

General Description

STARTING/CHARGING SYSTEMS

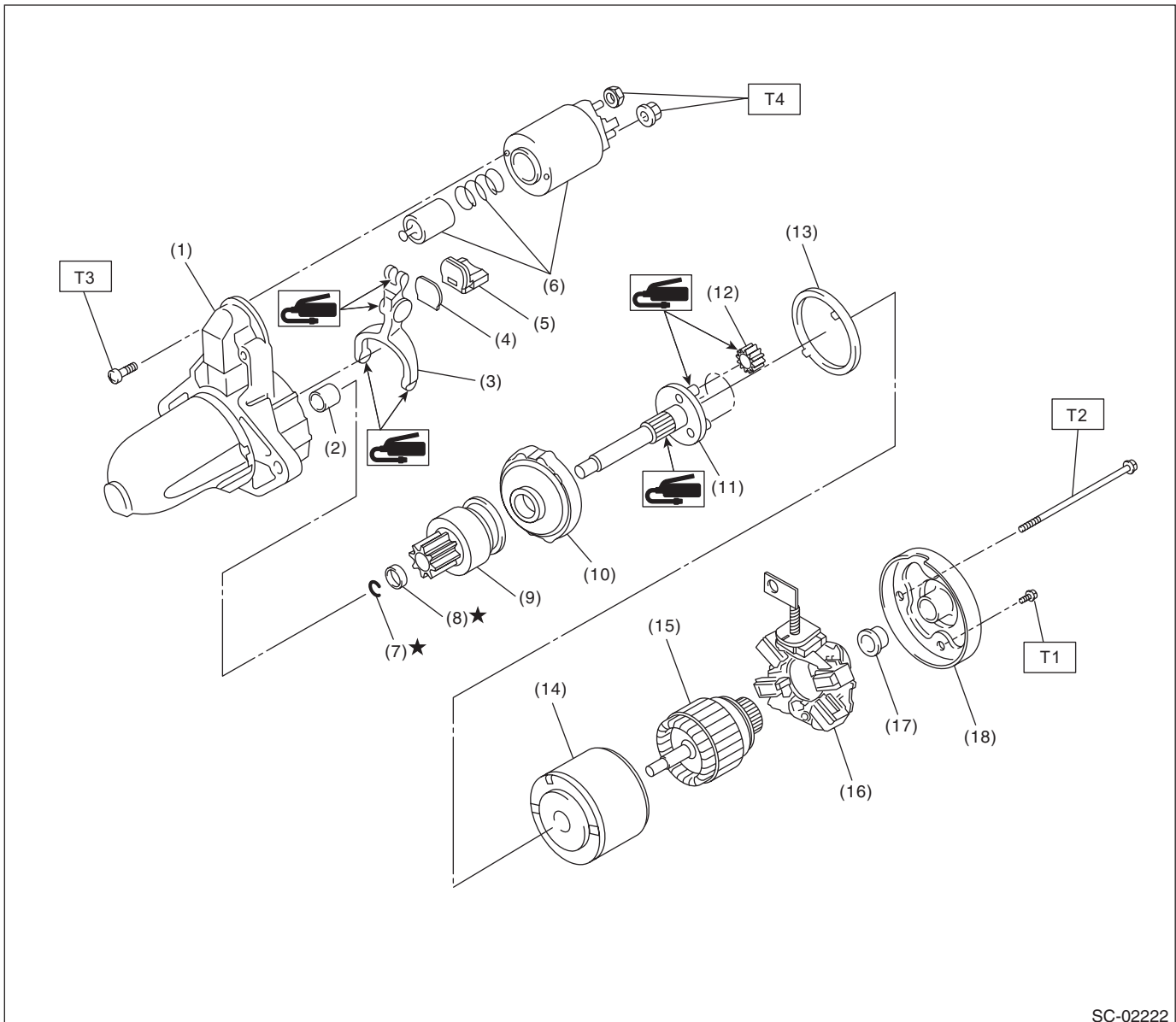
1. General Description

A: SPECIFICATION

Item			Specifications		
Vehicle model			Non-turbo model		Turbo model
			CVT	MT	
Starter	Type		Reduction type		
	Model		M000T38571	M000T33176	M000T20176
	Manufacturer		Mitsubishi Electric		
	Voltage and output		12 V — 1.2 kW	12 V — 1.0 kW	12 V — 1.4 kW
	Direction of rotation		Counterclockwise (when observed from pinion)		
	Number of pinion teeth		9	8	9
	No-load characteristics	Voltage	11 V		
		Current	90 A or less	95 A or less	90 A or less
		Rotating speed	2,370 rpm or more	2,500 rpm or more	2,000 rpm or more
	Load characteristics	Voltage	7.5 V	7.5 V	7.7 V
		Current	300 A	300 A	400 A
		Torque	10.65 N·m (1.1 kgf-m, 7.8 ft-lb) or more	8.84 N·m (0.9 kgf-m, 6.5 ft-lb) or more	16.7 N·m (1.7 kgf-m, 12.3 ft-lb) or more
		Rotating speed	840 rpm or more	870 rpm or more	710 rpm or more
	Lock characteristics	Voltage	4 V	4 V	3.5 V
		Current	780 A or less	680 A or less	960 A or less
		Torque	20 N·m (2.0 kgf-m, 14.8 ft-lb) or more	17 N·m (1.7 kgf-m, 12.5 ft-lb) or more	31 N·m (3.2 kgf-m, 22.9 ft-lb) or more
Generator	Type		Rotating-field three-phase type, voltage regulator built-in type, with load response control system		
	Model		A2TX3381		
	Manufacturer		Mitsubishi Electric		
	Voltage and output		12 V — 130 A		
	Polarity on ground side		Negative		
	Direction of rotation		Clockwise (when observed from pulley side)		
	Stator connection		3-phase \triangle type		
	Output current		1,500 rpm — 50 A or more 2,500 rpm — 111 A or more 5,000 rpm — 133 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	22.5 mm (0.886 in)		
		Limit	5.0 mm (0.197 in)		
Battery	Type and capacity		12 V — 48 AH (55D 23L)		
	CCA		390A		

B: COMPONENT

1. STARTER



SC-02222

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

Tightening torque: N·m (kgf-m, ft-lb)

T1: 1.4 (0.1, 1.0)

T2: 6 (0.6, 4.4)

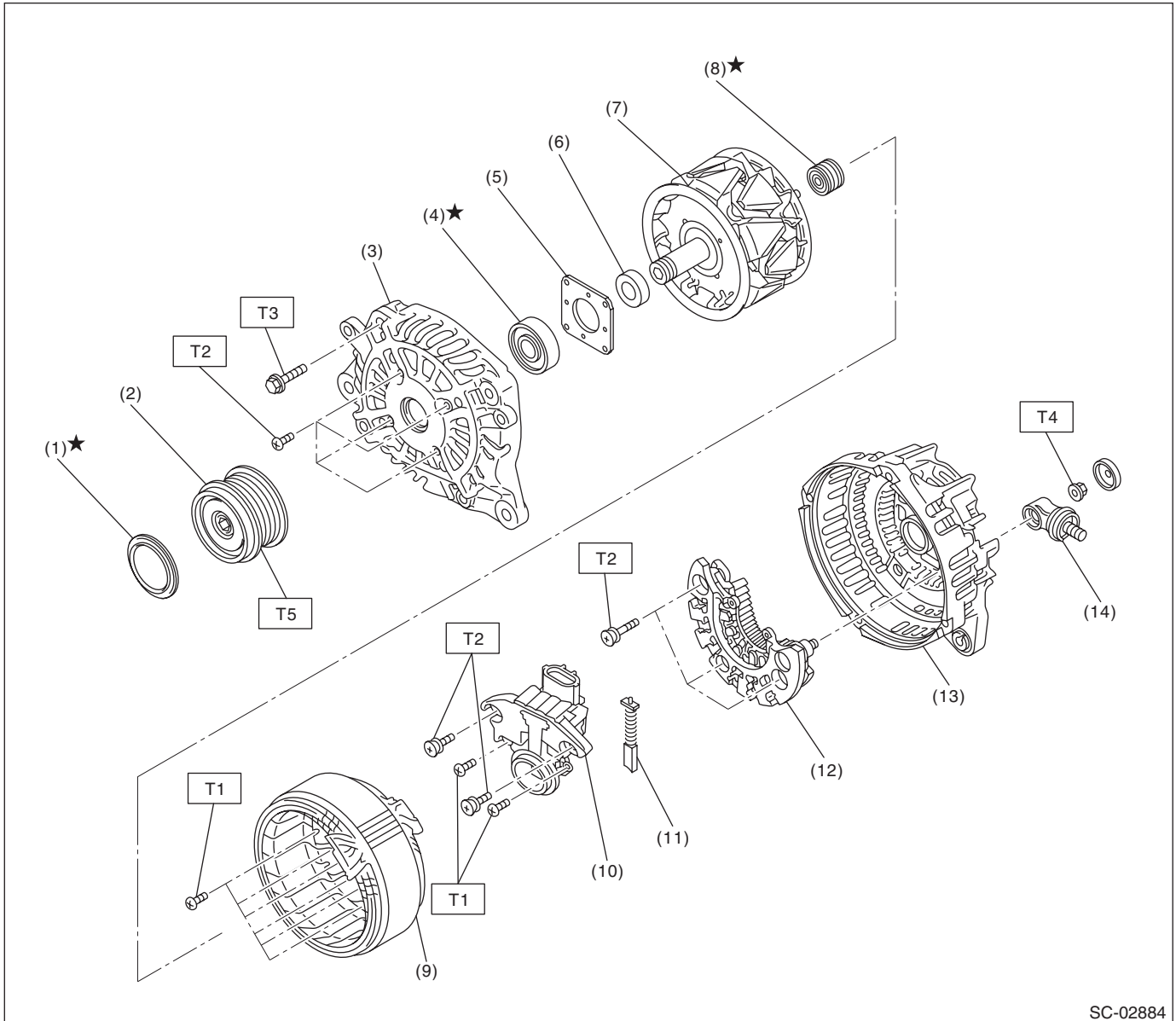
T3: 7.5 (0.8, 5.5)

T4: 10 (1.0, 7.4)

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2. GENERATOR



SC-02884

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|----------------------|-------------------|
| (1) Cap | (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: 2 (0.2, 1.5)

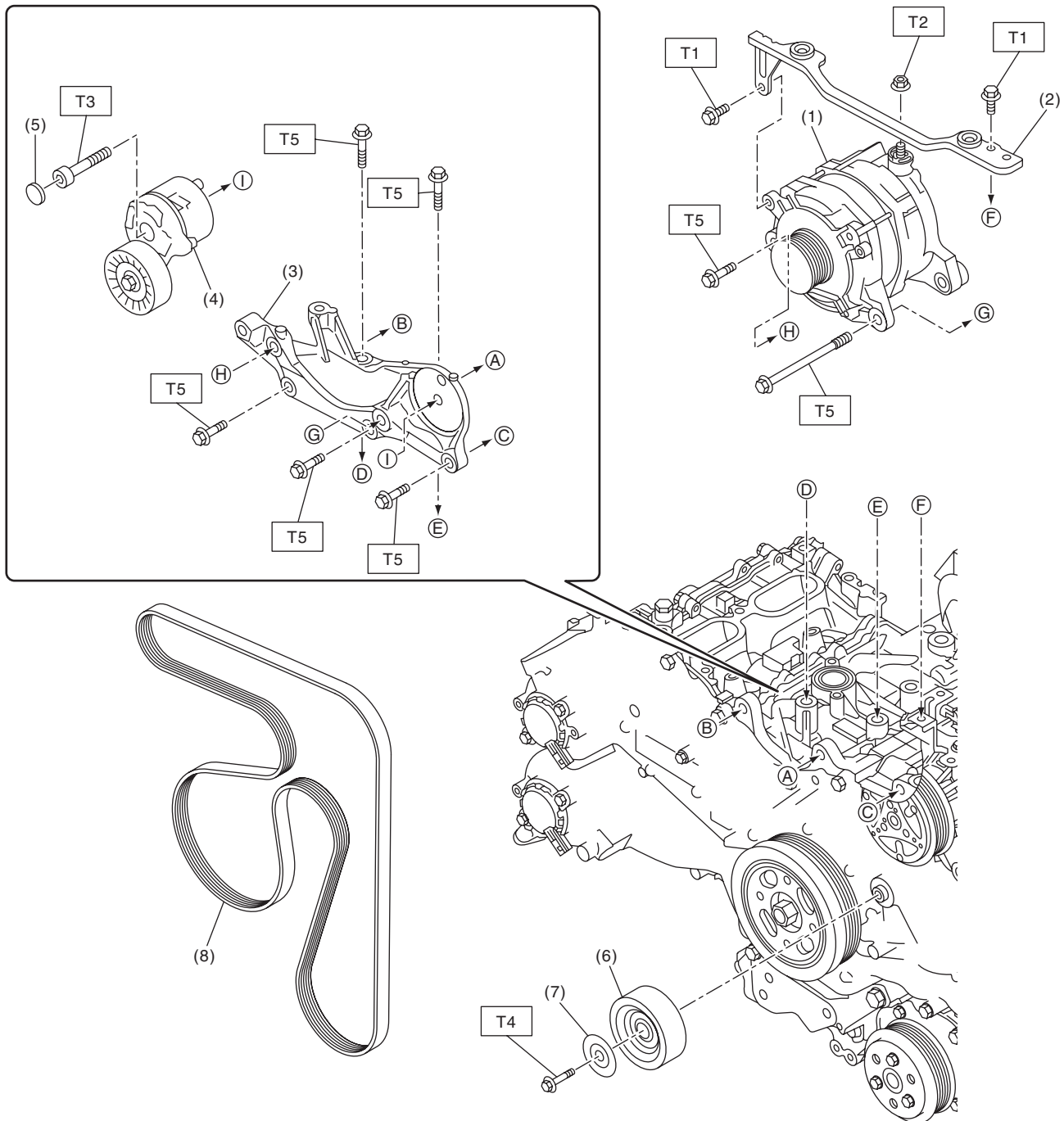
T2: 3.9 (0.4, 2.9)

T3: 4.4 (0.4, 3.2)

T4: 8.9 (0.9, 6.6)

T5: 108 (11.0, 79.8)

3. GENERATOR BRACKET



SC-02932

- | | |
|-----------------------------|------------------------|
| (1) Generator | (6) Idler pulley |
| (2) Collector cover bracket | (7) Idler pulley cover |
| (3) Generator bracket | (8) V-belt |
| (4) V-belt tensioner ASSY | |
| (5) Cap | |

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)

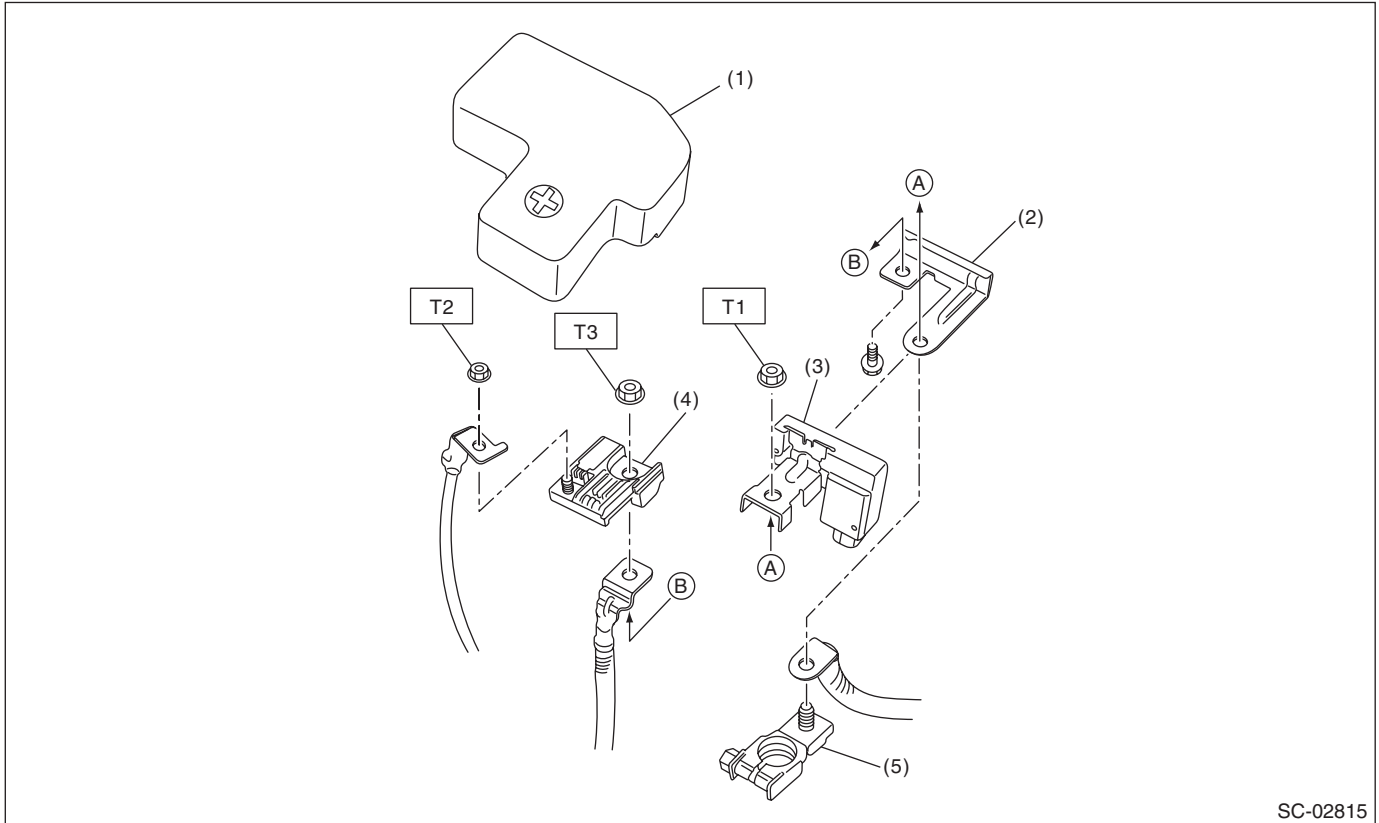
T4: 36 (3.7, 26.6)

T5: <Ref. to SC(H4DO)-43, INSTALLATION, Generator.>

General Description

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4. BATTERY CURRENT & TEMPERATURE SENSOR



SC-02815

- | | |
|--|--------------------|
| (1) Terminal boot | (4) Slow blow fuse |
| (2) Terminal bracket | (5) Terminal base |
| (3) Battery current & temperature sensor | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.8, 5.5)

T2: 9 (0.9, 6.6)

T3: 14 (1.4, 10.3)

C: CAUTION

- Prior to starting work, pay special attention to the following:
 1. Always wear work clothes, a work cap, and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
 2. Protect the vehicle using a seat cover, fender cover, etc.
 3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.
- Keep the removed parts in order and protect them from dust and dirt.
- All removed parts, if to be reused, should be reinstalled in the original positions with attention to the correct directions, etc.
- Bolts, nuts and washers should be replaced with new parts as required.
- Be sure to tighten the fasteners including bolts and nuts to the specified torque.

D: PREPARATION TOOL

1. GENERAL TOOL

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