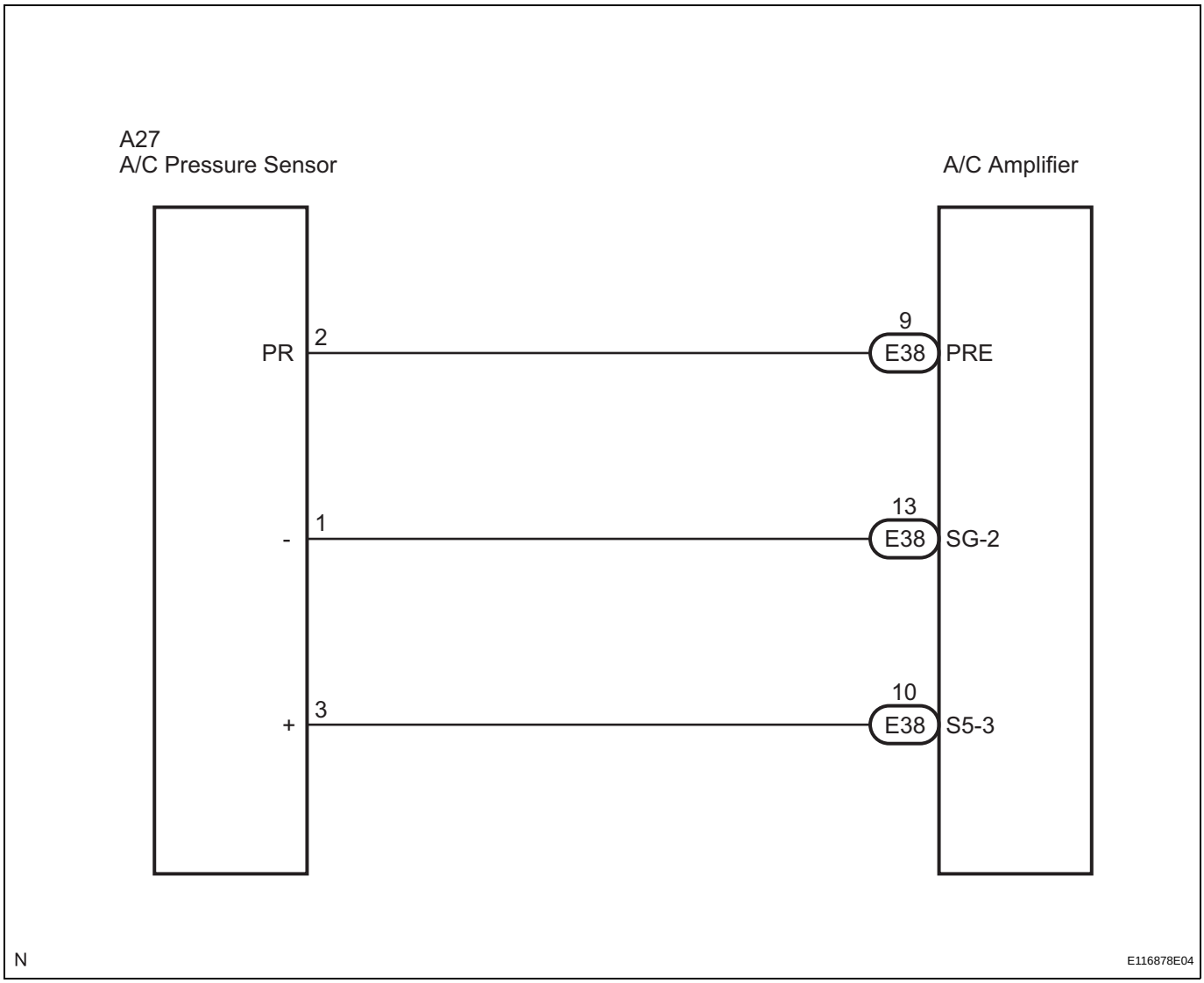
This DTC is output when refrigerant pressure is extremely low (0.19 MPa (2.0 kgf/cm^2, 28 psi) or less) or extremely high (3.14 MPa (32.0 kgf/cm^2, 455 psi) or more). The pressure sensor, which is installed on the pipe of the high pressure side to detect refrigerant pressure, outputs a refrigerant pressure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

HINT:

Be sure to check the refrigerant volume first when this DTC is output because this DTC can also be output if there is no refrigerant in the system.

DTC No.	DTC Detection Condition	Trouble Area
B1423/23	Open or short in pressure switch circuit	• Pressure sensor • Harness or connector between pressure sensor and A/C amplifier • Refrigerant pipe line • A/C amplifier

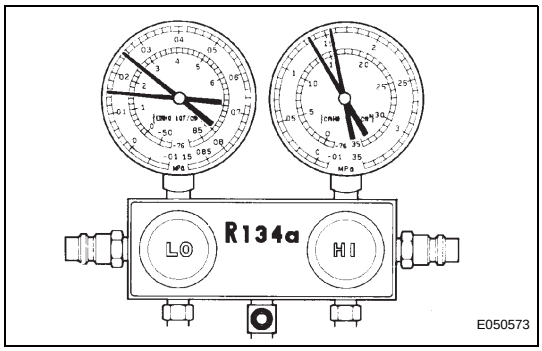
WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	CHECK REFRIGERANT PRESSURE



(a) Install the manifold gauge set (See page AC-120).
(b) Read the manifold gauge pressure when the following conditions are established.
  (1) Prepare the vehicle according to the chart below.

Item	Condition
Vehicle Doors	Fully open
Temperature Setting	MAX COLD
Blower Speed	HI
A/C switch	ON
R/F Switch	RECIRCULATION (30 to 35°C (86 to 95°F))

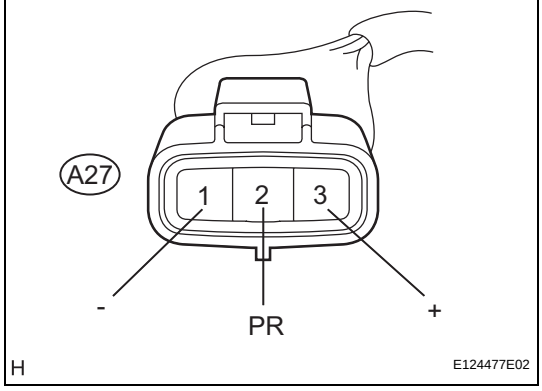
Standard pressure:
Low pressure side:
0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm^2, 21.3 to 35.6 psi)
High pressure side:
1.37 to 1.57 MPa (14 to 16 kgf/cm^2, 199 to 228 psi)

NG → **CHARGE REFRIGERANT**

AC **OK**

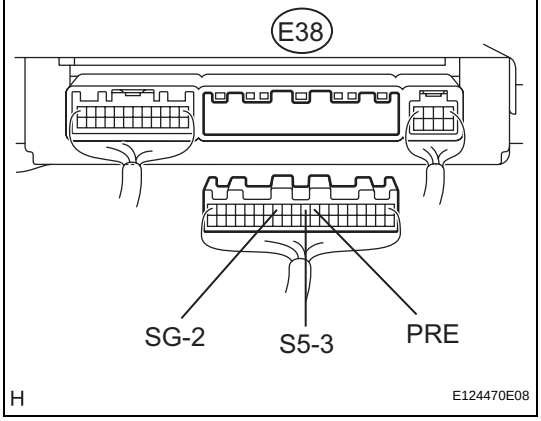
2	CHECK HARNESS AND CONNECTOR (PRESSURE SENSOR - A/C AMPLIFIER)

A/C Pressure Sensor Connector Front View:



(a) Disconnect the pressure sensor connector.

Air Conditioning Amplifier Connector Wire Harness View:



(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

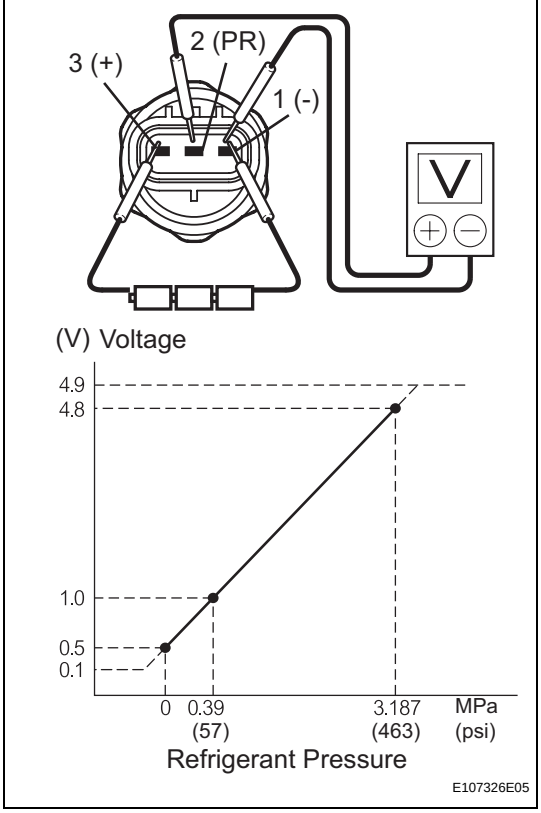
Tester Connection	Condition	Specified Condition
A27-2 (PR) - E38-9 (PRE)	Always	Below 1 Ω
A27-3 (+) - E38-10 (S5-3)	Always	Below 1 Ω
A27-1 (-) - E38-13 (SG-2)	Always	Below 1 Ω
E38-9 (PRE) - Body ground	Always	10 kΩ or higher
E38-10 (S5-3) - Body ground	Always	10 kΩ or higher
E38-13 (SG-2) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

3 INSPECT PRESSURE SENSOR

A/C Pressure Sensor Connector Front View:



(a) Install the manifold gauge set (See page AC-120).
(b) Connect the three 1.5 V dry cell batterie's positive (+) lead to terminal 3, and the negative (-) lead to terminal 1. Then connect the voltmeter's positive (+) lead to terminal 2, and the negative (-) lead to terminal 1. Measure the voltage.

OK:

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

Result

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

B → **REPLACE AIR CONDITIONING AMPLIFIER**

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

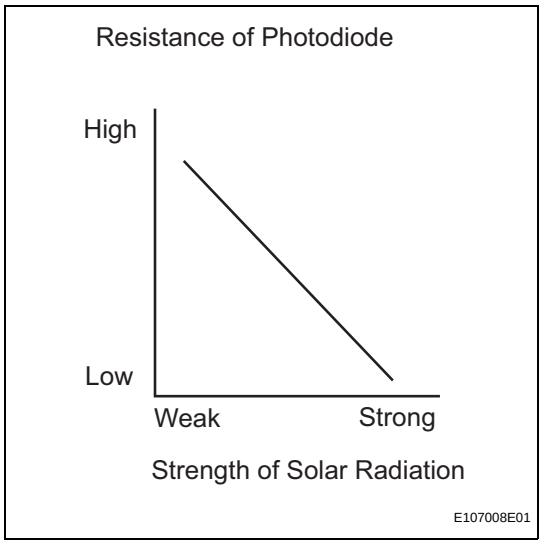
AC

A

REPLACE PRESSURE SENSOR

DTC	B1424/24	Solar Sensor Circuit (Driver Side)

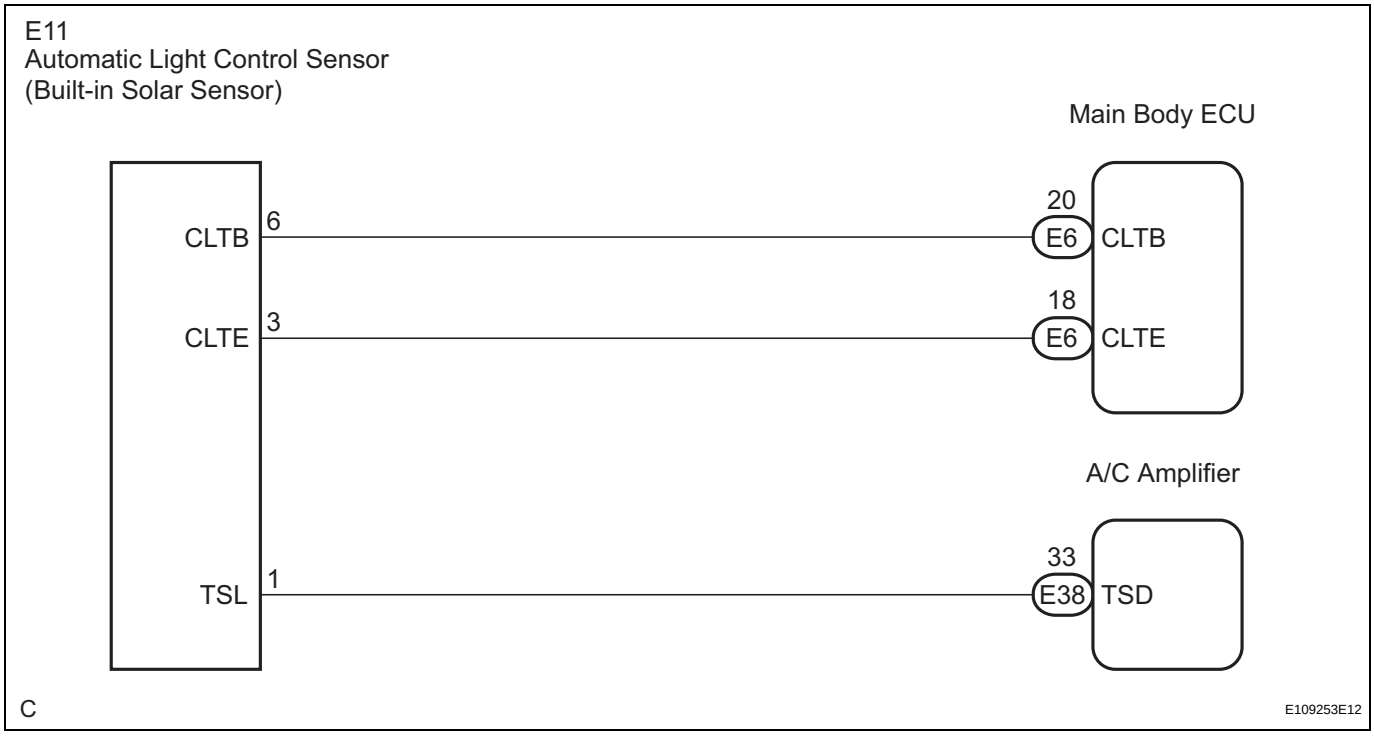
DESCRIPTION



The solar sensor, which is installed on the upper side of the instrument panel, detects sunlight and controls the air conditioning in AUTO mode. The output voltage from the solar sensor varies according to the amount of sunlight. When the sunlight increases, the output voltage increases. As the sunlight decreases, the output voltage decreases. The A/C amplifier detects output voltage from the solar sensor.

DTC No.	DTC Detection Condition	Trouble Area
B1424/24	Open or short in driver side solar sensor circuit	• Solar sensor • Harness or connector between solar sensor and A/C amplifier • Harness or connector between solar sensor and main body ECU • A/C amplifier • Main body ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

AC

- If DTC B1244 is output at the same time, troubleshoot DTC B1244 first (See page LI-23).
- If the check is performed in a dark place, DTC B1421/21 or B1424/24 (solar sensor circuit abnormal) may be output even though the system is normal.

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Expose the sensing portion of the solar sensor to light.
HINT:
Use an incandescent light for inspection.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measure Item / Display (Range)	Normal Condition	Diagnostic Note
SOLAR SENS-D (Solar sensor (D side))	Driver side solar sensor / Min.: 0, Max.: 255	Driver side solar sensor value increases as brightness increases	-

OK:

The display is as specified in the normal condition column.

Result

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

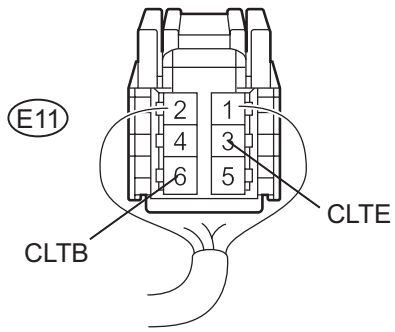
B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2 CHECK HARNESS AND CONNECTOR (SOLAR SENSOR)

A/C Solar Sensor Connector Wire Harness View:



H E124476E02

(a) Disconnect the solar sensor connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
E11-6 (CLTB) - E11-3 (CLTE)	Ignition switch on (IG)	10 to 14 V
E11-6 (CLTB) - E11-3 (CLTE)	Ignition switch off	Below 1 V

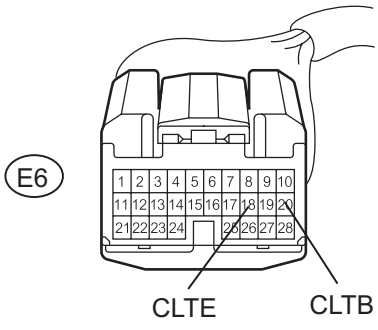
OK → Go to step 4

NG

AC

3 CHECK HARNESS AND CONNECTOR (SOLAR SENSOR - MAIN BODY ECU)

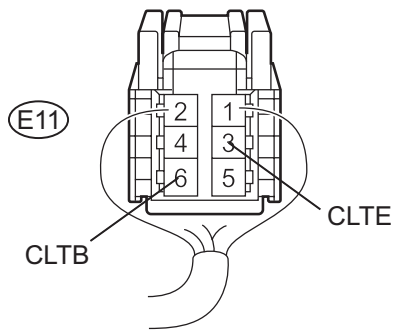
Main Body ECU Connector Front View:



H E124475E02

(a) Disconnect the main body ECU connector.

A/C Solar Sensor Connector Wire Harness View:



H E124476E02

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

Standard resistance

Tester Connection	Condition	Specified Condition
E6-20 (CLTB) - E11-6 (CLTB)	Always	Below 1 Ω
E6-18 (CLTE) - E11-3 (CLTE)	Always	Below 1 Ω
E6-20 (CLTB) - Body ground	Always	10 kΩ or higher
E6-18 (CLTE) - Body ground	Always	10 kΩ or higher

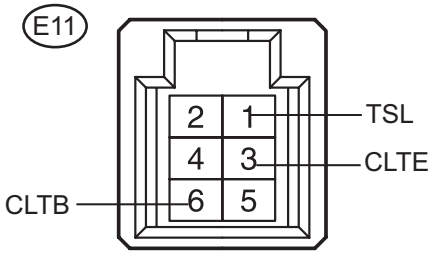
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE MAIN BODY ECU

4 CHECK SOLAR SENSOR

Solar Sensor Connector Front View:



P E109215E15

(a) Remove the solar sensor with its connector still connected.

(b) Connect the positive (+) lead from the battery to terminal 6 (CLTB), and the negative (-) lead to terminal 3 (CLTE) of the solar sensor.

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

Standard voltage

Tester Connection	Condition	Specified Condition
E11-1 (TSL) - E11-3 (CLTE)	Sensor is subjected to electric light	0.8 to 4.3 V
E11-1 (TSL) - E11-3 (CLTE)	Sensor is covered with a cloth	Below 0.8 V

NOTICE:

- **The connection procedure for using a digital tester such as a TOYOTA electrical tester is shown above. When using an analog tester, connect the negative (-) lead to terminal 6, and the positive (+) lead to terminal 3 of the solar sensor.**
- **While using the battery during inspection, do not bring the positive and negative tester probes too close to each other as a short circuit may occur.**

HINT:

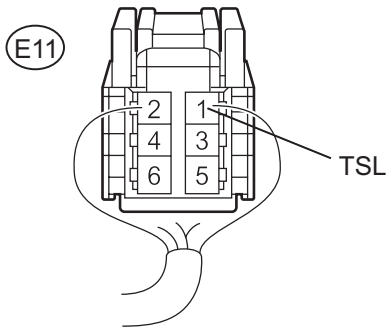
- Use an incandescent light for inspection. Bring it within about 30 cm (11.8 in.) of the solar sensor.
- As the inspection light is moved away from the sensor, the voltage increases.

NG → **REPLACE SOLAR SENSOR**

OK

5	CHECK HARNESS AND CONNECTOR (SOLAR SENSOR - A/C AMPLIFIER)

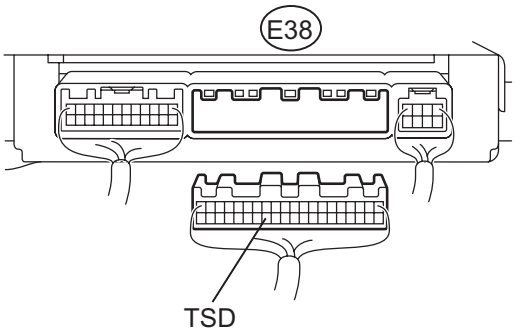
A/C Solar Sensor Connector Wire Harness View:



H E124476E04

(a) Disconnect the solar sensor connector.

Air Conditioning Amplifier Connector Wire Harness View:



H E124470E09

(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E38-33 (TSD) - E11-1 (TSL)	Always	Below 1 Ω
E38-33 (TSD) - Body ground	Always	10 kΩ or higher

AC

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE AIR CONDITIONING AMPLIFIER

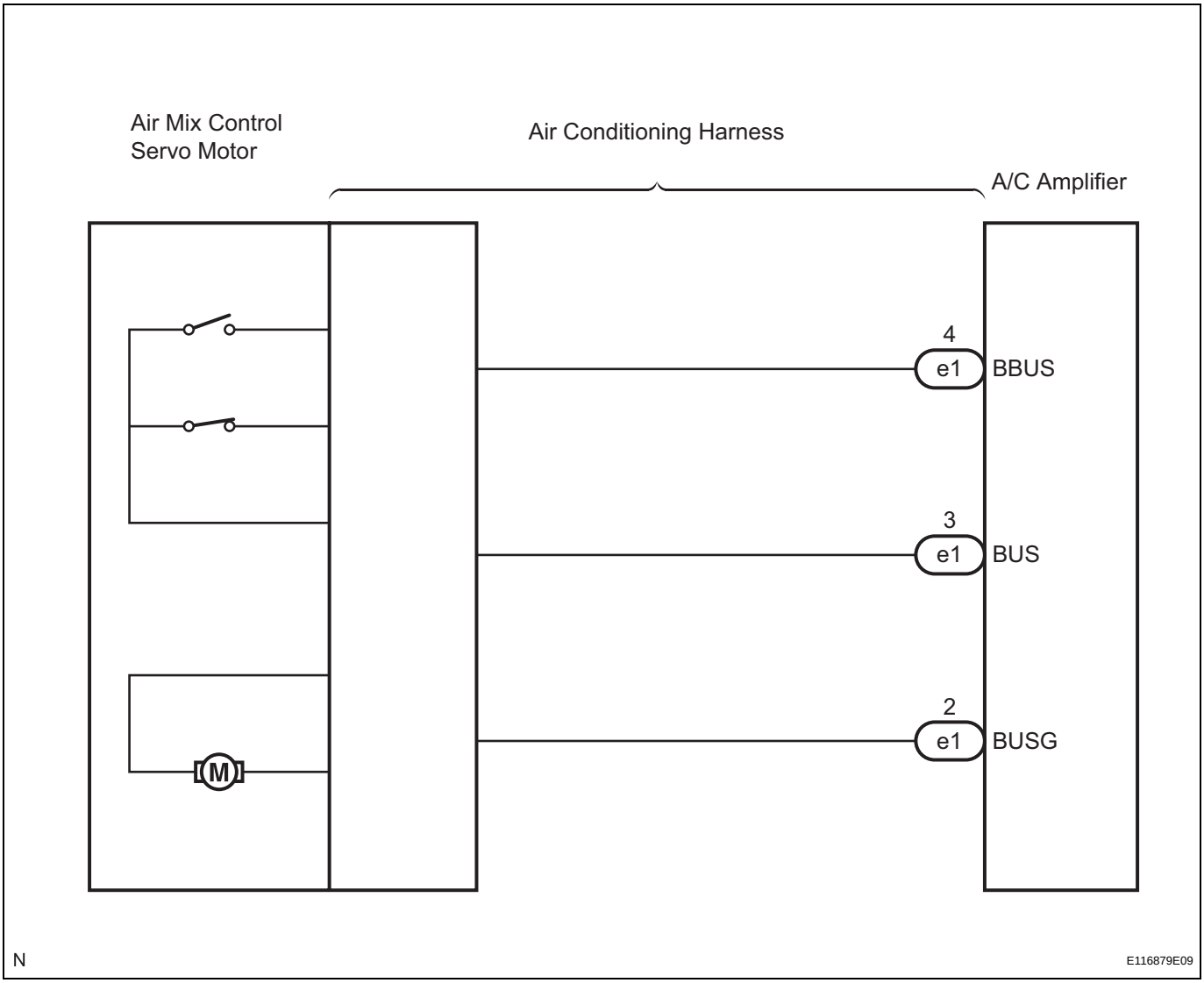
DTC	B1441/41	Air Mix Damper Control Servo Motor Circuit (Passenger Side)

DESCRIPTION

The air mix damper servo sends pulse signals to inform the air conditioning amplifier of the damper position. The air conditioning amplifier activates the motor (normal, reverse) based on the signals to move the air mix damper (passenger seat) to any position, which adjusts the amount of air passing the heater core after passing the evaporator to control the blowing temperature.
HINT:
Confirm that no mechanical problem is present because this diagnostic code can be output when either a damper link or damper is mechanically locked.

DTC No.	DTC Detection Condition	Trouble Area
B1441/41	Air mix damper position sensor value does not change even if air conditioning amplifier operates air mix control servo motor	• Air mix control servo motor • Air conditioning harness • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Operate the front passenger side temperature adjustment switch.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
AIR MIX PULSE-P (Air mix servomotor target pulse (P side))	Passenger side air mix servo motor target pulse / Min.: 0, Max.: 255	MAX. COLD: 105 (pulse) MAX. HOT: 7 (pulse)	-

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

Result

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

AC

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2	REPLACE AIR MIX CONTROL SERVO MOTOR

(a) Replace the air mix control servo motor.
HINT:
Since the servo motor cannot be inspected while it is removed from the vehicle, replace the servo motor with a normal one and check that the condition returns to normal.
(b) Check for DTCs.
Result

Result	Proceed to
DTC B1441/41 is output	A
DTC B1441/41 is not output	B

B → END

A

REPLACE AIR CONDITIONING HARNESS

DTC	B1442/42	Air Inlet Damper Control Servo Motor Circuit

DESCRIPTION

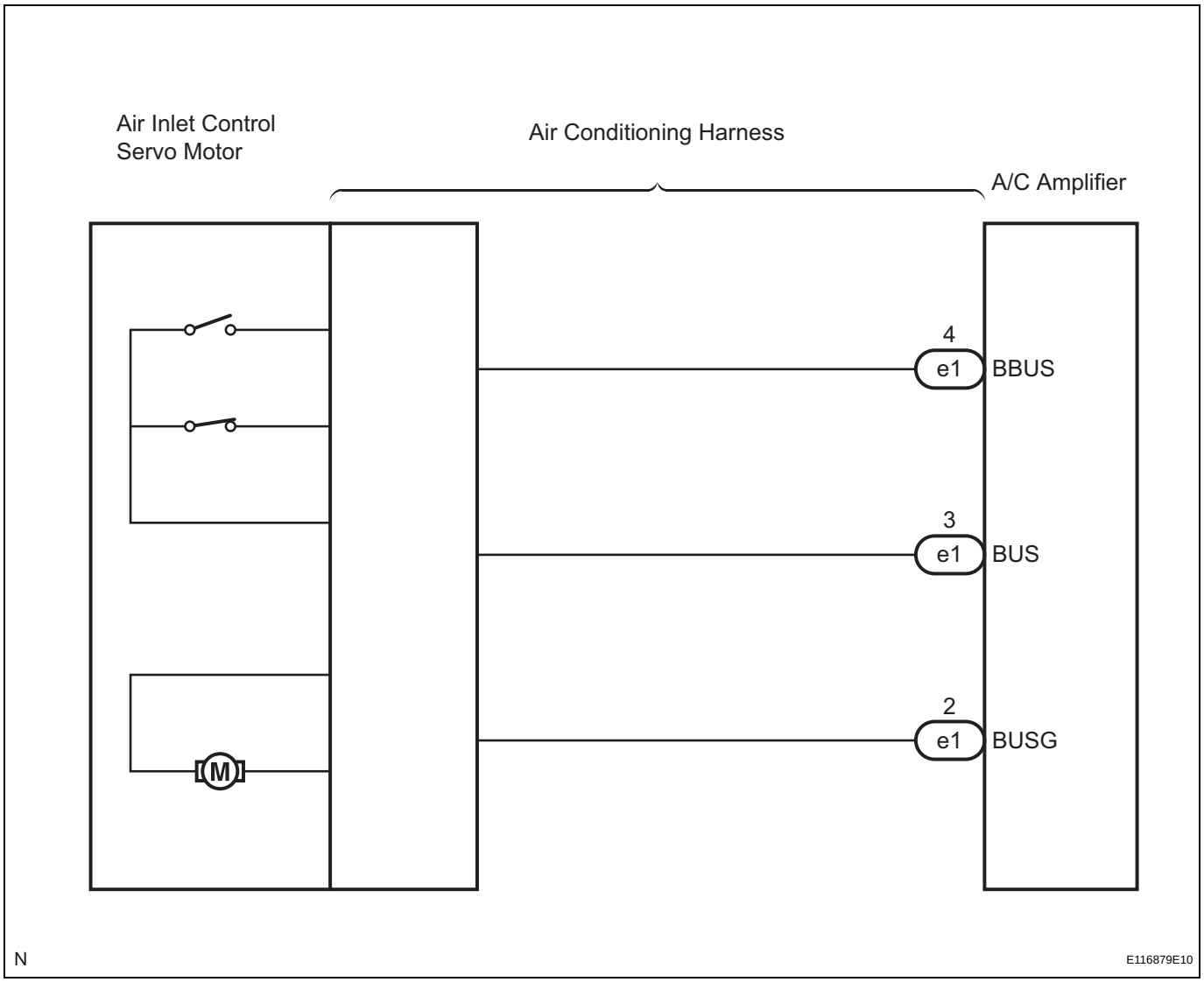
The damper servo (air inlet control) sends pulse signals to inform the air conditioning amplifier of the damper position. The air conditioning amplifier activates the motor (normal, reverse) based on the signals to move the air inlet damper to any position, which controls the intake air settings (FRESH, FRESH/ RECIRCULATION, and RECIRCULATION).

HINT:

Confirm that no mechanical problem is present because this diagnostic code can be output when either a damper link or damper is mechanically locked.

DTC No.	DTC Detection Condition	Trouble Area
B1442/42	Air inlet damper position sensor value does not change even if air conditioning amplifier operates air inlet control servo motor	• Air inlet control servo motor • Air conditioning harness • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Operate the R/F (Recirculation/Fresh) switch.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
A/I DAMP PLS (Air inlet damper target pulse)	Air inlet damper target pulse / Min.: 0, Max.: 255	RECIRCULATION: 7 (pulse) FRESH: 28 (pulse)	-

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

Result

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

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2	REPLACE AIR INLET CONTROL SERVO MOTOR

(a) Replace the air inlet control servo motor.
HINT:
Since the servo motor cannot be inspected while it is removed from the vehicle, replace the servo motor with a normal one and check that the condition returns to normal.
(b) Check for DTCs.
Result

Result	Proceed to
DTC B1442/42 is output	A
DTC B1442/42 is not output	B

B → END

A

REPLACE AIR CONDITIONING HARNESS

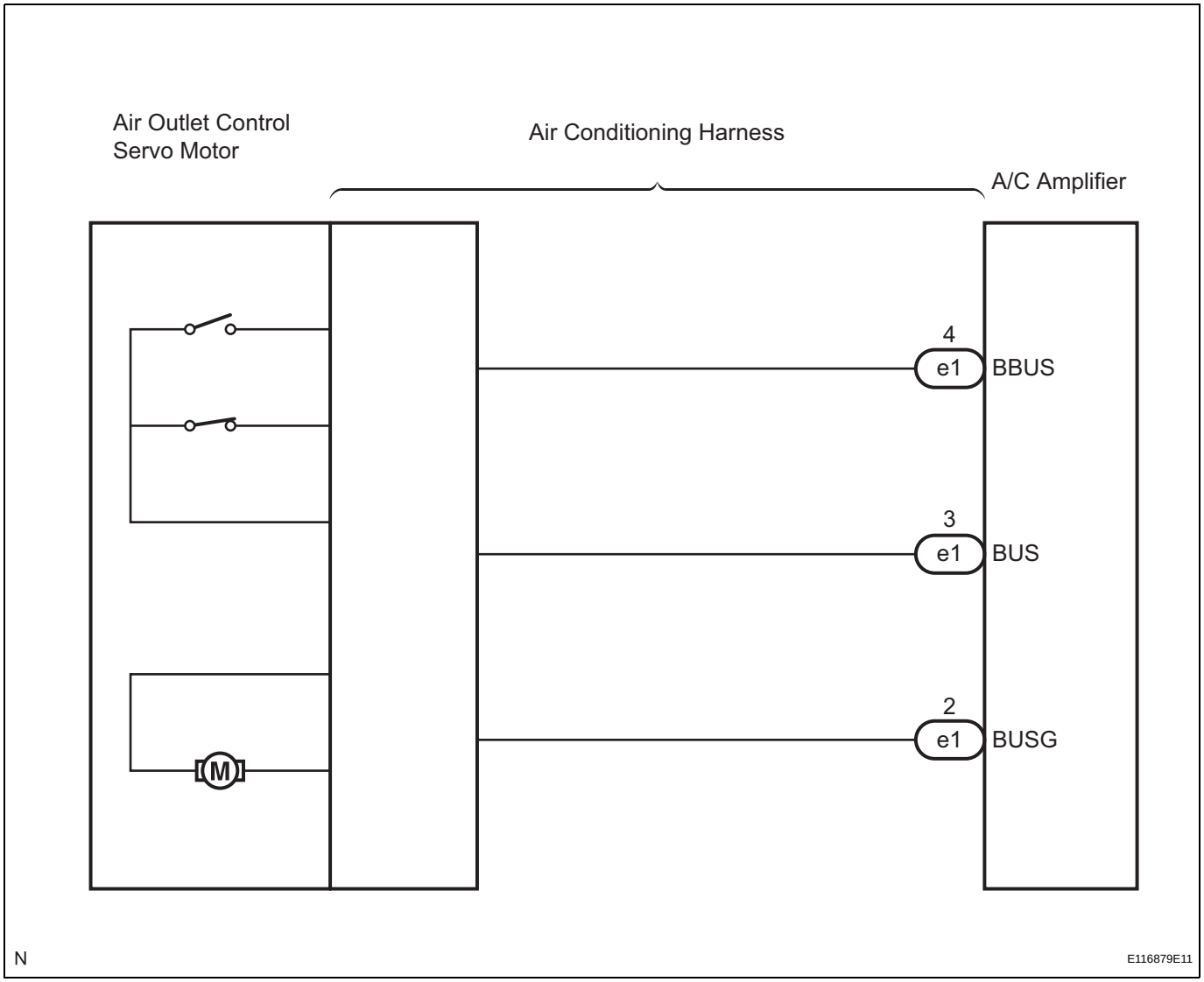
DTC	B1443/43	Air Outlet Damper Control Servo Motor Circuit

DESCRIPTION

The mode damper servo sends pulse signals to inform the air conditioning amplifier of the damper position. The air conditioning amplifier activates the motor (normal, reverse) based on the signals to move the air outlet damper to any position, which controls the air outlet switching.
HINT:
Confirm that no mechanical problem is present because this diagnostic code can be output when either a damper link or damper is mechanically locked.

DTC No.	DTC Detection Condition	Trouble Area
B1443/43	Air outlet damper position sensor value does not change even if air conditioning amplifier operates air outlet control servo motor	• Air outlet control servo motor • Air conditioning harness • A/C amplifier

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Operate the MODE switch.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
AIR OUT PULSE-D (Air outlet servomotor target pulse (D side))	Driver side air outlet servo motor target pulse / Min.: 0, Max.: 255	FACE: 8 (pulse) B/L: 30 to 38 (pulse) FOOT: 50 to 74 (pulse) FOOT/DEF: 80 (pulse) DEF: 97 (pulse)	-

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

Result

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

AC

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

C → **REPLACE AIR CONDITIONING AMPLIFIER**

A

2	REPLACE AIR OUTLET CONTROL SERVO MOTOR

(a) Replace the air outlet control servo motor.
HINT:
Since the servo motor cannot be inspected while it is removed from the vehicle, replace the servo motor with a normal one and check that the condition returns to normal.
(b) Check for DTCs.
Result

Result	Proceed to
DTC B1443/43 is output	A
DTC B1443/43 is not output	B

B → **END**

A

REPLACE AIR CONDITIONING HARNESS

DTC	B1446/46	Air Mix Damper Control Servo Motor Circuit (Driver Side)

DESCRIPTION

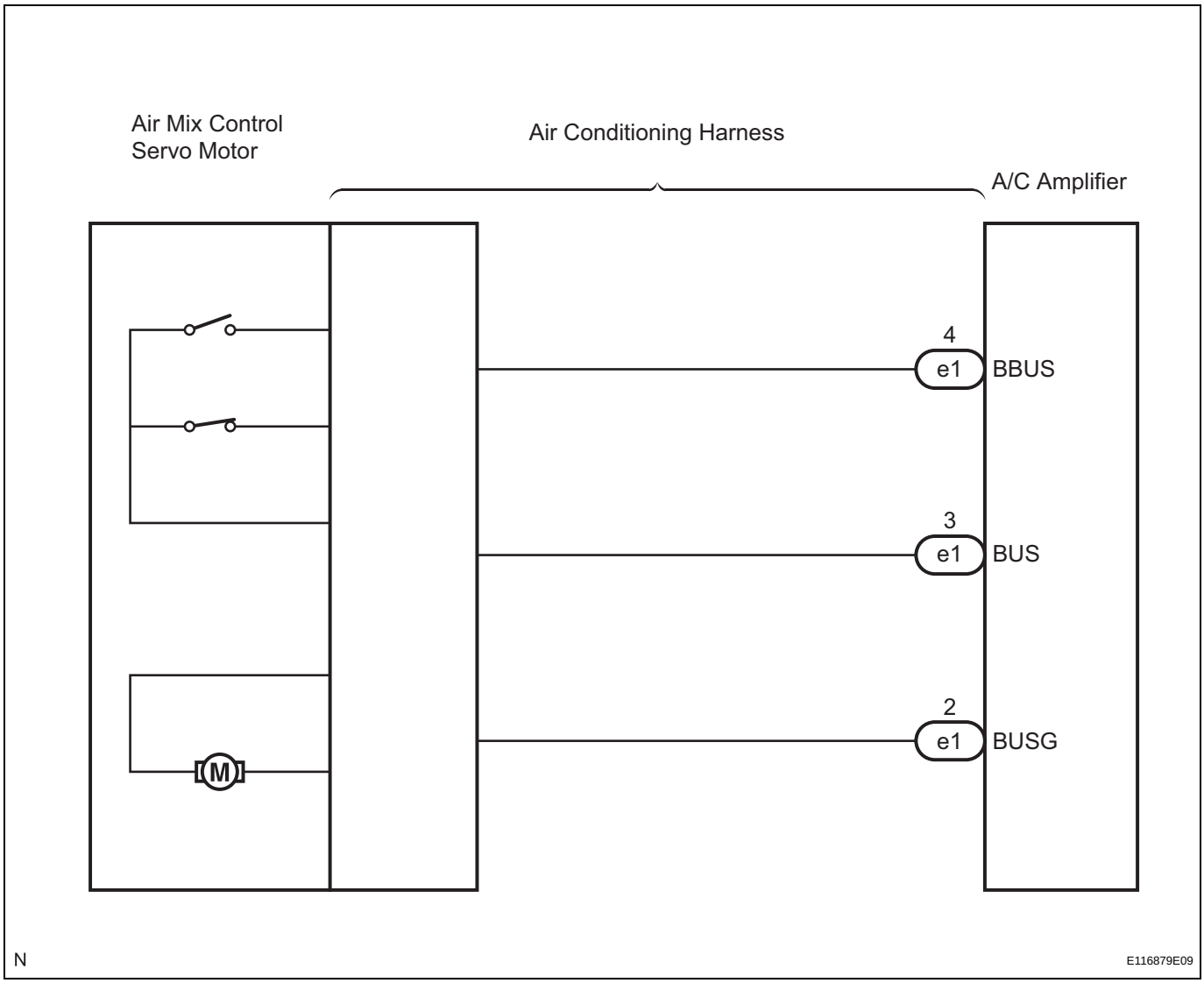
The air mix damper servo sends pulse signals to inform the air conditioning amplifier of the damper position. The air conditioning amplifier activates the motor (normal, reverse) based on the signals to move the air mix damper (driver seat) to any position. As a result, the amount of air passing through the heater core after passing through the evaporator is adjusted, and the temperature of the air blowing toward the driver seat side is controlled.

HINT:

Confirm that no mechanical problem is present because this diagnostic code can be output when either a damper link or damper is mechanically locked.

DTC No.	DTC Detection Condition	Trouble Area
B1446/46	Air mix damper position sensor value does not change even if air conditioning amplifier operates air mix control servo motor	• Air mix control servo motor • Air conditioning harness • Air amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Operate the driver side temperature adjustment switch.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
AIR MIX PULSE-D (Air mix servomotor target pulse (D side))	Driver side air mix servo motor target pulse / Min.: 0, Max.: 255	MAX COLD: 5 (pulse) MAX HOT: 103 (pulse)	-

OK:

The display is as specified in the normal condition column.

Result

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

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

2	REPLACE AIR MIX CONTROL SERVO MOTOR

(a) Replace the air mix control servo motor.
HINT:
Since the servo motor cannot be inspected while it is removed from the vehicle, replace the servo motor with a normal one and check that the condition returns to normal.
(b) Check for DTCs.
Result

Result	Proceed to
DTC B1446/46 is output	A
DTC B1446/46 is not output	B

B → END

A

REPLACE AIR CONDITIONING HARNESS

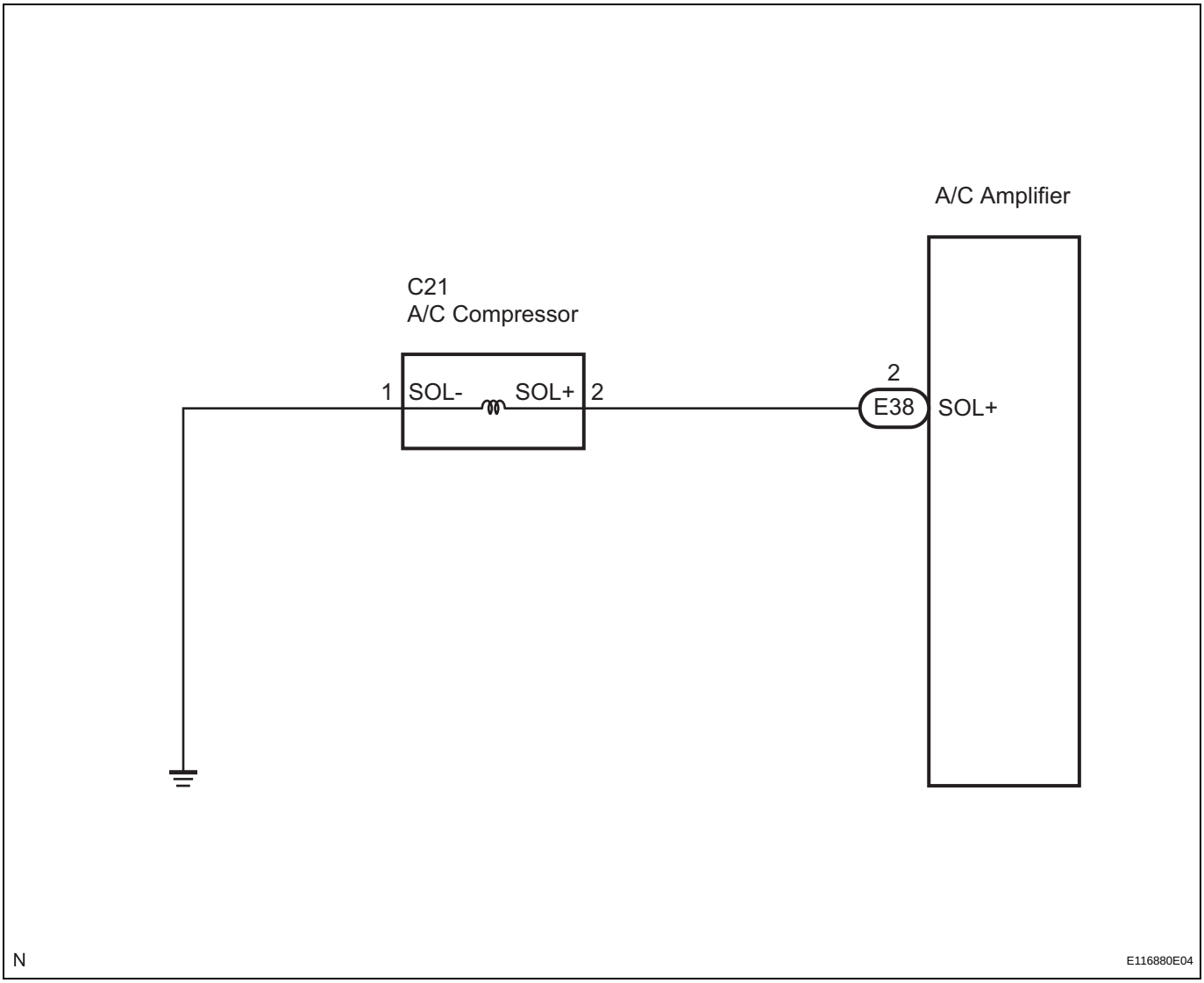
DTC	B1451/51	Compressor Solenoid Circuit

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 No.	DTC Detection Condition	Trouble Area
B1451/51	Open or short in solenoid of the externally changeable compressor circuit	• A/C compressor • Harness or connector between A/C amplifier and solenoid of externally changeable compressor • A/C amplifier

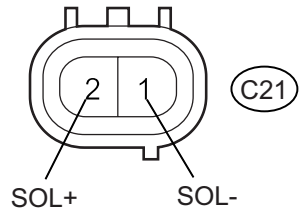
WIRING DIAGRAM



INSPECTION PROCEDURE

1 **INSPECT A/C COMPRESSOR**

A/C Compressor Connector Front View:



H E116970E02

(a) Disconnect the A/C compressor connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

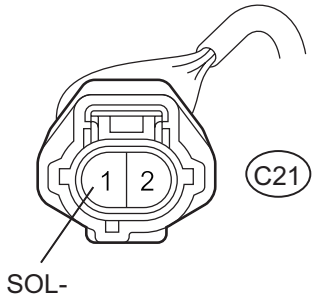
Tester Connection	Condition	Specified Condition
C21-2 (SOL+) - C21-1 (SOL-)	20°C (68°F)	10 to 11 Ω

NG → **REPLACE A/C COMPRESSOR**

OK

2 **CHECK HARNESS AND CONNECTOR (A/C COMPRESSOR - BODY GROUND)**

A/C Compressor Connector Front View:



H E116971E02

(a) Disconnect the A/C compressor connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
C21-1 (SOL-) - Body ground	Always	Below 1 Ω

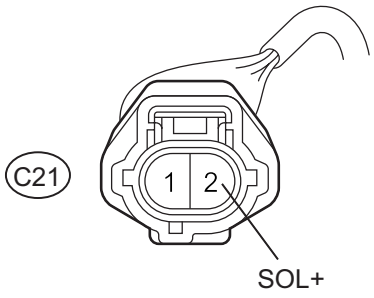
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

AC

3	CHECK HARNESS AND CONNECTOR (A/C COMPRESSOR - A/C AMPLIFIER)

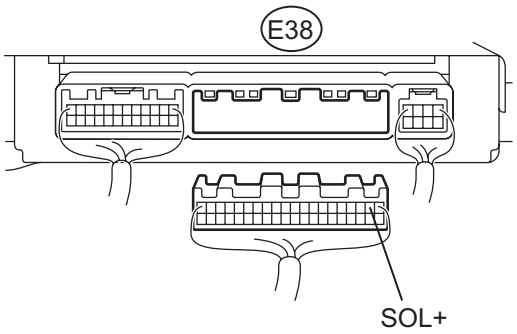
A/C Compressor Connector Front View:



H E116971E03

(a) Disconnect the A/C compressor connector.

Air Conditioning Amplifier Connector Wire Harness View:



H E124470E10

(b) Disconnect the A/C amplifier connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E38-2 (SOL+) - C21-2 (SOL+)	Always	Below 1 Ω
E38-2 (SOL+) - Body ground	Always	10 kΩ or higher

Result

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

B → PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

C → REPLACE AIR CONDITIONING AMPLIFIER

A

REPAIR OR REPLACE HARNESS OR CONNECTOR

AC

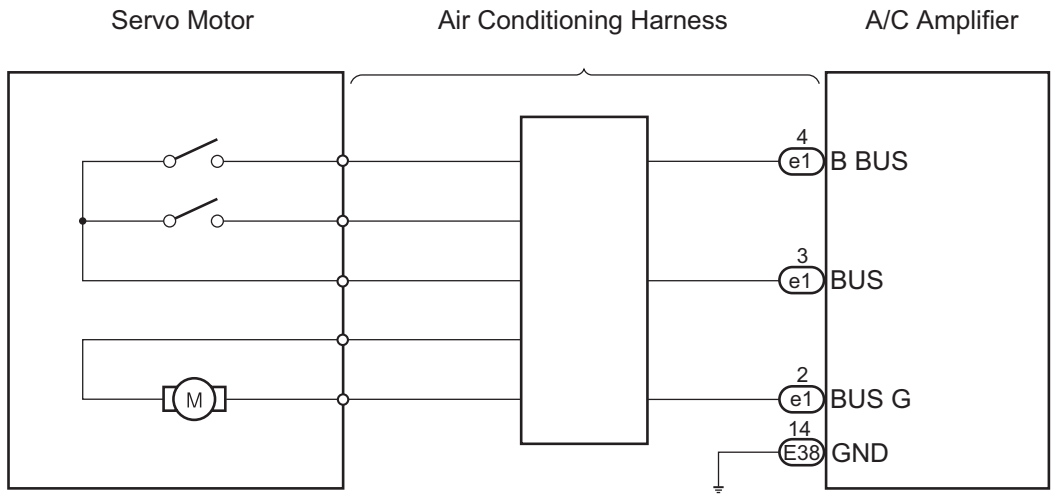
DTC	B1497/97	BUS IC Communication Malfunction

DESCRIPTION

The air conditioning harness connects the air conditioning amplifier and each servo motor. The air conditioning amplifier supplies power and sends operation instructions to each servo motor through the air conditioning harness. Each servo motor sends the damper position information to the air conditioning amplifier.

DTC No.	DTC Detection Condition	Trouble Area
B1497/97	Communication line error or open	• Air conditioning harness • A/C amplifier

WIRING DIAGRAM



H

E130105E01

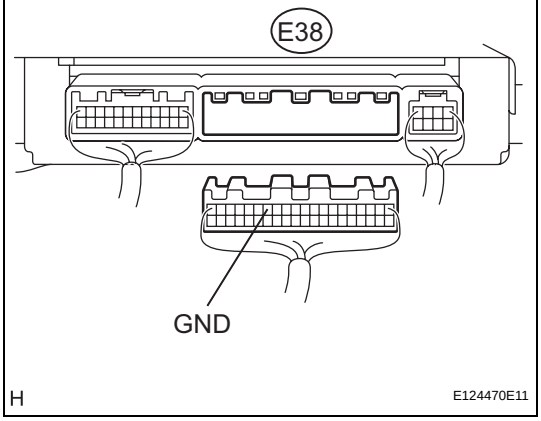
INSPECTION PROCEDURE

1	CHECK HARNESS AND CONNECTOR

(a) Remove the A/C amplifier.

AC

Air Conditioning Amplifier Connector Wire Harness View:



(b) Disconnect the connector from the A/C amplifier.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

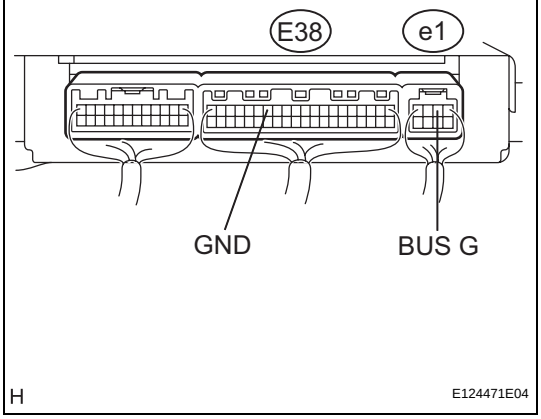
Tester Connection	Condition	Specified Condition
E38-14 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

2 INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



(a) Reconnect the connector to the A/C amplifier.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
e1-2 (BUS G) - E38-14 (GND)	Always	Below 1 Ω

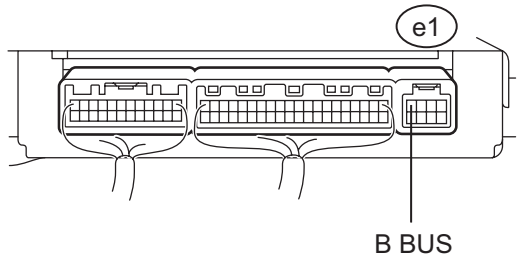
NG → **REPLACE AIR CONDITIONING AMPLIFIER**

OK

AC

3	INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



H E124471E10

(a) Disconnect the connector (e1) from the A/C amplifier .
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
e1-4 (B BUS) - Body ground	Ignition switch off	Below 1 V
e1-4 (B BUS) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → REPLACE AIR CONDITIONING AMPLIFIER

OK

4	REPLACE AIR CONDITIONING HARNESS

(a) Replace the air conditioning harness.
HINT:
Since the air conditioning harness cannot be inspected while it is removed from the vehicle, replace the air conditioning harness with a normal one and check that the condition returns to normal.
(b) Check for DTCs.

Result

Result	Proceed to
DTC B1497/97 is output.	A
DTC B1497/97 is not output.	B

B → END

A

REPLACE AIR CONDITIONING AMPLIFIER

AC

DTC	B1499/99	Multiplex Communication Circuit

DESCRIPTION

DTC No.	DTC Detecting Condition	Trouble Area
B1499/99	Open in CAN communication circuit	CAN communication system

INSPECTION PROCEDURE

1	GO TO CAN COMMUNICATION SYSTEM

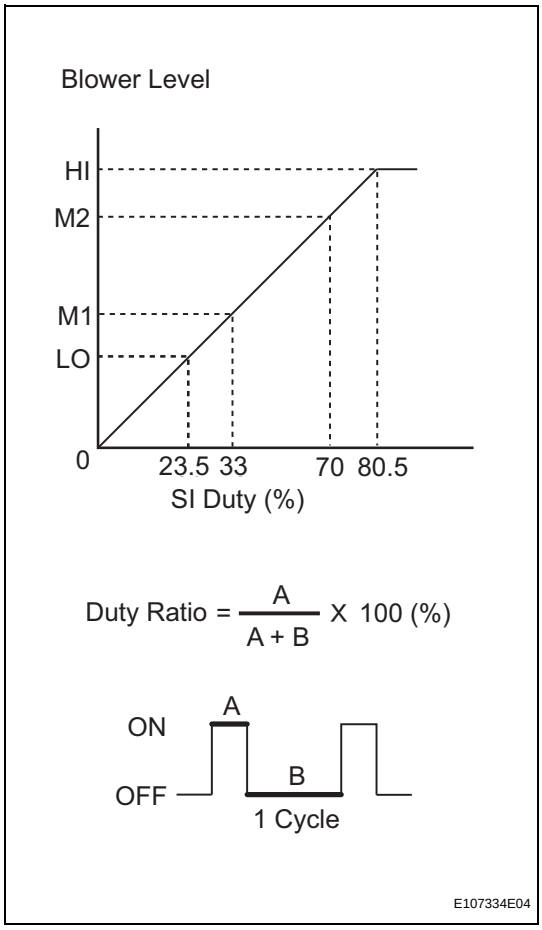
(a) Refer to the CAN communication system (See page CA-8).

NEXT

END

Blower Motor Circuit

DESCRIPTION



The blower motor is operated by signals from the A/C amplifier. The blower motor speed is controlled using various duty ratios.

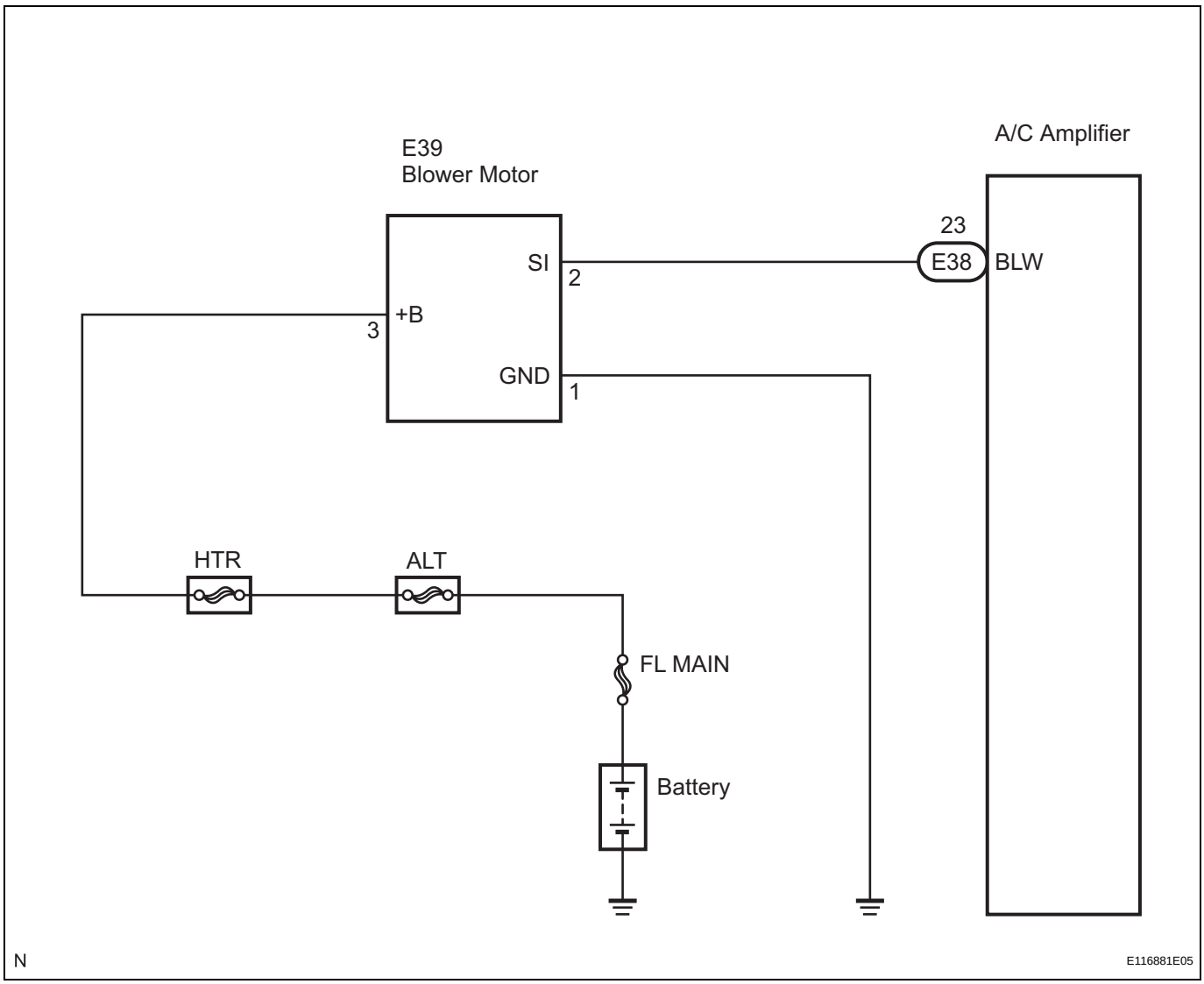
Duty Ratio:

The duty ratio is the ratio of the blower motor ON time (A) to the total of the blower motor ON and OFF time (A + B).

The blower motor controller controls the blower motor speed.

AC

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- AUTO A/C: Start inspection from step 1.
- MANUAL A/C: Start inspection from step 2.

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Select the item below in the ACTIVE TEST and then check that the blower motor operates.

ACTIVE TEST / AIR CONDITIONER:

Item	Test Details / Display (Range)	Diagnostic Note
BLOWER MOTOR (Blower motor)	Blower motor / Min.: Level 01, Max.: Level 31	-

Result

Result	Proceed to
OK	A
NG (blower motor does not operate)	B
NG (blower motor operates but does not change speed)	C

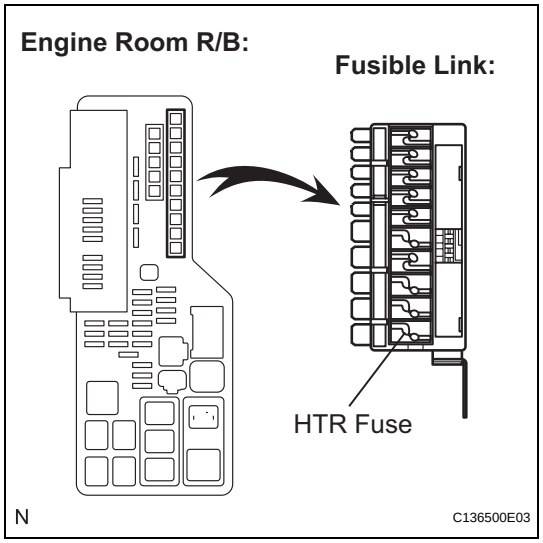
B → Go to step 2

C → Go to step 6

A

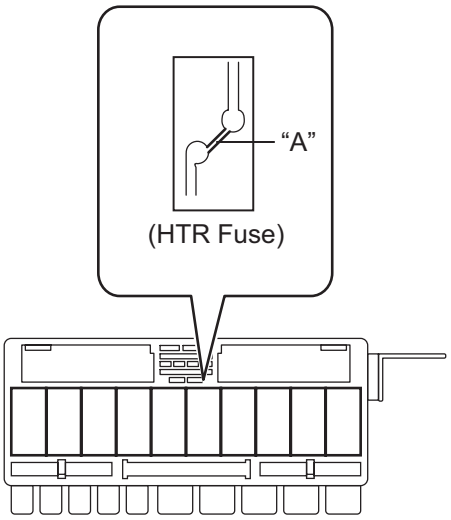
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2	INSPECT FUSIBLE LINK (HTR)



(a) Remove the fusible link from the engine room R/B.

Fusible Link:



(b) Check if the fusible link is melted.
OK:
The point indicated by "A" is not melted.
(c) Install the fusible link to the engine room R/B with the nut.

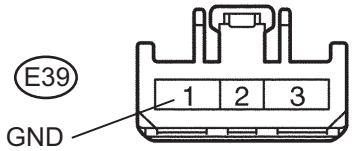
NG → **REPLACE FUSIBLE LINK (HTR)**

OK

3 CHECK HARNESS AND CONNECTOR (BLOWER MOTOR - BODY GROUND)

AC

Blower Motor Connector Front View:



(a) Disconnect the blower motor connector.
(b) Measure the resistance according to the value(s) in the table below.
Standard resistance

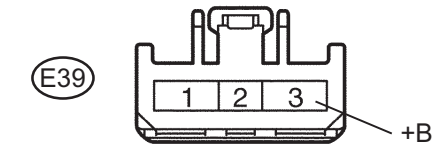
Tester Connection	Condition	Specified Condition
E39-1 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

4 CHECK HARNESS AND CONNECTOR (BLOWER MOTOR - BATTERY)

Blower Motor Connector Front View:



(a) Disconnect the blower motor connector.
(b) Measure the voltage according to the value(s) in the table below.
Standard voltage

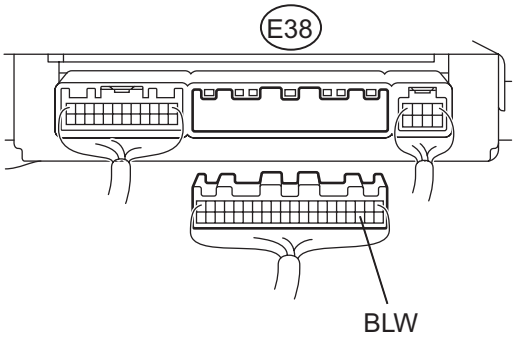
Tester Connection	Condition	Specified Condition
E39-3 (+B) - Body ground	Always	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

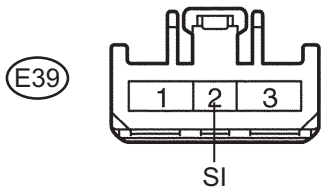
5	CHECK HARNESS AND CONNECTOR (A/C AMPLIFIER - BLOWER MOTOR)

Air Conditioning Amplifier Connector Wire Harness View:



(a) Disconnect the A/C amplifier connector.

Blower Motor Connector Front View:



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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E39-2 (SI) - E38-23 (BLW)	Always	Below 1 Ω
E39-2 (SI) - Body ground	Always	10 kΩ or higher

AC

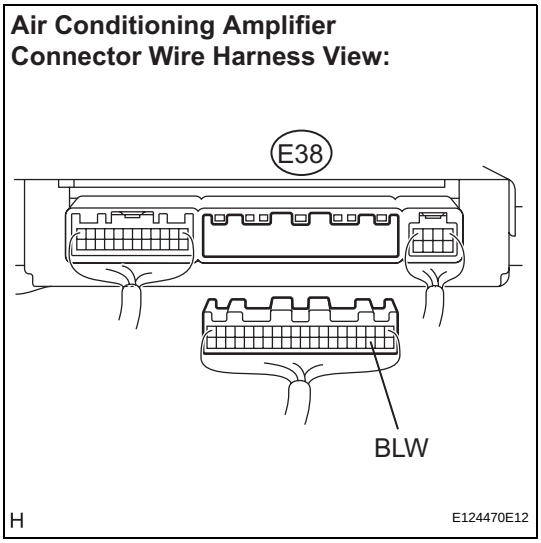
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

6	INSPECT BLOWER MOTOR

(a) Reconnect the connector to the blower motor.

Air Conditioning Amplifier Connector Wire Harness View:



(b) Measure the voltage on the A/C amplifier connector side according to the value(s) in the table below.
Standard voltage

Tester Connection	Condition	Specified Condition
E38-23 (BLW) - Body ground	Ignition switch on (IG)	4.5 to 5.5 V

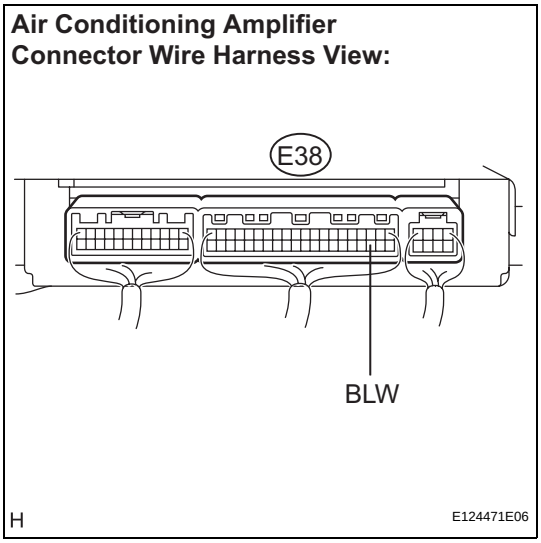
NG → **REPLACE BLOWER MOTOR**

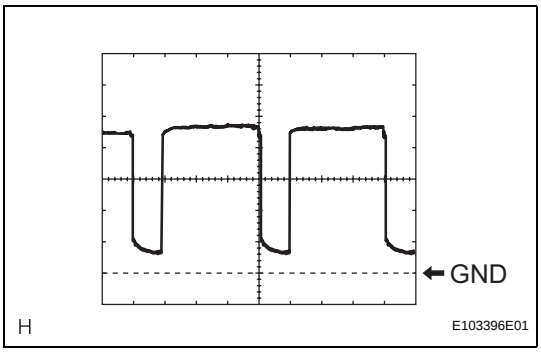
OK

7 INSPECT AIR CONDITIONING AMPLIFIER

(a) Remove the A/C amplifier.
(b) Reconnect the connector to the A/C amplifier.

Air Conditioning Amplifier Connector Wire Harness View:





(c) Turn the ignition switch on (IG) .
(d) Turn the blower switch ON.
(e) Measure the waveform between terminal E38-23 (BLW) of the A/C amplifier and body ground.
OK:
Waveform is as shown in the illustration.
HINT:
Waveform varies with the blower level.

Item	Contents
Tool setting	1 V/DIV., 500 μs/DIV.
Vehicle condition	Ignition switch on (IG) Blower switch: ON

NG → **REPLACE AIR CONDITIONING AMPLIFIER**

AC

OK

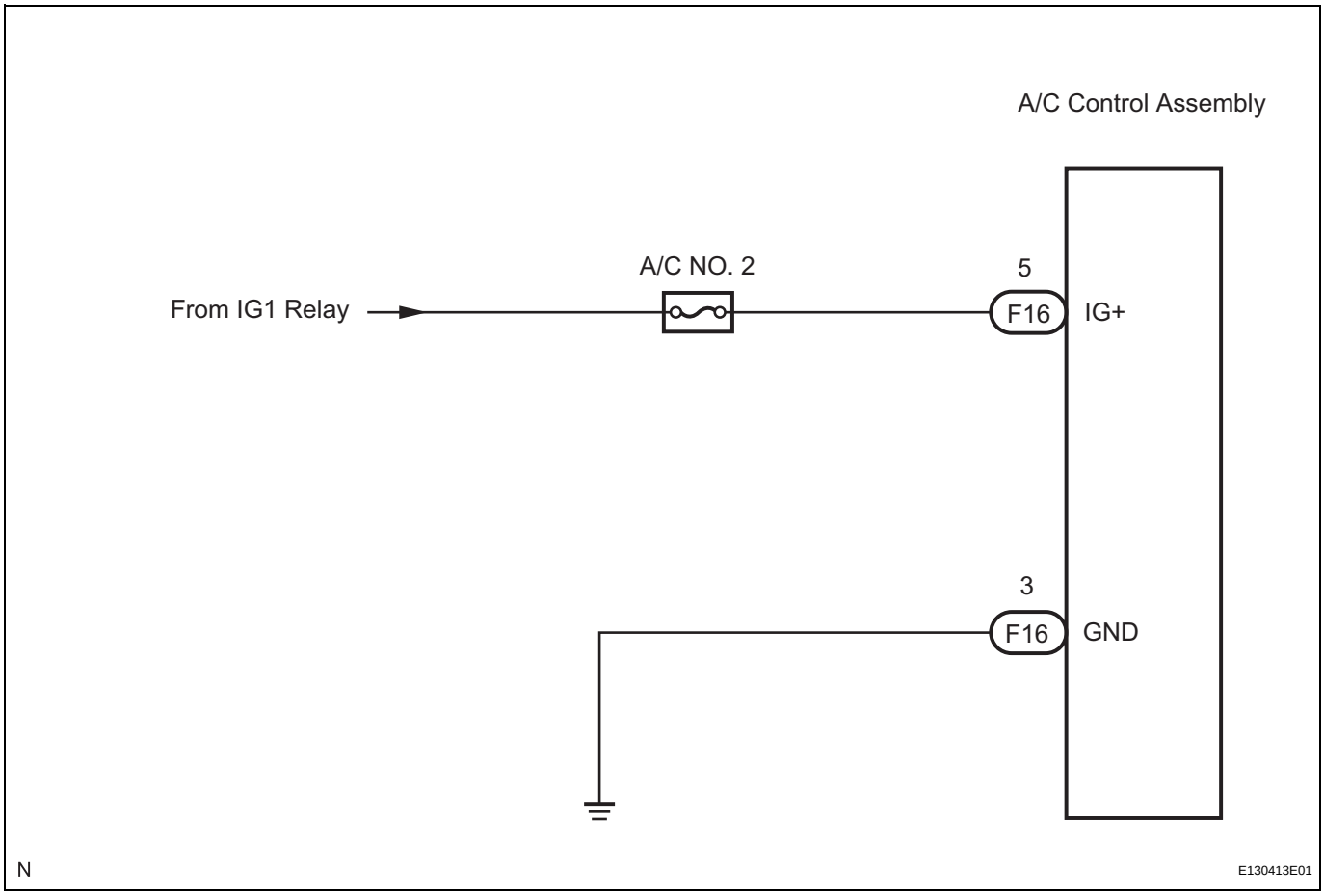
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Heater Control Panel Power Source Circuit

DESCRIPTION

Battery voltage is supplied to the heater control panel (A/C control assembly) through the A/C No. 2 fuse.

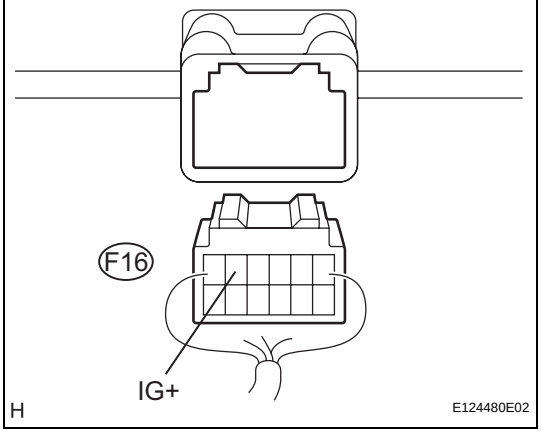
WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK HARNESS AND CONNECTOR (IG+ - BODY GROUND)

A/C Control Assembly Connector
Wire Harness View:



(a) Disconnect the connector from the heater control panel.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection (Symbols)	Condition	Specified Condition
F16-5 (IG+) - Body ground	Ignition switch on (IG)	10 to 14 V
F16-5 (IG+) - Body ground	Ignition switch off	Below 1 V

Result

Result	Proceed to
OK	A
NG (without Smart key system)	B
NG (with Smart key system)	C

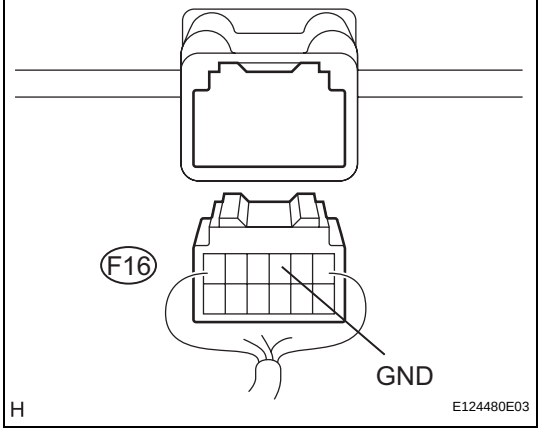
B → GO TO STARTING SYSTEM

C → GO TO PUSH BUTTON START SYSTEM

A

2 CHECK HARNESS AND CONNECTOR (GND - BODY GROUND)

A/C Control Assembly Connector
Wire Harness View:



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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
F16-3 (GND) - Body ground	Always	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

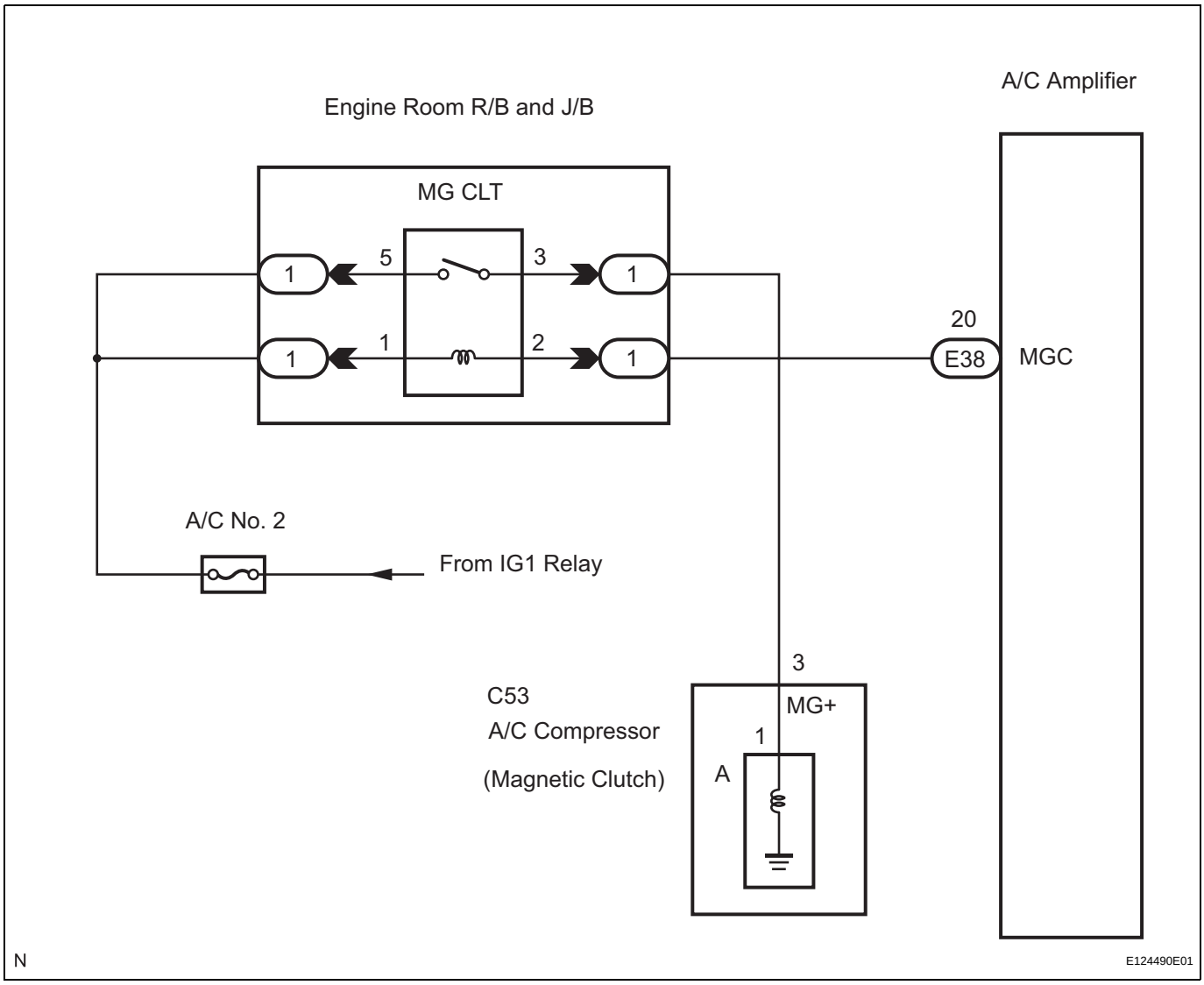
AC

Air Conditioning Compressor Magnetic Clutch Circuit

DESCRIPTION

When the A/C amplifier is turned on, a magnetic clutch ON signal is sent from the MGC terminal of the A/C amplifier. Then, the MG CLT relay turns on to operate the magnetic clutch.

WIRING DIAGRAM



AC

INSPECTION PROCEDURE

1	CHECK CAN COMMUNICATION SYSTEM

(a) Use the intelligent tester to check if the CAN Communication System is functioning normally.
Result

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

B → GO TO CAN COMMUNICATION SYSTEM

A

2 READ VALUE OF INTELLIGENT TESTER

(a) Connect the intelligent tester to the DLC3.
(b) Turn the ignition switch on (IG) and turn the intelligent tester main switch on.
(c) Turn the A/C switch on and off.
(d) Select the item below in the DATA LIST, and read the display on the intelligent tester.

DATA LIST / ENGINE:

Item	Measure Item	Normal Condition	Diagnostic Note
A/C SIGNAL (A/C Signal)	A/C signal / ON or OFF	ON: A/C ON OFF: A/C OFF	-

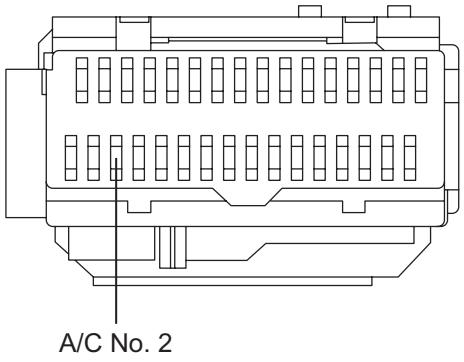
OK:
The display is as specified in the normal condition column.

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

OK

3 INSPECT FUSE (A/C NO. 2)

Instrument Panel J/B:



(a) Remove the A/C No. 2 fuse from the instrument panel J/B.
(b) Measure the resistance of the fuse.
Standard resistance

Tester Item	Condition	Specified Condition
A/C No. 2 fuse	Always	Below 1 Ω

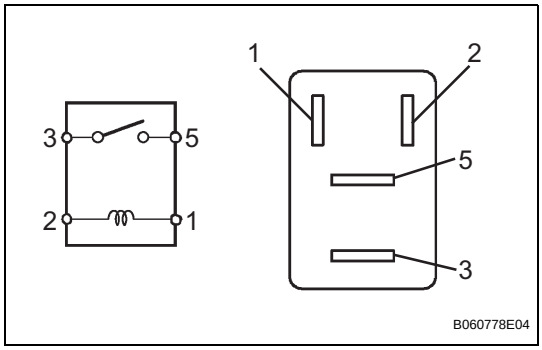
(c) Reconnect the A/C No. 2 fuse to the instrument panel J/B.

NG → **REPLACE FUSE (A/C NO. 2)**

OK

AC

4 INSPECT RELAY (MG CLT)



(a) Remove the MG CLT relay from the engine room R/B and J/B.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

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

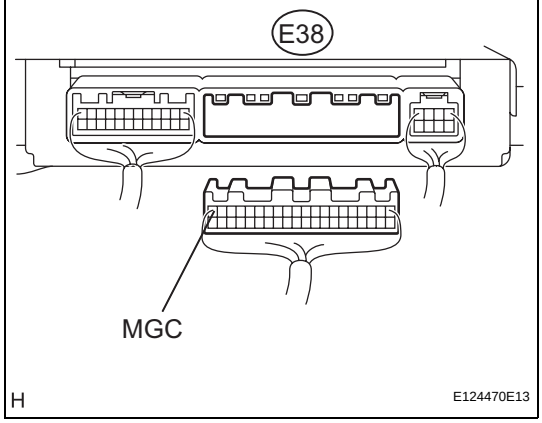
(c) Install the MG CLT relay to the engine room R/B and J/B.

NG → REPLACE RELAY (MG CLT)

OK

5 CHECK HARNESS AND CONNECTOR (A/C AMPLIFIER - BATTERY)

Air Conditioning Amplifier Connector Wire Harness View:



(a) Disconnect the connector from the A/C amplifier.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection (Symbols)	Condition	Specified Condition
E38-20 (MGC) - Body ground	Ignition switch off	Below 1 V
E38-20 (MGC) - Body ground	Ignition switch on (IG)	10 to 14 V

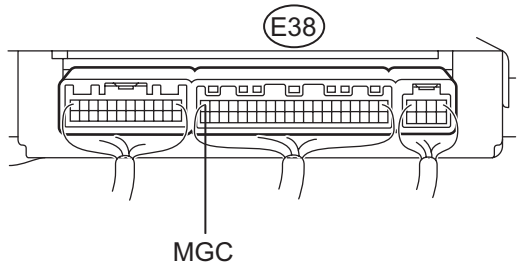
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

AC

6 INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



H E124471E11

(a) Reconnect the connector to the A/C amplifier.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

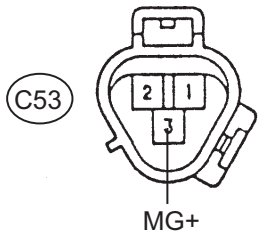
Tester Connection (Symbols)	Condition	Specified Condition
E38-20 (MGC) - Body ground	Ignition switch on (IG) A/C switch: OFF	10 to 14 V
E38-20 (MGC) - Body ground	Ignition switch on (IG) A/C switch: ON	Below 1 V

NG → REPLACE AIR CONDITIONING AMPLIFIER

OK

7 INSPECT A/C COMPRESSOR

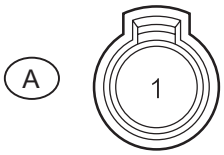
A/C Compressor Connector Front View:



E005280E15

(a) Disconnect the connector from the A/C compressor.

Magnetic Clutch Connector Front View:



H E124482E01

(b) Disconnect the connector from the magnetic clutch.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

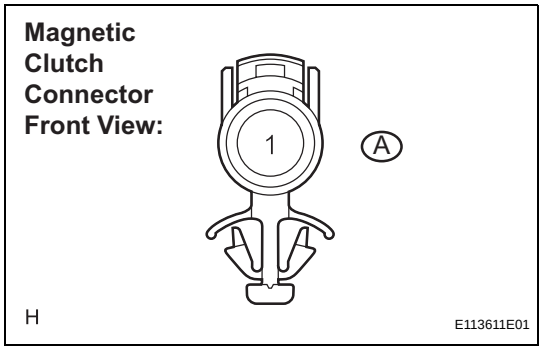
Tester Connection (Symbols)	Condition	Specified Condition
C53-3 (MG+) - A-1	Always	Below 1 Ω
C53-3 (MG+) - Body ground	Always	10 kΩ or higher

NG → REPLACE A/C COMPRESSOR

OK

AC

8 INSPECT MAGNETIC CLUTCH



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

Standard resistance

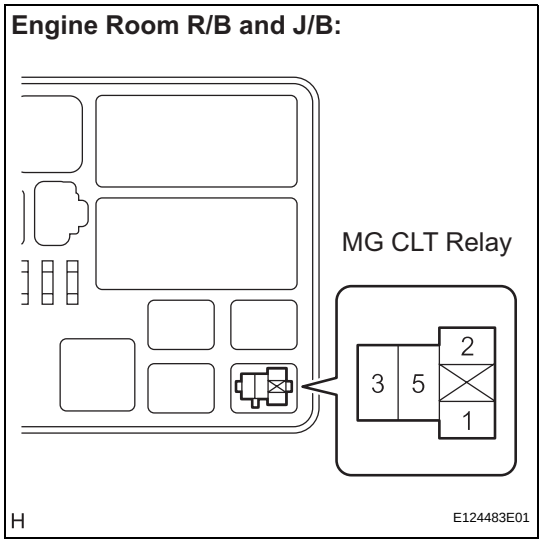
Tester Connection	Condition	Specified Condition
A-1 - Body ground	Always	3.4 to 3.8 Ω

(b) When connector terminal A1 is connected to the positive (+) battery terminal, check that the following occurs: 1) the magnetic clutch's operating sound can be heard, and 2) the magnetic clutch's hub and rotor lock.

NG → **REPLACE MAGNETIC CLUTCH**

OK

9 CHECK HARNESS AND CONNECTOR (ENGINE ROOM R/B AND J/B - BATTERY)



(a) Remove the MG CLT relay from the engine room R/B and J/B.
(b) Turn the ignition switch on (IG).
(c) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Specified Condition
Relay block MG CLT relay terminal 5 - Body ground	10 to 14 V
Relay block MG CLT relay terminal 1 - Body ground	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (ENGINE ROOM R/B AND J/B - A/C COMPRESSOR)**

OK

REPAIR OR REPLACE HARNESS OR CONNECTOR

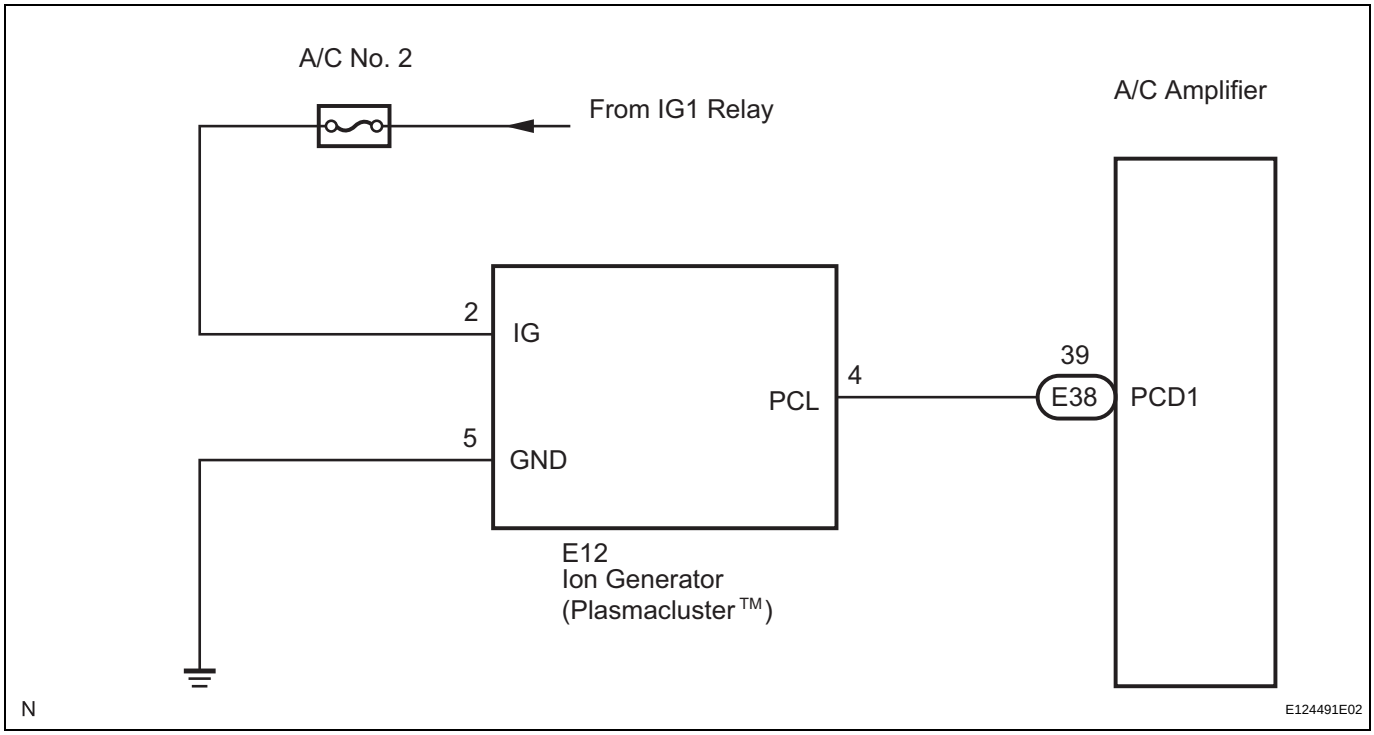
AC

Plasmacluster Circuit

DESCRIPTION

The plasmacluster™ operates in conjunction with blower switch operation. The plasmacluster™ operation indicator (CLEAN) illuminates on the A/C control assembly when the plasmacluster™ is operating.

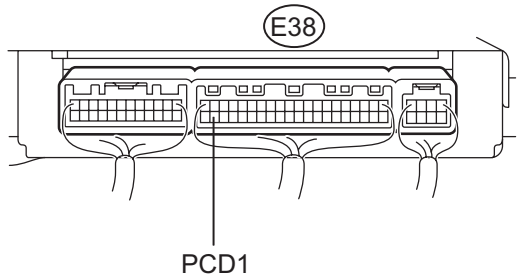
WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT AIR CONDITIONING AMPLIFIER

Air Conditioning Amplifier Connector Wire Harness View:



(a) Remove the A/C amplifier with the connectors still connected.
(b) Turn the ignition switch on (IG).
(c) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection (Symbols)	Condition	Specified Condition
E38-39 (PCD1) - Body ground	Ignition switch on (IG) Blower switch: OFF	10 to 14 V
E38-39 (PCD1) - Body ground	Ignition switch on (IG) Blower switch: ON	Below 1 V

NG	Go to step 2

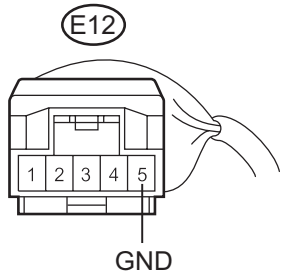
AC

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 CHECK HARNESS AND CONNECTOR (ION GENERATOR - BODY GROUND)

Ion Generator Connector Front View:



(a) Disconnect the connector from the ion generator.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E12-5 (GND) - Body ground	Always	Below 1 Ω

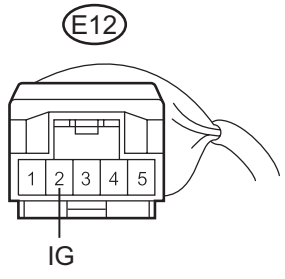
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

AC

3 CHECK HARNESS AND CONNECTOR (ION GENERATOR - BATTERY)

Ion Generator Connector Front View:



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

Standard voltage

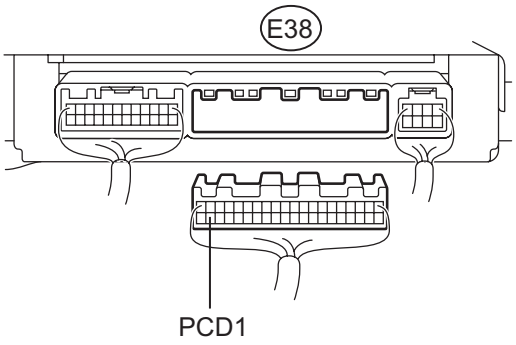
Tester Connection (Symbols)	Condition	Specified Condition
E12-2 (IG) - Body ground	Ignition switch off	Below 1 V
E12-2 (IG) - Body ground	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

4	CHECK HARNESS AND CONNECTOR (ION GENERATOR - A/C AMPLIFIER)

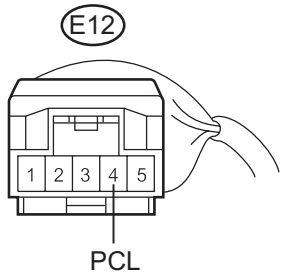
Air Conditioning Amplifier Connector Wire Harness View:



H E124470E14

(a) Disconnect the connector from the A/C amplifier.

Ion Generator Connector Front View:



H E116928E05

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

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
E12-4 (PCL) - E38-39 (PCD1)	Always	Below 1 Ω
E12-4 (PCL) - Body ground	Always	10 kΩ or higher

AC

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ION GENERATOR

Steering Pad Switch Circuit

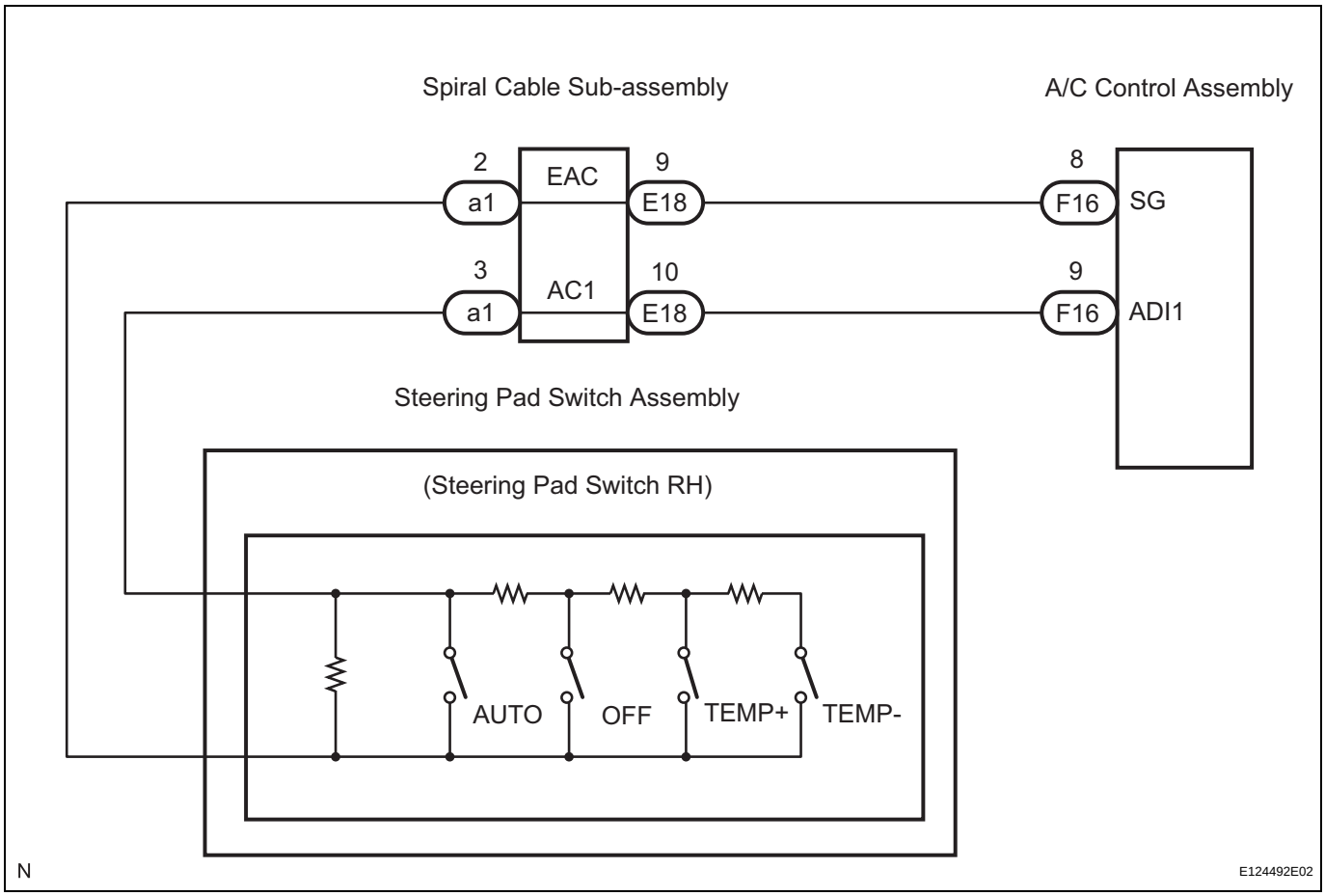
DESCRIPTION

AUTO, OFF, TEMP UP (+), and TEMP DOWN (-) switches are located on the steering pad switch. The resistance of the steering pad switch changes in accordance with switch operation. The A/C control assembly outputs voltage to the steering pad switch and reads voltage changes due to the resistance changes that result from switch operation.

HINT:

If there is an open in the circuit, the A/C system cannot be operated by the steering pad switch assembly. If there is a short in the circuit, the resulting condition is the same as if the switch were continuously depressed. Therefore, the A/C control assembly cannot be operated by the steering pad switch assembly, and the A/C control assembly will not be able to function correctly.

WIRING DIAGRAM

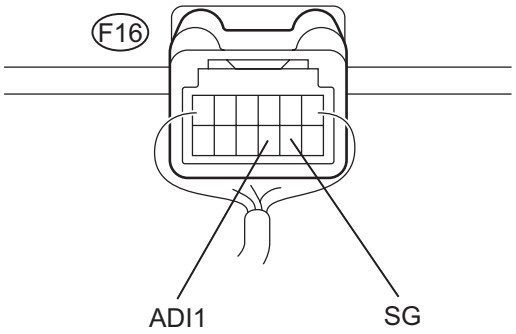


AC

INSPECTION PROCEDURE

1 **INSPECT A/C CONTROL ASSEMBLY**

A/C Control Assembly Connector Wire Harness View:



H E124479E02

(a) Remove the A/C control assembly with the connectors still connected.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection (Symbols)	Condition	Specified Condition
F16-9 (ADI1) - F16-8 (SG)	AUTO switch: ON	Below 2.5 Ω
F16-9 (ADI1) - F16-8 (SG)	OFF switch: ON	Approx. 329 Ω
F16-9 (ADI1) - F16-8 (SG)	TEMP+ switch: ON	Approx. 1,000 Ω
F16-9 (ADI1) - F16-8 (SG)	TEMP- switch: ON	Approx. 3,110 Ω

NG → **Go to step 2**

OK

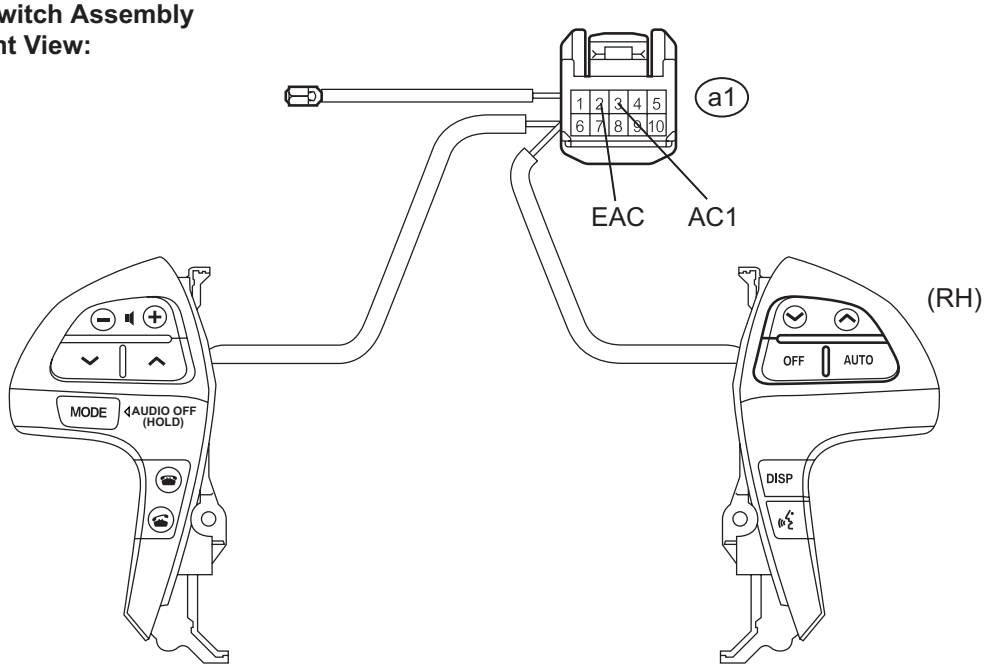
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

AC

2 **INSPECT STEERING PAD SWITCH ASSEMBLY**

(a) Remove the steering pad switch assembly.
(b) Disconnect the connector from the steering pad switch assembly.

Steering Pad Switch Assembly Connector Front View:



H

E124484E01

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

Standard resistance

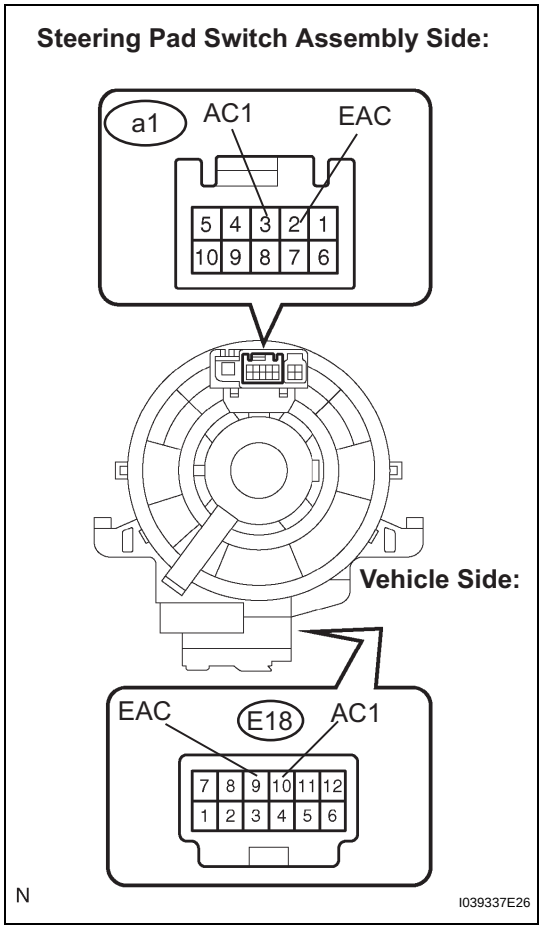
Tester Connection (Symbols)	Condition	Specified Condition
a1-3 (AC1) - a1-2 (EAC)	AUTO switch: ON	Below 2.5 Ω
a1-3 (AC1) - a1-2 (EAC)	OFF switch: ON	Approx. 329 Ω
a1-3 (AC1) - a1-2 (EAC)	TEMP+ switch: ON	Approx. 1,000 Ω
a1-3 (AC1) - a1-2 (EAC)	TEMP- switch: ON	Approx. 3,110 Ω

AC

NG → **REPLACE STEERING PAD SWITCH ASSEMBLY**

OK

3 INSPECT SPIRAL CABLE SUB-ASSEMBLY



(a) Disconnect the connector from the spiral cable sub-assembly.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

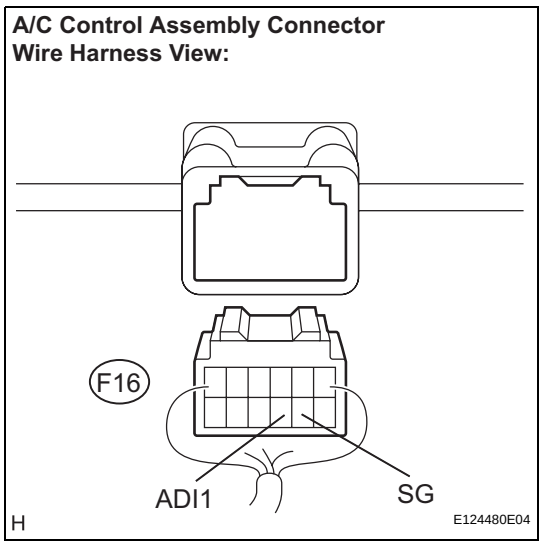
Tester Connection (Symbols)	Condition	Specified Condition
E18-10 (AC1) - a1-3 (AC1)	Center	Below 1 Ω
	2.5 rotations to the left	
	2.5 rotations to the right	
E18-9 (EAC) - a1-2 (EAC)	Center	Below 1 Ω
	2.5 rotations to the left	
	2.5 rotations to the right	

HINT:
The spiral cable makes a maximum of approximately 5 rotations.

NG → REPLACE SPIRAL CABLE SUB-ASSEMBLY

OK

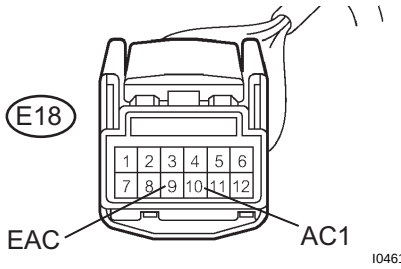
4 CHECK HARNESS AND CONNECTOR (A/C CONTROL ASSEMBLY - SPIRAL CABLE SUB-ASSEMBLY)



(a) Disconnect the connector from the A/C control assembly.

AC

Spiral Cable Sub-assembly Connector Front View:



(b) Disconnect the connector from the spiral cable sub-assembly.

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

Standard resistance

Tester Connection	Condition	Specified Condition
F16-9 (ADI1) - E18-10 (AC1)	Always	Below 1 Ω
F16-8 (SG) - E18-9 (EAC)	Always	Below 1 Ω
F16-9 (ADI1) - E18-10 (AC1)	Always	10 kΩ or higher
F16-8 (SG) - E18-9 (EAC)	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE A/C CONTROL ASSEMBLY

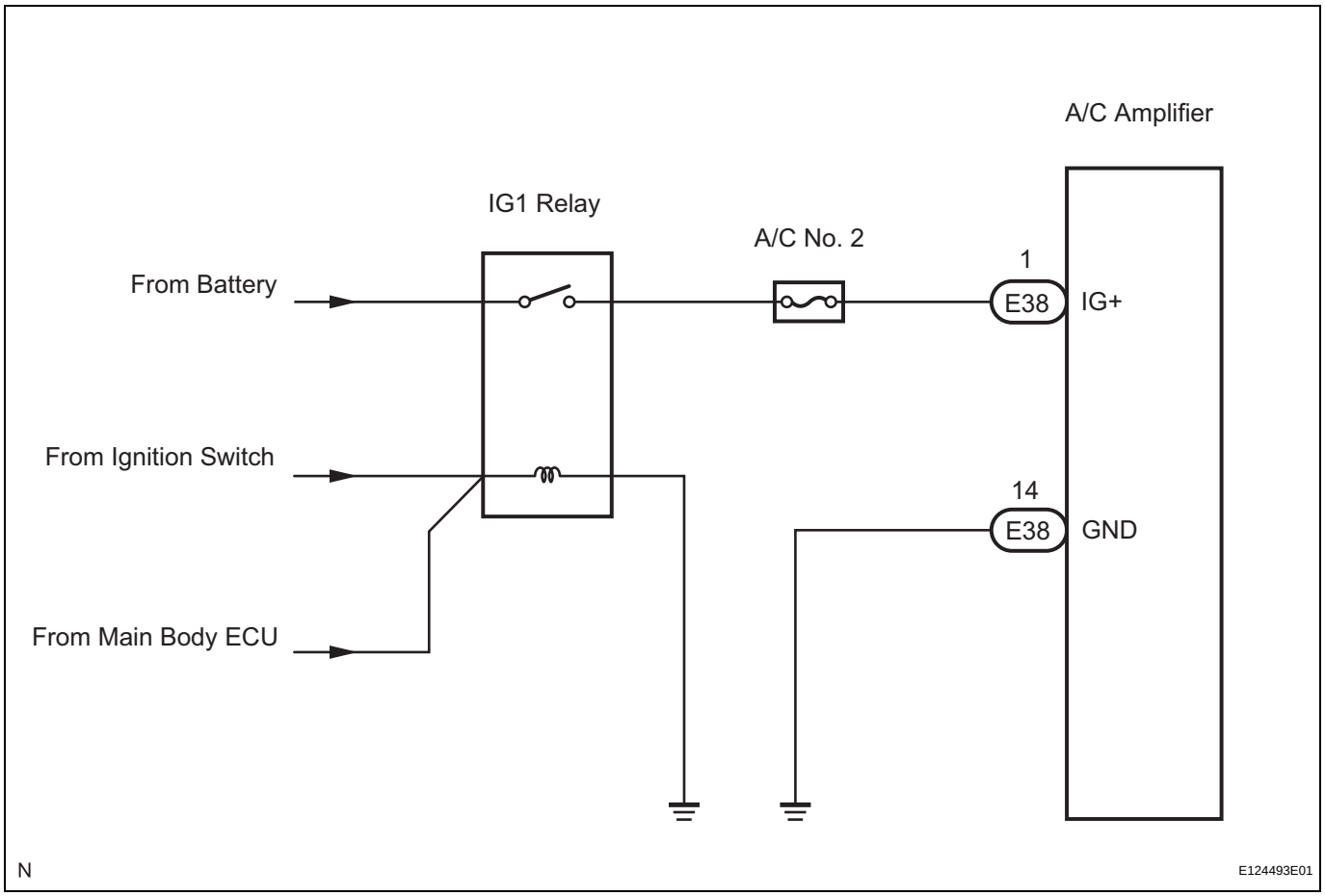
AC

IG Power Source Circuit

DESCRIPTION

The main power source is supplied to the A/C amplifier when the ignition switch is turned on (IG).
The power source is used for operating the A/C amplifier and servo motor, etc.

WIRING DIAGRAM



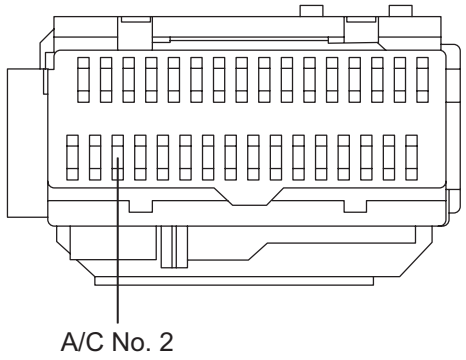
INSPECTION PROCEDURE

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

AC

1	INSPECT FUSE (A/C NO. 2)

Instrument Panel J/B:



H E124481E02

(a) Remove the A/C No. 2 fuse from the instrument panel J/B.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Item	Condition	Specified Condition
A/C No. 2 fuse	Always	Below 1 Ω

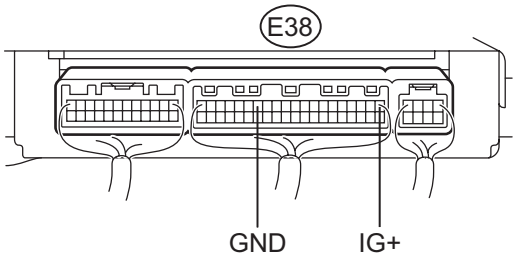
NG → **REPLACE FUSE (A/C NO. 2)**

OK

2	INSPECT AIR CONDITIONING AMPLIFIER (IG+ - GND)

AC

Air Conditioning Amplifier Connector Wire Harness View:



H E124471E09

(a) Remove the A/C amplifier with its connectors still connected.
(b) Turn the ignition switch on (IG).
(c) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
E38-1 (IG+) - E38-14 (GND)	Ignition switch on (IG)	10 to 14 V

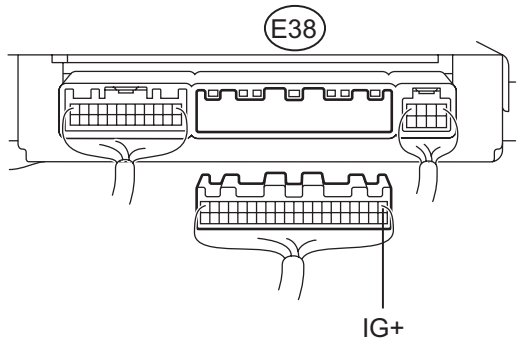
NG → **Go to step 3**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

3	CHECK WIRE HARNESS (AIR CONDITIONING AMPLIFIER - BATTERY)

Air Conditioning Amplifier Connector Wire Harness View:



(a) Disconnect the A/C amplifier connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

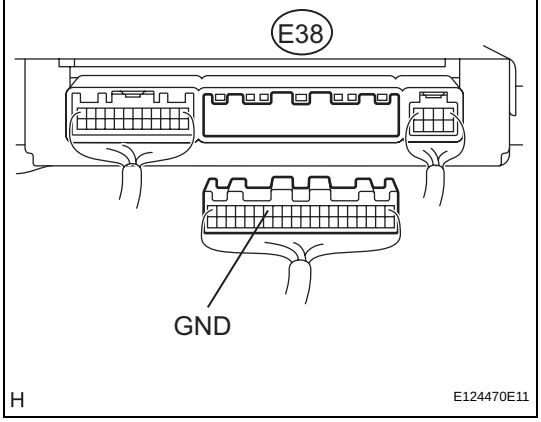
Tester Connection	Condition	Specified Condition
E38-1 (IG+) - Body ground	Ignition switch off	Below 1 V
	Ignition switch on (IG)	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

4	CHECK WIRE HARNESS (AIR CONDITIONING AMPLIFIER - BODY GROUND)

Air Conditioning Amplifier Connector Wire Harness View:



(a) Disconnect the A/C amplifier connector.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E38-14 (GND) - Body ground	Always	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE AIR CONDITIONING AMPLIFIER

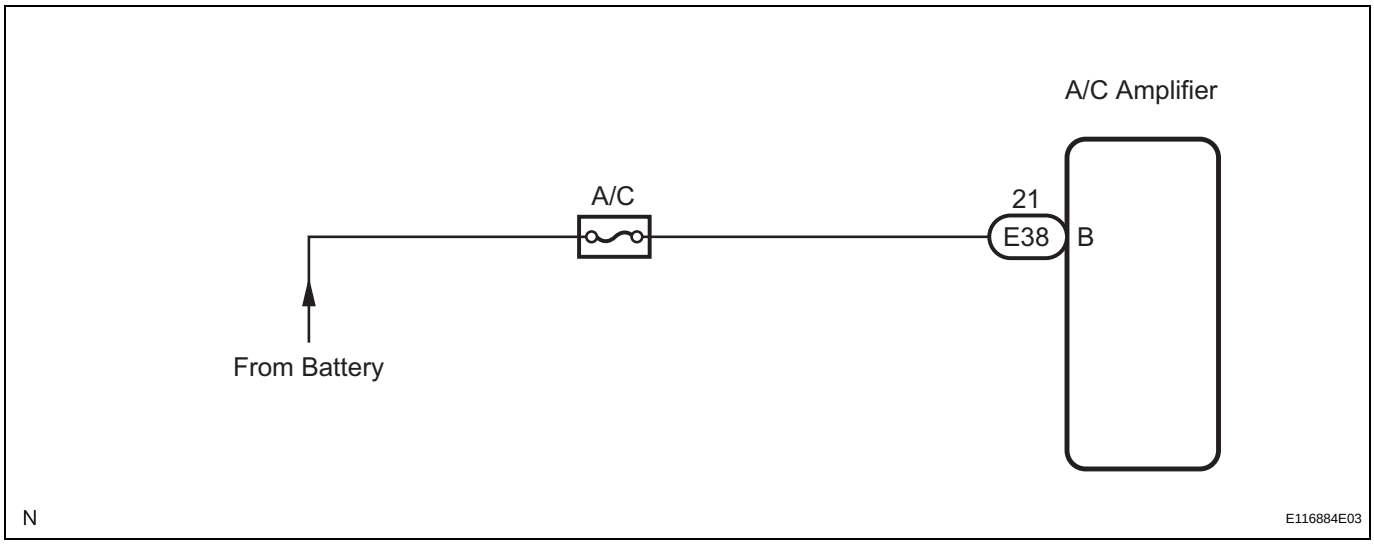
AC

Back-up Power Source Circuit

DESCRIPTION

The back-up power source circuit for the A/C amplifier is shown below. Power is supplied even when turning the ignition switch off and is used for diagnostic trouble code memory, etc.

WIRING DIAGRAM

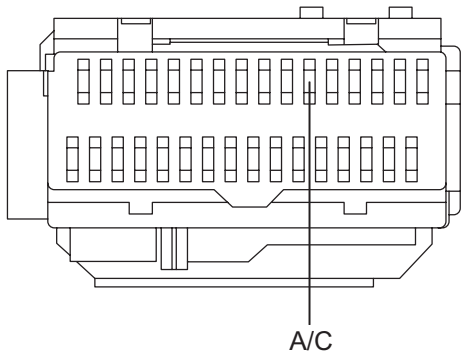


INSPECTION PROCEDURE

AC

1	INSPECT FUSE (A/C)

Instrument Panel J/B:



(a) Remove the A/C fuse from the instrument panel J/B.
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

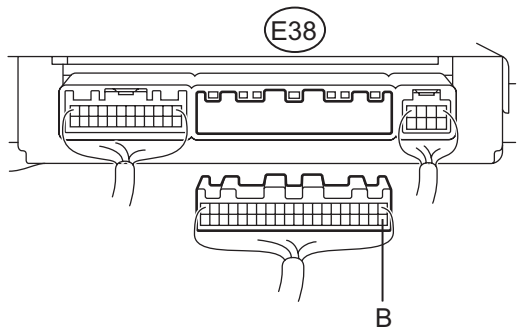
Tester Item	Condition	Specified Condition
A/C fuse	Always	Below 1 Ω

NG → **REPLACE FUSE (A/C)**

OK

2	INSPECT AIR CONDITIONING AMPLIFIER (AIR CONDITIONING AMPLIFIER - BODY GROUND)

Air Conditioning Amplifier Connector Wire Harness View:



H E124470E16

(a) Disconnect the A/C amplifier connector.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
E38-21 (B) - Body ground	Always	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

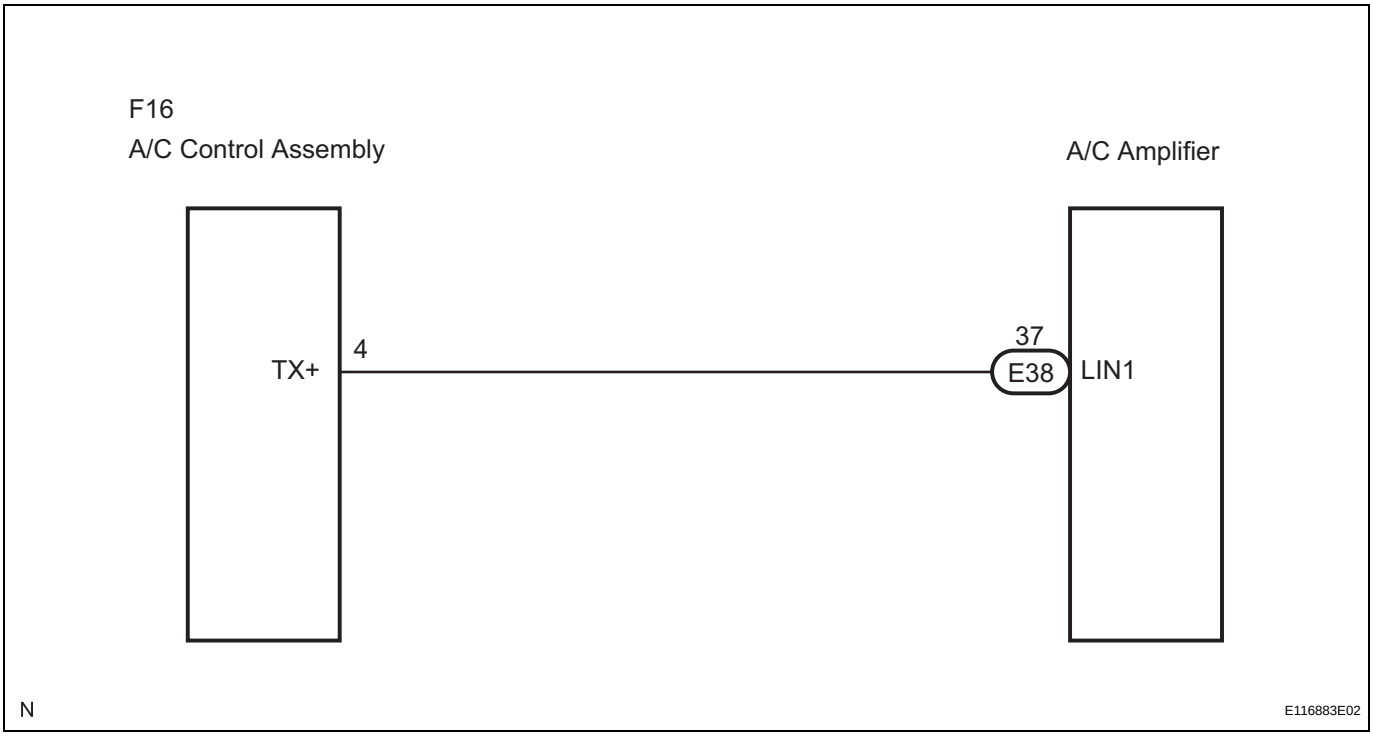
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

LIN Communication Circuit

DESCRIPTION

The operation signal of a switch etc. is exchanged between terminal TX+ of the A/C control assembly and terminal LIN1 of the A/C amplifier.

WIRING DIAGRAM

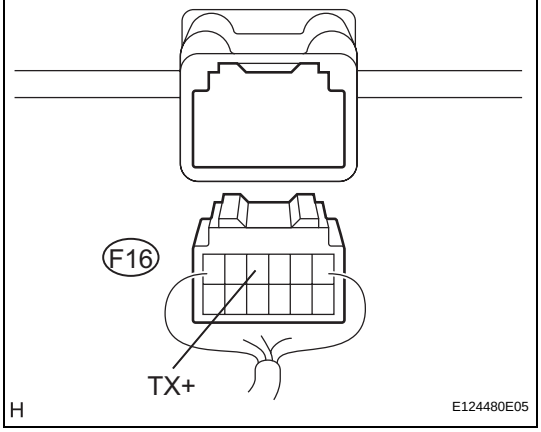


AC

INSPECTION PROCEDURE

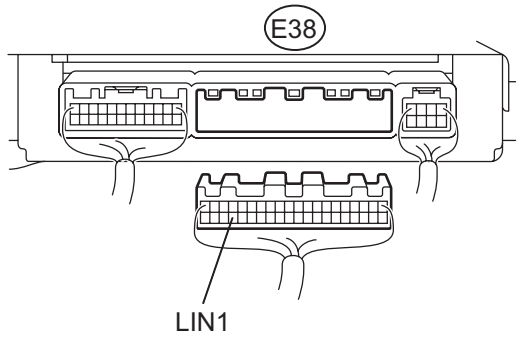
1	CHECK HARNESS AND CONNECTOR (A/C CONTROL ASSEMBLY - AIR CONDITIONING AMPLIFIER)

A/C Control Assembly Connector Wire Harness View:



(a) Disconnect the connector from the A/C control assembly.

Air Conditioning Amplifier Connector Wire Harness View:



(b) Disconnect the connector from the A/C amplifier.
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester connection (Symbols)	Condition	Specified condition
E38-37 (LIN1) - F16-4 (TX+)	Always	Below 1 Ω
E38-37 (LIN1) - Body ground	Always	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

AC

REFRIGERANT

ON-VEHICLE INSPECTION

1. INSPECT REFRIGERANT VOLUME

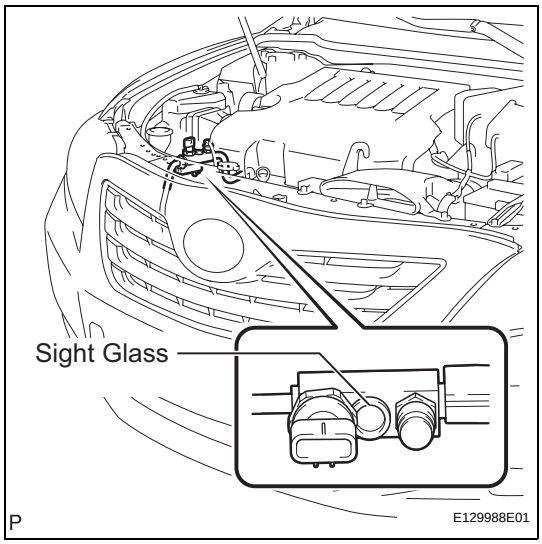
HINT:

Vehicles manufactured by TMC are equipped with a sight glass. A simple inspection of refrigerant volume can be performed using this sight glass. The inspection procedure is as follows.

(a) Check the sight glass on the air conditioning tube & accessory assembly.

(1) Prepare the vehicle according to the chart below.

Item	Condition
Vehicle door	Fully open
Temperature setting	MAX COLD
Blower speed	HI
A/C	ON



(2) Compare the sight glass to the following chart.

AC

Item	Symptom	Amount of refrigerant	Corrective Actions
1	Bubbles exist	Insufficient*	1. Check for gas leakage and repair if necessary 2. Recharge with proper amount of refrigerant
2	No bubbles exist (DTC 76 is output)	Empty, insufficient, or excessive	Refer to 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	1. Check for gas leakage and repair if necessary 2. Evacuate the AC system and recharge with the proper amount of refrigerant
4	Considerable temperature difference between compressor inlet and outlet	Proper or excessive	Refer to 5 and 6
5	Immediately after air conditioning is turned off, refrigerant remains clear	Excessive	1. Recover refrigerant 2. Evacuate the AC system and recharge with the proper amount of refrigerant
6	Immediately after air conditioning is turned off, refrigerant foams and then becomes clear	Proper	-

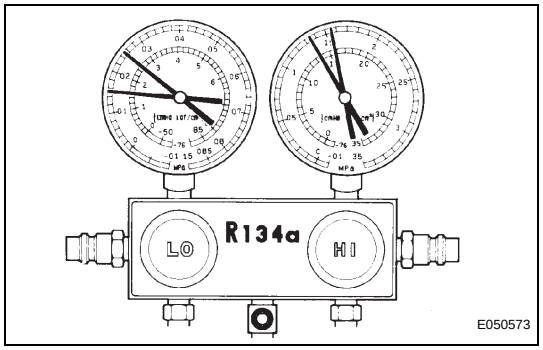
*: Bubbles in the sight glass with the vehicle's interior temperature above 35°C (95°F) can be considered normal if cooling is sufficient.

2. INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

HINT:

This is a method where a manifold gauge set is used to help locate the problem.

(a) Read the manifold gauge pressure when the following conditions are established.
Test conditions:
- Temperature at the air inlet with the switch set at RECIRC is 30 to 35°C (86 to 95°F)
- Engine is running at 1,500 rpm
- Blower speed control switch is at "HI"
- Temperature control dial is at "COOL"
- A/C switch is ON
- Doors are fully open
- Ignition switch is in a position that enables the AC compressor to run.



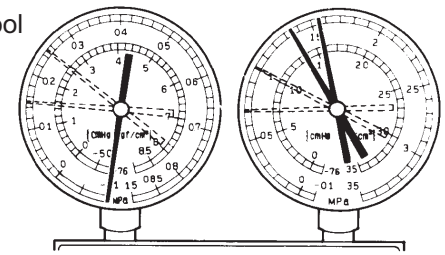
E050573

(1) Normally functioning refrigeration system
Gauge reading

Pressure side	Refrigerant volume
Low	0.15 to 0.25 MPa (1.5 to 2.5 kgf/cm^2, 21.3 to 35.5 psi)
High	1.37 to 1.57 MPa (14 to 16 kgf/cm^2, 199.1 to 227.5 psi)

(2) Moisture is present in refrigeration system.

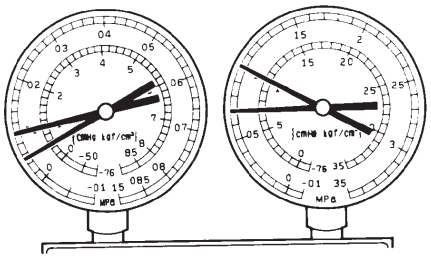
Condition:
Periodically cools and then fails to cool


I022117E21

Symptom	Probable Cause	Diagnosis	Corrective Actions
During operation, pressure on low pressure side cycles between normal and vacuum	Moisture in AC system will freeze at the expansion valve orifice, causing the refrigeration cycle to temporarily stop After the system stops, and warms up again, the ice will melt and normal operation will be temporarily restored	• Cooler dryer (integrated into condenser tank) in oversaturated state • Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant	1. Replace cooler dryer 2. Remove moisture in system by repeatedly evacuating air 3. Supply a proper amount of new refrigerant

(3) Insufficient cooling

Condition: Cooling system does not function effectively.

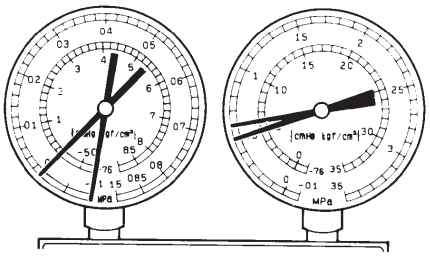

I022118E13

AC

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is low on both low and high pressure sides • Bubbles are seen through sight glass continuously • Insufficient cooling performance	Gas leakage from the refrigeration system	• Insufficient refrigerant • Refrigerant leaking	1. Check for gas leakage and repair if necessary 2. Supply a proper amount of new refrigerant 3. If the gauge indicates a pressure of close to 0, then it will be necessary to evacuate the system after repairing the leak

(4) Poor circulation of refrigerant

Condition: Cooling system does not function effectively.



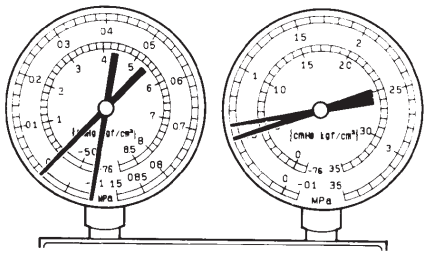
I022119E14

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is low on both low and high pressure sides • Frost exists on pipe from condenser to unit	Refrigerant flow is obstructed by dirt inside the pipes of the condenser core	Receiver is clogged	Replace condenser

(5) Refrigerant does not circulate.

AC

Condition : Cooling system does not function. (Sometimes it may function.)

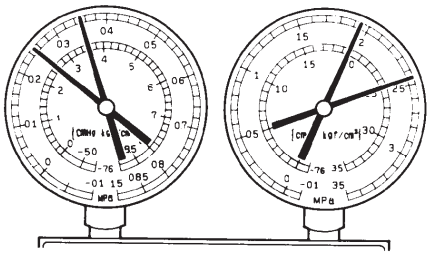


I022120E14

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Vacuum is indicated on low pressure side and very low pressure is indicated on high pressure side • Frost or condensation is seen on piping on both sides of receiver/drier or expansion valve	• Refrigerant flow is obstructed by moisture or dirt in refrigeration system • Refrigerant flow is disrupted by gas leaking internally through the expansion valve	Refrigerant does not circulate	1. Check the expansion valve 2. Replace expansion valve 3. Replace condenser 4. Evacuate air and supply a proper amount of new refrigerant 5. For internal gas leak at expansion valve, replace expansion valve

(6) Refrigerant is overcharged or cooling effectiveness of condenser is insufficient.

Condition: Cooling system does not function.



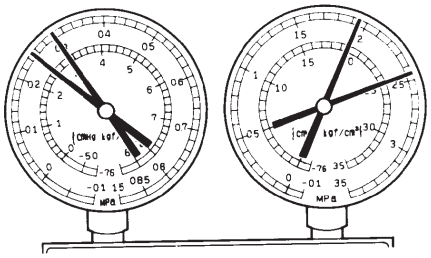
I022121E14

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is too high on both low and high pressure sides • No air bubbles are seen through sight glass even when engine rpm lowers	• Unable to develop sufficient performance due to excessive use of refrigeration system • Cooling effectiveness of condenser is insufficient	• Excessive refrigerant in cycle → excessive refrigerant was added during recharging • Condenser cooling effectiveness is insufficient → condenser fins are clogged at cooling fan	1. Clean condenser 2. Check the operation of the condenser cooling fan 3. If 1 and 2 are normal state, check the amount of refrigerant and supply proper amount of refrigerant

(7) Air is present in refrigeration system.

Condition: Cooling system does not function.

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

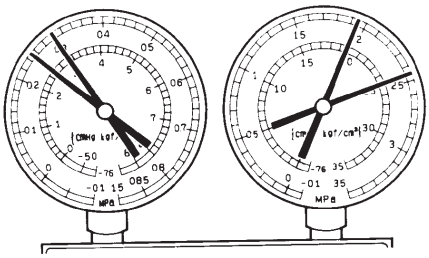


I022122E06

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is too high on both low and high pressure sides • The low pressure piping is too hot to touch • Bubbles can be seen through sight glass	Air in system	• Air present in refrigeration system • Insufficient vacuum purging	1. Check compressor oil to see if it is dirty or insufficient 2. Evacuate the system and recharge it with new or purified refrigerant

(8) Expansion valve malfunction

Condition: Insufficient cooling

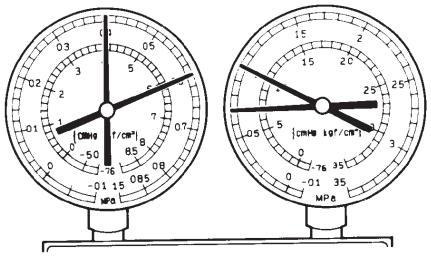


I022123E05

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is too high on both low and high pressure sides • Frost or a large amount of condensation on piping on low pressure side	Expansion valve may be sticking	• Excessive refrigerant in low pressure piping • Expansion valve opened too wide	Check expansion valve

(9) Insufficient compressor compression

Condition: Insufficient cooling



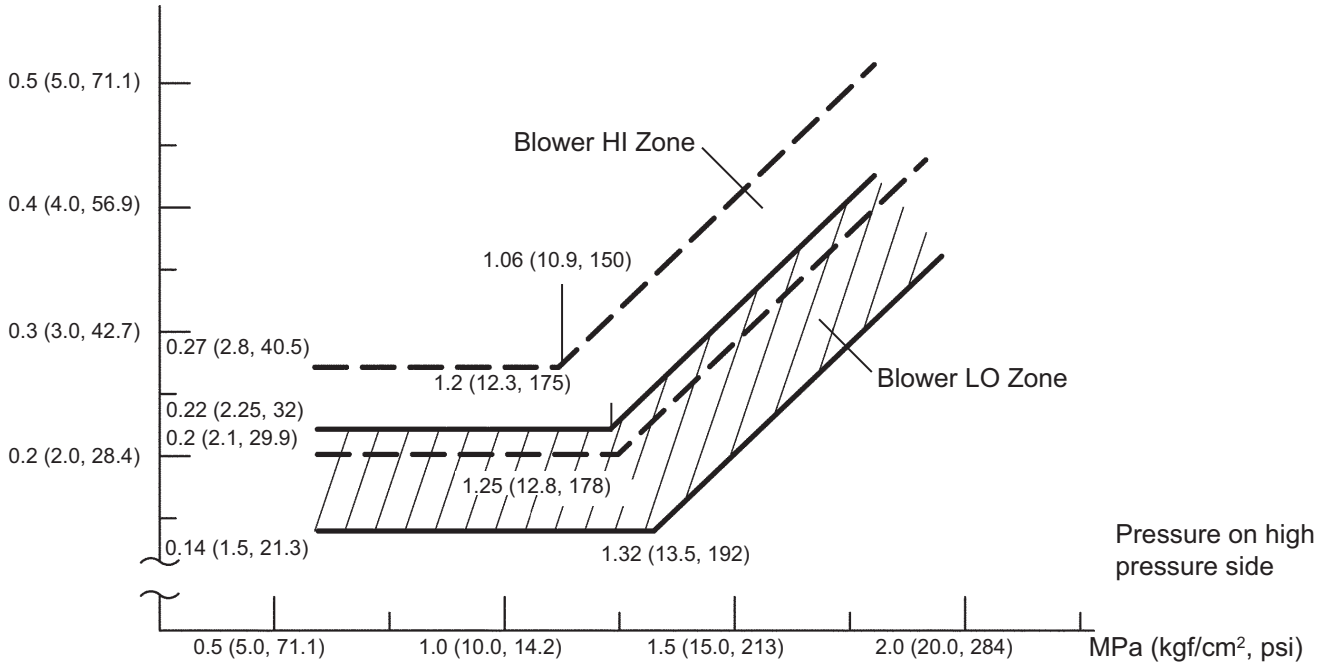
I022124E05

Symptom	Probable Cause	Diagnosis	Corrective Actions
• Pressure is too high both on low and high pressure sides • Pressure is too low on high pressure side	Internal leak in compressor	• Low compression • Leak from a damaged valve, or parts may be broken	Replace compressor

Gauge readings (Reference)

Pressure on low pressure side

AC



I030081E07

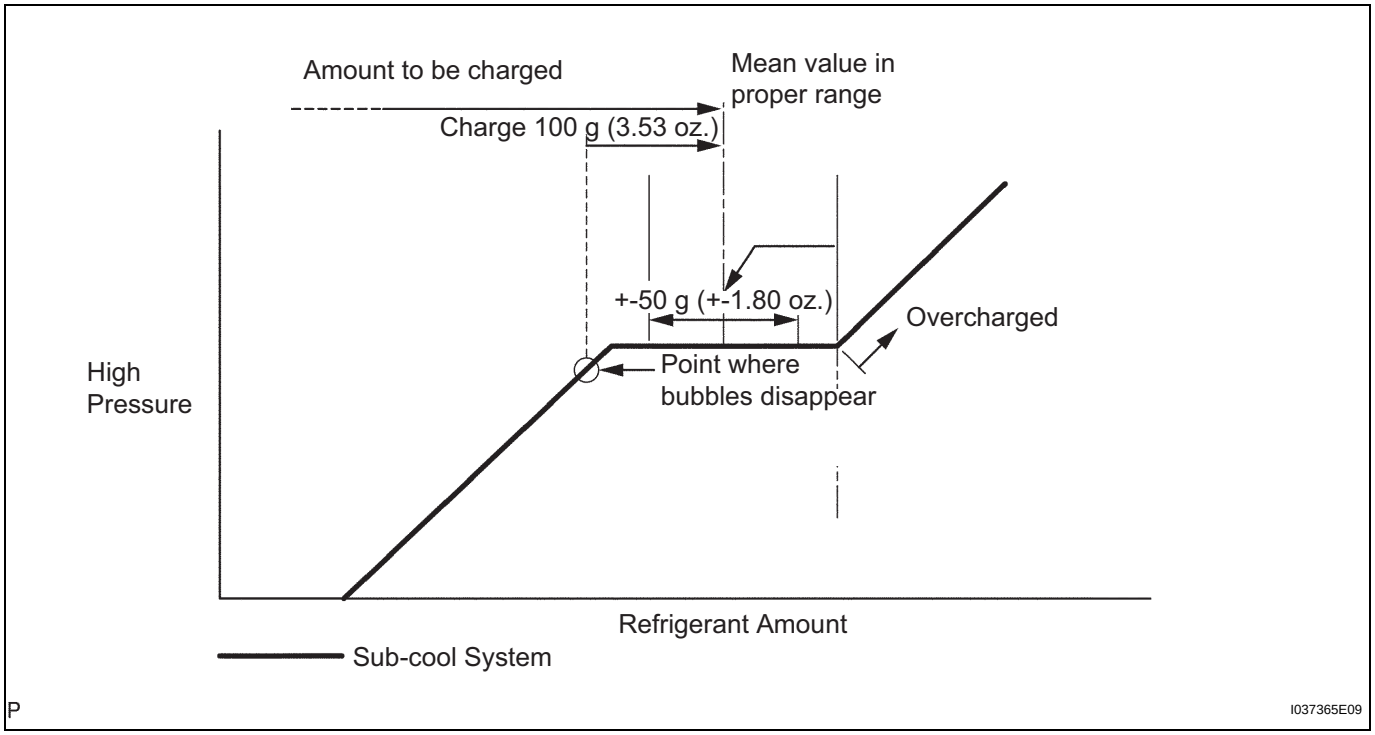
REPLACEMENT

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

(a) Start up the engine.
(b) Turn the A/C switch on.
(c) Operate the cooler compressor at an engine speed of approximately 1,000 rpm for 5 to 6 minutes to circulate the refrigerant. This causes most of the compressor oil from the various components of the A/C system to collect in the A/C compressor.
(d) Stop the engine.
(e) Recover the refrigerant from the A/C system using a refrigerant recovery unit.

2. CHARGE WITH REFRIGERANT

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



Standard:
450 to 550 g (15.9 to 19.4 oz.)

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

NOTICE:

- **Do not turn the A/C on before charging with refrigerant. Doing so will cause the cooler compressor to work without refrigerant, resulting in overheating of the cooler compressor.**

AC

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

HINT:
Ensure that sufficient refrigerant is available to recharge the system when using a refrigerant recovery unit. Refrigerant recovery units are not always able to recover 100 % of the refrigerant from an A/C system.

3. WARM UP ENGINE

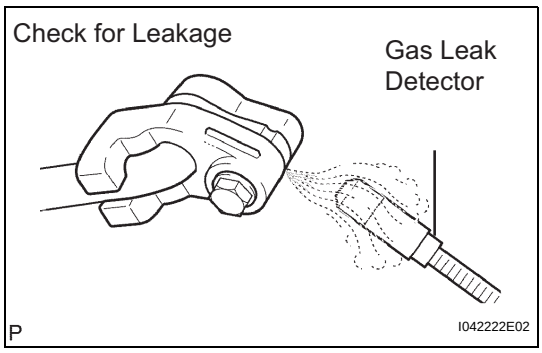
(a) Keep the A/C switch on for at least 2 minutes to warm up the compressor.
NOTICE:
Be sure to warm up the compressor when turning the A/C on after removing and installing the cooler refrigerant lines (including the compressor), to prevent damage to the compressor.

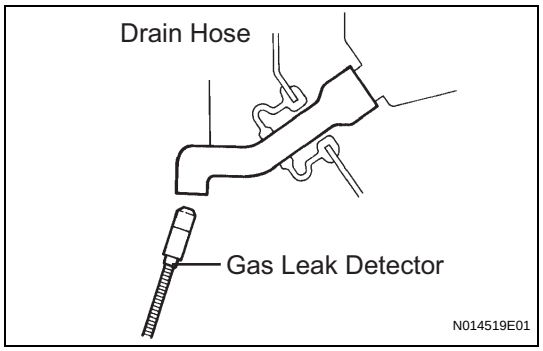
4. CHECK FOR LEAKAGE OF REFRIGERANT

(a) After recharging with refrigerant gas, check for leakage of refrigerant gas using a halogen leak detector.

(b) Carry out the test under the following conditions:
- IG OFF
- Secure good ventilation (the gas leak detector may react to volatile gases which are not refrigerant, such as evaporated gasoline and exhaust gas).
- Repeat the test 2 or 3 times.
- Make sure that there is some refrigerant remaining in the refrigeration system.
  When the compressor is off: approx. 392 to 588 kPa (4 to 6 kgf/cm^2, 57 to 85 psi)

(c) Using a gas leak detector, check for leakage from the refrigerant lines.





(d) Bring the gas leak detector close to the drain hose with the detector's power off, and then turn the detector on.
HINT:
- After the blower motor has stopped, let the cooling unit stand for more than 15 minutes.
- Bring the gas leak detector sensor under the drain hose.
- When bringing the gas leak detector close to the drain hose, make sure that the gas leak detector does not react to volatile gases.
  If it is not possible to avoid interference from volatile gases, the vehicle should be lifted up to allow testing.

(e) If a gas leak is not detected from the drain hose, remove the blower motor control from the cooling unit. Insert the gas leak detector sensor into the unit and perform the test.

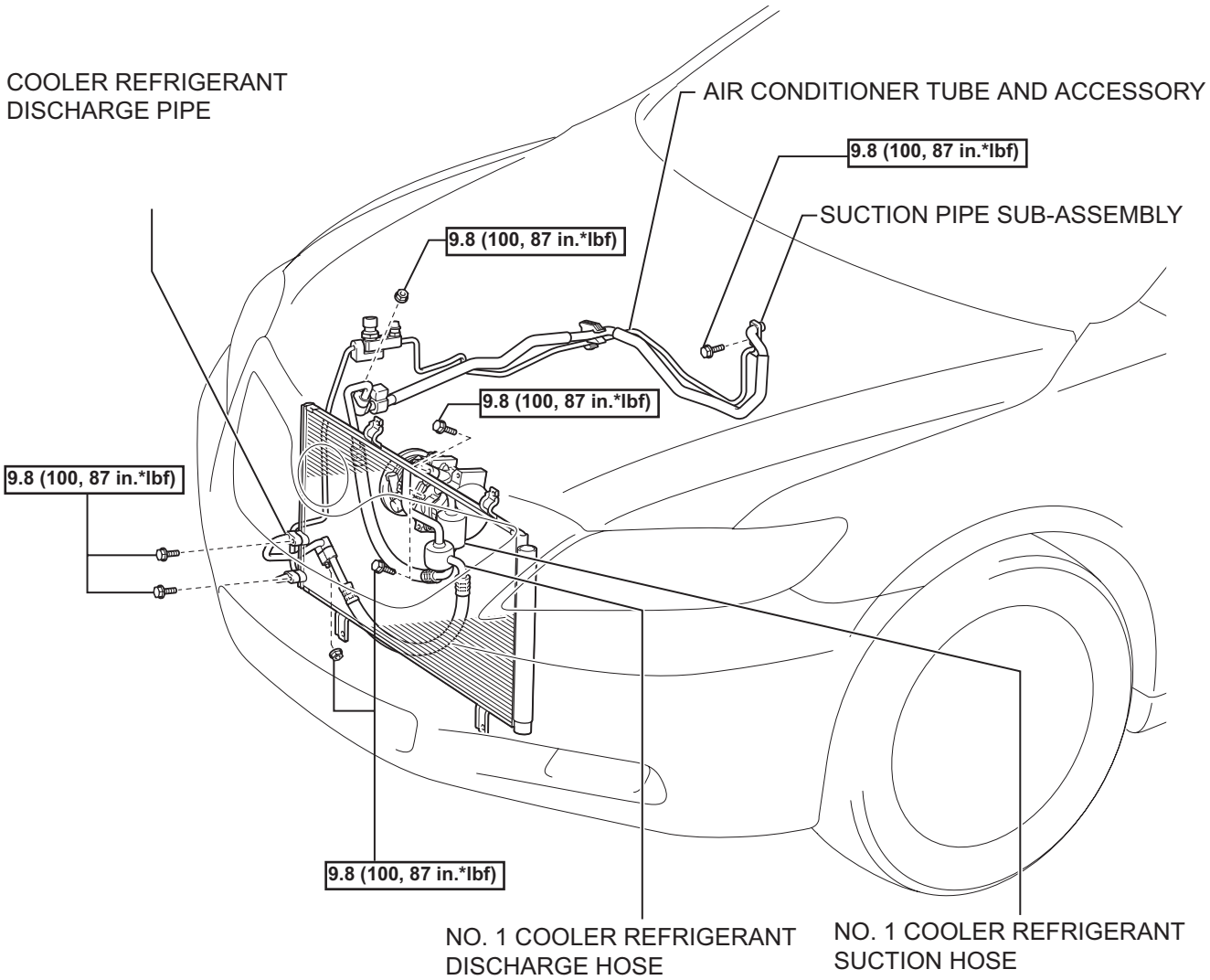
(f) Disconnect the pressure switch connector and leave it for approximately 20 minutes. Bring the gas leak detector close to the pressure switch and perform the test.

AC

REFRIGERANT LINE

COMPONENTS

for TMC Made 2AZ-FE:



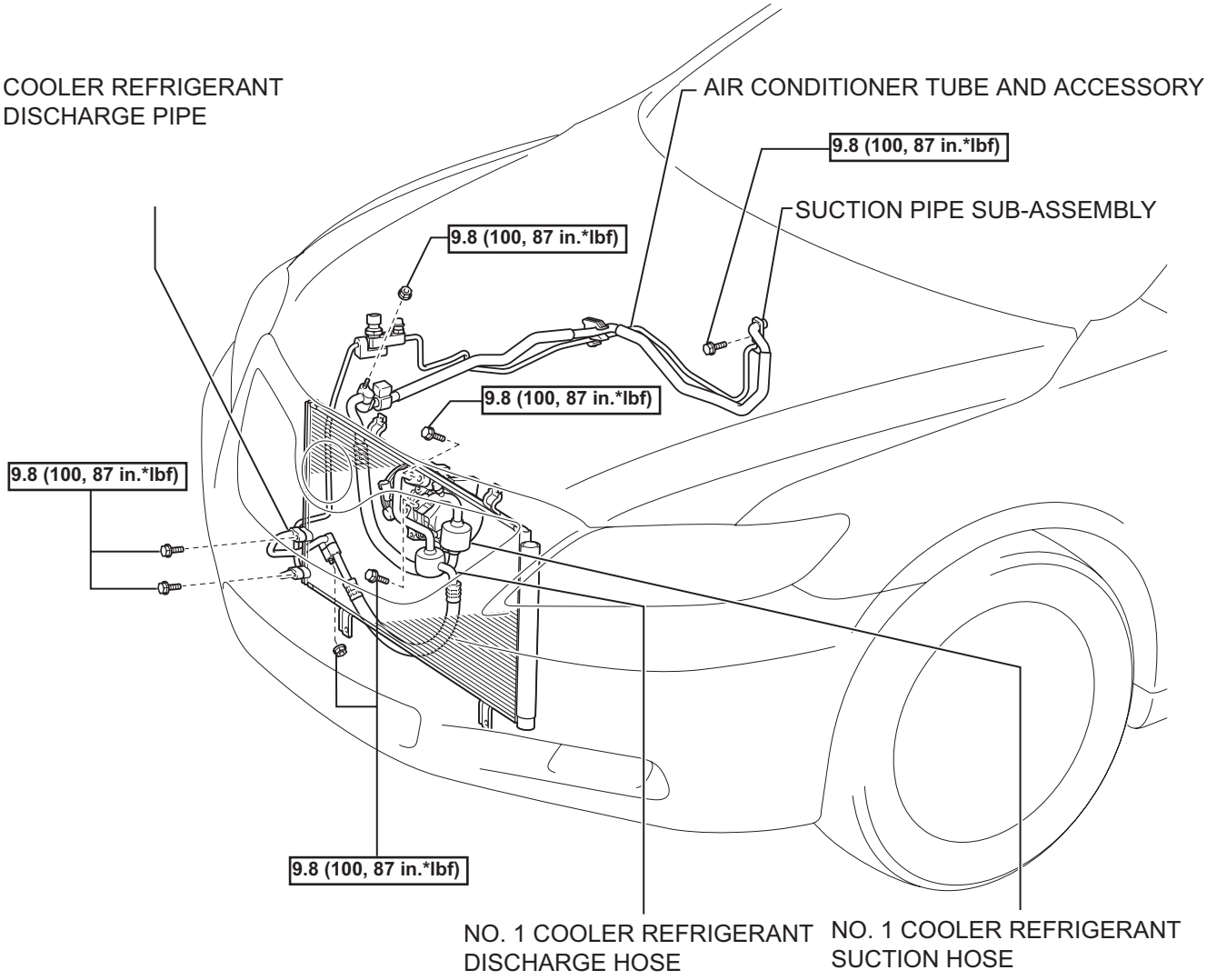
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

P

E128497E01

for TMC Made 2GR-FE:



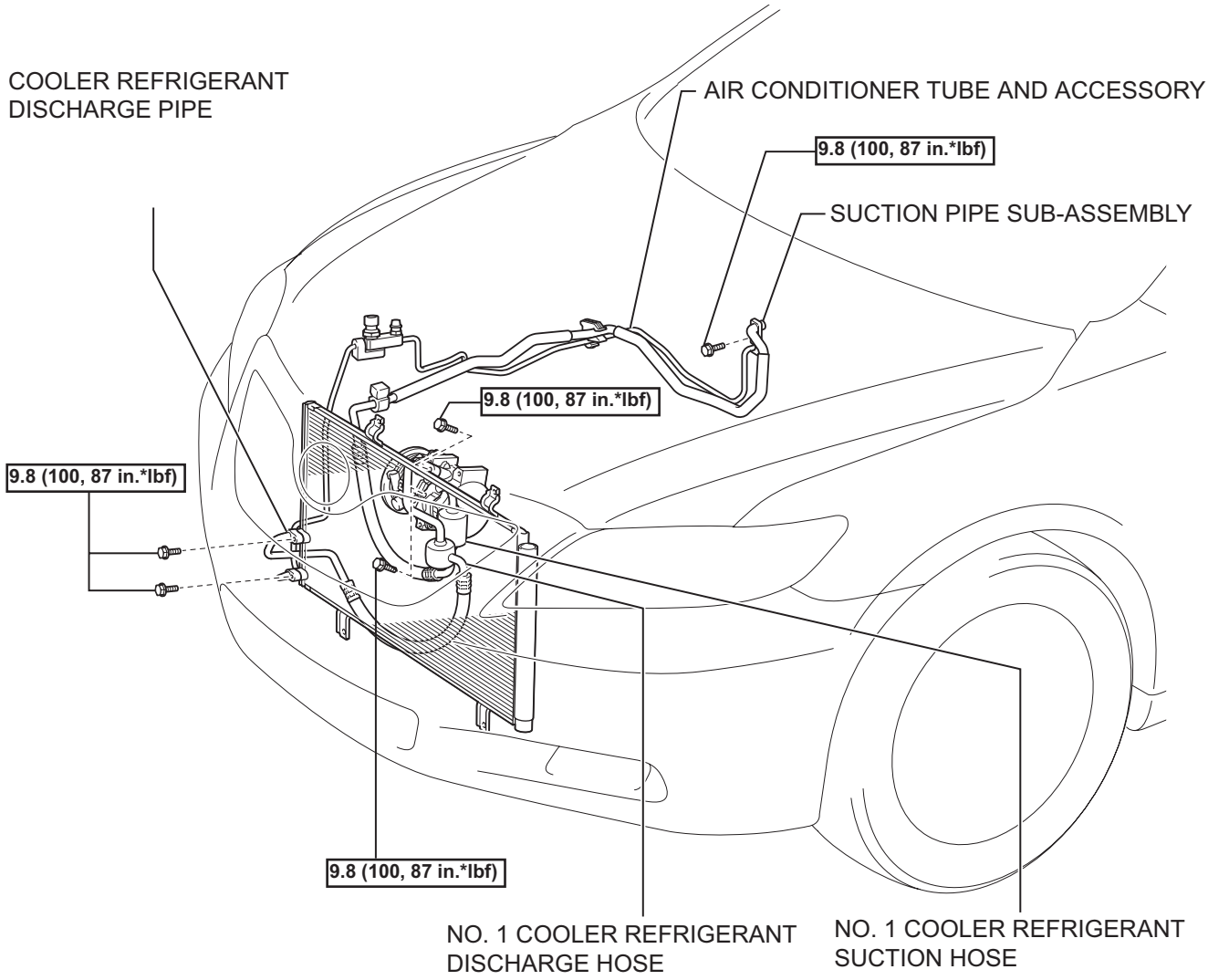
N*m (kgf*cm, ft.*lbf): Specified torque

P

E128496E01

AC

for TMMK Made 2AZ-FE:

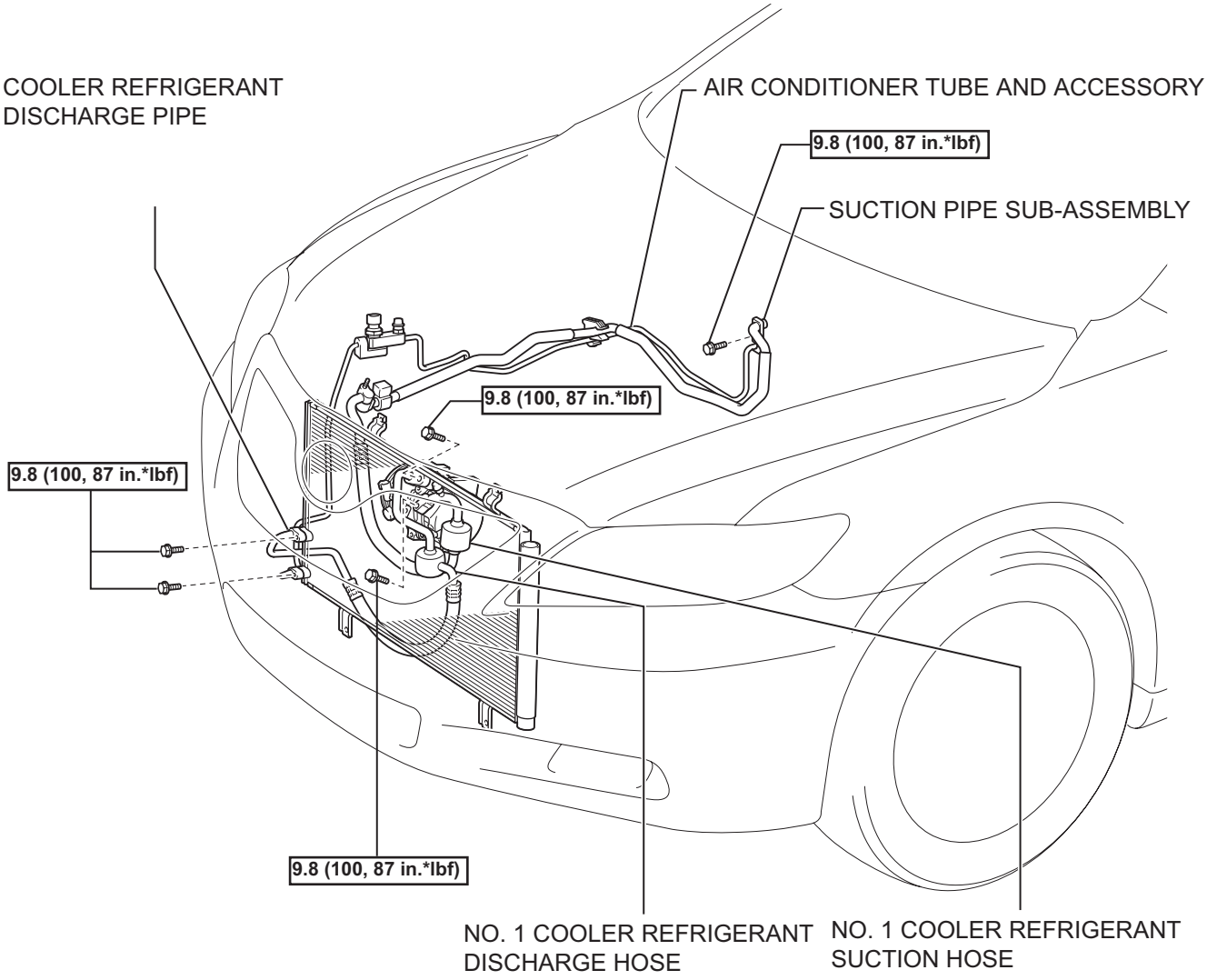


N*m (kgf*cm, ft.*lbf) : Specified torque

P

E129999E01

for TMMK Made 2GR-FE:



N*m (kgf*cm, ft.*lbf) : Specified torque

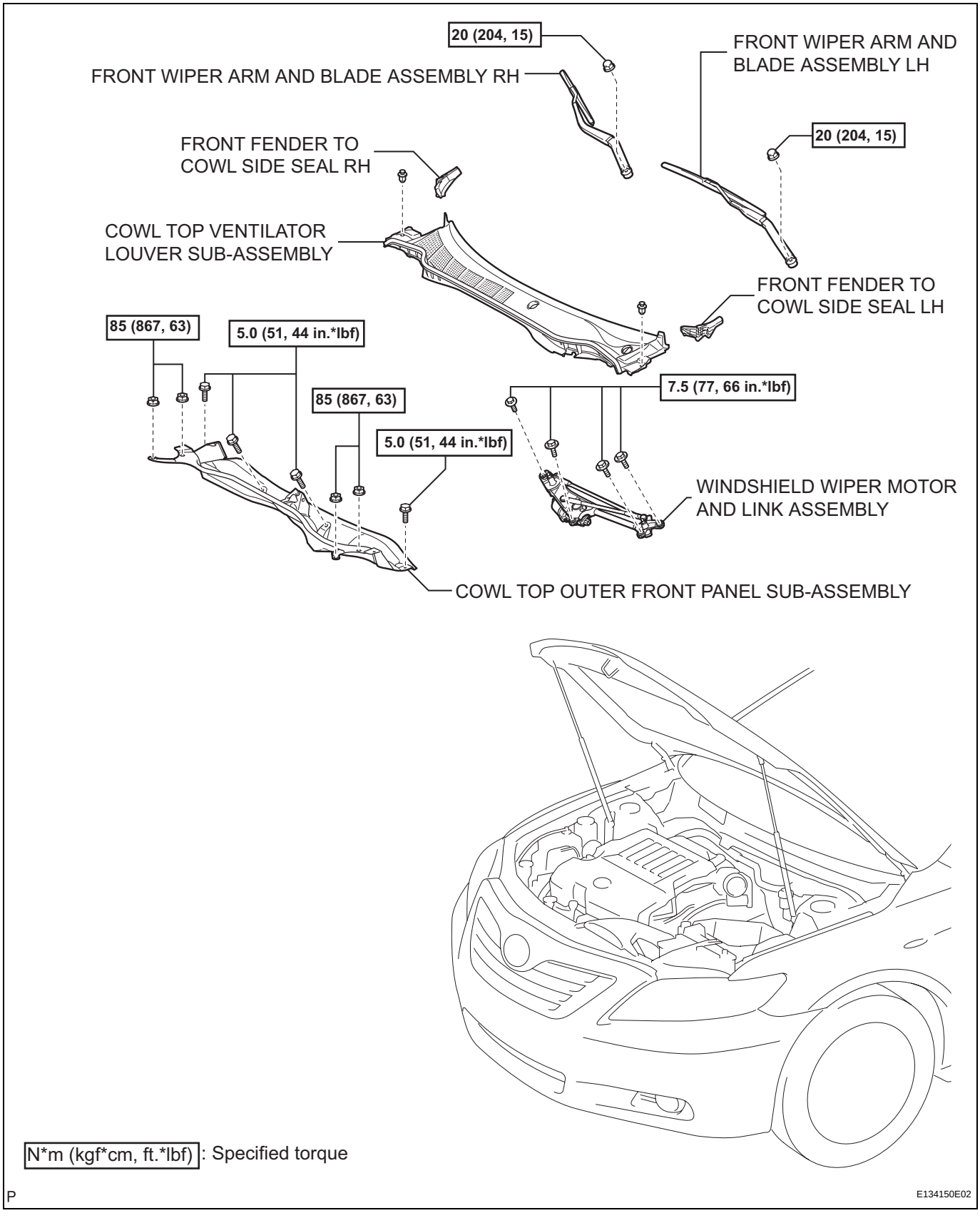
P

E130000E01

AC

AIR CONDITIONING UNIT

COMPONENTS



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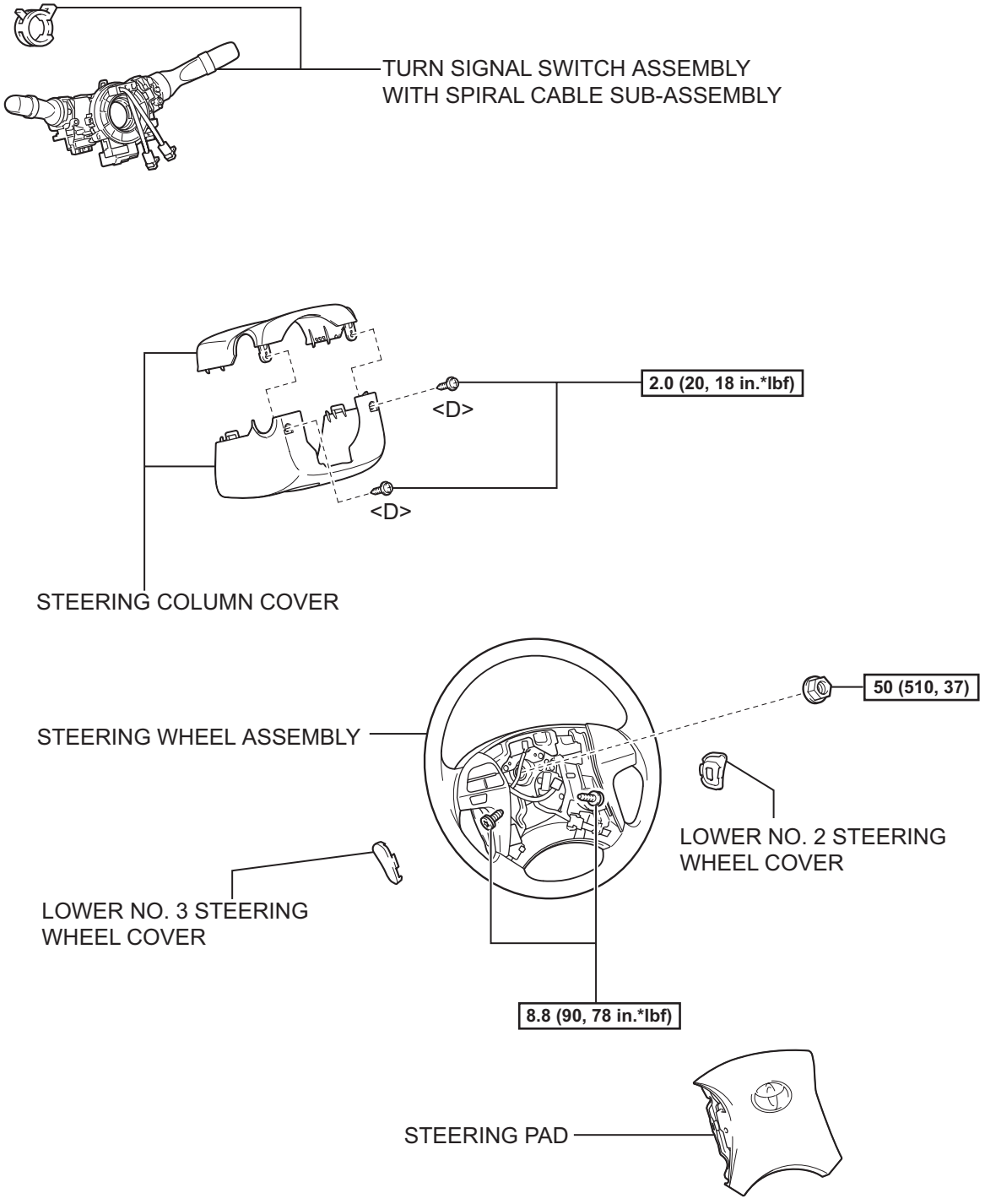
for TMC Made:



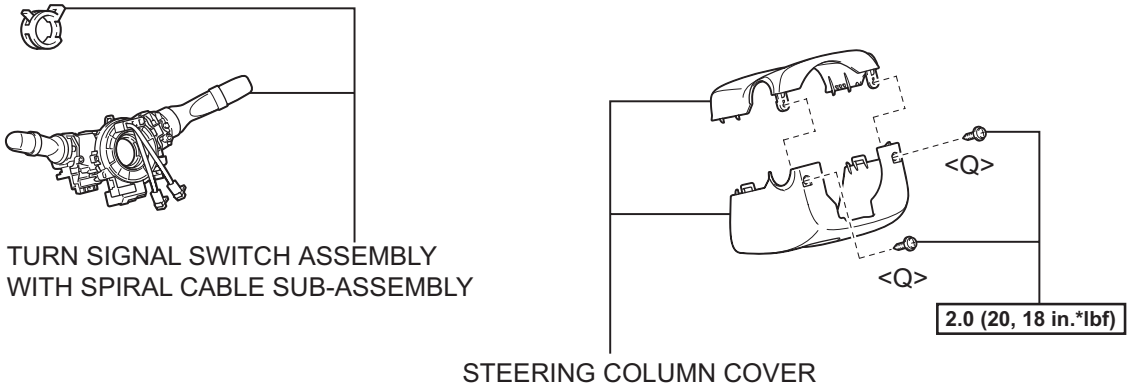
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

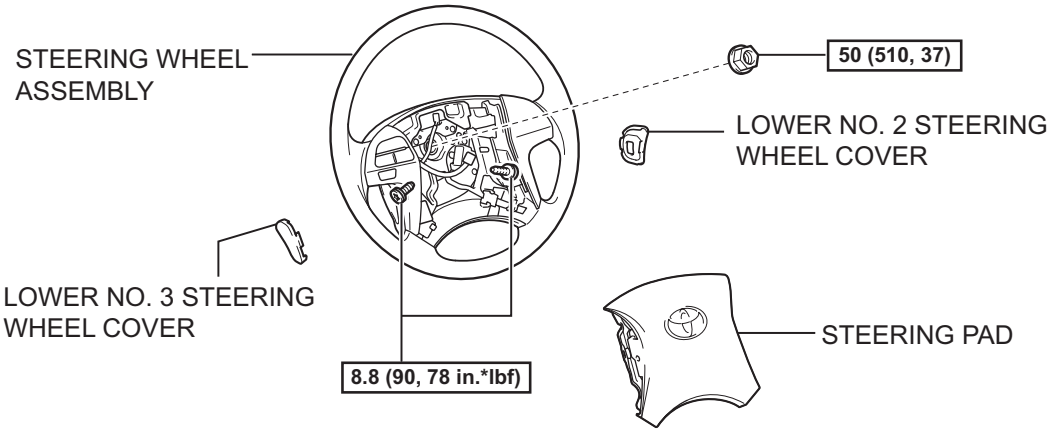
P

B137279E01

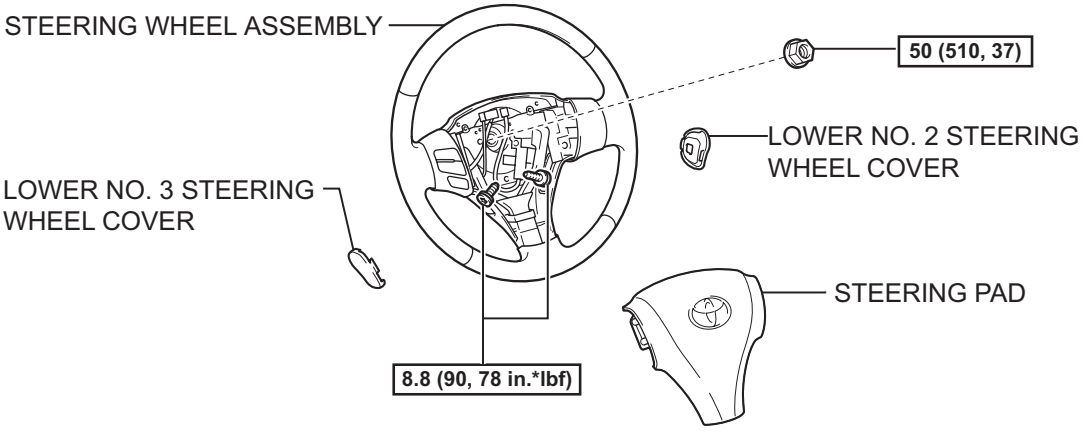
for TMMK Made:



for 4 Spoke:



for 3 Spoke:



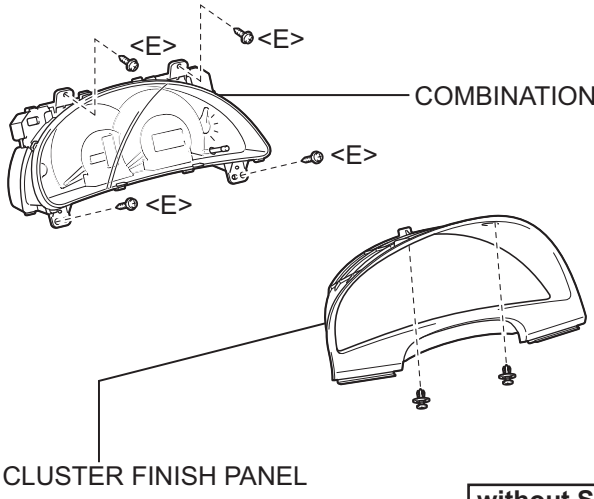
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

P

B137280E01

for TMC Made:



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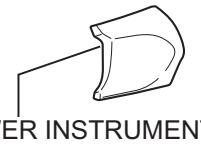

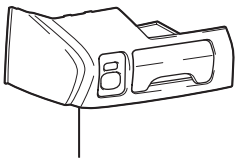

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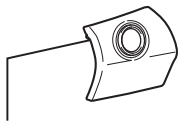

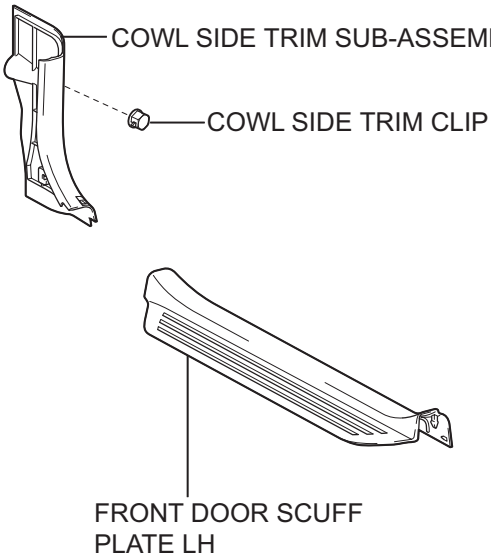

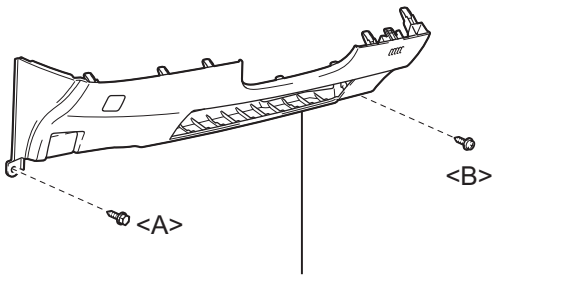

AC

P

B137281E01

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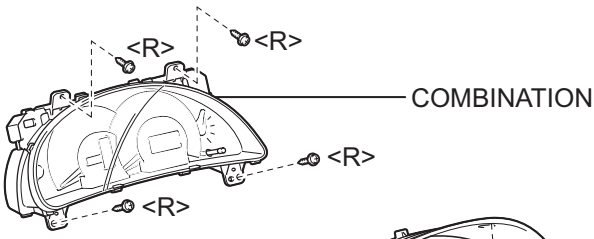
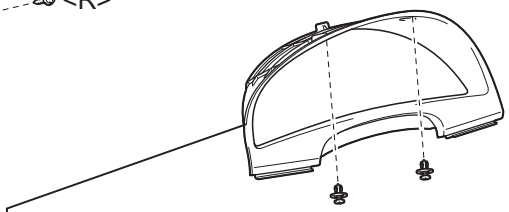
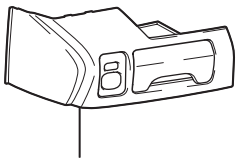




INSTRUMENT CLUSTER FINISH PANEL

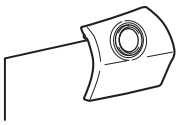
without Smart Key System:

LOWER INSTRUMENT PANEL FINISH PANEL



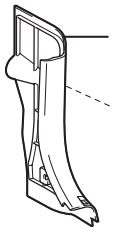
NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY

with Smart Key System:



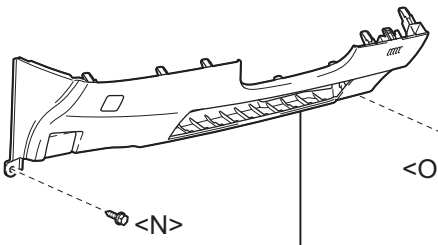
LOWER INSTRUMENT PANEL FINISH PANEL

AC

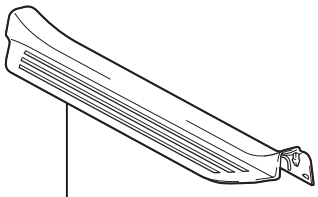


COWL SIDE TRIM SUB-ASSEMBLY LH

COWL SIDE TRIM CLIP



LOWER INSTRUMENT PANEL FINISH PANEL LH

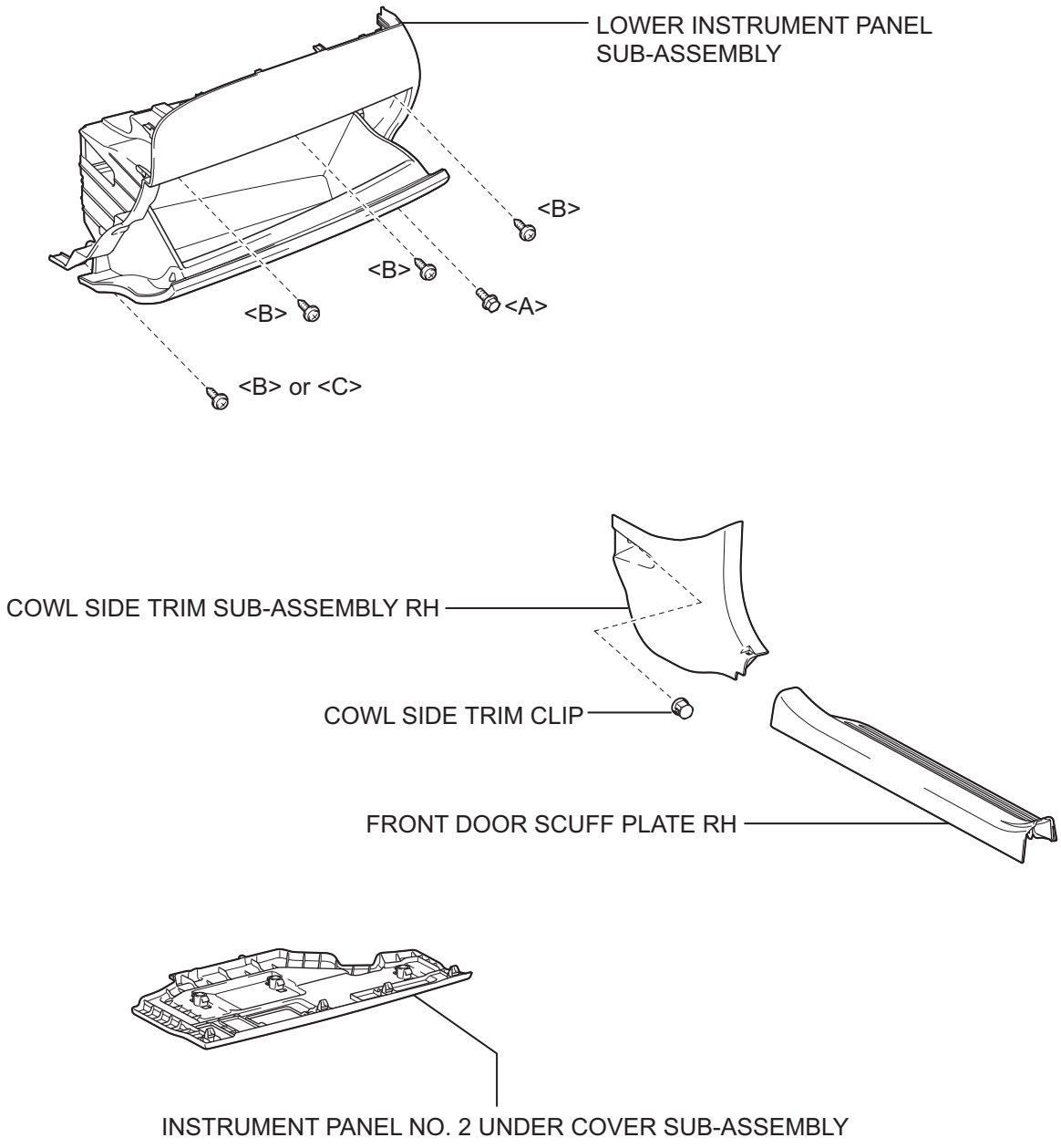


FRONT DOOR SCUFF PLATE LH

P

B137281E03

for TMC Made:



P

B137282E01

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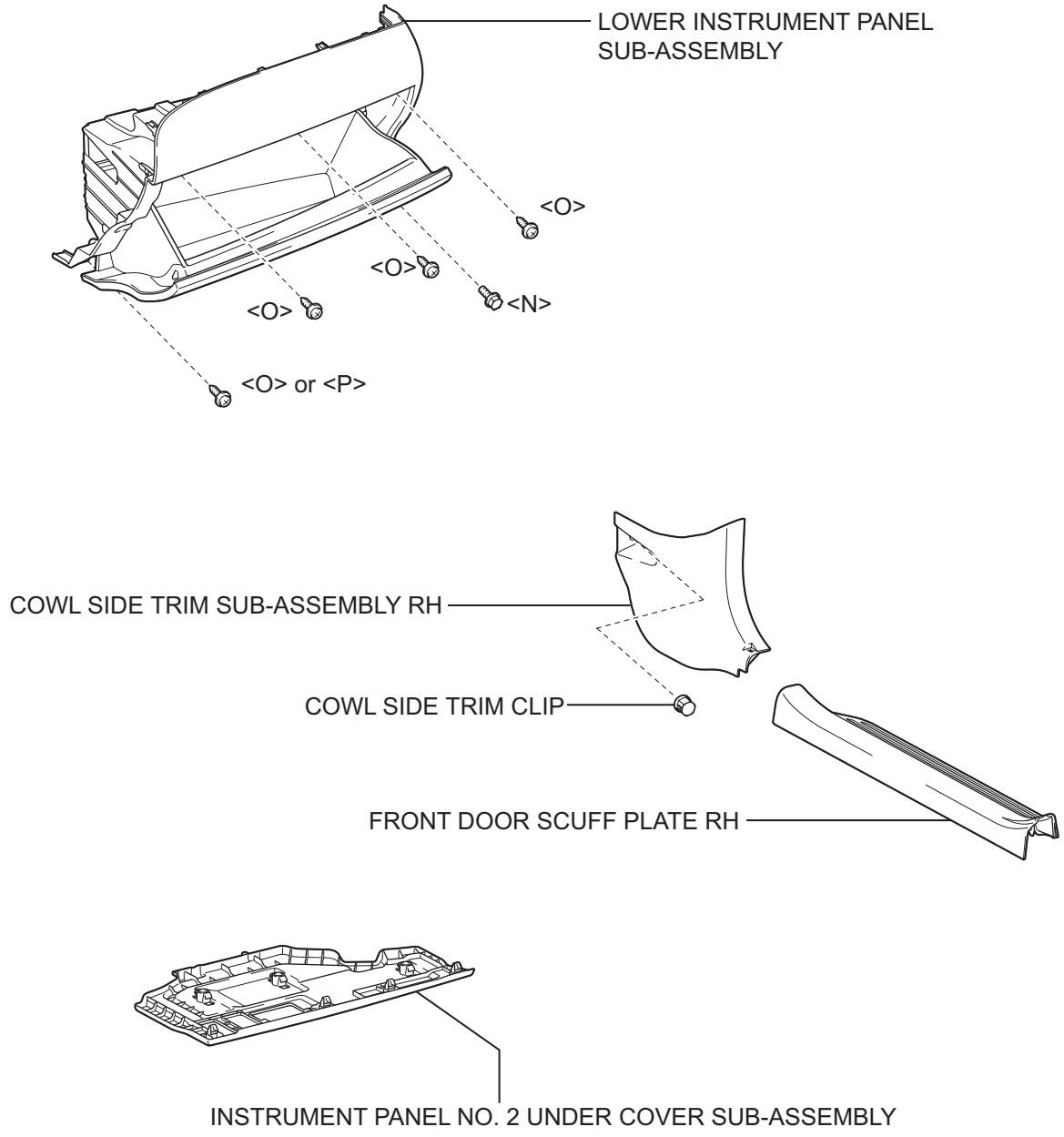

P

B137282E03

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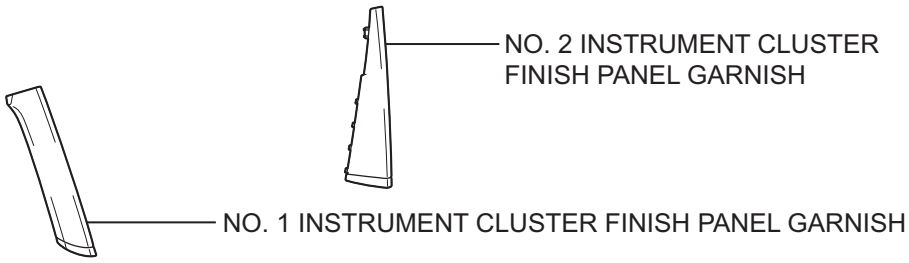
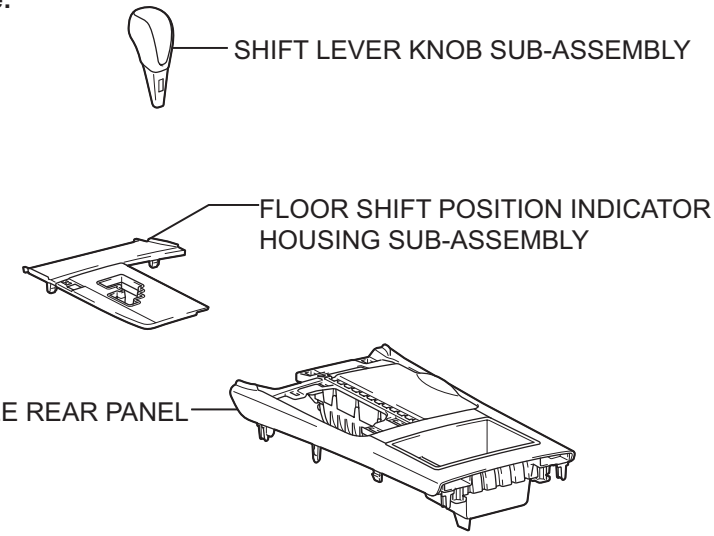


for Automatic Transaxle:



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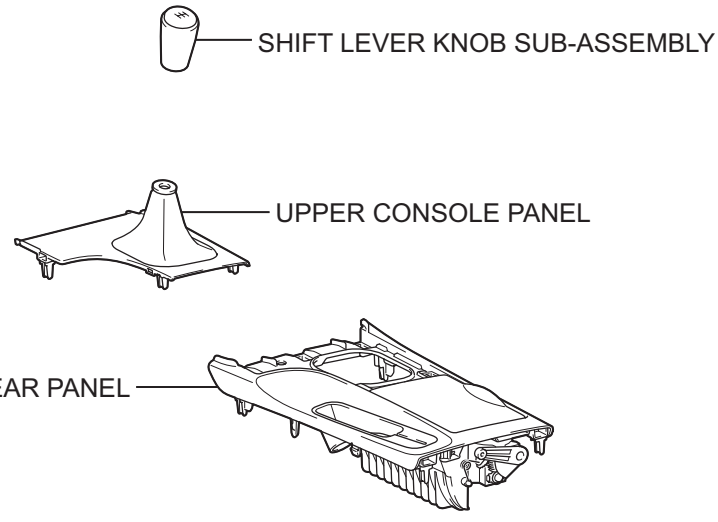
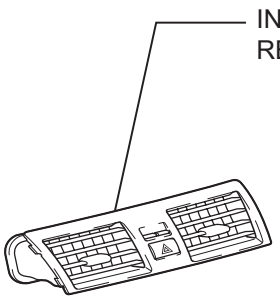


AC

P

B137283E01

for TMC Made:



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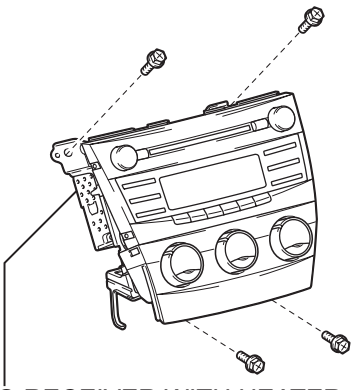

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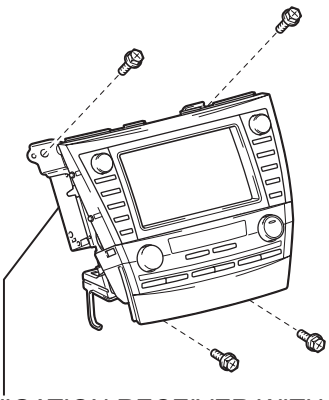

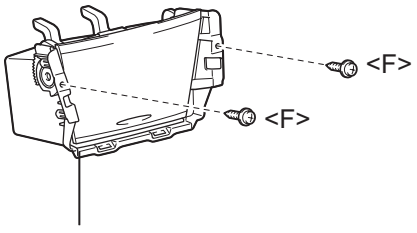

AC

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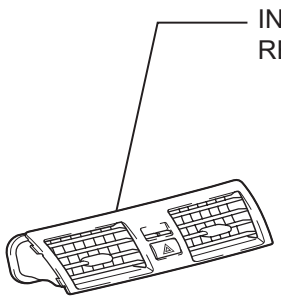
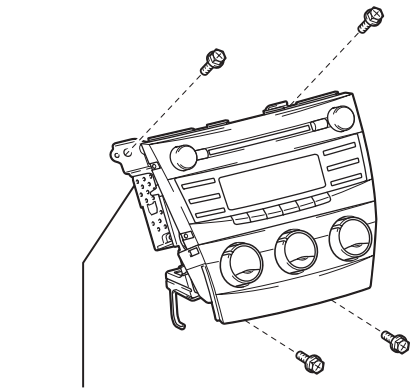
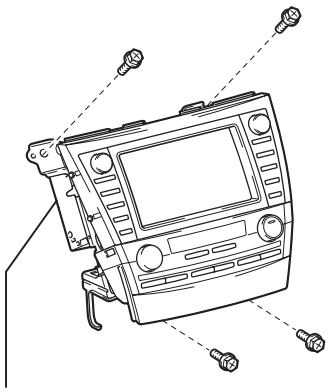
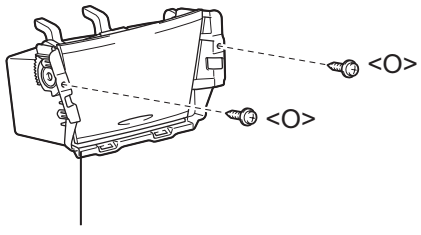


without Navigation System:	**with Navigation System:**
	
RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY	NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY



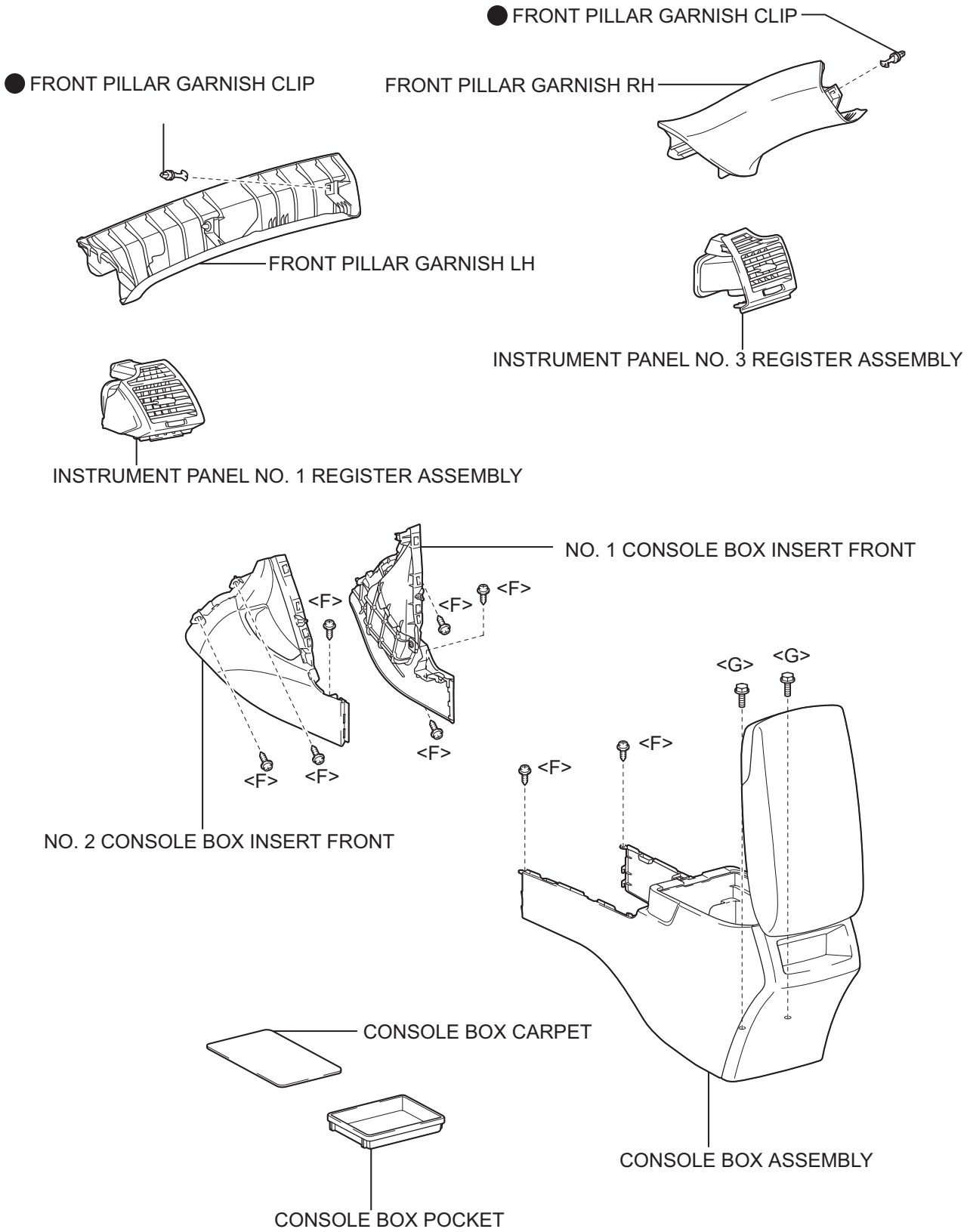
UPPER CONSOLE PANEL SUB-ASSEMBLY

AC

P

B137284E03

for TMC Made:



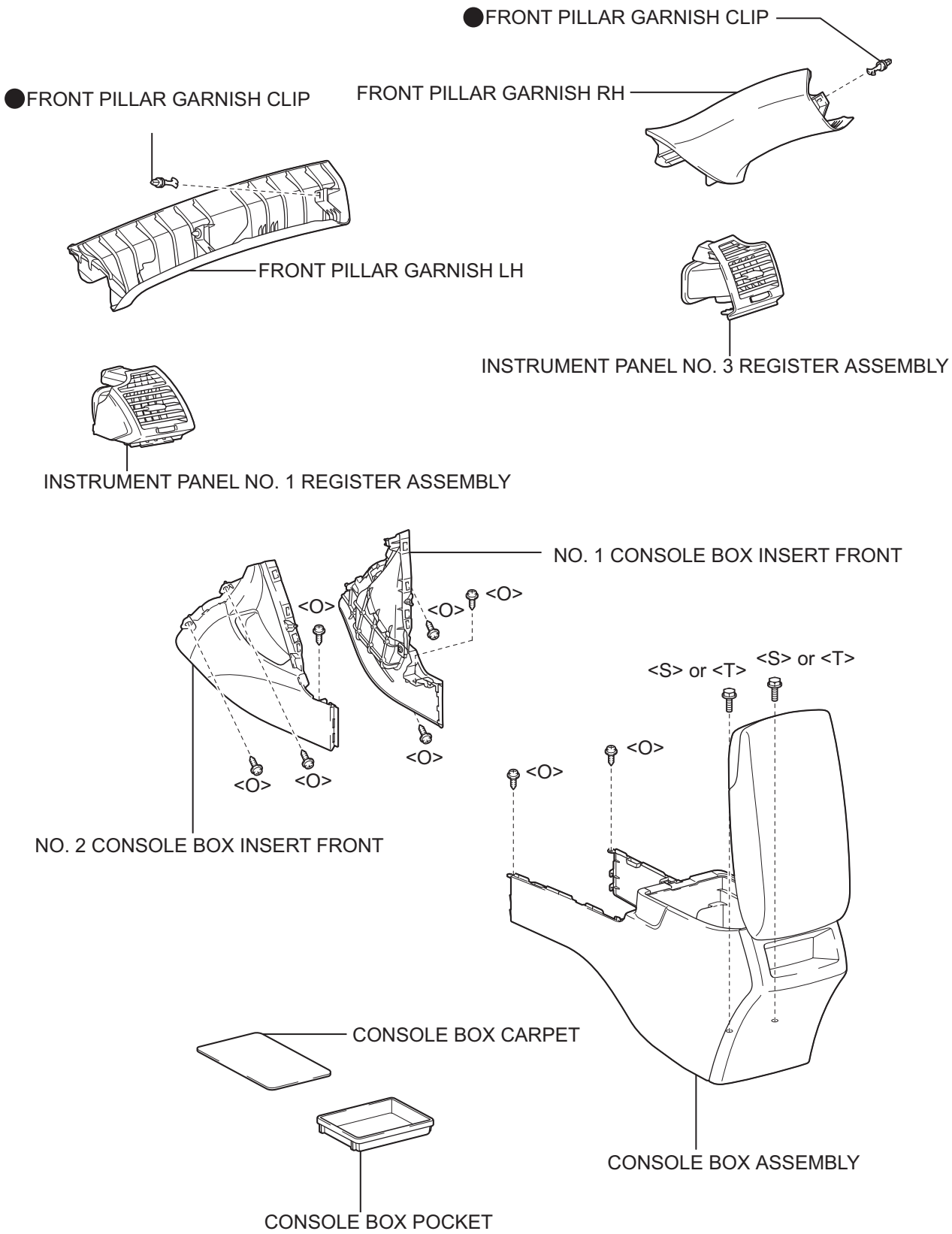
AC

● Non-reusable part

P

B137285E01

for TMMK Made:



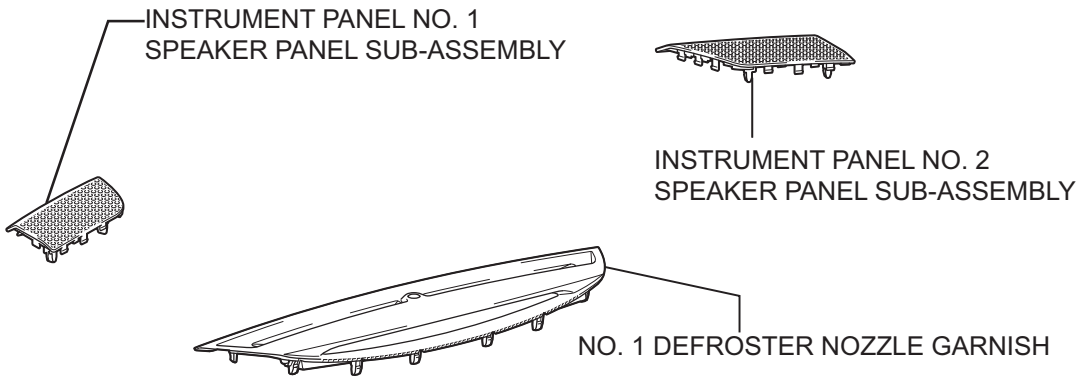
● Non-reusable part

P

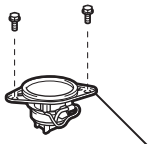
B137285E03

AC

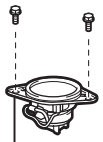
for TMC Made:



for LH Side:



for RH Side:



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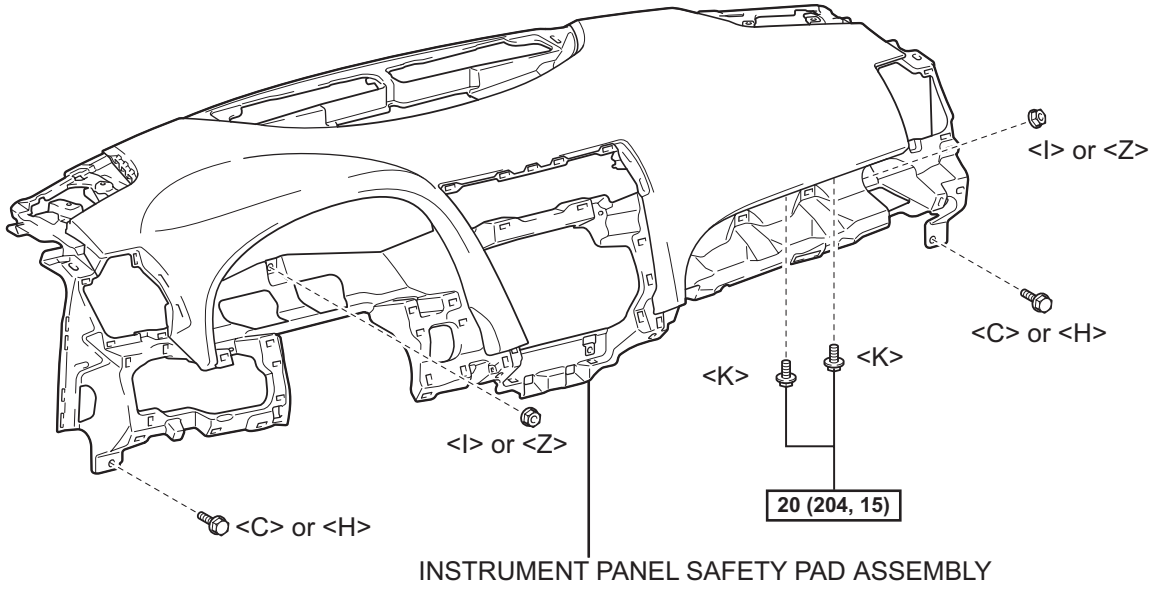
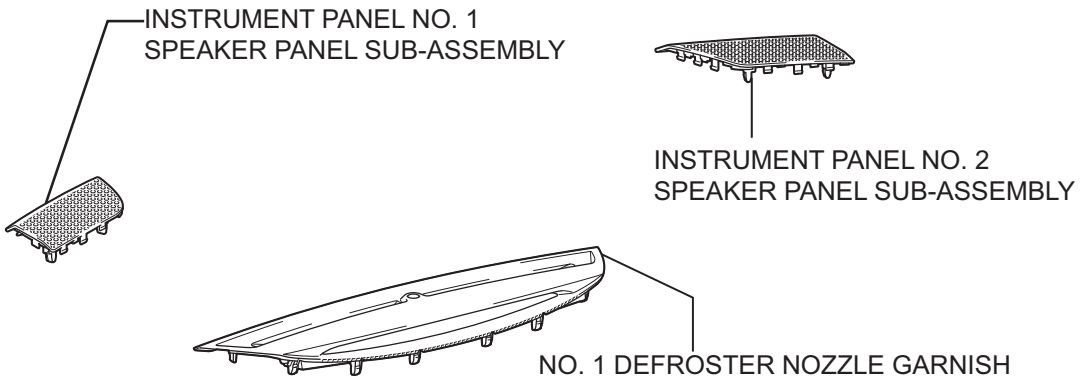


N*m (kgf*cm, ft.*lbf) : Specified torque

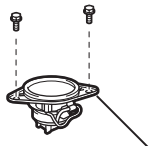
P

B137286E01

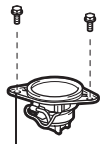
for TMMK Made:

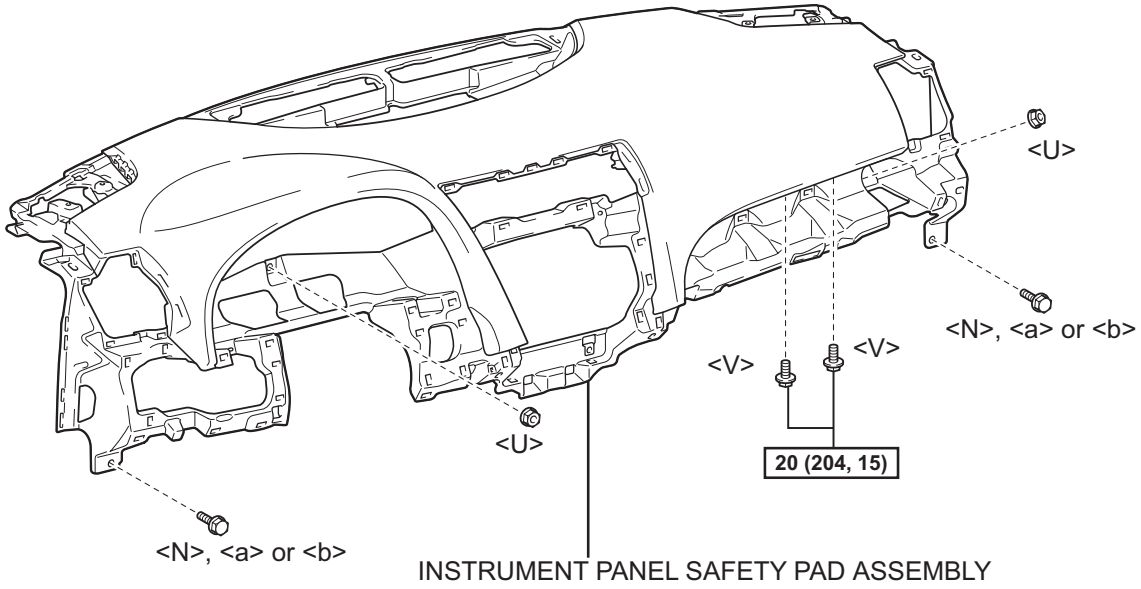


for LH Side:



for RH Side:



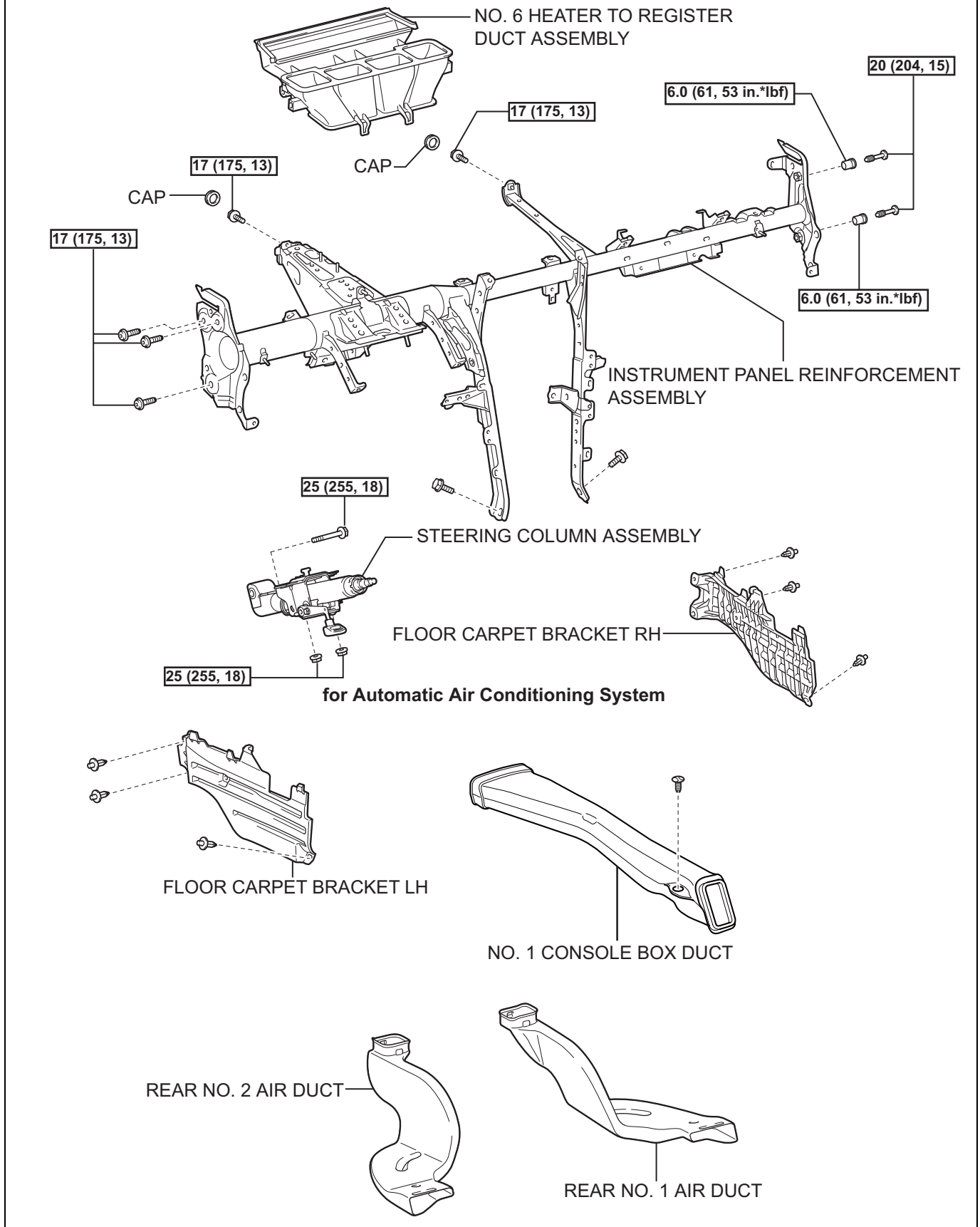


AC

N*m (kgf*cm, ft.*lbf) : Specified torque

P

B137286E03



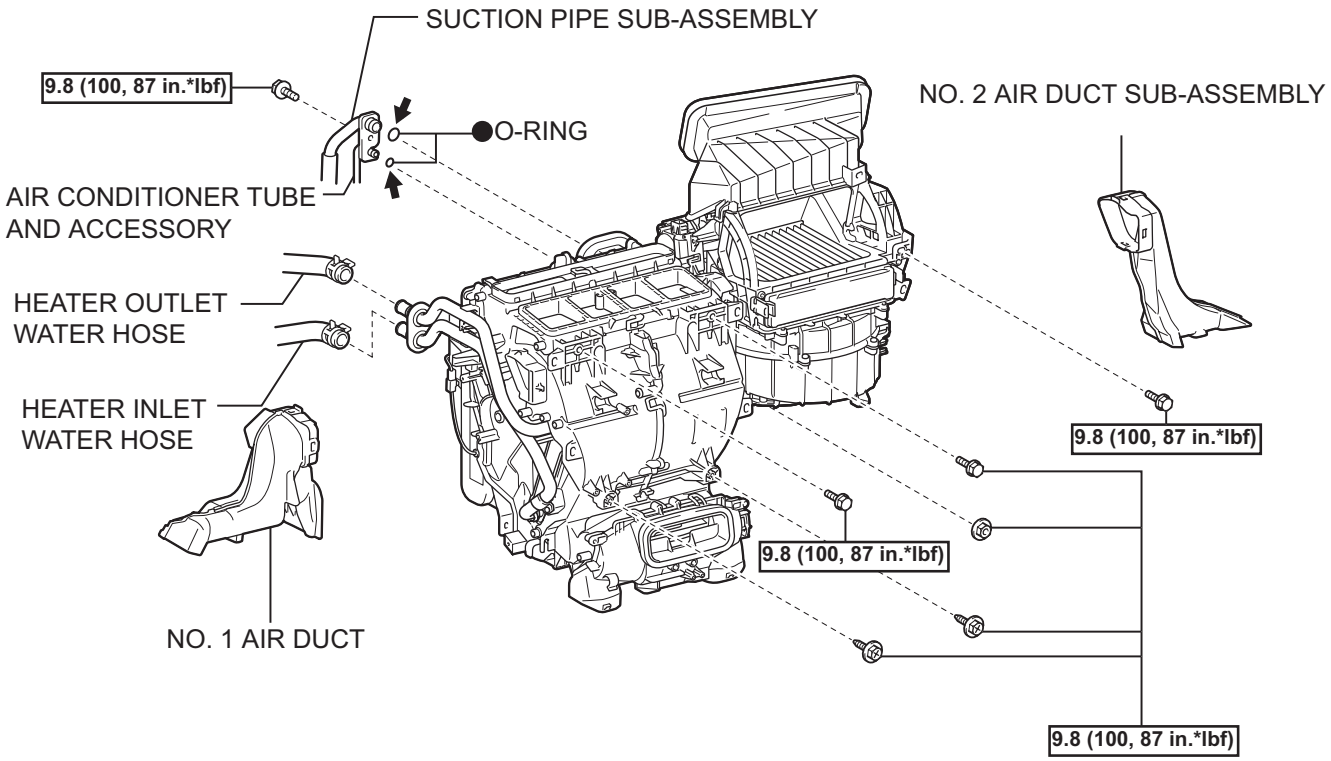
AC

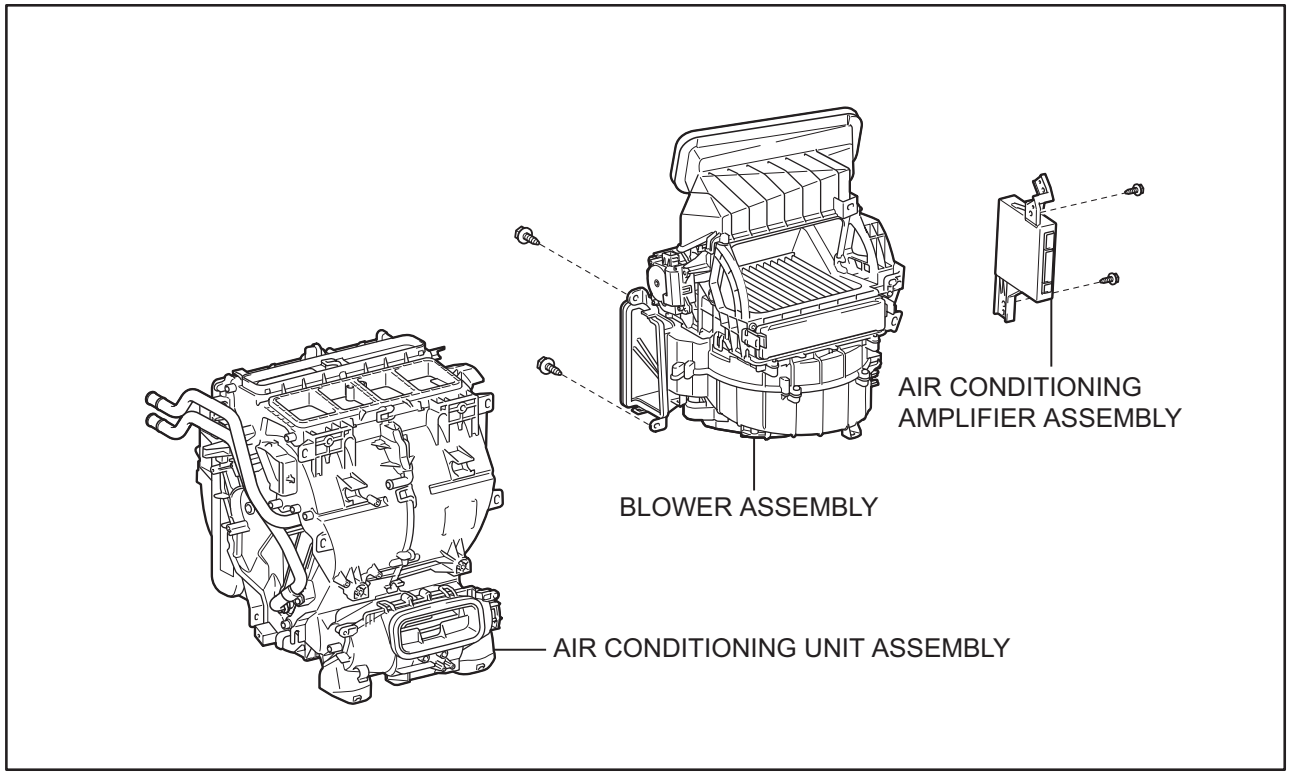
N*m (kgf*cm, ft.*lbf) : Specified torque

P

E128500E01

for TMC Made:





AC

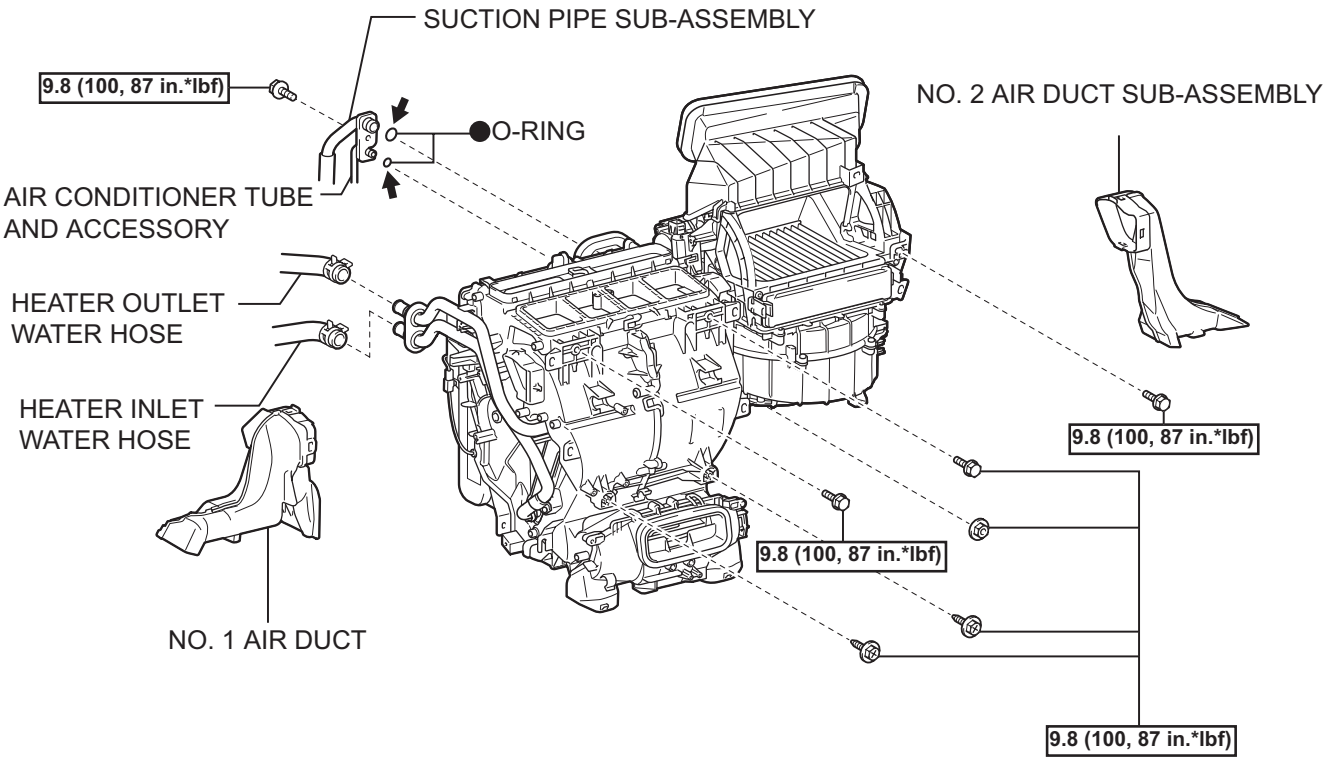
⬅ Compressor oil ND-OIL 8 or equivalent

● Non-reusable part N*m (kgf*cm, ft.*lbf): Specified torque

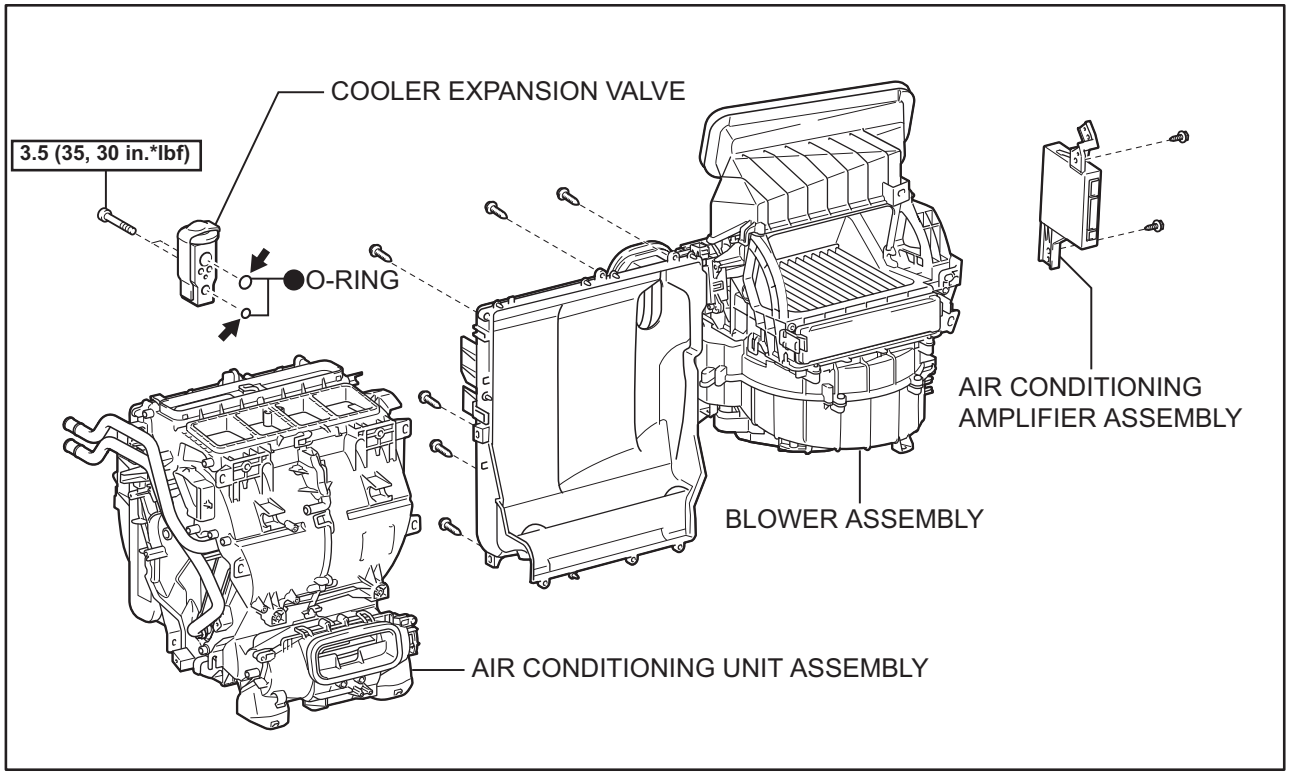
P

E128501E01

for TMMK Made:



AC

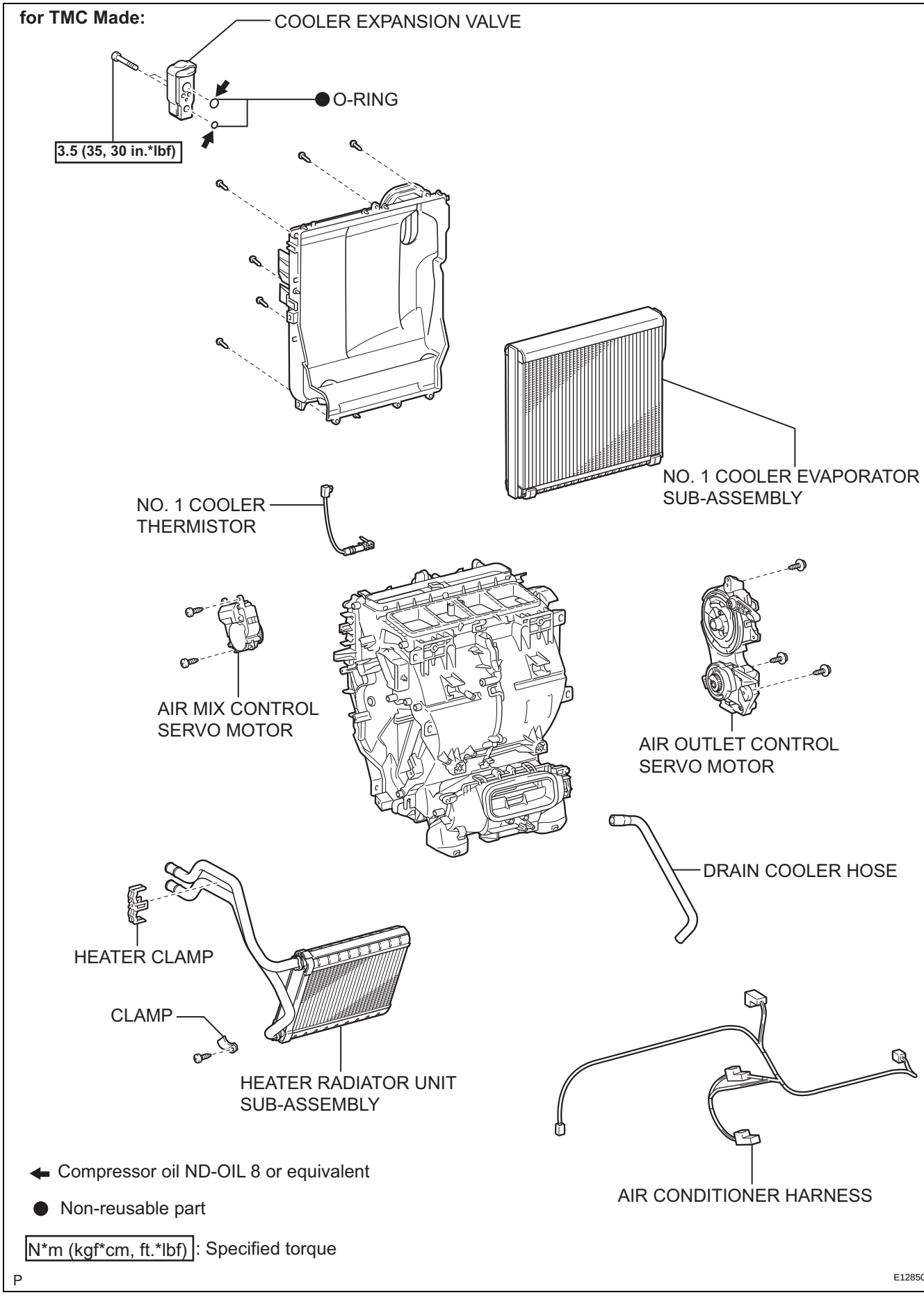


◀ Compressor oil ND-OIL 8 or equivalent

● Non-reusable part N*m (kgf*cm, ft.*lbf): Specified torque

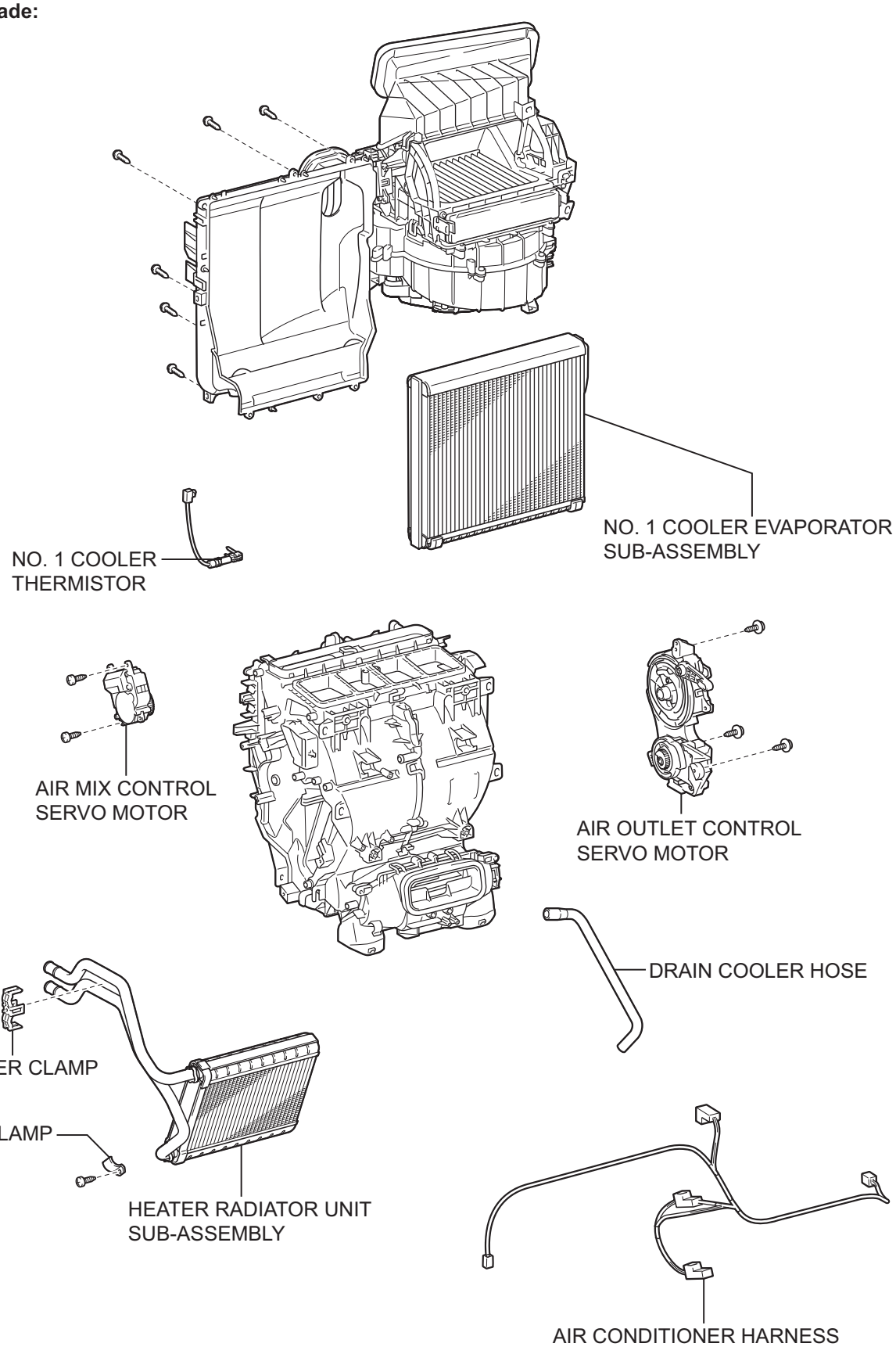
P

E129993E01


for TMC Made:
COOLER EXPANSION VALVE
O-RING
3.5 (35, 30 in.*lbf)
NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY
NO. 1 COOLER THERMISTOR
AIR MIX CONTROL SERVO MOTOR
AIR OUTLET CONTROL SERVO MOTOR
DRAIN COOLER HOSE
HEATER CLAMP
CLAMP
HEATER RADIATOR UNIT SUB-ASSEMBLY
AIR CONDITIONER HARNESS
Compressor oil ND-OIL 8 or equivalent
Non-reusable part
N*m (kgf*cm, ft.*lbf): Specified torque
P
E128502E01

AC

for TMMK Made:



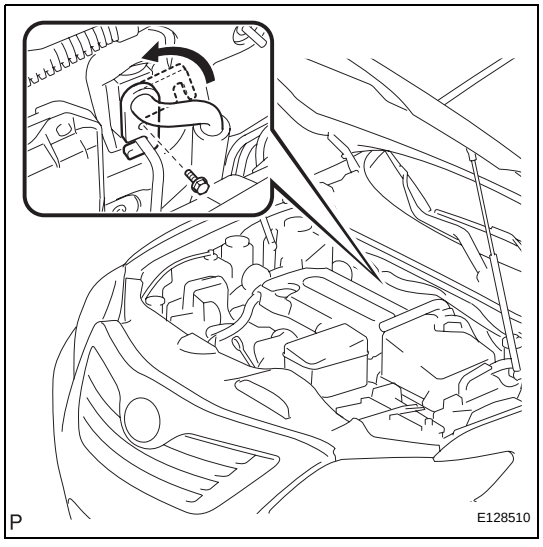
AC

P

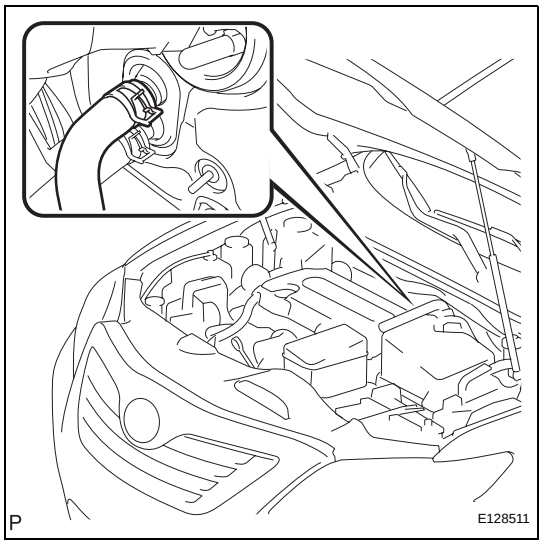
E129998E01

REMOVAL

1. **RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM (See page AC-125)**
2. **ALIGN FRONT WHEELS FACING STRAIGHT AHEAD**
3. **DISCONNECT BATTERY NEGATIVE TERMINAL**
   NOTICE:
   Wait for 90 seconds after disconnecting the terminal to prevent the airbag from deploying. (See page RS-1)
4. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH (See page WW-9)**
5. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH (See page WW-9)**
6. **REMOVE FRONT FENDER TO COWL SIDE SEAL LH (See page WW-9)**
7. **REMOVE FRONT FENDER TO COWL SIDE SEAL RH (See page WW-9)**
8. **REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-10)**
9. **REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page WW-10)**
10. **REMOVE COWL TOP OUTER FRONT PANEL SUB-ASSEMBLY (See page BR-29)**
11. **DISCONNECT SUCTION PIPE SUB-ASSEMBLY**
    (a) Remove the bolt, and slide the hook connector.
    (b) Disconnect the suction pipe sub-assembly.
    (c) Remove the O-ring from the suction hose sub-assembly.
    NOTICE:
    Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.
12. **DISCONNECT AIR CONDITIONER TUBE AND ACCESSORY**
    (a) Disconnect the air conditioner tube and accessory.
    (b) Remove the O-ring from the air conditioner tube and accessory.
    NOTICE:
    Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.



AC



13. **DISCONNECT HEATER OUTLET WATER HOSE**
    (a) Using pliers, grip the claws of the clip and slide the clip to disconnect the heater outlet water hose.
    NOTICE:
    - **Do not apply excessive force to the heater outlet water hose.**
    - **Prepare a drain pan or cloth in case the coolant leaks.**
14. **DISCONNECT HEATER INLET WATER HOSE**
    HINT:
    Disconnection procedure for the heater inlet water hose is the same as that for the heater outlet water hose.
15. **REMOVE LOWER NO. 3 STEERING WHEEL COVER (See page RS-349)**
16. **REMOVE LOWER NO. 2 STEERING WHEEL COVER (See page RS-349)**
17. **REMOVE STEERING PAD (See page RS-350)**
18. **REMOVE STEERING WHEEL ASSEMBLY (See page SR-38)**
19. **REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-24)**
20. **REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-25)**
21. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-20)**
22. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-21)**
23. **REMOVE STEERING COLUMN COVER (for TMC Made) (See page IP-21)**
24. **REMOVE STEERING COLUMN COVER (for TMMK Made) (See page IP-21)**
25. **REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-39)**
26. **REMOVE NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-22)**
27. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-22)**
28. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-22)**
29. **REMOVE INSTRUMENT CLUSTER FINISH PANEL (See page IP-22)**
30. **REMOVE COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-23)**
31. **REMOVE COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-23)**

32. REMOVE FRONT DOOR SCUFF PLATE RH (See page IR-26)
33. REMOVE COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-26)
34. REMOVE INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-23)
35. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-23)
36. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-24)
37. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-24)
38. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-24)
39. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-24)
40. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-25)
41. REMOVE FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-25)
42. REMOVE UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-25)
43. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-26)
44. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-26)
45. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-27)
46. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-27)
47. REMOVE INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-27)
48. REMOVE RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-146)
49. REMOVE NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (See page NS-195)
50. REMOVE CONSOLE BOX POCKET (See page IP-28)
51. REMOVE CONSOLE BOX CARPET (See page IP-28)
52. REMOVE CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-28)
53. REMOVE CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-29)

54. **REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-29)**

55. **REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)**

56. **REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-30)**

57. **REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)**

58. **REMOVE FRONT PILLAR GARNISH LH (See page IR-27)**

59. **REMOVE INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-31)**

60. **REMOVE INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-31)**

61. **REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)**

62. **REMOVE FRONT PILLAR GARNISH RH (See page IR-27)**

63. **REMOVE INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-31)**

64. **REMOVE INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-32)**

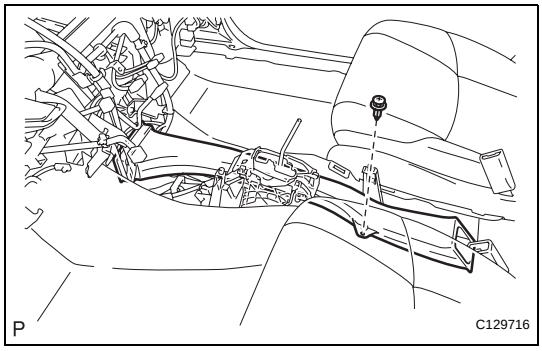
65. **REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side) (See page IP-32)**

66. **REMOVE NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-32)**

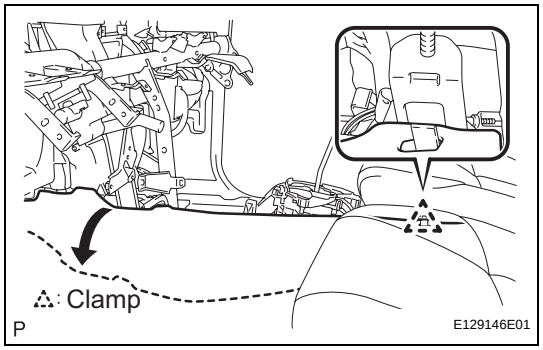
67. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-32)**

68. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-34)**

69. **REMOVE NO. 1 CONSOLE BOX DUCT (for Automatic Air Conditioning System)**
    (a) Remove the clip and No. 1 console box duct .

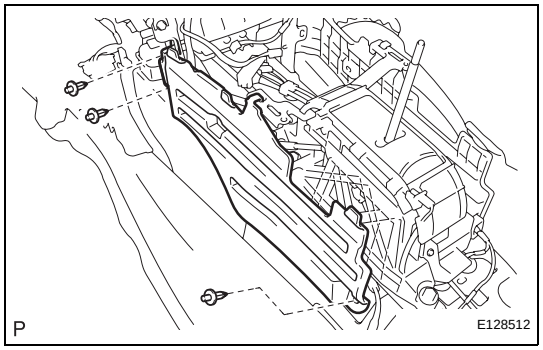


AC

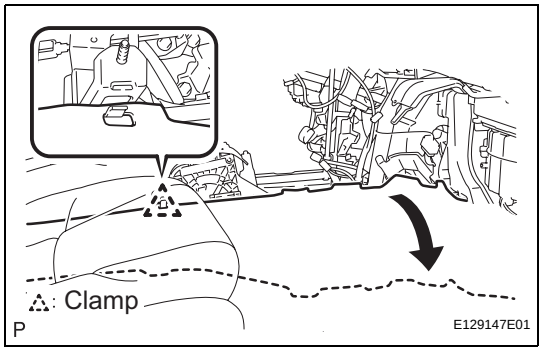


70. REMOVE FLOOR CARPET BRACKET LH

(a) Release the clamp.
(b) Turn back the floor carpet.



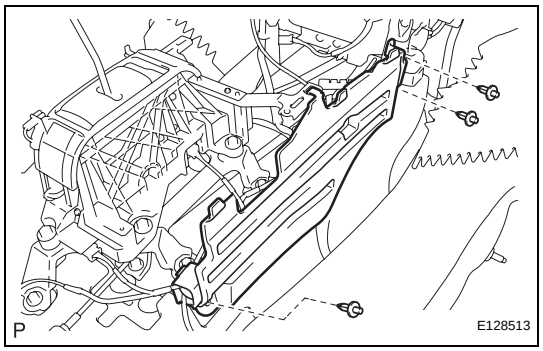
(c) Remove the 3 clips.
(d) Remove the floor carpet bracket LH.



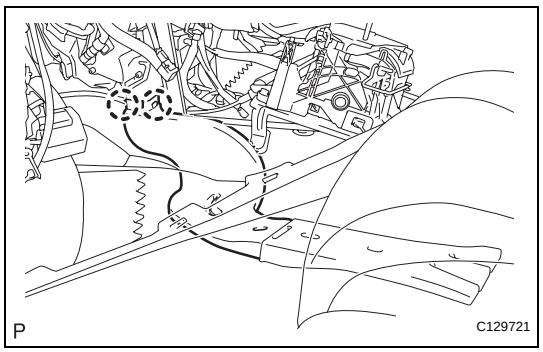
71. REMOVE FLOOR CARPET BRACKET RH

(a) Release the clamp.
(b) Turn back the floor carpet.

AC

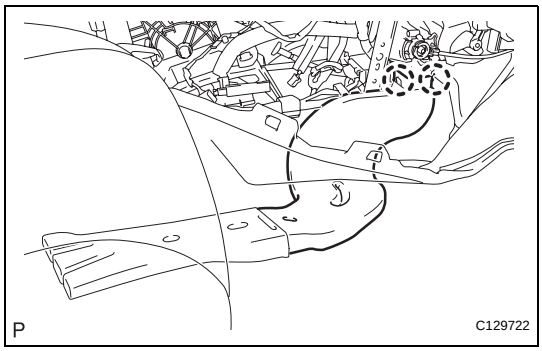


(c) Remove the 3 clips.
(d) Remove the floor carpet bracket RH.



72. REMOVE REAR NO. 2 AIR DUCT

(a) Release the 2 claws and remove the rear No. 2 air duct.



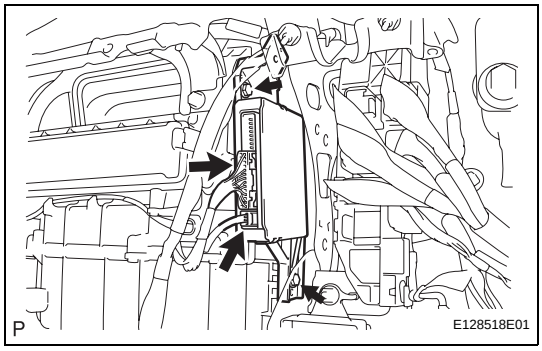
73. REMOVE REAR NO. 1 AIR DUCT

(a) Release the 2 claws and remove the rear No. 1 air duct.

74. REMOVE NO. 1 AIR DUCT (See page SR-39)

75. SEPARATE STEERING COLUMN ASSEMBLY (for TMC Made) (See page SR-39)

76. REMOVE STEERING POST ASSEMBLY (for TMMK Made) (See page SR-41)



77. REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY

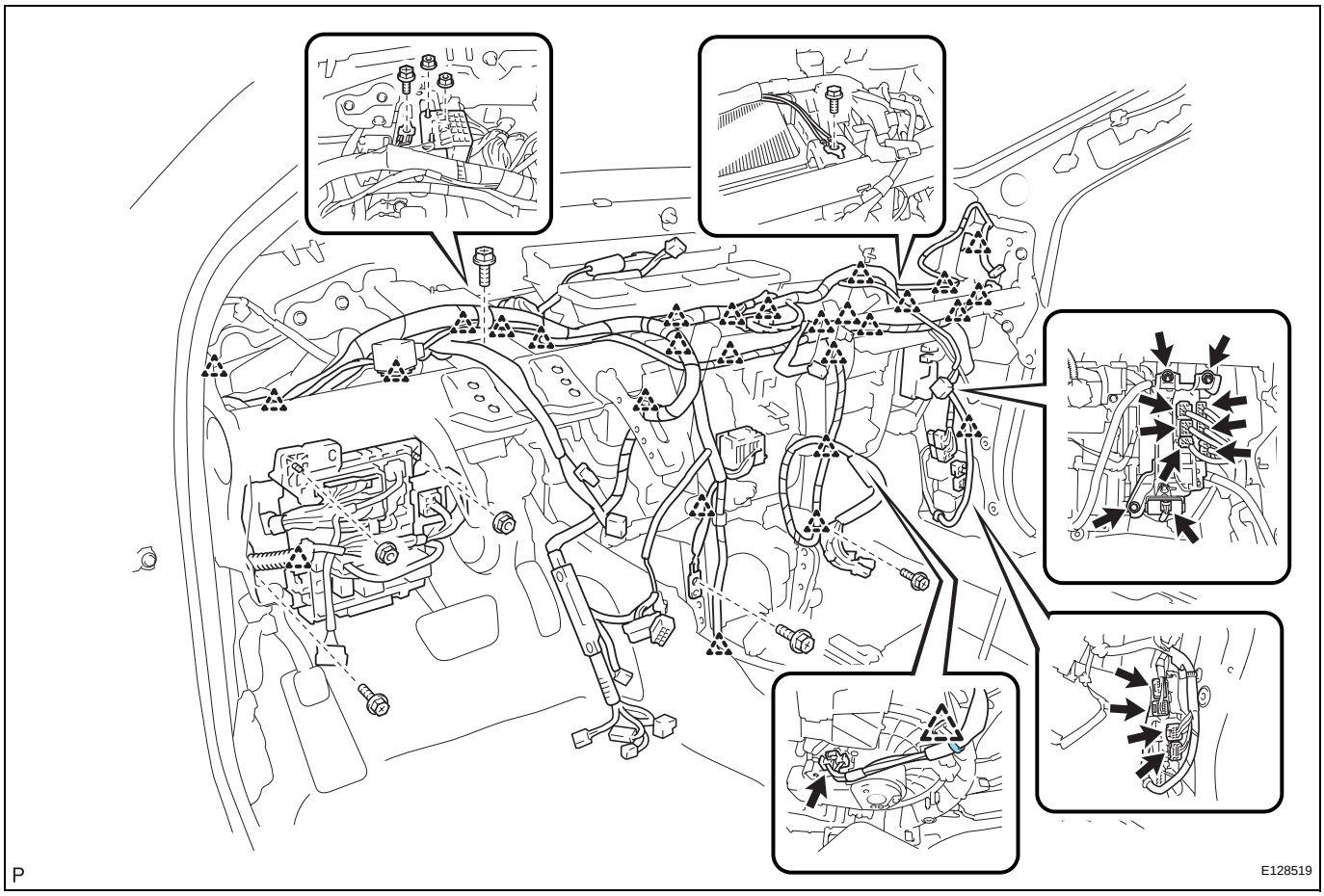
(a) Disconnect the 2 connectors.

(b) Remove the 2 bolts and air conditioning amplifier assembly.

78. REMOVE INSTRUMENT PANEL REINFORCEMENT ASSEMBLY

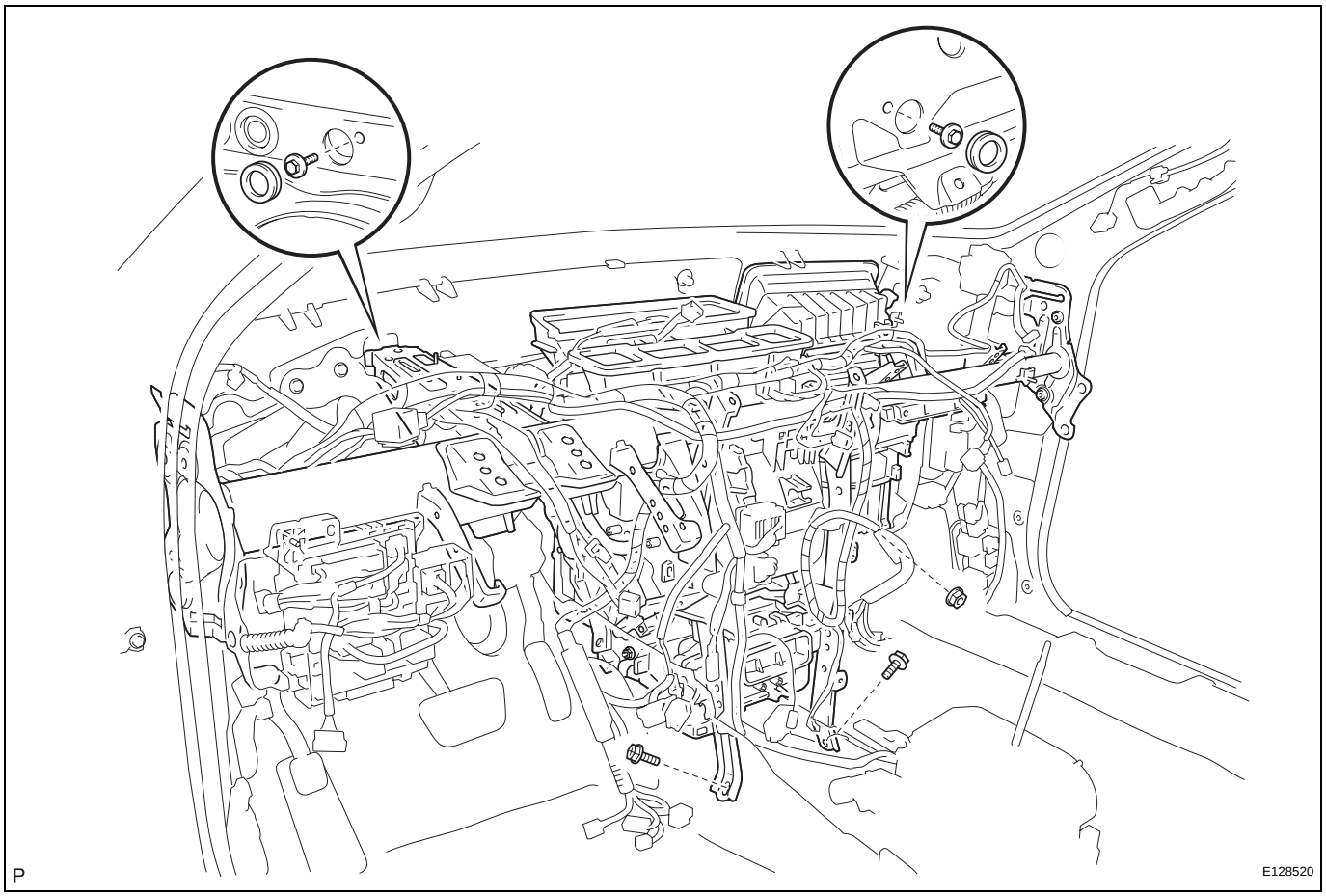
(a) Remove the 28 clamps, disconnect the 11 connectors, and then disconnect the wire harness.

(b) Remove the 6 nuts, 7 bolts, and junction block.



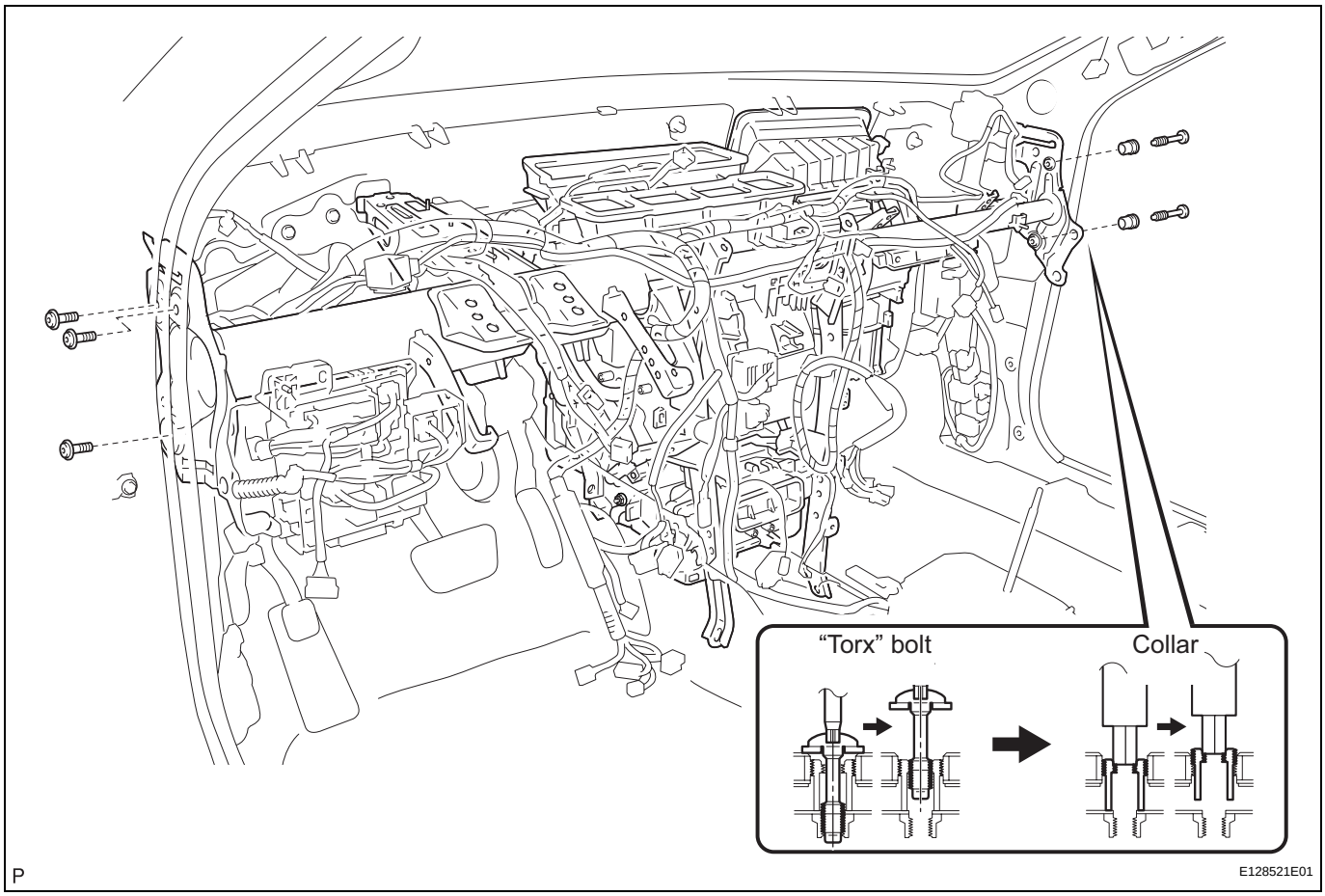
AC

(c) Remove the 2 caps and 2 bolts from the engine compartment side.



(d) Remove the 2 bolts and nut.

(e) Using a "Torx" socket wrench (T40), remove the 5 "Torx" bolts.

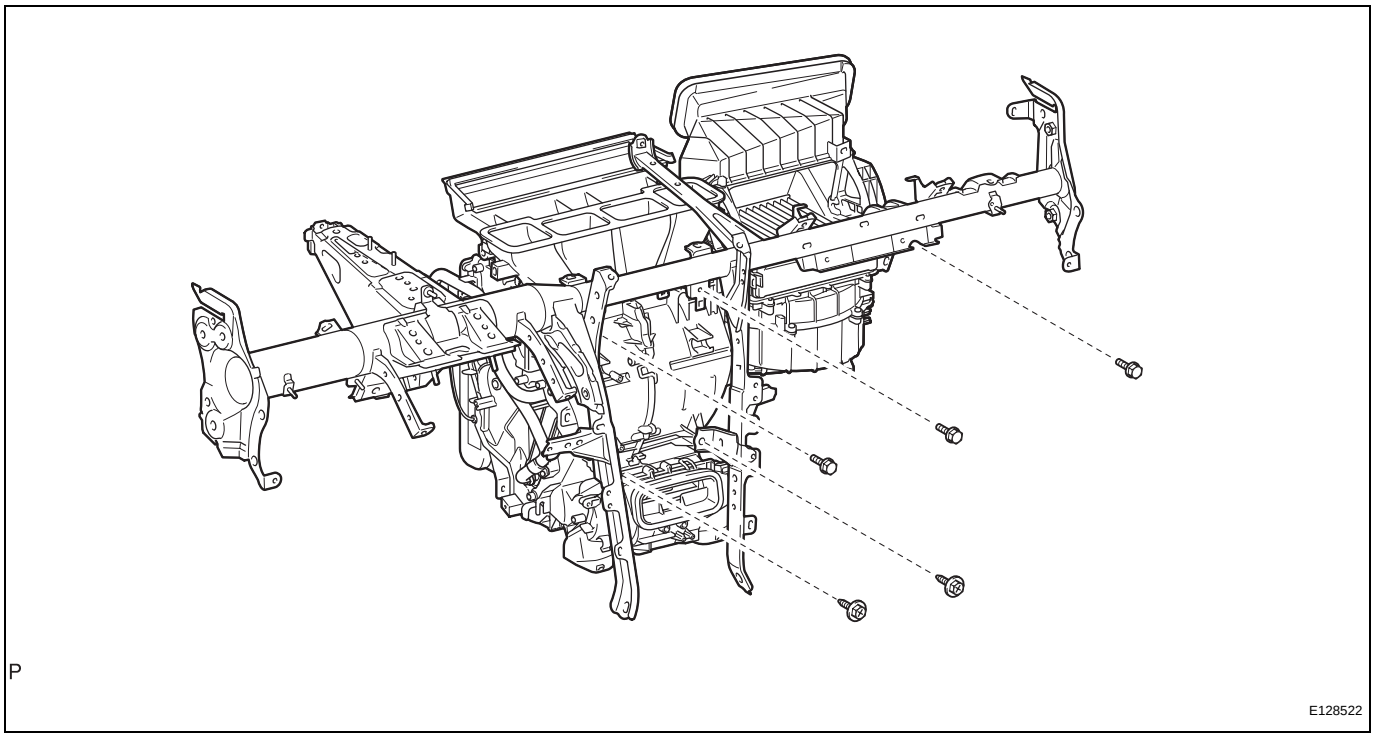


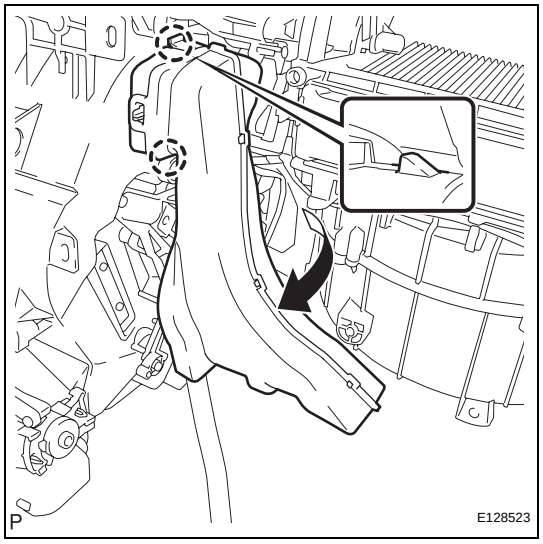
HINT:
The "Torx" bolts on the passenger side can be removed with the collars for adjustment.

(f) Using a hexagon wrench 12 mm, remove the 2 collars and instrument panel reinforcement assembly with the air conditioner unit assembly.

AC

(g) Remove the 3 bolts, 2 screws, and instrument panel reinforcement assembly.





DISASSEMBLY

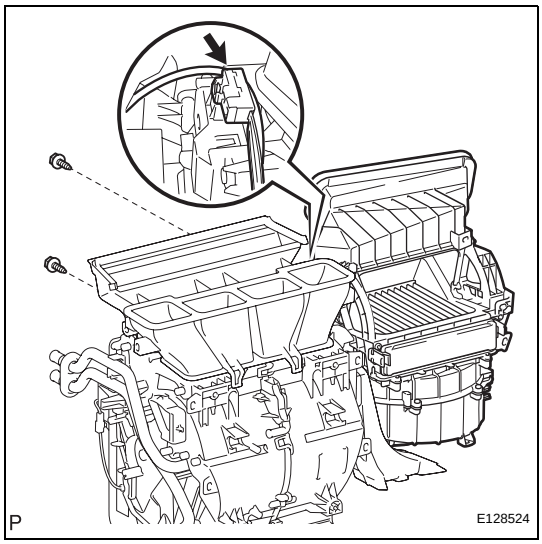
1. REMOVE NO. 2 AIR DUCT SUB-ASSEMBLY (for TMC Made)

(a) Release the 2 claws and remove the No. 2 air duct sub-assembly as shown in the illustration.

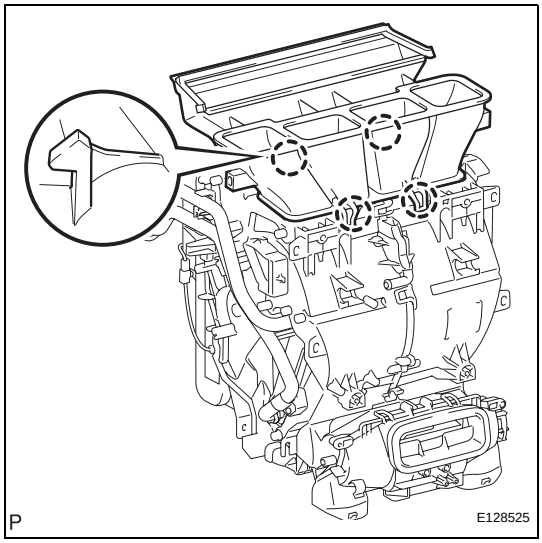
2. REMOVE BLOWER ASSEMBLY (for TMC Made)

(a) Disconnect the connector.

AC

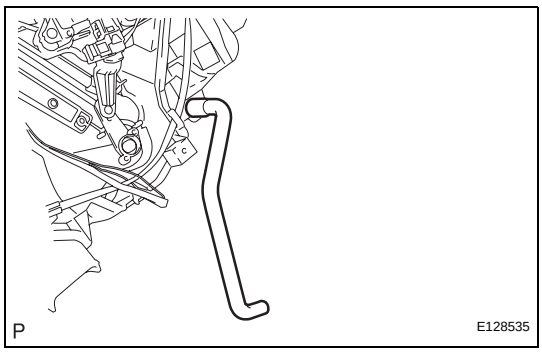


(b) Remove the 2 screws and blower assembly.



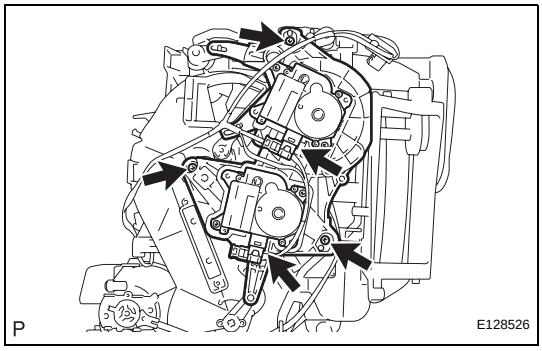
3. REMOVE NO. 6 HEATER TO REGISTER DUCT ASSEMBLY (for TMC Made)

(a) Release the 4 claws and remove the No. 6 heater to register duct assembly.



4. REMOVE DRAIN COOLER HOSE (for TMC Made)

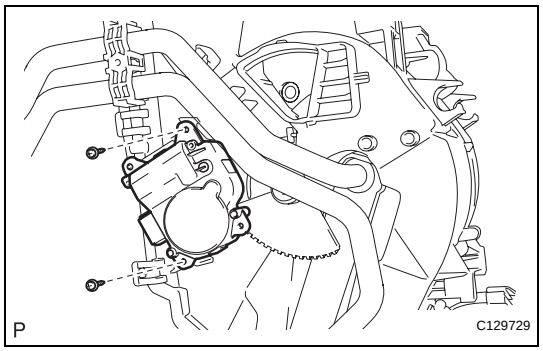
(a) Remove the drain cooler hose from the air conditioning radiator assembly.



5. REMOVE AIR OUTLET CONTROL SERVO MOTOR (for TMC Made)

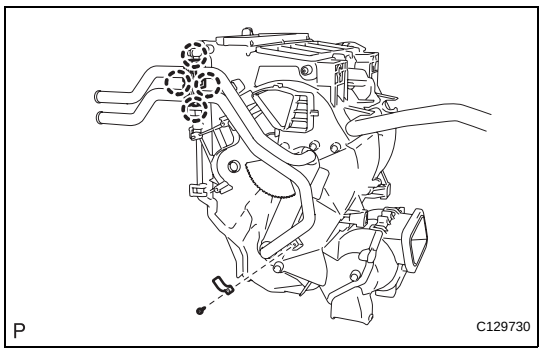
(a) Disconnect the 2 connectors and remove the air conditioner harness.

(b) Remove the 3 screws and then remove the air outlet control servo motor.



6. REMOVE AIR MIX CONTROL SERVO MOTOR (for Automatic Air Conditioning System)

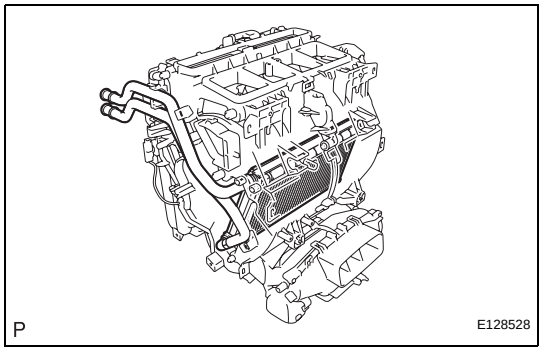
(a) Remove the 2 screws and air mix control servo motor.



7. REMOVE HEATER RADIATOR UNIT SUB-ASSEMBLY (for TMC Made)

(a) Remove the screw and clamp.

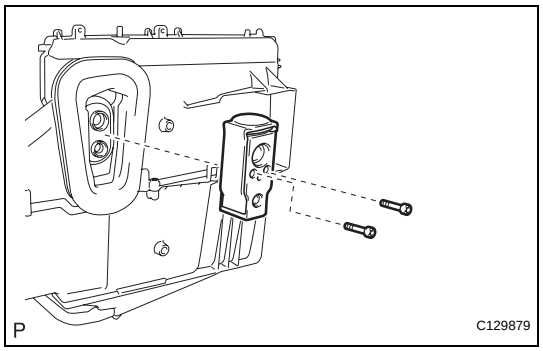
(b) Release the 4 claws and remove the clamp.



(c) Remove the heater radiator unit sub-assembly from the air conditioning radiator assembly.

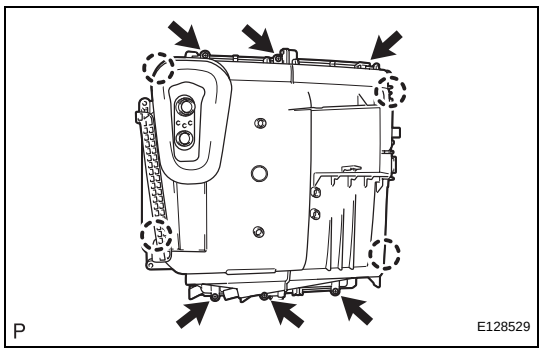
NOTICE:

Prepare a drain pan or cloth in case the cooling water leaks.



8. REMOVE COOLER EXPANSION VALVE (for TMC Made)

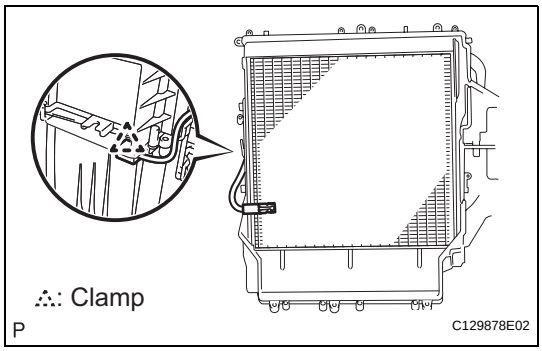
(a) Using a 4 mm hexagon wrench, remove the 2 hexagon bolts and cooler expansion valve.



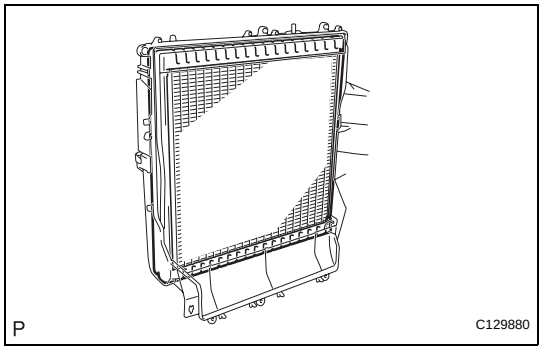
9. REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY (for TMC Made)

(a) Remove the 6 screws, release the 4 claws, and remove the plate cover.

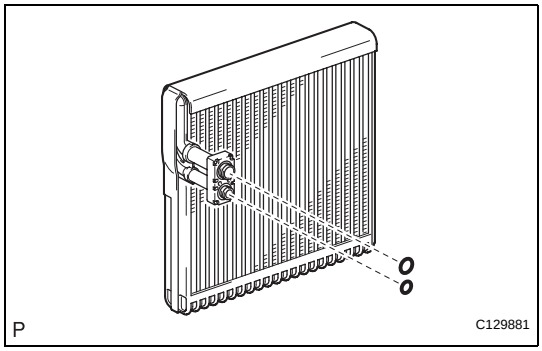
AC



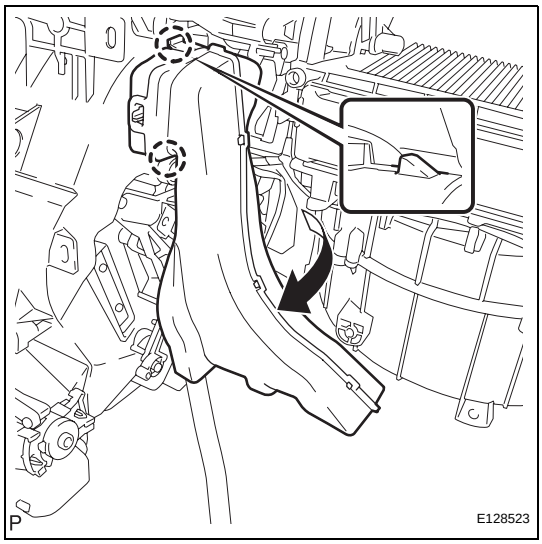
(b) Remove the clamp and No. 1 cooler thermistor.



(c) Remove the No. 1 cooler evaporator sub-assembly.

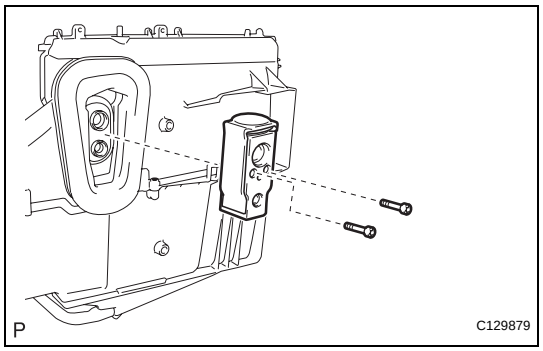


(d) Remove the 2 O-rings from the No. 1 cooler evaporator sub-assembly.



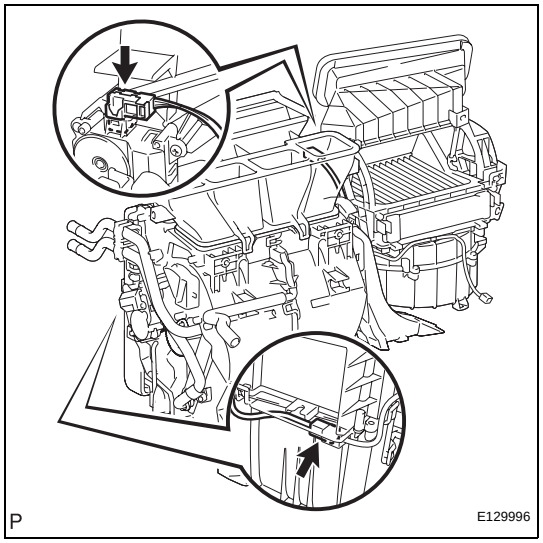
10. REMOVE NO. 2 AIR DUCT SUB-ASSEMBLY (for TMMK Made)

(a) Release the 2 claws and remove the No. 2 air duct sub-assembly as shown in the illustration.



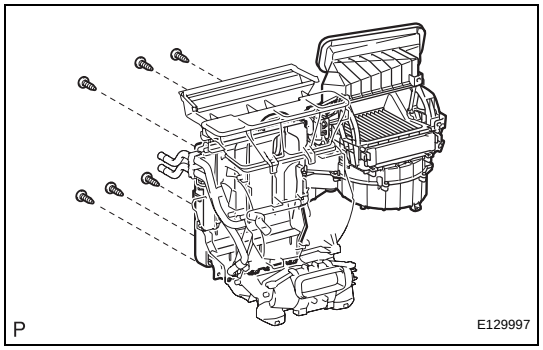
11. REMOVE COOLER EXPANSION VALVE (for TMMK Made)

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

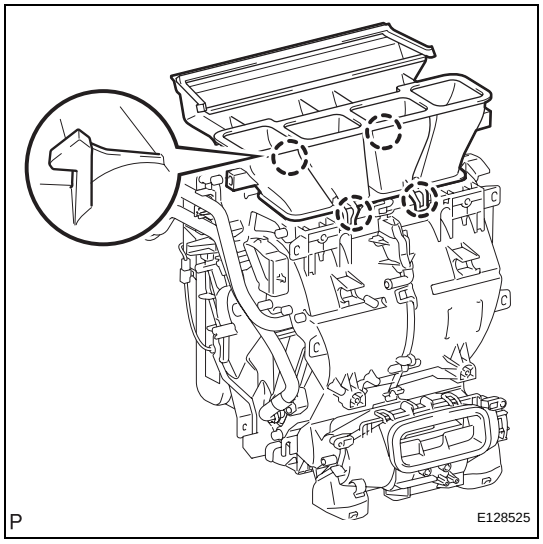


12. REMOVE BLOWER ASSEMBLY (for TMMK Made)

(a) Remove the connector and clamp, and disconnect the wire harness.



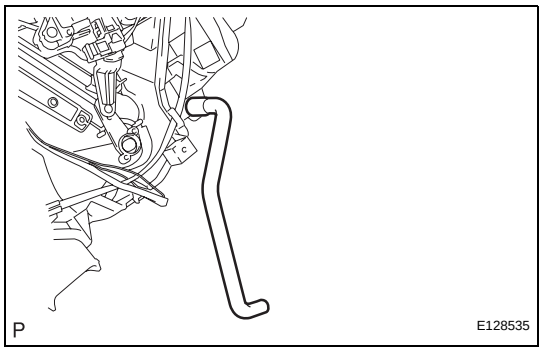
(b) Remove the 6 screws and then the blower assembly with the cooler evaporator sub-assembly.



13. REMOVE NO. 6 HEATER TO REGISTER DUCT ASSEMBLY (for TMMK Made)

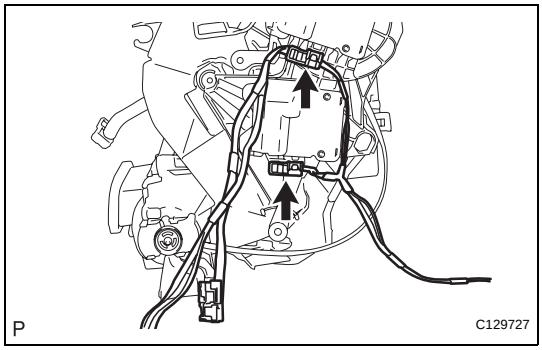
(a) Release the 4 claws and remove the No. 6 heater to register duct assembly.

AC



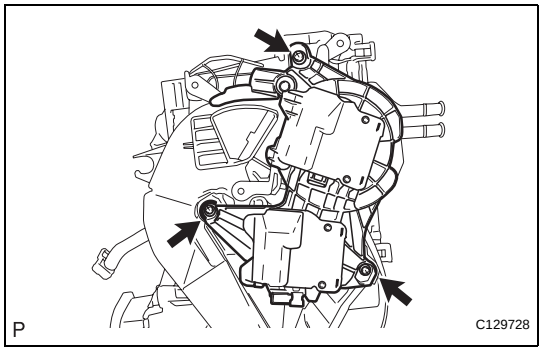
14. REMOVE DRAIN COOLER HOSE (for TMMK Made)

(a) Remove the drain cooler hose from the air conditioning radiator assembly.

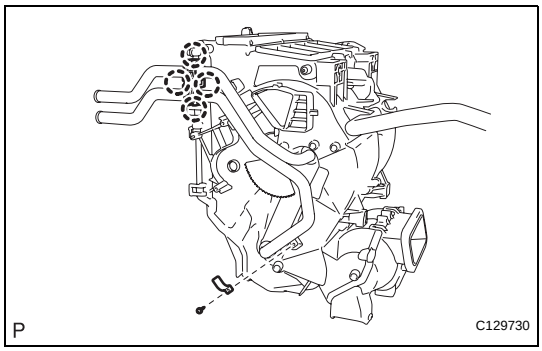


15. REMOVE AIR OUTLET CONTROL SERVO MOTOR (for TMMK Made)

(a) Disconnect the 2 connectors and remove the air conditioner harness.



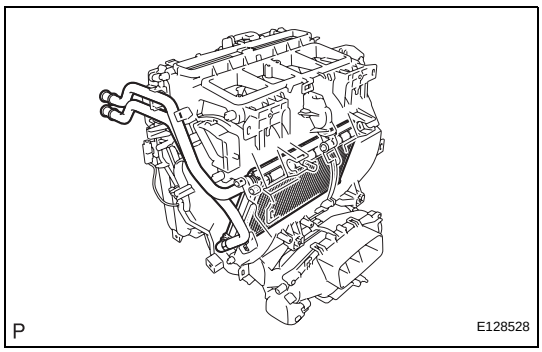
(b) Remove the 3 screws and then the air outlet control servo motor.



16. REMOVE HEATER RADIATOR UNIT SUB-ASSEMBLY (for TMMK Made)

(a) Remove the screw and clamp.

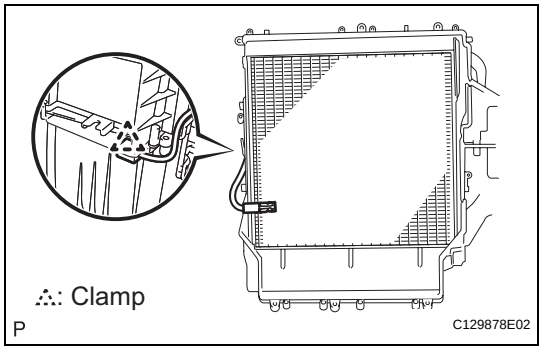
(b) Release the 4 claws and remove the clamp.



(c) Remove the heater radiator unit sub-assembly from the air conditioning radiator assembly.

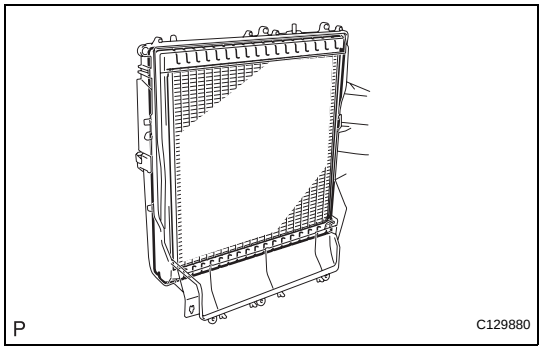
NOTICE:

Prepare a drain pan or cloth in case the cooling water leaks.

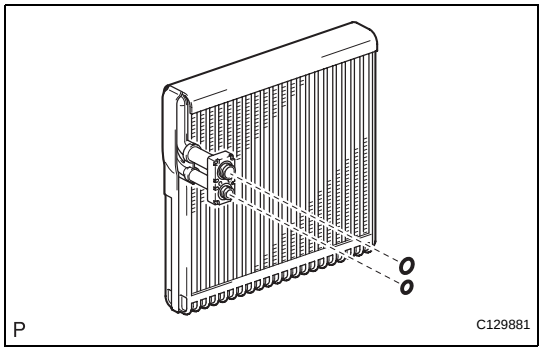


17. REMOVE NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY (for TMMK Made)

(a) Remove the clamp and No. 1 cooler thermistor.



(b) Remove the No. 1 cooler evaporator sub-assembly.



(c) Remove the 2 O-rings from the No. 1 cooler evaporator sub-assembly.

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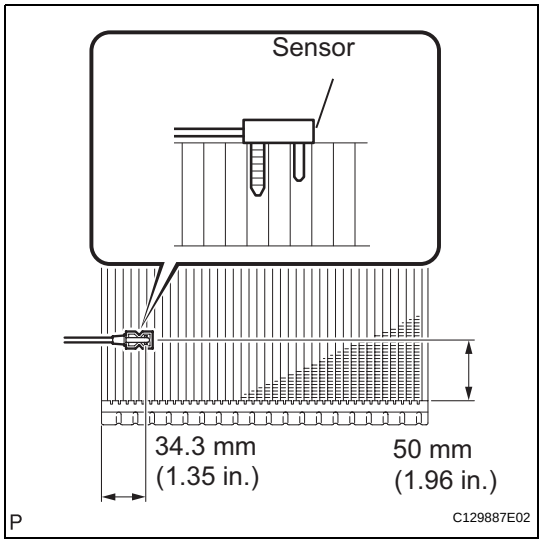
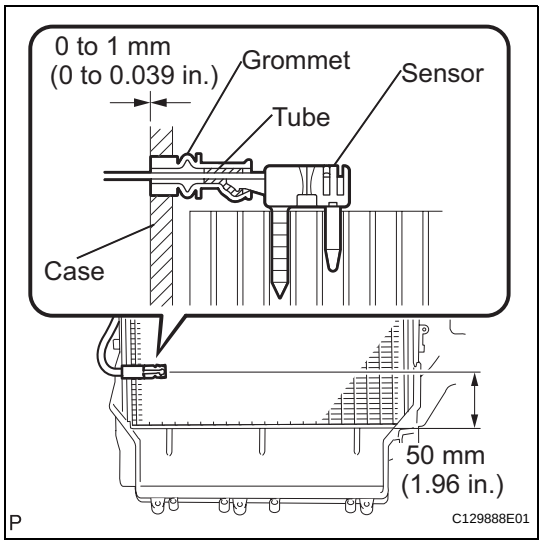
REASSEMBLY

1. INSTALL NO. 1 COOLER THERMISTOR (for TMC Made)

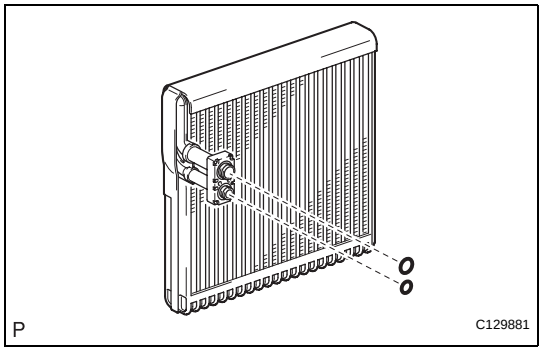
(a) If using a new evaporator:

(1) Install the No. 1 cooler thermistor to the evaporator as shown in the illustration.





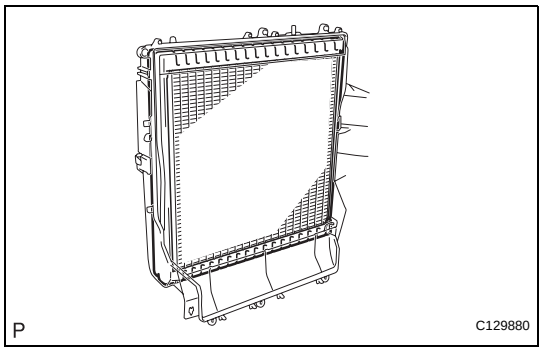
(b) If reusing the evaporator:
(1) Install the No. 1 cooler thermistor to the evaporator as shown in the illustration.



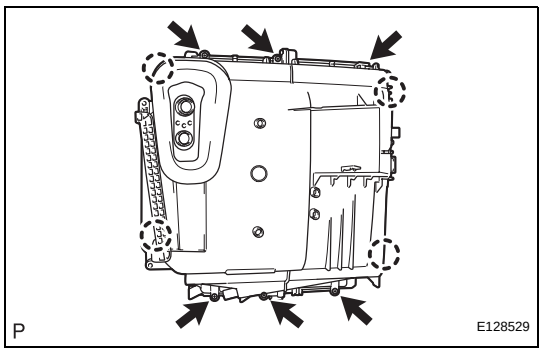
2. INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY (for TMC Made)

(a) Sufficiently apply compressor oil to 2 new O-rings and the fitting surfaces. Install the 2 O-rings to the No. 1 cooler evaporator sub-assembly.
Compressor oil:
ND-OIL 8 or equivalent

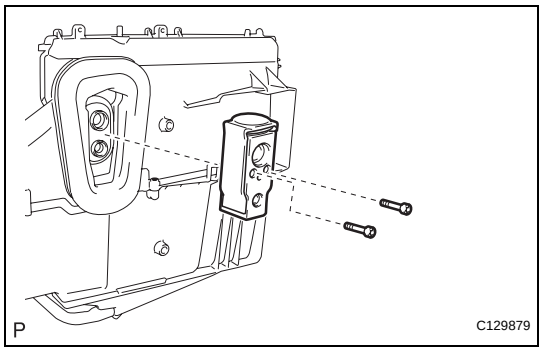
AC



(b) Install the No. 1 cooler evaporator sub-assembly.

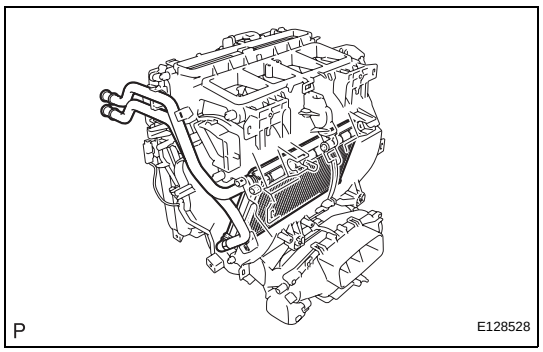


(c) Engage the 4 claws and install the plate cover with the 6 screws.



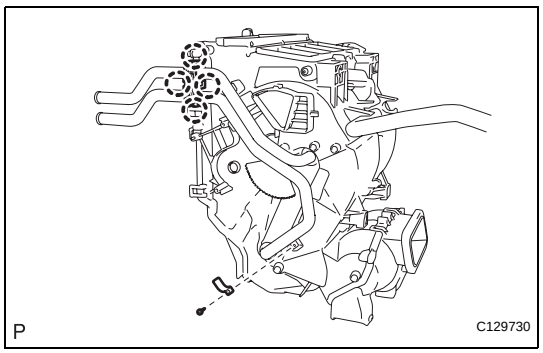
3. INSTALL COOLER EXPANSION VALVE (for TMC Made)

(a) Using a 4 mm hexagon wrench, install the cooler expansion valve with the 2 hexagon bolts.
Torque: 3.5 N*m (35 kgf*cm, 30 in.*lbf)

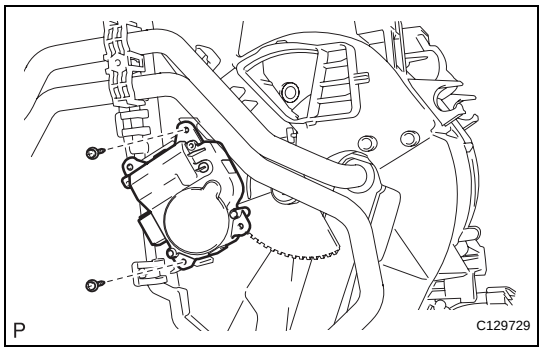


4. INSTALL HEATER RADIATOR UNIT SUB-ASSEMBLY (for TMC Made)

(a) Install the heater radiator unit sub-assembly to the air conditioner radiator assembly.

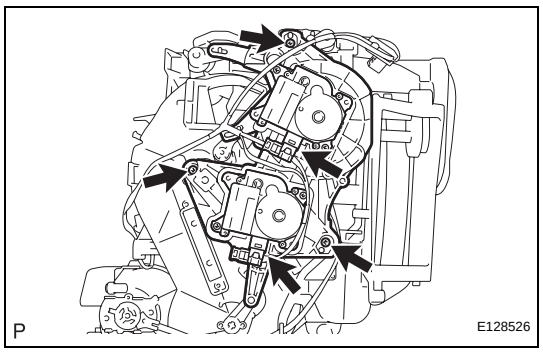


(b) Install the clamp with the screw.
(c) Engage the 4 claws and install the heater clamp.



5. INSTALL AIR MIX CONTROL SERVO MOTOR (for Automatic Air Conditioning System)

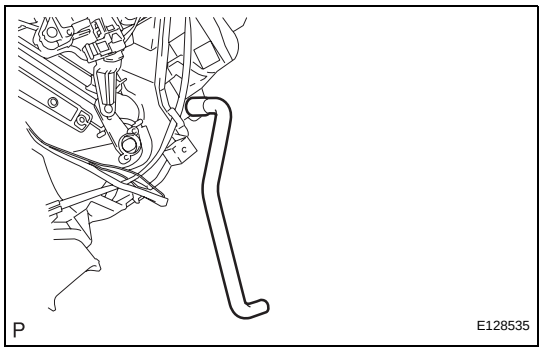
(a) Install the air mix control servo motor with the 2 screws.



6. INSTALL AIR OUTLET CONTROL SERVO MOTOR (for TMC Made)

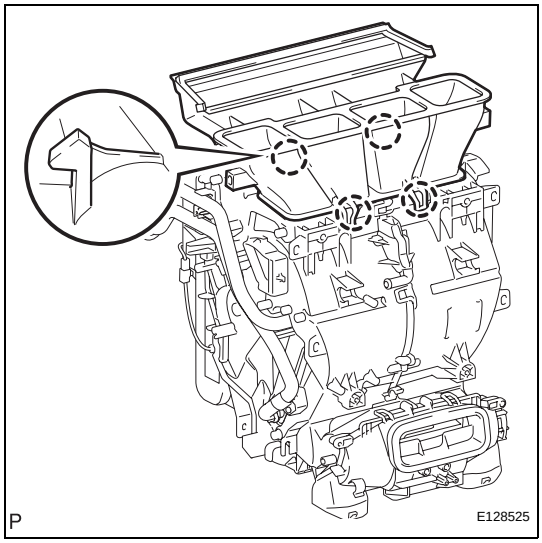
(a) Install the air outlet control servo motor with the 3 screws.
(b) Connect the 2 connectors and install the air conditioner harness.

AC



7. INSTALL DRAIN COOLER HOSE (for TMC Made)

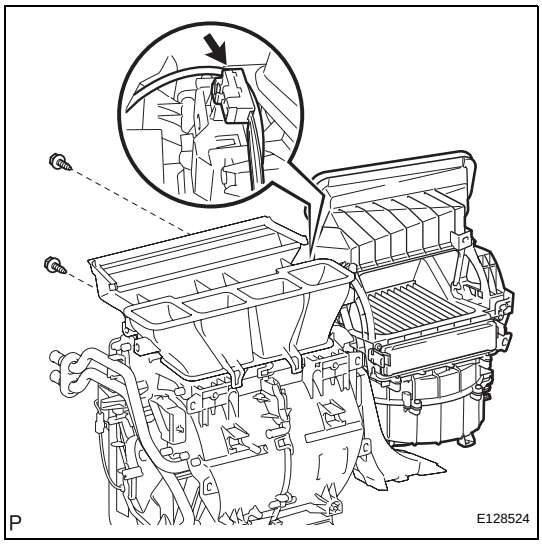
(a) Install the drain cooler hose to the air conditioner radiator assembly.



8. INSTALL NO. 6 HEATER TO REGISTER DUCT ASSEMBLY (for TMC Made)

(a) Engage the 4 claws to install the No. 6 heater to register duct assembly.

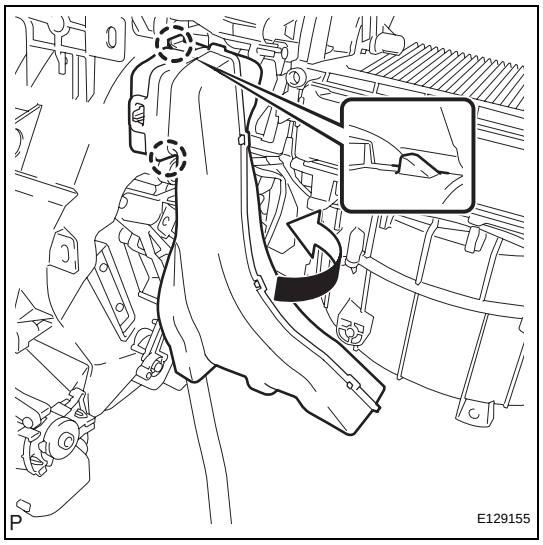
AC



9. INSTALL BLOWER ASSEMBLY (for TMC Made)

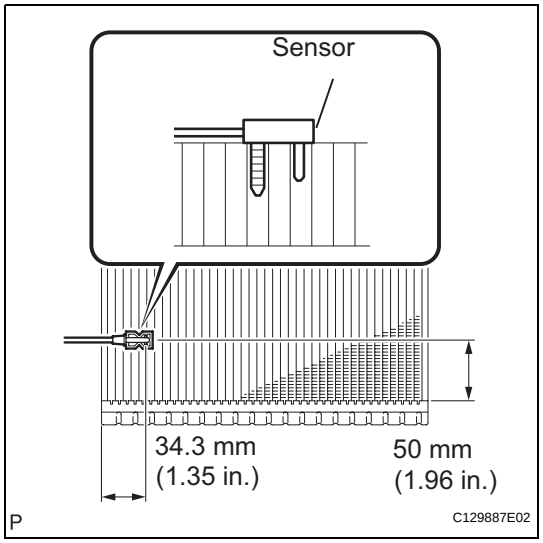
(a) Install the blower assembly with the 2 screws.

(b) Connect the connector.



10. INSTALL NO. 2 AIR DUCT SUB-ASSEMBLY (for TMC Made)

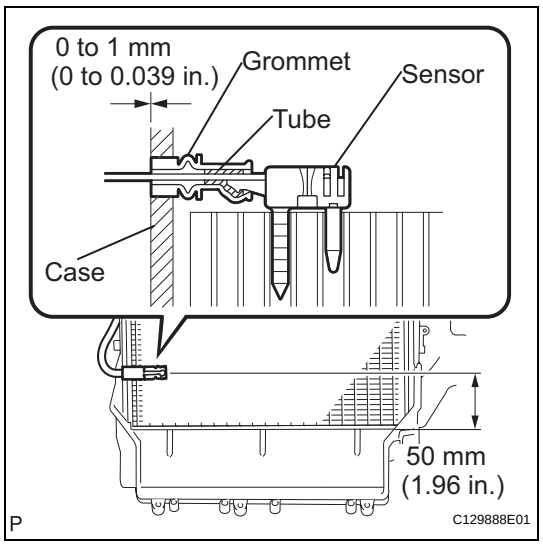
(a) Engage the 2 claws to install the No. 2 air duct sub-assembly.



11. INSTALL NO. 1 COOLER THERMISTOR (for TMMK Made)

(a) If using a new evaporator:

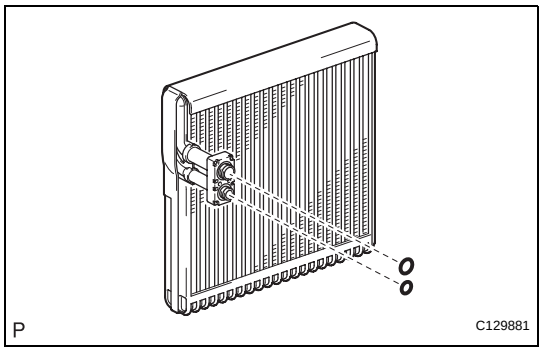
(1) Install the No. 1 cooler thermistor to the evaporator as shown in the illustration.



(b) If reusing the evaporator:

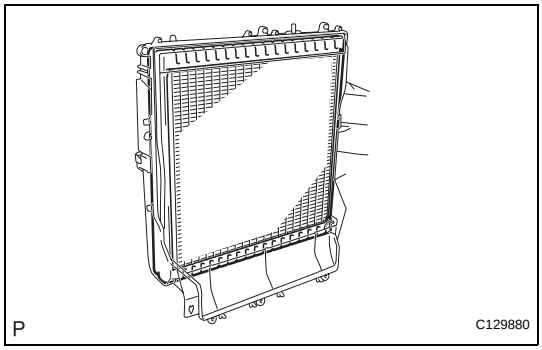
(1) Install the No. 1 cooler thermistor to the evaporator as shown in the illustration.

AC

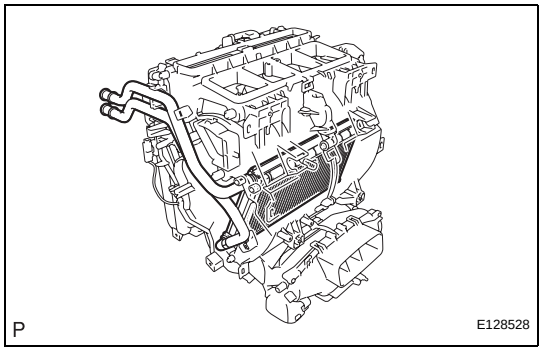


12. INSTALL NO. 1 COOLER EVAPORATOR SUB-ASSEMBLY (for TMMK Made)

(a) Sufficiently apply compressor oil to 2 new O-rings and the fitting surfaces. Install the 2 O-rings to the No. 1 cooler evaporator sub-assembly.
Compressor oil:
ND-OIL 8 or equivalent

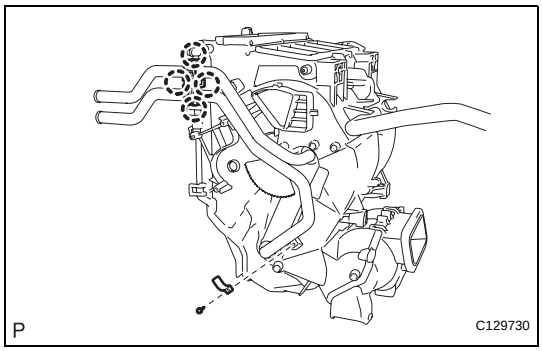


(b) Install the No. 1 cooler evaporator sub-assembly.

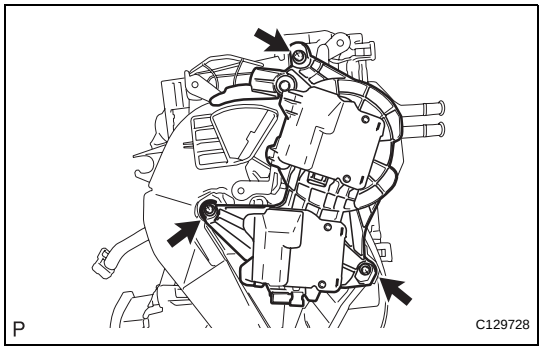


13. INSTALL HEATER RADIATOR UNIT SUB-ASSEMBLY (for TMMK Made)

(a) Install the heater radiator unit sub-assembly to the air conditioner radiator assembly.



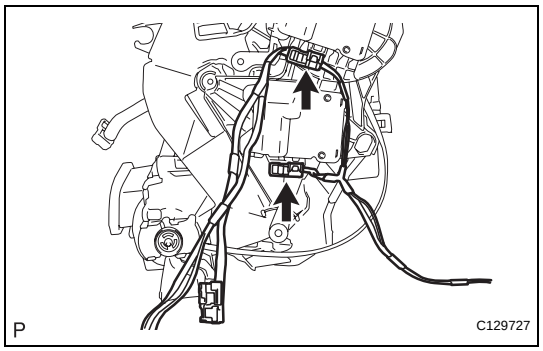
(b) Install the clamp with the screw.
(c) Engage the 4 claws and install the heater clamp.



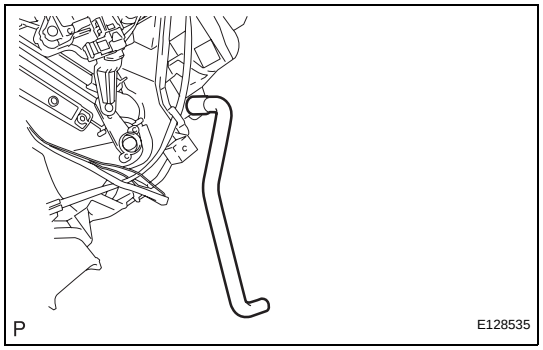
14. INSTALL AIR OUTLET CONTROL SERVO MOTOR (for TMMK Made)

(a) Install the air outlet control servo motor with the 3 screws.

AC

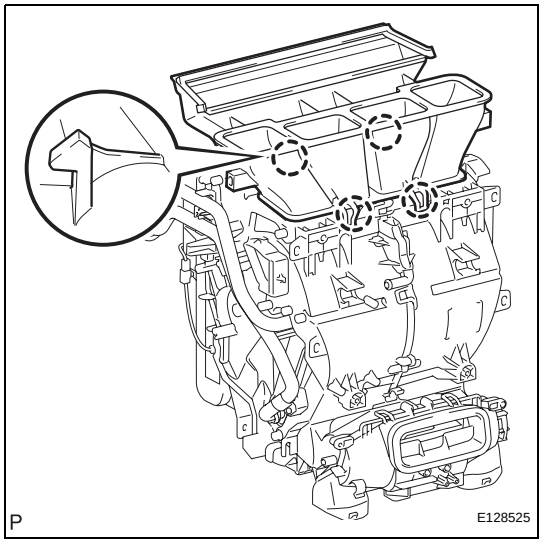


(b) Connect the 2 connectors and install the air conditioner harness.



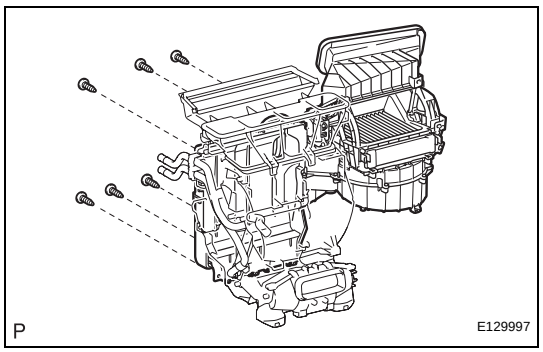
15. INSTALL DRAIN COOLER HOSE (for TMMK Made)

(a) Install the drain cooler hose to the air conditioner radiator assembly.



16. INSTALL NO. 6 HEATER TO REGISTER DUCT ASSEMBLY (for TMMK Made)

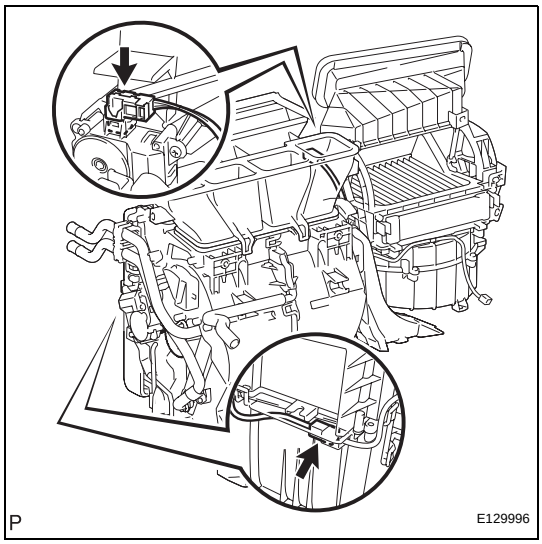
(a) Engage the 4 claws to install the No. 6 heater to register duct assembly.



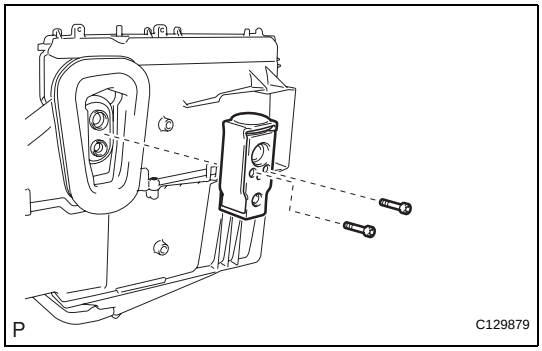
17. INSTALL BLOWER ASSEMBLY (for TMMK Made)

(a) Install the blower assembly with the 6 screws.

AC



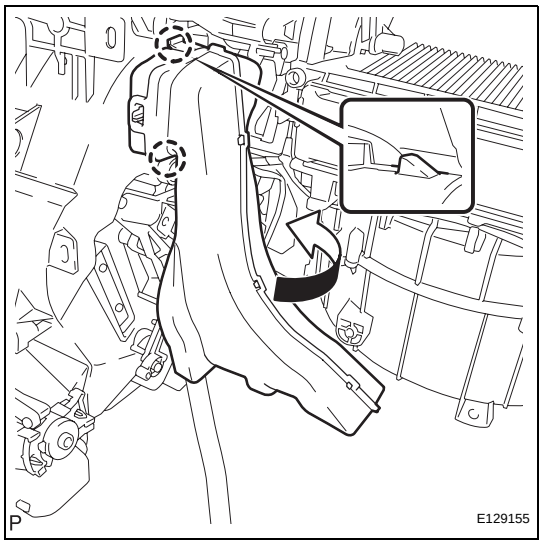
(b) Connect the connector.



18. INSTALL COOLER EXPANSION VALVE (for TMMK Made)

(a) Using a 4 mm hexagon wrench, install the cooler expansion valve with the 2 hexagon bolts.
Torque: 3.5 N*m (35 kgf*cm, 30 in.*lbf)

AC



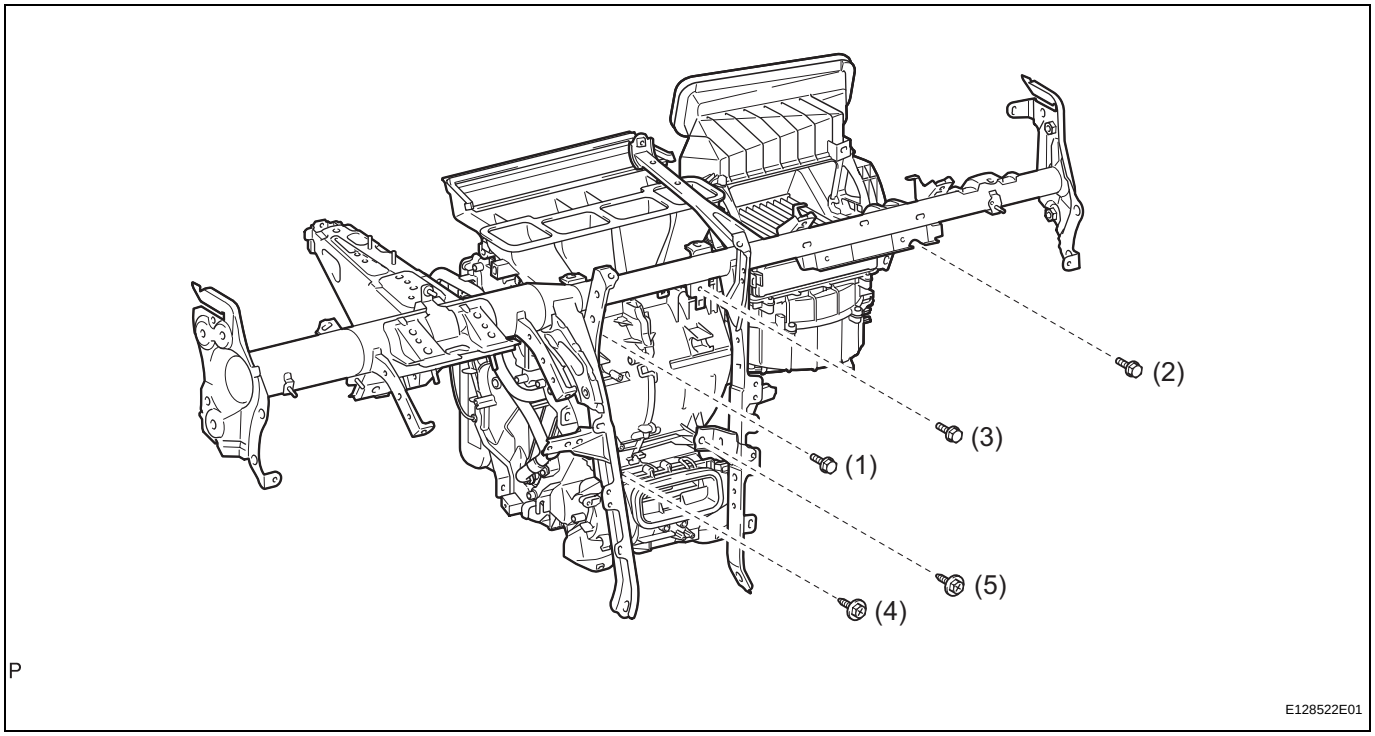
19. INSTALL NO. 2 AIR DUCT SUB-ASSEMBLY (for TMMK Made)

(a) Engage the 2 claws to install the No. 2 air duct sub-assembly.

INSTALLATION

1. INSTALL INSTRUMENT PANEL REINFORCEMENT ASSEMBLY

(a) Install the conditioner unit assembly to the instrument panel reinforcement assembly with the 2 screws and 3 bolts.



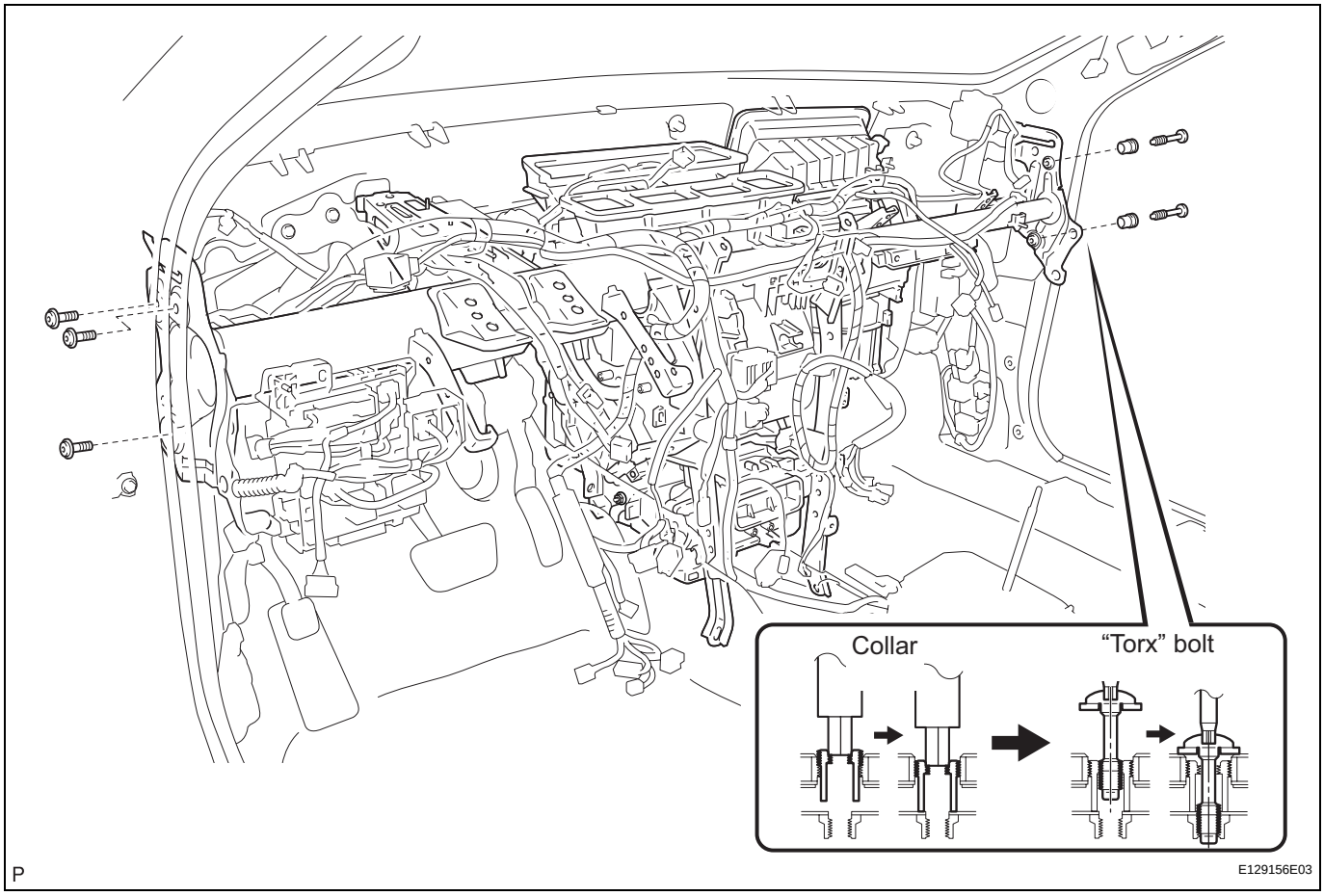
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)

NOTICE:

Tighten the bolts and screws in the order shown in the illustration to install the air conditioner unit assembly.

(b) Driver seat:

(1) Using a "Torx" socket wrench (T40), install the instrument panel reinforcement assembly with the 3 "Torx" bolts.



Torque: 17 N*m (173 kgf*cm, 13 ft.*lbf)

(c) Passenger seat:

(1) Using a 12 mm hexagon wrench, adjust the position of the 2 collars.

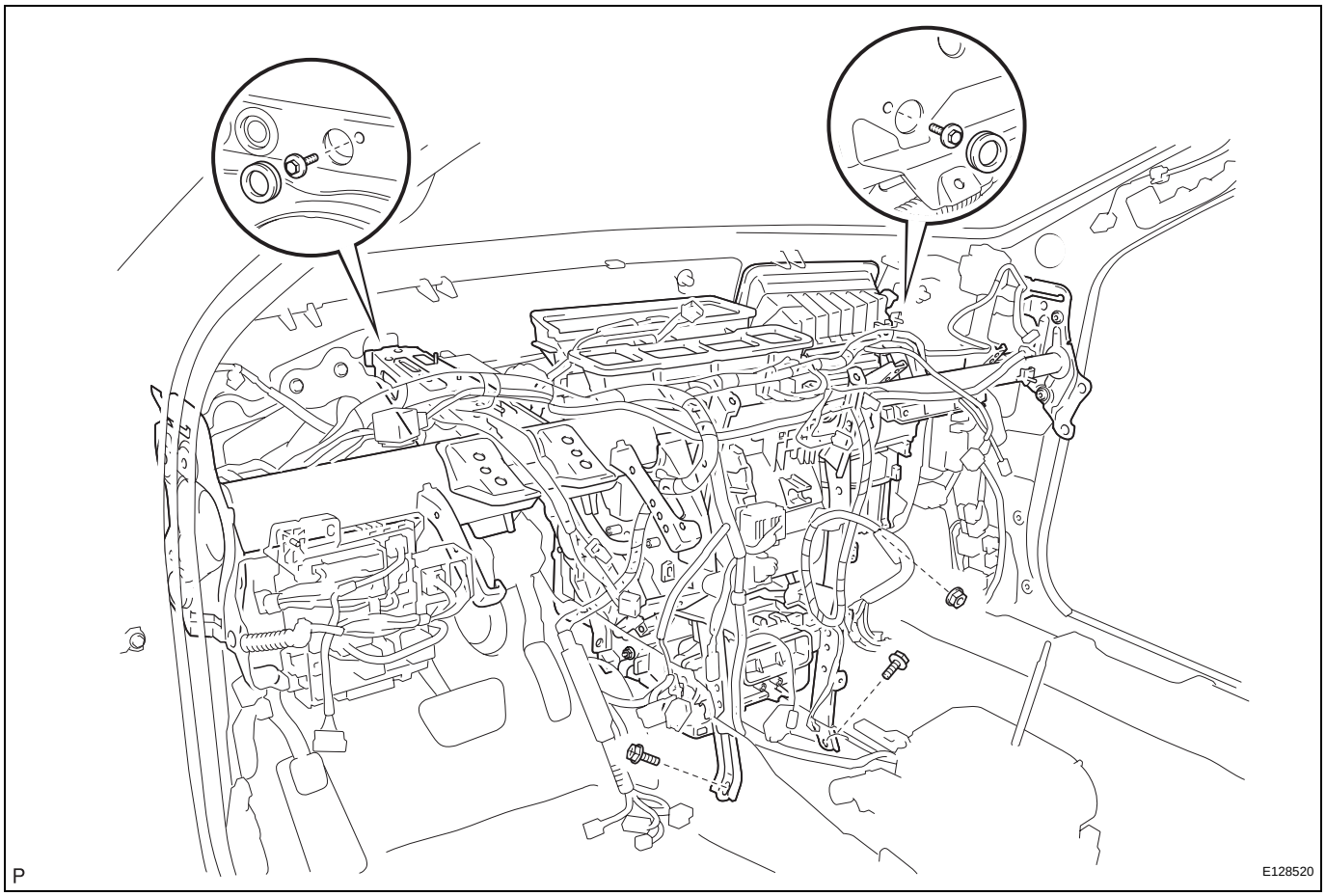
Torque: 6.0 N*m (61 kgf*cm, 53 in.*lbf)

(2) Using a "Torx" socket wrench (T40), install the instrument panel reinforcement assembly with the 2 "Torx" bolts.

Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

AC

(d) Install the instrument panel reinforcement assembly with the 2 bolts and nut.

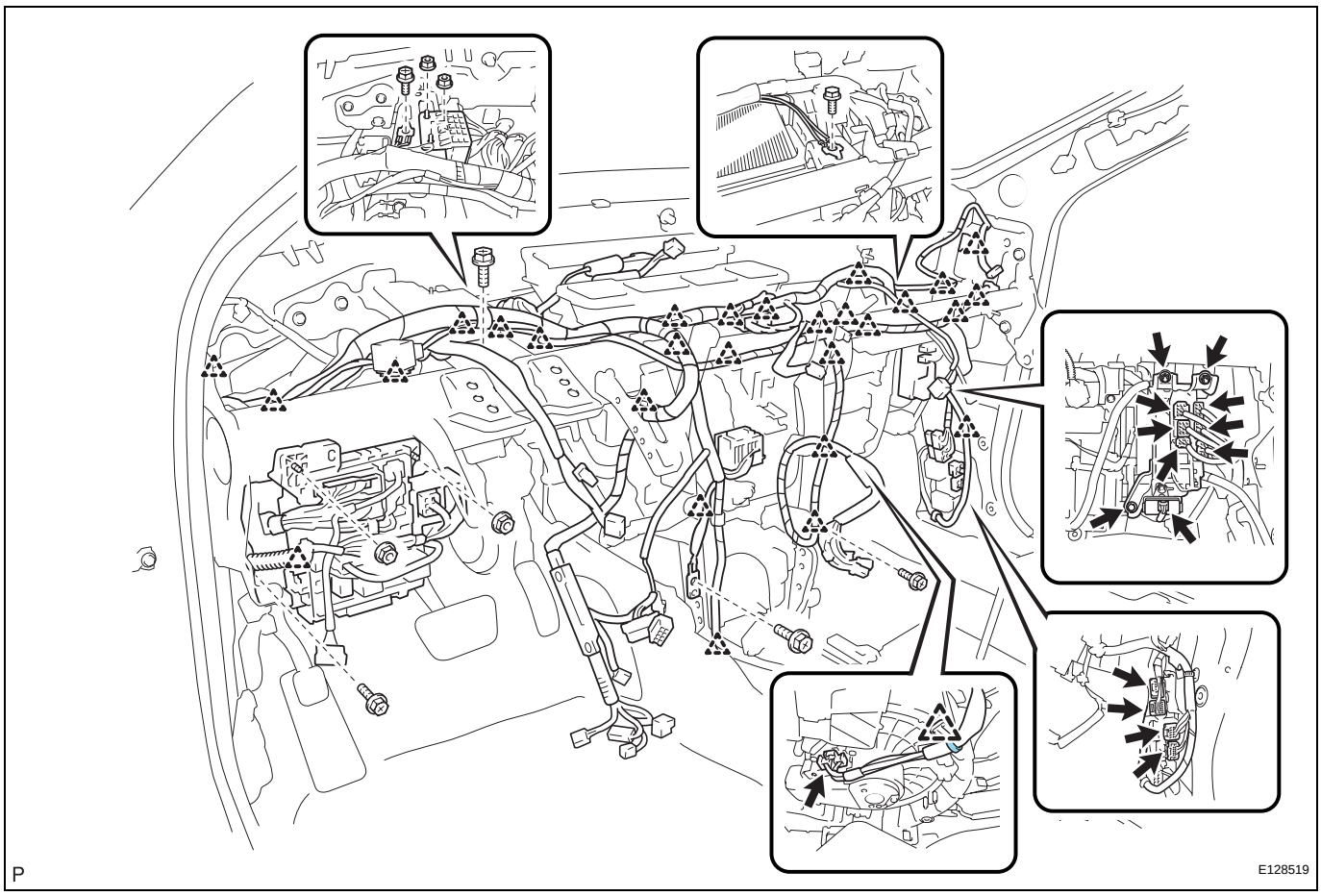


Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf) (NUT)

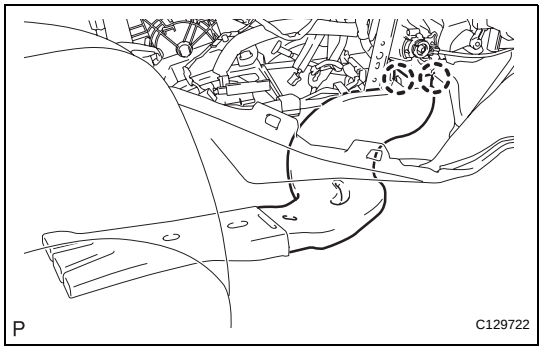
(e) Install the 2 bolts and 2 caps.

(f) Connect the connectors and clamps.

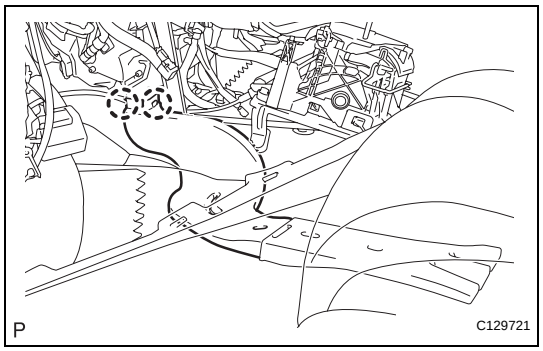
(g) Install the 6 nuts and 7 bolts.



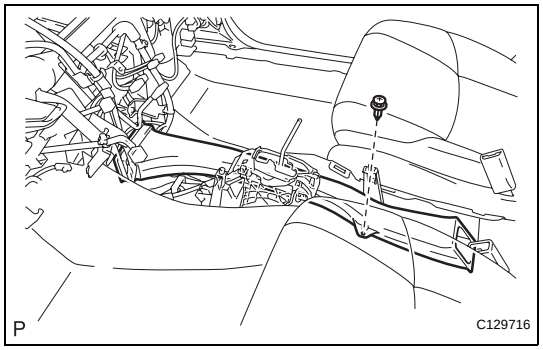
2. **INSTALL STEERING COLUMN ASSEMBLY (for TMC Made) (See page SR-47)**
3. **INSTALL STEERING POST ASSEMBLY (for TMMK Made) (See page SR-49)**
4. **INSTALL NO. 1 AIR DUCT (See page SR-50)**
5. **INSTALL REAR NO. 1 AIR DUCT**
   (a) Engage the 2 claws to install the rear No. 1 air duct.



AC



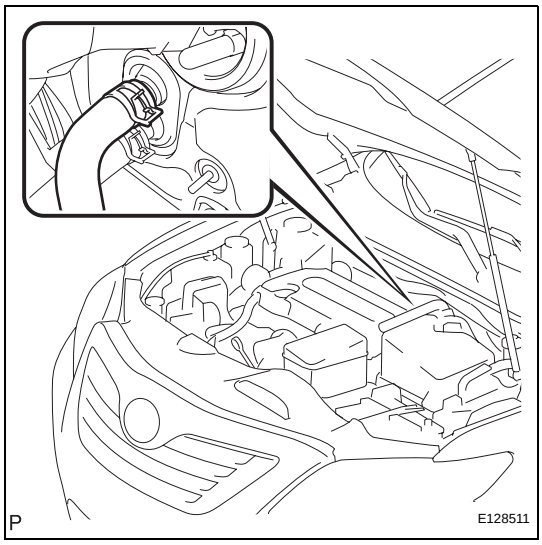
6. **INSTALL REAR NO. 2 AIR DUCT**
   (a) Engage the 2 claws to install the rear No. 2 air duct.
7. **INSTALL FLOOR CARPET BRACKET RH**
8. **INSTALL FLOOR CARPET BRACKET LH**



9. **INSTALL NO. 1 CONSOLE BOX DUCT (for Automatic Air Conditioning System)**
   (a) Install the No. 1 console box duct with the clip.
10. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-44)**
11. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-45)**
12. **INSTALL NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-48)**
13. **INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)**
14. **INSTALL INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-48)**
15. **INSTALL INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-48)**
16. **INSTALL FRONT PILLAR GARNISH LH (See page IR-51)**
17. **INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side) (See page IP-48)**
18. **INSTALL INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-49)**
19. **INSTALL INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-49)**
20. **INSTALL FRONT PILLAR GARNISH RH (See page IR-52)**
21. **INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-49)**
22. **INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)**
23. **INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-50)**
24. **INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)**
25. **INSTALL CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-51)**

26. **INSTALL CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-51)**
27. **INSTALL CONSOLE BOX CARPET (See page IP-51)**
28. **INSTALL CONSOLE BOX POCKET (See page IP-51)**
29. **INSTALL RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-147)**
30. **INSTALL NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/ Navigation System) (See page NS-196)**
31. **INSTALL INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-52)**
32. **INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-52)**
33. **INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-52)**
34. **INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)**
35. **INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-53)**
36. **INSTALL FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)**
37. **INSTALL UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-54)**
38. **INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-54)**
39. **INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-55)**
40. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-55)**
41. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-55)**
42. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-55)**
43. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-56)**
44. **INSTALL INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-56)**
45. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-55)**
46. **INSTALL FRONT DOOR SCUFF PLATE RH (See page IR-55)**

47. INSTALL COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-56)
48. INSTALL COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-56)
49. INSTALL INSTRUMENT CLUSTER FINISH PANEL (See page IP-57)
50. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-57)
51. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-57)
52. INSTALL NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-57)
53. INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-50)
54. ADJUST SPIRAL CABLE SUB-ASSEMBLY (See page RS-367)
55. INSTALL STEERING COLUMN COVER (for TMC Made) (See page IP-58)
56. INSTALL STEERING COLUMN COVER (for TMMK Made) (See page IP-58)
57. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-58)
58. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-59)
59. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-54)
60. INSTALL FRONT DOOR SCUFF PLATE LH (See page IR-54)
61. INSTALL STEERING WHEEL ASSEMBLY (See page SR-51)
62. INSTALL STEERING PAD (See page RS-350)
63. INSTALL LOWER NO. 3 STEERING WHEEL COVER (See page RS-351)
64. INSTALL LOWER NO. 2 STEERING WHEEL COVER (See page RS-352)

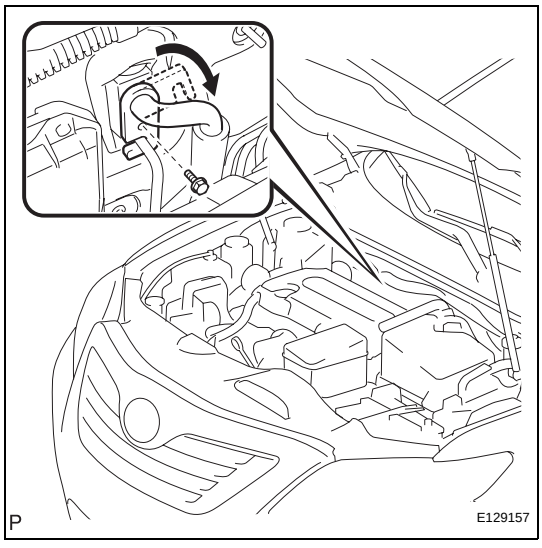


65. INSTALL HEATER INLET WATER HOSE
(a) Install the water hose and attach the clip.

66. INSTALL HEATER OUTLET WATER HOSE
(a) Use the same procedures described for the heater inlet water hose.

67. INSTALL AIR CONDITIONER TUBE AND ACCESSORY
(a) Remove the attached vinyl tape from the tube.
(b) Sufficiently apply compressor oil to a new O-ring and fitting surface of the air conditioning tube assembly.
Compressor oil:
ND-OIL 8 or equivalent
(c) Install the O-ring on the air conditioner tube and accessory.
(d) Install the air conditioner tube and accessory.

68. INSTALL SUCTION HOSE SUB-ASSEMBLY
(a) Remove the attached vinyl tape from the hose.
(b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the suction hose sub-assembly.
Compressor oil:
ND-OIL 8 or equivalent
(c) Install the O-ring on the suction hose sub-assembly.
(d) Move the hook connector in the direction indicated by the arrow in the illustration.
(e) Insert the pipe joint into the fitting hole securely and tighten the bolt.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



69. INSTALL COWL TOP OUTER FRONT PANEL SUB-ASSEMBLY (See page BR-36)

70. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page WW-14)

71. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-15)

72. INSTALL FRONT FENDER TO COWL SIDE SEAL LH (See page WW-15)

73. INSTALL FRONT FENDER TO COWL SIDE SEAL RH (See page WW-15)

74. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH (See page WW-15)

75. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH (See page WW-16)

76. CONNECT NEGATIVE BATTERY TERMINAL

77. INSPECT STEERING PAD (See page RS-352)

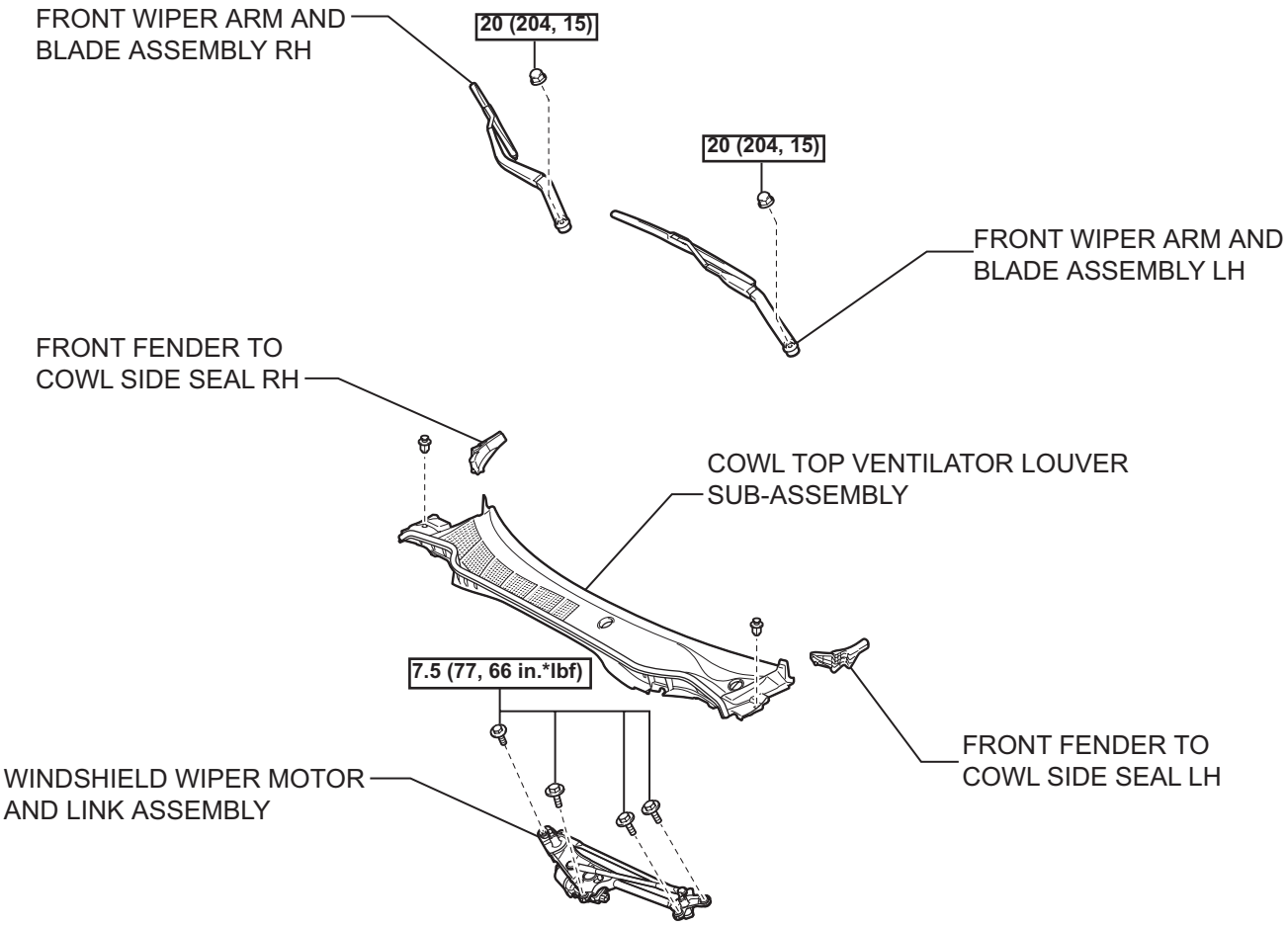
78. INSPECT SRS WARNING LIGHT
(See page RS-32)

AC

79. **ADD ENGINE COOLANT (for 2AZ-FE) (See page CO-5)**
80. **ADD ENGINE COOLANT (for 2GR-FE) (See page CO-6)**
81. **CHECK FOR ENGINE COOLANT LEAKS**
82. **CHARGE WITH REFRIGERANT (See page AC-125)**
83. **WARM UP ENGINE (See page AC-126)**
84. **CHECK FOR REFRIGERANT LEAKS (See page AC-126)**

BLOWER UNIT

COMPONENTS



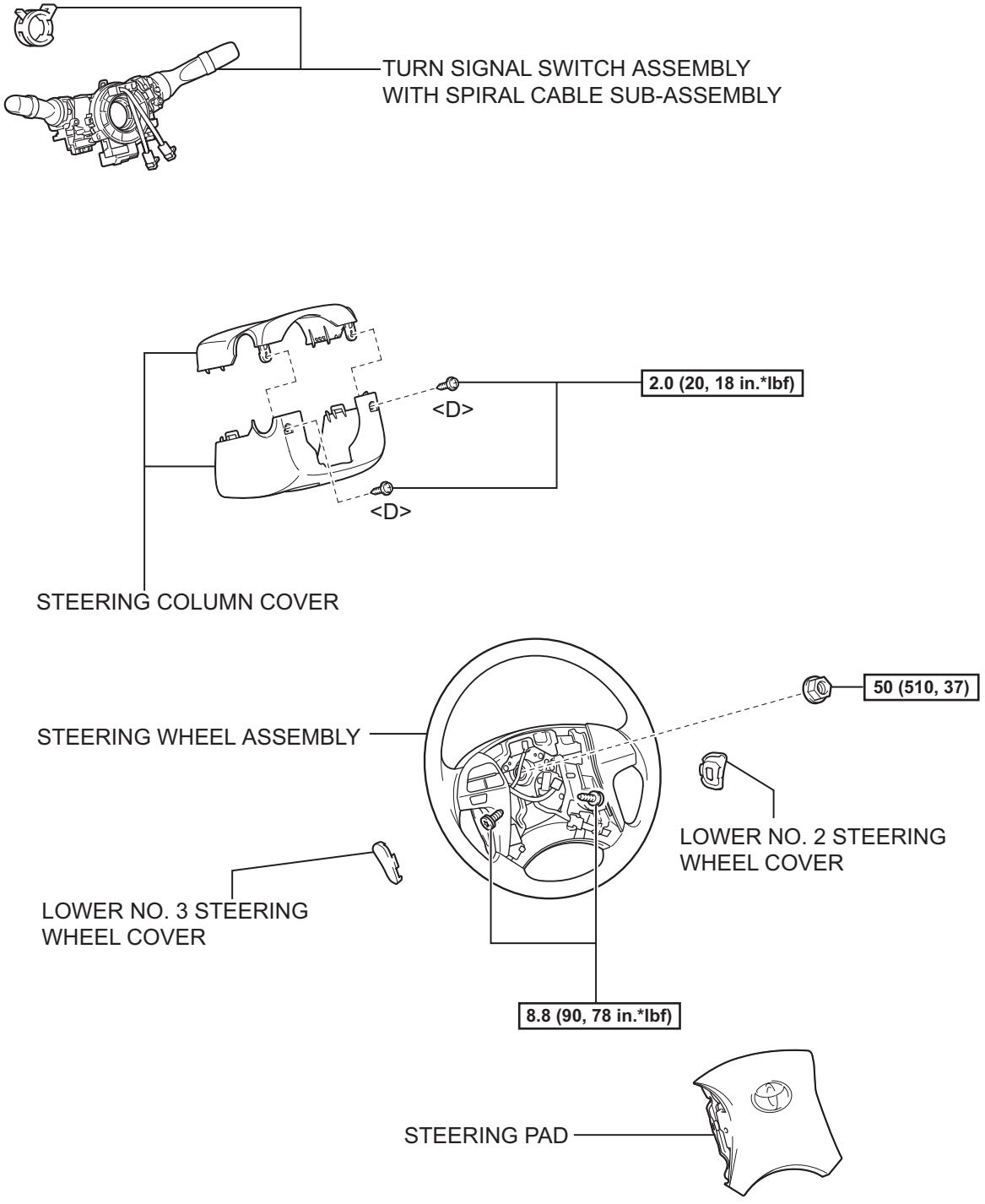
N*m (kgf*cm, ft.*lbf): Specified torque

P

E133392E01

AC

for TMC Made:



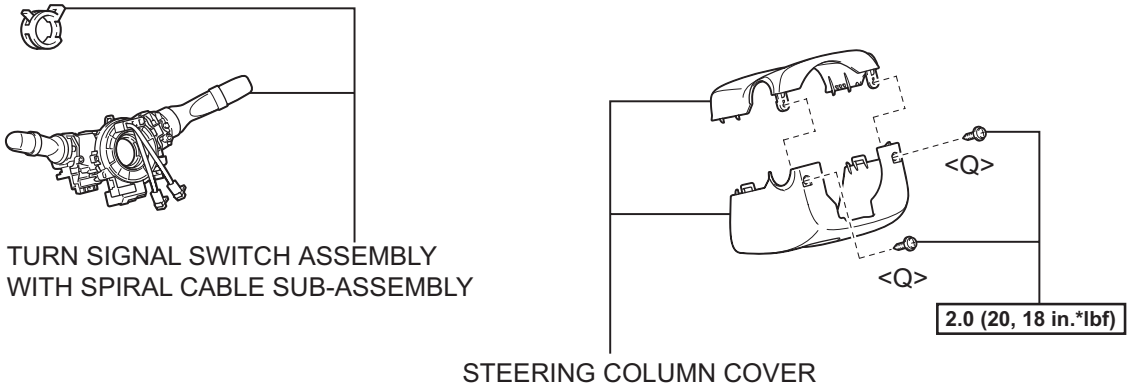
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

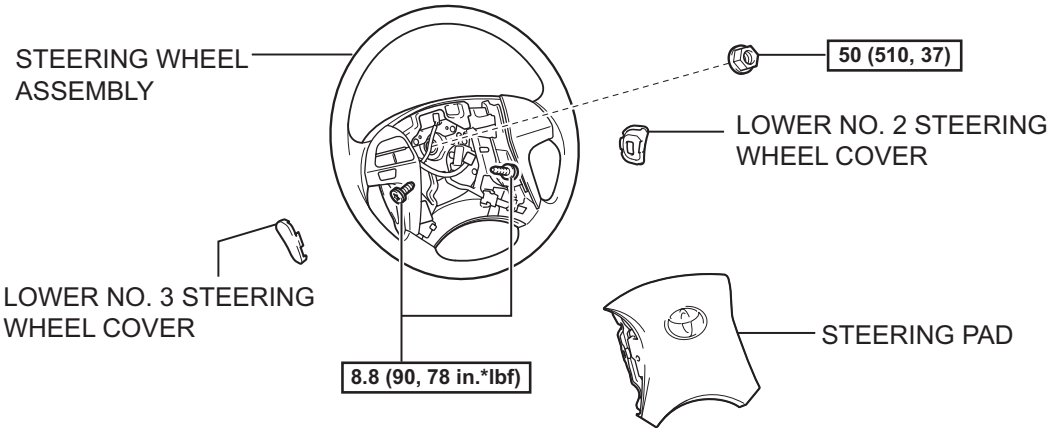
P

B137279E01

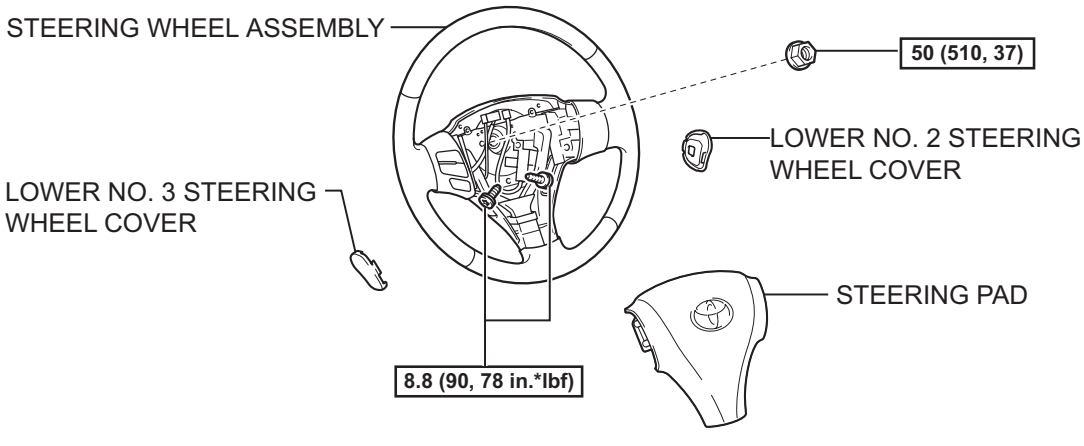
for TMMK Made:



for 4 Spoke:



for 3 Spoke:

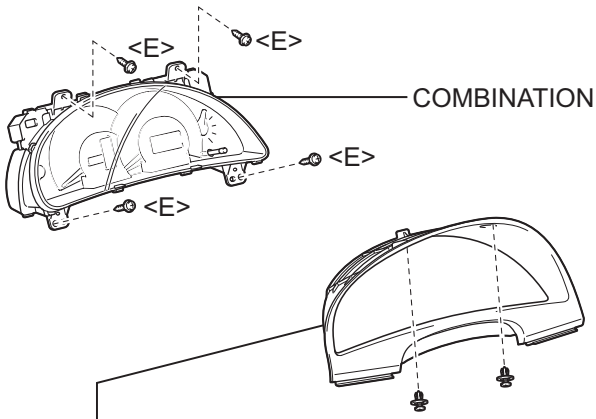


N*m (kgf*cm, ft.*lbf) : Specified torque

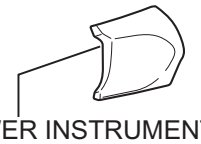
P

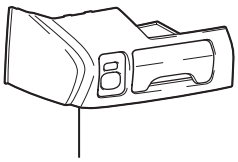
B137280E01

for TMC Made:

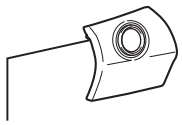


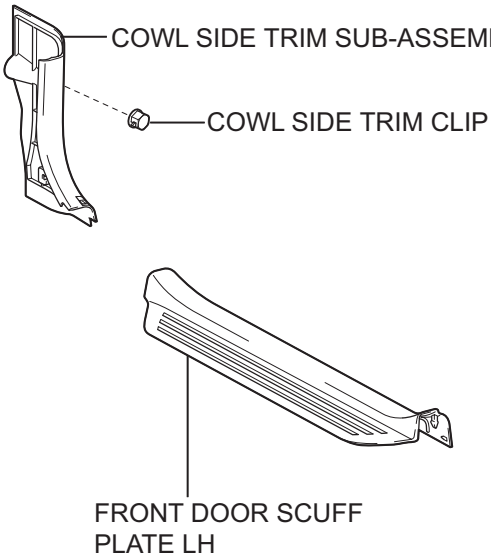
without Smart Key System:

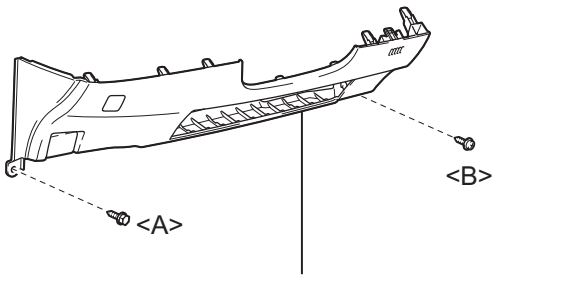




with Smart Key System:





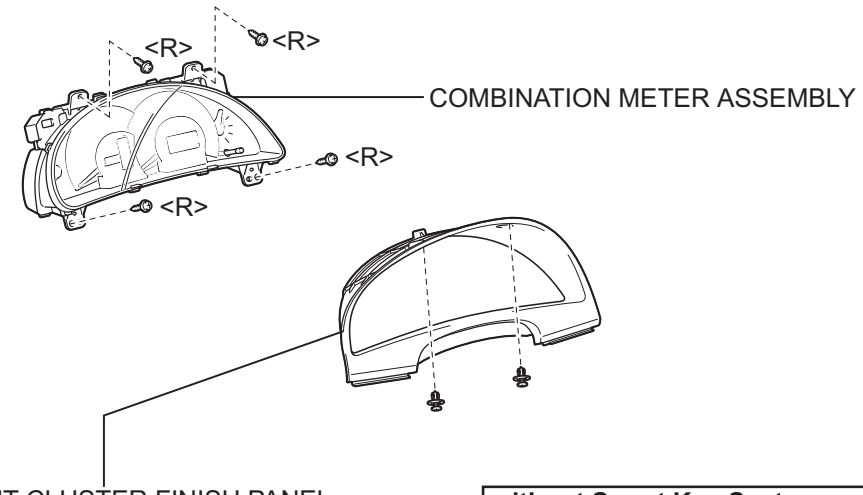


AC

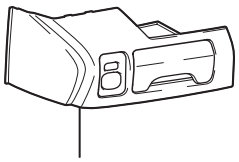
P

B137281E01

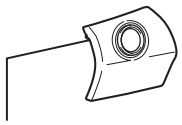
for TMMK Made:

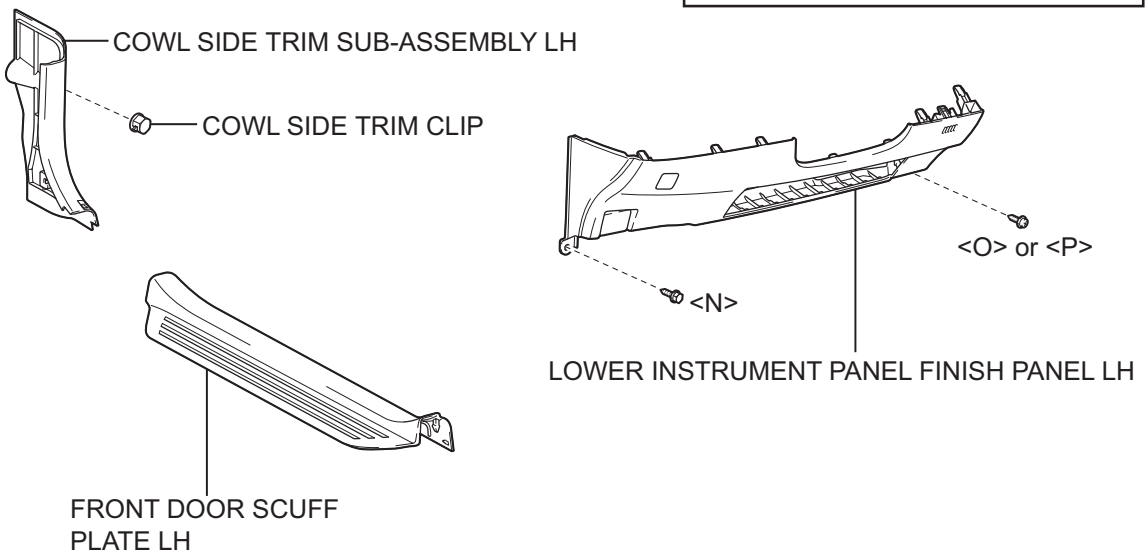


without Smart Key System:



with Smart Key System:



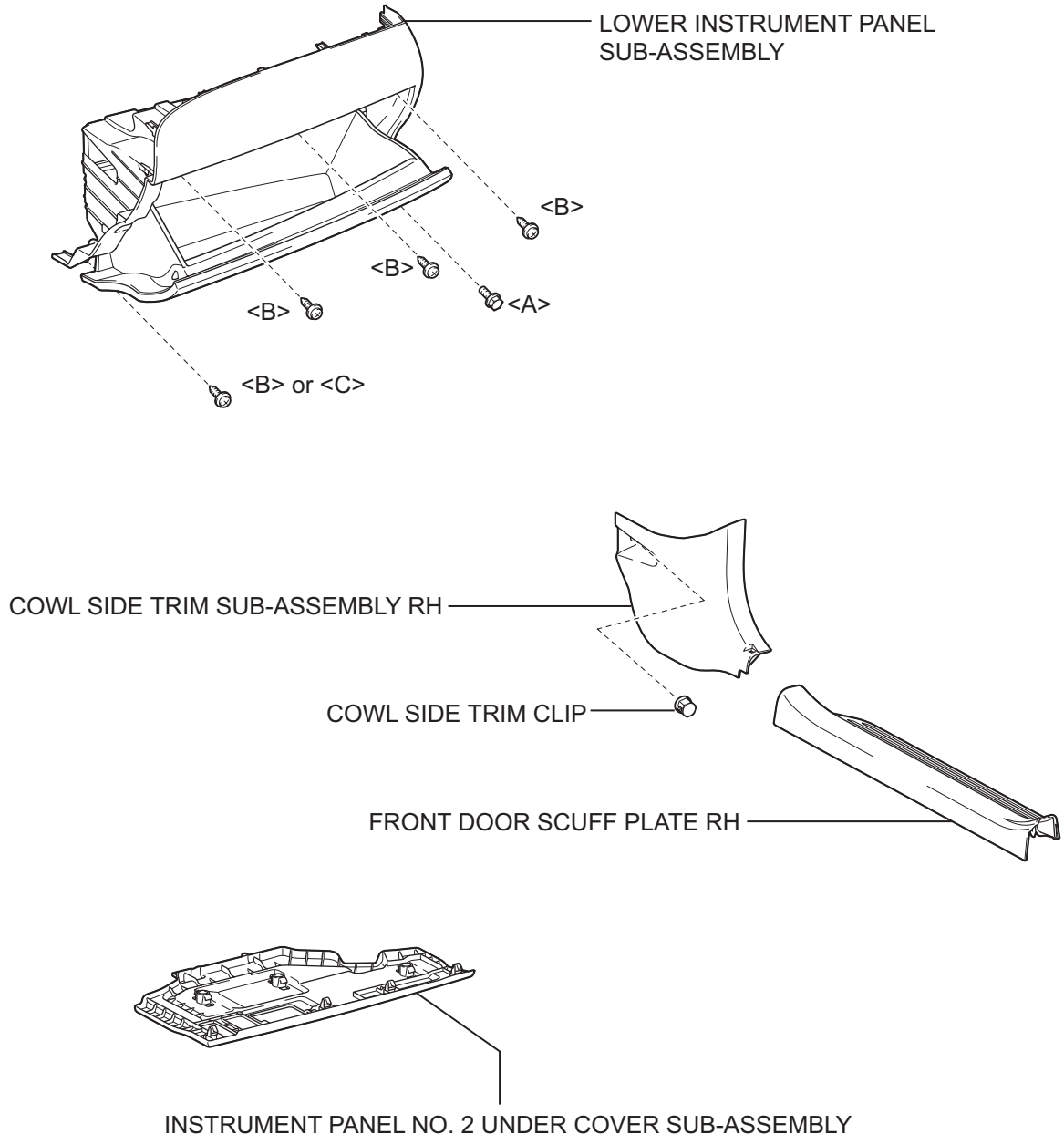


AC

P

B137281E03

for TMC Made:

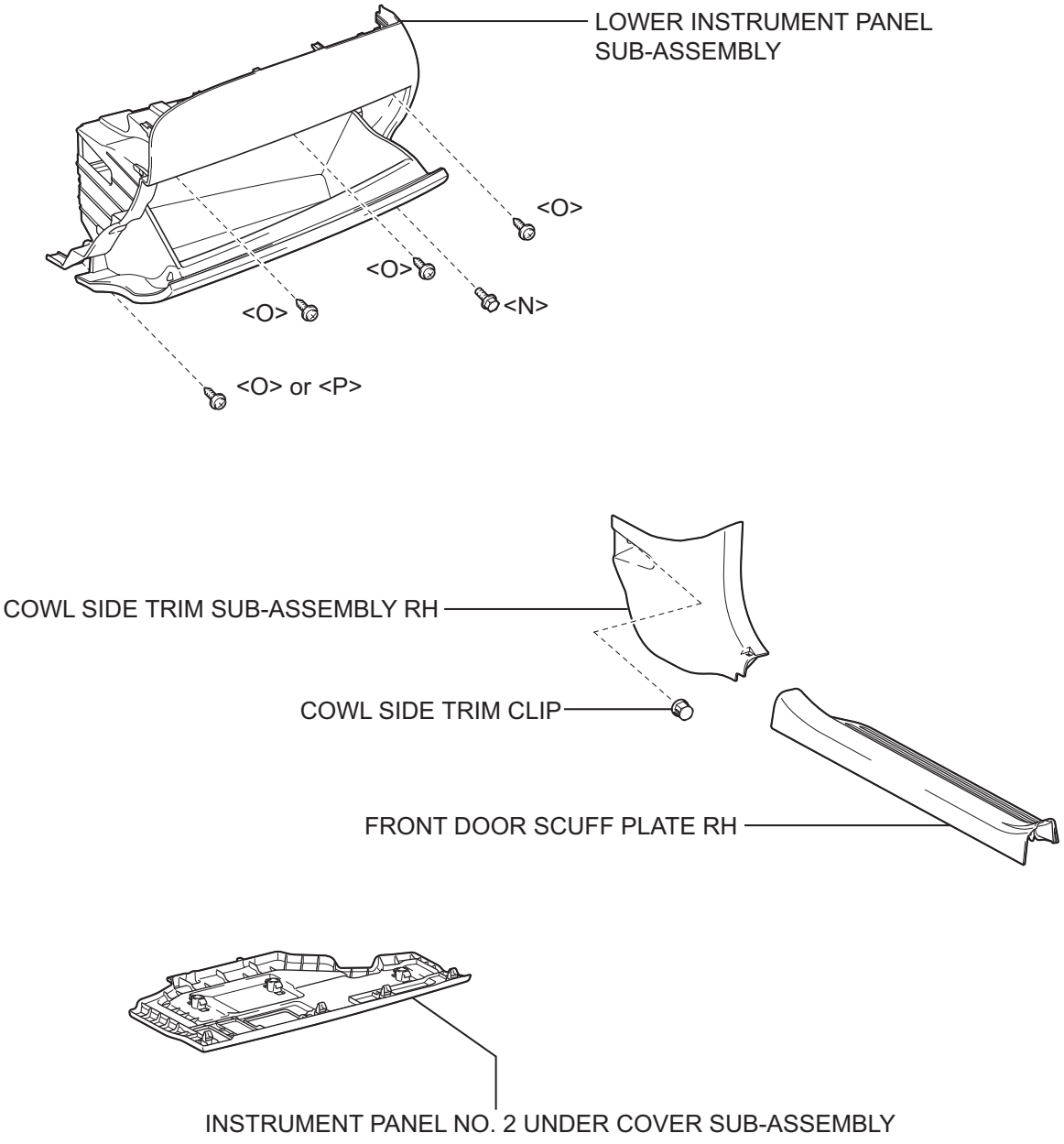


P

B137282E01

AC

for TMMK Made:



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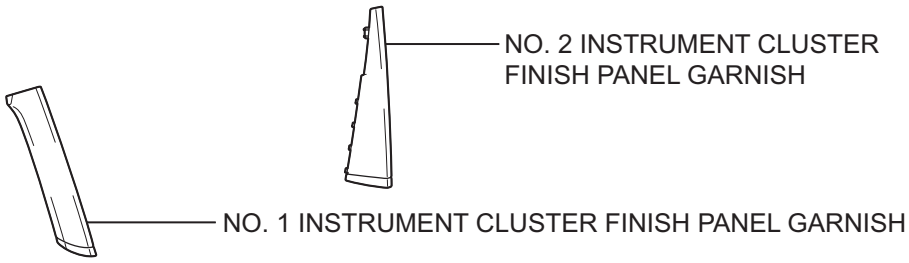
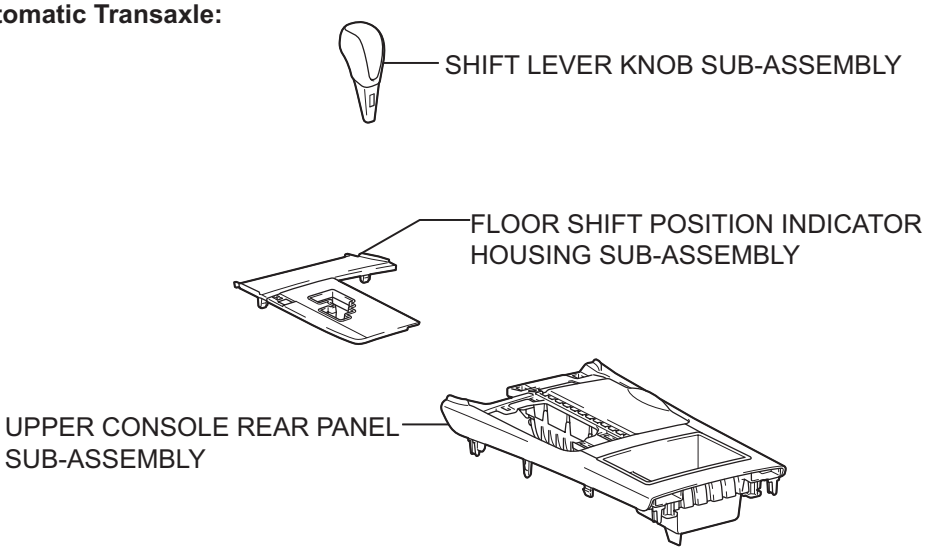
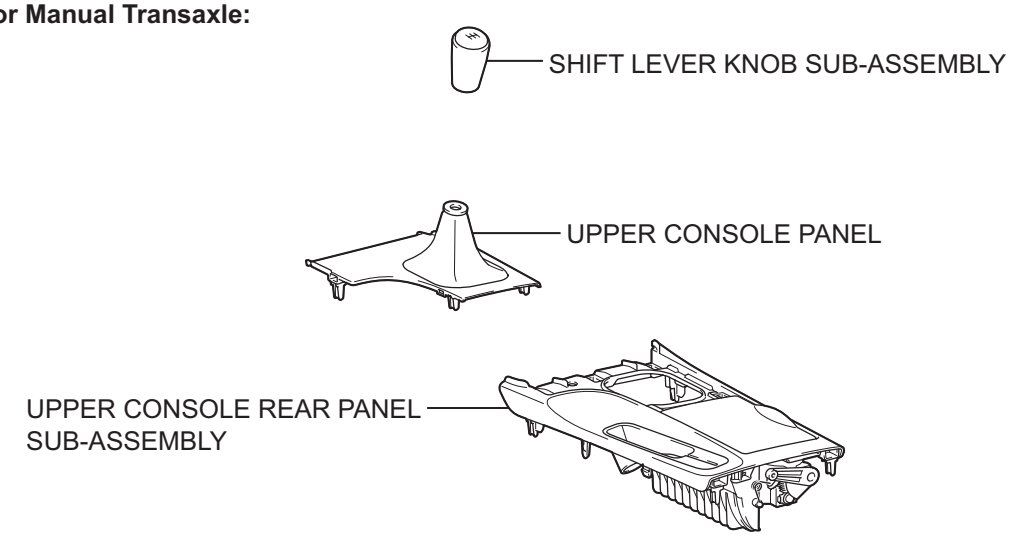


for Automatic Transaxle:



for Manual Transaxle:

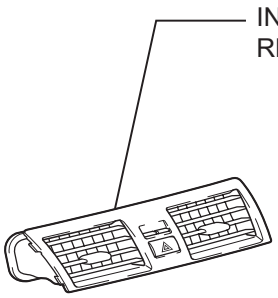


AC

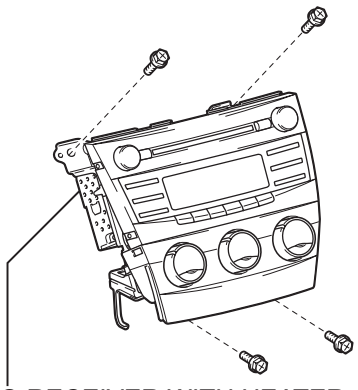
P

B137283E01

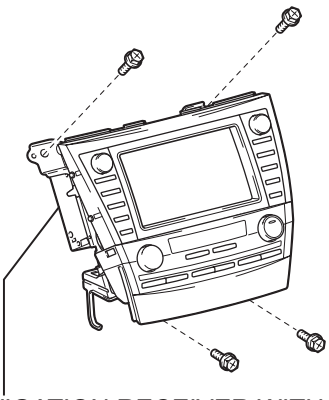
for TMC Made:

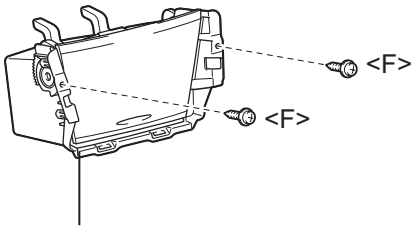


without Navigation System:



with Navigation System:



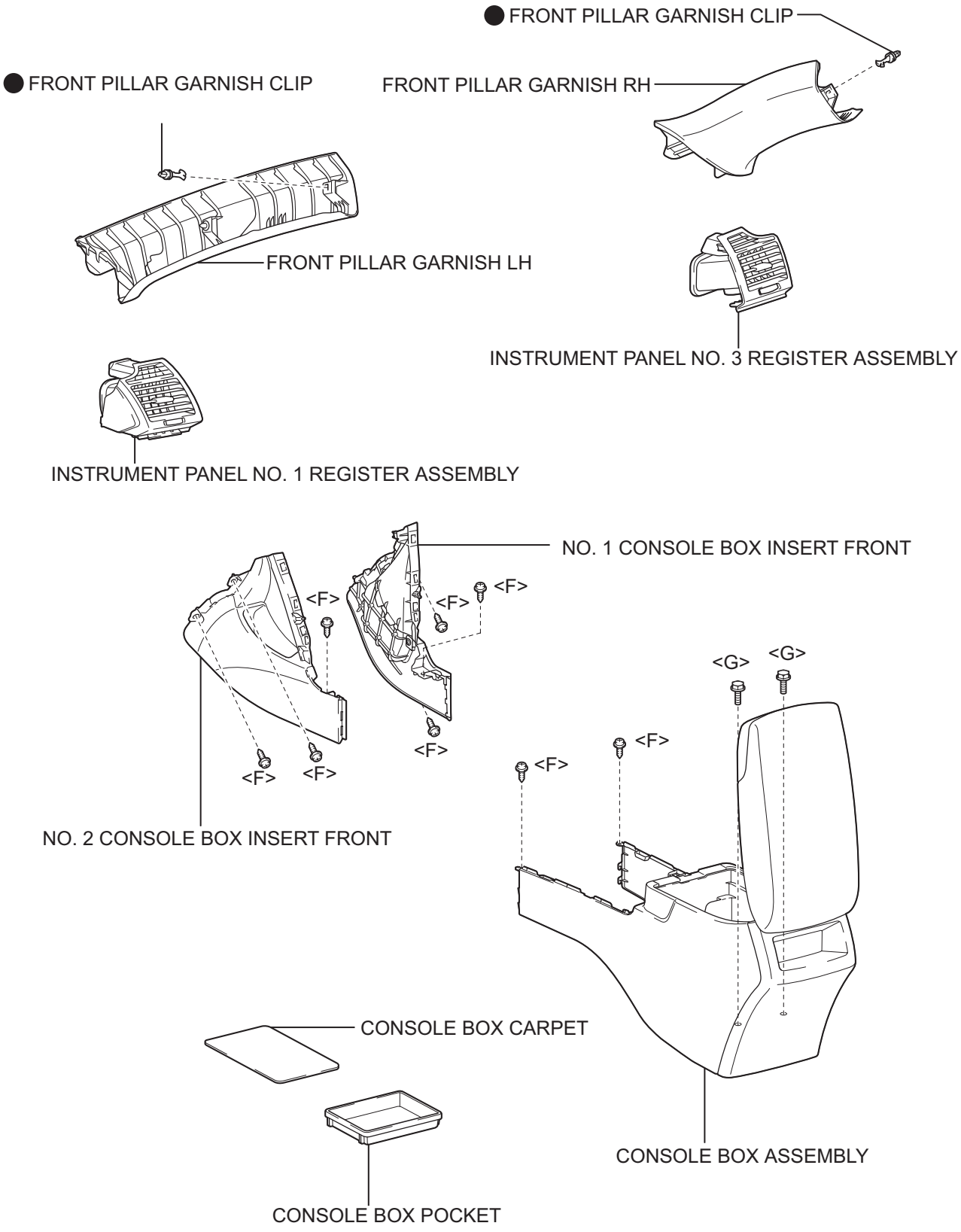


AC

P

B137284E01

for TMC Made:



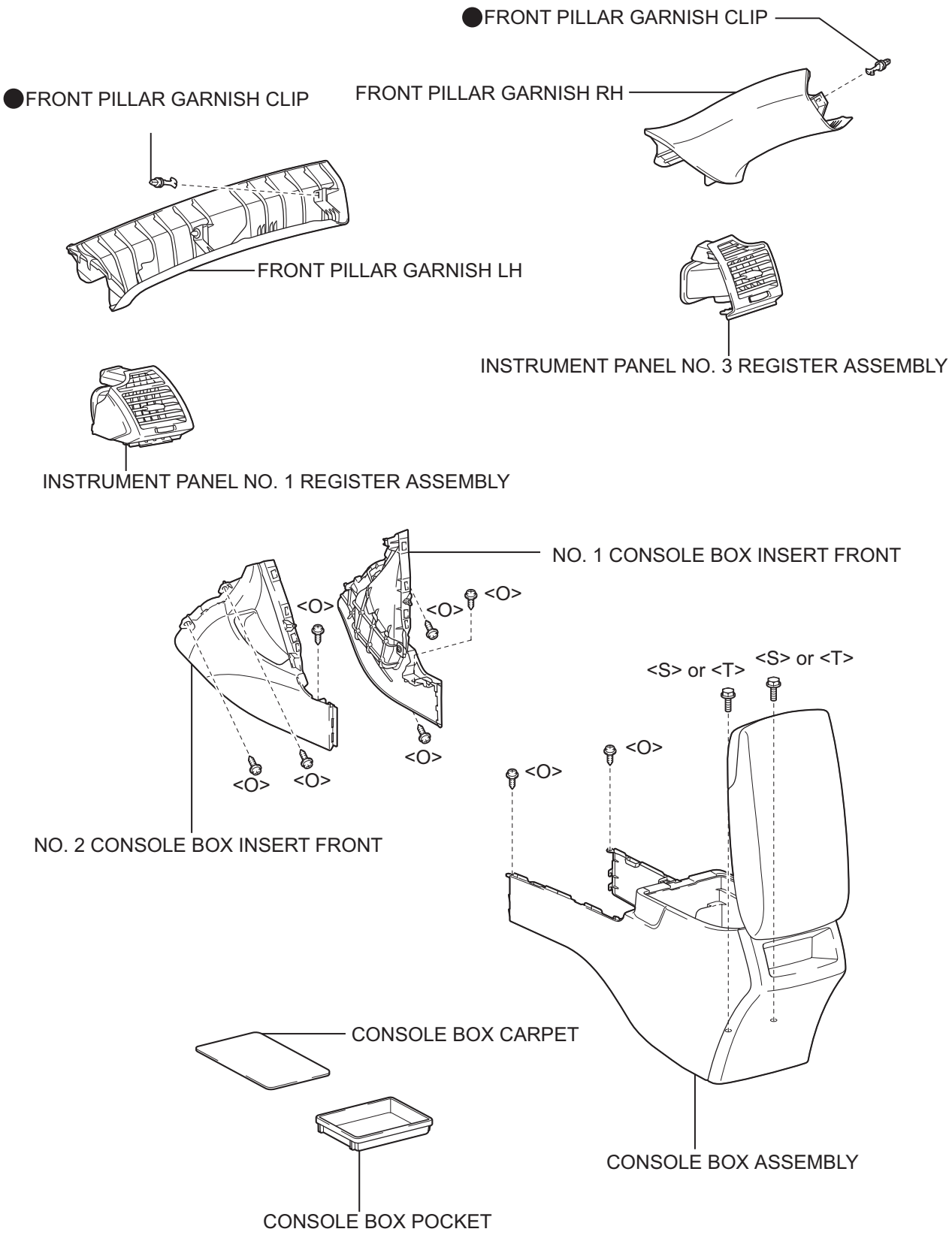
● Non-reusable part

P

B137285E01

AC

for TMMK Made:



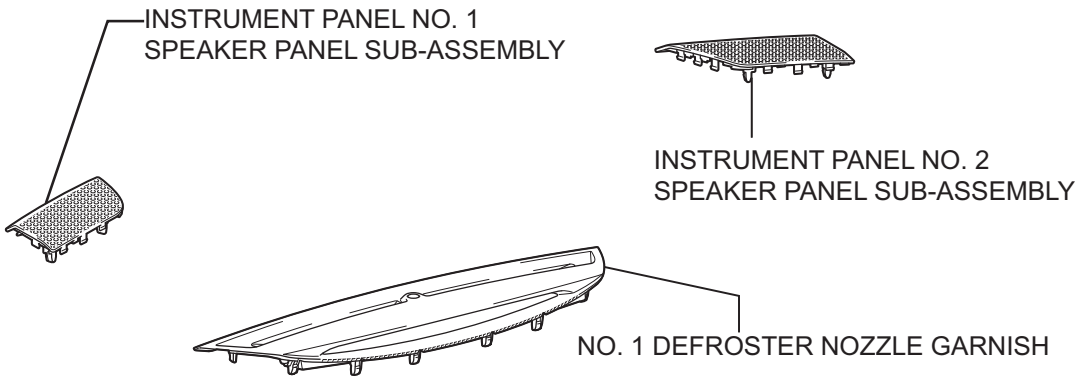
AC

● Non-reusable part

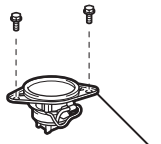
P

B137285E03

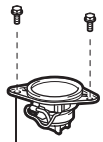
for TMC Made:

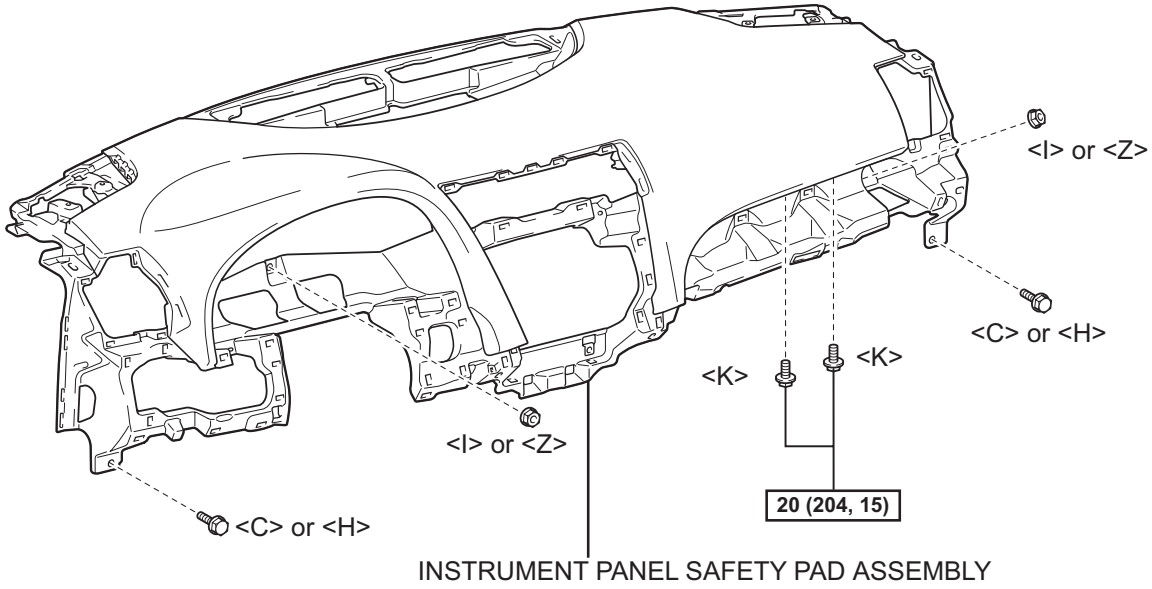


for LH Side:



for RH Side:





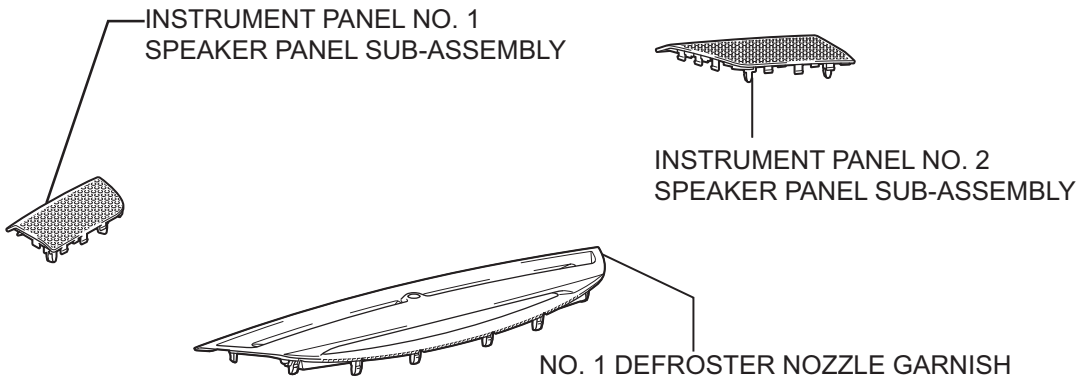
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

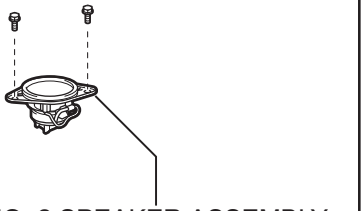
P

B137286E01

for TMMK Made:

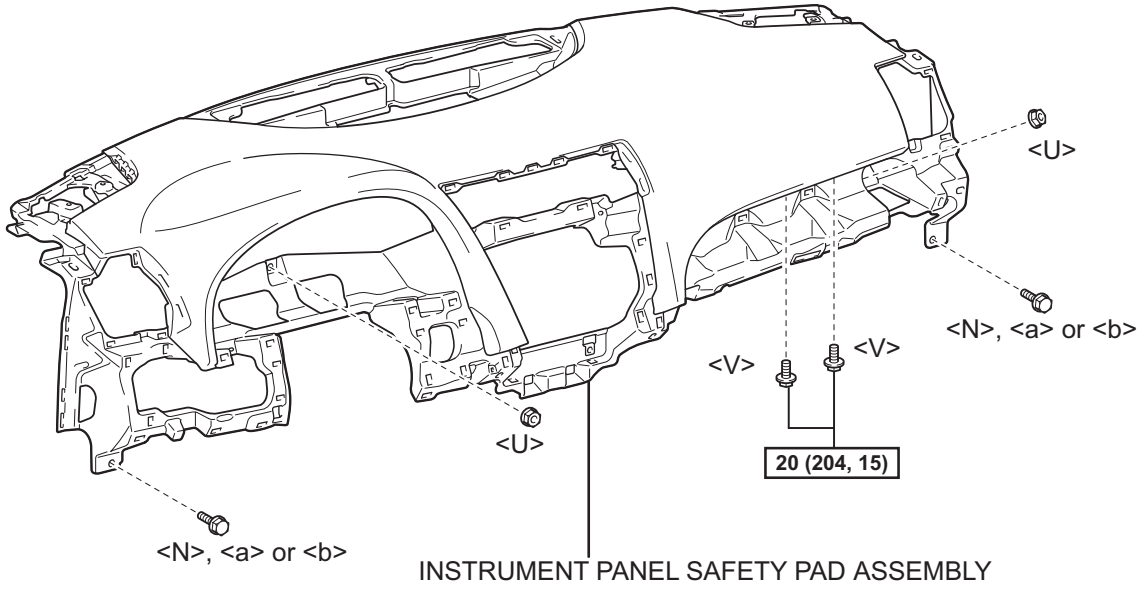


for LH Side:



for RH Side:

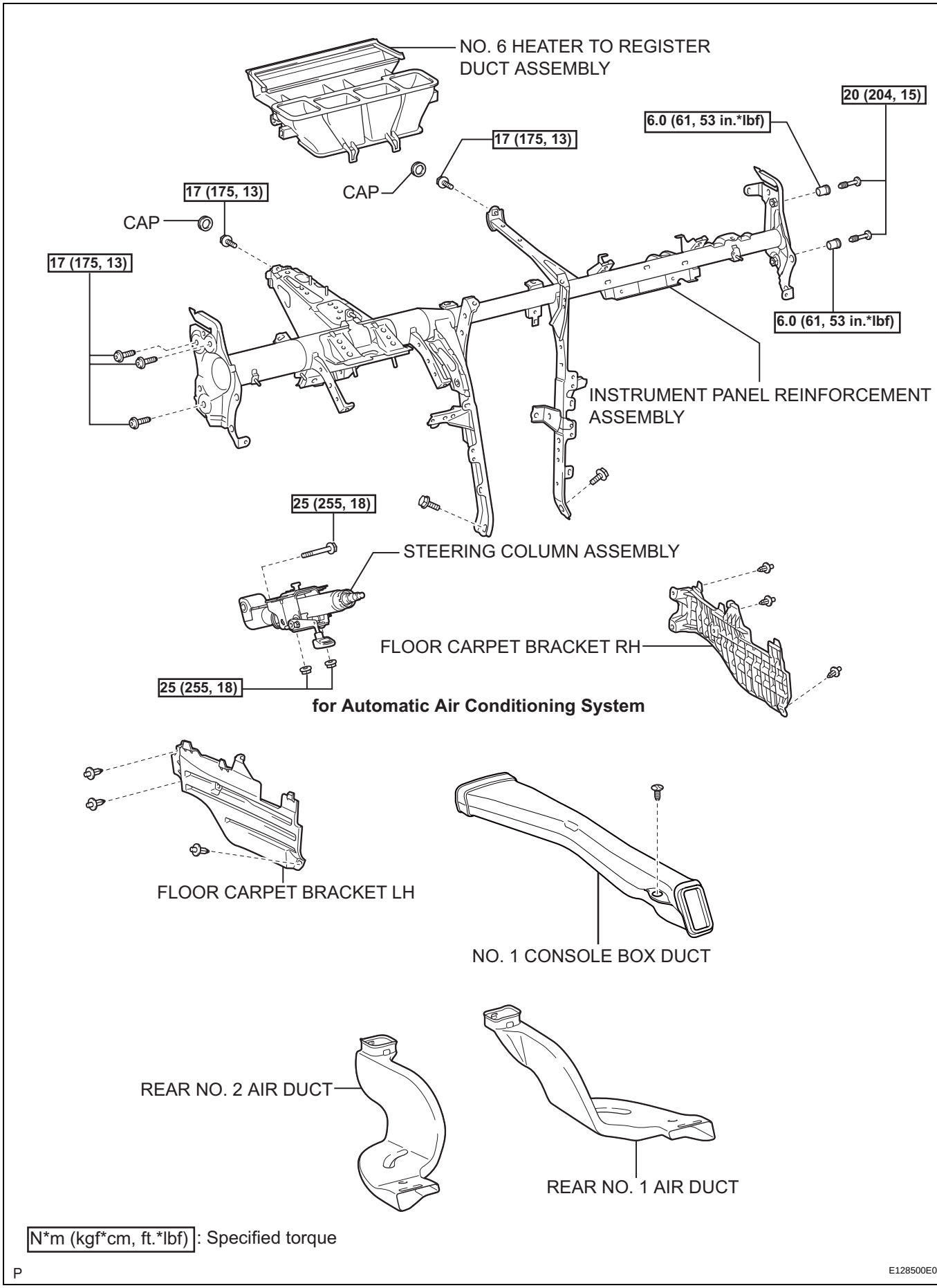
AC



N*m (kgf*cm, ft.*lbf) : Specified torque

P

B137286E03



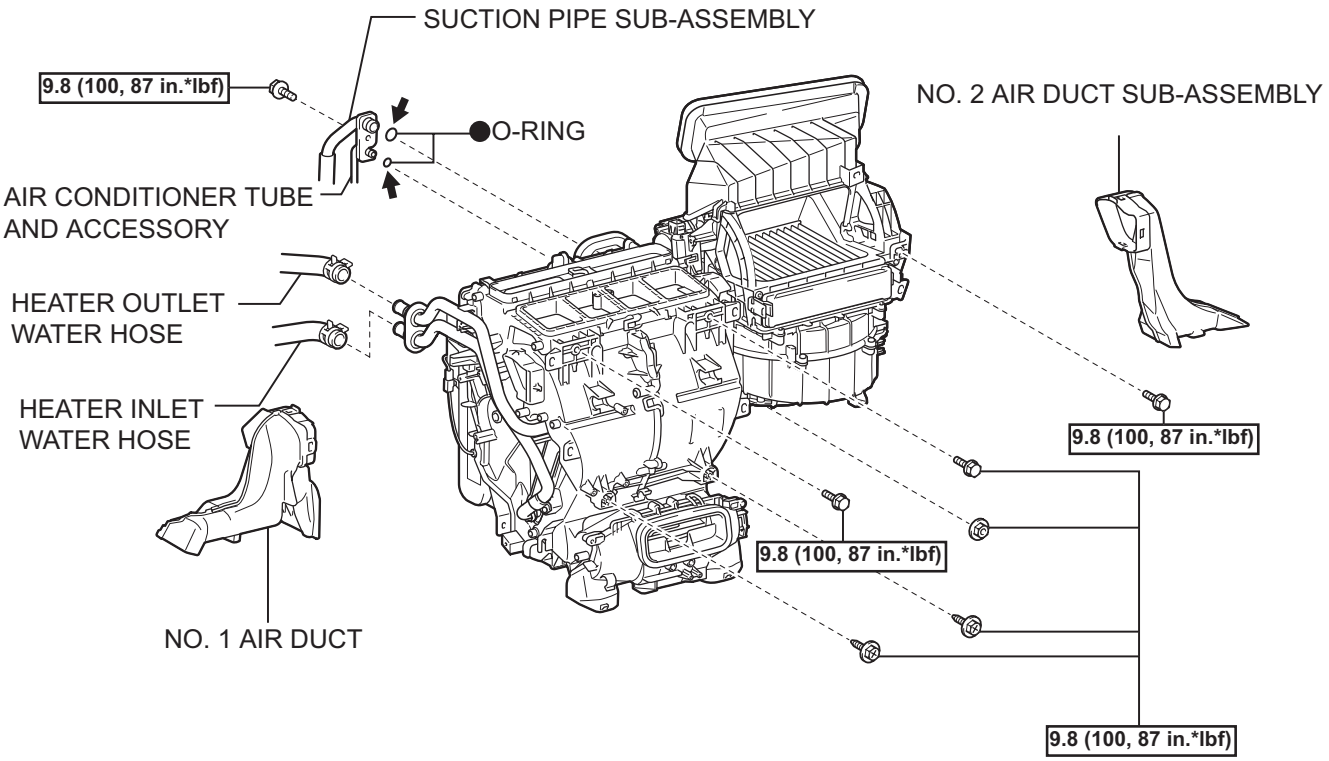
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

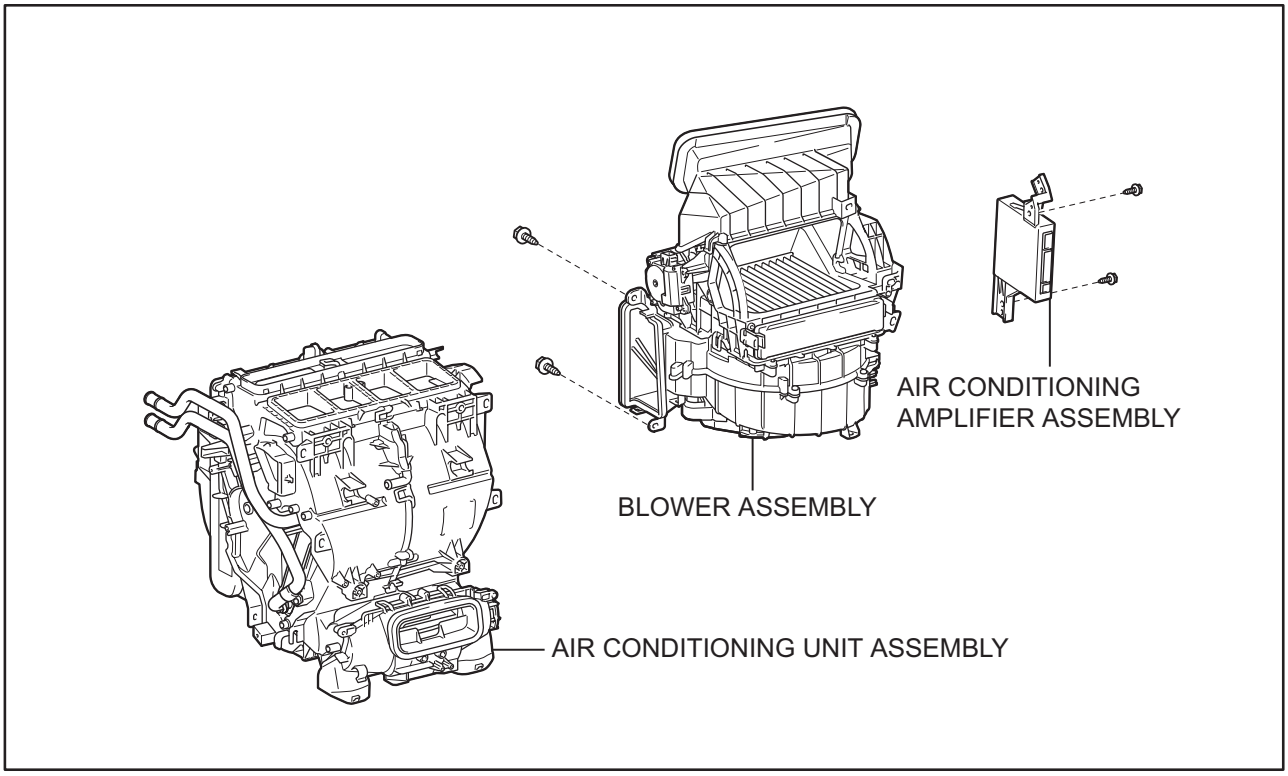
P

E128500E01

for TMC Made:



AC



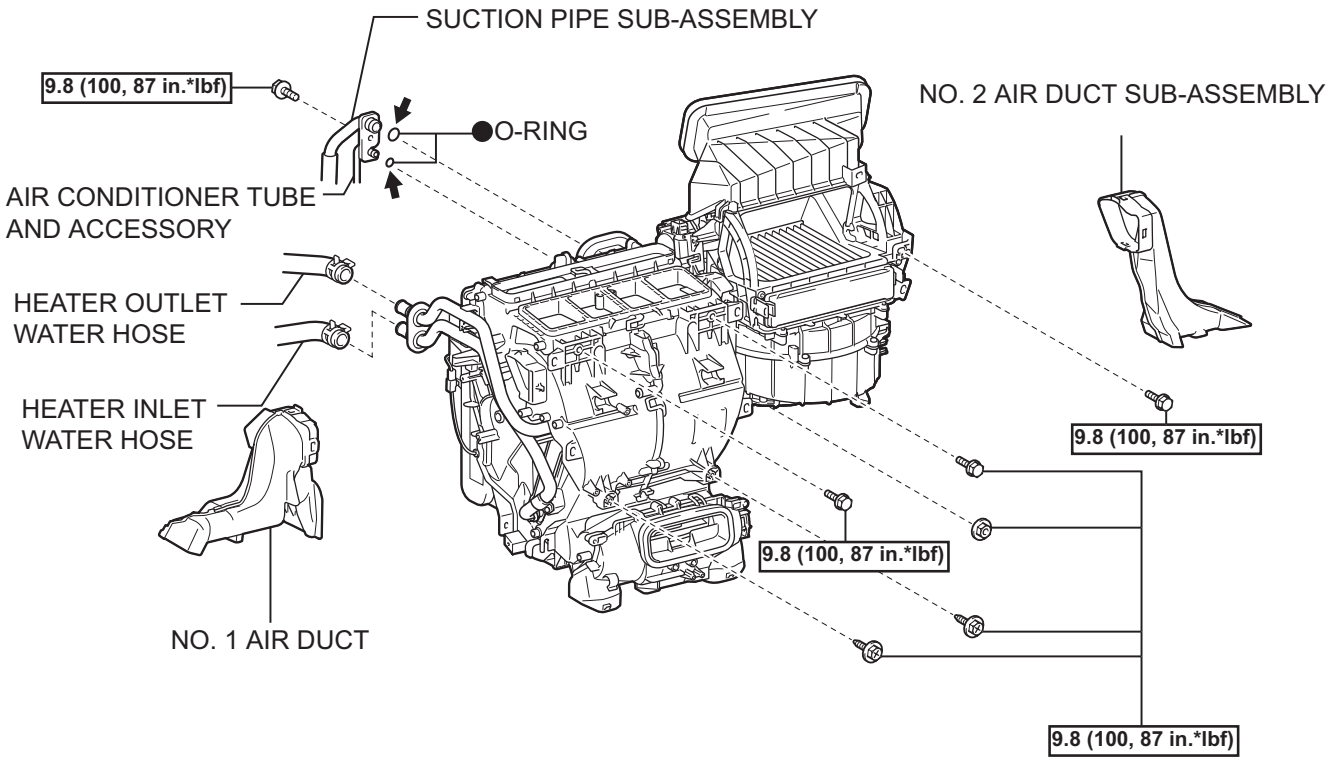
◀ Compressor oil ND-OIL 8 or equivalent

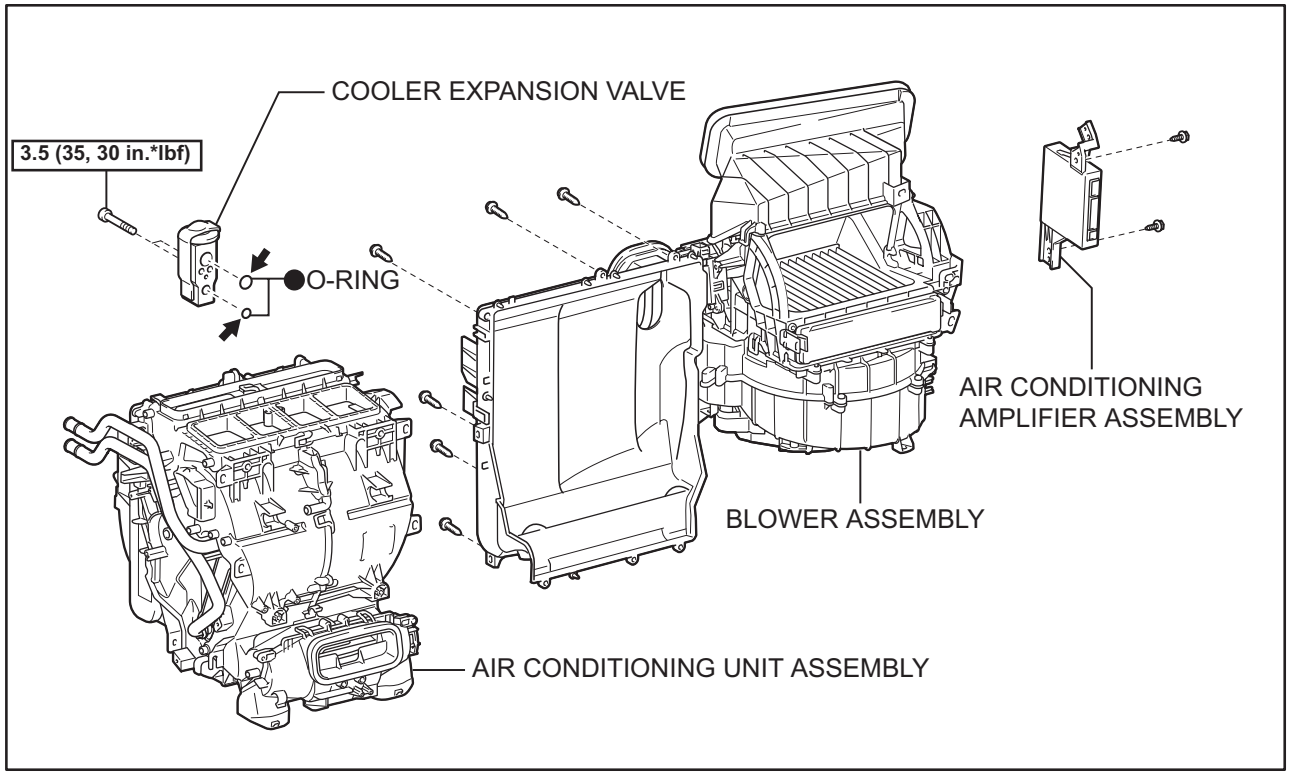
● Non-reusable part N*m (kgf*cm, ft.*lbf): Specified torque

P

E128501E01

for TMMK Made:





AC

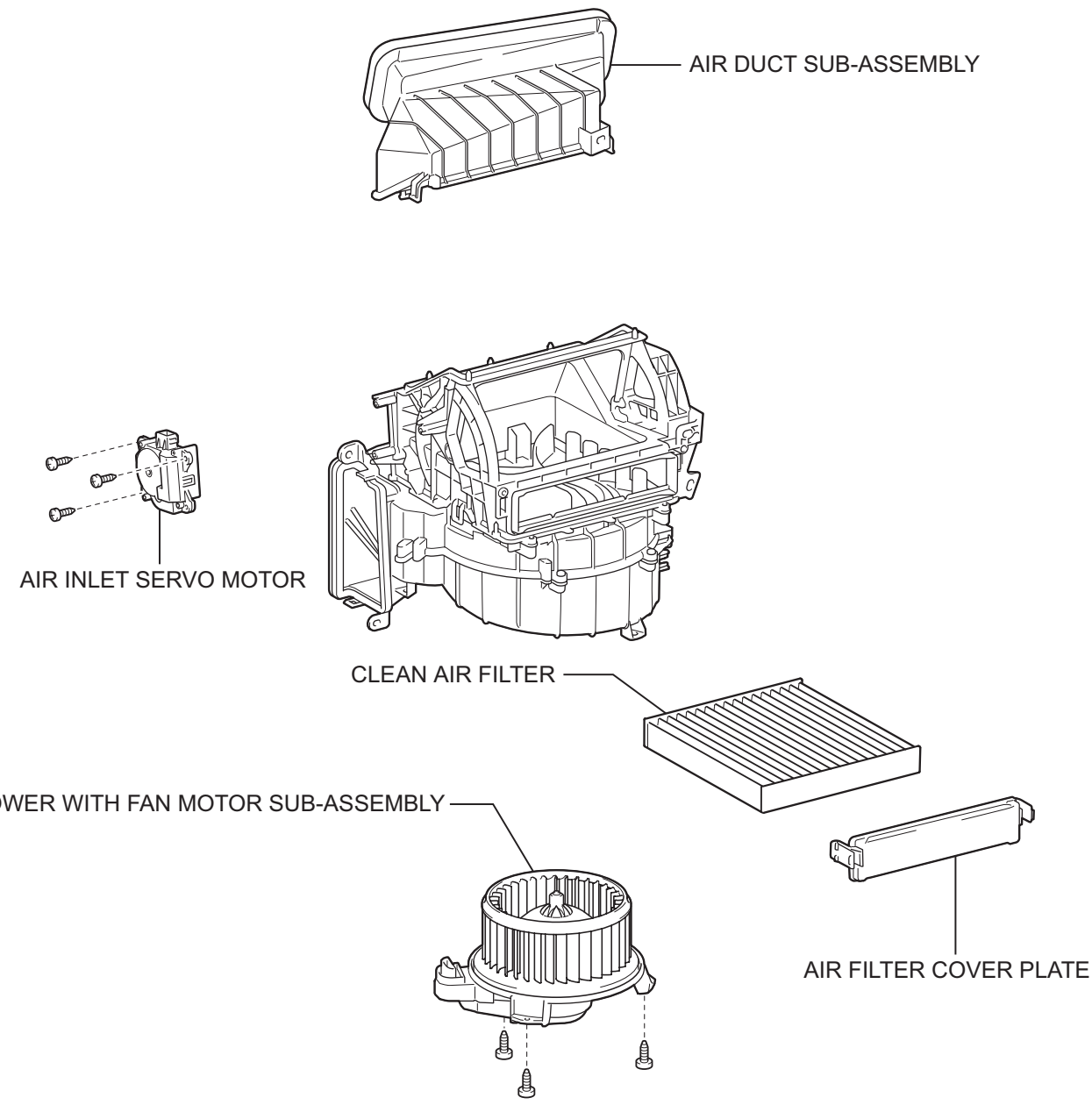
⬅ Compressor oil ND-OIL 8 or equivalent

● Non-reusable part N*m (kgf*cm, ft.*lbf): Specified torque

P

E129993E01

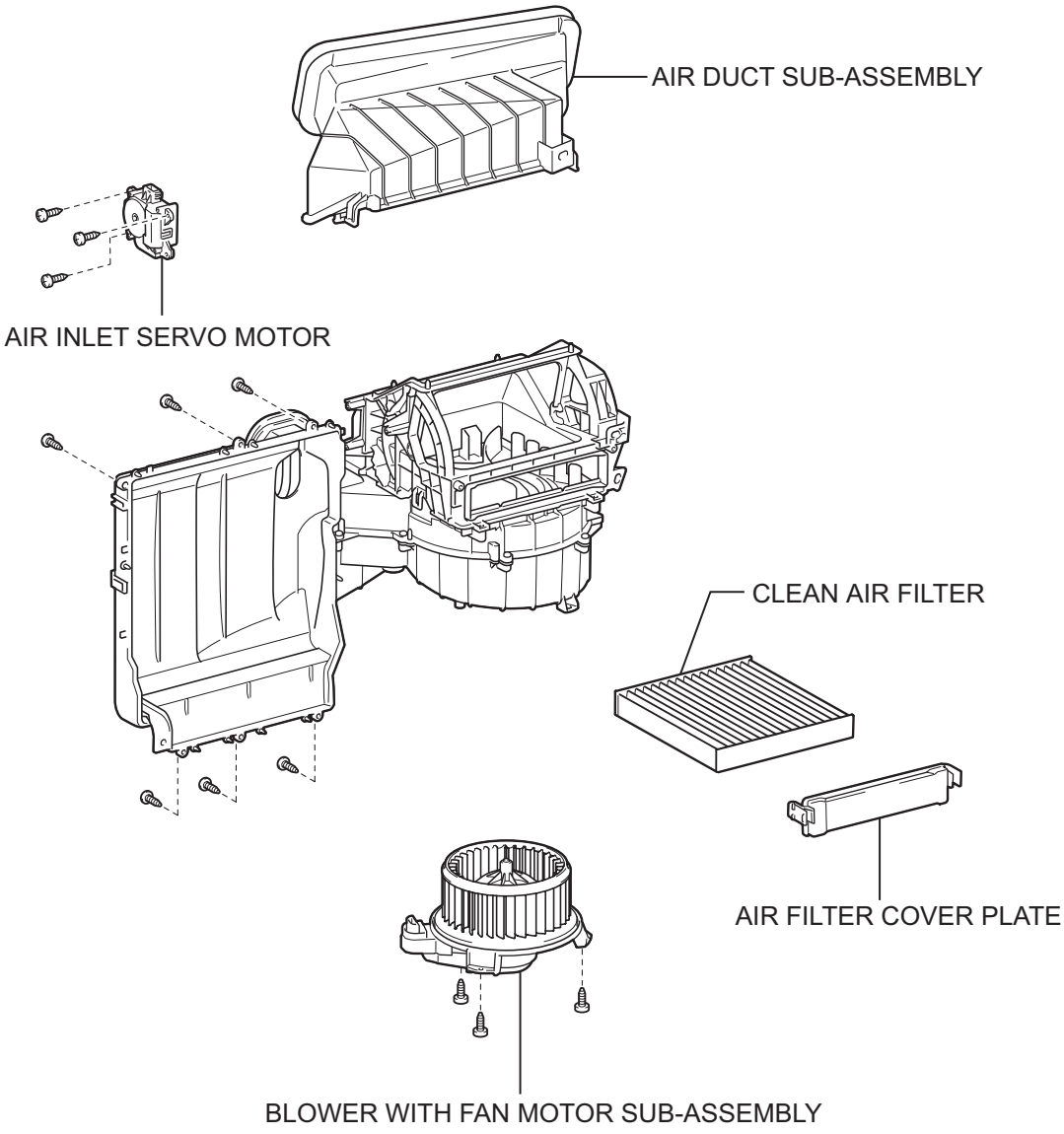
for TMC Made:



AC

P

E128503E01


AIR DUCT SUB-ASSEMBLY
AIR INLET SERVO MOTOR
CLEAN AIR FILTER
AIR FILTER COVER PLATE
BLOWER WITH FAN MOTOR SUB-ASSEMBLY
P
E129995E01

AC

REMOVAL

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM (See page AC-125)
2. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD
3. DISCONNECT BATTERY NEGATIVE TERMINAL
   CAUTION:
   Wait for 90 seconds after disconnecting the terminal to prevent the airbag from deploying. (See page RS-1)
4. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH (See page WW-9)
5. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH (See page WW-9)
6. REMOVE FRONT FENDER TO COWL SIDE SEAL LH (See page WW-9)
7. REMOVE FRONT FENDER TO COWL SIDE SEAL RH (See page WW-9)
8. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-10)
9. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page WW-10)
10. REMOVE COWL TOP OUTER FRONT PANEL SUB-ASSEMBLY (See page BR-29)
11. DISCONNECT SUCTION PIPE SUB-ASSEMBLY (See page AC-151)
12. DISCONNECT AIR CONDITIONER TUBE AND ACCESSORY (See page AC-151)
13. DISCONNECT HEATER OUTLET WATER HOSE (See page AC-152)
14. DISCONNECT HEATER INLET WATER HOSE (See page AC-152)
15. REMOVE LOWER NO. 3 STEERING WHEEL COVER (See page RS-349)
16. REMOVE LOWER NO. 2 STEERING WHEEL COVER (See page RS-349)
17. REMOVE STEERING PAD (See page RS-350)
18. REMOVE STEERING WHEEL ASSEMBLY (See page SR-38)
19. REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-24)
20. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-25)
21. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-20)

22. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-21)
23. REMOVE STEERING COLUMN COVER (for TMC Made) (See page IP-21)
24. REMOVE STEERING COLUMN COVER (for TMMK Made) (See page IP-21)
25. REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-39)
26. REMOVE NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-22)
27. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-22)
28. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-22)
29. REMOVE INSTRUMENT CLUSTER FINISH PANEL (See page IP-22)
30. REMOVE COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-23)
31. REMOVE COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-23)
32. REMOVE FRONT DOOR SCUFF PLATE RH (See page IR-26)
33. REMOVE COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-26)
34. REMOVE INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-23)
35. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-23)
36. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-24)
37. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-24)
38. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-24)
39. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-24)
40. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-25)
41. REMOVE FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-25)
42. REMOVE UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-25)

43. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-26)
44. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-26)
45. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-27)
46. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-27)
47. REMOVE INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-27)
48. REMOVE RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-146)
49. REMOVE NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (See page NS-195)
50. REMOVE CONSOLE BOX POCKET (See page IP-28)
51. REMOVE CONSOLE BOX CARPET (See page IP-28)
52. REMOVE CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-28)
53. REMOVE CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-29)
54. REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-29)
55. REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)
56. REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-30)
57. REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)
58. REMOVE FRONT PILLAR GARNISH LH (See page IR-27)
59. REMOVE INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-31)
60. REMOVE INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-31)
61. REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)
62. REMOVE FRONT PILLAR GARNISH RH (See page IR-27)
63. REMOVE INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-31)
64. REMOVE INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-32)

65. **REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side)**

66. **REMOVE NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-32)**

67. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-32)**

68. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-34)**

69. **REMOVE NO. 1 CONSOLE BOX DUCT (for Automatic Air Conditioning System) (See page AC-154)**

70. **REMOVE FLOOR CARPET BRACKET LH (See page AC-155)**

71. **REMOVE FLOOR CARPET BRACKET RH (See page AC-155)**

72. **REMOVE REAR NO. 2 AIR DUCT (See page AC-155)**

73. **REMOVE REAR NO. 1 AIR DUCT (See page AC-156)**

74. **REMOVE NO. 1 AIR DUCT (See page SR-39)**

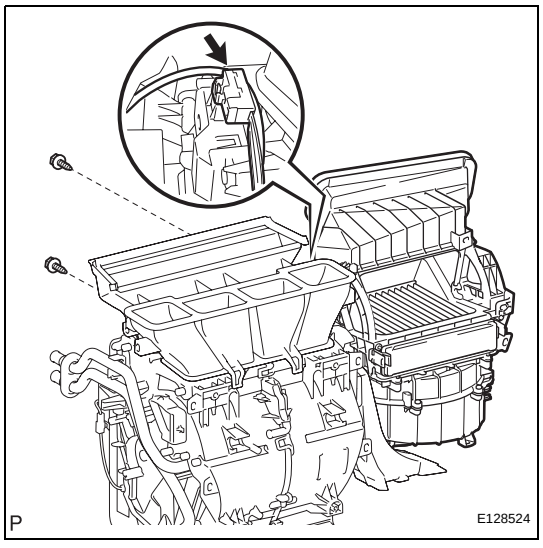
75. **SEPARATE STEERING COLUMN ASSEMBLY (for TMC Made) (See page SR-39)**

76. **REMOVE STEERING POST ASSEMBLY (for TMMK Made) (See page SR-41)**

77. **REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY (See page AC-259)**

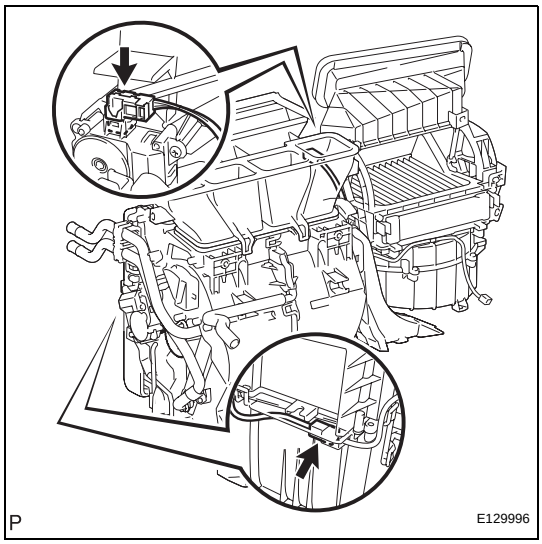
78. **REMOVE INSTRUMENT PANEL REINFORCEMENT ASSEMBLY (See page AC-156)**

79. **REMOVE BLOWER ASSEMBLY (for TMC Made)**
    (a) Disconnect the connector.
    (b) Remove the 2 screws and blower assembly.



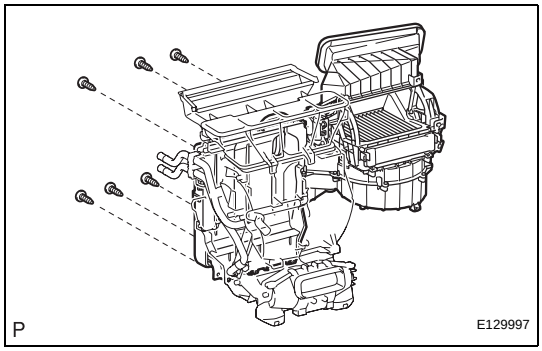
80. **REMOVE COOLER EXPANSION VALVE (for TMMK Made) (See page AC-163)**

AC

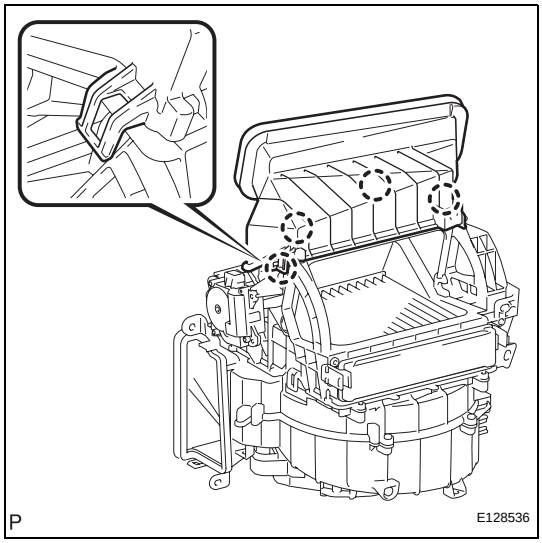


81. REMOVE BLOWER ASSEMBLY (for TMMK Made)

(a) Remove the connector and clamp, and disconnect the wire harness.



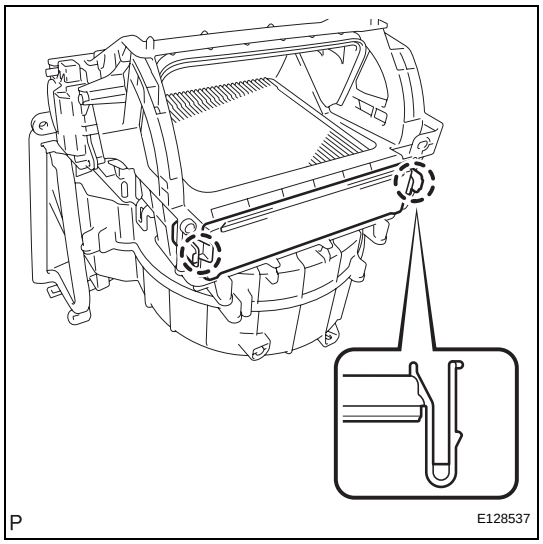
(b) Remove the 6 screws and then the blower assembly with the cooler evaporator sub-assembly.



DISASSEMBLY

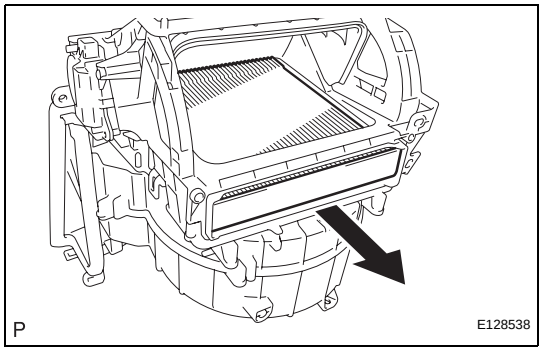
1. REMOVE AIR DUCT SUB-ASSEMBLY (for TMC Made)

(a) Release the 4 claws and remove the air duct sub-assembly.



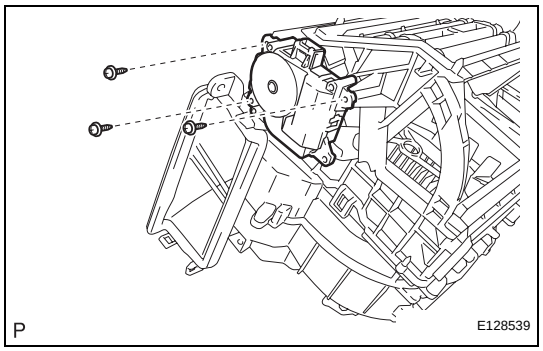
2. REMOVE AIR FILTER COVER PLATE (for TMC Made)

(a) Release the 2 claws and remove the air filter cover plate.



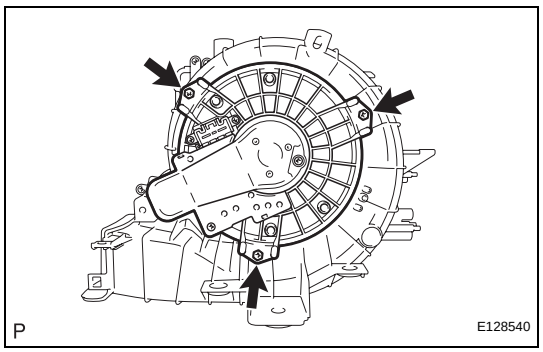
3. REMOVE CLEAN AIR FILTER (for TMC Made)

(a) Remove the clean air filter as shown in the illustration.



4. REMOVE AIR INLET SERVO MOTOR (for TMC Made)

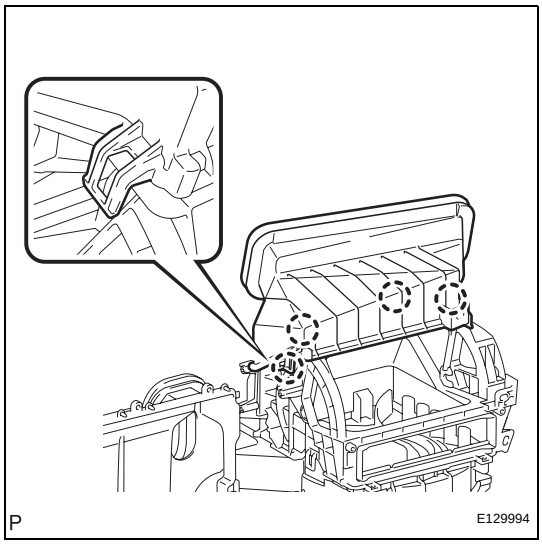
(a) Remove the 3 screws and air inlet servo motor.



5. REMOVE BLOWER WITH FAN MOTOR SUB-ASSEMBLY (for TMC Made)

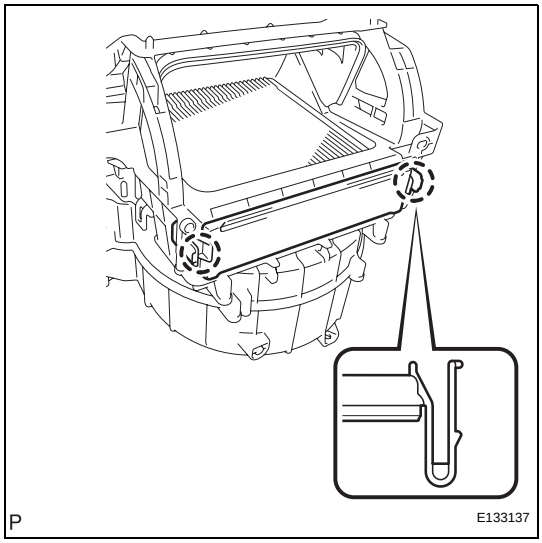
(a) Remove the 3 screws and blower with fan motor sub-assembly.

AC



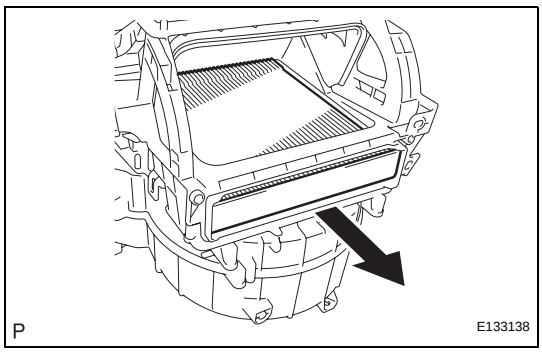
6. REMOVE AIR DUCT SUB-ASSEMBLY (for TMMK Made)

(a) Disengage the 4 claws and then remove the air duct sub-assembly.



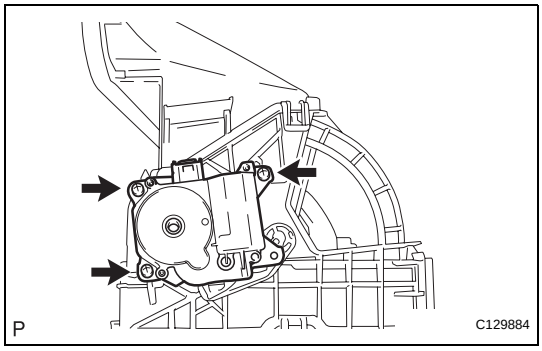
7. REMOVE AIR FILTER COVER PLATE (for TMMK Made)

(a) Release the 2 claws and remove the air filter cover plate.



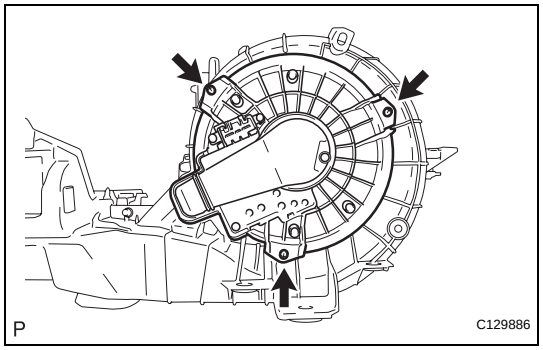
8. REMOVE CLEAN AIR FILTER (for TMMK Made)

(a) Remove the clean air filter as shown in the illustration.



9. REMOVE AIR INLET SERVO MOTOR (for TMMK Made)

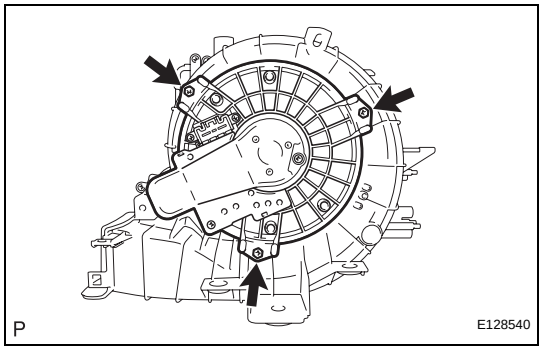
(a) Remove the 3 screws and air inlet servo motor.



10. REMOVE BLOWER WITH FAN MOTOR SUB-ASSEMBLY (for TMMK Made)

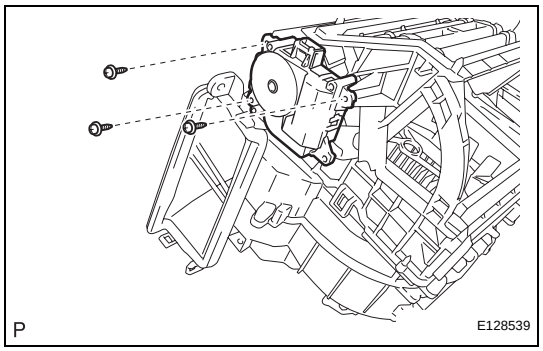
(a) Remove the 3 screws and blower with fan motor sub-assembly.

REASSEMBLY



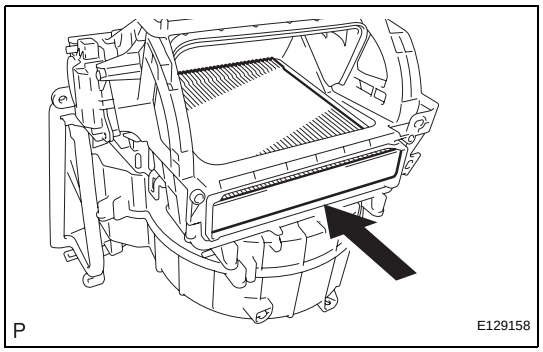
1. INSTALL BLOWER WITH FAN MOTOR SUB-ASSEMBLY (for TMC Made)

(a) Install the blower with fan motor sub-assembly with the 3 screws.



2. INSTALL AIR INLET SERVO MOTOR (for TMC Made)

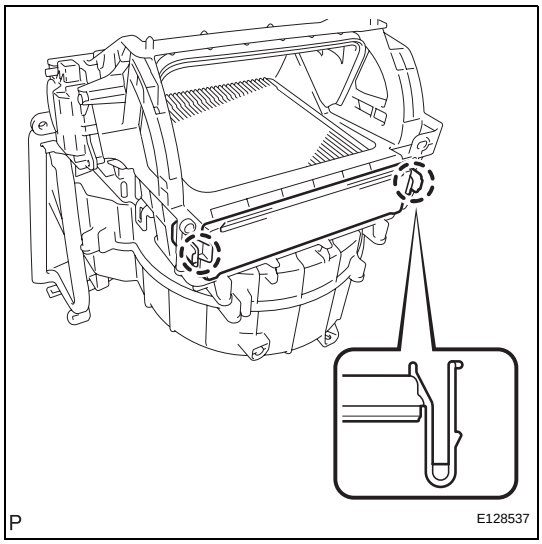
(a) Install the air inlet servo motor with the 3 screws.



3. INSTALL CLEAN AIR FILTER (for TMC Made)

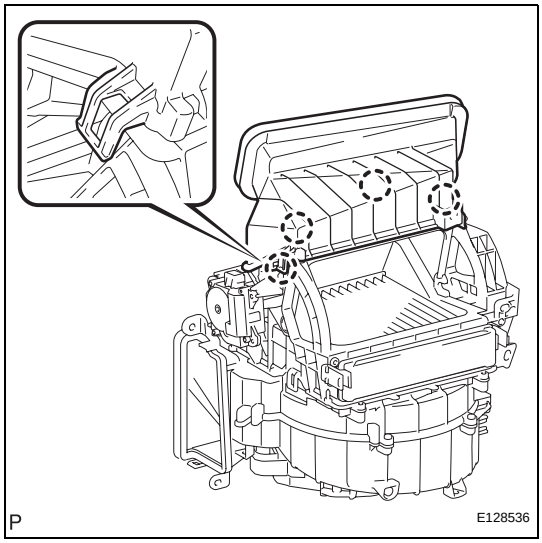
(a) Install the clean air filter as shown in the illustration.

AC



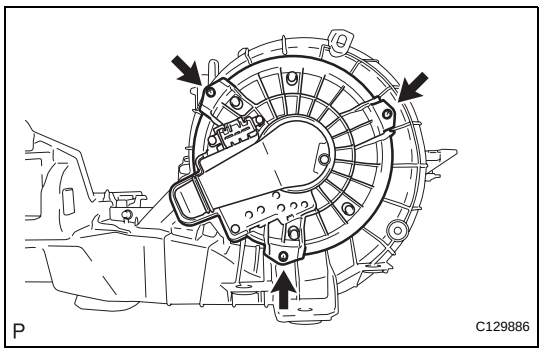
4. INSTALL AIR FILTER COVER PLATE (for TMC Made)

(a) Engage the 2 claws to install the air filter cover plate.



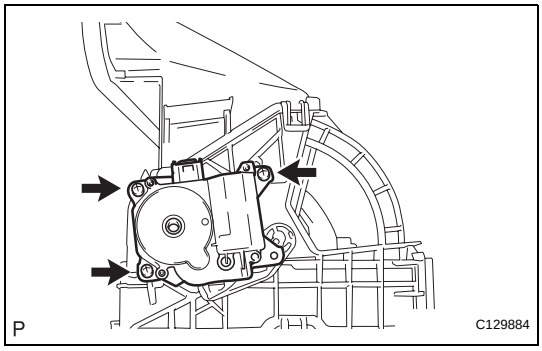
5. INSTALL AIR DUCT SUB-ASSEMBLY (for TMC Made)

(a) Engage the 4 claws to install the air duct sub-assembly.



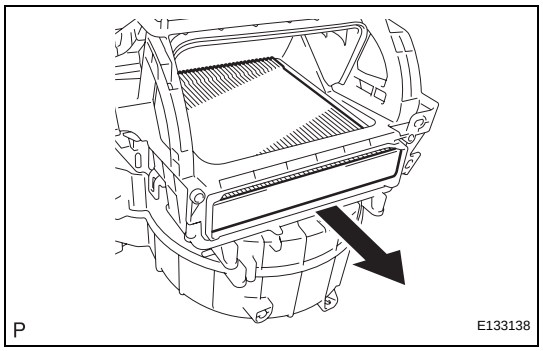
6. INSTALL BLOWER WITH FAN MOTOR SUB-ASSEMBLY (for TMMK Made)

(a) Install the blower with fan motor sub-assembly with the 3 screws.



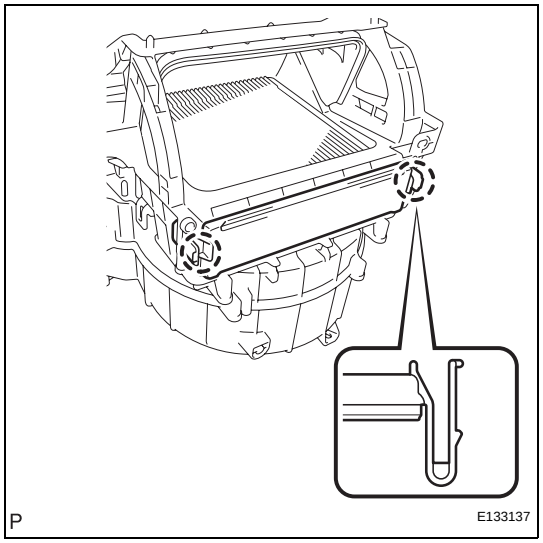
7. INSTALL AIR INLET SERVO MOTOR (for TMMK Made)

(a) Install the air inlet servo motor with the 3 screws.



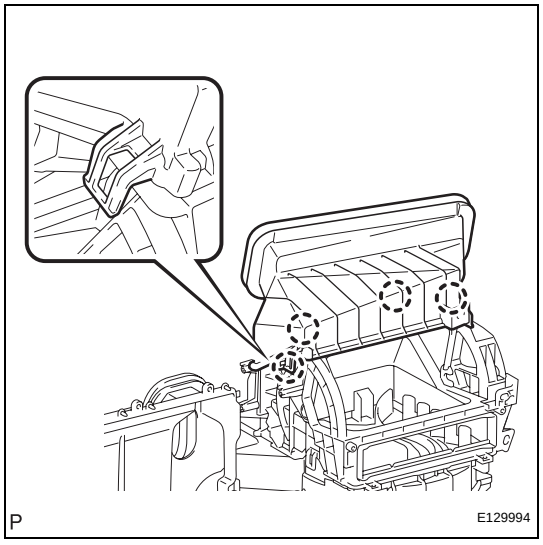
8. INSTALL CLEAN AIR FILTER (for TMMK Made)

(a) Install the clean air filter as shown in the illustration.



9. INSTALL AIR FILTER COVER PLATE (for TMMK Made)

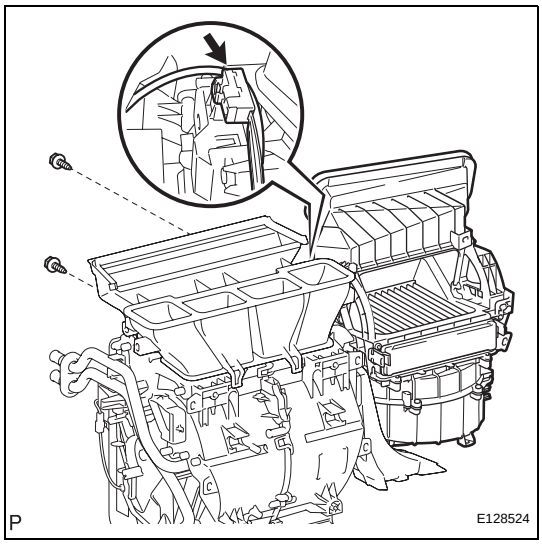
(a) Engage the 2 claws to install the air filter cover plate.



10. INSTALL AIR DUCT SUB-ASSEMBLY (for TMMK Made)

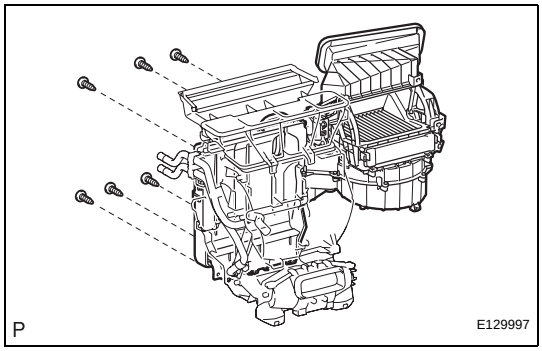
(a) Engage the 4 claws to install the air duct sub-assembly.

AC



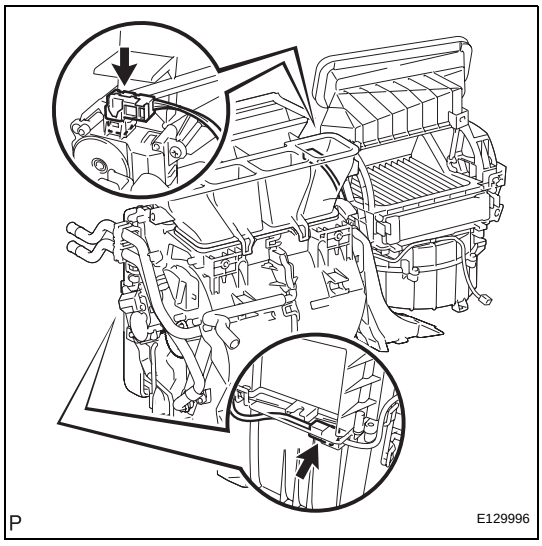
INSTALLATION

1. **INSTALL BLOWER ASSEMBLY (for TMC Made)**
   (a) Install the blower assembly with the 2 screws.
   (b) Connect the connector.
2. **INSTALL COOLER EXPANSION VALVE (for TMMK Made) (See page AC-172)**



3. **INSTALL BLOWER ASSEMBLY (for TMMK Made)**
   (a) Install the blower assembly with the 6 screws.

AC



   (b) Connect the connector.
4. **INSTALL INSTRUMENT PANEL REINFORCEMENT ASSEMBLY (See page AC-173)**
5. **INSTALL STEERING COLUMN ASSEMBLY (for TMC Made) (See page SR-47)**
6. **INSTALL STEERING POST ASSEMBLY (for TMMK Made) (See page SR-49)**
7. **INSTALL NO. 1 AIR DUCT (See page SR-50)**
8. **INSTALL REAR NO. 1 AIR DUCT (See page AC-176)**
9. **INSTALL REAR NO. 2 AIR DUCT (See page AC-177)**
10. **INSTALL FLOOR CARPET BRACKET RH**
11. **INSTALL FLOOR CARPET BRACKET LH**
12. **INSTALL NO. 1 CONSOLE BOX DUCT (for Automatic Air Conditioning System) (See page AC-177)**
13. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-44)**
14. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-45)**
15. **INSTALL NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-48)**

16. INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)
17. INSTALL INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-48)
18. INSTALL INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-48)
19. INSTALL FRONT PILLAR GARNISH LH (See page IR-51)
20. INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side) (See page IP-48)
21. INSTALL INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-49)
22. INSTALL INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-49)
23. INSTALL FRONT PILLAR GARNISH RH (See page IR-52)
24. INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-49)
25. INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)
26. INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-50)
27. INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)
28. INSTALL CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-51)
29. INSTALL CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-51)
30. INSTALL CONSOLE BOX CARPET (See page IP-51)
31. INSTALL CONSOLE BOX POCKET (See page IP-51)
32. INSTALL RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-147)
33. INSTALL NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/ Navigation System) (See page NS-196)
34. INSTALL INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-52)
35. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-52)
36. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-52)
37. INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)

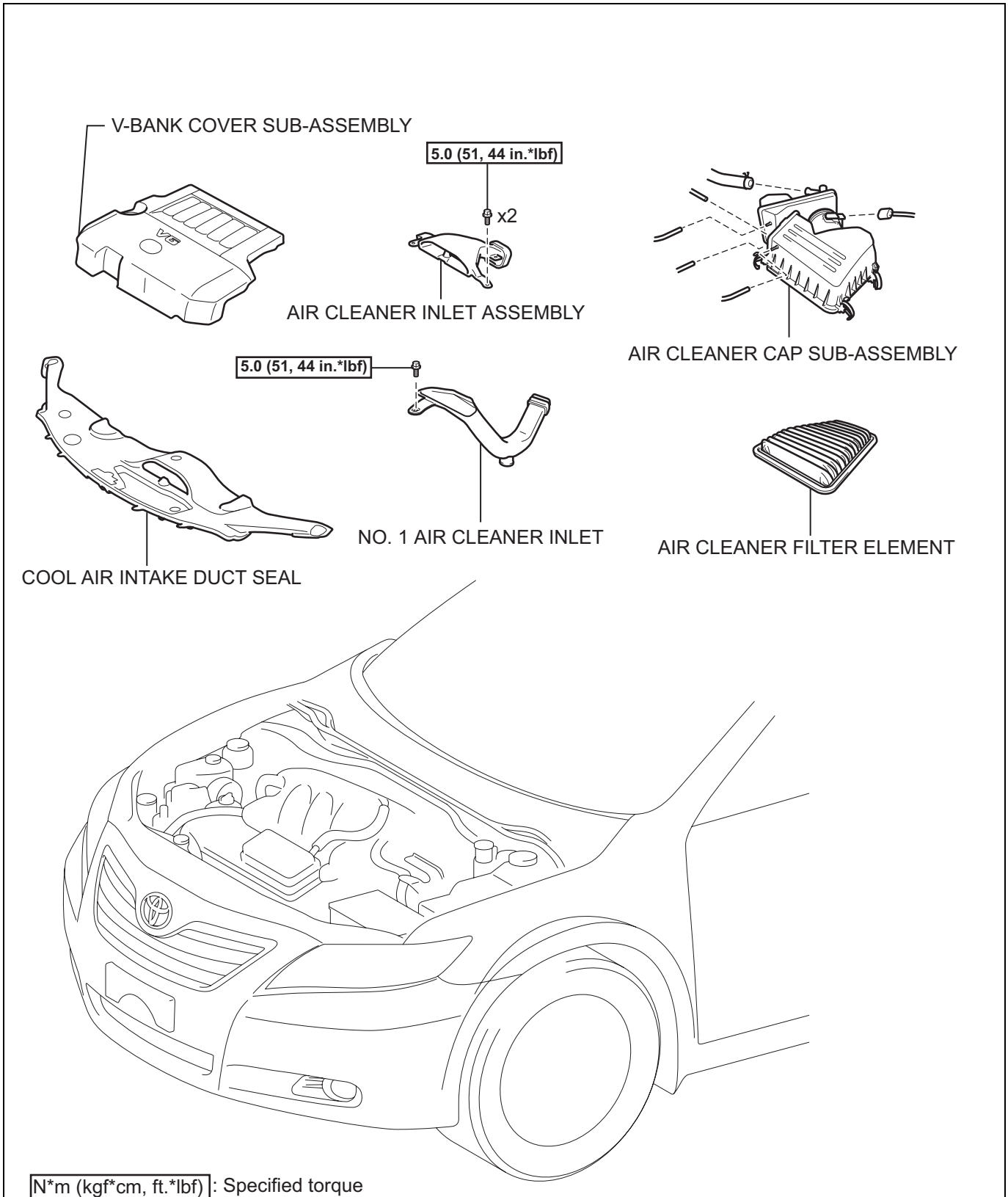
38. **INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-53)**
39. **INSTALL FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)**
40. **INSTALL UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-54)**
41. **INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-54)**
42. **INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-55)**
43. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-55)**
44. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-55)**
45. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-55)**
46. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-56)**
47. **INSTALL INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-56)**
48. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-55)**
49. **INSTALL FRONT DOOR SCUFF PLATE RH (See page IR-55)**
50. **INSTALL COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-56)**
51. **INSTALL COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-56)**
52. **INSTALL INSTRUMENT CLUSTER FINISH PANEL (See page IP-57)**
53. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-57)**
54. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-57)**
55. **INSTALL NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-57)**
56. **INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-50)**
57. **ADJUST SPIRAL CABLE SUB-ASSEMBLY (See page RS-367)**
58. **INSTALL STEERING COLUMN COVER (for TMC Made) (See page IP-58)**
59. **INSTALL STEERING COLUMN COVER (for TMMK Made) (See page IP-58)**

60. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-58)
61. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-59)
62. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-54)
63. INSTALL FRONT DOOR SCUFF PLATE LH (See page IR-54)
64. INSTALL STEERING WHEEL ASSEMBLY (See page SR-51)
65. INSTALL STEERING PAD (See page RS-352)
66. INSTALL LOWER NO. 3 STEERING WHEEL COVER (See page RS-351)
67. INSTALL LOWER NO. 2 STEERING WHEEL COVER (See page RS-352)
68. INSTALL HEATER INLET WATER HOSE (See page AC-180)
69. INSTALL HEATER OUTLET WATER HOSE (See page AC-180)
70. INSTALL AIR CONDITIONER TUBE AND ACCESSORY (See page AC-180)
71. INSTALL SUCTION HOSE SUB-ASSEMBLY (See page AC-180)
72. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY (See page WW-14)
73. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY (See page WW-15)
74. INSTALL FRONT FENDER TO COWL SIDE SEAL LH (See page WW-15)
75. INSTALL FRONT FENDER TO COWL SIDE SEAL RH (See page WW-15)
76. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH (See page WW-15)
77. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH (See page WW-16)
78. CONNECT NEGATIVE BATTERY TERMINAL
79. INSPECT STEERING PAD (See page RS-352)
80. INSPECT SRS WARNING LIGHT (See page AC-180)
81. ADD ENGINE COOLANT (for 2AZ-FE) (See page CO-5)
82. ADD ENGINE COOLANT (for 2GR-FE) (See page CO-6)
83. CHECK FOR ENGINE COOLANT LEAKS

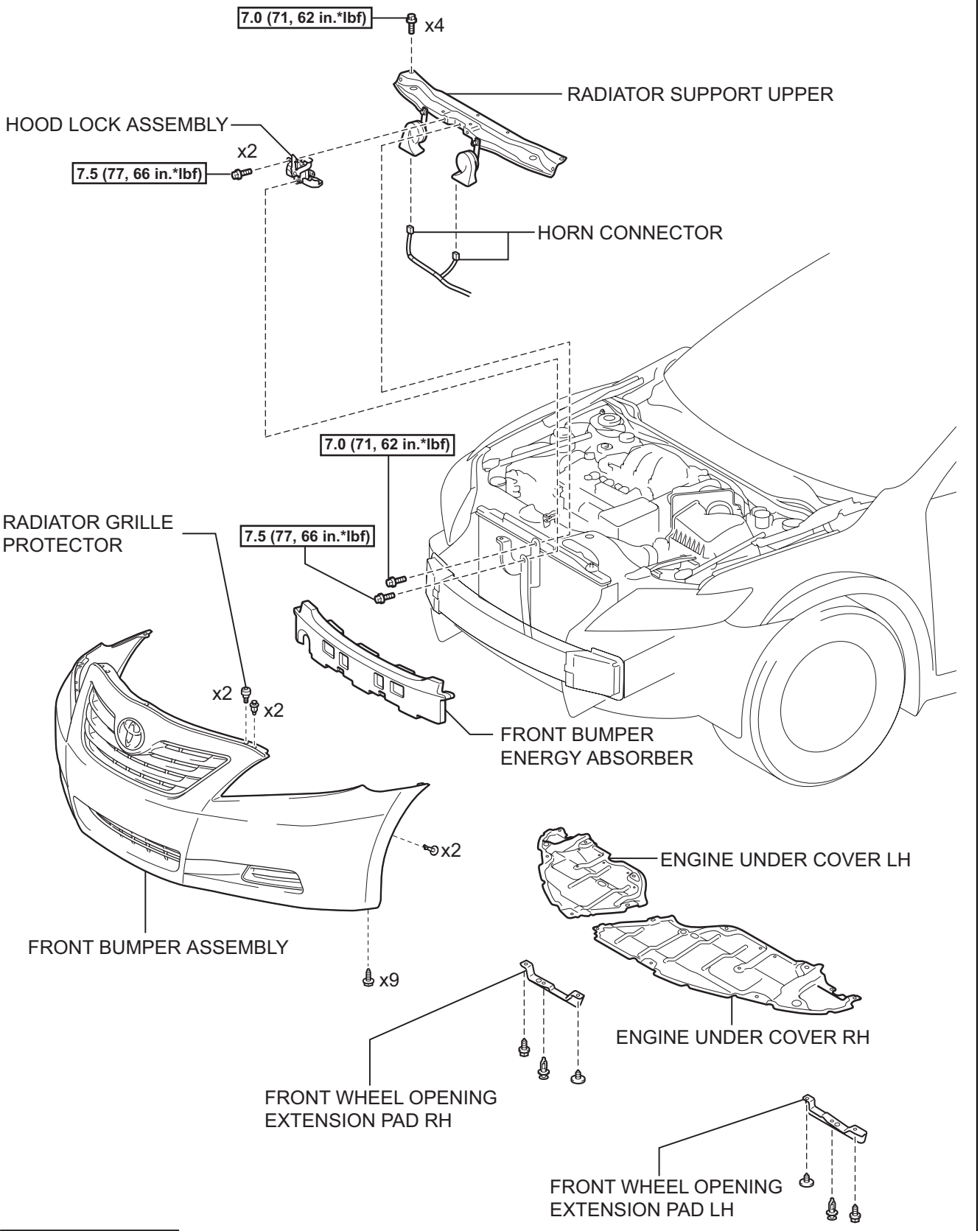
84. **CHARGE WITH REFRIGERANT (See page AC-125)**
85. **WARM UP ENGINE (See page AC-126)**
86. **CHECK FOR REFRIGERANT LEAKS (See page AC-126)**

COMPRESSOR AND MAGNETIC CLUTCH (for 2GR-FE)

COMPONENTS



AC

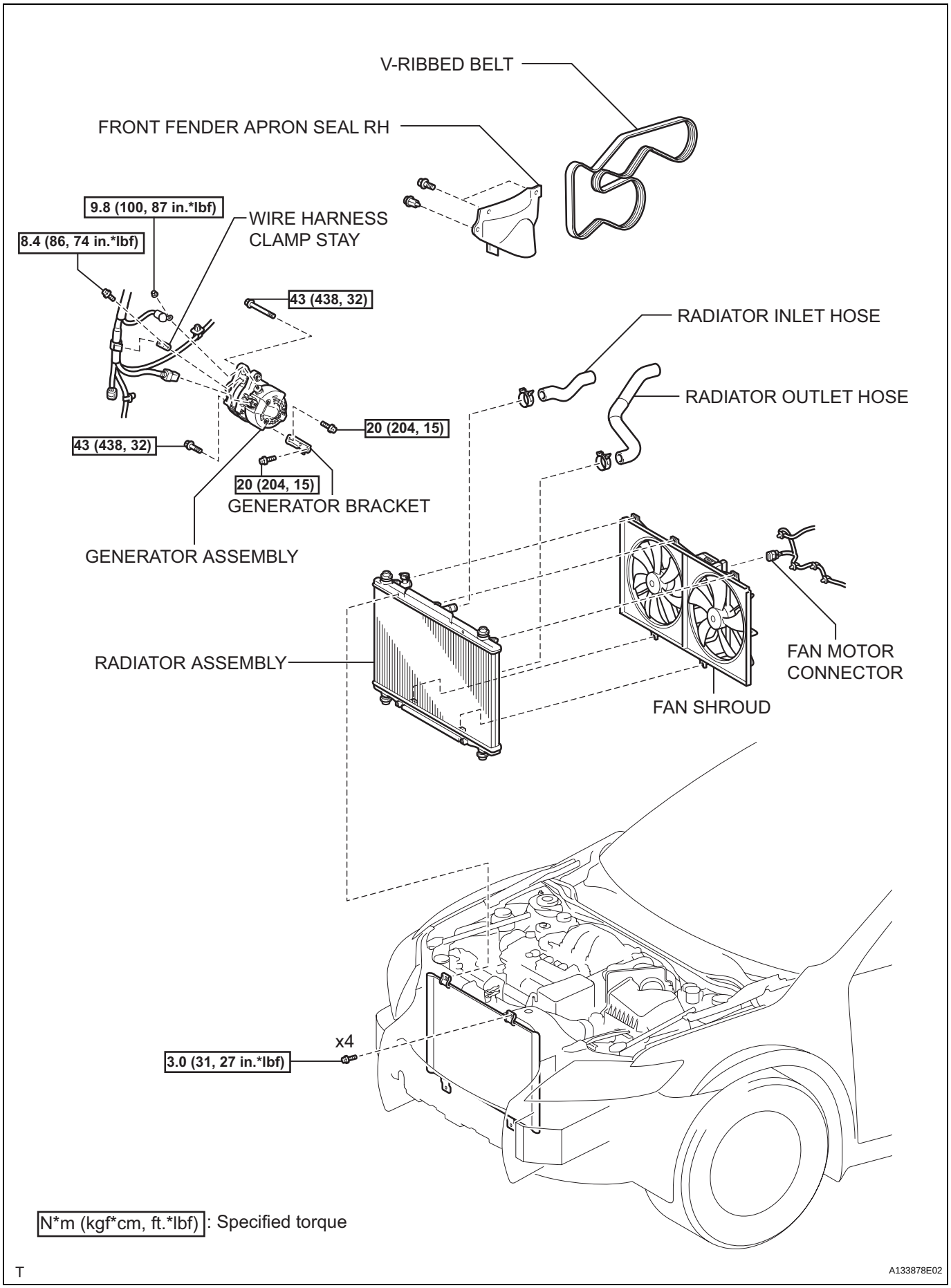


AC

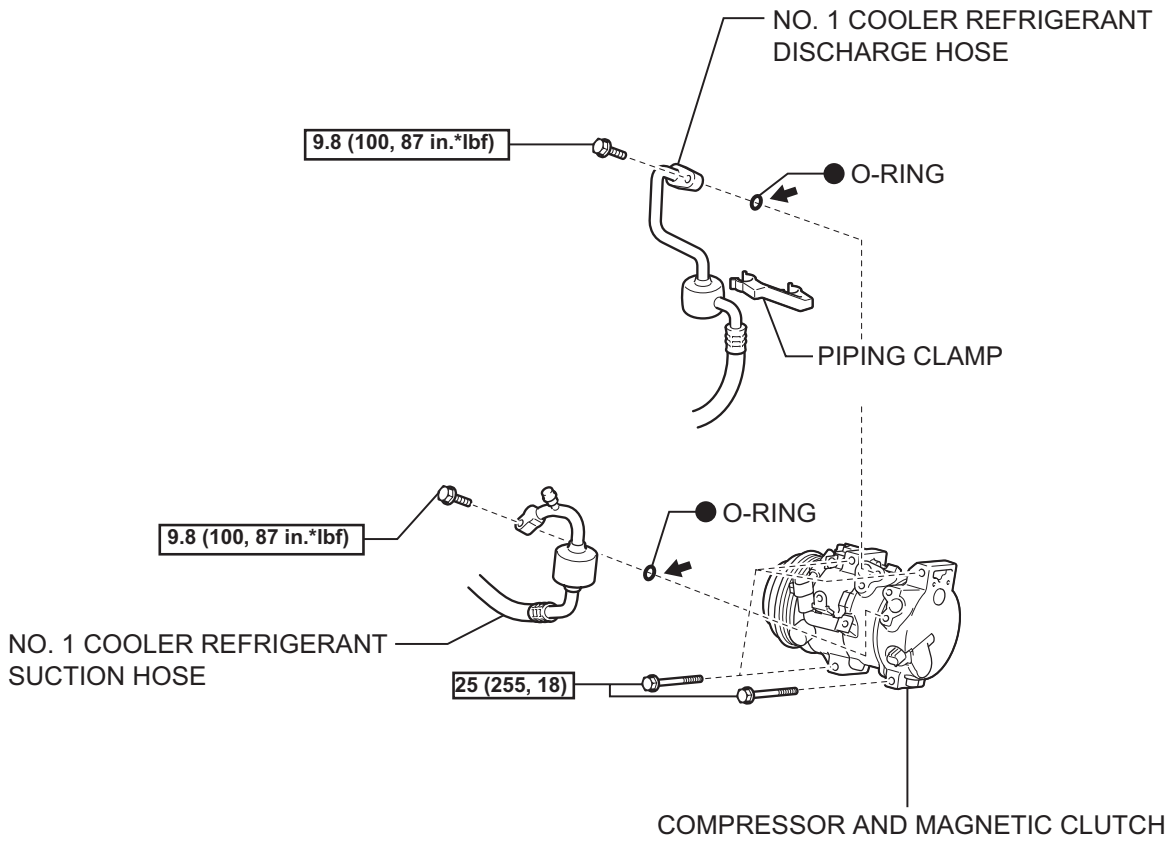
N*m (kgf*cm, ft.*lbf) : Specified torque

T

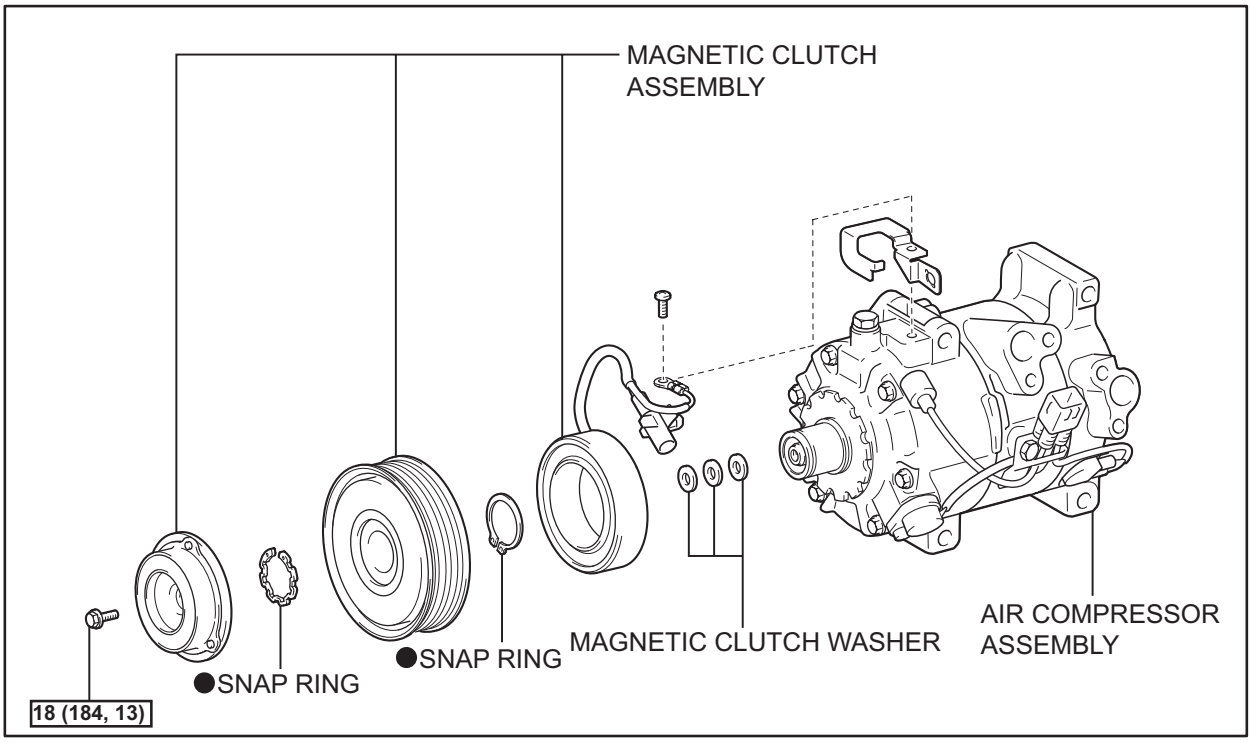
A133359E06


V-RIBBED BELT
FRONT FENDER APRON SEAL RH
9.8 (100, 87 in.*lbf)
WIRE HARNESS CLAMP STAY
8.4 (86, 74 in.*lbf)
43 (438, 32)
RADIATOR INLET HOSE
RADIATOR OUTLET HOSE
20 (204, 15)
43 (438, 32)
20 (204, 15)
GENERATOR BRACKET
GENERATOR ASSEMBLY
RADIATOR ASSEMBLY
FAN MOTOR CONNECTOR
FAN SHROUD
x4
3.0 (31, 27 in.*lbf)
N*m (kgf*cm, ft.*lbf): Specified torque
T
A133878E02

AC



AC



◄ Compressor oil ND-OIL 8 or equivalent

● Non-reusable part N*m (kgf*cm, ft.*lbf): Specified torque

P

E128508E01

REMOVAL

1. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM (See page AC-125)
2. DISCONNECT BATTERY NEGATIVE TERMINAL
   CAUTION:
   Wait for 90 seconds after disconnecting the cable to prevent airbag deployment (See page RS-1)
3. REMOVE FRONT WHEEL RH
4. REMOVE FRONT FENDER APRON SEAL RH
5. REMOVE FRONT WHEEL OPENING EXTENSION PAD RH
6. REMOVE FRONT WHEEL OPENING EXTENSION PAD LH
7. REMOVE ENGINE UNDER COVER RH
8. REMOVE ENGINE UNDER COVER LH
9. DRAIN ENGINE COOLANT (See page CO-5)
10. REMOVE COOL AIR INTAKE DUCT SEAL (See page EM-23)
11. REMOVE V-BANK COVER SUB-ASSEMBLY (See page EM-23)
12. REMOVE AIR CLEANER INLET ASSEMBLY (See page EM-24)
13. REMOVE AIR CLEANER CAP SUB-ASSEMBLY
14. REMOVE NO. 1 AIR CLEANER INLET (See page EM-24)
15. REMOVE FRONT BUMPER COVER (w/o Fog Light) (See page ET-5)
16. REMOVE FRONT BUMPER COVER (w/ Fog Light) (See page ET-6)
17. REMOVE FRONT BUMPER ENERGY ABSORBER (See page ET-9)
18. SEPARATE RADIATOR RESERVE TANK HOSE (See page CO-24)
19. SEPARATE RADIATOR INLET HOSE (See page CO-24)
20. SEPARATE RADIATOR OUTLET HOSE (See page CO-24)
21. REMOVE NO. 1 OIL COOLER INLET HOSE (for Automatic Transaxle) (See page CO-25)
22. REMOVE NO. 1 OIL COOLER OUTLET HOSE (for Automatic Transaxle) (See page CO-25)
23. REMOVE RADIATOR SUPPORT UPPER (See page CO-25)

24. REMOVE FAN SHROUD (See page CO-26)

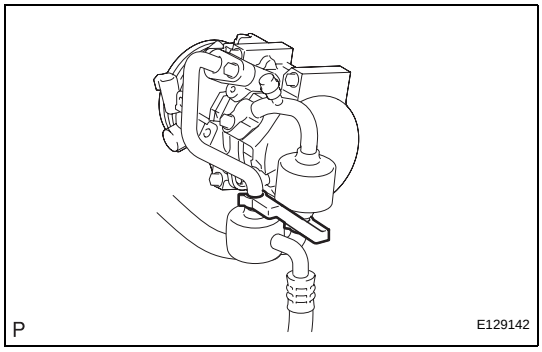
25. REMOVE RADIATOR ASSEMBLY (See page CO-26)

26. REMOVE V-RIBBED BELT (See page EM-6)

27. REMOVE GENERATOR ASSEMBLY (See page CH-14)

28. REMOVE PIPING CLAMP

(a) Remove the piping clamp from the No. 1 cooler refrigerant discharge hose and No. 1 cooler refrigerant suction hose.

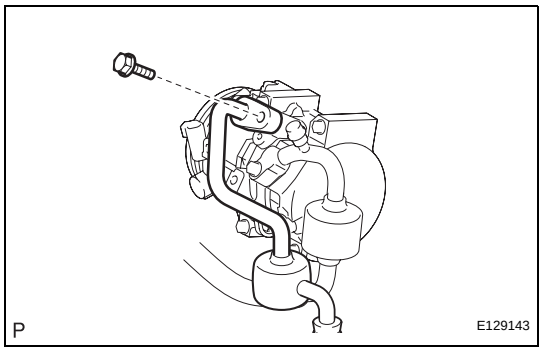


29. DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

(a) Remove the bolt and disconnect the No. 1 cooler refrigerant discharge hose from the compressor.

(b) Remove the O-ring from the discharge hose sub-assembly.

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

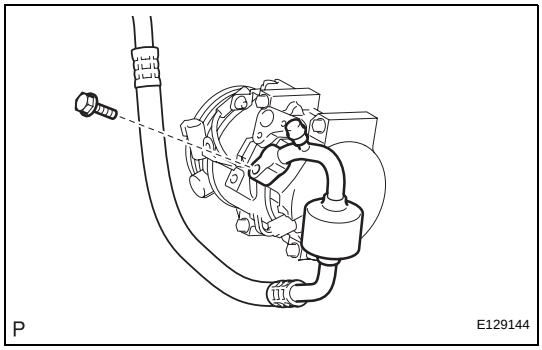


30. DISCONNECT NO. 1 COOLER REFRIGERANT SUCTION HOSE

(a) Remove the bolt and disconnect the No. 1 cooler refrigerant suction hose from the compressor.

(b) Remove the O-ring from the cooler refrigerant suction hose.

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

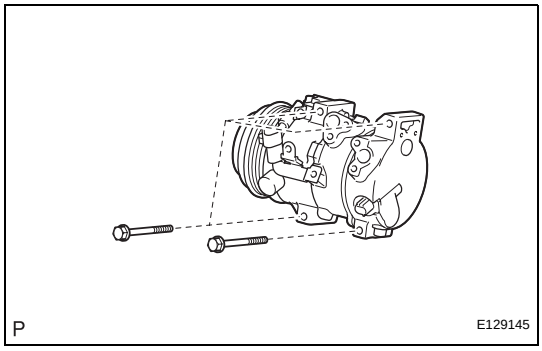


31. REMOVE COMPRESSOR AND MAGNETIC CLUTCH

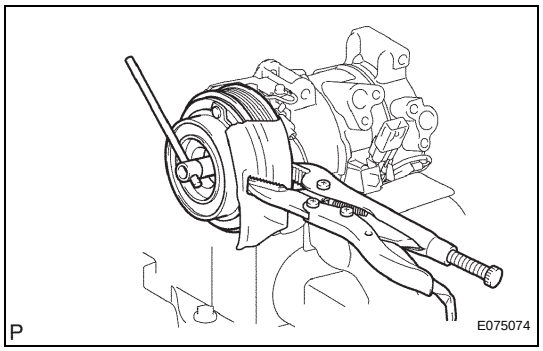
(a) Disconnect the magnetic clutch connector.

(b) Remove the 4 bolts.

(c) Remove the compressor and magnetic clutch.



AC



DISASSEMBLY

1. REMOVE MAGNETIC CLUTCH ASSEMBLY

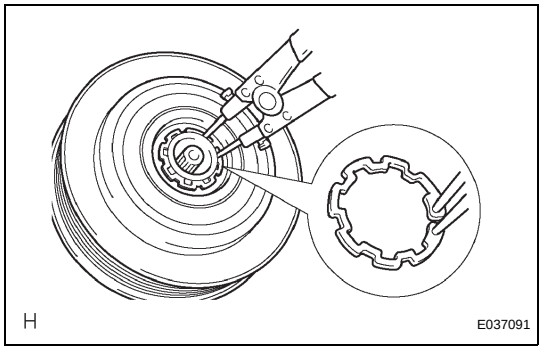
(a) Place the compressor and magnetic clutch in a vise.

(b) Using locking pliers, hold the magnetic clutch hub.

(c) Remove the bolt, magnetic clutch hub, and magnetic clutch washers.

HINT:

There is no set number of magnetic clutch washers because they are used for adjustment.



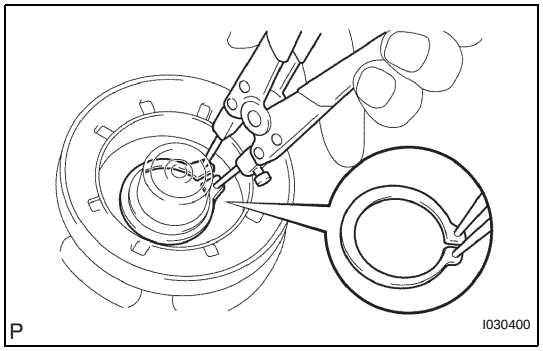
(d) Using a snap ring expander, remove the snap ring and then remove the magnetic clutch rotor.

NOTICE:

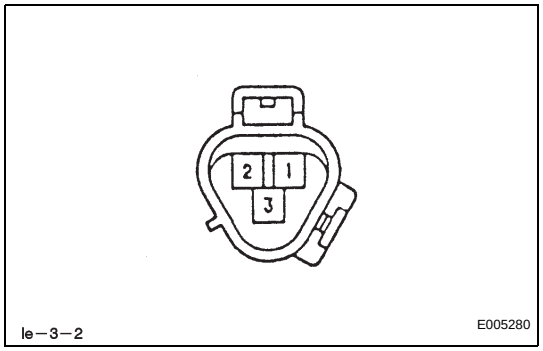
Take care not to damage the seal cover of the bearing when removing the snap ring.

(e) Disconnect the connector.

(f) Remove the screw.



(g) Using a snap ring expander, remove the snap ring and magnetic clutch stator.



INSPECTION

1. INSPECT COMPRESSOR AND MAGNETIC CLUTCH (A/C LOCK SENSOR)

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

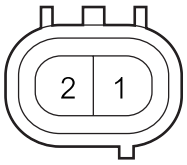
Standard resistance

Tester Connection	Condition	Specified Condition
1 - 2	Always (at 20°C (68°F))	165 to 205 Ω

If the resistance is not as specified, replace the compressor and magnetic clutch.

AC

Compressor and Magnetic Clutch Connector Front View:



H E116970E04

2. INSPECT COMPRESSOR AND MAGNETIC CLUTCH (A/C COMPRESSOR SOLENOID)

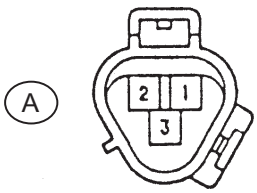
(a) Measure the resistance according to the value(s) in the table below.

Standard resistance

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

If the resistance is not as specified, replace the compressor and magnetic clutch.

A/C Compressor Connector Front View:



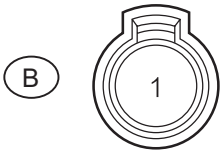
Ie–3–2 E005280E18

3. INSPECT COMPRESSOR AND MAGNETIC CLUTCH

(a) Disconnect the connector from the compressor and magnetic clutch.

AC

Magnetic Clutch Connector Front View:



H E124482E03

(b) Disconnect the connector from the magnetic clutch.

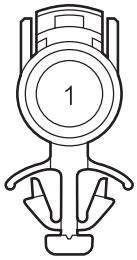
(c) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A-3 - B-1	Always	Below 1 Ω
A-3 - Body ground	Always	10 kΩ or higher

If the resistance is not as specified, replace the compressor and magnetic clutch.

Magnetic Clutch Connector Front View:



H E113611E02

4. INSPECT MAGNETIC CLUTCH

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

Standard resistance

Tester Connection	Condition	Specified Condition
1 - Body ground	Always	3.4 to 3.8 Ω

If the resistance is not as specified, replace the magnetic clutch.

(b) When connector terminal 1 is connected to the positive (+) battery terminal, check that the following occurs: 1) the magnetic clutch's operating sound can be heard, and 2) the magnetic clutch's hub and rotor lock.

OK:

1):

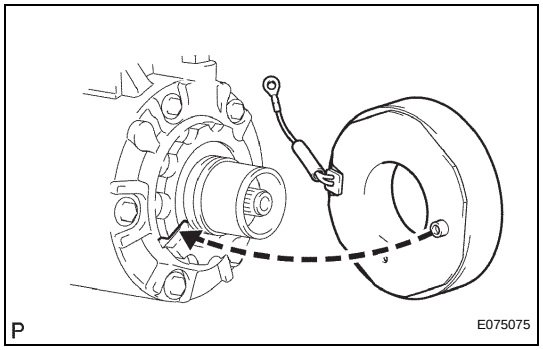
The magnetic clutch's operating sound can be heard.

2):

The magnetic clutch's hub and rotor lock.

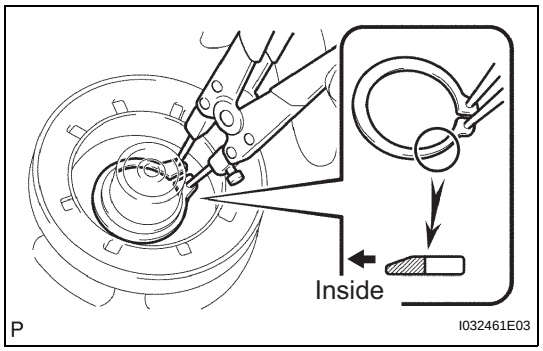
If the result is not as specified, replace the magnetic clutch.

REASSEMBLY



1. INSTALL MAGNETIC CLUTCH ASSEMBLY

(a) Install the magnetic clutch stator while aligning the protrusion on the stator with the notch on the air compressor assembly as shown in the illustration.

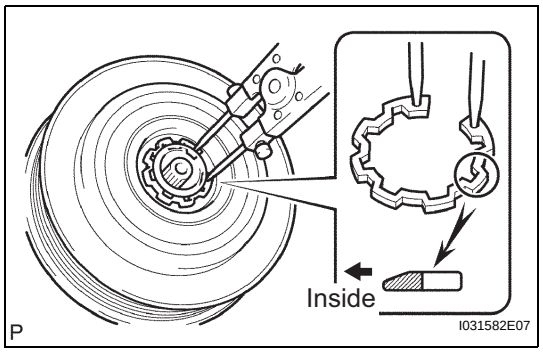


(b) Using a snap ring expander, install a new snap ring with the chamfered side facing up.

NOTICE:

Take care not to damage the seal cover of the bearing when installing the snap ring.

(c) Connect the connector.



(d) Using a snap ring expander, install the magnetic clutch rotor and a new snap ring with the chamfered side facing up.

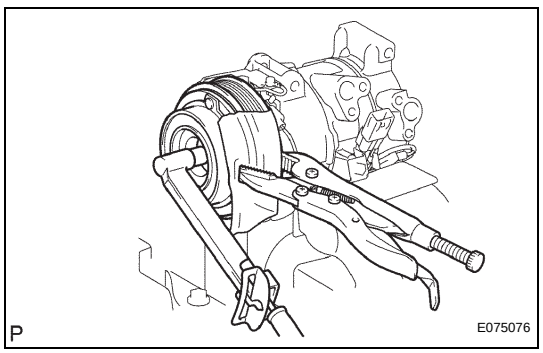
NOTICE:

- **Do not expand the snap ring by more than 35.5 mm (1.39 in.) when installing it.**
- **Do not damage the seal cover of the bearing when installing the snap ring.**

(e) Install the magnetic clutch washer and magnetic clutch hub.

NOTICE:

Do not change the combination of the magnetic clutch washers used before disassembly.



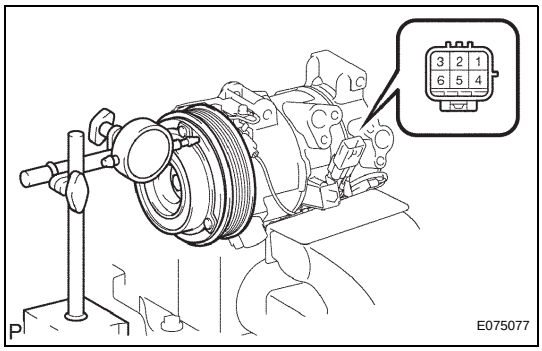
(f) Using vise pliers, hold the magnetic clutch hub and install the bolt.

Torque: 18 N*m (184 kgf*cm, 13 ft.*lbf)

NOTICE:

Make sure that there is no foreign matter or oil on the compressor shaft, bolt, and clutch hub.

AC



2. INSPECT MAGNETIC CLUTCH CLEARANCE

(a) Set the dial indicator to the magnetic clutch hub.

(b) Connect the battery positive lead to terminal 1 of the magnetic clutch connector, and the negative lead to the ground wire. Turn the magnetic clutch on and off and measure the clearance.

Standard clearance:

0.26 to 0.60 mm (0.010 to 0.024 in.)

If the measured value is not within the standard range, remove the magnetic clutch hub and adjust it with magnetic clutch washers.

NOTICE:

Adjustment should be performed with 3 or less magnetic clutch washers.

(c) Remove the compressor and magnetic clutch from the vise.

3. ADJUST COMPRESSOR OIL LEVEL

(a) When replacing the compressor and magnetic clutch with a new one, gradually discharge the inert gas (helium) from the service valve, and drain the following amount of oil from the new compressor and magnetic clutch before installation.

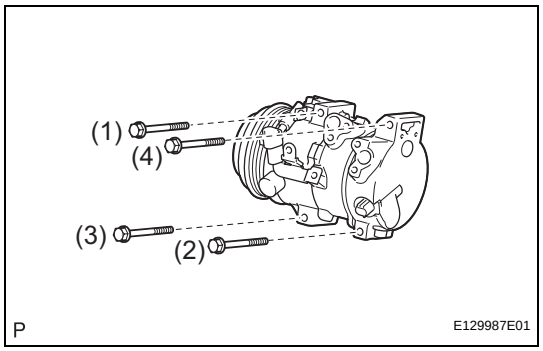
Standard:

(Oil capacity inside the new compressor and magnetic clutch: 130 + 15 cc (4.6 + 0.51 fl.oz.)) - (Remaining oil amount in the removed compressor and magnetic clutch) = (Oil amount to be removed from the new compressor when replacing)

NOTICE:

- **When checking the compressor oil level, observe the precautions on the cooler removal/installation.**
- **If a new compressor and magnetic clutch is installed without removing some oil, due to the oil remaining in the pipes of the vehicle, the oil amount will be too large. This prevents heat exchange in the refrigerant cycle and causes refrigerant failure.**
- **If the volume of oil remaining in the removed compressor and magnetic clutch is too small, check for oil leakage.**
- **Be sure to use ND-OIL 8 or equivalent for compressor oil.**

AC



INSTALLATION

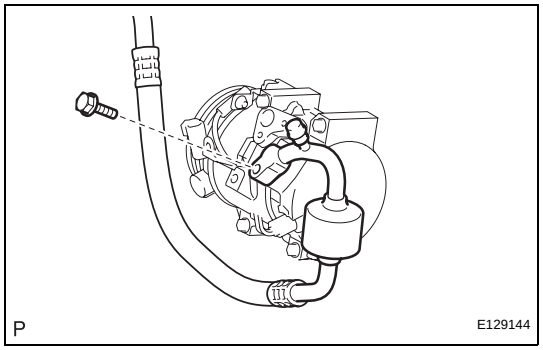
1. INSTALL COMPRESSOR AND MAGNETIC CLUTCH

(a) Install the compressor and magnetic clutch with the 4 bolts.

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

NOTICE:

Tighten the bolts in the order shown in the illustration to install the compressor and magnetic clutch.



2. INSTALL NO. 1 COOLER REFRIGERANT SUCTION HOSE

(a) Remove the attached vinyl tape from the hose.

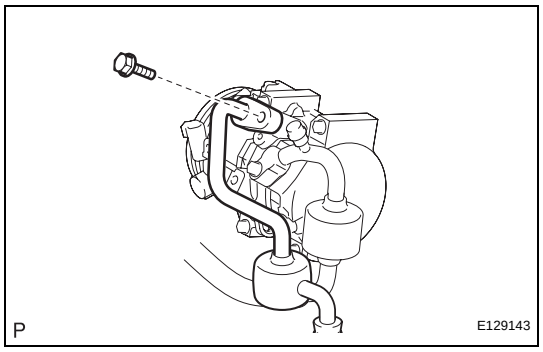
(b) Apply sufficient compressor oil to a new O-ring and the fitting surface of the compressor and magnetic clutch.

Compressor oil:
ND-OIL 8 or equivalent

(c) Install the O-ring onto the No. 1 cooler refrigerant suction hose.

(d) Install the No. 1 cooler refrigerant suction hose onto the compressor and magnetic clutch with the bolt.

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



3. INSTALL NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

(a) Remove the attached vinyl tape from the hose.

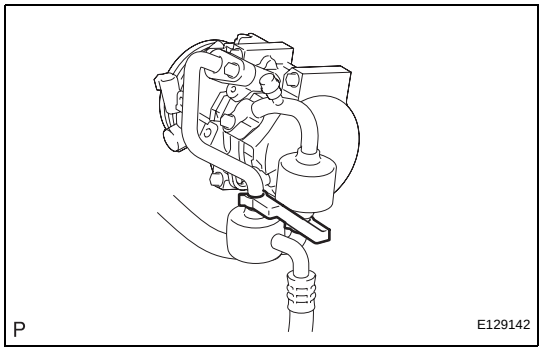
(b) Apply sufficient compressor oil to a new O-ring and the fitting surface of the compressor and magnetic clutch.

Compressor oil:
ND-OIL 8 or equivalent

(c) Install the O-ring onto the No. 1 cooler refrigerant discharge hose sub-assembly.

(d) Install the No. 1 cooler refrigerant discharge hose onto the compressor and magnetic clutch with the bolt.

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



4. INSTALL PIPING CLAMP

(a) Install the piping clamp to the No. 1 cooler refrigerant suction hose and No. 1 cooler refrigerant discharge hose.

5. INSTALL GENERATOR ASSEMBLY (See page CH-22)

6. INSTALL V-RIBBED BELT (See page EM-7)

7. INSTALL RADIATOR ASSEMBLY (See page CO-31)

8. INSTALL FAN SHROUD (See page CO-32)

9. INSTALL RADIATOR SUPPORT UPPER (See page CO-32)

10. INSTALL NO. 1 OIL COOLER OUTLET TUBE (for Automatic Transaxle) (See page CO-33)

AC

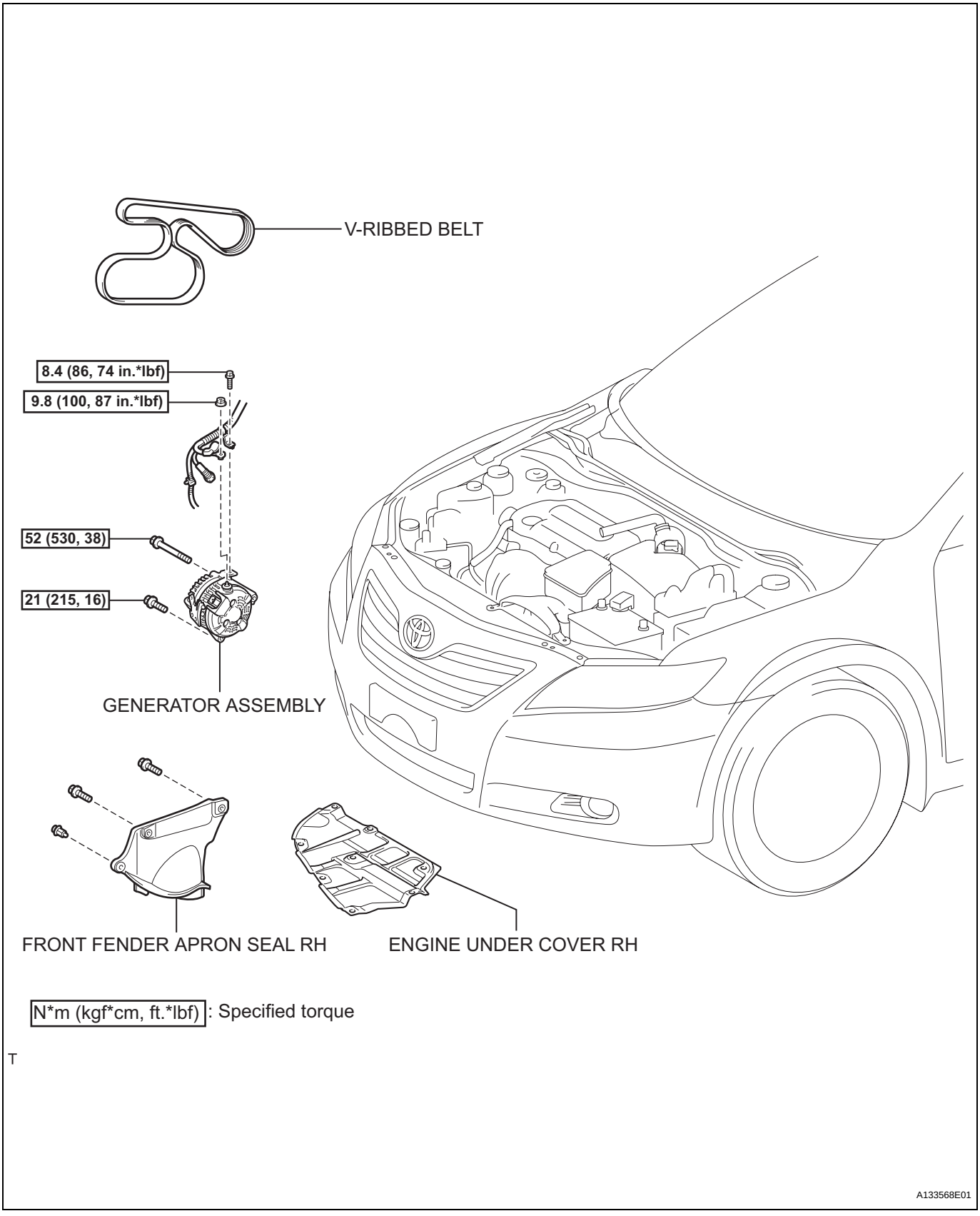
11. INSTALL NO. 1 OIL COOLER INLET TUBE (for Automatic Transaxle) (See page CO-33)
12. CONNECT RADIATOR OUTLET HOSE (See page CO-33)
13. CONNECT RADIATOR INLET HOSE (See page CO-33)
14. CONNECT RADIATOR RESERVE TANK HOSE (See page CO-34)
15. INSTALL FRONT BUMPER ENERGY ABSORBER (See page ET-10)
16. INSTALL FRONT BUMPER ASSEMBLY (w/o Fog Light) (See page ET-13)
17. INSTALL FRONT BUMPER ASSEMBLY (w/ Fog Light) (See page ET-14)
18. INSTALL NO. 1 AIR CLEANER INLET (See page EM-49)
19. INSTALL AIR CLEANER CAP SUB-ASSEMBLY
20. INSTALL AIR CLEANER INLET ASSEMBLY (See page EM-50)
21. CONNECT BATTERY NEGATIVE TERMINAL
22. ADD ENGINE COOLANT (See page CO-6)
23. CHECK FOR ENGINE COOLANT LEAKS (See page CO-1)
24. CHARGE WITH REFRIGERANT (See page AC-125)
25. WARM UP ENGINE (See page AC-126)
26. CHECK FOR REFRIGERANT LEAKS (See page AC-126)
27. INSTALL V-BANK COVER SUB-ASSEMBLY (See page EM-52)
28. INSTALL COOL AIR INTAKE DUCT SEAL (See page EM-52)
29. INSTALL ENGINE UNDER COVER RH
30. INSTALL ENGINE UNDER COVER LH
31. INSTALL FRONT WHEEL OPENING EXTENSION PAD RH
32. INSTALL FRONT WHEEL OPENING EXTENSION PAD LH
33. INSTALL FRONT FENDER APRON SEAL RH
34. INSTALL FRONT WHEEL RH
35. VEHICLE PREPARATION FOR FOG LIGHT AIMING (w/ Fog Light) (See page LI-79)
36. PREPARATION FOR FOG LIGHT AIMING (w/ Fog Light) (See page LI-80)

37. **INSPECT FOG LIGHT AIMING (w/ Fog Light) (See page LI-81)**

38. **ADJUST FOG LIGHT AIMING (w/ Fog Light) (See page LI-82)**

COMPRESSOR AND PULLEY (for 2AZ-FE)

COMPONENTS



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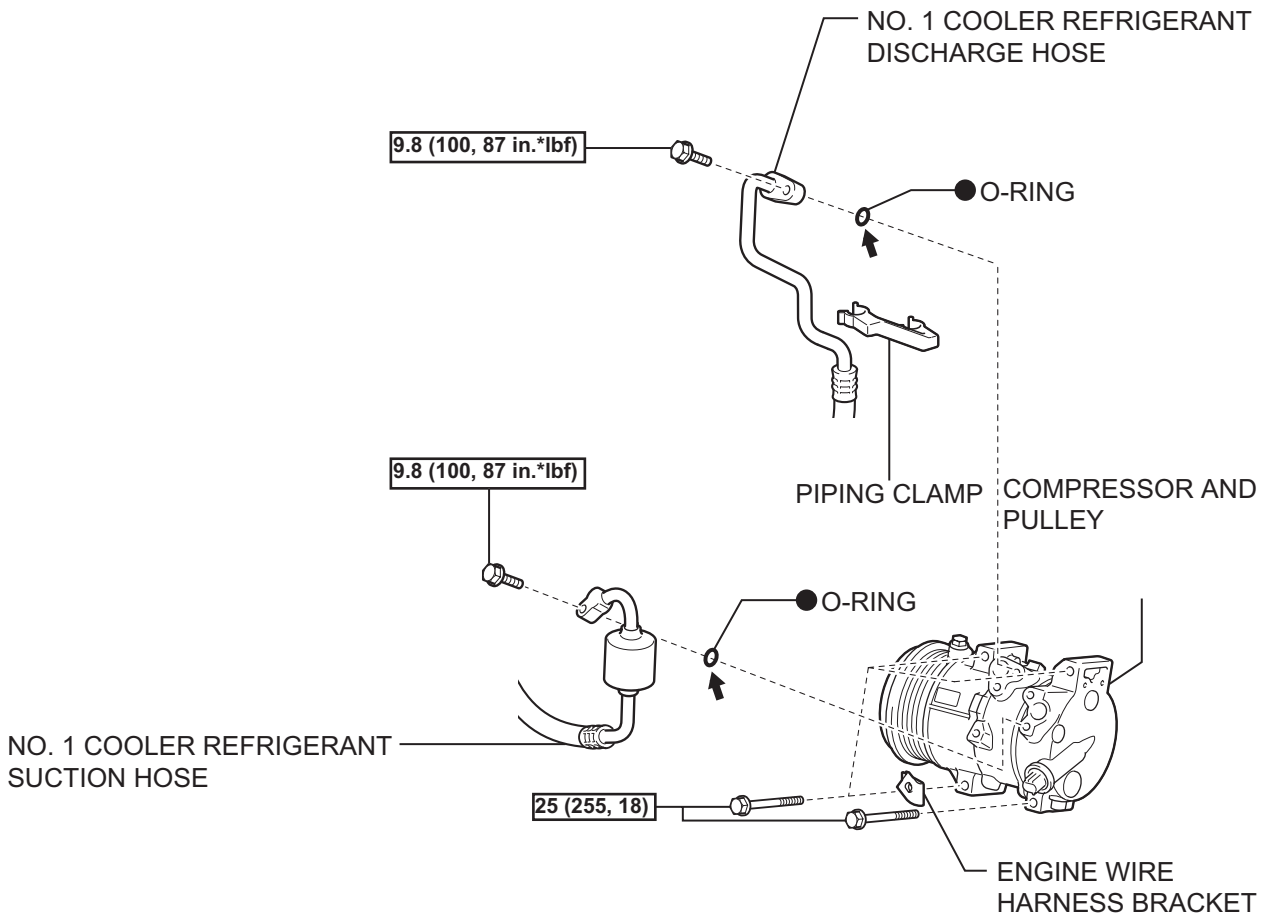

AC

← Compressor oil ND-OIL 8 or equivalent

● Non-reusable part

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

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ON-VEHICLE INSPECTION

1. INSPECT COMPRESSOR FOR METALLIC SOUND

(a) Check if there is abnormal metallic sound from the compressor when the A/C switch is on and the compressor operates.
If abnormal metallic sound is heard, replace the compressor and pulley.

2. INSPECT REFRIGERANT PRESSURE

HINT:
(See page AC-120)

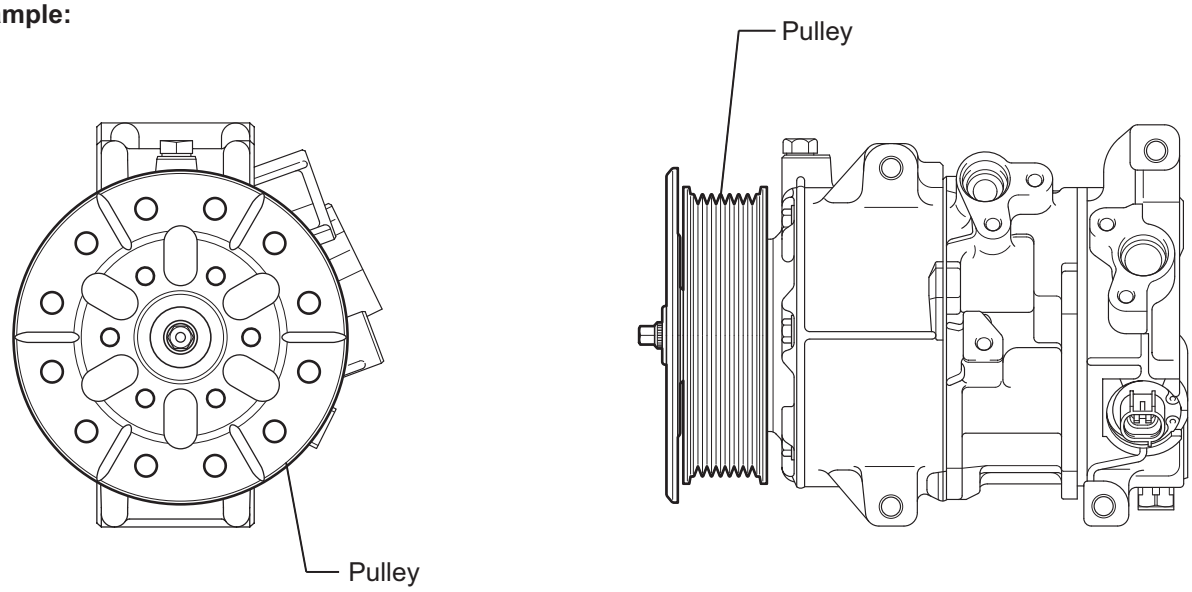
3. INSPECT FOR LEAKAGE OF REFRIGERANT

(a) Using a gas leak detector, check for leakage of refrigerant.
If there is any leakage, replace the compressor and pulley.

4. INSPECT COMPRESSOR AND PULLEY

(a) Check operation of compressor and pulley.
(1) Start the engine.
(2) Inspect the compressor pulley.

Example:



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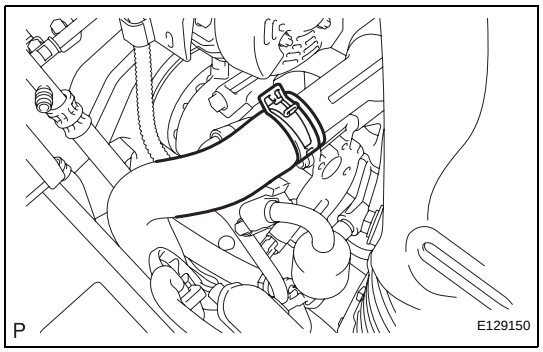
Standard:

The compressor shaft rotates along with the pulley.

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

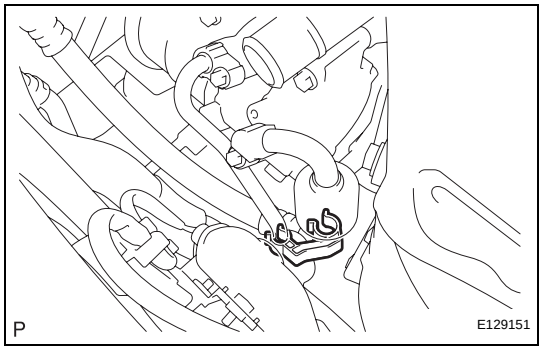
REMOVAL

1. **RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM (See page AC-125)**
2. **DISCONNECT REFRIGERANT FROM REFRIGERATION SYSTEM**
   CAUTION:
   Wait for 90 seconds after disconnecting the cable to prevent airbag deployment (See page RS-1)
3. **DRAIN ENGINE COOLANT (See page CO-5)**
4. **REMOVE FRONT WHEEL RH**
5. **REMOVE ENGINE UNDER COVER RH**
6. **REMOVE FRONT FENDER APRON SEAL RH**
7. **REMOVE V-RIBBED BELT (See page EM-6)**
8. **REMOVE GENERATOR ASSEMBLY (See page CH-11)**
9. **DISCONNECT RADIATOR HOSE OUTLET**
   (a) Using pliers, grip the claws of the clip and slide the clip to disconnect the radiator hose outlet.

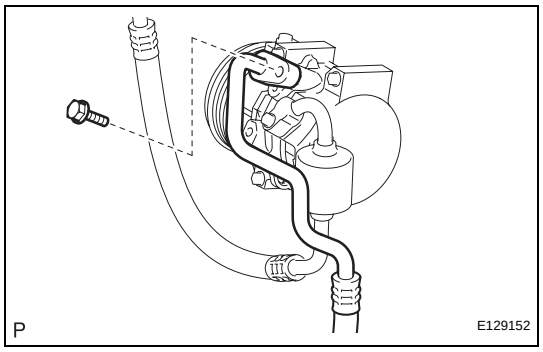


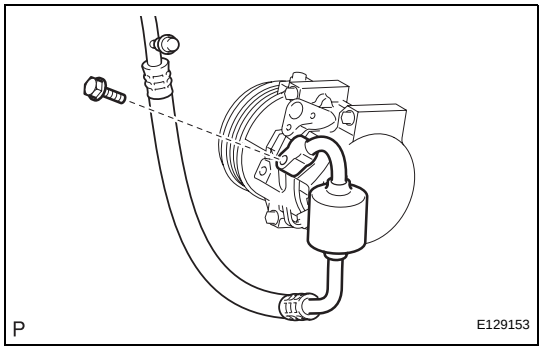
AC

10. **REMOVE PIPING CLAMP**
    (a) Remove the piping clamp from the No. 1 cooler refrigerant discharge hose and No. 1 cooler refrigerant suction hose.



11. **DISCONNECT NO. 1 COOLER REFRIGERANT DISCHARGE HOSE**
    (a) Remove the bolt and disconnect the No. 1 cooler refrigerant discharge hose from the compressor and pulley.
    (b) Remove the O-ring from the No. 1 cooler refrigerant discharge hose.
    NOTICE:
    Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.





12. DISCONNECT NO. 1 COOLER REFRIGERANT SUCTION HOSE

(a) Remove the bolt and disconnect the No. 1 cooler refrigerant suction hose from the compressor and pulley.

(b) Remove the O-ring from the No. 1 cooler refrigerant suction hose.

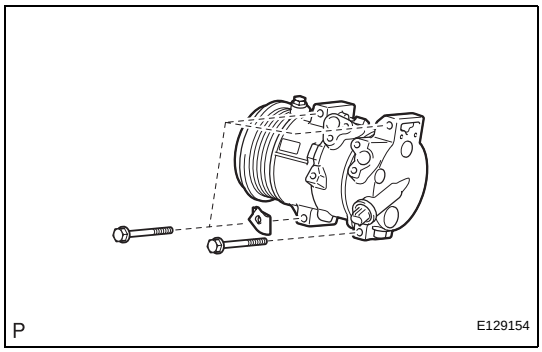
NOTICE:

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

13. REMOVE COMPRESSOR AND PULLEY

(a) Disconnect the connector.

(b) Remove the 4 bolts, engine wire harness bracket, and the compressor and pulley.



INSPECTION

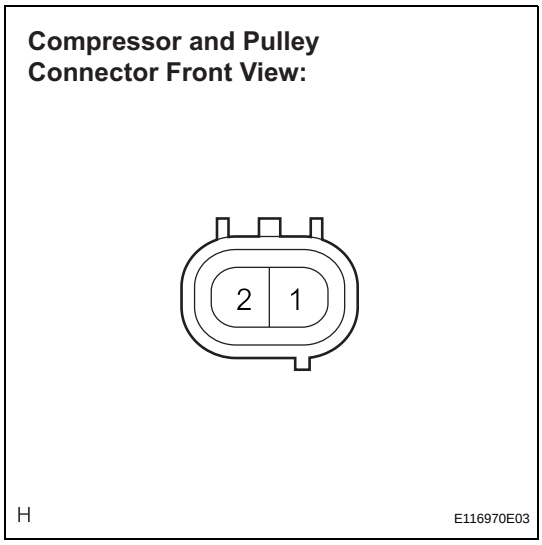
1. INSPECT COMPRESSOR AND PULLEY (A/C COMPRESSOR SOLENOID)

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

Standard resistance

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

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



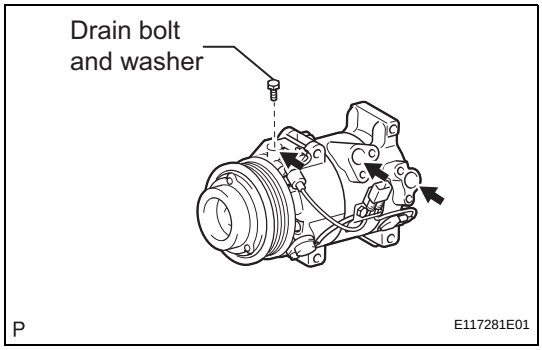
INSTALLATION

1. ADJUST COMPRESSOR OIL LEVEL

(a) When replacing the cooler compressor assembly 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.

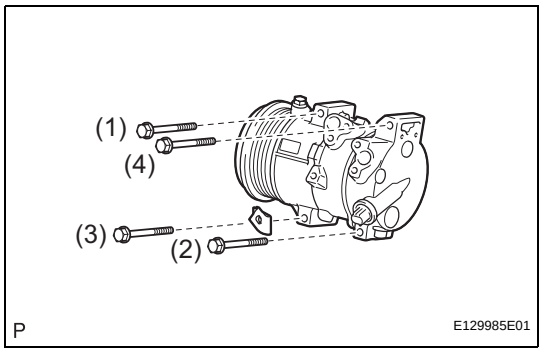


Standard:

AC (Oil capacity inside the new compressor and magnetic clutch: 160 + 15 cc (5.4 + 0.51 fl.oz.)) - (Remaining oil amount in the removed compressor and magnetic clutch) = (Oil amount to be removed from the new compressor when replacing)

NOTICE:

- **If a new compressor and magnetic clutch is installed without removing some oil, due to the oil remaining in the pipes of the vehicle, the oil amount will be too large. This prevents heat exchange in the refrigerant cycle and causes refrigeration system failure.**
- **If the volume of oil remaining in the removed compressor and magnetic clutch is too small, check for oil leakage.**
- **Be sure to use ND-OIL 8 or equivalent for compressor oil.**



2. INSTALL COMPRESSOR AND PULLEY

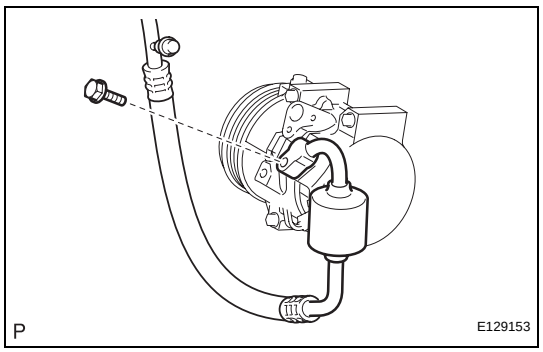
(a) Install the compressor and pulley and the engine wire harness bracket with the 4 bolts.

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

NOTICE:

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

AC



3. INSTALL 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 and magnetic clutch.

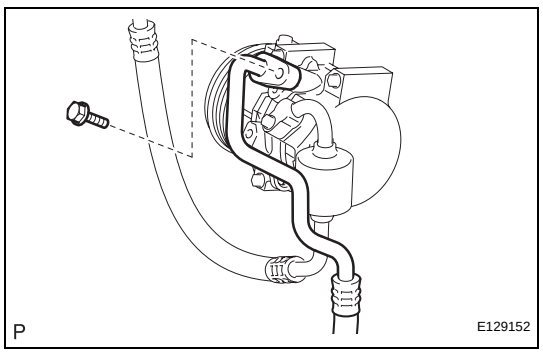
Compressor oil:

ND-OIL 8 or equivalent

(c) Install the O-ring onto the No. 1 cooler refrigerant suction hose.

(d) Install the No. 1 cooler refrigerant suction hose onto the compressor and magnetic clutch with the bolt.

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



4. INSTALL NO. 1 COOLER REFRIGERANT DISCHARGE HOSE

(a) Remove the attached vinyl tape from the hose.

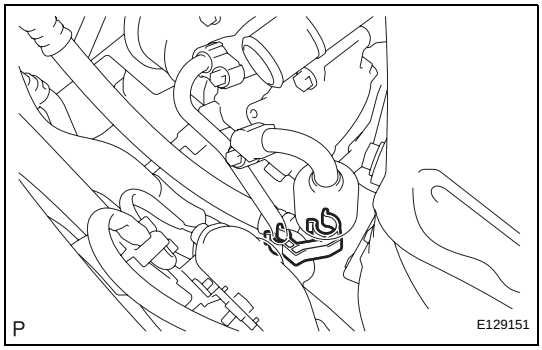
(b) Apply sufficient compressor oil to a new O-ring and the fitting surface of the compressor and magnetic clutch.

Compressor oil:

ND-OIL 8 or equivalent

(c) Install the O-ring onto the No. 1 cooler refrigerant discharge hose.

(d) Install the discharge hose sub-assembly onto the compressor and magnetic clutch with the bolt.
Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



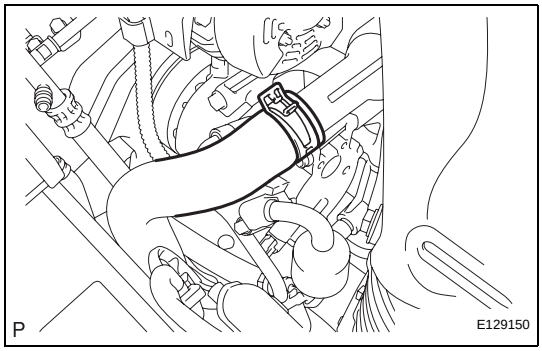
5. INSTALL PIPING CLAMP

(a) Install the piping clamp to the No. 1 cooler refrigerant suction hose and No. 1 cooler refrigerant discharge hose.

6. INSTALL GENERATOR ASSEMBLY (See page CH-19)

7. INSTALL V-RIBBED BELT (See page EM-6)

8. INSTALL FRONT FENDER APRON SEAL RH



9. INSTALL RADIATOR HOSE OUTLET

(a) Install the radiator hose outlet and attach the clip.

10. CONNECT BATTERY NEGATIVE TERMINAL

11. ADD ENGINE COOLANT (See page CO-5)

12. CHECK FOR ENGINE COOLANT LEAKS
NOTICE:
Do not turn the A/C on before charging with refrigerant. Doing so will cause the cooler compressor to work without refrigerant, resulting in overheating of the cooler compressor.

13. INSTALL ENGINE UNDER COVER RH

14. INSTALL FRONT WHEEL RH

15. CHARGE WITH REFRIGERANT (See page AC-125)

16. WARM UP ENGINE (See page AC-126)

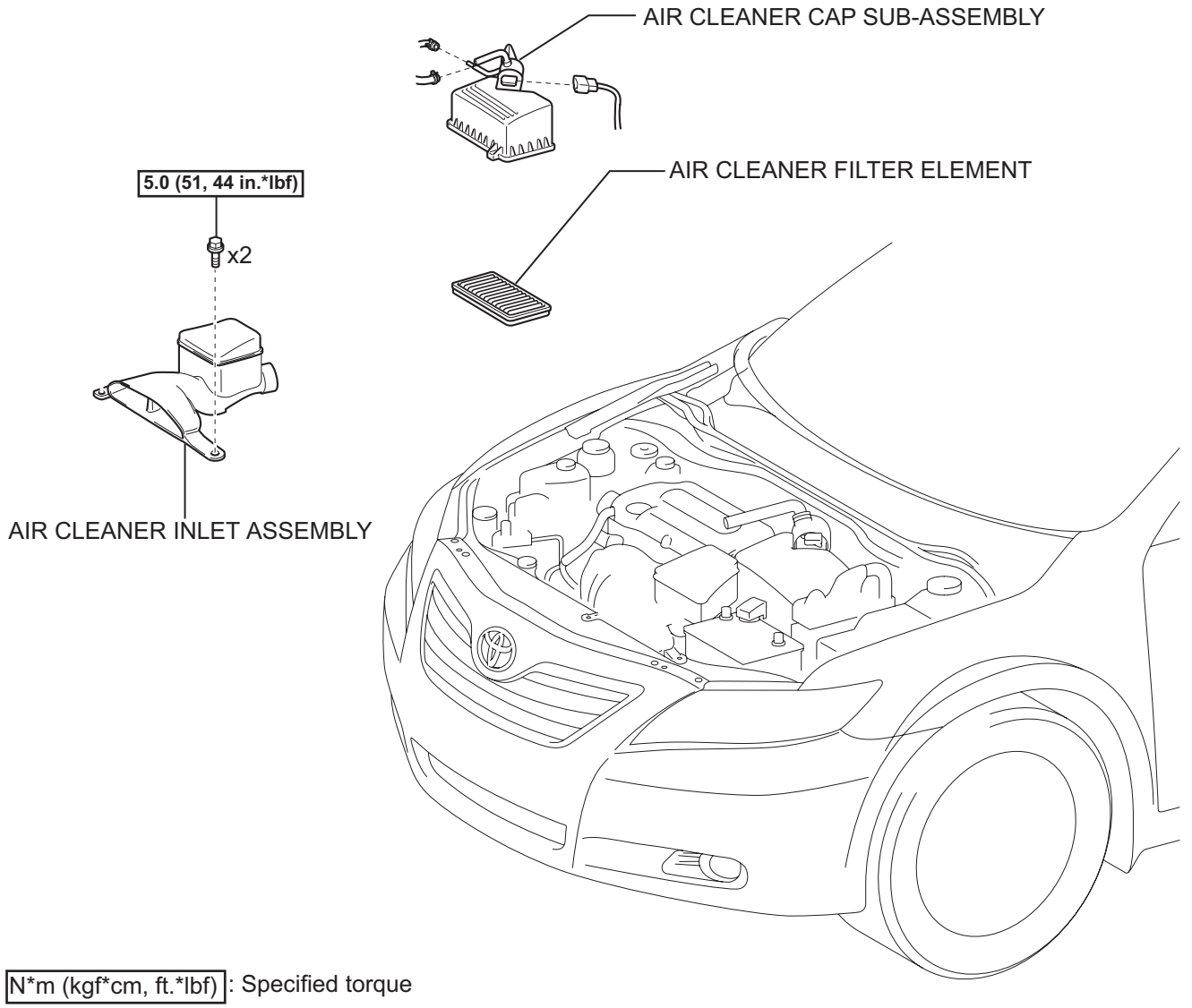
17. CHECK FOR REFRIGERANT LEAKS (See page AC-126)

AC

CONDENSER

COMPONENTS

2AD-FE:



N*m (kgf*cm, ft.*lbf): Specified torque

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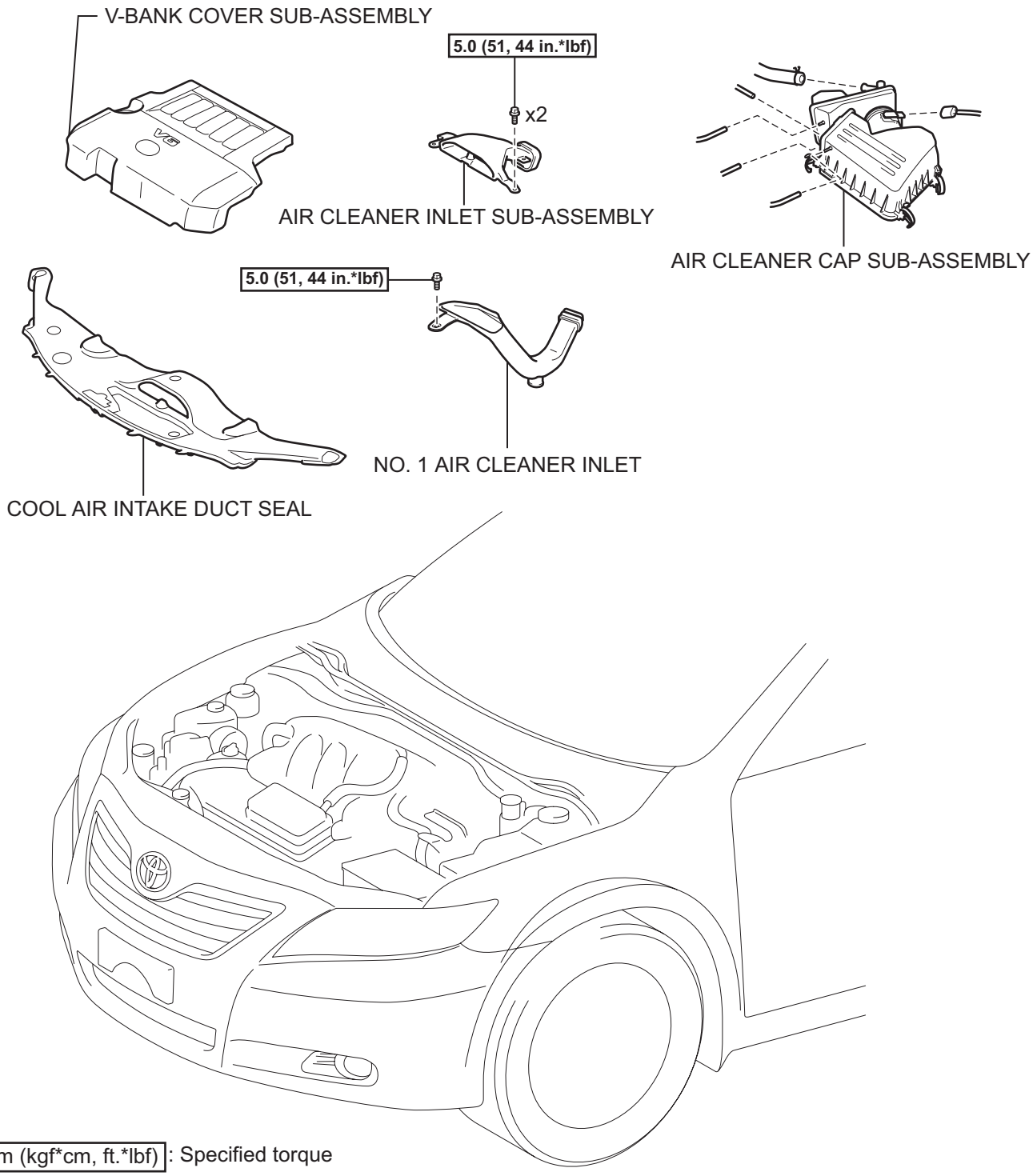
2GR-FE:

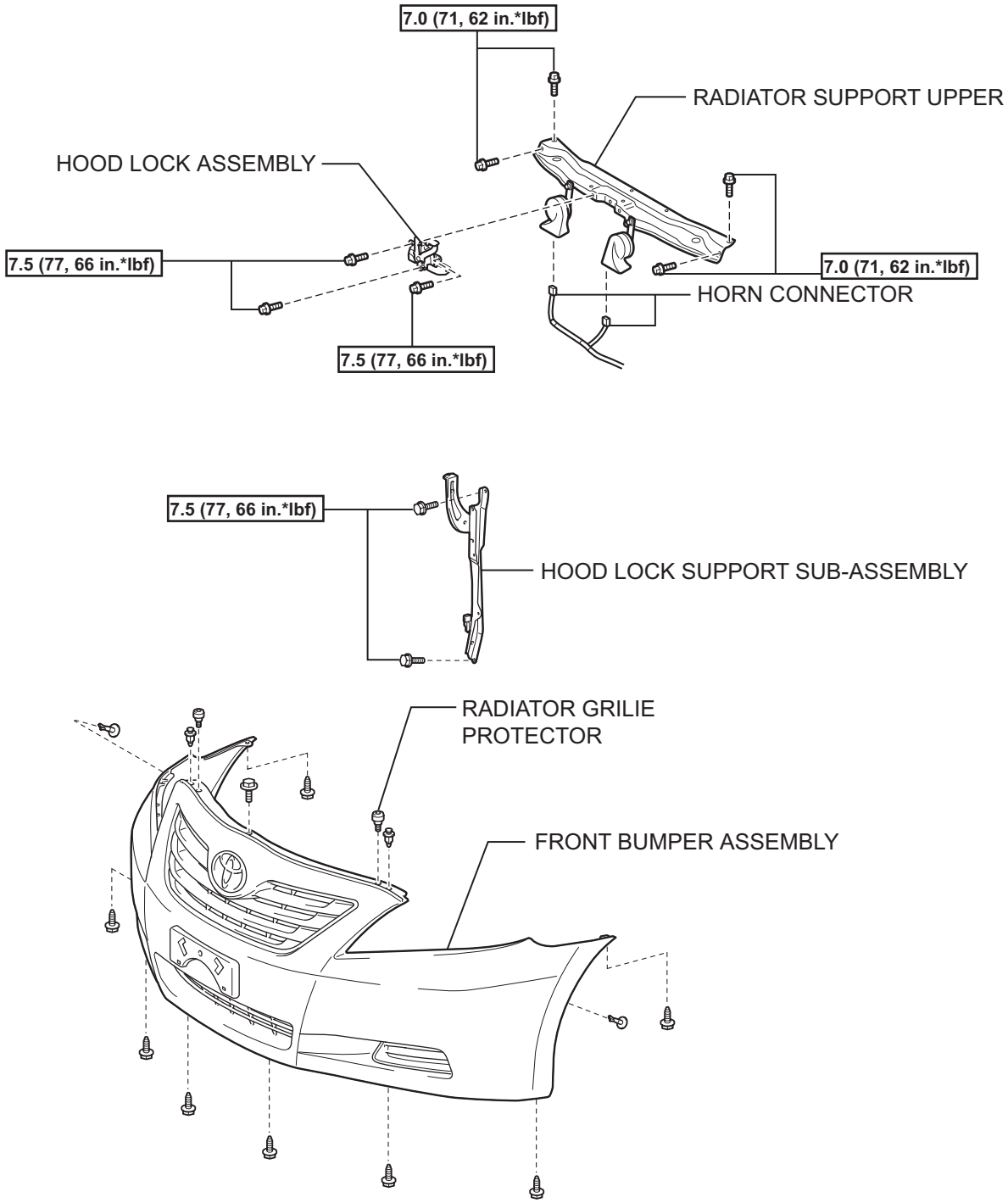


AC

N*m (kgf*cm, ft.*lbf): Specified torque

P

E133915E01



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N*m (kgf*cm, ft.*lbf) : Specified torque

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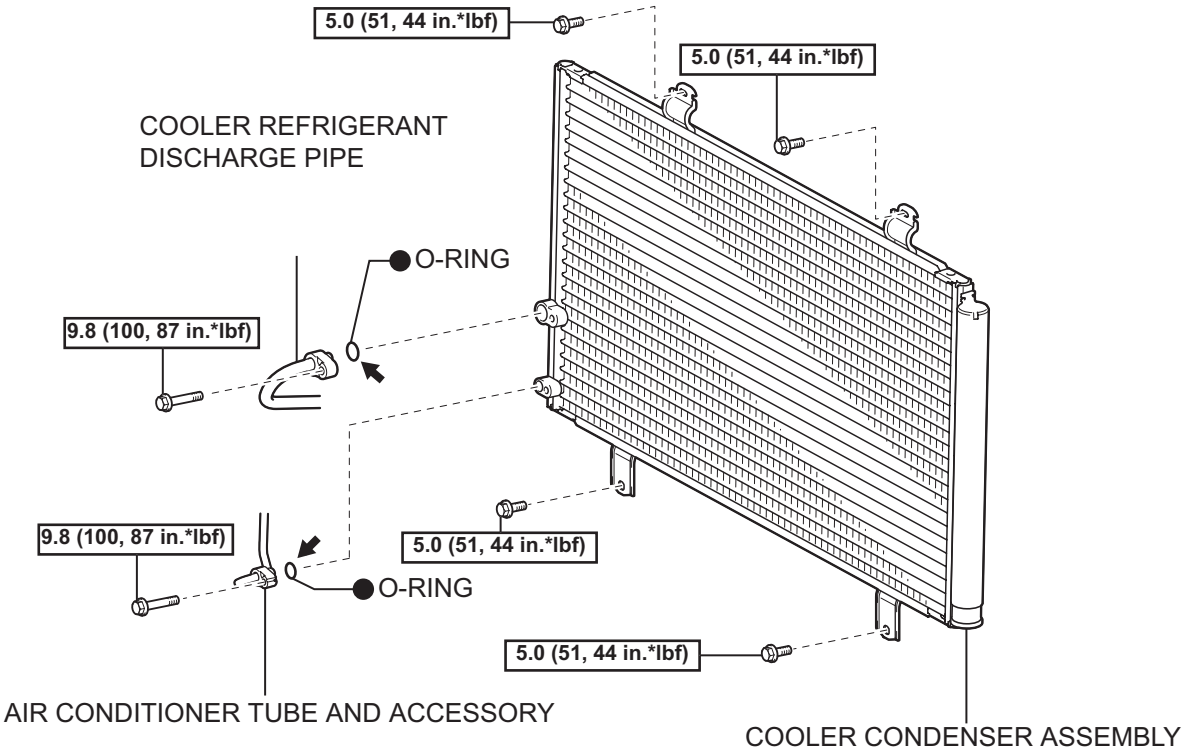

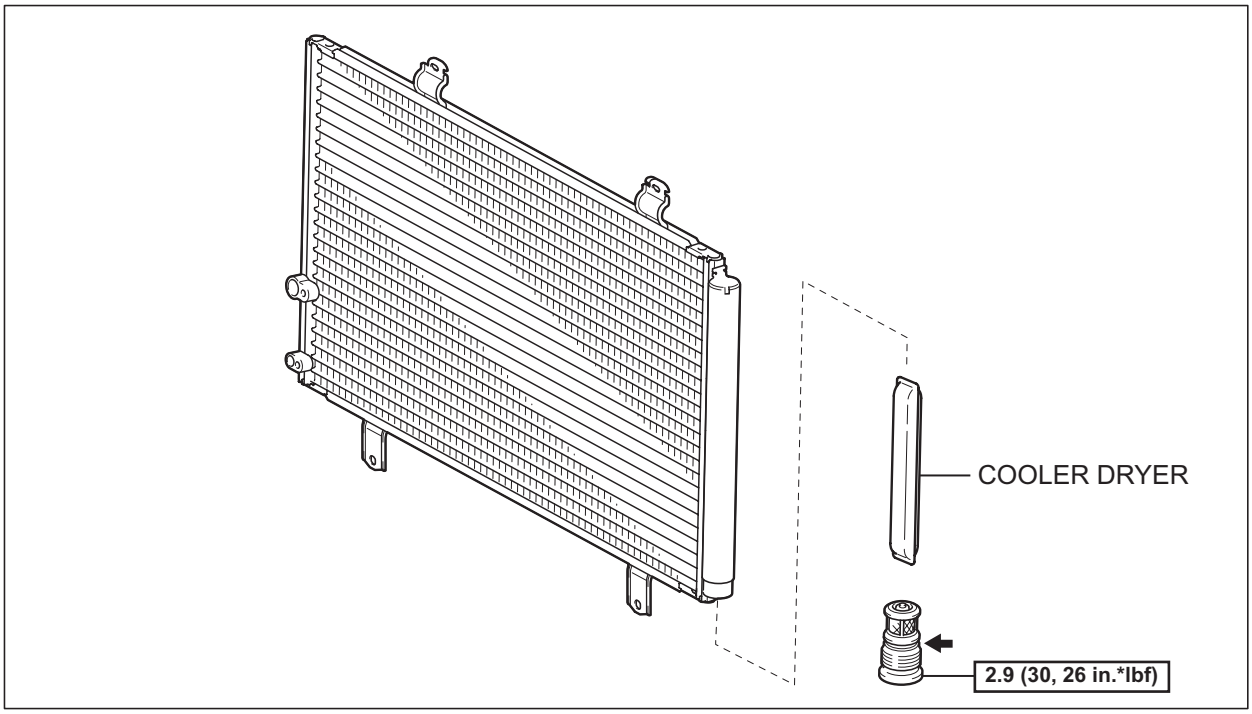

AC

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

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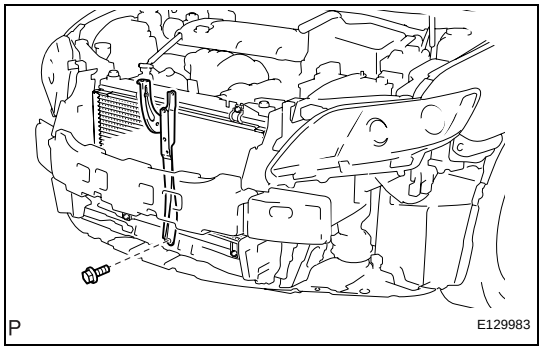
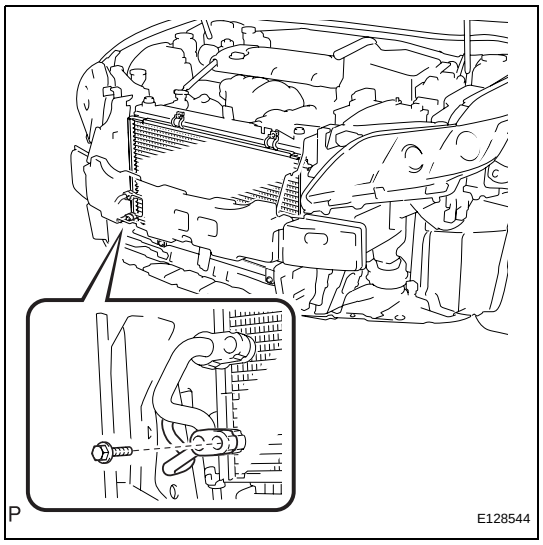
REMOVAL

1. **RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM**
2. **REMOVE V-BANK COVER SUB-ASSEMBLY (for 2GR-FE) (See page EM-23)**
3. **REMOVE COOL AIR INTAKE DUCT SEAL (for 2GR-FE) (See page EM-23)**
4. **REMOVE AIR CLEANER CAP SUB-ASSEMBLY (for 2AZ-FE) (See page ES-416)**
5. **REMOVE AIR CLEANER CAP SUB-ASSEMBLY (for 2GR-FE) (See page ES-503)**
6. **REMOVE AIR CLEANER INLET ASSEMBLY (for 2AZ-FE) (See page EM-94)**
7. **REMOVE AIR CLEANER INLET SUB-ASSEMBLY (for 2GR-FE) (See page EM-24)**
8. **REMOVE NO. 1 AIR CLEANER INLET (for 2GR-FE) (See page EM-24)**
9. **REMOVE FRONT BUMPER ASSEMBLY (w/o Fog Light) (See page ET-5)**
10. **REMOVE FRONT BUMPER ASSEMBLY (w/ Fog Light) (See page ET-6)**
11. **REMOVE RADIATOR SUPPORT UPPER**
12. **REMOVE HOOD LOCK SUPPORT SUB-ASSEMBLY**
    (a) Remove the bolt and hood lock support sub-assembly.



13. **DISCONNECT AIR CONDITIONER TUBE AND ACCESSORY**
    (a) Remove the bolt and disconnect the air conditioning tube assembly from the condenser.
    (b) Remove the O-ring from the air conditioning tube assembly.
    NOTICE:
    Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.



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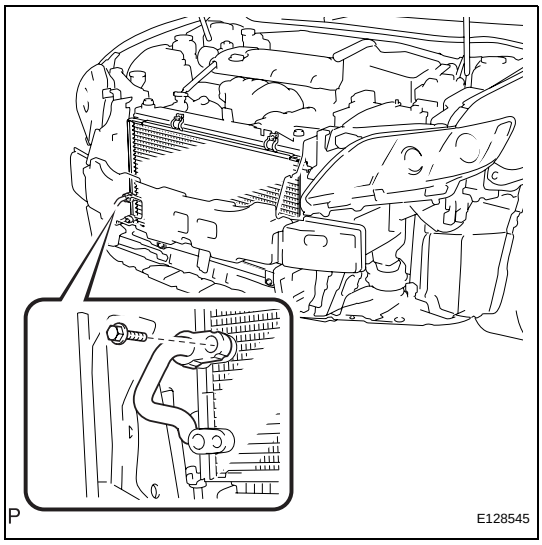


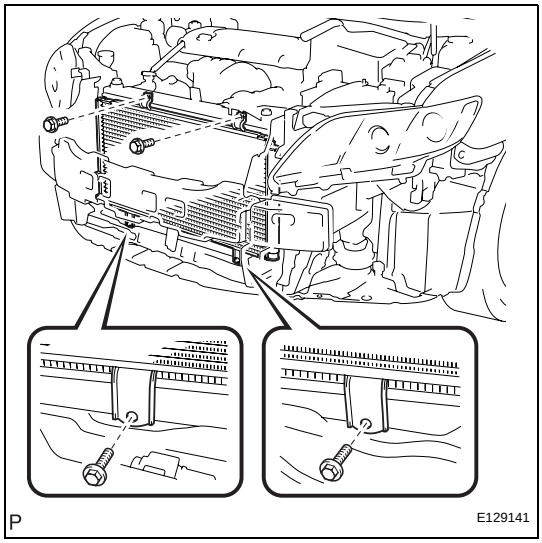
14. DISCONNECT COOLER REFRIGERANT DISCHARGE PIPE

(a) Remove the bolt and disconnect the cooler refrigerant discharge pipe from the condenser.

(b) Remove the O-ring from the cooler refrigerant discharge pipe.

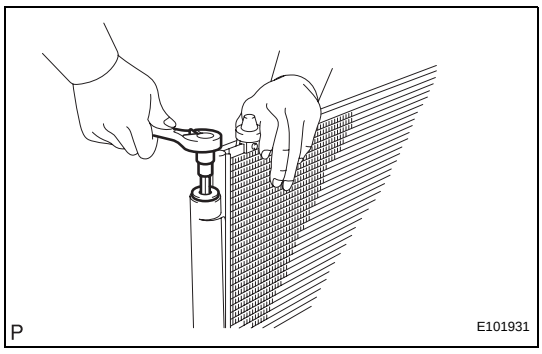
NOTICE:

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



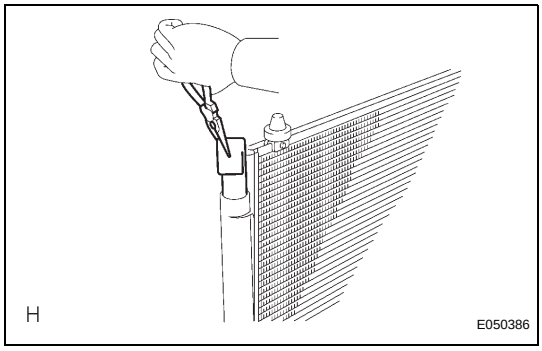
15. REMOVE COOLER CONDENSER ASSEMBLY

(a) Remove the 4 bolts and condenser.



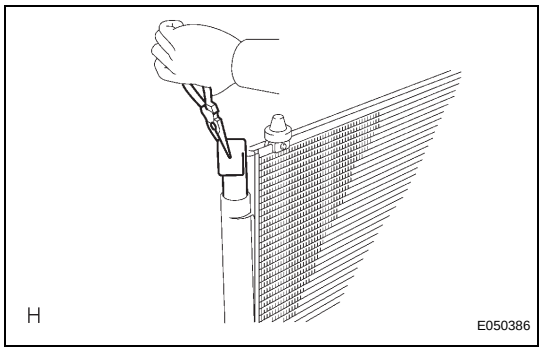
16. REMOVE COOLER DRYER

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



(b) Using pliers, remove the cooler dryer.

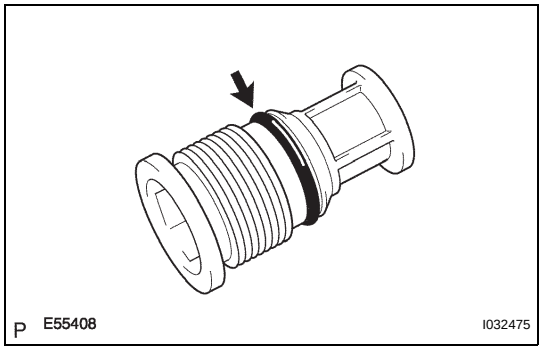
AC



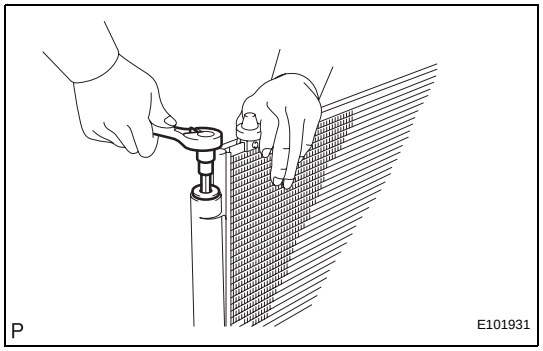
INSTALLATION

1. INSTALL COOLER DRYER

(a) Using pliers, install the cooler dryer to the modulator.

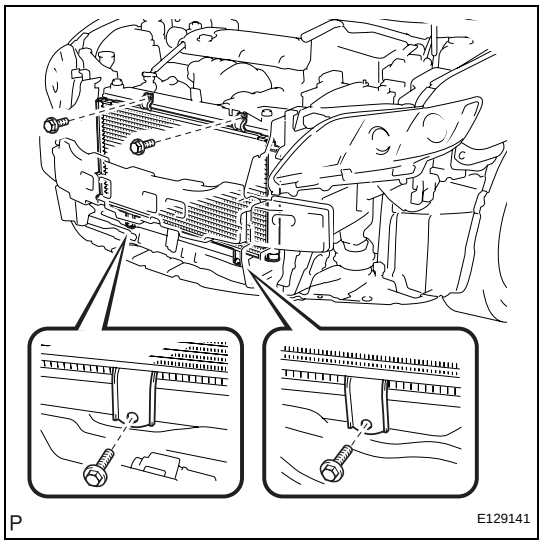


(b) Apply sufficient compressor oil to an O-ring and cap fitting surface.
Compressor oil:
ND-OIL 8 or equivalent



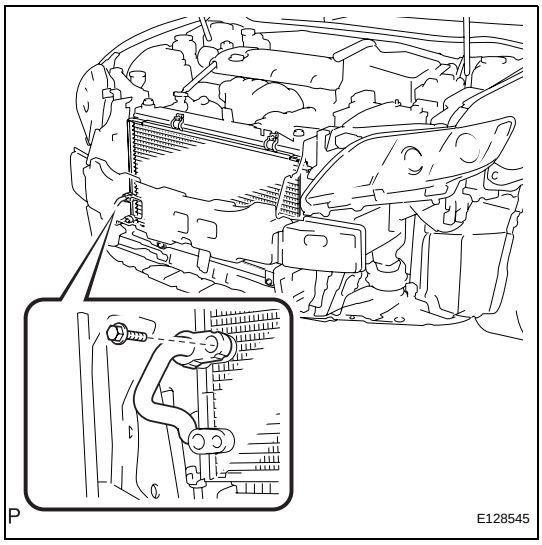
(c) Using a straight hexagon wrench 14 mm, install the cap to the cooler condenser core.
Torque: 2.9 N*m (30 kgf*cm, 26 in.*lbf)

AC

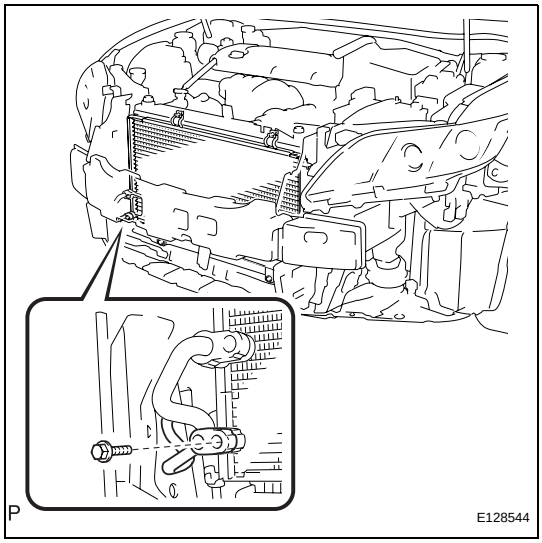


2. INSTALL COOLER CONDENSER ASSEMBLY

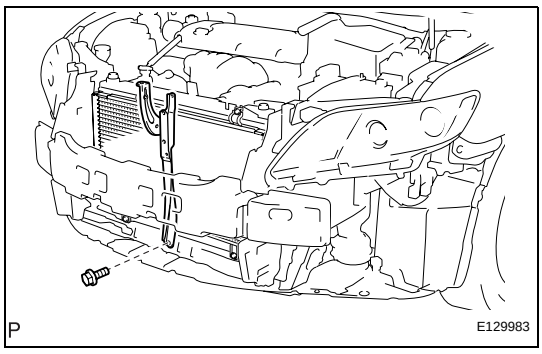
(a) Install the cooler condenser assembly with the 4 bolts.
Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)
HINT:
If the condenser is replaced with a new one, add compressor oil to the new condenser.
Capacity:
40 cc (1.4 fl. oz.)
Compressor oil:
ND-8 or equivalent



3. **INSTALL COOLER REFRIGERANT DISCHARGE PIPE**
   (a) Remove the attached vinyl tape from the pipe and the connecting part of the cooler condenser assembly.
   (b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the pipe joint.
   Compressor oil:
   ND-OIL 8 or equivalent
   (c) Install the O-ring on the cooler refrigerant discharge pipe.
   Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



4. **INSTALL AIR CONDITIONER TUBE AND ACCESSORY**
   (a) Remove the attached vinyl tape from the tube and the connecting part of the cooler condenser assembly.
   (b) Sufficiently apply compressor oil to a new O-ring and the fitting surface of the tube joint.
   Compressor oil:
   ND-OIL 8 or equivalent
   (c) Install the O-ring on the air conditioning tube assembly.
   (d) Install the air conditioning tube assembly on the cooler condenser assembly with the bolt.
   Torque: 9.8 N*m (100 kgf*cm, 87 in.*lbf)



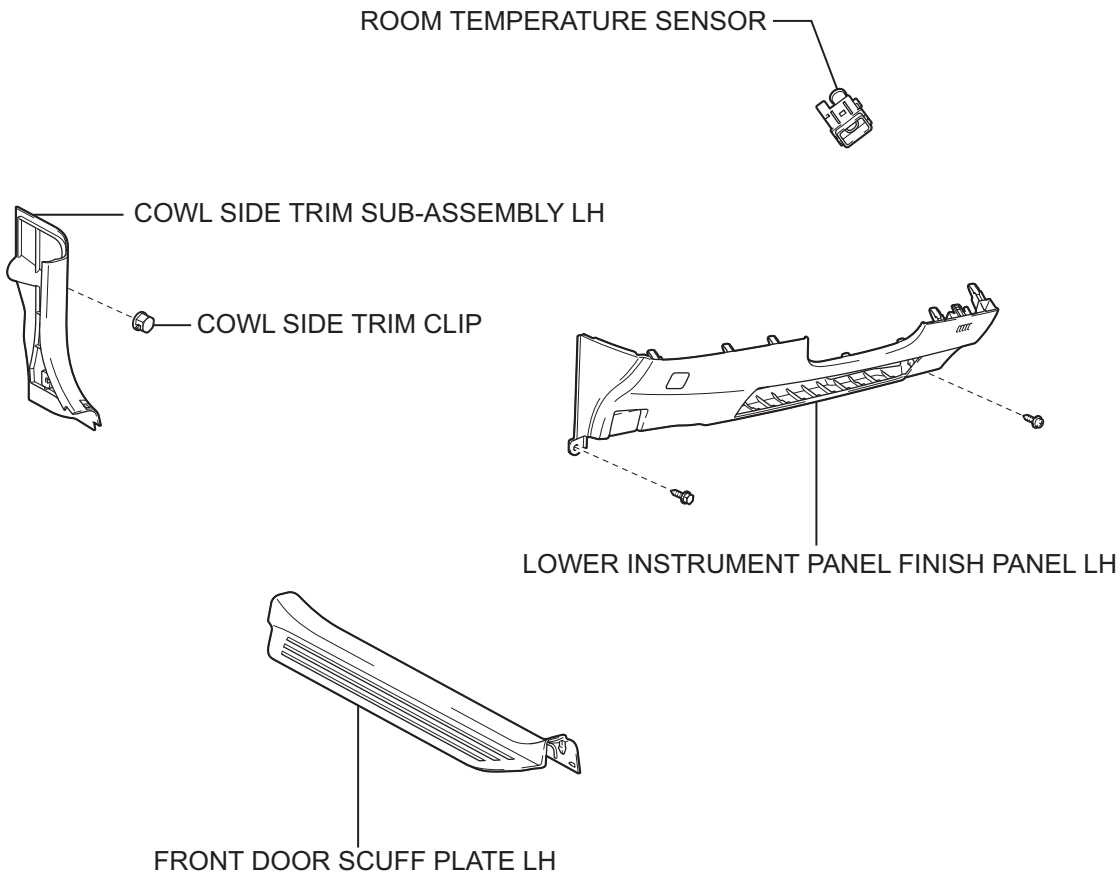
5. **INSTALL HOOD LOCK SUPPORT SUB-ASSEMBLY**
   (a) Install the hood lock support sub-assembly with the bolt.
   Torque: 7.5 N*m (77 kgf*cm, 66 in.*lbf)
6. **INSTALL RADIATOR SUPPORT UPPER**
7. **INSTALL FRONT BUMPER ASSEMBLY (w/o Fog Light) (See page ET-13)**
8. **INSTALL FRONT BUMPER ASSEMBLY (w/ Fog Light) (See page ET-14)**
9. **INSTALL NO. 1 AIR CLEANER INLET (for 2GR-FE) (See page EM-49)**
10. **INSTALL AIR CLEANER INLET ASSEMBLY (for 2AZ-FE) (See page EM-120)**
11. **INSTALL AIR CLEANER INLET SUB-ASSEMBLY (for 2GR-FE) (See page EM-50)**
12. **INSTALL AIR CLEANER CAP SUB-ASSEMBLY (for 2AZ-FE) (See page ES-419)**

AC

13. **INSTALL AIR CLEANER CAP SUB-ASSEMBLY (for 2GR-FE) (See page ES-506)**
14. **INSTALL COOL AIR INTAKE DUCT SEAL (for 2GR-FE) (See page EM-52)**
15. **INSTALL V-BANK COVER SUB-ASSEMBLY (for 2GR-FE) (See page EM-52)**
16. **ADD ENGINE COOLANT (for 2AZ-FE) (See page CO-5)**
17. **ADD ENGINE COOLANT (for 2GR-FE) (See page CO-6)**
18. **CHECK FOR ENGINE COOLANT LEAKS**
19. **CHARGE WITH REFRIGERANT (See page AC-125)**
20. **WARM UP ENGINE (See page AC-126)**
21. **CHECK FOR REFRIGERANT LEAKS (See page AC-126)**

ROOM TEMPERATURE SENSOR

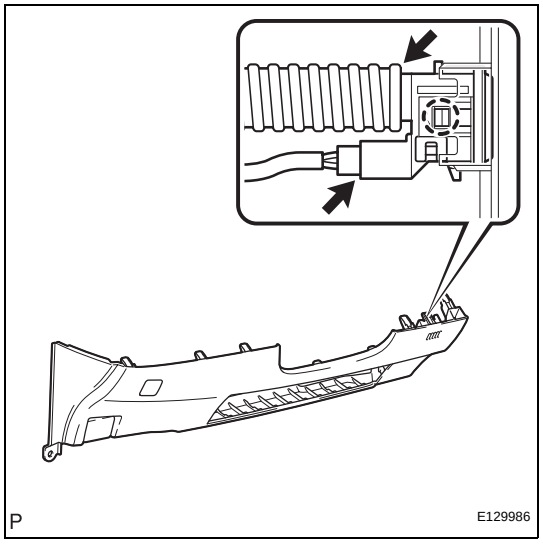
COMPONENTS



AC

REMOVAL

1. **REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-24)**
2. **REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-25)**
3. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (See page IP-20)**
4. **REMOVE ROOM TEMPERATURE SENSOR**
   (a) Disconnect the connector and air hose.
   (b) Release the claw and remove the sensor.



INSPECTION

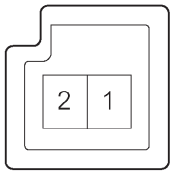
1. **INSPECT ROOM TEMPERATURE SENSOR**
   (a) Measure the resistance according to the value(s) in the table below.
   Standard resistance

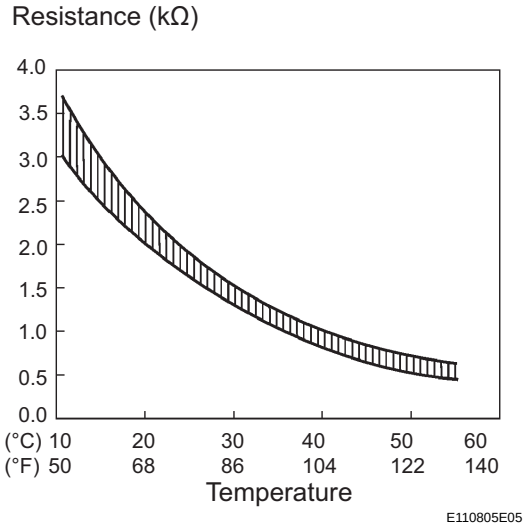
Tester Connection	Condition	Specified Condition
1 - 2	10°C (50°F)	3.00 to 3.73 kΩ
1 - 2	15°C (59°F)	2.45 to 2.88 kΩ
1 - 2	20°C (68°F)	1.95 to 2.30 kΩ
1 - 2	15°C (77°F)	1.60 to 1.80 kΩ
1 - 2	30°C (86°F)	1.28 to 1.47 kΩ
1 - 2	35°C (95°F)	1.00 to 1.22 kΩ
1 - 2	40°C (104°F)	0.80 to 1.00 kΩ
1 - 2	45°C (113°F)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

NOTICE:
- **Hold the sensor only by its connector. Touching the sensor may change the resistance value.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

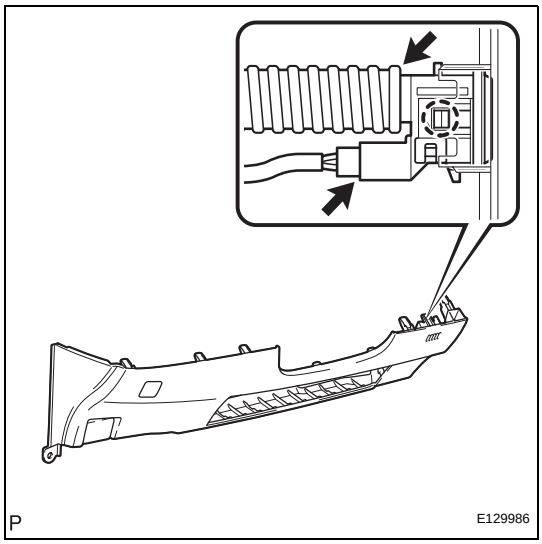
HINT:
As the temperature increases, the resistance decreases (see the graph).

A/C Room Temperature Sensor Connector Front View:





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

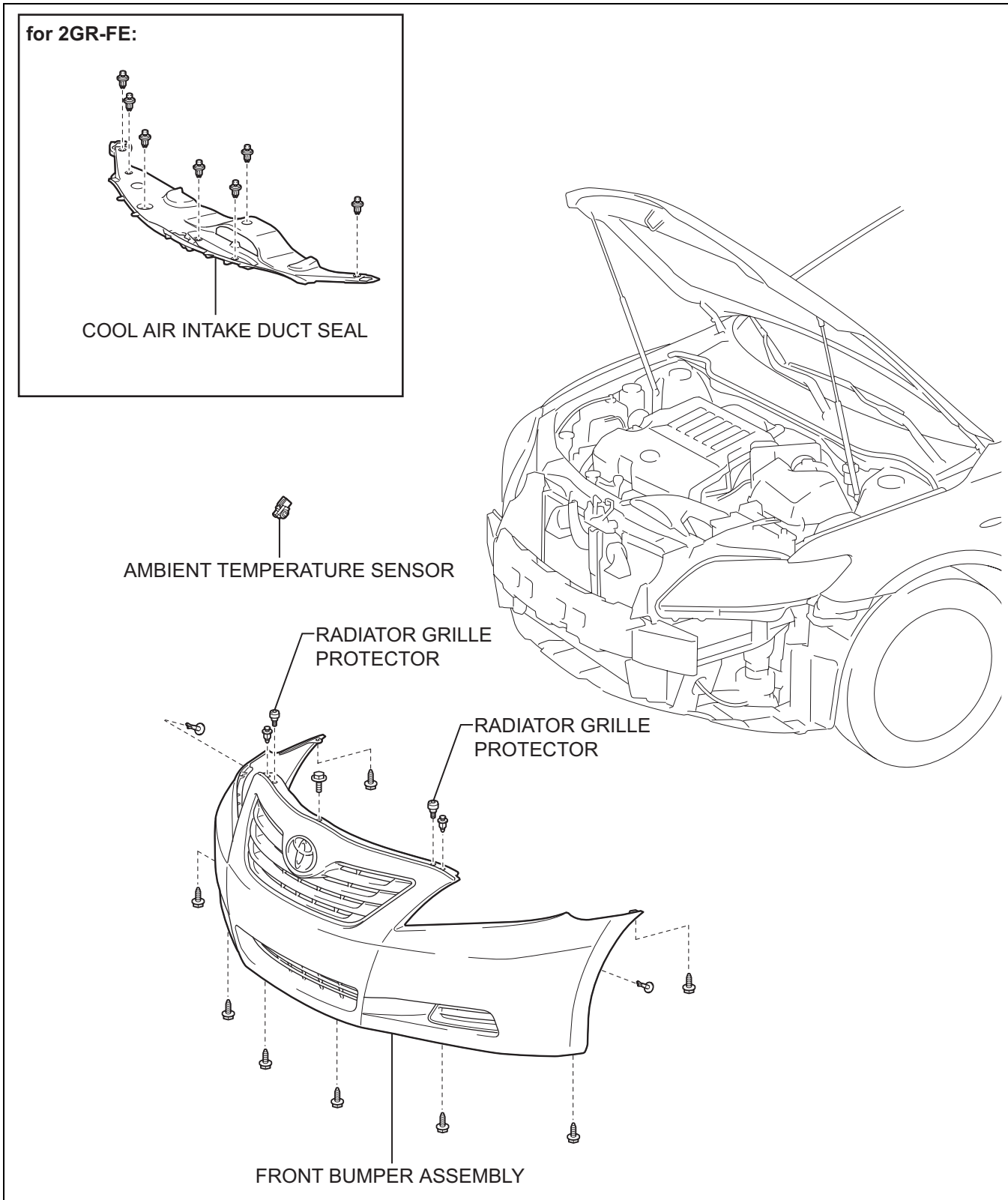


INSTALLATION

1. **INSTALL ROOM TEMPERATURE SENSOR**
   (a) Engage the claw to install the sensor.
   (b) Connect the connector and attach the air hose.
2. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (See page IP-58)**
3. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-54)**
4. **INSTALL FRONT DOOR SCUFF PLATE LH (See page IR-54)**

AMBIENT TEMPERATURE SENSOR

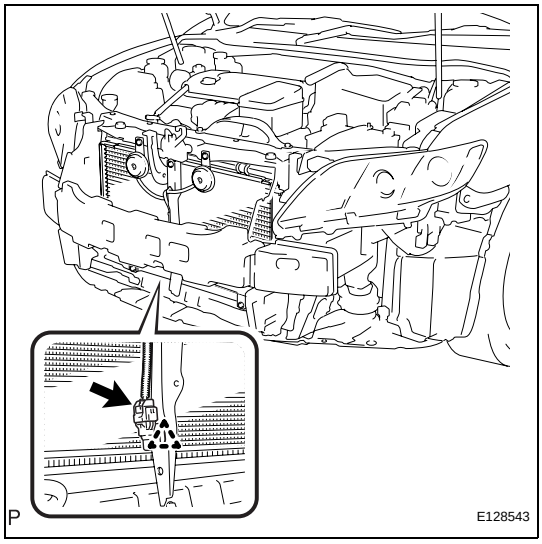
COMPONENTS



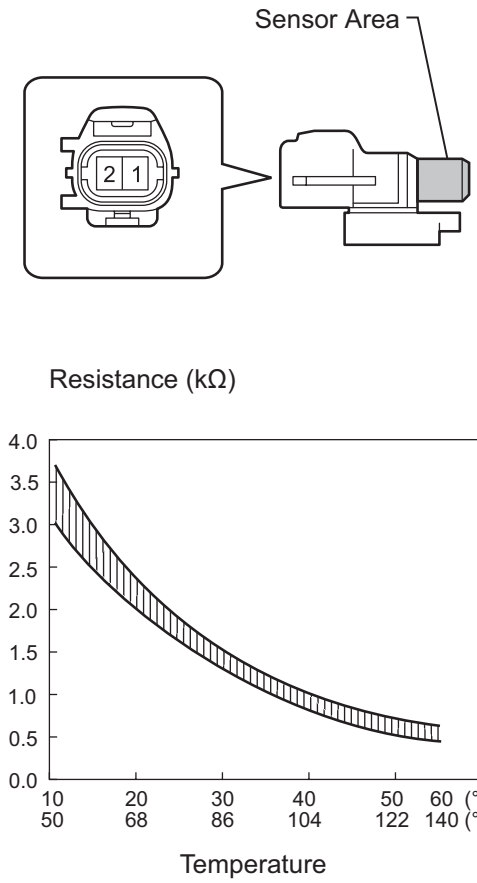
AC

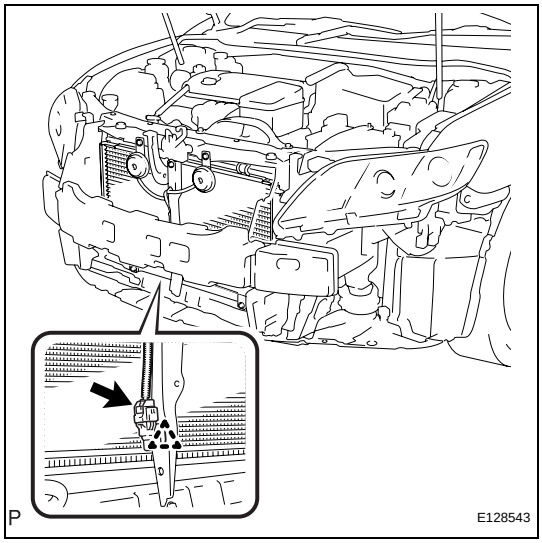
REMOVAL

1. **REMOVE COOL AIR INTAKE DUCT SEAL (for 2GR-FE) (See page ET-4)**
2. **REMOVE FRONT BUMPER ASSEMBLY (w/o Fog Light) (See page ET-5)**
3. **REMOVE FRONT BUMPER ASSEMBLY (w/ Fog Light) (See page ET-6)**
4. **REMOVE AMBIENT TEMPERATURE SENSOR**
   (a) Disconnect the connector and detach the clamp.
   (b) Remove the ambient temperature sensor.



Ambient Temperature Sensor Connector Front View:





INSPECTION

1. **INSPECT AMBIENT TEMPERATURE SENSOR**
   (a) Measure the resistance according to the value(s) in the table below.
   Standard resistance

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

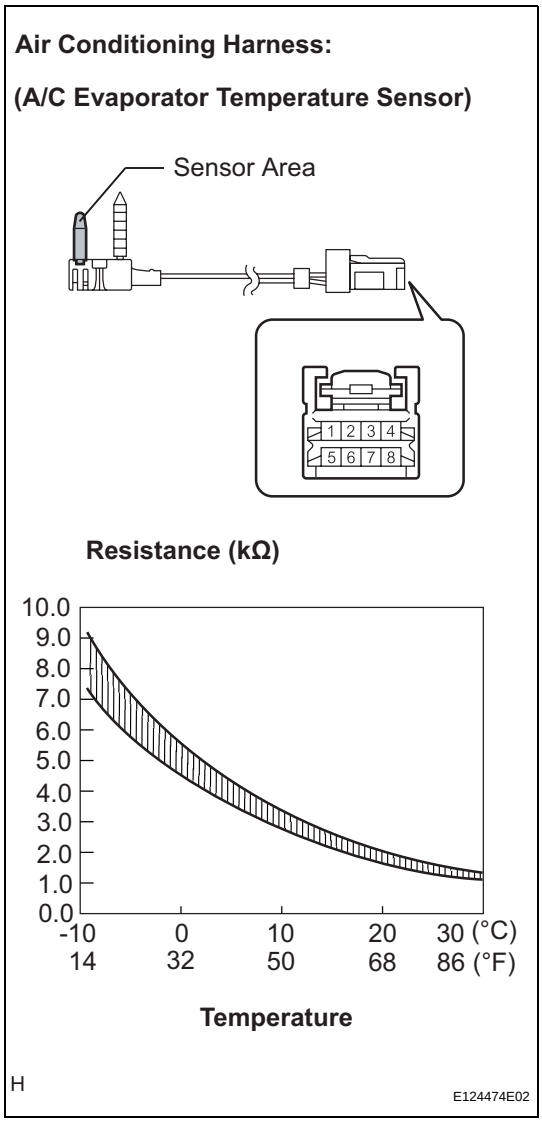
NOTICE:
- **Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.**
- **When measuring, the sensor temperature must be the same as the ambient temperature.**

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

AC

INSTALLATION

1. **INSTALL AMBIENT TEMPERATURE SENSOR**
   (a) Install the ambient temperature sensor with the clamp.
   (b) Connect the connector.
2. **INSTALL FRONT BUMPER ASSEMBLY (w/o Fog Light) (See page ET-13)**
3. **INSTALL FRONT BUMPER ASSEMBLY (w/ Fog Light) (See page ET-14)**
4. **INSTALL COOL AIR INTAKE DUCT SEAL**
5. **VEHICLE PREPARATION FOR FOG LIGHT AIMING (w/ Fog Light) (See page LI-79)**
6. **PREPARATION FOR FOG LIGHT AIMING (w/ Fog Light) (See page LI-80)**
7. **INSPECT FOG LIGHT AIMING (w/ Fog Light) (See page LI-81)**
8. **ADJUST FOG LIGHT AIMING (w/ Fog Light) (See page LI-82)**



EVAPORATOR TEMPERATURE SENSOR

ON-VEHICLE INSPECTION

1. INSPECT EVAPORATOR TEMPERATURE SENSOR

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

Standard resistance

Tester Connection	Condition	Specified Condition
5 - 6	-10°C (14°F)	7.30 to 9.10 kΩ
5 - 6	-5°C (23°F)	5.65 to 6.95 kΩ
5 - 6	0°C (32°F)	4.40 to 5.35 kΩ
5 - 6	5°C (41°F)	3.40 to 4.15 kΩ
5 - 6	10°C (50°F)	2.70 to 3.25 kΩ
5 - 6	15°C (59°F)	2.14 to 2.58 kΩ
5 - 6	20°C (68°F)	1.71 to 2.05 kΩ
5 - 6	25°C (77°F)	1.38 to 1.64 kΩ
5 - 6	30°C (86°F)	1.11 to 1.32 kΩ

NOTICE:

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

HINT:

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

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

AC

AIR CONDITIONING PRESSURE SENSOR

ON-VEHICLE INSPECTION

1. INSPECT PRESSURE SENSOR

(a) Install the manifold gauge set (See page AC-120).

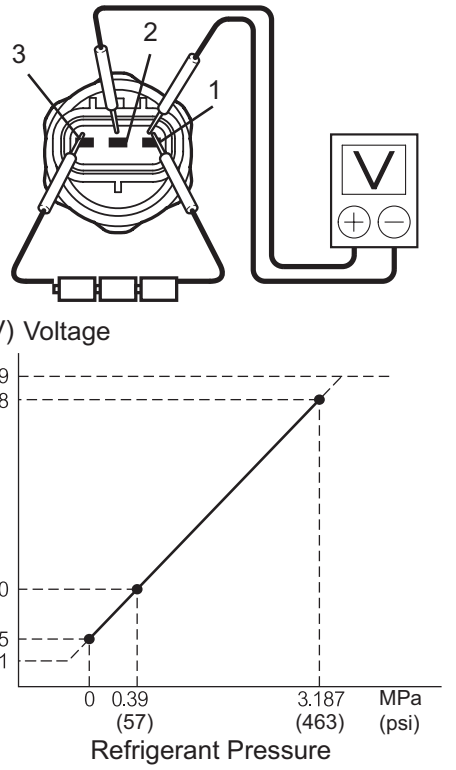
(b) Connect the three 1.5 V dry cell batterie's positive (+) lead to terminal 3 and the negative (-) lead to terminal 1. Then connect the voltmeter's positive (+) lead to terminal 2 and the negative (-) lead to terminal 1. Measure the voltage.

OK:

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

If the voltage is not as specified, replace the pressure sensor.

A/C Pressure Sensor Connector Front View:

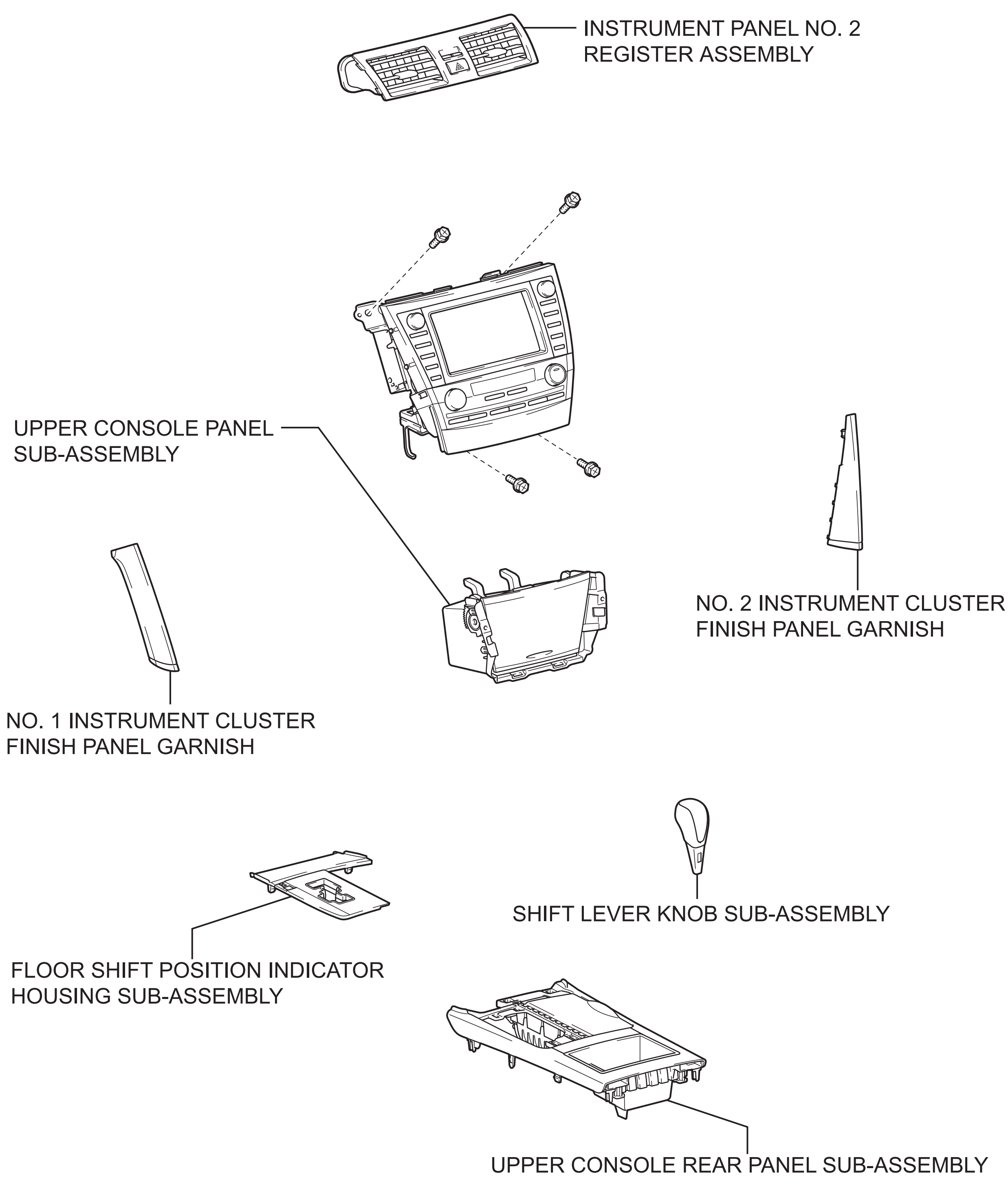


AC

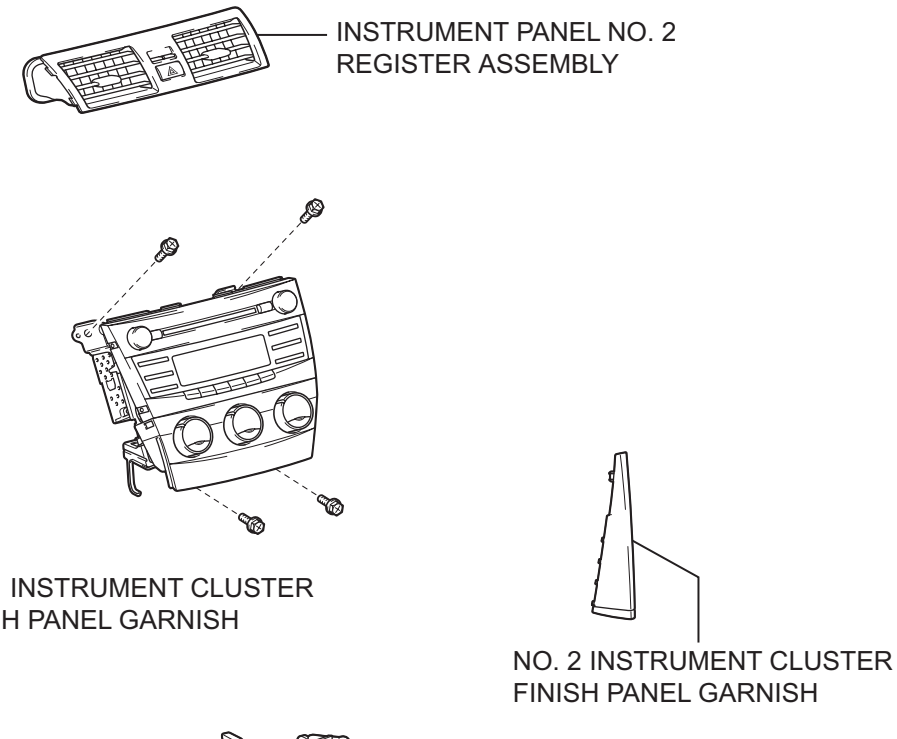
AIR CONDITIONING CONTROL ASSEMBLY

COMPONENTS

Automatic Air Conditioning System:



Manual Air Conditioning System:

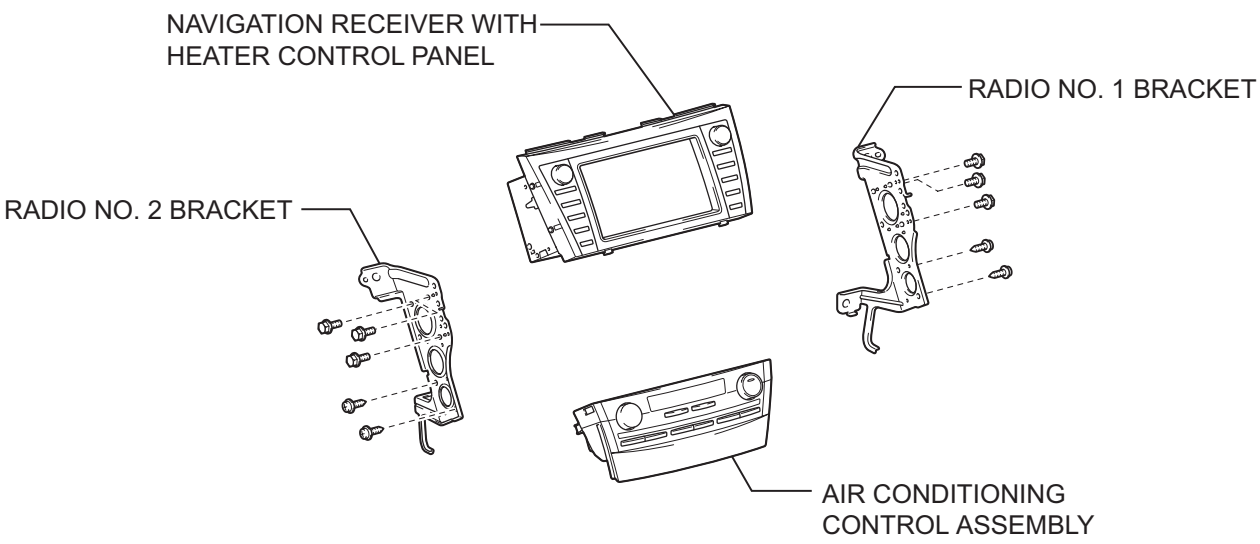


AC

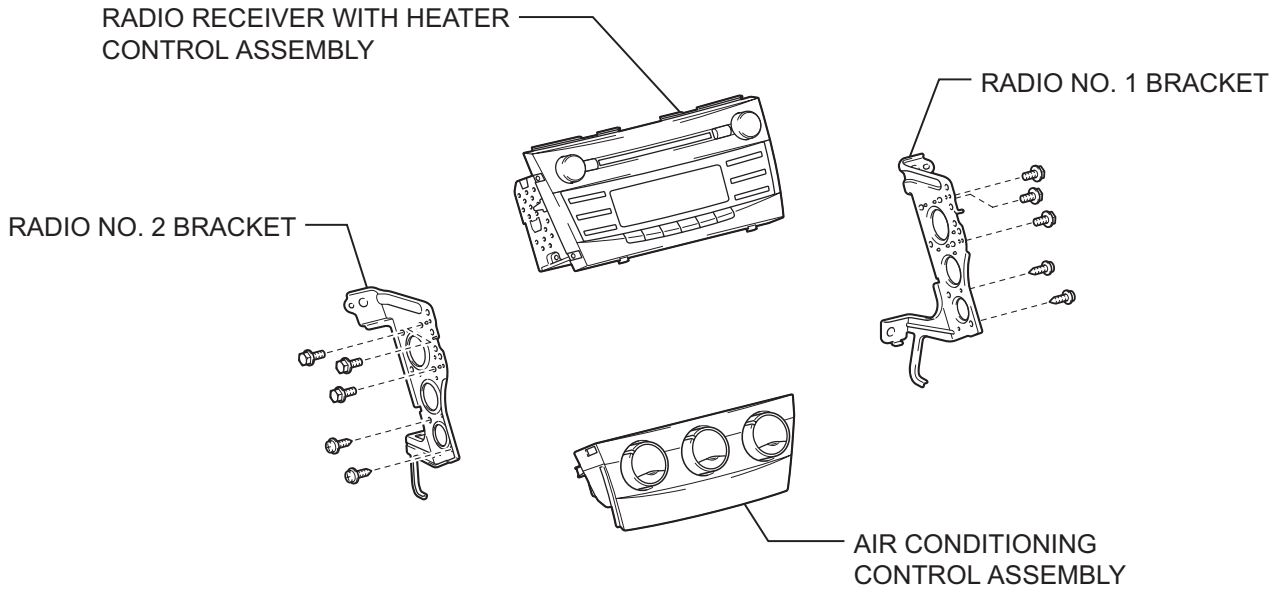
P

E129160E01

for Automatic Air Conditioning System:



for Manual Air Conditioning System:

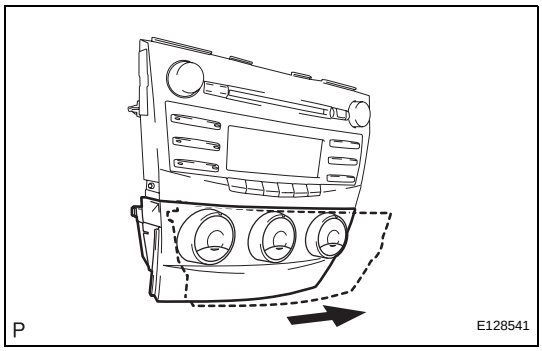


P

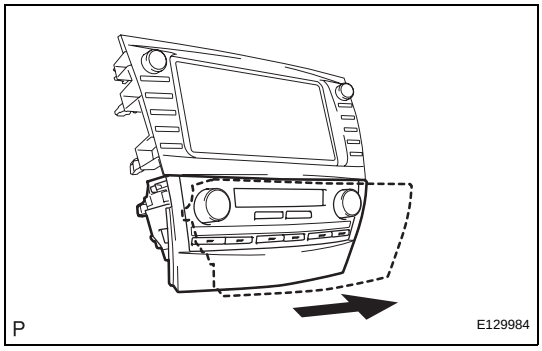
E128505E01

REMOVAL

1. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-24)
2. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-24)
3. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-24)
4. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-25)
5. REMOVE FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-25)
6. REMOVE UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-25)
7. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-26)
8. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-26)
9. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (See page IP-27)
10. REMOVE INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-27)
11. REMOVE RADIO RECEIVER WITH HEATER CONTROL ASSEMBLY (for Manual Air Conditioning System) (See page AV-146)
12. REMOVE NAVIGATION RECEIVER WITH HEATER CONTROL PANEL (for Automatic Air Conditioning System) (See page NS-195)
13. REMOVE RADIO NO. 1 BRACKET (for Manual Air Conditioning System) (See page AV-146)
14. REMOVE RADIO NO. 1 BRACKET (for Automatic Air Conditioning System) (See page NS-195)
15. REMOVE RADIO NO. 2 BRACKET (for Manual Air Conditioning System) (See page AV-146)
16. REMOVE RADIO NO. 2 BRACKET (for Automatic Air Conditioning System) (See page NS-195)

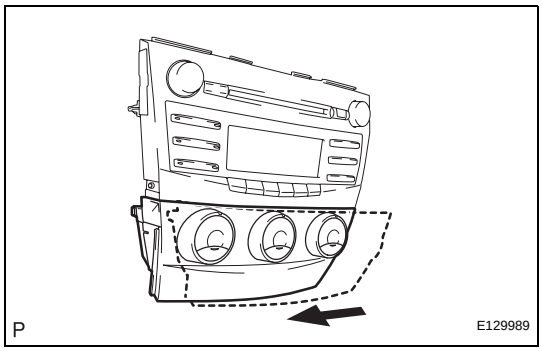


17. **REMOVE AIR CONDITIONING CONTROL ASSEMBLY (for Manual Air Conditioning System)**
    (a) Remove the air conditioning control assembly as shown in the illustration.

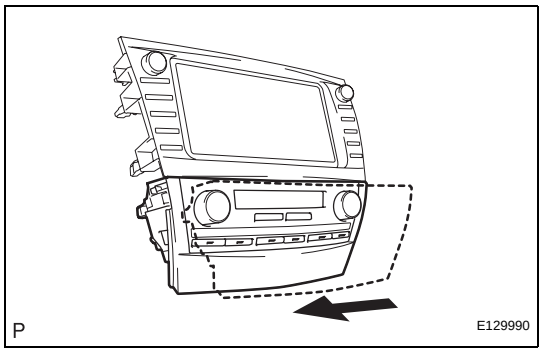


18. **REMOVE AIR CONDITIONING CONTROL ASSEMBLY (for Automatic Air Conditioning System)**
    (a) Remove the air conditioning control assembly as shown in the illustration.

INSTALLATION



1. **INSTALL AIR CONDITIONING CONTROL ASSEMBLY (for Manual Air Conditioning System)**
    (a) Install the air conditioning control assembly as shown in the illustration.



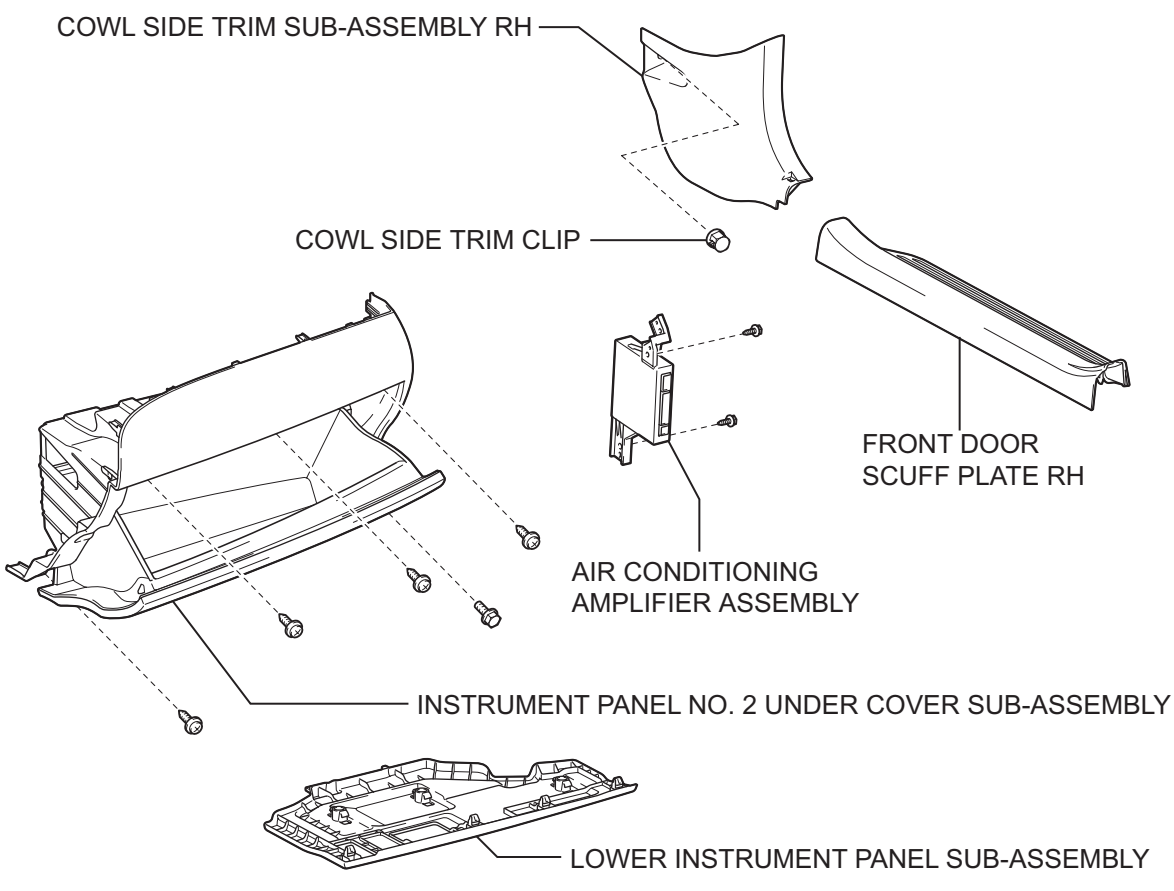
2. **INSTALL AIR CONDITIONING CONTROL ASSEMBLY (for Automatic Air Conditioning System)**
    (a) Install the air conditioning control assembly as shown in the illustration.
3. **INSTALL RADIO NO. 2 BRACKET (for Manual Air Conditioning System) (See page AV-147)**
4. **INSTALL RADIO NO. 2 BRACKET (for Automatic Air Conditioning System) (See page NS-196)**
5. **INSTALL RADIO NO. 1 BRACKET (for Manual Air Conditioning System) (See page AV-147)**
6. **INSTALL RADIO NO. 1 BRACKET (for Automatic Air Conditioning System) (See page NS-196)**
7. **INSTALL RADIO RECEIVER WITH HEATER CONTROL ASSEMBLY (for Manual Air Conditioning System) (See page AV-147)**
8. **INSTALL NAVIGATION RECEIVER WITH HEATER CONTROL PANEL (for Automatic Air Conditioning System) (See page NS-196)**

AC

9. **INSTALL INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-52)**
10. **INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (See page IP-52)**
11. **INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)**
12. **INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-53)**
13. **INSTALL FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)**
14. **INSTALL UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-54)**
15. **INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-54)**
16. **INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-55)**
17. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-55)**
18. **INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-55)**

AIR CONDITIONING AMPLIFIER

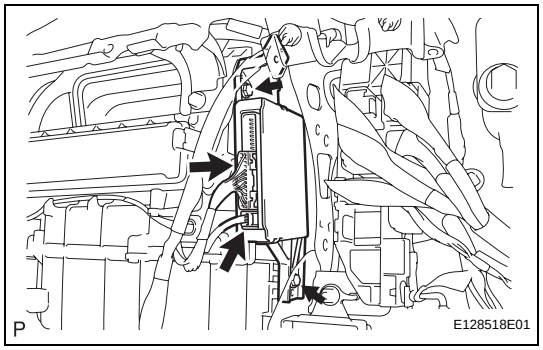
COMPONENTS



AC

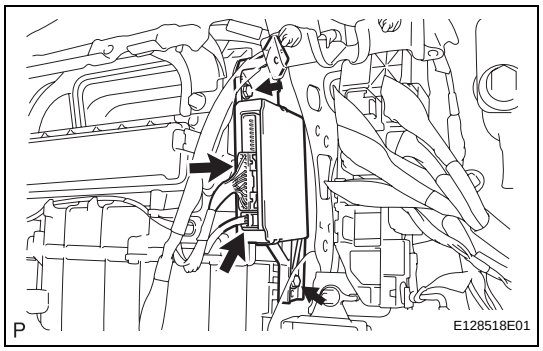
REMOVAL

1. **REMOVE FRONT DOOR SCUFF PLATE RH (See page IR-26)**
2. **REMOVE COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-26)**
3. **REMOVE INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-23)**
4. **REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-23)**
5. **REMOVE AIR CONDITIONING AMPLIFIER ASSEMBLY**
   (a) Disconnect the connectors.
   (b) Remove the 2 bolts and air conditioning amplifier assembly.



INSTALLATION

1. **INSTALL AIR CONDITIONING AMPLIFIER ASSEMBLY**
   (a) Install the air conditioning amplifier assembly with the 2 bolts.
   (b) Connect the connectors.
2. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-55)**
3. **INSTALL INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-56)**
4. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-55)**
5. **INSTALL FRONT DOOR SCUFF PLATE RH (See page IR-55)**



REMOVAL

1. ALIGN FRONT WHEELS FACING STRAIGHT AHEAD
2. DISCONNECT BATTERY NEGATIVE TERMINAL
   NOTICE:
   Wait for 90 seconds after disconnecting the terminal to prevent the airbag from deploying. (See page RS-1)
3. REMOVE LOWER NO. 3 STEERING WHEEL COVER (See page RS-349)
4. REMOVE LOWER NO. 2 STEERING WHEEL COVER (See page RS-349)
5. REMOVE STEERING PAD (See page RS-350)
6. REMOVE STEERING WHEEL ASSEMBLY (See page SR-38)
7. REMOVE FRONT DOOR SCUFF PLATE LH (See page IR-24)
8. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-25)
9. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-20)
10. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-21)
11. REMOVE STEERING COLUMN COVER (for TMC Made) (See page IP-21)
12. REMOVE STEERING COLUMN COVER (for TMMK Made) (See page IP-21)
13. REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-39)
14. REMOVE NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-22)
15. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-22)
16. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-22)
17. REMOVE INSTRUMENT CLUSTER FINISH PANEL (See page IP-22)
18. REMOVE COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-23)
19. REMOVE COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-23)
20. REMOVE FRONT DOOR SCUFF PLATE RH (See page IR-26)
21. REMOVE COWL SIDE TRIM SUB-ASSEMBLY RH

22. REMOVE INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-23)
23. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-23)
24. REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-24)
25. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-24)
26. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-24)
27. REMOVE NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-24)
28. REMOVE NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-25)
29. REMOVE FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-25)
30. REMOVE UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-25)
31. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-26)
32. REMOVE UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-26)
33. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-27)
34. REMOVE UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-27)
35. REMOVE INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-27)
36. REMOVE RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-146)
37. REMOVE NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (See page NS-195)
38. REMOVE CONSOLE BOX POCKET (See page IP-28)
39. REMOVE CONSOLE BOX CARPET (See page IP-28)
40. REMOVE CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-28)
41. REMOVE CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-29)
42. REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-29)
43. REMOVE NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)

44. **REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-30)**

45. **REMOVE NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-30)**

46. **REMOVE FRONT PILLAR GARNISH LH (See page IR-27)**

47. **REMOVE INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-31)**

48. **REMOVE INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-31)**

49. **REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)**

50. **REMOVE FRONT PILLAR GARNISH RH (See page IR-27)**

51. **REMOVE INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-31)**

52. **REMOVE INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-32)**

53. **REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side) (See page IP-32)**

54. **REMOVE NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-32)**

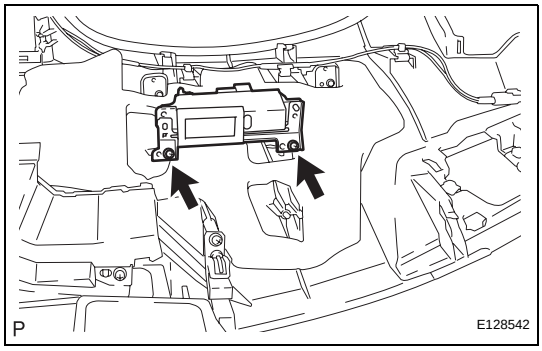
55. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-32)**

56. **REMOVE INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-34)**

57. **REMOVE SIDE NO. 1 DEFROSTER NOZZLE DUCT (See page IP-37)**

58. **REMOVE NO. 1 HEATER TO REGISTER DUCT (See page IP-38)**

59. **REMOVE PLASMACLUSTER**
    (a) Remove the 2 screws and "Plasmacluster".



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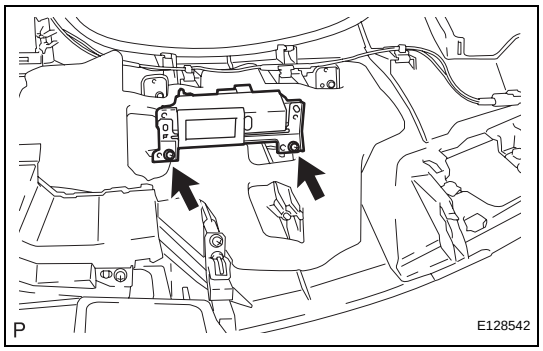


INSTALLATION

1. **INSTALL PLASMACLUSTER**
   (a) Install the "Plasmacluster" with the 2 screws.
   Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
2. **INSTALL NO. 1 HEATER TO REGISTER DUCT (See page IP-42)**
3. **INSTALL SIDE NO. 1 DEFROSTER NOZZLE DUCT (See page IP-43)**
4. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMC Made) (See page IP-44)**
5. **INSTALL INSTRUMENT PANEL SAFETY PAD ASSEMBLY (for TMMK Made) (See page IP-45)**
6. **INSTALL NO. 1 DEFROSTER NOZZLE GARNISH (See page IP-48)**
7. **INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for LH Side) (See page AV-156)**
8. **INSTALL INSTRUMENT PANEL NO. 1 SPEAKER PANEL SUB-ASSEMBLY (See page IP-48)**
9. **INSTALL INSTRUMENT PANEL NO. 1 REGISTER ASSEMBLY (See page IP-48)**
10. **INSTALL FRONT PILLAR GARNISH LH (See page IR-51)**
11. **INSTALL FRONT NO. 2 SPEAKER ASSEMBLY (for RH Side) (See page IP-48)**
12. **INSTALL INSTRUMENT PANEL NO. 2 SPEAKER PANEL SUB-ASSEMBLY (See page IP-49)**
13. **INSTALL INSTRUMENT PANEL NO. 3 REGISTER ASSEMBLY (See page IP-49)**
14. **INSTALL FRONT PILLAR GARNISH RH (See page IR-52)**
15. **INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-49)**
16. **INSTALL NO. 1 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)**
17. **INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMC Made) (See page IP-50)**
18. **INSTALL NO. 2 CONSOLE BOX INSERT FRONT (for TMMK Made) (See page IP-50)**
19. **INSTALL CONSOLE BOX ASSEMBLY (for TMC Made) (See page IP-51)**
20. **INSTALL CONSOLE BOX ASSEMBLY (for TMMK Made) (See page IP-51)**
21. **INSTALL CONSOLE BOX CARPET (See page IP-51)**
22. **INSTALL CONSOLE BOX POCKET (See page IP-51)**

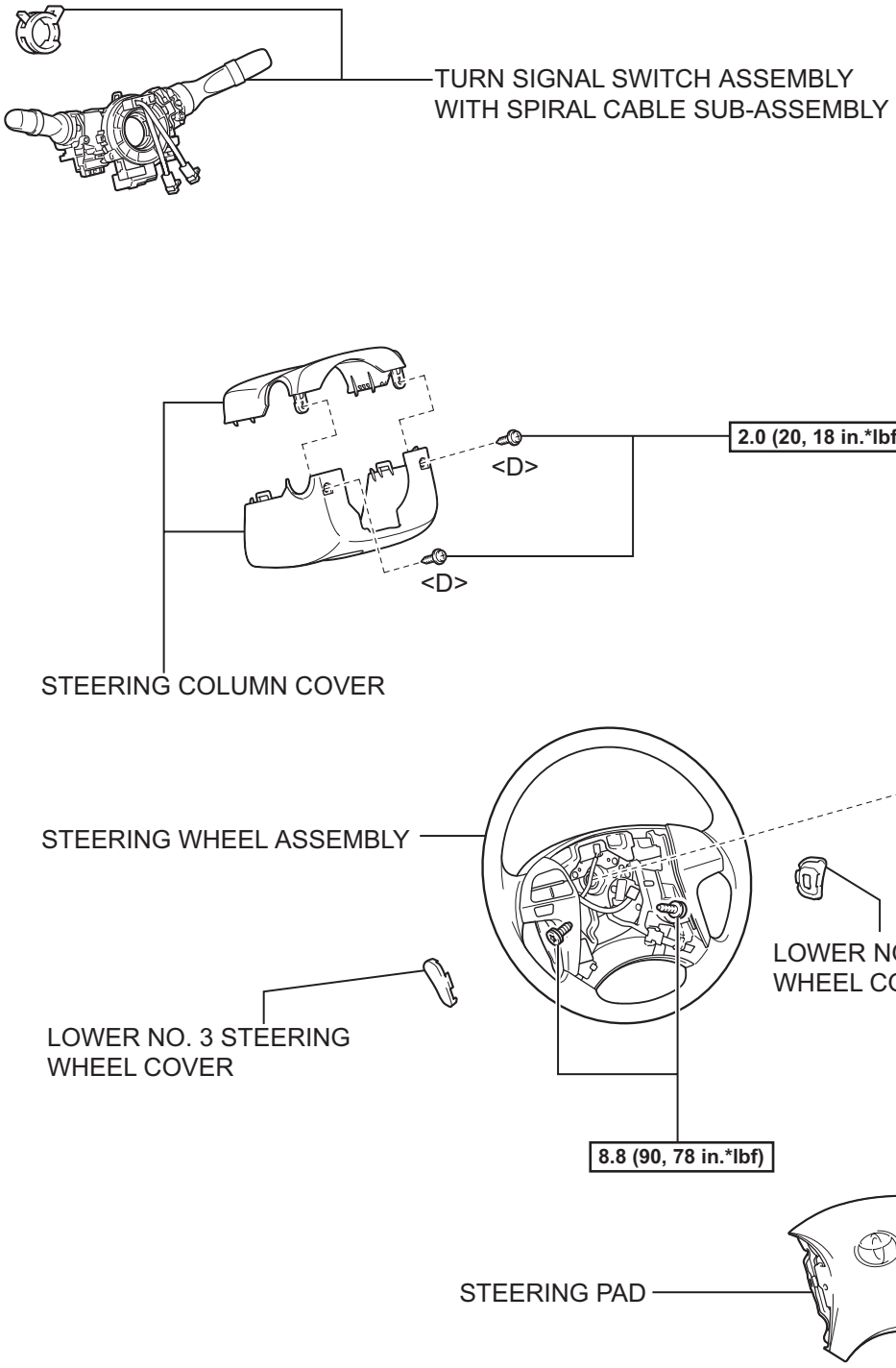
23. INSTALL RADIO RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/o Navigation System) (See page AV-147)
24. INSTALL NAVIGATION RECEIVER WITH HEATER CONTROL PANEL ASSEMBLY (w/ Navigation System) (See page NS-196)
25. INSTALL INSTRUMENT PANEL NO. 2 REGISTER ASSEMBLY (See page IP-52)
26. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-52)
27. INSTALL UPPER CONSOLE PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-52)
28. INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)
29. INSTALL UPPER CONSOLE REAR PANEL SUB-ASSEMBLY (for Manual Transaxle) (See page IP-53)
30. INSTALL FLOOR SHIFT POSITION INDICATOR HOUSING SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-53)
31. INSTALL UPPER CONSOLE PANEL (for Manual Transaxle) (See page IP-54)
32. INSTALL NO. 2 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-54)
33. INSTALL NO. 1 INSTRUMENT CLUSTER FINISH PANEL GARNISH (See page IP-55)
34. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Automatic Transaxle) (See page IP-55)
35. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transaxle) (See page IP-55)
36. INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMC Made) (See page IP-55)
37. INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY (for TMMK Made) (See page IP-56)
38. INSTALL INSTRUMENT PANEL NO. 2 UNDER COVER SUB-ASSEMBLY (See page IP-56)
39. INSTALL COWL SIDE TRIM SUB-ASSEMBLY RH (See page IR-55)
40. INSTALL FRONT DOOR SCUFF PLATE RH (See page IR-55)
41. INSTALL COMBINATION METER ASSEMBLY (for TMC Made) (See page IP-56)
42. INSTALL COMBINATION METER ASSEMBLY (for TMMK Made) (See page IP-56)

43. INSTALL INSTRUMENT CLUSTER FINISH PANEL (See page IP-57)
44. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/o Smart Key System) (See page IP-57)
45. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL (w/ Smart Key System) (See page IP-57)
46. INSTALL NO. 1 INSTRUMENT PANEL SUB-ASSEMBLY (See page IP-57)
47. INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY (See page SR-50)
48. ADJUST SPIRAL CABLE SUB-ASSEMBLY (See page RS-367)
49. INSTALL STEERING COLUMN COVER (for TMC Made) (See page IP-58)
50. INSTALL STEERING COLUMN COVER (for TMMK Made) (See page IP-58)
51. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMC Made) (See page IP-58)
52. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL LH (for TMMK Made) (See page IP-59)
53. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH (See page IR-54)
54. INSTALL FRONT DOOR SCUFF PLATE LH (See page IR-54)
55. INSTALL STEERING WHEEL ASSEMBLY (See page SR-51)
56. INSTALL STEERING PAD (See page RS-350)
57. INSTALL LOWER NO. 3 STEERING WHEEL COVER (See page RS-351)
58. INSTALL LOWER NO. 2 STEERING WHEEL COVER (See page RS-352)
59. CONNECT NEGATIVE BATTERY TERMINAL
60. INSPECT STEERING PAD (See page RS-352)
61. INSPECT SRS WARNING LIGHT (See page IP-59)

PLASMACLUSTER

COMPONENTS

for TMC Made:



N*m (kgf*cm, ft.*lbf) : Specified torque

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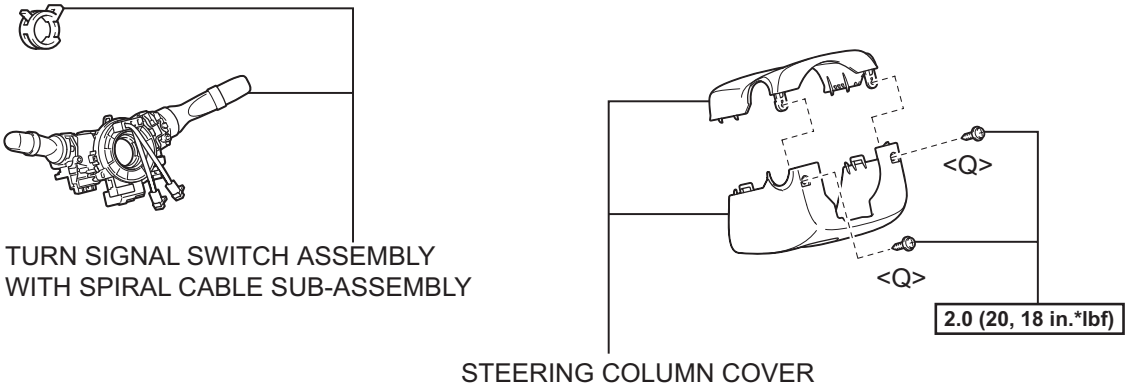
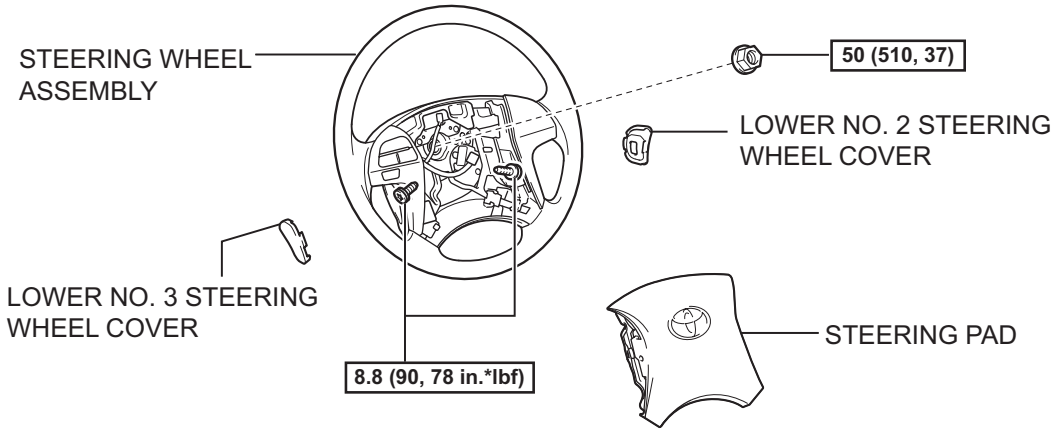
AC

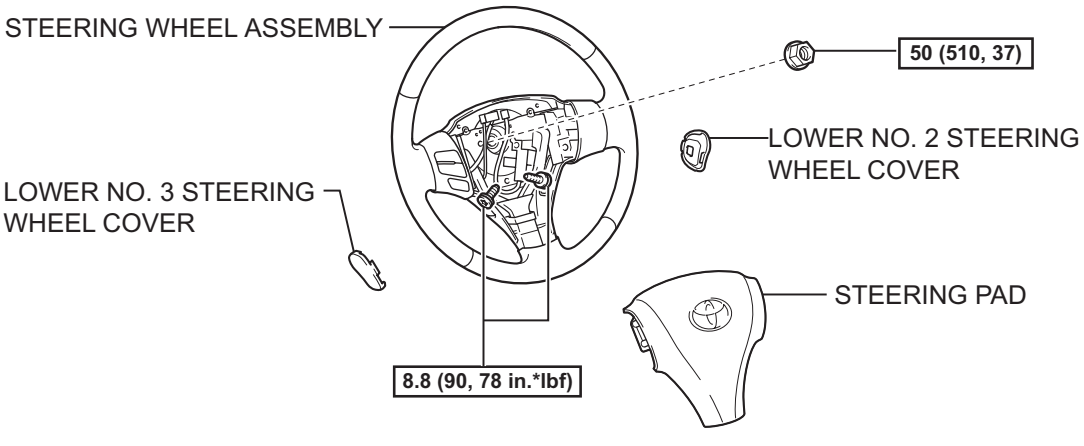
for TMMK Made:



for 4 Spoke:



for 3 Spoke:



N*m (kgf*cm, ft.*lbf) : Specified torque

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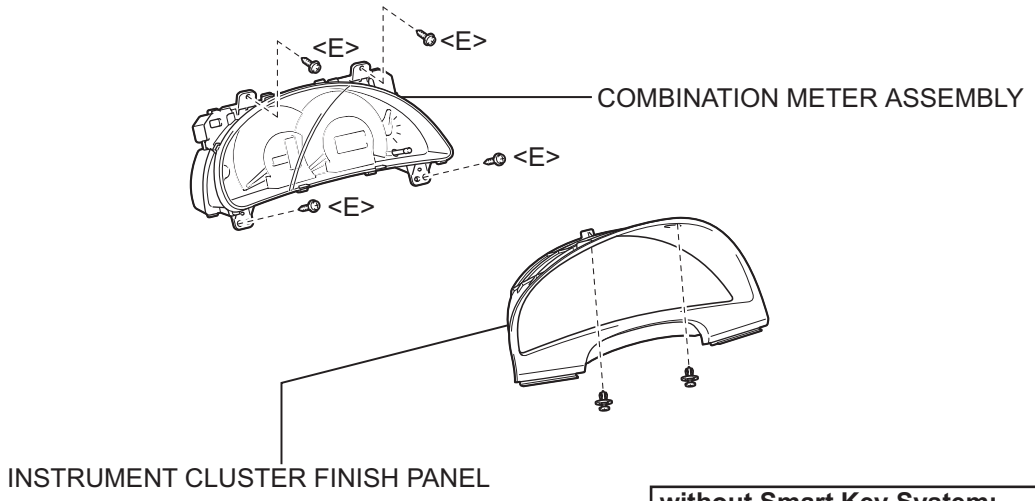
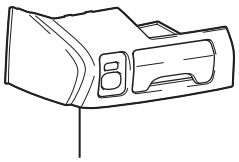
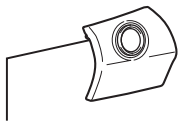
for TMC Made:



without Smart Key System:



with Smart Key System:



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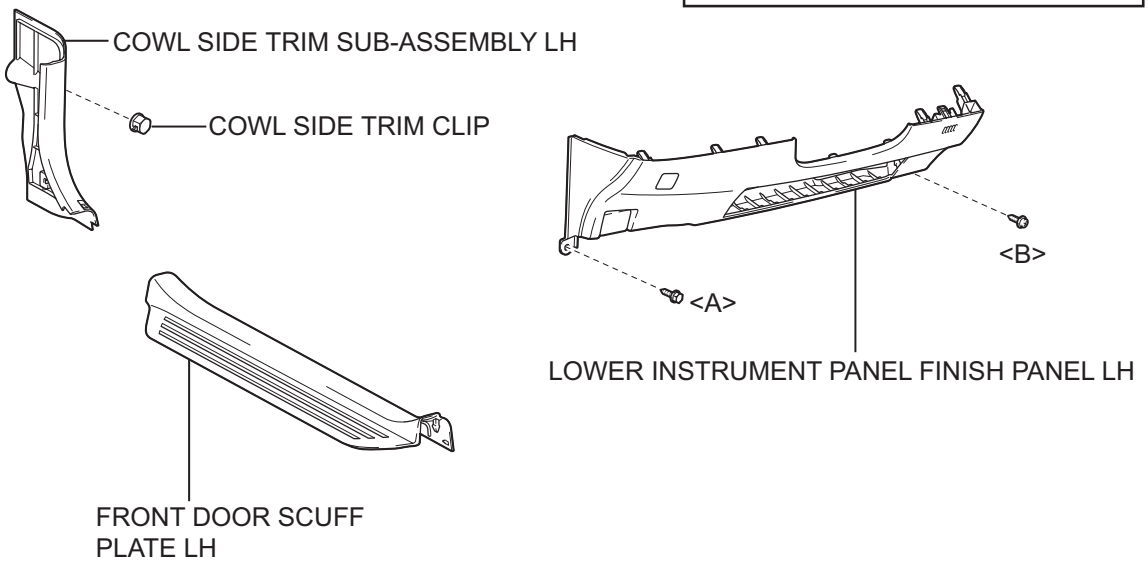

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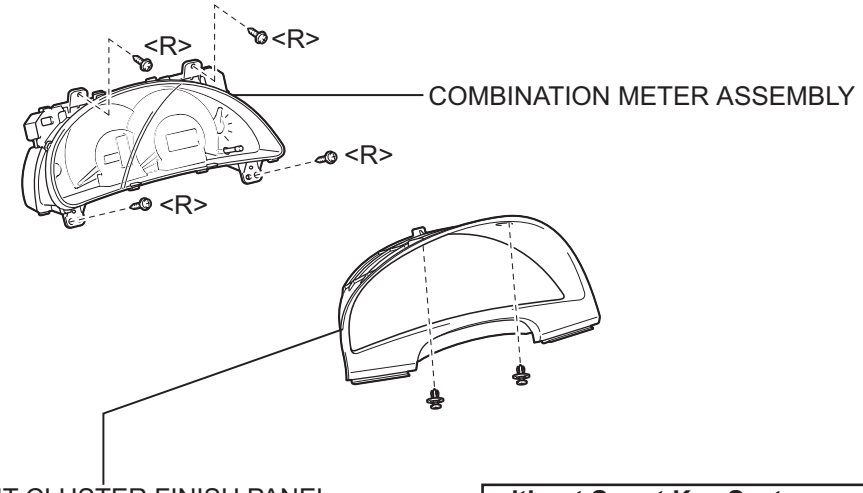
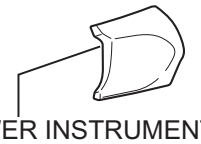
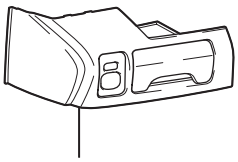
for TMMK Made:

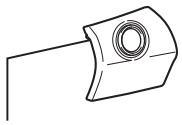


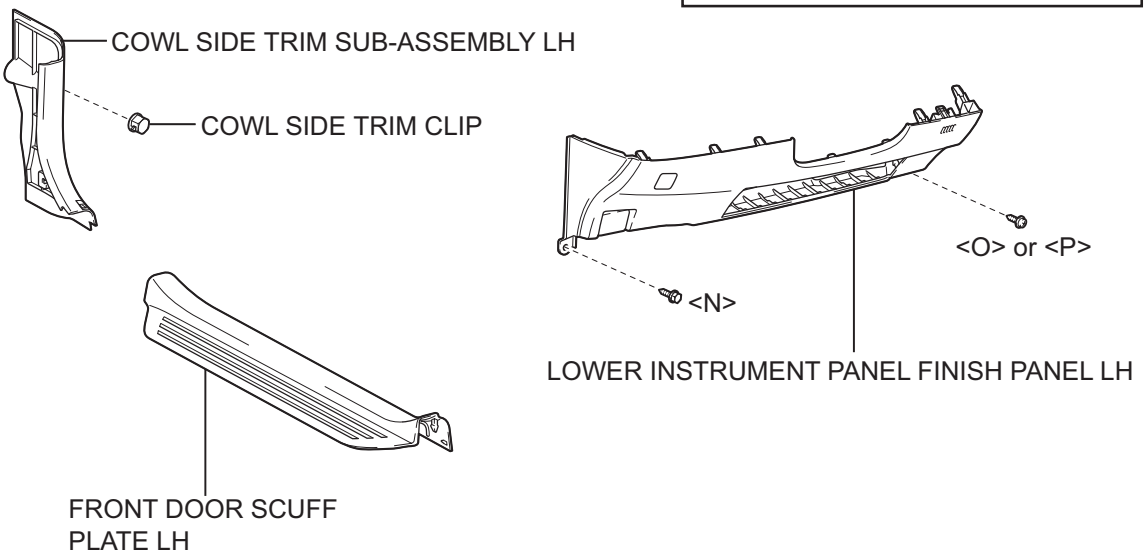
without Smart Key System:





with Smart Key System:





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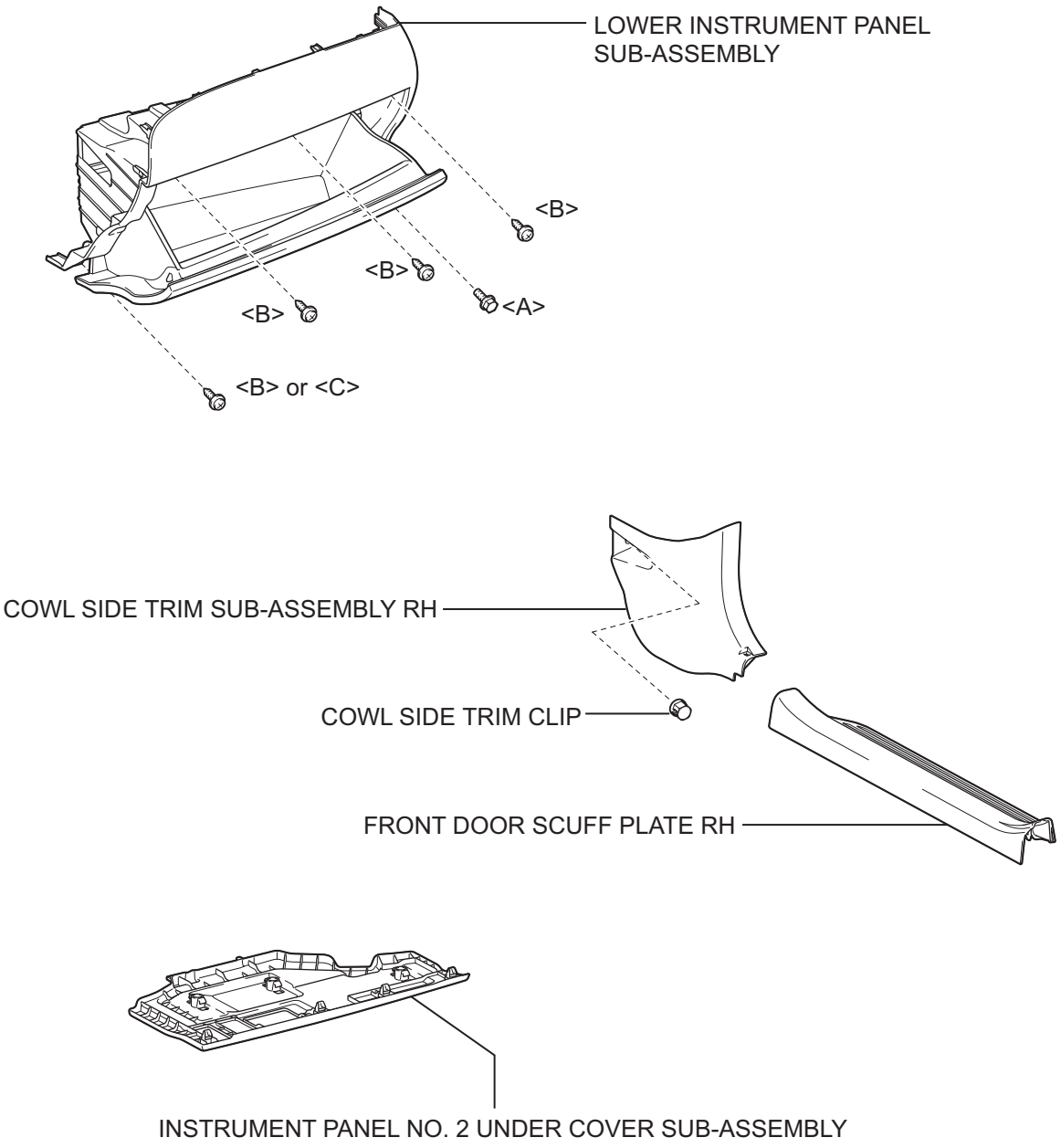
for TMC Made:



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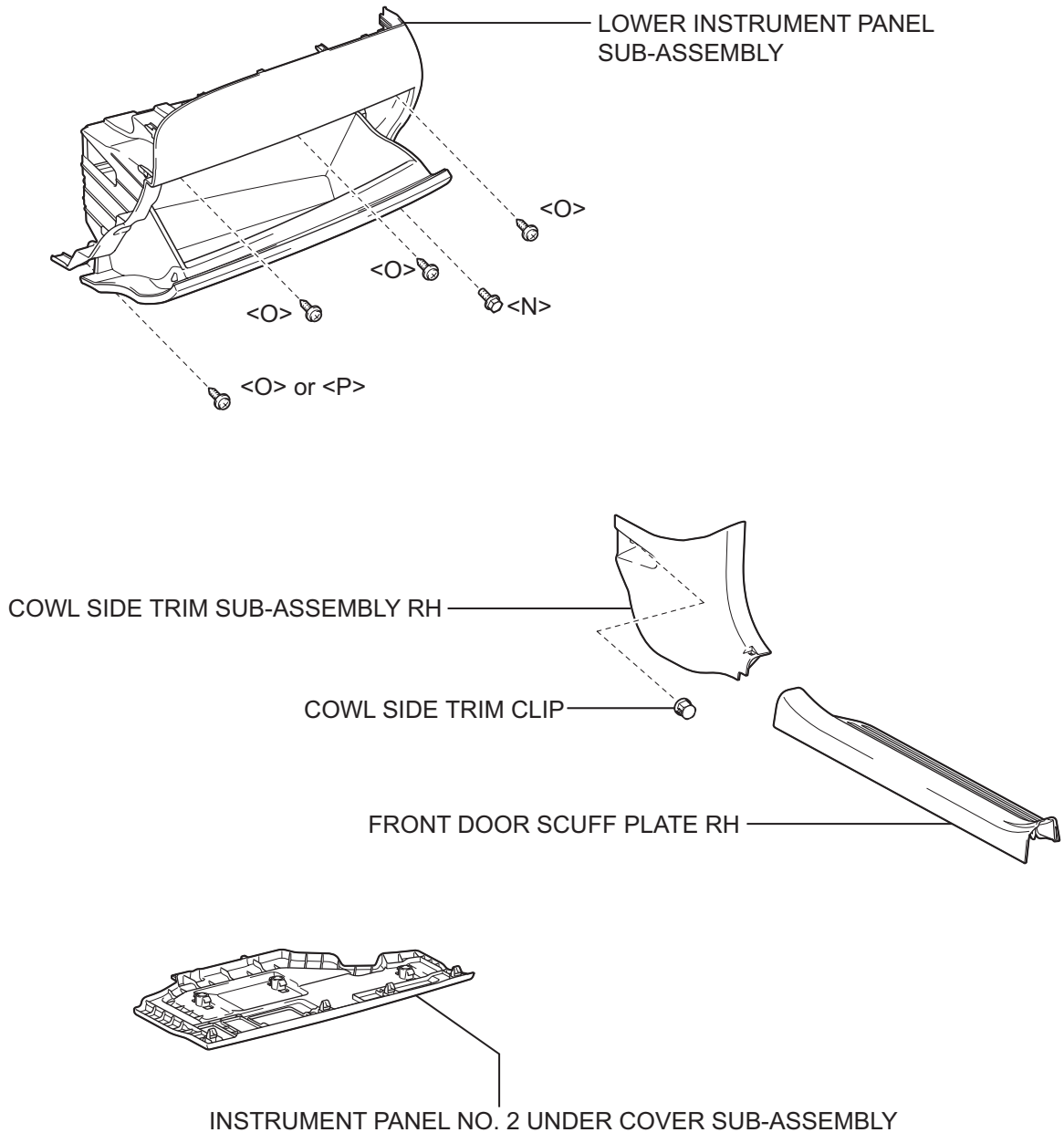
B137282E01

AC

for TMMK Made:



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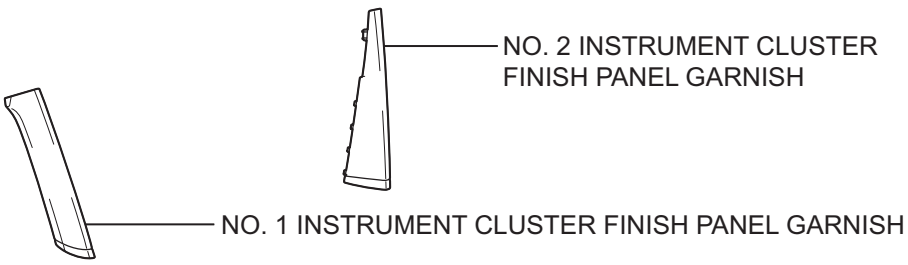
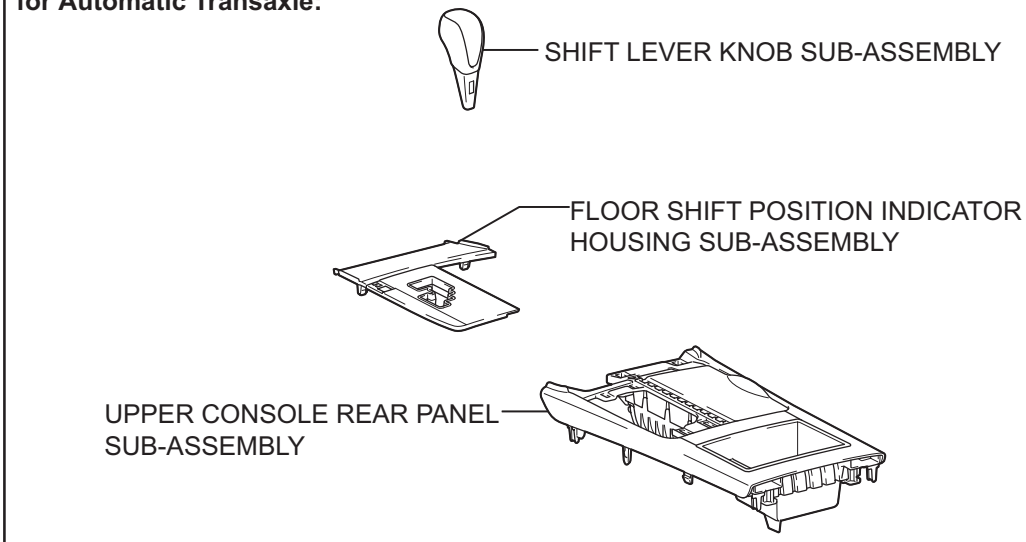
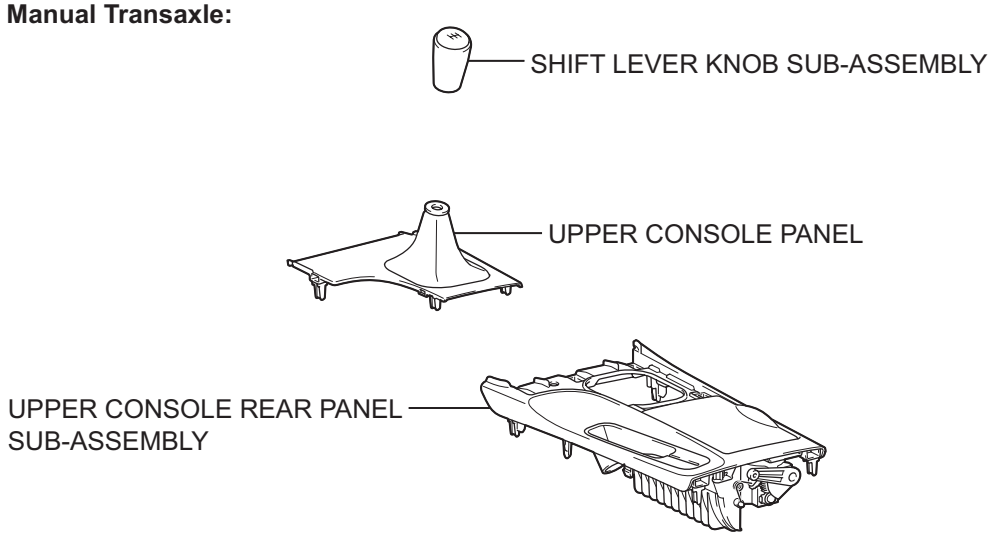


for Automatic Transaxle:



for Manual Transaxle:



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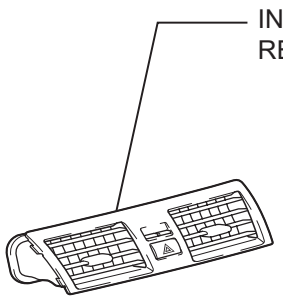
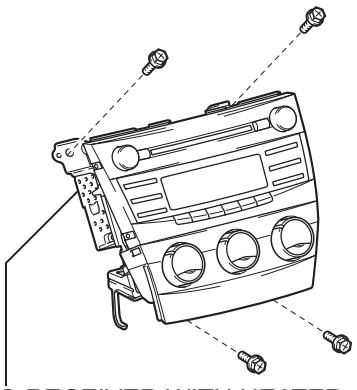
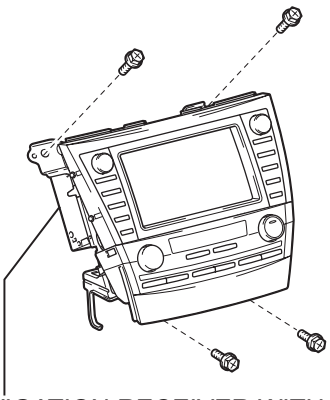
for TMC Made:

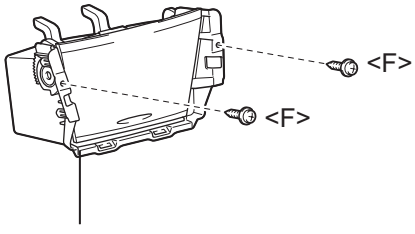


without Navigation System:



with Navigation System:





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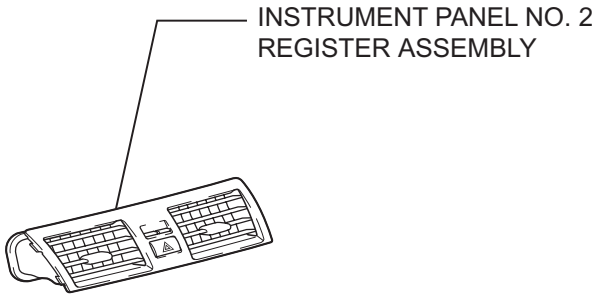
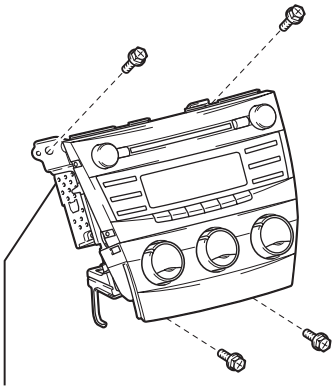
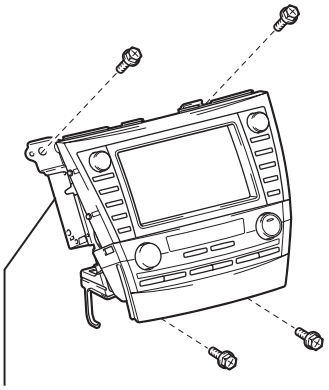
for TMMK Made:

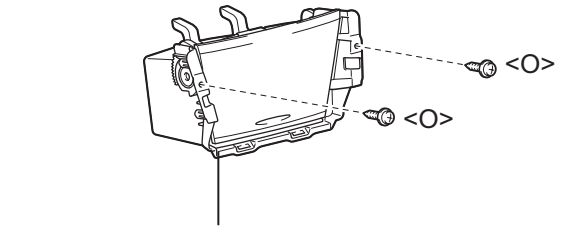


without Navigation System:



with Navigation System:





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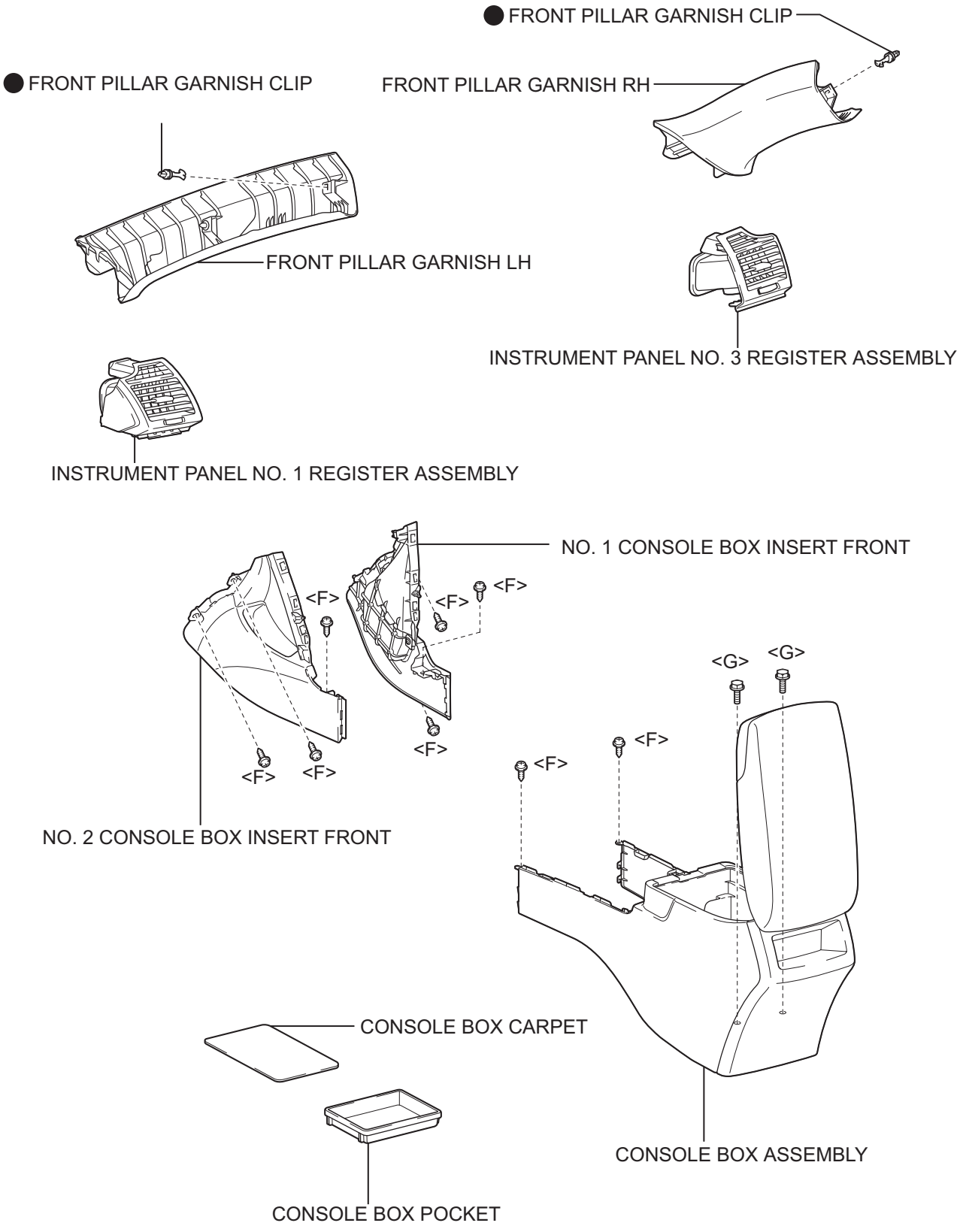
P

B137284E03

for TMC Made:



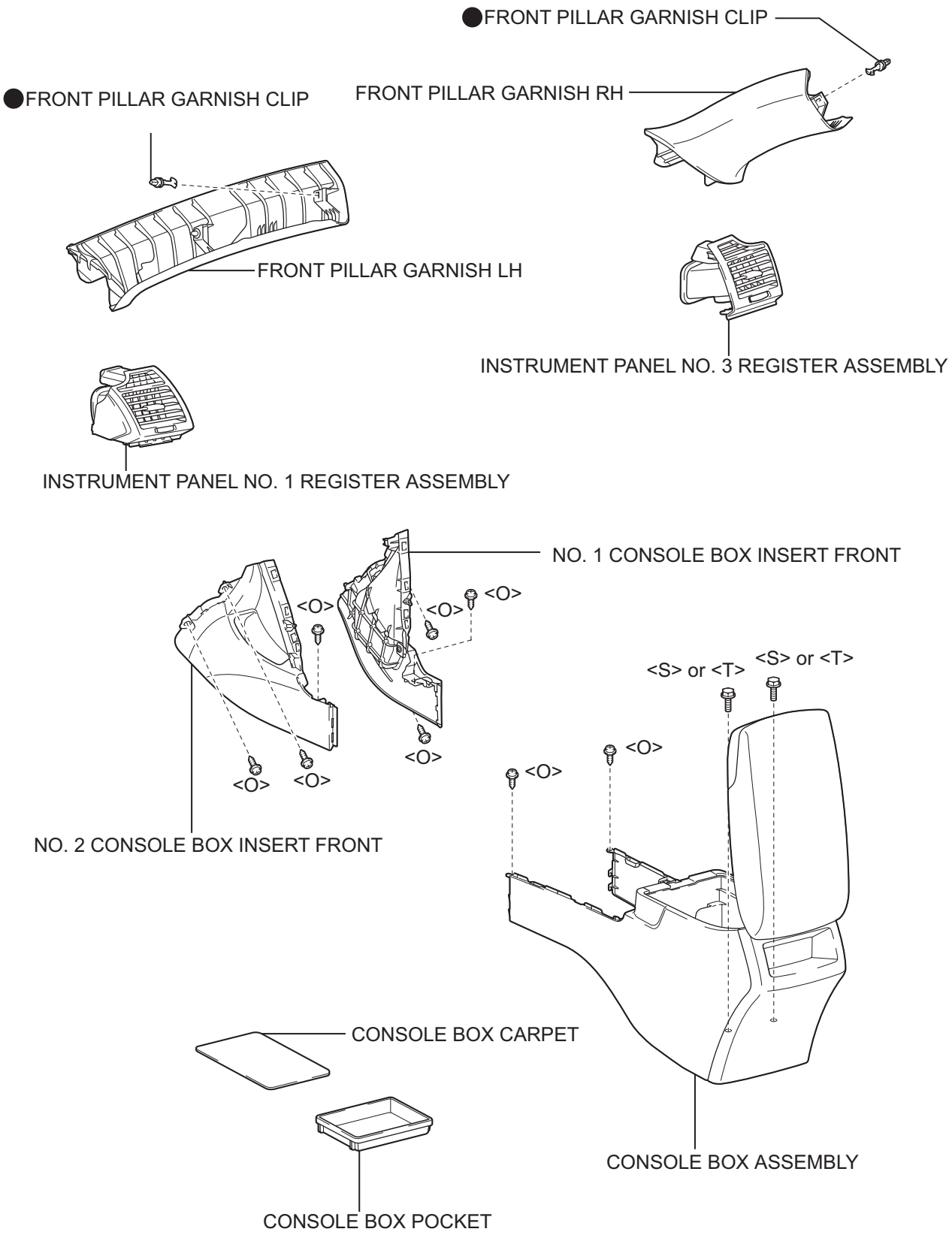
● Non-reusable part

P

B137285E01

AC

for TMMK Made:



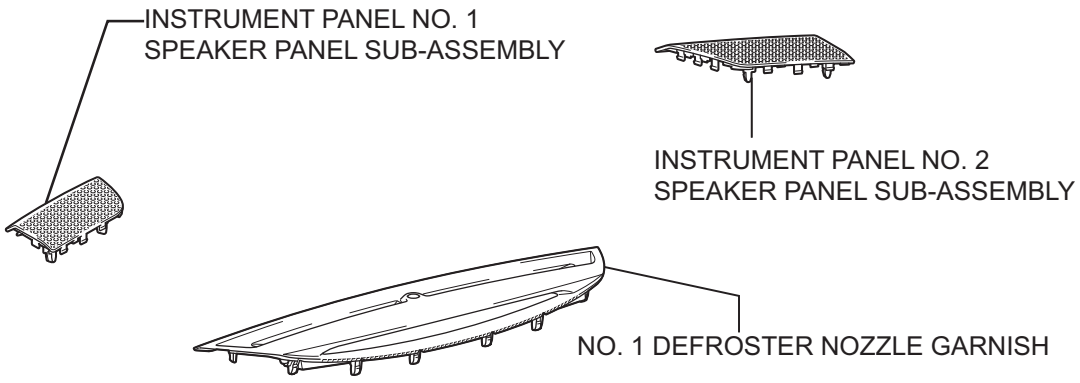
AC

● Non-reusable part

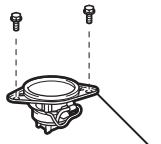
P

B137285E03

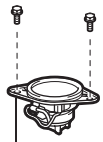
for TMC Made:

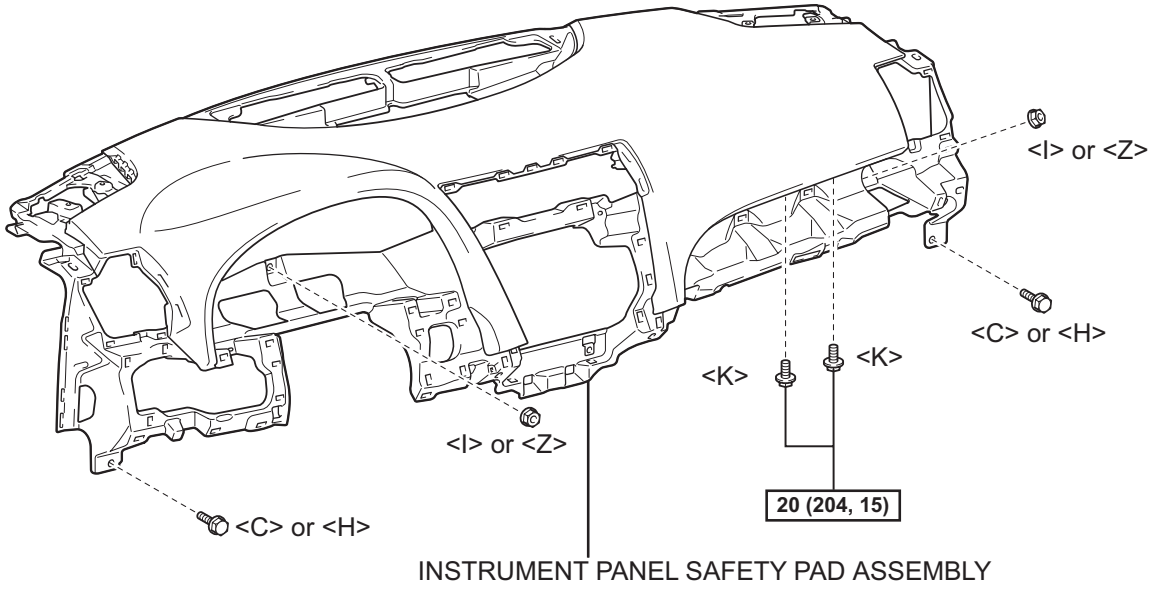


for LH Side:



for RH Side:





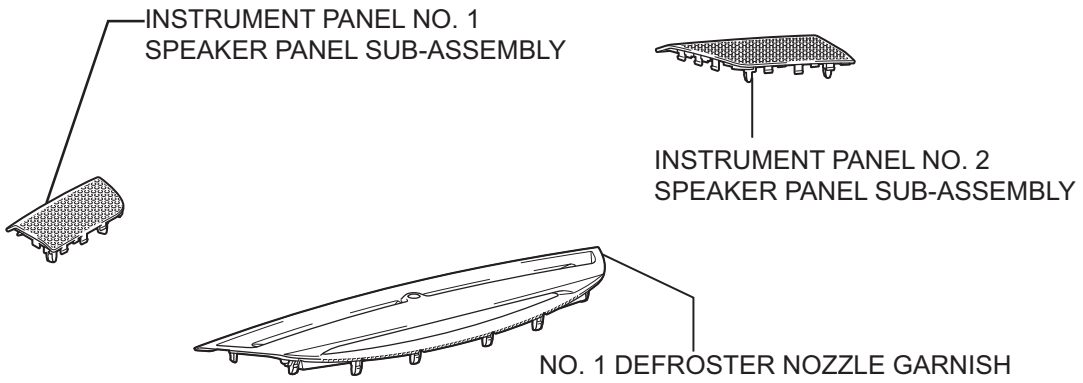
AC

N*m (kgf*cm, ft.*lbf) : Specified torque

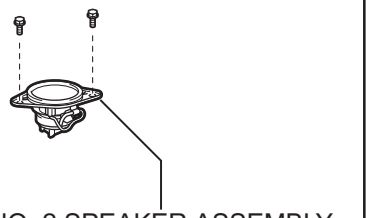
P

B137286E01

for TMMK Made:

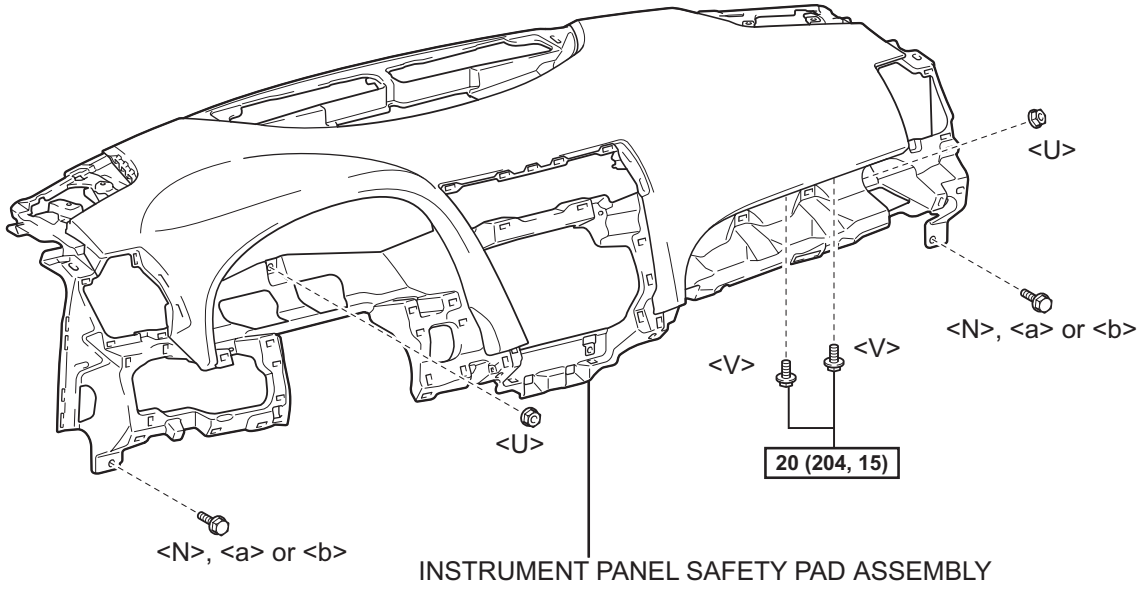


for LH Side:



for RH Side:

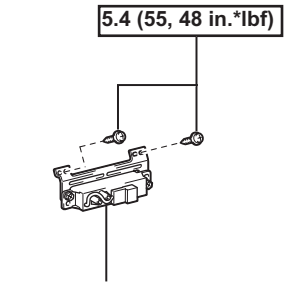
AC

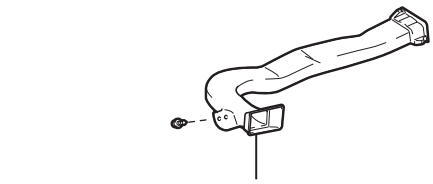


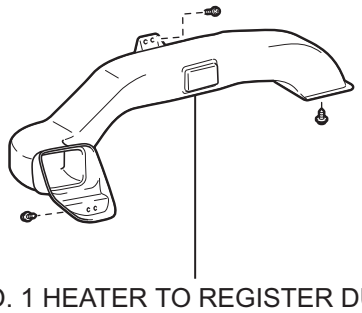
N*m (kgf*cm, ft.*lbf) : Specified torque

P

B137286E03







N*m (kgf*cm, ft.*lbf): Specified torque

P

E129992E01

AC