# 1. General Description

## A: SPECIFICATION

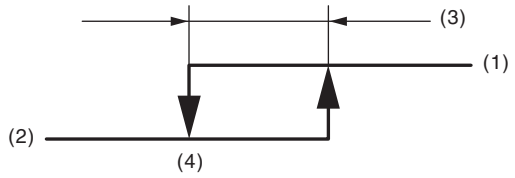
### 1. HEATER SYSTEM

| Item | | Specifications | Condition |
|---|---|---|---|
| Heating capacity | | 5.2 kW (4,471 kcal/h, 17,743 BTU/h) or more | • Mode selector switch: HEAT<br>• Temperature control switch: MAX HOT<br>• Temperature difference between hot water and inlet air: 65°C (149°F)<br>• Hot water flow rate: 360 L (95.1 US gal, 79.2 Imp gal)/h |
| Air flow rate | | 340 $m^3$ (11,301 cu ft)/h | Heat mode (FRESH), MAX HOT at 12.5 V |
| Max air flow rate | | 550 $m^3$ (16,245 cu ft)/h | • Temperature control switch: MAX COOL<br>• Blower fan speed: 6th position<br>• Mode selector lever: RECIRC |
| Heater core size (height × length × width) | | 264 × 110 × 27 mm (10.4 × 4.33 × 1.06 in) | — |
| Blower motor | Type | Brush motor 260 W or less | 12 V |
| | Fan type and size (diameter × width) | Sirocco fan type 165 × 70 mm (6.50 × 2.76 in) | — |

### 2. A/C SYSTEM

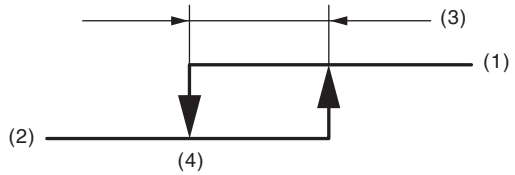
- Single A/C model (front only)

| Item | | Specifications |
|---|---|---|
| Type of air conditioner | | Reheat air-mix type |
| Cooling capacity | | 6.2 kW (5,331 kcal/h, 21,154 BTU/h) |
| Refrigerant | | HFC-134a ($CH_2FCF_3$)<br>20 — 22 oz (0.57 — 0.63 kg, 1.26 — 1.39 lb) |
| Compressor | Type | Inclined plate (SWASH PLATE), fixed capacity (10SR17), Temperature fuse |
| | Discharge | 177 cc (10.80 cu in)/rev |
| | Max. permissible speed | 6,000 rpm |
| Magnet clutch | Type | Dry, single-disc type |
| | Power consumption | 35 W |
| | Type of belt | V-belt 6 PK |
| | Pulley dia. (effective dia.) | 115 mm (4.53 in) |
| | Pulley ratio | 1.24 |
| Condenser | Type | Corrugated fin (Sub cool type) |
| | Core face area | 0.29 $m^2$ (3.122 sq ft) |
| | Core thickness | 16 mm (0.63 in) |
| | Radiation area | 7.65 $m^2$ (82.35 sq ft) |
| Expansion valve | Type | Box time (external pressure equalizing type) |
| Evaporator | Type | Single tank |
| | Dimensions (W × H × T) | 293.1 × 211 × 38 mm (11.54 × 8.31 × 1.50 in) |
| Blower fan | Fan type | Sirocco fan |
| | Outer diameter × width | 165 × 70 mm (6.50 × 2.76 in) |
| | Power consumption | 260 W |
| Condenser fan (Sub fan) | Motor type | Magnet |
| | Power consumption | 200 W |
| | Fan outer diameter | 320 mm (12.6 in) |

| Item | | | Specifications |
|---|---|---|---|
| Radiator fan (Main fan) | | Motor type | Magnet |
| | | Power consumption | 200 W |
| | | Fan outer diameter | 320 mm (12.6 in) |
| Idle speed | | MPFI model | No load: 700±100 rpm<br>A/C ON: 805±100 rpm |
| Triple switch (Pressure switch) | Low-pressure switch operating pressure | ON → OFF | 196±20 kPa<br>(2.00±0.20 kg/cm$^2$, 28.4±2.9 psi) |
| | | OFF → ON | $225^{+25}_{-29}$ kPa<br>($2.29^{+0.25}_{-0.30}$ kg/cm$^2$, $32.6^{+3.6}_{-4.2}$ psi) |
| | High-pressure switch operating pressure | ON → OFF | $3{,}140^{+50}_{-200}$ kPa<br>($32.02^{+0.51}_{-2.04}$ kg/cm$^2$, $455.4^{+7.25}_{-29.0}$ psi) |
| | | OFF → ON | 2,550±200 kPa<br>(26.00±2.04 kg/cm$^2$, 369.8±29.0 psi) |
| | Middle-pressure switch operating pressure | ON → OFF | 1,370±120 kPa<br>(13.97±1.22 kg/cm$^2$, 198.65±17.35 psi) |
| | | OFF → ON | 1,770±80 kPa<br>(18.05±0.82 kg/cm$^2$, 256.81±11.60 psi) |
| Thermo-control amplifier working temperature (Evaporator outlet air) | | |  <br>AC-00601<br>(1) ON<br>(2) OFF<br>(3) 1°C (33.8°F)<br>(4) $1.5^{+8.0}$°C ($34.7^{+46.4}$°F) |

- Dual A/C model (Front A/C and Rear cooler)

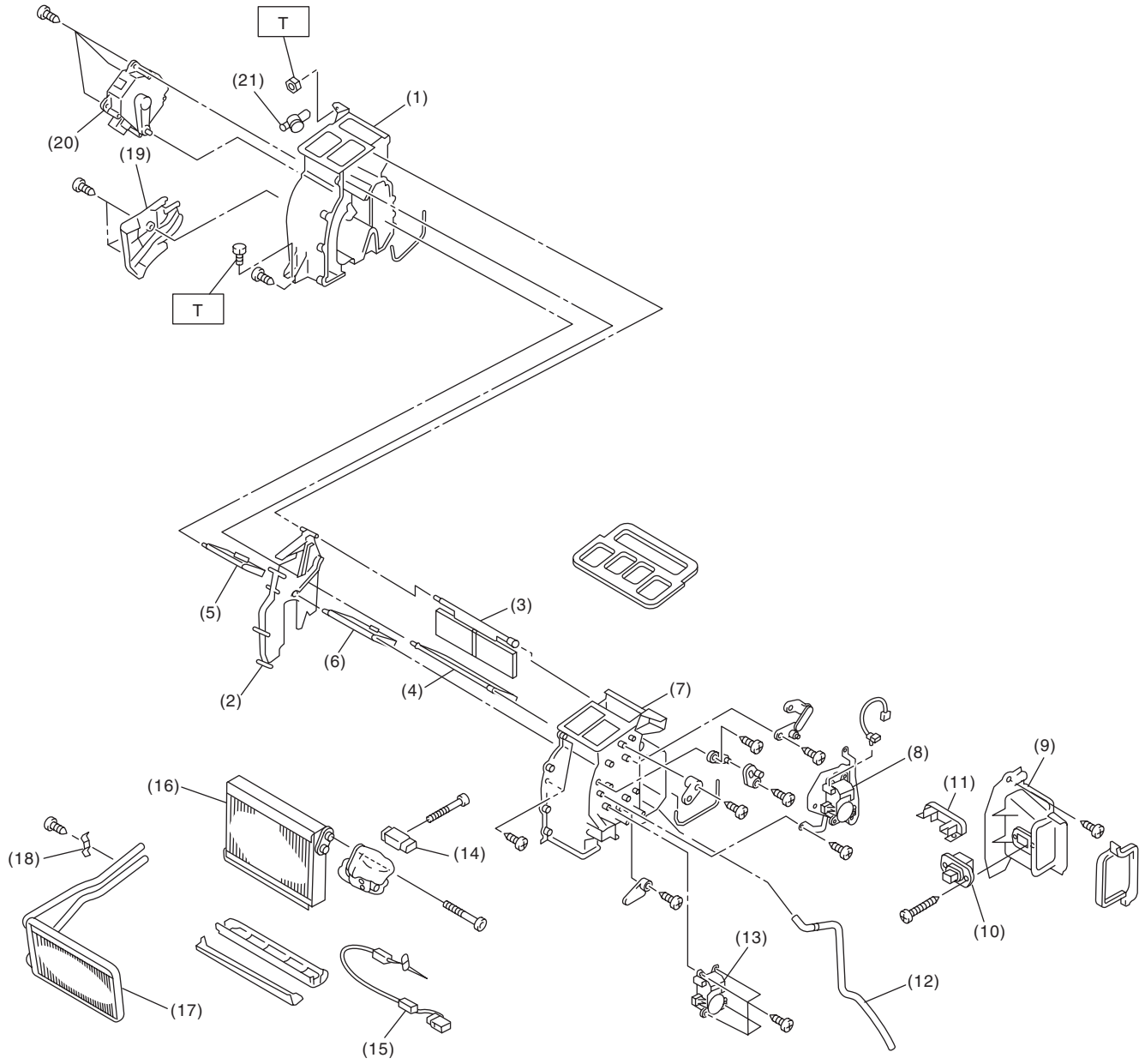
| Item | | | Specifications |
|---|---|---|---|
| Type of air conditioner | | Front | Reheat air-mix type |
| | | Rear | Cooler |
| Cooling capacity | | | 7.2 kW<br>(6,191 kcal/h, 24.56 BTU/h) |
| Refrigerant | | | HFC-134a ($CH_2FCF_3$)<br>30 — 32 oz (0.84 — 0.90 kg, 1.85 — 1.98 lb) |
| Compressor | | Type | Inclined plate (SWASH PLATE), fixed capacity (10SR17), Temperature fuse |
| | | Discharge | 177 cc (10.80 cu in)/rev |
| | | Max. permissible speed | 6,000 rpm |
| Magnet clutch | | Type | Dry, single-disc type |
| | | Power consumption | 35 W |
| | | Type of belt | V-belt 6 PK |
| | | Pulley dia. (effective dia.) | 115 mm (4.53 in) |
| | | Pulley ratio | 1.24 |
| Condenser | | Type | Corrugated fin (Sub cool type) |
| | | Core face area | 0.29 $m^2$ (3.122 sq ft) |
| | | Core thickness | 16 mm (0.63 in) |
| | | Radiation area | 7.65 $m^2$ (82.35 sq ft) |
| Expansion valve | Front | Type | Box time (external pressure equalizing type) |
| | Rear | Type | |
| Evaporator | Front | Type | Single tank |
| | | Dimensions (W × H × T) | 293.1 × 211 × 38 mm<br>(11.54 × 8.31 × 1.50 in) |
| | Rear | Type | Single tank |
| | | Dimensions (W × H × T) | 132.1 × 181 × 38 mm<br>(5.2 × 7.13 × 1.50 in) |
| Blower fan | Front | Fan type | Sirocco fan |
| | | Outer diameter × width | 165 × 70 mm (6.49 × 2.76 in) |
| | | Power consumption | 260 W |
| | Rear | Fan type | Sirocco fan |
| | | Outer diameter × width | 150 × 70 mm (5.91 × 2.76 in) |
| | | Power consumption | 150 W or less |
| Condenser fan (Sub fan) | | Motor type | Magnet |
| | | Power consumption | 200 W |
| | | Fan outer diameter | 320 mm (12.6 in) |
| Radiator fan (Main fan) | | Motor type | Magnet |
| | | Power consumption | 200 W |
| | | Fan outer diameter | 320 mm (12.6 in) |
| Idle speed | | MPFI model | No load: 700±100 rpm<br>A/C ON: 805±100 rpm |

<table>
<tr><th colspan="3">Item</th><th>Specifications</th></tr>
<tr><td rowspan="6">Triple switch (Pressure switch)</td><td rowspan="2">Low-pressure switch operating pressure</td><td>ON → OFF</td><td>196±20 kPa<br>(2.00±0.20 kg/cm$^2$, 28.4±2.9 psi)</td></tr>
<tr><td>OFF → ON</td><td>$225^{+25}_{-29}$ kPa<br>($2.29^{+0.25}_{-0.30}$ kg/cm$^2$, $32.6^{+3.6}_{-4.2}$ psi)</td></tr>
<tr><td rowspan="2">High-pressure switch operating pressure</td><td>ON → OFF</td><td>$3{,}140^{+50}_{-200}$ kPa<br>($32.02^{+0.51}_{-2.04}$ kg/cm$^2$, $455.4^{+7.25}_{-29.0}$ psi)</td></tr>
<tr><td>OFF → ON</td><td>2,550±200 kPa<br>(26.00±2.04 kg/cm$^2$, 369.8±29.0 psi)</td></tr>
<tr><td rowspan="2">Middle-pressure switch operating pressure</td><td>ON → OFF</td><td>1,370±120 kPa<br>(13.97±1.22 kg/cm$^2$, 198.65±17.35 psi)</td></tr>
<tr><td>OFF → ON</td><td>1,770±80 kPa<br>(18.05±0.82 kg/cm$^2$, 256.81±11.60 psi)</td></tr>
<tr><td colspan="3">Thermo-control amplifier working temperature<br>(Evaporator outlet air)</td><td> 

AC-00601<br>(1) ON<br>(2) OFF<br>(3) 1°C (33.8°F)<br>(4) $1.5^{+0.8}$°C ($34.7^{+46.4}$°F)</td></tr>
</table>

# B: COMPONENT

## 1. HEATER COOLING UNIT



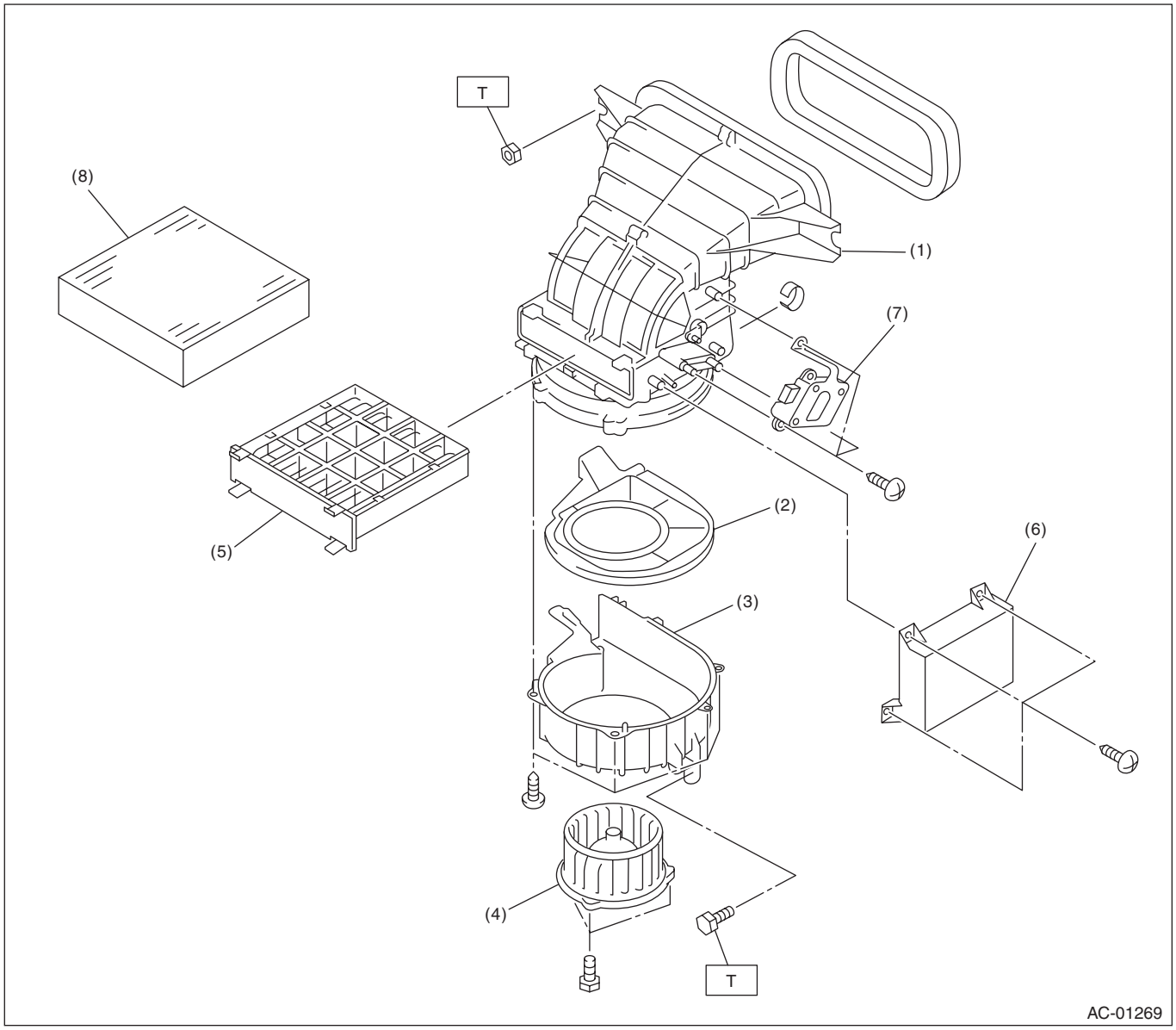

AC-01268

(1) Heater unit case LH
(2) Separator
(3) Mode door RR
(4) Mode door FR
(5) Air mix door LH
(6) Air mix door RH
(7) Heater unit case RH
(8) Mode door actuator
(9) Evaporator cover
(10) Power transistor
(11) Pipe cover
(12) Drain hose
(13) Air mix door actuator RH
(14) Expansion valve
(15) Evaporator sensor
(16) Evaporator
(17) Heater Core
(18) Heater pipe clamp
(19) Heater core cover
(20) Air mix door actuator LH
(21) Aspirator

***Tightening torque: N·m (kgf-m, ft-lb)***
***T: 7.5 (0.76, 5.5)***

## 2. BLOWER MOTOR UNIT

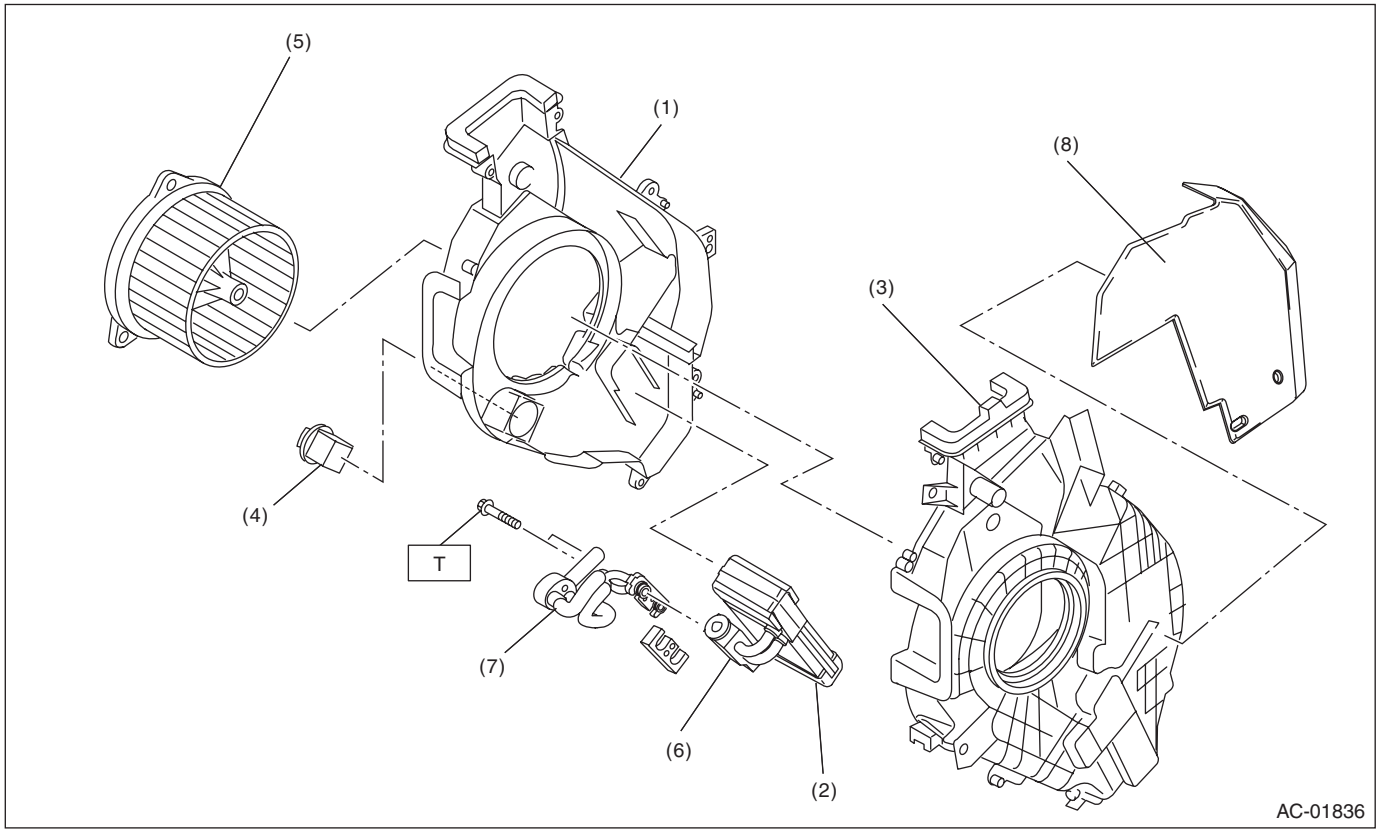
### Front




(1) Upper case
(2) Blower plate
(3) Lower case
(4) Blower motor
(5) Filter cover
(6) Control unit (auto A/C model)
(7) Intake door actuator
(8) Filter

***Tightening torque: N·m (kgf-m, ft-lb)***
***T: 7.5 (0.76, 5.5)***

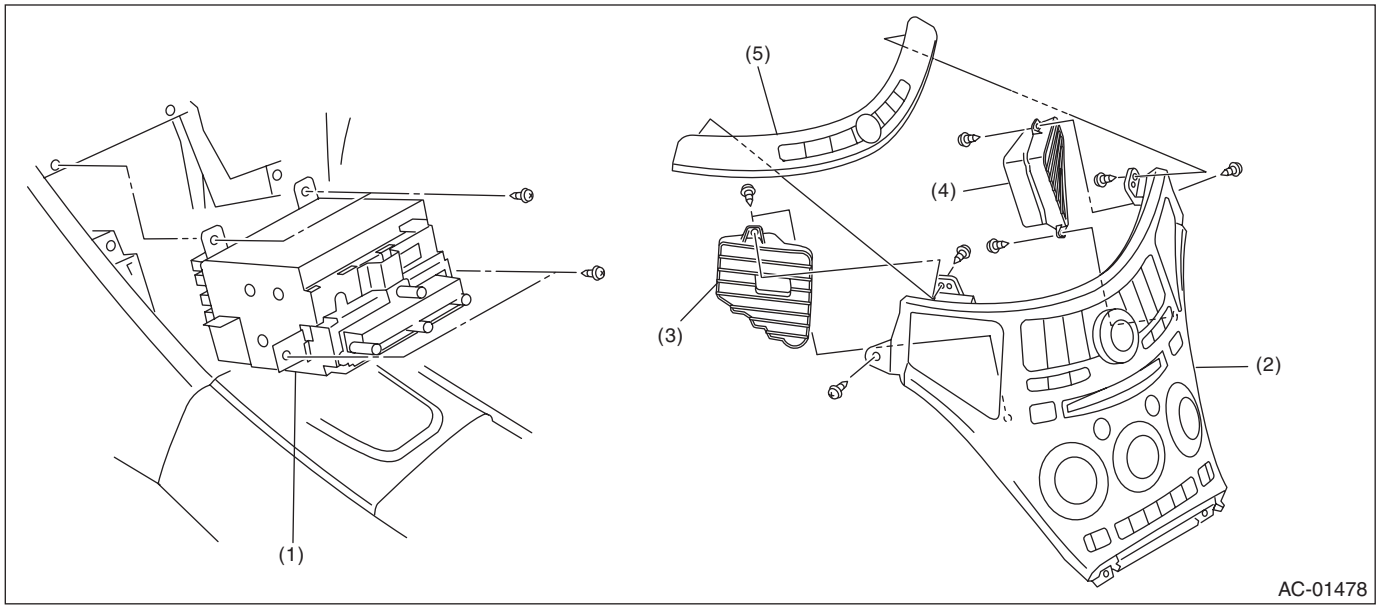
**Rear**




(1) Inner case
(2) Evaporator
(3) Outer case
(4) Blower resistor
(5) Blower motor
(6) Expansion valve
(7) Expansion tube
(8) Cover

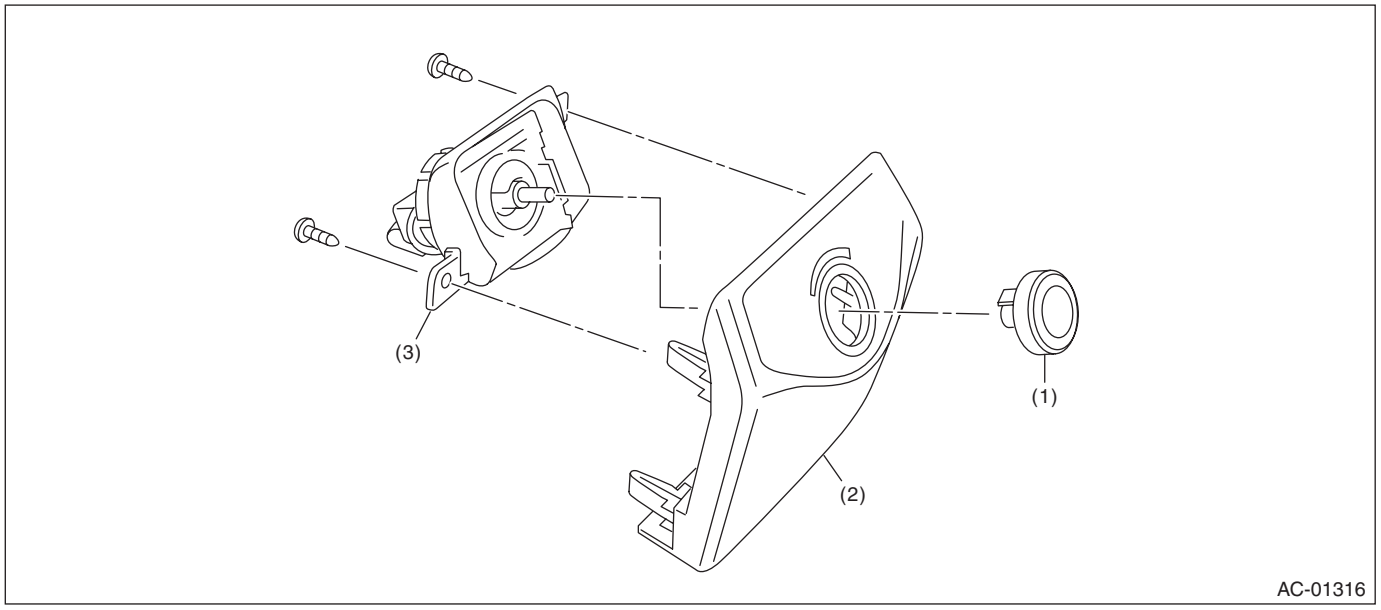
***Tightening torque: N·m (kgf-m, ft-lb)***
***T: 7.5 (0.76, 5.5)***

## 3. CONTROL PANEL




(1) Audio ASSY
(2) Control panel
(3) Center duct RH
(4) Center duct LH
(5) Navigation, MFD control switch

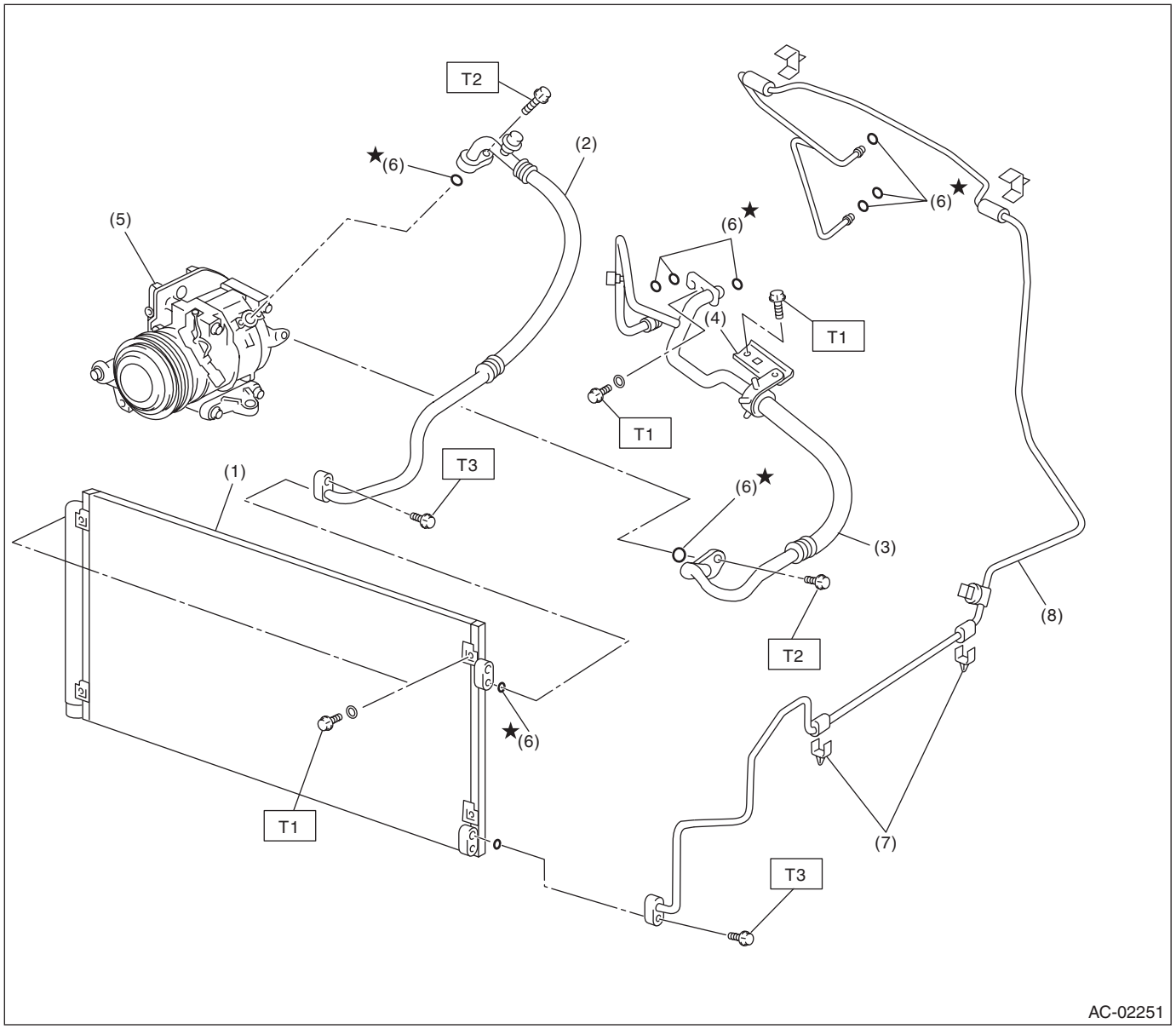
### Rear cooler model




(1) Dial
(2) Control panel
(3) Blower switch

## 4. AIR CONDITIONING UNIT

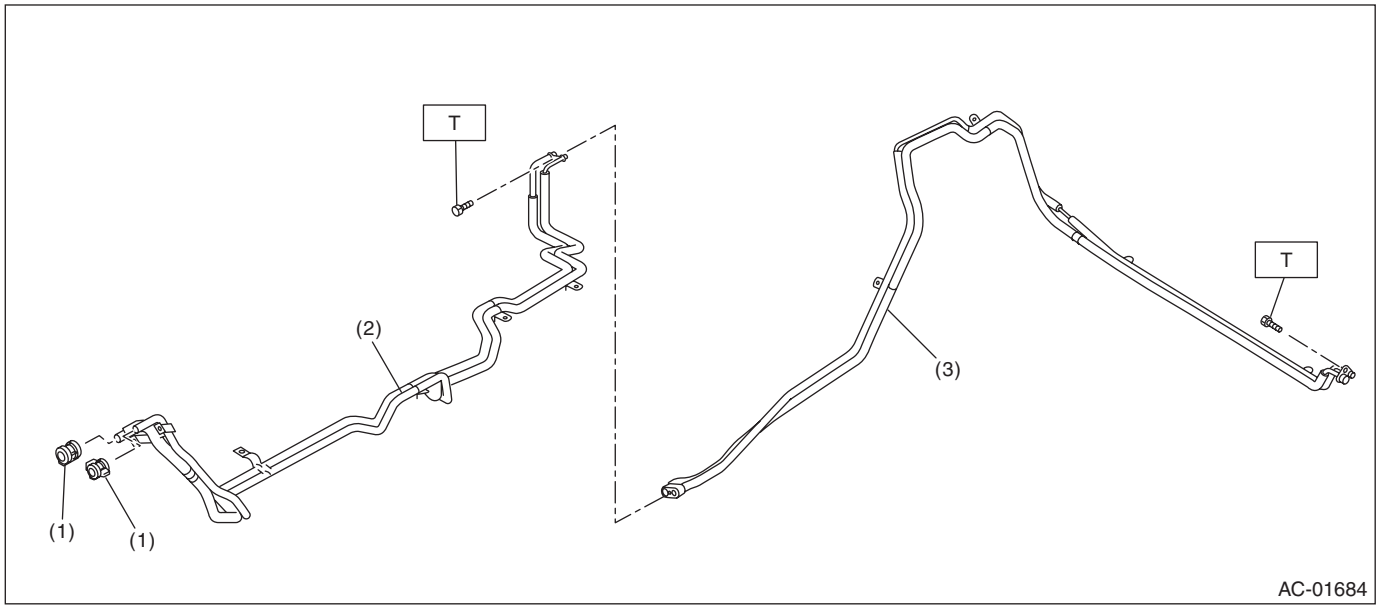
### Front




| | | | |
|---|---|---|---|
| (1) | Condenser | (5) | Compressor |
| (2) | Hose (high-pressure) | (6) | O-ring |
| (3) | Hose (low-pressure) | (7) | Clamp |
| (4) | Bracket | (8) | Pipe |

***Tightening torque: N·m (kgf-m, ft-lb)***
***T1: 7.5 (0.76, 5.5)***
***T2: 10 (1.0, 7.4)***
***T3: 5 (0.5, 3.7)***

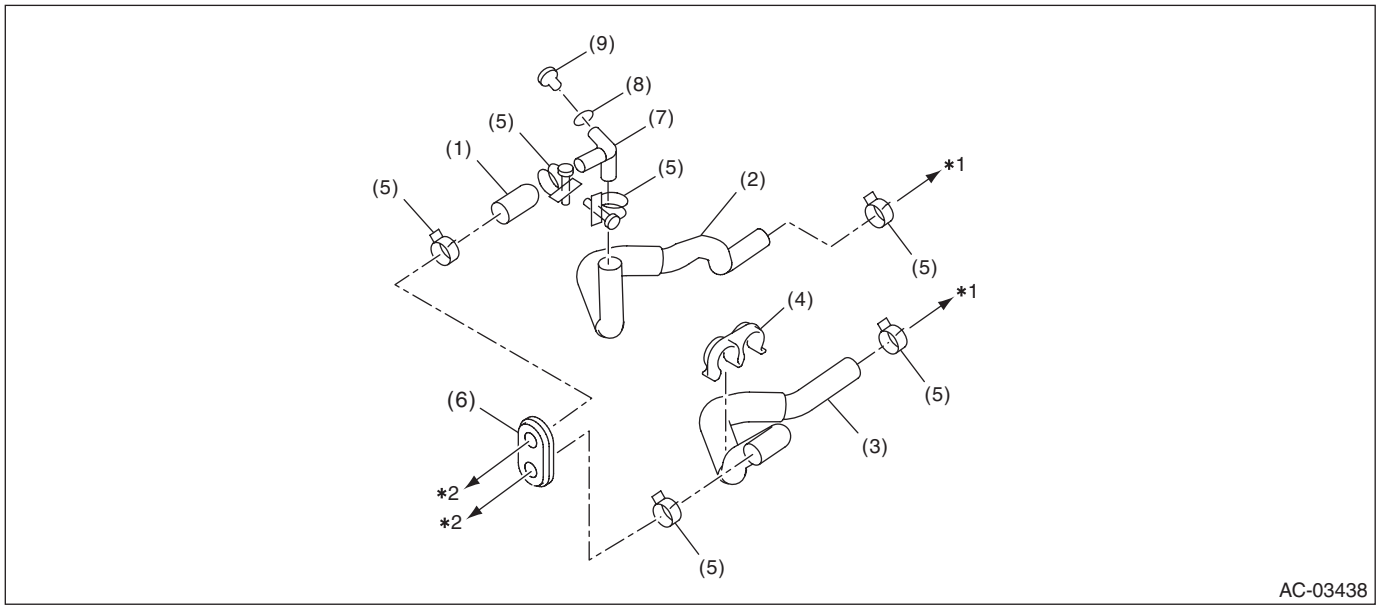
**Rear**




(1) Quick connector
(2) Front pipe
(3) Rear pipe

***Tightening torque: N·m (kgf-m, ft-lb)***
***T: 7.5 (0.76, 5.5)***

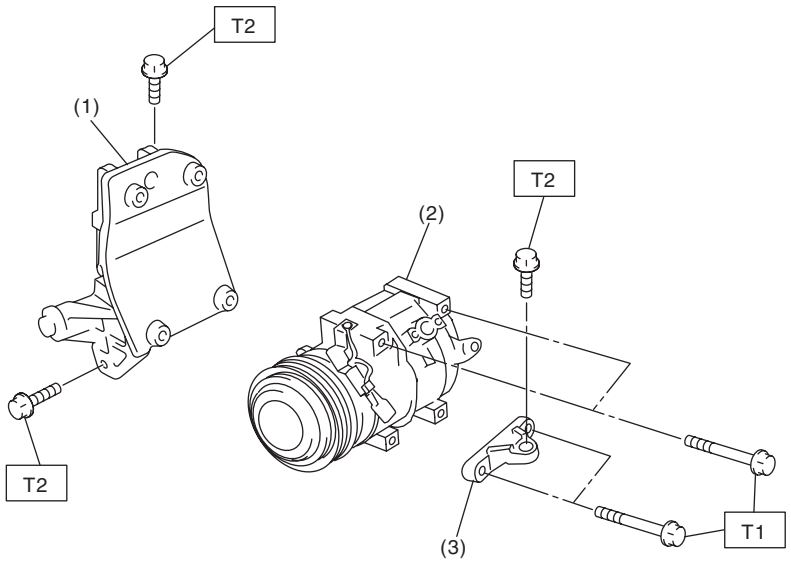
## 5. HEATER HOSE




(1) Heater outlet hose A
(2) Heater outlet hose B
(3) Heater inlet hose
(4) Clip
(5) Clamp
(6) Grommet
(7) Heater cock
(8) O-ring
(9) Drain

*1: Engine side
*2: Heater core side

## 6. COMPRESSOR

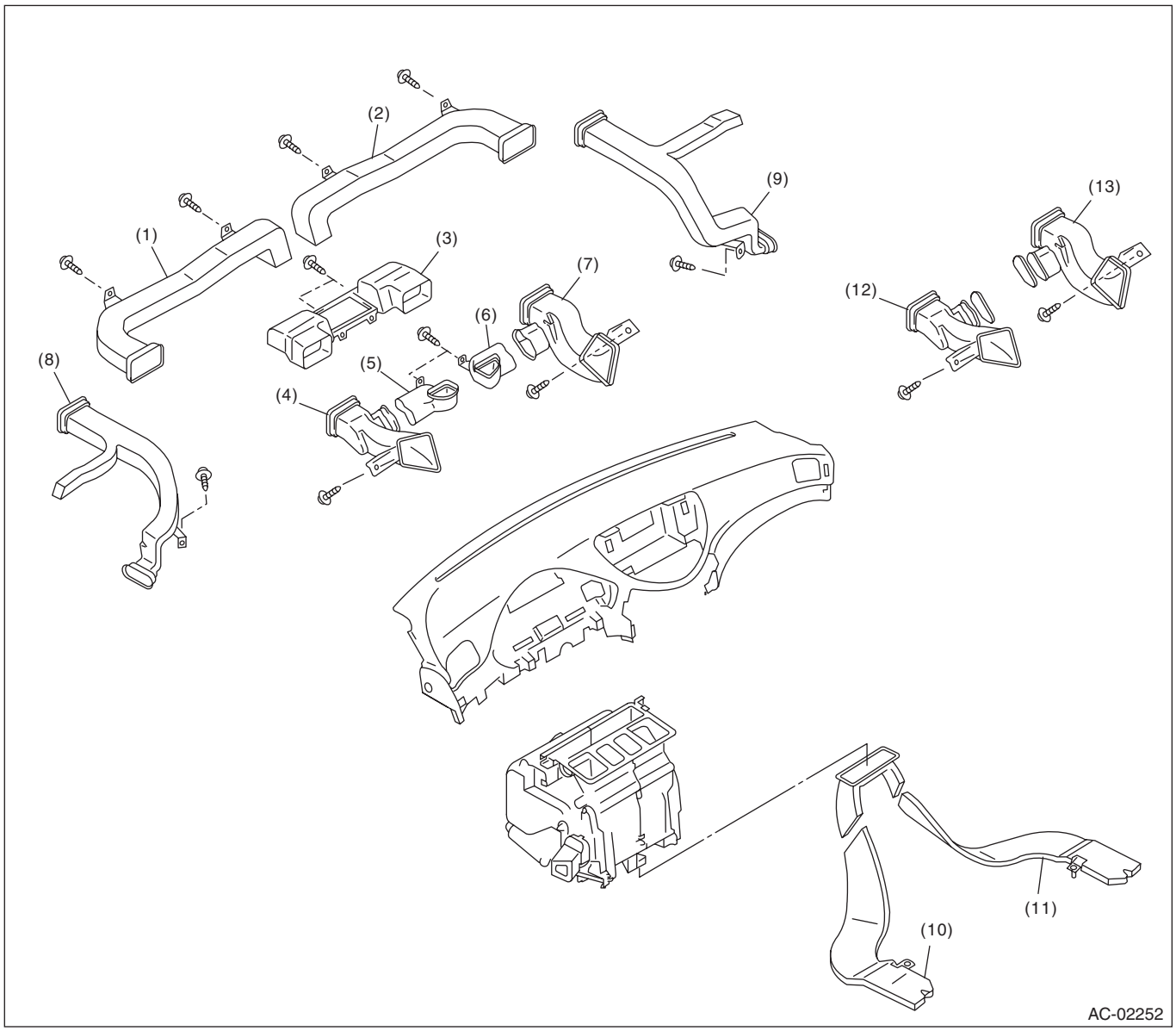



AC-01273

(1) Compressor upper bracket
(2) Compressor
(3) Compressor lower bracket

***Tightening torque: N·m (kgf-m, ft-lb)***
***T1: 26.5 (2.95, 21.3)***
***T2: 36 (3.7, 26.6)***

## 7. HEATER DUCT

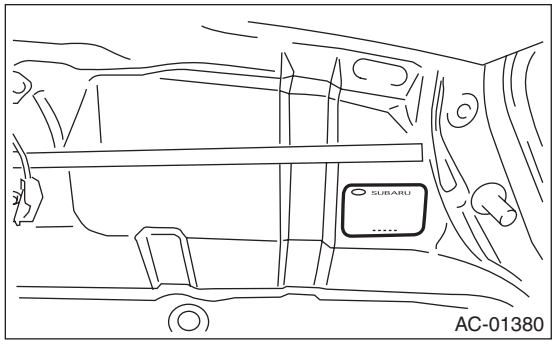



(1) Side ventilation duct LH
(2) Side ventilation duct RH
(3) Center ventilation duct
(4) Center duct LH
(5) Upper duct LH
(6) Upper duct RH
(7) Center duct RH
(8) Side defroster duct LH
(9) Side defroster duct RH
(10) Rear heater duct LH
(11) Rear heater duct RH
(12) Center duct LH (for harman/kardon audio)
(13) Center duct RH (for harman/kardon audio)

# C: CAUTION

## 1. HFC-134A A/C SYSTEM

• The cooling system components for the HFC-134a system such as the refrigerant and compressor oil are different from the conventional CFC-12 system components and they are incompatible with each other.
• Vehicles with the HFC-134a system can be identified by the label attached to the vehicle.
Before maintenance, check which A/C system is installed to the vehicle.




## 2. COMPRESSOR OIL

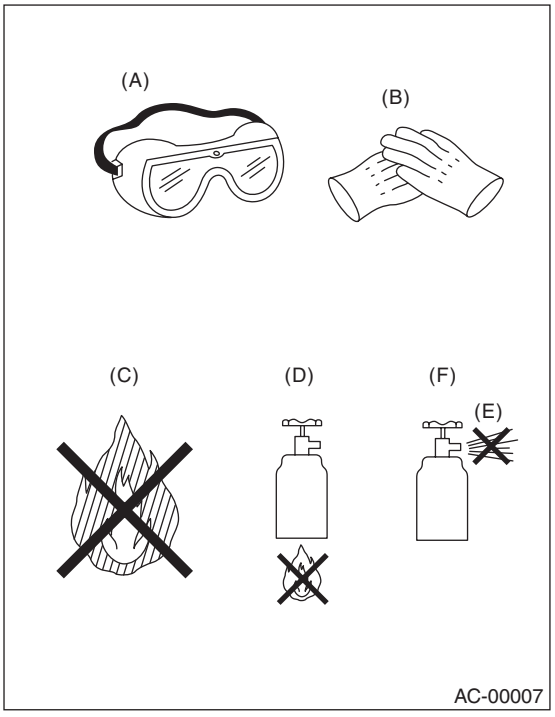
• HFC-134a compressor oil has no compatibility with that of CFC-12 system.
• Use only DENSO OIL 8, the manufacturer-authorized compressor oil for the HFC-134a system.
• Do not mix multiple compressor oils.
If CFC-12 compressor oil is used in the HFC-134a A/C system, the compressor may become stuck due 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 CFC-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 atmosphere using a plug or tape. In order to avoid moisture, store the oil in a container with its cap tightly closed.

## 3. REFRIGERANT

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

## 4. HANDLING OF REFRIGERANT

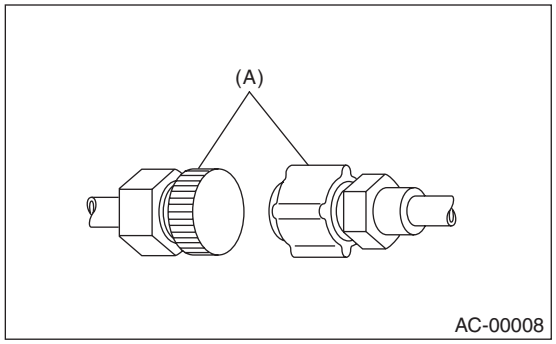
• The refrigerant boils at approx. –30°C (–22°F). When handling it, be sure to wear protective goggles and protective gloves. Direct contact of the refrigerant with skin may cause frostbite.
If the refrigerant gets into your eye, avoid rubbing your eyes with your hands. Wash your eye with plenty of water, 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 warm water of 40°C (104°F) or less.
• Do not drop or subject a service can to impacts. (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. High-pressure gas can back-flow resulting in an explosion of the can.
• Provide good ventilation and do not work in a closed area.
• In order to prevent global warming, avoid releasing HFC-134a into the atmosphere. Using a refrigerant recovery system, discharge and recycle the gas.




(A) Goggles
(B) Gloves
(C) Avoid open flame
(D) No direct heat on container
(E) Do not discharge
(F) Loosen

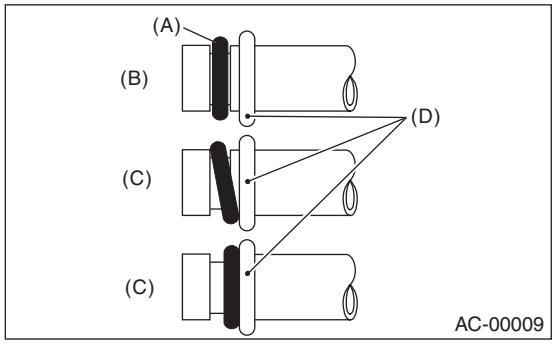
## 5. O-RING CONNECTIONS

- Always use a new O-ring.
- In order to keep the O-rings free of lint which will cause a refrigerant gas leak, perform work without using gloves or waste cloths.
- Apply compressor oil to O-rings to avoid sticking, before installation.
- Use a torque wrench to tighten the O-ring fittings. Over-tightening will result in damage of the O-ring and deformation of the pipe end.
- If the work is interrupted before completing pipe connections, recap the pipes, components and fittings with a plug or tape to prevent foreign matter from entering.




(A) Seal

- 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 straight against the groove of the pipe.

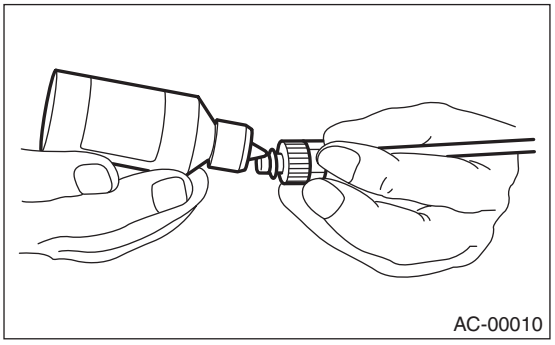



(A) O-ring
(B) OK
(C) NG
(D) Groove

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

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

Apply compressor oil to grooves of the pipe.




- After tightening, use a clean cloth to remove excess compressor 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 tighten the connections further, but disconnect the connections, remove the O-rings, and check the O-rings, threads, and connections.

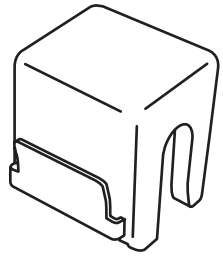
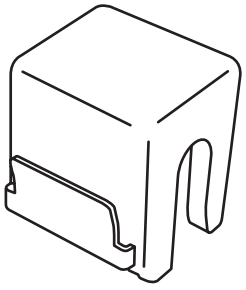
# D: PREPARATION TOOL

**CAUTION:**
**If HFC-134a and CFC-12 refrigerant or compressor oil is mixed, it will result in poor lubrication and the compressor itself may be damaged, be careful of the following:**
- **When working on vehicles with a HFC-134a system, only use HFC-134a specified tools and parts.**
- **Do not mix CFC-12 tools and parts.**
- **The gas leak detectors for the HFC-134a and CFC-12 systems must also not be interchanged.**

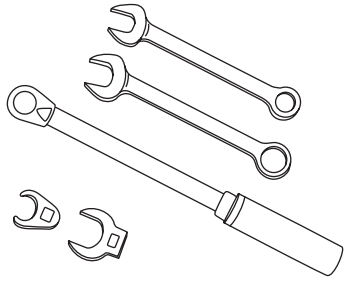
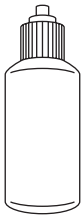
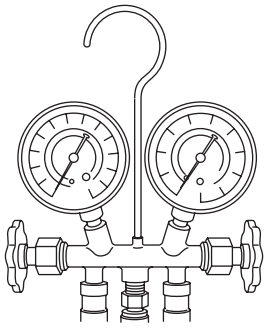
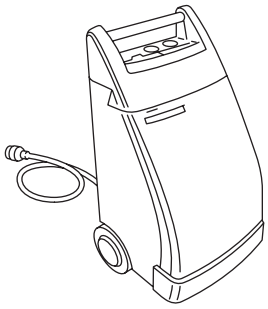
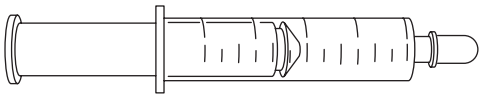
**In order to prevent the mixture of HFC-134a and CFC-12 parts and liquid, the type of tool and screw, and the replacement valves used are different.**

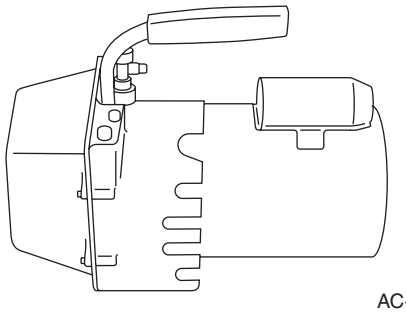
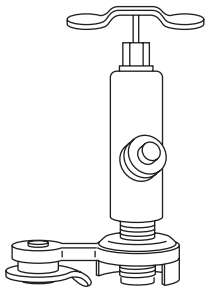
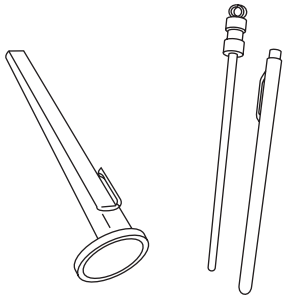
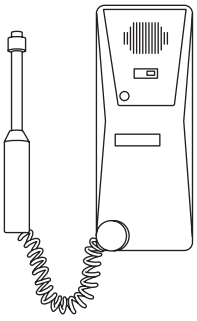
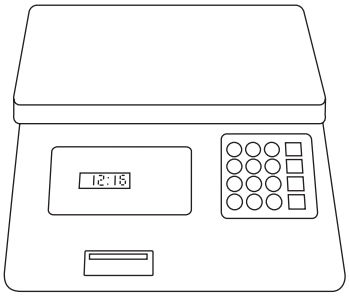
| | HFC-134a | CFC-12 |
|---|---|---|
| Tool and screw type | Millimeter size | Inch size |
| Valve type | Quick joint type | Screw-in type |

## 1. SPECIAL TOOL

| ILLUSTRATION | TOOL NUMBER | DESCRIPTION | REMARKS |
|---|---|---|---|
|  ST73499XA00A | 73499XA00A | S/T REMOVER PD | Used to disconnect the connector for a quick joint type air conditioner piping (high pressure side). |
|  ST73499XA01A | 73499XA01A | S/T REMOVER PS | Used to disconnect the connector for a quick joint type air conditioner piping (high pressure side). |

## 2. GENERAL TOOL

| ILLUSTRATION | Name and Function |
|---|---|
|  AC-00213 | Wrench<br>Various **WRENCHES** will be required to service any A/C system. 7 — 40 N·m (0.7 to 4.1 kg-m, 5 to 30 ft-lb) torque wrench and various crow-foot wrenches will be needed. Open end or flare nut wrenches will be needed to affix the pipe and hose fittings. |
|  AC-00012 | Applicator bottle<br>A small **APPLICATOR BOTTLE** is recommended to apply compressor oil to the various parts. It can be available at a hardware or drug store. |
|  AC-00013 | Manifold gauge set<br>A **MANIFOLD GAUGE SET** (with hoses) is available at either a refrigerant supplier or an automotive equipment supplier. |
|  AC-00014 | Refrigerant recovery system<br>A **REFRIGERANT RECOVERY SYSTEM** is used for the recovery and recycling of A/C system refrigerant after contaminants and moisture have been removed from the refrigerant. |
|  AC-00015 | Syringe<br>A graduated plastic **SYRINGE** will be needed to add oil into the system again. A syringe can be available at a pharmacy or drug store. |

| ILLUSTRATION | Name and Function |
|---|---|
|  AC-00016 | Vacuum pump<br>A **VACUUM PUMP** is necessary (for a good working condition), and may be available at either a refrigerant supplier or an automotive equipment supplier. |
|  AC-00017 | Can tap<br>A **CAN TAP** for the 397 g (14 oz.) can is available at an automotive equipment supplier. |
|  AC-00018 | Thermometer<br>A pocket **THERMOMETER** is available either at a industrial hardware store or a refrigerant supplier. |
|  AC-00019 | Electronic leak detector<br>An **ELECTRONIC LEAK DETECTOR** can be available at either a specialty tool supplier or an A/C equipment supplier. |
|  AC-00020 | Weight scale<br>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. |