

HEATERS AND AIR CONDITIONING

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WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING!

- (1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver (from rendering the SRS inoperative).
- (2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized CHRYSLER dealer.
- (3) CHRYSLER dealer personnel must thoroughly review this manual, and especially its GROUP 23B – Supplemental Restraint System (SRS) and GROUP 0 – Maintenance Service, before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE

The SRS includes the following components: impact sensors, SRS diagnosis unit, SRS warning light, air bag module, clock spring and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

VENTILATORS (AIR INLET AND AIR OUTLET)	42	DAMPER CONTROL MOTOR ASSEMBLY *	63
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HEATERS AND AIR CONDITIONING

SPECIFICATIONS

GENERAL SPECIFICATIONS

Items	Specifications
Heater unit	
Type	Three-way-flow full-air-mix system
Heater control assembly	Dial type
Compressor	
Model	MSC 105
Refrigerant unit lubricant cc (cu.in.)	SUN PAG 56 160 ± 20 (9.8 ± 1.2)
Drive belt size mm (in.)	<DOHC>: 1150 (45.3). <SOHC>: 940 (37.0)
Dual pressure switch	
High pressure switch kPa (psi)	OFF: 3,200 (455) ON: 2,600 (370)
Low pressure switch kPa (psi)	OFF: 200 (28) ON: 225 (32)
Freezer prevention °C (°F)	Air temperature thermostat
	OFF: - 2 (28.4) ON: 2 (35.6)
Refrigerant and quantity g (oz.)	R-1 34a 740 – 790 (26 – 28)

SERVICE SPECIFICATIONS

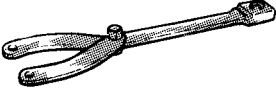
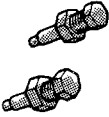
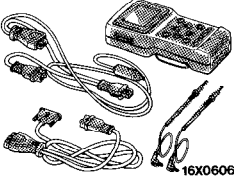
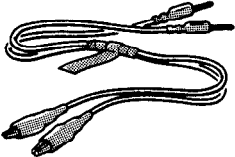
Items	Specifications
Standard value	
Idle speed when air conditioning on rpm	900 ± 100 <A/T at P range>
Resister resistance value Ω	1.76 – 2.06 (Across terminals ② and ①) 1.10 – 1.26 (Across terminals ② and ③) 0.38 – 0.44 (Across terminals ④ and ④)
Thermostat	
ON temperature °C (°F)	Approx. 110 (230) or less
OFF temperature °C (°F)	Approx. 155 (311) or more
Revolution pick up sensor standard resistance Ω	405 ± 35 when ambient temperature is 20°C (68°F)
Clutch clearance mm (in.)	0.4 – 0.6 (.01–.02)
<Fully automatic air conditioning>	
Blend air damper potentiometer motor assembly resistance	
MAX. HOT kΩ	0.2
MAX. COOL kΩ	4.8
Mode selection damper potentiometer assembly resistance	
DEF. position kΩ	0.2
FACE position kΩ	4.8
Engine coolant temperature sensor	
Sensor-ON temperature °C (°F)	26.5 ± 4 (79.7 ± 7)

24-4 HEATERS AND AIR CONDITIONING – Specifications / Special Tools

LUBRICANTS

Items	Specified lubricants	Quantity
Each connection of refrigerant line	SUN PAG 56	As required

SPECIAL TOOLS

Tool number and tool name	Replaced by Miller tool number	Application
 MB991367 Special spanner	6568	Removal and installation of armature mounting nut of compressor
 MB991386 Pin	6568	
 MB991502 Scan tool (MUT-II)	DRB II Scan tool	Inspection of full auto air conditioning
 MB991529 Diagnostic trouble code check harness		Inspection of full auto air conditioning by using a voltmeter

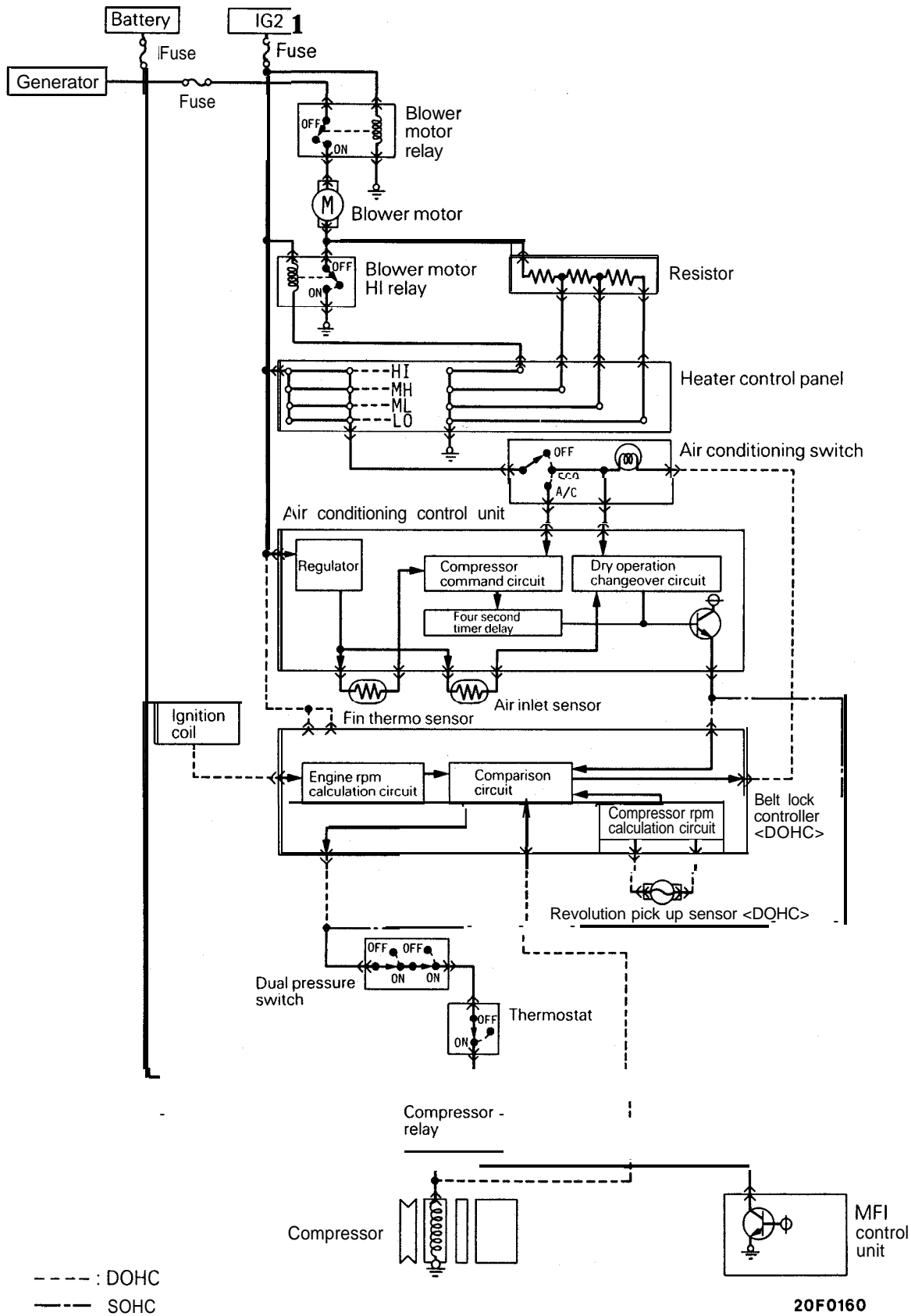
HEATERS AND MANUAL AIR CONDITIONING

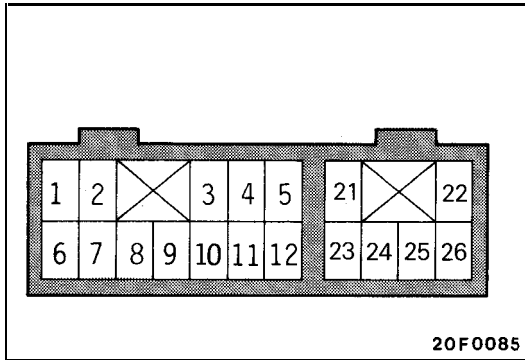
TROUBLESHOOTING

Symptom	Probable cause	Remedy	Ref. page
Heater insufficient heat	Obstructed heater outlets	Correct	—
	Blend air dampers improperly adjusted or binding	Correct	—
	Thermostat malfunction	Replace	Group 7
	Obstructed heater hoses	Replace	—
	Improperly adjusted control cables	Adjust	—
	Plugged or partially plugged heater core	Clean or replace	
	Incorrect adjustment of mode selection dampers	Adjust	—
No ventilation even when mode selection knob is operated	Incorrect installation of mode selection control wire	Adjust	—
	Ducts are incorrectly/incompletely connected, crushed, bent or clogged	Repair or replace	—
Blower motor nonoperative	Burnt-out fuse	Correct	—
	Poor grounding	Replace	—
	Malfunction blower switch	Replace	24-20
	Malfunction resistor	Replace	24-22
	Malfunction blower motor	Replace	24-25
	Malfunction heater relay	Replace	24-19
	Malfunction blower motor relay	Replace	24-19
Air conditioning does not operate when the ignition switch is in the ON position	Open-circuited power circuit harness	Correct harness	—
	Defective compressor relay in relay box	Replace	24-19
	Defective magnet clutch	Replace	24-32
	Defective thermostat	Replace	24-32
	Defective dual pressure switch	Replace	24-38
	Refrigerant leak	Charge refrigerant, correct leak	24-13
	Excessive refrigerant	Discharge refrigerant	24-16
	Defective air conditioning switch	Replace air conditioning switch	24-23
	Defective belt lock controller <DOHC>	Replace belt lock controller	24-22

Symptom	Probable cause	Remedy	Ref. page
Air conditioning does not operate when the ignition switch is in the ON position	Defective air conditioning control unit	Replace air conditioning control unit	24-27
Condenser fan does not operate when the air conditioning is activated	Defective condenser fan motor relay	Replace power relay	24-1 9
	Defective condenser fan motor	Replace condenser fan motor	24-36
Air conditioning switch indicator blinks <DOHC>	Wet compressor drive belt	Dry	—
	Insufficient compressor drive belt tension	Check and adjust	GROUP9
	Defective compressor drive belt	Replace	—
	Defective compressor	Check and replace	24-1 2, 29
	Defective revolution pick-up sensor	Check and replace	24-34, 32
	Defective air conditioning switch	Replace air conditioning switch	24-23
	Defective belt lock controller	Replace	24-22
	Defective air conditioning control unit	Replace	24-27
Defective MFI control unit	Replace	—	

CIRCUIT DIAGRAM
AIR CONDITIONING CONTROL UNIT CIRCUIT





TROUBLESHOOTING HINTS

Inspection of Air Conditioning Control Unit

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

Test Conditions:

- (1) Ignition switch: ON
- (2) Air conditioning switch: ON
- (3) Temperature control lever: MAX. COOL
- (4) Blower switch: HI

Terminal No.	Signal	Conditions	Terminal voltage
8, 9	Auto compressor control unit ground	At all times	0v
1	Auto compressor control unit power supply	When ignition switch is ON	Battery positive voltage
6	Air conditioning compressor relay	When all conditions for switch-ON of the compressor are satisfied	Battery positive voltage
7	Air conditioning switch: A/C	When air conditioning switch pressed in to second step	Battery positive voltage
2	Air conditioning switch: ECONO	When air conditioning switch pressed in to first step	Battery positive voltage
21	Fin-thermo sensor \oplus	Ignition switch, blower switch and air conditioning switch: ON	Approx. 2.5V
22	Air-inlet sensor \oplus	Ignition switch, blower switch and air conditioning switch: ON	Approx. 1V
23	Fin-thermo sensor \ominus	Ignition switch, blower switch and air conditioning switch: ON Ambient temperature: 4°C (39°F)	0v
26	Air-inlet sensor \ominus	Ignition switch, blower switch and air conditioning switch: ON Ambient temperature: 4°C (39°F)	0V

TROUBLESHOOTING QUICK-REFERENCE TABLE

Compressor doesn't operate.

Item no.	Inspection point	Method	Criteria		Probable cause	Remedy
			Normal	Abnormal		
	Magnetic clutch	Apply battery voltage to magnetic clutch terminal ① to check if sound is developed during operation.	Sound is noted	No sound is noted	Faulty magnetic clutch	Replace magnetic clutch.
2	Blower switch	Check for continuity between switch terminals. (Refer to P.24-21.)	Continuity	No continuity	Faulty blower switch	Replace blower switch.
3	Air conditioning switch	Check for continuity between switch terminals, (Refer to P.24-23.)	Continuity	No continuity	Faulty air conditioning switch	Replace air conditioning switch.
4	Magnetic clutch relay	Check for continuity between terminals ② and ④. With battery voltage applied between terminals ② and ④, check for continuity between terminals ① and ③.	Continuity	No continuity	Faulty air magnetic clutch relay	Replace magnetic clutch relay.
5	Liquid pipe	Connect adapter valve and gauge manifold to service plug to measure high pressure side refrigerant pressure.	Within range of 2,100 to 2,700 kPa (299 to 384 psi)	Outside range of 2,100 to 2,700 kPa (299 to 384 psi)	Gas leakage	Correct places where gas leaks.
6	Dual-pressure switch	Check for continuity between switch terminals.	Continuity	No continuity	Faulty dual-pressure switch	Replace dual-pressure switch.
7	Thermostat	Check for continuity between thermostat terminals. (Refer to P.24-33.)	Continuity	No continuity	Faulty thermostat	Replace thermostat.
8	Fin-thermo sensor	Measure resistance across terminals at a sensing temperature of 25°C (77°F)	Within range of 3.9 to 4.1 kΩ	Outside range of 3.9 to 4.1 kΩ	Faulty fin-thermo sensor	Replace fin-thermo sensor.
9	Air inlet sensor	Measure resistance across terminals at a sensing temperature of 25°C (77°F)	Within range of 0.9 to 1.1 kΩ	Outside range of 0.9 to 1.1 kΩ	Faulty air inlet sensor	Replace air inlet sensor.

If no abnormality is noted at each inspection point after inspection conducted in the sequence shown in this quick-reference table, it is suspected that the compressor is inoperative because of faulty air conditioning control unit. Therefore, replace the air conditioning control unit,

**Interior temperature does not lower
(No cold air coming out)**

Probable cause	Remedy	Ref. page
Excessive refrigerant	Discharge refrigerant	—
Clogged receiver	Replace receiver	24-38
Clogged expansion valve	Replace expansion valve	24-28
Defective compressor	Replace compressor	24-29

SAFETY PRECAUTIONS

Because R-134a refrigerant is a hydrofluorocarbon (HFC) which contains hydrogen atoms in place of chlorine atoms, it will not cause damage to the ozone layer.

Ozone filters out harmful radiation from the sun. To assist in protecting the ozone layer, Chrysler Corporation recommends an R-134a refrigerant recycling device.

Refrigerant R-134a is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of -29.8°C (-21.7°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. The following precautions must be observed when handling R-134a.

Caution

Wear safety goggles when servicing the refrigeration system.

R-134a 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-134a is rapidly absorbed by the oil. Next splash the eyes with plenty of cool water. Call your doctor immediately even though irritation has ceased after treatment.

Caution

Do not heat R-134a above 40°C (104°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 40°C (104°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-134a containers upright when charging the system.

When adding R-134a 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.

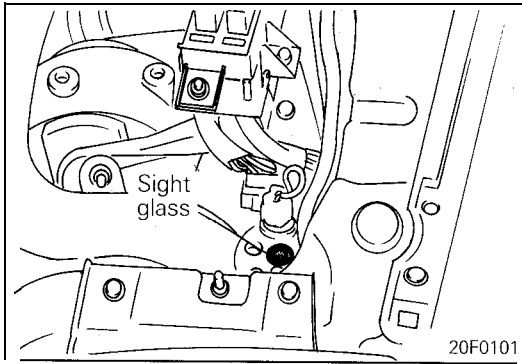
Caution

A leak detector designed for R-134a should be used to check for refrigerant gas leaks.

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.



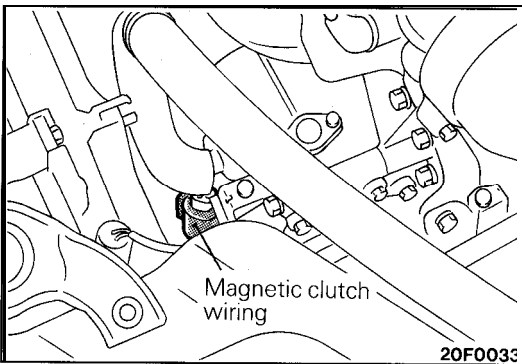
SERVICE ADJUSTMENT PROCEDURES

TEST PROCEDURES

SIGHT GLASS REFRIGERANT LEVEL TEST

The sight glass is a refrigerant level indicator. To check the refrigerant level, clean the sight glass and start the vehicle engine. Push the air conditioning button to operate the compressor, place the blower switch to high and move the temperature control lever to MAX. COOL. 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 most of its refrigerant charge.
- (3) If the sight glass shows foam or bubbles, the system could be low on refrigerant or the receiver drier is restricted. The system has to be tested, leak checked then recharged with refrigerant.



MAGNETIC CLUTCH

- (1) Disconnect the wiring to the magnetic clutch.
- (2) Connect battery (-) to compressor body.
- (3) Connect battery (+) voltage directly to the wiring for the magnetic clutch.
- (4) 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.

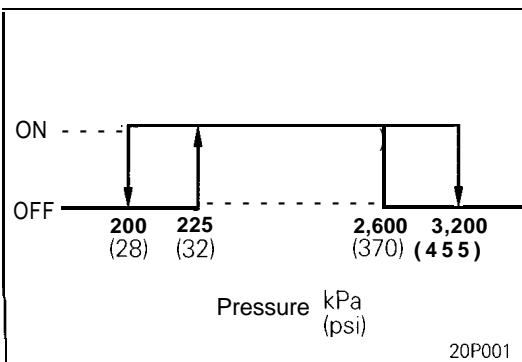
RECEIVER DRIER

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.

DUAL PRESSURE SWITCH (LOW PRESSURE SWITCH)

- (1) Turn back the adaptor valve handle all the way and install it to the low pressure side service valve.
- (2) With the gauge manifold low pressure service valves closed, connect the gauge manifold high pressure side charging hose to the adaptor valve.
- (3) Tighten the adaptor valve handle and open the service valve.
- (4) If there is continuity between the dual pressure switch terminals when the low pressure side pressure is at the level of dual pressure switch ON condition shown to the left, the switch is functioning normally. If not, replace the switch.



COMPRESSOR CHECK

After running the compressor for five minutes, check whether the following items are proper or not.

	Inspection content			Criteria	Probable cause	Remedy
	Pressure on the high-pressure side	Pressure on the low-pressure side	Performance test			
Case 1	Saturated pressure of open air + 200 – 500 kPa 28.4 – 71.1 psi	150 – 200 kPa 21.3 – 28.4 psi	Acceptable	Proper		–
Case 2		100 kPa or less 14.2 psi or less	Acceptable			
Case 3	Nearly saturated pressure of open air		Rejected	The difference between the high and low pressures is not observed.	Faulty compressor*1	
Case 4	Lower than in case 1	150 – 200 kPa 21.3 – 28.4 psi	Rejected	Abnormal Blow-out temperature is high.	Clogged expansion valve	Replace expansion valve

NOTE

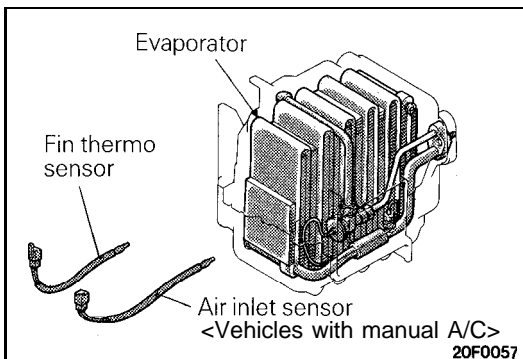
(1) Saturated pressure of open air

Temperature °C (°F)		15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)
Saturated pressure of open air	kPa (psi)	400 (56.9)	470 (66.8)	560 (79.7)	650 (92.5)	760 (108.1)	870 (123.7)

(2) For the performance testing procedure, refer to P.24-17.

(3) *1 means that the compressor is locked in the full load state (100% delivery).

(4) *2 means that the compressor is locked in the full capacity control (delivery rate: 0) state.

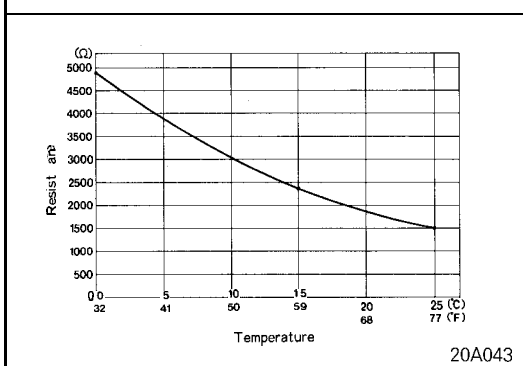


FIN-THERMO SENSOR AND AIR-INLET SENSOR

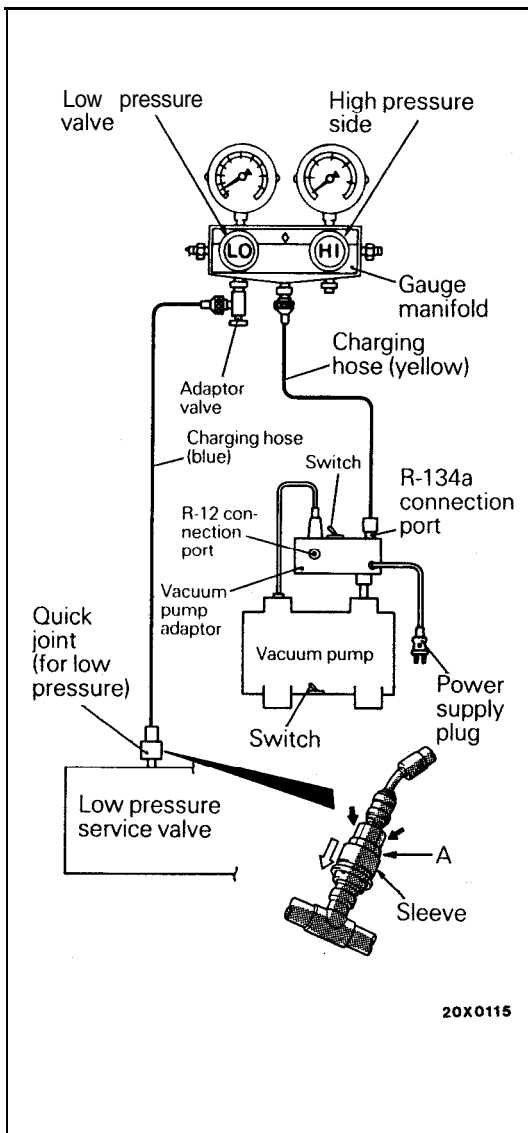
- (1) Disconnect the sensor's connector at the evaporator case, and by using an ohmmeter, measure the resistance. If the resistance is within $\pm 10\%$ of value of the characteristic curve, the sensor is functioning normally.
- (2) If the sensor is normal, there is a malfunction of the air conditioning control unit, and it should be replaced.

COMPRESSOR DRIVE BELT ADJUSTMENT

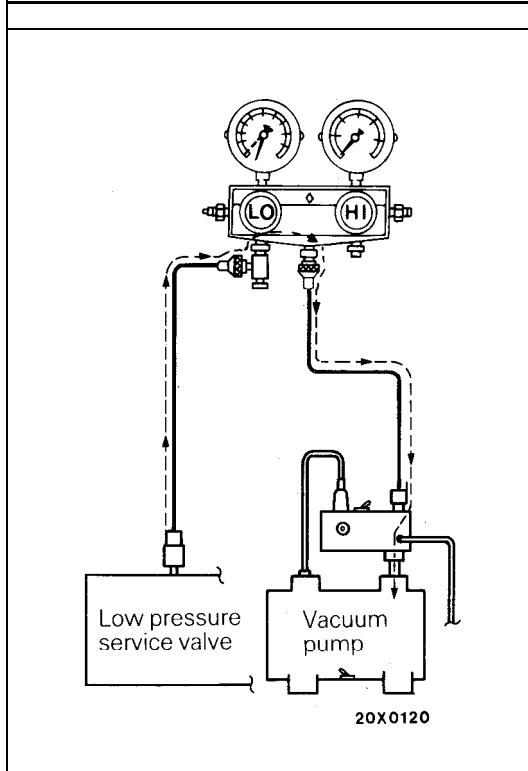
Refer to GROUP 9 – Service Adjustment Procedures.



CHARGING



20X0115



20X0120

- (1) With the handles turned back all the way (valve closed), install the adaptor valve to the low-pressure side of the gauge manifold.
- (2) Connect the charging hose (blue) to the adaptor valve.
- (3) Connect the quick joint (for low pressure) to the charging hose (blue).
- (4) Connect the quick joint (for low pressure) to the low pressure service valve.

NOTE

The low-pressure service valve should be connected to the low pressure hose.

Caution

1. Use tools that are designed for R-134a.
2. To install the quick joint, press section A firmly against the service valve until a click is heard. When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.

- (5) Close the high and low pressure valves of the gauge manifold.
- (6) Install the vacuum pump adaptor to the 'vacuum pump.
- (7) Connect the vacuum pump plug to the vacuum pump adaptor.
- (8) Connect the charging hose (yellow) to the R-134a connection port of the vacuum pump adaptor.
- (9) Tighten the adaptor valve handle (valve open).
- (10) Open the low pressure valve of the gauge manifold.
- (11) Turn the power switch of the vacuum pump to the ON position.

NOTE

Even if the vacuum pump power switch is turned ON, the vacuum pump will not operate because of the power supply connection in step (7).

- (12) Turn the vacuum pump adaptor switch to the R-134a side to start the vacuum pump.

Caution

Do not operate the compressor during evacuation.

- (13) Evacuate to a vacuum reading of 100 kPa (29.5 inHg) or higher (takes approx. 10 minutes).
- (14) Turn the vacuum pump adaptor switch OFF and allow to stand it for 5 minutes.

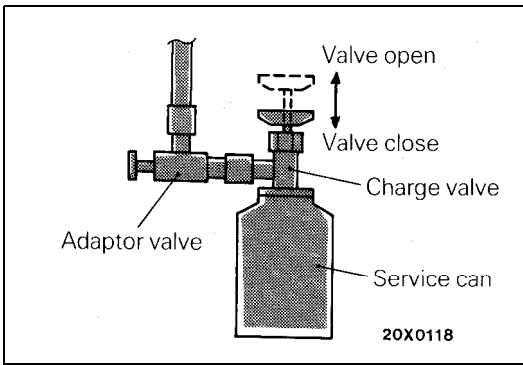
Caution

Do not operate the compressor in the vacuum condition; damage may occur.

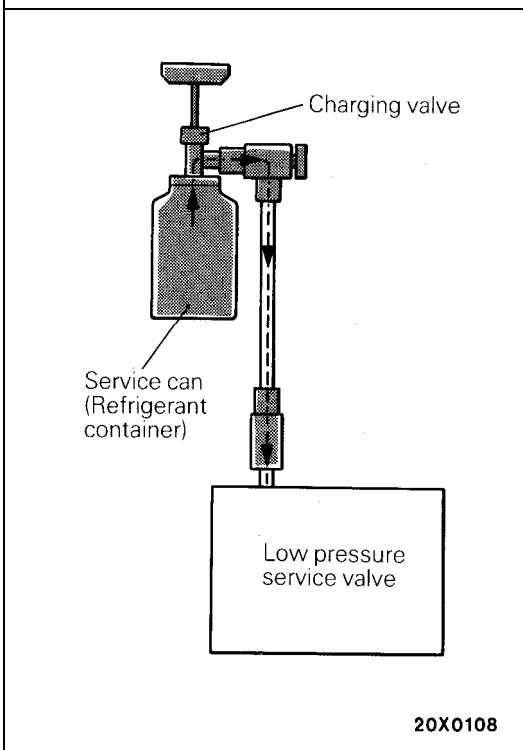
- (15) Carry out a leak test. (Good if the negative pressure does not drop.)

Caution

If the negative pressure (vacuum) is lost, check for loose connections. Then, repeat the evacuation procedure from step (12). If negative pressure (vacuum) is still lost, add 1 lb of refrigerant and check system using an R-134a compatible leak detector.



- (16) With the handle turned out all the way (valve open), install the charging valve to the service can.
- (17) Turn the handle of the adaptor valve back all the way (valve closed), remove it from the gauge manifold and install the service can.
- (18) Tighten the handle of the charging valve (valve closed) to puncture the service can.



- (19) Turn the handle of the charging valve back (valve open) and tighten the handle of the adaptor valve (valve open) to charge the system with refrigerant.

Caution

If the service can is inverted, liquid refrigerant may be drawn into the compressor damaging it by liquid compression. Keep the service can upright to ensure that refrigerant is charged in gas state.

- (20) If the refrigerant is not drawn in, turn the handle of the adaptor valve back all the way (valve closed).
- (21) Check for gas leaks using a leak detector.
If a gas leak is detected, re-tighten the connections, and then repeat the charging procedure from evacuation in step (12).

Caution

A leak detector designed for R-134a should be used.

- (22) Start the engine.
- (23) Operate the A/C and set to the lowest temperature (MAX. COOL).
- (24) Fix the engine speed at 1,500 rpm.
- (25) Tighten the handle of the adaptor valve (valve open) to charge the required volume of refrigerant.

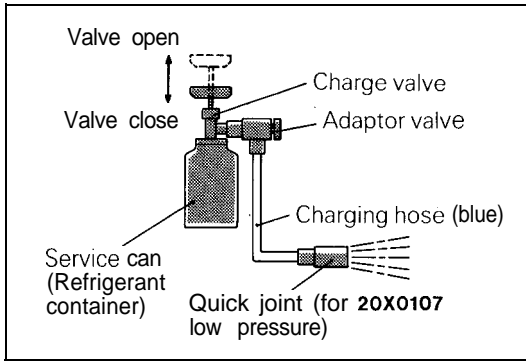
Caution

If the service can is inverted, liquid refrigerant may be drawn into the compressor damaging it by liquid compression. Keep the service can upright to ensure that refrigerant is charged in gas state.

- (26) After charging with refrigerant, turn the handle of the adaptor valve back all the way (valve closed).
- (27) Tighten the charging valve handle (valve closed).
Remove the quick joint (for low pressure) from the low-pressure service valve.

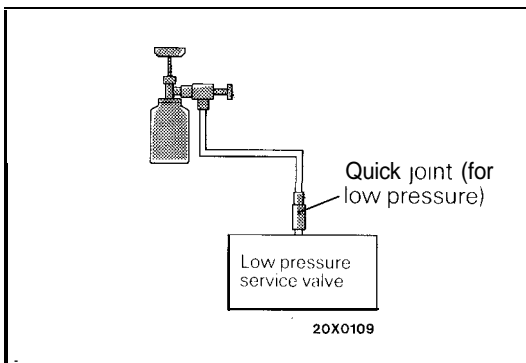
NOTE

If the service can is not emptied, completely, keep the handles of the charging valve and adaptor valve closed for the next charging.



CORRECTING LOW REFRIGERANT LEVEL IN CASE THE SERVICE CAN IS USED

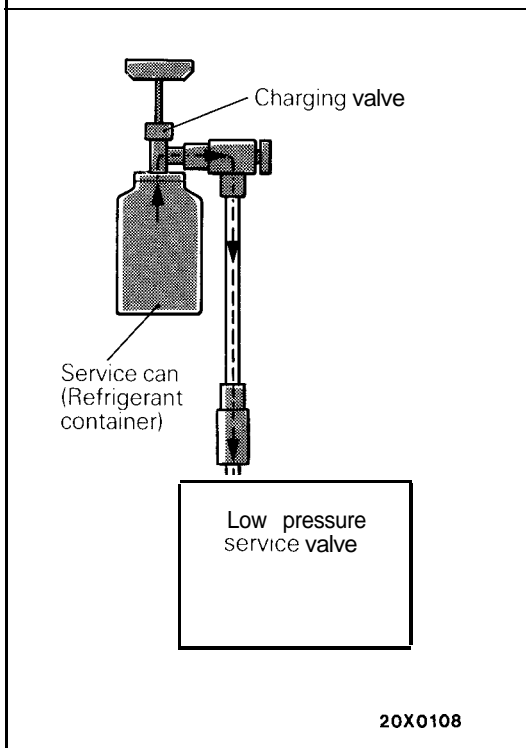
- (1) Install the charge valve with the handle turned all the way out (valve open) of the service can.
- (2) Install the adaptor valve with the handle turned all the way back (valve close) to the charging valve.
- (3) Connect the charging hose (blue) to the adaptor valve.
- (4) Connect the charging hose (blue) to the quick joint (for low pressure).
- (5) Tighten the handle of the charge valve (valve close), and pierce the service can.
- (6) Turn the handle of the adaptor valve to bleed the air.



- (7) Install the quick joint (for low pressure) to the low pressure service valve.

NOTE

The low-pressure service valve should be connected to the low-pressure hose.



- (8) Start the engine.
- (9) Operate the air conditioner and set at the lowest temperature (MAX. COOL).
- (10) Fix the engine speed at 1,500 rpm.
- (11) Tighten the handle of the adaptor valve (valve open), and replenish refrigerant checking the quantity through the sight glass.

Caution

If the service can is inverted, liquid refrigerant may be drawn into the compressor damaging it by liquid compression. Keep the service can upright to ensure that refrigerant is charged in gas state.

- (12) After replenishing is completed, turn the handle of the adaptor valve all the way back (valve close), and remove the quick joint.

NOTE

If any refrigerant is remaining in the service can, close the adaptor valve and save the refrigerant for another vehicle. Do not release into the atmosphere.

METHOD BY USING REFRIGERANT RECOVERY AND RECYCLING UNIT

Using the refrigerant recovery and recycling unit, refill the refrigerant.

NOTE

Refer to the Refrigerant Recovery and Recycling Unit Instruction Manual for operation of the unit.

DISCHARGING SYSTEM

Use the refrigerant recovery unit to discharge refrigerant gas from the system.

NOTE

Refer to the Refrigerant Recovery and Recycling Unit Instruction Manual for operation of the unit.

REFILLING OF OIL IN THE AIR CONDITIONING SYSTEM

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

When a compressor is installed at the factory, it contains 160 cm³ (5.4 fl.oz.) 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 oil: SUN PAG 56

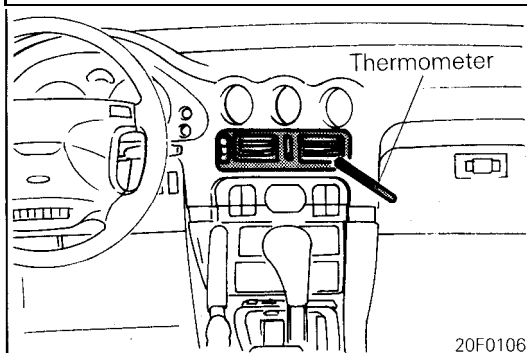
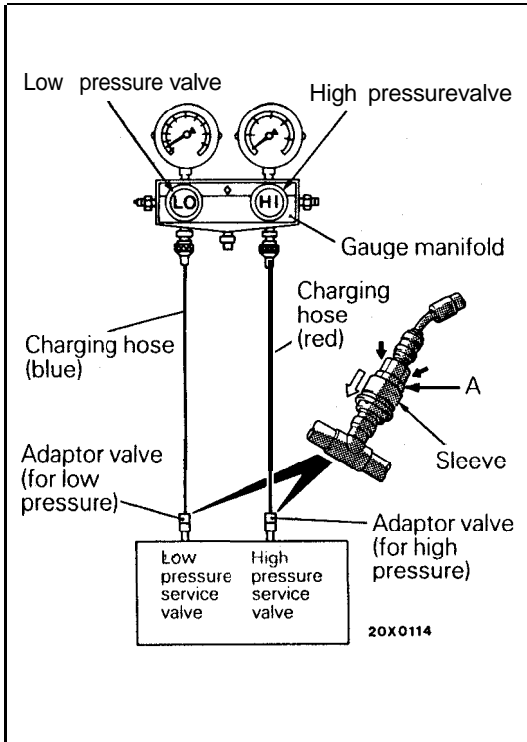
Quantity:

Evaporator: 60 cm³ (2.0 fl.oz.)

Condenser: 15 cm³ (.5 fl.oz.)

Low-pressure hose: 10 cm³ (.3 fl.oz.)

Receiver: 10 cm³ (.3 fl.oz.)



PERFORMANCE TEST

- (1) The vehicles to be tested should be in a place that is not in direct sunlight.
- (2) Close the high and low pressure valve of the gauge manifold.
- (3) Connect the charging hose (blue) to the low pressure valve and connect the charging hose (red) to the high pressure valve of the gauge manifold.
- (4) Install the quick joint (for low pressure) to the charging hose (blue), and connect the quick joint (for high pressure) to the charging hose (red).
- (5) Connect the quick joint (for low pressure) to the low-pressure service valve and connect the quick joint (for high pressure) to the high-pressure service valve.

NOTE

The high-pressure service valve is on high-pressure pipe B, and the low-pressure service valve is on the low-pressure hose.

Caution

To connect the quick joint, press section A firmly against the service valve until a click is heard. When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.

- (6) Start the engine.
- (7) Set the A/C controls as follows:
 A/C switch: A/C – ON position
 Mode selection: Face position
 Temperature control: Max. cooling position
 Air selection: Recirculation position
 Blower switch: HI (Fast) position
- (8) Adjust engine speed to 1,000 rpm with A/C clutch engaged.
- (9) Engine should be warmed up with doors and windows closed.
- (10) Insert a thermometer in the left center A/C outlet and operate the engine for 20 minutes.
- (11) 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)	26.7 (80)	32.2 (90)	37.8 (100)	43.3 (110)
Discharge air temperature °C (°F)	0.0 – 3.0 (32.0 – 37.4)	1.0 – 4.0 (33.8 – 39.2)	1.0 – 4.0 (33.8 – 39.2)	1.0 – 4.0 (33.8 – 39.2)	2.0 – 5.0 (35.6 – 41.0)
Compressor discharge pressure kPa (psi)	690 – 740 (98.1 – 105.3)	780 – 830 (110.9 – 118.1)	870 – 920 (123.7 – 130.9)	1,080 – 1,130 (153.6 – 160.7)	1,210 – 1,260 (172.1 – 179.2)
Compressor suction pressure kPa (psi)	130 – 190 (18.5 – 27.5)	130 – 190 (18.5 – 27.5)	130 – 190 (18.5 – 27.5)	130 – 190 (18.5 – 27.5)	130 – 190 (18.5 – 27.5)

REFRIGERANT LEAK REPAIR PROCEDURE

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

- (7) Evacuate and charge the system.

LOW CHARGE

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

HANDLING TUBING AND FITTINGS

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.

O-ring used on connections are not reusable.

COMPRESSOR NOISE

When investigating an air conditioning related noise, you must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, gear in neutral, engine temperature or any other special conditions.

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

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.

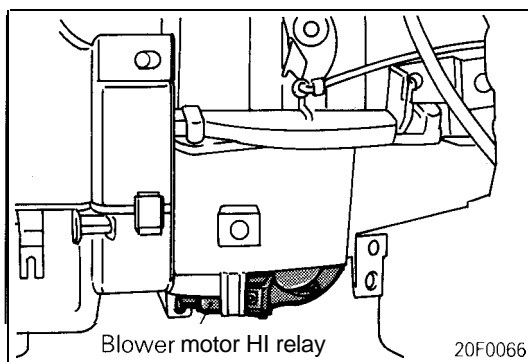
Drive belts are speed sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

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. (See "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

- (1) Remove the radiator fan motor relays (HI) and (LO) from the relay box on the right of the engine compartment.
- (2) Remove the condenser fan motor relays (HI) and (LO), and air-conditioning compressor relay from the relay box on the left of the engine compartment.
- (3) Remove the blower motor relay from the junction box.
- (4) Remove the blower motor HI relay from the blower case assembly.
- (5) Check the continuity between terminals using a circuit tester.

**IDLE-UP OPERATION CHECK**

- (1) Before inspection and adjustment set vehicle in the following condition:
 - Engine coolant temperature: 80 – 95°C (176 – 203°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 to be sure that the idling speed becomes the standard value when the air conditioning switch is switched ON and the air conditioning is activated.

Standard value: 900 ± 100 rpm

NOTE

Idle speed is controlled by the ISC system and is not adjustable. If, idle speed is not within specifications, check the ISC system.

(Refer to GROUP 14A – Service Adjustment Procedures.)

HEATER CONTROL ASSEMBLY

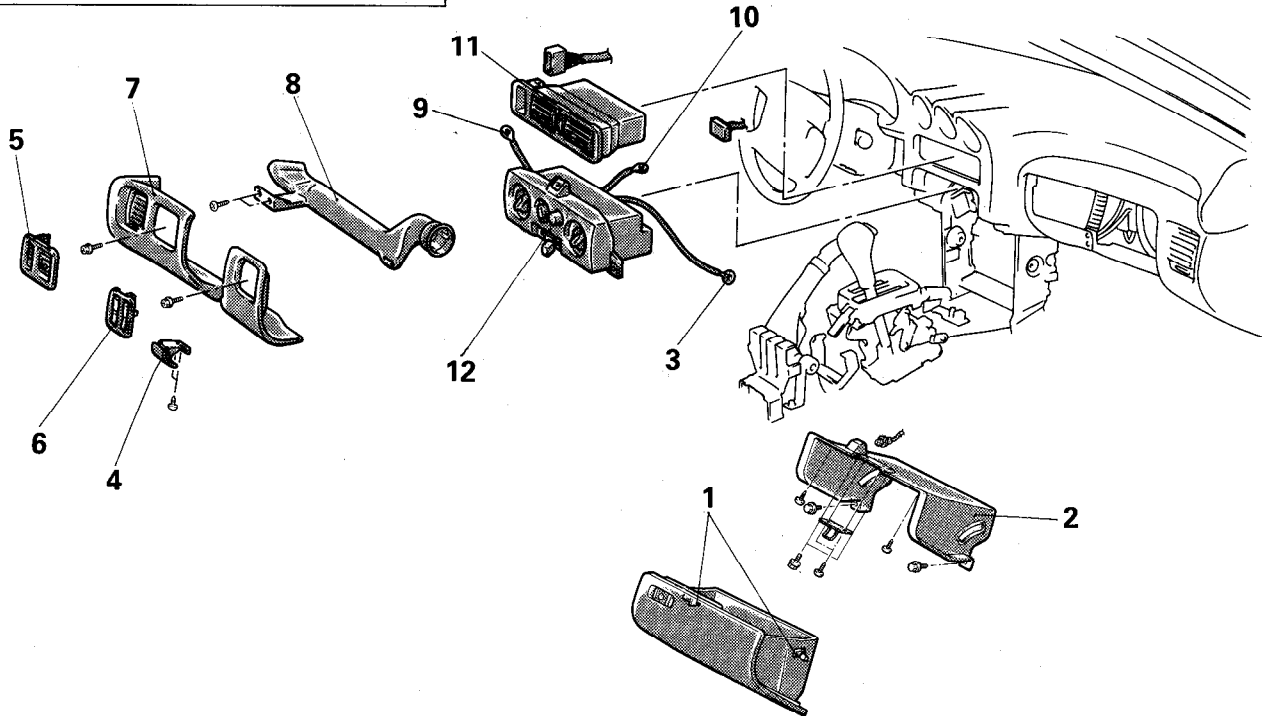
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

• Removal and installation of Floor Console
(Refer to GROUP 23A—Floor Console.)

CAUTION: SRS

When installing or removing the floor console, don't allow any impact or shock to the SRS diagnosis unit



Removal steps

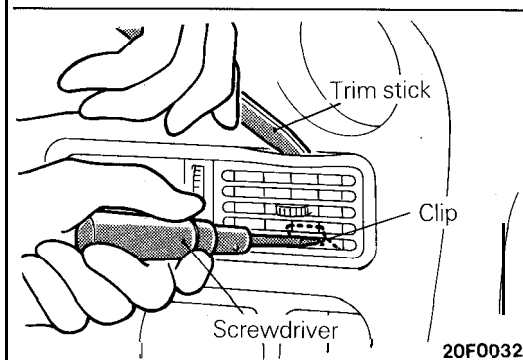
20F0078

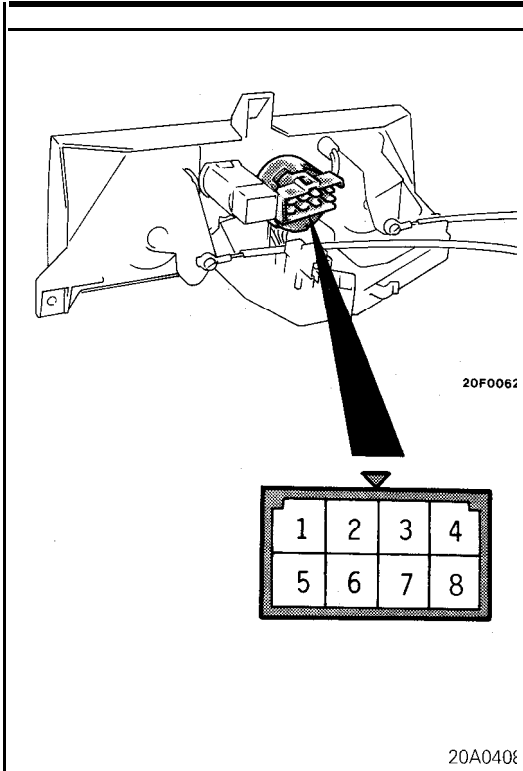
- 1. Stopper
- 2. Glove box outer case assembly
- + 3. Connection of the air-selection control wire
- 4. Hood lock release handle
- 5. Rheostat assembly
- 6. Rear wiper&washer switch
- 7. Knee protector
- 8. Shower duct
- C 9. Connection of the mode control wire
- +10. Connection of the temperature control wire
- ◄◄ 11. Center air outlet assembly
- 12. Heater control assembly

SERVICE POINT OF REMOVAL

11. REMOVAL OF CENTER AIR OUTLET ASSEMBLY

Disengaging the clips (2 positions) of the center air outlet assembly with a flat tip screwdriver, remove the center air outlet assembly with the trim stick.





INSPECTION

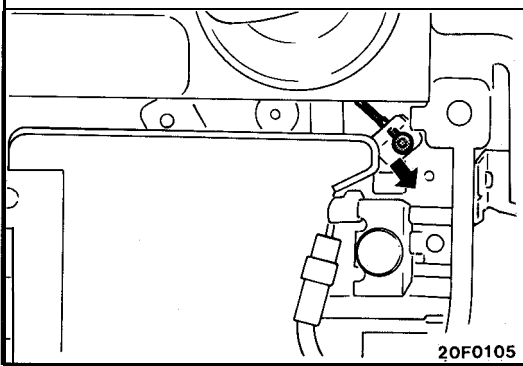
BLOWER SWITCH

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

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

NOTE

O-O indicates that there is continuity between the terminals.

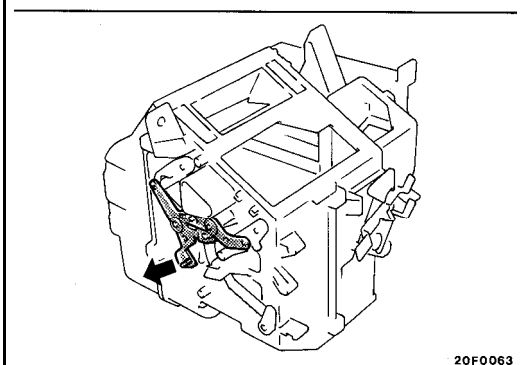


SERVICE POINTS OF INSTALLATION

10. INSTALLATION OF TEMPERATURE CONTROL WIRE


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

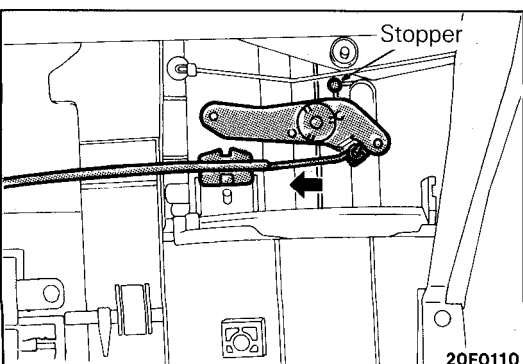
- (1) Move the temperature control lever to the rightmost position. ("HOT" position)
- (2) With the blend air damper lever pressed completely downward in the direction indicated by the arrow, connect the inner cable of the temperature control wire to the end of the blend air damper lever, and then secure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



9. 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 pressed inward in the direction indicated by the arrow, connect the inner cable of the mode selection control wire to the end of the mode selection control lever, and then secure the outer cable by using a clip.

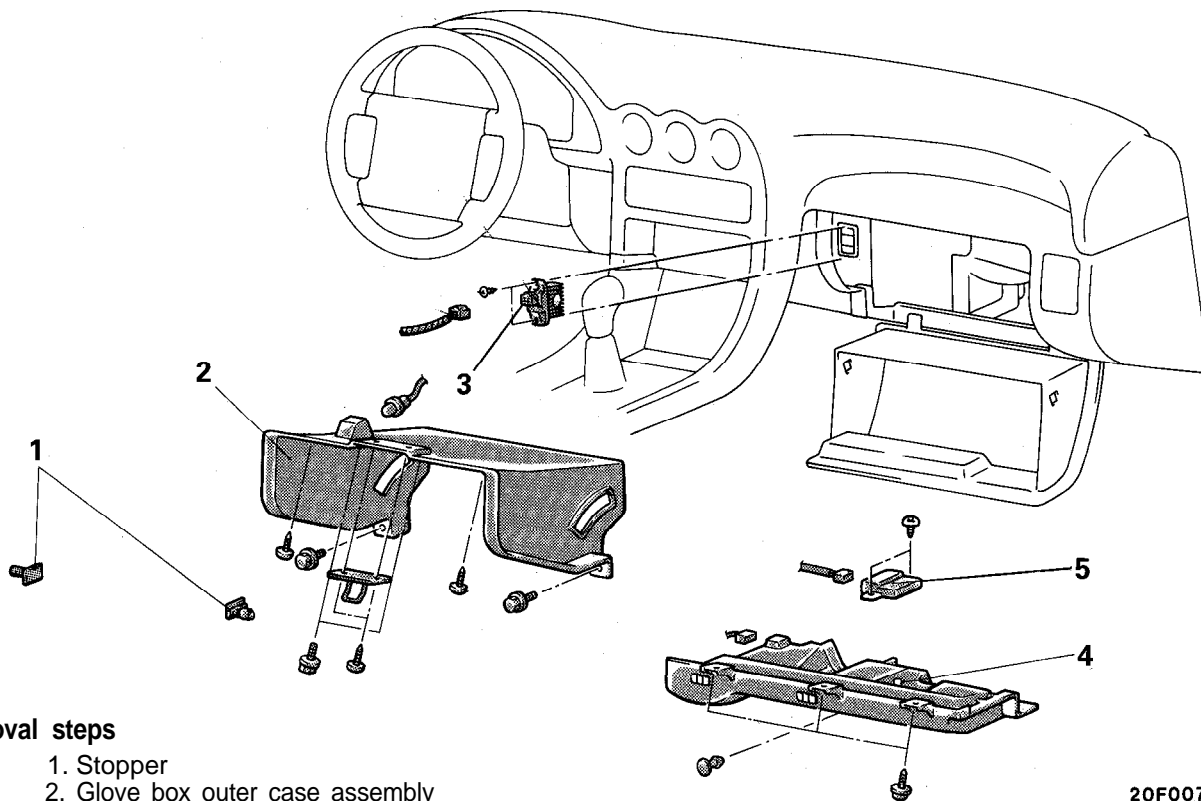


3. INSTALLATION OF AIR SELECTION CONTROL WIRE

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) Set the air selection damper lever as it contacts stopper.
- (3) Connect the inner cable of the air selection control wire to the end of the air selection lever, and then secure the outer cable by using a clip.

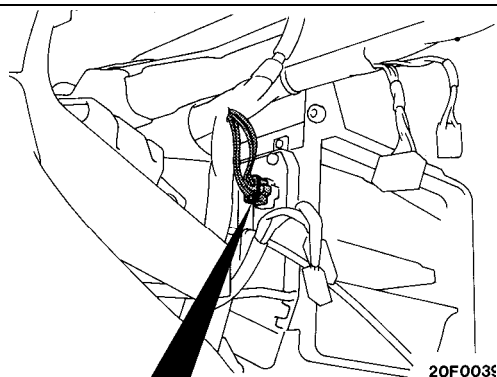
RESISTOR, BELT LOCK CONTROLLER REMOVAL AND INSTALLATION



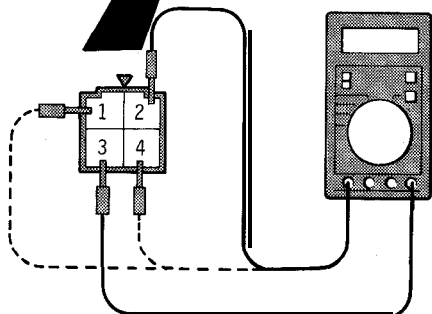
Removal steps

1. Stopper
2. Glove box outer case assembly
3. Resistor
4. Under cover
5. Belt lock controller <DOHC>

20F0073



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INSPECTION

RESISTOR CHECK

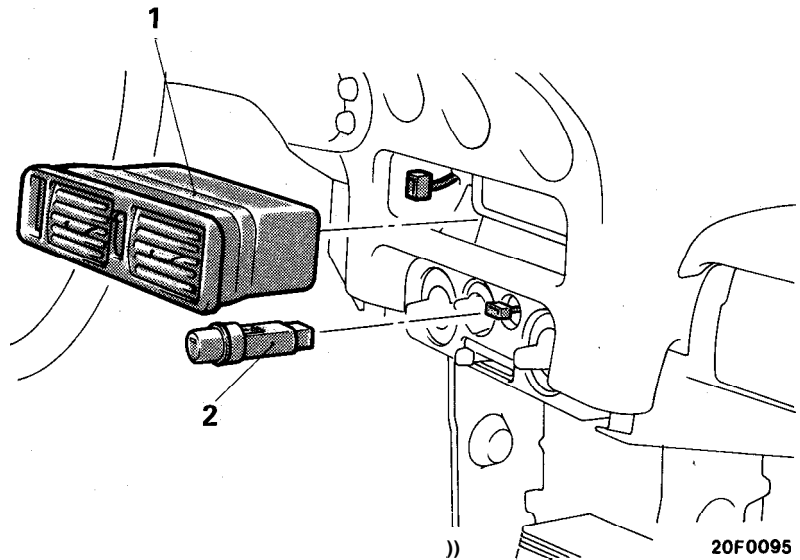
Using a circuit tester, measure the resistance between the terminals indicated below.

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

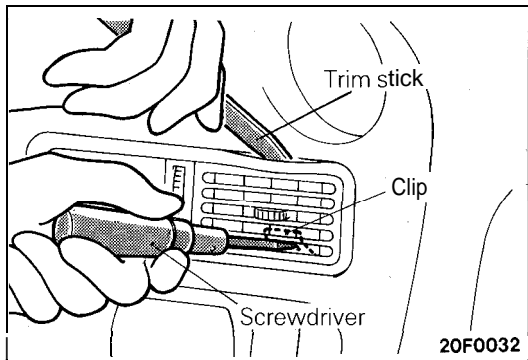
AIR CONDITIONING SWITCH REMOVAL AND INSTALLATION



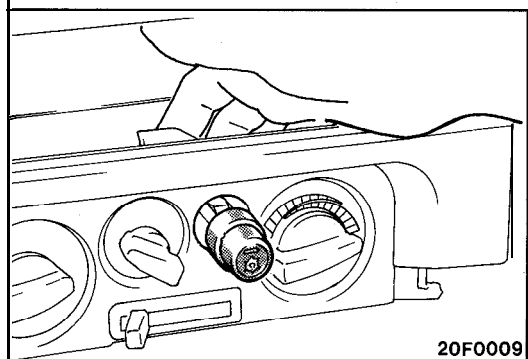
Removal steps

- ↔ 1. Center air outlet assembly
- ↔ 2. Air conditioning switch

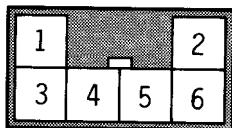
20F0095



20F0032



20F0009



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SERVICE POINTS OF REMOVAL

1. REMOVAL OF CENTER AIR OUTLET ASSEMBLY

Disengaging the clips (2 positions) of the center air outlet assembly with a flat tip screwdriver, remove the center air outlet assembly with the trim stick.

2. REMOVAL OF AIR CONDITIONING SWITCH

Remove the center air outlet assembly, and insert hand to the back of the cluster panel assembly through the produced opening. Push it toward you for removal.

INSPECTION

AIR CONDITIONING SWITCH CHECK

Terminal	1	2	4	5	3	6
Switch position						
OFF						
If pressed 1 step (ECONOMY)	○	○	○	○		○
If pressed 2 steps (Air conditioning)	○	○	○	○	*	○

NOTE

- (1) The O-O symbol indicates continuity.
- (2) *: <Indication light>

HEATER UNIT

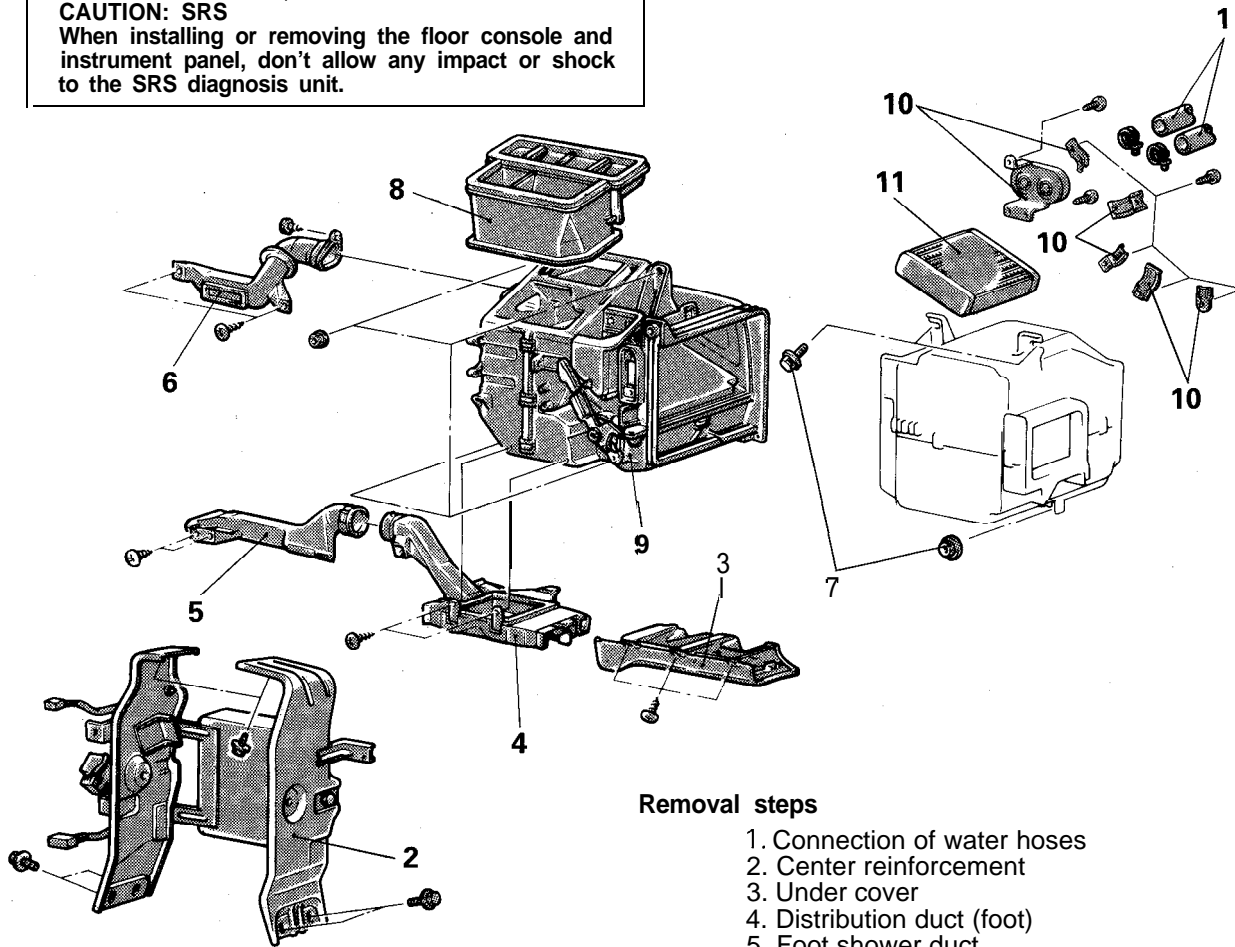
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- Draining and Supplying of the Coolant (Refer to GROUP 9 -Service Adjustment Procedures.)
- Removal and Installation of the Floor Console and Instrument Panel (Refer to GROUP 23A –Floor Console and Instrument Panel.)

CAUTION: SRS

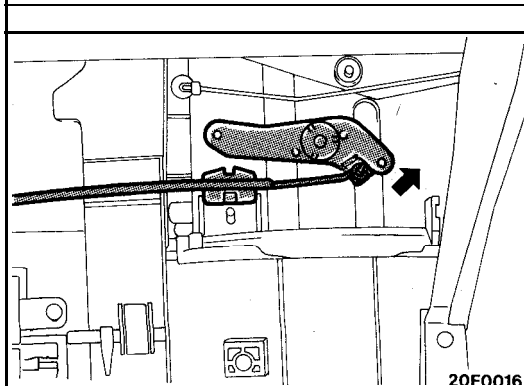
When installing or removing the floor console and instrument panel, don't allow any impact or shock to the SRS diagnosis unit.

**Removal steps**

1. Connection of water hoses
2. Center reinforcement
3. Under cover
4. Distribution duct (foot)
5. Foot shower duct
6. Lap cooler duct
7. Evaporator mounting bolt and nut <Vehicles with air conditioning>
8. Center duct
9. Heater unit
10. Plate
11. Heater core



20F0104

**SERVICE POINT OF REMOVAL****7. REMOVAL OF EVAPORATOR MOUNTING BOLT
<Vehicles with manual air conditioning>****NOTE**

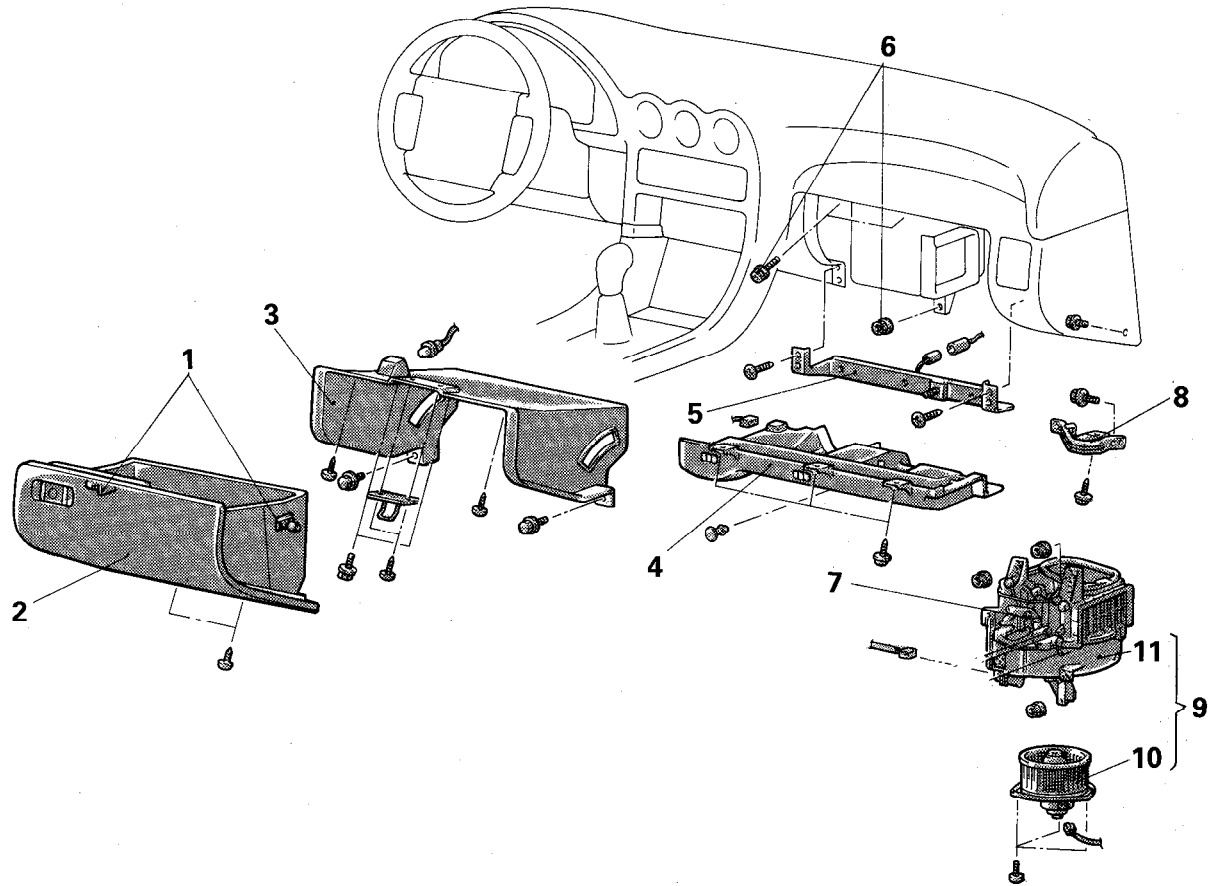
In order to prevent bolts from falling into the blower assembly, set the air selection damper to the position that permits outside air introduction.

INSPECTION

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

20F0016

BLOWER ASSEMBLY REMOVAL AND INSTALLATION



20F0079

Removal steps of blower case assembly

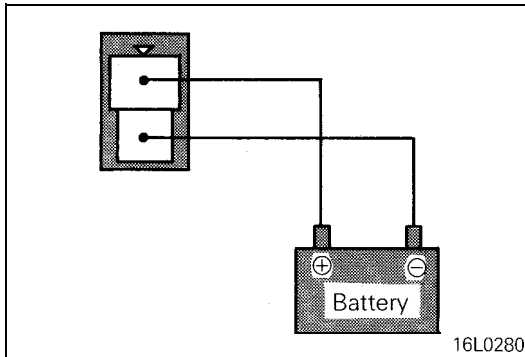
1. Stopper
2. Glove box
3. Glove box outer case assembly
4. Under cover
5. Lower frame
6. Evaporator mounting bolt and nut
<Vehicles with air conditioning>
- ◆◆ 7. Connection of the air-selection wire
8. Side frame
9. Blower assembly
- +10. Blower motor assembly
11. Blower case assembly

Removal steps of blower motor assembly

4. Under cover
- ◆◆10. Blower motor assembly

INSPECTION

- 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.



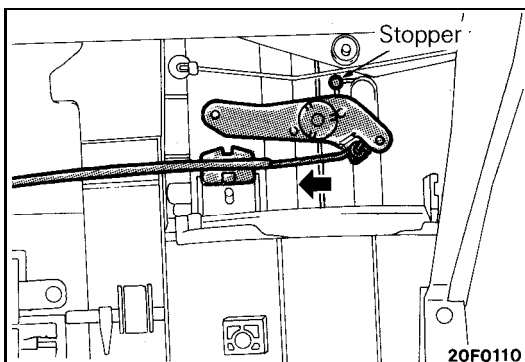
BLOWER MOTOR ASSEMBLY CHECK

When battery voltage is applied between the terminals, check to be sure that the motor operates. Also, check to be sure that there is no abnormal noise.

SERVICE POINTS OF INSTALLATION


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.



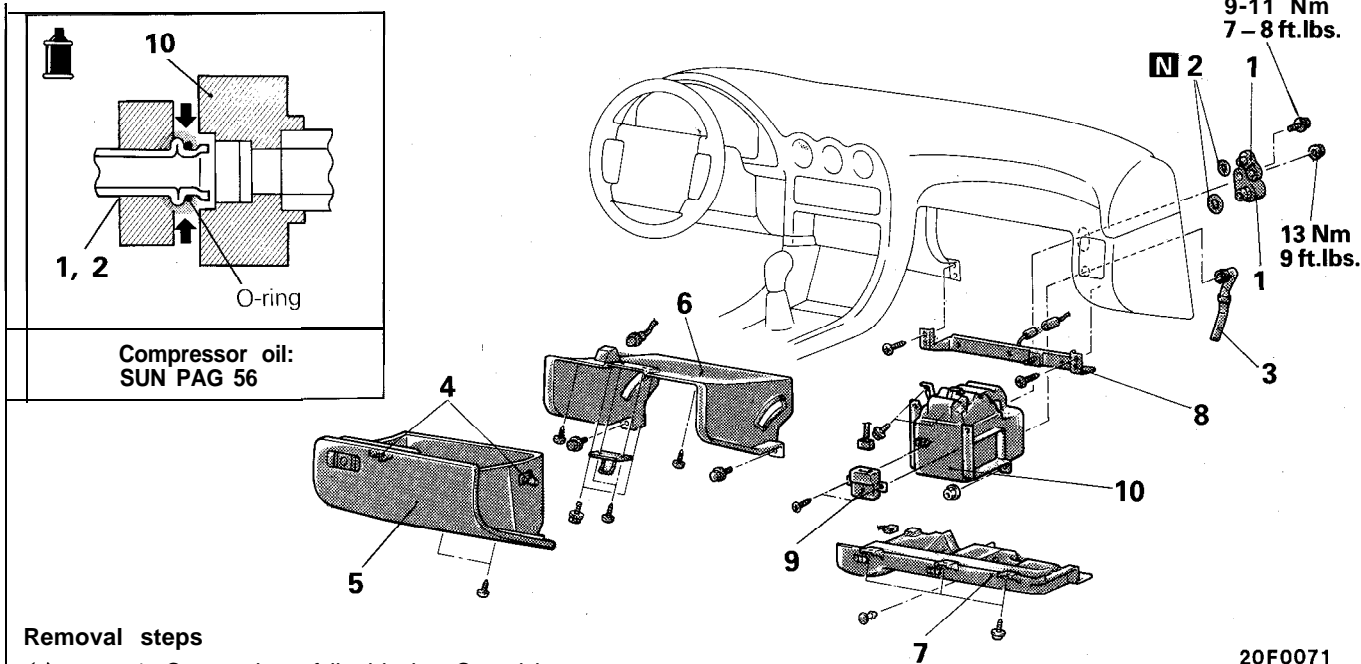
7. INSTALLATION OF AIR SELECTION CONTROL WIRE

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) Set the air selection damper lever as it contacts stopper.
- (3) Connect the inner cable of the air selection control wire to the end of the air selection lever, and then secure the outer cable by using a clip.

EVAPORATOR

REMOVAL AND INSTALLATION



Removal steps

- ◄►
1. Connection of liquid pipe C and low-pressure hose B
 2. O-ring
 3. Drain hose
 4. Stopper
 5. Glove box
 6. Glove box outer case assembly
 7. Under cover
 8. Lower frame
 9. A/C control unit
 - +10. Evaporator

Pre-removal and Post-installation Operation

- Discharge and Charging of Refrigerant (Refer to P.24-16.13.)
- Removal and Installation of Battery

20F0071

SERVICE POINTS OF REMOVAL

1. DISCONNECTION OF LIQUID PIPE C AND LOW-PRESSURE HOSE B

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

- 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.

FIN-THERMO SENSOR AND AIR-INLET SENSOR CHECK

For information concerning the checking procedures, refer to P.24-12.

SERVICE POINT OF INSTALLATION

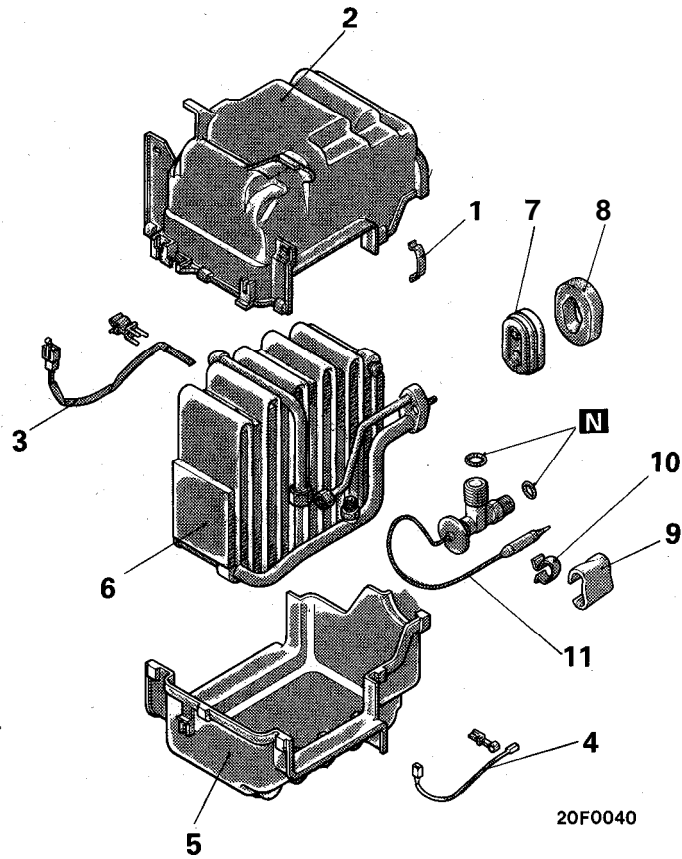
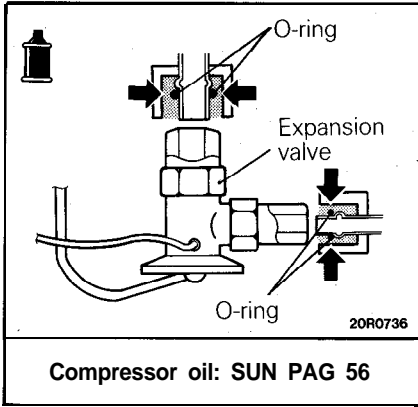
10. INSTALLATION OF EVAPORATOR

If a new evaporator is used, fill it with the specified amount of compressor oil before installing on the vehicle.

Compressor oil: SUN PAG 56

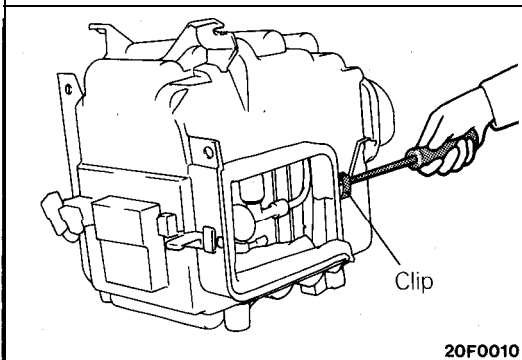
Quantity: 60 cm³ (2.0 fl.oz.)

DISASSEMBLY AND REASSEMBLY



Disassembly steps

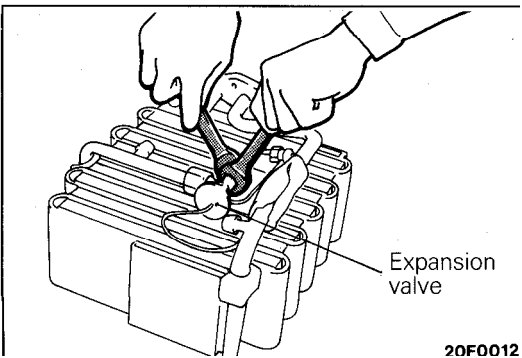
- ↔ 1. Clips
- 2. Evaporator case (upper)
- 3. Fin thermo sensor
- 4. Air inlet sensor
<Vehicles with manual air conditioning>
- 5. Evaporator case (lower)
- 6. Evaporator assembly
- 7. Grommet
- 8. Insulator
- 9. Rubber insulator
- 10. Clip
- ↔ 11. Expansion valve



SERVICE POINTS OF DISASSEMBLY

1. REMOVAL OF CLIPS

Remove the clips with a 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).

COMPRESSOR

REMOVAL AND INSTALLATION

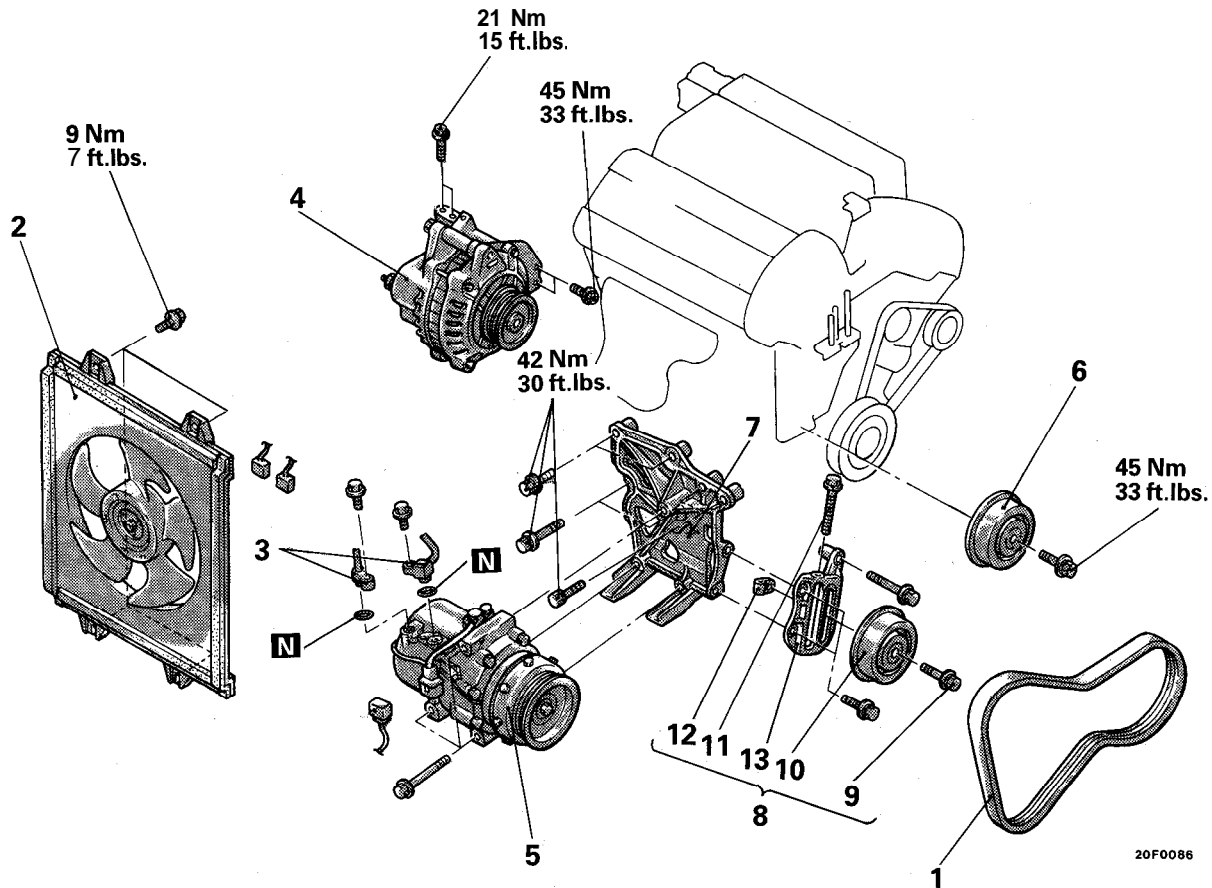
<DOHC>

Pre-removal Operation

- Discharge of the Refrigerant (Refer to P.24-16.)

Post-installation Operation

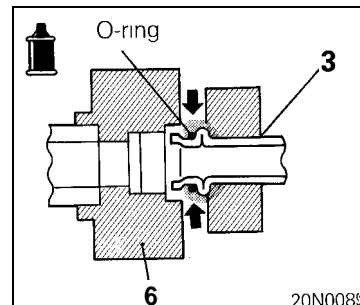
- Adjustment of the Compressor Drive Belt (Refer to GROUP 9 – Service Adjustment Procedures.)
- Charging of Refrigerant (Refer to P.24-13.)



20F0086

Removal steps

- ↔ 1. Compressor drive belt
- ↔ 2. Condenser fan motor assembly
- ↔ 3. Connection of high-pressure hose and low-pressure hose A
- * • a 4. Generator (Refer to GROUP 8 – Generator.)
- * • * 5. Compressor
- 6. Idler pulley
- 7. Compressor bracket
- 8. Tension pulley assembly
- 9. Bolt
- 10. Tension pulley
- 11. Bolt
- 12. Adjustment plate
- 13. Tension pulley bracket



20N0083

Compressor oil:
SUN PAG 56

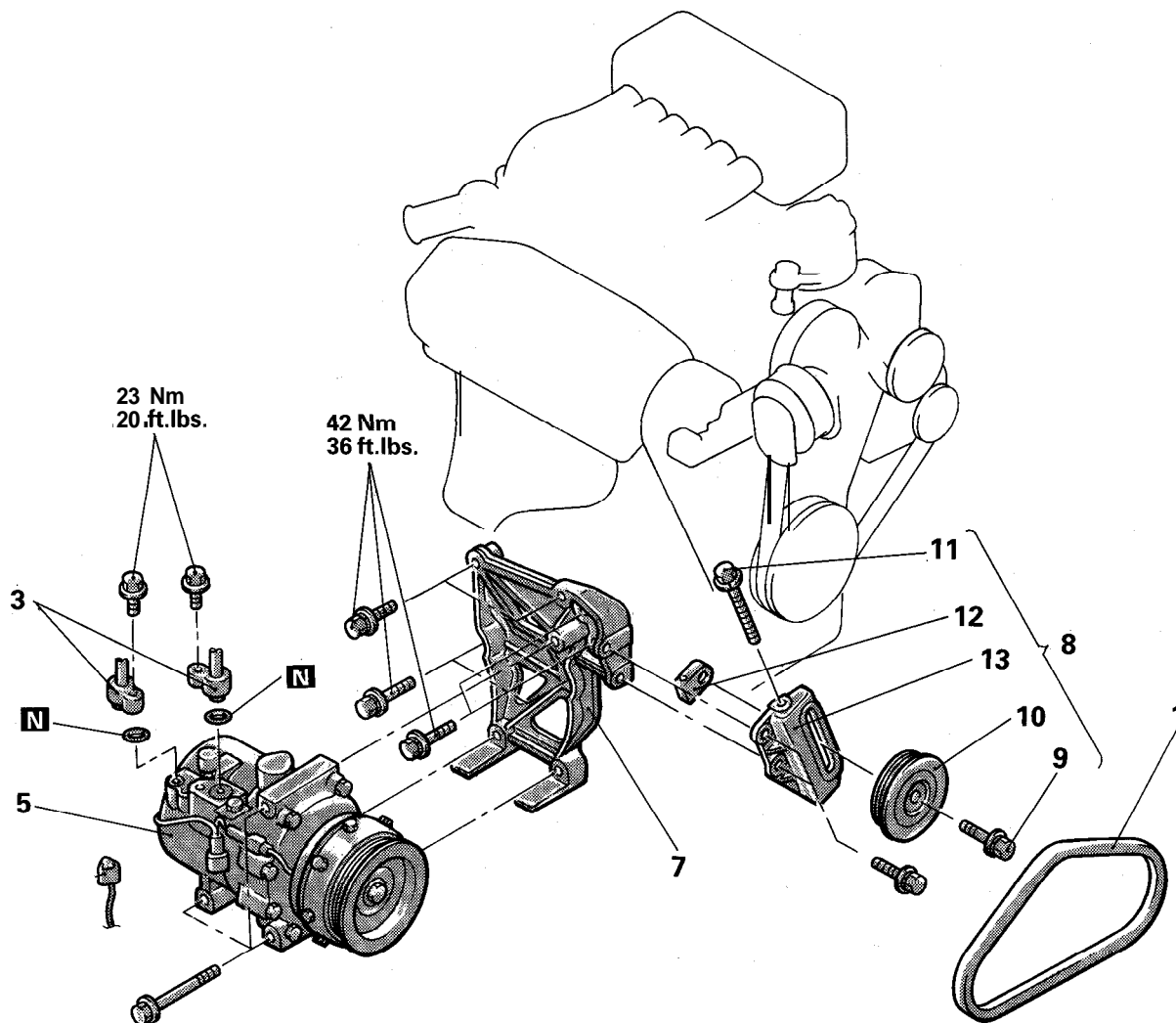
<SOHC>

Pre-removal Operation

- Discharge of the Refrigerant
(Refer to P.24-16.)

Post-installation Operation

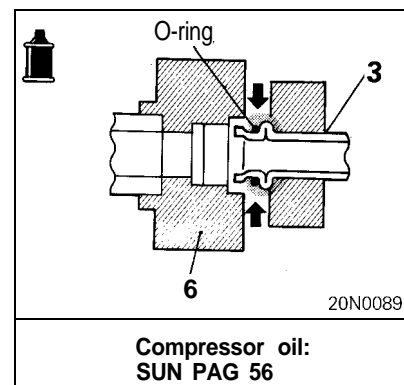
- Adjustment of the Compressor Drive Belt (Refer to GROUP 9 – Service Adjustment Procedures.)
- Charging of Refrigerant (Refer to P.24-13.)



20F0087

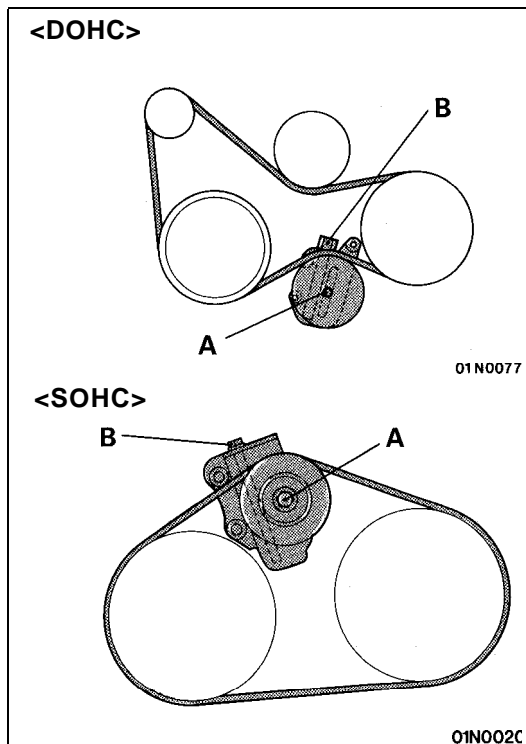
Removal steps

- ↔ 1. Compressor drive belt
- ↔ 3. Connection of high-pressure hose and low-pressure hose A
- ↔ • a 5. Compressor
- 7. Compressor bracket
- 8. Tension pulley assembly
- 9. Bolt
- 10. Tension pulley
- 11. Bolt
- 12. Adjustment plate
- 13. Tension pulley bracket



20N0089

Compressor oil:
SUN PAG 56



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 HIGH-PRESSURE HOSE AND LOW-PRESSURE HOSE A

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

5. REMOVAL OF COMPRESSOR

Caution

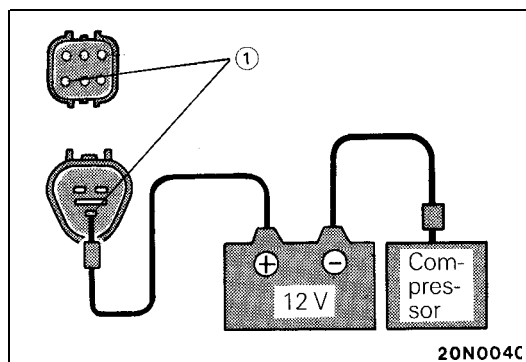
Lay the towel on the brake tube to protect them. When installing the compressor, do not damage the brake tubes. This work must be done carefully so as not to spill the compressor oil.

INSPECTION

- 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 conditioning belt.
- Check for unusual wear or abrasion of the air conditioning belt.

OPERATION CHECK OF THE COMPRESSOR'S MAGNETIC CLUTCH

- (1) Connect terminal ① at the compressor side to the positive (+) terminal of the battery, and ground the negative (-) terminal of the battery to the compressor.
- (2) 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

5. 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 [$X \text{ cm}^3$ ($X \text{ fl.oz.}$)] 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.

New compressor oil amount $160 \text{ cm}^3 - X \text{ cm}^3 = Y \text{ cm}^3$
 (5.4 fl.oz. - x fl.oz. = Y fl.oz.)

NOTE

- (1) $Y \text{ cm}^3$ ($Y \text{ fl.oz.}$) indicates the amount of oil in the refrigerant line, the condenser, the cooling unit, etc.

- (2) If any other air conditioning part is replaced simultaneously with the compressor, remove the oil from the new compressor, taking the specified amount of oil for the part into consideration.

Quantity

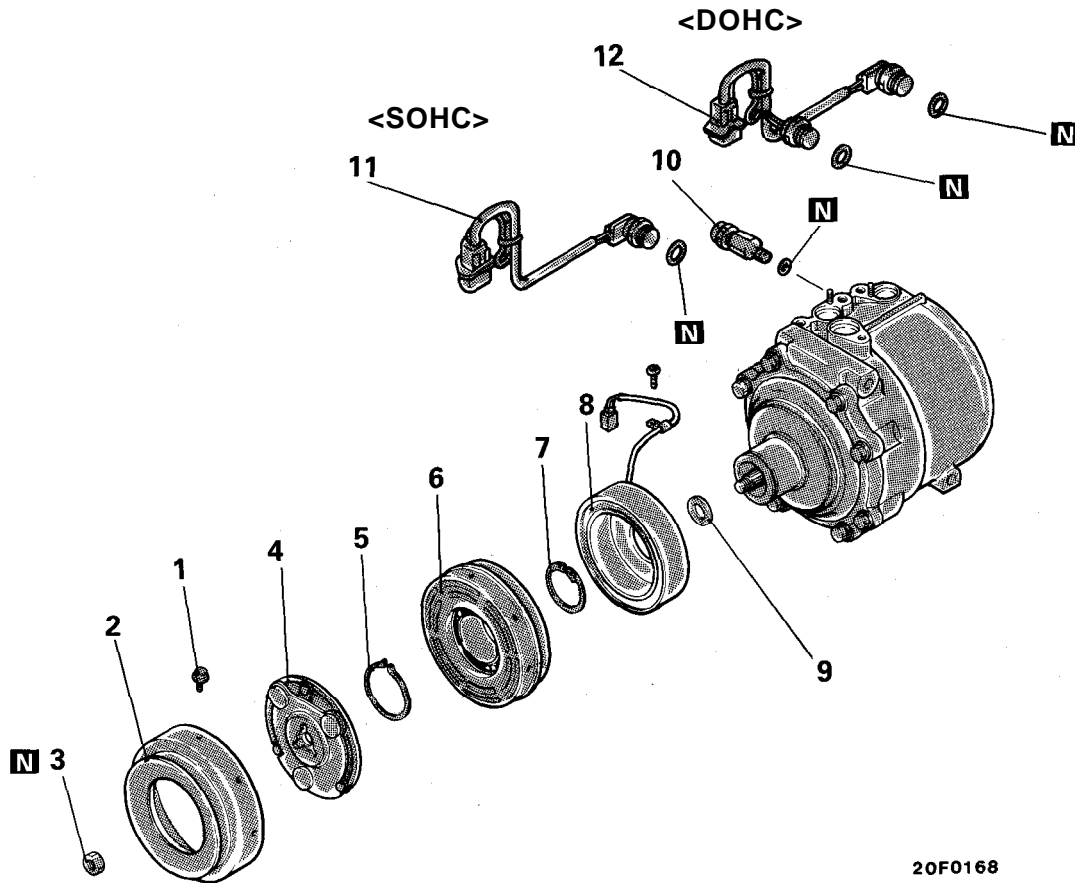
Evaporator: 60 cm³ (2.0 fl.oz.)

Condenser: 15 cm³ (.5 fl.oz.)

Low-pressure hose: 10 cm³ (.3 fl.oz.)

Receiver: 10 cm³ (.3 fl.oz.)

DISASSEMBLY AND REASSEMBLY



20F0168

Magnetic clutch disassembly steps

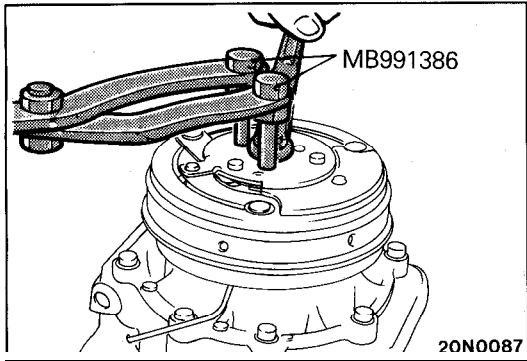
1. Bolts
2. Pulley
3. Nut
4. Armature plate
5. Snap ring
6. Rotor
7. Snap ring
8. Clutch coil
9. Shims

Thermostat and revolution pick up sensor disassembly

11. Thermostat <SOHC>
12. Thermostat and revolution pick up sensor <DOHC>

High pressure relief valve disassembly

10. High pressure relief valve



SERVICE POINTS OF DISASSEMBLY

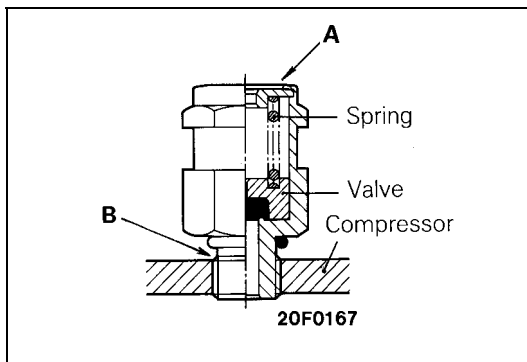
3. REMOVAL OF NUT

Use the special tool to tighten the nut.

INSPECTION

Check the surface of the armature 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,
-



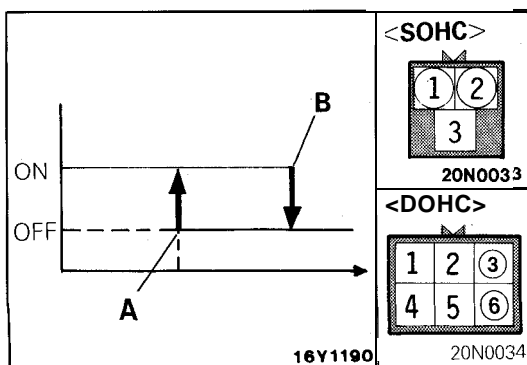
HIGH PRESSURE RELIEF VALVE CHECK

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 3,740 kPa (532 psi) during air conditioning operation.

2,940 kPa (418 psi) or lower, the high pressure relief valve closes, thus allowing continued operation.

- (1) relief valve. The valve can be used unless there is a leak from that section.

leak still persists after retightening the valve, replace the packing.



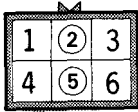
THERMOSTAT CHECK

- (1)
- (2) Check for continuity across terminals ① and ② (SOHC) or ③ and ⑥ (DOHC) when the engine oil is heated.

Standard value:

Continuity at approx. 110°C (230°F) or less

No continuity at approx. 155°C (311°F) or more at B point



20N0034

REVOLUTION PICK UP SENSOR CHECK

Measure the resistance between terminals ② and ⑤ of the connector.

Normal resistance: $405 \pm 35 \Omega$ when ambient temperature is 20°C (68°F)

If the measurement deviates greatly from the above resistance, replace the revolution pick up sensor assembly.

CONTROL VALVE CHECK

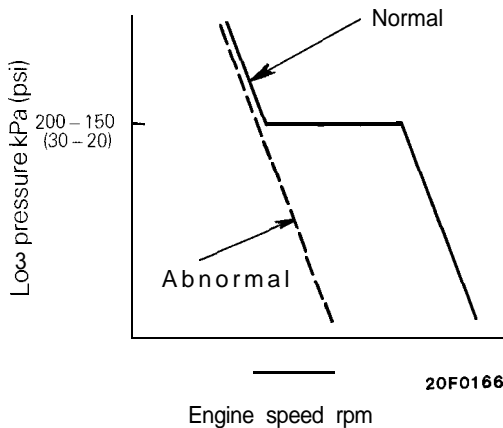
The control valve detects a low pressure level during the operation of the air conditioning, and adjusts the amount of refrigerant to be bypassed.

- (1) Operate the air conditioning 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 conditioning 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 200 – 150 kPa (30 – 20 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 200 – 150 kPa (30 – 20 psi) pressure level.

If the low pressure drops like this, replace the control valve.

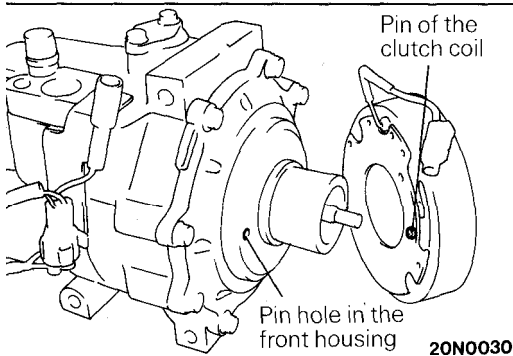


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SERVICE POINTS OF REASSEMBLY

8. INSTALLATION OF CLUTCH COIL

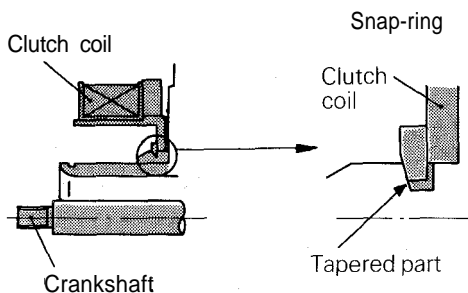
Align the pin of the clutch coil with the pin hole in the front housing, and then fit it into the hole.



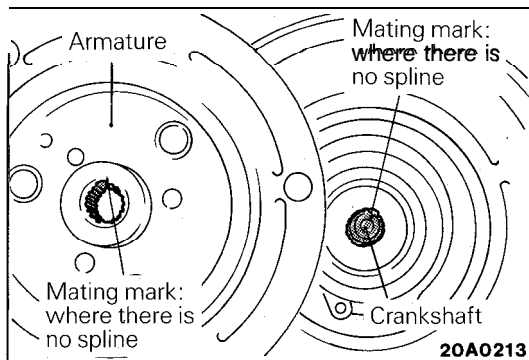
20N0030

7. INSTALLATION OF SNAP RING

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

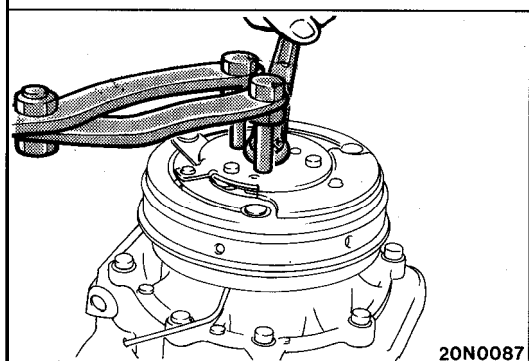


20A0157



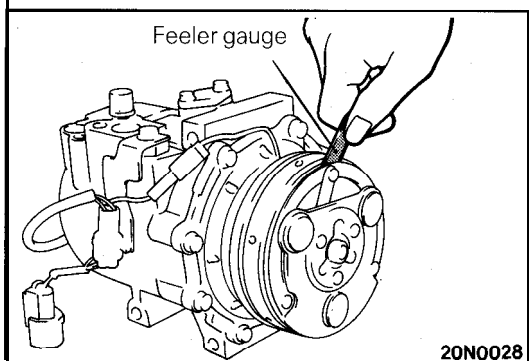
4. INSTALLATION OF ARMATURE PLATE

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) Use a socket wrench to tighten the nut.



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

Standard value: 0.4 – 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.

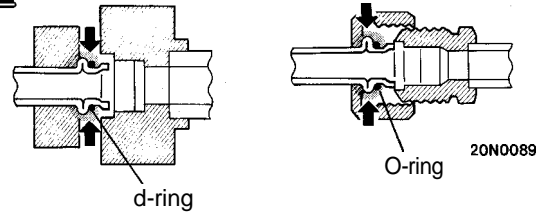
CONDENSER AND CONDENSER FAN MOTOR

REMOVAL AND INSTALLATION

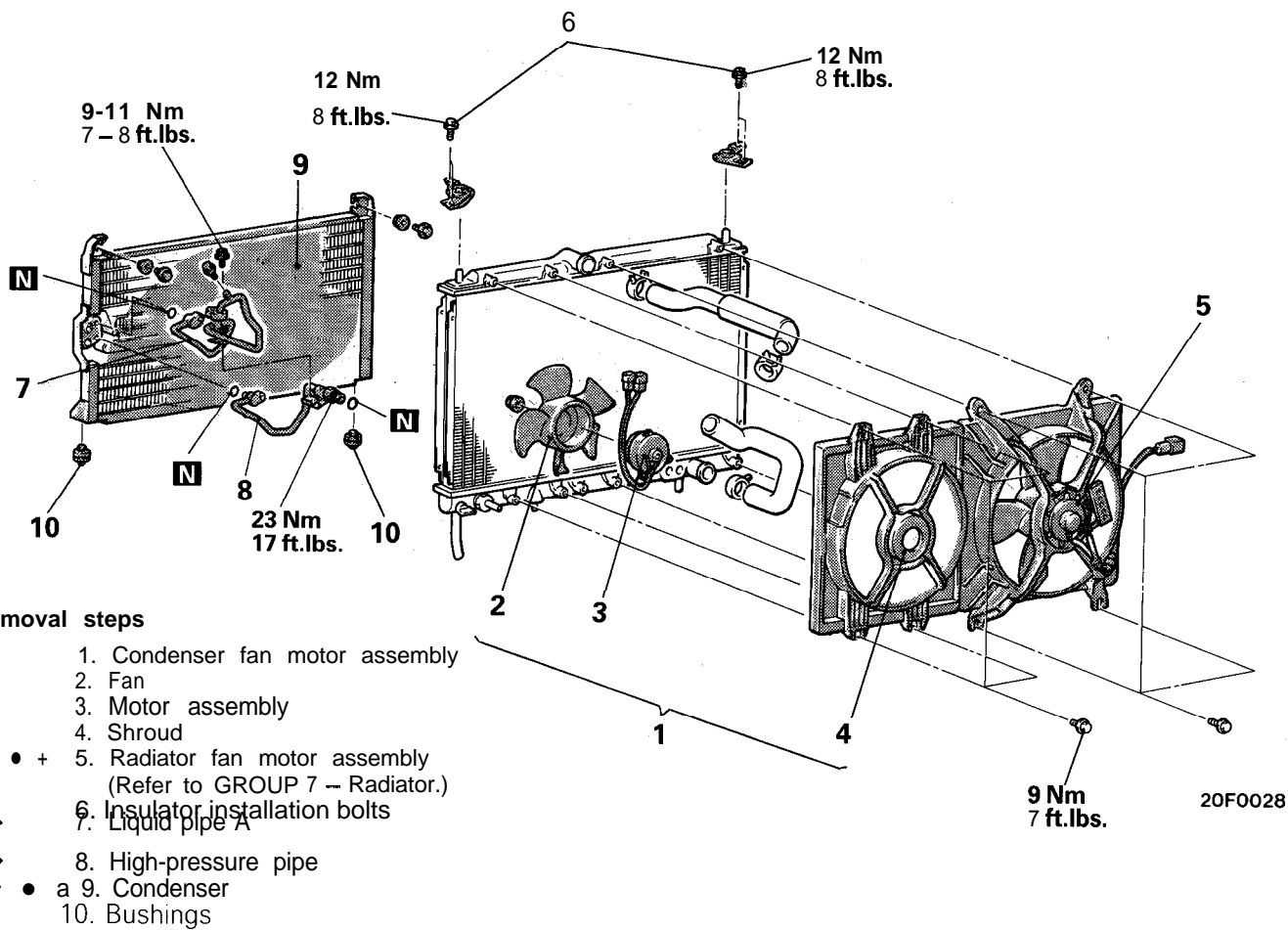
Pre-removal and Post-installation Operation

- Discharge and Charging of the Refrigerant (Refer to P.24-16, 13.)
- Removal and Installation of the Generator <DOHC> (Refer to GROUP 8 – Engine Electrical.)

 : Piping connection



Compressor oil: SUN PAG 56



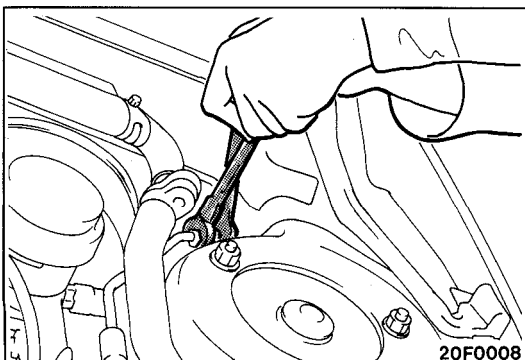
Removal steps

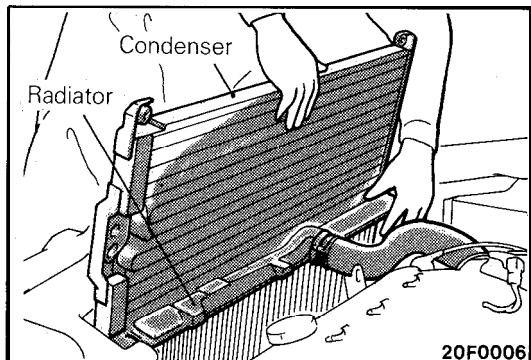
1. Condenser fan motor assembly
2. Fan
3. Motor assembly
4. Shroud
- + 5. Radiator fan motor assembly (Refer to GROUP 7 – Radiator.)
- 6. Insulator installation bolts
- 7. Liquid pipe A
- 8. High-pressure pipe
- a 9. Condenser
- 10. Bushings

SERVICE POINTS OF REMOVAL

7. REMOVAL OF LIQUID PIPE A / 8. HIGH-PRESSURE PIPE

- (1) Loosen the flare nut by using two wrenches.
- (2) Plug the disconnected hose and pipes and the openings of the condenser in order to prevent dust, dirt and other foreign material from entering.



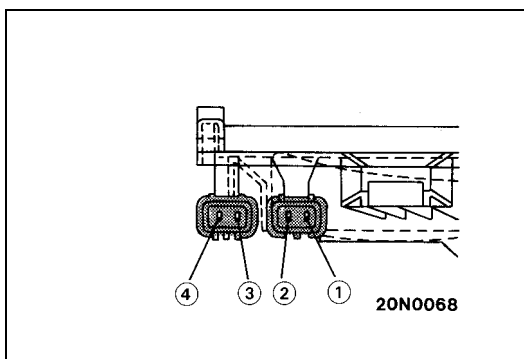


9. REMOVAL OF CONDENSER

Move the radiator toward the engine, and then remove the condenser upward.

INSPECTION

- 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) Apply battery voltage (+) to terminal ③ and ground (-) terminal ④; at this time, check that the condenser fan motor turns.
- (2) Apply battery voltage (+) to terminal ① and ground (-) terminal ②; at this time, check that the condenser fan motor turns.

SERVICE POINT OF INSTALLATION

9. INSTALLATION OF CONDENSER

If a new condenser is used, fill it with the specified amount of compressor oil before installing on the vehicle.

Compressor oil: SUN PAG 56

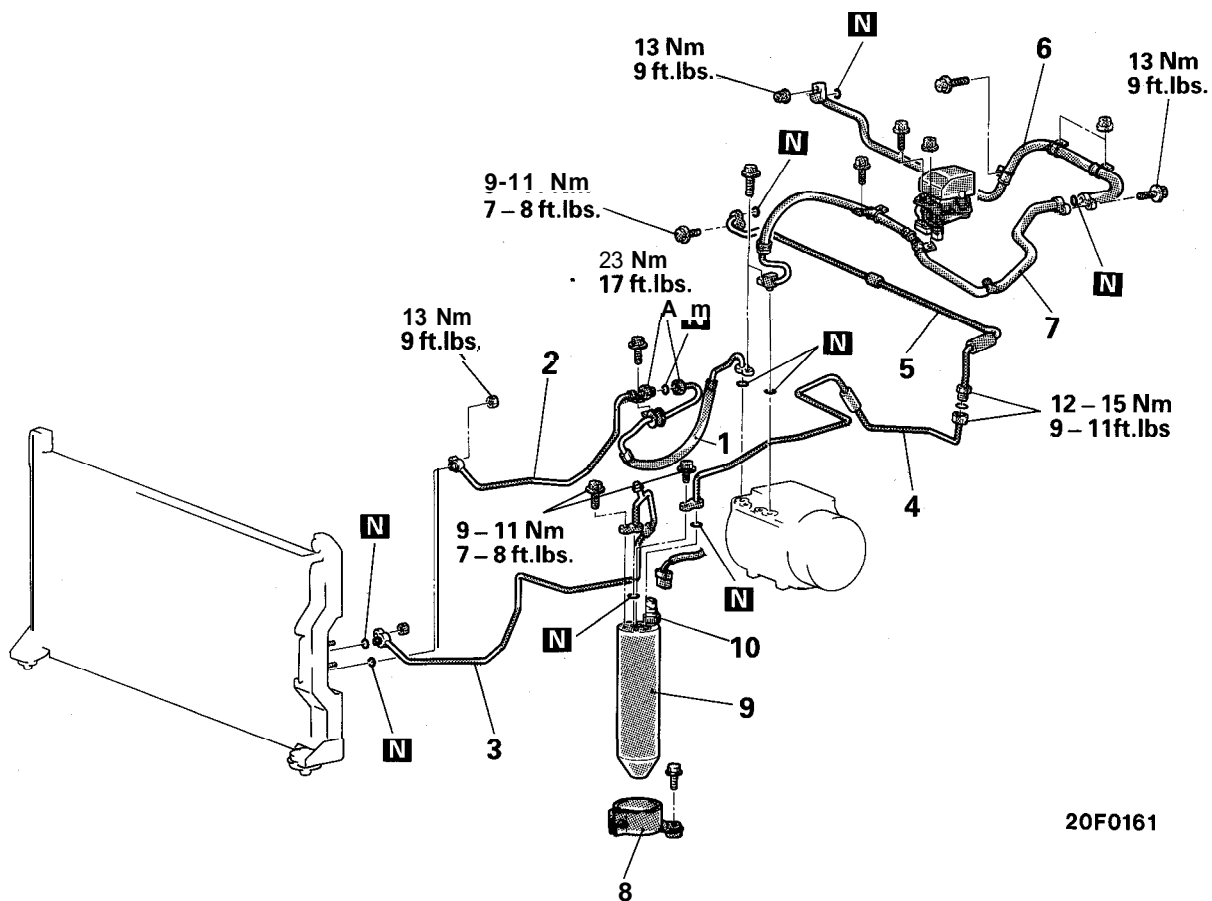
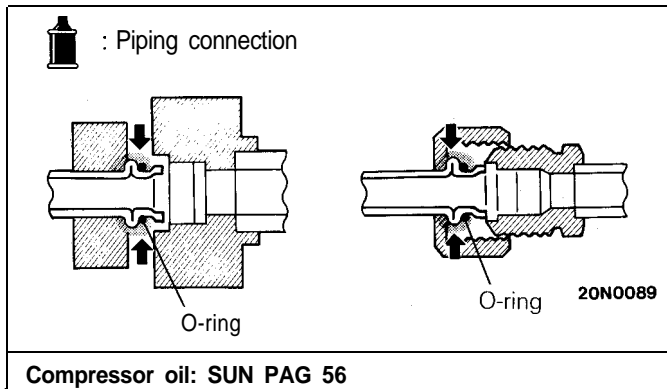
Quantity: 15 cm³ (.5 fl.oz.)

REFRIGERANT LINE

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

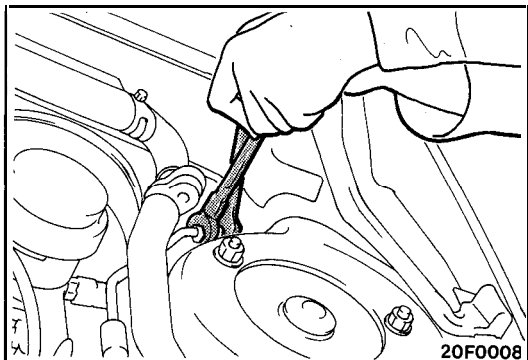
- Discharge and Charging of Refrigerant
(Refer to P.24-16, 13.)



20F0161

Removal steps

- ↔ 1. High-pressure hose
- ↔ 2. High-pressure pipe
- ↔ 3. Liquid pipe A
- C 4. Liquid pipe B
- 5. Liquid pipe C
- + 6. Low-pressure hose B
- * 7. Low-pressure hose A
- 8. Receiver bracket
- 4 9. Receiver
- 10. Dual-pressure switch



SERVICE POINTS OF REMOVAL

1. REMOVAL OF HIGH-PRESSURE HOSE / HIGH-PRESSURE PIPE

Loosen the flare nut by using two wrenches.

INSPECTION

CHECKING DUAL PRESSURE SWITCH

For information concerning the checking procedures of the dual pressure switch, refer to "Service Adjustment Procedures" on P.24-11.

SERVICE POINTS OF INSTALLATION

9. INSTALLATION OF RECEIVER / 7, 6. LOW-PRESSURE HOSE

If the low-pressure hose is replaced with new one, or if a new receiver is installed, pour the specified amount of oil in the compressor before installing these parts in the vehicle.

Compressor oil: SUN PAG 56

Quantity:

Low-pressure hose: 10 cm³ (.3 fl.oz.)

10 cm³ (.3 fl.oz.)

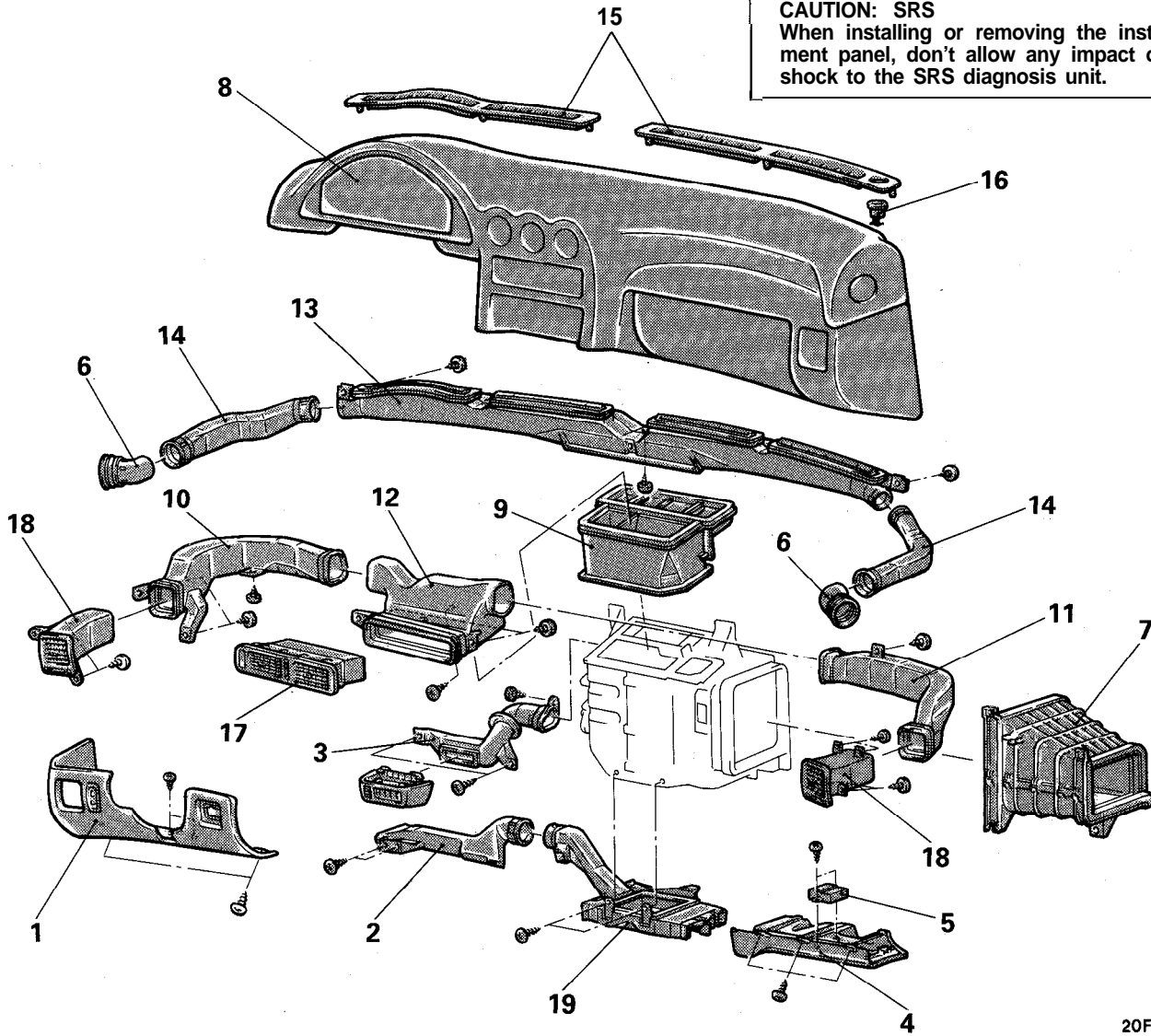
4. INSTALLATION OF LIQUID PIPE B

Connect liquid pipe B first on the receiver side.

VENTILATORS (INSTRUMENT PANEL)

REMOVAL AND INSTALLATION

CAUTION: SRS
When installing or removing the instrument panel, don't allow any impact or shock to the SRS diagnosis unit.

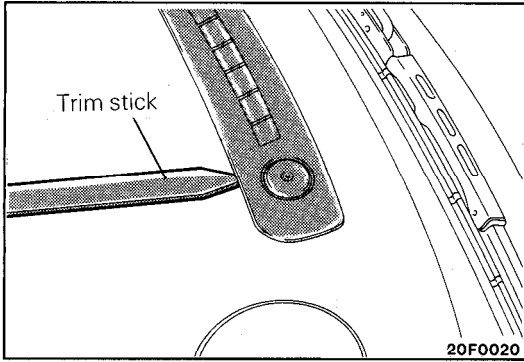


20F0055

Removal steps

- ◆ ◆ ● + 1. Knee protector
(Refer to GROUP 23A –Instrument Panel.)
- 2. Foot shower duct
- 3. Lap cooler duct
- 4. Under cover
- 5. Belt lock controller <DOHC>
- 6. Side defroster hoses A
- ◆ ◆ ● + 8. Instrument panel (Refer to GROUP 23A –
Instrument Panel.)
- 9. Center duct

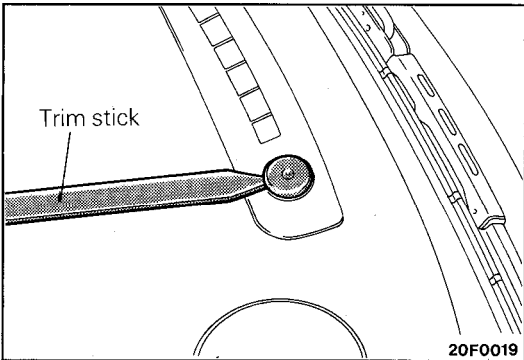
- ◆ ◆ 10. Air duct (LH)
- ◆ ◆ 11. Air duct (RH)
- ◆ ◆ 12. Distribution duct (center)
- ◆ ◆ 13. Defroster duct
- ◆ ◆ 14. Side defroster hoses B
- ◆ ◆ 15. Defroster garnishes
- ◆ ◆ 16. Photo sensor
- ◆ ◆ 17. Center air outlet assembly
- ◆ ◆ 18. Side air outlet assembly
- ◆ ◆ 19. Distribution duct (foot)



SERVICE POINTS OF REMOVAL

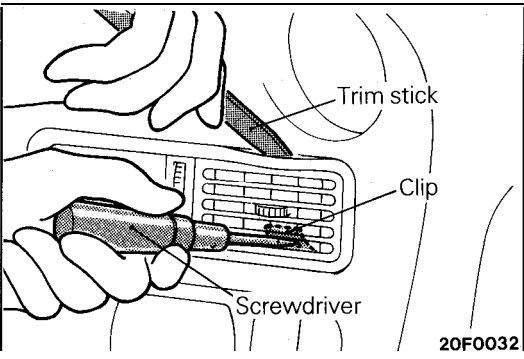
15. REMOVAL OF DEFROSTER GARNISHES

Using the trim stick, remove the defroster garnishes from the instrument panel.



16. REMOVAL OF PHOTO SENSOR

Using the trim stick, remove the photo sensor from the defroster garnish.

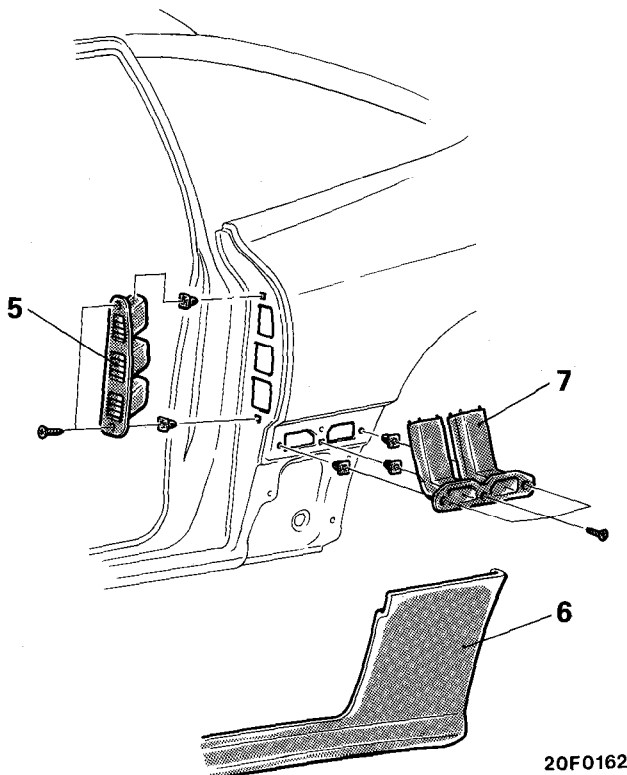
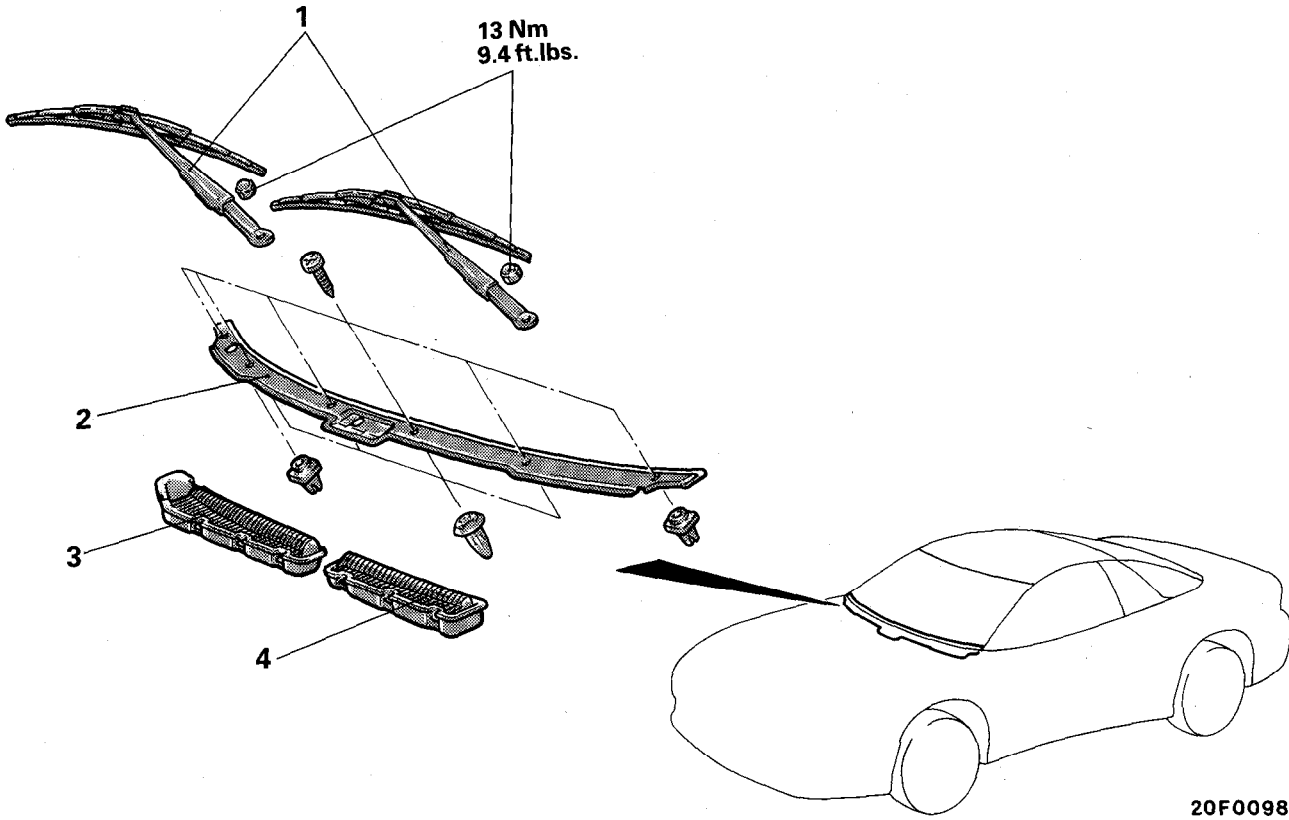


17. REMOVAL OF CENTER AIR OUTLET ASSEMBLY

Disengaging the clips (2 positions) of the center air-outlet assembly with a flat tip screwdriver, remove the center air outlet assembly with the trim stick.

VENTILATORS (AIR INLET AND AIR OUTLET)

REMOVAL AND INSTALLATION



Inlet garnishes removal steps

1. Windshield wiper arm
2. Front deck garnish
3. Inlet garnish (RH)
4. Inlet garnish (LH)

Rear ventilation duct removal steps

5. Rear ventilation duct A
6. Side air dam (side sill)
(Refer to GROUP 23A – Aero Parts.)
7. Rear ventilation duct B

FULL AUTO AIR CONDITIONING

TROUBLESHOOTING

TROUBLESHOOTING PROCEDURE

- (1) Check that the air ducts and rods are not off.
- (2) Check that connectors are properly connected and fuses are not blown.
- (3) Using an analog voltmeter, check on-board diagnostic outputs. If failure code is being output, check the failing system and repair as necessary. (Refer to Diagnosis Display Patterns and Codes on P.24-60.)
- (4) If the on-board diagnostic outputs are normal, check for terminal voltage or continuity with a circuit tester according to the troubleshooting chart by symptom. (Refer to control unit terminal voltages on P.24-49 – 56.)
- (5) In carrying out the troubleshooting procedure, first look up the Troubleshooting Quick-Reference Chart to know the inspection items and then start the inspection procedure detailed in the following pages.
- (6) When checking components, be sure to disconnect the connectors first.

TROUBLESHOOTING QUICK-REFERENCE CHART

Symptom		Inspection item																											
		Fuse	Harness (incl. connectors)	Compressor relay	Magnetic clutch	Sensors	Pressure switch	Air-conditioning control panel	Refrigerant amount	Receiver	Expansion valve	Compressor	Thermostat	Belt lock controller	Air conditioning control unit	MFI control unit	On-board diagnostic outputs	Blend air damper motor and potentiometer	Heater link	Heater relay	Power transistor	Blower motor	Blower motor relay	Air selection damper motor	Mode selection damper motor/potentiometer	Condenser fan relay	Resistor	Condenser fan motor	
1	Air conditioning does not operate when the ignition switch in the ON position.	①	②	③	④	⑥	⑧	⑦				⑤	⑨	⑩	⑪														
2	Interior temperature does not raise even the air conditioning is operating (No warm air coming out).		⑤		②		⑥							⑦		①	③	④											
3	Interior temperature does not lower even the air conditioning is operating (No cold air coming out).	①	④	⑤	⑫	⑪	⑬	⑥	⑦	⑧	⑨	⑩		⑭		②	③												
4	Blower motor does not rotate.	①	④				⑥							⑦					②	③	⑤								
5	Blower motor does not stop rotating.		③				④							⑤						②		①							
6	Air selection damper does not operate.		②				③							④									①						
7	Mode selection damper does not operate.		③				④							⑤		①									②				
8	Condenser fan does not operate when the air conditioning is activated.	①																								②	③	④	
9	Air-conditioning graphic display does not function correctly.	①	②				③							④															
10	Air conditioning control panel blinks.				②	③			①				④	⑤	⑥														
11	Set temperature returns to 25°C (122°F) when the ignition switch is turned ON and OFF.	①	②			③																							

NOTE
 (1) 0 indicates the component requiring inspection. (Numbers in 0 are the priority order.)
 (2) Use an analog voltmeter to check the control unit.

No.	Symptom	Probable cause	Remedy	Ref. page
1	Air conditioning does not operate when the ignition switch in the ON position.	Open-circuited power circuit harness	Correct harness.	—
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Check on-board diagnostic output.	24-57
		Defective compressor relay in relay box	Replace.	24-19
		Defective magnet clutch	Replace.	24-32
		Defective thermostat	Replace.	24-32
		Defective dual pressure switch	Replace.	24-38
		Refrigerant leak	Charge refrigerant, correct leak.	24-1 3
		Excessive refrigerant	Discharge refrigerant.	24-1 6
		Defective belt lock controller <DOHC>	Replace belt lock controller.	24-62
	Defective MFI control unit	Replace MFI control unit	—	
2	Interior temperature does not raise (No warm air coming out).	Defective interior temperature sensor input circuit	Check on-board diagnostic output. Replace defective parts.	24-57
		Defective blend air damper potentiometer input circuit		
		Defective blend air damper drive motor	Replace blend air damper drive motor.	24-63
		Incorrect engagement of blend air damper drive motor lever and blend air damper	Engage correctly.	—
		Sticking blend air damper	Correct blend air damper.	—
		Open-circuited harness between blend air damper drive motor and air conditioning control unit	Correct harness.	—
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61
3	Interior temperature does not lower (No cold air coming out).	Defective interior temperature sensor input circuit	Check on-board diagnostic output. Replace defective parts.	24-57
		Defective air inlet sensor input circuit		
		Defective air thermo sensor input circuit		
		Defective blend air damper potentiometer input circuit		

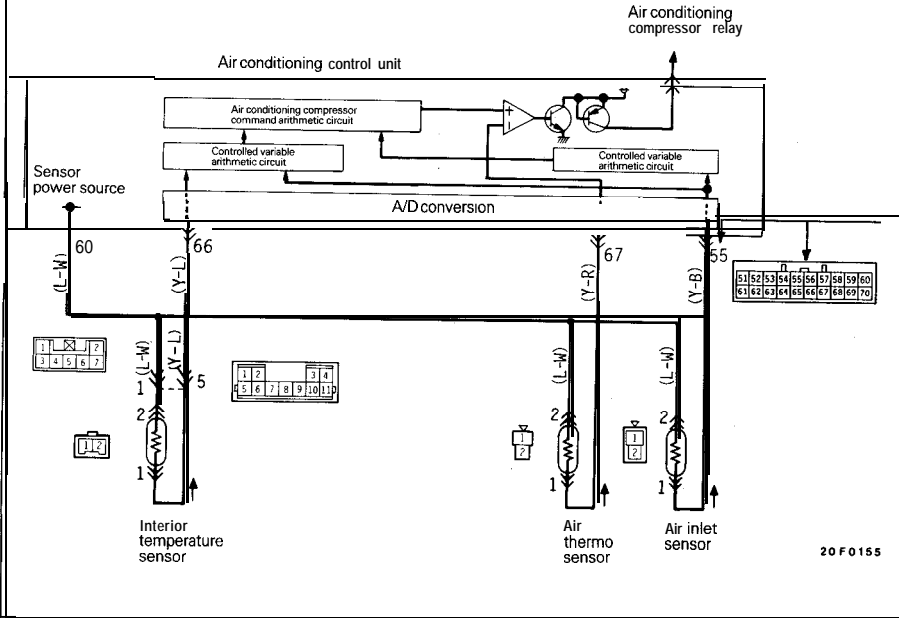
0.	Symptom	Probable cause	Remedy	Ref. page
3	Interior temperature does not lower (No cold air coming out).	Defective blend air damper drive motor	Replace blend air damper drive motor.	24-63
		Incorrect engagement of blend air damper drive motor lever and blend air mix damper	Engage correctly.	—
		Sticking blend air damper	Correct blend air damper.	—
		Open-circuited harness between blend air damper drive motor and air conditioning control unit	Correct harness.	—
		Open-circuited harness between photo sensor and air conditioning control unit	Correct harness.	—
		Defective air-conditioning compressor relay in the relay box	Replace.	24-19
		Defective thermostat	Replace thermostat	24-32
		Defective revolution pick up sensor <DOHC>	Replace revolution pick up sensor	24-32
		Refrigerant leak	Charge refrigerant, correct leak.	24-13, 18
		Excessive refrigerant	Discharge refrigerant.	24-16
		Clogged receiver	Replace receiver.	24-38
		Clogged expansion valve	Replace expansion valve.	24-28
		Defective compressor	Replace compressor.	24-29
		Defective air inlet sensor	Replace air inlet sensor.	24-65
		Defective magnetic clutch	Replace.	24-32
		Defective belt lock controller	Replace belt lock controller.	24-22
Defective control panel	Replace control panel.	24-6 1		
Defective air conditioning control unit	Replace air conditioning control unit.	24-61		
1	Blower motor does not rotate.	Defective blower motor	Replace blower motor.	24-25
		Blown thermal fuse inside air conditioning power transistor	Replace air conditioning power transistor.	24-62
		Defective blower motor relay	Replace blower motor relay.	24-1 9
		Open-circuited harness between fuse and blower motor relay	Correct harness.	—

No	Symptom	Probable cause	Remedy	Ref. page
4	Blower motor does not rotate.	Open-circuited harness between blower motor relay and blower motor	Correct harness.	--
		Open-circuited harness between air conditioning power transistor and air conditioning control unit	Correct harness.	--
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61
5	Blower motor does not stop rotating.	Defective blower motor HI relay	Replace power relay.	24-19
		Short-circuited harness between blower motor relay and air conditioning power transistor air conditioning control unit	Correct harness.	--
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit	24-61
		Defective air conditioning power transistor	Replace air conditioning power transistor	24-62
6	Air selection damper does not operate.	Defective air selection drive motor	Replace air selection drive motor.	24-63
		Incorrect engagement of air selection drive motor damper	Engage correctly.	--
		Malfunctioning air selection damper	Correct air selection damper.	--
		Open-circuited harness between air selection motor and air conditioning control unit	Correct harness.	--
		Defective control panel	Replace control panel	24-61
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61

No.	Symptom	Probable cause	Remedy	Ref. page
7	Mode selection damper does not operate.	Defective mode selection damper potentiometer input circuit	Check on-board diagnostic output. Replace defective parts.	24-57
		Defective mode selection drive motor	Replace mode selection drive motor.	24-63
		Incorrect engagement of mode selection drive motor and mode selection damper	Engage correctly.	—
		Malfunctioning DEF., FACE, and FOOT damper	Correct DEF., FACE, and FOOT damper.	—
		Open-circuited harness between mode selection motor and control unit	Correct harness.	—
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61
8	Condenser fan does not operate when the air conditioning is activated.	Defective condenser fan motor relay	Replace power relay.	24-1 9
		Defective condenser fan motor	Replace condenser fan motor.	24-36
9	Air-conditioning graphic display does not function correctly	Open-circuited harness between control panel and air conditioning control unit	Correct harness.	—
		Defective control panel	Replace control panel.	24-61
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61
10	Air conditioning control panel blinks. <DOHC>	Wet compressor drive belt	Dry.	—
		Insufficient compressor drive belt tension	Check and adjust.	GROUP9
		Defective compressor drive belt	Replace.	—
		Defective compressor	Check and replace.	24-1 2, 29
		Defective revolution pick-up sensor	Check and replace.	24-34, 32
		Defective air conditioning switch	Replace air conditioning control panel	24-61
		Defective belt lock controller	Replace belt lock controller	24-62
		Defective air conditioning control unit	Replace air conditioning control unit	24-61
11	Set temperature returns to 25°C (112°F) when the ignition switch is turned ON and OFF.	Open-circuited power circuit harness	Correct harness.	—
		Defective air conditioning control unit	Replace air conditioning control unit.	24-61

READING THE “CIRCUIT AND UNIT CHECK”

3. Inspection of interior temperature sensor, air inlet sensor, and air thermo sensor circuits



Connectors are keyed by terminal numbers.

Troubleshooting Hints

- Diagnosis
 - No. 11, 12 [Fix interior temperature sensor input signal at 25°C (77°F).]
 - No. 13, 14 [Fix air inlet sensor input signal at 15°C (59°F).]
 - No. 21, 22 [Fix air thermo sensor input signal at -2°C (-35.6°F).]
- Air conditioning control unit terminal voltages

Indicates the on-board diagnostic output code number and system condition when the code is output.

Terminal No.	Signal name	Condition	Terminal voltage
55	Air inlet sensor	Temperature at sensor 25°C (77°F) (4 kΩ)	2.2 – 2.8 V
60	Sensor power source	Normally	4.8 – 5.2 V
66	Interior temperature sensor	Temperature at sensor 25°C (77°F) (4 kΩ)	2.3 – 2.9 V
67	Air thermo sensor	Temperature at sensor 25°C (77°F) (4 kΩ) when air conditioning is OFF	2.3 – 2.9 V

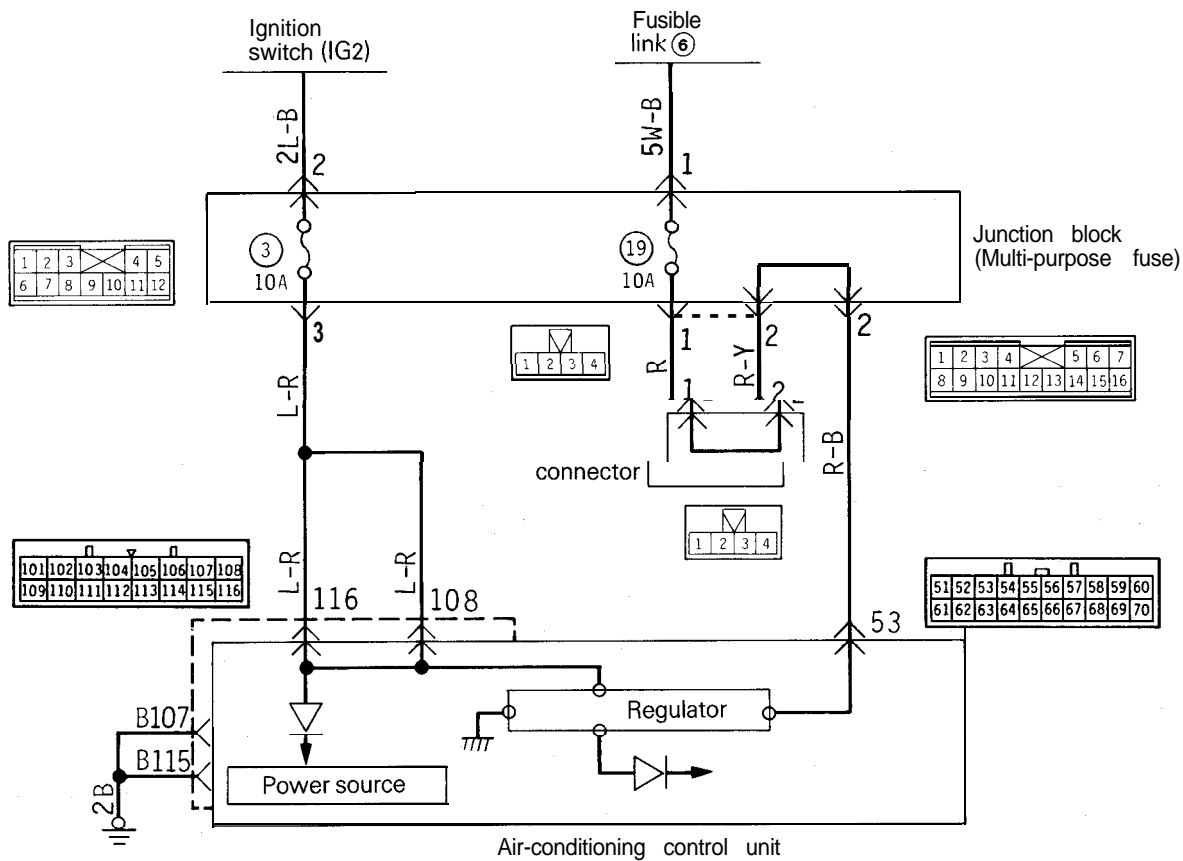
Indicates the terminal number to be checked.

Indicates the condition at terminal check.

Indicates the specification criteria. Where no condition is given in the “Condition” column, the normal specification value is given.

CIRCUIT AND BENCH CHECK

1. Inspection of air conditioning control unit power source circuit

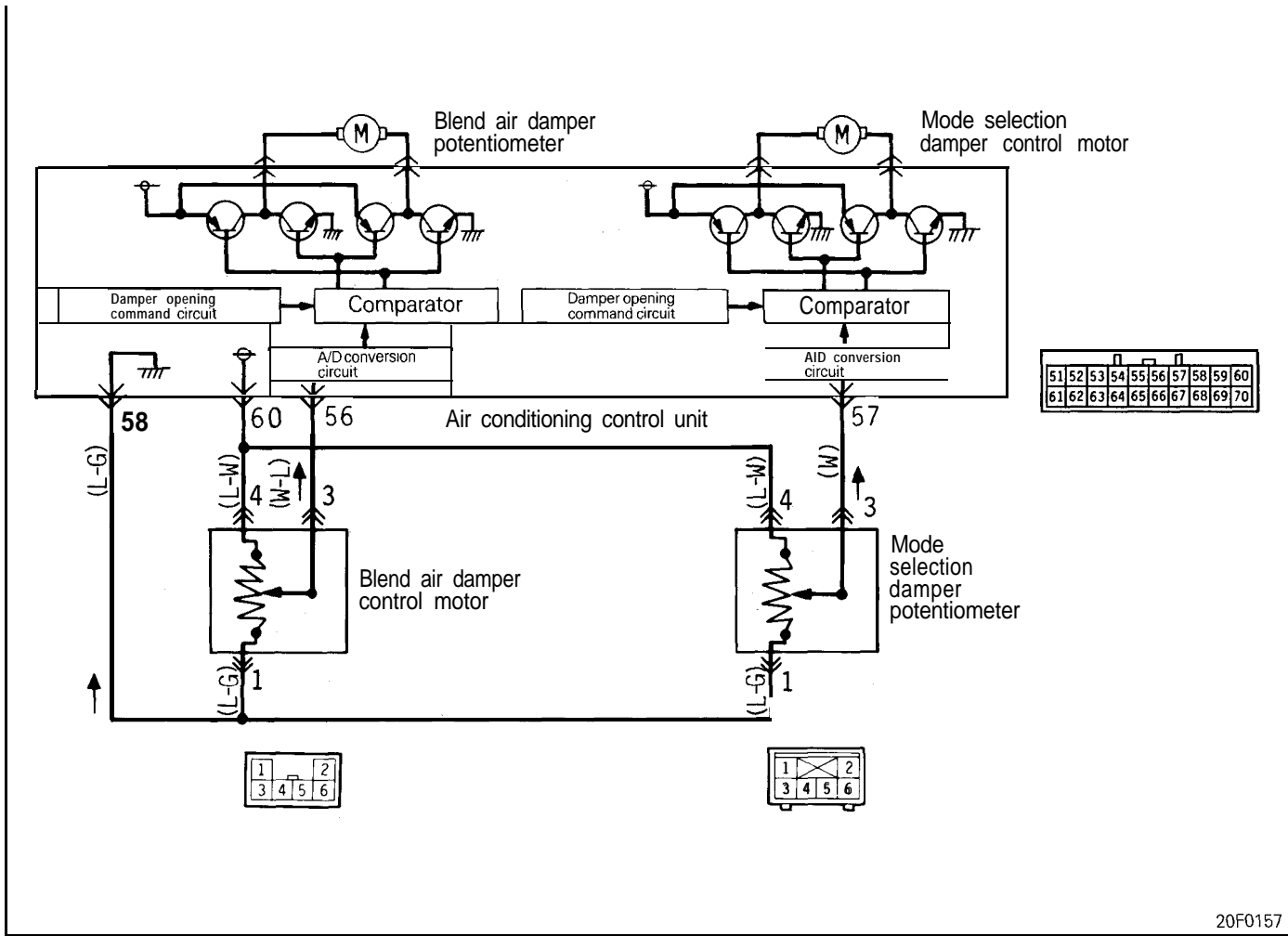


20F0153

• Air conditioning control unit terminal voltage

Terminal No.	Signal name	Condition	Terminal voltage
53	Backup power source	Normally	Battery positive voltage
108, 116	Air conditioning control unit power source	Ignition switch ON	Battery positive voltage
107, 115	Air conditioning control unit ground	Normally	0 v

2. Inspection of potentiometer circuit



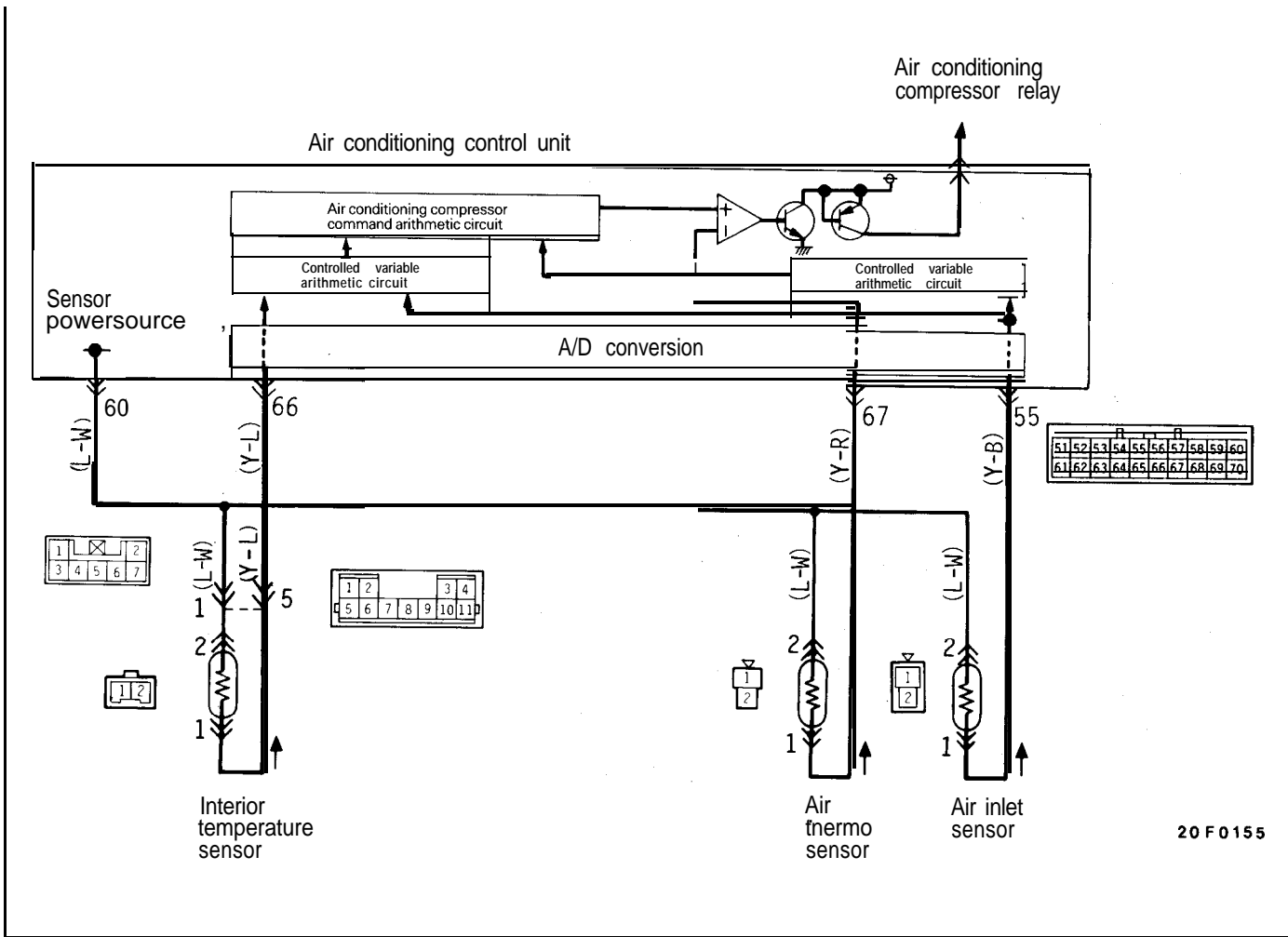
20F0157

Troubleshooting Hints

- Diagnosis
 - No. 31 (Fix blend air damper at MAX. HOT position, or at MAX: COOL position when it is at MAX. COOL position.)
 - No. 32 (Fix mode selection damper at FACE position, or at FACE position when it is at FACE position.)
- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
56	Blend air damper potentiometer (input)	Blend air damper at MAX. COOL position	0.1 – 0.3 V
		Blend air damper at MAX. HOT position	4.7 – 5.0 v
57	Mode selection damper potentiometer (input)	Mode selection damper at FACE position	0.1 – 0.3 V
		Mode selection damper at DEF. position	4.7 – 5.0 v
58	Blend air damper and mode selection damper potentiometer ⊖	Normally	0 v
60	Sensor power source	Normally	4.8 – 5.2 V

3. Inspection of interior temperature sensor, air inlet sensor, and air thermo sensor circuits



20 F 0155

Troubleshooting Hints

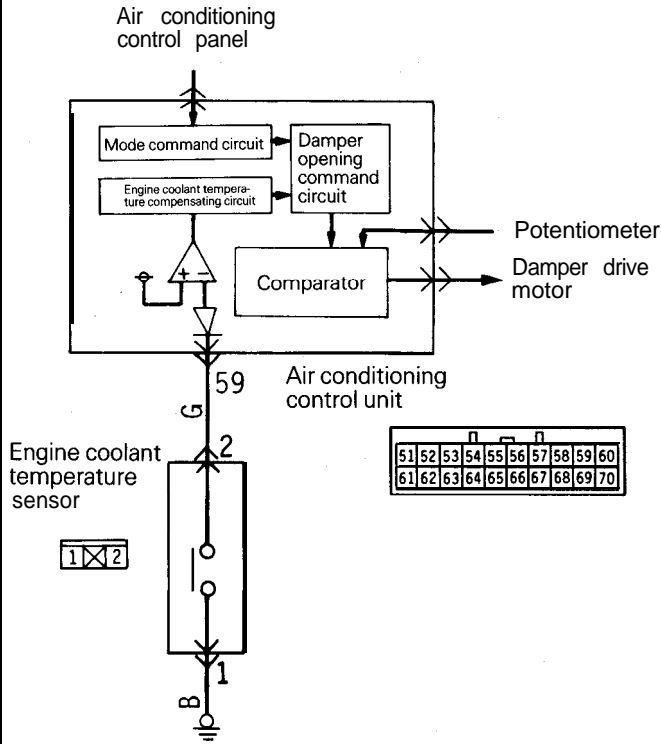
- Diagnosis
 - No. 11, 12 [Fix interior temperature sensor input signal at 25°C (77°F)]
 - No. 13, 14 [Fix air inlet sensor input signal at 15°C (59°F).]
 - No. 21, 22 [Fix air thermo sensor input signal at -2°C (-35.6°F).]
- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
55	Air inlet sensor	Temperature at sensor 25°C (77°F) (4 kΩ)	2.2 – 2.8 V
60	Sensor power source	Normally	4.8 – 5.2 V
66	Interior temperature sensor	Temperature at sensor 25°C (77°F) (4 kΩ)	2.3 – 2.9 V
67	Air thermo sensor	Temperature at sensor 25°C (77°F) (4 kΩ) when air conditioning is OFF	2.3 – 2.9 V

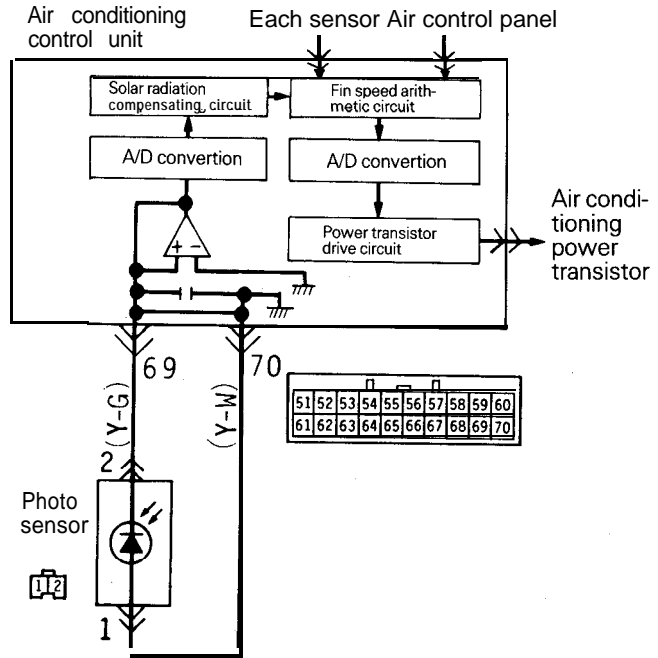
4. Inspection of engine coolant temperature sensor and photo sensor circuits

<Engine coolant temperature sensor>

<Photo sensor>



20F 0150



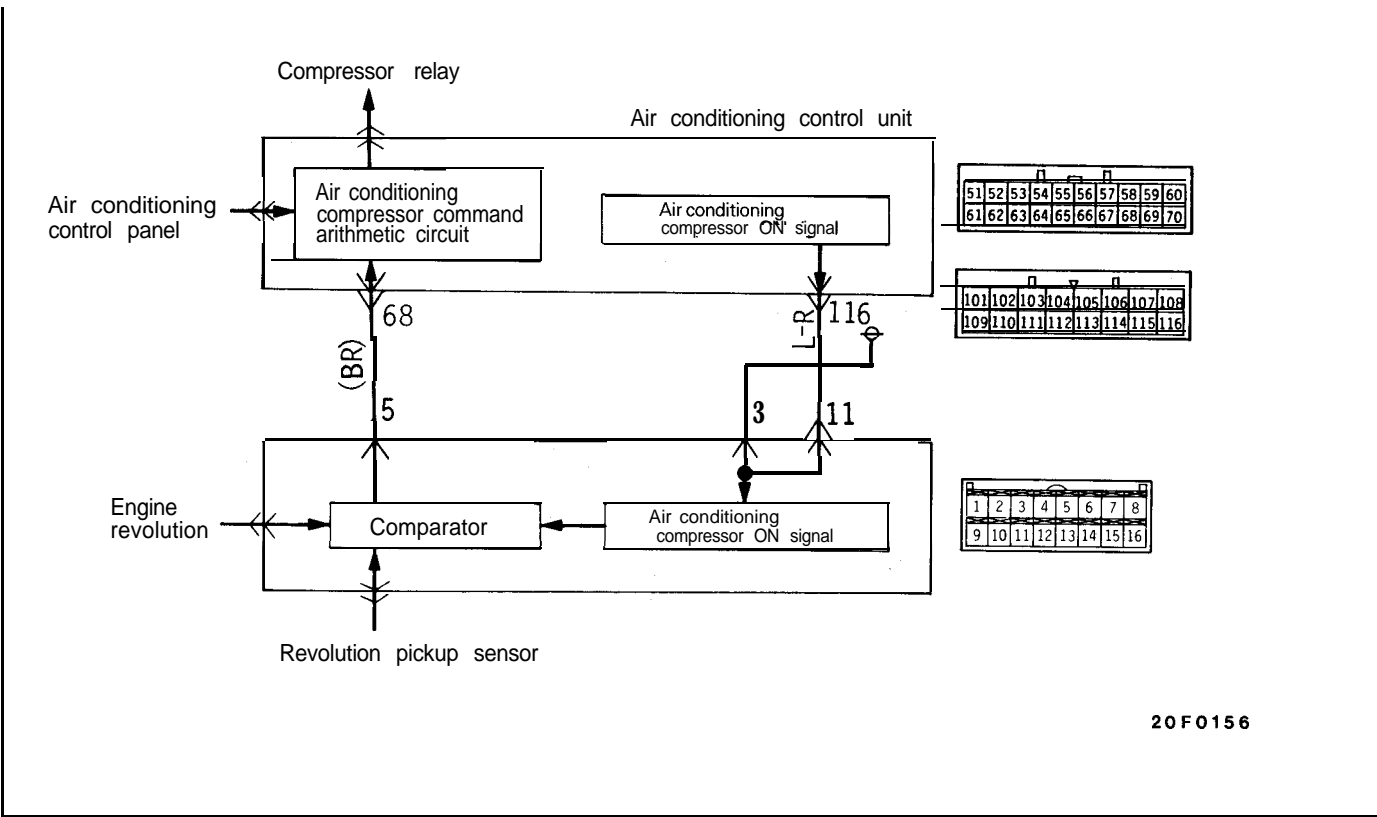
20F0149

Troubleshooting Hints

- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
69	Photo sensor ⊖	Illuminance 100,000 lux or more	-0.1 to -0.2 v
		Illuminance less than 0 lux	0 v
70	Photo sensor ⊕	Normally	0 v
59	Engine coolant temperature sensor ⊕	Switch OFF [Engine coolant temperature less than 50°C (122°F)]	Battery positive voltage
		Switch ON [Engine coolant temperature 50°C (122°F) or higher]	0 V

5. Inspection of belt lock controller circuit



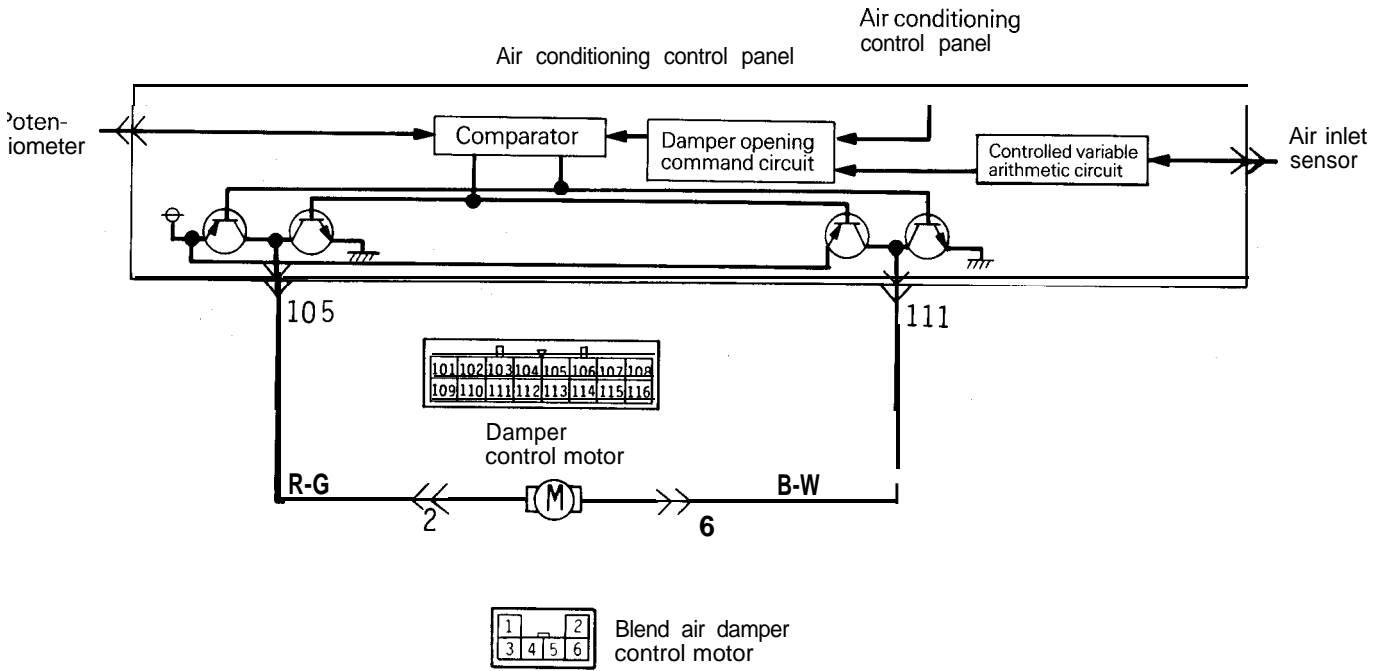
Troubleshooting Hints

- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
116	Air conditioning output	Compressor ON	10 V to battery positive voltage

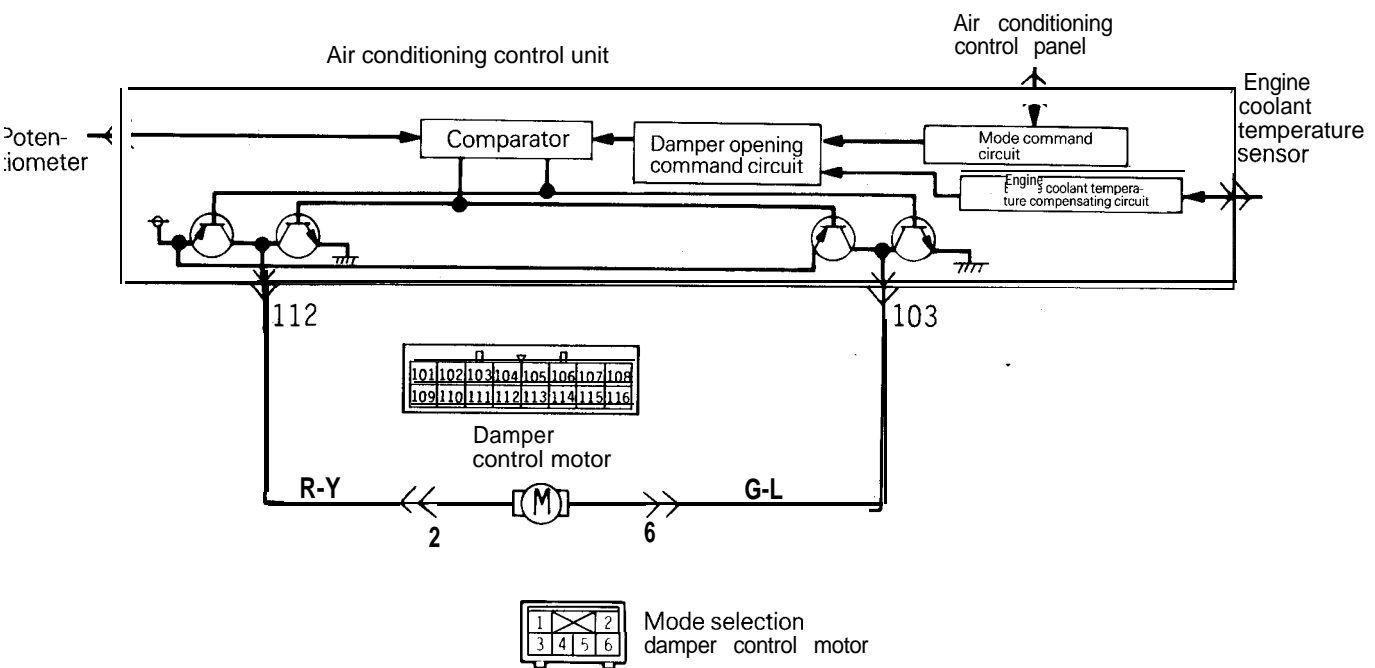
6. Inspection of blend air damper, mode selection damper, air selection damper control motor circuits

<Blend air damper control motor>

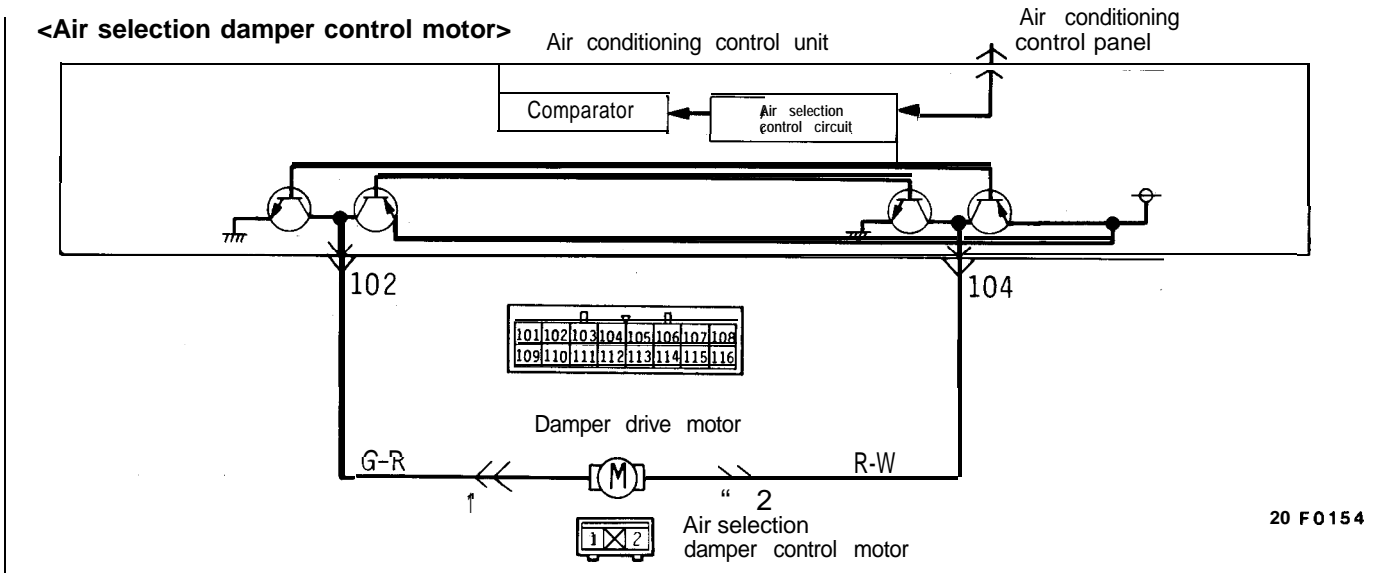


20F 0152

<Mode selection damper control motor>



20F0151

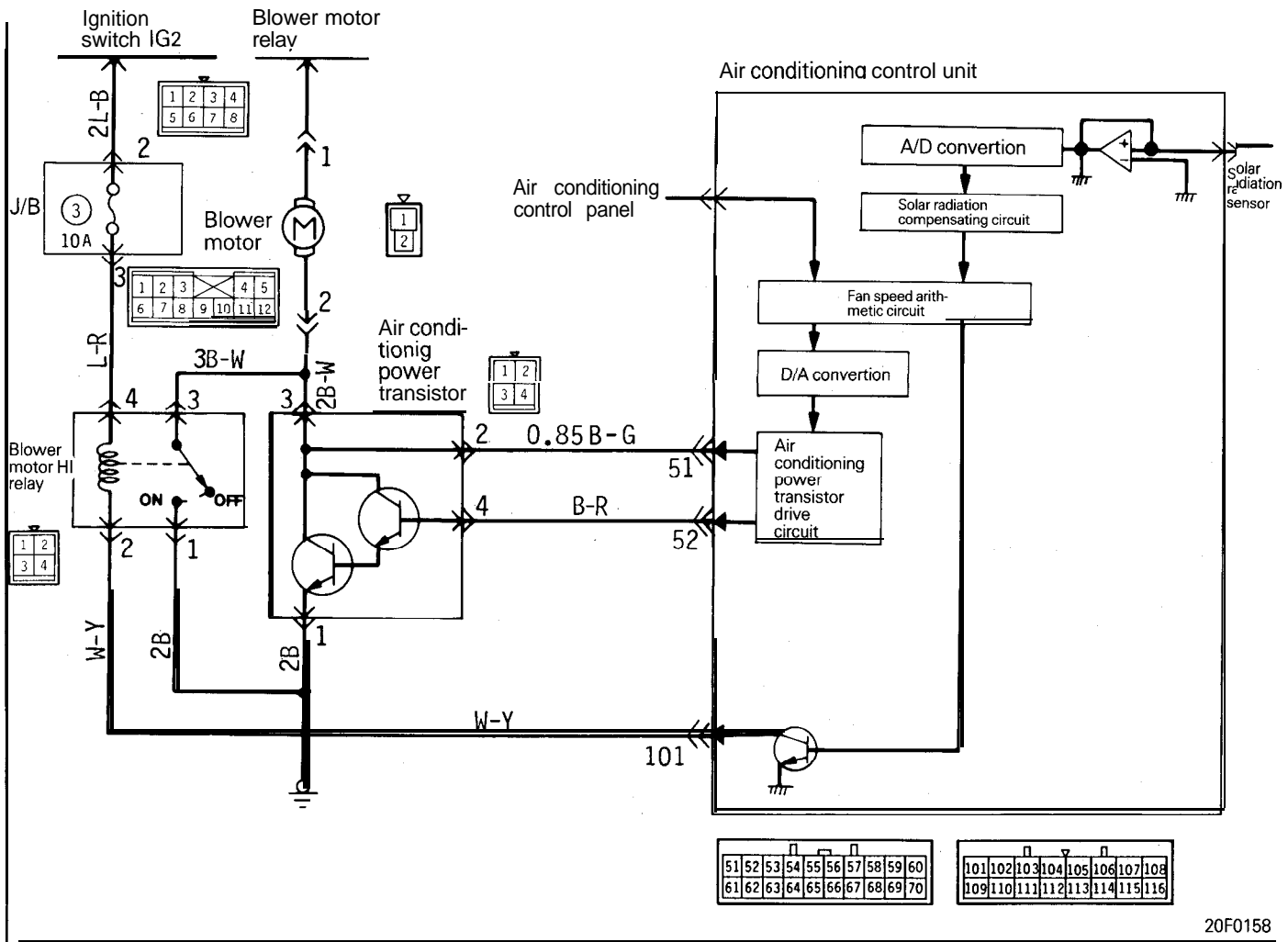


Troubleshooting Hints

- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
102	Air selection damper control motor ⊖	Inside-air switch ON (Output turns OFF 40 seconds after the damper moved to inside air position.)	0.5 v
		Outside-air switch ON (Output turns OFF 40 seconds after the damper moved to outside air position.)	10 V
103	Mode selection damper control motor ⊖	FACE switch ON (Output turns OFF 40 seconds after the damper moved to FACE position.)	0.5 v
		DEF. switch ON (Output turns OFF 40 seconds after the damper moved to DEF. position.)	10 V
104	Air selection damper control motor ⊕	Inside-air switch ON (Output turns OFF 40 seconds after inside air has been activated.)	10 V
		Outside-air switch ON (Output turns OFF 40 seconds after outside air has been activated.)	0.5 V
105	Blend air damper control motor ⊕	Temperature is set at 17°C (62.6°F). (Output turns OFF 40 seconds after the damper moved to MAX. COOL position.)	0.5 v
		Temperature is set at 32.5°C (90.5°F). (Output turns OFF 40 seconds after the damper moved to MAX. HOT position.)	10 V
111	Blend air damper control motor ⊖	Temperature is set at 17°C (62.6°F). (Output turns OFF 40 seconds after the damper moved to MAX. COOL position.)	10 V
		Temperature is set at 32.5°C (90.5°F). (Output turns OFF 40 seconds after the damper moved to MAX. HOT position.)	0.5 v
112	Mode selection damper control motor ⊕	FACE switch ON (Output turns OFF 40 seconds after the damper moved to FACE position.)	10 V
		DEF. switch ON (Output turns OFF 40 seconds after the damper moved to DEF. position.)	0.5 v

7. Inspection of air conditioning power transistor and blower motor relay circuits

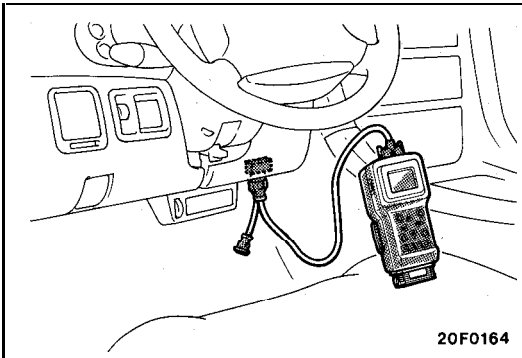


20F0158

Troubleshooting Hints

- Air conditioning control unit terminal voltages

Terminal No.	Signal name	Condition	Terminal voltage
51	Air conditioning power transistor collector	Switch is turned OFF.	Battery positive voltage
		Switch is placed in LO.	Approx. 7 V
		Switch is placed in HI.	0 v
52	Air conditioning power transistor base	Blower switch is turned OFF.	0 v
		Blower switch is placed in LO.	Approx. 1.3 V
		Blower switch is placed in HI.	Approx. 1.2 V
101	Blower motor HI relay	Fan switch HI is ON.	1.5 V or less
		Fan switch in ME, LO, or OFF.	Battery positive voltage



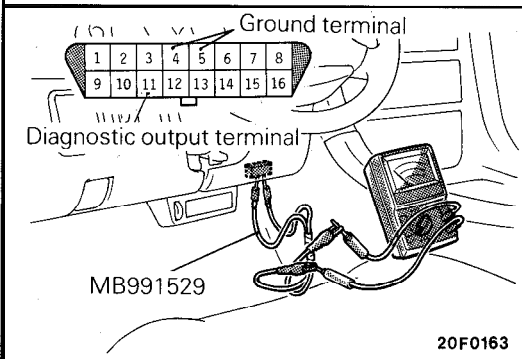
ON-BOARD DIAGNOSTIC CHECKING

When using the scan tool

Connect the scan tool to the data link connector to read out the diagnostic trouble codes.

Caution

Turn off the ignition switch beforehand whenever the scan tool is connected or disconnected.



When using the voltmeter












Connect a voltmeter to the diagnostic output terminal and the ground terminal of the data link connector using the special tool. Read out the diagnostic trouble code by observing the voltmeter pointer deflection.

SERVICE DATA

tem no.	Inspection point	Method	Criteria		Probable cause	Remedy
			Normal	Abnormal		
11	Interior temperature sensor	Measure resistance of sensor when room temperature is 25°C (77°F).	Approx. 4 kΩ	Largely deviates from approx. 4 kΩ	Defective interior temperature sensor	Replace interior temperature sensor.
		Measure voltage across terminal (16) of air conditioning control unit and ground when interior temperature is 25°C (77°F).	In approx. 2.3–2.9 V range	–	Open-circuited harness between interior temperature sensor and air conditioning control unit	Correct harness.
		–	Outside approx. 2.3–2.9 V range	Poor connection of air conditioning control unit connector or defective air conditioning control unit	Correct connector connection or replace air conditioning control unit.	
13	Air inlet sensor	Measure resistance of sensor when ambient temperature is 25°C (77°F).	Approx. 4 kΩ	Largely deviates from approx. 4 kΩ	Defective air inlet sensor	Replace air inlet sensor.
		Measure voltage across terminal (6) of air conditioning control unit and ground when ambient temperature is 25°C (77°F).	In approx. 2.2–2.8 V range	–	Open-circuited harness between air inlet sensor and air conditioning control unit	Correct harness.
		–	Outside approx. 2.2–2.8 V range	Poor connection of air-conditioning control unit connector or defective air conditioning control unit	Correct connector connection or replace air conditioning control unit.	
15	Engine coolant temperature sensor	Measure resistance of sensor when engine coolant temperature is 22.5 to 30.5°C (57.6 to 86.9°F).	Conductive	Nonconductive	Defective engine coolant temperature sensor	Replace engine coolant temperature sensor.
		Measure voltage across terminal (8) of air conditioning control unit and ground when engine coolant temperature is 22.5 to 30.5°C (57.6 to 86.9°F).	Approx. 12 V	–	Open-circuited harness between engine coolant temperature sensor and air conditioning control unit	Correct harness.
		–	Largely deviates from approx. 12 V	Poor connection of air conditioning control unit connector or defective air conditioning control unit	Correct connector connection or replace air conditioning control unit.	
21	Air thermo sensor	Measure resistance of sensor when sensor's sensing temperature is 25°C (77°F).	Approx. 4 kΩ	Largely deviates from approx. 4 kΩ	Defective air thermo sensor	Replace air thermo sensor.
		Measure voltage across terminal (17) of air conditioning control unit and ground when sensor's sensing temperature is 25°C (77°F).	In approx. 2.3–2.9 V range	–	Open-circuited harness between air thermo sensor and air conditioning control unit	Correct harness.
		–	Outside approx. 2.3–2.9 V range	Poor connection of air conditioning control unit	Correct connector connection or replace air conditioning control unit.	

tem no.	Inspection point	Method	Criteria		Probable cause	Remedy	
			Normal	Abnormal			
31	Blend air damper potentiometer	Refer to p. 24-64.				Defective blend air damper potentiometer	Replace blend air damper potentiometer.
		Measure voltage across terminal ⑧ of air conditioning control unit and ground when potentiometer is in MAX. COOL position.	In approx. 0.1 – 0.3 V range	–		Open-circuited harness between blend air damper potentiometer and air conditioning control unit	Correct harness.
			–	Outside approx. 0.1 – 0.3 V range		Poor connection of air conditioning control unit connector or defective air conditioning control unit	Correct connector connection or replace air conditioning control unit.
33	Mode selection damper potentiometer	Refer to p. 24-64.				Defective mode selection damper potentiometer	Replace mode selection damper potentiometer.
		Measure voltage across terminal ⑧ of air conditioning control unit and ground when potentiometer is in FACE position,	In approx. 0.1 – 0.3 V range	–		Open-circuited harness between mode selection damper potentiometer and air conditioning control	Correct harness.
			–	Outside approx. 0.1 – 0.3 V range		Poor connection of air conditioning control unit connector or defective air conditioning control unit	Correct connector connection or replace air conditioning control unit.

DIAGNOSIS DISPLAY PATTERNS AND CODES

Code	Display pattern (output codes) (use with voltmeter)	Cause	Fail safe
0	ON OFF  Continuous	Normal	—
11		Open-circuited interior temperature sensor	Condition in which 25°C (77°F) is detected
12		Short-circuited interior temperature sensor	
13		Open-circuited air inlet sensor	Condition in which 20°C (68°F) is detected
14	 12A0104	Short-circuited air inlet sensor	
21		Open-circuited air thermo sensor	Condition in which -2°C (-35.6°F) is detected
22		Short-circuited air thermo sensor	
31		Short-circuited and open-circuited blend air damper potentiometer	MAX. HOT (or MAX. COOL when it is at MAX. COOL)
32	 12A0107	Short-circuited and open-circuited mode selection damper potentiometer	DEF. (or FACE when it is at FACE)
41		Defective blend air damper motor	—
42	 12A0105	Defective mode selection damper motor	—

- NOTE: (1) If two or more abnormal conditions occur at the same time, the code numbers are alternately displayed, in order, repeatedly.
 (2) The nature of the malfunction is entered and stored in the memory from the time the malfunction occurs until the ignition switch is next turned to OFF.

SAFETY PRECAUTIONS

Same as those given in HEATER AND MANUAL AIR CONDITIONING. (Refer to 24-10.)

SERVICE ADJUSTMENT PROCEDURES

Same as those given in HEATER AND MANUAL AIR CONDITIONING. (Refer to 24-1 1.)

AIR CONDITIONING CONTROL PANEL, AIR CONDITIONING CONTROL UNIT

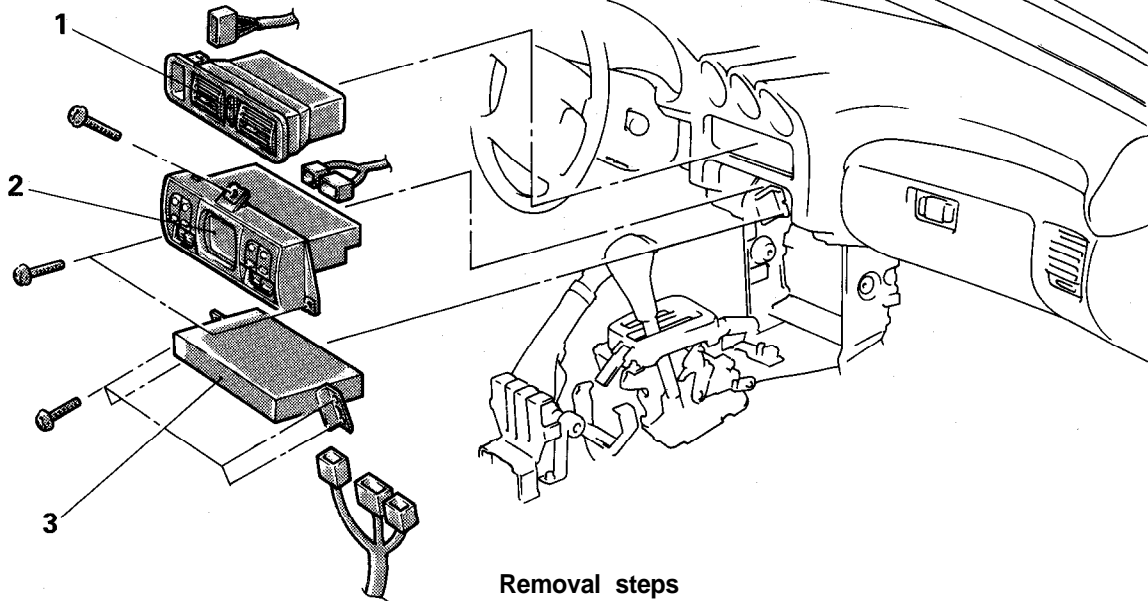
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

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

CAUTION: SRS

When installing or removing the floor console, don't allow any impact or shock to the SRS diagnosis unit.

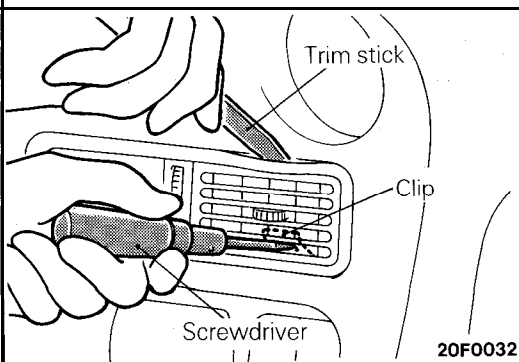


Removal steps



1. Center air outlet assembly
2. Air conditioning control panel
3. Air conditioning control unit

20F0069

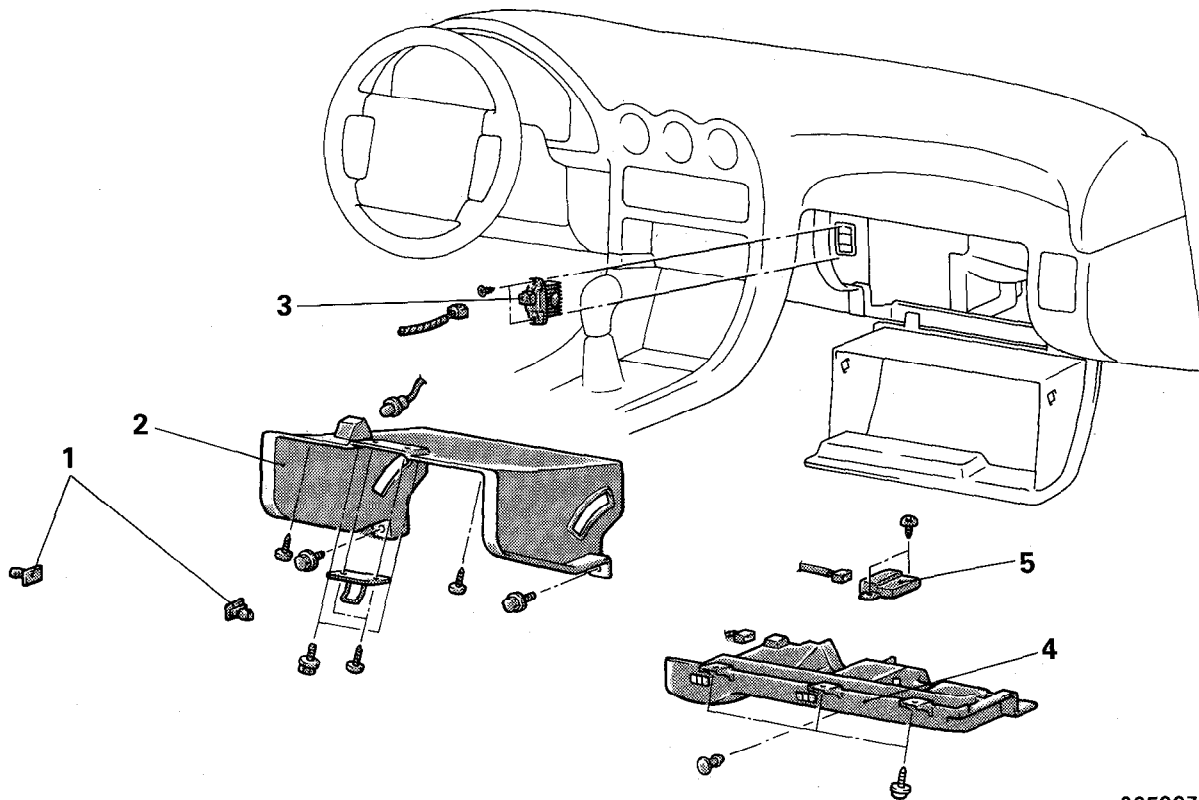


20F0032

SERVICE POINT OF REMOVAL

1. REMOVAL OF CENTER AIR OUTLET ASSEMBLY

Disengaging the clips (2 positions) of the center air outlet assembly with a flat tip screwdriver, remove the center air outlet assembly with a plastic trim stick.

POWER TRANSISTOR, BELT LOCK CONTROLLER**REMOVAL AND INSTALLATION****Power transistor removal steps**

1. Stopper
2. Glove box outer case assembly
3. Power transistor

Belt lock controller removal steps

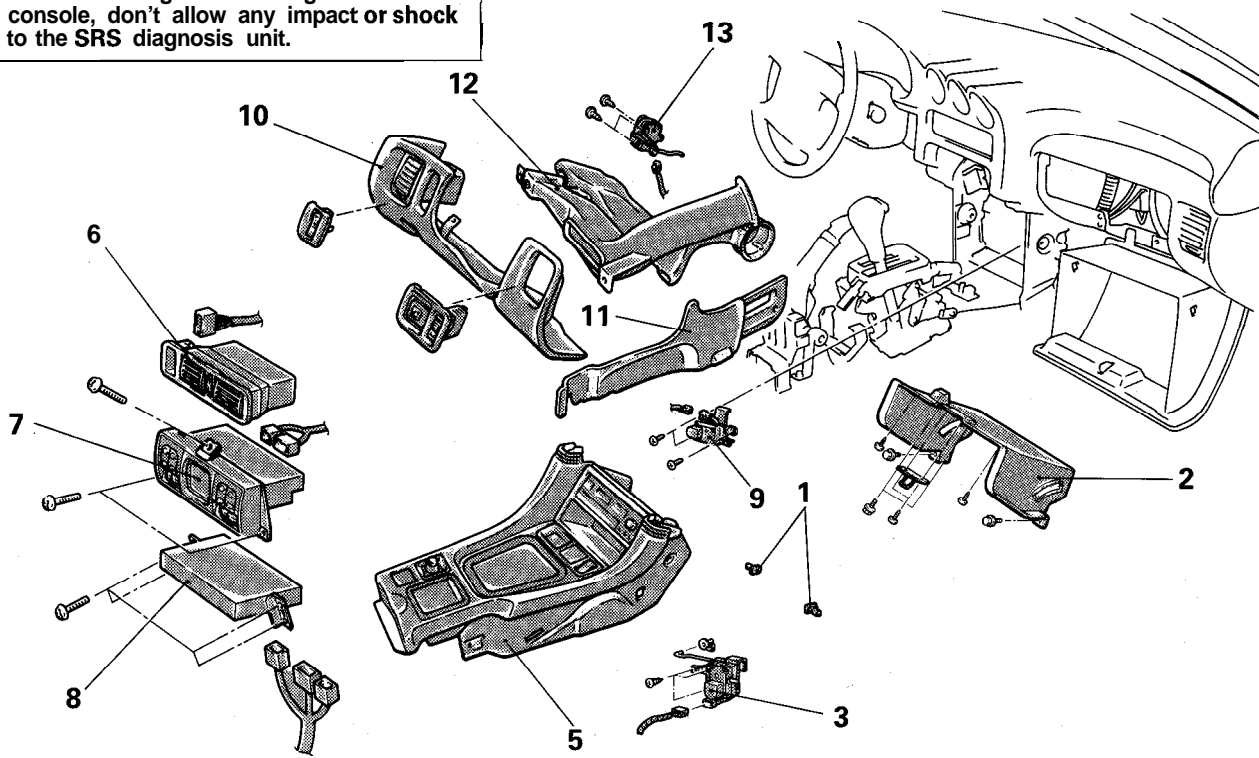
4. Under cover
5. Belt lock controller

20F0073

DAMPER CONTROL MOTOR ASSEMBLY

REMOVAL AND INSTALLATION

CAUTION: SRS
When installing or removing the floor console, don't allow any impact or shock to the SRS diagnosis unit.



20F0077

Air selection damper motor assembly removal steps

1. Stopper
2. Glove box outer case
3. Air selection damper motor assembly

Mode selection damper motor assembly removal steps

10. Knee protector
11. Side console cover
12. Shower duct and lap cooler duct
13. Mode selection damper motor assembly

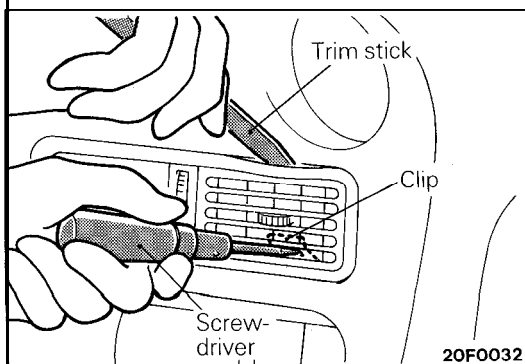
Blend air damper motor assembly removal steps

- * • + 4. Floor console (Refer to GROUP 23A – Floor Console.)
- ↔ 5. Air conditioning control unit
- ↔ 6. Center outlet assembly
- ↔ 7. Air conditioning control panel
- ↔ 8. Air conditioning control unit
- ↔ 9. Blend air damper motor assembly

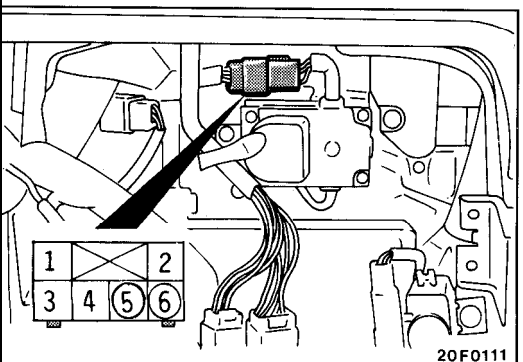
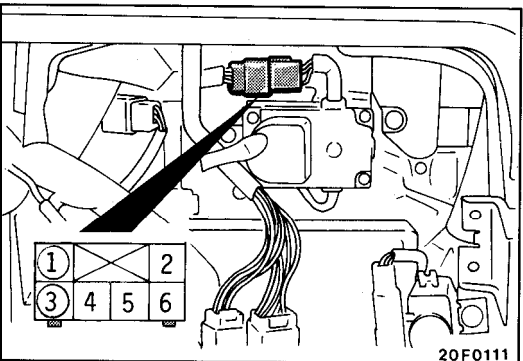
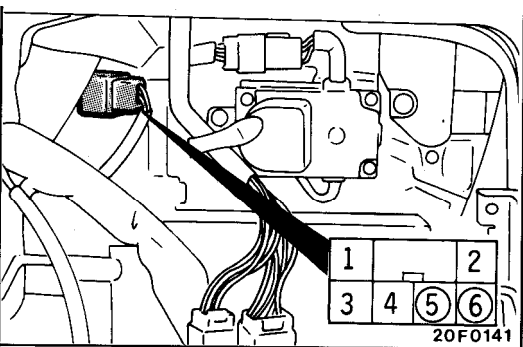
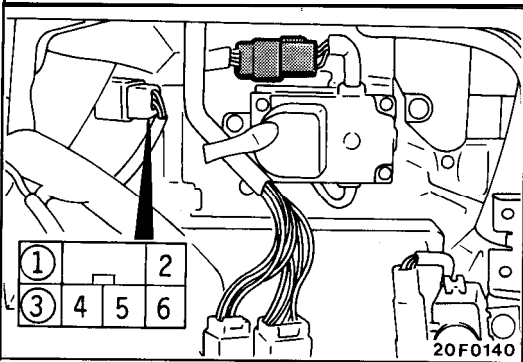
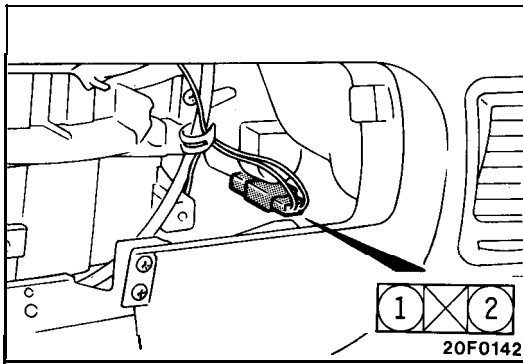
SERVICE POINTS OF REMOVAL

6. REMOVAL OF CENTER AIR OUTLET ASSEMBLY

Disengaging the clips (2 positions) of the center air outlet assembly with a flat tip screwdriver, remove the center air outlet assembly with a plastic trim tool.



20F0032



INSPECTION

INSPECTION OF AIR SELECTION DAMPER MOTOR ASSEMBLY

Check that the motor rotates when battery voltage is applied to the connector on the motor assembly side.

Check also that the motor rotates in the backward direction when polarity is changed.

Caution

1. Cut off the voltage when the damper is in the **RECIRCULATION** or **FRESH** position.
2. Cut off the voltage if the motor does not turn when battery voltage is applied.

INSPECTION OF BLEND AIR DAMPER MOTOR

Check that the motor rotates when battery voltage is applied across terminals ① and ③ of motor assembly side connector. Check also that the motor turns in the backward direction when polarity is changed.

Caution

1. Cut off the voltage when the damper is in the **MAX. HOT** or **MAX. COOL** position.
2. Cut off the voltage if the motor does not turn when battery voltage is applied.

INSPECTION OF BLEND AIR DAMPER POTENTIOMETER

Connect a circuit tester across terminals ⑤ and ⑥ of the motor assembly connector and check that resistance gradually changes as the damper is moved from **MAX. HOT** to **MAX. COOL** position.

Standard value

MAX. HOT: Approx. 0.2 k Ω

MAX. COOL: Approx. 4.8 k Ω

INSPECTION OF MODE SELECTION DAMPER MOTOR

Check that the motor turns when battery voltage is applied across terminals ① and ③ of the motor assembly connector. Check also that the motor turns in the backward direction when polarity is changed.

Caution

1. Cut off the voltage when the damper is in the **DEF.** or **FACE** position.
2. Cut off the voltage if the motor does not turn when battery voltage is applied.

INSPECTION OF MODE SELECTION DAMPER POTENTIOMETER

Connect a circuit tester across terminals ⑤ and ⑥ of the motor assembly connector and check that resistance gradually changes as the damper is moved from **DEF.** to **FACE** position.

Standard value

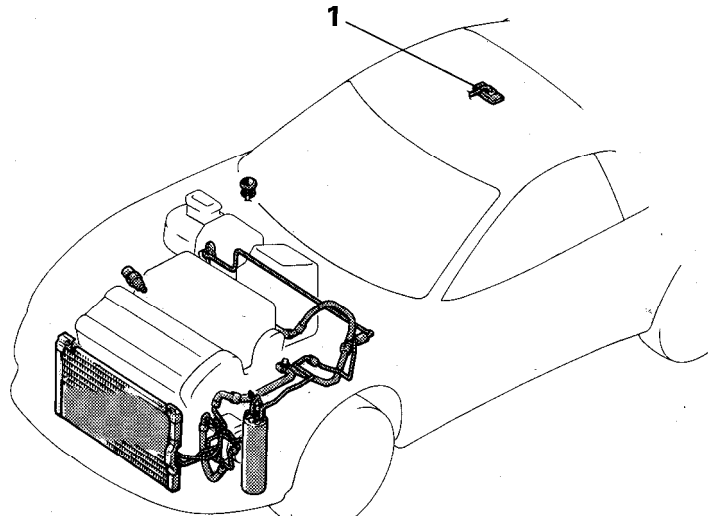
DEF. position: Approx. 0.2 k Ω

FACE position: Approx. 4.8 k Ω

SENSORS

REMOVAL AND INSTALLATION

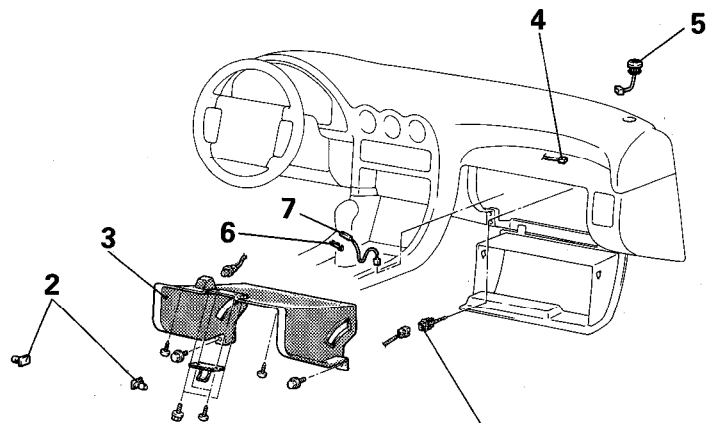
- ↔ 1. Interior temperature sensor



20F0053

Photo sensor removal steps

- 2. Stopper
- 3. Glove box outer case
- ↔ 4. Photo sensor connector connection
- 5. Photo sensor



20F0075

Engine coolant temperature sensor removal steps

- 2. Stopper
- 3. Glove box outer case assembly
- 6. Plate
- 7. Engine coolant temperature sensor

Air inlet sensor removal steps

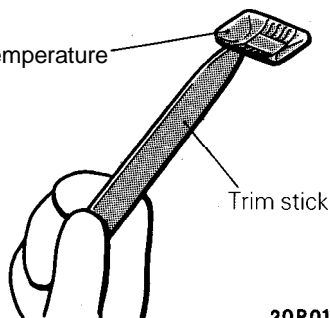
- 2. Stopper
- 3. Glove box outer case assembly
- 8. Air inlet sensor

SERVICE POINTS OF REMOVAL

1. REMOVAL OF INTERIOR TEMPERATURE SENSOR

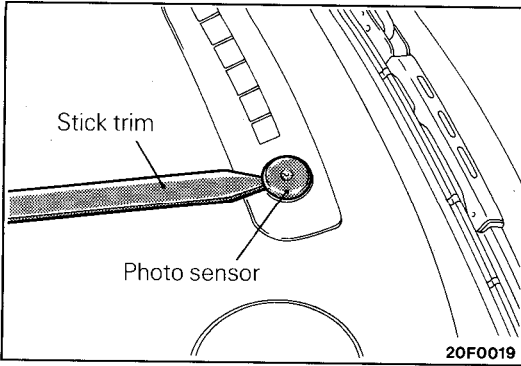
Using the trim stick, remove the interior temperature sensor from the headlining.

Interior temperature sensor



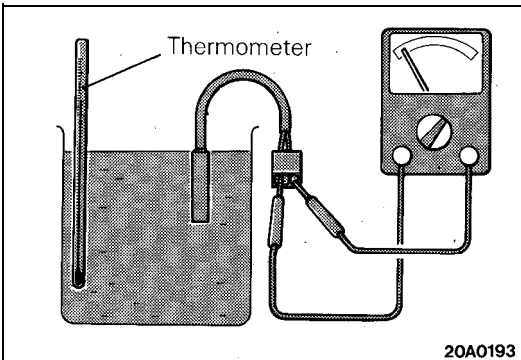
Trim stick

20P016



5. REMOVAL OF PHOTO SENSOR

Using a trim stick, remove the photo sensor from the defroster garnishes.



INSPECTION

ENGINE COOLANT TEMPERATURE SENSOR

- (1) Dip the engine coolant temperature sensor in hot water and, using a stove, etc., raise the engine coolant temperature.
- (2) Check that the engine coolant temperature sensor is conductive when the engine coolant temperature reaches the specified temperature.

Standard value: $26.5 \pm 4^{\circ}\text{C}$ ($79.7 \pm 7.2^{\circ}\text{F}$)

AIR INLET SENSOR

The condition can be considered normal if the resistances are measured within the ranges of 3.98 – 4.12 kilohms and 2.21 – 2.35 kilohms, respectively, when the air inlet sensor is submerged in warm water of 25°C (77°F) and 40°C (104°F) for one minute or longer each.

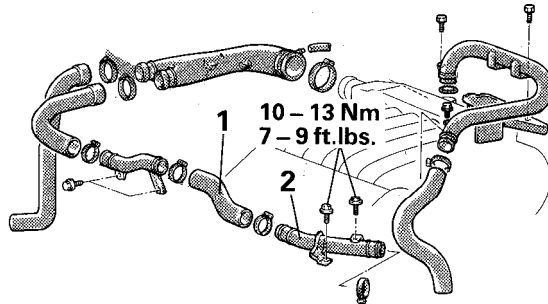
NOTE

The relationship between the air inlet temperature and the resistance values is as shown below.

Ambient temperature °C (°F)	-10 (14)	0 (32)	10 (50)	20 (68)	25 (77)	30 (86)	40 (104)
Resistance value (reference) kΩ	19.06	11.71	7.45	4.89	4.00	3.30	2.28

COMPRESSOR, CONDENSER, CONDENSER FAN MOTOR, REFRIGERANT LINE

The service procedures are the same as those for manual air conditioning except for those parts described below on turbocharged vehicles.



Compressor, condenser and condenser fan motor, refrigerant line removal steps

- + 1. Air hose B
- + 2. Air pipe

NOTE
Torque hose clamps to 4 Nm (2.9 ft.lbs.).

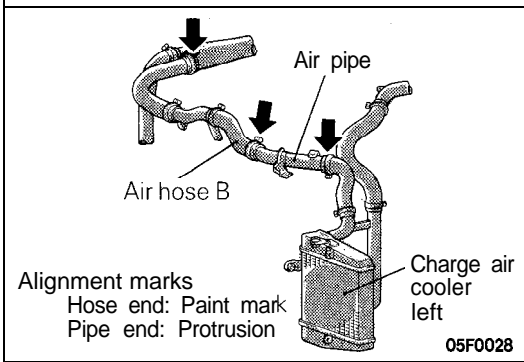
SERVICE POINTS OF INSTALLATION

2. INSTALLATION OF AIR PIPE / 1. AIR HOSE B

When installing the air hoses, make sure that the alignment marks at places indicated by arrows are properly aligned. Insert each air hose until it hits the root of step or its bottoms.

Caution

Be careful not to allow any foreign matter to get into the hoses, pipes, or the charge air cooler itself.



OTHER PARTS

Service procedures for other parts are the same as those in HEATER AND MANUAL AIR CONDITIONING.

Part name	Ref. page	Part name	Ref. page
Heater Unit	P.24-24	Evaporator – Disassembly and Reassembly	P.24-28
Blower Motor Assembly	P.24-25	Compressor – Disassembly and Reassembly	P.24-32
Evaporator – Removal and Installation	P.24-27	Ventilators	P.24-40

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