

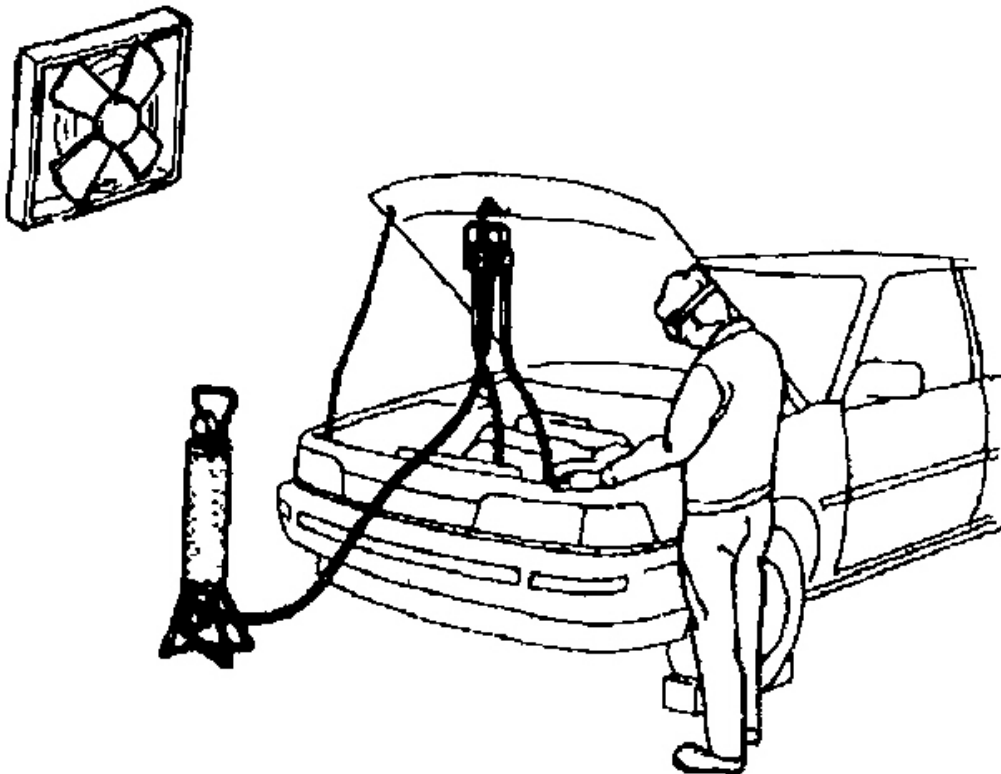
**2005 HVAC**

**Air Conditioning - RAV4**

**AIR CONDITIONING SYSTEM**

**PRECAUTION**

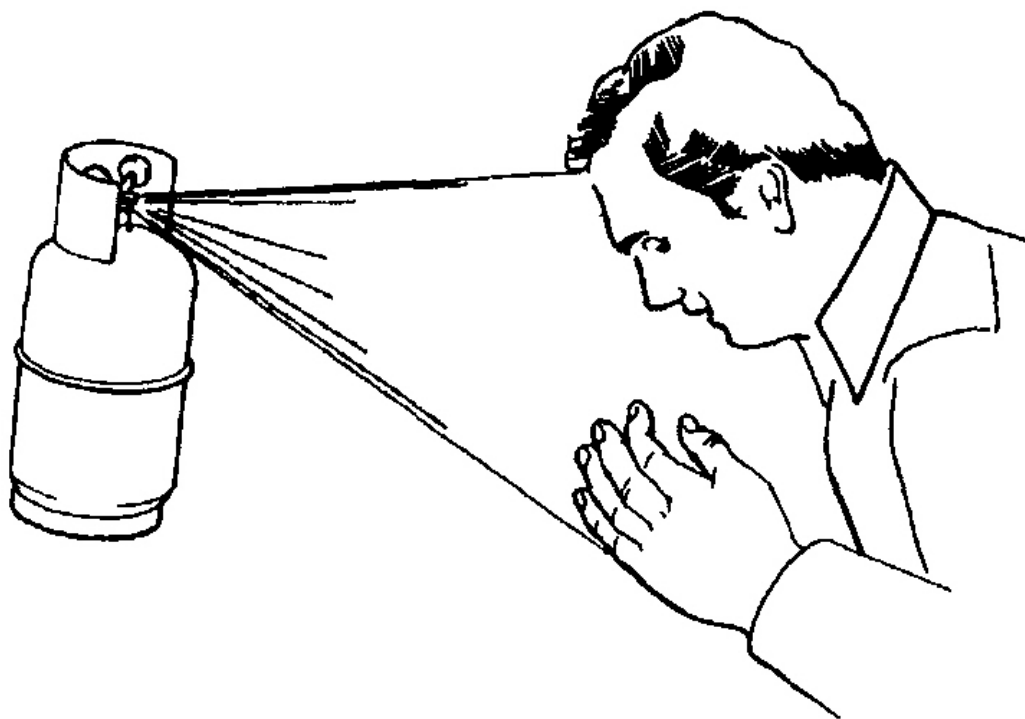
1. **DO NOT HANDLE REFRIGERANT IN AN ENCLOSED AREA**
2. **ALWAYS WEAR EYE PROTECTION**



**G02641312**

**Fig. 1: Precautions While Handling Refrigerant**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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



G02641313

**Fig. 2: Be Careful Not To Get Liquid Refrigerant In Your Eyes Or On Your Skin**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

- a. Wash your eyes or skin with much cool water.

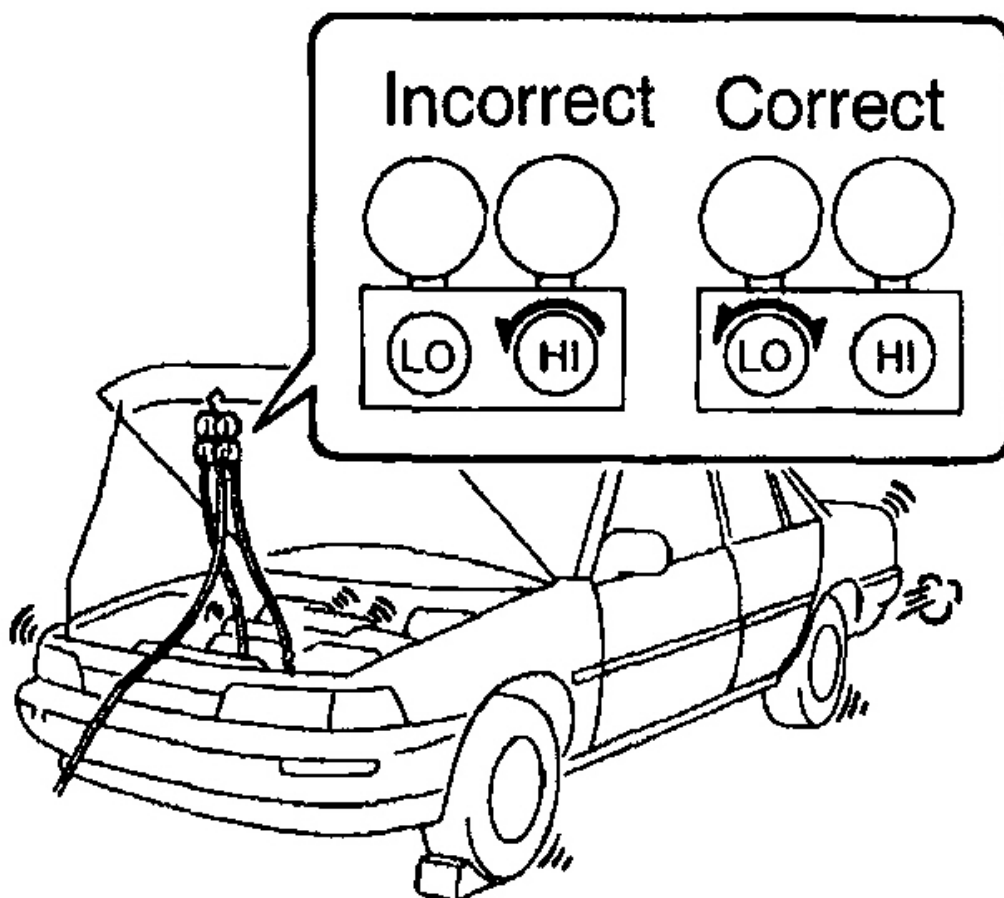
**CAUTION: Do not rub your eyes or skin.**

- b. Apply clean petroleum jelly to the skin.
- c. Go immediately to a hospital for professional treatment.
4. **NEVER HEAT CONTAINER OR EXPOSE IT TO OPEN FLAME**
5. **BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT**
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. Care should be taken to avoid this.

**7. DO NOT OPEN HIGH PRESSURE VALVE WHILE COMPRESSOR IS OPERATING**

If the high pressure valve is opened, refrigerant may flow in the reverse direction and cause the charging cylinder to rupture. Open and close the low pressure valve only.



G02641314

**Fig. 3: Identifying Correct Way Of Opening/Closing Valve**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**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 RAV4 is equipped with an Supplemental Restraint System (SRS) such as the driver and front passenger airbags. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing and leading to serious injury. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notices in the SRS section.

### ON-VEHICLE INSPECTION

#### 1. INSPECT REFRIGERANT VOLUME

Observe the sight glass on the liquid tube.

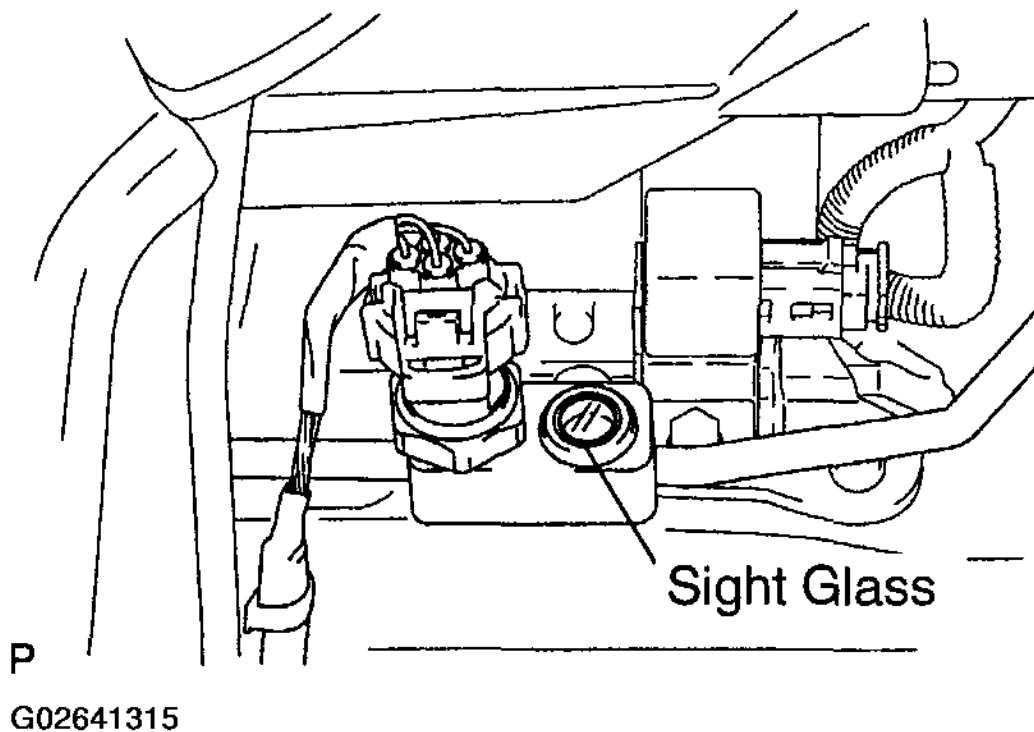


**Fig. 4: Inspecting Refrigerant Volume**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Test conditions:

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

- 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 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 to items 3 and 4                                                                                                |
| 3    | No temperature difference between compressor inlet and outlet                            | Empty or nearly empty        | 1. Check for gas leakage with gas leak detector and repair if necessary<br>2. Add refrigerant until bubbles disappear |
| 4    | Temperature between compressor inlet and outlet is noticeably different                  | Sufficient 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              | Sufficient                   | —                                                                                                                     |

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

G02641316

**Fig. 5: Refrigerant Volume, Symptom & Remedy Chart**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET

Using this method, trouble can be located by a manifold gauge set. Read the manifold gauge pressure when these conditions are met.

### 3. Test conditions:

- Temperature at the air inlet with the switch at "RECIRC" is between 30 to 35°C (86 to 95°F)
- Engine running at 1500 RPM
- Blower speed control switch at "HI".
- Temperature control dial at "COOL".

HINT:

Gauge indications may vary slightly due to ambient temperature conditions.

1. Normally functioning refrigeration system:

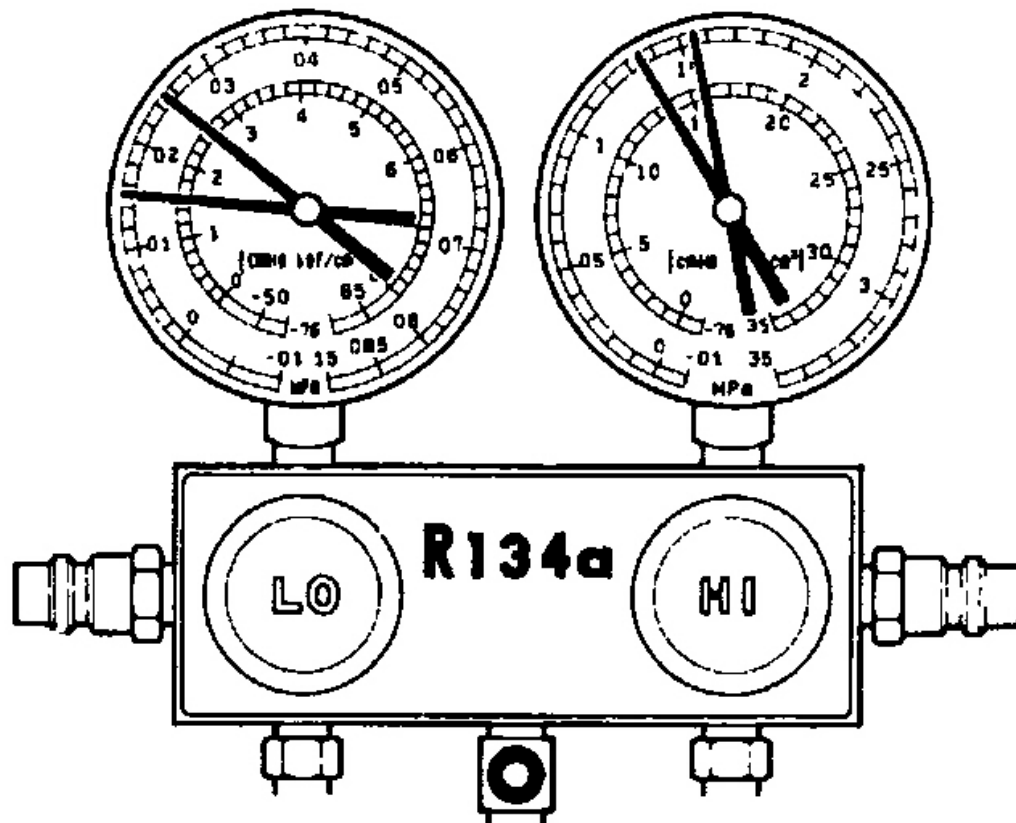
**Gauge reading:**

**Low pressure side:**

0.15 - 0.25 MPa (1.5 - 2.5 kgf/cm<sup>2</sup> )

High pressure side:

1.37 - 1.57 MPa (14 - 16 kgf/cm<sup>2</sup> )

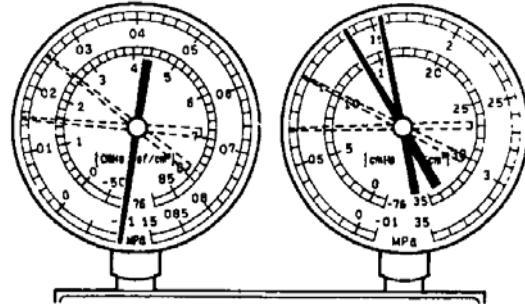


G02641317

**Fig. 6: Identifying Normal Functioning Refrigeration System**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Moisture present in refrigeration system:

Condition : Periodically cools and then fails to cool



G02641318

**Fig. 7: Inspecting Refrigerant Pressure With Manifold Gauge Set (Moisture Present In Refrigeration System)**

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

| Symptom in refrigeration system                                                                | Probable cause                                                                                                                                            | Diagnosis                                                                                                                                                                                             | Remedy                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| During operation, pressure on low pressure side sometimes become a vacuum and sometimes normal | Moisture entered in refrigeration system freezes at expansion valve orifice and temporarily stops cycle, but normal state is restored after the ice melts | <ul style="list-style-type: none"> <li>• Drier in oversaturated state</li> <li>• Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant</li> </ul> | <ol 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> </ol> |

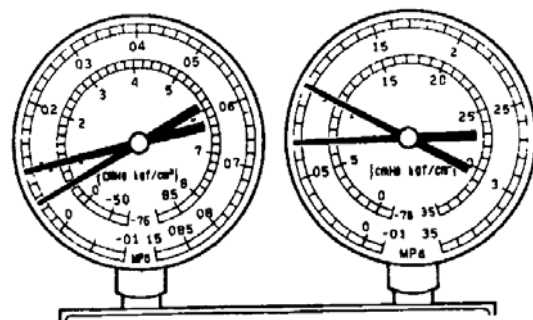
G02641319

**Fig. 8: Symptom Refrigerant System Diagnosis Table**

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

### 3. Insufficient cooling

Condition: Insufficient cooling



G02641320

## 2005 Toyota RAV4

2005 HVAC Air Conditioning - RAV4

**Fig. 9: Inspecting Refrigerant Pressure With Manifold Gauge Set (Insufficient Cooling)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

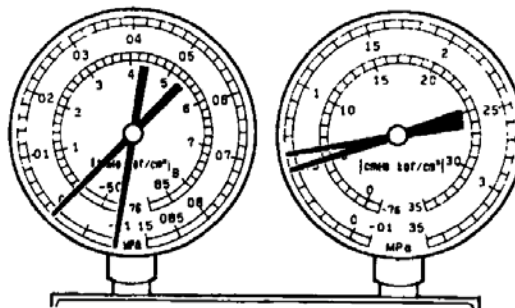
| Symptom in refrigeration system                                                                                                                                                                  | Probable cause                                     | Diagnosis                                                                                                          | 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 places in refrigeration system | <ul style="list-style-type: none"><li>• Insufficient refrigerant in system</li><li>• Refrigerant leaking</li></ul> | <ol style="list-style-type: none"><li>1. Check for gas leakage with gas leak detector and repair if necessary</li><li>2. Charge proper amount of refrigerant</li><li>3. If indicated pressure value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak</li></ol> |

G02641321

**Fig. 10: Insufficient Cooling Diagnosis Table**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Poor circulation of refrigerant

Condition: Insufficient cooling



G02641322

**Fig. 11: Inspecting Refrigerant Pressure With Manifold Gauge Set (Poor Circulation Of Refrigerant)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

| Symptom 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 | Modulator clogged | Replace condenser |

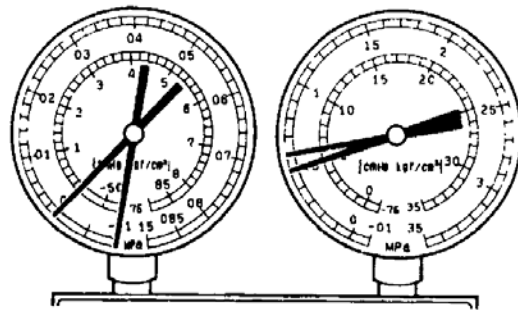
G02641323

**Fig. 12: Poor Circulation Diagnosis Table**

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

5. Refrigerant does not circulate

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



G02641324

**Fig. 13: Inspecting Refrigerant Pressure With Manifold Gauge Set (Refrigerant Does Not Circulate)**

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

| Symptom 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> |

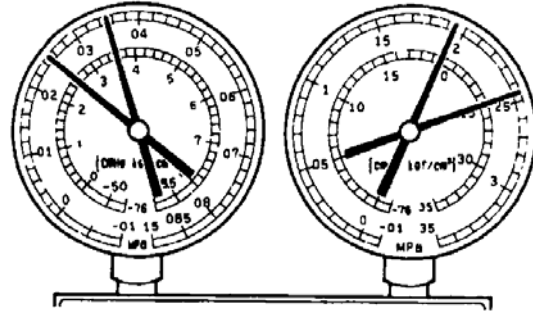
G02641325

**Fig. 14: Refrigerant Does Not Circulate Diagnosis Table**

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

6. Refrigerant overcharged or insufficient cooling of condenser

Condition: Insufficient cooling



G02641326

**Fig. 15: Inspecting Refrigerant Pressure With Manifold Gauge Set (Refrigerant Overcharged Or Insufficient Cooling Of Condenser)**

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

| Symptom 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 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 refrigerant</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</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. Charge proper amount of refrigerant.</li> </ol> |

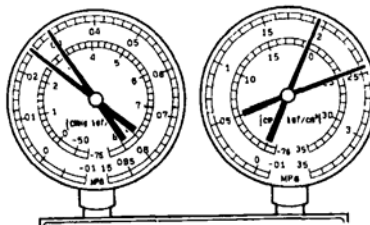
G02641327

**Fig. 16: Over Charged Or Insufficient Cooling Of Condenser Diagnosis Table**

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

## 7. Air present in refrigeration system

Condition: Insufficient cooling



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

G02641328

**Fig. 17: Inspecting Refrigerant Pressure With Manifold Gauge Set (Air Present In Refrigeration System)**

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

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

| Symptom 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>• Low pressure piping hot to 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> | <ol style="list-style-type: none"><li>1. Check to see if compressor oil is dirty or insufficient</li><li>2. Evacuate air and charge new refrigerant</li></ol> |

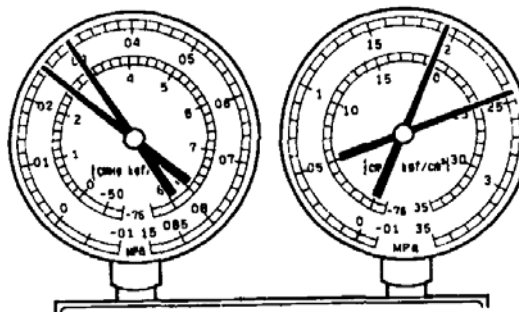
G02641329

**Fig. 18: Air Present Diagnosis Table**

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

#### 8. Expansion valve improperly

Condition: Insufficient cooling



G02641330

**Fig. 19: Inspecting Refrigerant Pressure With Manifold Gauge Set (Expansion Valve Improperly)**

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

| Symptom 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> | <p>Check expansion valve</p> <p>Replace if defective</p> |

G02641331

**Fig. 20: Expansion Valve Diagnosis Table**

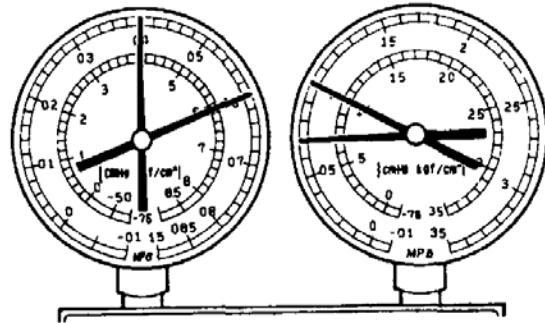
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 9. Defective compression compressor

## 2005 Toyota RAV4

2005 HVAC Air Conditioning - RAV4

Condition : Does not cool



G02641332

**Fig. 21: Inspecting Refrigerant Pressure With Manifold Gauge Set (Defective Compression Compressor)**

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

| Symptom 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 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 |

G02641333

**Fig. 22: Defective Compressor Diagnosis Table**

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

#### 4. INSPECT IDLE-UP SPEED

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

#### **MAGNETIC CLUTCH CONDITION IDLE-UP SPEED**

| Magnetic clutch condition   | Idle-up speed  |
|-----------------------------|----------------|
| Magnetic clutch not engaged | 700 +/- 20 rpm |
| Magnetic clutch engaged     | 750 +/- 20 rpm |

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

## **5. INSPECT FOR LEAKAGE OF REFRIGERANT**

- a. Inspect for leakage of refrigerant when these conditions are met.:
  - 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 some refrigerant remains in the refrigeration system.

When compressor is OFF: approx. 392 to 588 kPa (4 to 6 kgf/cm<sup>2</sup> , 57 to 85 psi)

- b. Bring the gas leak detector close to the drain hose before performing the test.

### **HINT:**

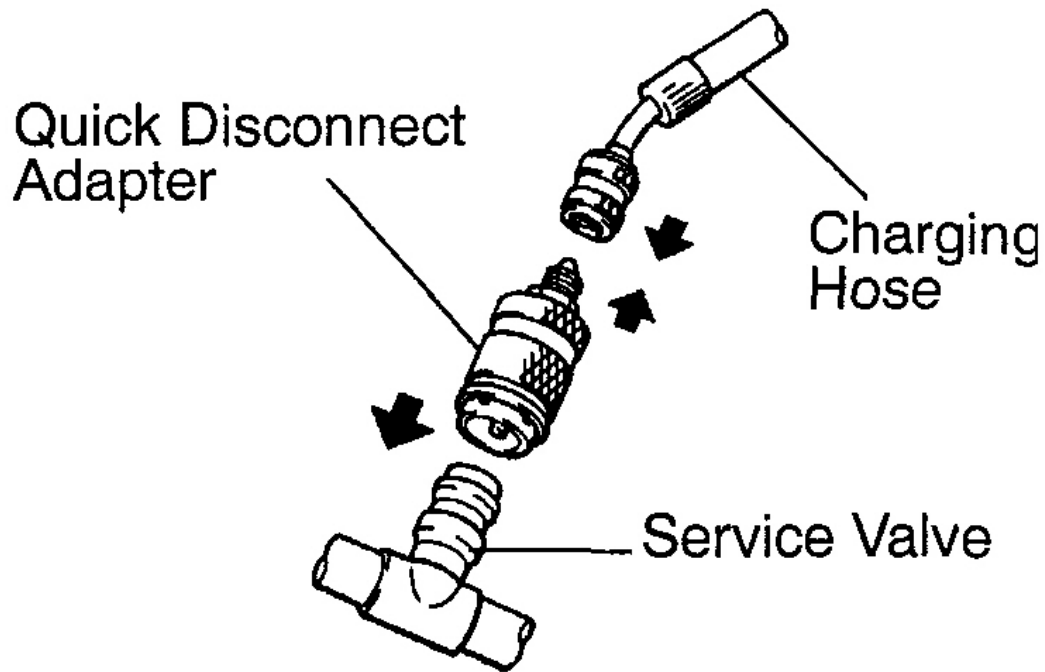
- After the blower motor stopped, leave the cooling unit for more than 15 minutes.
- Expose the gas leak detector sensor under the drain hose.
- When bringing the gas leak detector close to the drain hose, make sure that the gas leak detector does not react to the volatile gases.

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.

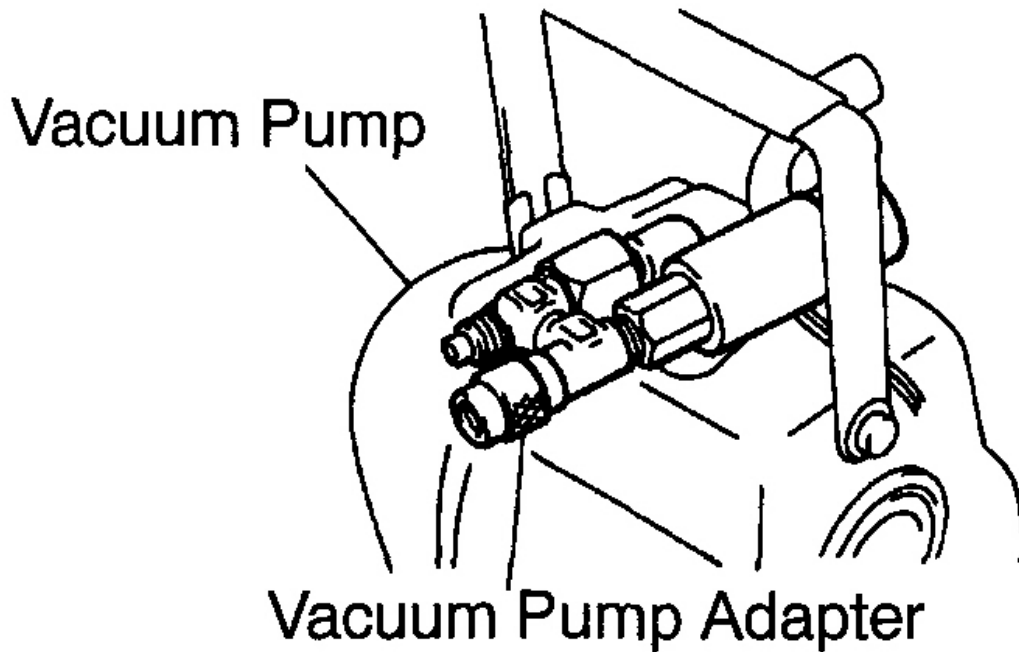


G02641334

**Fig. 23: Connecting Quick Disconnect Adapter To Charging Hoses**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**4. EVACUATE AIR FROM REFRIGERATION SYSTEM**

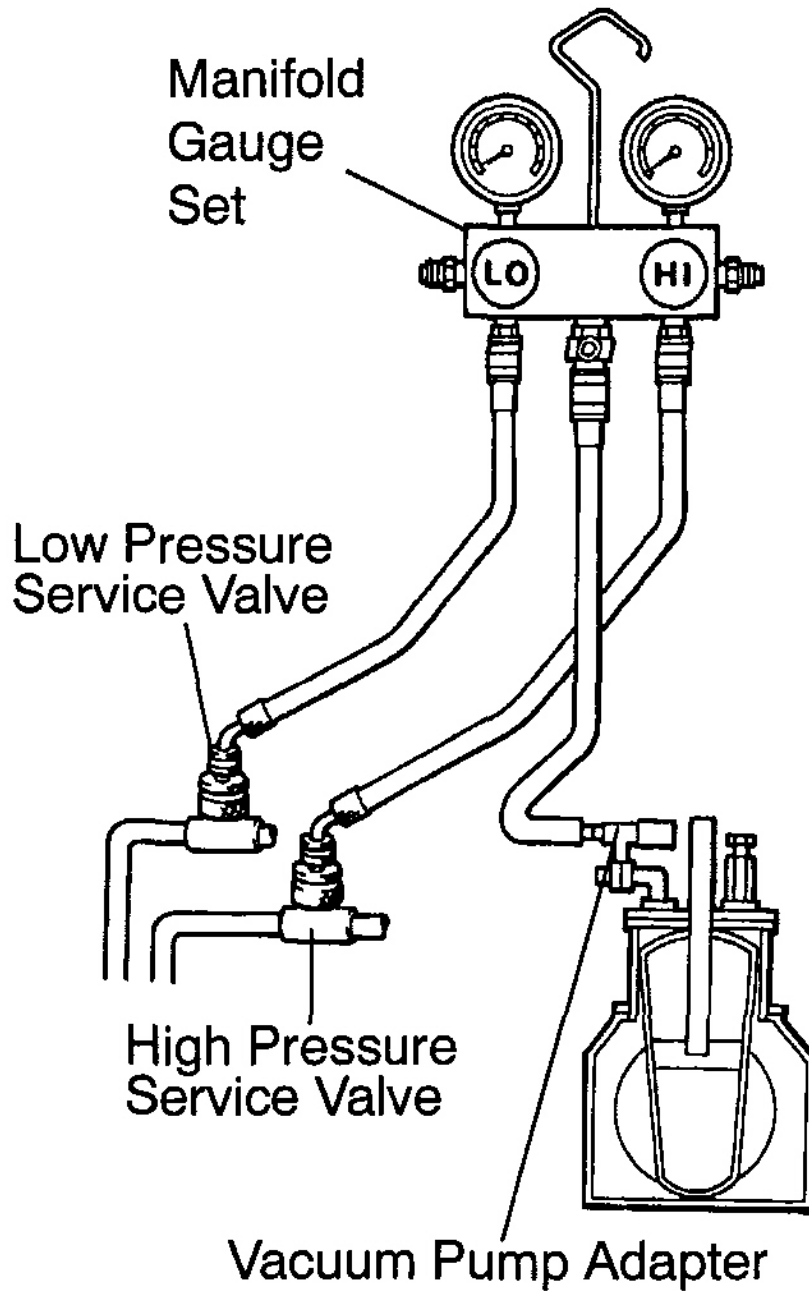
- a. Connect the vacuum pump adapter to the vacuum pump.



G02641335

**Fig. 24: Connecting Vacuum Pump Adapter To Vacuum Pump**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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.



G02641336

**Fig. 25: Connecting Center Hose Of Manifold Gauge Set To Vacuum Pump Adapter & Opening Valves**

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

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

- d. After 10 minutes or more, check that the low pressure gauge indicates 750 mmHg (30 in. Hg) or more.

HINT:

If the reading is 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.

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

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

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

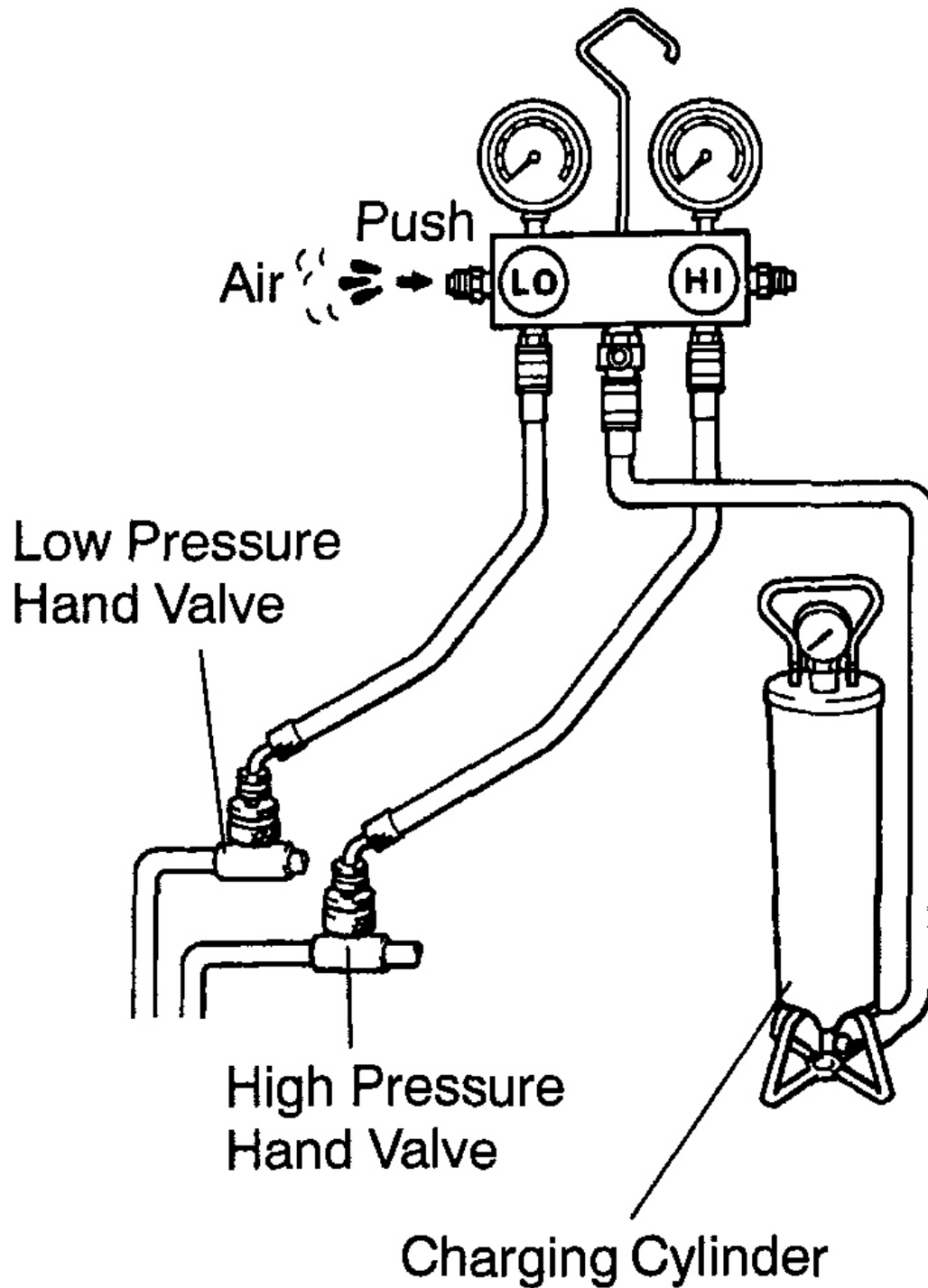


**Fig. 26: Installing Charging Cylinder**

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

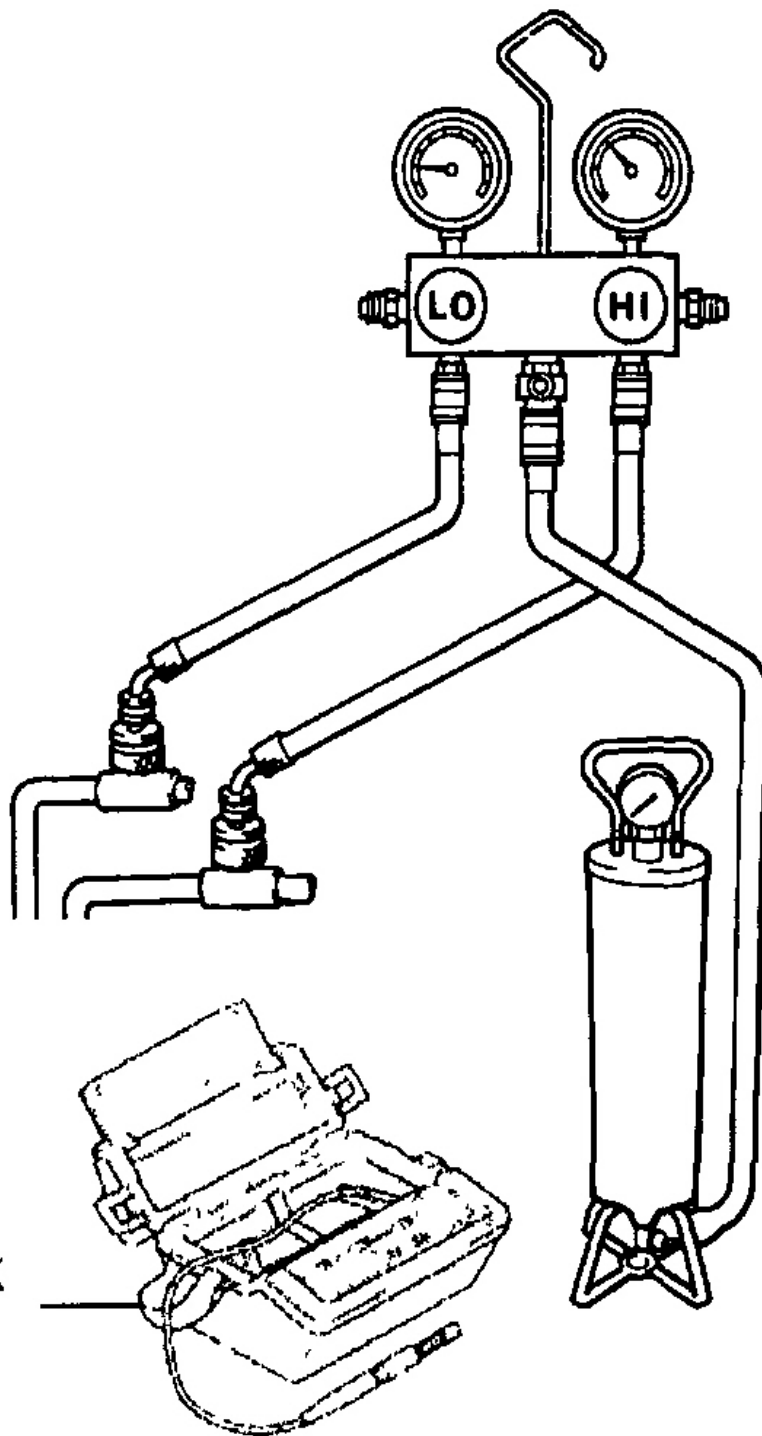
**2. INSPECT REFRIGERATION SYSTEM FOR LEAKS**

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

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

## 2005 Toyota RAV4

2005 HVAC Air Conditioning - RAV4



Gas Leak  
Detector

G02641338

**Fig. 27: Inspecting Refrigeration System For Leaks**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### **3. CHARGE REFRIGERANT INTO REFRIGERANT SYSTEM**

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

**CAUTION:**

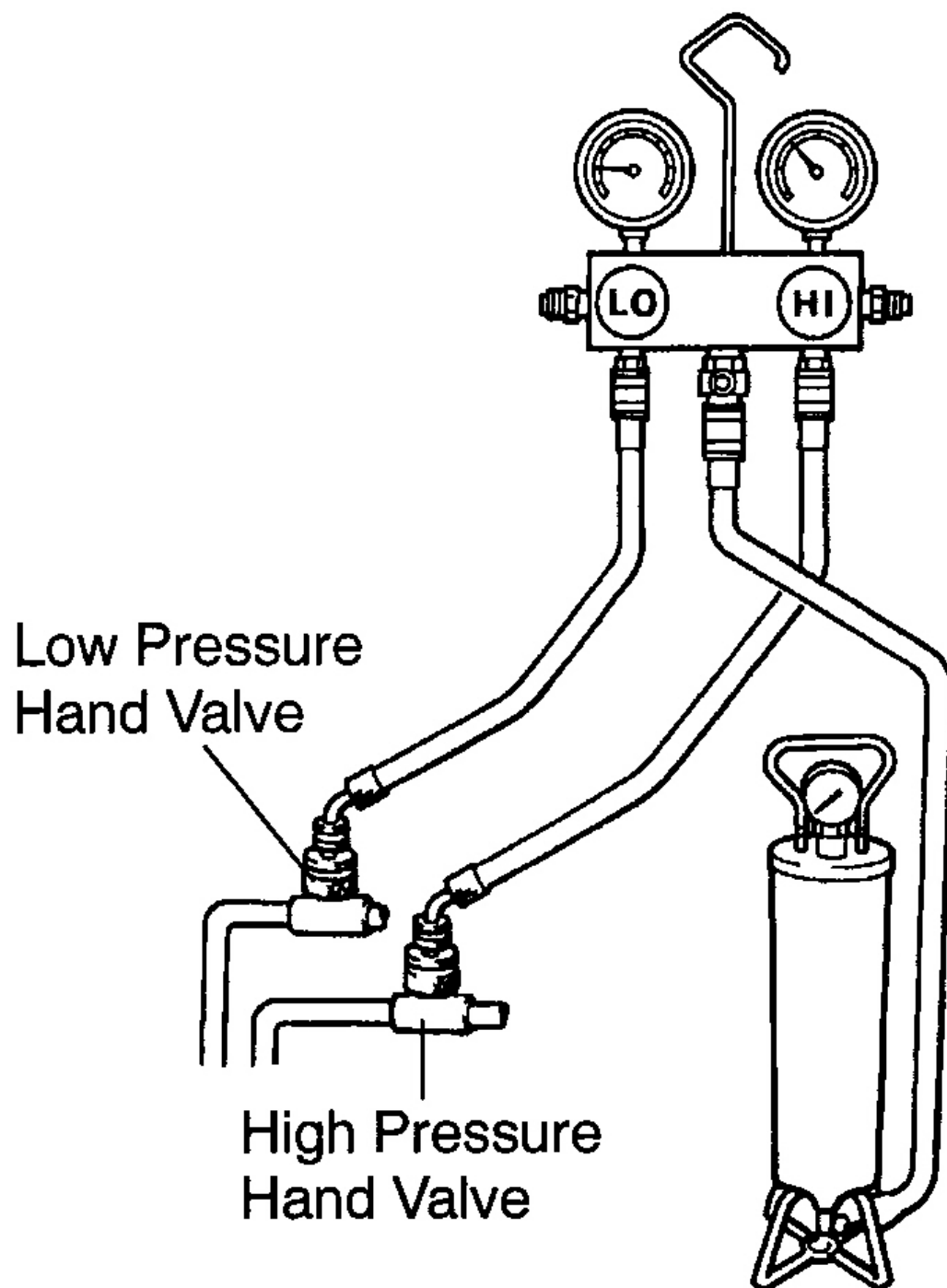
- **Never run the engine when charging the system through the high pressure service valve.**
- **Do not open the low pressure hand valve when the system is being charged with liquid refrigerant.**

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



G02641339

**Fig. 28: Identifying Low And High-Pressure Hand Valves**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**CAUTION:**

- Do not open the high pressure hand valve.
  - After charging the refrigerant, turn the A/C switch ON and run the engine at 1,800 RPM or less for 1 minute or more (Do not depress the accelerator pedal while the A/C switch is ON, before performing this task).
- d. Charge refrigerant until bubbles disappear and check the pressure on the gauge through the sight glass.
- e. Replenish refrigerant to be 100 +/- 50 g after bubbles disappear.

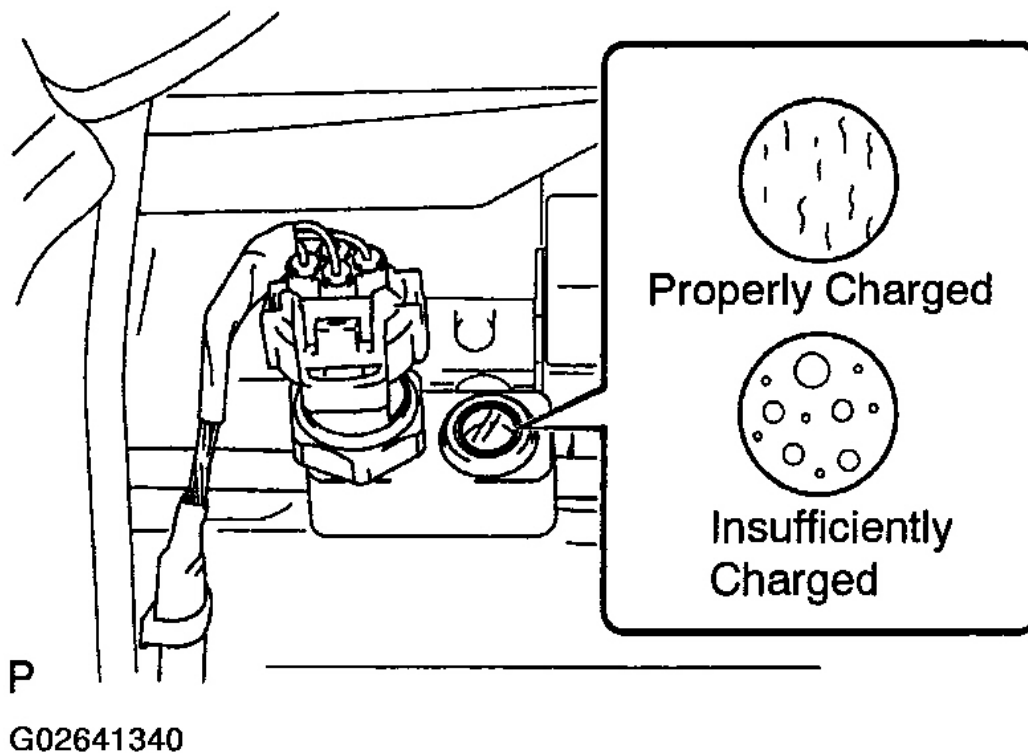
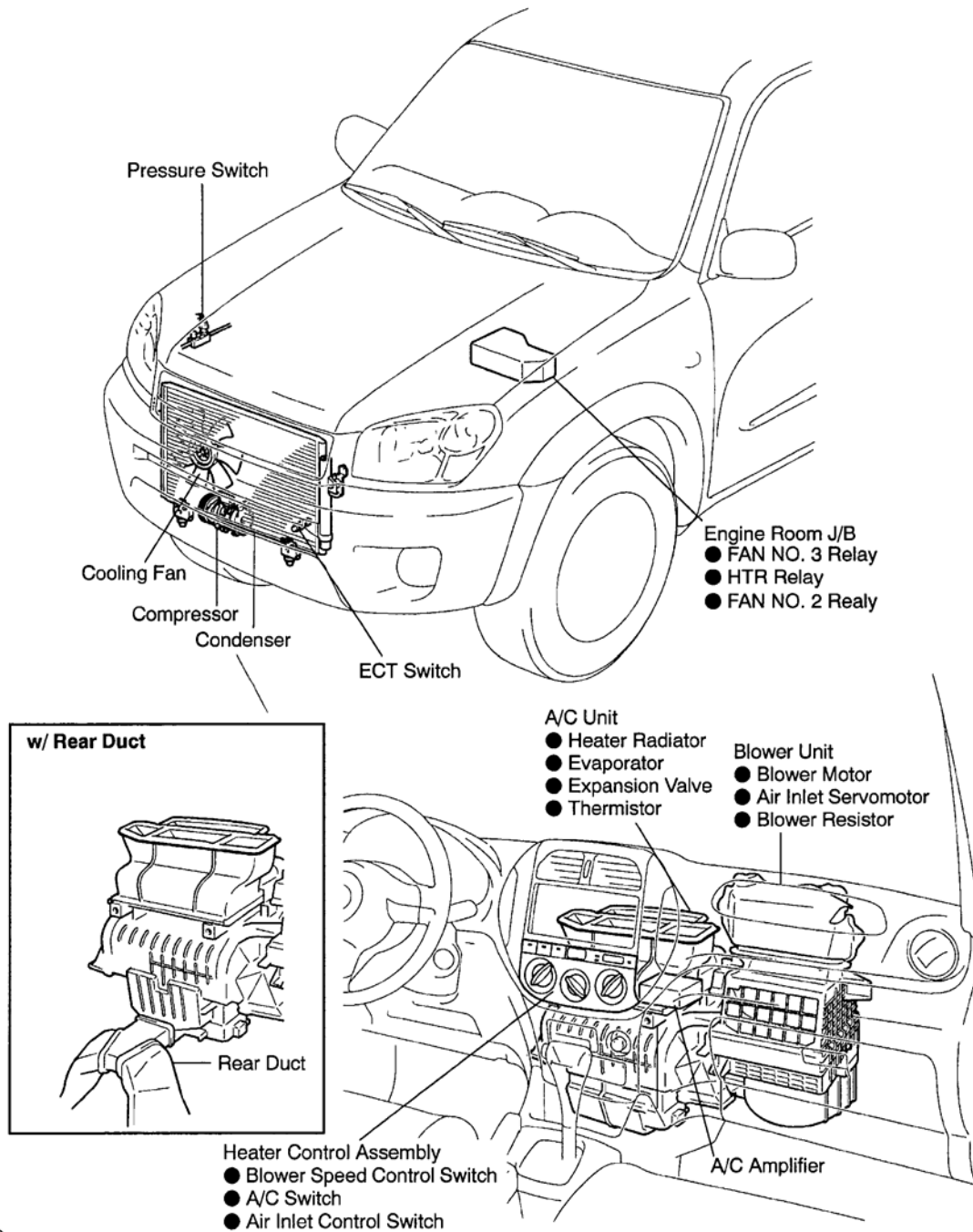


**Fig. 29: Identifying Properly And Improperly Charged Refrigerant Pressure**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



P  
G02641341

**Fig. 30: Identifying Location Of Air Conditioning System Components**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## TROUBLESHOOTING

### PROBLEM SYMPTOMS TABLE

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

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                                                           | Suspected Area                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No blower operation                                               | <ol style="list-style-type: none"> <li>1. HTR fuse</li> <li>2. HTR relay</li> <li>3. Blower motor</li> <li>4. Blower resistor</li> <li>5. Blower speed control switch</li> <li>6. Wire harness</li> </ol>                                                                                                                                                                  |
| No blower control                                                 | <ol style="list-style-type: none"> <li>1. Blower motor</li> <li>2. Blower resistor</li> <li>3. Blower speed control switch</li> <li>4. Wire harness</li> </ol>                                                                                                                                                                                                             |
| No air temperature                                                | <ol style="list-style-type: none"> <li>1. Engine coolant volume</li> <li>2. Heater control assembly</li> </ol>                                                                                                                                                                                                                                                             |
| No compressor operation                                           | <ol style="list-style-type: none"> <li>1. Refrigerant volume</li> <li>2. A.C fuse</li> <li>3. Magnetic clutch</li> <li>4. Compressor lock sensor</li> <li>5. Compressor</li> <li>6. Pressure switch</li> <li>7. Heater main relay</li> <li>8. Blower speed control switch</li> <li>9. Heater control assembly</li> <li>10. Thermistor</li> <li>11. Wire harness</li> </ol> |
| No cool air comes out                                             | <ol style="list-style-type: none"> <li>1. Refrigerant volume</li> <li>2. Refrigerant pressure</li> <li>3. Drive belt</li> <li>4. Magnetic clutch</li> <li>5. Compressor lock sensor</li> <li>6. Pressure switch</li> <li>7. Thermistor</li> <li>8. Heater control assembly</li> <li>9. Wire harness</li> </ol>                                                             |
| Insufficient cooling                                              | <ol style="list-style-type: none"> <li>1. Refrigerant volume</li> <li>2. Drive belt</li> <li>3. Magnetic clutch</li> <li>4. Compressor</li> <li>5. Condenser</li> <li>6. Expansion valve</li> <li>7. Evaporator</li> <li>8. Refrigerant lines</li> <li>9. Pressure switch</li> <li>10. A/C control system</li> <li>11. Heater control assembly</li> </ol>                  |
| No engine idle-up with A/C switch ON                              | <ol style="list-style-type: none"> <li>1. Heater control assembly</li> <li>2. Engine ECU</li> <li>3. Idle control system</li> <li>4. Wire harness</li> </ol>                                                                                                                                                                                                               |
| No air inlet control                                              | <ol style="list-style-type: none"> <li>1. Heater control assembly</li> <li>2. Air inlet servomotor</li> <li>3. Wire harness</li> </ol>                                                                                                                                                                                                                                     |
| No mode control                                                   | <ol style="list-style-type: none"> <li>1. Heater control assembly</li> <li>2. Wire harness</li> </ol>                                                                                                                                                                                                                                                                      |
| Blinking of A/C indicator                                         | <ol style="list-style-type: none"> <li>1. Compressor</li> <li>2. Drive belt</li> <li>3. Compressor lock sensor</li> <li>4. Heater control assembly</li> </ol>                                                                                                                                                                                                              |
| Brightness does not change when light control switch is turned on | <ol style="list-style-type: none"> <li>1. Headlight and taillight system</li> <li>2. Heater control assembly</li> </ol>                                                                                                                                                                                                                                                    |

G02926831

**Fig. 31: Air Conditioning Troubleshooting Table**

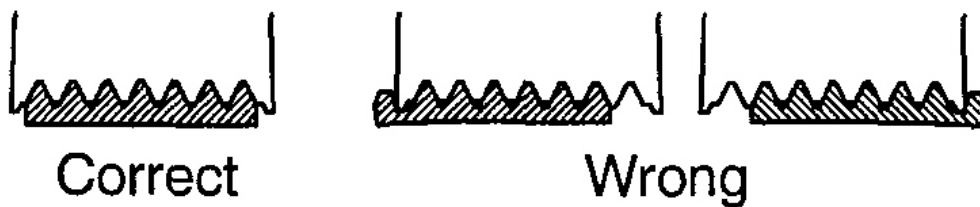
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## DRIVE BELT

### ON-VEHICLE INSPECTION

#### 1. INSPECT DRIVE BELT'S INSTALLATION CONDITION

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



Y

G02641343

**Fig. 32: Checking Drive Belt Is Properly Fitted**

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

#### 2. INSPECT DRIVE BELT TENSION (See INSTALLATION )

### REPLACEMENT

#### 1. REMOVE DRIVE BELT

Hook SST on the hexagonal portion of the drive belt tensioner bracket, compress the drive belt tension by turning the drive belt tensioner bracket clockwise, and remove the drive belt.

SST 09249-63010

#### 2. REINSTALL DRIVE BELT

Hook SST on the hexagonal portion of the drive belt tensioner bracket, compress the drive belt tension by turning the drive belt tensioner bracket clockwise, and install the drive belt.

SST 09249-63010

**NOTE:** Compress the drive belt tensioner by taking 3 seconds or more and installed the drive belt.

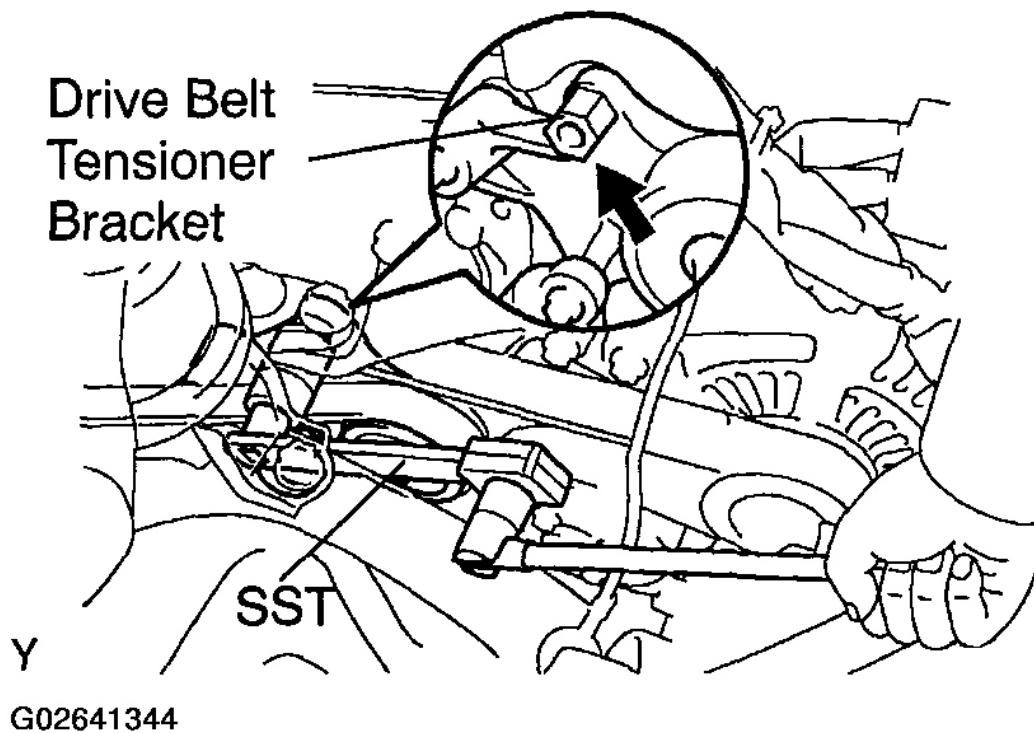
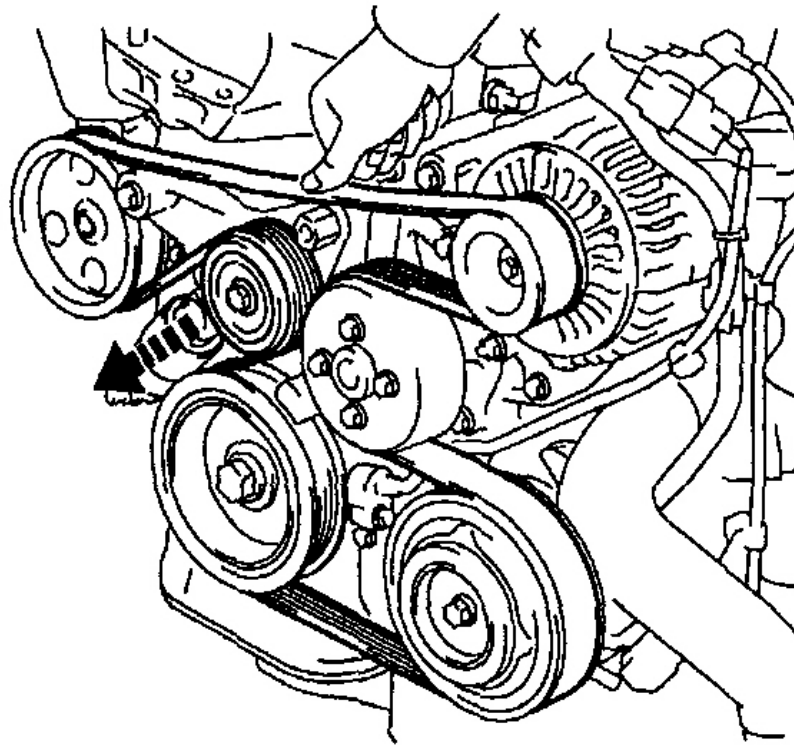


**Fig. 33: Removing/Installing Drive Belt**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. CHECK DRIVE BELT INSTALLATION CONDITION

- Check that the belt tensioner moves downward when the drive belt is pressed down at the points indicated in **Fig. 34**.
- Check the alignment of the belt tensioner pulley to make sure the drive belt will not slip off the pulley.

If necessary, replace the belt tensioner.



P

G02641345

**Fig. 34: Checking Drive Belt Installed Condition**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## MANIFOLD GAUGE SET

### SET ON

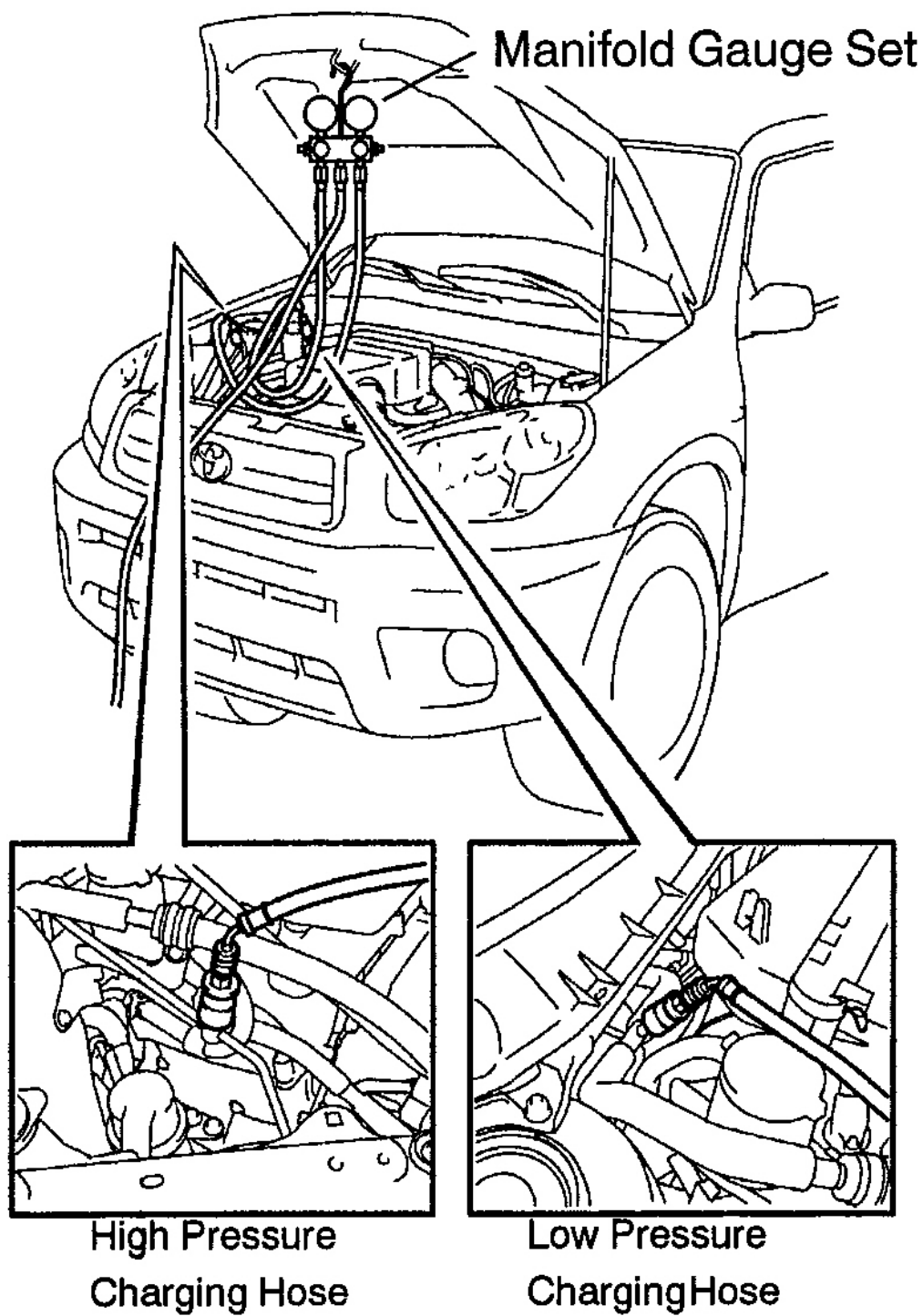
- a. **CONNECT CHARGE HOSE TO MANIFOLD GAUGE SET**

Tighten the nuts by hand.

**CAUTION:** Do not connect the wrong hoses.

## 2005 Toyota RAV4

2005 HVAC Air Conditioning - RAV4



G02641346

**Fig. 35: Connecting Charge Hose To Manifold Gauge Set**

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

**b. CONNECT QUICK DISCONNECT ADAPTER TO CHARGING HOSES**

Tighten the nuts by hand.

**c. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET**

**d. REMOVE CAPS FROM SERVICE VALVE ON REFRIGERANT LINE**

**e. CONNECT QUICK DISCONNECT ADAPTER TO SERVICE VALVES**

HINT:

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

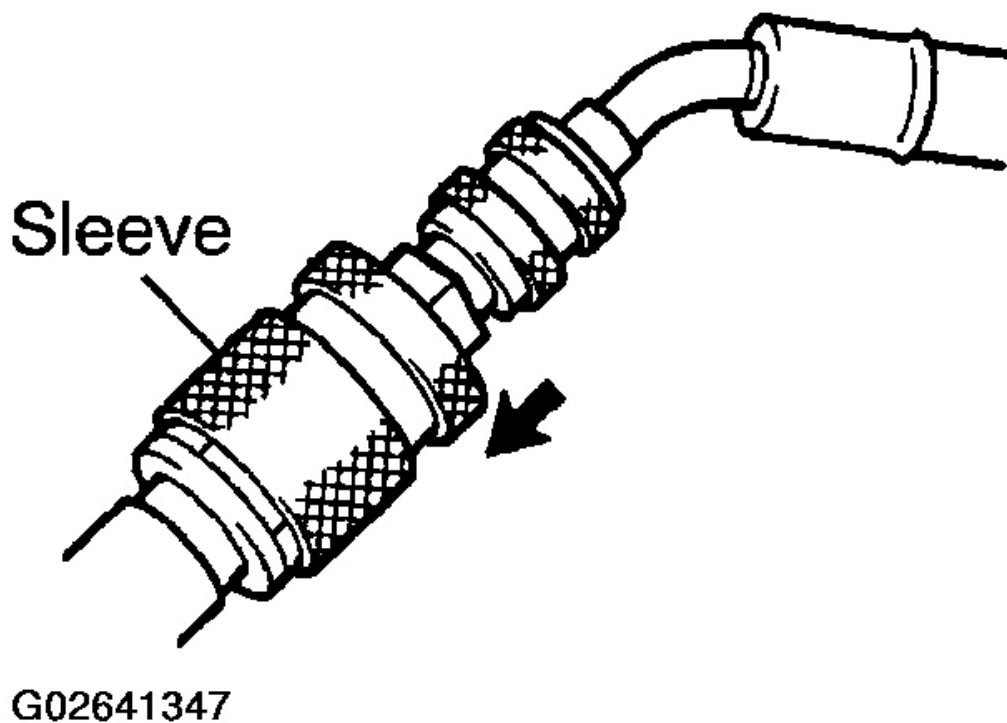


**Fig. 36: Connecting Quick Disconnect Adapter To Service Valves**

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

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.

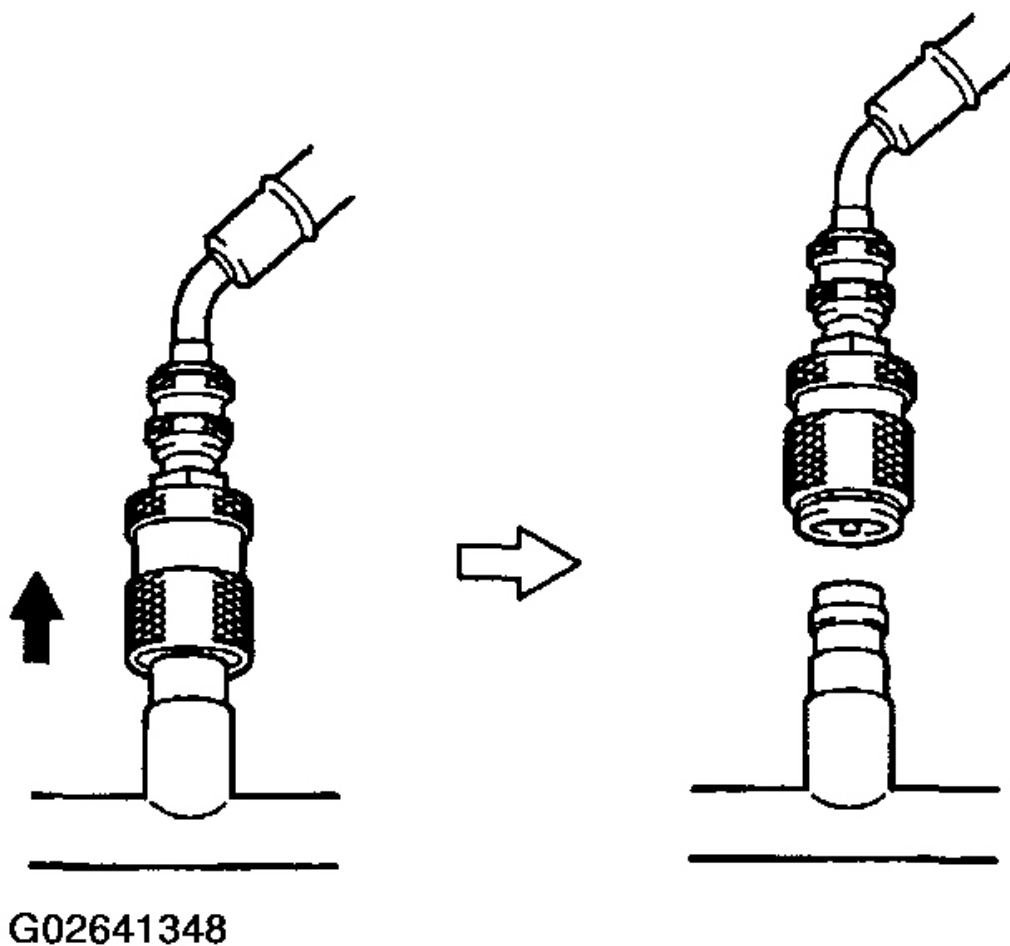


**Fig. 37: Disconnecting Quick Disconnect Adapters From Service Valves**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE**

## **REFRIGERANT LINE**

### **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**

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

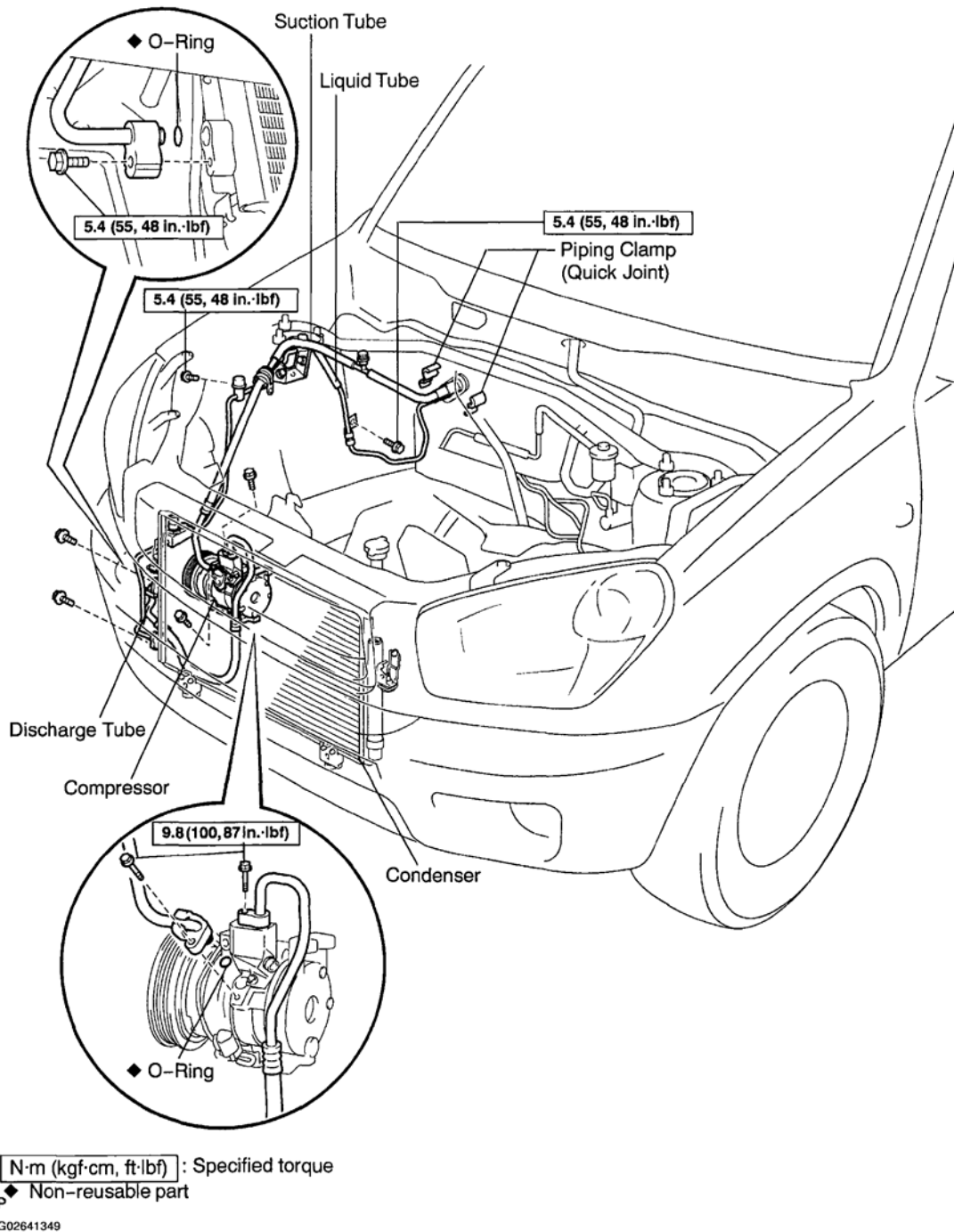


**Fig. 38: Identifying Routing Of Refrigerant Lines & Torque Specifications**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REPLACEMENT

### 1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

#### 2. REPLACE FAULTY TUBE OR HOSE

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

#### 3. TORQUE CONNECTIONS TO SPECIFIED TORQUE

**NOTE:** Connections should not be torqued tighter than the specified torque.

##### TORQUE SPECIFICATIONS

| 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 hose  | 9.8 | 100    | 87 in.lbf |
| Compressor x Suction hose    | 9.8 | 100    | 87 in.lbf |
| Expansion valve x Evaporator | 3.5 | 36     | 31 in.lbf |

#### 4. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT

**Specified amount: 500 +/- 50 g (17.64 +/- 1.76 oz.)**

#### 5. INSPECT FOR LEAKAGE OF REFRIGERANT

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

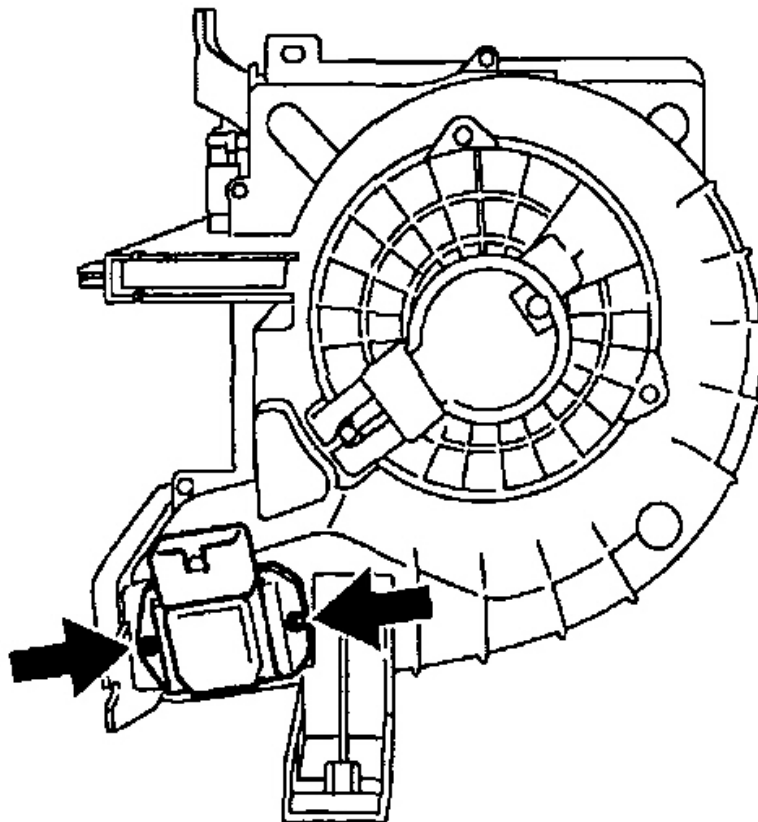
#### 6. INSPECT AIR CONDITIONER OPERATION

## AIR CONDITIONING UNIT

### ON-VEHICLE INSPECTION

#### 1. INSPECT FOR LEAKAGE OF REFRIGERANT

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



Y

G02641350

**Fig. 39: Identifying Location Of Blower Resistor**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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.

- d. Reinstall the blower resistor with the 2 screws.
- e. Reconnect the blower resistor connector.

## 2. INSPECT EXPANSION VALVE

- a. Check the quantity of gas during refrigeration cycle.
- b. Set on the manifold gauge set.

- c. Run the engine.
  - 1. Run the engine at 1,500 RPM for at least 5 minutes.
  - 2. Then check that the high pressure reading is 1.37 - 1.57 MPa (14 - 16 kgf/cm<sup>2</sup>, 199 - 228 psi).
- d. Check the expansion valve.

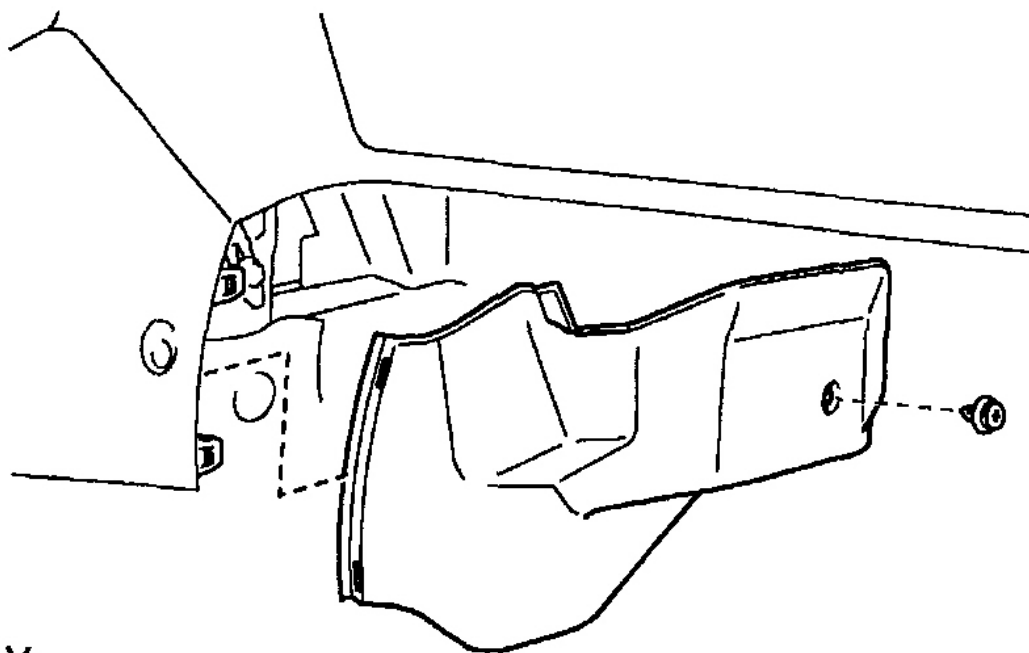
If the expansion valve is faulty, the low pressure reading will drop to 0 kPa (0 kgf/cm<sup>2</sup>, 0 psi).

HINT:

When the low pressure drops to 0 kPa (0 kgf/cm<sup>2</sup>, 0 psi), feel the receiver's IN and OUT sides for zero temperature difference.

### 3. REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER

Remove the clip and No. 2 instrument panel under cover.



Y

G02641351

#### 4. INSPECT THERMISTOR RESISTANCE

- a. Disconnect the thermistor connector and clamp.
- b. Using an ohmmeter, measure the resistance between the terminals.

**Standard resistance: 1,500 ohm at 25°C (77°F)**

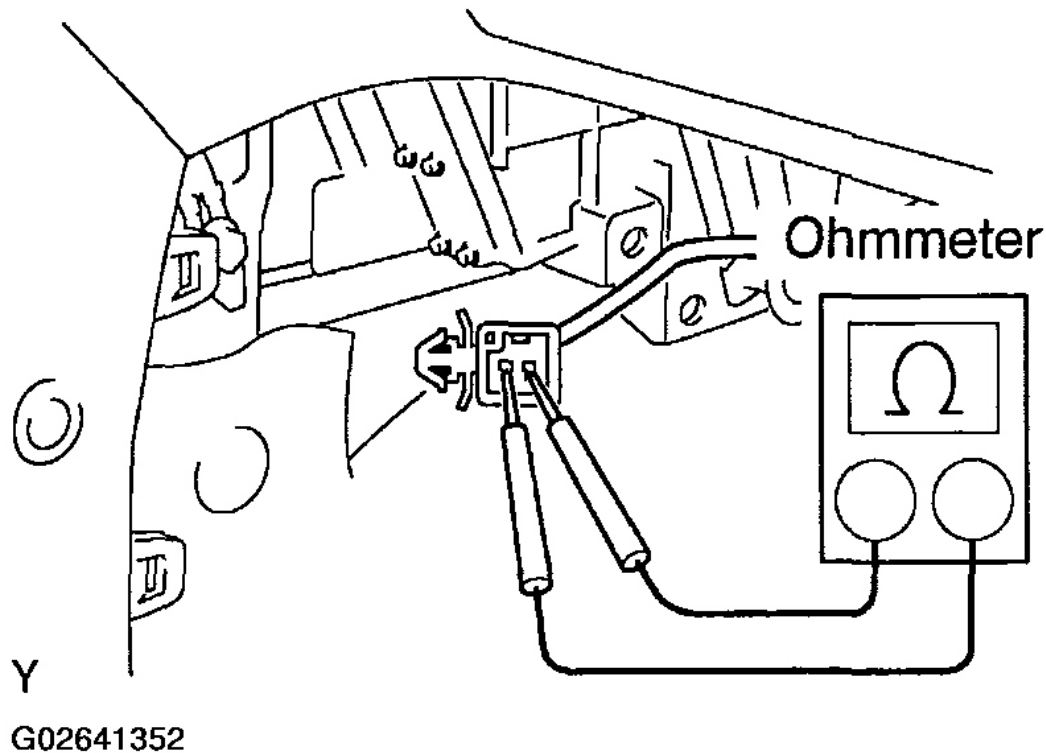


**Fig. 41: Inspecting Thermistor Resistance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If resistance is not as specified, replace the thermistor.

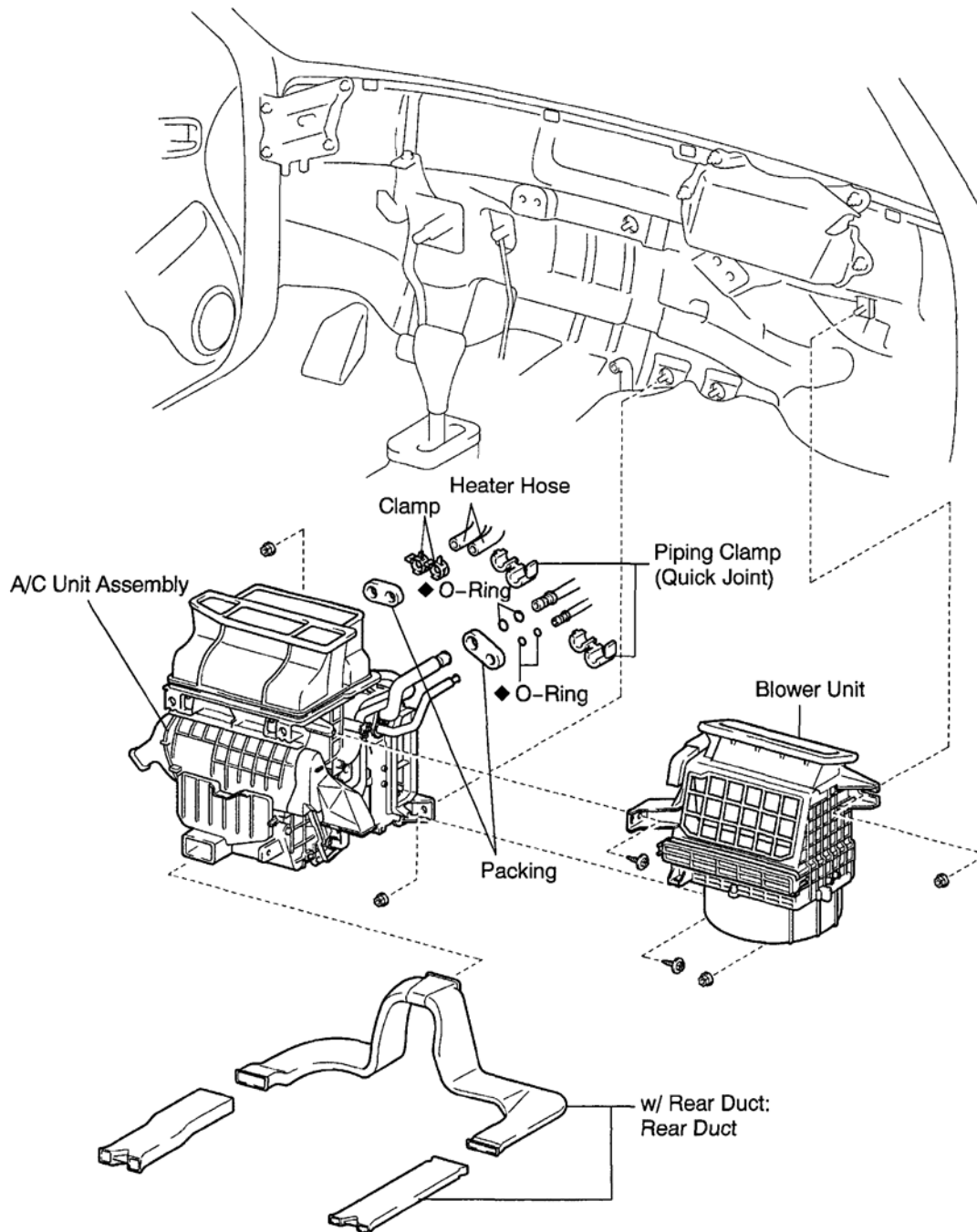
- c. Reconnect the thermistor connector and clamp.

#### 5. REINSTALL NO. 2 INSTRUMENT PANEL UNDER COVER

#### COMPONENTS

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



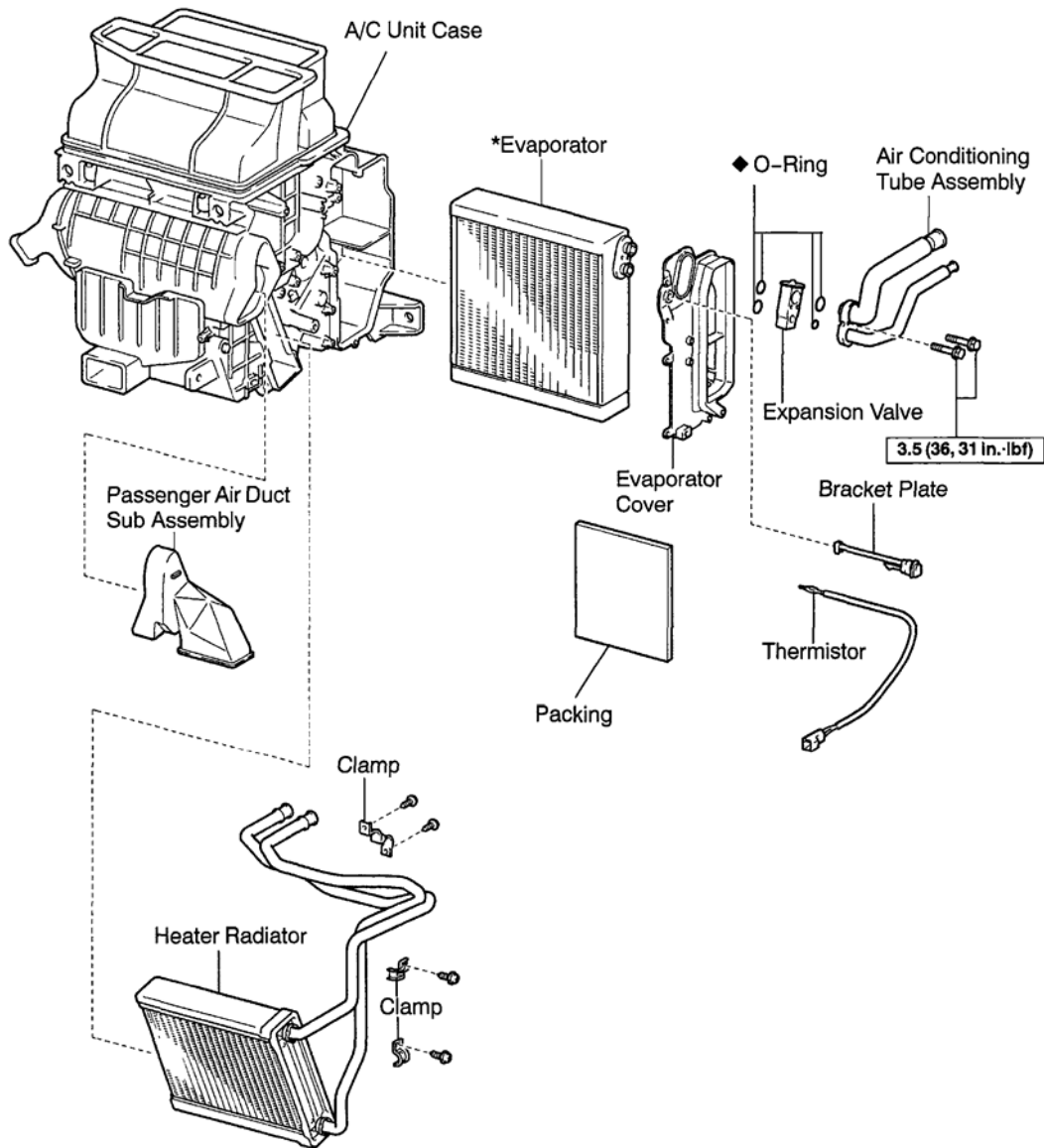
p ♦ Non-reusable part

G02641353

**Fig. 42: Identifying Air Conditioning Unit Components (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



N·m (kgf-cm, ft-lbf) : Specified torque

◆ Non-reusable part

\* If evaporator is replaced, add 40 cc (1.4 fl.oz.) of compressor oil (ND-OIL 8 or equivalent)

G02641354

**Fig. 43: Identifying Air Conditioning Unit Components & Torque Specifications (2 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
2. DRAIN ENGINE COOLANT FROM RADIATOR

HINT:

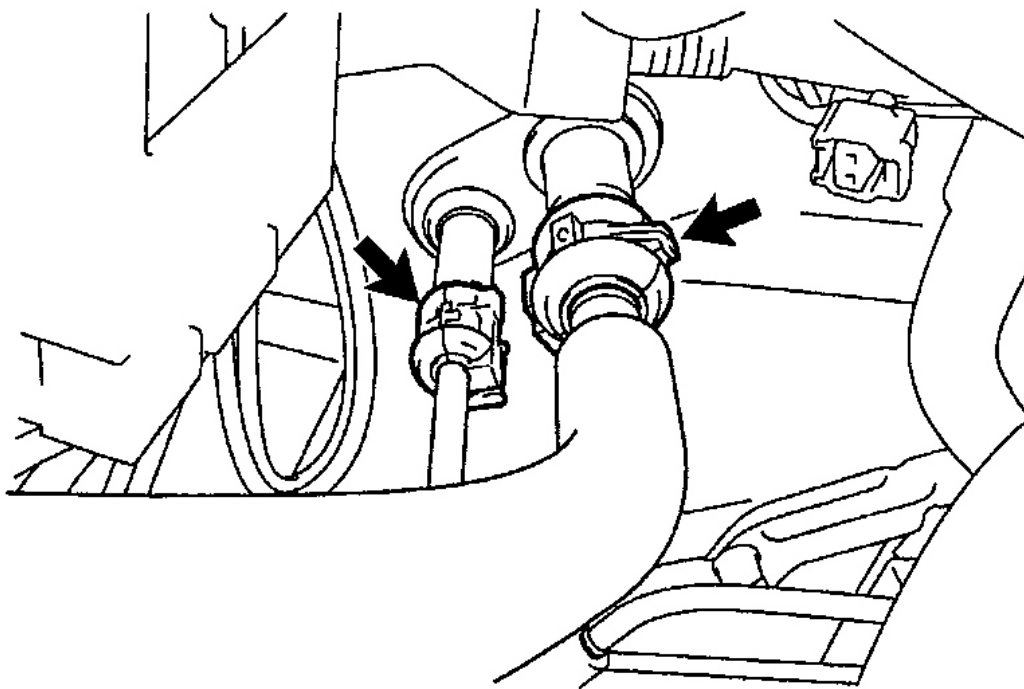
It is not necessary to drain out all coolant.

**3. DISCONNECT LIQUID TUBE AND SUCTION HOSE**

- a. Using SST, remove the 2 piping clamps.

SST 09870-00015 (Suction tube)

09870-00025 (Liquid tube)



G02641355

**Fig. 44: Using SST Remove Piping Clamps**

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

1. Insert the SST to the piping clamp.

HINT:

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

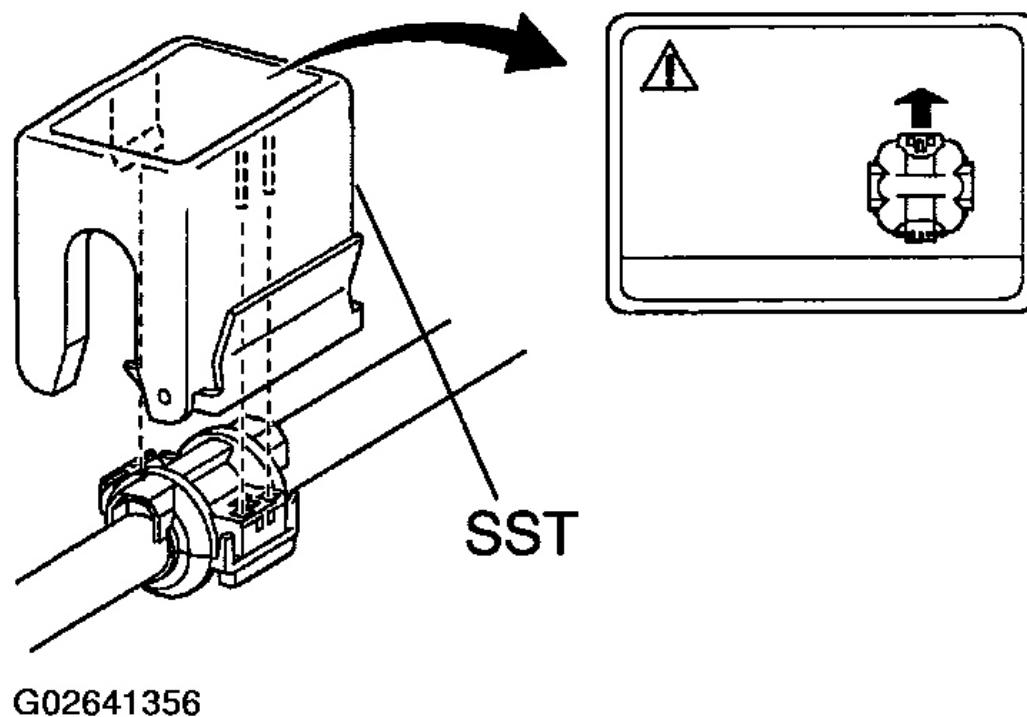


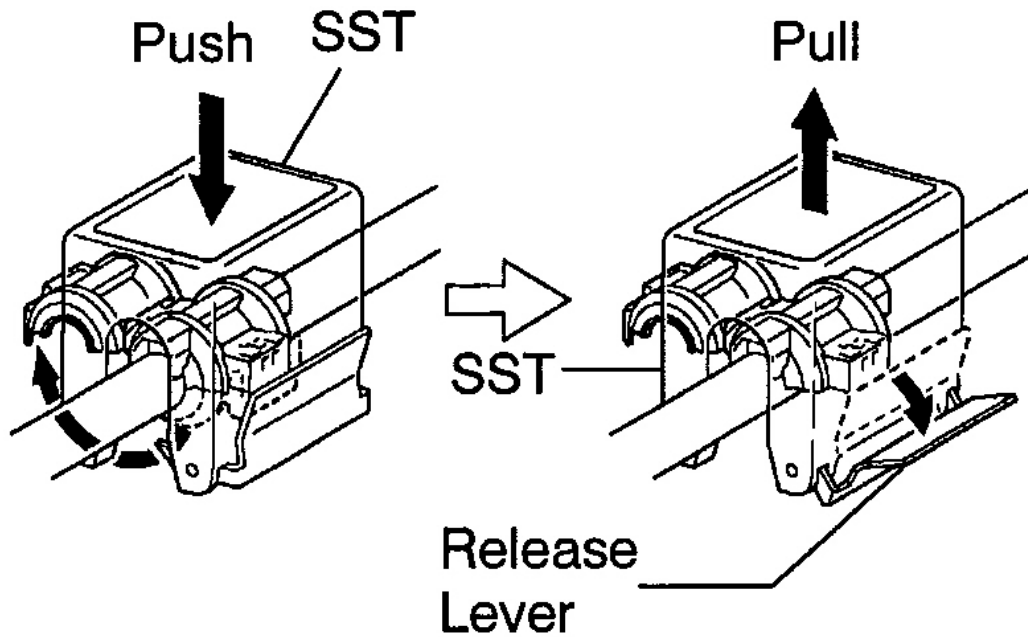
**Fig. 45: Inserting SST To Piping Clamp**

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

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

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

3. Pull the SST slightly and push the release lever, then remove the piping clamp with SST
  4. Remove the piping clamp from the SST.
- b. Disconnect both tubes.



G02641357

**Fig. 46: Removing Piping Clamp From SST**

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

**NOTE:**

- Do not use tools like screwdrivers to remove the tube.
- Cap the open fittings immediately to keep moisture or dirt out of the system.

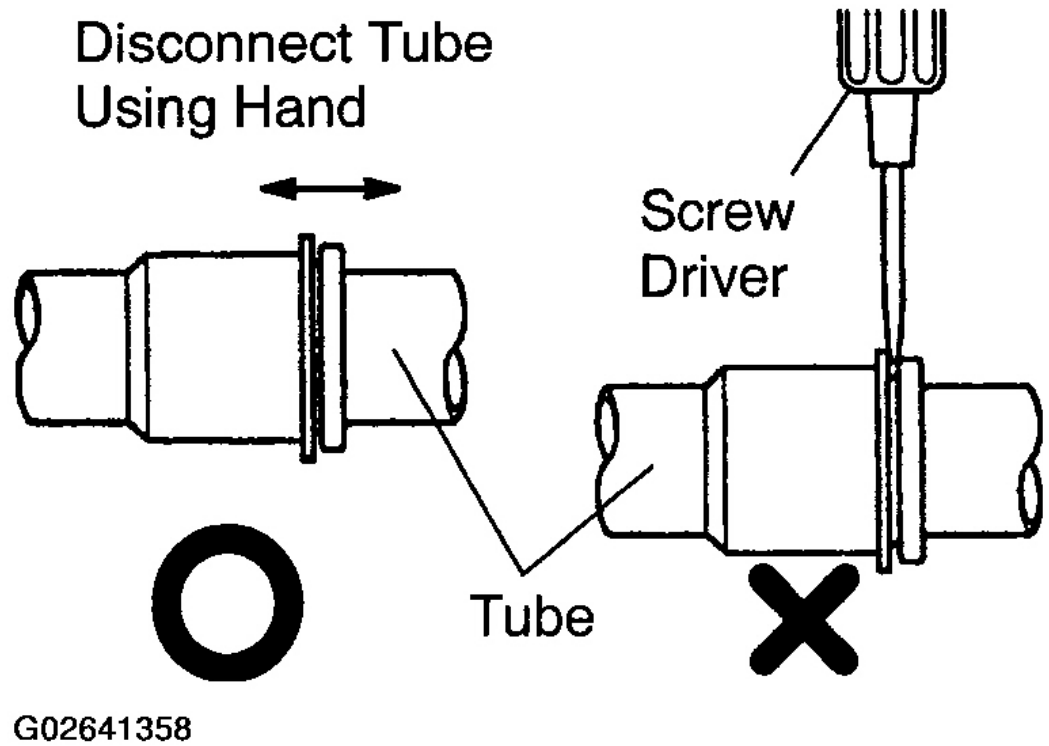
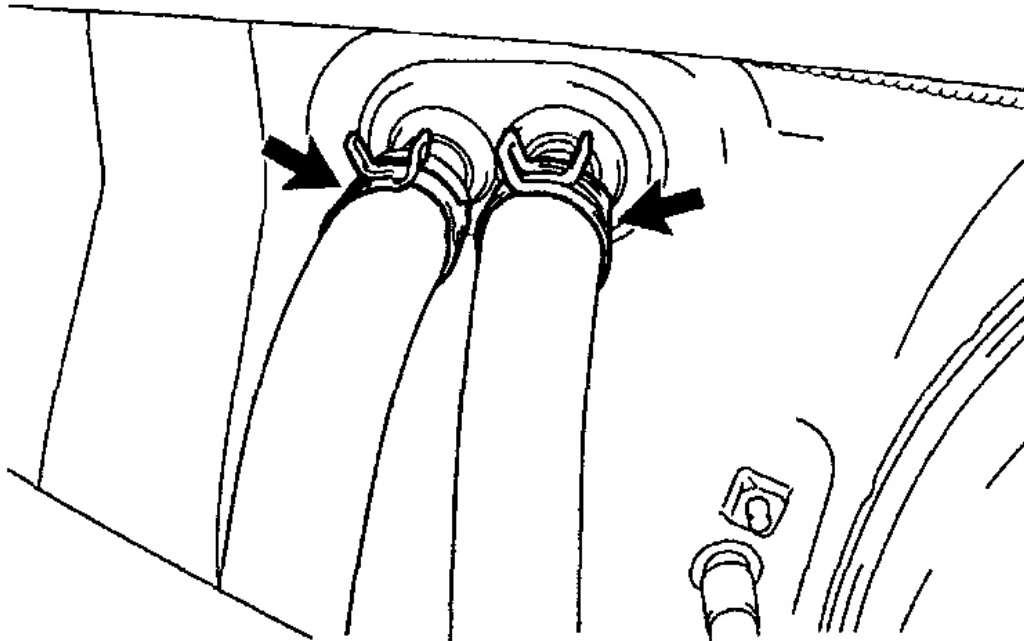


**Fig. 47: Identifying Correct Way Of Disconnecting Tube**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**4. 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 2 heater hoses.

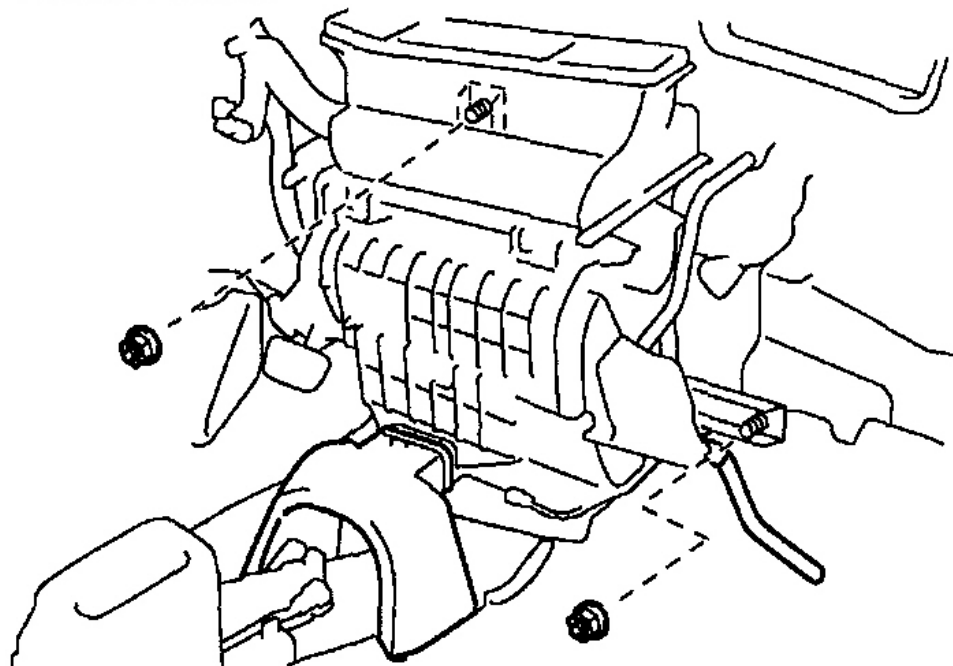


G02641359

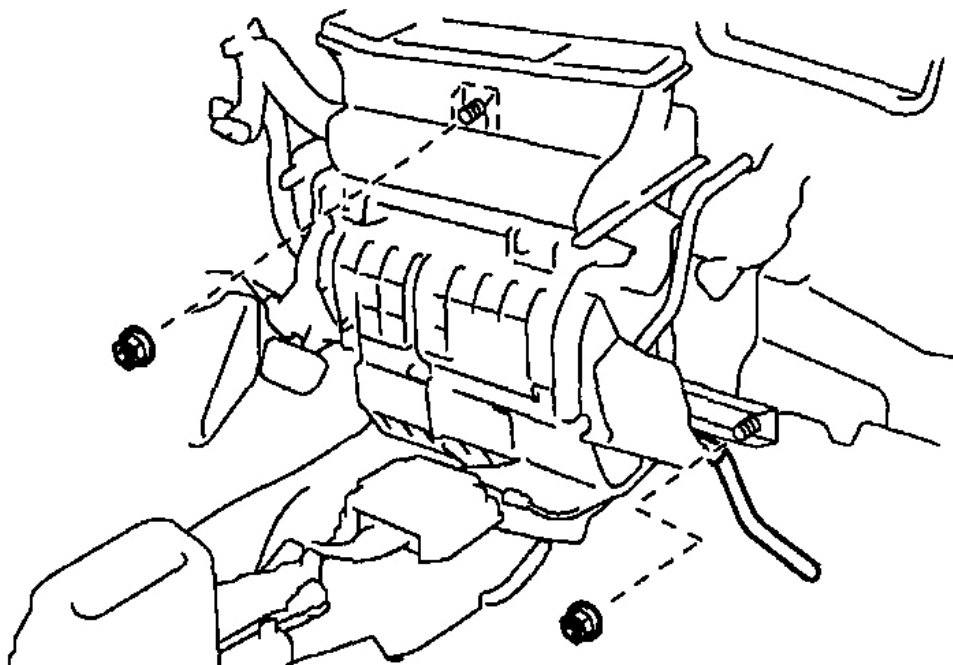
**Fig. 48: Disconnecting Water Hoses From Heater Radiator Pipes**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. **REMOVE INSTRUMENT PANEL AND REINFORCEMENT (See REMOVAL )**
6. **REMOVE PIPE GROMMETS**
7. **REMOVE BLOWER UNIT (See REMOVAL)**
8. **REMOVE A/C UNIT**
  - a. w/ Rear duct:  
  
Remove the rear duct.
  - b. Remove the drain hose.
  - c. Remove the 2 nuts and A/C unit.

## w/ Rear Duct



## w/o Rear Duct



Y

G02641360

**Fig. 49: Removing A/C Unit**

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

## DISASSEMBLY

### 1. REMOVE THERMISTOR

- a. Disconnect the connector clamp.
- b. Release the 4 claws and remove the harness from the plate.

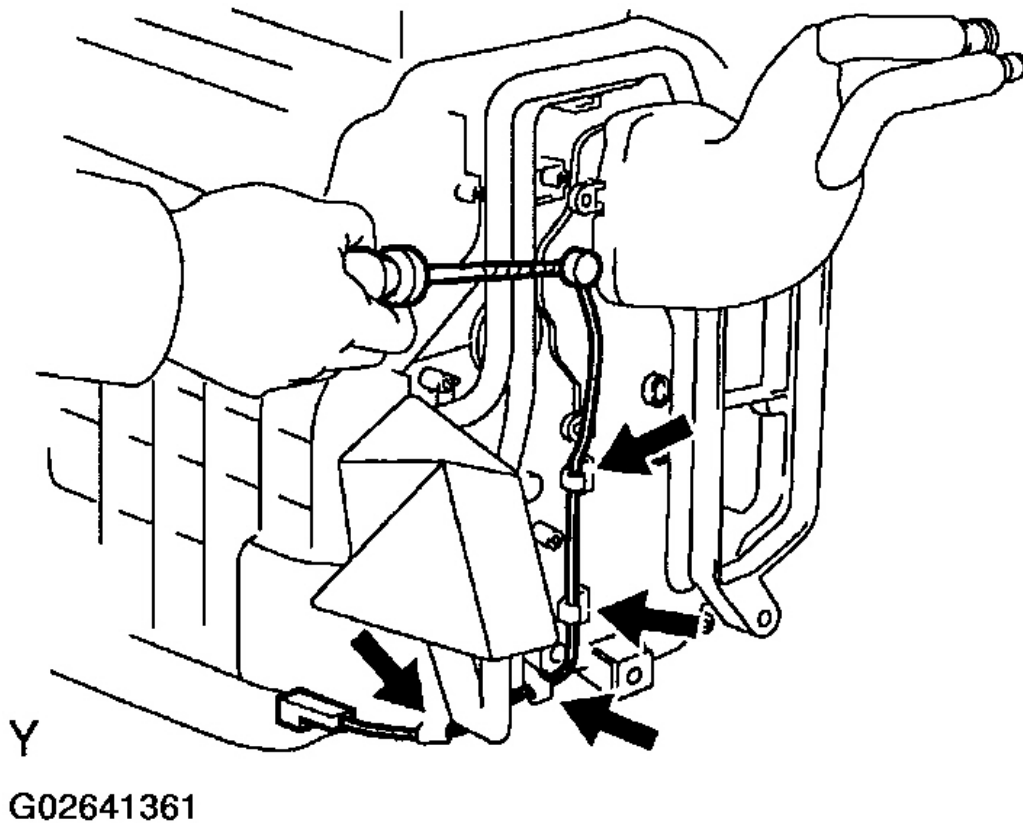


**Fig. 50: Removing Harness From Plate**

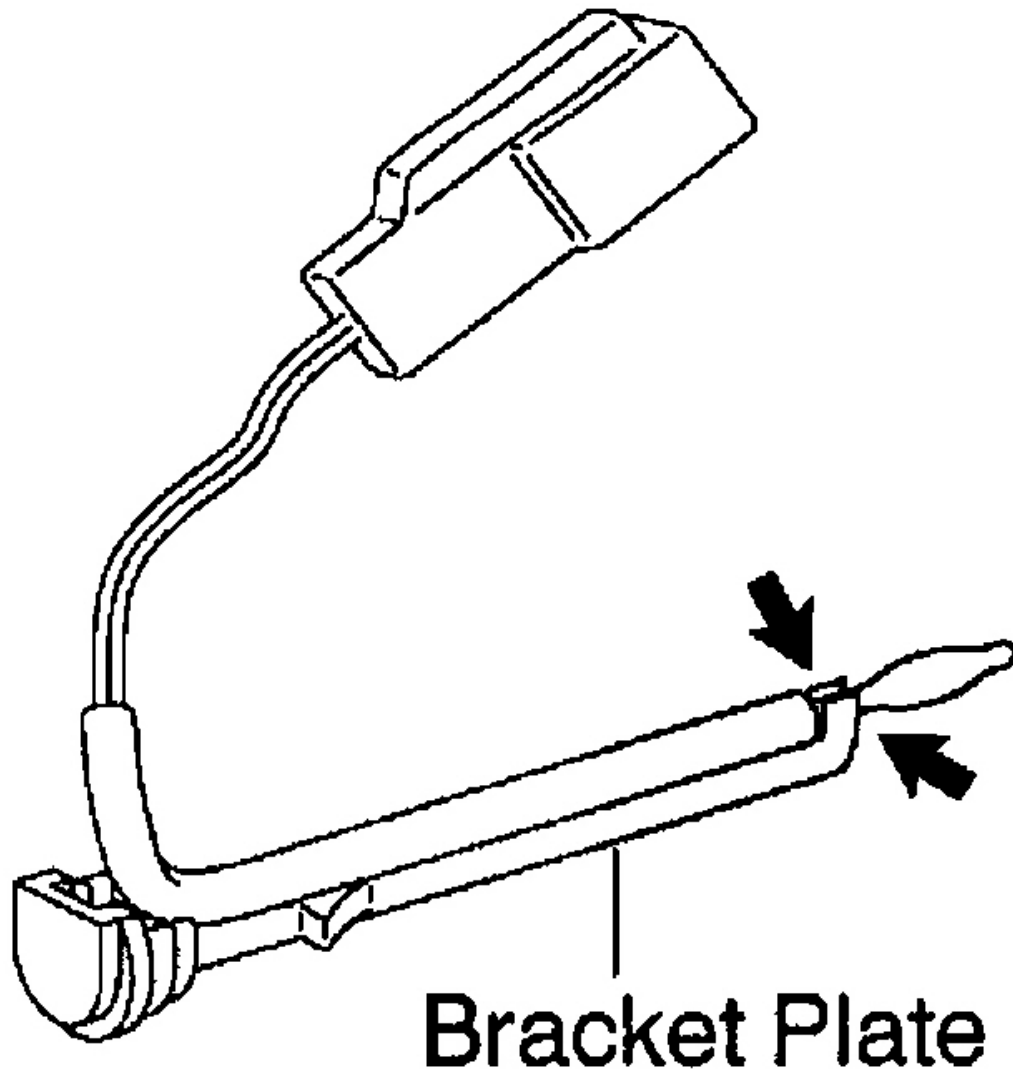
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using a screwdriver, pull out the thermistor from the A/C unit case.

HINT:

Tape the screwdriver tip before use.

- d. Release the 2 claws and remove the thermistor from the bracket plate.



G02641362

**Fig. 51: Removing Thermistor From Bracket Plate**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. REMOVE EVAPORATOR

- a. Remove the 7 screws.
- b. Pull out the evaporator from the A/C unit case.

- c. Remove the packing.

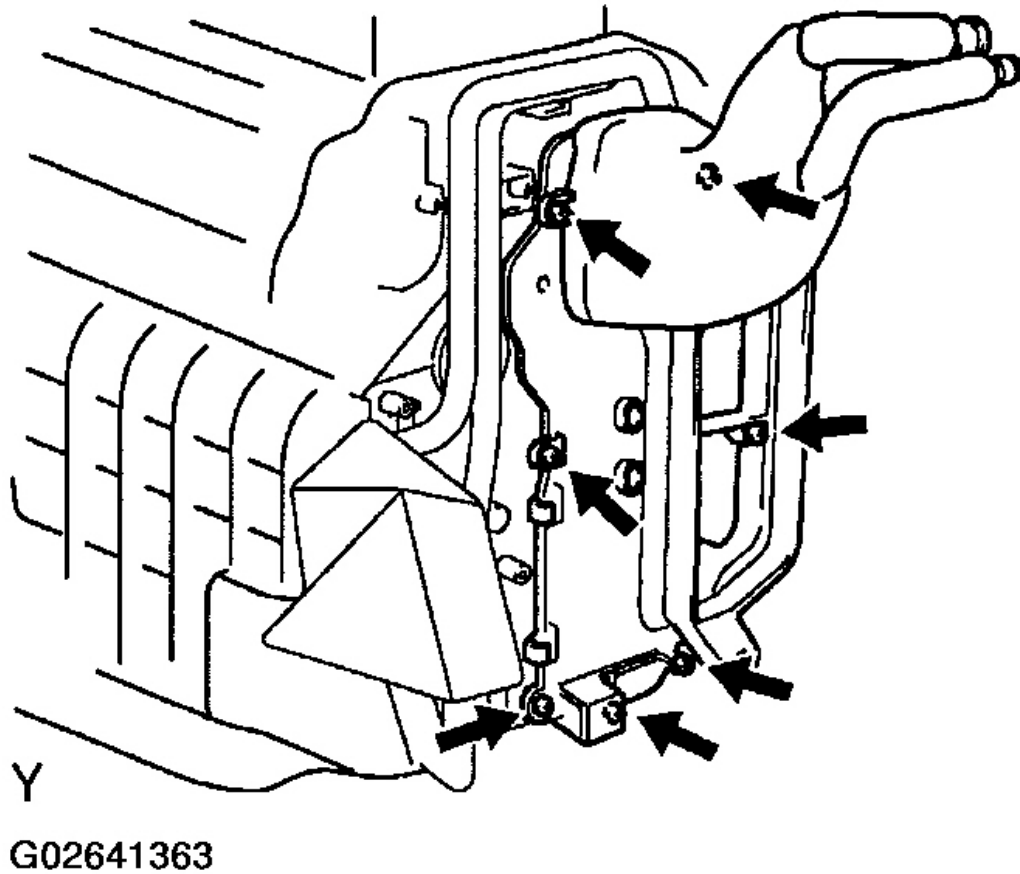
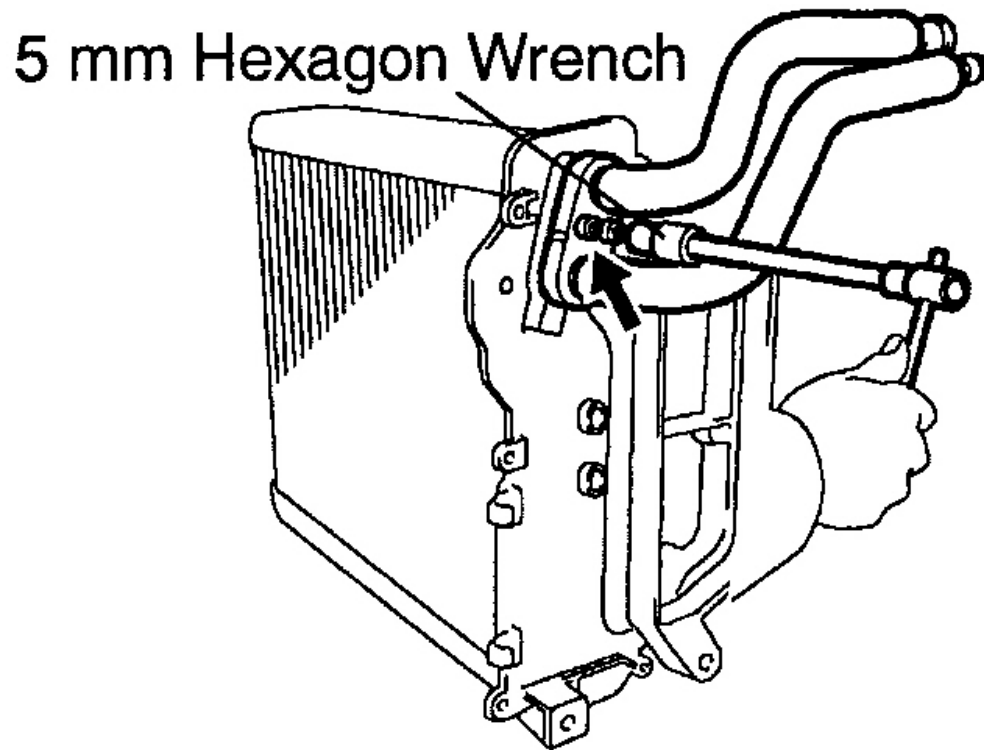


**Fig. 52: Removing Evaporator**

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

### 3. REMOVE EXPANSION VALVE

- a. Remove the evaporator cover.
- b. Using a 5 mm hexagon wrench, remove the 2 bolts, and separate the expansion valve and evaporator.



Y

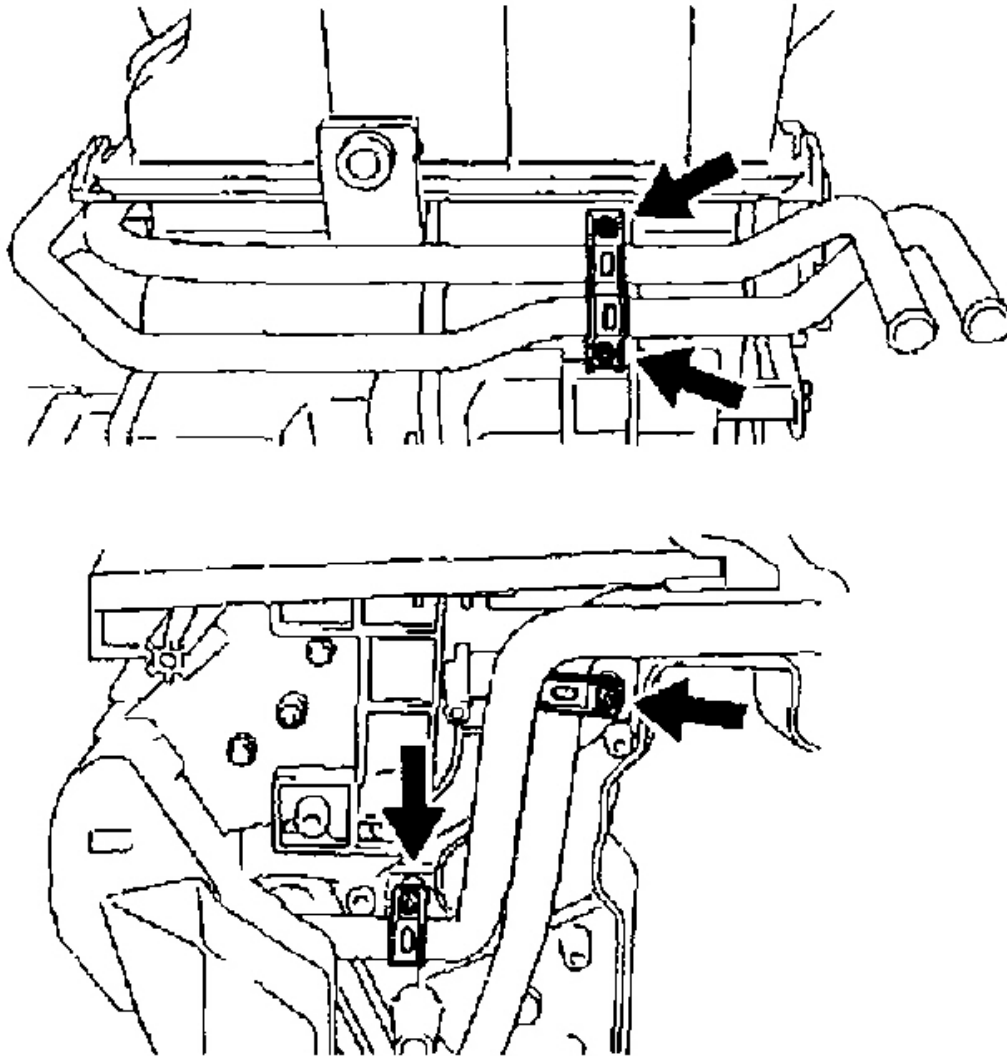
G02641364

**Fig. 53: Removing Expansion Valve**

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

**4. REMOVE HEATER RADIATOR**

- a. Remove the 4 screws and 3 clamps.
- b. Remove the passenger air duct subassembly.
- c. Pull out the heater radiator from the A/C unit case.



G02641365

**Fig. 54: Removing Heater Radiator**

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

## INSPECTION

### 1. INSPECT EVAPORATOR

- Check evaporator fins for blockage.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

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

**NOTE:**        **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.

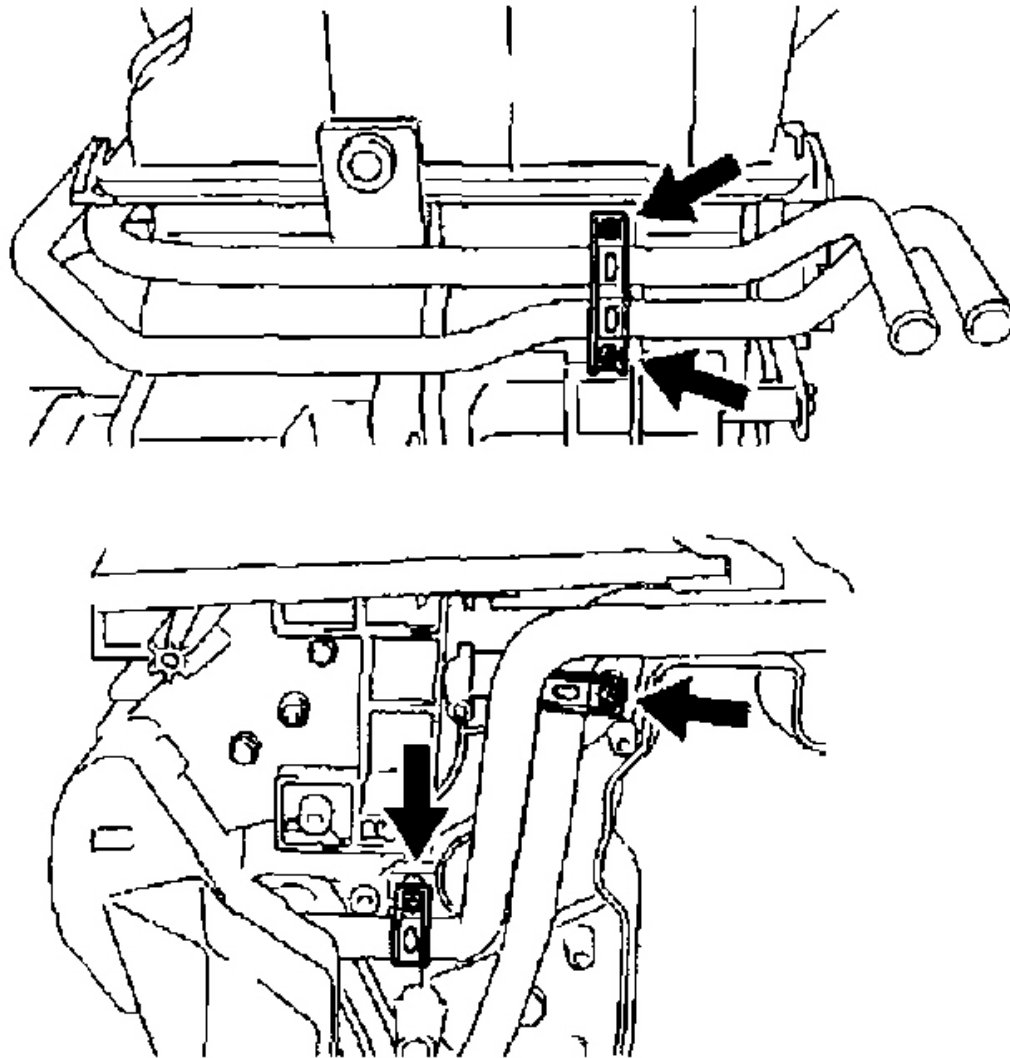
## 3. INSPECT THERMISTOR (See THERMISTOR)

## 4. INSPECT EXPANSION VALVE (See ON-VEHICLE INSPECTION)

## REASSEMBLY

### 1. INSTALL HEATER RADIATOR

- a. Push into the heater radiator to the A/C unit case.
- b. Install the 4 screws and 3 clamps.
- c. Install the passenger air duct subassembly.



G02641366

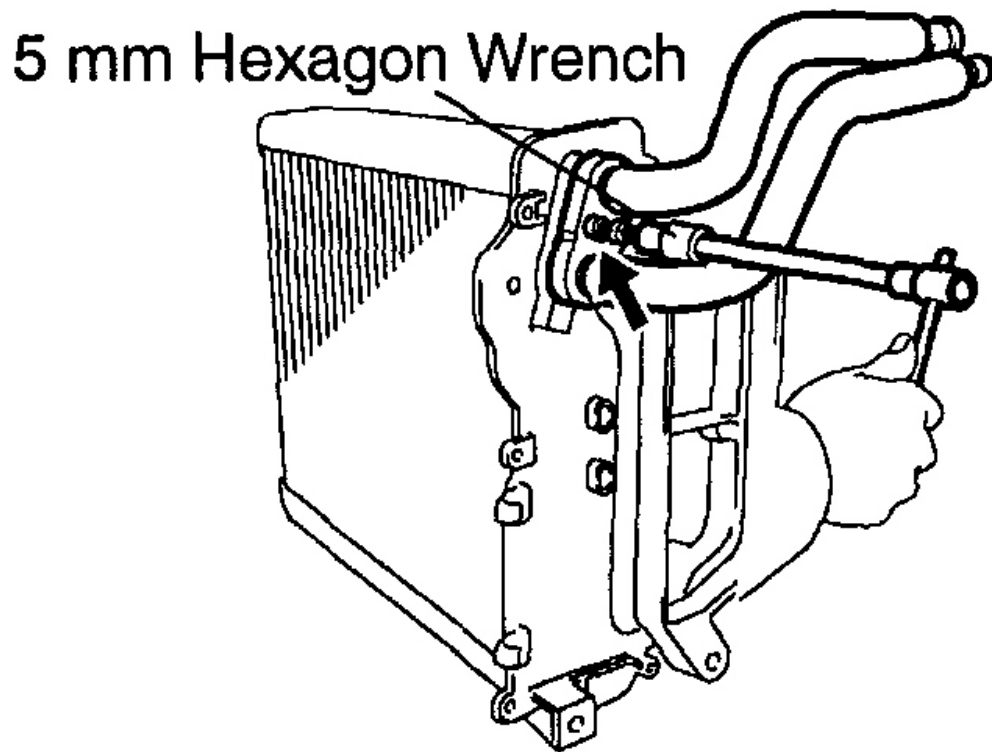
**Fig. 55: Installing Heater Radiator**

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

## 2. INSTALL EXPANSION VALVE

- Coat 4 new O-rings with the compressor oil.
- Using a 5 mm hexagon wrench, install the expansion valve to the evaporator with the 2 bolts.

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



Y

G02641367

**Fig. 56: Installing Expansion Valve**

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

### 3. INSTALL EVAPORATOR

- a. Install the evaporator with the 7 screws.
- b. Wrap the packing.

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

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

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

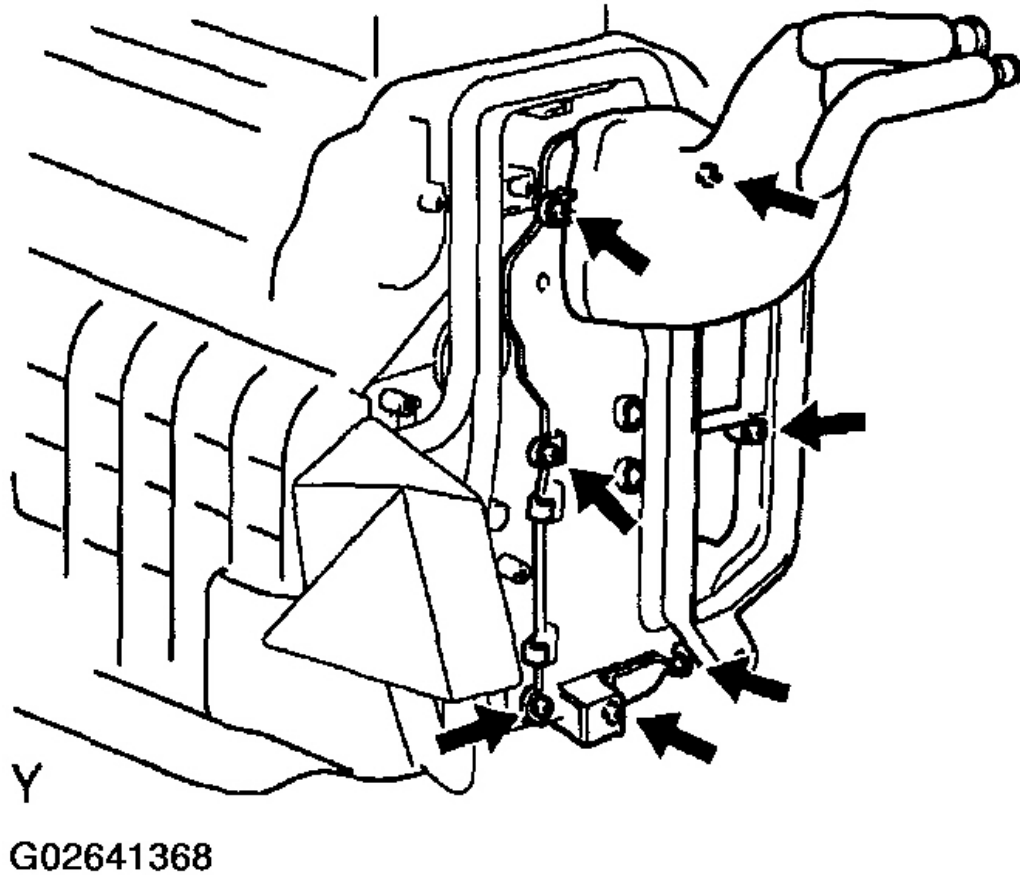
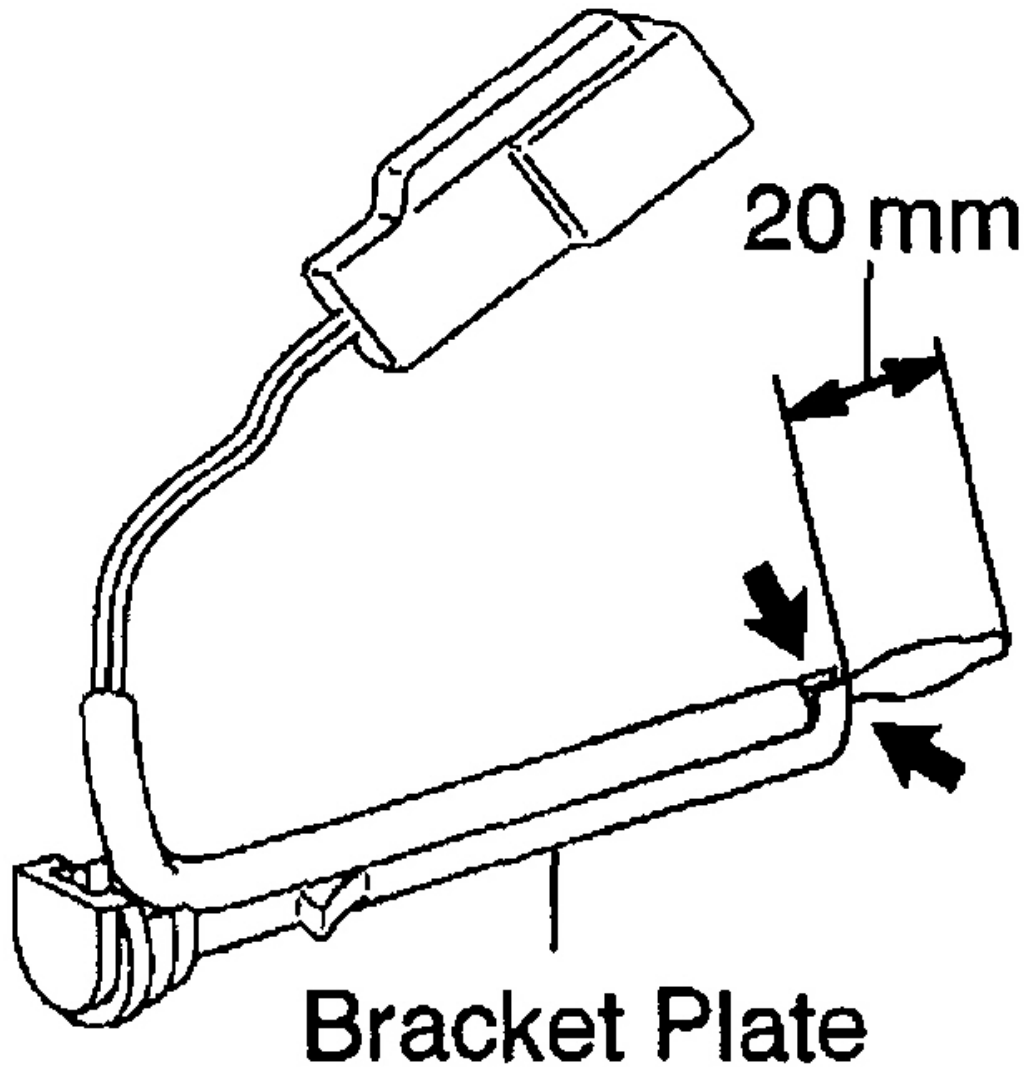


**Fig. 57: Installing Evaporator**

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

#### 4. INSTALL THERMISTOR

- Install the thermistor to the bracket plate as shown in **Fig. 58**.
- Push into the thermistor to the A/C unit case.
- Connect the connector clamp.



G02641369

**Fig. 58: Installing Thermistor**

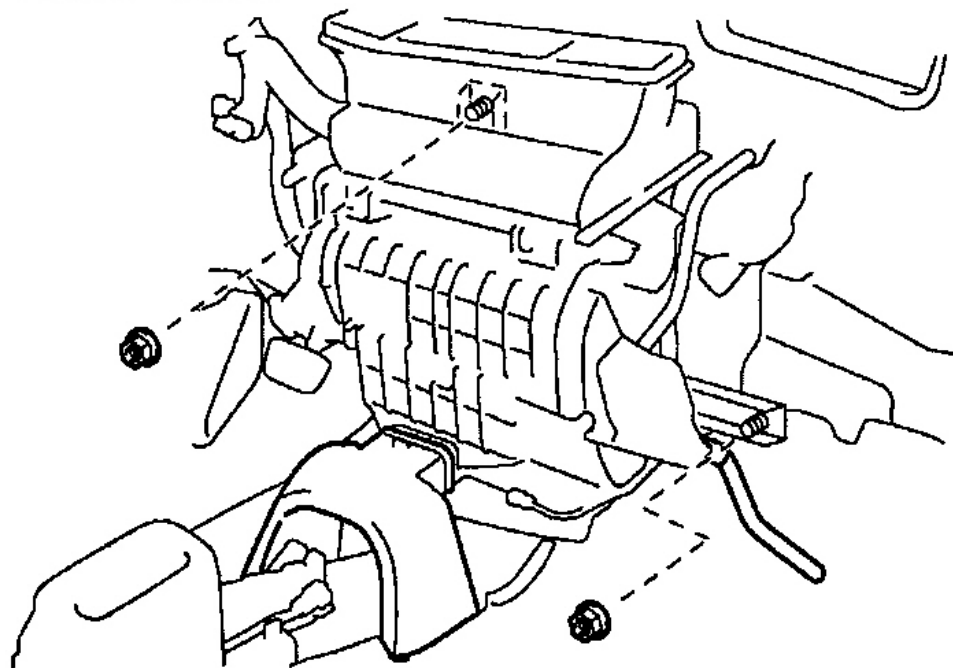
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## INSTALLATION

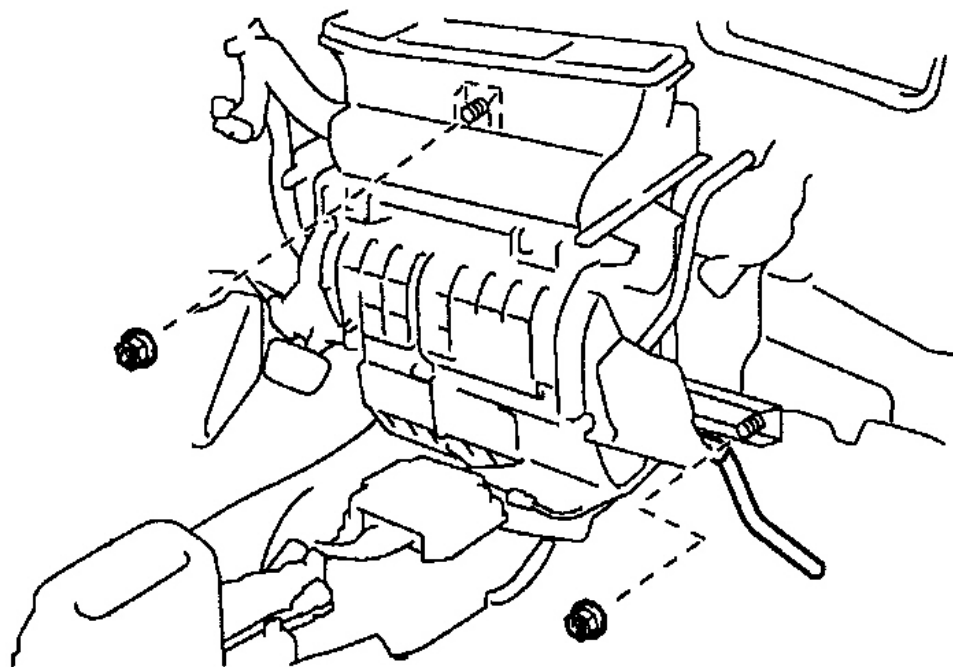
### 1. INSTALL A/C UNIT

- Install the A/C unit with the 2 nuts.

## w/ Rear Duct



## w/o Rear Duct

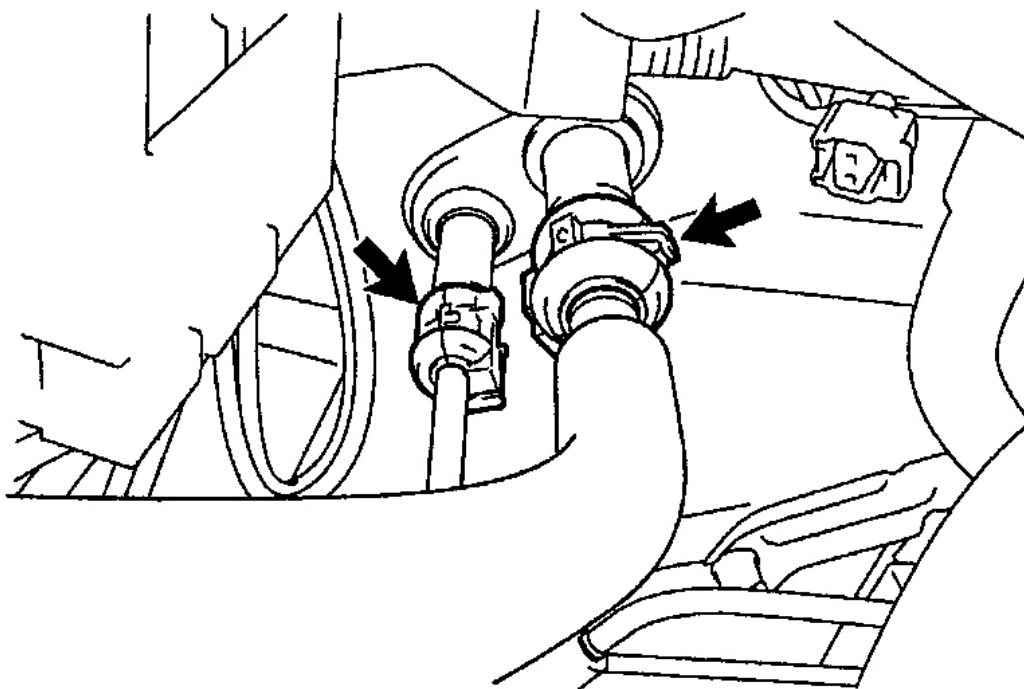


Y

**Fig. 59: Installing A/C Unit**

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

- b. w/ Rear duct:
  - c. Install the rear duct.
  - d. Install the drain hose.
2. **INSTALL BLOWER UNIT** (See INSTALLATION)
  3. **INSTALL PIPE GROMMETS**
  4. **INSTALL INSTRUMENT PANEL AND REINFORCEMENT** (See INSTALLATION )
  5. **CONNECT LIQUID TUBE AND SUCTION TUBE**
    - a. Connect both tubes.
    - b. Install the 2 piping clamps.



G02641371

**Fig. 60: Connecting Liquid Tube And Suction Tube**

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

- c. After connection, check the fitting for claw of the piping clamp.

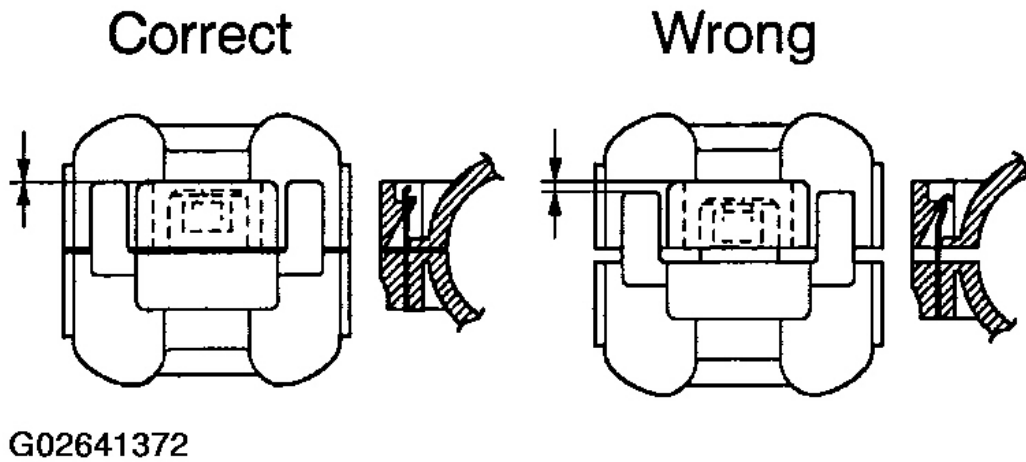
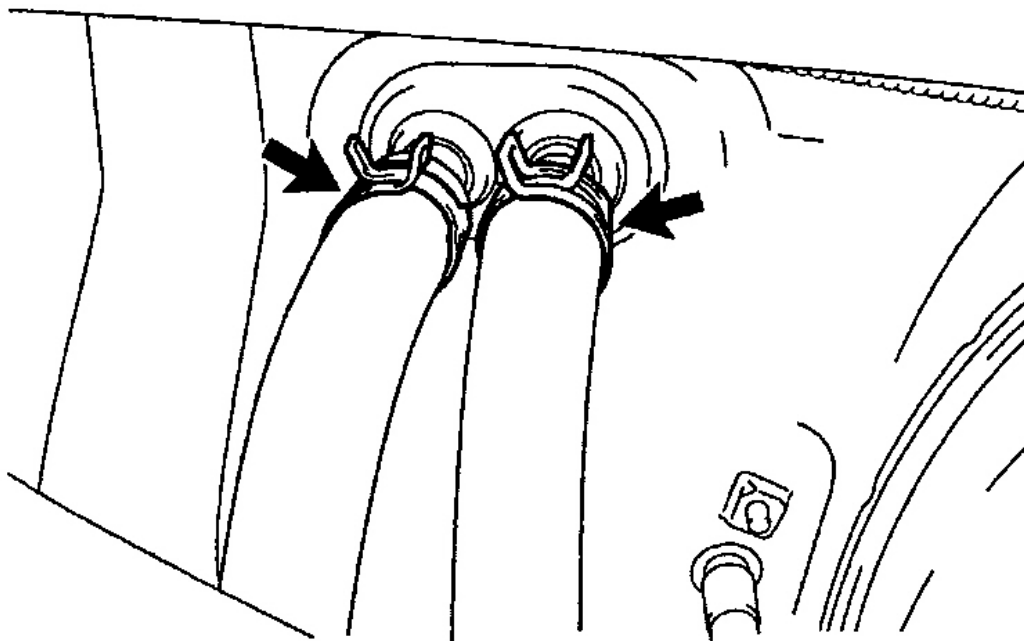


**Fig. 61: Checking Fitting For Claw Of Piping Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**6. CONNECT WATER HOSES TO HEATER RADIATOR PIPE**

- a. Connect the 2 heater hoses.
- b. Push the water hose onto the heater radiator pipe as further as the grommet.



G02641373

**Fig. 62: Connecting Water Hoses To Heater Radiator Pipe**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Install the hose clip in a position, as shown in **Fig. 63**.

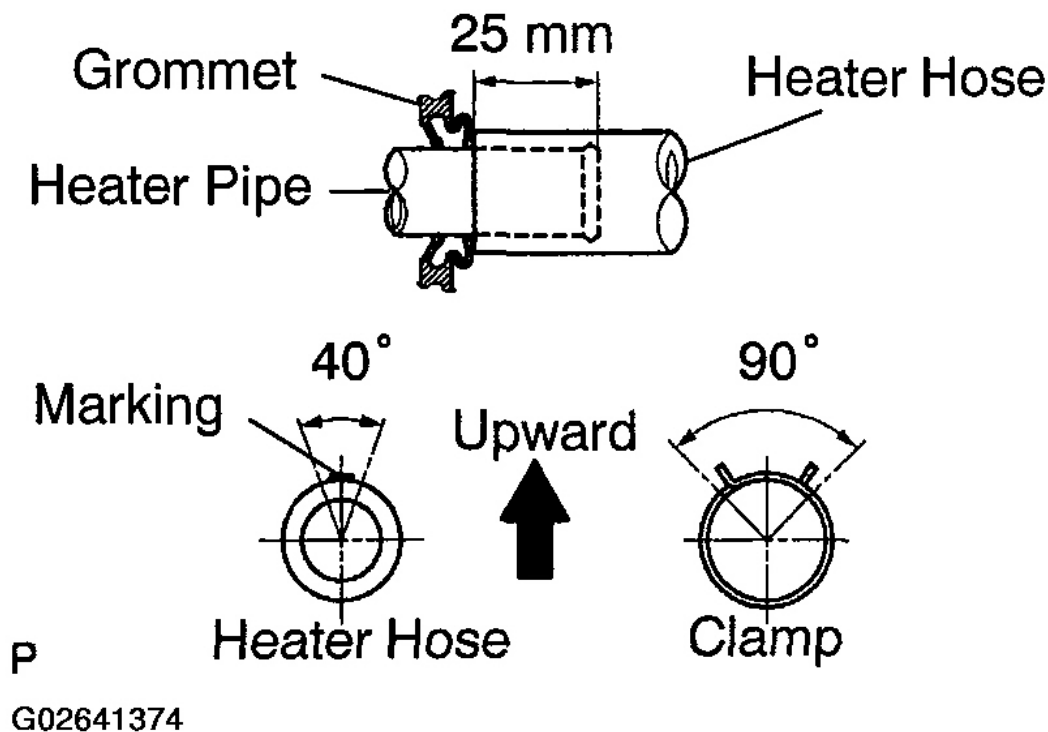


**Fig. 63: Identifying Installation Position Of Hose Clip**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Using pliers, grip the claw of the hose clip and slide the hose clip.
7. **FILL WITH ENGINE COOLANT (See REPLACEMENT )**
8. **CHARGE REFRIGERANT TO REFRIGERATION SYSTEM**
  - a. Evacuate air from refrigeration system.
  - b. Charge system with refrigerant and inspect for leakage of refrigerant.

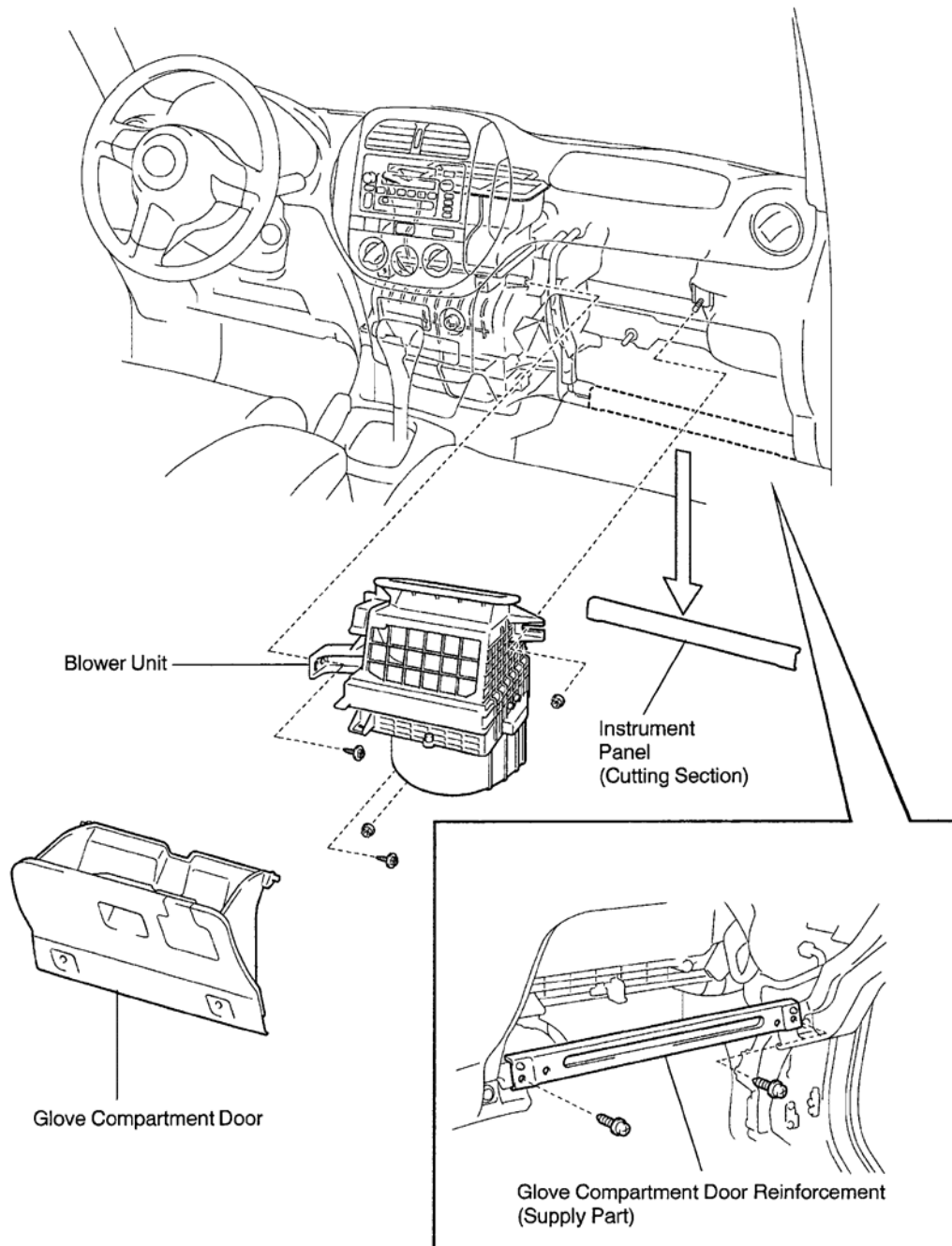
**Specified amount: 500 +/- 50 g (17.64 +/- 1.76 oz.)**

## BLOWER UNIT

### COMPONENT

## 2005 Toyota RAV4

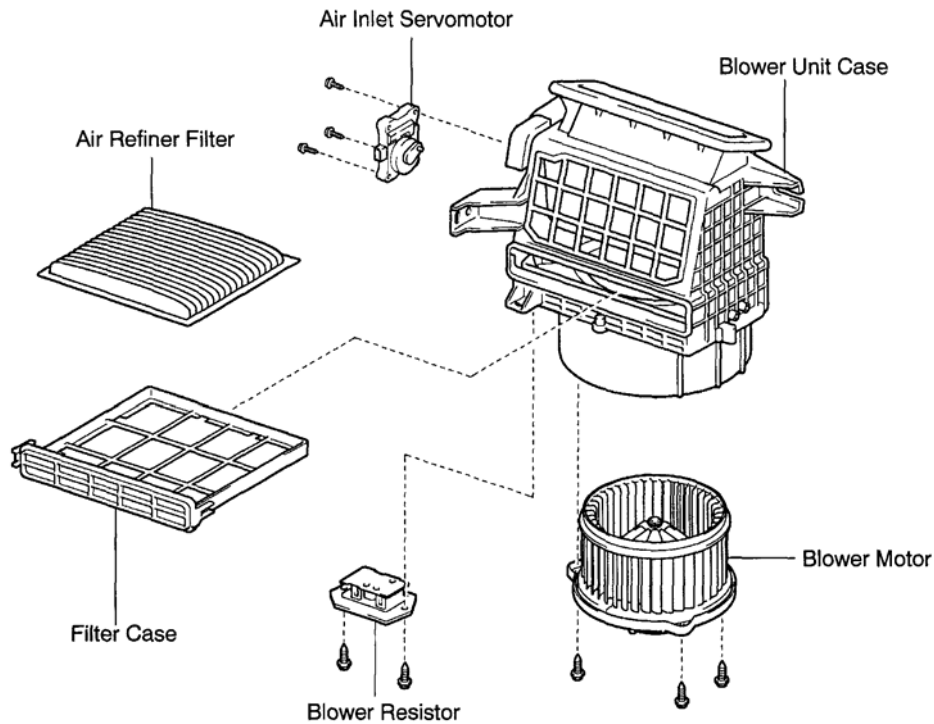
### 2005 HVAC Air Conditioning - RAV4



P

G02641375

**Fig. 64: Identifying Blower Unit Component (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



P  
G02641376

**Fig. 65: Identifying Blower Unit Component (2 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

1. REMOVE GLOVE COMPARTMENT DOOR
  - a. Open the glove compartment door.

Push both side inward one after another and pull out the glove compartment door.

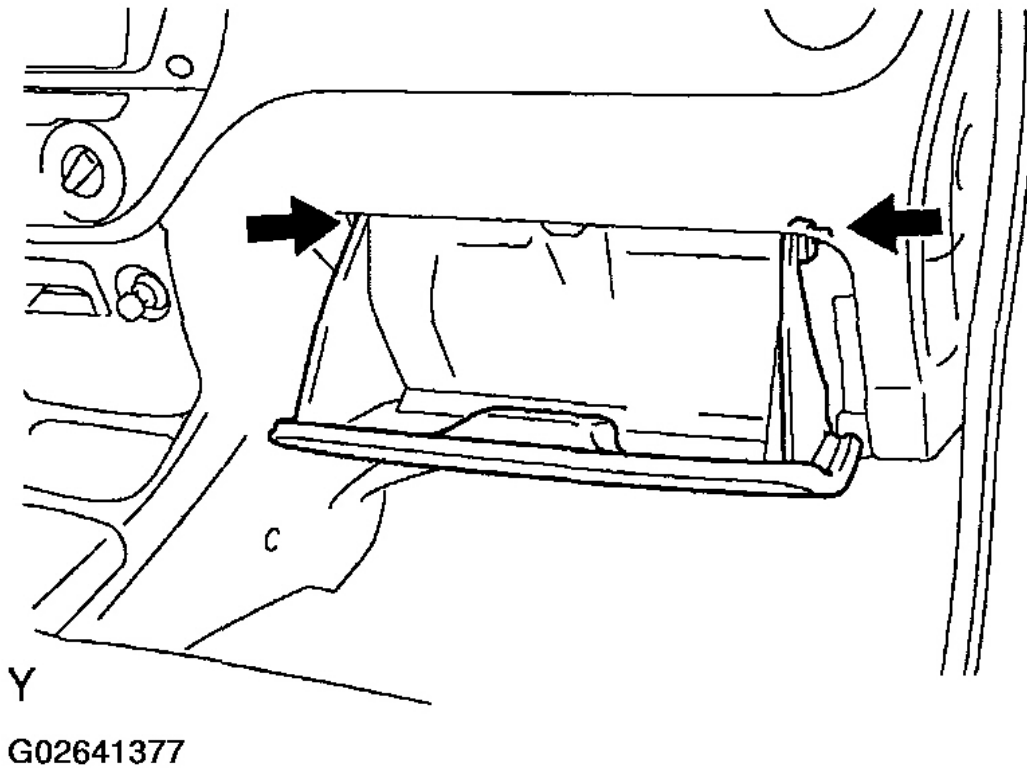


**Fig. 66: Removing Glove Compartment Door**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 2 screws and glove compartment door.
- c. Cut out the instrument panel as shown in **Fig. 67**.

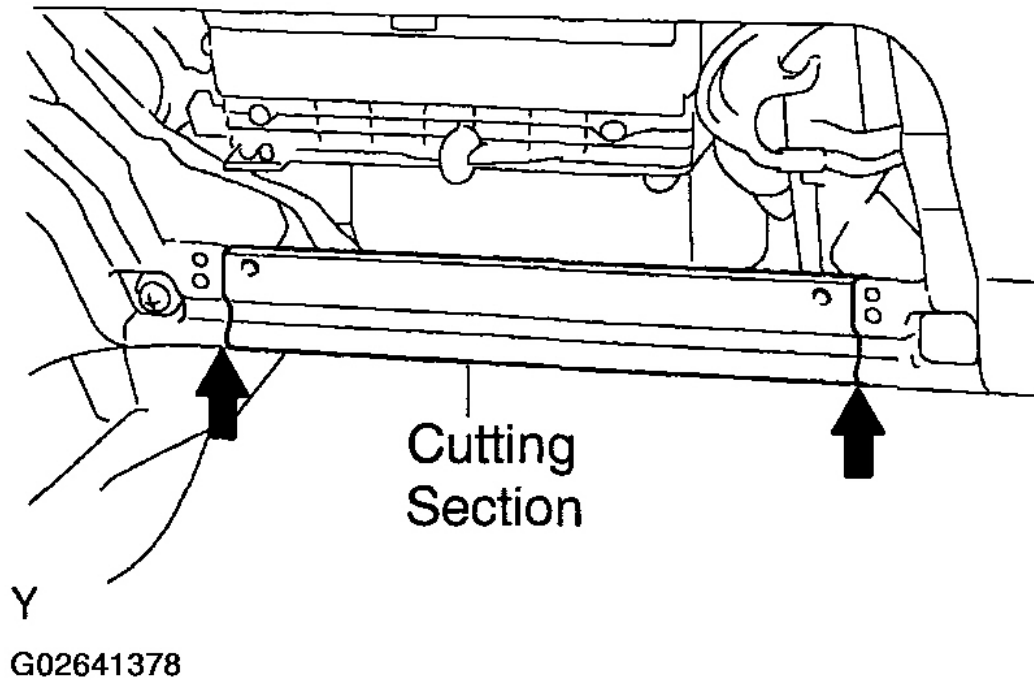


**Fig. 67: Identifying Cutting Section Of Instrument Panel**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

After cutting out the instrument panel, file the cutting face and smooth the surface.

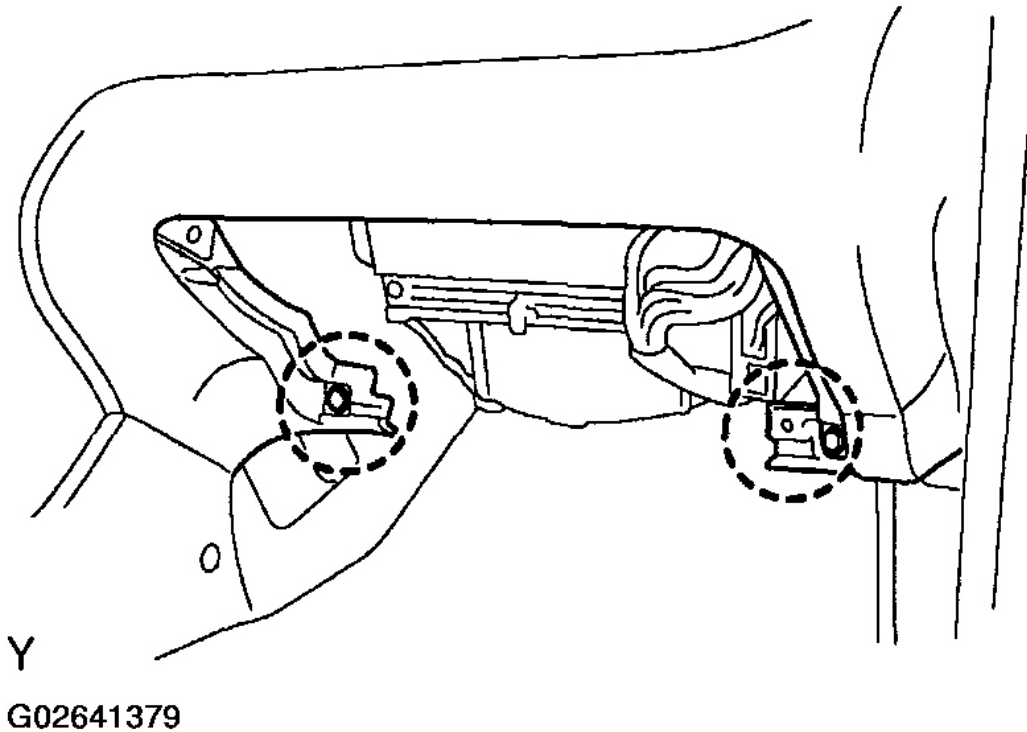


**Fig. 68: Identifying Cutting Face For Filing**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. REMOVE BLOWER UNIT

- a. Disconnect the blower resistor, blower motor connectors and harness clamps to the blower unit.
- b. Disconnect the air inlet servomotor connector.

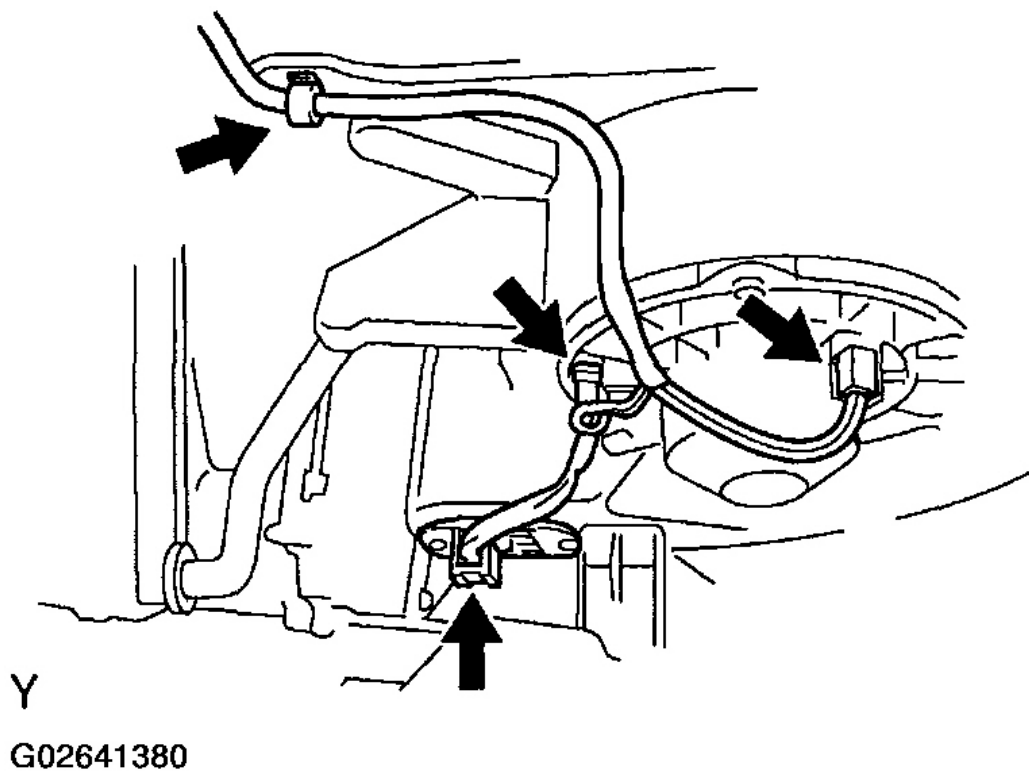


**Fig. 69: Disconnecting Blower Resistor, Blower Motor Connectors & Harness Clamps**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Remove the 2 screws, 2 nuts and blower unit.

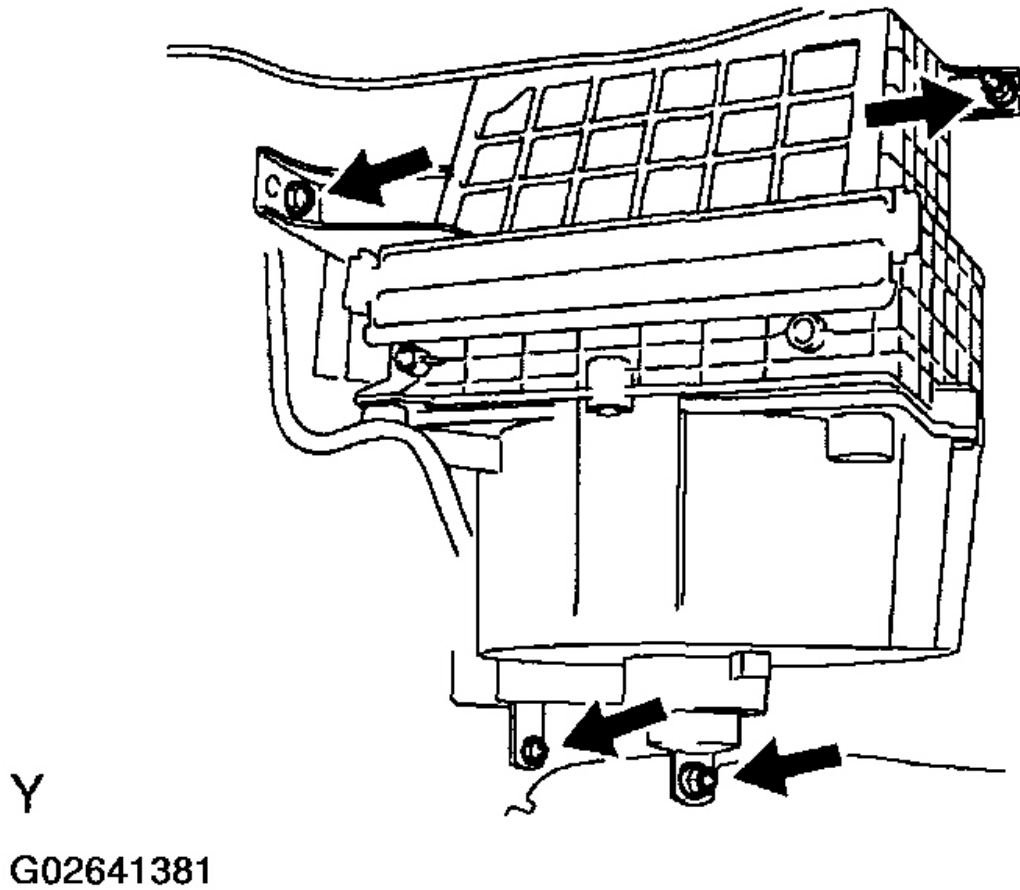
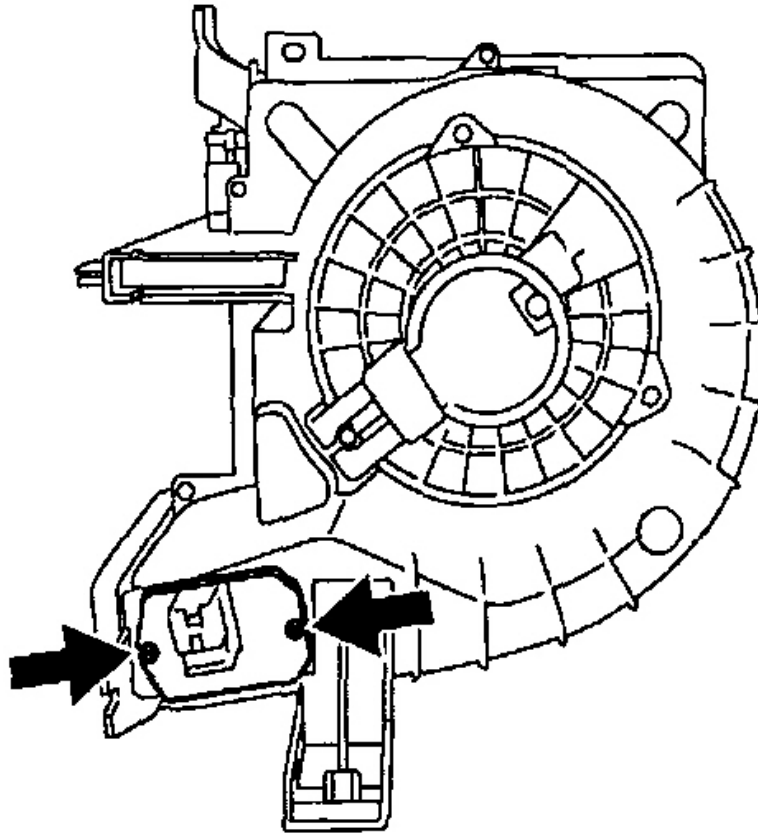


**Fig. 70: Removing Blower Unit**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## DISASSEMBLY

### 1. REMOVE BLOWER RESISTOR

Remove the 2 screws and blower resistor.



Y

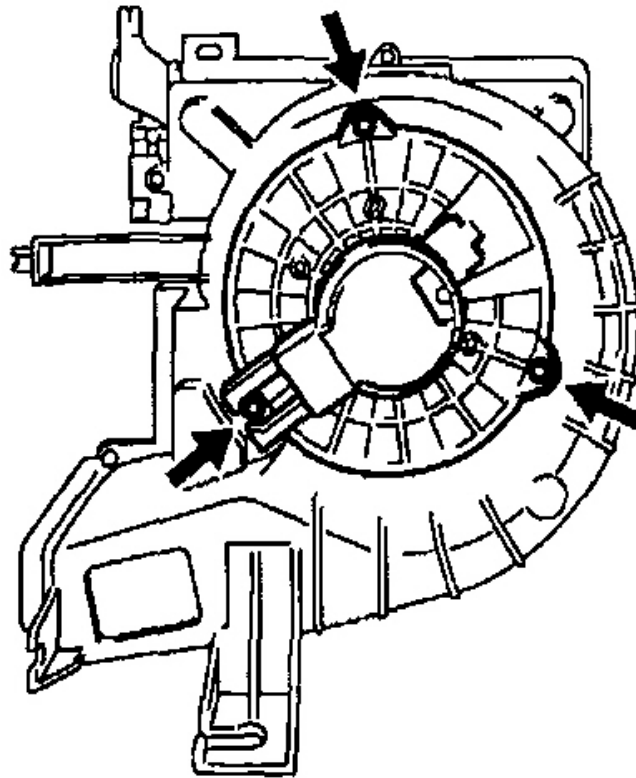
G02641382

**Fig. 71: Removing Blower Resistor**

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

2. **INSPECT BLOWER RESISTOR (See BLOWER RESISTOR)**
3. **REMOVE AIR REFINER FILTER**
  - a. Pull out the filter cover.
  - b. Remove the filter from the frame.
4. **REMOVE BLOWER MOTOR**

Using a Torx(R) wrench, remove the 3 screws and blower motor.



Y

G02641383

**Fig. 72: Removing Blower Motor**

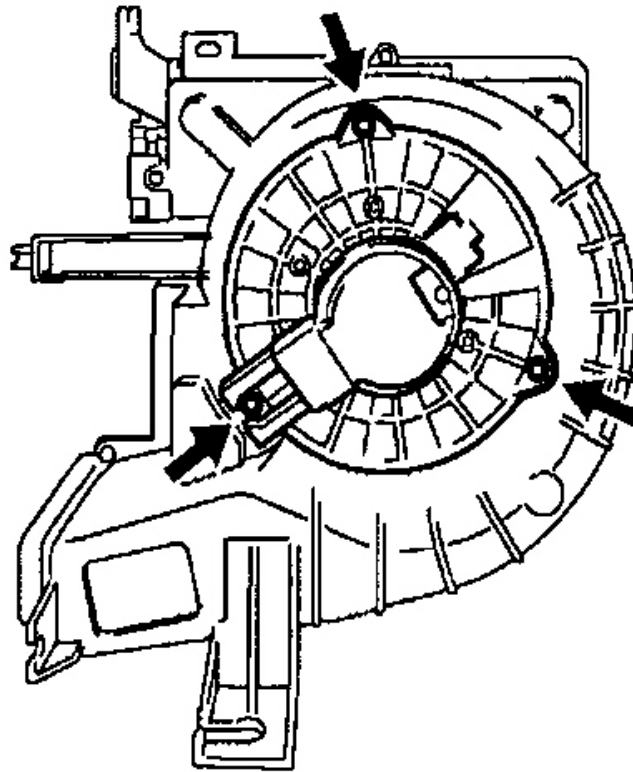
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. INSPECT BLOWER MOTOR (See BLOWER MOTOR)

## REASSEMBLY

1. INSTALL BLOWER MOTOR

Using a Torx(R) wrench, install the blower motor with the 3 screws.



Y

G02641384

**Fig. 73: Installing Blower Motor**

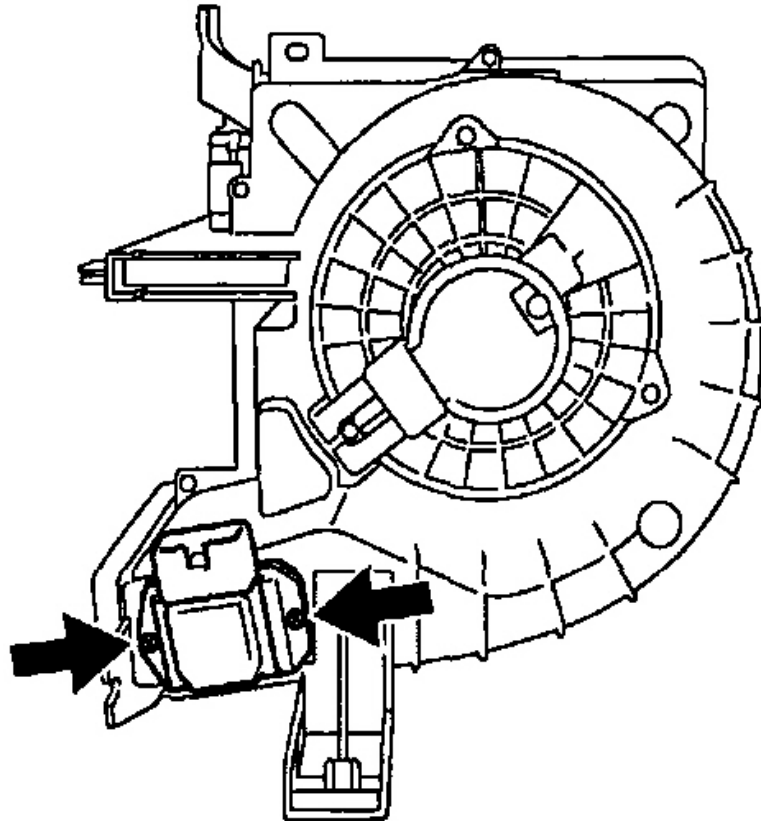
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. INSTALL AIR REFINER FILTER**

- a. Install the filter to the frame.
- b. Push into the filter cover.

**3. INSTALL BLOWER RESISTOR**

Install the blower resistor with the 2 screws.



Y

G02641385

**Fig. 74: Installing Blower Resistor**

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

## INSTALLATION

### 1. INSTALL BLOWER UNIT

- Install the blower unit with the 2 screws and 2 nuts.

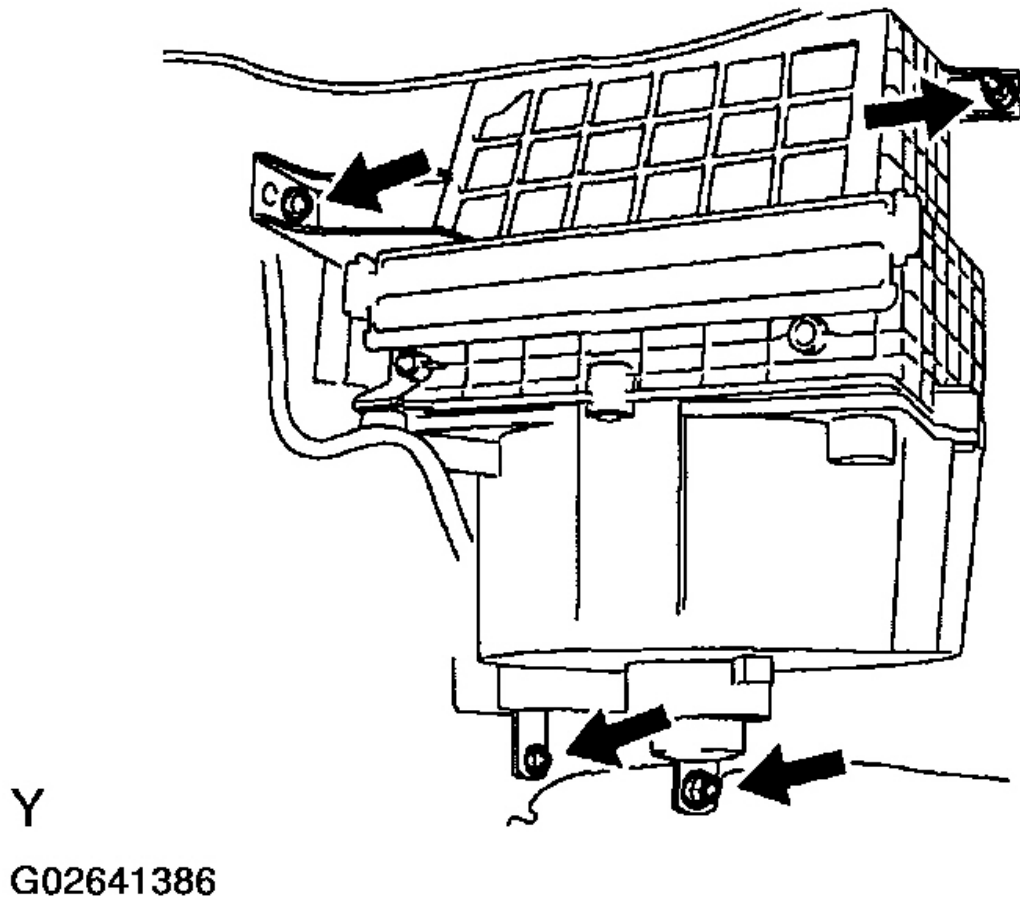


**Fig. 75: Installing Blower Unit**

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

- b. Connect the blower resistor, blower motor connectors and harness clamps to the blower unit.
- c. Connect the air inlet servomotor connector.

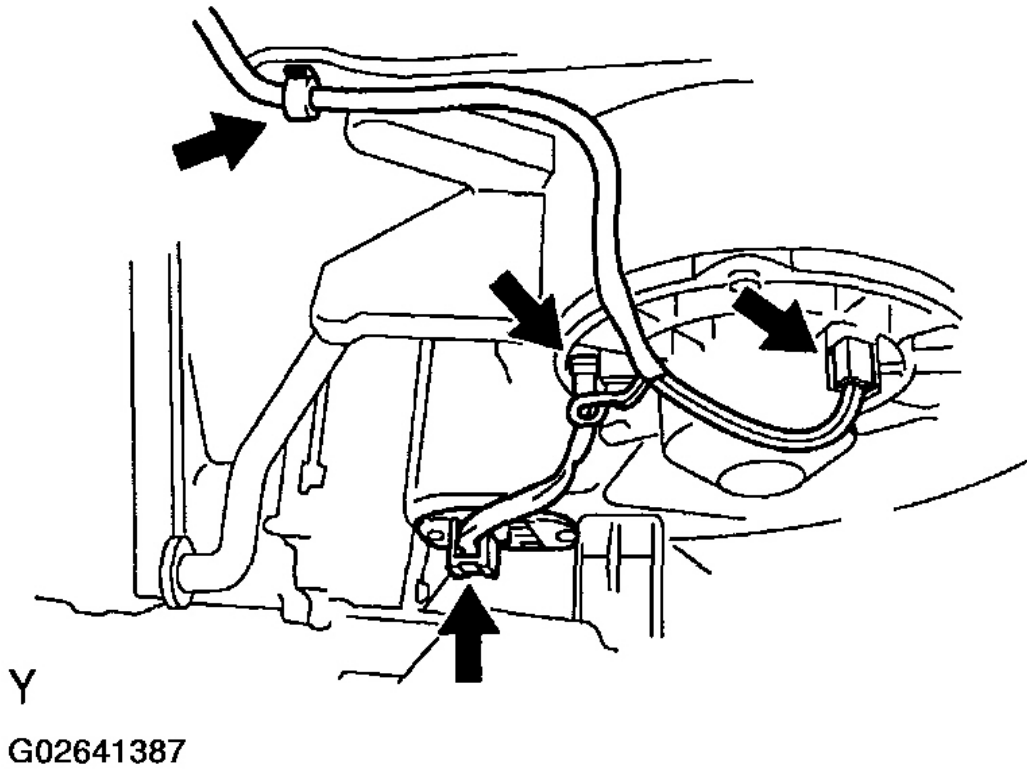
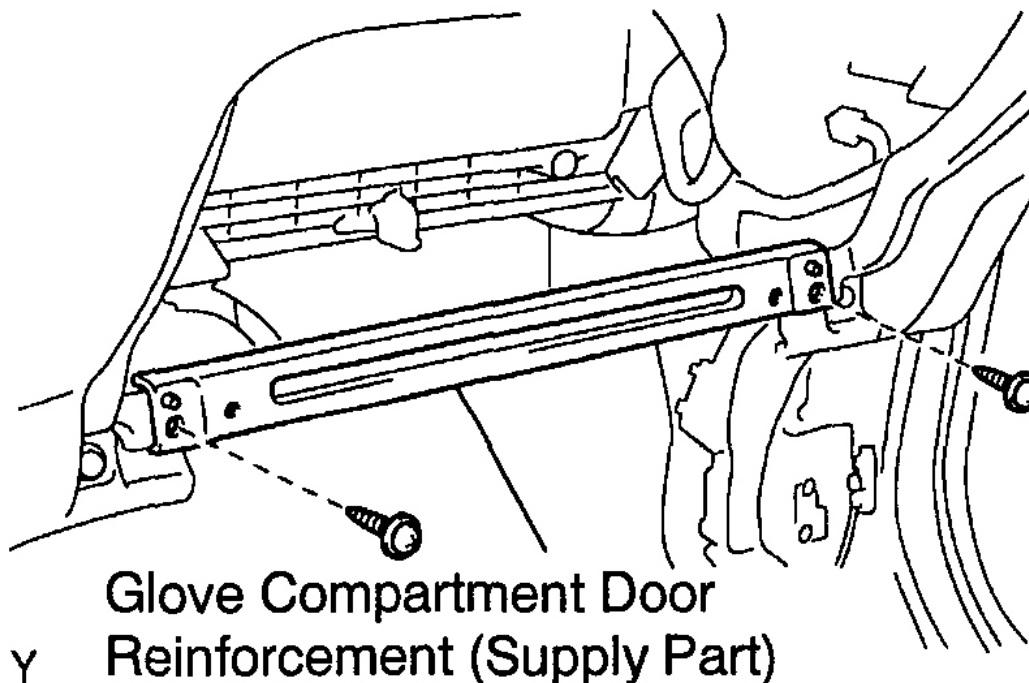


**Fig. 76: Connecting Blower Resistor, Blower Motor Connectors & Harness Clamps**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Install the glove compartment door reinforcement (supply part) with the 2 screws.



G02641388

**Fig. 77: Installing Glove Compartment Door Reinforcement**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSTALL GLOVE COMPARTMENT DOOR

# COMPRESSOR AND MAGNETIC CLUTCH

## ON-VEHICLE INSPECTION

### 1. INSPECT COMPRESSOR FOR METALLIC SOUND

Check there is abnormal metallic sound from the compressor when the A/C switch is ON.

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

### 2. INSPECT REFRIGERANT PRESSURE (See ON-VEHICLE INSPECTION)

### 3. INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT

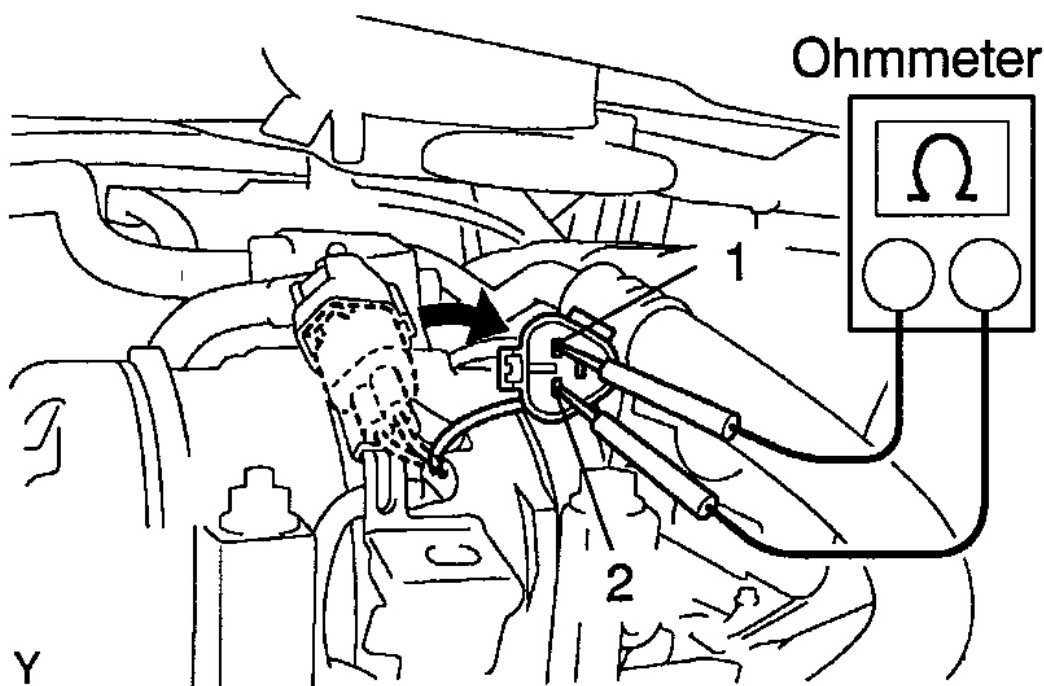
Using a gas leak detector, check for leakage of refrigerant. If there is any leakage, replace the compressor assembly.

**4. INSPECT COMPRESSOR LOCK SENSOR RESISTANCE**

- a. Disconnect the connector.
- b. Using an ohmmeter, measure the resistance between the terminals 1 and 2.

**Standard resistance: 165 - 205 ohm at 20°C (68°F)**

If resistance is not as specified, replace the sensor.



G02641389

**Fig. 78: Inspecting Compressor Lock Sensor Resistance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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 the 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 connector.
- b. Connect the positive (+) lead from the battery to the terminal 3 and negative (-) lead to the body ground.
- c. Check that the magnetic clutch energized.

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

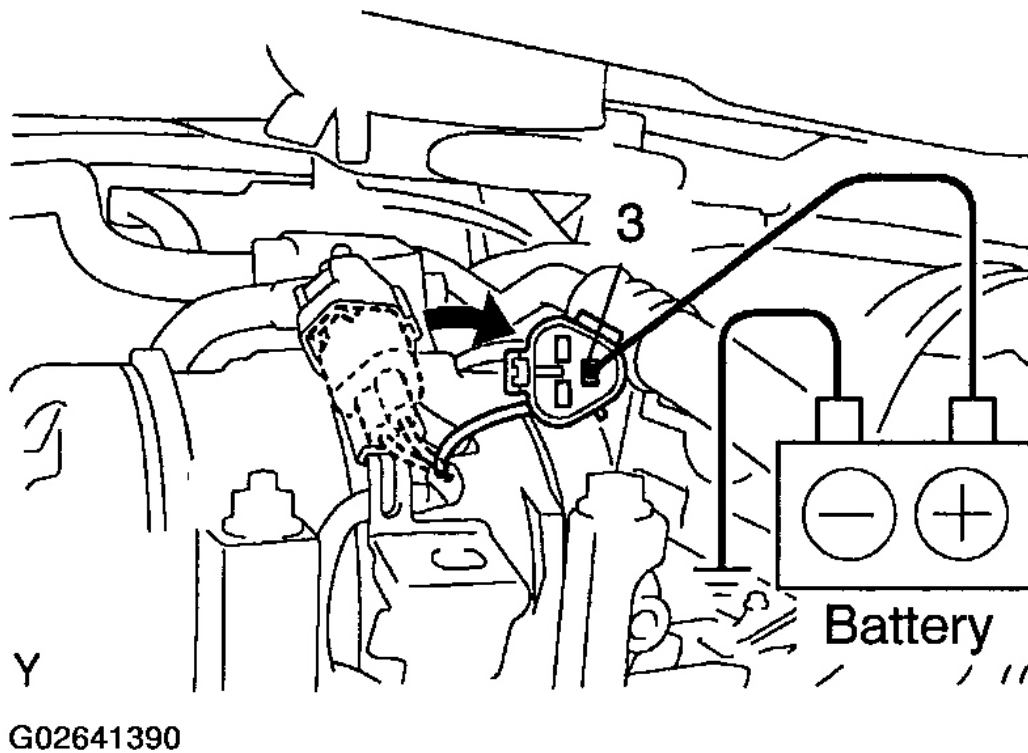


**Fig. 79: Inspecting Magnetic Clutch Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**COMPONENTS**

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

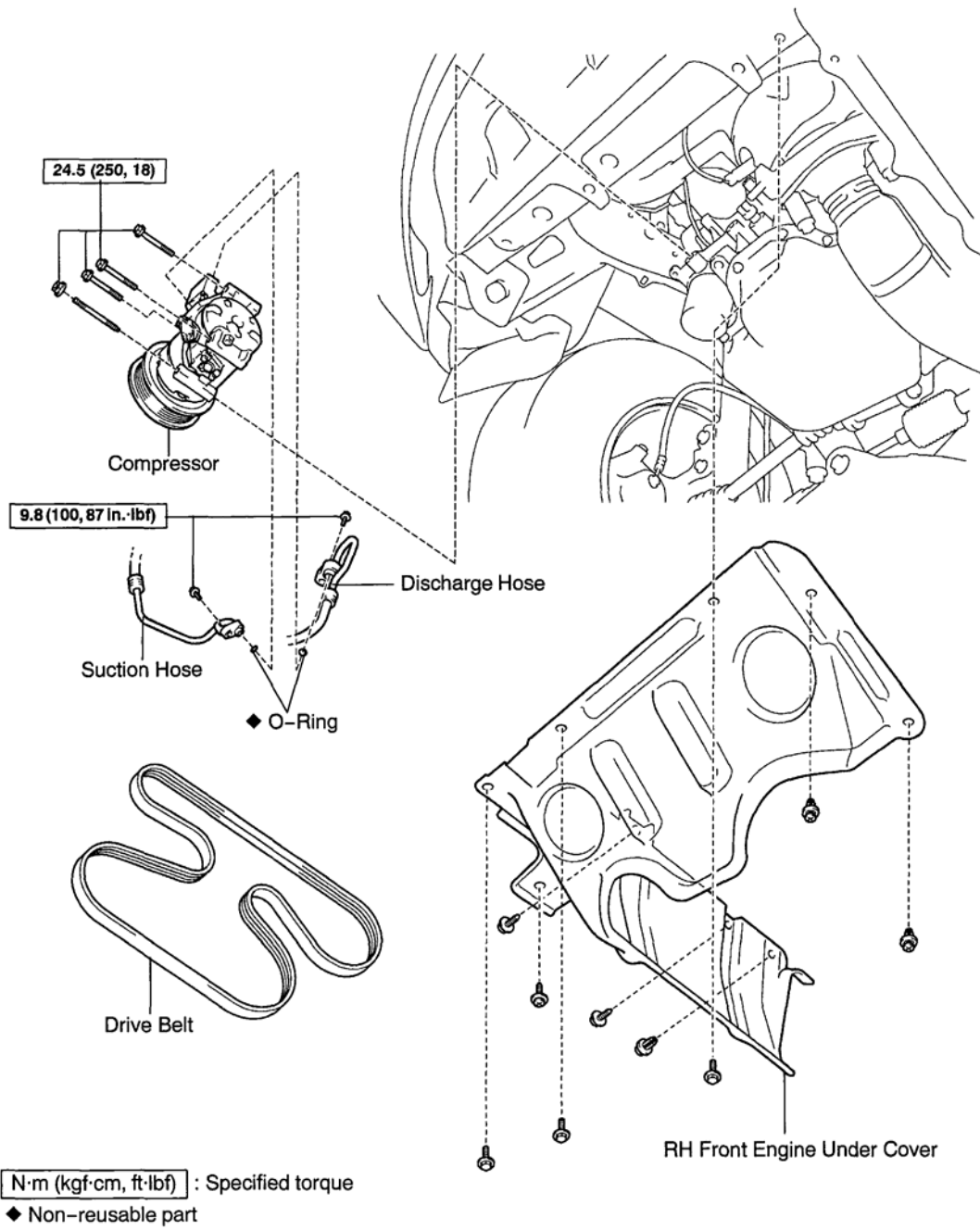
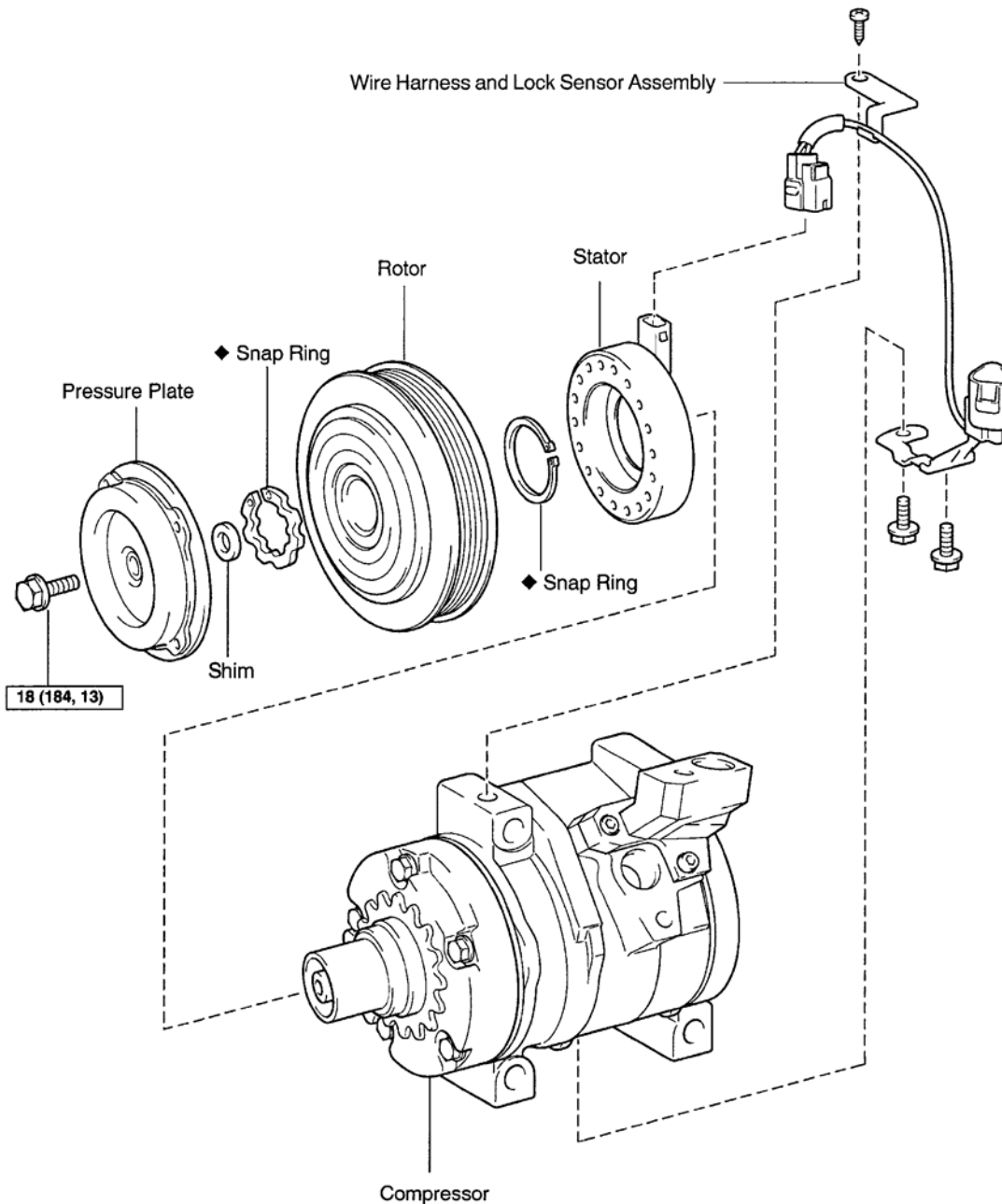


**Fig. 80: Identifying Compressor And Magnetic Clutch Components & Torque Specifications (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



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

P ◆ Non-reusable part

G02641392

**Fig. 81: Identifying Compressor And Magnetic Clutch Components & Torque Specifications (2 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

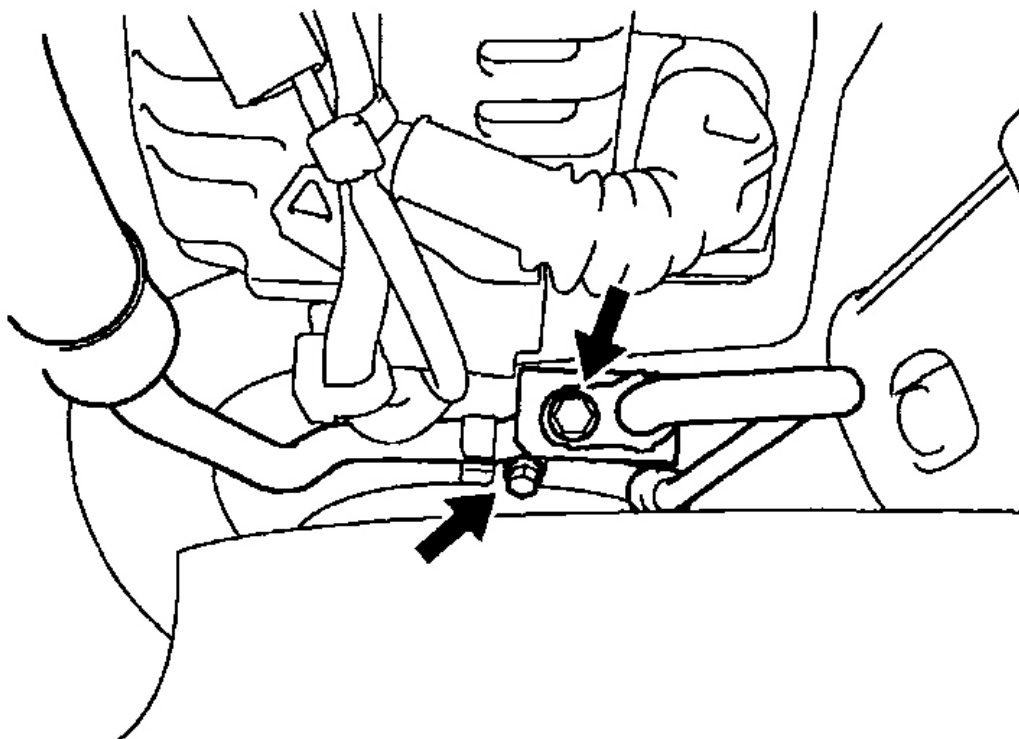
## REMOVAL

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 RH FRONT ENGINE UNDER COVER**
6. **REMOVE DRIVE BELT (See REPLACEMENT)**
7. **DISCONNECT DISCHARGE AND SUCTION HOSES**

Remove the 2 bolts and disconnect both hoses.

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



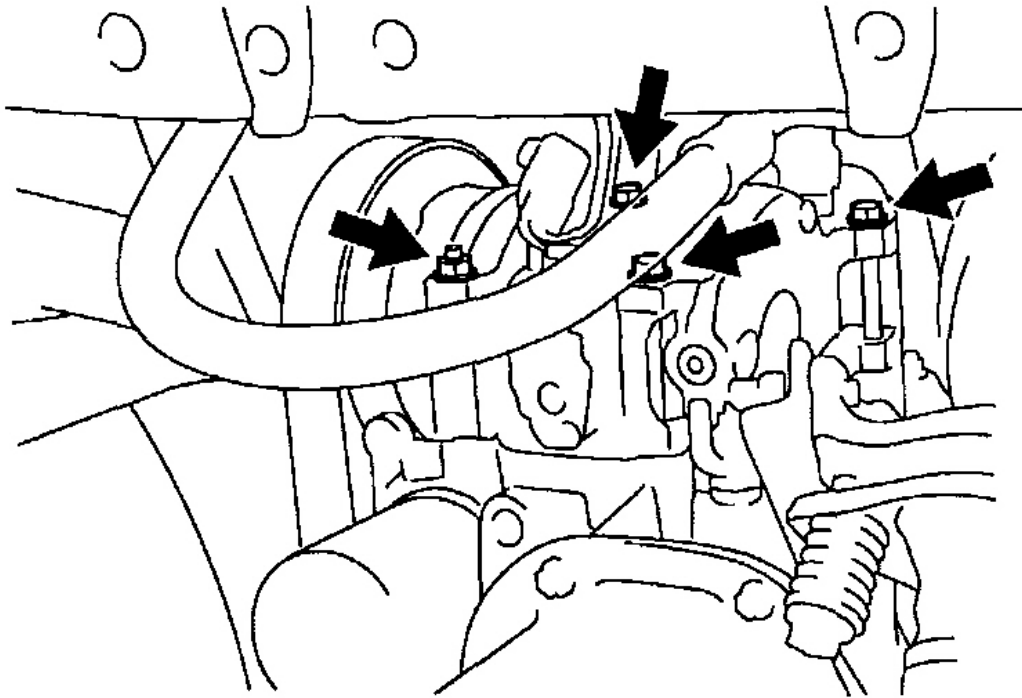
G02641393

**Fig. 82: Disconnecting Discharge And Suction Hoses**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. **REMOVE COMPRESSOR**

- a. Disconnect the connector.
- b. Remove the 3 bolts, nut, stud bolt and compressor.

**NOTE:** Be careful not to damage the discharge and suction hose.



G02641394

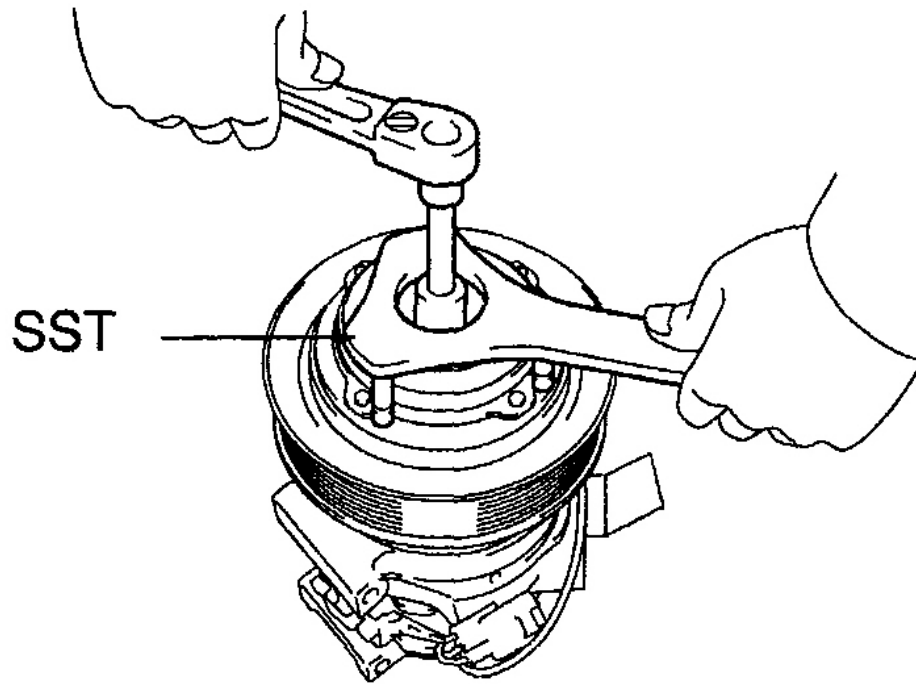
**Fig. 83: Removing Compressor**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## **DISASSEMBLY**

### **1. REMOVE PRESSURE PLATE**

- a. Using SST and a socket wrench, remove the shaft bolt.

SST 07112-76060



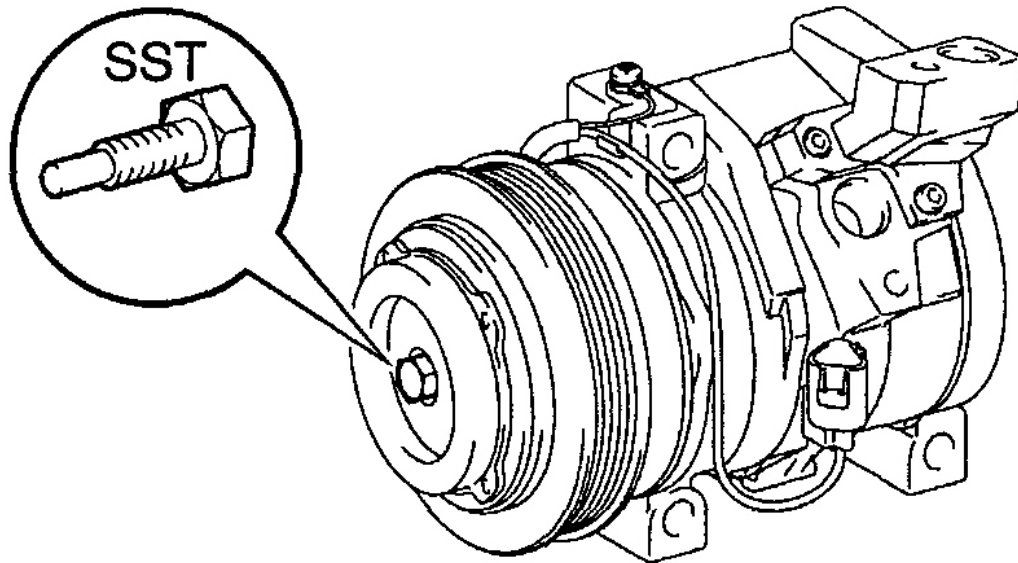
P

G02641395

**Fig. 84: Removing Pressure Plate Shaft Bolt Using SST**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install SST on the pressure plate.

SST 07112-66040



**P**

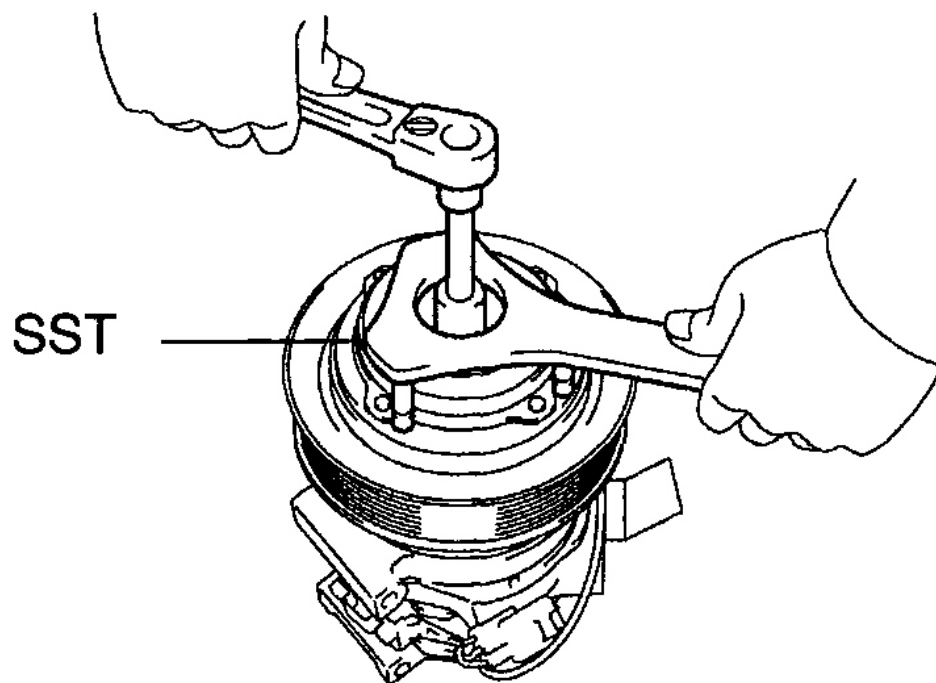
G02641396

**Fig. 85: Installing SST On Pressure Plate**

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

- c. Using SST and socket wrench, remove the pressure plate.

SST 07112-66040, 07112-76060



P

G02641397

**Fig. 86: Removing Pressure Plate**

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

- d. Remove the shims from the pressure plate.

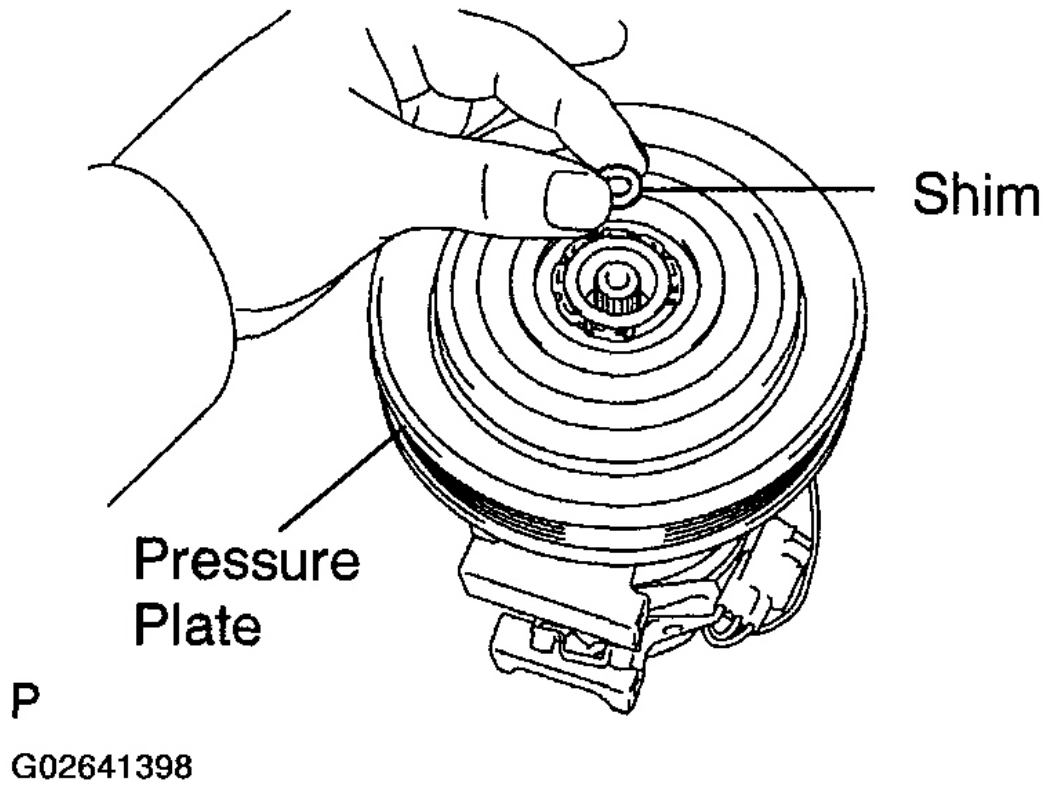
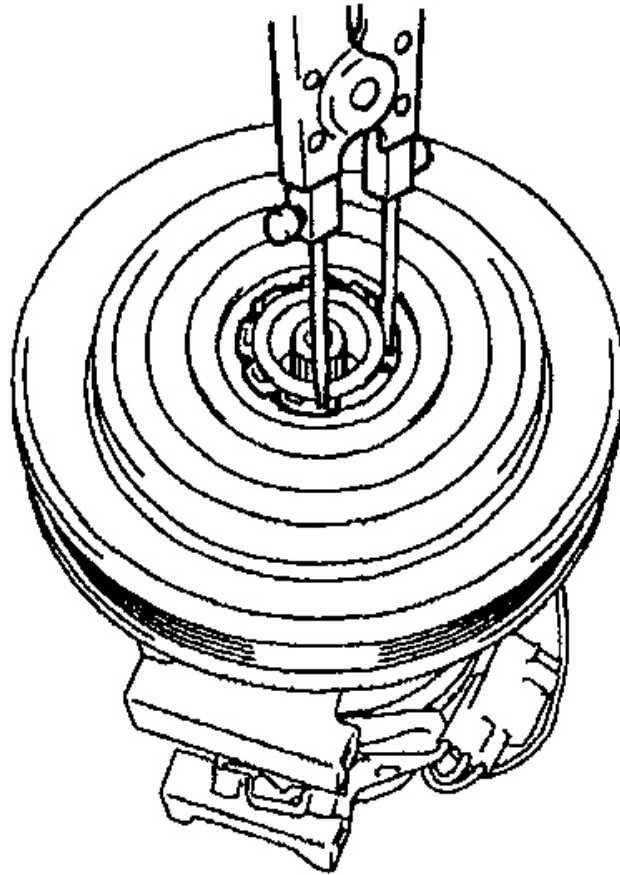


**Fig. 87: Removing Pressure Plate Shims**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. REMOVE ROTOR**

- a. Using snap ring pliers, remove the snap ring.



P

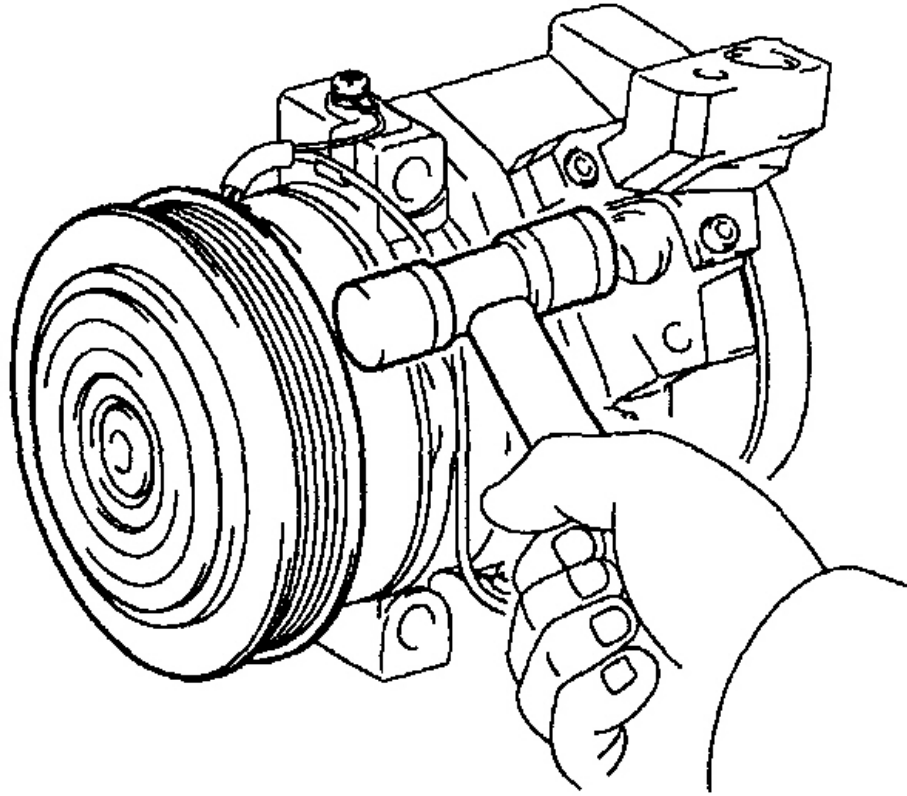
G02641399

**Fig. 88: Removing Snap Ring**

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

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

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



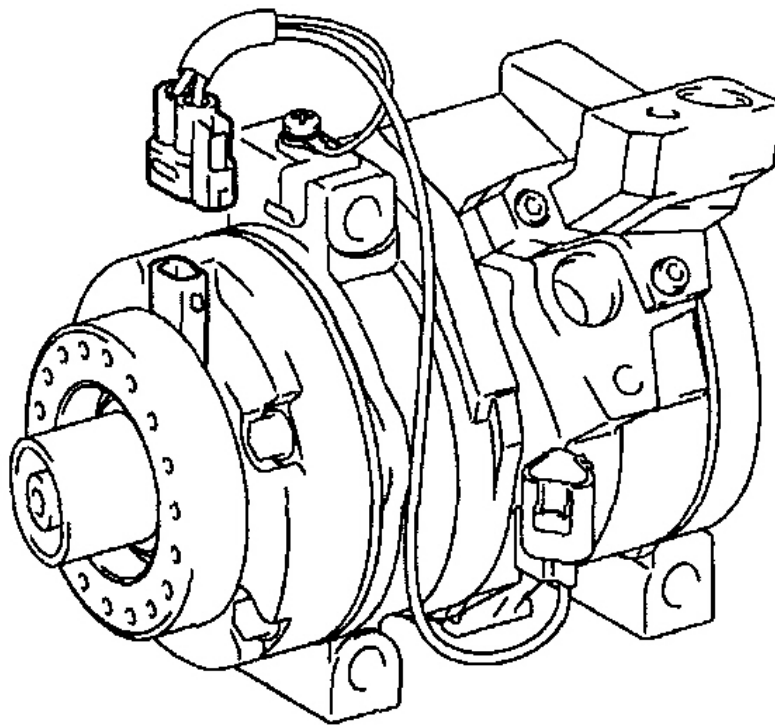
P

G02641400

**Fig. 89: Tapping Rotor Off Shaft Using Plastic Hammer**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. REMOVE STATOR

- a. Disconnect the connector from the stator.

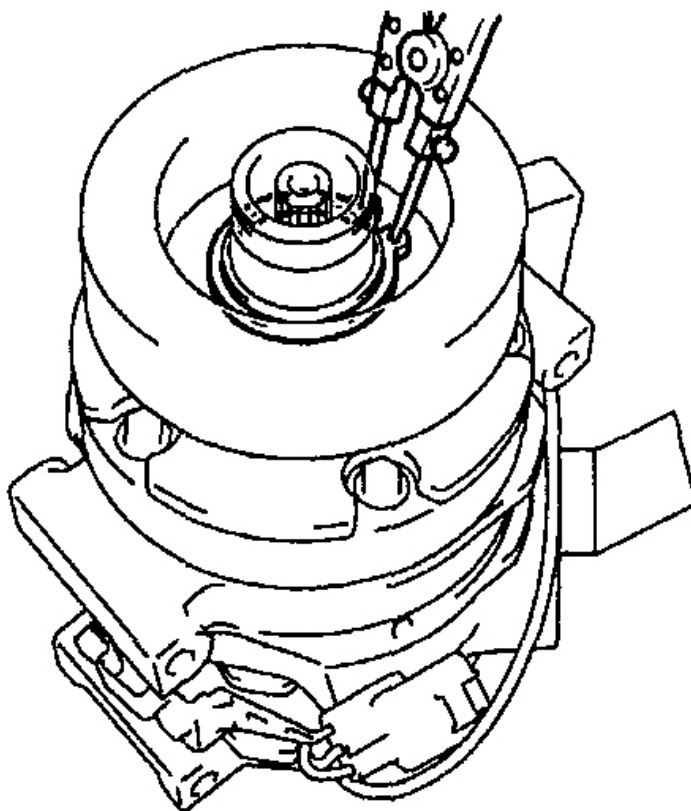


P

G02641401

**Fig. 90: Disconnecting Connector From Stator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using snap ring pliers, remove the snap ring.



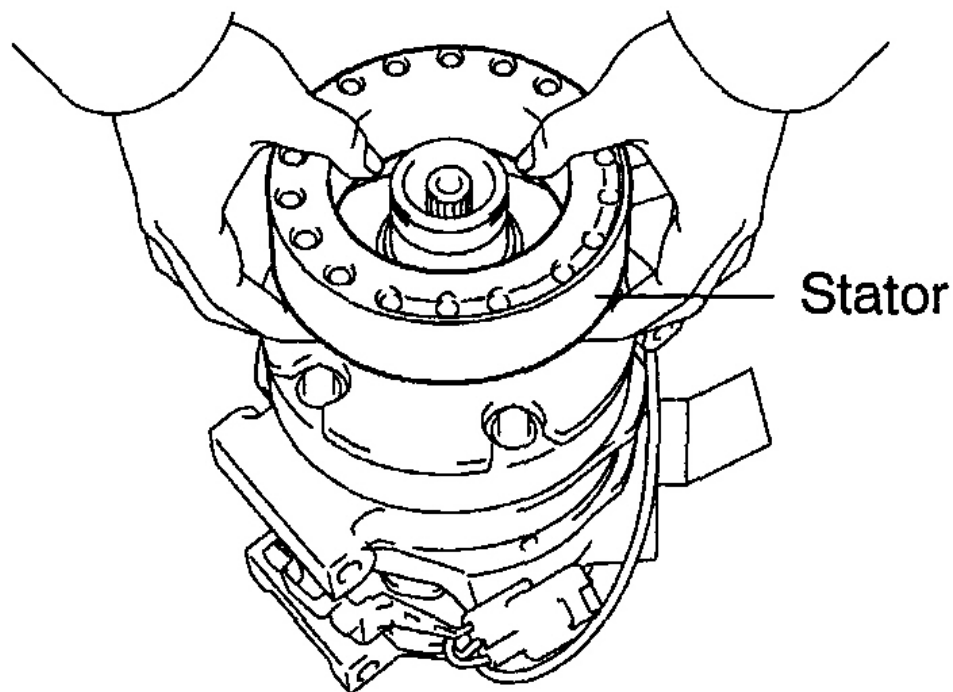
**P**

**G02641402**

**Fig. 91: Removing Snap Ring**

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

- c. Remove the stator.



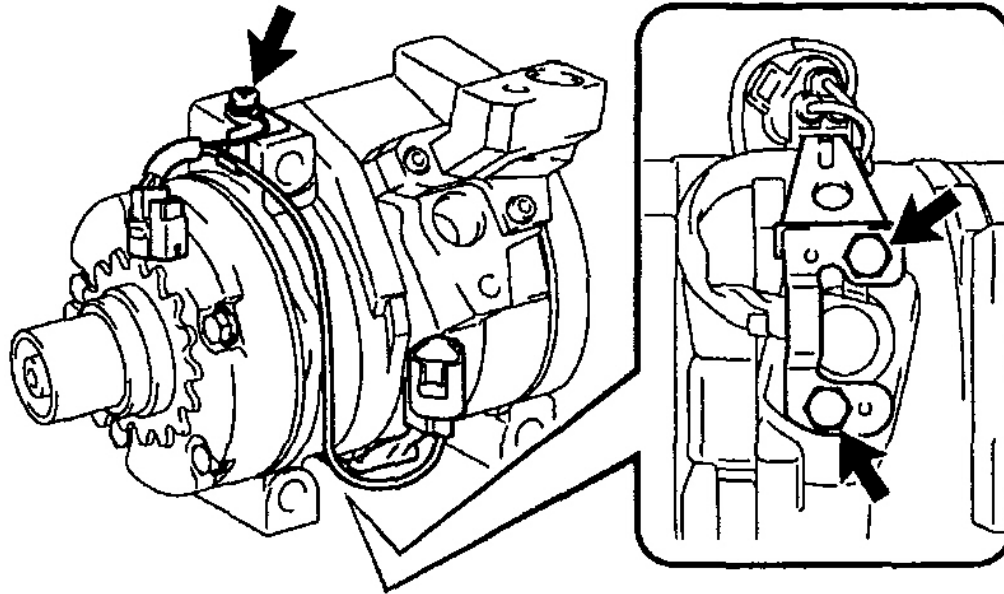
P

G02641403

**Fig. 92: Removing Stator**

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

- d. Remove the 2 bolts, screw, wire harness and lock sensor assembly.



P

G02641404

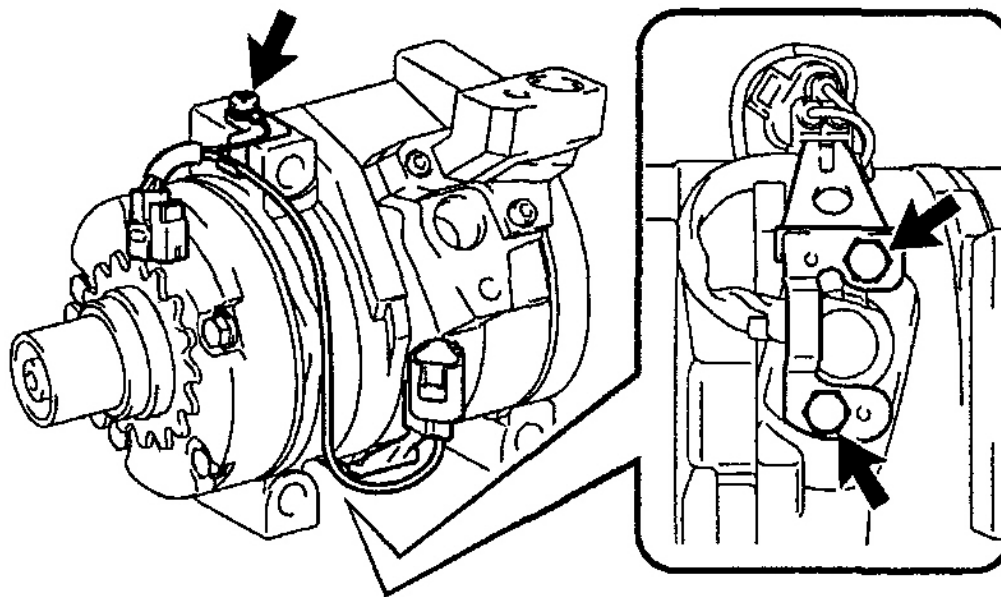
**Fig. 93: Removing Lock Sensor Assembly**

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

## REASSEMBLY

### 1. INSTALL STATOR

- a. Install the wire harness and lock sensor assembly with the 2 bolts and screw.

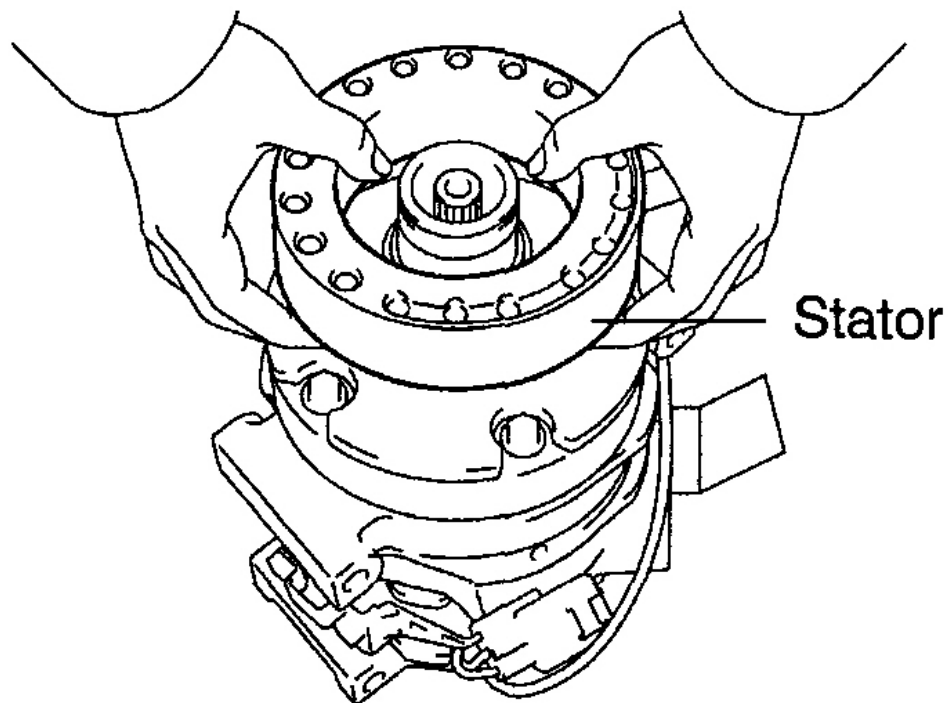


P

G02641405

**Fig. 94: Installing Wire Harness And Lock Sensor Assembly With Bolts And Screw**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the stator.



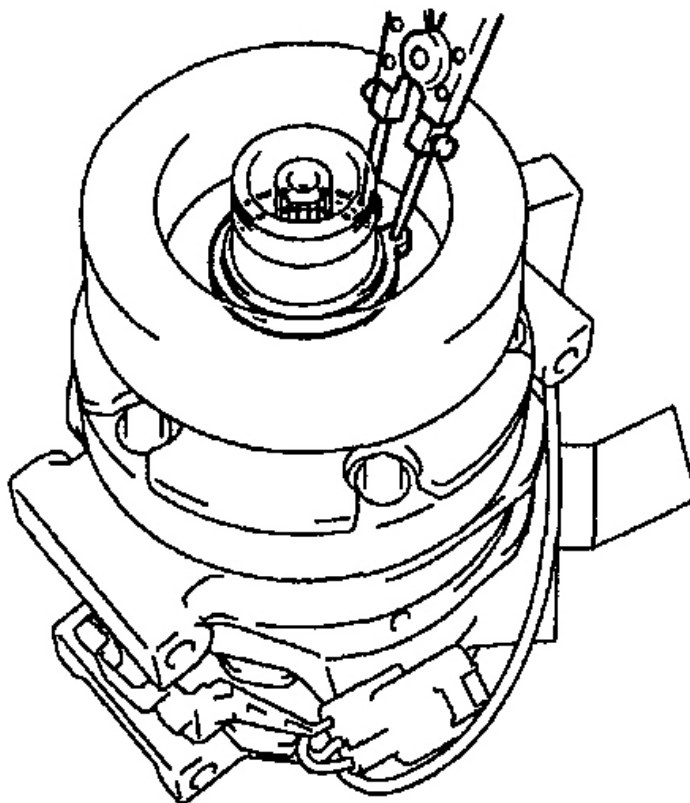
P

G02641406

**Fig. 95: Installing Stator**

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

- c. Using snap ring pliers, install the snap ring.



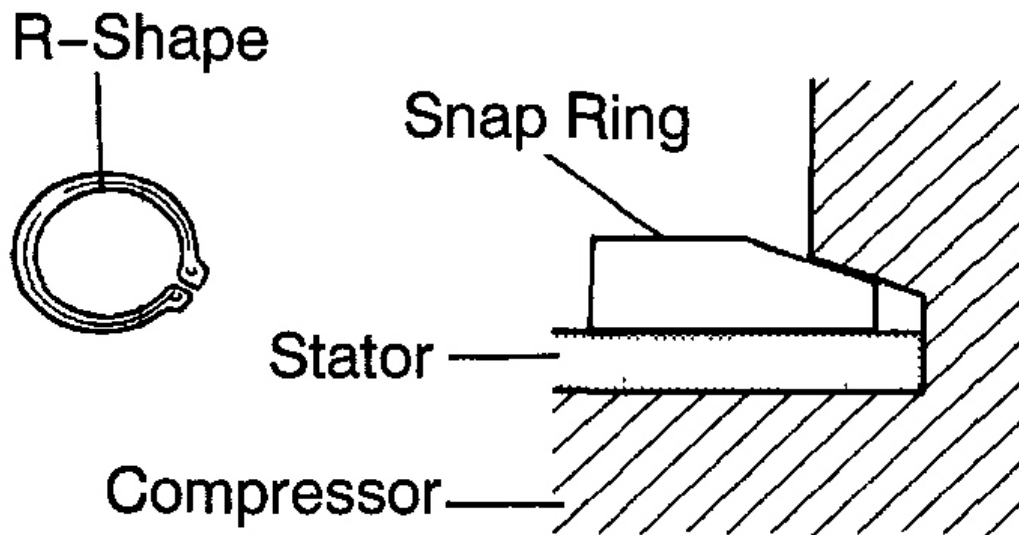
P

G02641407

**Fig. 96: Installing Snap Ring**

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

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

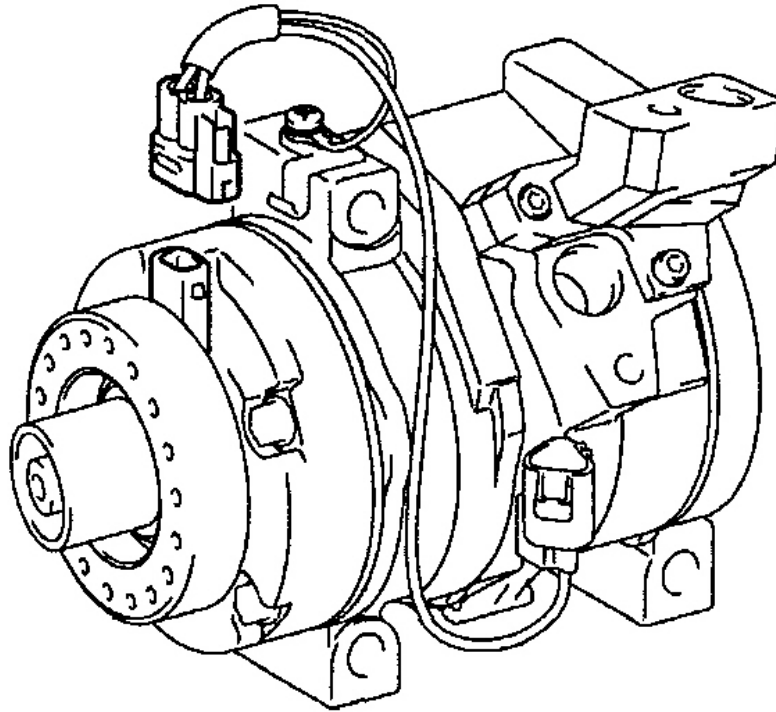


G02641408

**Fig. 97: Identifying Installation Of Snap Ring**

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

- d. Connect the connector to the stator.



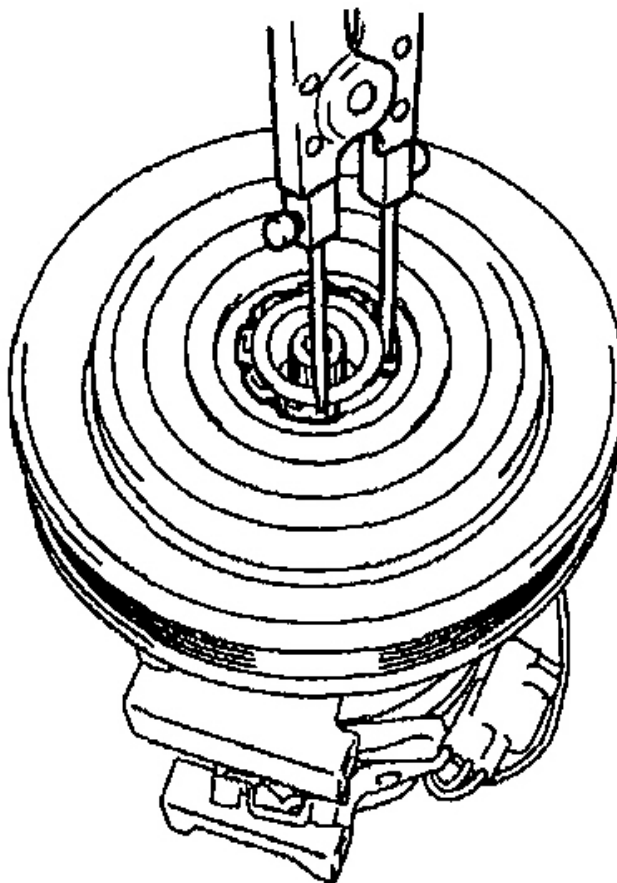
P

G02641409

**Fig. 98: Connecting Connector To Stator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSTALL ROTOR

- a. Install the rotor.
- b. Using snap ring pliers, install the snap ring.



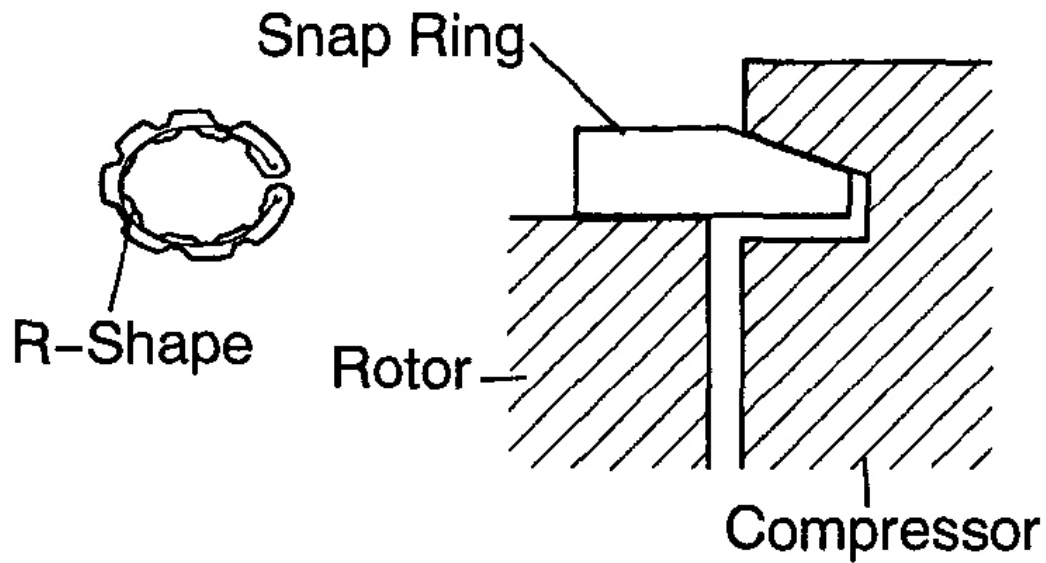
P

G02641410

**Fig. 99: Installing Snap Ring**

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

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



G02641411

**Fig. 100: Identifying Installation Position Of Snap Ring**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. INSTALL PRESSURE PLATE

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

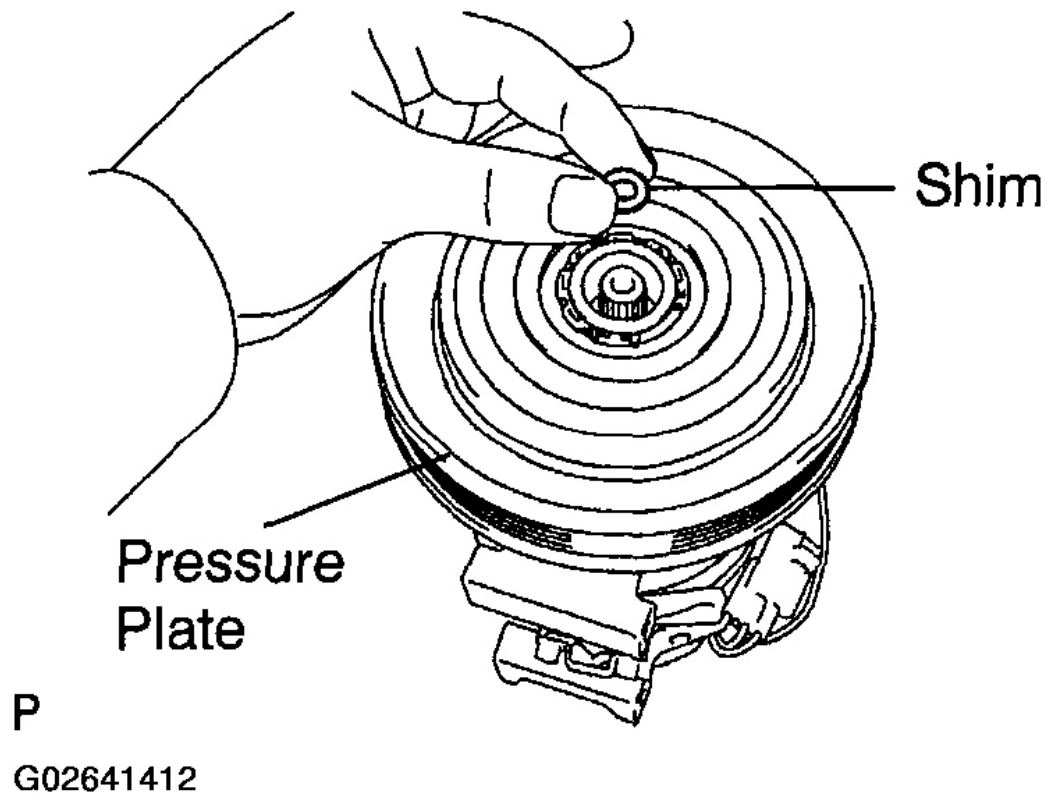


**Fig. 101: Installing Pressure Plate Shims**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

**SST 07112-66040, 07112-76060**

**Torque: 18 N.m (184 kgf.cm, 13.2 ft.lbf)**

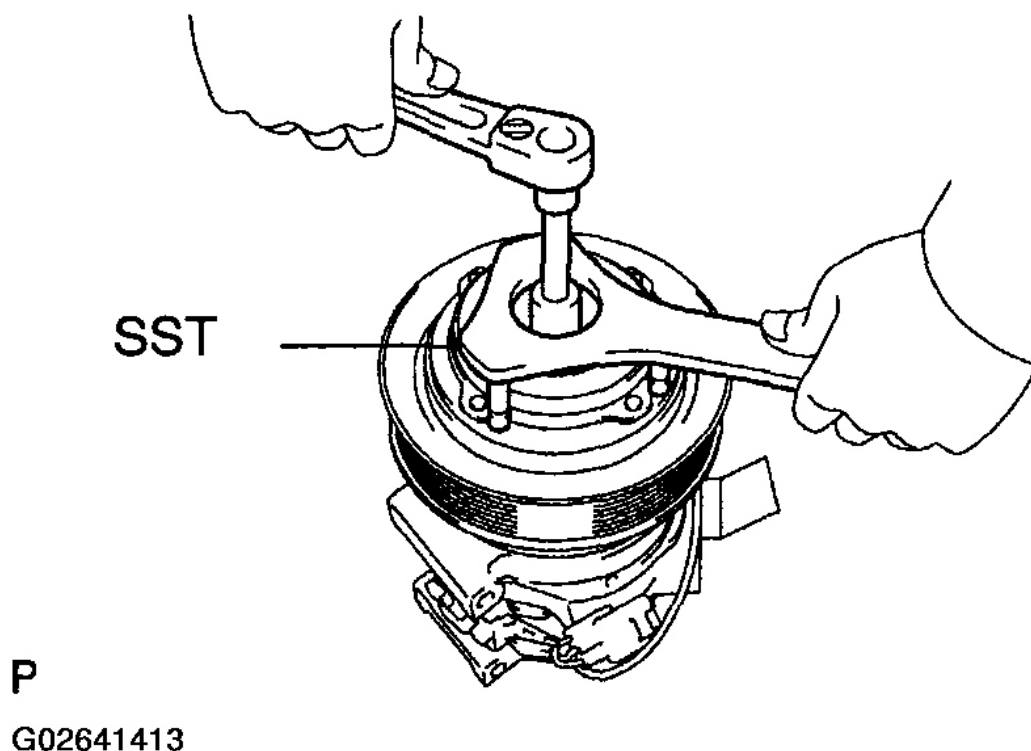


**Fig. 102: Installing Pressure Plate Shaft Bolt**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 4. INSPECT MAGNETIC CLUTCH CLEARANCE

- Set the dial indicator to the pressure plate of the magnetic clutch.
- Connect the positive (+) lead from the battery to the terminal 3 and the negative (-) lead to the ground.
- Check the clearance between the pressure plate and rotor when connecting the negative (-) terminal to the battery.

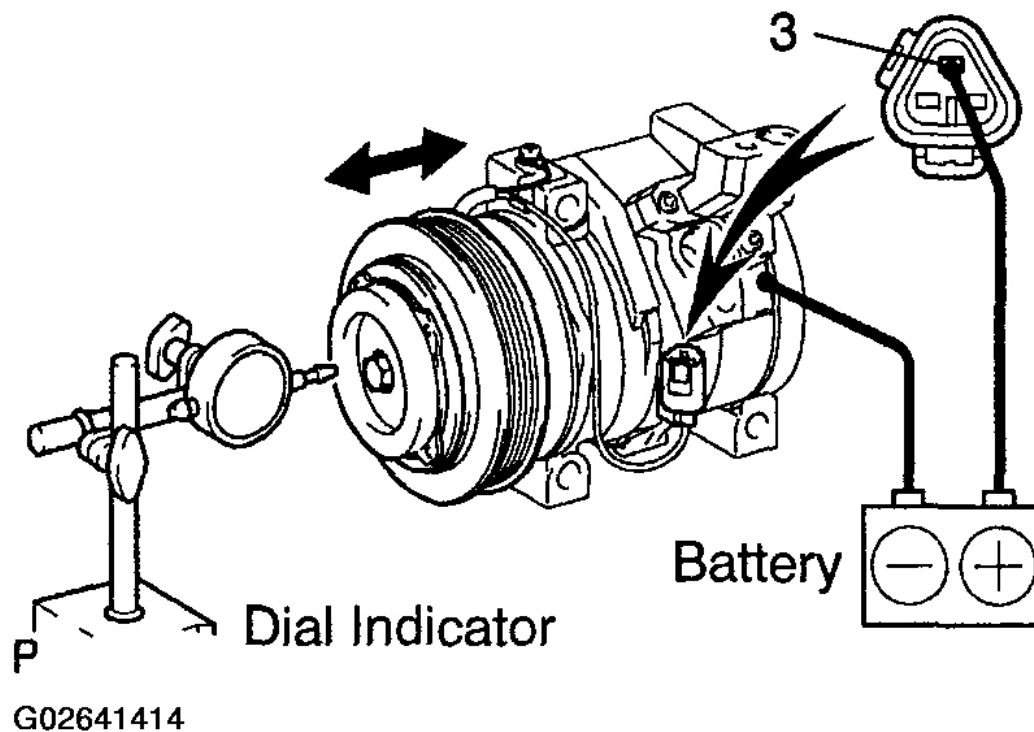


**Fig. 103: Inspecting Magnetic Clutch Clearance**

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

**Standard clearance:**

**0.45 + 0.15 mm (0.018 + 0.006 in.)**

**0.45 - 0.10 mm (0.018 - 0.004 in.)**

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

**Shim thickness:**

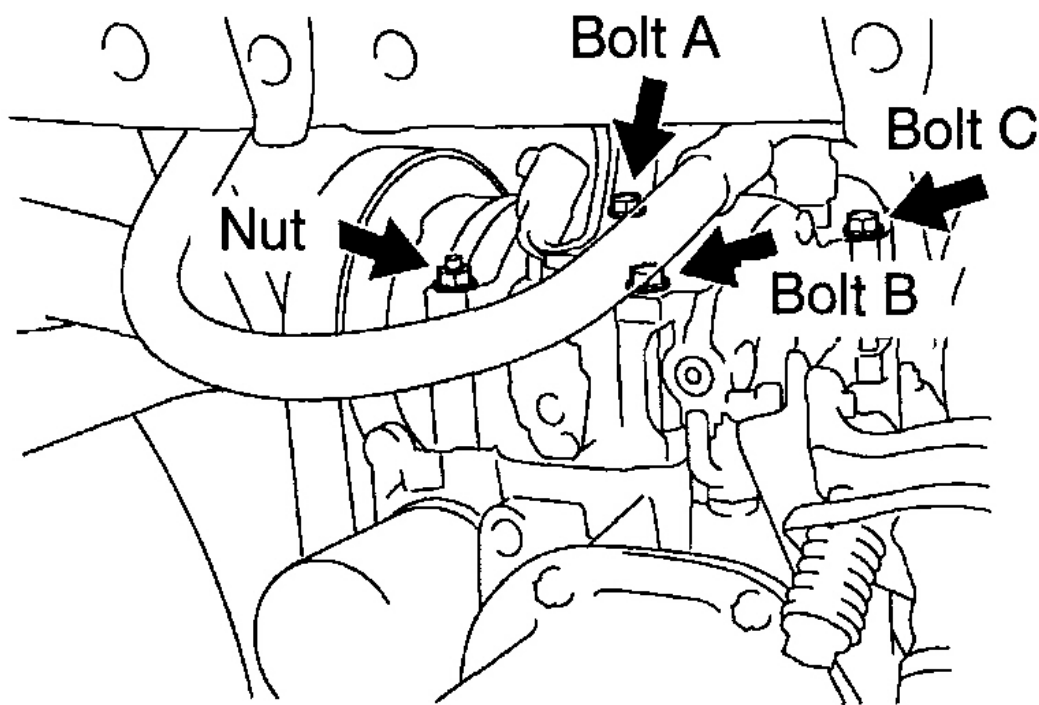
**0.1 mm (0.004 in.)**

**0.3 mm (0.012 in.)**

**0.5 mm (0.020 in.)**

## 1. INSTALL COMPRESSOR

- a. Install the compressor with the 3 bolts, nut and stud bolt.



G02641415

**Fig. 104: Installing Compressor**

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

- b. Temporarily tighten bolt A.

HINT:

Do not overtighten the bolt until the compressor no longer moves.

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

**Torque: 24.5 N.m (250 kgf.cm, 18 ft.lbf)**

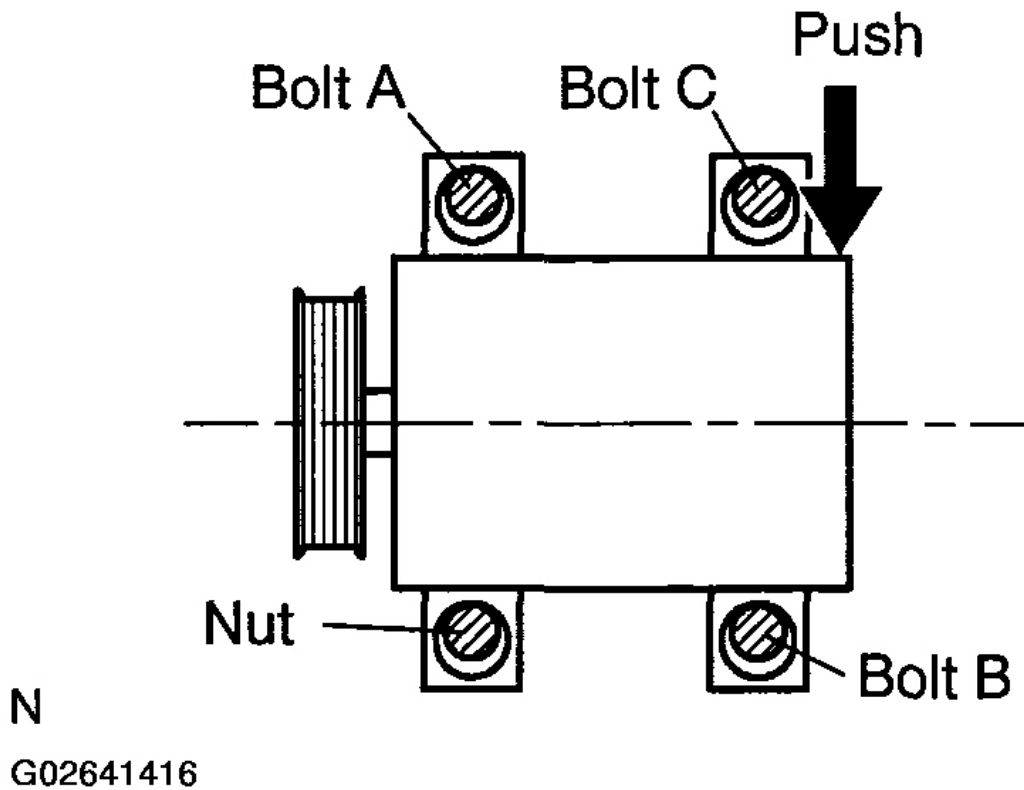


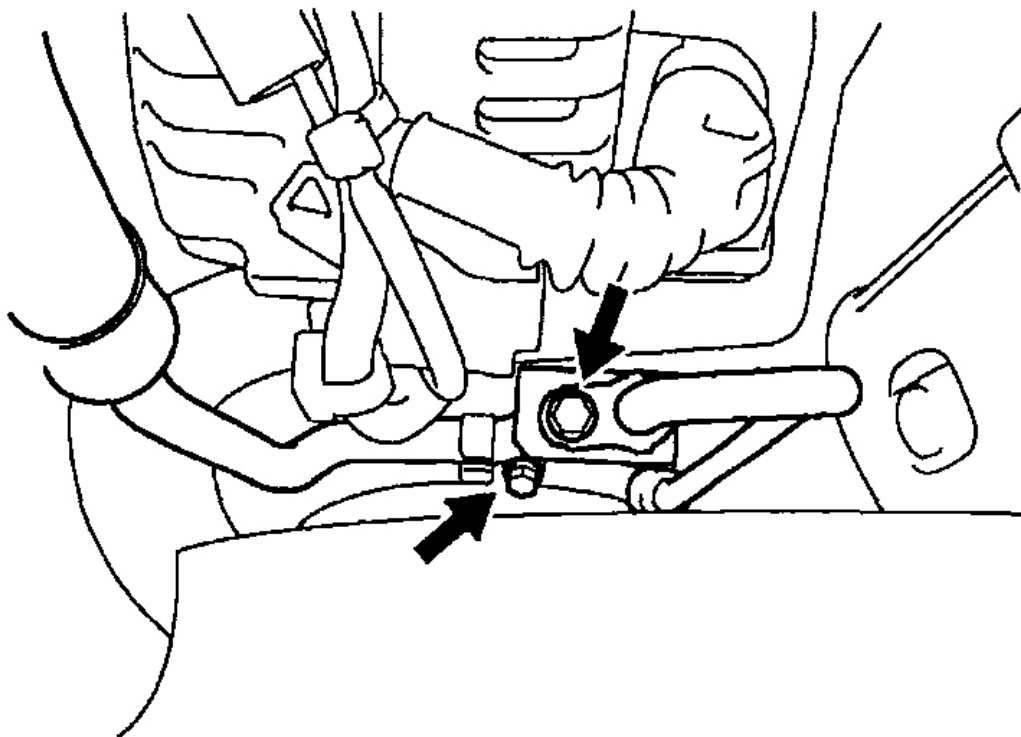
**Fig. 105: Identifying Compressor Bolt Tightening Order**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

d. Connect the connector.

## 2. CONNECT DISCHARGE AND SUCTION HOSES

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

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



G02641417

**Fig. 106: Connecting Discharge And Suction Hoses**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

**Add: 100 cc (3.5 fl.oz.)**

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

**NOTE:**

- Hose should be connected immediately after the caps have been removed.
- Be careful not to damage the discharge and suction hose.

3. **INSTALL AND CHECK DRIVE BELT (See DRIVE BELT)**
4. **CONNECT NEGATIVE (-) TERMINAL CABLE TO BATTERY**
5. **EVACUATE AIR FROM REFRIGERATION SYSTEM CHARGE SYSTEM WITH REFRIGERANT**

**Specified amount: 500 +/- 50 g (17.64 +/- 1.76 oz.)**

## **6. INSPECT FOR LEAKAGE OF REFRIGERANT**

Using a gas leak detector, check for leakage of refrigerant. If there is leakage, check the tightening torque at the joints.

## **7. INSPECT A/C OPERATION**

# **CONDENSER**

## **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.

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

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

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

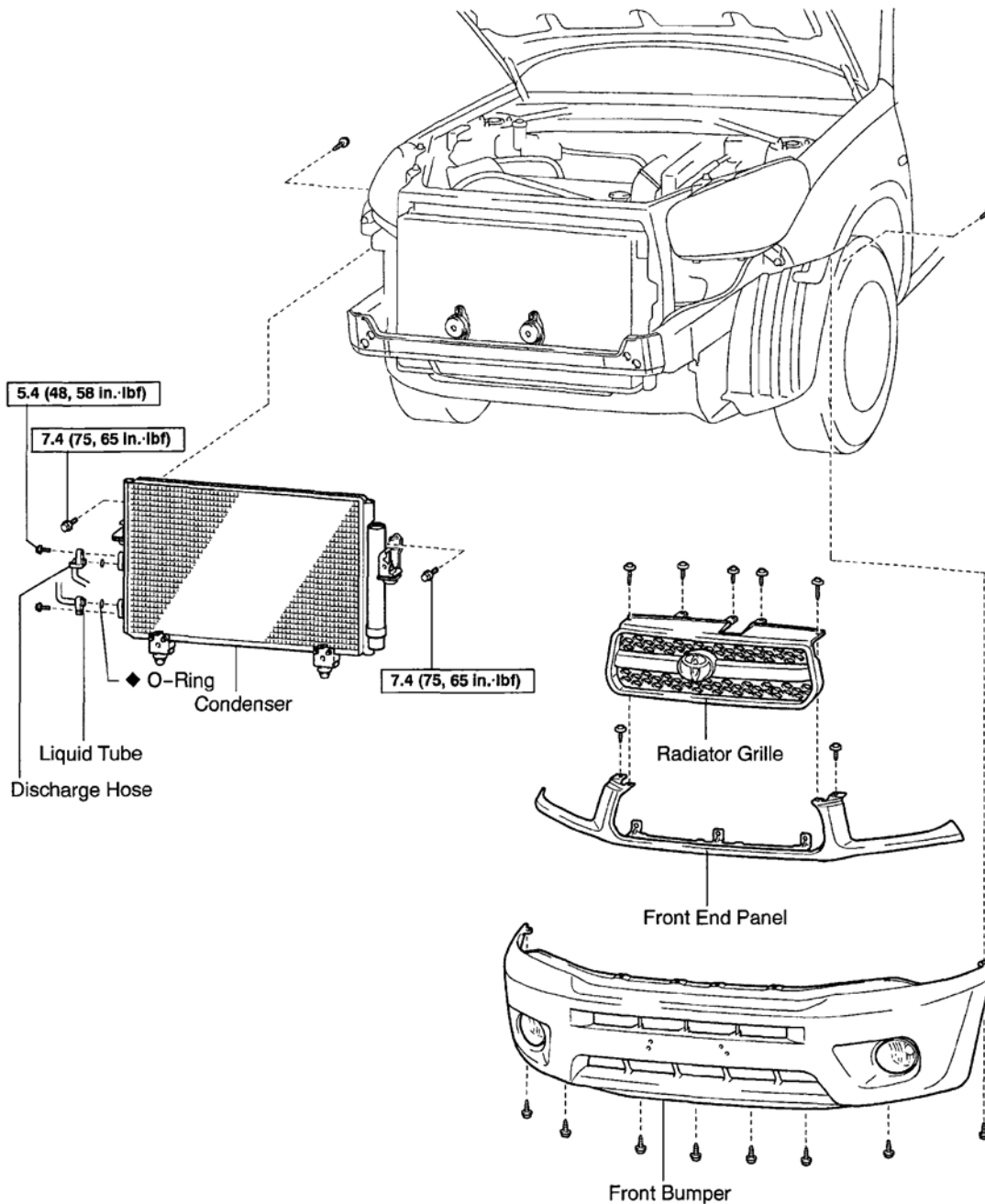
Using a gas leak detector, check for leakage of refrigerant.

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

## **COMPONENT**

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



$\text{N}\cdot\text{m}$  (kgf-cm, ft-lbf) : Specified torque ♦ Non-reusable part

G02641418

**Fig. 107: Identifying Condenser Components & Torque Specifications (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

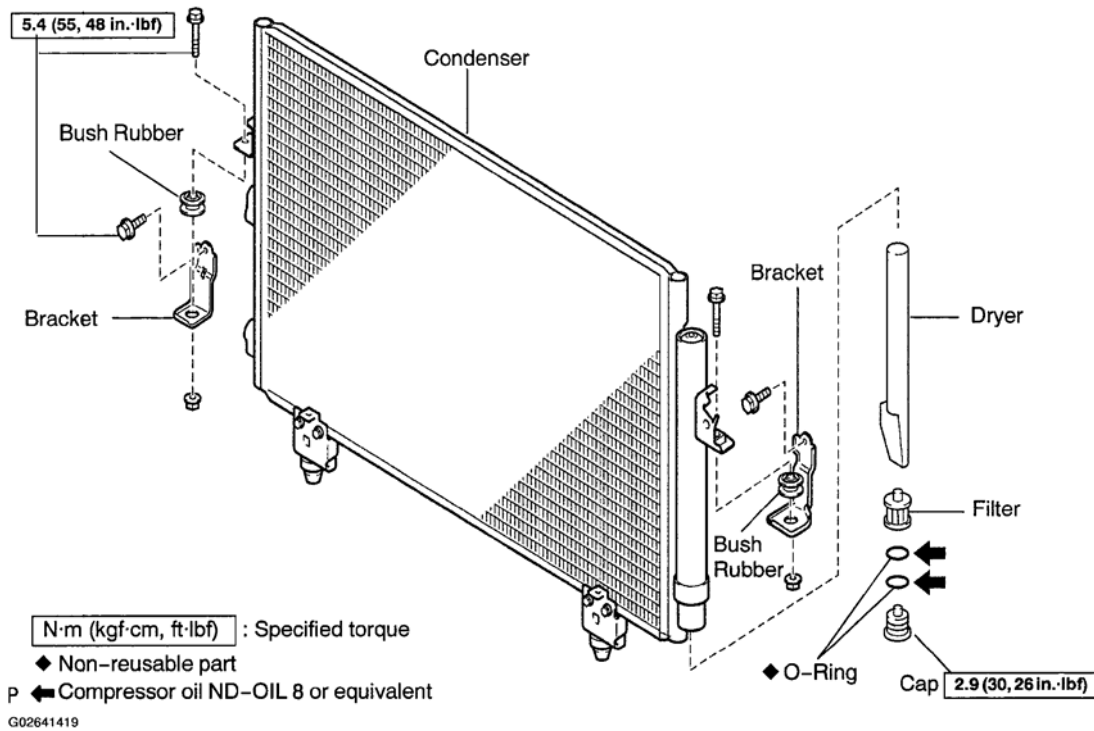
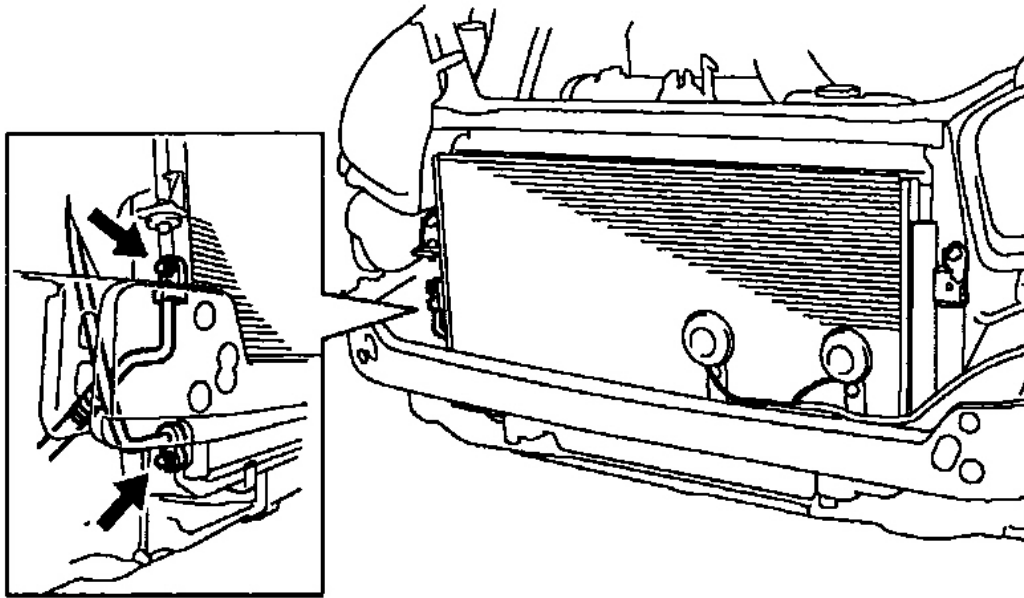


**Fig. 108: Identifying Condenser Components & Torque Specifications (2 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### REMOVAL

1. **DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM**
2. **REMOVE FRONT BUMPER (See COMPONENTS )**
3. **REMOVE LIQUID TUBE AND DISCHARGE TUBE**

Remove the 2 bolts and both tubes.



Y

G02641420

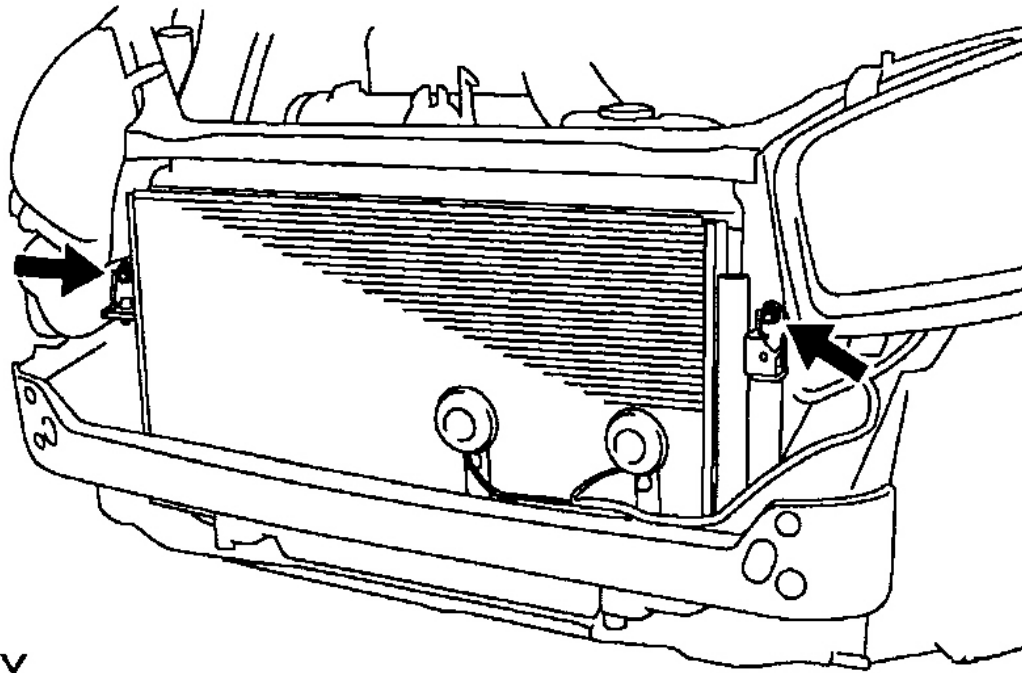
**Fig. 109: Removing Liquid Tube And Discharge Tube**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

**4. REMOVE CONDENSER**

- a. Remove the 2 bolts.
- b. Pull up the condenser.

**NOTE:** Be careful not to damage the radiator and condenser.



Y

G02641421

**Fig. 110: Removing Condenser**

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

## REPLACEMENT

### REPLACE DRYER FROM MODULATOR

- Using a 10 mm hexagon wrench, remove the cap from the modulator.
- Remove the filter from the modulator.

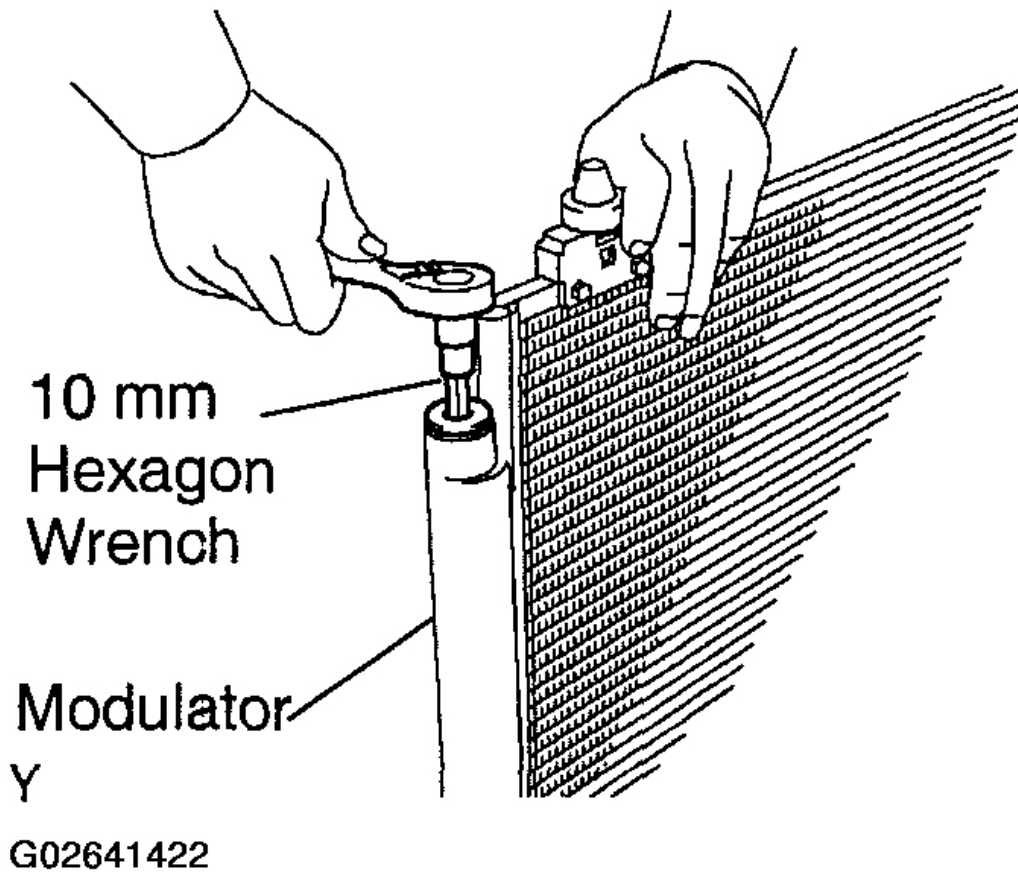
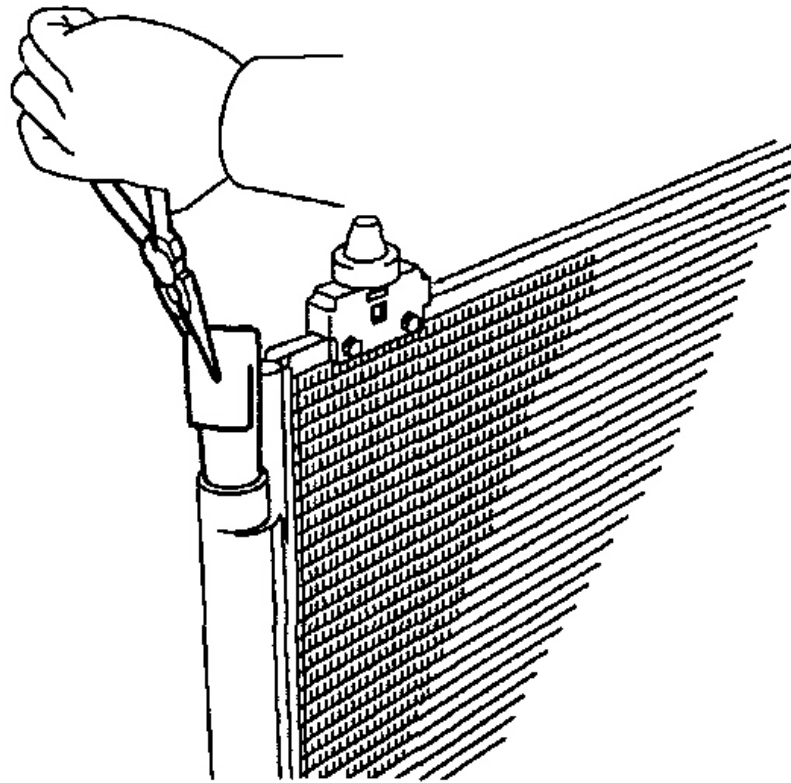


**Fig. 111: Removing Cap From Modulator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using pliers, remove the dryer.



Y

G02641423

**Fig. 112: Removing Dryer From Modulator**

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

- d. Insert a new dryer into the modulator.

**NOTE:**

- Do not remove the dryer from a vinyl bag until inserting it into the modulator.
- Install the dryer with its 2 layered parts facing up to the modulator.

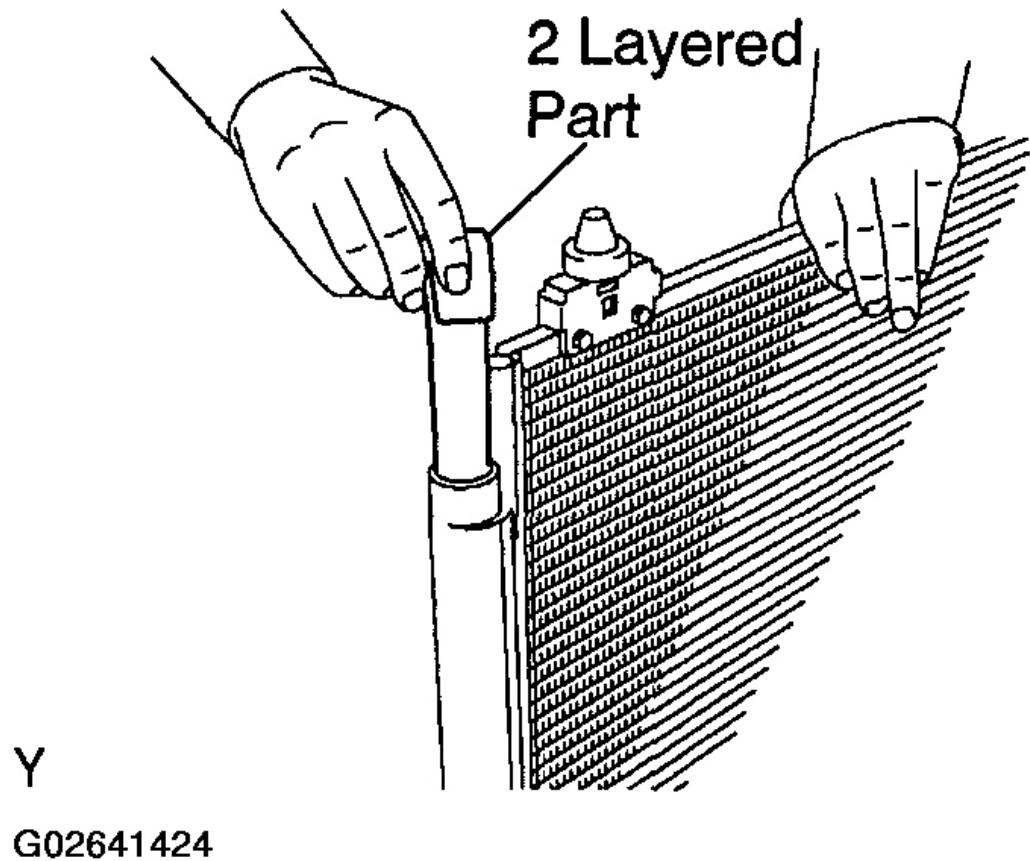
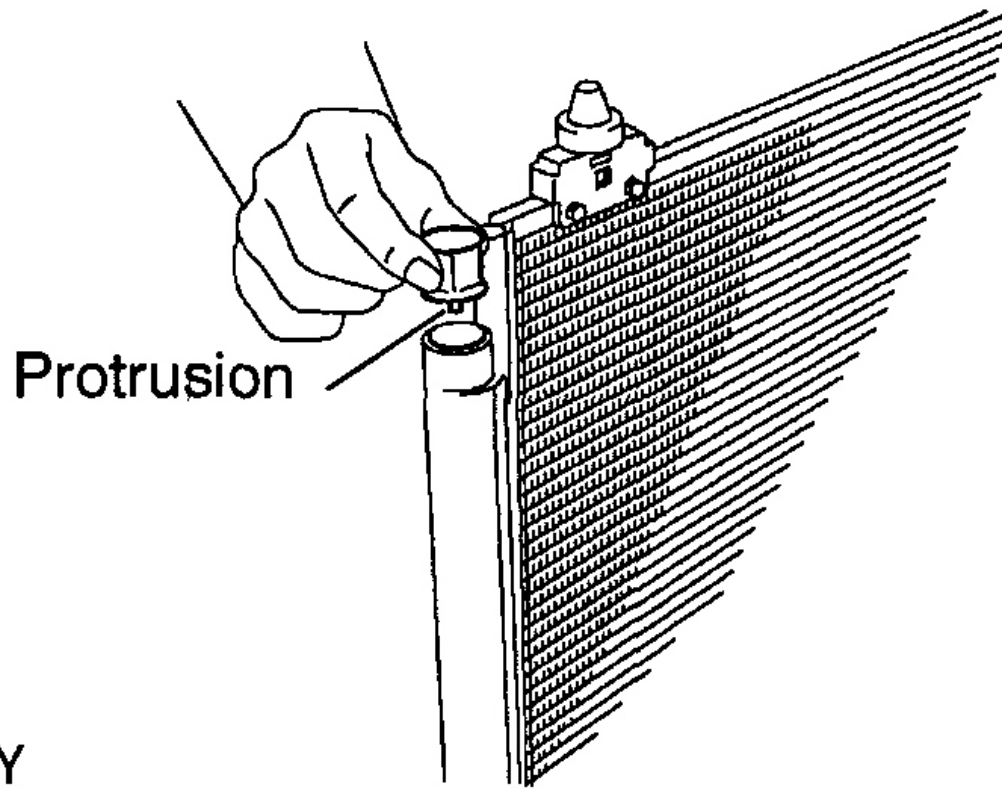


**Fig. 113: Inserting New Dryer Into Modulator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Insert the filter into the modulator.

**NOTE:** Install the filter with its protrusion facing down to the modulator.



Y

G02641425

**Fig. 114: Inserting NEW Filter Into Modulator**

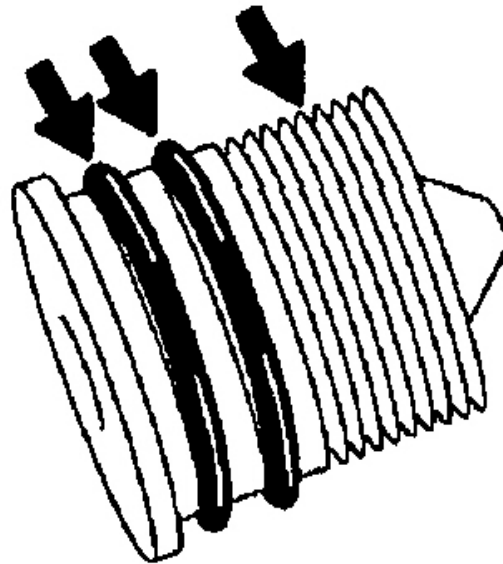
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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 10 mm hexagon wrench, install the caps.

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



Y

G02641426

**Fig. 115: Applying Compressor Oil To O-Rings & Threads Of Modulator Cap**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

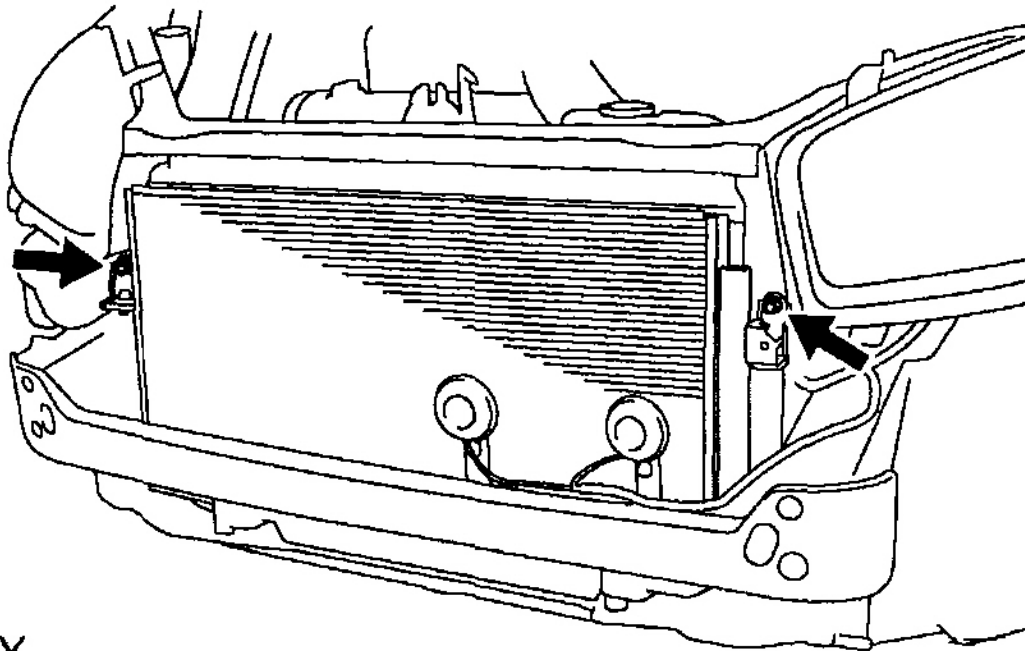
## INSTALLATION

### 1. INSTALL CONDENSER

Install the condenser with the 2 bolts.

**Torque: 7.4 N.m (75 kgf.cm, 65 in.lbf)**

**NOTE:** Be careful not to damage the condenser and radiator.



Y

G02641427

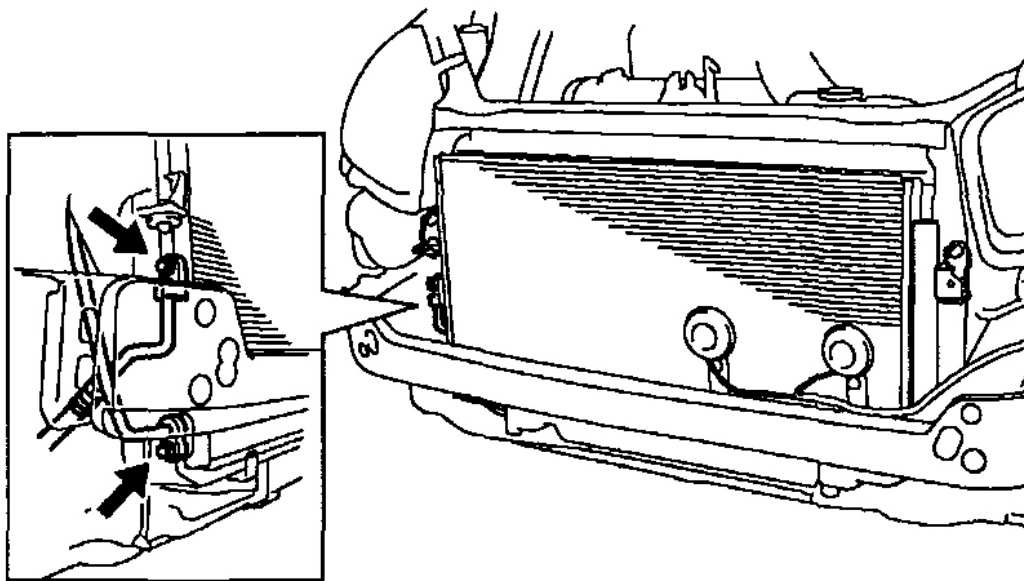
**Fig. 116: Installing Condenser**

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

**2. INSTALL LIQUID TUBE AND DISCHARGE TUBE**

- a. Remove the cap.
- b. Coat 2 new O-rings with compressor oil.
- c. Install both tubes with the 2 bolts.

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



Y

G02641428

**Fig. 117: Installing Liquid Tube And Discharge Tube**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

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

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

### **3. CHARGE REFRIGERANT TO REFRIGERATION SYSTEM**

- a. Evacuate air from the refrigeration system.
- b. Charge system with refrigerant and inspect for leakage of refrigerant.

**Specified amount: 500 +/- 50 g (17.64 +/- 1.76 oz.)**

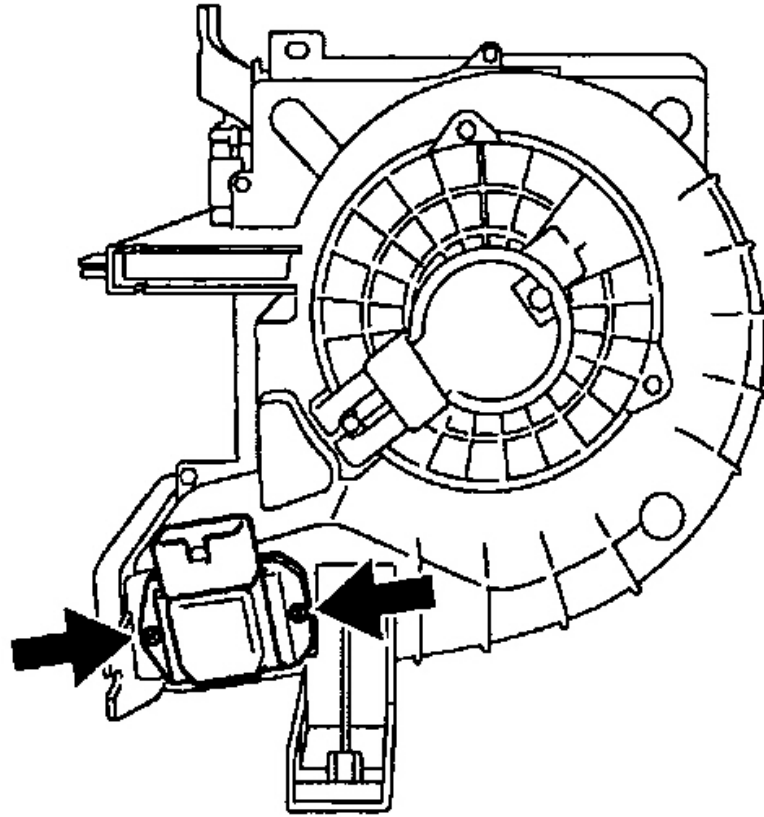
## **BLOWER MOTOR**

### **INSPECTION**

#### **1. REMOVE BLOWER MOTOR**

- a. Disconnect the blower motor connector and wire harness clamp.

- b. Using a Torx(R) wrench, remove the 2 screws and blower motor.



Y

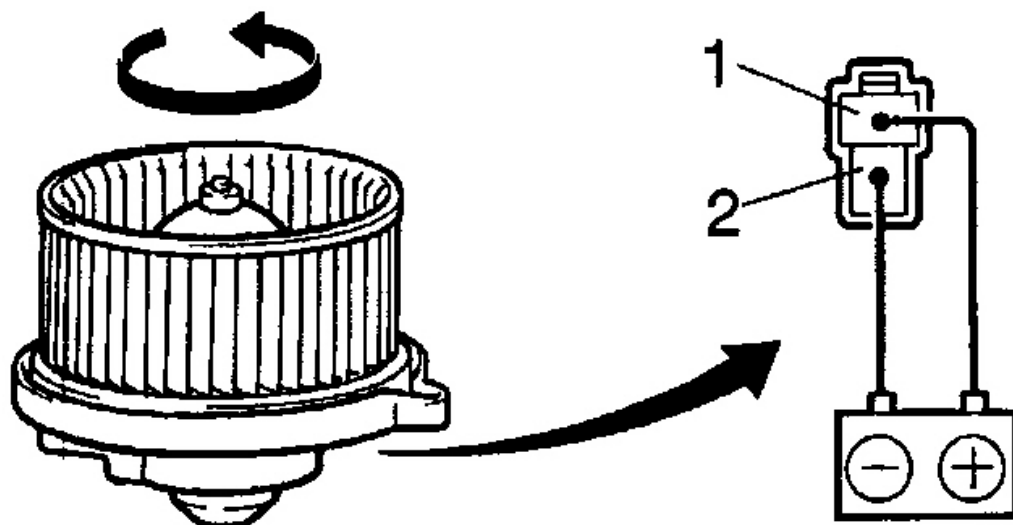
G02641429

**Fig. 118: Removing Blower Motor Connector And Wire Harness Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. 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.



G02641430

**Fig. 119: Inspecting Blower Motor Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. INSTALL BLOWER MOTOR

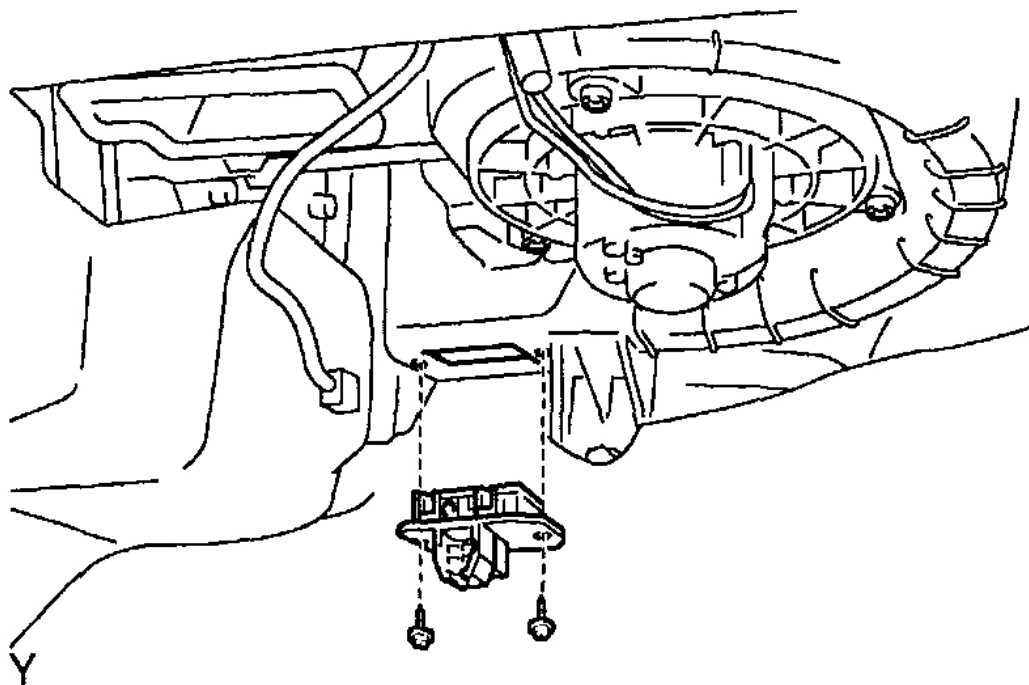
- a. Using a Torx(R) wrench, install the blower motor with the 2 screws.
- b. Connect the blower motor connector and wire harness clamp.

## BLOWER RESISTOR

### INSPECTION

#### 1. REMOVE BLOWER RESISTOR

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

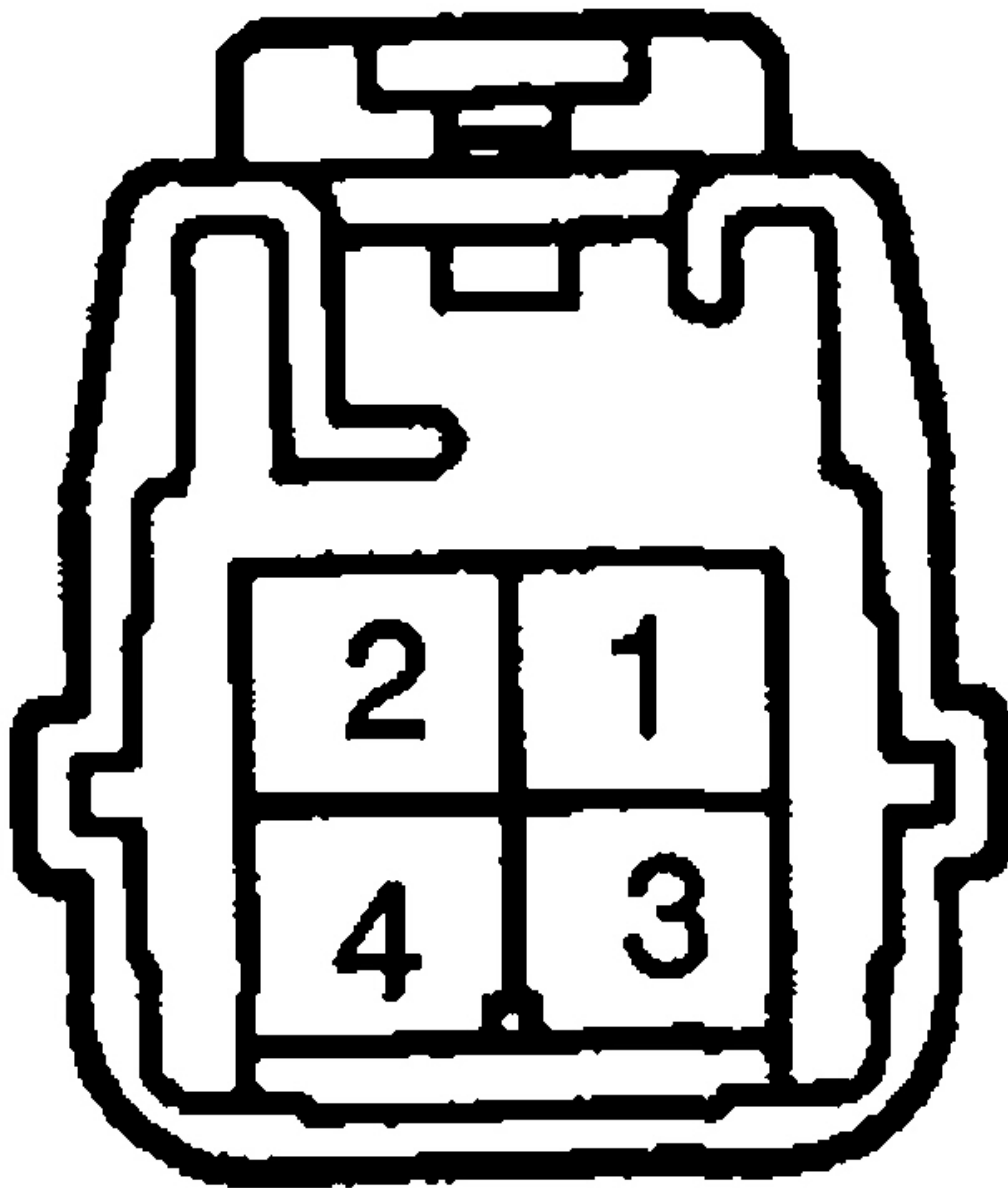


G02641431

**Fig. 120: Removing Blower Resistor**

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

## 2. INSPECT BLOWER RESISTOR CONTINUITY



G02641432

**Fig. 121: Identifying Terminals Of Blower Resistor Connector**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**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. REINSTALL BLOWER RESISTOR

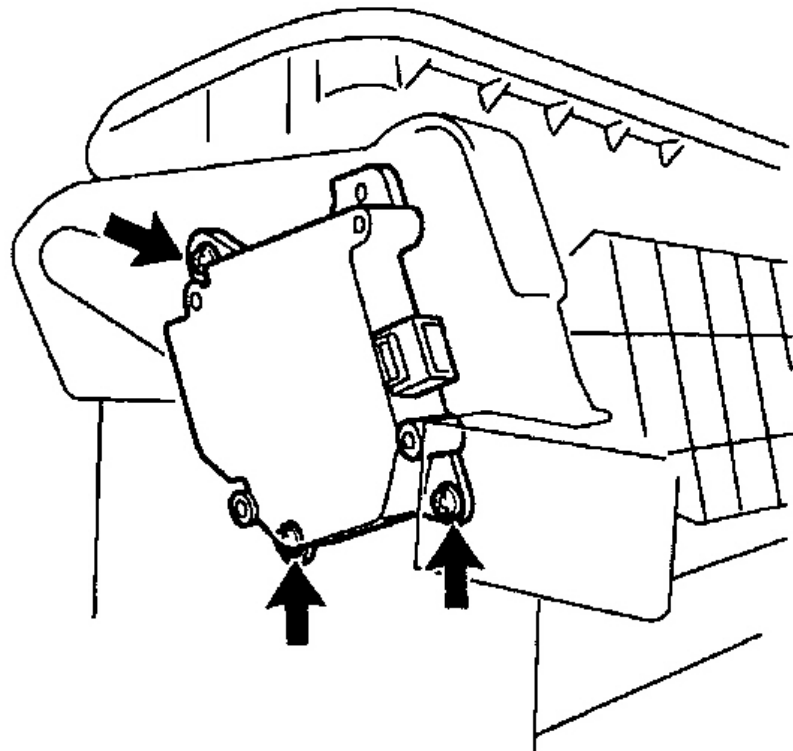
- Install the blower resistor with the 2 screws.
- Connect the blower resistor connector.

## AIR INLET SERVOMOTOR

### REMOVAL

1. REMOVE BLOWER UNIT (See REMOVAL)
2. REMOVE AIR INLET SERVOMOTOR

Remove the 3 screws and air inlet servomotor.



Y

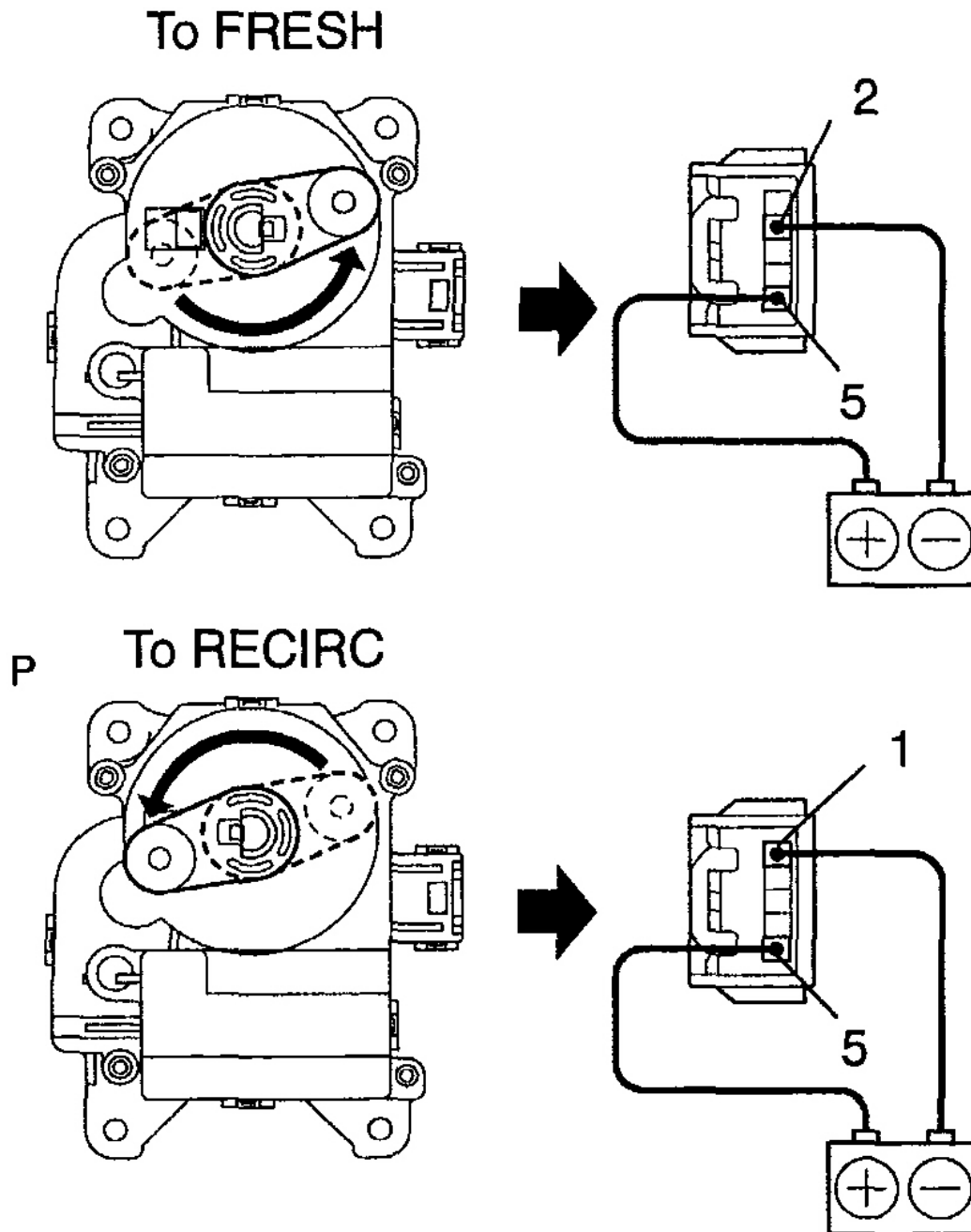
G02641433

**Fig. 122: Removing Air Inlet Servomotor****Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.****INSPECTION****INSPECT AIR INLET SERVOMOTOR**

Inspect the servomotor operation.

1. Connect the positive (+) lead of the battery to terminal 5 and negative (-) lead to terminal 2.
2. Check the motor arm rotates counterclockwise and arm stops on the "FRESH" position.
3. Connect the positive (+) lead of the battery to terminal 5 and negative (-) lead to terminal 1.
4. Check the motor arm rotates counterclockwise and arm stops on the "RECIRC" position.

If operations are not as specified, replace the air inlet servomotor.



G02641434

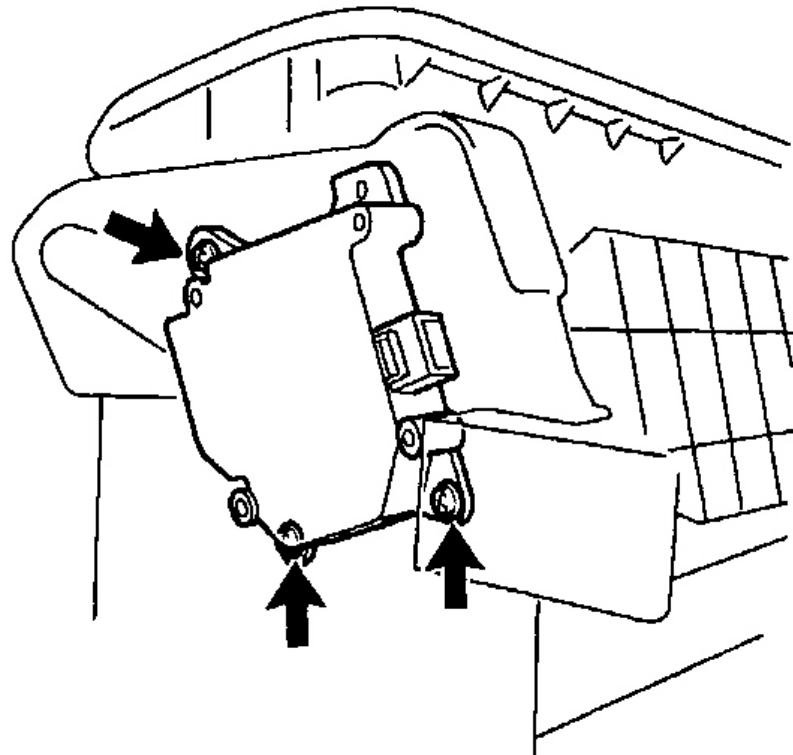
**Fig. 123: Inspecting Air Inlet Servomotor Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## INSTALLATION

### 1. INSTALL AIR INLET SERVOMOTOR

Install the air inlet servomotor with the 3 screws.

### 2. INSTALL BLOWER UNIT (See INSTALLATION)



Y

G02641435

**Fig. 124: Installing Air Inlet Servomotor**

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

## THERMISTOR

### INSPECTION

#### 1. REMOVE BLOWER UNIT (See REMOVAL)

#### 2. REMOVE THERMISTOR

- a. Disconnect the thermistor connector.
- b. Disconnect the connector clamp.
- c. Release the 4 claws and remove the harness.
- d. Using a screwdriver, pull out the thermistor from the A/C unit.

HINT:

Tape the screwdriver tip before use.

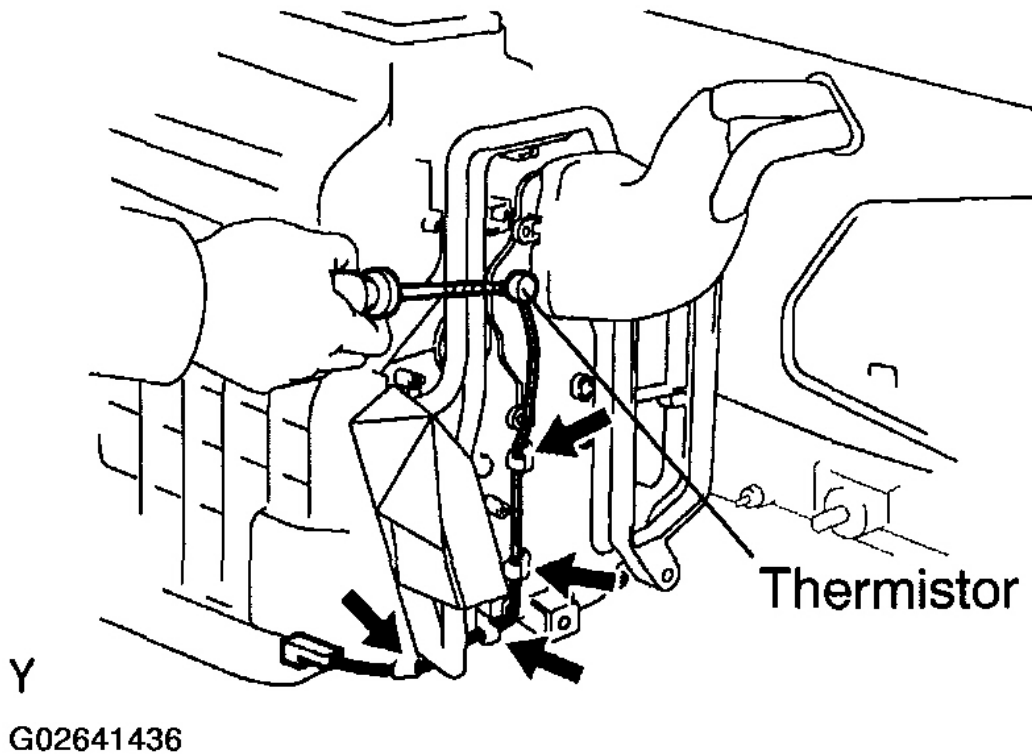


**Fig. 125: Releasing Harness Claws & Removing Thermistor From A/C Unit**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Release the 2 claws and remove the thermistor from the bracket plate.

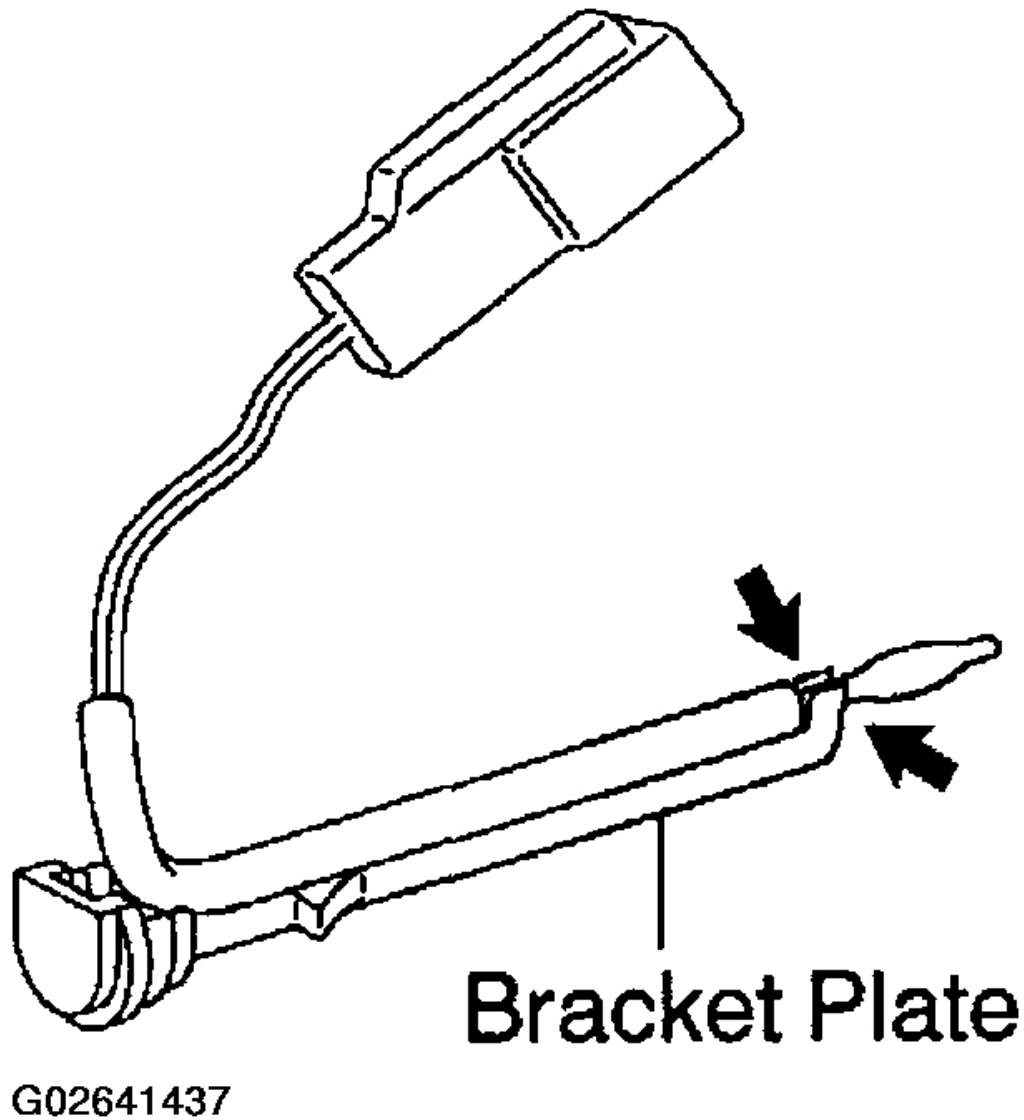
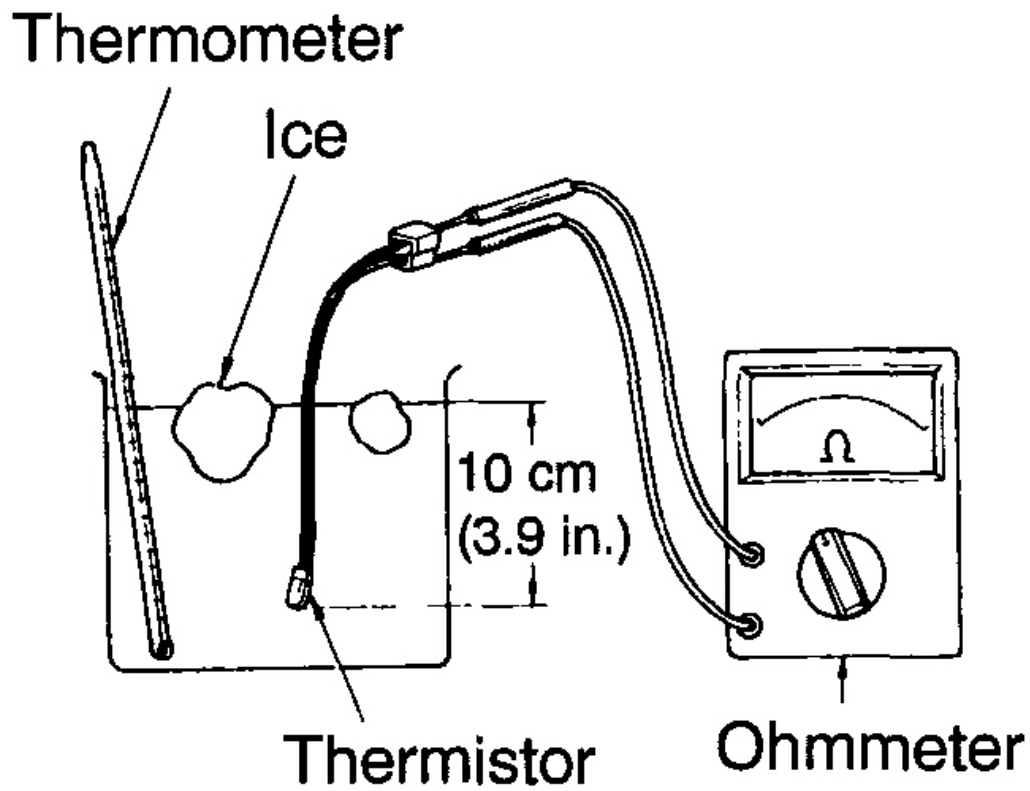


**Fig. 126: Releasing Claws & Removing Thermistor From Bracket Plate**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. INSPECT THERMISTOR

- a. 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.

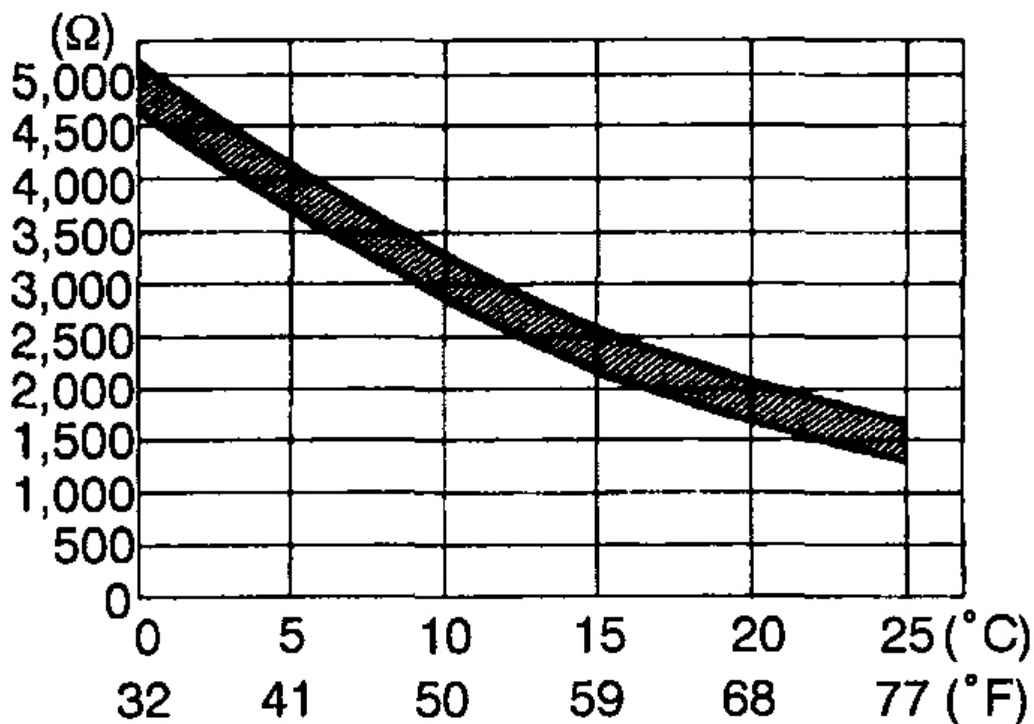


G02641438

**Fig. 127: Placing Thermistor In Cold Water & Measuring Resistance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Compare the 2 readings on the graphs.

If resistance is not as specified, replace the thermistor.



G02641439

**Fig. 128: Thermistor Resistance Graph**

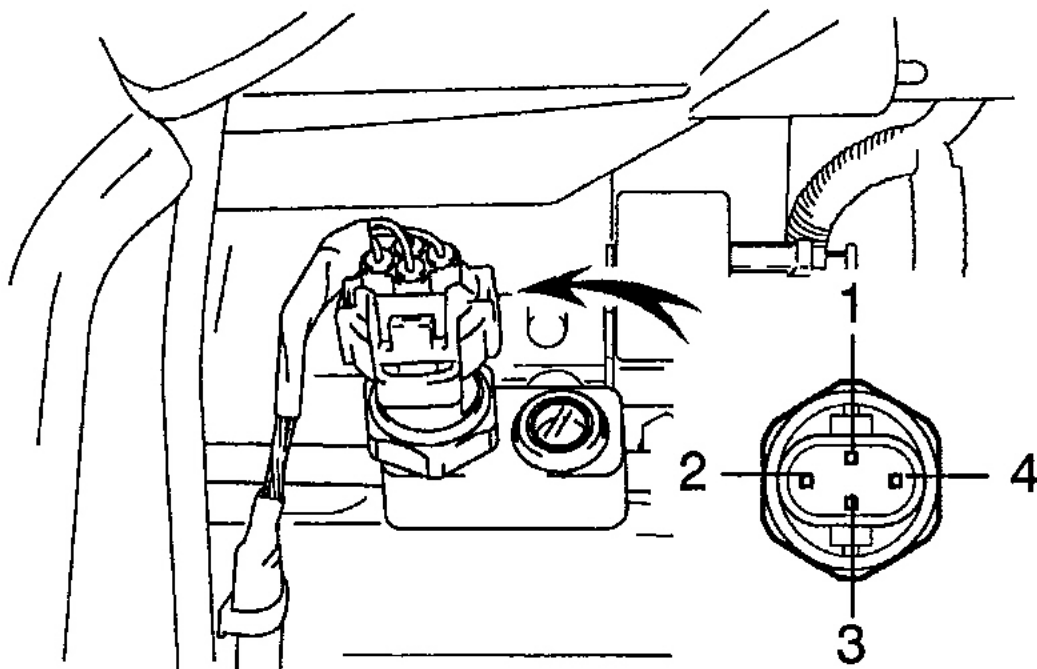
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**4. REINSTALL THERMISTOR**

- Install the thermistor to the bracket plate.
- Install the thermistor to the A/C unit case.
- Connect the connector clamp.
- Connect the thermistor connector.

**5. REINSTALL BLOWER UNIT (See REMOVAL)****PRESSURE SWITCH****ON-VEHICLE INSPECTION**

- SET ON MANIFOLD GAUGE SET (See MANIFOLD GAUGE SET)**
- DISCONNECT CONNECTOR FROM PRESSURE SWITCH**
- RUN ENGINE AT APPROX. 1,500 RPM**



G02641440

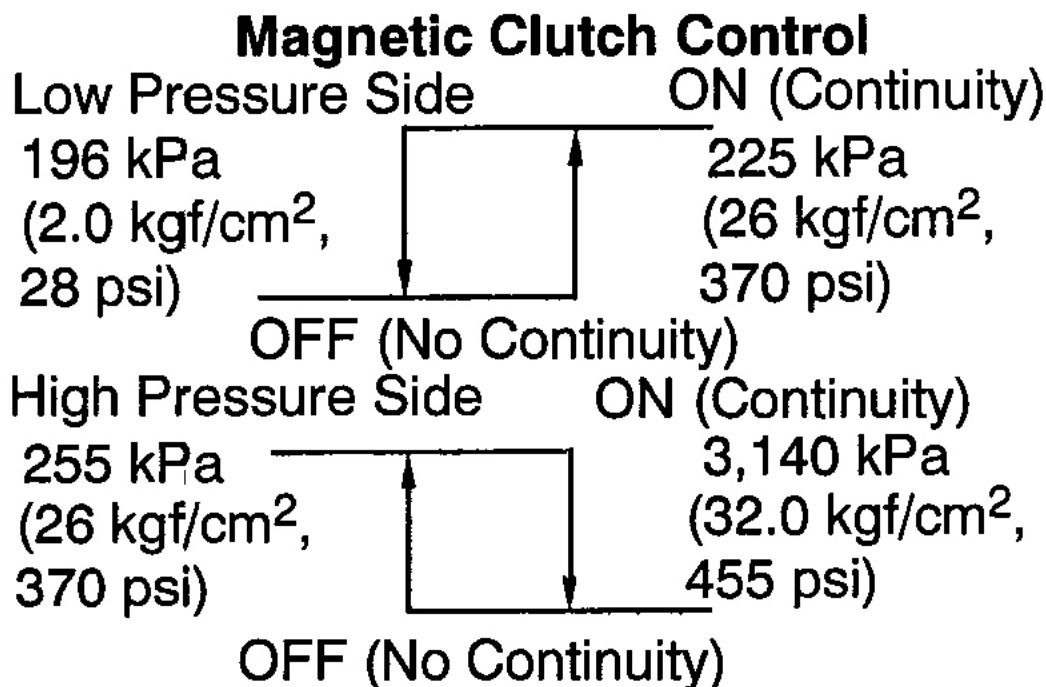
**Fig. 129: Identifying Pressure Switch**

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

**4. Magnetic clutch control: INSPECT PRESSURE SWITCH OPERATION:**

- a. Connect the positive (+) lead from the ohmmeter to terminal 3 and the negative (-) lead to terminal 1.
- b. Check continuity between terminals when refrigerant pressure is charged, as shown in **Fig. 130**.

If operation is not as specified, replace the pressure switch.



G02641441

**Fig. 130: Inspecting Pressure Switch Operation (Magnetic Clutch Control)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**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 4.
- b. Check continuity between terminals when refrigerant pressure is changed, as shown in **Fig. 131**.

If operation is not as specified, replace the pressure switch.

## Condenser Fan Control

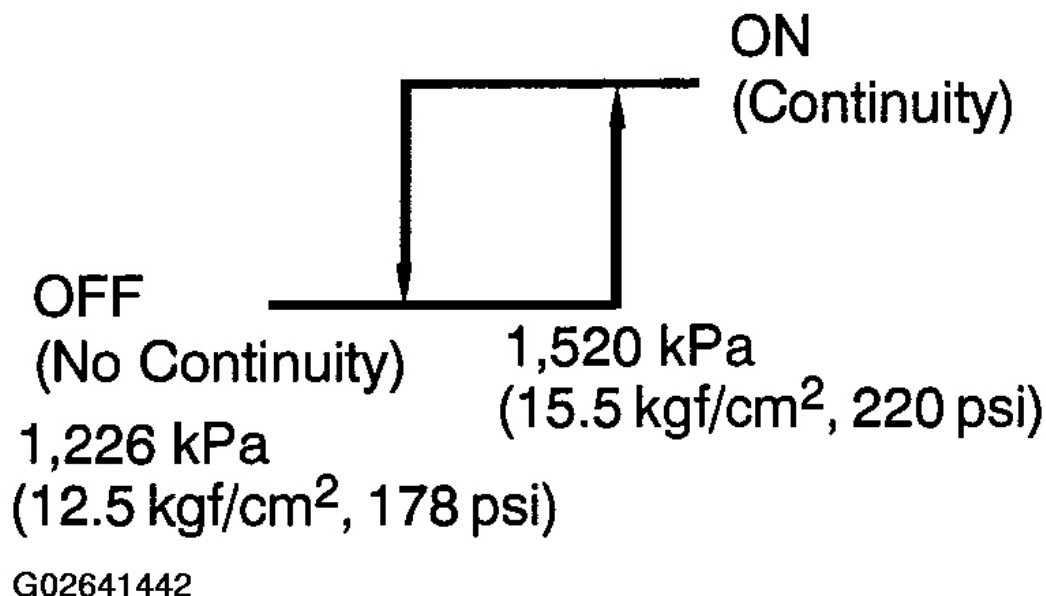


**Fig. 131: Inspecting Pressure Switch Operation (Condenser Fan Control)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

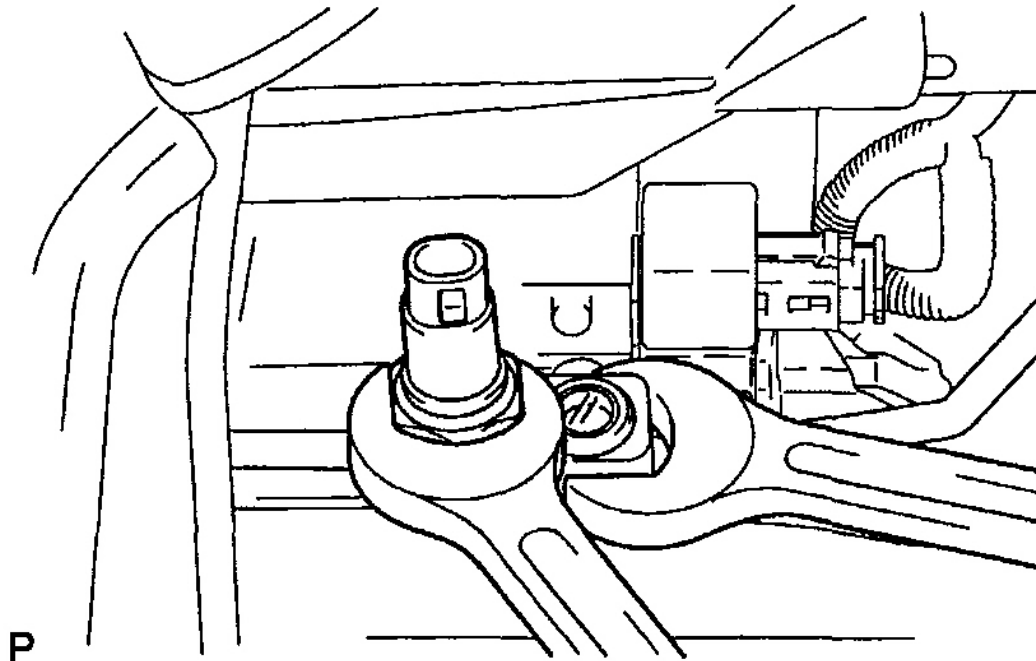
6. STOP ENGINE AND SET OFF MANIFOLD GAUGE SET
7. RECONNECT CONNECTOR TO PRESSURE SWITCH

### REMOVAL

1. DISCHARGE REFRIGERANT FROM REFRIGERANT SYSTEM (See EVACUATING)
2. REMOVE PRESSURE SWITCH
  - a. Disconnect the pressure switch connector.
  - b. Remove the pressure switch from the liquid tube.

### HINT:

Lock the switch mount on the tube with an open end wrench, being careful not to deform the tube, and remove the switch.



P

G02641443

**Fig. 132: Removing Pressure Switch**

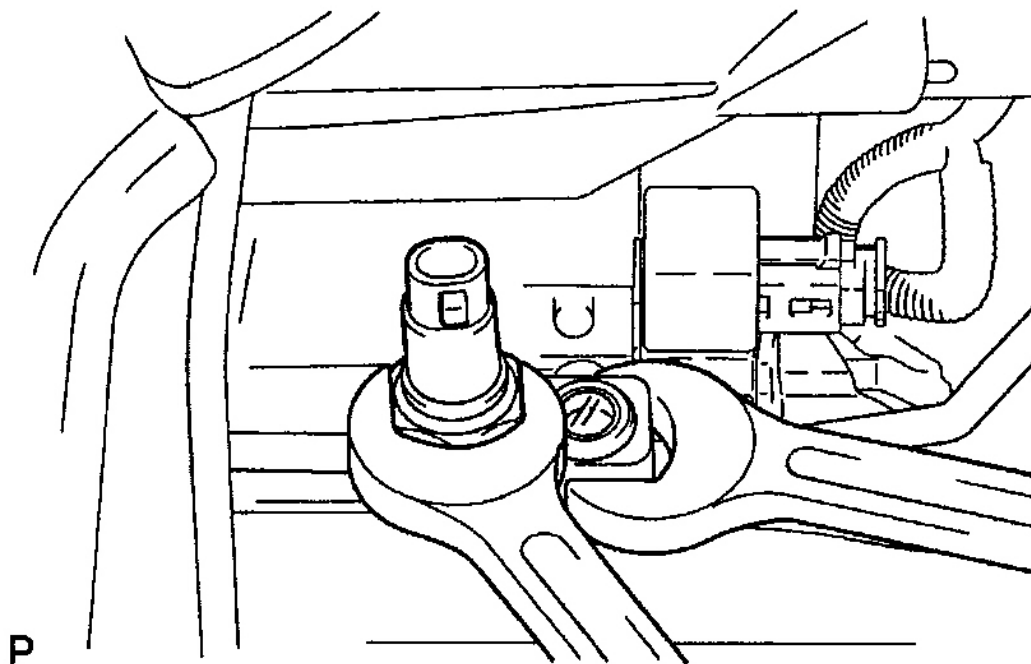
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## INSTALLATION

### 1. INSTALL PRESSURE SWITCH

- Coat a new O-ring with compressor oil.
- Install the pressure switch to the liquid tube.

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



G02641444

**Fig. 133: Installing Pressure Switch To Liquid Tube**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. CHARGE REFRIGERANT TO REFRIGERANT SYSTEM (See CHARGING)**

- a. Evacuate air from the refrigeration system.
- b. Charge system with refrigerant and inspect for leakage of refrigerant.

**Specified amount: 500 +/- 50 g (17.64 +/- 1.76 oz.)**

## HEATER MAIN RELAY

### INSPECTION

- 1. REMOVE HEATER MAIN RELAY (Marking: HTR) FROM ENGINE ROOM J/B**

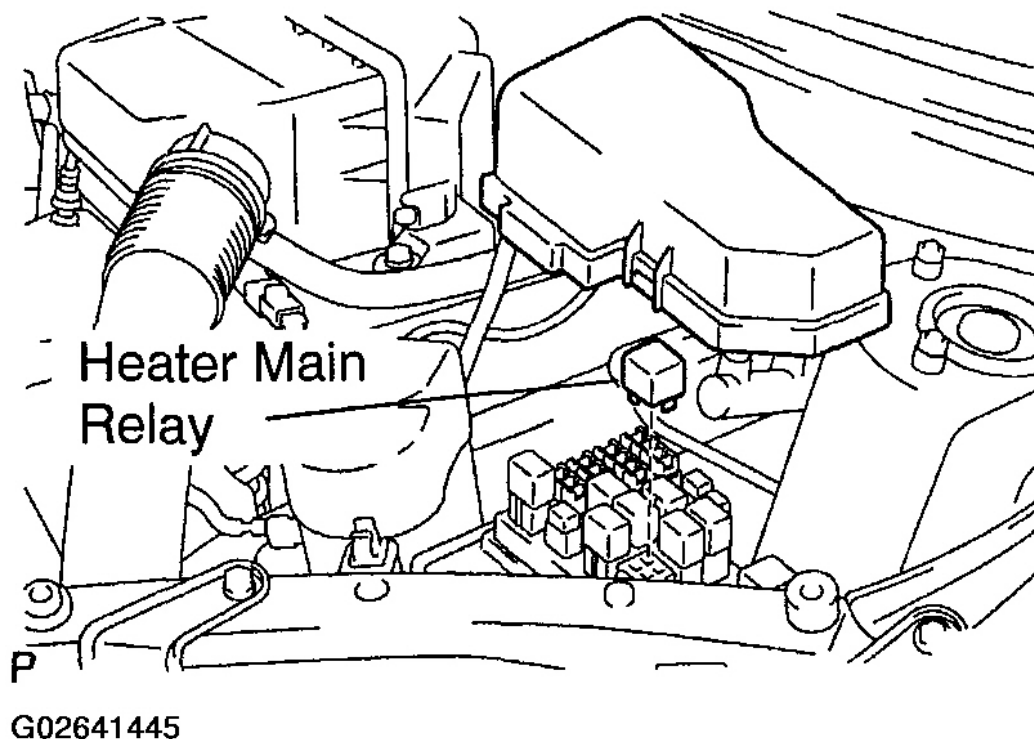


**Fig. 134: Identifying Location Of Heater Main Relay (Marking: HTR) In Engine Room J/B**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSPECT HEATER MAIN RELAY

### a. Inspect the relay continuity.

1. Using an ohmmeter, check that there is continuity between terminals 1 and 2.

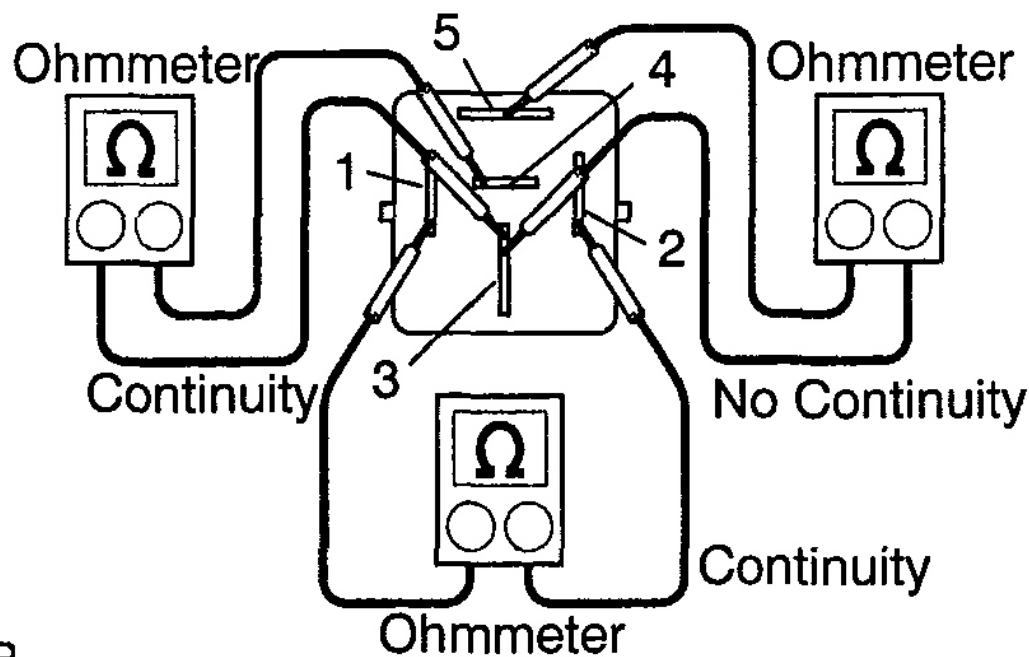
If there is no continuity, replace the relay.

2. Check that there is continuity between terminals 3 and 4.

If there is no continuity, replace the relay.

3. Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.



P

G02641446

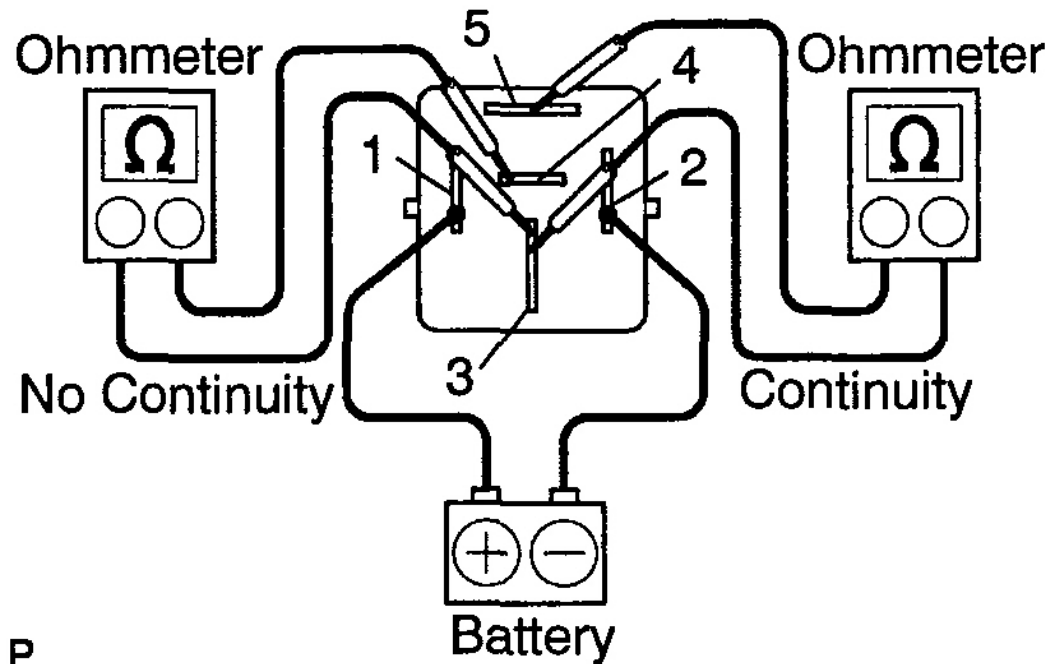
**Fig. 135: Inspecting Heater Main Relay Continuity**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the relay operation.
1. Apply battery positive voltage across terminals 1 and 2.
  2. Using an ohmmeter, check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

3. Check that there is no continuity between terminals 3 and 4.

If there is continuity, replace the relay.



P

G02641447

**Fig. 136: Inspecting Heater Main Relay Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. REINSTALL HEATER MAIN RELAY

## COOLING FAN RELAY

### INSPECTION

1. REMOVE NO. 2 COOLING FAN RELAY (Marking: FAN NO. 2) FROM ENGINE ROOM J/B

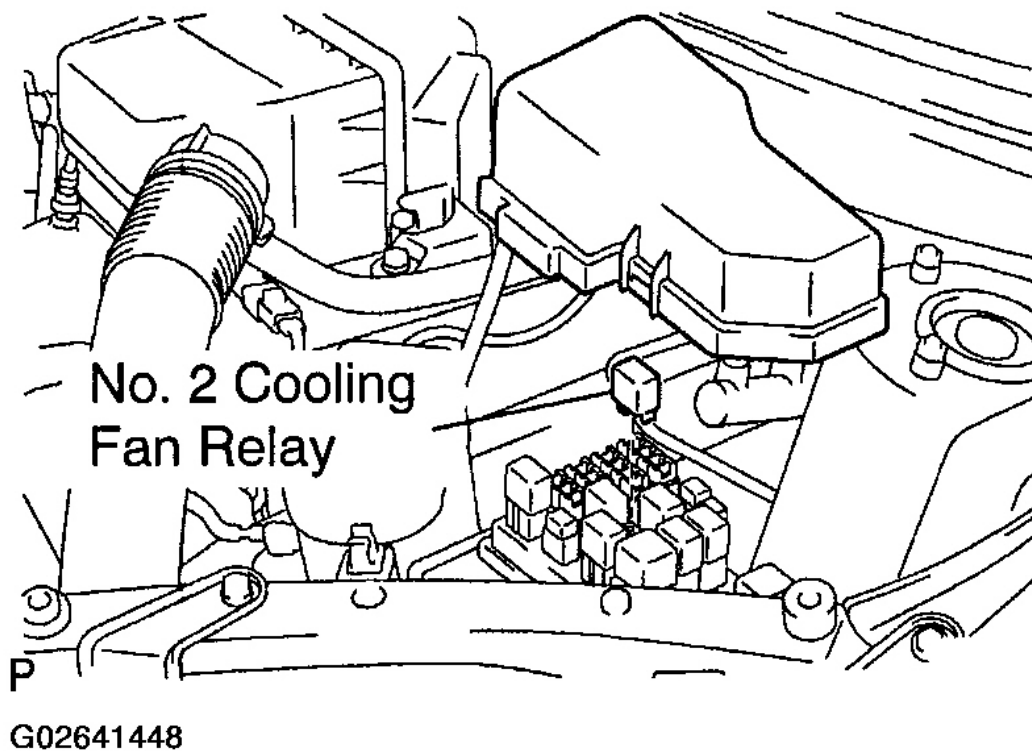


**Fig. 137: Identifying Location Of No. 2 Cooling Fan Relay (Marking: Fan No. 2) In Engine Room J/B**

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

## 2. INSPECT NO. 2 COOLING FAN RELAY

### a. Inspect the relay continuity.

1. Using an ohmmeter, check that there is continuity between terminals 1 and 2.

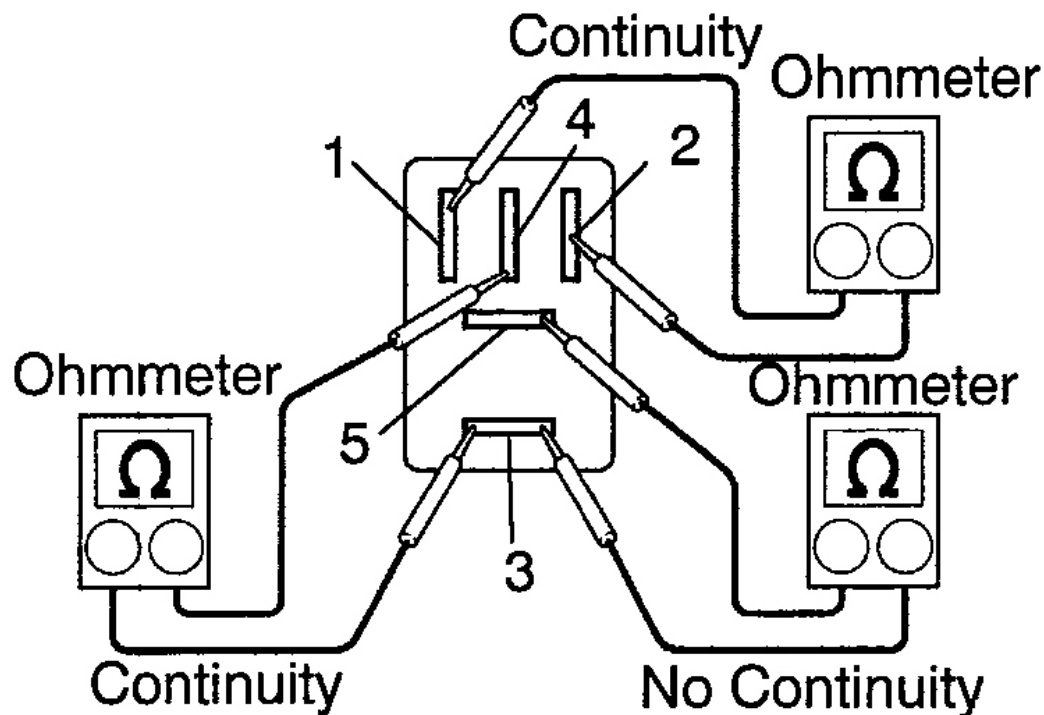
If there is no continuity, replace the relay.

2. Check that there is continuity between terminals 3 and 4.

If there is no continuity, replace the relay.

3. Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.



G02641449

**Fig. 138: Inspecting No. 2 Cooling Fan Relay Continuity**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the relay operation.
1. Apply battery positive voltage across terminals 1 and 2.
  2. Using an ohmmeter, check that there is no continuity between terminals 3 and 4.

If there is continuity, replace the relay.

3. Check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

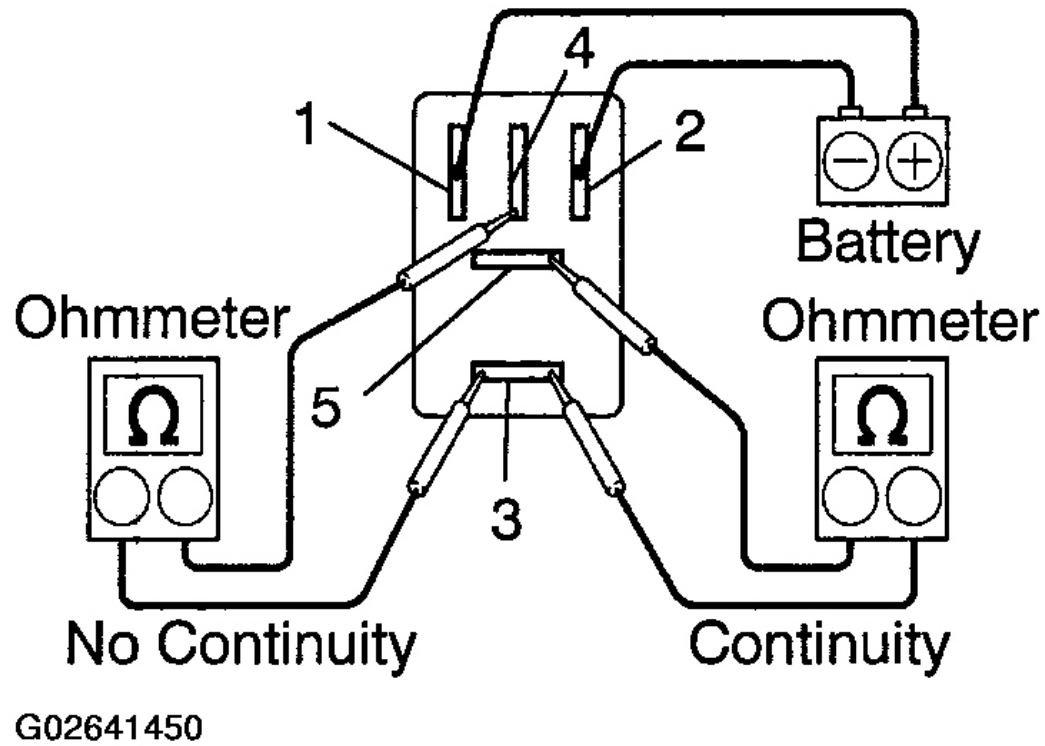
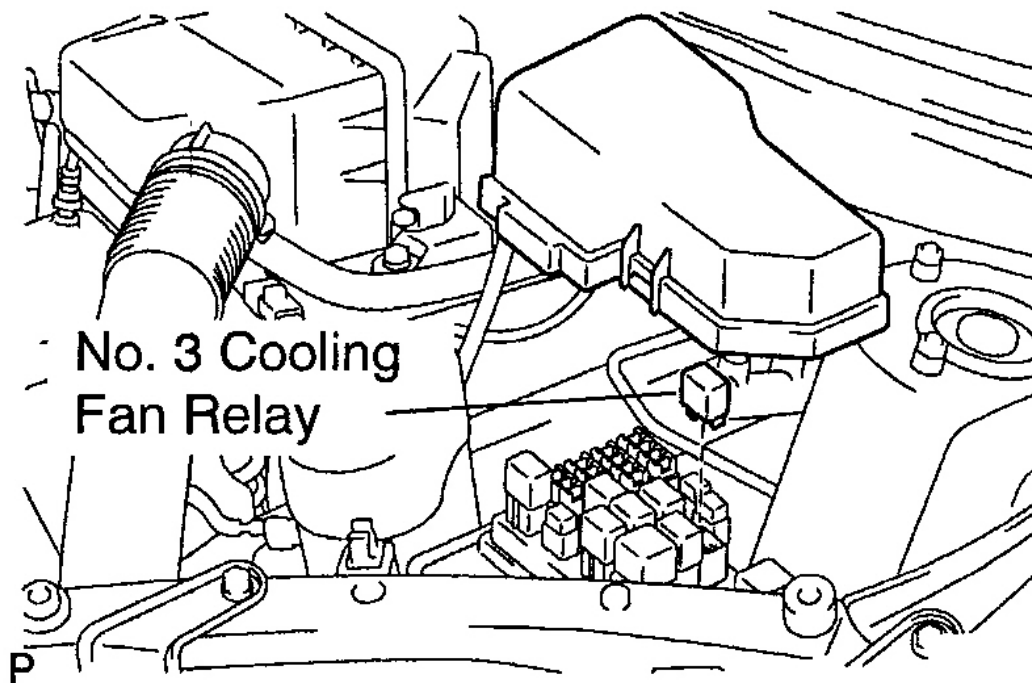


**Fig. 139: Inspecting No. 2 Cooling Fan Relay Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REINSTALL NO. 2 COOLING FAN RELAY
4. REMOVE NO. 3 COOLING FAN (Marking: FAN NO. 3) RELAY FROM ENGINE ROOM J/B



G02641451

**Fig. 140: Identifying Location Of No. 3 Cooling Fan Relay (Marking: Fan No. 3) In Engine Room J/B**

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

## 5. INSPECT NO. 3 COOLING FAN RELAY

a. Inspect the relay continuity.

1. Using an ohmmeter, check that there is continuity between terminals 1 and 2.

If there is no continuity, replace the relay.

2. Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.

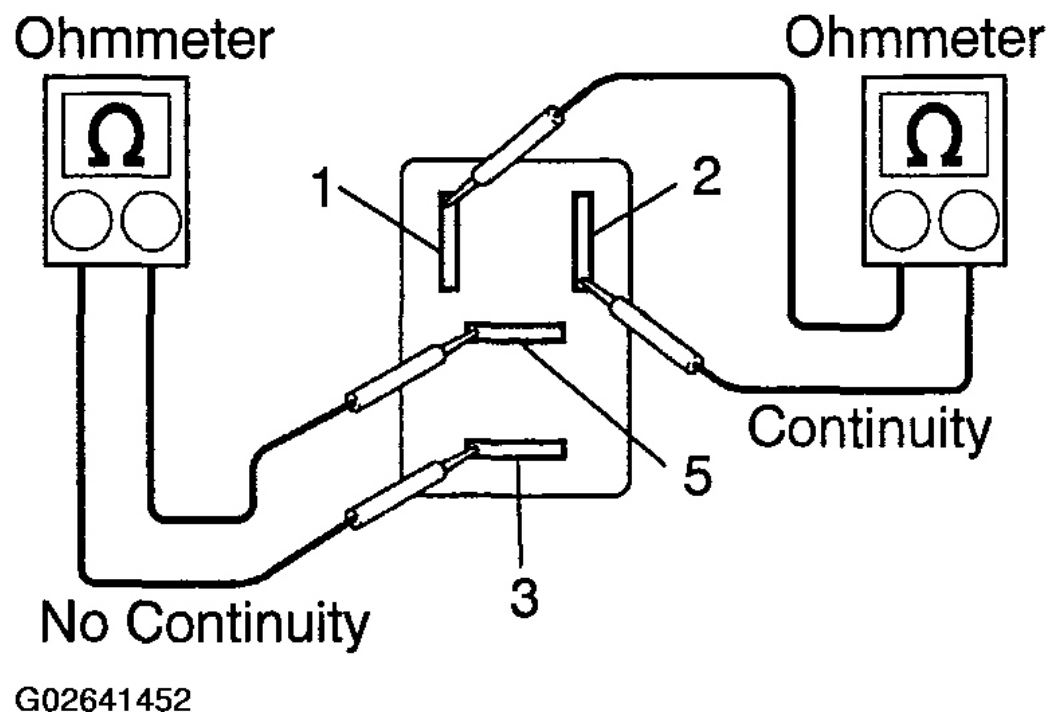


**Fig. 141: Inspecting No. 3 Cooling Fan Relay Continuity**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Inspect the relay operation.
  1. Apply battery positive voltage across terminals 1 and 2.
  2. Using an ohmmeter, check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

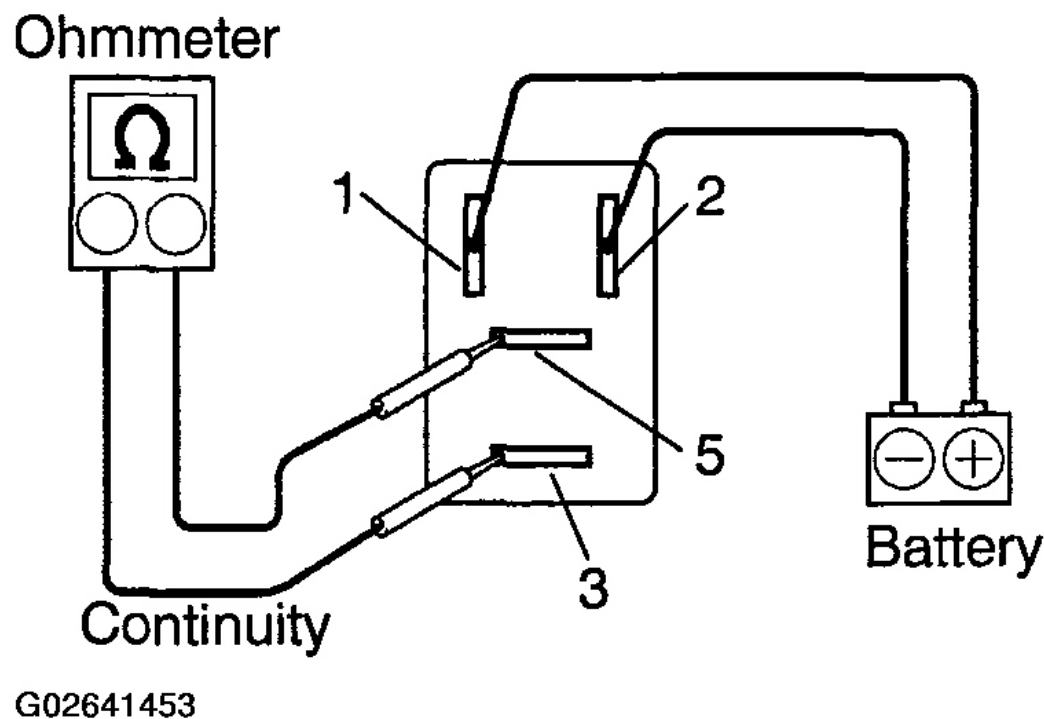


**Fig. 142: Inspecting No. 3 Cooling Fan Relay Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 6. REINSTALL NO. 3 COOLING FAN RELAY

# CONDENSER FAN

## ON-VEHICLE INSPECTION

### 1. INSPECT CONDENSER FAN OPERATION

Inspect fan operation under these condition, as shown in the table.

Test conditions:

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

**CONDENSER FAN OPERATION**

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

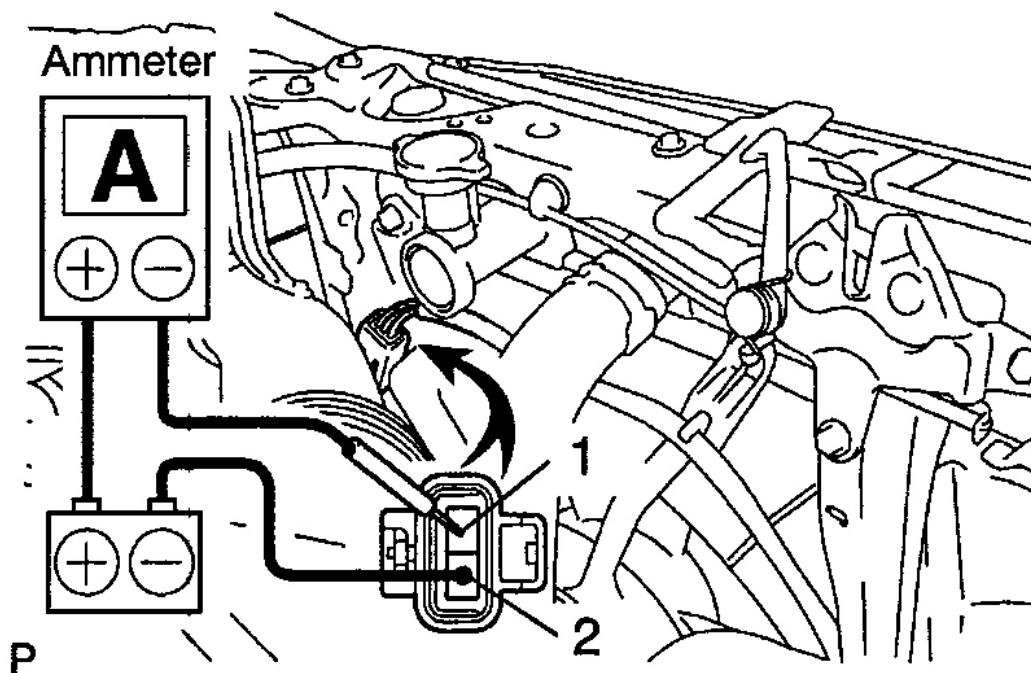
If operation is not as specified, proceed to the next inspection.

**2. INSPECT CONDENSER FAN MOTOR OPERATION**

- Disconnect the connector.
- Connect the battery and ammeter as shown in **Fig. 143**.
- 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 water temperature switch.



G02641454

**Fig. 143: Inspecting Condenser Fan Motor Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**COMPONENTS**

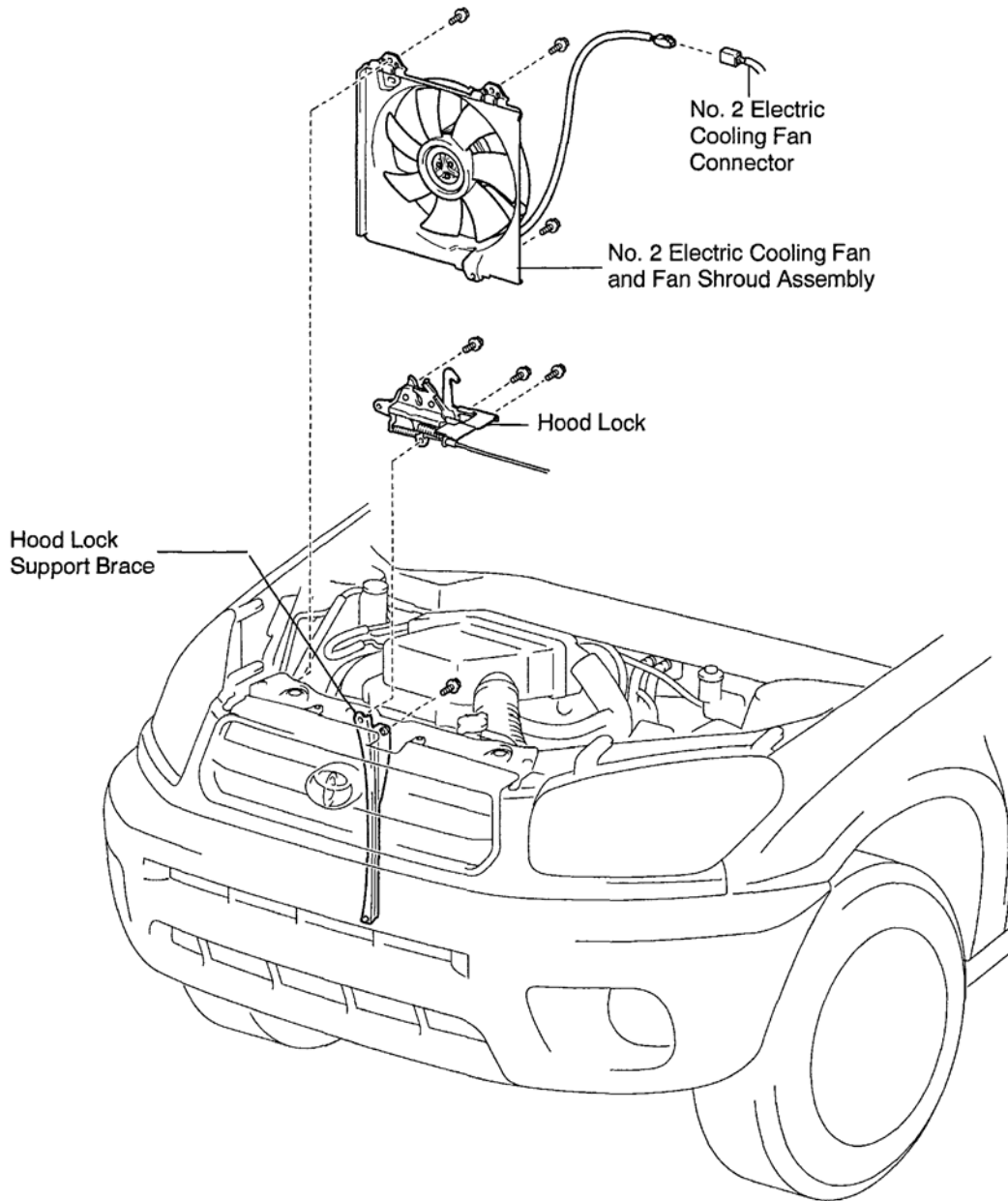
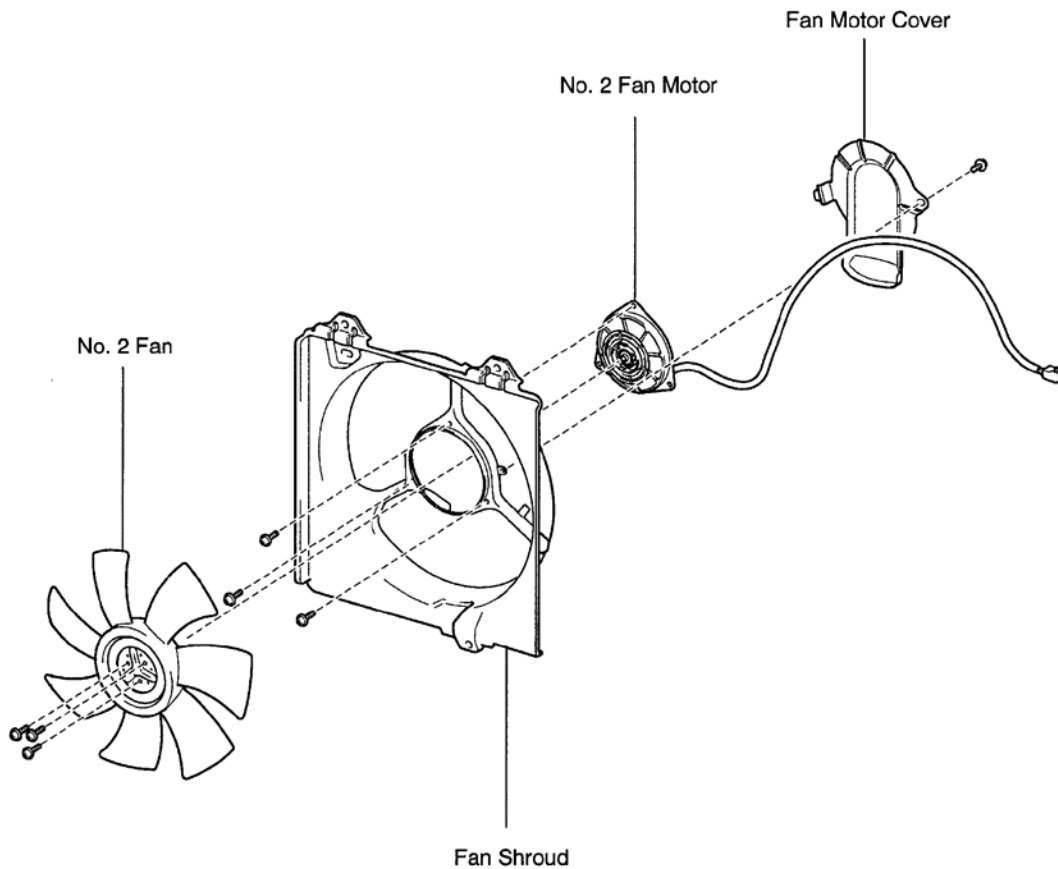


**Fig. 144: Identifying Condenser Fan Components (1 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



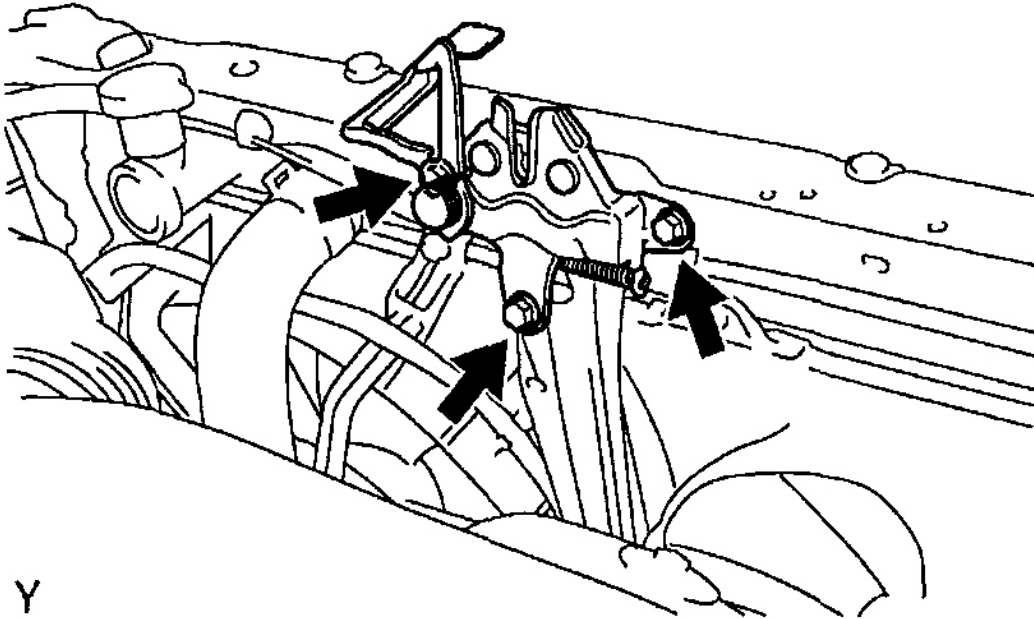
P  
G02641456

**Fig. 145: Identifying Condenser Fan Components (2 Of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## REMOVAL

1. REMOVE HOOD LOCK

Remove the 3 bolts and hood lock.



Y

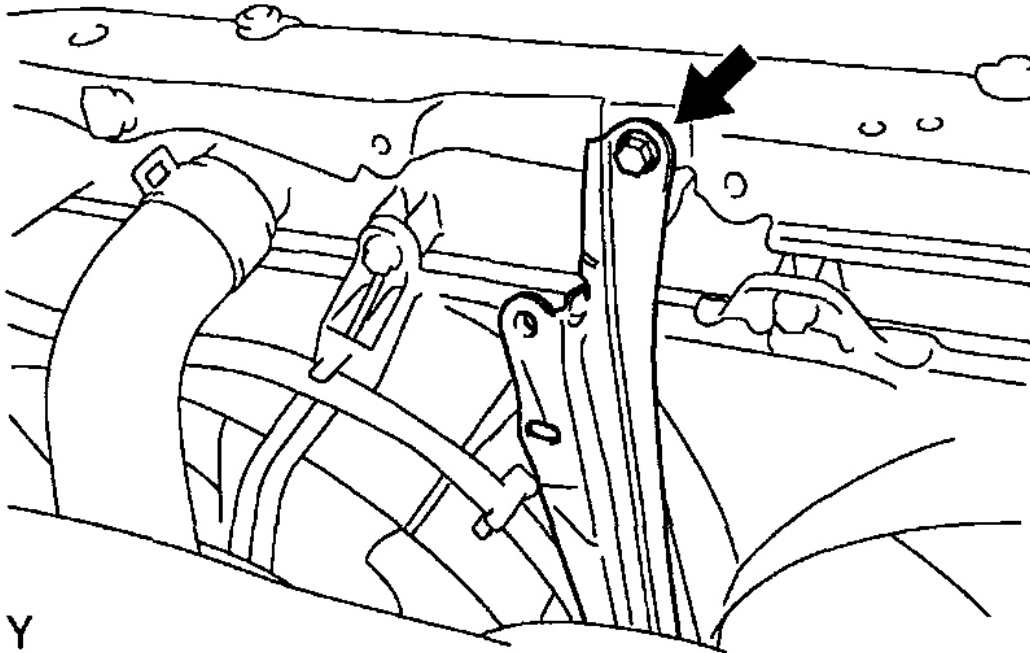
G02641457

**Fig. 146: Removing Hood Lock**

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

## 2. DISCONNECT HOOD LOCK SUPPORT BRACE

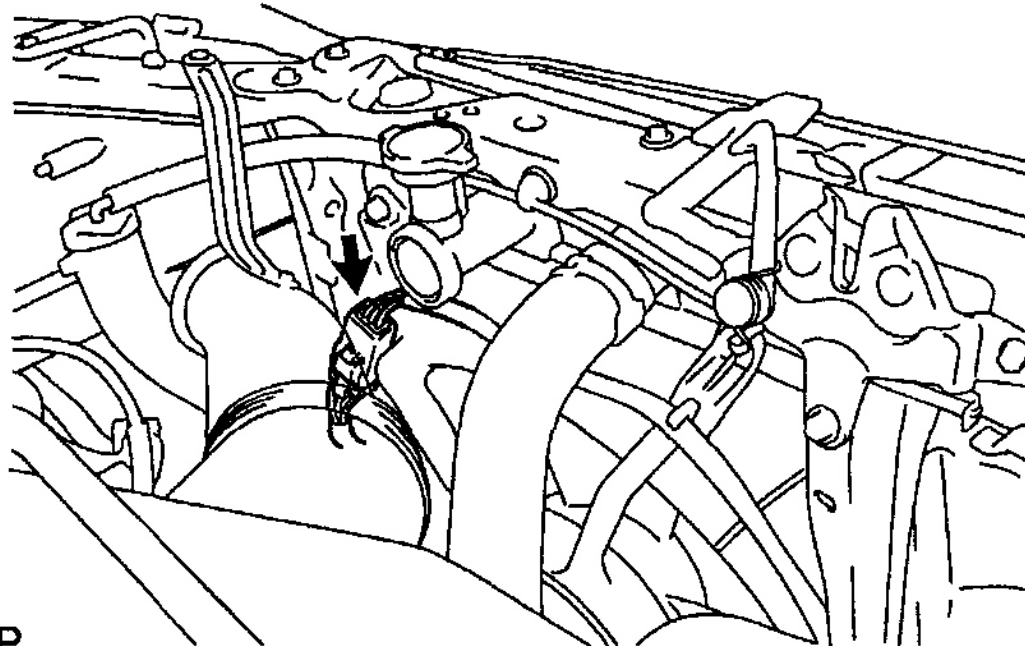
Remove the bolt.



G02641458

**Fig. 147: Disconnecting Hood Lock Support Brace**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **REMOVE NO. 2 ELECTRIC COOLING FAN AND FAN SHROUD ASSEMBLY**
  - a. Disconnect the cooling fan connector and clamp.



P

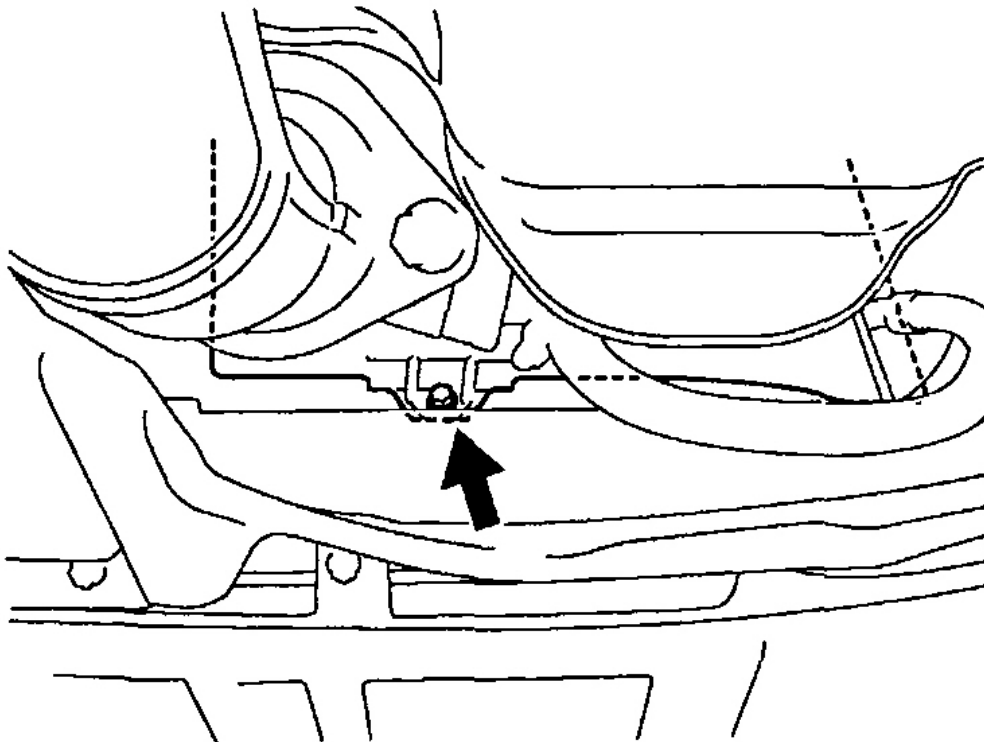
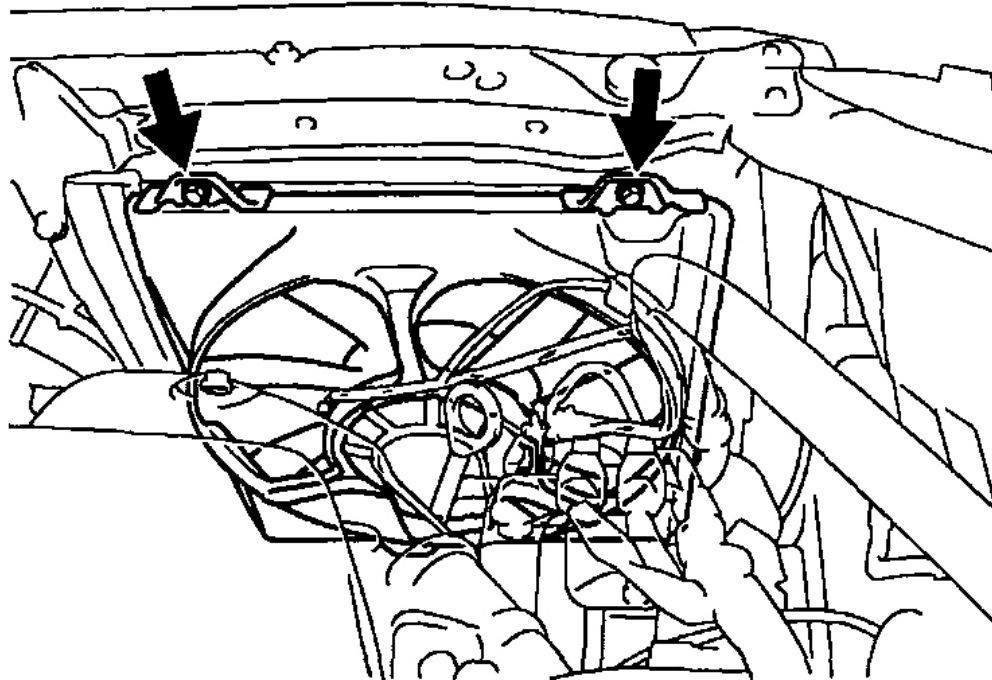
G02641459

**Fig. 148: Disconnecting Cooling Fan Connector And Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 3 bolts, the cooling fan and fan shroud assembly.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



Y

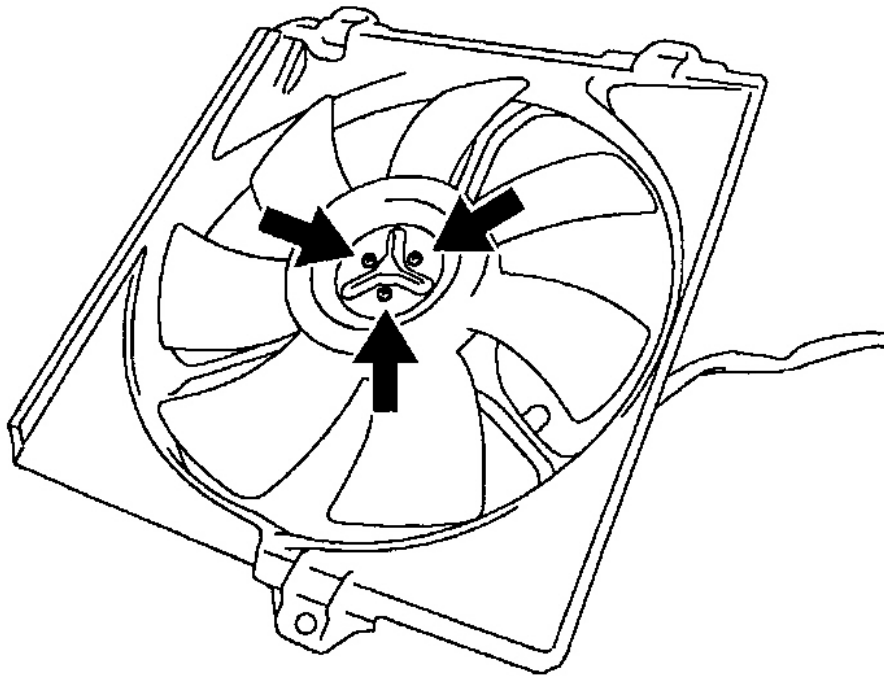
G02641460

**Fig. 149: Removing Cooling Fan And Fan Shroud Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**DISASSEMBLY**

**1. REMOVE NO. 2 FAN**

Remove the 3 screws and fan.



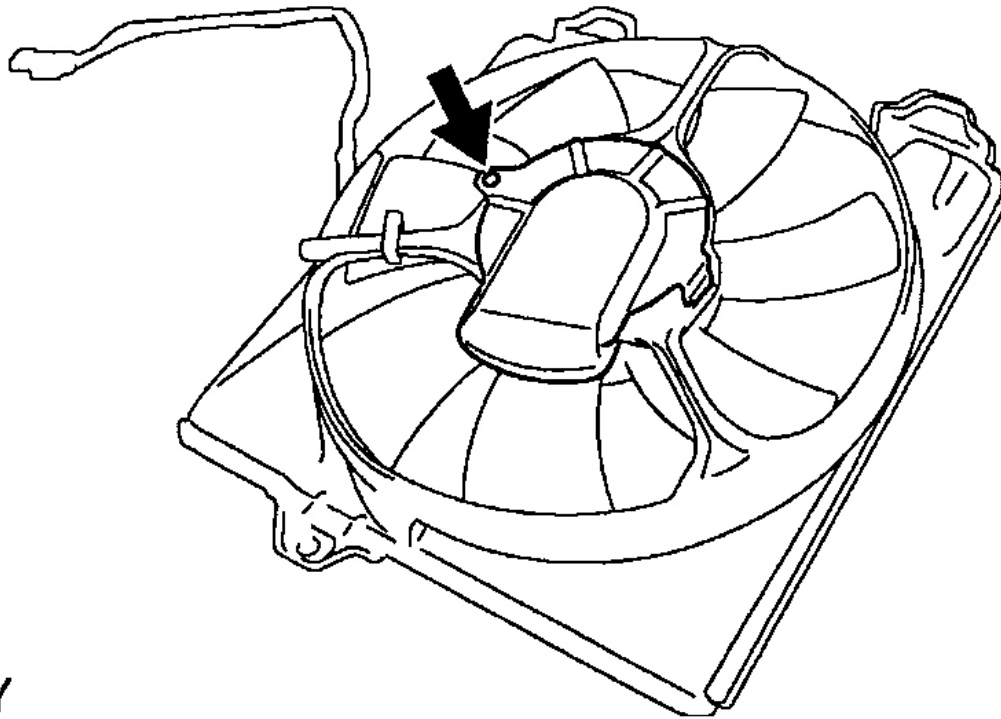
Y

G02641461

**Fig. 150: Removing No. 2 Fan**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. REMOVE NO. 2 FAN MOTOR**

- a. Remove the screw and fan motor cover.



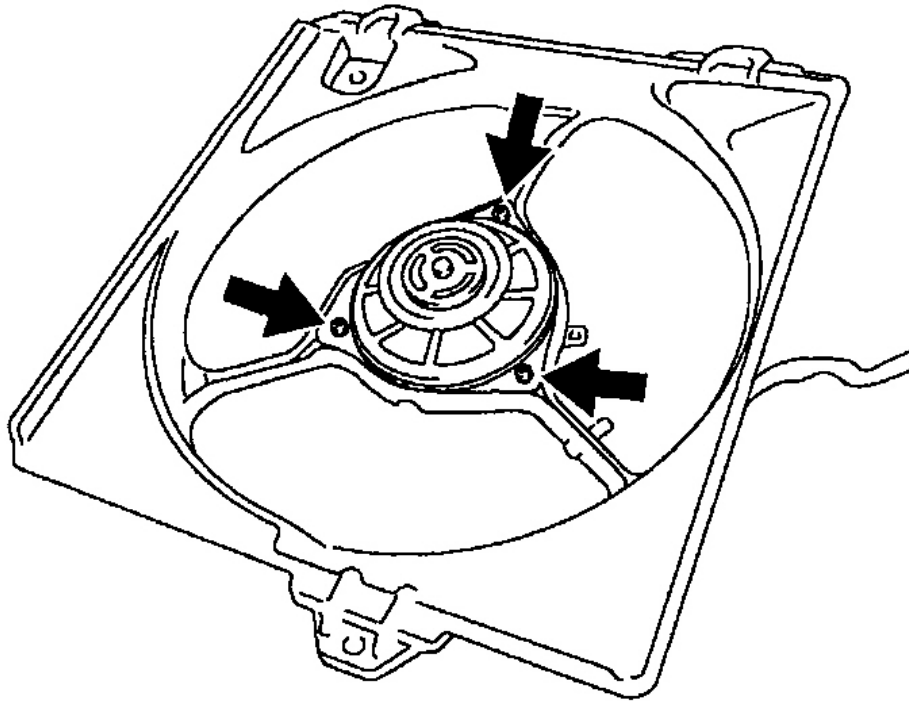
Y

G02641462

**Fig. 151: Removing Fan Motor Cover**

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

- b. Remove the 3 screws and fan motor.



Y

G02641463

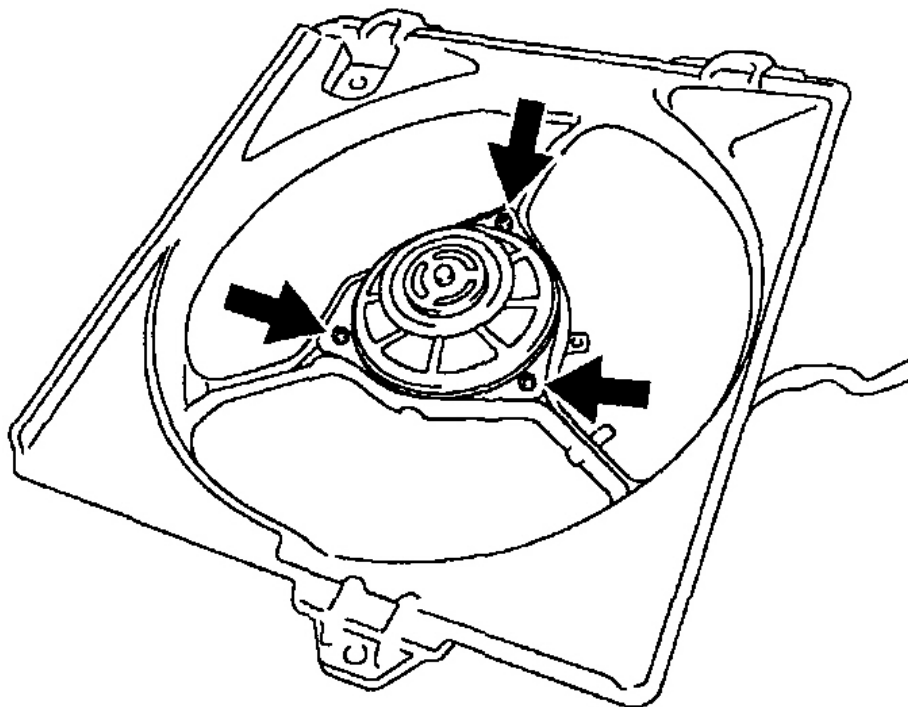
**Fig. 152: Removing Fan Motor**

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

## REASSEMBLY

### 1. INSTALL NO. 2 FAN MOTOR

- a. Install the fan motor with the 3 screws.



Y

G02641464

**Fig. 153: Installing No. 2 Fan Motor**

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

- b. Install the fan motor cover with the screw.

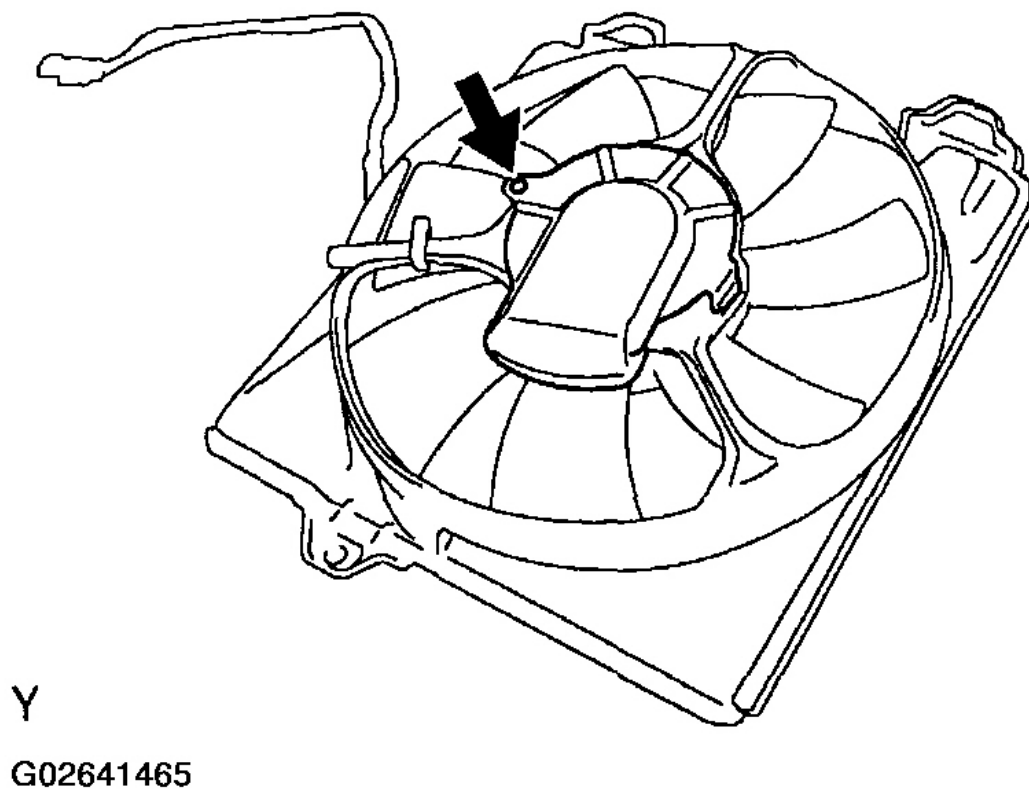
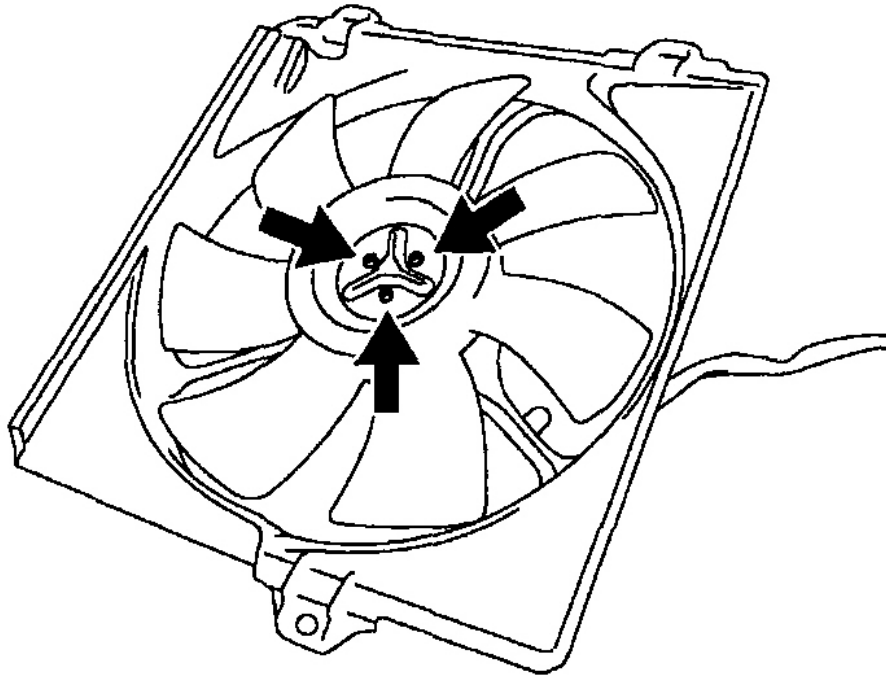


**Fig. 154: Installing No. 2 Fan Motor Cover**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSTALL NO. 2 FAN

Install the fan with the 3 screws.



Y

G02641466

**Fig. 155: Installing No. 2 Fan**

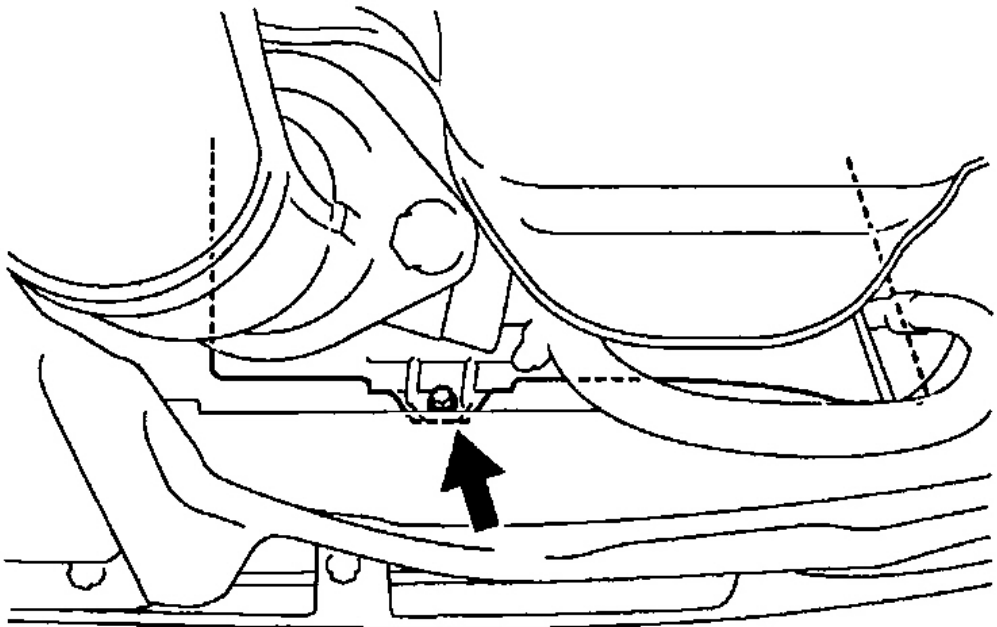
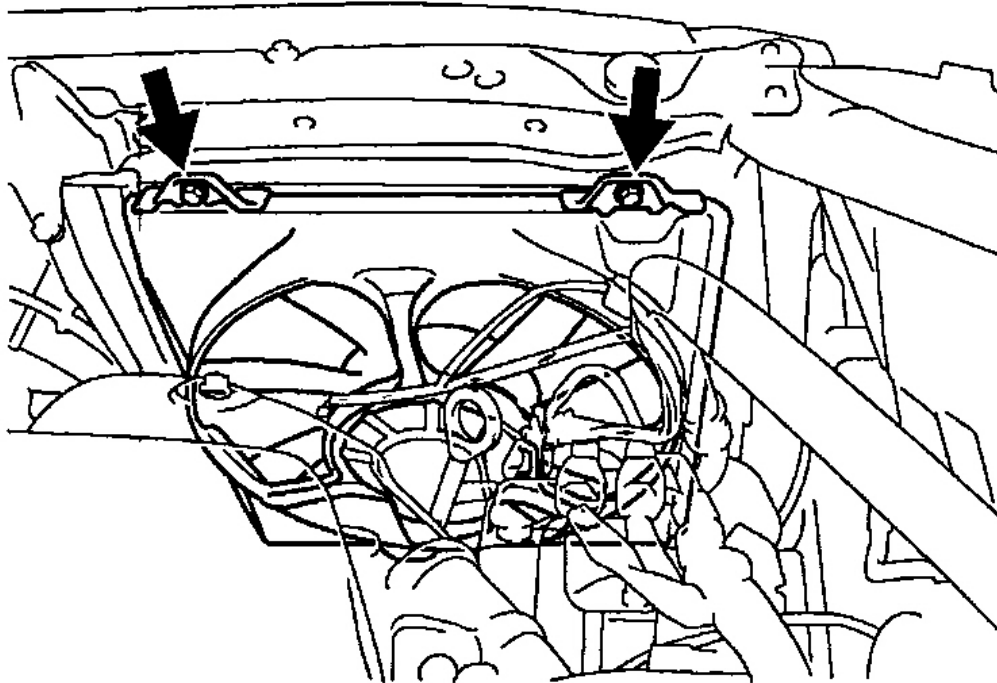
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## INSTALLATION

1. **INSTALL NO. 2 ELECTRIC COOLING FAN AND FAN SHROUD ASSEMBLY**
  - a. Install the cooling fan and fan shroud assembly with the 3 bolts.

## 2005 Toyota RAV4

2005 HVAC Air Conditioning - RAV4



Y

G02641467

**Fig. 156: Installing No. 2 Electric Cooling Fan And Fan Shroud Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Connect the cooling fan connector and clamp.

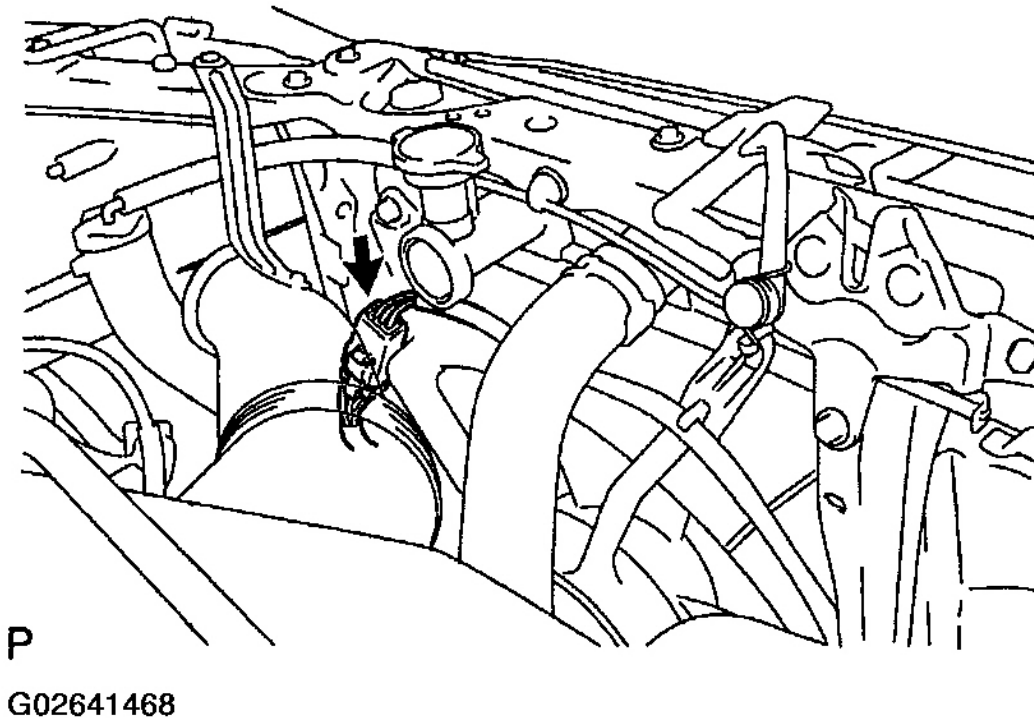
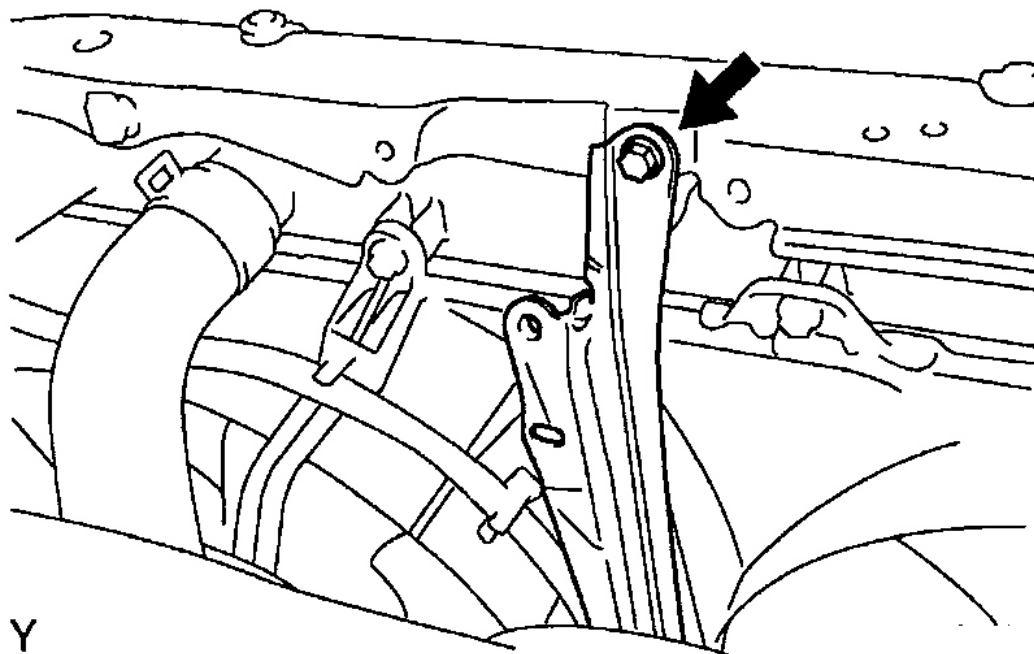


**Fig. 157: Connecting Cooling Fan Connector And Clamp**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. INSTALL HOOD LOCK SUPPORT BRACE

Install the bolt.



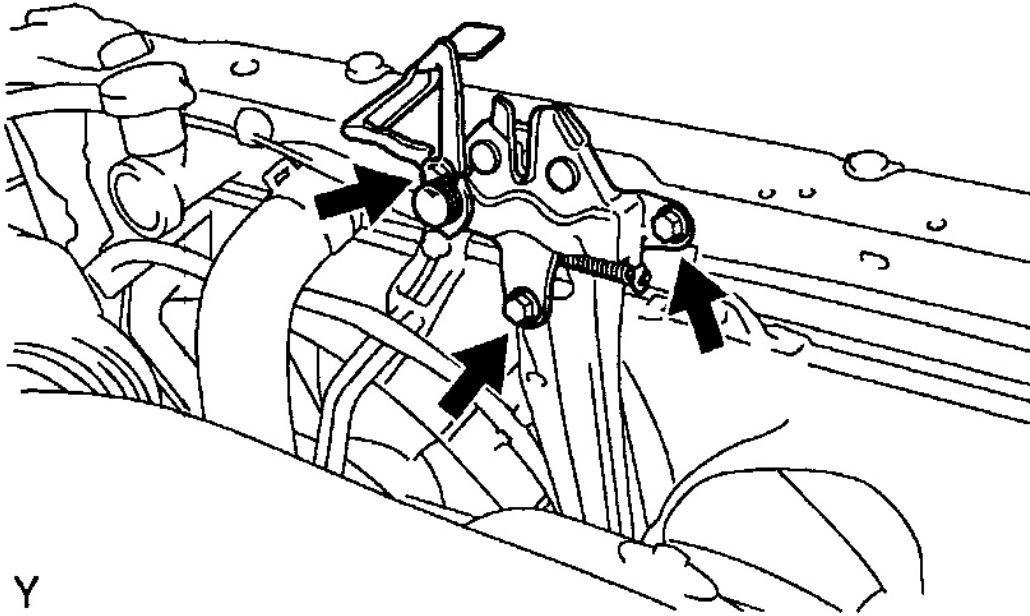
Y

G02641469

**Fig. 158: Installing Hood Lock Support Brace**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. INSTALL HOOD LOCK

Install the hood lock with the 3 bolts.



Y

G02641470

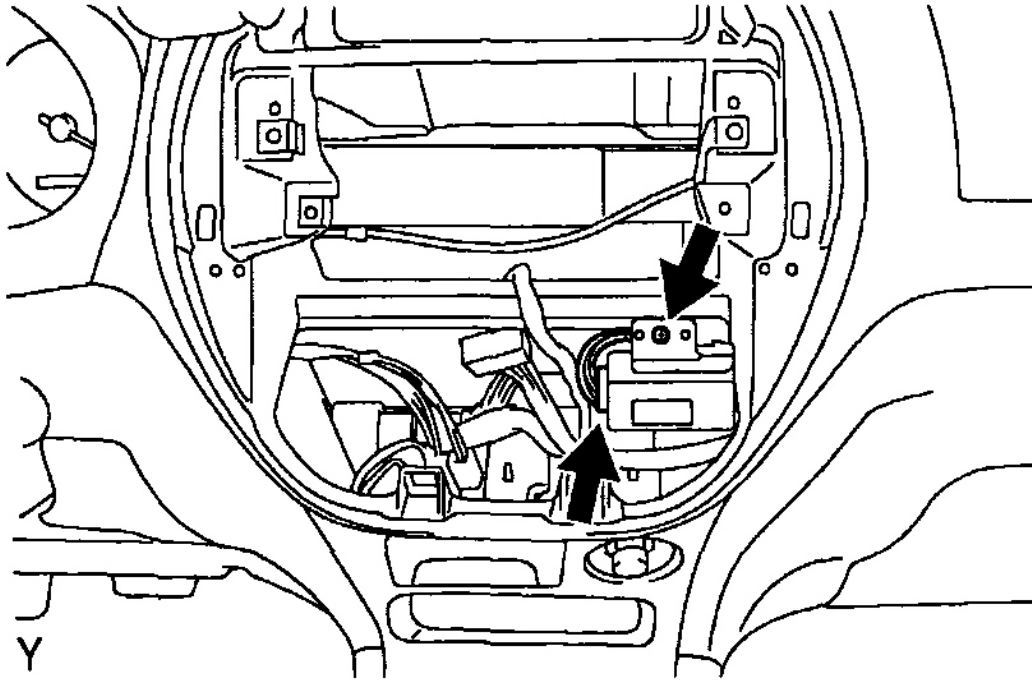
**Fig. 159: Installing Hood Lock**

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

## AIR CONDITIONING AMPLIFIER

### ON-VEHICLE INSPECTION

1. **REMOVE HEATER CONTROL PANEL** (See REMOVAL)
2. **INSPECT AMPLIFIER CIRCUIT**
  - a. Disconnect the amplifier connector.
  - b. Remove the screw and amplifier from the instrument panel.



G02641471

**Fig. 160: Disconnecting Amplifier Connector**

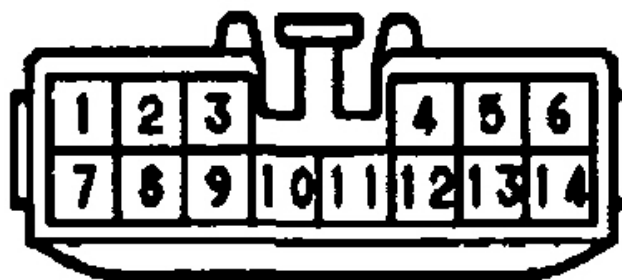
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Inspect the connector on wire harness side as shown in **AMPLIFIER CIRCUIT INSPECTION** below.

Test conditions:

- Ignition switch ON
- Temperature damper control dial at "MAX. COOL" position
- Blower speed control switch at "HI" position

## Wire Harness Side



G02641472

**Fig. 161: Identifying Amplifier Connector Terminals**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### AMPLIFIER CIRCUIT INSPECTION

| Tester connection | Condition                                   | Specified condition             |
|-------------------|---------------------------------------------|---------------------------------|
| 5 - Ground        | Constant                                    | Continuity                      |
| 8 - 5             | A/C switch ON                               | 10 - 14 V                       |
|                   | Defroster damper control dial DEF. position |                                 |
|                   | A/C switch OFF                              | 0 V                             |
| 9 - 13            | Evaporator temperature at 25°C (77° F)      | Approx. 1.5 kohm                |
| 14 - 13           | Constant                                    | Approx. 115 ohm at 20°C (68° F) |
| 10 - 5            | A/C switch ON                               | 1.0 V or more                   |
|                   | A/C switch OFF                              | 0 V                             |

If circuit value is not as specified, replace the amplifier.

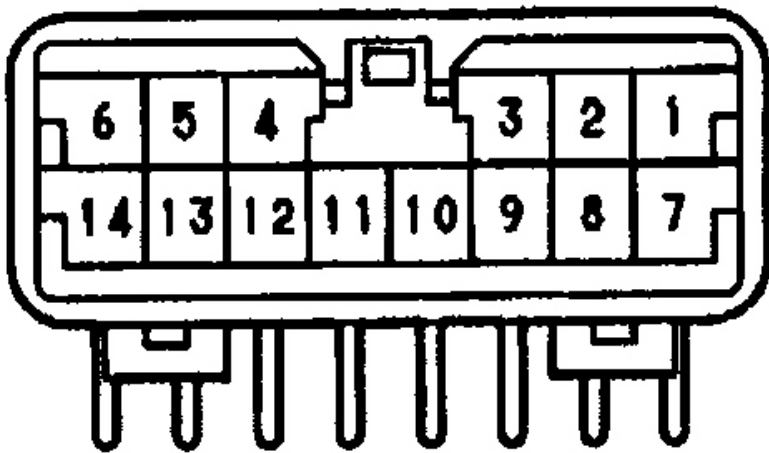
If the circuit value is as specified, inspect the circuits connected to other parts.

- d. Connect the connector to A/C amplifier and inspect wire harness side connector from the back side, as shown in A/C AMPLIFIER CONNECTOR VOLTAGE below.

Test conditions:

- Running engine at idle speed
- A/C switch ON
- Temperature damper control dial at "MAX. COOL" position
- Blower speed control switch at "HI" position
- Set on manifold gauge set

## From Back Side



G02641473

**Fig. 162: Identifying A/C Amplifier Connector Terminals**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**A/C AMPLIFIER CONNECTOR VOLTAGE**

| Tester connection | Condition                            | Specified condition |
|-------------------|--------------------------------------|---------------------|
|                   | Refrigerant pressure 196 - 3,138 kPa | 10 - 14 V           |

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

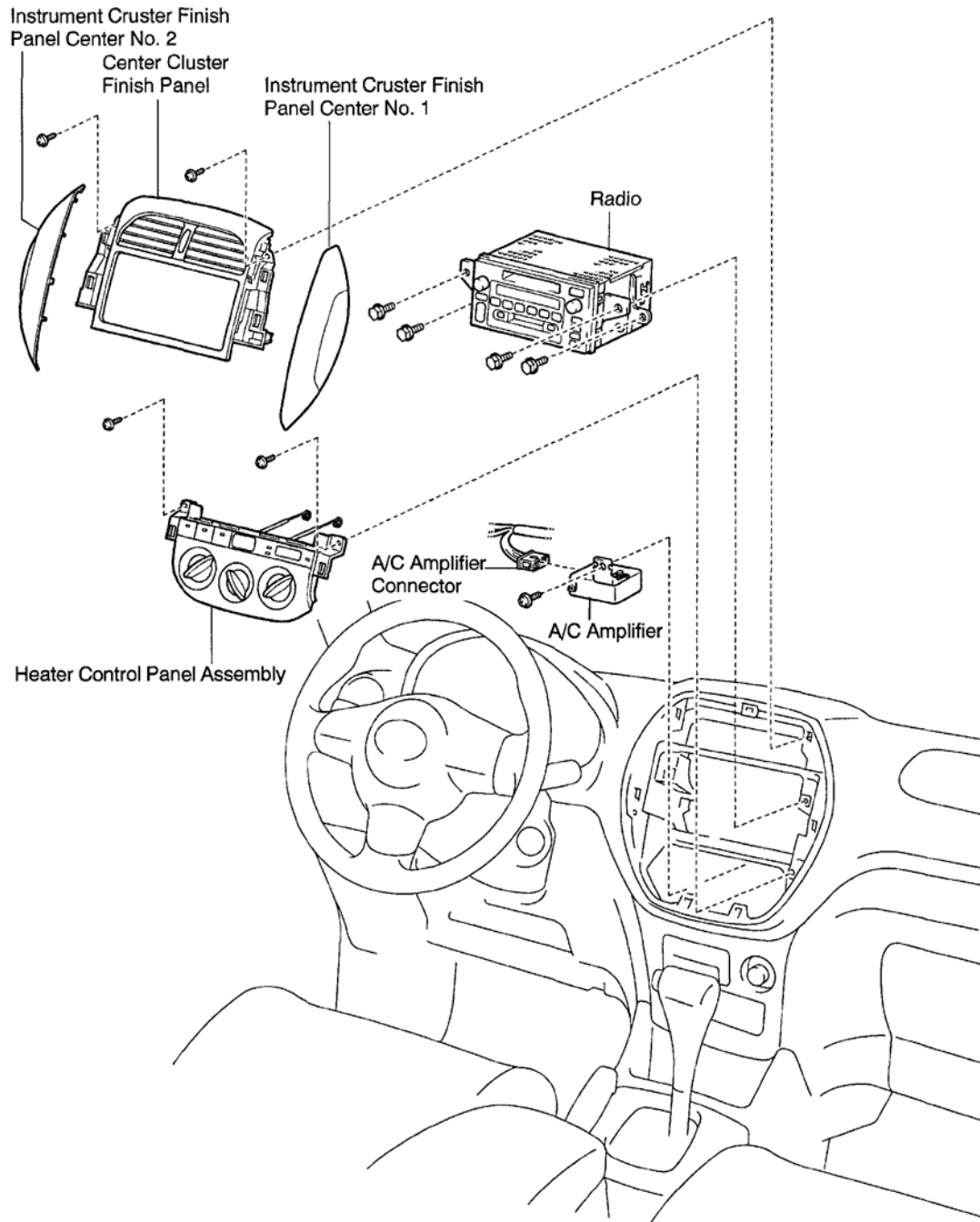
|        |                                                                                              |             |
|--------|----------------------------------------------------------------------------------------------|-------------|
| 2 - 5  | Refrigerant pressure less than 196 kPa or more than 3,138 kPa                                | 0 V         |
| 6 - 5  | Magnetic clutch is not engaged                                                               | Below 1.0 V |
|        | Magnetic clutch is engaged                                                                   | 10 - 14 V   |
| 12 - 5 | A/C amplifier sends signal to engine ECU to turn magnetic clutch ON (while A/C switch is ON) | Below 1.0 V |
|        | A/C switch OFF                                                                               | 10 - 14 V   |

If the circuit value is not as specified, replace the amplifier. If the circuit value is as specified, inspect the circuits connected to other parts.

## COMPONENTS

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4



P  
G02641474

**Fig. 163: Identifying Air Conditioning Amplifier Components**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

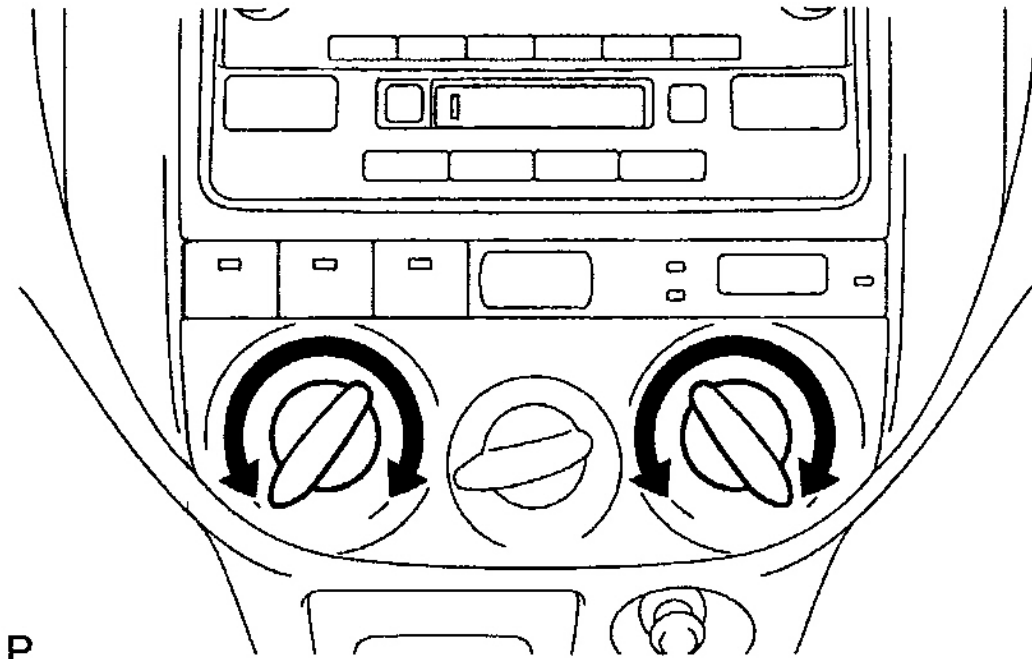
## HEATER CONTROL ASSEMBLY

## ON-VEHICLE INSPECTION

**INSPECT HEATER CONTROL DIALS OPERATION**

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

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

**P**

G02641475

**Fig. 164: Inspecting Operation Of Heater Control Dials**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**COMPONENTS**

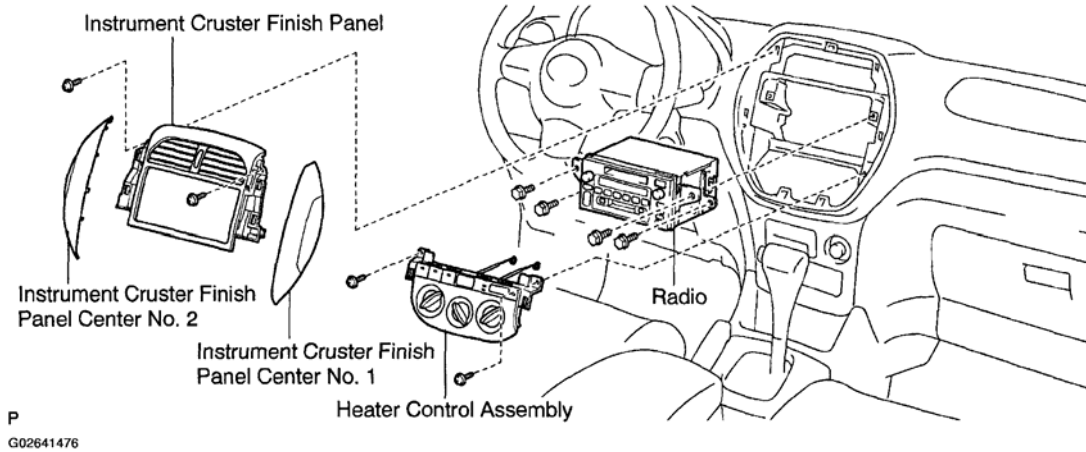


**Fig. 165: Identifying Heater Control Assembly Components (1 Of 2)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

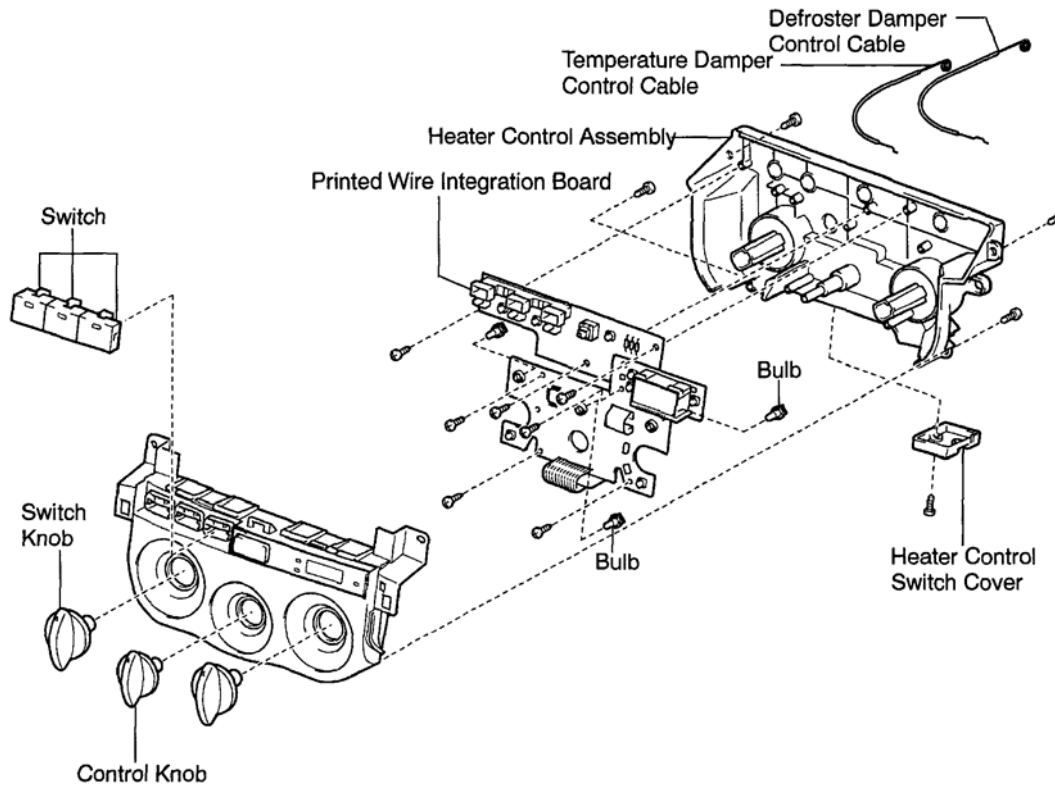


**Fig. 166: Identifying Heater Control Assembly Components (2 Of 2)**

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

## REMOVAL

### 1. REMOVE INSTRUMENT CLUSTER FINISH PANEL CENTER

- Using a screwdriver, pry out the 2 finish panels.

HINT:

Tape the screwdriver tip before use.

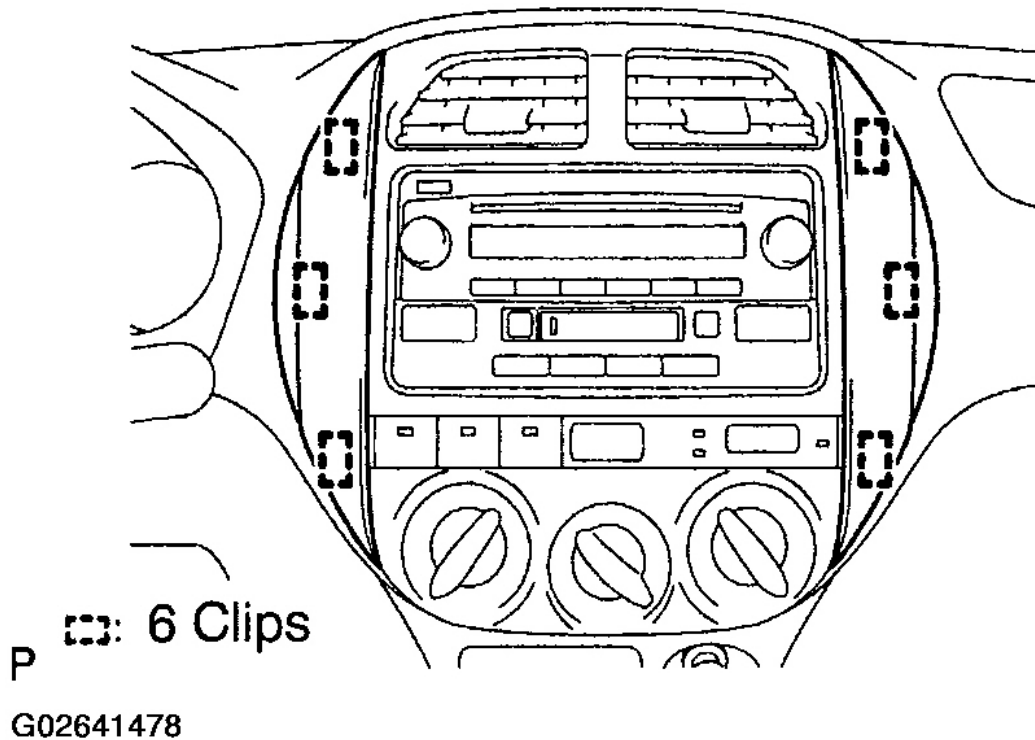


**Fig. 167: Removing Instrument Cluster Finish Panel Center**

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

### 2. REMOVE INSTRUMENT CLUSTER FINISH PANEL

- Remove the 2 screws.

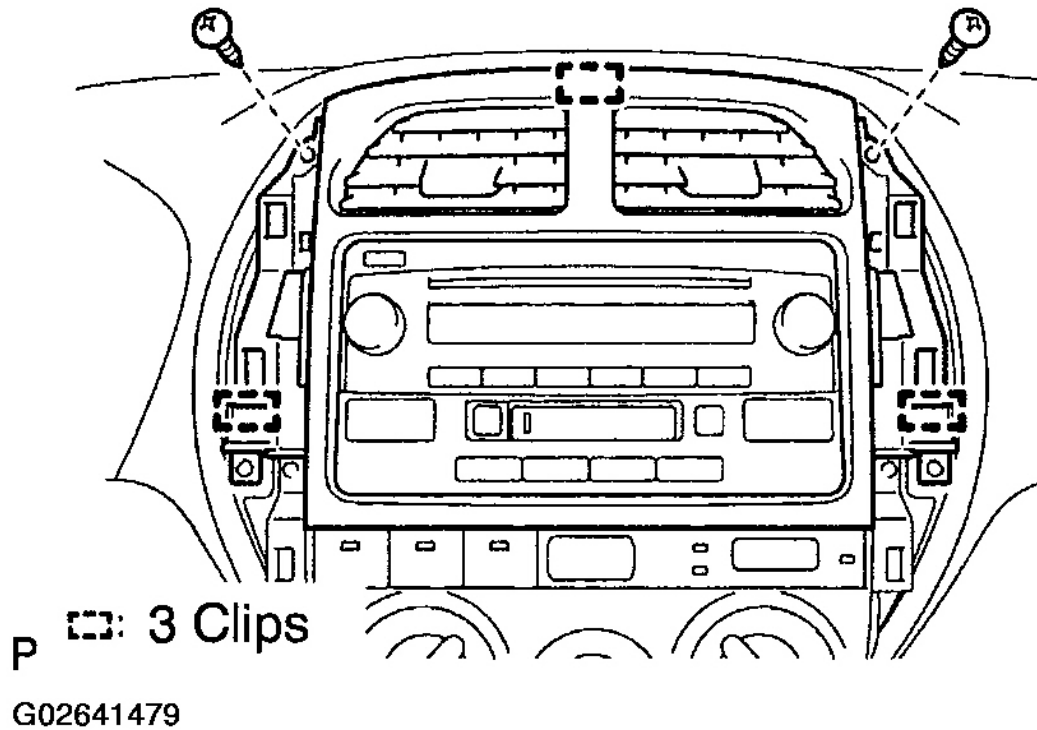


**Fig. 168: Removing Instrument Cluster Finish Panel**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a screwdriver, pry out the finish panel.

HINT:

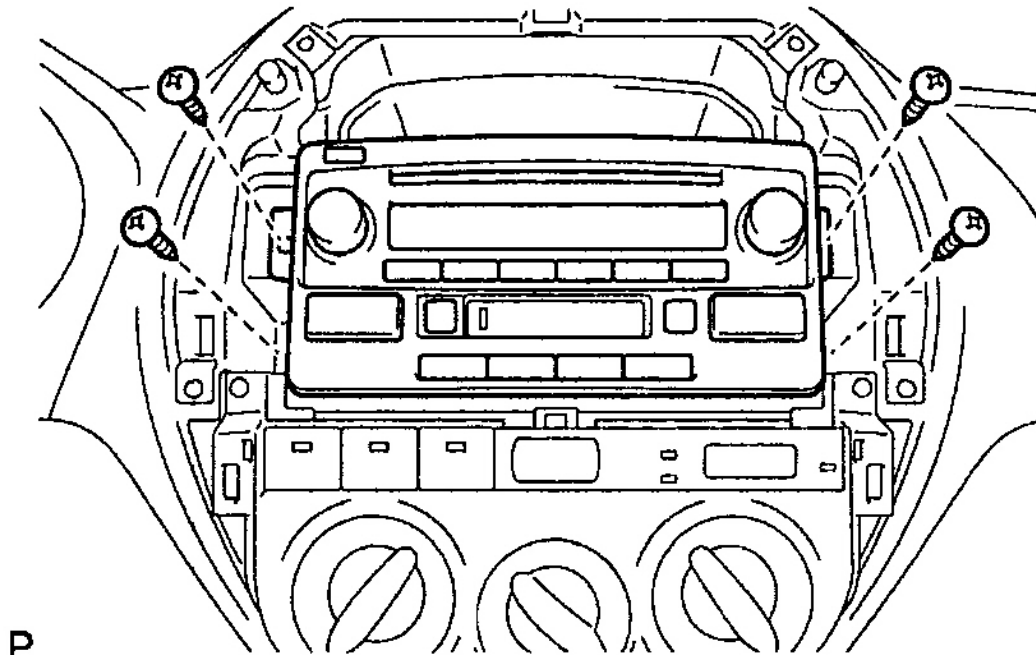
Tape the screwdriver tip before use.

- c. w/o Radio:

Remove the 4 bolts and stereo opening cover.

w/ Radio:

Remove the 4 bolts and radio, then disconnect the connectors.



G02641480

**Fig. 169: Removing Screws & Stereo Opening Cover Or Radio**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### 3. DISCONNECT HEATER CONTROL CABLES

Remove the No. 1 instrument panel under cover sub-assembly.

**NOTE:** When the cables are disconnected, be careful not to bend the cables.

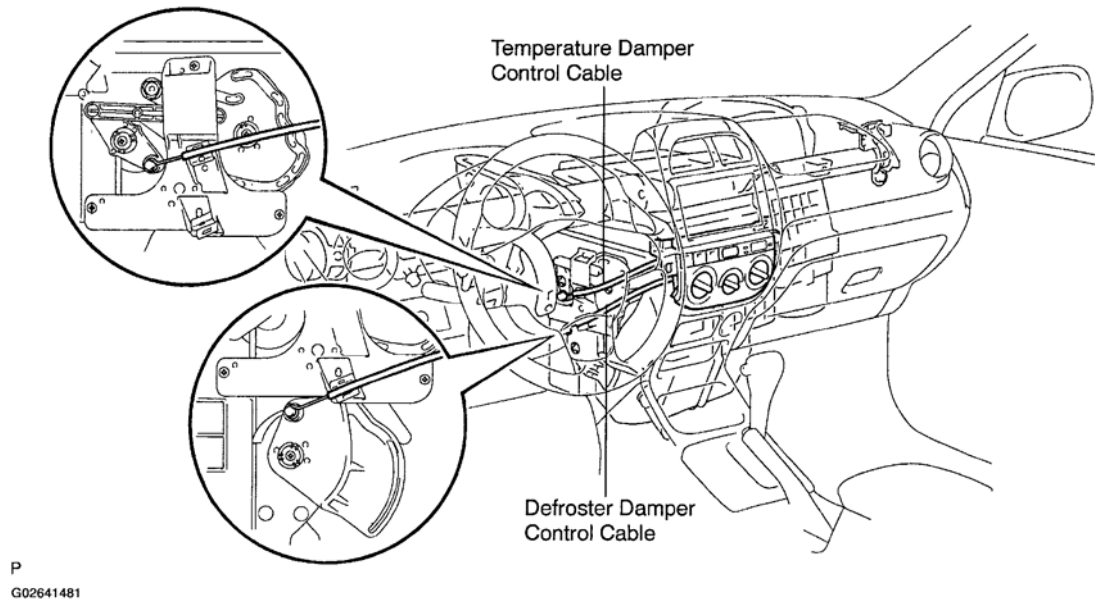


**Fig. 170: Disconnecting Heater Control Cables**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**4. REMOVE HEATER CONTROL ASSEMBLY**

- a. Remove the 2 screws.
- b. Using a screwdriver, pry out the heater control assembly.

**HINT:**

Tape the screwdriver tip before use.

- c. Disconnect the 2 connectors.

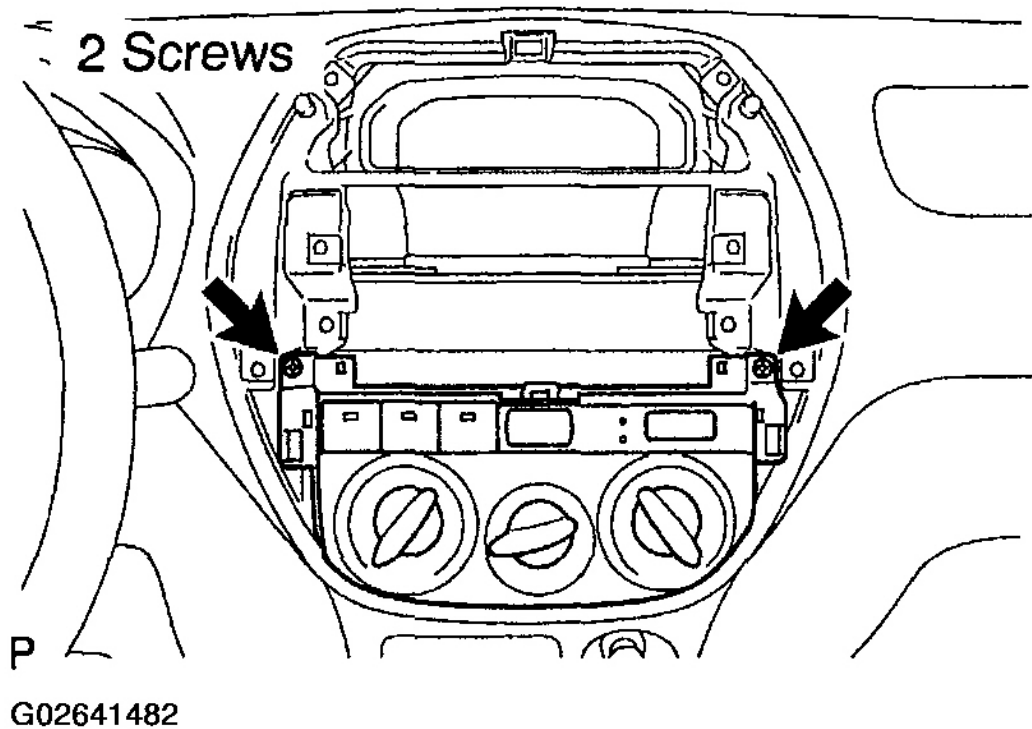


**Fig. 171: Removing Heater Control Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## DISASSEMBLY

### 1. REMOVE HEATER CONTROL CABLES

- a. Pull out the outer cables.
- b. Remove the inner cables.

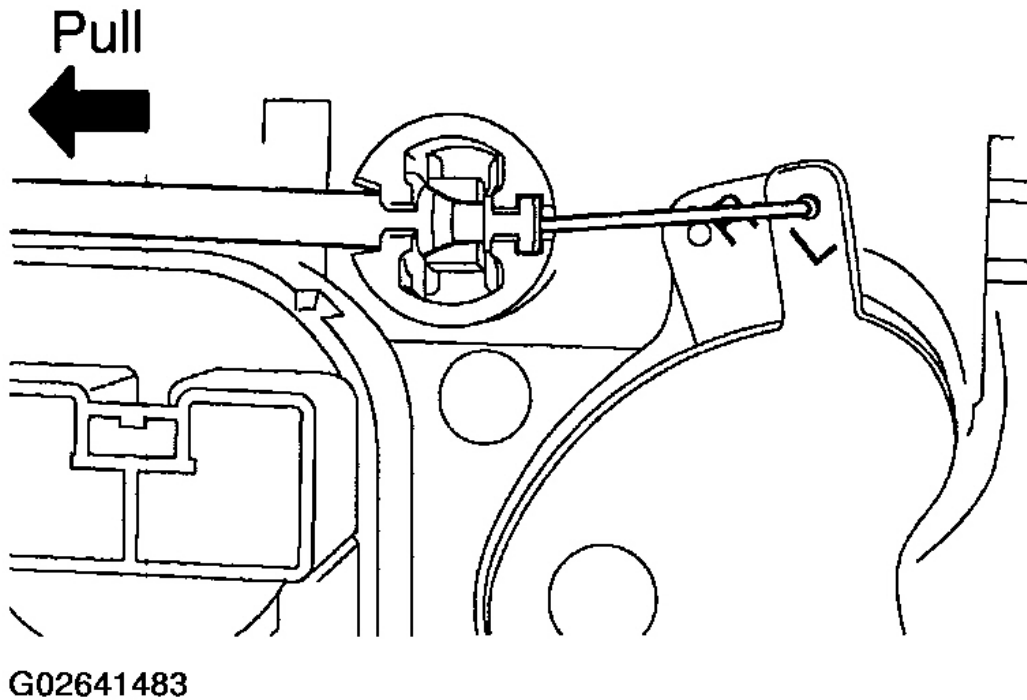


**Fig. 172: Removing Heater Control Cables**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. REMOVE HEATER CONTROL NAME PLATE**

- a. Remove the 3 knobs.
- b. Remove the 8 screws.
- c. Remove the 3 switches.
- d. Remove the heater control cover.

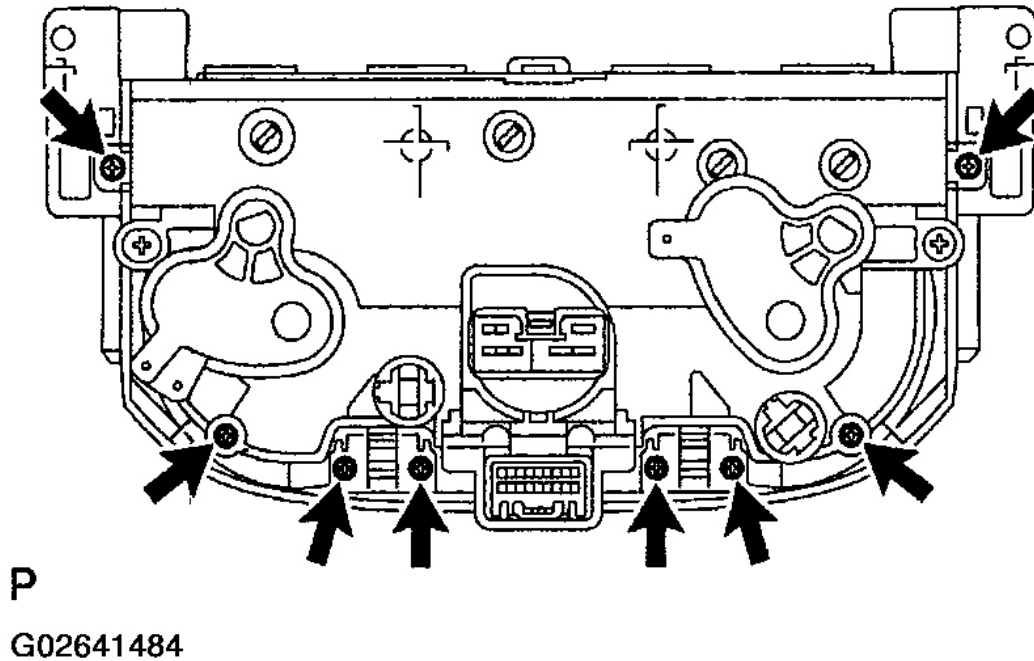
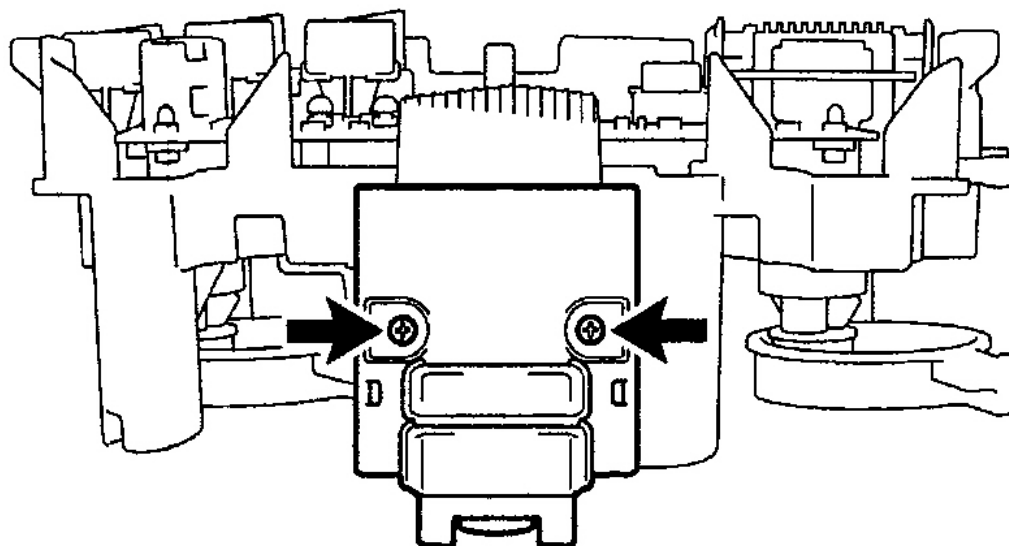


**Fig. 173: Removing Heater Control Name Plate**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**3. REMOVE PRINTED WIRE INTEGRATION BOARD**

- a. Remove the 2 screws and heater control switch cover.



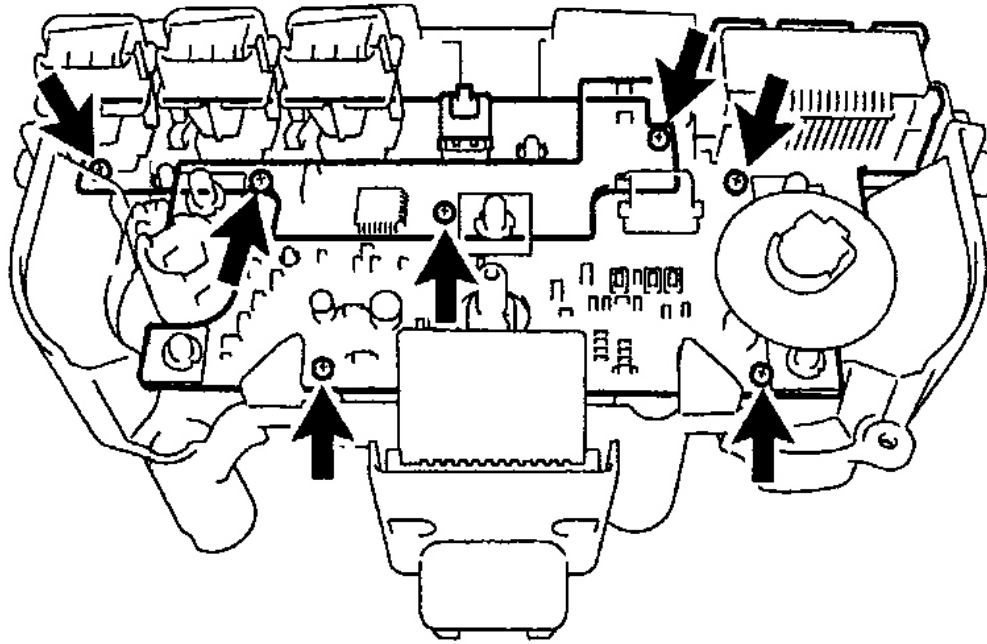
P

G02641485

**Fig. 174: Removing Heater Control Switch Cover**

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

- b. Remove the 7 screws and integration board.



P

G02641486

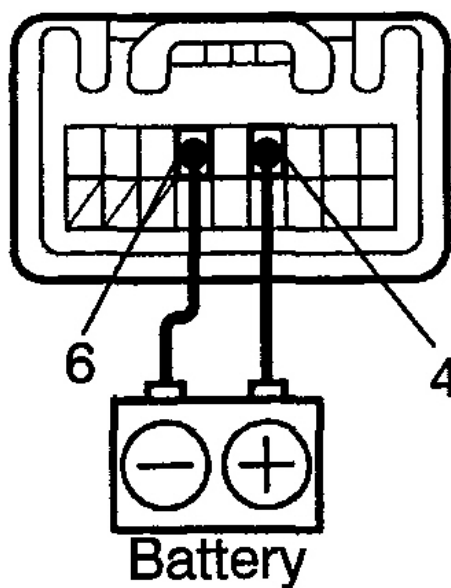
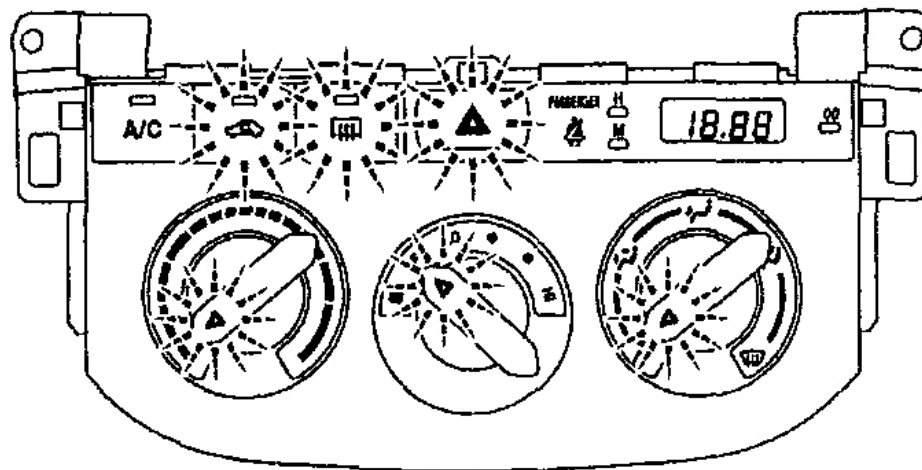
**Fig. 175: Removing Integration Board**

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

## INSPECTION

### 1. INSPECT ILLUMINATION OPERATION

- a. Connect the battery's positive (+) lead to terminal 4 and negative (-) lead to terminal 6. Then check that the illuminations light up.



P

G02641487

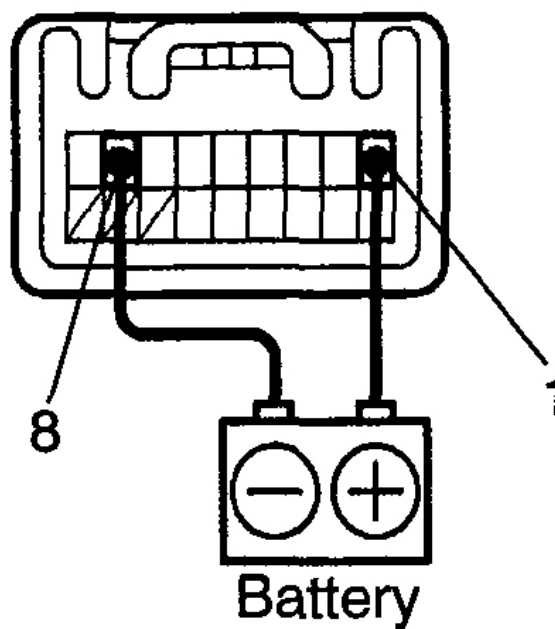
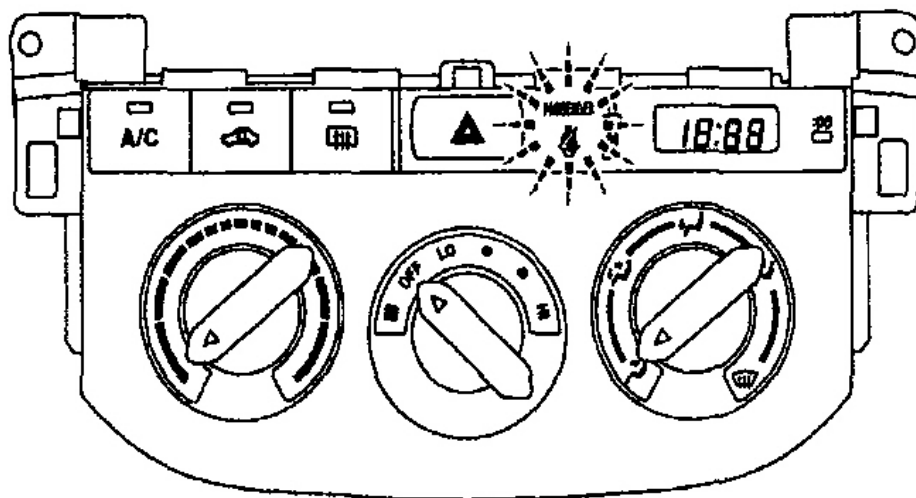
**Fig. 176: Checking Illumination Lights Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2005 Toyota RAV4

### 2005 HVAC Air Conditioning - RAV4

- b. Connect the battery's positive (+) lead to terminal 1 and negative (-) lead to terminal 8. Then check that the passenger side seat belt illuminations light up.

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



P

G02641488

**Fig. 177: Checking Passenger Side Seat Belt Illumination Light Operation**

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

## 2. INSPECT AIR INLET CONTROL SWITCH INDICATOR OPERATION

- Connect the positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 13.
- Push the A/C button in and then check that the A/C indicator lights up.

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

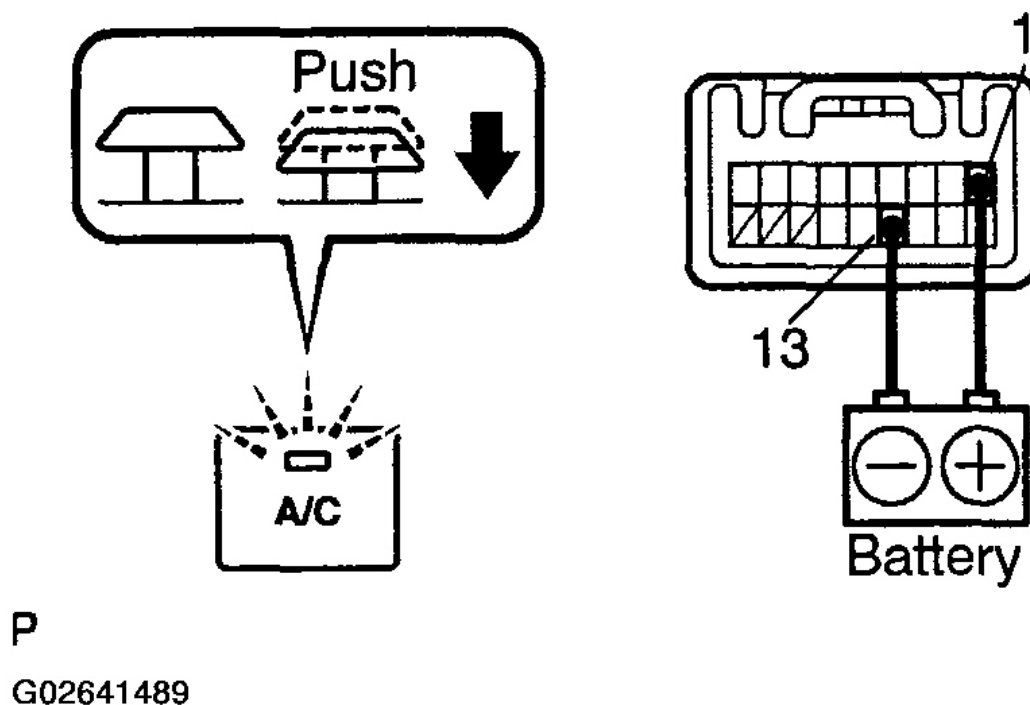


**Fig. 178: Checking Air Inlet Control Switch Indicator Operation**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 3. INSPECT A/C SWITCH INDICATOR OPERATION

- Connect the battery's positive (+) lead to terminal 1 and negative (-) lead to terminal 13.
- Push the A/C button in and then check that the A/C indicator illuminates.

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

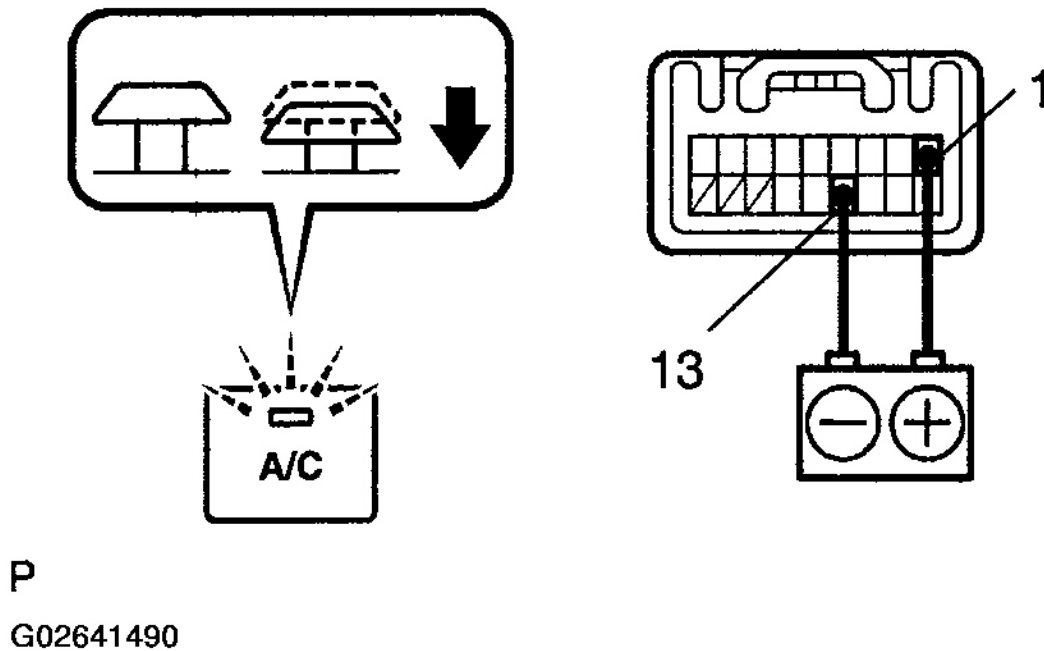
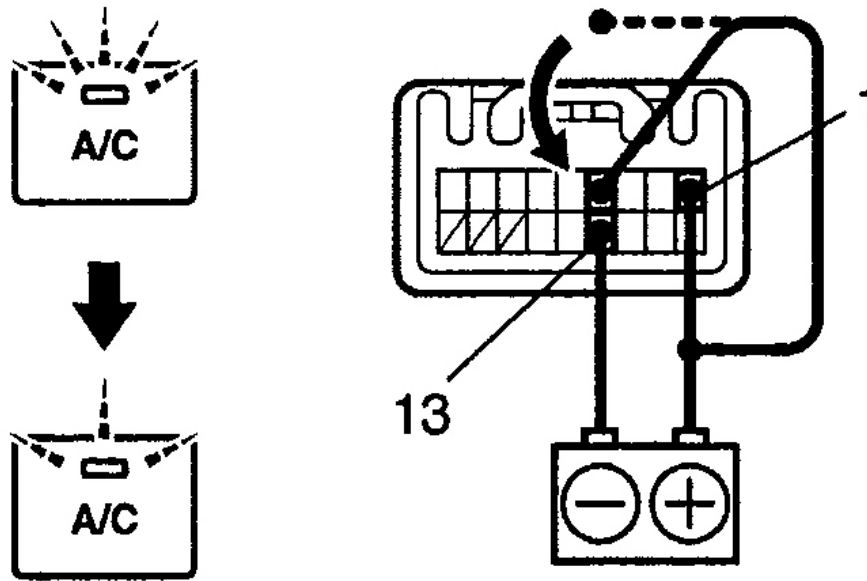


**Fig. 179: Inspecting A/C Switch Indicator Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 4. INSPECT A/C SWITCH INDICATOR DIMMING OPERATION

- Connect the battery's positive (+) lead to terminal 1 and negative (-) lead to terminal 13 while pressing the switch.
- Connect the battery's positive (+) lead to terminal 4 and then check that the A/C indicator dims.



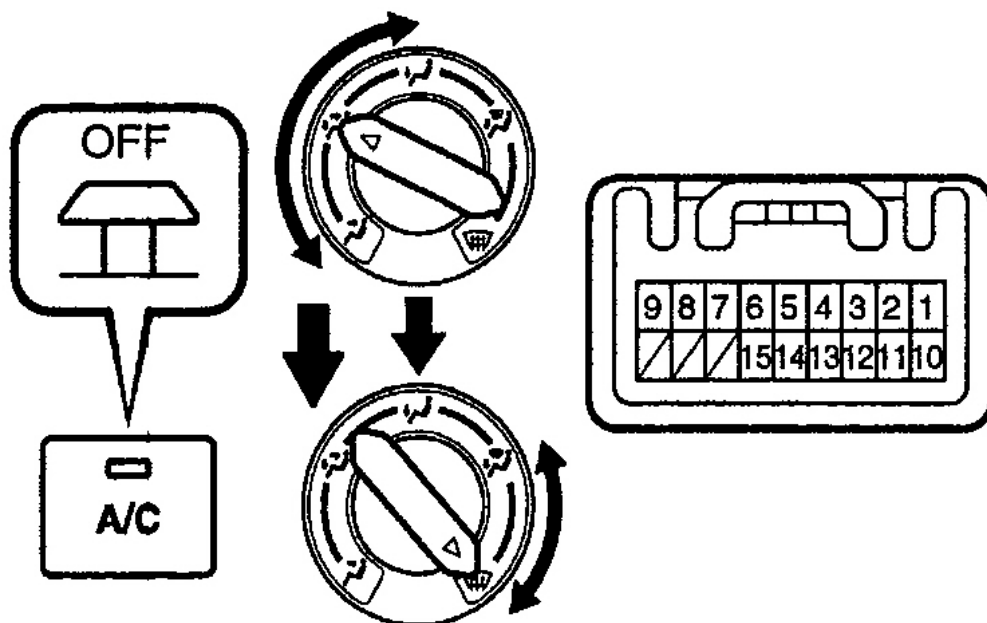
P

G02641491

**Fig. 180: Inspecting A/C Switch Indicator Dimming Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

## 5. INSPECT A/C SWITCH RESISTANCE



P

G02641492

**Fig. 181: Inspecting A/C Switch Resistance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### IDENTIFYING A/C SWITCH SPECIFIED CONDITIONS

| Condition/Circuit                               | Tester Connection | Specified Condition |
|-------------------------------------------------|-------------------|---------------------|
| A/C switch OFF                                  |                   | Below 1 ohm         |
| A/C switch ON                                   | 1 - 13            | Below 1 ohm         |
| Defroster damper control dial at "FACE - FOOT"  |                   | 10 kohm or higher   |
| Defroster damper control dial at "DEF-FOOT-DEF" | 1 - 13            | Below 1 ohm         |
| Illumination circuit                            | 4 - 6             | Below 1 ohm         |

Switch circuit:

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

Illumination circuit:

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

#### 6. INSPECT AIR INLET CONTROL SWITCH INDICATOR

- a. Connect the battery's positive (+) lead to terminal 1 and negative (-) lead to terminal 12.
- b. Push the air inlet control switch in and then check that the air inlet control switch illuminates.

If operation is not as specified, replace the air inlet control switch.

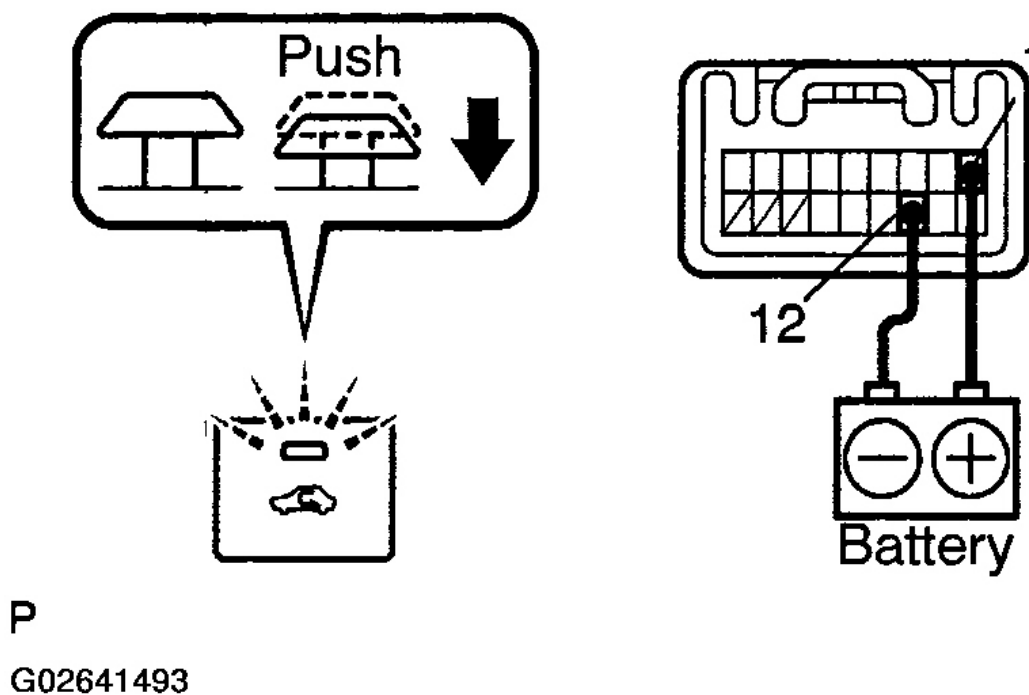


**Fig. 182: Inspecting Air Inlet Control Switch Indicator**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### 7. INSPECT AIR INLET CONTROL SWITCH INDICATOR DIMMING OPERATION

- a. Connect the battery's positive (+) lead from the battery to terminal 1 and negative (-) lead to terminal 12 while pressing the switch.
- b. Connect the battery's positive (+) lead from battery to terminal 4 and then check that the air inlet control switch indicator dims.

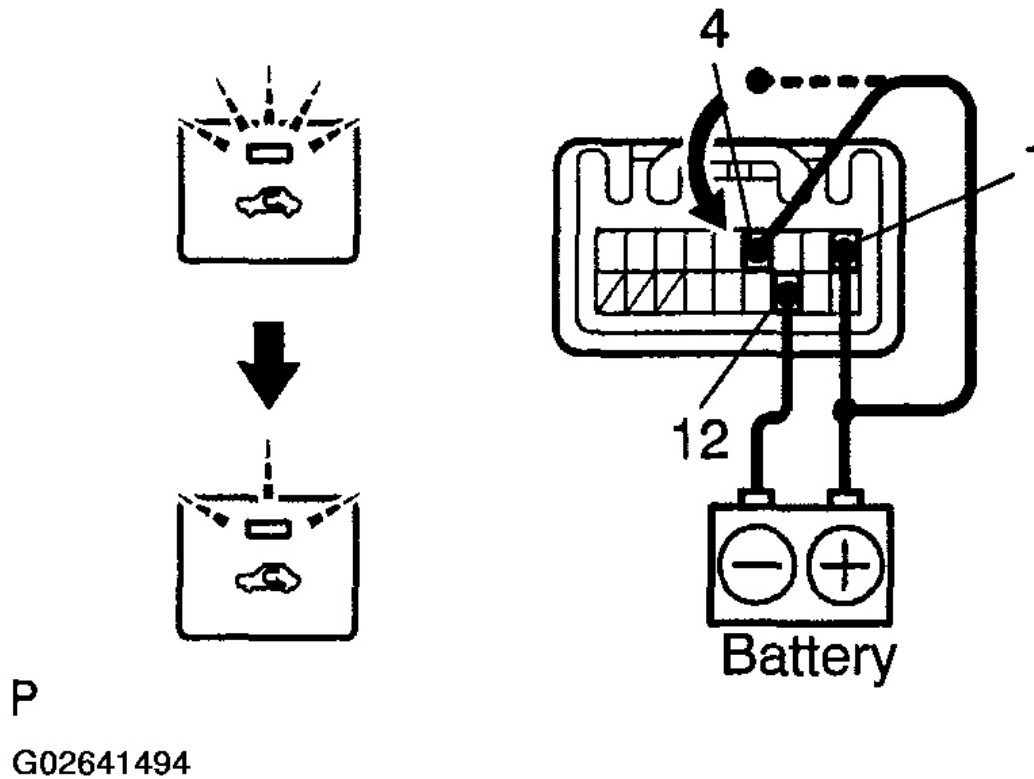
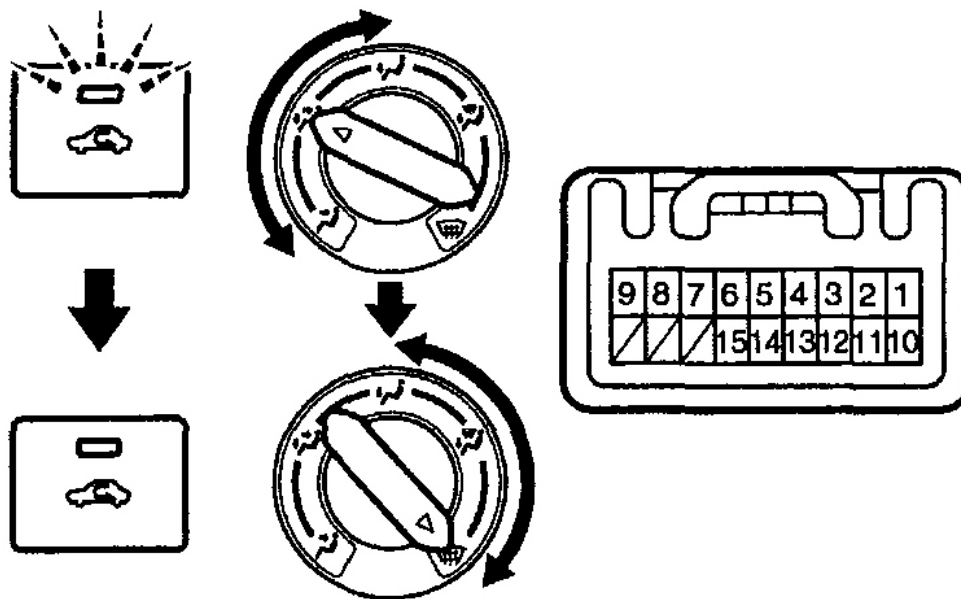


**Fig. 183: Inspecting Air Inlet Control Switch Indicator Dimming Operation**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If operation is not as specified, replace the air inlet control switch.

## 8. INSPECT AIR INLET CONTROL SWITCH RESISTANCE



P

G02641495

**Fig. 184: Inspecting Air Inlet Control Switch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### AIR INLET CONTROL SWITCH SPECIFIED CONDITIONS

| Condition/Circuit                              | Tester Connection | Specified Condition |
|------------------------------------------------|-------------------|---------------------|
| Air inlet control switch OFF                   |                   | 10 kohm or higher   |
| Air inlet control switch ON                    | 1 - 12            | Below 1 ohm         |
| Defroster damper control dial at "FACE - FOOT" |                   | 10 kohm or higher   |
| Defroster damper control dial at "DEF - FOOT"  | 1 - 12            | Below 1 ohm         |
| Illumination circuit                           | 4 - 6             | Below 1 ohm         |

If continuity is not as specified, replace the air inlet control switch.

#### 9. Defroster damper control dial: INSPECT AIR INLET CONTROL SWITCH INDICATOR OPERATION

- Connect the battery's positive (+) lead to terminal 1 and negative (-) lead to terminal 12.
- Push the air inlet control switch in and then check that the air inlet control switch illuminates.
- Turn the defroster damper control dial to the "DEF-FOOT" position and check that the air inlet control switch indicator turns off.

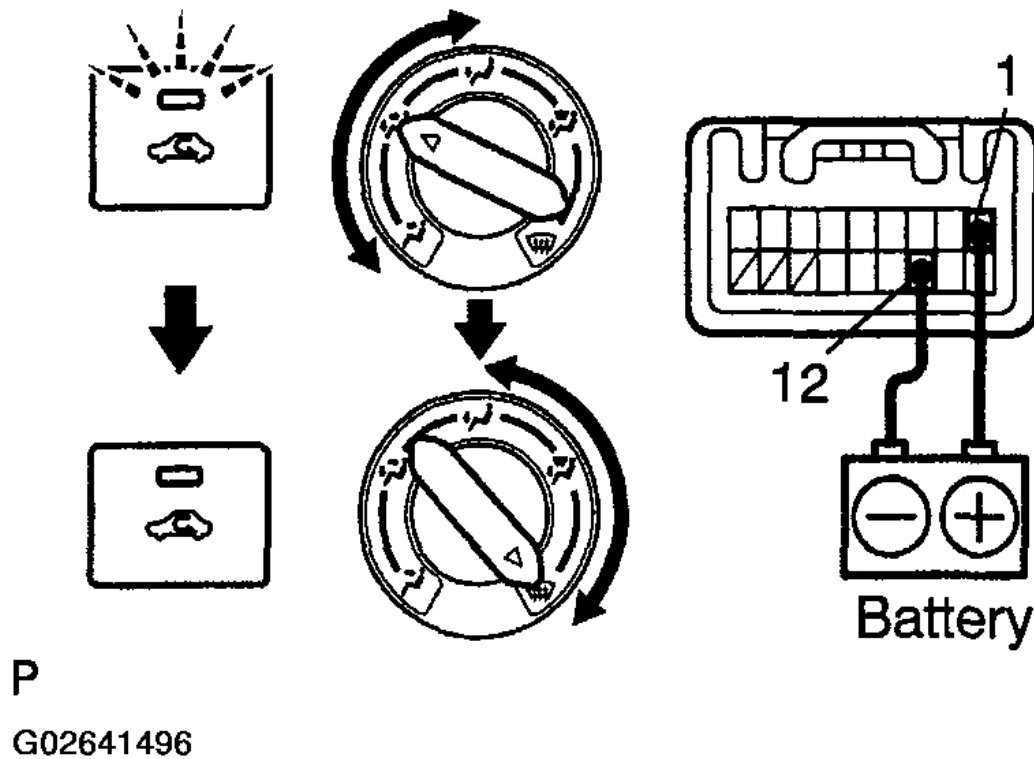
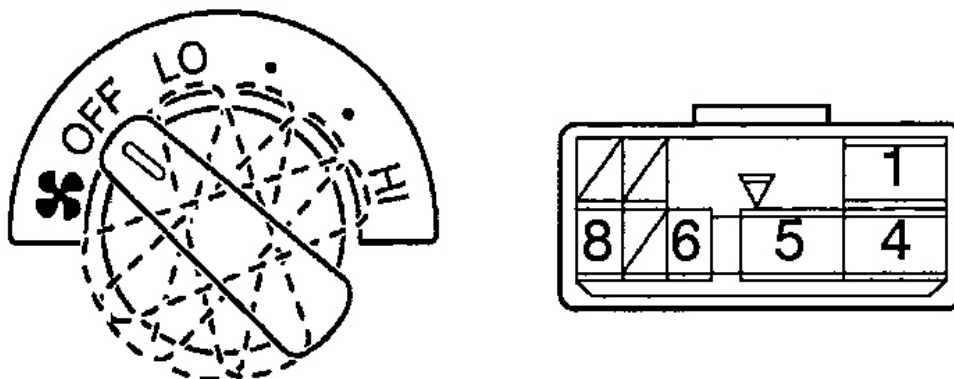


**Fig. 185: Inspecting Air Inlet Control Switch Indicator Operation Of Defroster Damper Control Dial**

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

If operation is not as specified, replace the air inlet control switch.

#### 10. INSPECT BLOWER SPEED CONTROL SWITCH RESISTANCE



Y

G02641497

**Fig. 186: Inspecting Blower Speed Control Switch Resistance**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**BLOWER SPEED CONTROL SWITCH SPECIFIED CONDITIONS**

| Position=Circuit | Tester Connection | Specified Condition |
|------------------|-------------------|---------------------|
| OFF              |                   | 10 kohm or higher   |
| LO               | 1 - 8             | Below 1 ohm         |
| M1               | 1 - 6 - 8         | Below 1 ohm         |
| M2               | 1 - 5 - 8         | Below 1 ohm         |
| HI               | 1 - 4 - 8         | Below 1 ohm         |

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

11. **INSPECT REAR DEFOGGER SWITCH OPERATION** (See INSPECTION )
12. **INSPECT HAZARD WARNING SIGNAL SWITCH** (See INSPECTION )

**REASSEMBLY**

The reassembly procedures are the disassembly procedures in reverse order (see DISASSEMBLY ).

**INSTALLATION**

1. **INSTALL HEATER CONTROL ASSEMBLY**

- a. Connect the 2 connectors to the heater control.
- b. Pass through the A/C control cables as shown in **Fig. 187**.

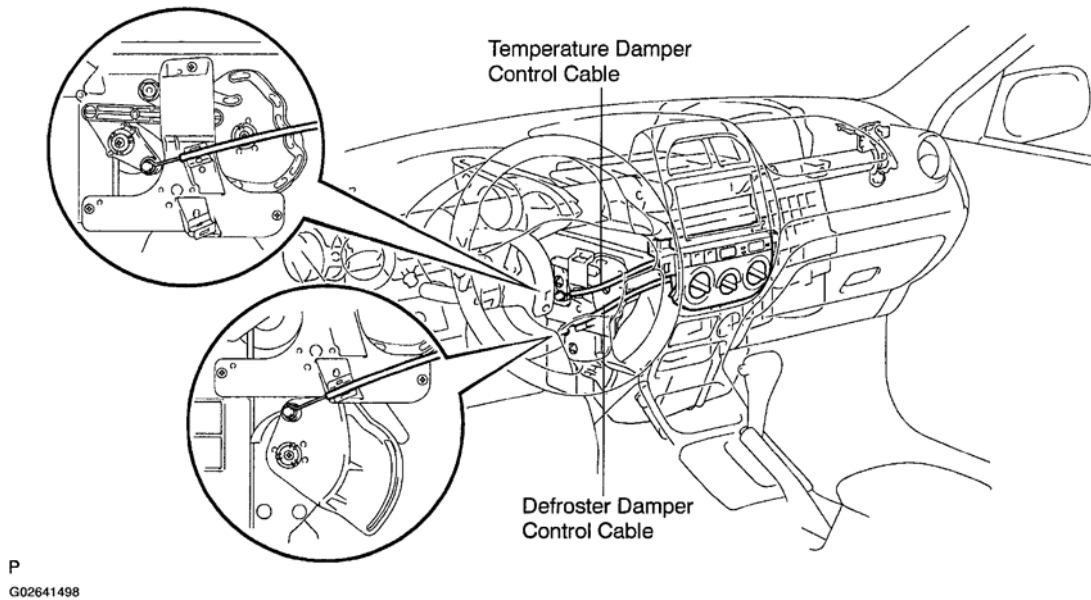


**Fig. 187: Installing Heater Control Assembly Cables**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Install the heater control assembly with the 2 screws.

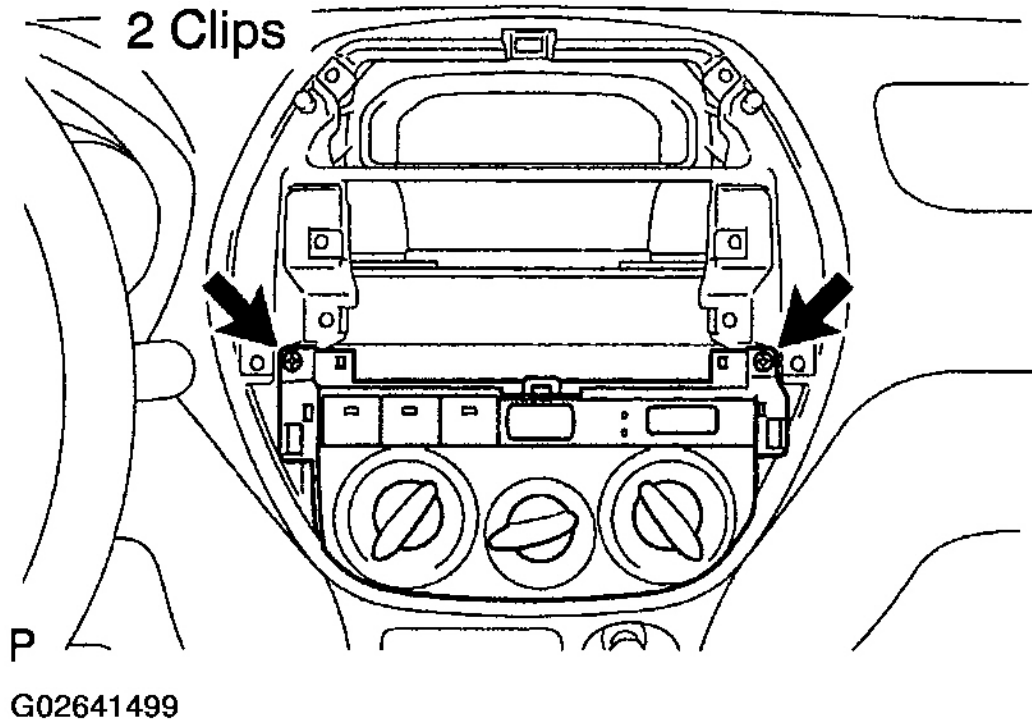


**Fig. 188: Installing Heater Control Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

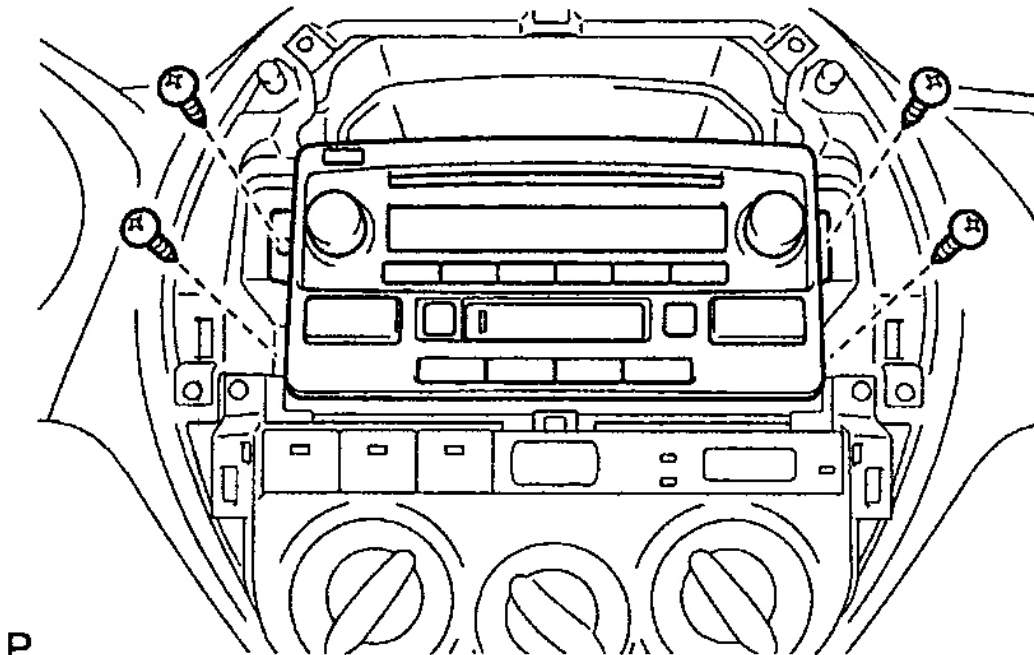
**2. INSTALL INSTRUMENT CLUSTER FINISH PANEL**

**a. w/o Radio:**

Install the stereo opening cover with the 4 bolts.

**w/ Radio:**

Connect the connectors and install the radio with the 4 bolts.



G02641500

**Fig. 189: Installing Stereo Opening Cover Or Radio**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**3. INSTALL INSTRUMENT CLUSTER FINISH PANEL**

- a. Install the finish panel with the 2 screws.

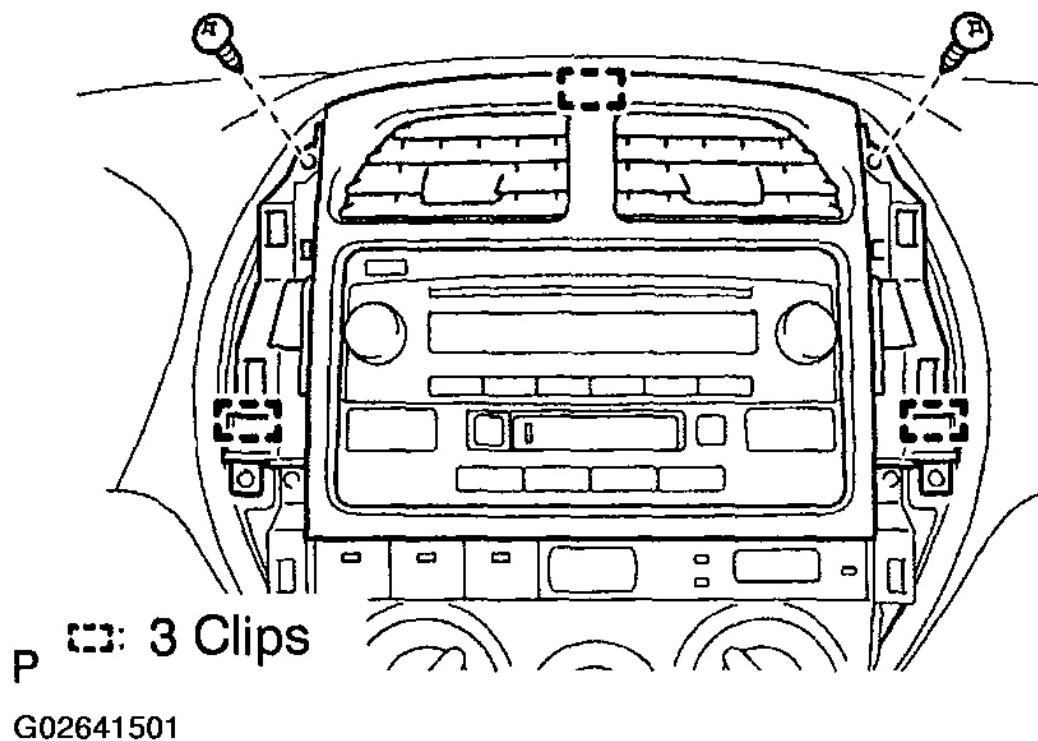


**Fig. 190: Installing Instrument Cluster Finish Panel**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. INSTALL INSTRUMENT CLUSTER FINISH PANEL CENTERS

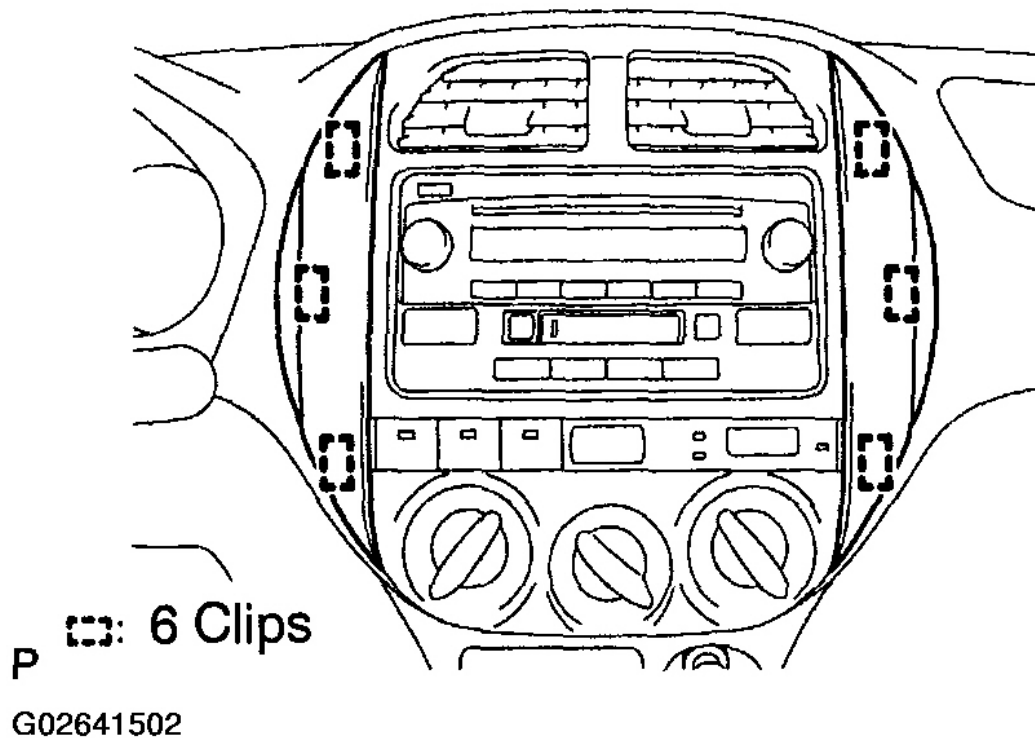


**Fig. 191: Installing Instrument Cluster Finish Panel Centers**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**5. CONNECT HEATER CONTROL CABLES**

- a. Set the temperature control dial at "MAX. COOL"
- b. Set the mode control dial at "FACE"
- c. Adjust the air mix damper control cable.

Set the air mix damper control lever at "MAX. COOL", connect the inner cable to the lever pin and lock the outer cable to the clamp.

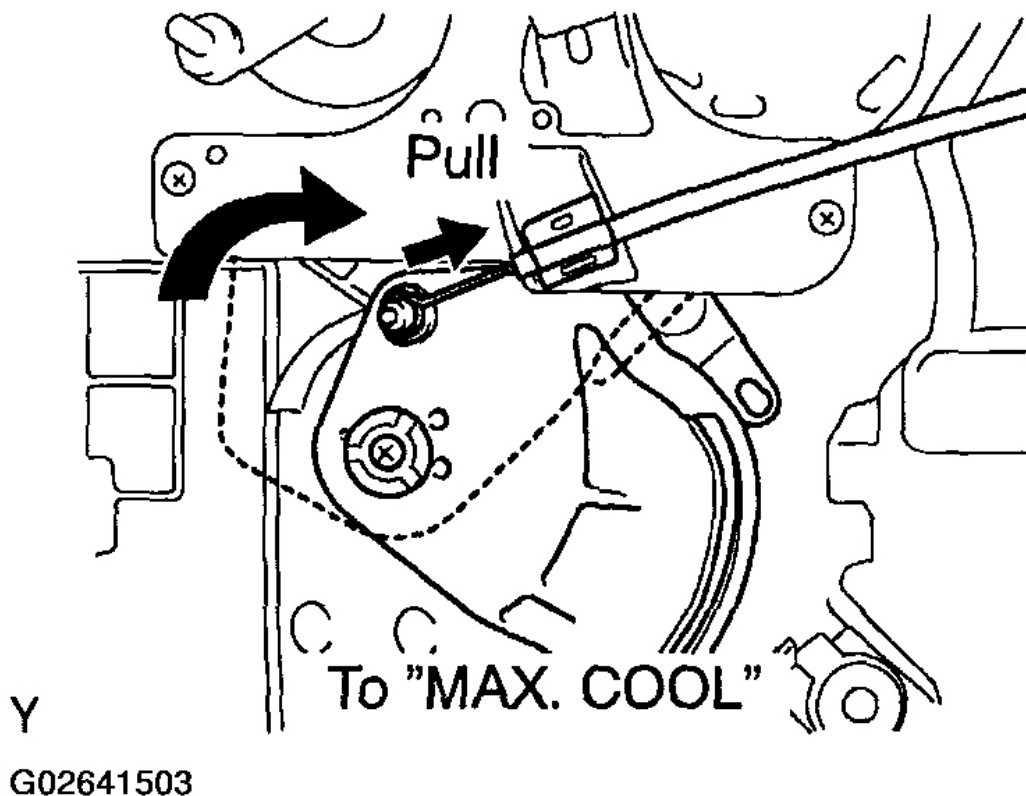


**Fig. 192: Adjusting Air Mix Damper Control Cable**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Lock the clamp while lightly pulling the outer cable to the direction shown by the arrow in **Fig. 193**.

- d. Adjust the mode control cable.

Set the mode control lever at "FACE" position, connect the inner cable to the lever pin and lock the outer cable to the clamp.

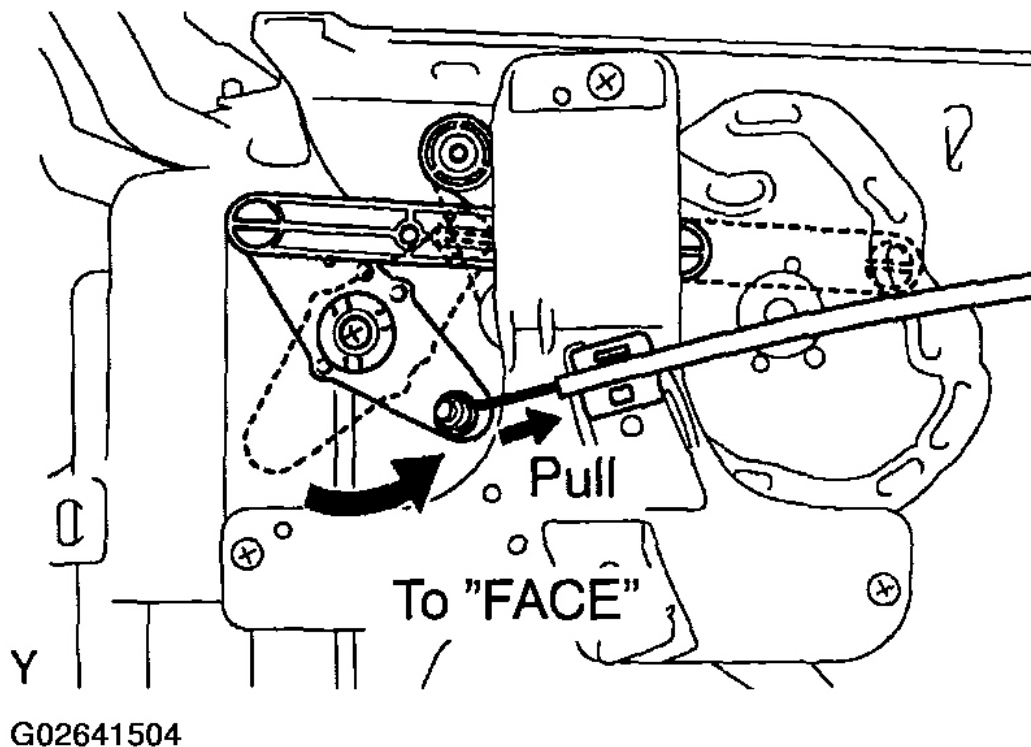


**Fig. 193: Adjusting Mode Control Cable**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Lock the clamp while lightly pulling the outer cable to the direction shown by the arrow in **Fig. 193**.

- e. Install the No. 1 instrument panel under cover sub-assembly.

## ENGINE COOLANT TEMPERATURE (ECT) SWITCH

### INSPECTION

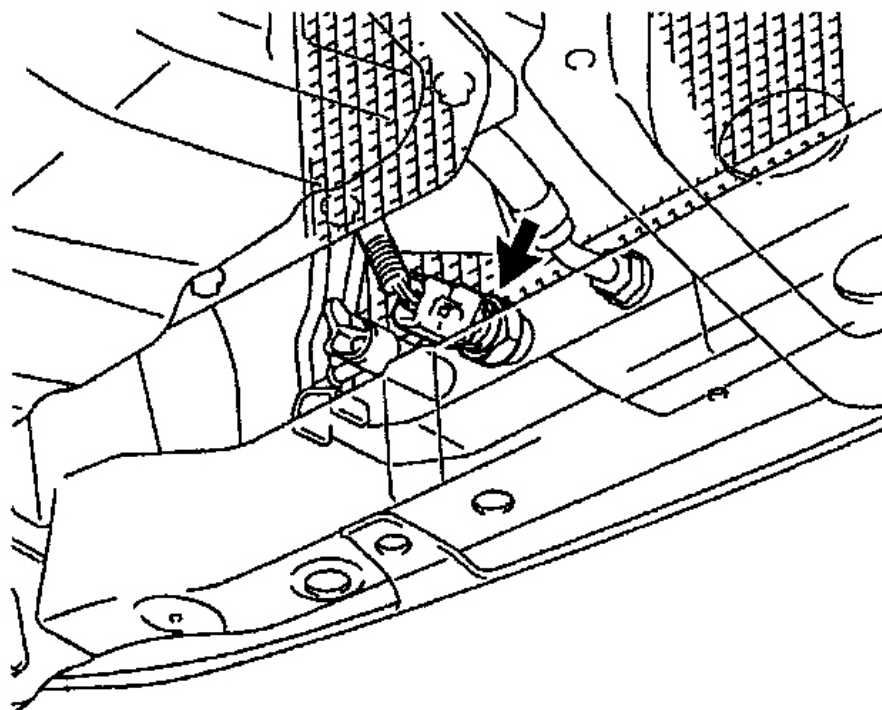
#### 1. DRAIN ENGINE COOLANT FROM RADIATOR

HINT:

It is not necessary to drain out all coolant.

#### 2. REMOVE ECT SWITCH

- a. Remove the RH engine under cover.
- b. Disconnect the ECT switch connector.
- c. Remove the ECT switch.



P

G02641505

**Fig. 194: Removing ECT Switch**

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

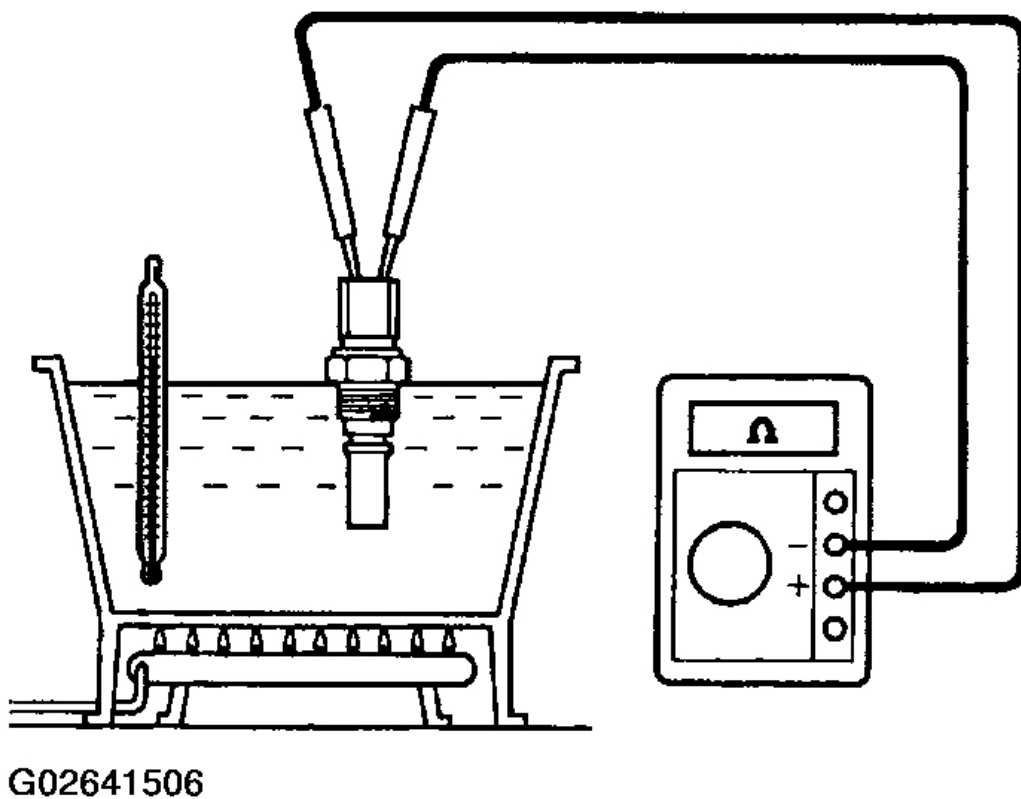
### 3. INSPECT ECT SWITCH CONTINUITY

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

If continuity exists, replace the switch.

- b. Using an ohmmeter, check continuity exists between terminals when the coolant temperature is below 83°C (181°F).

If no continuity exists, replace the switch.



G02641506

**Fig. 195: Inspecting ECT Switch Continuity**

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

#### 4. REINSTALL ECT SWITCH

- Install a new O-ring with the ECT switch.

**Torque: 7.4 N.m (75 kgf.cm, 65 in.lbf)**

- Connect the ECT switch connector.
- Install the RH engine under cover.

#### 5. REFILL WITH ENGINE COOLANT (See REPLACEMENT )

### AIR REFINER FILTER

#### REPLACEMENT

##### 1. REMOVE AIR REFINER FILTER

- a. Disconnect the glove compartment door.

Push both sides inward one after another and pull out the glove compartment door.

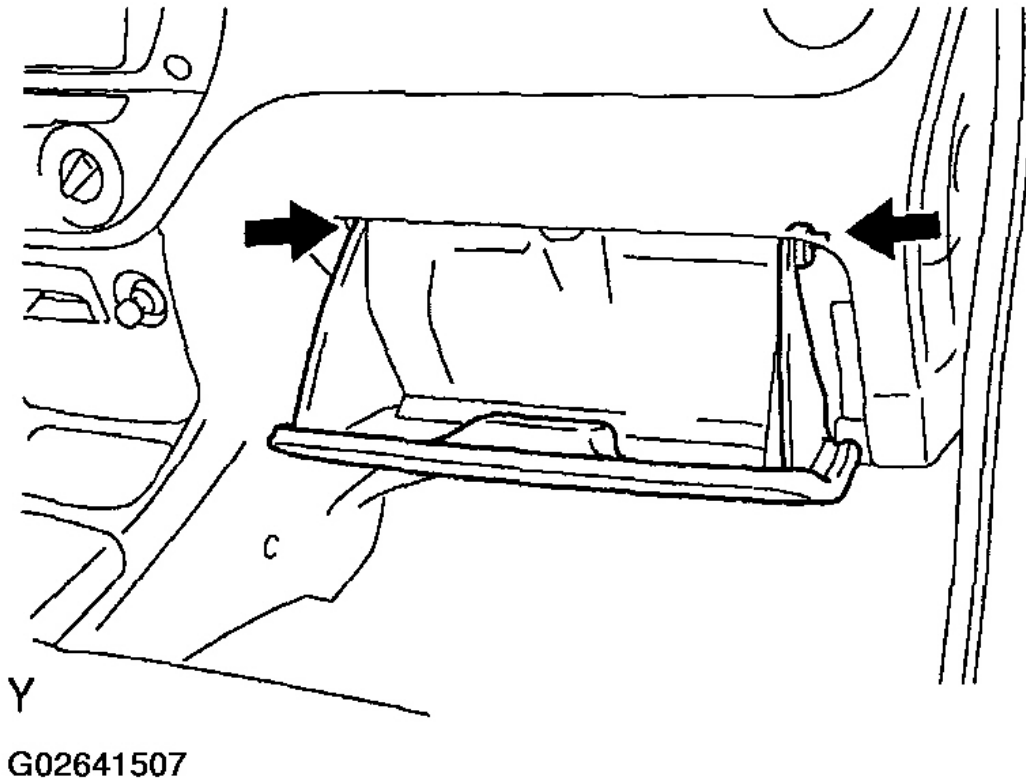


**Fig. 196: Removing/ Installing Glove Compartment Door**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

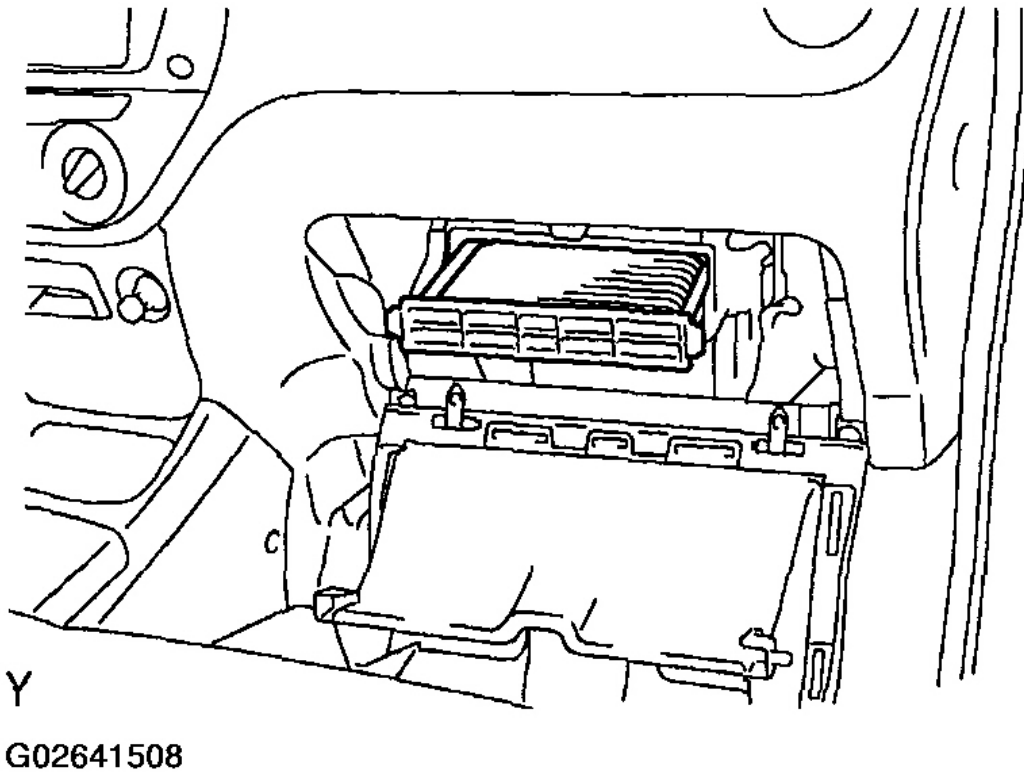


**Fig. 197: Removing/ Installing Air Refiner Filter From The Filter Case**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 2. REINSTALL AIR REFINER FILTER

- a. Install the air refiner filter to the filter case. (See **Fig. 197**)
- b. Install the filter case.
- c. Connect the glove compartment door. (See **Fig. 196**)