

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 — 1.6 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	1,900 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)]	
	Rotor slip ring outer diameter	Standard	22.7 mm (0.894 in)	
		Limit	22.1 mm (0.870 in)	
	Brush length	Standard	18.5 mm (0.728 in)	
		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

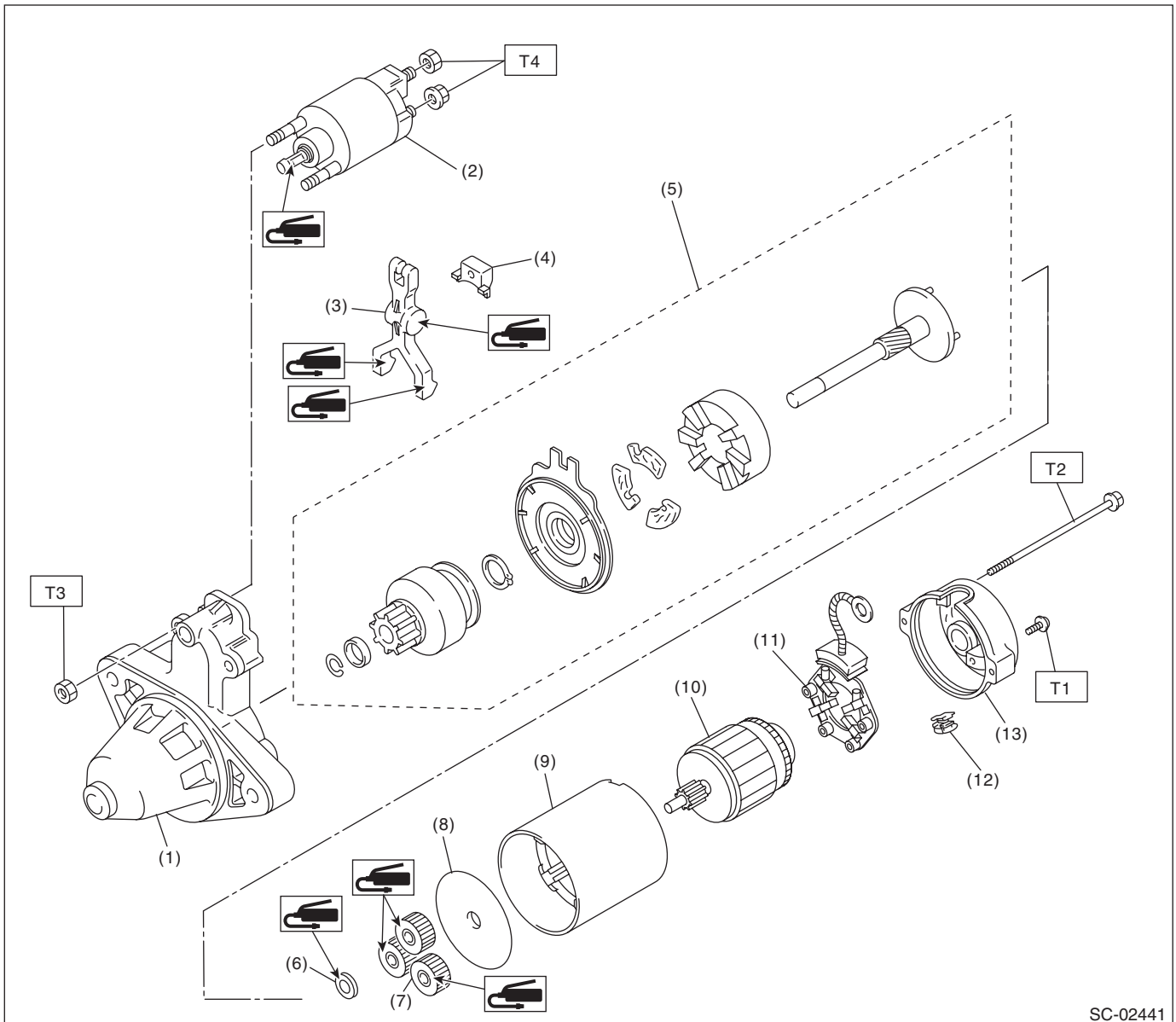
Item		Specification
Vehicle model		AT
Starter	Type	Reduction type
	Model	428000-5250
	Manufacturer	DENSO
	Voltage and output	12 V — 1.6 kW
	Direction of rotation	Counterclockwise (when observed from pinion)
	Number of pinion teeth	9
	No-load characteristics	Voltage
		Current
		Rotating speed
	Load characteristics	Voltage
		Current
		Torque
		Rotating speed
	Lock characteristics	Voltage
		Current
		Torque
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
		Service limit
	Brush length	Standard
		Service limit
Battery	Type and capacity	12 V — 52 AH (75D 23R)

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B: COMPONENT

1. STARTER



SC-02441

- | | |
|-----------------------------|------------------------|
| (1) Starter housing | (8) Starter plate |
| (2) Magnet switch ASSY | (9) Yoke |
| (3) Shift lever | (10) Armature |
| (4) Starter seal | (11) Brush holder ASSY |
| (5) Overrunning clutch ASSY | (12) Drain duct |
| (6) Washer | (13) Starter cover |
| (7) Planetary gear | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 1.4 (0.1, 1.0)

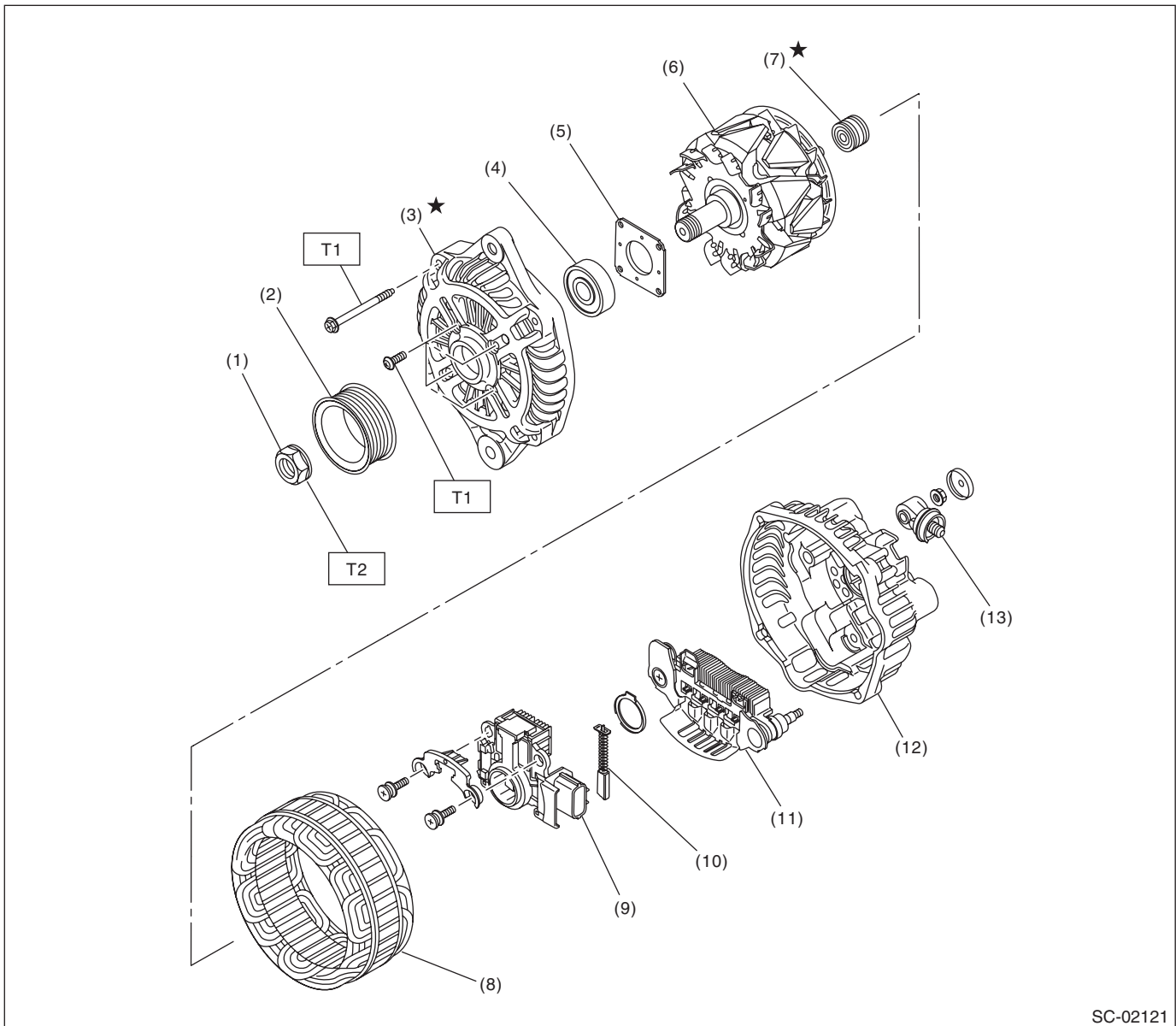
T2: 6 (0.6, 4.4)

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
- (10) Brush
- (11) Rectifier
- (12) Rear cover

- (13) Terminal B

Tightening torque: N·m (kgf-m, ft-lb)

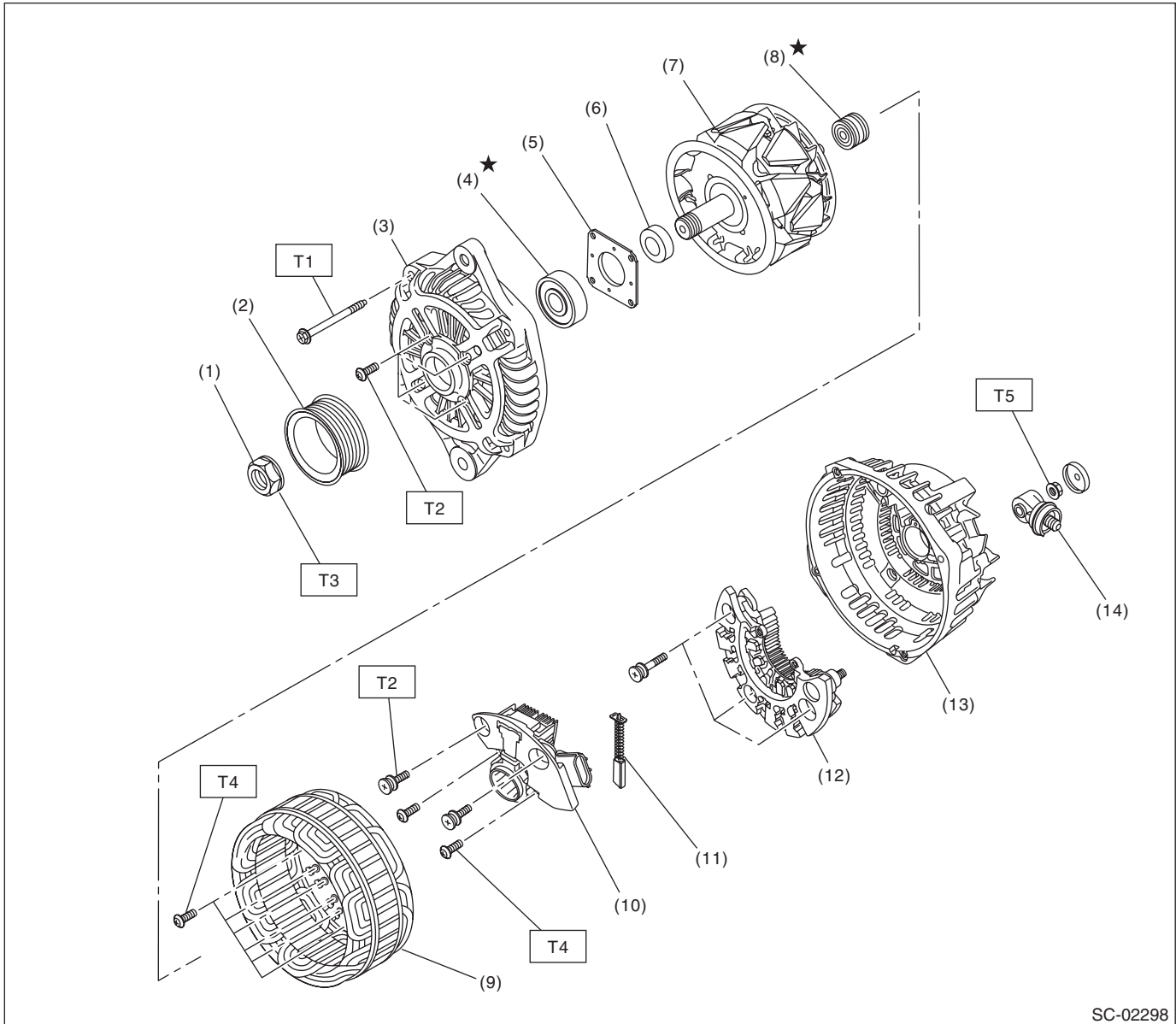
T1: 4.7 (0.5, 3.5)

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)

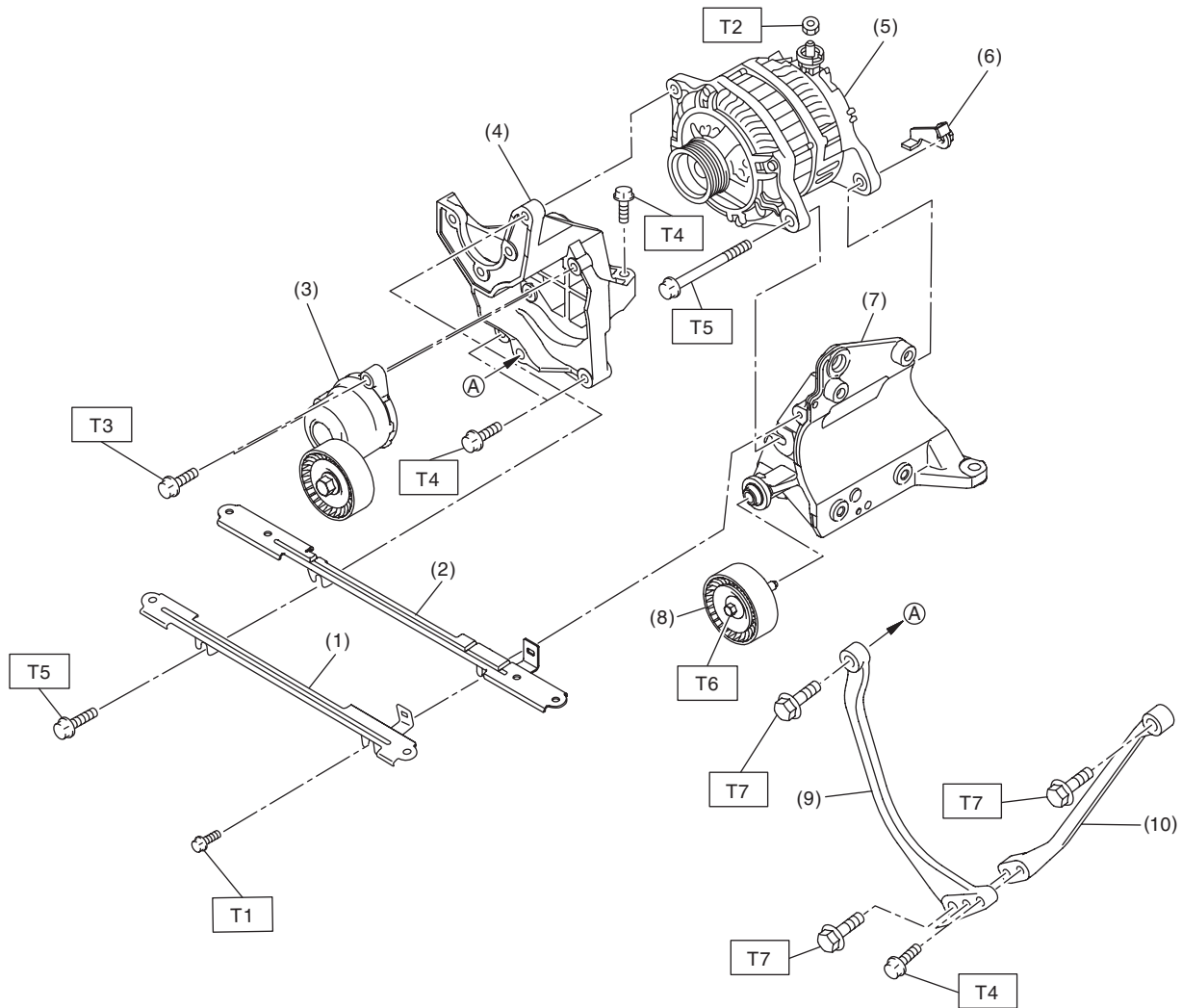
T2: 3.9 (0.4, 2.9)

T3: 117.5 (12.0, 86.7)

T4: 2 (0.2, 1.5)

T5: 8.9 (0.9, 6.6)

- 2.5 L model



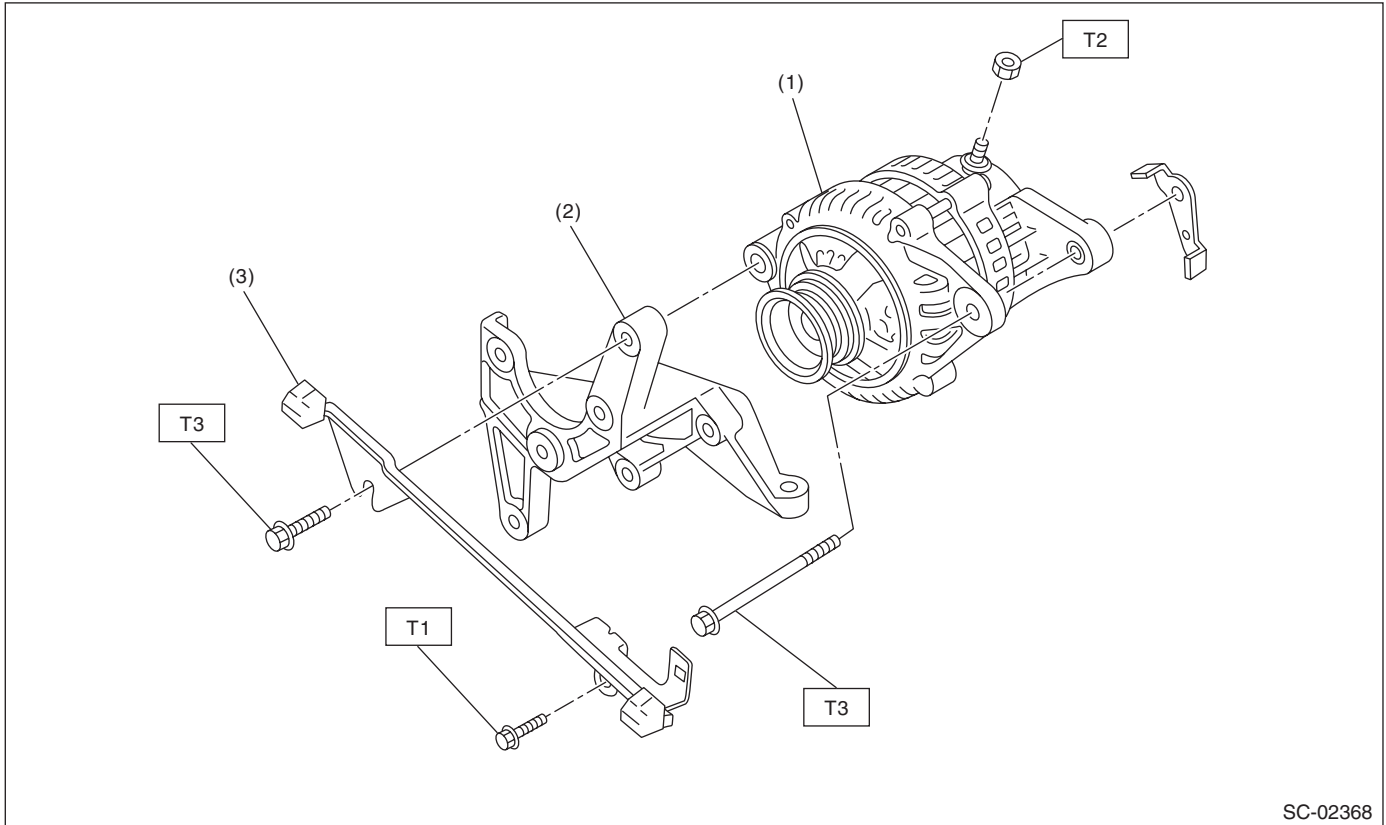
(1) V-belt cover bracket	(6) Generator plate
(2) Collector cover bracket	(7) A/C compressor bracket
(3) V-belt tensioner ASSY	(8) Idler pulley
(4) Power steering pump bracket	(9) Stopper rod RH
(5) Generator	(10) Stopper rod LH

T7: 36 (3.7, 26.6)

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- 3.6 L model



- (1) Generator
(2) Power steering pump bracket
(3) Collector cover bracket

Tightening torque: N·m (kgf-m, ft-lb)

T1: 6.4 (0.7, 4.7)

T2: 16 (1.6, 11.8)

T3: 25 (2.5, 18.4)

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.

D: PREPARATION TOOL

1. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance, voltage and current.