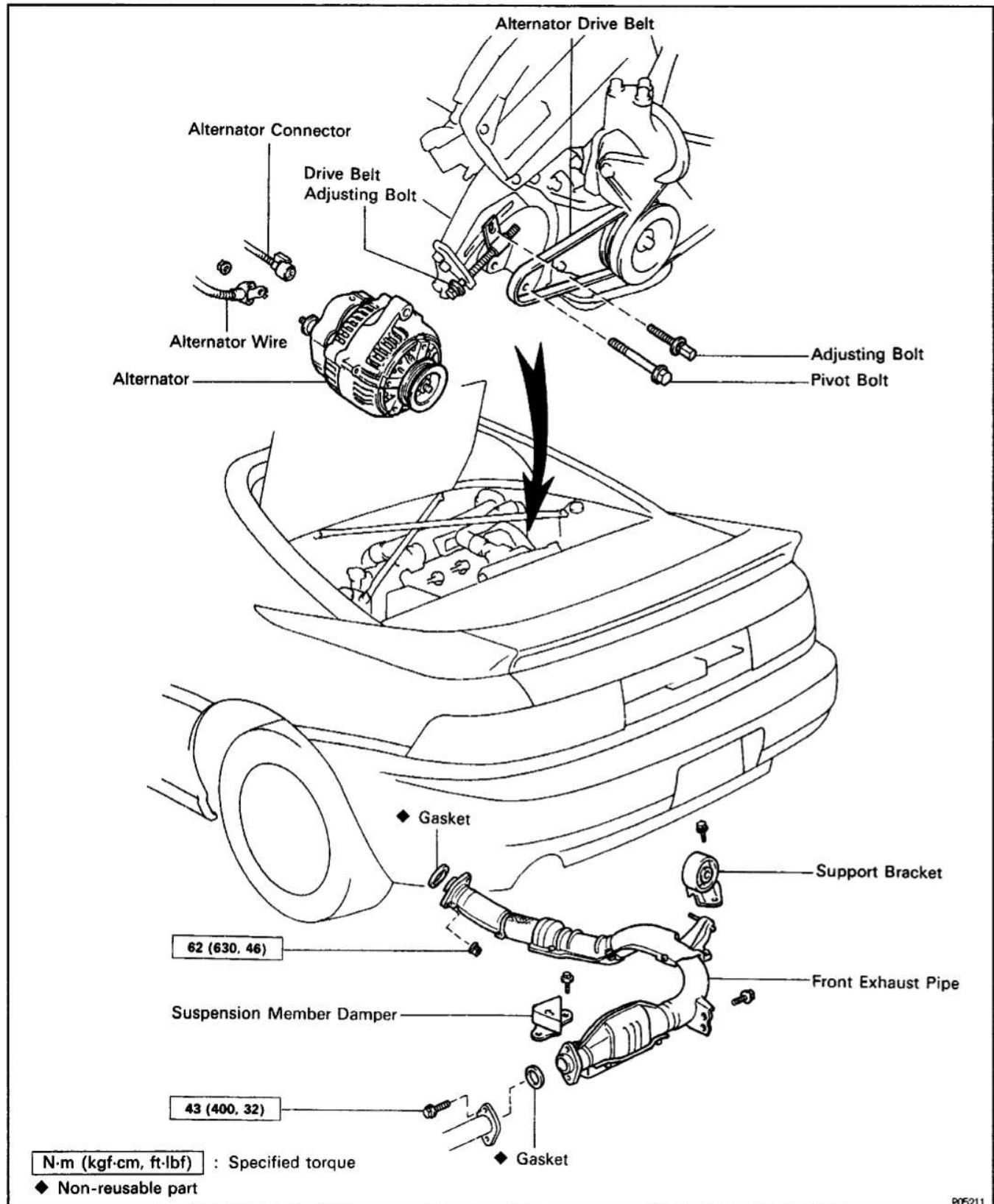


CH-10

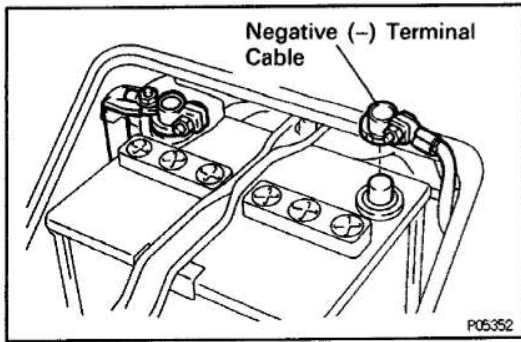
CHARGING SYSTEM - ALTERNATOR

ALTERNATOR COMPONENTS FOR REMOVAL AND INSTALLATION (3S-GTE)

CH010-02



P05211

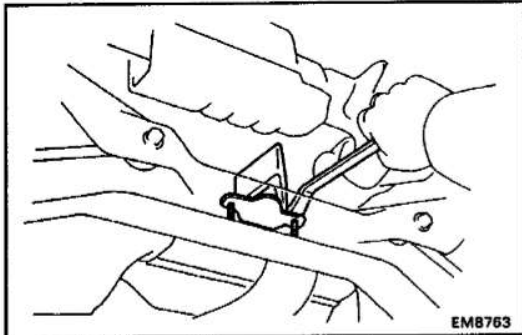


REMOVAL ALTERNATOR (3S-GTE)

(See Components for Removal and Installation)

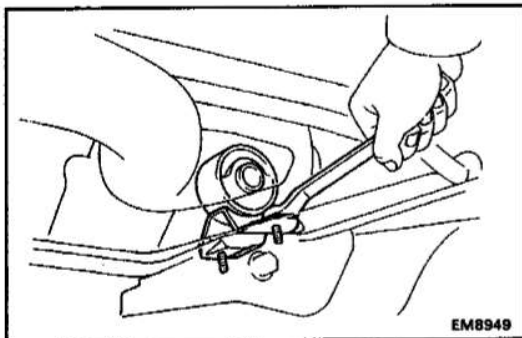
1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Turn the ignition switch to 'LOCK'. Disconnect the negative terminal from the battery. Wait at least 20 seconds before proceeding with work.

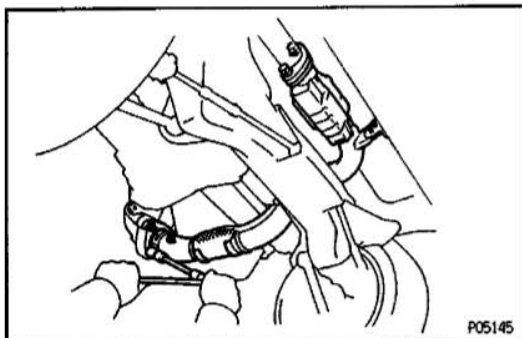


2. REMOVE FRONT EXHAUST PIPE

(a) Remove the two bolts and damper.



(b) Remove the two bolts and support bracket.



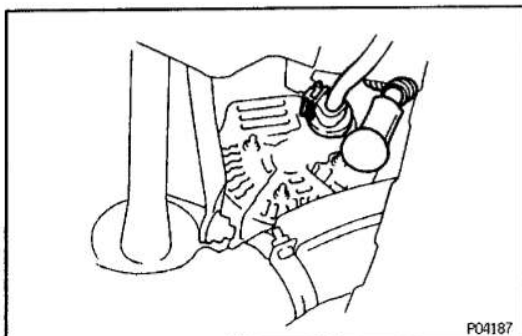
(c) Remove the two bolts holding the front exhaust pipe to the tailpipe bracket.

(d) Remove the two bolts holding the front exhaust pipe to the tailpipe.

(e) Using a 14 mm deep socket wrench, remove the three nuts.

(f) Disconnect the front exhaust pipe from the TWC and tailpipe.

(g) Remove the two gaskets.



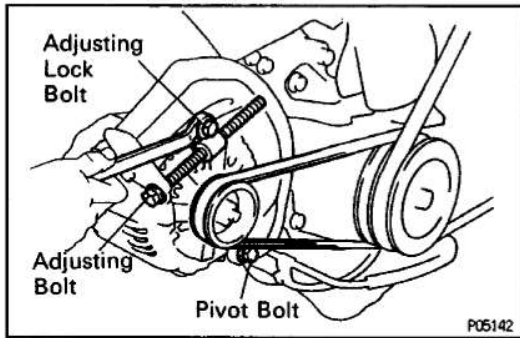
3. REMOVE ALTERNATOR

(a) Disconnect the alternator connector.

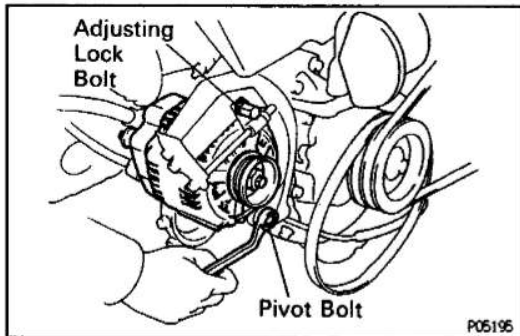
(b) Remove the nut, and disconnect the alternator wire.

CH-12

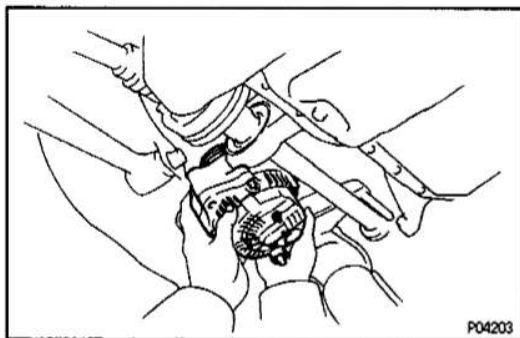
CHARGING SYSTEM – ALTERNATOR



- (c) Loosen the pivot bolt and adjusting lock bolt.
- (d) Loosen the adjusting bolt, and disconnect the drive belt from the alternator.

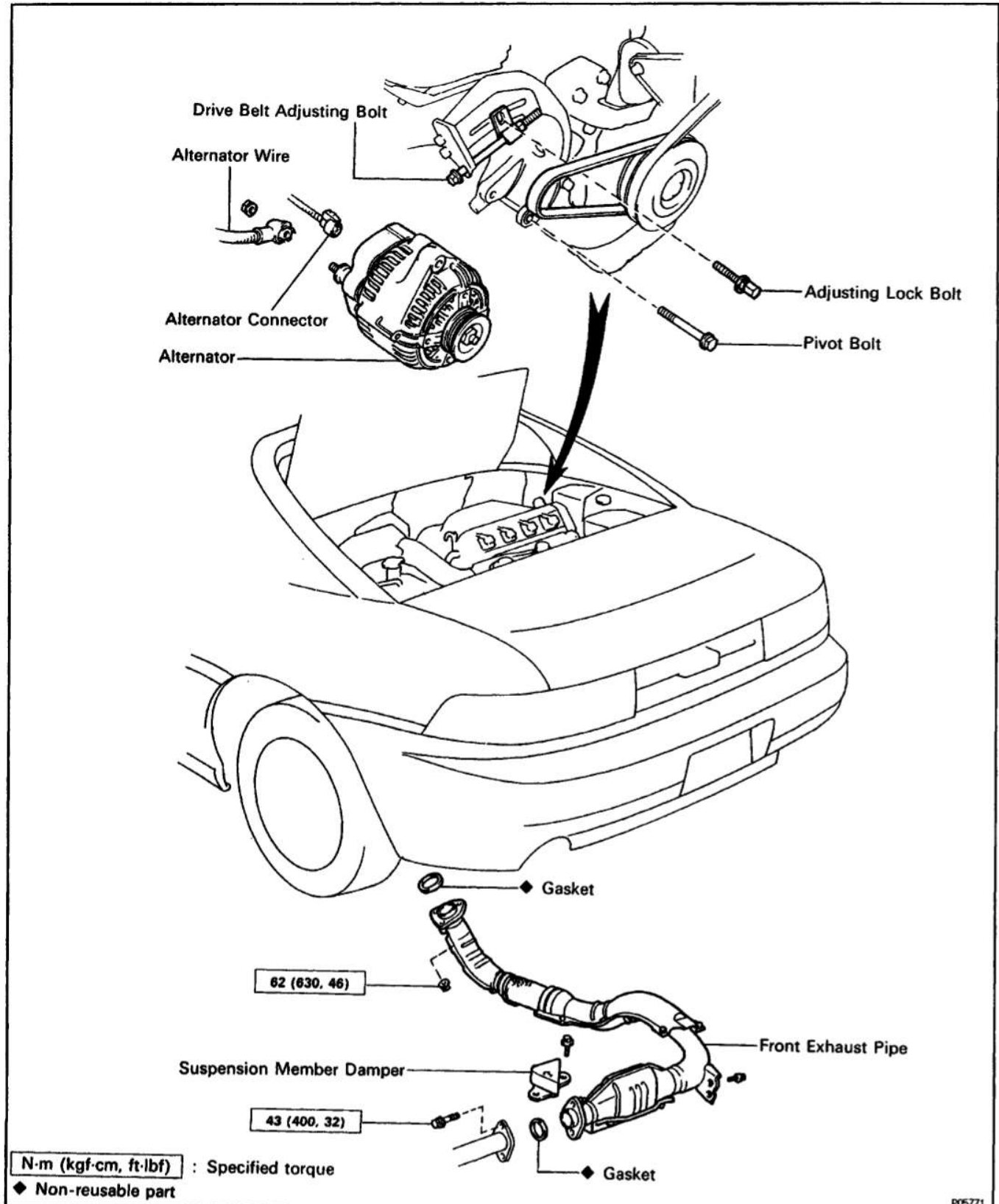


- (e) Remove the pivot bolt and adjusting lock bolt, and disconnect the alternator from the bracket.



- (f) Remove the alternator by passing it between the suspension crossmember and drive shaft.
- HINT: Move front exhaust pipe to the left, and remove the alternator.

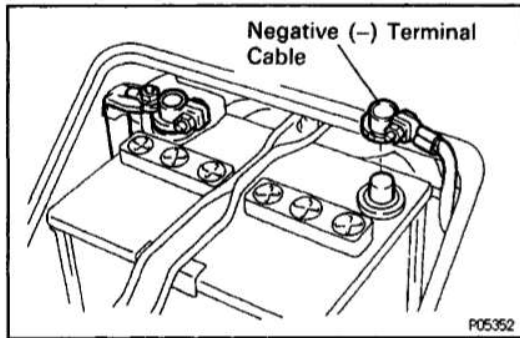
COMPONENTS FOR REMOVAL AND INSTALLATION (5S-FE)



CH-14

CHARGING SYSTEM - ALTERNATOR

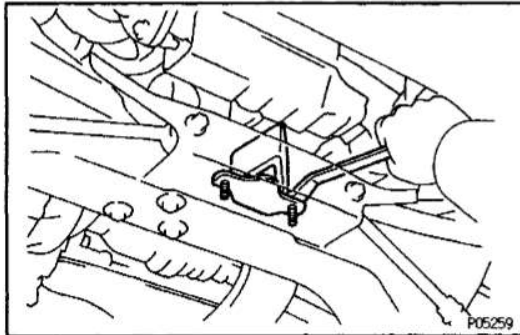
CH030-01

**REMOVAL ALTERNATOR (5S-FE)**

(See Components for Removal and Installation)

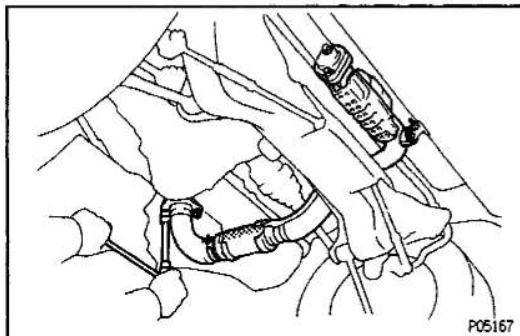
1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Turn the ignition switch to "LOCK". Disconnect the negative terminal from the battery. Wait at least 20 seconds before proceeding with work.

**2. REMOVE EXHAUST PIPE**

(a) (CALIF. only)

Remove the two bolts and damper.



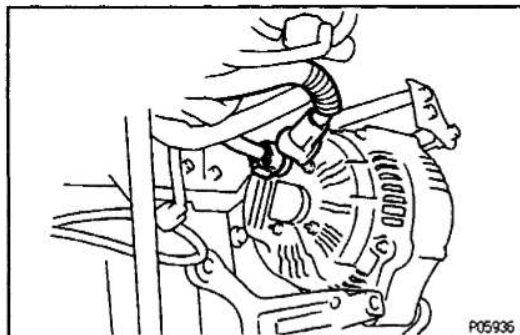
(b) Remove the two bolts holding the front exhaust pipe bracket to the tailpipe bracket.

(c) Remove the two bolts holding the front exhaust pipe to the tailpipe.

(d) Using a 14 mm deep socket wrench, remove the three nuts holding the front exhaust pipe to the TWC.

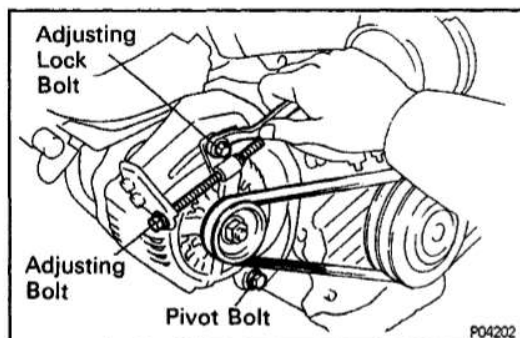
(e) Remove the front exhaust pipe.

(f) Remove the two gaskets.

**3. REMOVE ALTERNATOR**

(a) Disconnect the alternator connector.

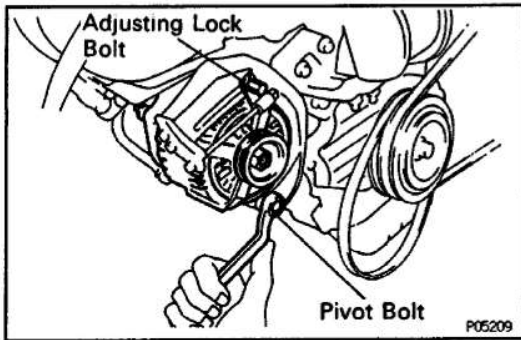
(b) Remove the nut, and disconnect the alternator wire.



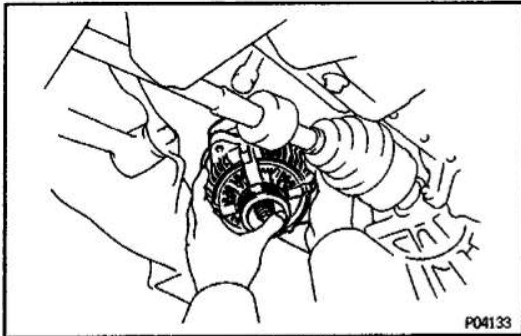
(c) Loosen the pivot bolt and adjusting lock bolt.

(d) Loosen the adjusting bolt, and disconnect the drive belt from the alternator.

CHARGING SYSTEM - ALTERNATOR

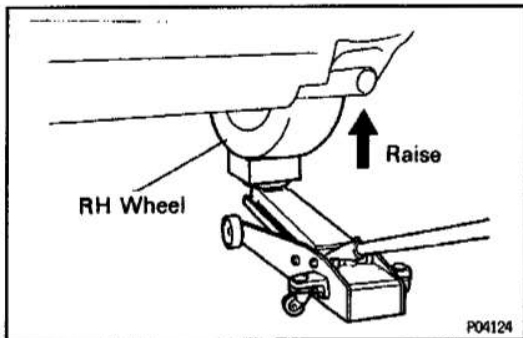


- (e) Remove the pivot bolt and adjusting lock nut, and disconnect the alternator from the bracket.



- (f) Remove the alternator by passing it between the suspension crossmember and drive shaft.

NOTICE: Be careful not to damage the drive shaft boot.

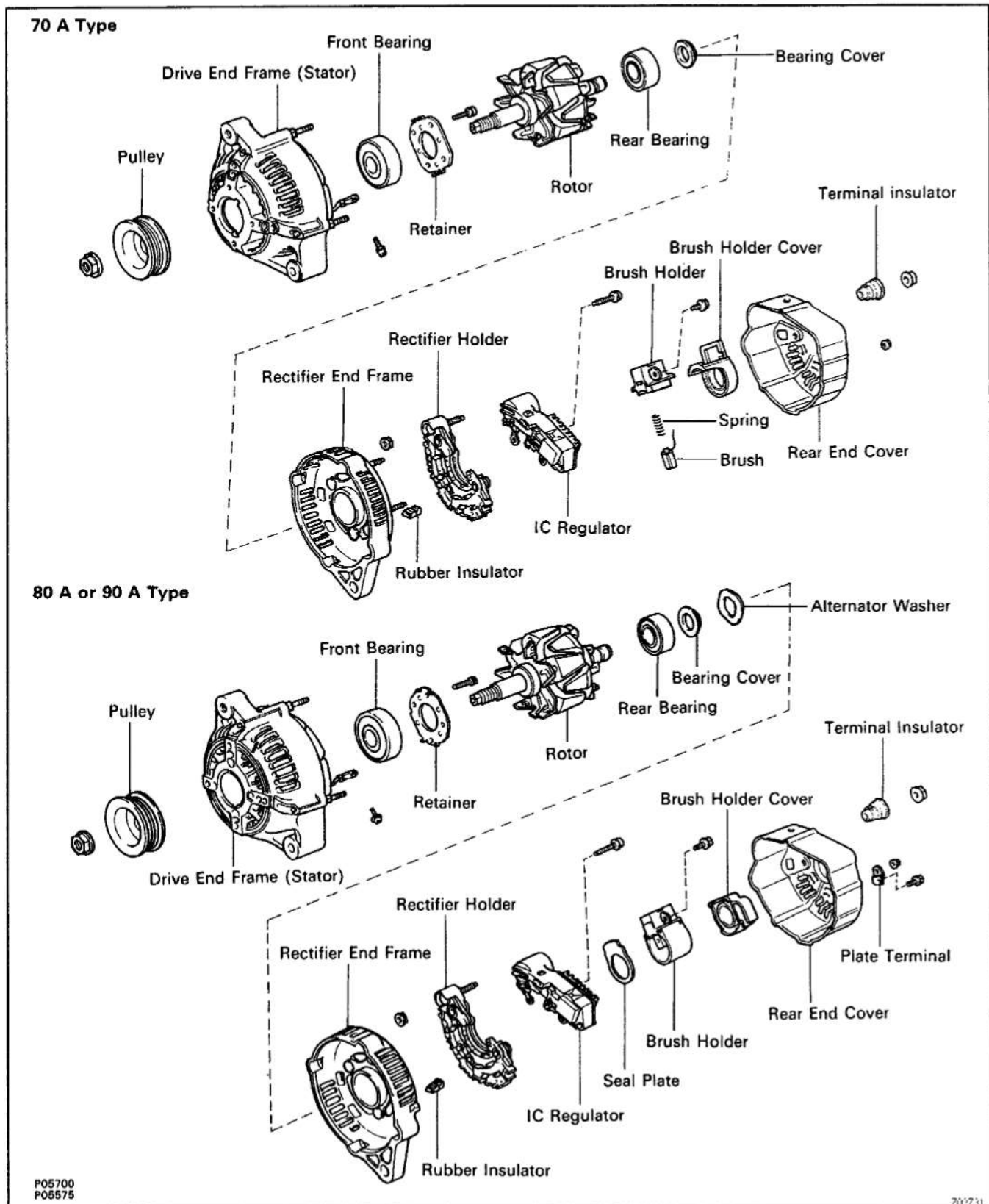


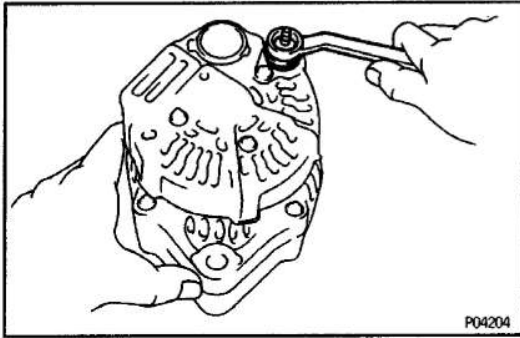
HINT: (80 A or 90 A Type Alternator): Using a jack, raise the RH wheel as far as it will go.

CH-16

CHARGING SYSTEM - ALTERNATOR

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY



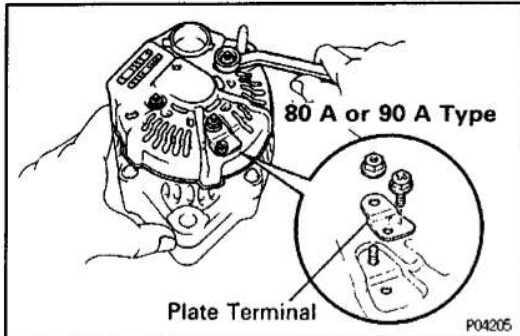


ALTERNATOR DISASSEMBLY

(See Components for Disassembly and Assembly)

1. REMOVE REAR END COVER

(a) Remove the nut and terminal insulator.

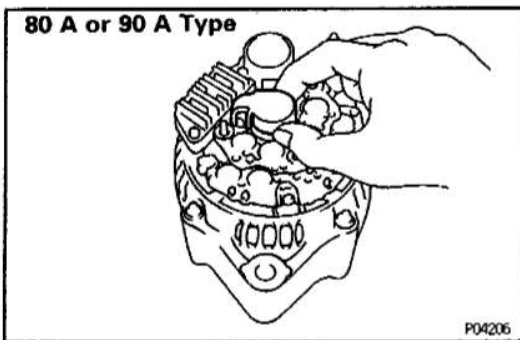


(b) (70 A Type)

Remove the three nuts and end cover.

(c) (80 A or 90 A Type)

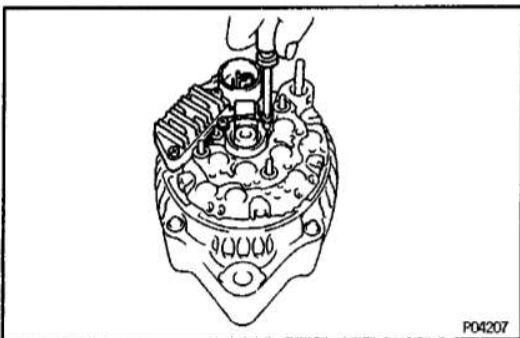
Remove the bolt, three nuts, plate terminal and end cover.



2. REMOVE BRUSH HOLDER AND IC REGULATOR

(a) (80 A or 90 A Type)

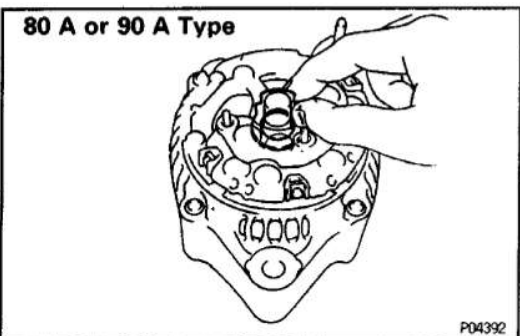
Remove the brush holder cover from the brush holder.



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

(c) (70 A Type)

Remove the brush holder cover from the brush holder.

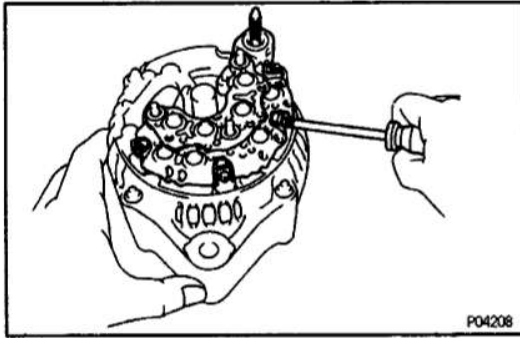


(d) (80 A or 90 A Type)

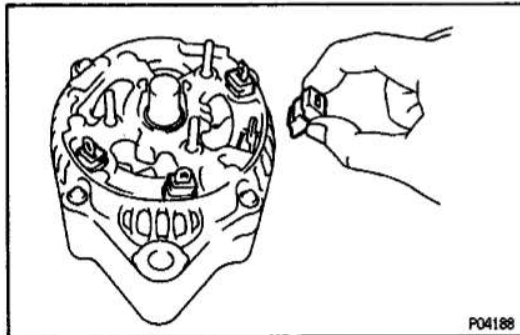
Remove the seal plate.

CH-18

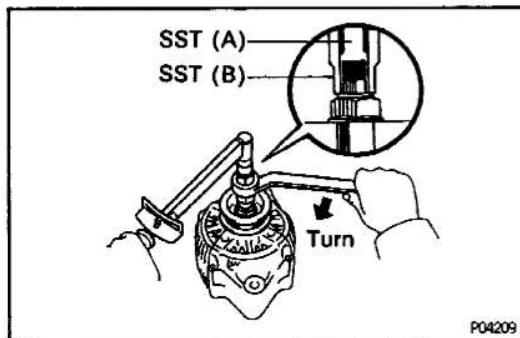
CHARGING SYSTEM – ALTERNATOR

**3. REMOVE RECTIFIER HOLDER**

(a) Remove the four screws and rectifier holder.



(b) Remove the four rubber insulators.

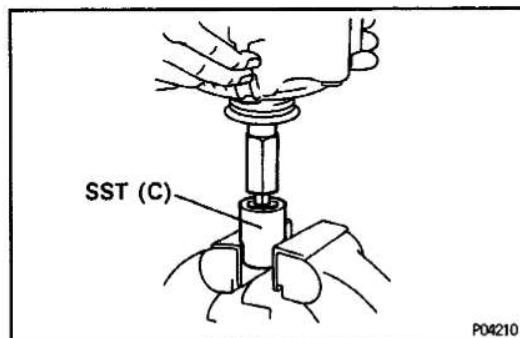
**4. REMOVE PULLEY**

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

SST 09820-63010

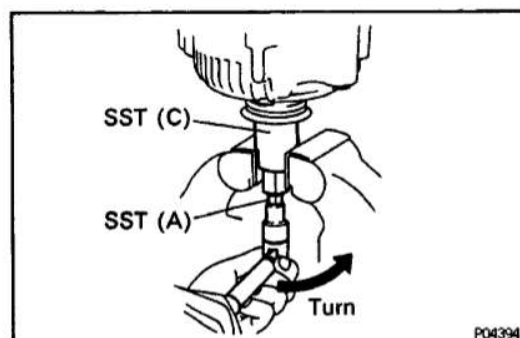
Torque: 39 N-m (400 kgf-cm, 29 ft-lbf)

(b) Check that SST (A) is secured to the rotor shaft.



(c) Mount SST (C) in a vise.

(d) Install the pulley nut to SST (C).

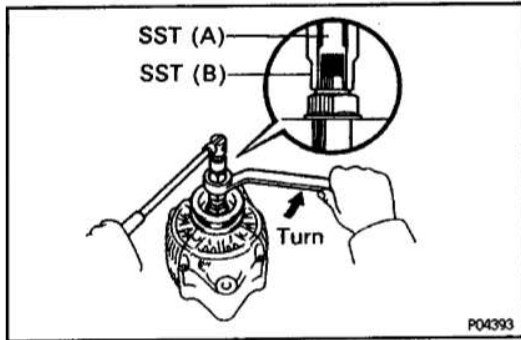


(e) To loosen the pulley nut, turn SST (A) in the direction shown in the illustration.

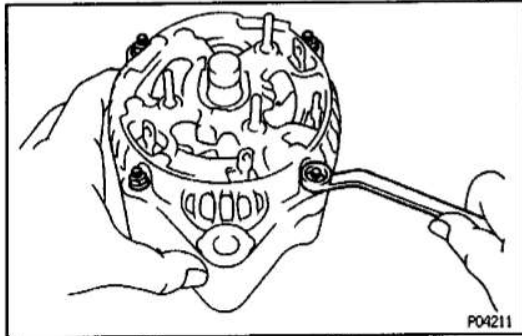
NOTICE: To prevent damage to the rotor shaft, do not loosen the pulley nut more than one-half of a turn.

(f) Remove the alternator from SST (C).

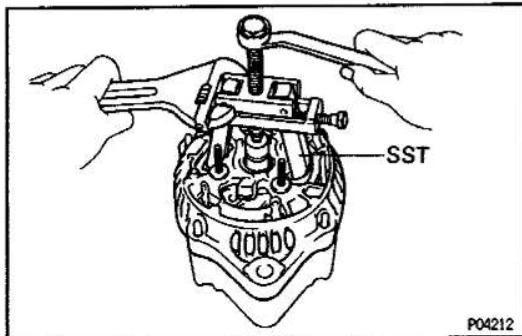
CHARGING SYSTEM - ALTERNATOR



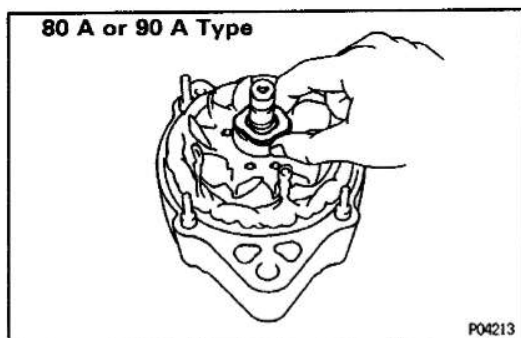
- (g) Turn SST (B), and remove SST (A and B).
- (h) Remove the pulley nut and pulley.

**5. REMOVE RECTIFIER END FRAME**

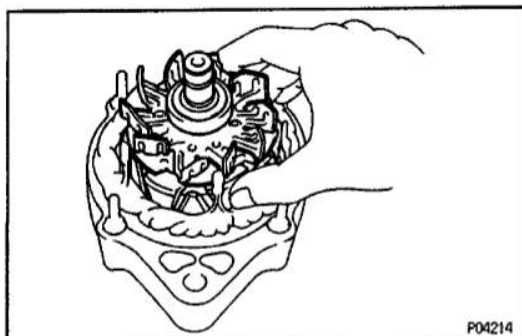
- (a) Remove the four nuts.



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

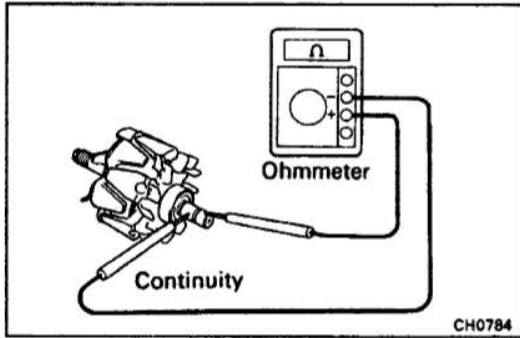


- (c) (80 A or 90 A Type)
Remove the alternator washer.

**6. REMOVE ROTOR FROM DRIVE END FRAME**

CH-20

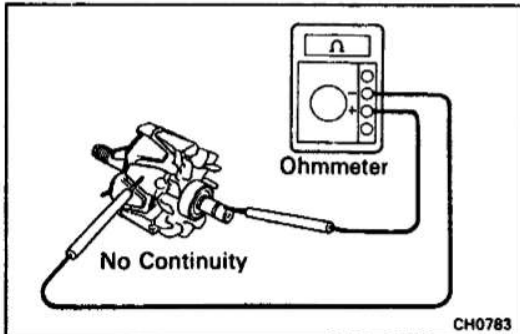
CHARGING SYSTEM – ALTERNATOR

**ALTERNATOR INSPECTION AND REPAIR****Rotor****1. INSPECT ROTOR FOR OPEN CIRCUIT**

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

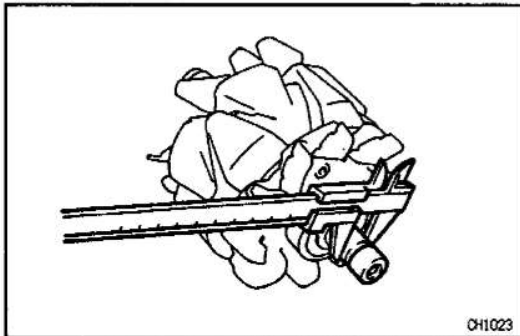
Standard resistance (Cold): 2.8–3–00

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.

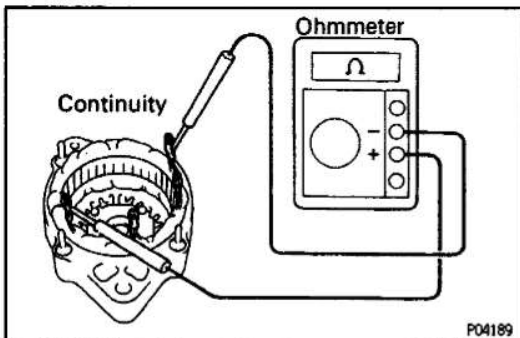
Standard diameter:

14.2 – 14.4 mm (0.559 – 0.567 in.)

Minimum diameter:

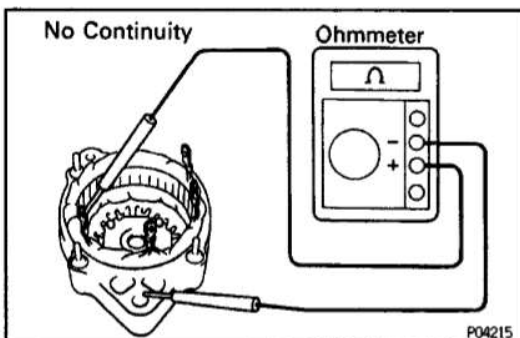
12.8 mm (0.504 in.)

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

**Stator (Drive End Frame)****1. INSPECT STATOR FOR OPEN CIRCUIT**

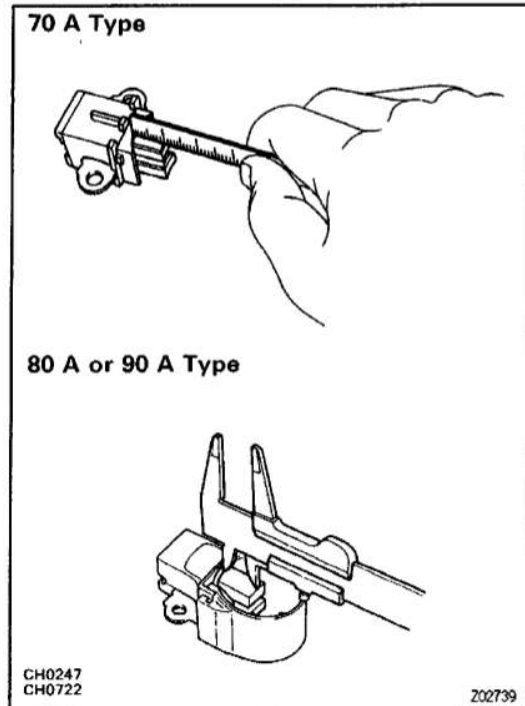
Using an ohmmeter, check that there is continuity between the coil leads.

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.



Brushes

1. INSPECT EXPOSED BRUSH LENGTH

Using a scale, measure the exposed brush length.

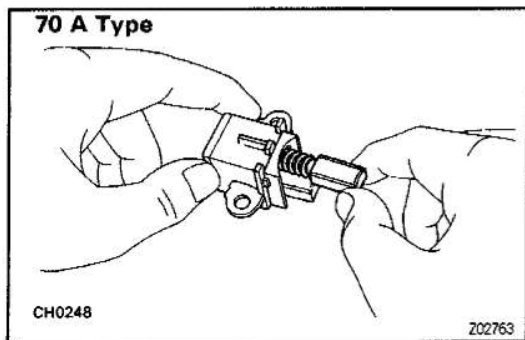
Standard exposed length:

10.5 mm (0.413 in.)

Minimum exposed length:

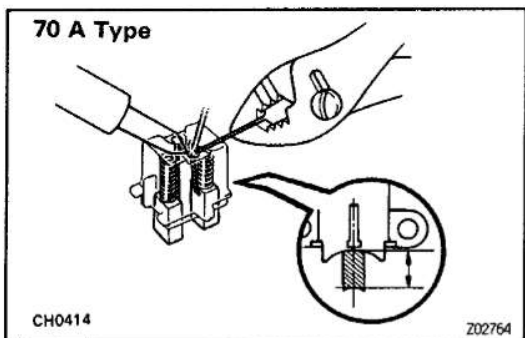
1.5 mm (0.059 in.)

If the exposed length is less than minimum, replace the brushes (70 A type) or brush holder assembly (80 A or 90 A type).



2. 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.



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

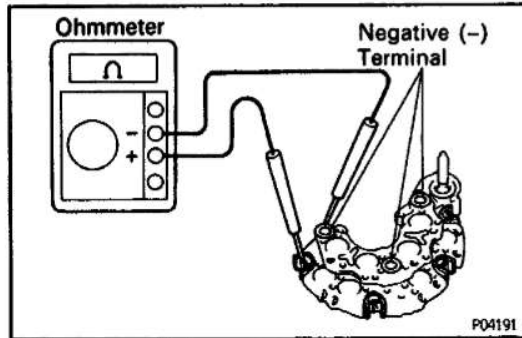
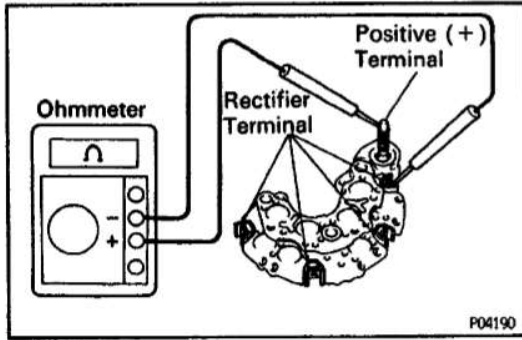
Exposed length:

10.5 mm (0.413 in.)

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

CH-22

CHARGING SYSTEM – ALTERNATOR



Rectifiers (Rectifier Holder)

1. INSPECT POSITIVE RECTIFIER

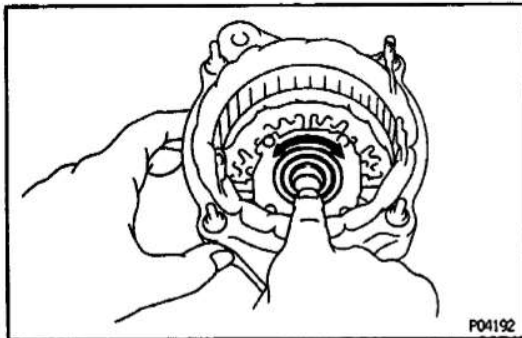
- Using an ohmmeter, connect one tester probe to the positive (+) terminal and the other to each rectifier terminal.
- Reverse the polarity of the tester probes and repeat step (a).
- Check that one shows continuity and the other shows no continuity.

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

2. INSPECT NEGATIVE RECTIFIER

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

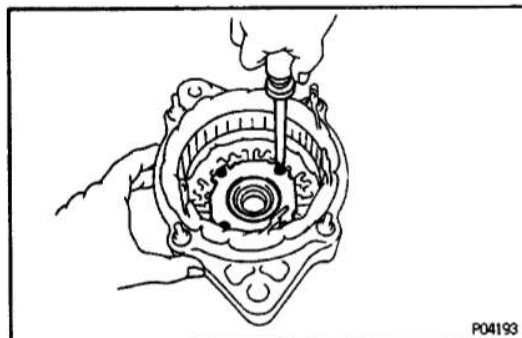
If continuity is not as specified, replace the rectifier holder.



Bearings

1. INSPECT FRONT BEARING

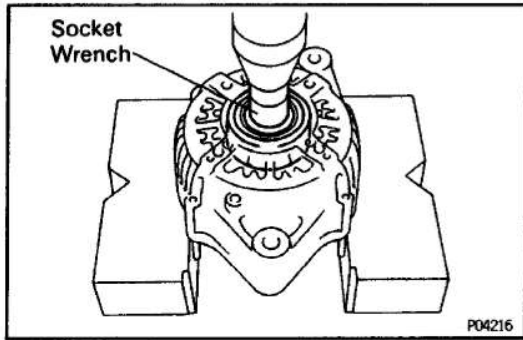
Check that the bearing is not rough or worn.



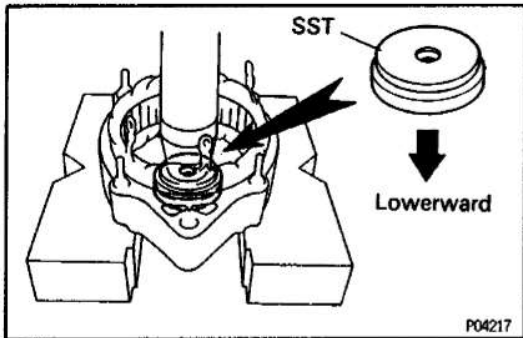
2. IF NECESSARY, REPLACE FRONT BEARING

- Remove the four screws, bearing retainer and bearing

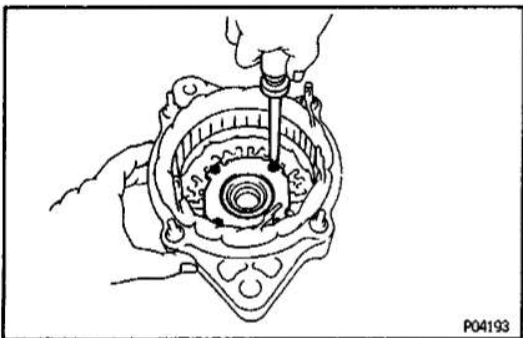
CHARGING SYSTEM – ALTERNATOR



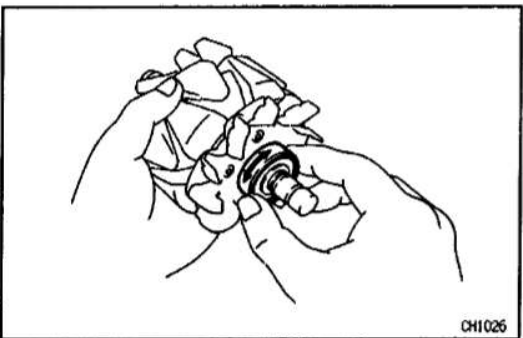
(b) Using a socket wrench and press, press out the bearing.



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

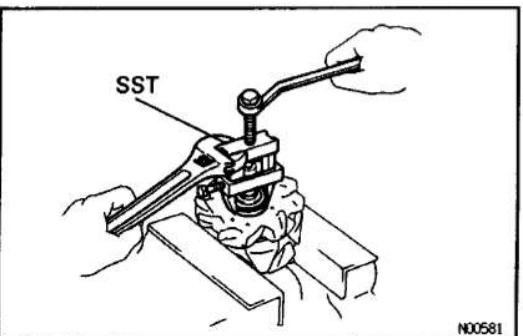


(d) Install the bearing retainer with the four screws.



3. INSPECT REAR BEARING

Check that the bearing is not rough or worn.



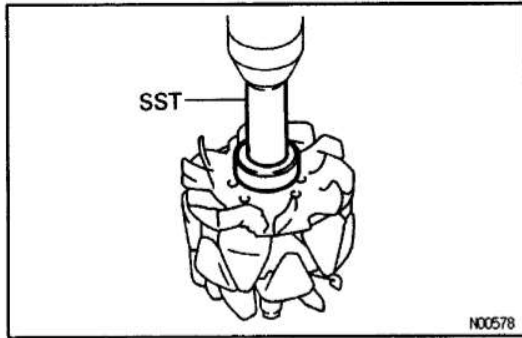
4. IF NECESSARY, REPLACE REAR BEARING

(a) Using SST, remove the bearing cover and bearing.
SST 09820-00021

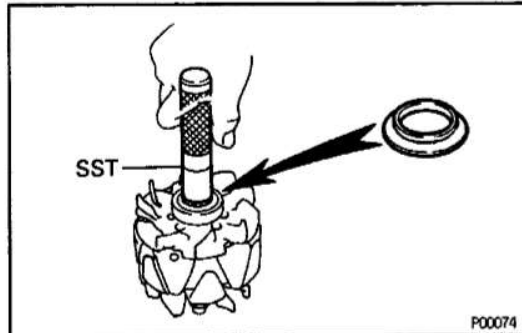
NOTICE: Be careful not to damage the fan.

CH-24

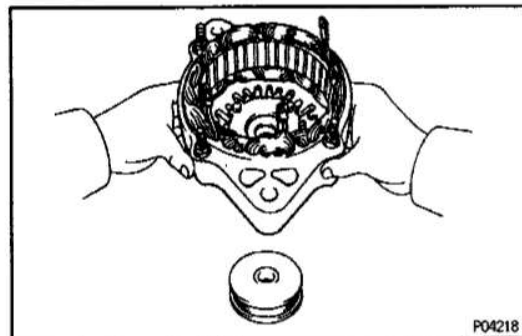
CHARGING SYSTEM – ALTERNATOR



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

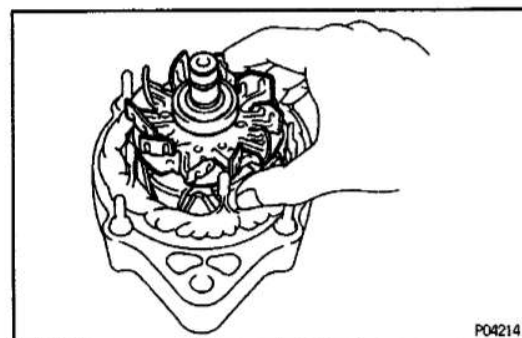
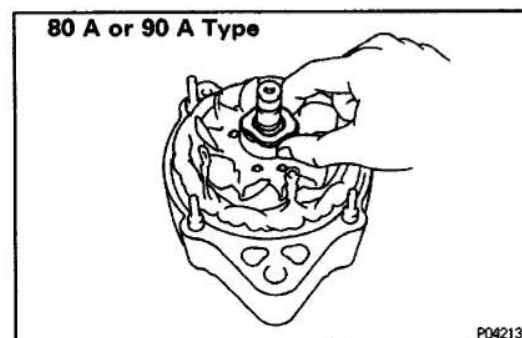


- (c) Using SST, push in the bearing cover.
SST 09285-76010

**ALTERNATOR ASSEMBLY**

CH03J-9

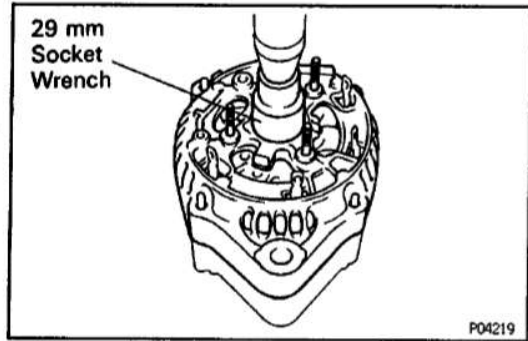
(See Components for Disassembly and Assembly)

1. PLACE RECTIFIER END FRAME ON PULLEY**2. INSTALL ROTOR TO DRIVE END FRAME****3. INSTALL RECTIFIER END FRAME**

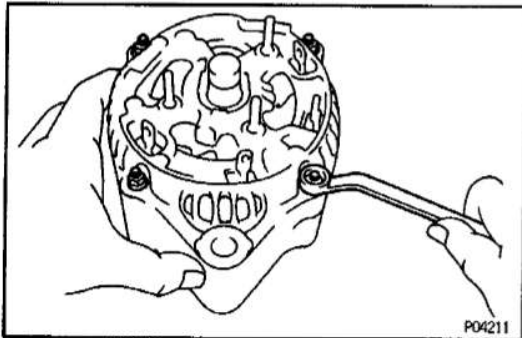
- (a) (80 A or 90 A Type)

Place the thrust washer on the rotor.

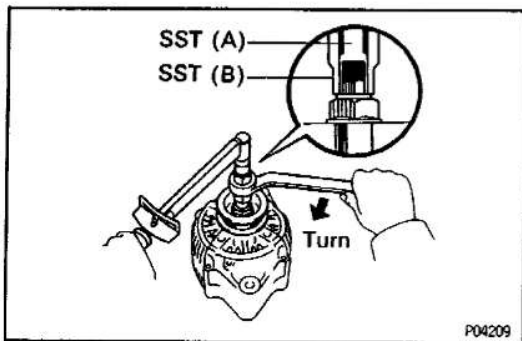
CHARGING SYSTEM - ALTERNATOR



(b) Using a 29 mm socket wrench and press, slowly press in the rectifier end frame.

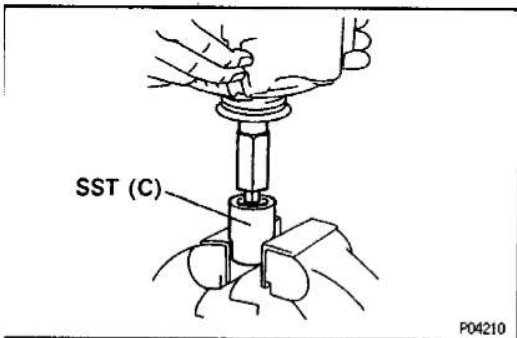


(c) Install the four nuts.

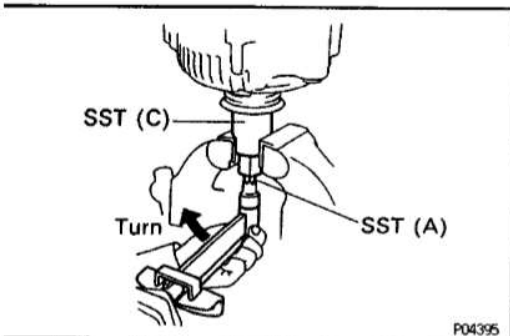


4. INSTALL PULLEY

- (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.



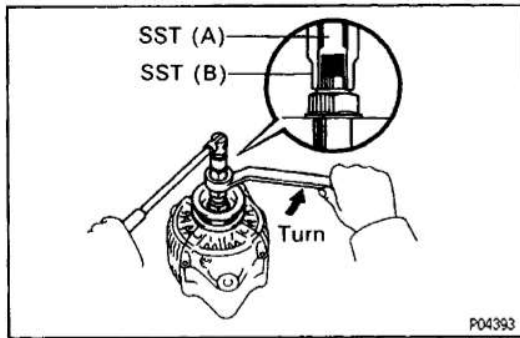
- (d) Mount SST (C) in a vise.
 (e) Install the pulley nut to SST (C).



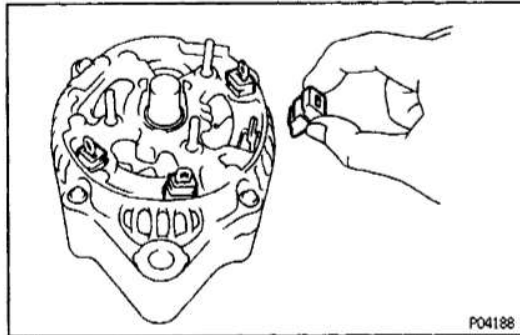
- (f) To torque the pulley nut turn SST (A) in the direction shown in the illustration.
Torque: 110 N-m (1,125 kgf-cm, 81 ft-lbf)
 (g) Remove the alternator from SST (C).

CH-26

CHARGING SYSTEM - ALTERNATOR

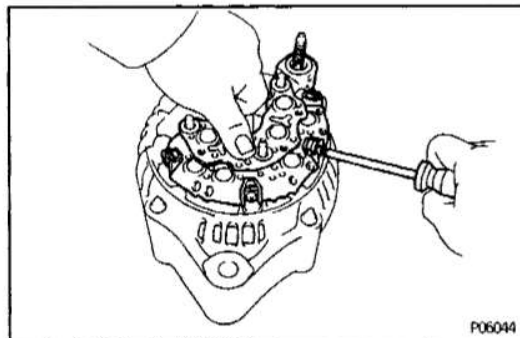


(h) Turn SST (B) and remove SST (A and B).

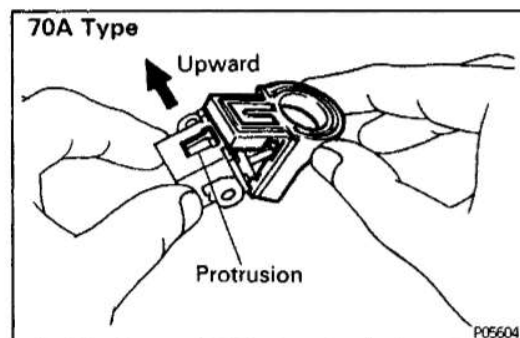


5. INSTALL RECTIFIER HOLDER

(a) Install the four rubber insulators on the lead wires.



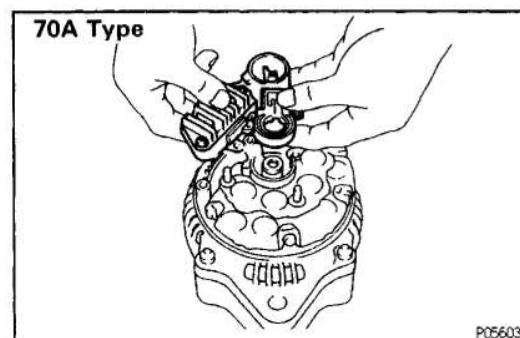
(b) Install the rectifier holder while pushing it with the four screws.



6. INSTALL IC REGULATOR AND BRUSH HOLDER (70 A Type)

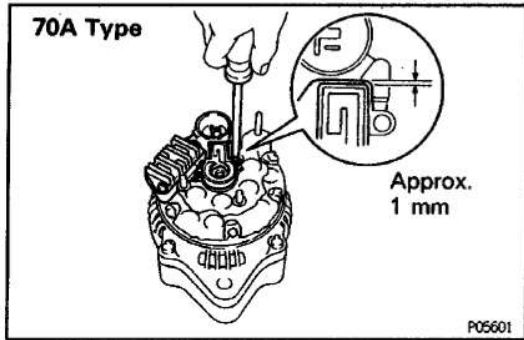
(a) Install the brush holder cover to the brush holder.

NOTICE: Be careful of the holder installation direction.

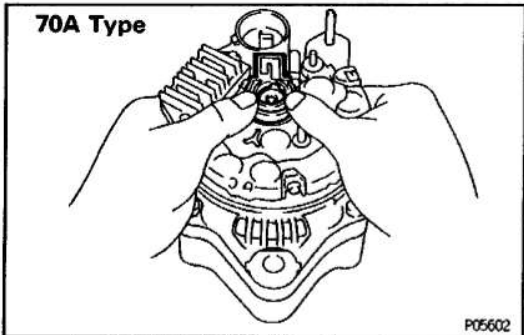


(b) Place the IC regulator together with the brush holder horizontally on the rectifier end frame.

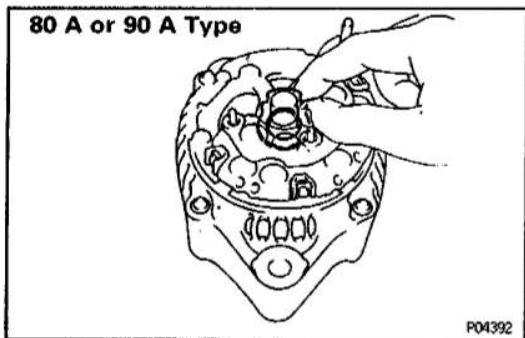
CHARGING SYSTEM – ALTERNATOR



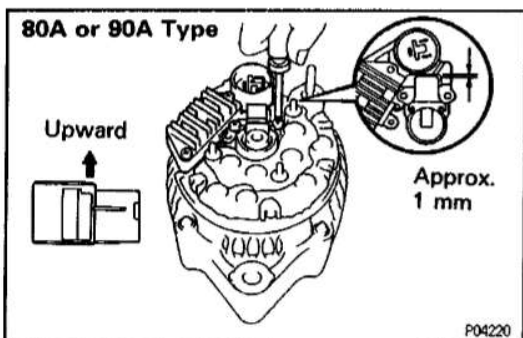
- (c) Install the five screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and connector.



- (d) Fit the brush holder cover.

**(80 A or 90 A Type)**

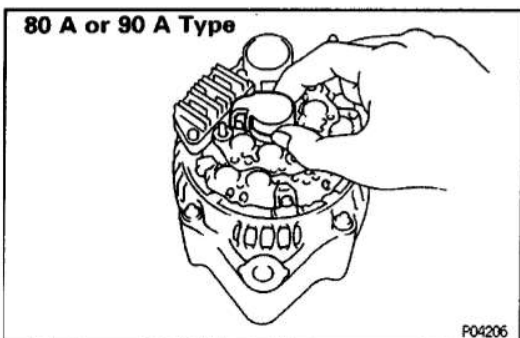
- (a) Place the seal plate on the rectifier end frame.



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

NOTICE: Be careful of the holder installation direction.

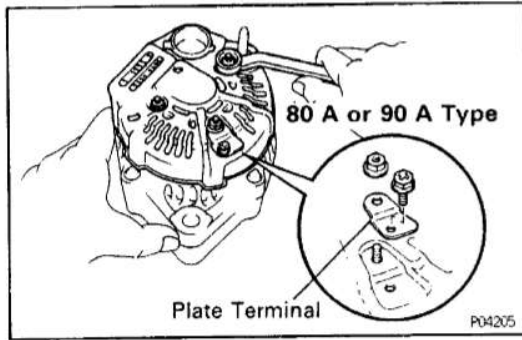
- (c) Install the five screws until there is a clearance of approx. 1 mm (0.04 in.) between the brush holder and connector.



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

CH-28

CHARGING SYSTEM – ALTERNATOR

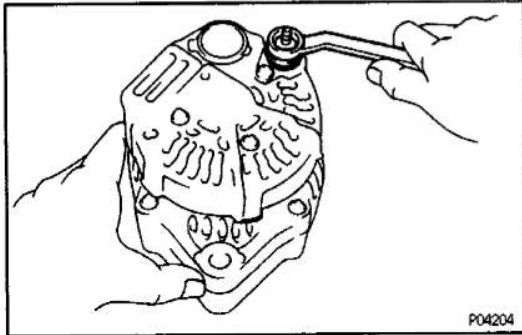
**7. INSTALL REAR END COVER**

(a) (70 A Type)

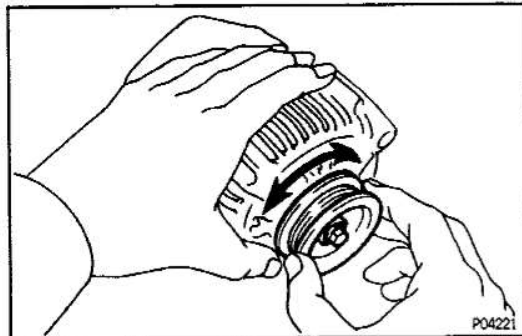
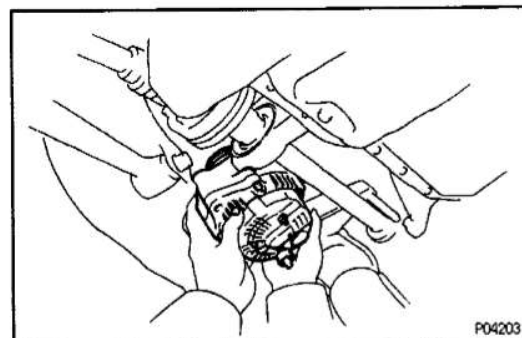
Install the end cover with the three nuts.

(b) (80 A or 90 A Type)

Install the end cover and plate terminal with the three nuts and bolt.



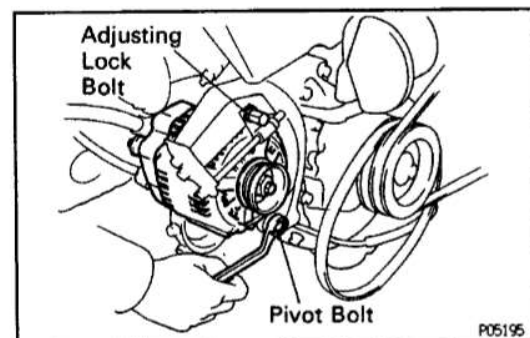
(c) Install the terminal insulator with the nut.

**8. CHECK THAT ROTOR ROTATES SMOOTHLY****ALTERNATOR INSTALLATION (3S-GTE)**

(See Components for Removal and Installation)

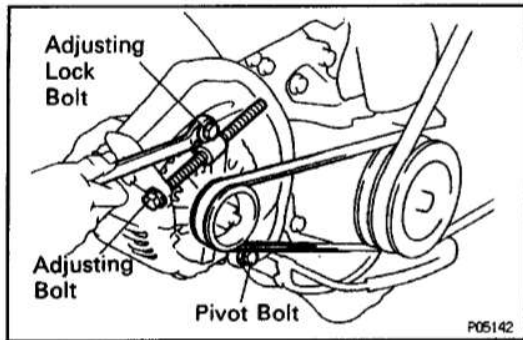
1. INSTALL ALTERNATOR

(a) Pass the alternator between the suspension cross member and drive shaft.

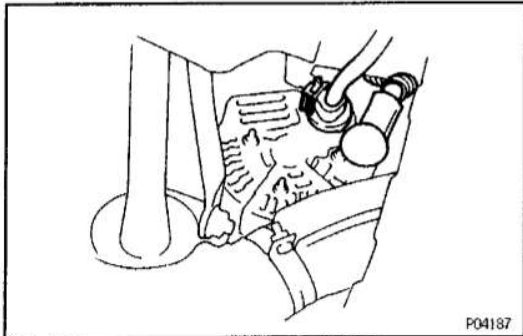


(b) Mount the alternator on the alternator bracket with the pivot bolt and adjusting lock bolt. Do not tighten the bolts yet.

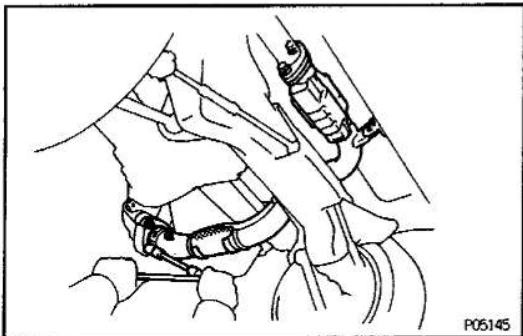
CHARGING SYSTEM – ALTERNATOR



- (c) Install the drive belt with the adjusting bolt.
- (d) Adjust the drive belt with the adjusting bolt.
(See steps 5 to 7 in On-Vehicle Inspection)
- (e) Tighten the Adjusting lock bolt and pivot bolt.



- (f) Connect the alternator connector.
- (g) Connect the alternator wire with the nut.

**2. INSTALL FRONT EXHAUST PIPE**

- (a) Place two new gaskets to the front and rear of the front exhaust pipe.
- (b) Using a 14 mm deep socket wrench, install the front exhaust pipe with three new nuts.

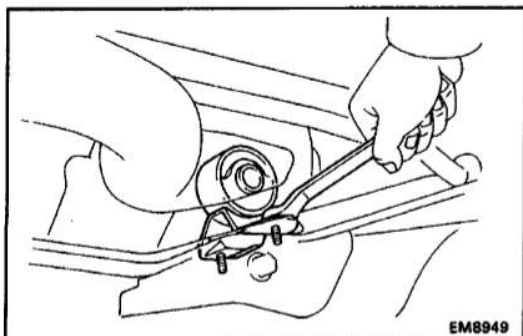
Torque: 62 N-m (630 kgf-cm, 46 ft-lbf)

- (c) Install the two bolts holding the front exhaust pipe to the tailpipe.

Torque: 43 N-m (440 kgf-cm, 32 ft-lbf)

- (d) Install the two bolts holding the front exhaust pipe bracket to the tailpipe bracket.

Torque: 19 N-m (190 kgf-cm, 14 ft-lbf)

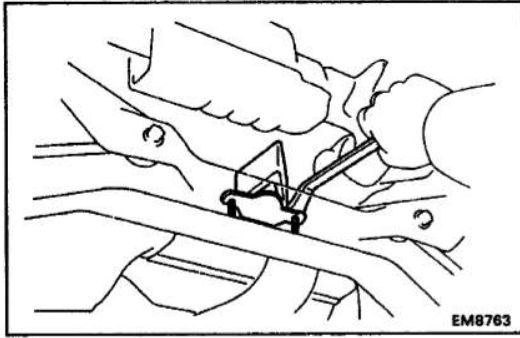


- (e) Install the support bracket with the two bolts.

Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)

CH-30

CHARGING SYSTEM – ALTERNATOR



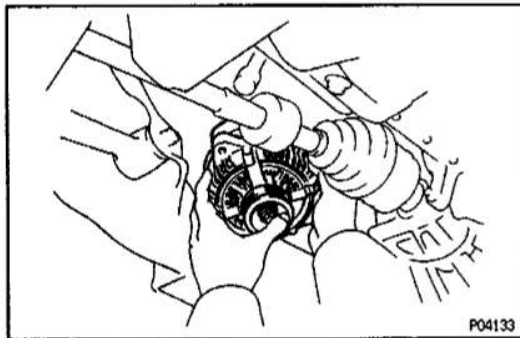
(f) install the damper with the two bolts.

Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)

3. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

4. PERFORM ON-VEHICLE INSPECTION

(See steps 5 to 7 in On-Vehicle Inspection)

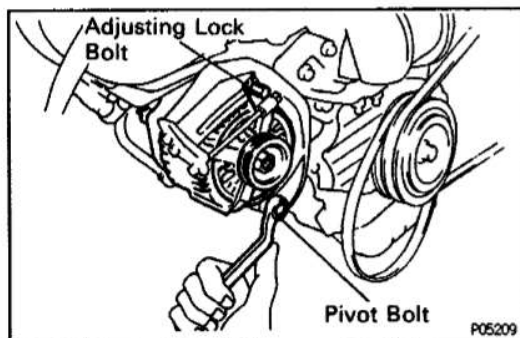


ALTERNATOR INSTALLATION (5S- FE)

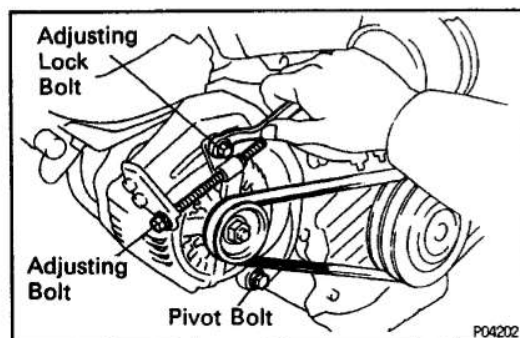
(See Components for Removal and Installation)

1. INSTALL ALTERNATOR

(a) Pass the alternator between the suspension cross-member and drive shaft.



(b) Mount the alternator on the alternator bracket with the pivot bolt and adjusting lock bolt. Do not tighten the bolts yet.

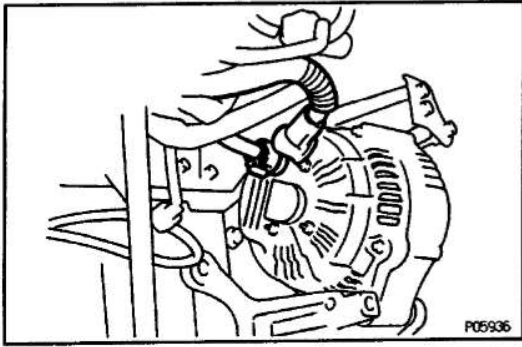


(c) Install the drive belt with the adjusting bolt.

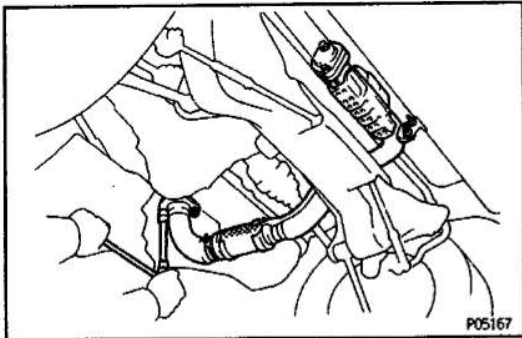
(d) Adjust the drive belt with the adjusting bolt.
(See step 3 in On-Vehicle Inspection)

(e) Tighten the adjusting lock bolt and pivot bolt.

CHARGING SYSTEM - ALTERNATOR



- (f) Connect the alternator connector.
- (g) Connect the alternator wire with the nut.

**2. INSTALL FRONT EXHAUST PIPE**

- (a) Place two new gaskets to the front and rear of the front exhaust pipe.
- (b) Using a 14 mm deep socket wrench, install the front exhaust pipe with three new nuts.

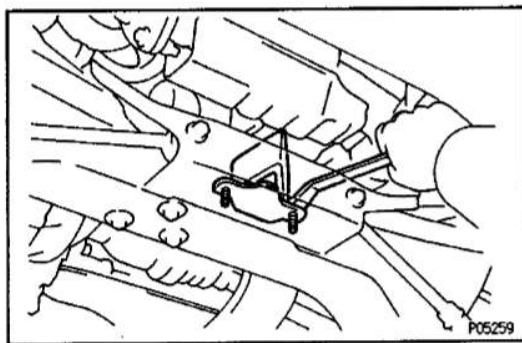
Torque: 62 N-m (630 kgf-cm, 46 ft-lbf)

- (c) Install the two bolts holding the front exhaust pipe to the tailpipe.

Torque: 43 N-m (440 kgf-cm, 32 ft-lbf)

- (d) Install the two bolts holding the front exhaust pipe bracket to the tailpipe bracket.

Torque: 19 N-m (190 kgf-cm, 14 ft-lbf)



- (e) (CALIF. only)

Install the damper with the two bolts.

Torque: 21 N-m (210 kgf-cm, 15 ft-lbf)

3. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY**4. PERFORM ON-VEHICLE INSPECTION**

(See steps 5 to 7 in On-Vehicle Inspection)

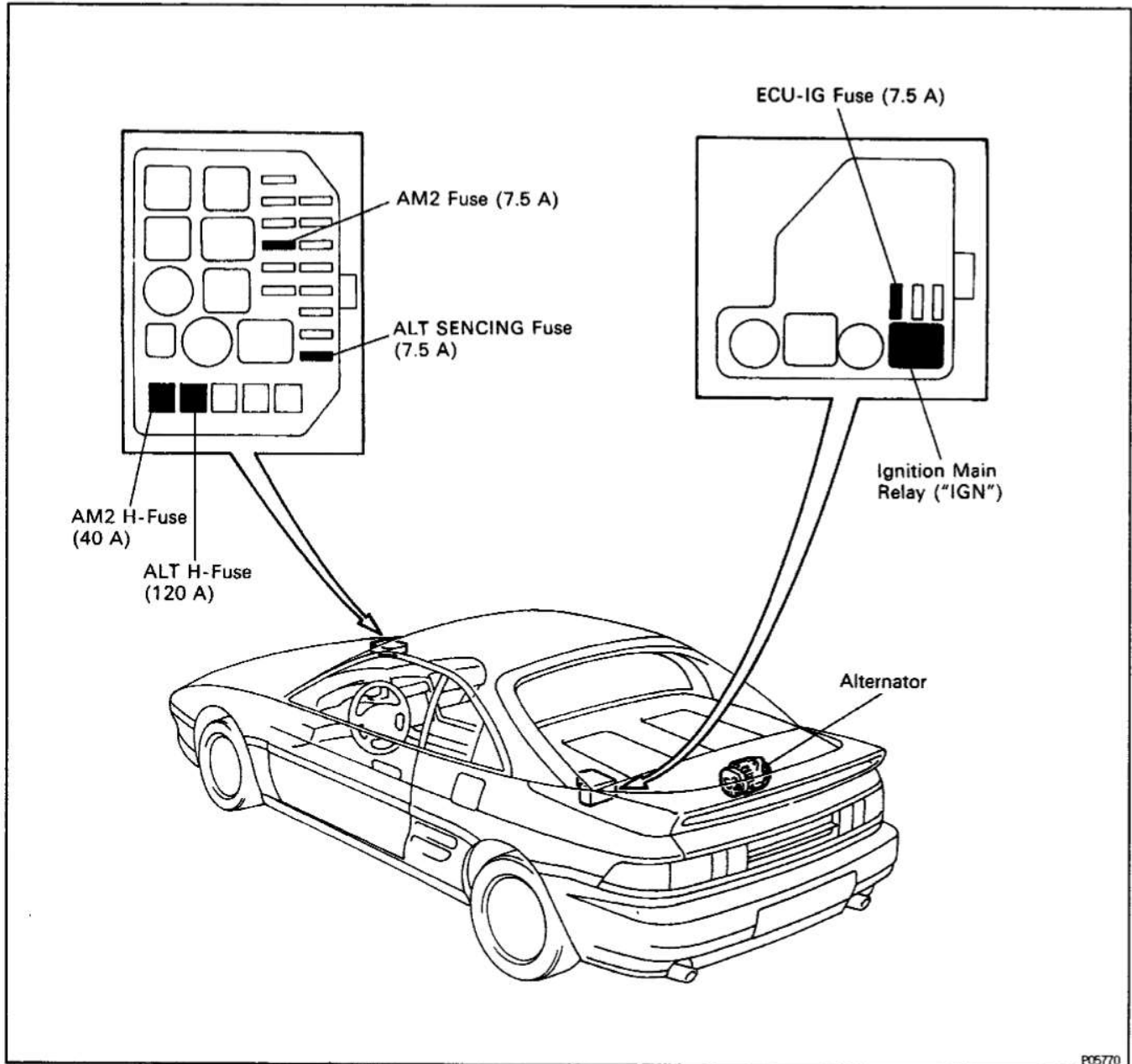
CHARGING SYSTEM

CH-2

CHARGING SYSTEM - PRECAUTION

DESCRIPTION

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



PRECAUTION

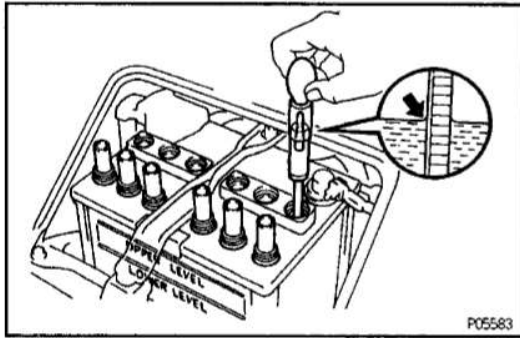
1. Check that the battery cables are connected to the correct terminals.
2. Disconnect the battery cables when the battery is given a quick charge.
3. Do not perform tests with a high voltage insulation resistance tester.
4. Never disconnect the battery while the engine is running.

P05770

CH00J-02

CH-6

CHARGING SYSTEM – VEHICLE INSPECTION



P05583

ON-VEHICLE INSPECTION

1. CHECK BATTERY SPECIFIC GRAVITY AND ELECTROLYTE LEVEL

CH02E-01

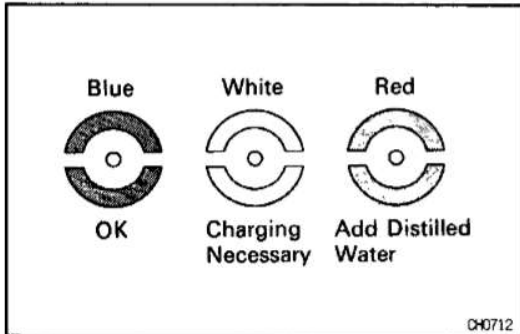
- (a) Check the electrolyte level of each cell.
If insufficient, refill with distilled (or purified) water.
- (b) Check the specific gravity of each cell.

Standard specific gravity at 20° C (68° F):

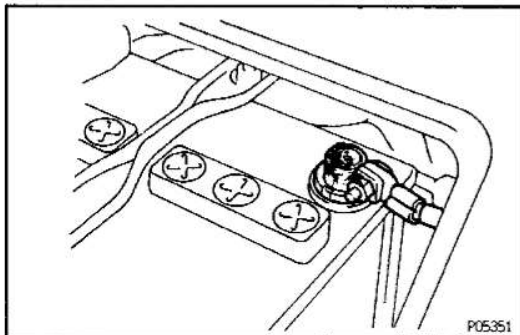
1.25 – 1.27

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

HINT: Check the indicator as shown in the illustration.



CH0712



P05351

2. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES

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

Fusible link:

2.01.

H-Fuse:

AM2 40A

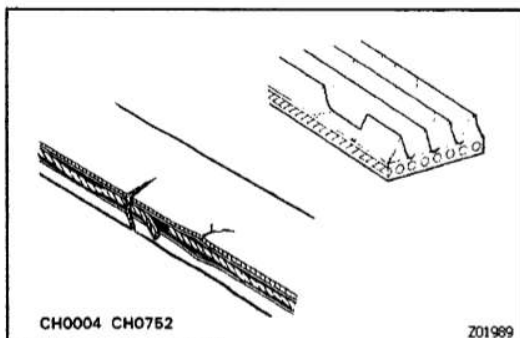
ALT 120A

Fuse:

AM2 7.5A

ECU-IG 7.5A

ALT SENCING 7.5A



CH0004 CH0752

Z01989

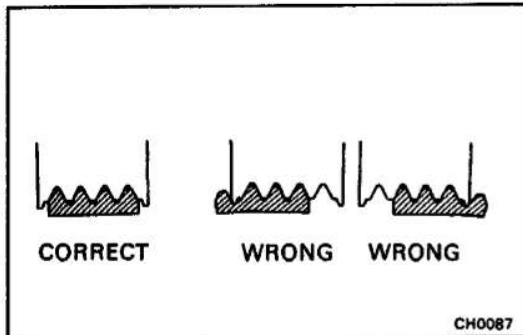
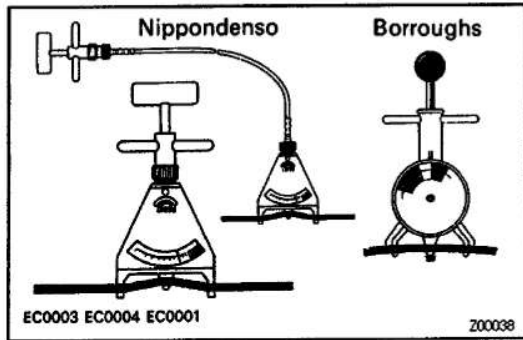
3. INSPECT DRIVE BELT

- (a) Visually check the 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 belt are considered acceptable. If the belt has chunks missing from the ribs, it should be replaced.

CHARGING SYSTEM – VEHICLE INSPECTION



(b) Using a belt tension gauge, measure the belt tension.

Belt tension gauge:

Nippondenso BTG-20 (95506-00020)

Borroughs No. BT-33-73F

Drive belt tension:

New belt

120 ± 20 lbf

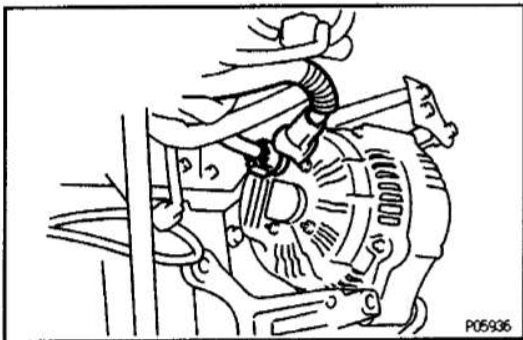
Used belt

104 ± 20 lbf

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

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.



4. VISUALLY CHECK ALTERNATOR WIRING AND LISTEN FOR ABNORMAL NOISES

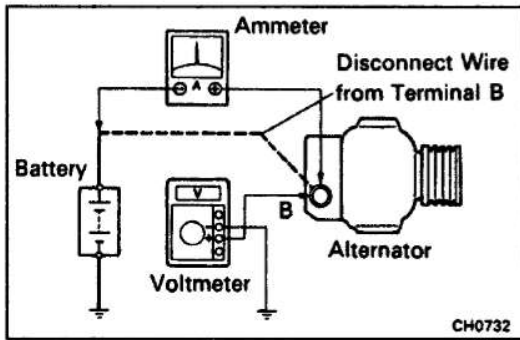
- Check that the wiring is in good condition.
- Check that there is no abnormal noise from the alternator while the engine is running.

5. INSPECT DISCHARGE WARNING LIGHT CIRCUIT

- Turn the ignition switch 'ON'. Check that the discharge warning light comes on.
- Start the engine. Check that the light goes off.
If the light does not operate as specified, troubleshoot the discharge warning light circuit.

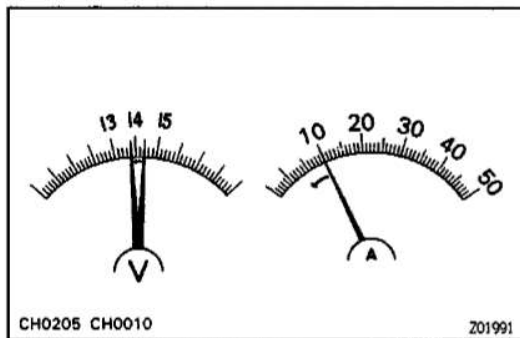
CH-8

CHARGING SYSTEM – 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 (–) lead of the ammeter.
 - Connect the positive (+) lead of the ammeter to terminal B of the alternator.
 - Connect the positive (+) lead of the voltmeter to terminal B of the alternator.
 - Ground the negative (–) lead of the voltmeter.



- (b) Check the charging circuit as follows:

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

Standard amperage:

10 A or less

Standard voltage:

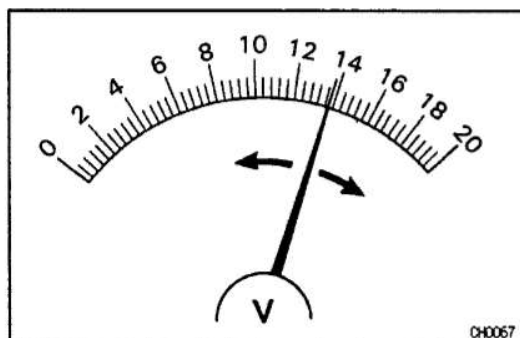
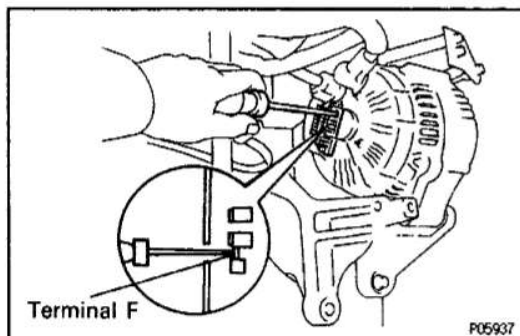
14.0 – 15.1 V at 260°C (77°F)

13.5 – 14.3 V at 115° C (239° F)

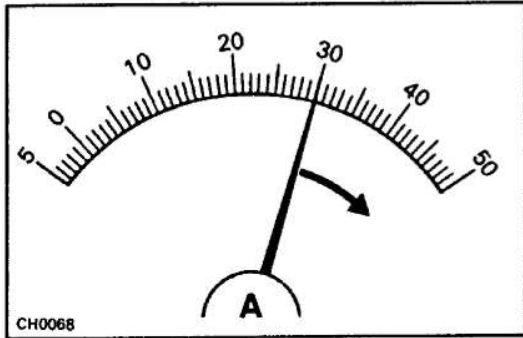
If the voltmeter reading is more than standard voltage, replace the IC regulator.

If the voltmeter reading is less than the 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.



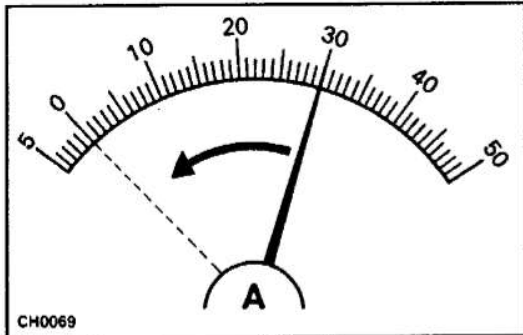
- If the voltmeter reading is more than standard voltage, replace the IC regulator.
- If the voltmeter reading is less than standard voltage, check the alternator–.



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".
- (b) Check the reading on the ammeter.

Standard amperage:
30 A or more



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

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

CH-4**CHARGING SYSTEM – OPERATION**

OPERATION

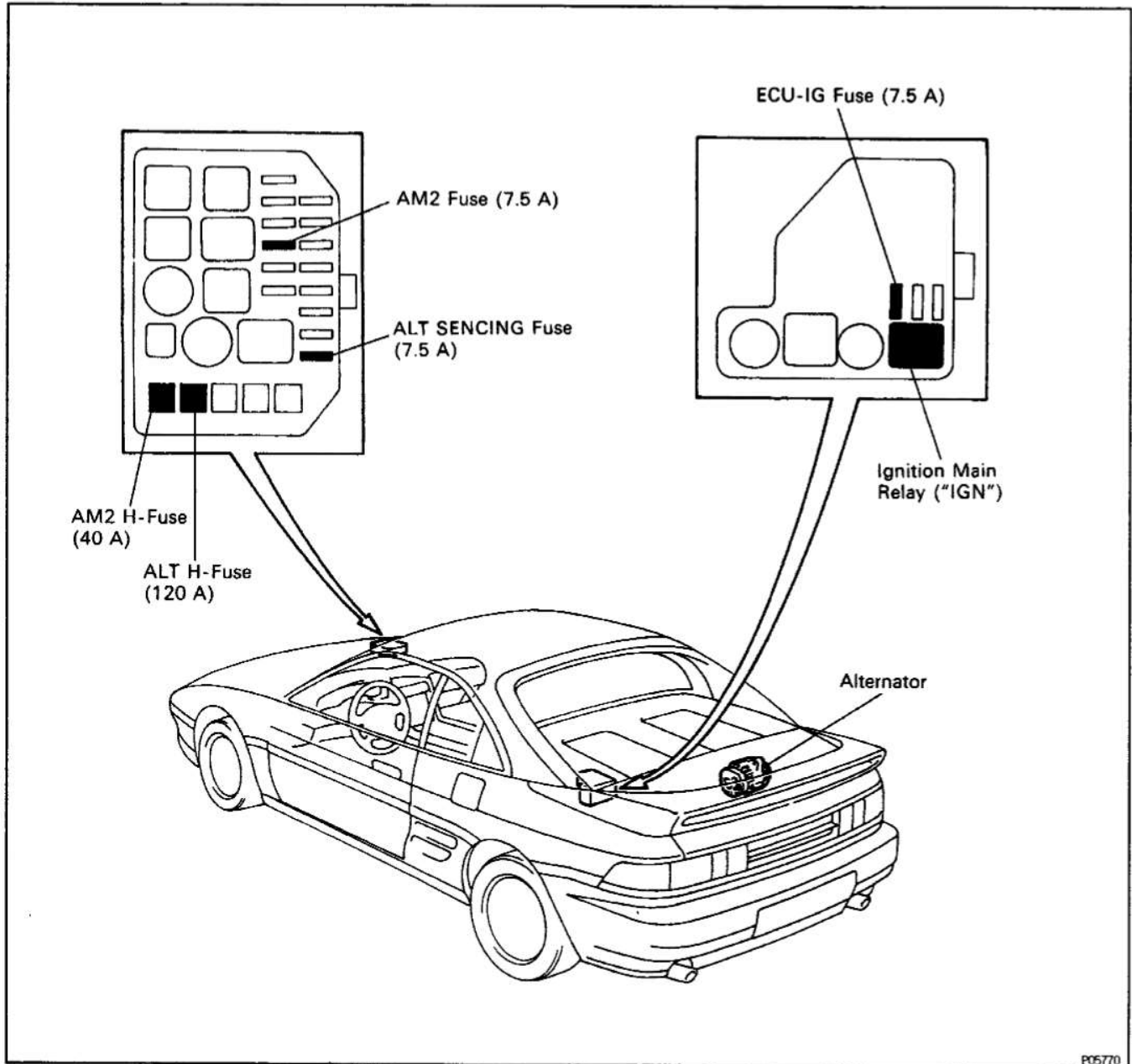
When the ignition switch is turned ON, current from the battery flows from terminal L of the alternator through the IC regulator to terminal E, causing the discharge warning light to light up. Then when the engine is started, the voltage output increases as the alternator rpm increases. When the voltage 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 discharge 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.

CH-2

CHARGING SYSTEM – PRECAUTION

DESCRIPTION

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



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.

P05770

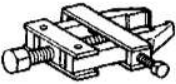
CH90J-02

CHARGING SYSTEM – PREPARATION

PREPARATION

SST (SPECIAL SERVICE TOOLS)

CH9000-01

	09285-76010 Injection Pump Camshaft Bearing Cone Replace	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	
	09820-00030 Alternator Rear Bearing Replacer	Rotor rear bearing
	09820-63010 Alternator Pulley Set Nut Wrench Set	

CH9008-01

RECOMMENDED TOOLS

	09082-00015 TOYOTA Electrical Tester	
---	--------------------------------------	--

CH900U-02

EQUIPMENT

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

CH-32

CHARGING SYSTEM – SERVICE SPECIFICATIONS

IGNITION MAIN RELAY

(See IG section in 3S-GTE Engine)

8T014-02

SERVICE SPECIFICATIONS

CH01A-02

SERVICE DATA

Battery	Specific gravity (When full charge at 20° C (68° F))	1.25 – 1.27
Drive belt	Tension	
	New belt	120 ± 20 lbf
	Used belt	104 ± 20 lbf
Alternator	Rated output	12 V – 70 A, 12 V – 80 A, 12 V – 90 A
	Rotor coil resistance	2.8 – 3.0 Ω
	Slip ring diameter (STD)	14.2 mm – 14.4 mm (0.559 – 0.567 in.)
	Slip ring diameter (Minimum)	12.8 mm (0.504 in.)
	Brush exposed length (STD)	10.5 mm (0.413 in.)
	Brush exposed length (Minimum)	1.5 mm (0.59 in.)
Alternator regulator (IC)	Regulating voltage at 25° C (77° F)	14.0 – 15.1 V
	Regulating voltage at 115° C (239° F)	13.5 – 14.3 V

CH01C-02

TORQUE SPECIFICATIONS

Part tightened	N·m	kgf·cm	ft·lbf
Alternator pulley nut	110	1,125	81
TWC (main) x Exhaust manifold	29	300	22
Tailpipe x Front exhaust pipe	43	440	32
Tailpipe bracket x Front exhaust pipe bracket	19	190	14
Suspension member damper x Suspension crossmember	21	210	15
Exhaust pipe support bracket x Suspension crossmember (3S-GTE)	21	210	15

SYSTEM CIRCUIT

