

# AIR CONDITIONING

## SPECIFICATIONS

### GENERAL SPECIFICATIONS

N24CA-B

Items	2.6 L Engine	3.0 L Engine
Compressor		
Model	6P148 Inclined-plate type	10PA15 Inclined-plate type
No. of cylinders and displacement   cc (fl. oz.)	6 cylinders 148 (5.0)	10 cylinders 155.3 (5.3)
Compressor oil   cc (fl.oz.)	DENSO oil 6 110 (3.7)	DENSO oil 6 80 ± 20 (2.7 ± 0.6)
High pressure relief valve   kPa (psi)		
Open	3,160–4,220 (449–600)	3,160–4,220 (449–600)
Close	2,810 (400)	2,810 (400)
Protective equipment		
Cycling clutch switch   °C(°F)		
OFF	1.0 (22)	1.0 (22)
ON	4.5 (39)	4.5 (39)
Dual pressure switch   kPa (psi)		
Low-pressure side		
OFF	210 ± 20 (30 ± 3)	210 ± 20 (30 ± 3)
Differential	25 (3.6) or less	25 (3.6) or less
High-pressure side		
OFF	2,700 ± 200 (384 ± 28)	2,700 ± 200 (384 ± 28)
ON	2,100 ± 200 (299 ± 28)	2,100 ± 200 (299 ± 28)
Engine coolant temperature switch   °C(°F)		
OFF	113 ± 3 (235 ± 5)	115 ± 3 (239 ± 5)
ON	106 (223)	108 (226)
Freezer prevention [Air temperature thermistor]   °C(°F)		
OFF	1 (22)	1 (22)
ON	4.5 (39)	4.5 (39)
Fusible plug (Burn out temperature)   °C(°F)	Burn out temperature 106 (222)	Burn out temperature 106 (222)
Refrigerant and quantity   g (oz.)	R-12 910 (32)	R-12 910 (32)

### SERVICE SPECIFICATIONS

N24CB-

Items	2.6 L Engine	3.0 L Engine
Standard value		
Drive belt deflection   mm (in.)		
When a new belt installed	13–15 (.51–.59)	5.0–6.0 (.20–.24)
When a used belt installed	17–20 (.67–.78)	8.5–9.5 (.33–.37)
Pressure plate to rotor clearance   mm (in.)	0.4–0.7 (.016–.028)	0.35–0.65 (.0138–.0256)
Air conditioner idle-up engine speed   rpm	900	900

### TORQUE SPECIFICATIONS

N24CC-


Items	Nm	ft.lbs.
Suction line to cooling unit	30–35	22–25
Liquid line to cooling unit	12–15	9–11
Liquid line to receiver drier	12–15	9–11
Suction line to suction hose	30–35	22–25
Liquid line to liquid pipe	12–15	9–11
Liquid line to condenser	20–25	15–18

## 24-18 AIR CONDITIONING – Specifications / Special Tools / Troubleshooting

Items	Nm	ft.lbs.
Suction line to compressor	30–35	22–25
Discharge line to compressor	20–25	15–18
Discharge line to liquid pipe	20–25	15–18
Compressor shaft nut	15–17	11–13
Through bolt	25–26	18–20

### SPECIAL TOOLS

N24DA--

Tool	Number	Name	Use
	MB990783-01	Steering pinion gear remover / installer	Installation of seal plate

### TROUBLESHOOTING

N24EBAM

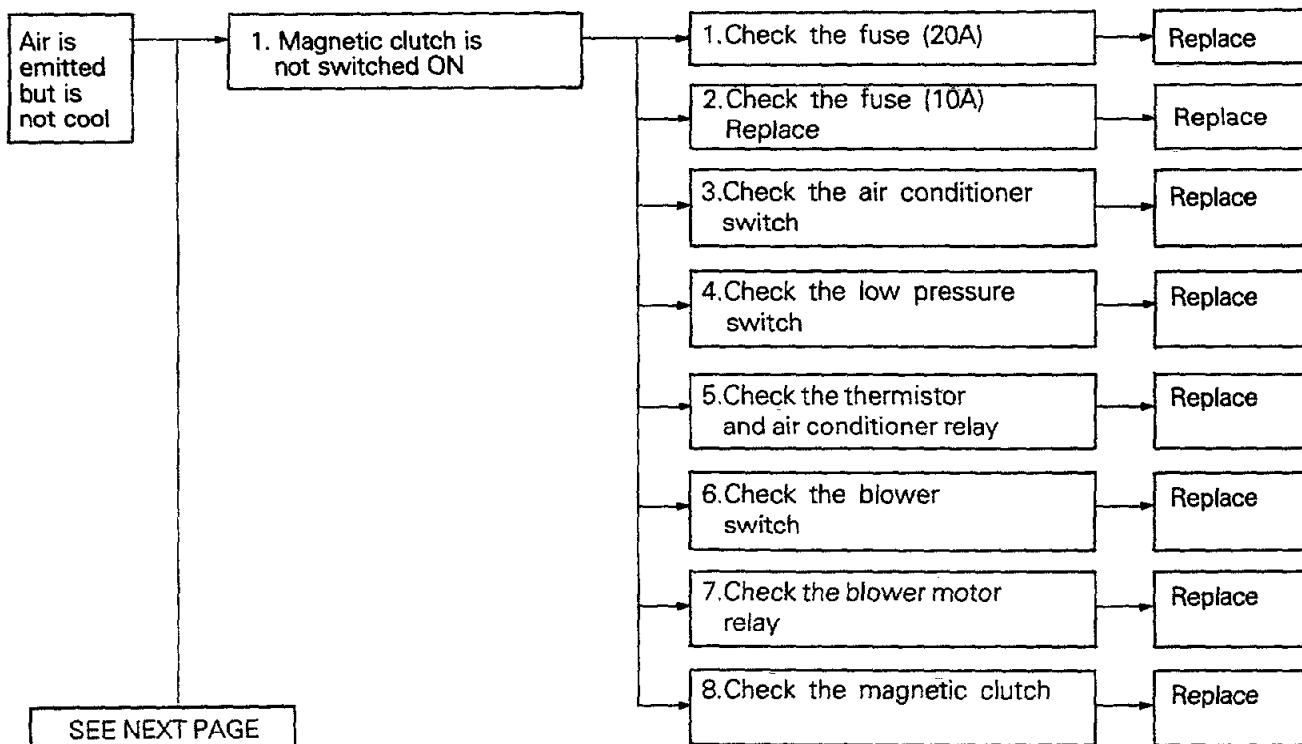
Before replacing or repairing air conditioning components, first determine if the malfunction is; due to refrigerant charge, air flow, or compressor related.

The following diagnostic charts have been developed as a "quick reference" and in determin-

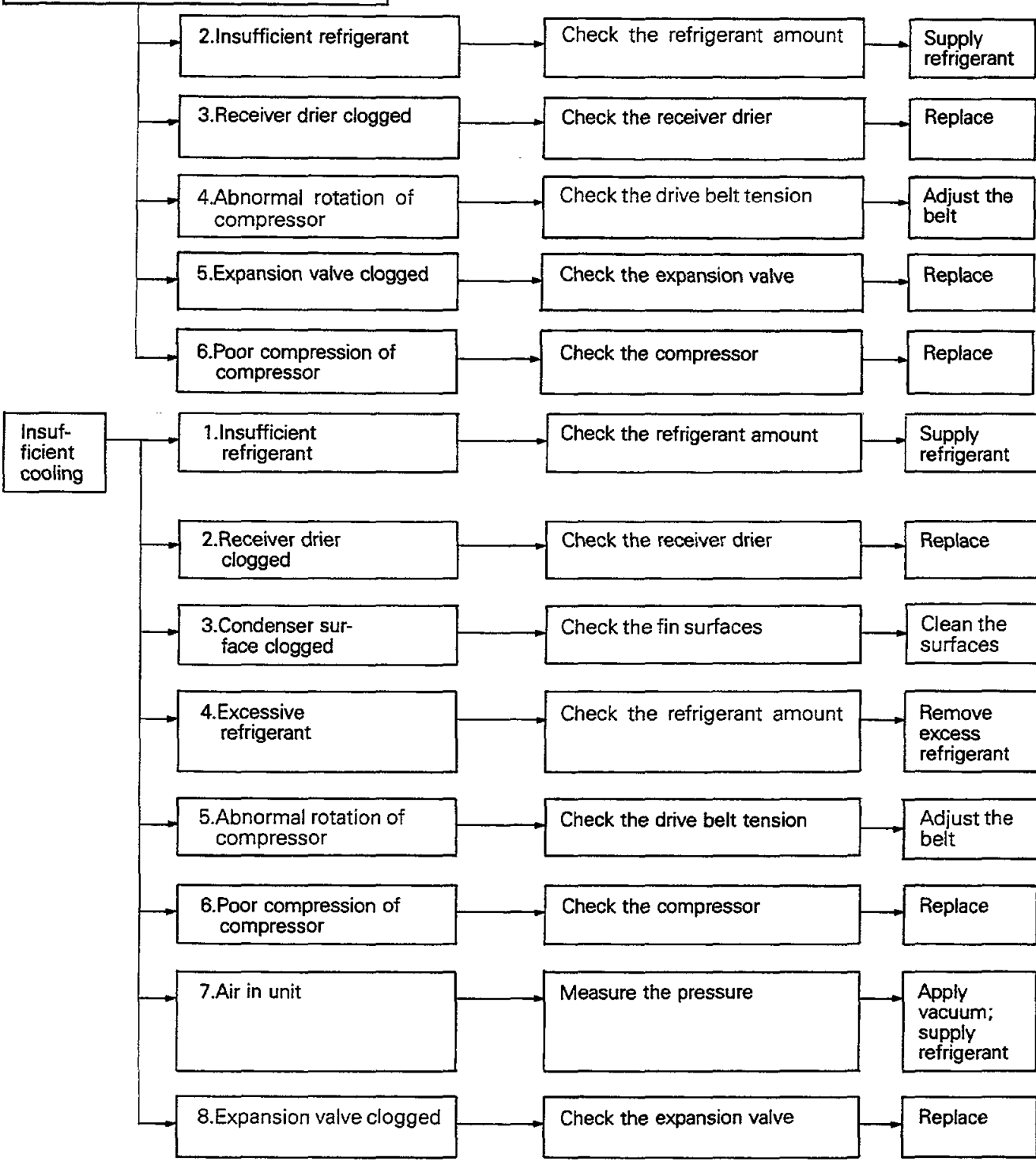
ing the cause of malfunction. If these charts do not satisfactorily describe the problem, refer to appropriate section for detailed explanation.

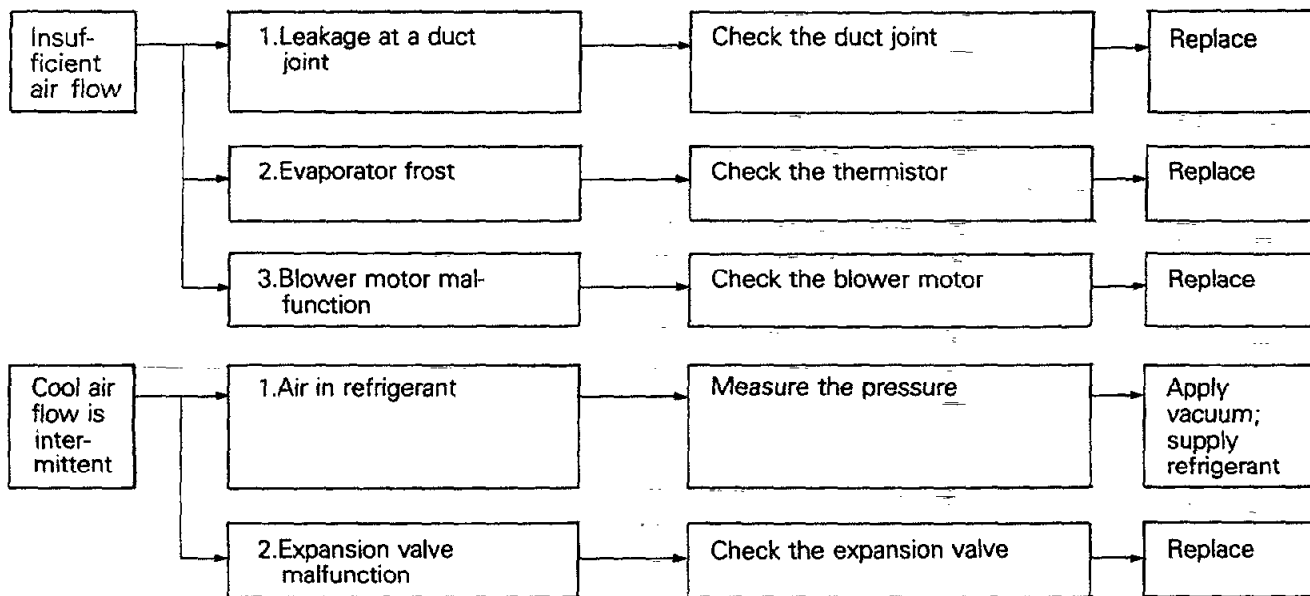
After correcting the malfunction, check out the complete system to assure satisfactory performance.

#### MALFUNCTION CAUSES AND REMEDIES (Numbers indicate checking/inspection order.)



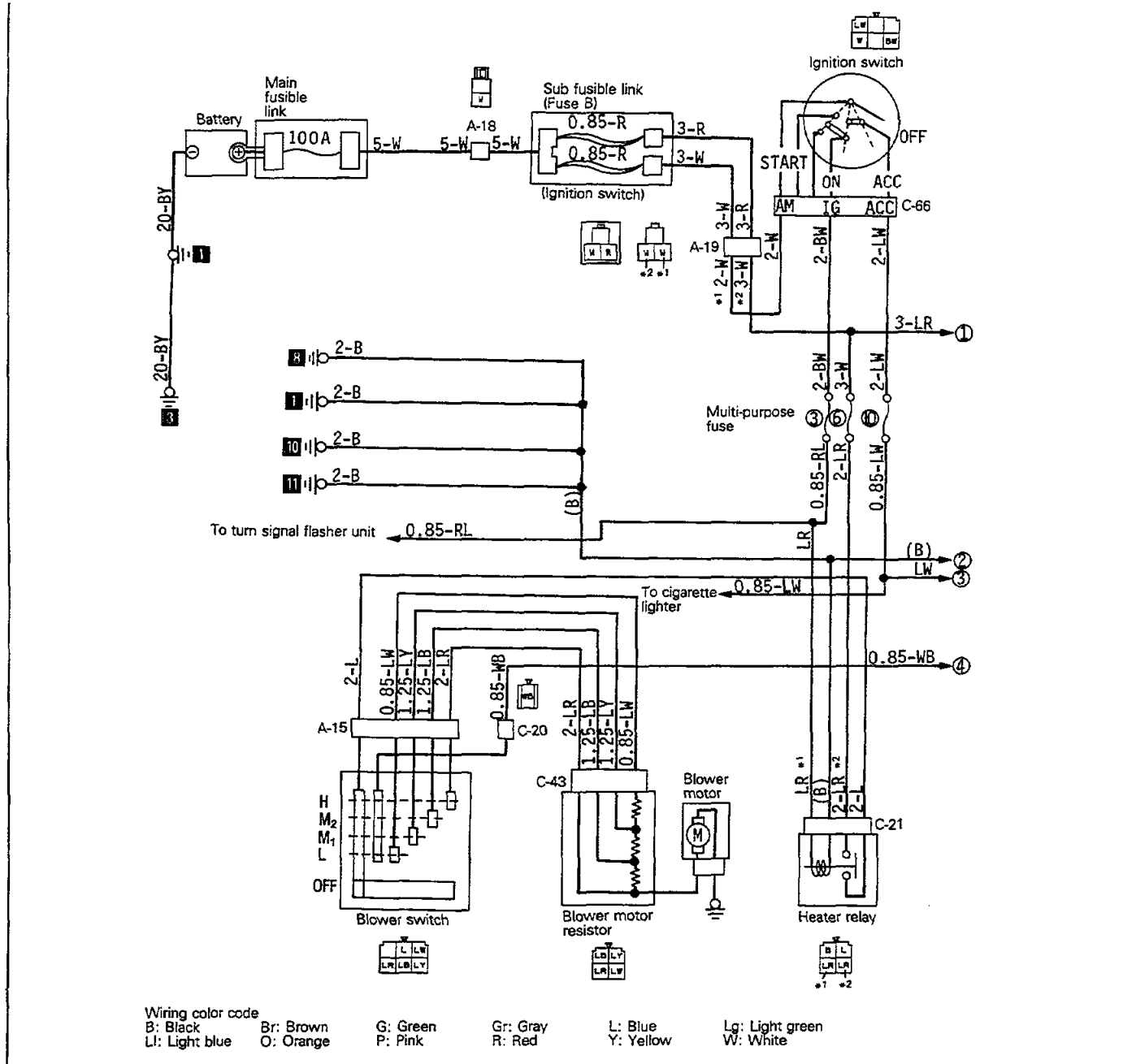
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**SINGLE AIR CONDITIONER CIRCUIT**

**CIRCUIT DIAGRAM <2.6L Engine>**



**OPERATION**

**Blower Control**

Refer to the "Heater" section.

**Compressor Control**

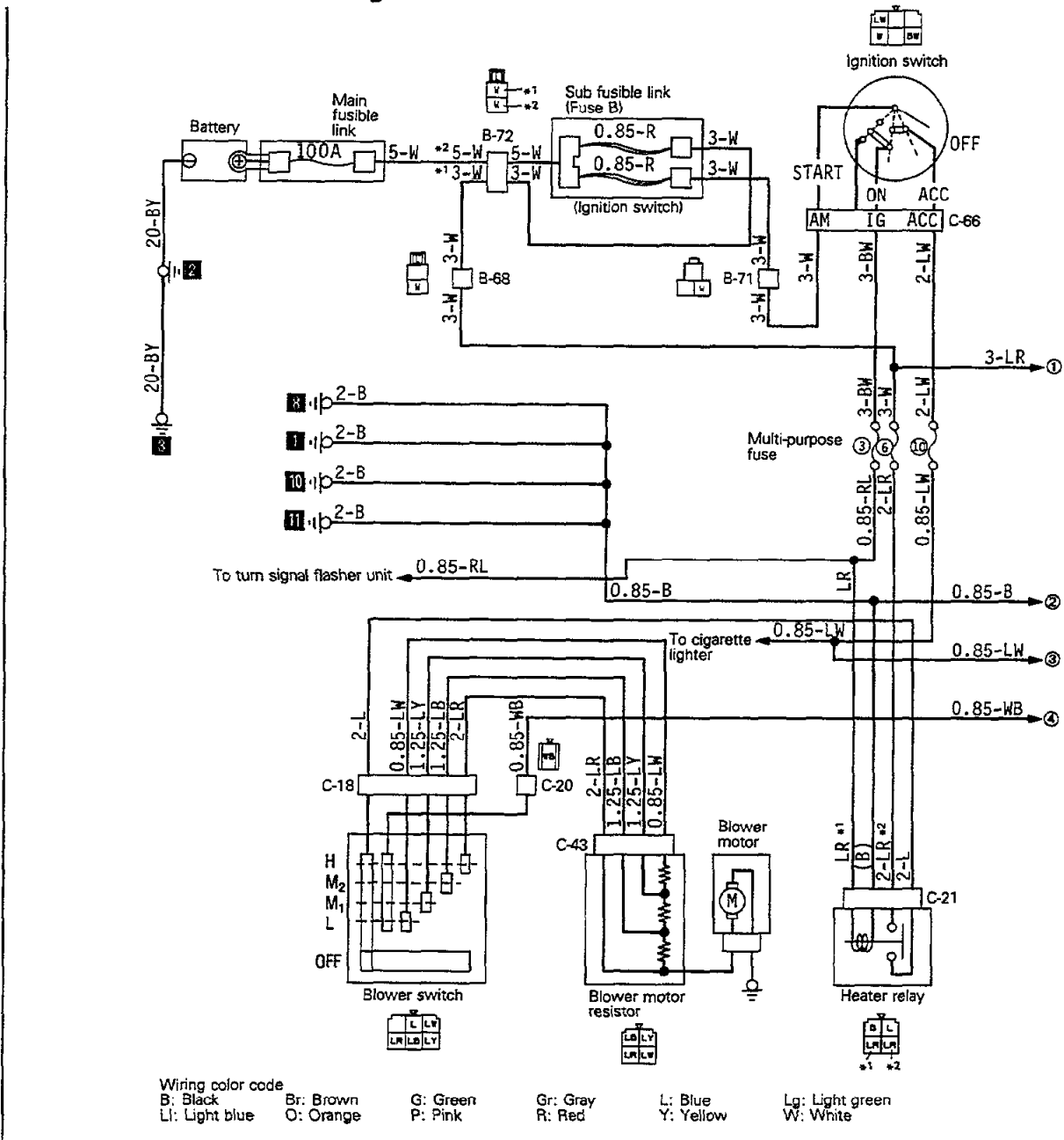
- Battery voltage is always applied to the heater relay (contacts), air conditioner relay A (contacts), and the condenser blower motor relay (contacts).
- When the ignition key is turned to the "ACC" position, current flows to fuse No. 10, air conditioner relay B (coil), and ground, and the contacts of air conditioner relay B close.

- When the ignition key is turned to the "ON" position, current flows to fuse No. 3, the heater relay (coil), and ground; the contacts of the heater relay then close, and, at the same time, battery voltage is applied, through the sub fusible link, fuse No. 6 and the heater relay (contacts), to the blower switch.
- When the blower switch and the air conditioner switch are switched ON, current flows to the sub fusible link, fuse No. 6, the heater relay (contacts), the blower switch, the air conditioner switch termistor, air conditioner relay B (contacts), air conditioner relay A (coil), the engine coolant temperature switch, and gro-



**SINGLE AIR CONDITIONER CIRCUIT**

**CIRCUIT DIAGRAM <3.0L Engine>**



**OPERATION**

**Blower Control**

Refer to the "heater" section.

**Compressor Control**

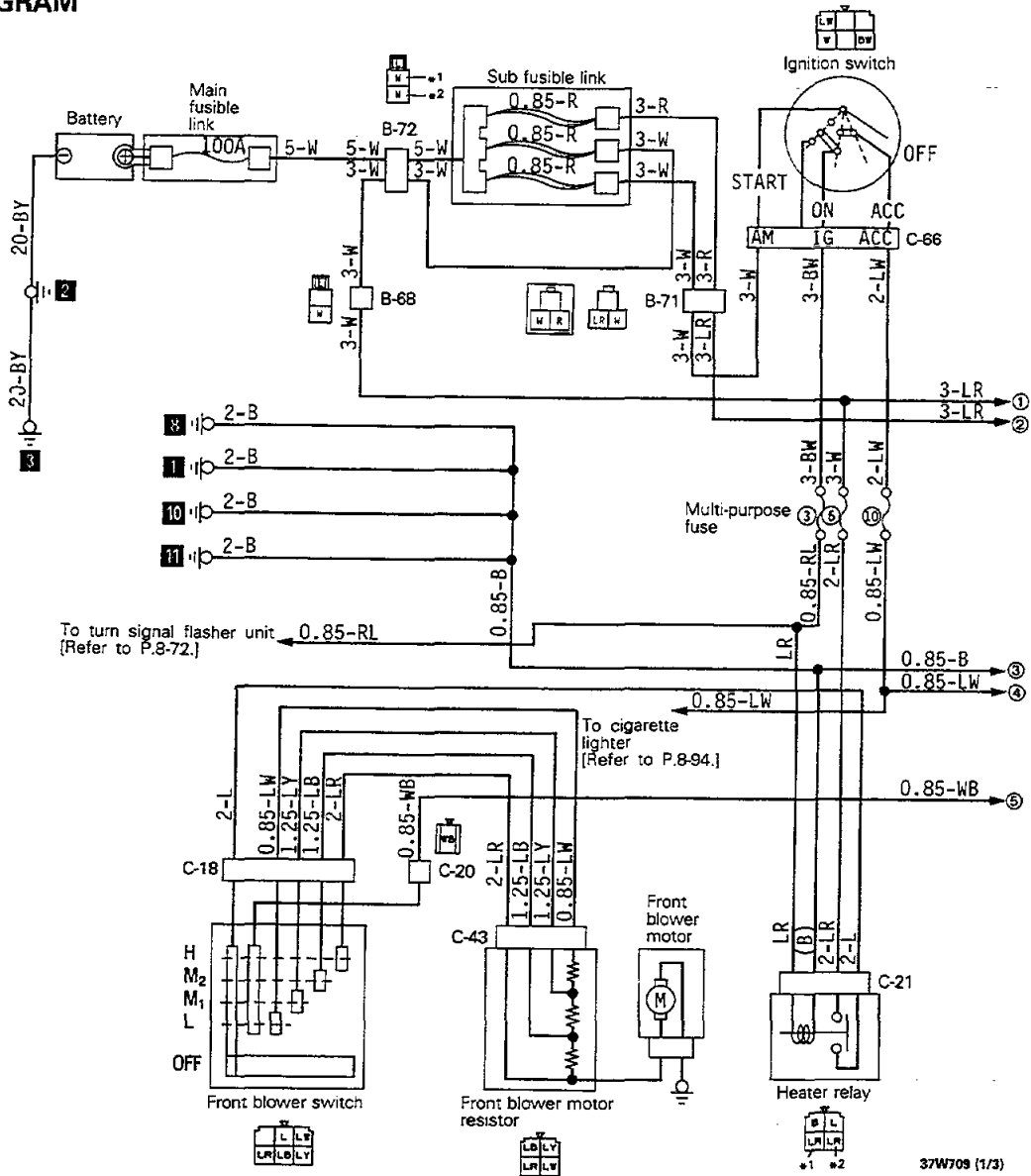
- Battery voltage is always applied to the heater relay (contacts), air conditioner relay A, (contacts), and the condenser blower motor relay (contacts).
- When the ignition key is turned to the "ACC" position, current flows to fuse No. 10, air conditioner relay B (coil), and ground, and the contacts of air conditioner relay B close.

- When the ignition key is turned to the "ON" position, current flows to fuse No. 3, the heater relay (coil), and ground; the contacts of the heater relay then close, and, at the same time, battery voltage is applied, through the sub fusible link, fuse No. 6 and the heater relay (contacts), to the blower switch.
- When the blower switch and the air conditioner switch are switched ON, current flows to the sub fusible link, fuse No. 6, the heater relay (contacts), the blower switch, the air conditioner switch thermistor, air conditioner relay B (contacts), pressure switch, condenser blower





**DUAL AIR CONDITIONER CIRCUIT  
CIRCUIT DIAGRAM**



37W708 (1/3)

**OPERATION**

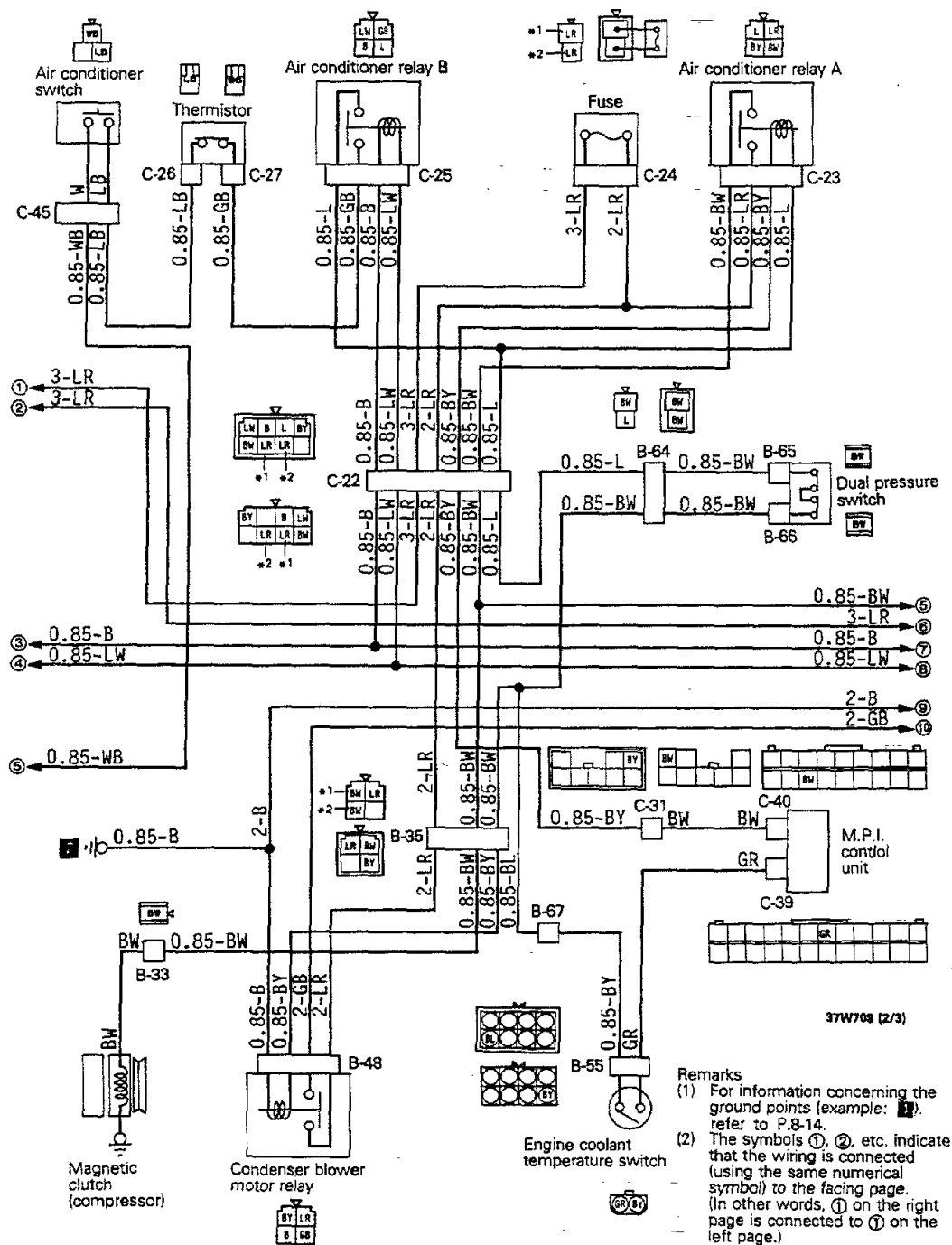
**Front Blower Control**

Refer to the "Heater" section.

**Rear Blower Control**

- When the ignition key is at "ON" or "ACC" position, current flows through fuse No. 10, air conditioner relay D (coil), and ground, causing the air conditioner relay D contacts to close.

- Then, when the rear blower switch is set at any of "L", "M1", "M2", or "H", current flows through air conditioner dedicated fuse, air conditioner relay D (contacts), blower switch, resistor, blower motor, and ground, causing the blower motor to rotate.



### Condenser Fan Control

- When, with the ignition key at the "ON" position, the front blower switch and the A/C switch are switched ON, current flows to fuse No. 6, the heater relay, the front blower switch, the A/C switch, the thermistor, air conditioner relay B (contacts), the pressure switch, dual pressure switch, condenser blower motor relay (coil), and ground, and the contacts of condenser blower motor relay close.

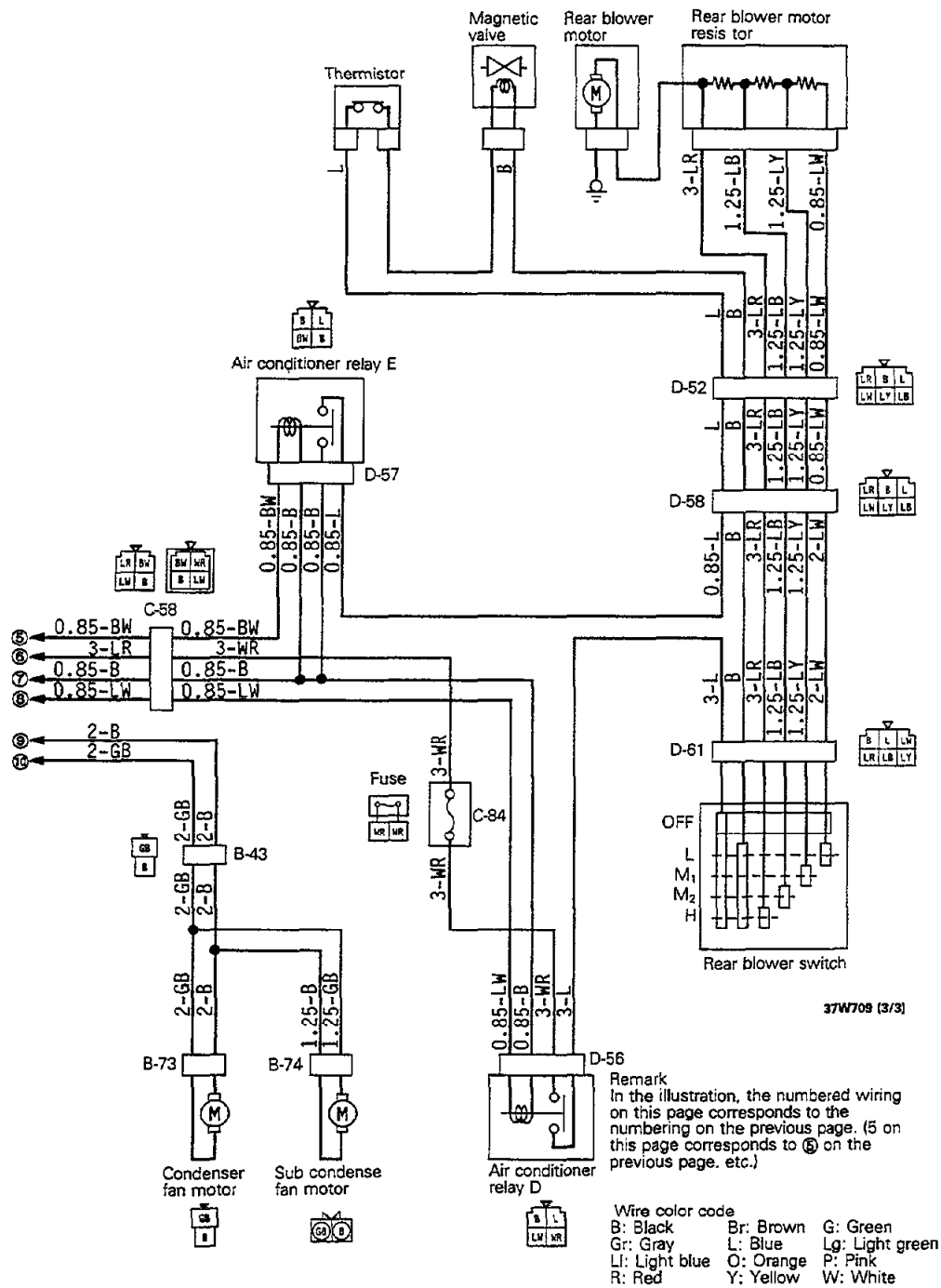
- When this happens, current flows to the air conditioner dedicated fuse, the condenser blower motor relay (contacts), the condenser fan motor, and ground, and the condenser fan motor is activated.

### Compressor Control

Refer to P. 24-23.

### Magnetic Valve Control

- When the ignition key is at "ON" or "ACC" position, current flows through fuse No. 10, air



conditioner relay D (coil), and ground, causing the air conditioner relay D contacts to close.

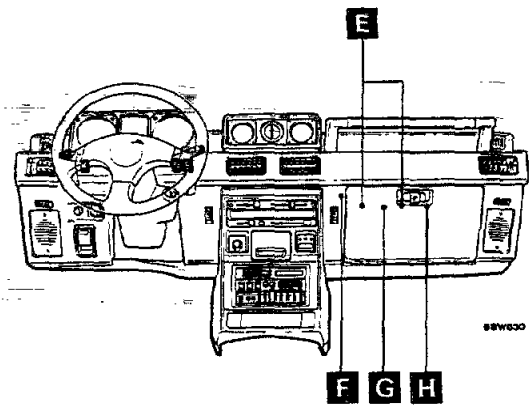
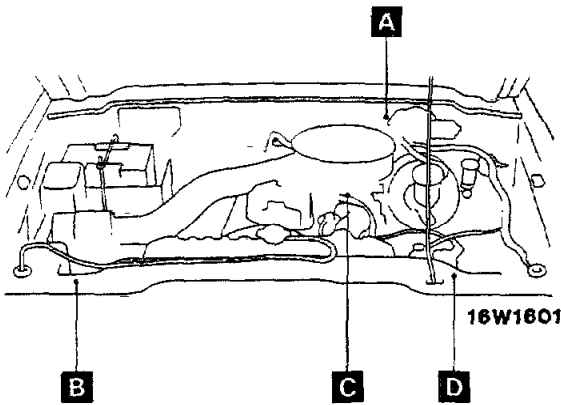
- Then, when the rear blower switch is set at any of "L", "M1", "M2", or "H", current flows through air conditioner dedicated fuse, air conditioner relay D (contacts), and the blower switch to the magnetic valve.
- Then, when the front blower switch and A/C switch are switched ON, current flows to fuse No. 6, the heater relay, the front blower switch, the A/C switch, the thermistor, the air conditioner relay B (contacts), air conditioner relay A

(coil) and M.P.I. control unit (ground), and the contacts of air conditioner relay A close.

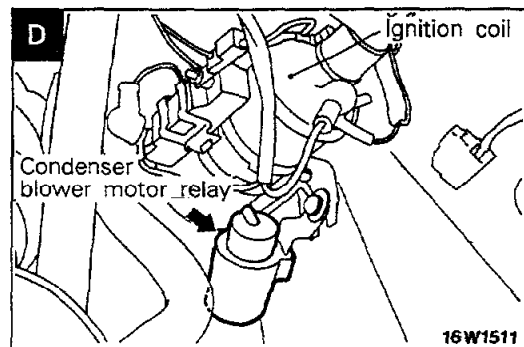
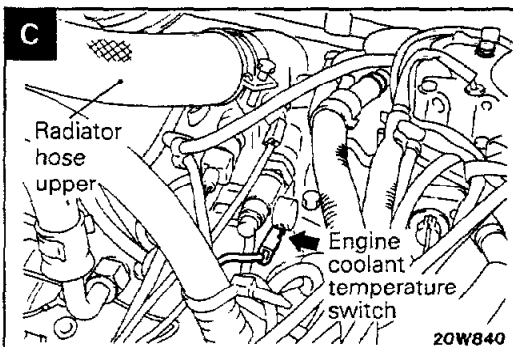
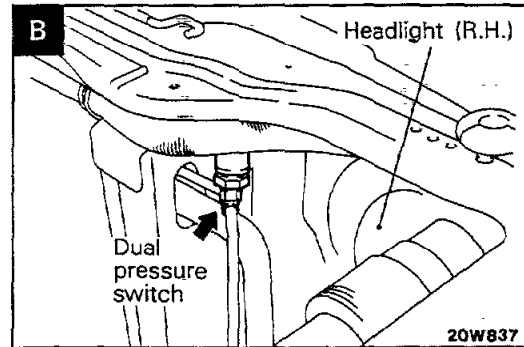
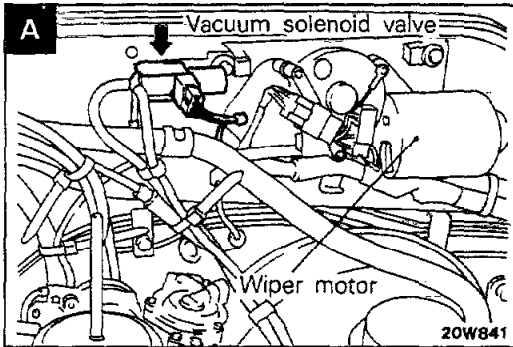
- While the contacts are closed, current flows through the air conditioner dedicated fuse, air conditioner relay A (contacts), air conditioner relay E (coil) and ground.
- When the thermistor is switched ON, current flows through the rear blower switch, the magnetic valve, the thermistor, air conditioner relay E (contacts) and ground, and the magnetic valve is activated.

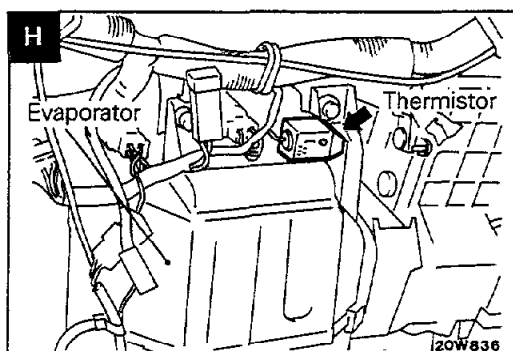
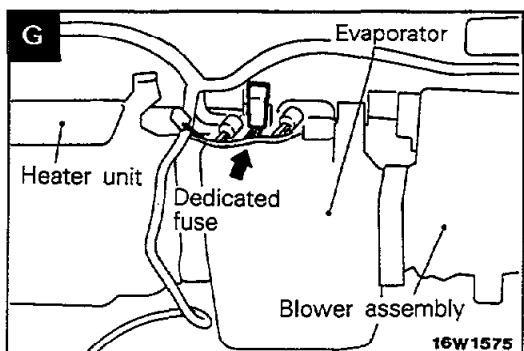
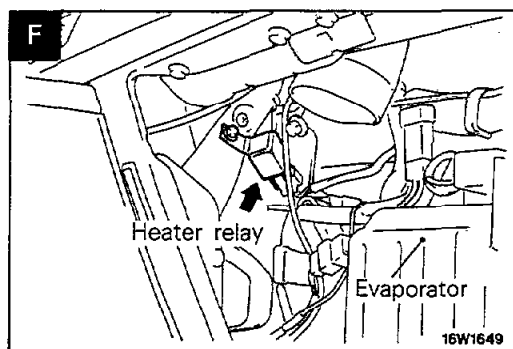
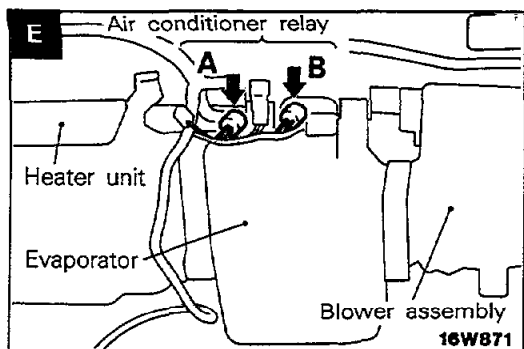
PARTS LOCATION

<2.6L Engine>

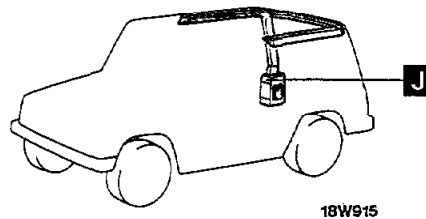
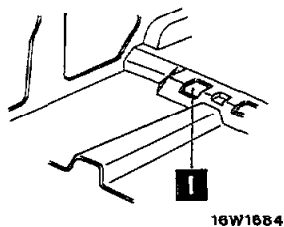
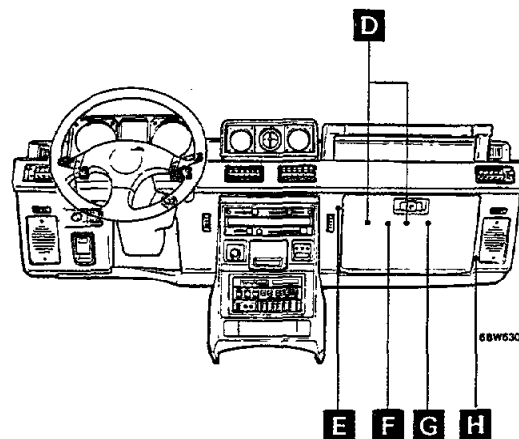
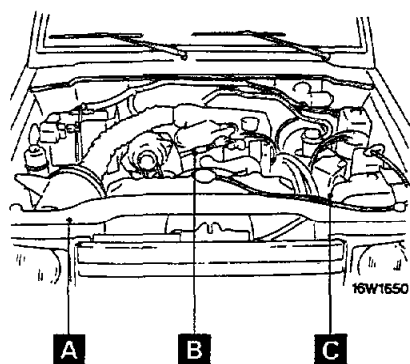


Name	Symbol	Name	Symbol
Air conditioner relay A, B	E	Engine coolant temperature switch	C
Condenser blower motor relay	D	Heater relay	F
Dedicated fuse	G	Thermistor	H
Dual pressure switch	B	Vacuum solenoid valve	A

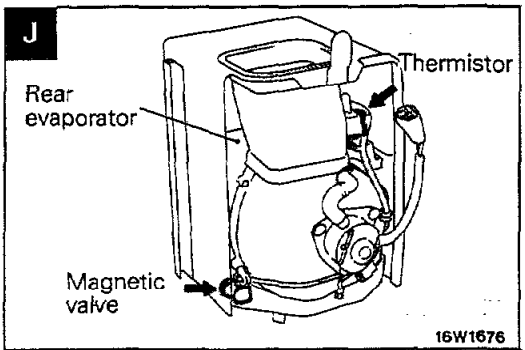
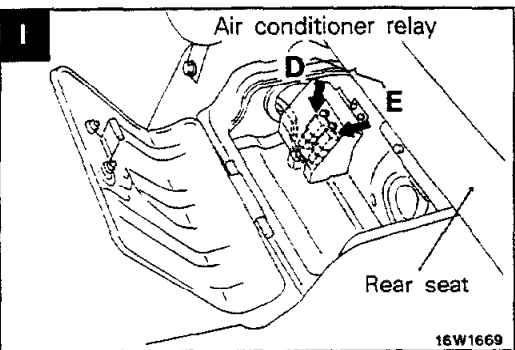
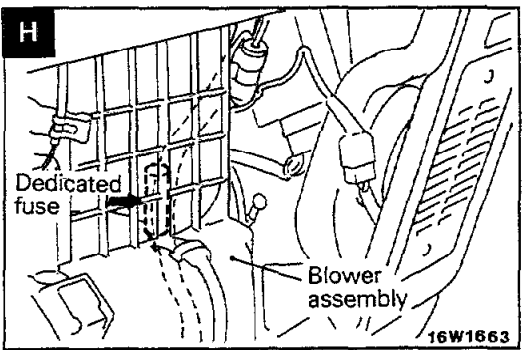
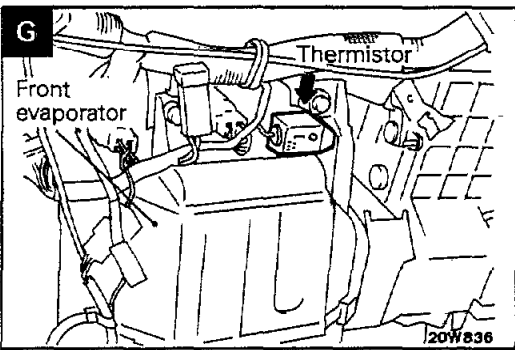
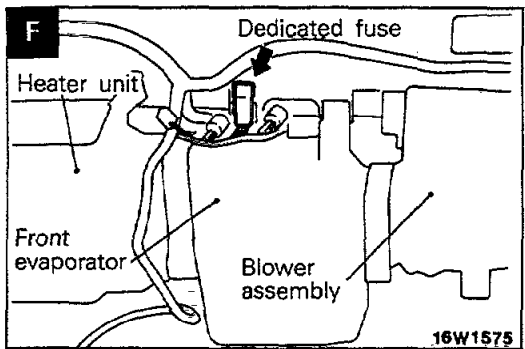
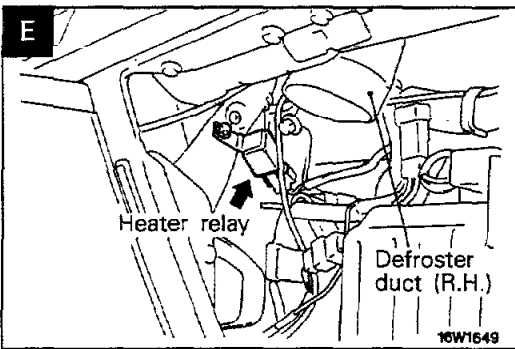
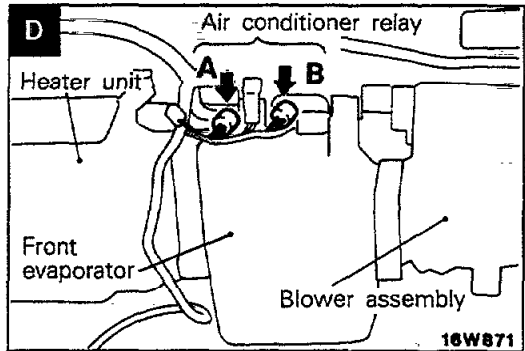
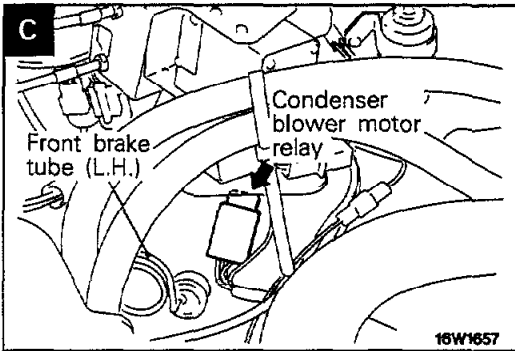
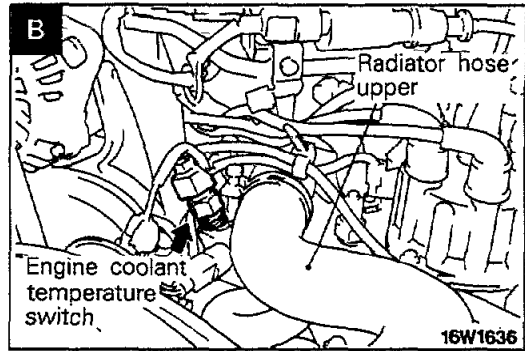
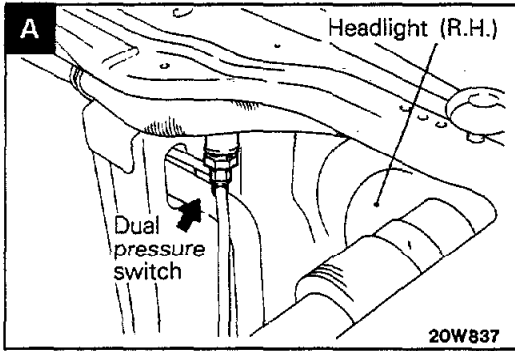




<3.0L Engine>



Name	Symbol	Name	Symbol
Air conditioner relay A, B	D	Engine coolant temperature switch	B
Air conditioner relay D, E (for rear air conditioner)	I	Heater relay	E
Condenser blower motor relay	C	Magnetic valve (for rear air conditioner)	J
Dedicated fuse (for front air conditioner)	F	Thermistor (for front air conditioner)	G
Dedicated fuse (for rear air conditioner)	H	Thermistor (for rear air conditioner)	J
Dual pressure switch	A		



## SAFETY PRECAUTIONS

N24PAAB•

### SAFETY PRECAUTIONS

The refrigerant used in all air conditioning installations is R-12. It is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of  $-29.8^{\circ}\text{C}$  ( $-21.7^{\circ}\text{F}$ ), at atmospheric pressure, it will be a vapor at all normal temperatures and pressures. The vapor is heavier than air, non-flammable, and nonexplosive. It is nonpoisonous except when it is in direct contact with open flame. It is noncorrosive except when combined with water. The following precautions must be observed when handling R-12.

#### Caution

**Wear safety goggles when servicing the refrigeration system.**

R-12 evaporates so rapidly at normal atmospheric pressures and temperatures that it tends to freeze anything it contacts. For this reason, extreme care must be taken to prevent any liquid refrigerant from contacting the skin and especially the eyes. Always wear safety goggles when servicing the refrigeration part of the air-conditioning system. Keep a bottle of sterile mineral oil handy when working on the refrigeration system. Should any liquid refrigerant get into the eyes, use a few drops of mineral oil to wash them out. R-12 is rapidly absorbed by the oil. Next, splash the eyes with plenty of cold water. Call your doctor immediately even though irritation has ceased after treatment.

#### Caution

**Do not heat R-12 above  $52^{\circ}\text{C}$  ( $125^{\circ}\text{F}$ )**

In most instances, moderate heat is required to bring the pressure of the refrigerant in its container above the pressure of the system when charging or adding refrigerant. A bucket or large pan of hot water not over  $52^{\circ}\text{C}$  ( $125^{\circ}\text{F}$ ) is all the heat required for this purpose. Do not heat the refrigerant container with a blow torch or any other means that would raise temperature and pressure above this temperature. Do not weld or steam clean on or near the system components or refrigerant lines.

#### Caution

**Keep R-12 containers upright when charging the system.**

When metering R-12 into the refrigeration system, keep the supply tank or cans in an upright position. If the refrigerant container is on its side or upside down, liquid refrigerant will enter the system and damage the compressor.

#### Caution

**Always work in a well-ventilated room.**

Good ventilation is vital in the working area. Always discharge the refrigerant into the service bay exhaust system or outside the building. Large quantities of refrigerant vapor in a small, poorly ventilated room can displace the air and cause suffocation.

Although R-12 vapor is normally nonpoisonous, contact with an open flame can cause the vapor to become very poisonous. Do not discharge large quantities of refrigerant in an area having an open flame. A poisonous gas is produced when using the flame-type leak detector. Avoid inhaling the fumes from the leak detector.

#### Caution

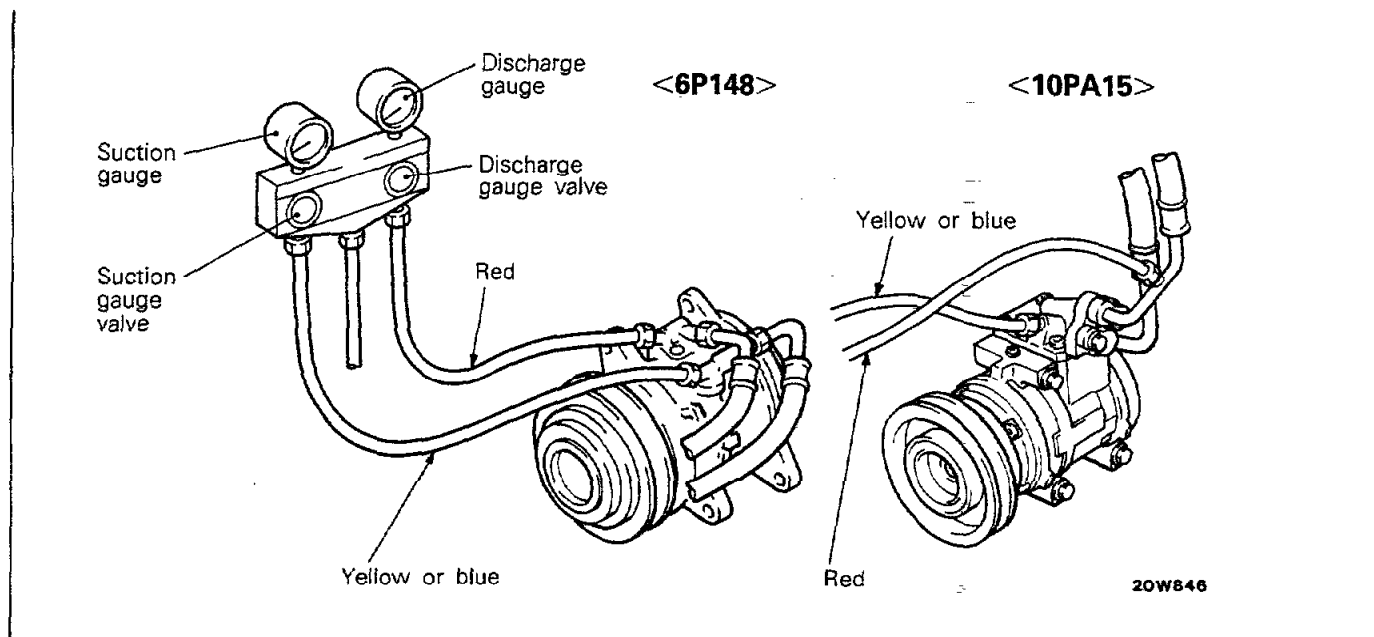
**Do not allow liquid refrigerant to touch bright metal.**

Refrigerant will tarnish bright metal and chrome surfaces, and in combination with moisture can severely corrode all metal surfaces.

## SERVICE ADJUSTMENT PROCEDURES

### MANIFOLD GAUGE SET INSTALLATION

N24FDAD



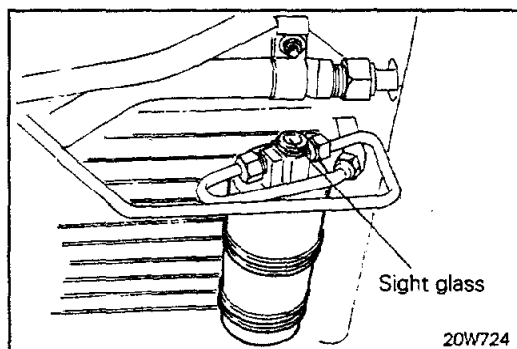
Manifold Gauge Valves should be closed when connecting the manifold gauge set to the service port of the compressor and the discharge hose. The suction gauge valve at the left is opened to provide a passage between the suction gauge and the center manifold outlet. The discharge gauge valve at the right is opened to provide a passage between the discharge pressure gauge and the center manifold outlet.

Detailed instructions for proper use of the gauge set manifold are contained in the text covering each test and service operation employing these gauges.

Suction Gauge; the left side of the manifold set is calibrated to register 0 to 1,000 kPa (0 to 150 psi). This gauge is connected to the suction port of the compressor.

Discharge Gauge; the right of the manifold set is calibrated to register 0 to 2,100 kPa (0 to 300 psi). For all tests this gauge is connected to the discharge port of the system.

Center Manifold outlet; provides the necessary connection for a long service hose used when discharging the system, using a vacuum pump to pull a vacuum before charging the system, and for connecting the supply of refrigerant when charging the system.



## TEST PROCEDURES

N24FEAO

### RECEIVER DRIER

The receiver driver assembly consists of; Drier reservoir, Refrigerant level sight glass and Fusible plug.

#### To Test the Receiver Drier

- (1) Operate the unit and check the plumbing temperature by touching the receiver drier outlet and inlet.
- (2) If there is a difference in the temperatures, the receiver drier is restricted.  
Replace the receiver drier.



**SIGHT GLASS REFRIGERANT LEVEL TEST**

The sight glass is a refrigerant level indicator. To check the refrigerant level, clean the sight glass and start the vehicle engine. Push the air conditioner button to operate the compressor, place the blower switch to high and move the temperature lever to extreme left.

After operating for a few minutes in this manner, check the sight glass.

- (1) If the sight glass is clear, the magnetic clutch is engaged, the compressor discharge line is warm and the compressor inlet line is cool; the system has a full charge.
- (2) If the sight glass is clear, the magnetic clutch is engaged and there is no significant temperature difference between compressor inlet and discharge lines; the system has lost some refrigerant.
- (3) If the sight glass is clear and the magnetic clutch is disengaged; the clutch is faulty or, the system is out of refrigerant. Perform dual-pressure switch test to determine condition. Check dual-pressure switch and clutch coil for electrical continuity.
- (4) If the sight glass shows foam or bubbles, the system could be low on charge. Occasional foam or bubbles are normal when the ambient temperature is above 43°C (110°F) or below 21°C (70°F).

Adjust the engine speed to 1,500 rpm. Block the airflow through the condenser to increase the compressor discharge pressure to 1,422 to 1,520 kPa (206 to 220 psi). If sight glass still shows bubbles or foam, system charge level is low.

The refrigerant system will not be low on charge unless there is a leak. Find and repair the leak. If the leak can be repaired without discharging the system an oil level check is not necessary. Use the procedure for correcting low refrigerant level found in the Refrigerant System Service Procedure Section.

**FUSIBLE PLUG**

When ambient temperature of the fusible plug reaches 105°C (221°F), the fusible plug melts and the refrigerant in the system is released.

Once the fusible plug is operated, it cannot be used again.

So, it is necessary to install new one and charge the refrigerant in the system.

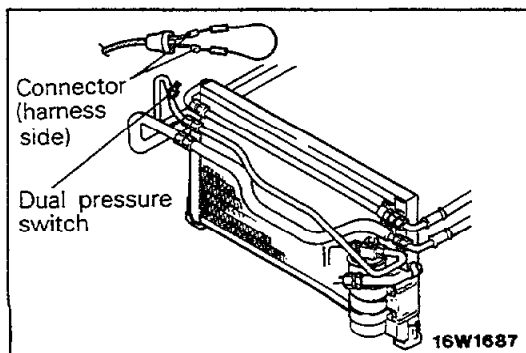
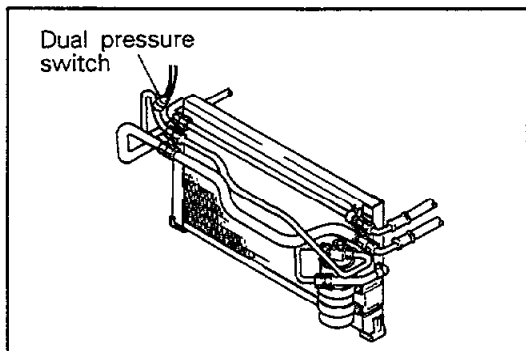
**DUAL PRESSURE SWITCH**

The dual pressure switch, located on the liquid line, is wired in series with the magnetic clutch. It cuts off the electrical power supply to the clutch when refrigerant pressure drops below the control point of the switch. Whenever the system is inactivated by the dual pressure switch due to refrigerant loss, the refrigerant oil may have been lost. Therefore, to prevent damage to the compressor due to operation without sufficient lubrication, the leak must be repaired and add compressor oil [15 cc (0.5 fl.oz.)] before final charge of the system. The switch is a sealed, factory calibrated unit. No attempt should be made to adjust or otherwise repair it.

If it is found to be faulty it must be replaced.

**To Test the Dual Pressure Switch (Engine Off)**

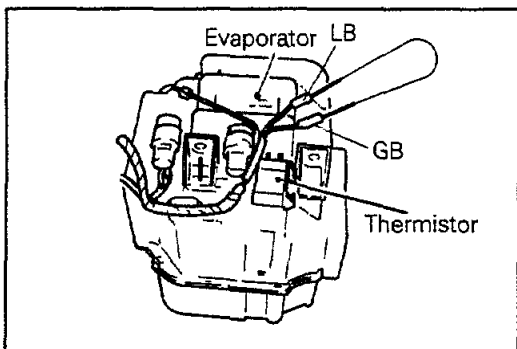
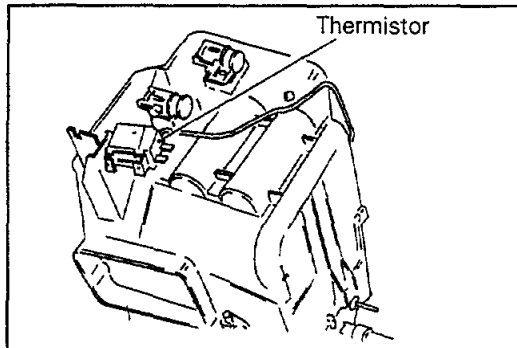
- (1) Jump the wire leads.
- (2) Press the air conditioner switch and blower switch on.
- (3) Momentarily turn the ignition switch on (do not crank the engine), listen for the compressor clutch engaging.
- (4) If the clutch does not engage, the fin thermistor, engine coolant temperature switch or fuse may be faulty.
- (5) If clutch engages, connect the manifold gauge set and read pressure. At pressure of 210 kPa (30 psi) or above, switch must actuate the clutch. If the pressure is below 210 kPa (30 psi), the refrigerant system is low in charge. For corrective action refer to refrigerant leak repair procedure.



- (6) Reconnect boot on switch and perform step number 3. If the clutch does not engage, discharge the system, replace the switch, and recharge the system.
- (7) If the magnet clutch switches OFF during driving even though the temperature inside the vehicle has not decreased, it is possible that the high-pressure side of the dual-pressure switch has activated.
- (8) Install a manifold gauge and then drive the vehicle and read the value at which the magnet clutch is switched OFF.
- (9) If the value at which the magnet clutch is switched OFF is 2,700 kPa (384 psi) or less, there is an incorrect setting of the dual-pressure switch, and replacement must be made.

### FREEZE UP CONTROL

Evaporator freeze up is controlled by a thermistor attached to the evaporator fins. The control is an electronic type and consists of two parts (thermo relay and thermistor). It is connected to the magnetic clutch of the compressor in series. When the temperature of the evaporator drops below 3°C (37.4°F), the compressor is turned OFF.



### To Test the Thermistor

- (1) Jump the wire lead (LB to GB) of the connector portion.
- (2) Press the air conditioner switch and blower switch on.
- (3) Momentarily turn the ignition switch on (do not crank the engine), listen for the clutch engaging.
- (4) If the clutch does not engage, the dual pressure switch, engine coolant temperature switch wiring or fuse may be faulty.
- (5) If the clutch operates, replace the thermostat.

### ENGINE COOLANT TEMPERATURE SWITCH

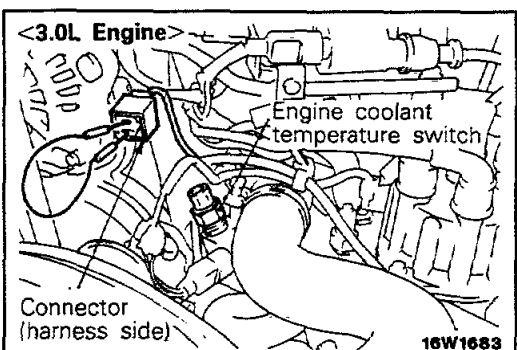
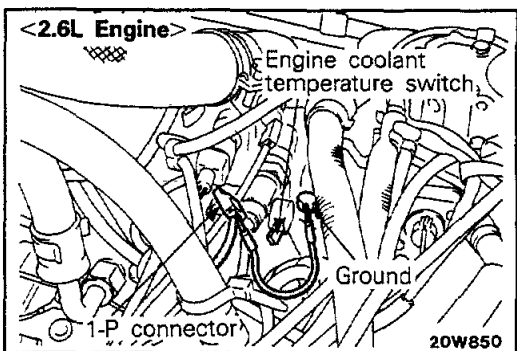
The engine coolant temperature switch is located on the thermostat housing. The engine coolant temperature switch is connected to the clutch in series. When the coolant temperature in the radiator reaches above 113°C (235°F), it turns the compressor OFF.

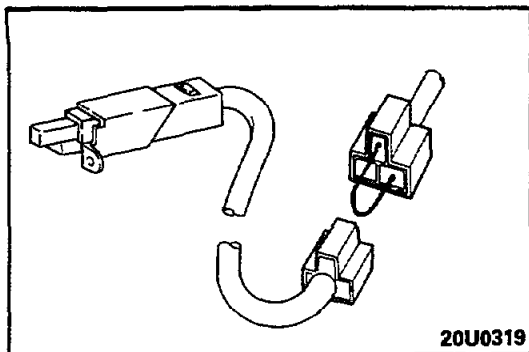
This is to prevent engine overheating.

When the engine coolant temperature switch is activated and the clutch is OFF, check the surface of the condenser and radiator, the belt tension, and the coolant volume in the radiator, and return to the normal condition.

### To Test the Engine Coolant Temperature Switch

- (1) Remove wire from engine coolant temperature switch and jump lead wires.
- (2) Press the air conditioner switch and blower switch on.
- (3) Momentarily turn the ignition switch on (do not crank the engine), listen for the clutch engaging.
- (4) If the clutch does not engage, the fin thermistor, dual-pressure switch, wiring or fuse may be faulty.
- (5) If clutch engages, replace the switch.



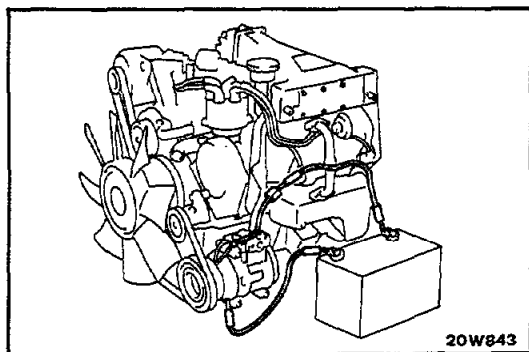


20U0319

**AIR CONDITIONER SWITCH**

**To Test the Air Conditioner Switch**

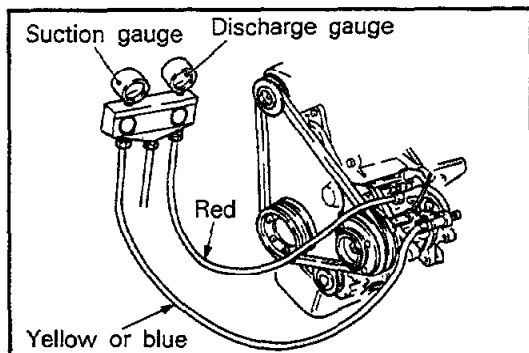
- (1) Disconnect the harness connector for the air conditioner switch.
- (2) Jump the lead wires as shown.
- (3) Turn the blower switch ON.
- (4) Momentarily turn the ignition switch on (do not crank the engine), listen for the clutch engaging.
- (5) If the clutch does not engage, fin thermostat, water temperature switch, wiring or fuse may be faulty.
- (6) If clutch engages, replace the air conditioner switch.



20W843

**MAGNETIC CLUTCH**

- (1) Disconnect the wiring to the magnetic clutch.
- (2) Connect battery (+) voltage directly to the wiring for the magnetic clutch.
- (3) If the magnetic clutch is normal, there will be a "click". If the pulley and armature do not make contact ("click"), there is a malfunction.

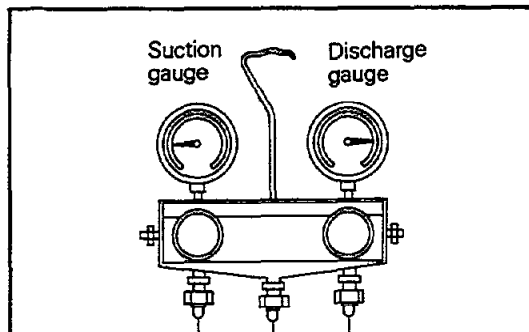


**COMPRESSOR**

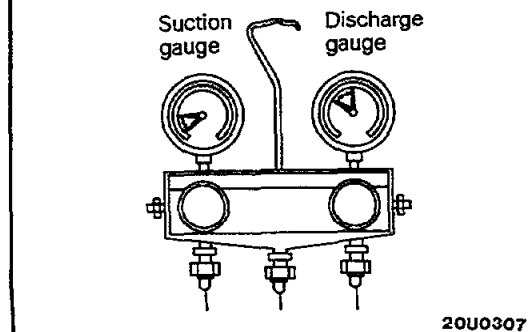
- (1) Install the manifold gauge set, and run the air conditioner.
- (2) If a pressure of approx.490 kPa (71 psi) is indicated on the suction gauge side and a pressure of approx.883 kPa (128 psi) is indicated on the discharge gauge side, the compressor has abnormal compression. Replace the compressor.
- (3) If a pressure of 294 to 392 kPa (43 to 59 psi) is indicated on the suction gauge side and a pressure of approx.1961 kPa (284 psi) is indicated on the discharge gauge side, it is suspected that air is present in the air conditioning system. Discharge the system, evacuate and recharge with specified amount of refrigerant.

**Recharging condition**

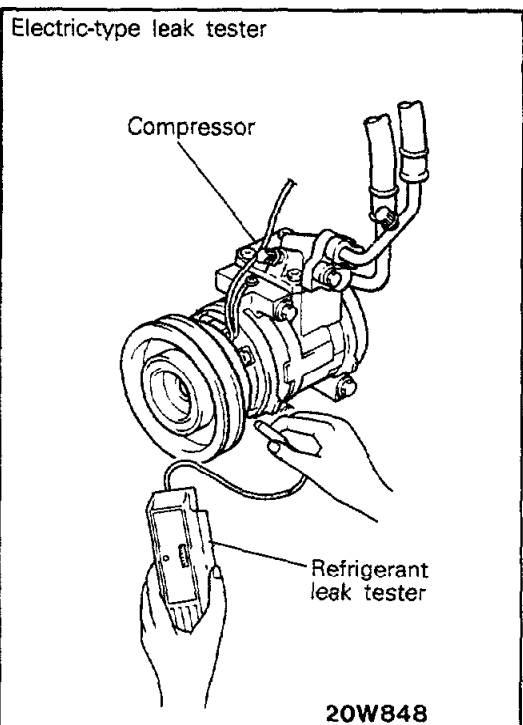
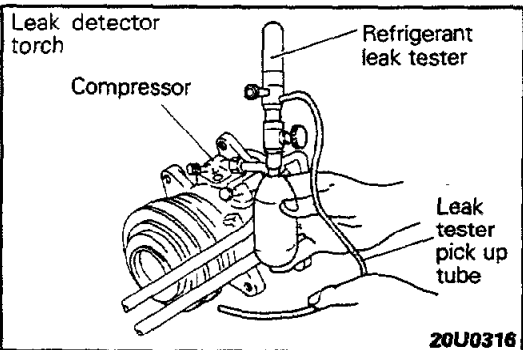
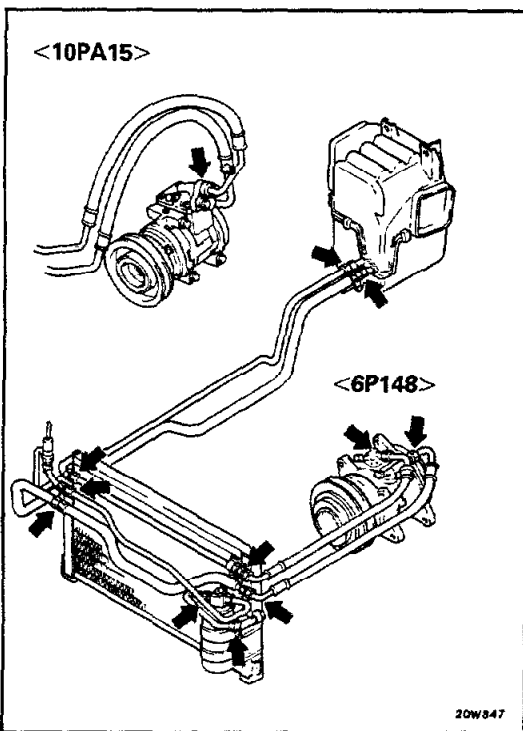
- Cooler discharge temperature (evaporator) : 30–35°C (86–95°F)
  - Engine revolutions : 2,000 rpm
  - Blower : HI
- (4) During operation of the air conditioner, cold air may stop flowing after the elapse of time and this state is maintained before cold air flows out again. If cold air stops flowing out with negative pressure indicated on the suction gauge side and a pressure of 588 to 980 kPa (85 to 142 psi) indicated on the discharge gauge side, it is suspected that water is present in the air conditioning system. Discharge the system. Replace receiver drier. Evacuate and check for leaks, and recharge with specified amount of refrigerant.



20U0306



20U0307



## TESTING SYSTEM FOR LEAKS

N24FFAB

A leak is likely to occur where two components are connected together. See illustration for possible locations.

The Leak Detector Torch is a butane gas-burning torch used to locate a leak in any part of the refrigeration system. Refrigerant gas drawn into the sampling or "sniffer" hose will cause the flame to change color in proportion to the size of the leak. A very small leak will produce a flame varying from yellowish-green to bright green. A large leak will produce a brilliant blue flame.

### Caution

**Do not use the lighted detector in any place where explosive gases, dust or vapors are present. Do not breathe the fumes that are produced by the burning of refrigerant gas. Large concentrations of refrigerant in the presence of a live flame become dangerously toxic.**

If the flame remains bright yellow when the tester is removed from a possible leak point, insufficient air is being drawn in through the sampling tube, or the copper reaction wire is dirty.

- (1) Assemble leak detector as shown be sure detector is seated tightly over torch gasket.
- (2) Holding torch upright screw-in butane charger (clockwise) until punctured. (Do not use force).
- (3) Screw-out butane charge (counterclockwise) about 1/4 turn.
- (4) Point torch away from body—then light escaping gas with match. Always keep torch in upright position.
- (5) Adjust flame by turning cartridge in or out as required.
- (6) Allow 30 seconds to heat copper reaction wire.

### Caution

**Never remove butane charger while torch is lighted or in the presence of any open flame.**

- (7) Examine all tube connectors and other possible lead points by moving the end of the sampling hose from point to point. Always keep torch in upright position. Since R-12 is heavier than air, it is good practice to place the open end of sampling hose directly below point being tested. Be careful not to pinch sampling tube since this will shut off air supply to flame and cause a color change.
- (8) Watch for a change in the color of the flame. Small leaks will produce a green color and large leaks a bright blue color. If leaks are observed at tube fittings, tighten the connection, using the proper flare wrenches, and retest.

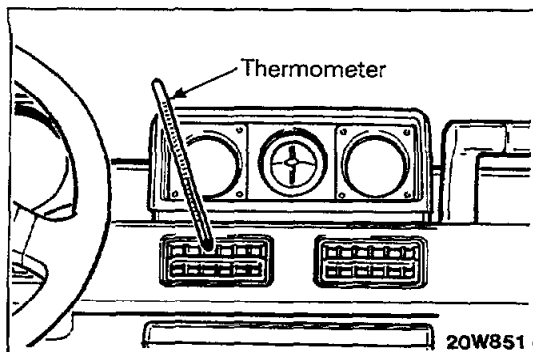
### NOTE

Gas leaks can also be detected by using the electric type of leak tester (which employs an audible alarm).

## PERFORMANCE TEST

N24FWAC

- (1) Park the vehicle to be tested at the place where it will not be in direct sunlight.
- (2) Connect a tachometer and manifold gauge set.



- (3) Set the controls of air conditioner (loaded on the vehicle) to the following positions.
  - Air conditioning switch : A/C-ON position
  - Mode selection lever : Face position
  - Temperature control lever : Max. cooling position
  - Air selection lever : Recirculation position
  - Blower switch : HI (Fast) position
- (4) Start engine and adjust rpm to 1,000 with air conditioner clutch engaged.
- (5) Engine should be warmed up with doors windows close and hood open.
- (6) Insert a thermometer in the left center air conditioner outlet and operate the engine for 20 minutes.
- (7) Note the discharge air temperature.

**NOTE**

If the clutch cycles, take the reading before the clutch disengages.

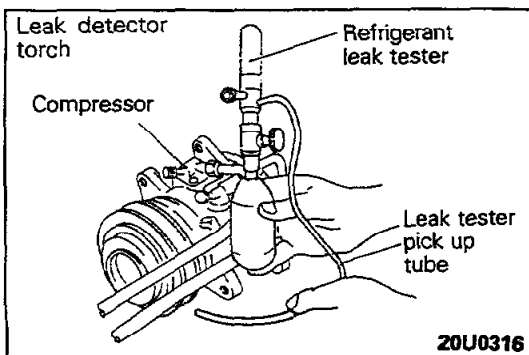
**Performance Temperature Chart**

**SINGLE AIR CONDITIONER**

Garage ambient temperature °C (°F)	21 (70)	26.7 (80)	32.2 (90)	37.8 (100)	43.3 (110)
Discharge air temperature °C (°F)	2-5 (35-41)	2-5 (35-41)	2-5 (35-41)	2-5 (35-41)	2-5 (35-41)
Compressor discharge pressure kPa (psi)	621-834 (90-121)	703-979 (102-142)	841-1138 (122-165)	993-1345 (144-195)	(1,131-1,517) (164-220)
Compressor suction pressure kPa (psi)	124-207 (18-30)	130-221 (19-32)	138-241 (20-35)	145-255 (21-37)	152-276 (22-40)

**DUAL AIR CONDITIONER**

Garage ambient temperature °C (°F)		21 (70)	26.7 (80)	32.2 (90)	37.8 (100)	43.3 (110)
Discharge air temperature °C (°F)	Front	2-8 (35-46)	3-9 (37-48)	4-10 (39-50)	7-14 (45-57)	12-18 (54-64)
	Rear	2-8 (35-46)	3-9 (37-48)	4-10 (39-50)	7-14 (45-57)	12-18 (54-64)
Compressor discharge pressure kPa (psi)		981-1,373 (142-199)	981-1,373 (142-199)	1,079-1,472 (156-213)	1,373-1,766 (199-256)	1,668-2,060 (242-299)
Compressor suction pressure kPa (psi)		108-206 (16-30)	108-206 (16-30)	128-226 (18-33)	206-304 (30-44)	226-324 (33-47)



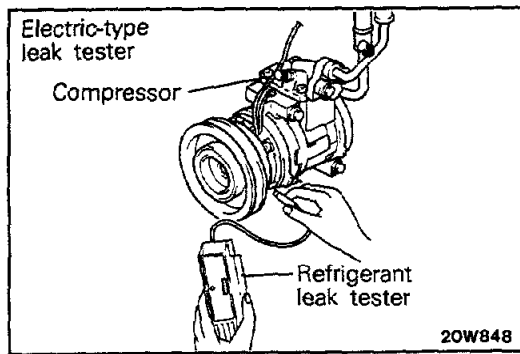
**REFRIGERANT LEAK REPAIR PROCEDURE**

N24FHAN

**LOST CHARGE**

If the system has lost all charge due to a leak:

- (1) Evacuate the system. (See the procedure).
- (2) Charge the system with approximately one pound of refrigerant.
- (3) Check for leaks.
- (4) Discharge the system.
- (5) Repair leaks.
- (6) Replace receiver drier.

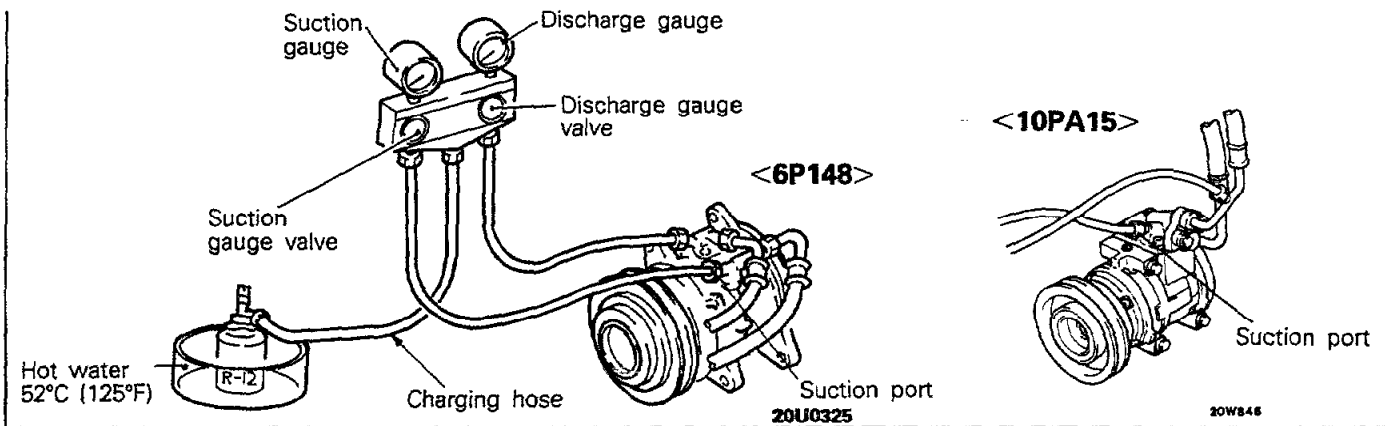
**Caution**

Replacement filter-drier units must be sealed while in storage. The drier used in these units will saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick reassembly to avoid keeping the system open any longer than necessary.

(7) Evacuate and charge the system.

**LOW CHARGE**

If the system has not lost all of its refrigerant charge; locate and repair all leaks. If it is necessary to increase the system pressure to find the leak (because of an especially low charge) add refrigerant. If it is possible to repair the leak without discharging the refrigerant system, use the procedure for correcting low refrigerant level.

**CORRECTING LOW REFRIGERANT LEVEL**

Since the refrigeration system is completely sealed, refrigerant level will not be low unless there is a leak in the system.

Before adding refrigerant when the cause of low level is not known, the system should be tested for leaks.

Assuming that leaks have been corrected without discharging the system, proceed with partial charge.

Install and connect manifold gauge set.

- (1) Close both gauge set manifold valves.
- (2) Connect the suction gauge test hose to the suction port of the compressor. Connect the discharge gauge test hose to the discharge port.
- (3) Connect one end of long test hose to center manifold outlet, other end to refrigerant dispensing manifold.
- (4) Close two dispensing manifold valves and open remaining dispensing manifold valve. Remove protective cap from opened valve.
- (5) Screw a can of R-12 to the opened manifold valve. Be sure gasket is in place and in good condition. Tighten refrigerant can and manifold locking nut to insure a good seal. Do not overtighten. 8 to 11 Nm (6 to 8 ft.lbs.) is

sufficient if gasket is in good condition.

- (6) Turn manifold valve (above the refrigerant can) completely clockwise to puncture the can. This closes the valve and seals the refrigerant in the can.

**Caution**

**Never heat small cans of refrigerant over 52°C (125°F) as they may explode.**

- (7) Place the refrigerant in a large pan of water heated to 52°C (125°F). Place pan of water containing the refrigerant can on an accurate scale so the amount of refrigerant added can be weighed. Open the refrigerant manifold valve.
- (8) **Purge all air from test hoses.** Air in the system will be trapped in the condenser causing abnormally high discharge pressures and interfering with condensing of the refrigerant.
- (9) Slightly loosen both test hoses at the gauge set manifold. Tighten the hoses as soon as the air is purged.
- (10) Slightly loosen charging hose connection at gauge set manifold. This will purge air from the charging hose. Tighten connection as soon as air is purged.

(11) With vehicle windows open and hood up, operate engine at 1,500 rpm and jump the switch terminals located on so the clutch will remain engaged.

(12) Place air conditioner control on air conditioner and place the blower switch on high.

(13) If necessary, block the condenser to maintain a discharge pressure of 1,422 to 1,520 kPa (206 to 220 psi.)

System must be charged through the evaporator suction service ports as follows:

- (a) Slowly open the **suction service gauge valve**. Meter flow of refrigerant by adjusting the suction service gauge valve so that pressure registered at the suction service gauge does not exceed 345 kPa (50 psi). **Keep refrigerant container upright.**

(b) Add refrigerant gas until there is no foam visible at the sight glass. Then add a further 170 g (6 oz.).

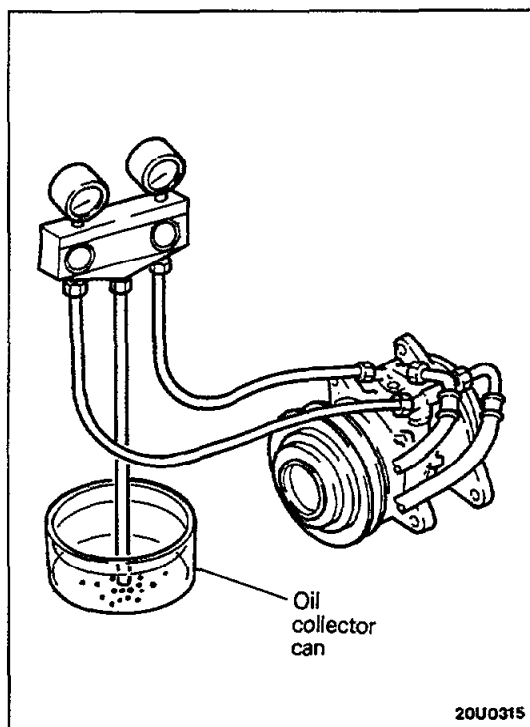
(c) Close the suction gauge valve.

**Caution**

**Too much refrigerant in the system can cause abnormally high discharge pressures. Care must be used so that the exact recommended amount of refrigerant is added after foam clears in the sight glass.**

(d) Close dispensing manifold valve. Remove test hoses and adapters from the service ports of compressor, install protective caps at service ports and reconnect wiring.

(e) Check system performance P. 24-37.



**DISCHARGING THE SYSTEM**

Since the air conditioning refrigerant system is pressurized, it will be necessary to completely discharge the system (in a well ventilated area) before replacing any refrigerant component. The procedure is as follows:

(1) Install manifold gauge set. Make sure the gauge set valves are closed before attaching the hoses to the refrigerant system.

(2) Install a long hose to the manifold gauge set connector. Run this hose to the oil collector can near a shop exhaust system.

A good oil collector can may be made from a large empty coffee can with a plastic top. Slit the plastic top in the form of a Y to make an entrance for the refrigerant hose and an exit for the gas.

(3) Open the compressor discharge and suction line pressure valves and blow the refrigerant into the oil collect can. Watch to make sure the hose does not blow out of the collector can.

(4) When the system has been completely discharged, measure the amount of oil collected in the can. The amount of oil measured should be added to the refrigerant system before it is re-charged. Add new oil-discard the used oil.

**Caution**

**It is important to have the correct amount of oil in the refrigerant system.**

Too little oil will provide inadequate compressor lubrication and cause a compressor failure. Too much oil will increase discharge air temperature.

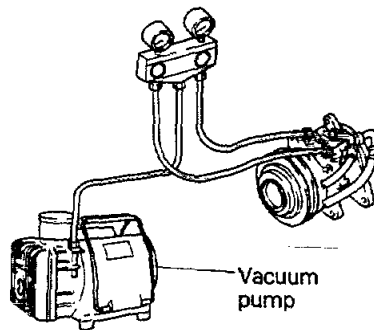
When a compressor is installed at the factory, it contains refrigerant oil.

While the air conditioning system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.

When the following system components are changed, it is necessary to add oil to the system to replace the oil being removed with the component.

Replacement component	Replenishment oil cc (fl.oz.)	
	6P148	10PA15
Compressor	90 (3.2)	40 (1.4)
Condenser	30 (1.0)	30 (1.0)
Evaporator	60 (2.0)	60 (2.0)
Pipe		
1m (3.3 ft.) or more	5 (0.2)	5 (0.2)
1m (3.3 ft.) or less	0 (0)	0 (0)
Receiver drive	10 (0.3)	10 (0.3)

## EVACUATING THE SYSTEM



20U0317

Whenever the system has been opened to the atmosphere, it is absolutely essential that the system be evacuated or "vacuumed" to remove all the air and moisture. Air in the refrigerant system causes high compressor discharge pressures, a loss in system performance, and oxidation of the compressor oil into gum and varnish. Moisture in the refrigerant system can cause the expansion valve to malfunction. Under certain conditions, water can react with the refrigerant to form destructive acids. It is necessary to adhere to the following procedure to keep air and moisture out of the system.

- (1) Install manifold gauge set. Make sure the gauge set valves are closed before attaching the hoses to the refrigerant system.
- (2) Discharge the system slowly if the manifold gauge set indicates pressure in the system.
- (3) Connect a long test hoses from gauge set manifold center connection to vacuum pump.
- (4) Open both manifold gauge set valves.
- (5) Start the vacuum pump and operate until the

evaporator suction gauge registers at least -101 kPa (29.9 in. of vacuum).

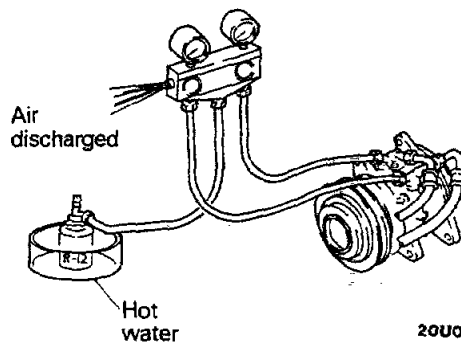
If at least -101 kPa (29.9 in. of vacuum) cannot be obtained, either the system has a leak or the vacuum pump is defective.

Check the vacuum pump. If the pump proves to be functioning properly, the system has a leak. Charge the system with one can (14 oz) of refrigerant. Locate and repair all leaks. Discharge the refrigerant and evacuate the system.

- (6) Continue to operate the pump for at least five minutes.
- (7) Close manifold valves. Turn off the vacuum pump and observe evaporator suction gauge for two minutes. The vacuum level should remain constant.

If the vacuum level falls off, the system has a leak. Charge the system with one pound of refrigerant. Locate and repair all leaks. Discharge the system and repeat evacuation procedure.

## CHARGING THE SYSTEM



20U0326

The refrigerant system must have been evacuated using the previous procedure before charging. Charge using only R-12 refrigerant. R-12 is available in bulk tanks or small cans. Follow the safety precautions for handling R-12 as listed in the beginning of this group.

**Charging with Small Cans**

When using disposable cans of this type, follow carefully the can manufactures instructions.

**Caution**

**Never use these cans to charge into the high pressure side of the system (compressor discharge port) or into a system that is at high temperature, because the high system pressures could be transferred into the charging can causing it to explode.**



Keep the refrigerant manifold valves capped when not in use.

Keep a supply of extra refrigerant-can-to-refrigerant-manifold gaskets on hand so that gaskets can be replaced periodically. This will insure a good seal without excessive tightening of the can or the manifold nuts.

- (1) Attach center hose from manifold gauge set to refrigerant dispensing manifold. Turn refrigerant manifold valves completely counterclockwise so they are fully open. Remove protective caps from refrigerant manifold.
- (2) Screw refrigerant cans into manifold. Be sure manifold-to-can gasket is in place and in good condition. Tighten can and manifold nuts to 8 to 11 Nm (6 to 8 ft.lbs.)
- (3) Turn refrigerant manifold valves completely clockwise to puncture the cans and close the manifold valves.
- (4) Purge the air from the charging line by loosening the charging hose at the gauge set manifold and turning one of the refrigerant valves counterclockwise to release refrigerant. When the refrigerant gas starts escaping from the loose connection, re-tighten the hoses.

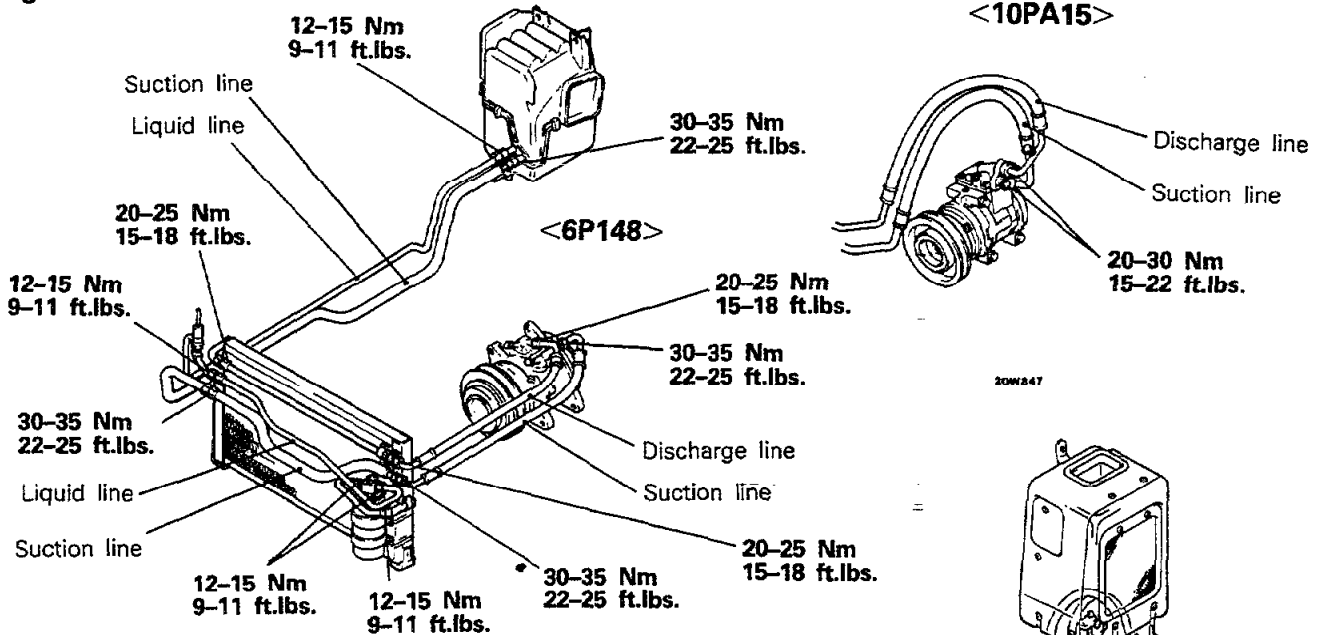
#### Caution

**Never heat small refrigerant cans over 52°C (125°F) as they may explode.**

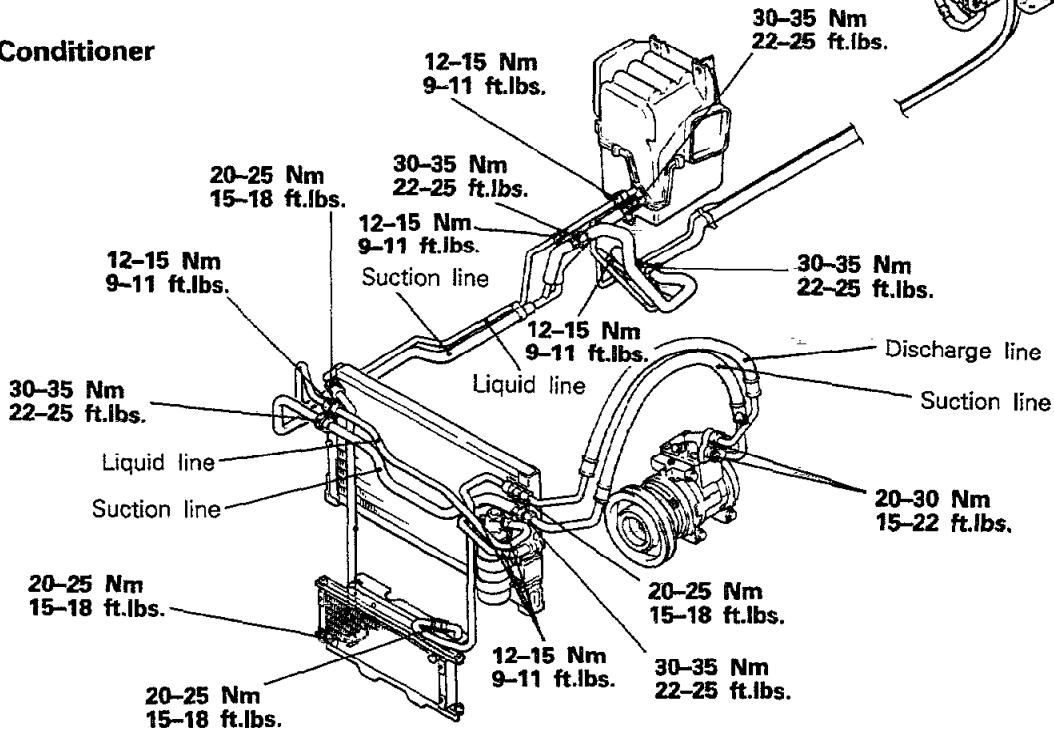
- (5) Fully open all refrigerant manifold valves being used and place the cans of refrigerant into a pan containing 52°C (125°F) water will warm the charging can and aid in the transfer of the charge into the system. Place the water pan and refrigerant cans on a scale and note the weight.
- (6) Jump the low pressure switch terminals located on the receiver drier so the clutch will remain engaged.
- (7) Start the engine and move the controls to air conditioner switch on and low blower position. The low pressure switch will prevent the clutch from engaging until refrigerant is added to the system. If the clutch does engage, replace the switch before proceeding any further.
- (8) Charge through the suction side of the system by slowly opening the suction manifold valve. Adjust the valve as necessary so charging pressure does not exceed 345 kPa (50 psi). Maintain the temperature of the water in the pan by adding warm water as necessary. Note the weight of water added, to ensure accuracy when determining amount of refrigerant added to system.
- (9) Adjust the engine speed to a fast idle of approximately 1,500 rpm.
- (10) When specified refried refrigerant charge 900 (31.7 lbs.) has entered the system, close the gauge set manifold valves, refrigerant manifold valves, and reconnect wiring. Each can contains 397 g (14 oz.) of R-12. Use 2 1/2 cans.

HANDLING TUBING AND FITTINGS

Single Air Conditioner



Dual Air Conditioner



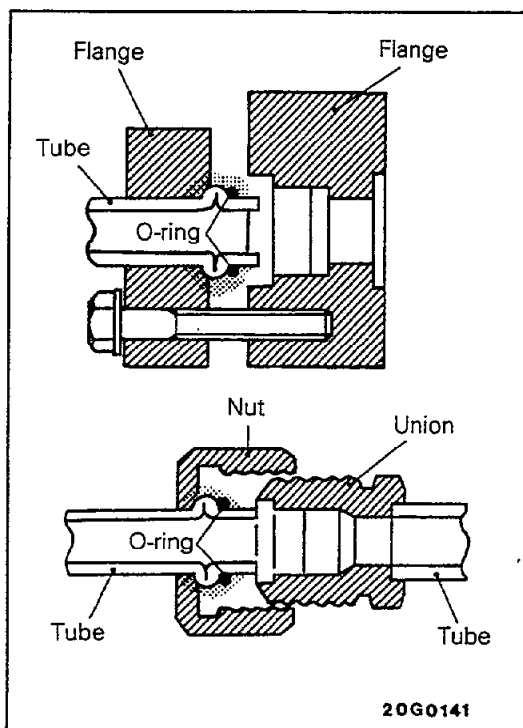
Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and mois-

ture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting or connection in the refrigeration system.

Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly. **Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing.**

A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.

Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm (3 in.) from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed. All plumbing connections use O-rings which are not reusable.



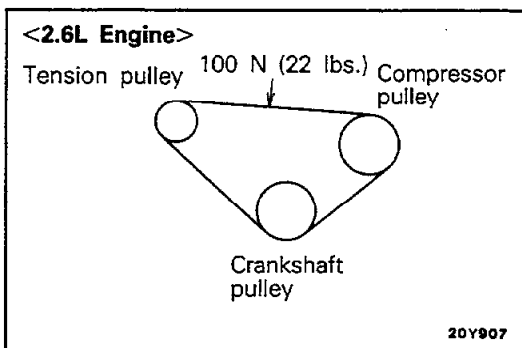
**O-RING INSTALLATION**

- (1) Clean sealing surface.
- (2) Make sure O-ring does not have any scratches.
- (3) Connect fitting, install fastener, and torque to amount shown in illustration.

The internal part of the refrigeration system will remain in a state of chemical stability as long as pure-moisture-free R-12 and refrigerant oil is used. Abnormal amounts of dirt, moisture or air can upset the chemical stability and cause operational troubles or even serious damage if present in more than minute quantities.

When it is necessary to open the refrigeration system, have everything you will need to service the system ready so the system will not be left open any longer than necessary. Cap or plug all lines and fittings as soon as they are opened to prevent the entrance of dirt and moisture. All lines and components in parts stock should be capped or sealed until they are ready to be used.

All tools, including the refrigerant dispensing manifold, the gauge set manifold and test hoses should be kept clean and dry.



**COMPRESSOR DRIVE BELT ADJUSTMENT** N24FJABa

Satisfactory performance of the air conditioning system is dependent upon drive belt condition and tension. If the proper tensions are not maintained, belt slippage will greatly reduce air conditioning performance and drive belt life. To avoid such adverse effects, the following service procedure should be followed:

- (1) Any belt that has operated for a minimum of one half-hour is considered to be a "used" belt. Adjust air conditioning drive belt at the time of new-car preparation.
- (2) Check drive belt tension at regular service intervals and adjust as needed.

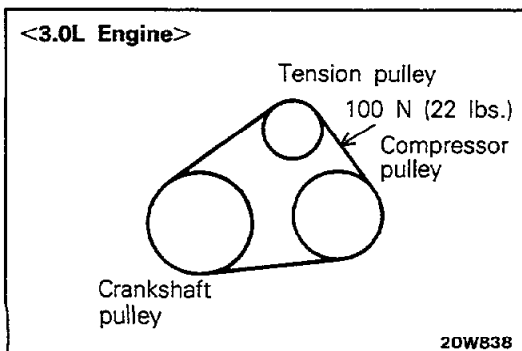
**Standard value**

**When a new belt installed**

- 2.6 L Engine : 13–15 mm (.51–.59 in.)
- 3.0 L Engine : 5.0–6.0 mm (.20–.24 in.)

**When a used belt installed**

- 2.6 L Engine : 17–20 mm (.67–.78 in.)
- 3.0 L Engine : 8.5–9.5 mm (.33–.37 in.)



**COMPRESSOR NOISE**

N24FLAA

When investigating an air conditioning related noise, you must first know the conditions when the noise occurs.

These conditions are weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions.

Noises that develop during air-conditioning operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering, alternator or air pump). Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged.

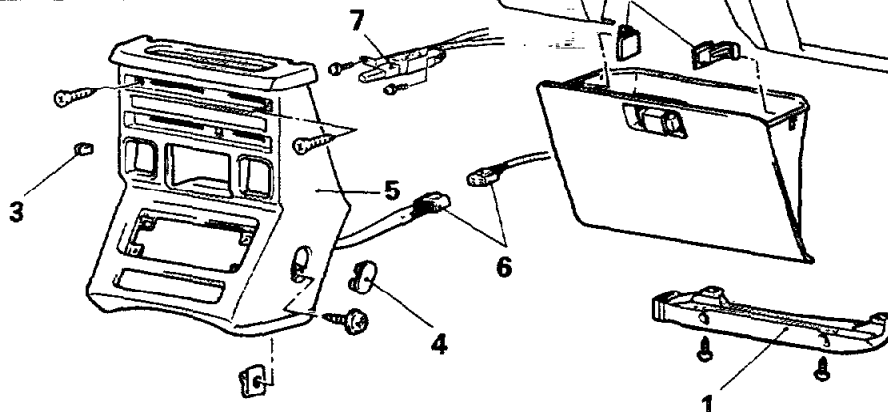
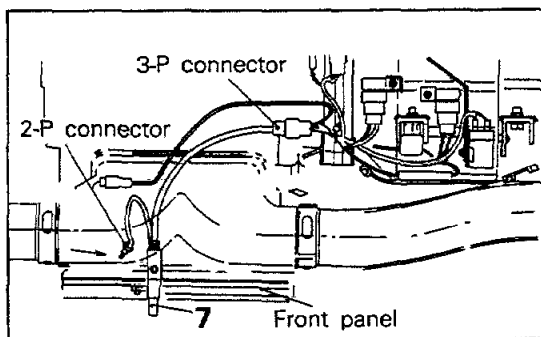
Drive belts are speed sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

**Adjustment Procedures**

- (1) Select a quiet area for testing. Duplicate conditions as much as possible. Switch compressor on and off several times to clearly identify compressor noise.  
**To duplicate high ambient conditions (high head pressure), restrict air-flow through condenser. Install manifold gauge set to make sure discharge pressure does not exceed 2,070 kPa (300 psi).**
- (2) Tighten all compressor mounting bolts, clutch mounting bolt, and compressor drive belt. Check to assure clutch coil is tight (no rotation or wobble).
- (3) Check refrigerant hoses for rubbing or interference that can cause unusual noises.
- (4) Check refrigerant charge (See "Charging the System").
- (5) Recheck compressor noise as in Step 1.
- (6) If noise still exists, loosen compressor mounting bolts and retorque. Repeat Step 1.
- (7) If noise continues, replace compressor and repeat Step 1.

**AIR CONDITIONER SWITCH  
REMOVAL AND INSTALLATION**

N24QA-



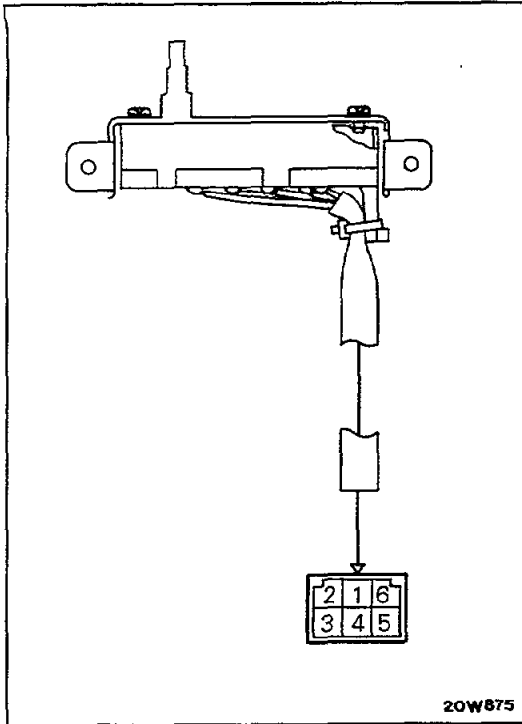
20W829

**Removal steps**

1. Lap heater duct (C)
2. Glove box stoppers
3. Knobs
4. Plugs
5. Center panel
6. Connection of center panel wiring harness to front wiring harness connector
7. Air conditioner switch

**NOTE**

Reverse the removal procedures to reinstall.



### REAR FAN SWITCH

#### INSPECTION

N24GCAC2

#### BLOWER SWITCH

Operate the switch, and check the continuity between the terminals.

Switch position \ Terminal	1	6	2	3	4	5
OFF	○					
•	○	○	○			
•	○	○		○		
•	○	○			○	
•	○	○				○

**NOTE**

○—○ indicates that there is continuity between the terminals.

**FRONT EVAPORATOR  
REMOVAL AND INSTALLATION**

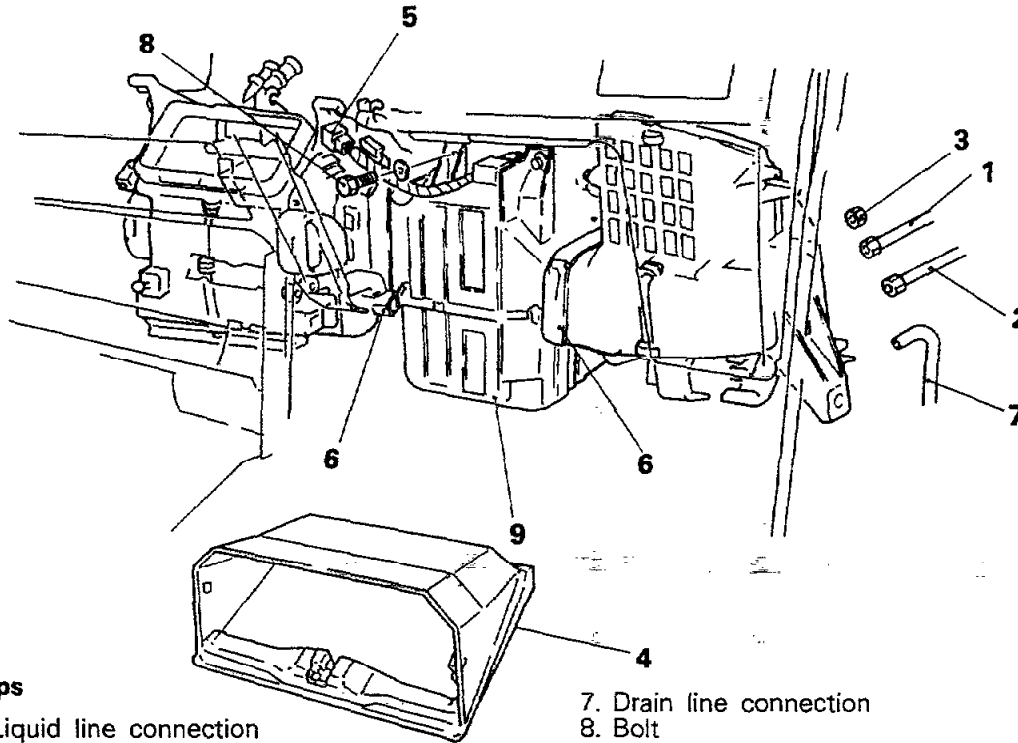
N24RA-A

**Pre-removal Operation**

- Discharge the refrigerant. (Refer to P.24-39.)

**Post-installation Operation**

- Charge the refrigerant. (Refer to P.24-40.)



**Removal steps**

- ◆◆ 1. Liquid line connection
- ◆◆ 2. Suction line connection
- 3. Nut
- 4. Glove box
- 5. Main harness connector connection
- 6. Duct joint

- 7. Drain line connection
- 8. Bolt
- 9. Evaporator

**NOTE**

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Installation".

**SERVICE POINTS OF REMOVAL**

N24RBAC1

**Caution**

If the hoses or pipes are disconnected, cap the hoses or pipes with a blank plug to prevent entry of dust, dirt, and water.

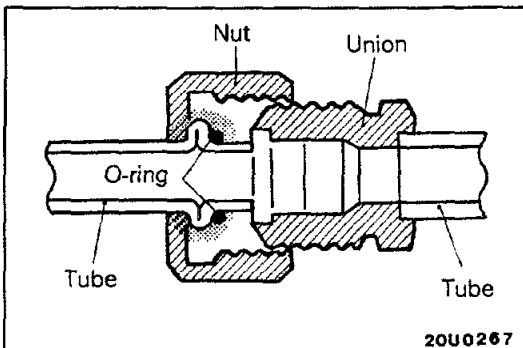
**SERVICE POINTS OF INSTALLATION**

N24RDAE

**2. APPLICATION OF COMPRESSOR OIL TO SUCTION LINE/1. LIQUID LINE**

Apply specified compressor oil to portions indicated before installing the liquid pipe and suction flexible hose.

**Specified compressor oil : DENSO OIL 6 or SUNISO 5GS**



20U0267

DISASSEMBLY AND REASSEMBLY

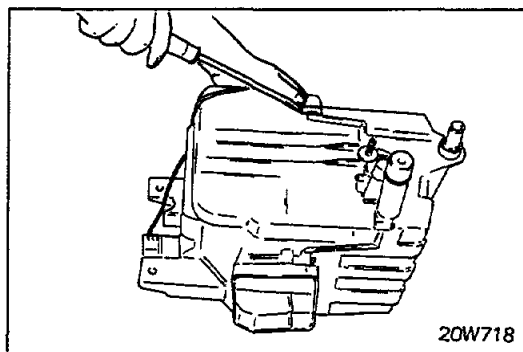
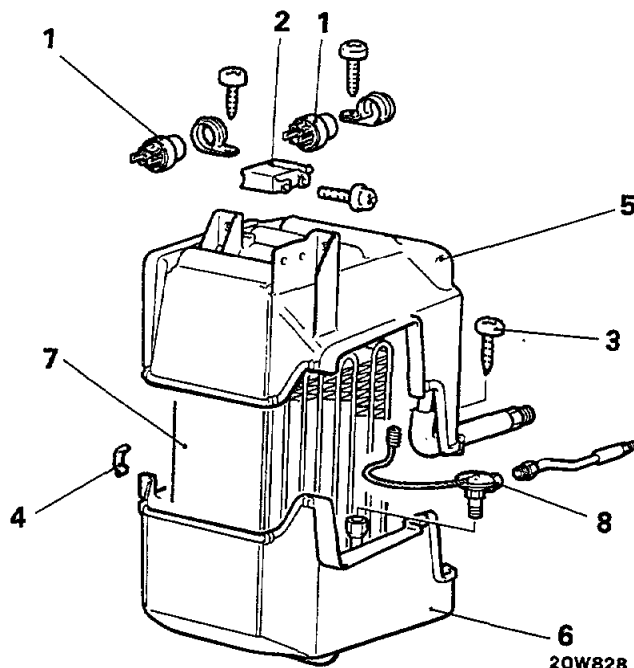
N24RE-A

**Disassembly steps**

- 1. Air conditioner relay
- 2. Thermistor
- 3. Screw
- ↔ 4. Clip
- 5. Evaporator case (upper)
- 6. Evaporator case (lower)
- 7. Evaporator assembly
- ↔ ↔ 8. Expansion valve

**NOTE**

- (1) Reverse the disassembly procedures to reassemble.
- (2) ↔ : Refer to "Service Points of Disassembly".
- (3) ↔ ↔ : Refer to "Service Points of Reassembly".

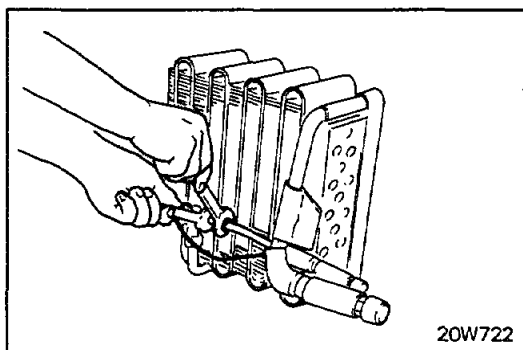


**SERVICE POINTS OF DISASSEMBLY**

N24RFAB

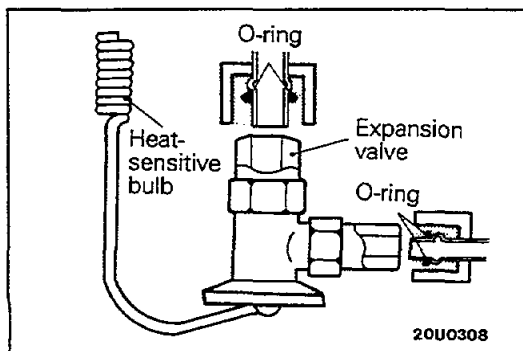
**4. REMOVAL OF CLIP**

Remove the clips with a flat-blade screwdriver covered with a shop towel to prevent damage to case surfaces.



**8. REMOVAL OF EXPANSION VALVE**

Use two wrenches to loosen the flare nut on the pipe connection (for both the inlet and outlet).



**SERVICE POINTS OF REASSEMBLY**

N24RHA E

**8. APPLICATION OF COMPRESSOR OIL TO EXPANSION VALVE**

Apply specified compressor oil to the O-rings and install the expansion valve to the evaporator assembly.

**Specified oil : DENSO OIL 6 or SUNISO 5GS**

## REAR EVAPORATOR REMOVAL AND INSTALLATION

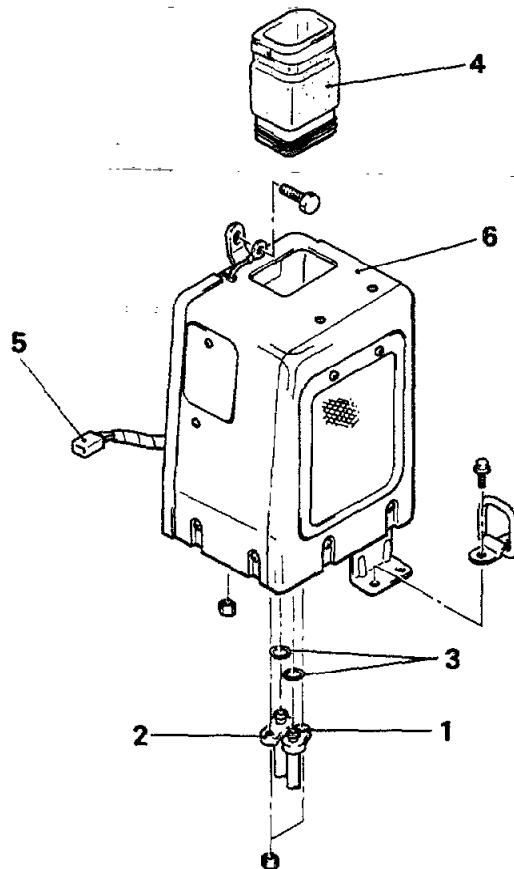
N24RA-B

### Pre-removal Operation

- Discharge the Refrigerant.  
(Refer to P. 24-39.)
- Remove the Rear Pillar Trim.  
(Refer to GROUP 23-Trims)

### Post-installation Operation

- Install the Rear Pillar Trim.  
(Refer to GROUP 23-Trims.)
- Charge the Refrigerant.  
(Refer to P. 24-40.)



### Removal steps

- ◆◆ 1. Liquid line connection
- ◆◆ 2. Suction line connection
- 3. O-ring
- 4. Duct
- 5. Connector
- 6. Rear evaporator ass'y

### NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Installation".

20W855

## SERVICE POINTS OF REMOVAL

N24RBAC2

### Caution

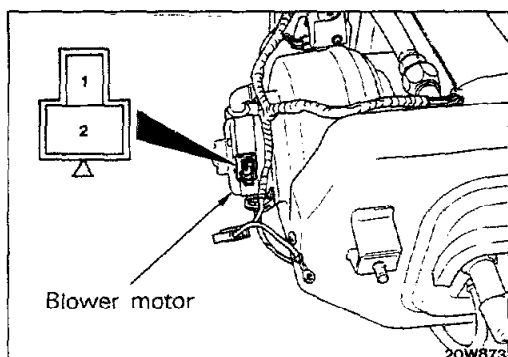
If the hoses or pipes are disconnected, cap the hoses or pipes with a blank plug to prevent entry of dust, dirt, and water.

## INSPECTION

N24RCAC

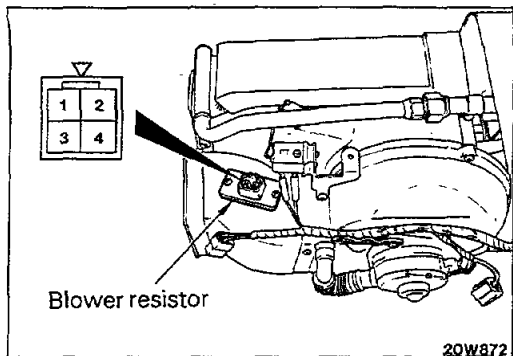
### BLOWER MOTOR ASSEMBLY

- (1) Connect the blower motor terminals directly to the battery and check that the blower motor operates smoothly.
- (2) Next, reverse the polarity and check that blower motor operates smoothly in the reverse direction.



TSB Revision

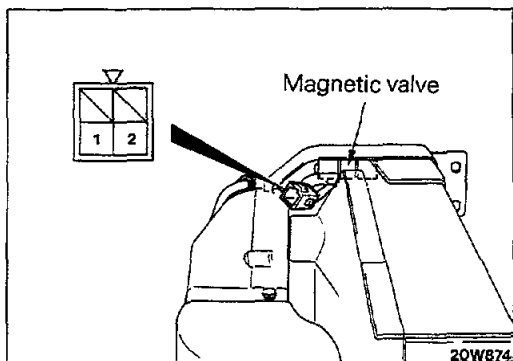




**BLOWER RESISTOR**

(1) Check for resistance as described below.

Terminals measured	Standard value $\Omega$
Between terminals ④–②	Approx. 0.5
Between terminals ④–①	Approx. 1.8
Between terminals ④–③	Approx. 3.3



**MAGNETIC VALVE**

- (1) Connect terminal ① to the positive (+) terminal of the battery, and connect terminal ② to the negative (-) terminal of the battery.
- (2) The condition of the magnetic valve can be considered satisfactory if the operation sound (a "click" sound) of the magnetic valve can be heard when this check is made.

**SERVICE POINTS OF INSTALLATION**

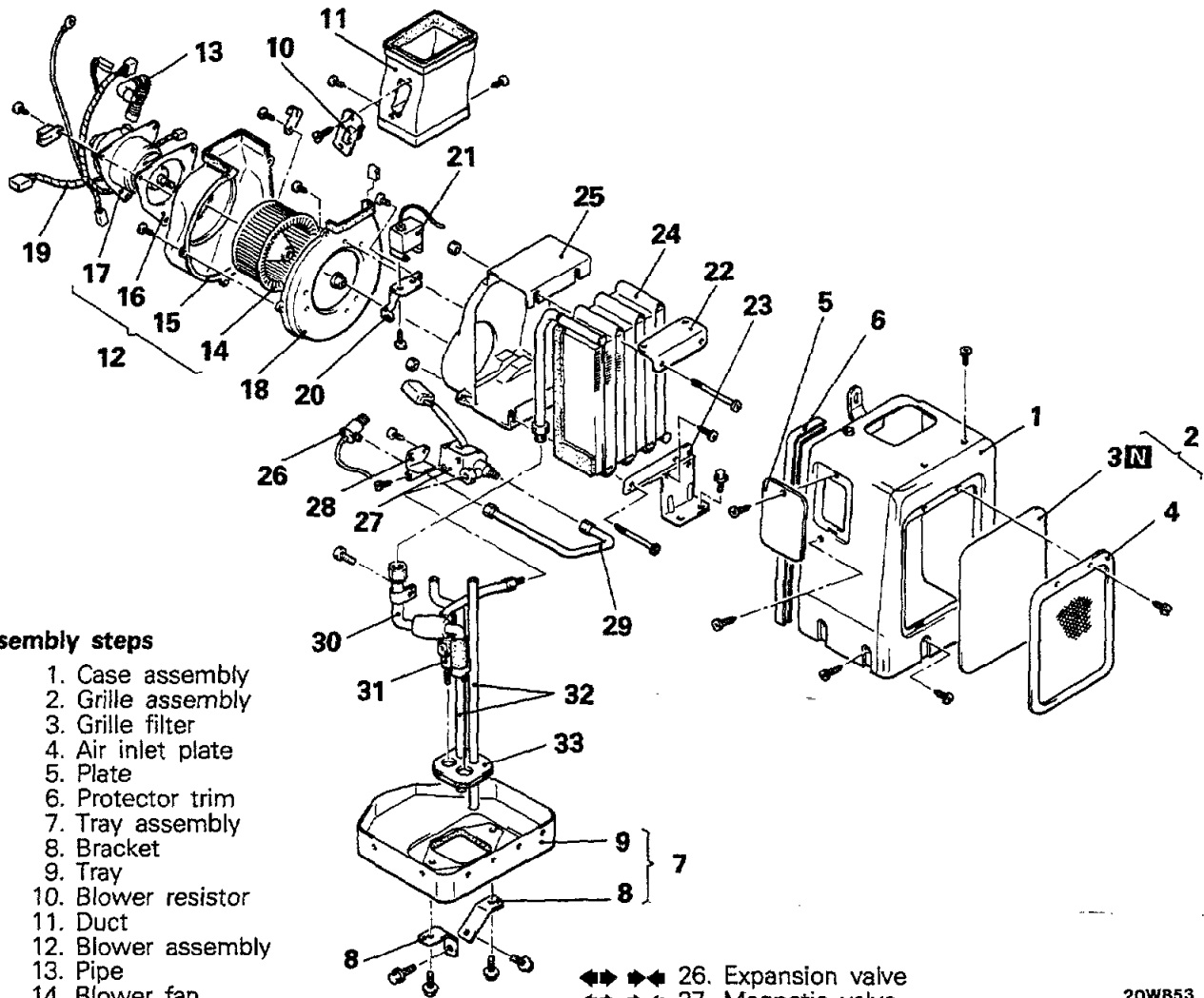
N24RDAL

**2. APPLICATION OF COMPRESSOR OIL TO SUCTION LINE/1. LIQUID LINE**

Refer to P. 24-46.

DISASSEMBLY AND REASSEMBLY

N24RE-B



Disassembly steps

1. Case assembly
2. Grille assembly
3. Grille filter
4. Air inlet plate
5. Plate
6. Protector trim
7. Tray assembly
8. Bracket
9. Tray
10. Blower resistor
11. Duct
12. Blower assembly
13. Pipe
14. Blower fan
15. Blower case
16. Packing
17. Motor assembly
18. Blower case
19. A/C harness
20. Thermistor bracket
21. Thermistor
22. Plate
23. Bracket
24. Evaporator
25. Cooling unit case

- ◄◄ ◄◄ 26. Expansion valve
- ◄◄ ◄◄ 27. Magnetic valve
- ◄◄ ◄◄ 28. Bracket
- ◄◄ ◄◄ 29. Liquid pipe
- ◄◄ ◄◄ 30. Suction pipe
- ◄◄ ◄◄ 31. Liquid pipe
- ◄◄ ◄◄ 32. Drain hose
- ◄◄ ◄◄ 33. Grommet

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ◄◄ : Refer to "Service Points of Disassembly".
- (3) ◄◄ : Refer to "Service Points of Reassembly".
- (4) [N] : Non-reusable parts

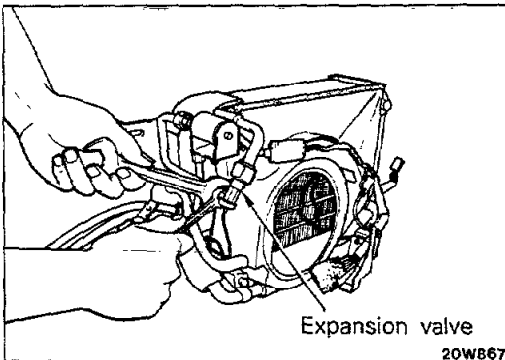
20W853

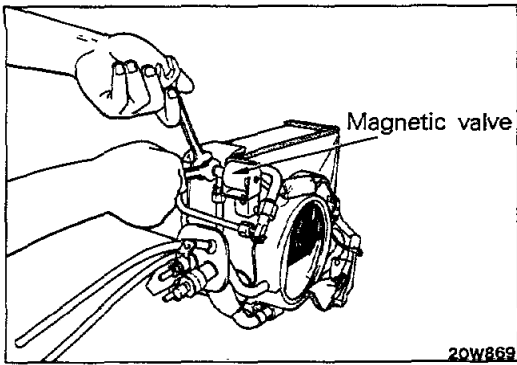
SERVICE POINTS OF DISASSEMBLY

N24FAH

26. REMOVAL OF EXPANSION VALVE

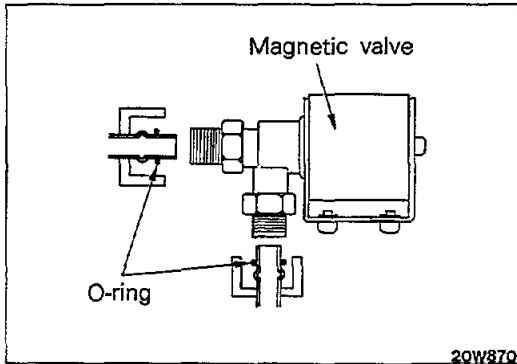
Use two wrenches to loosen the flare nut on the pipe connection (for both the inlet and outlet).





**27. REMOVAL OF MAGNETIC VALVE**

Use two wrenches to loosen the flare nut on the pipe connection (for both the inlet and outlet).



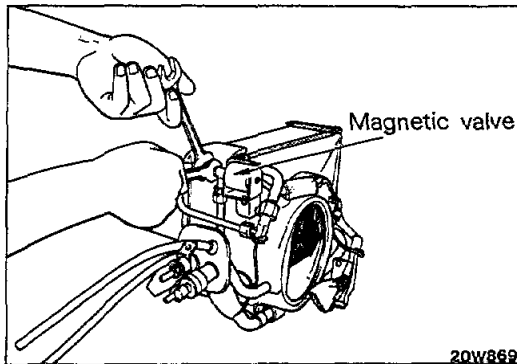
**SERVICE POINTS OF REASSEMBLY**

N24RHAN

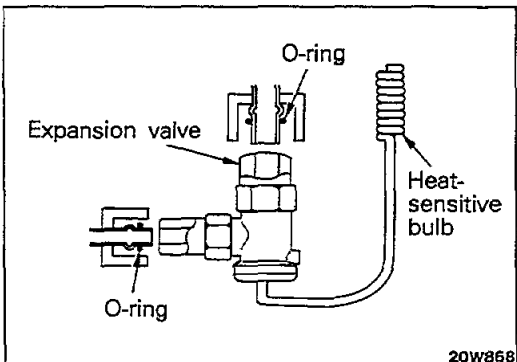
**27. INSTALLATION OF MAGNETIC VALVE**

(1) Apply specified compressor oil to the O-rings and install the magnetic valve to the evaporator assembly.

**Specified compressor oil : DENSO OIL 6 or SUNISO 5GS**



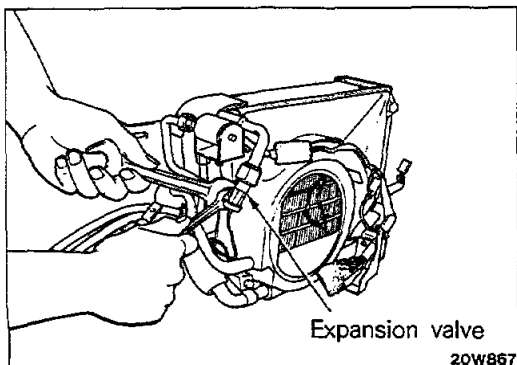
(2) Use two wrenches to tighten the flare nut on the pipe connection (for both the inlet and outlet).



**26. INSTALLATION OF EXPANSION VALVE**

(1) Apply specified compressor oil to the O-rings and install the expansion valve to the evaporator assembly.

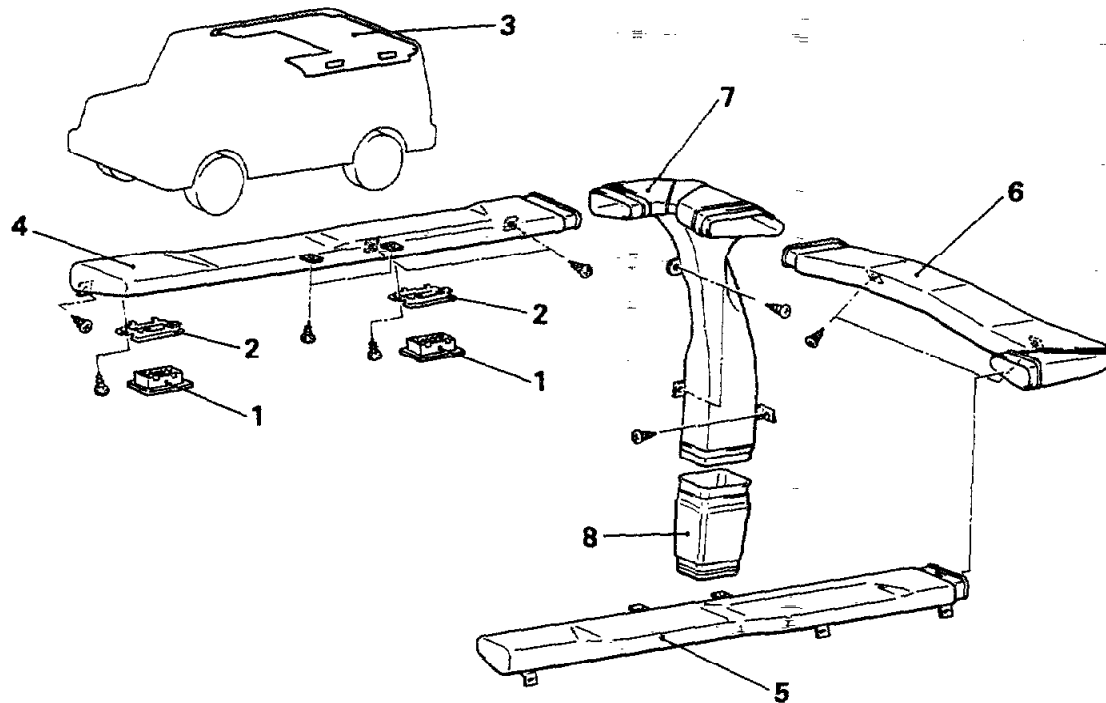
**Specified compressor oil : DENSO OIL 6 or SUNISO 5GS**



(2) Use two wrenches to tighten the flare nut on the pipe connection (for both the inlet and outlet).

## REAR VENTILATORS REMOVAL AND INSTALLATION

N24MA-C



### Removal steps

- ◄► 1. Air outlet grille
- ◄► 2. Retainer B
- ◄► ◄◄ 3. Rear headlining
- 4. Roof duct assembly (R.H.)
- 5. Roof duct assembly (L.H.)
- 6. Rear roof duct assembly
- 7. Pillar duct
- 8. Duct

20W844

### NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◄► : Refer to "Service Points of Removal".
- (3) ◄◄ : Refer to "Service Points of Installation".

### SERVICE POINTS OF REMOVAL

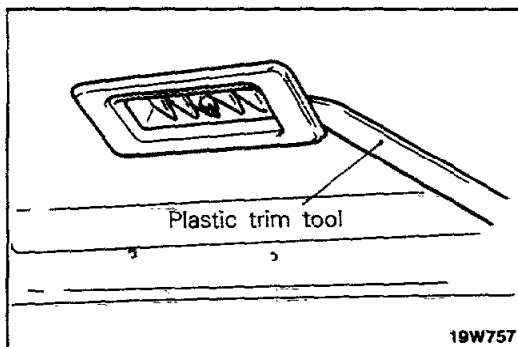
N24MBBB

#### 1. REMOVAL OF AIR OUTLET GRILLES

Using a plastic trim tool, remove the air outlet grille.

#### 3. REMOVAL OF REAR HEADLINING

Refer to GROUP 23 – Headlining and Assist Strap.



19W757

### SERVICE POINTS OF INSTALLATION

N24MDBB

#### 3. INSTALLATION OF REAR HEADLINING

Refer to GROUP 23 – Headlining and Assist Strap.

# RECEIVER, DRIER CONDENSER, COMPRESSOR CLUTCH ASSEMBLY REMOVAL AND INSTALLATION Single Air Conditioner

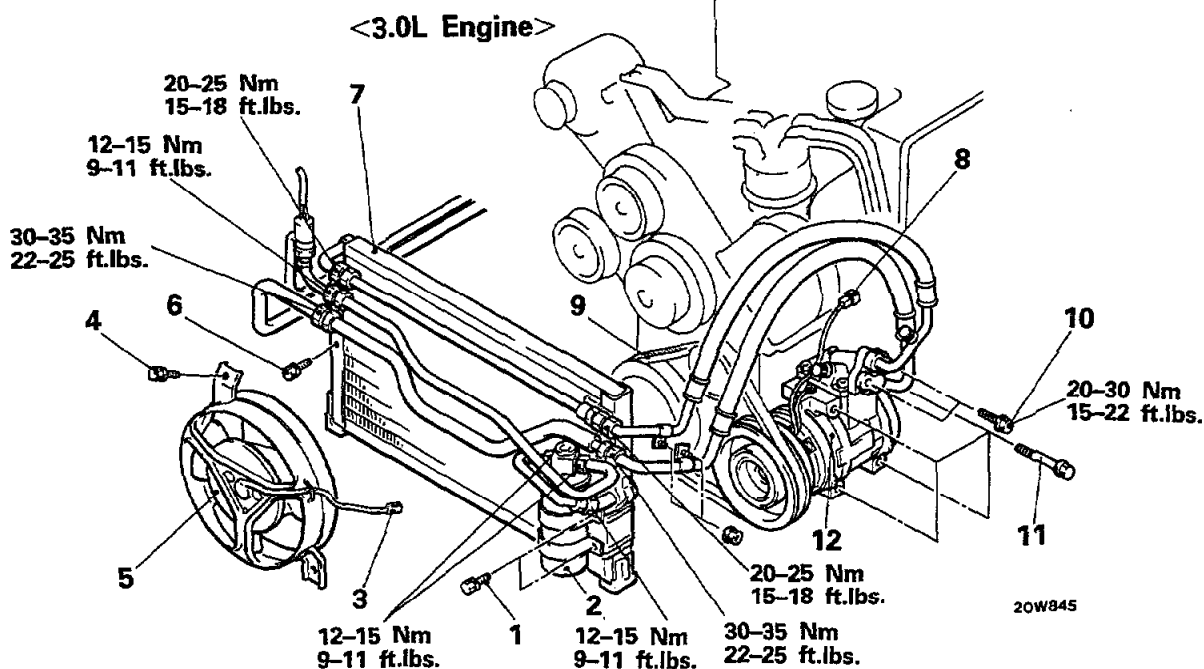
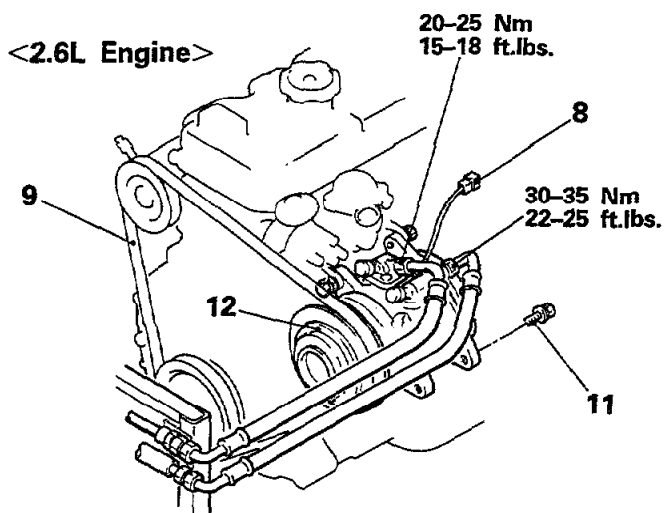
N24TA-

### Pre-removal Operation

- Discharge the Refrigerant. (Refer to P.24-39.)
- Remove the Radiator Grille. (Refer to GROUP 23 -Grille, Garnish, Moulding)
- Disconnect the Liquid Pipes and Hoses.

### Post-installation Operation

- Install the Radiator Grille. (Refer to GROUP 23 -Grille, Garnish, Moulding)
- Charge the Refrigerant. (Refer to P.24-40.)
- Adjustment of the Tension of the Air Conditioner Drive Belt. (Refer to P.24-43.)



### Receiver drier removal steps

1. Receiver drier mounting bolt
2. Receiver drier

### Condenser removal steps

3. Blower motor connector
4. Blower motor mounting bolt
5. Blower motor
6. Condenser mounting bolt
7. Condenser

### Compressor clutch assembly removal steps

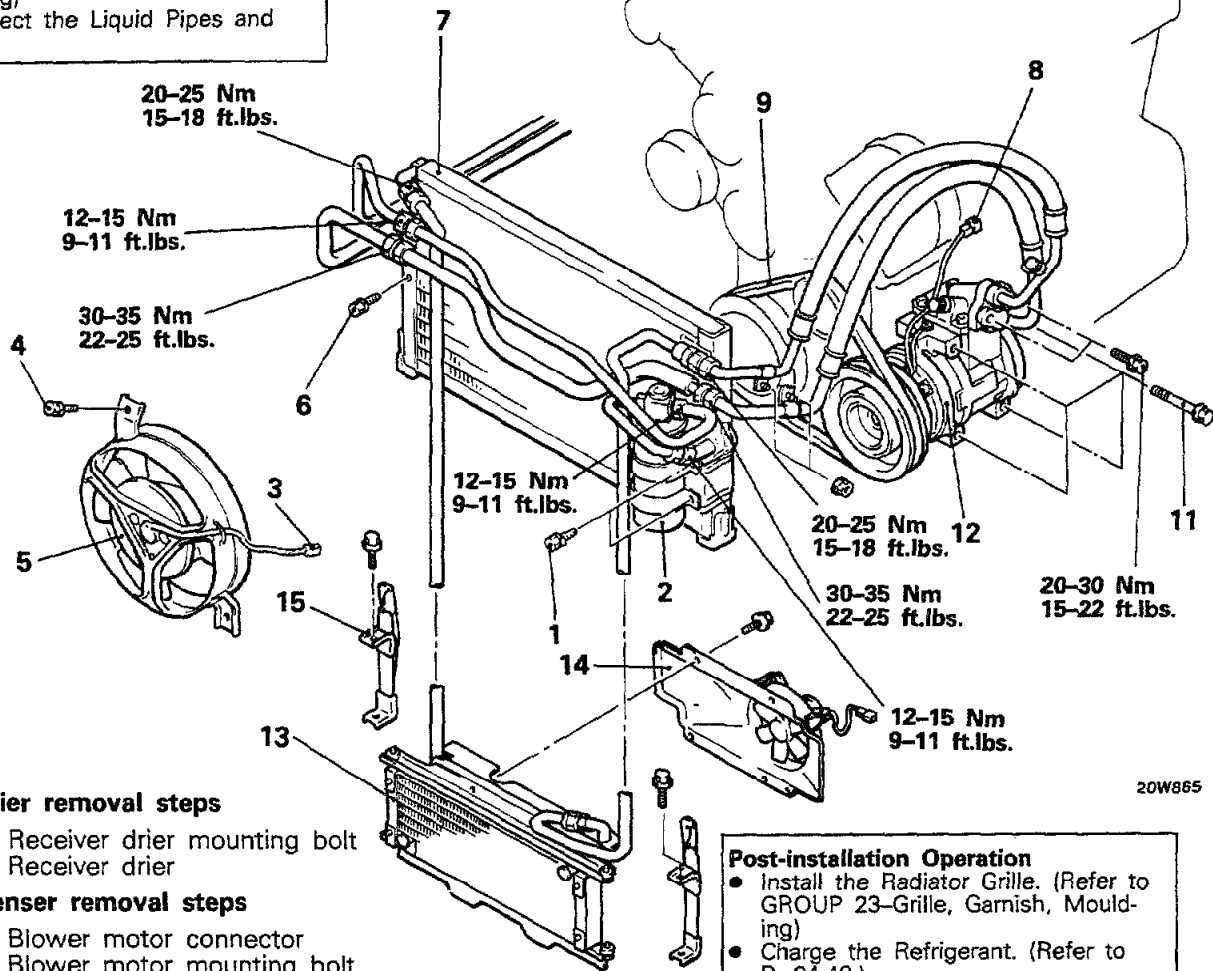
8. Clutch coil connector
9. Drive belt
10. Line mounting bolt
11. Compressor clutch assembly mounting bolt
12. Compressor clutch assembly

NOTE  
Reverse the removal procedures to reinstall.

## Dual Air Conditioner

## Pre-removal Operation

- Discharge the Refrigerant. (Refer to P. 24-39.)
- Remove the Radiator Grille. (Refer to GROUP 23-Grille, Garnish, Moulding)
- Disconnect the Liquid Pipes and Hoses.



## Receiver drier removal steps

1. Receiver drier mounting bolt
2. Receiver drier

## Main condenser removal steps

3. Blower motor connector
4. Blower motor mounting bolt
5. Blower motor
6. Condenser mounting bolt
7. Condenser

## Compressor clutch assembly removal steps

8. Clutch coil connector
9. Drive belt
10. Line mounting bolt
11. Compressor clutch assembly mounting bolt
12. Compressor clutch assembly

## Post-installation Operation

- Install the Radiator Grille. (Refer to GROUP 23-Grille, Garnish, Moulding)
- Charge the Refrigerant. (Refer to P. 24-40.)
- Adjustment of the Tension of the Air Conditioner Drive Belt. (Refer to P. 24-43.)

## Sub condenser removal steps

13. Condenser
14. Blower motor
15. Bracket

## NOTE

Reverse the removal procedures to reinstall.

## SERVICE POINTS OF REMOVAL

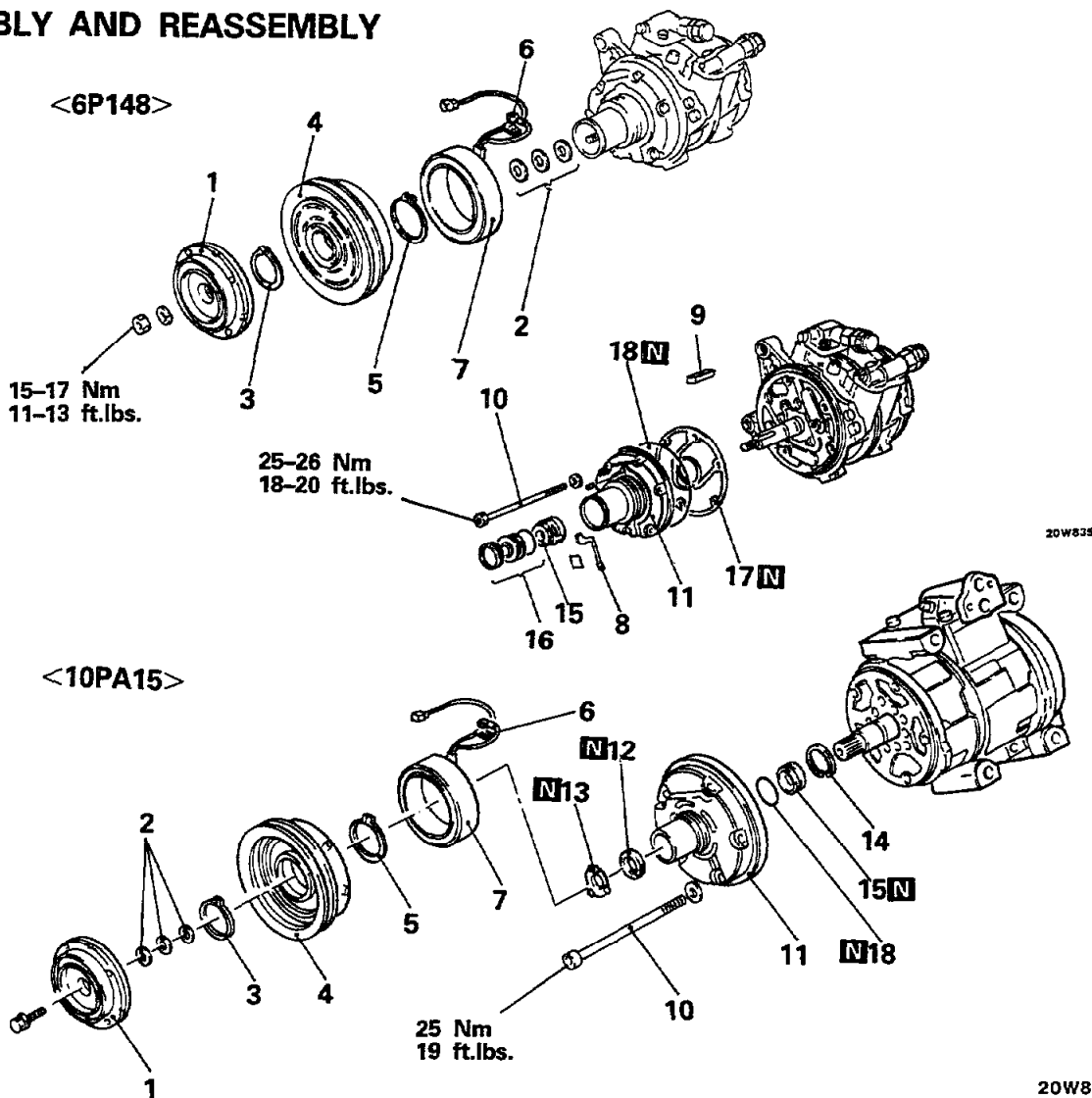
N24TBAB

## Caution

If the hoses or pipes are disconnected, cap the hoses or pipes with a blank plug to prevent entry of dust, dirt, and water.

# COMPRESSOR

## DISASSEMBLY AND REASSEMBLY



N24TE-

20W835

20W856

### Magnetic clutch disassembly steps

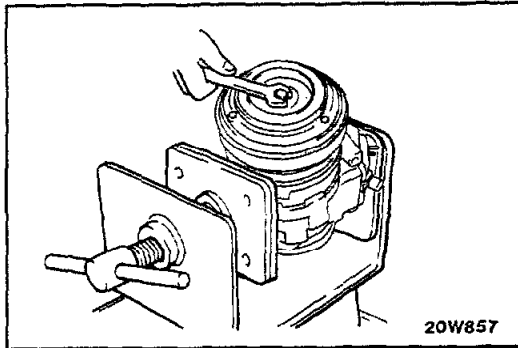
- ▶▶ Adjustment of clutch clearance
- ◀▶ 1. Clutch hub
- 2. Shims
- 3. Snap ring
- ◀▶ 4. Rotor assembly
- 5. Snap ring
- 6. Ground terminal
- ▶▶ 7. Clutch coil

### Compressor front housing and shaft seal disassembly steps

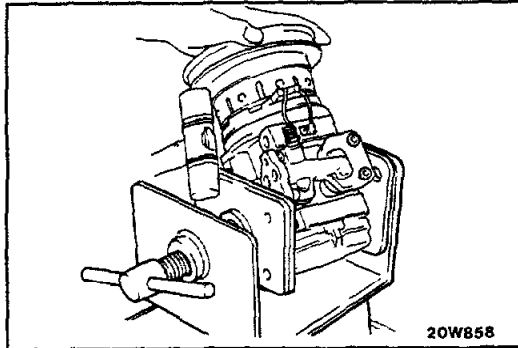
- 8. Oil drain guide
- 9. Woodruff key
- ◀▶ 10. Through bolt
- ▶▶ Refilling of compressor oil
- ▶▶ 11. Front housing
- ◀▶ 12. Felt
- 13. Felt holder
- 14. Snap ring
- ◀▶ ▶▶ 15. Shaft seal
- ▶▶ 16. Shaft plate
- 17. Gasket
- 18. O-ring

**NOTE**

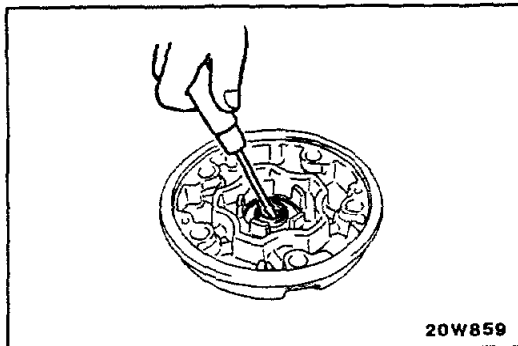
- (1) Reverse the disassembly procedures to reassemble.
- (2) ◀▶ : Refer to "Service Points of Disassembly".
- (3) ▶▶ : Refer to "Service Points of Reassembly".
- (4) [N] : Non-reusable parts



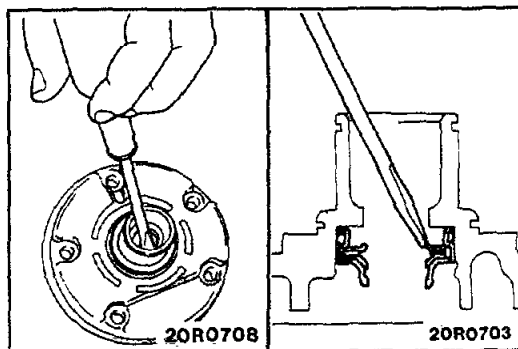
20W857



20W858



20W859



20R0708

20R0703

## SERVICE POINTS OF DISASSEMBLY

N24TFAH

### 1. REMOVAL OF CLUTCH HUB (10PA15)

- (1) Secure the compressor in a vise.
- (2) If the clutch hub cannot be pulled off by hand, screw in an 8 mm (.315 in.) completely threaded bolt so as to raise the clutch hub so it can be removed.

### 4. REMOVAL OF ROTOR ASSEMBLY

Using a plastic hammer, lightly tap the rotor off the shaft.

### 10. REMOVAL OF THROUGH BOLT

Remove the through bolt after first securing the rear housing of the compressor by placing it in a vise.

#### Caution

If the through bolt is removed without first doing so, the rear housing will become uncoupled and compressor oil will escape.

### 12. REMOVAL OF FELT (10PA15)

Using a flat-tip  $\ominus$  screwdriver, remove the felt from the front housing.

### 15. REMOVAL OF SHAFT SEAL (10PA15)

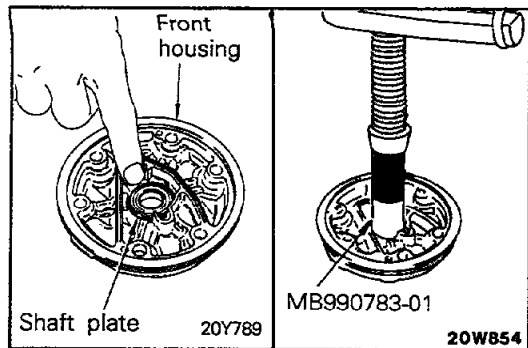
Using a flat-tip  $\ominus$  screwdriver, remove the shaft seal from the front housing.

## INSPECTION

N24TGAC

- Check the surface of the clutch hub for scoring or bluing.
- Check the surface of the rotor for scoring or bluing.
- Check the sealing surfaces for cracks, scratches and deformation.
- Check the front housing for cracks or scoring on the sealing surfaces.
- Check the compressor shaft for scoring.



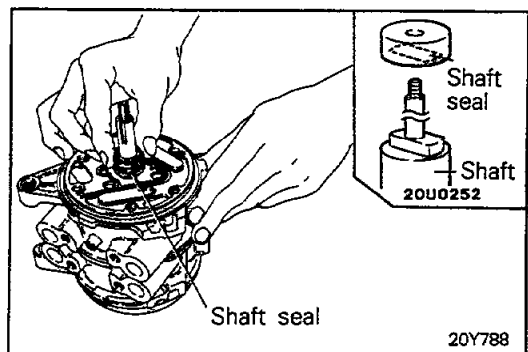


**SERVICE POINTS OF REASSEMBLY**

N24THAL

**16. INSTALLATION OF SHAFT PLATE (6P148)**

- (1) Lubricate the shaft plate and a new O-ring with compressor oil. Push the shaft plate and O-ring into the front housing.
- (2) Install the seal plate into the front housing with a special tool.



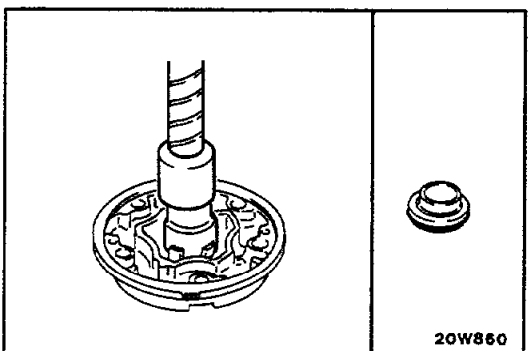
**15. INSTALLATION OF SHAFT SEAL**

6P148

Lubricate the shaft seal with compressor oil. Install the shaft seal on the shaft.

**NOTE**

Rotate the shaft seal lightly by hand to check that it is fitted into the notch on the compressor shaft.

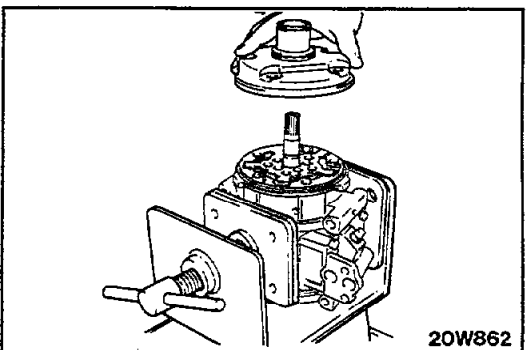


10PA15

- (1) Lubricate the shaft seal with specified compressor oil.

**Specified compressor oil :**  
**DENSO OIL 6 or SUNISO 5GS**

- (2) Set the shaft seal to the front housing so that the projection side of the center ring is at the shaft seal side.
- (3) Using a 21 mm (.83 in.) socket, install the shaft seal.

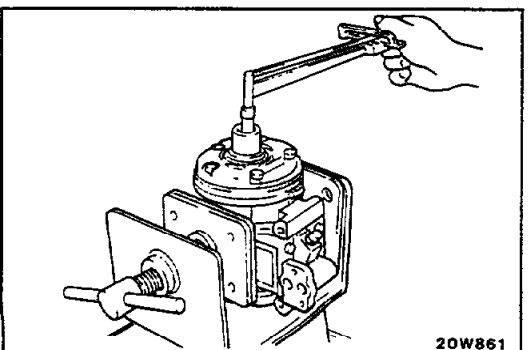


**11. INSTALLATION OF FRONT HOUSING (10PA15)**

- (1) Apply the specified compressor oil on the shaft.

**Specified compressor oil :**  
**DENSO OIL 6 or SUNISO 5GS**

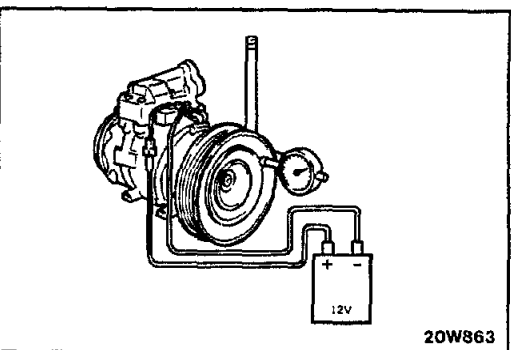
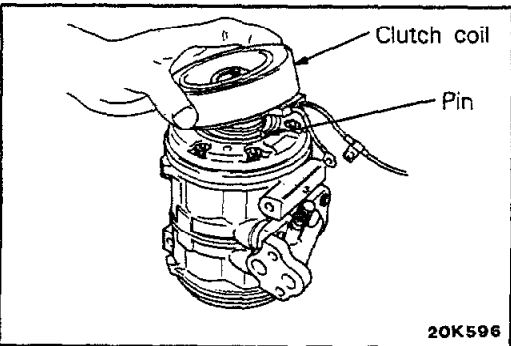
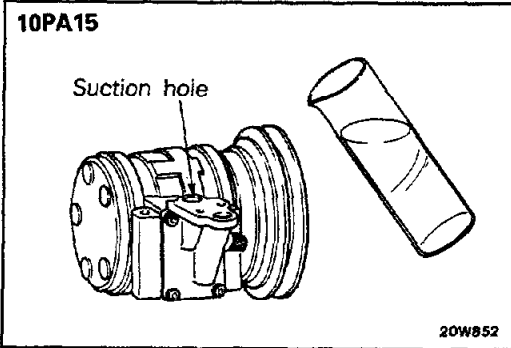
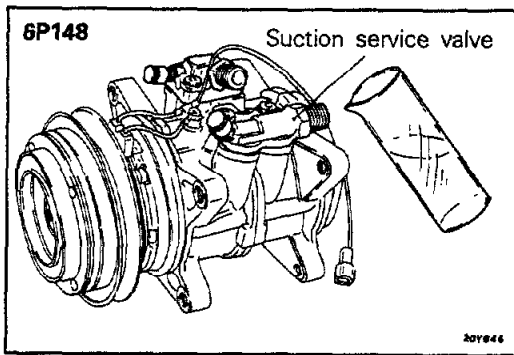
- (2) Install the front housing, taking care not to damage the lip part of the shaft seal.



- (3) Mount the bolt on the shaft, and then measure the shaft starting torque.

**Standard value : 5.0 Nm (43 in.lbs.) or less**

- (4) Remove the bolt from the shaft.



### ● REFILL OF COMPRESSOR OIL

When the compressor is disassembled, supply compressor oil of which quantity is the same as that which went out when the compressor is disassembled adding 20 cc (0.7 fl.oz.) with it from the suction hole side.

**Specified oil : DENSO OIL 6 or SUNISO 5GS**

### NOTE

1. The quantity of compressor oil to supply at when exchanging the compressor with new one.

6P148 : 90 cc (3.2 fl.oz.)

10PA15 : 40 cc (1.4 fl.oz.)

2. When exchanging the whole refrigerant system, do not supply the compressor oil with it for it is supplied before hand.

### 7. INSTALLATION OF CLUTCH COIL

The clutch coil must be aligned with the pin in the compression housing.

### ● ADJUSTMENT OF CLUTCH CLEARANCE

- (1) Connect the magnetic clutch to the battery.
- (2) The clutch hub will be attracted to and fit closely to the rotor.
- (3) Use a shim(s) to adjust so that the amount of movement of the clutch hub is as described below.

### Standard value

6P148 : 0.4–0.7 mm (.016–.028 in.)

10PA15 : 0.35–0.65 mm (.0138–.0256 in.)

### NOTE

1. For the 6P148, use a feeler gauge for clutch clearance measurement.
2. Remove clearance adjusting shims to decrease clutch clearance. Add shims selected from the following table to increase clutch clearance.

### Clearance Adjustment Shims

Part No.	Thickness
RS13023A	0.1 mm (.004 in.)
RS13023B	0.2 mm (.008 in.)
RS13024	0.5 mm (.020 in.)

- (4) Turn the rotor by hand to confirm that it rotates freely.