BODY SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

FUJI HEAVY INDUSTRIES LTD.

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

AC

1. General Description S701001

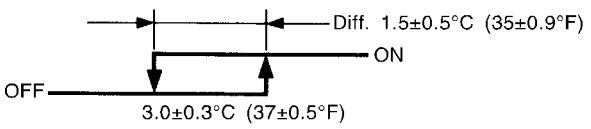
A: SPECIFICATIONS S701001E49

1. HEATER SYSTEM S701001E4901

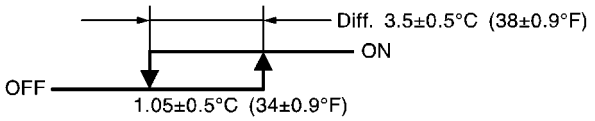
Item		Specifications		Condition
Heating capacity		LHD model	5.1 kW (4,386 kcal/h, 17,404 BTU/h) or more	● Mode selector switch: HEAT ● Temperature control switch: FULL HOT ● Temperature difference between hot water and inlet air: 65°C (149°F) ● Hot water flow rate: 360 ℓ (95.1 US gal, 79.2 Imp gal)/h
		RHD model	4.93 kW (4,240 kcal/h, 16,824 BTU/h) or more	
Air flow rate		LHD model	280 m^3 (9,887 cu ft)/h	Heat mode (FRESH), FULL HOT at 12.5 V
		RHD model	300 m^3 (10,593 cu ft)/h	
Max air flow rate		LHD model	480 m^3 (16,949 cu ft)/h	● Temperature control switch: FULL COLD ● Blower fan speed: 4th position ● Mode selector lever: RECIRC
		RHD model	460 m^3 (16,243 cu ft)/h	
Heater core size (height × length × width)		LHD model	193.5 × 152 × 35.0 mm (7.62 × 5.98 × 1.378 in)	—
		RHD model	161.4 × 176.4 × 32 mm (6.35 × 6.94 × 1.26 in)	
Blower motor	Type	LHD model	Magnet motor 260 W or less	at 12 V
		RHD model	Magnet motor 250 W or less	
	Fan type and size (diameter × width)	LHD model	Sirocco fan type 150 × 75 mm (5.91 × 2.95 in)	—
		RHD model	Sirocco fan type 150 × 75 mm (5.91 × 2.95 in)	

2. A/C SYSTEM S701001E4902

● LHD Model:

Item			Specifications
Type of air conditioner			Reheat air-mix type
Cooling capacity			5.117 kW (4,400 kcal/h, 17,459 BTU/h)
Refrigerant			HFC-134a (CH_2FCF_3) [0.65±0.05 kg (1.43±0.11 lb)]
Compressor		Type	5-vane rotary, fix volume (KC50G)
		Discharge	140 cm^3 (8.54 cu in)/rev
		Max. permissible speed	7,000 rpm
Magnet clutch		Type	Dry, single-disc type
		Power consumption	38 W
		Type of belt	V-Ribbed 4 PK
		Pulley dia. (effective dia.)	125 mm (4.92 in)
		Pulley ratio	1.064
Condenser		Type	Corrugated fin (Multi-flow)
		Core face area	0.255 m^2 (2.74 sq ft)
		Dimensions (W × H × T)	22 × 374 × 683 mm (0.87 × 14.72 × 26.89 in)
		Radiation area	6.52 m^2 (70 sq ft)
Receiver drier		Effective inner capacity	250 cm^3 (15.26 cu in)
Expansion valve		Type	Internal equalizing
Evaporator		Type	Single tank
		Dimensions (W × H × T)	60 × 224 × 235 mm (2.36 × 8.82 × 9.25 in)
Blower fan		Fan type	Sirocco fan
		Outer diameter × width	150 × 75 mm (5.91 × 2.95 in)
		Power consumption	260 W at 12 V
Condenser fan (Sub fan)		Motor type	Magnet
		Power consumption	70 W at 12 V
		Fan outer diameter	320 mm (12.60 in)
Radiator fan (Main fan)		Motor type	Magnet
		Power consumption	70 W at 12 V
		Fan outer diameter	320 mm (12.60 in)
Dual switch (Pressure switch)	Low-pressure switch operating pressure	ON → OFF	177±25 kPa (1.80±0.25 kg/cm^2, 25.6±3.6 psi)
		OFF → ON	Less than 216 kPa (2.2 kg/cm^2, 31 psi)
	High-pressure switch operating pressure	ON → OFF	2,940±200 kPa (29.98±2.04 kg/cm^2, 426.3±29.0 psi)
		DIFF	590±200 kPa (6.02±2.04 kg/cm^2, 85.6±29.0 psi)
Compressor relief valve blow-out pressure			3,600±300 kPa (36.71±3.06 kg/cm^2, 522.0±43.5 psi)
Thermo control amplifier working temperature (Evaporator outlet air)			 S4M0511A

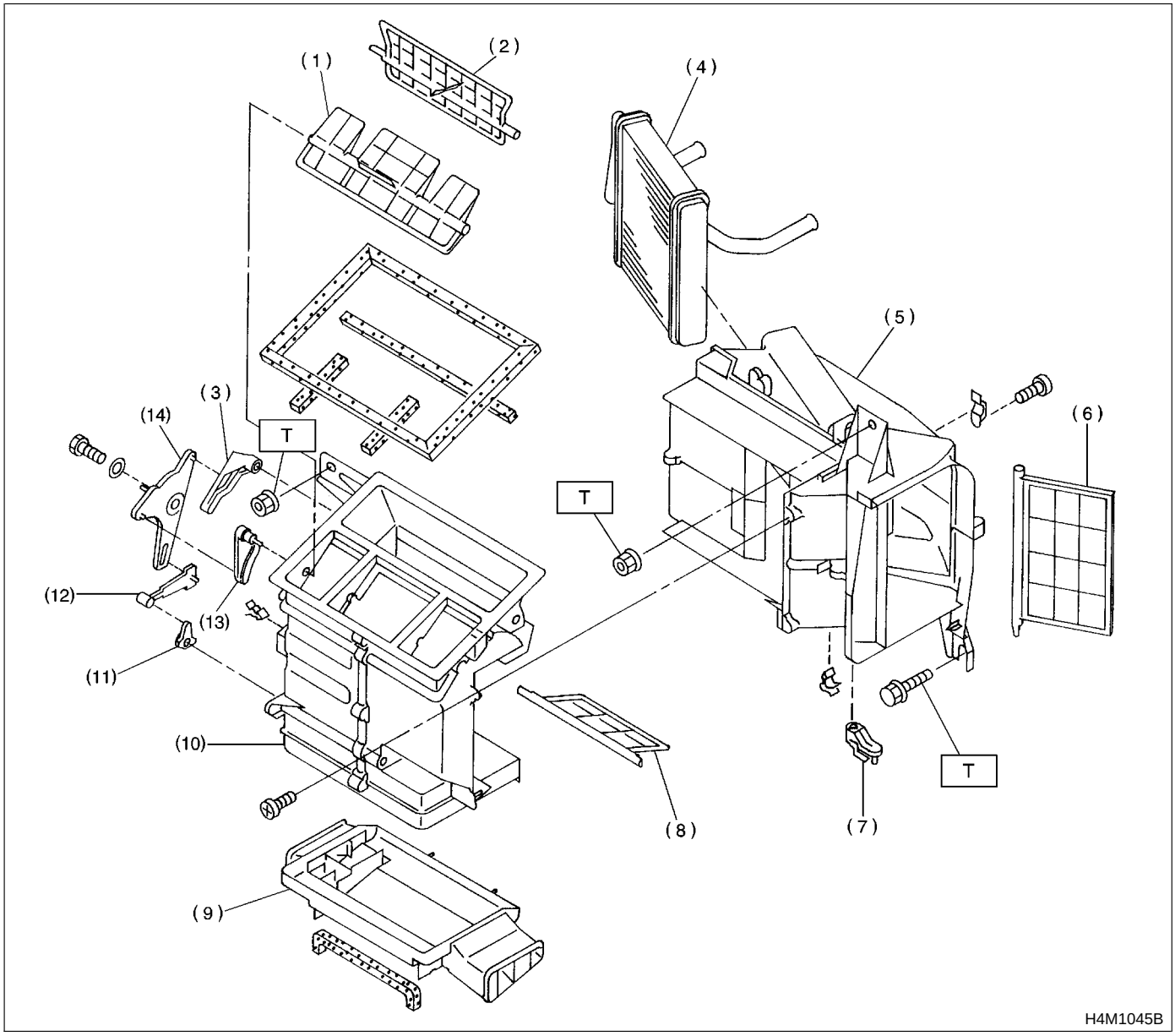
● RHD Model:

Item			Specifications
Type of air conditioner			Reheat air-mix type
Cooling capacity			5.059 kW (4,350 kcal/h, 17,261 BTU/h)
Refrigerant			HFC-134a (CH_2FCF_3) [0.65±0.05 kg (1.43±0.11 lb)]
Compressor		Type	5-vane rotary, fix volume (KC50G)
		Discharge	140 cm^3 (8.54 cu in)/rev
		Max. permissible speed	7,000 rpm
Magnet clutch		Type	Dry, single-disc type
		Power consumption	38 W
		Type of belt	V-Ribbed 4 PK
		Pulley dia. (effective dia.)	125 mm (4.92 in)
		Pulley ratio	1.064
Condenser		Type	Corrugated fin (Multi-flow)
		Core face area	0.231 m^2 (2.48 sq ft)
		Dimensions (W × H × T)	20 × 331 × 698 × mm (0.79 × 13.03 × 27.48 in)
		Radiation area	7.2 m^2 (77 sq ft)
Receiver drier		Effective inner capacity	250 cm^3 (15.26 cu in)
Expansion valve		Type	Internal equalizing
Evaporator		Type	Single tank
		Dimensions (W × H × T)	60 × 224 × 235 mm (2.36 × 8.82 × 9.25 in)
Blower fan		Fan type	Sirocco fan
		Outer diameter × width	150 × 75 mm (5.91 × 2.95 in)
		Power consumption	250 W at 12 V
Condenser fan (Sub fan)		Motor type	Magnet
		Power consumption	70 W at 12 V
		Fan outer diameter	320 mm (12.60 in)
Radiator fan (Main fan)		Motor type	Magnet
		Power consumption	70 W at 12 V
		Fan outer diameter	320 mm (12.60 in)
Dual switch (Pressure switch)	Low-pressure switch operating pressure	ON → OFF	177±25 kPa (1.8±0.25 kg/cm^2, 26±3.6 psi)
		OFF → ON	Less than 216 kPa (2.2 kg/cm^2, 31 psi)
	High-pressure switch operating pressure	ON → OFF	2,650±200 kPa (27.02±2.04 kg/cm^2, 384±29 psi)
		OFF → ON	1,471±200 kPa (15±2.04 kg/cm^2, 213±29 psi)
Compressor relief valve blow-out pressure			3,600±300 kPa (36.71±3.06 kg/cm^2, 522.0±43.5 psi)
Thermo control amplifier working temperature (Evaporator outlet air)			 S4M0275A

B: COMPONENT S701001A05

1. HEATER UNIT S701001A0501

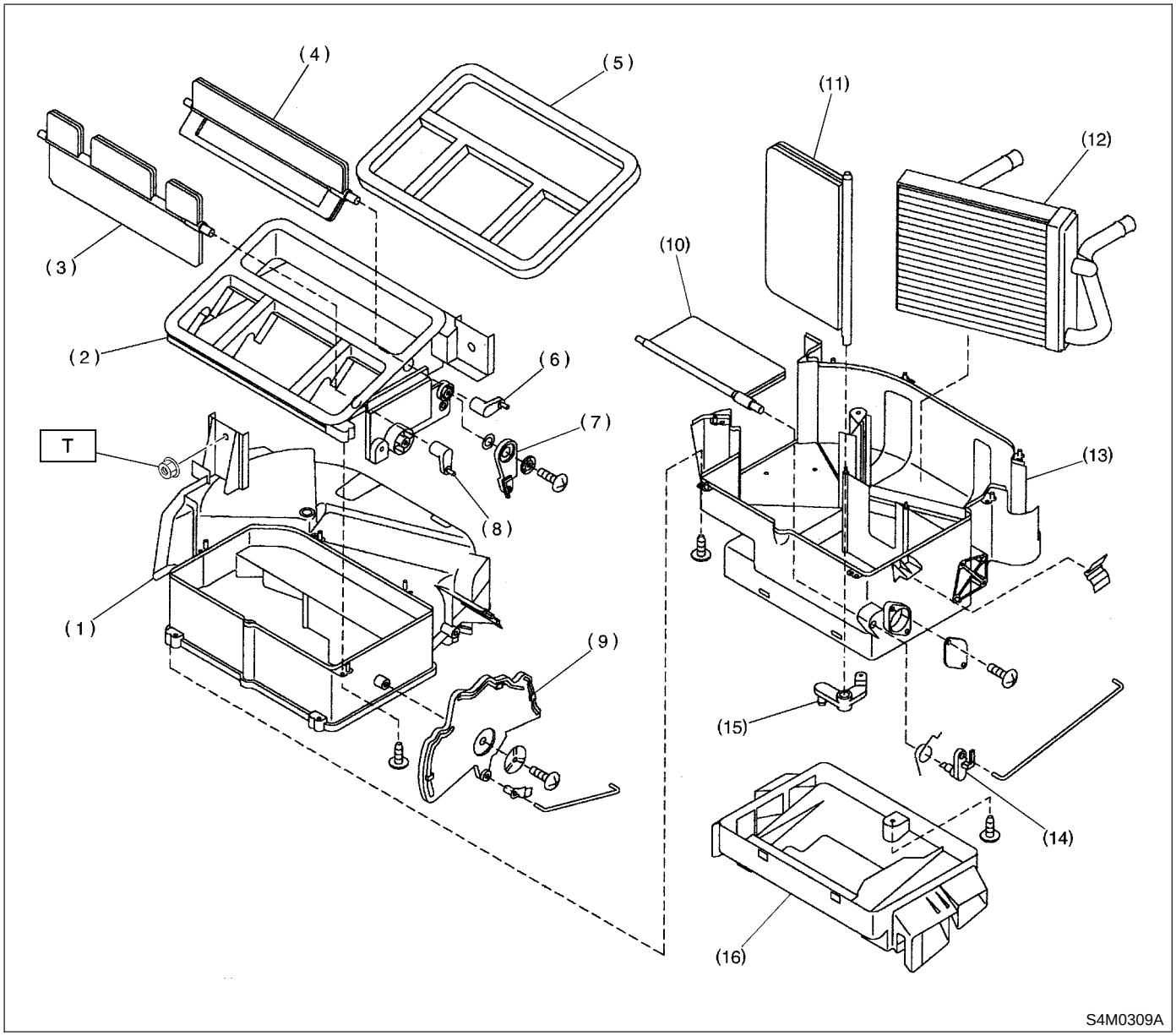
- **LHD Model:**



(1) Vent door
(2) DEF door
(3) DEF lever
(4) Heater core
(5) Heater case FRONT
(6) Mix door
(7) Mix lever
(8) Foot door
(9) Foot duct
(10) Heater case REAR
(11) Foot lever lower
(12) Foot lever upper
(13) Vent lever
(14) Side link

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.35 (0.750, 5.421)

- **RHD Model:**

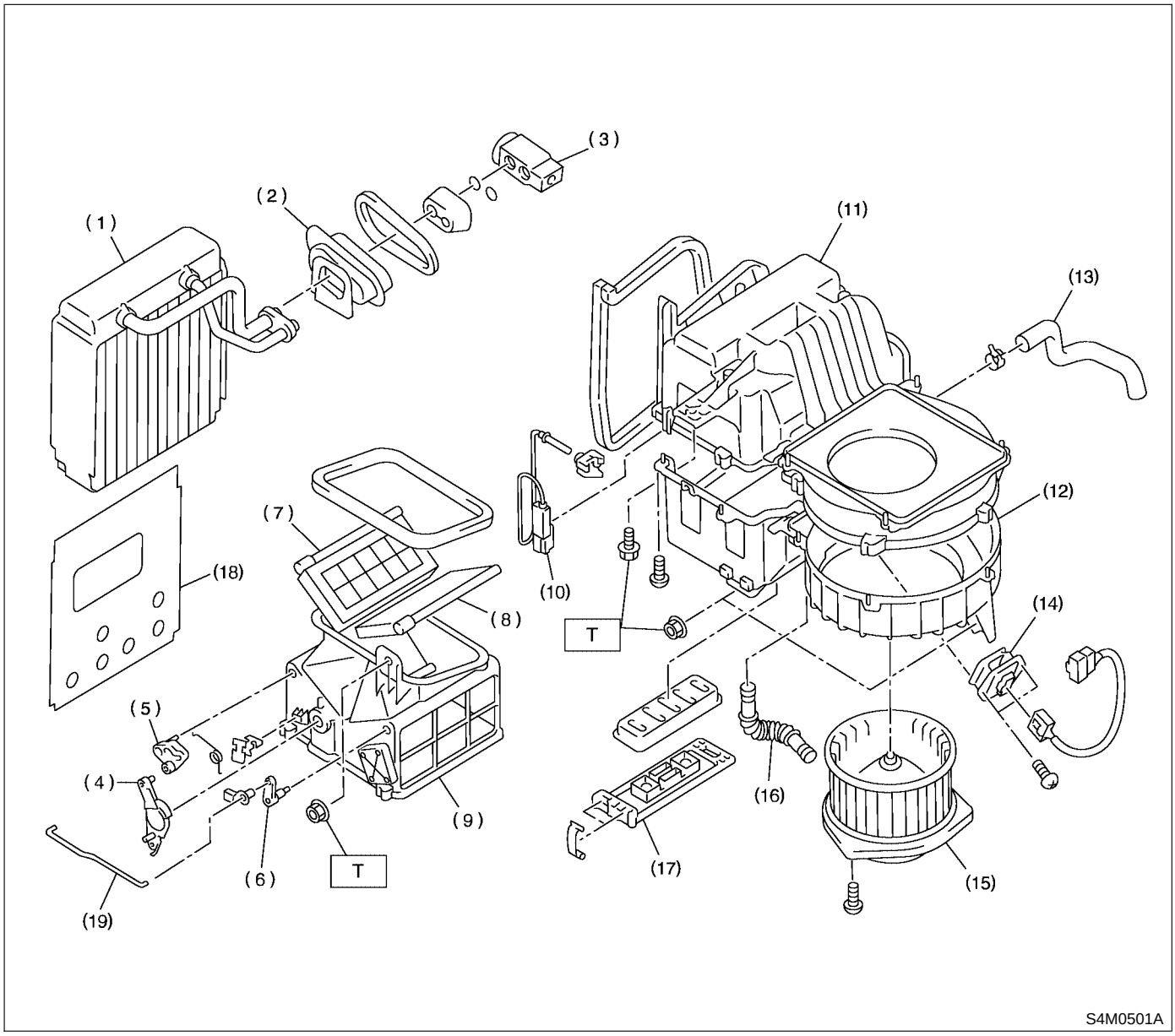


(1) Heater case upper A
(2) Heater case upper B
(3) Vent door
(4) DEF door
(5) Sealing sponge
(6) DEF door lever
(7) DEF door link
(8) Vent door lever
(9) Side link
(10) Foot door
(11) Mix door
(12) Heater core
(13) Heater case lower
(14) Foot door lever
(15) Mix door lever
(16) Foot duct

Tightening torque: N·m (kg-m, ft-lb)
T: 7.35 (0.750, 5.421)

2. INTAKE UNIT WITH EVAPORATOR S701001A0505

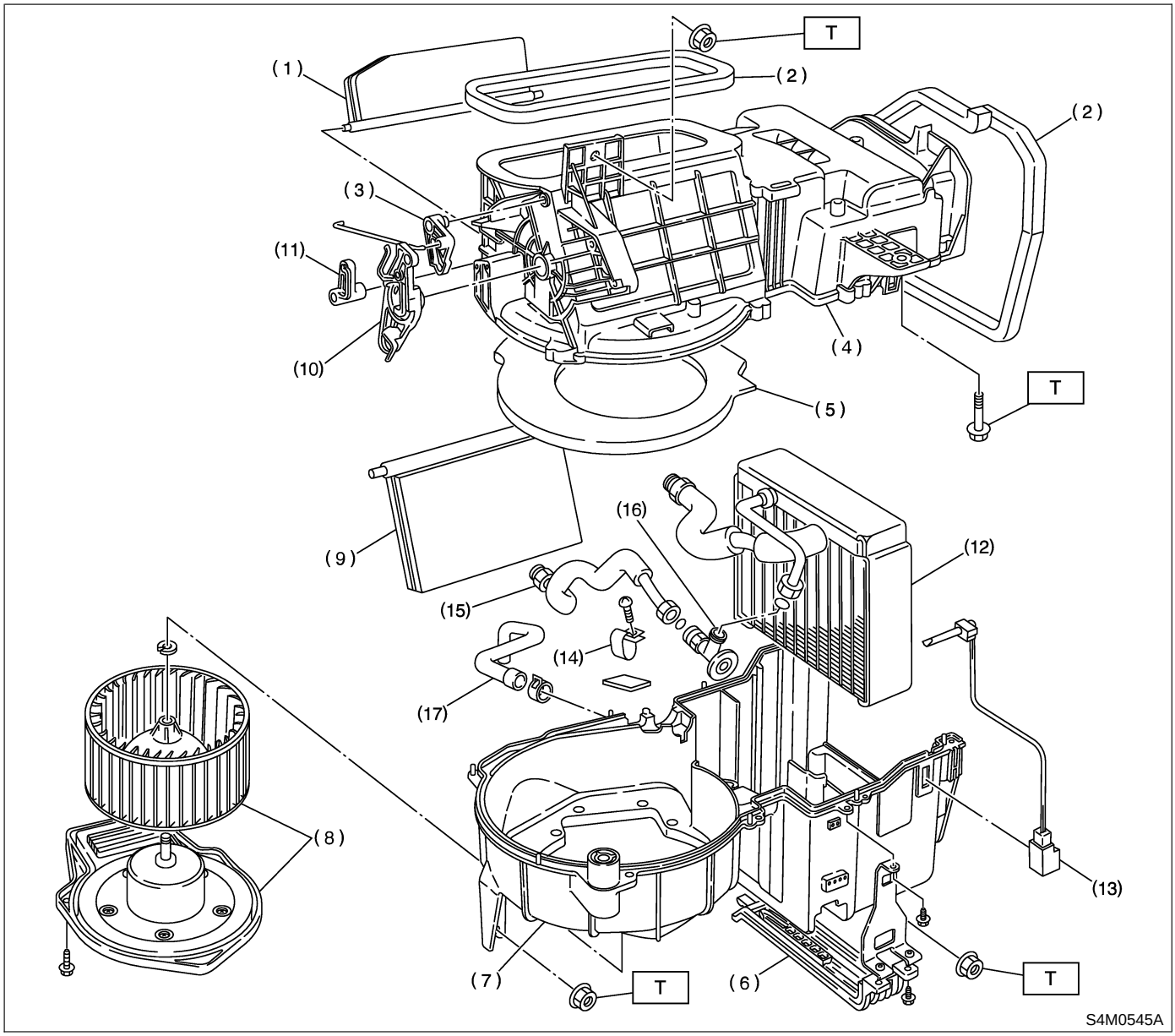
- **LHD Model:**



(1) Evaporator (With A/C model)
(2) Boot
(3) Block expansion valve (With A/C model)
(4) Link
(5) Lever (A)
(6) Lever (B)
(7) Door (A)
(8) Door (B)
(9) Intake unit case inlet
(10) Thermistor (With A/C model)
(11) Intake unit case upper
(12) Intake unit case lower
(13) Drain hose
(14) Resistor
(15) Blower motor ASSY
(16) Aspirator pipe
(17) Cover
(18) Separator
(19) Rod

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.35 (0.750, 5.421)

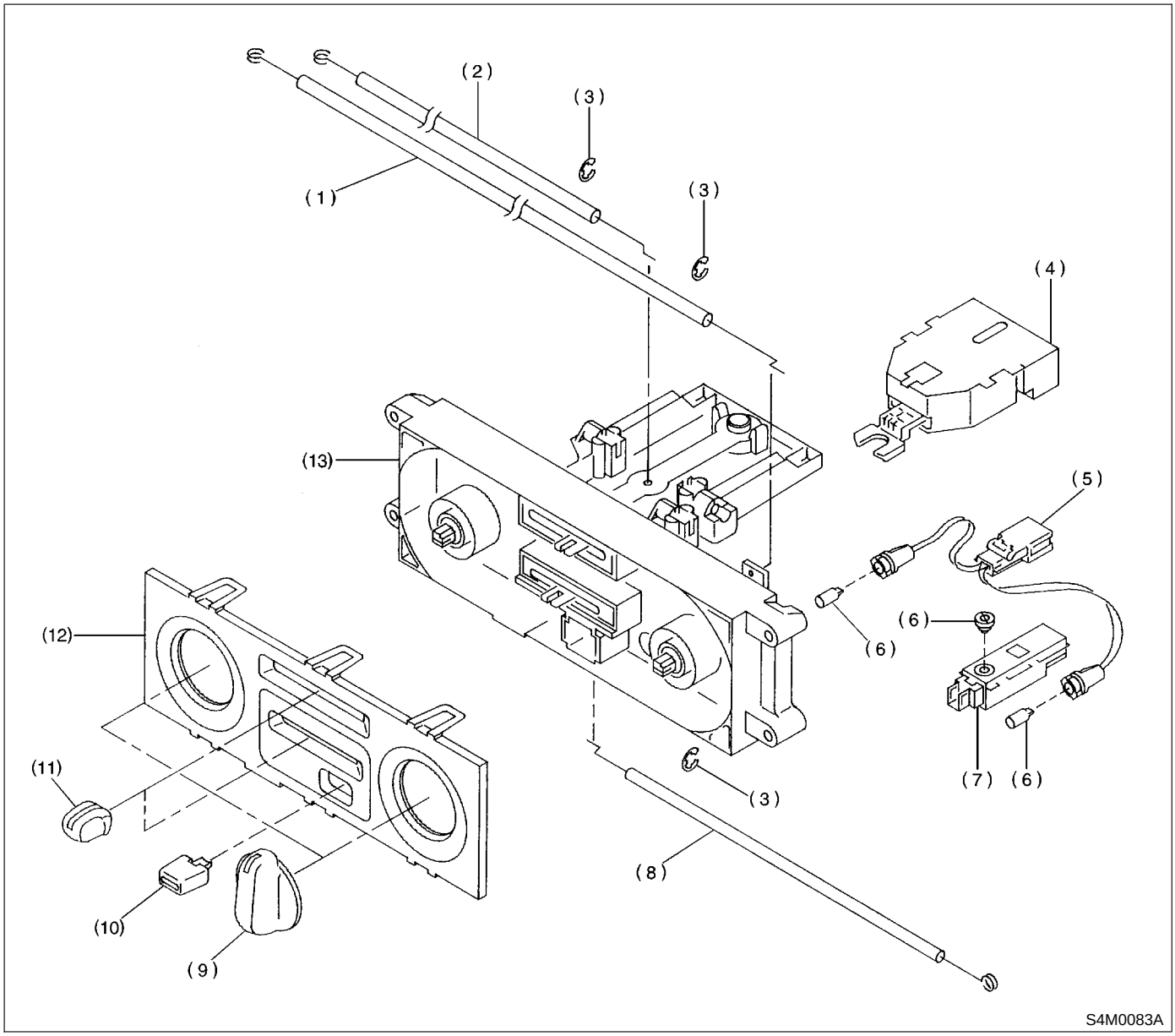
- **RHD Model:**



(1) Door (A)
(2) Sealing sponge
(3) Door (B) lever
(4) Intake unit case upper
(5) Separator
(6) Cover
(7) Intake unit case lower
(8) Blower motor ASSY
(9) Door (B)
(10) Link
(11) Door (A) lever
(12) Evaporator (With A/C model)
(13) Thermo control amplifier (With A/C model)
(14) Clamp
(15) Pipe (With A/C model)
(16) Expansion valve (With A/C model)
(17) Drain hose

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.35 (0.750, 5.421)

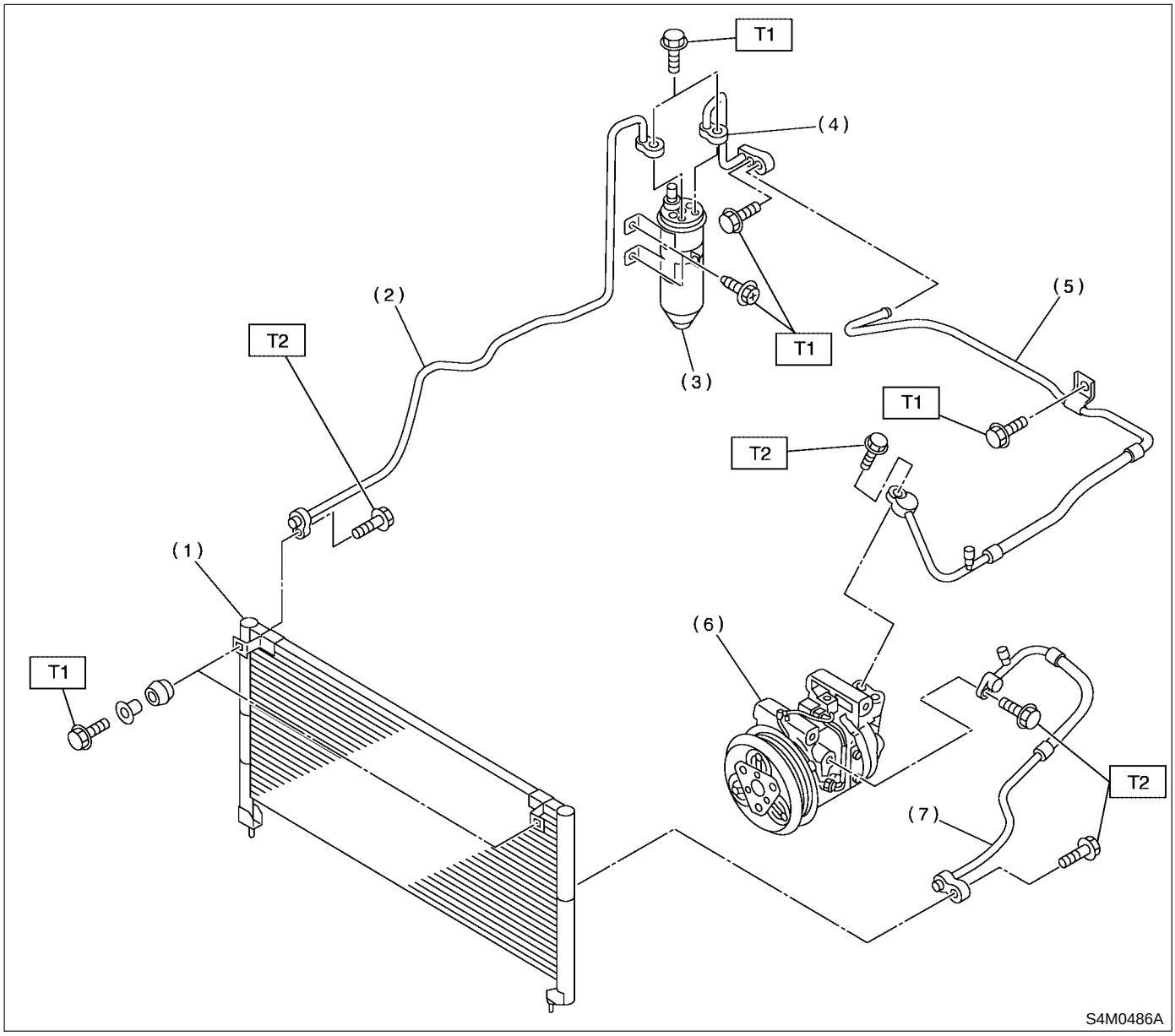
3. CONTROL UNIT S701001A0503



(1) Temperature control cable
(2) Recirc control cable
(3) Clip
(4) Blower switch ASSY
(5) Harness ASSY
(6) Bulb
(7) A/C switch ASSY
(8) Mode control cable
(9) Control dial knob
(10) A/C switch knob
(11) Control lever knob
(12) Plate
(13) Base unit

4. AIR CONDITIONING UNIT S701001A0504

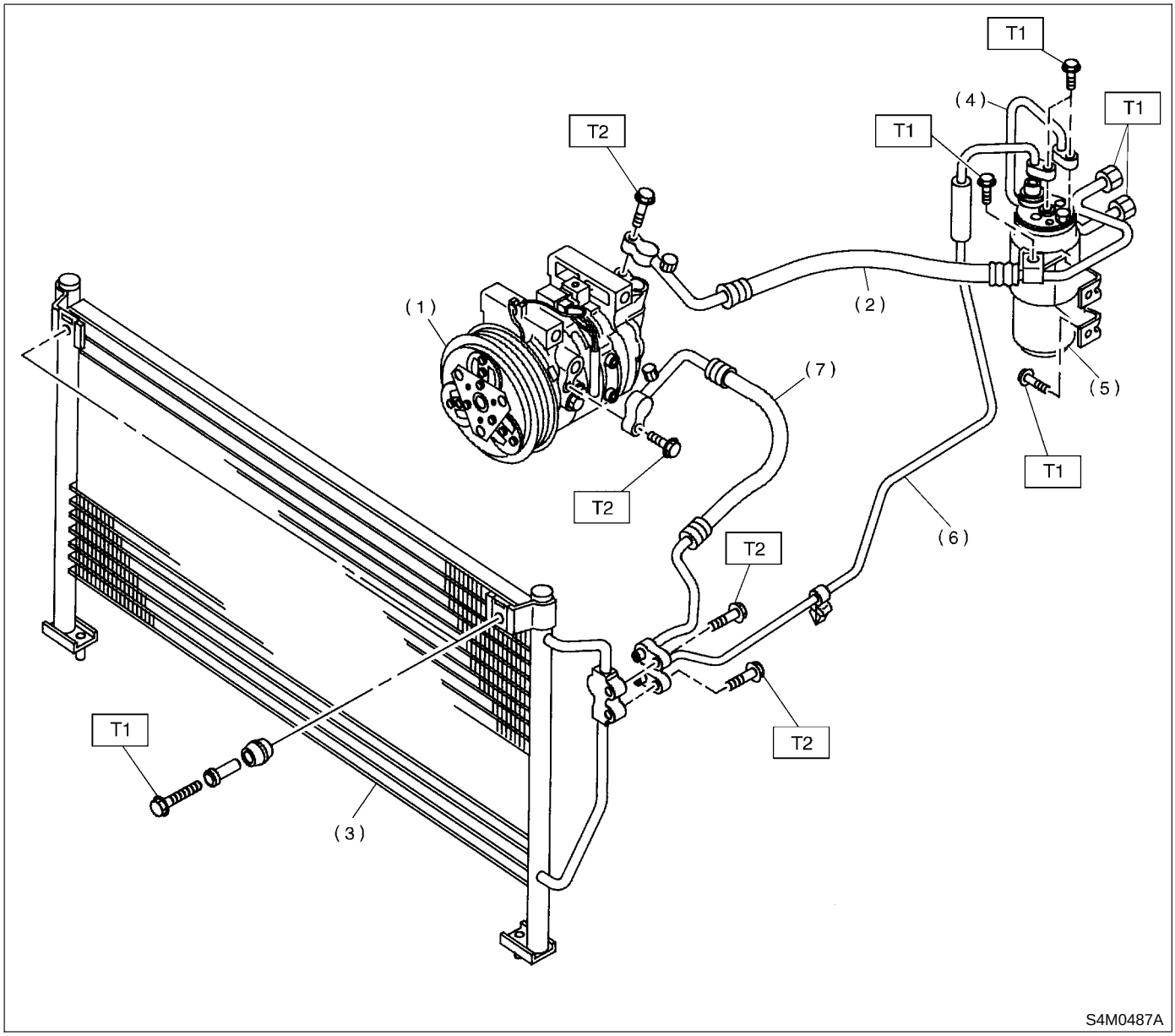
- **LHD Model:**



(1) Condenser
(2) Pipe (From condenser to receiver drier)
(3) Receiver drier
(4) Pipe (From receiver drier to intake unit)
(5) Hose (Low-pressure)
(6) Compressor
(7) Hose (High-pressure)

Tightening torque: N·m (kgf-m, ft-lb)
T1: 7.4 (0.75, 5.4)
T2: 15 (1.5, 10.8)

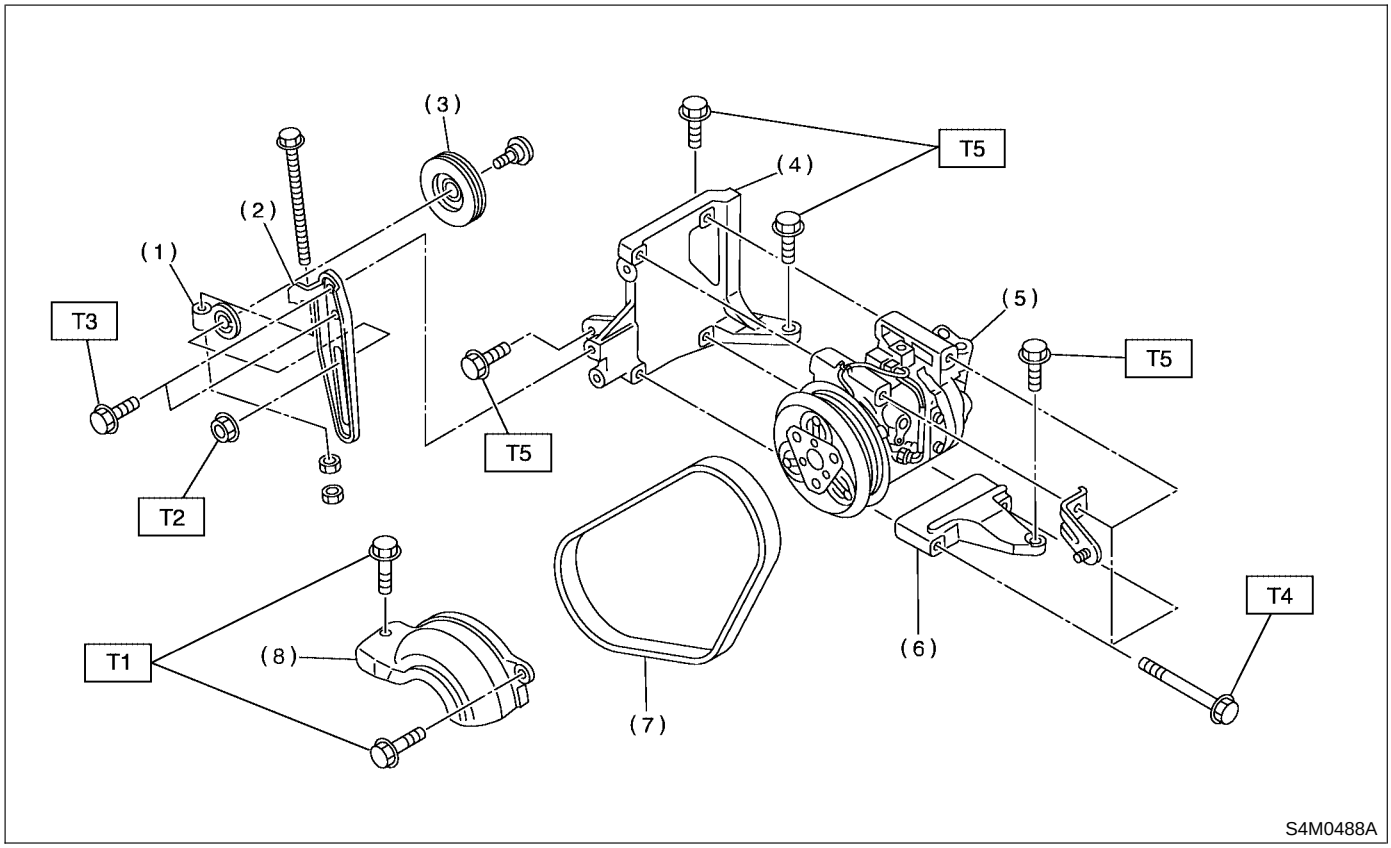
- **RHD Model:**



(1) Compressor
(2) Hose (Low-pressure)
(3) Condenser
(4) Pipe (From receiver drier to intake unit)
(5) Receiver drier
(6) Pipe (From condenser to receiver drier)
(7) Hose (High-pressure)

Tightening torque: N·m (kgf-m, ft-lb)
T1: 7.4 (0.75, 5.4)
T2: 15 (1.5, 10.8)

5. COMPRESSOR S701001A0506



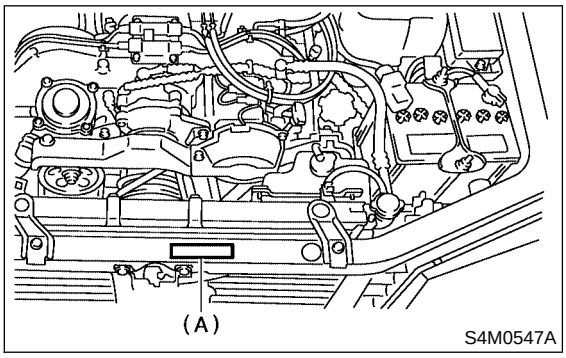
(1) Idler pulley adjuster
(2) Idler pulley bracket
(3) Idler pulley
(4) Compressor bracket upper
(5) Compressor
(6) Compressor bracket lower
(7) V-belt
(8) Compressor belt cover

Tightening torque: N·m (kgf-m, ft-lb)
T1: 7.4 (0.75, 5.4)
T2: 23 (2.3, 17)
T3: 23.0 (2.35, 17.0)
T4: 28.9 (2.95, 21.3)
T5: 35 (3.6, 26)

C: CAUTION S701001A03

1. HFC-134a A/C SYSTEM S701001A0301

● Unlike the old conventional HFC-12 system components, the cooling system components for the HFC-134a system such as the refrigerant and compressor oil are incompatible.
● Vehicles with the HFC-134a system can be identified by the label “A” attached to the vehicle. Before maintenance, check which A/C system is installed in the vehicle.



2. COMPRESSOR OIL S701001A0302

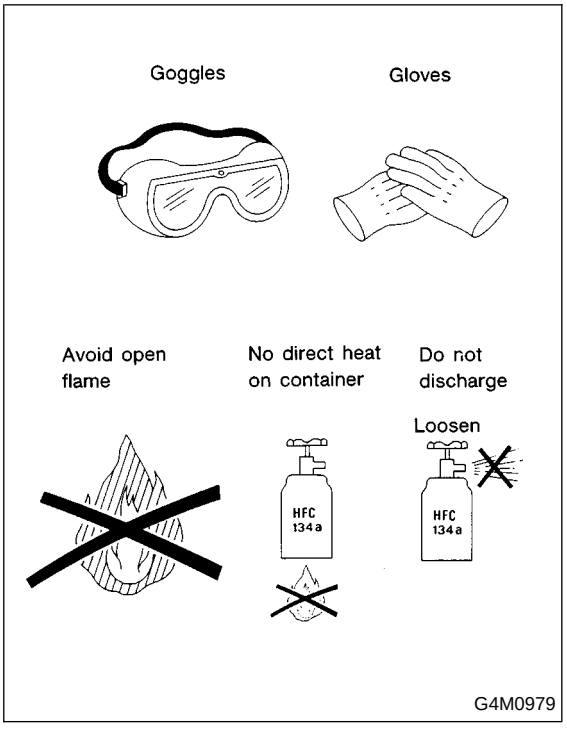
● HFC-134a compressor oil has no compatibility with that for R12 system.
● Use only the manufacturer-authorized compressor oil for the HFC-134a system; only use ZXL200PG.
● Do not mix multiple compressor oils.
If HFC-12 compressor oil is used in a HFC-134a A/C system, the compressor may become stuck due to poor lubrication, or the refrigerant may leak due to swelling of rubber parts.
On the other hand, if HFC-134a compressor oil is used in a HFC-12 A/C system, the durability of the A/C system will be lowered.
● HFC-134a compressor oil is very hygroscopic. When replacing or installing/removing A/C parts, immediately isolate the oil from the atmosphere using a plug or tape. In order to avoid moisture, store the oil in a container with its cap tightly closed.

3. REFRIGERANT S701001A0303

● The HFC-12 refrigerant cannot be used in the HFC-134a A/C system. The HFC-134a refrigerant, also, cannot be used in the HFC-12 A/C system.
● If an incorrect or no refrigerant is used, poor lubrication will result and the compressor itself may be damaged.

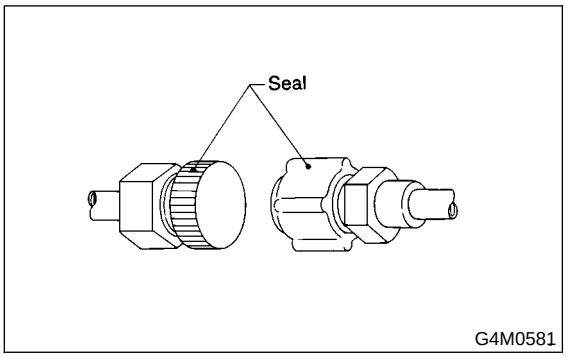
4. HANDLING OF REFRIGERANT S701001A0304

● The refrigerant boils at approx. −30°C (−22°F). When handling it, be sure to wear safety goggles and protective gloves. Direct contact of the refrigerant with skin may cause frostbite.
If the refrigerant gets into your eye, avoid rubbing your eyes with your hands. Wash your eye with plenty of water, and receive medical treatment from an eye doctor.
● Do not heat a service can. If a service can is directly heated, or put into boiling water, the inside pressure will become extremely high. This may cause the can to explode. If a service can must be warmed up, use hot water in 40°C (104°F) max.
● Do not drop or impact a service can. (Observe the precautions and operation procedure described on the refrigerant can.)
● When the engine is running, do not open the high-pressure valve of the manifold gauge. The high-pressure gas will back-flow resulting in an explosion of the can.
● The refrigerant is non-toxic and harmless under normal operating circumstance, but it may change to phosgene (a noxious fume) under open flames or high temperatures (caused by a cigarette or heater).
● Provide good ventilation and do not work in a closed area.
● Never perform a gas leak test using a halide torch-type leak tester.
● In order to avoid destroying the ozone layer, prevent HFC-134a from being released into the atmosphere. Using a refrigerant recovery system, discharge and reuse it.

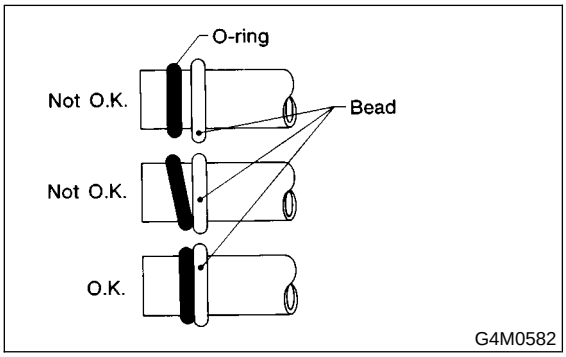


5. O-RING CONNECTIONS S701001A0305

- Use new O-rings.
- In order to keep the O-rings free of lint which will cause a refrigerant gas leak, perform operations without gloves and shop towels.
- Apply the compressor oil to the O-rings to avoid sticking, then install them.
- Use a torque wrench to tighten the O-ring fittings: Over-tightening will damage the O-ring and tube end distortion.
- If the operation is interrupted before completing a pipe connection, recap the tubes, components, and fittings with a plug or tape to prevent contamination from entering.



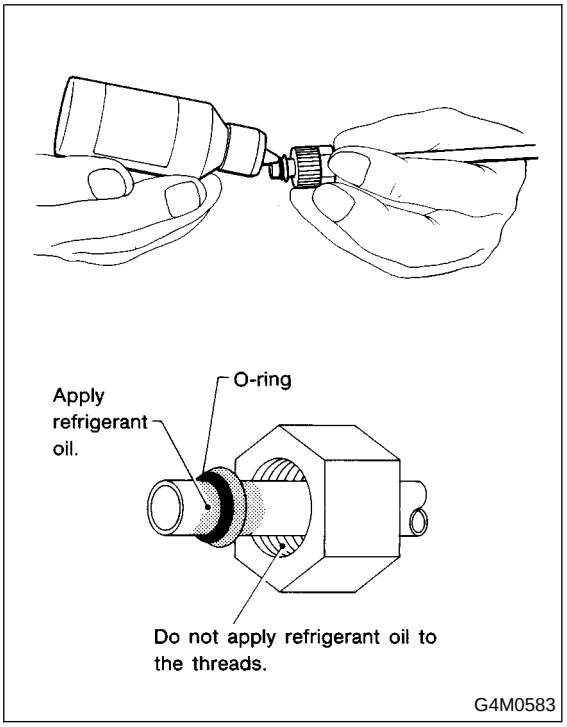
- Visually check the surfaces and mating surfaces of O-rings, threads, and connecting points. If a failure is found, replace the applicable parts.
- Install the O-rings at right angle to the tube beards.



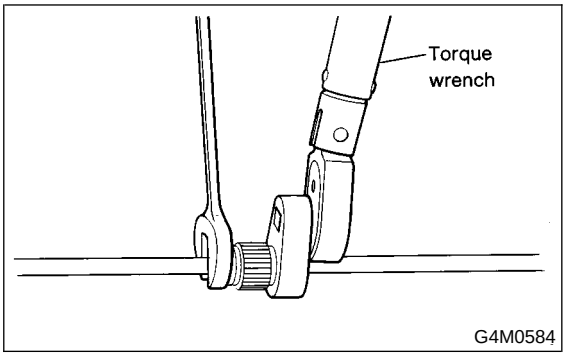
- Use the oil specified in the service manual to lubricate the O-rings.

Apply the oil to the top and sides of the O-rings before installation.

Apply the oil to the area including the O-rings and tube beads.



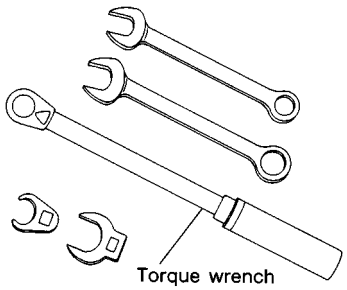
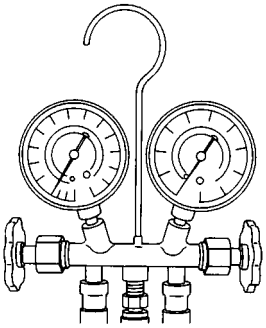
- When connecting hoses or pipes, use 2 wrenches (a torque wrench for tightening). While securing one side with a wrench, tighten the other side to the specified torque with a torque wrench. If only one wrench is used to tighten, the tightening torque will be excessive or insufficient. This may cause a pipe distortion or gas leak, resulting in damage to hoses and pipes.
- After tightening, using a clean shop towel to remove excess oil from the connections and any oil which may have run on the vehicle body or other parts.
- If any leakage is suspected after tightening, do not retighten the connections, Disconnect the connections, remove the O-rings, and check the O-rings, threads, and connections.

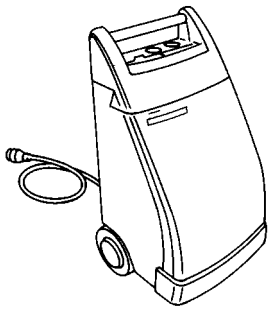
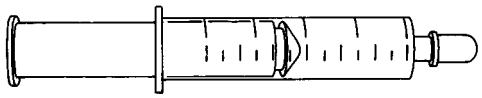
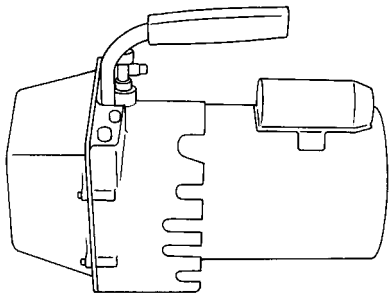
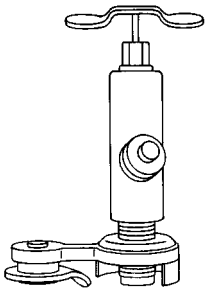


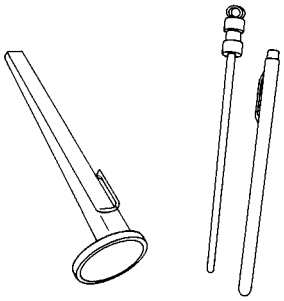
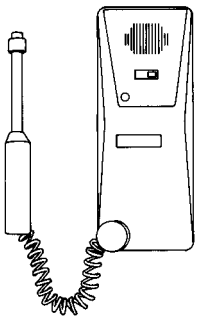
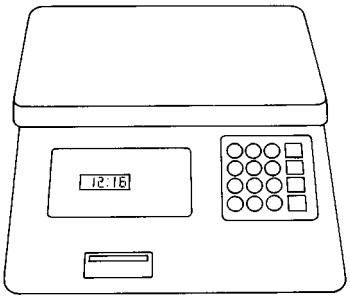
D: PREPARATION TOOL S701001A17

CAUTION:
When working on vehicles with the HFC-134a system, only use HFC-134a specified tools and parts. Do not mix with CFC-12 tools and parts. If HFC-134a and CFC-12 refrigerant or compressor oil is mixed, poor lubrication will result and the compressor itself may be destroyed.
In order to help prevent mixing HFC-134a and CFC-12 parts and liquid, the tool and screw type and the type of service valves used are different. The gas leak detectors for the HFC-134a and CFC-12 systems must also not be interchanged.

	HFC-134a	CFC-12
Tool & screw type	Millimeter size	Inch size
Valve type	Quick joint type	Screw-in type

Tools and Equipment	Description
Wrench Various **WRENCHES** will be required to service any A/C system. A 7 to 40 N·m (0.7 to 4.1 kg-m, 5 to 30 ft-lb) torque wrench with various crowfoot wrenches will be needed. Open end or flare nut wrenches will be needed for back-up on the tube and hose fittings.	 G4M0571
Applicator bottle A small **APPLICATOR BOTTLE** is recommended to apply refrigerant oil to the various parts. They can be obtained at a hardware or drug store.	 G4M0572
Manifold gauge set A **MANIFOLD GAUGE SET** (with hoses) can be obtained from either a commercial refrigeration supply house or from an auto shop equipment supplier.	 G4M0573

Tools and Equipment	Description
Refrigerant recovery system A **REFRIGERANT RECOVERY SYSTEM** is used for the recovery and reuse of A/C system refrigerant after contaminants and moisture have been removed from the refrigerant.	 G4M0574
Syringe A graduated plastic **SYRINGE** will be needed to add oil back into the system. The syringe can be found at a pharmacy or drug store.	 G4M0575
Vacuum pump A **VACUUM PUMP** (in good working condition) is necessary, and may be obtained from either a commercial refrigeration supply house or an automotive equipment supplier.	 G4M0576
Can tap A **CAN TAP** for the 397 g (14 oz) can is available from an auto supply store.	 G4M0577

Tools and Equipment	Description
Thermometer Pocket **THERMOMETERS** are available from either industrial hardware store or commercial refrigeration supply houses.	 G4M0578
Electronic leak detector An **ELECTRONIC LEAK DETECTOR** can be obtained from either a specialty tool supply or an A/C equipment supplier.	 G4M0579
Weight scale A **WEIGHT SCALE** such as an electronic charging scale or a bathroom scale with digital display will be needed if a 13.6 kg (30 lb) refrigerant container is used.	 G4M0580

2. Refrigerant Pressure with Manifold Gauge Set S701631

A: OPERATION S701631A16

1) Place the vehicle in the shade and draftless condition.
2) Connect the manifold gauge set.
3) Open the front windows and close all doors.
4) Open the hood.
5) Increase engine rpm to 1,500.
6) Turn ON the A/C switch.
7) Turn the temperature control switch to MAX COOL.
8) Put in RECIRC position.
9) Turn the blower control switch to HI.
10) Read the gauge.

Standard:

Low pressure: 127 - 196 kPa (1.3 - 2.0 kg/cm^2, 18 - 28 psi)
High pressure: 1,471 - 1,667 kPa (15 - 17 kg/cm^2, 213 - 242 psi)
Ambient temperature: 30 - 35 °C (86 - 95 °F)

B: INSPECTION S701631A10

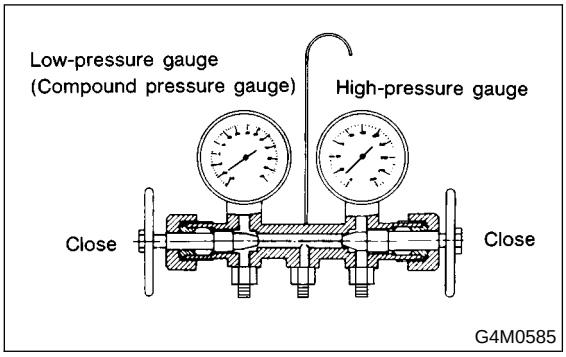
Symptom	Probable cause	Repair order
High-pressure side is unusually high.	• Defective condenser fan motor • Clogged condenser fan • Too much refrigerant • Air inside the system • Defective receiver dryer	• Replace the fan motor. • Clean the condenser fin. • Discharge refrigerant. • Replace the receiver dryer.
High-pressure side is unusually low.	• Defective compressor • Not enough refrigerant • Clogged expansion valve • Expansion valve frozen temporarily by moisture	• Replace the compressor. • Check for leaks. • Replace the expansion valve.
Low-pressure side is unusually high.	• Defective compressor • Defective expansion valve • Too much refrigerant	• Replace the compressor. • Replace the expansion valve. • Discharge refigerant.
Low-pressure side is unusually low.	• Not enough refrigerant • Clogged expansion valve • Expansion valve frozen temporarily by moisture • Saturated receiver dryer	• Check for leaks. • Replace the expansion valve • Replace the receiver dryer.

3. Refrigerant Recovery Procedure S701291

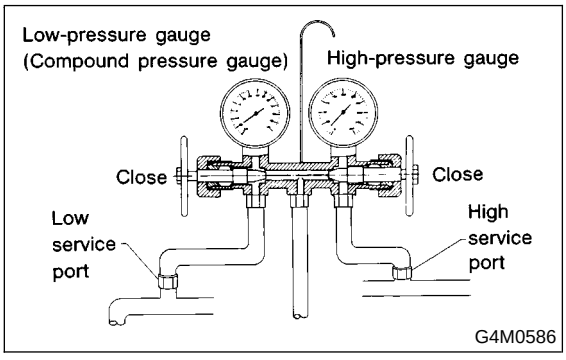
A: OPERATION S701291A16

CAUTION:
● During operation, be sure to wear safety goggles and protective gloves.
● Connect the refrigerant recovery system with the manifold gauge set to discharge the refrigerant from the A/C system and reuse it.
● When reusing the discharged refrigerant, keep service cans on hand. Because the discharge rate with the recovery system is approx. 90%, service cans are necessary to charge the refrigerant.
● Follow the detailed operation procedure described in the operation manual attached to the refrigerant recovery system.

1) Turn the A/C switch ON.
Leave the engine running for approx. 5 minutes to activate the compressor. Perform the refrigerating cycle with the refrigerant to discharge the compressor oil remaining on the functional parts into the compressor as much as possible.
2) Stop the engine.
3) Close the valves on the low-/high-pressure sides of the manifold gauge set.



4) Install the low-/high-pressure hoses to the service ports on the low-/high-pressure sides of the vehicle respectively.



5) Connect the center hose to the refrigerant recovery system.
6) Follow the operation manual to activate the refrigerant recovery system.

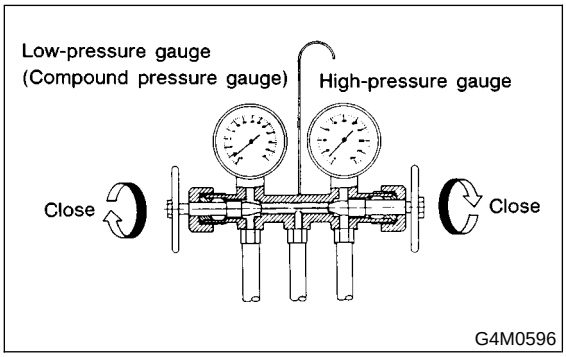
4. Refrigerant Charging Procedure S701292

A: OPERATION S701292A16

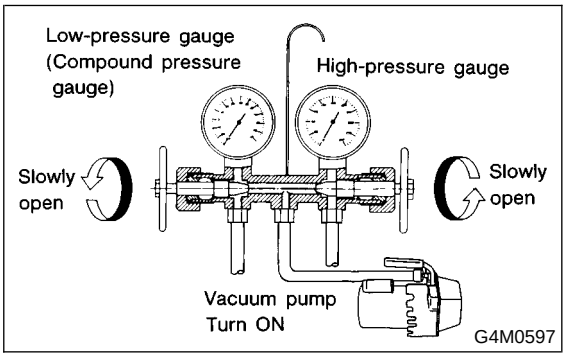
CAUTION:
● During operation, be sure to wear safety goggles and protective gloves.
● Before charging the refrigerant, evacuate the system to remove small amounts of moisture remaining in the system.
The moisture in the system can be completely evacuated only under the minimum vacuum level. The minimum vacuum level affects the temperature in the system.
● The list below shows the vacuum values necessary to boil water in various temperature. In addition, the vacuum levels indicated on the gauge are approx. 3.3 kPa (25 mmHg, 0.98 inHg) lower than those measured at 304.8 m (1,000 ft) above sea level.

Vacuum level required to boil water (at sea level)	
Temperature	Vacuum
1.7°C (35°F)	100.9 kPa (757 mmHg, 29.8 inHg)
7.2°C (45°F)	100.5 kPa (754 mmHg, 29.7 inHg)
12.8°C (55°F)	99.8 kPa (749 mmHg, 29.5 inHg)
18.3°C (65°F)	99.2 kPa (744 mmHg, 29.3 inHg)
23.9°C (75°F)	98.5 kPa (739 mmHg, 29.1 inHg)
29.4°C (85°F)	97.2 kPa (729 mmHg, 28.7 inHg)
35°C (95°F)	95.8 kPa (719 mmHg, 28.3 inHg)

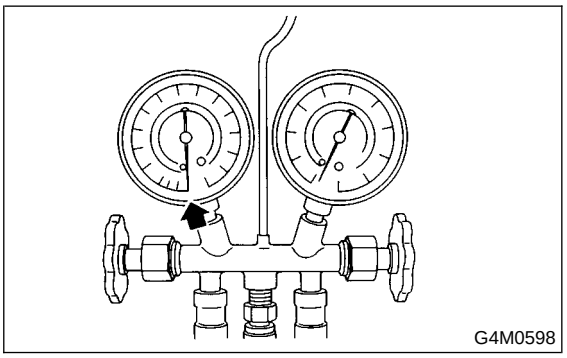
1) Close the valves on low-/high-pressure sides of the manifold gauge.



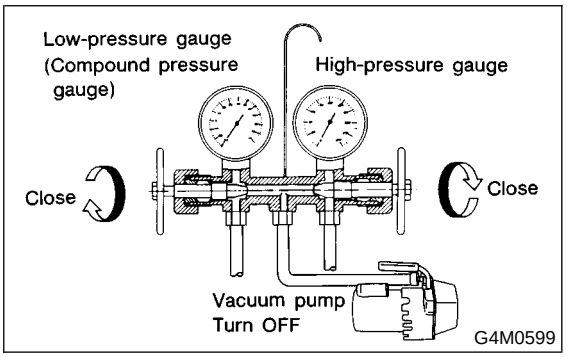
2) Install the low-/high-pressure hoses to the corresponding service ports on the vehicle respectively.
3) Connect the center hose of the manifold gauge set with the vacuum pump.
4) Carefully open the valves on the low-/high-pressure sides to activate the vacuum pump.



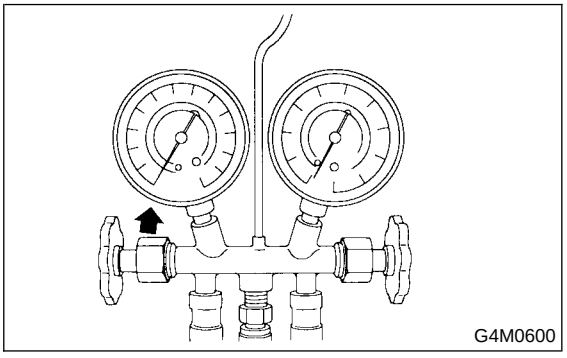
5) After the low-pressure gauge reaches 100.0 kPa (750 mmHg, 29.5 inHg) or higher, evacuate the system for approx. 15 minutes.



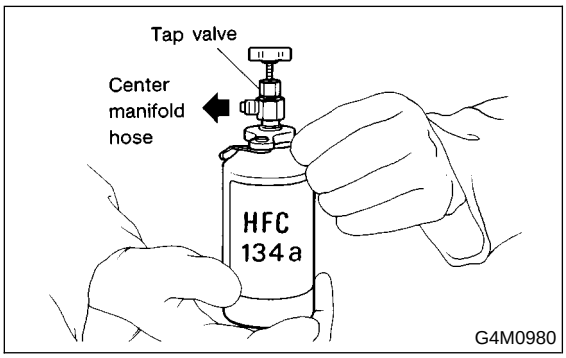
6) After 15 minutes of evacuation, if the reading shows 100.0 kPa (750 mmHg, 29.5 inHg) or higher, close the valves on the both sides to stop the vacuum pump.



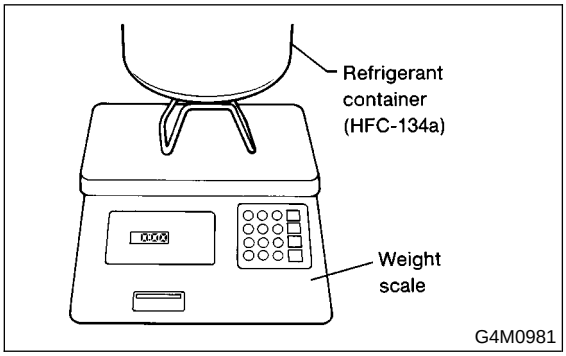
7) Note the low-pressure gauge reading.



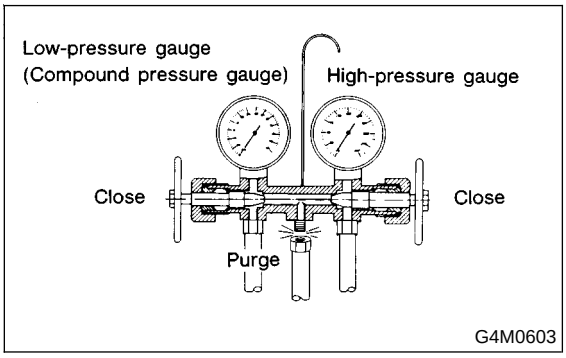
8) Leave it at least 5 minutes, and then check the low-pressure gauge reading for any changes.
When a gauge indicator shows near to zero point, this is a sign of leakage. Check pipe connector points, repair them, make sure there is no leakage by air bleeding.
9) Following the can tap operation manual instructions, install it to the refrigerant can.



10) Disconnect the center manifold hose from the vacuum pump, and connect the hose to the tap valve.
11) When a 13.6 kg (30 lb) refrigerant container is used, measure the refrigerant amount in use using a weighting scale.

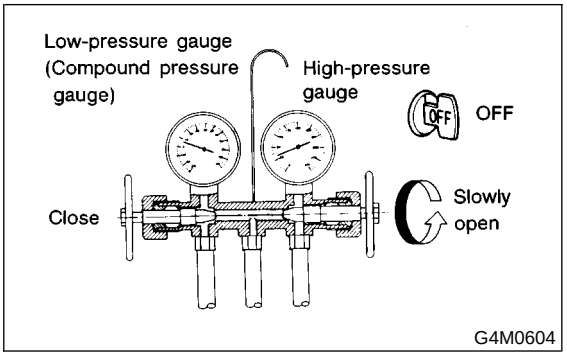


12) Confirm that all the 3 hoses are tightly connected to the manifold gauge set.



13) Open the valve on the HFC-134a source.
14) Loosen the center hose connection on the manifold gauge set (if applicable, press a purge valve on the manifold gauge set) only for a couple of seconds to allow the air in the center hose to escape by the refrigerant.
15) Carefully open the high-pressure valve with the engine stopping.

CAUTION:
Do not open the low-pressure valve.

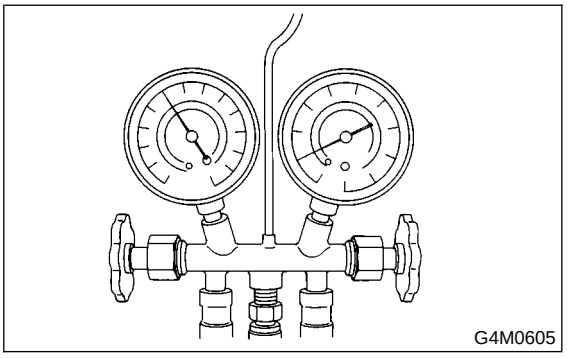


CAUTION:
Never run the engine during charging from the high-pressure side.

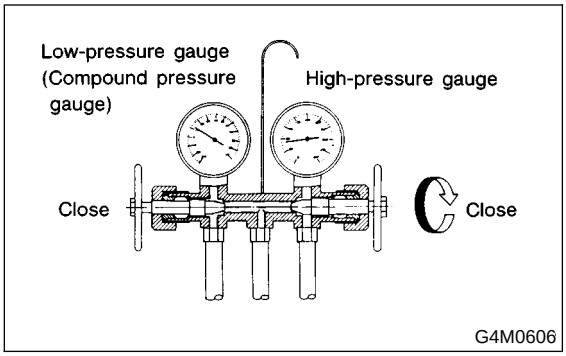
16) Close the high-pressure valve when the low-pressure gauge reaches 98 kPa (1 kg/cm^2, 14 psi).
Using a leak tester, check the system for leaks.
If any leakage is found after the refrigerant recovery is completed, repair the applicable area.
17) After confirming that there are no leaks with the leak test, charge the required amount of refrigerant.

CAUTION:
Never run the engine during charging from the high-pressure side.

18) Close the high-pressure valve when;
- the readings of low- and high-pressure gauges become almost equal, after the charging speed is reduced,
- the HFC-134a source becomes empty, or
- the system is filled with the gas.



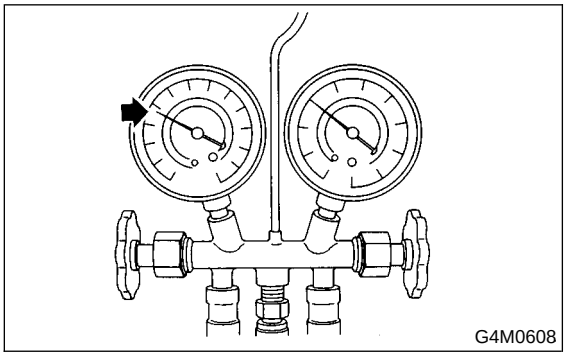
19) If the HFC-134a source is empty, close the high-pressure valve, close the valve on the can tap, and replace the HFC-134a source with a new one to restart the operation.



20) Confirm that both the low- and high-pressure valves can be closed. Start the engine with the A/C switch OFF.
21) Quickly repeat ON-OFF cycles a few times to prevent initial compressor damage.
22) Set up the vehicle to the following status:
- A/C switch ON
- Engine running at 1,500 rpm
- Blower speed setting to “HI”
- Temperature setting to “MAX COOL”
- Air inlet setting to “RECIRC”
- Windows open

23) While reading the low-pressure gauge, carefully open the low-pressure valve with the refrigerant source connected and the service hose purged.

CAUTION:
Never open the high-pressure valve with the engine running.



24) Adjust the refrigerant flow to maintain the pressure on the low-pressure side at 276 kPa (2.81 kg/cm^2, 40 psi) max.
25) After the system is fully charged, close the low-pressure valve.
26) Close the valve on the refrigerant source.

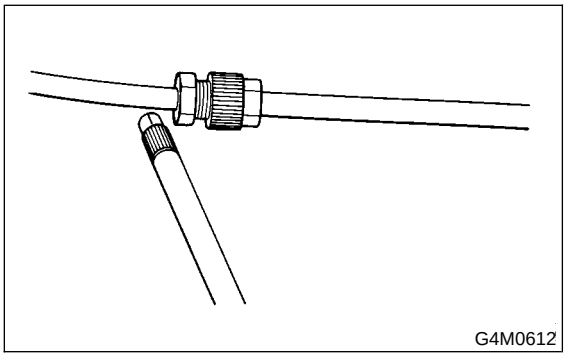
Refrigerant amount		
Refrigerant	Minimum	Maximum
HFC-134a	0.6 kg (1.3 lb)	0.7 kg (1.5 lb)

27) Disconnect the hose from the service port, and install the service port cap.

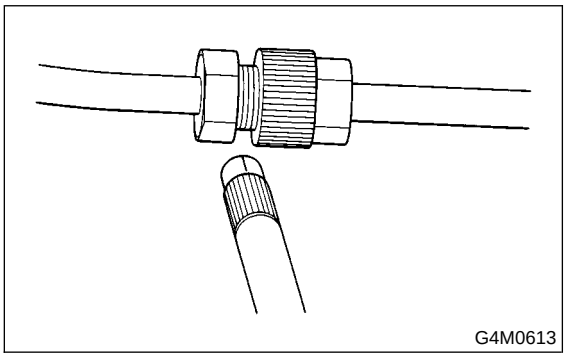
5. Refrigerant Leak Check S701293

A: INSPECTION S701293A10

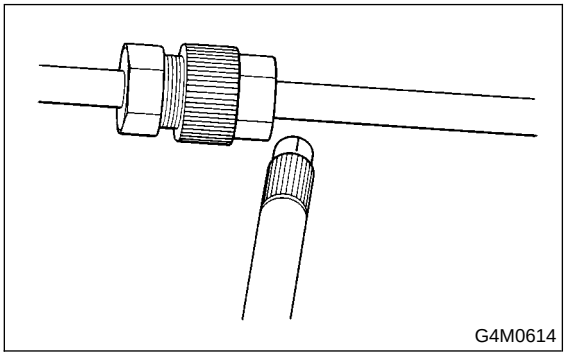
1) Operate the A/C system for approx. 10 minutes, and confirm that the high-side pressure shows at least 690 kPa (7.03 kg/cm^2, 100 psi). Then stop the engine to start the leak test.
2) Starting from the connection between the high-pressure tube and evaporator, check the system for leaks along the high-pressure side through the compressor. The following items must be checked thoroughly.
- Connection between the tube and tube fitting


G4M0612

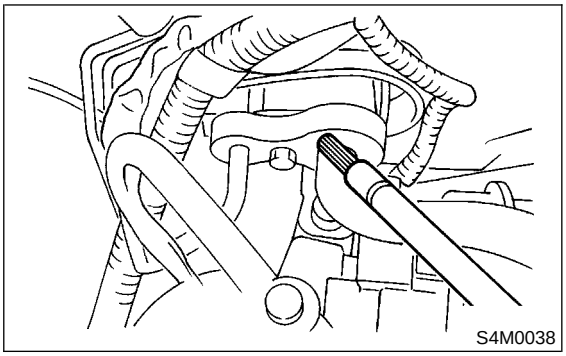
- Connection between 2 parts


G4M0613

- Connection between the tube and nut

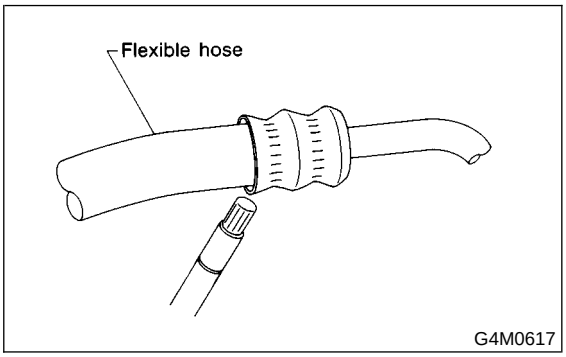

G4M0614

3) Check the joint and seam between the pressure switch (dual switch) and receiver dryer.
4) Check the connections between the condenser and tubes, and welded joints on the condenser.
The leak tester may detect the oil on the condenser fins as a leak.
5) Check the joint between the compressor and hoses.
6) Check the machined area of compressor and other joints on the compressor.
7) Check the thermal limiter (if equipped) on the compressor housing.
8) Check the compressor shaft seal at the area near the center of compressor clutch pulley.
Some shaft seals show a slight amount of leakage about 28 g (1.0 oz) per year. This is not a problem.
9) Starting from the connection between the low-pressure tube and evaporator, check the system for leakage along the high-pressure side through the compressor. The following items must be checked thoroughly.
- Connection between the tube and tube fitting
- Connection between 2 parts
- Connection between the tube and nut


S4M0038

10) Visually check the rubber area of the flexible hose for cracks.
Check the entire length of the flexible hose, especially the connection with the metal hose end.

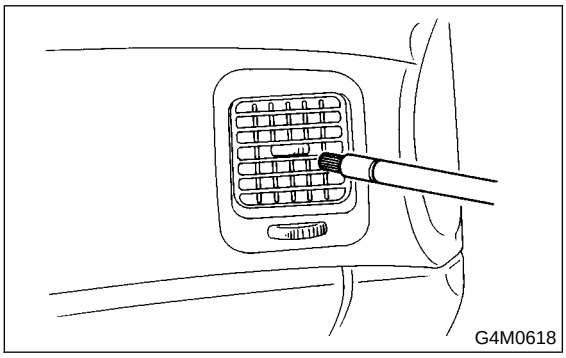
CAUTION:
Carefully check the external surface of hoses and tubes at approx. 25 mm (0.98 in) per second.



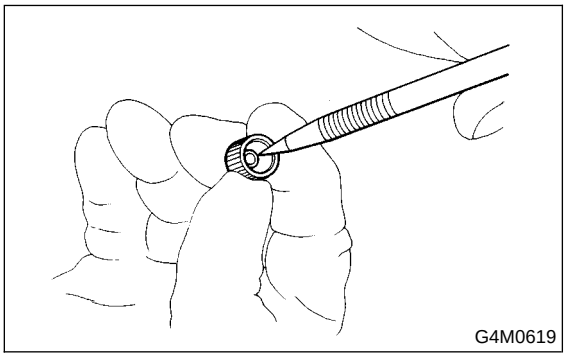
G4M0617

11) Disconnect the drain hose from the evaporator case, and check the hose end for at least 10 seconds.
After the test is finished, reconnect the drain hose.

12) Turn the ignition key to ON position, and run the blower at high speed for 1 minute. Stop the blower to check the ventilation grill on the instrument panel. While moving the tester closer to the grill, run the blower for 1 or 2 seconds, then stop it. Check the grill at that point for at least 10 seconds.


G4M0618

13) Check the valve in the service port.
14) Visually check the rubber seal in the service port cap.


G4M0619

6. Compressor Oil S701294

A: OPERATION S701294A16

NOTE:
Before making repairs, conduct the oil return operation to return the compressor oil in circulation with the refrigerant to the compressor.

1) Increase engine rpm to 1,500.
2) Turn ON the A/C switch.
3) Turn the temperature control switch to MAX COOL.
4) Put in RECIRC position.
5) Turn the blower control switch to HI.
6) Leave in this condition for 10 minutes.

B: REPLACEMENT S701294A20

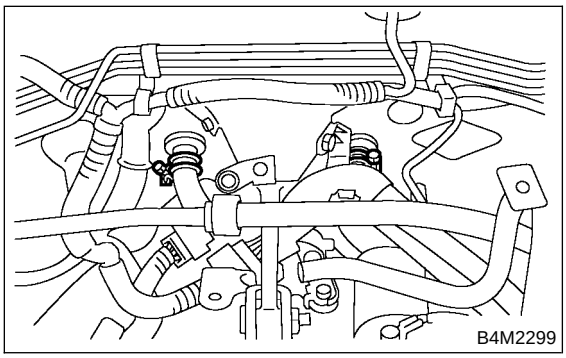
NOTE:
- If a component is replaced, add an appropriate amount of compressor oil.
- When replacing the compressor, the new compressor will already have the specified amount of oil in it. Install the new compressor after removing the same amount of oil that is remaining in the compressor removed.

Replacement parts	Amount of oil replenishment
Evaporator	70 mℓ (2.4 US fl oz, 2.5 Imp fl oz)
Receiver drier	5 mℓ (0.2 US fl oz, 0.2 Imp fl oz)
Condenser	50 mℓ (1.7 US fl oz, 1.8 Imp fl oz)
Hose	50 mℓ (1.7 US fl oz, 1.8 Imp fl oz)

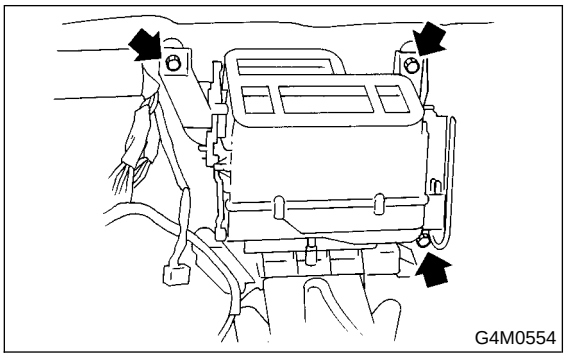
7. Heater Unit S701290

A: REMOVAL S701290A18

1) Disconnect ground cable from battery.
2) Drain engine coolant. <Ref. to CO-14, DRAINING OF ENGINE, REPLACEMENT, Engine Coolant.>
3) Remove air cleaner case. (Non-turbo model) <Ref. to IN(SOHC)-7, REMOVAL, Air Cleaner.>
4) Remove intercooler. (Turbo model) <Ref. to IN(DOHC TURBO)-10, REMOVAL, Intercooler.>
5) Release heater hose clamps in engine compartment to remove the hoses.


B4M2299

6) Remove instrument panel. <Ref. to EI-31 REMOVAL, Instrument Panel Assembly.>
7) Loosen nuts and bolts of support beam to remove support beam.
8) Remove A/C unit. <Ref. to AC-36 REMOVAL, Intake Unit.>
9) Loosen nuts and bolts of heater unit to remove heater unit.


G4M0554

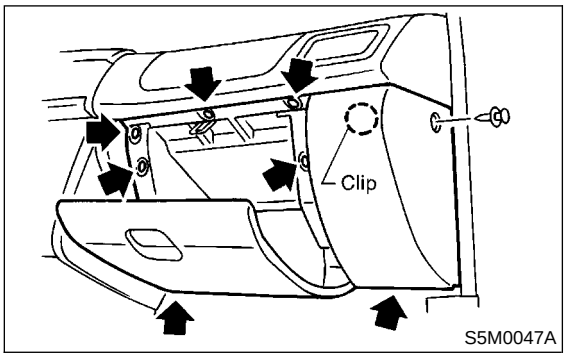
B: INSTALLATION S701290A11

1) Install in the reverse order of removal.
2) Refill engine coolant. <Ref. to CO-14, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

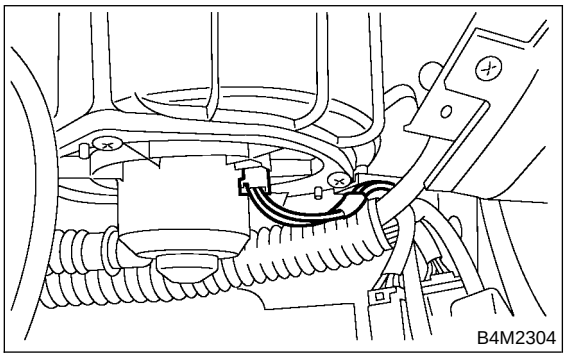
8. Blower Motor Assembly S701295

A: REMOVAL S701295A18

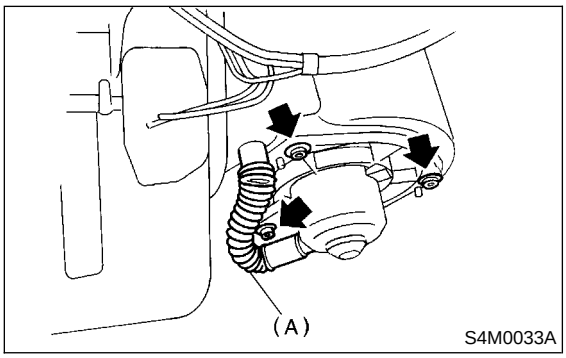
1) Disconnect ground cable from battery.
2) Remove glove box.



3) Disconnect motor connector.



4) Remove 3 screws.
5) Disconnect aspirator pipe (A) and remove blower motor.

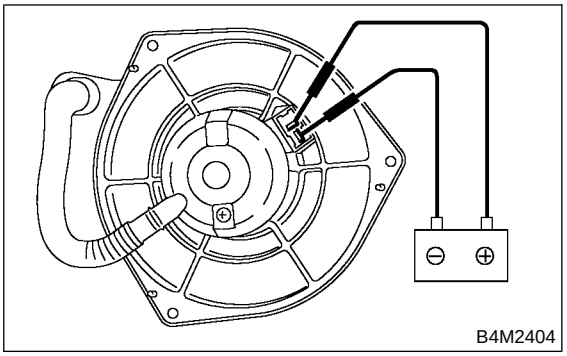


B: INSTALLATION S701295A11

Install in the reverse order of removal.

C: INSPECTION S701295A10

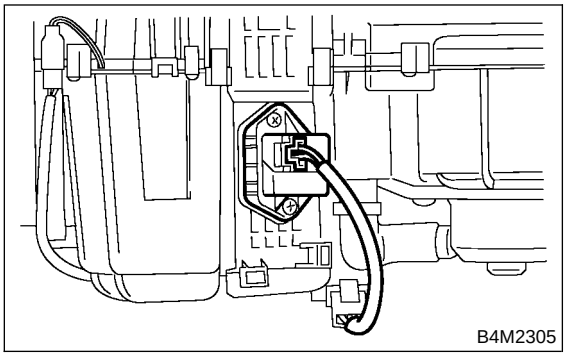
Connect motor connector terminal 1 from the battery to the positive (+) lead and terminal 2 to the negative (−) lead. Make sure the motor runs smoothly.



9. Power Transistor (Heater Blower Resistor) S701553

A: REMOVAL S701553A18

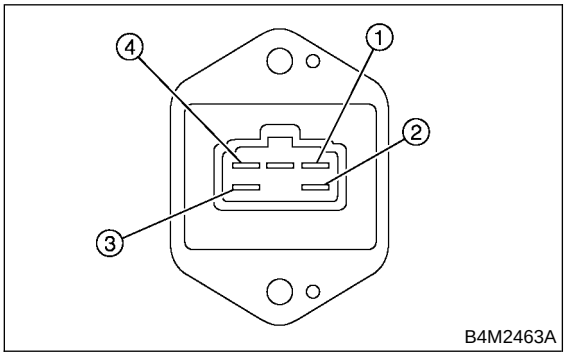
1) Remove glove box. <Ref. to EI-28 REMOVAL, Glove Box.>
2) Disconnect power transistor connector.
3) Loosen 2 screws to remove power transistor.



B: INSTALLATION S701553A11

Install in the reverse order of removal.

C: INSPECTION S701553A10



Check continuity between connector terminals.

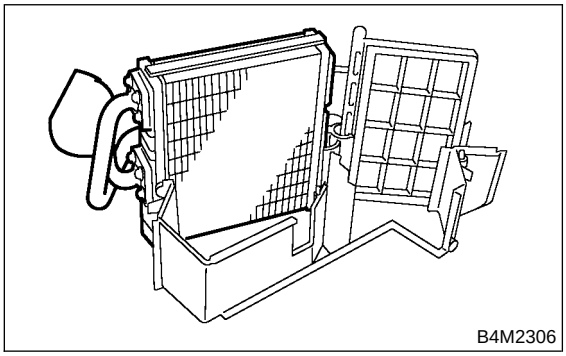
Tester connection	Condition	Specified condition
4 — 3	Constant	Approx. 0.4 Ω
3 — 2	Constant	Approx. 0.7 Ω
2 — 1	Constant	Approx. 1.5 Ω

If NG, replace the blower resistor.

10. Heater Core S701554

A: REMOVAL S701554A18

1) Remove heater unit. <Ref. to AC-26 REMOVAL, Heater Unit.>
2) Remove screws to separate heater unit case.
3) Remove heater core.



B: INSTALLATION S701554A11

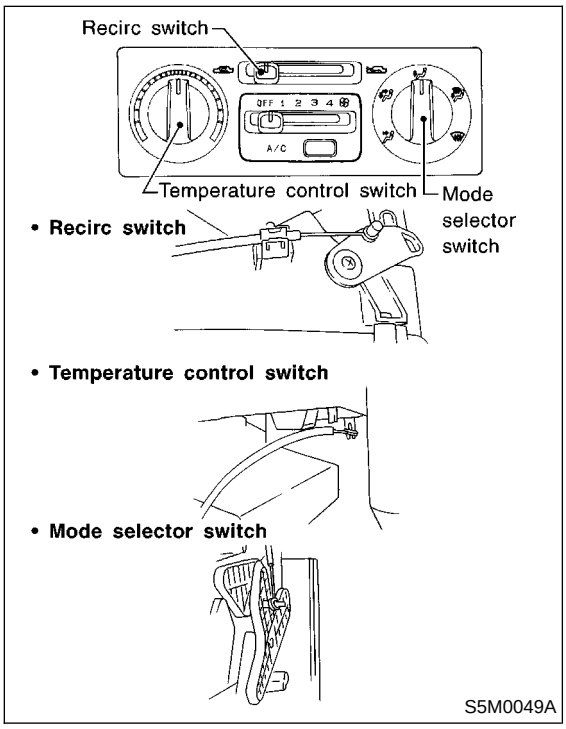
Install in the reverse order of removal.

11. Control Unit S701285

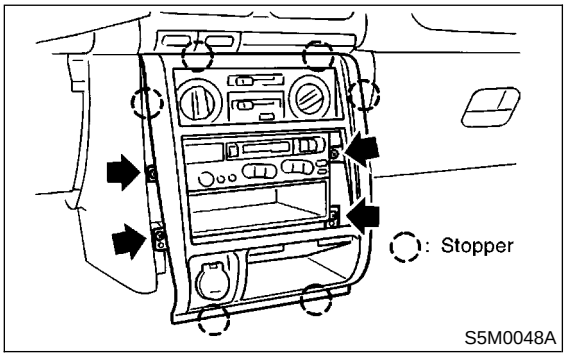
A: REMOVAL S701285A18

1) Disconnect GND cable from battery.
2) Set temperature control switch to “FULL HOT” and mode selector switch to “DEF” position and recirc switch to “FRESH” position.
3) Disconnect temperature control cable and mode door control cable from heater unit then disconnect recirc control cable from intake unit.

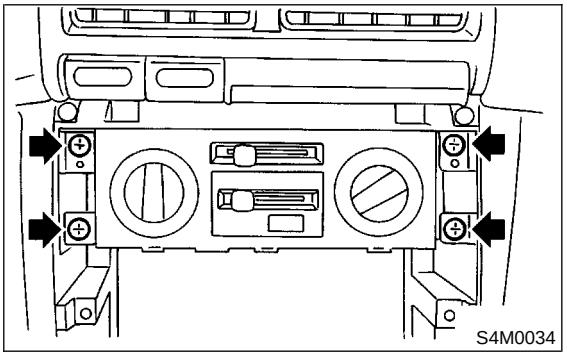
NOTE:
Do not attempt to move links during installation.



4) Remove console box. <Ref. to EI-30 REMOVAL, Console Box.>
5) Remove center panel and then disconnect connector.
6) Remove audio.



7) Remove control unit assembly from center console.



B: INSTALLATION S701285A11

Install in the reverse order of removal.

NOTE:
Before installing control unit, set temperature control switch to “FULL HOT” and mode selector switch to “DEF” position and recirc switch to “FRESH” position.

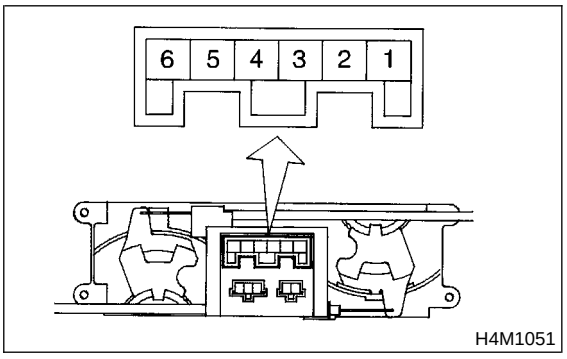
C: INSPECTION S701285A10

1. FAN SWITCH S701285A1003

Check continuity between terminals at each switch position.

Switch position	Terminals					
	1	2	3	4	5	6
1	○				○	○
2	○			○		○
3	○		○			○
4	○	○				○
	IGN					GND

H5M1280A

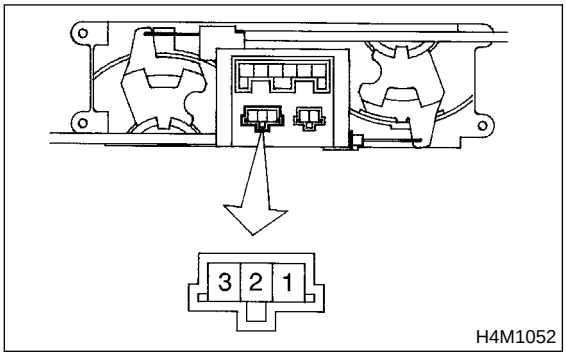


2. A/C SWITCH S701285A1004

Check A/C switch continuity between each terminal.

Terminal	Switch ON	Illumi.
1		○
2	○	○
3	○	○

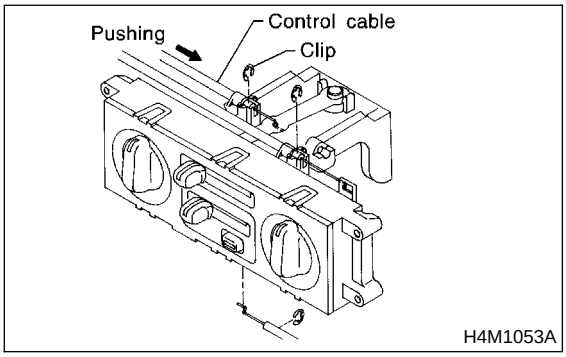
H5M1281A



H4M1052

D: ADJUSTMENT S701285A01

1) Operate temperature control switch to “FULL COLD” and mode selector switch to “VENT” position and recirc switch to “RECIRC” position.
2) Install control cable to lever. While pushing outer cable, secure control cable with clip.



H4M1053A

12. Compressor S701281

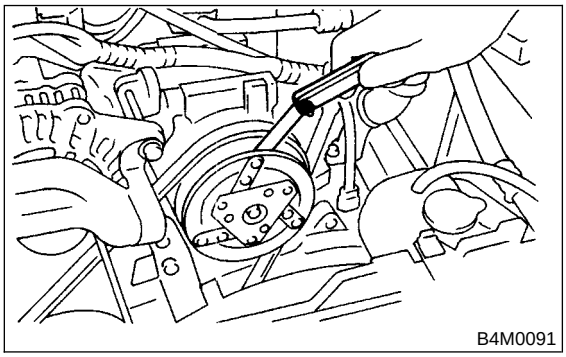
A: INSPECTION S701281A10

1. MAGNETIC CLUTCH CLEARANCE

S701281A1001

1) Check the clearance of the entire circumference around the drive plate and pulley.

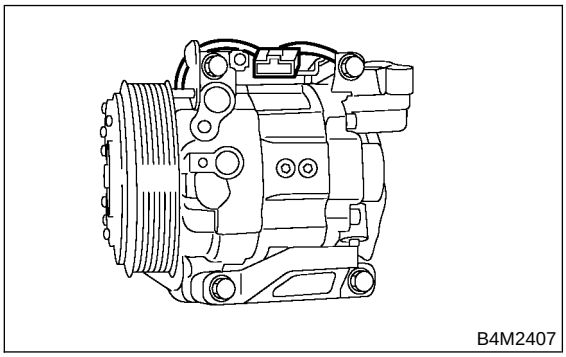
Standard:
0.45±0.15 mm (0.0177±0.0059 in)


B4M0091

2. MAGNETIC CLUTCH OPERATION

S701281A1002

1) Disconnect the compressor connector.
2) Connect the No. 3 terminal of the compressor connector from the battery to the positive (+) lead. Ground the negative (−) lead to the body.

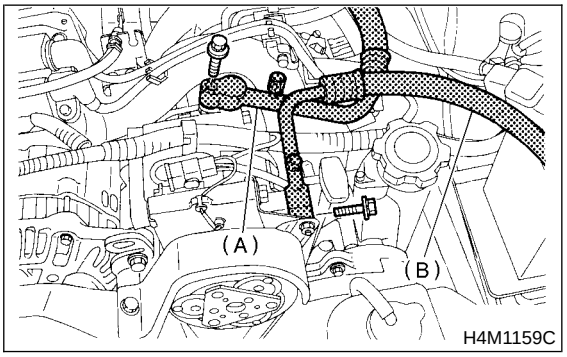

B4M2407

3) Make sure the magnet clutch engages.
If NG, replace the compressor.

B: REMOVAL S701281A18

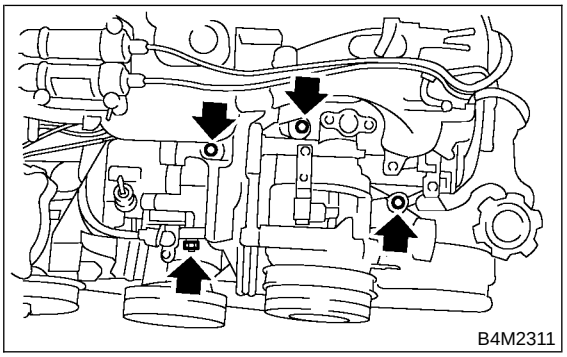
1) Perform oil return operation. <Ref. to AC-25 OPERATION, Compressor Oil.>
2) Turn A/C switch OFF and stop the engine.
3) Using refrigerant recovery system, discharge refrigerant. <Ref. to AC-19 OPERATION, Refrigerant Recovery Procedure.>
4) Disconnect ground cable from battery.
5) Disconnect low-pressure hose (A) and high-pressure hose (B).

CAUTION:
Be careful not to lose O-rings on hose. Immediately seal hose with a plug or vinyl tape to prevent the entry of contamination.

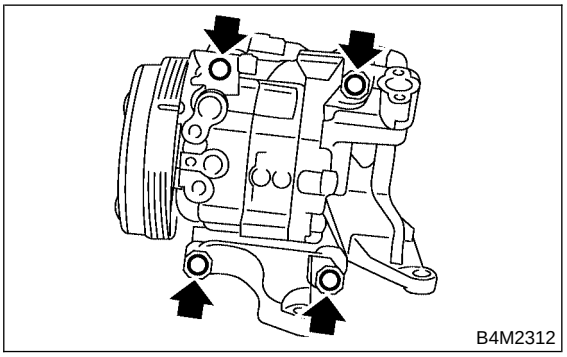


H4M1159C

6) Remove V-belt. (SOHC) <Ref. to ME(SOHC)-42, REMOVAL, V-belt.> or (DOHC TURBO) <Ref. to ME(DOHC TURBO)-44, REMOVAL, V-belt.>
7) Remove generator. <Ref. to SC-12 REMOVAL, Generator.>
8) Disconnect compressor harness from body harness.
9) Remove bolts from compressor bracket.


B4M2311

10) Loosen bolts to remove compressor from bracket.


B4M2312

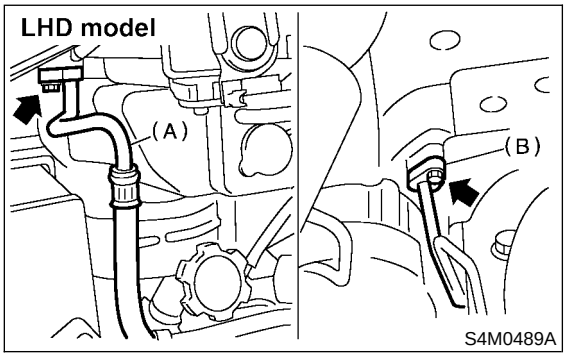
C: INSTALLATION S701281A11

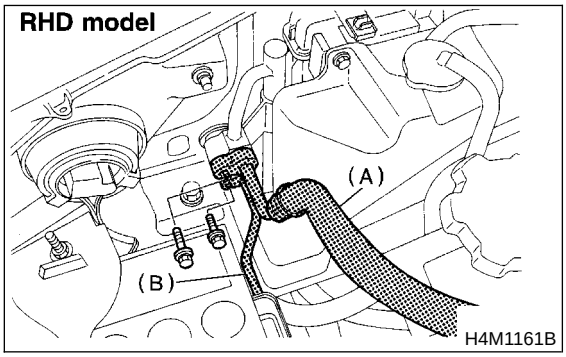
1) Install in the reverse order of removal.
2) Replace O-rings on low-/high-pressure hoses with new ones, then apply compressor oil.
3) When replacing compressor, adjust amount of compressor oil. <Ref. to AC-25 Compressor Oil.>
4) Charge refrigerant. <Ref. to AC-20 OPERATION, Refrigerant Charging Procedure.>

13. Condenser S701282

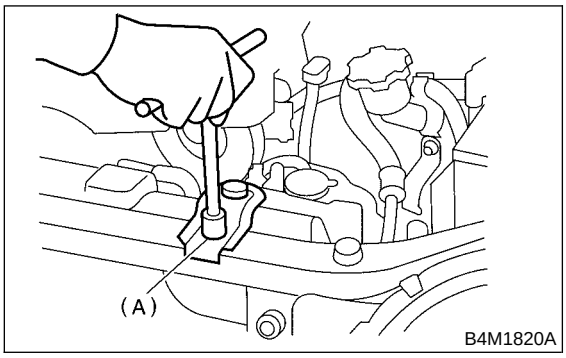
A: REMOVAL S701282A18

1) Using refrigerant recovery system, discharge refrigerant. <Ref. to AC-19 OPERATION, Refrigerant Recovery Procedure.>
2) Disconnect ground cable from battery.
3) Disconnect high-pressure hose (A) and high-pressure pipe (B) from condenser.

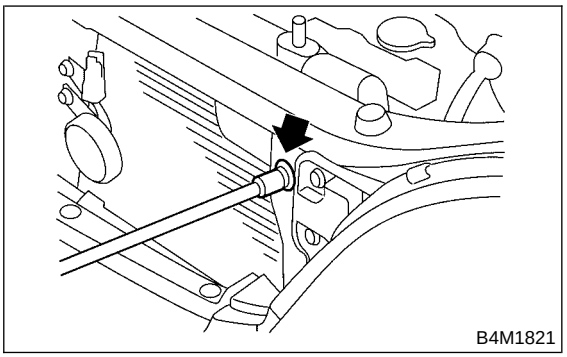




4) Remove radiator bracket (A).



5) Remove 2 bolts. While lifting condenser, pull it out through the space between the radiator and the radiator panel.

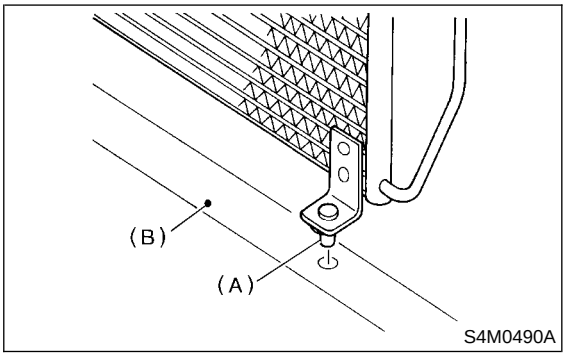


CAUTION:
Be careful not to damage condenser fins. If a damaged fin is found, repair it using a thin screwdriver.
If condenser is replaced, add appropriate amount of compressor oil to the compressor. <Ref. to AC-25 REPLACEMENT, Compressor Oil.>

B: INSTALLATION S701282A11

1) Install in the reverse order of removal.

CAUTION:
Replace O-rings on hoses or pipes with new ones, and then apply compressor oil. Confirm that lower guide of condenser has been fitted into holes on radiator panel.



2) Charge refrigerant. <Ref. to AC-20 OPERATION, Refrigerant Charging Procedure.>

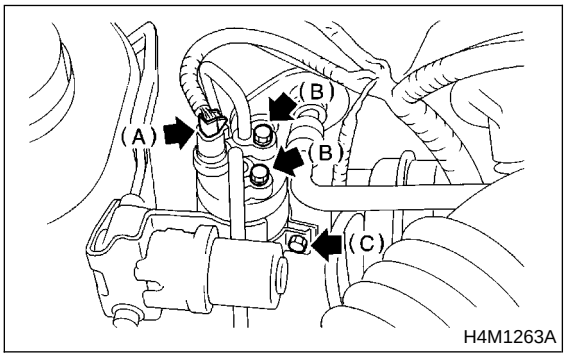
C: INSPECTION S701282A10

1) Confirm that no dust or insects are found on the condenser fins. Air-blow or flush fins with water as needed.
2) Confirm that no oil leaks from condenser. If a failure is found, replace condenser with a new one.

14. Receiver Drier S701283

A: REMOVAL S701283A18

1) Disconnect ground cable from battery.
2) Using refrigerant recovery system, discharge refrigerant. <Ref. to AC-19 OPERATION, Refrigerant Recovery Procedure.>
3) Disconnect pressure switch harness (A).
4) Disconnect pipe (B).
5) Loosen mounting bolts (C) to remove receiver dryer.



CAUTION:
The receiver drier contains a desiccant. After disconnecting receiver drier, plug it to avoid moisture.
If receiver drier is replaced, add appropriate amount of compressor oil to the compressor. <Ref. to AC-25 REPLACEMENT, Compressor Oil.>

B: INSTALLATION S701283A11

1) Install in the reverse order of removal.

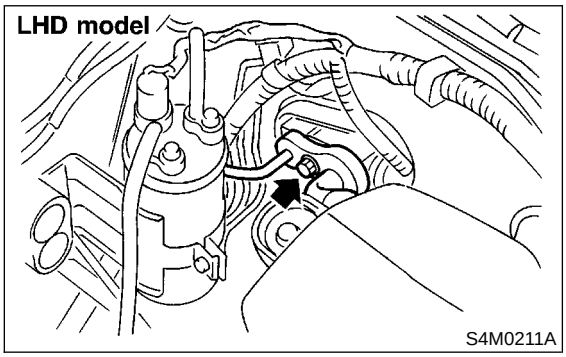
CAUTION:
Replace O-rings with new ones, and apply compressor oil.

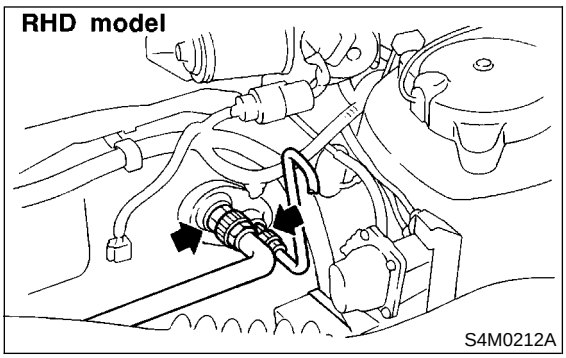
2) Charge refrigerant. <Ref. to AC-20 OPERATION, Refrigerant Charging Procedure.>

15. Intake Unit S701632

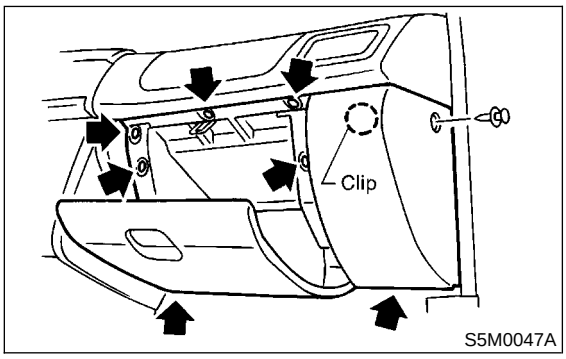
A: REMOVAL S701632A18

1) Using refrigerant recovery system, discharge refrigerant. <Ref. to AC-19 OPERATION, Refrigerant Recovery Procedure.>
2) Disconnect ground cable from battery.
3) LHD: Remove bolt then disconnect discharge pipe and suction pipe.
RHD: Disconnect discharge pipe, suction pipe and grommets.

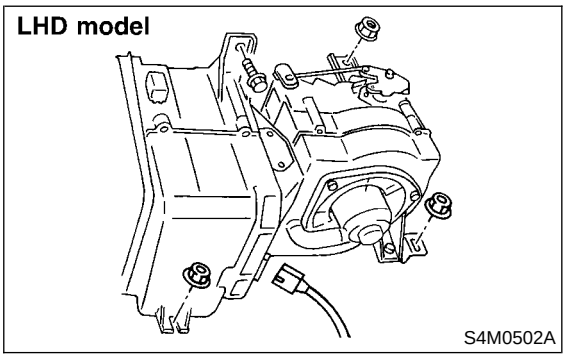


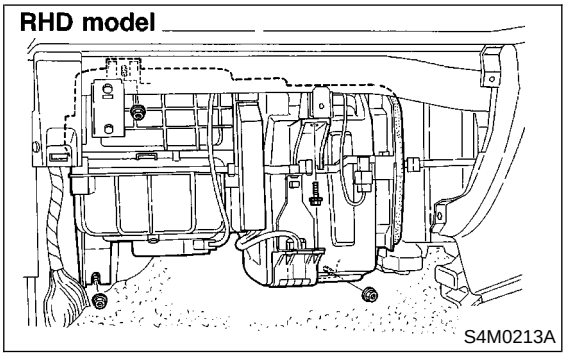


4) Remove glove box.



5) Disconnect the harness connector from intake unit.
6) Disconnect drain hose.
7) Remove intake unit mounting bolt and nut.





B: INSTALLATION S701632A11

1) Install in the reverse order of removal.

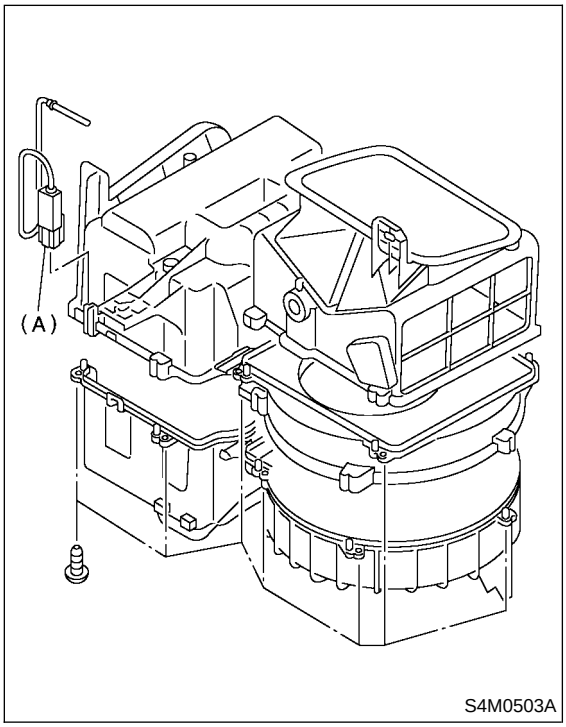
CAUTION:
Replace O-rings with new ones, and apply compressor oil.

2) Charge refrigerant. <Ref. to AC-20 OPERATION, Refrigerant Charging Procedure.>

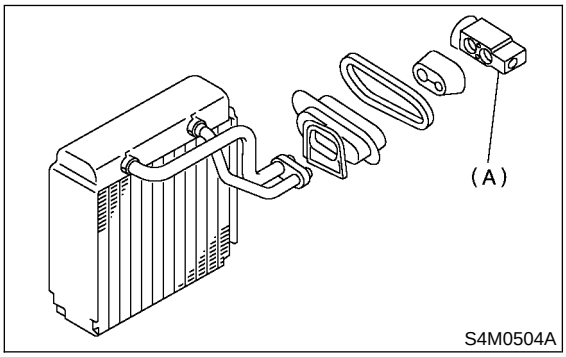
C: DISASSEMBLY S701632A06

1. LHD MODEL S701632A0601

1) Remove thermistor (A) from intake unit case.
2) Remove some screws then separate intake unit case.
3) Remove thermistor from clip with the evaporator.

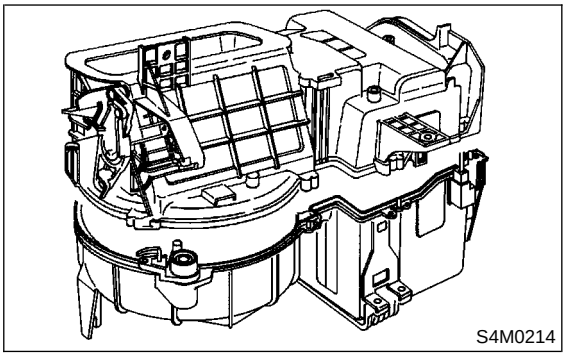


4) Remove the block expansion valve (A) from pipes.

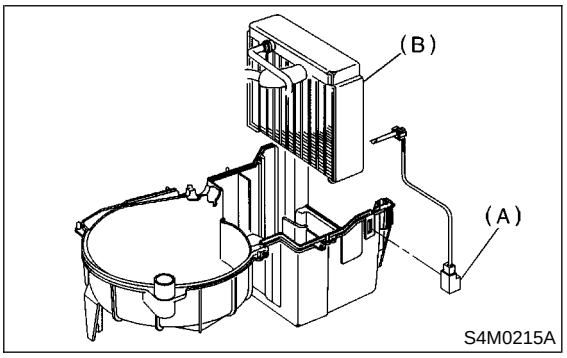


2. RHD MODEL S701632A0602

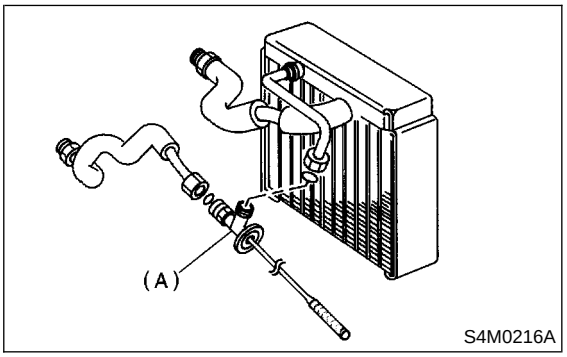
1) Remove some screws, then separate intake unit case.



2) Remove thermostat (A) from lower case and then detach evaporator (B).



3) Disconnect the connection between the expansion valve and pipe from receiver drier.
4) Remove the expansion valve (A) from pipes.



CAUTION:
If evaporator is replaced, add appropriate amount of compressor oil to evaporator. <Ref. to AC-25 REPLACEMENT, Compressor Oil.>

D: ASSEMBLY S701632A02

Assemble in the reverse order of disassembly.

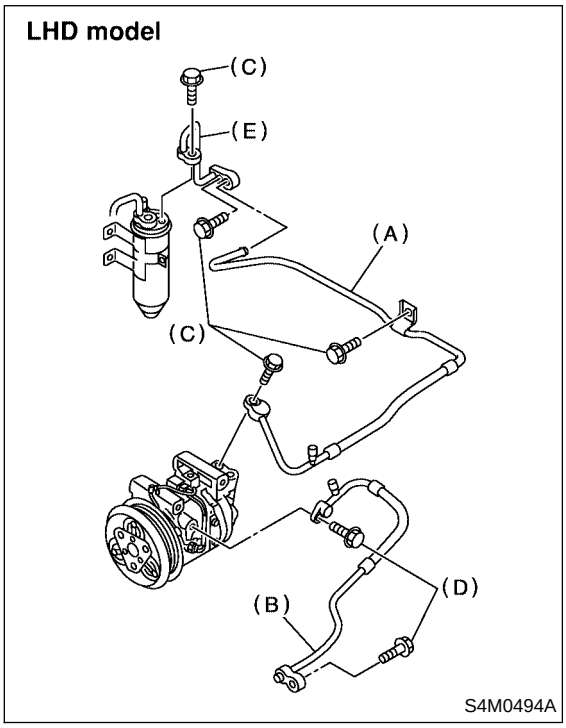
CAUTION:
Replace O-rings with new ones, and then apply compressor oil.

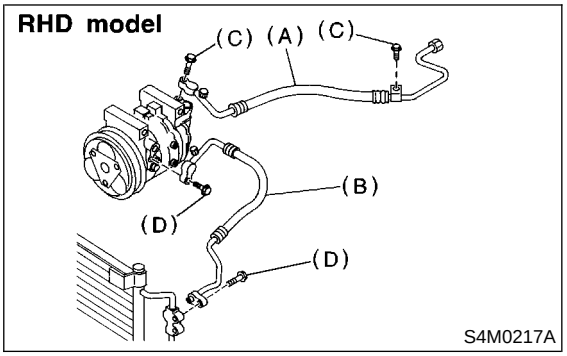
16. Flexible Hose S701286

A: REMOVAL S701286A18

CAUTION:
● When disconnecting/connecting hoses, do not apply excessive force them. Confirm that no torsion and excessive tension exist after installing.
● Seal the disconnected hose with a plug or vinyl tape to prevent contamination from entering.

1) Disconnect ground cable from battery.
2) Using refrigerant recovery system, discharge refrigerant. <Ref. to AC-19 OPERATION, Refrigerant Recovery Procedure.>
3) Remove hose attaching bolts (C).
4) Disconnect hose from evaporator unit.
5) Disconnect hose from compressor.
6) Remove low-pressure hose (A) from the vehicle.
7) Remove hose attaching bolts (D).
8) Disconnect hose from compressor.
9) Disconnect hose from condenser.
10) Disconnect high-pressure hose (B) from the vehicle.





B: INSTALLATION S701286A11

CAUTION:
When disconnecting/connecting hoses, do not apply an excessive force them. Confirm that no torsion and excessive tension exist after installing. Seal the disconnected hose with a plug or vinyl tape to prevent contamination from entering.

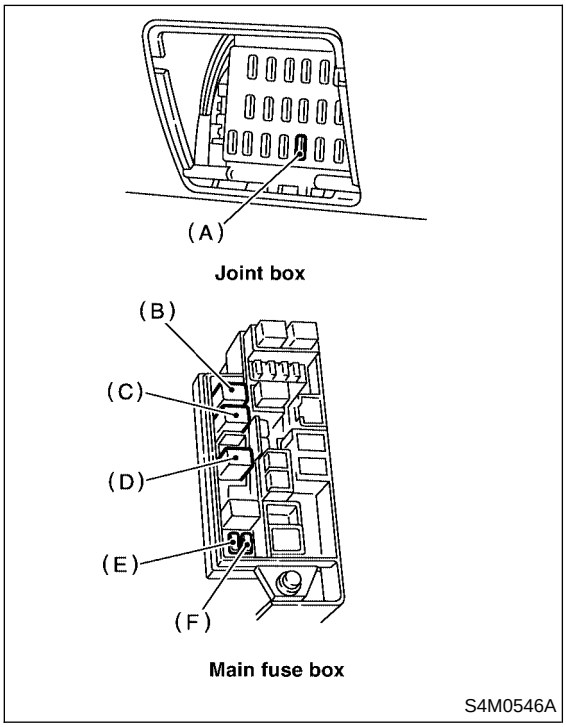
1) Install in the reverse order of removal.
2) Charge refrigerant. <Ref. to AC-20 OPERATION, Refrigerant Charging Procedure.>

C: INSPECTION S701286A10

NOTE:
If cracking, damage, or swelling is found on a hose, replace it with a new one.

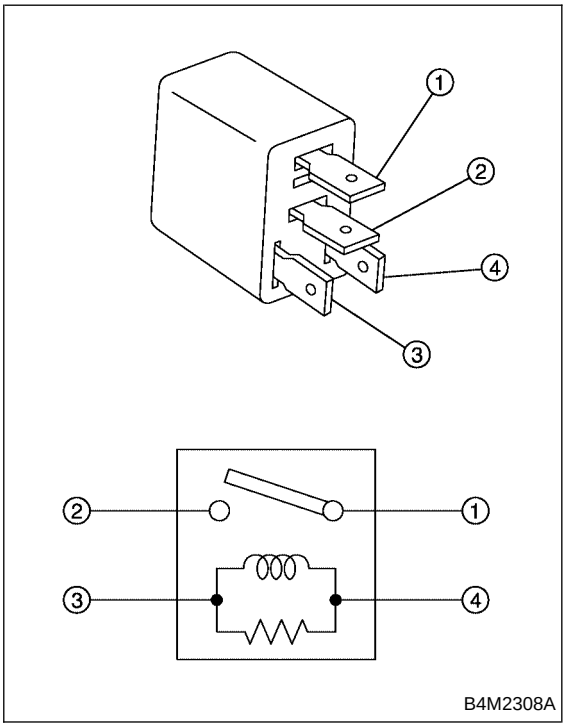
17. Relay and Fuse S701287

A: LOCATION S701287A13



(A) A/C fuse
(B) Main fan relay
(C) Sub fan relay
(D) A/C relay
(E) Main fan fuse
(F) Sub fan fuse

B: INSPECTION S701287A10

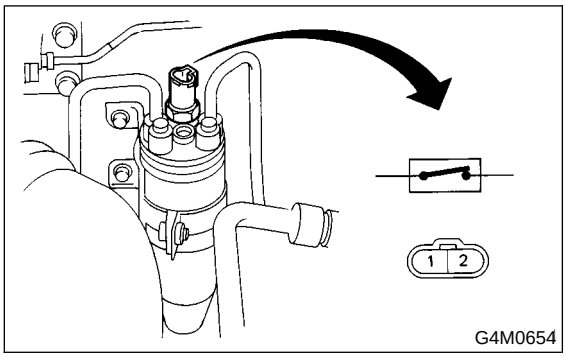


(3) — (4): Continuity exists.
(1) — (2): No continuity
While applying battery voltage to the cable between (3) and (4), check continuity between (1) and (2).
If no continuity exists, replace the relay with a new one.

18. Pressure Switch (Dual Switch) S701555

A: INSPECTION S701555A10

1) Connect the manifold gauge to the service valve on the high-pressure side.
2) Remove the pressure switch harness connector. Using a circuit tester, inspect the ON-OFF operation of the pressure switch.



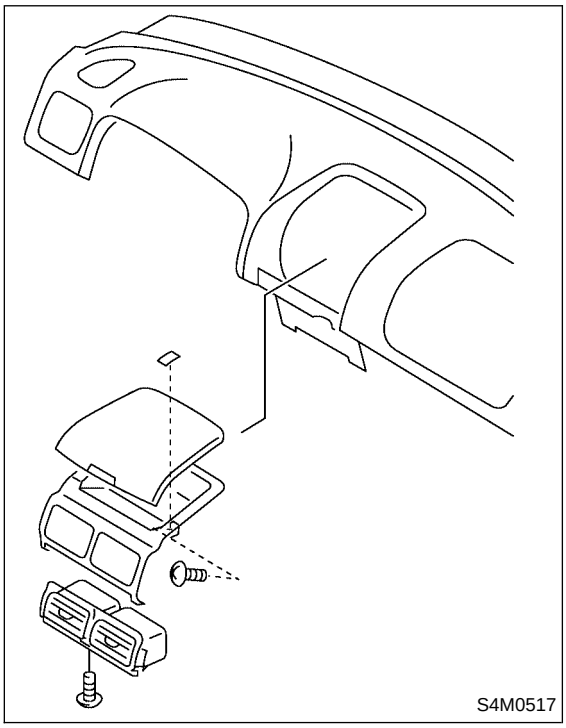
	Terminal	Operation	High-pressure side line pressure
High and low pressure switch	1 — 2	Turns OFF.	Increasing to 2,940±200 kPa (29.98±2.04 kg/cm^2, 426.3±29.0 psi): LHD model 2,650±200 kPa (27.02±2.04 kg/cm^2, 384±29 psi): RHD model
			Decreasing to 177±25 kPa (1.80±0.25 kg/cm^2, 25.6±3.6 psi):
		Turns ON.	Increasing to Less than 216 kPa (2.2 kg/cm^2, 31 psi):
			Decreasing to 2,350±200 kPa (23.97±2.04 kg/cm^2, 341±29 psi): LHD model 1,471±200 kPa (15±2.04 kg/cm^2, 213 ±29 psi): RHD model

19. Air Vent Grille S701284

A: REMOVAL S701284A18

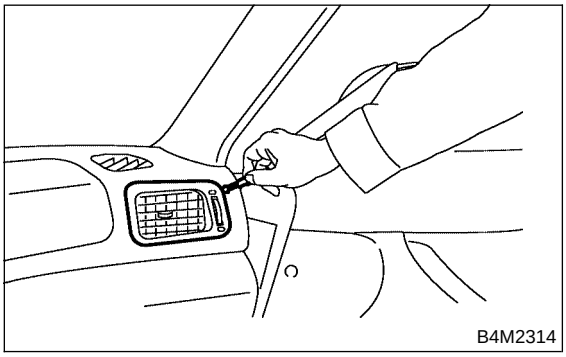
1. CENTER AIR VENT GRILLE S701284A1803

1) Remove center panel.
2) Loosen screw to remove grille.



2. SIDE AIR VENT GRILLE S701284A1804

1) Remove grille using sharp-edged screwdriver.



CAUTION:
Wrap screwdriver with vinyl tape to prevent damage to interior parts.

B: INSTALLATION S701284A11

Install in the reverse order of removal.

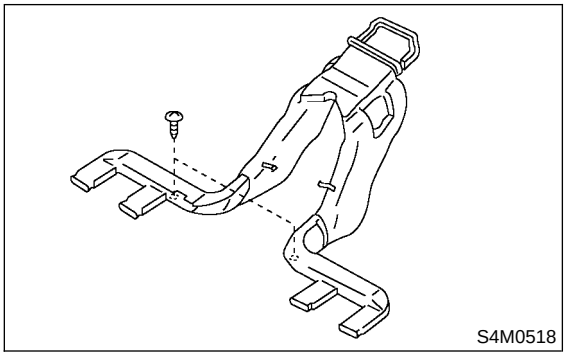
C: INSPECTION S701284A10

The direction and amount of air should be adjusted smoothly.
The adjustment should be kept in each position.

20. Heater Duct S701556

A: REMOVAL S701556A18

1) Remove front seat. <Ref. to SE-5 REMOVAL, Front Seat.>
2) Remove heater unit. <Ref. to AC-26 REMOVAL, Heater Unit.>
3) Remove front side sill cover.
4) Pull off floor mat to remove heater duct.



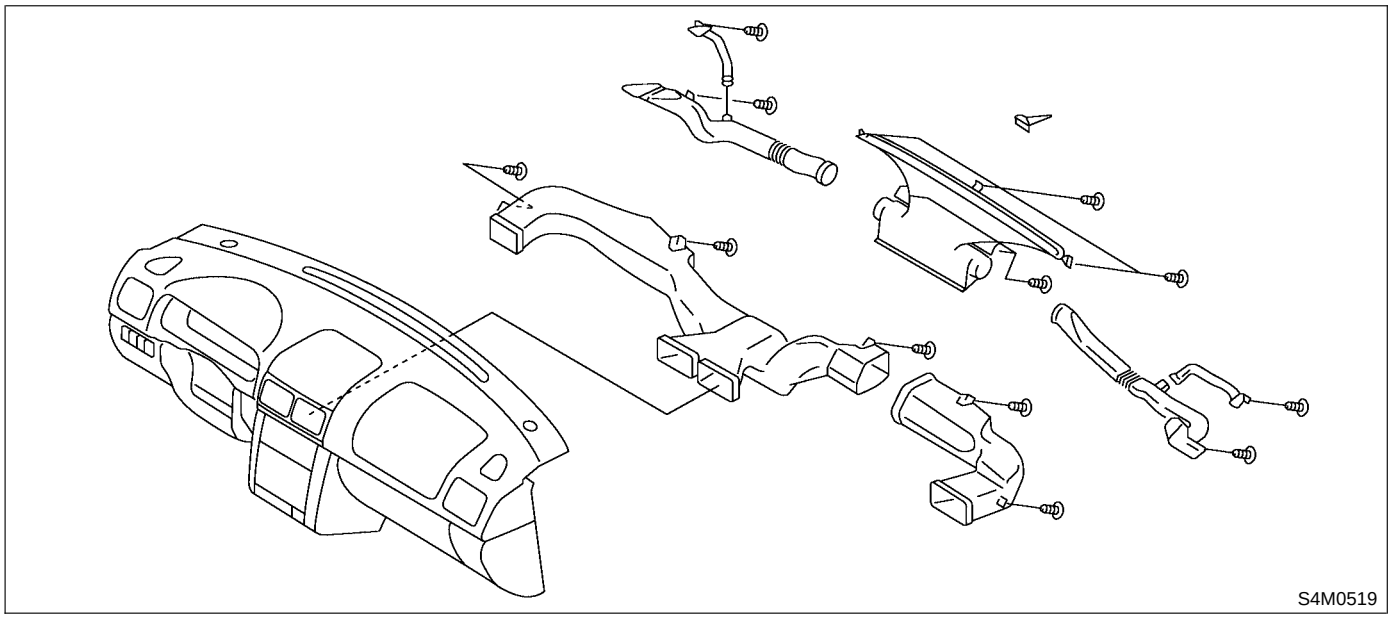
B: INSTALLATION S701556A11

Install in the reverse order of removal.

21. Heater Vent Duct S701557

A: REMOVAL S701557A18

1) Remove instrument panel. <Ref. to EI-31 REMOVAL, Instrument Panel.>
2) Remove screws.
3) Remove heater vent duct.



B: INSTALLATION S701557A11

Install in the reverse order of removal.

22. General Diagnostics S701278

A: INSPECTION S701278A10

Symptom		Repair order
Blower motor	Doesn't move.	Fuse
		Blower motor relay
		Blower motor
		Blower motor resister
		Blower switch
		Wire harness
	Strange noise.	Blower motor
Compressor	Doesn't move.	Refrigerant
		Fuse
		Air conditioning relay
		Magnet clutch
		Compressor
		Pressure switch
		A/C switch
		Blower switch
		Wire harness
	Strange noise	V-Belt
		Magnet clutch
		Compressor
Cold air not emitted.		Refrigerant
		V-Belt
		Magnet clutch
		Compressor
		Pressure switch
		A/C switch
		Blower switch
		Wire harness
		Heater duct
		Heater vent duct
Warm air not emitted.		Engine coolant
		Blower switch
		Heater core
Temperature of air from vents does not change.		Engine coolant
		Mode actuator
		Wire harness
Unable to switch blow vents.		Mode actuator
		Air flow switch
		Wire harness
Unable to switch suction vents.		Air inlet select switch
		FRESH/RECIRC actuator
		Wire harness