

# GENERAL DESCRIPTION

Starting/Charging Systems

## 1. General Description S109001

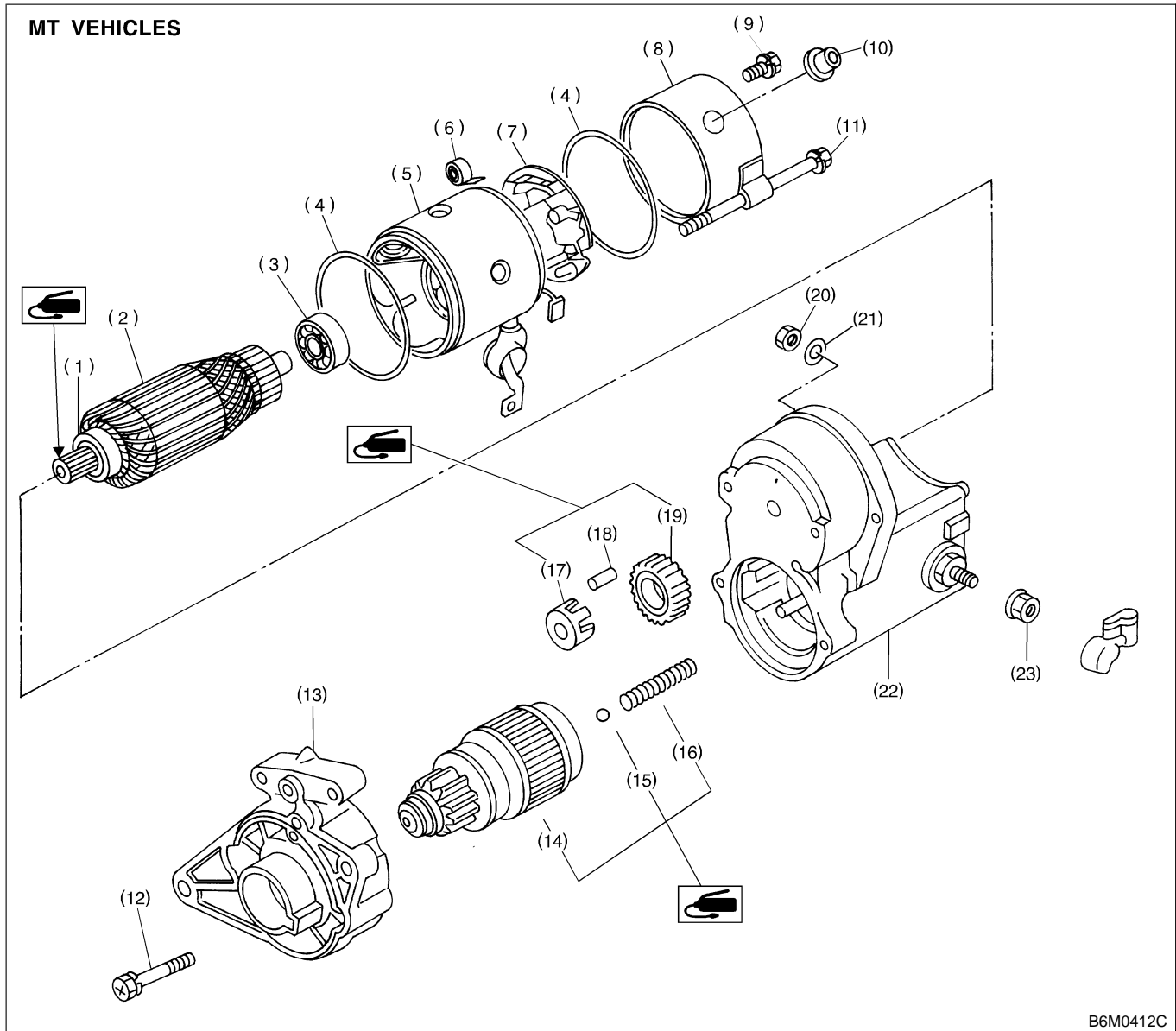
### A: SPECIFICATIONS S109001E49

Item		Designation		
		MT	AT	
Starter	Type	Reduction type		
	Model	TN128000-8311	TN128000-8321	
	Manufacturer	NIPPONDENSO TENNESSEE		
	Voltage and output	12 V — 1.0 kW	12 V — 1.4 kW	
	Direction of rotation	Counterclockwise (when observed from pinion)		
	Number of pinion teeth	8	9	
	No-load characteristics	Voltage	11 V	
		Current	90 A or less	
		Rotating speed	3,000 rpm or more	2,900 rpm or more
	Load characteristics	Voltage	8 V	
		Current	280 A or less	370 A or less
		Torque	9.8 N·m (1.0 kgf-m, 7.2 ft-lb)	13.7 N·m (1.4 kgf-m, 10.1 ft-lb)
		Rotating speed	900 rpm or more	880 rpm or more
	Lock characteristics	Voltage	5 V	
Current		800 A or less	1,050 A or less	
Torque		27.5 N·m (2.8 kgf-m, 20.3 ft-lb) or more		
Generator	Type	Rotating-field three-phase type, Voltage regulator built-in type		
	Model	A2TB2891ZC	LR190-742	
	Manufacturer	MITUBISHI ELECTRIC CORPORATION	HITACHI AUTOMOTIVE PRODUCTS	
	Voltage and output	12 V — 90 A	12 V — 90 A	
	Polarity on ground side	Negative		
	Rotating direction	Clockwise (when observed from pulley side.)		
	Armature connection	3-phase Y-type		
	Output current	1,500 rpm — 36 A or more	1,500 rpm — 39 A or more	
		2,500 rpm — 65 A or more	2,500 rpm — 66 A or more	
		5,000 rpm — 86 A or more	5,000 rpm — 85 A or more	
Regulated voltage	14.5 <sup>+0.3</sup> / <sub>-0.4</sub> V [20°C (68°F)]			

**SC(H4)-2**

## B: COMPONENT S109001A05

### 1. STARTER S109001A0501



B6M0412C

- (1) Front ball bearing
- (2) Armature
- (3) Rear ball bearing
- (4) O-ring
- (5) Yoke
- (6) Brush spring
- (7) Brush holder
- (8) End frame

- (9) Screw & washer
- (10) Cover
- (11) Through bolt
- (12) Screw & washer
- (13) Starter housing
- (14) Overrunning clutch
- (15) Steel ball
- (16) Spring

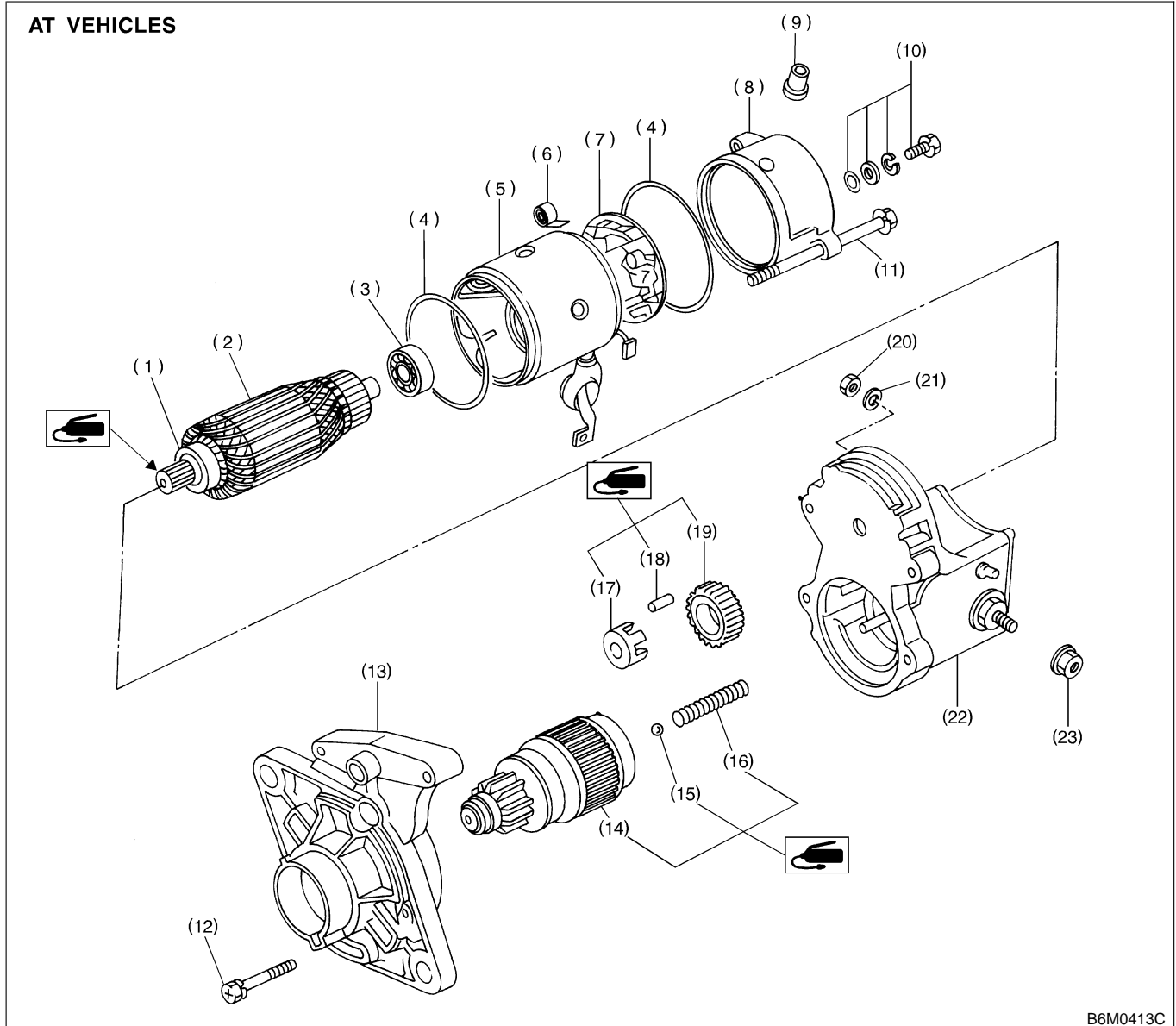
- (17) Retainer
- (18) Roller
- (19) Idle gear
- (20) Nut
- (21) Spring washer
- (22) Magnet switch
- (23) Nut

**SC(H4)-3**

# GENERAL DESCRIPTION

Starting/Charging Systems

## AT VEHICLES



B6M0413C

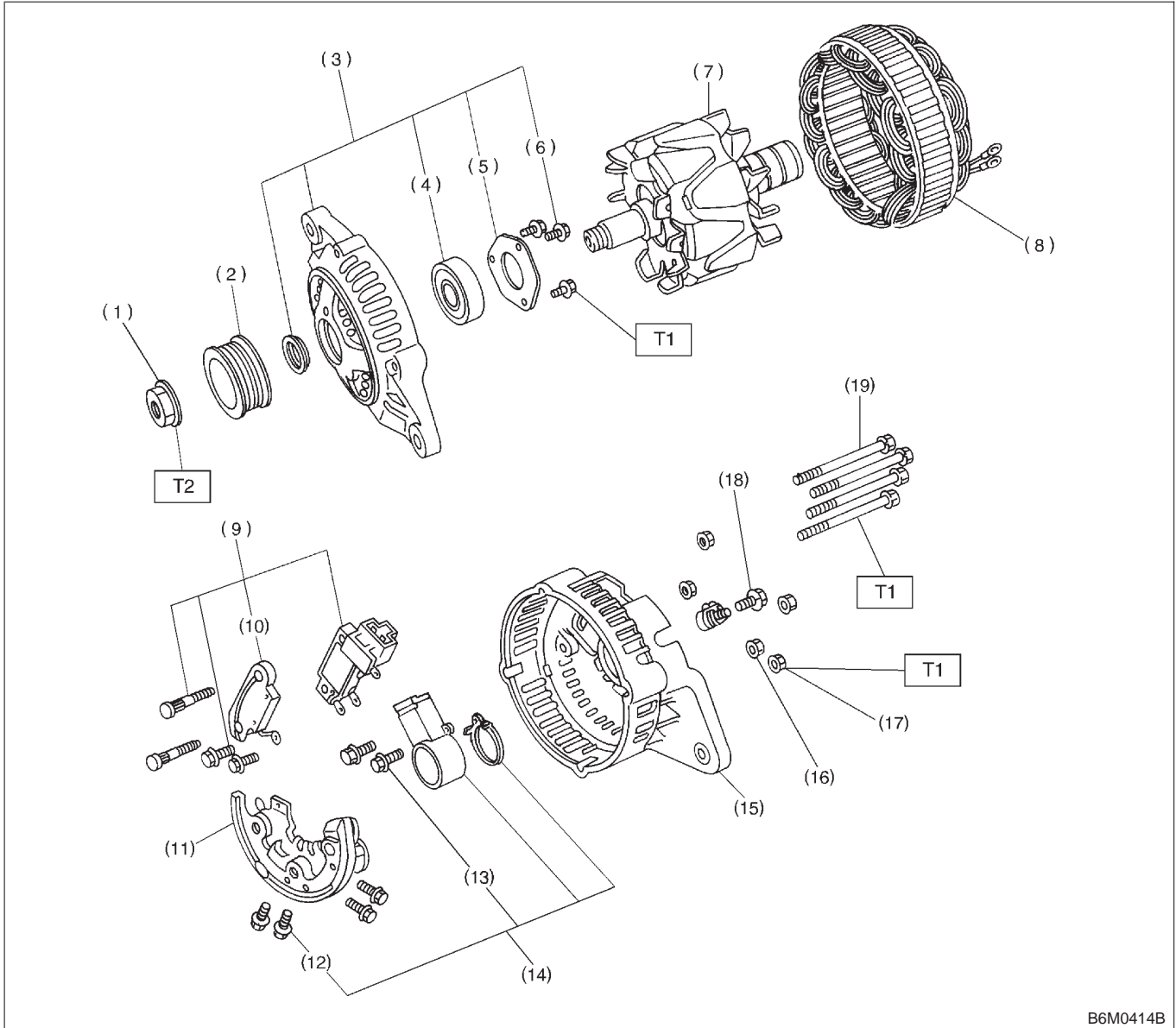
- (1) Front ball bearing
- (2) Armature
- (3) Rear ball bearing
- (4) O-ring
- (5) Yoke
- (6) Brush spring
- (7) Brush holder
- (8) End frame

- (9) Cover
- (10) Screw & washer
- (11) Through bolt
- (12) Screw & washer
- (13) Starter housing
- (14) Overrunning clutch
- (15) Steel ball
- (16) Spring

- (17) Retainer
- (18) Roller
- (19) Idle gear
- (20) Nut
- (21) Spring washer
- (22) Magnet switch
- (23) Nut

**SC(H4)-4**

## 2. GENERATOR S109001A0502



B6M0414B

- (1) Pulley nut
- (2) Pulley
- (3) Front cover ASSY
- (4) Ball bearing
- (5) Bearing retainer
- (6) Screw
- (7) Rotor
- (8) Stator coil

- (9) IC regulator ASSY
- (10) Condenser
- (11) Diode ASSY
- (12) Bolt
- (13) Bolt
- (14) Brush holder ASSY
- (15) Rear cover
- (16) BAT. terminal

- (17) Nut
- (18) Bolt
- (19) Through bolt

**Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 3.1 (0.32, 2.3)**

**T2: 63.7 (6.5, 47.0)**

**SC(H4)-5**

### **C: CAUTION** S109001A03

- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn your hands, because each part in the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect negative terminal from battery.