

COMPRESSOR

ON-VEHICLE INSPECTION (Magnetic Clutch)

AC60N-01

1. MAKE THE FOLLOWING VISUAL CHECKS

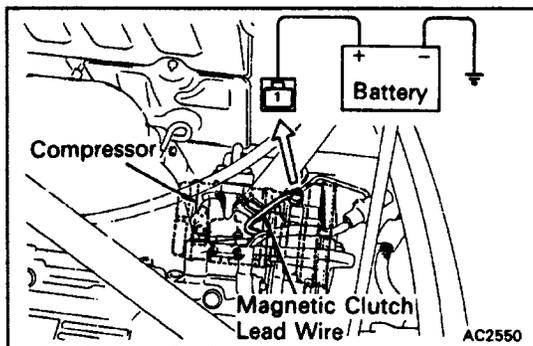
- (a) Leakage of grease from the clutch bearing.
- (b) Signs of oil on the pressure plate or rotor.

Repair or replace, as necessary.

2. INSPECT MAGNETIC CLUTCH BEARING FOR NOISE

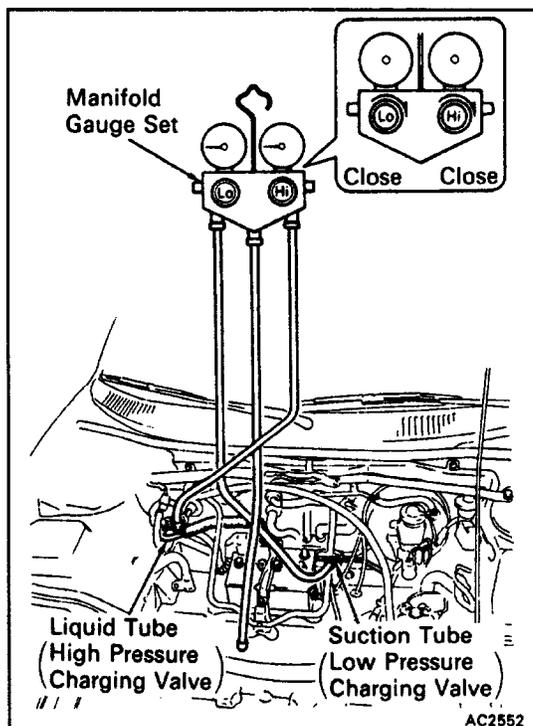
- (a) Start engine.
- (b) Check for abnormal noise from near the compressor when the A/C switch is OFF.

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

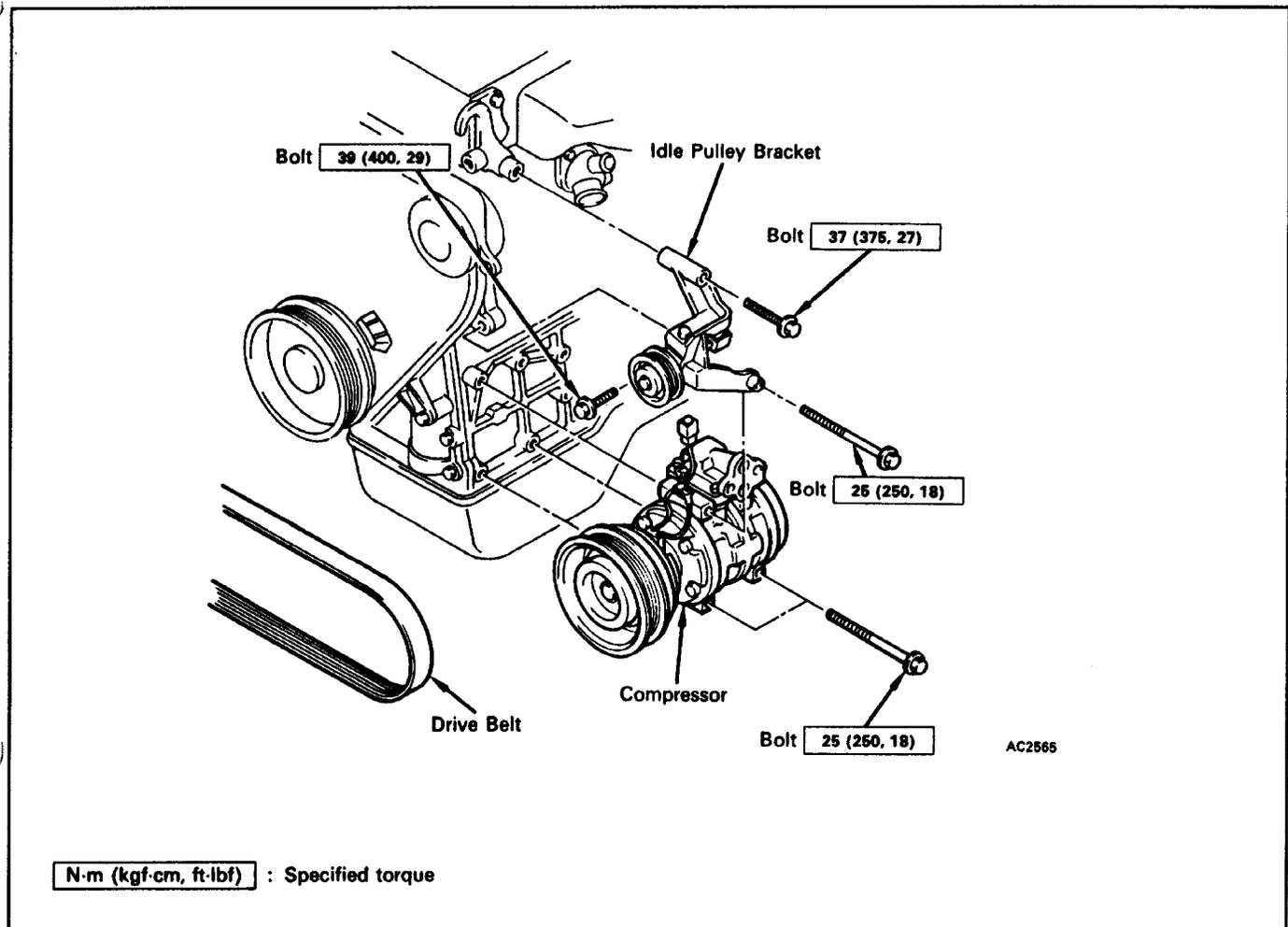
See "Refrigerant System Inspection with Manifold Gauge Set" on page [AC-18](#).

5. STOP ENGINE

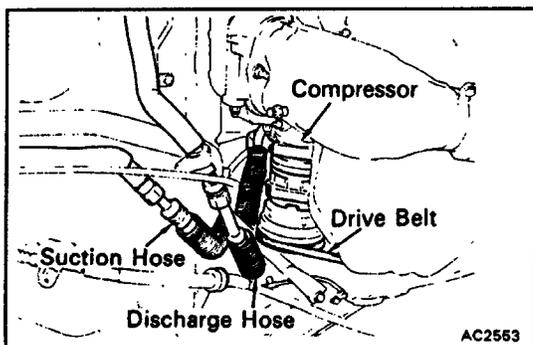
6. INSPECT VISUALLY FOR LEAKAGE OF REFRIGERANT FROM SAFETY SEAL

If there is any leakage, replace the compressor assembly.

COMPRESSOR REMOVAL



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

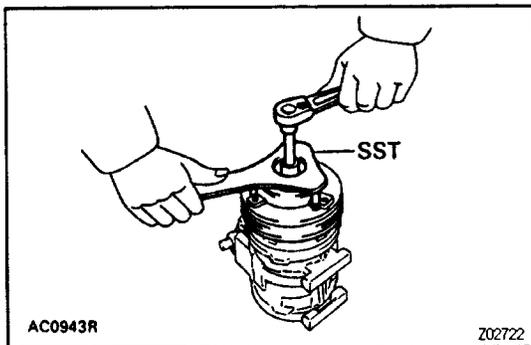
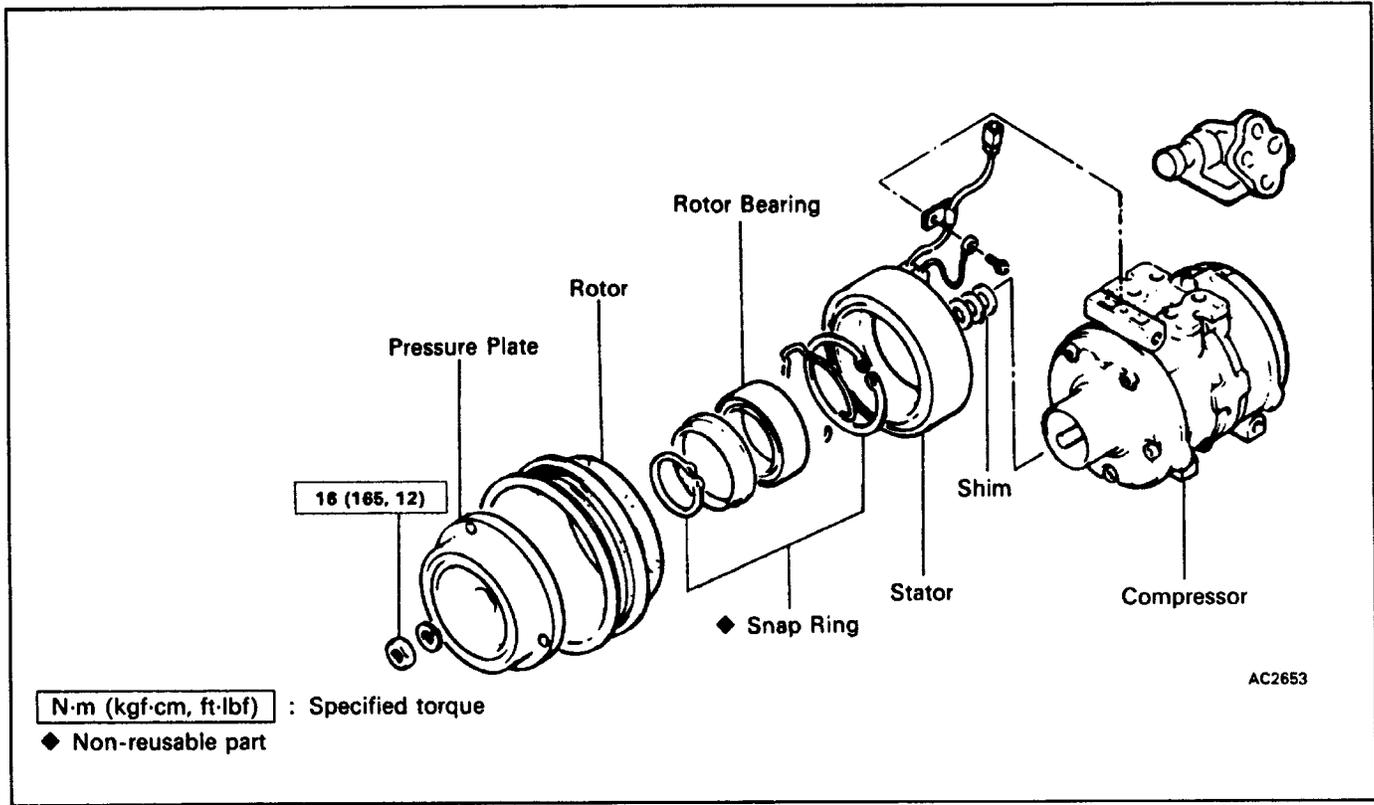
HINT: Cap the open fitting immediately to keep moisture and dust out of the system.

8. REMOVE COMPRESSOR

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

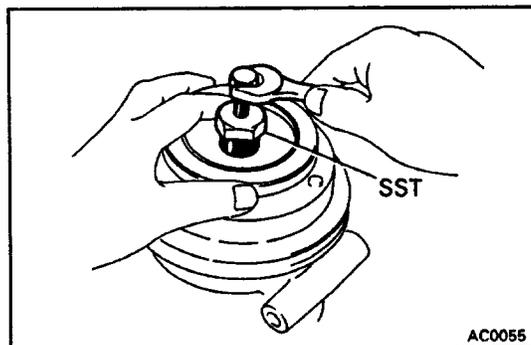
MAGNETIC CLUTCH DISASSEMBLY

AC000-01

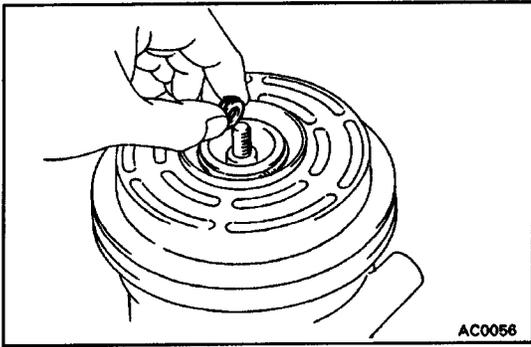


1. REMOVE PRESSURE PLATE

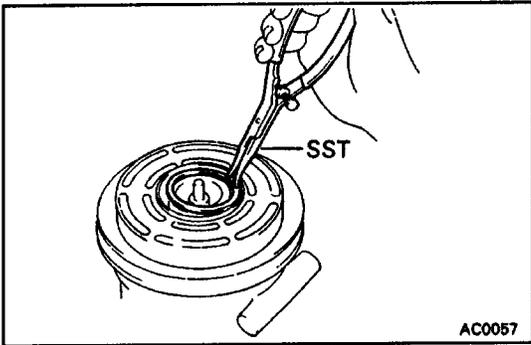
- (a) Using SST and a socket, remove the shaft nut.
SST 07112-76040



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

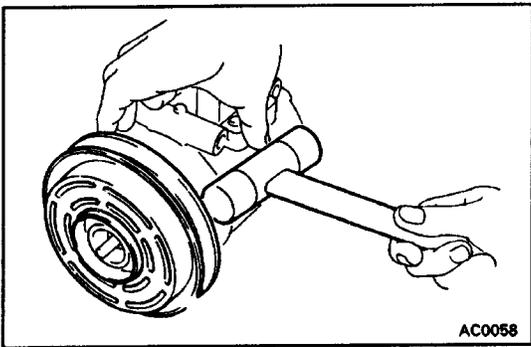


(c) Remove the shims from the shaft.

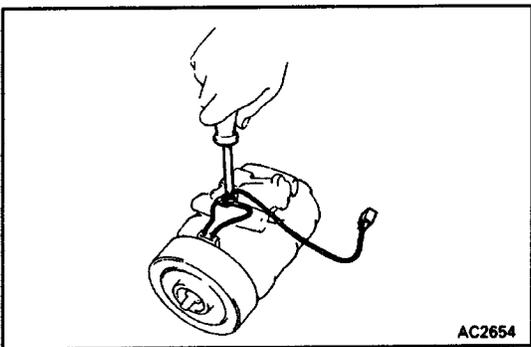


2. REMOVE ROTOR

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

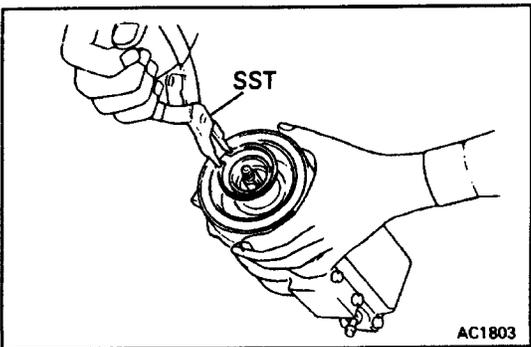


(b) Using plastic hammer, tap the rotor off the shaft.
NOTICE: Be careful not to damage the pulley when tapping on the rotor.

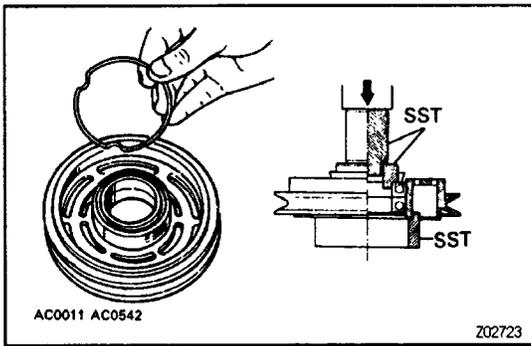


3. REMOVE STATOR

(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.

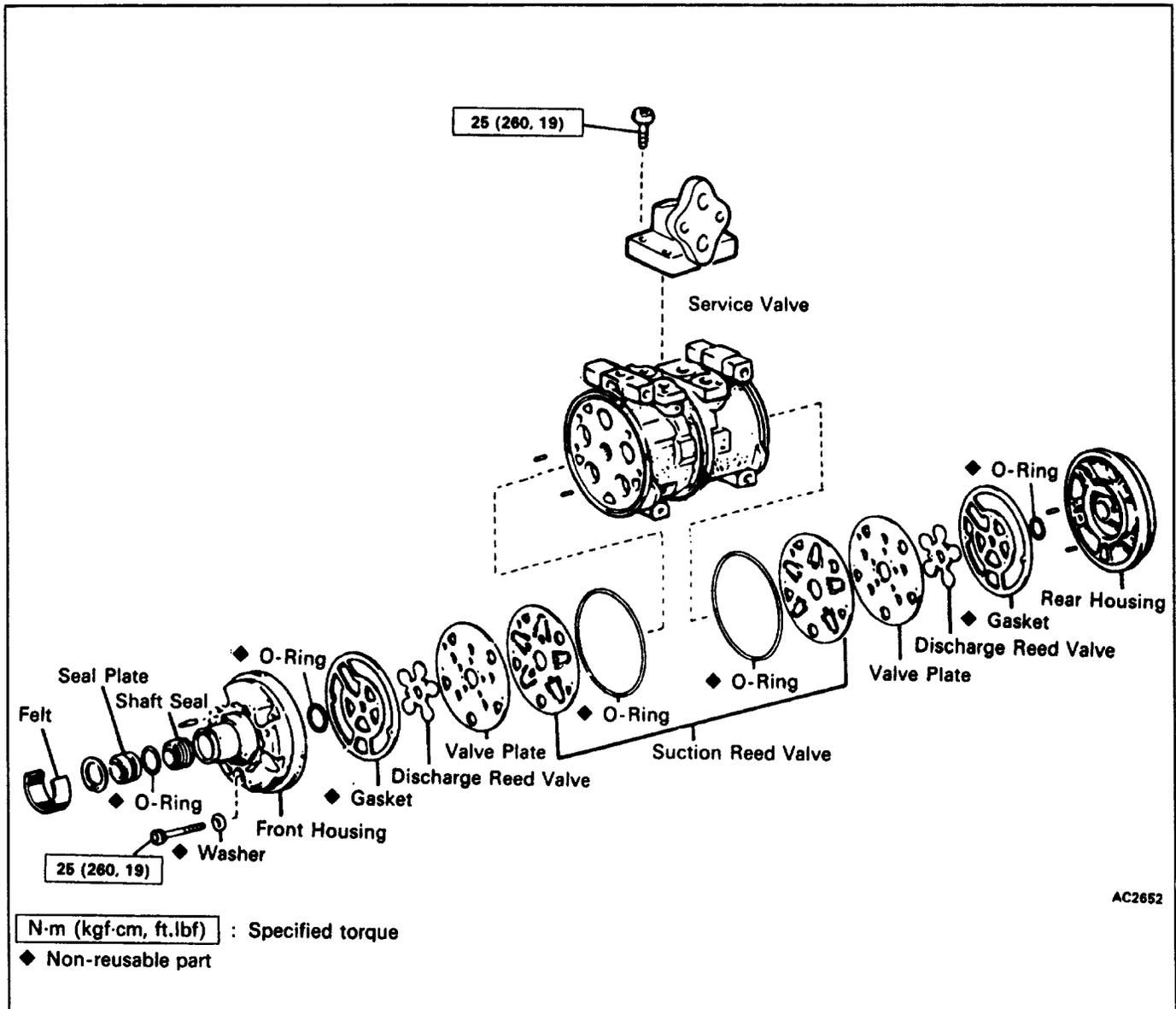
SST 07110-77011

5. INSPECT PRESSURE PLATE AND ROTOR

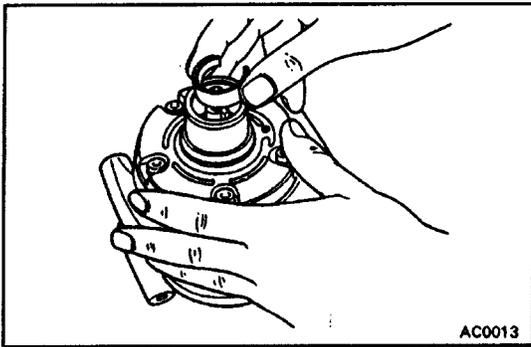
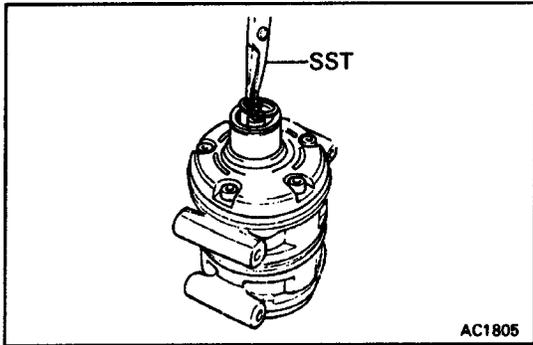
- (a) Inspect the pressure plate and rotor surface for wear and scoring. Replace if necessary.
- (b) Check rotor bearings for wear and leakage of grease. Replace if necessary.

COMPRESSOR DISASSEMBLY

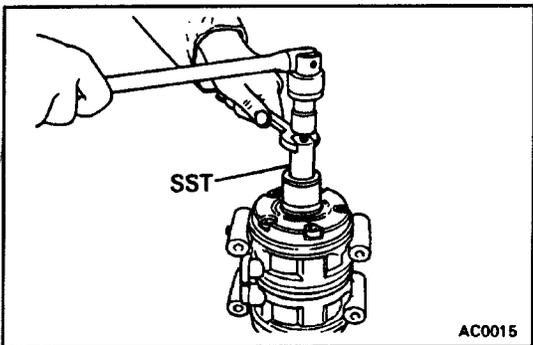
AC00R-01



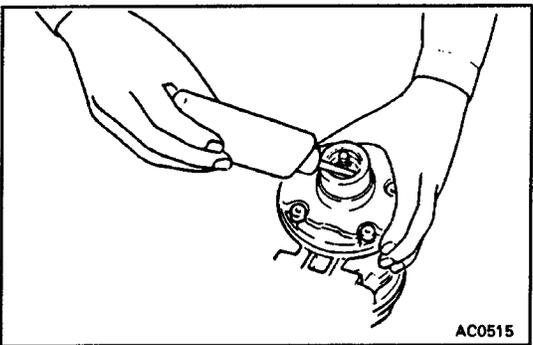
AC2652

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

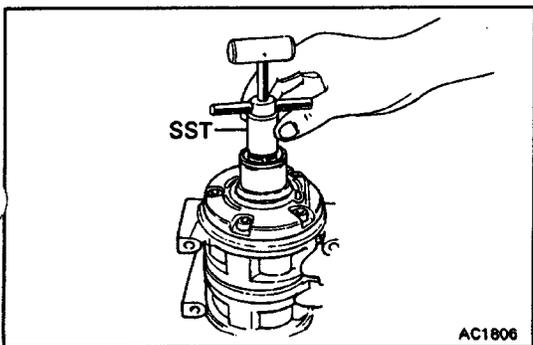
Using SST, remove the snap ring.
SST 07114-84020

**3. REMOVE KEY**

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

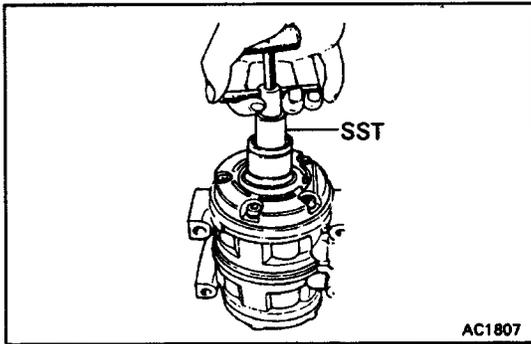
**4. APPLY COMPRESSOR OIL TO INNER BORE**

Apply compressor oil to the inner bore of the compressor.

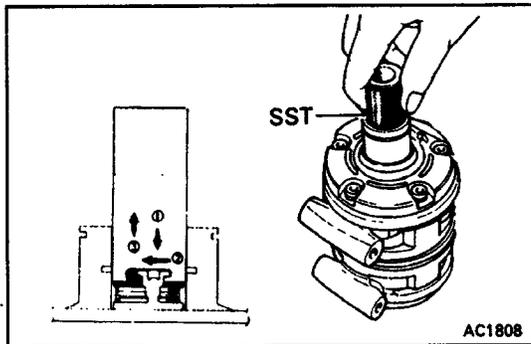
**5. REMOVE SEAL PLATE**

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

SST 07112-15010



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

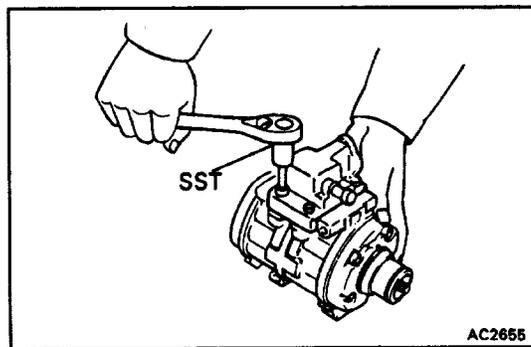


6. REMOVE SHAFT SEAL

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

Then remove the shaft seal.

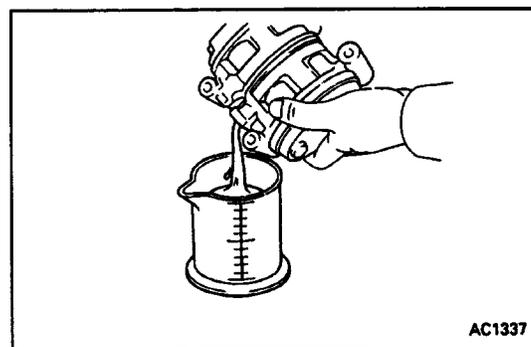
SST 07114 -15010



7. REMOVE SERVICE VALVE

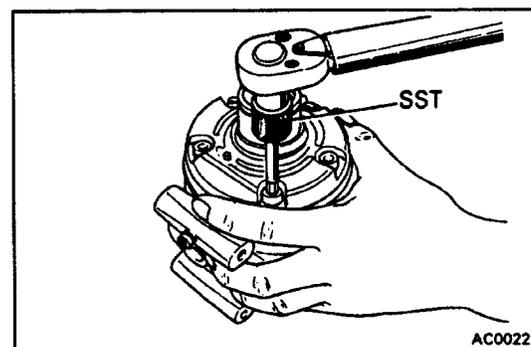
(a) Using SST, remove the bolts holding the service valve.
SST 07110-61050

(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.

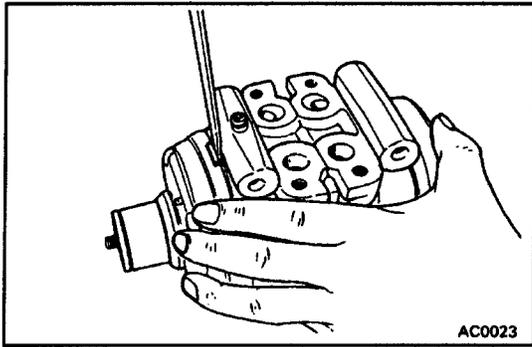


9. REMOVE FRONT HOUSING

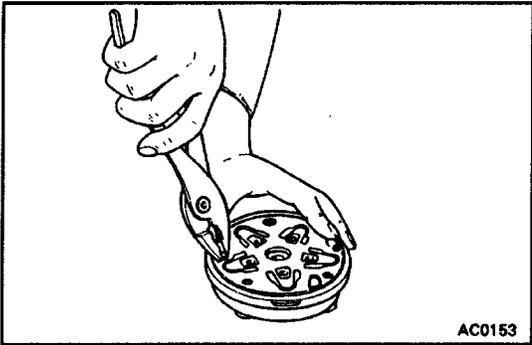
(a) Using SST, remove the five through bolts.

HINT: Do not reuse the five washers.

SST 07110-61050

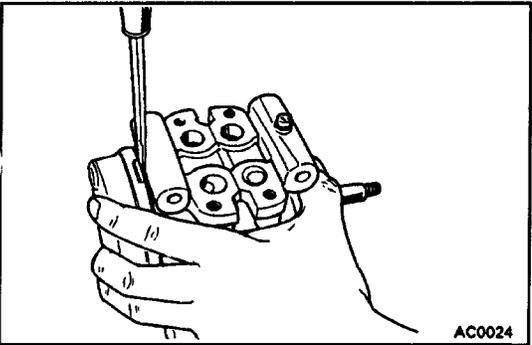


- (b) Using a screwdriver, remove the front housing.
NOTICE: Be careful not to scratch the sealing surface of the front housing.



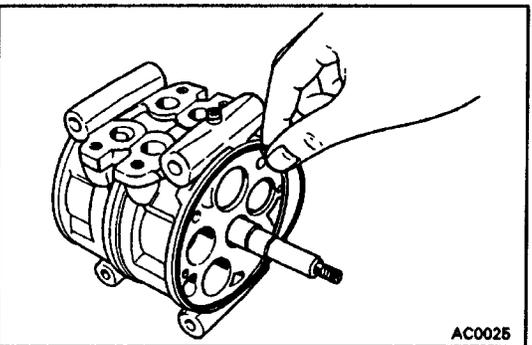
10. REMOVE FRONT VALVE PLATE

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



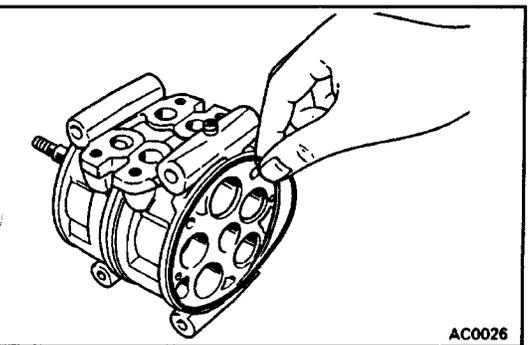
11. REMOVE REAR HOUSING

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.

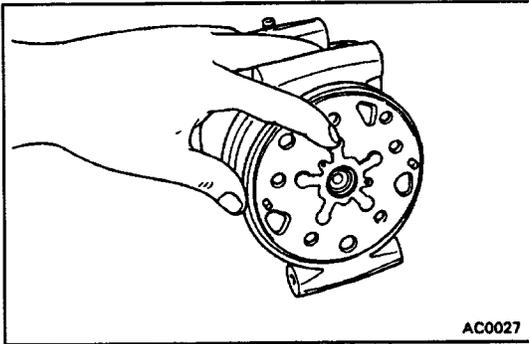


COMPRESSOR ASSEMBLY

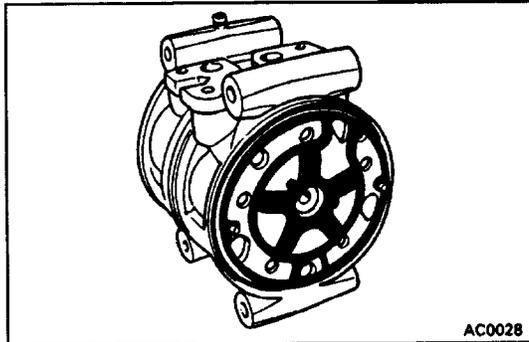
AC008-01

1. INSTALL REAR VALVE PLATE ON REAR CYLINDER

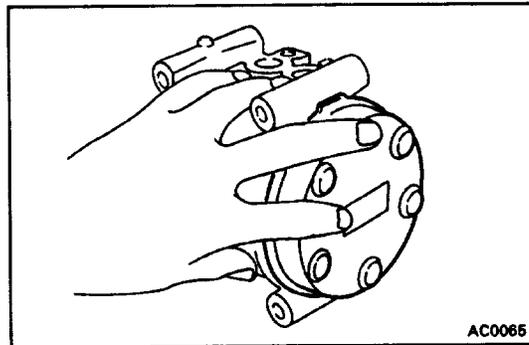
- (a) Install two pins in the rear cylinder.
 (b) Lubricate a new O-ring with compressor oil. Install the O-ring in the rear cylinder.



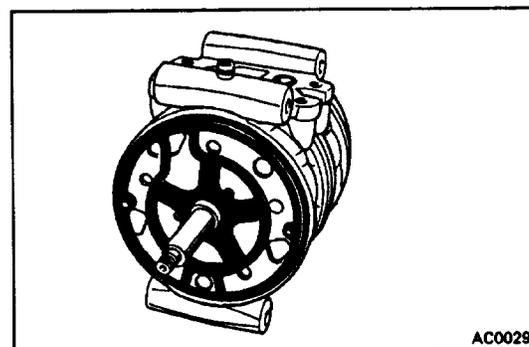
- (c) Install the rear suction valve over the pins on the rear cylinder.
HINT: The front and rear suction valves are identical.



- (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.

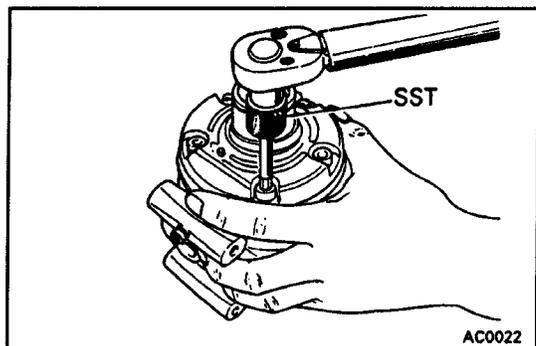


2. INSTALL REAR HOUSING ON REAR CYLINDER



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.

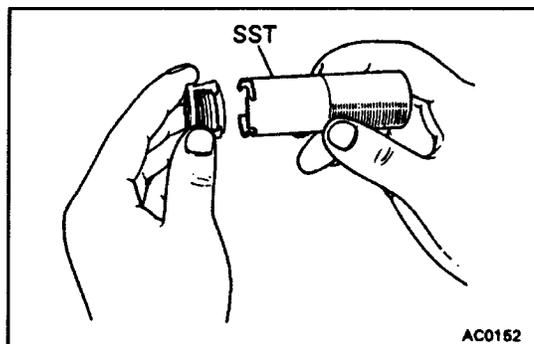


4. INSTALL FRONT HOUSING ON FRONT CYLINDER AND TIGHTEN FIVE THROUGH BOLTS

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

SST 07110-61050

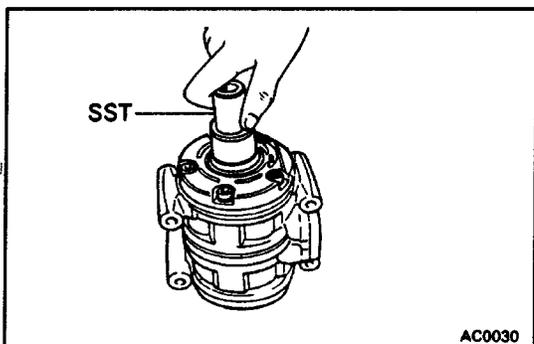
Torque: 25 N-m (260 kgf-cm, 19 ft-lbf)



5. INSTALL SHAFT SEAL

(a) Fit the shaft seal onto SST.

SST 07114-15010

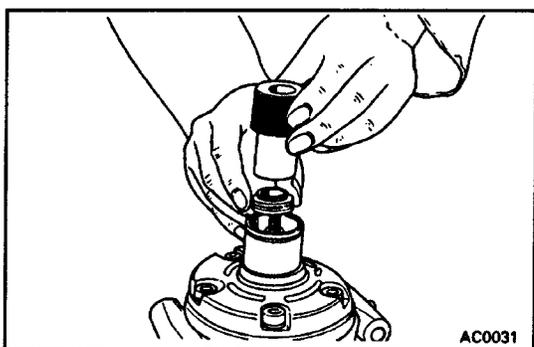


(b) Apply oil to the bore.

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

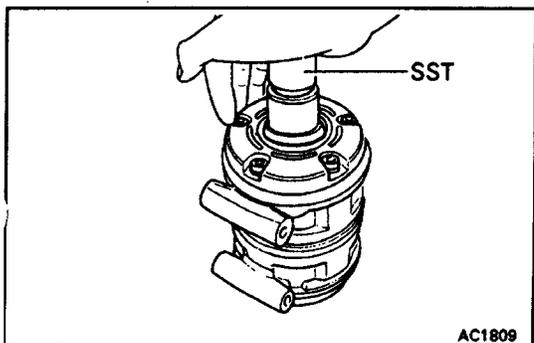
(d) Then pull up the SST.

SST 07114-15010



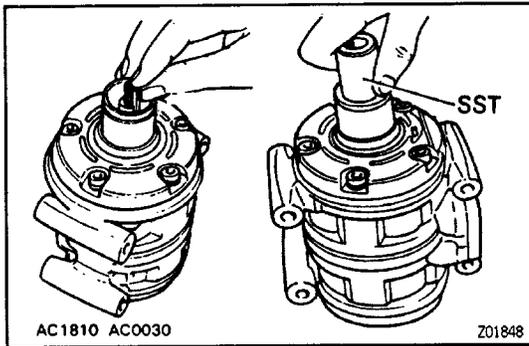
6. INSTALL SEAL PLATE

(a) Put in the seal plate.



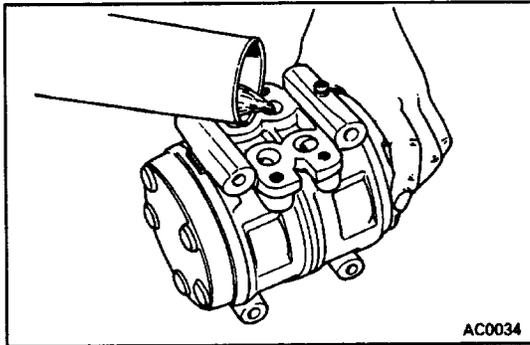
(b) Press in SST.

SST 07112-25010



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](#))

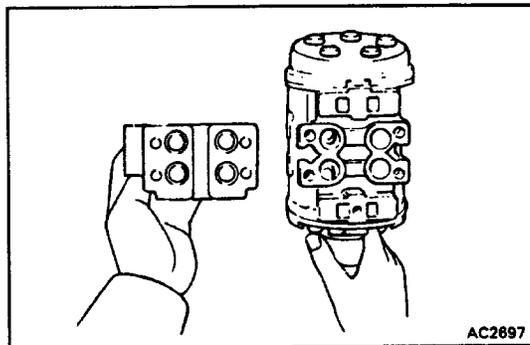


8. POUR COMPRESSOR OIL INTO COMPRESSOR

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

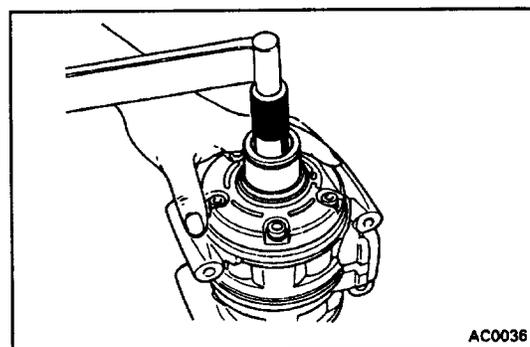
Compressor oil: .

ND OIL6, SUNISO No.5GS or equivalent



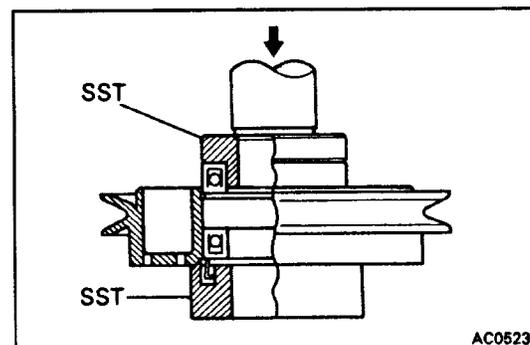
9. INSTALL SERVICE VALVE

- Lubricate new O-rings with compressor oil. Install the O-rings in the service valve.
- 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 kgf-cm, 43 in.-lbf)

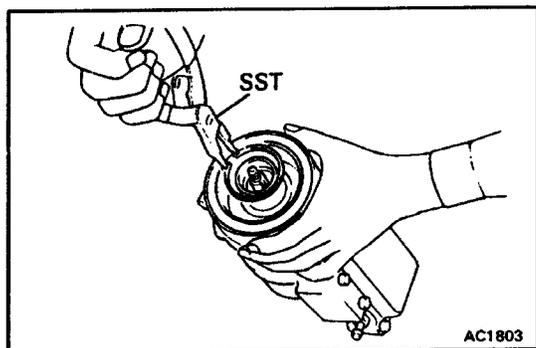


MAGNETIC CLUTCH ASSEMBLY

AC007-01

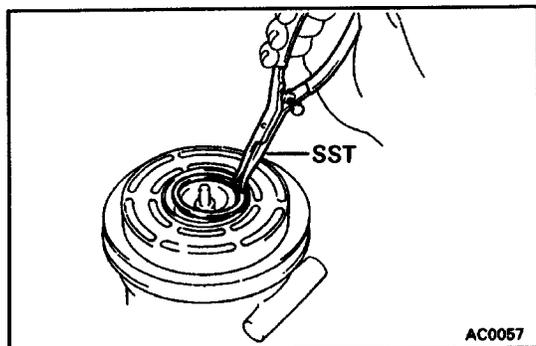
1. INSTALL TWO BEARINGS IN ROTOR

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



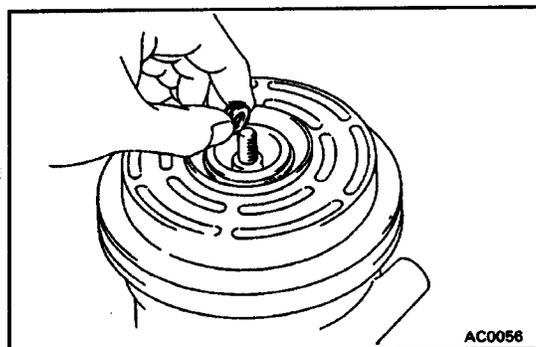
2. INSTALL STATOR

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



3. INSTALL ROTOR

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



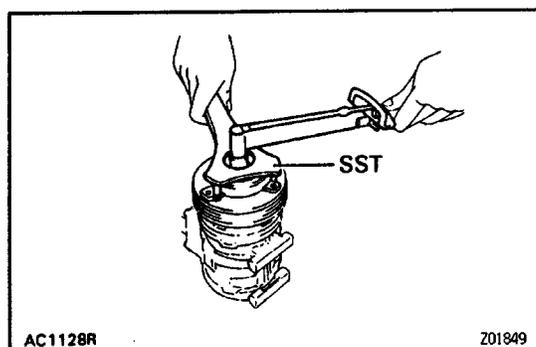
4. INSTALL PRESSURE PLATE

- (a) Adjust the clearance between the pressure plate and rotor by installing shims on the compressor shaft.

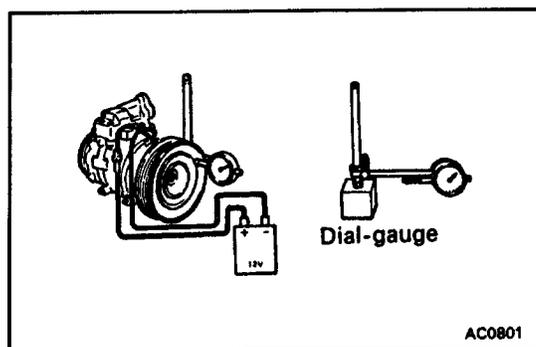
Standard clearance:

0.8±0.2mm (0.32±0.08in.)

If the clearance is not within tolerance, change the number of shims to obtain the standard clearance.



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

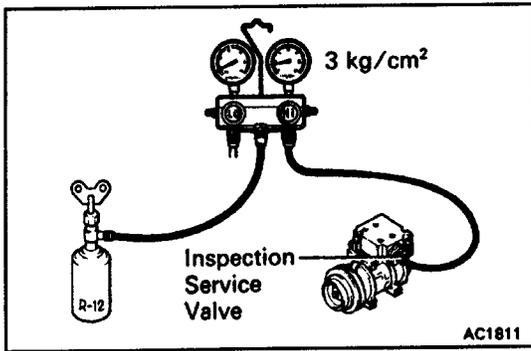


5. INSPECT CLEARANCE OF MAGNETIC CLUTCH

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

Standard clearance: **0.8 ± 0.2 mm (0.32 ± 0.08 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/cm², 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.

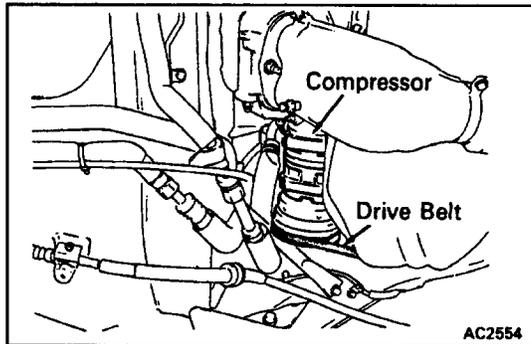
COMPRESSOR INSTALLATION

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.)