1. General Description

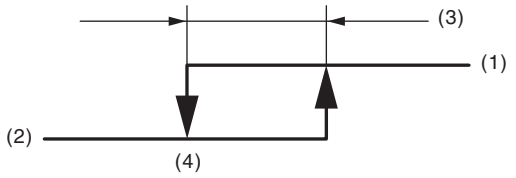
A: SPECIFICATION

1. HEATER SYSTEM

Item	Specifications		Condition
Heating capacity	5.0 kW (4,299 kcal/h, 17,059 BTU/h) or more		• Air flow control dial or switch: FOOT • Temperature control dial: HI (MAX 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
Air flow rate	290 m^3 (10,243 cu ft)/h		FOOT mode (FRESH), MAX HOT at 12.5 V
Max air flow rate	480 m^3 (16,954 cu ft)/h		• Temperature control dial: LO (MAX COOL) • Fan dial: HI (MAX): 7th position • FRESH/RECIRC switch: RECIRC
Heater core	Size (W × H × T)	257.5 × 118.5 × 27 mm (10.1 × 4.67 × 1.06 in)	—
Blower motor	Type	Magnet motor 300 W or less	12 V
	Fan type	Sirocco fan type	—
	Size (diameter × width)	150 × 75 mm (5.91 × 2.95 in)	—

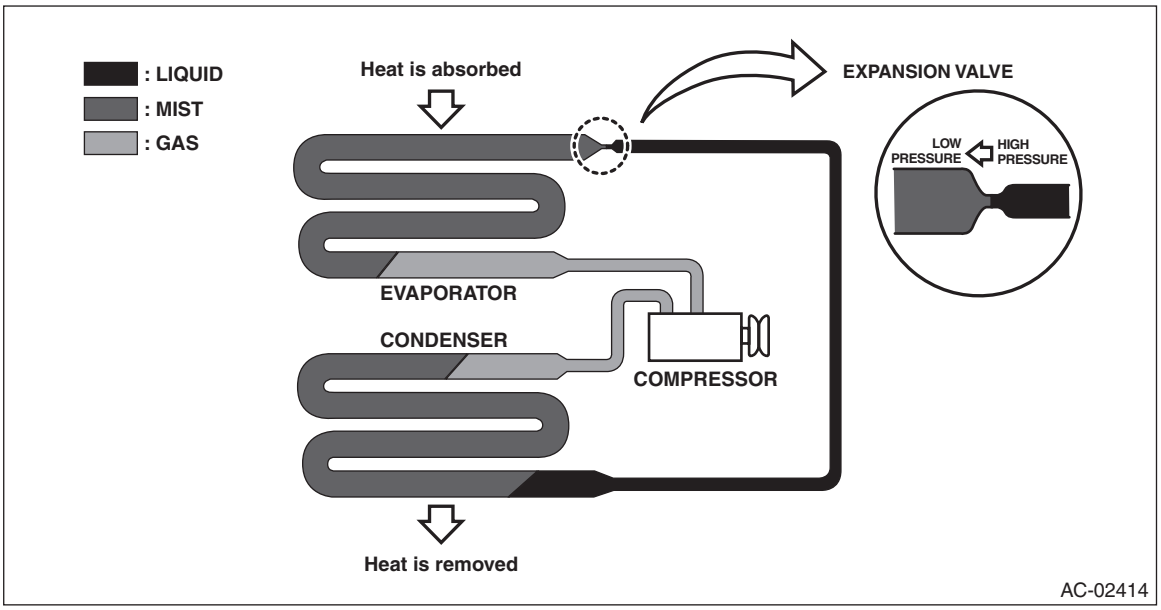
2. A/C SYSTEM

Item		Specifications
Type of air conditioner		Reheat air-mix type
Cooling capacity		5.0 kW (4,299 kcal/h, 17,059 BTU/h)
Refrigerant		HFC-134a (CH_2FCF_3) [0.475±0.025 kg (1.05±0.06 lb)]
Compressor	Type	Rotary fixed capacity
	Type	Except for STI model: DKV-10Z STI model: DKV-10R
	Discharge	105 cc (6.41 cu in)/rev
	Max. permissible speed	7,700 r/min
Magnet clutch	Type	Dry, single-disc type
	Power consumption	Except for STI model: 45 W STI model: 38.8 W
	Type of belt	Except for STI model: V-belt 6 PK STI model: V-belt 4 PK
	Pulley dia. (effective dia.)	Except for STI model: 110 mm (4.33 in) STI model: 100 mm (3.94 in)
	Pulley ratio	Except for STI model: 1.3 STI model: 1.32
Condenser	Type	Sub cool type
	Core face area	0.188 m^2 (2.002 sq ft)
	Core thickness	16 mm (0.63 in)
	Radiation area	4.5 m^2 (48.44 sq ft)
Expansion valve	Type	Block
Evaporator	Type	Dual-tank
	Size (W × H × T)	290.1 × 172 × 39 mm (11.42 × 6.77 × 1.54 in)
Blower fan	Fan type	Sirocco fan
	Outer diameter × Width	150 × 75 mm (5.91 × 2.95 in)
	Power consumption	280 W

Item			Specifications
Condenser fan (sub fan)		Motor type	Magnet
		Power consumption	120 W
		Fan outer diameter	318.5 mm (12.5 in)
Radiator fan (main fan)		Motor type	Magnet
		Power consumption	120 W
		Fan outer diameter	318.5 mm (12.5 in)
Idle speed		No load	700±100 r/min
		A/C ON	Except for STI model: 700 — 865±50 r/min STI model: 750±100 r/min
Triple switch (Pressure switch)	Low-pressure switch operating pressure	ON → OFF	196±25 kPa (2.00±0.25 kgf/cm^2, 28.4±3.6 psi)
		OFF → ON	225±30 kPa (2.29±0.31 kgf/cm^2, 32.6±4.3 psi)
	High-pressure switch operating pressure	ON → OFF	2,940±200 kPa (29.98±2.04 kgf/cm^2, 426.3±29 psi)
		OFF → ON	2,350±200 kPa (24.00±2.04 kgf/cm^2, 340.7±29.0 psi)
	Middle-pressure switch operating pressure	ON → OFF	1,470±120 kPa (14.99±1.22 kgf/cm^2, 213.15±17.4 psi)
		OFF → ON	1,770±100 kPa (18.05±1.02 kgf/cm^2, 256.65±14.5 psi)
Thermo-control amplifier working temperature			 AC-00601 (1) ON (2) OFF (3) 1.5±0.3°C (34.7±0.5°F) (4) 1.0±0.5°C (33.8±0.9°F)

3. BASIC OPERATION

The cooling system cools down the compartment by using the pipes connecting parts and cycling the evaporable liquid (refrigerant) within the sealed system in a repeated process of “vaporization — liquefaction — re-vaporization”.



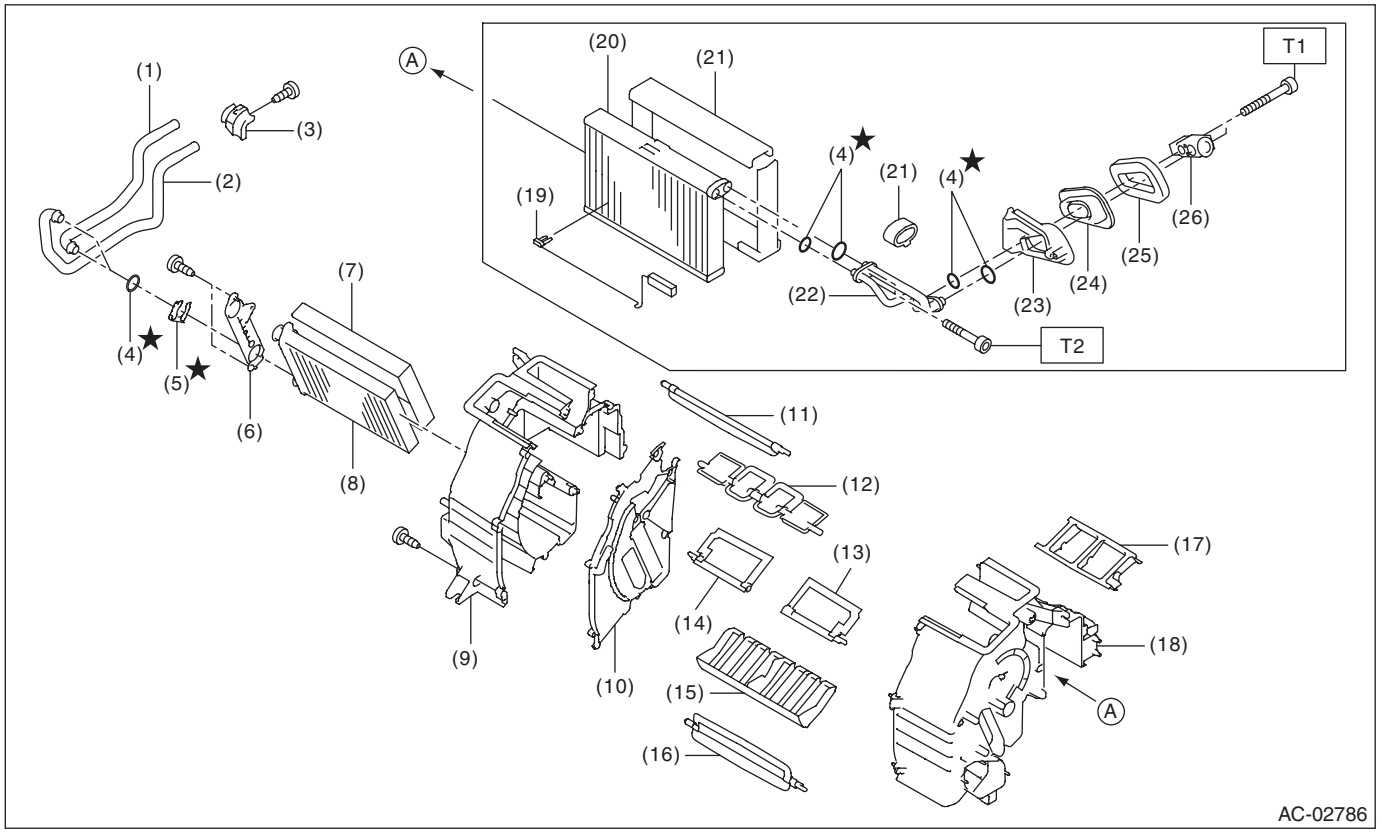
Item	Operation
Compressor	Sucks and pressurizes the low temperature, low pressure refrigerant gas that was vaporized at the evaporator by absorbing heat from the compartment, and sends the high temperature, high pressure refrigerant gas to the condenser.
Condenser	Cools the high temperature, high pressure refrigerant gas sent from the compressor for condense and liquefaction.
Expansion valve	• Sprays the high temperature, high pressure liquid refrigerant from the small hole in order to let the refrigerant expand rapidly to turn it into low temperature, low pressure mist. • The refrigerant amount is adjusted according to the refrigerant vaporization condition in the evaporator.
Evaporator	The evaporator turns into a low temperature condition when the mist refrigerant that was turned into a low temperature, low pressure condition at the expansion valve is vaporized in large quantity in the evaporator. Passing air flow through the low temperature evaporator emits cold air.

B: LOCATION

Refer to “Electrical Component Location” for “HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)” section. <Ref. to AC(diag)-4, Electrical Component Location.>

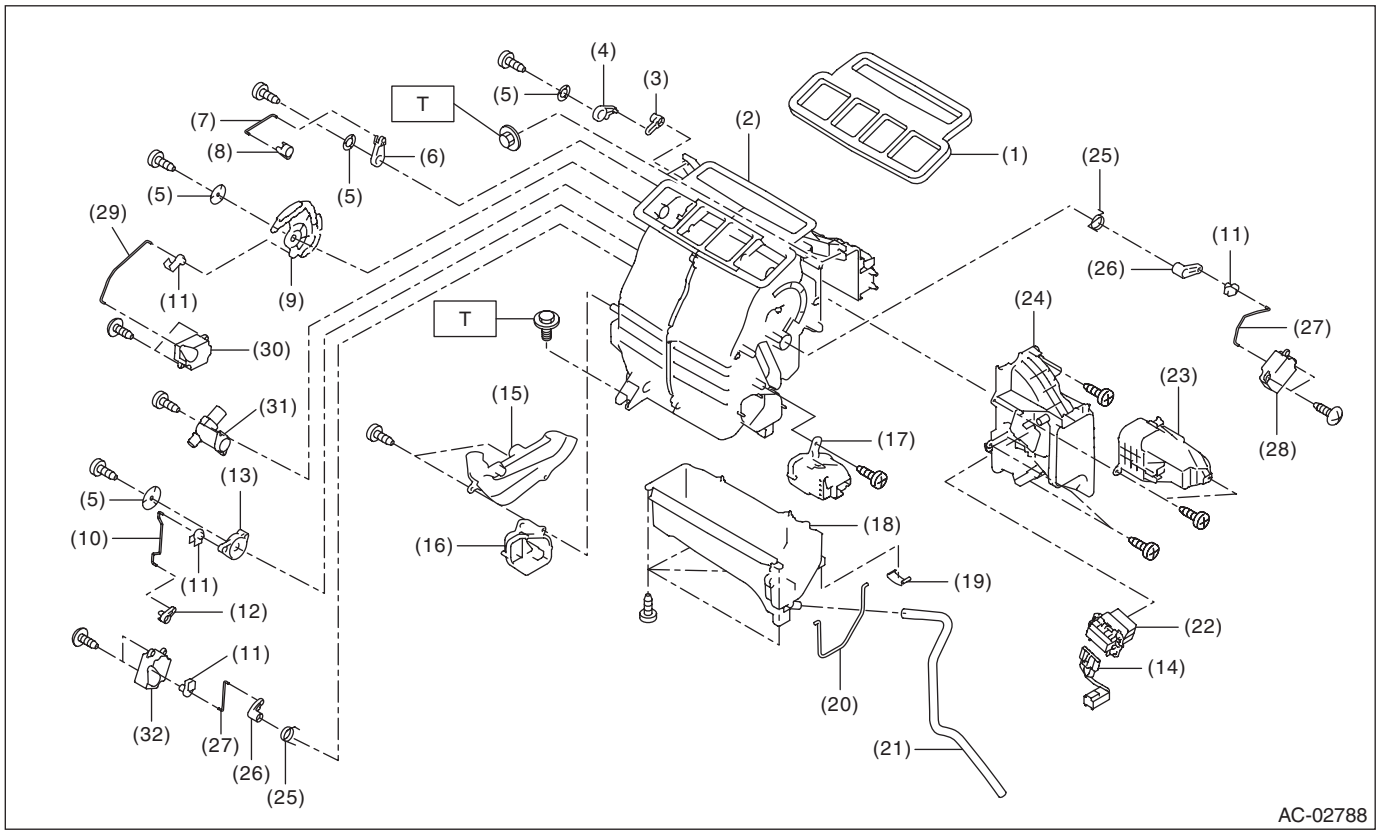
C: COMPONENT

1. HEATER AND COOLING UNIT



(1)	Pipe - inlet	(11)	Shutter - defroster	(21)	Packing - evaporator core
(2)	Pipe - outlet	(12)	Shutter - vent	(22)	Pipe - evaporator core
(3)	Clamp - pipe	(13)	Shutter - air mix RH	(23)	Case - expansion valve
(4)	Seal O-ring	(14)	Shutter - air mix LH	(24)	Seal - cooling
(5)	Clamp	(15)	Guide - heater unit	(25)	Packing - heater unit
(6)	Plate - heater core	(16)	Shutter - foot	(26)	Expansion valve - cooling
(7)	Packing - heater core	(17)	Case - vent duct		
(8)	Heater core	(18)	Case - heater unit UPR RH		
(9)	Case - heater unit UPR LH	(19)	Thermostat - cooling		
(10)	Plate CTR	(20)	Evaporator ASSY - cooling		

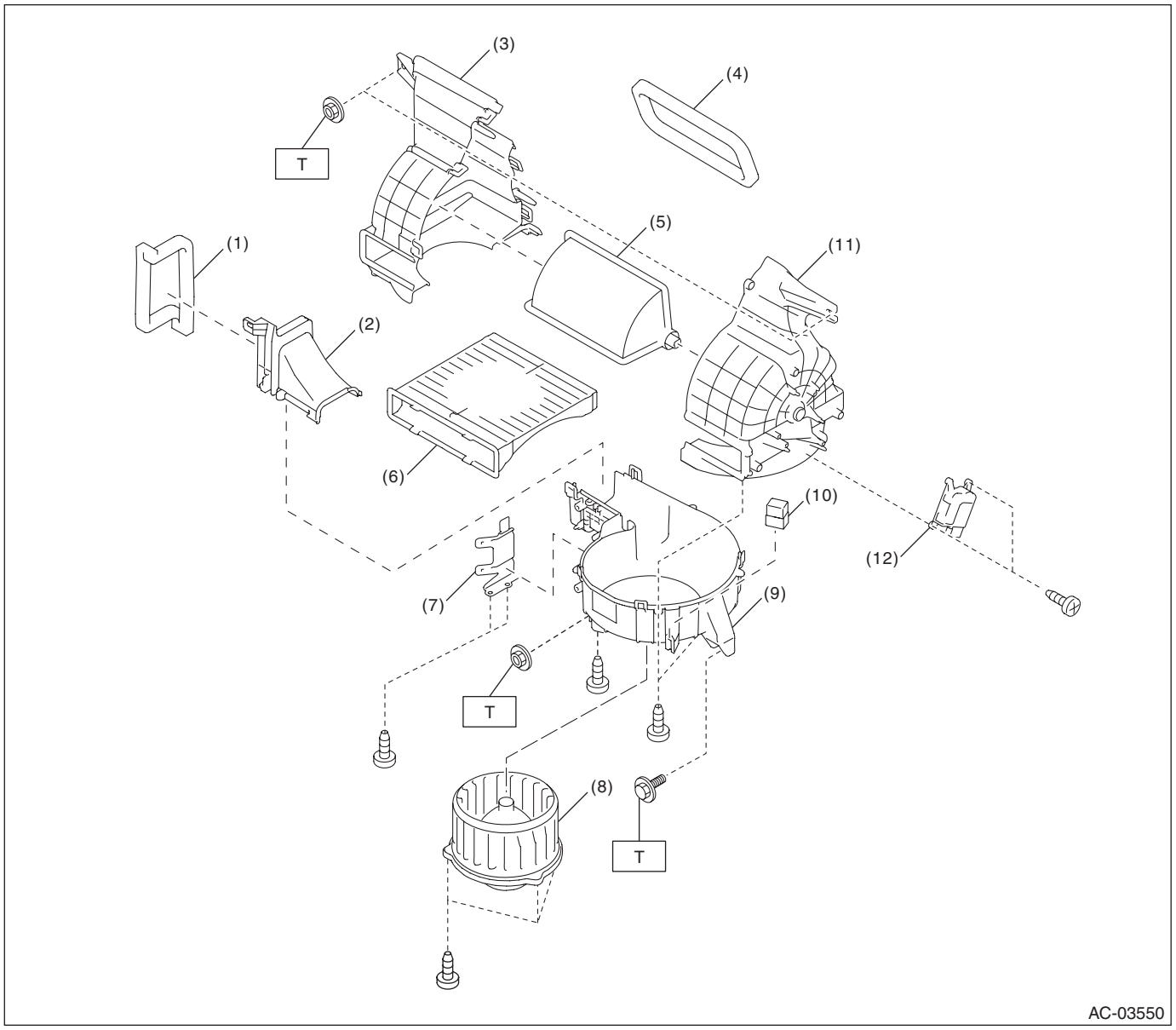
Tightening torque: N·m (kgf-m, ft-lb)
T1: 5 (0.5, 3.7)
T2: 6.7 (0.7, 4.9)



(1) Packing - heater unit
(2) Case - heater unit
(3) Lever - defroster
(4) Lever - defroster sub
(5) Washer - heater
(6) Lever - ventilator sub
(7) Rod - ventilator
(8) Lever - ventilator door
(9) Lever - mode
(10) Rod - foot
(11) Clip
(12) Lever - foot
(13) Lever - foot sub
(14) Harness - heater unit
(15) Cover - heater pipe
(16) Duct - foot LH
(17) Duct - foot RH
(18) Case - heater LWR
(19) Clip - case
(20) Packing - evaporator cover
(21) Hose - drain
(22) Power transistor
(23) Cover
(24) Cover - heater unit
(25) Spring - heater unit
(26) Lever - air mix
(27) Rod - air mix
(28) Motor - actuator mix RH
(29) Rod - mode
(30) Motor - actuator mode
(31) Aspirator - heater unit
(32) Motor - actuator mix LH (dual A/C model)

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.5 (0.8, 5.5)

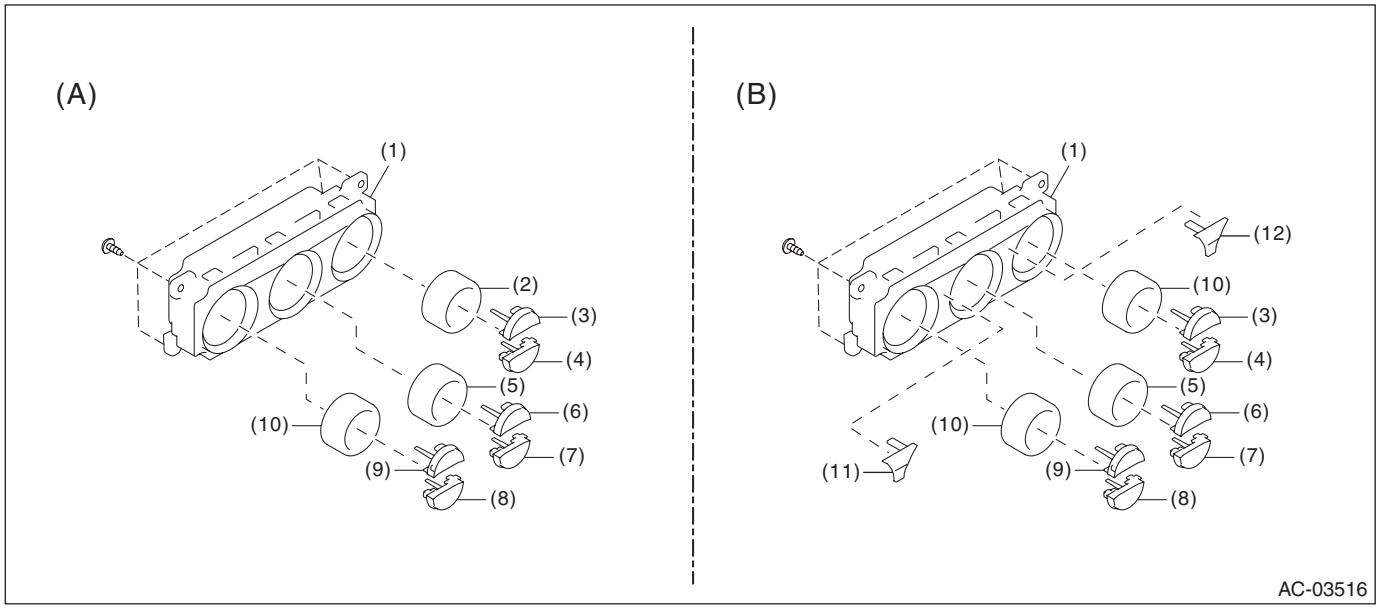
2. BLOWER MOTOR UNIT



(1) Packing
(2) Case upper - blower
(3) Case - blower intake LH
(4) Packing - blower
(5) Shutter - blower
(6) Filter kit
(7) Bracket
(8) Blower - motor
(9) Case lower - blower
(10) Blower motor relay
(11) Case - blower intake RH
(12) Motor - actuator blower

Tightening torque: N·m (kgf-m, ft-lb)
T: 7.5 (0.8, 5.5)

3. CONTROL PANEL

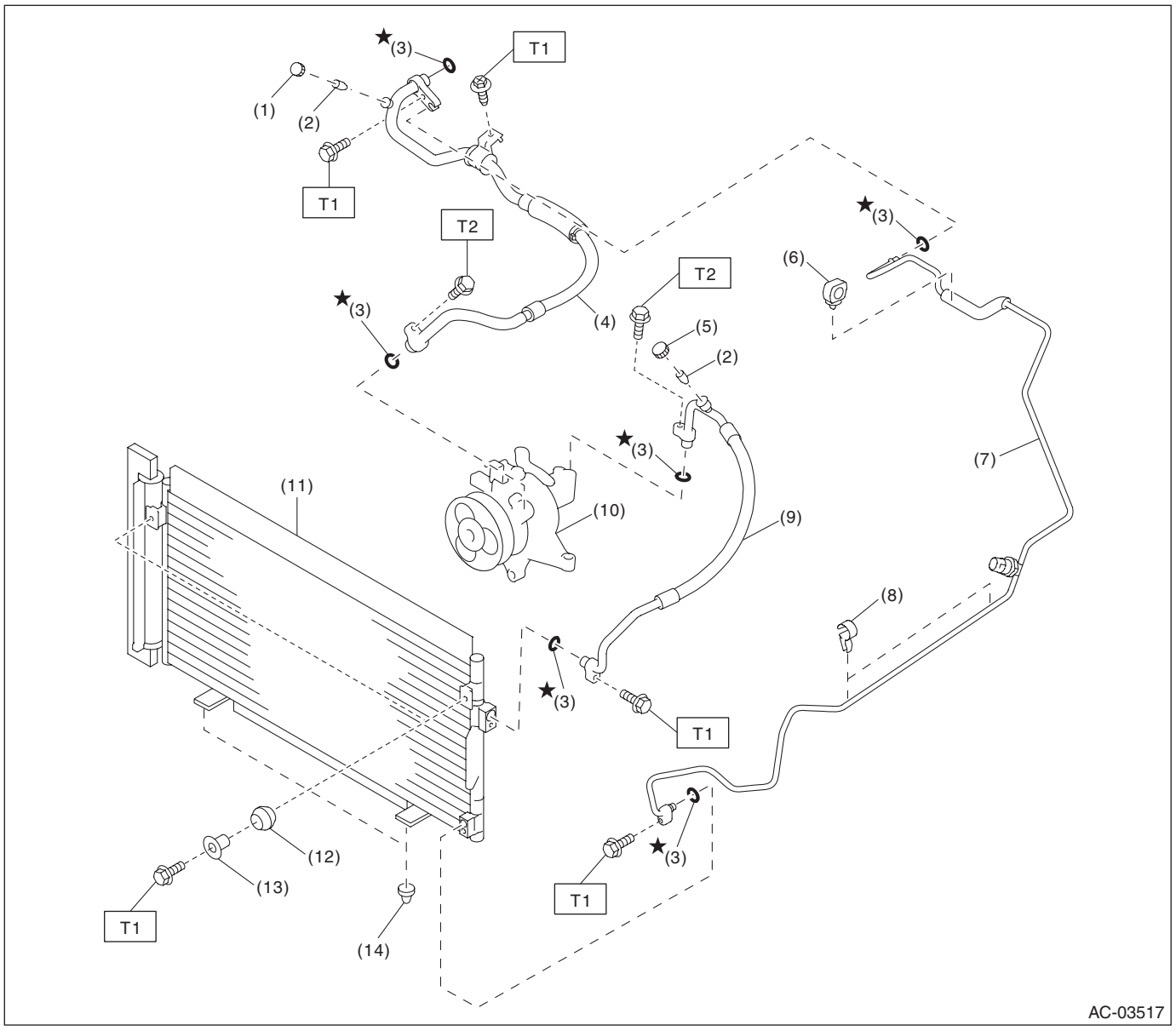


(A) Single A/C model
(B) Dual A/C model

(1) Control case
(2) Air flow control dial
(3) Defroster switch
(4) Rear window defogger switch
(5) Fan dial
(6) A/C switch
(7) FRESH/RECIRC switch
(8) OFF switch
(9) AUTO switch
(10) Temperature adjustment dial
(11) Air flow control switch
(12) Dual switch

4. AIR CONDITIONING UNIT

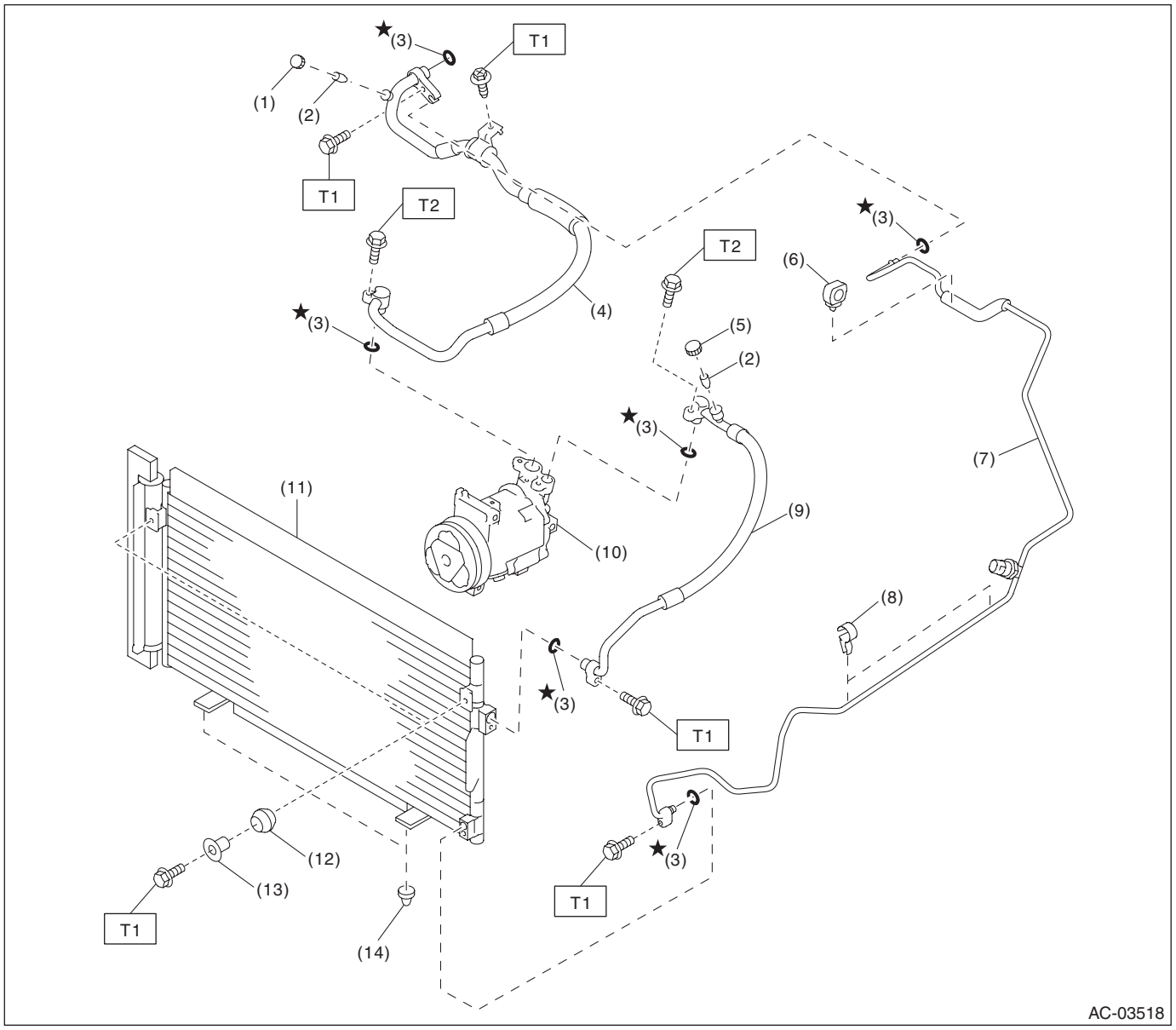
- Except for STI model



(1)	Cap - hose pressure suction	(7)	Pipe - evaporator cooling	(13)	Spacer
(2)	Valve - hose pressure	(8)	Clip - pipe	(14)	Bushing - condenser
(3)	Seal O-ring	(9)	Hose - pressure discharge		
(4)	Hose - pressure suction	(10)	Compressor ASSY		
(5)	Cap - hose pressure discharge	(11)	Condenser ASSY - air conditioner		
(6)	Clip	(12)	Grommet		

Tightening torque: N·m (kgf-m, ft-lb)	
T1:	*7.5 (0.8, 5.5)*
T2:	*10 (1.0, 7.4)*

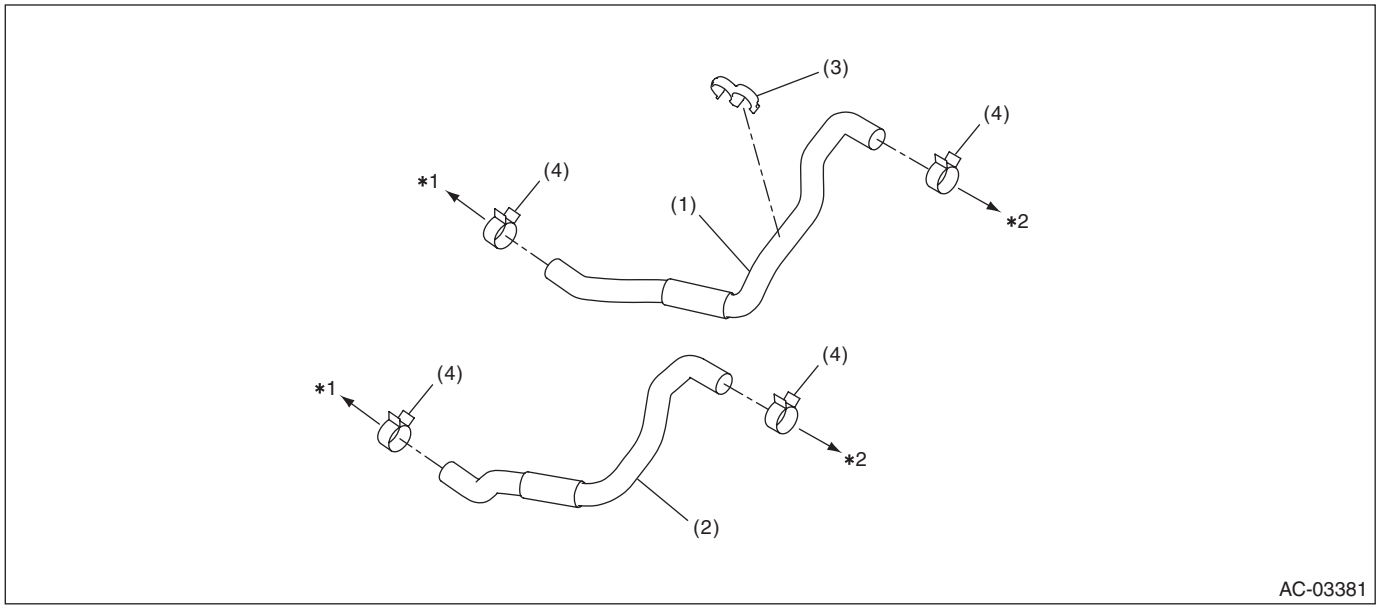
- STI model



(1)	Cap - hose pressure suction	(7)	Pipe - evaporator cooling	(13)	Spacer
(2)	Valve - hose pressure	(8)	Clip - pipe	(14)	Bushing - condenser
(3)	Seal O-ring	(9)	Hose - pressure discharge		
(4)	Hose - pressure suction	(10)	Compressor ASSY		
(5)	Cap - hose pressure discharge	(11)	Condenser ASSY - air conditioner		
(6)	Clip	(12)	Grommet		

Tightening torque: N·m (kgf-m, ft-lb)	
T1:	***7.5 (0.8, 5.5)***
T2:	***10 (1.0, 7.4)***

5. HEATER HOSE

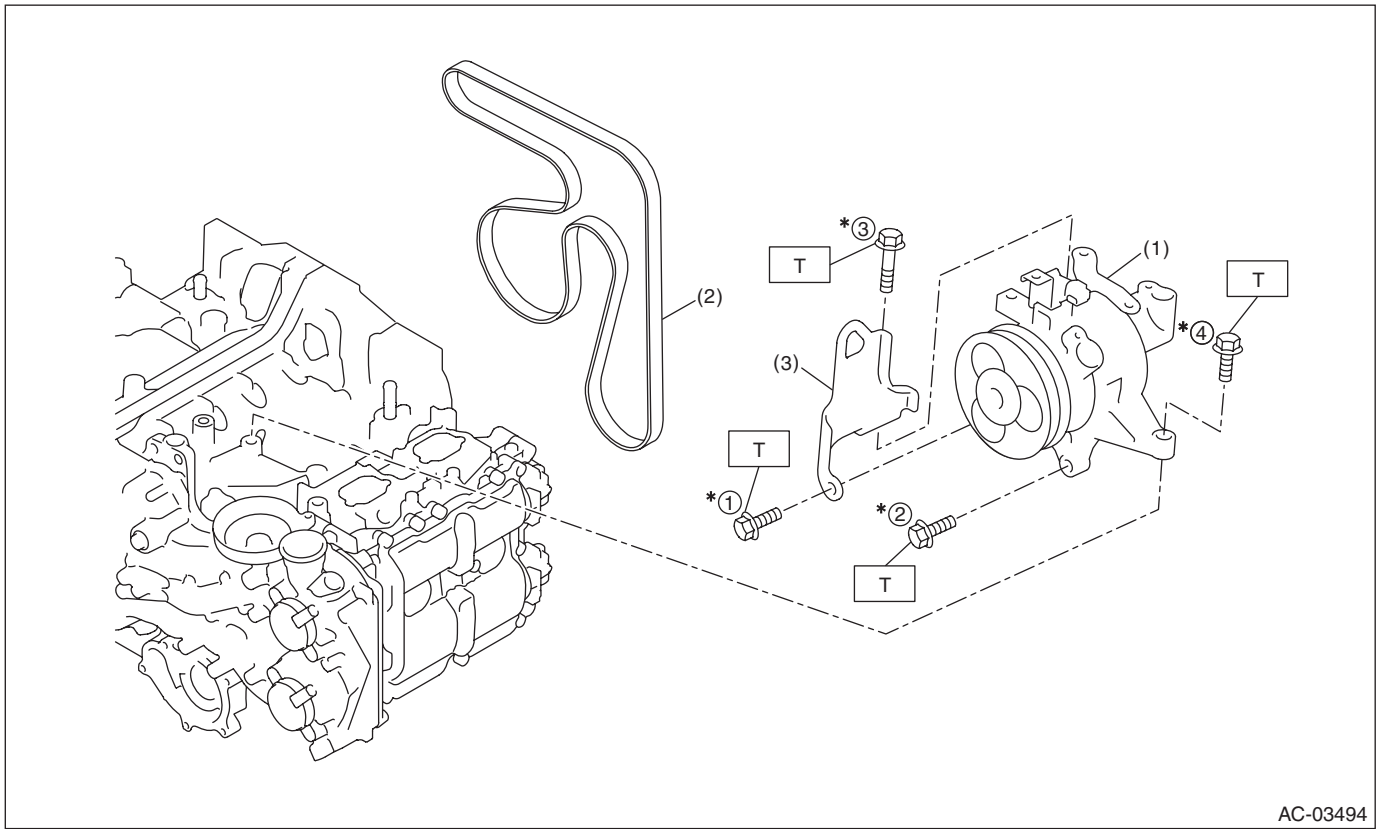


(1) Hose - heater outlet
(2) Hose - heater inlet
(3) Clip
(4) Clamp

*1: Engine side
*2: Heater core side

6. COMPRESSOR

- Except for STI model

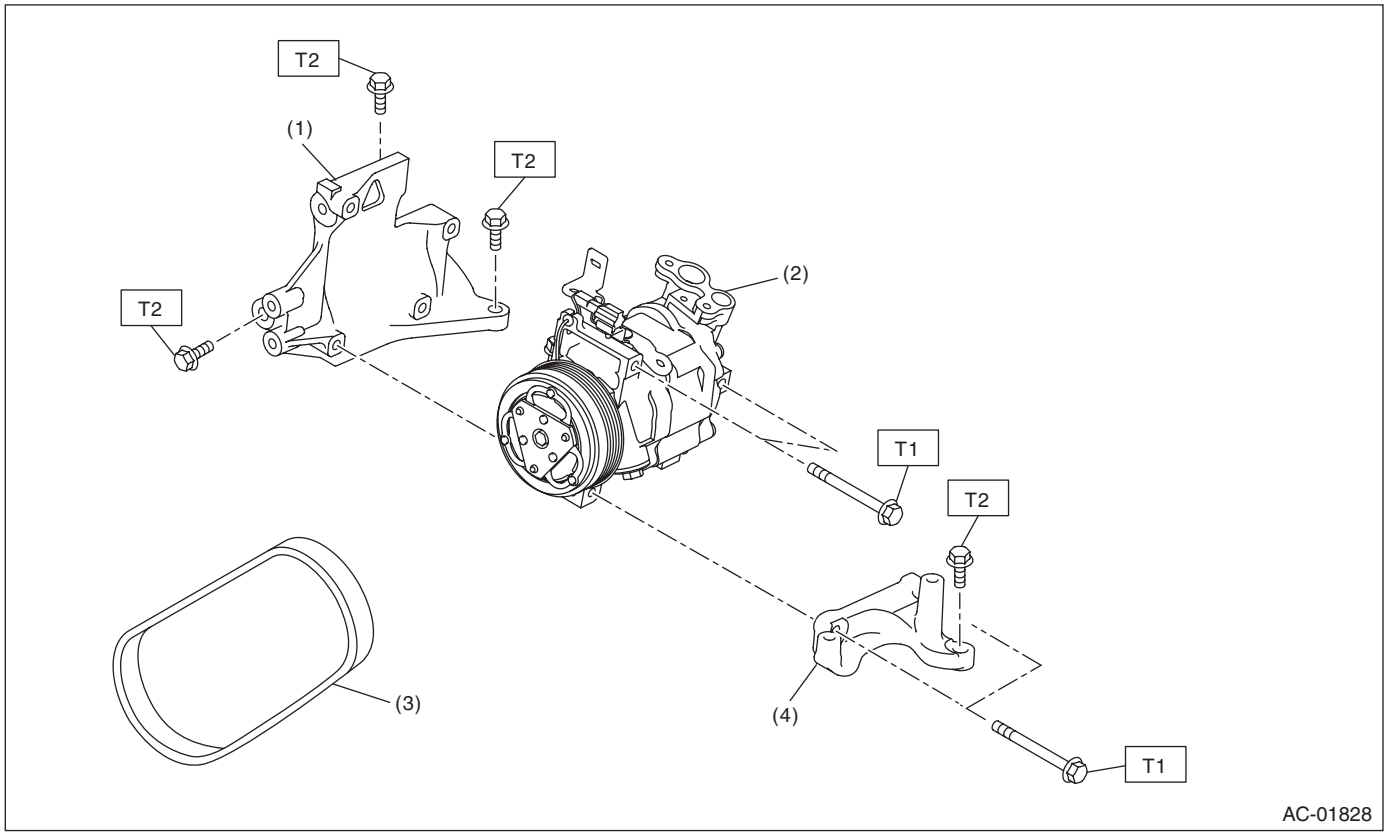


(1) Compressor ASSY
(2) V-belt (6 PK)
(3) Hanger - engine front

Tightening torque: N·m (kgf-m, ft-lb)
T: 36 (3.7, 26.6)

* Tighten the compressor in the numerical order as shown in the figure.

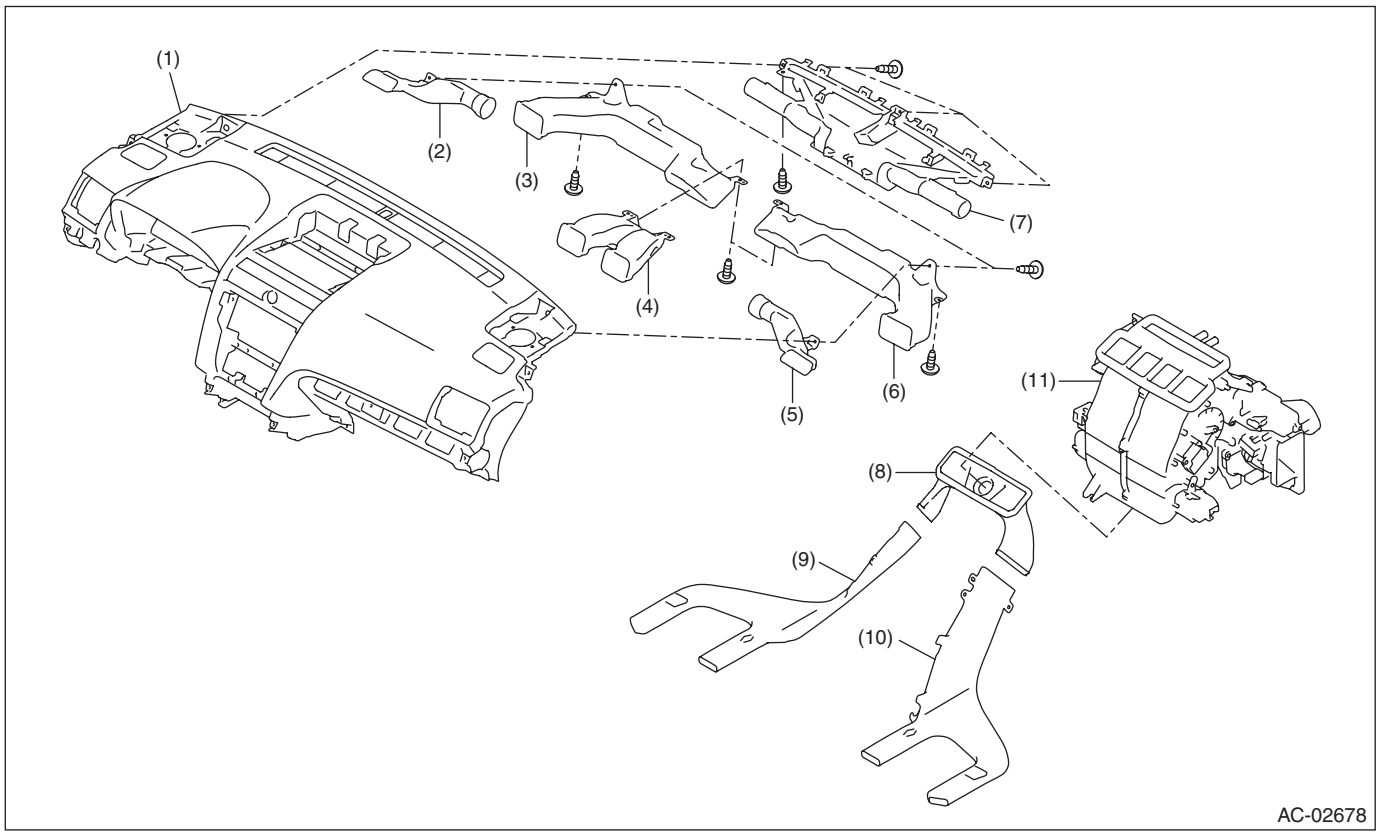
- STI model



(1) Bracket ASSY - compressor
(2) Compressor ASSY
(3) V-belt
(4) Bracket - air conditioner

Tightening torque: N·m (kgf-m, ft-lb)
T1: 26.5 (2.7, 19.5)
T2: 36 (3.7, 26.6)

7. HEATER DUCT



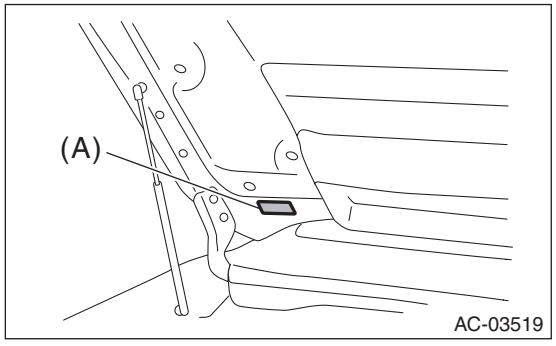
(1) Panel COMPL - instrument
(2) Duct - side defroster LH
(3) Duct - side ventilation LH
(4) Duct - center vent
(5) Duct - side defroster RH
(6) Duct - side ventilation RH
(7) Nozzle - front defroster
(8) Duct - rear heater CTR
(9) Duct - rear heater LH
(10) Duct - rear heater RH
(11) Heater and cooling unit ASSY

D: CAUTION

Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery. When replacing the audio and MFD parts provided with memory functions, record the memory contents before disconnecting the battery ground cable.

1. HFC-134A A/C SYSTEM

• The cooling system components for the HFC-134a system using 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 A/C system which is installed to the vehicle.



2. COMPRESSOR OIL

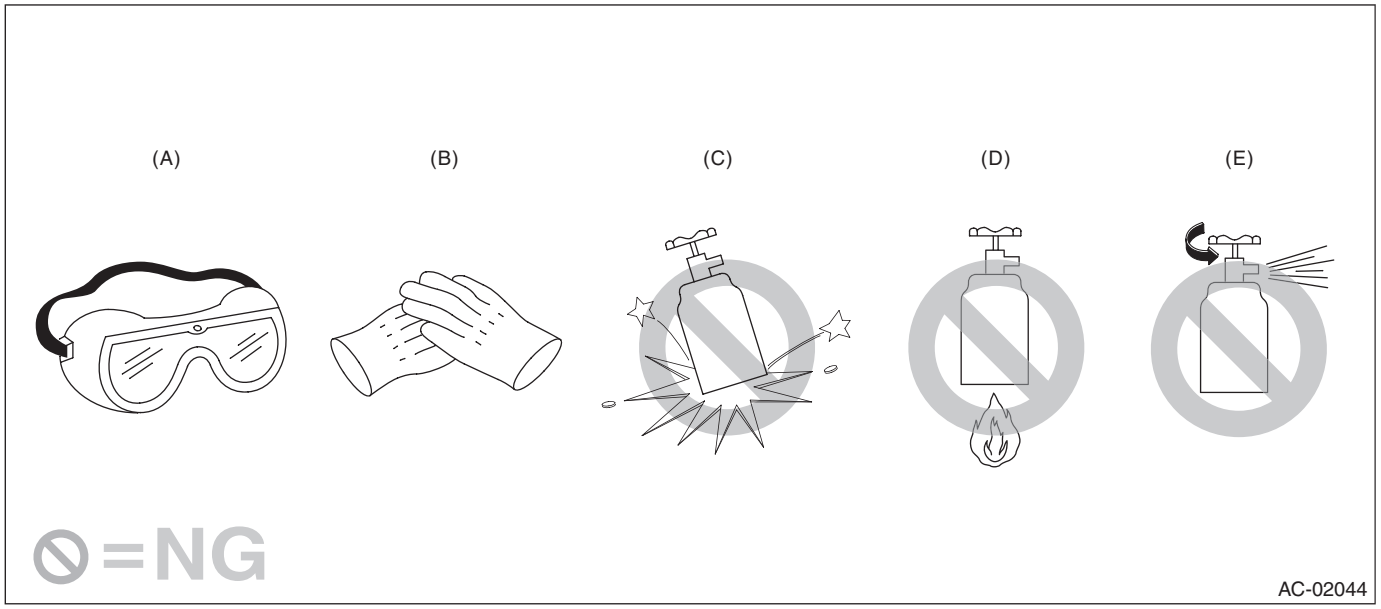
• HFC-134a compressor oil has no compatibility with that of CFC-12 system.
• Use only the manufacturer-authorized compressor oil for the HFC-134a system; only use DH-PR (ZXL200PG).
• Do not mix multiple compressor oils.
If CFC-12 compressor oil is used in the HFC-134a A/C system, the compressor may become 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

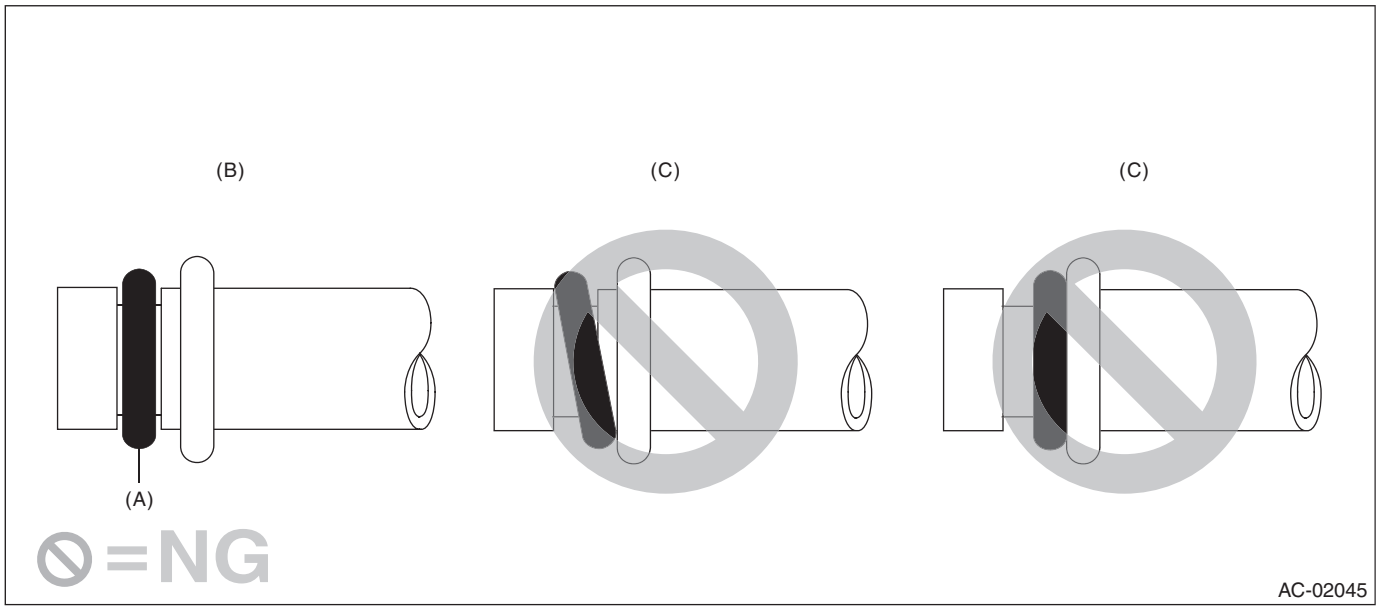
• The refrigerant boils at approx. –30°C (–22°F). When handling it, be sure to wear protective goggles and protective gloves. Direct contact of the refrigerant with skin may cause frostbite.
If the refrigerant gets into your eye, avoid rubbing your eyes with your hands. Wash your eye with plenty of water, 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 manifold gauge. The high-pressure gas will 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) Do not apply impact.
(D) No direct heat on container
(E) Do not discharge

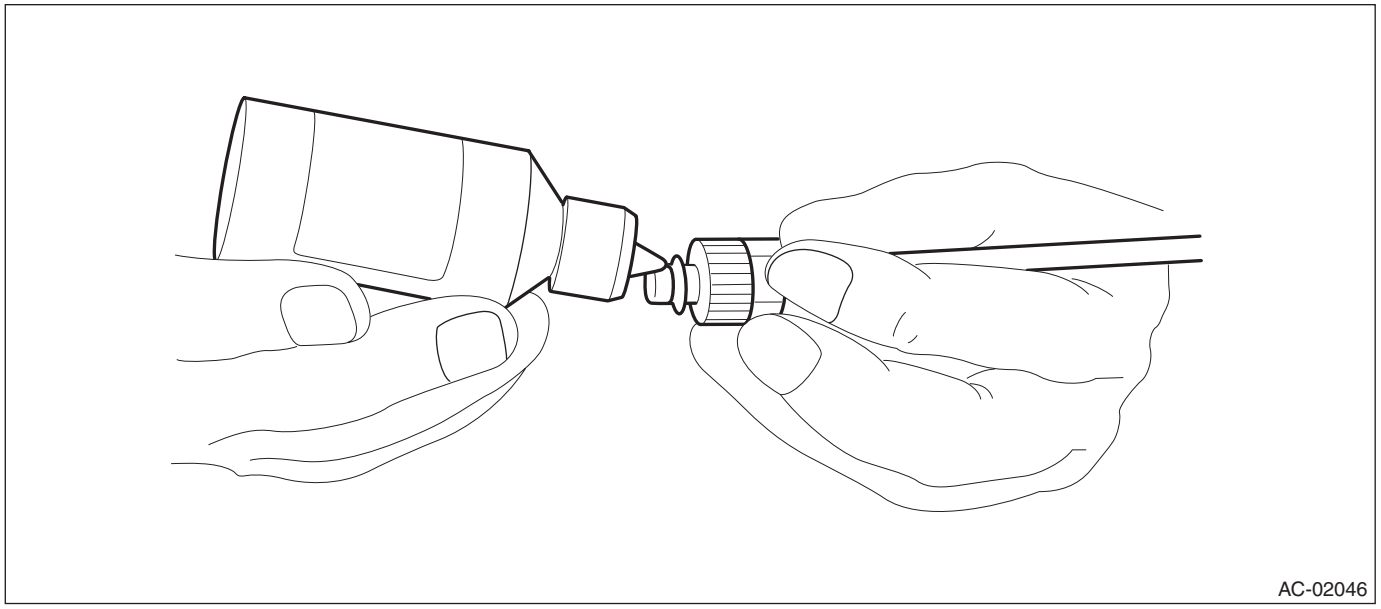
5. O-RING CONNECTIONS

- 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.
- 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 pipe groove.



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

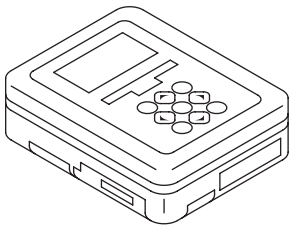
• Use compressor oil specified in the service manual to lubricate the O-rings.
Apply oil to the top and sides of O-rings before installation.
Apply compressor oil to the pipe grooves.



• 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.

E: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting the electrical system. NOTE: For detailed operation procedures of SUBARU SELECT MONITOR III KIT, refer to “PC application help for Subaru Select Monitor”.

2. GENERAL 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 type of tool and screw, and the replacement 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

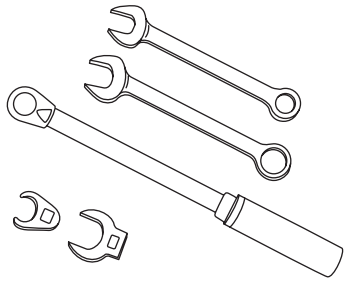
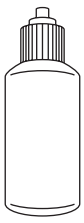
Illustration	Tools and Equipment
 AC-00213	Wrench Various **WRENCHES** will be required to service any A/C system.7 — 40 N·m (0.7 to 4.1 kgf-m, 5 to 30 ft-lb) torque wrench and various crowfoot wrenches will be needed. Open end or flare nut wrenches will be needed to affix the pipe and hose fittings.
 AC-00012	Applicator bottle A small **APPLICATOR BOTTLE** is recommended to apply compressor oil to the various parts. It can be available at a hardware store.

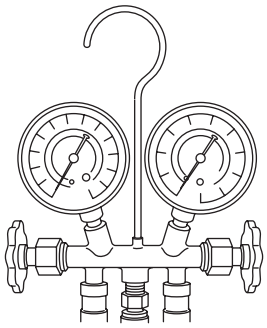
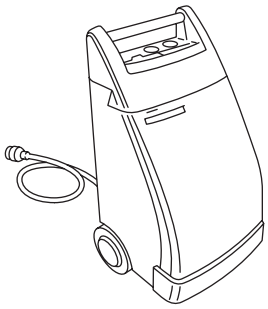
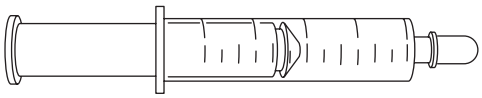
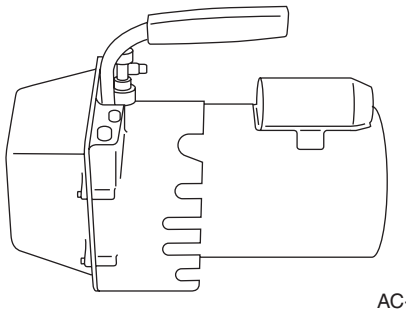
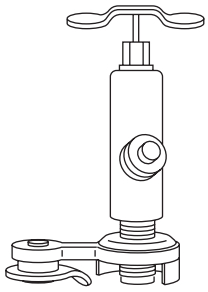
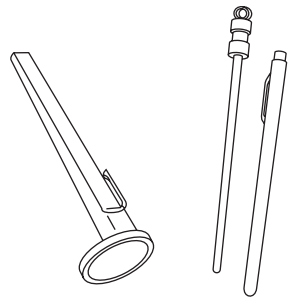
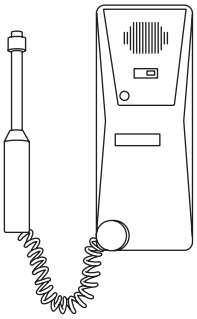
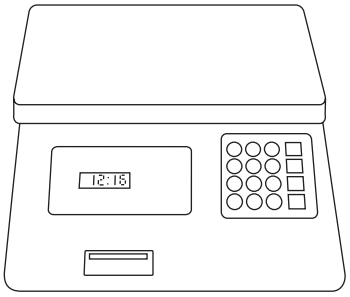
Illustration	Tools and Equipment
 AC-00013	Manifold gauge set A **MANIFOLD GAUGE SET** (with hoses) is available at either a refrigerant supplier or an automotive equipment supplier.
 AC-00014	Refrigerant recovery system A **REFRIGERANT RECOVERY SYSTEM** is used for the recovery and recycling of A/C system refrigerant after contaminants and moisture have been removed from the refrigerant.
 AC-00015	Syringe 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.
 AC-00016	Vacuum pump 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 A **CAN TAP** for the 397 g (14 oz.) can is available at an automotive equipment supplier.

Illustration	Tools and Equipment
 AC-00018	Thermometer A Pocket **THERMOMETER** is available at either a industrial hardware store or a refrigerant supplier.
 AC-00019	Electronic leak detector An **ELECTRONIC LEAK DETECTOR** can be available at either a specialty tool supplier or an A/C equipment supplier.
 AC-00020	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.