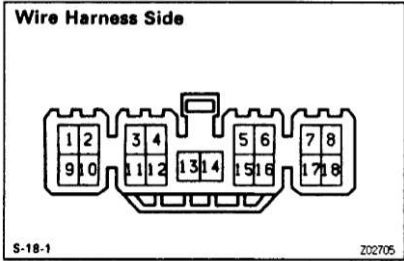


AC-62

AIR CONDITIONING SYSTEM – AIR CONDITIONER AMPLIFIER



AIR CONDITIONER AMPLIFIER ACDEM-81

A/C AMPLIFIER INSPECTION

INSPECT AMPLIFIER CIRCUIT

Disconnect the amplifier and inspect the connector on the wire harness side as shown in the chart.

Test conditions:

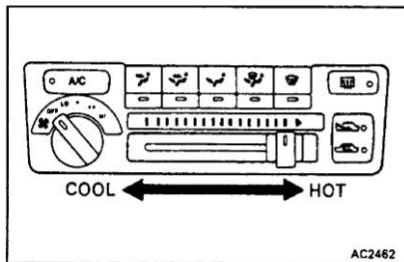
- Temperature control lever: MAX COOL
- Blower fan speed control switch: HI

| Check for  | Tester connection                   | Condition                                    |              | Specified value    |
|------------|-------------------------------------|----------------------------------------------|--------------|--------------------|
| Continuity | 8 – Engine control ECU terminal A/C | Constant                                     |              | Continuity         |
|            | 13 – Ground                         | Constant                                     |              | Continuity         |
| Resistance | 3 – Ground                          | Constant                                     |              | Continuity         |
|            | 9–15                                | Engine coolant condition                     | 85°C (185°F) | Approx. 1.35 kΩ    |
|            |                                     |                                              | 90°C (194°F) | Approx. 1.19 kΩ    |
|            |                                     |                                              |              | Approx. 1.05 kΩ    |
|            | 14–17                               | Ambient temperature at 25°C (77°F)           |              | Approx. 1.5 kΩ     |
| Voltage    | 1 – Ground                          | Ignition switch position                     | LOCK or ACC  | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 2 – Ground                          | Ignition switch position                     | LOCK or ACC  | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 4 – Ground                          | ECON switch position with ignition switch ON | OFF          | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 6 – Ground                          | A/C switch position with ignition switch ON  | OFF          | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 7 – Ground                          | Ignition switch position                     | LOCK or ACC  | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 10 – Ground                         | Ignition switch position                     | LOCK or ACC  | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 11 –Ground                          | Ignition switch position                     | LOCK or ACC  | No voltage         |
|            |                                     |                                              | ON           | Battery voltage    |
|            | 18 – Ground                         | Engine condition                             | Running      | Approx. 10 to 14 v |
|            |                                     |                                              | Stopped      | No voltage         |

V00830

## AC-58

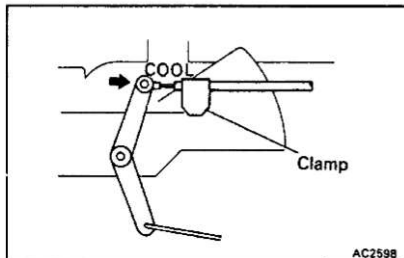
AIR CONDITIONING SYSTEM — AIR CONDITIONING CONTROL ASSEMBLY



## AIR CONDITIONING CONTROL ASSEMBLY

### ON-VEHICLE INSPECTION

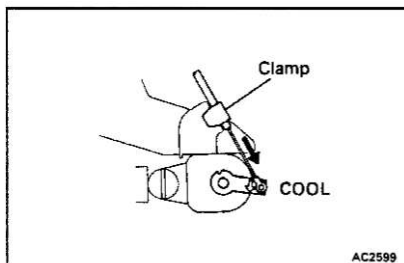
Move the control lever left and right and check for shiffness and bindings through the full range of the levers.



## A/C CONTROL CABLES ADJUSTMENT

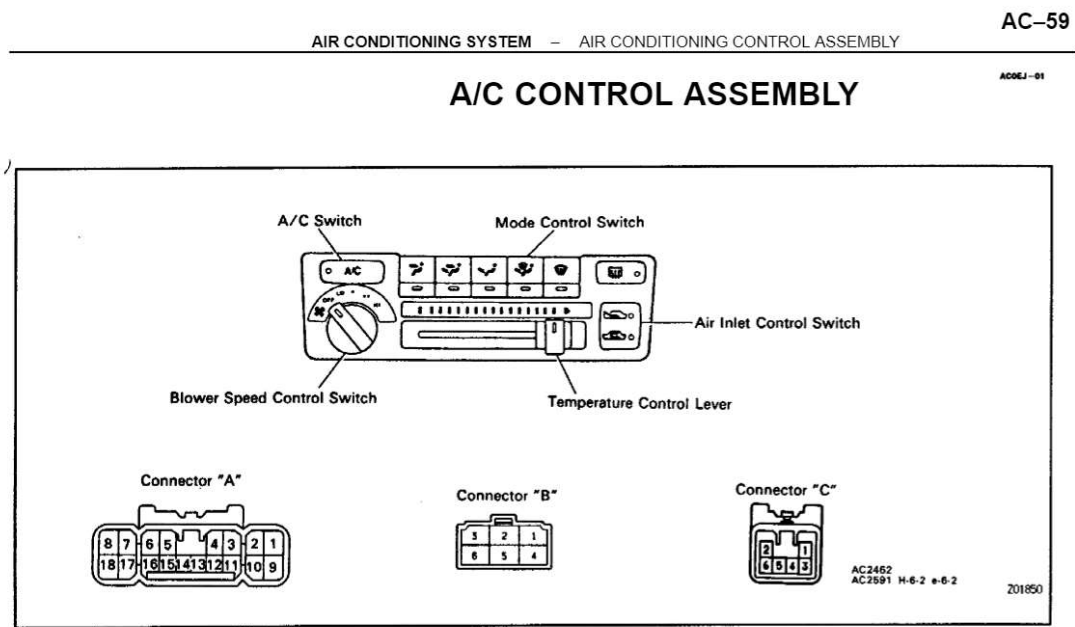
### 1. ADJUST AIR MIX DAMPER CONTROL CABLE

Set the air mix damper and the control levee to "COOL", then install the control cable and lock the clamp.



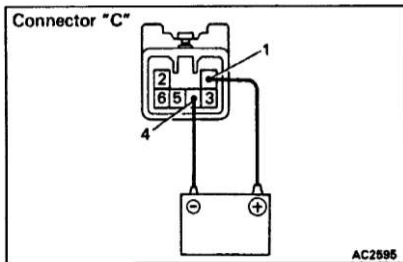
### 2. ADJUST WATER VALVE CONTROL CABLES

Set the water valve and the control lever to "COOL", then install the control cable and lock clamp.

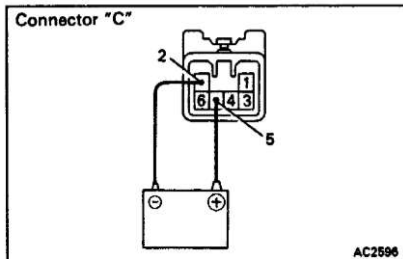


## AC-60

## AIR CONDITIONING SYSTEM — AIR CONDITIONING CONTROL ASSEMBLY

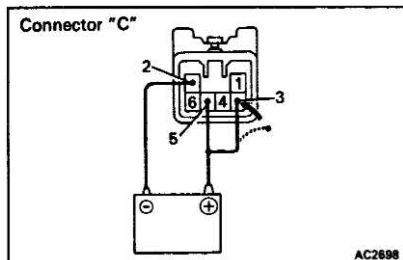
**A/C SWITCH INSPECTION****1. INSPECT ILLUMINATION**

Connect the positive (+) lead from the battery to terminal C-1 and the negative (-) lead to terminal C-4, then check that the illumination lights up. If illumination does not light up, test the bulb.

**2. INSPECT INDICATOR**

(a) Connect the positive (+) lead from the battery to terminal C-5 and the negative (-) lead to terminal C-2.

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



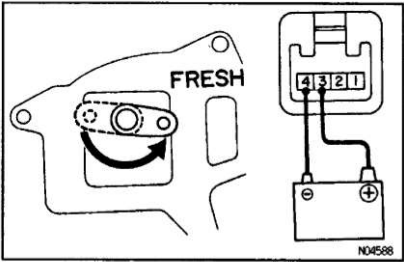
(c) Then, connect the positive (+) lead from the battery to terminal C-3 and check that the indicator dims. If indicators operation is not as specified, replace the A/C switch.

3. INSPECT SWITCH A/C SWITCH CONTINUITY

|                                                                                                                             |                 |     |                                                                                    |     |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------|-----|------------------------------------------------------------------------------------|-----|
| <div>Connector "C"</div>  <div>• 6-2</div> | Terminal        | C-3 | C-5                                                                                | C-6 |
|                                                                                                                             | Switch position |     |                                                                                    |     |
|                                                                                                                             | OFF             |     |                                                                                    |     |
|                                                                                                                             | A/C             |     |  |     |

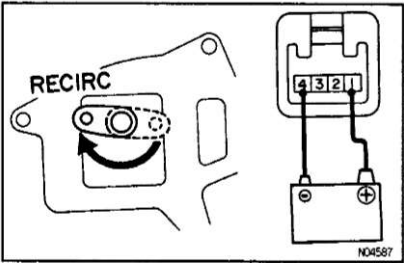
V00628

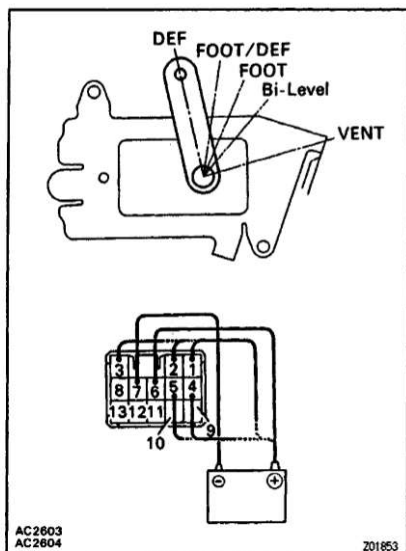
If continuity is not as specified, replace the A/C switch.



**AIR INLET SERVOMOTOR**  
**AIR INLET SERVOMOTOR INSPECTION**  
AD001-01  
**INSPECT SERVOMOTOR OPERATION**

- (a) Connect the positive (+) lead from the battery to terminal 3 and the negative (-) lead to terminal 4, check that the arm rotates to the "FRESH" side smoothly.
- (b) Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 4, check that the arm rotates to the "RECIRC" side smoothly.  
If operation is not as specified, replace the servomotor.



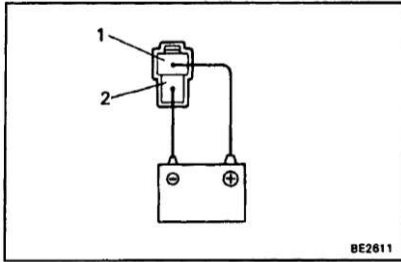


## AIR OUTLET SERVOMOTOR

### AIR OUTLET SERVOMOTOR INSPECTION

#### INSPECT SERVOMOTOR OPERATION

- Connect the positive (+) lead from the battery to terminal 6 and the negative (-) lead to terminal 7.
- Connect the positive (+) lead from the battery to each terminal and check that the arm rotates to each position as shown.  
If operation is not as specified, replace the servomotor.



## BLOWER MOTOR

AC065-01

### BLOWER MOTOR INSPECTION

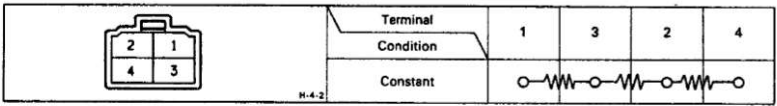
#### INSPECT BLOWER MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and the negative (-) lead to terminal 2, check that the motor operation is smooth.

If operation is not as specified, replace the motor.

**BLOWER RESISTOR**  
**BLOWER RESISTER INSPECTION**  
INSPECT BLOWER RESISTER CONTINUITY

AC088-01



V00823

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

## COMPRESSOR

AC2508-01

### ON-VEHICLE INSPECTION

#### (Magnetic Clutch)

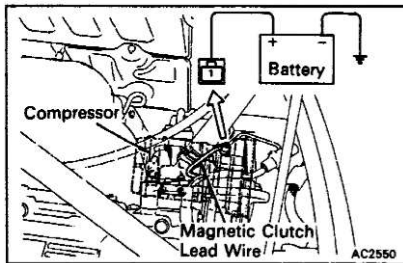
##### 1. MAKE THE FOLLOWING VISUAL CHECKS

- (a) Leakage of grease from the clutch bearing.
- (b) Signs of oil on the pressure plate or rotor.

Repair or replace, as necessary.

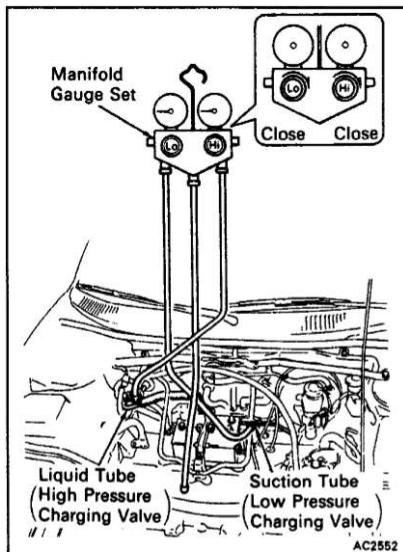
##### 2. INSPECT MAGNETIC CLUTCH BEARING FOR NOISE

- (a) Start engine.
- (b) Check for abnormal noise from near the compressor when the A/C switch is OFF.  
If abnormal noise is being emitted, replace the magnetic clutch.



##### 3. INSPECT MAGNETIC CLUTCH

- (a) Disconnect the connector from the magnetic clutch.
- (b) Connect the positive (+) lead from the battery to the terminal on the magnetic clutch connector and the negative (-) lead to the body ground.
- (c) Check that the magnetic clutch is energized.  
If operation is not as specified, replace the magnetic clutch.



#### (Compressor)

##### 1. INSTALL MANIFOLD GAUGE SET

(See page [AC-16](#))

##### 2. START ENGINE

##### 3. INSPECT COMPRESSOR FOR METALLIC SOUND

Check that there is a metallic sound from the compressor when the A/C switch is turn on.

If metallic sound is heard, replace the compressor assembly.

##### 4. INSPECT PRESSURE OF REFRIGERATION SYSTEM

See "Refrigerant System Inspection with Manifold Gauge Set" on page [AC-18](#).

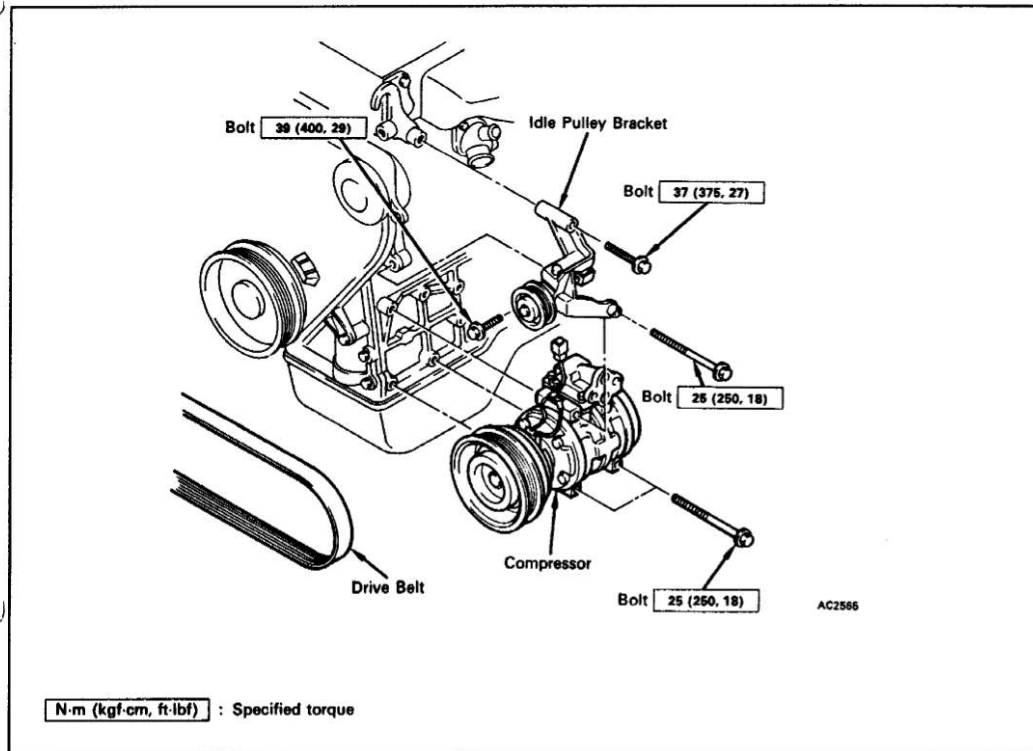
##### 5. STOP ENGINE

##### 6. INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT FROM SAFETY SEAL

If there is any leakage, replace the compressor assembly.

## COMPRESSOR REMOVAL

AC256P-01

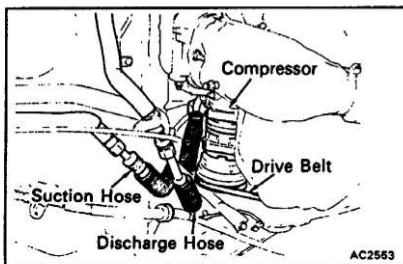


1. RUN ENGINE AT IDLE SPEED WITH A/C ON FOR 10 MINUTES
2. STOP ENGINE
3. DISCONNECT NEGATIVE CABLE TO BATTERY
4. REMOVE UNDER COVER
5. DISCONNECT CONNECTOR FROM MAGNETIC CLUTCH
6. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
7. DISCONNECT TWO HOSES FROM COMPRESSOR SERVICE VALVES

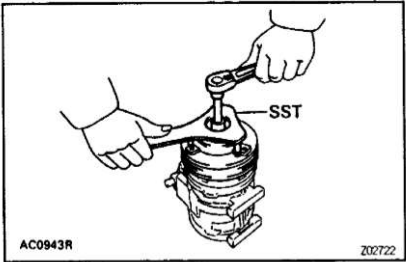
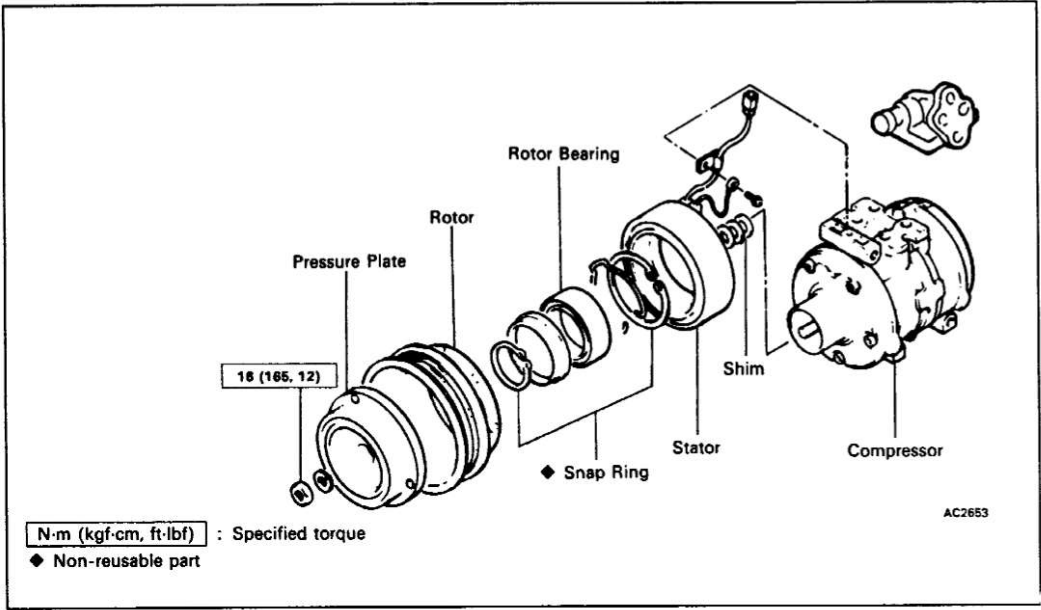
HINT: Cap the open fitting immediately to keep moisture and dust out of the system.

### 8. REMOVE COMPRESSOR

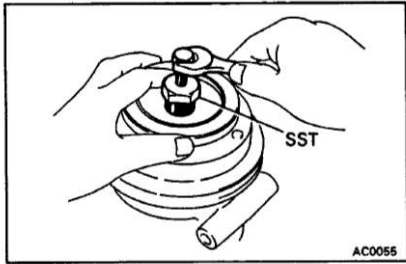
- (a) Loosen the drive belt.
- (b) Remove the idle pulley bracket.
- (c) Remove the compressor.



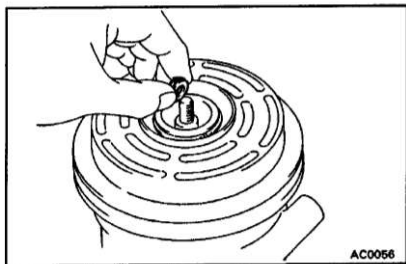
MAGNETIC CLUTCH DISASSEMBLY



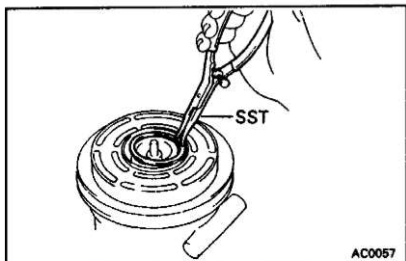
- 1. REMOVE PRESSURE PLATE**  
(a) Using SST and a socket, remove the shaft nut.  
SST 07112-76040



- (b) Using SST and a socket, remove the pressure plate.  
SST 07112 – 71010

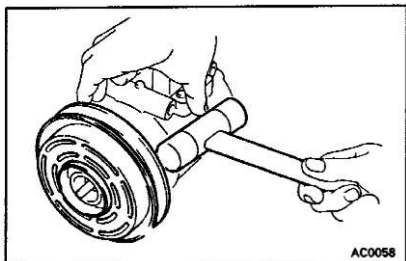


(c) Remove the shims from the shaft.



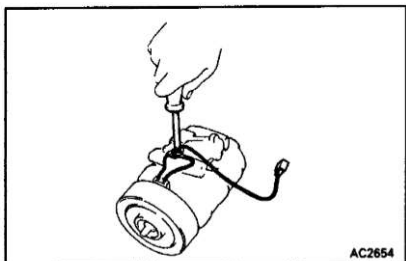
## 2. REMOVE ROTOR

(a) Using SST, remove the snap ring.  
SST 07114-84020



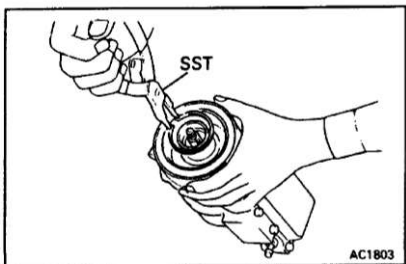
(b) Using plastic hammer, tap the rotor off the shaft.

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

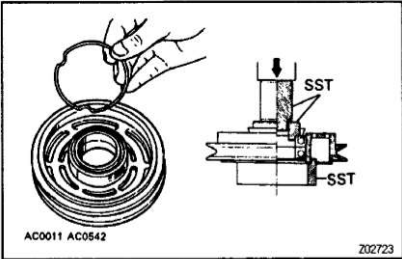


## 3. REMOVE STATOR

(a) Disconnect the stator lead wires from the compressor housing.



(b) Using SST, remove the snap ring and stator.  
SST 07114-84020



4. REMOVE ROTOR BEARINGS

HINT: Press out the bearings only if they are to be replace.

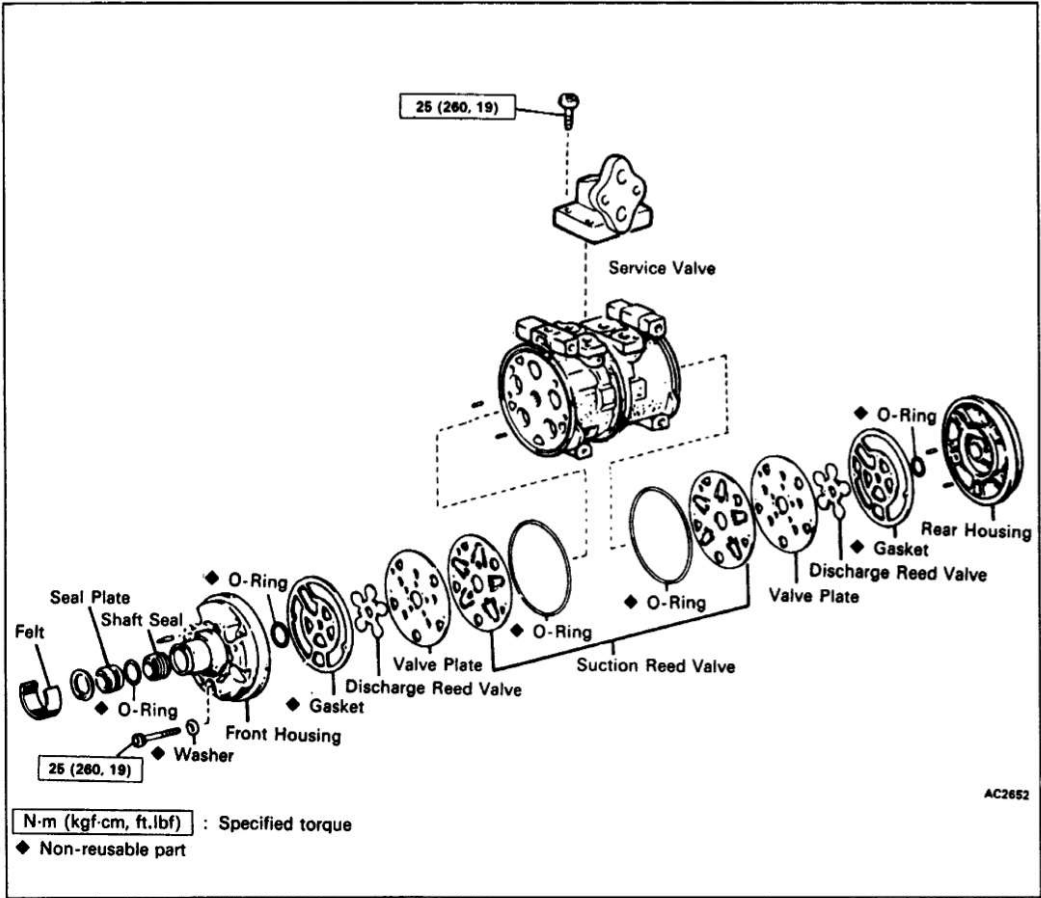
- (a) Remove the bearing snap ring from the rotor.
- (b) Using SST, press out the two bearings.  
SST 07110-77011

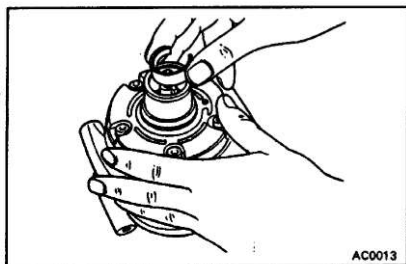
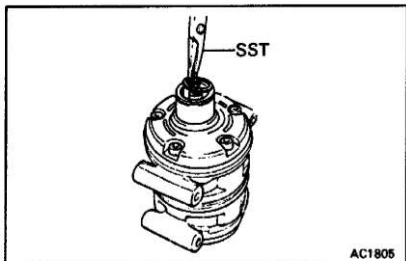
5. INSPECT PRESSURE PLATE AND ROTOR

- (a) Inspect the pressure plate and rotor surface for wear and scoring. Replace if necessary.
- (b) Check rotor bearings for wear and leakage of grease. Replace if necessary.

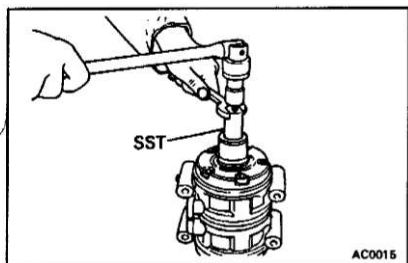
COMPRESSOR DISASSEMBLY

AC00R-01

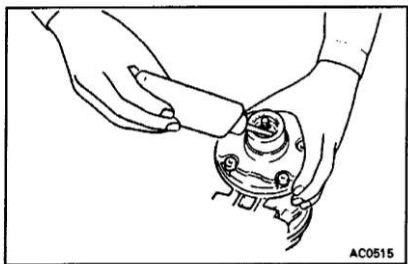


**1. REMOVE FELT****2. REMOVE SNAP RING**

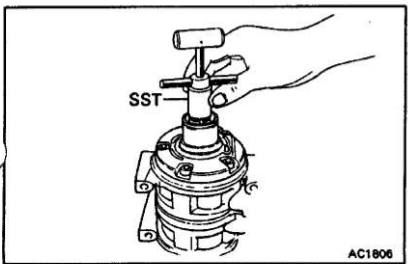
Using SST, remove the snap ring.  
SST 07114-84020

**3. REMOVE KEY**

Using SST, remove the key from the shaft.  
SST 07112-45021

**4. APPLY COMPRESSOR OIL TO INNER BORE**

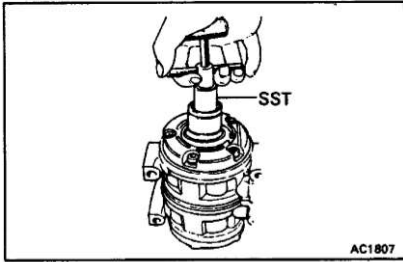
Apply compressor oil to the inner bore of the compressor.

**5. REMOVE SEAL PLATE**

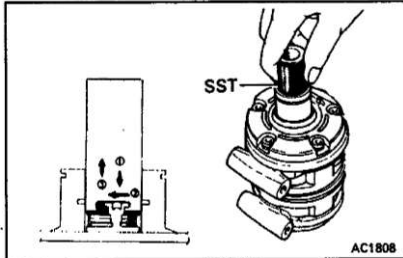
- (a) Insert SST against the shaft. Then push the holder ring downward.  
SST 07112-15010

## AC-34

## AIR CONDITIONING SYSTEM - COMPRESSOR



(b) Pull up the remover bar, and remove the seal plate.

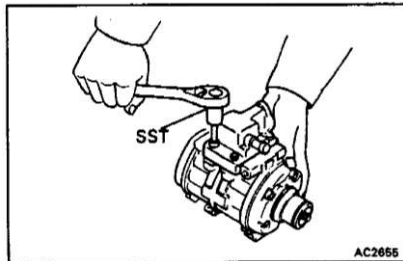


#### 6. REMOVE SHAFT SEAL

Insert SST against the shaft, and turn it to the right while pressing on the remover.

Then remove the shaft seal.

SST 07114 -15010

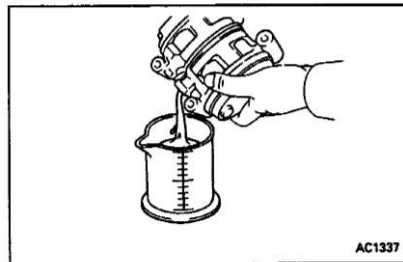


#### 7. REMOVE SERVICE VALVE

(a) Using SST, remove the bolts holding the service valve.

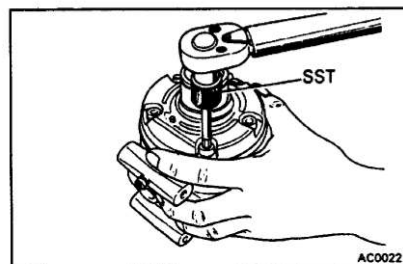
SST 07110-61050

(b) Remove the O-ring from the service valve and discard them.



#### 8. DRAIN COMPRESSOR OIL INTO MEASURING FLASK

Measure the quantity of drained oil because the same amount should be replaced later.

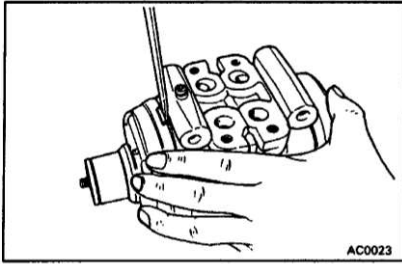


#### 9. REMOVE FRONT HOUSING

(a) Using SST, remove the five through bolts.

HINT: Do not reuse the five washers.

SST 07110-61050



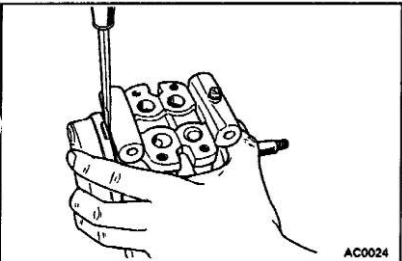
(b) Using a screwdriver, remove the front housing.

**NOTICE:** Be careful not to scratch the sealing surface of the front housing.



#### 10. REMOVE FRONT VALVE PLATE

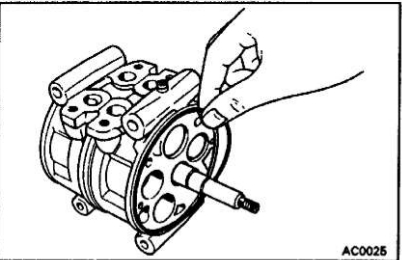
Remove the two pins from the front housing. Discard the pins.



#### 11. REMOVE REAR HOUSING

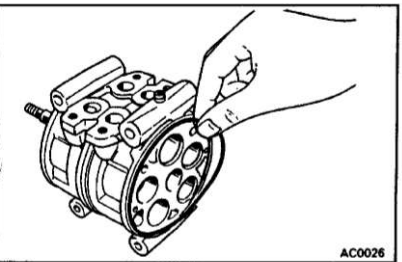
Using screwdriver, remove the rear housing.

**NOTICE:** Be careful not to scratch the sealing surface of the rear housing.



#### 12. REMOVE FRONT AND REAR O - RINGS FROM CYLINDER BLOCK

Discard the O-rings.



### COMPRESSOR ASSEMBLY

AC008-01

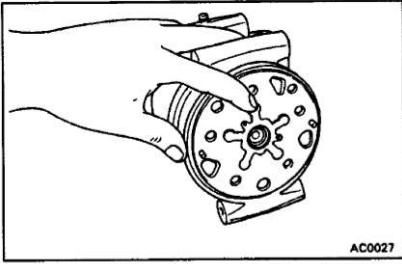
#### 1. INSTALL REAR VALVE PLATE ON REAR CYLINDER

(a) Install two pins in the rear cylinder.

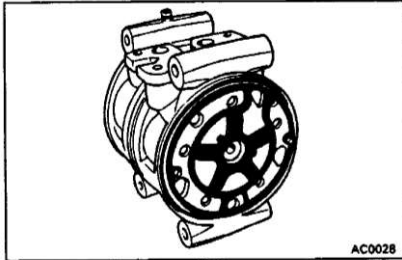
(b) Lubricate a new O-ring with compressor oil. Install the O-ring in the rear cylinder.

## AC-36

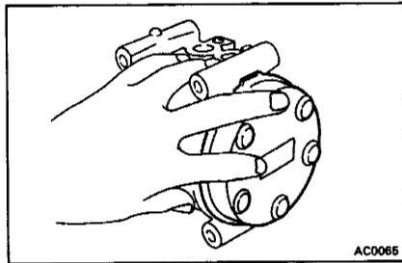
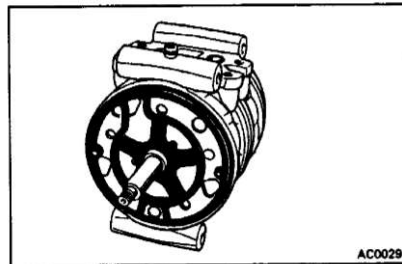
## AIR CONDITIONING SYSTEM - COMPRESSOR



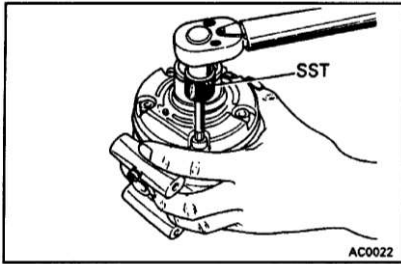
- (c) Install the rear suction valve over the pins on the rear cylinder.  
HINT: The front and rear suction valves are identical.



- (d) Install the rear valve plate together with the discharge over the pins on the rear cylinder.  
HINT: The rear valve plate is marked with an "R".  
(e) Lubricate the new gasket with compressor oil. Install the gasket on the valve plate.

**2. INSTALL REAR HOUSING ON REAR CYLINDER****3. INSTALL FRONT VALVE PLATE ON FRONT CYLINDER**

- (a) Install the two pins in the front cylinder.  
(b) Lubricate a new O-ring with compressor oil. Install the O-ring in the front housing.  
(c) Install the front suction valve over the pins on the front cylinder.  
(d) Install the front valve plate together with the discharge valve over the pins on the front cylinder.  
HINT: The front valve plate is marked with an "F".  
(e) Lubricate the new gasket with compressor oil. Install the gasket on the valve plate.

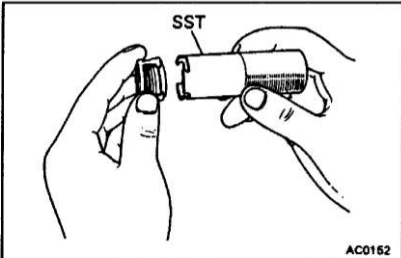


#### 4. INSTALL FRONT HOUSING ON FRONT CYLINDER AND TIGHTEN FIVE THROUGH BOLTS

Using SST and torque wrench, gradually tighten the five through bolts in two or three passes.

SST 07110-61050

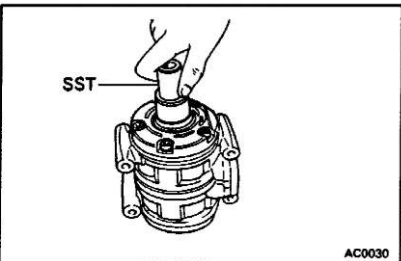
Torque: 25 N·m (260 kgf·cm, 19 ft·lbf)



#### 5. INSTALL SHAFT SEAL

(a) Fit the shaft seal onto SST.

SST 07114-15010

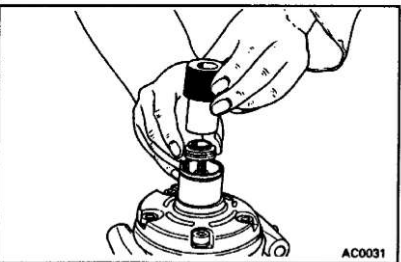


(b) Apply oil to the bore.

(c) Insert SST, and turn it counterclockwise while lightly pressing in.

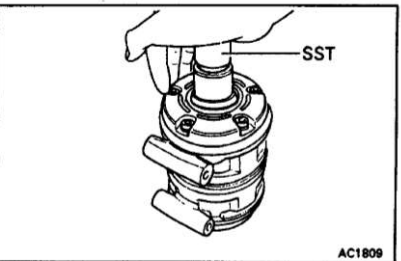
(d) Then pull up the SST.

SST 07114-15010



#### 6. INSTALL SEAL PLATE

(a) Put in the seal plate.

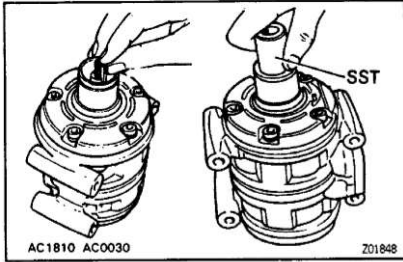


(b) Press in SST.

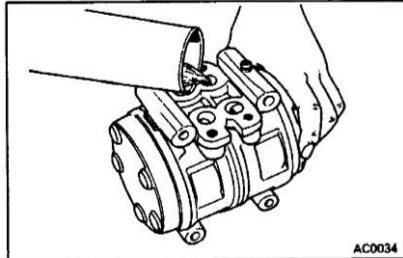
SST 07112-25010

## AC-38

## AIR CONDITIONING SYSTEM - COMPRESSOR

**7. INSTALL KEY IN SHAFT GROOVE**

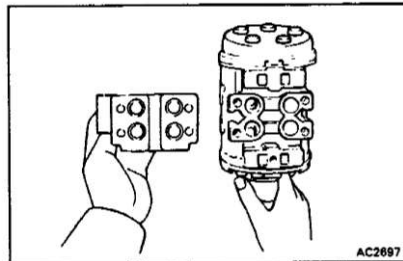
Using SST and plastic hammer, tap the key lightly.  
 SST 07114 - 45010  
 Place the felt inside the bore.  
 (Refer to page AC-32)

**8. POUR COMPRESSOR OIL INTO COMPRESSOR**

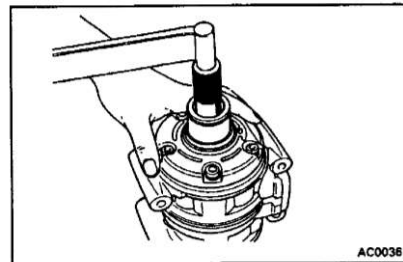
Add the same quantity of oil as was removed, plus 20 cc, into the compressor.

Compressor oil: .

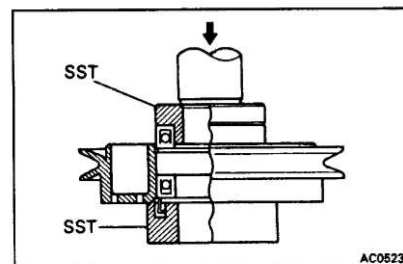
ND OIL6, SUNISO No.5GS or equivalent

**9. INSTALL SERVICE VALVE**

- (a) Lubricate new O-rings with compressor oil. Install the O-rings in the service valve.
- (b) Install the service valve on the compressor. Using SST and torque wrench, tighten the bolts.  
 SST 07110-61050  
 Torque: 25 N-m (260 kgf-cm, 19 ft-lbf)

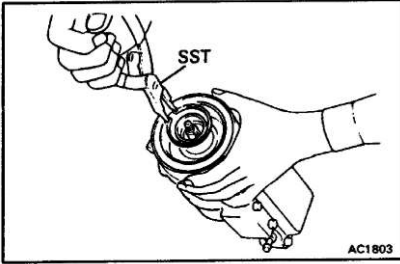
**10. CHECK SHAFT STARTING TORQUE**

Torque: 4.9 N-m (50 k9f-cm, 43 in.-lbf)

**MAGNETIC CLUTCH ASSEMBLY****1. INSTALL TWO BEARINGS IN ROTOR**

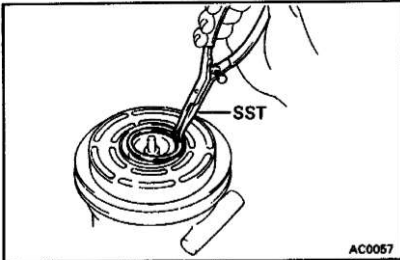
- (a) Using SST, press a shield ring and two new bearing; into the rotor boss until fully seated.  
 SST 07110-77011
- (b) Install the bearing snap ring into the rotor groove.

AC001-01



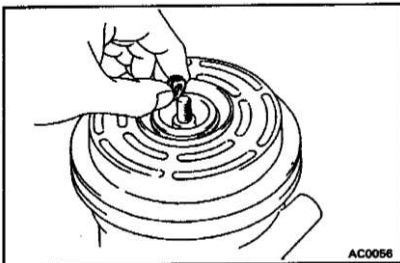
## 2. INSTALL STATOR

- Install the stator on the compressor.
- Using SST, install the new snap ring.  
SST 07114-84020
- Connect the stator lead wires to the compressor housing.



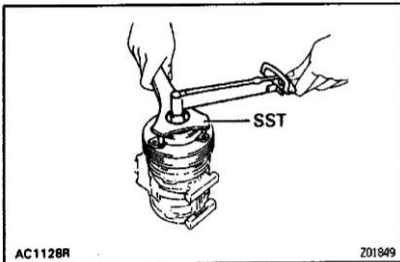
## 3. INSTALL ROTOR

- Install the rotor on the compressor shaft.
- Using SST, install the new snap ring.  
SST 07114-84020

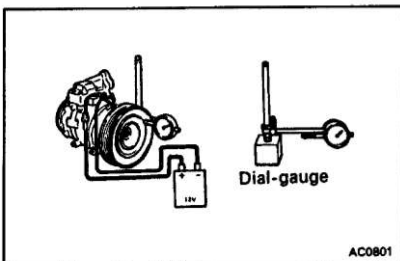


## 4. INSTALL PRESSURE PLATE

- Adjust the clearance between the pressure plate and rotor by installing shims on the compressor shaft.  
**Standard clearance:**  
 $0.8 \pm 0.2 \text{ mm } (0.32 \pm 0.08 \text{ in.})$   
If the clearance is not within tolerance, change the number of shims to obtain the standard clearance.



- Using SST and torque wrench, install the shaft nut.  
SST 07112-76040  
**Torque: 20 N-m (200 kgf-cm, 14 ft-lbf)**



## 5. INSPECT CLEARANCE OF MAGNETIC CLUTCH

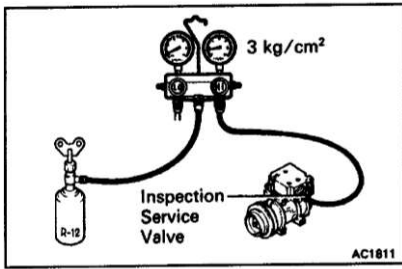
- Set the dial indicator to the pressure plate of the magnetic clutch.
- Connect the magnetic clutch lead wire to the positive (+) terminal of the battery.
- Check the clearance between the pressure plate and rotor, when connect the negative (-) terminal of the battery.

**AC-40****AIR CONDITIONING SYSTEM - COMPRESSOR**

---

**Standard clearance:** **$0.8 \pm 0.2 \text{ mm}$  ( $0.32 \pm 0.08 \text{ in.}$ )**

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



## COMPRESSOR PERFORMANCE TEST

### 1. PERFORM GAS LEAKAGE TEST

- (a) Install the inspection service valve on the service valve.

HINT: Use only a TOYOTA supplied inspection service valve to perform the gas leakage test.

Part No.

Suction side 88376-17020

Discharge side 88376-22020

- (b) Charge the compressor with refrigerant through the charge valve until the pressure is 294 kPa (3 kgf/cm<sup>2</sup>, 43 psi).

- (c) Using a gas leak detector, check the compressor for leaks.

If leaks are found, check and replace the compressor.

### 2. EVACUATE COMPRESSOR AND CHARGE WITH REFRIGERANT

Make sure the caps are tight and compressor is free from moisture and contamination.

HINT: When storing a compressor for an extended period, charge the compressor with refrigerant or dry nitrogen gas to prevent corrosion.

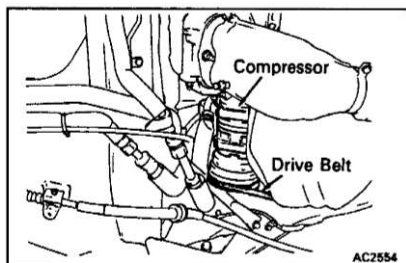
## COMPRESSOR INSTALLATION

### 1. INSTALL COMPRESSOR AND IDLE PULLEY BRACKET WITH FIVE BOLTS

Torque:

12 mm bolt 25 N-m (250 kgf-cm, 18 ft-lbf)

14 mm bolt 37 N-m (375 kgf-cm, 27 ft-lbf)



### 2. INSTALL DRIVE BELT

### 3. CONNECT TWO HOSES TO COMPRESSOR

Torque:

Discharge line 25 N-m (250 kgf-cm, 18 ft-lbf)

Suction line 25 N-m (250 kgf-cm, 18 ft-lbf)

### 4. CONNECT CLUTCH LEAD WIRE TO WIRE HARNESS

### 5. CONNECT CABLES TO BATTERY

### 6. EVACUATE AIR FROM AIR CONDITIONING SYSTEM

### 7. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT AND CHECK FOR GAS LEAKAGE

Specified amount:

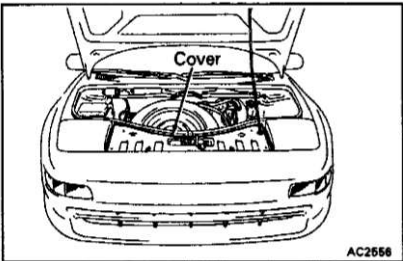
850 ± 50 g (29.98 ± 1.76 oz.)

# CONDENSER

## ON-VEHICLE INSPECTION

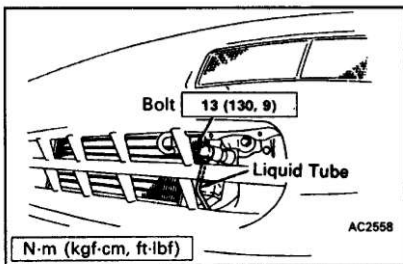
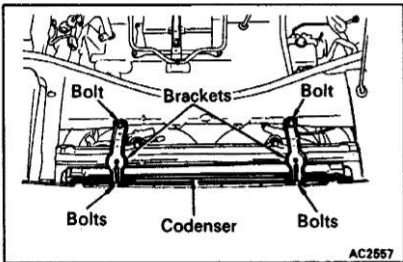
AC004-01

1. INSPECT CONDENSER FINS FOR BLOCKAGE OR DAMAGE
- If the fins are clogged, wash them with water and dry with compressed air.
- NOTICE:** Be careful not to damage the fins.
- If the fins are bent, straighten them with a screwdriver or pliers.
2. INSPECT CONDENSER FITTINGS FOR LEAKAGE
- Repair as necessary.

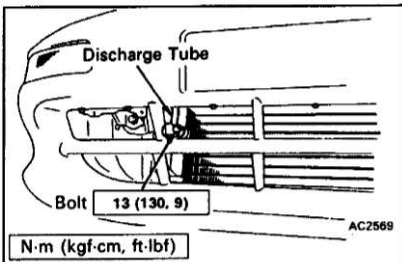
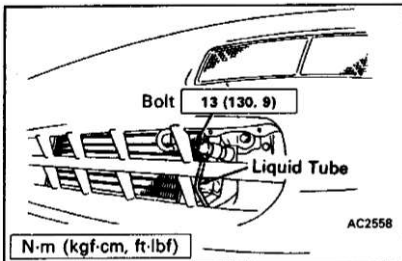
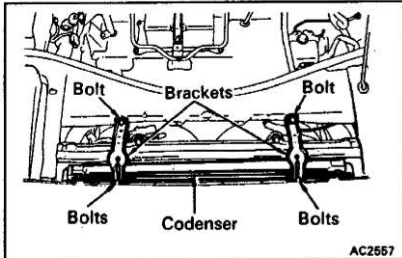
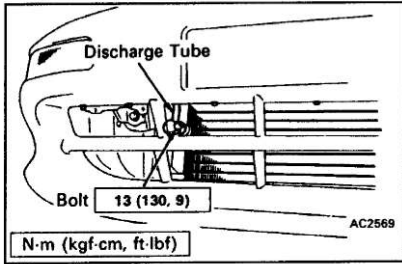


- ## CONDENSER REMOVAL
1. DISCHARGE REFRIGERANT FROM REFRIGERA-  
TION SYSTEM
2. REMOVE COVER AND TWO BRACKETS WITH  
FOUR BOLTS

AC00Y-01



3. DISCONNECT LIQUID TUBE AND DISCHARGE  
TUBE FROM CONDENSER FITTINGS
- HINT: Cap the open fittings immediately to keep  
moisture out of the system.



#### 4. REMOVE CONDENSER

- Remove the two bolts.
- Pull out the condenser between radiator and the body.

### CONDENSER INSTALLATION

#### 1. INSTALL CONDENSER

Install the brackets and bolts, making sure the rubber cushions fit on the mounting flanges correctly.

#### 2. CONNECT LIQUID TUBE AND DISCHARGE TUBE TO CONDENSER

Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)

#### 3. REINSTALL TWO BRACKETS WITH FOUR BOLTS AND COVER

#### 4. IF CONDENSER WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR

Add 40-50 cc (1.4-1.8 fl.oz.)

Compressor oil:

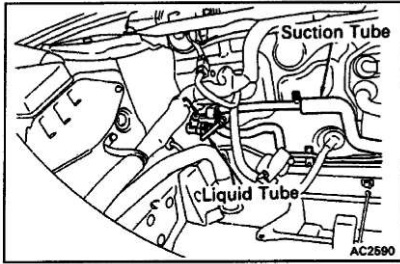
ND OIL6, SUNISO NO.5 GS or equivalent

#### 5. EVACUATE AIR FROM AIR CONDITIONING SYSTEM

#### 6. CHARGE SYSTEM WITH REFRIGERANT AND INSPECT FOR LEAKAGE OF REFRIGERANT

Specified amount:

850 ±50 g (29.98 ±1.76 oz.)



## COOLING UNIT

AC25J-01

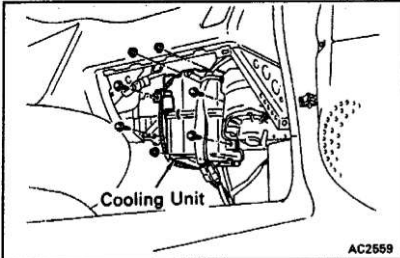
### COOLING UNIT REMOVAL

1. DISCONNECT NEGATIVE CABLE FROM BATTERY
2. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
3. DISCONNECT SUCTION TUBE FROM COOLING UNIT OUTLETFITTING
4. DISCONNECT LIQUID TUBE FROM COOLING UNIT OUTLET FITTING

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

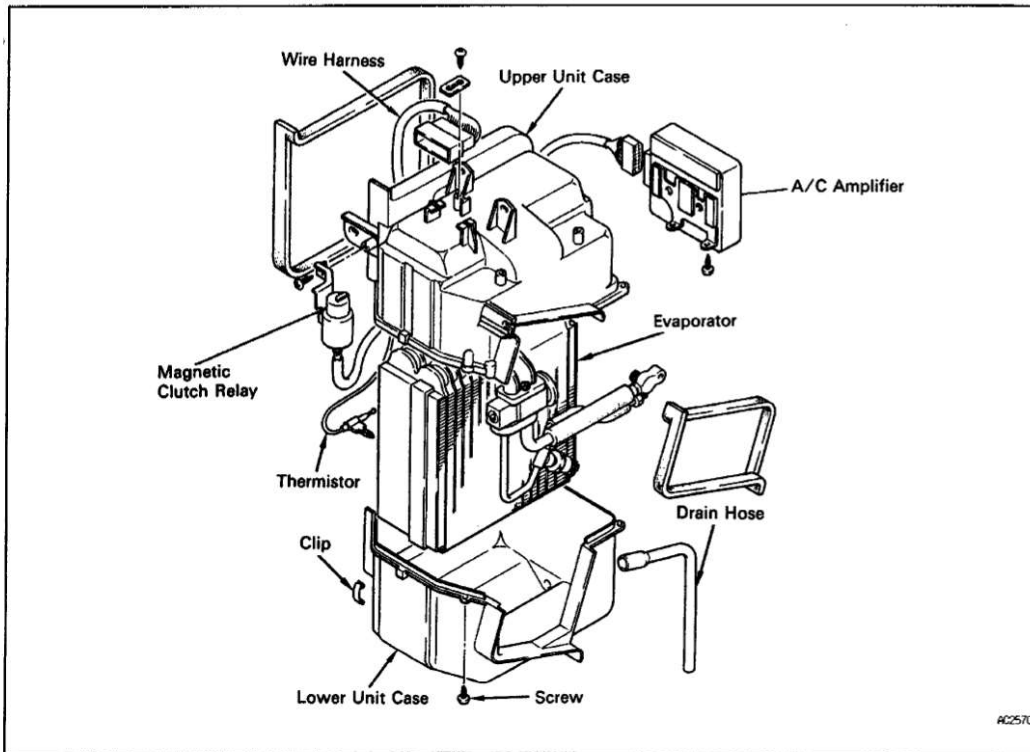
5. REMOVE GLOVE BOX
6. DISCONNECT CONNECTORS
7. REMOVE COOLING UNIT

Remove the three nuts and four bolts and the cooling unit.



### COOLING UNIT DISASSEMBLY

AC25K-01



## AC-26

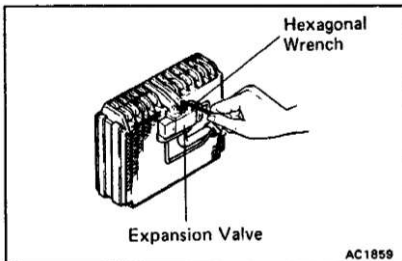
## AIR CONDITIONING SYSTEM - COOLING UNIT

**1. REMOVE MAGNETIC CLUTCH RELAY****2. REMOVE A/C AMPLIFIER****3. REMOVE UPPER UNIT CASE**

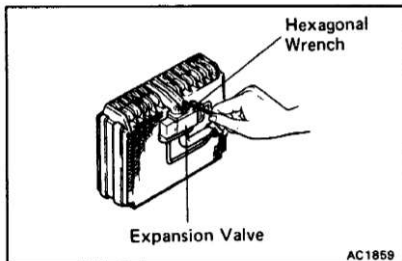
- (a) Disconnect the connectors.
- (b) Remove the wire harness.
- (c) Remove the two clips.
- (d) Remove the four screws.
- (e) Remove the upper unit case.

**4. REMOVE EVAPORATOR FROM LOWER UNIT CASE****5. REMOVE THERMISTOR FROM EVAPORATOR**

Remove the thermistor with the thermistor holder.

**6. REMOVE EXPANSION VALVE FROM EVAPORATOR**

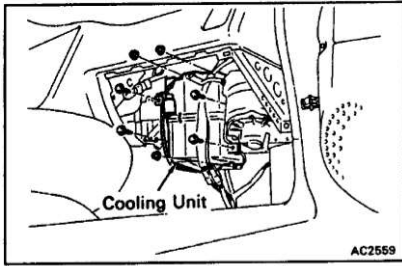
- (a) Remove the packing and heat sensing tube from suction and liquid tubes.
- (b) Remove the expansion valve from the evaporator.

**COOLING UNIT ASSEMBLY**

AC06L-01

**INSTALL COMPONENTS ON EVAPORATOR**

- (a) Connect the expansion valve, suction and liquid tubes to the evaporator. Torque the bolt.  
**Torque: 5.4 N-m (55 kgf-cm, 48 in.-lbf)**  
HINT: Be sure that the O-rings are positioned on the tube fitting.
- (b) Install the holder to the suction and liquid tubes with heat sensing tube.
- (c) Install the lower unit case to the evaporator.
- (d) Install the thermistor to the evaporator.
- (e) Install the upper unit case.
- (f) Install the four screws.
- (g) Install three clips.
- (h) Install the connector of thermistor.



## COOLING UNIT INSTALLATION

### 1. INSTALL COOLING UNIT

Install the cooling unit with the three nuts and four bolts.

### 2. CONNECT CONNECTORS

### 3. INSTALL GLOVE BOX REINFORCEMENT

### 4. CONNECT LIQUID TUBE TO COOLING UNIT INLET FITTING

Torque the nut.

Torque: 14 N-m (140 kgf-cm, 10 ft-lbf)

### 5. CONNECT SUCTION TUBE TO COOLING UNIT OUTLET FITTING

Torque the nut.

Torque: 32 N-m (330 kgf-cm, 24 ft-lbf)

### 6. IF EVAPORATOR WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR

Add 40-50 cc (1.4-1.7 fl.oz.)

Compressor oil:

ND OIL 6, SUNISO N0.5 GS or equivalent

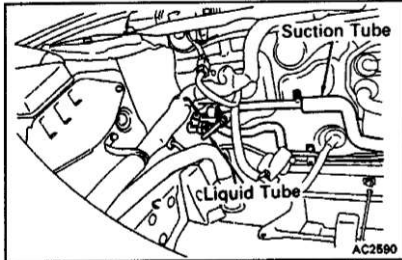
### 7. CONNECT NEGATIVE CABLE TO BATTERY

### 8. EVACUATE AIR FROM REFRIGERATION SYSTEM

### 9. CHARGE SYSTEM WITH REFRIGERANT AND INSPECT FOR LEAKAGE OF REFRIGERANT

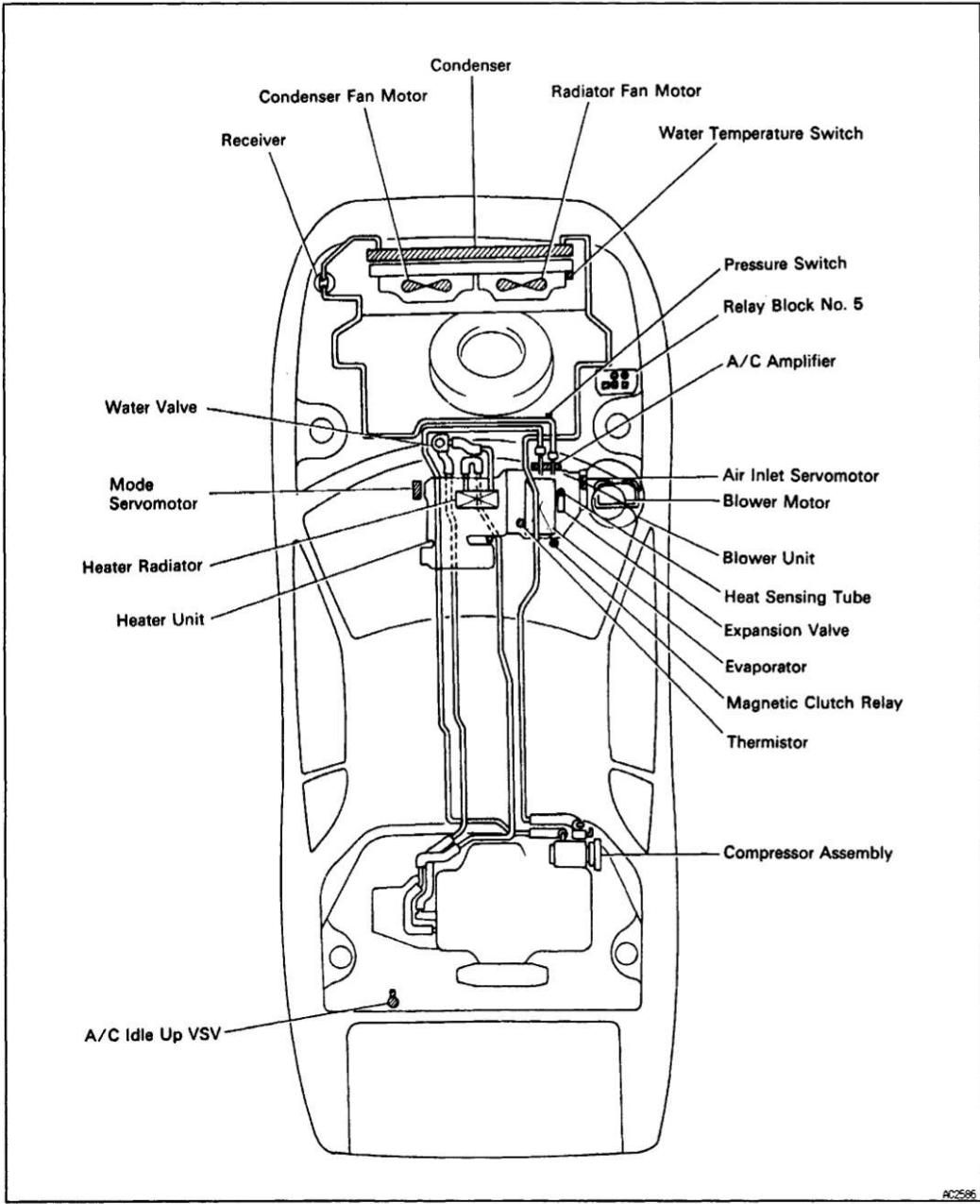
Specified amount:

850±50 g (29.98 ±1.76 oz.)



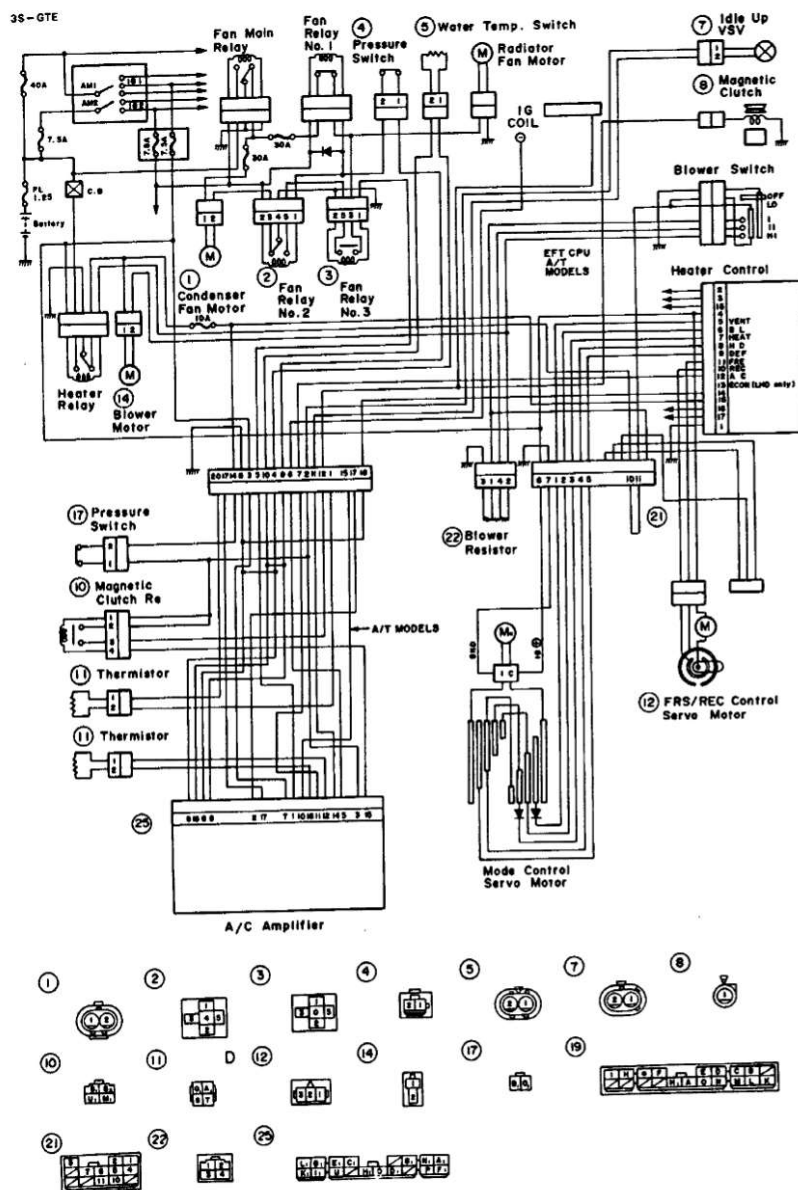
DESCRIPTION  
PARTS LOCATION

AC08S-02



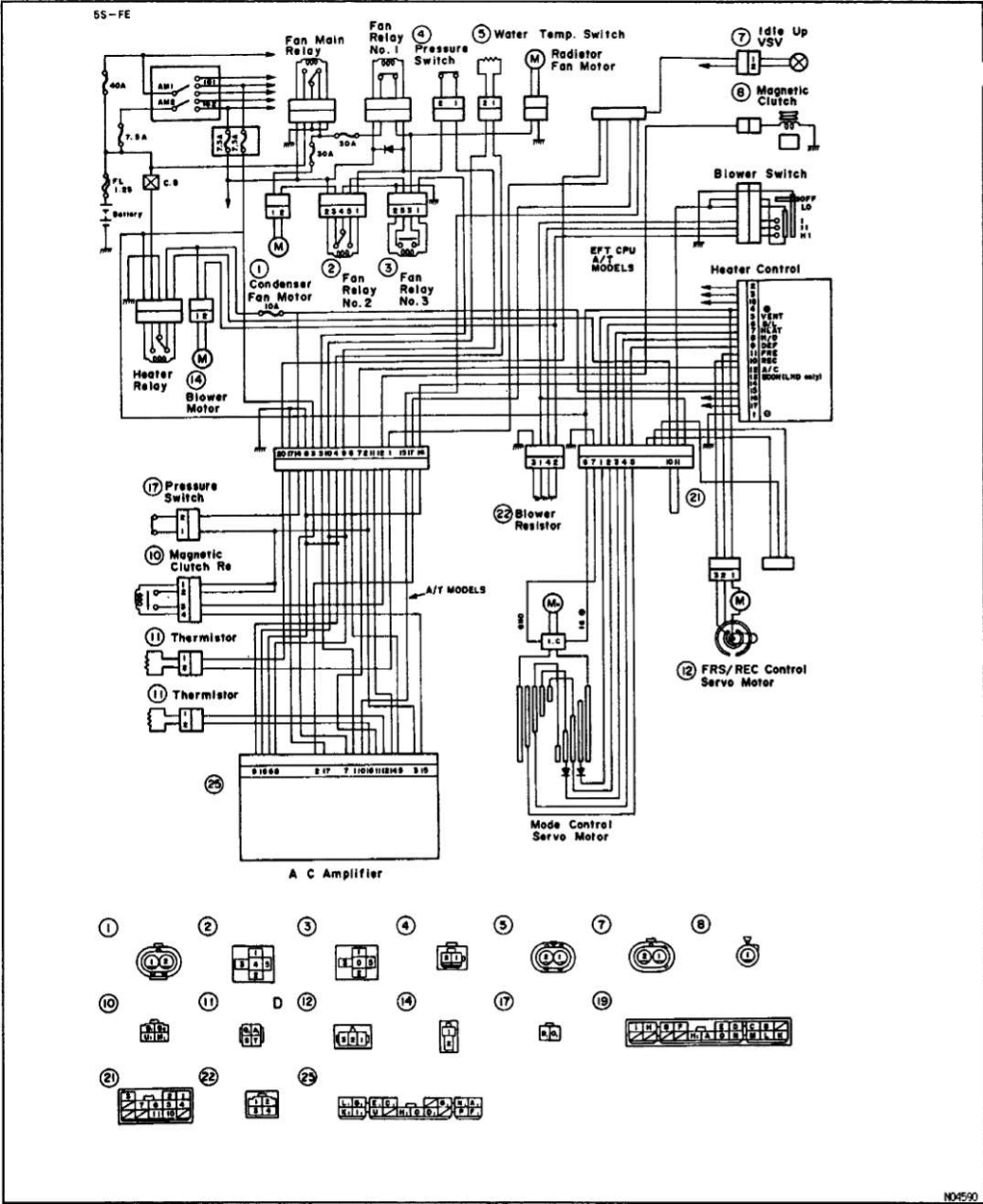
AC2586

## ELECTRICAL WIRING DIAGRAM

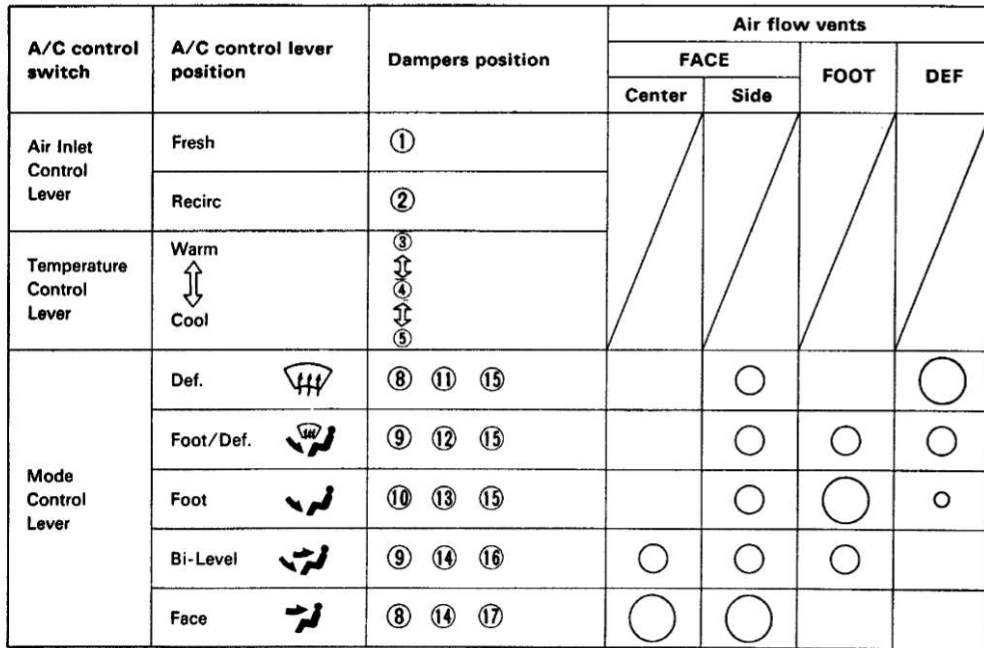


AC-10

AIR CONDITIONING SYSTEM - DESCRIPTION



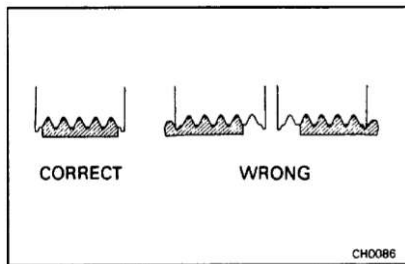
## ACODE-01



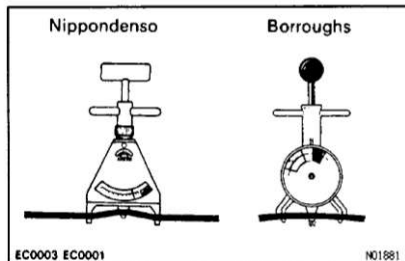
201844

## AC-22

## AIR CONDITIONING SYSTEM — DRIVE BELT TENSION

**DRIVE BELT TENSION****DRIVE BELT TENSION INSPECTION****1. INSPECT DRIVE BELT'S INSTALLATION CONDITION**

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

**2. INSPECT DRIVE BELT TENSION**

(Reference)

Using SST, check the drive belt tension.

SST 09216-00020 and 09216-00030

**Drive belt tension:**

**New belt  $160 \pm 25$  lb**

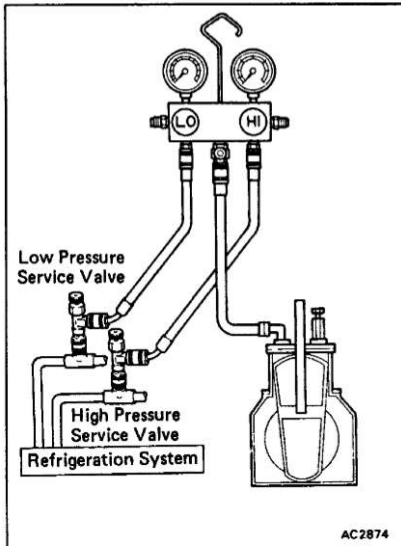
**Used belt  $100 \pm 20$  lb**

**HINT:**

- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the drive belt, check that it fits properly in the ribbed grooves. .

## AC-18

## AIR CONDITIONING SYSTEM

EVACUATING AIR IN REFRIGERATION SYSTEM AND  
CHARGING WITH REFRIGERANT

## EVACUATING AIR IN REFRIGERATION SYSTEM AND CHARGING WITH REFRIGERANT

HINT: Before charging the system with refrigerant, be sure carry out a complete evacuation of the system.

### 1. INSTALL MANIFOLD GAUGE SET TO SERVICE VALVES

(See page AC-2)

### 2. EVACUATE AIR IN REFRIGERATION SYSTEM

(a) Connect the center hose of the manifold gauge set to the vacuum pump.

(b) Open both the high and low hand valves and run the vacuum pump.

HINT: If opening the low pressure hand valve pulls the high pressure gauge into the vacuum range, there is no blockage in the system.

(c) After ten minutes or more, check that the low pressure gauge indicates 99.99 kPa (750 mmHg, 29.53 in. Hg) or more of vacuum.

HINT: If the reading is not 99.99 kPa (750 mmHg, 29.53 in. Hg) or more of vacuum, close both the high and low hand valves of the manifold gauge set and stop vacuum pump. Then, check the system for leaks and repair as necessary.

(d) Close both the high and low hand valves and stop the vacuum pump.

(e) Leave the system in this condition for five minutes or longer and check that there is no change in the gauge indicator.

### 3. INSTALL CHARGING CYLINDER

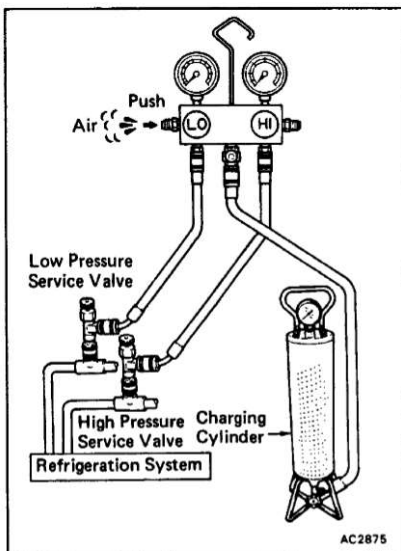
**NOTICE:** When handling the charging cylinder, always follow the directions given in the instruction manual.

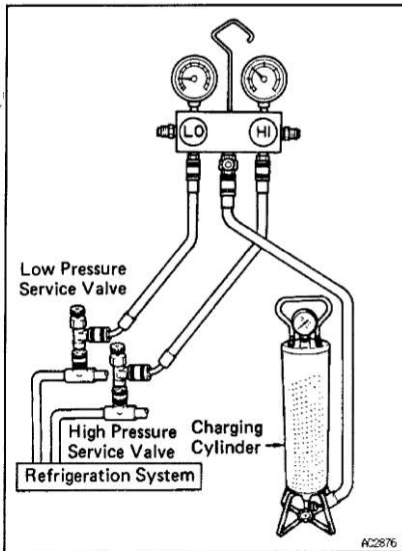
(a) Charge the proper amount of refrigerant in charging cylinder.

(b) Connect the center hose to charging cylinder.

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

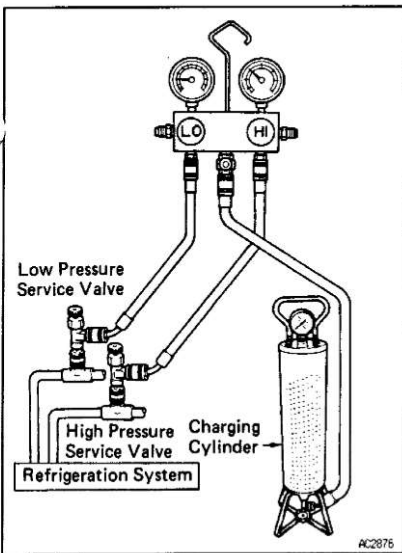
(c) Press on the schrader valve on the side of manifold gauge and expel the air inside of the center hose.



**4. INSPECT REFRIGERATION SYSTEM FOR LEAKS**

HINT: After evacuating the air in system, check the system for leakage.

- Open the high pressure hand valve to charge the system with refrigerant.
- When the low pressure gauge indicates 98 kPa (1 kgf/cm<sup>2</sup>, 14 psi), close the high pressure hand valve.
- Using a gas leak tester, check the system for leakage. (f leak is found, repair the faulty component or connection.

**5. CHARGE EMPTY REFRIGERATION SYSTEM WITH REFRIGERANT (LIQUID)**

HINT: This step is used to charge an empty system through the high pressure side with refrigerant in a liquid state.

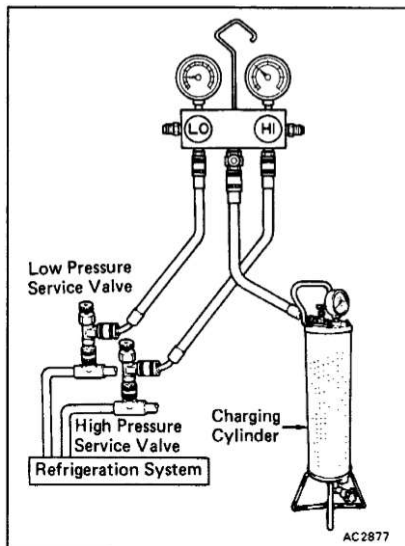
**NOTICE:**

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

- Open the high pressure hand valve fully.
- Charge the system with 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.
- If the low pressure gauge does not show a reading the system is clogged and must be repaired.



#### 6. CHARGE PARTIALLY REFRIGERATION SYSTEM WITH REFRIGERANT (VAPOR)

HINT: This step is used to charge the system through the low pressure side with refrigerant in a vapor state.

**NOTICE:** Do not open the high pressure hand valve when running the engine.

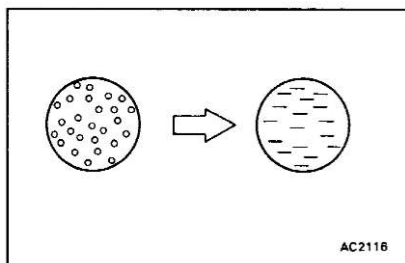
(a) Run the engine at idling speed and operate the air conditioner.

(b) Open the low pressure hand valve.

**NOTICE:** Adjust the hand valve so that the low pressure gauge does not indicate over limited pressure of charging cylinder.

(c) Close the low pressure hand valve when the sight glass is free of any bubbles and stop the engine.

**NOTICE:** Be careful not to overcharge the system with refrigerant as it may cause of troubles.

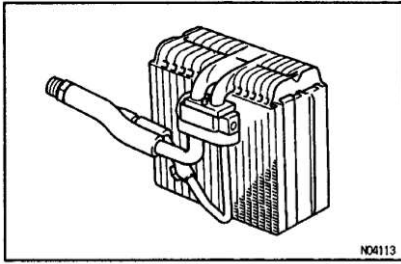


#### 7. REMOVE MANIFOLD GAUGE SET FROM SERVICE VALVES

(See page [AC-2](#))

## AC-46

## AIR CONDITIONING SYSTEM — EVAPORATOR

**EVAPORATOR**

AC097-02

**EVAPORATOR INSPECTION****1. CHECK EVAPORATOR FINS FOR BLOCKAGE**

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

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

**2. CHECK FITTINGS FOR CRACKS OR SCRATCHES**

Repair as necessary.

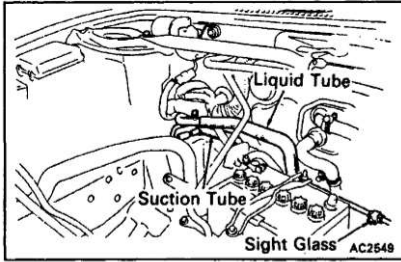
AC098-02

**EVAPORATOR REMOVAL AND  
INSTALLATION**

(See page [AC-25](#))

## AC-50

## AIR CONDITIONING SYSTEM — EXPANSION VALVE

**EXPANSION VALVE**

AC083-01

**ON-VEHICLE INSPECTION**

1. INSPECT REFRIGERANT VOLUME  
(See page [AC-21](#))
2. INSTALL MANIFOLD GAUGE SET  
(See page [AC-16](#))
3. A/C SWITCH ON AND BLOWER SWITCH TO HI
4. RUN ENGINE AT APPROX. 2,000 RPM

Run the engine at 2,000 rpm for at least 5 minutes.

5. INSPECT EXPANSION VALVE

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

**EXPANSION VALVE REMOVAL**

AC084-01

See Disassembly of Cooling Unit on page [AC-25](#).

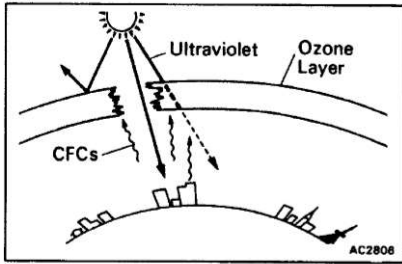
**EXPANSION VALVE INSTALLATION**

See Assembly of Cooling Unit on page [AC-26](#).

# AIR CONDITIONING SYSTEM

## AC-2

## AIR CONDITIONING SYSTEM — GENERAL INFORMATION



## GENERAL INFORMATION

AC002-08

## REFRIGERATION SYSTEM

## Prevention of Refrigerant Release and Excessive Quantities

Refrigerant (CFCs) for automobile air conditioners is believed to cause harm by depleting the ozone layer which helps to protect us from the ultraviolet rays of the sun.

Therefore, it is necessary to prevent release of refrigerant to the atmosphere and to use the minimum amount when servicing the air conditioner.

### 1. USE RECOVERY MACHINE TO RECOVER REFRIGERANT

When discharging refrigerant from the system as follows, use a recovery machine to recover the refrigerant.

Before replacing parts on the refrigerant line.

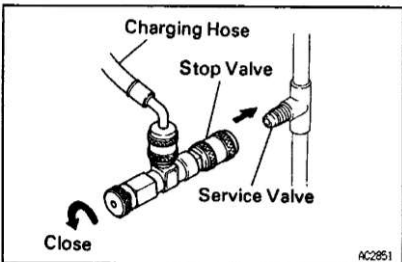
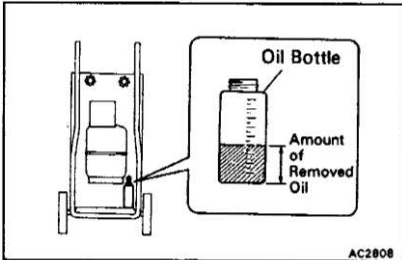
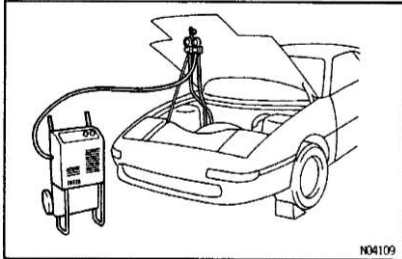
When moisture or air gets in the refrigerant line.

When excess refrigerant is charged.

#### NOTICE:

When handling the recovery machine, always follow the directions given in the instruction manual.

After recovery, the amount of compressor oil removed must be measured and the same amount added to the system.



### 2. USE CHARGING HOSES WITH STOP VALVE WHEN INSTALLING MANIFOLD GAUGE SET

To prevent release of refrigerant, using charging hoses with a stop valve when installing the manifold gauge set to the service valves on the refrigerant line.

### 3. TIGHTEN CONNECTION PARTS SECURELY

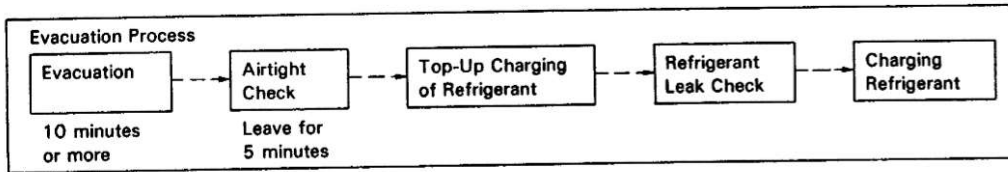
Follow the notices about tightening connecting parts in step 6 on page [AC-5](#).

#### 4. PROPERLY EVACUATE AIR FROM REFRIGERANT SYSTEM

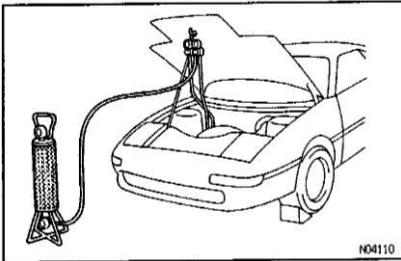
To prevent release and wasteful use of refrigerant, evacuate air with care from refrigeration system as follows.

Do not evacuate before recovering refrigerant in system.

Do not perform repeat evacuation of system.



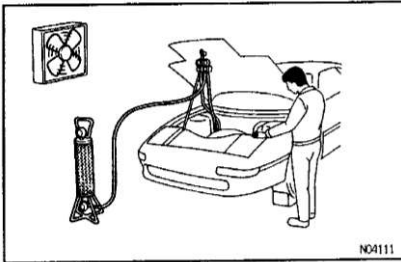
V00117



N04110

#### 5. USE CHARGING CYLINDER To CHARGE PROPER AMOUNT OF REFRIGERANT

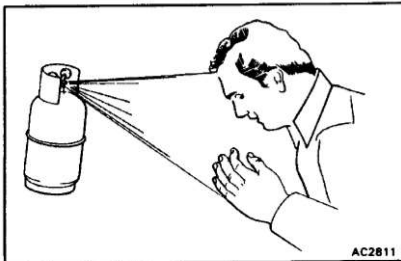
To prevent excessive use of refrigerant due to overcharging, use a charging cylinder to charge the proper amount of refrigerant.



N04111

#### Handling Precautions for refrigerant

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



AC2811

#### 3. BE CAREFUL THAT LIQUID REFRIGERANT DOES NOT GET IN YOUR EYES OR ON YOUR SKIN

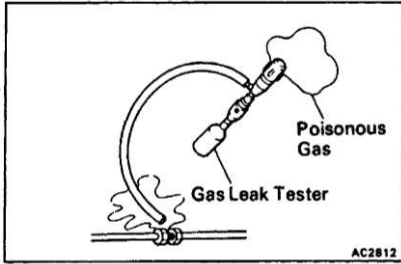
If liquid refrigerant gets in your eyes or on your skin.

- (a) Wash the area with lots of cool water.
- (b) Apply clean petroleum jelly to the skin.
- (c) Go immediately to a physician or hospital for professional treatment.

**CAUTION: Do not attempt to treat yourself.**

## **Handling Precautions For Refrigerant Container**

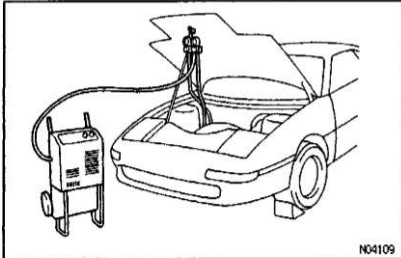
- 1. NEVER HEAT CONTAINER OR EXPOSE IT TO NAKED FLAME**
- 2. BE CAREFUL NOT TO DROP CONTAINER AND NOT TO APPLY PHYSICAL SHOCKS TO IT**



## Handling Precautions for Gas-Cylinder Type Gas Leak Tester

1. BEFORE USING TESTER MAKE SURE THAT THERE ARE NO FLAMMABLE SUBSTANCES NEARBY
2. BE CAREFUL NOT TO INHALE POISONOUS GAS

If refrigerant gas comes in contact with flame, a poisonous gas is produced. During leak tests, do not inhale any gas.

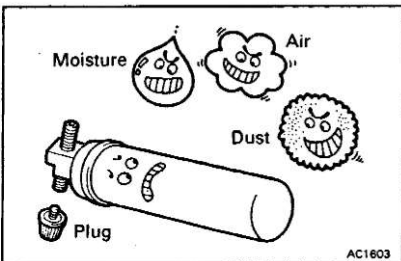


## Precautions When Replacing Parts In Refrigerant Line

1. RECOVER REFRIGERANT IN SYSTEM BEFORE REMOVING PARTS

Using a recovery machine, recover refrigerant in system before removing the parts.

**NOTICE:** Do not release refrigerant to atmosphere.



- Z. INSERT PLUG IMMEDIATELY IN DISCONNECTED PARTS

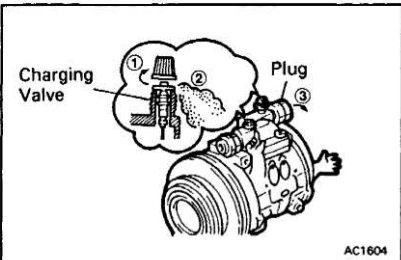
Insert a plug immediately in the disconnected parts to prevent the entry of moisture and dust.

3. DO NOT REMOVE PLUG FROM NEW PARTS UNTIL IMMEDIATELY BEFORE INSTALLATION
4. DO NOT USE BURNER FOR BENDING OR LENGTHENING OPERATIONS ON TUBE

If the tubes are heated with a burner, a layer of oxidation forms inside the tube, causing the same kind of trouble as an accumulation of dust.

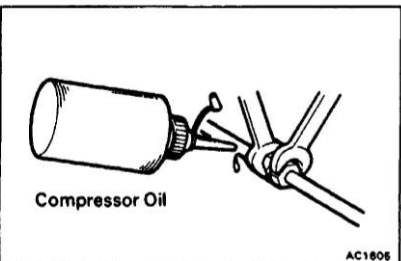
5. DISCHARGE GAS IN NEW COMPRESSOR FROM CHARGING VALVE BEFORE INSTALLING IT

If the gas in new compressor is not discharged first, compressor oil will spray out with gas when the plug is removed.



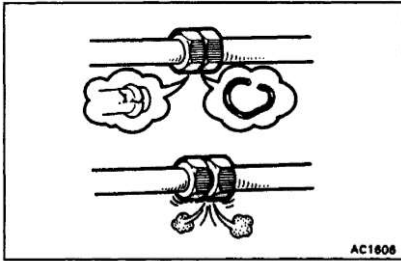
6. TIGHTEN CONNECTING PARTS SECURELY

- Securely tighten the connecting parts to prevent leaking of refrigerant gas.
- Apply a few drops of compressor oil to O-ring fittings for easy tightening and to prevent leaking of refrigerant gas.
- Tighten the nuts using two wrenches to avoid twisting the tube.



## AC-6

## AIR CONDITIONING SYSTEM - GENERAL INFORMATION

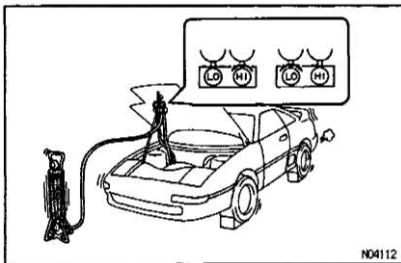


- Tighten the O-ring fittings or the bolted type fittings to the specified torque.

## Precautions When Charging Refrigerant

### 1. DO NOT OPERATE COMPRESSOR WITHOUT ENOUGH REFRIGERANT IN REFRIGERANT CYCLE

If there is not enough refrigerant in the refrigerant cycle, oil lubrication will be insufficient and compressor burnout may occur, so take care to avoid this.



### 2. DO NOT OPEN HIGH PRESSURE VALVE OF MANIFOLD WITH COMPRESSOR OPERATING

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

### 3. BE CAREFUL NOT TO OVERCHARGE WITH REFRIGERANT IN SYSTEM

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

## ELECTRICAL PARTS

AC003-08

Before removing and inspecting the electrical parts, set the ignition switch to the LOCK position and disconnect the negative (-) terminal cable from battery.

**CAUTION:** Work must not be started until after at least 30 seconds or longer from the time the negative (-) terminal cable is disconnected.

## SRS AIRBAG SYSTEM

Failure to carry out service operation in the correct sequence could cause the airbag system to deploy, possibly leading to a serious accident.

When removal or installation of the parts and the yellow wire harness and connector for the airbag is necessary, refer to the precautionary notices in the AB section before performing the operation.

AC-12

AIR CONDITIONING SYSTEM — PREPARATION

**PREPARATION****SST(SPECIAL SERVICE TOOLS)**

AC08K-02

|                                                                                     |                                              |              |
|-------------------------------------------------------------------------------------|----------------------------------------------|--------------|
|    | 07110-58011 Air Conditioner Service Tool Set |              |
|    | (07117-58010) Refrigerant Dram Service Valve |              |
|    | (07117-78011) Refrigerant Charging Gauge     |              |
|    | (07117-88013) Refrigerant Charging Hose      | Green color  |
|    | (07117-88022) Refrigerant Charging Hose      | Blue color   |
|    | (07117-88040) Refrigerant Charging Hose      | Orange color |
|    | (—) Stop Valve                               |              |
|   | 07110-61050 Wrench Set                       |              |
|  | 07110-77011 Magnetic Clutch Tool Set         |              |
|  | 07112-15010 Seal Plate Remover               |              |
|  | 07112-25010 Shaft Seal Remover               |              |
|  | 07112-45021 Key Remover                      |              |
|  | 07112-71010 Magnetic Clutch Remover          |              |

## AC-13

## AIR CONDITIONING SYSTEM - PREPARATION

|                                                                                   |                                        |                         |
|-----------------------------------------------------------------------------------|----------------------------------------|-------------------------|
|  | 07112-76040 Magnetic Clutch Stopper    |                         |
|  | 07114-15010 Seal Plate Presser         |                         |
|  | 07114-45010 Key Replacer               |                         |
|  | 07114-84020 Snap Ring Pliers           |                         |
|  | 07116-38330 Gas Leak Detector Assembly |                         |
|  | 07117-48050 Vacuum Pump Assy           | Rated voltage<br>AC220V |
|  | 07117-48060 Vacuum Pump Assy           | Rated voltage<br>AC240V |

## RECOMMENDED TOOLS

AC008-08

|                                                                                    |                                      |  |
|------------------------------------------------------------------------------------|--------------------------------------|--|
|  | 09082-00015 TOYOTA Electrical Tester |  |
|------------------------------------------------------------------------------------|--------------------------------------|--|

## EQUIPMENT

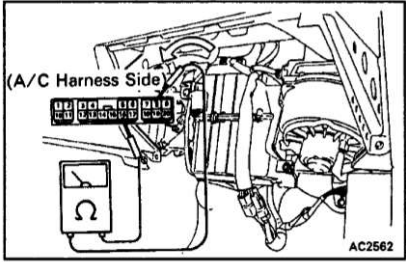
AC008-02

| Part Name | Note                |
|-----------|---------------------|
| Voltmeter | Measures voltage    |
| Ammeter   | Measures current    |
| Ohmmeter  | Measures resistance |

## LUBRICANT

AC009-01

| Item                      | Capacity                                | Classification |
|---------------------------|-----------------------------------------|----------------|
| Compressor oil            |                                         |                |
| When replacing receiver   | 20 cm <sup>3</sup> (0.7 fl. oz.)        |                |
| When replacing condenser  | 40-50 cm <sup>3</sup> (1.4-1.7 fl. oz.) | ND OIL6        |
| When replacing evaporator | 40-50 cm <sup>3</sup> (1.4-1.7 fl. oz.) |                |

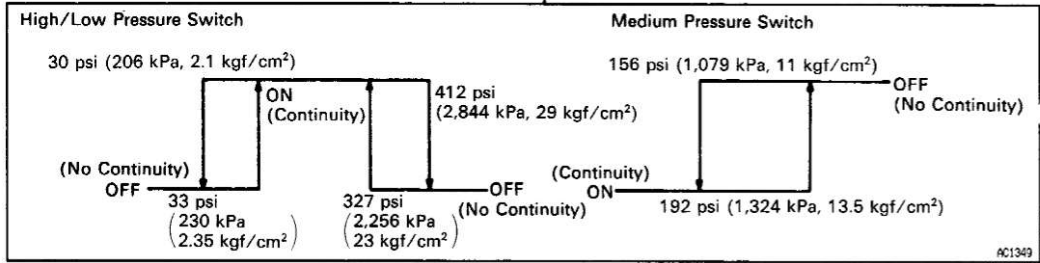
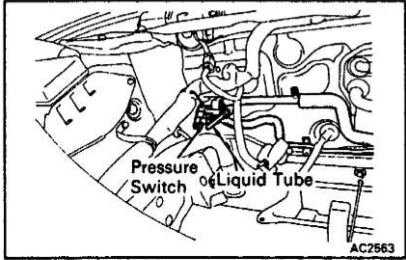


PRESSURE SWITCH

ON-VEHICLE INSPECTION

- 1. DISCONNECT CONNECTOR OF PRESSURE SWITCH
- 2. INSPECT PRESSURE SWITCH

- (a) Install the manifold gauge set.
- (b) Observe the gauge reading.
- (c) Check the continuity between the two terminals of the pressure switch shown in the below.



- If defective, replace the pressure switch.
- 3. CONNECT CONNECTOR OF PRESSURE SWITCH

## RECEIVER

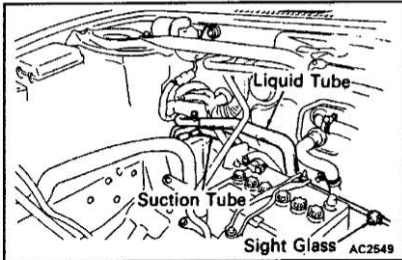
AC081-01

### ON-VEHICLE INSPECTION

#### INSPECT FITTINGS FOR LEAKAGE

Using a gas leak-tester, check for leakage.

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



### RECEIVER REMOVAL

AC08W-01

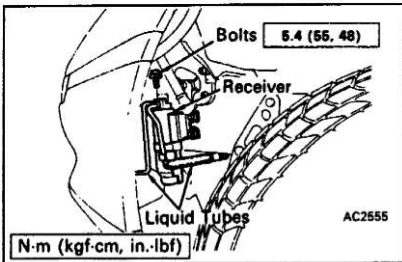
#### 1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

#### 2. REMOVE LEFT SIDE FRONT FENDER LINER AND UNDER COVER

#### 3. DISCONNECT TWO LIQUID TUBES FROM RECEIVER

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

#### 4. REMOVE RECEIVER FROM RECEIVER HOLDER



### RECEIVER INSTALLATION

AC08R-01

#### 1. INSTALL RECEIVER IN RECEIVER HOLDER

HINT: Do not remove the blind plugs until ready for connection.

#### 2. CONNECT TWO LIQUID TUBES TO RECEIVER

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

#### 3. REINSTALL FENDER LINER AND UNDER COVER

#### 4. IF RECEIVER WAS REPLACED. ADD COMPRESSOR OIL TO COMPRESSOR

Add 20 cc (0.7 fl.oz.)

Compressor oil:

ND OIL6, SUNISO N0.5GS or equivalent

#### 5. EVACUATE AIR FROM REFRIGERATION SYSTEM

#### 6. CHARGE SYSTEM WITH REFRIGERANT AND INSPECT FOR LEAKAGE OF REFRIGERANT

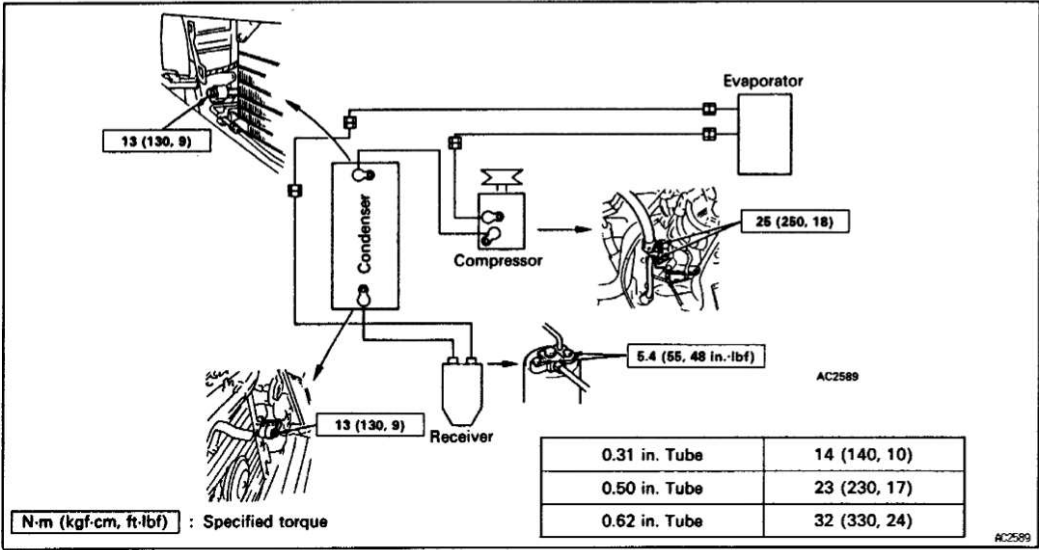
Specified amount:

850 ±50 g (29.98 ± 1.76 oz.)

REFRIGERANT LINES

TIGHTENING TORQUE OF

REFRIGERATION LINES



- ON-VEHICLE INSPECTION
1. INSPECTION HOSE AND TUBE CONNECTIONS FOR LOOSENESS
2. INSPECT HOSES AND TUBES FOR LEAKAGE
- Using a gas leak tester, check for leakage of refrigerant.

## REFRIGERANT LINES REPLACEMENT

### 1. RECOVER REFRIGERANT IN REFRIGERATION SYSTEM

### 2. REPLACE FAULTY TUBE OR HOSE

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

### 3. TORQUE CONNECTIONS TO SPECIFIED TORQUE

NOTICE: Connections should not be torque tighter than the specified torque.

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

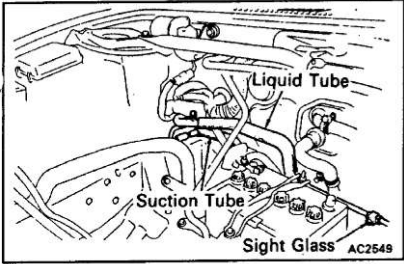
Specified amount:

850±50 g (29.89±1.76 oz.)

### 5. INSPECT FOR LEAKAGE OF REFRIGERANT

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

### 6. INSPECT AIR CONDITIONER OPERATION



**REFRIGERANT VOLUME**  
**REFRIGERANT VOLUME INSPECTION**

1. RUN ENGINE AT IDLE SPEED  
2. OPERATE A/C AT MAXIMUM COOLING FOR A FEW MINUTES  
3. INSPECT AMOUNT OF REFRIGERANT  
Observe the sight glass on the liquid tube.

| Item | Symptom                                                                                 | Amount of refrigerant        | Remedy                                                                                                                |
|------|-----------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1    | Bubbles present in sight glass                                                          | Insufficient*                | (1) Check for gas leakage with gas leak tester 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 tester and repair if necessary<br>(2) Add refrigerant until bubbles disappear |
| 4    | Temperature between compressor inlet and outlet is noticeably different                 | Proper or too much           | Refer to items 5 and 6                                                                                                |
| 5    | Immediately after air conditioner is turned off, refrigerant in sight glass stays clear | Too much                     | (1) Recover refrigerant<br>(2) Evacuate air and charge proper amount of purified refrigerant                          |
| 6    | When air conditioner is turned off, refrigerant foams and then stay clear               | Proper                       | -                                                                                                                     |

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

**REFRIGERANT CHARGE VOLUME**

Specified amount:  
850 ±50 g (29.98 ±1.76 oz.)

RELAYS  
RELAYS INSPECTION

AC08P-01

1. INSPECT HEATER MAIN RELAY CONTINUITY

AC2208

|                                           |   |   |   |   |   |
|-------------------------------------------|---|---|---|---|---|
| Terminal                                  | 1 | 2 | 3 | 4 | 5 |
| Condition                                 |   |   |   |   |   |
| Constant                                  | ○ | ○ | ○ | ○ |   |
| Apply battery voltage to terminal 1 and 2 |   |   | ○ | ○ | ○ |

V00824

If continuity is not as specified, replace the relay.

2. INSPECT MAGNETIC CLUTCH RELAY CONTINUITY

BE1647 BE1841

|                                             |   |   |   |   |
|---------------------------------------------|---|---|---|---|
| Terminal                                    | 1 | 2 | 3 | 4 |
| Condition                                   |   |   |   |   |
| Constant                                    | ○ | ○ | ○ |   |
| Apply battery voltage to terminals 1 and 3. |   | ○ | ○ | ○ |

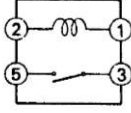
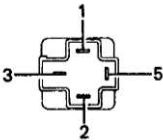
V00825

If continuity is not as specified, replace the relay.

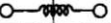
3. INSPECT FAN MAIN RELAY

Check the relay the same way as for the Heater Main Relay.

4. INSPECT FAN RELAY NO.1 CONTINUITY



BE4049 BE640

| Terminal                                    | 1                                                                                 | 2 | 3                                                                                  | 5 |
|---------------------------------------------|-----------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|
| Condition                                   |                                                                                   |   |                                                                                    |   |
| Constant                                    |  |   |                                                                                    |   |
| Apply battery voltage to terminals 1 and 2. |                                                                                   |   |  |   |

V00826

If continuity is not as specified, replace the relay.

5. INSPECT FAN RELAY NO.2 CONTINUITY

Check the relay the same way as for the Heater Main Relay.

6. INSPECT FAN RELAY NO.3 CONTINUITY

Check the relay the same way as for the Heater Main Relay.

## SERVICE SPECIFICATIONS

AC9AB-62

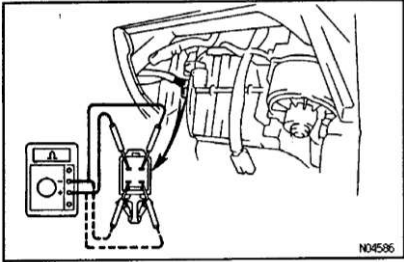
### SERVICE DATA

|                                     |                |                                |
|-------------------------------------|----------------|--------------------------------|
| Refrigerant volume                  |                | 850 ± 50 g (29.98 ± 1.76 oz.)  |
| Drive belt tension                  |                |                                |
|                                     | New belt       | 160 ± 25 lbf                   |
|                                     | Used belt      | 100 ± 25 lbf                   |
| Pressure plate clearance            |                | 0.8 ± 0.2 mm (0.32 ± 0.08 in.) |
| Magnetic clutch clearance           |                | 0.8 ± 0.2 mm (0.32 ± 0.08 in.) |
| Idle -up speed                      |                | 950 ± 50 rpm                   |
| Thermistor resistance               |                | 1,500 Ω at 25°C (77°F)         |
| Water temperature sensor resistance |                |                                |
|                                     | 85° C (185° F) | Approx. 1.35 kΩ                |
|                                     | 90° C (194° F) | Approx. 1.19 kΩ                |
|                                     | 95° C (203° F) | Approx. 1.05 kΩ                |

AC9AC-62

### TORQUE SPECIFICATIONS

| Part tightened                   | N-m        | kgf-cm | ft-lbf     |
|----------------------------------|------------|--------|------------|
| Suction tube x Cooling unit      | 32         | 330    | 24         |
| Liquid tube x Cooling unit       | 14         | 140    | 10         |
| Idle pulley bracket x Compressor |            |        |            |
|                                  | 12 mm bolt | 25     | 250        |
|                                  | 14 mm bolt | 37     | 375        |
| Compressor x Suction hose        | 25         | 250    | 18         |
| Compressor x Discharge hose      | 25         | 250    | 18         |
| Liquid tube x Receiver           | 5.4        | 55     | 48 in.-lbf |
| Condenser x Suction tube         | 13         | 130    | 9          |
| Condenser x Discharge tube       | 13         | 130    | 9          |
| Pressure plate x Compressor      | 16         | 165    | 12         |
| Front housing x Front cylinder   | 25         | 260    | 19         |
| Service valve x Compressor       | 25         | 260    | 19         |



THERMISTOR

AC06A-01

ON-VEHICLE INSPECTION

1. DISCONNECT NEGATIVE BATTERY CABLE
2. REMOVE GLOVE BOX
3. CHECK RESISTANCE OF THERMISTOR

Measure the resistance between terminals.

Standard resistance:

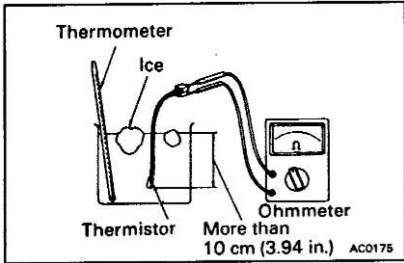
1,500 Ω at 25°C (77°F)

If resistance value is not as specified, replace the thermistor.

THERMISTOR REMOVAL

AC06B-01

See Disassembly of Cooling Unit on page AC-25.

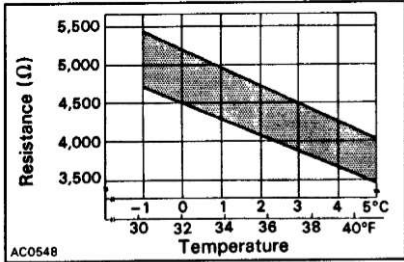


AC06C-01

THERMISTOR INSPECTION

INSPECT THERMISTOR OPERATION

- (a) Place the thermistor in cold water. While varying the temperature of the water, measure the resistance at the connector and at the same time, measure the temperature of the water with a thermometer.
- (b) Compare the two readings on the chart. If the intersection is not between the two lines, replace the thermistor.



AC0548

AC06D-01

THERMISTOR INSTALLATION

See Assembly of Cooling Unit on page AC-26.

## AC-14

## AIR CONDITIONING SYSTEM - TROUBLESHOOTING

## TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

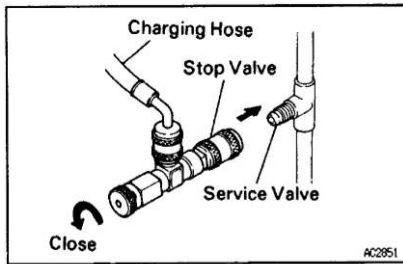
| See page                                     | AC-21                         | AC-18                                                | AC-22                      | AC-8, 9            | AC-8, 9                  | AC-8, 9    | AC-56           | AC-55      | EG-305<br>378 | AC-53             | AC-53                 | EG-303,<br>375                              | AC-52           | AC-48                |
|----------------------------------------------|-------------------------------|------------------------------------------------------|----------------------------|--------------------|--------------------------|------------|-----------------|------------|---------------|-------------------|-----------------------|---------------------------------------------|-----------------|----------------------|
| Parts Name                                   | Inspect Volume of Refrigerant | Inspect Refrigeration System with Manifold Gauge Set | Inspect Drive Belt Tension | Fusible Link (ALT) | Circuit Breaker (HEATER) | Fuse (A/C) | Pressure Switch | Thermistor | ECTS          | Heater Main Relay | Magnetic Clutch Relay | Engine Main Relay and Fan Relay No. 1, 2, 3 | Blower Resistor | Air Inlet Servomotor |
| No blower operation                          |                               |                                                      |                            | 1                  | 2                        |            |                 |            |               | 3                 |                       |                                             | 6               |                      |
| No blower control                            |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |
| No air flow mode control                     |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |
| No air inlet control                         |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 | 2                    |
| Insufficient flow of cool air                |                               |                                                      |                            |                    |                          |            |                 |            |               | 1                 |                       |                                             | 3               |                      |
| Insufficient flow of warm air                |                               |                                                      |                            |                    |                          |            |                 |            |               | 1                 |                       |                                             | 3               |                      |
| No cool air comes out                        | 3                             | 4                                                    | 5                          |                    |                          | 1          | 6               | 12         |               |                   | 2                     |                                             |                 |                      |
| Cool air comes out intermittently            | 1                             | 2                                                    | 3                          |                    |                          |            |                 | 5          |               |                   |                       |                                             |                 |                      |
| Cool air comes out only at high engine speed | 2                             | 3                                                    | 1                          |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |
| Insufficient cooling                         | 1                             | 2                                                    | 3                          |                    |                          |            |                 | 13         | 7             |                   |                       | 6                                           |                 |                      |
| No warm air comes out                        |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |
| Air temp. control not functioning            |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |
| No engine idle up when A/C switch on         |                               |                                                      |                            |                    |                          |            |                 |            |               |                   |                       |                                             |                 |                      |

V00871

[illegible]

## AC-16

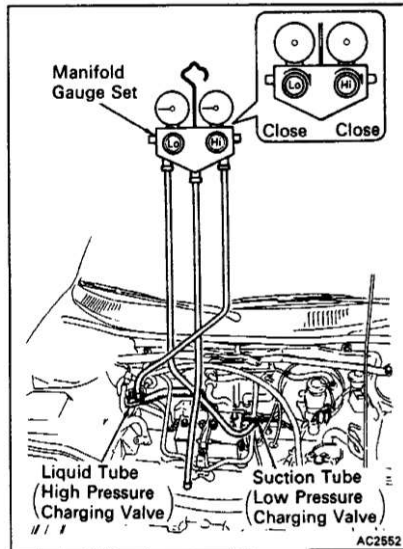
## AIR CONDITIONING SYSTEM — USE OF MANIFOLD GAUGE SET



## USE OF MANIFOLD GAUGE SET

## MANIFOLD GAUGE SET INSTALLATION

HINT: To prevent releasing refrigerant, use charging hoses with a stop valve when installing the manifold gauge set to service valves on the refrigerant line.



## 1. CONNECT CHARGING HOSES WITH A STOP VALVE TO MANIFOLD GAUGE SET

Tighten the nuts by hand.

## CAUTION:

- Do not connect the wrong hoses to the high pressure and the low pressure side.
- To prevent loosening the nuts, do not apply compressor oil to seat of the connection.

## 2. CLOSE HAND VALVES OF BOTH STOP VALVES

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

## 4. REMOVE CAPS FROM SERVICE VALVES ON REFRIGERANT LINE

## 5. CONNECT STOP VALVES TO SERVICE VALVES

Tighten the nuts by hand.

## CAUTION:

- Do not connect the wrong hoses to the high pressure and the low pressure sides.
- To prevent loosening the nuts, do not apply compressor oil to seat of the connection.

## 6. OPEN HAND VALVES OF BOTH STOP VALVES

## MANIFOLD GAUGE SET REMOVAL

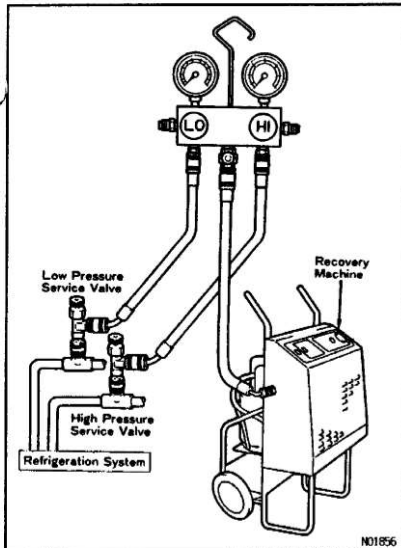
AC2853-02

## 1. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET

## 2. CLOSE HAND VALVES OF BOTH STOP VALVES

## 3. DISCONNECT STOP VALVES FROM SERVICE VALVES ON REFRIGERANT LINE

## 4. INSTALL CAPS TO SERVICE VALVES ON REFRIGERANT LINE



## USE OF REFRIGERANT RECOVERY MACHINE

AC2808-52

### RECOVERING OF REFRIGERANT IN REFRIGERANT SYSTEM

When discharging refrigerant from the system as follows, use a recovery machine to recover the refrigerant.

Before replacing parts on the refrigerant line.

When moisture or air gets in the refrigerant line.

When excess refrigerant is charged.

#### NOTICE:

- When handling the recovery machine, always follow the directions given in instruction manual.
- After recovery, the amount of compressor oil removed must be measured and same amount added into the system.

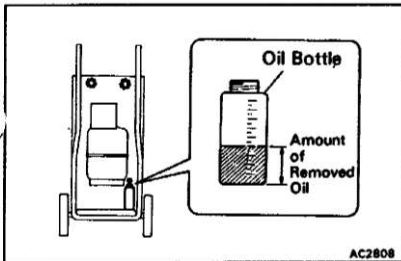
#### 1. INSTALL MANIFOLD GAUGE SET TO SERVICE VALVES

#### 2. RECOVER REFRIGERANT FROM REFRIGERATION SYSTEM

- (a) Connect the center hose to recovery machine.
- (b) Operate the recovery machine.
- (c) Open both high and low hand valves of manifold gauge set.

#### 3. STOP RECOVERY MACHINE WHEN RECOVERING HAS FINISHED

#### 4. REMOVE MANIFOLD GAUGE SET FROM SERVICE VALVES



## VACUUM SWITCHING VALVE (VSV)

### IDLE-UP SPEED INSPECTION

#### (3S-GTE only)

##### 1. WARM UP ENGINE

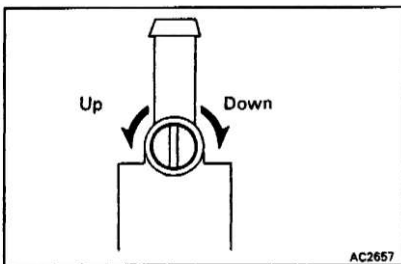
##### 2. SET VEHICLE IN FOLLOWING

- Transmission position to Neutral
- A/C switch ON and Magnetic clutch engaged
- Blower speed control switch to HI
- Door window fully opened

##### 3. INSPECT IDLE-UP SPEED

Standard:

950  $\pm$  50 rpm



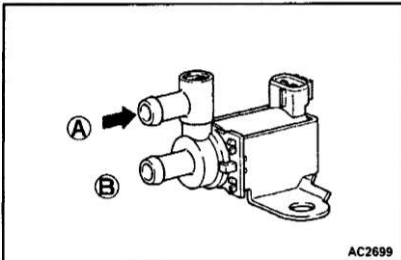
AC2657

### IDLE-UP SPEED ADJUSTMENT

AC064-01

If idle-up speed is not as specified, adjust the idle-up speed turning the idle speed adjusting screw on the VSV.

**NOTICE:** Do not use too much force when tightening the idle adjusting screw.



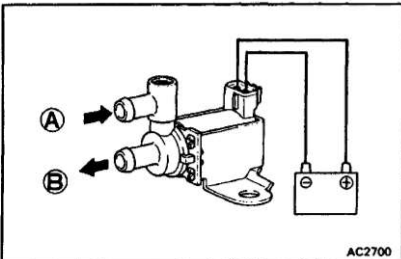
AC2699

### VSV OPERATION INSPECTION

AC067-01

#### INSPECT VSV OPERATION

(a) Blow into pipe "A" and check that air does not come out of pipe "B".



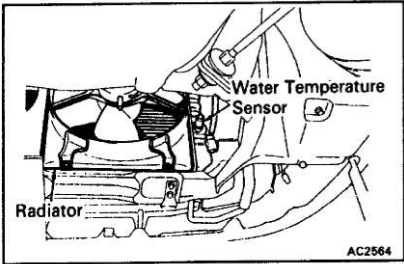
AC2700

(b) Apply battery voltage

(12V) between the terminals 1 and 2.

(c) Blow into pipe "A" and check that air comes out of pipe "B".

If a problem is found, replace the VSV.



# WATER TEMPERATURE SENSOR

## WATER TEMPERATURE SENSOR INSPECTION

### INSPECT WATER TEMPERATURE SENSOR

Using an ohmmeter, measure the resistance of the water temperature sensor.

| Water temperature | Resistance      |
|-------------------|-----------------|
| 85° C (185° F)    | approx. 1.35 kΩ |
| 90° C (194° F)    | approx. 1.19 kΩ |
| 95° C (203° F)    | approx. 1.05 kΩ |

If resistance value is not as specified, replace the sensor.

