AIR CONDITIONING SYSTEM

PRECAUTIONS

1. **When handling refrigerant (R-12), the following precautions sho e observed:**
   (a) Always wear eye protection.
   (b) Keep the refrigerant container (service drum) below 40°C (104
   (c) Do not handle refrigerant in an enclosed area where there is ar n flame.
   (d) Discharge refrigerant slowly when purging the system.
   (e) Be careful that the liquid refrigerant does not get on your skin.

2. **If liquid refrigerant gets in the eyes or on the skin:**
   (a) Do not rub.
   (b) Wash the area with a lot of cool water.
   (c) Apply clean petroleum jelly to the skin.
   (d) Rush to a physician or hospital for immediate professional trea t.
   (e) Do not attempt to treat yourself.

3. **When tubing:**
   (a) Apply a few drops of compressor oil to the seats of the O-rin ngs.
   (b) Tighten the nut using two wrenches to avoid twisting the tube
   (c) Tighten the O-ring fitting to the specified torque.

Tightening torque for O-ring fittings

Fitting size	Torque
3/8 in. Tube	135 kg-cm (10 ft-lb, 13 N·m)
1/2 in. Tube	225 kg-cm (16 ft-lb, 22 N·m)
5/8 in. Tube	325 kg-cm (24 ft-lb, 32 N·m)

TROUBLESHOO NG

Problem	Possible cause		Remedy	Page
No cooling or warm air	Magnetic clutch does not engage			
	(a) A/C fuse blown	Repla	se and check for short	AC-7
	(b) Magnetic clutch faulty	Check	netic clutch	AC-15
	(c) Temperature control resistor faulty	Check	stor	AC-25
	(d) Thermistor faulty	Check	mistor	AC-26
	(e) Wiring or ground faulty	Repai	ecessary	AC-4, 5
	(f) Refrigerant empty	Check	gerant pressure	AC-8
	(g) Relay faulty	Check	y	AC-28
	(h) Pressure switch faulty	Check	pressure switch	AC-27
	Compressor does not rotate properly			
	(a) Drive belt loose or broken	Adjus	eplace drive belt	AC-17
	(b) Compressor faulty	Check	pressor	AC-15
	Expansion valve faulty	Check	ansion valve	AC-23
	Leak in system	Leak	ystem	AC-10
	Fusible plug on receiver blown or clogged screen	Check	iver	AC-20

PRECAUTIONS

1. **When handling refrigerant (R-12), the following precautions should be observed:**
   (a) Always wear eye protection.
   (b) Keep the refrigerant container (service drum) below 40°C (104°F).
   (c) Do not handle refrigerant in an enclosed area where there is an open flame.
   (d) Discharge refrigerant slowly when purging the system.
   (e) Be careful that the liquid refrigerant does not get on your skin.

2. **If liquid refrigerant gets in the eyes or on the skin:**
   (a) Do not rub.
   (b) Wash the area with a lot of cool water.
   (c) Apply clean petroleum jelly to the skin.
   (d) Rush to a physician or hospital for immediate professional treatment.
   (e) Do not attempt to treat yourself.

3. **When tubing:**
   (a) Apply a few drops of compressor oil to the seats of the O-ring fittings.
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Tightening torque for O-ring fittings

Fitting size	Torque
3/8 in. Tube	135 kg-cm (10 ft-lb, 13 N·m)
1/2 in. Tube	225 kg-cm (16 ft-lb, 22 N·m)
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TROUBLESHOOTING

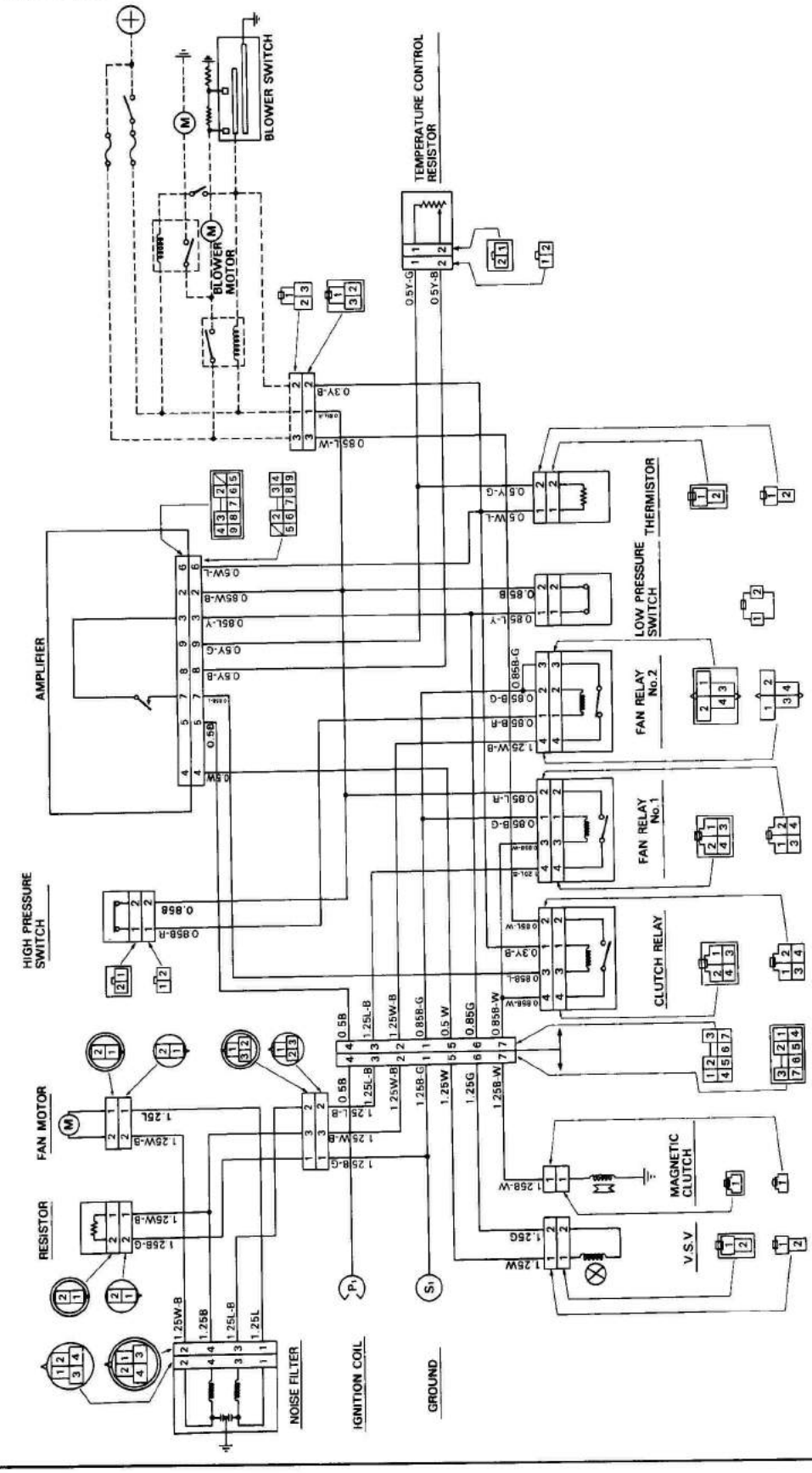
Problem	Possible cause	Remedy	Page
No cooling or warm air	Magnetic clutch does not engage		
	(a) A/C fuse blown	Replace fuse and check for short	AC-7
	(b) Magnetic clutch faulty	Check magnetic clutch	AC-15
	(c) Temperature control resistor faulty	Check resistor	AC-25
	(d) Thermistor faulty	Check thermistor	AC-26
	(e) Wiring or ground faulty	Repair as necessary	AC-4, 5
	(f) Refrigerant empty	Check refrigerant pressure	AC-8
	(g) Relay faulty	Check relay	AC-28
	(h) Pressure switch faulty	Check low pressure switch	AC-27
	Compressor does not rotate properly		
	(a) Drive belt loose or broken	Adjust or replace drive belt	AC-17
	(b) Compressor faulty	Check compressor	AC-15
	Expansion valve faulty	Check expansion valve	AC-23
	Leak in system	Leak test system	AC-10
	Fusible plug on receiver blown or clogged screen	Check receiver	AC-20

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
No cooling or warm air (Cont'd)	Blower does not operate		
	(a) Heater fuse blown	Replace fuse and check for short	AC-4, 5
	(b) Temperature control resistor faulty	Check resistor	AC-25
	(c) Clutch relay faulty	Check clutch relay	AC-29
	(d) Blower motor faulty	Check blower motor	
	(e) Wiring faulty	Repair as necessary	AC-4, 5
Cool air comes out intermittently	Magnetic clutch slipping	Check magnetic clutch	AC-15
	Expansion valve faulty	Check expansion valve	AC-23
	Wiring connection faulty	Repair as necessary	AC-4, 5
	Excessive moisture in the system	Evacuate and charge system	AC-9
Limited amount of cool air at high speed	Thermistor faulty	Check thermistor	AC-26
Cool air comes out only at high speed	Condenser clogged	Check condenser	AC-19
	Drive belt slipping	Check or replace drive belt	AC-17
	Compressor faulty	Check compressor	AV-15
	Insufficient or too much refrigerant	Check refrigerant charge	AC-8
	Air in system	Evacuate and charge system	AC-9
Insufficient cooling	Condenser clogged	Check condenser	AC-19
	Drive belt slipping	Check or replace drive belt	AC-17
	Magnetic clutch faulty	Check magnetic clutch	AC-15
	Compressor faulty	Check compressor	AC-15
	Expansion valve faulty	Check expansion valve	AC-23
	Thermistor faulty	Check thermistor	AC-26
	Insufficient or too much refrigerant	Check refrigerant charge	AC-8
	Air or excessive compressor oil in system	Evacuate and charge system	AC-9
	Receiver clogged	Check receiver	AC-20
	Temperature control resistor faulty	Check resistor	AC-25
Insufficient velocity of cool air	Evaporator clogged or frosted	Clean evaporator fins or filters	AC-23
	Air leakage from cooling unit or air duct	Repair as necessary	AC-21
	Air inlet blocked	Repair as necessary	
	Blower motor faulty	Replace blower motor	

AIR CONDITIONING SYSTEM CIRCUIT

YU, RU series



WIRE COLOR

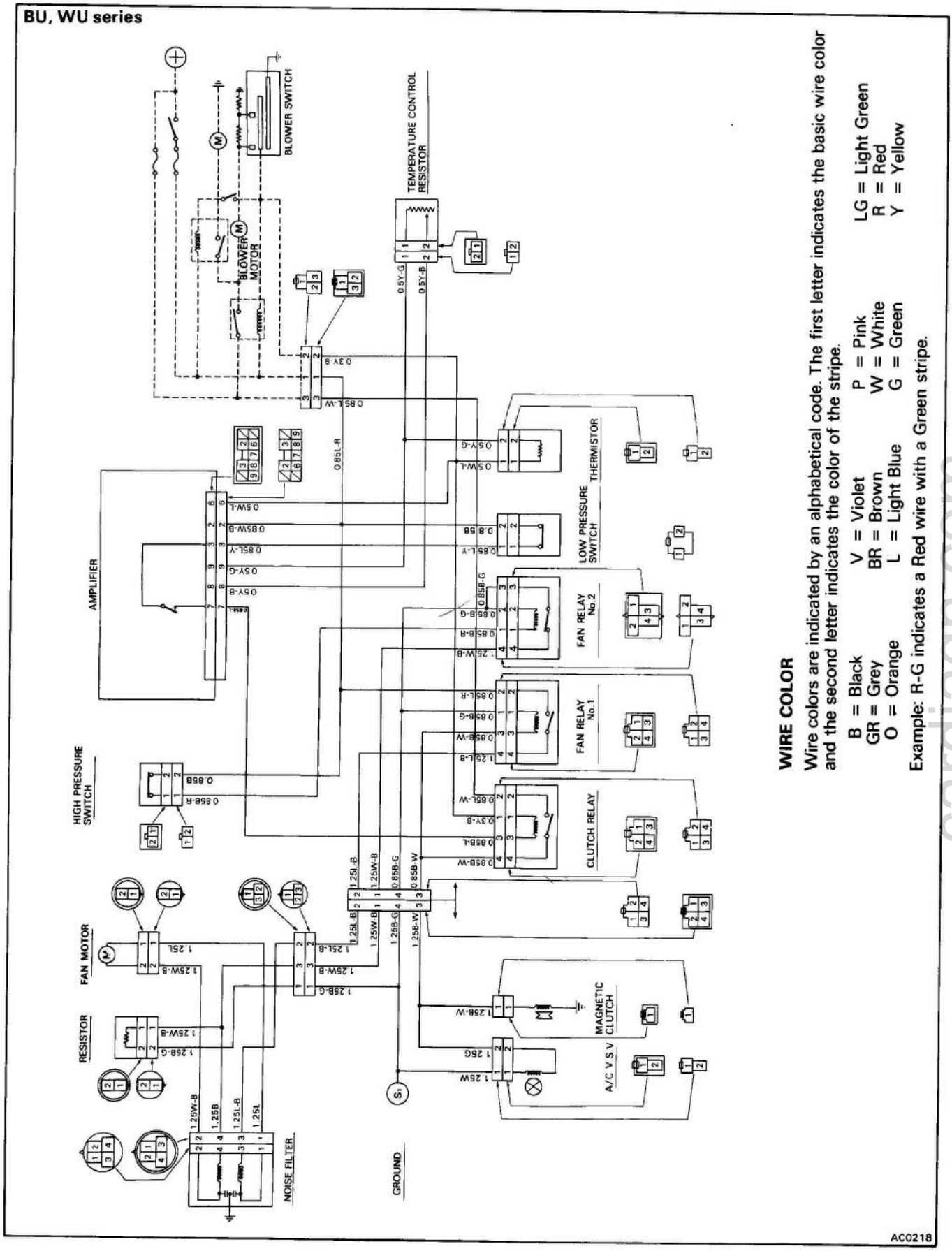
Wire colors are indicated by an alphabetical code. The first letter indicates the basic wire color and the second letter indicates the color of the stripe.

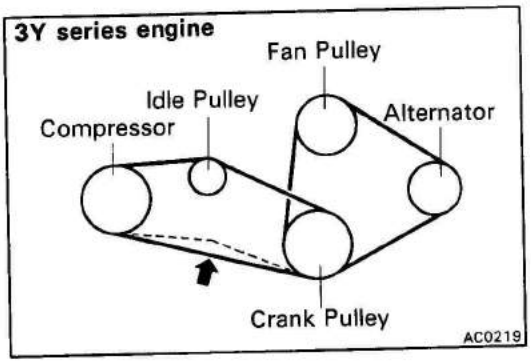
B = Black	V = Violet	P = Pink	LG = Light Green
GR = Grey	BR = Brown	W = White	R = Red
O = Orange	L = Light Blue	G = Green	Y = Yellow

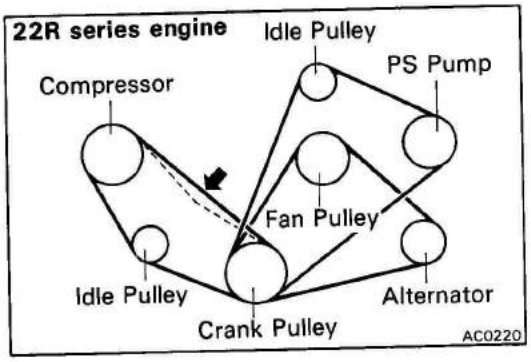
Example: R-G indicates a Red wire with a Green stripe.

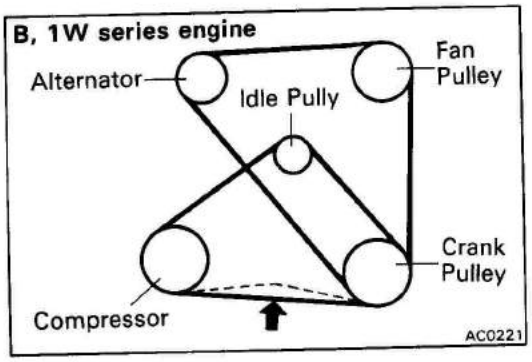
AIR CONDITIONING SYSTEM CIRCUIT (Cont'd)

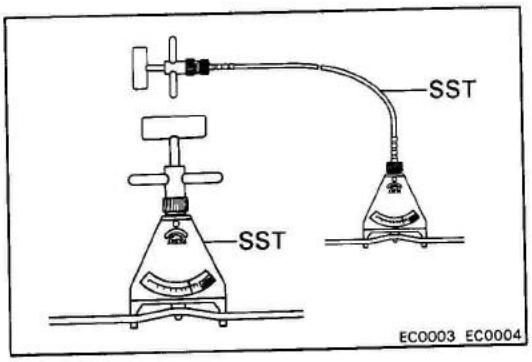
BU, WU series











ON-VEHICLE INSPECTION

1. **CHECK CONDENSER FINS FOR BLOCKAGE OR DAMAGE**

If the fins are clogged, clean them with pressurized water.

CAUTION: Be careful no to damage the fins.

2. **CHECK DRIVE BELT TENSION**

Drive belt tension at 10 kg (22.0 lb, 98 N):

mm (in.)

Engine	New belt	Used belt
3Y	7 – 9 (0.28 – 0.35)	9 – 13 (0.35 – 0.51)
22R	13 – 17 (0.51 – 0.67)	17 – 23 (0.67 – 0.91)
B, 11B, 13B	9 – 12 (0.35 – 0.47)	12 – 16 (0.47 – 0.63)
1W	8 – 10 (0.31 – 0.39)	10 – 14 (0.39 – 0.55)

NOTE:
- "New belt" refers to a brand new belt which has never before been used.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.

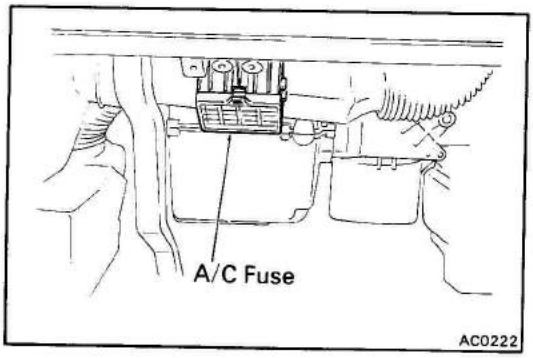
(Reference)

Using SST, check the drive belt tension.

SST 09216-00020 and 09216-00030

Drive belt tension:
New belt 50 ± 5 kg
Used belt 30 ± 5 kg

NOTE:
- "New belt" refers to a brand new belt which has never before been used.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.



3. START ENGINE

4. POSITION THE TEMPERATURE CONTROL RESISTOR ON "MAX COOL"

Check that the A/C operates at each position of the blower switch.

If A/C dose not operate, check A/C fuse.

5. CHECK MAGNETIC CLUTCH OPERATION

6. CHECK THAT IDLE INCREASES

When the magnetic clutch engages, engine revolution should increase.

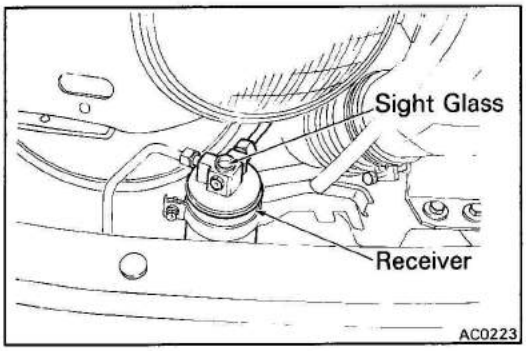
Standard idle up rpm: 900 – 1,000 rpm

7. CHECK AMOUNT OF REFRIGERANT

If you can see bubbles in the sight glass, additional refrigerant is needed. (See page AC-8)

8. IF NO OR INSUFFICIENT COOLING, INSPECT FOR LEAKAGE

Using a gas leak tester, inspect each component of the refrigeration system. (See page AC-9)



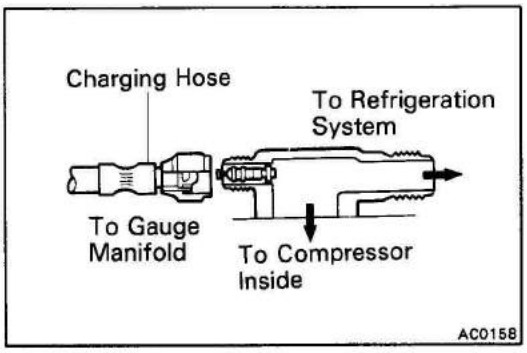
REFRIGERATION SYSTEM

Checking of Refrigerant Charge

1. **RUN ENGINE AT FAST IDLE**
2. **OPERATE AIR CONDITIONER AT MAXIMUM COOLING FOR A FEW MINUTES**
3. **CHECK AMOUNT OF REFRIGERANT**

   Observe the sight glass on the receiver.

Item	Symptom	Amount of refrigerant	Remedy
1	Bubbles present in sight glass	Insufficient	Check for leak with gas leak tester
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	Evacuate and charge system. Then check for leak with gas leak tester
4	Temperature between compressor inlet and outlet is noticeably different	Proper or too much	Refer to items 5 and 6
5	Immediately after the air conditioner is turned off, refrigerant in sight glass stays clear	Too much	Discharge the excess refrigerant to specified amount
6	When the air conditioner is turned off, refrigerant foams and then stays clear	Proper	—



Installation of Manifold Gauge Set

NOTE: Fittings for attaching the manifold gauge set are located on the compressor service valves.

1. **CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET**
2. **INSTALL CHARGING HOSES OF GAUGE SET TO SERVICE VALVES**

   Connect the low pressure hose to the suction service valve and the high pressure hose to the discharge service valve. Tighten the hose nuts by hand.

   NOTE: Do not apply compressor oil to the seat of the connection.

Discharging of Refrigeration System

1. **CONNECT MANIFOLD GAUGE SET TO COMPRESSOR**

2. **PLACE FREE END OF CENTER HOSE IN A SHOP TOWEL**

3. **DISCHARGE SYSTEM**

   (a) Slowly open the high pressure hand valve to adjust the refrigerant flow. Do not open the valve very much.

   CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.

   (b) Check the shop towel to make sure no oil is being discharged.

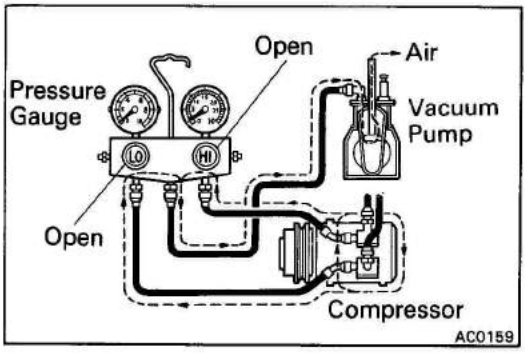
   If oil is present, partially close the hand valve.

   (c) After the manifold gauge reading drops below 3.5 kg/cm² (50 psi, 343 kPa), slowly open the low pressure valve.

   (d) As the system pressure drops, gradually open both high and low valves until both gauges read 0 kg/cm² (0 psi, 0 kPa).

Evacuating and Charging of Refrigeration System

NOTE:
- Whenever the air conditioning system has been exposed to the atmosphere, it must be evacuated.
- After installation of a component, the system should be evacuated for approximately 15 minutes. A component in service that has been opened for repair should be evacuated for 30 minutes.



1. **EVACUATE SYSTEM**

   (a) Connect the manifold gauge set. (See page AC-8)

   (b) Install the center hose of the gauge set to the vacuum pump inlet.

   (c) Run the vacuum pump, and then open both hand valves.

   (d) After about ten minutes, check that the low pressure gauge reads more than 600 mmHg (23.62 in. Hg, 80.0 kPa) of vacuum.

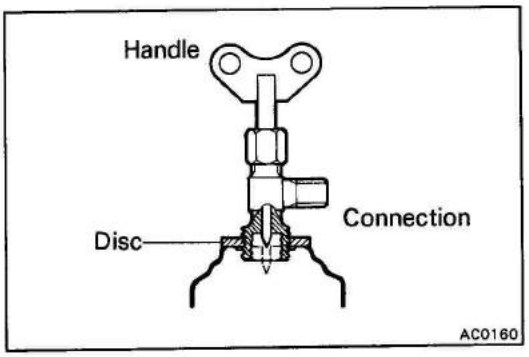
   If the reading is not more than 600 mmHg (23.62 in. Hg, 80.0 kPa), close both valves and stop the vacuum pump. Check the system for leaks and repair as necessary.

   If no leaks are found, continue evacuating the system.

   (e) After the low pressure gauge indicates more than 700 mmHg (27.56 in. Hg, 93.3 kPa) of vacuum, continue evacuating for 15 minutes.

   (f) Close both hand valves, and stop the vacuum pump. Disconnect the hose from the vacuum pump.

   The system is now ready for charging.



2. INSTALL REFRIGERANT CONTAINER TAP VALVE

CAUTION: Observe the precautions listed in the front of this section.

(a) Before installing the valve on the refrigerant container, turn the handle counterclockwise until the valve needle is fully retracted.

(b) Turn the disc counterclockwise until it reaches its highest position.

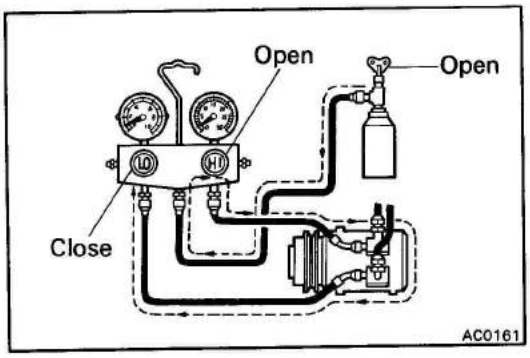
Screw down the valve on the refrigerant container.

(c) Connect the center hose to the valve fitting. Turn the disc fully clockwise by hand.

(d) Turn the handle clockwise to make a hole in the sealed tap.

(e) Turn the handle fully counterclockwise to fill the center hose with gas. Do not open the high and low pressure valves.

(f) Loosen the center hose nut connected to the center fitting of the manifold gauge until a hiss can be heard.
Allow air to escape for a few seconds, and then tighten the nut.



3. TEST SYSTEM FOR LEAKS

NOTE: After finishing the evacuation of the system, check the system for leaks.

(a) Install the refrigerant can tap valve as described in step 2.

(b) Open the high pressure valve to charge the system with refrigerant vapor.

(c) When the low pressure gauge reads 1 kg/cm² (14 psi, 98 kPa) close the high pressure valve.

(d) Using a halide gas leak detector, propane torch, or electric leak detector, check the system for leaks.

If a leak is found, repair the faulty component or connection.

(e) After checking and repairing the system, perform the following:

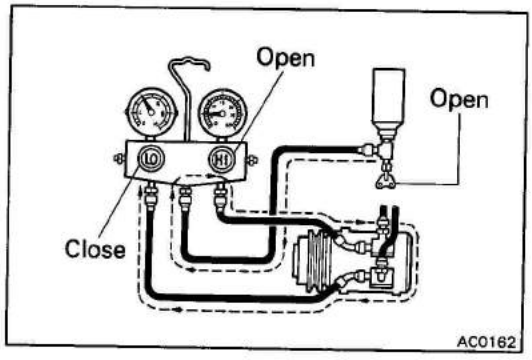
- Turn the container tap handle fully clockwise.
- Disconnect the center hose from the can valve fitting.
- Evacuate the system for at least 15 minutes. (See step 1 on page AC-9)

4. CHARGE EMPTY SYSTEM (LIQUID)

NOTE: This step is to charge and empty system through the high pressure side with refrigerant in a liquid state. When the refrigerant container is held upside down, refrigerant will enter the system as a liquid.

CAUTION:

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



(a) Close both high and low pressure valves completely after the system is evacuated.

(b) Install the refrigerant can tap valve as described in step 2.

(c) Open the high pressure valve fully, and keep the container upside down.

(d) Charge the system with more than one container (400 g, 0.9 lb) to the specified amount. Then, close the high pressure valve.

Specified amount: 650 – 750 g (1.4 – 1.7 lb)

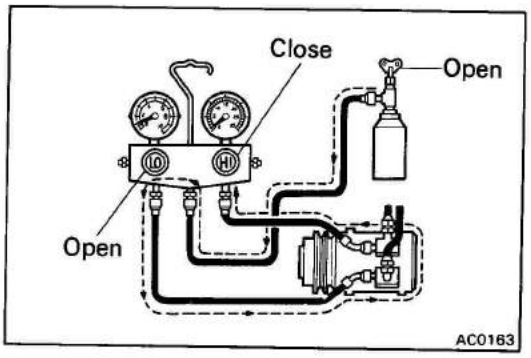
NOTE:

- A fully charged system is indicated by the receiver 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.

5. (VAPOR)
CHARGE EMPTY OR PARTIALLY CHARGED SYSTEM

NOTE:

- This step is to charge the system through the low pressure side with refrigerant in a vapor state. When the refrigerant container is placed rightside up, refrigerant will enter the system as a vapor.
- Put the refrigerant container in a pan of warm water (maximum temperature 40°C (104°F) to keep vapor pressure in the container slightly higher than vapor pressure in the system.



(a) Install the refrigerant can tap valve as described in step 2.

(b) Open the low pressure valve. Adjust the valve so that the low pressure gauge does not read over 4.2 kg/cm² (60 psi, 412 kPa).

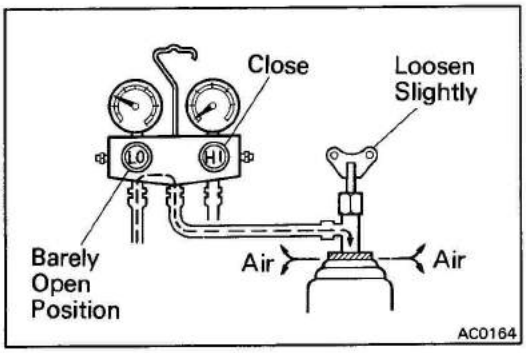
(c) Run the engine at fast idle, and operate the air conditioner.

CAUTION: Be sure to keep the container upright to prevent liquid refrigerant being charged into the system through the suction side, resulting in possible damage to the compressor.

(d) Charge the system with more than one container (400 g, 0.9 lb) to the specified amount. Then, close the low pressure valve.

Specified amount: 650 – 750 g (1.4 – 1.7 lb)

NOTE: A fully charged system is indicated by the receiver sightglass being free of any bubbles.



6. **IF NECESSARY, CHARGE SYSTEM WITH ANOTHER CONTAINER**
   (a) When the refrigerant container is empty, close the pressure valves.
   (b) Remove the can tap valve from the container.
   (c) Attach the can tap valve to a new refrigerant container.
   (d) Purge the air from the center hose by barely opening the low pressure valve and loosening the valve disc.
   (e) Make a hole in the sealed tap of the new container and charge the system.

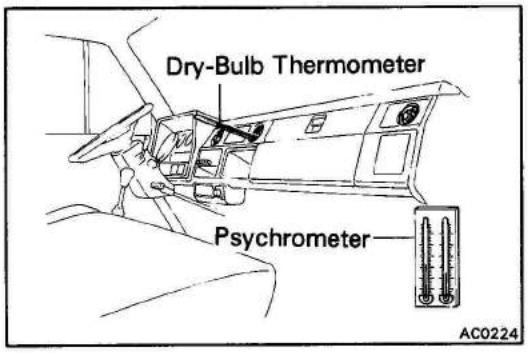
   CAUTION: Be careful not to overcharge the refrigerant as it could cause failure of the bearings and belt.

7. **WHEN SYSTEM IS FULLY CHARGED, DISCONNECT MANIFOLD GAUGE SET**
   (a) Close both low and high pressure valves.
   (b) Close valve of the refrigerant container. If using one-pound containters of R-12, allow remaining refrigerant to escape by slowly removing the charge line.
   (c) Turn off the engine.
   (d) Using a shop rag, quickly remove both hoses from the compressor service valves.

   WARNING: Care must be taken to protect eyes and skin when removing the high pressure hoses.
   (e) Put the cap nuts on the service valve fittings.

Performance Test

1. **INSTALL MANIFOLD GAUGE SET**
   (a) Close the high pressure and low pressure hand valves.
   (b) Connect the high pressure hose to the discharge service valve of the compressor.
   (c) Connect the low pressure hose to the suction service valve of the compressor.



2. **RUN ENGINE AND OPERATE AIR CONDITIONER**
   (a) Run the engine at 2,000 rpm.
   (b) Set the blower switch at HI, A/C switch ON temperature control at COOL, and air flow control at VENT.
   (c) Keep all windows and doors open.

3. **POSITION THERMOMETERS**
   (a) Place a dry-bulb thermometer in the cool air outlet.
   (b) Place a psychrometer close to the inlet of the cooling unit.

4. WAIT UNTIL AIR CONDITIONING SYSTEM STABILIZES

(a) Check that the reading on the high pressure gauge is 14.0 – 15.5 kg/cm² (199 – 220 psi, 1,373 – 1,520 kPa).

If the reading is too high, pour water on the condenser. If the reading is too low, cover the front of the condenser.

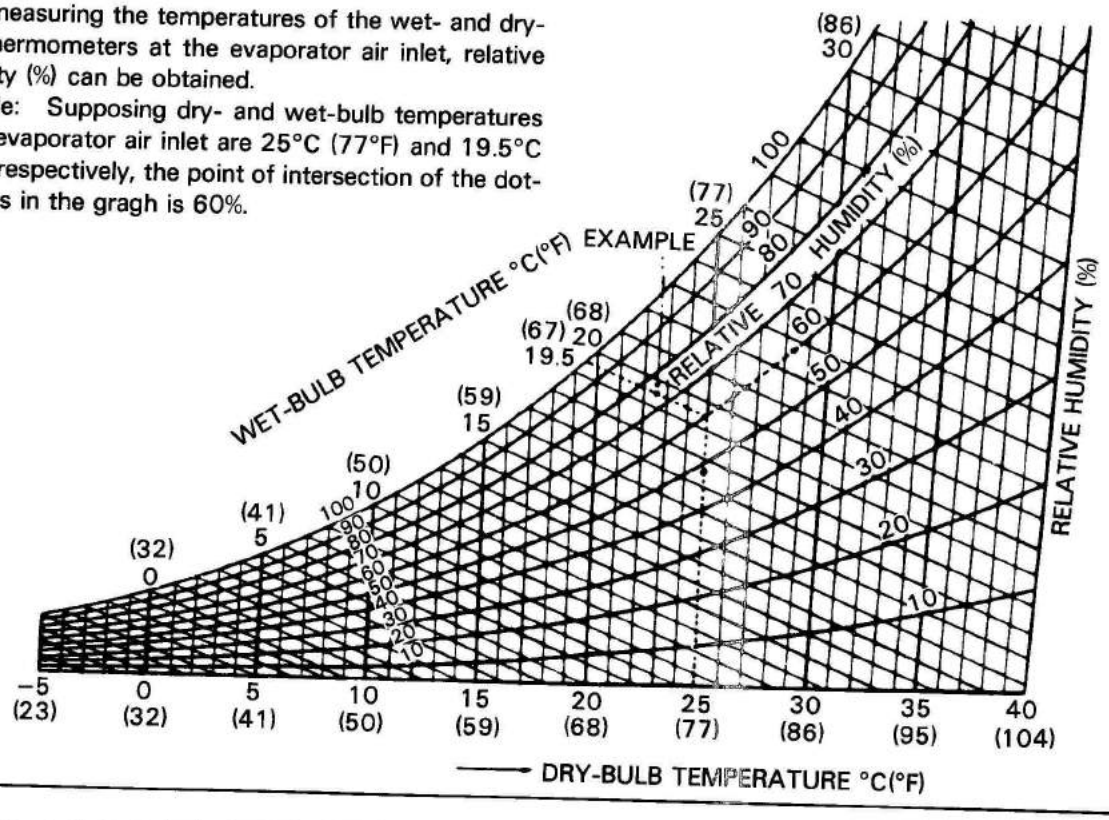
(b) Check that the reading on the dry-bulb thermometer at the air inlet is 25 – 35 °C (77 – 95 °F).

5. CHECK PERFORMANCE OF AIR CONDITIONING SYSTEM

(a) Calculate the relative humidity from the psychrometric graph by comparing the wet- and dry-bulb readings of the psychrometer at the air inlet.

HOW TO READ THE GRAPH:

After measuring the temperatures of the wet- and dry-bulb thermometers at the evaporator air inlet, relative humidity (%) can be obtained.
Example: Supposing dry- and wet-bulb temperatures at the evaporator air inlet are 25°C (77°F) and 19.5°C (67°F) respectively, the point of intersection of the dotted lines in the gragh is 60%.



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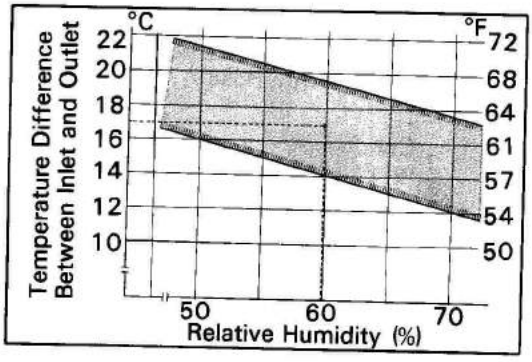
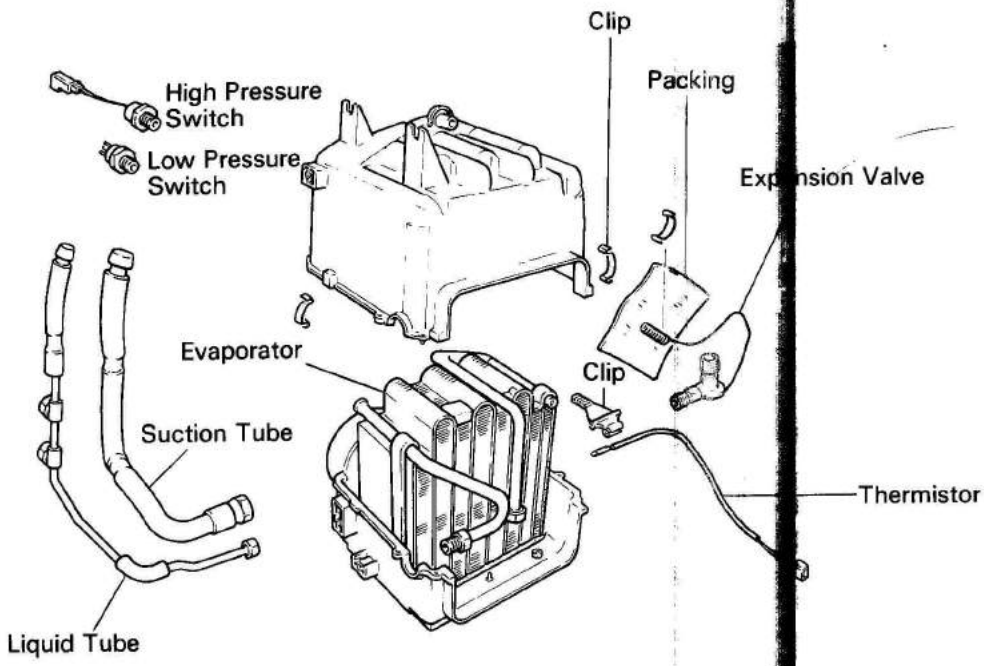


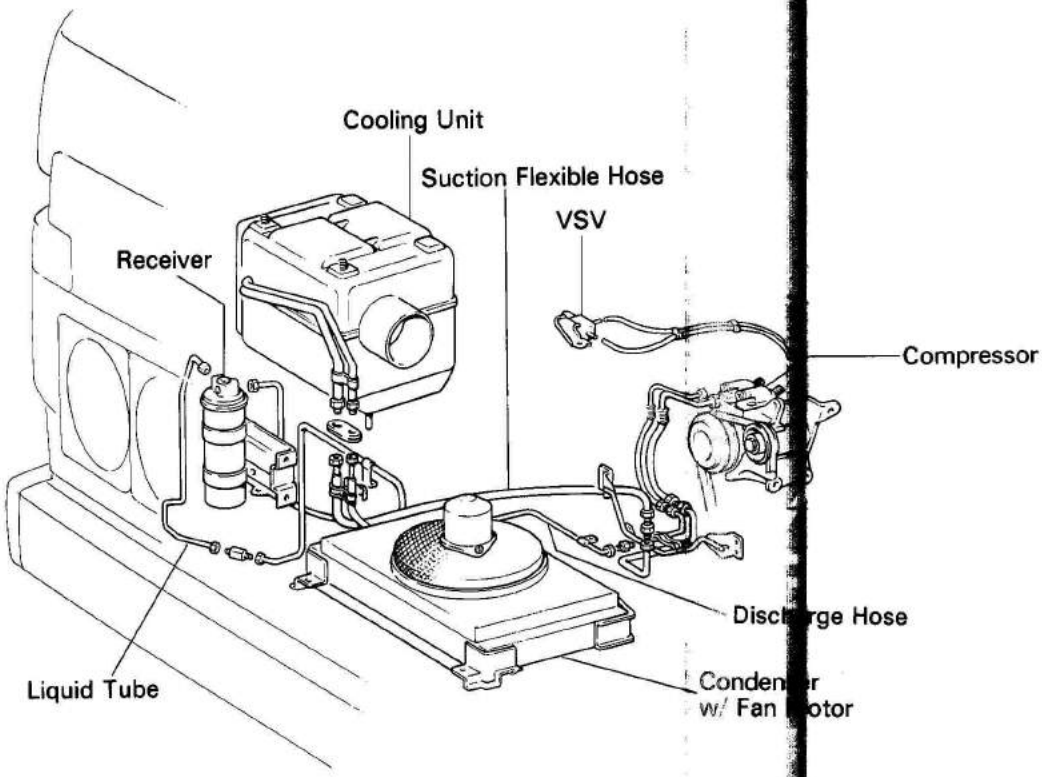
(b) Measure the dry-bulb temperature at the cool air outlet, and calculate the difference between the inlet dry-bulb and outlet dry-bulb temperatures.

(c) Check that the intersection of the relative humidity and temperature difference is between the two hatched lines.

If the intersection is within the two lines, cooling performance is satisfactory.

SYSTEM COMPONENTS





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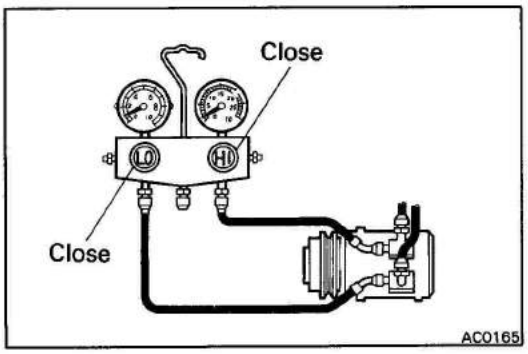


COMPRESSOR

ON-VEHICLE INSPEC ION

1. INSTALL MANIFOLD UGE SET

(a) Close the high pr ure and low pressure valves.

(b) Connect the high ssure hose to the discharge service valve of the npressor.

(c) Connect the low p ssure hose to the suction service valve of the com ssor.

2. RUN ENGINE AT FAS IDLE

3. CHECK COMPRESSO OR FOLLOWING:

(a) High pressure g e reading is not low and low pressure gauge r ing is not higher than normal.

(b) Metallic sound

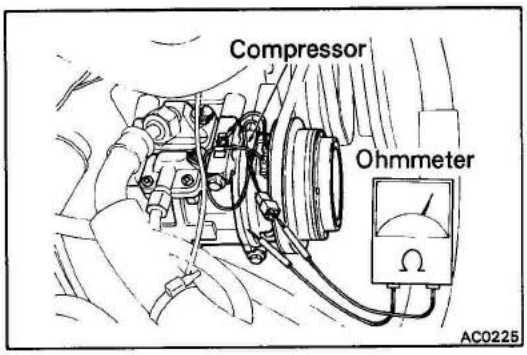
(c) Leakage from sh seal

If defects are found, r ir the compressor.

4. CHECK MAGNETIC C JTCH

(a) Inspect the press plate and the rotor for signs of oil.

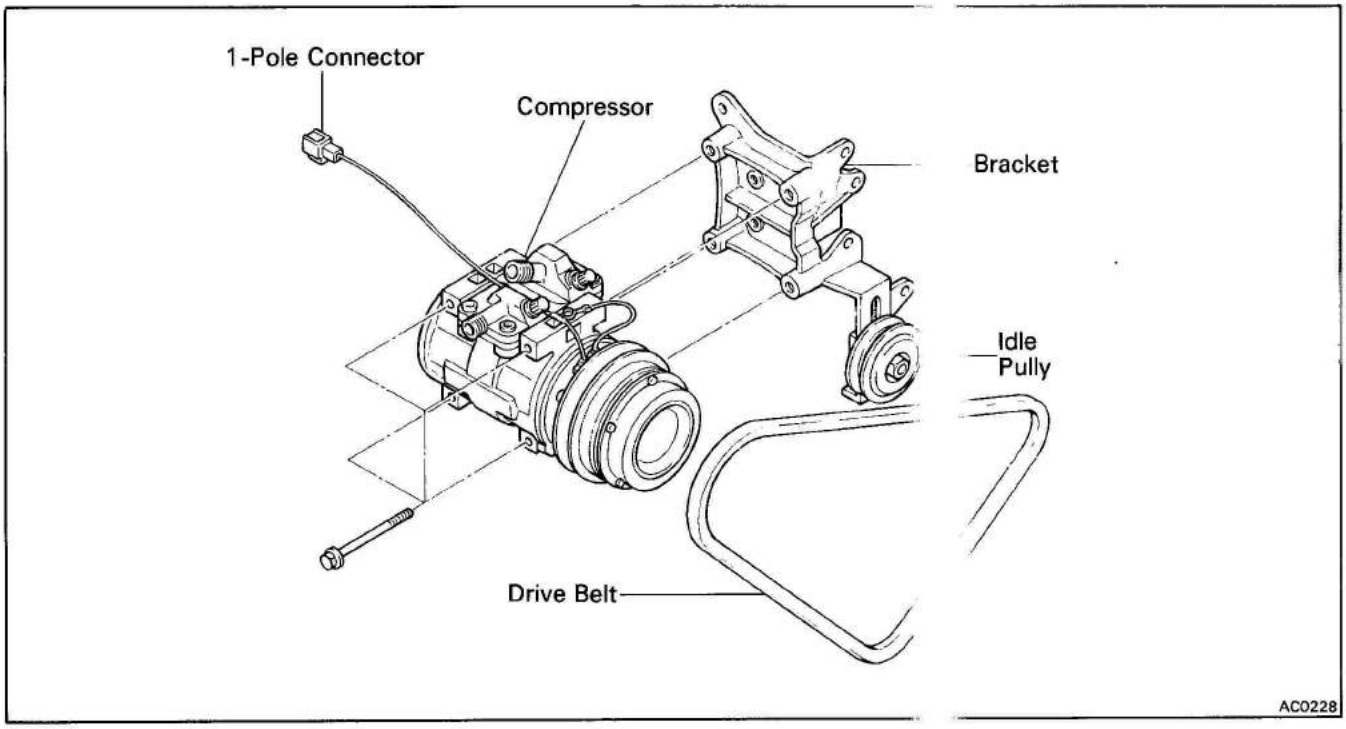
(b) Check the clutc bearings for noise and grease leakage.



(c) Using an ohmme , measure the resistance of the stator coil betwe the clutch lead wire and ground.

If the resistance is no thin tolerance, replace the coil.

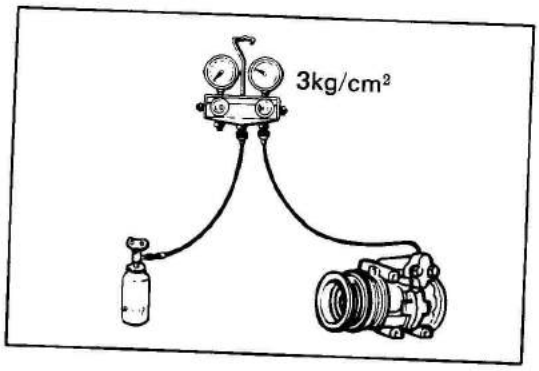
Standard resistance: t 20°C (68°F)
3.6 ± 0.2 Ω



REMOVAL OF COMP ESSOR

1. **RUN ENGINE AT IDLE OR 10 MINUTES WITH AIR CONDITIONING ON**
2. **DISCONNECT NEGAT E CABLE FROM BATTERY**
3. **DISCONNECT CLUTCH EAD WIRE FROM WIRING HARNESS**
4. **DISCHARGE REFRIGE NT FROM REFRIGERATION SYS M (See page AC-8)**
5. **DISCONNECT TWO F IBLE HOSES FROM COMPRESSOR SERVI VALVES**

   Cap the open fitting im diately to keep moisture out of the system.
6. **REMOVE COMPRESS**
   (a) Loosen the drive b
   (b) Remove the com ssor mounting bolts and the compressor.



INSTALLATIO OF COMPRESSOR

(See page AC-16)

1. **PERFORM GA EAKAGE TEST**
   (a) Put caps oth service valves.
   (b) Charge th ompressor with refrigerant through the charge va until the pressure is 3 kg/cm² (43 psi, 294 kPa).
   (c) Using gas k detector, check the compressor for leaks.

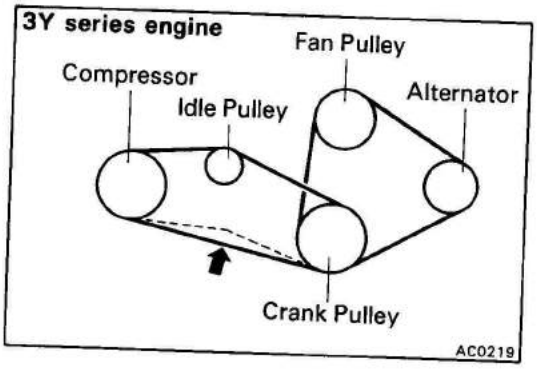
   If leaks are foun check and replace the gasket, O-ring, or shaft seal.

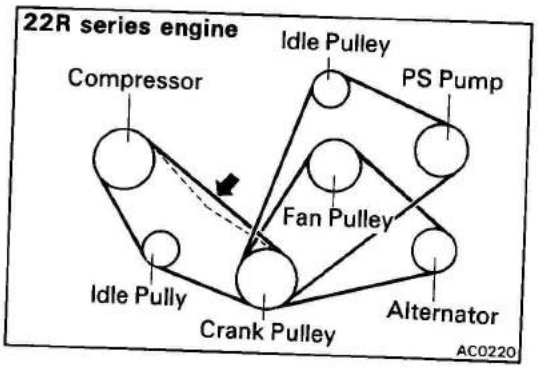
2. **FILL COMPRES R WITH CLEAN COMPRESSOR OIL**

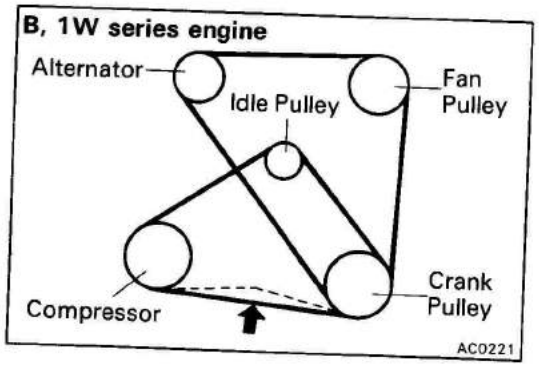
   Remove the ser valve and drain the compressor oil. Fill with new oil.

   Compressor oil ENSOOIL 6, SUNISO No. 5GS or equivalent

   Compressor oil pacity: 60 – 100 cc (2.0 – 3.4 oz)







3. **INSTALL COMP SSOR WITH FOUR MOUNTING BOLTS**

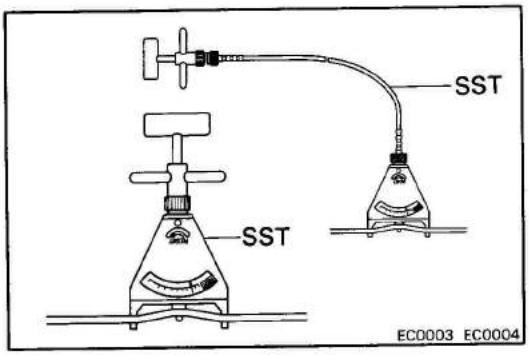
4. **INSTALL DRIVE LT**
   (a) Install the d belt to the pulley.
   (b) Tighten the t with the adjusting bolts.

   Drive belt tensi t 10 kg (22.0 lb, 98N):

mm (in.)

Engine		ew belt	Used belt
3Y	7 –	(0.28 – 0.35)	9 – 13 (0.35 – 0.51)
22R	13 –	(0.51 – 0.67)	17 – 23 (0.67 – 0.91)
B, 11B, 13B	9 –	(0.35 – 0.47)	12 – 16 (0.47 – 0.63)
1W	8 –	(0.31 – 0.39)	10 – 14 (0.39 – 0.55)

NOTE:
- "New belt" refe o a brand new belt which has never before been use
- "Used belt" ref to a belt which has been used on a running engine 5 minutes or more.



(Reference)

Using SST, check the e belt tension.

SST 09216-00020 a 9216-00030

Drive belt tension:

New belt 50 ± 5

Used belt 30 ± 4

NOTE:

- "New belt" refers t brand new belt which has never before been used.
- "Used belt" refers belt which has been used on a running engine for nutes or more.

5. **CONNECT TWO FLE LE HOSES TO COMPRESSOR SERVICE VALVES**

   Torque:

   Discharge line 5 kg-cm (16 ft-lb, 22 N·m)

   Suction line 5 kg-cm (24 ft-lb, 32 N·m)

6. **CONNECT CLUTCH D WIRE TO WIRING HARNESS**

7. **CONNECT NEGATIV ABLE TO BATTERY**

8. **EVACUATE AND CH GE REFRIGERATION SYSTEM**
   (See page AC-9)

CONDENSER

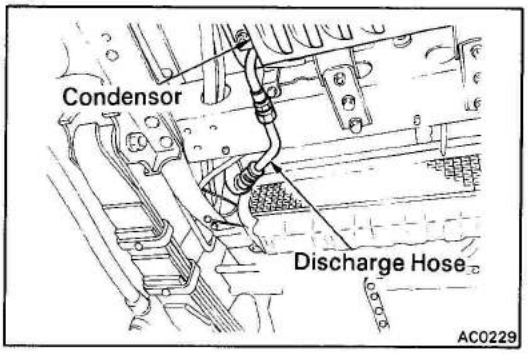
ON-VEHICLE INS CTION

1. **CHECK CONDEN R FINS FOR BLOCKAGE OR DAMAGE**

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

   CAUTION: Be c ul not to damage the fins.

   If the fins are ben raighten them with a screwdriver or pliers.



2. **CHECK CONDEN FITTINGS FOR LEAKAGE**

   Repair as necessa

REMOVAL OF CO DENSER

(See page AC-14)

1. **DISCHARGE REF ERATION SYSTEM**
   (See page AC-9)

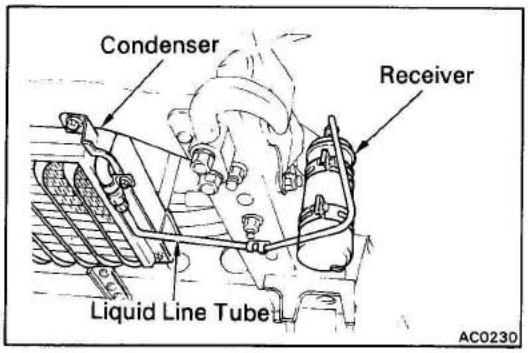
2. **DISCONNECT DIS ARGE HOSE FROM CONDENSER INLET FITTING**

3. **DISCONNECT LIC D LINE TUBE FROM CONDENSER OUTLET FITTING**

   NOTE: Cap the en fittings immediately to keep moisture out of the stem.

4. **REMOVE CONDE ER**

   Remove the six bc

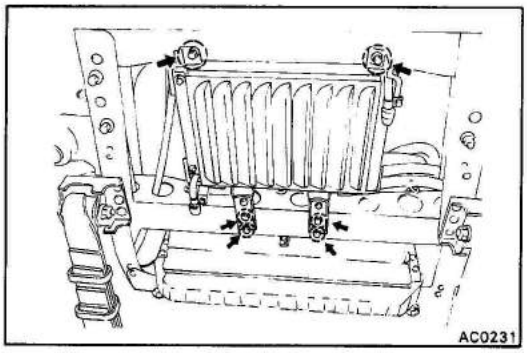


INSTALLATION O CONDENSER

(See page AC-14)

1. **INSTALL CONDE ER**

   Install the six bolts



2. **CONNECT LIQUID NE TUBE AND DISCHARGE HOSE TO CONDE ER**

   Torque:

Liquid line tu	**135 kg-cm (10 ft-lb, 13 N·m)**
Discharge ho	**225 kg-cm (16 ft-lb, 22 N·m)**

3. **IF CONDENSER IS PLACED, ADD COMPRESSOR OIL TO COMPRES R**

   Add 25 — 30 cc (— 1.0 oz)

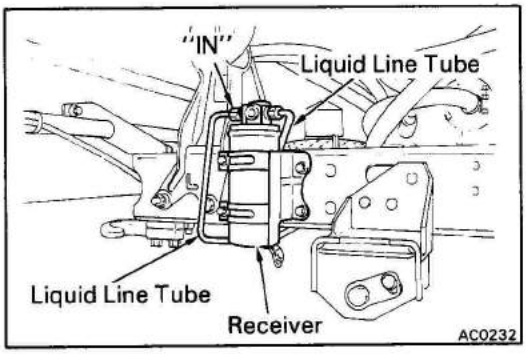
4. **EVACUATE, CHA AND TEST REFRIGERATION SYSTEM (See pag C-9)**

RECEIVER

ON-VEHICLE INSPEC ON

CHECK SIGHT GLASS, FU LE PLUG AND FITTINGS FOR LEAKAGE

Use a gas leak tester. air as necessary.



REMOVAL OF RECE ER

(See page AC-14)

1. **DISCHARGE REFRIGE TION SYSTEM**
   (See page AC-9)
2. **DISCONNECT TWO L UID LINE TUBES FROM RECEIVER**
   NOTE: Cap the op fittings immediately to keep moisture out of the sy m.
3. **REMOVE RECEIVER M RECEIVER HOLDER**

INSTALLATION OF R CEIVER

(See page AC-14)

1. **INSTALL RECEIVER RECEIVER HOLDER**
   NOTE: Do not remov e blind plugs until ready for connection.
2. **CONNECT TWO LIQU LINE TUBES TO RECEIVER**
   Torque: 135 kg-cm ft-lb, 13 N·m)
3. **IF RECEIVER WAS RE ACED, ADD COMPRESSOR OIL TO COMPRESSO**
   Add 20 cc (0.7 oz)
4. **EVACUATE, CHARGE ND TEST REFRIGERATION SYSTEM (See page A 9)**

COOLING UNI

ON-VEHICLE INSP CTION OF EXPANSION VALVE

1. CONNECT MANIF D GAUGE TO COMPRESSOR

2. CHECK EXPANSIC VALVE OPERATION

   (a) Run the engin : fast idle with the air conditioning on.

   (b) Check that th v pressure reading is between 0.5 – 5.0 kg/cm² – 71 psi, 49 – 490 kPa).

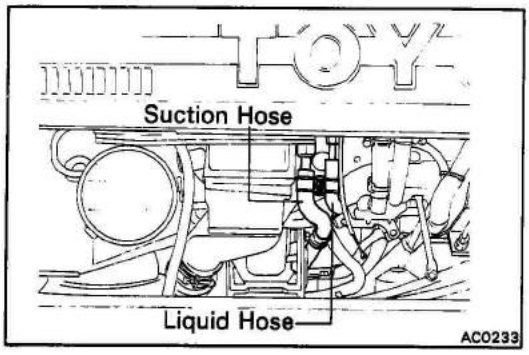
   If the reading is too , check and replace the expansion valve and/or receiv

   If the reading is too h, tighten the remote bulb holders and/or replace the ansion valve.

REMOVAL OF CO ING UNIT

1. DISCONNECT NE IVE CABLE FROM BATTERY

2. DISCHARGE REFR ERATION SYSTEM (See page AC-9)



3. DISCONNECT SUC ON HOSE FROM COOLING UNIT OUTLET FITTING

4. DISCONNECT LIQ D LINE HOSE FROM COOLING UNIT INLET FITTI

   NOTE: Cap the n fittings immediately to keep moisture out of the stem.

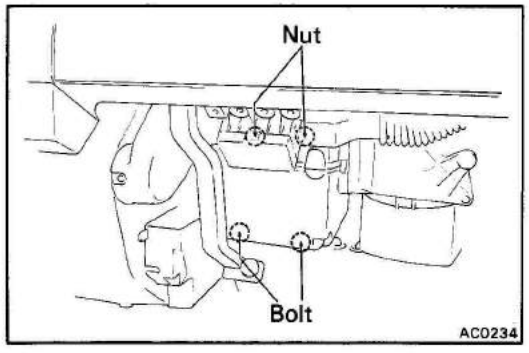
5. REMOVE GROMM S FROM INLET AND OUTLET FITTINGS

6. REMOVE FOLLOV G COMPONENTS:

   (a) Under tray
   (b) Glove box

7. DISCONNECT FOL WING CONNECTORS:

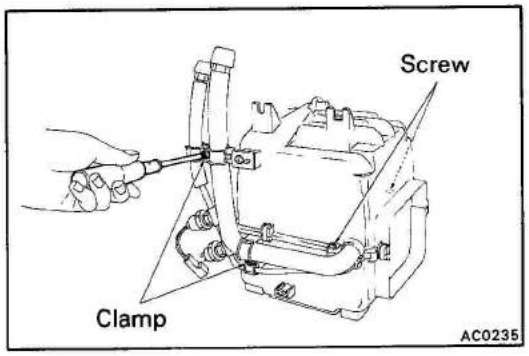
   (a) Connectors fo essure switch
   (b) Connector for rmistor
   (c) Connector for perature control resistor
   (d) Connectors fo lays and amplifire
   (e) Connector con cted to vehicle wire harness



8. REMOVE COOLIN NIT

   Remove the two nu and two bolts.

9. REMOVE A/C WIR HARNESS AND RELAYS FROM COOLING UNIT

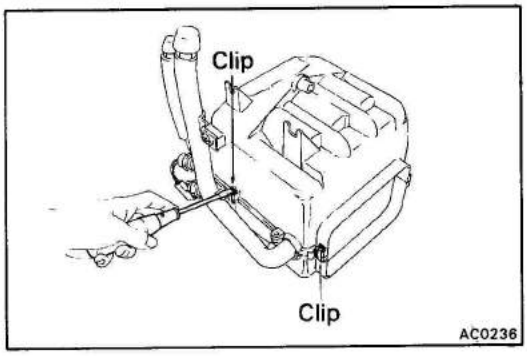


DISASSEMBLY OF C OLING UNIT

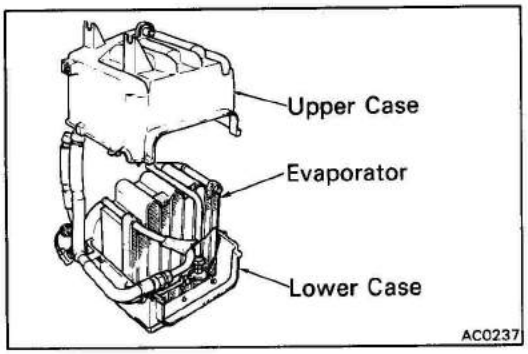
(See page AC-14)

1. REMOVE UPPER AN OWER CASES FROM EVAPORATOR

(a) Remove the clam and two screws.



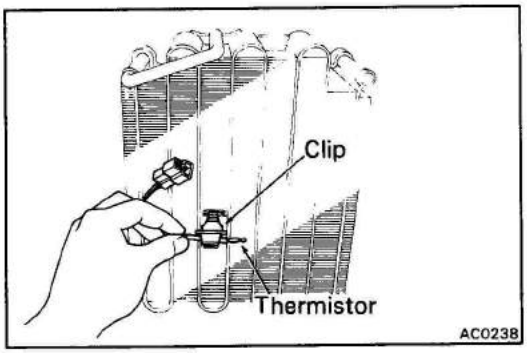
(b) Remove six clips



(c) Remove upper an ower cases from the evaporator.

2. REMOVE THERMIST

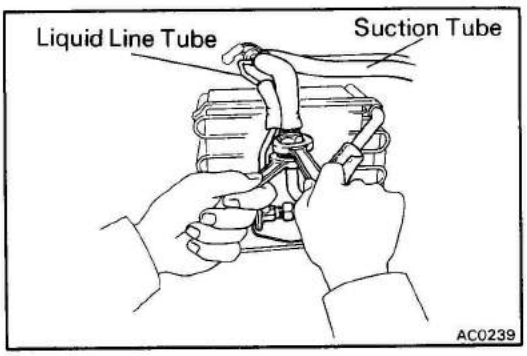
Pull out the clip with t rmistor from the evaporator.

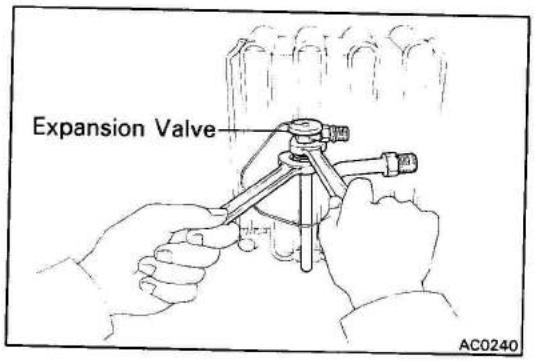


3. REMOVE COMPONE S FROM EVAPORATOR

(a) Disconnect the s ion tube from the evaporator.

(b) Disconnect the liq line tube from the inlet fitting of the expansion va .





(c) Disconnect t expansion valve from the inlet fitting of the evapo or.

(d) Remove the p ssure switch, if necessary.

Evaporator

INSPECTION OF E APORATOR

1. **CHECK EVAPOR/ R FINS FOR BLOCKAGE**

If the fins are clog l, clean them with compressed air.

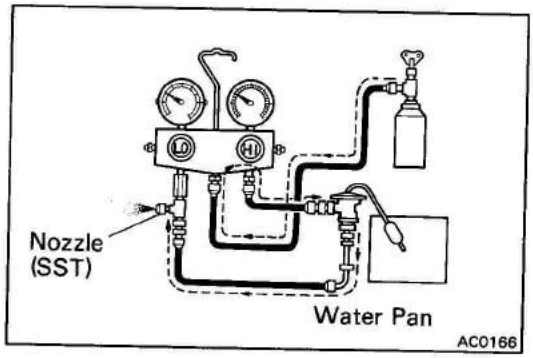
CAUTION: Neve se water to clean the evaporator.

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

Repair as necessar

Expansion Va e

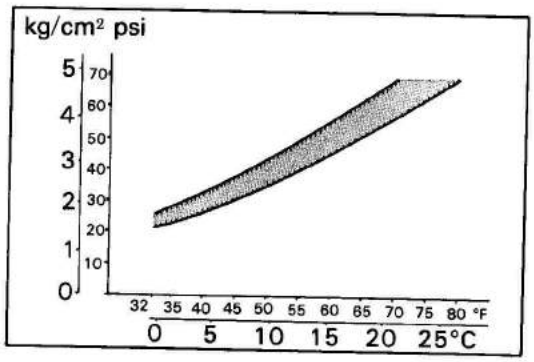
INSPECTION OF E PANSION VALVE



1. **CONNECT MANIF D GAUGE**

Connect the manif gauge set to the expansion valve, testing nozzle (SST nd refrigerant container as shown.

SST 07115-7101C



2. **CHECK EXPANSIC VALVE**

(a) Close both ma old gauge hand valves.

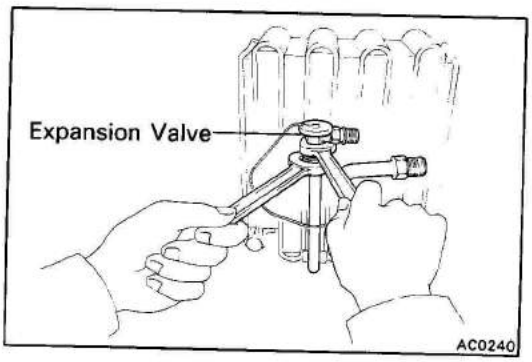
(b) Pierce the refr rant container to release the pressure.

(c) Open the high essure hand valve and adjust the high side pres e to approximately 5 kg/cm² (71 psi, 490 kPa).

(d) Dip the heat se ng tube of the expansion valve in a pan of water. W ile varying the temperature of the water, read the v pressure gauge and, at the same time, measure temperature of the water with a thermometer.

(e) Compare the tw readings on the chart.

If the intersection is n between the two lines, replace the expansion valve.



ASSEMBLY OF CO LING UNIT

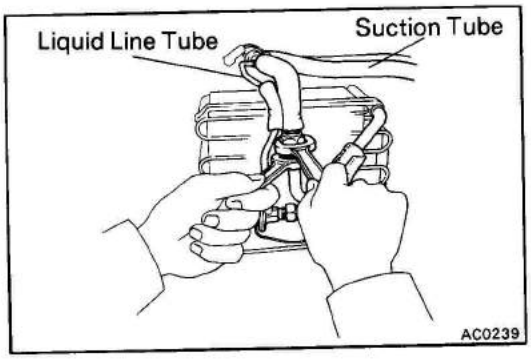
(See page AC-14)

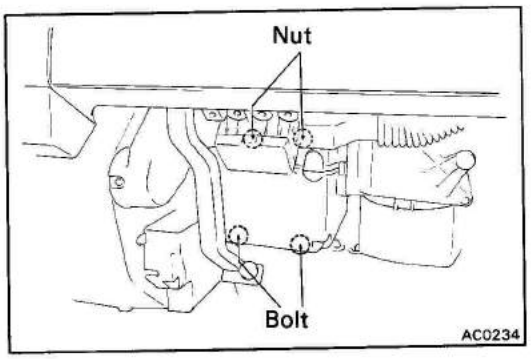
1. **INSTALL COMPON TS ON EVAPORATOR**

(a) Connect the exp sion valve to the inlet fitting of the evaporator. Tor the nut.

Torque: 235 kg-cm 17 ft-lb, 23 N·m)

NOTE: Be sure that e O-ring is positioned on the tube fitting.





(b) Connect the liquid tube to the inlet fitting of the expansion valve. Tc ue the nut.

Torque: 135 kg-cm (1 ft-lb, 13 N·m)

(c) Connect the suctic ube to the inlet fitting of the evaporator. Torque nut.

Torque: 235 kg-cm (1 ft-lb, 23 N·m)

(d) Install the pressure itch, if removed.

Torque: 135 kg-cm (ft-lb, 13 N·m)

(e) Using the clip, inst the heat sensing tube.

(f) Install the packing.

2. INSTALL THERMISTO N EVAPORATOR

3. INSTALL UPPER AND WER CASES ON EVAPORATOR

INSTALLATION OF C LING UNIT

1. INSTALL A/C WIRE H NESS AND RELAYS TO COOLING UNIT

2. INSTALL COOLING U

Install the cooling unit w the two nuts and the two bolts.

CAUTION: Be careful ot to pinch the wire harness while installing the co ng unit.

3. CONNECT FOLLOWIN CONNECTORS:

(a) Connectors for pr ure switch

(b) Connector for the stor

(c) Connector for tem rature control resistor

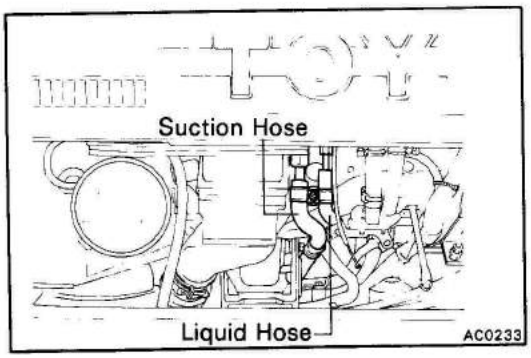
(d) Connectors for re and amplifire

(e) Connector connec to vehicle wire harness

4. INSTALL FOLLOWIN OMPONENTS:

(a) Glove box

(b) Under tray



5. INSTALL GROMMETS N INLET AND OUTLET FITTINGS

6. CONNECT LIQUID LI TUBE TO COOLING UNIT INLET FITTINGS

Torque: 135 kg-cm (ft-lb, 13 N·m)

7. CONNECT SUCTION SE TO COOLING UNIT OUTLET FITTING

Torque: 325 kg-cm (ft-lb, 32 N·m)

8. IF EVAPORATOR WA REPLACED, ADD COMPRESSOR OIL T COMPRESSOR

Add 40 – 50 cc (1.4 1.7 oz)

9. CONNECT NEGATIVE ABLE TO BATTERY

10. EVACUATE, CHARGE ND TEST REFRIGERATION SYSTEM (See page A 9)

REFRIGERANT INES

ON-VEHICLE INSP CTION

1. **INSPECT HOSES A D TUBES FOR LEAKAGE**
   Use a gas leak teste Replace, if necessary.
2. **CHECK THAT HOS AND TUBE CLAMPS ARE NOT LOOSE**
   Tighten or replace, necessary.

REPLACEMENT O REFRIGERANT LINES

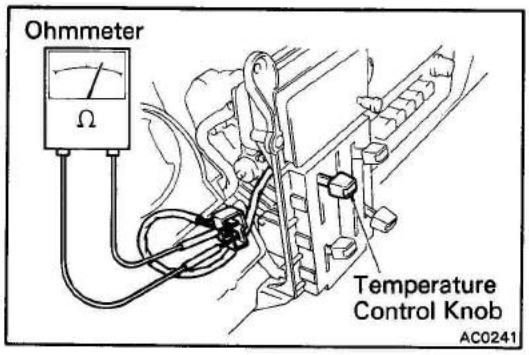
(See page AC-14)

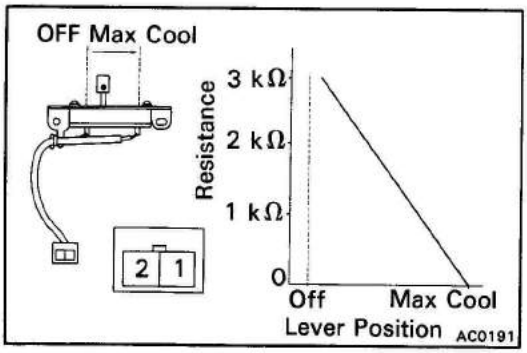
1. **DISCHARGE REFRI RATION SYSTEM**
   (See page AC-9)
2. **REPLACE FAULTY BE OR HOSE**
   NOTE: Cap the n fittings immediately to keep moisture out of the stem.

   Tightening t ues for O-ring fittings

Fitting size		Torque
3/8 in. tube for liquid lin		135 kg-cm (10 ft-lb, 13 N·m)
1/2 in. tube for discharge	ıe	225 kg-cm (16 ft-lb, 22 N·m)
5/8 in. tube for suction li		325 kg-cm (24 ft-lb, 32 N·m)

3. **EVACUATE CHARG AND TEST REFRIGERATION SYSTEM (See page C-9)**

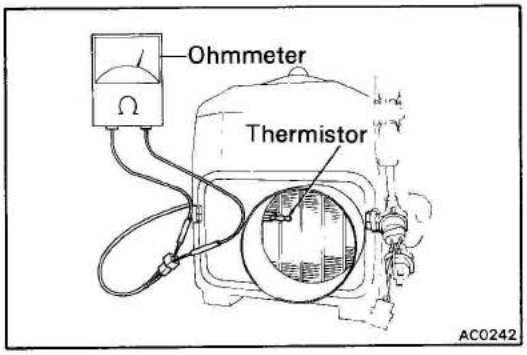


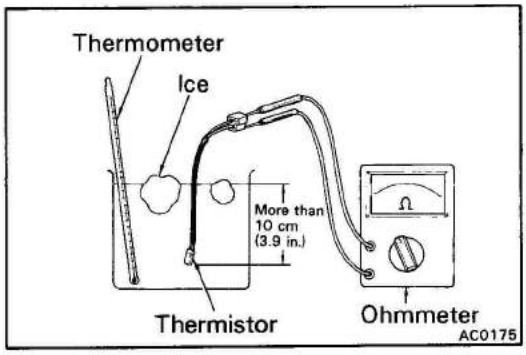


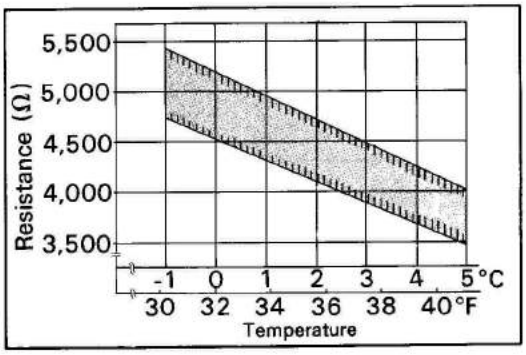
TEMPERATUR CONTROL RESISTOR

ON-VEHICLE INSP TION

1. **DISCONNECT NEG IVE CABLE FROM BATTERY**
2. **REMOVE METER C STER**
3. **DISCONNECT TEM RATURE CONTROL RESISTOR CONNECTOR**
4. **CHECK TEMPERAT E CONTROL RESISTOR**
   Using an ohmmeter, easure the resistance between the terminal 1 and 2.
   If defective, replace temperature control resistor.
5. **CONNECT TEMPER URE CONTROL RESISTOR CONNECTOR**
6. **INSTALL METER C STER**
7. **CONNECT NEGATI CABLE TO BATTERY**







THERMISTOR

(See page AC-14)

REMOVAL AND INSP CTION OF THERMISTOR

1. DISCONNECT NEGAT CABLE FROM BATTERY
2. REMOVE UNDER TRA
3. CHECK THERMISTOR STALLED OPERATION

   Using an ohmmeter, m ure the resistance at the connector.

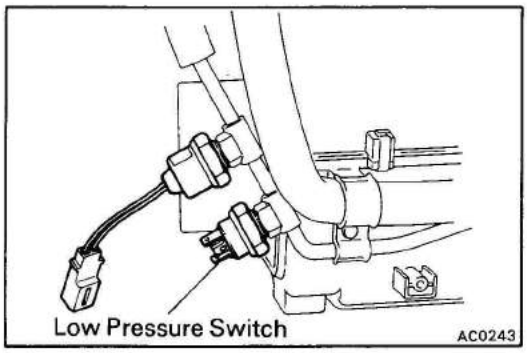
   Resistance: 1,500 Ω 25°C (77°F)

4. REMOVE THERMISTO
   (a) Disconnect the co ctor.
   (b) Remove the clip a hermistor from the evaporator.
5. CHECK THERMISTOR ERATION
   (a) Place the thermist n cold water. While varying the temperature of th ater, measure the resistance at the connector and t the same time, measure the temperature of th ater with a thermometer.
   (b) Compare the two dings on the chart.

   If the intersection is not tween the two lines, replace the thermistor.

INSTALLATION OF T ERMISTOR

1. INSTALL THERMISTO
   (a) Install thermistor n the clip.
   (b) Connect the conn or.
2. INSTALL COOLING U
3. INSTALL UNDER TRA
4. CONNECT NEGATIVE BLE TO BATTERY



LOW PRESS RE SWITCH

(See page AC-14)

INSPECTION OF OW PRESSURE SWITCH

1. **CHECK REFRIG ANT PRESSURE**

   (a) Connect the ses of the manifold gauge set to the compressor rvice valves and observe the gauge reading.

   (b) The gauge ding must be more than 2.7 kg/cm² (38 psi, 26 Pa) when the ambient temperature is higher than (41°F).

   If the pressure is s than 2.7 kg/cm² (38 psi, 265 kPa), charge the refrig nt. (See page AC-9)

2. **CHECK LOW PR SURE SWITCH**

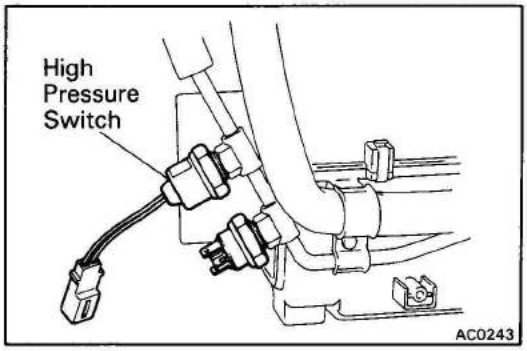
   (a) Remove the der tray.

   (b) Disconnect lead wire of the A/C wire harness.

   (c) Using an o meter, check the continuity between the two ter als of the low pressure switch. The ohmme must indicate zero ohm.

   If there is no con ity, replace the low pressure switch.

3. **REINSTALL RE VED PARTS IN REVERSE ORDER**



HIGH PRESS RE SWITCH

(See page AC-14)

INSPECTION OF GH PRESSURE SWITCH

1. **CHECK REFRIG ANT PRESSURE**

   (a) Connect the ses of the manifold gauge set to the compressor rvice valves and observe the gauge reading.

   (b) The gauge ding must be less than 15.5 kg/cm² (220 psi, 1,5 kPa) when the ambient temperature is higher tha °C (41°F).

2. **CHECK HIGH PR SURE SWITCH**

   (a) Remove the der tray.

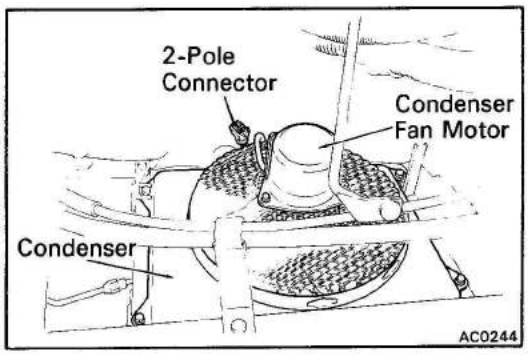
   (b) Disconnect lead wire of the A/C wire harness.

   (c) Using an oh meter, check the continuity between the two ter ls of the high pressure switch.

   The ohmme must indicate zero ohm.

   If there is no cont ity, replace the high pressure switch.

3. **REINSTALL REM VED PARTS IN REVERSE ORDER**



CONDENSER FA N MOTOR

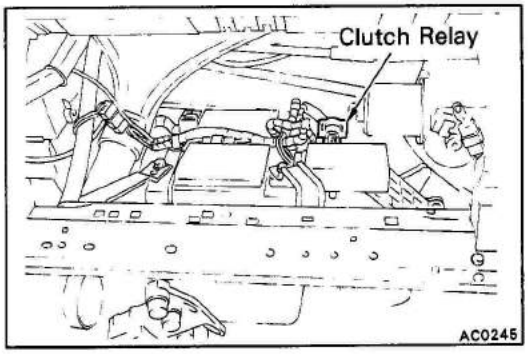
(See page AC-14)

INSPECTION OF CO DENSER FAN MOTOR

1. DISCONNECT NEGA E CABLE FROM BATTERY
2. DISCONNECT CONN TOR OF FAN MOTOR
3. CHECK FAN MOTOR
   (a) Using the wire h ess, apply battery voltage to the connector.
   (b) Confirm smooth tation of the motor within the specified current w.

   Standard current: 8 ± 0.8A

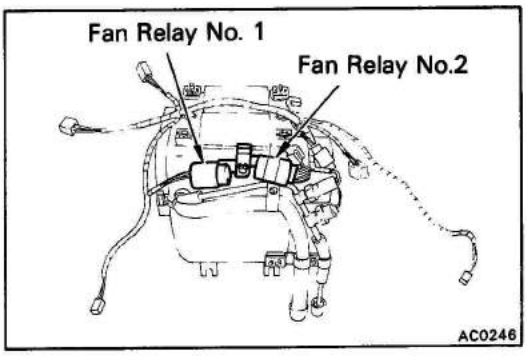
   If defective, replace th motor
4. CONNECT CONNEC R OF FAN MOTOR
5. CONNECT NEGATIV ABLE TO BATTERY

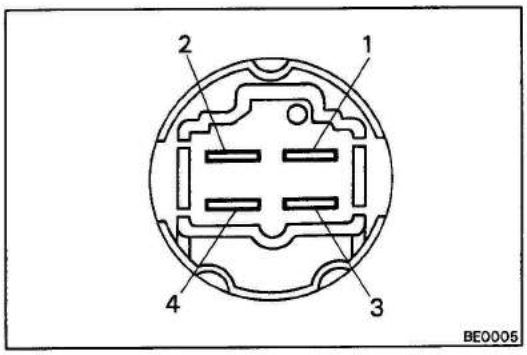


RELAYS

INSPECTION OF A/C RELAYS

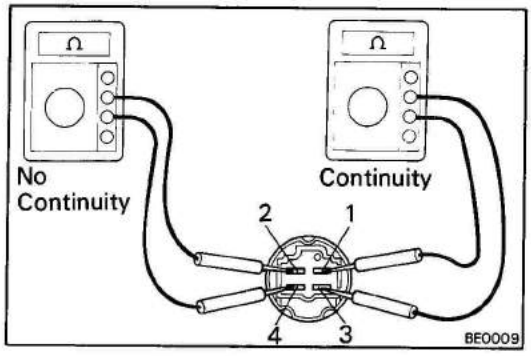
1. REMOVE GLOVE BO
2. REMOVE BOLTS
3. REMOVE RELAYS





4. INSPECT CLUTCH R AY GROUND CONNECTION

   Check the ground cc ection between terminal 3 of the wiring connector and dy ground.

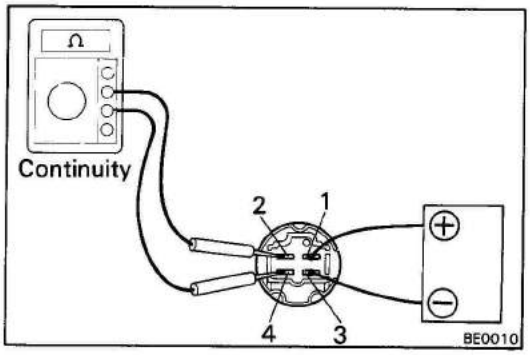


5. **INSPECT CLUT RELAY CONTINUITY**

(a) Check that ere is continuity between terminals 1 and 3.

(b) Check that re is no continuity between terminals 2 and 4.

If continuity is n as specified, replace the relay.

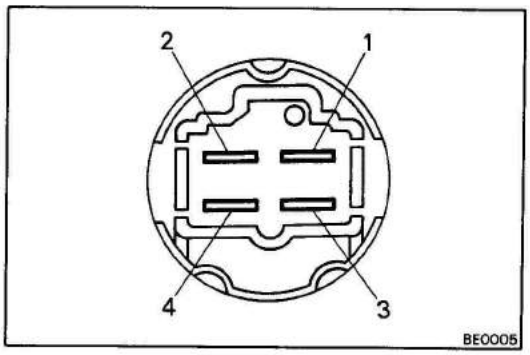


6. **INSPECT CLUT RELAY OPERATION**

(a) Apply batte voltage across terminals 1 and 3.

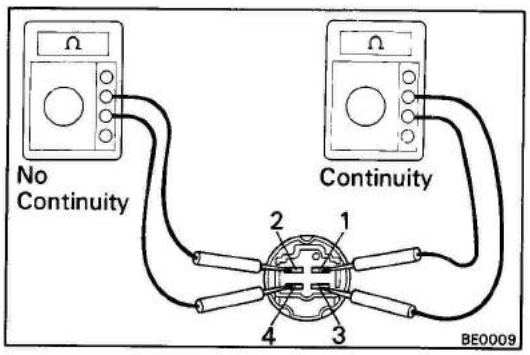
(b) Check that ere is continuity between terminals 2 and 4.

If there is no cor uity, replace the relay.



7. **INSPECT FAN R AY NO. 1 GROUND CONNECTION**

Check the groun connection between terminal 3 of the wiring connector d body ground.

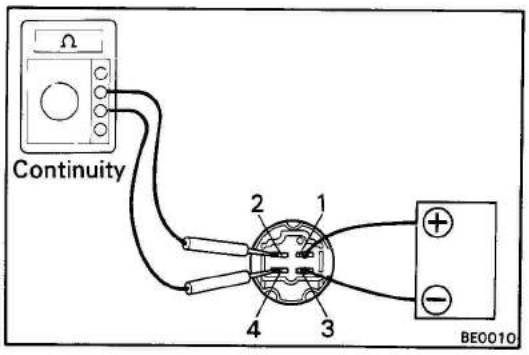


8. **INSPECT FAN R AY NO. 1 CONTINUITY**

(a) Check that re is continuity between terminals 1 and 3.

(b) Check that t e is no continuity between terminals 2 and 4.

If continuity is no s specified, replace the relay.

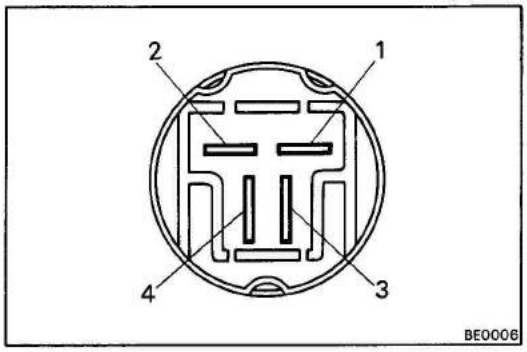


9. **INSPECT FAN R AY NO. 1 OPERATION**

(a) Apply batter oltage across terminals 1 and 3.

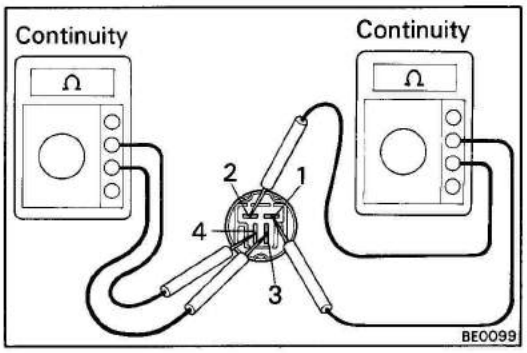
(b) Check that t re is continuity between terminals 2 and 4.

If there is no cont ity, replace the relay.



10. INSPECT FAN RELAY ( ). 2 GROUND CONNECTION

Check the ground conn ion between terminal 1 of the wiring connector and bo ground, and between terminal 3 and body ground.

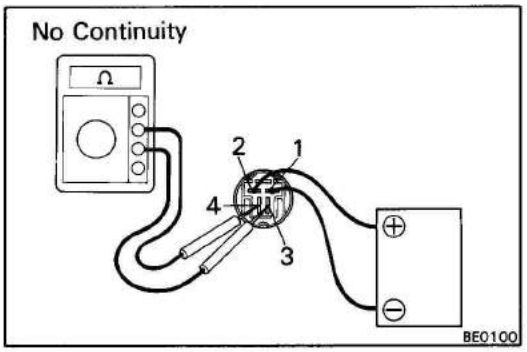


11. INSPECT FAN RELAY ( ). 2 CONTINUITY

(a) Check that there is ontinuity between terminals 1 and 2.

(b) Check that there ontinuity between terminals 3 and 4.

If there is no continuity, place the relay.

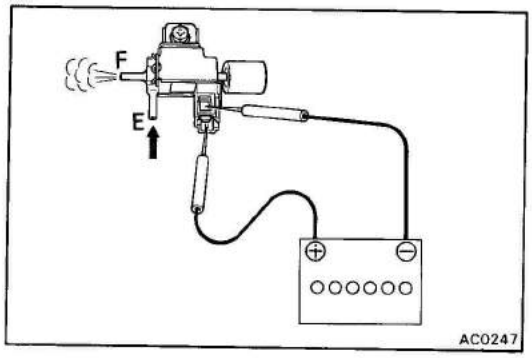


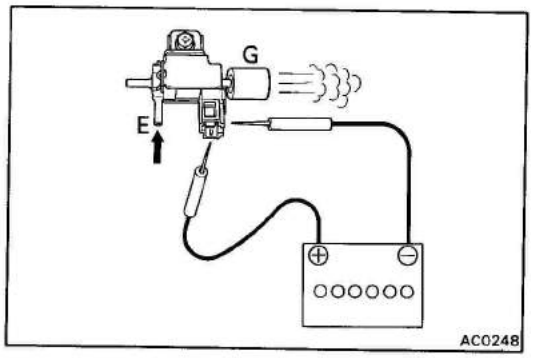
12. INSPECT FAN RELAY ( ). 2 OPERATION

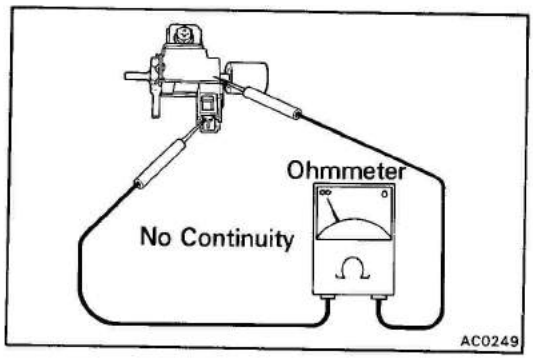
(a) Apply battery volta across terminals 1 and 2.

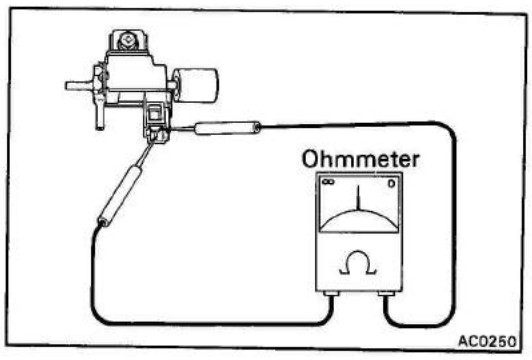
(b) Check that there is continuity between terminals 3 and 4.

If there is continuity, re ce the relay.









VACUUM SW CHING VALVE (VSV)

(See page AC-14)

INSPECTION OF V

1. **CHECK VACUUM RCUIT CONTINUITY IN VSV BY BLOWING AIR IN PIPES**
   (a) Connect the / terminals to the battery terminals as illustrated.
   (b) Blow into pip " and check that air comes out of pipe "F".
   (c) Disconnect th attery.
   (d) Blow into pip " and check that air comes out of filter "G".

   If a problem is fou replace the VSV.

2. **CHECK FOR SHOR IRCUIT**
   Using an ohmmeter eck that there is no continuity between each termina d the VSV body.

   If there is continuit eplace the VSV.

3. **CHECK FOR OPEN RCUIT**
   Using an ohmmeter, easure the resistance between the two terminals.

   Resistance: at 20 (68°F)
   38 — Ω

   If resistance is not w n specification, replace the VSV.