

HEATERS AND AIR CONDITIONING

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SPECIFICATIONS

N24CA--

GENERAL SPECIFICATIONS

Items	Specifications
Heater unit	
Type	Three-way-flow full-air-mix system
Heater control assembly	Dial type
Compressor	
Model	FX105V (Scroll type)
Refrigerant unit lubricant cc (cu.in.)	FREOL S-83 or SUNISO 5GS 150 (9.1)
V-belt size mm (in.)	
<1500>	775 (30.5)
<1600-M/T-N/A>	920 (36)
<1600-A/T, 1600-M/T-T/C>	910 (35.9)
Dual pressure switch	
High pressure switch kPa (psi)	OFF: 2,700 (384) ON: 2,100 (299)
Low pressure switch kPa (psi)	OFF: 210 (30) ON: 235 (33)
Freezer prevention °C (°F)	Air temperature thermostat OFF: 3.2 (37.8) ON: 4.2 (39.6)
Fusible plug °C (°F)	Burn out temperature 105 (221)
Refrigerant and quantity g (oz.)	R-12 Approx. 1,020 (36)

SERVICE SPECIFICATIONS

N24CB--

Items	Specifications
Standard value	
Air-thermo sensor standard resistance value k Ω	
0°C (32°F)	11.4
10°C (50°F)	7.32
20°C (68°F)	4.86
30°C (86°F)	3.31
40°C (104°F)	2.32
Air-inlet sensor standard resistance value k Ω	
0°C (32°F)	3.31
10°C (50°F)	2.0
20°C (68°F)	1.25
30°C (86°F)	0.81
40°C (104°F)	0.53
Engine coolant temperature switch <1600> °C (°F)	OFF: 115 (239) ON: 108 (222)
Refrigerant temperature sensor °C (°F)	OFF: 175 (347) ON: 115 (239)

Items	Specifications
Amount of V-belt deflection mm (in.)	
When new belt installed	5 – 6 (.20 – .23)
When used belt installed	6 – 7 (.23 – .28)
Amount of V-ribbed belt deflection mm (in.)	
When new belt installed	5 – 5.5 (.20 – .21)
When used belt installed	6 – 7 (.23 – .28)
Clutch clearance mm (in.)	0.3 – 0.6 (.01 – .02)

TORQUE SPECIFICATIONS

N24CC--

Items	Nm	ft.lbs.
Duct attaching screws	1.5 – 2.5	1.08 – 1.81
Shaft nut (compressor)	16	12
Front housing installation bolt	11 – 13	8 – 9.4
Compressor bracket tightening bolt (M10) <1600>	45 – 55	33 – 39
Compressor tightening bolt (M8)	23 – 27	17 – 19
Tension pulley holding nut <1600>	24 – 28	18 – 20
Tension pulley assembly installation bolt <1600>	23 – 27	17 – 19
Tension pulley assembly installation bolt <1500>	18 – 22	13 – 15

LUBRICANTS

N24CD--

Items	Specified lubricants	Quantity
Each connection of refrigerant line	FREOL S-83 or SUNISO 5GS	As required
Shaft seal of the compressor	FREOL S-83 or SUNISO 5GS	As required
Shaft seal plate of the compressor	FREOL S-83 or SUNISO 5GS	As required

SEALANT AND ADHESIVE

N24CE--

Items	Specified sealant and adhesive
Engine coolant temperature switch threaded part	MOPAR Part Number 4318034 or equivalent

24-4 HEATERS AND AIR CONDITIONING – Special Tool / Troubleshooting

SPECIAL TOOL

N24DA- -

Tool	Number	Name	Use
	MB991301	Felt installer	Installation of felt Installation of bearing

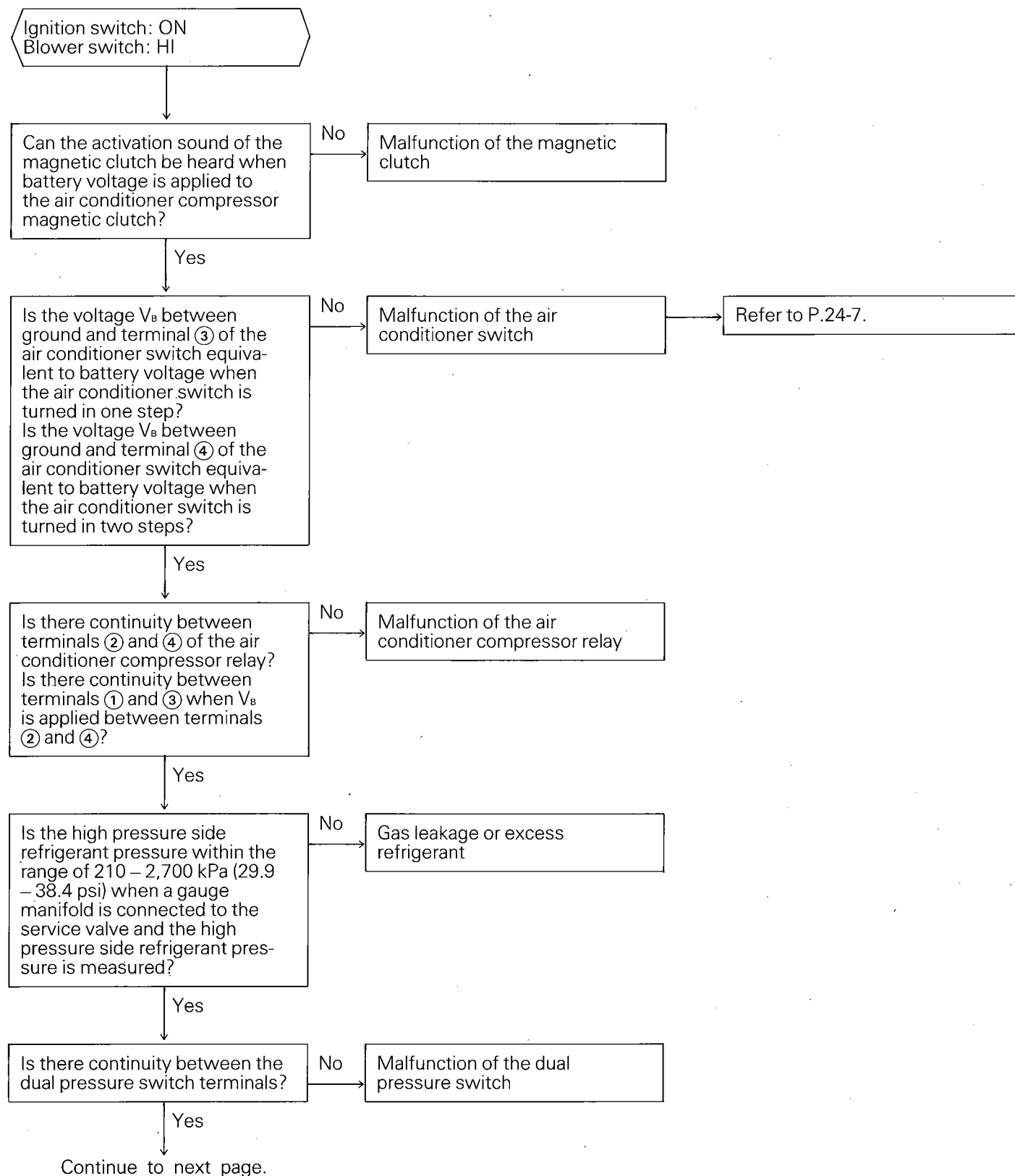
TROUBLESHOOTING

N24ECAC

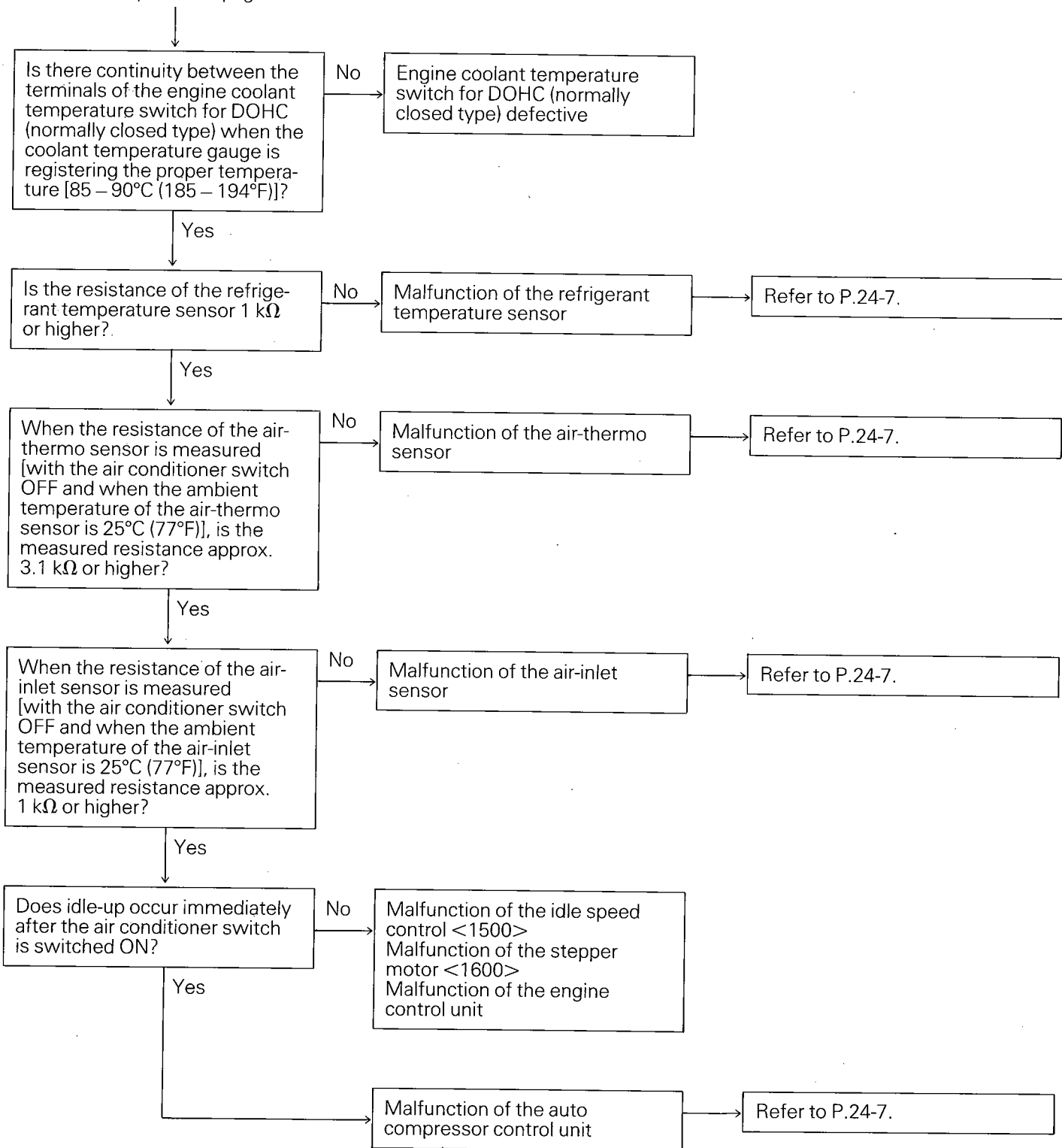
Symptom	Probable cause	Remedy
Heater insufficient heat	Obstructed heater outlets	Correct
	Blend air dampers improperly adjusted or binding	Correct
	Thermostat malfunction	Replace
	Obstructed heater hoses	Replace
	Improperly adjusted control cables	Adjust
	Plugged or partially plugged heater core	Clean or replace
No ventilation even when mode selection knob is operated	Incorrect adjustment of mode selection dampers	Adjust
	Incorrect installation of mode selection control wire	Adjust
	Ducts are incorrectly/incompletely connected, crushed, bent or clogged	Repair or replace
Blower motor inoperative	Burnt-out fuse	Replace
	Poor grounding	Correct
	Malfunction blower switch	Replace
	Malfunction resistor	Replace
	Malfunction blower motor	Replace
	Malfunction heater relay	Replace

TROUBLESHOOTING QUICK REFERENCE TABLE

Compressor doesn't operate.

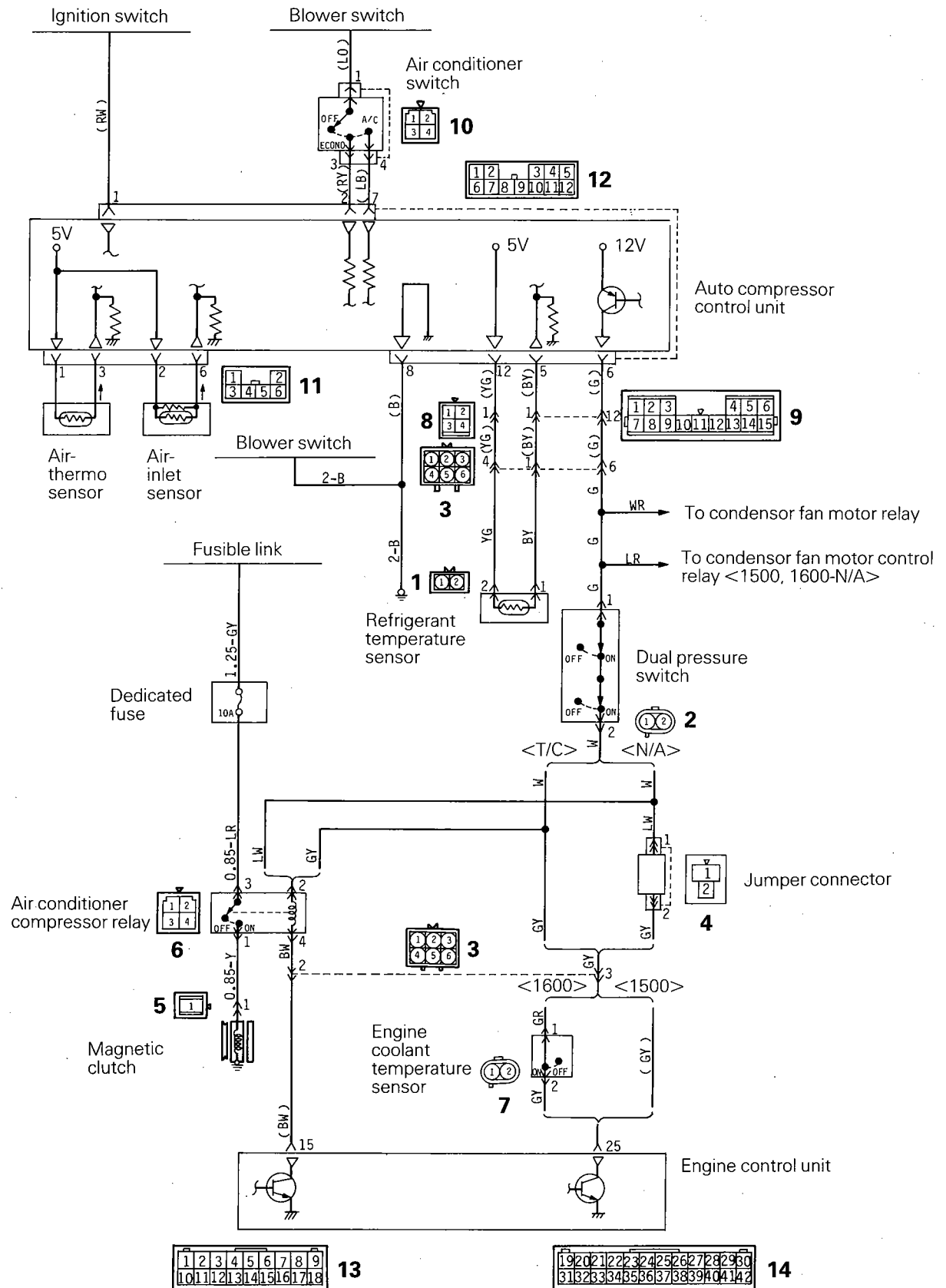


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CIRCUIT CHECK

AUTO COMPRESSOR CONTROL UNIT CIRCUIT



OPERATION

- (1) A negative characteristic thermistor is employed for the refrigerant temperature sensor, the air-thermo sensor and the air-inlet sensor in order to convert the ambient temperature at the sensor part to resistance.

The sensor power supply voltage (5V) of the auto compressor control unit is applied to each sensor.

The terminal voltages (of terminal ⑤ of the auto compressor control unit, terminal ③ of the air-thermo sensor, and terminal ⑥ of the air-inlet sensor) become voltage-divided values by the resistance value of each sensor and by the resistance within the auto compressor control unit.

- (2) The compressor operation mode changes (from OFF to ECONO to A/C...) each time the air conditioner switch is turned.

When the air conditioner switch is turned in to the first step, the mode is changed to the ECONO mode, and the voltage at terminal ③ of the air conditioner switch becomes V_B .

When turned in to the second step, the mode is changed to the air conditioner mode, and the voltage at terminal ④ of the air conditioner switch becomes V_B .

- (3) The output (terminal ⑥) of the auto compressor control unit is output when all of the following conditions are satisfied.

- ① The air conditioner switch is ON (ECONO or A/C mode).
- ② The air-thermo sensor ambient temperature (evaporator outlet air temperature) is 4°C (39°F) or higher.
- ③ The air-inlet sensor ambient temperature (evaporator intake air temperature) is 4°C (39°F) or higher.
- ④ The compressor discharge side refrigerant temperature is 175°C (347°F) or lower.

TROUBLESHOOTING HINTS**Auto Compressor Control Unit Terminal Voltage**

Terminal No.	Signal	Conditions	Terminal voltage
1	Auto compressor control unit power supply	When ignition switch is ON	V_B
5	Refrigerant temperature sensor \ominus	When air conditioner switch is OFF [Sensor temperature 25°C (77°F)]	Approx. 0.15V
6	Air conditioner compressor relay	When all conditions for switch-ON of the compressor are satisfied	V_B
8	Auto compressor control unit ground	At all times	0V
12	Refrigerant temperature sensor \oplus	At all times	5V

Air Conditioner Switch Terminal Voltage

Terminal No.	Signal	Conditions	Terminal voltage
1	Air conditioner switch power supply	Ignition switch: ON; blower switch: ON	V_B
3	Air conditioner switch: ECONO	When air conditioner switch turned in to first step	V_B
4	Air conditioner switch: A/C	When air conditioner switch turned in to second step	V_B

NOTE

V_B indicates battery voltage.

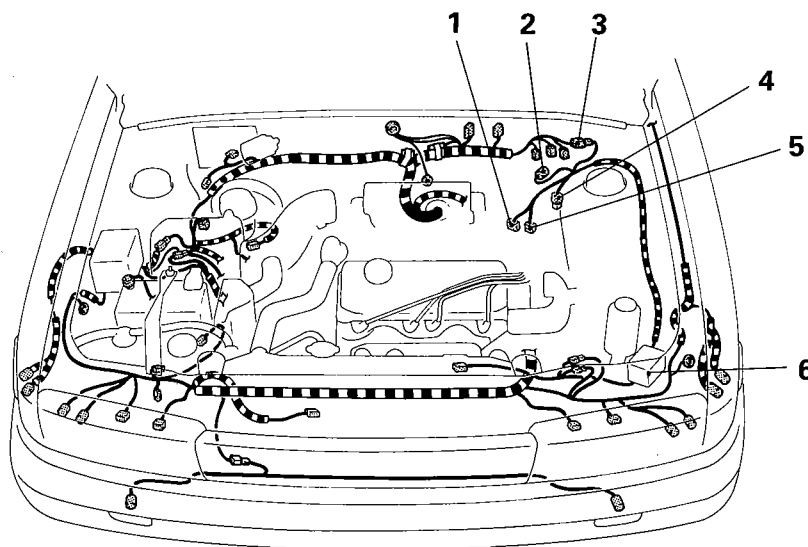
Resistance between Air-thermo Sensor and Air-inlet Sensor Terminals

Terminals	Sensor	Conditions	Resistance value
1 – 3	Air-thermo sensor	Sensor area ambient temperature 25°C (77°F)	Approx. 3.1 k Ω
2 – 6	Air-inlet sensor	Sensor area ambient temperature 25°C (77°F)	Approx. 1 k Ω

HARNESSES AND COMPONENTS LAYOUT DIAGRAM

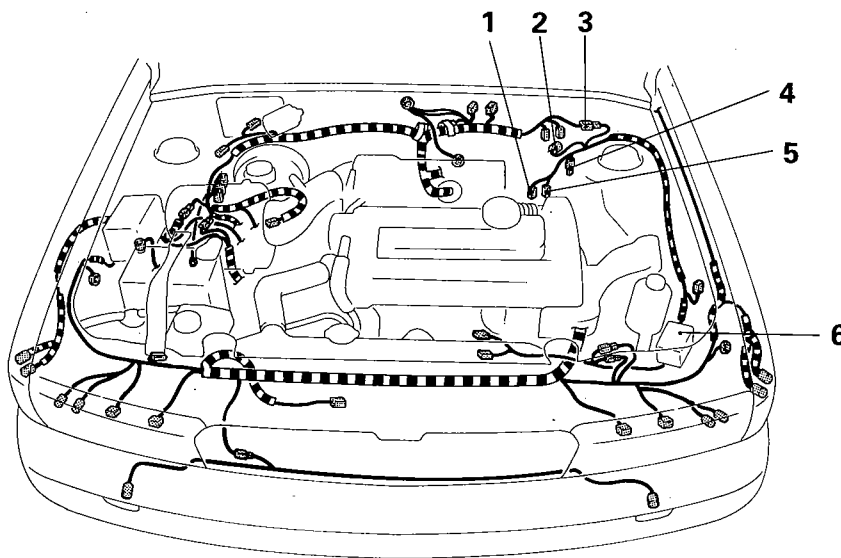
Engine compartment

<1500>



36P0052

<1600>

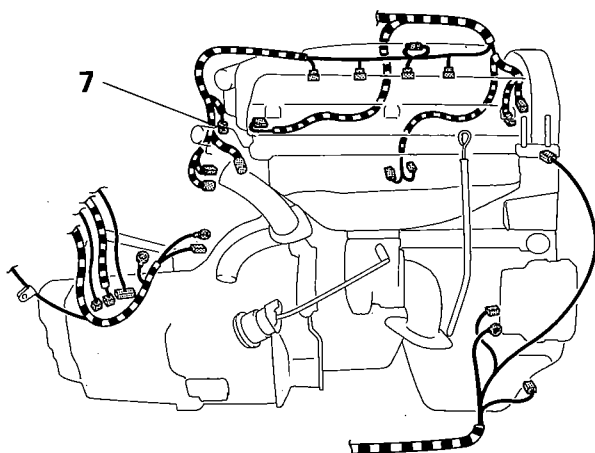


36P0044

1. Refrigerant temperature sensor
2. Dual pressure switch
3. Control wiring harness and air conditioner wiring harness coupling
4. Jumper connector <N/A>
5. Magnetic clutch
6. Air conditioner compressor relay

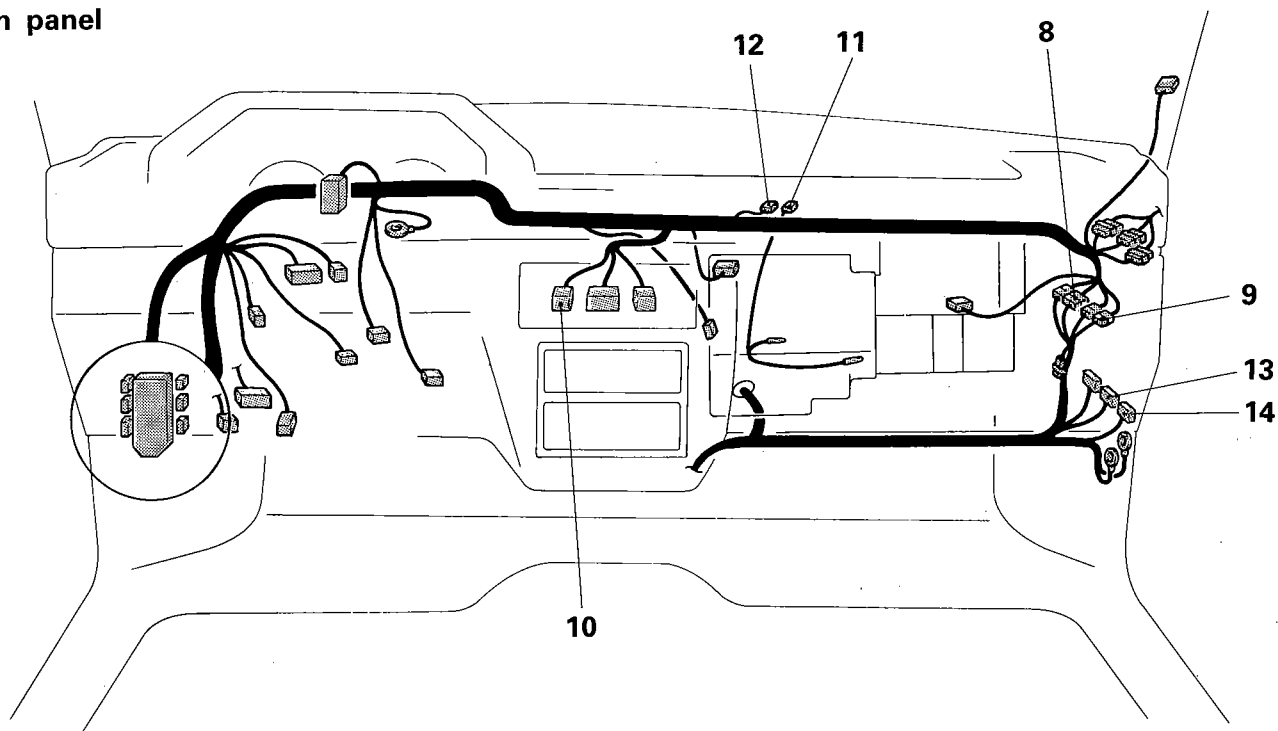
Engine

<1600>



7. Engine coolant temperature switch

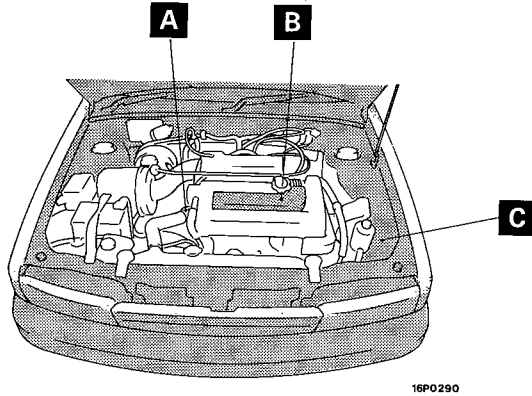
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Dash panel

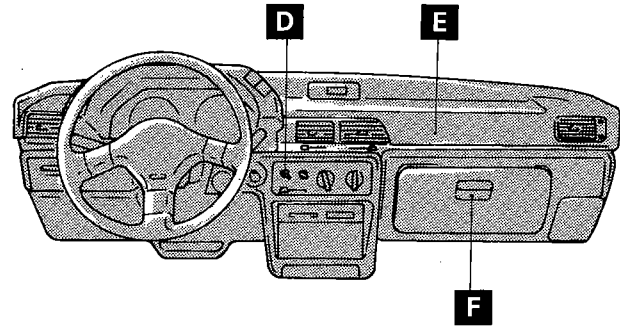
36P0043

- 8. } Control wiring harness and main wiring
- 9. } harness coupling
- 10. Air conditioner switch
- 11. } Auto compressor control unit
- 12. }
- 13. } Engine control unit
- 14. }

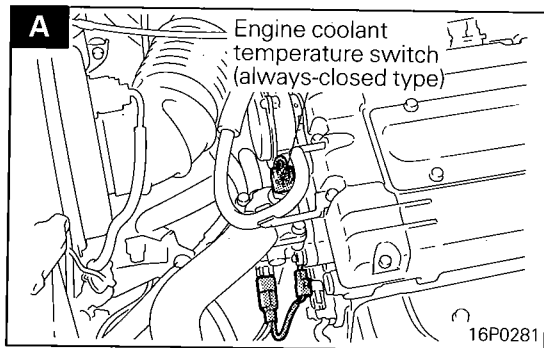
Name	Symbol	Name	Symbol
Air conditioner compressor relay	C	Auto compressor control unit	E
Air conditioner switch	D	Engine coolant temperature switch (always-closed type)	A
Air-inlet sensor	F	Refrigerant temperature sensor	B
Air-thermo sensor	F		



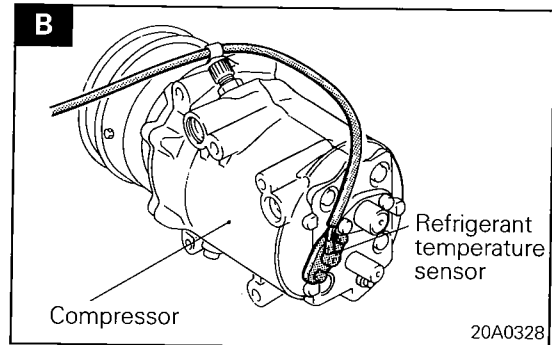
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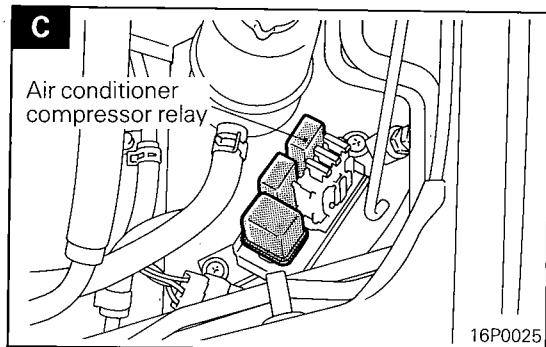
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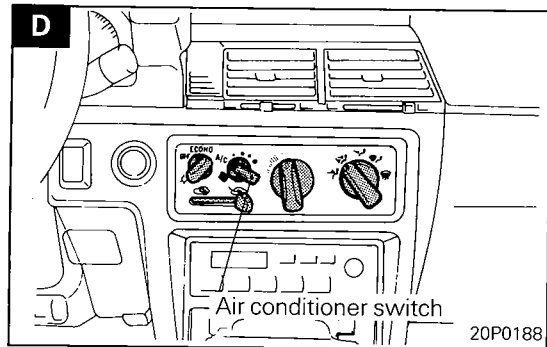
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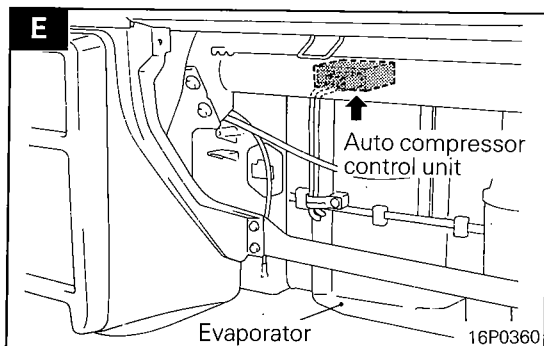
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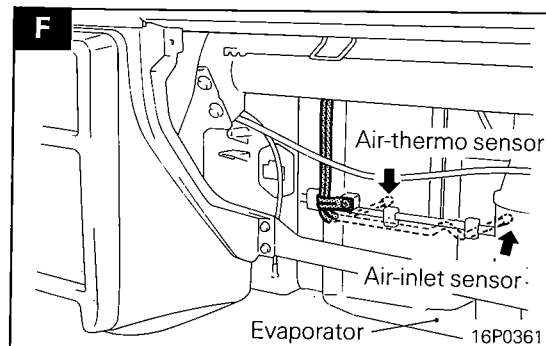
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16P0361

SAFETY PRECAUTIONS

N24PAAA

The refrigerant used in all air conditioner is R-12. It is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of -29.8°C (-85.6°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°C (125°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°C (125°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

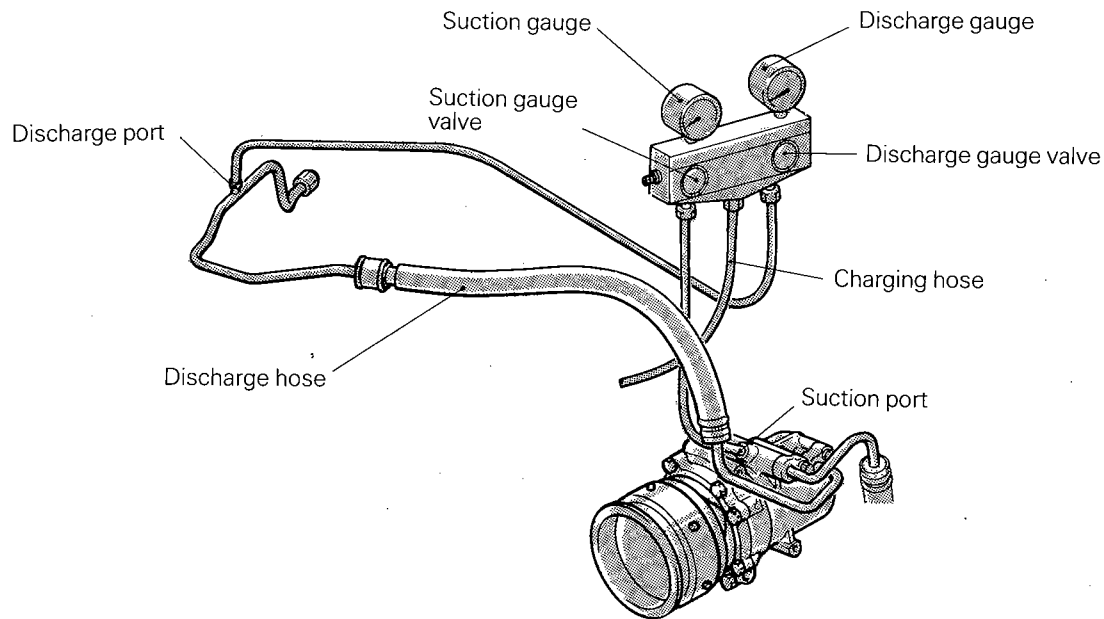
Do not allow liquid refrigerant to touch bright metal.

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

SERVICE ADJUSTMENT PROCEDURES

N24FDAF

MANIFOLD GAUGE SET INSTALLATION



20P0228

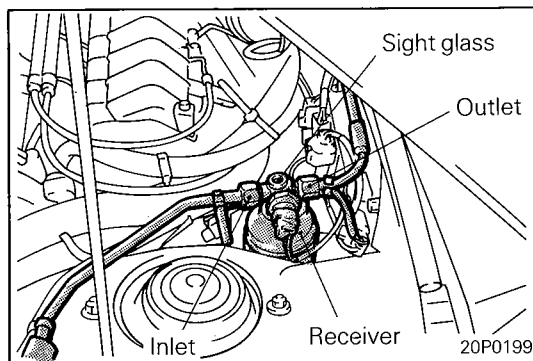
Manifold Gauge Valves – should be closed when connecting the manifold gauge set to the service port of the compressor and the discharge hose. The suction gauge valve at the left is opened to provide a passage between the suction gauge and the center manifold outlet. The discharge gauge valve at the right 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 -100 kPa (0 to -29 in.Hg) and 0 to 1,000 kPa (0 to 145 psi). This gauge is connected to the suction port of the compressor.

Discharged Gauge – the right of the manifold set is calibrated to register 0 – 2,100 kPa (0 – 305 psi). For all tests this gauge is connected to the discharge hose 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

N24FEAL

RECEIVER DRIER

The receiver drier assembly consists of drier reservoir, refrigerant level sight glass and fusible plug.

To Test the Receiver Drier

- (1) Operate the unit and check the piping 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. Turn the air conditioner switch to operate the compressor, place the blower switch to high and move the temperature control lever to extreme left. After operating for a few minutes in this manner, check the sight glass.

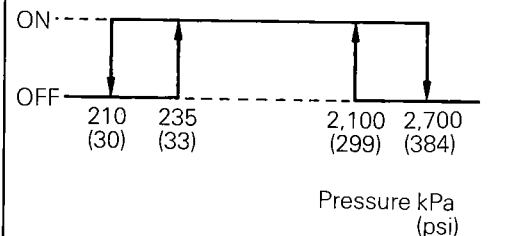
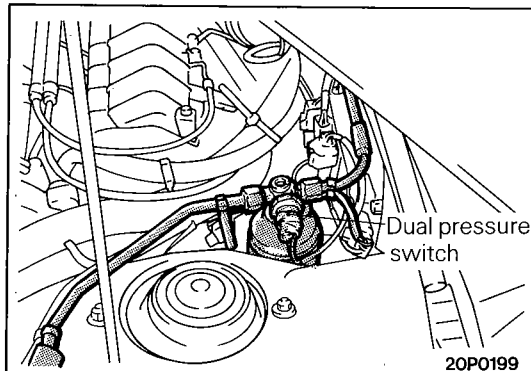
- (1) If the sight glass is clear, the magnetic clutch is engaged, the compressor discharge line is warm and the compressor inlet line is cool; the system has a full charge.
- (2) If the sight glass is clear, the magnetic clutch is engaged and there is no significant temperature difference between compressor 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 air-flow thru the condenser to increase the compressor discharge pressure to 1,422 – 1,520 kPa (206 – 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

In 105°C (221°F) ambient, the fusible link melts and the refrigerant in the system is discharge.

Once the fusible link has melted, it cannot be reused. Therefore, install a new fusible link and charge the system with the refrigerant.



DUAL PRESSURE SWITCH

The dual pressure switch is a combination of the low pressure switch (for checking the quantity of refrigerant) and the high pressure switch (for prevention of overheating); it is installed in the receiver, and, when the pressure becomes approximately 210 kPa (30 psi) or lower, the compressor stops, thus preventing the compressor from being damaged by heat. When the pressure reaches 2,700 kPa (384 psi) or higher, the compressor stops, thus preventing overheating. There is generally no necessity for inspection; if, however, an unusual condition, such as non-operation of the compressor is encountered, check by following the procedures below.

(1) Check for continuity of the dual pressure switch.

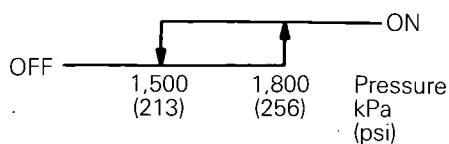
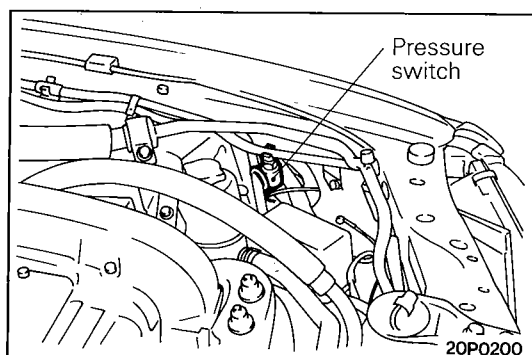
Usual condition	Continuity
Insufficient refrigerant	No continuity
Unusually high temperature	

- If there is an insufficient amount of refrigerant, check the refrigerant amount by looking through the sight glass of the receiver; supply refrigerant if necessary. (Refer to P.24-25.)
- Set the gauge manifold in place and check whether or not the pressure at the high pressure side has become the dual pressure switch activation pressure.
- Replace the switch if, under ordinary conditions, there is no continuity.

Caution

The condition can be considered to be satisfactory if there is continuity.

Never increase the pressure in a deliberate attempt to obtain an abnormally high temperature, because to do so risks blowing the fusible plug of the receiver.



PRESSURE SWITCH <1600>

The pressure switch (installed above the high pressure pipe) is for control of the condenser and the radiator fan; it regulates the fan in two steps (LO and HI).

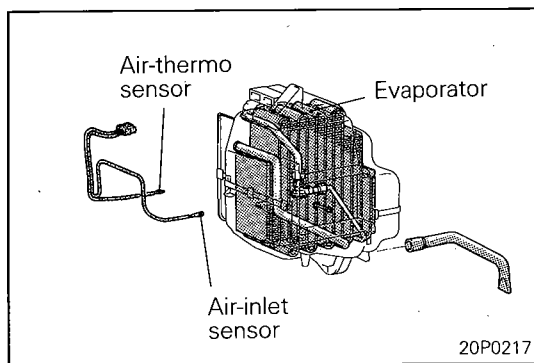
If there is a problem such as non-operation of the condenser fan, check by following the procedures described below.

- Install the gauge manifold, and then switch the air conditioner to the operation mode.
- Check for continuity of the pressure switch.

Less than 1,500 kPa (213 psi)	No continuity
1,800 kPa (256 psi) or higher	Continuity

NOTE

If the pressure will not decrease to less than the standard value, cool by employing an electric fan; if the pressure will not increase to the standard value or higher, place a cover on the condenser so as to adjust the pressure by regulating the air ventilation.



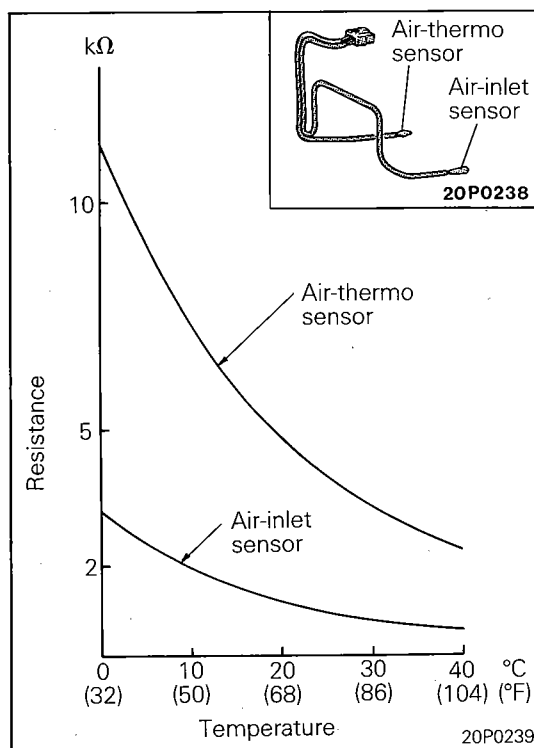
AIR-THERMO SENSOR AND AIR-INLET SENSOR

If frost forms on the surfaces of the evaporator fins, the cause might be a malfunction of air-thermo sensor.

The temperature of the air-flowing from the evaporator's outlet is sensed by the thermistor, and the signals conveying this data are input to the auto compressor control unit, thus switching the compressor's clutch ON or OFF.

This functions when the evaporator's air-flow is low, or the evaporator's fins are clogged by dust, etc., or when the amount of refrigerant is insufficient.

These sensors detect the temperature within the passenger compartment and the temperature at the cooling unit inlet, thus causing changes of the resistance value, and this data is provided to the auto compressor control unit as input.



How to Test the Air-thermo Sensor and Air-inlet Sensor

- (1) Disconnect the sensor's connector at the auto compressor control unit, and by using an ohmmeter, measure the resistance. The resistance is normal if it is within the range shown in the illustration at the left; if the resistance is not normal, replace.
- (2) If the sensor is normal, there is a malfunction of the auto compressor control unit, and it should be replaced.

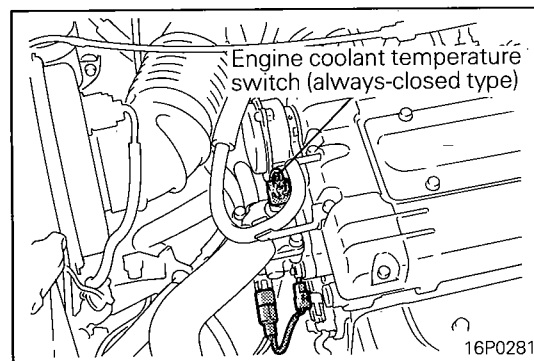
Standard value:

Air-thermo sensor resistance value

0°C (32°F)	11.4 kΩ
10°C (50°F)	7.32 kΩ
20°C (68°F)	4.86 kΩ
30°C (86°F)	3.31 kΩ
40°C (104°F)	2.32 kΩ

Air-inlet sensor resistance value

0°C (32°F)	3.31 kΩ
10°C (50°F)	2.0 kΩ
20°C (68°F)	1.25 kΩ
30°C (86°F)	0.81 kΩ
40°C (104°F)	0.53 kΩ



ENGINE COOLANT TEMPERATURE SWITCH <1600>

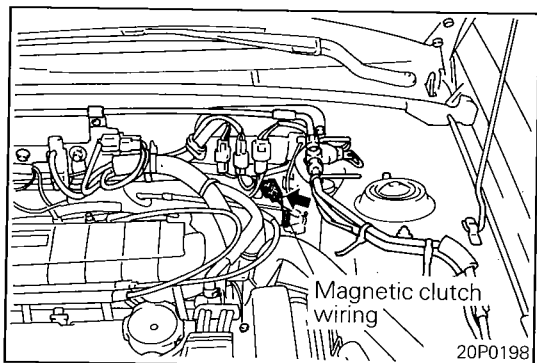
The engine coolant temperature switch is connected in series with the compressor magnetic clutch power relay.

It disengages the compressor when the temperature of radiator coolant rises above 115°C (239°F).

This is designed to prevent engine overheating when cooling air is not sufficient for the condenser and radiator. If the engine coolant temperature switch operates to disengage the compressor, check for the condenser and radiator surface conditions, belt tension and radiator coolant level and correct, if necessary.

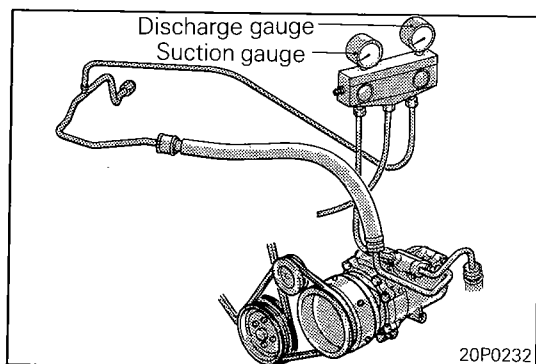
To Test the Engine Coolant Temperature Switch

- (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 air-flow sensor, low pressure switch, high pressure switch wiring or fuse may be faulty.
- (5) If clutch engages replace the engine coolant temperature switch.



MAGNETIC CLUTCH

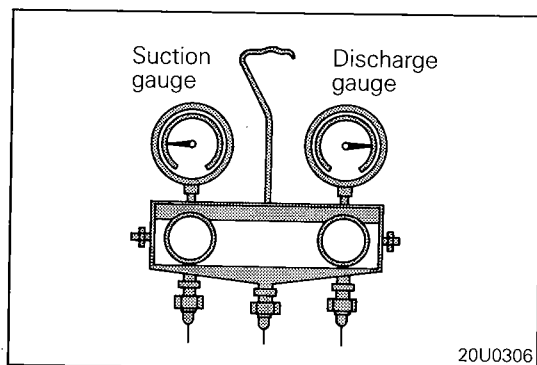
- (1) Disconnect the wiring to the magnetic clutch.
- (2) Connect battery (+) voltage directly to the wiring for the magnetic clutch.
- (3) If the magnetic clutch is normal, there will be a "click". If the pulley and armature do not make contact ("click"), there is a malfunction.



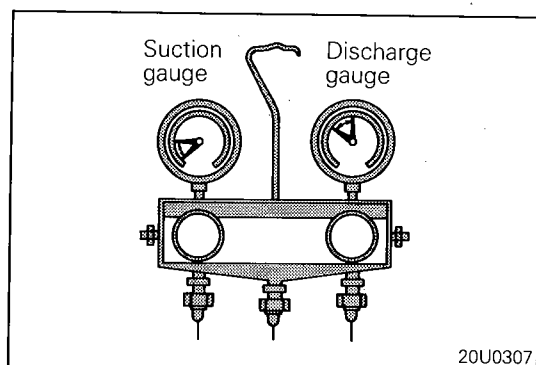
COMPRESSOR

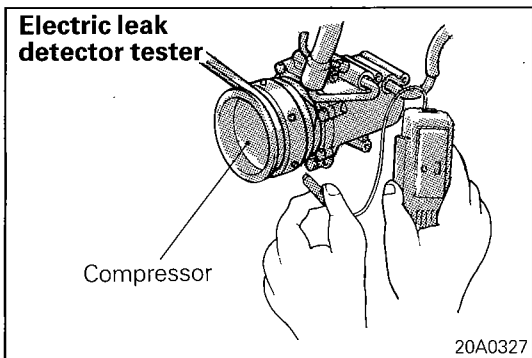
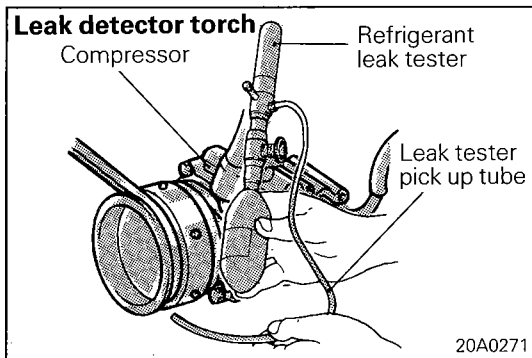
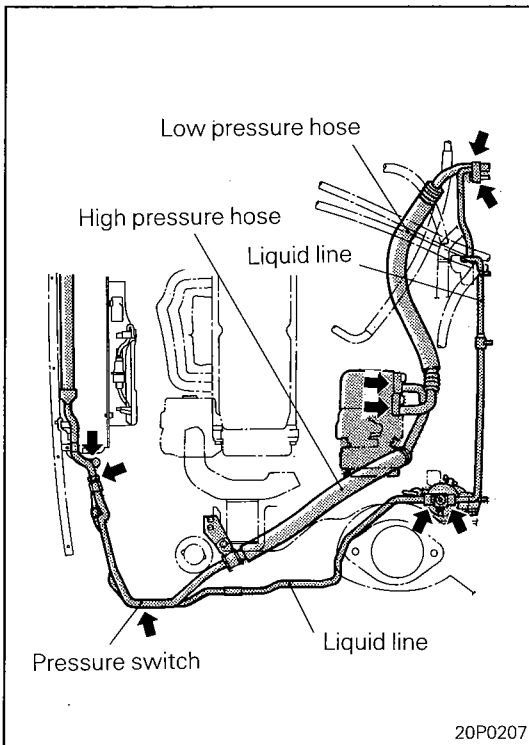
- (1) Install the manifold gauge set, and run the air conditioner.
- (2) If a pressure of approx. 490 kPa (71 psi) is indicated on the suction gauge side and a pressure of approx. 883 kPa (128 psi) is indicated on the discharge gauge side, the compressor has abnormal compression. Replace the compressor.

- (3) If a pressure of 294 – 392 kPa (43 – 57 psi) is indicated on the suction gauge side and a pressure of approx. 1,961 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.



- (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 – 980 kPa (85 – 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.





LEAK TESTING SYSTEM

N24FFAD

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

For gas leak test the use of an electric gas lead detector is recommended.

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.

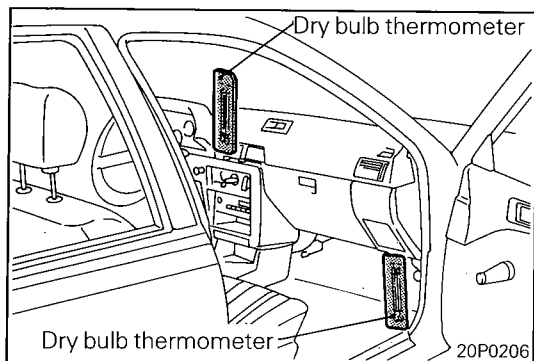
- (1) Assemble leak detector as shown in the illustration, and be sure detector is seated tightly over torch gasket.
- (2) Holding torch upright, screw-in butane charger (clockwise) until punctured. (Do not use force.)
- (3) Screw-out butane charger (counterclockwise) about 1/4 turn.
- (4) Point torch 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 leak 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.

24-20 HEATERS AND AIR CONDITIONING – Service Adjustment Procedures



PERFORMANCE TEST

N24FWAA

TEST

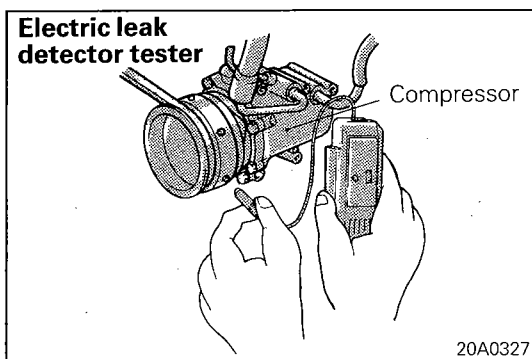
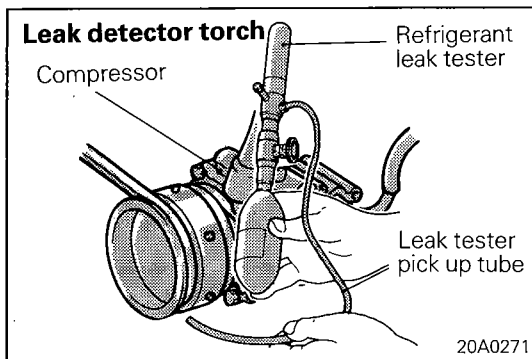
- (1) Connect a tachometer and manifold gauge set.
- (2) Set air conditioner controls to air conditioner, panel temperature lever on recirc, and blower on high.
- (3) Start engine and adjust rpm to 1,000 with air conditioner clutch engaged.
- (4) Engine should be warmed up with doors, windows close, and hood open.
- (5) Insert a thermometer in the left center air conditioner outlet and operate the engine for 20 minutes.
- (6) Note the discharge air temperature.

NOTE

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

Performance Temperature Chart

Garage ambient temperature °C (°F)	21 (70)	26.5 (80)	32 (90)	37.5 (100)	40.6 (105)
Discharge air temperature °C (°F)	1.7 – 4.4 (35 – 40)	1.7 – 5.0 (35 – 41)	1.7 – 5.6 (35 – 42)	1.7 – 6.1 (35 – 43)	1.7 – 6.7 (35 – 44)
Compressor discharge pressure kPa (psi)	928 – 1,322 (132 – 188)	1,069 – 1,547 (152 – 220)	1,209 – 1,772 (172 – 252)	1,336 – 1,969 (190 – 280)	1,406 – 2,109 (200 – 300)
Evaporator suction pressure kPa (psi)	127 – 148 (18 – 21)	131 – 162 (18.6 – 23)	134 – 176 (19 – 25)	135 – 188 (19.2 – 26.8)	136 – 194 (19.4 – 27.6)



REFRIGERANT LEAK REPAIR PROCEDURE

N24FHAK

LOST CHARGE

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

- (1) Evacuate the system. (See 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.

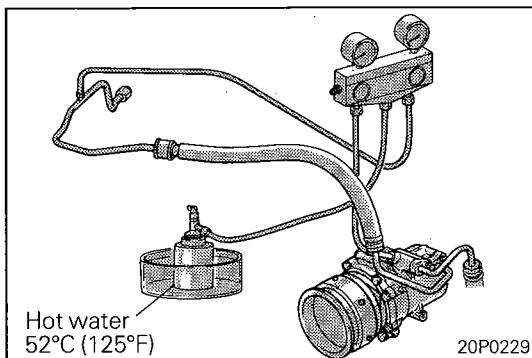
Caution

Replacement receiver/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 receiver/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 of 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 hose.
- (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 – 11 Nm (6 – 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

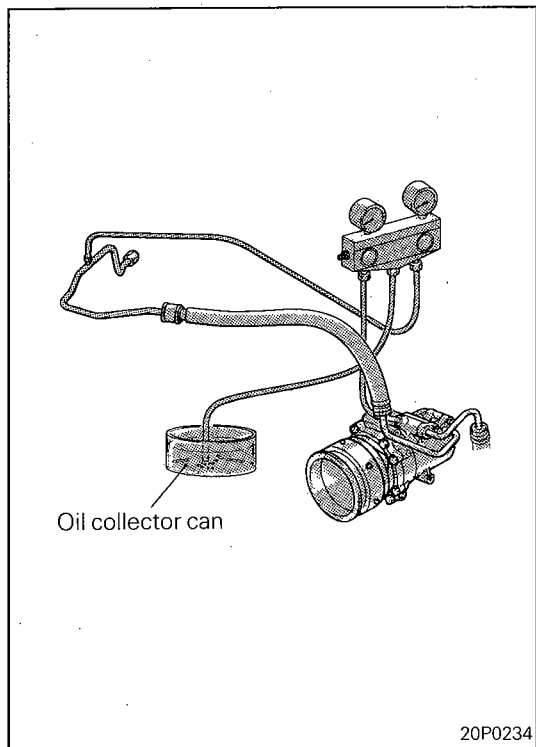
Never heat small cans of refrigerant over 52°C (125°F) as they may explode.

- (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 close and hood up, operate engine at 1,500 rpm and jump the low pressure switch terminals located on the receiver drier 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 – 1,520 kPa (206 – 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.
Add an additional 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. (Refer to P.24-20.)



DISCHARGING 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 collector 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 FX105V compressor is installed at the factory, it contains 150 cc (9.1 cu.in.) of 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 charged, it is necessary to add oil to the system to replace the oil being removed with the component.

Compressor: 85 cc (5.2 cu.in.)

Condenser: 15 cc (0.9 cu.in.)

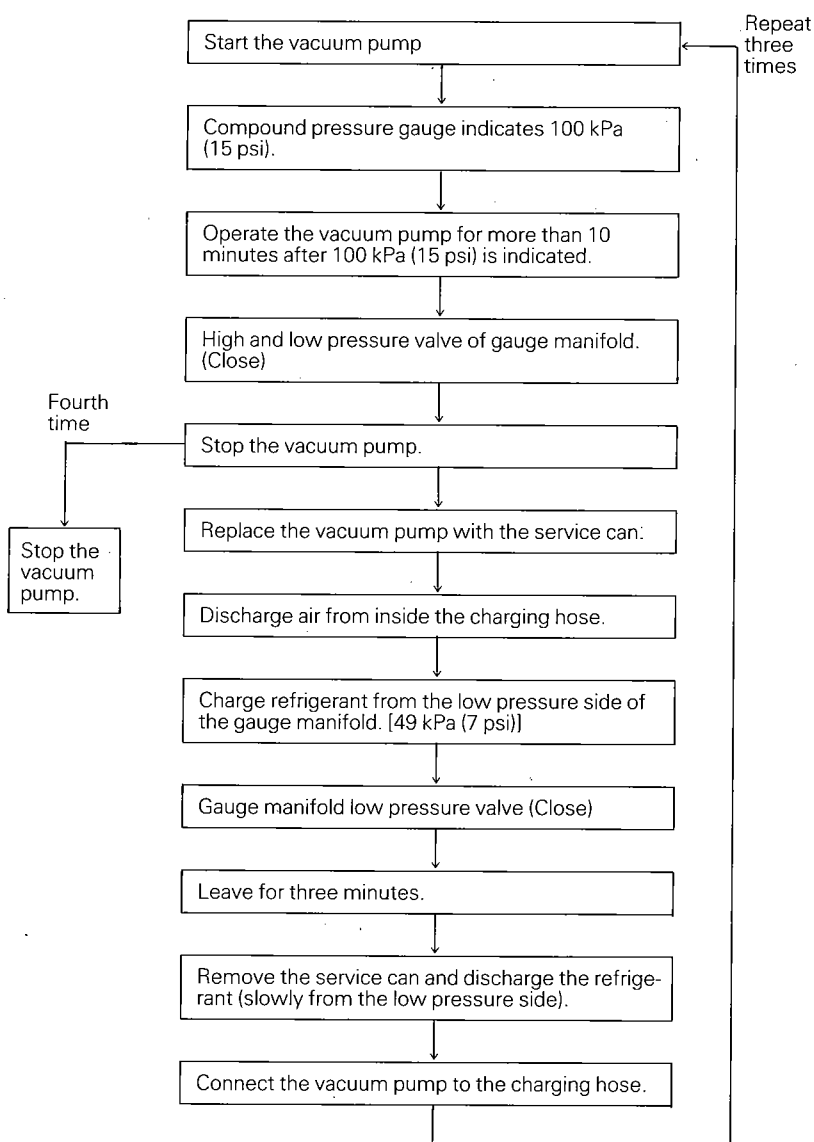
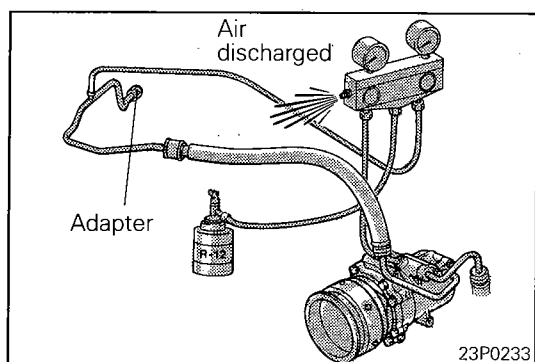
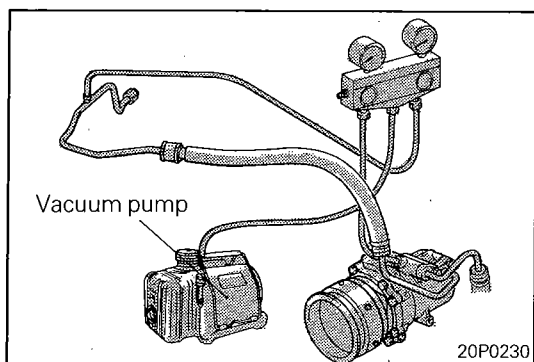
Evaporator: 50 cc (3.1 cu.in.)

Piping: 10 cc (0.6 cu.in.)

EVACUATING SYSTEM

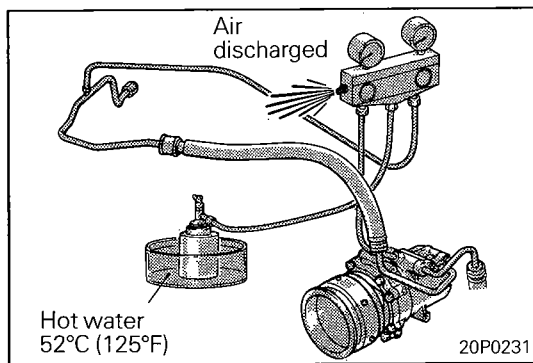
Whenever the system has been opened to the atmosphere, it is absolutely essential that the system be evacuated or "vacuumed" to remove all the air and moisture. Air in the refrigerant system causes high compressor discharge pressures, a loss in system performance, and oxidation of the compressor oil 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) Check to ensure that there is no internal pressure in the equipment. If there is an internal pressure, it should be relieved through the check valve.
- (2) Connect the charging hoses of the gauge manifold to the inlet and outlet check valves of the compressor.
- (3) Connect a vacuum pump to the charging hose. Repeat evacuation in the following sequence,



NOTE

- (1) Do not use the refrigerant pressure to expel air.
- (2) Do not use the compressor for evacuation.
- (3) Do not operate the compressor in the vacuum condition; shaft seal leaks could occur.



CHARGING SYSTEM

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 this group.

Charging with Small Cans

When using disposable cans of this type, follow carefully the can manufacturers 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 – 11 Nm (6 – 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 hose.

Caution

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

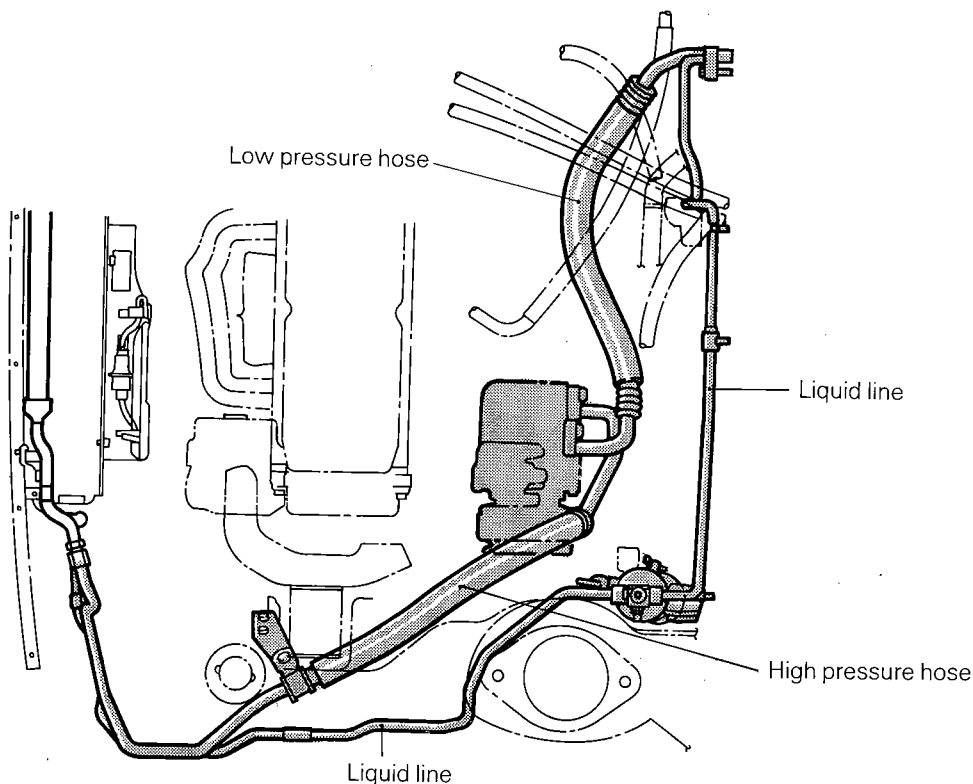
- (5) Fully open all refrigerant manifold valves being used and place the cans of refrigerant into a pan containing 52°C (125°F) water. The water will warm the charging can and aid in the transfer of the charge into the system. Place the water pan and refrigerant cans on a scale and note the weight.
- (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 low blower position.

The dual 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 refrigerant charge 1,020 g (36 oz.) 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 + [300 g (10 oz.) x 1] cans.

HANDLING TUBING AND FITTINGS

N24FIAE

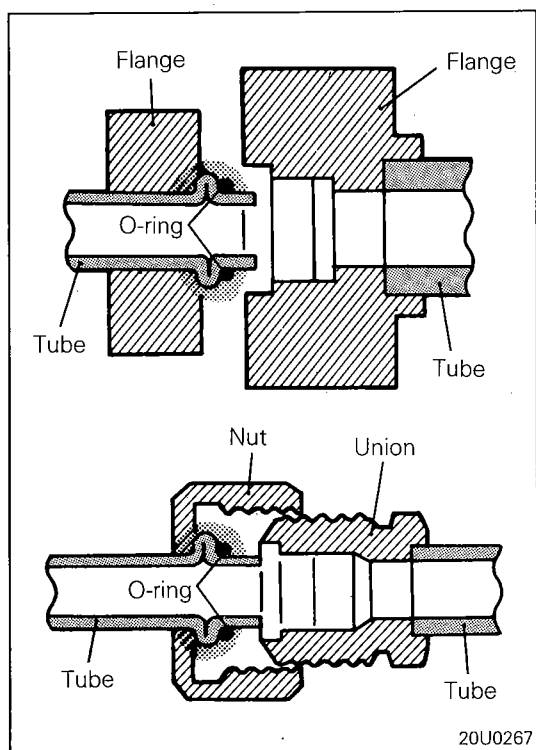


20P0207

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 moisture 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. Unified plumbing connections with O-rings. These O-rings are not reusable.



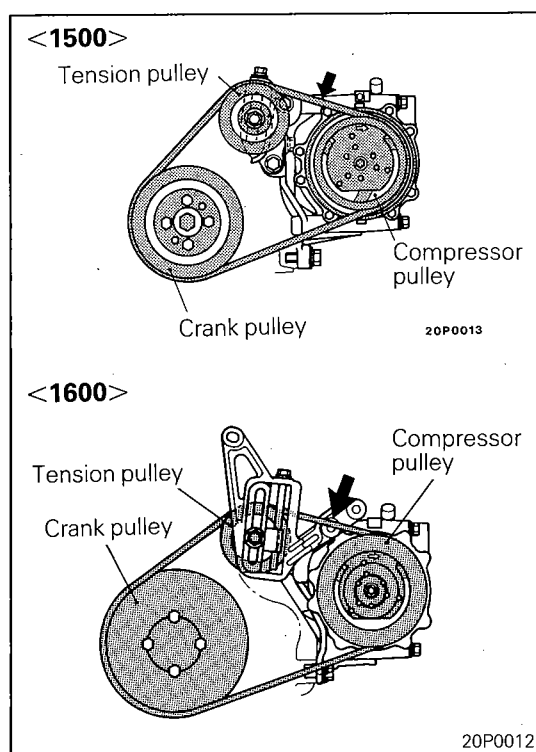
O-RING INSTALLATION

- (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 the illustration.

The internal parts 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

N24FJAEa

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 is installed

<1500> 5 – 6 mm (.20 – .23 in.)

<1600> 5 – 5.5 mm (.20 – .22 in.)

When the used belt's tension is adjusted

6 – 7 mm (.23 – .27 in.)

COMPRESSOR NOISE

N24FLAC

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.

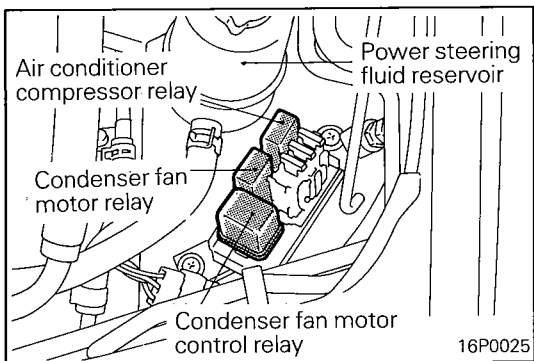
Noises that develop during air conditioning operation can often be misleading. For example: what sounds like a failed bearing, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or alternator).

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

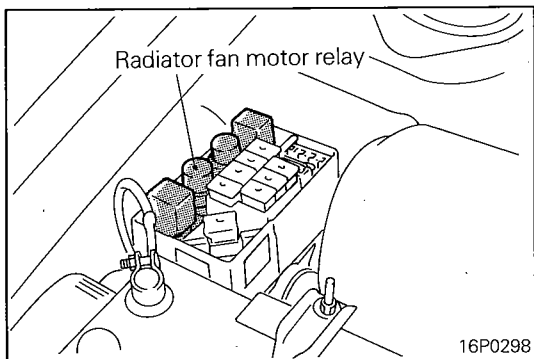
- (1) Select a quiet area for testing. Duplicate conditions as much as possible. Switch compressor on and off several times to clearly identify compressor noise.
To duplicate high ambient conditions (high head pressure), restrict air-flow through condenser. Install manifold gauge set to make sure discharge pressure doesn't 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. (Refer to "Charging 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.



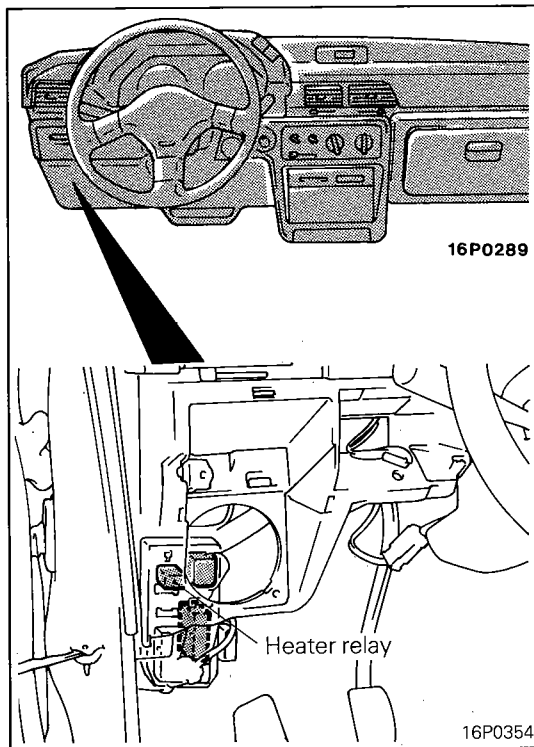
POWER RELAY CHECK

N24FNAB

- (1) Remove the condenser fan motor relay, and the air conditioner compressor relay from the relay box located in the engine compartment.

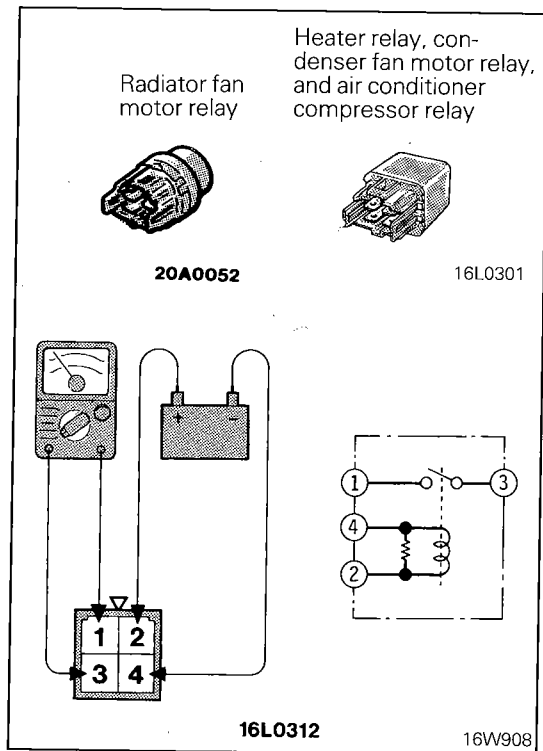


- (2) Remove the radiator fan motor relay from the relay box located in the engine compartment.



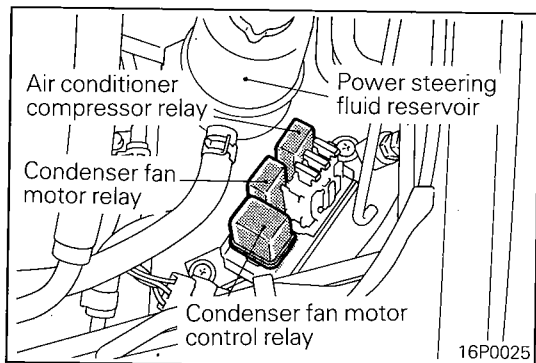
- (3) Remove the heater relay from the junction block (located behind the instrument panel).

24-30 HEATERS AND AIR CONDITIONING – Service Adjustment Procedures



- (4) Check for continuity between the terminals when the battery power supply is applied to terminal ②, and terminal ④ is grounded.

When current flows	Between terminals ① – ③	Continuity
When no current flows	Between terminals ① – ③	No continuity
	Between terminals ② – ④	Continuity

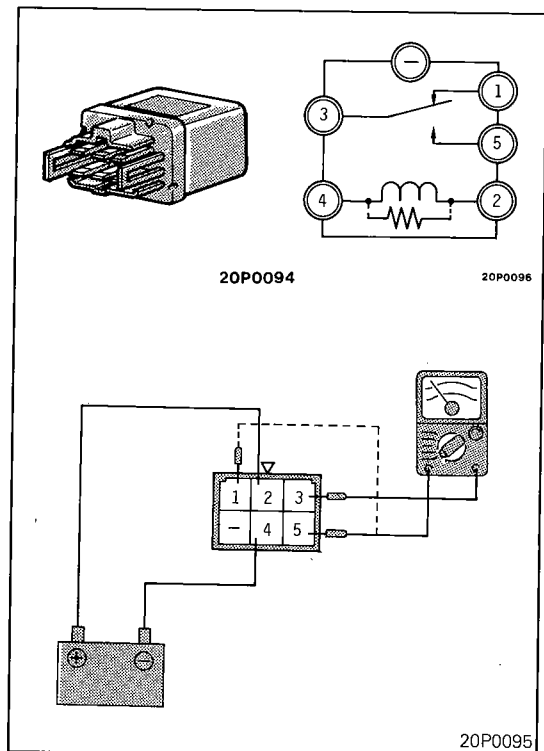


CONDENSER FAN MOTOR CONTROL RELAY CHECK

- (1) Remove the condenser fan motor control relay from the relay box located in the engine compartment.

- (2) Check for continuity between the terminals when the battery power supply is applied to terminal ②, and terminal ④ is grounded.

When current flows	Between terminals ① – ③	No continuity
	Between terminals ③ – ⑤	Continuity
When no current flows	Between terminals ① – ③	Continuity
	Between terminals ③ – ⑤	No continuity
	Between terminals ② – ④	Continuity



IDLE-UP OPERATION CHECK

N24FOAA

- (1) Before inspection and adjustment set vehicle in the following condition:
 - Engine coolant temperature: 80 – 90°C (176 – 194°F)
 - Lights, electric cooling fan and accessories: Set to OFF
 - Transaxle: Neutral (N or P for vehicles with A/T)
 - Steering wheel: Straightforward
- (2) Check whether or not the idling speed is the standard value.

Standard value: 700 rpm

NOTE

There is no necessity to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, there occurs a deviation from the standard value for some reason, check the ISC system.

- (3) Check to be sure that the idling speed becomes the standard value when the air conditioner switch is switched ON and the air conditioner is activated.

Standard value: 850 rpm

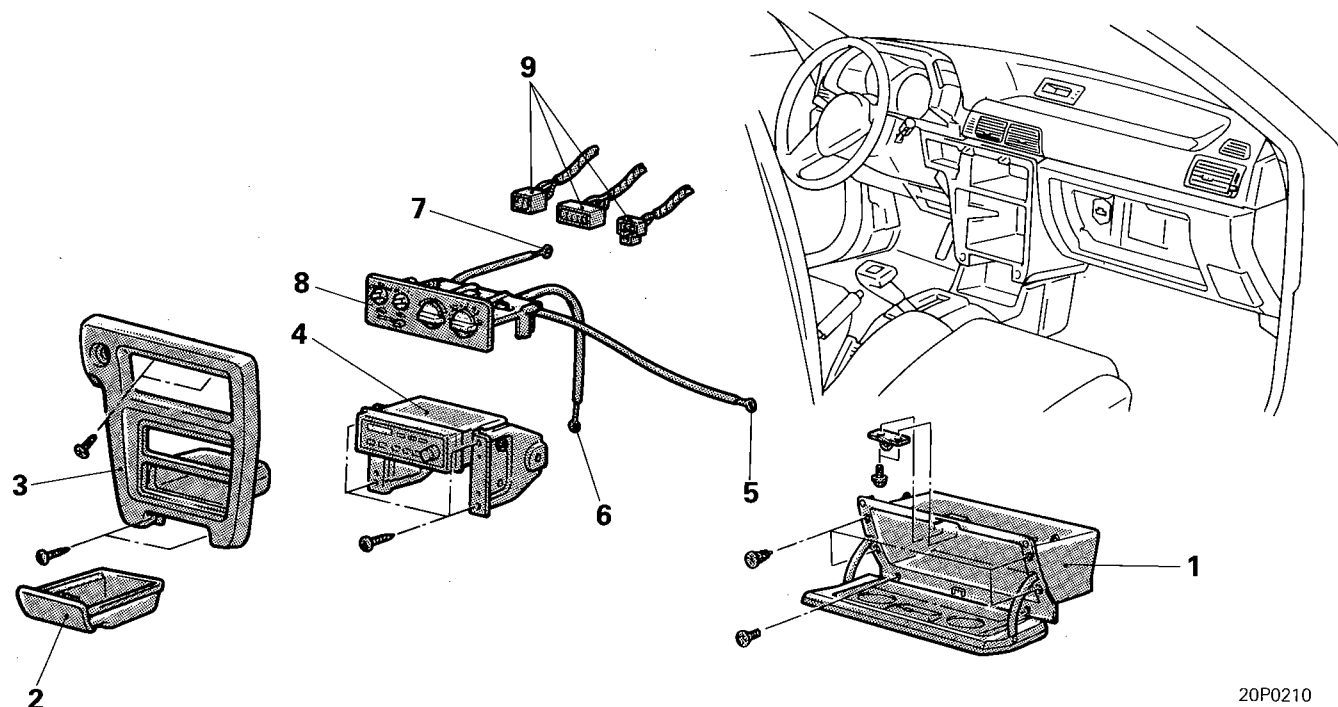
NOTE

There is no necessity to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, there occurs a deviation from the standard value for some reason, check the ISC system.

HEATER CONTROL ASSEMBLY

REMOVAL AND INSTALLATION

N24GA--



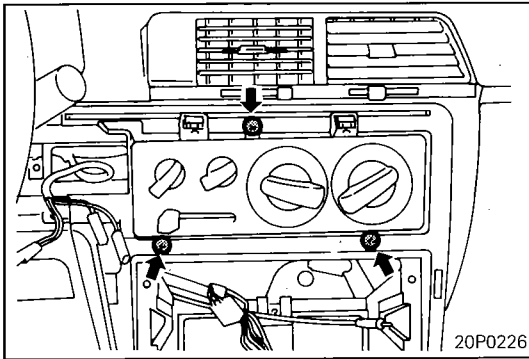
20P0210

Removal steps

1. Glove box
2. Ashtray
3. Heater control panel
4. Radio and tape player
- ◆◆ 5. Connection for the air selection control wire
- ◆◆ 6. Connection for the temperature control wire
- ◆◆ 7. Connection for the mode selection control wire
- ◆◆ 8. Heater control assembly
9. Connections of the connectors for illumination lamp (2P), blower switch (8P) and air conditioner switch (4P)

NOTE

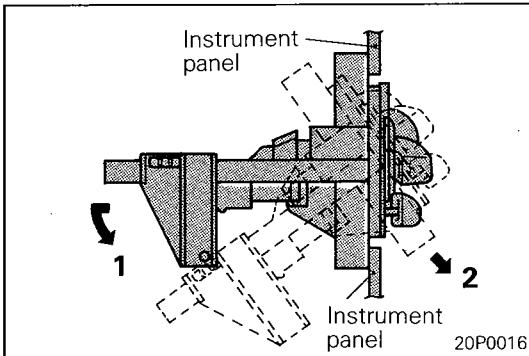
- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆: Refer to "Service Points of Removal".
- (3) ◆◆: Refer to "Service Points of Installation".

**SERVICE POINT OF REMOVAL**

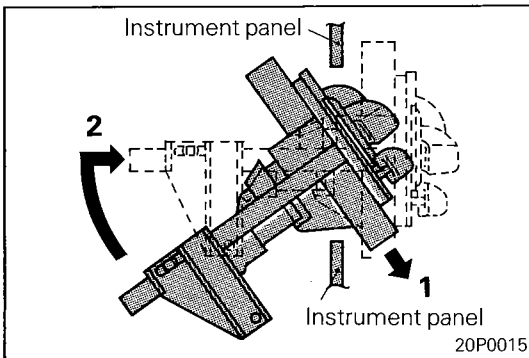
N24GBAI

8. REMOVAL OF HEATER CONTROL ASSEMBLY

- (1) Remove the heater control assembly mounting screws.
- (2) Remove the heater control assembly from the left instrument panel center stay assembly.



- (3) Press out the bracket under the heater control assembly forward from behind the instrument panel.

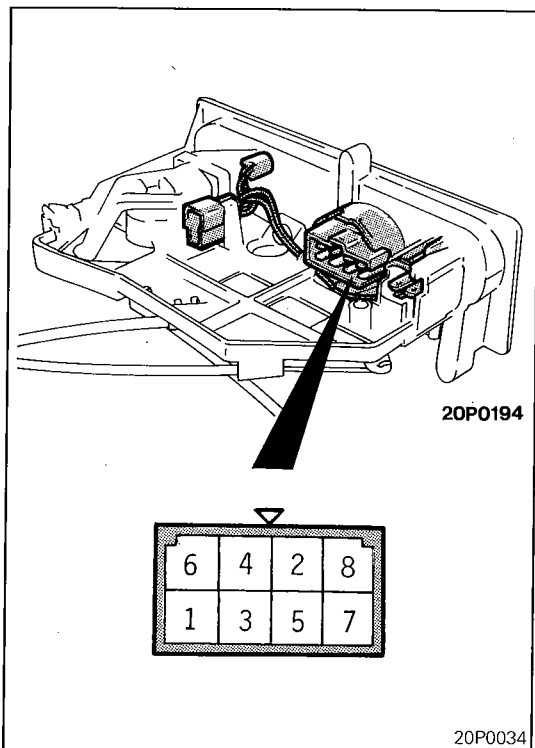


- (4) Press out the bracket above the heater control assembly forward from behind the instrument panel and remove the heater control assembly.

INSPECTION

N24GCAH

- Check each knob and lever for proper operation and possible damage.
- Check the connection between the lever and cable.
- Check that the cable slides properly.
- Check the illumination lamp for a possible broken filament.



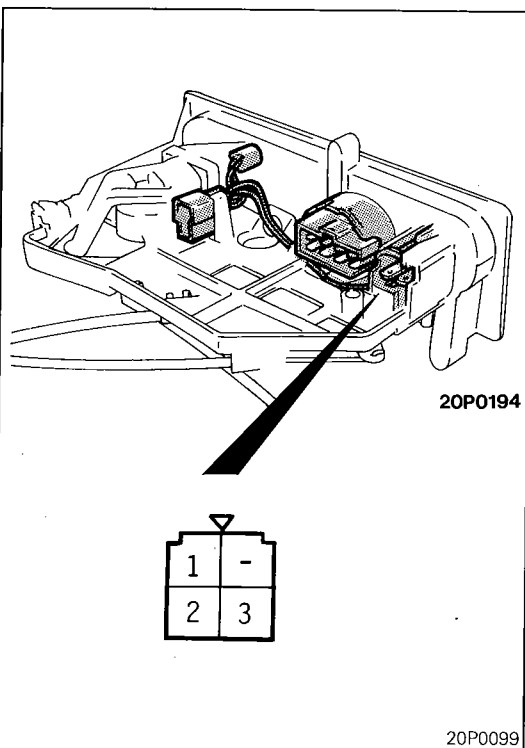
BLOWER SWITCH

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

Switch position \ Terminal	1	2	3	4	5	6	7	8
OFF								
• (Low)	○—○					○—○		
• (Medium first step)	○—○	○—○				○—○		
● (Medium second step)	○—○		○—○			○—○	○—○	
● (High)	○—○			○—○	○—○	○—○	○—○	○—○

NOTE

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



AIR CONDITIONER SWITCH CHECK

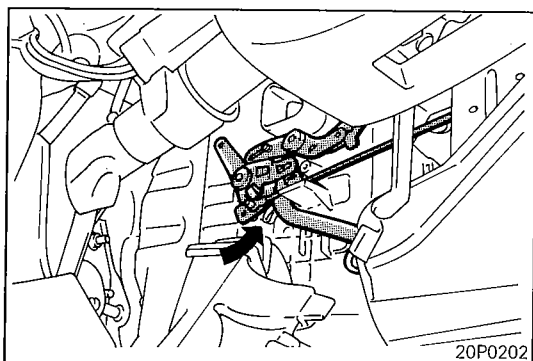
N24QCAC

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

Switch position \ Terminal	1	2	3
OFF position	○		
ECONO position	○—○	○—○	
A/C position	○—○		○—○

NOTE

○—○ symbol indicates continuity.




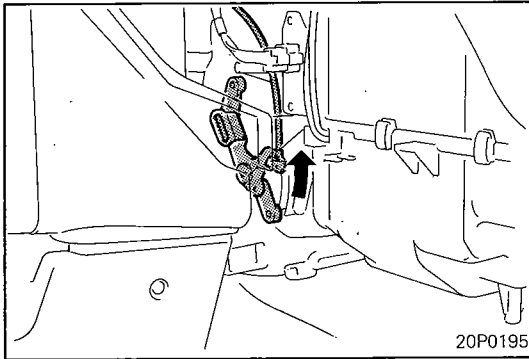
SERVICE POINTS OF INSTALLATION

N24GDAN

7. INSTALLATION OF MODE SELECTION CONTROL WIRE

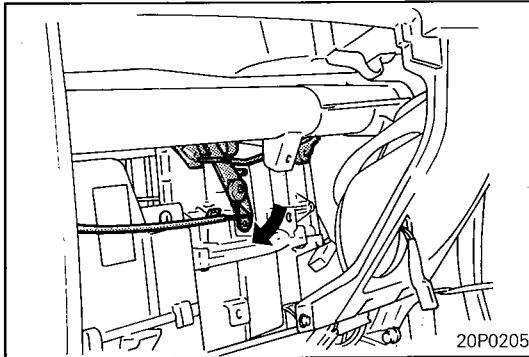
Connect the mode selection control wire to the mode selection damper lever by following the steps below.

- (1) Move the mode selection lever to the  position.
- (2) With the mode selection damper lever pulled outward in the direction indicated by the arrow, connect the inner cable of the mode selection control wire to the end of the mode selection lever, and then secure the outer cable by using a clip.


**6. INSTALLATION OF TEMPERATURE CONTROL WIRE**

Connect the temperature control wire to the blend air damper lever by following the steps below.

- (1) Move the temperature control lever to the leftmost position. ("COOL" position)
- (2) With the blend air damper lever pressed completely downward in the direction indicated by the arrow, connect the inner cable of the temperature control wire to the end of the blend air damper lever, and then secure the outer cable by using a clip.

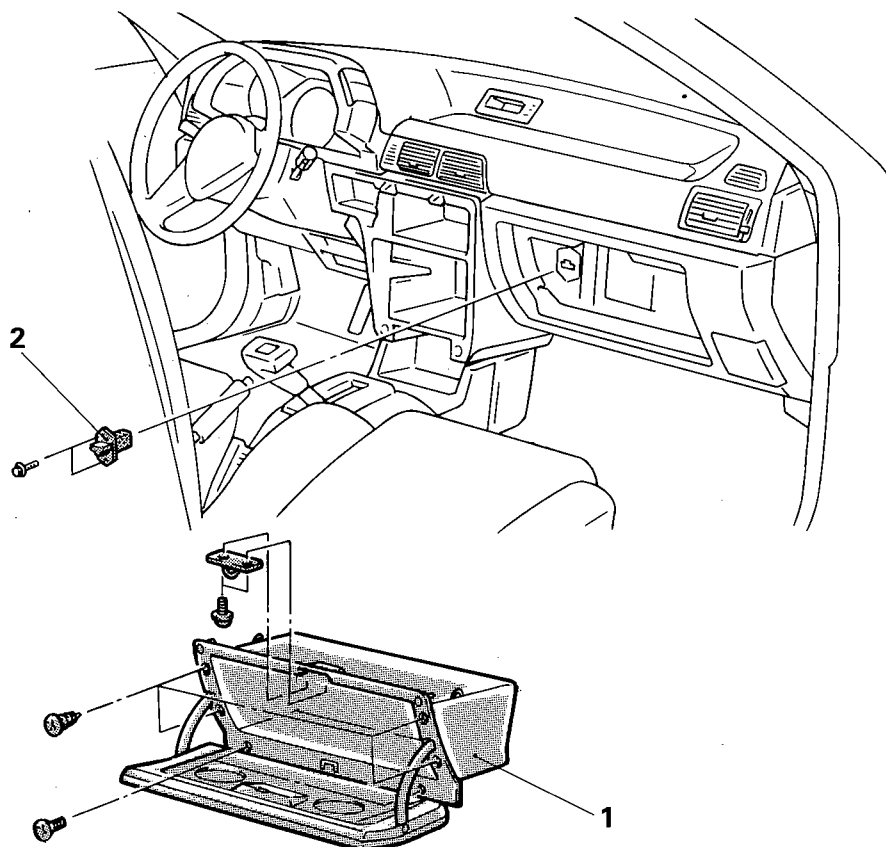
**5. INSTALLATION OF AIR SELECTION CONTROL WIRE**

Connect the air selection control wire to the air selection damper lever by following the steps below.

- (1) Move the air selection control lever to the  position.
- (2) With the air selection damper lever pressed inward in the direction indicated by the arrow, connect the inner cable of the air selection control wire to the end of the air selection damper lever, and then secure the outer cable by using a clip.

RESISTOR

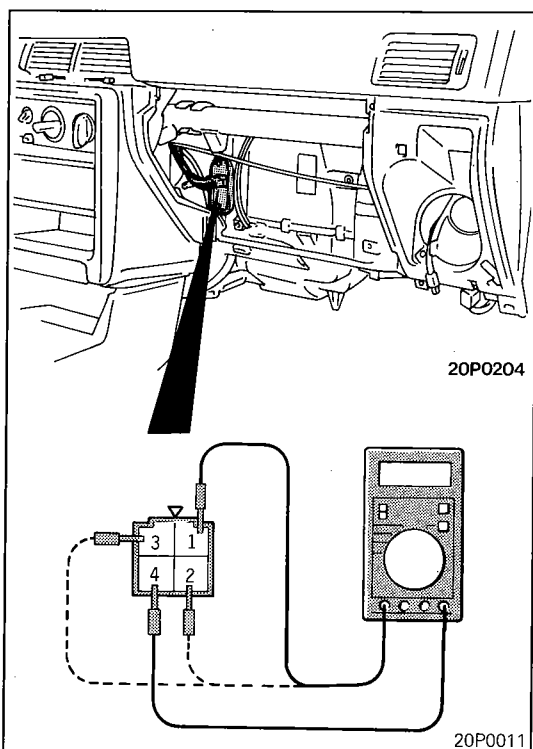
N24JA--

REMOVAL AND INSTALLATION**Removal steps**

1. Glove box
2. Resistor

NOTE
Reverse the removal procedures to reinstall.

20P0212

**INSPECTION**

N24JCAB

RESISTOR CHECK

- (1) Remove the glove box.
- (2) Disconnect the connector for the resistor.
- (3) Using a circuit tester, measure the resistance between the terminals indicated below.

The condition can be considered satisfactory if the value measured at this time is equivalent to the standard value.

Standard value

Terminals measured	Standard value Ω
Between terminals ② – ①	Approx. 1.79 – 2.06
Between terminals ② – ④	Approx. 1.10 – 1.26
Between terminals ② – ③	Approx. 0.38 – 0.44

HEATER UNIT

N241A--

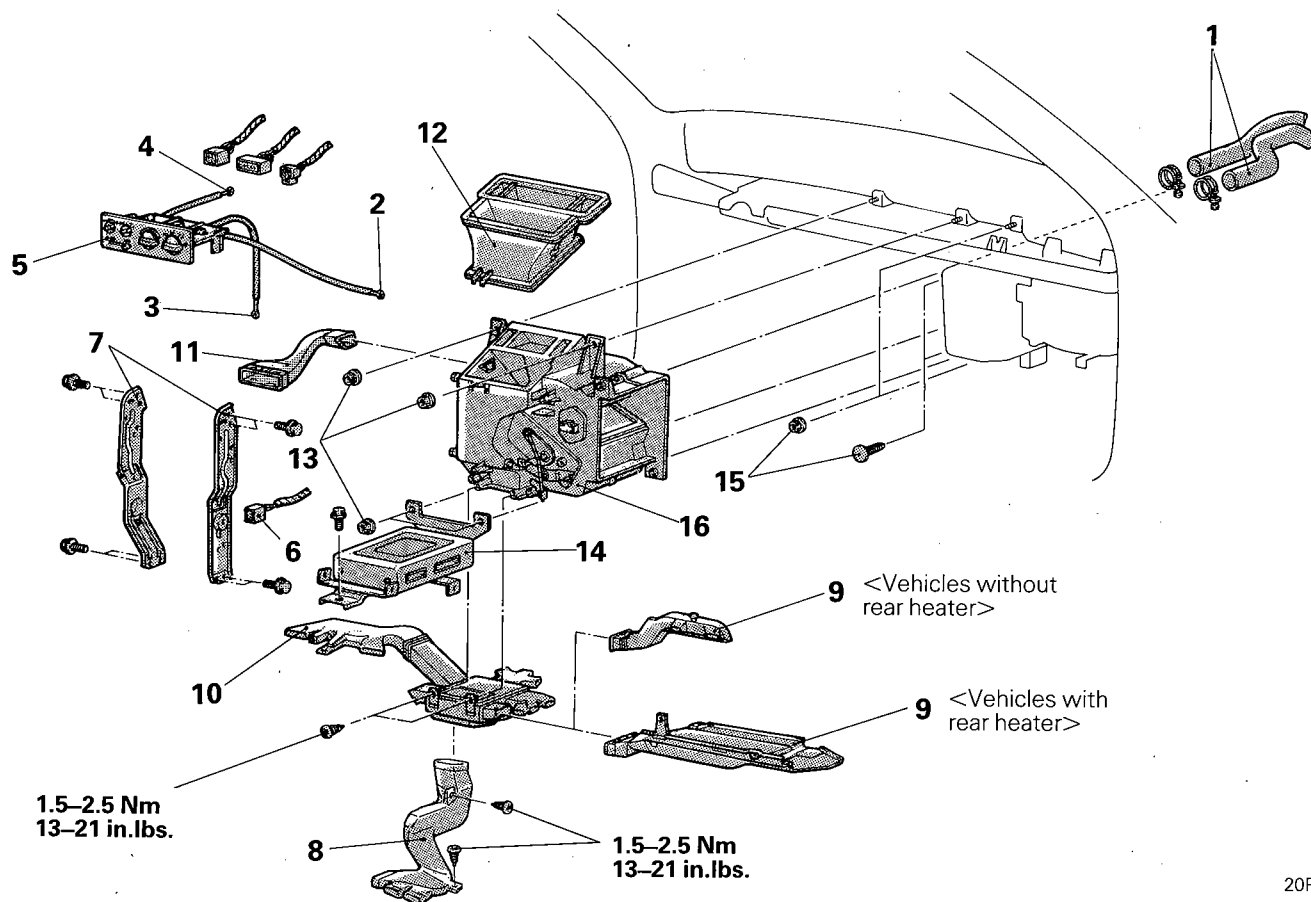
REMOVAL AND INSTALLATION

Pre-removal Operation

- Draining Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)
- Removal of Front Seats, Floor Console and Instrument Panel
(Refer to GROUP 23 – Front Seat, Floor Console and Instrument Panel.)

Post-installation Operation

- Supplying of Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)
- Installation of Front Seat, Floor Console and Instrument Panel
(Refer to GROUP 23 – Front Seat, Floor Console and Instrument Panel.)

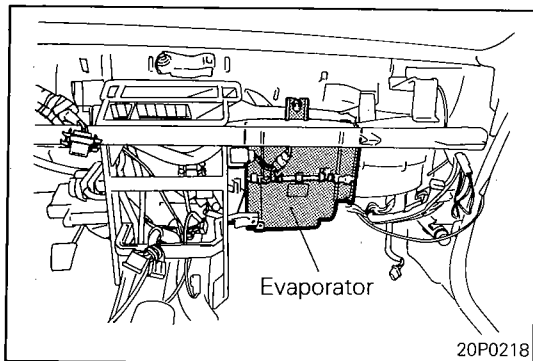
**Removal steps**

1. Connection for the heater hoses
- ◆◆ 2. Connection for the air selection control wire
- ◆◆ 3. Connection for the temperature control wire
- ◆◆ 4. Connection for the mode selection control wire
5. Heater control assembly
6. Connection of the connector [8P <1500> or 10P <1600>] for ECI control relay
7. Instrument panel center stay assembly
8. Rear heater duct A
9. Lap heater duct <vehicles without rear heater> or shower duct <vehicles with rear heater>
10. Foot duct
11. Lap duct
12. Center ventilation duct
13. Heater unit mounting nuts
14. ELC-4 A/T control unit
15. Evaporator mounting nuts, clips
- ◆◆ 16. Heater unit

NOTE

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

20P0209



SERVICE POINT OF REMOVAL

N24IBAL

16. REMOVAL OF HEATER UNIT

<Vehicles with air conditioner>

With the evaporator pulled outward (to the cabin side), remove the heater unit.

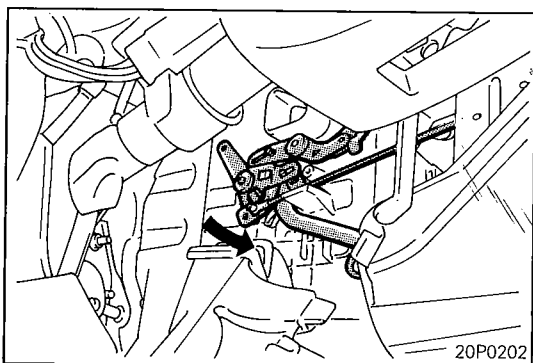
NOTE

- (1) Be careful not to damage the liquid pipe and suction hose when performing the procedures.
- (2) Be careful that the coolant left behind in the heater core is not spilt.

INSPECTION

N24ICAG

- Check the operation of dampers and link mechanism.
- Check the heater core for clogging and water leakage.




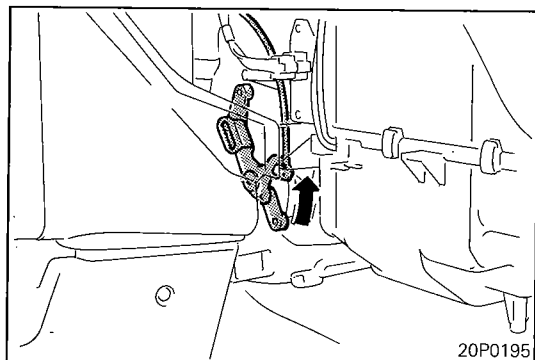
SERVICE POINTS OF INSTALLATION

N24IEAJ

4. INSTALLATION OF MODE SELECTION CONTROL WIRE

Connect the mode selection control wire to the mode selection damper lever by following the steps below.

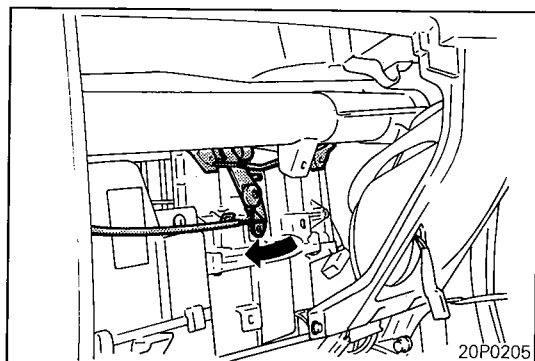
- (1) Move the mode selection lever to the  position.
- (2) With the mode selection damper lever pulled outward in the direction indicated by the arrow, connect the inner cable of the mode selection control wire to the end of the mode selection lever, and then secure the outer cable by using a clip.



3. INSTALLATION OF TEMPERATURE CONTROL WIRE


Connect the temperature control wire to the blend air damper lever by following the steps below.

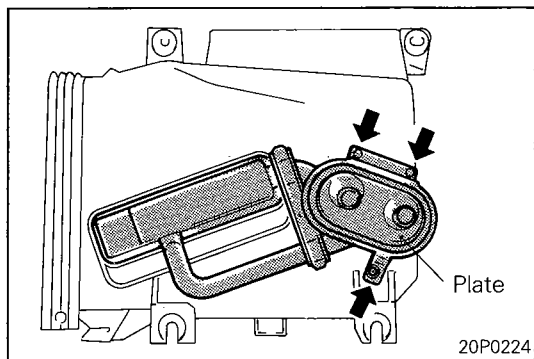
- (1) Move the temperature control lever to the leftmost position. ("COOL" position)
- (2) With the blend air damper lever pressed completely downward in the direction indicated by the arrow, connect the inner cable of the temperature control wire to the end of the blend air damper lever, and then secure the outer cable by using a clip.



2. INSTALLATION OF AIR SELECTION CONTROL WIRE

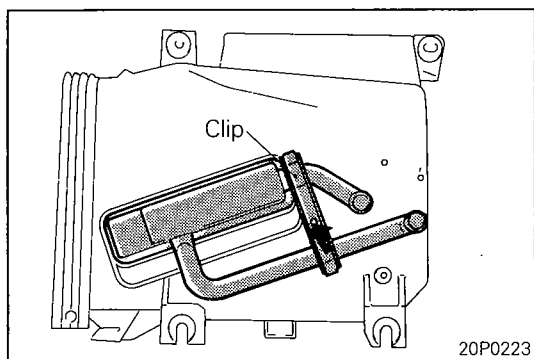
Connect the air selection control wire to the air selection damper lever by following the steps below.

- (1) Move the air selection lever to the  position.
- (2) With the air selection damper lever pressed inward in the direction indicated by the arrow, connect the inner cable of the air selection control wire to the end of the air selection damper lever, and then secure the outer cable by using a clip.

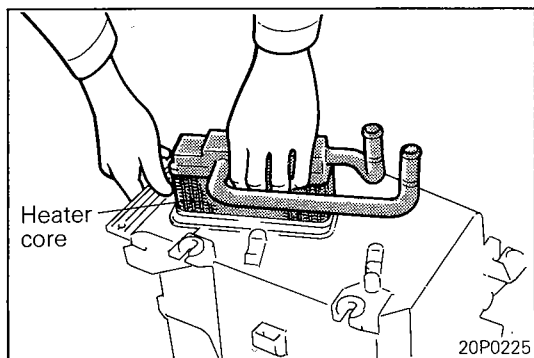
**HEATER CORE REPLACEMENT**

N24IDA1

- (1) Remove the heater unit.
- (2) Remove the plate.



- (3) Remove the heater core fastening clips.



- (4) Pull out the heater core from the heater unit.
- (5) Insert the heater core into the heater unit.

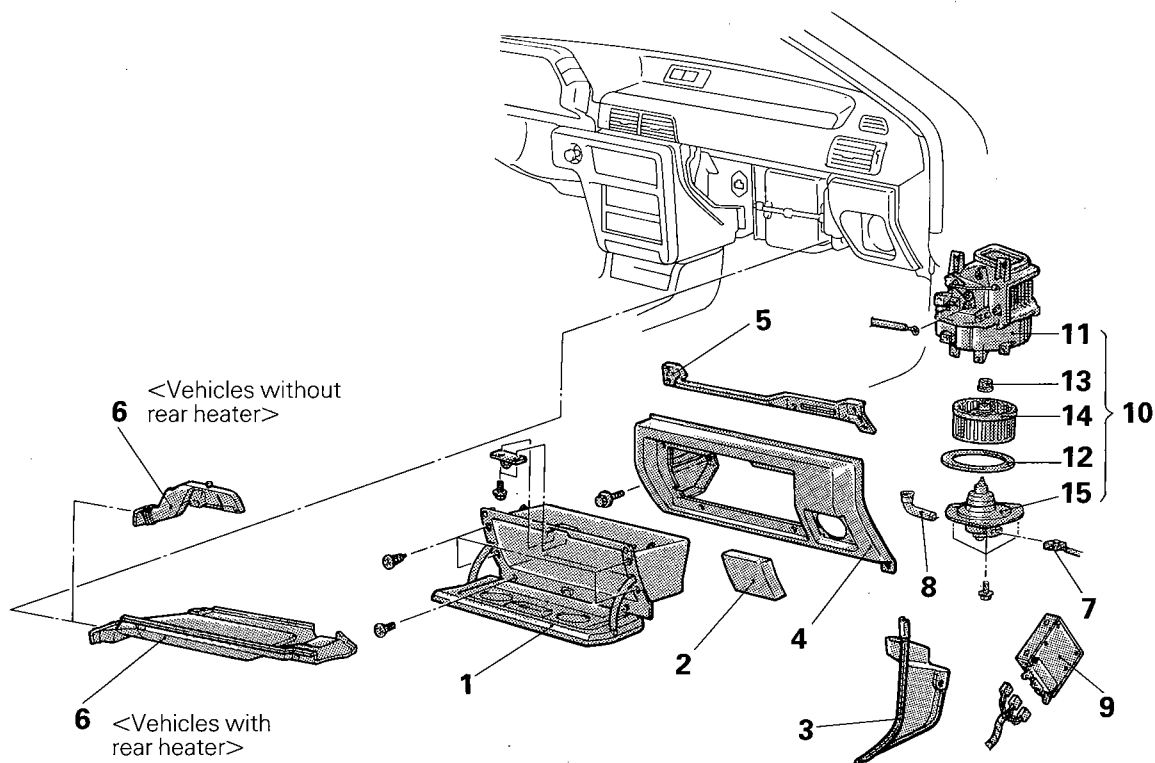
NOTE

This work must be done carefully so as not to damage the fin part or the pad part.

- (6) Install the plate.
- (7) Install the heater unit.

BLOWER ASSEMBLY**REMOVAL AND INSTALLATION**

N24KA--

**Removal steps**

20P0211

1. Glove box
2. Speaker cover
3. Cowl side trim, R.H.
4. Knee protector, R.H.
5. Glove box frame
6. Lap heater duct <vehicles without rear heater> or shower duct <vehicles with rear heater>
7. Connection of the connector for blower motor
8. Hose
9. MPI control unit
- ◆◆ 10. Blower motor assembly
- ◆◆ 11. Blower case
- ◆◆ 12. Packing
13. Fan installation nut
14. Fan
15. Blower motor

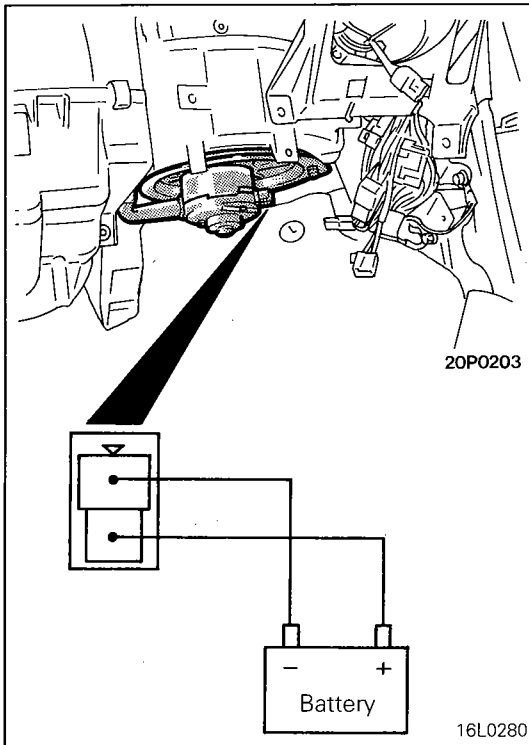
NOTE

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

INSPECTION

N24KCAJ

- Check for bending or abnormal deflection of the rotating shaft of the blower motor assembly.
- Check for cracking or deterioration of the packing.
- Check for damage to the fan.
- Check for damage to the blower case.
- Check the operation of the inside/outside air selection damper, and for damage.

**BLOWER MOTOR ASSEMBLY**

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

SERVICE POINTS OF INSTALLATION

N24KDAFa

12. INSTALLATION OF PACKING

If the packing is cracked, replace with a new one.

10. INSTALLATION OF BLOWER MOTOR ASSEMBLY

Before installing the blower motor assembly, carefully clean away any dust, dirt, etc. adhering to the inner surface of the blower case.

EVAPORATOR

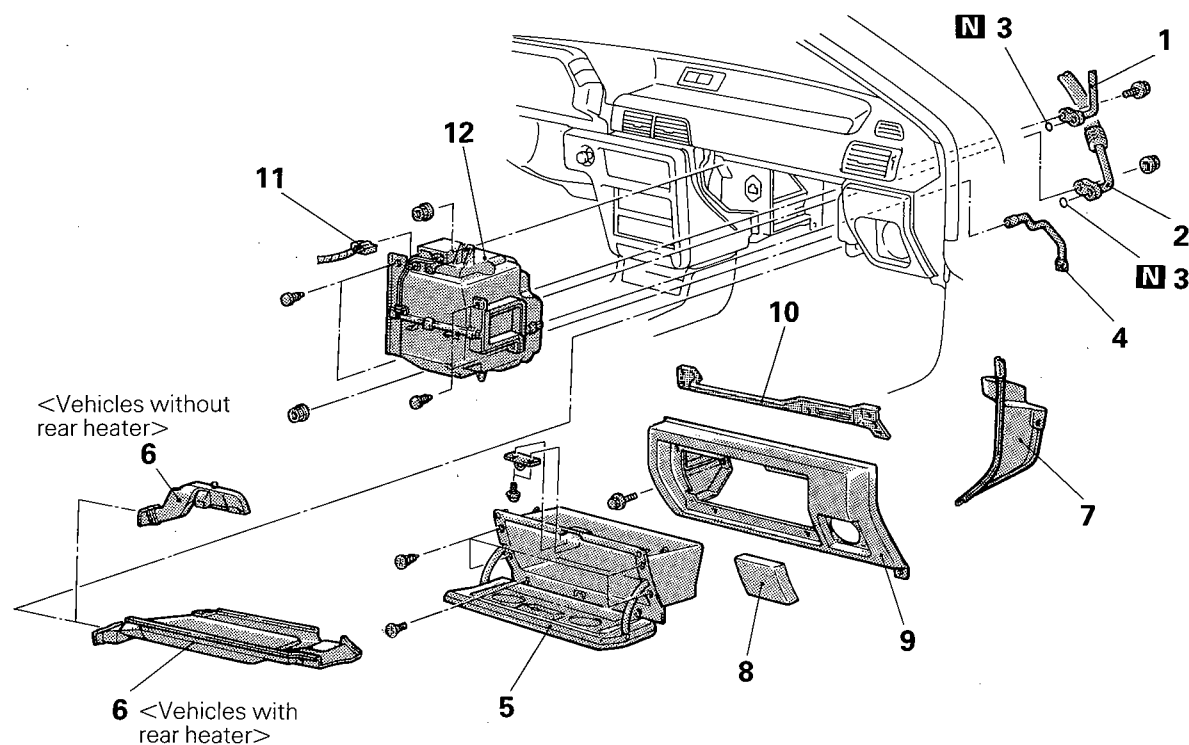
REMOVAL AND INSTALLATION

Pre-removal Operation

- Discharge of the Refrigerant
(Refer to P.24-23.)

Post-installation Operation

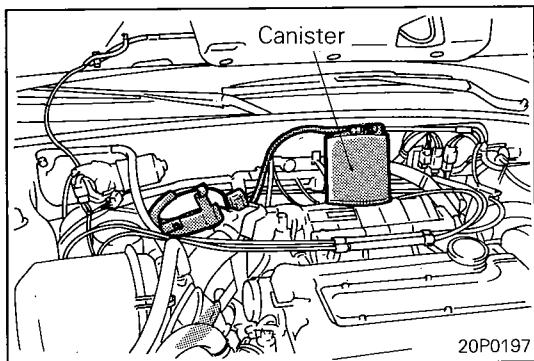
- Charging of Refrigerant
(Refer to P.24-25.)
- Checking for Refrigerant Gas Leakage
(Refer to P.24-19.)
- Performance Test
(Refer to P.24-20.)

**Removal steps**

- ◆◆ ◆◆ 1. Liquid pipe connection
- ◆◆ ◆◆ 2. Suction hose connection
- 3. O-rings
- 4. Drain hose
- 5. Glove box
- 6. Lap heater duct <vehicles without rear heater> or shower duct <vehicles with rear heater>
- 7. Cowl side trim
- 8. Speaker cover
- 9. Knee protector, R.H.
- 10. Glove box frame
- 11. Connection of the connector (12P) for auto compressor control unit
- 12. Evaporator

NOTE

- (1). Reverse the removal procedures to reinstall.
- (2). ◆◆: Refer to "Service Points of Removal".
- (3). ◆◆: Refer to "Service Points of Installation".
- (4). **N**: Non-reusable parts

**SERVICE POINTS OF REMOVAL**

N24RBAG

1. DISCONNECTION OF LIQUID PIPE / 2. SUCTION HOSE

- (1) Remove the canister from the canister bracket and set it aside.
- (2) 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

N24RCAB

- Check for damage of the evaporator fin part.
- Check for damage or collapse of the drain hose.
- Check for peeling or cracking of the insulator.

AIR-THERMO SENSOR AND AIR-INLET SENSOR CHECK

For information concerning the checking procedures, refer to P.24-17.

SERVICE POINTS OF INSTALLATION

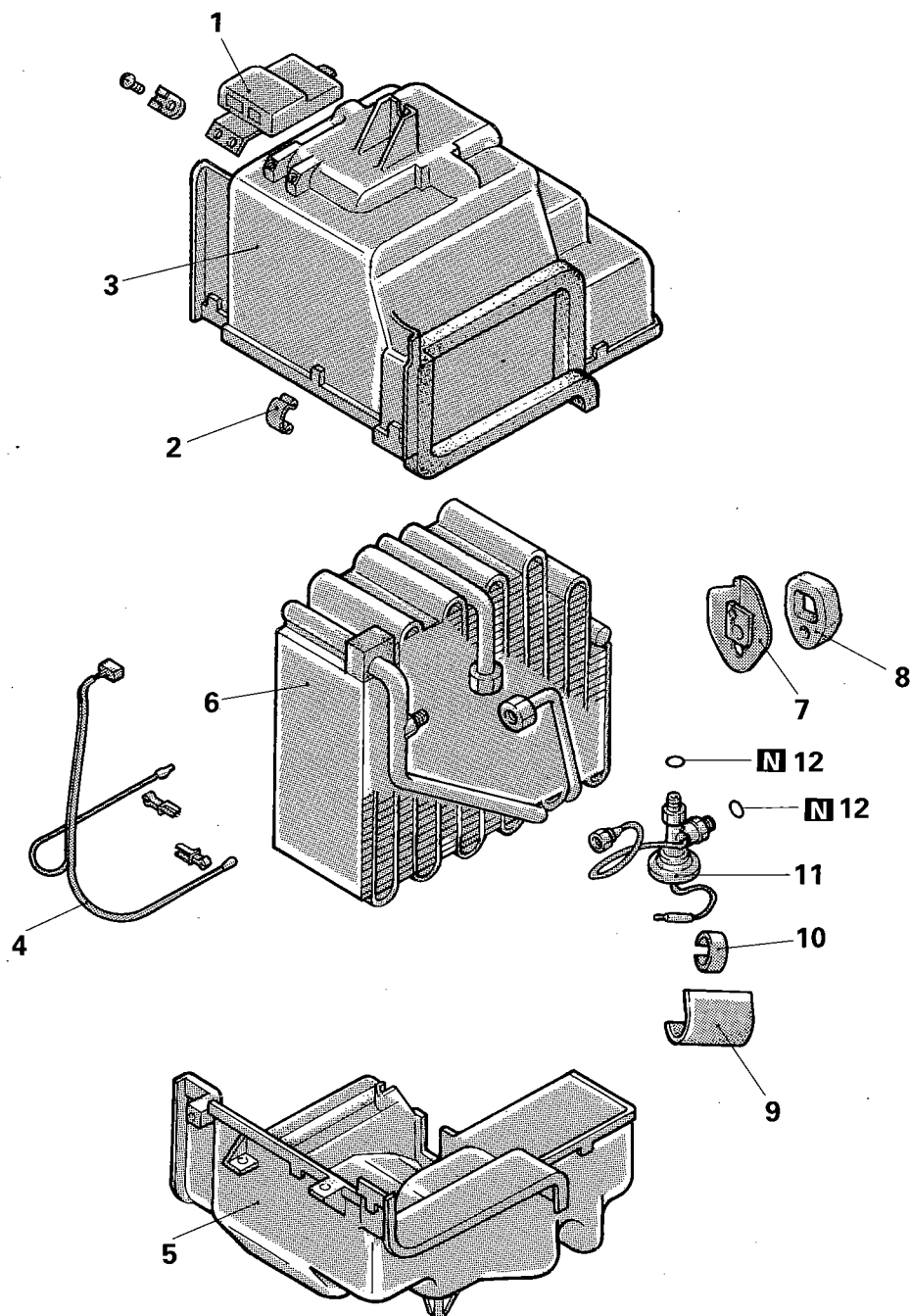
N24RDAKa

2. INSTALLATION OF SUCTION HOSE / 1. LIQUID PIPE

For information concerning the installation procedures, refer to P.24-27.

DISASSEMBLY AND REASSEMBLY

N24RE -



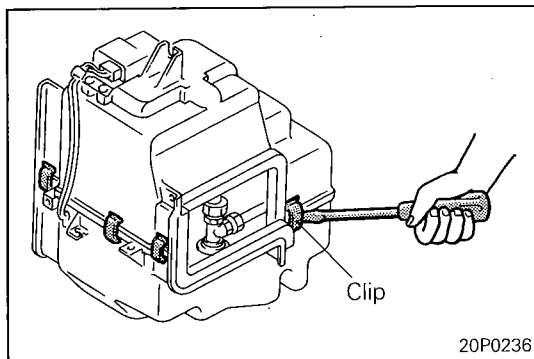
20P0235

Disassembly steps

- 1. Auto compressor control unit
- ↔ 2. Clips
- 3. Evaporator case (upper)
- 4. Air-inlet sensor and air-thermo sensor
- 5. Evaporator case (lower)
- 6. Evaporator assembly
- 7. Grommet
- 8. Insulator
- 9. Rubber insulator
- 10. Clip
- ↔ ♦♦ 11. Expansion valve
- ♦♦ 12. O-ring

NOTE

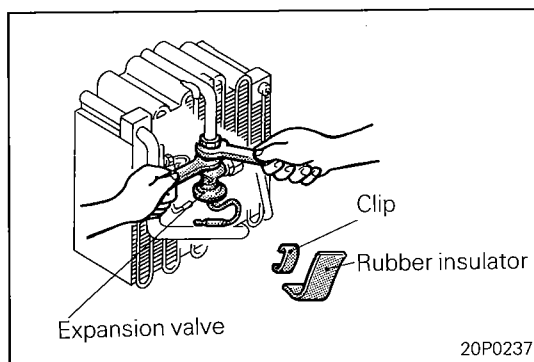
- (1) Reverse the disassembly procedures to reassemble.
- (2) ↔: Refer to "Service Points of Disassembly".
- (3) ♦♦: Refer to "Service Points of Reassembly".
- (4) **N**: Non-reusable parts

**SERVICE POINTS OF DISASSEMBLY**

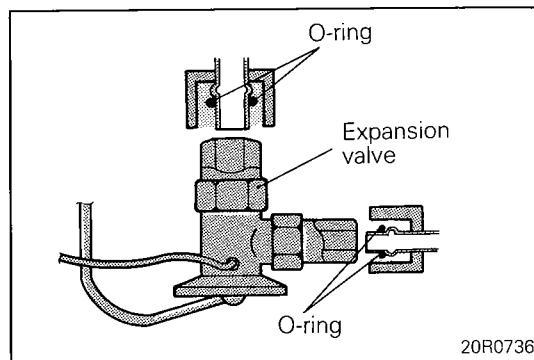
N24RFAE

2. REMOVAL OF CLIPS

Remove the clips with an ordinary screwdriver covered with a shop towel to prevent damage to case surfaces.

**11. REMOVAL OF EXPANSION VALVE**

Loosen the flare nut by using two wrenches (for both the inlet and outlet).

**SERVICE POINT OF REASSEMBLY**

N24RHAJ

11. APPLICATION OF COMPRESSOR OIL TO EXPANSION VALVE / 12. O-RINGS

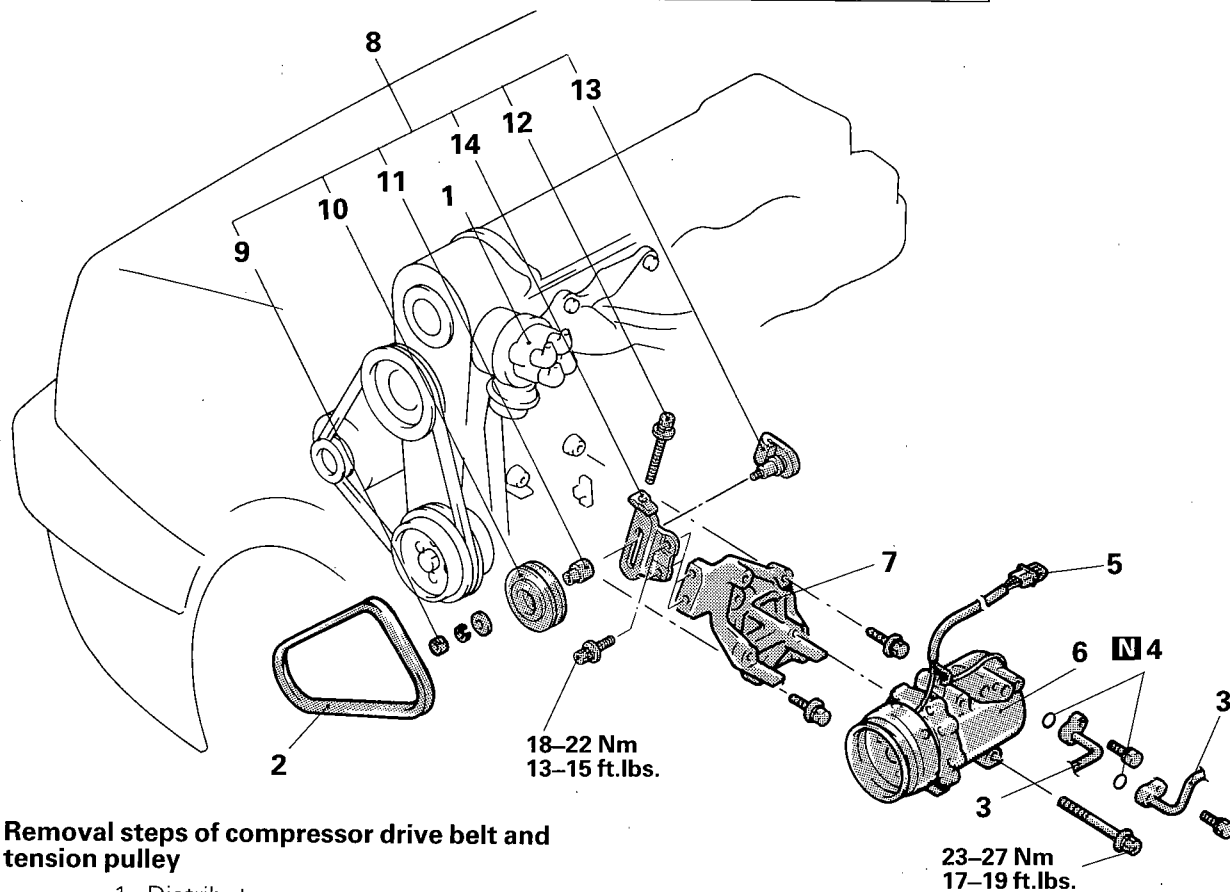
Apply compressor oil to the O-rings and expansion valve of the evaporator assembly.

COMPRESSOR <1500>**REMOVAL AND INSTALLATION****Pre-removal Operation**

- Discharge of Refrigerant
(Refer to P.24-23.)

Post-installation Operation

- Charging of Refrigerant
(Refer to P.24-25.)
- Adjustment of Compressor Drive Belt
(Refer to P.24-27.)
- Checking for Gas Leakage
(Refer to P.24-19.)
- Performance Test
(Refer to P.24-20.)

**Removal steps of compressor drive belt and tension pulley**

- ↔
1. Distributor cap
 2. Compressor drive belt
 8. Tension pulley assembly
 9. Nut
 10. Tension pulley
 11. Collar
 12. Bolt
 13. Shaft
 14. Tension pulley bracket

Removal steps of compressor

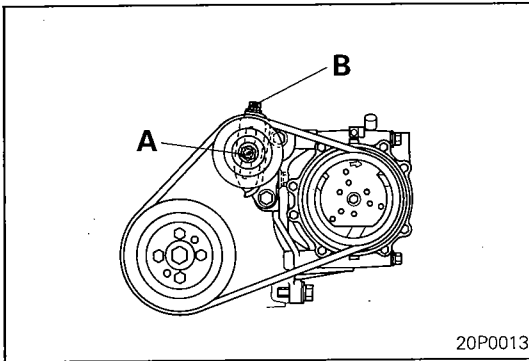
- ↔
- ↔ ↔
1. Distributor cap
 2. Compressor drive belt
 3. Connection for suction hose and discharge hose
 4. O-rings
 5. Connection for connector (3 pin) for the magnetic clutch
 6. Compressor
 7. Compressor bracket

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ↔: Refer to "Service Points of Removal".
- (3) ↔: Refer to "Service Points of Installation".
- (4) **N**: Non-reusable parts

20P0243

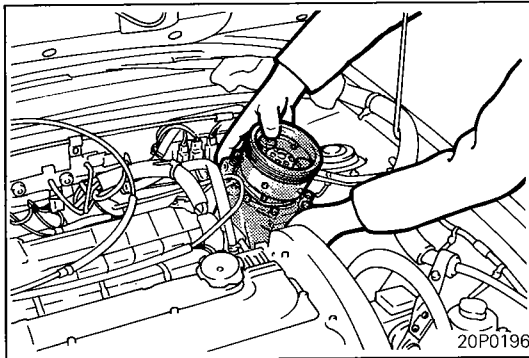
N24SBAB

**SERVICE POINTS OF REMOVAL****1. REMOVAL OF COMPRESSOR DRIVE BELT**

- (1) Loosen bolt "A" for holding the tension pulley.
- (2) Loosen bolt "B" for adjustment, and remove the compressor drive belt.

3. REMOVAL OF SUCTION HOSE

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

**6. REMOVAL OF COMPRESSOR**

When doing this work, be careful not to spill the compressor oil.

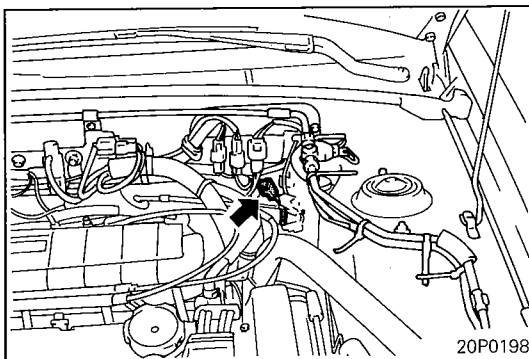
INSPECTION

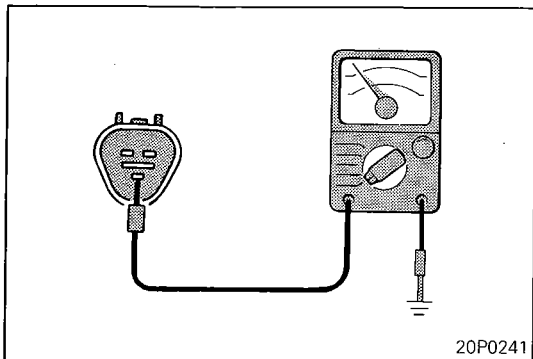
N24SCAA

- Checking for heat damage of the tension pulley.
- Check for excessive play or deflection of the tension pulley.
- Check for unusual wear of the tension pulley.
- Check for hardening of the air conditioner belt.
- Check for unusual wear or abrasion of the air conditioner belt.

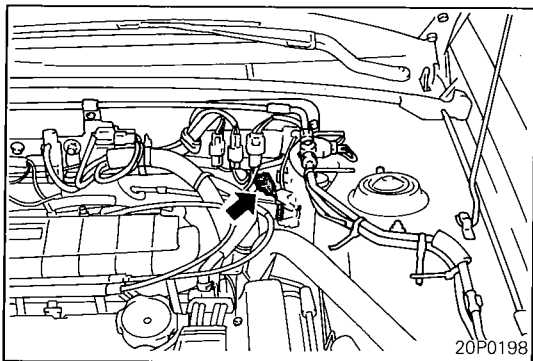
CONTINUITY CHECK OF THE COMPRESSOR'S MAGNETIC CLUTCH

- (1) Disconnect the compressor's connector.



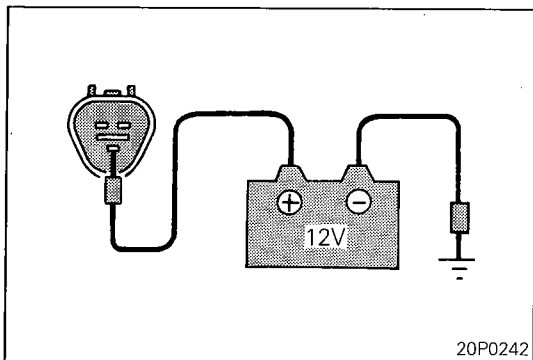


- (2) Check to be sure that there is continuity between body ground and magnetic clutch terminal.



OPERATION CHECK OF THE COMPRESSOR'S MAGNETIC CLUTCH

- (1) Disconnect the compressor's connector.



- (2) Connect terminal at the compressor side to the positive (+) terminal of the battery, and ground the negative (-) terminal of the battery to the compressor.
- (3) The condition of the compressor's magnetic clutch can be considered satisfactory if the operation sound (a "click" sound) of the magnetic clutch can be heard when this check is made.

SERVICE POINTS OF INSTALLATION

N24SDAB

6. INSTALLATION OF COMPRESSOR

If a new compressor is installed, first adjust the amount of oil according to the procedures described below, and then install the compressor.

- (1) Measure the amount (X cc) of oil within the removed compressor.
- (2) Wipe away (from the new compressor) the amount of oil calculated according to the following formula, and then install the new compressor.

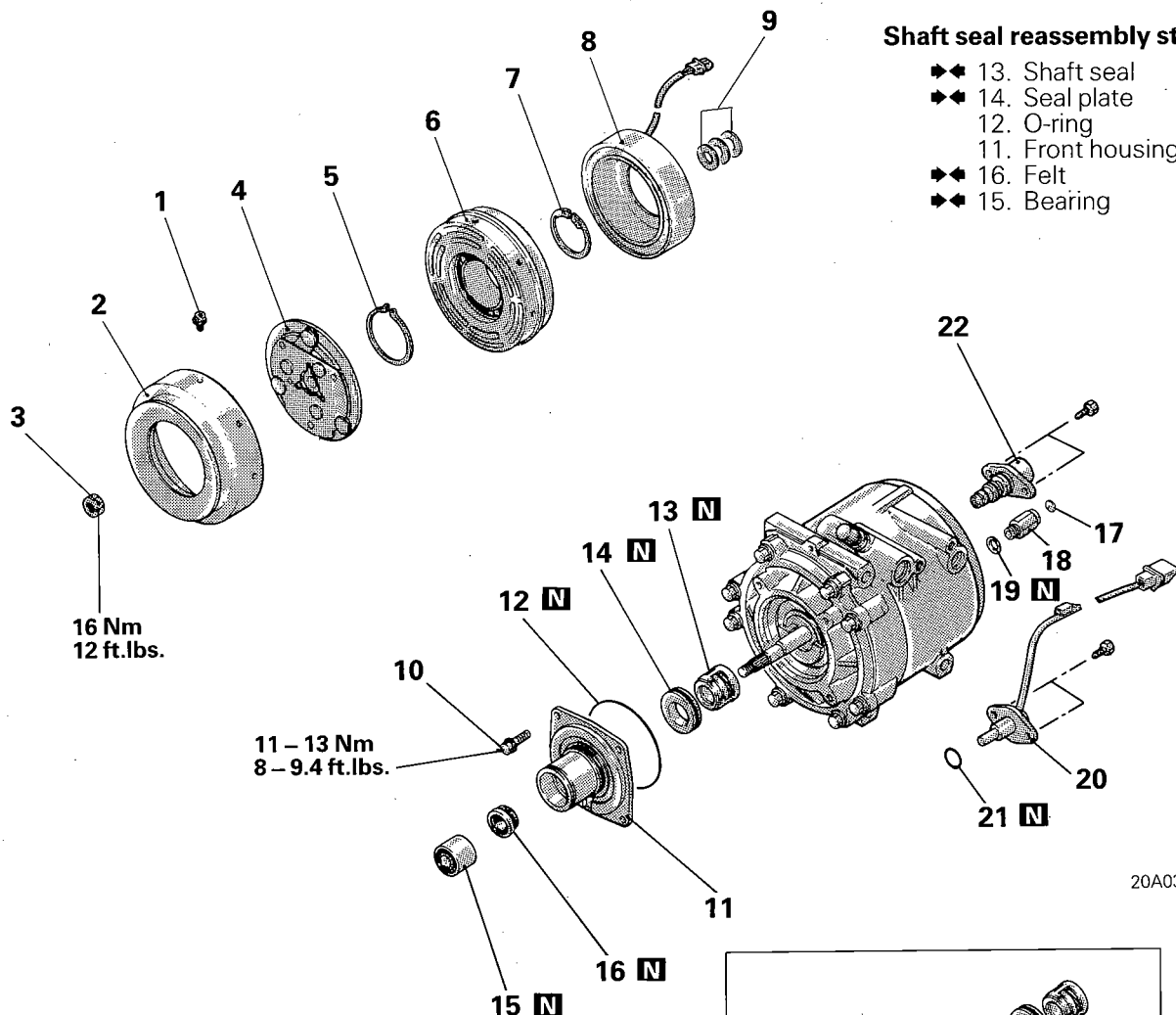
$$\text{New compressor oil amount } 150 \text{ cc (9.1 cu.in.)} - X \text{ cc} = Y \text{ cc}$$

NOTE

Y cc indicates the amount of oil in the refrigerant line, the condenser, the cooling unit, etc.

3. INSTALLATION OF SUCTION HOSE AND DISCHARGE HOSE

For information concerning the installation procedures, refer to P.24-27.

COMPRESSOR**DISASSEMBLY AND REASSEMBLY****Magnetic clutch disassembly steps**

1. Bolts
2. Pulley
- ↔ 3. Nut
- ↔ 4. Armature plate
- ↔ 5. Snap ring
- ↔ 6. Rotor
- ↔ 7. Snap ring
- ↔ 8. Clutch coil
9. Shims

Shaft seal disassembly steps

10. Bolts
11. Front housing
12. O-ring
13. Shaft seal
- ↔ 14. Seal plate
- ↔ 15. Bearing
16. Felt

High pressure relief valve disassembly steps

17. Dust cover
18. High pressure relief valve
19. Packing

Shaft seal reassembly steps

- ↔ 13. Shaft seal
- ↔ 14. Seal plate
12. O-ring
11. Front housing
- ↔ 16. Felt
- ↔ 15. Bearing

Refrigerant temperature sensor disassembly steps

20. Refrigerant temperature sensor
21. O-ring

Control valve disassembly

22. Control valve

NOTE

- (1) Reverse the disassembly procedures to reassemble all the parts except the shaft seal.
- (2) ↔: Refer to "Service Points of Disassembly".
- (3) ↔: Refer to "Service Points of Reassembly".
- (4) **N**: Non-reusable parts

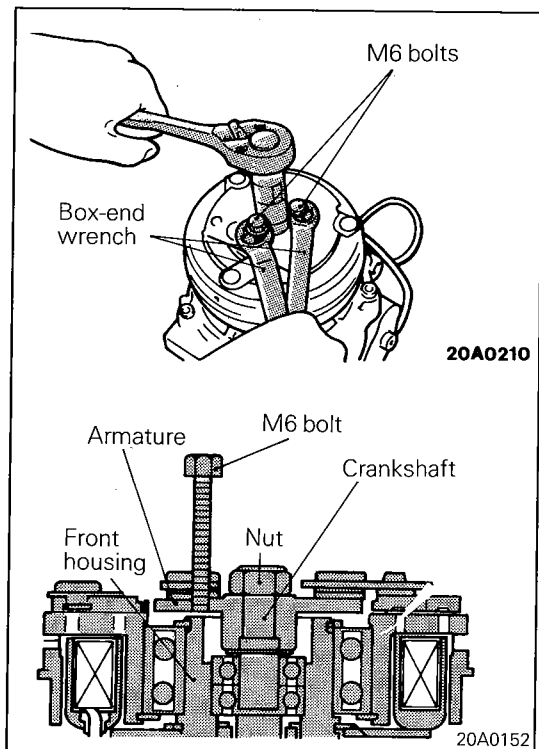
SERVICE POINTS OF DISASSEMBLY**3. REMOVAL OF NUT**

- (1) Provisionally install two M6 bolts [length 25 mm (.98 in.) or longer] in the bolt holes of the armature plate.

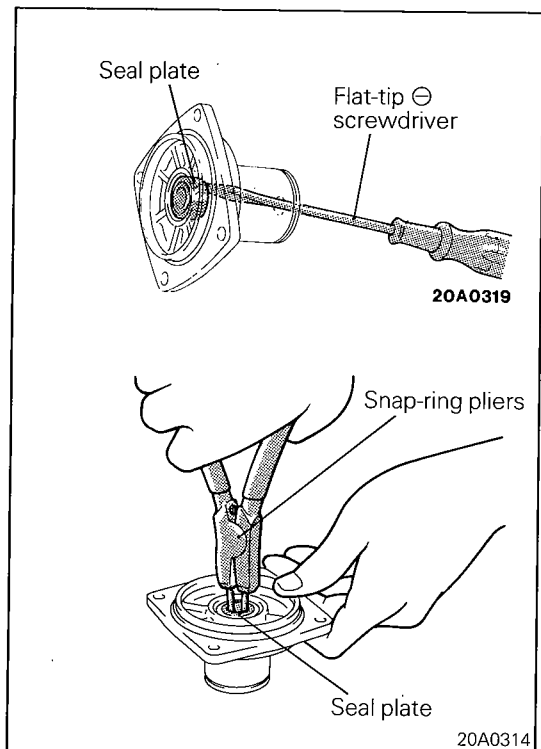
NOTE

Provisionally install the M6 bolts in the armature plate so that the ends of the M6 bolts do not contact the front housing.

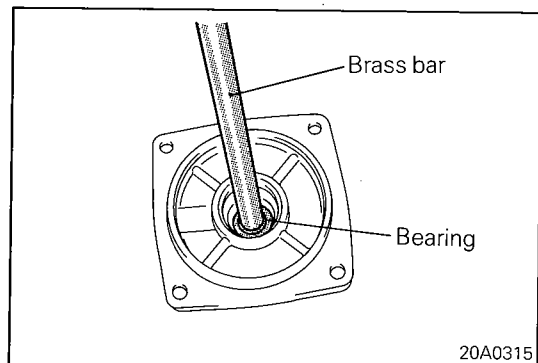
- (2) Use box-end wrenches to hold the provisionally installed bolts (so as to prevent the armature plate from turning), and then remove the nut.
- (3) Remove the armature plate from the crankshaft.

**14. REMOVAL OF SEAL PLATE**

Use a flat-tip \ominus screwdriver or snap-ring pliers to remove the seal plate from the front housing.

**15. REMOVAL OF BEARING**

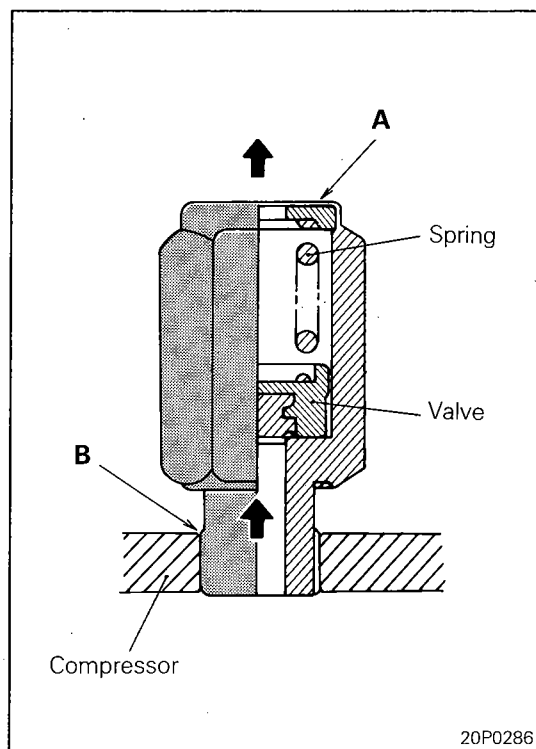
Use a brass bar to remove the bearing from the front housing.



INSPECTION

N24TGAF

- Check the surface of the armature 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.



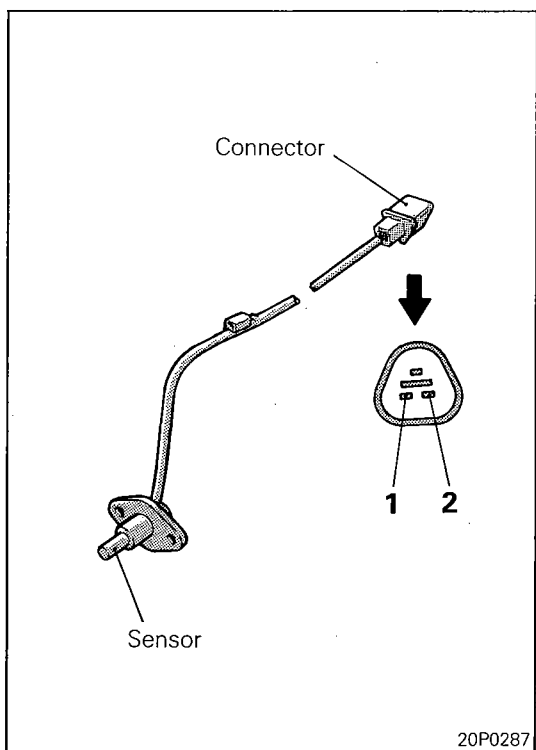
20P0286

HIGH PRESSURE RELIEF VALVE CHECK

The high pressure relief valve is a safety feature which releases part of the refrigerant inside the system into the atmosphere when the high pressure level exceeds 3,550 kPa (505 psi) during air conditioner operation.

Once the pressure inside the system has been reduced to 2,400 kPa (341 psi) or lower, the high pressure relief valve closes, thus allowing continued operation.

- (1) If a leak is detected at section A, replace the high pressure relief valve. The valve can be used unless there is a leak from that section.
- (2) If a leak is detected at section B, retighten the valve. If the leak still persists after retightening the valve, replace the packing.



20P0287

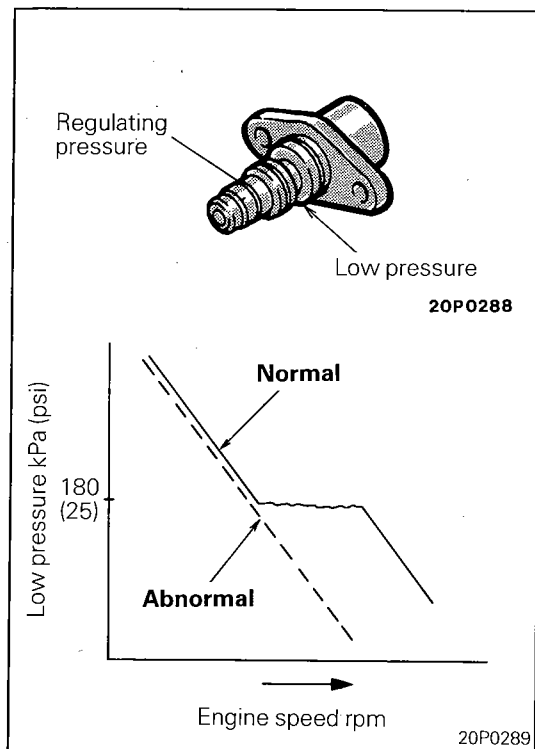
REFRIGERANT TEMPERATURE SENSOR CHECK

The refrigerant temperature sensor detects the temperature of the refrigerant delivered from the compressor during the operation of the air conditioner, and deenergizes the magnetic clutch to stop the compressor when the temperature exceeds 175°C (347°F), due to a problem in the system.

- (1) Measure the resistance between terminals ① and ② of the connector.

Normal resistance: 80.47 kΩ when ambient temperature is 25°C (77°F)

If the measurement deviates greatly from the above resistance, replace the refrigerant temperature sensor assembly.



CONTROL VALVE CHECK

The control valve detects a low pressure level during the operation of the air conditioner, and adjusts the amount of refrigerant to be bypassed.

- (1) Operate the air conditioner under a high temperature load condition (when vehicle interior temperature is high).
- (2) Connect a low pressure gauge to the air compressor.
- (3) Operate the air conditioner with the engine running at idle.
- (4) Gradually increase the engine speed while observing the low pressure gauge.

If the valve is normal, the low pressure drops slowly as the engine speed increases until a pressure of 180 kPa (25 psi) is reached, at which point the pressure temporarily ceases to drop. Then, the pressure again starts dropping as the engine speed further increases.

If the valve is abnormal, the low pressure drops in direct proportion to the increase in engine speed without a temporary leveling off at the 180 kPa (25 psi) pressure level. If the low pressure drops like this, replace the control valve.

SERVICE POINTS OF REASSEMBLY

N24SHAB

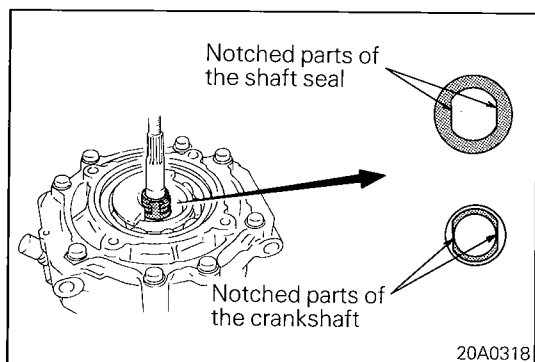
13. INSTALLATION OF SHAFT SEAL

Caution

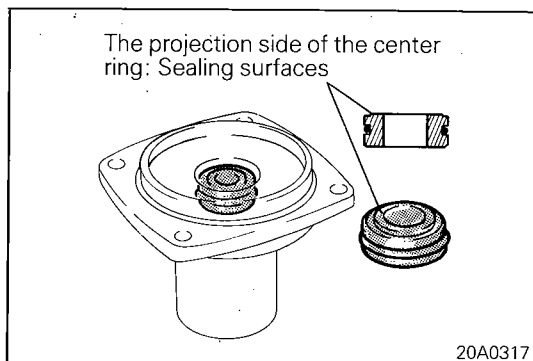
Do not touch the sealing surfaces of the shaft seal carbon ring and shaft seal plate.

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

Specified compressor oil: FREOL S-83 or SUNISO 5GS



- (2) Align the notched parts of the shaft seal with the notched parts of the crankshaft, and then install the shaft seal on the crankshaft, positioning it at the base of the crankshaft.



14. INSTALLATION OF SEAL PLATE

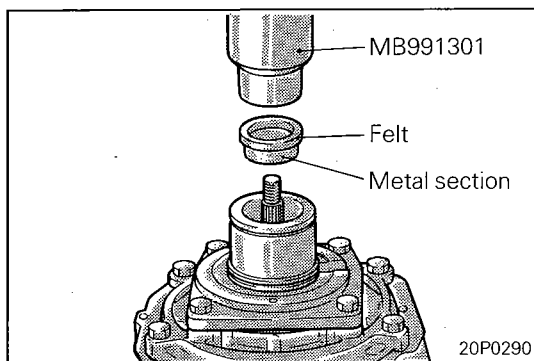
Caution

Do not touch the sealing surfaces of the shaft seal carbon ring and shaft seal plate.

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

Specified compressor oil: FREOL S-83 or SUNISO 5GS

- (2) Install the shaft seal plate on the front housing so that the surface (the projection side of the center ring) of the shaft seal plate is at the shaft seal side.

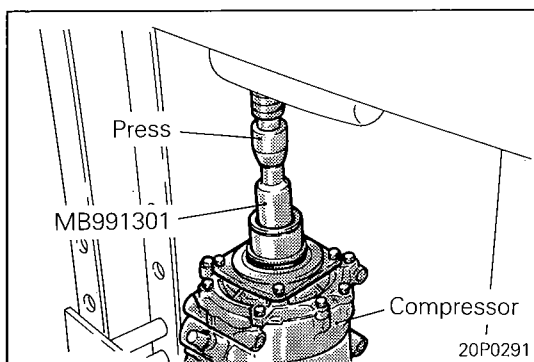


16. INSTALLATION OF FELT

Using the special tool, insert the felt into the front housing.

NOTE

Install the felt with its metal section facing as shown.

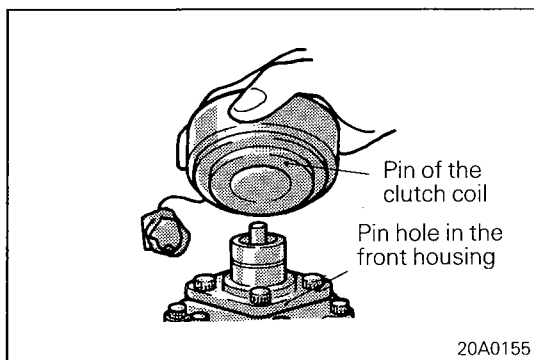


15. INSTALLATION OF BEARING

Using the special tool and a press, force the bearing into the front housing.

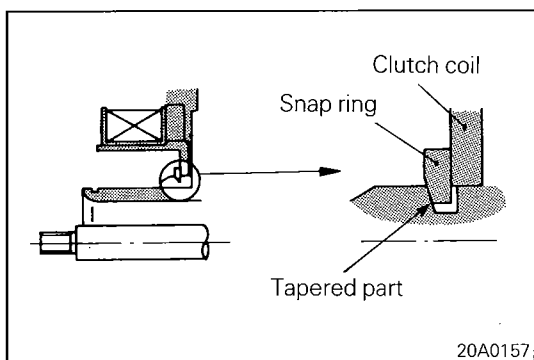
Caution

- (1) **Avoid applying force suddenly to the compressor body.**
- (2) **Set up the compressor in the press so that no force is applied to the sensor or valves.**

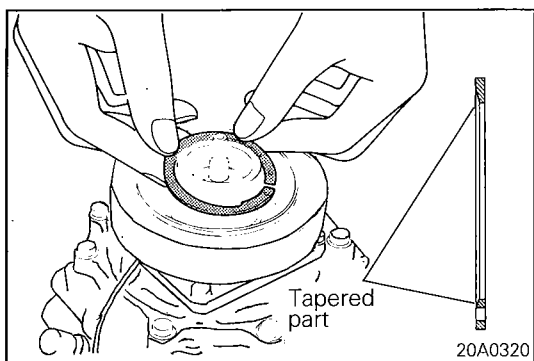


8. INSTALLATION OF CLUTCH COIL

- (1) Align the pin of the clutch coil with the pin hole in the front housing, and then fit it into the hole.

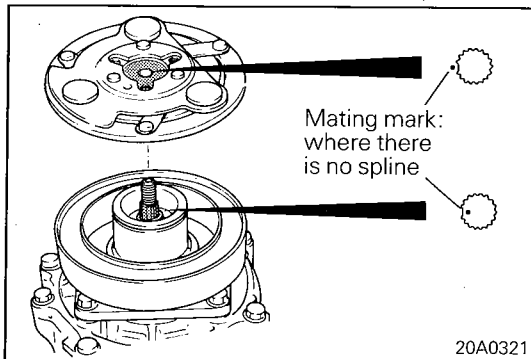


- (2) Install the snap ring so that the tapered surface is at the outer side.



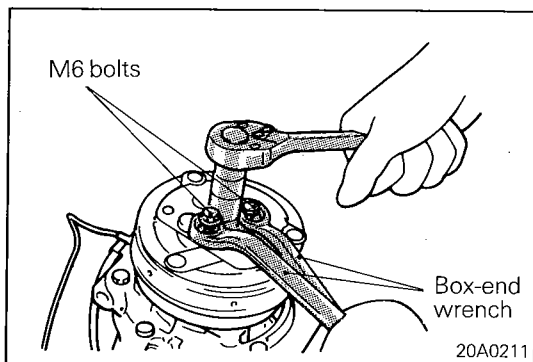
6. INSTALLATION OF ROTOR

Install the snap ring so that the tapered surface is at the outer side.



4. INSTALLATION OF ARMATURE PLATE

Align the mating mark of the crankshaft spline and the mating mark of the armature plate, and then fit them together.



3. INSTALLATION OF NUT

- (1) Provisionally install two M6 bolts [length 25 mm (.98 in.) or longer] in the bolt holes of the armature plate.

NOTE

Provisionally install the M6 bolts in the armature plate so that the ends of the M6 bolts do not contact the front housing.

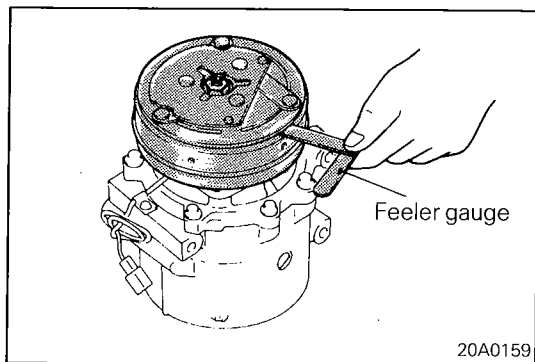
- (2) Use box-end wrenches to hold the provisionally installed bolts (so as to prevent the armature plate from turning), and then tighten the nut.

- (3) Check whether or not the air gap of the clutch is within the standard value.

Standard value: 0.5 – 0.6 mm (.01 – .02 in.)

NOTE

If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.

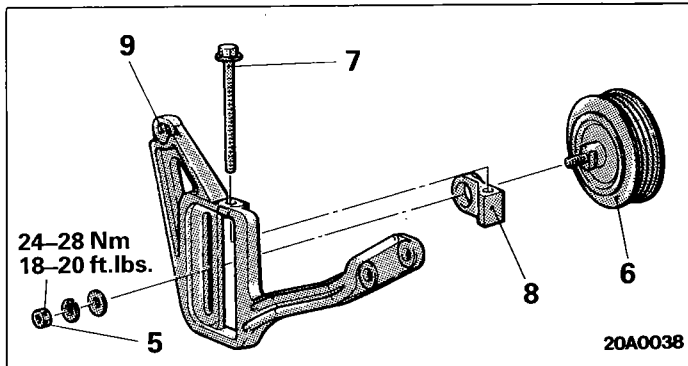


COMPRESSOR <1600>**REMOVAL AND INSTALLATION****Pre-removal Operation**

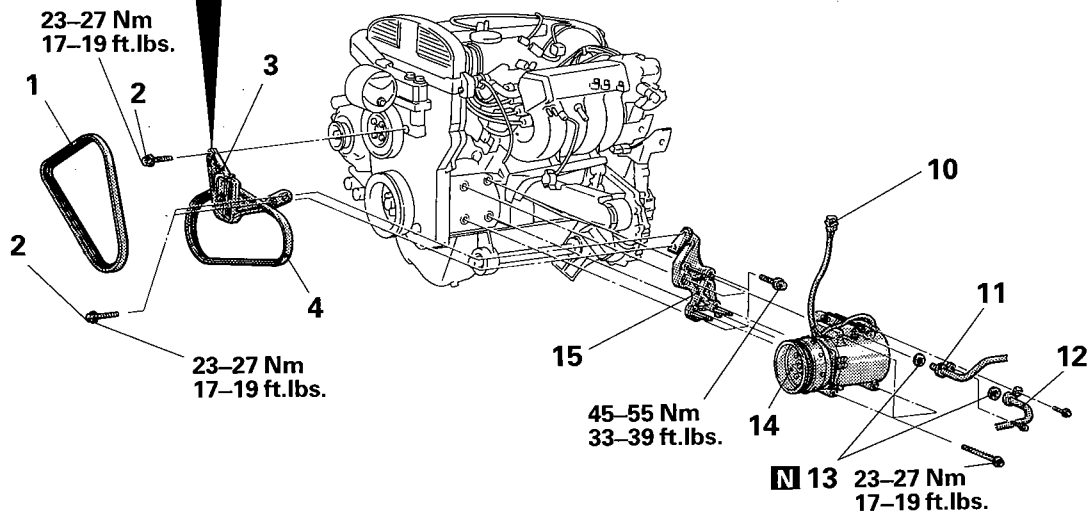
- Discharge of Refrigerant
(Refer to P.24-23.)

Post-installation Operation

- Charging of Refrigerant
(Refer to P.24-25.)
- Adjustment of Compressor Drive Belt
(Refer to P.24-27.)
- Checking for Gas Leakage
(Refer to P.24-19.)
- Performance Test
(Refer to P.24-20.)

**Removal steps of compressor drive belt and tension pulley**

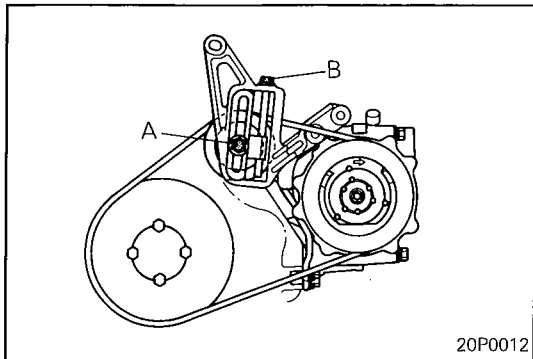
1. Alternator drive belt
2. Tension pulley assembly installation bolt
3. Tension pulley assembly
4. Compressor drive belt
5. Nut
6. Tension pulley
7. Bolt
8. Adjust plate
9. Tension pulley bracket

**Removal steps of compressor**

1. Alternator drive belt
2. Tension pulley assembly installation bolt
3. Tension pulley assembly
4. Compressor drive belt
10. Connector (3 pin) for the magnetic clutch
11. Connection for suction hose
12. Connection for liquid hose
13. O-rings
14. Compressor
15. Compressor bracket

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ⇐⇐: Refer to "Service Points of Removal".
- (3) ⇐⇐: Refer to "Service Points of Installation".
- (4) **N**: Non-reusable parts

**SERVICE POINTS OF REMOVAL**

N24SBAA

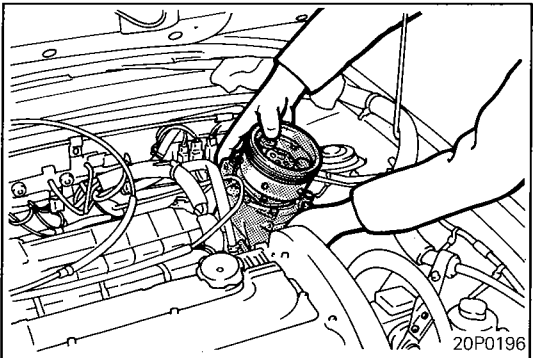
2. REMOVAL OF TENSION PULLEY ASSEMBLY INSTALLATION BOLTS

- (1) After loosening nut A (for holding the tension pulley), loosen bolt B (for adjustment) and reduce the tension of the compressor drive belt to zero.

- (2) Remove the tension pulley assembly installation bolts, and then remove the tension pulley assembly together with the compressor drive belt.

11. DISCONNECTION OF SUCTION HOSE CONNECTION

Plug the disconnected hose and the compressor opening to prevent dust, dirt or other foreign material from entering.

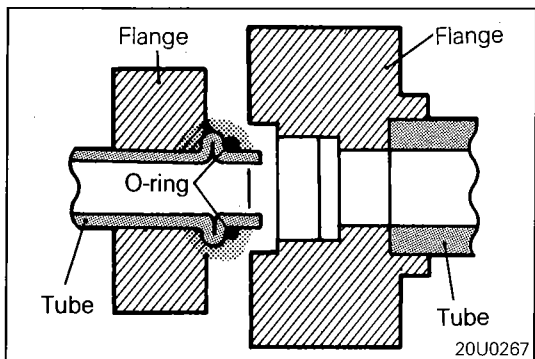
**14. REMOVAL OF COMPRESSOR**

This work must be done carefully so as not to spill the compressor oil.

INSPECTION

N24SCAB

For information concerning inspection points and procedures, refer to P.24-47.

**SERVICE POINTS OF INSTALLATION**

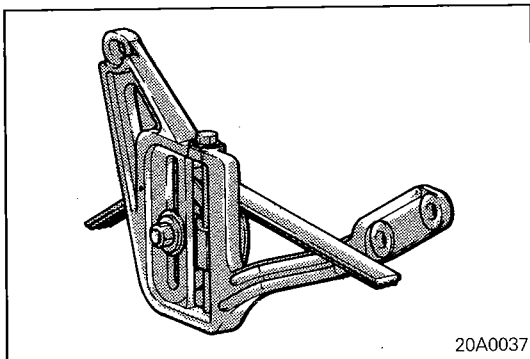
N24SDAC

14. INSTALLATION OF COMPRESSOR

For the key points to note for the installation of the compressor, refer to P.24-48.

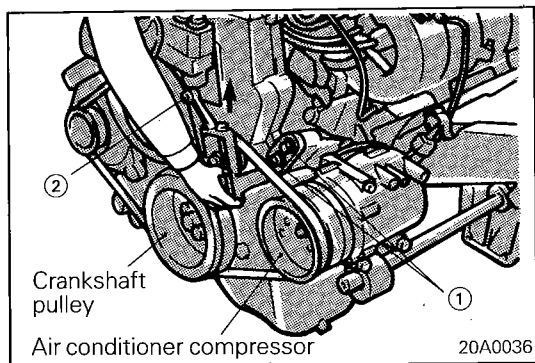
12. CONNECTION OF LIQUID HOSE / 11. SUCTION HOSE

Take care that the O-rings are not caught, crushed or cracked.



4. INSTALLATION OF COMPRESSOR DRIVE BELT / 3. TENSION PULLEY ASSEMBLY INSTALLATION BOLT

- (1) Attach the compressor drive belt to the tension pulley assembly as shown in the illustration.



- (2) Attach the compressor drive belt to the crankshaft pulley and the compressor's pulley, and then install the tension pulley assembly.

NOTE

- (1) Hold the tension pulley assembly so that the compressor drive belt does not slip out of place; while doing so install the tension pulley assembly.
- (2) Install the tension pulley assembly installation bolts in the sequence ① → ②.

COMPRESSOR

N24SE-A

DISASSEMBLY AND REASSEMBLY

For information concerning the disassembly and reassembly of the compressor, refer to P.24-49.

REFRIGERANT TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of Compressor
(Refer to P.24-46, 55.)

Post-installation Operation

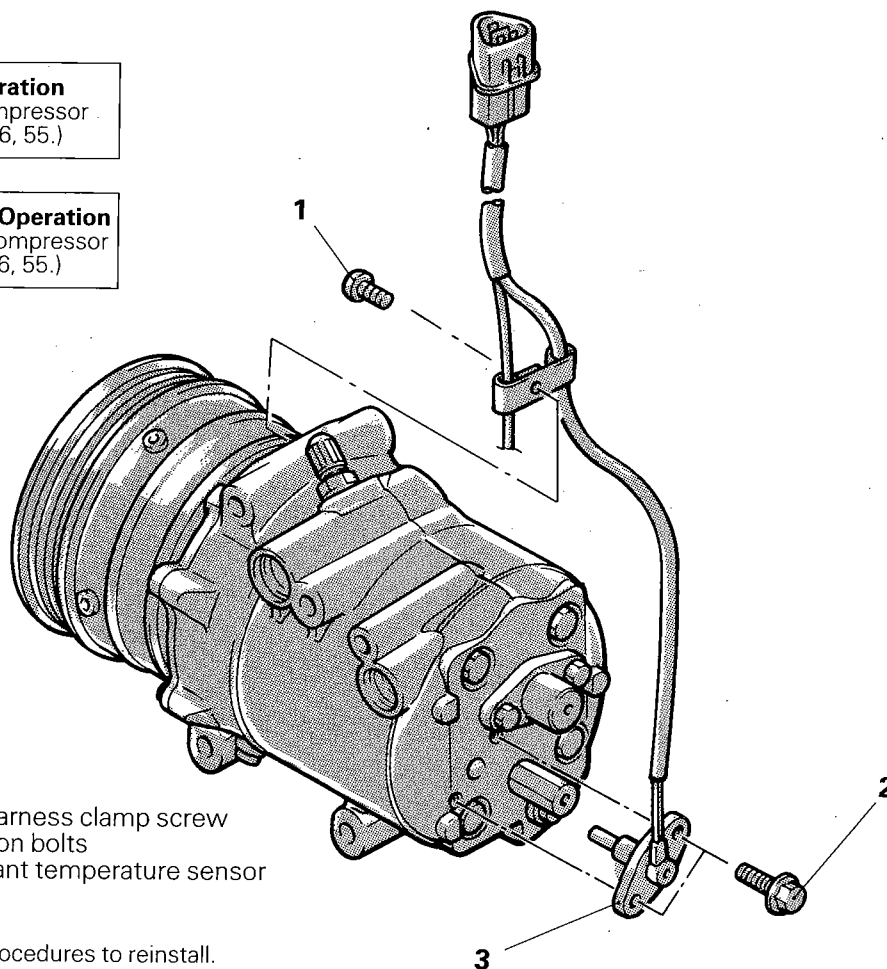
- Installation of Compressor
(Refer to P.24-46, 55.)

Removal steps

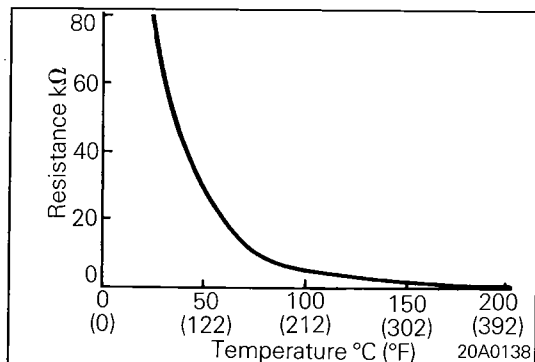
1. Wiring harness clamp screw
2. Installation bolts
3. Refrigerant temperature sensor

NOTE

Reverse the removal procedures to reinstall.



20A0245



20A0138

INSPECTION

N24JLAA

REFRIGERANT TEMPERATURE SENSOR CHECK

- (1) Immerse the refrigerant temperature sensor in engine oil.
- (2) Heat the engine oil; the resistance value must approximately satisfy the resistance value indicated in the illustration when the resistance value is measured at two places or more between the terminals of the sensor (in the heated condition).

NOTE

The temperature during heating for checking must not exceed the range indicated in the graph.

CONDENSER AND CONDENSER FAN <1500, 1600-N/A>

N24TA--

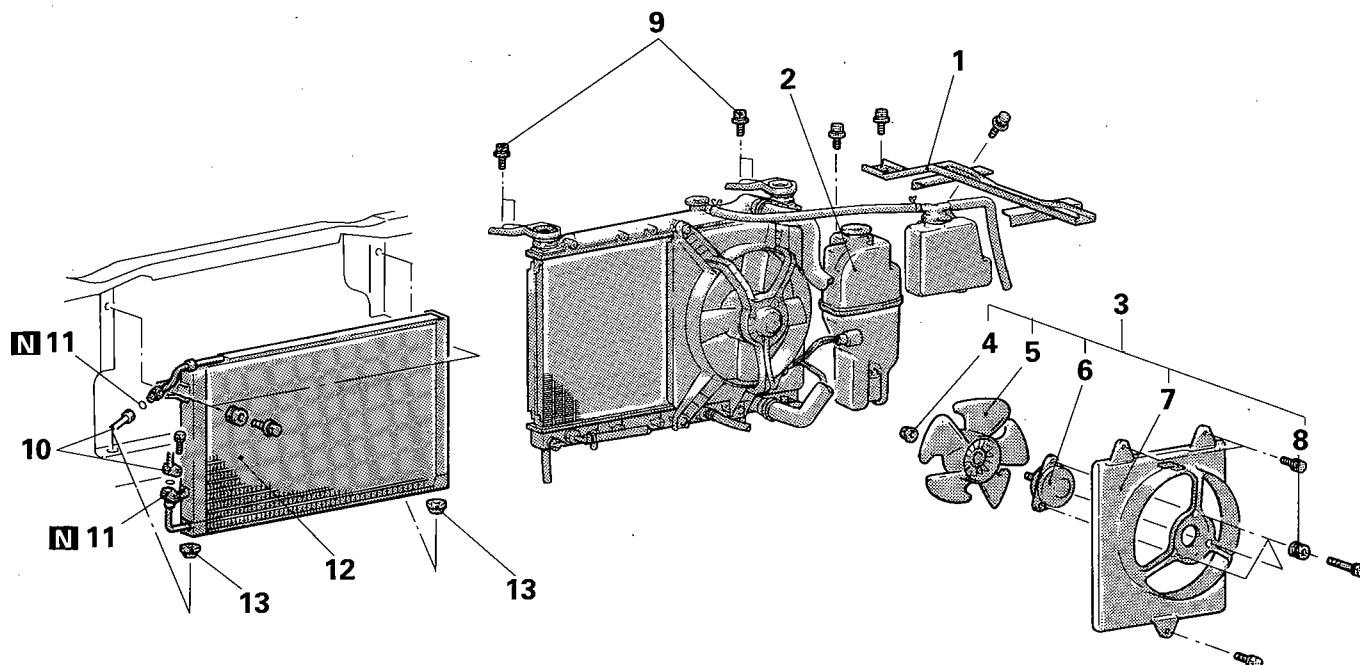
REMOVAL AND INSTALLATION

Pre-removal Operation of Condenser

- Discharge of Refrigerant
(Refer to P.24-23.)

Post-installation Operation of Condenser

- Charging of Refrigerant
(Refer to P.24-25.)
- Checking for Gas Leakage
(Refer to P.24-19.)
- Performance Test
(Refer to P.24-20.)



Removal steps of condenser

1. Battery holder
2. Washer tank
3. Condenser fan
9. Insulator mounting bolt
10. Connection between discharge hose and liquid pipe
11. O-rings
12. Condenser
13. Bushings

Removal steps of condenser fan

3. Condenser fan
4. Nut
5. Fan
6. Motor
7. Shroud
8. Bushings

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ♦♦♦: Refer to "Service Points of Removal".
- (3) ♦♦♦: Refer to "Service Points of Installation".
- (4) [N]: Non-reusable parts

20P0086

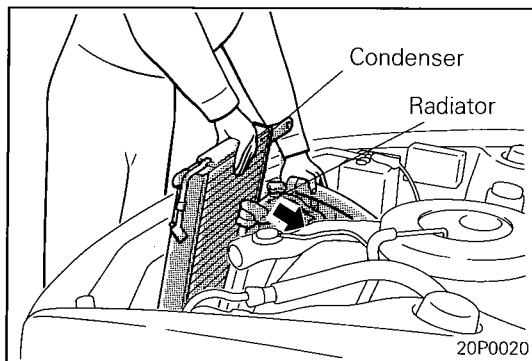
SERVICE POINTS OF REMOVAL

N24TBAC

10. DISCONNECTION OF CONNECTION OF LIQUID PIPE AND DISCHARGE HOSE

Plug the disconnected hose and pipes and the openings of the condenser in order to prevent dust, dirt or other foreign material from entering.

24-60 HEATERS AND AIR CONDITIONING – Condenser and Condenser Fan



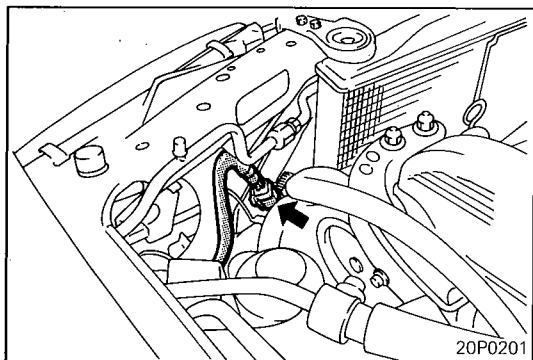
12. REMOVAL OF CONDENSER

Move the radiator toward the engine, and then lift up the condenser vertically to remove.

INSPECTION

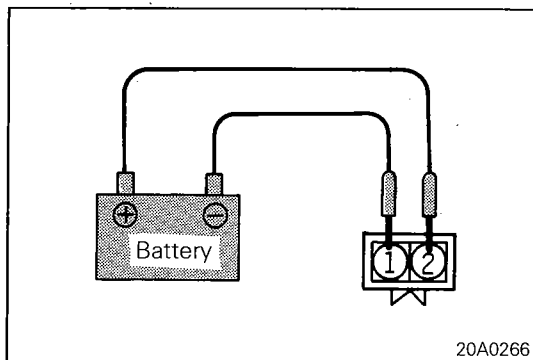
N24TCAGa

- Check the condenser fan for crushing or other damage.
- Check the condenser's high pressure hose and pipe installation parts for damage or deformation.
- Check the condenser fan shroud for damage.

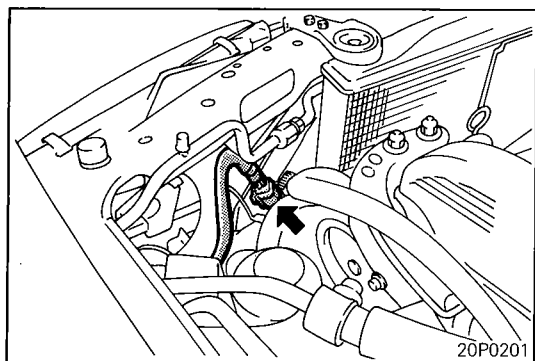


CONDENSER FAN MOTOR CHECK

- (1) Disconnect the connection of the connector for the condenser fan motor.

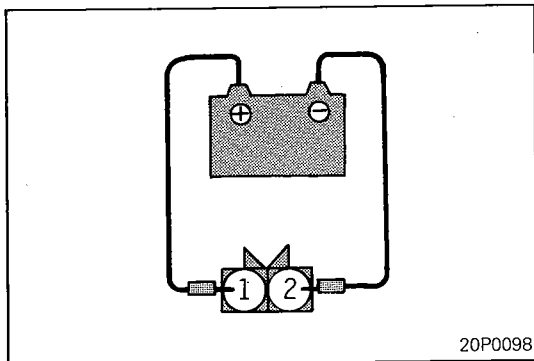


- (2) Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal ① and terminal ② is grounded.



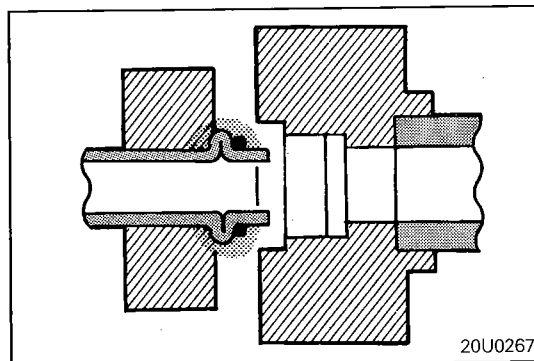
RESISTOR CHECK <1600-N/A>

- (1) Disconnect the connection of the connector for the resistor, and then measure the resistance between the terminals.



- (2) The condition can be considered satisfactory if the measured resistance is within the range noted below.

Standard value: $0.29 \Omega \pm 10\%$



SERVICE POINT OF INSTALLATION

N24TDAB

10. CONNECTION OF LIQUID PIPE AND DISCHARGE HOSE

After applying a coating of compressor oil to the connection part, connect the liquid pipe and discharge hose, taking care that the O-ring is not caught, crushed, cracked, etc. while making the connection.

CONDENSER AND CONDENSER FAN <1600-T/C>

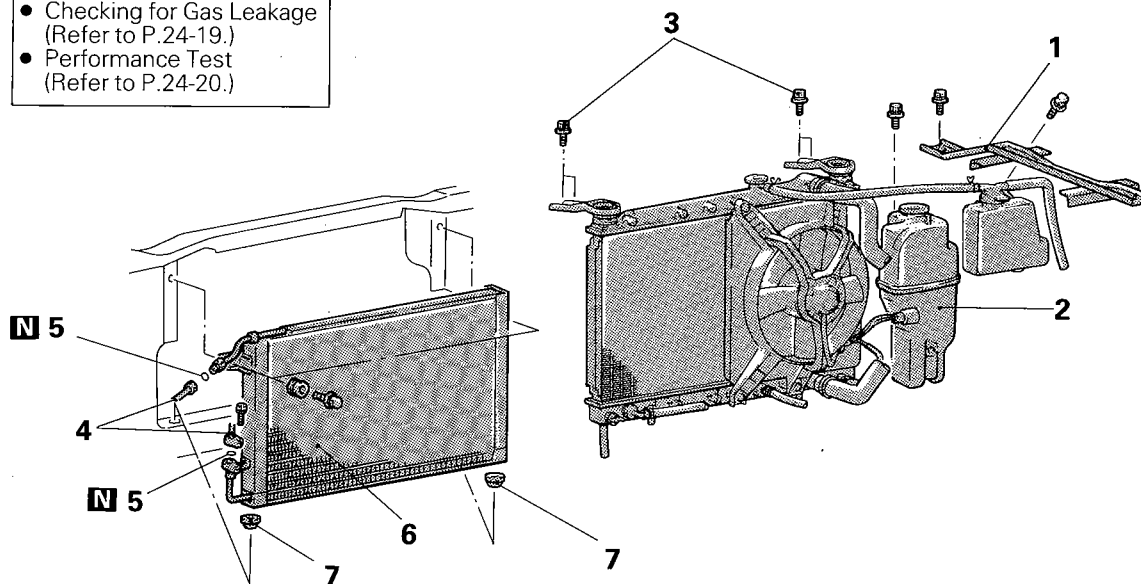
REMOVAL AND INSTALLATION

Pre-removal Operation

- Discharge of Refrigerant
(Refer to P.24-23.)

Post-installation Operation

- Charging of Refrigerant
(Refer to P.24-25.)
- Checking for Gas Leakage
(Refer to P.24-19.)
- Performance Test
(Refer to P.24-20.)



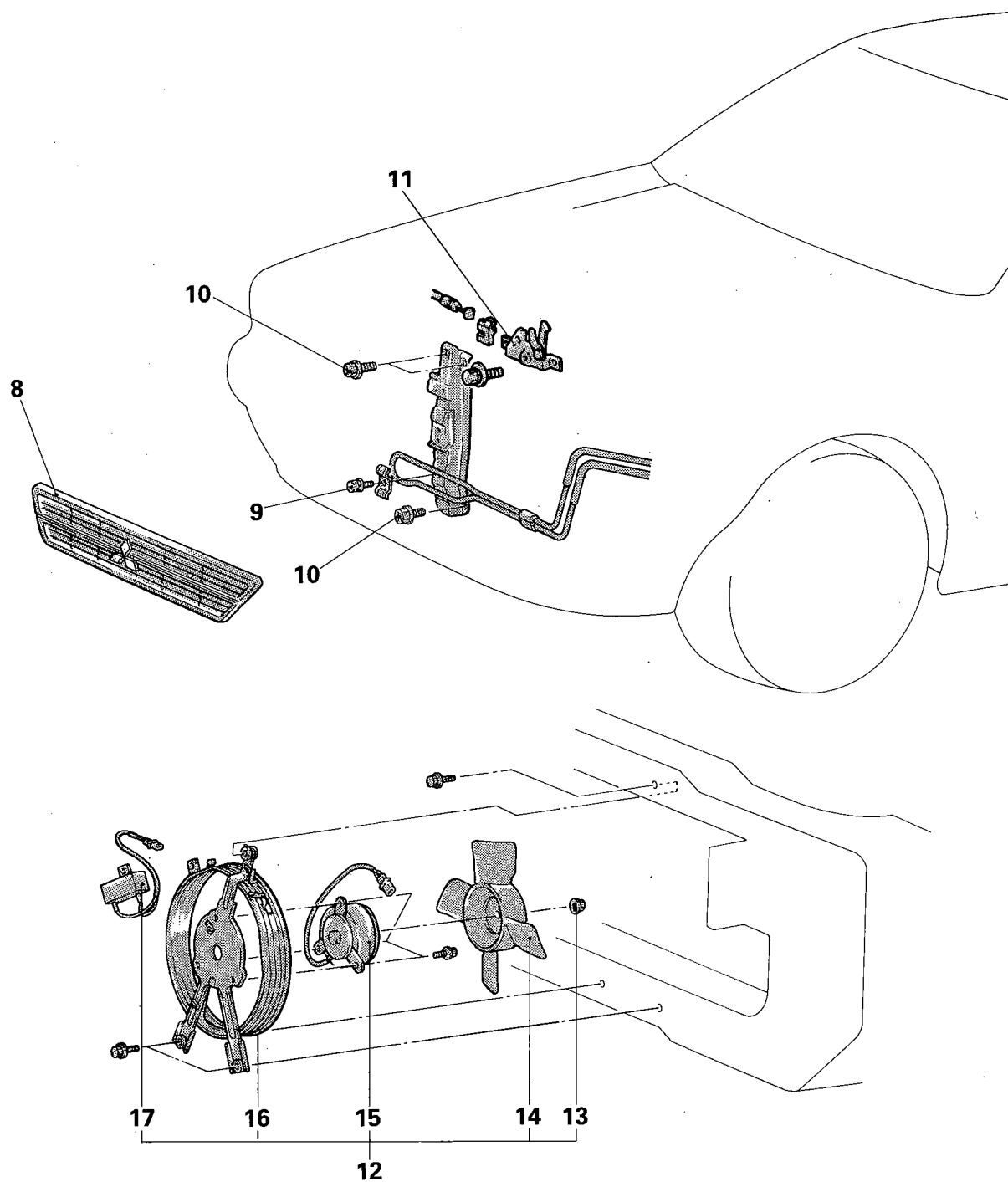
20P0087

Removal steps of condenser

1. Battery holder
2. Washer tank
3. Insulator mounting bolt
4. Connection between discharge hose and liquid pipe
5. O-rings
6. Condenser
7. Bushings

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts



Removal steps of condenser fan

8. Radiator grille
9. Power steering oil cooler tube mounting bolt
10. Hood lock support mounting bolt
11. Hood latch
12. Condenser fan
13. Nut
14. Fan
15. Motor
16. Shroud
17. Resistor

NOTE
Reverse the removal procedures to reinstall.

SERVICE POINTS OF REMOVAL

N24TBAD

For information concerning the removal procedures, refer to P.24-59.

INSPECTION

N24TCAH

For information concerning the checking procedures, refer to P.24-60.

SERVICE POINTS OF INSTALLATION

N24TDAC

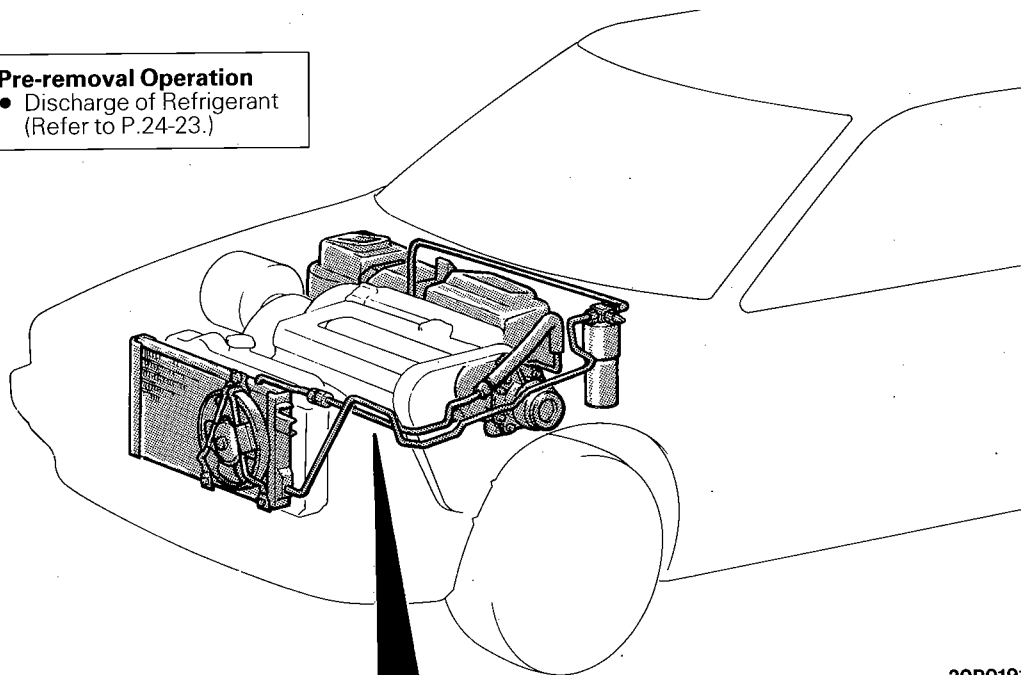
For information concerning the installation procedures, refer to P.24-61.

REFRIGERANT LINE

REMOVAL AND INSTALLATION

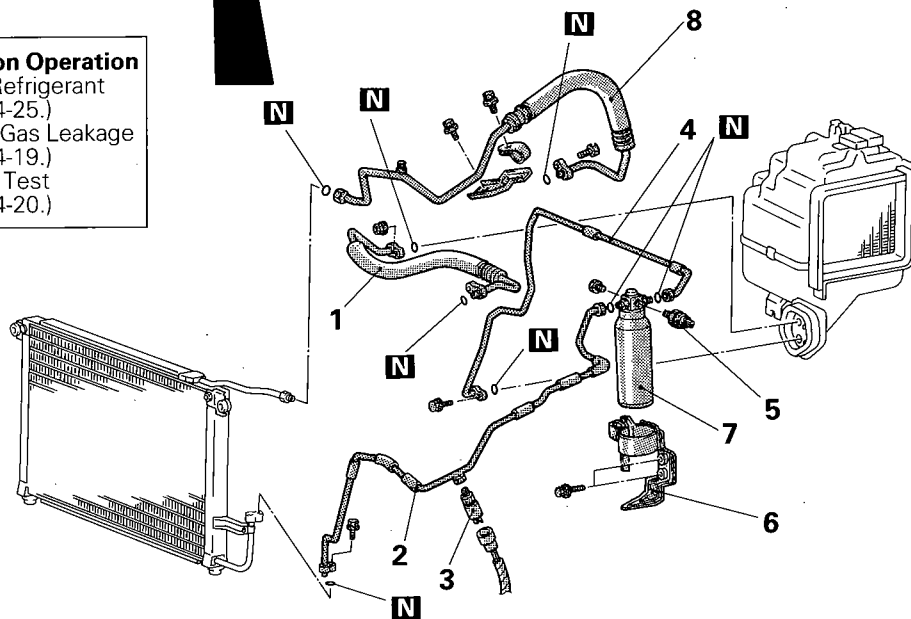
Pre-removal Operation

- Discharge of Refrigerant (Refer to P.24-23.)



Post-installation Operation

- Charging of Refrigerant (Refer to P.24-25.)
- Checking for Gas Leakage (Refer to P.24-19.)
- Performance Test (Refer to P.24-20.)



Removal steps

1. Suction hose
2. Liquid pipe
3. Pressure switch
4. Liquid pipe
5. Dual pressure switch
6. Receiver bracket
7. Receiver
8. Discharge hose

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts

SERVICE POINTS OF REMOVAL

N24UBAB

Plug the disconnected hose, pipe, etc. to prevent dust, dirt or foreign material, etc. from entering the openings.

INSPECTION

N24UCAC

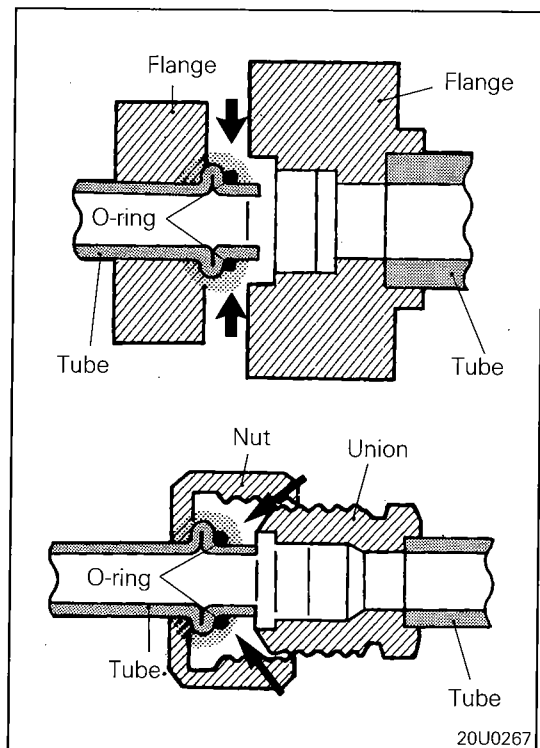
CHECKING DUAL PRESSURE SWITCH AND PRESSURE SWITCH <1600>

For information concerning the checking procedures of the dual pressure switch and the pressure switch, refer to "Service Adjustment Procedures" on P.24-16.

SERVICE POINTS OF INSTALLATION

N24UDAC

After applying a coating of compressor oil to each hose and pipe connection, install carefully so that the O-ring is not caught, crushed, cracked, etc.



VENTILATORS (INSTRUMENT PANEL AND FLOOR)

N24YA--

REMOVAL AND INSTALLATION

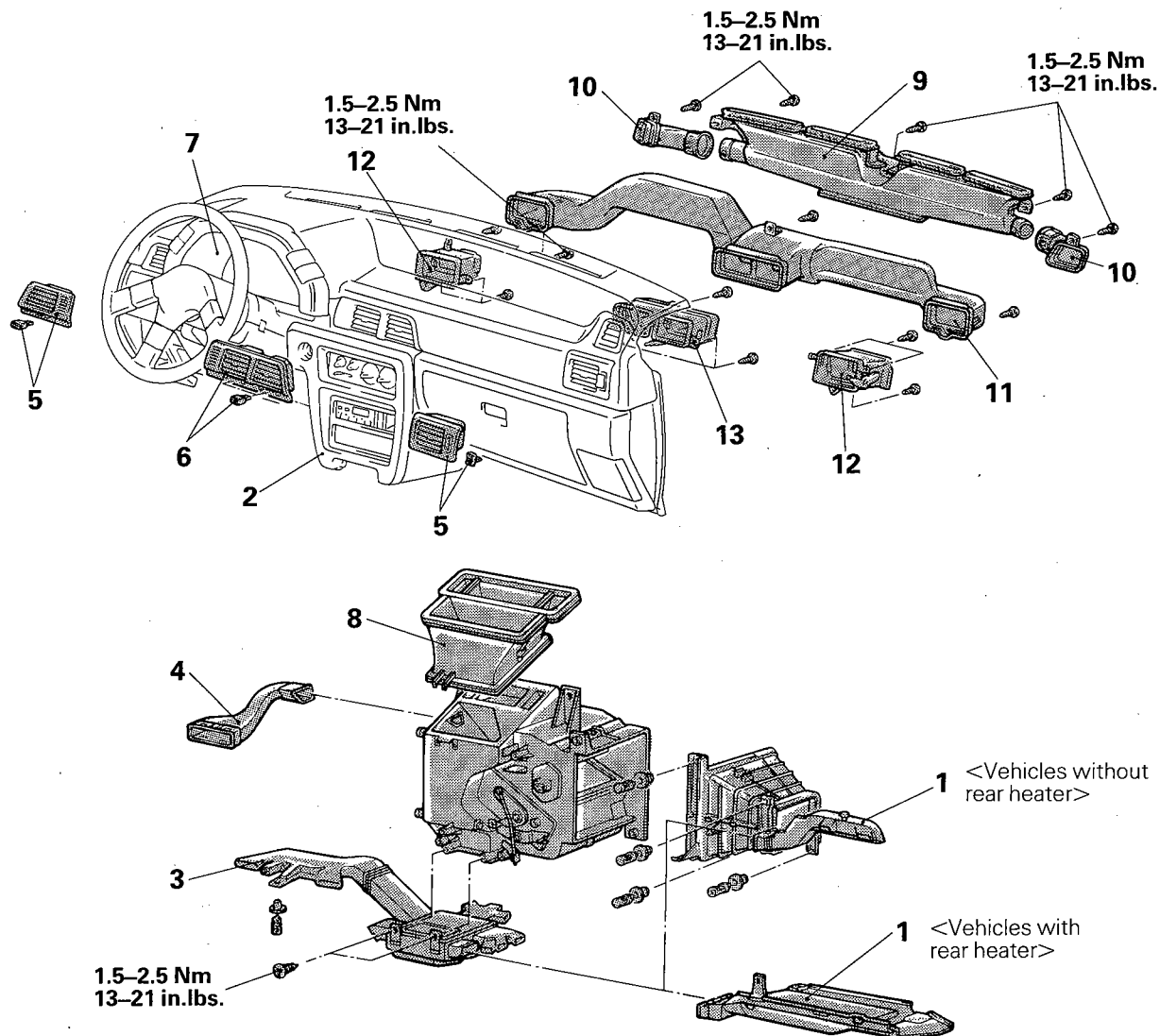
<Instrument panel>

Pre-removal Operation

- Removal of Floor Console
(Refer to GROUP 23 – Floor Console.)

Post-installation Operation

- Installation of Floor Console
(Refer to GROUP 23 – Floor Console.)

**Removal steps**

1. Lap heater duct <vehicles without rear heater> or shower duct <vehicles with rear heater>
2. Heater control panel
3. Foot duct
4. Lap duct
5. Knob and side air outlet
6. Knob and center air outlet
7. Instrument panel
8. Center ventilation duct
9. Defroster nozzle assembly
10. Side defroster duct
11. Distribution duct
12. Side duct
13. Center duct
14. Joint duct <vehicles without air conditioner>

NOTE

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

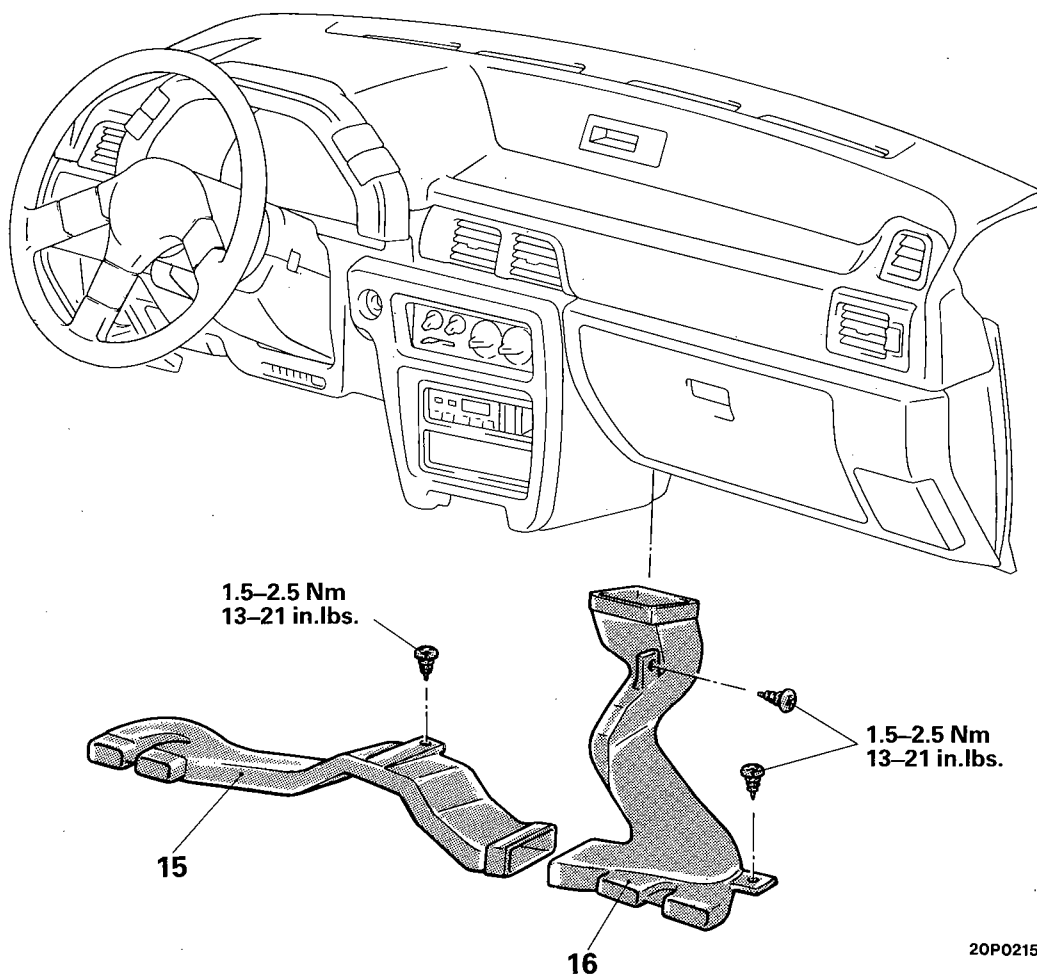
<Floor (Vehicles with rear heater)>

Pre-removal Operation

- Removal of Front Seat
(Refer to GROUP 23 – Front Seat.)
- Removal of Floor Console
(Refer to GROUP 23 – Floor Console.)
- Remove the Front Scuff Plate and the Cowl Side Trim, and then Pull up the Carpet.
(Refer to GROUP 23 – Trims.)

Post-installation Operation

- Return the Front Carpet as it was, and then install the Cowl Side Trim and the Front Scuff Plate.
(Refer to GROUP 23 – Trims.)
- Installation of Floor Console
(Refer to GROUP 23 – Floor Console.)
- Installation of Front Seat
(Refer to GROUP 23 – Front Seat.)



15. Rear heater duct B
16. Rear heater duct A

NOTE
Reverse the removal procedures to reinstall.

SERVICE POINTS OF REMOVAL

N24YBAC

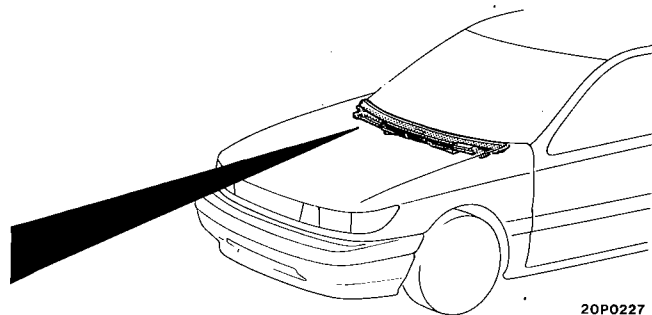
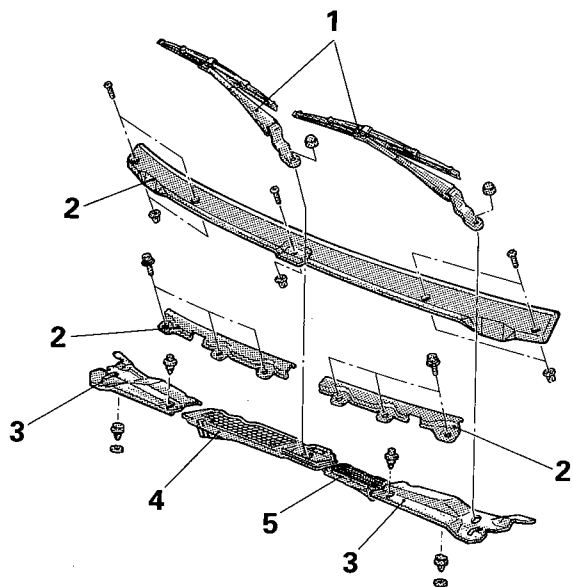
- 5. REMOVAL OF KNOB AND SIDE AIR OUTLET / 6. KNOB AND CENTER AIR OUTLET / 7. INSTRUMENT PANEL / 9. DEFROSTER NOZZLE ASSEMBLY / 10. SIDE DEFROSTER DUCT / 11. DISTRIBUTION DUCT / 12. SIDE DUCT / 13. CENTER DUCT**

For service procedures, refer to GROUP 23 — Instrument Panel.

VENTILATORS (AIR INLET AND AIR OUTLET)

N24YD--

REMOVAL AND INSTALLATION



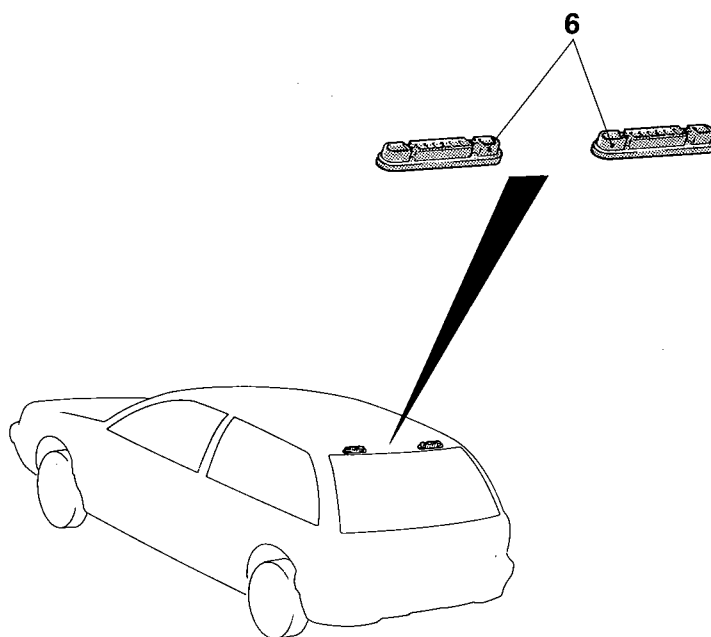
20P0227

Removal steps of air inlet garnishes

1. Wiper arms
2. Front deck garnish and windshield holders
3. Deck cover
4. Air inlet garnish, R.H.
5. Air inlet garnish, L.H.

**Removal steps of air outlet garnish
<Hatchback>**

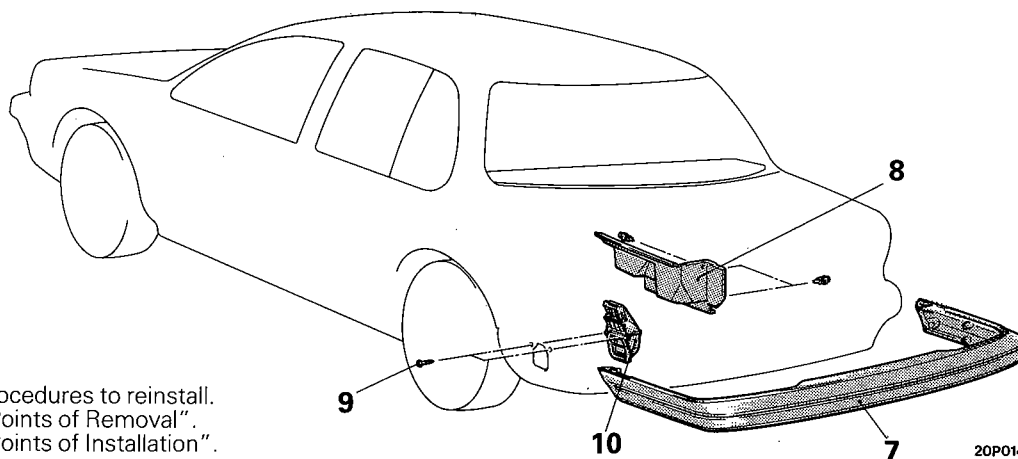
6. Air outlet garnish



20P0088

**Removal steps of rear ventilator
duct assembly <Sedan>**

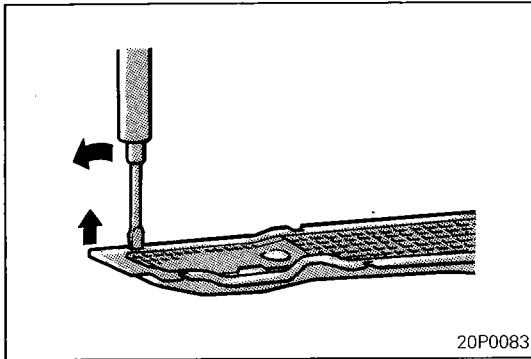
7. Rear bumper
8. Trunk side trim (L.H.)
9. Rear ventilator duct mounting screw
10. Rear ventilator duct assembly



20P0147

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**

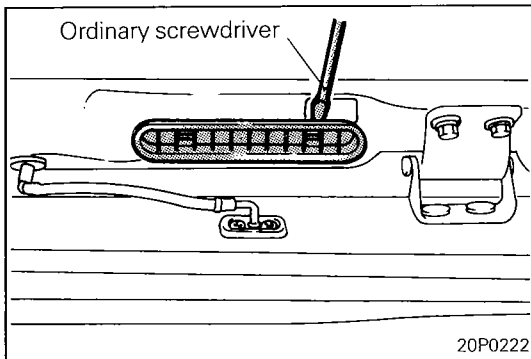
N24YEAA

4. REMOVAL OF AIR INLET GARNISH, R.H. / 5. AIR INLET GARNISH, L.H.

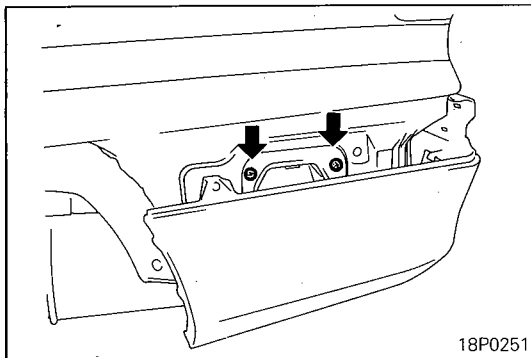
Insert an ordinary screwdriver in the notch of the garnish and pry to remove it.

NOTE

Be careful not to damage the garnish when prying with the screwdriver.

**6. REMOVAL OF AIR OUTLET GARNISH**

Using an ordinary screwdriver, remove the air outlet garnish from the liftgate.

**7. REMOVAL OF REAR BUMPER**

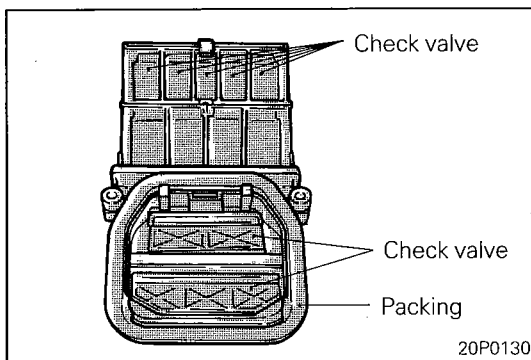
Refer to GROUP 23 — Rear Bumper.

8. REMOVAL OF TRUNK SIDE TRIM (L.H.)

Refer to GROUP 23 — Trims.

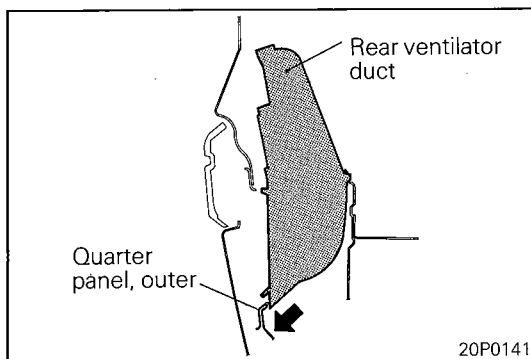
9. REMOVAL OF REAR VENTILATOR DUCT MOUNTING SCREWS

Remove the screws shown in the illustration to remove the rear ventilator duct from the luggage compartment.

**INSPECTION**

N24YFAA

- Check the rear ventilator duct check valve for tightness.
- Check the rear ventilator duct check valve for deterioration and damage.
- Check the rear ventilator packing for deterioration and damage.

**SERVICE POINT OF INSTALLATION**

N24YGAA

4. INSTALLATION OF REAR VENTILATOR DUCT ASSEMBLY

Securely fit the rear ventilator duct on the outer quarter panel.

ENGINE COOLANT TEMPERATURE SWITCH <1600>

N24XA--

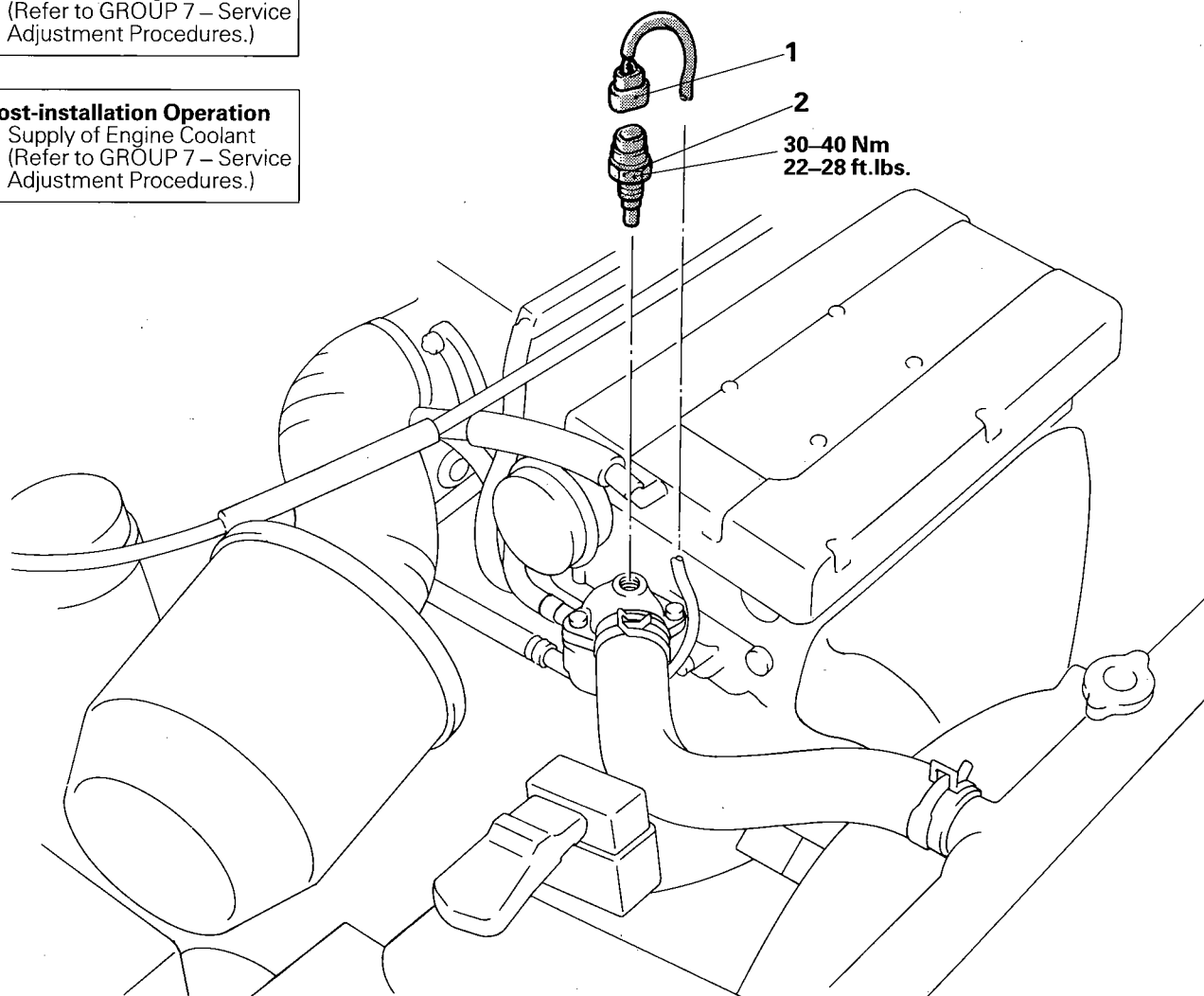
REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of Engine Coolant
(Refer to GROUP 7 – Service
Adjustment Procedures.)

Post-installation Operation

- Supply of Engine Coolant
(Refer to GROUP 7 – Service
Adjustment Procedures.)



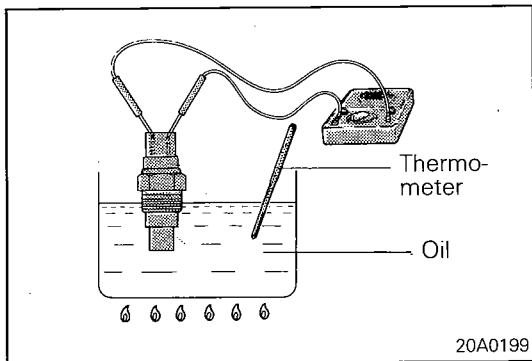
Removal steps

1. Engine coolant temperature switch connector (2 pin)
- ♦♦ 2. Engine coolant temperature switch (always-closed type)

NOTE

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

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**INSPECTION**

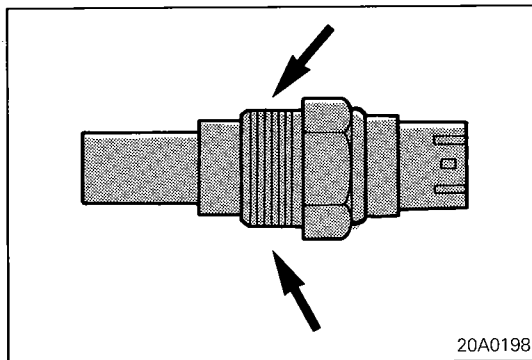
N24XCAB

ENGINE COOLANT TEMPERATURE SWITCH (ALWAYS-CLOSED TYPE) CHECK

- (1) Remove the engine coolant temperature switch from the water outlet fitting.
- (2) Immerse the engine coolant temperature switch in oil and heat by a gas stove or similar method so as to increase the oil temperature.
- (3) Check to be sure that the engine coolant temperature switch is switched OFF when the oil temperature reaches the standard value.

Standard value: 108 – 115°C (222 – 239°F)**Caution**

Use engine oil for this test; stir it well while heating, and do not heat more than necessary.

**SERVICE POINT OF INSTALLATION**

N24XDAB

2. INSTALLATION OF ENGINE COOLANT TEMPERATURE SWITCH

Apply a coating of the specified sealant to the threaded parts and then install the engine coolant temperature switches.

Specified sealant: MOPAR Part Number 4318034 or equivalent