

# General Description

## COOLING

### 1. General Description

#### A: SPECIFICATION

Cooling system			Electric fan + Forced engine coolant circulation system			
Total engine coolant capacity			ℓ (US qt, Imp qt)			
Water pump	Type			Centrifugal impeller type		
	Discharge performance	Discharge rate ℓ (US gal, Imp gal) /min.		240 (63.4, 52.8)		
		Pump speed — Discharge pressure		4,956 rpm — 140 kPa (14.0 mAq)		
		Engine coolant temperature		80°C (176°F)		
	Impeller diameter			mm (in) 66 (2.60)		
	Number of impeller blades			8		
Thermostat	Pump sprocket outer diameter			mm (in) 60.60 (2.39)		
	Type			Wax pellet type		
	Starting temperature to open			80 — 84°C (176 — 183°F)		
	Fully opens			95°C (203°F)		
	Valve lift			mm (in) 9.0 (0.354) or more		
Radiator fan	Valve bore			mm (in) 35 (1.38)		
	Motor input	Main fan		W 200		
		Sub fan		W 200		
	Fan diameter / Blade	Main fan		320 mm (12.6 in)/5		
		Sub fan		320 mm (12.6 in)/7		
Radiator	Type			Cross flow, pressure type		
	Core dimensions	Width × Height × Thickness		mm (in) 674.2 × 478.6 × 27 (26.543 × 18.842 × 1.06)		
		Pressure range in which cap valve is open	Positive pressure side	Standard 73.6 — 103.0 (0.75 — 1.05, 11 — 15)		
			Limit	63.6 (0.65, 9)		
			Negative pressure side	Standard —1.0 — —4.9 (—0.01 — —0.05, —0.1 — —0.7)		
	Fins			Corrugated fin type		
Reservoir tank	Capacity			ℓ (US qt, Imp qt) 0.45 (0.48, 0.40)		

	Recommended materials	Item number	Alternative
Coolant	SUBARU SUPER COOLANT (Concentrated type)	—	—
	SUBARU SUPER COOLANT (Diluted type)	K0670Y0001	
Water for dilution	Distilled water	—	Soft water or tap water
Cooling system protective agent	Cooling system conditioner	SOA345001	—

- **Outside temperature: less than 35°C (95°F)**

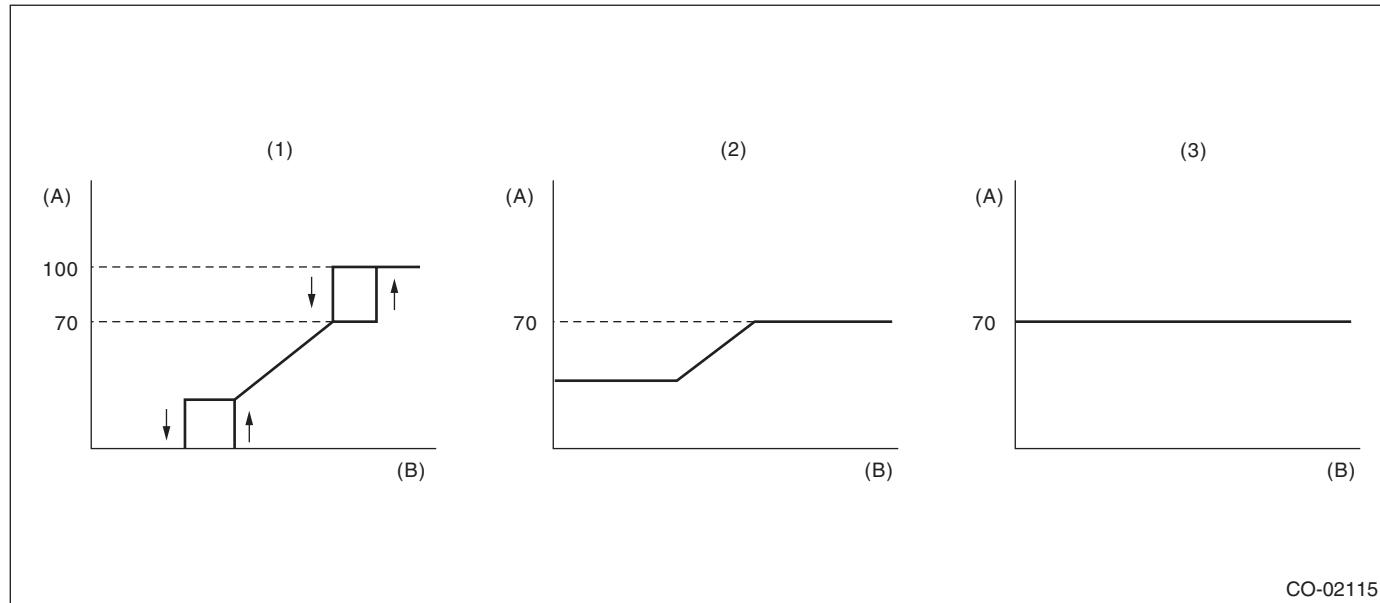
A/C compressor load		Engine coolant temperature		
		Increase: less than 95°C (203°F) Decrease: less than 92°C (198°F)	Increase: 98 — 101°C (203 — 214°F) Decrease: 92 — 99°C (198 — 210°F)	Increase: 102°C (216°F) or more Decrease: 100°C (212°F) or more
OFF		0%	Refer to fig. (1)	100%
ON	Middle pressure switch OFF	Refer to fig. (2)		100%
	Middle pressure switch ON	Refer to fig. (3)		100%

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## • OUTSIDE TEMPERATURE: 35°C (95°F) OR MORE

Vehicle speed	A/C compressor load	Engine coolant temperature		
		Increase: less than 95°C (203°F) Decrease: less than 92°C (198°F)	Increase: 95 — 101°C (203 — 214°F) Decrease: 92 — 99°C (198 — 210°F)	Increase: 102°C (216°F) or more Decrease: 100°C (212°F) or more
During acceleration: 19 km/h (12 MPH) or less During deceleration: 10 km/h (6 MPH) or less	OFF	Refer to fig. (1)		100%
	ON	Middle pressure switch OFF	Refer to fig. (2)	
		Middle pressure switch ON	100%	
During acceleration: 20 — 69 km/h (12 — 43 MPH) During deceleration: 11 — 64 km/h (7 — 40 MPH)	OFF	Refer to fig. (1)		100%
	ON	Middle pressure switch OFF	100%	
		Middle pressure switch ON	100%	
During acceleration: 70 — 105 km/h (43 — 65 MPH) During deceleration: 65 — 103 km/h (40 — 64 MPH)	OFF	Refer to fig. (1)		100%
	ON	Middle pressure switch OFF	Refer to fig. (2)	
		Middle pressure switch ON	Refer to fig. (3)	
During acceleration: 106 km/h (66 MPH) or more During deceleration: 104 km/h (65 MPH) or more	OFF	Refer to fig. (1)		100%
	ON	Middle pressure switch OFF	Refer to fig. (2)	
		Middle pressure switch ON	Refer to fig. (3)	



CO-02115

(A) Fan speed (%)

(B) Water temperature

(1) A/C OFF control

(2) A/C ON control (A/C middle pressure switch OFF)

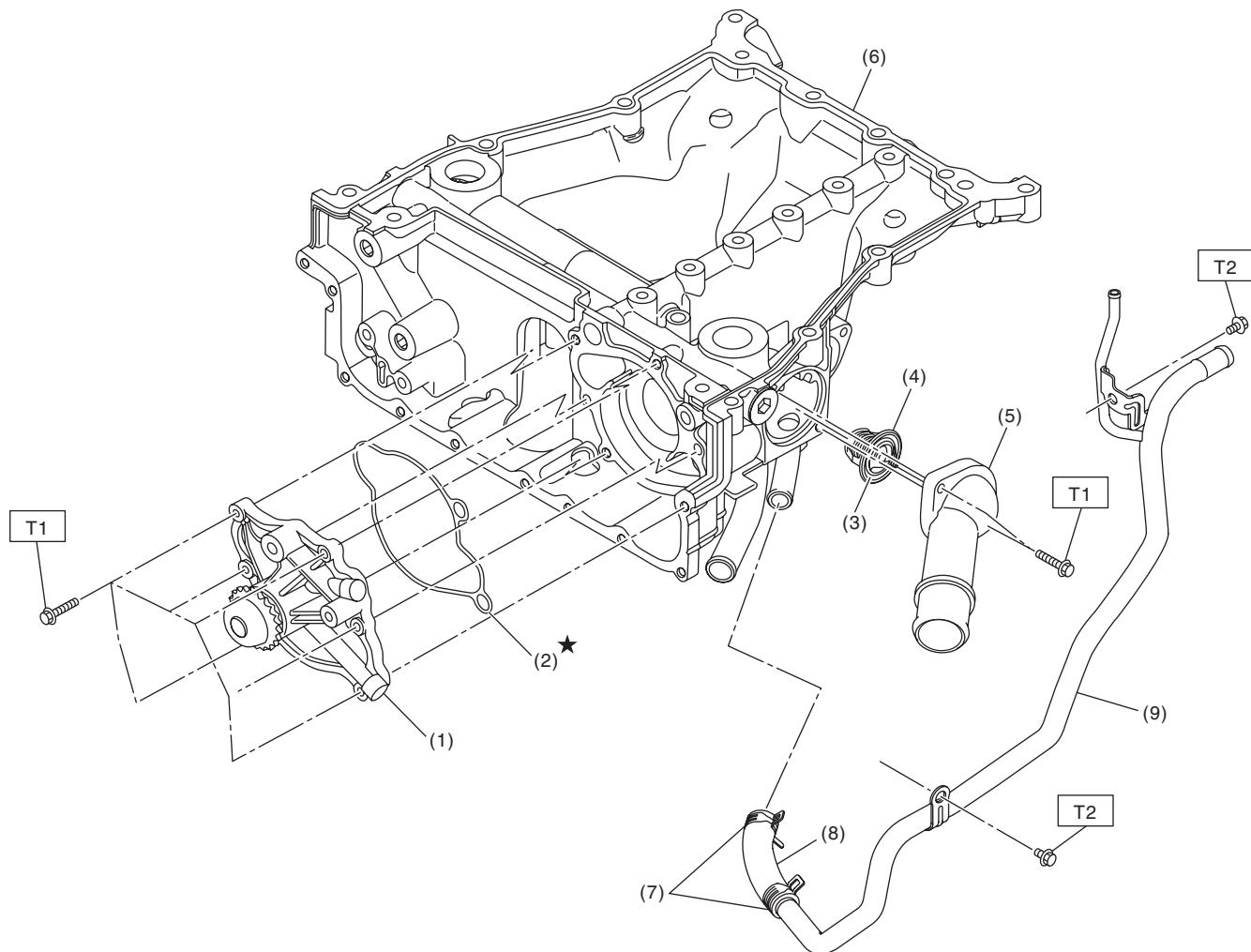
(3) A/C ON control (A/C middle pressure switch ON)

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## B: COMPONENT

## 1. WATER PUMP & WATER PIPE



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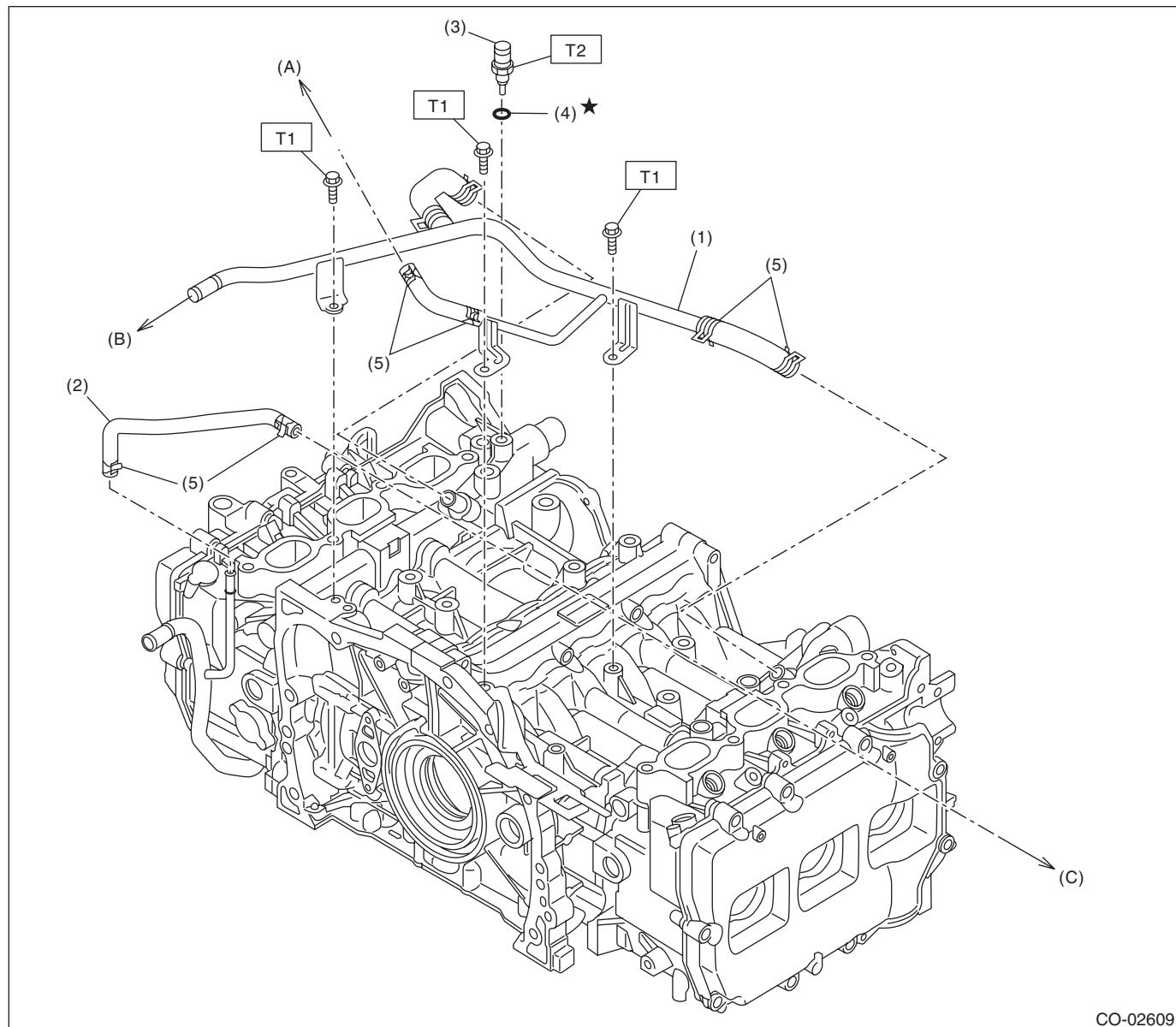
(1)	Water pump ASSY	(6)	Oil pan upper
(2)	O-ring	(7)	Clip
(3)	Thermostat	(8)	Hose
(4)	Gasket	(9)	Water return pipe
(5)	Thermostat cover		

### ***Tightening torque:N·m (kgf-m, ft-lb)***

**T1: 6.4 (0.7, 4.7)**

**T2: 16 (1.6, 11.8)**

## 2. ENGINE COOLANT TEMPERATURE SENSOR & HEATER HOSE



CO-02609

(A) To the throttle body

(B) To the heater hose on body side

(C) To the throttle body

(1) Heater pipe

(4) Gasket

**Tightening torque:N·m (kgf-m, ft-lb)**

(2) Preheater hose

(5) Clip

**T1: 19 (1.9, 14.0)**

(3) Engine coolant temperature sensor

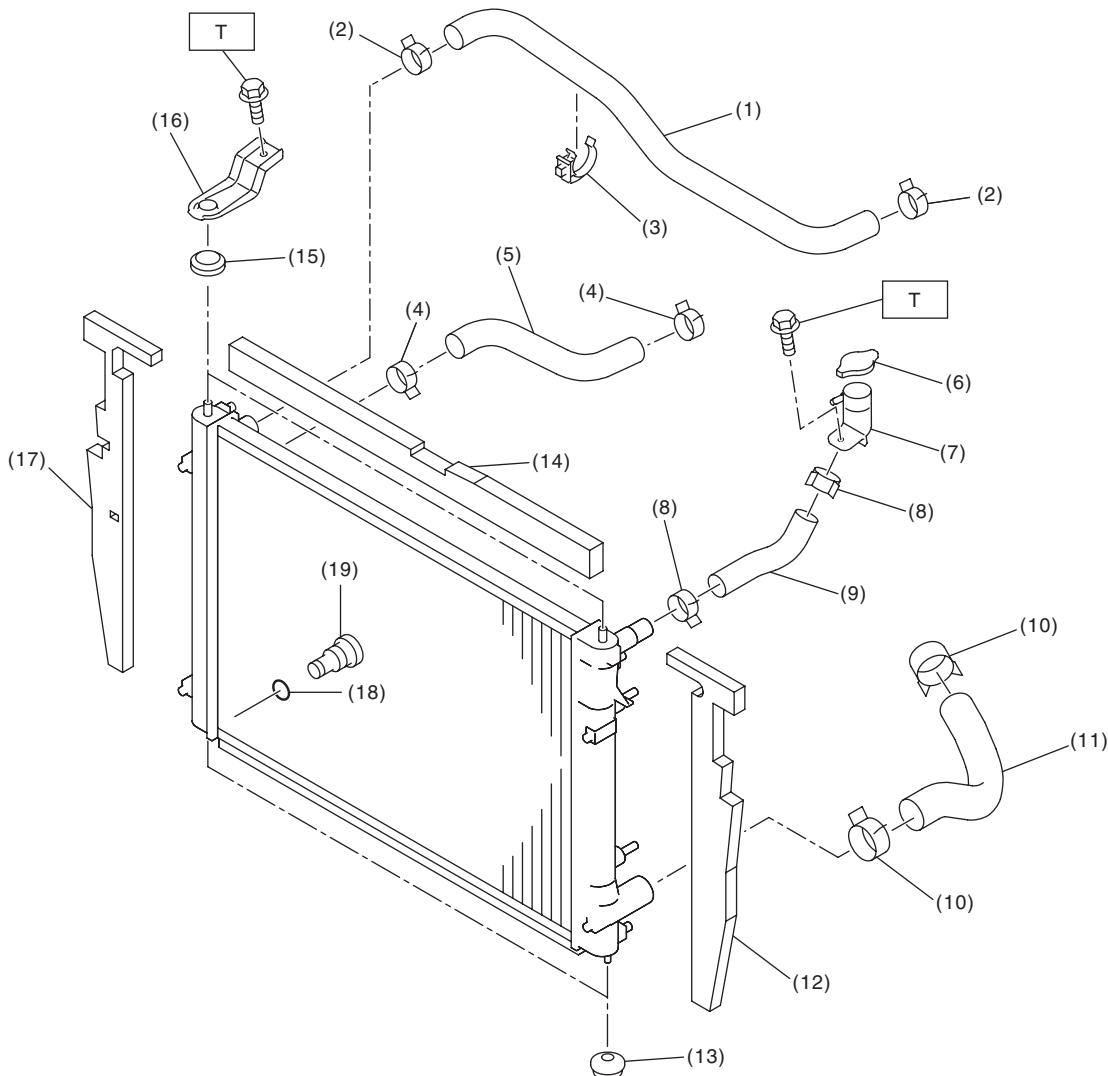
**T2: 22 (2.2, 16.2)**

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### 3. RADIATOR AND RADIATOR FAN

- Radiator



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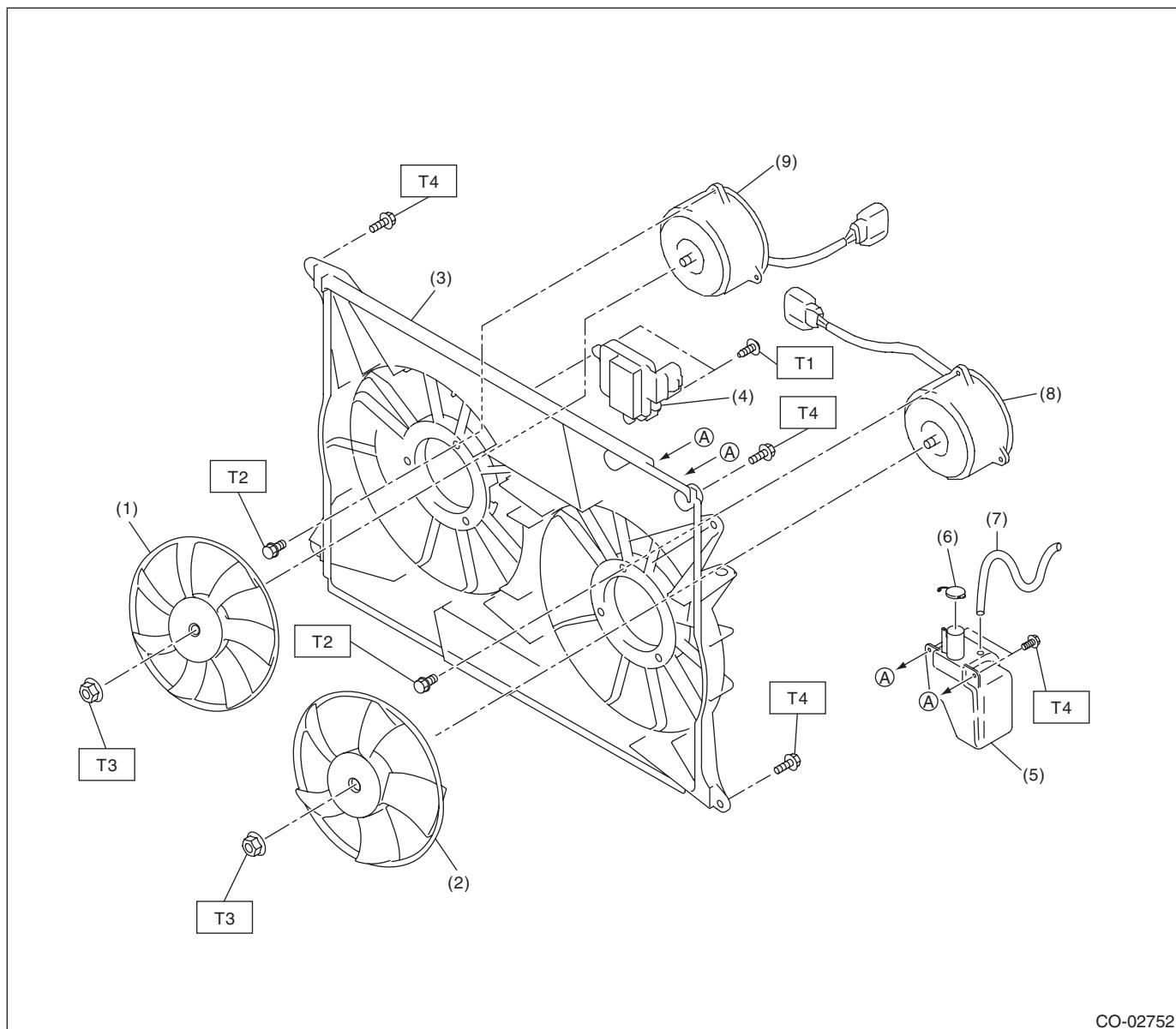
(1) Radiator upper hose LH	(9) Radiator cap hose	(16) Radiator upper bracket
(2) Clip	(10) Clip	(17) Gasket
(3) Clip	(11) Radiator lower hose	(18) O-ring
(4) Clip	(12) Gasket	(19) Drain plug
(5) Radiator upper hose RH	(13) Radiator lower cushion	
(6) Radiator cap	(14) Gasket	
(7) Filler neck	(15) Radiator upper cushion	
(8) Clip		

**Tightening torque:N·m (kgf·m, ft·lb)**  
**T: 12 (1.2, 8.9)**

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- Radiator fan



CO-02752

(1)	Radiator sub fan	(6)	Reservoir tank cap
(2)	Radiator main fan	(7)	Over flow hose
(3)	Radiator fan shroud	(8)	Radiator main fan motor
(4)	Radiator fan control unit	(9)	Radiator sub fan motor
(5)	Reservoir tank		

## ***Tightening torque:N·m (kgf·m, ft·lb)***

**T1: 2.6 (0.3, 1.9)**  
**T2: 3.8 (0.4, 2.8)**  
**T3: 6.3 (0.6, 4.6)**  
**T4: 7.5 (0.8, 5.5)**

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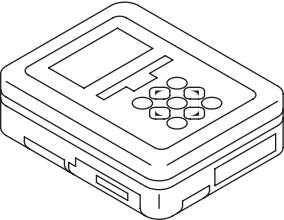
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### C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Prepare a container and cloth to prevent scattering of engine coolant when performing work where engine coolant can be spilled. If the fuel spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing engine coolant.

### D: PREPARATION TOOL

#### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting for electrical system.

#### 2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.
Radiator cap tester	Used for checking radiator and radiator cap.