

ELECTRICAL

Charging System [2GR-FE] (Diagnostics & Symptom Tests) - Sienna

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 cables while the engine is running.**
5. **Check that the charging cable nut is tightened on terminal B of the generator and the engine room relay block.**

PARTS LOCATION

ILLUSTRATION

ENGINE ROOM RELAY BLOCK

- IG2 RELAY*2
- ALT-S FUSE
- AM2 FUSE*1
- AM2 NO. 2 FUSE*2
- INJ FUSE*2

GENERATOR

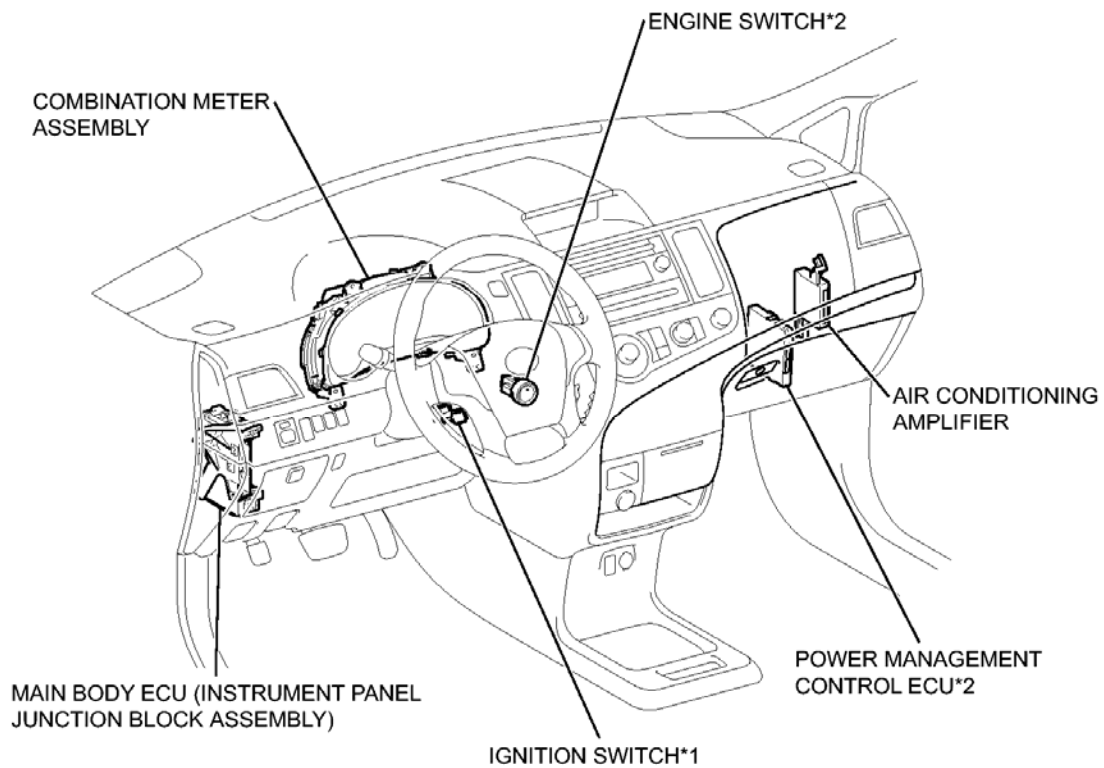
ECM

*1: w/o Smart Key System

*2: w/ Smart Key System

Fig. 1: Charging System Components Location (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



- IG1 NO. 1 RELAY
- GAUGE NO. 1 FUSE
- GAUGE NO. 2 FUSE
- AM1 FUSE*1

*1: w/o Smart Key System

*2: w/ Smart Key System

Fig. 2: Charging System Components Location (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

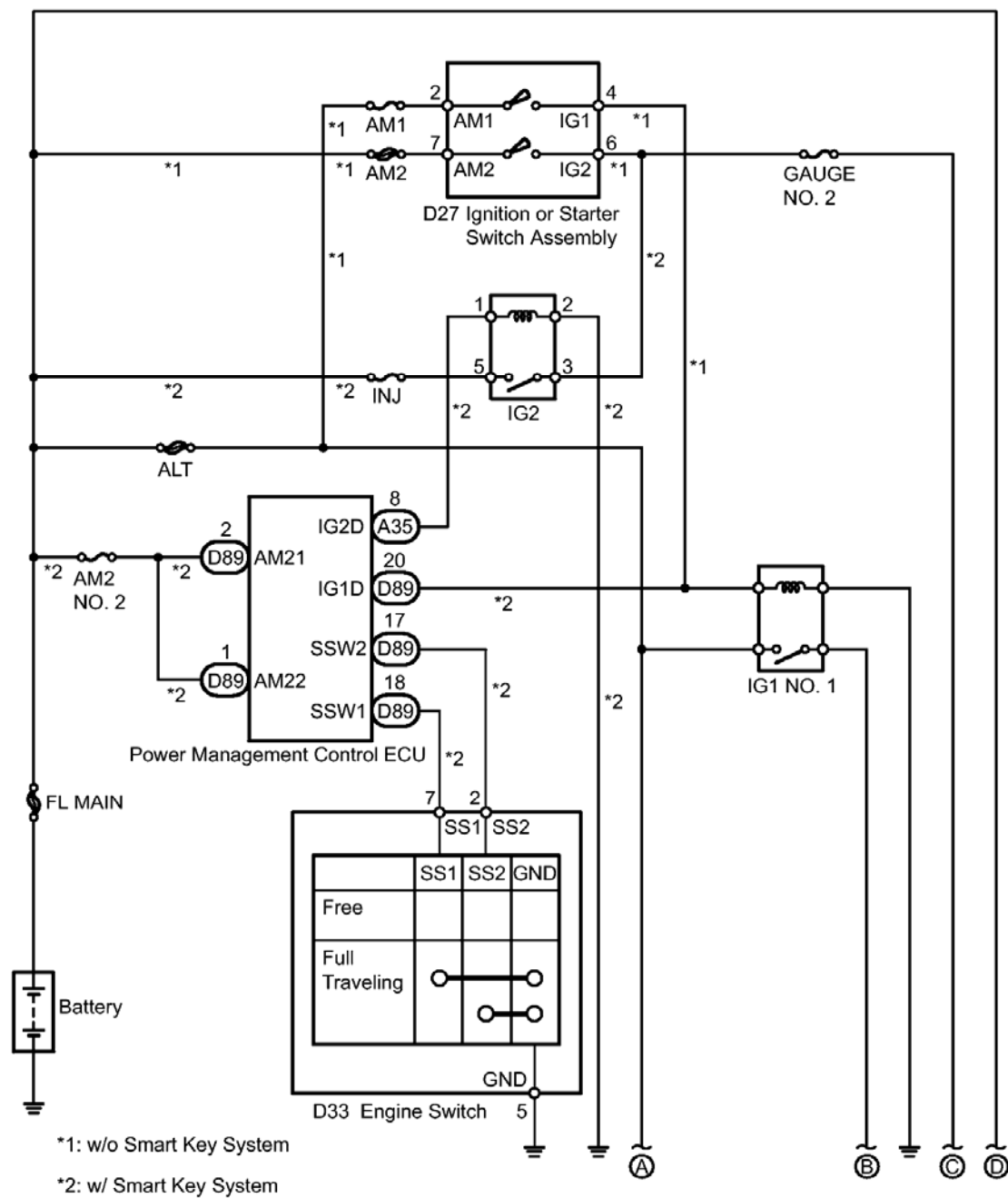


Fig. 3: Charging System Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

RESULT

Symptom	Suspected Area	See
Charge Warning Light Comes ON while Driving	Clutch pulley	Refer to <u>Charge Warning Light Comes ON while Driving</u>
	Generator assembly	Refer to <u>Charge Warning Light Comes ON while Driving</u>
Noise Occurs from Generator while Engine is Running	V-ribbed belt	Refer to <u>Noise Occurs from Generator while Engine is Running</u>
	Generator clutch pulley	Refer to <u>Noise Occurs from Generator while Engine is Running</u>
	Generator assembly	Refer to <u>Noise Occurs from Generator while Engine is Running</u>

ON-VEHICLE INSPECTION

ON-VEHICLE INSPECTION

1. CHECK BATTERY CONDITION

NOTE: If the battery is weak or if the engine is difficult to start, recharge the battery and perform inspections again before returning the vehicle to the customer.

- Check the battery for damage and deformation. If severe damage, deformation or leak is found, replace the battery.
- Check the voltage.
 - Turn the ignition switch off and turn on the headlights for 20 to 30 seconds. This will remove the surface charge from the battery.
 - Measure the battery voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
Positive (+)		

terminal - Negative (-) terminal	20°C (68° F)	12.5 to 12.9 V
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HINT:

If the voltage is not as specified, charge the battery.

2. CHECK BATTERY TERMINAL

- a. Check that the battery terminals are not loose or corroded.

If the terminals are corroded, clean them.

3. CHECK FUSES

- a. Measure the resistance of the fuses.

Standard resistance

Below 1 ohms

If the results are not as specified, replace the fuses as necessary.

4. CHECK V-RIBBED BELT . Refer to ON-VEHICLE INSPECTION - Step 1

5. INSPECT GENERATOR WIRING

- a. Check that the wiring is in good condition.

6. LISTEN FOR ABNORMAL NOISE FROM GENERATOR

- a. Check that the generator does not emit any abnormal noise while the engine is running.

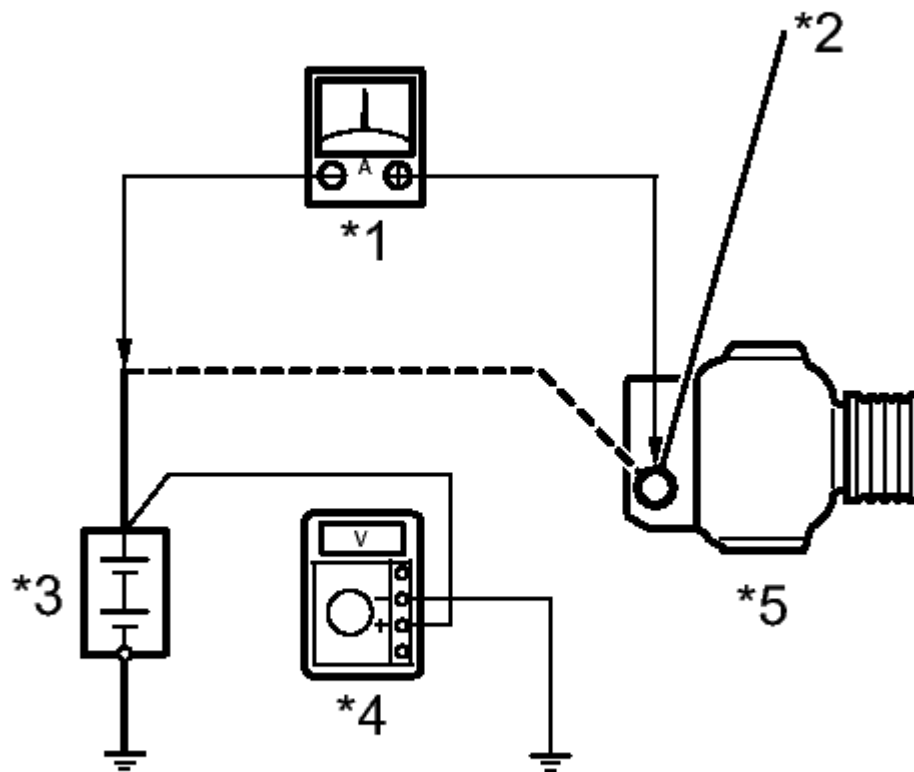
7. INSPECT CHARGE WARNING LIGHT CIRCUIT

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

- a. Connect a voltmeter and an ammeter to the charging circuit as follows.



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Fig. 5: Inspecting Charging Circuit Without Load
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

If a battery / generator tester is available, connect the tester to the charging circuit in accordance with the manufacturer's instructions.

1. Disconnect the wire from terminal B of the generator and connect it to the negative (-) lead of the ammeter.
 2. Connect the ammeter positive (+) lead to terminal B of the generator.
 3. Connect the voltmeter positive (+) lead to positive (+) terminal of the battery.
 4. Ground the voltmeter negative (-) lead.
- b. Check the charging circuit.
1. Keep the engine speed at 2000 RPM and check the reading on the ammeter and voltmeter.

Standard current

Below 10 A

Standard voltage

13.2 to 14.8 V

TEXT IN ILLUSTRATION

*1	Ammeter
*2	Terminal B
*3	Battery
*4	Voltmeter
*5	Generator

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

HINT:

If the battery is not fully charged, the ammeter reading will sometimes be more than the standard current.

9. INSPECT CHARGING CIRCUIT WITH LOAD

- a. With the engine running at 2000 RPM, turn the high beam headlights on and turn the heater blower switch to the "HI" position.
- b. Check the reading on the ammeter.

Standard current

30 A or more

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

HINT:

If the battery is fully charged, the indication will sometimes be less than the standard current. If this is the case, add more electrical load (operate the wipers, rear window defogger, etc.) and check the reading on the ammeter again.

SYMPTOM TESTS

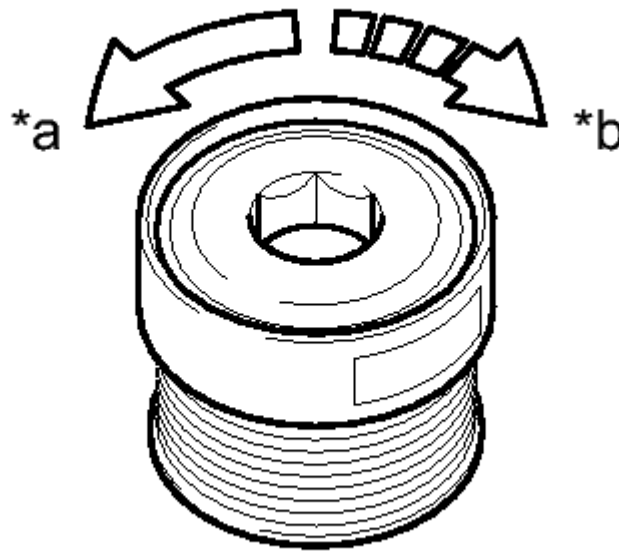
Charge Warning Light Comes ON while Driving

INSPECTION PROCEDURE

PROCEDURE

1. CHECK LOCK FUNCTION OF GENERATOR CLUTCH PULLEY

- a. Check the lock function with the pulley installed in the vehicle.
 1. Visually check that the rotor in the generator assembly operates with the engine running.
- b. Check the lock function with the pulley removed from the vehicle.
 1. Remove the generator pulley cap.
 2. Hold the generator rotor assembly using SST, and turn the generator clutch pulley clockwise to check that the outer ring locks. Refer to **DISASSEMBLY - Step 5** .



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Fig. 6: Inspecting Generator Clutch Pulley Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Free
*b	Lock

OK

The outer ring locks.

- SST: 09820-63021

NG --> See step 3

OK: Go to next step

2. CHECK LOCK OF GENERATOR CLUTCH PULLEY

- a. Start the engine and visually check the generator clutch pulley for looseness.

OK

The clutch pulley is not loose.

NG --> TIGHTEN GENERATOR CLUTCH PULLEY TO THE SPECIFIED TORQUE

OK --> See step 4

3. REPLACE GENERATOR CLUTCH PULLEY. Refer to COMPONENTS

4. REPLACE GENERATOR ASSEMBLY. Refer to COMPONENTS

Noise Occurs from Generator while Engine is Running

INSPECTION PROCEDURE

PROCEDURE

1. CHECK LOOSENESS OF V-RIBBED BELT

- a. Check the tension of the belt by pushing it down with a finger.

OK

The tension of the belt is enough.

NG --> See step 5

OK: Go to next step

2. CHECK V-RIBBED BELT FOR WEAR

- a. Check the V-ribbed belt for wear.

OK

The V-ribbed belt is not worn.

NG --> See step 6

OK: Go to next step

3. CHECK GENERATOR CLUTCH PULLEY FOR WEAR

- a. Check the generator clutch pulley grooves for wear or other defects.

OK

The generator clutch pulley grooves are not damaged.

NG --> See step 7

OK: Go to next step

4. CHECK FOR NOISE WHILE GENERATOR CLUTCH PULLEY IS OPERATING

- a. Perform a driving test and check if noise occurs when decelerating.

OK

Noise does not occur.

NG --> See step 7

OK --> See step 8

- 5. REPLACE V-RIBBED BELT TENSIONER ASSEMBLY. Refer to COMPONENTS**
- 6. REPLACE V-RIBBED BELT. Refer to COMPONENTS**
- 7. REPLACE GENERATOR CLUTCH PULLEY. Refer to COMPONENTS**
- 8. REPLACE GENERATOR ASSEMBLY. Refer to COMPONENTS**

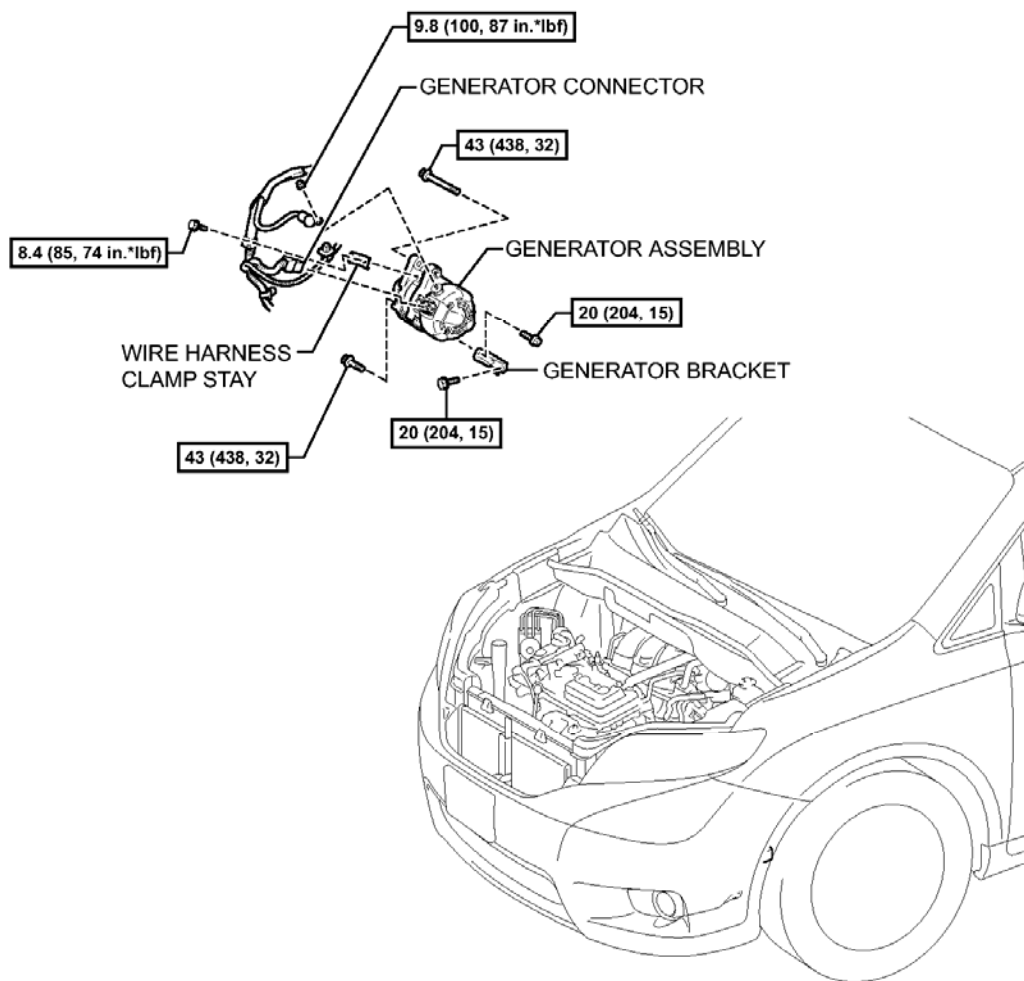
ELECTRICAL

Charging System [2GR-FE] (Service Information) - Sienna

GENERATOR

COMPONENTS

ILLUSTRATION

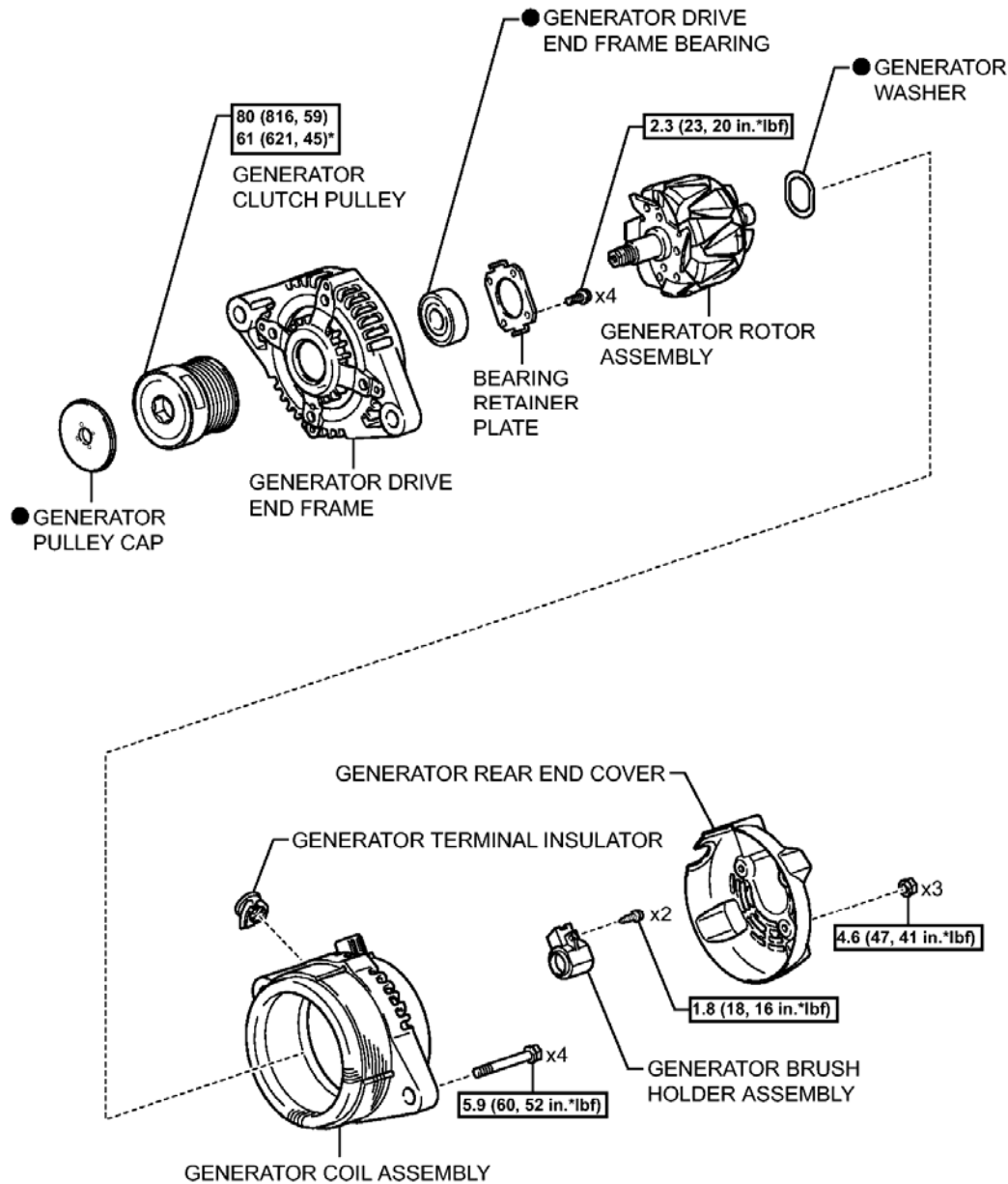


N*m (kgf*cm, ft.*lbf): Specified torque

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Fig. 1: Generator Replacement Components With Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



[N*m (kgf*cm, ft.*lbf)]: Specified torque

* For use with SST

● Non-reusable part

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Fig. 2: Exploded View Of Generator Assembly With Torque Specifications
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to INITIALIZATION .

2. REMOVE FRONT BUMPER ASSEMBLY

Refer to REMOVAL

3. REMOVE RADIATOR ASSEMBLY WITH FAN SHROUD AND FAN MOTOR

Refer to REMOVAL

4. REMOVE FAN & GENERATOR V BELT

Refer to REMOVAL - Step 3

5. REMOVE GENERATOR ASSEMBLY

- a. Turn back the terminal cap.

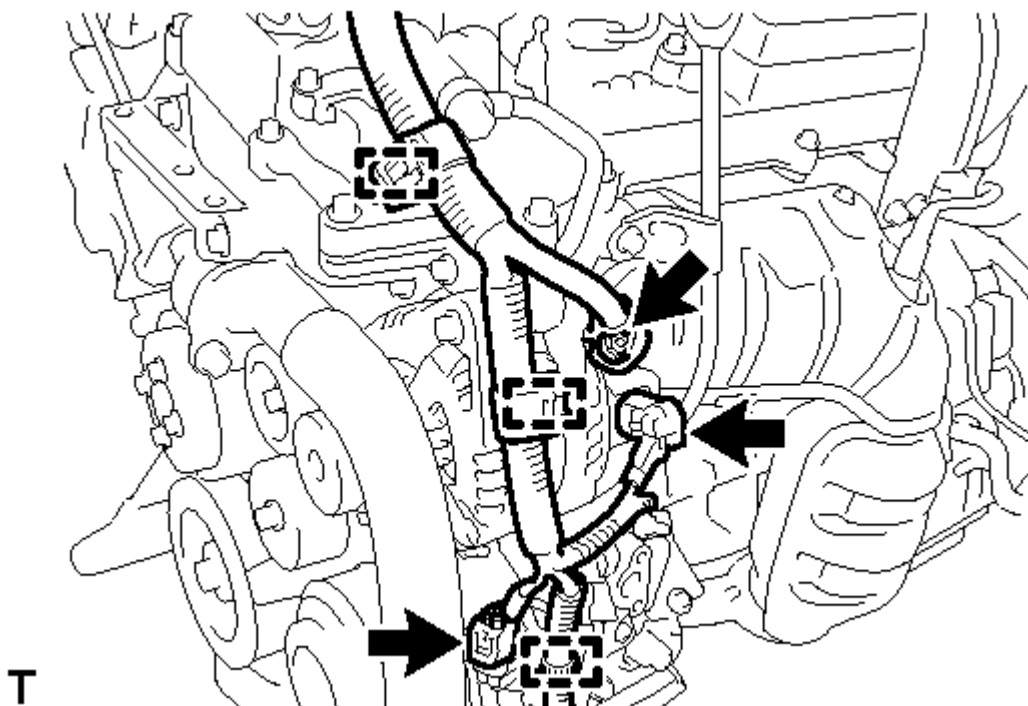


Fig. 3: Identifying Generator Assembly Nut, Connector & Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Remove the nut and disconnect the wire harness from terminal B.
- c. Disconnect the generator connector from the generator assembly.
- d. Disconnect the magnetic clutch connector from the compressor and magnetic clutch.
- e. Disengage the 3 wire harness clamps.
- f. Remove the 2 bolts.

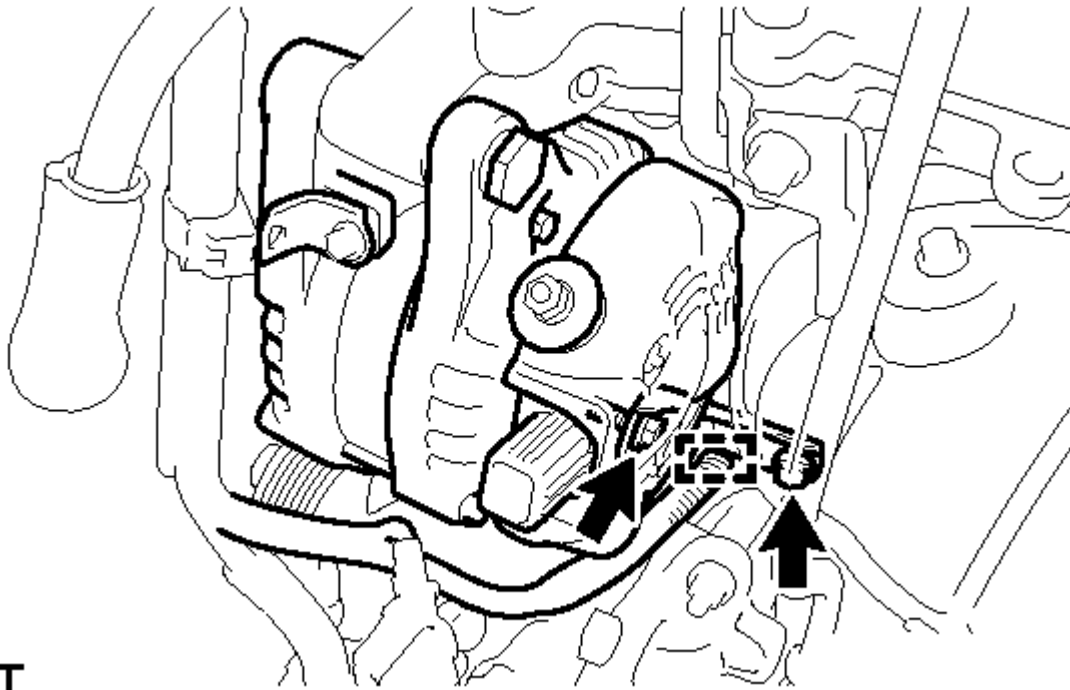
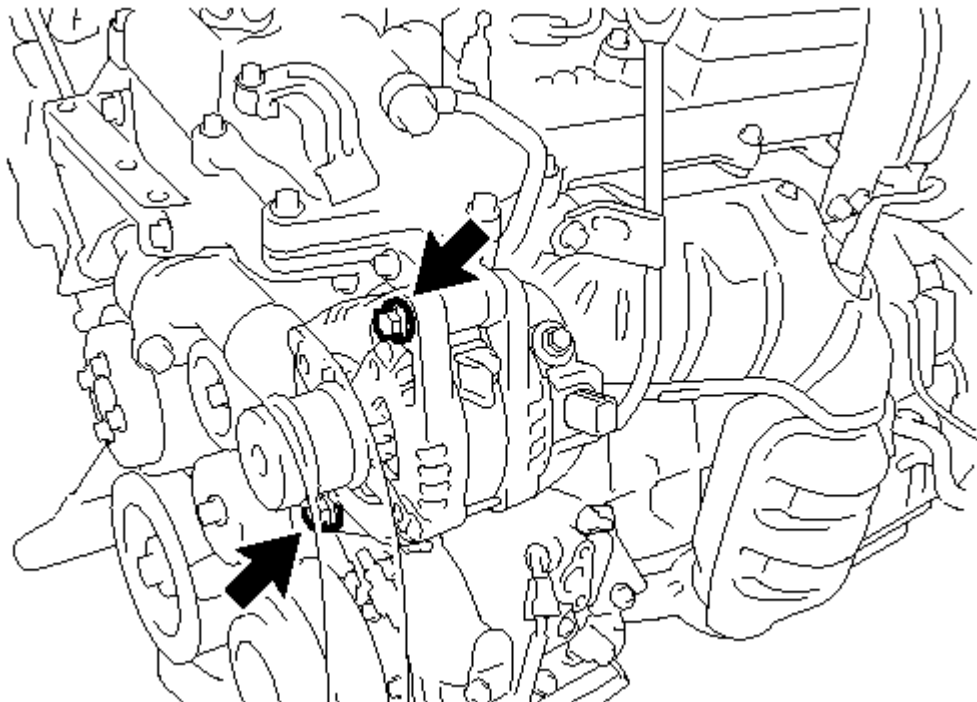


Fig. 4: Identifying Generator Assembly Wire Harness Clamp, Bracket & Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- g. Disconnect the wire harness clamp and remove the generator bracket.
- h. Remove the 2 bolts and the generator assembly.

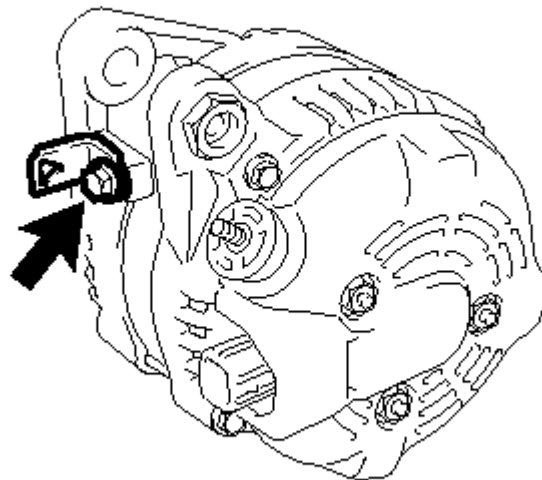


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Fig. 5: Identifying Generator Assembly Bolts

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

- i. Remove the bolt and the wire harness clamp stay.



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Fig. 6: Identifying Wire Harness Clamp Stay Bolt

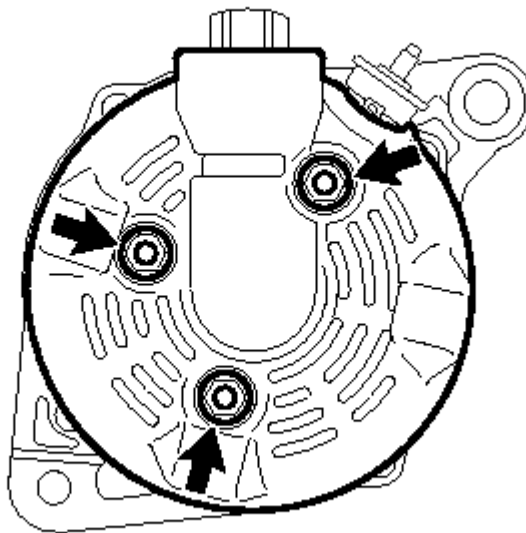
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DISASSEMBLY

DISASSEMBLY

1. REMOVE GENERATOR REAR END COVER

- a. Remove the 3 nuts and the generator rear end cover.

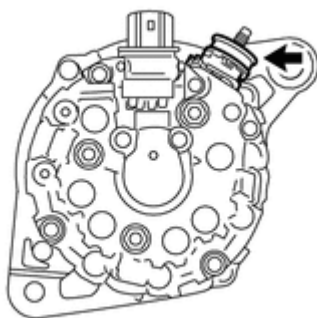


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Fig. 7: Identifying Generator Rear End Cover Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE GENERATOR TERMINAL INSULATOR

- a. Remove the terminal insulator.

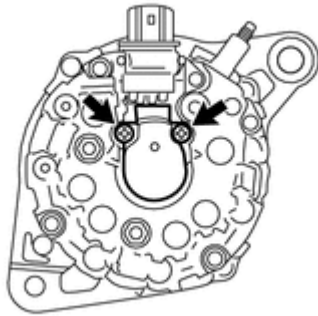


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Fig. 8: Identifying Terminal Insulator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. REMOVE GENERATOR BRUSH HOLDER ASSEMBLY

- a. Remove the 2 screws and the brush holder.

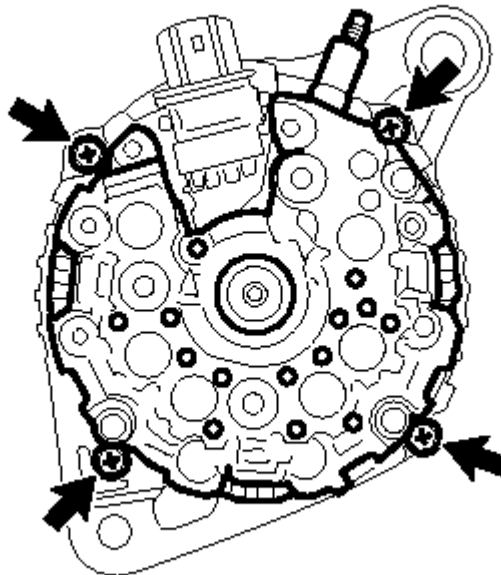


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Fig. 9: Identifying Generator Brush Holder Assembly Screws
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. REMOVE GENERATOR COIL ASSEMBLY

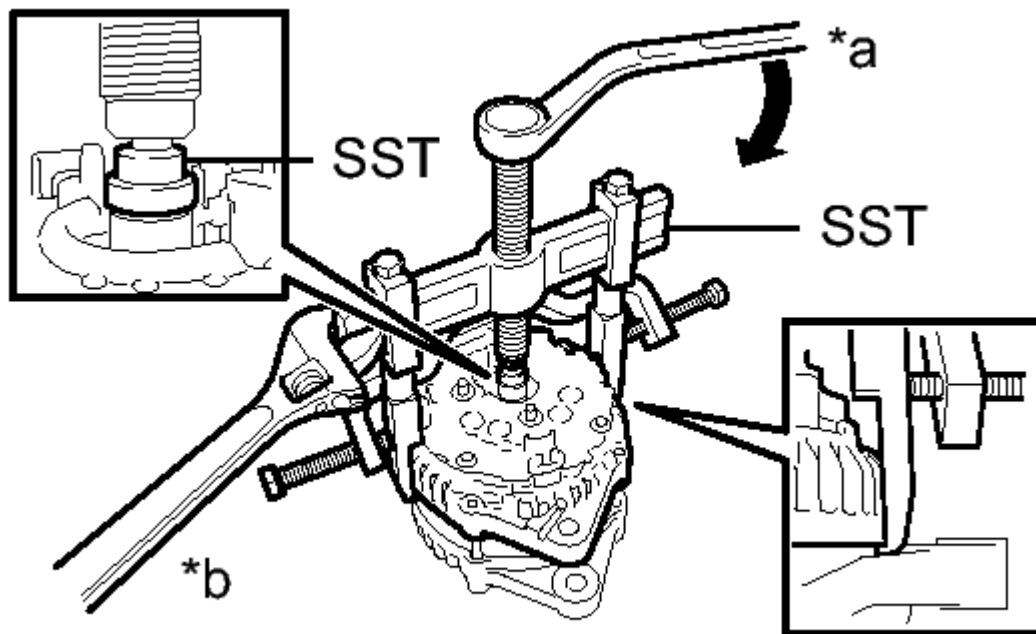
- a. Remove the 4 bolts.



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Fig. 10: Identifying Generator Coil Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST, remove the generator coil assembly.



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Fig. 11: Removing Generator Coil Assembly With SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn
*b	Hold

- SST: 09950-40011
- 09951-04020
- 09952-04010
- 09953-04020
- 09954-04010
- 09955-04071
- 09957-04010
- 09958-04011

5. REMOVE GENERATOR CLUTCH PULLEY

- a. Using a screwdriver, remove the generator pulley cap.

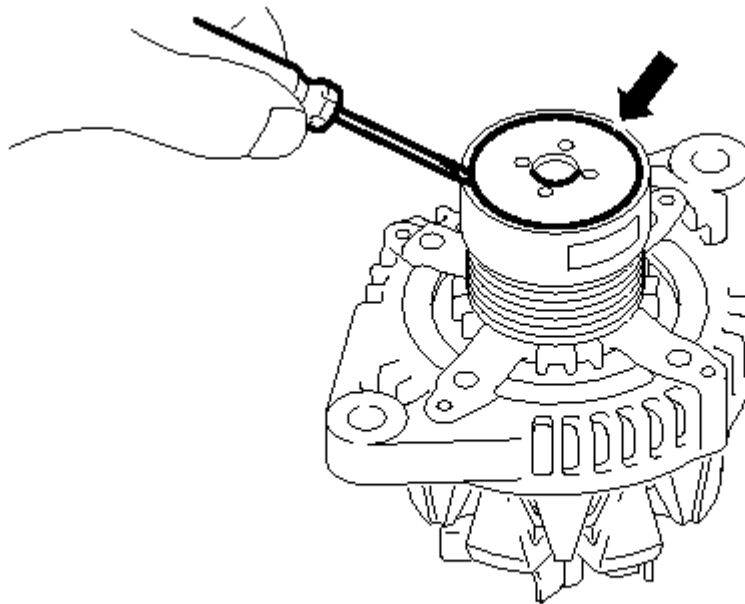
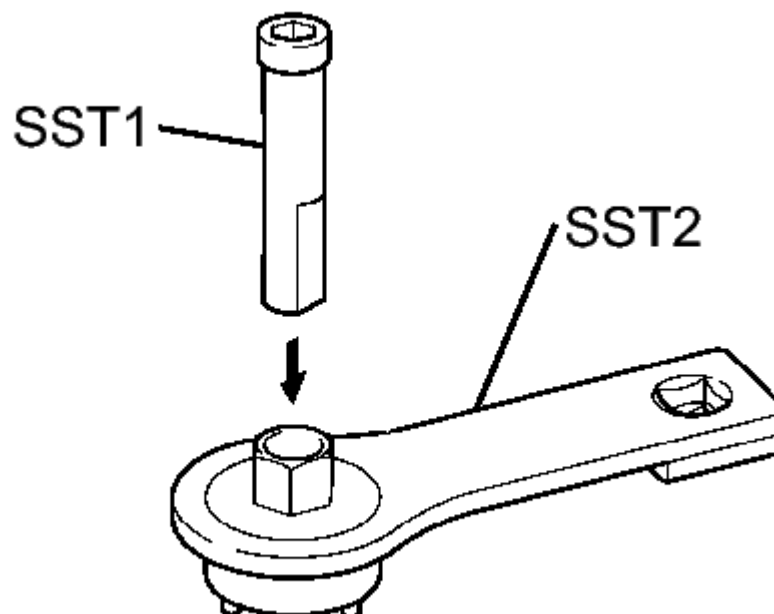


Fig. 12: Removing Generator Pulley Cap
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Clamp the generator drive end frame in a vise tightly.
- c. Assemble SST1 and 2 as shown in the illustration.

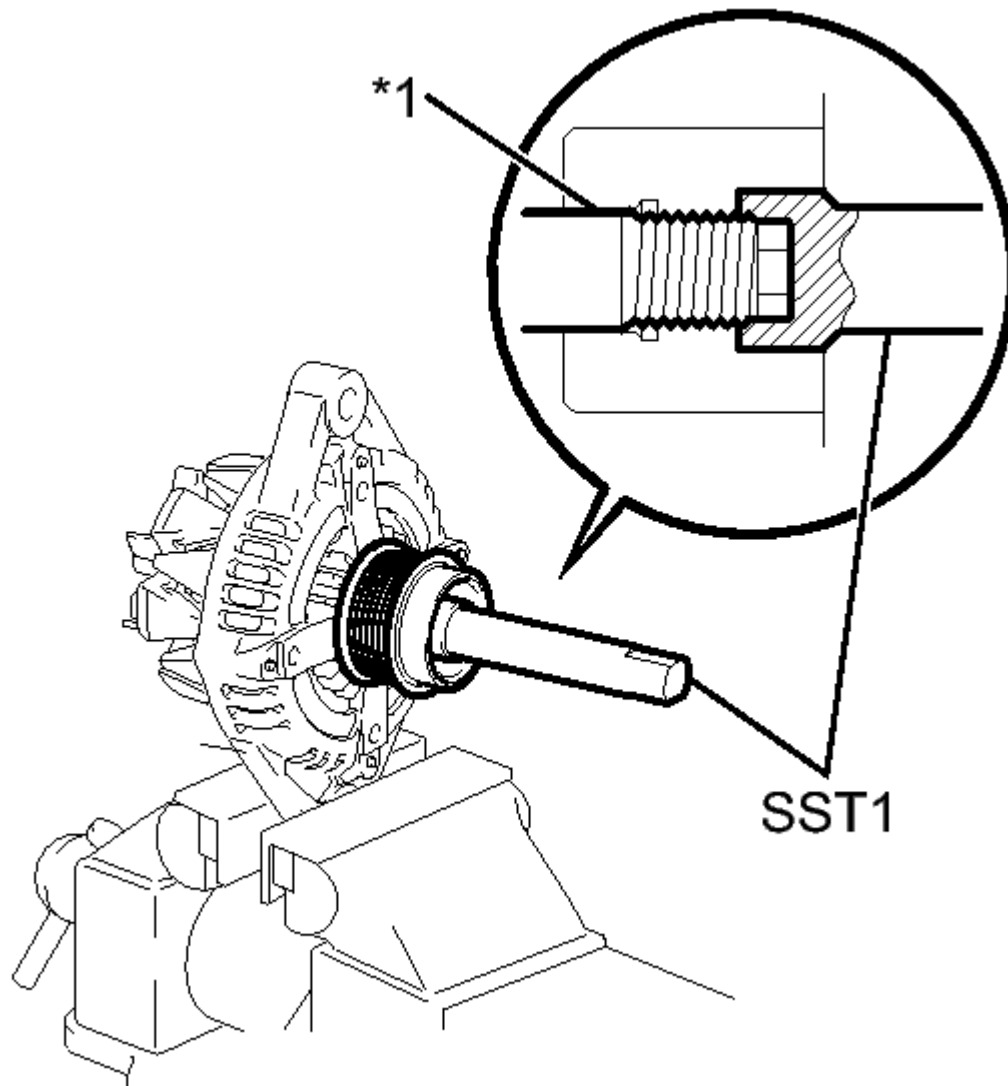


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Fig. 13: Assembling Generator Pulley SST
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09820-63021

d. Place the rotor shaft end into SST1.



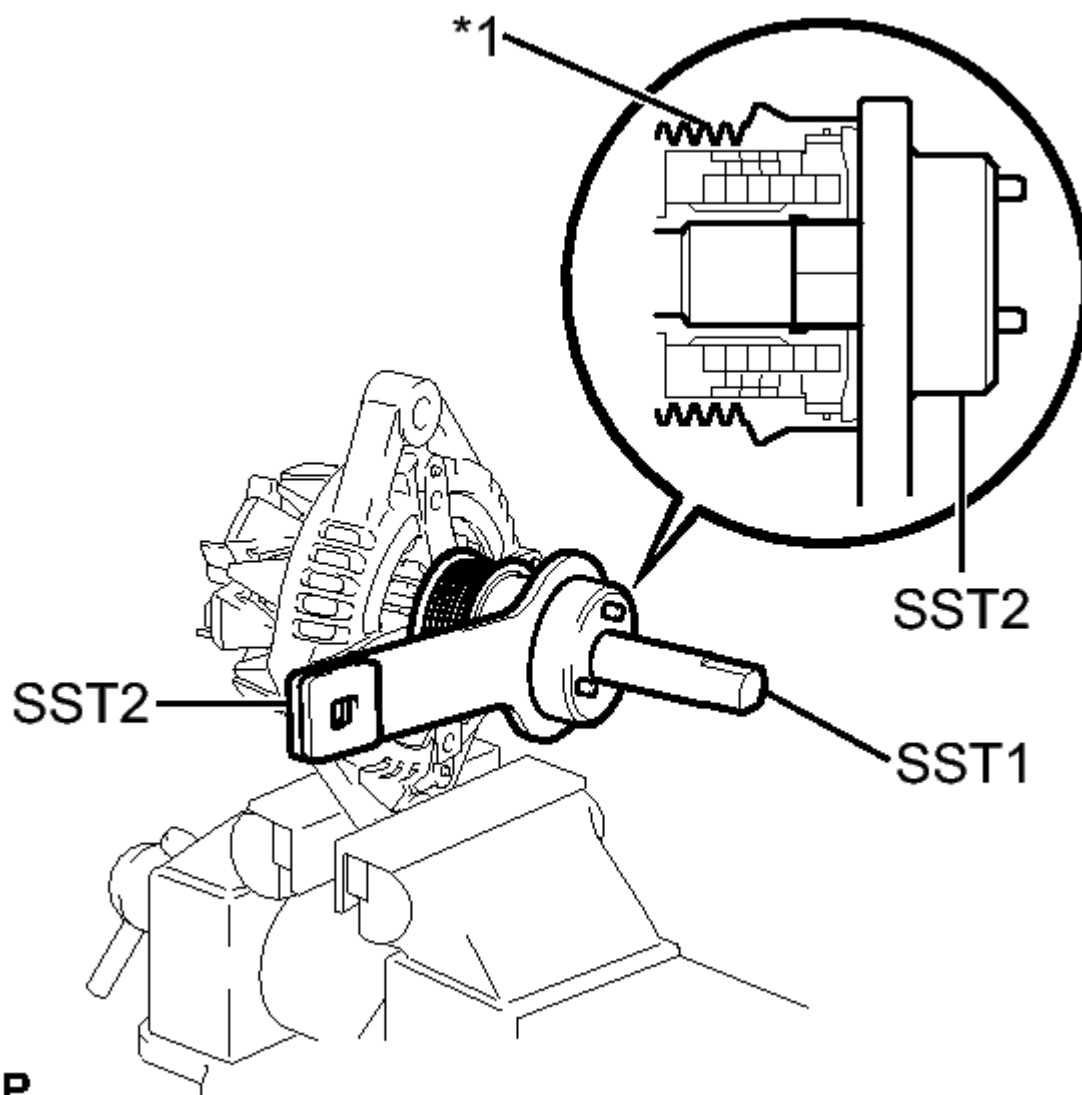
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Fig. 14: Identifying Rotor Shaft End & SST1 Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Rotor Shaft
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e. Fit SST2 onto the clutch pulley.



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Fig. 15: Identifying Clutch Pulley & SST2 Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Clutch Pulley
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- f. Loosen the pulley by turning SST2 in the direction shown in the illustration.

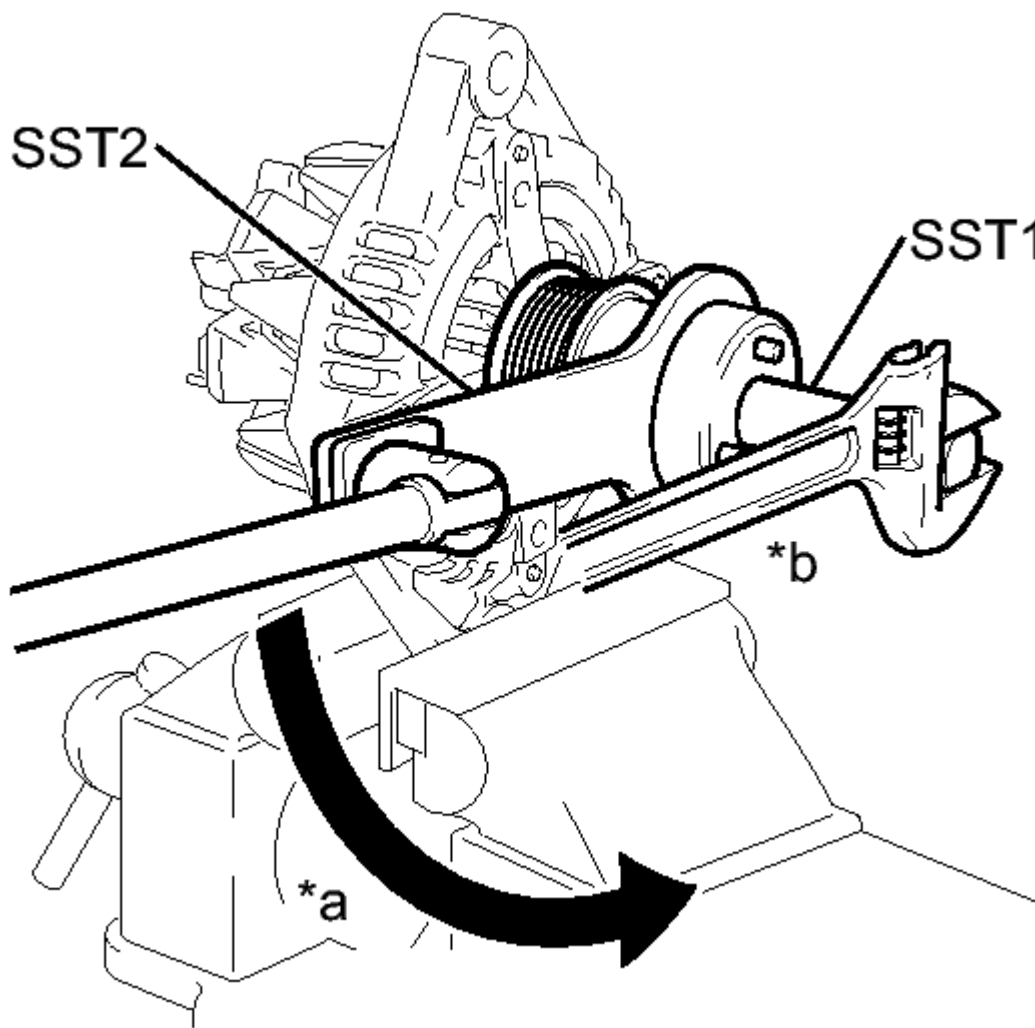


Fig. 16: Loosening Pulley With SST2
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Turn
*b	Hold

NOTE:

- Check that the drive end frame is secured in the vise tightly.
- Hold SST1 tightly during the operation.

- g. Remove SST from the generator assembly.
- h. Remove the clutch pulley from the rotor shaft.

6. REMOVE GENERATOR ROTOR ASSEMBLY

- a. Remove the generator washer.

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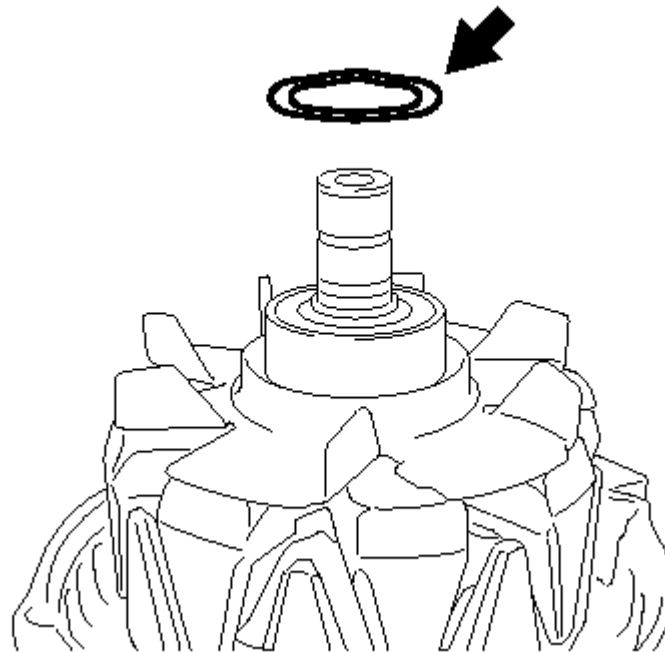


Fig. 17: Identifying Generator Washer

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

- b. Remove the generator rotor assembly.

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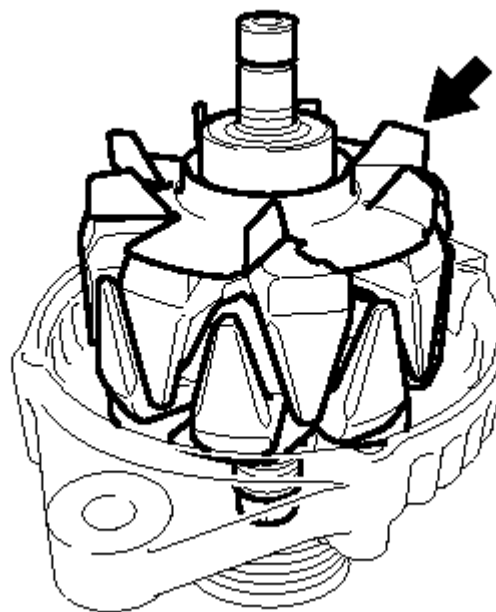


Fig. 18: Identifying Generator Rotor Assembly

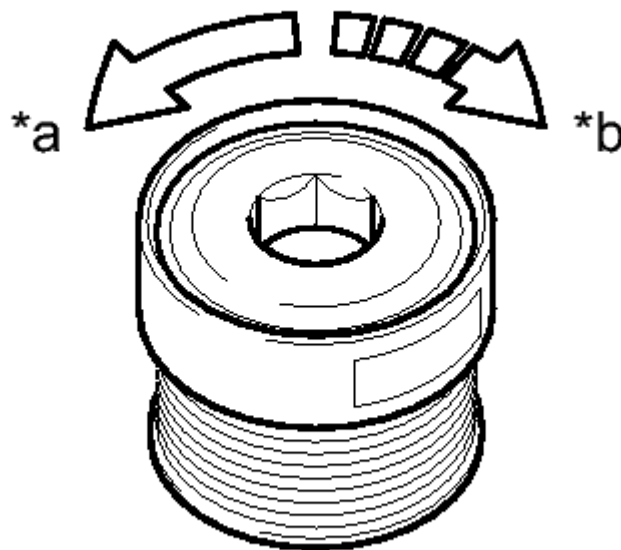
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

INSPECTION

1. INSPECT GENERATOR CLUTCH PULLEY

- a. Hold the center of the pulley, and confirm that the outer ring turns counterclockwise and does not turn clockwise.



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Fig. 19: Inspecting Generator Clutch Pulley Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

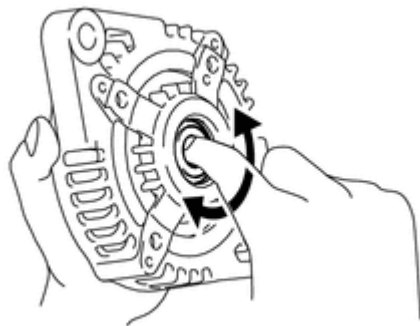
TEXT IN ILLUSTRATION

*a	Free
*b	Lock

If the result is not as specified, replace the clutch pulley.

2. INSPECT GENERATOR DRIVE END FRAME BEARING

- a. Check that the bearing is not rough or worn.



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Fig. 20: Inspecting Generator Drive End Frame Bearing
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

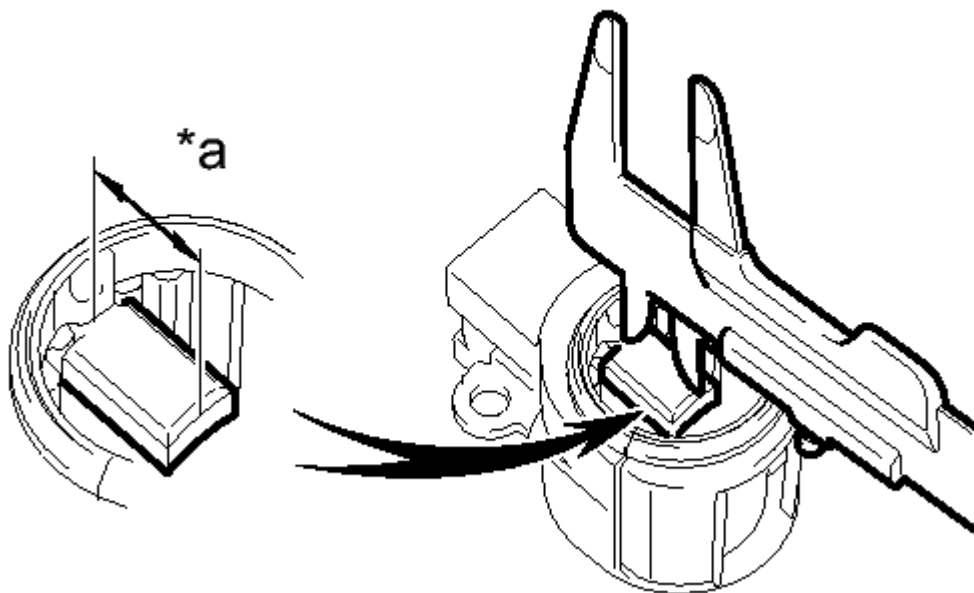
OK

The bearing rotates smoothly.

If necessary, replace the generator drive end frame bearing.

3. INSPECT GENERATOR BRUSH HOLDER ASSEMBLY

- a. Using a vernier caliper, measure the length of the exposed brushes.



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Fig. 21: Measuring Brush Length Using A Vernier Caliper
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a** Length

Standard exposed length

9.5 to 11.5 mm (0.374 to 0.453 in.)

Minimum exposed length

4.5 mm (0.177 in.)

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

4. INSPECT GENERATOR ROTOR ASSEMBLY

- a. Check that the generator rotor bearing is not rough or worn.

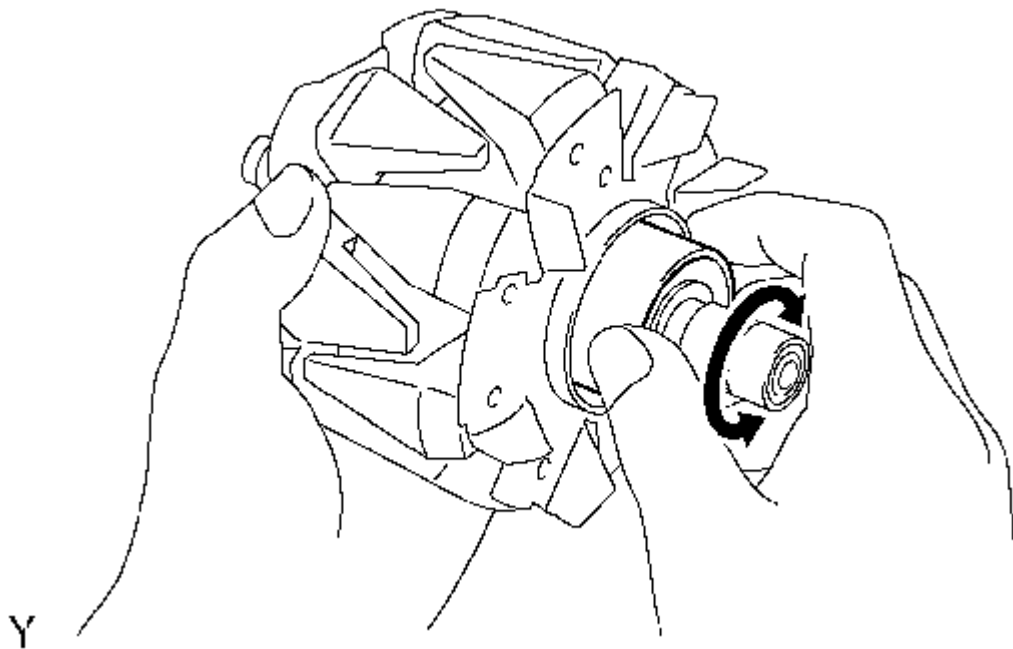
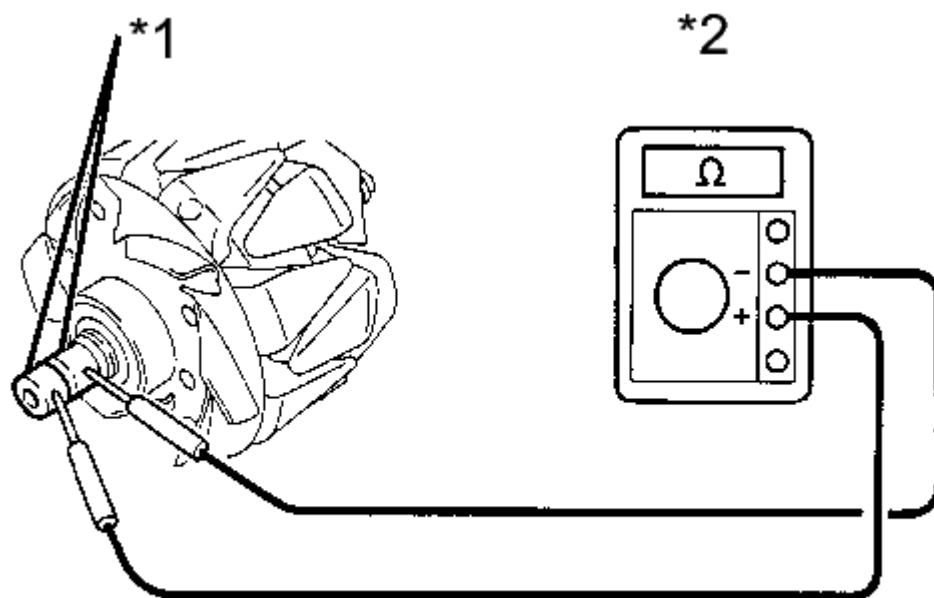


Fig. 22: Inspecting Generator Rotor Assembly

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

If necessary, replace the generator rotor assembly.

- b. Check the generator rotor for an open circuit.



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Fig. 23: Measuring Resistance Between Slip Rings
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Measure the resistance according to the value(s) in the table below.

TEXT IN ILLUSTRATION

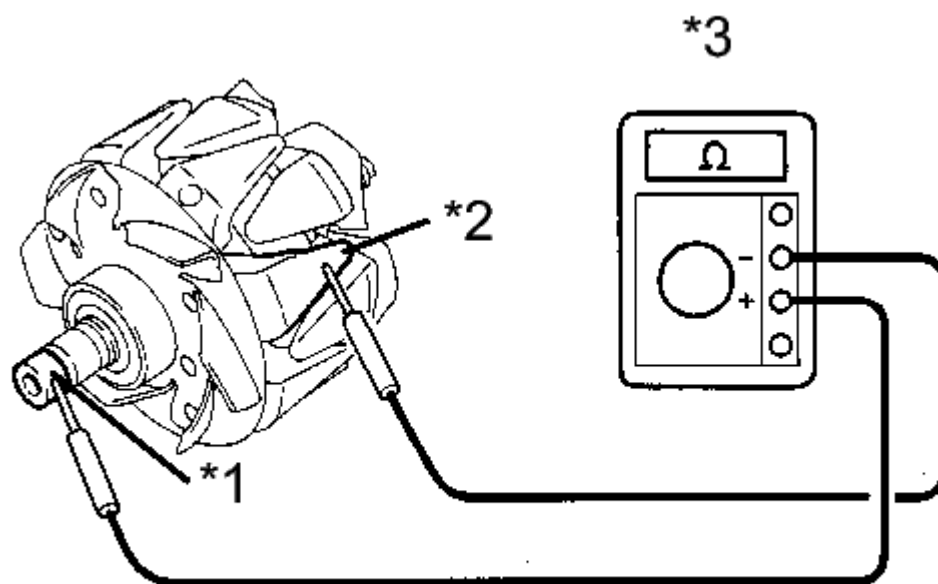
*1	Slip Ring
*2	Ohmmeter

Standard Resistance

Tester Connection	Condition	Specified Condition
Slip ring - Slip ring	20°C (68°F)	1.5 to 1.9 ohms

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

- c. Check the rotor for a short to ground.



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Fig. 24: Measuring Resistance Between Slip Ring And Rotor
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Measure the resistance according to the value(s) in the table below.

TEXT IN ILLUSTRATION

*1	Slip Ring
*2	Rotor
*3	Ohmmeter

Standard Resistance

Tester Connection	Condition	Specified Condition
Slip ring - Rotor	Always	1 Mohms or higher

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

- d. Using a vernier caliper, measure the slip ring diameter.

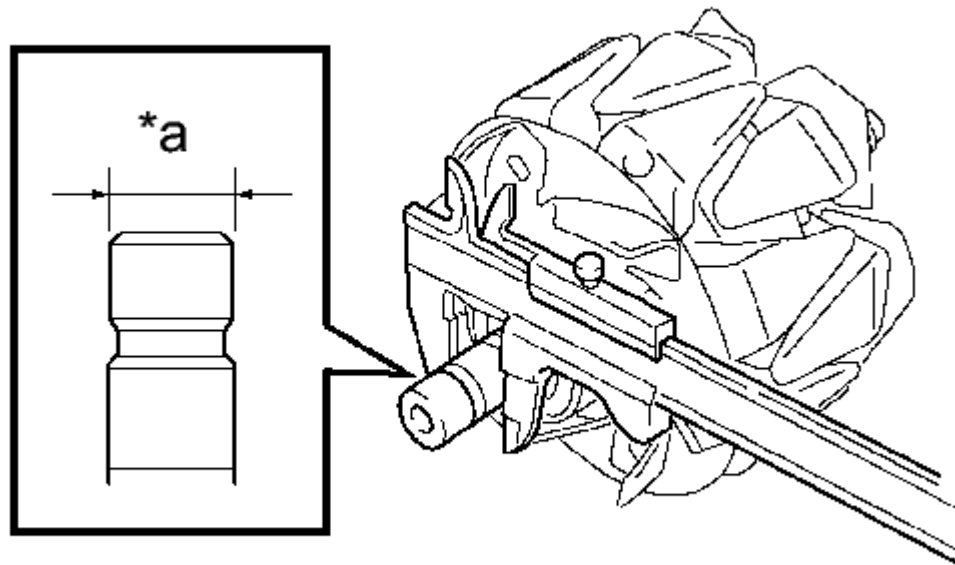


Fig. 25: Measuring Slip Ring Diameter Using Vernier Caliper
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

***a** Diameter

Standard diameter

14.2 to 14.4 mm (0.559 to 0.567 in.)

Minimum diameter

14.0 mm (0.551 in.)

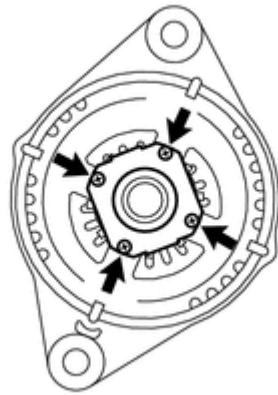
If the diameter is less than the minimum, replace the generator rotor assembly.

REPLACEMENT

REPLACEMENT

1. REPLACE GENERATOR DRIVE END FRAME BEARING

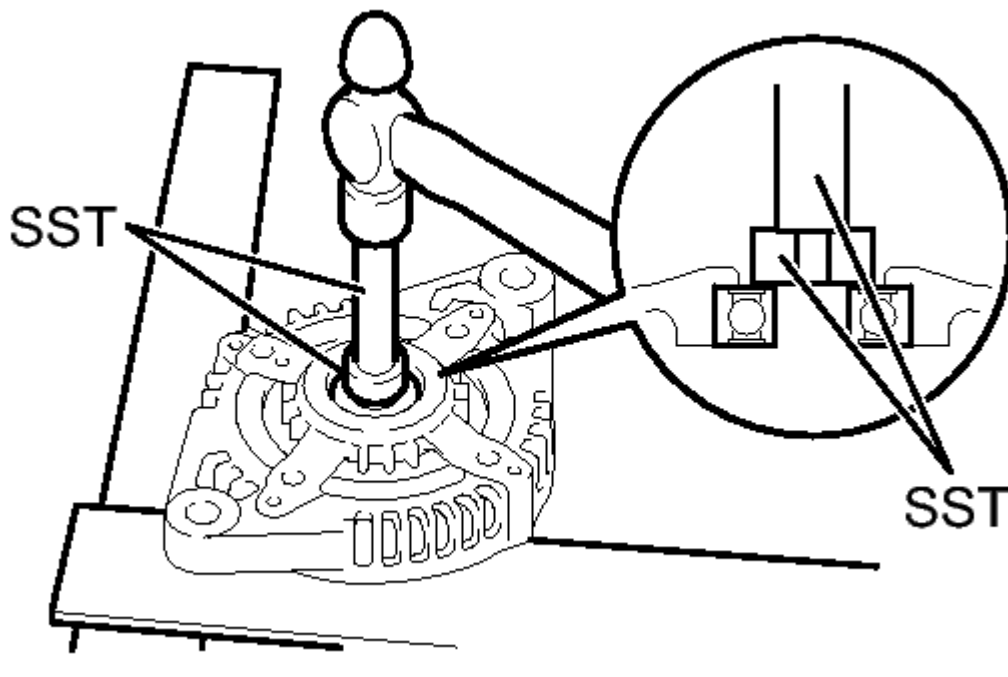
- a. Remove the 4 screws and the bearing retainer plate from the drive end frame.



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Fig. 26: Identifying Bearing Retainer Screws
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Using SST and a hammer, tap out the drive end frame bearing from the drive end frame.



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Fig. 27: Removing Generator Drive End Frame Bearing With SST & Hammer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09950-60010
 09951-00250
- SST: 09950-70010
 09951-07100

- c. Using SST and a press, press in a new generator drive end frame bearing.

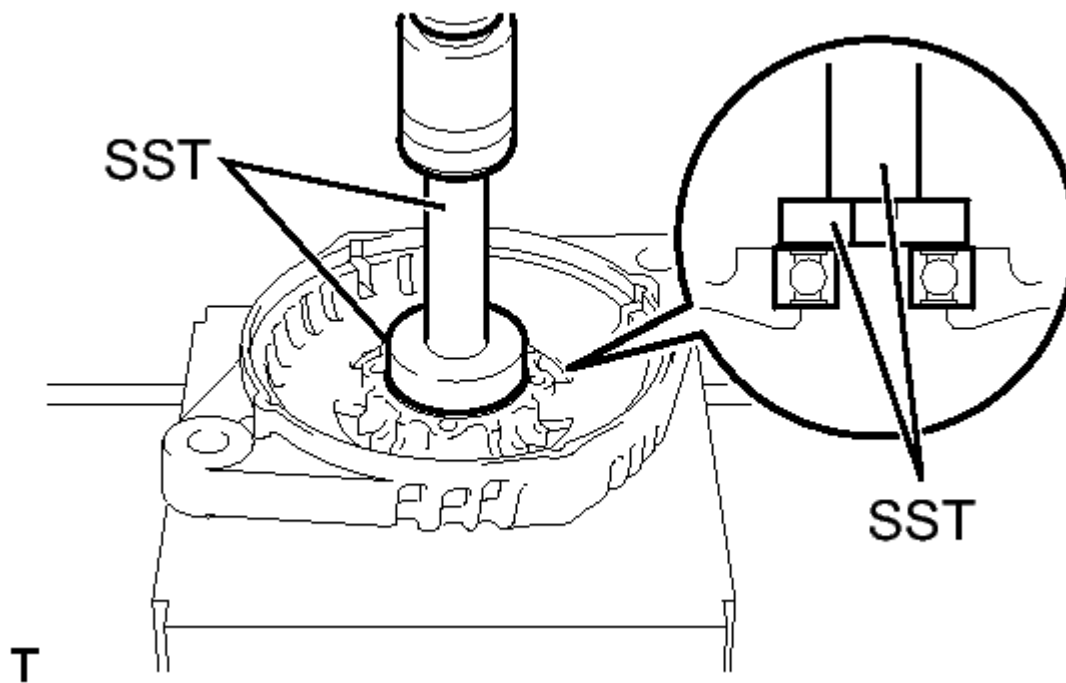
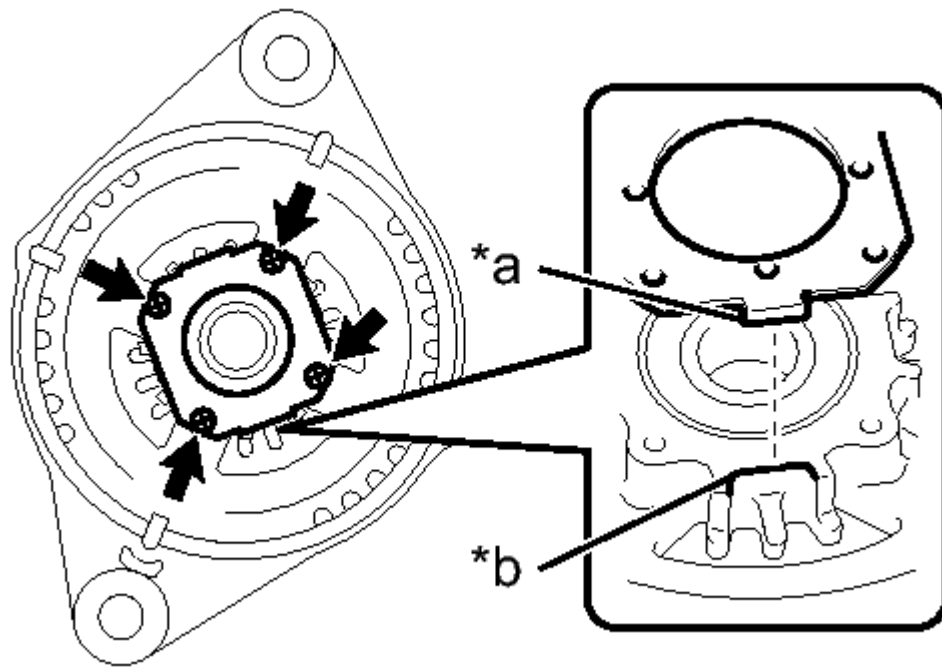


Fig. 28: Installing New Generator Drive End Frame Bearing With SST & Press
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09950-60010
09951-00470
 - SST: 09950-70010
09951-07100
- d. Fit the tabs on the bearing retainer plate into the cutouts on the drive end frame to install the retainer plate.



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Fig. 29: Identifying Bearing Retainer Plate Tabs
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Tab
*b	Cutout

- e. Install the 4 screws.

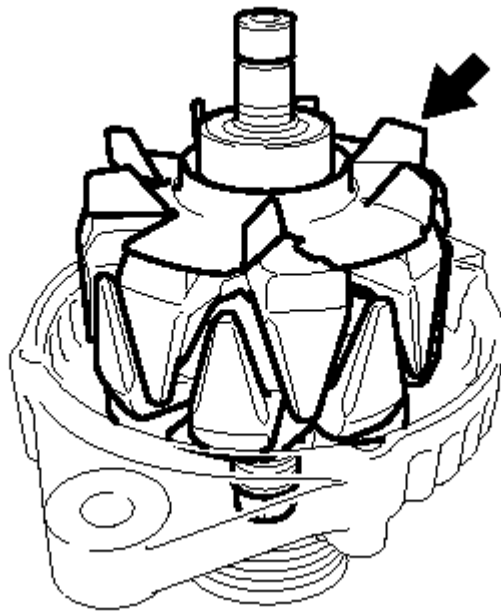
Torque: 2.3 N*m (23 kgf*cm, 20 in.*lbf)

REASSEMBLY

REASSEMBLY

1. INSTALL GENERATOR ROTOR ASSEMBLY

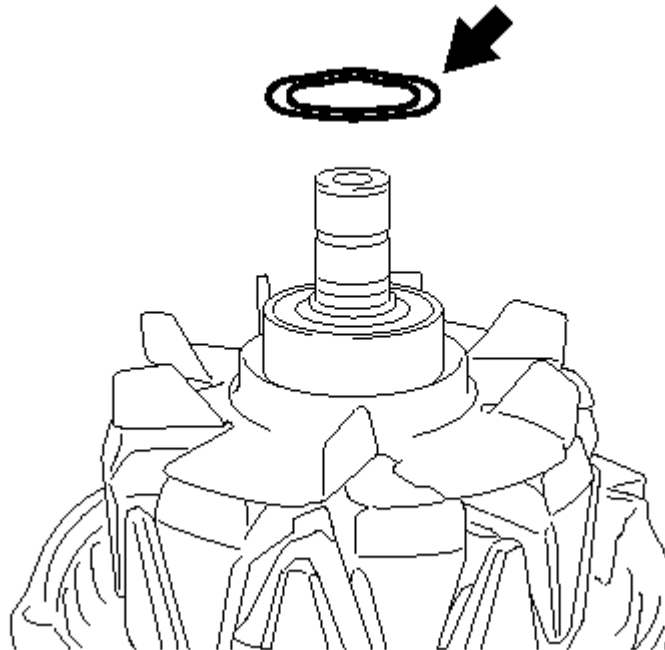
- a. Place the drive end frame on the clutch pulley.
- b. Install the generator rotor assembly to the drive end frame.



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Fig. 30: Identifying Generator Rotor Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Place a new generator washer on the generator rotor assembly.

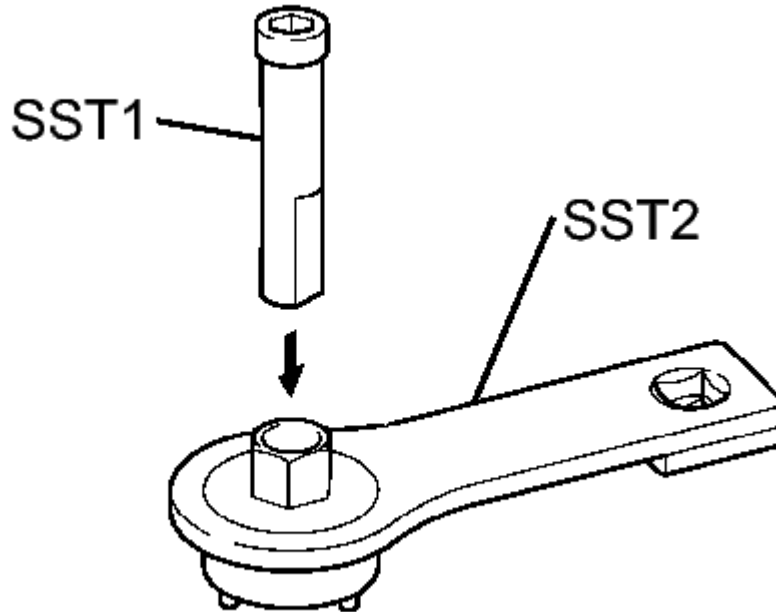


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Fig. 31: Identifying Generator Washer
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL GENERATOR CLUTCH PULLEY

- a. Temporarily install the clutch pulley onto the rotor shaft.
- b. Mount the generator drive end frame in a vise tightly.
- c. Assemble SST1 and 2 as shown in the illustration.

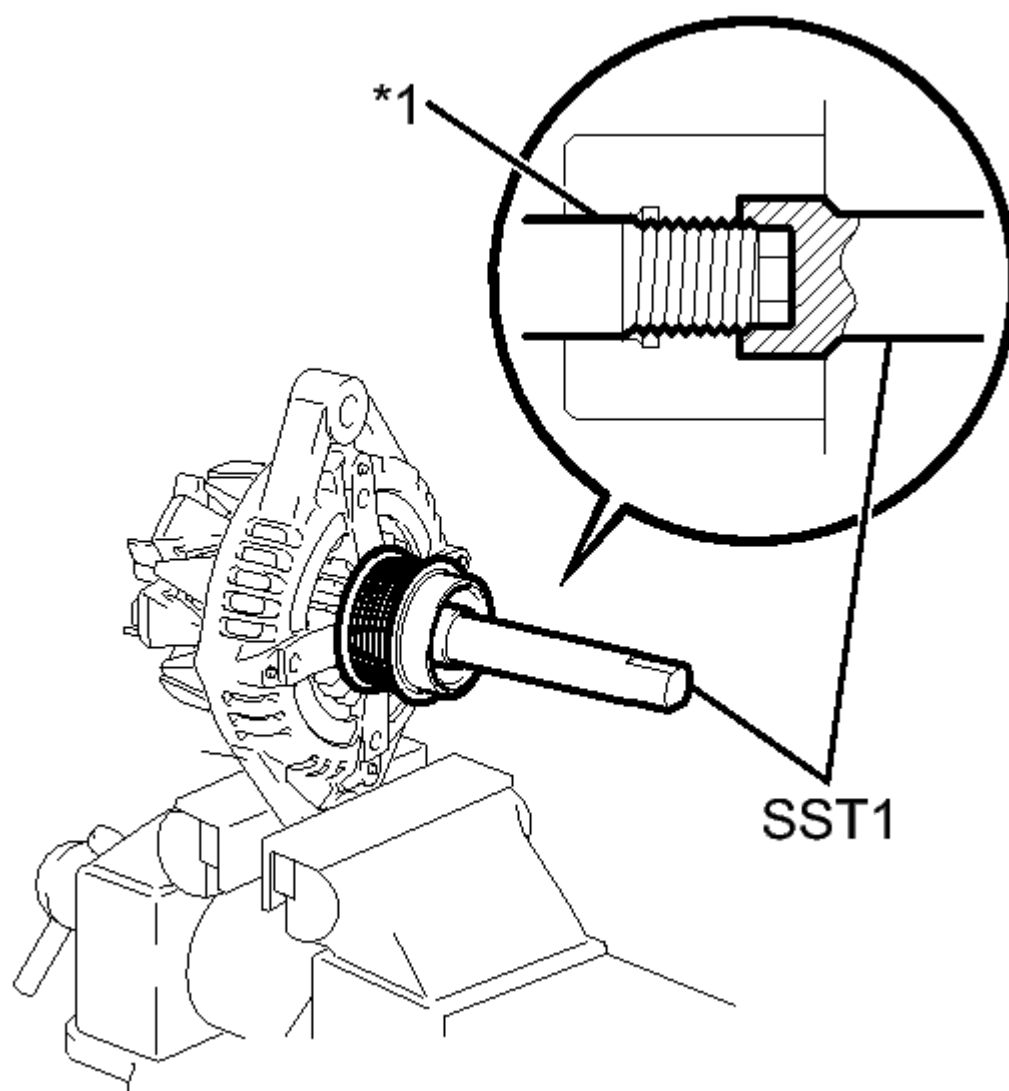


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Fig. 32: Assembling Generator Pulley SST
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- SST: 09820-63021

- d. Place the rotor shaft end into SST1.



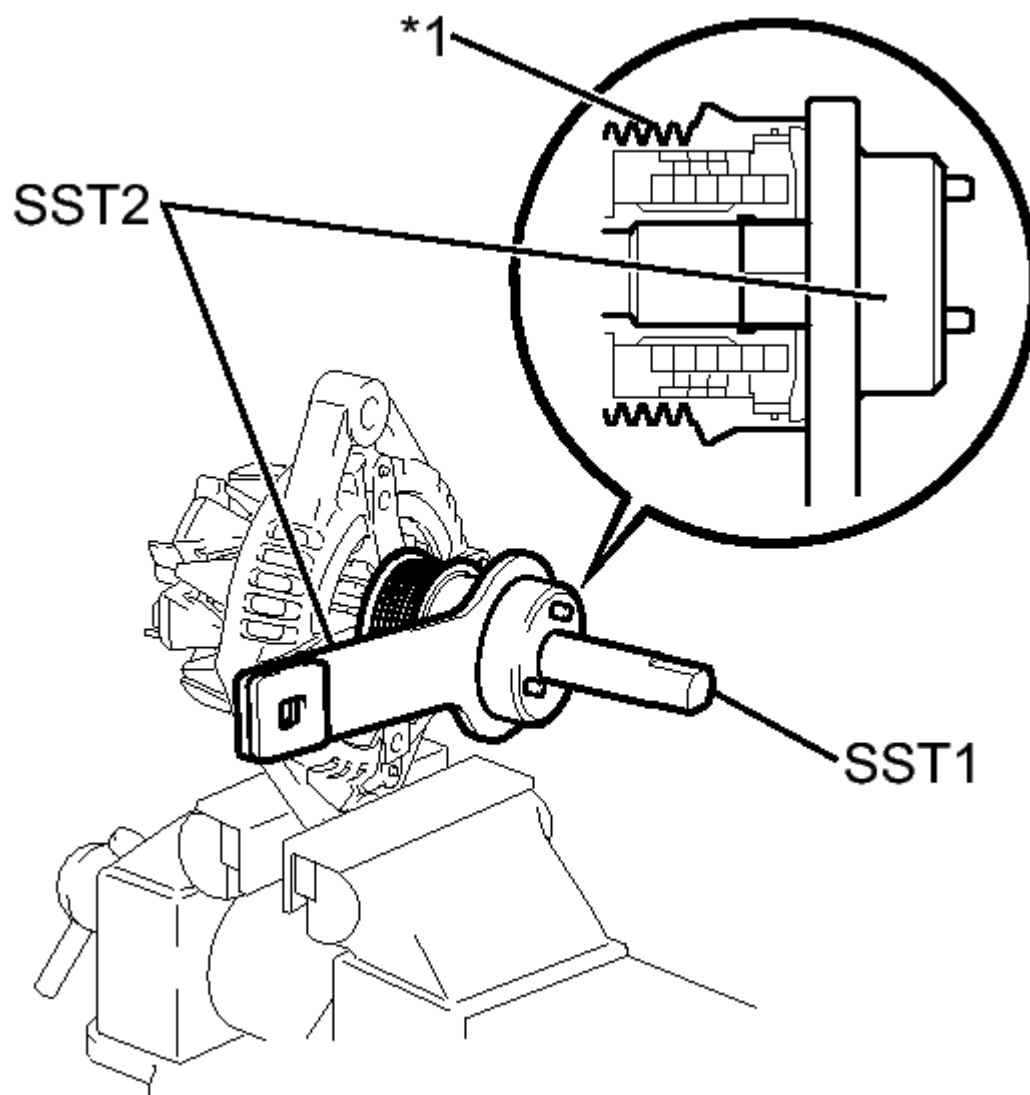
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Fig. 33: Identifying Rotor Shaft End & SST1 Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Rotor Shaft
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- e. Fit SST2 to the clutch pulley.



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Fig. 34: Identifying SST2 & Clutch Pulley Position
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Clutch Pulley
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- f. Tighten the pulley by turning SST2 in the direction shown in the illustration.

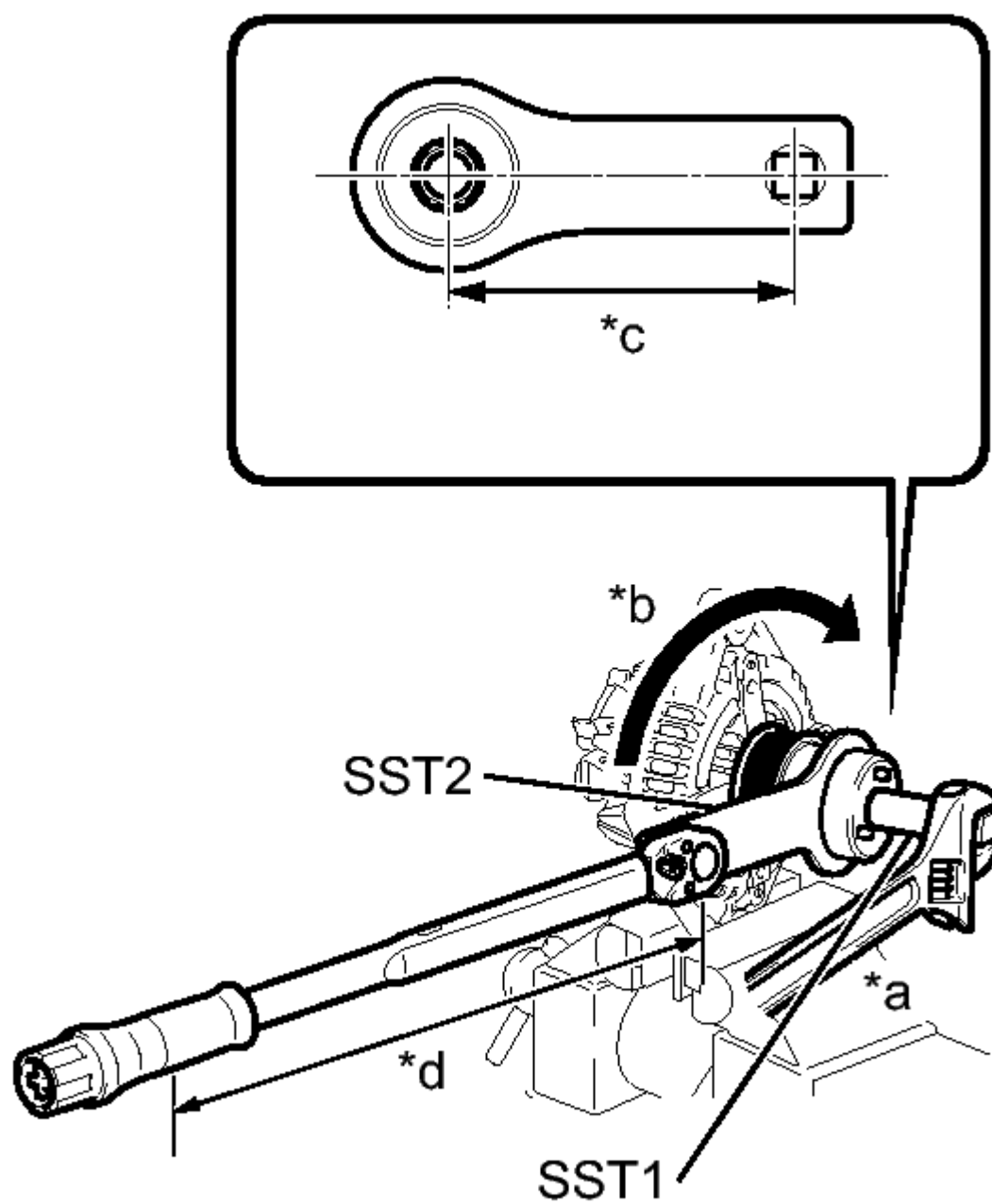


Fig. 35: Tightening Pulley With Wrench, SST1 & SST2
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

<i>*a</i>	Hold
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*b	Turn
*c	Fulcrum Length: 100 mm
*d	Fulcrum Length: 318 mm

without SST

Torque: 80 N*m (816 kgf*cm, 59 ft.*lbf)

with SST

Torque: 61 N*m (621 kgf*cm, 45 ft.*lbf)

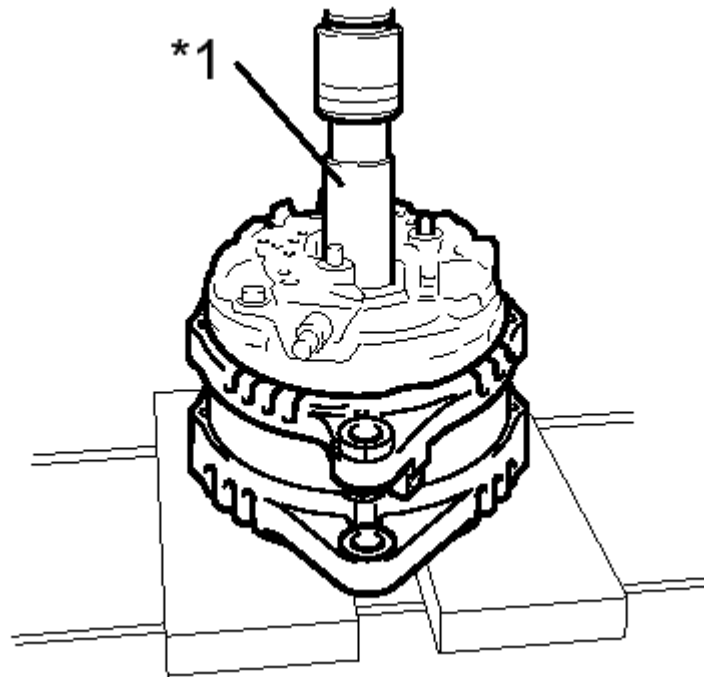
NOTE:

- Use a torque wrench with a fulcrum length of 318 mm (12.52 in.).
- This torque value is effective when SST is parallel to the torque wrench.
- Check that the drive end frame is secured in the vise tightly.
- Hold SST1 tightly during the operation.

- Remove the generator assembly from SST.
- Check that the clutch pulley rotates smoothly.
- Install a new generator pulley cap to the clutch pulley.

3. INSTALL GENERATOR COIL ASSEMBLY

- Using a deep socket wrench (21 mm) and a press, slowly press in the generator coil assembly.



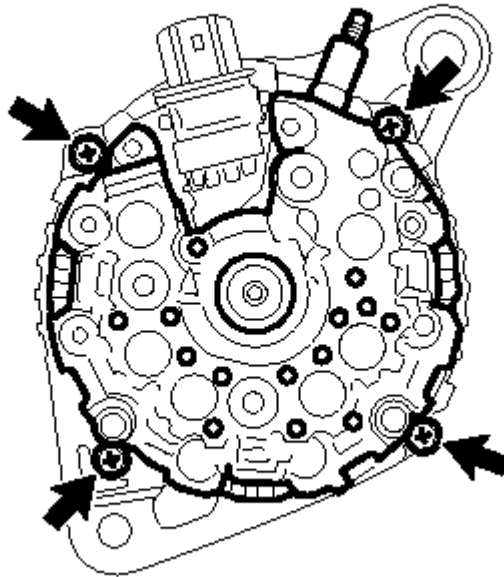
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Fig. 36: Pressing Generator Coil Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Deep Socket
*1	Wrench (21 mm)

- b. Install the 4 bolts.



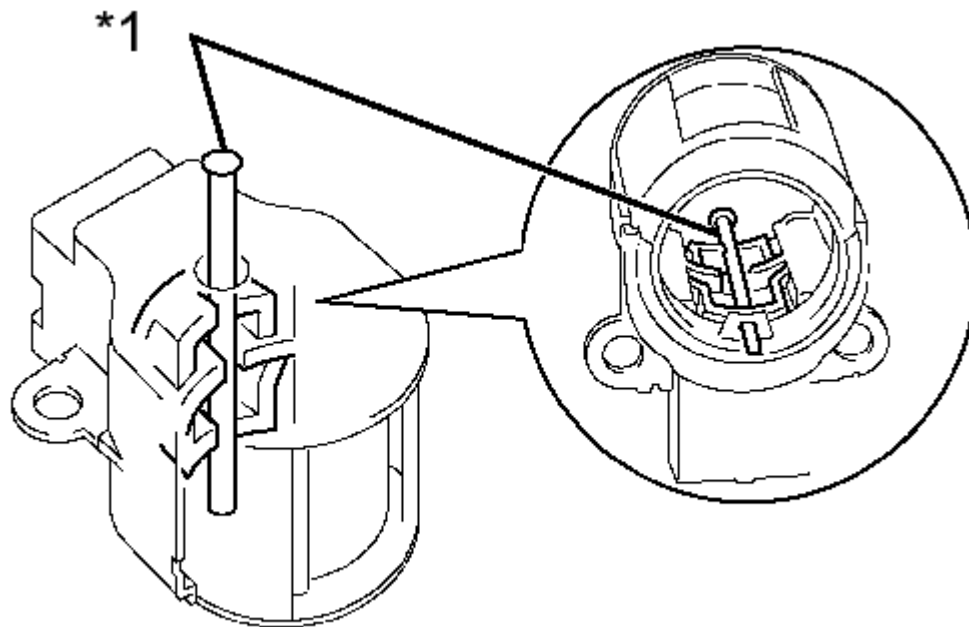
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Fig. 37: Identifying Generator Coil Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Torque: 5.9 N*m (60 kgf*cm, 52 in.*lbf)

4. INSTALL GENERATOR BRUSH HOLDER ASSEMBLY

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



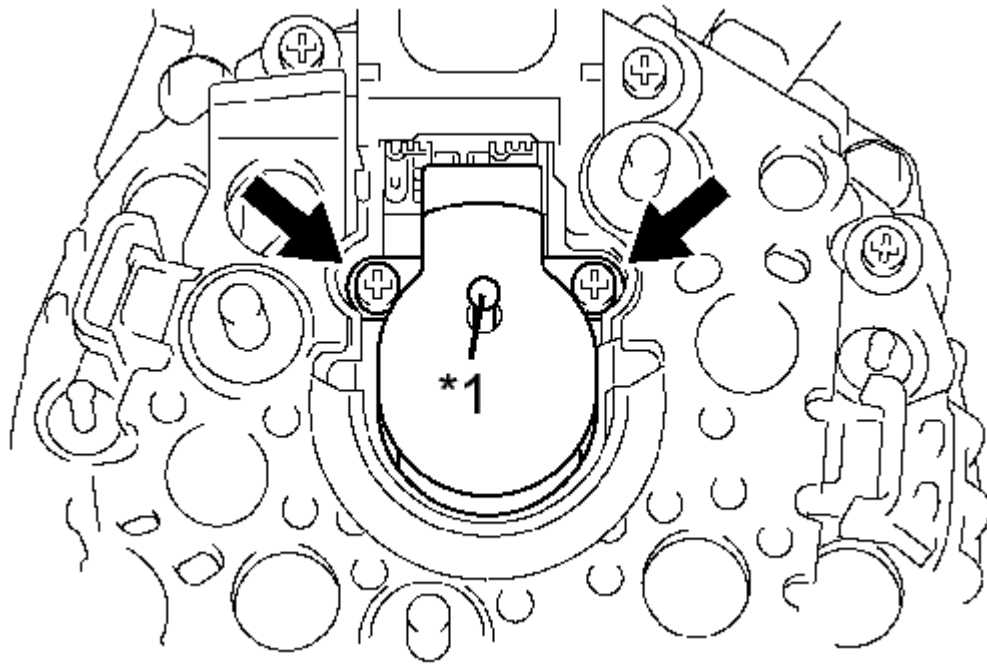
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Fig. 38: Identifying Generator Brush Holder Assembly
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Pin
*1	(1.0 mm)

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



Y

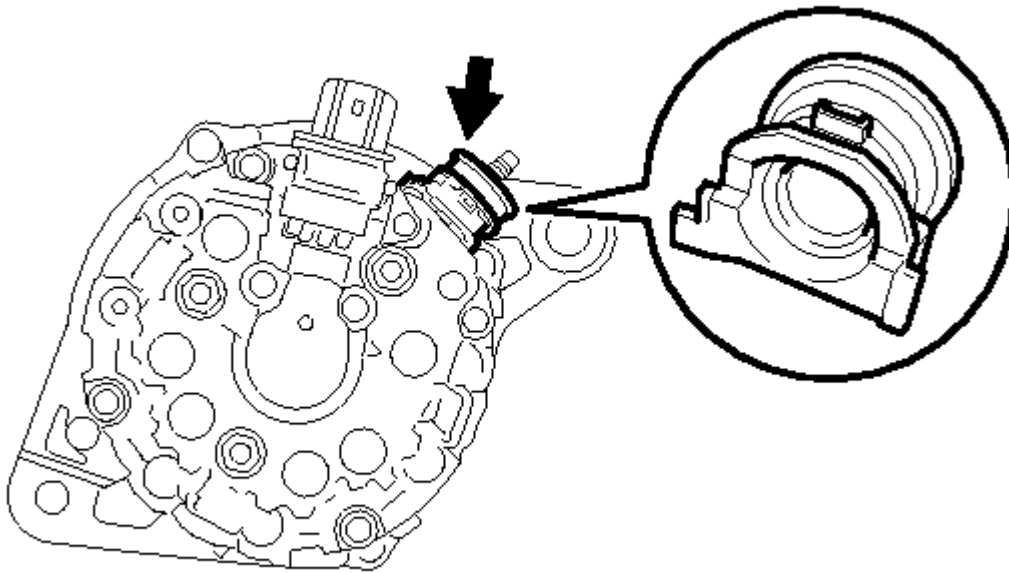
Fig. 39: Identifying Brush Holder Assembly With Screws
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Pin
*1	(1.0 mm)

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

- c. Pull out the pin from the generator brush holder.
- 5. **INSTALL GENERATOR TERMINAL INSULATOR**
 - a. Install the terminal insulator.



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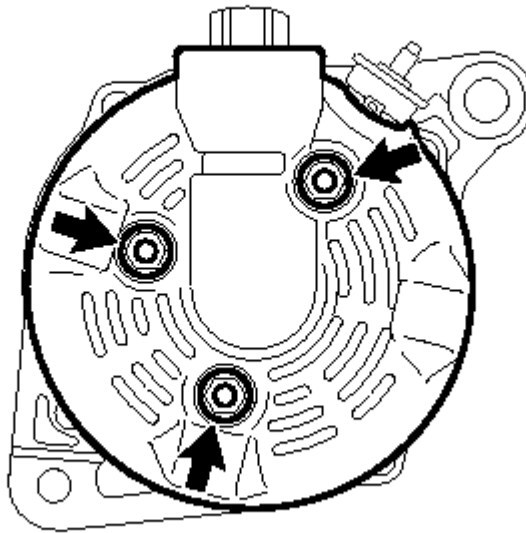
Fig. 40: Identifying Terminal Insulator

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

NOTE: Pay attention to installation direction of the terminal insulator.

6. INSTALL GENERATOR REAR END COVER

- a. Install the generator rear end cover with the 3 nuts.



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Fig. 41: Identifying Generator Rear End Cover Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

INSTALLATION

INSTALLATION

1. INSTALL GENERATOR ASSEMBLY

- a. Install the wire harness clamp stay with the bolt.

Torque: 8.4 N*m (85 kgf*cm, 74 in.*lbf)

- b. Connect the wire harness clamp.
- c. Install the generator assembly to the cylinder block sub-assembly with the generator bracket, bolt and nut.

Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

- d. Install the 2 bolts.

Torque: 43 N*m (438 kgf*cm, 32 ft.*lbf)

- e. Connect the generator connector to the generator assembly.
- f. Install the generator wire with the nut.

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

- g. Install the terminal cap.
- h. Connect the 3 wire harness clamps.
- i. Connect the magnetic clutch connector to the compressor and magnetic clutch.

2. INSTALL FAN & GENERATOR V BELT

Refer to **INSTALLATION - Step 1**

3. INSTALL RADIATOR ASSEMBLY WITH FAN SHROUD AND FAN MOTOR

Refer to **INSTALLATION**

4. INSTALL FRONT BUMPER ASSEMBLY

Refer to **INSTALLATION**

5. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected. Refer to **INITIALIZATION** .