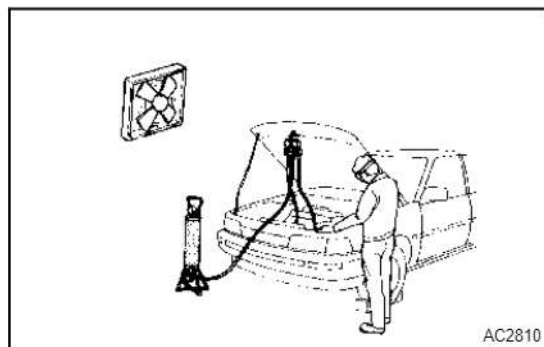


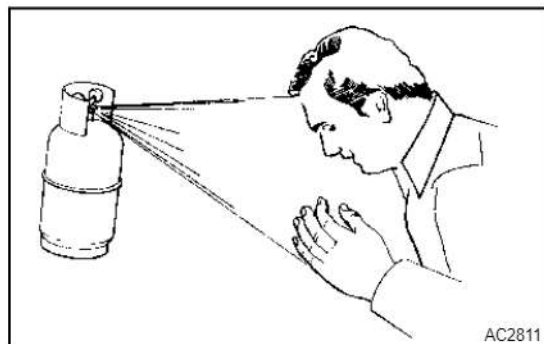


AC2810

## AIR CONDITIONING SYSTEM PRECAUTION

AC0C1-13

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



AC2811

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 cool water.

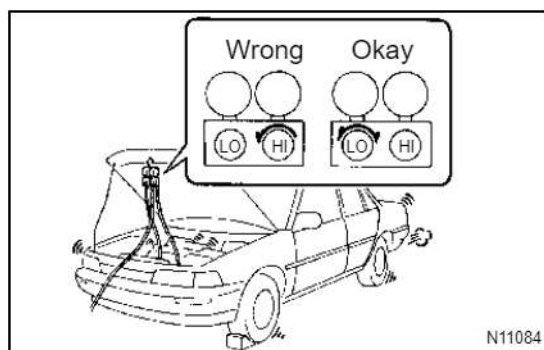
### CAUTION:

**Do not rub your eyes or skin.**

- (b) Apply clean petroleum jelly to the skin.
- (c) Go immediately to a physician or hospital for professional treatment.

4. **NEVER HEAT CONTAINER OR EXPOSE IT TO NAKED FLAME**

5. **BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT**



N11084

6. **DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERATION SYSTEM**

If there is not enough refrigerant in the refrigerant system oil lubrication will be insufficient and compressor burnout may occur, so that care to avoid this, necessary care should be taken.

7. **DO NOT OPEN PRESSURE MANIFOLD VALVE WHILE COMPRESSOR IS OPERATE**

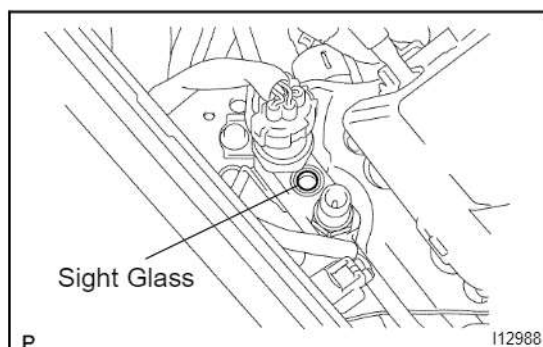
If the high pressure valve is opened, refrigerant flows in the reverse direction and could cause the charging cylinder to rupture, so open and close the only low pressure valve.

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. SUPPLEMENTAL RESTRAINT SYSTEM (SRS)**

The CELICA is equipped with an SRS (Supplemental Restraint System) such as the driver and front passenger airbag. 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 in the RS section.



## ON-VEHICLE INSPECTION

### 1. INSPECT REFRIGERANT VOLUME

Observe the sight glass on the liquid tube.

Test conditions:

- Running engine at 1,500 rpm
- Blower speed control switch at "HI" position
- A/C switch ON
- Temperature control dial at "COOL" position
- Fully open the doors

| Item | Symptom                                                                                  | Amount of refrigerant        | Remedy                                                                                                                  |
|------|------------------------------------------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1    | Bubbles present in sight glass                                                           | Insufficient*                | (1) Check for gas leakage with gas leak detector and repair if necessary<br>(2) Add refrigerant until bubbles disappear |
| 2    | No bubbles present in sight glass                                                        | None, sufficient or too much | Refer item 3 and 4                                                                                                      |
| 3    | No temperature difference between compressor inlet and outlet                            | Empty or nearly empty        | (1) Check for gas leakage with gas leak detector and repair if necessary<br>(2) Add refrigerant until bubbles disappear |
| 4    | Temperature between compressor inlet and outlet is noticeably different                  | Correct or too much          | Refer to items 5 and 6                                                                                                  |
| 5    | Immediately after air conditioning is turned off, refrigerant in sight glass stays clear | Too much                     | (1) Discharge refrigerant<br>(2) Evacuate air and charge proper amount or purified refrigerant                          |
| 6    | When air conditioning is turned off, refrigerant foams and then stays clear              | Correct                      | –                                                                                                                       |

\*: Bubbles in the sight glass with ambient temperatures higher than usual can be considered normal if cooling is sufficient.

2. INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

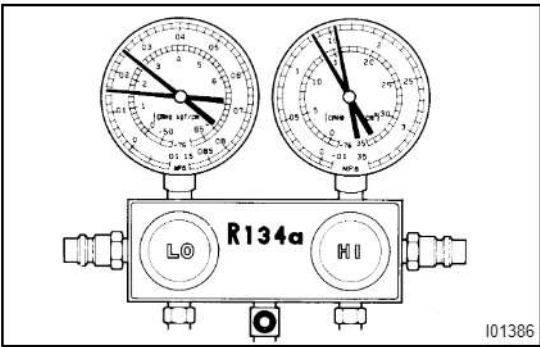
This is a method in which the trouble is located by using a manifold gauge set. Read the manifold gauge pressure when the these conditions are established.

Test conditions:

- Temperature at the air inlet with the switch set at RECIRC is 30 – 35°C (86 – 95°F)
- Engine running at 1500 rpm
- Blower speed control switch at "HI" position
- Temperature control dial at "COOL" position

HINT:

It should be noted that the gauge indications may vary slightly due to ambient temperature conditions.



(1) Normally functioning refrigeration system.

Gauge reading:

Low pressure side:

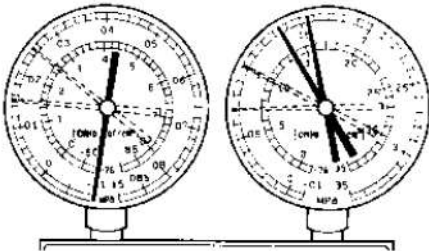
0.15 – 0.25 MPa (1.5 – 2.5 kgf/cm²)

High pressure side:

1.37 – 1.57 MPa (14 – 16 kgf/cm²)

(2) Moisture present in refrigeration system.

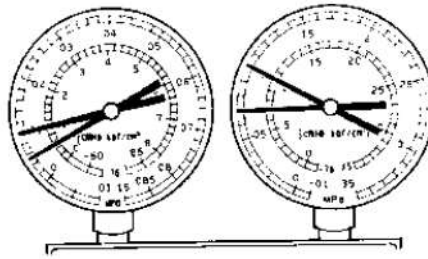
Condition : Periodically cools and then fails to cool



| Symptom seen in refrigeration system                                                          | Probable cause                                                                                                                                                        | Diagnosis                                                                                                                                                                                           | Remedy                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| During operation, pressure on low pressure side sometimes become a vacuum and sometime normal | Moisture entered in refrigeration system freezes at expansion valve orifice and temporarily stops cycle, but normal state is restored after a time when the ice melts | <ul style="list-style-type: none"><li>• Drier in over-saturated state</li><li>• Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant</li></ul> | <ul style="list-style-type: none"><li>(1) Replace condenser</li><li>(2) Remove moisture in cycle through repeatedly evacuating air</li><li>(3) Charge proper amount of new refrigerant</li></ul> |

## (3) Insufficient cooling

Condition: Insufficient cooling

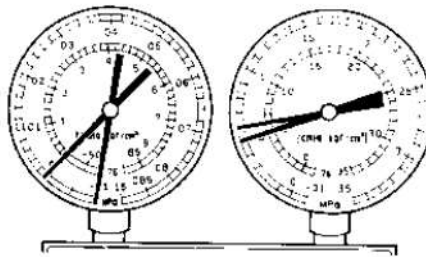


I01388

| Symptom seen in refrigeration system                                                                                                                                                                 | Probable cause                                    | Diagnosis                                                                                                             | Remedy                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Pressure low on both low and high pressure sides</li> <li>• Bubbles seen in sight glass continuously</li> <li>• Insufficient cooling performance</li> </ul> | Gas leakage at some place in refrigeration system | <ul style="list-style-type: none"> <li>• Insufficient refrigerant in system</li> <li>• Refrigerant leaking</li> </ul> | (1) Check for gas leakage with gas leak detector and repair if necessary<br>(2) Charge proper amount of refrigerant<br>(3) If indicated pressure value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak |

## (4) Poor circulation of refrigerant

Condition: Insufficient cooling

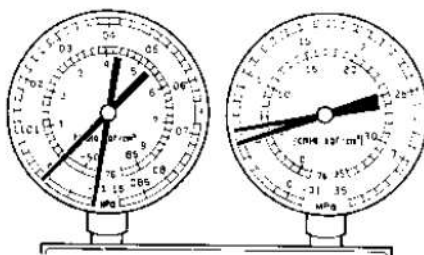


I01389

| Symptom seen in refrigeration system                                                                                                                 | Probable cause                                  | Diagnosis        | Remedy            |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------|-------------------|
| <ul style="list-style-type: none"> <li>• Pressure low in both low and high pressure sides</li> <li>• Frost on tube from condenser to unit</li> </ul> | Refrigerant flow obstructed by dirt in receiver | Receiver clogged | Replace condenser |

## (5) Refrigerant does not circulate

Condition: Does not cool (Cools from time to time in some cases)

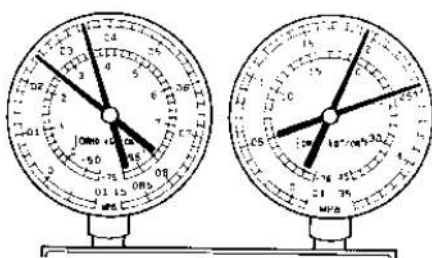


I01449

| Symptom seen in refrigeration system                                                                                                                                                                                                    | Probable cause                                                                                                                                                                                         | Diagnosis                      | Remedy                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Vacuum indicated on low pressure side, very low pressure indicated on high pressure side</li> <li>• Frost or dew seen on piping before and after receiver/ drier or expansion valve</li> </ul> | <ul style="list-style-type: none"> <li>• Refrigerant flow obstructed by moisture or dirt in refrigeration system</li> <li>• Refrigerant flow obstructed by gas leakage from expansion valve</li> </ul> | Refrigerant does not circulate | <ol style="list-style-type: none"> <li>(1) Check expansion valve</li> <li>(2) Clean out dirt in expansion valve by blowing with air</li> <li>(3) Replace condenser</li> <li>(4) Evacuate air and charge new refrigerant to proper amount</li> <li>(5) For gas leakage from expansion valve, replace expansion valve</li> </ol> |

## (6) Refrigerant overcharged or insufficient cooling of condenser

Condition: Insufficient cooling

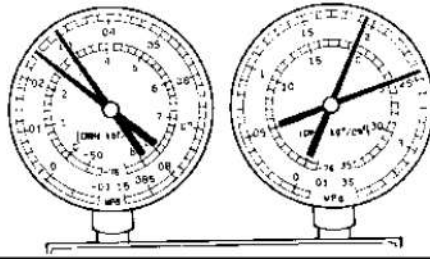


I01390

| Symptom seen in refrigeration system                                                                                                                                                                 | Probable cause                                                                                                                                             | Diagnosis                                                                                                                                                                                         | Remedy                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Pressure too high on both low and high pressure sides</li> <li>• No air bubbles seen through the sight glass even when the engine rpm is lowered</li> </ul> | <ul style="list-style-type: none"> <li>• Unable to develop sufficient performance due to excessive</li> <li>• Insufficient cooling of condenser</li> </ul> | <ul style="list-style-type: none"> <li>• Excessive refrigerant in cycle→refrigerant overcharged</li> <li>• Condenser cooling insufficient→condenser fins clogged or cooling fan faulty</li> </ul> | <ol style="list-style-type: none"> <li>(1) Clean condenser</li> <li>(2) Check cooling fan with fluid coupling operation</li> <li>(3) If (1) and (2) are in normal state, check amount of refrigerant</li> </ol> <p>Charge proper amount of refrigerant</p> |

## (7) Air present in refrigeration system

Condition: Insufficient cooling



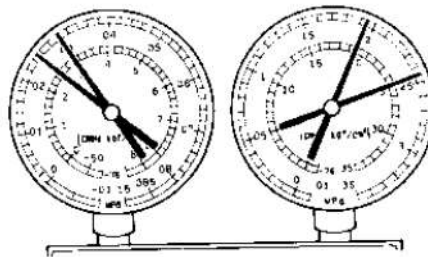
NOTE : These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without vacuum purging.

I01392

| Symptom seen in refrigeration system                                                                                                                                                                 | Probable cause                      | Diagnosis                                                                                                                      | Remedy                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Pressure too high on both low and high pressure sides</li> <li>• The low pressure piping hot to the touch</li> <li>• Bubbles seen in sight glass</li> </ul> | Air entered in refrigeration system | <ul style="list-style-type: none"> <li>• Air present in refrigeration system</li> <li>• Insufficient vacuum purging</li> </ul> | (1) Check compressor oil to see if it is dirty or insufficient<br>(2) Evacuate air and charge new refrigerant |

## (8) Expansion valve improperly

Condition: Insufficient cooling

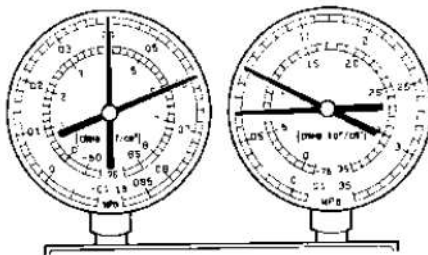


I01450

| Symptom seen in refrigeration system                                                                                                                                             | Probable cause             | Diagnosis                                                                                                                                   | Remedy                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <ul style="list-style-type: none"> <li>• Pressure too high on both low and high pressure sides</li> <li>• Frost or large amount of dew on piping on low pressure side</li> </ul> | Trouble in expansion valve | <ul style="list-style-type: none"> <li>• Excessive refrigerant in low pressure piping</li> <li>• Expansion valve opened too wide</li> </ul> | Check expansion valve<br>Replace if defective |

## (9) Defective compression compressor

Condition : Does not cool



I01393

| Symptom seen in refrigeration system                                                                                                              | Probable cause              | Diagnosis                                                                                                              | Remedy                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <ul style="list-style-type: none"> <li>Pressure too high on low high pressure sides</li> <li>Pressure too low to on high pressure side</li> </ul> | Internal leak in compressor | <ul style="list-style-type: none"> <li>Compression defective</li> <li>Valve leaking or broken sliding parts</li> </ul> | Repair or replace compressor |

**3. INSPECT IDLE-UP SPEED**

- Warm up engine.
- Inspect idle-up speed when the these conditions are established.
  - Warm up engine
  - Blower speed control switch at "HI" position
  - A/C switch ON
  - Temperature control dial at "COOL" position

**1ZZ-FE engine models (M/T):**

| Magnetic clutch condition   | Idle-up speed |
|-----------------------------|---------------|
| Magnetic clutch not engaged | 700 ± 50 rpm  |
| Magnetic clutch engaged     | 900 ± 50 rpm  |

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

**1ZZ-FE engine models (A/T):**

| Magnetic clutch condition   | Idle-up speed |
|-----------------------------|---------------|
| Magnetic clutch not engaged | 750 ± 50 rpm  |
| Magnetic clutch engaged     | 900 ± 50 rpm  |

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

**2ZZ-GE engine models (M/T):**

| Magnetic clutch condition   | Idle-up speed |
|-----------------------------|---------------|
| Magnetic clutch not engaged | 750 ± 50 rpm  |
| Magnetic clutch engaged     | 850 ± 50 rpm  |

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

**2ZZ-GE engine models (A/T):**

| Magnetic clutch condition   | Idle-up speed |
|-----------------------------|---------------|
| Magnetic clutch not engaged | 650 ± 50 rpm  |
| Magnetic clutch engaged     | 850 ± 50 rpm  |

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

**4. INSPECT FOR LEAKAGE OF REFRIGERANT**

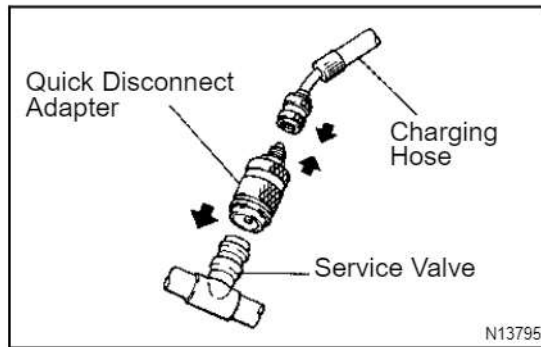
- (a) Perform in these conditions:
- Stop engine.
  - Secure good ventilation (If not the gas leak detector may react to volatile gases which are not refrigerant, such as evaporated gasoline and exhaust gas.)
  - Repeat the test 2 or 3 times.
  - Make sure that there is some refrigerant remaining in the refrigeration system.  
When compressor is OFF: approx. 392 – 588 kPa  
(4 – 6 kgf/cm<sup>2</sup>, 57 – 85 psi)
- (b) Bring the gas leak detector close to the drain hose before performing the test.

**HINT:**

- After the blower motor stopped, leave the cooling unit for more than 15 minutes.
- Expose the gas leak detector sensor under the drain hose.
- When bring the gas leak detector close to the drain hose, make sure that the gas leak detector does not react to the volatile gases.

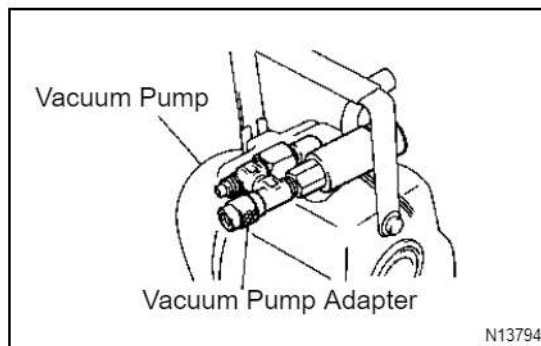
If such reaction is unavoidable, the vehicle must be lifted up.

- (c) If gas leak is not detected on the drain hose, remove the blower resistor from the cooling unit. Then insert the gas leak detector sensor into the unit and perform the test.
- (d) Disconnect the connector and leave the pressure switch for approx. 20 minutes. Then bring the gas leak detector close to the pressure switch and perform the test.
- (e) Bring the gas leak detector close to the refrigerant lines and perform the test.

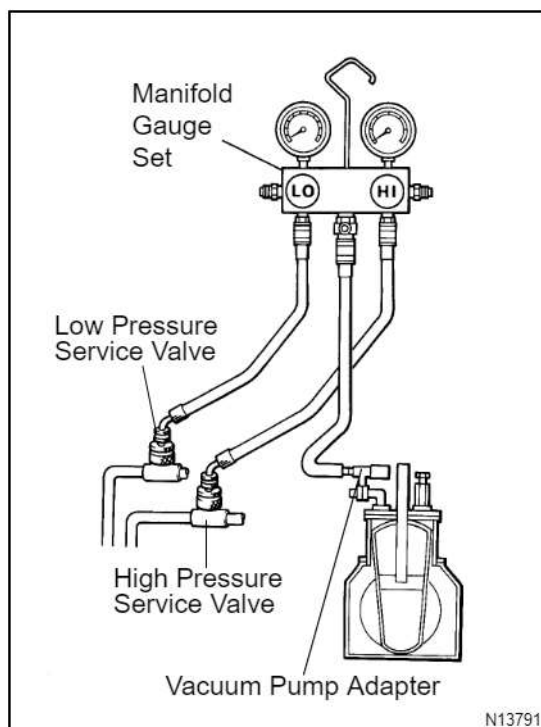


## EVACUATING

1. **CONNECT QUICK DISCONNECT ADAPTER TO CHARGING HOSES**
2. **REMOVE CAPS FROM SERVICE VALVES ON REFRIGERANT LINES**
3. **SET ON MANIFOLD GAUGE SET**
  - (a) Close both hand valves of manifold gauge set.
  - (b) Connect the quick disconnect adapters to the service valves.



4. **EVACUATE AIR FROM REFRIGERATION SYSTEM**
  - (a) Connect the vacuum pump adapter to the vacuum pump.

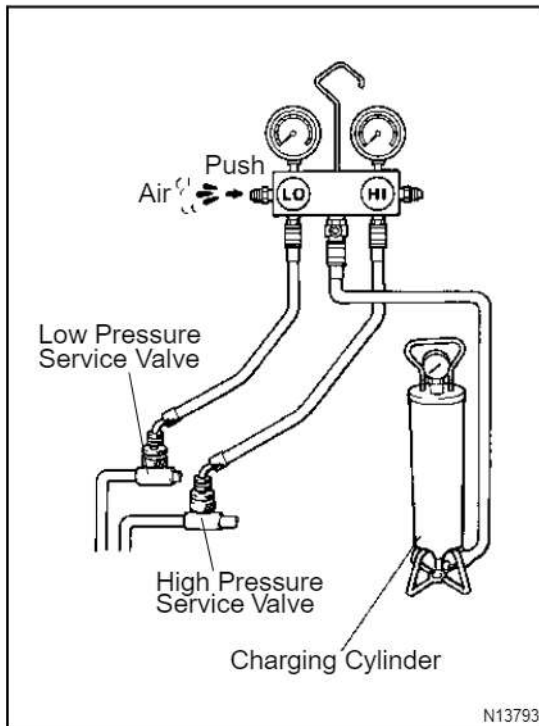


- (b) Connect the center hose of the manifold gauge set to the vacuum pump adapter.
- (c) Open both the high and low hand valves and run the vacuum pump.
- (d) After 10 minutes or more, check that the low pressure gauge indicates 750 mmHg (30 in. Hg) or more.

### HINT:

If the reading 750 mmHg (30 in. Hg) or more, close both hand valves of manifold gauge set and stop the vacuum pump. Check the system for leaks and repair necessary.

- (e) Close both the high and low hand valves and stop the vacuum pump.
- (f) Leave the system in this condition for 5 minutes or more and check that there is no gauge indicator.



## CHARGING

### 1. INSTALL CHARGING CYLINDER

#### HINT:

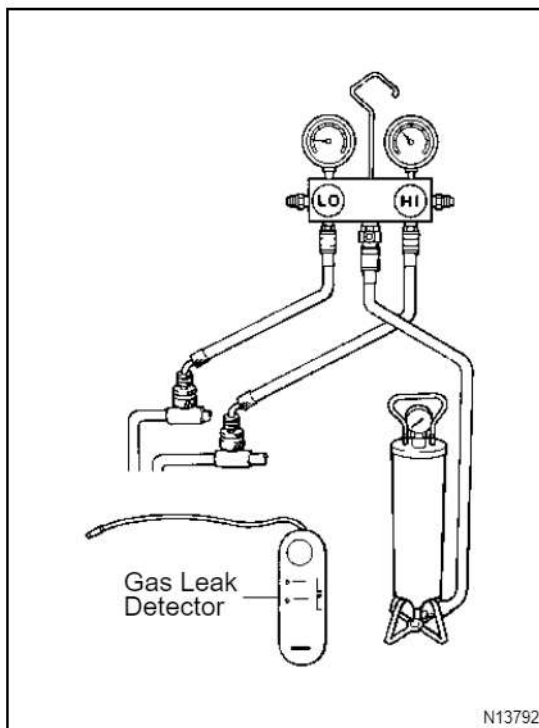
When handling the charging cylinder, always follow the directions given in the instruction manual.

- Charge the proper amount of refrigerant into the charging cylinder.
- Connect the center hose to the charging cylinder.

#### CAUTION:

**Do not open both high and low hand valves of manifold gauge set.**

- Open the valve of charging cylinder.
- Press the valve core on the side of manifold gauge and expel the air inside of the center hose.

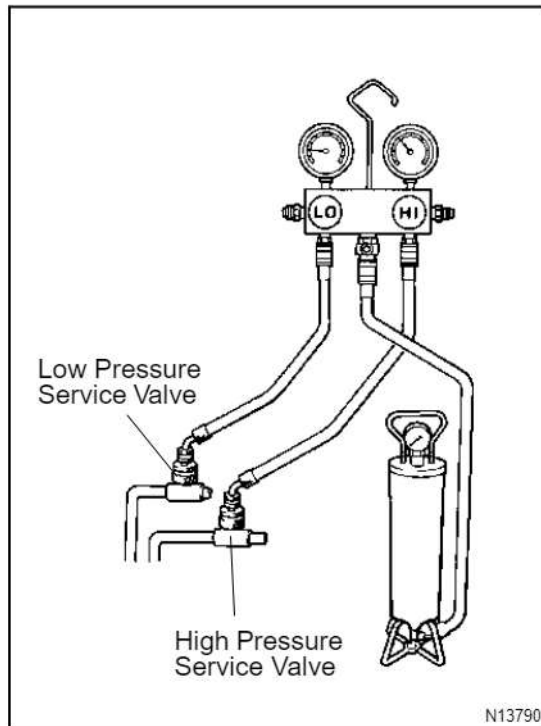


### 2. INSPECT REFRIGERATION SYSTEM FOR LEAKS

- Open the high pressure hand valve and charge refrigerant.
- When the low pressure gauge indicates 98 kPa (1 kgf/cm<sup>2</sup>, 14 psi) close the high pressure hand valve.
- Using a gas leak detector, check the system for leakage.

#### CAUTION:

**Use the refrigerant recovery/ recycling machine to recover the refrigerant whenever replacing parts.**



### 3. CHARGE REFRIGERANT INTO REFRIGERANT SYSTEM

If there is no leak after refrigerant leak check, charge the proper amount of refrigerant into refrigeration system.

#### CAUTION:

- Never run the engine when charging the system through the high pressure side.
  - Do not open the low pressure hand valve when the system is being charged with liquid refrigerant.
- (a) Open the high pressure hand valve fully.
  - (b) Charge specified amount of refrigerant, then close the high pressure hand valve.

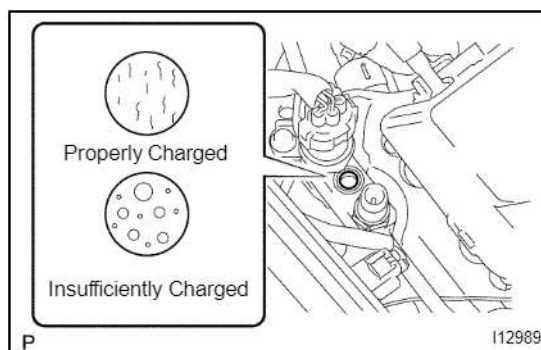
#### HINT:

A fully charged system is indicated by the sight glass being free of any bubbles.

- (c) Charge partially refrigeration system with refrigerant.
  - (1) Set vehicle in these condition:
    - Running engine at 1,500 rpm
    - Blower speed control switch: "HI"
    - Temperature control selector: "MAX. COOL"
    - Air inlet control selector: "RECIRC"
    - Fully open doors (Sliding roof: closed)
  - (2) Open the low pressure hand valve.

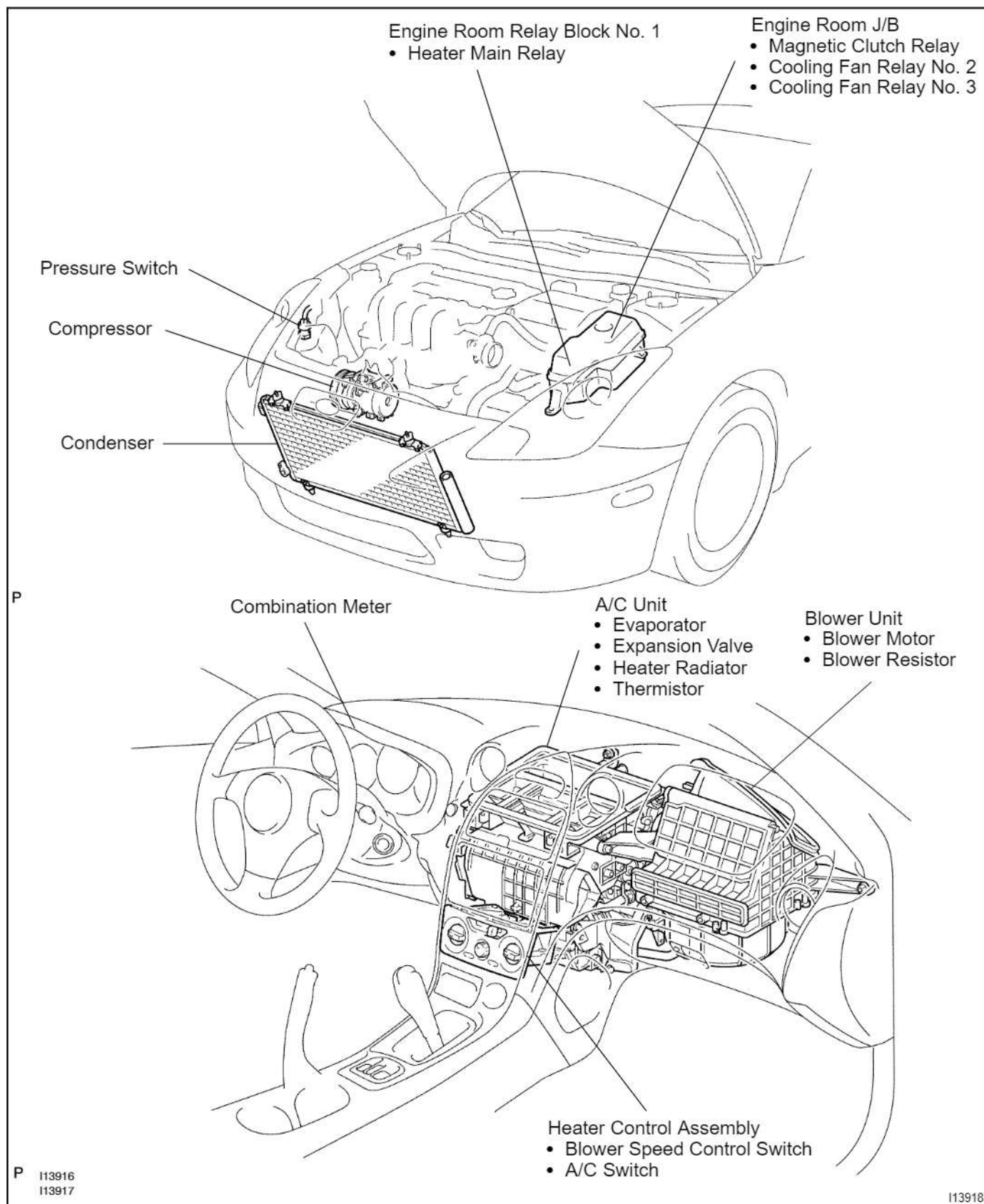
#### CAUTION:

Do not open the high pressure hand valve.



- (d) Charge refrigerant until bubbles disappear and check the pressure on the gauge through the sight glass.
- (e) Replenishment to be  $100 \pm 50$  g after bubbles disappear.

## LOCATION



# TROUBLESHOOTING

## PROBLEM SYMPTOMS TABLE

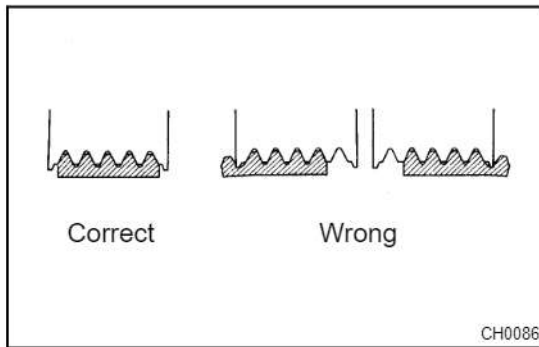
AC1FD-12

Use the table below to help you find the cause of the problem. The numbers indicate the priority of the likely cause of the problem. Check each part in order. If necessary, replace these parts.

| Symptom                              | Suspect Area                                                                                                                                                                                                                                                 | See page                                                                                       |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| No blower operation                  | 1. HTR Fuse<br>2. Heater main relay<br>3. Blower motor<br>4. Blower resistor<br>5. Blower speed control switch<br>6. Wire harness                                                                                                                            | –<br>AC-54<br>AC-48<br>AC-49<br>AC-68<br>–                                                     |
| No blower control                    | 1. Blower motor<br>2. Blower resistor<br>3. Blower speed control switch<br>4. Wire harness                                                                                                                                                                   | AC-48<br>AC-49<br>AC-68<br>–                                                                   |
| No air temperature                   | 1. Engine coolant volume<br>2. Heater control assembly                                                                                                                                                                                                       | –<br>AC-65                                                                                     |
| No compressor operation              | 1. Refrigerant volume<br>2. A.C Fuse<br>3. Magnetic clutch<br>4. Compressor lock sensor<br>5. Compressor<br>6. Pressure switch<br>7. Heater main relay<br>8. Blower speed control switch<br>9. Heater control assembly<br>10. Thermistor<br>11. Wire harness | AC-3<br>–<br>AC-35<br>AC-35<br>AC-35<br>AC-51<br>AC-54<br>AC-68<br>AC-65<br>AC-50<br>–         |
| No cool air comes out                | 1. Refrigerant volume<br>2. Refrigerant pressure<br>3. Drive belt<br>4. Magnetic clutch<br>5. Compressor lock sensor<br>6. Pressure switch<br>7. Thermistor<br>8. Heater control assembly<br>9. Wire harness                                                 | AC-3<br>AC-3<br>AC-16<br>AC-35<br>AC-35<br>AC-51<br>AC-50<br>AC-65<br>–                        |
| Insufficient cooling                 | 1. Refrigerant volume<br>2. Drive belt<br>3. Magnetic clutch<br>4. Compressor<br>5. Condenser<br>6. Expansion Valve<br>7. Evaporator<br>8. Refrigerant lines<br>9. Pressure switch<br>10. A/C amplifier<br>11. Heater control assembly                       | AC-3<br>AC-16<br>AC-35<br>AC-35<br>AC-43<br>AC-24<br>AC-28<br>AC-21<br>AC-51<br>AC-68<br>AC-65 |
| No engine idle-up when A/C switch ON | 1. Heater control assembly<br>2. Engine (and ECT) ECU<br>3. Idle control system<br>4. Wire harness                                                                                                                                                           | AC-65<br>–<br>–<br>–                                                                           |
| No air inlet control                 | 1. Heater control assembly<br>2. Wire harness                                                                                                                                                                                                                | AC-65<br>–                                                                                     |

## AIR CONDITIONING – TROUBLESHOOTING

|                                                                |                                                                                           |                                  |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------|
| No mode control                                                | 1. Heater control assembly<br>2. Wire harness                                             | AC-65<br>–                       |
| Blinking of A/C indicator                                      | 1. Compressor<br>2. Drive belt<br>3. Compressor lock sensor<br>4. Heater control assembly | AC-35<br>AC-16<br>AC-35<br>AC-65 |
| Brightness does not change when light control switch is turned | 1. Headlight and taillight system<br>2. Heater control assembly                           | BE-18<br>AC-65                   |

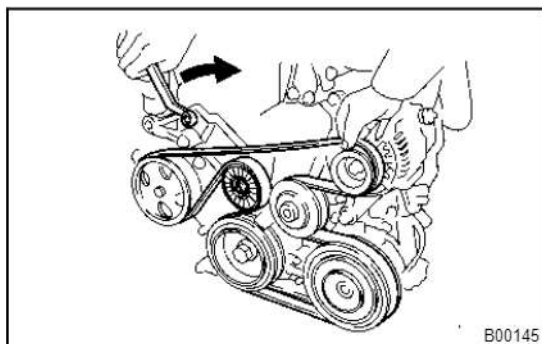


## DRIVE BELT ON-VEHICLE INSPECTION

AC2GV-07

### INSPECT DRIVE BELT'S INSTALLATION CONDITION

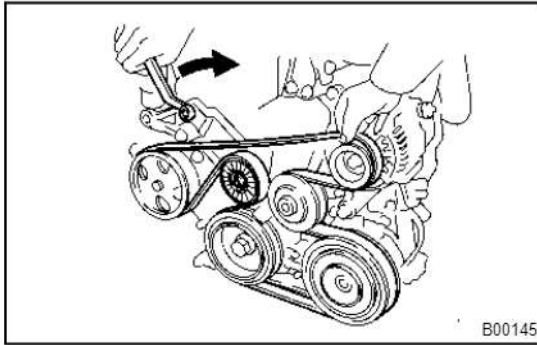
Check that the drive belt fits properly in the ribbed grooves.



## REMOVAL

### REMOVE DRIVE BELT

Loosen the drive belt tension by turning the drive belt tensioner arm clockwise, and remove the drive belt.

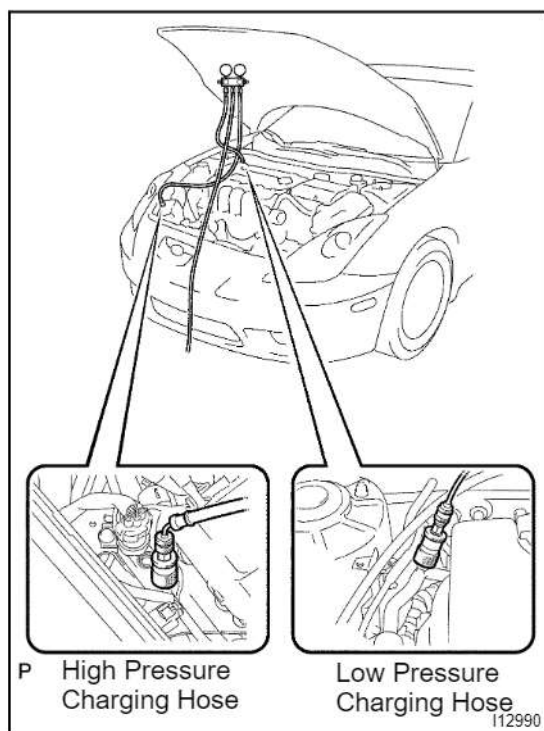


## INSTALLATION

### 1. INSTALL DRIVE BELT

Turning the drive belt tensioner arm clockwise, and install the drive belt.

### 2. CHECK DRIVE BELT INSTALLING CONDITION



## MANIFOLD GAUGE SET SET ON

AC0CA-07

### 1. CONNECT CHARGE HOSE TO MANIFOLD GAUGE SET

Tighten the nuts by hand.

#### CAUTION:

Do not connect the wrong hoses.

### 2. CONNECT QUICK DISCONNECT ADAPTER TO CHARGING HOSES

Tighten the nuts by hand.

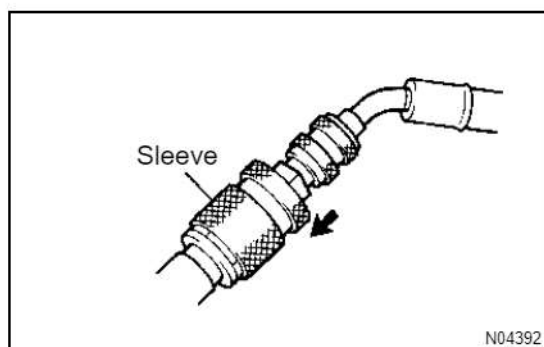
### 3. CLOSE BOTH HAND VALVE OF MANIFOLD GAUGE SET

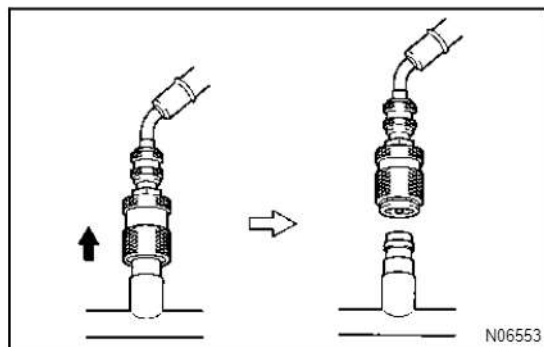
### 4. REMOVE CAPS FROM SERVICE VALVE ON REFRIG- ERANT LINE

### 5. CONNECT QUICK DISCONNECT ADAPTER TO SER- VICE VALVES

#### HINT:

Push the quick disconnect adapter onto the service valve, then slide, then slide the sleeve of the quick disconnect adapter downward to lock it.





## SET OFF

1. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET
2. DISCONNECT QUICK DISCONNECT ADAPTERS FROM SERVICE VALVES ON REFRIGERANT LINE

### HINT:

Slide the sleeve of the quick disconnect adapter upward to unlock the adapter and remove it from the service valve.

3. INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE

## REFRIGERANT LINE

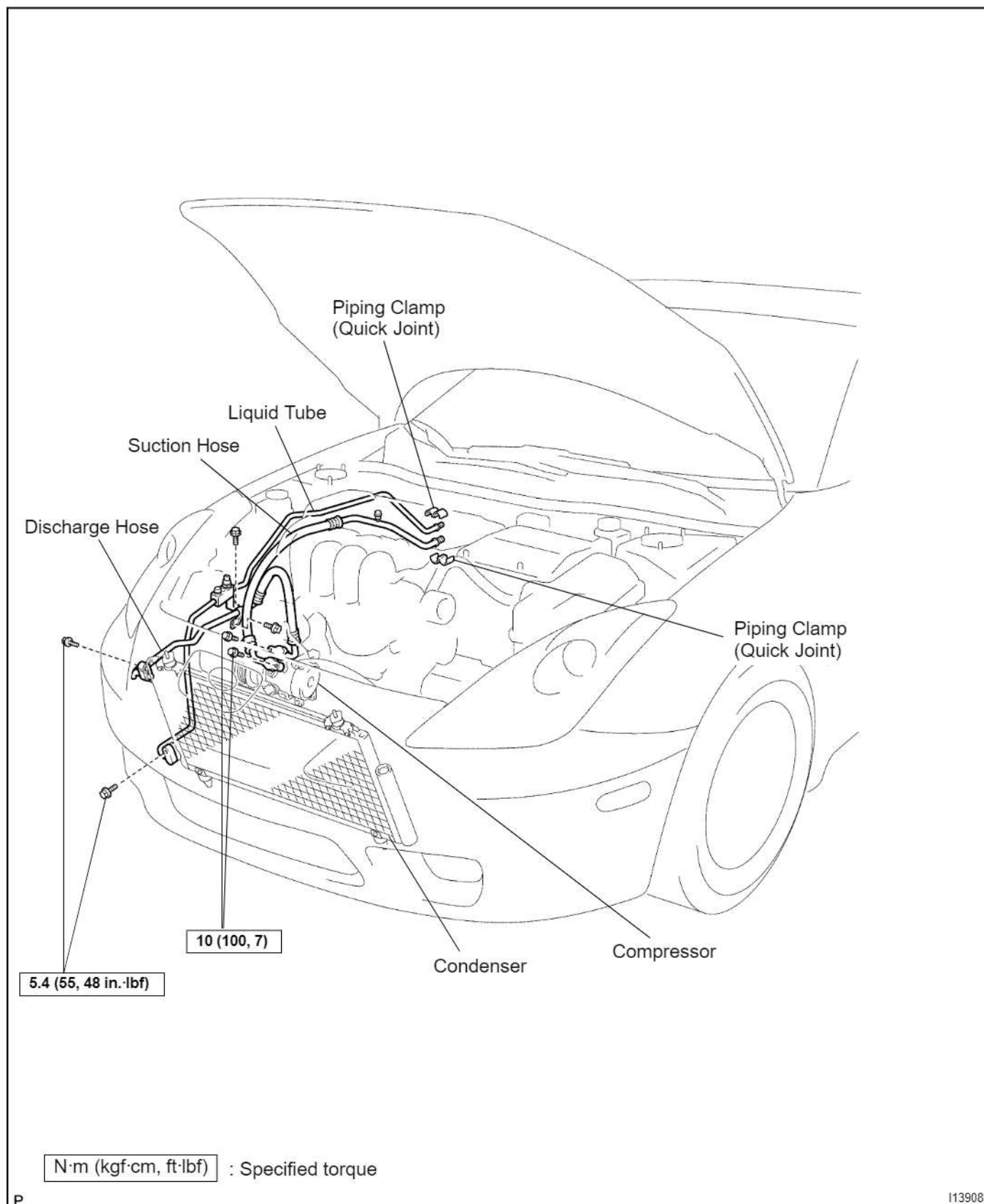
AC6CC-02

### ON-VEHICLE INSPECTION

1. INSPECTION HOSE AND TUBE CONNECTIONS FOR LOOSENESS
2. INSPECT HOSES AND TUBES FOR LEAKAGE

Using a gas leak detector, check for leakage of refrigerant.

## LOCATION



## REPLACEMENT

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
2. REPLACE FAULTY TUBE OR HOSE

### NOTICE:

Cap the open fittings immediately to keep moisture or dirt out of the system.

3. TORQUE CONNECTIONS TO SPECIFIED TORQUE

### NOTICE:

Connections should not be torqued tighter than the specified torqued.

| Part tightened               | N·m | kgf·cm | ft·lbf    |
|------------------------------|-----|--------|-----------|
| Condenser x Discharge tube   | 5.4 | 55     | 48 in·lbf |
| Condenser x Liquid tube      | 5.4 | 55     | 48 in·lbf |
| Compressor x Discharge tube  | 10  | 100    | 7         |
| Compressor x Suction tube    | 10  | 100    | 7         |
| Expansion valve x Evaporator | 5.4 | 55     | 48 in·lbf |

4. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT

Specified amount:  $430 \pm 30$  g ( $15.17 \pm 1.06$  oz.)

5. INSPECT FOR LEAKAGE OF REFRIGERANT

Using a gas leak detector, check for leakage of refrigerant.

6. INSPECT AIR CONDITIONING OPERATION

## AIR CONDITIONING UNIT

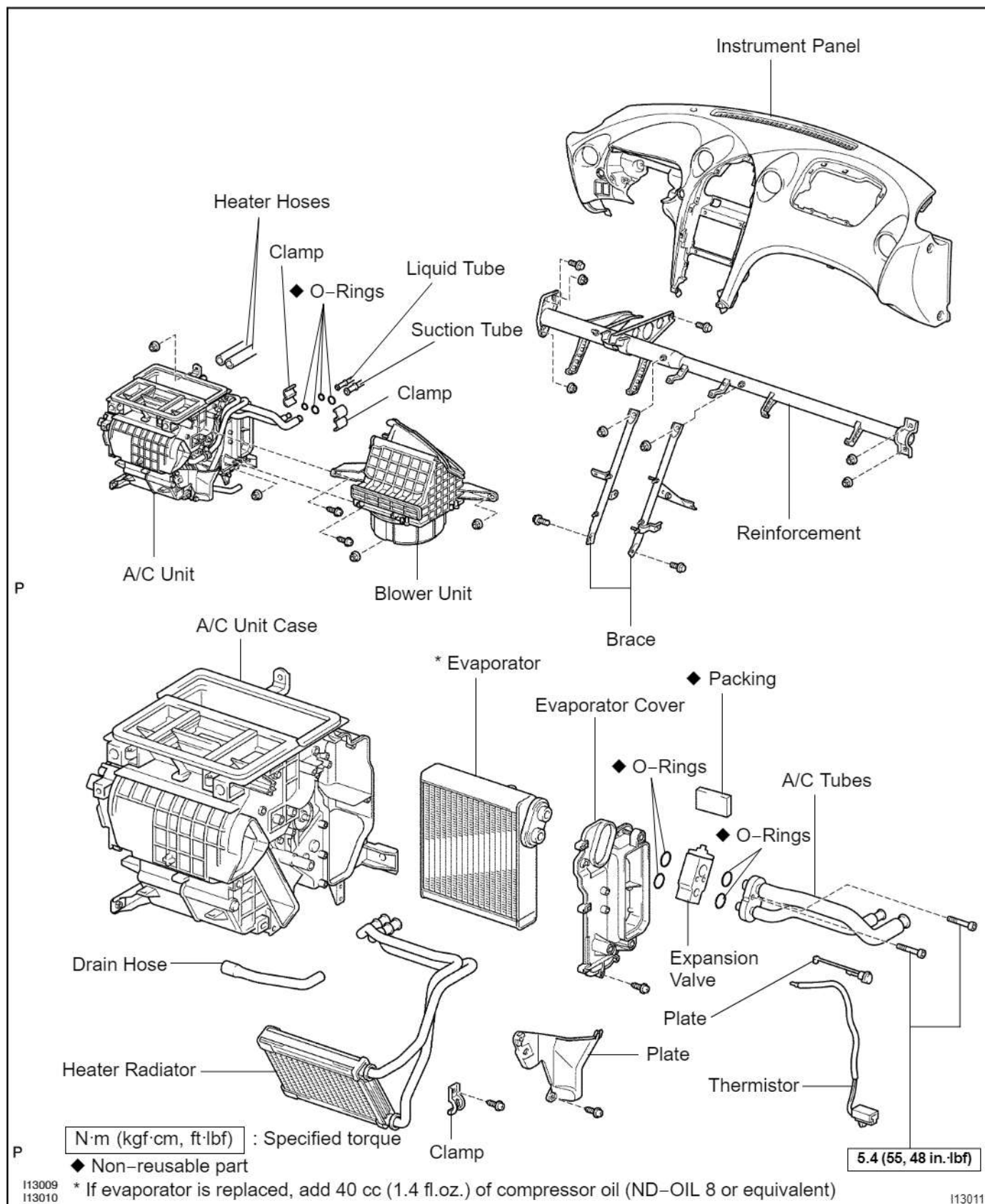
### ON-VEHICLE INSPECTION

AC2GW-02

#### INSPECT FOR LEAKAGE OF REFRIGERANT

- (a) Remove the glove compartment door (See page BO-79).
  - (b) Remove the blower unit.
  - (c) Using a gas leak detector, check for leakage of refrigerant.
- If there is leakage, check the tightening torque at the joints or check the evaporator, expansion valve, A/C tube and O-rings.

## COMPONENTS



113009  
113010

113011

## REMOVAL

### 1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

HINT:

At the time of installation, please refer to the following item.

Evacuate air from refrigeration system.

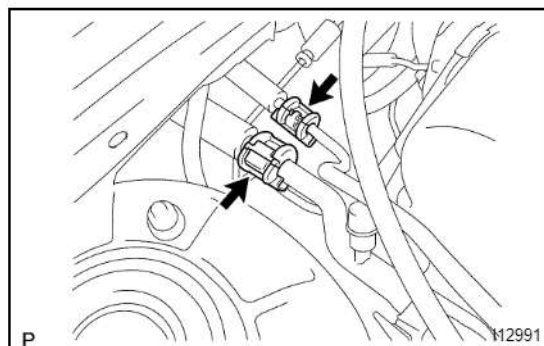
Charge system with refrigerant and inspect for leakage of refrigerant.

**Specified amount: 430 ± 30 g (15.17 ± 1.06 oz.)**

### 2. DRAIN ENGINE COOLANT FROM RADIATOR

HINT:

It is not necessary to drain out all coolant.

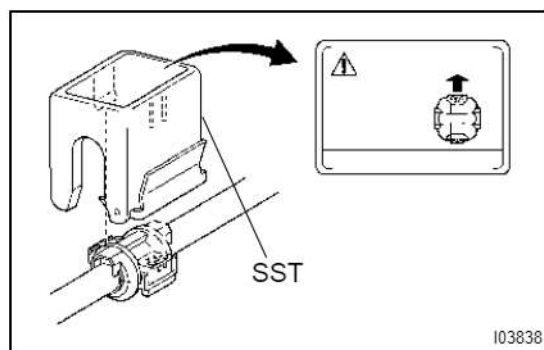


### 3. DISCONNECT LIQUID TUBE AND SUCTION HOSE

(a) Using SST, remove the 2 piping clamps.

SST 09870-00015 (Suction tube)

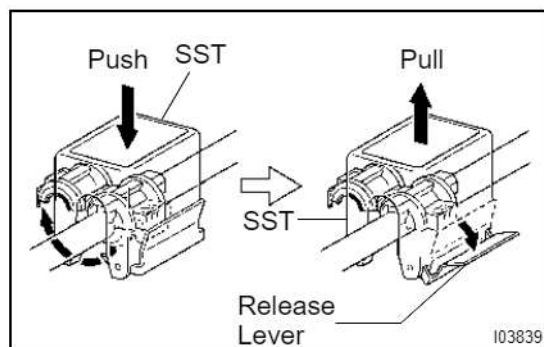
09870-00025 (Liquid tube)



(1) Insert SST to piping clamp.

HINT:

Confirm the direction of the piping clamp claw and SST using the illustration showing on the caution label.



(2) Push down SST and release the clamp lock.

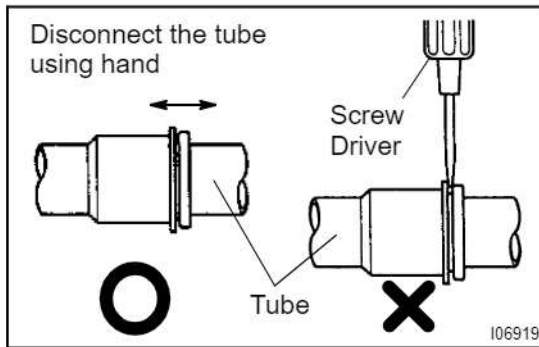
**NOTICE:**

**Be careful not to deform the tubes, when pushing SST.**

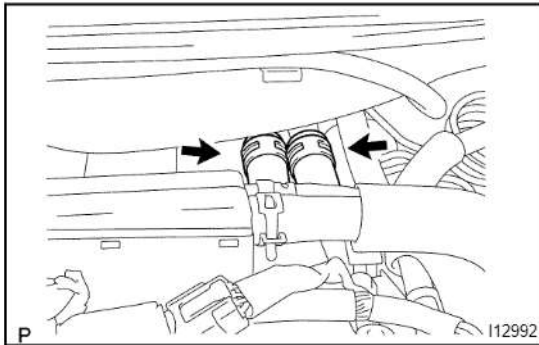
(3) Pull SST slightly and push the release lever, then remove the piping clamp with SST.

(4) Remove the piping clamp from SST.

(b) Disconnect the both tubes.

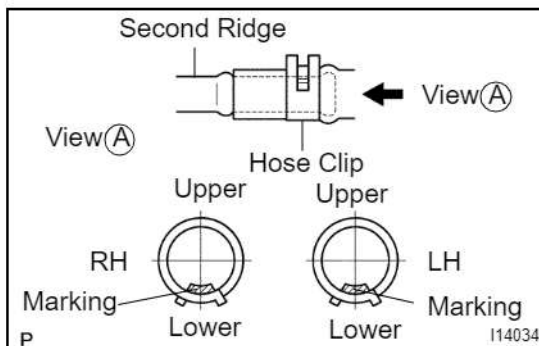
**NOTICE:**

- Do not use tools like screwdriver to remove the tube.
  - Cap the open fittings immediately to keep moisture or dirt out of the system.
4. **REMOVE INSTRUMENT PANEL AND REINFORCEMENT** (See page BO-79)



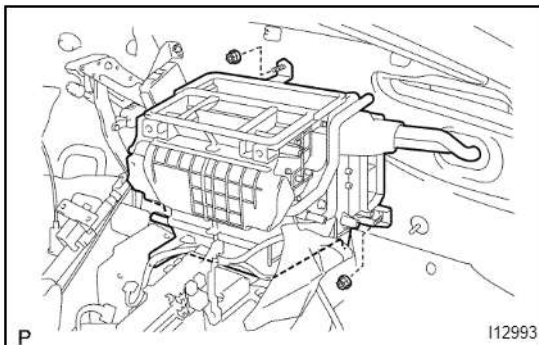
5. **DISCONNECT WATER HOSES FROM HEATER RADIATOR PIPES**

- (a) Using pliers, grip the claw of the hose clip and slide the hose clip along the hose.
- (b) Disconnect the heater hoses.

**HINT:**

At the time of installation, please refer to the following item.  
Push the water hose onto the heater radiator pipe as far as second ridge on the pipe and install the hose clip.

6. **REMOVE BLOWER UNIT** (See page AC-31)



7. **REMOVE A/C UNIT**

- (a) Disconnect the connectors.
- (b) Remove the 2 nuts and A/C unit.

## INSPECTION

### 1. INSPECT EVAPORATOR

(a) Check evaporator fins for blockage.

If the fins are clogged, clean them with compressed air.

#### **NOTICE:**

**Never use water to clean the evaporator.**

(b) Check fitting for cracks or scratches.

If necessary, repair or replace.

### 2. INSPECT HEATER RADIATOR

Inspect fins for blockage.

If the fins are clogged, clean them with compressed air.

## INSTALLATION

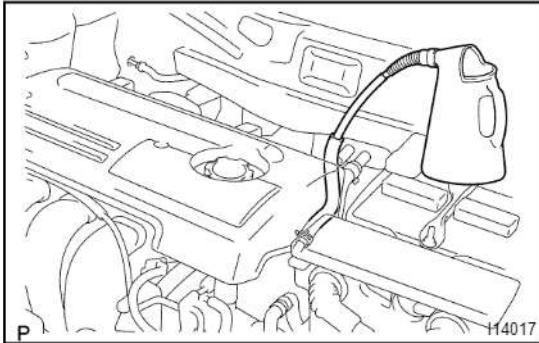
Installation is in the reverse order of removal (See page AC-26).

**HOWEVER, NOTE THAT THE FOLLOWING PROCEDURES SHOULD BE SURELY CONDUCTED**

- (a) Remove the joint of the heater outlet hose from the heater pipe.

HINT:

Do not detach the other joint on the engine side.



- (b) Hold the removed heater hose with the end facing up, pour LLC into the hose.
- (c) Pour LLC until it flows into the reverse tank from the hose at the bottom.
- (d) When this happens, stop pouring and reinstall the heater hose to the heater pipe.
- (e) Perform air bleeding in the same manner when LLC is replaced (See page CO-2).

HINT:

Note that the amount of LLC removed from the heater parts should be added.

**Additional amount (example):**

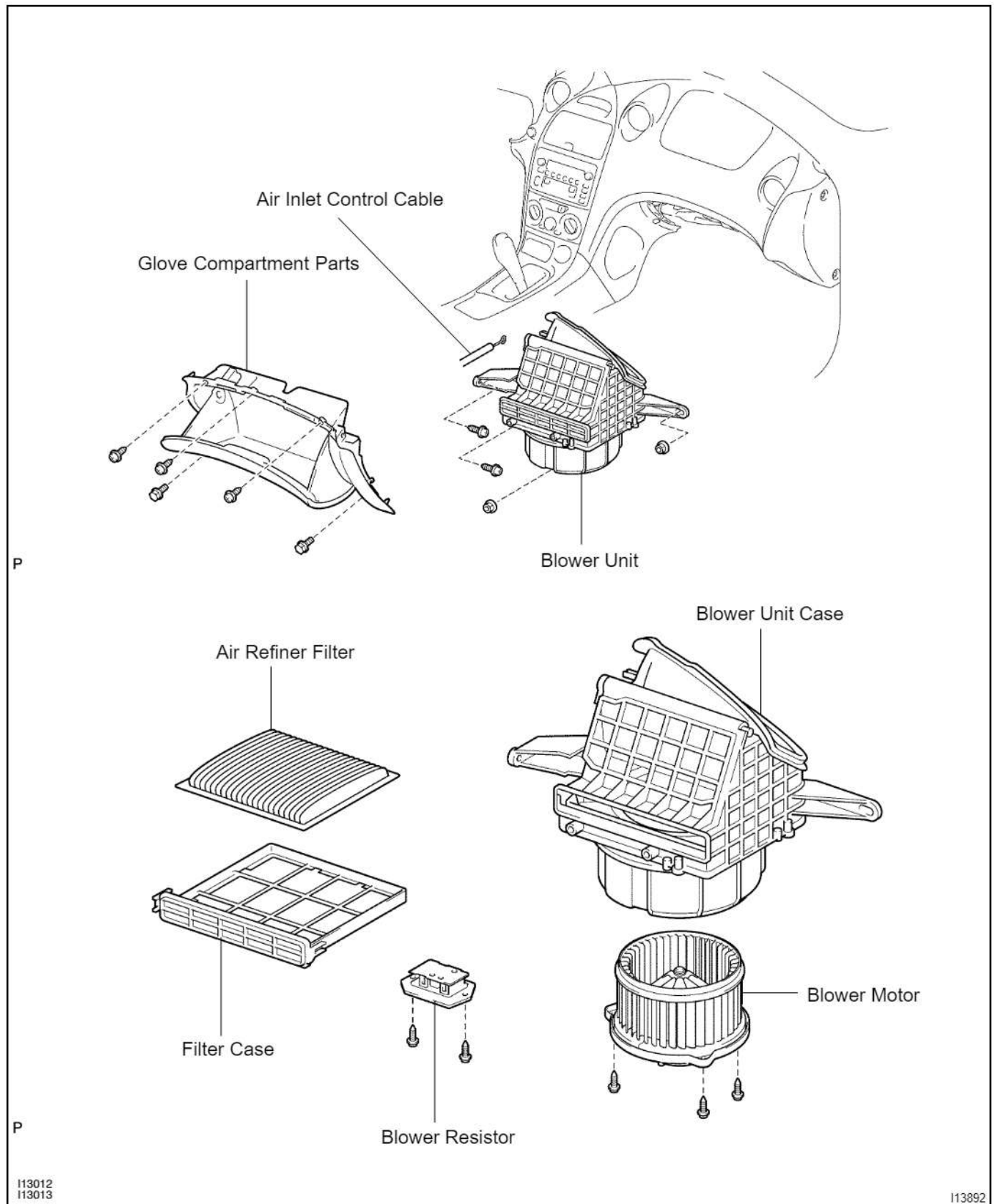
**Heater core: approx. 350 cc**

**Heater pipe: approx. 200 cc**

**Heater hose: approx. 70 cc**

# BLOWER UNIT COMPONENTS

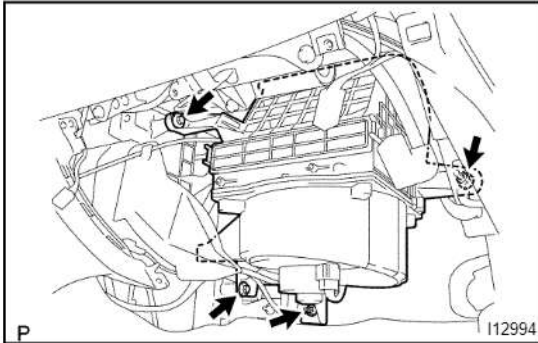
AC1GS-03

I13012  
I13013

I13892

## REMOVAL

1. **REMOVE GLOVE COMPARTMENT PARTS**  
(See page BO-79)



2. **REMOVE BLOWER UNIT**
  - (a) Disconnect the connector and air inlet control cable.
  - (b) Remove wire harness clamp.
  - (c) Remove the 2 screws, 2 nuts and the blower unit.

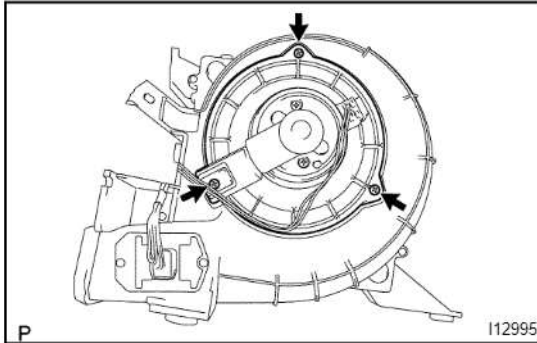
## DISASSEMBLY

### 1. REMOVE BLOWER RESISTOR

Remove the 2 screws and blower resistor.

### 2. REMOVE AIR REFINER FILTER

- (a) Pull out the filter cover.
- (b) Remove the filter from the frame.



### 3. REMOVE BLOWER MOTOR

- (a) Remove the screw and wire harness clamp.
- (b) Remove the 3 screws and the blower motor.

## REASSEMBLY

Reassembly is in the reverse order of disassembly (See page AC-32).

## INSTALLATION

Installation is in the reverse order of removal (See page AC-31).

# COMPRESSOR AND MAGNETIC CLUTCH

ACTGA-10

## ON-VEHICLE INSPECTION

### 1. INSPECT COMPRESSOR FOR METALLIC SOUND

Check if there is abnormal metallic sound from the compressor after starting the engine and turning the A/C switch on. If abnormal metallic sound is heard, replace the compressor assembly.

### 2. INSPECT REFRIGERANT PRESSURE

(See page AC-3)

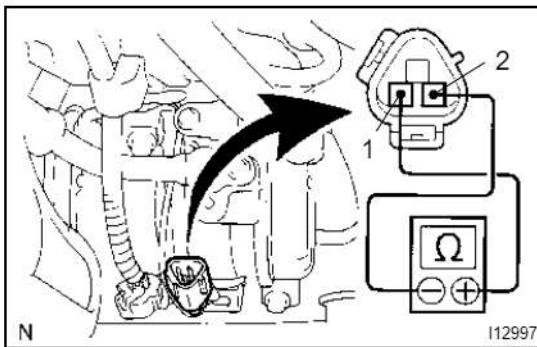
### 3. INSPECT FOR LEAKAGE OF REFRIGERANT

(a) Visually inspect the refrigerant for any leakage.

If there is any leakage, replace the compressor assembly.

(b) Using a gas leak detector, check for leakage of refrigerant.

If there is any leakage, replace the compressor assembly.



### 4. INSPECT COMPRESSOR LOCK SENSOR RESISTANCE

(a) Disconnect the compressor connector.

(b) Measure resistance between terminals 1 and 2.

**Standard resistance:**

**165 – 205  $\Omega$  at 20°C (68°F)**

If resistance is not as specified, replace the sensor.

### 5. CHECK FOR LEAKAGE OF GREASE FROM CLUTCH BEARING

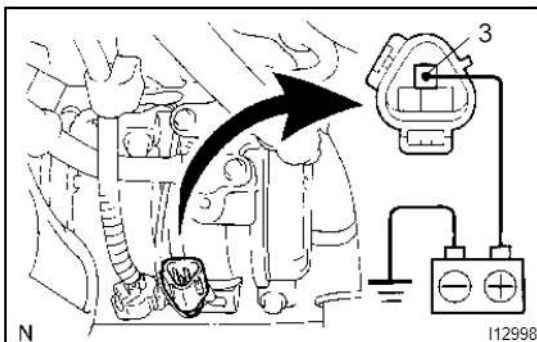
### 6. CHECK FOR SIGNS OF OIL ON PRESSURE PLATE OR ROTOR

### 7. INSPECT MAGNETIC CLUTCH BEARING FOR NOISE

(a) Start engine.

(b) Check for abnormal noise from the compressor when the A/C switch is OFF.

If abnormal noise is being emitted, replace the magnetic clutch.



### 8. INSPECT MAGNETIC CLUTCH OPERATION

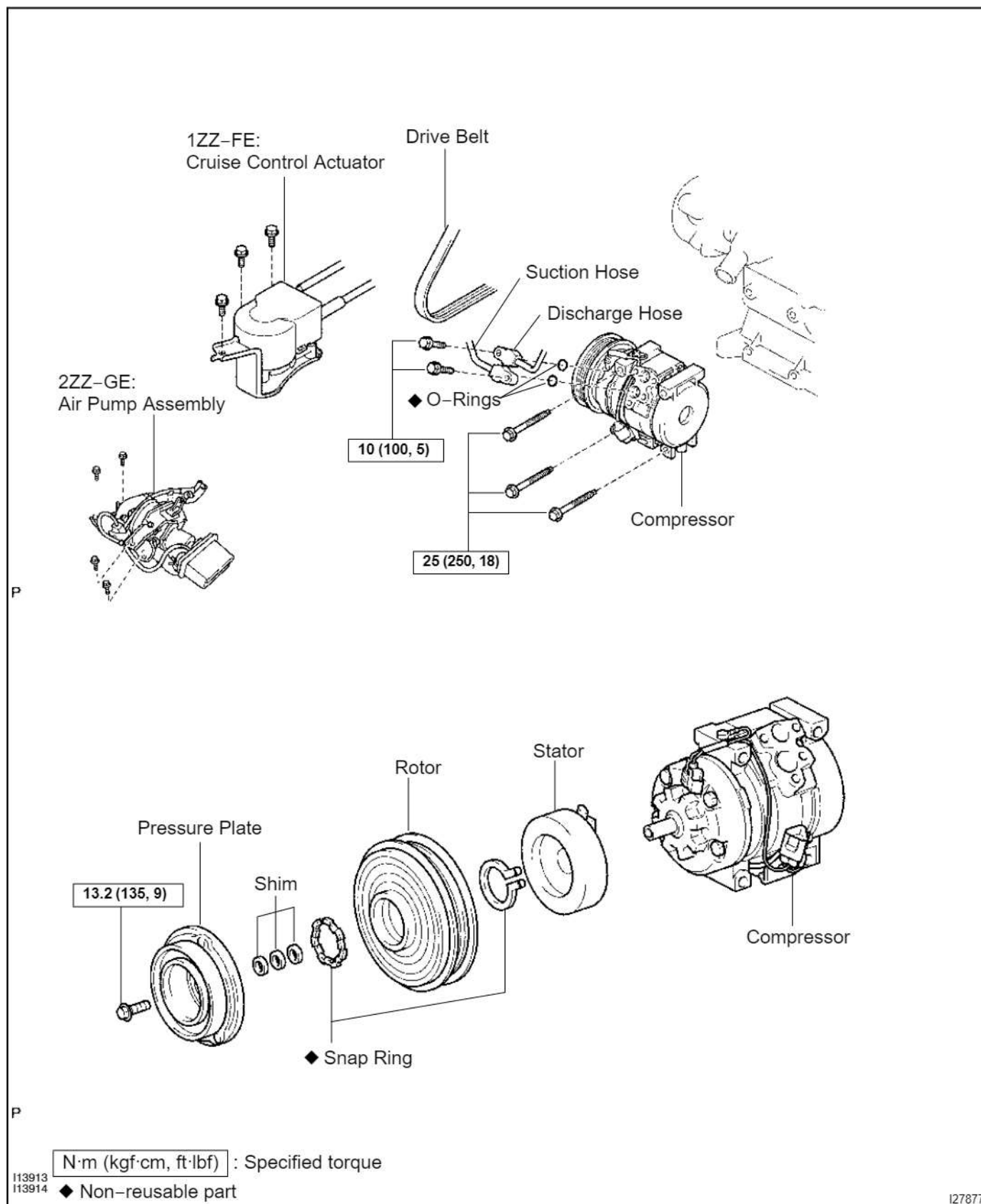
(a) Disconnect the compressor connector.

(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (-) lead to the body ground.

(c) Check that the magnetic clutch operates.

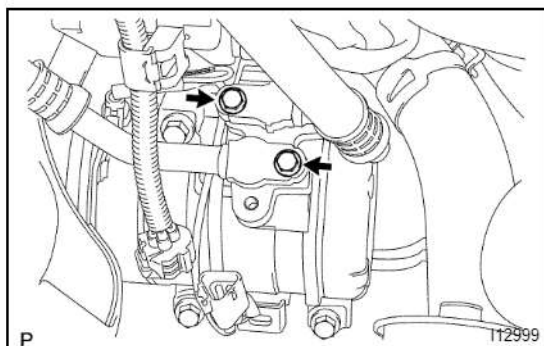
If operation is not as specified, replace the magnetic clutch.

## COMPONENTS



**REMOVAL**

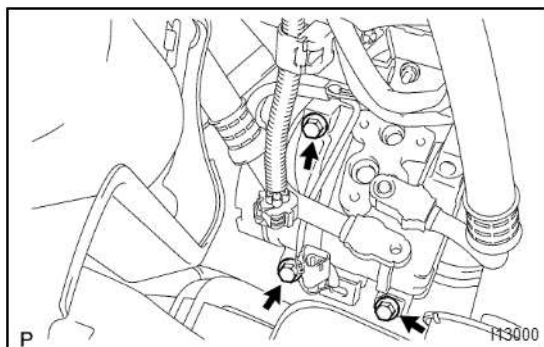
1. RUN ENGINE AT IDLE SPEED WITH A/C ON FOR APPROX. 10 MINUTES
2. STOP ENGINE
3. DISCONNECT NEGATIVE (-) TERMINAL CABLE FROM BATTERY
4. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
5. REMOVE DRIVE BELT (See page AC-17)
6. 1ZZ-FE:  
REMOVE CRUISE CONTROL ACTUATOR  
(See page CO-27)
7. 2ZZ-GE:  
REMOVE AIR PUMP ASSEMBLY (See page CO-27)

**8. DISCONNECT DISCHARGE AND SUCTION HOSES**

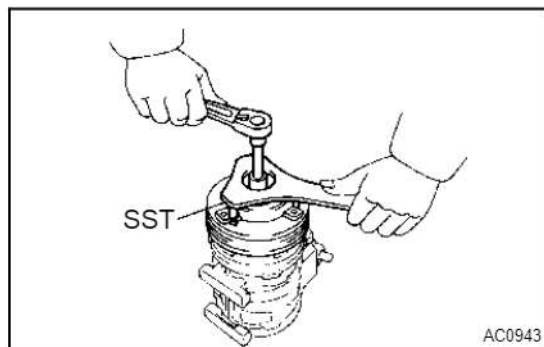
Remove the 2 bolts and disconnect the both hoses.

**NOTICE:**

Cap the open fittings immediately to keep moisture or dirt out of the system.

**9. REMOVE COMPRESSOR**

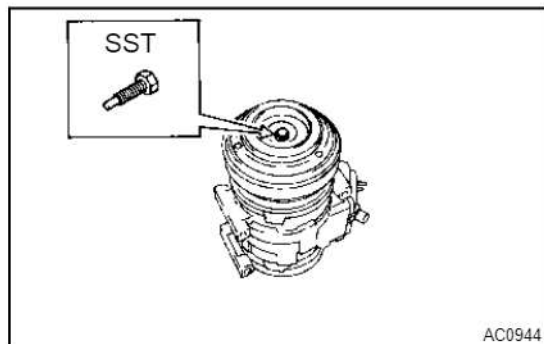
- (a) Disconnect the connector.
- (b) Disconnect the wire harness clamp.
- (c) Remove the 3 bolts and compressor.



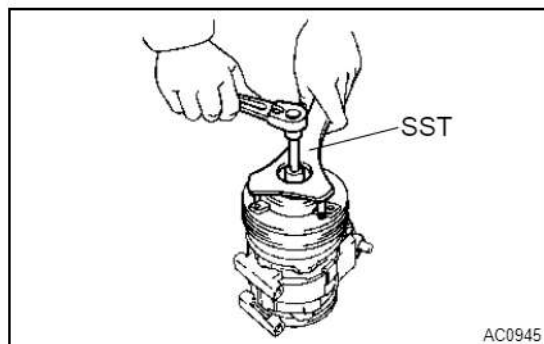
## DISASSEMBLY

### 1. REMOVE PRESSURE PLATE

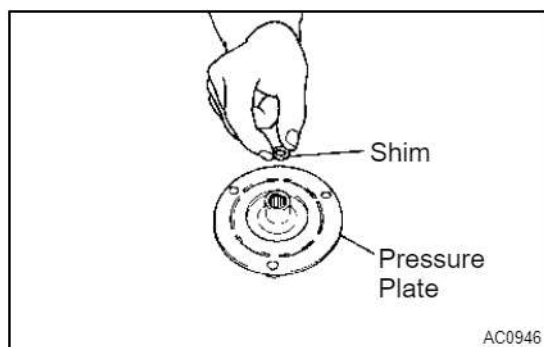
- (a) Using SST and a socket wrench, remove the shaft bolt.  
SST 07112-76060  
Torque: 13.2 N·m (135 kgf·cm, 9 ft·lbf)



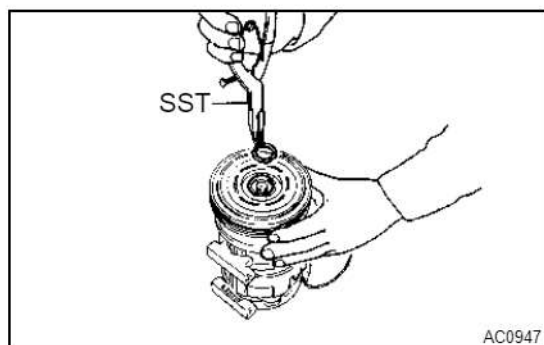
- (b) Install SST on the pressure plate.  
SST 07112-66040



- (c) Using SST and socket wrench, remove the pressure plate.  
SST 07112-66040, 07112-76060

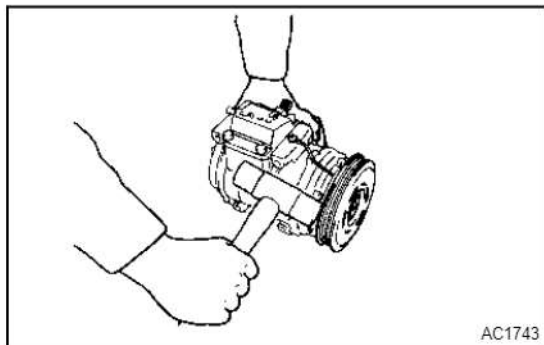


- (d) Remove the shims from the pressure plate.



### 2. REMOVE ROTOR

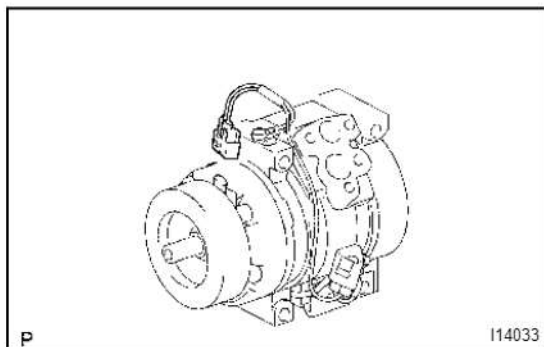
- (a) Using SST, remove the snap ring.  
SST 95994-10020



(b) Using a plastic hammer, tap the rotor off the shaft.

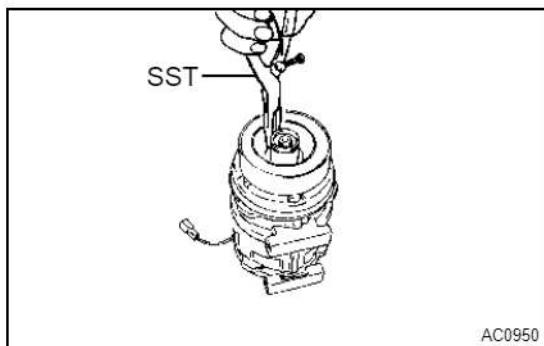
**NOTICE:**

Be careful not to damage the pulley when tapping on the rotor.



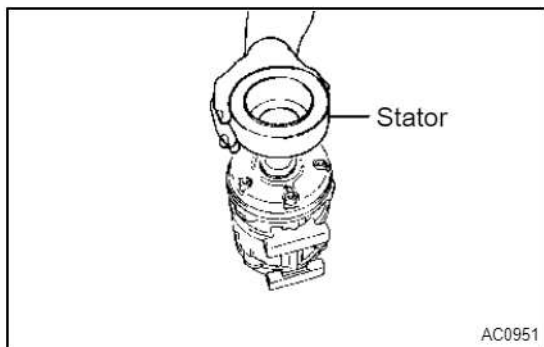
**3. REMOVE STATOR**

(a) Disconnect the connector from the stator.

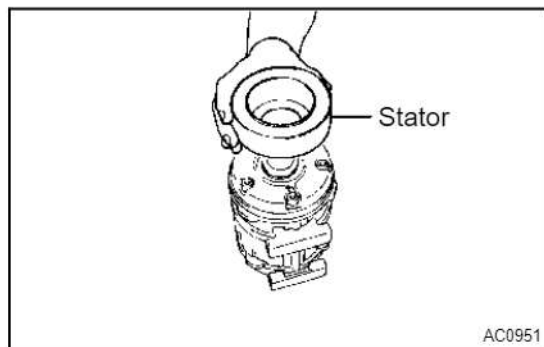


(b) Using SST, remove the snap ring.

SST 95994-10020



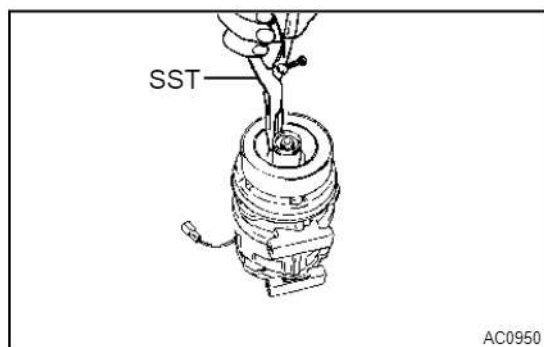
(c) Remove the stator.



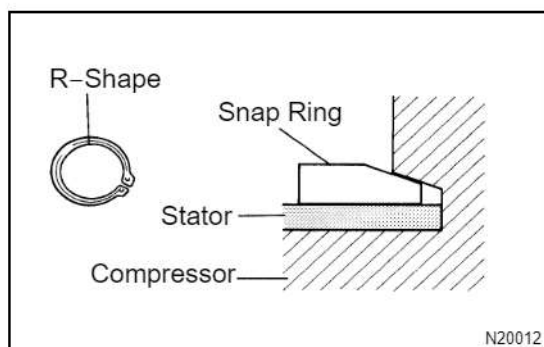
## REASSEMBLY

### 1. INSTALL STATOR

- (a) Install the stator.

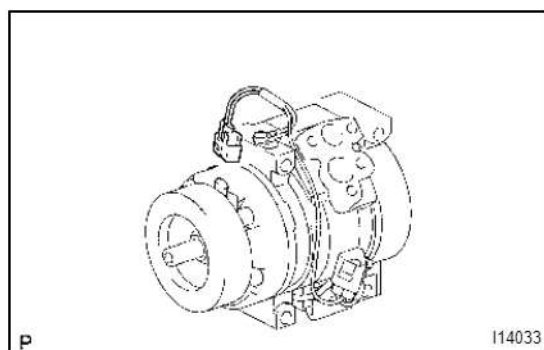


- (b) Using SST, install the snap ring.  
SST 95994-10020

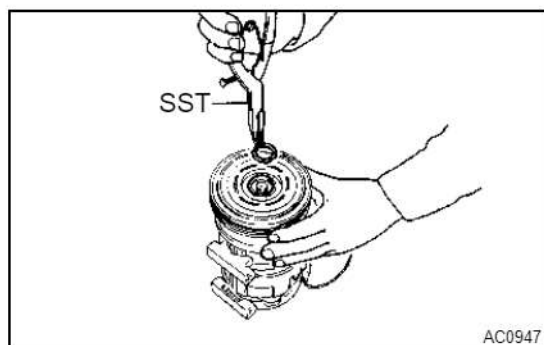


### NOTICE:

The snap ring should be installed so that its beveled side faces up.

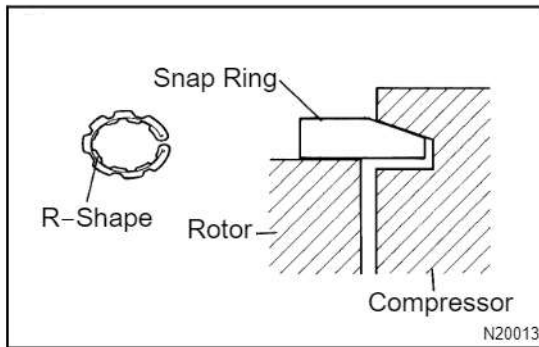


- (c) Connect the connector to the stator.

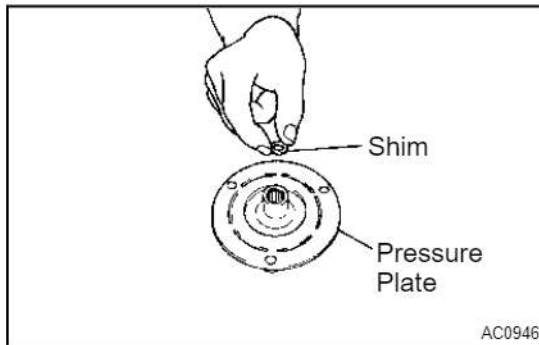


### 2. INSTALL ROTOR

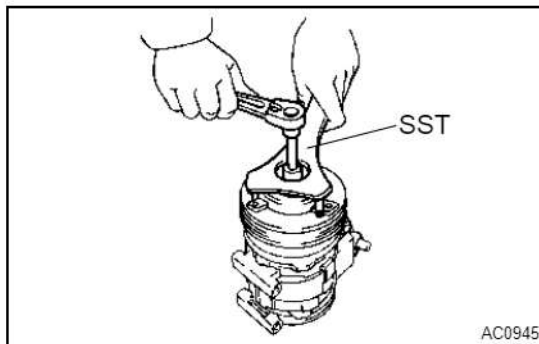
- (a) Install the rotor.  
(b) Using SST, install the snap ring.  
SST 95994-10020

**NOTICE:**

The snap ring should be installed so that beveled side faces up.

**3. INSTALL PRESSURE PLATE**

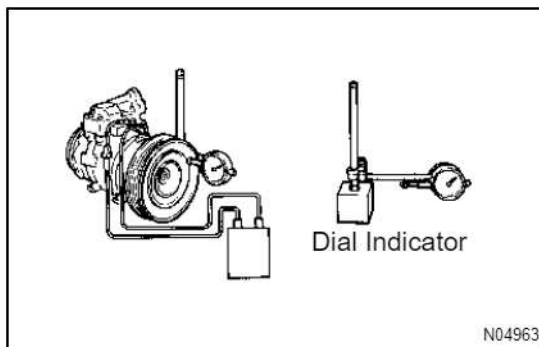
- (a) Install the shims to the pressure plate and install the pressure plate on the rotor.



- (b) Using SST and a torque wrench, install the shaft bolt.

SST 07112-66040, 07112-76060

**Torque: 13.2 N·m (135 kgf·cm, 9 ft·lbf)**

**4. INSPECT MAGNETIC CLUTCH CLEARANCE**

- (a) Set the dial indicator to the pressure plate of the magnetic clutch.
- (b) Connect the magnetic clutch lead wire to the positive (+) terminal of the battery.
- (c) Check the clearance between the pressure plate and rotor when connecting the negative (-) terminal to the battery.

**Standard clearance:**

**$0.45 \pm 0.10$  mm ( $0.018 \pm 0.004$  in.)**

If the clearance is not within the standard clearance, adjust the clearance using shims to obtain the standard clearance.

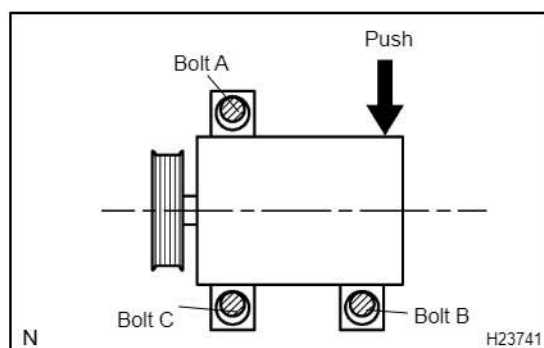
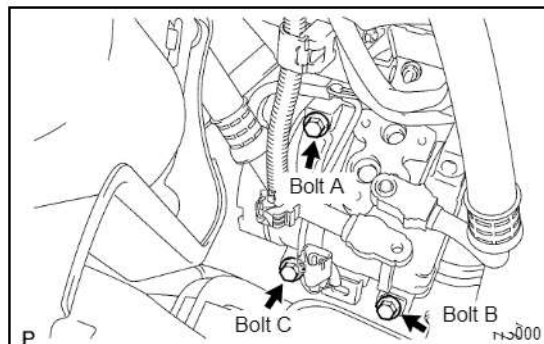
**Shim thickness:**

**0.1 mm (0.004 in.)**

**0.3 mm (0.012 in.)**

**0.5 mm (0.020 in.)**

## INSTALLATION



### 1. INSTALL COMPRESSOR

- (a) Install the compressor with 3 bolts.
- (b) Temporarily tighten bolt A.

#### HINT:

Do not over tighten the bolt until the compressor no longer moves.

- (c) Push down on the rear side of the compressor and fully tighten bolt B, bolt C and bolt A in order.

**Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)**

- (d) Connect the compressor connector.

### 2. CONNECT DISCHARGE AND SUCTION HOSES

- (a) Lubricate 2 new O-rings with compressor oil and install them to the hoses.
- (b) Connect the both hoses with 2 bolts.

**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

#### NOTICE:

Hose should be connected immediately after the caps have been removed.

### 3. 1ZZ-FE:

**INSTALL CRUISE CONTROL ACTUATOR** (See page CO-30)

### 4. 2ZZ-GE:

**INSTALL AIR PUMP ASSEMBLY** (See page CO-30)

### 5. INSTALL AND CHECK DRIVE BELT

(See page AC-18, AC-16)

### 6. CONNECT NEGATIVE (-) TERMINAL CABLE TO BATTERY

### 7. EVACUATE AIR FROM REFRIGERATION SYSTEM AND CHARGE SYSTEM WITH REFRIGERANT

Specified amount: 430 ± 30 g (15.17 ± 1.06 oz.)

### 8. INSPECT FOR LEAKAGE OF REFRIGERANT

- (a) Using a gas leak detector, check for leakage of refrigerant.

If there is leakage, check the tightening torque at the joints.

### 9. INSPECT A/C OPERATION

## CONDENSER

ACTGJ-03

### ON-VEHICLE INSPECTION

#### 1. INSPECT CONDENSER FINS FOR BLOCKAGE OR DAMAGE

If the fins are clogged, wash them with water and dry with compressed air.

#### NOTICE:

**Be careful not to damage the fins.**

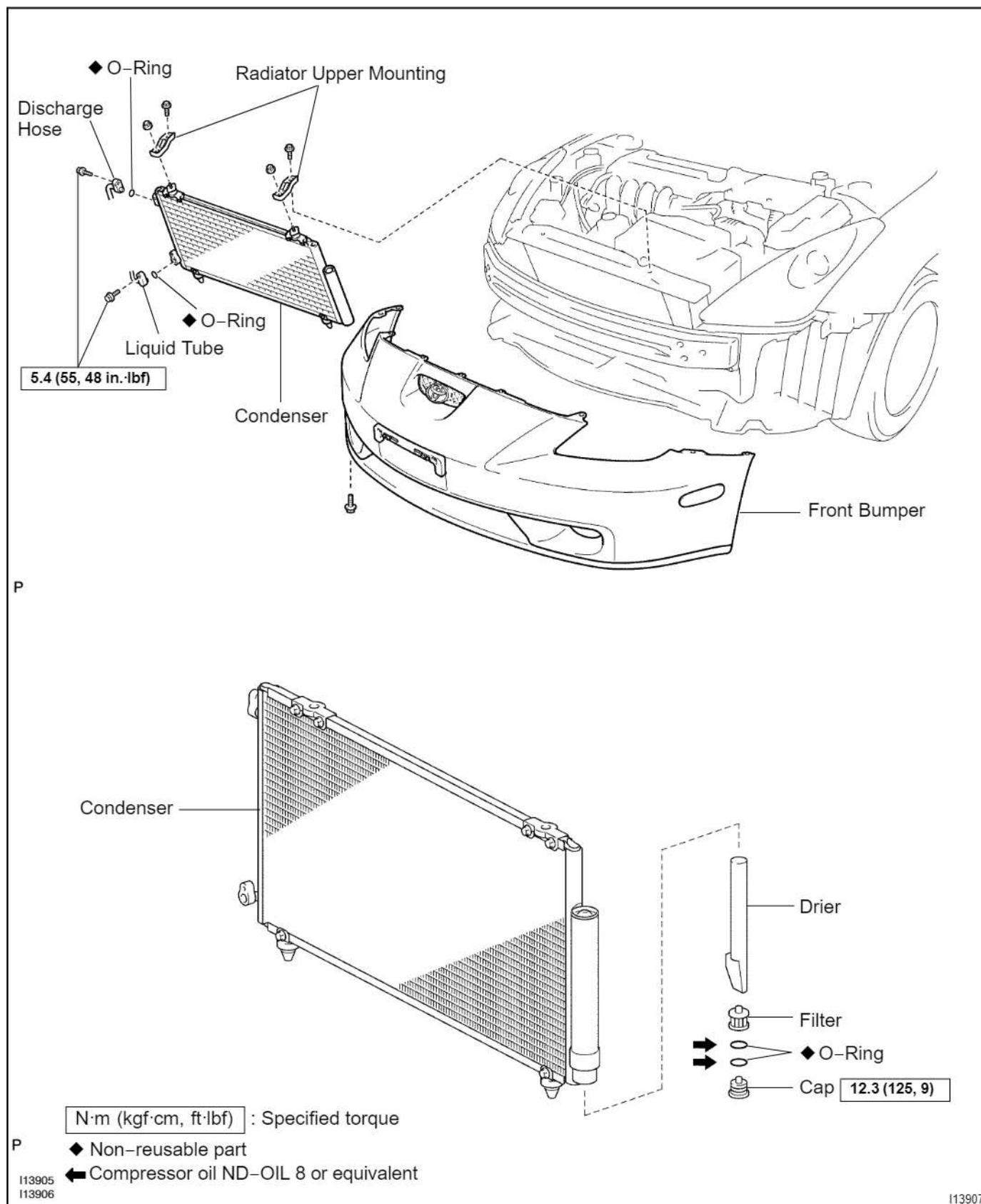
If the fins are bent, straighten them with a screwdriver or pliers.

#### 2. INSPECT CONDENSER AND FITTINGS FOR LEAKAGE

Using a gas leak detector, check for leakage of refrigerant.

If there is leakage, check the tightening torque at the joints.

## COMPONENTS



## REMOVAL

### 1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

#### HINT:

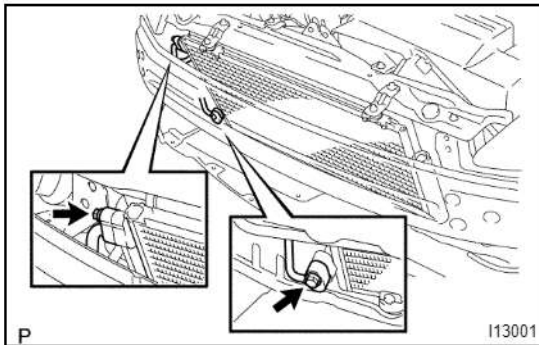
At the time of installation, please refer to the following item.

Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

**Specified amount: 430 ± 30 g (15.17 ± 1.06 oz.)**

### 2. REMOVE FRONT BUMPER (See page BO-4)



### 3. REMOVE LIQUID TUBE AND DISCHARGE HOSE

Remove 2 bolts and both tubes.

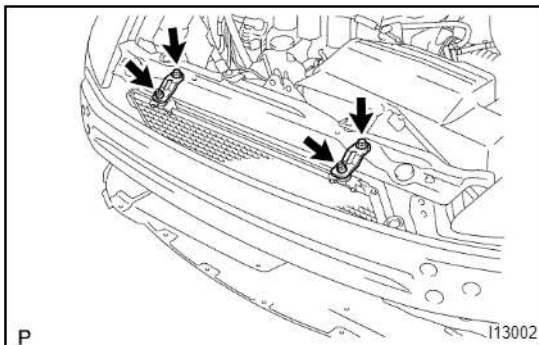
**Torque: 5.4 N·m (55 kgf·cm, 48 in·lbf)**

#### NOTICE:

Cap the open fittings immediately to keep moisture out of the system.

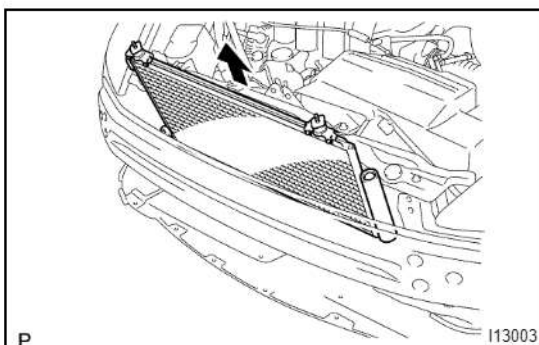
#### HINT:

Lubricate 2 new O-rings with compressor oil and install them to the tubes.



### 4. REMOVE RADIATOR UPPER MOUNTINGS

Remove the 2 bolts, 2 nuts and the 2 upper mountings.



### 5. REMOVE CONDENSER

Pull out the condenser.

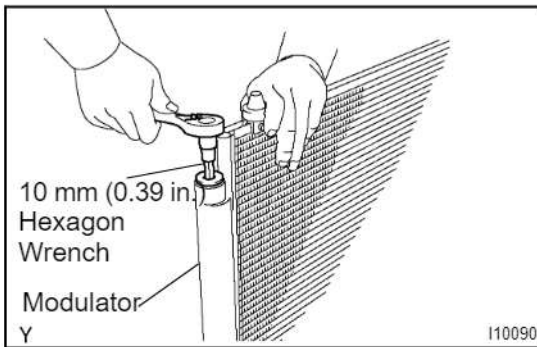
#### HINT:

At the time of installation, please refer to the following item.

If condenser was replaced, add compressor oil to the compressor.

**Add: 40 cc (1.4 fl. oz.)**

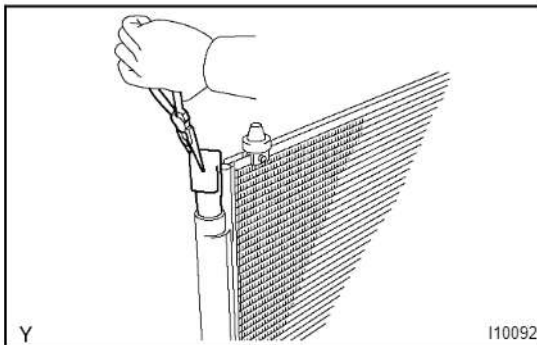
**Compressor oil: ND-OIL 8 or equivalent**



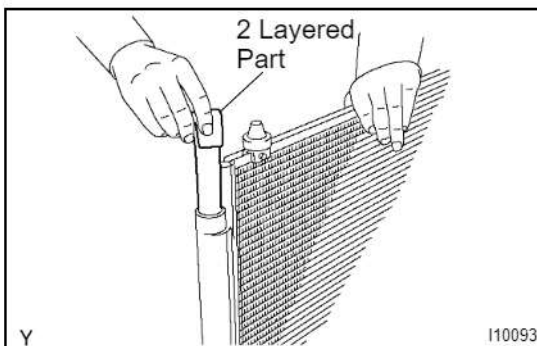
## REPLACEMENT

### REPLACE DRYER FROM MODULATOR

- (a) Using a hexagon wrench (10 mm, 0.39 in.), remove the cap from the modulator.
- (b) Remove the filter from the modulator.



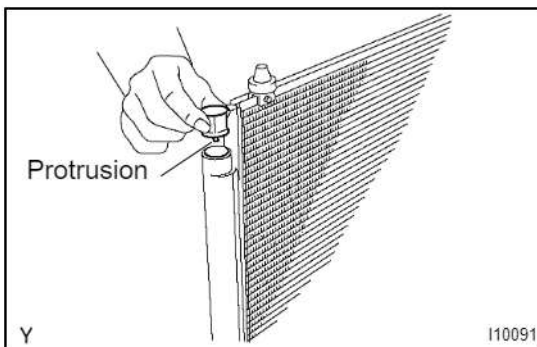
- (c) Using pliers, remove the dryer.



- (d) Insert a new dryer into the modulator.

#### NOTICE:

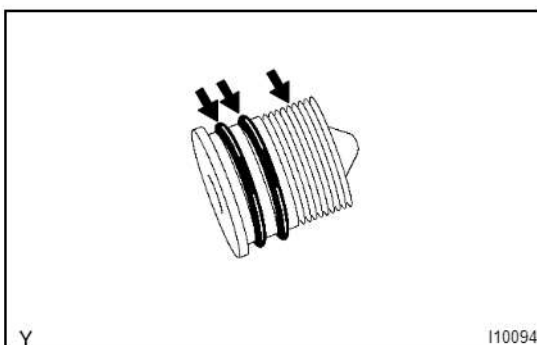
- Do not remove the dryer from a vinyl bag until inserting it into the modulator.
- Install the dryer with its 2 layered part faced upward to the modulator.



- (e) Insert the filter into the modulator.

#### NOTICE:

Install the filter with its protrusion faced downward to the modulator.



- (f) Install the cap to the modulator.
  - (1) Apply compressor oil to the o-rings and screw part of the cap.

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

- (2) Using a hexagon wrench (10 mm, 0.39 in.), install the caps.

**Torque: 12.3 N·m (125 kgf·cm, 9 ft·lbf)**

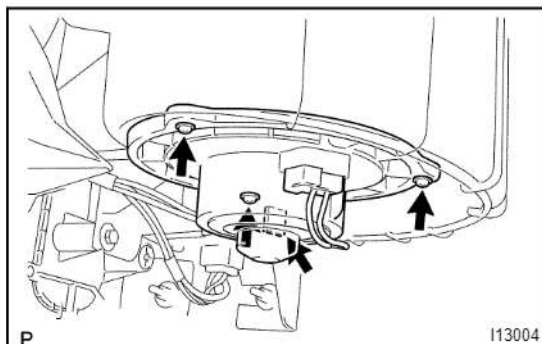
## INSTALLATION

Installation is in the reverse order of removal (See page AC-45).

## BLOWER MOTOR INSPECTION

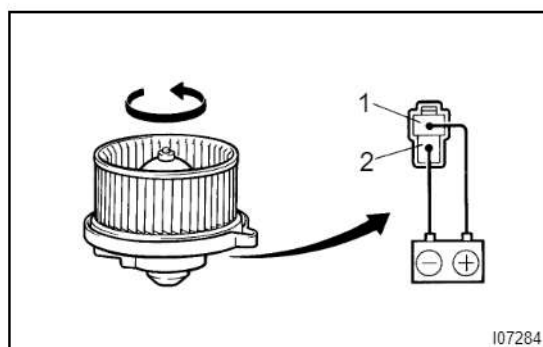
AC1GP-07

### 1. REMOVE GLOVE COMPARTMENT PARTS (See page BO-79)



### 2. REMOVE BLOWER MOTOR

- (a) Remove the wire harness clamp and disconnect the connector.
- (b) Remove the 3 screws and motor.



### 3. INSPECT BLOWER MOTOR OPERATION

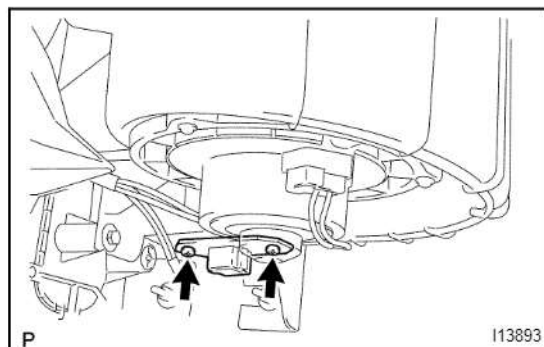
Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2, then check that the motor operations smoothly.

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

### 4. INSTALL BLOWER MOTOR

- (a) Install the motor and 3 screws.
- (b) Connect the connector and wire harness clamp.

### 5. INSTALL GLOVE COMPARTMENT PARTS (See page BO-85)

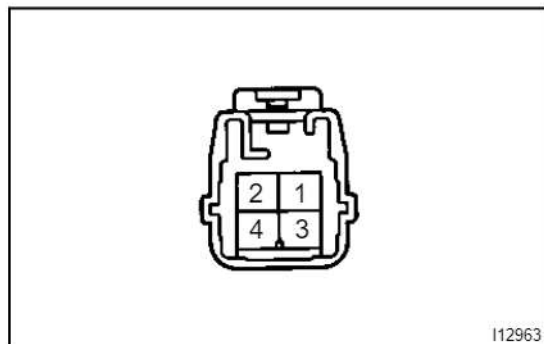


## BLOWER RESISTOR INSPECTION

AC1GQ-04

### 1. REMOVE BLOWER RESISTOR

- Disconnect the connector.
- Remove the 2 screws and the blower resistor.



### 2. INSPECT BLOWER RESISTOR CONTINUITY

| Condition | Tester connection | Specified condition |
|-----------|-------------------|---------------------|
| Constant  | 1 - 2 - 3 - 4     | Continuity          |

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

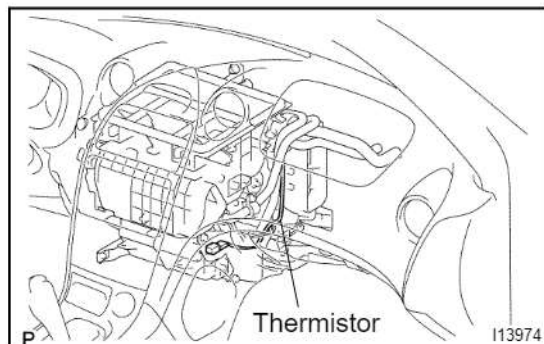
### 3. INSTALL BLOWER RESISTOR

- Install the blower resistor and 2 screws.
- Connect the connector.

# THERMISTOR INSPECTION

AC2117-02

## 1. REMOVE BLOWER UNIT (See page AC-31)

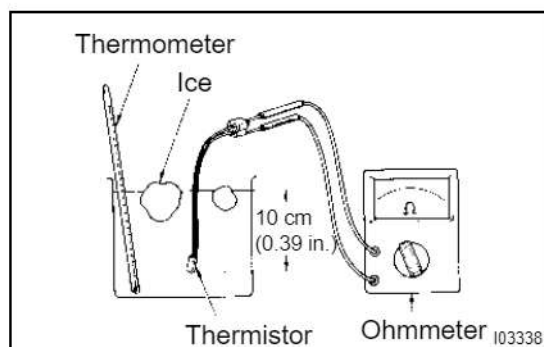


## 2. REMOVE THERMISTOR

- Disconnect the connector.
- Using a screwdriver, pull out the thermistor.

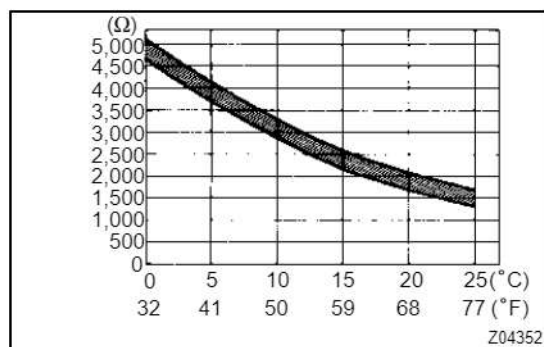
HINT:

Tape the screwdriver tip before use.



## 3. INSPECT THERMISTOR

- Place the thermistor in cold water, and while changing the temperature of water, measure resistance at the connector and at the same time, measure temperature of water with a thermometer.

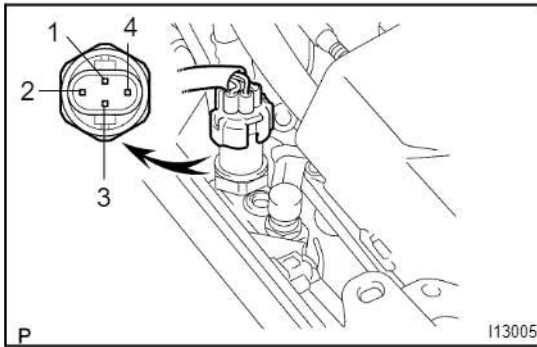


- Compare the 2 readings on the chart. If resistance is not as specified, replace the thermistor.

## 4. INSTALL THERMISTOR

- Install the thermistor to A/C unit.
- Connect the connector.

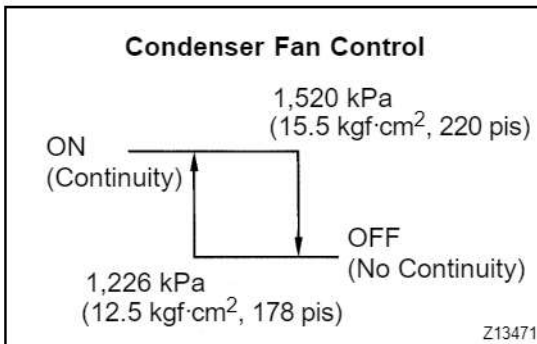
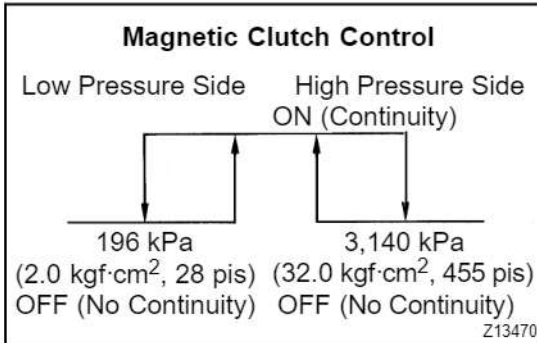
## 5. INSTALL BLOWER UNIT (See page AC-34)



## PRESSURE SWITCH ON-VEHICLE INSPECTION

AC1GU-10

1. SET ON MANIFOLD GAUGE SET  
(See page AC-19)
2. DISCONNECT CONNECTOR FROM PRESSURE SWITCH
3. RUN ENGINE AT APPROX. 1,500 RPM



4. **Magnetic clutch control:**  
**INSPECT PRESSURE SWITCH OPERATION:**
  - (a) Connect the positive (+) lead from the ohmmeter to terminal 4 and the negative (-) lead to terminal 1.
  - (b) Check continuity between terminals when refrigerant pressure is charged, as shown in the illustration.

If operation is not as specified, replace the pressure switch.
5. **Condenser fan control:**  
**INSPECT PRESSURE SWITCH OPERATION**
  - (a) Connect the positive (-) lead from the ohmmeter to terminal 2 and the negative (-) lead to terminal 3.
  - (b) Check continuity between terminals when refrigerant pressure is changed, as shown in the illustration.

If operation is not as specified, replace the pressure switch.
6. **STOP ENGINE AND SET OFF MANIFOLD GAUGE SET**
7. **CONNECT CONNECTOR TO PRESSURE SWITCH**

## REMOVAL

### 1. DISCHARGE REFRIGERANT FROM REFRIGERANT SYSTEM

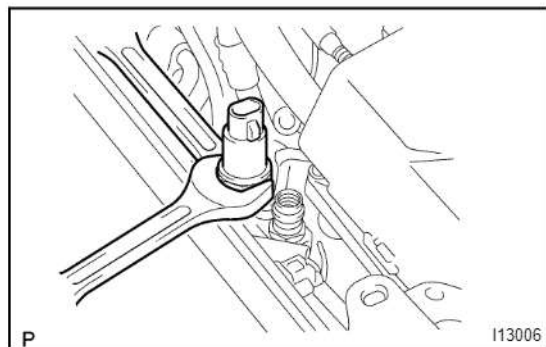
HINT:

At the time of installation, please refer to the following item.

Evacuate air from refrigeration system.

Charge system with refrigerant and inspect for leakage of refrigerant.

**Specified amount: 430 ± 30 g (15.17 ± 1.06 oz.)**



### 2. REMOVE PRESSURE SWITCH

- (a) Disconnect the connector.
- (b) Remove the pressure switch from the liquid tube.

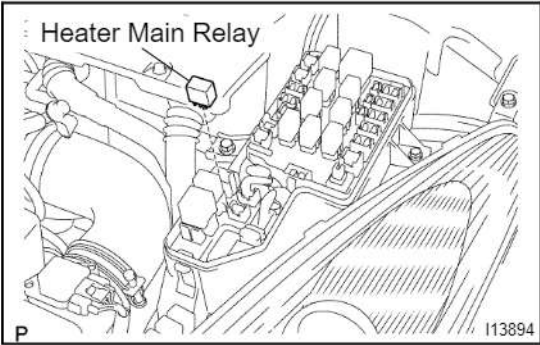
**Torque: 10 N·m (100 kgf·cm, 7 ft·lbf)**

HINT:

- Lock the switch mount on the tube with an open end wrench, being careful not to deform the tube, and remove the switch.
- At the time of installation, please refer to the following item.  
Lubricate a new O-ring with compressor oil and install them to the switch.

## INSTALLATION

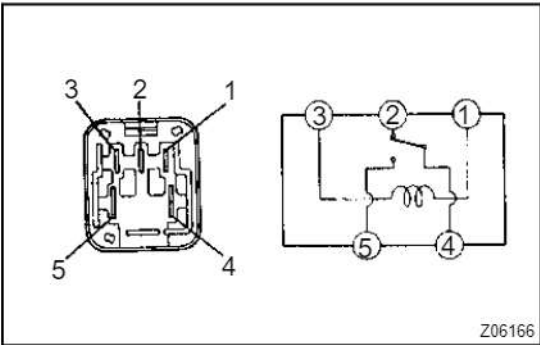
Installation is in the reverse order of removal (See page AC-52).



# HEATER MAIN RELAY INSPECTION

AC1GX-03

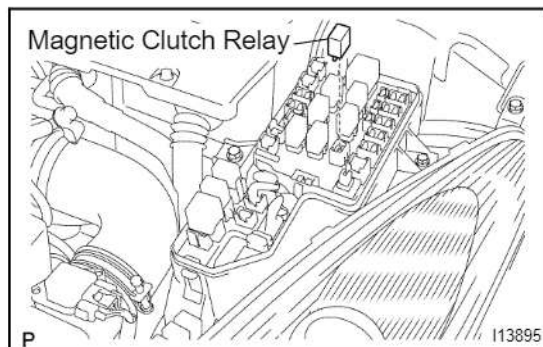
- 1. REMOVE HEATER MAIN RELAY FROM ENGINE ROOM RELAY BLOCK NO. 1



- 2. INSPECT HEATER MAIN RELAY CONTINUITY

| Condition                           | Tester connection | Specified condition |
|-------------------------------------|-------------------|---------------------|
| Constant                            | 1 - 3<br>2 - 4    | Continuity          |
| Apply B+ between terminals 1 and 3. | 4 - 5             | Continuity          |

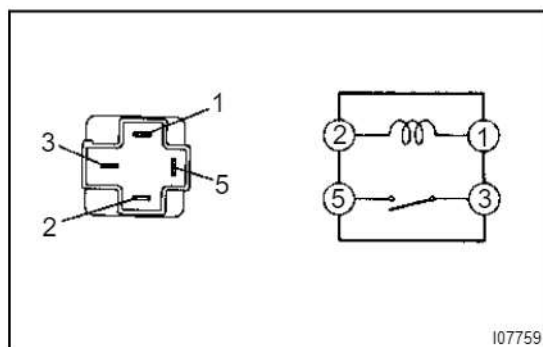
If continuity is not as specified, replace the relay.



## MAGNETIC CLUTCH RELAY INSPECTION

AC1GY-03

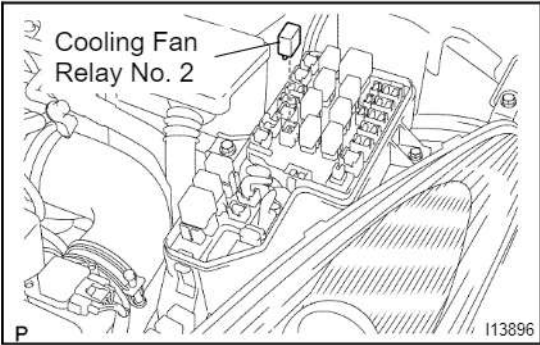
1. REMOVE MAGNETIC CLUTCH RELAY FROM ENGINE ROOM J/B



2. INSPECT MAGNETIC CLUTCH RELAY CONTINUITY

| Condition                           | Tester connection | Specified condition |
|-------------------------------------|-------------------|---------------------|
| Constant                            | 1 - 2             | Continuity          |
| Apply B+ between terminals 1 and 2. | 3 - 5             | Continuity          |

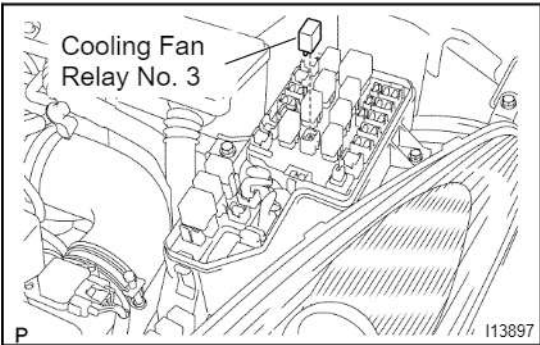
If continuity is not as specified, replace the relay.



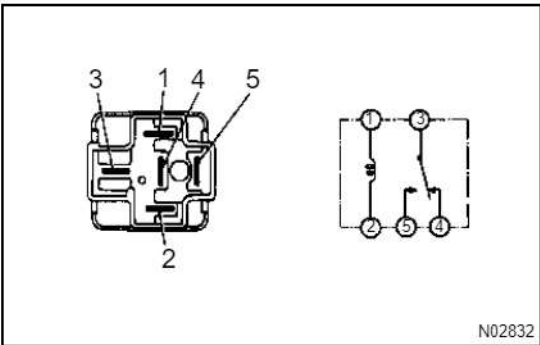
# COOLING FAN RELAY INSPECTION

AC21H8-03

1. REMOVE COOLING FAN RELAY NO. 2 FROM ENGINE ROOM J/B



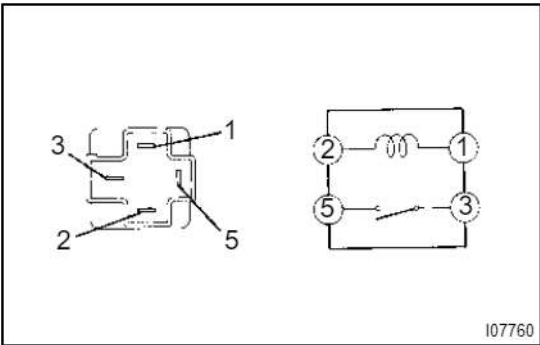
2. REMOVE COOLING FAN RELAY NO. 3 FROM ENGINE ROOM J/B



3. INSPECT COOLING FAN RELAY NO. 2 CONTINUITY

| Condition                           | Tester connection | Specified condition |
|-------------------------------------|-------------------|---------------------|
| Constant                            | 1 - 2<br>4 - 5    | Continuity          |
| Apply B+ between terminals 1 and 2. | 3 - 5             | Continuity          |

If continuity is not as specified, replace the relay.



4. INSPECT COOLING FAN RELAY NO. 3 CONTINUITY

| Condition                           | Tester connection | Specified condition |
|-------------------------------------|-------------------|---------------------|
| Constant                            | 1 - 2             | Continuity          |
| Apply B+ between terminals 1 and 2. | 3 - 5             | Continuity          |

If continuity is not as specified, replace the relay.

## CONDENSER FAN ON-VEHICLE INSPECTION

AC1H0-09

### 1. INSPECT CONDENSER FAN OPERATION

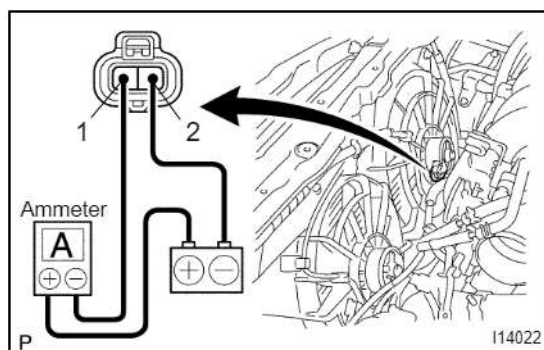
Inspect the fan operation at these conditions, as shown in the chart.

Test conditions:

- Start engine
- Blower speed control switch position "HI"
- Temperature control dial at "COOL" position
- Set on manifold gauge set
- A/C switch ON

| Condition                                                                           | Fan operation (Fan speed) |
|-------------------------------------------------------------------------------------|---------------------------|
| Engine coolant temperature<br>88 °C (190 °F) or below                               | Rotate (Low speed)        |
| Engine coolant temperature<br>98 °C (208 °F) or above                               | Rotate (High speed)       |
| Refrigerant pressure is less than<br>1,520 kPa (15.5 kgf/cm <sup>2</sup> , 220 psi) | Rotate (Low speed)        |
| Refrigerant pressure is 1,520 kPa<br>(15.5 kgf/cm <sup>2</sup> , 220 psi) or above  | Rotate (High speed)       |

If operation is not as specified, proceed to the next inspection.



### 2. INSPECT CONDENSER FAN MOTOR OPERATION

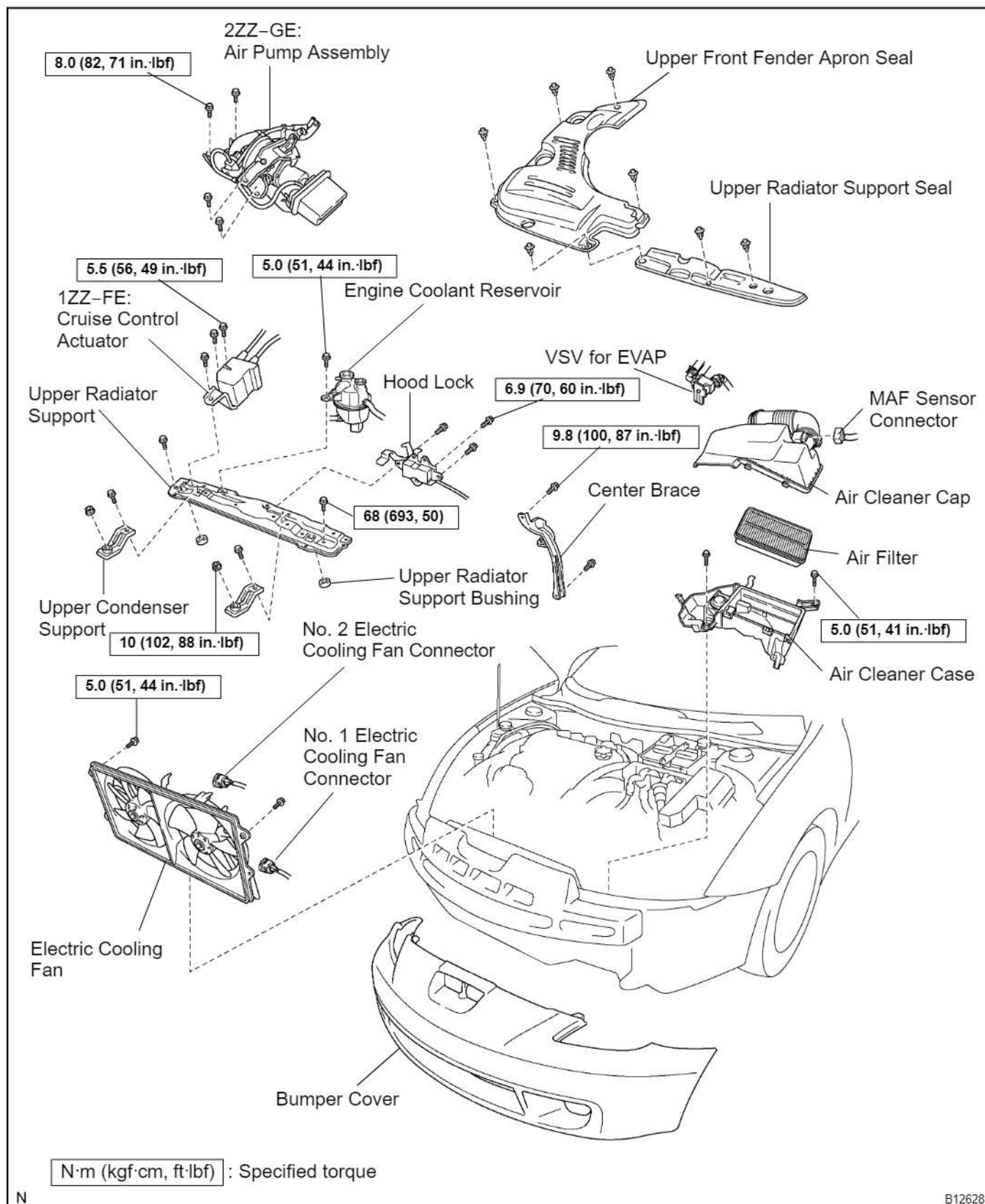
- Disconnect the condenser fan motor connector.
- Connect battery and ammeter.
- Check that the fan rotates smoothly, and then check the reading on the ammeter.

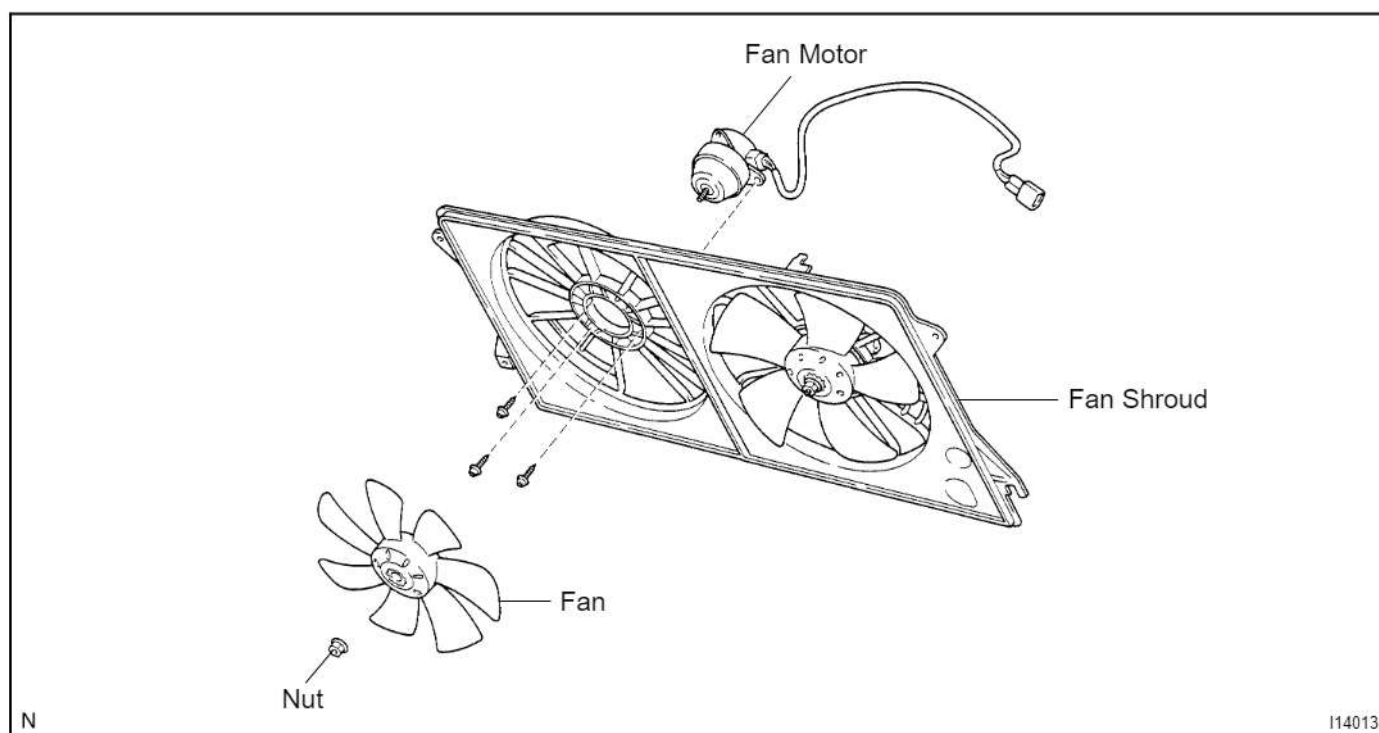
**Specified amperage: 9.2 – 11.0 A at 20°C (68°F)**

If operation is not as specified, replace the fan motor.

If operation is as specified, check the pressure switch, cooling fan relays and engine coolant temp. switch.

## COMPONENTS



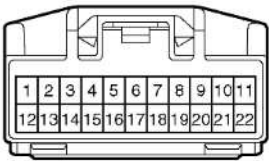


# AIR CONDITIONING AMPLIFIER ON-VEHICLE INSPECTION

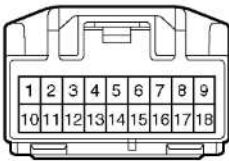
AC21HA-02

- 1. REMOVE COMBINATION MATER  
(See page BE-48)
- 2. REMOVE ECM
- 3. INSPECT A/C AMPLIFIER CIRCUIT
  - (a) Disconnect the connector from the combination mater and inspect the connector on the wire harness side, as shown in the chart below.  
Test condition:  
Turn ignition switch to ON

Wire harness side:



Connector "A"



Connector "B"

I14994

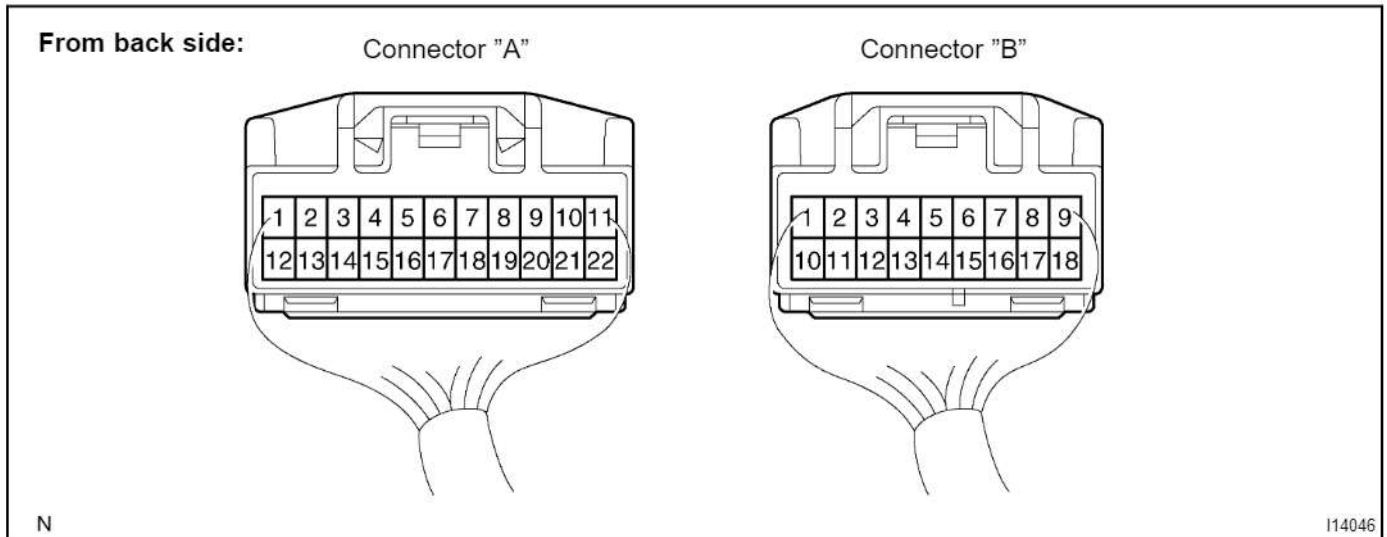
| Tester connection | Condition                             | Specified condition |
|-------------------|---------------------------------------|---------------------|
| A7 – Ground       | Constant                              | Continuity          |
| A6 – A18          | Evaporator temperature at 25°C (77°F) | 1.5 kΩ              |

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.

- (b) Connect the connector to combination meter and inspect wire harness side from the back side, as shown in the chart below.

Test condition:

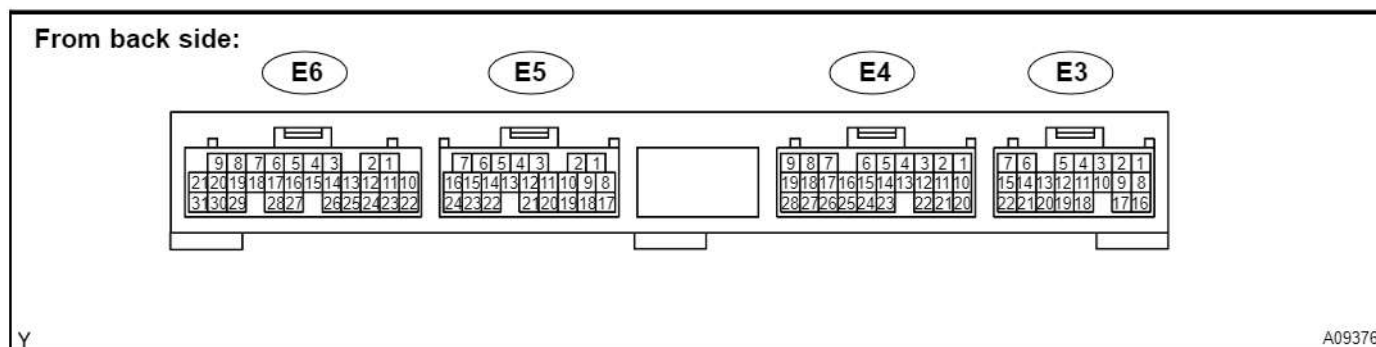
- Run engine at idle speed
- Set on manifold gauge set



| Tester connection | Condition                             | Specified condition      |
|-------------------|---------------------------------------|--------------------------|
| B10 – Ground      | A/C switch ON & Blower motor: operate | Below 1.0 V              |
|                   | A/C switch OFF                        | Battery positive voltage |
| B14 – Ground      | Mode selector: DEF.                   | Below 1.0 V              |
|                   | Mode Selector: Except DEF.            | Battery positive voltage |
| B15 – Ground      | A/C switch ON                         | Below 1.0 V              |
|                   | A/C switch OFF                        | Battery positive voltage |
| A13 – Ground      | Blower motor: Operate                 | Below 2.0 V              |
|                   | Blower motor: No operate              | Battery positive voltage |

If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.

- (c) Inspect the wire harness side connector of ECM from the back side, as shown in the chart below.



| Tester connection | Condition                                                     | Specified condition      |
|-------------------|---------------------------------------------------------------|--------------------------|
| E3-12 ↔ Ground    | Start engine. Magnetic clutch: ON                             | Below 1.0 V              |
|                   | Start engine. Magnetic clutch: OFF                            | Battery positive voltage |
| E4-28 ↔ Ground    | Start engine. A/C switch ON                                   | Battery positive voltage |
|                   | Start engine. A/C switch OFF                                  | No voltage               |
| E4-18 ↔ Ground    | Refrigerant pressure: 196 – 1,340 kPa                         | Battery positive voltage |
|                   | Refrigerant pressure:<br>less than 196 or more than 1,340 kPa | No voltage               |

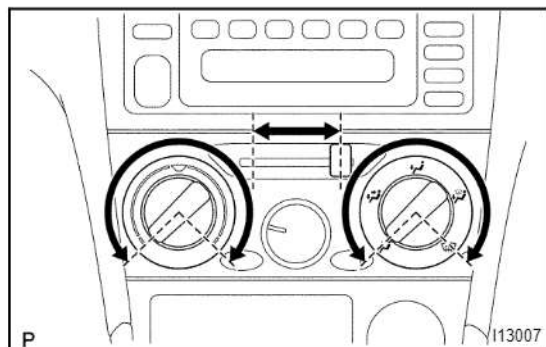
If circuit is as specified, try replacing the amplifier with a new one. If the circuit is not as specified, inspect the circuits connected to other parts.

## REMOVAL

1. REMOVE COMBINATION METER (See page BE-48)
2. REMOVE ECM

## INSTALLATION

Installation is in the reverse order of removal (See page AC-63).



## HEATER CONTROL ASSEMBLY ON-VEHICLE INSPECTION

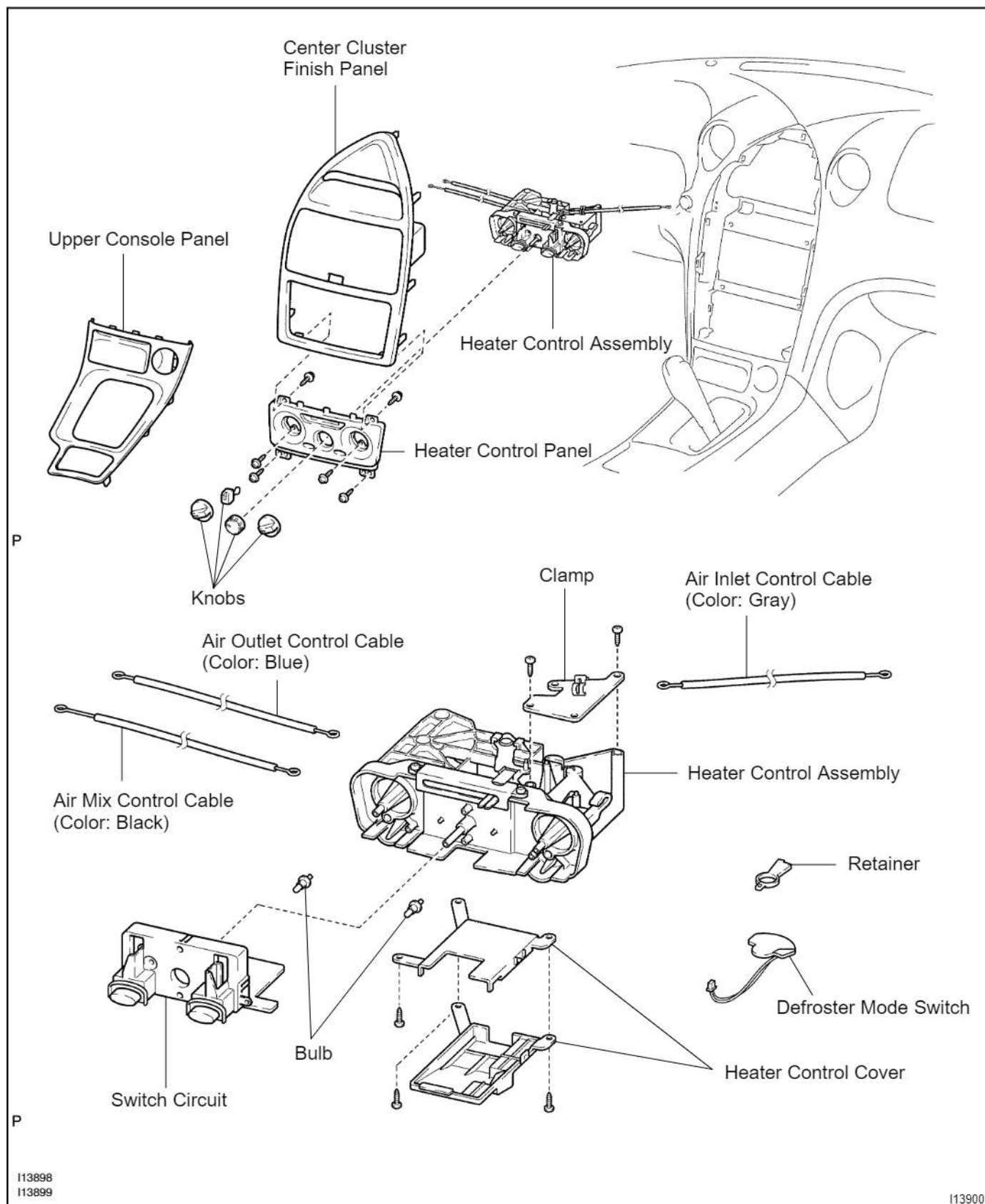
AC2HD-08

### INSPECT HEATER CONTROL DIALS OPERATION

Turn the control lever and 2 control dials left and right then check that click sound can be heard and recoil is felt.

If click sound can not be heard or recoil is felt, adjust the control cable or check control cable and heater control assembly.

## COMPONENTS

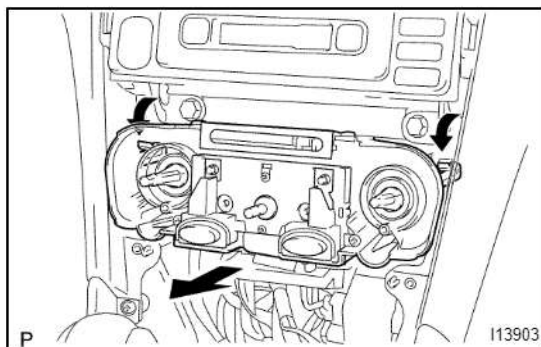
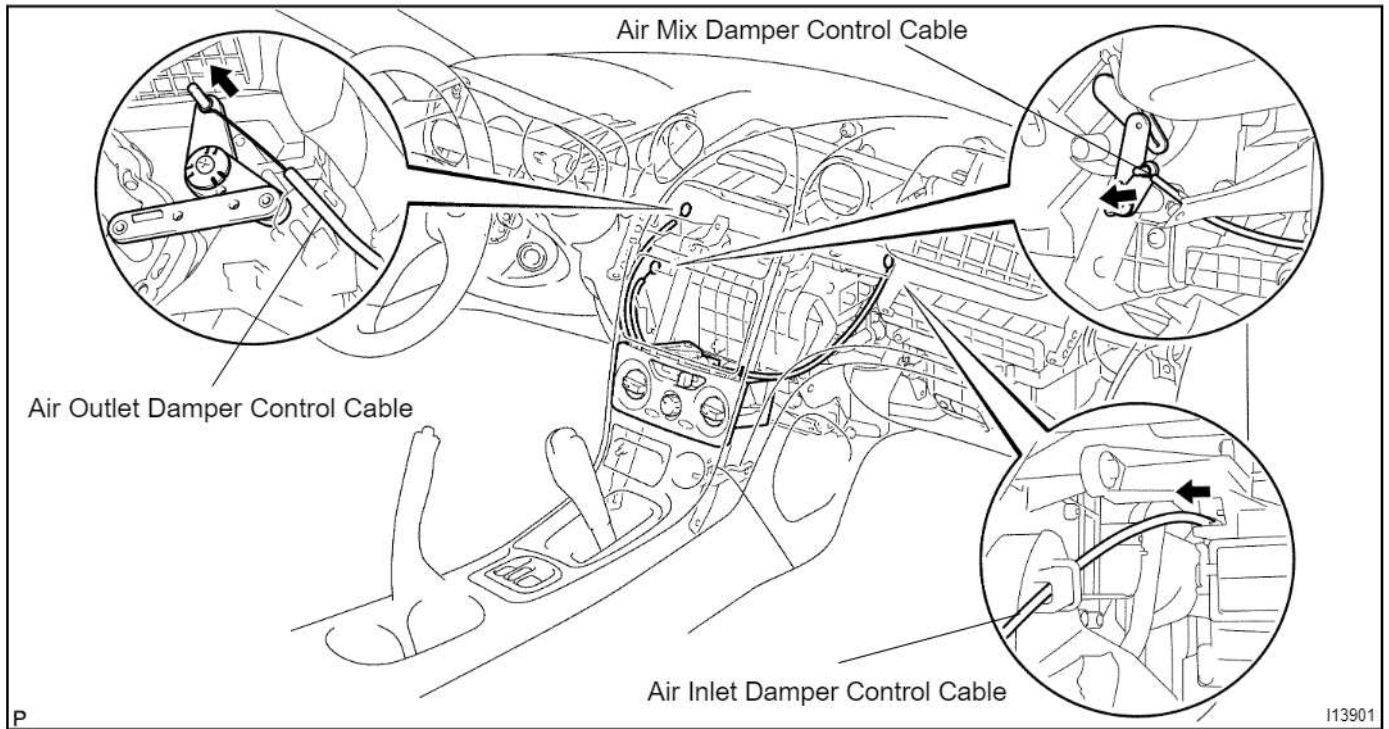


**REMOVAL**

1. **REMOVE CENTER CLUSTER FINISH PANEL**  
(See page BO-79)
2. **DISCONNECT HEATER CONTROL CABLES**

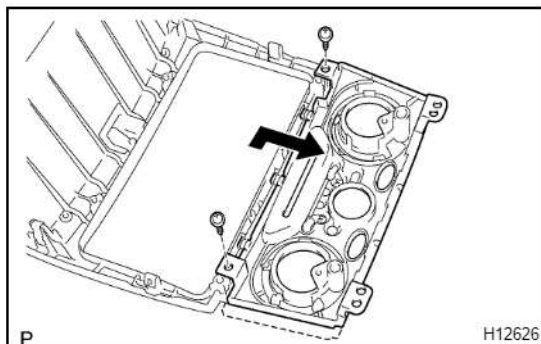
**NOTICE:**

When the air mix damper control cables is disconnected, should not bend the cable.



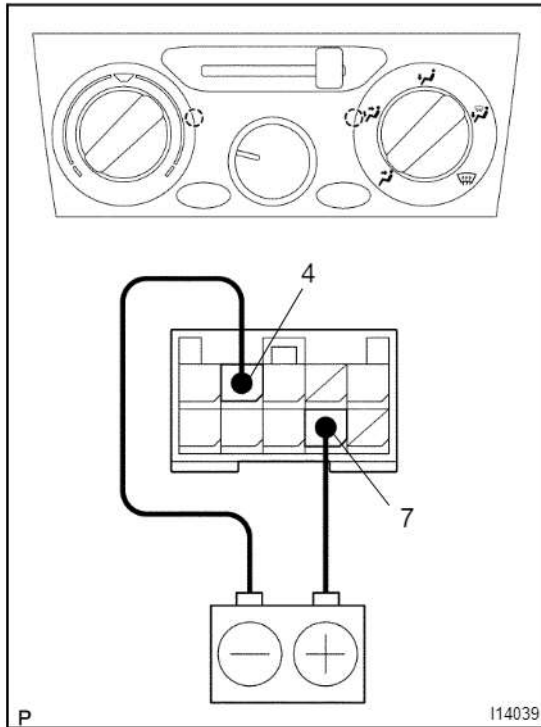
3. **REMOVE HEATER CONTROL ASSEMBLY**

Release the 2 claws and pull out the A/C control assembly, then disconnect the connector.



4. **REMOVE HEATER CONTROL PANEL**

- (a) Remove the 2 screws.
- (b) Slide and remove the A/C control assembly.

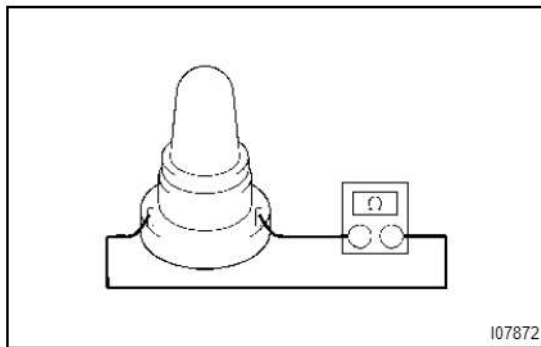


## INSPECTION

### 1. INSPECT ILLUMINATION OPERATION

Connect the positive (+) lead from the battery to terminal 7 and negative (-) lead to terminal 4 then check that the illuminations lights up.

If operation is not as specified, check the faulty bulb.

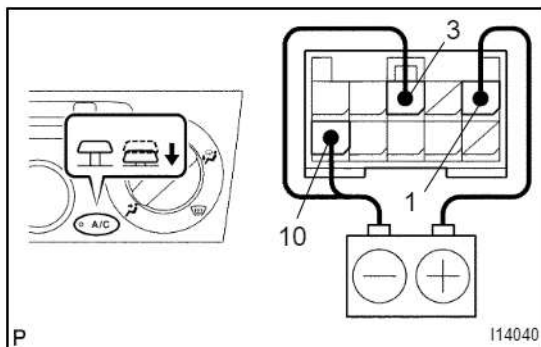


### 2. INSPECT BULB

Apply the tester as shown in the illustration to the test for continuity.

If continuity exists, replace the heater control.

If no continuity exists, replace the bulb.

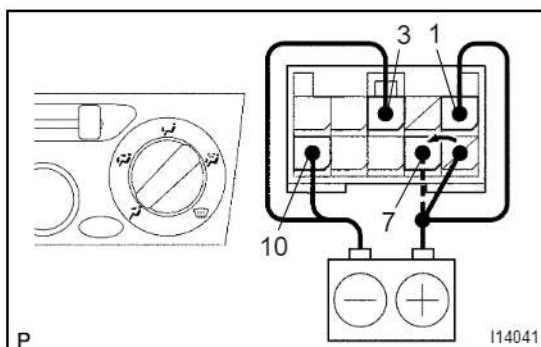


### 3. INSPECT A/C INDICATOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 3 and 10.

(b) Push the A/C button in and then check that the indicator lights up.

If operation is not as specified, replace the switch.

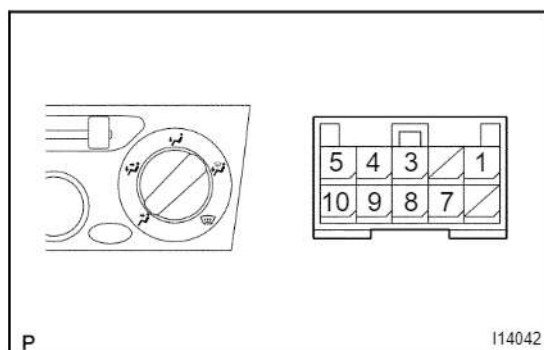


### 4. INSPECT DIMMING OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 3 and 10 while press the switch.

(b) Connect the positive (+) lead from battery to terminal 7 and then check that the indicator dims.

If operation is not as specified, replace the switch.



### 5. INSPECT A/C SWITCH CONTINUITY

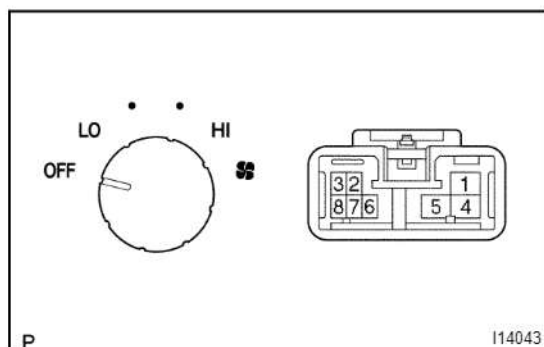
| Condition/ Circuit | Tester connection | Specified condition |
|--------------------|-------------------|---------------------|
| OFF                | -                 | No continuity       |
| ON                 | 9 - 3             | Continuity          |

Switch continuity:

If continuity is not as specified, replace the switch.

Illumination circuit:

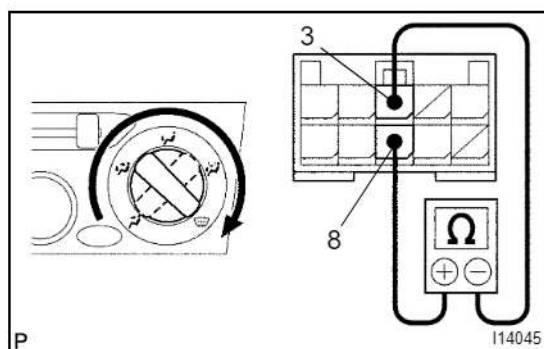
If continuity is not as specified, replace the bulb.



### 6. INSPECT BLOWER SPEED CONTROL SWITCH CONTINUITY

| Position/ Circuit | Tester connection | Specified condition |
|-------------------|-------------------|---------------------|
| OFF               | -                 | No continuity       |
| LO                | 1 - 8             | Continuity          |
| M1                | 1 - 6 - 8         | Continuity          |
| M2                | 1 - 5 - 8         | Continuity          |
| HI                | 1 - 4 - 8         | Continuity          |

If continuity is not as specified, replace the switch.

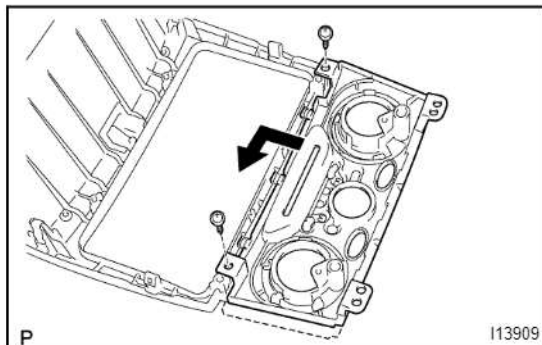


### 7. INSPECT DEFROSTER MODE SWITCH OPERATION

| Position/ Circuit | Tester connection | Specified condition |
|-------------------|-------------------|---------------------|
| OFF               | -                 | No continuity       |
| ON                | 3 - 8             | Continuity          |

If no continuity exists, replace the switch.

### 8. INSPECT REAR DEFOGGER SWITCH OPERATION (See page BE-58)



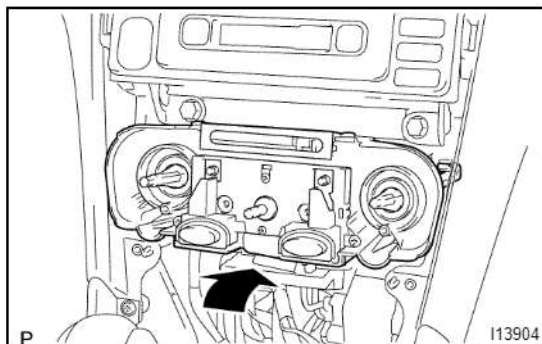
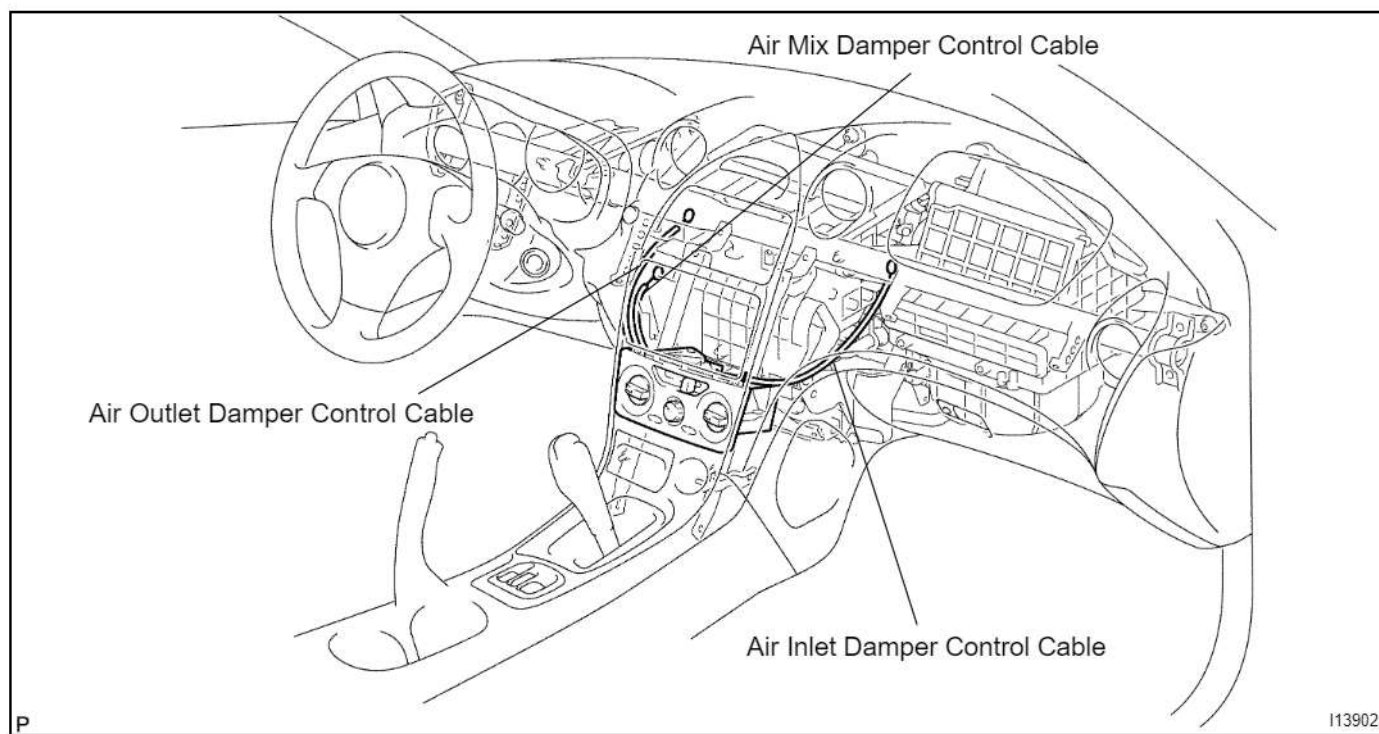
## INSTALLATION

### 1. INSTALL A/C CONTROL PANEL

Install the A/C control panel and 2 screws.

### 2. INSTALL A/C CONTROL ASSEMBLY

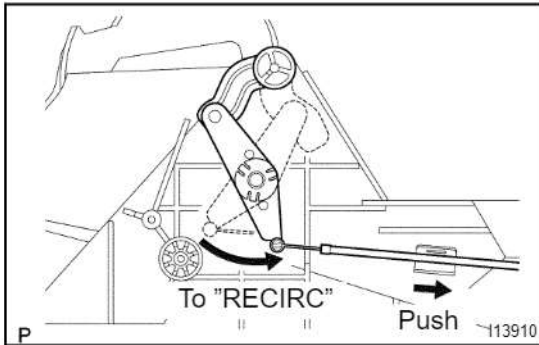
- Install the A/C control assembly temporarily.
- Pass through the A/C control cables as shown in the illustration.



- Fit the 2 claws of heater control assembly in the instrument panel hole.

**3. CONNECT A/C CONTROL CABLES**

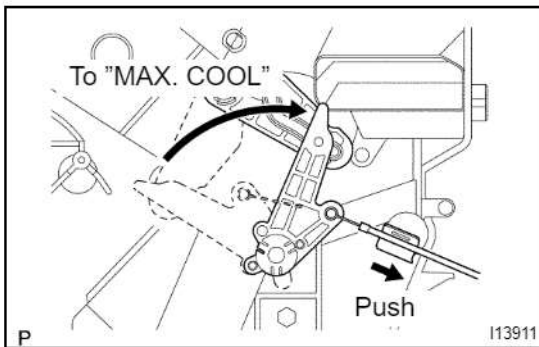
- (a) Set air inlet control lever to "RECIRC" position.
- (b) Set temperature control dial to "MAX. COOL" position.
- (c) Set mode control dial to "DEF" position.



- (d) Adjust air inlet damper control cable.  
Set air inlet damper control lever to "RECIRC" position and connect the inner cable to lever pin and clamp the outer cable.

**HINT:**

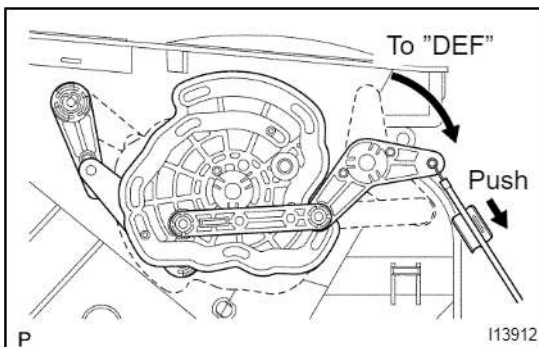
Lock the clamp while lightly pushing the outer cable to the direction shown by arrow in the illustration.



- (e) Adjust air mix damper control cable.  
Set air mix damper control lever to "MAX. COOL" position and connect the inner cable to lever pin and clamp the outer cable.

**HINT:**

Lock the clamp while lightly pushing the outer cable to the direction shown by arrow in the illustration.



- (f) Adjust air outlet damper control cable.  
Pull the air outlet damper control link to "DEF" position, connect the control cable and lock the clamp.

**HINT:**

Lock the clamp while lightly pushing the outer cable to the direction shown by arrow in the illustration.

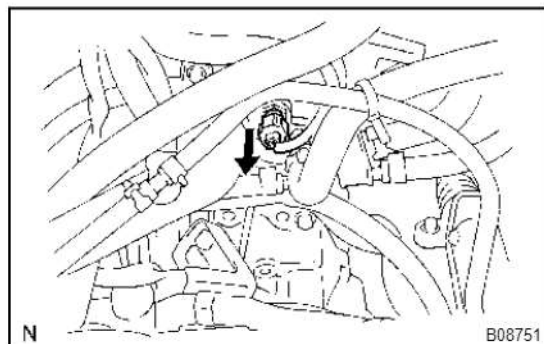
## ENGINE COOLANT TEMPERATURE (ECT) SWITCH INSPECTION

AC1HE-04

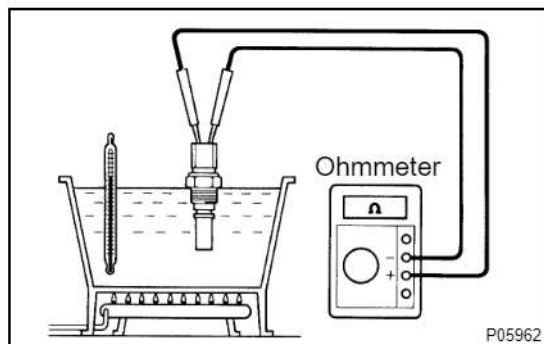
### 1. DRAIN ENGINE COOLANT FROM RADIATOR

HINT:

It is not necessary to drain out all the coolant.



### 2. REMOVE ECT SWITCH



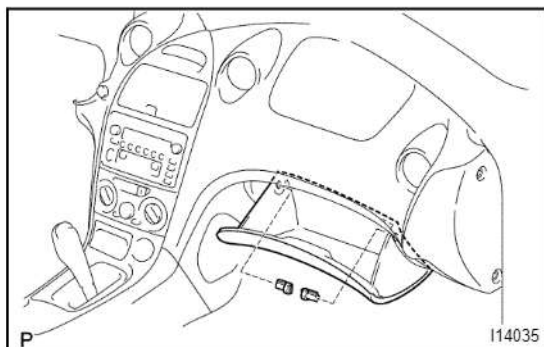
### 3. INSPECT SWITCH CONTINUITY

- Using an ohmmeter, check that no continuity exists between the terminals when the coolant temperature is above 90°C (194°F).
- Using an ohmmeter, check that continuity exists between the terminals when the coolant temperature is below 83°C (181°F).

If no continuity exists, replace the switch.

### 4. INSTALL ECT SWITCH

### 5. REFILL ENGINE COOLANT

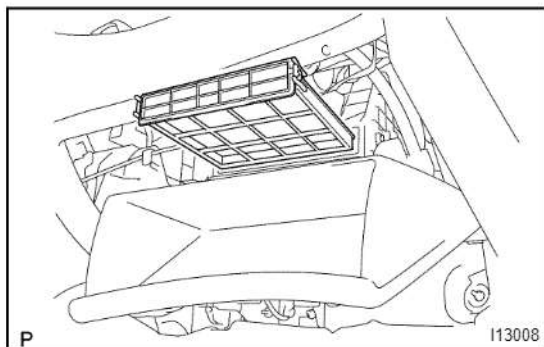


## AIR REFINER FILTER REPLACEMENT

AC21H1-05

### 1. REMOVE AIR REFINER FILTER

- (a) Remove the 2 pins in the glove box and open the glove box widely by pulling it down.



- (b) Pull out the filter case.
- (c) Remove the air refiner filter from the filter case.

### 2. INSTALL AIR REFINER FILTER

- (a) Install the air refiner filter to filter case.
- (b) Install the filter case.
- (c) Close the glove box and install the 2 pins to it.