HEATER, AIR CONDITIONER AND VENTILATION

CONTENTS

55109000065

GENERAL INFORMATION 3
Safety Precautions 3

SERVICE SPECIFICATIONS 4

LUBRICANTS 4

SPECIAL TOOLS 4

TROUBLESHOOTING 5

ON-VEHICLE SERVICE 7
Sight Glass Refrigerant Level Test 7
Magnetic Clutch Test 7
Receiver Drier Test 7
Dual Pressure Switch Check 8

CONTINUED ON NEXT PAGE

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 and passenger (from rendering the SRS inoperative).

(2) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.

(3) MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B – Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.

NOTE
The SRS includes the following components: SRS-ECU, SRS warning lamp, 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 (*).

Compressor Drive Belt Adjustment 8
Charging 9
Performance Test 14
Refrigerant Leak Repair 15
Compressor Noise 16
Power Relay Check 16
Idle-up Operation Check 17

HEATER CONTROL ASSEMBLY AND A/C SWITCH 18

HEATER UNIT AND HEATER CODE* 21

BLOWER ASSEMBLY AND RESISTOR <EXCEPT R.H. DRIVE VEHICLES WITH A/C>* 22

EVAPORATOR <L.H. DRIVE VEHICLES WITH A/C> 24

EVAPORATOR, BLOWER UNIT AND RESISTOR <R.H. DRIVE VEHICLES WITH A/C> 26

COMPRESSOR AND TENSION PULLEY 28

REFRIGERANT LINE 32

CONDENSER AND CONDENSER FAN MOTOR 35

VENTILATORS 37

GENERAL INFORMATION

55200010107

The heater system uses a two-way-flow full-air-mix system that features high performance and low operating noise, and includes an independent face air blowing function and a cool air bypass function.

The A/C system is basically the same as the conventional system, but a new refrigerant system has been adopted as a response to restrictions on the use of chlorofluorocarbons.

Items		Specifications
Heater unit	Type	Two-way-flow full-air-mix system
Heater control assembly		Dial type
Compressor	Model	Scroll type <MSC90>
Dual pressure switch kPa	High pressure switch	ON → OFF: 3,138, OFF → ON: 2,550
	Low pressure switch	ON → OFF: 196, OFF → ON: 221
Refrigerant and quantity g		R-134a (HFC-134a), Approx. 555–595

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.
Refrigerant R-134a is transparent and colourless in both the liquid and vapour state. Since it has a boiling point of –29.8°C, at atmospheric pressure, it will be a vapour at all normal temperatures and pressures. The vapour 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 A/C 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 cold water. Call your doctor immediately even though irritation has ceased after treatment.

Caution
Do not heat R-134a above 40°C

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 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 metering 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
1. **The leak detector for R-134a should be used to check for refrigerant gas leaks.**
2. **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 SPECIFICATIONS

55200030110

Items		Standard value
Idle speed r/min	4G1, 4G9 (except MVV)	750±100
	4G9 (MVV)	700±100
Idle up speed r/min		850±100
Resistor (for blower motor) <L.H. drive vehicles> Ω		LO: 2.21, ML: 0.97, MH: 0.35
Resistor (for blower motor) <R.H. drive vehicles> Ω		LO: 2.81, ML: 1.28, MH: 0.33
Air gap (Magnetic clutch)		0.40 – 0.65

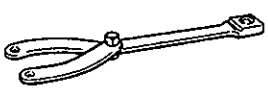
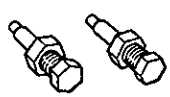
LUBRICANTS

55200040113

Items	Specified lubricants	Quantity
Each connection of refrigerant line	SUN PAG 56	As required
Compressor refrigerant unit lubricant mℓ	SUN PAG 56	120

SPECIAL TOOLS

55200060096

Tool	Number	Name	Use
	MB991367	Special spanner	Removal and installation of armature mounting nut of compressor
	MB991386	Pin	Removal and installation of armature mounting nut of compressor

TROUBLESHOOTING

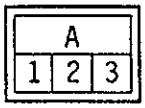
55200070112

TROUBLESHOOTING PROCEDURES

Trouble symptom	Problem cause	Remedy	Reference page
When the ignition switch is "ON", the A/C does not operate.	A/C compressor relay is defective	Replace A/C compressor relay	55-17
	Magnetic clutch is defective	Replace the armature plate, rotor or clutch coil	55-30
	Refrigerant leak or overfilling of refrigerant	Replenish the refrigerant, repair the leak or take out some of the refrigerant	55-15
	Dual pressure switch is defective	Replace the dual pressure switch	55-32
	A/C switch is defective	Replace the A/C switch	55-18
	Blower switch is defective	Replace the blower switch	55-18
	Refrigerant temperature switch is defective	Replace the refrigerant temperature switch	55-28
	Automatic compressor-ECU is defective	Replace the automatic compressor-ECU	55-25
When the A/C is operating, temperature inside the passenger compartment doesn't decrease (cool air is not emitted).	Refrigerant leak	Replenish the refrigerant and repair the leak	55-15
	Dual pressure switch is defective	Replace the dual pressure switch	55-32
	Refrigerant temperature switch is defective	Replace the refrigerant temperature switch	55-28
	Automatic compressor ECU is defective	Replace the automatic compressor-ECU	55-25
Blower fan and motor doesn't turn	Blower relay is defective	Replace the blower relay	55-16
	Blower fan and motor is defective	Replace the blower fan and motor	55-22, 26
	Resistor (for blower motor) is defective	Replace the resistor	55-22, 26
	Blower switch is defective	Replace the blower switch	55-18
Blower fan and motor doesn't stop turning.	Short circuit of the harness between the blower fan and motor and the blower switch	Repair the harness	–
	Blower switch is defective	Replace the blower switch	55-18
	Blower relay is defective	Replace the blower relay	55-16
When the A/C is operating condenser fan does not turn.	Condenser fan motor is defective	Replace the condenser fan motor	55-35
	Condenser fan relay is defective	Replace the condenser fan relay	55-17
	Dual pressure switch is defective	Replace the dual pressure switch	55-32

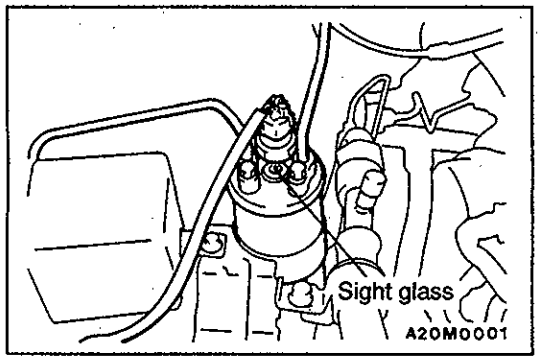
INSPECTION AT THE AUTOMATIC COMPRESSOR-ECU TERMINAL

55201030010



20M0065

Terminal No.	Check item	Checking requirements	Normal condition
1	Output from ECU to A/C compressor relay	A/C compressor relay: OFF	Battery voltage
		A/C compressor relay: ON	0 V
2	Input from A/C switch to ECU	A/C switch: OFF	0 V
		A/C switch: ON	Battery voltage
3	Earth	Always	0V

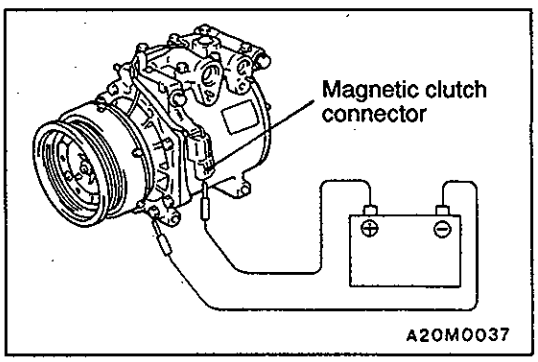


ON-VEHICLE SERVICE 55200840089

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 A/C 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 some refrigerant.
3. If the sight glass shows foam or bubbles, the system could be low on charge. The system has to be recharged with refrigerant.

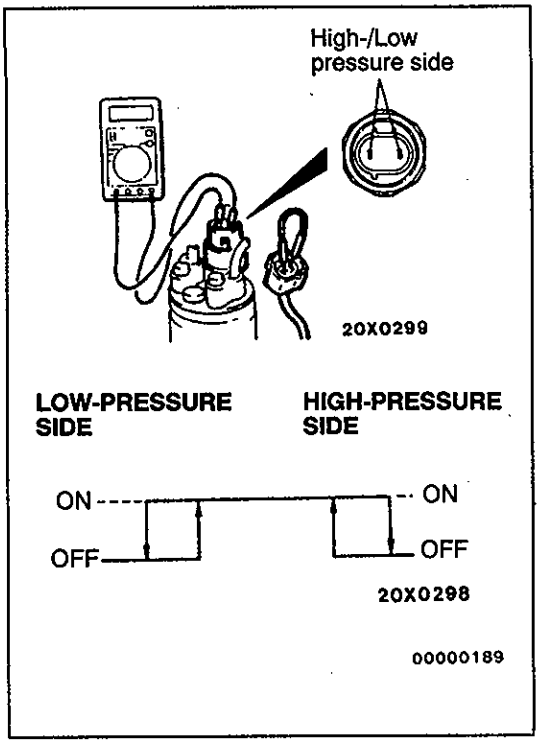


MAGNETIC CLUTCH TEST 55200850044

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

RECEIVER DRIER TEST 55200860047

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



DUAL PRESSURE SWITCH CHECK 55201040105

1. Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
2. Install a gauge manifold to the high pressure side service valve of the refrigerant line. (Refer to Performance Test.)
3. When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and there is continuity between the respective terminals, then the condition is normal. If there is no continuity, replace the switch.

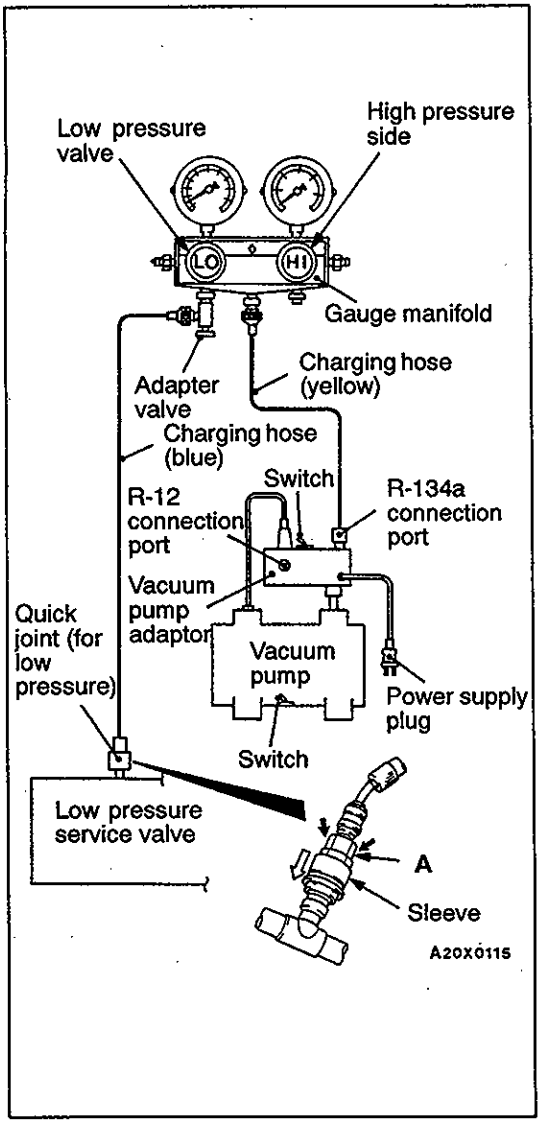
Unit: kPa

Items	Switch position	
	OFF → ON	ON → OFF
Low-pressure side	221	196
High-pressure side	2,550	3,138

COMPRESSOR DRIVE BELT ADJUSTMENT

55200100101

Refer to GROUP 11 – On-vehicle Service.



CHARGING

55200120046

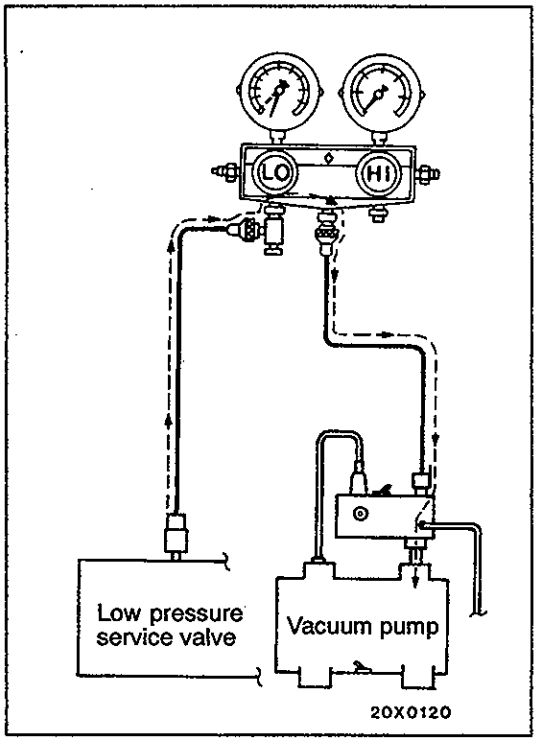
1. With the handles turned back all the way (valve closed), install the adaptor valve to the low-pressure side of the gauge manifold.
2. Connect the charging hose (blue) to the adaptor valve.
3. Connect the quick joint (for low pressure) to the charging hose (blue).
4. Connect the quick joint (for low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

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

   Caution
   1. Use tools that are suited to 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.

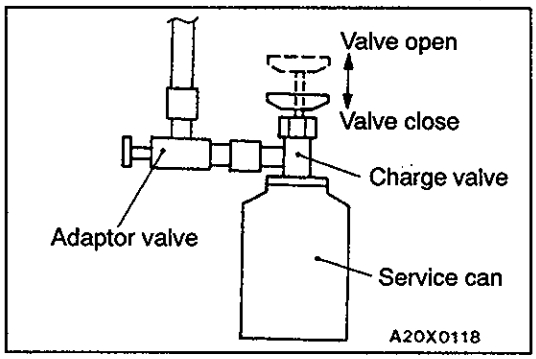
    Caution
    Do not operate the compressor for evacuation.

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

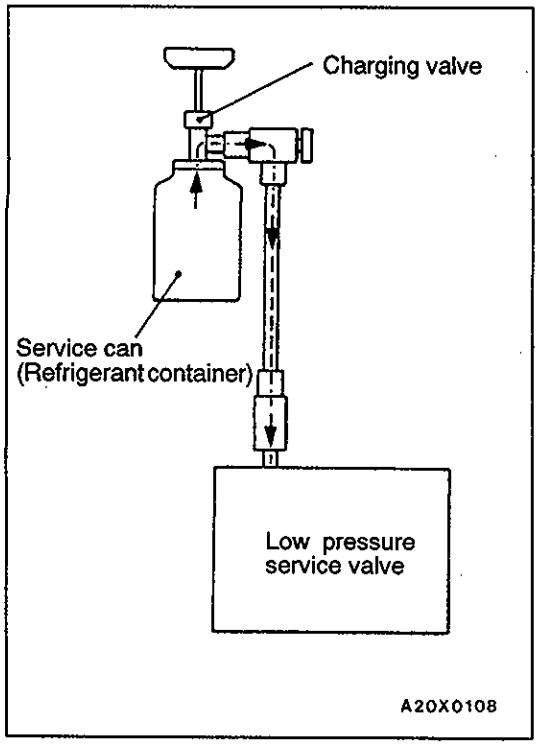
    Caution
    Do not operate the compressor in the vacuum condition; damage may occur.

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

    Caution
    If the negative pressure drops, increase the tightness of the connections, and then repeat the evacuation procedure from step (12).



16. With the handle turned back all the way (valve open), install the charging valve to the service van.
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).

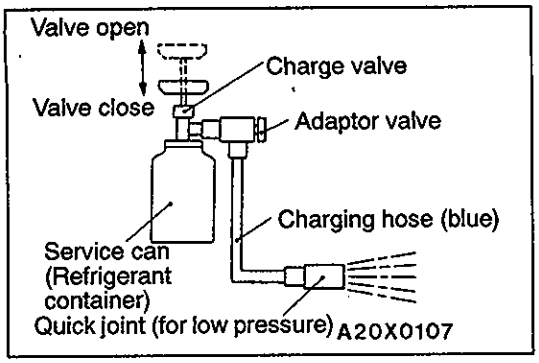
    Caution
    The leak detector for R-134a should be used.

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 r/min.
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.

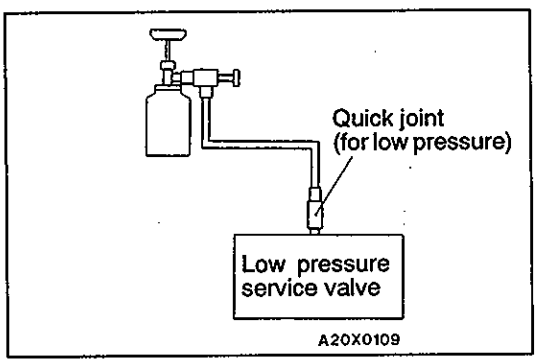
26. After charging with refrigerant, turn the handle of the adaptor valve back all the way (valve closed).
27. Tighten the charging valve handle (valve closed).
    Remove the quick joint (for low pressure) from the low-pressure service valve.

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



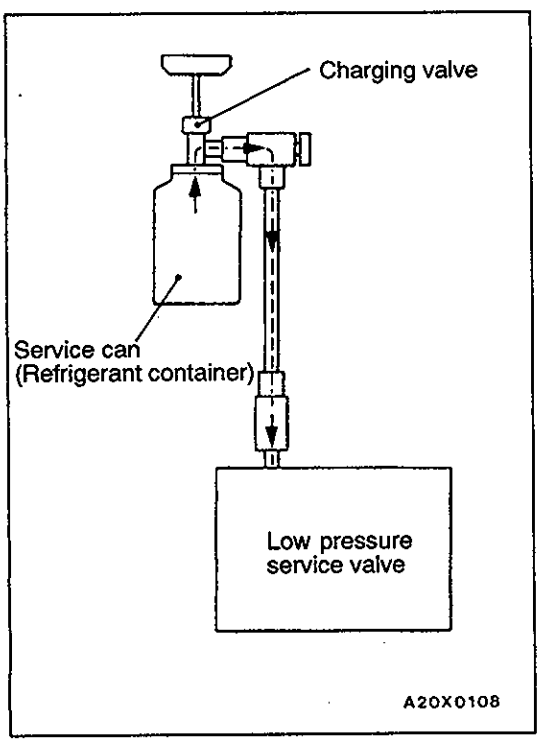
CORRECTING LOW REFRIGERANT LEVEL IN CASE THE SERVICE CAN IS USED.

1. Install the charge valve with the handle turned all the way back (valve open) to 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 suction hose.

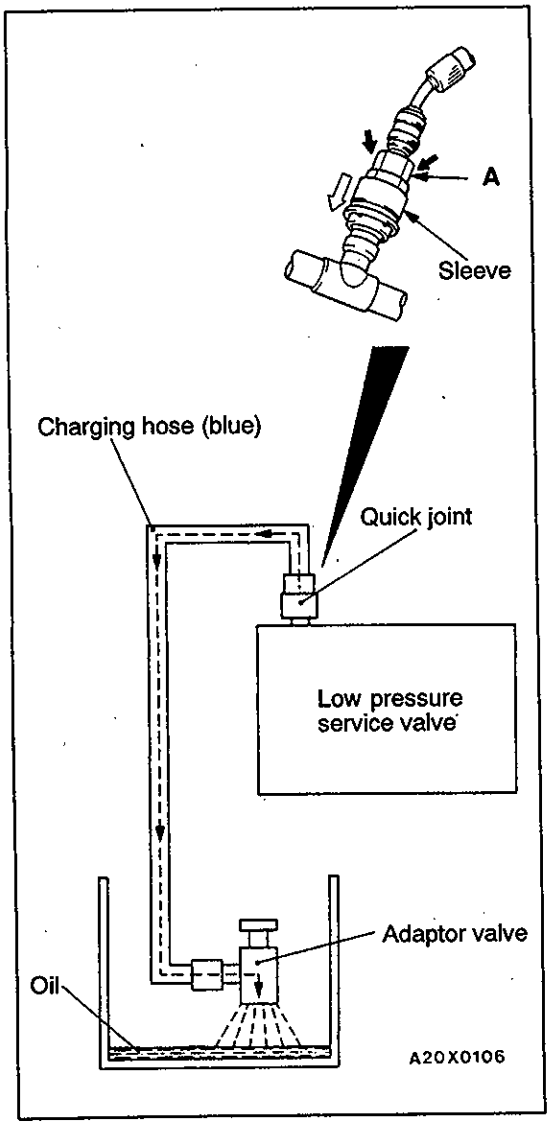


8. Start the engine.
9. Operate the air conditioner and set at the lowest temperature (MAX. COOL).
10. Fix the engine speed at 1,500 r/min.
11. Tighten the handle of the adaptor valve (valve open), and replenish refrigerant while checking the quantity through the sight glass.

    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 changed 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
    When there is remainder of refrigerant in the service can, keep it for next use with the charge value and the valve of the adaptor valve being closed.



DISCHARGING SYSTEM

1. Run the engine at an engine speed of 1,200–1,500 r/min for approximately 5 minutes with the A/C operating to return to the oil.

   NOTE
   Returning the oil will be more effective if it is done while driving.

2. Stop the engine.
3. Connect the charging hose (blue) to the adaptor valve with its handle turned back all the way (valve closed).
4. Connect the quick joint to the charging hose (blue).
5. Install the quick joint to the low pressure service valve.

   NOTE
   The low-pressure service valve should be connected to the suction 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. Place the adaptor valve inside the container and discharge the refrigerant by opening the handle gradually so that oil does not gush out.

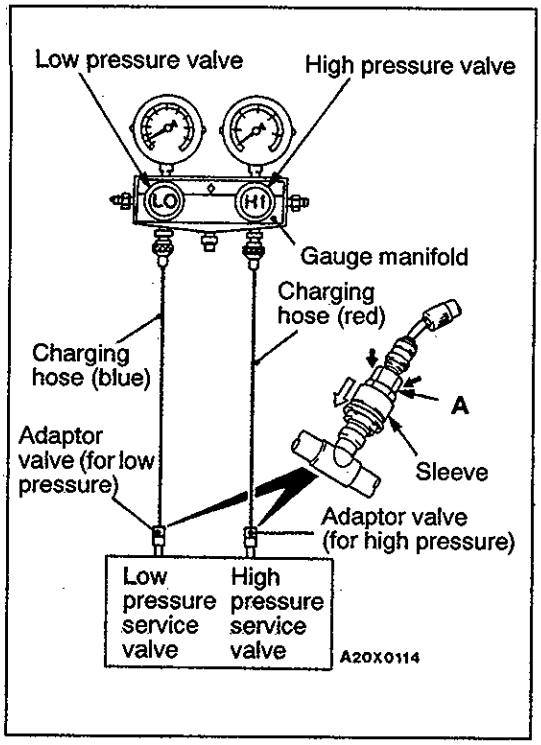
   NOTE
   Any oil remaining in the container should be returned to the A/C system.

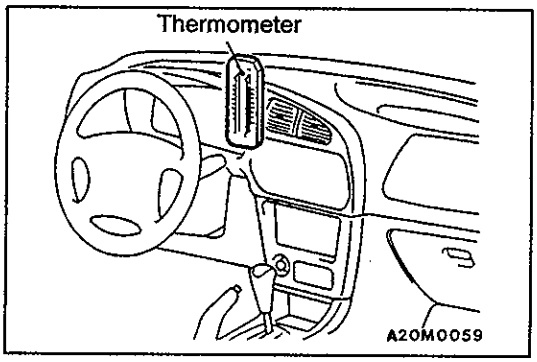
REFILLING OF OIL IN THE A/C SYSTEM

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 120 mℓ of refrigerant oil. While the A/C system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.
When the following system components are changed, it is necessary to add oil to the system to replace the oil being removed with the component.

Compressor oil: SUN PAG 56

Quantity
Condenser: 15 mℓ
Evaporator: 60 mℓ
Suction hose: 10 mℓ
Receiver: 10 mℓ





PERFORMANCE TEST

55200140103

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 discharge pipe A and the low-pressure service valve is on the suction 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 controls to the A/C 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 r/min 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	20	25	35	40
Discharge air temperature °C	2.5–4.5	2.5–4.5	4.0–6.5	6.5–9.0
Compressor high pressure kPa	765–960	765–960	1,325–1,420	1,570–1,765
Compressor low pressure kPa	40–135	40–135	80–175	155–255

REFRIGERANT LEAK REPAIR 55200150045

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 saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick reassembly to avoid keeping the system open any longer than necessary.

7. Evacuate and charge 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 of 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 from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.

Unified plumbing connections with O-rings, these O-rings are not reusable.

COMPRESSOR NOISE

55200870033

You must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions.

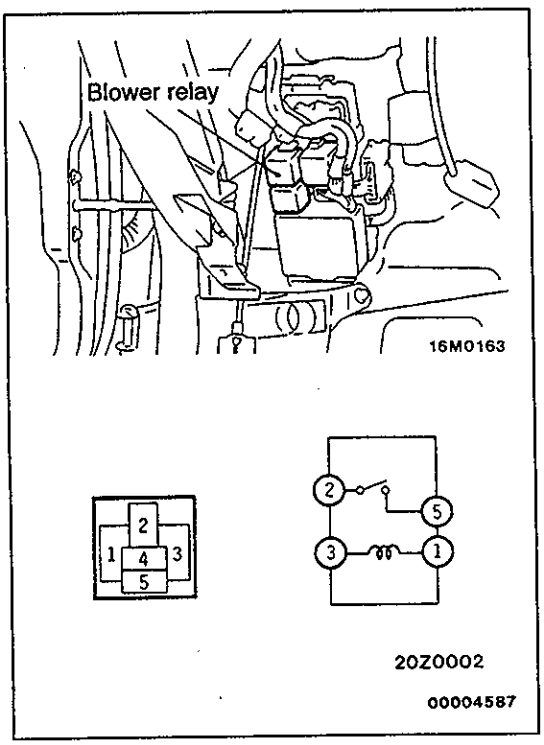
Noises that develop during A/C operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or alternator).

Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged.

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

ADJUSTMENT

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:
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.

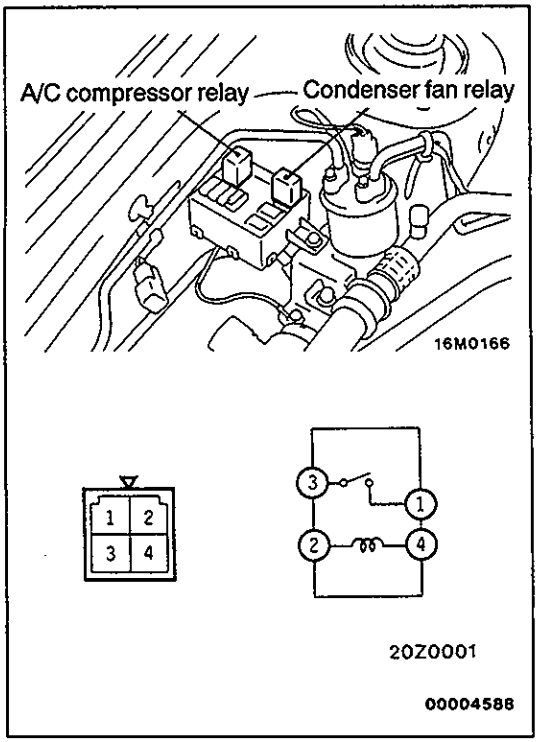


POWER RELAY CHECK

55200880111

BLOWER RELAY

Battery voltage	Terminal No.			
	1	3	2	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○



A/C COMPRESSOR RELAY, CONDENSER FAN RELAY

Battery voltage	Terminal No.			
	2	4	1	3
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

IDLE-UP OPERATION CHECK 55200160116

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

   Standard value:
   <4G1, 4G9 (except MVV)> 750 ± 100 r/min
   <4G9 (MVV)> 700 ± 100 r/min
3. When the A/C is running after turning the A/C switch to ON, and the blower switch to the MH or HI position, check to be sure that the idle speed is at the standard value.

   Standard value: 850 ± 50 r/min

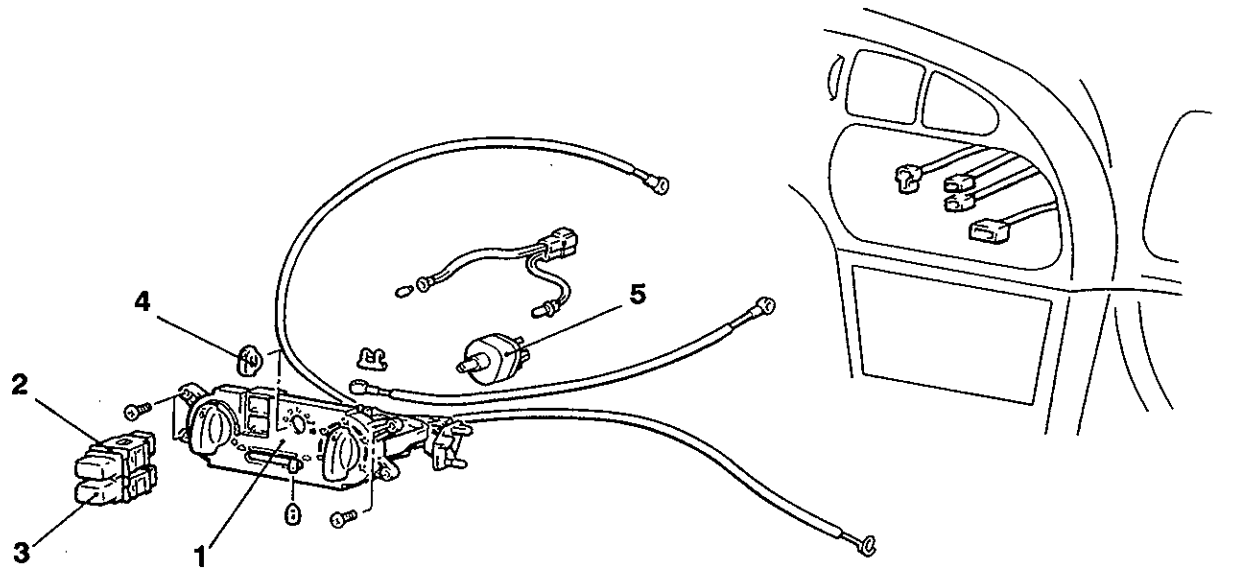
   NOTE
   There is no necessity to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, there occurs a deviation from the standard value for some reason, check the ISC system. (Refer to GROUP 13A – On-vehicle Service.)

HEATER CONTROL ASSEMBLY AND A/C SWITCH

55200240025

REMOVAL AND INSTALLATION

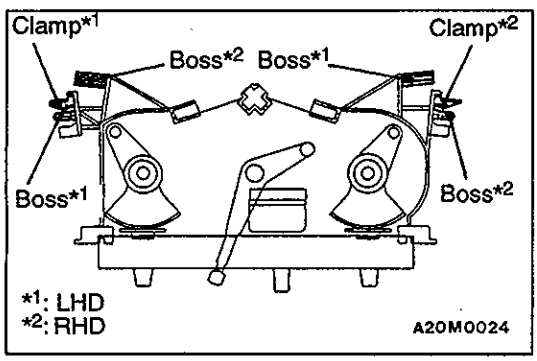
Pre-removal and Post-installation Operation
- Driver's side Lower Cover and Heater Control Panel Removal and Installation
- Floor Console Assembly Removal and Installation (Refer to GROUP 52A.)
- Foot Distribution Duct Removal and Installation (Refer to P.55-37.)



A20M0060

Removal steps

◀A▶ ▶A◀ 1. Heater control assembly
2. Rear window defogger switch
3. A/C switch
4. Knob
5. Blower switch

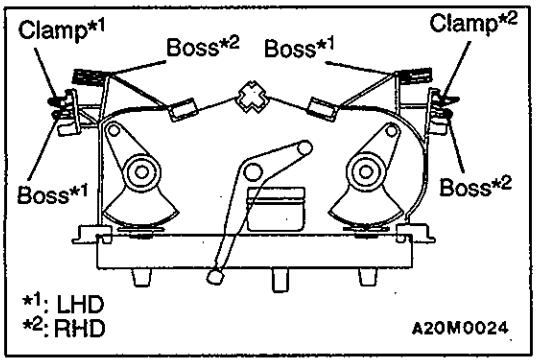


A20M0024

REMOVAL SERVICE POINT

◀A▶ HEATER CONTROL ASSEMBLY REMOVAL

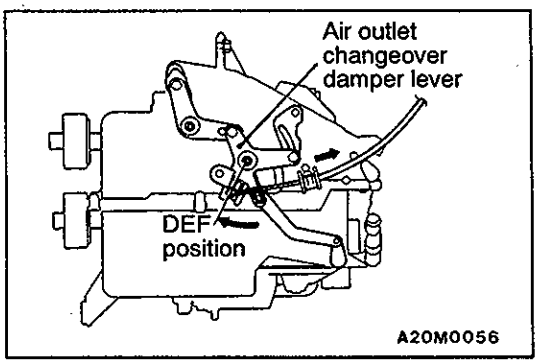
1. Remove the heater control assembly mounting screws.
2. Bend the two clamps and the four bosses, which are inserted into the centre reinforcement.
3. Remove the heater control assembly.



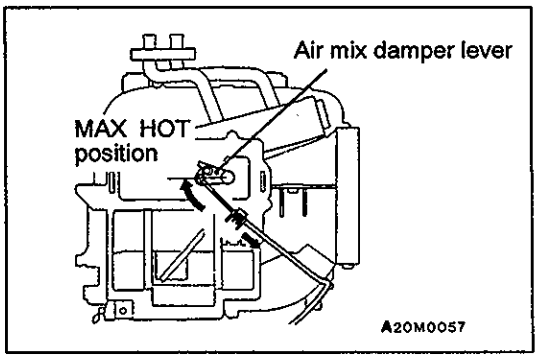
INSTALLATION SERVICE POINT

▶A◀ HEATER CONTROL ASSEMBLY INSTALLATION

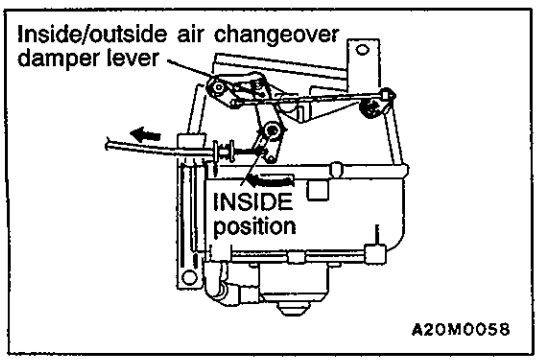
1. Cut off the bosses and clips shown before installing a new heater control assembly.
2. Install the heater control assembly mounting screws.



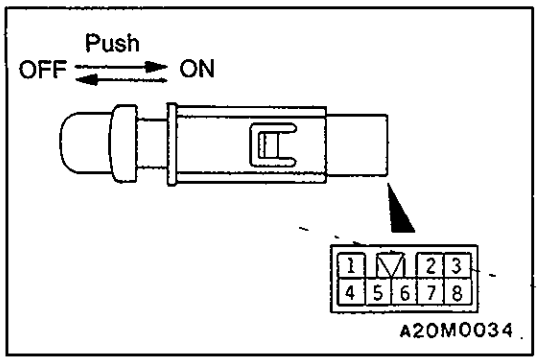
3. Follow the steps below to install the air outlet changeover damper lever cable.
   (1) Set the air outlet changeover control knob on the heater control assembly to the DEF position.
   (2) Set the air outlet changeover damper lever of the heater unit to the DEF position as shown in the illustration, and then connect the cable to the lever pin.
   (3) Push the outer cable in the direction of the arrow so that there is no looseness, and then secure it with clip.

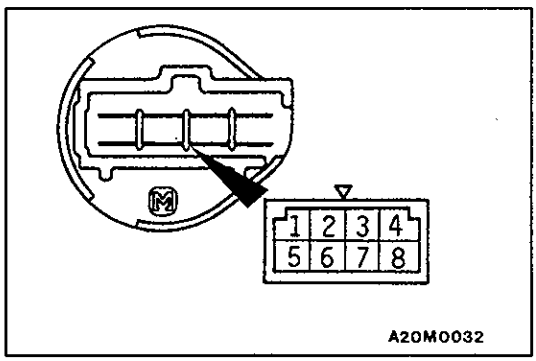


4. Follow the steps below to install the air mix damper lever cable.
   (1) Set the temperature control knob on the heater control assembly to the MAX HOT position.
   (2) Set the air mix damper lever of the heater unit to the MAX HOT position as shown in the illustration, and then connect the cable to the lever pin.
   (3) Push the outer cable in the direction of the arrow so that there is no looseness, and then secure it with clip.



5. Follow the steps below to install the inside/outside air changeover damper lever cable.
   (1) Set the inside/outside air changeover control knob on the heater control assembly to the INSIDE position.
   (2) Set the inside/outside air changeover damper lever of the heater unit to the INSIDE position as shown in the illustration, and then connect the cable to the lever pin.
   (3) Push the outer cable in the direction of the arrow so that there is no looseness, and then secure it with clip.
6. After installation, ensure that each damper operates smoothly by operating the heater control assembly knob.





INSPECTION

55200250028

A/C SWITCH CONTINUITY CHECK

Switch position	Terminal No.						
	1	ILL	2	IND	4	5	7
OFF	○	○			○		
ON	○	○			○		
			○	○		○	○

BLOWER SWITCH CONTINUITY CHECK

55200900046

Switch position	Terminal No.						
	1	2	3	5	6	7	8
OFF							
● (LO)	○		○	○			○
● (ML)	○			○	○		○
● (MH)	○	○		○			○
● (HI)	○			○		○	○

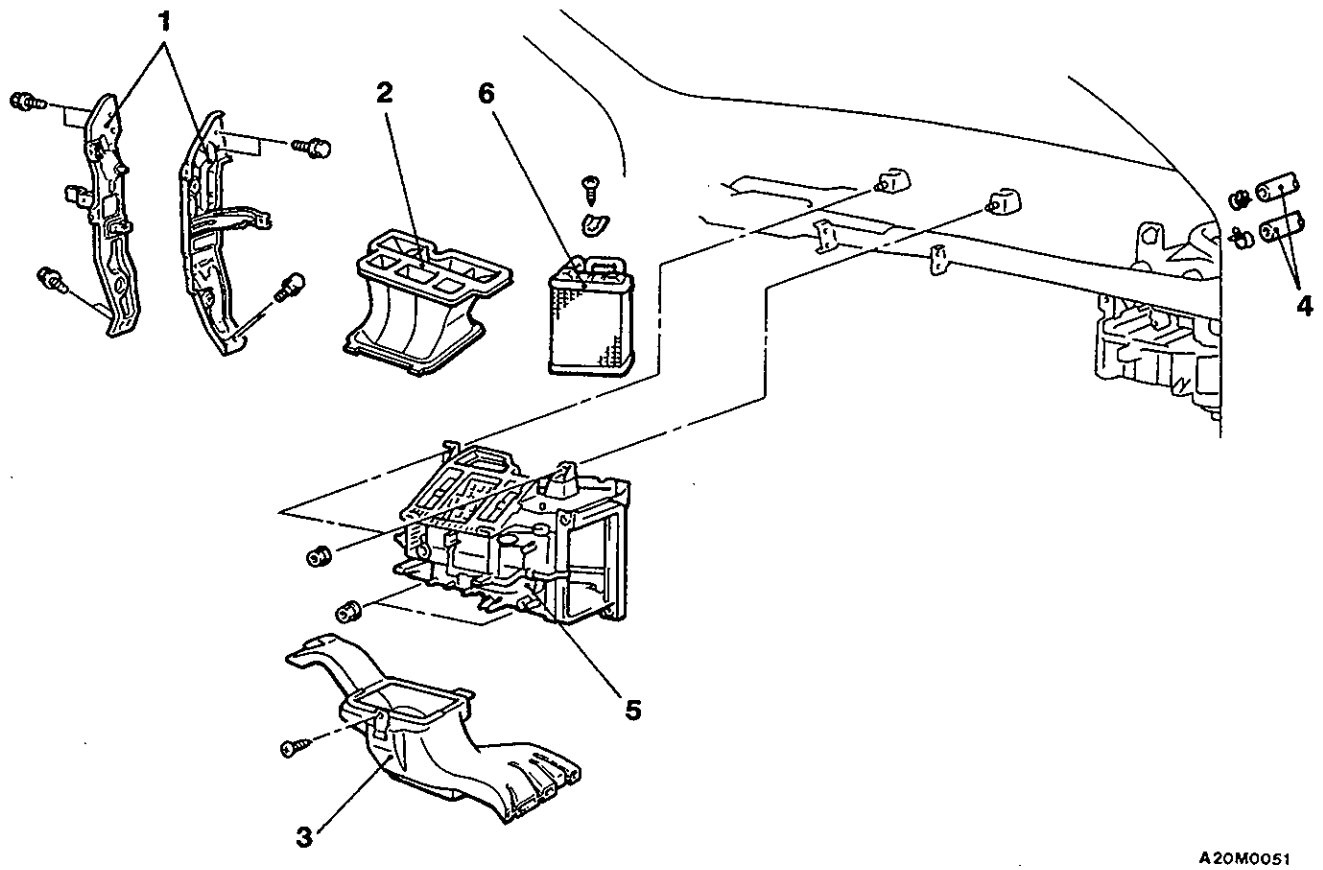
HEATER UNIT AND HEATER CORE

55100190112

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Draining and Refilling Engine Coolant (Refer to GROUP 14 – On-vehicle Service.)
- Air Cleaner Cover and Air Intake Hose Removal and Installation
- Instrument Panel Removal and Installation (Refer to GROUP 52A.)
- Joint Duct Removal and Installation <Vehicles without A/C> (Refer to P.55-22.)
- Evaporator Removal and Installation <L.H. drive vehicles with A/C> (Refer to P.55-24.)
- Evaporator and Blower Unit Removal and Installation <R.H. drive vehicles with A/C> (Refer to P.55-26.)

Caution: SRS
When removing and installing the floor console assembly from vehicles equipped with SRS, do not let it bump against the SRS-ECU or the components.



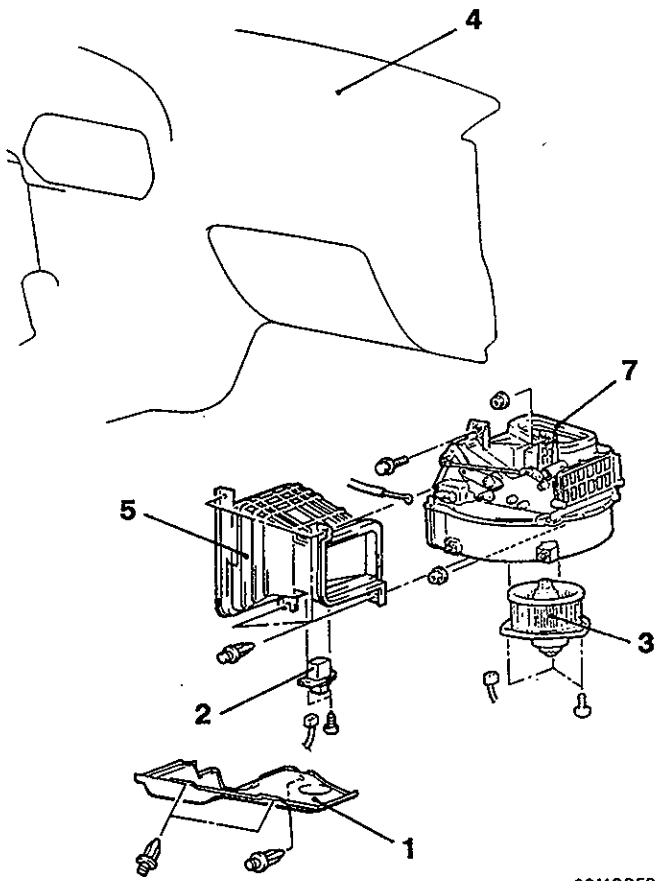
Removal steps
1. Center reinforcement
2. Center ventilation duct
3. Foot distribution duct
4. Heater hose connection
5. Heater unit
6. Heater core

BLOWER ASSEMBLY AND RESISTOR <EXCEPT R.H. DRIVE VEHICLES WITH A/C>

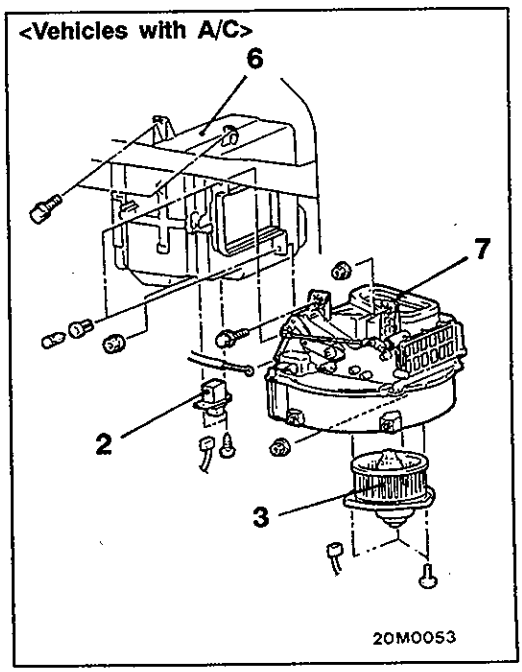
55100280116

REMOVAL AND INSTALLATION

Caution: SRS
When removing and installing the floor console assembly from vehicles equipped with SRS, do not let it bump against the SRS-ECU or the components.



20M0052



00004633

Resistor removal steps

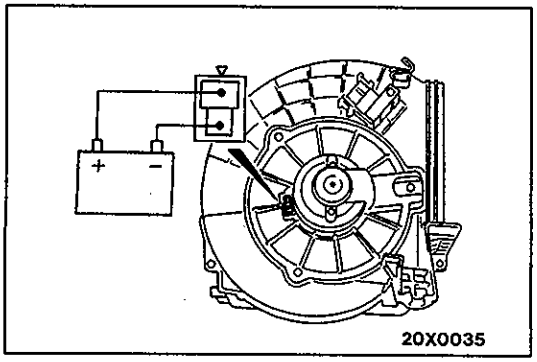
1. Under cover
2. Resistor

Blower fan and motor removal steps

1. Under cover
3. Blower fan and motor

Blower unit removal steps

4. Instrument panel (Refer to GROUP 52A.)
5. Joint duct <Vehicles without A/C>
6. Evaporator <Vehicles with A/C> (Refer to P.55-24.)
7. Blower unit assembly

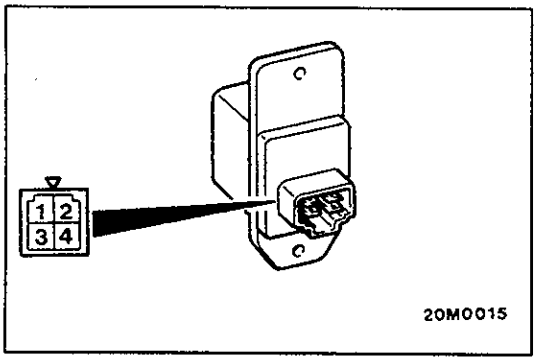


INSPECTION

55100290065

BLOWER FAN AND MOTOR CHECK

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



RESISTOR CHECK

Use a circuit tester to measure the resistance between the terminals as indicated below. Check that the measured value is at the standard value.

Standard value:
<L.H. drive vehicles>

Measurement terminal	Standard value Ω
Between terminals 3 and 2 (LO)	2.21
Between terminals 3 and 4 (ML)	0.97
Between terminals 3 and 1 (MH)	0.35

<R.H. drive vehicles>

Measurement terminal	Standard value Ω
Between terminals 3 and 2 (LO)	2.81
Between terminals 3 and 4 (ML)	1.28
Between terminals 3 and 1 (MH)	0.33

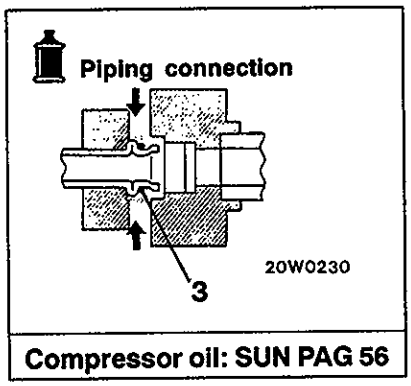
EVAPORATOR <L.H. DRIVE VEHICLES WITH A/C>

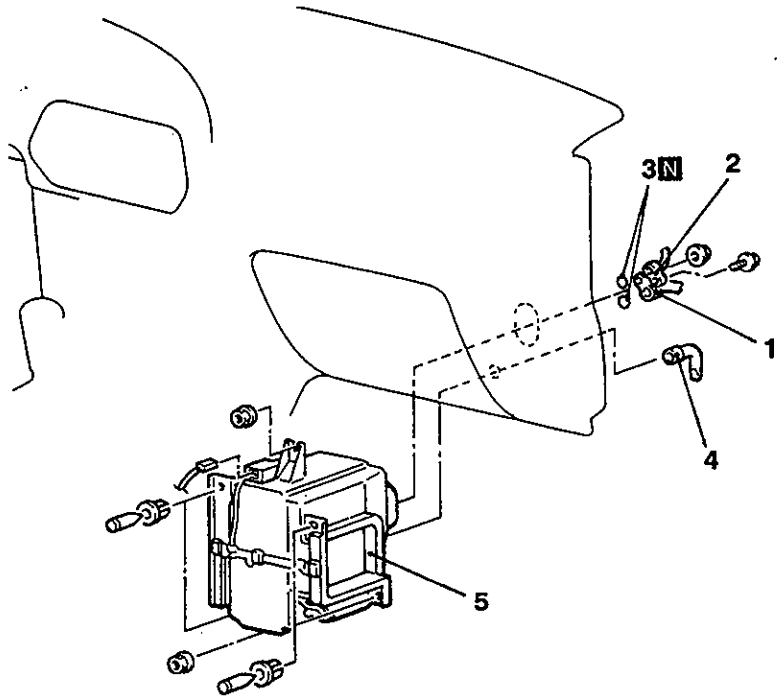
55200360080

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Discharging and Charging of Refrigerant (Refer to P.55-9.)
- Under Cover, Glove Box and Glove Box Frame Removal and Installation (Refer to GROUP 52A – Instrument Panel.)

Caution: SRS
When removing and installing the floor console assembly from vehicles equipped with SRS, do not let it bump against the SRS-ECU or the components.





00004589

Removal steps

◀A▶ 1. Suction hose connection
◀A▶ 2. Discharge pipe connection
3. O-ring
4. Drain hose
▶A◀ 5. Evaporator

REMOVAL SERVICE POINT

◀A▶ SUCTION HOSE, DISCHARGE PIPE DISCONNECTION

Plug the disconnected hose and the evaporator nipple not to let foreign matter get into them.

Caution
Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapour easily.

INSTALLATION SERVICE POINT

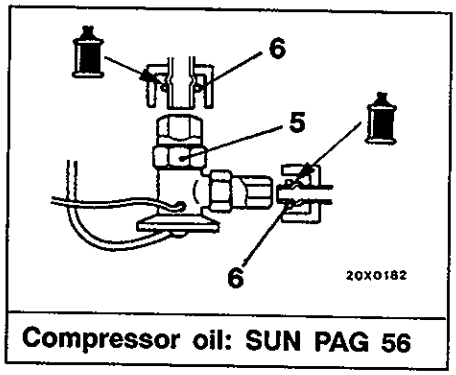
▶A◀ EVAPORATOR INSTALLATION

When replacing the evaporator, refill it with a specified amount of compressor oil and install it (to the vehicle).

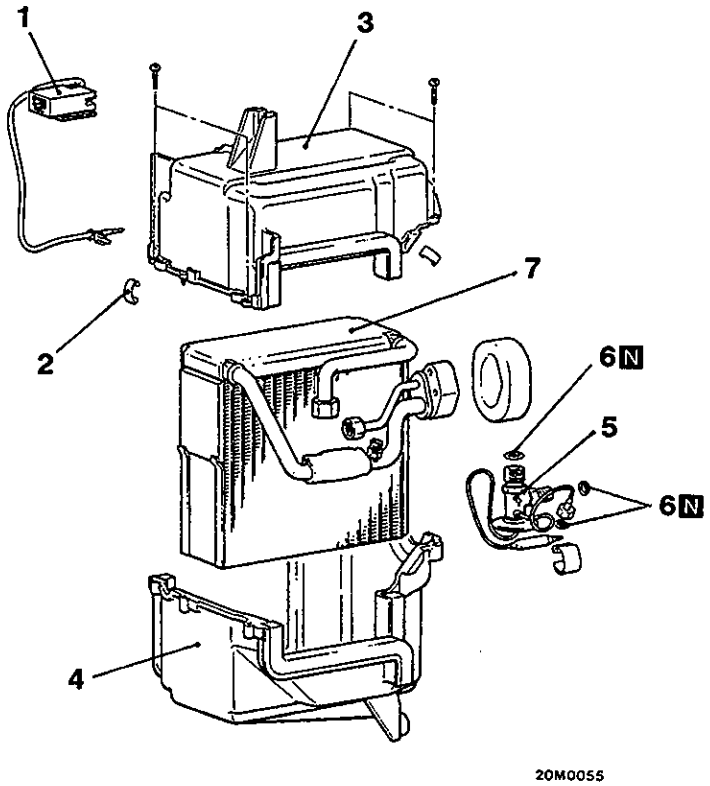
Compressor oil: SUN PAG 56
Quantity: 60 mℓ

DISASSEMBLY AND REASSEMBLY

55200380086



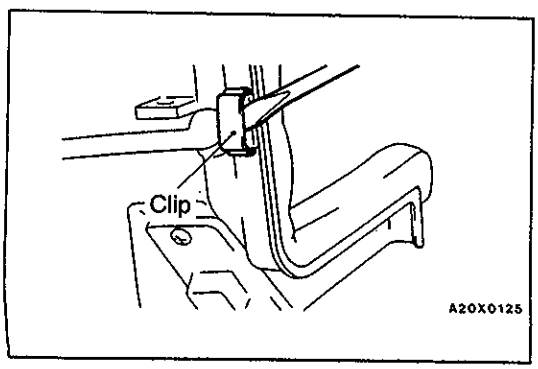
Compressor oil: SUN PAG 56



00004590

Disassembly steps

◀A▶
1. Clip
2. Evaporator cover (upper)
3. Thermostat (Automatic compressor ECU)
4. Evaporator cover (lower)
5. Expansion valve
6. O-ring
7. Evaporator



DISASSEMBLY SERVICE POINT

◀A▶ CLIP REMOVAL

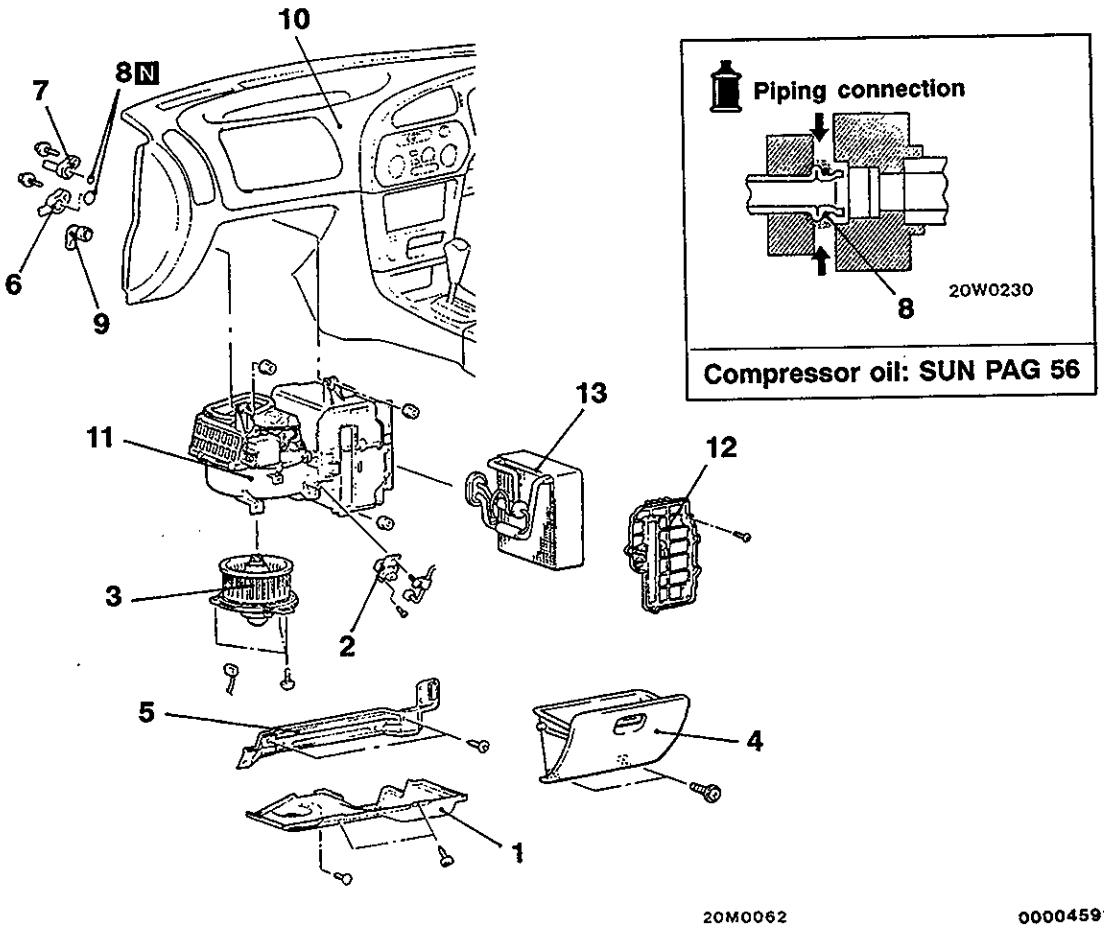
Remove the clips with a flat-tipped screwdriver covered with a shop towel to prevent damage to case surfaces.

EVAPORATOR, BLOWER UNIT AND RESISTOR <R.H. DRIVE VEHICLES WITH A/C>

55200360097

REMOVAL AND INSTALLATION

Caution: SRS
When removing and installing the floor console assembly from vehicles equipped with SRS, do not let it bump against the SRS-ECU or the components.



Resistor removal steps
1. Under cover
2. Resistor

Blower fan and motor removal steps
1. Under cover
3. Blower fan and motor

Evaporator and blower unit removal steps
1. Under cover
4. Glove box
5. Glove box frame
- Discharging and charging of refrigerant (Refer to P.55-9.)
- Air cleaner cover and air intake hose

◀A▶ 6. Suction hose connection
◀A▶ 7. Discharge pipe connection
8. O-ring
9. Drain hose
10. Instrument panel (Refer to GROUP 52A.)
11. Evaporator and blower unit

Evaporator removal steps
1. Under cover
4. Glove box
5. Glove box frame
- Discharging and charging of refrigerant (Refer to P.55-9.)
- Air cleaner cover and air intake hose

◀A▶ 6. Suction hose connection
◀A▶ 7. Discharge pipe connection
8. O-ring
◀B▶ 12. Case cover
◀B▶ ▶A◀ 13. Evaporator

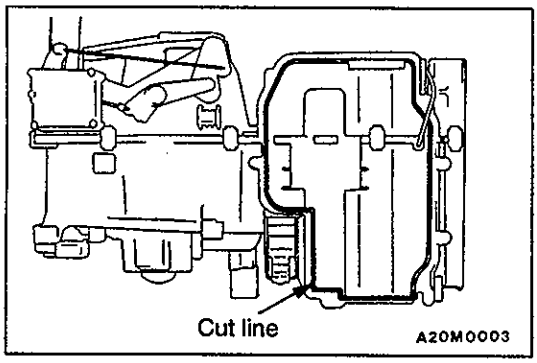
REMOVAL SERVICE POINTS

◀A▶ SUCTION HOSE, DISCHARGE PIPE DISCONNECTION

Plug the disconnected hose and the evaporator nipple not to let foreign matter get into them.

Caution

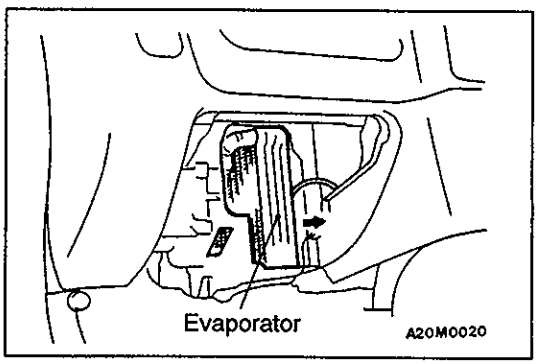
Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapour easily.



▶B◀ CASE COVER, EVAPORATOR REMOVAL

The evaporator, which has been installed in a factory, has no case cover. Follow the steps below to remove that evaporator.

1. Cut the case along the shown line to remove the cooling and blower unit.



2. Remove the air thermo sensor from the evaporator, and then remove the evaporator towards you, being careful not to damage its core.

INSTALLATION SERVICE POINT

▶B◀ EVAPORATOR INSTALLATION

When replacing the evaporator, refill it with a specified amount of compressor oil and install it (to the vehicle).

Compressor oil: SUN PAG 56

Quantity: 60 mℓ

INSPECTION

55200370021

BLOWER FAN AND MOTOR CHECK

Refer to P.55-23.

RESISTOR CHECK

Refer to P.55-23.

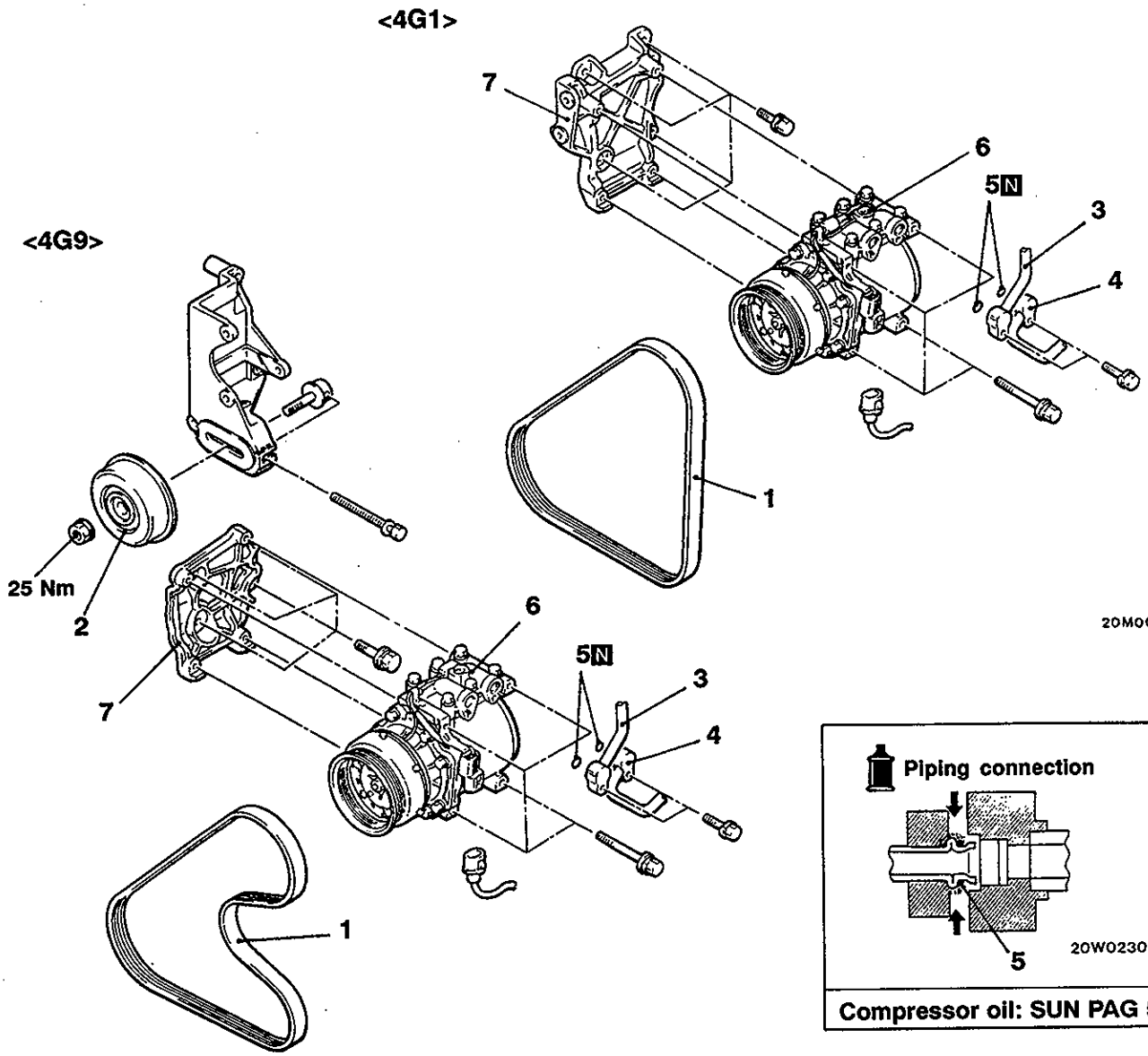
COMPRESSOR AND TENSION PULLEY

55200410150

REMOVAL AND INSTALLATION

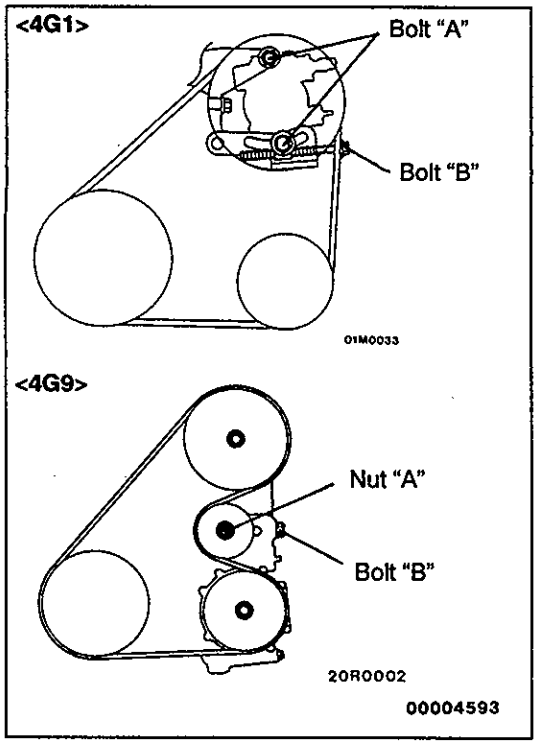
Pre-removal Operation
- Discharging of Refrigerant (Refer to P.55-9.)

Post-installation Operation
- Drive Belt Tension Adjustment (Refer to GROUP 11 – On-vehicle Service.)
- Charging of Refrigerant (Refer to P.55-9.)



Removal steps

◀A▶ 1. Drive belt
2. Tension pulley <4G9>
◀B▶ 3. Suction hose connection
◀B▶ 4. Discharge hose connection
5. O-ring
◀C▶ ▶A◀ 6. Compressor
7. Compressor bracket



REMOVAL SERVICE POINTS

◀A▶ DRIVE BELT REMOVAL

1. Loosen the bolts "A" <4G1> or nut "A" <4G9> for holding.
2. Loosen the bolt "B" for adjustment.
3. Remove the drive belt.

◀B▶ SUCTION HOSE, DISCHARGE HOSE DISCONNECTION

Plug the disconnected hose and the compressor nipple not to let foreign matter get into them.

Caution
Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapour easily.

◀C▶ COMPRESSOR REMOVAL

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

INSTALLATION SERVICE POINT

▶A◀ COMPRESSOR INSTALLATION

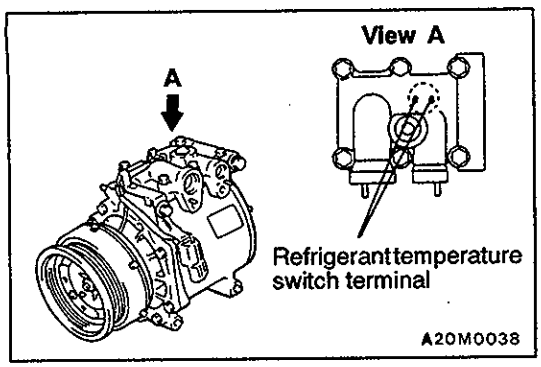
If a new compressor is installed, first adjust the amount of oil according to the procedures described below, and then install the compressor.

(1) Measure the amount (X mℓ) of oil within the removed compressor.
(2) Drain (from the new compressor) the amount of oil calculated according to the following formula, and then install the new compressor.
New compressor oil amount

120 mℓ – X mℓ = Y mℓ

NOTE
(1) Y mℓ indicates the amount of oil in the refrigerant line, the condenser, the evaporator etc.
(2) When replacing the following parts at the same times as the compressor, subtract the rated oil amount of the each part from Y mℓ and discharge from the new compressor.

Quantity
Evaporator: 60 mℓ
Condenser: 15 mℓ
Suction hose: 10 mℓ
Receiver: 10 mℓ

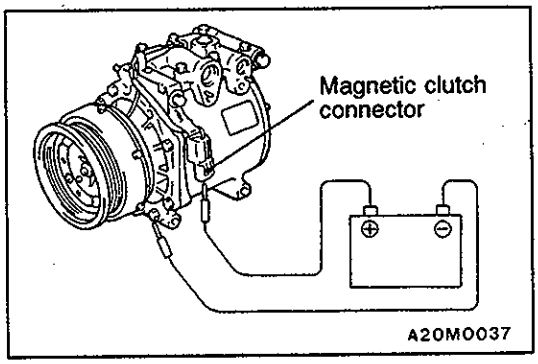


INSPECTION

55200930052

REFRIGERANT-TEMPERATURE SWITCH SIMPLE CHECK

When the A/C is off, check that there is continuity between the refrigerant-temperature switch terminals. If no, replace the compressor assembly.



COMPRESSOR MAGNETIC CLUTCH OPERATION INSPECTION

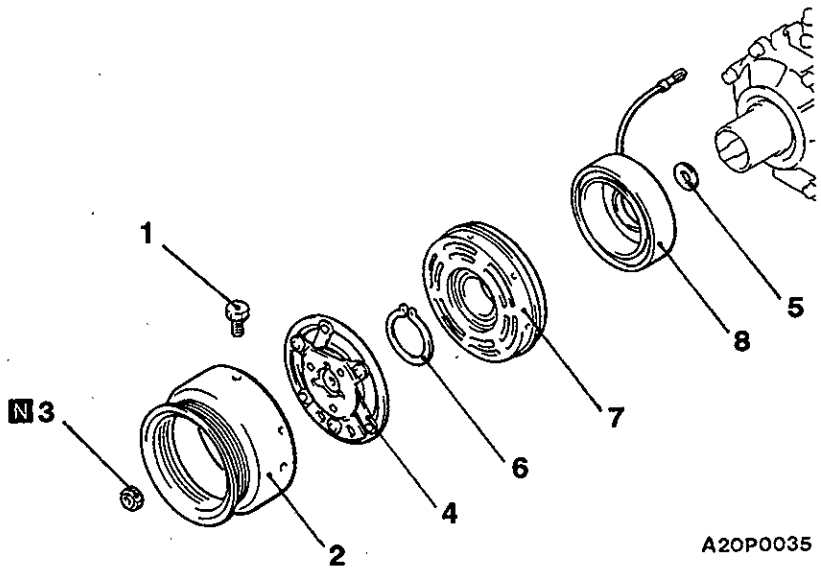
55200850075

Connect the battery (+) terminal to the compressor side terminal, and earth the battery (–) terminal to the body of the compressor. The condition is normal if the sound of the magnetic clutch (click) can be heard.

MAGNETIC CLUTCH

55200460117

DISASSEMBLY AND REASSEMBLY



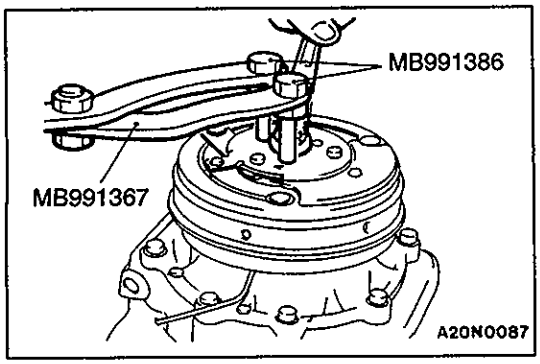
Disassembly steps

◀A▶ ▶E◀ ▶D◀ ▶C◀
1. Bolt
2. Pulley
   • Air gap adjustment
3. Nut
4. Armature plate
5. Shims

▶B◀
6. Snap ring

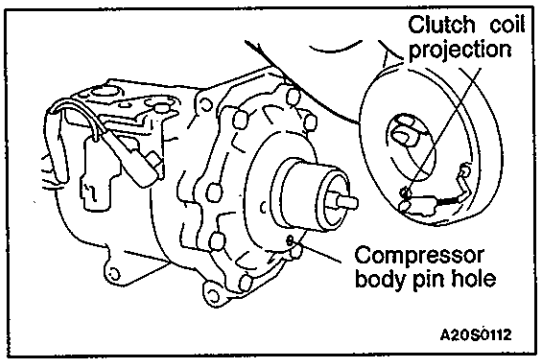
7. Rotor

▶A◀
8. Clutch coil



DISASSEMBLY SERVICE POINT

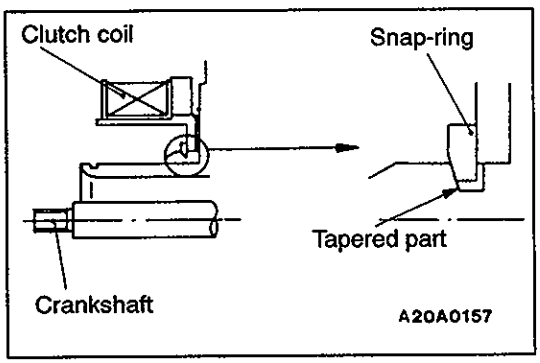
◀A▶ NUT REMOVAL



REASSEMBLY SERVICE POINTS

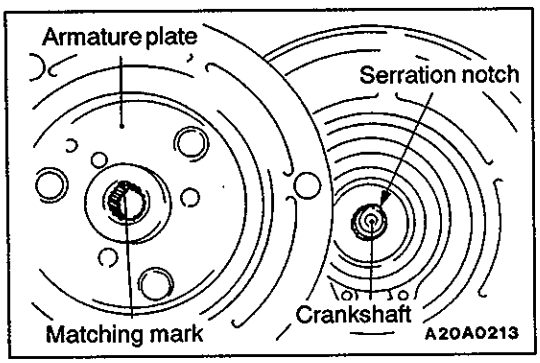
▶A◀ CLUTCH COIL INSTALLATION

When installing the clutch coil to the A/C compressor body, install so that the pin hole of the A/C compressor body and the clutch coil projection are aligned.



▶B◀ SNAP RING INSTALLATION

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

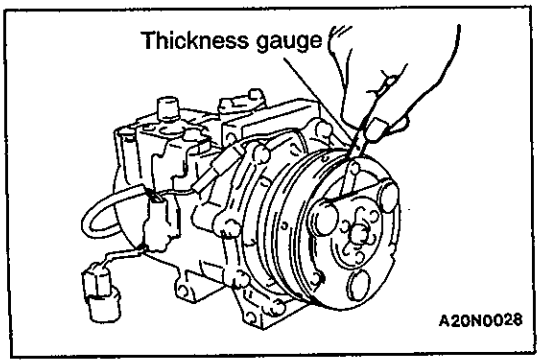


▶C◀ ARMATURE PLATE INSTALLATION

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

▶D◀ NUT INSTALLATION

Use the special tool to hold the magnet clutch, and tighten the nut in the same manner as removal.



▶E◀ AIR GAP ADJUSTMENT

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

Standard value: 0.40–0.65 mm

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

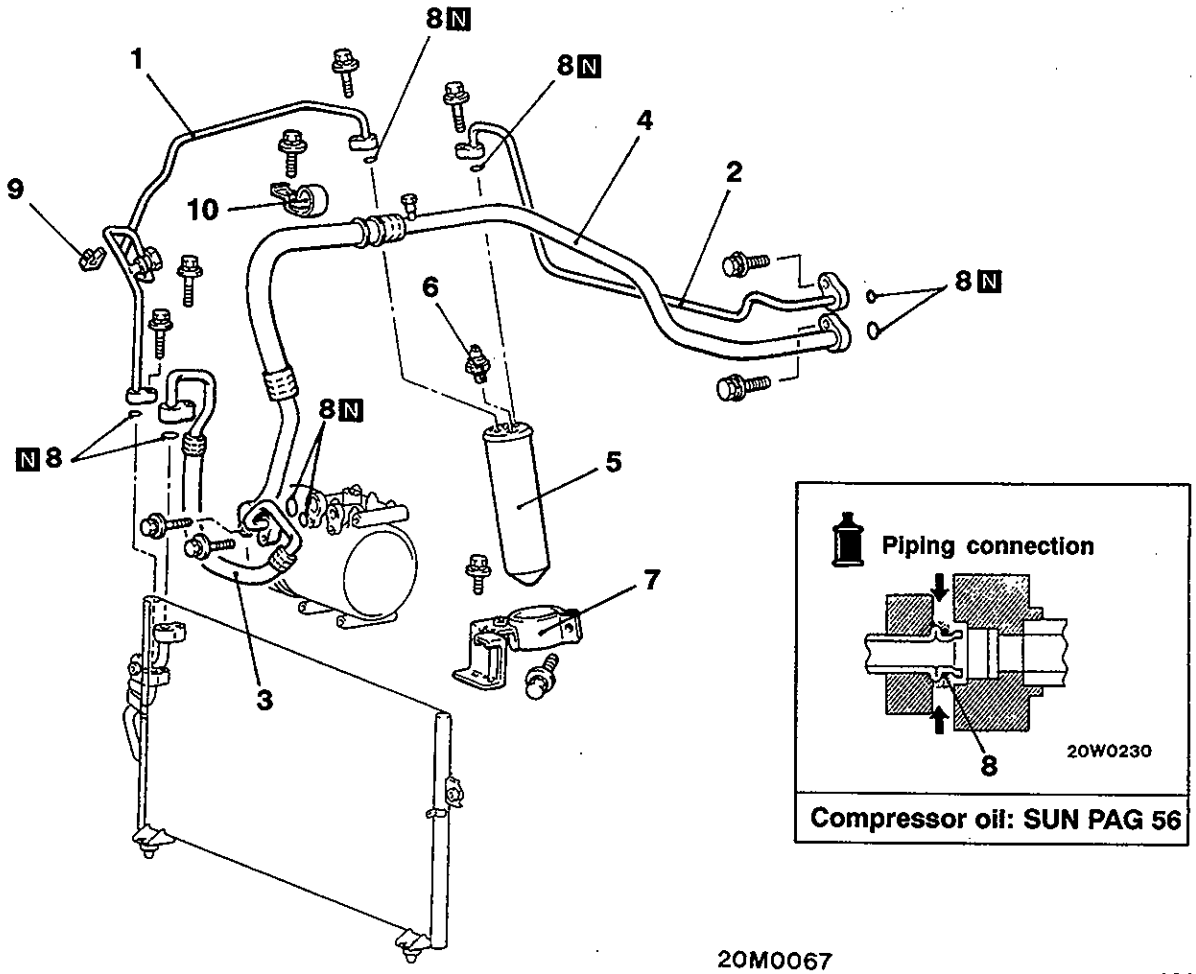
REFRIGERANT LINE

55200640122

REMOVAL AND INSTALLATION

<L.H. DRIVE VEHICLES>

Pre-removal and Post-installation Operation
- Discharging and Charging of Refrigerant (Refer to P.55-9.)



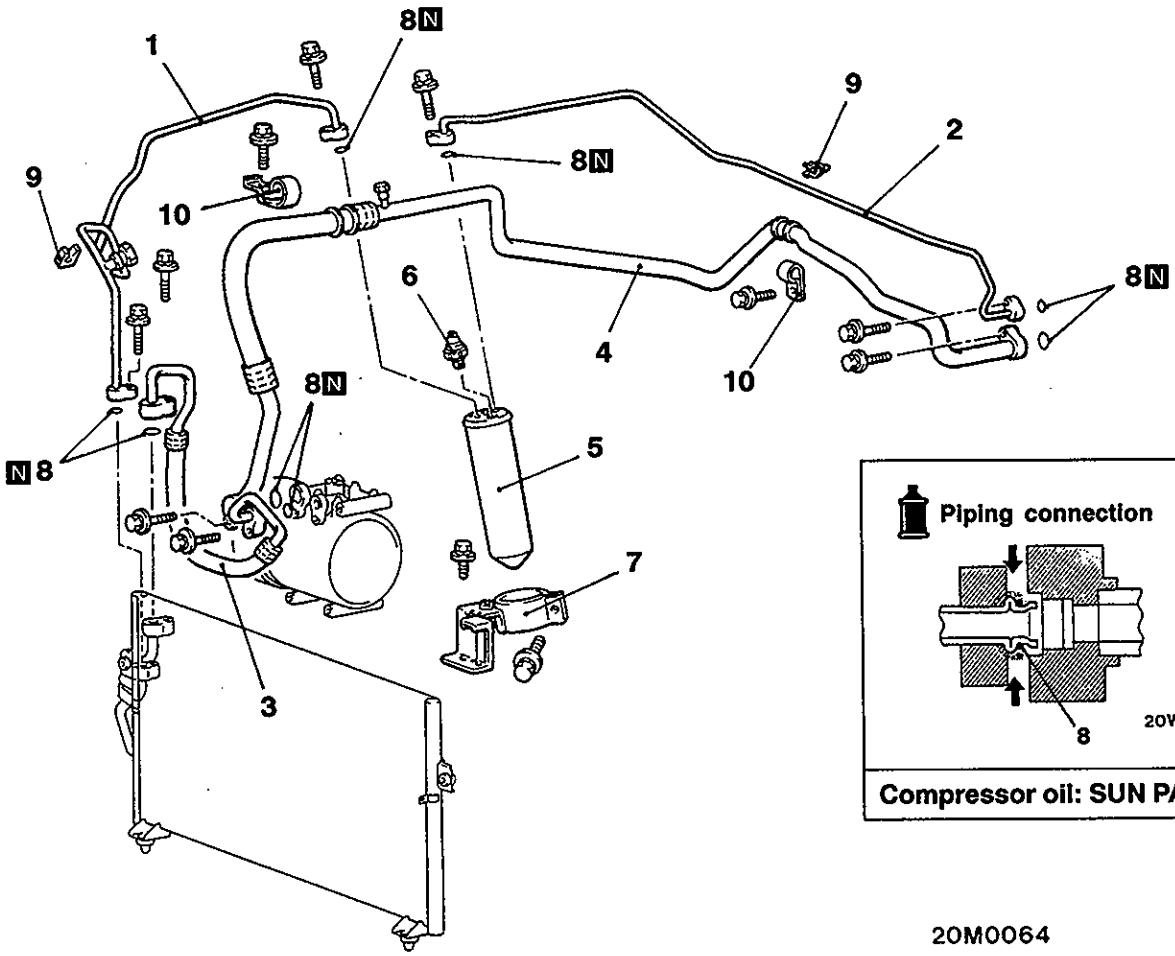
20M0067

00004594

◀A▶ 1. Discharge pipe A
◀A▶ 2. Discharge pipe B
◀A▶ 3. Discharge hose
◀A▶ 4. Suction hose
◀A▶ ▶A◀ 5. Receiver assembly
6. Dual pressure switch
7. Receiver bracket
8. O-ring
9. Clip
10. Clamp

<R.H. DRIVE VEHICLES>

Pre-removal and Post-installation Operation
- Discharging and Charging of Refrigerant (Refer to P.55-9.)
- Air Cleaner Cover and Air Intake Hose Removal and Installation



◀A▶ 1. Discharge pipe A
◀A▶ 2. Discharge pipe B
◀A▶ 3. Discharge hose
◀A▶ 4. Suction hose
◀A▶ ▶A◀ 5. Receiver assembly
6. Dual pressure switch
7. Receiver bracket
8. O-ring
9. Clip
10. Clamp

REMOVAL SERVICE POINT

◀A▶ HOSE/PIPE/RECEIVER ASSEMBLY DISCONNECTION

Plug the disconnected hose, the receiver, the evaporator and the compressor nipple not to let foreign matter get into them.

Caution
Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapour easily.

INSTALLATION SERVICE POINT

▶A◀ SUCTION HOSE/RECEIVER ASSEMBLY INSTALLATION

When replacing the suction hose or receiver assembly, refill them with a specified amount of compressor oil, and then install them.

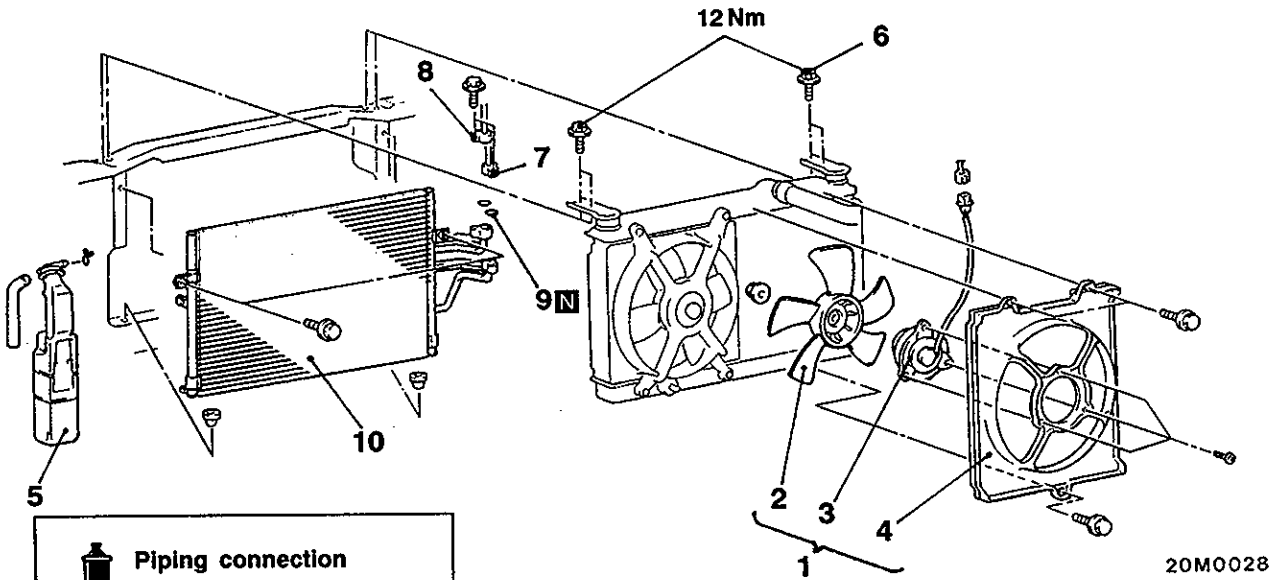
Compressor oil: SUN PAG 56

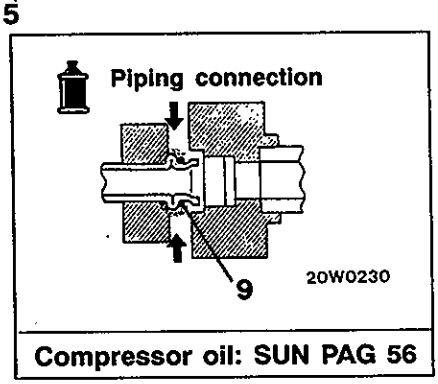
Quantity:
Suction hose: 10 mℓ
Receiver assembly: 10 mℓ

CONDENSER AND CONDENSER FAN MOTOR

55200670114

REMOVAL AND INSTALLATION





00004596

Condenser fan motor removal steps

1. Condenser fan motor and shroud assembly
2. Condenser fan
3. Condenser fan motor
4. Shroud

Condenser removal steps

- Discharging and charging of refrigerant (Refer to P.55-9.)

5. Reserve tank
6. Upper insulator installation bolt
7. Discharge pipe A connection
8. Discharge hose connection
9. O-ring
10. Condenser

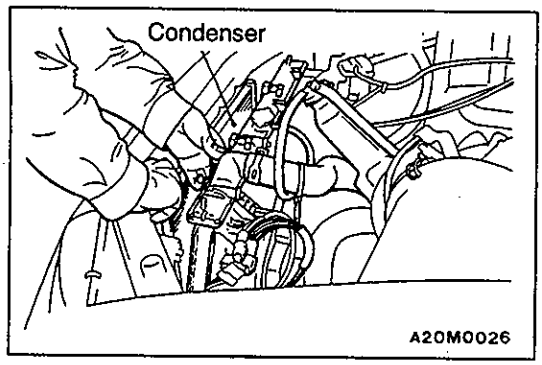
◀A▶ ◀A▶ ◀B▶ ▶A◀

REMOVAL SERVICE POINTS

◀A▶ DISCHARGE PIPE "A" /DISCHARGE HOSE DISCONNECTION

Plug the disconnected pipe, hose and the condenser nipple not to let foreign matter get into them.

Caution
Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapour easily.



◀B▶ CONDENSER REMOVAL

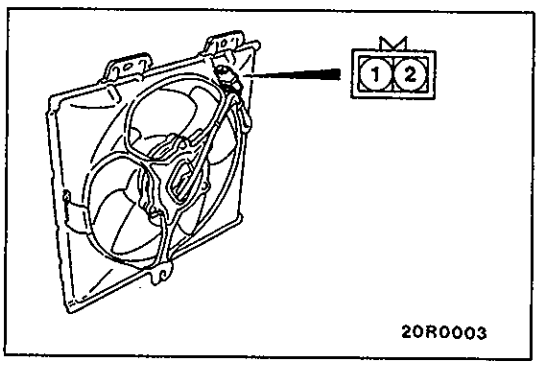
Move the radiator to the engine side and then lift up the condenser to remove it.

INSTALLATION SERVICE POINT

▶A◀ CONDENSER INSTALLATION

When replacing the condenser, refill it with a specified amount of compressor oil and install it. (to the vehicle).

Compressor oil: SUN PAG 56
Quantity: 15 mℓ



INSPECTION

5200680070

CONDENSER FAN MOTOR CHECK

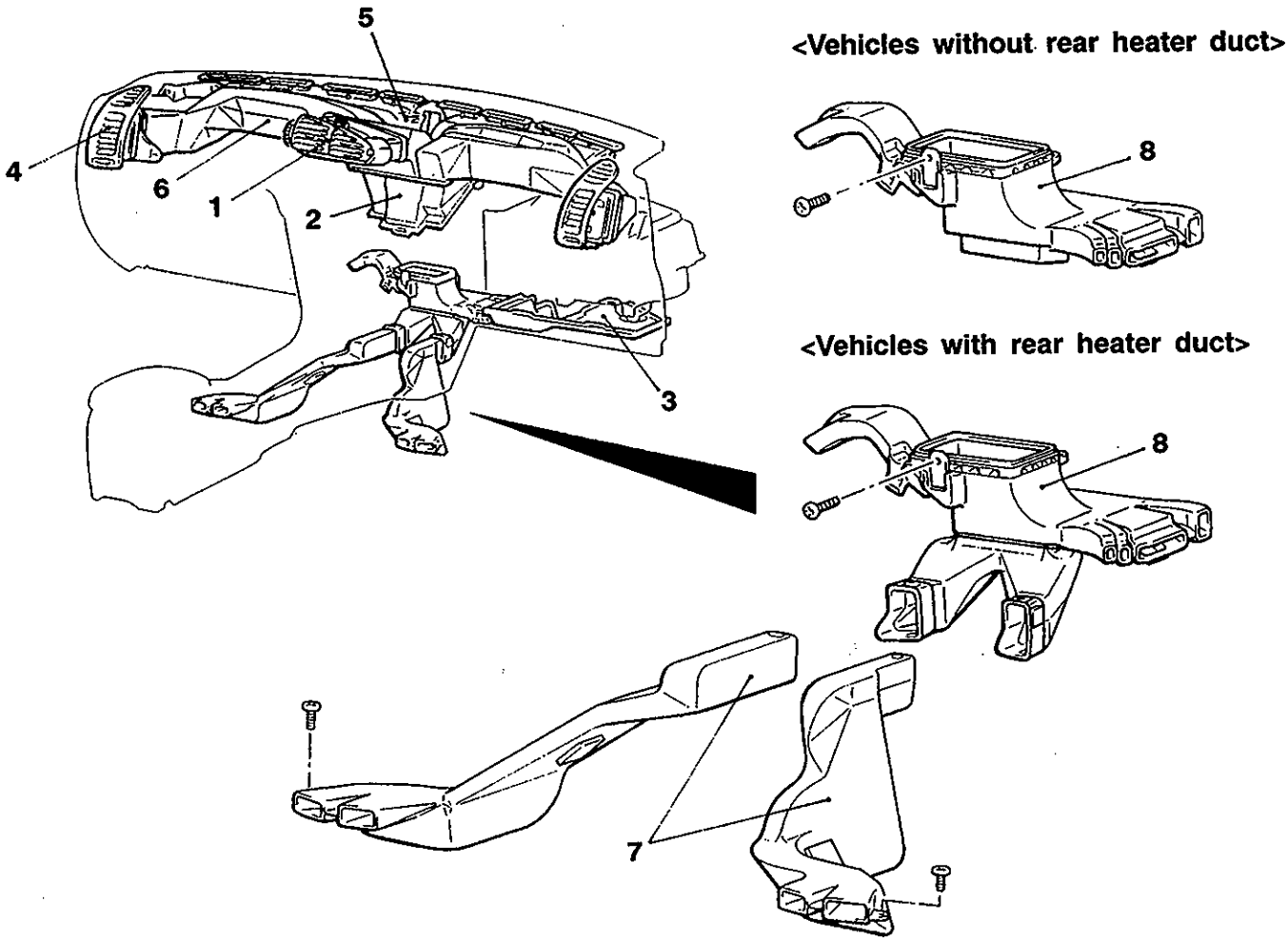
Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal 1 and terminal 2 earthed.

VENTILATORS

55300160041

REMOVAL AND INSTALLATION

Caution: SRS
When removing and installing the floor console assembly from vehicles equipped with SRS, do not let it bump against the SRS-ECU or the components.



A20M0061

1. Center air outlet assembly (Refer to GROUP 52A – Instrument Panel.)
2. Center ventilation duct (Refer to P.55-21.)
3. Under cover
4. Side air outlet assembly (Refer to GROUP 52A – Instrument Panel.)
5. Defroster nozzle (Refer to GROUP 52A – Instrument Panel.)
6. Distribution duct (Refer to GROUP 52A – Instrument Panel.)

Rear heater duct removal steps

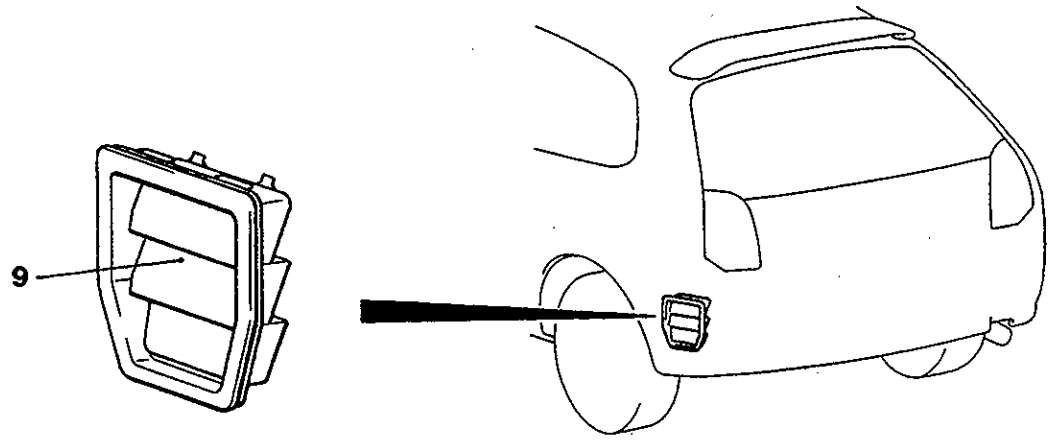
- Front seat assembly (Refer to GROUP 52A.)
- Floor console assembly (Refer to GROUP 52A.)

7. Rear heater duct

- Radio and tape player (Refer to GROUP 54.)

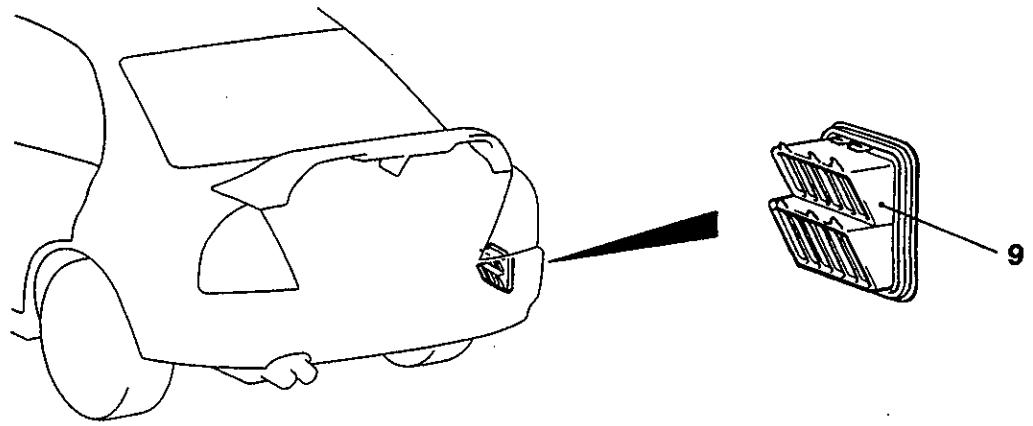
8. Foot distribution duct

<Hatchback>



20M0040

<Sedan>



20M0039

00004597

Rear ventilation duct removal steps

- Rear bumper (Refer to GROUP 51.)
- Quarter trim <Hatchback> (Refer to GROUP 52A.)
- Trunk side trim <Sedan> (Refer to GROUP 52A.)

9. Rear ventilation duct

NOTE
A rear ventilation duct for Hatchback is equipped on the right side also.

RJST511004-892