

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)	

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2. 3.6 L MODEL

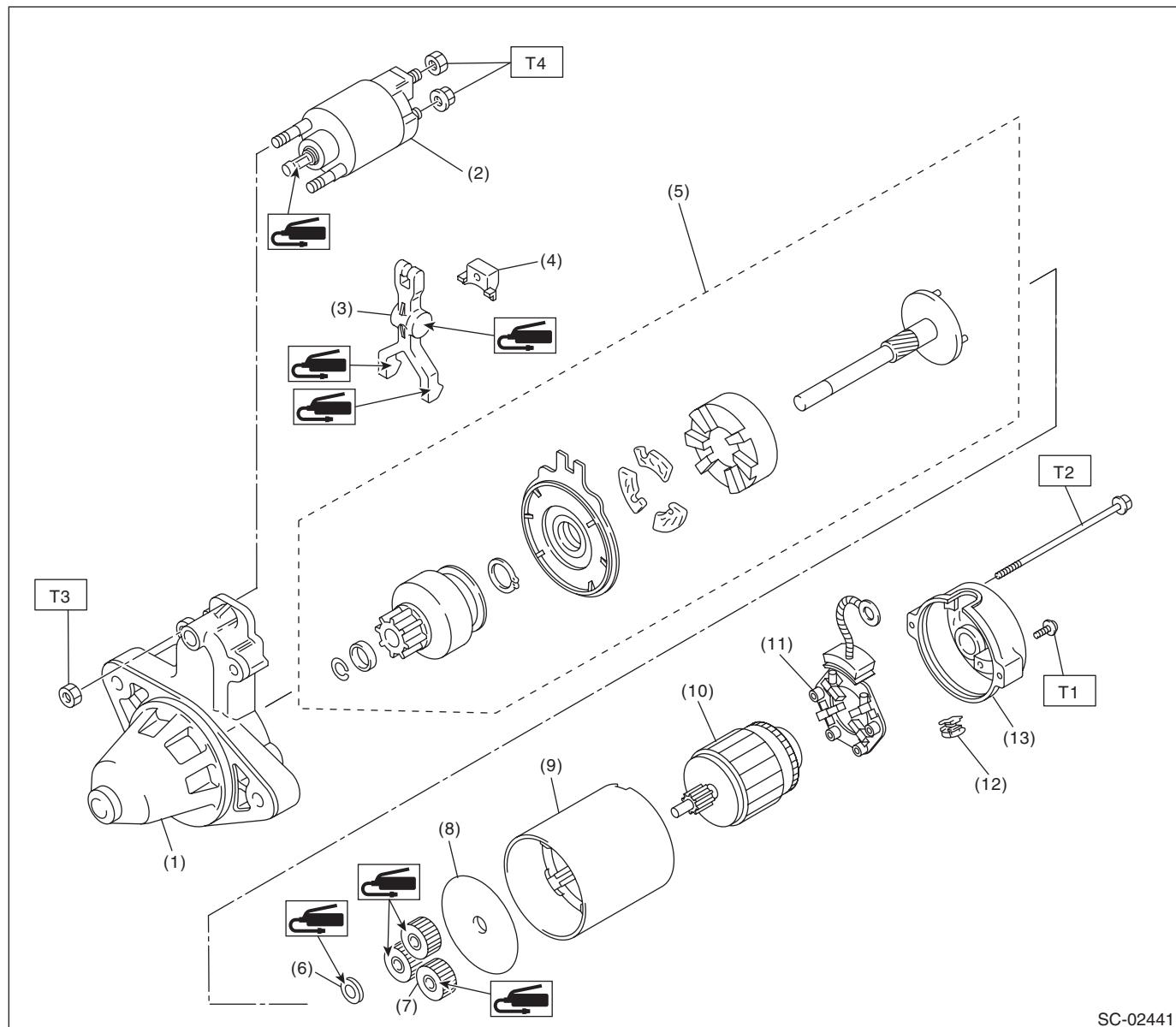
Item		Specification
Vehicle model		AT
Starter	Type	Reduction type
	Model	428000-5250
	Manufacturer	DENSO
	Voltage and output	12 V — 1.6 kW
	Direction of rotation	Counterclockwise (when observed from pinion)
	Number of pinion teeth	9
	No-load characteristics	Voltage
		Current
		Rotating speed
Generator	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)

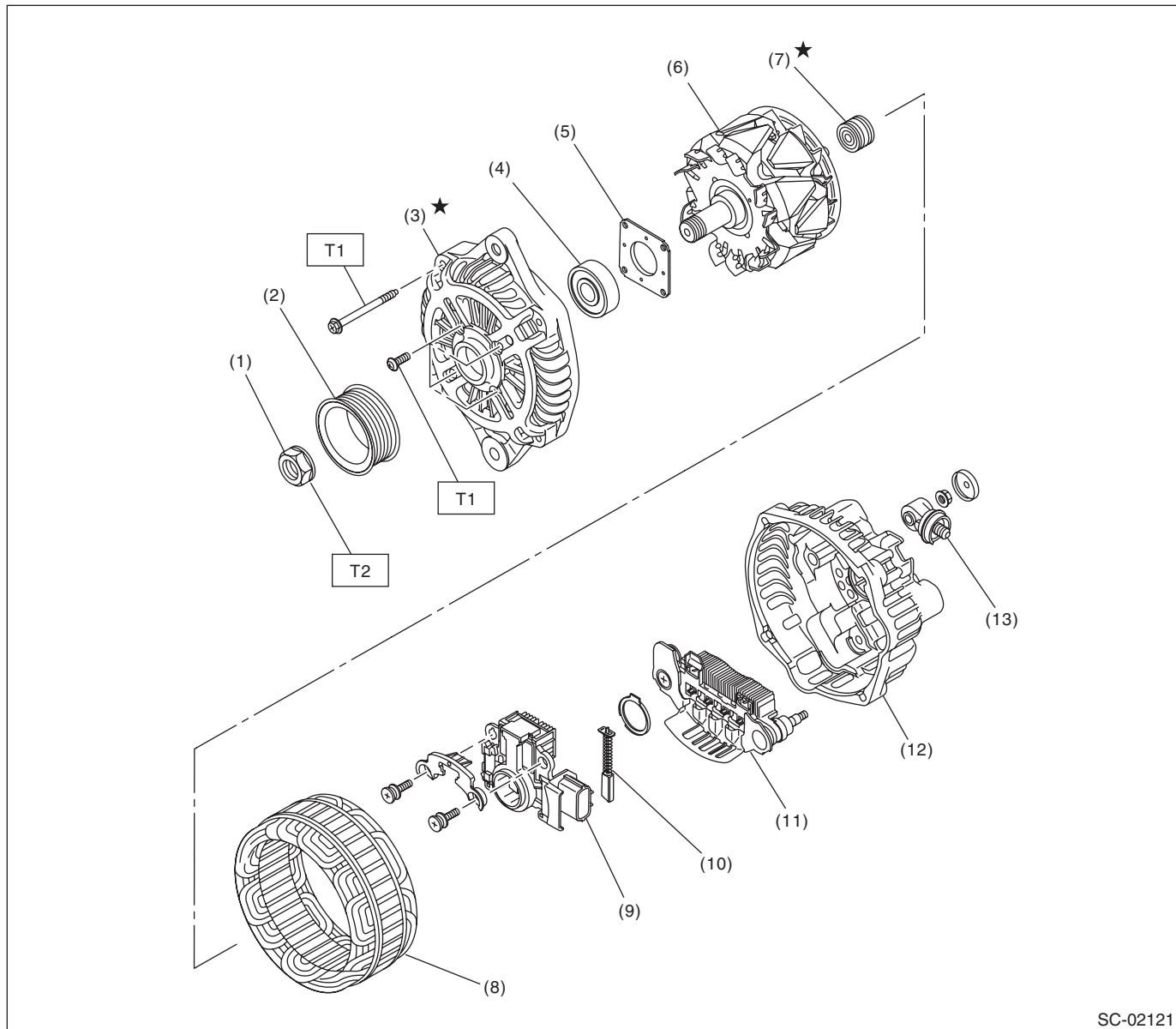
T2: 6 (0.6, 4.4)

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)

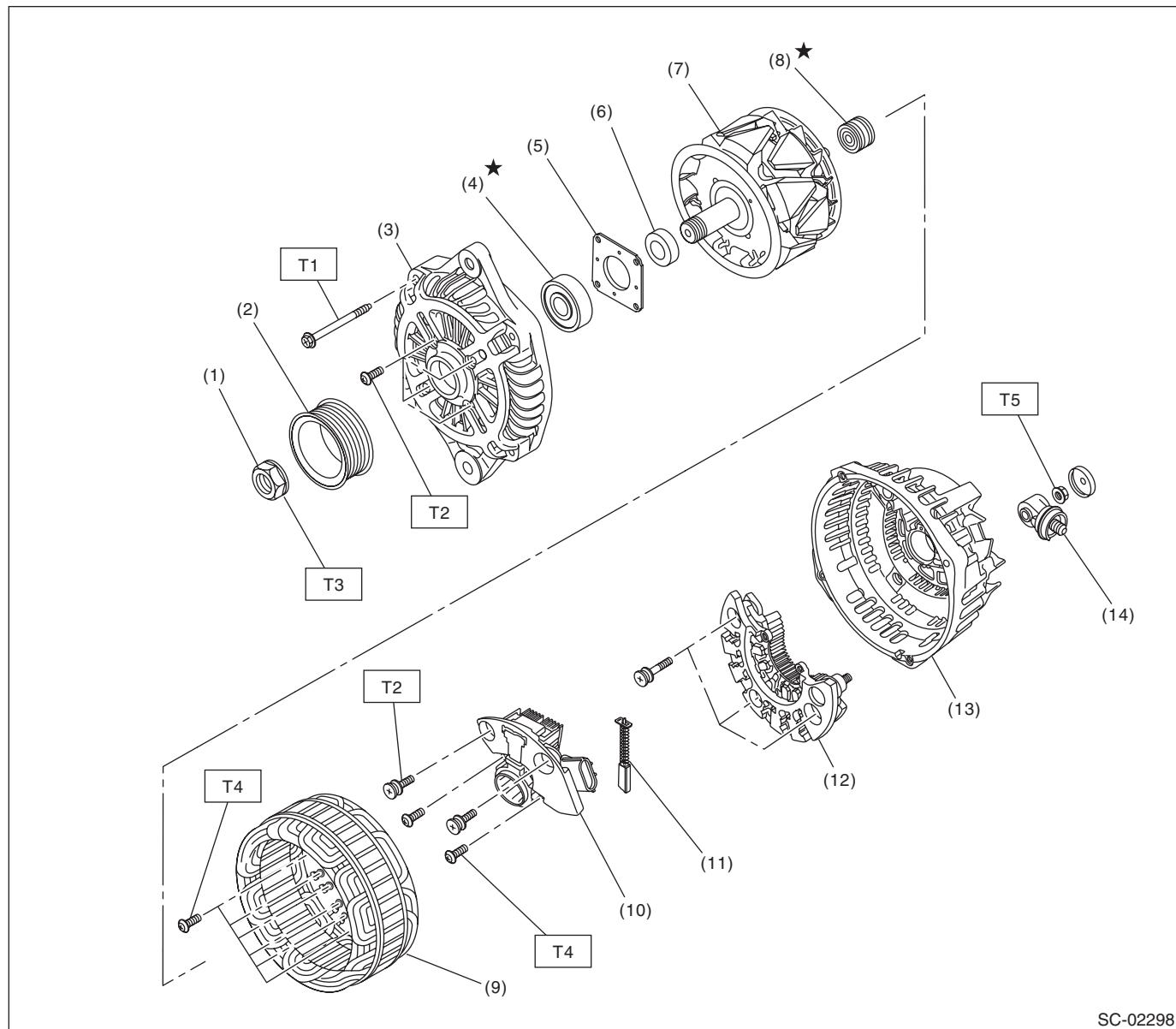
T1: 4.7 (0.5, 3.5)

T2: 108 (11.0, 79.8)

General Description

STARTING/CHARGING SYSTEMS

- 3.6 L model



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)

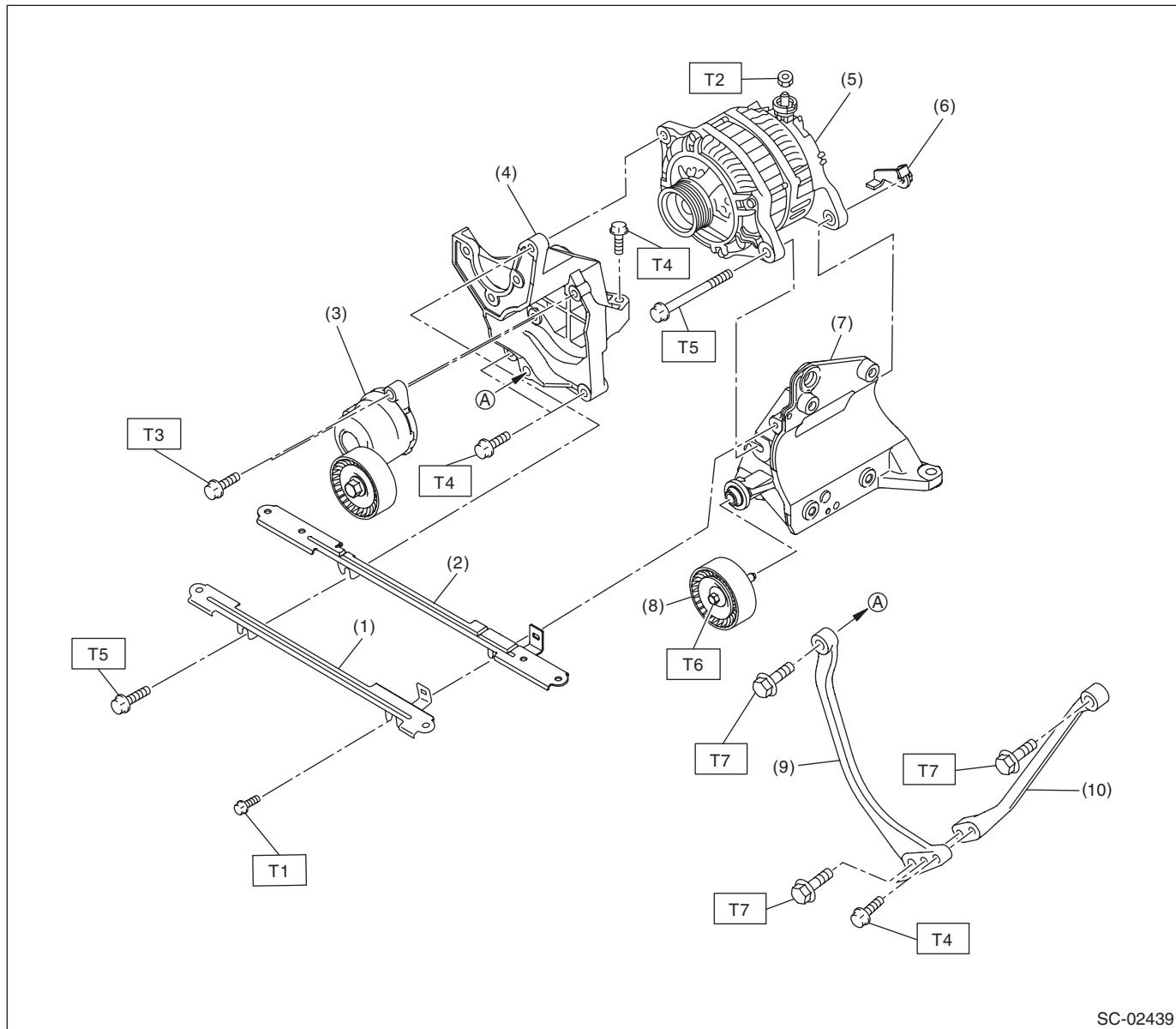
T3: 117.5 (12.0, 86.7)

T4: 2 (0.2, 1.5)

T5: 8.9 (0.9, 6.6)

3. GENERATOR BRACKET

- 2.5 L model



SC-02439

(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

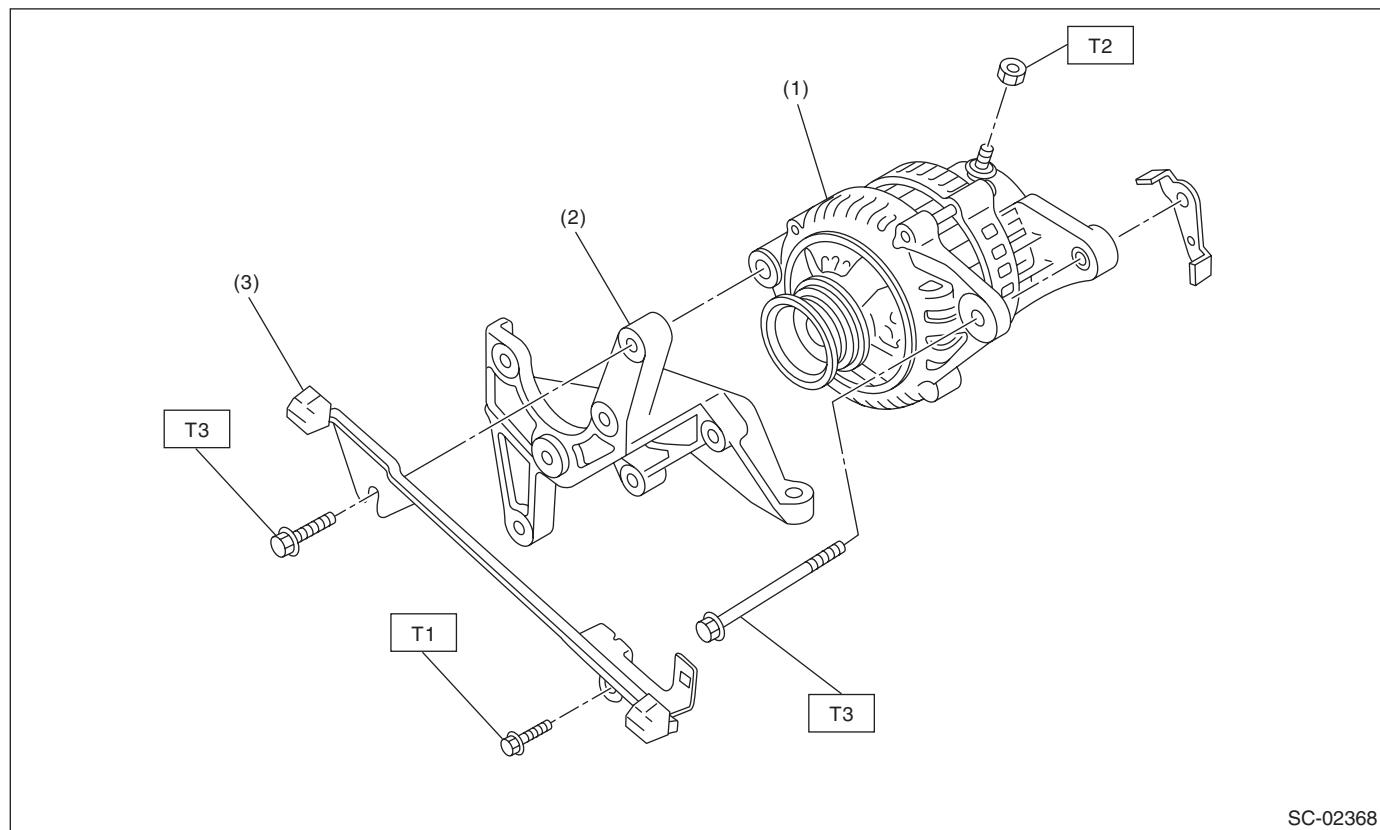
Tightening torque:N·m (kgf·m, ft·lb)

T1: 6.4 (0.7, 4.7)
T2: 16 (1.6, 11.8)
T3: 20 (2.0, 14.8)
T4: 22 (2.2, 16.2)
T5: 25 (2.5, 18.4)
T6: 33 (3.4, 24.3)
T7: 36 (3.7, 26.6)

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- 3.6 L model



(1) Generator

(3) Collector cover bracket

(2) Power steering pump 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.