

General Description

STARTING/CHARGING SYSTEMS

1. General Description

A: SPECIFICATION

1. 2.5 L MODEL

Item		SPECIFICATION	
Vehicle model		AT and CVT	
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
	Lock characteristics	Rotating speed	910 rpm or more
		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	
	Regulated voltage	5,000 rpm — 105 A or more	
		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)	

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2. 3.6 L MODEL

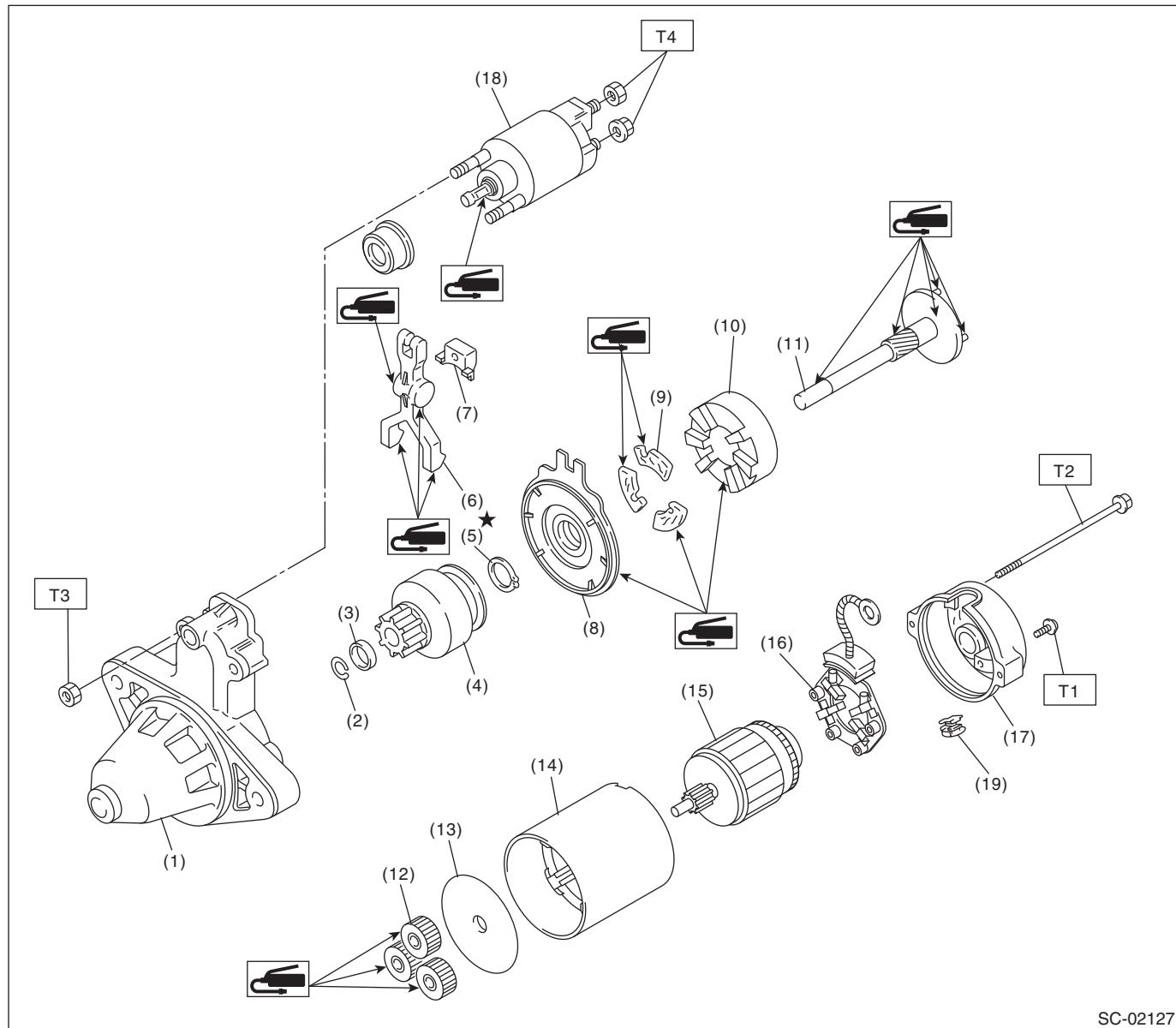
Item		SPECIFICATION
Vehicle model		AT
Starter	Type	Reduction type
	Model	428000-5250
	Manufacturer	DENSO
	Voltage and output	12 V — 1.6 kW
	Direction of rotation	Clockwise (when observed from pinion)
	Number of pinion teeth	9
	No-load characteristics	Voltage 11 V
		Current 90 A or less
		Rotating speed 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
	Lock characteristics	Rotating speed 800 rpm or more
		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)

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B: COMPONENT

1. STARTER



- (1) Starter housing
- (2) Snap ring
- (3) Stopper
- (4) Overrunning clutch
- (5) Snap ring
- (6) Shift lever
- (7) Starter seal
- (8) Shock absorber bearing
- (9) Shock absorber

- (10) Internal gear
- (11) Shaft
- (12) Planetary gear
- (13) Starter plate
- (14) Yoke
- (15) Armature
- (16) Brush holder ASSY
- (17) Starter cover
- (18) Magnet switch ASSY

- (19) Drain duct

Tightening torque:N·m (kgf·m, ft·lb)

T1: 1.4 (0.1, 1.0)

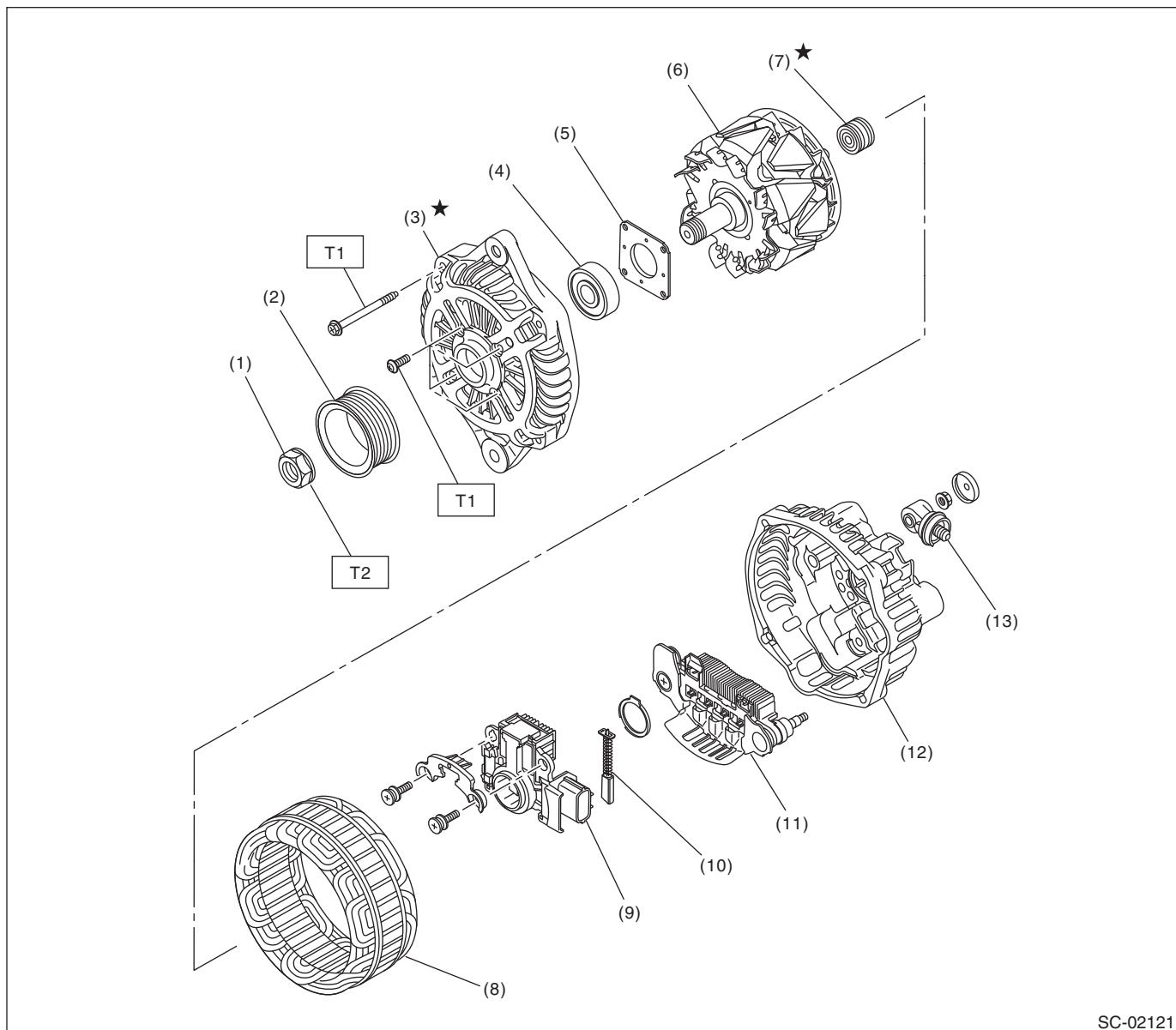
T2: 6 (0.6, 4.4)

T3: 7.5 (0.8, 5.5)

T4: 10 (1.0, 7.4)

2. GENERATOR

- 2.5 L model



SC-02121

(1) Pulley nut
 (2) Pulley
 (3) Front cover
 (4) Ball bearing
 (5) Bearing retainer
 (6) Rotor

(7) Bearing
 (8) STATOR COIL
 (9) IC regulator with brush
 (10) Brush
 (11) Rectifier
 (12) Rear cover

(13) Terminals

Tightening torque:N·m (kgf·m, ft·lb)

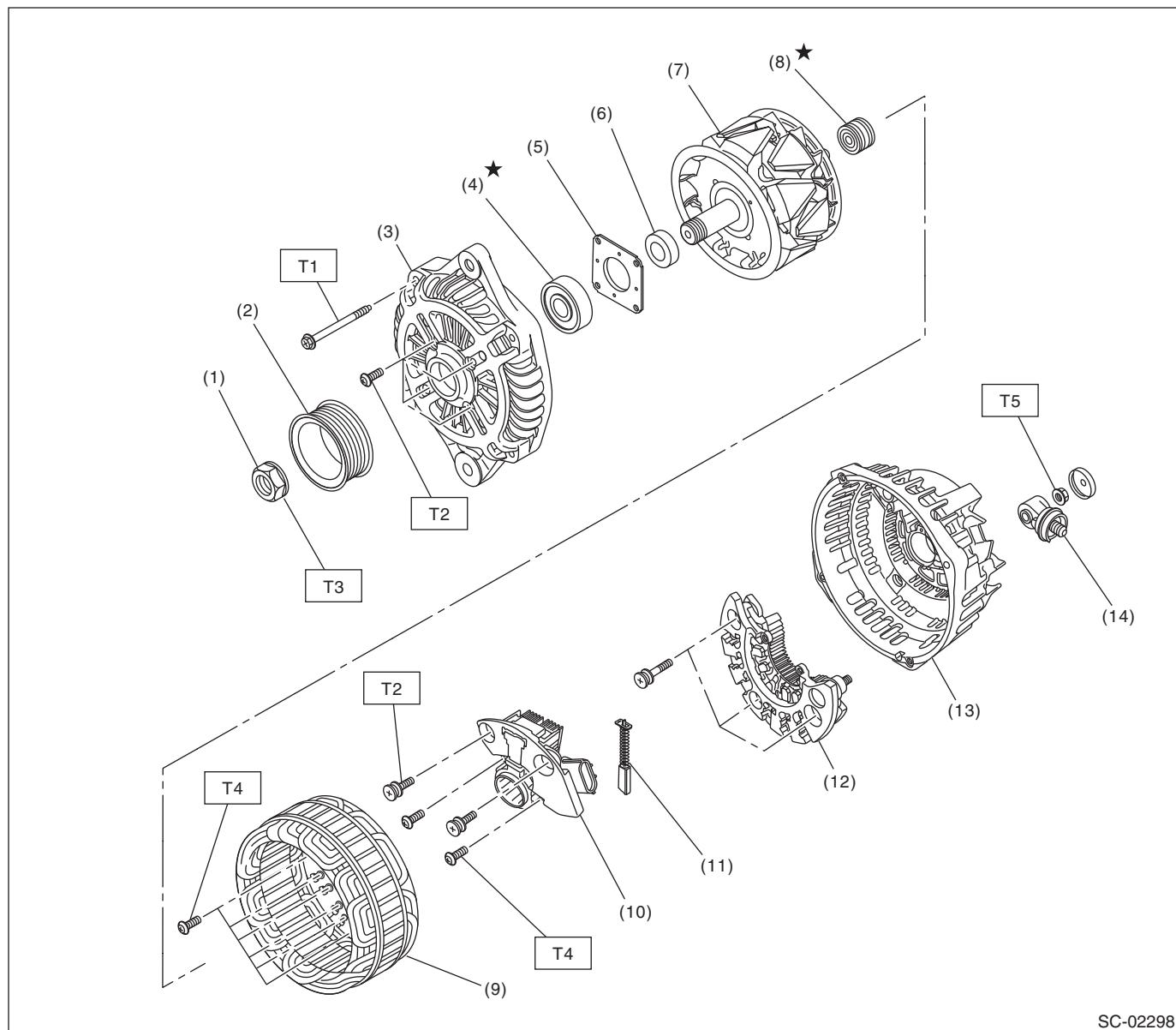
T1: 4.7 (0.5, 3.5)

T2: 108 (11.0, 79.8)

General Description

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- 3.6 L model



SC-02298

(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)

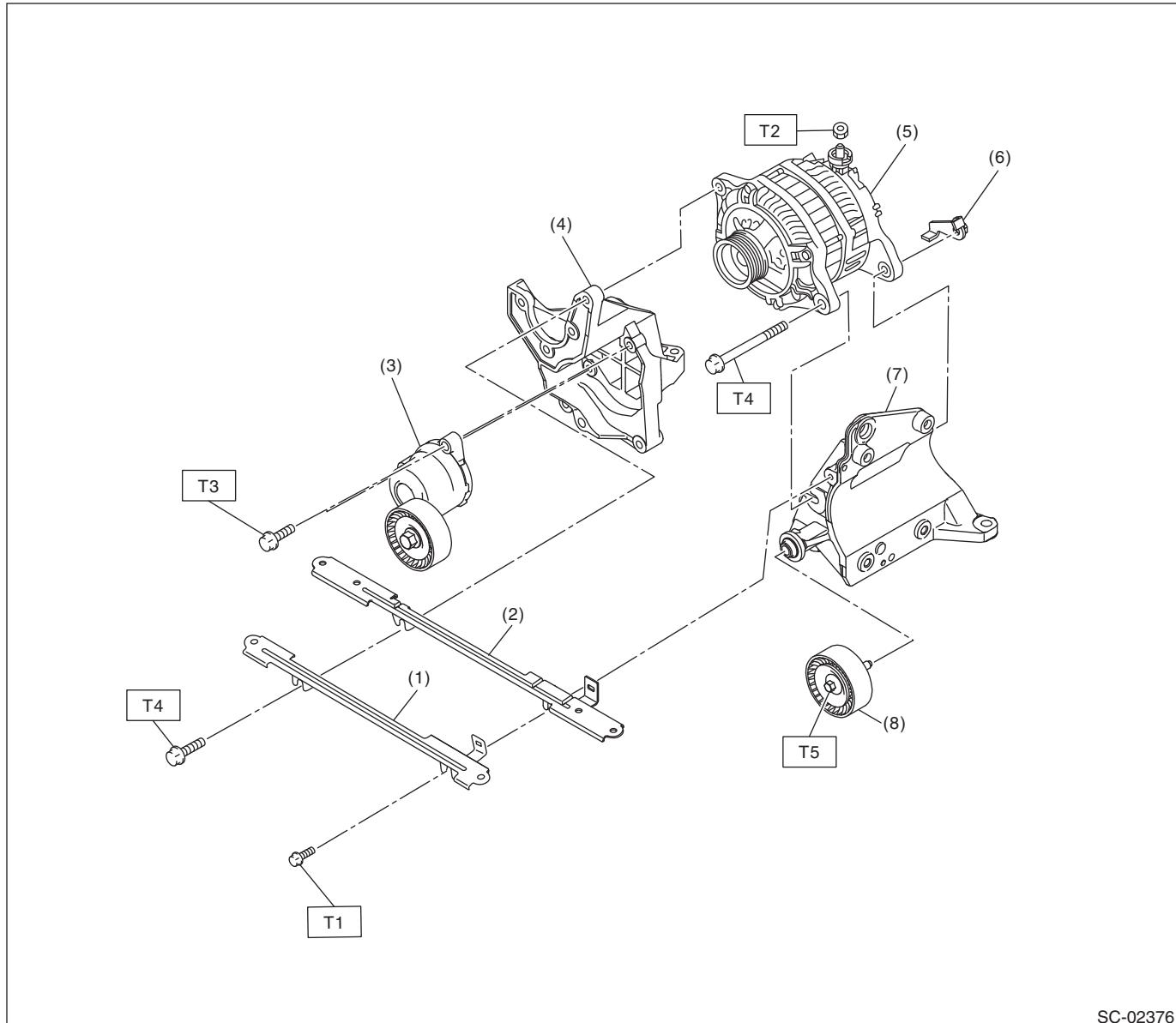
T2: 3.9 (0.4, 2.9)

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)

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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.