

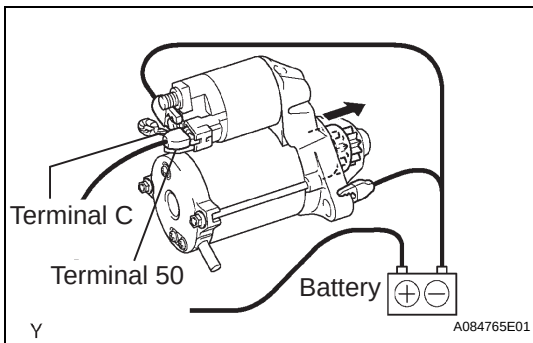
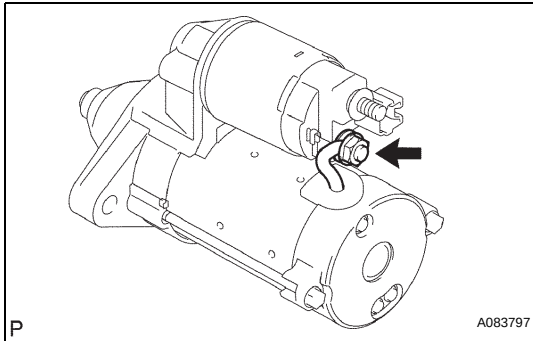
INSPECTION

1. INSPECT STARTER ASSEMBLY

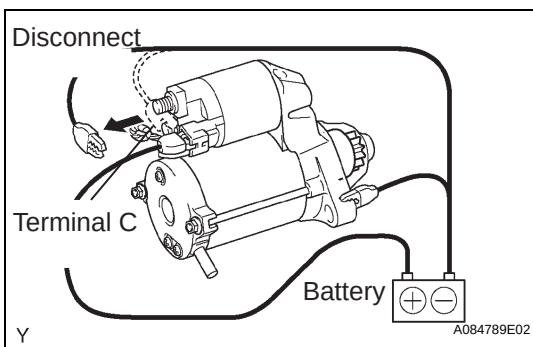
NOTICE:

These tests must be performed within 3 to 5 seconds to prevent burnout of the coil.

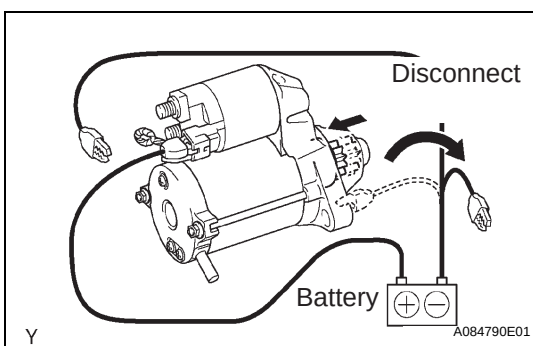
- (a) Perform the pull-in test.
 - (1) Remove the nut, then disconnect the lead wire from terminal C.



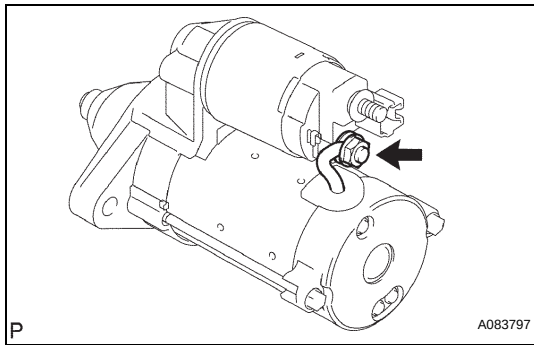
- (2) Connect the battery to the starter repair service kit as shown in the illustration. Check that the clutch pinion gear is extended. If the clutch pinion gear is not extended, replace the magnet switch.



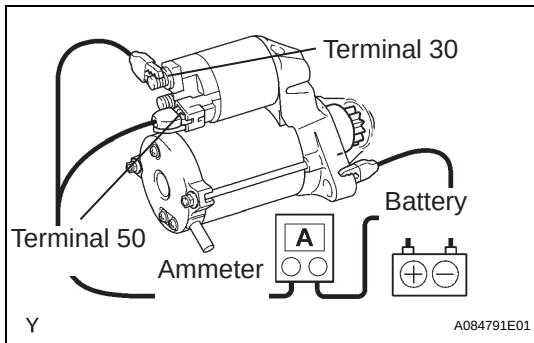
- (b) Perform the hold-in test.
 - (1) Disconnect the negative (-) lead from terminal C. Check that the clutch pinion gear remains extended. If the clutch pinion gear returns, replace the magnet switch.



- (c) Check the operation.
 - (1) Disconnect the negative (-) lead from the starter body. Check that the clutch pinion gear returns. If the clutch pinion gear does not return, replace the magnet switch.



- (d) Perform the no-load performance test.
- (1) Connect the lead wire to terminal C with the nut. Make sure that the lead is not grounded.
Torque: 10 N*m (102 kgf*cm, 7 ft.*lbf)



- (2) Clamp the starter in a vise.
- (3) Connect the battery and an ammeter to the starter as shown in the illustration.
- (4) Check that the starter rotates smoothly and steadily with the clutch pinion gear extended. Check that the ammeter reads the specified current.

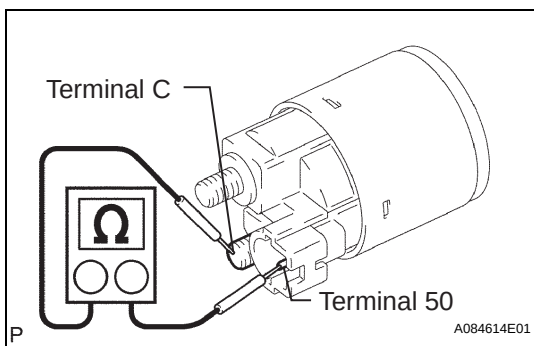
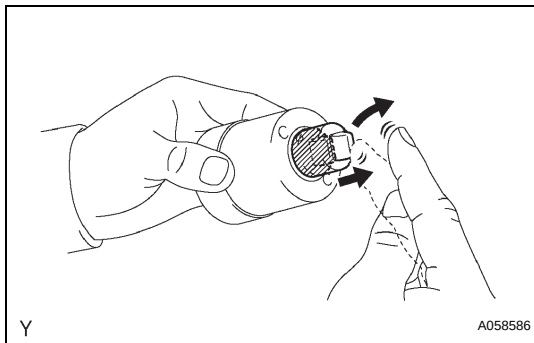
Specified current:

90 A or less at 11.5 V

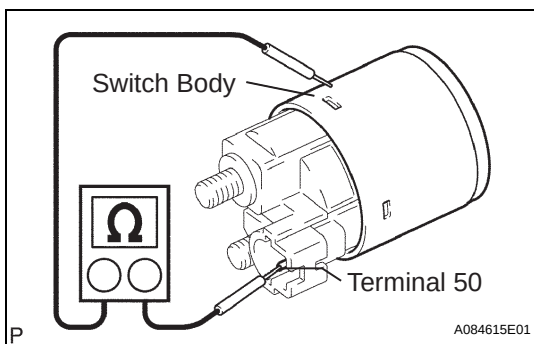
If the current is not as specified, replace the magnet switch.

2. INSPECT MAGNET SWITCH BODY

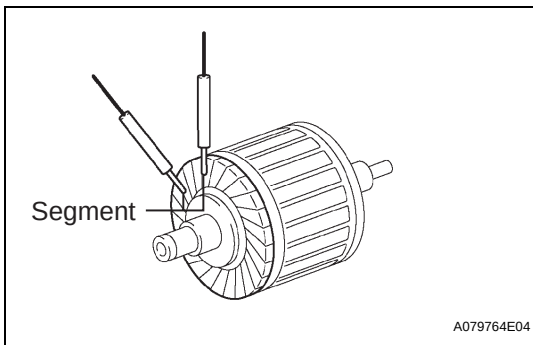
- (a) Check the operation.
 - (1) Push in the plunger, then check that it returns quickly to its original position.
If necessary, replace the magnet switch.



- (b) Check the resistance.
 - (1) Using an ohmmeter, check that there is resistance between terminals 50 and C.
Standard resistance:
1 Ω or lower
If the result is not met, replace the magnet switch.



- (2) Using an ohmmeter, check that there is resistance between terminal 50 and the switch body.
Standard resistance:
2.0 Ω or lower
If the result is not met, replace the magnet switch.



3. INSPECT STARTER ARMATURE ASSEMBLY

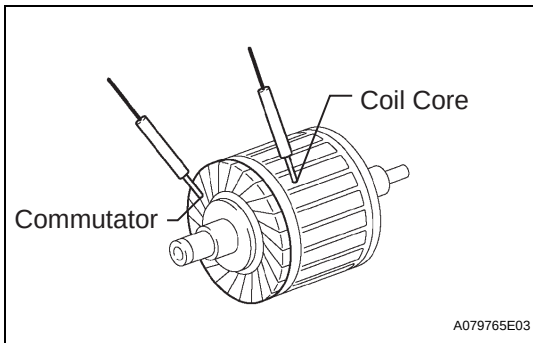
(a) Check the resistance.

- (1) Using an ohmmeter, check that there is resistance between the segments of the commutator.

Standard resistance:

1 Ω or lower

If the result is not met, replace the starter armature.



- (2) Using an ohmmeter, check that there is no resistance between the commutator and armature coil core.

Standard resistance:

10 k Ω or higher

If the resistance is not as specified, replace the starter armature.

- (b) Check the commutator surface for dirt and burn. If the surface is dirty or burnt, smooth the surface with 400-grit sandpaper or lather.

(c) Check the commutator depth.

- (1) Using vernier calipers, measure the commutator depth.

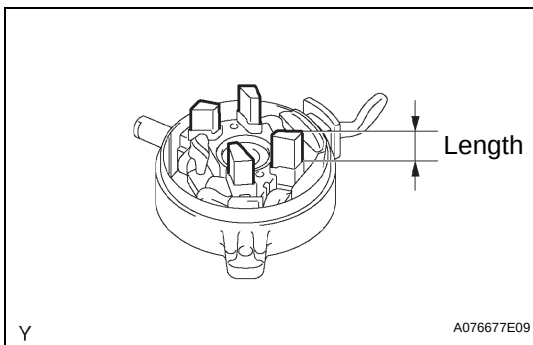
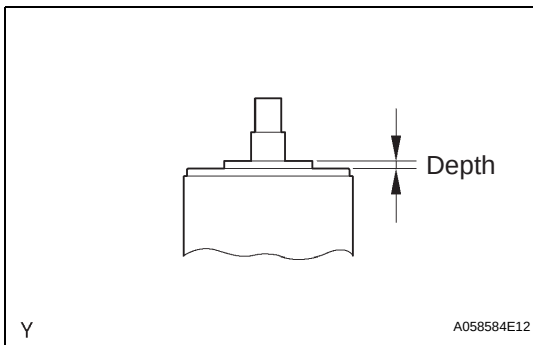
Standard depth:

3.1 mm (0.122 in.)

Maximum depth:

3.8 mm (0.150 in.)

If the depth is greater than maximum, replace the starter armature.



4. INSPECT STARTER COMMUTATOR END FRAME ASSEMBLY

(a) Check the brush length.

- (1) Using vernier calipers, measure the brush length.

Standard length:

9.0 mm (0.354 in.)

Minimum length:

4.0 mm (0.158 in.)

If the length is less than minimum, replace the starter commutator end frame.

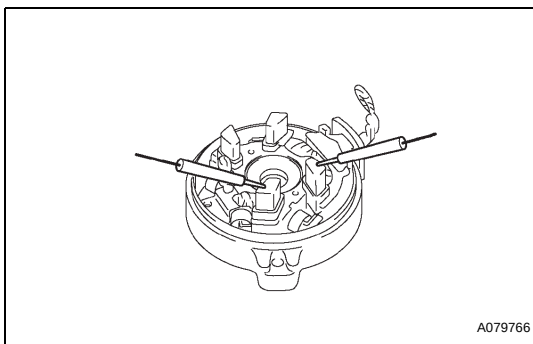
(b) Check the resistance.

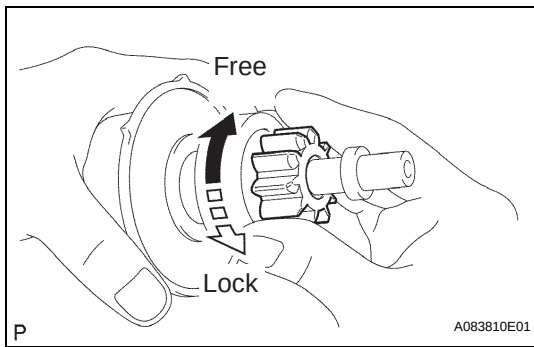
- (1) Using an ohmmeter, measure the resistance between the positive (+) and negative (-) brushes.

Standard resistance:

10 k Ω or higher

If the resistance is not as specified, repair or replace the brush holder.





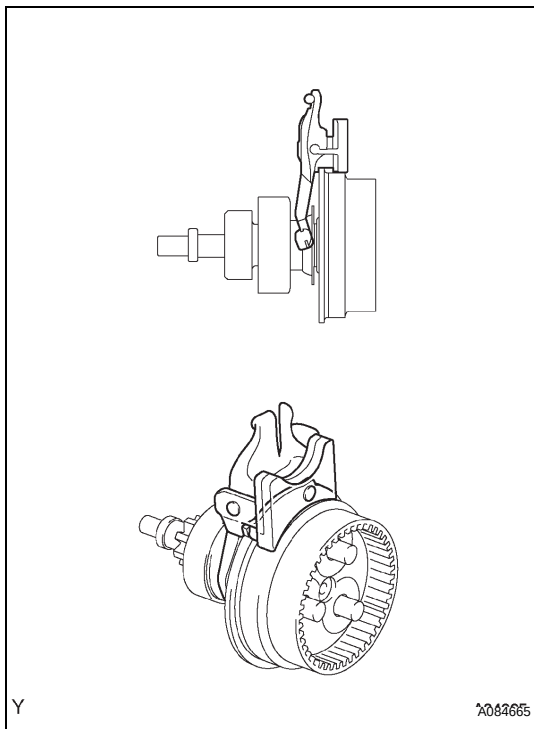
5. INSPECT STARTER CENTER BEARING CLUTCH SUB-ASSEMBLY

- (a) Check the operation.
 - (1) Turn the clutch pinion gear clockwise, then check that it turns freely. Try to turn the clutch pinion gear counterclockwise, then check that it locks.
If necessary, replace the starter center bearing clutch.
- (b) Check for wear and damage.
 - (1) Check the gear teeth on the planetary gear, internal gear and starter clutch for wear or damage.
If worn or damaged, replace the starter center bearing clutch.

REASSEMBLY

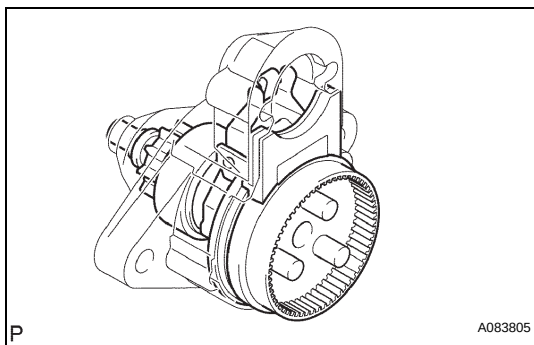
1. INSTALL STARTER DRIVE LEVER SET PIN

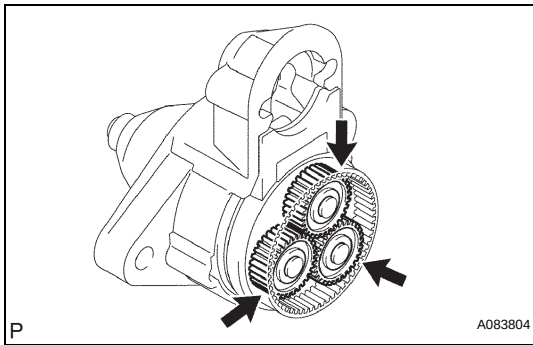
- (a) Install the starter drive lever set pin to the starter center bearing clutch as shown in the illustration.



2. INSTALL STARTER CENTER BEARING CLUTCH SUB-ASSEMBLY

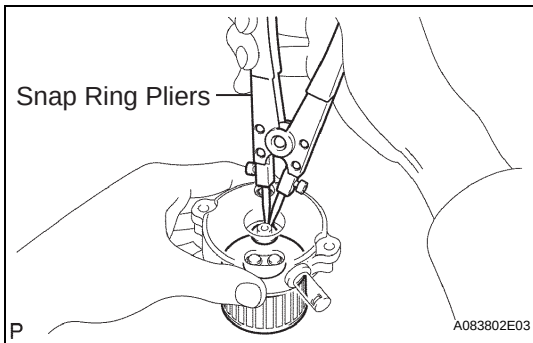
- (a) Install the starter center bearing clutch together with the starter drive lever set pin to the starter drive housing.





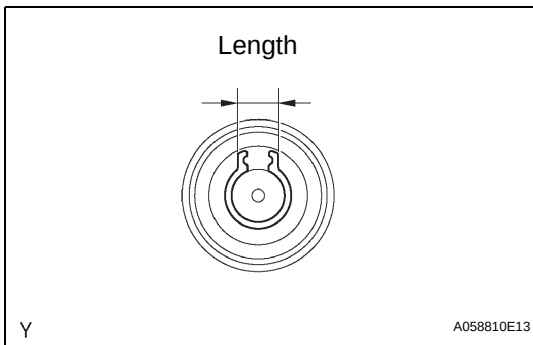
3. INSTALL PLANETARY GEAR

- (a) Apply grease to the planetary gears and planetary shaft pins.
- (b) Install the 3 planetary gears to the starter center bearing clutch.



4. INSTALL STARTER ARMATURE ASSEMBLY

- (a) Apply grease to the washer and armature shaft.
- (b) Install the starter armature and washer to the starter commutator end frame.
- (c) Using snap ring pliers, install a new snap ring.



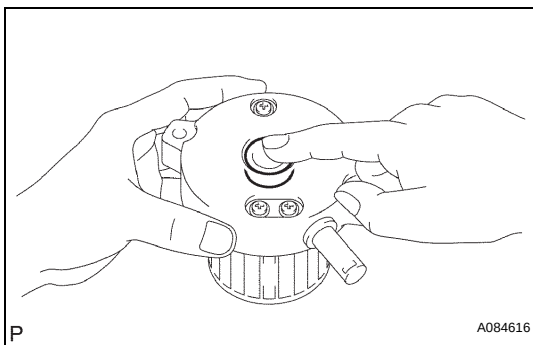
- (d) Check the snap ring length.

- (1) Using vernier calipers, measure the snap ring length.

Maximum length:

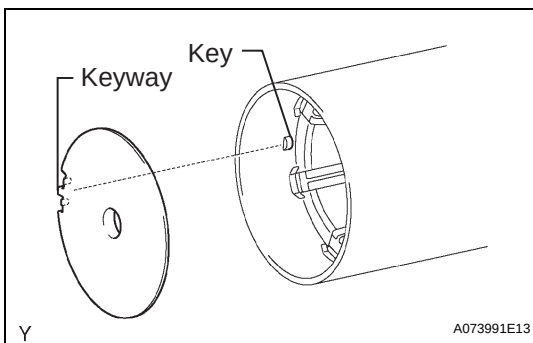
5.0 mm (0.197 in.)

If the length is greater than maximum, replace it with a new snap ring.



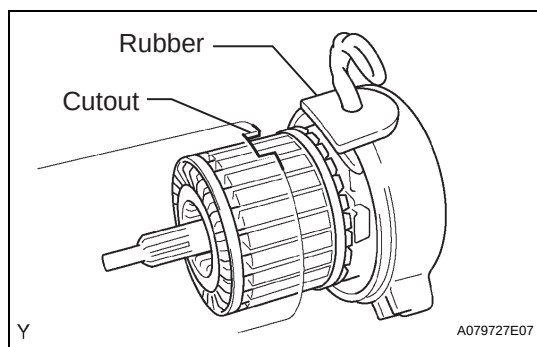
5. INSTALL STARTER COMMUTATOR END FRAME COVER

- (a) Install the starter commutator end frame cover to the starter commutator end frame.



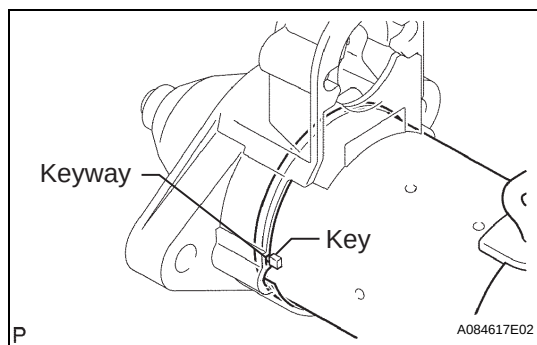
6. INSTALL STARTER ARMATURE PLATE

- (a) Align the keyway of the starter armature plate with the key inside of the starter yoke, then install the armature plate to the starter yoke.



7. INSTALL STARTER COMMUTATOR END FRAME ASSEMBLY

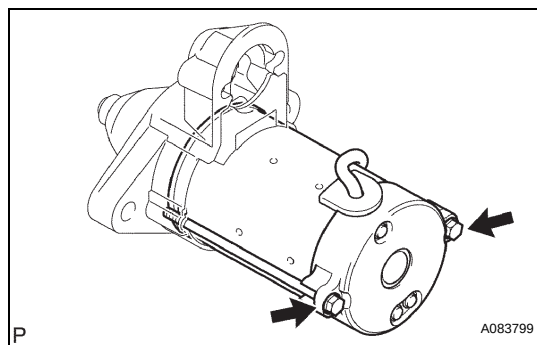
- (a) Align the rubber with the cutout of the starter yoke, then install the starter commutator end frame to the starter yoke.



8. INSTALL STARTER YOKE ASSEMBLY

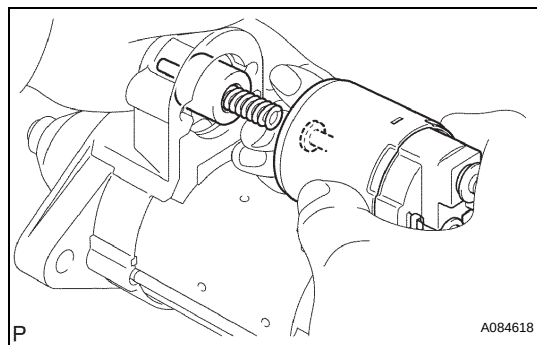
- (a) Align the key of the starter yoke with the keyway of the starter drive housing, then install the starter yoke to the starter drive housing.

- (b) Tighten the 2 through bolts.
Torque: 6.0 N*m (61 kgf*cm, 53 in.*lbf)

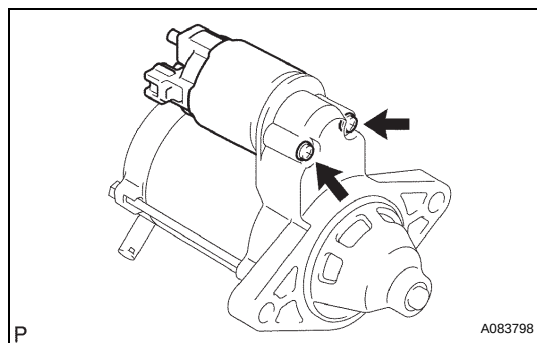


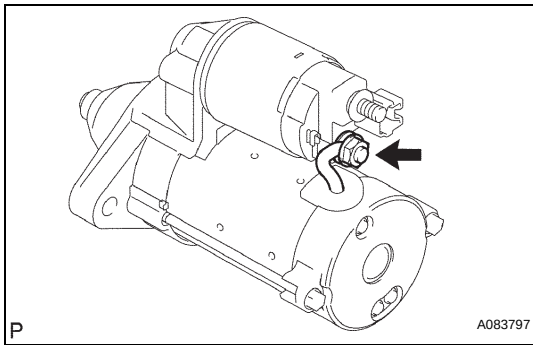
9. INSTALL MAGNET SWITCH BODY

- (a) Apply grease to the plunger and hook.
(b) Hang the plunger hook of the magnet switch into the starter drive lever set pin.
(c) Install the plunger and return spring.

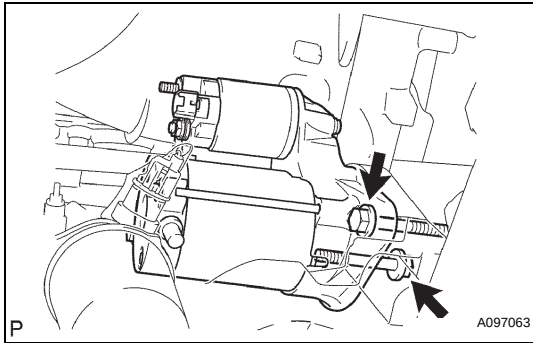


- (d) Install the magnet switch with the 2 screws.
Torque: 7.5 N*m (76 kgf*cm, 66 in.*lbf)





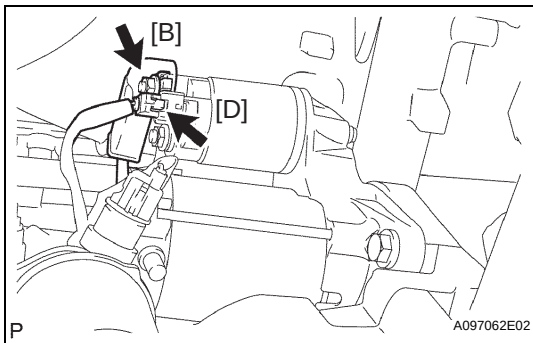
- (e) Connect the lead wire to terminal C with the nut.
Torque: 10 N*m (102 kgf*cm, 7 ft.*lbf)



INSTALLATION

1. INSTALL STARTER ASSEMBLY

- (a) Install the starter assembly with the 2 bolts.
Torque: 37 N*m (378 kgf*cm, 27 ft.*lbf)



- (b) Connect the starter wire with the nut [B].
Torque: 9.8 N*m (100 kgf*cm, 7 ft.*lbf)

(c) Close the terminal cover.

(d) Connect the starter connector [D].

2. INSTALL ENGINE UNDER COVER LH

3. INSTALL ENGINE UNDER COVER RH

4. **CONNECT BATTERY NEGATIVE TERMINAL**
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)