

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

1. General Description

A: SPECIFICATION

1. HEATER SYSTEM

Item		Specification	On condition
Heating capacity		5.1 kW (4,385 kcal/h, 17,401 BTU/h) or more	<ul style="list-style-type: none"> • Mode selector switch: HEAT • Temperature control switch: FULL HOT • Temperature difference between hot water and inlet air: 65°C (149°F) • How water flow rate: 360 ℓ (95.1 US gal, 79.2 Imp gal)/h
Air flow rate		320 m ³ (11,301 cu ft)/h	Heat mode (FRESH), FULL HOT at 12.5 V
Max air flow rate		510 m ³ (18.01 cu ft)/h	<ul style="list-style-type: none"> • Temperature control switch: FULL COLD • Blower fan speed: Auto A/C: 6th position Manual A/C: 4th position • Mode selector lever: RECIRC
Heater core size (height × length × width)		264 × 110 × 27 mm (10.4 × 4.33 × 1.06 in)	—
Blower motor	Type	Magnet motor 220 W or less	12 V
	Fan type and size (diameter × width)	Sirocco fan type 150 × 75 mm (5.91 × 2.95 in)	—

2. A/C SYSTEM

- Auto A/C model

Item		Specification
Type of air conditioner		Reheat air-mix type
Cooling capacity		5.3 kW (4,557 kcal/h, 18,084 BTU/h)
Refrigerant		HFC-134a (CH ₂ FCF ₃) [0.4±0.03 kg (0.88±0.07 lb)]
Compressor	Type	Scroll, constant volume (SCSA 08C)
	Discharge	74.5 cc (4.55 cu in)/rev
	Max. permissible speed	9,000 rpm
Magnet clutch	Type	Dry, single-disc type
	Power consumption	35 W
	Type of belt	2.5 L SOHC Non-turbo and 2.5 L DOHC Turbo model: V-belt 4 PK 3.0 L DOHC Non-turbo model: V-belt 6 PK
	Pulley dia. (effective dia.)	93 mm (3.7 in)
	Pulley ratio	1.43
Condenser	Type	Corrugated fin (Sub cool type)
	Core face area	0.193 m ² (2.077 sq ft)
	Core thickness	16 mm (0.63 in)
	Radiation area	5.72 m ² (61.57 sq ft)
Receiver drier	Effective inner capacity	190 cm ³ (11.6 cu in)
Expansion valve	Type	Externally equalizing
Evaporator	Type	Single tank
	Dimensions (W × H × T)	298.6 × 151 × 38 mm (11.76 × 5.94 × 1.50 in)
Blower fan	Fan type	Sirocco fan
	Outer diameter × width	150 × 75 mm (5.91 × 2.95 in)
	Power consumption	220 W

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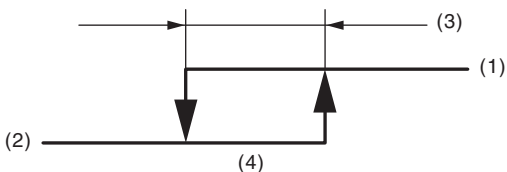
Item		Specification	
Condenser fan (Sub fan)		Motor type	Magnet
		Power consumption	2.5 L SOHC Non-turbo model: 90 W 2.5 L DOHC Turbo model: 120 W 3.0 L DOHC Non-turbo model: 160 W
		Fan outer diameter	2.5 L SOHC Non-turbo model: 300 mm (11.8 in) 2.5 L DOHC Turbo and 3.0 L DOHC Non-turbo model: 320 mm (12.6 in)
Radiator fan (Main fan)		Motor type	Magnet
		Power consumption	2.5 L SOHC Non-turbo model: 90 W 2.5 L DOHC Turbo model: 120 W 3.0 L DOHC Non-turbo model: 160 W
		Fan outer diameter	2.5 L SOHC Non-turbo model: 300 mm (11.8 in) 2.5 L DOHC Turbo and 3.0 L DOHC Nonturbo model: 320 mm (12.6 in)
Idling speed (A/C ON)		MPFI model	800±100 rpm
Triple switch (Pressure switch)	Low-pressure switch operating pressure	ON → OFF	196±20 kPa (2.00±0.20 kg/cm ² , 28.4±2.9 psi)
		OFF → ON	225 ⁺²⁵ ₋₂₉ kPa (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 (32.02 ^{+0.51} _{-2.04} kg/cm ² , 455.4 ^{+7.25} _{-29.0} psi)
		OFF → ON	2,550±200 kPa (26.00±2.04 kg/cm ² , 369.8±29.0 psi)
	Middle-pressure switch operating pressure	ON → OFF	1,370±120 kPa (13.97±1.22 kg/cm ² , 198.65±17.35 psi)
		OFF → ON	1,770±80 kPa (18.05±0.82 kg/cm ² , 256.81±11.60 psi)
Thermo-control amplifier working temperature (Evaporator outlet air)		<div></div> <div>AC-00601</div> <div>(1) ON (2) OFF (3) 1±0.5°C (33.8±0.9°F) (4) 4^{+1.5}₀°C (39.2^{+2.7}₀°F)</div>	

• Manual A/C model

Item		Specification
Type of air conditioner		Reheat air-mix type
Cooling capacity		5.3 kW (4,557 kcal/h, 18,084 BTU/h)
Refrigerant		HFC-134a (CH ₂ FCF ₃) [0.4±0.03 kg (0.88±0.07 lb)]
Compressor	Type	Scroll, constant volume (SCSA 08C)
	Discharge	74.5 cc (4.55 cu in)/rev
	Max. permissible speed	9,000 rpm

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

Item		Specification	
Magnet clutch	Type	Dry, single-disc type	
	Power consumption	35 W	
	Type of belt	V-belt 4 PK	
	Pulley dia. (effective dia.)	93 mm (3.7 in)	
	Pulley ratio	1.43	
Condenser	Type	Corrugated fin (Sub cool type)	
	Core face area	0.193 m ² (2.077 sq ft)	
	Core thickness	16 mm (0.63 in)	
	Radiation area	5.7 m ² (61.57 sq ft)	
Receiver drier	Effective inner capacity	190 cm ³ (11.6 cu in)	
Expansion valve	Type	Externally equalizing	
Evaporator	Type	Single tank	
	Dimensions (W × H × T)	298.6 × 151 × 38 mm (11.7 × 5.94 × 1.50 in)	
Blower fan	Fan type	Sirocco fan	
	Outer diameter × width	150 × 75 mm (5.91 × 2.95 in)	
	Power consumption	220 W	
Condenser fan (Sub fan)	Motor type	Magnet	
	Power consumption	90 W	
	Fan outer diameter	300 mm (11.8 in)	
Radiator fan (Main fan)	Motor type	Magnet	
	Power consumption	90 W	
	Fan outer diameter	300 mm (11.8 in)	
Idling speed (A/C ON)		MPFI model	800±100 rpm
Triple switch (Pressure switch)	Low-pressure switch operating pressure	ON → OFF	196±20 kPa (2.00±0.20 kg/cm ² , 28.4±2.9 psi)
		OFF → ON	225 ⁺²⁵ ₋₂₉ kPa (2.29 ^{+0.25} _{-0.30} kg/cm ² , 32.6 ^{+3.6} _{-4.2} psi)
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	Middle-pressure switch operating pressure	ON → OFF	1,370±120 kPa (13.97±1.22 kg/cm ² , 198.65±17.35 psi)
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Thermo control amplifier working temperature (Evaporator outlet air)		<div></div> <div>AC-00601</div> <div>(1) ON (2) OFF (3) 1±0.5°C (33.8±0.9°F) (4) 4^{+1.5}₀°C (39.2^{+2.7}₀°F)</div>	

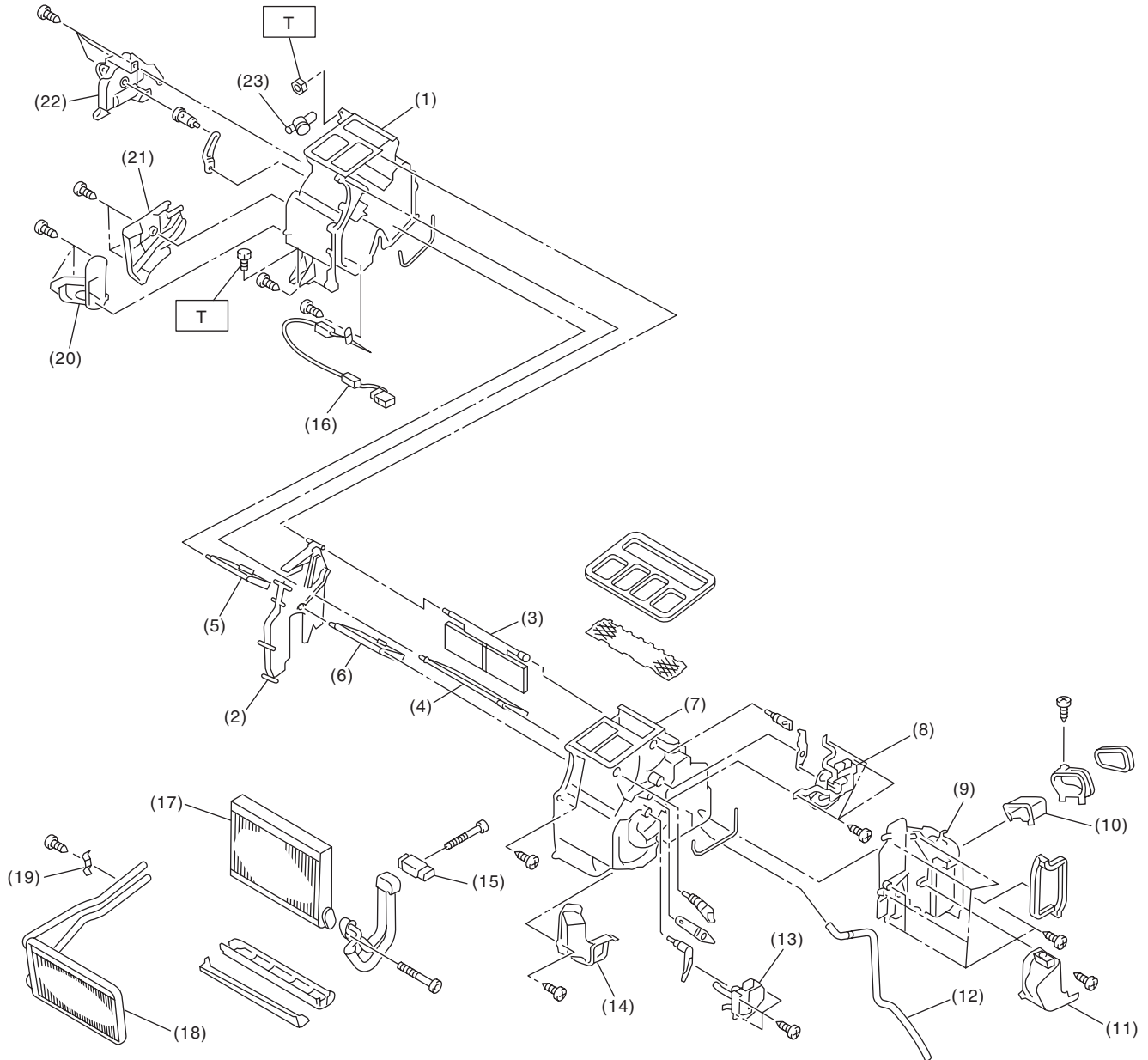
General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

B: COMPONENT

1. HEATER COOLING UNIT

- Auto A/C model



AC-01431

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

(1) Heater unit case LH	(10) Grommet	(19) Heater pipe clamp
(2) Separator	(11) Pipe cover	(20) Foot duct LH
(3) Mode door RR	(12) Drain hose	(21) Heater core cover
(4) Mode door FR	(13) Air mix door actuator RH	(22) Air mix door actuator LH
(5) Air mix door LH	(14) Foot duct RH	(23) Aspirator
(6) Air mix door RH	(15) Expansion valve	
(7) Heater unit case RH	(16) Evaporator sensor	
(8) Mode door actuator	(17) Evaporator	
(9) Evaporator cover	(18) Heater core	

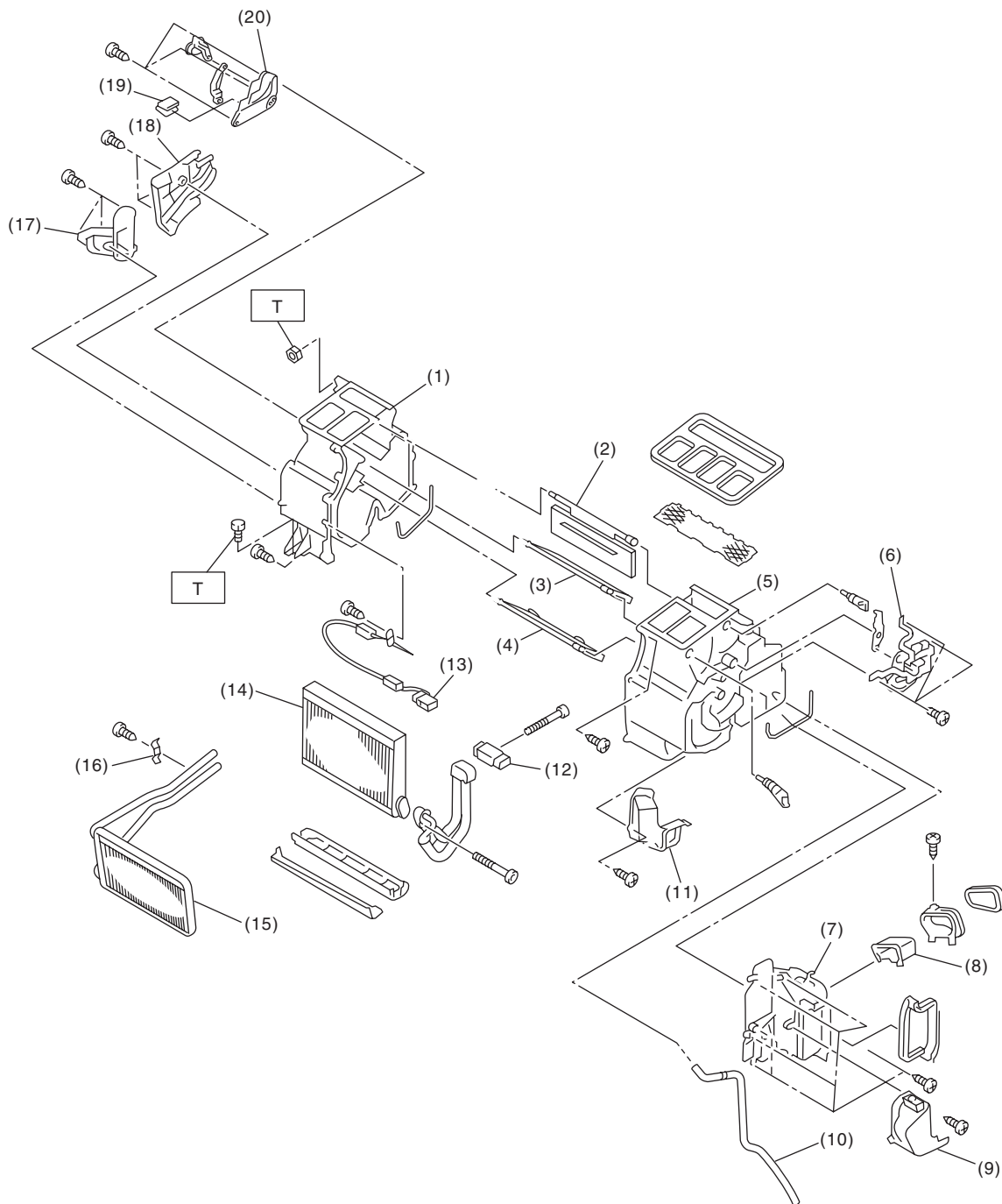
Tightening torque:N·m (kgf-m, ft-lb)

T: 7.5 (0.76, 5.5)

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

- Manual A/C model



AC-01430

General Description

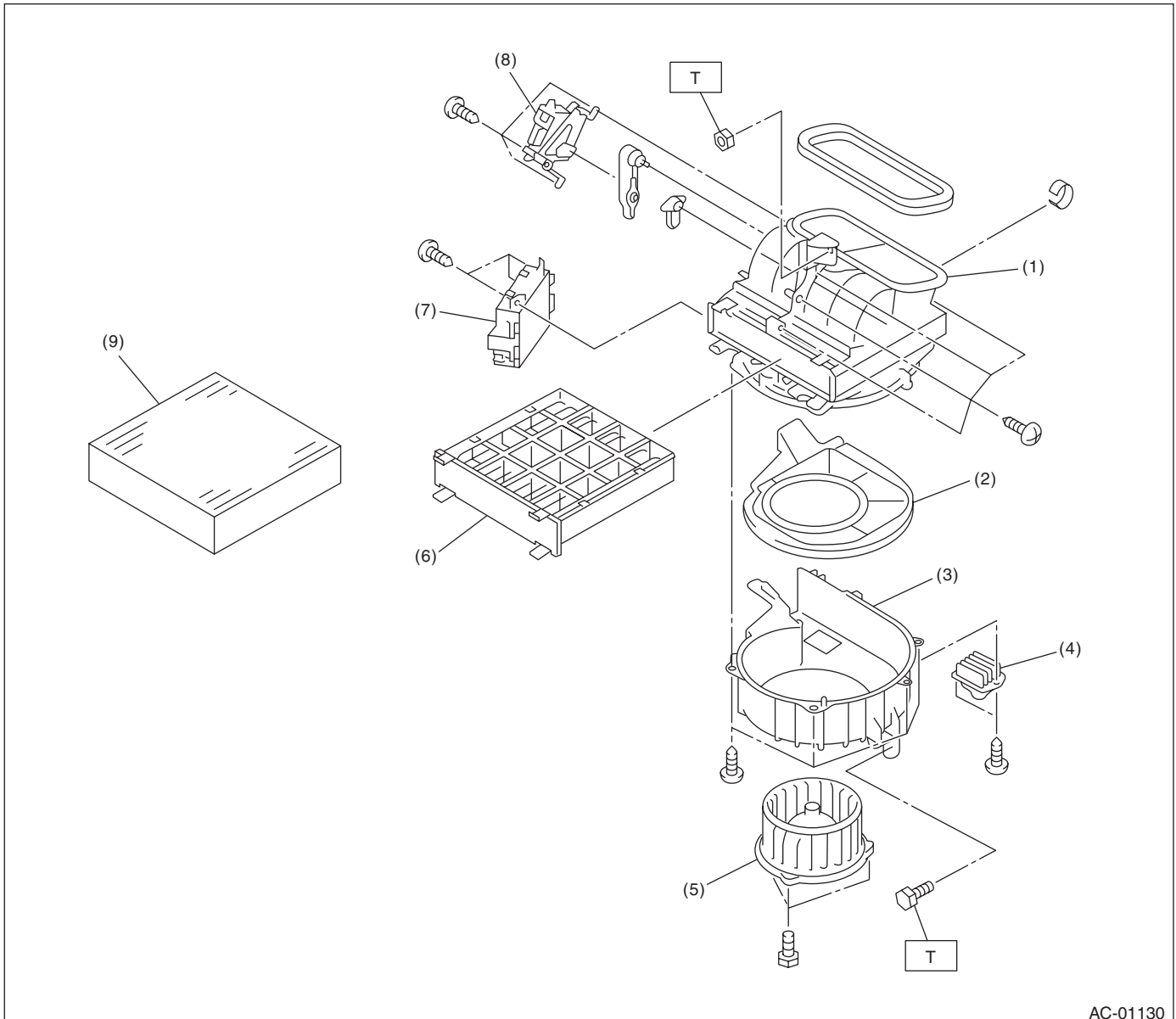
HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

- | | | |
|-------------------------|------------------------|---------------------------|
| (1) Heater unit case LH | (9) Pipe cover | (17) Foot duct LH |
| (2) Mode door RR | (10) Drain hose | (18) Heater core cover |
| (3) Mode door FR | (11) Foot duct RH | (19) Clip |
| (4) Air mix door | (12) Expansion valve | (20) Air mix door linkage |
| (5) Heater unit case RH | (13) Thermo amplifier | |
| (6) Mode door actuator | (14) Evaporator | |
| (7) Evaporator cover | (15) Heater core | |
| (8) Grommet | (16) Heater pipe clamp | |

Tightening torque: N·m (kgf-m, ft-lb)

T: 7.5 (0.76, 5.5)

2. BLOWER MOTOR UNIT



AC-01130

- | | | |
|---|-----------------------------------|------------|
| (1) Upper case | (5) Blower motor | (9) Filter |
| (2) Blower plate | (6) Filter cover | |
| (3) Lower case | (7) Control unit (Auto A/C model) | |
| (4) Power Transistor (Auto A/C Model)
Blower Resistor (Manual A/C Model) | (8) Intake door actuator | |

Tightening torque: N·m (kgf-m, ft-lb)

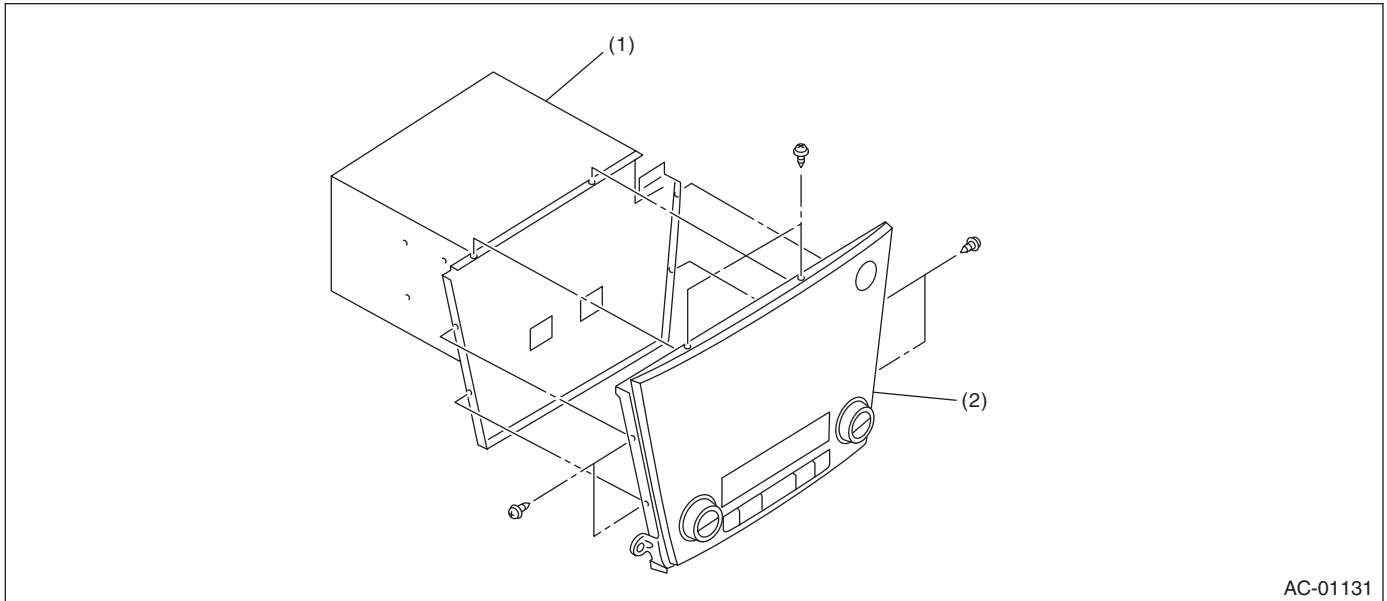
T: 7.5 (0.76, 5.5)

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

3. CONTROL PANEL

- Auto A/C model

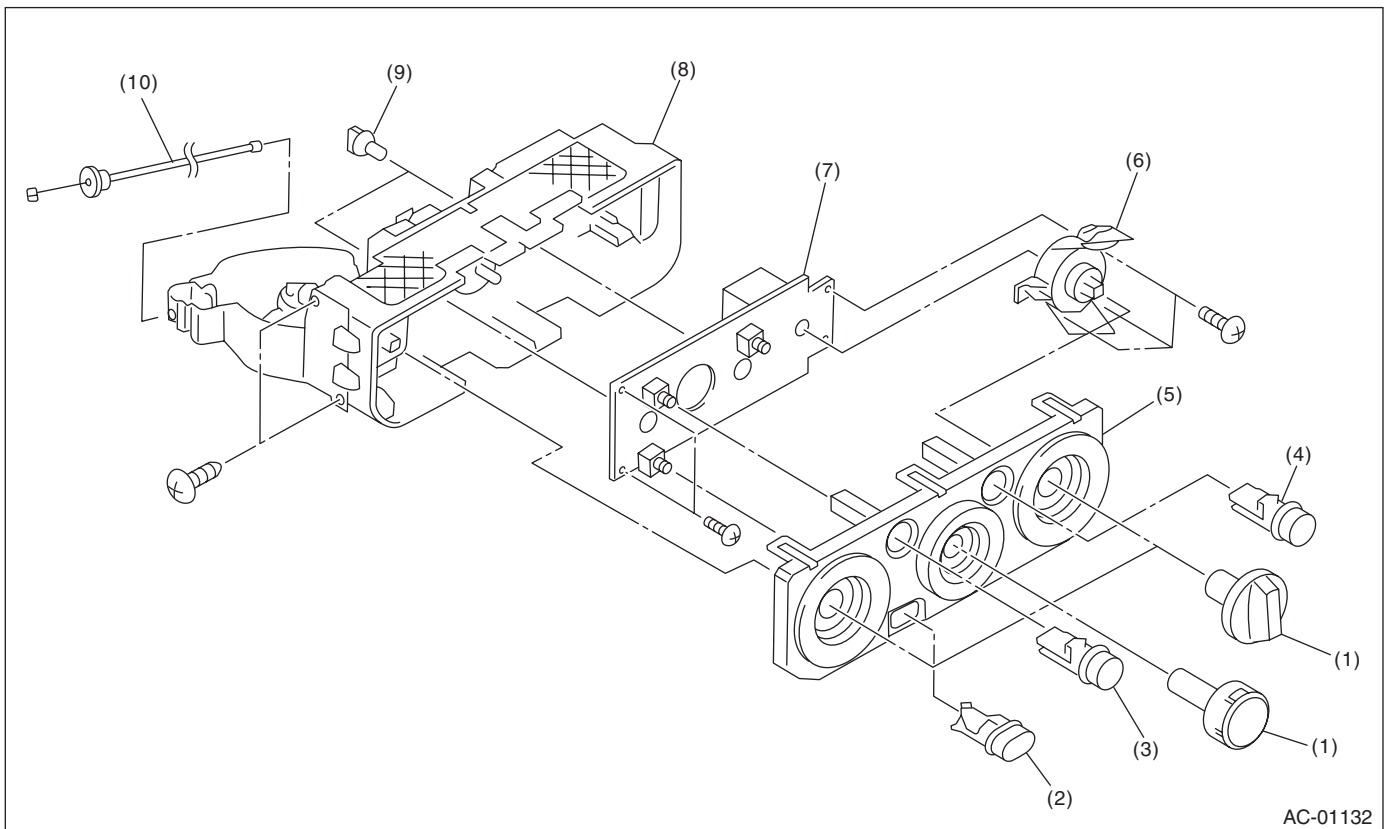


AC-01131

(1) Audio ASSY

(2) Control panel

- Manual A/C model



AC-01132

(1) Dial

(2) A/C switch

(3) FRESH/RECIRC switch

(4) Rear window defogger switch

(5) Heater control panel

(6) Air flow control switch

(7) Switch board

(8) Heater control base

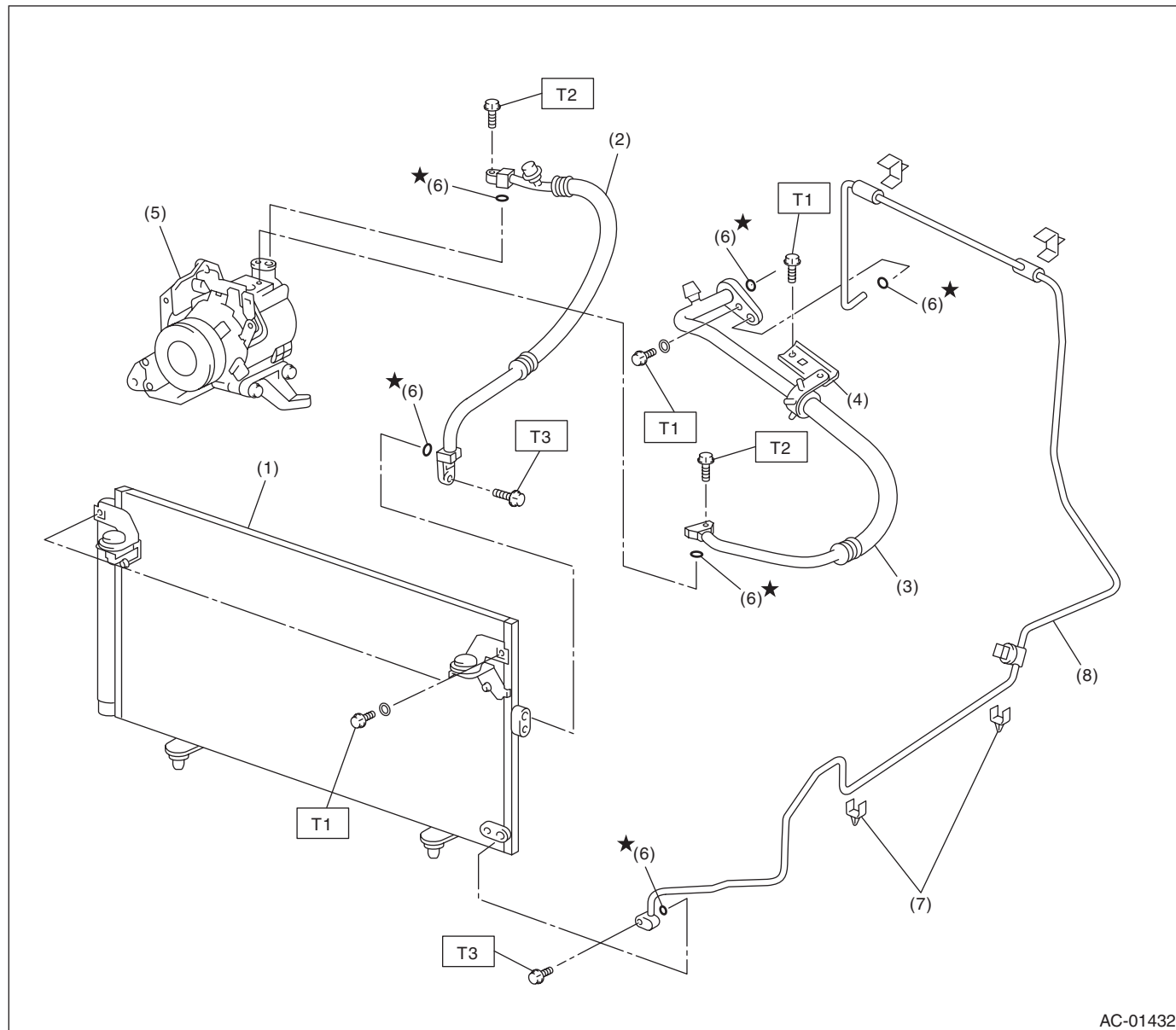
(9) Light

(10) Temperature control cable

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

4. AIR CONDITIONING UNIT



- | | |
|--------------------------|----------------|
| (1) Condenser | (5) Compressor |
| (2) Hose (High-pressure) | (6) O-ring |
| (3) Hose (Low-pressure) | (7) Clamp |
| (4) Bracket | (8) Tube |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.76, 5.5)

T2: 10 (1.0, 7.4)

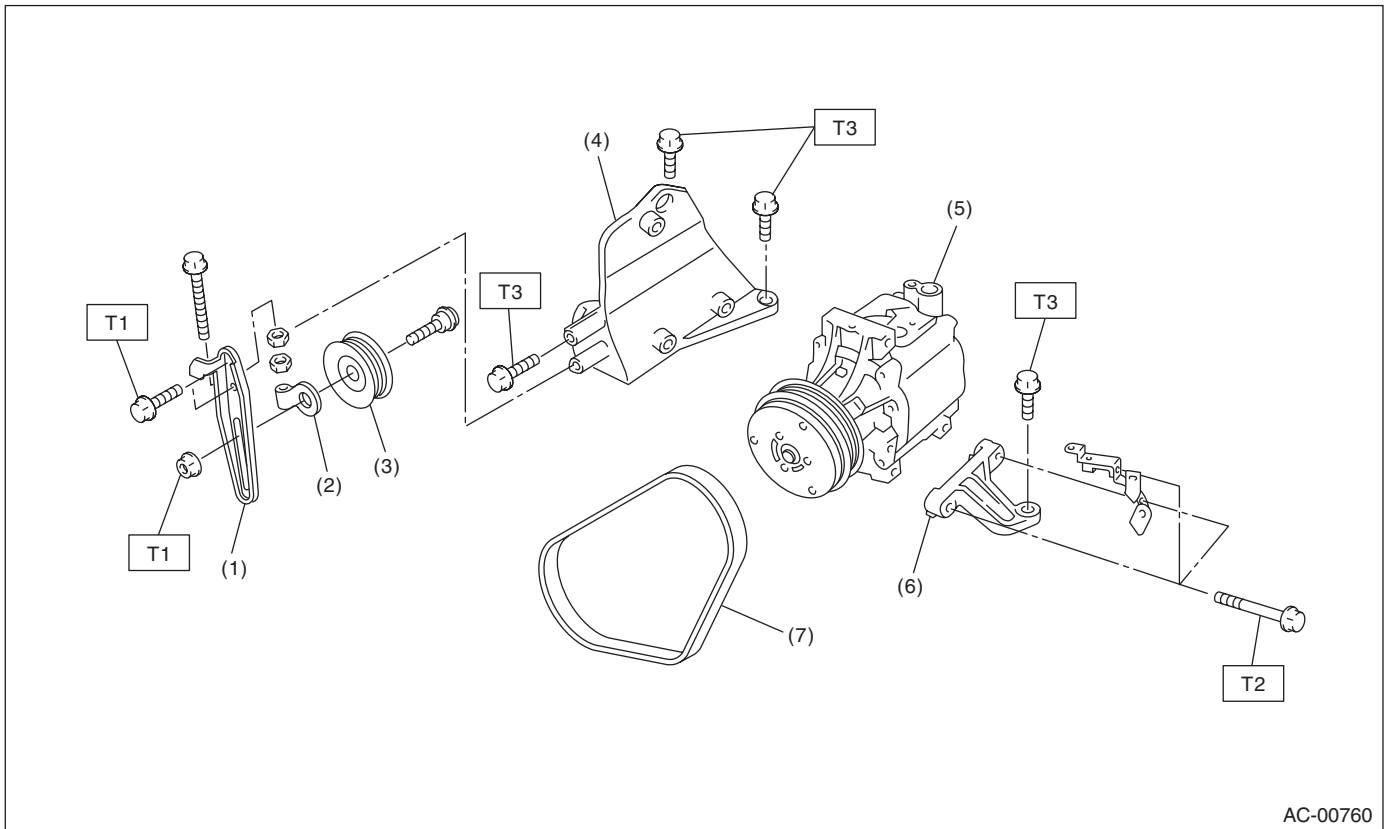
T3: 5 (0.5, 3.7)

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

5. COMPRESSOR

- H4 model



- (1) Idler pulley bracket
- (2) Idler pulley adjuster
- (3) Idler pulley
- (4) Compressor upper bracket

- (5) Compressor
- (6) Compressor lower bracket
- (7) V-belt

Tightening torque: N·m (kgf-m, ft-lb)

T1: 23.0 (2.35, 17.0)

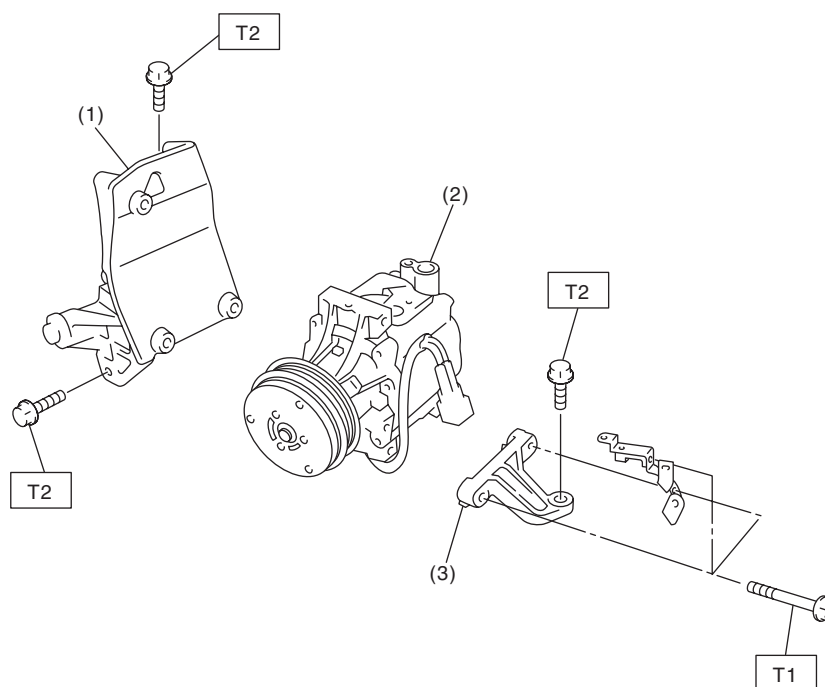
T2: 28.9 (2.95, 21.3)

T3: 36 (3.7, 26.6)

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

- H6 model



AC-00912

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

Tightening torque: N·m (kgf-m, ft-lb)

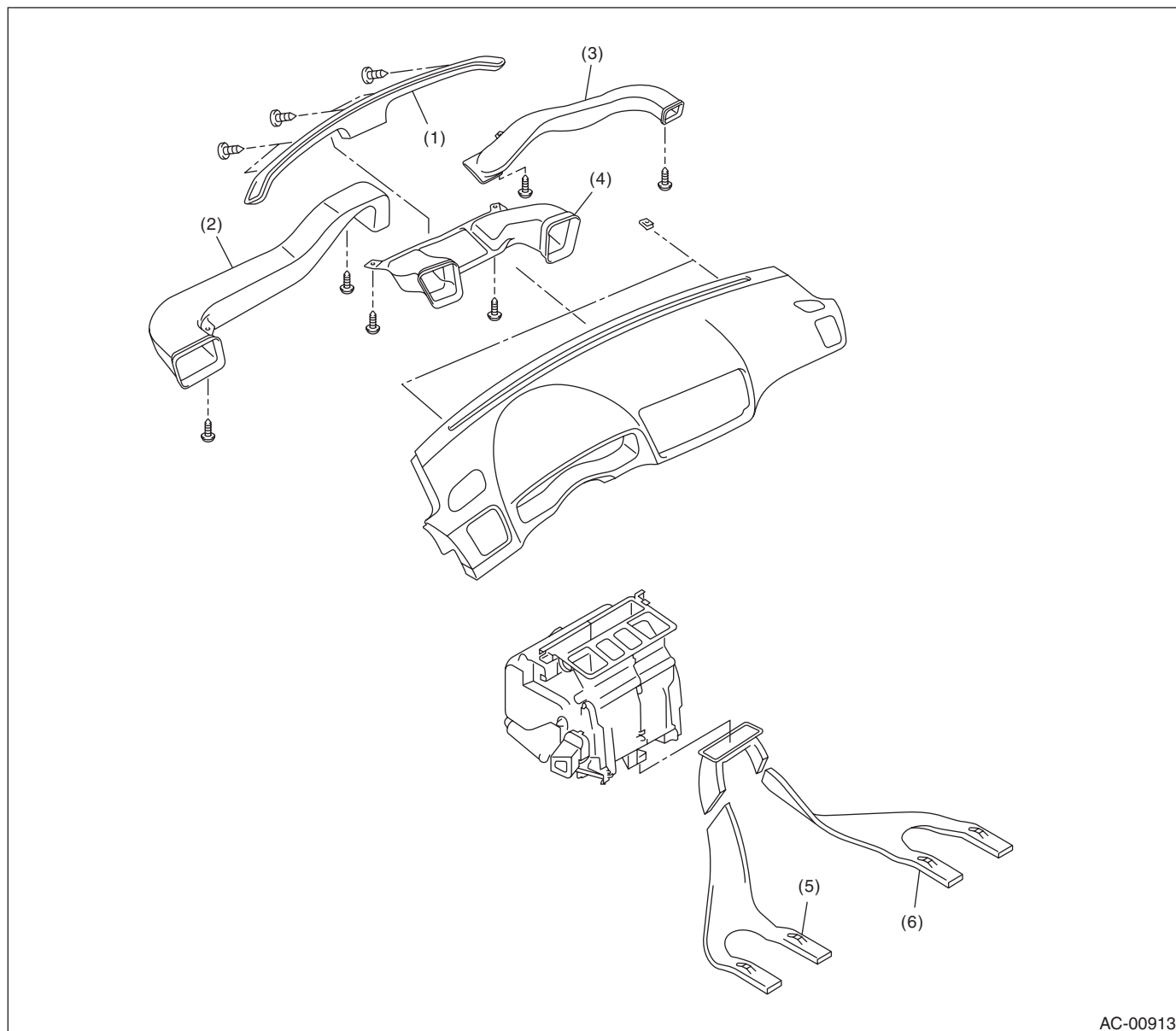
T1: 28.9 (2.95, 21.3)

T2: 36 (3.7, 26.6)

General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

6. HEATER DUCT



AC-00913

- (1) Front defroster nozzle
- (2) Side ventilation duct (LH)

- (3) Side ventilation duct (RH)
- (4) Center ventilation duct

- (5) Rear heater duct (LH)
- (6) Rear heater duct (RH)

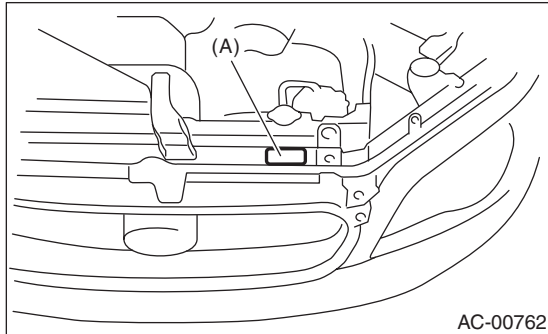
General Description

HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

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 (A) attached to the vehicle. Before maintenance, check which A/C system is installed to the vehicle.



2. COMPRESSOR OIL

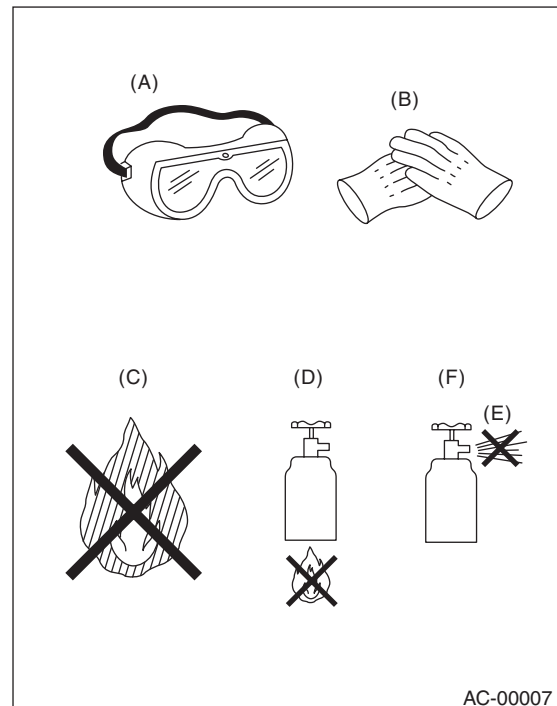
- HFC-134a compressor oil has no compatibility with that of CFC-12 system.
 - Use only Denso Oil 8, the manufacturer-authorized compressor oil for the HFC-134a system.
 - Do not mix multiple compressor oils.
- If CFC-12 compressor oil is used in the HFC-134a A/C system, the compressor may become stuck 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 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. 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.



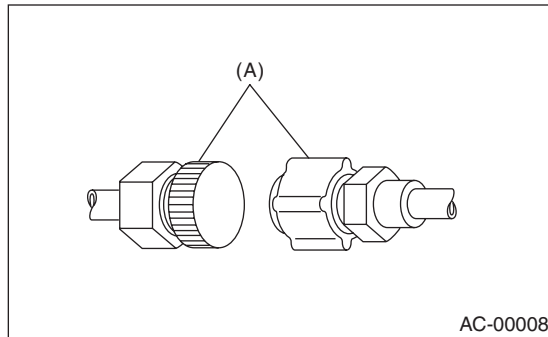
- (A) Goggles
- (B) Gloves
- (C) Avoid open flame
- (D) No direct heat on container
- (E) Do not discharge
- (F) Loosen

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HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

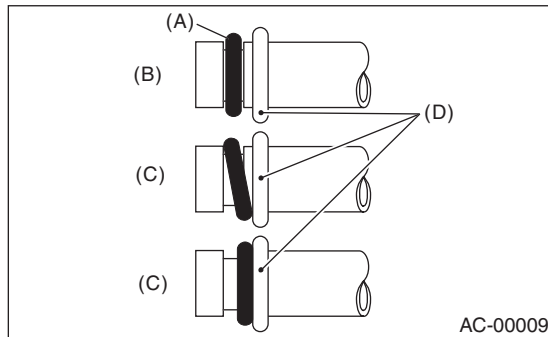
5. O-RING CONNECTIONS

- Always use a new O-ring.
- In order to keep the O-rings free of lint which can cause a refrigerant gas leak, perform operations without gloves and cloth.
- Apply compressor oil to O-rings to avoid sticking, before installation.
- Use a torque wrench to tighten the O-ring fittings. Over-tightening will cause damage to the O-ring and cause tube end distortion.
- If the work is interrupted before completing pipe connections, recap the tubes, 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 at a right angle to tube beads.

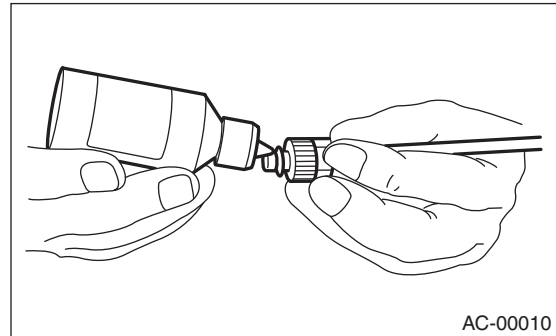


- (A) O-ring
(B) OK
(C) NG
(D) Groove

- 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 tube.



- 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:

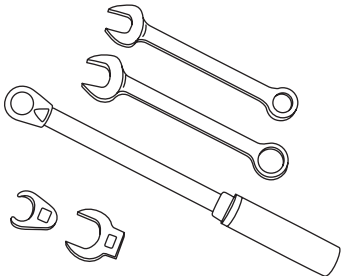
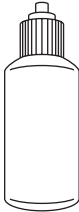
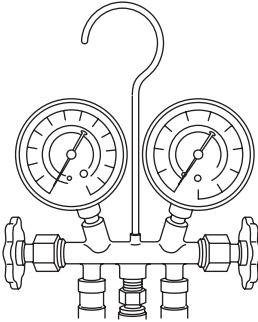
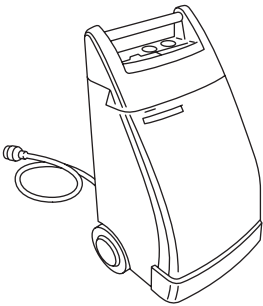
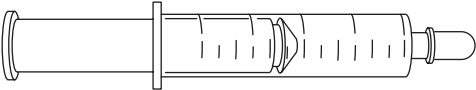
When working on vehicles with a HFC-134a system, only use HFC-134a specified tools and parts. Do not mix CFC-12 tools and parts. If HFC-134a and CFC-12 refrigerant or compressor oil is mixed, it will result in poor lubrication and the compressor itself may be damaged.

In order to prevent the mixture of 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

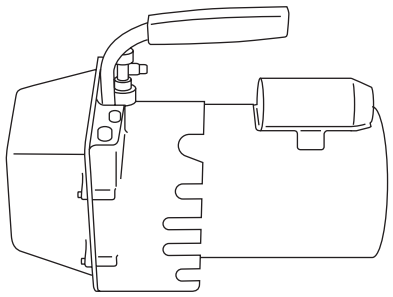
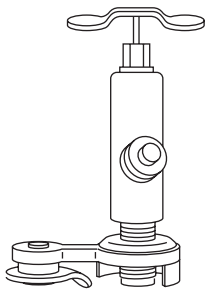
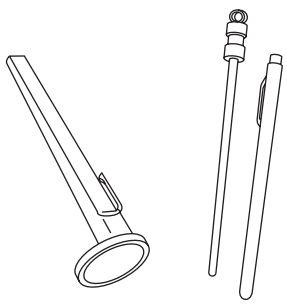
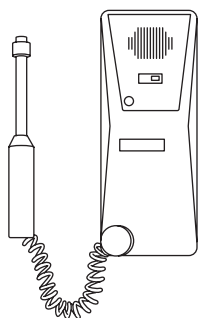
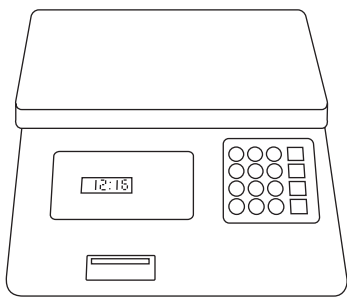
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HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

ILLUSTRATION	NAME AND FUNCTION
 <p>AC-00213</p>	<p>Wrench</p> <p>Various WRENCHES will be required to service any A/C system. A 7 to 40 N-m (0.7 to 4.1 kgf-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 hold the tube and hose fittings.</p>
 <p>AC-00012</p>	<p>Applicator bottle</p> <p>A small APPLICATOR BOTTLE is recommended to apply compressor oil to the various parts. It can be available at a hardware or drug store.</p>
 <p>AC-00013</p>	<p>Manifold gauge set</p> <p>A MANIFOLD GAUGE SET (with hoses) is available either from a refrigerant supplier or an automotive equipment supplier.</p>
 <p>AC-00014</p>	<p>Refrigerant recovery system</p> <p>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.</p>
 <p>AC-00015</p>	<p>Syringe</p> <p>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.</p>

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HVAC SYSTEM (HEATER, VENTILATOR AND A/C)

ILLUSTRATION	NAME AND FUNCTION
 <p>AC-00016</p>	<p>Vacuum pump</p> <p>A VACUUM PUMP is necessary (for a good working condition), and is available either at a refrigerant supplier or an automotive equipment supplier.</p>
 <p>AC-00017</p>	<p>Can tap</p> <p>A CAN TAP for the 397 g (14 oz.) can is available at an automotive equipment supplier.</p>
 <p>AC-00018</p>	<p>Thermometer</p> <p>A Pocket THERMOMETER is available either at a industrial hardware store or a refrigerant supplier.</p>
 <p>AC-00019</p>	<p>Electronic leak detector</p> <p>An ELECTRONIC LEAK DETECTOR can be available either at a specialty tool supplier or an A/C equipment supplier.</p>
 <p>AC-00020</p>	<p>Weight scale</p> <p>A WEIGHT SCALE such as an electronic charging scale or a bath-room scale with digital display will be needed, if a 13.6 kg (30 lb) refrigerant container is used.</p>