

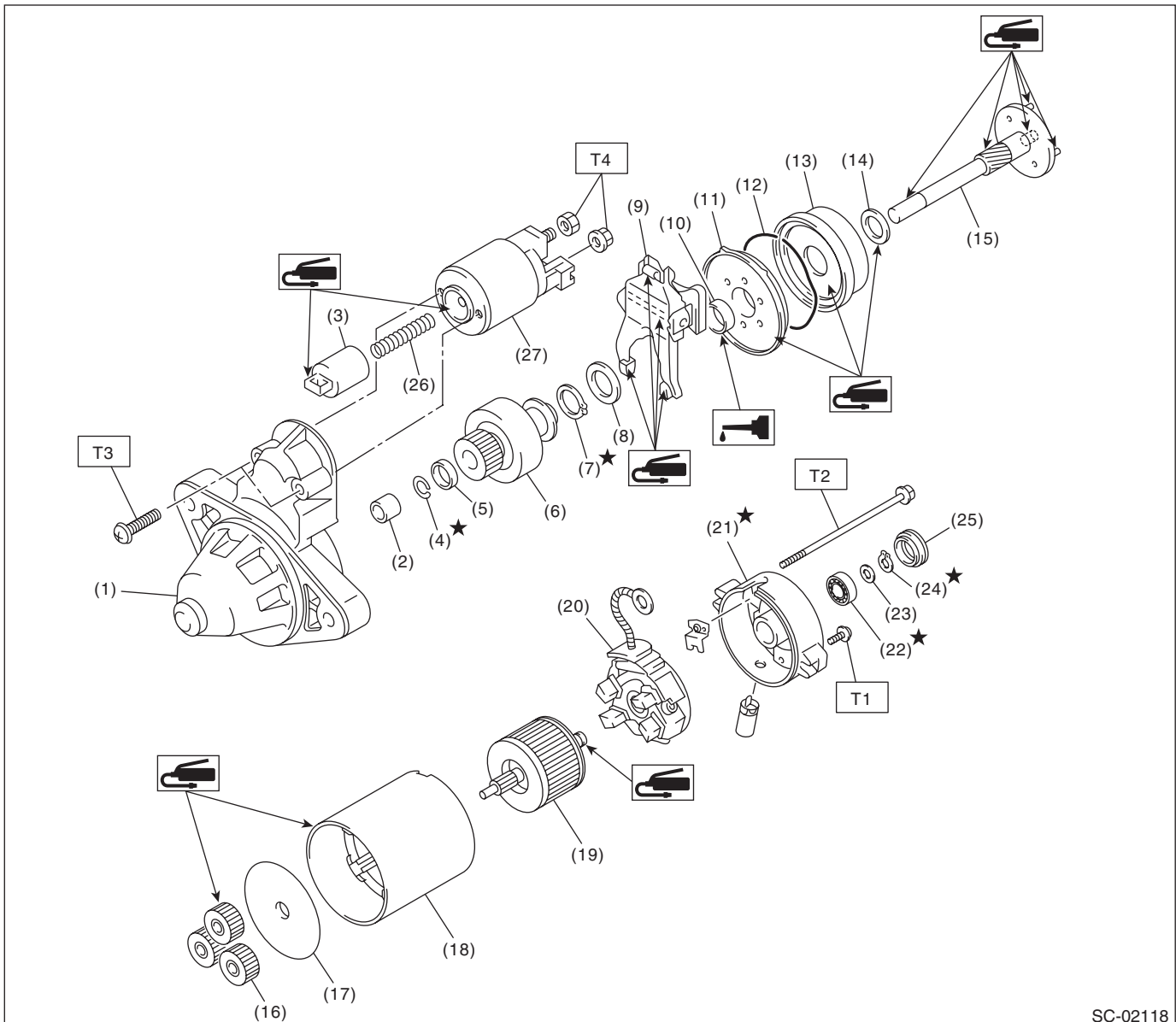
# General Description

## STARTING/CHARGING SYSTEMS

### 1. General Description

#### A: SPECIFICATION

Item		Specification
Vehicle model		AT
Starter	Type	Reduction type
	Model	428000-2290
	Manufacturer	DENSO
	Voltage and output	12 V — 1.4 kW
	Direction of rotation	Counterclockwise (when observed from pinion)
	Number of pinion teeth	9
	No-load characteristics	Voltage
		11 V
		Current
		90 A or less
		Rotating speed
		More than 1,720 rpm
	Load characteristics	Voltage
		8 V
		Current
		370 A
	Lock characteristics	Torque
		12.78 N·m (1.30 kgf-m, 9.4 ft-lb) or more
		Rotating speed
		More than 850 rpm
Generator	Type	Rotating-field three-phase type, voltage regulator built-in type, with load response control system
	Model	A003TG0591
	Manufacturer	MITSUBISHI ELECTRIC
	Voltage and output	12 V — 110 A
	Polarity on ground side	Negative
	Direction of rotation	Clockwise (when observed from pulley side)
	Armature connection	3-phase Y-type
	Output current	1,500 rpm — 50 A or more
		2,500 rpm — 91 A or more
		5,000 rpm — 105 A or more
Battery	Regulated voltage	14.1 — 14.8 V [20°C (68°F)]
	Type and capacity	12 V — 52 AH (75D23L)

**B: COMPONENT****1. STARTER**

SC-02118

- |                             |                        |                      |
|-----------------------------|------------------------|----------------------|
| (1) Front bracket           | (12) Wave washer       | (23) Space ring      |
| (2) Front bearing           | (13) Internal gear     | (24) Snap ring       |
| (3) Plunger                 | (14) Washer            | (25) End frame cover |
| (4) Snap ring               | (15) Shaft             | (26) Plunger spring  |
| (5) Stopper                 | (16) Planetary gear    | (27) Magnet switch   |
| (6) Overrunning clutch      | (17) Armature plate    |                      |
| (7) Snap ring               | (18) Yoke              |                      |
| (8) Washer                  | (19) Armature          |                      |
| (9) Lever                   | (20) Brush holder ASSY |                      |
| (10) Oilless bearing        | (21) End frame         |                      |
| (11) Shock absorber bearing | (22) Rear bearing      |                      |

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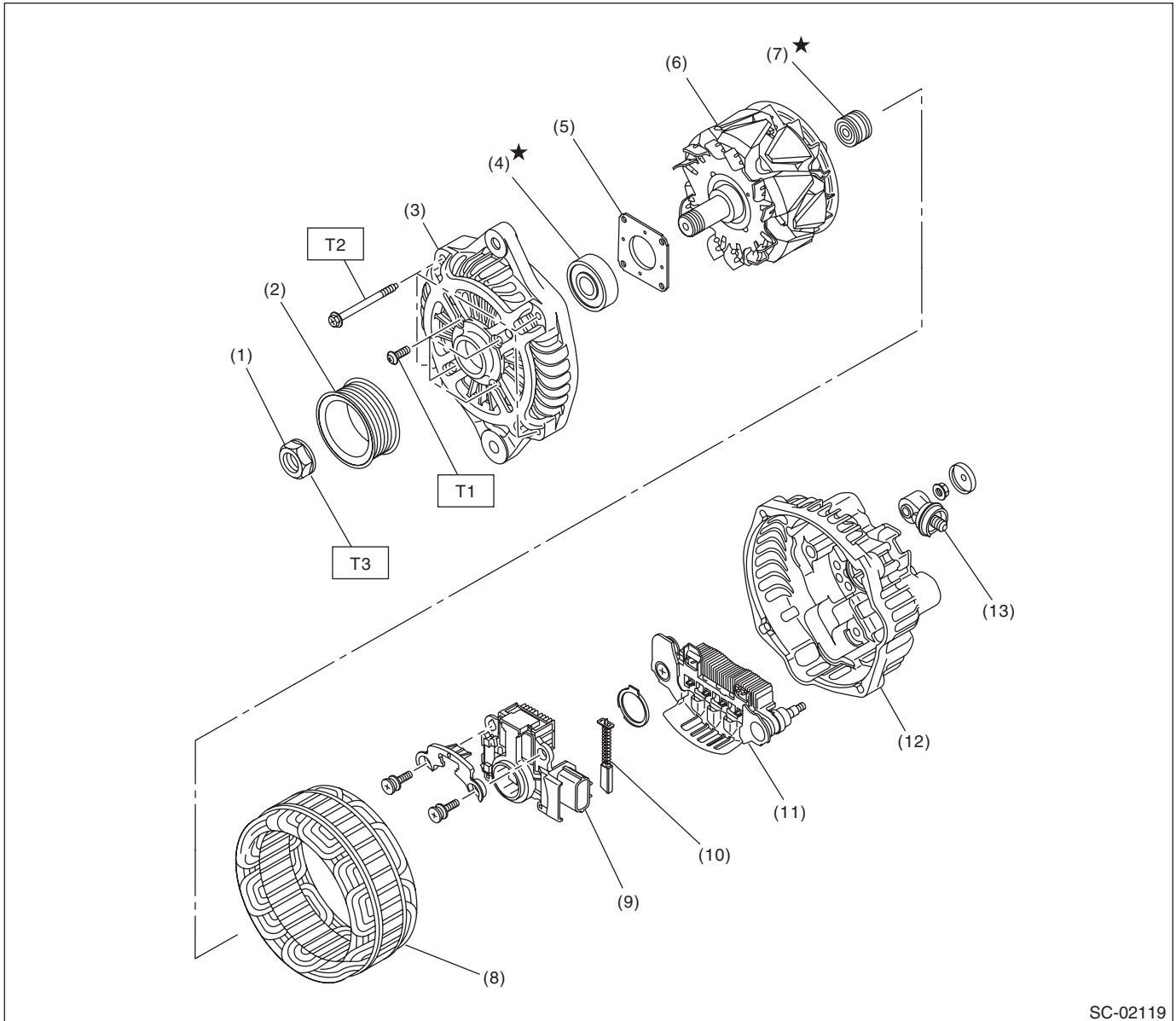
**Tightening torque: N·m (kgf-m, ft-lb)**
**T1: 1.4 (0.14, 1.03)****T2: 6 (0.6, 4.4)****T3: 7.5 (0.8, 5.5)****T4: 10 (1.0, 7.4)**


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# General Description

## STARTING/CHARGING SYSTEMS

### 2. GENERATOR



SC-02119

- |                      |                             |
|----------------------|-----------------------------|
| (1) Pulley nut       | (7) Bearing                 |
| (2) Pulley           | (8) Stator coil             |
| (3) Front cover      | (9) IC regulator with brush |
| (4) Ball bearing     | (10) Brush                  |
| (5) Bearing retainer | (11) Rectifier              |
| (6) Rotor            | (12) Rear cover             |

- (13) Terminals

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

**T1: 3.9 (0.4, 2.9)**

**T2: 4.6 (0.47, 3.4)**

**T3: 103 (10.5, 76)**

### **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.