

General Description

STARTING/CHARGING SYSTEMS

1. General Description

A: SPECIFICATION

1. 2.5 L MODEL

Item			SPECIFICATION	
Vehicle model			AT and CVT	MT
Starter	Type		Reduction type	
	Model		428000-4790	428000-4780
	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	1,900 rpm or more	
	Load characteristics	Voltage	8 V	
		Current	370 A	
		Torque	11.1 N·m (1.1 kgf-m, 8.2 ft-lb) or more	
		Rotating speed	910 rpm or more	
	Lock characteristics	Voltage	3 V	
		Current	750 A or less	
		Torque	15.5 N·m (1.6 kgf-m, 11.4 ft-lb) or more	
Generator	Type		Rotating-field three-phase type, voltage regulator built-in type, with load response control system	
	Model		A3TG6191	
	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	
	Regulated voltage		14.1 — 14.8 V [20°C (68°F)]	
	Outer diameter of rotor slip ring	Standard	22.7 mm (0.894 in)	
		Service limit	22.1 mm (0.870 in)	
	Brush length	Standard	18.5 mm (0.728 in)	
		Service limit	5.0 mm (0.197 in)	
Battery	Type and capacity		12 V — 52 AH (75D 23R)	

General Description

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2. 3.6 L MODEL

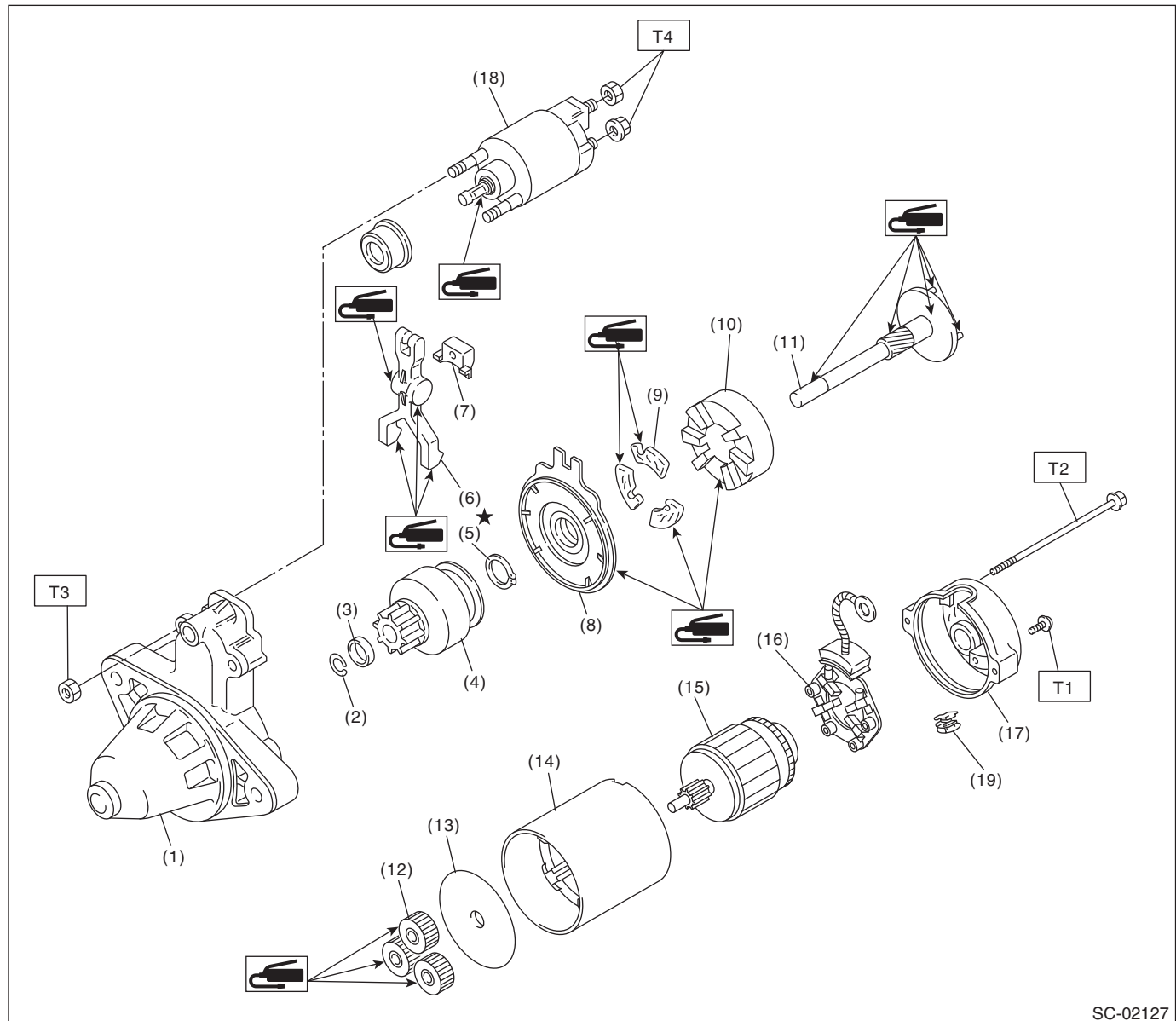
Item			SPECIFICATION
Vehicle model			AT
Starter	Type		Reduction type
	Model		428000-5250
	Manufacturer		DENSO
	Voltage and output		12 V — 1.6 kW
	Direction of rotation		Counterclockwise (when observed from pinion)
	Number of pinion teeth		9
	No-load characteristics	Voltage	11 V
		Current	90 A or less
		Rotating speed	1,550 rpm or more
	Load characteristics	Voltage	8 V
		Current	370 A
		Torque	12.8 N·m (1.3 kgf-m, 9.4 ft-lb) or more
		Rotating speed	800 rpm or more
	Lock characteristics	Voltage	3 V
		Current	750 A or less
		Torque	19.0 N·m (1.9 kgf-m, 14.0 ft-lb) or more
Generator	Type		Rotating-field three-phase type, voltage regulator built-in type, with load response control system
	Model		A3TJ3591
	Manufacturer		Mitsubishi Electric
	Voltage and output		12 V — 130 A
	Polarity on ground side		Negative
	Direction of rotation		Clockwise (when observed from pulley side)
	Armature connection		3-phase Δ type
	Output current		1,500 rpm — 55 A or more 2,500 rpm — 108 A or more 5,000 rpm — 127 A or more
	Regulated voltage		14.1 — 14.8 V [20°C (68°F)]
	Outer diameter of rotor slip ring	Standard	22.7 mm (0.894 in)
		Service limit	22.1 mm (0.870 in)
	Brush length	Standard	18.5 mm (0.728 in)
		Service limit	5.0 mm (0.197 in)
Battery	Type and capacity		12 V — 52 AH (75D 23R)

General Description

STARTING/CHARGING SYSTEMS

B: COMPONENT

1. STARTER



SC-02127

- | | |
|----------------------------|-------------------------|
| (1) Starter housing | (10) Internal gear |
| (2) Snap ring | (11) Shaft |
| (3) Stopper | (12) Planetary gear |
| (4) Overrunning clutch | (13) Starter plate |
| (5) Snap ring | (14) Yoke |
| (6) Shift lever | (15) Armature |
| (7) Starter seal | (16) Brush holder ASSY |
| (8) Shock absorber bearing | (17) Starter cover |
| (9) Shock absorber | (18) Magnet switch ASSY |

- (19) Drain duct

Tightening torque: N·m (kgf-m, ft-lb)

T1: 1.4 (0.1, 1.0)

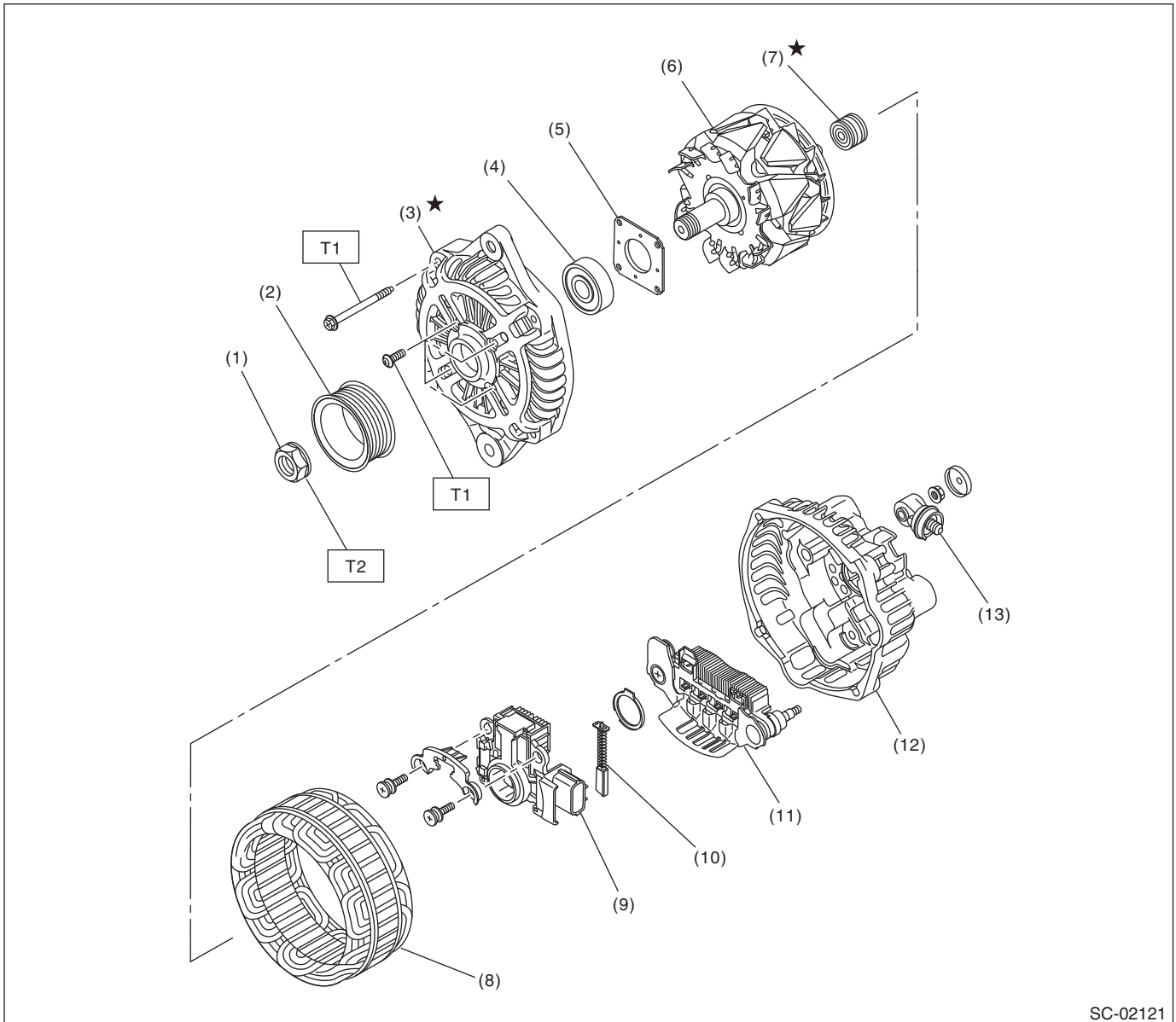
T2: 6 (0.6, 4.4)

T3: 7.5 (0.8, 5.5)

T4: 10 (1.0, 7.4)

2. GENERATOR

- 2.5 L model



- | | |
|----------------------|-----------------------------|
| (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)

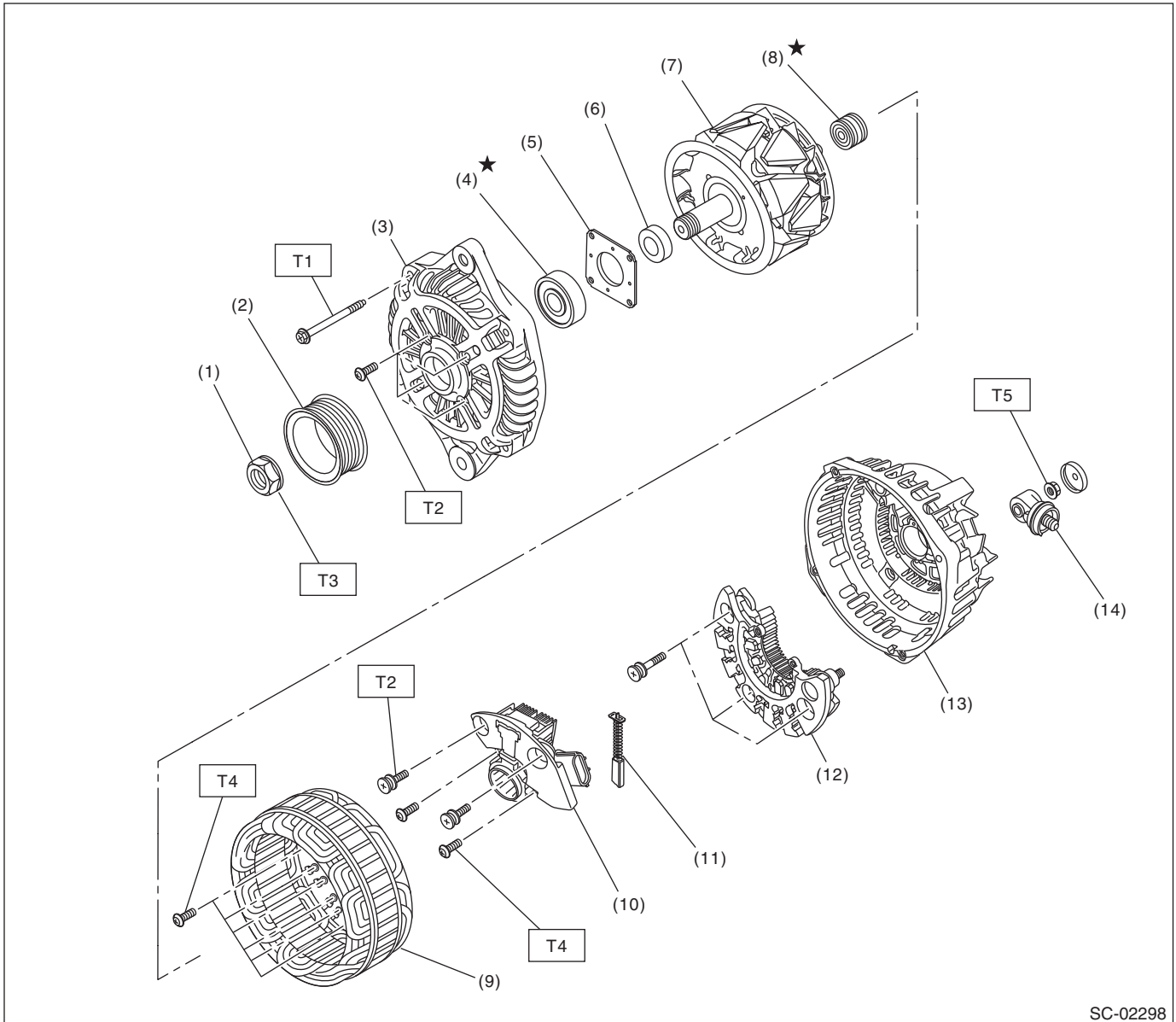
T1: 4.7 (0.5, 3.5)

T2: 108 (11.0, 79.8)

General Description

STARTING/CHARGING SYSTEMS

- 3.6 L model



- | | |
|----------------------|-------------------|
| (1) Pulley nut | (8) Bearing |
| (2) Pulley | (9) STATOR COIL |
| (3) Front cover | (10) IC regulator |
| (4) Ball bearing | (11) Brush |
| (5) Bearing retainer | (12) Rectifier |
| (6) SPACER | (13) Rear cover |
| (7) Rotor | (14) Terminal B |

Tightening torque:N·m (kgf-m, ft-lb)

T1: 4.4 (0.4, 3.2)

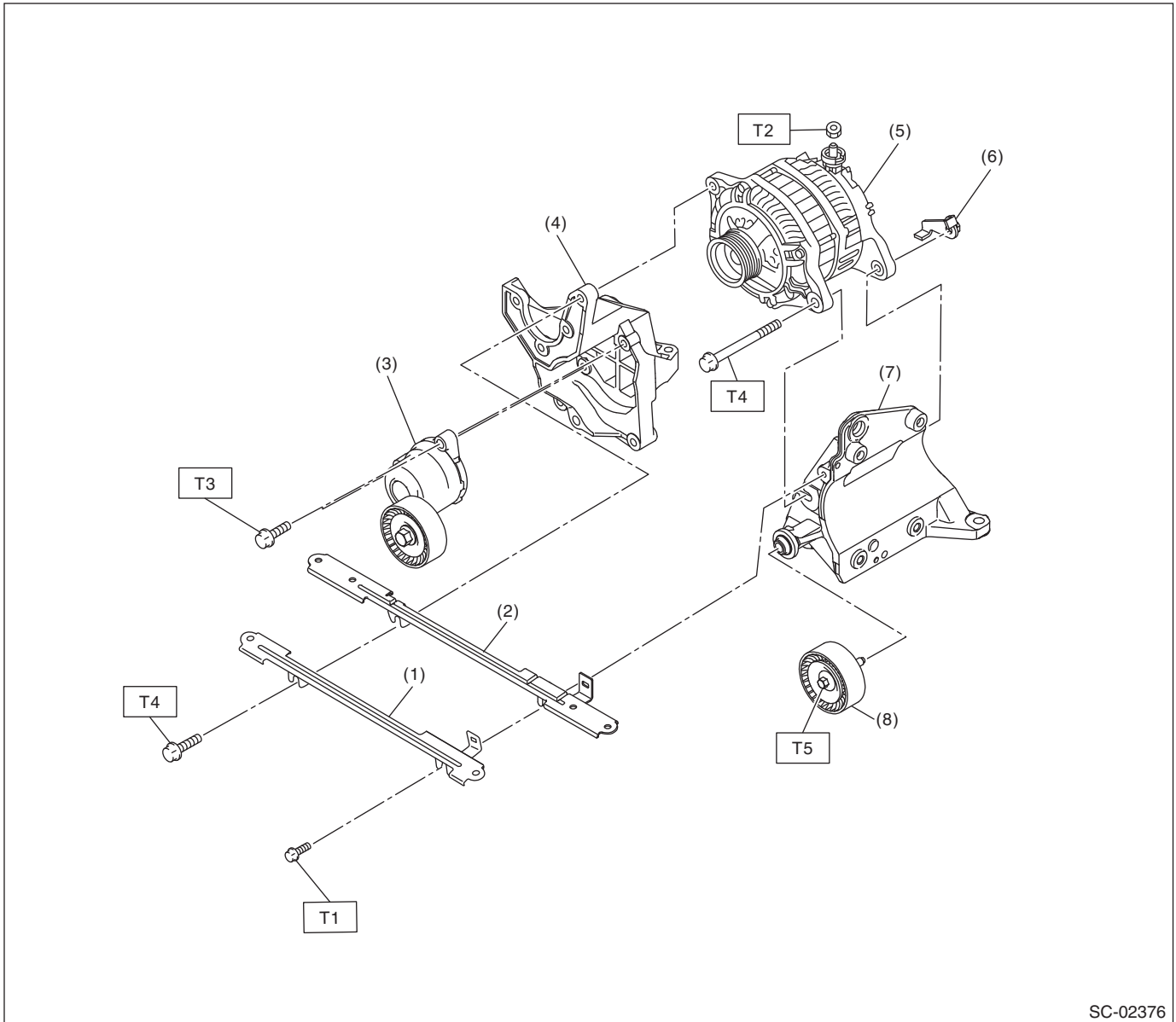
T2: 3.9 (0.4, 2.9)

T3: 117.5 (12.0, 86.7)

T4: 2 (0.2, 1.5)

T5: 8.9 (0.9, 6.6)

3. GENERATOR BRACKET



SC-02376

- | | |
|---------------------------------|----------------------------|
| (1) V-belt cover bracket | (5) Generator |
| (2) Collector cover bracket | (6) Generator plate |
| (3) V-belt tensioner ASSY | (7) A/C compressor bracket |
| (4) Power steering pump bracket | (8) Idler pulley |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 6.4 (0.7, 4.7)

T2: 16 (1.6, 11.8)

T3: 20 (2.0, 14.8)

T4: 25 (2.5, 18.4)

T5: 33 (3.4, 24.3)

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.