

CHARGING SYSTEM

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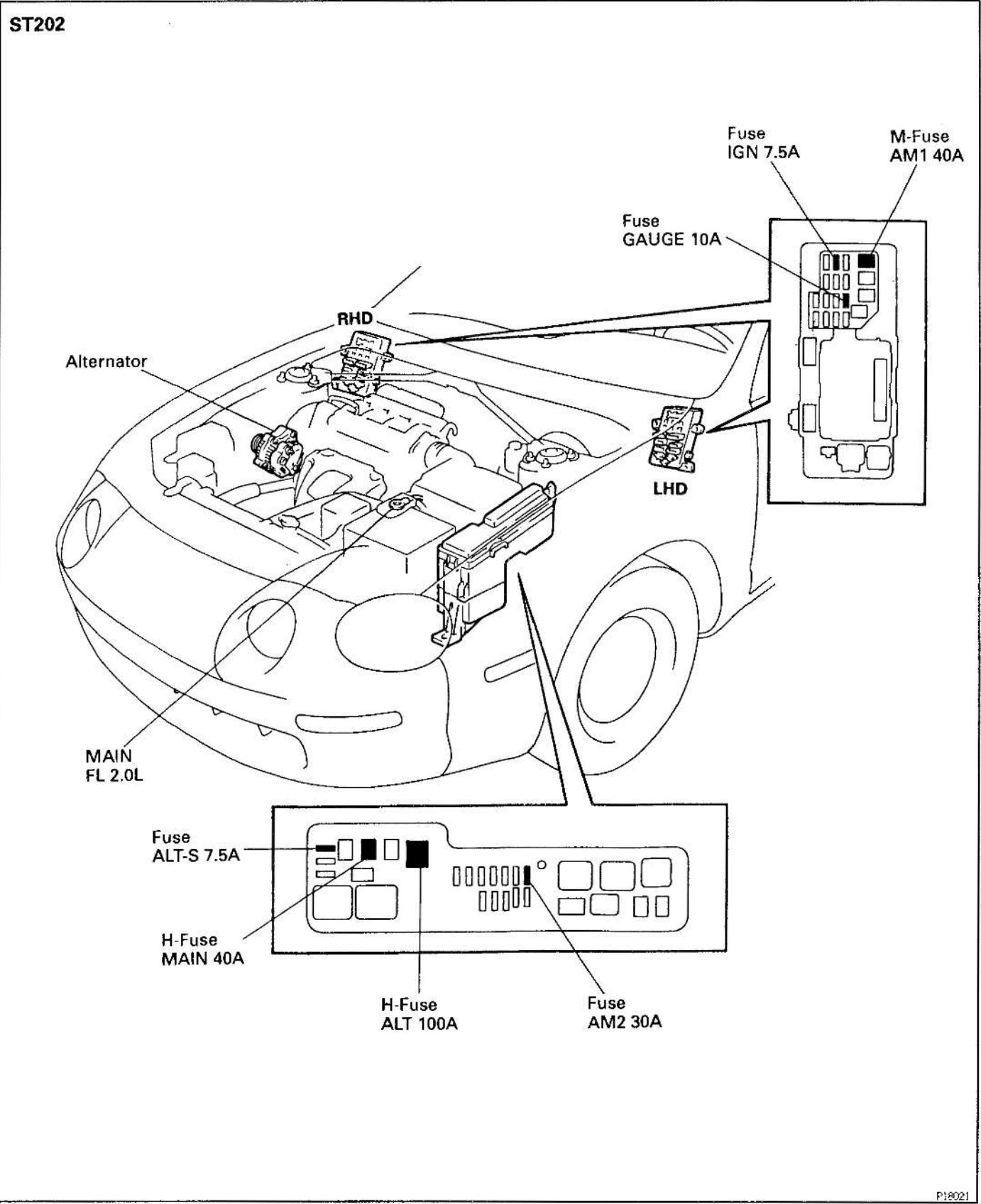
CH

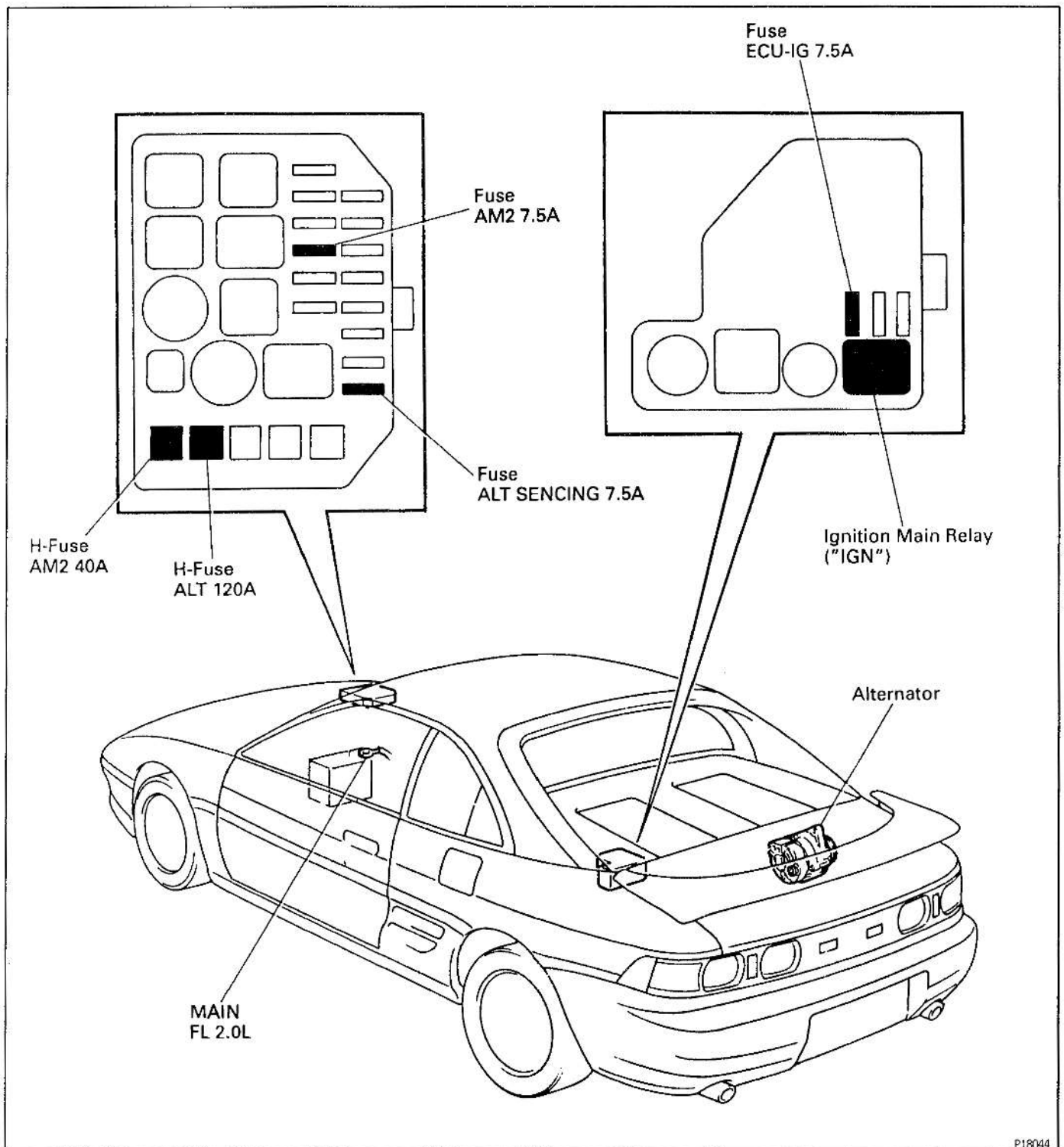
CH-2

CHARGING SYSTEM — DESCRIPTION

DESCRIPTION

The alternator is a small, high—rpm, high—performance type with a IC regulator incorporated. CH078-01
The IC regulator uses integrated circuits and controls the voltage produced by the alternator.



CHARGING SYSTEM — PRECAUTION**PRECAUTION**

1. Check that the battery cables are connected to the correct terminals.
2. Disconnect the battery cables when the battery is given a quick charge.
3. Do not perform tests with a high voltage insulation resistance tester.
4. Never disconnect the battery while the engine is running.

C100K - 01

CH-4

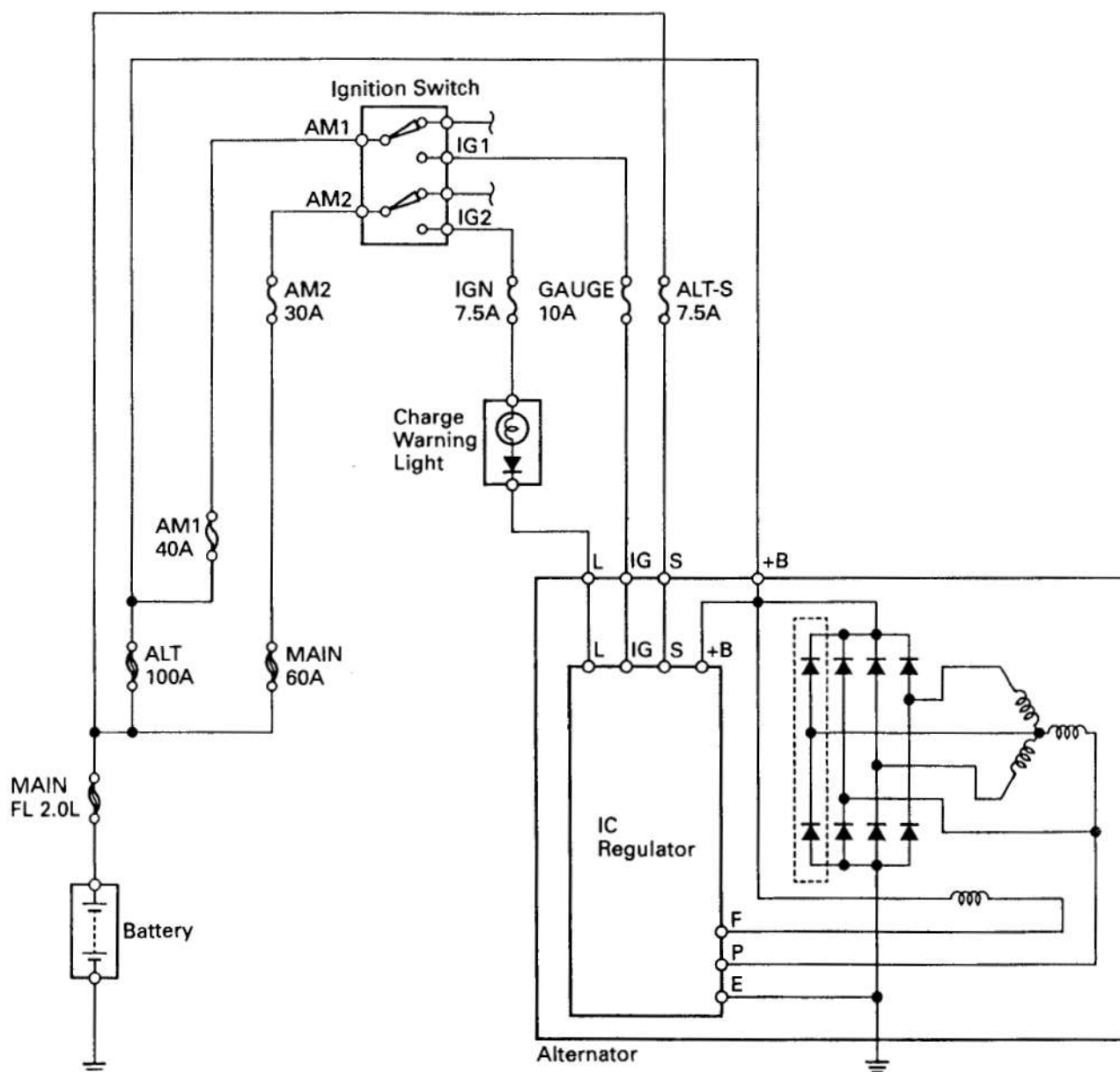
CHARGING SYSTEM — SYSTEM CIRCUIT

SYSTEM CIRCUIT

ST202

CH07C-01

CH

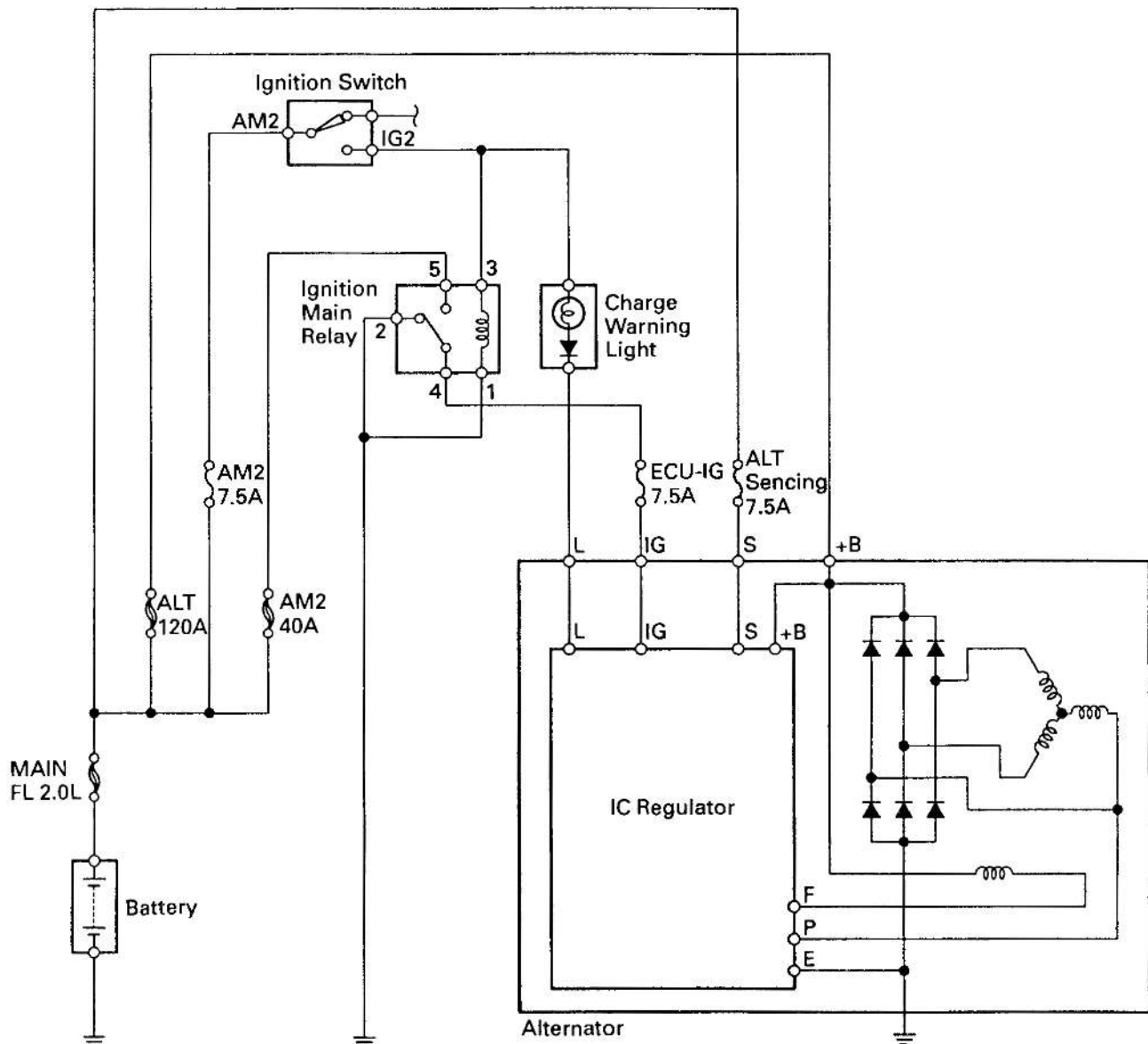


P18024

Z13243

CHARGING SYSTEM — OPERATION

SW20



P18023

Z13242

OPERATION

When the ignition switch is turned ON, current from the battery flows from terminal L of the alternator through the IC regulator to terminal E, causing the charge warning light to light up. When the engine is started, the voltage output increases as the alternator speed increases. When the voltage output becomes greater than the battery voltage, current for recharging flows from terminal B. Simultaneously, voltage at terminal L increases and the potential difference between battery and terminal L disappears, causing the charge warning light to go off. When the voltage output exceeds the regulator adjustment voltage, the transistor inside the IC regulator regulates the voltage so that the voltage from the alternator remains constant.

CH00P-0F

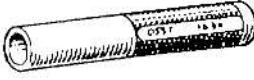
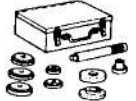
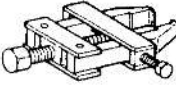
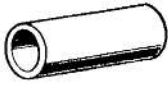
CH-6

CHARGING SYSTEM — PREPARATION

PREPARATION

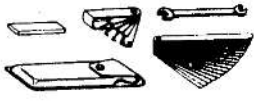
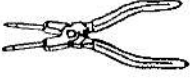
SST (SPECIAL SERVICE TOOLS)

CH000 - 0C

	09216-00021	Belt Tension Gauge	
	09216-00030	Belt Tension Gauge Cable	
	09285-76010	Injection Pump Camshaft Bearing Cone Replacer	Rotor rear bearing cover
	09286-46011	Injection Pump Spline Shaft Puller	Rectifier end frame
	09608-20012	Front Hub & Drive Pinion Bearing Tool Set	
	(09608-00030)	Replacer	Rotor front bearing
	09820-00021	Alternator Rear Bearing Puller	Rotor rear bearing
	09820-00030	Alternator Rear Bearing Replacer	Rotor rear bearing
	09820-63010	Alternator Pulley Set Nut Wrench Set	

CH008 - 0A

RECOMMENDED TOOLS

	09082-00050	TOYOTA Electrical Tester Set	
	09200-00010	Engine Adjust Kit	
	09905-00013	Snap Ring Pliers	Alternator washer for ST202

CHARGING SYSTEM — PREPARATION

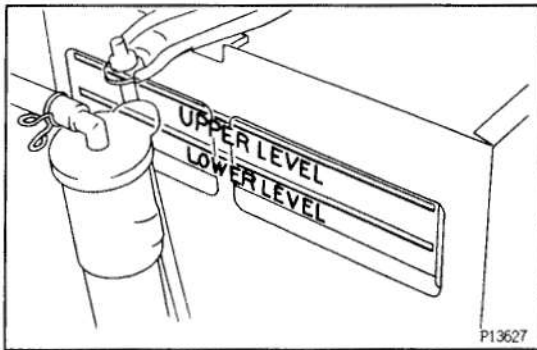
CH-7

EQUIPMENT

CH000U - 07

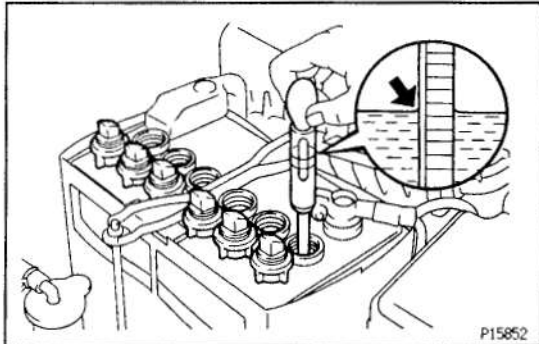
Battery specific gravity gauge	
Belt tension gauge	
Torque wrench	
Vernier calipers	Rotor (Slip ring), Brush

CH

CH-8**CHARGING SYSTEM — ON—VEHICLE INSPECTION****ON—VEHICLE INSPECTION****1. CHECK BATTERY SPECIFIC GRAVITY AND ELECTROLYTE LEVEL**

CH07D-01

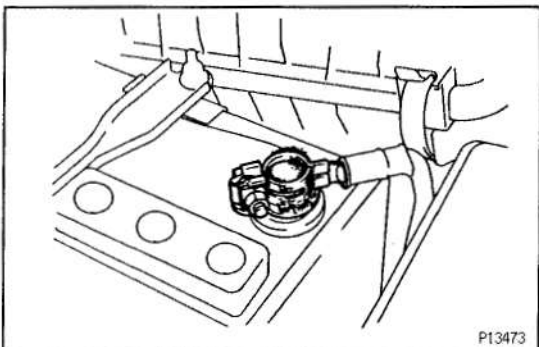
- (a) Check the electrolyte level of each cell.
If insufficient, refill with distilled (or purified) water.



- (b) Check the specific gravity of each cell.
Standard specific gravity at 20°C (68°F):

1.25 — 1.27

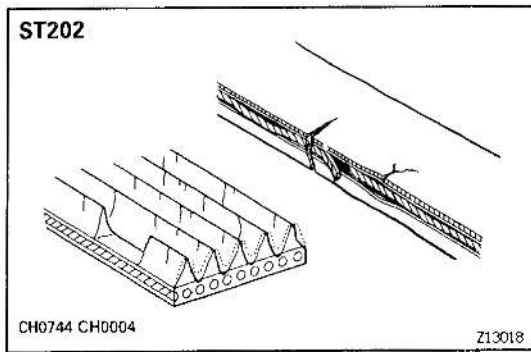
If the gravity is less than specification, charge the battery.

**2. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES**

- (a) Check that the battery terminals are not loose or corroded.
If the terminals are corroded, clean the terminals.
- (b) Check the fusible link, H—fuses, M—fuse and fuses for continuity.

ST202:**Fusible link****MAIN 2.0L****H—fuse****ALT 100A****MAIN 60A****M—fuse****AM1 40A****Fuse****AM2 30A****ALT—S 7.5A****GAUGE 10A****IGN 7.5A****SW20:****Fusible link****MAIN 2.0L****H—fuse****ALT 120A****AM2 40A****Fuse****AM2 7.5A****ALT SENCING 7.5A****ECU—IG 7.5A**

CHARGING SYSTEM — ON—VEHICLE INSPECTION



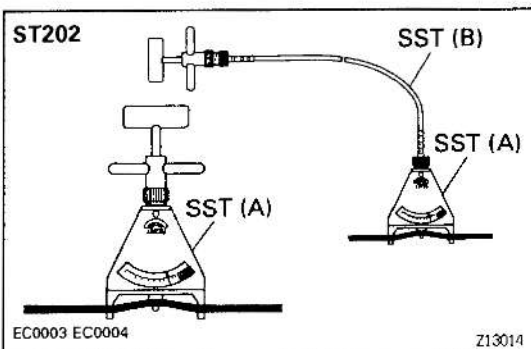
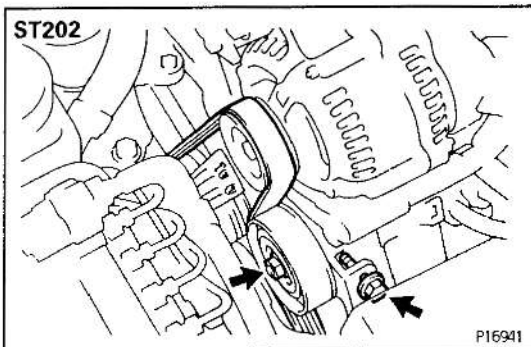
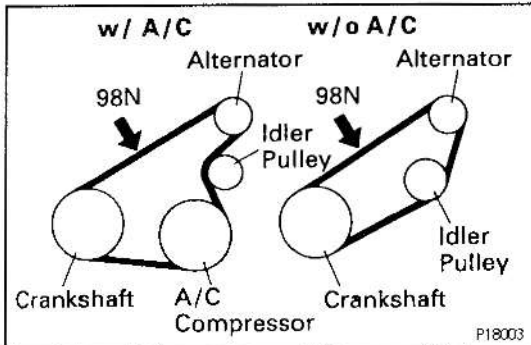
3. INSPECT DRIVE BELT

ST202:

- (a) Visually check the drive belt for excessive wear, frayed cords etc.

If any defect has been found, replace the drive belt.

HINT: Cracks on the rib side of a drive belt are considered acceptable. If the drive belt has chunks missing from the ribs, it should be replaced.



- (b) Check the drive belt deflection by pressing on the belt at the points indicated in the illustration with 98 N (10 kgf, 22 lbf) of pressure.

Drive belt deflection:

w/ A/C

New belt

10 — 11 mm (0.39 — 0.43 in.)

Used belt

13 — 16 mm (0.51 — 0.63 in.)

w/o A/C

New belt

11 — 14 mm (0.43 — 0.55 in.)

Used belt

12 — 18 mm (0.47 — 0.71 in.)

If the belt deflection is not as specified, adjust it.

Reference:

Using SST, check the drive belt tension.

SST 09216—00021 (A),

09216—00030 (B)

Drive belt tension:

w/ A/C

New belt

686 — 785 N (70 — 80 kgf)

Used belt

294 — 441 N (30 — 45 kgf)

w/o A/C

New belt

461 — 706 N (47 — 72 kgf)

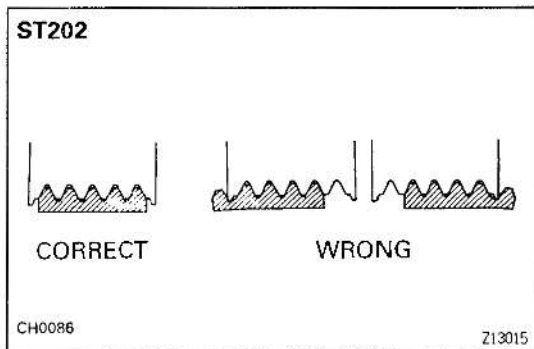
Used belt

353 — 610 N (36 — 62 kgf)

If the belt tension is not as specified, adjust it.

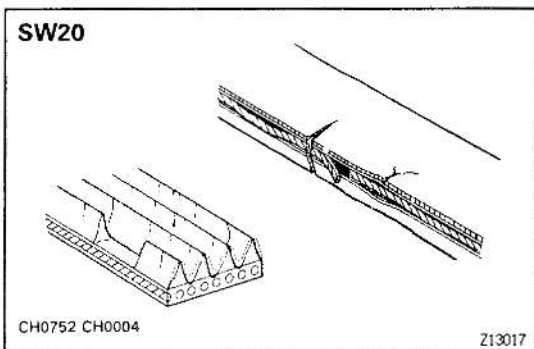
CH-10

CHARGING SYSTEM — ON—VEHICLE INSPECTION



HINT:

- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing a belt, check that it fits properly in the ribbed grooves.
- Check with your hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.
- After installing a new belt, run the engine for about 5 minutes and recheck the belt tension.

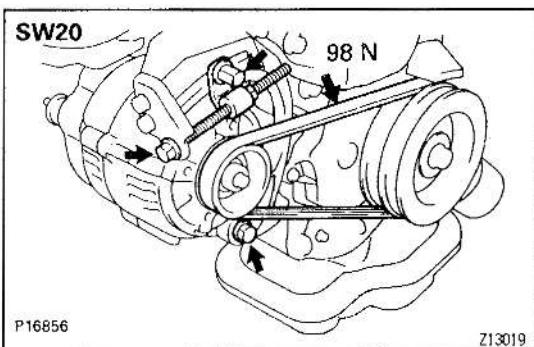


SW20:

- (a) Visually check the drive belt for excessive wear, frayed cords etc.

If any defect has been found, replace the drive belt.

HINT: Cracks on the rib side of a drive belt are considered acceptable. If the drive belt has chunks missing from the ribs, it should be replaced.



- (b) Check the drive belt deflection by pressing on the belt at the points indicated in the illustration with 98 N (10 kgf, 22 lbf) of pressure.

Drive belt deflection:

New belt

9 — 12 mm (0.35 — 0.47 in.)

Used belt

10 — 15 mm (0.39 — 0.59 in.)

If the belt deflection is not as specified, adjust it.

Reference:

Using SST, check the drive belt tension.

SST 09216—00021 (A),

09216—00030 (B)

Drive belt tension:

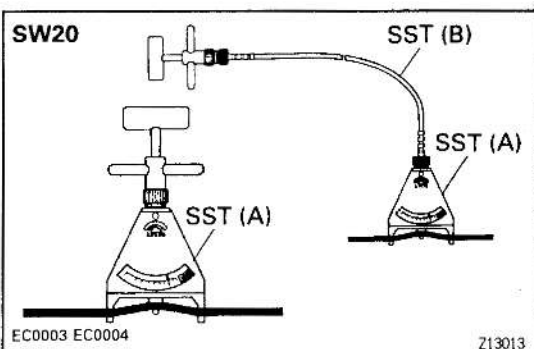
New belt

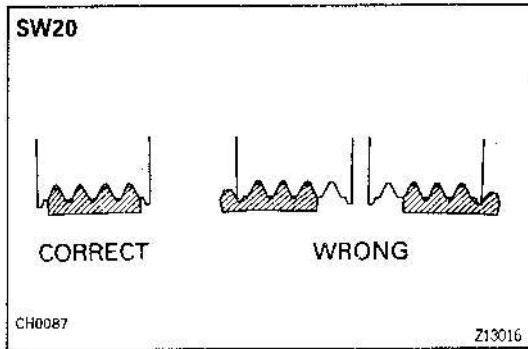
539 — 639 N (55 — 65 kgf)

Used belt

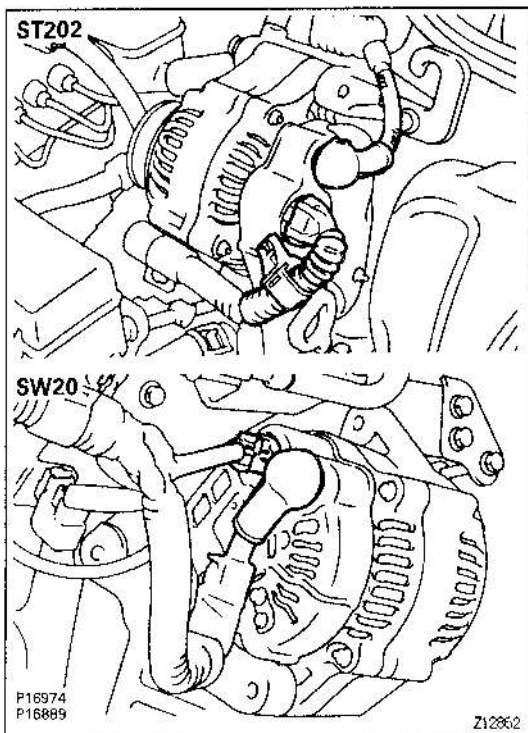
245 — 392 N (25 — 40 kgf)

If the belt tension is not as specified, adjust it.



CHARGING SYSTEM — ON—VEHICLE INSPECTION**CH-11****HINT:**

- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing a belt, check that it fits properly in the ribbed grooves.
- Check with your hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.
- After installing a new belt, run the engine for about 5 minutes and recheck the belt tension.

CH**4. VISUALLY CHECK ALTERNATOR WIRING AND LISTEN FOR ABNORMAL NOISES**

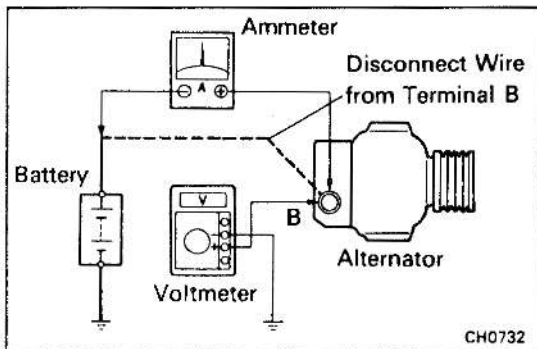
- Check that the wiring is in good condition.
- Check that there is no abnormal noise from the alternator while the engine is running.

5. CHECK CHARGE WARNING LIGHT CIRCUIT

- Warm up the engine and then turn it off.
- Turn off all accessories.
- Turn the ignition switch "ON". Check that the charge warning light is lit.
- Start the engine. Check that the light goes off. If the light does not go off as specified, troubleshoot the charge light circuit.

CH-12

CHARGING SYSTEM — ON—VEHICLE INSPECTION

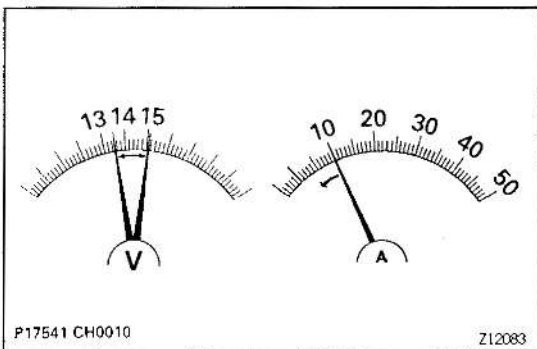


6. INSPECT CHARGING CIRCUIT WITHOUT LOAD

HINT: If a battery/alternator tester is available, connect the tester to the charging circuit as per manufacturer's instructions.

(a) If a tester is not available, connect a voltmeter and ammeter to the charging circuit as follows:

- Disconnect the wire from terminal B of the alternator, and connect it to the negative (–) tester probe of the ammeter.
- Connect the positive (+) tester probe of the ammeter to terminal B of the alternator.
- Connect the positive (+) tester probe of the voltmeter to terminal B of the alternator.
- Ground the negative (–) tester probe of the voltmeter.



(b) Check the charging circuit as follows:

With the engine running from idling to 2,000 rpm, check the reading on the ammeter and voltmeter.

Standard amperage:

10 A or less

Standard voltage:

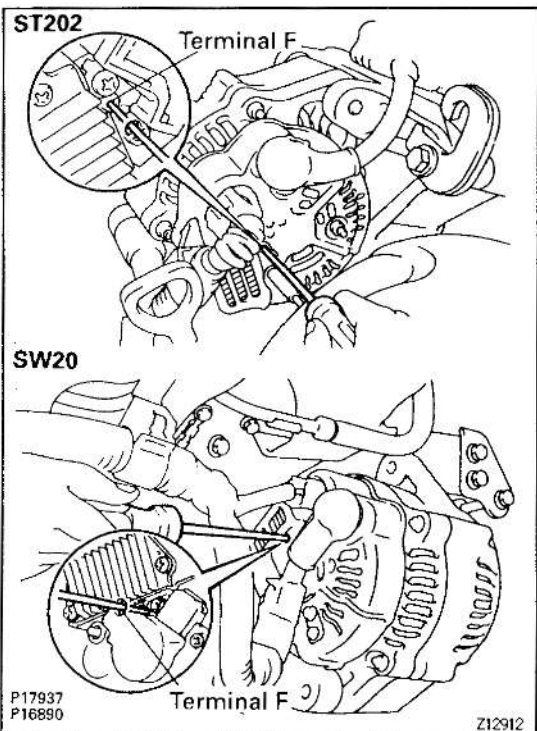
13.9 – 15.1 V at 25°C (77°F)

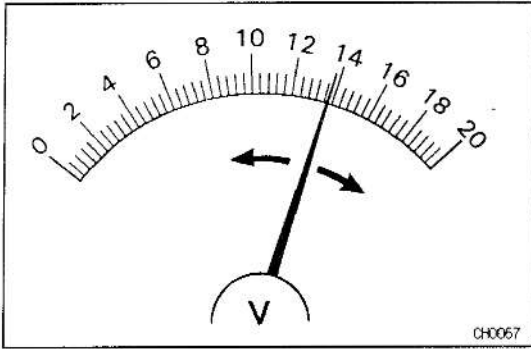
13.5 – 14.3 V at 115°C (239°F)

If the voltmeter reading is more than standard voltage, replace the IC regulator.

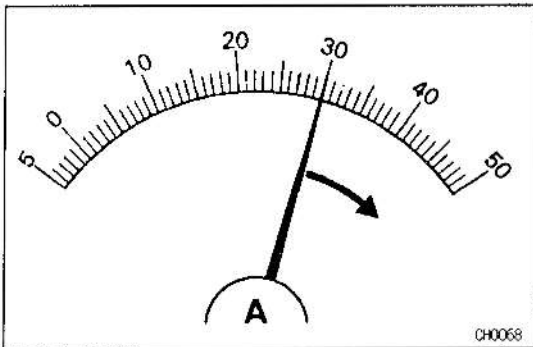
If the voltmeter reading is less than standard voltage, check the IC regulator and alternator as follows:

- With terminal F grounded, start the engine and check the voltmeter reading of terminal B.



CHARGING SYSTEM – ON – VEHICLE INSPECTION**CH-13**

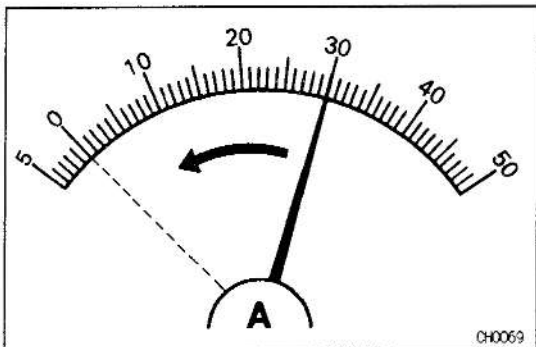
- If the voltmeter reading is more than standard voltage, replace the IC regulator.
- If the voltmeter reading is less than standard voltage, check the alternator.

**7. INSPECT CHARGING CIRCUIT WITH LOAD**

- (a) With the engine running at 2,000 rpm, turn on the high beam headlights and place the heater blower switch at "HI".

CH

- (b) Check the reading on the ammeter.

Standard amperage:**30 A or more**

If the ammeter reading is less than the standard amperage, repair the alternator.

HINT: If the battery is fully charged, the indication will sometimes be less than standard amperage.

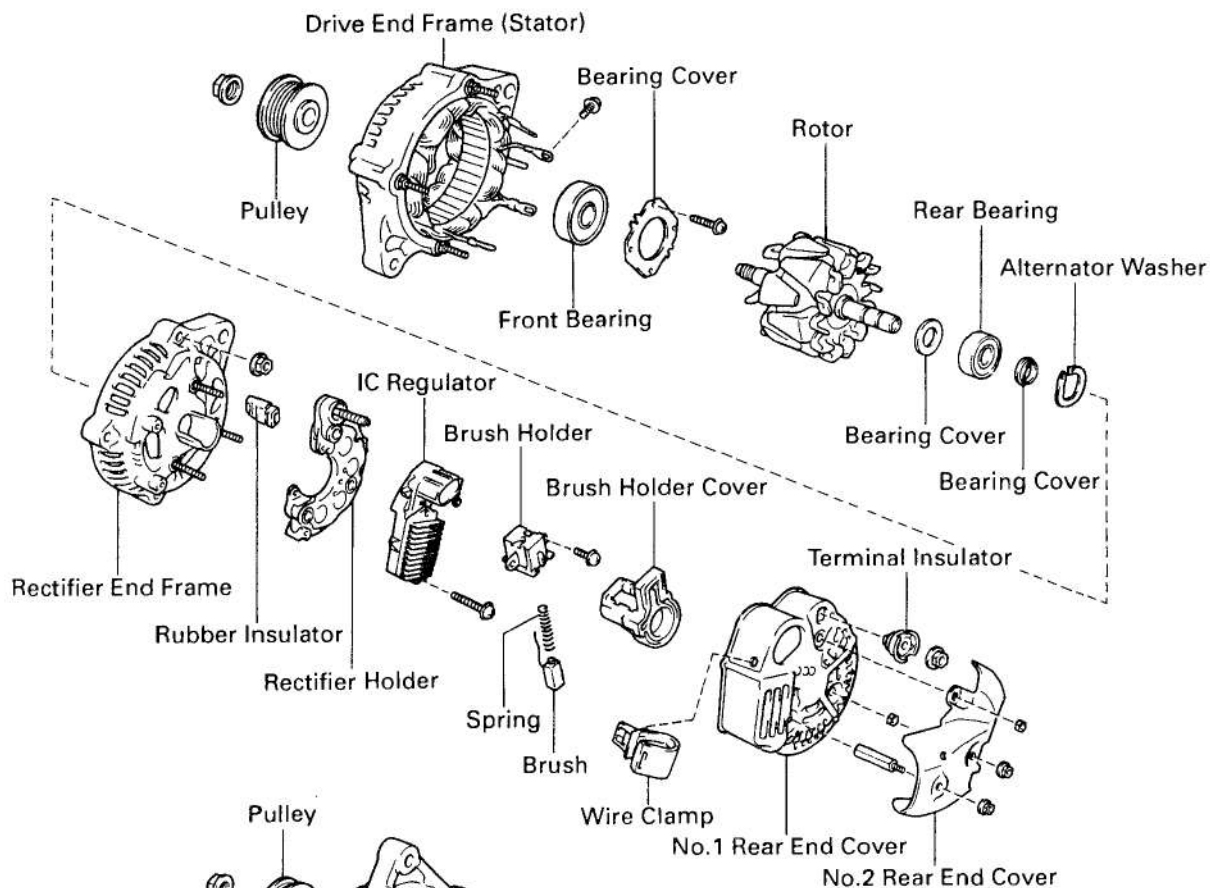
CH-14

CHARGING SYSTEM — ALTERNATOR

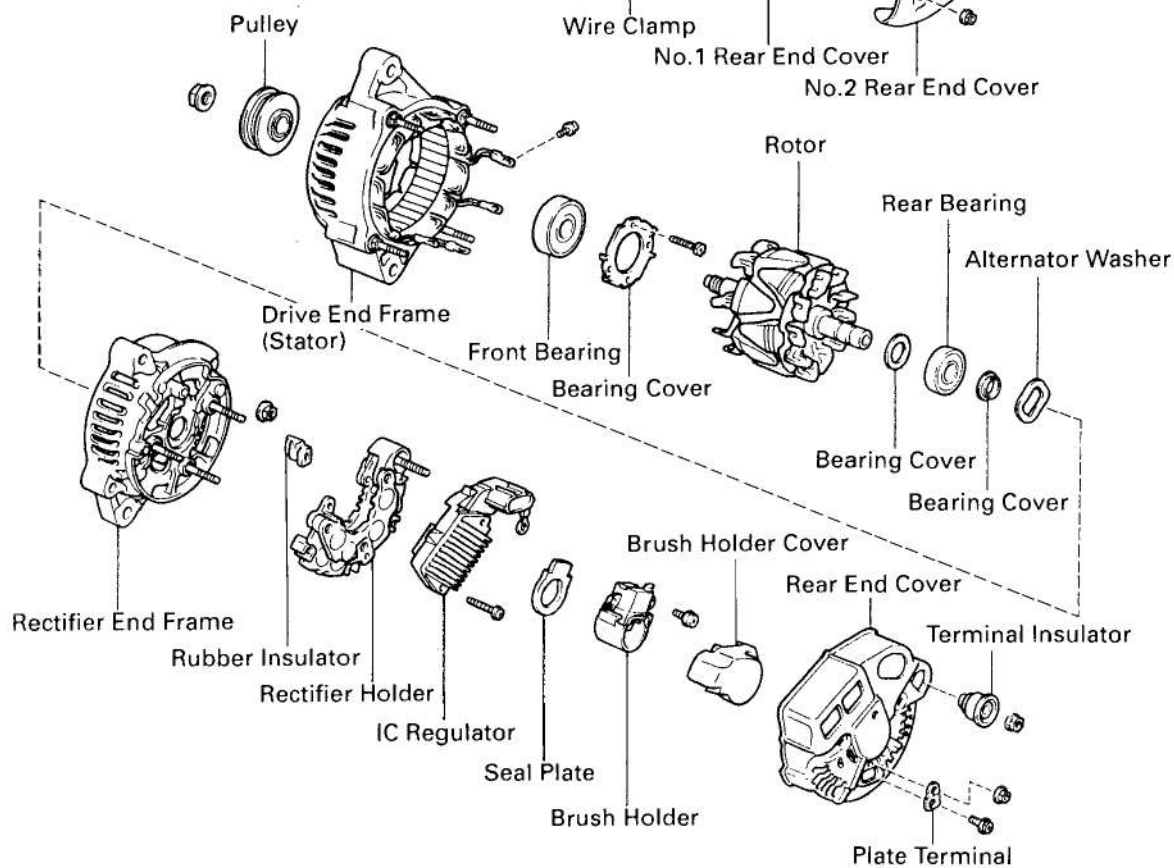
ALTERNATOR COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

CH010-00

ST202



SW20

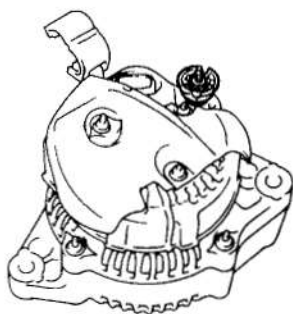


P15685
P16845

Z12200

CHARGING SYSTEM — ALTERNATOR**CH-15**

CH07E-01

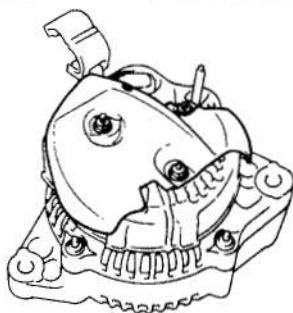
ST202

P15686

Z11866

ALTERNATOR DISASSEMBLY**(See Components for Disassembly and Assembly)****1. ST202:****REMOVE REAR END COVERS**

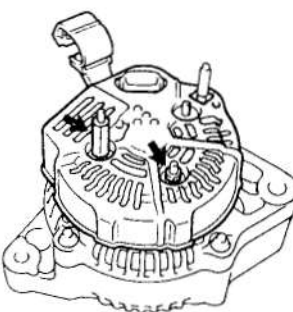
- (a) Remove the nut and terminal insulator.

ST202

P15687

Z11867

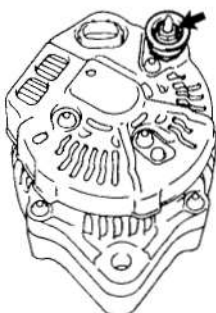
- (b) Remove the 3 nuts and No.2 rear end cover.

CH**ST202**

P15688

Z12271

- (c) Remove the 2 nuts and No.1 rear end cover.
(d) Remove the wire clamp from the rear end cover.

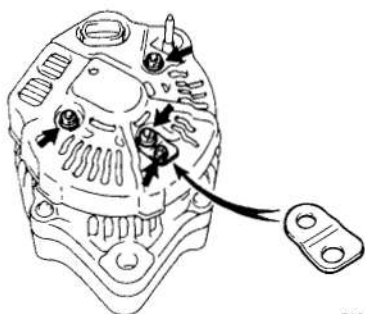
SW20

P16891

Z12272

2. SW20:**REMOVE REAR END COVER**

- (a) Remove the nut and terminal insulator.

SW20

P16892

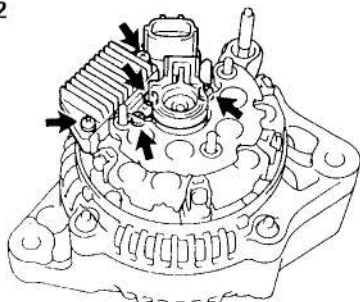
Z12273

- (b) Remove the bolt, 3 nuts, plate terminal and rear end cover.

CH-16

CHARGING SYSTEM — ALTERNATOR

ST202



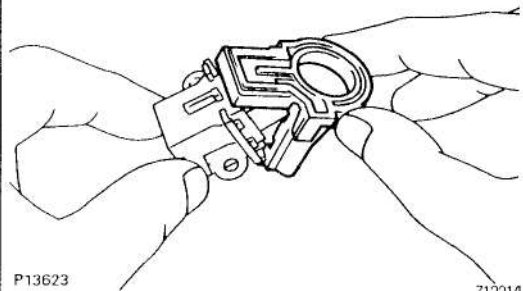
P13546

Z12210

3. REMOVE BRUSH HOLDER AND IC REGULATOR**ST202:**

(a) Remove the 5 screws, brush holder and IC regulator.

ST202

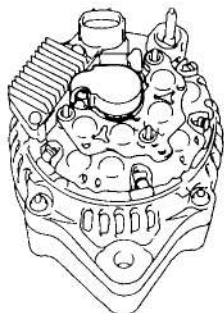


P13623

Z12214

(b) Remove the brush holder cover from the brush holder.

SW20



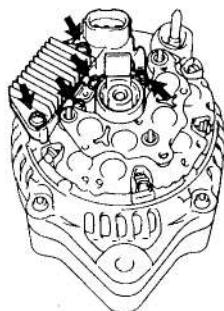
P16893

Z12274

SW20:

(a) Remove the brush holder cover from the brush holder.

SW20

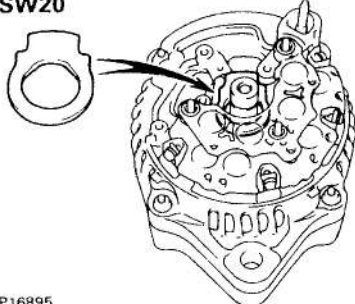


P16894

Z12275

(b) Remove the 5 screws, brush holder and IC regulator.

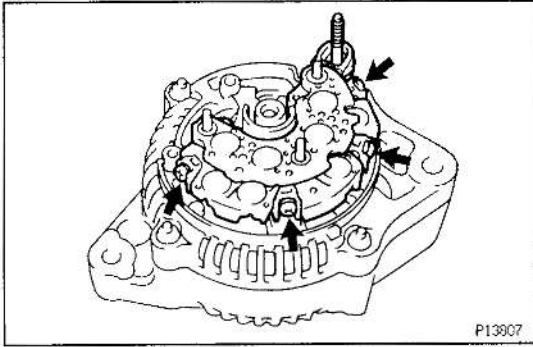
SW20



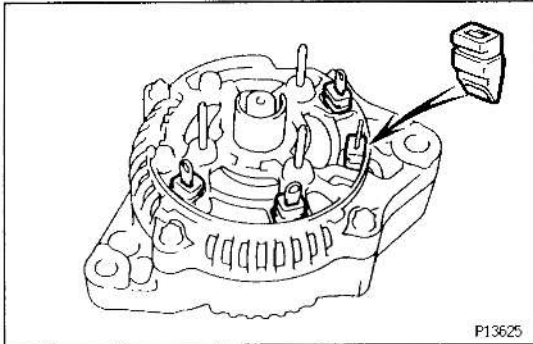
P16895

Z12276

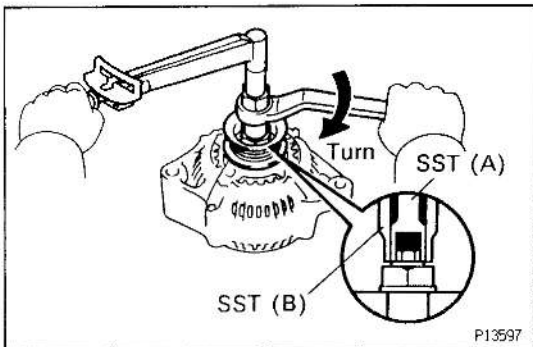
(c) Remove the seal plate from the rectifier end frame.

CHARGING SYSTEM – ALTERNATOR**4. REMOVE RECTIFIER HOLDER**

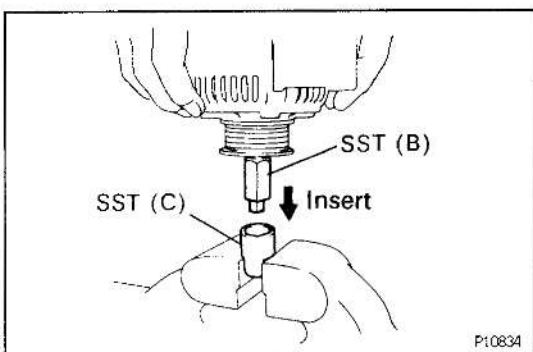
- (a) Remove the 4 screws and rectifier holder.



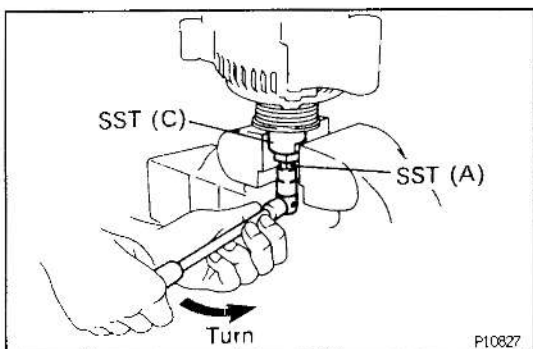
- (b) Remove the 4 rubber insulators.

**5. REMOVE PULLEY**

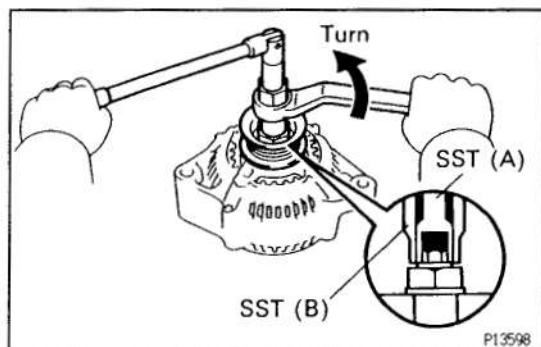
- (a) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.
SST 09820-63010
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
- (b) Check that SST (A) is secured to the rotor shaft.



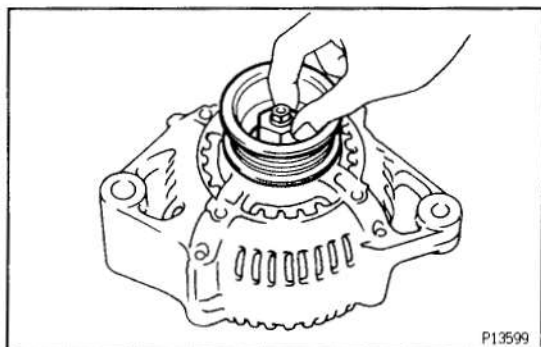
- (c) Mount SST (C) in a vise.
- (d) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).



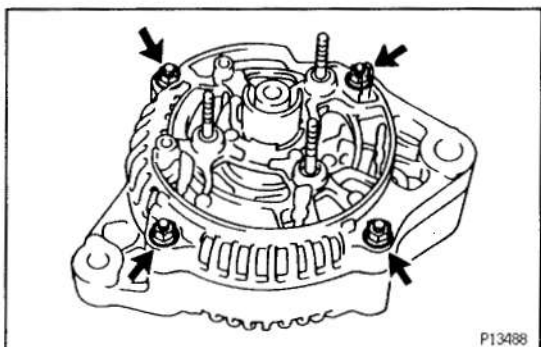
- (e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.
NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one-half of a turn.
- (f) Remove the alternator from SST (C).

CH-18**CHARGING SYSTEM – ALTERNATOR**

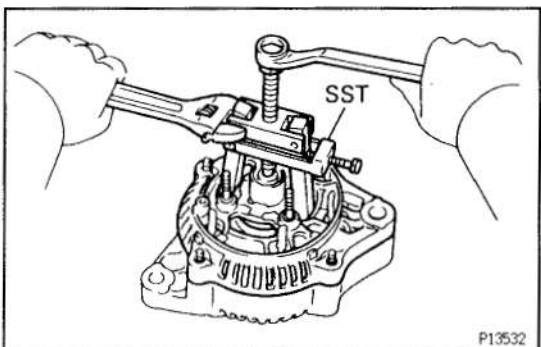
(g) Turn SST (B), and remove SST (A and B).



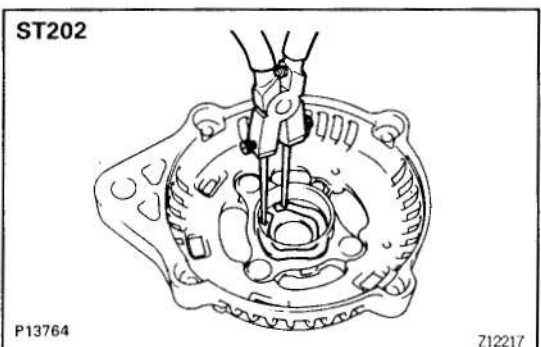
(h) Remove the pulley nut and pulley.

**6. REMOVE RECTIFIER END FRAME**

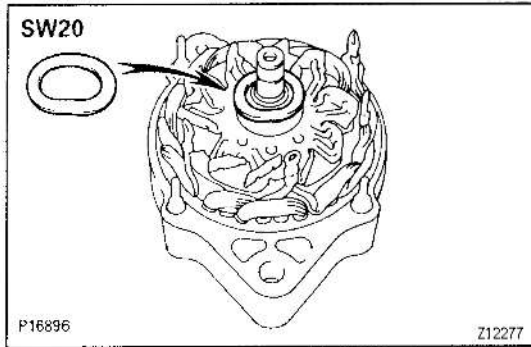
(a) Remove the 4 nuts.



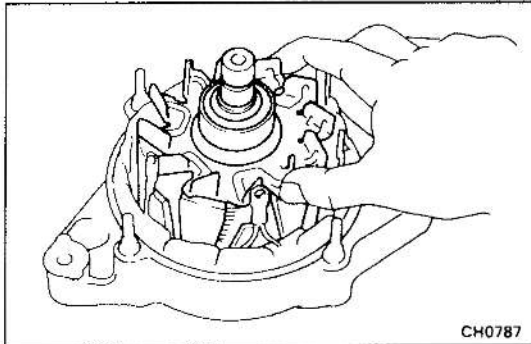
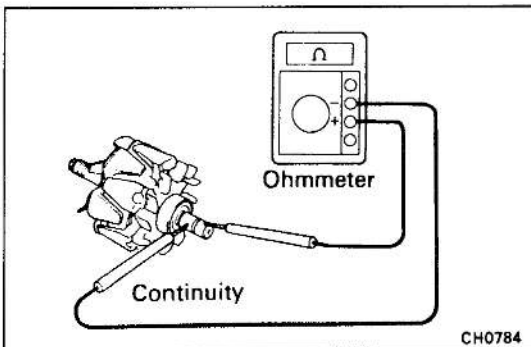
(b) Using SST, remove the rectifier end frame.
SST 09286-46011



(c) ST202:
Using snap ring pliers, remove the alternator washer from the rectifier end frame.

CHARGING SYSTEM — ALTERNATOR**CH-19**

- (d) **SW20:**
Remove the alternator washer from the rotor.

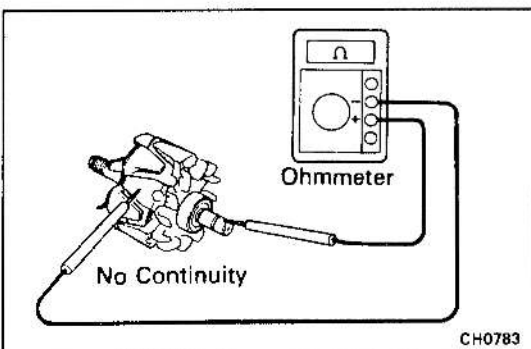
**7. REMOVE ROTOR FROM DRIVE END FRAME****ALTERNATOR INSPECTION AND REPAIR****Rotor****1. INSPECT ROTOR FOR OPEN CIRCUIT**

Using an ohmmeter, check that there is continuity between the slip rings.

Standard resistance:

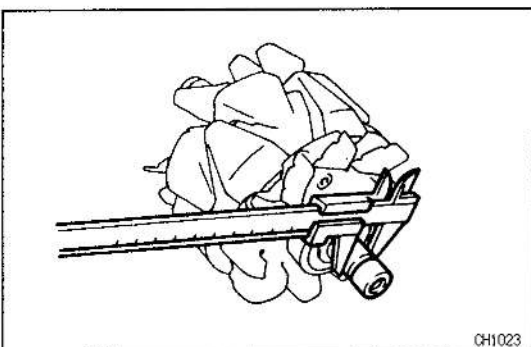
2.8 — 3.0 Ω at 20°C (68°F)

If there is no continuity, replace the rotor.

**2. INSPECT ROTOR FOR GROUND**

Using an ohmmeter, check that there is no continuity between the slip ring and rotor.

If there is continuity, replace the rotor.

**3. INSPECT SLIP RINGS**

- (a) Check that the slip rings are not rough or scored. If rough or scored, replace the rotor.

- (b) Using a vernier caliper, measure the slip ring diameter.

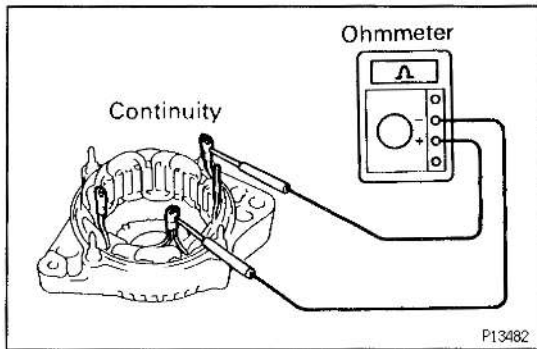
Standard diameter:

14.2 — 14.4 mm (0.559 — 0.567 in.)

Minimum diameter:

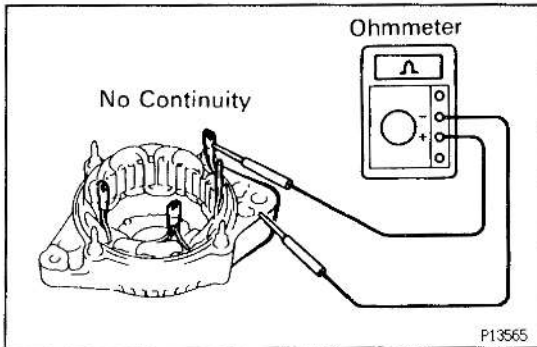
12.8 mm (0.504 in.)

If the diameter is less than minimum, replace the rotor.

CH-20**CHARGING SYSTEM — ALTERNATOR****Stator (Drive End Frame)****1. INSPECT STATOR FOR OPEN CIRCUIT**

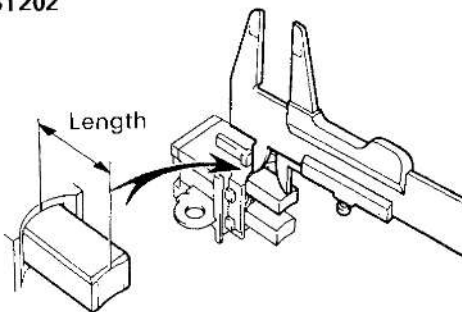
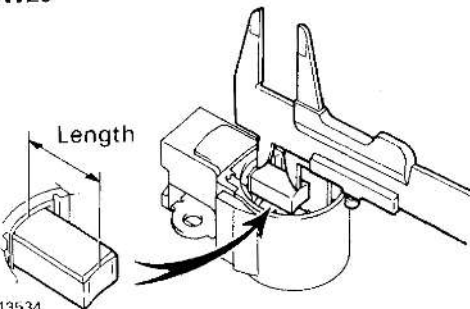
Using an ohmmeter, check that there is continuity between the coil leads.

If there is no continuity, replace the drive end frame assembly.

**2. INSPECT STATOR FOR GROUND**

Using an ohmmeter, check that there is no continuity between the coil lead and drive end frame.

If there is continuity, replace the drive end frame assembly.

ST202**SW20**P13534
P13535

Z12209

Brushes**1. INSPECT EXPOSED BRUSH LENGTH**

Using vernier calipers, measure the exposed brush length.

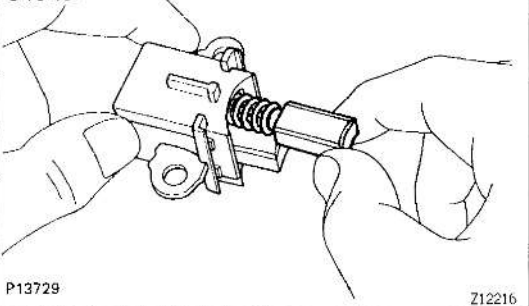
Standard exposed length:

10.5 mm (0.413 in.)

Minimum exposed length:

1.5 mm (0.059 in.)

If the exposed length is less than minimum, replace the brushes (ST202) or brush holder assembly (SW20).

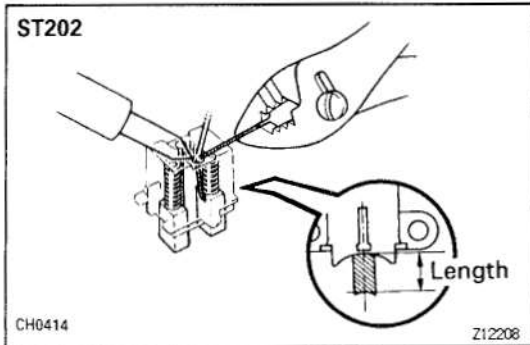
ST202

P13729

Z12216

2. ST202:**IF NECESSARY, REPLACE BRUSHES**

- Unsolder and remove the brush and spring.
- Run the wire of a new brush through the spring and the hole in the brush holder, and insert the spring and brush into the brush holder.

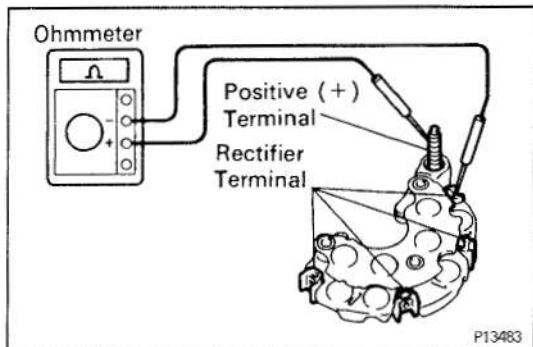
CHARGING SYSTEM — ALTERNATOR**CH-21**

- (c) Solder the brush wire to the brush holder at specified exposed length.

Exposed length:

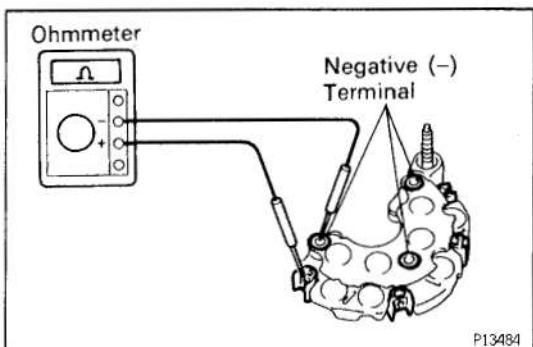
10.5 mm (0.413 in.)

- (d) Check that the brush moves smoothly in the brush holder.
 (e) Cut off the excess wire.
 (f) Apply insulation paint to the soldered area.

**Rectifiers (Rectifier Holder)****1. INSPECT POSITIVE RECTIFIER**

- (a) Using an ohmmeter, connect one tester probe to the positive (+) terminal and the other to each rectifier terminal.
 (b) Reverse the polarity of the tester probes and repeat step (a).
 (c) Check that one shows continuity and the other shows no continuity.

If continuity is not as specified, replace the rectifier holder.

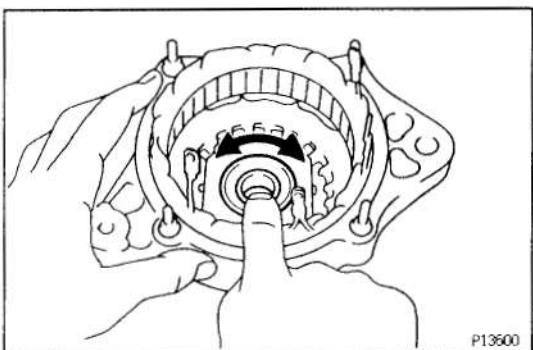
**2. INSPECT NEGATIVE RECTIFIER**

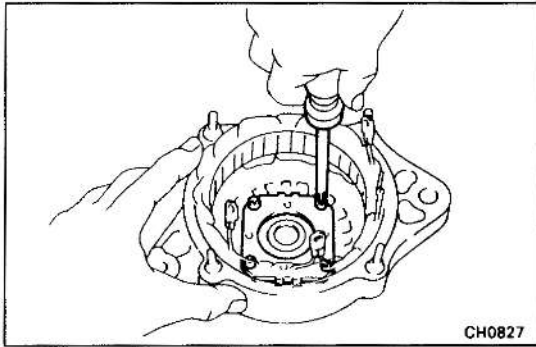
- (a) Using an ohmmeter, connect one tester probe to each negative (-) terminal and the other to each rectifier terminal.
 (b) Reverse the polarity of the tester probes and repeat step (a).
 (c) Check that one shows continuity and the other shows no continuity.

If continuity is not as specified, replace the rectifier holder.

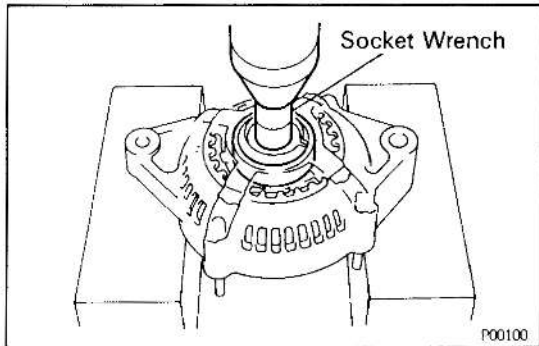
Bearings**1. INSPECT FRONT BEARING**

Check that the bearing is not rough or worn.

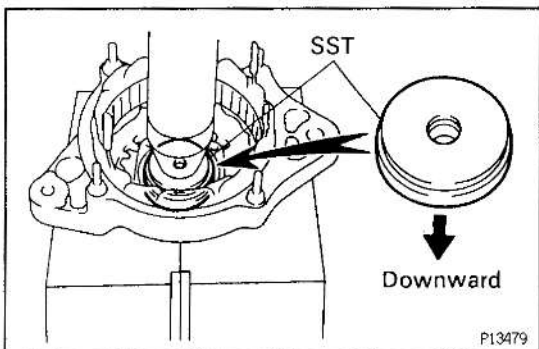


CH-22**CHARGING SYSTEM — ALTERNATOR****2. IF NECESSARY, REPLACE FRONT BEARING**

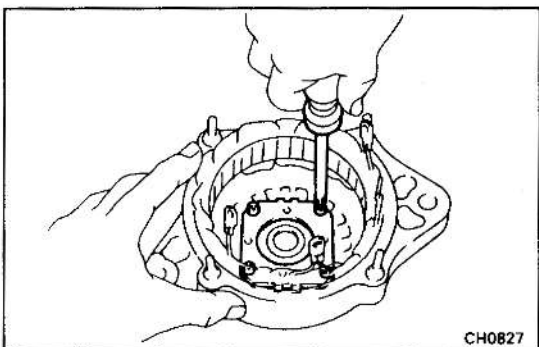
- (a) Remove the 4 screws, bearing retainer and bearing.



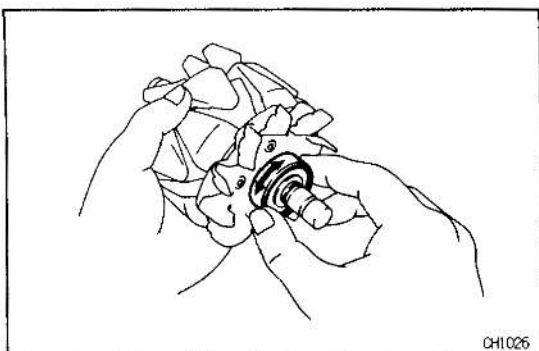
- (b) Using a socket wrench and press, press out the bearing.



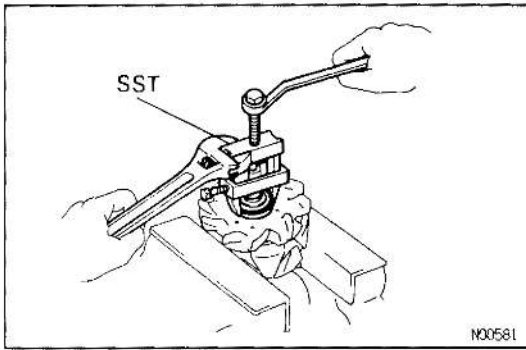
- (c) Using SST and a press, press in a new bearing. SST 09608-20012 (09608-00030)



- (d) Install the bearing retainer with the 4 screws. Torque: 2.6 N·m (27 kgf·cm, 23 in.-lbf)

**3. INSPECT REAR BEARING**

Check that the bearing is not rough or worn.

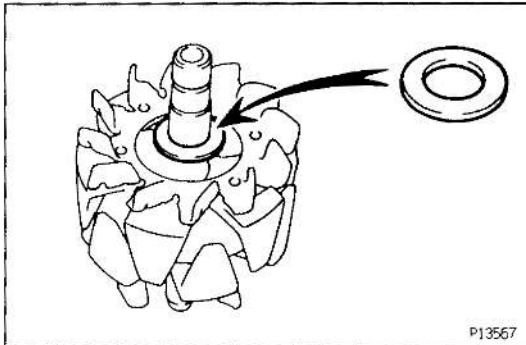
CHARGING SYSTEM — ALTERNATOR**CH-23****4. IF NECESSARY, REPLACE REAR BEARING**

- (a) Using SST, remove the bearing cover (outside) and bearing.

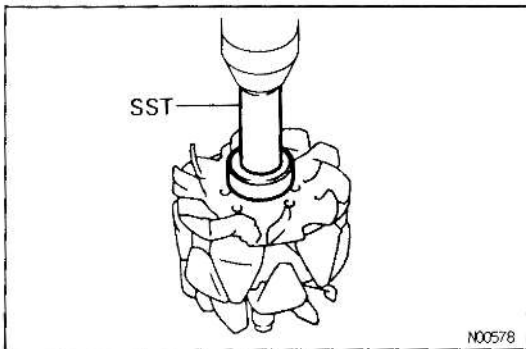
SST 09820-00021

NOTICE: Be careful not to damage the fan.

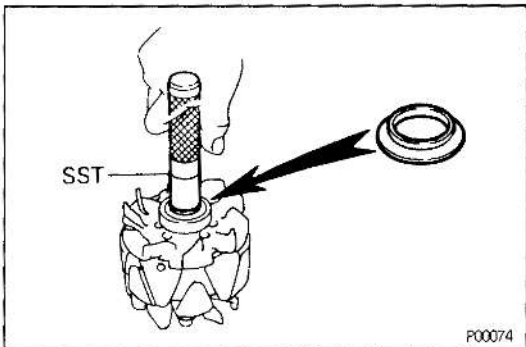
- (b) Remove the bearing cover (inside).



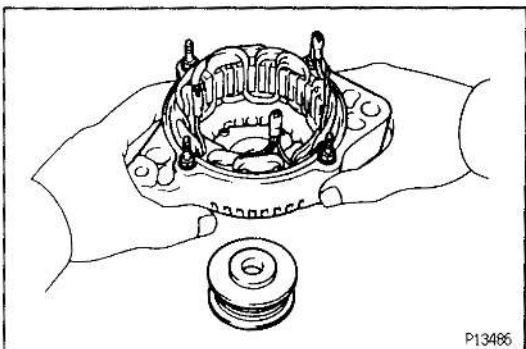
- (c) Place the bearing cover (inside) on the rotor.

CH

- (d) Using SST and a press, press in a new bearing.
SST 09820-00030

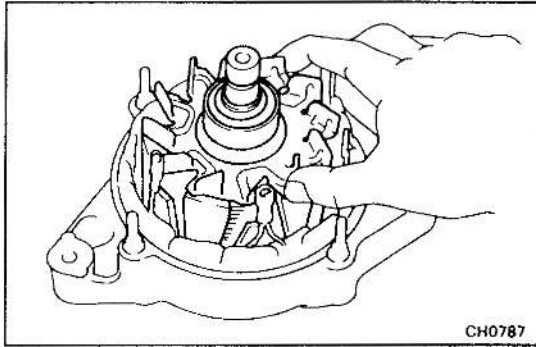
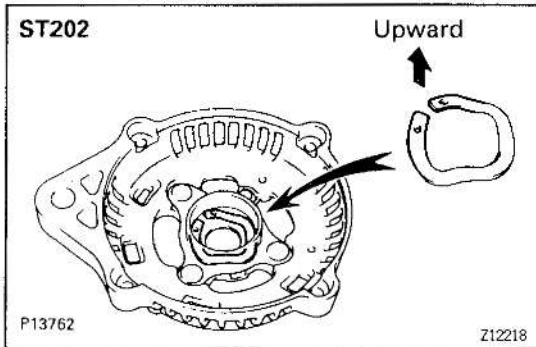


- (e) Using SST, push in the bearing cover (outside).
SST 09285-76010

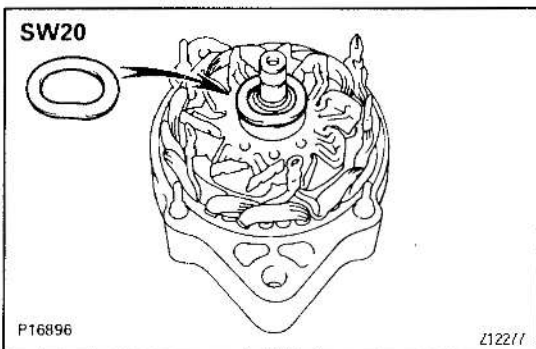
**ALTERNATOR ASSEMBLY**

CH07F-01

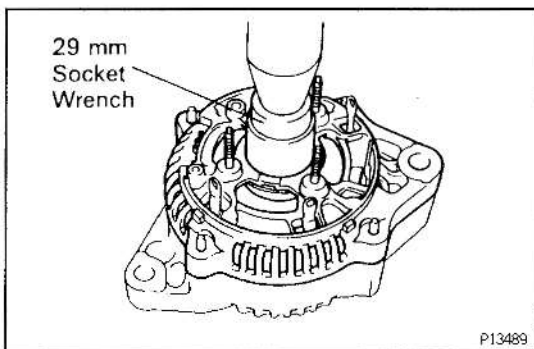
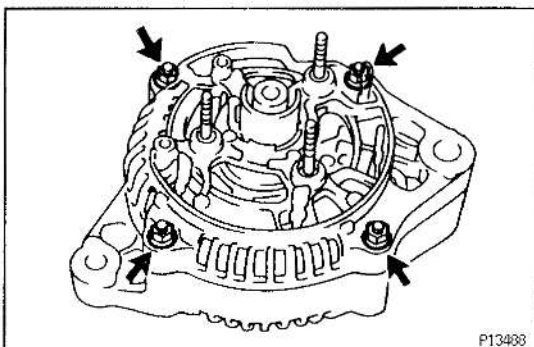
(See Components for Disassembly and Assembly)**1. PLACE RECTIFIER END FRAME ON PULLEY**

CH-24**CHARGING SYSTEM — ALTERNATOR****2. INSTALL ROTOR TO DRIVE END FRAME****3. INSTALL RECTIFIER END FRAME****(a) ST202:**

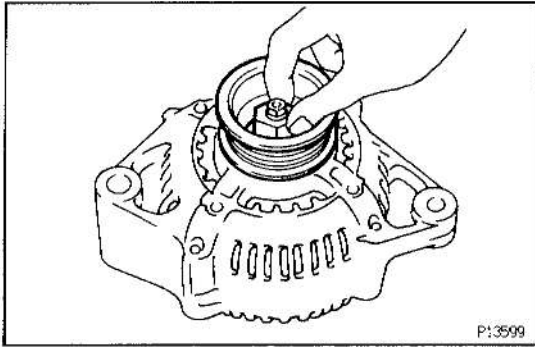
Install the alternator washer to the rectifier end frame.
NOTICE: Be careful of the alternator washer installation direction.

**(b) SW20:**

Place the alternator washer on the rotor.

**(c) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.****(d) Install the 4 nuts.**

Torque: 4.5 N·m (46 kgf·cm, 40 in.-lbf)

CHARGING SYSTEM — ALTERNATOR**CH-25****4. INSTALL PULLEY**

- (a) Install the pulley to the rotor shaft by tightening the pulley nut by hand.

- (b) Hold SST (A) with a torque wrench, and tighten SST (B) clockwise to the specified torque.

SST 09820-63010

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

- (c) Check that SST (A) is secured to the pulley shaft.

- (d) Mount SST (C) in a vise.

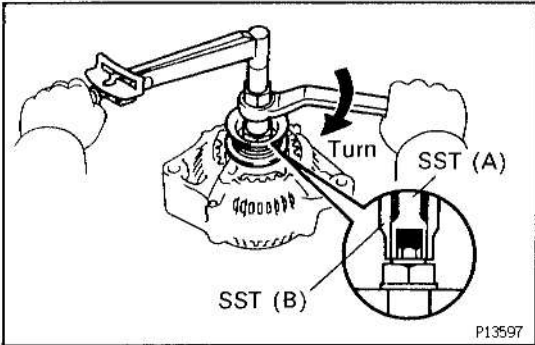
- (e) Insert SST (B) into SST (C), and attach the pulley nut to SST (C).

- (f) To torque the pulley nut, turn SST (A) in the direction shown in the illustration.

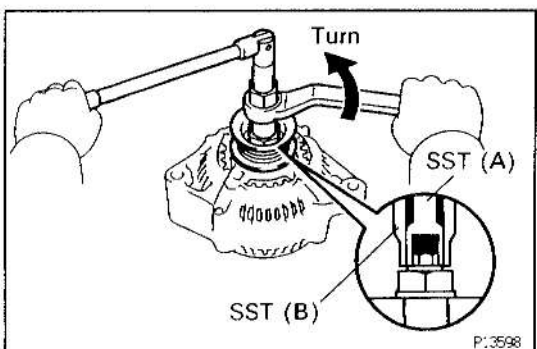
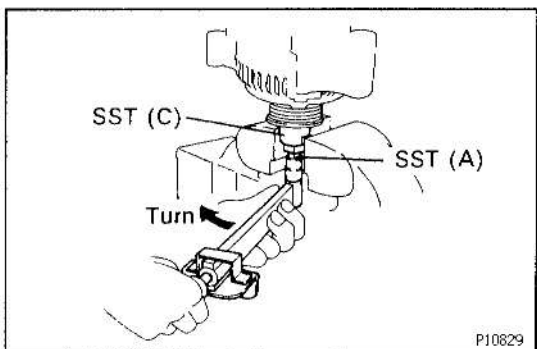
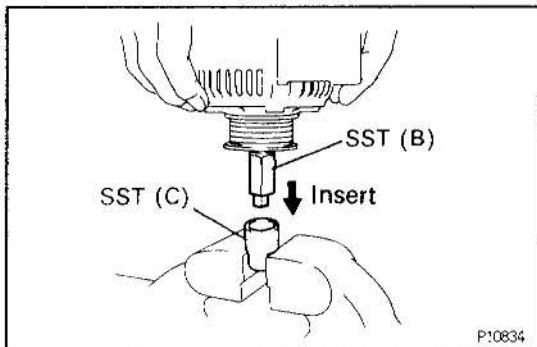
Torque: 110 N·m (1,125 kgf·cm, 81 ft·lbf)

- (g) Remove the alternator from SST (C).

- (h) Turn SST (B), and remove SST (A and B).

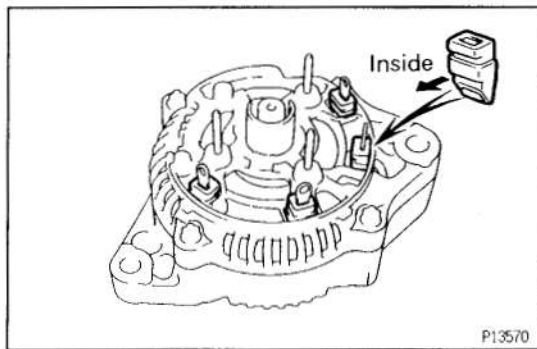


CH

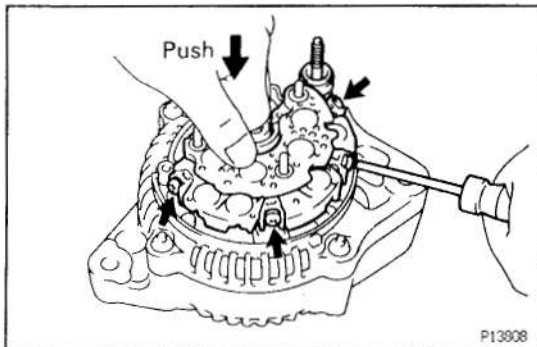


CH-26

CHARGING SYSTEM — ALTERNATOR

**5. INSTALL RECTIFIER HOLDER**

- (a) Install the 4 rubber insulators on the lead wires.
NOTICE: Be careful of the rubber insulators installation direction.



- (b) Install the rectifier holder while pushing it with the 4 screws.

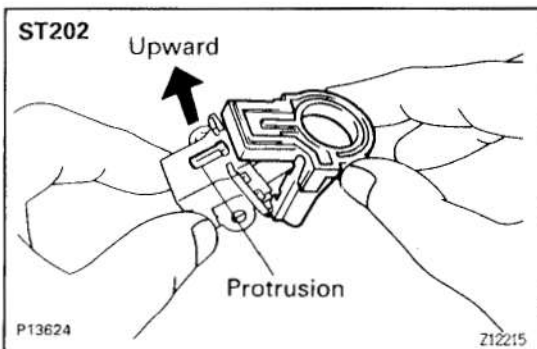
Torque:

ST202

2.0 N·m (20 kgf·cm, 17 in.-lbf)

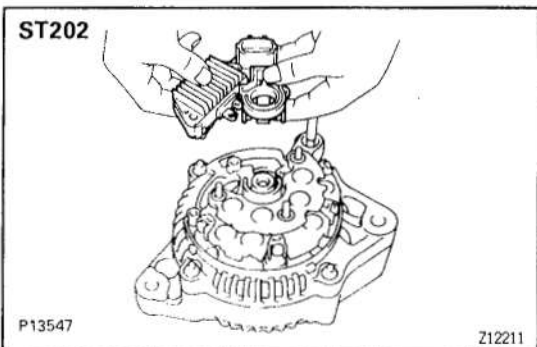
SW20

3.0 N·m (31 kgf·cm, 27 in.-lbf)

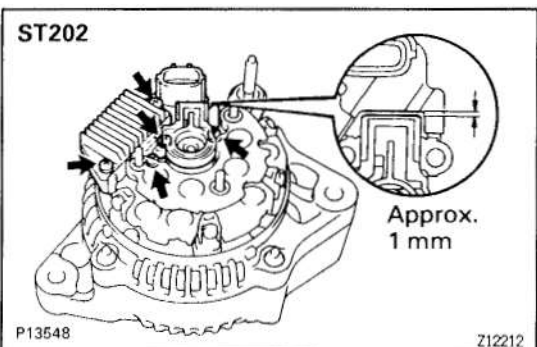
**6. INSTALL IC REGULATOR AND BRUSH HOLDER**

ST202:

- (a) Install the brush holder cover to the brush holder.
NOTICE: Be careful of the holder installation direction.



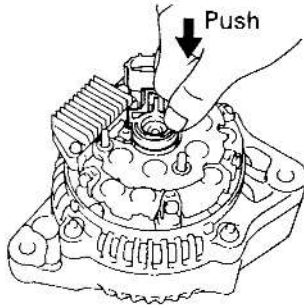
- (b) Place the IC regulator together with the brush holder horizontally on the rectifier end frame.



- (c) Install the 5 screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and IC regulator.

CHARGING SYSTEM — ALTERNATOR

ST202

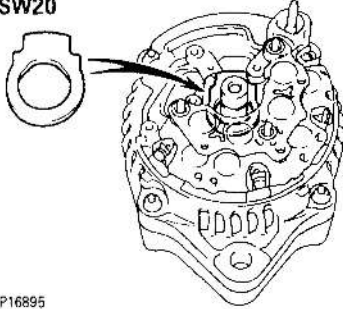


P13549

Z12213

- (d) Fit the brush holder cover.

SW20



P16895

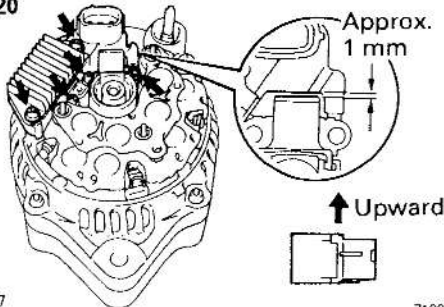
Z12276

SW20:

- (a) Place the seal plate on the rectifier end frame.

CH

SW20



P16897

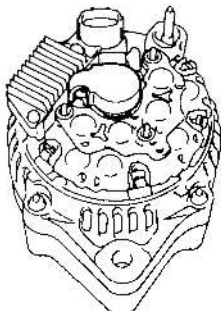
Z12278

- (b) Place the IC regulator and brush holder on the rectifier end frame.

NOTICE: Be careful of the holder installation direction.

- (c) Install the 5 screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and IC regulator.

SW20

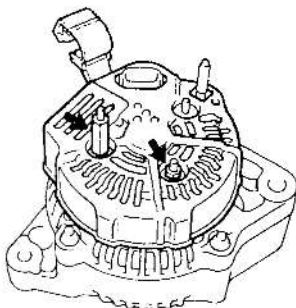


P16893

Z12274

- (d) Place the brush holder cover on the brush holder.

ST202

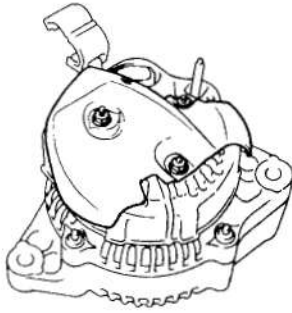


P15688

Z12271

7. ST202:**INSTALL REAR END COVERS**

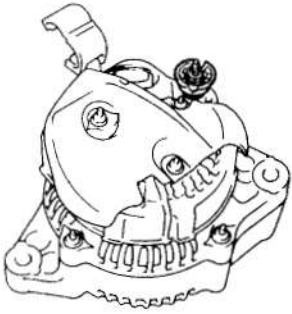
- (a) Install the No.1 rear end cover with the 2 nuts.
Torque: 4.4 N·m (45 kgf·cm, 39 in.-lbf)
- (b) Install the wire clamp to the rear end cover.

CH-28**CHARGING SYSTEM – ALTERNATOR****ST202**

P15687

Z11867

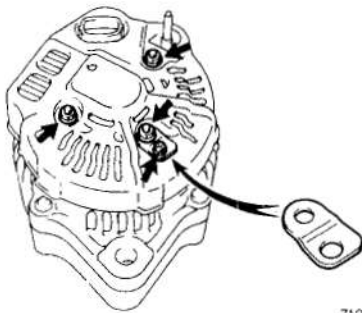
- (c) Install the No.2 rear end cover with the 3 nuts.

Torque:**A 4.4 N·m (45 kgf·cm, 39 in.-lbf)****B 6.1 N·m (63 kgf·cm, 54 in.-lbf)****ST202**

P15686

Z11866

- (d) Install the terminal insulator with the nut.

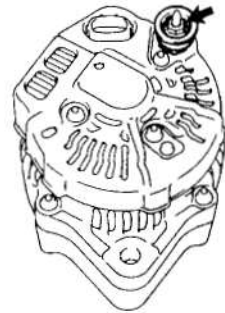
Torque: 4.1 N·m (42 kgf·cm, 36 in.-lbf)**CH****SW20**

P16892

Z12273

8. SW20:**INSTALL REAR END COVER**

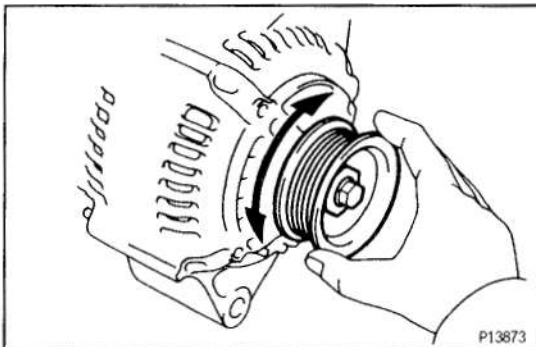
- (a) Install the rear end cover and plate terminal with the bolt and 3 nuts.

Torque:**Nut****4.4 N·m (45 kgf·cm, 39 in.-lbf)****Bolt****3.8 N·m (39 kgf·cm, 34 in.-lbf)****SW20**

P16891

Z12272

- (b) Install the terminal insulator with the nut.

Torque: 4.1 N·m (42 kgf·cm, 36 in.-lbf)**9. CHECK THAT ROTOR ROTATES SMOOTHLY**

P13873

CHARGING SYSTEM – SERVICE SPECIFICATIONS

CH-29

IGNITION MAIN RELAY (SW20)

(See page IG – 18)

ST014-0A

SERVICE SPECIFICATIONS SERVICE DATA

CH01A-0E

Battery	Specific gravity	at 20°C (68°F)	1.25 – 1.27	
Drive belt	Deflection	ST202	w/ A/C New belt	10 – 11 mm (0.39 – 0.43 in.)
			Used belt	13 – 16 mm (0.51 – 0.63 in.)
		w/o A/C New belt	11 – 14 mm (0.43 – 0.55 in.)	
			Used belt	12 – 18 mm (0.47 – 0.71 in.)
		SW20	New belt	9 – 12 mm (0.35 – 0.47 in.)
			Used belt	10 – 15 mm (0.39 – 0.59 in.)
	Tension	ST202	w/ A/C New belt	686 – 785 N (70 – 80 kgf)
			Used belt	294 – 441 N (30 – 45 kgf)
		w/o A/C New belt	461 – 706 N (47 – 72 kgf)	
			Used belt	353 – 610 N (36 – 62 kgf)
	SW20	New belt	539 – 639 N (55 – 65 kgf)	
		Used belt	245 – 392 N (25 – 40 kgf)	
Alternator	Rated output			
	ST202		12 V 70 A	
	SW20		12 V 80 A	
	Rotor coil resistance		2.8 – 3.0 Ω	
	Slip ring diameter	STD	14.2 – 14.4 mm (0.559 – 0.567 in.)	
		Limit	12.8 mm (0.504 in.)	
	Brush exposed length	STD	10.5 mm (0.413 in.)	
	Limit	1.5 mm (0.059 in.)		
IC regulator	Regulating voltage	at 25 °C (77°F)	13.9 – 15.1 V	
		at 115°C (239°F)	13.5 – 14.3 V	

TORQUE SPECIFICATIONS

CH01C-0J

Part tightened		N·m	kgf·cm	ft·lbf
Bearing retainer x Drive end frame		2.6	27	23 in·lbf
Rectifier end frame x Drive end frame		4.5	46	40 in·lbf
Alternator pulley x Rotor		110	1,125	81
Rectifier holder x Coil lead on rectifier end frame	ST202	2.0	20	17 in·lbf
	SW20	3.0	31	27 in·lbf
No.1 rear end cover x Rectifier holder (ST202)		4.4	45	39 in·lbf
No.2 rear end cover x No.1 rear end cover (ST202)	Nut A	4.4	45	39 in·lbf
	B	6.1	63	54 in·lbf
Rear end cover x Rectifier holder (SW20)		4.4	45	39 in·lbf
Plate terminal x Rectifier holder (SW20 only)	Nut	4.4	45	39 in·lbf
	Bolt	3.8	39	34 in·lbf
Terminal insulator x Rectifier holder		4.1	42	36 in·lbf

CH-30

CHARGING SYSTEM — SERVICE SPECIFICATIONS

— MEMO —

CH



