

2005 ELECTRICAL

Charging - RAV4

CHARGING SYSTEM

ON-VEHICLE INSPECTION

CAUTION:

- Check that the battery cables are connected to the correct terminals.
- Disconnect the battery cables when the battery is given a quick charge.
- Do not perform tests with a high voltage insulation resistance tester.
- Never disconnect the battery while the engine is running.
- Check that the charging cable is tightened on terminal B of the generator and the fuse box.
- Do not perform the inspection of the alternator in which terminal F is connected to the other terminal.

1. CHECK BATTERY ELECTROLYTE LEVEL

Check the electrolyte quantity of each cell.

Maintenance-free battery:

If under the lower level, replace the battery (or add distilled water if possible) and check the charging system.

Except Maintenance-free battery:

If under the lower level, add distilled water.

2. Except Maintenance-free battery:

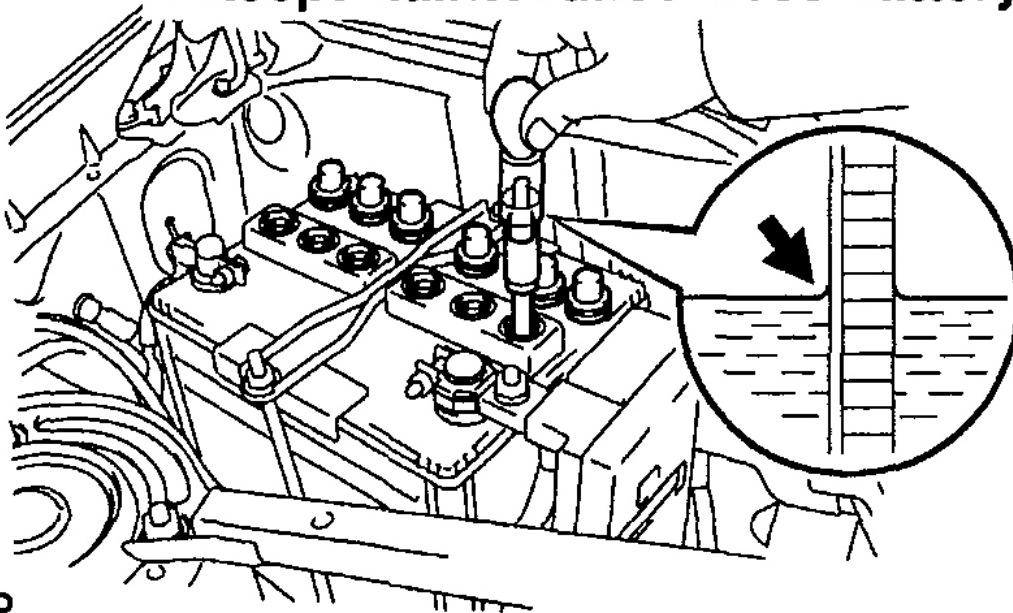
CHECK BATTERY SPECIFIC GRAVITY

Check the specific gravity of each cell.

Standard specific gravity: 1.25 to 1.29 at 20°C (68°F)

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

Except Maintenance-Free Battery



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Fig. 1: Checking Battery Specific Gravity

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Maintenance-free battery:

CHECK BATTERY VOLTAGE

- a. After having driven the vehicle and in the case that 20 minutes have not passed after having stopped the engine, turn the ignition switch ON and turn on the electrical system (headlight, blower motor, rear defogger etc.) for 60 seconds to remove the surface charge.
- b. Turn the ignition switch OFF and turn off the electrical systems.

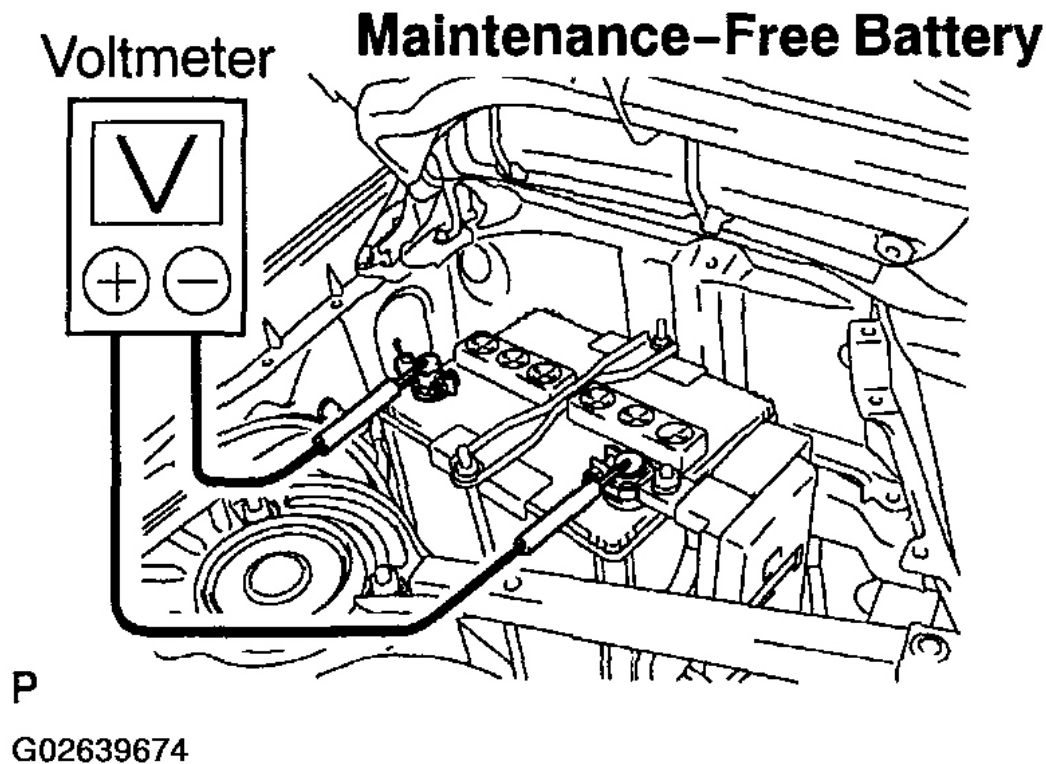


Fig. 2: Checking Battery Voltage

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the battery voltage between the negative (-) and positive (+) terminals of the battery.

Standard voltage: 12.5 to 12.9 V at 20°C (68°F)

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

4. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES

- a. Check that the battery terminals are not loosen or corroded.
- b. Check the fuses and fusible link for continuity.

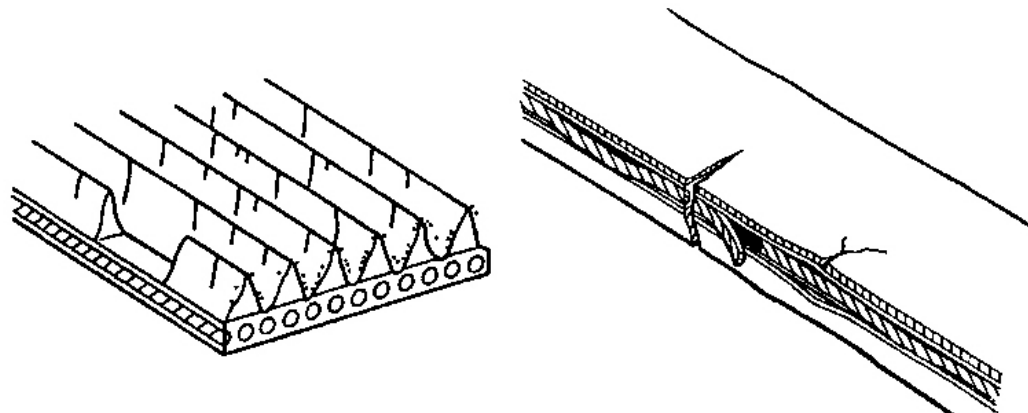
5. INSPECT DRIVE BELT

- 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.



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Fig. 3: Inspecting Drive Belt

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Hook SST on the hexagonal portion of the drive belt tensioner bracket, compress the drive belt tension by turning the drive belt tensioner bracket clockwise and, take 3 seconds or more for 1 stroke.
- The drive belt tension can be released by turning the belt tensioner.

SST 09249-63010

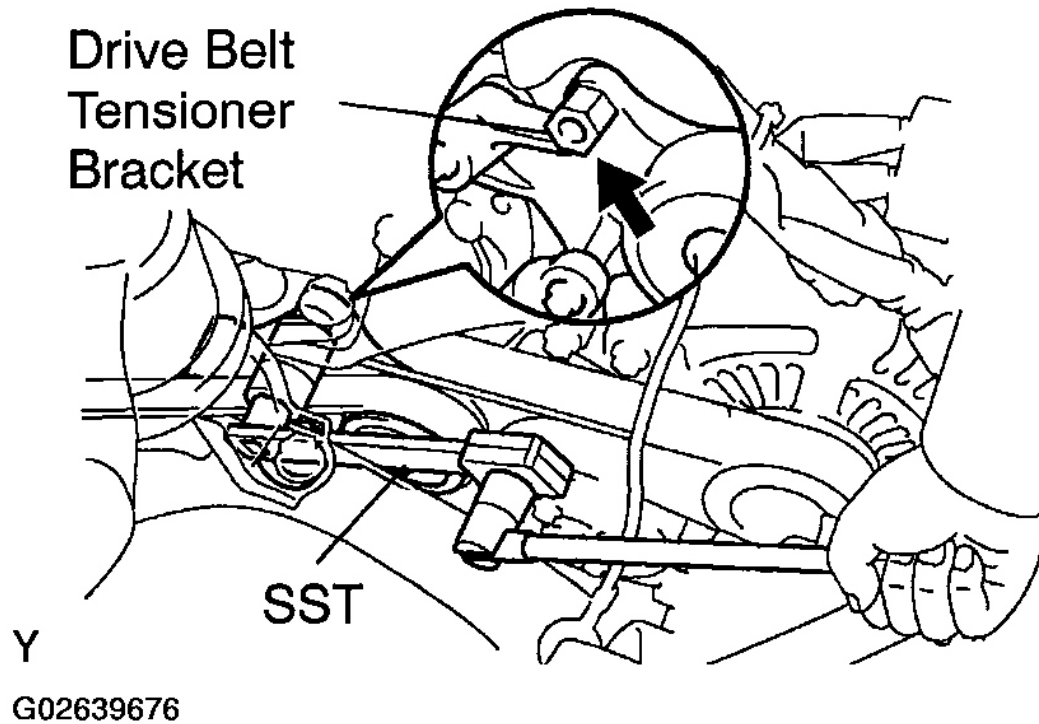
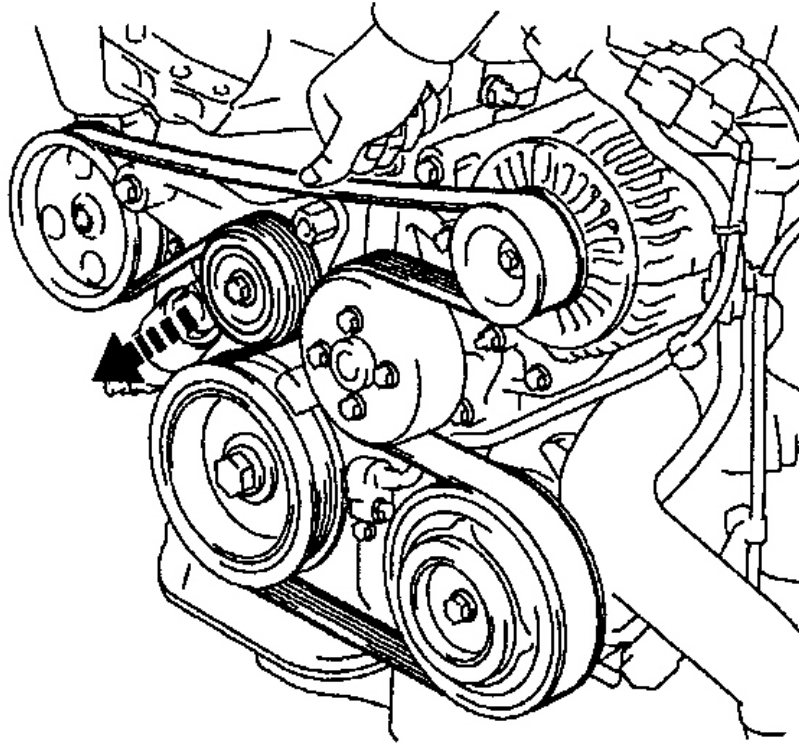


Fig. 4: Identifying Drive Belt Tensioner Bracket Hexagon
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the belt tensioner operation.
- Check that belt tensioner moves downward when the drive belt is pressed down at the points indicated in **Fig. 5** with approx. 98 N (10kgf, 22.0 lbf) of force.



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Fig. 5: Checking Belt Tensioner Operation

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Check the alignment of the belt tensioner pulley to make sure the drive belt will not slip off the pulley.

**Fig. 6: Checking Belt & Pulley Alignment**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If necessary, replace the belt tensioner.

HINT:

- 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 check the belt tension existing.

6. VISUALLY CHECK GENERATOR WIRING AND LISTEN FOR ABNORMAL NOISES

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

7. INSPECT CHARGE WARNING LIGHT CIRCUIT

- a. Turn the ignition switch ON. Check that the charge warning light comes on.
- b. Start the engine. Check that the light goes off.

If the light does not operate as specified, troubleshoot the charge warning light circuit.

8. INSPECT CHARGING CIRCUIT WITHOUT LOAD**HINT:**

If a battery/generator 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:
 1. Disconnect to the wire from terminal B of the alternator and connect it to the negative (-) lead of the ammeter.

2. Connect the positive (+) lead of the ammeter to terminal B of the alternator.
3. Connect the positive (+) lead of the voltmeter to terminal B of the alternator.
4. Ground the negative (-) lead of the voltmeter.

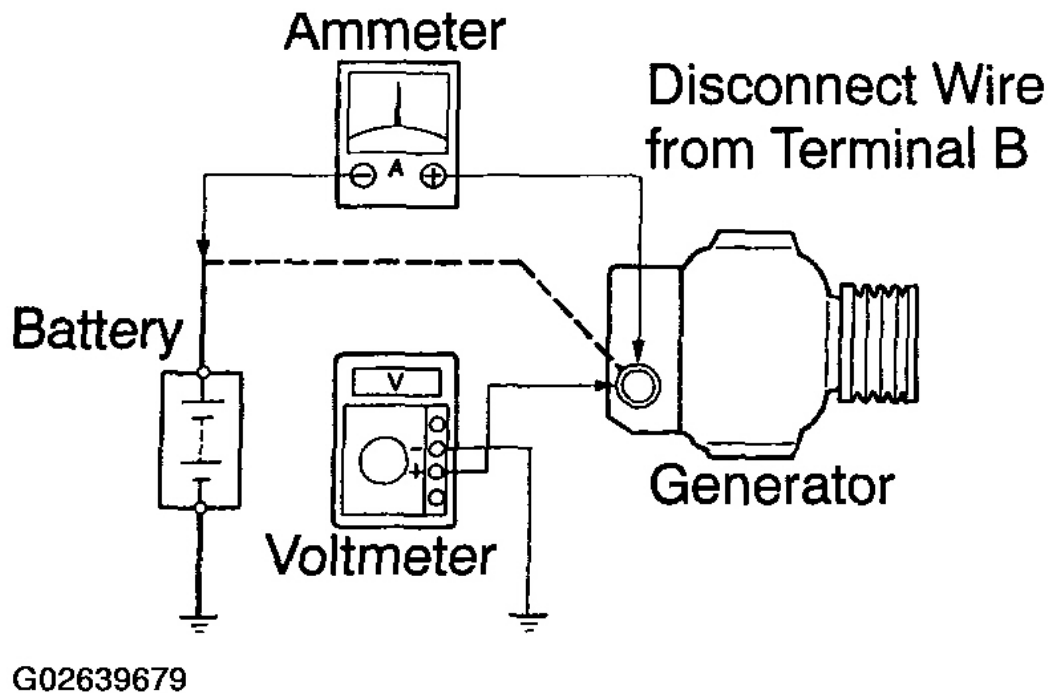


Fig. 7: Inspecting Charging Circuit Without Load
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 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: 13.2 to 14.8 V

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

9. 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 H (High).
- b. Check the reading on the ammeter.

2005 Toyota RAV4

2005 ELECTRICAL Charging - RAV4

Standard amperage: 30 A or more

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

HINT:

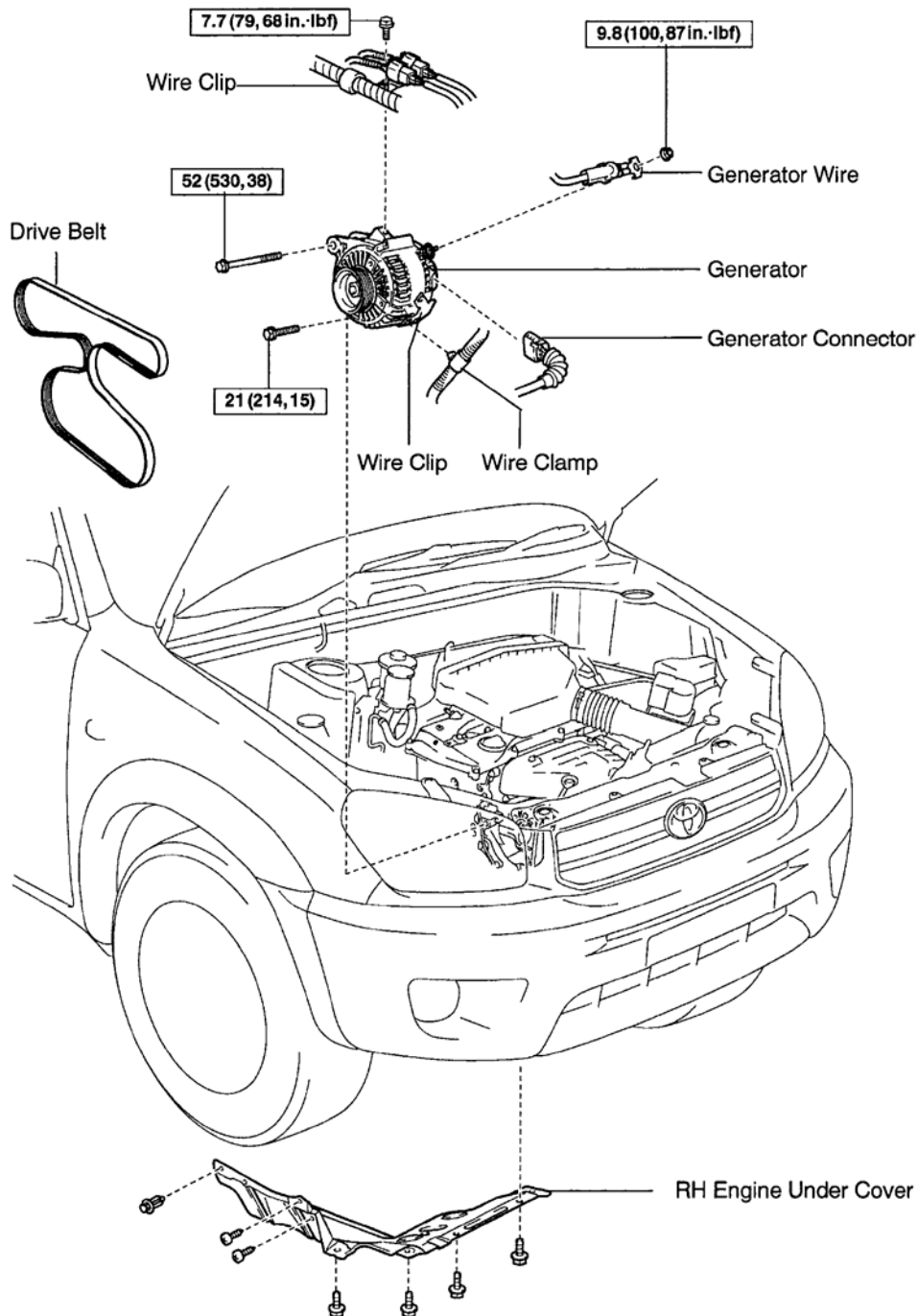
If the battery is fully charged, the indication will sometimes be less than standard amperage.

GENERATOR

COMPONENTS

2005 Toyota RAV4

2005 ELECTRICAL Charging - RAV4



$\text{N}\cdot\text{m}$ (kgf·cm, ft·lbf) : Specified torque

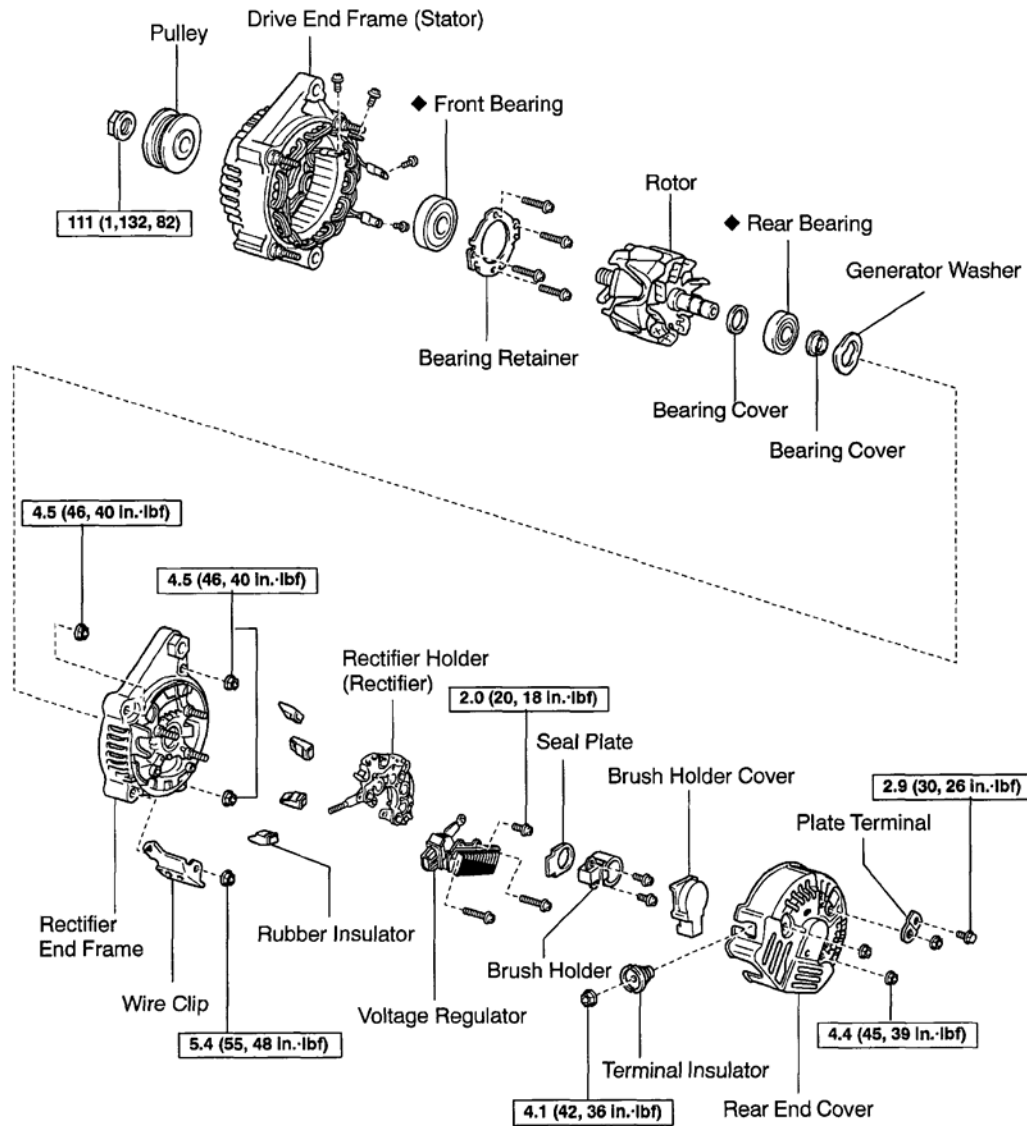
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Fig. 8: Exploded View Of Generator Components & Torque Specifications (1 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

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12 V 90 A Type



N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

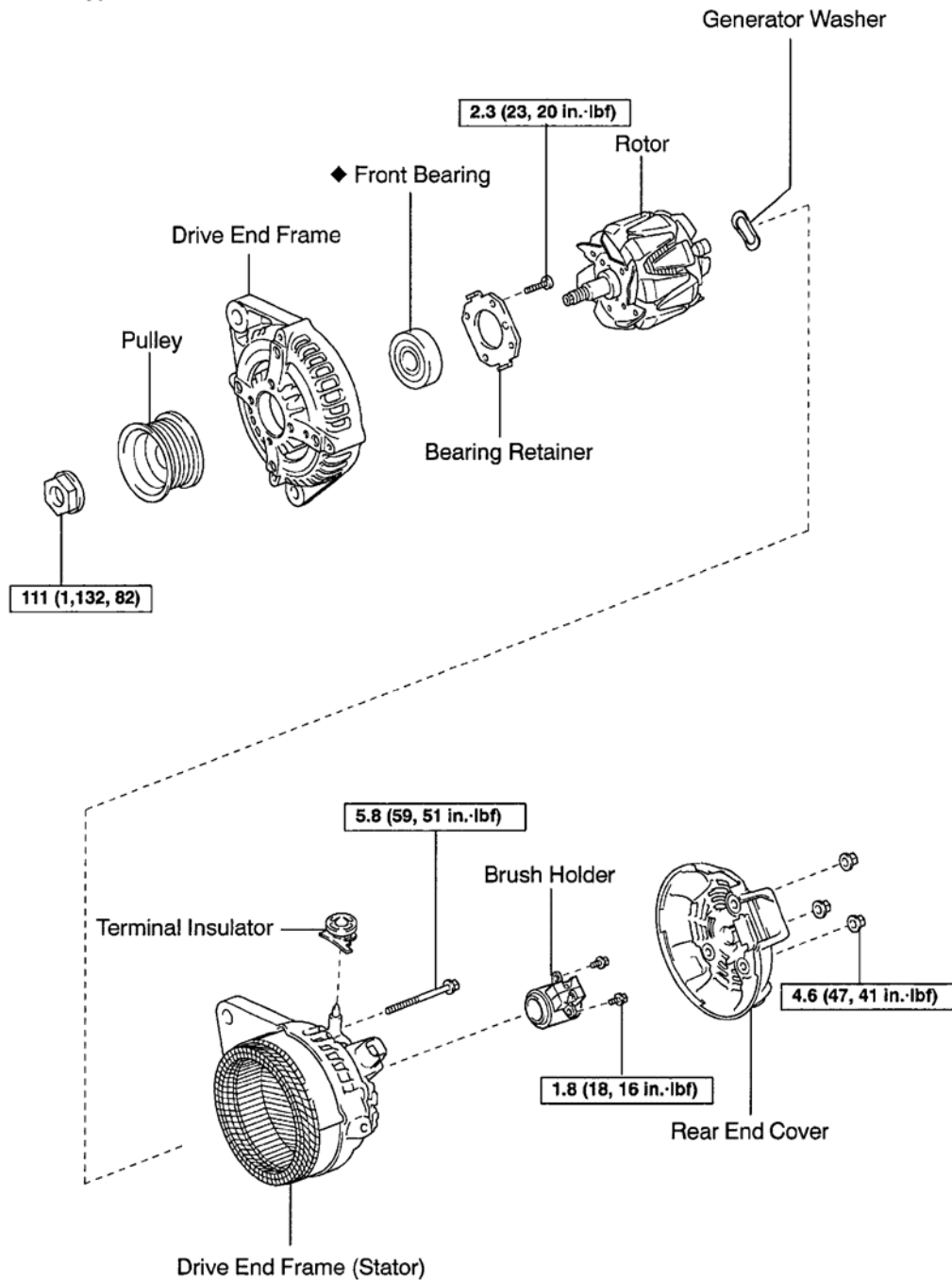
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Fig. 9: Exploded View Of Generator Components & Torque Specifications (2 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2005 Toyota RAV4

2005 ELECTRICAL Charging - RAV4

12 V 100 A Type



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Fig. 10: Exploded View Of Generator Components & Torque Specifications (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. REMOVE DRIVE BELT

Hook SST on the hexagonal portion of the drive belt tensioner bracket, compress the drive belt tension by turning the drive belt tensioner bracket clockwise, and remove the drive belt.

SST 09249-63010

NOTE: Compress the drive belt tensioner by taking 3 seconds or more and remove the drive belt.

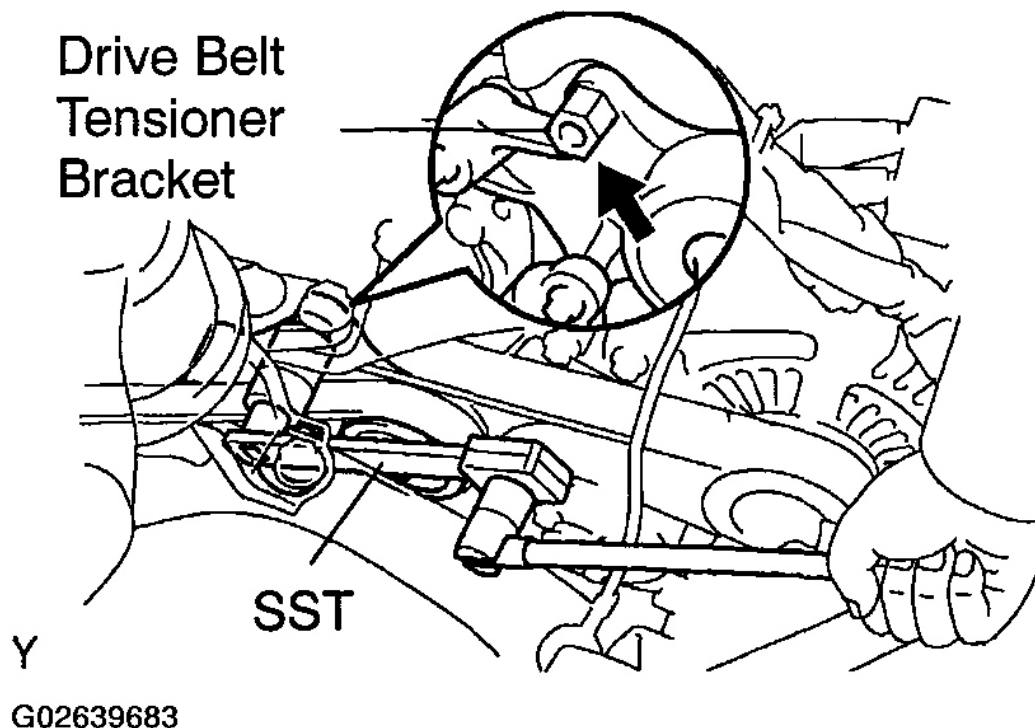


Fig. 11: Identifying Drive Belt Tensioner Bracket Hexagon
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE GENERATOR

- Remove the bolt, and disconnect the wire clip on the wire connectors from the generator.
- Disconnect the wire clamp from the wire clip.
- Remove the cap and nut, and disconnect the generator wire.
- Disconnect the generator connector.

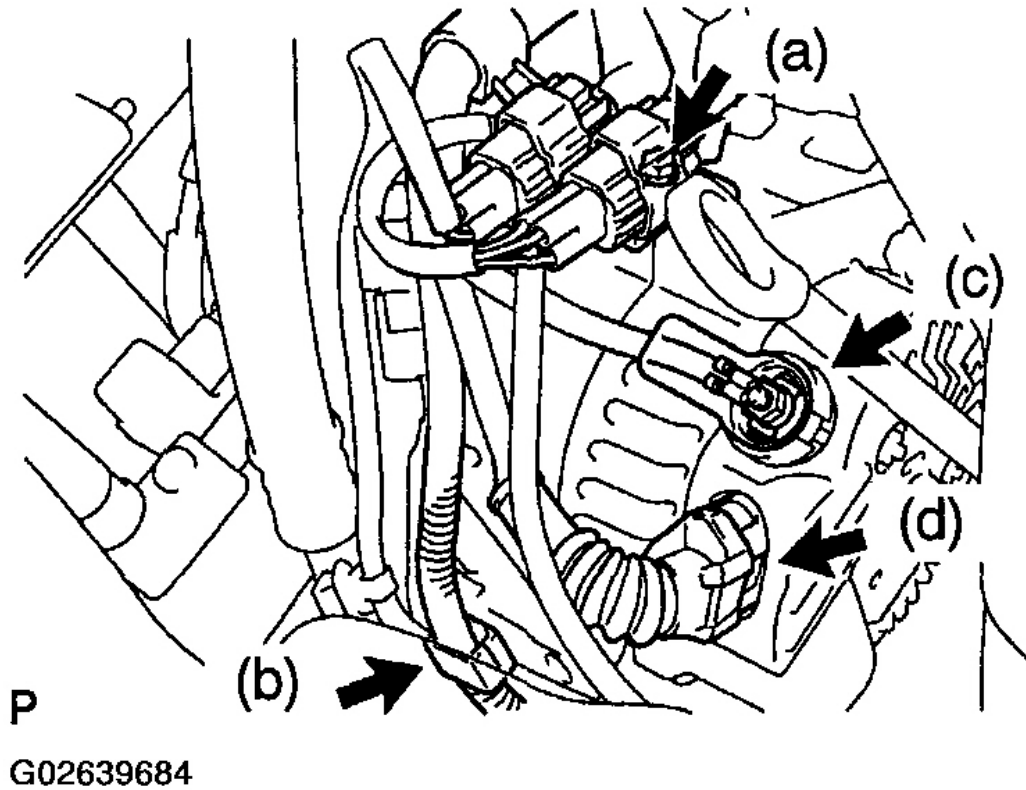
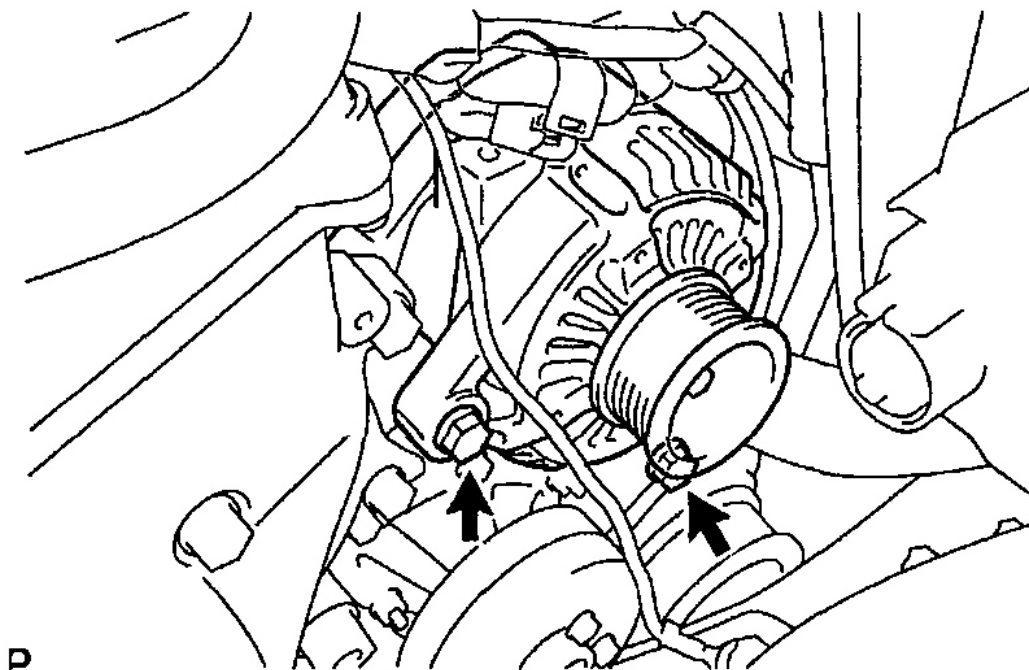


Fig. 12: Disconnecting Generator Harness Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Remove the 2 bolts and generator.



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Fig. 13: Removing Generator

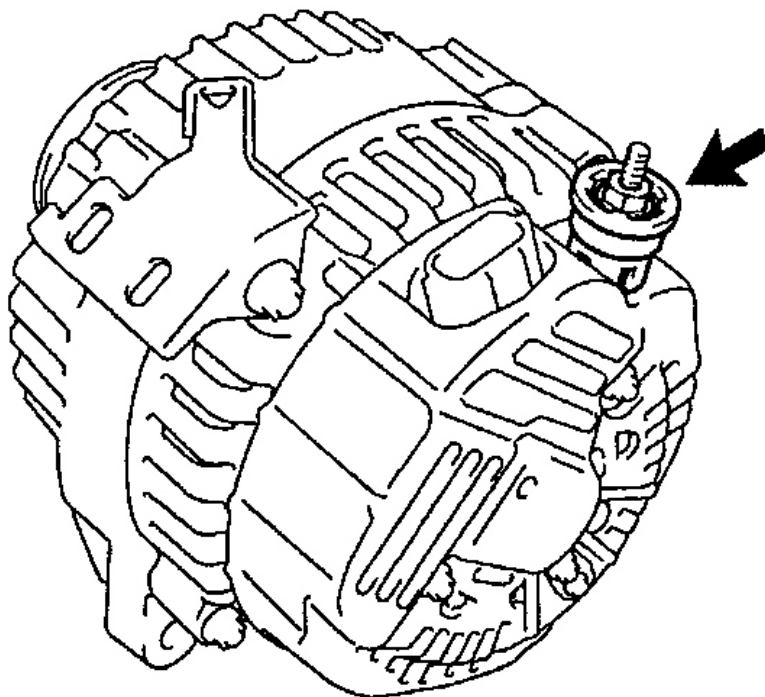
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

1. 12 V 90 A type:

REMOVE REAR END COVER

- a. Remove the nut and terminal insulator.



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Fig. 14: Removing Nut & Terminal Insulator

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the bolt, 3 nuts, plate terminal, end cover and brush holder cover.

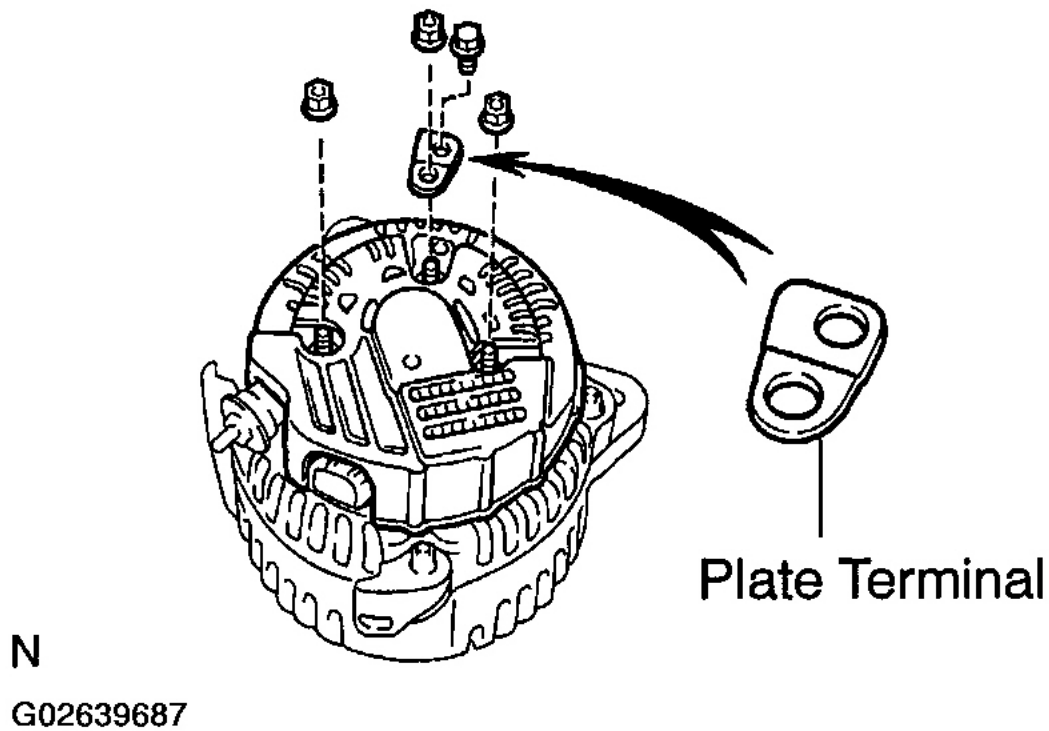
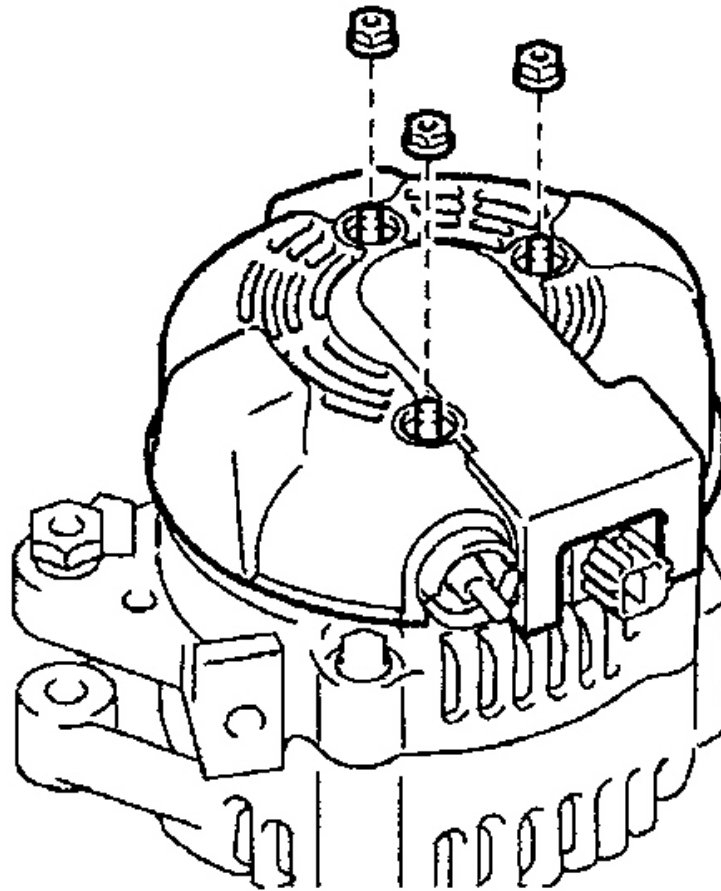


Fig. 15: Removing Bolt, 3 Nuts, Plate Terminal, End Cover & Brush Holder Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. 12 V 100 A type:

REMOVE REAR END COVER

Remove the 3 nuts and terminal insulator.



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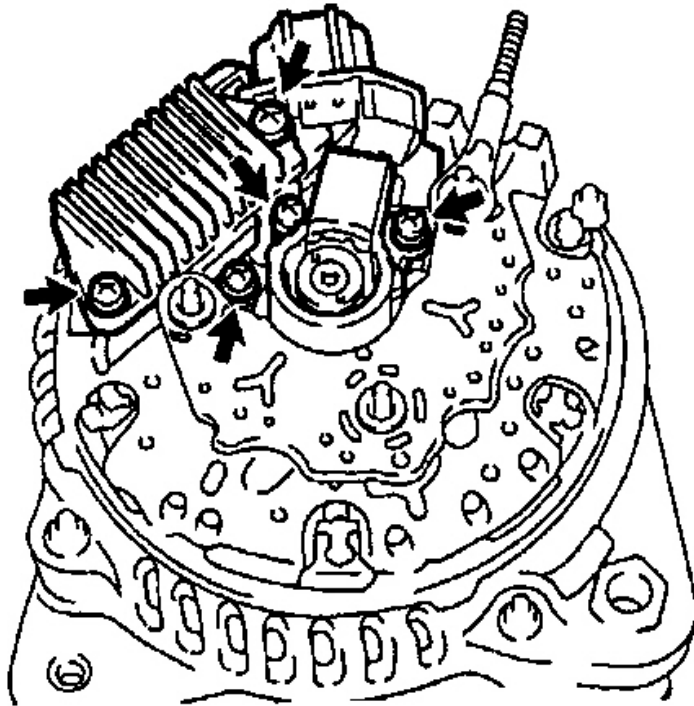
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Fig. 16: Removing 3 Nuts & Terminal Insulator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. 12 V 90 A type:

REMOVE BRUSH HOLDER AND VOLTAGE REGULATOR

- a. Remove the 5 screws, brush holder and voltage regulator.
- b. Remove the seal plate from the rectifier end frame.



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Fig. 17: Removing 5 Screws, Brush Holder & Voltage Regulator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. 12 V 100 A type:

REMOVE BRUSH HOLDER AND TERMINAL INSULATOR

- a. Remove the terminal insulator.

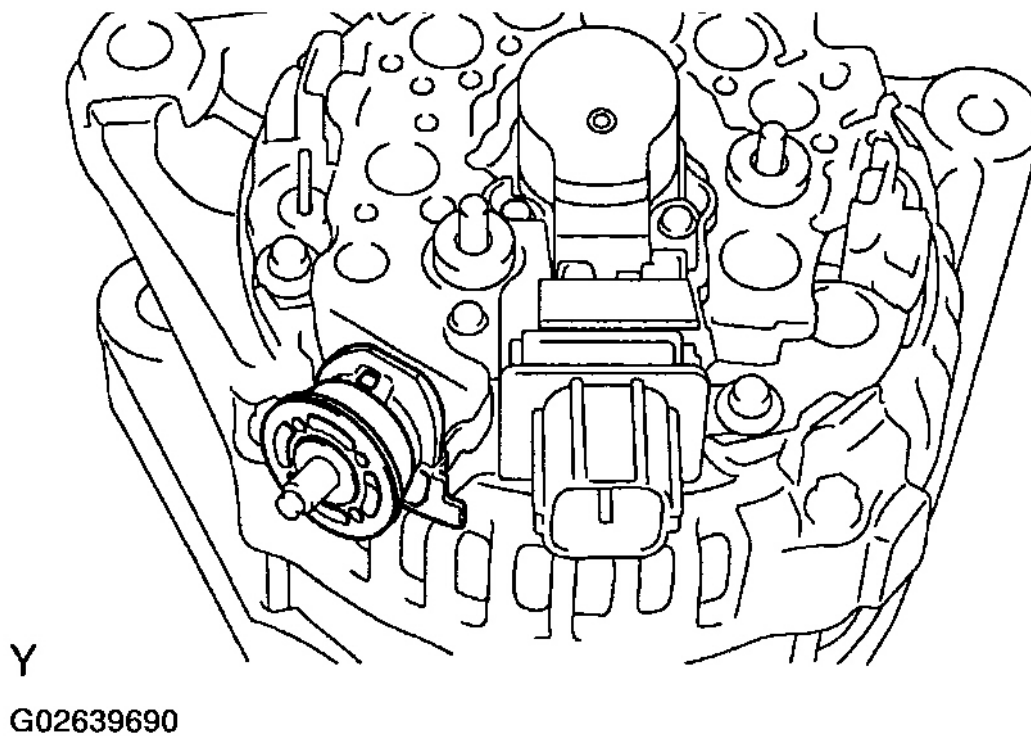


Fig. 18: Removing Terminal Insulator

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the 2 screws and brush holder.

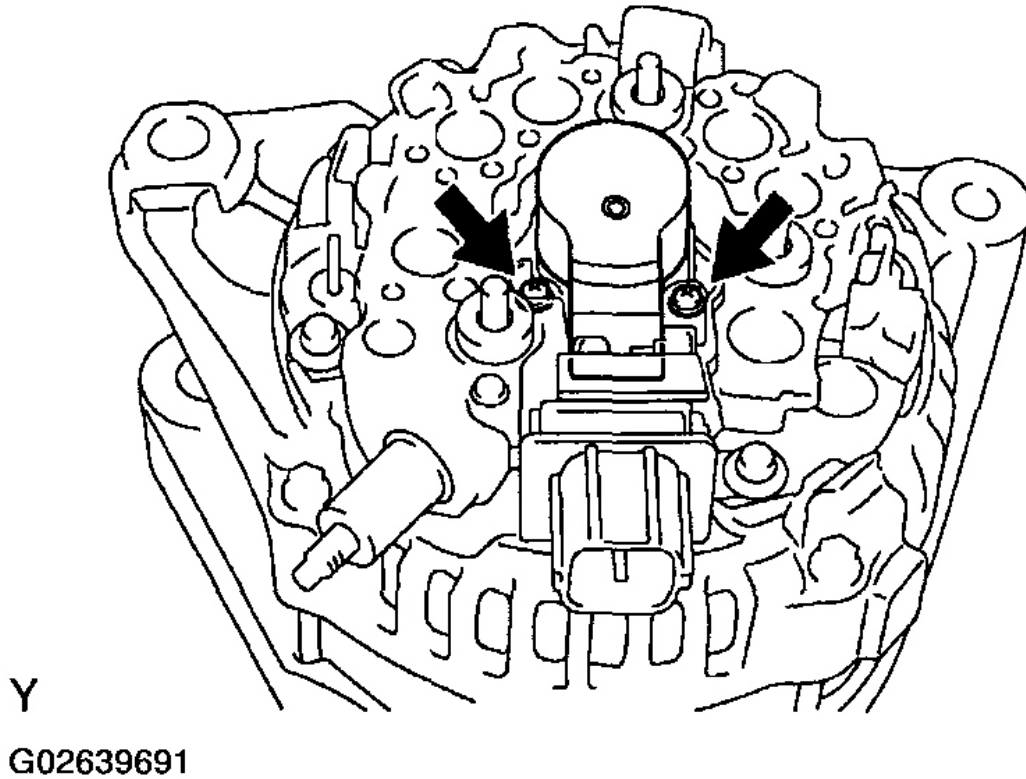
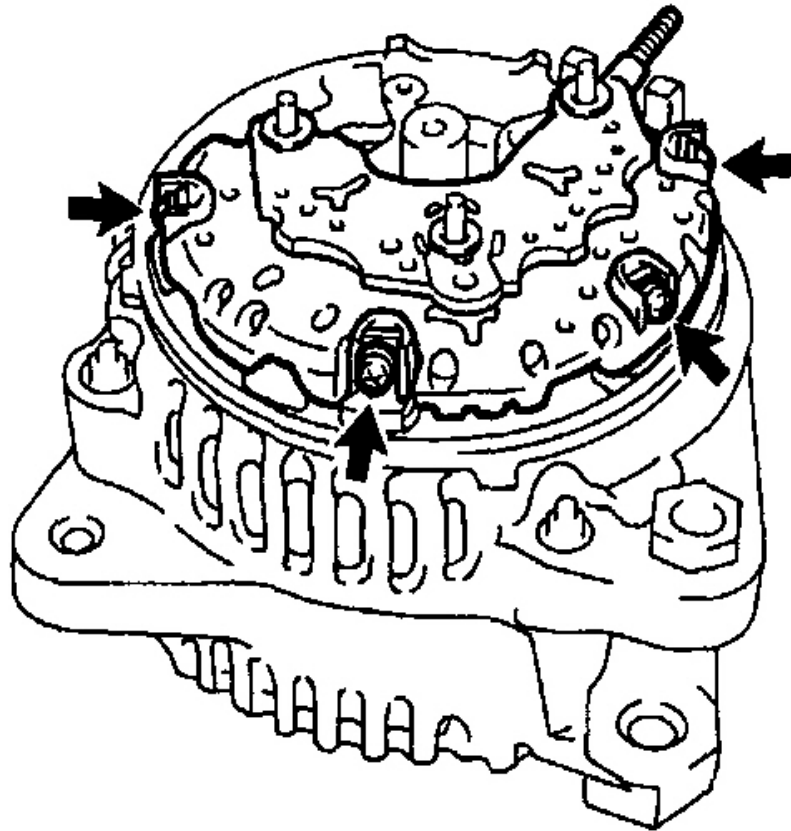


Fig. 19: Removing 2 Screws & Brush Holder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. 12 V 90 A type:

REMOVE RECTIFIER HOLDER

- a. Remove the 4 screws and rectifier holder.
- b. Remove the 4 rubber insulators.



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Fig. 20: Removing 4 Screws & Rectifier Holder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

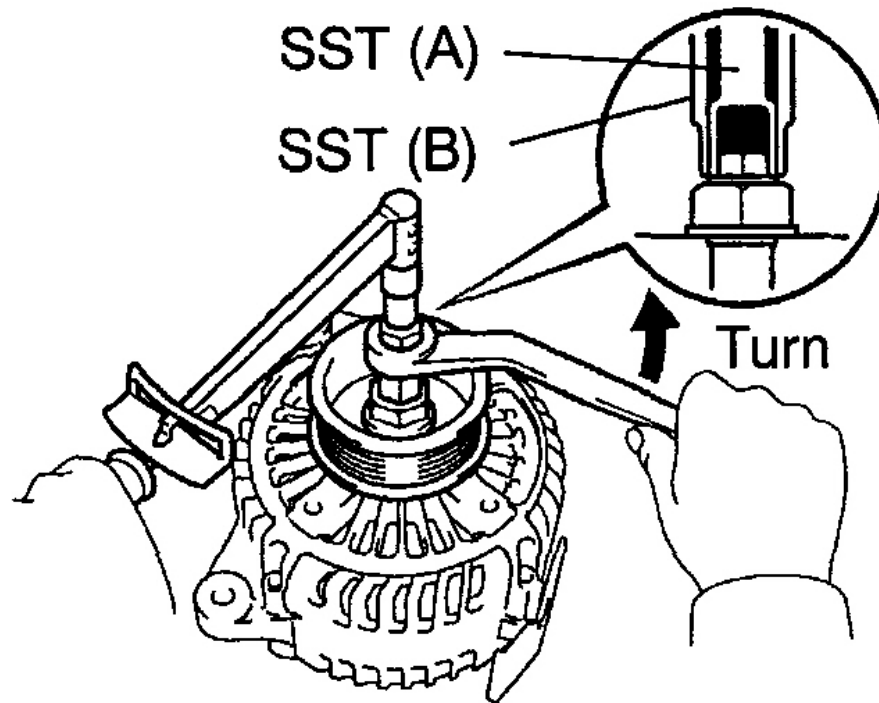
6. REMOVE PULLEY

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

SST 09820-63011

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

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

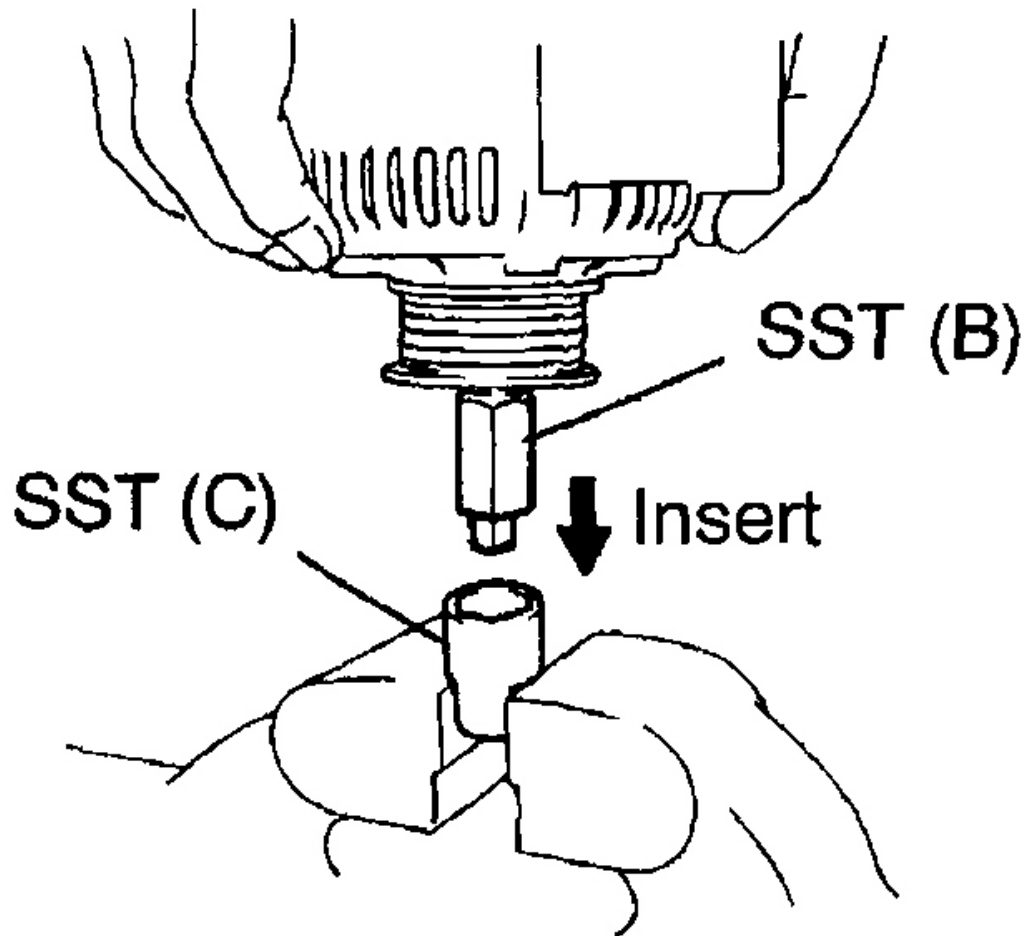


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Fig. 21: Installing SST (A & B) To Remove Pulley
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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



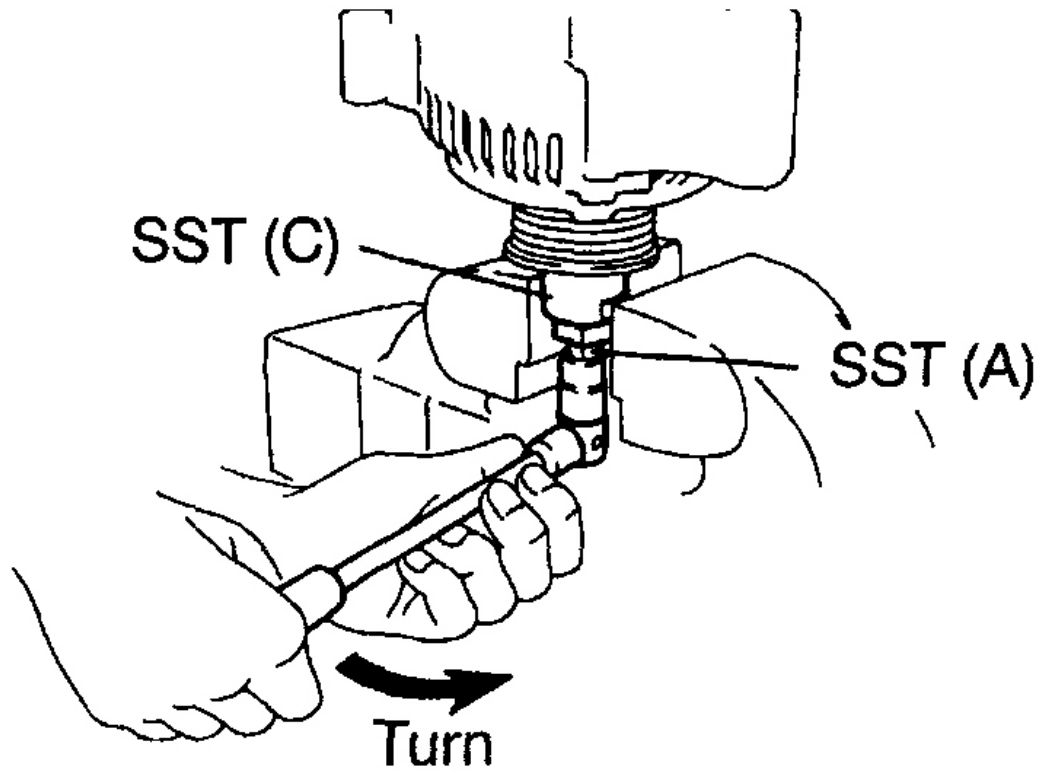
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Fig. 22: Inserting SST (B) Into SST (C), & Attaching Pulley Nut To SST (C)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

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

- f. Remove the generator from SST (C).



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Fig. 23: Removing Generator From SST (C)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

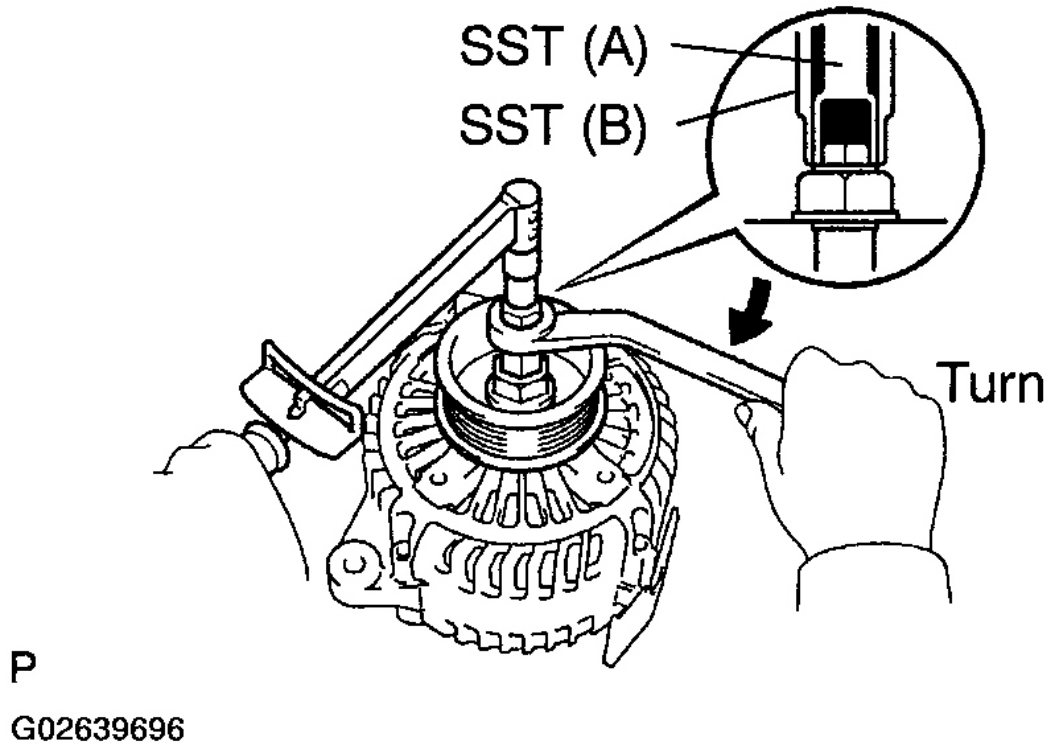


Fig. 24: Removing Pulley Nut & Pulley
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. 12V 90 A type:

REMOVE RECTIFIER END FRAME

- a. Remove the 4 nuts and wire clip.

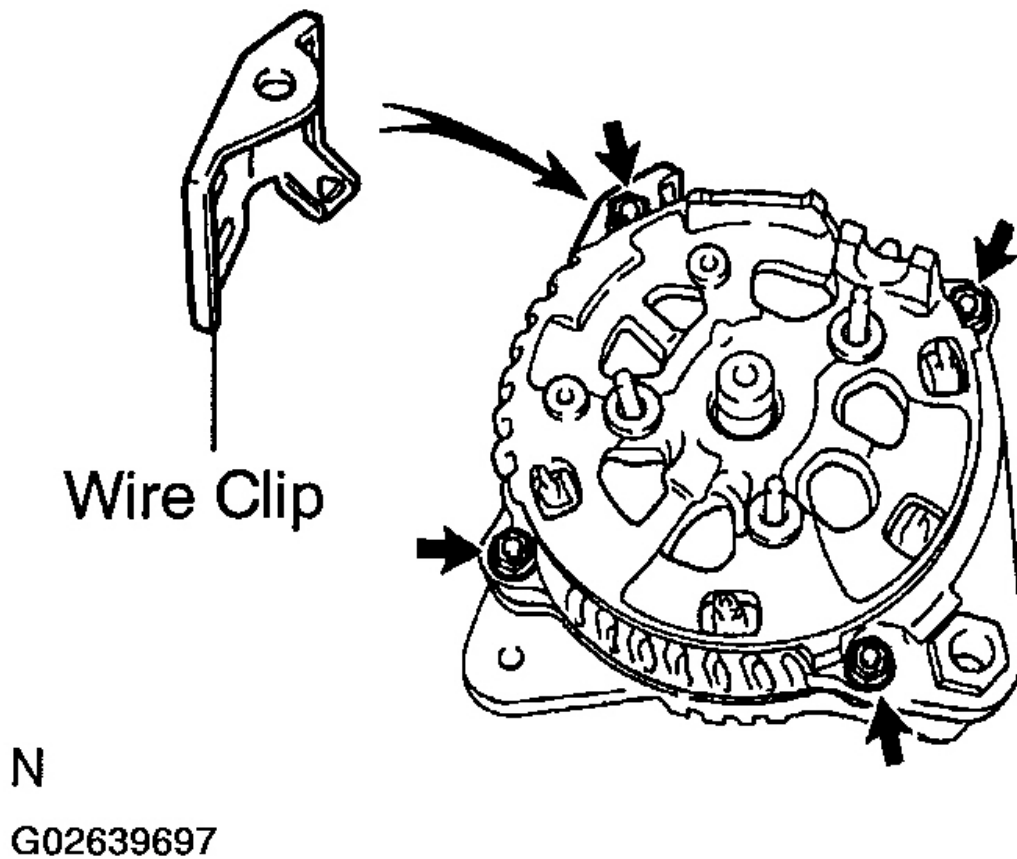


Fig. 25: Removing 4 Nuts & Wire Clip

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, remove the rectifier end frame.

SST 09286-46011
- c. Remove the generator washer from the rotor.

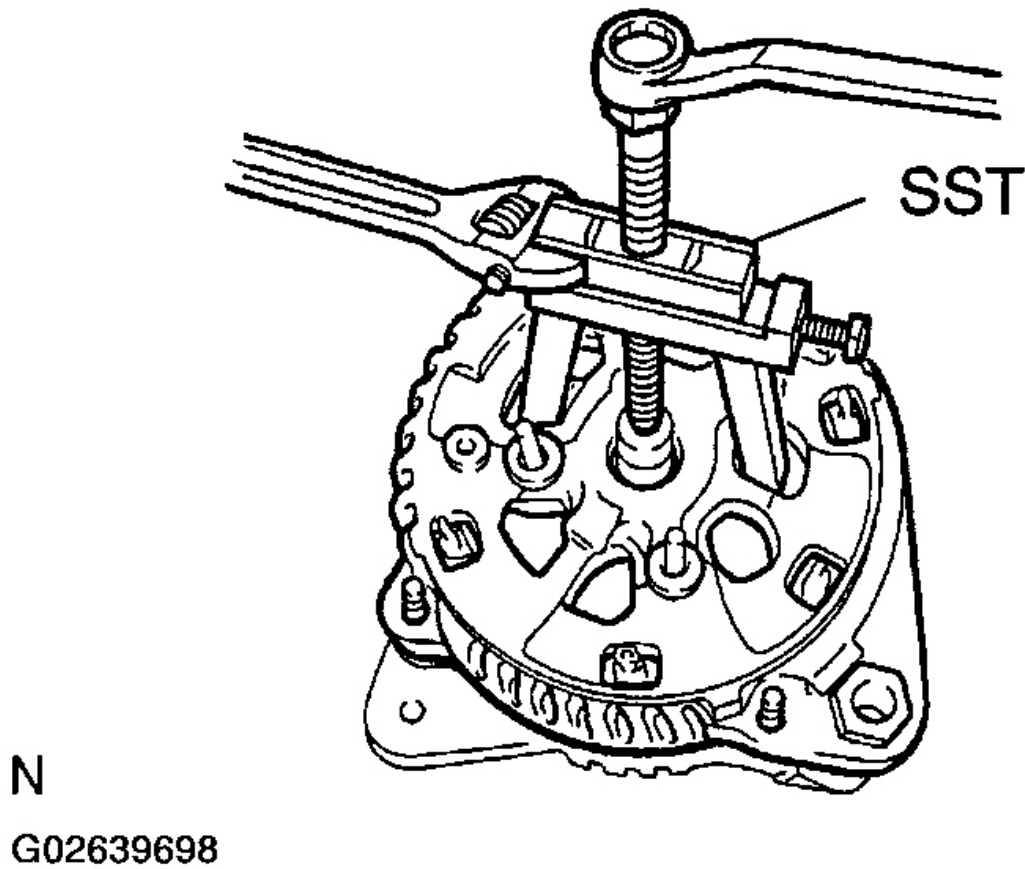
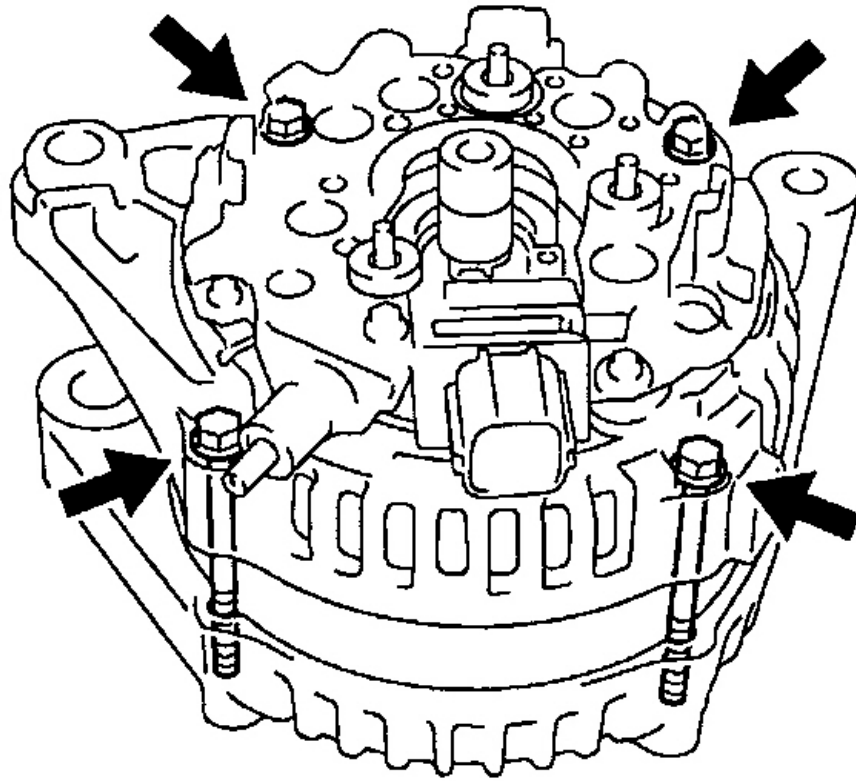


Fig. 26: Removing Rectifier End Frame (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. 12V 100A type:

REMOVE RECTIFIER END FRAME

- a. Remove the 4 bolts.
- b. Remove the bolt and cord clip.



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Fig. 27: Removing 4 Bolts

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST, remove the rectifier end frame.

SST 09950-40011 (09951-04020, 09952-04010, 09953-04020, 09954-04010, 09955-04071)

- d. Remove the alternator washer from the rotor.

9. REMOVE ROTOR FROM DRIVE END FRAME

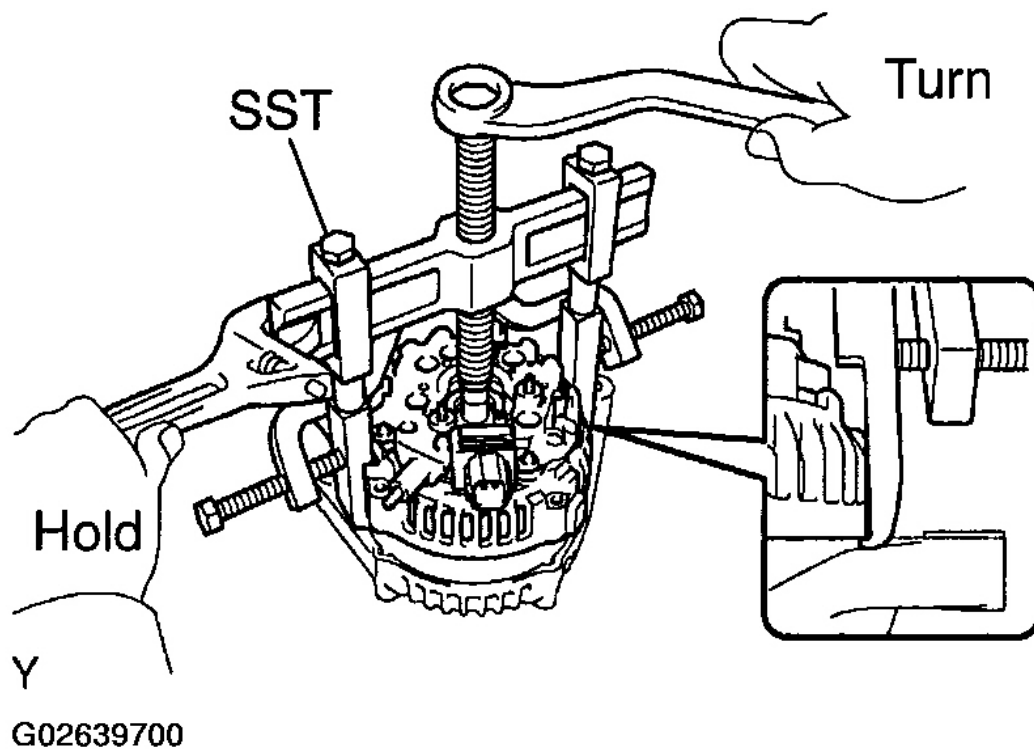


Fig. 28: Removing Rectifier End Frame (12V 100A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. INSPECT VOLTAGE REGULATOR

- Using an ohmmeter, measure the resistance between terminals F and B.

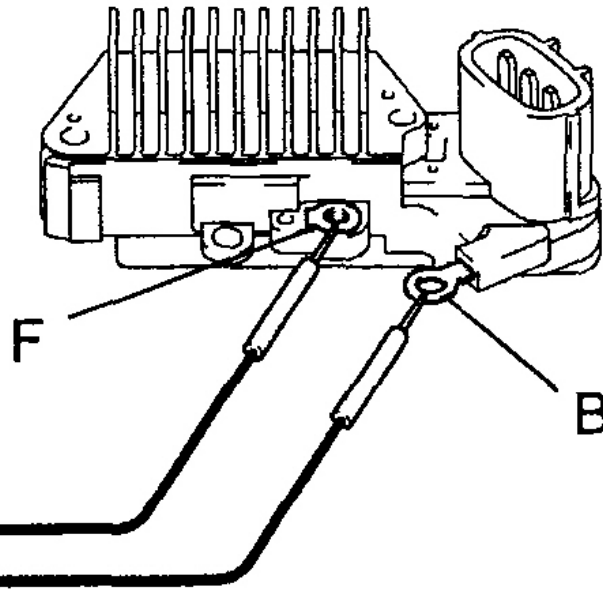
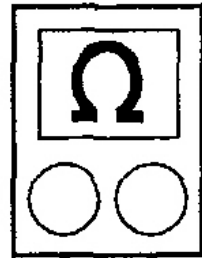
Standard:

When the positive and negative poles between terminals F and B are exchanged, there is a resistance of Below 1 ohm in one way but a resistance of 10 kohm or higher in another way.

If the result is not as specified, replace the voltage regulator.

12 V 90 A type

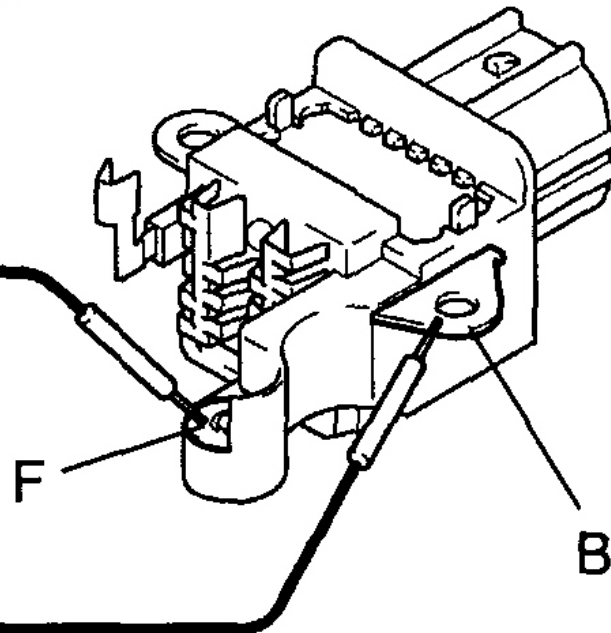
Ohmmeter



P B12989
A21905

12 V 100 A type

Ohmmeter



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Fig. 29: Measuring Resistance Between Terminals F & B
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

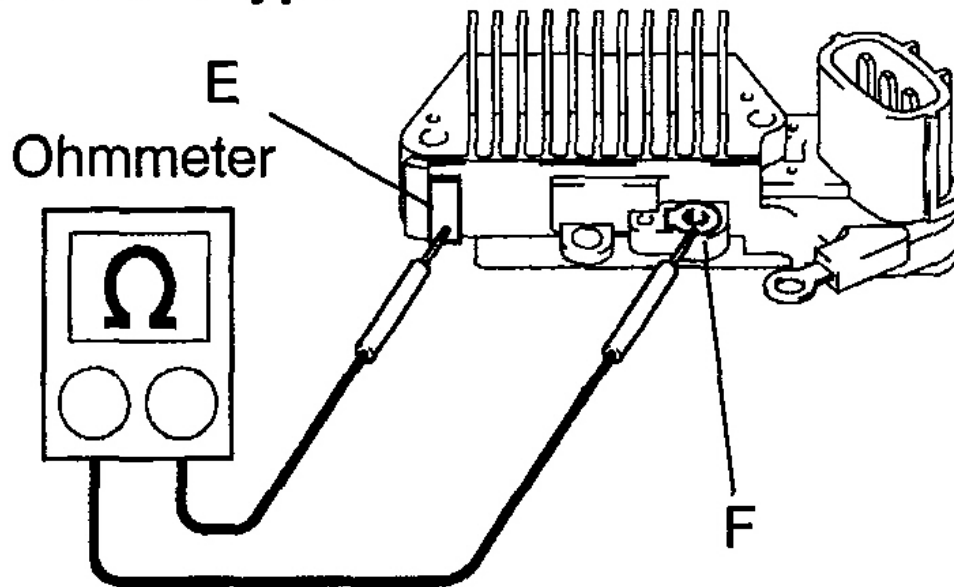
- b. Using an ohmmeter, measure the resistance between terminals F and E.

Standard:

When the positive and negative poles between terminals F and E are exchanged, there is a resistance of Below 1 ohm in one way but a resistance of 10 kohm or higher in another way.

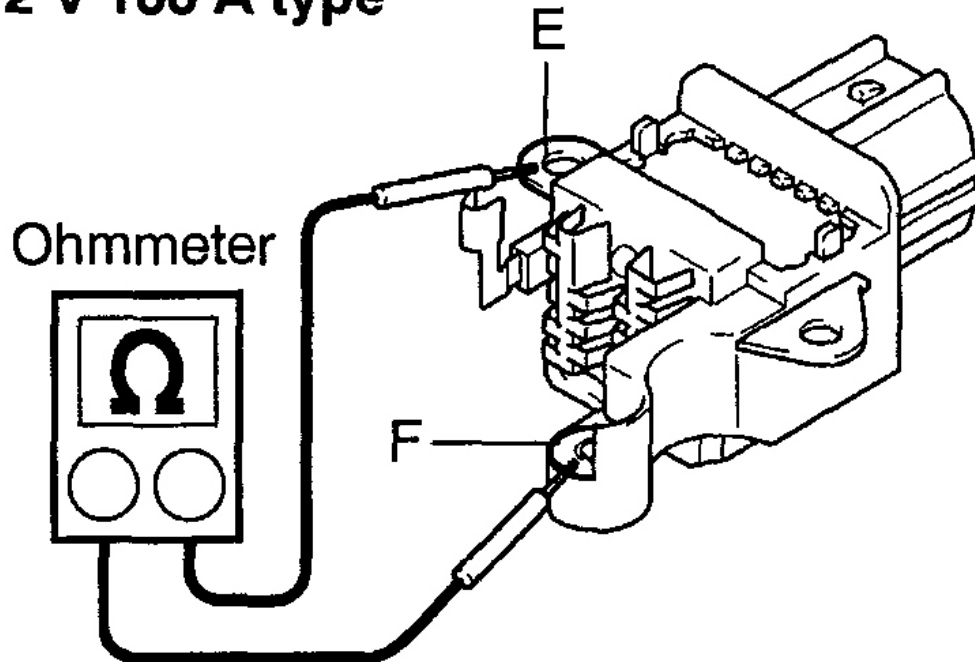
If the result is not as specified, replace the voltage regulator.

12 V 90 A type



P B12990
B17275

12 V 100 A type



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Fig. 30: Measuring Resistance Between Terminals F & E
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSPECT ROTOR FOR OPEN CIRCUIT

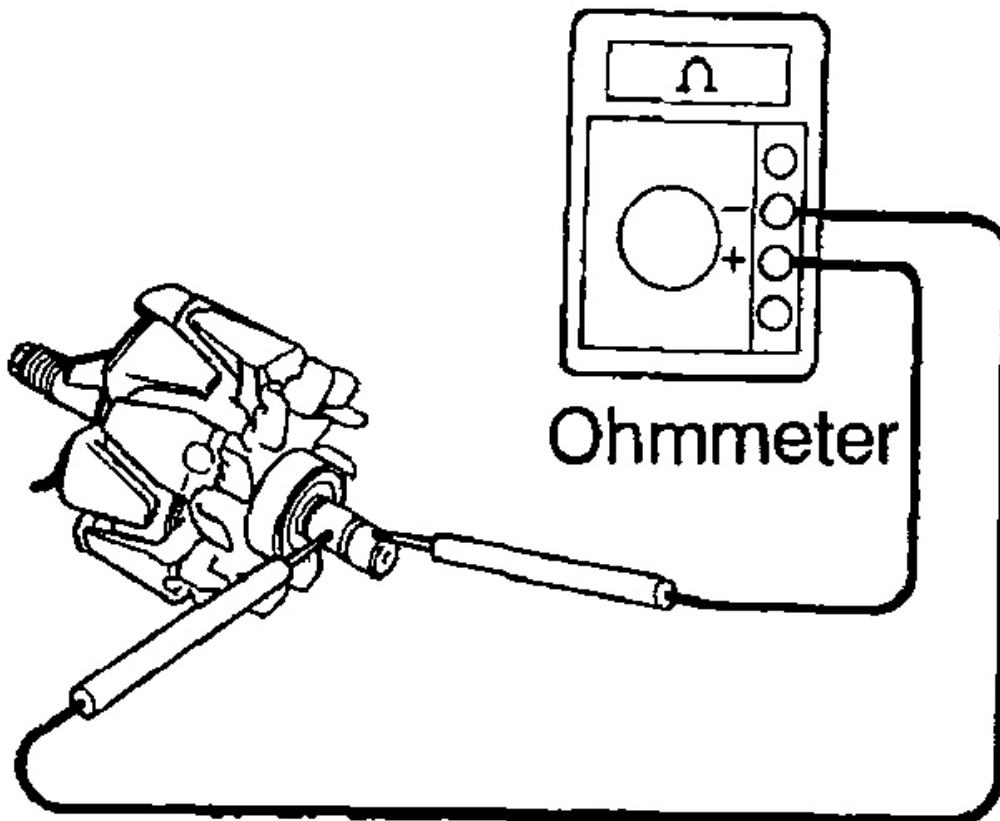
Using an ohmmeter, measure the resistance between the slip rings.

Standard resistance:

SLIP RINGS: STANDARD RESISTANCE

12 V 90 A type	2.1 o 2.5ohm at 20°C (68°F)
12 V 100 A type	2.3 o 2.7ohm at 20°C (68°F)

If the result is not as specified, replace the rotor.



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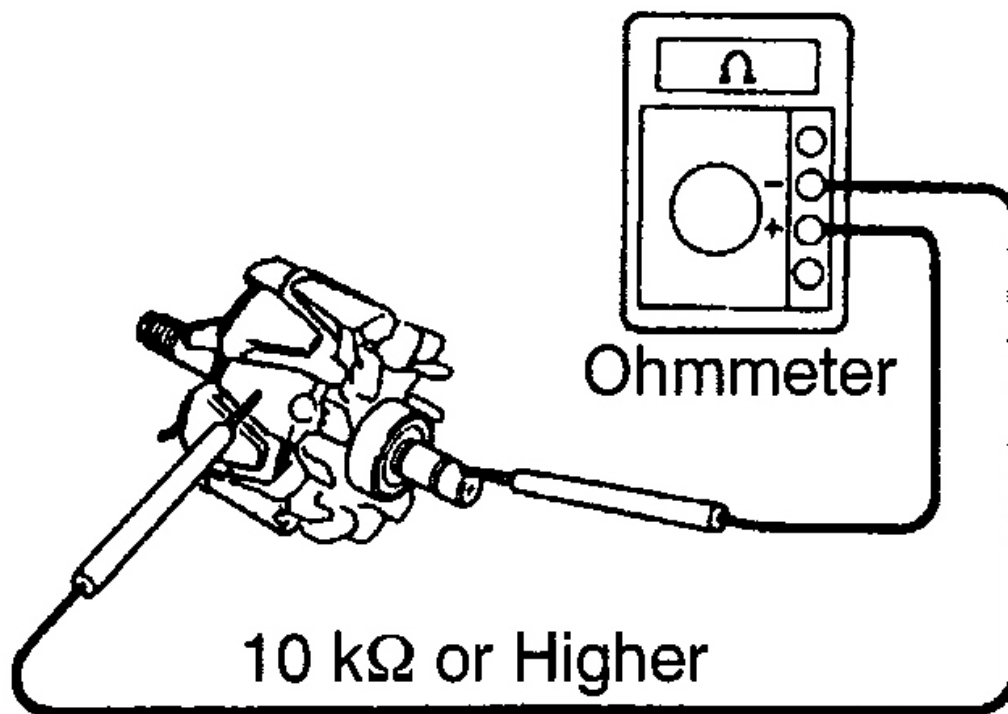
Fig. 31: Measuring Resistance Between Slip Rings
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSPECT ROTOR FOR GROUND

Using an ohmmeter, measure the resistance between the slip ring and rotor.

Standard: 10 kohm or higher

If the result is not as specified, replace the rotor.



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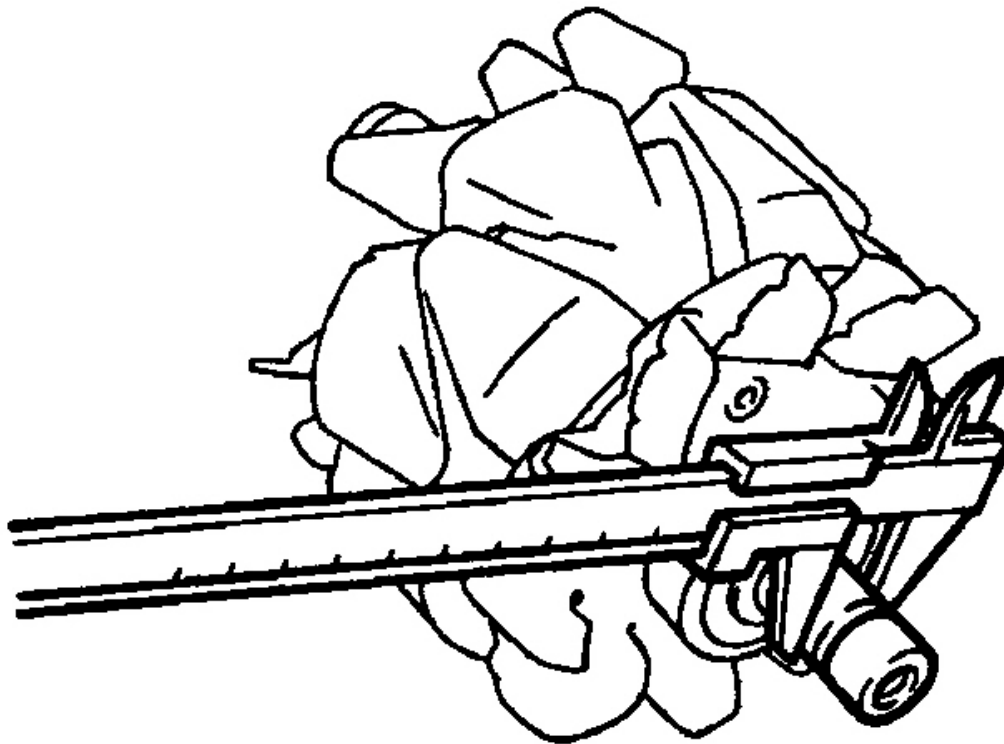
Fig. 32: Measuring Resistance Between Slip Ring & Rotor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. 12V 90 A type:

INSPECT SLIP RINGS

- a. Check that the slip rings are not rough or scored. If rough or scored, replace the rotor.
- b. Using vernier calipers, measure the slip ring diameter.

Standard diameter: 14.2 to 14.4 mm (0.559 to 0.567 in.)



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Fig. 33: Measuring Slip Ring Diameter (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Minimum diameter:

SLIP RING: MINIMUM DIAMETER

12 V 90 A type	12.8 mm (0.504 in.)
12 V 100 A type	14.0 mm (0.551 in.)

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

5. 12 V 90 A type:

INSPECT STATOR FOR OPEN CIRCUIT

Using an ohmmeter, measure the resistance between the coil leads.

Standard: Below 1 ohm

If the result is not as specified, replace the drive end frame assembly.

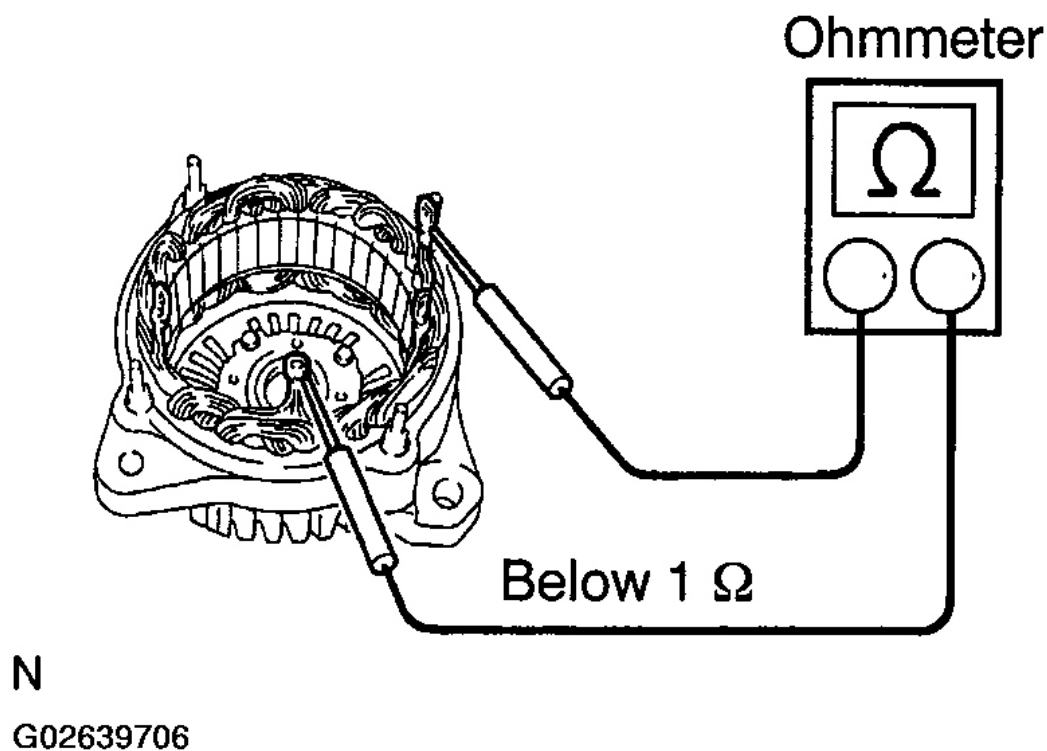


Fig. 34: Measuring Resistance Between Coil Leads (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. 12 V 90 A type:

INSPECT STATOR FOR GROUND

Using an ohmmeter, measure the resistance between the coil lead and drive end frame.

Standard: 10 kohm or higher

If the result is not as specified, replace the drive end frame assembly.

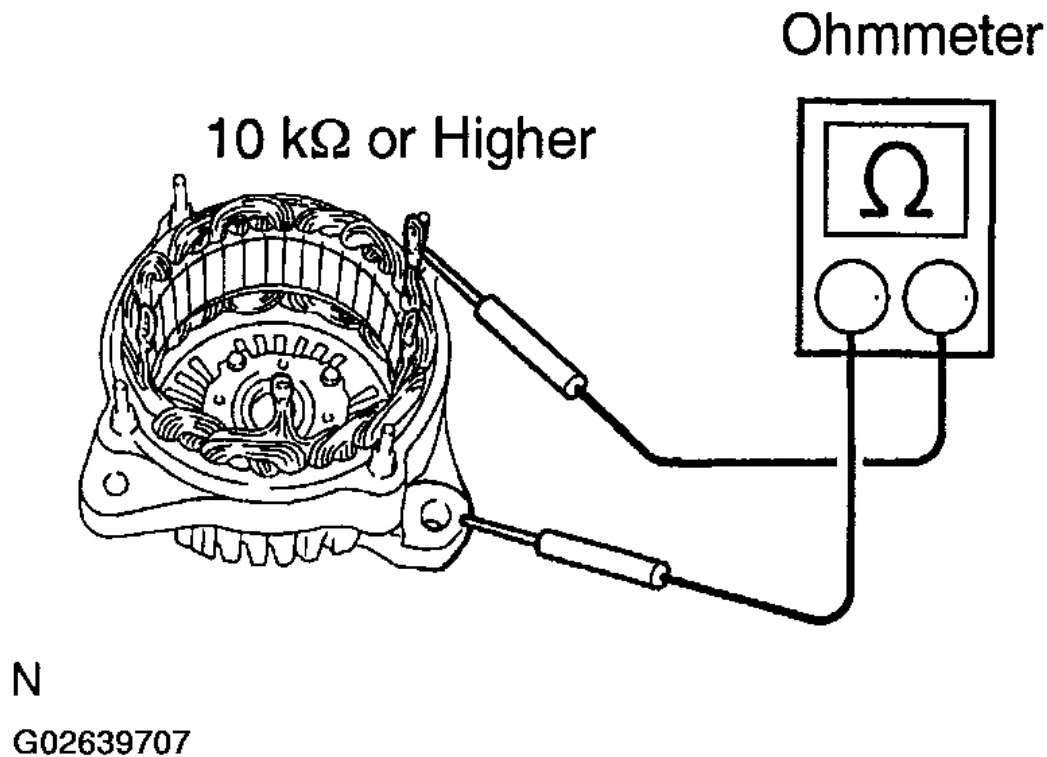


Fig. 35: Measuring Resistance Between Coil Lead & Drive End Frame (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. INSPECT EXPOSED BRUSH LENGTH

Using vernier calipers, measure the exposed brush length.

Standard exposed length: 9.5 to 11.5 mm (0.374 to 0.453 in.)

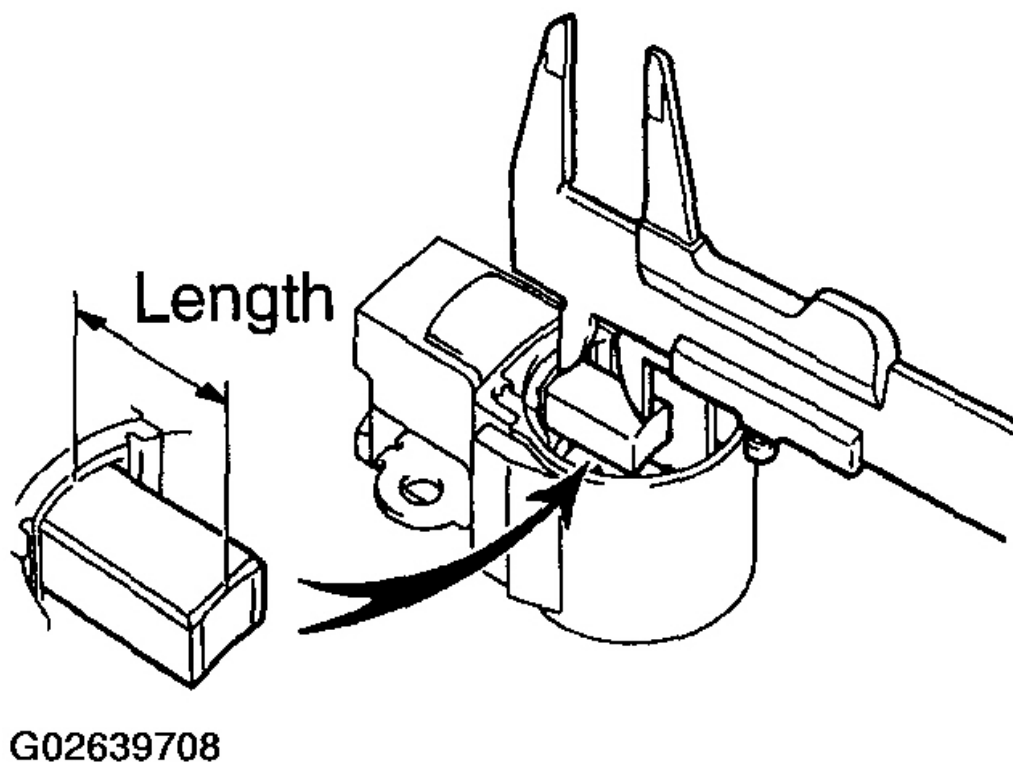


Fig. 36: Measuring Exposed Brush Length

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Minimum exposed length:

BRUSH LENGTH: MINIMUM EXPOSED LENGTH

12 V 90 A type	4.5 mm (0.177 in.)
12 V 100 A type	4.5 mm (0.177 in.)

If the exposed length is less than the minimum, replace the brush holder assembly.

8. 12 V 90 A type:

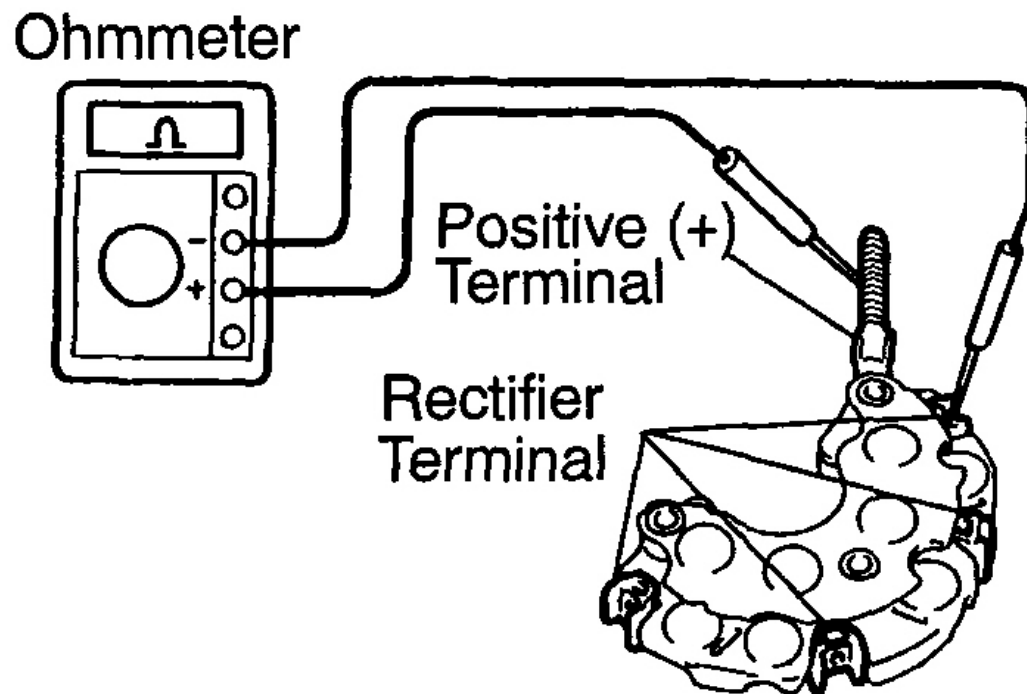
INSPECT RECTIFIERS (RECTIFIER HOLDER)

a. Check the positive (+) rectifier.

1. Using an ohmmeter, connect one tester probe to the positive (+) terminal and the other to each rectifier terminal.

2. Reverse the polarity of the tester probes and repeat step (a).
3. Check that one shows a resistance of Below 1 ohm and the other shows a resistance of 10 kohm or higher.

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

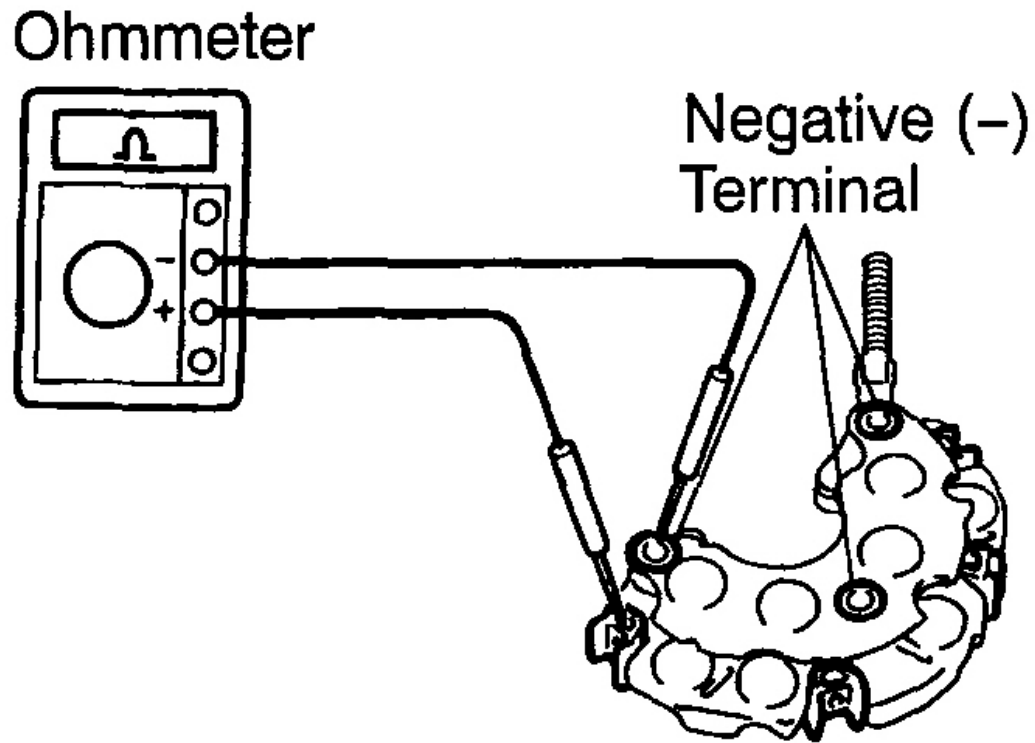


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Fig. 37: Inspecting Rectifiers Terminal (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the negative (-) rectifier.
 1. Using an ohmmeter, connect one tester probe to each negative (-) terminal and the other to each rectifier terminal.
 2. Reverse the polarity of the tester probes and repeat step (a).
 3. Check that one shows a resistance of Below 1 ohm and the other shows a resistance of 10 kohm or higher.

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



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Fig. 38: Connecting One Tester Probe To Each Negative (-) Terminal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. INSPECT BEARINGS

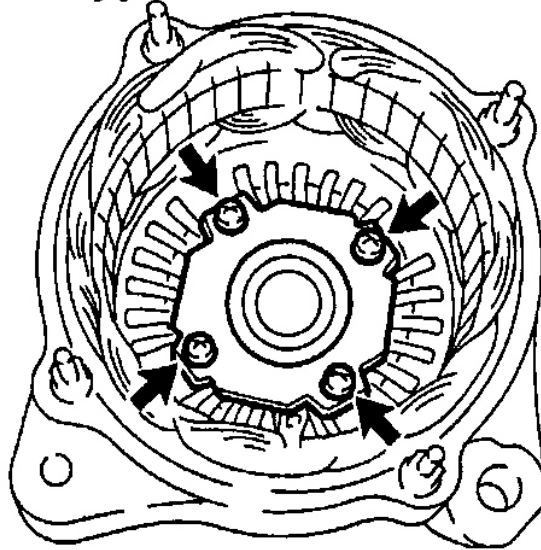
Check that the bearing is not rough or worn. If necessary, replace the bearing (see **REPLACEMENT**).

REPLACEMENT

1. REPLACE FRONT BEARING

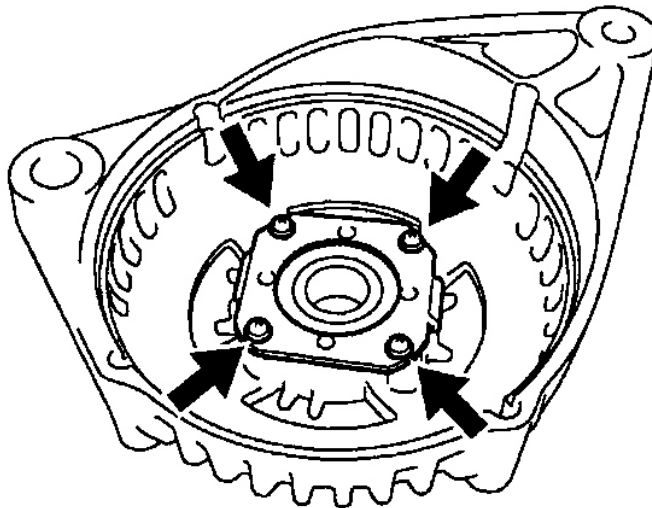
- Remove the 4 screws and bearing retainer.

12 V 90 A Type



N

12 V 100 A Type



Y

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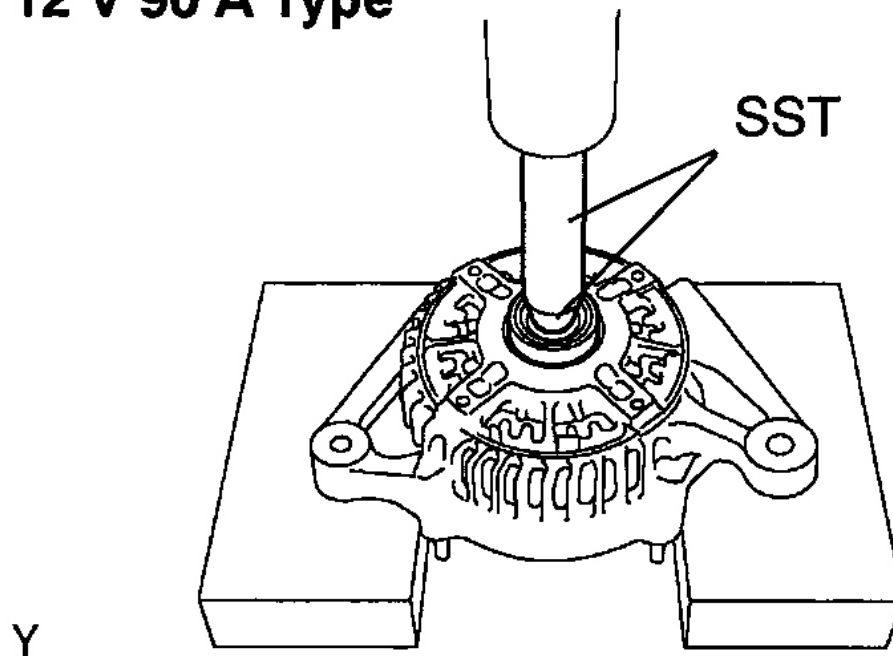
Fig. 39: Removing 4 Screws & Bearing Retainer
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST and a press, press out the bearing.

2005 Toyota RAV4
2005 ELECTRICAL Charging - RAV4

SST 09950-60010 (09951-00350), 09950-70010 (09951-07100)

12 V 90 A Type



12 V 100 A Type

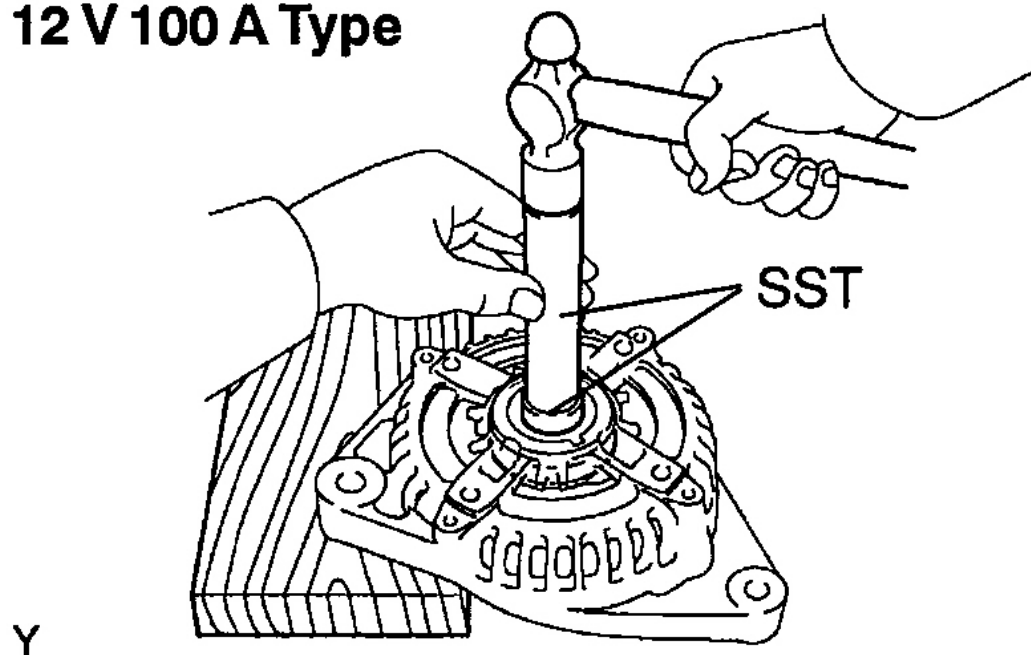


Fig. 40: Pressing Out Bearing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Using SST and a press, press in a new bearing.

SST 09950-60010 (09951-00530), 09950-70010 (09951-07100)

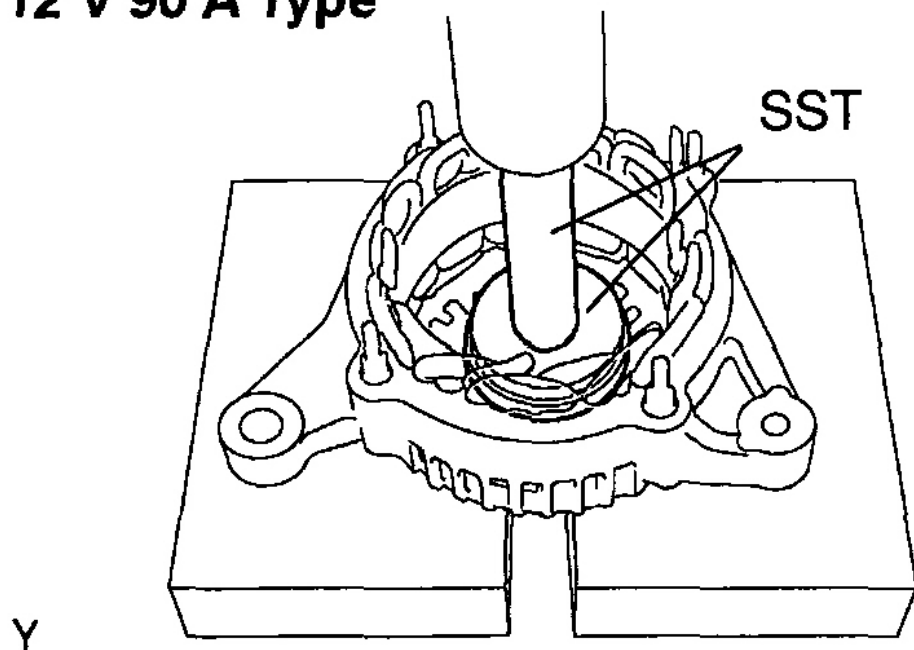
- d. Install the bearing retainer with the 4 screws.

Torque:

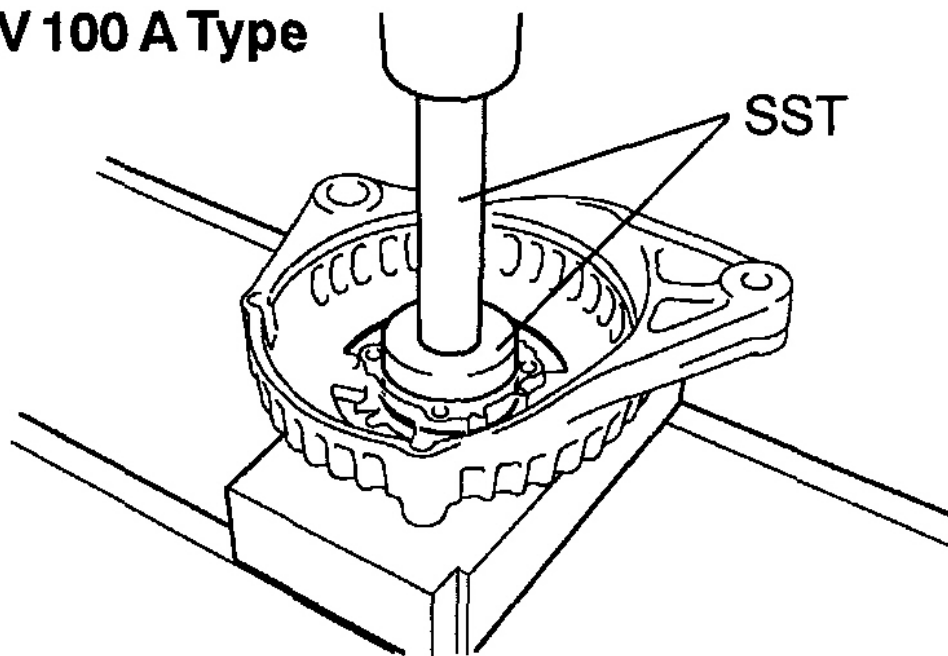
3.0 N.m (31 kgf.cm, 27 in.lbf) for 12 V 90 A type

2.3 N.m (23 kgf.cm, 20 in.lbf) for 12 V 100 A type

12 V 90 A Type



12 V 100 A Type



Y
G02639713

Fig. 41: Pressing New Bearing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

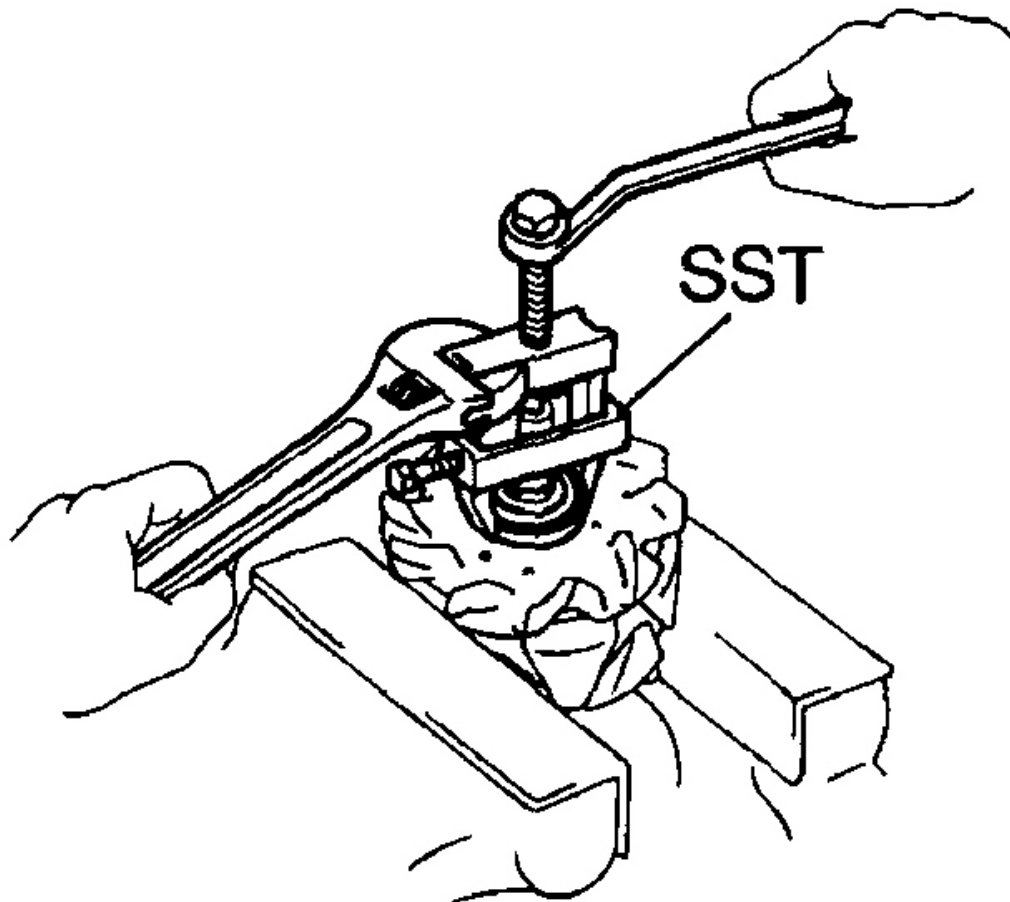
2. 12 V 90 A type:

REPLACE REAR BEARING

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

SST 09821-00021

NOTE: Be careful not to damage the fan.

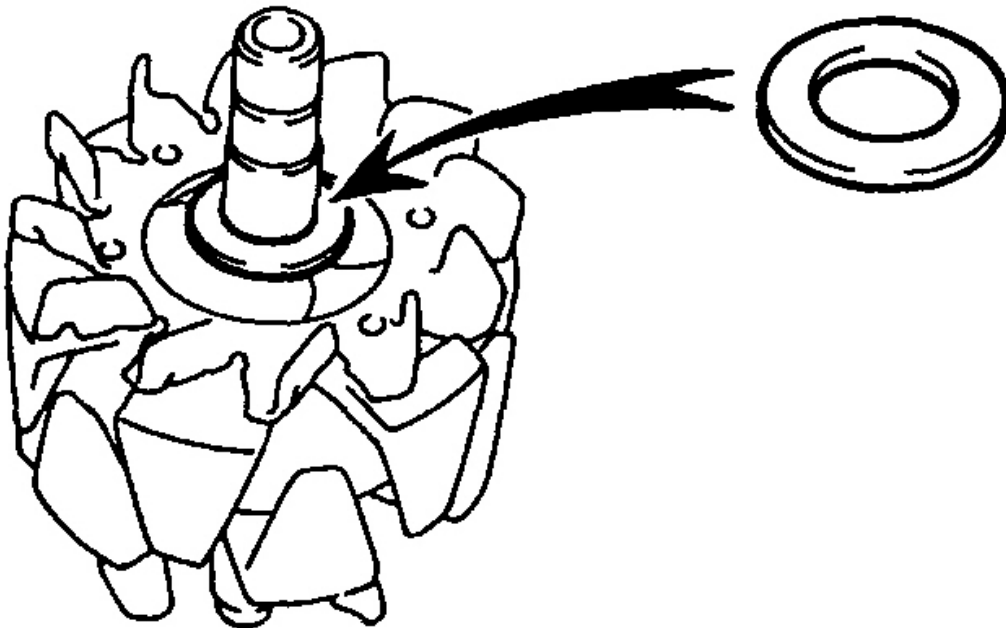


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Fig. 42: Removing Bearing Cover

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Remove the bearing cover (inside).
4. Place the bearing cover (inside) on the rotor.



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Fig. 43: Removing Bearing Cover

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. Using SST and a press, press in a new bearing.

SST 09820-00031

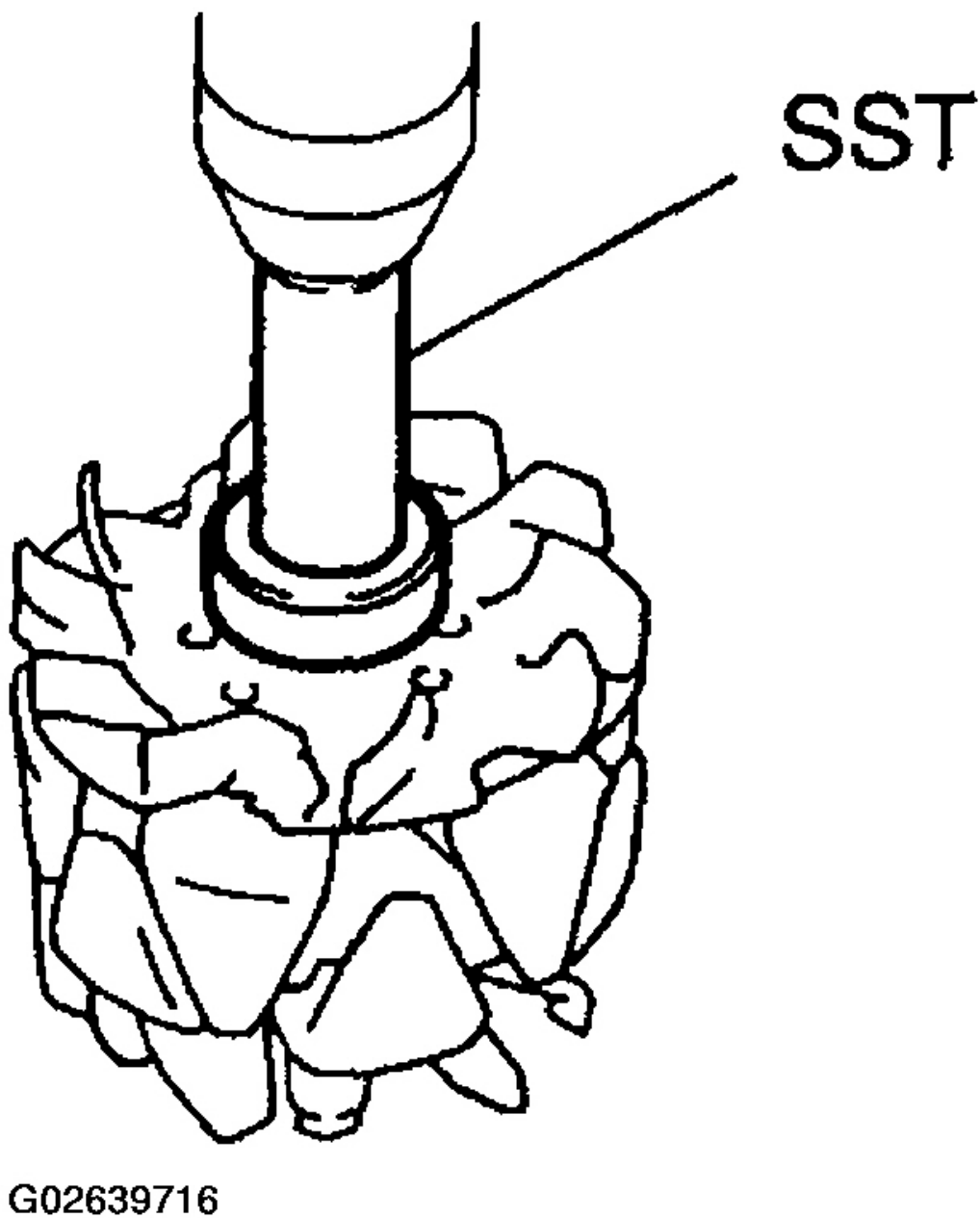


Fig. 44: Pressing New Bearing

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Using SST, push in the bearing cover (outside).

SST 09825-76010

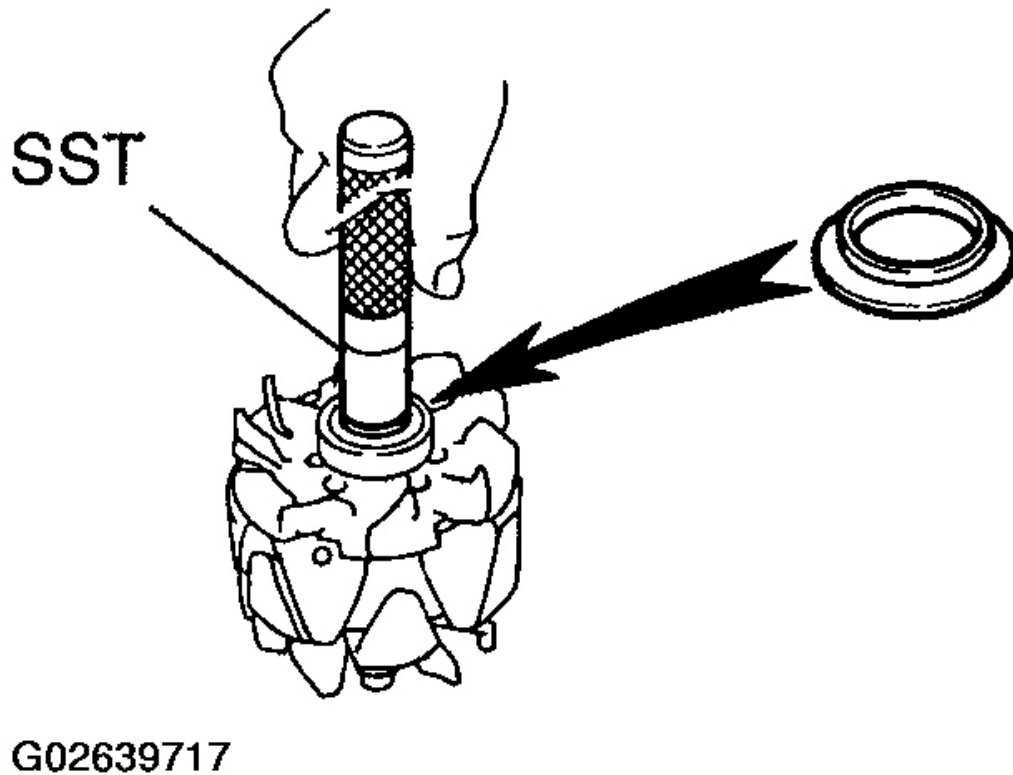


Fig. 45: Pushing Bearing Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REASSEMBLY

1. 12 V 90 A type:

INSTALL ROTOR TO DRIVE END FRAME

- a. Place the drive end frame on the pulley.
- b. Install the rotor to the drive end frame.

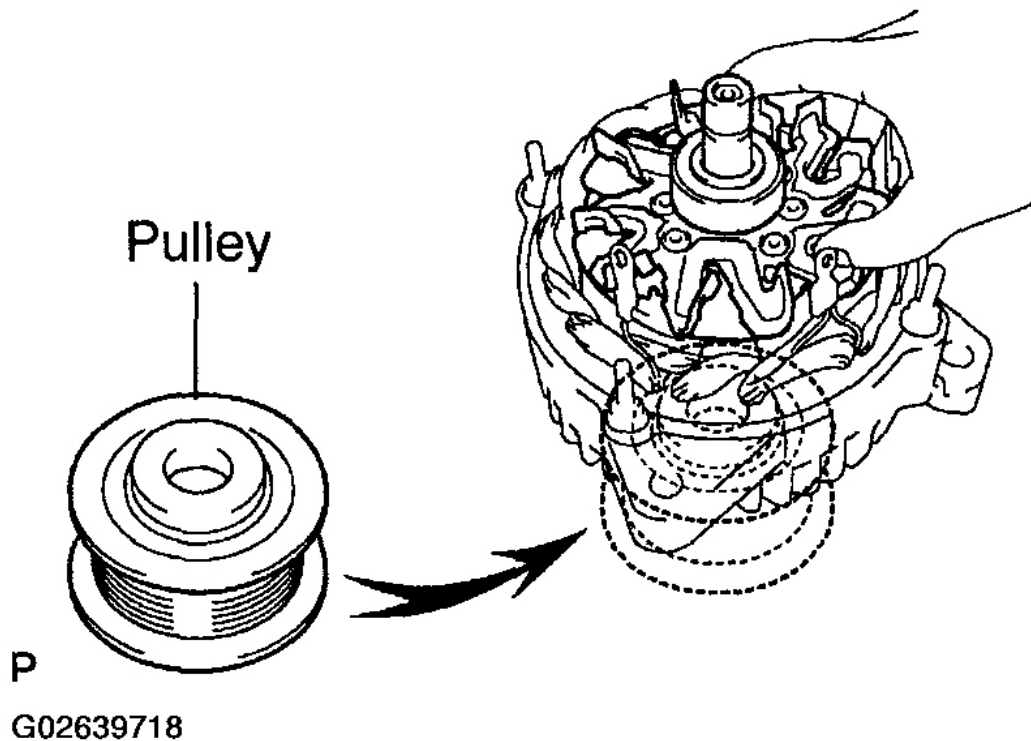


Fig. 46: Installing Rotor To Drive End Frame (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. 12 V 100 A type:

INSTALL ROTOR TO DRIVE END FRAME

- a. Place the drive end frame on the pulley.
- b. Install the rotor to the drive end frame.

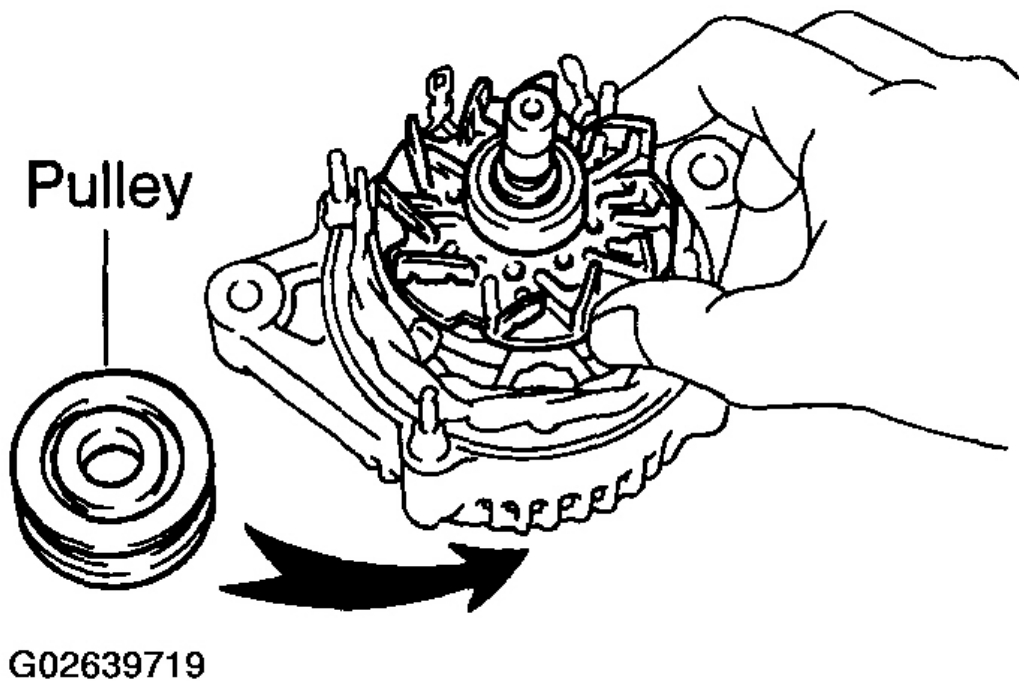
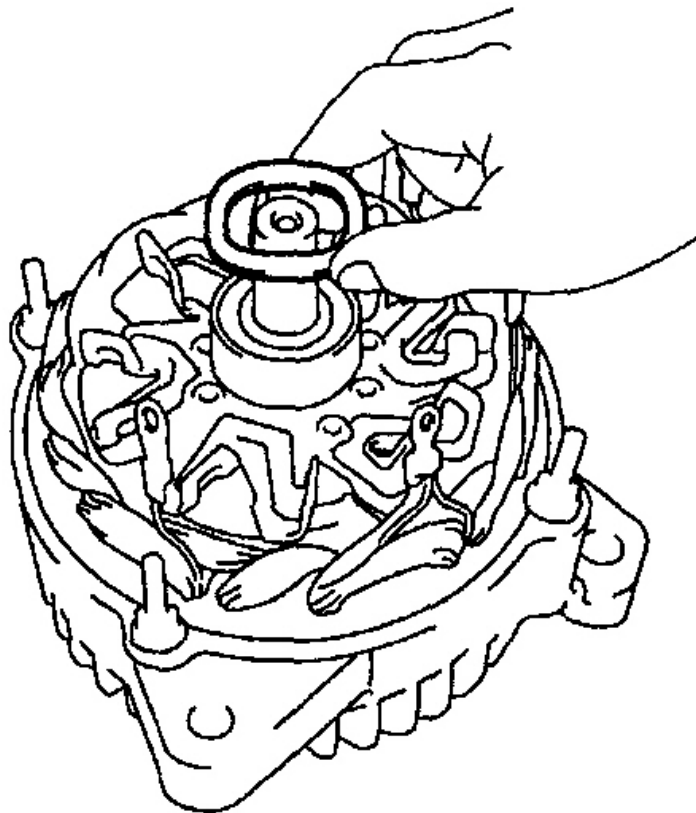


Fig. 47: Installing Rotor To Drive End Frame (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. 12 V 90 A type:

INSTALL RECTIFIER END FRAME

- a. Place the generator washer on the rotor.



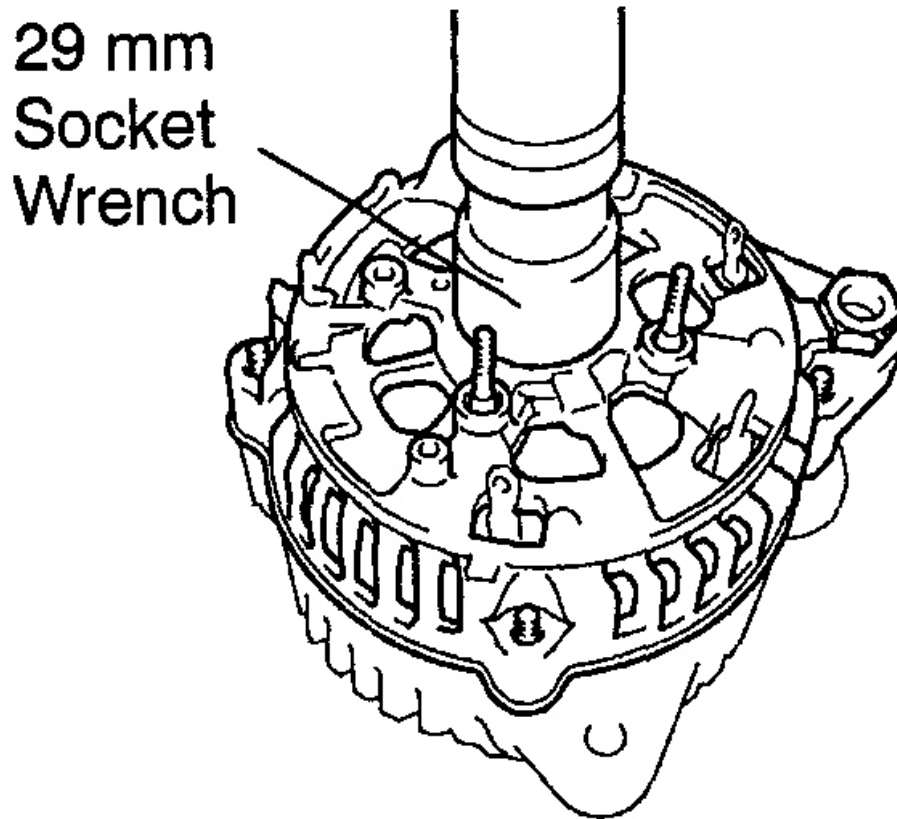
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Fig. 48: Installing Rectifier End Frame (12V 90 A Type)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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



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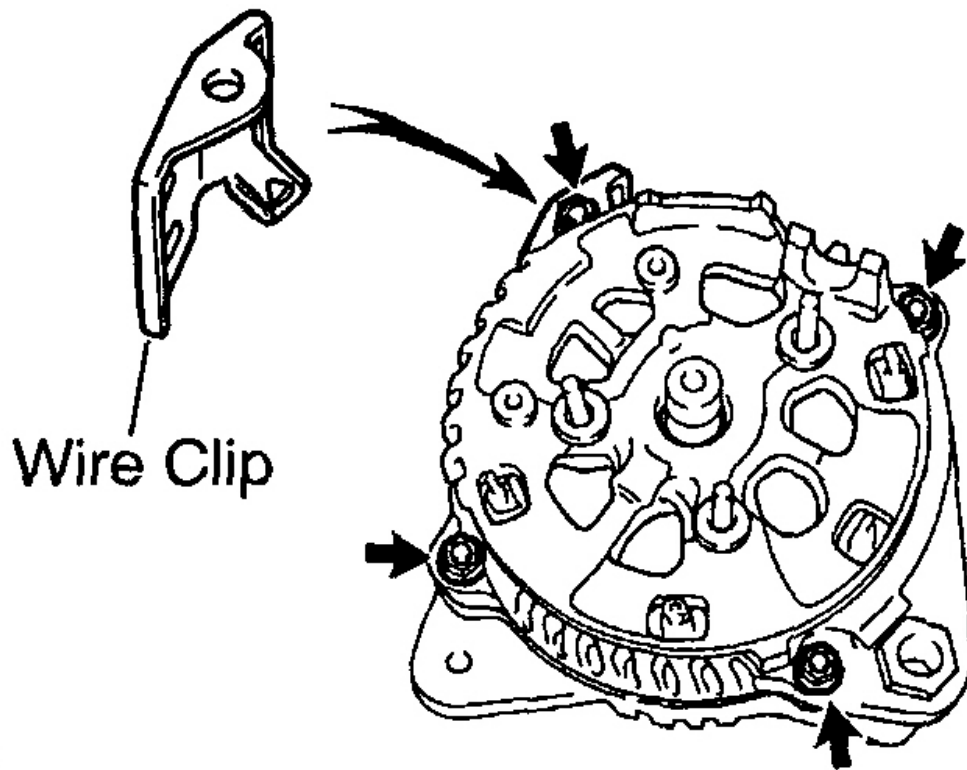
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Fig. 49: Pressing In Rectifier End Frame (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Install the wire clip and 4 nuts.

Torque:

4.5 N.m (46 kgf.cm, 40 in.lbf) for without wire clip 5.4 N.m (55 kgf.cm, 48 in.lbf) for with wire clip



N

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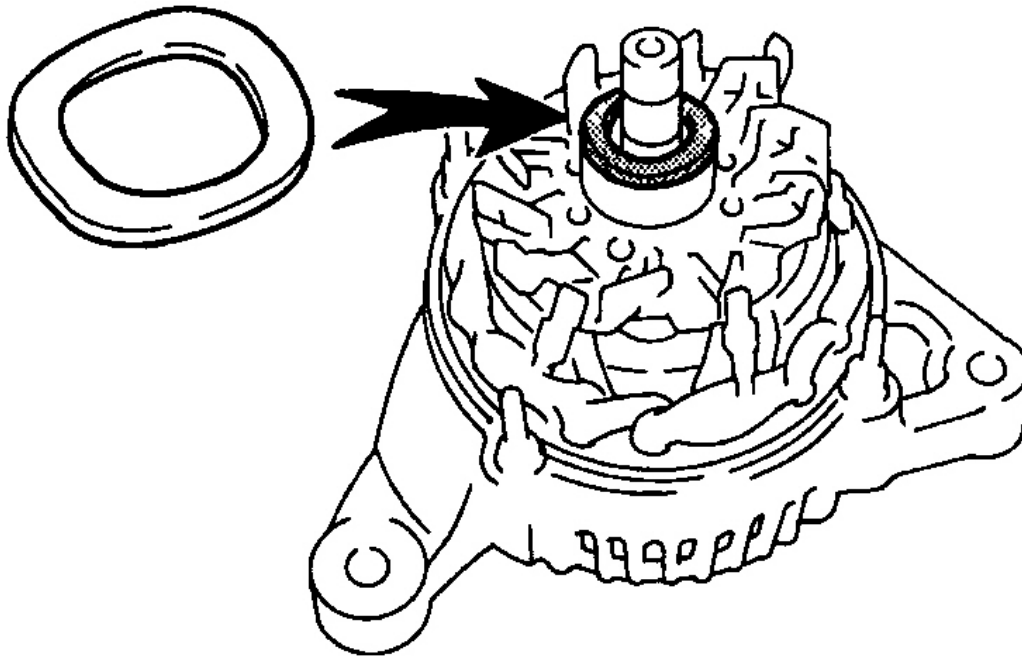
Fig. 50: Installing Wire Clip & 4 Nuts

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. 12 V 100 A type:

INSTALL RECTIFIER END FRAME

- a. Place the alternator washer on the rotor.



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Fig. 51: Placing Alternator Washer On Rotor (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using a 21 mm socket wrench and press, slowly press in the rectifier end frame.

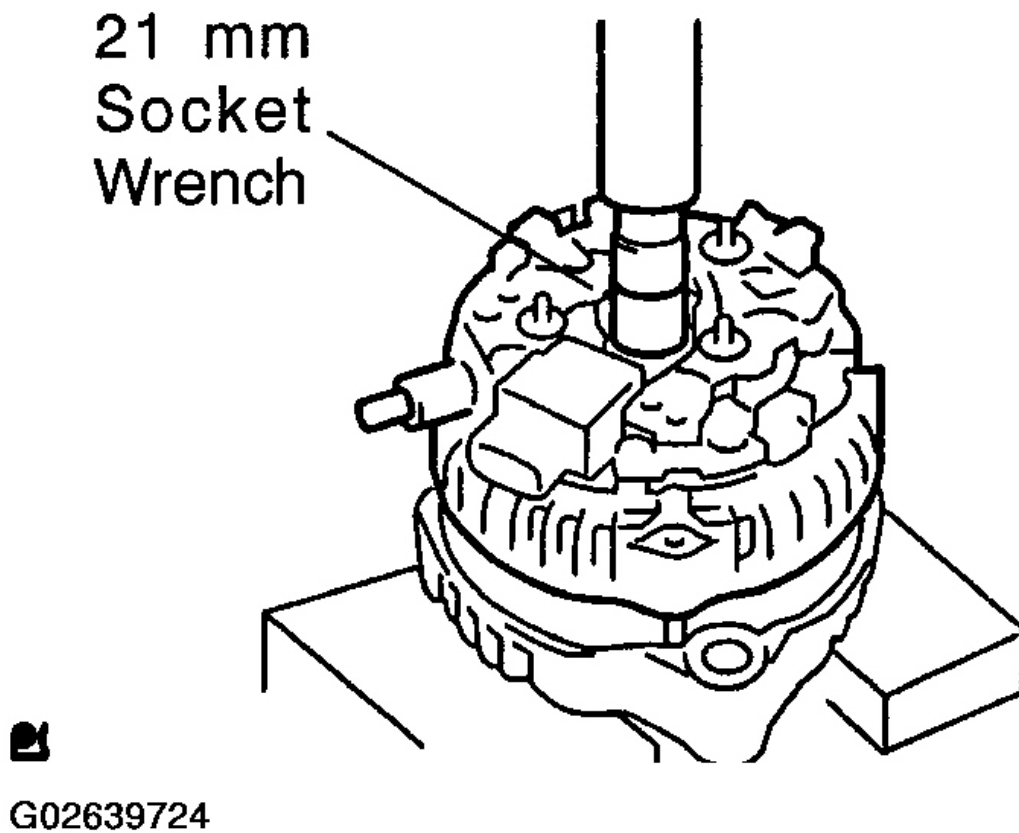


Fig. 52: Identifying 21 MM Socket Wrench (12V 100 A Type)

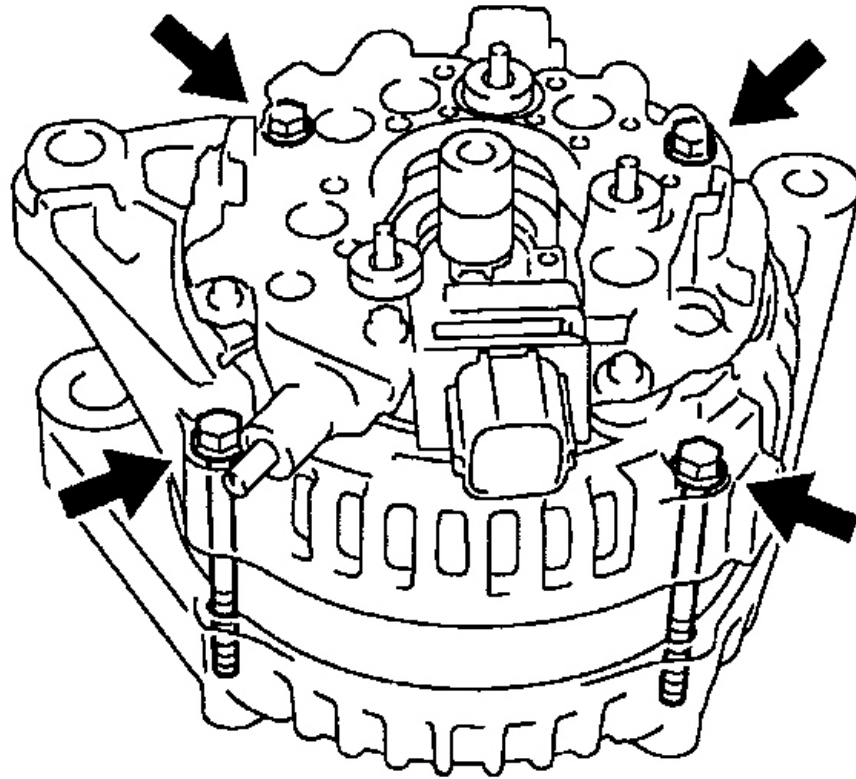
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Tighten the 4 bolts.

Torque: 5.8 N.m (59 kgf.cm, 51 in.lbf)

- d. Install the cord clip with the bolt.

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



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Fig. 53: Tightening 4 Bolts

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

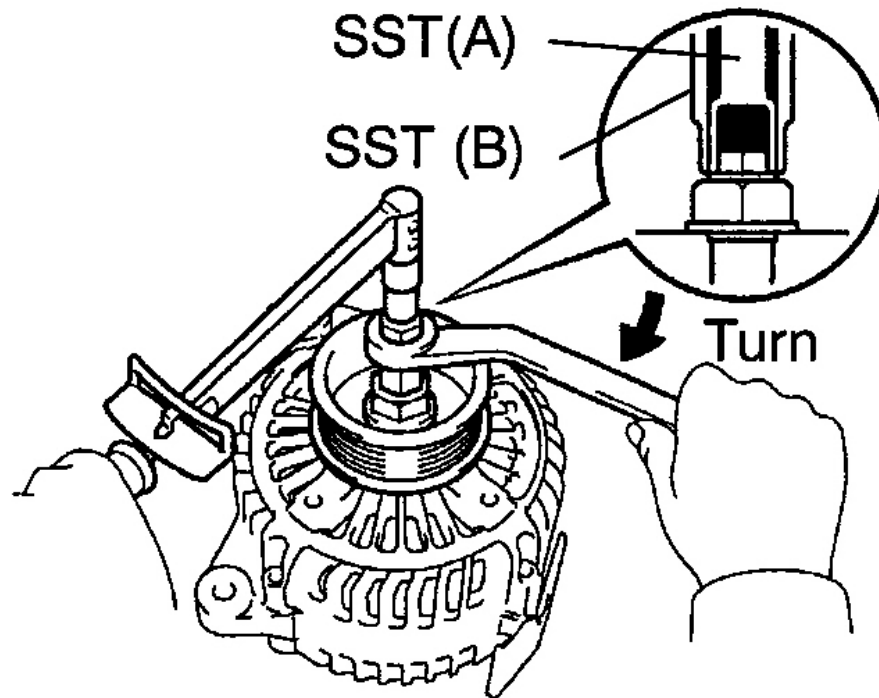
5. INSTALL PULLEY

- 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 09820-63011

Torque: 39 N.m (398 kgf.cm, 29 ft.lbf)

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

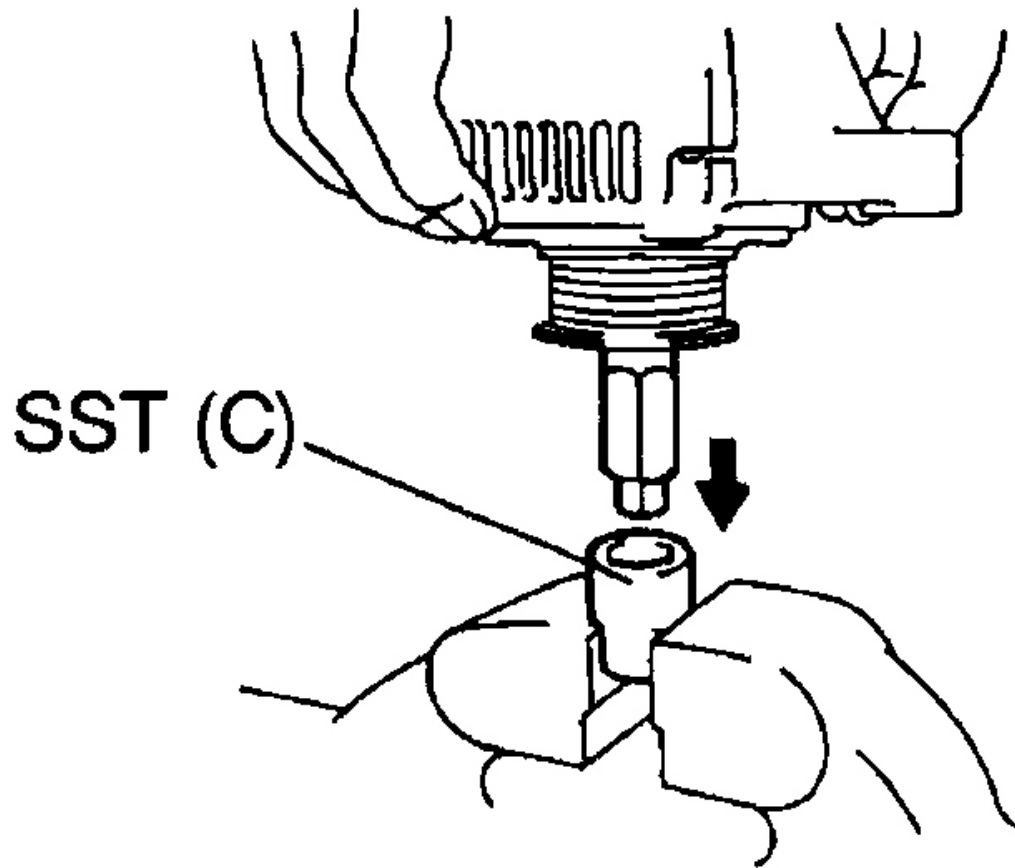


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Fig. 54: Installing Pulley To Rotor Shaft By Tightening Pulley Nut By Hand
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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



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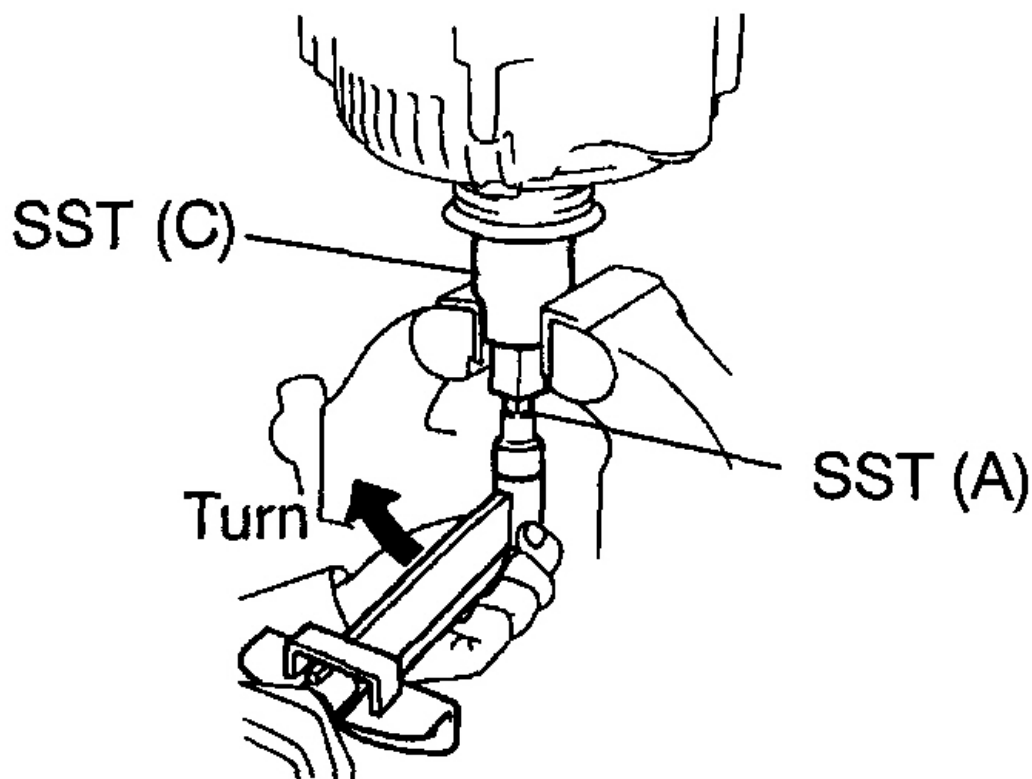
Fig. 55: Mounting SST (C) In Vise

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- f. To torque the pulley nut, turn SST (A) in the direction shown in **Fig. 56**.

Torque: 111 N.m (1,132 kgf.cm, 82 ft.lbf)

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



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Fig. 56: Removing Generator From SST (C)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

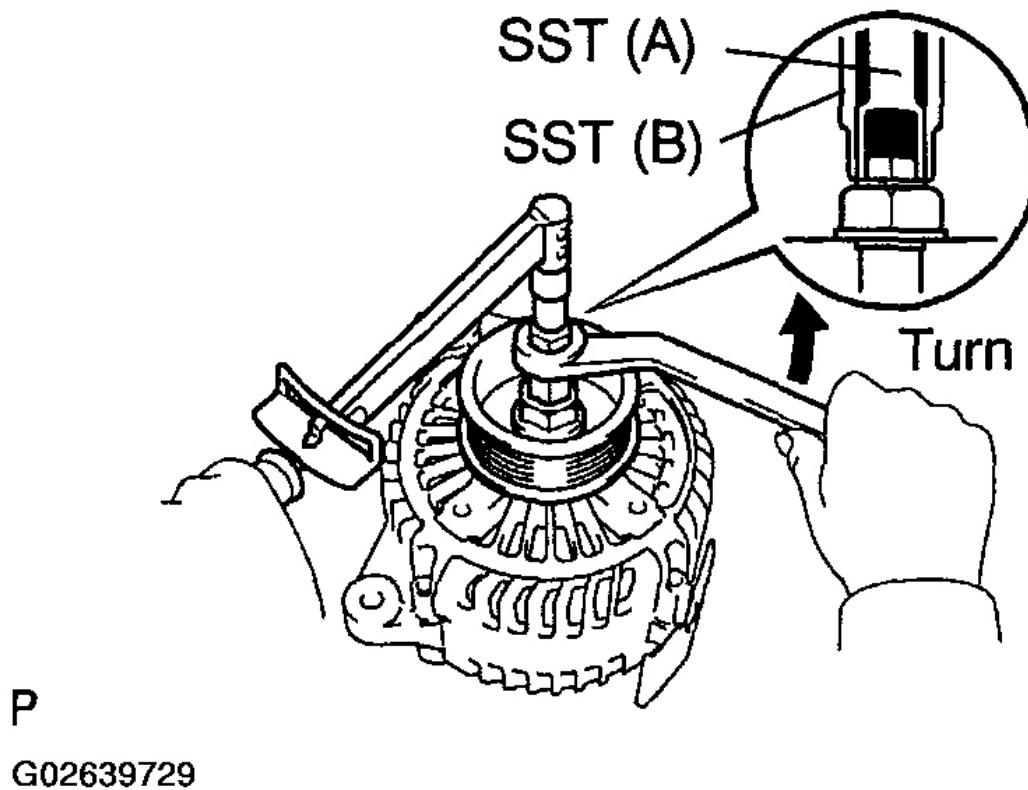


Fig. 57: Removing SST (A & B)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. 12 V 90 A type:

INSTALL RECTIFIER HOLDER

- a. Install the 4 rubber insulators on the lead wires.

NOTE: Be careful of the rubber insulators installation direction.

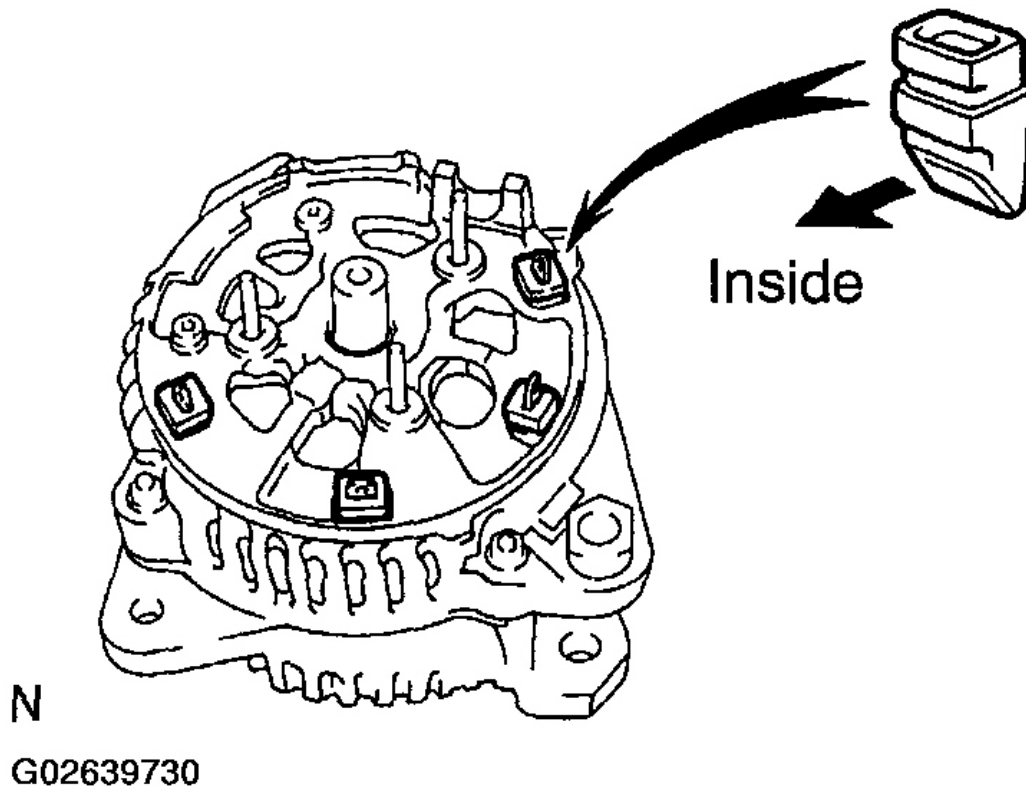


Fig. 58: Installing 4 Rubber Insulators (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Torque: 2.9 N.m (30 kgf.cm, 26 in.lbf)

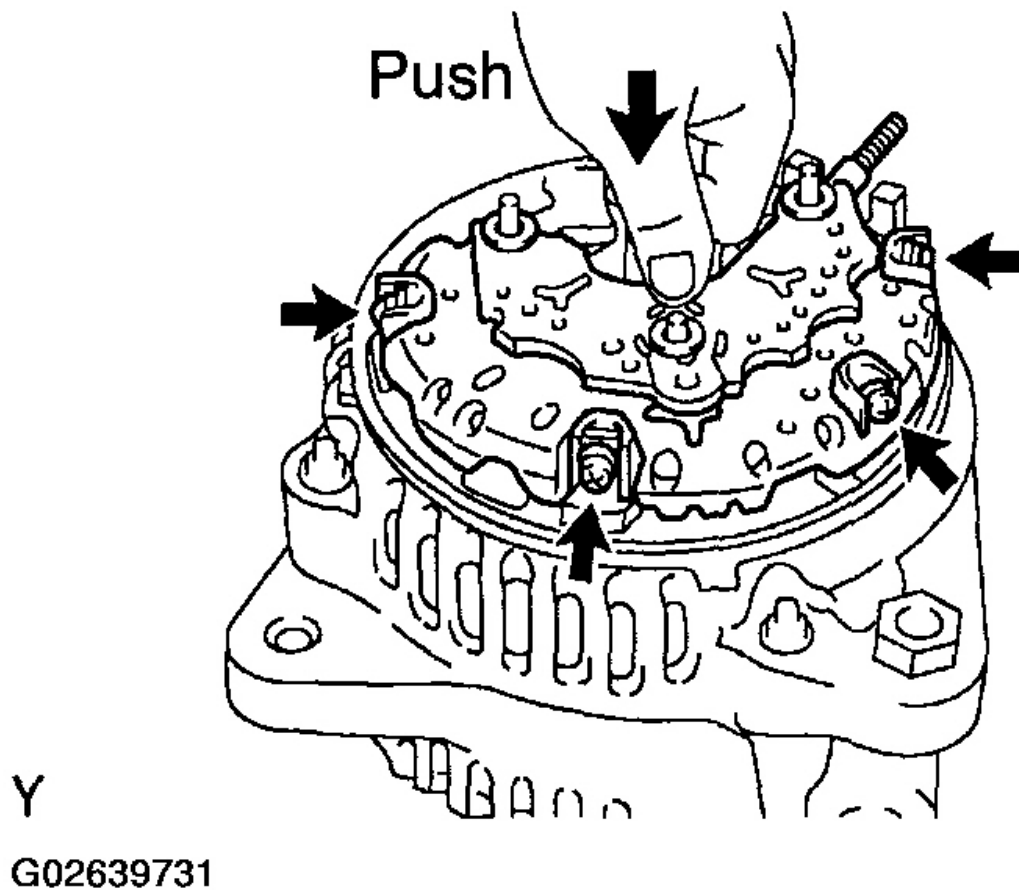
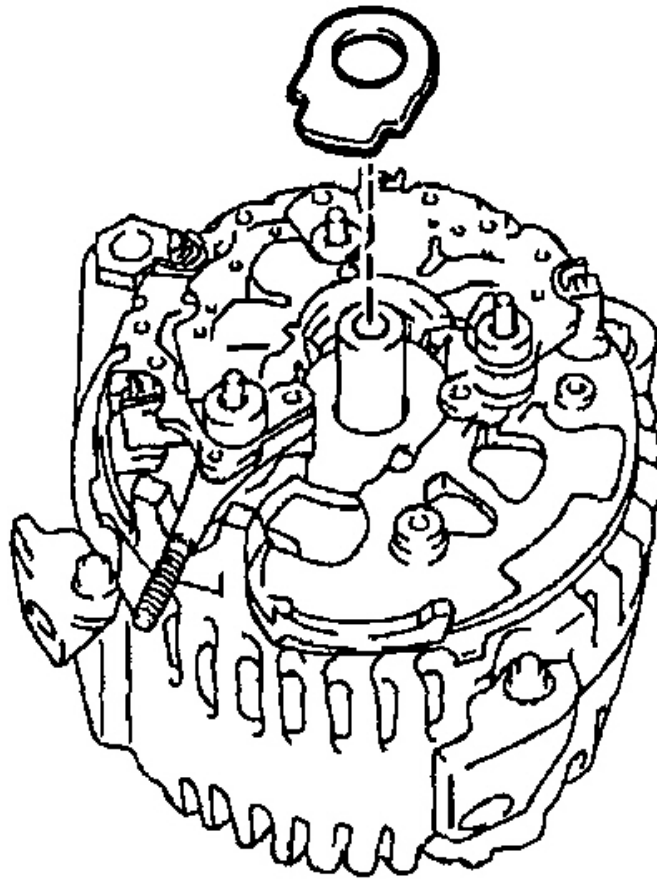


Fig. 59: Identifying 4 Screws (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. 12 V 90 A type:

INSTALL VOLTAGE REGULATOR AND BRUSH HOLDER

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



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Fig. 60: Placing Seal Plate On Rectifier End Frame (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Place the voltage regulator and brush holder on the rectifier end frame.

NOTE: Be careful of the holder installation direction.

- c. Install the 5 screws.

Torque: 2.0 N.m (20 kgf.cm, 18 in.lbf)

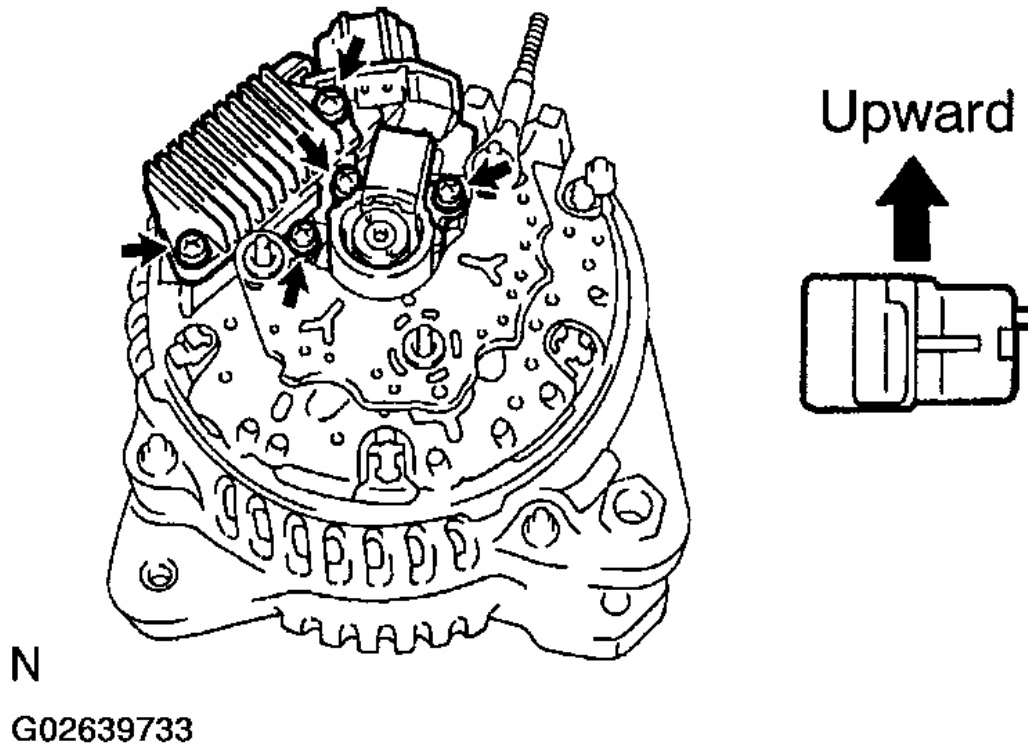
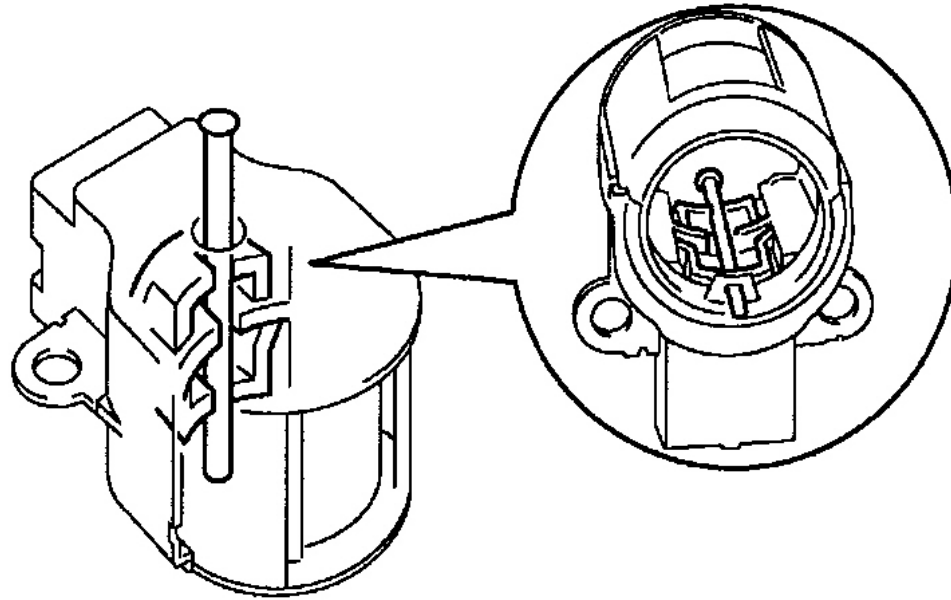


Fig. 61: Installing 5 Screws (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. 12 V 100 A type:

INSTALL BRUSH HOLDER AND TERMINAL INSULATOR

- a. While pushing the 2 brushes to inside the brush holder, insert a pin (diameter 1.0 mm (0.039 in.)) into the brush holder hole.



Y

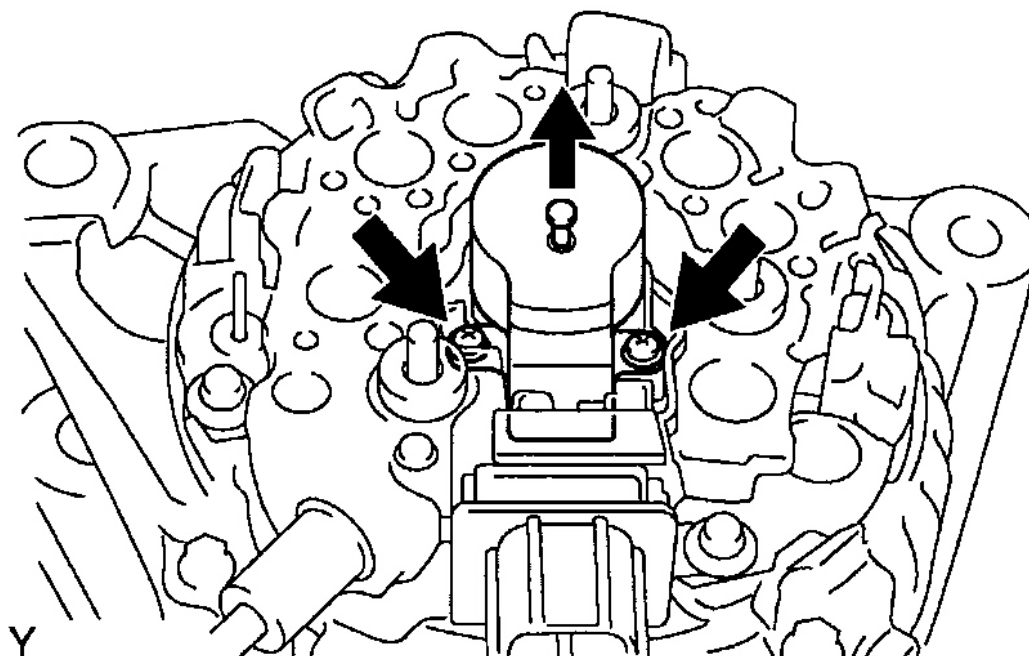
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Fig. 62: Installing Brush Holder & Terminal Insulator (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the brush holder with the 2 screws.

Torque: 1.8 N.m (18 kgf.cm, 16 in.lbf)

- c. Pull out the pin (diameter 1.0 mm (0.039 in.)) from the brush holder.



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Fig. 63: Installing Brush Holder With 2 Screws (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. Install the terminal insulator to the rectifier end frame.

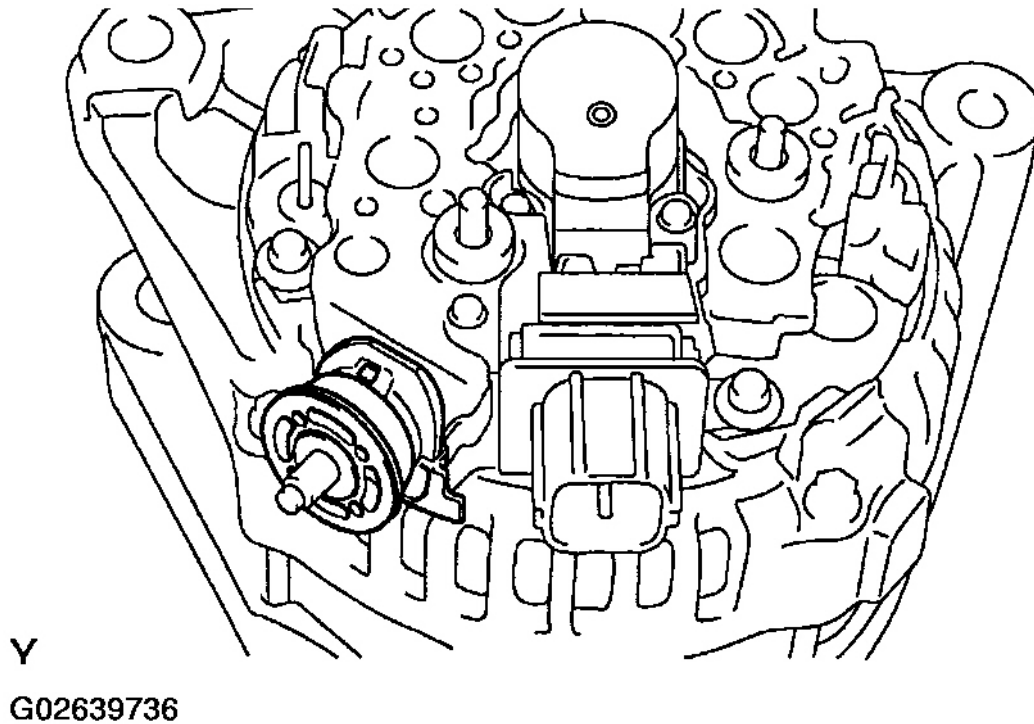
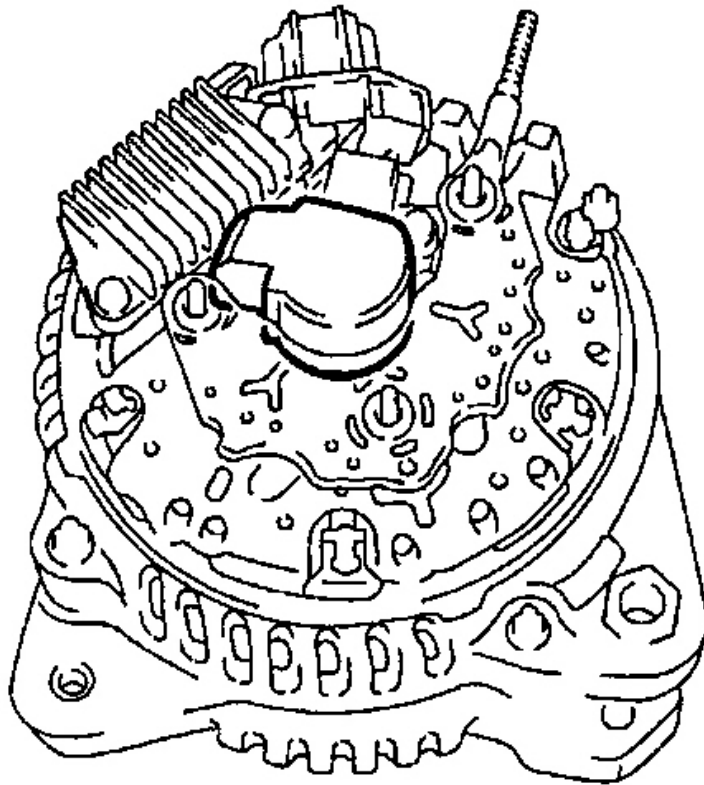


Fig. 64: Installing Terminal Insulator To Rectifier End Frame (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. 12 V 90 A type:

INSTALL REAR END COVER

- a. Place the brush holder cover on the brush holder.



N

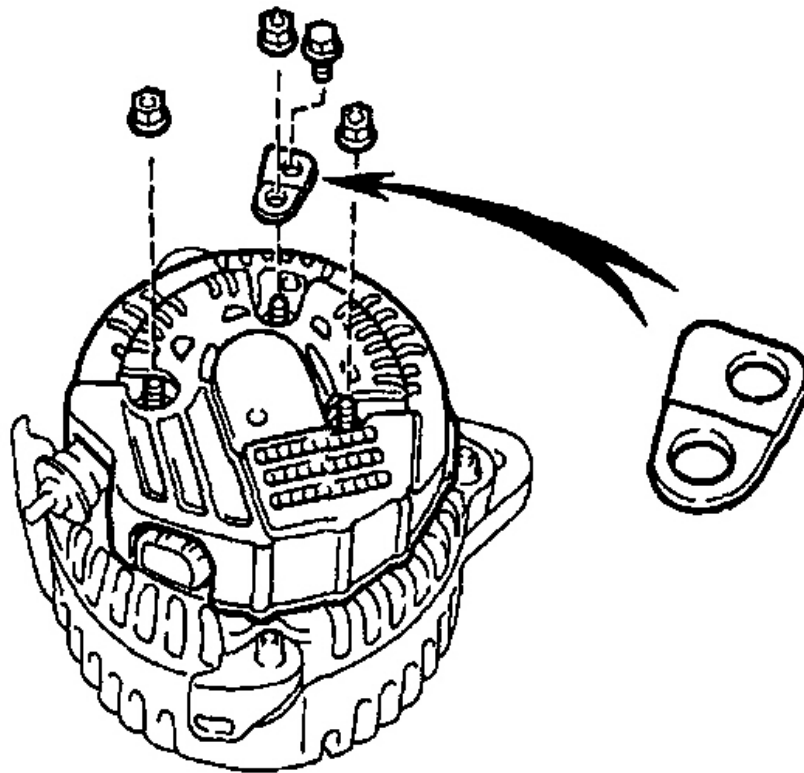
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Fig. 65: Placing Brush Holder Cover On Brush Holder (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Install the end cover and plate terminal with the bolt and 3 nuts.

Torque:

4.4 N.m (45 kgf.cm, 39 in.lbf) for nut 3.9 N.m (40 kgf.cm, 35 in.lbf) for bolt



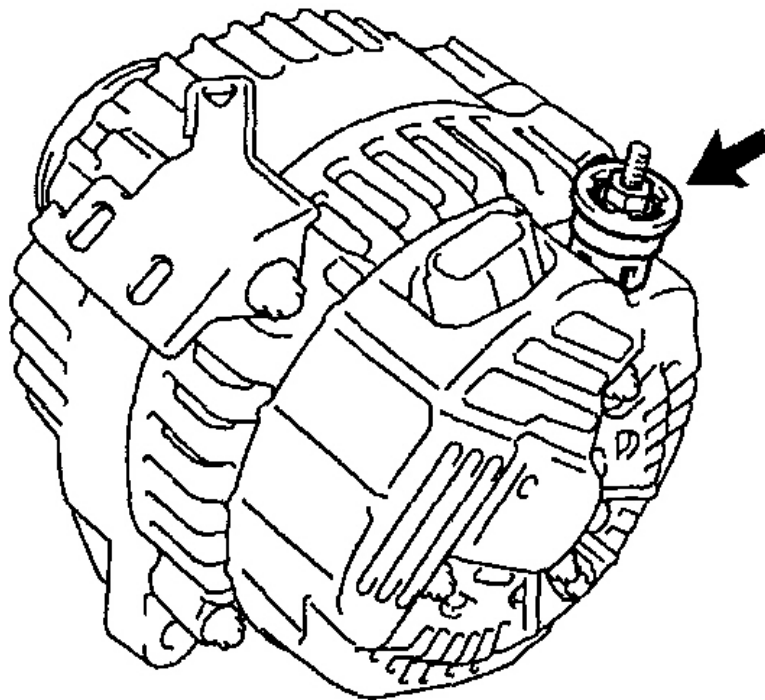
N

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Fig. 66: Installing End Cover & Plate Terminal With Bolt & 3 Nuts (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Install the terminal insulator with the nut.

Torque: 4.1 N.m (42 kgf.cm, 36 in.lbf)



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Fig. 67: Installing Terminal Insulator With Nut (12V 90 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

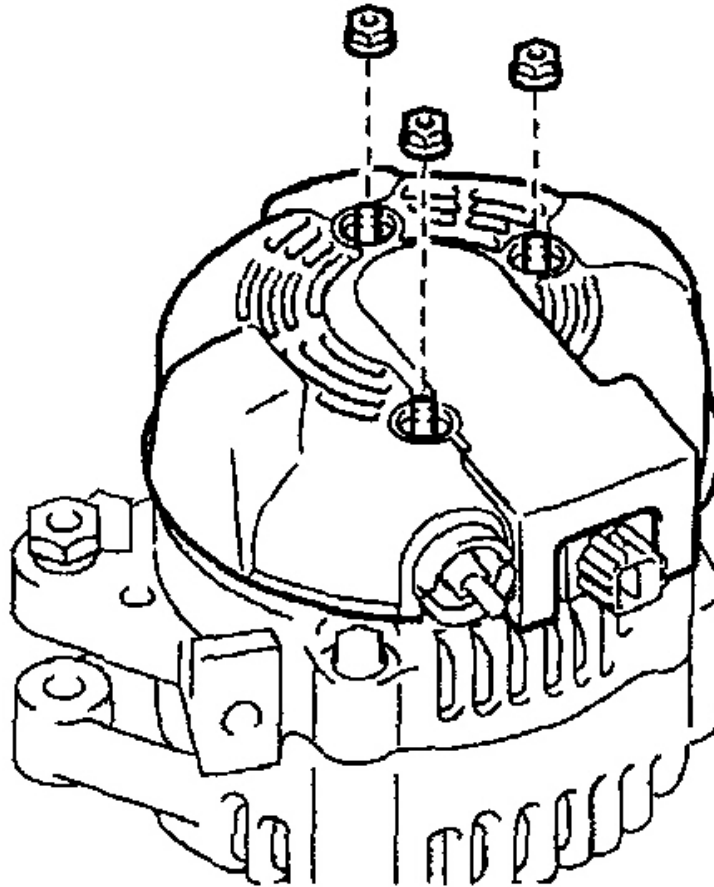
10. 12 V 100 A type:

INSTALL REAR END COVER

Install the end cover with the bolt and 3 nuts.

Torque: 4.6 N.m (47 kgf.cm, 41 in.lbf)

11. **CHECK THAT ROTOR ROTATES SMOOTHLY**



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Fig. 68: Installing End Cover With Bolt & 3 Nuts (12V 100 A Type)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

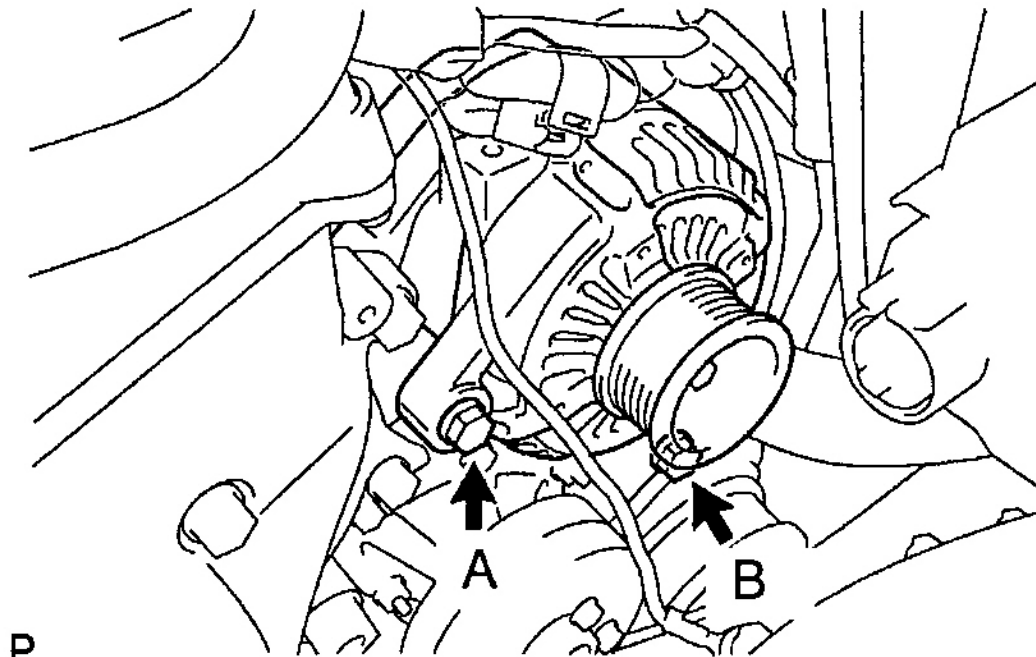
1. INSTALL GENERATOR

- Install the generator with the 2 bolts.

Torque:

52 N.m (530 kgf.cm, 38 ft.lbf) for bolt A

21 N.m (214 kgf.cm, 15 ft.lbf) for bolt B



G02639741

Fig. 69: Installing Generator With 2 Bolts

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Connect the generator connector.
- c. Connect the generator wire with the nut, and install the cap.

Torque: 9.8 N.m (100 kgf.cm, 87 in.lbf)

- d. Install the wire clamp to the wire clip.
- e. Install the wire clip on the wire connectors to the generator.

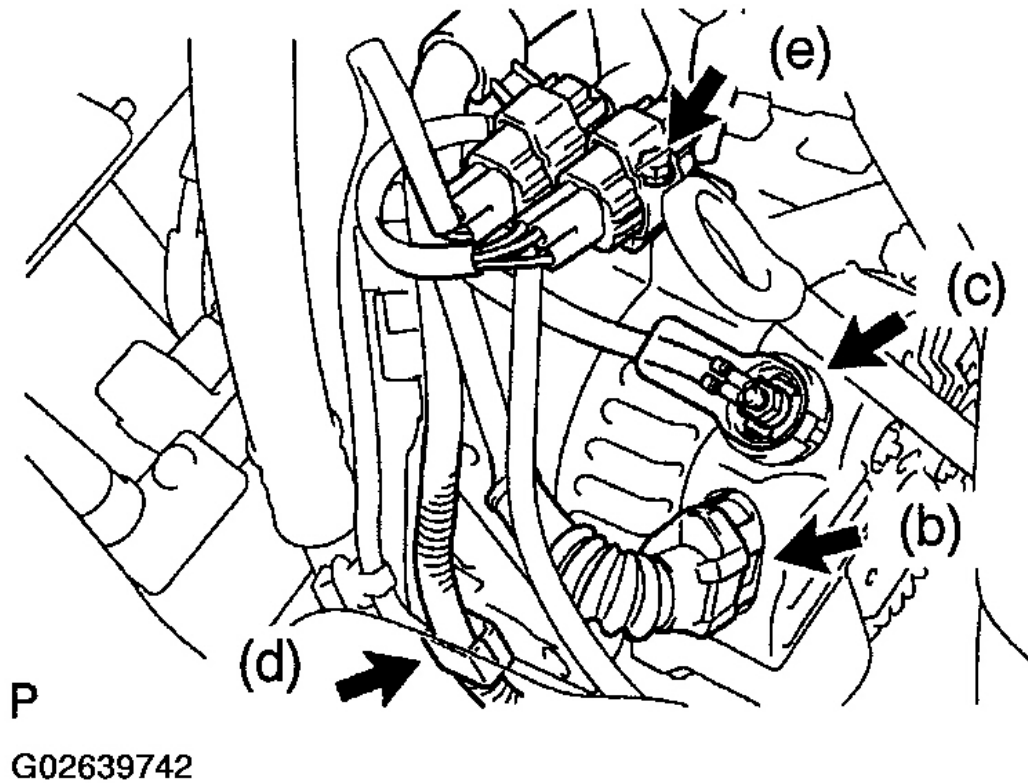


Fig. 70: Installing Wire Clamp To Wire Clip

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL DRIVE BELT

Hook SST on the hexagonal portion of the drive belt tensioner bracket, compress the drive belt tension by turning the drive belt tensioner bracket clockwise, and install the drive belt.

SST 09249-63010

NOTE: Compress the drive belt tensioner by taking 3 seconds or more and installed the drive belt.

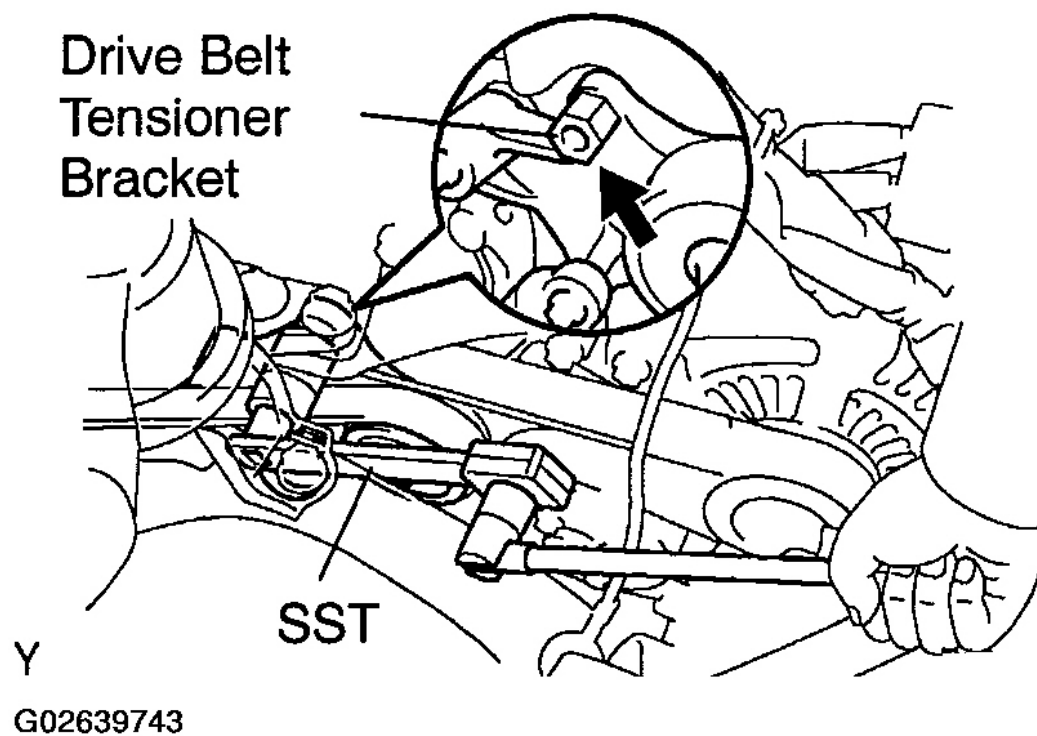


Fig. 71: Identifying Drive Belt Tensioner Bracket Hexagon
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.