

# General Description

## COOLING

### 1. General Description

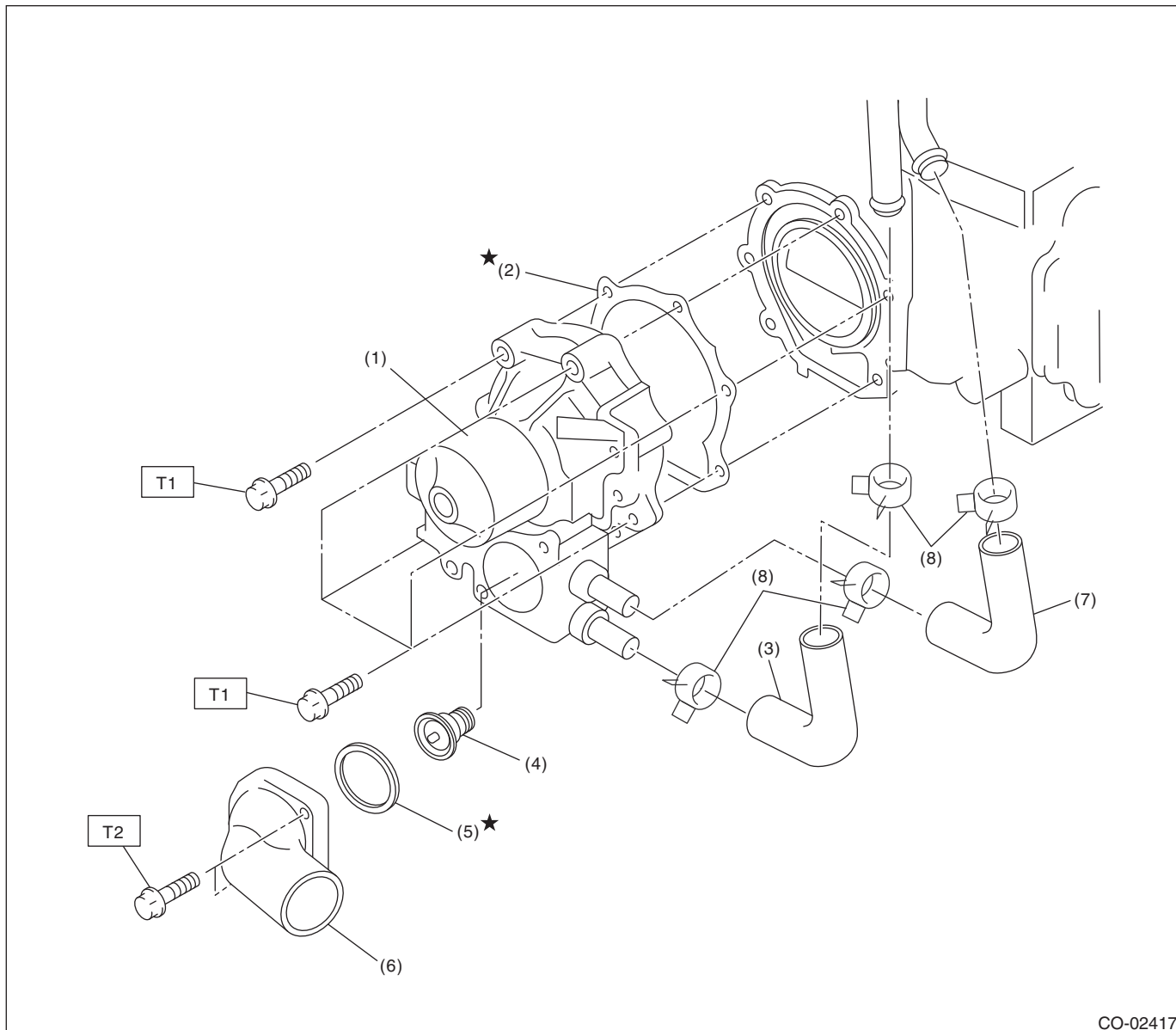
#### A: SPECIFICATION

|                               |                                           |                                                         |                                                                                              |
|-------------------------------|-------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Cooling system                |                                           |                                                         | Electric fan + Forced engine coolant circulation system                                      |
| Total engine coolant capacity |                                           |                                                         | ℓ (US qt, Imp qt)                                                                            |
|                               |                                           |                                                         | Approx. 8.0 (8.5, 7.0)                                                                       |
| Water pump                    | Type                                      |                                                         | Centrifugal impeller type                                                                    |
|                               | Discharge performance I                   | Discharge rate ℓ (US gal, Imp gal) /min                 | 20 (5.3, 4.4)                                                                                |
|                               |                                           | Pump speed — Discharge pressure                         | 760 rpm — 2.9 kPa (0.3 mAq)                                                                  |
|                               |                                           | Engine coolant temperature                              | 80°C (176°F)                                                                                 |
|                               | Discharge performance II                  | Discharge rate ℓ (US gal, Imp gal) /min                 | 100 (26.4, 22.0)                                                                             |
|                               |                                           | Pump speed — Discharge pressure                         | 3,000 rpm — 49.0 kPa (5.0 mAq)                                                               |
|                               |                                           | Engine coolant temperature                              | 80°C (176°F)                                                                                 |
|                               | Discharge performance III                 | Discharge rate ℓ (US gal, Imp gal) /min                 | 200 (52.8, 44.0)                                                                             |
|                               |                                           | Pump speed — Discharge pressure                         | 6,000 rpm — 225.4 kPa (23.0 mAq)                                                             |
|                               |                                           | Engine coolant temperature                              | 80°C (176°F)                                                                                 |
|                               | Impeller diameter mm (in)                 |                                                         | 76 (2.99)                                                                                    |
|                               | Number of impeller vanes                  |                                                         | 8                                                                                            |
| Thermostat                    | Type                                      |                                                         | Wax pellet type                                                                              |
|                               | Starting temperature to open              |                                                         | 76 — 80°C (169 — 176°F)                                                                      |
|                               | Fully opens                               |                                                         | 91°C (196°F)                                                                                 |
|                               | Valve lift mm (in)                        |                                                         | 9.0 (0.354) or more                                                                          |
|                               | Valve bore mm (in)                        |                                                         | 35 (1.38)                                                                                    |
| Radiator fan                  | Motor input                               | Main fan W                                              | 120                                                                                          |
|                               |                                           | Sub fan W                                               | 120                                                                                          |
|                               | Fan diameter / Blade                      | Main fan                                                | 318.5 mm (12.54 in)/9                                                                        |
|                               |                                           | Sub fan                                                 | 318.5 mm (12.54 in)/11                                                                       |
| Radiator                      | Type                                      |                                                         | Down flow                                                                                    |
|                               | Core dimensions                           | Width × Height × Thickness mm (in)                      | 687.4 × 340 × 16<br>(27.06 × 13.39 × 0.63)                                                   |
|                               | Pressure range in which cap valve is open | Coolant filler tank side kPa (kg/cm <sup>2</sup> , psi) | Above: 108±14.7<br>(1.1±0.15, 16±2.1)<br>Below: -1.0 to -4.9<br>(-0.01 — -0.05, -0.1 — -0.7) |
|                               |                                           | Radiator side kPa (kg/cm <sup>2</sup> , psi)            | Above only: 137±14.7<br>(1.40±0.15, 20±2.1)                                                  |
|                               | 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 (dilution type)     | K0670Y0000  |                         |
| Water for dilution              | Distilled water                          | —           | Soft water or tap water |
| Cooling system protective agent | Cooling system conditioner               | SOA345001   | —                       |

## B: COMPONENT

### 1. WATER PUMP



- |                         |                                 |
|-------------------------|---------------------------------|
| (1) Water pump ASSY     | (5) Gasket                      |
| (2) Gasket              | (6) Thermostat cover            |
| (3) Heater by-pass hose | (7) Coolant filler by-pass hose |
| (4) Thermostat          | (8) Clip                        |

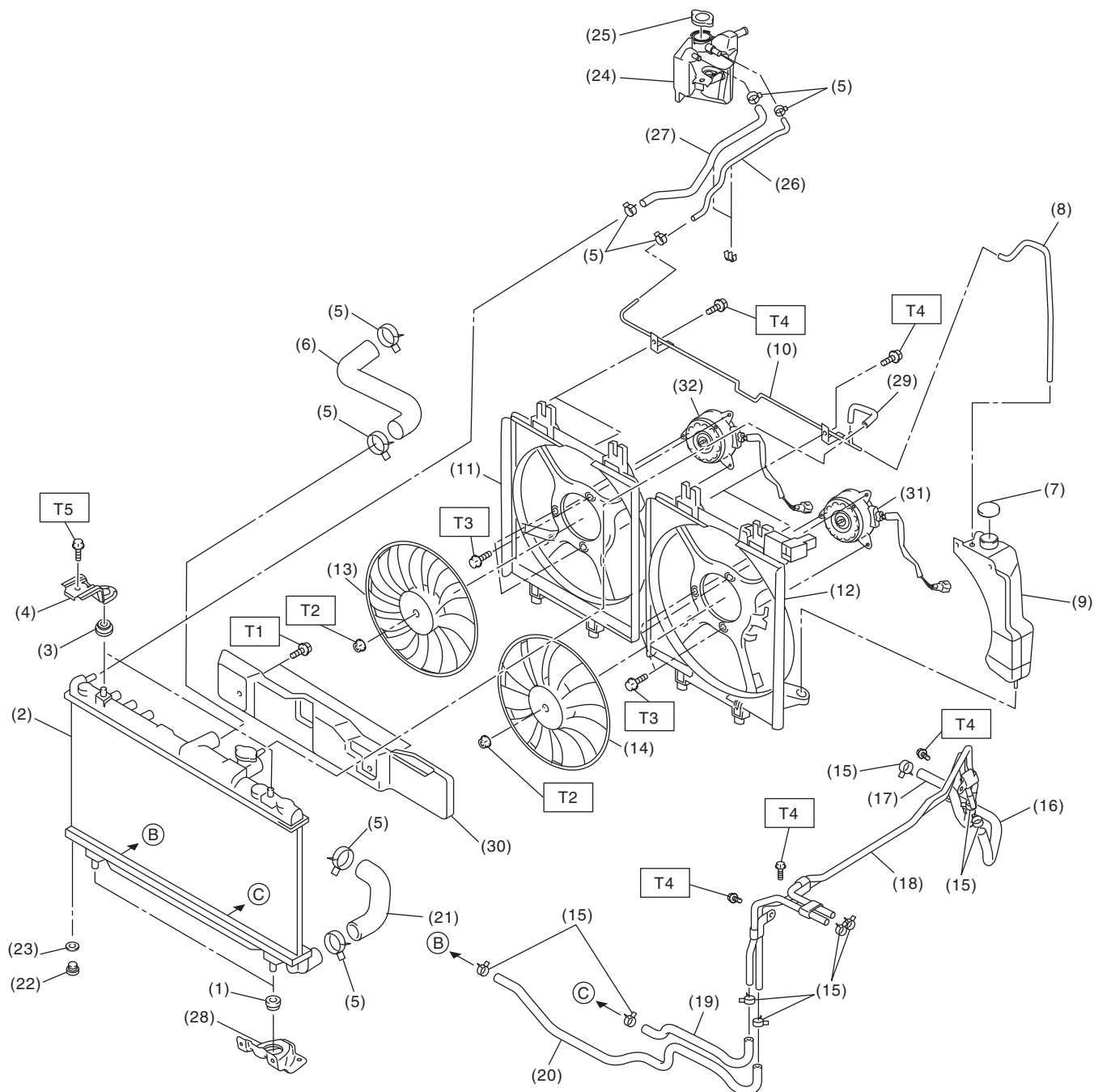
**Tightening torque:N·m (kgf-m, ft-lb)**

**T1: First 12 (1.2, 8.9)**

**Second 12 (1.2, 8.9)**

**T2: 12 (1.2, 8.9)**

## 2. RADIATOR AND RADIATOR FAN



CO-02447

|                                       |                                  |                                 |
|---------------------------------------|----------------------------------|---------------------------------|
| (1) Radiator lower cushion            | (15) ATF hose clamp              | (27) Coolant filler tank hose B |
| (2) Radiator                          | (16) ATF hose A                  | (28) Radiator lower bracket     |
| (3) Radiator upper cushion            | (17) ATF hose B                  | (29) Over flow hose B           |
| (4) Radiator upper bracket            | (18) ATF pipe                    | (30) Heat shield cover          |
| (5) Clip                              | (19) ATF hose C                  | (31) Main fan motor             |
| (6) Radiator inlet hose               | (20) ATF hose D                  | (32) Sub fan motor              |
| (7) Engine coolant reservoir tank cap | (21) Radiator outlet hose        |                                 |
| (8) Over flow hose A                  | (22) Radiator drain plug         |                                 |
| (9) Engine coolant reservoir tank     | (23) O-ring                      |                                 |
| (10) Over flow pipe                   | (24) Engine coolant filler tank  |                                 |
| (11) Radiator sub fan shroud          | (25) Radiator cap                |                                 |
| (12) Radiator main fan shroud         | (Engine coolant filler tank cap) |                                 |
| (13) Radiator sub fan                 | (26) Coolant filler tank hose A  |                                 |
| (14) Radiator main fan                |                                  |                                 |

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**Tightening torque: N·m (kgf-m, ft-lb)**
**T1: 3 (0.3, 2.2)****T2: 3.4 (0.3, 2.5)****T3: 4.41 (0.45, 3.25)****T4: 7.5 (0.8, 5.5)****T5: 12 (1.2, 8.9)**


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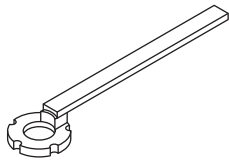
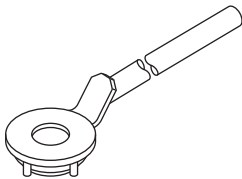
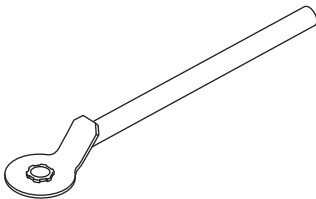
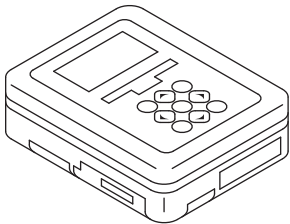
**C: CAUTION**

- 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 the 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.

# General Description

COOLING

## D: PREPARATION TOOL

| ILLUSTRATION                                                                                            | TOOL NUMBER                      | DESCRIPTION                   | REMARKS                                                                                    |
|---------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|--------------------------------------------------------------------------------------------|
|  <p>ST-499207400</p>   | 499207400                        | CAM SPROCKET WRENCH           | Used for removing and installing exhaust cam sprocket.                                     |
|  <p>ST-499977400</p>   | 499977400                        | CRANK PULLEY WRENCH           | Used to stop rotation of the crank pulley when loosening or tightening crank pulley bolts. |
|  <p>ST-499977500</p> | 499977500                        | CAM SPROCKET WRENCH           | Used for removing and installing intake cam sprocket.                                      |
|  <p>ST1B022XU0</p>   | 1B022XU0<br>(Newly adopted tool) | SUBARU SELECT MONITOR III KIT | Used for troubleshooting for electrical system.                                            |