

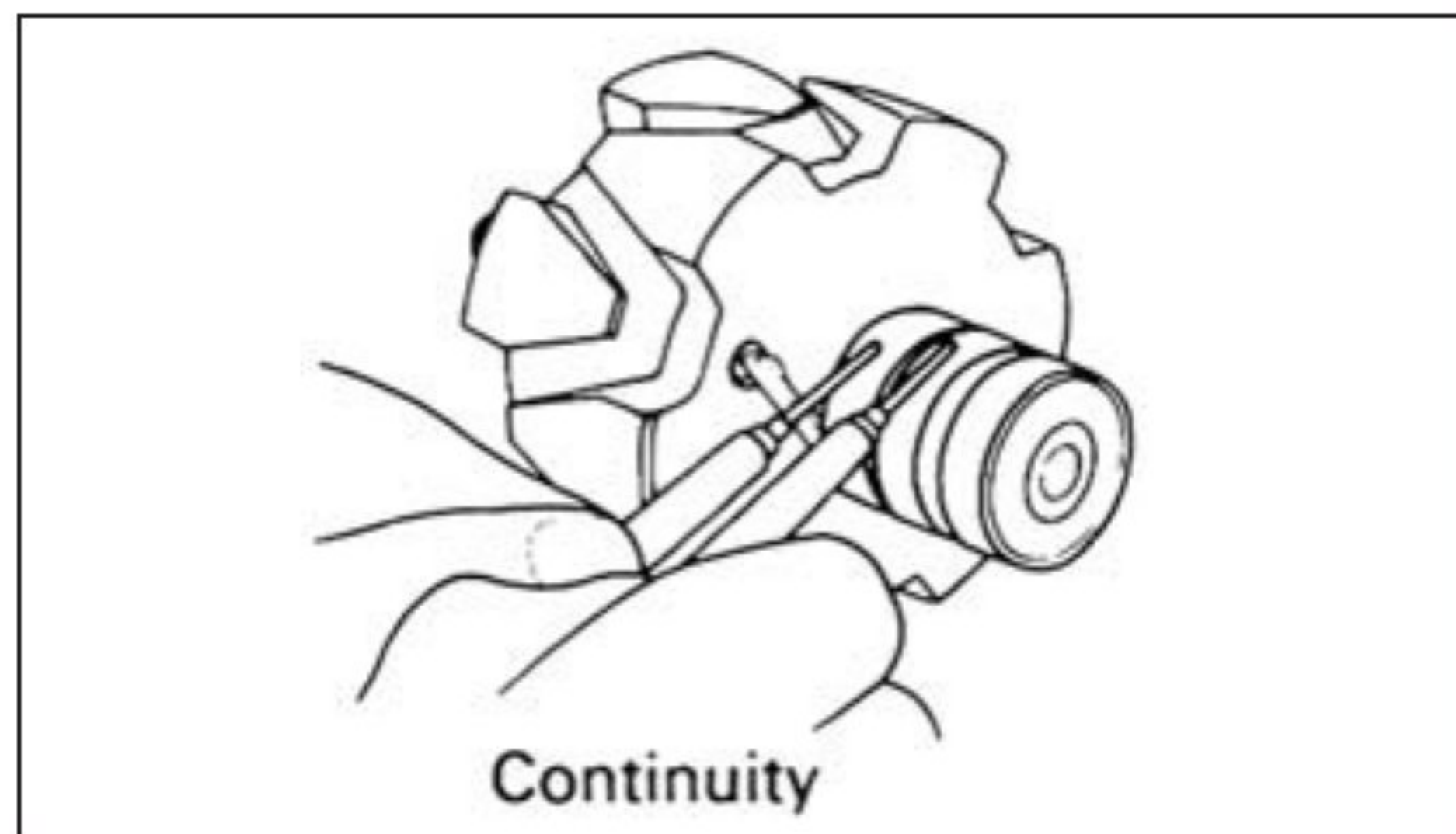
Tackling 1991 Land Cruiser Starting and Charging Systems Part III

Toyota Motor Corporation

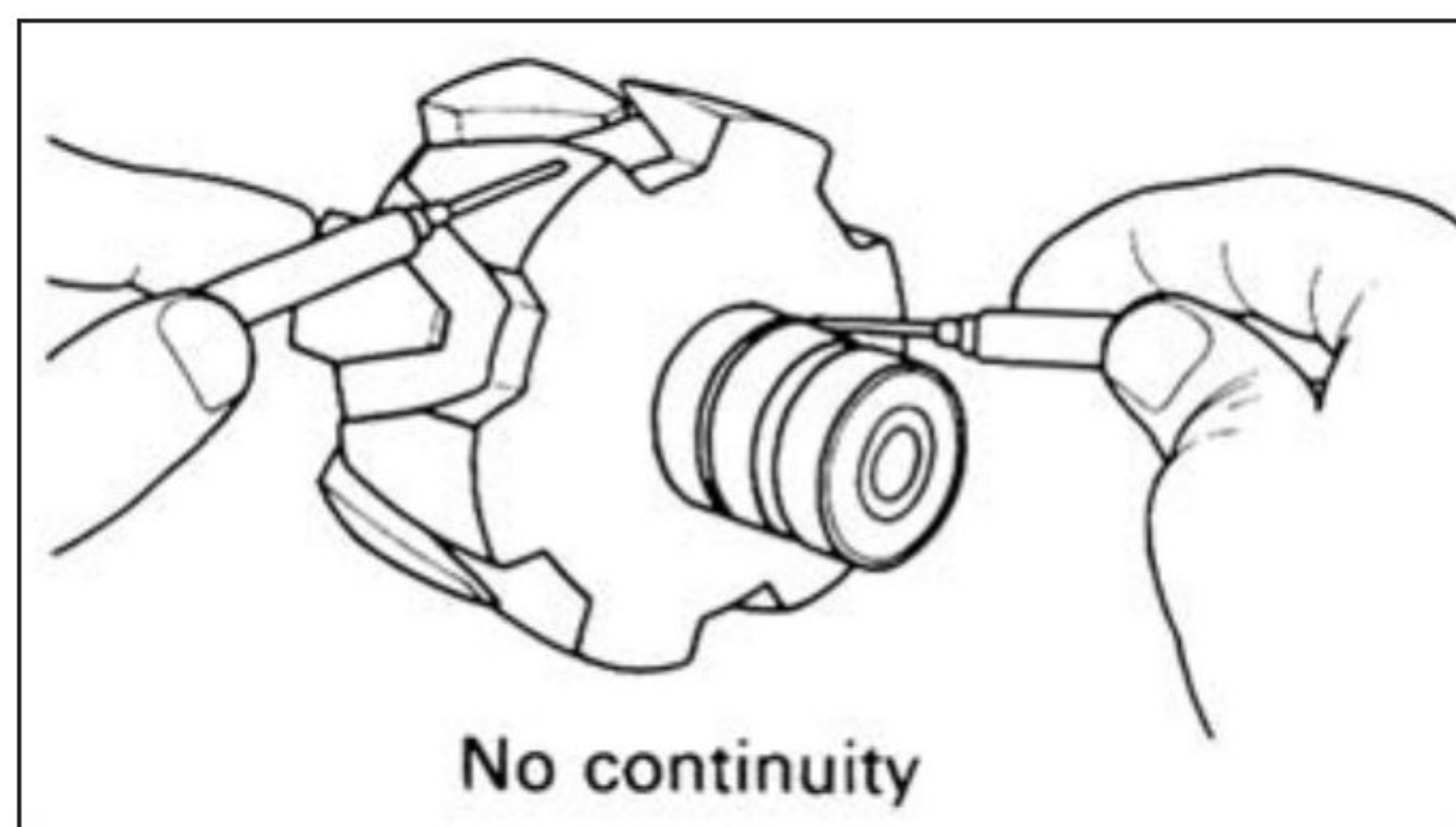
CHARGING SYSTEMS

Inspection and Repair of Alternator Rotor—

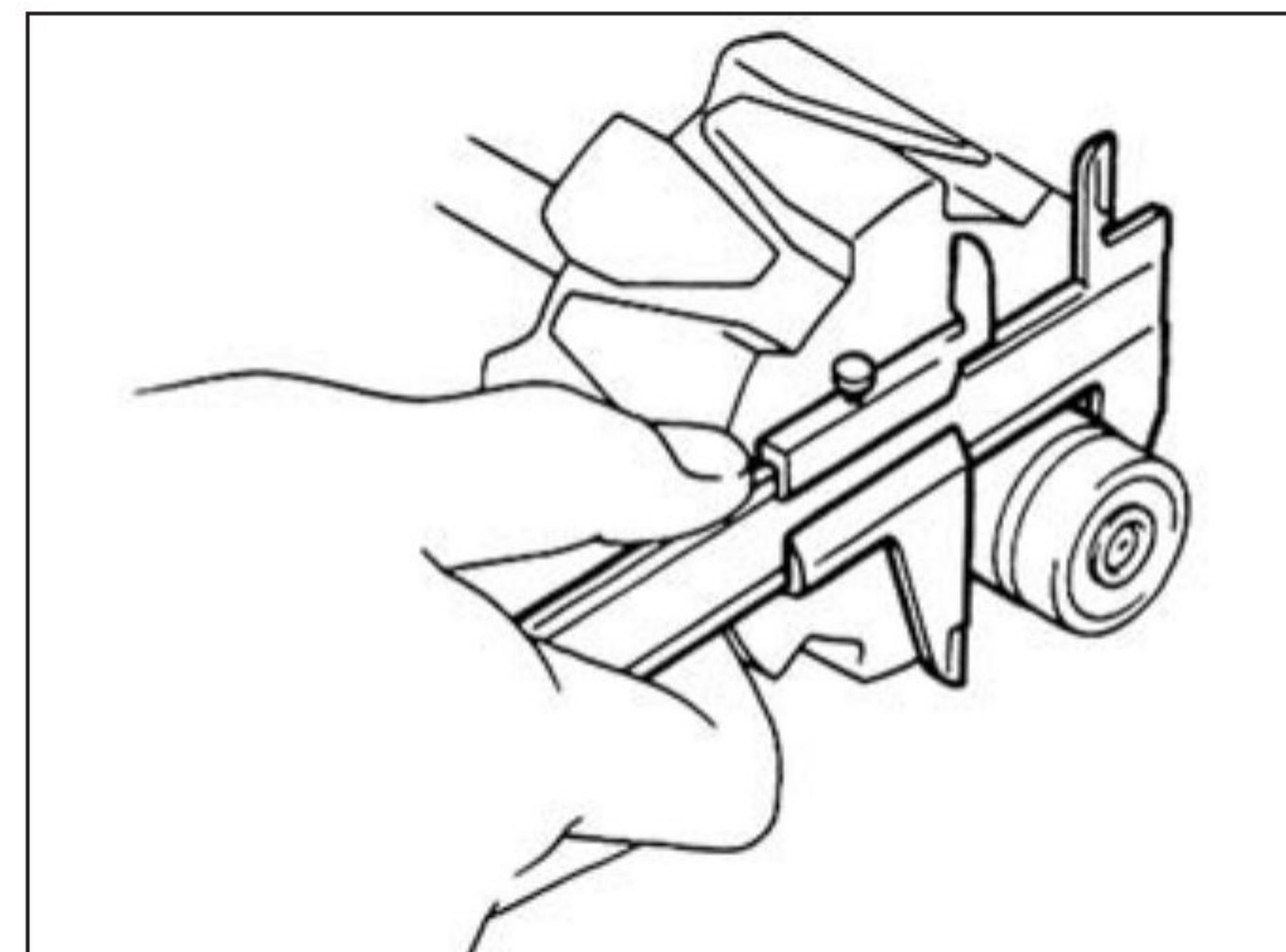
1. Inspect rotor for open circuit. Using an ohmmeter, check that there is continuity between the slip rings. Standard resistance: 2.8 to 3.0 Ω . If there is no continuity, replace the rotor.



2. Inspect rotor for ground. Using an ohmmeter, check that there is no continuity between the slip ring and the rotor. If there is continuity, replace the rotor.

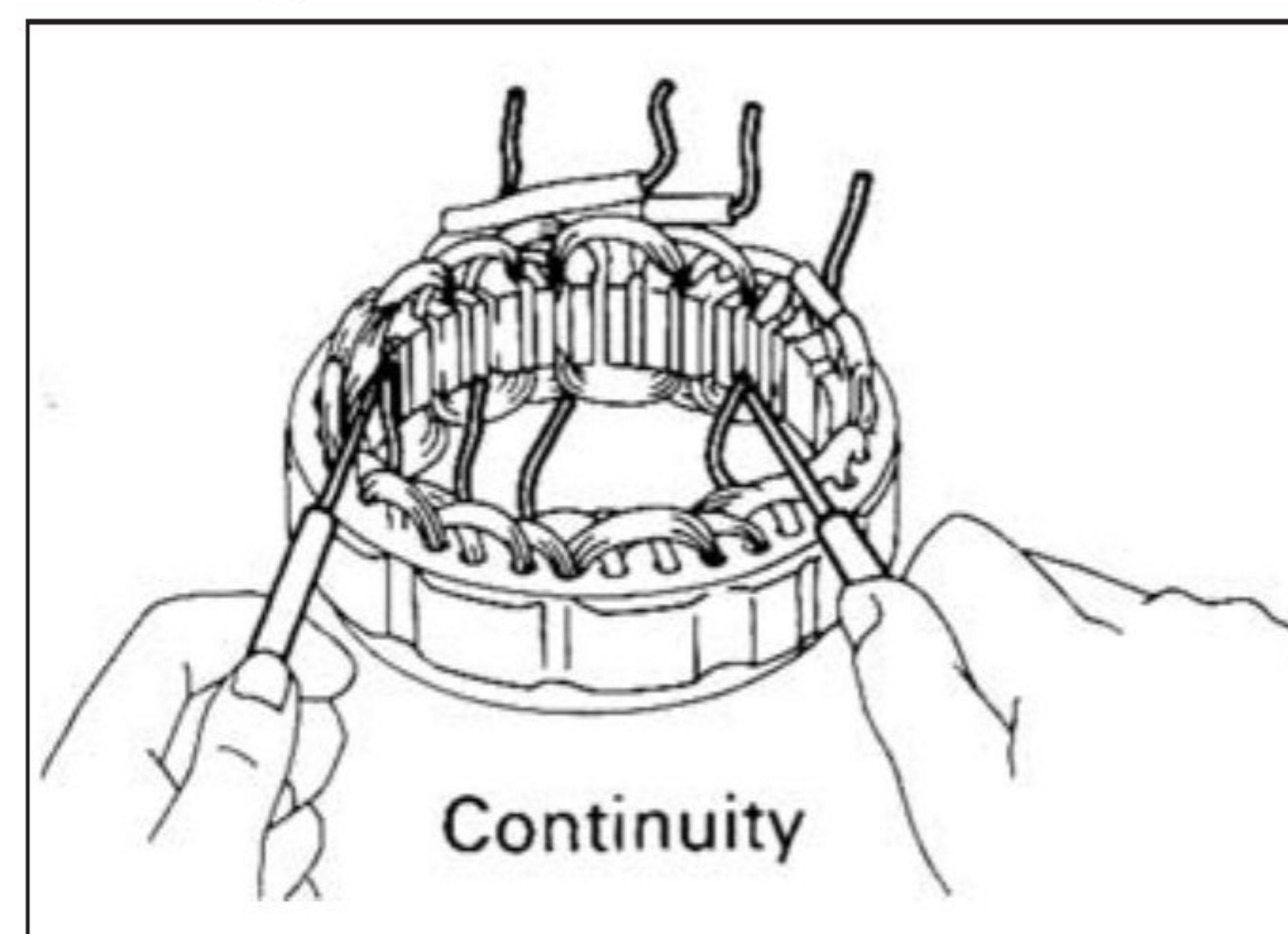


3. Inspect slip rings. Check the slip rings are not rough or scored. If rough or scored, replace the rotor. Using calipers, measure the slip ring diameters. Standard diameter: 32.3 to 32.5 mm (1.272 to 1.280 in.); Minimum diameter: 32.1 mm (1.264 in.). If the diameter is less than minimum, replace the rotor.

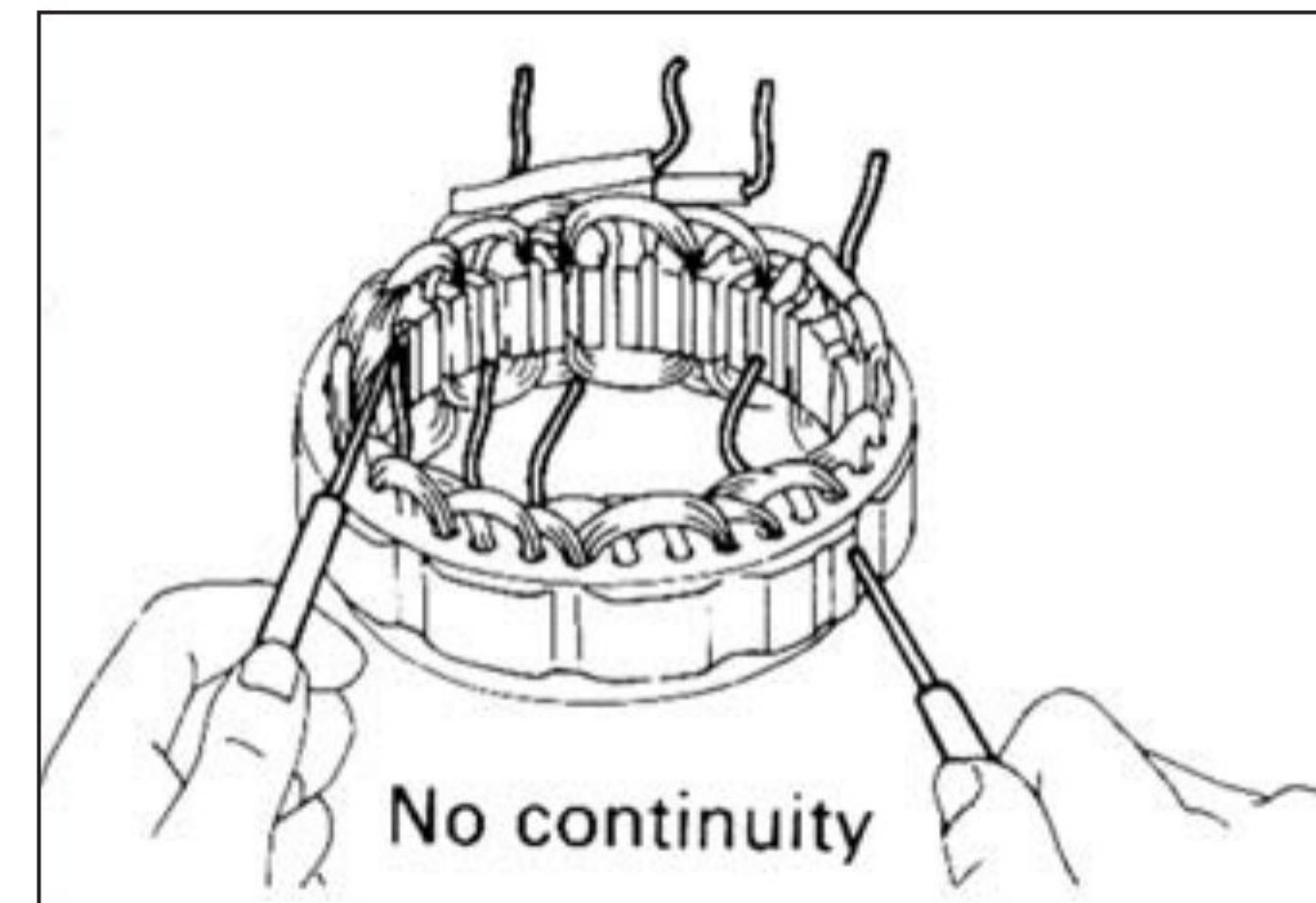


Stator—

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 stator.

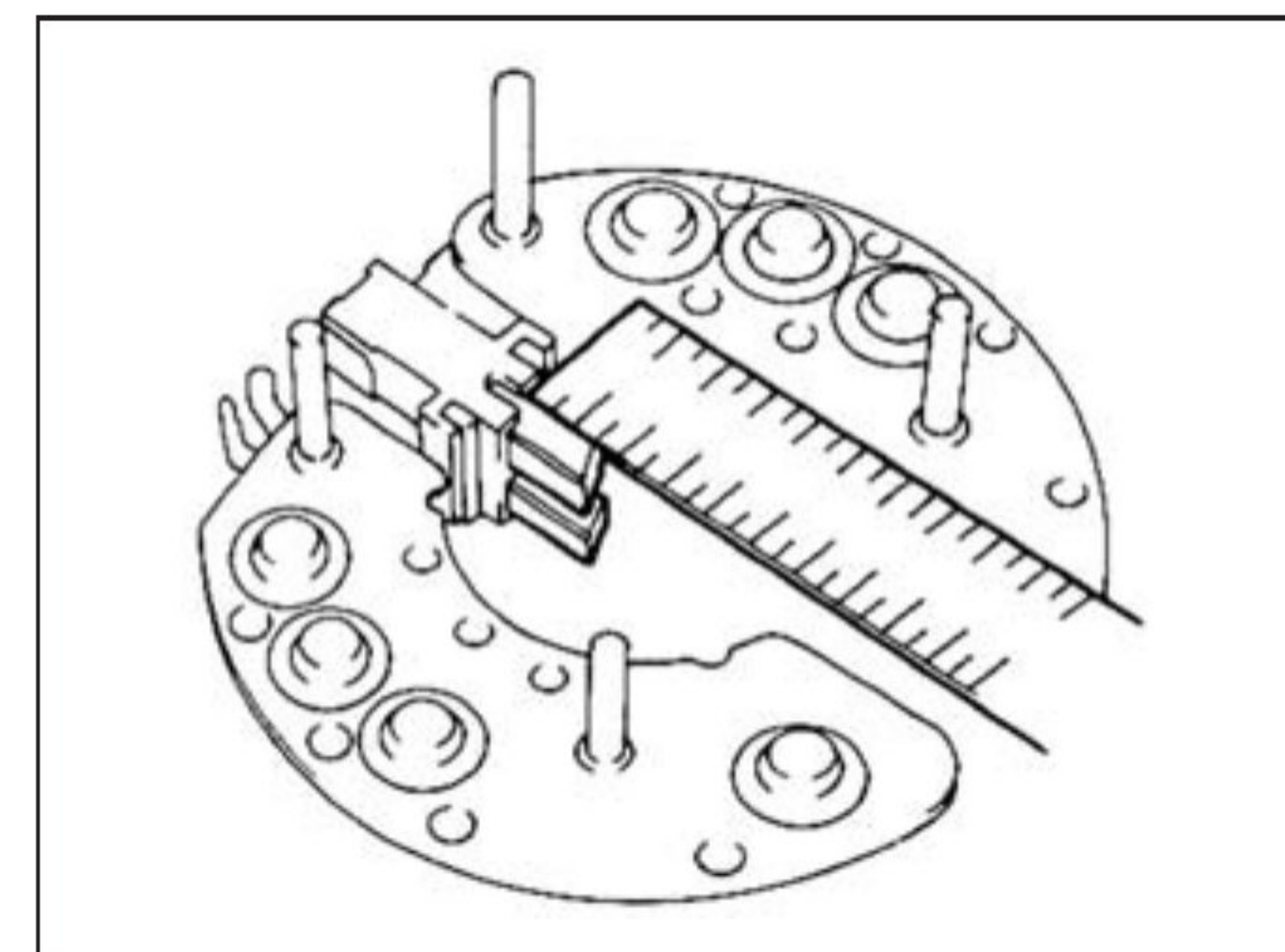


2. Inspect stator for ground. Using an ohmmeter, check that there is no continuity between the coil leads and stator core. If there is continuity, replace the stator.

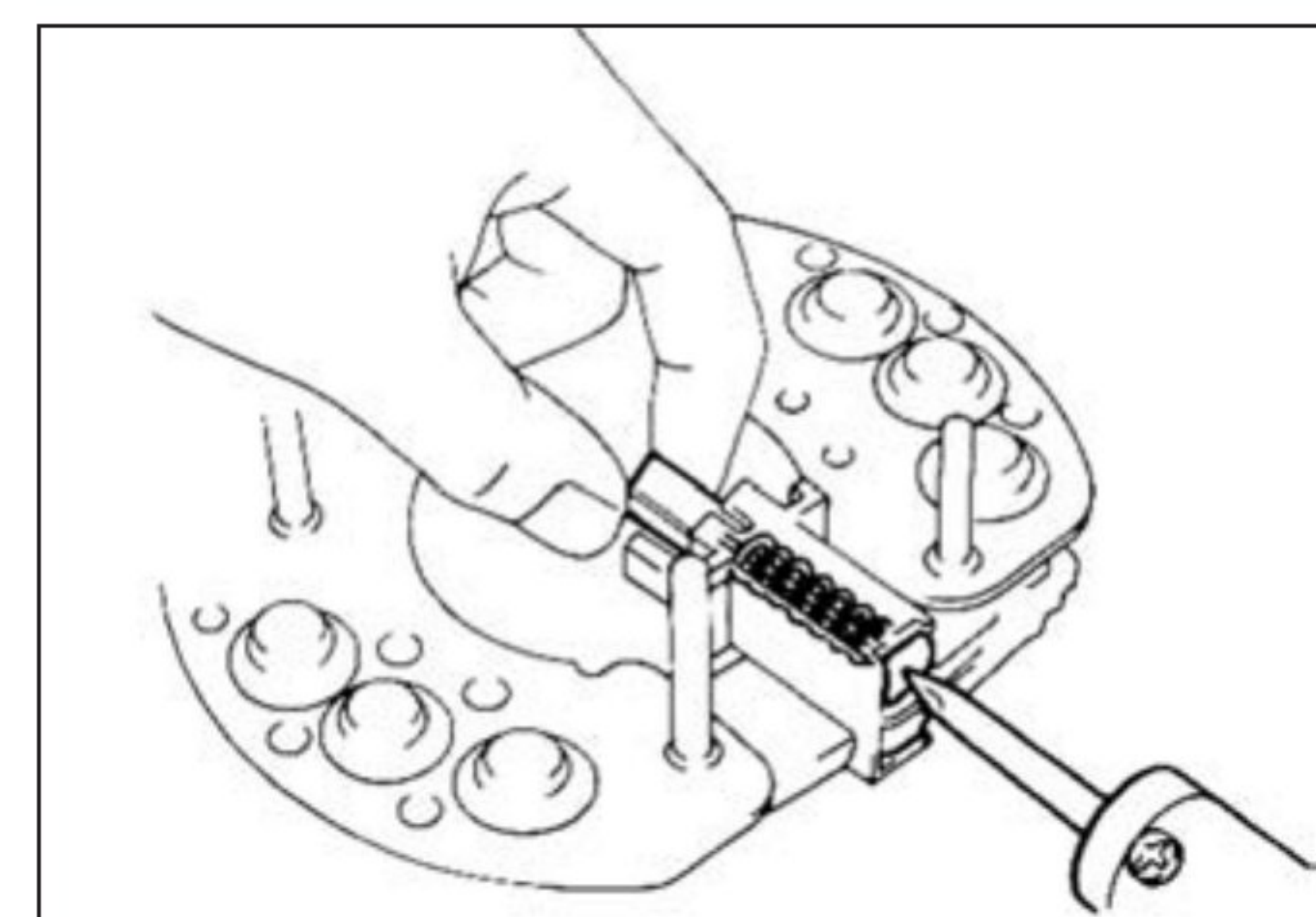


Brushes—

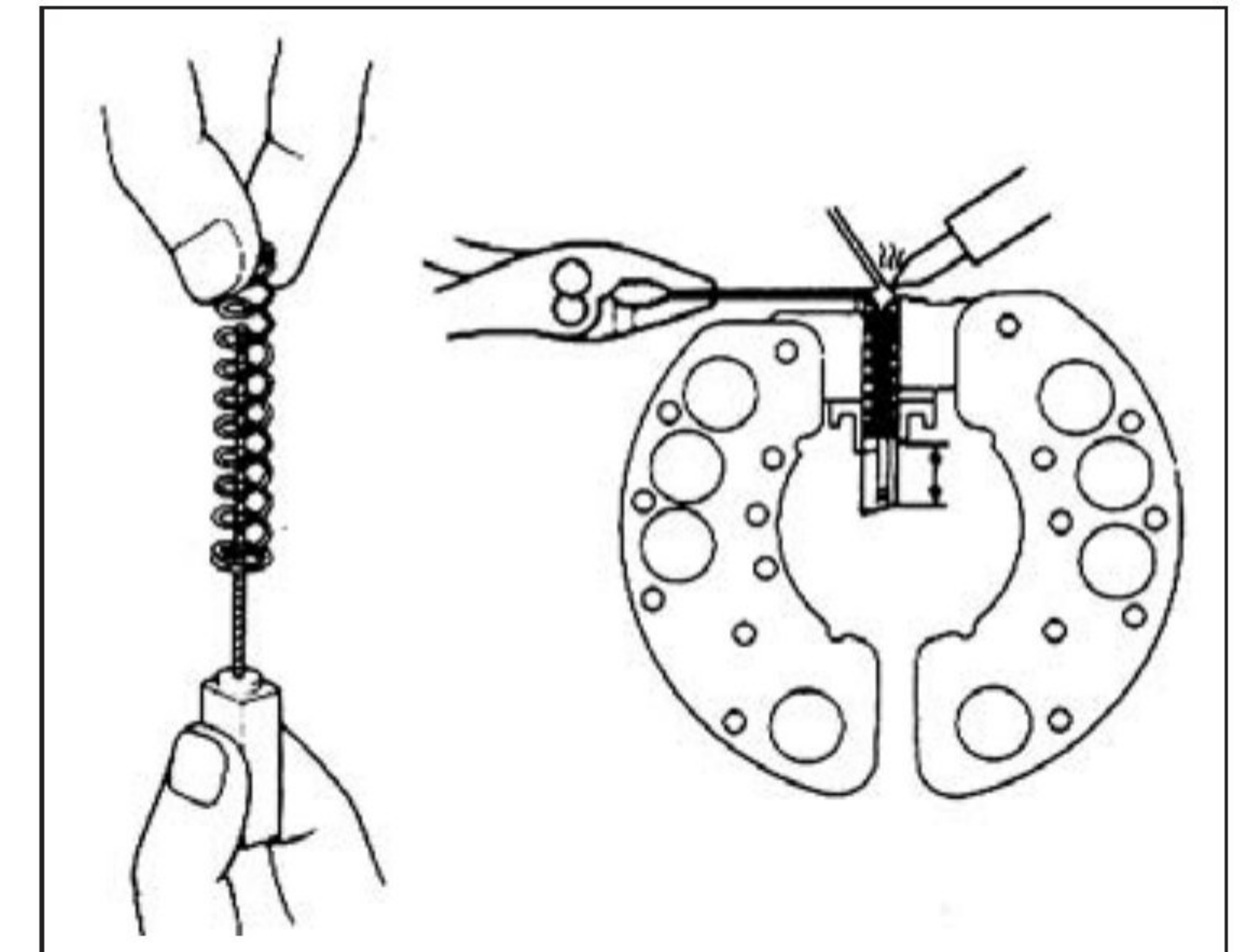
1. Inspect exposed brush length. Using a scale, measure the exposed brush length. Standard exposed length: 12.5 mm (0.492 in.); Minimum exposed length: 5.5 mm (0.217 in.). If the length is less than minimum, replace the brushes.



2. If necessary replace brushes. Unsolder and remove the brush and spring.

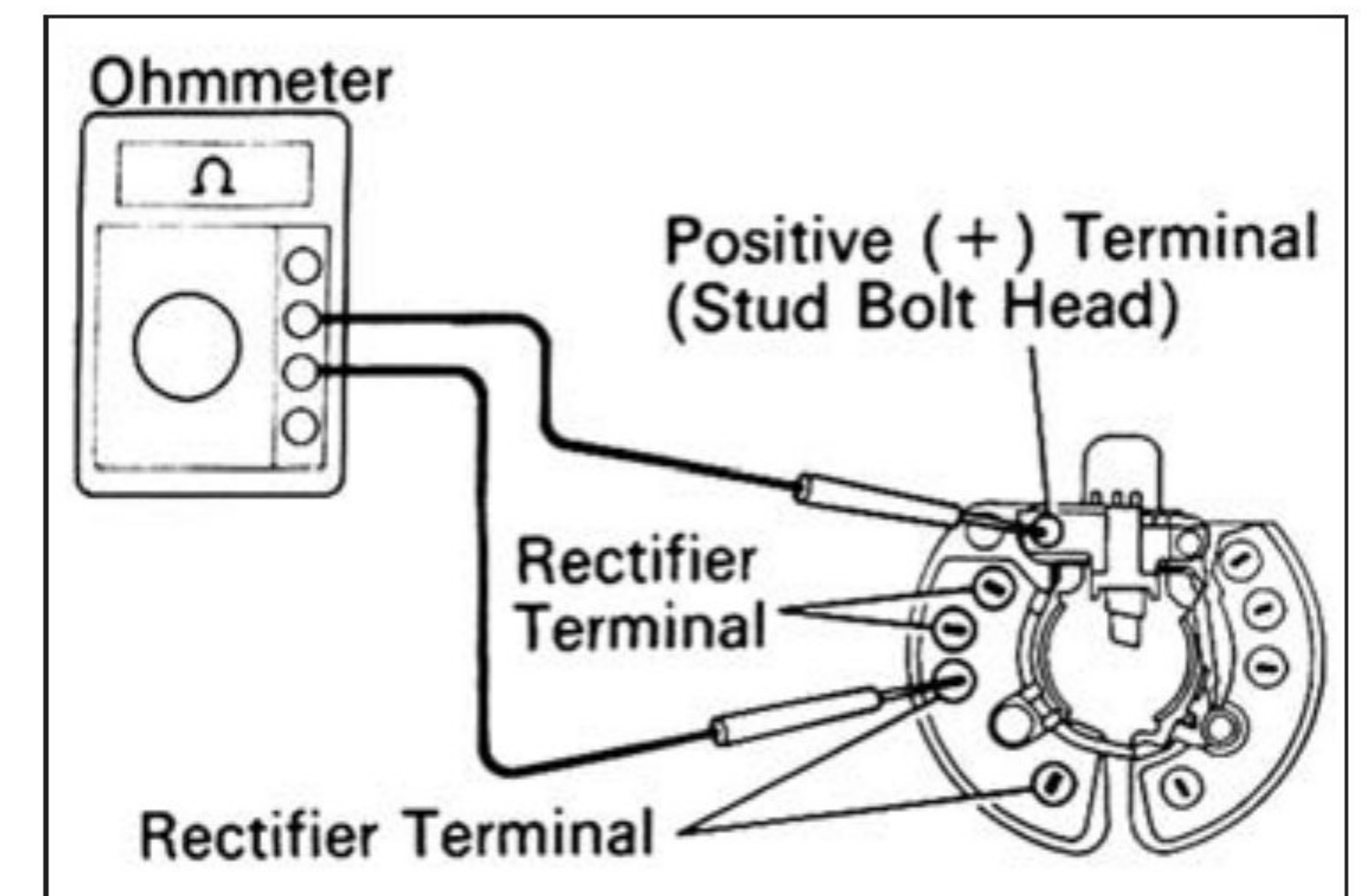


Insert the brush wire through the spring. Install the brush in the brush holder. Solder the wire to the brush holder at specified exposed length. Exposed length: 12.5 mm (0.492 in.). Check that the brush moves smoothly in the brush holder. Cut off any excess wire.



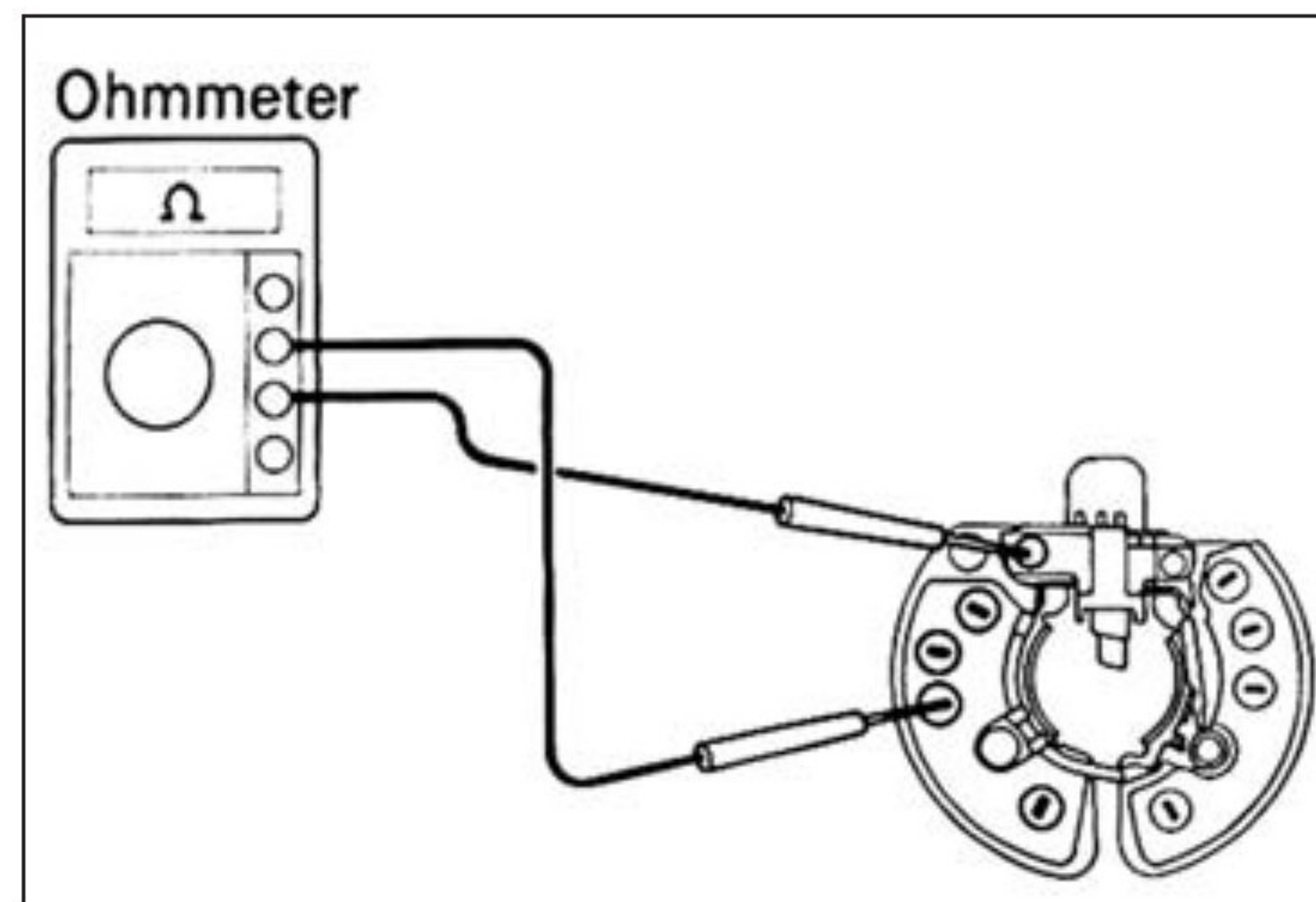
Rectifiers (Rectifier Holder)—

1. Inspect positive side rectifier. Using an ohmmeter, connect one tester probe to the positive terminal and the other to each rectifier terminal.

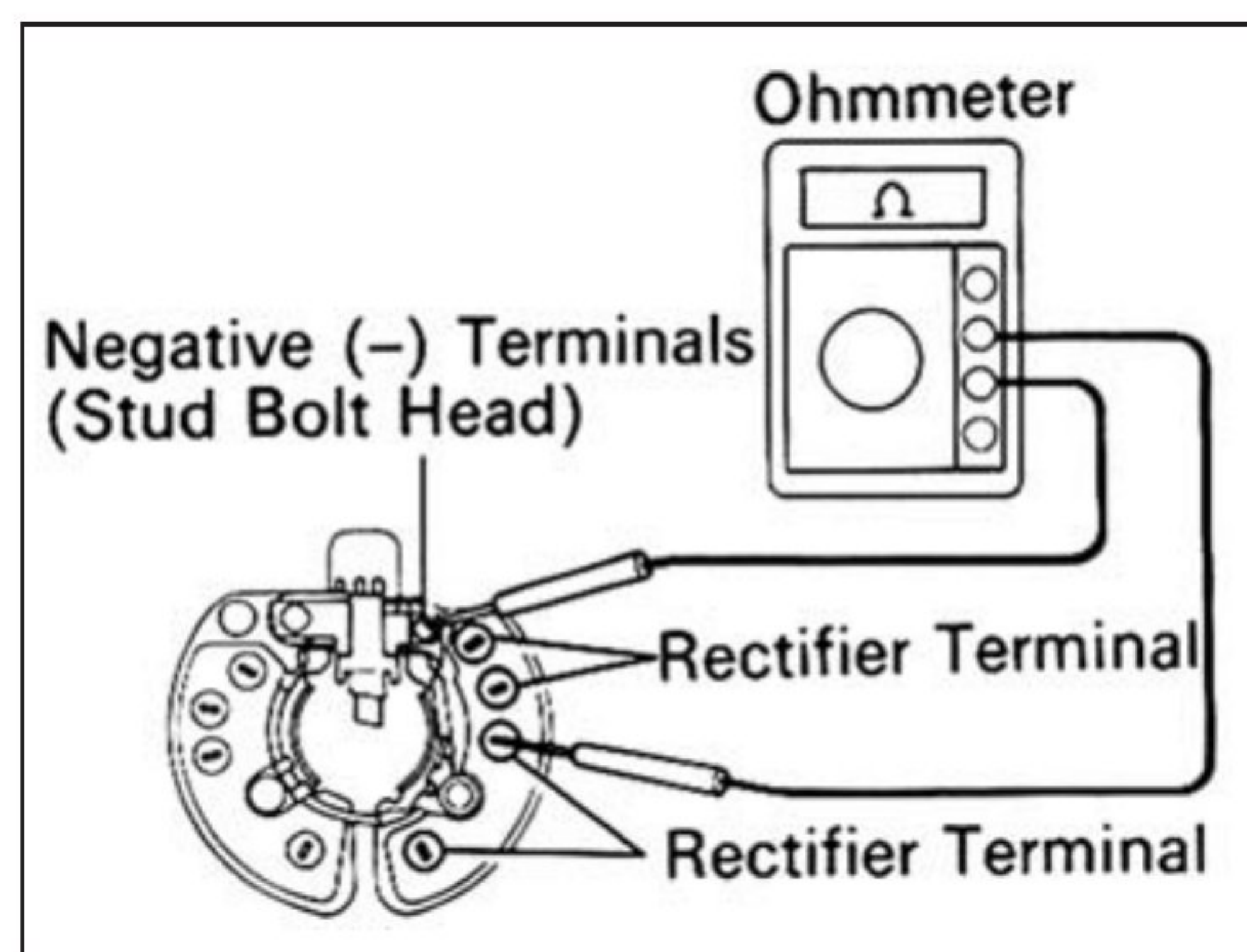


Reverse the polarity of the tester and repeat. Check that one

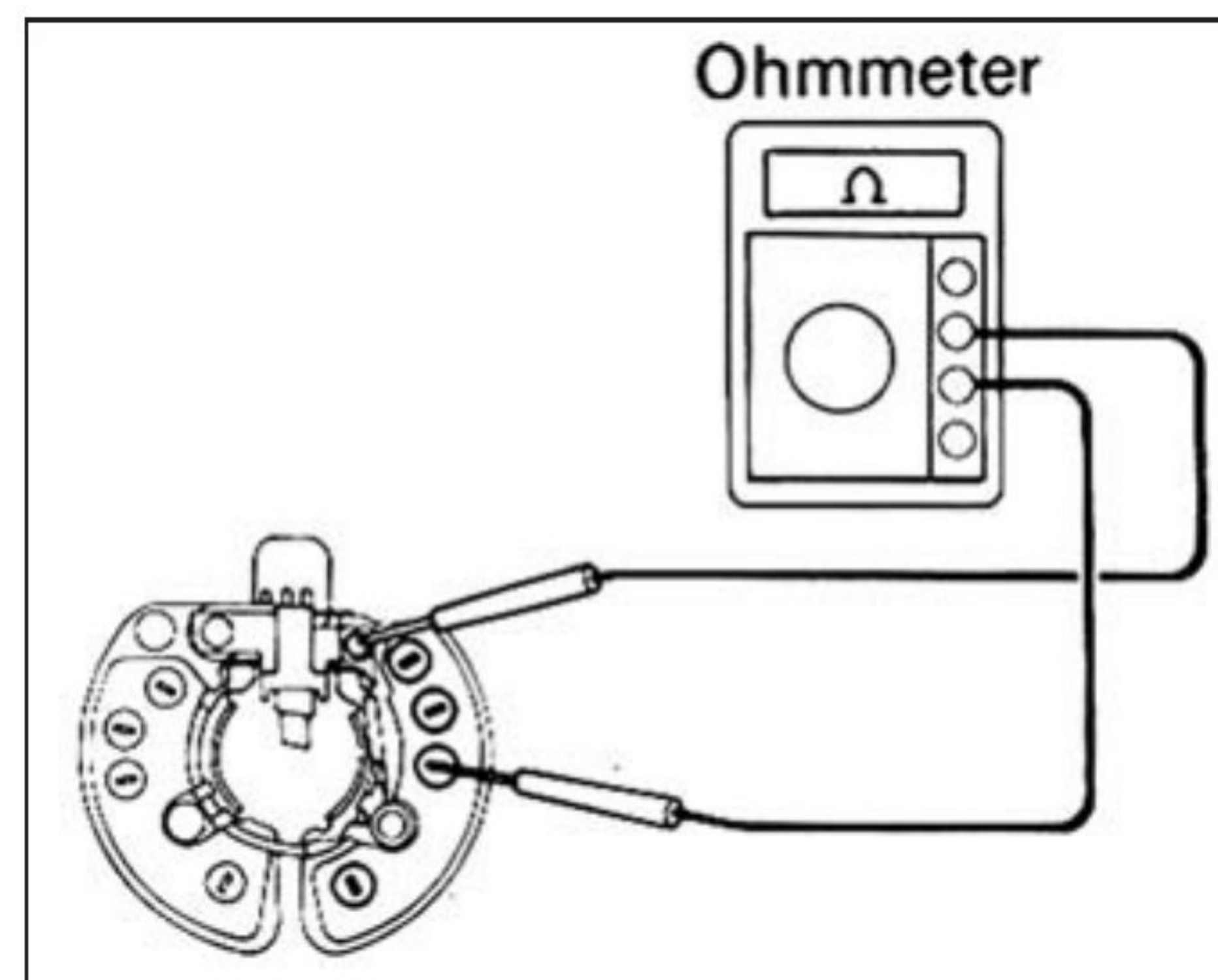
shows continuity and the other shows no continuity. If continuity is not as specified, replace the rectifier holder.



2. Inspect negative side rectifier. Using an ohmmeter, connect one tester probe to the negative terminal and the other to each rectifier terminal.

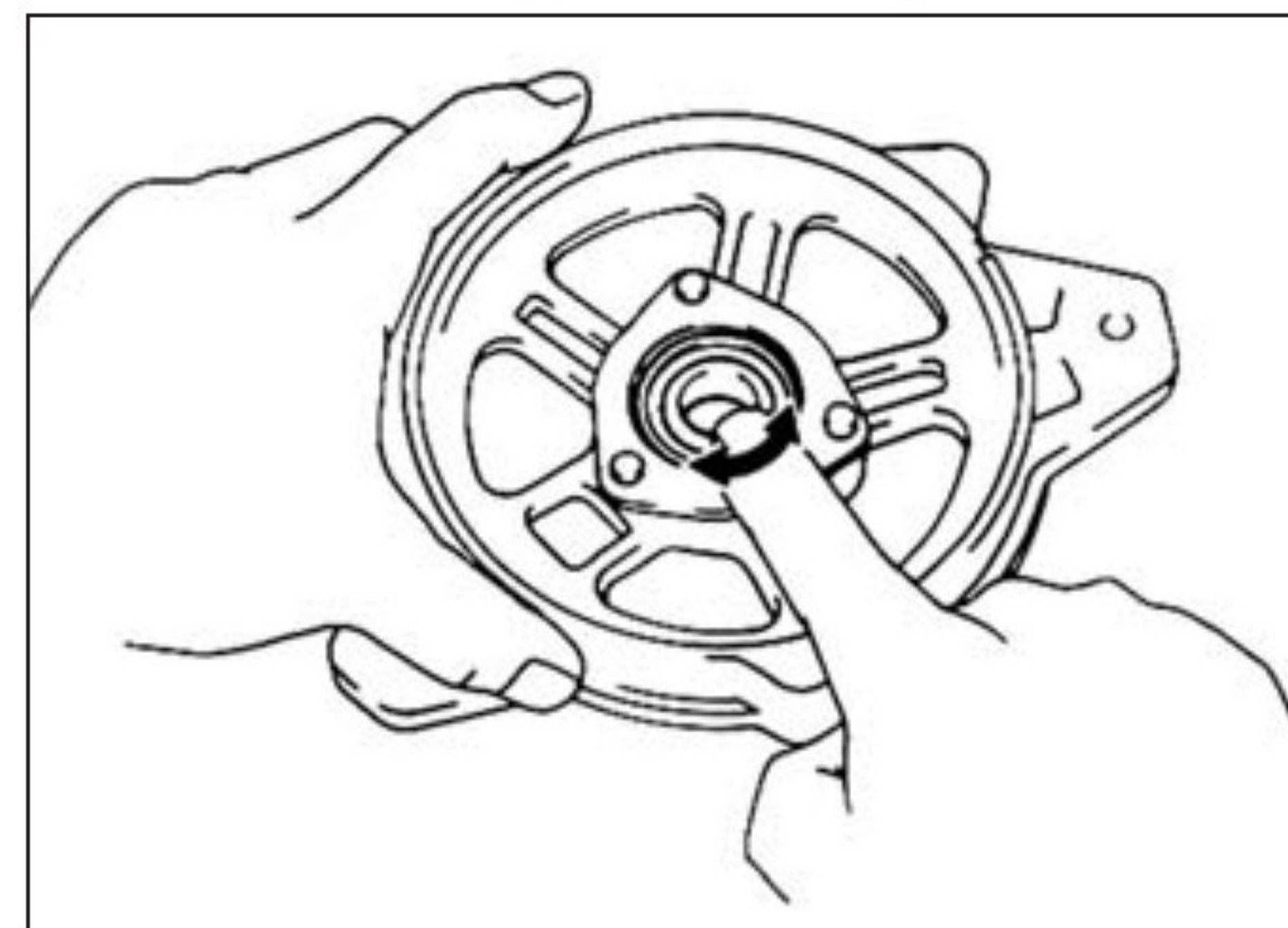


Reverse the polarity of the tester probes and repeat. Check that one shows continuity and the other shows no continuity. If continuity is not as specified, replace the rectifier holder.

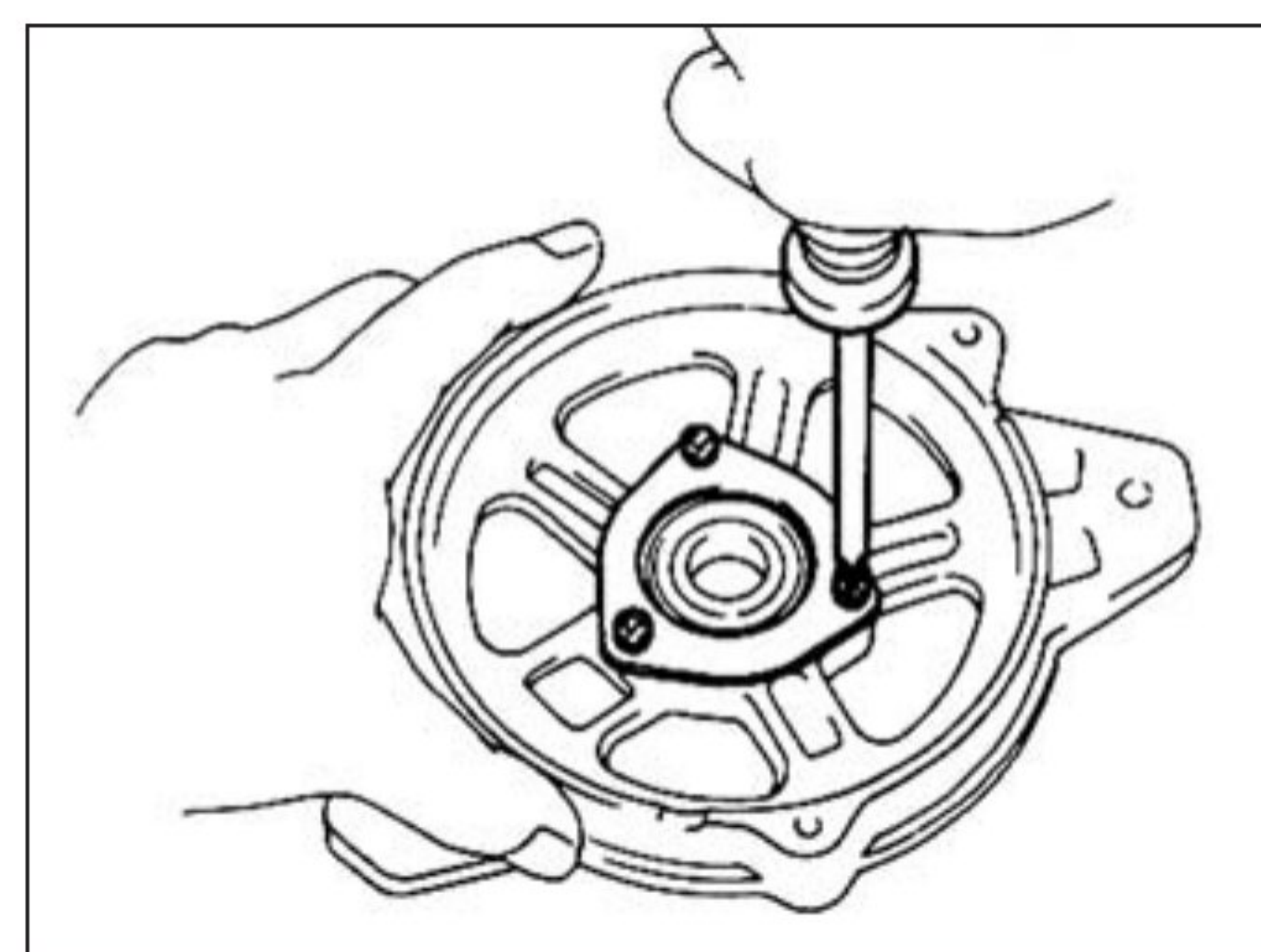


Bearings—

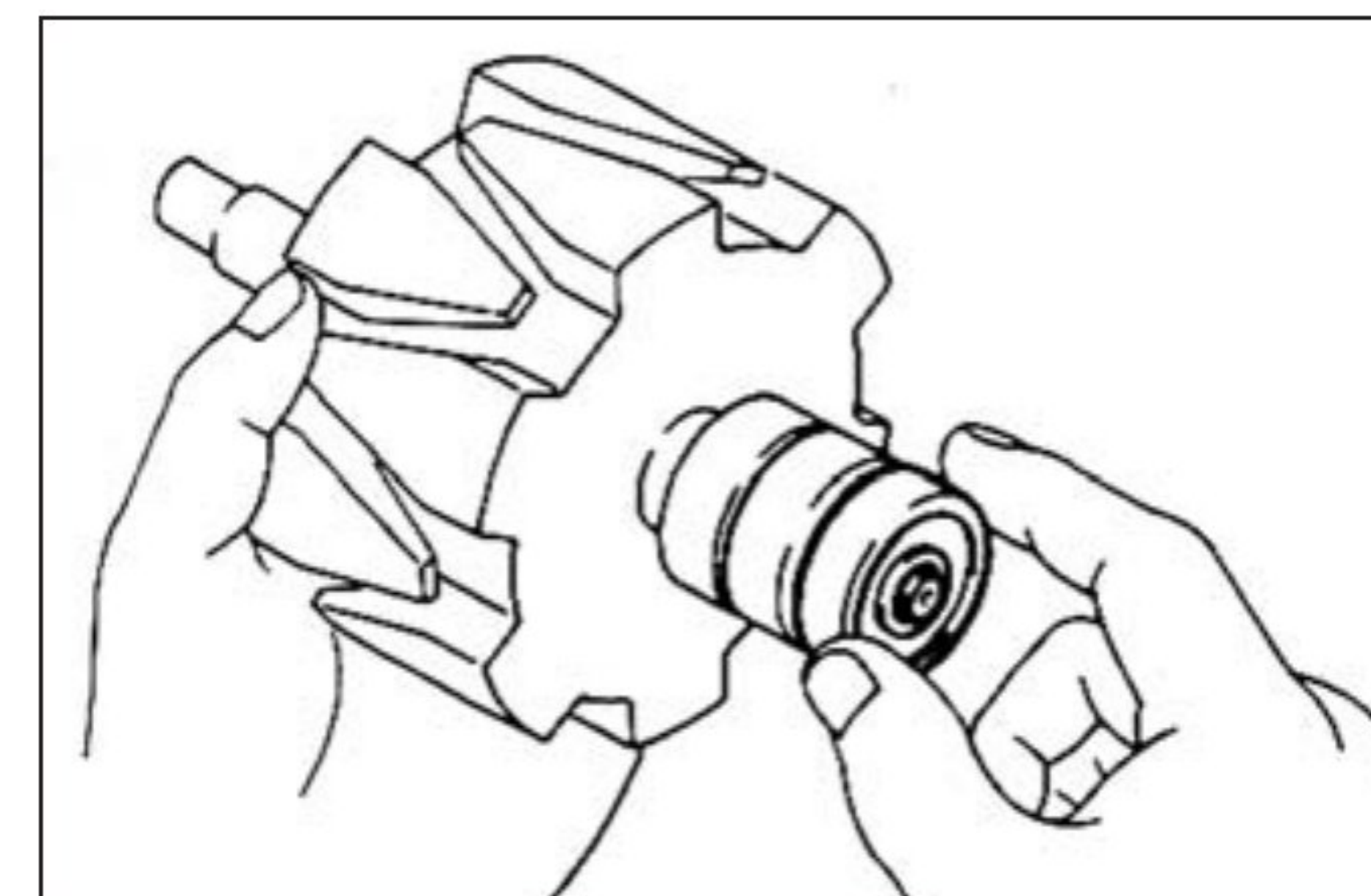
1. Inspect front bearing. Check that the bearing is not rough or worn.



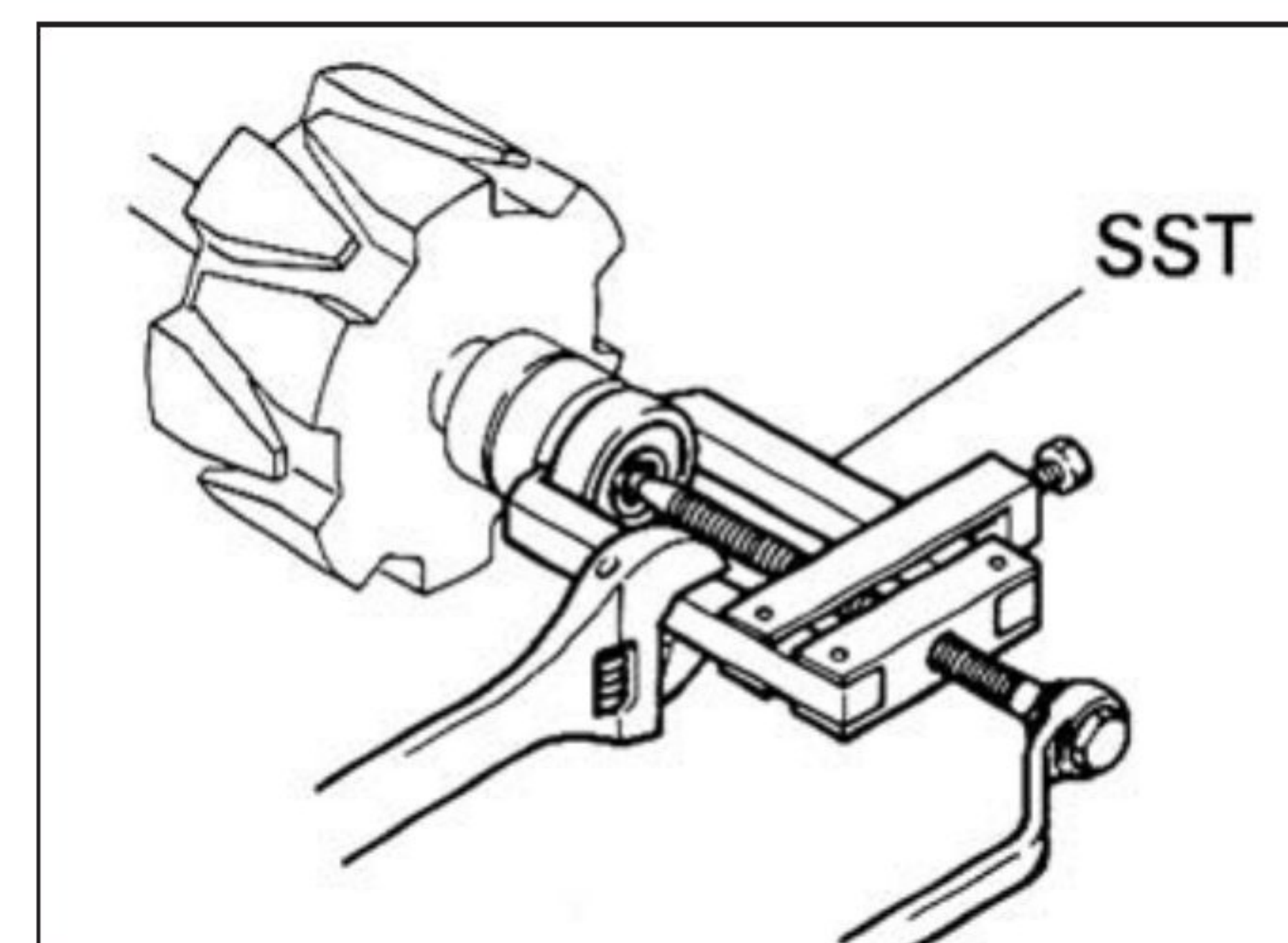
2. If necessary, replace front bearing. Remove the three screws and bearing retainer, and replace the bearing. Torque: 35 kg-cm (30 in-lb., 3.4 N-m).



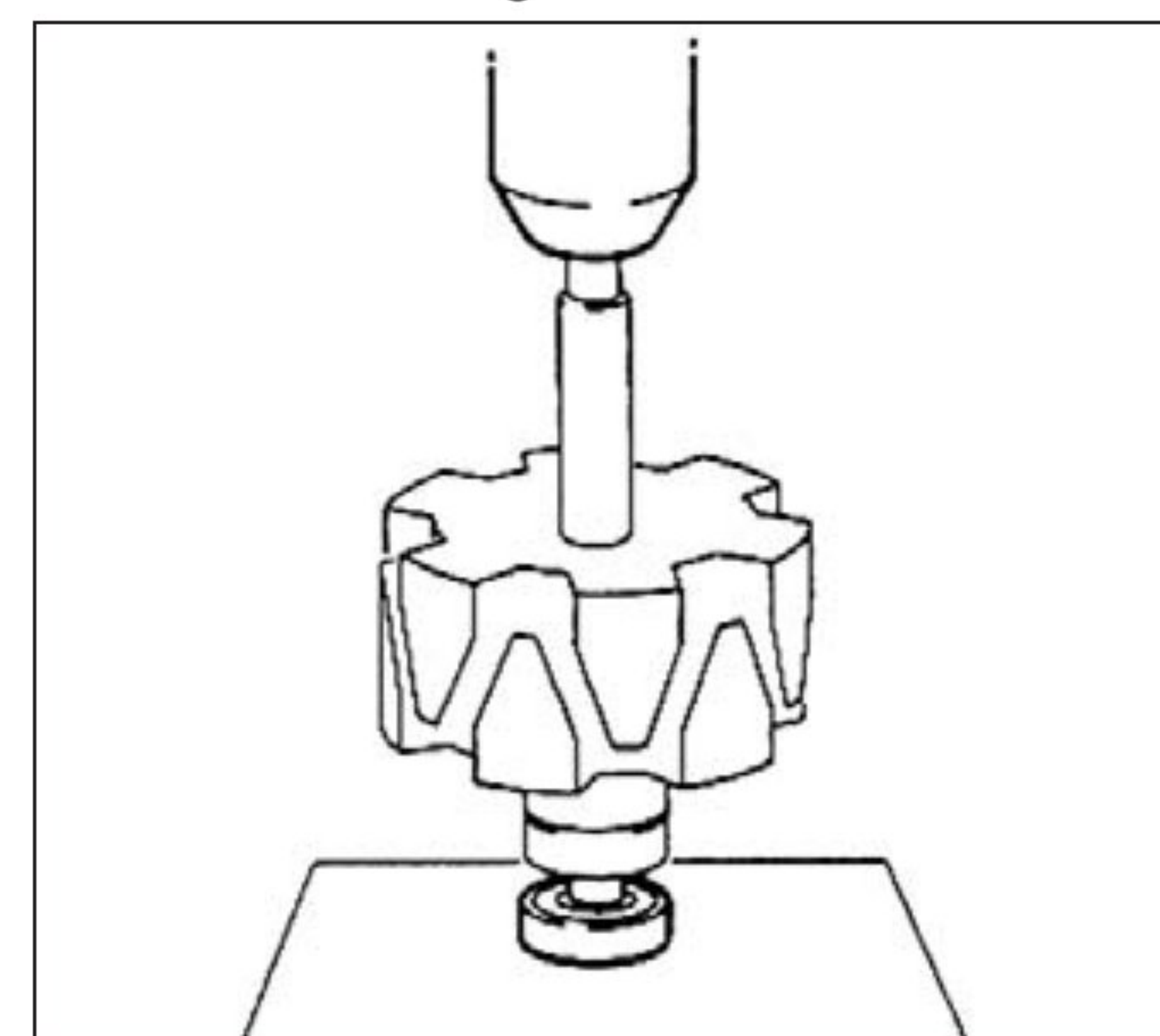
3. Inspect rear bearing. Check that the bearing is not rough or worn.



4. If necessary, replace rear bearing. Using SST, remove the bearing from the rotor shaft. SST 09286-46011.

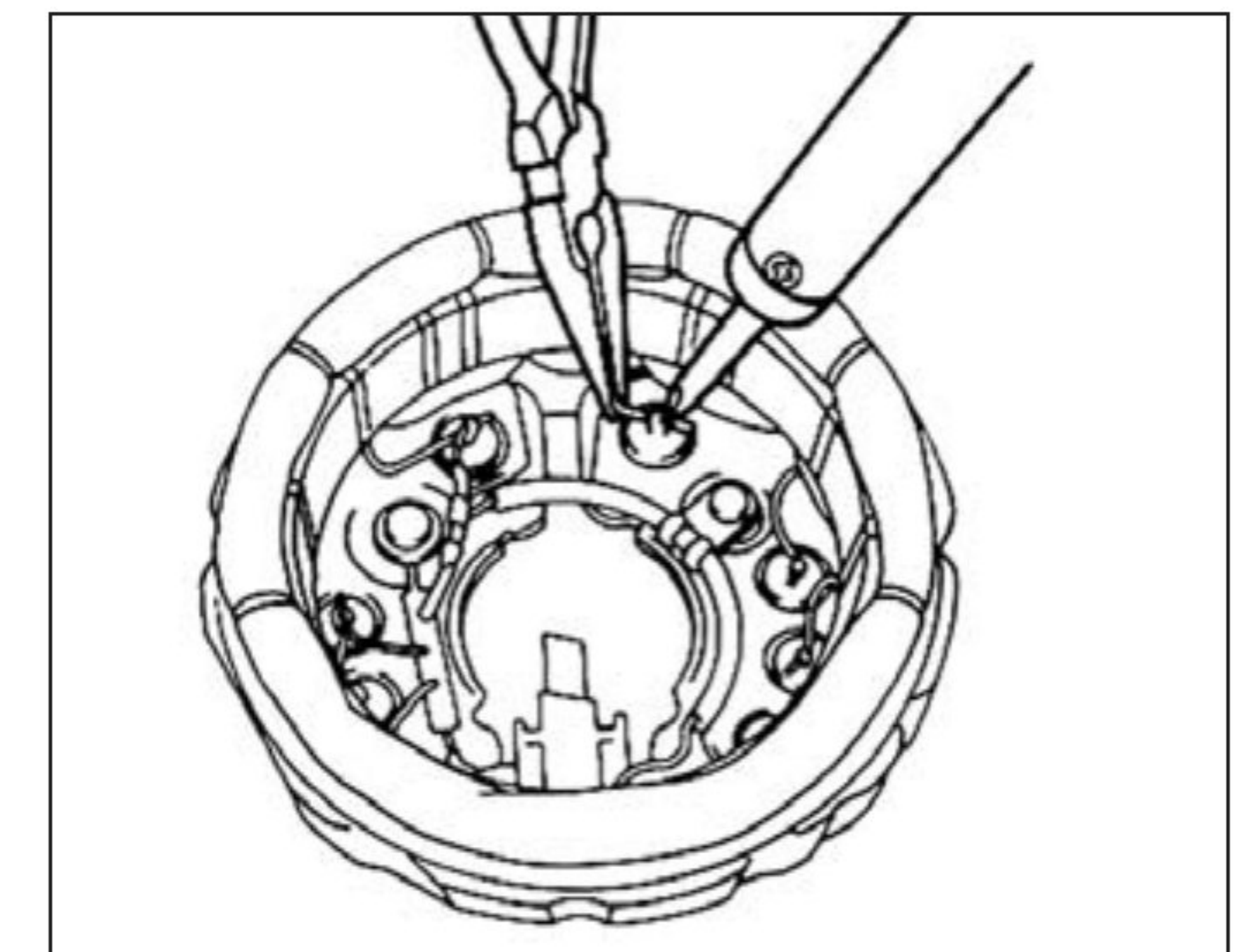


Using a press, press in a new rear bearing onto the rotor shaft.

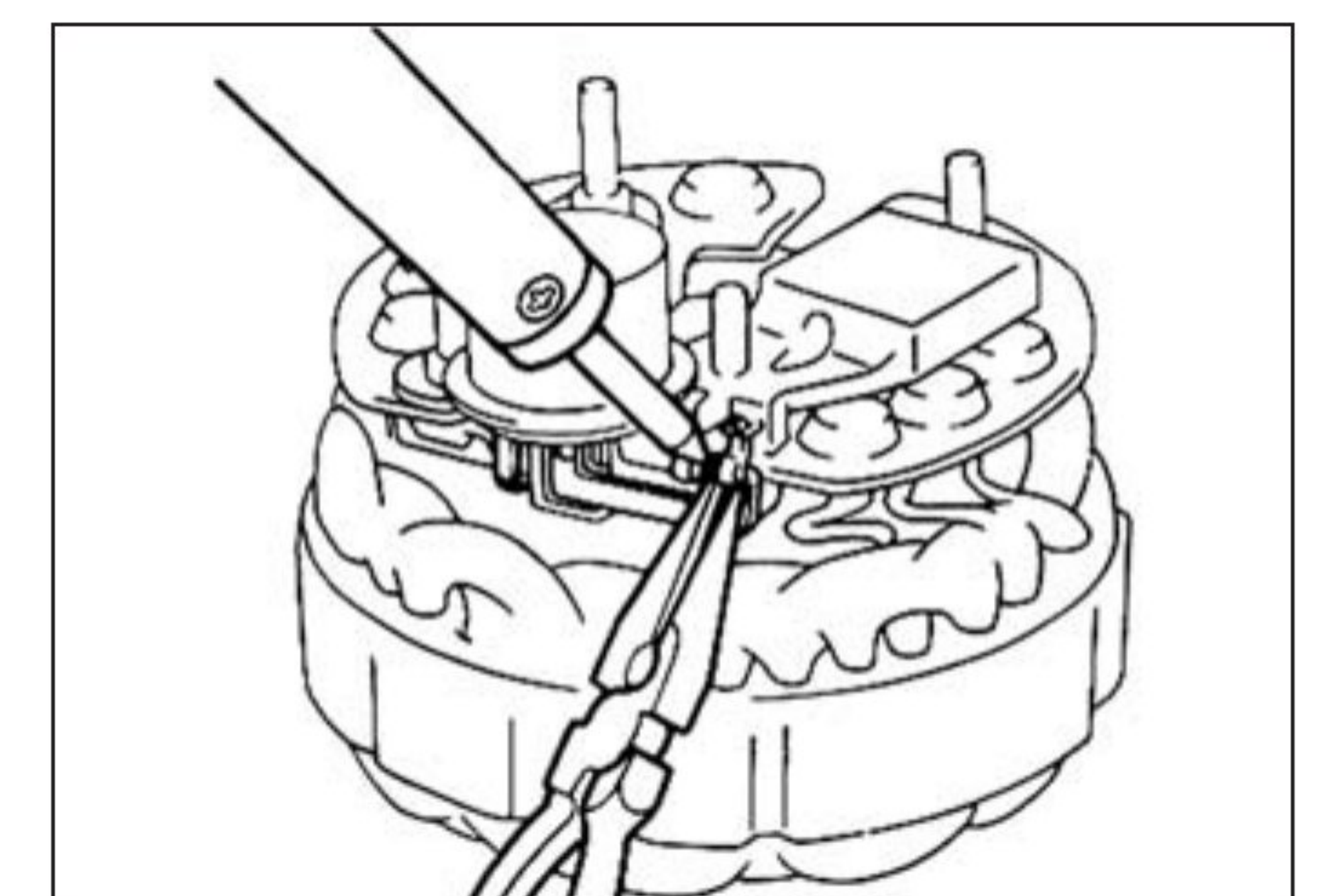


Assembly of Alternator

1. Install rectifier holder to stator. Hold the stator coil lead with needlenose pliers while soldering the leads. Notice: Protect the rectifiers from heat.

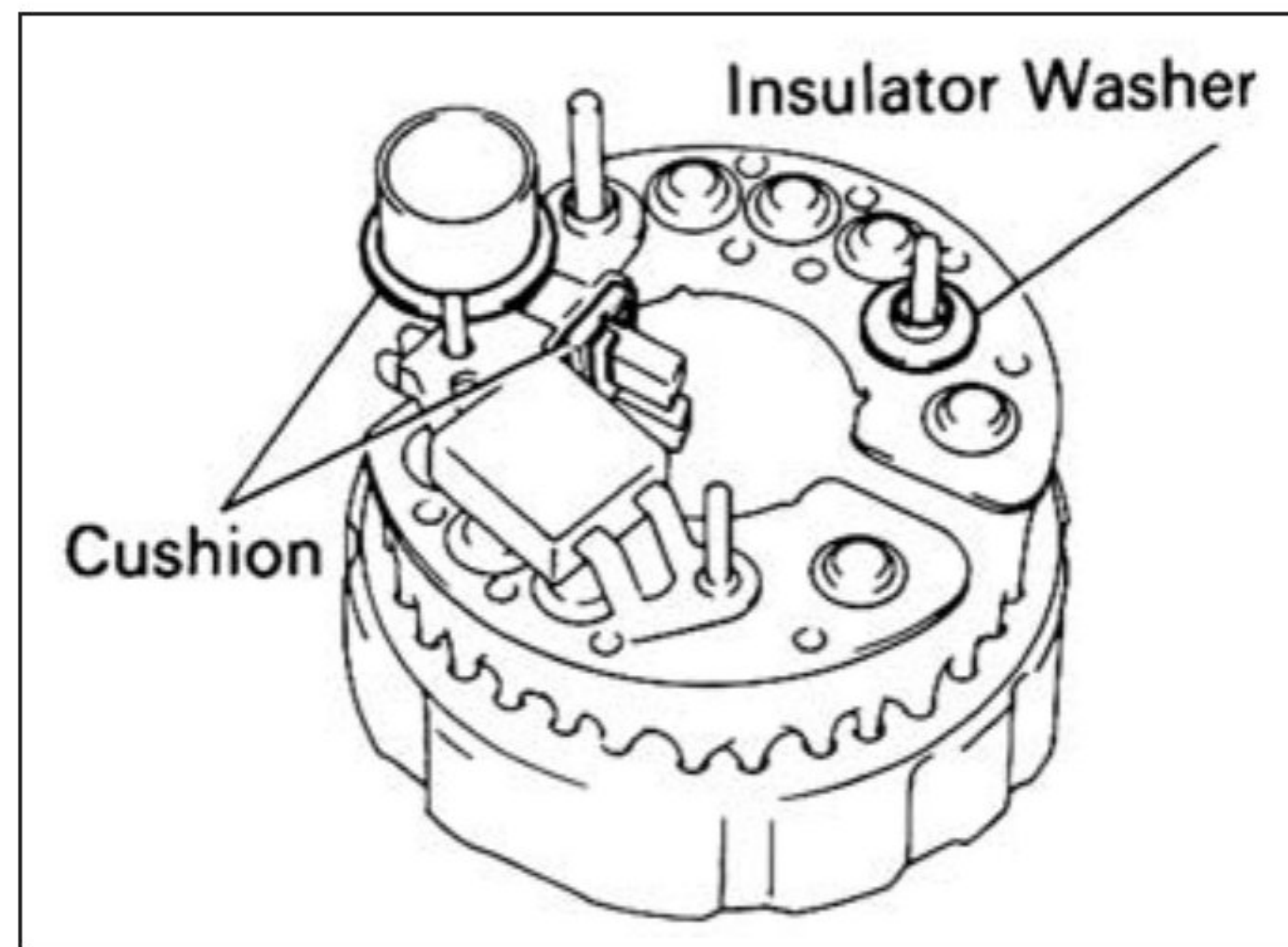


2. Install IC regulator. Hold the IC regulator terminal with needlenose pliers while soldering the terminals. Notice: Protect the rectifiers from heat.

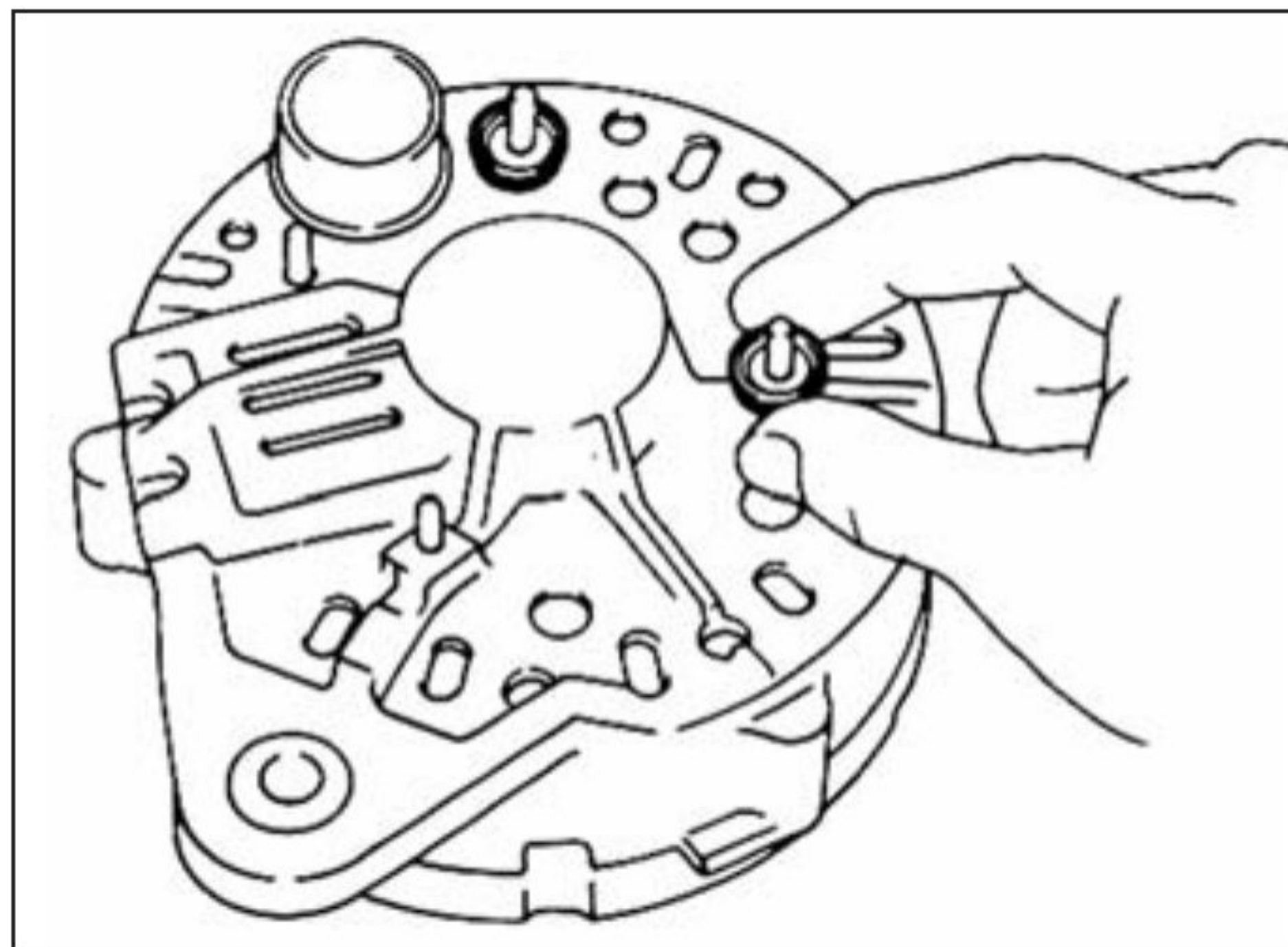


3. Install rectifier end frame to rectifier holder.
 - Place the insulator washer on the positive stud of the rectifier holder.
 - Place the two cushions on the brush holder and alternator terminal.

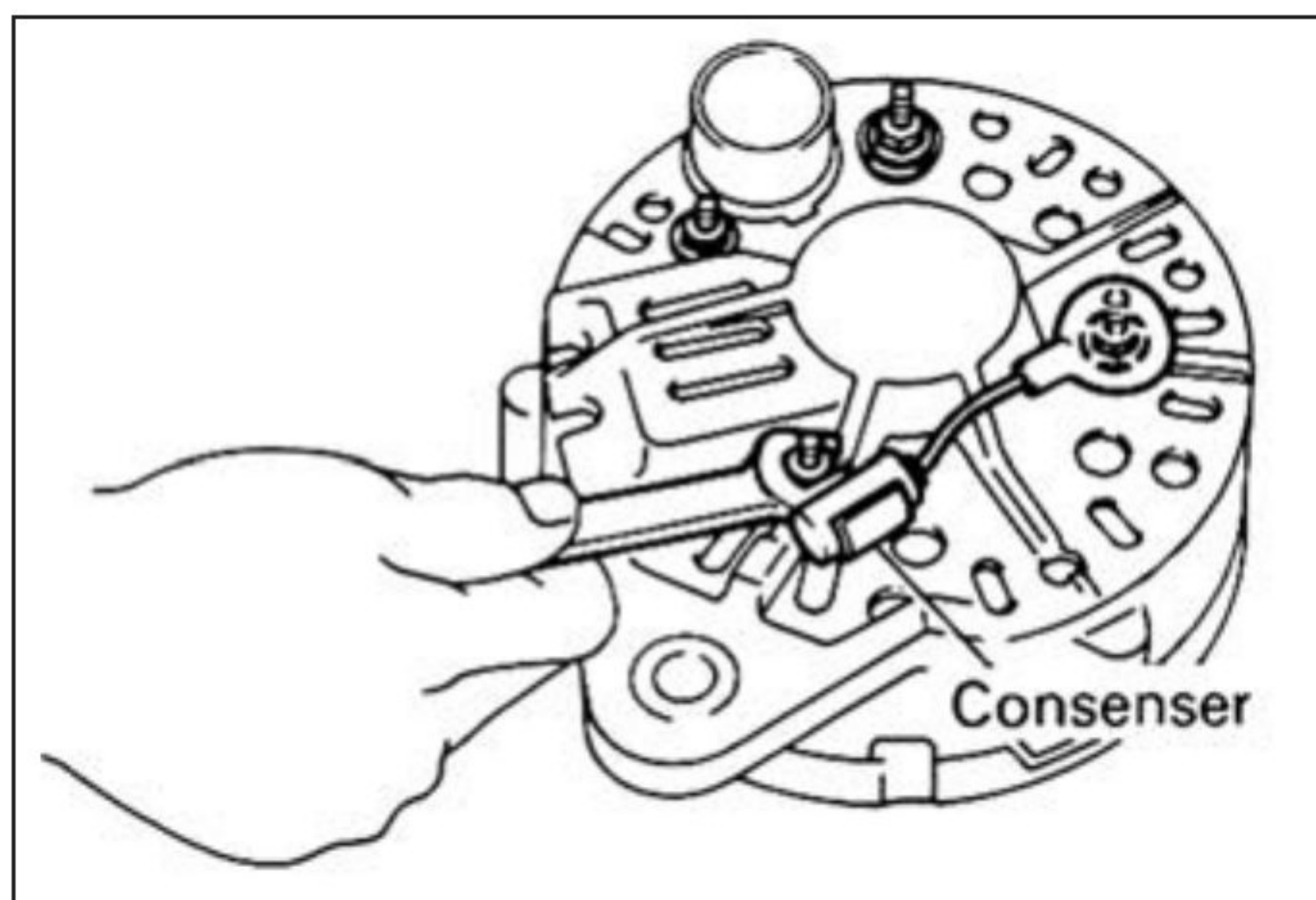
- Place the rectifier end frame on the rectifier holder.
- Check that the wires are not touching the rectifier end frame.



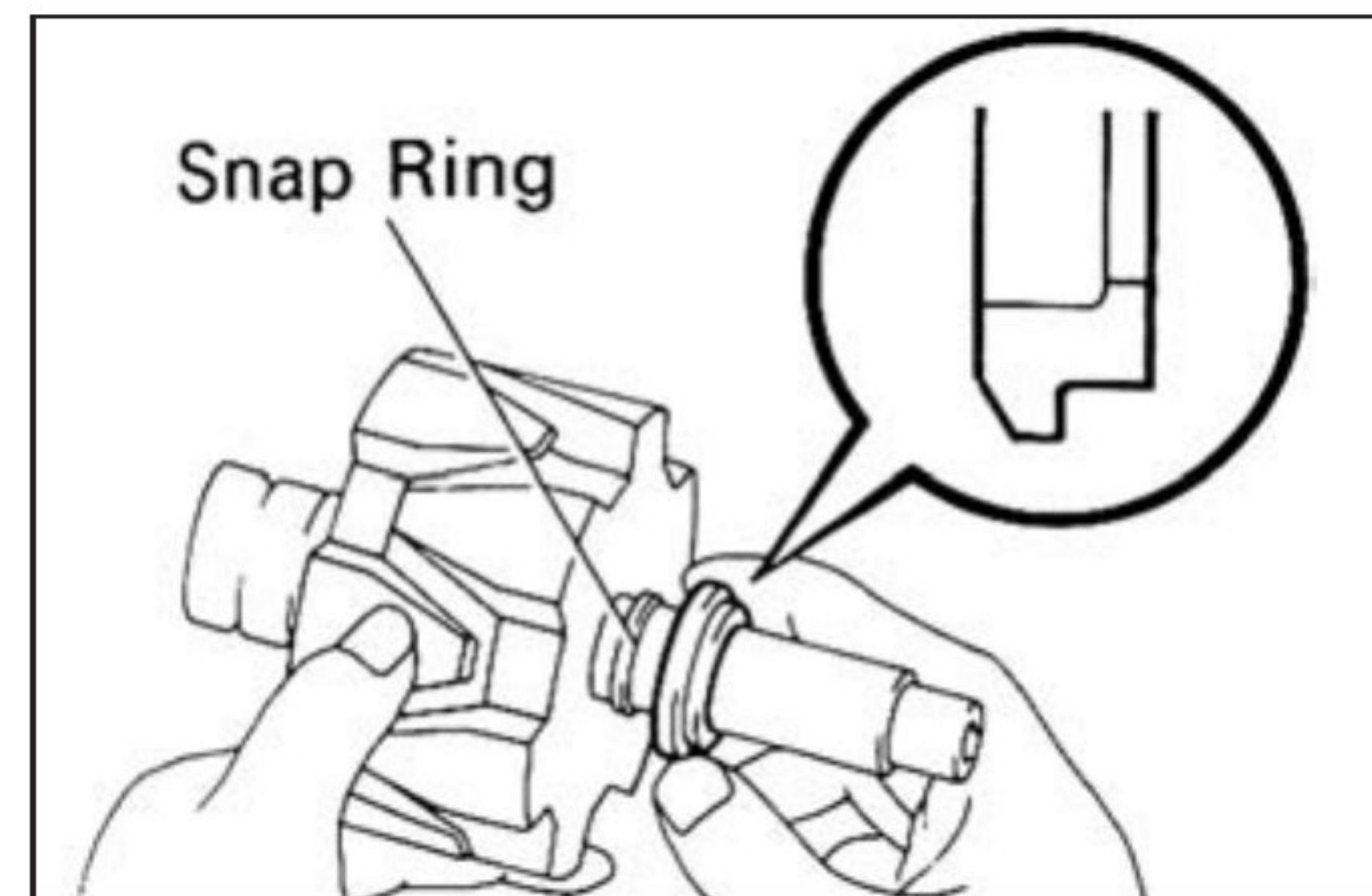
- Place the two terminal insulators on the positive studs of the rectifier holder.



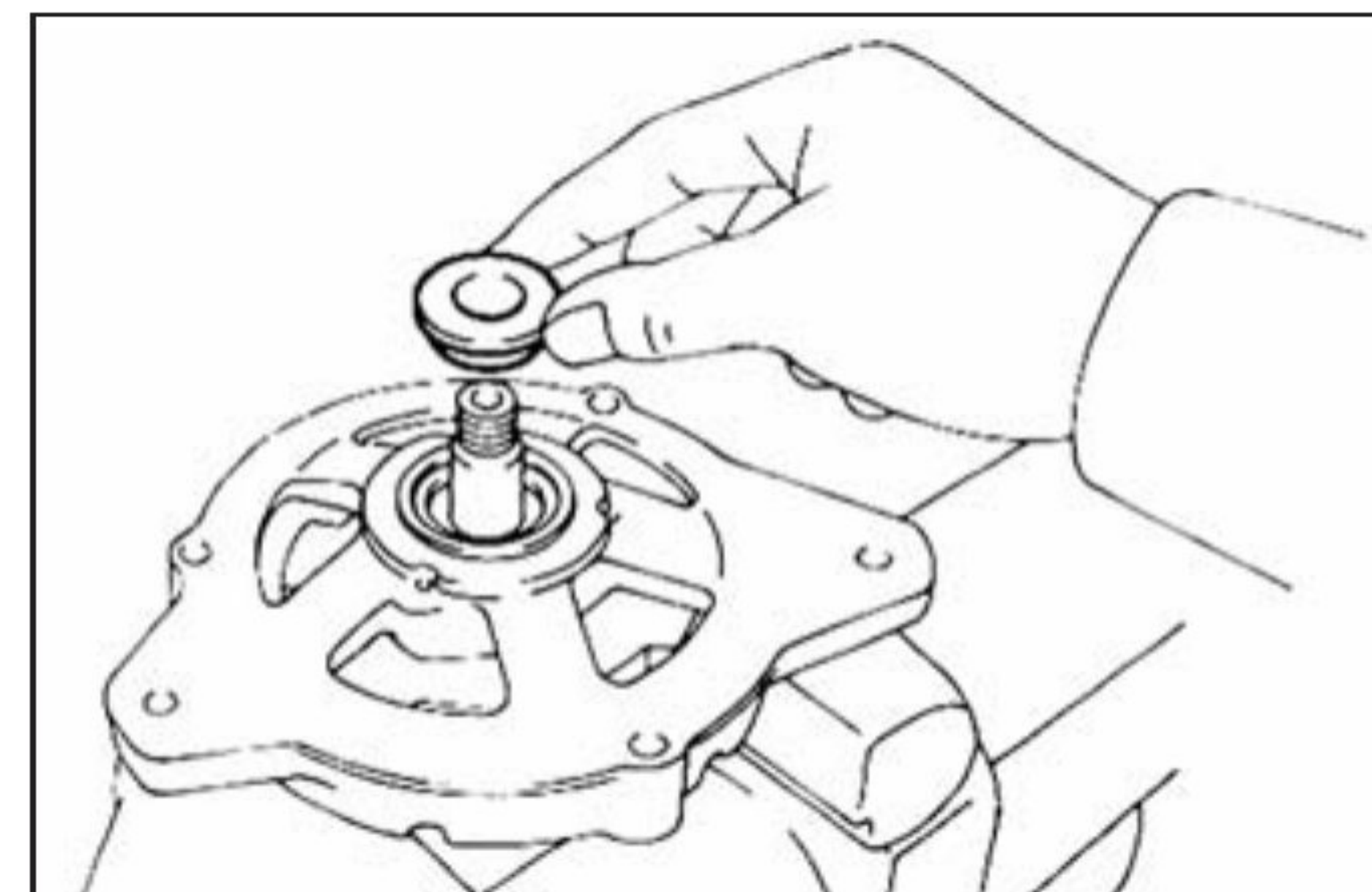
- Install the condenser and four nuts. Torque: 45 kg-cm (39 in.-lb., 4.4 N-m).



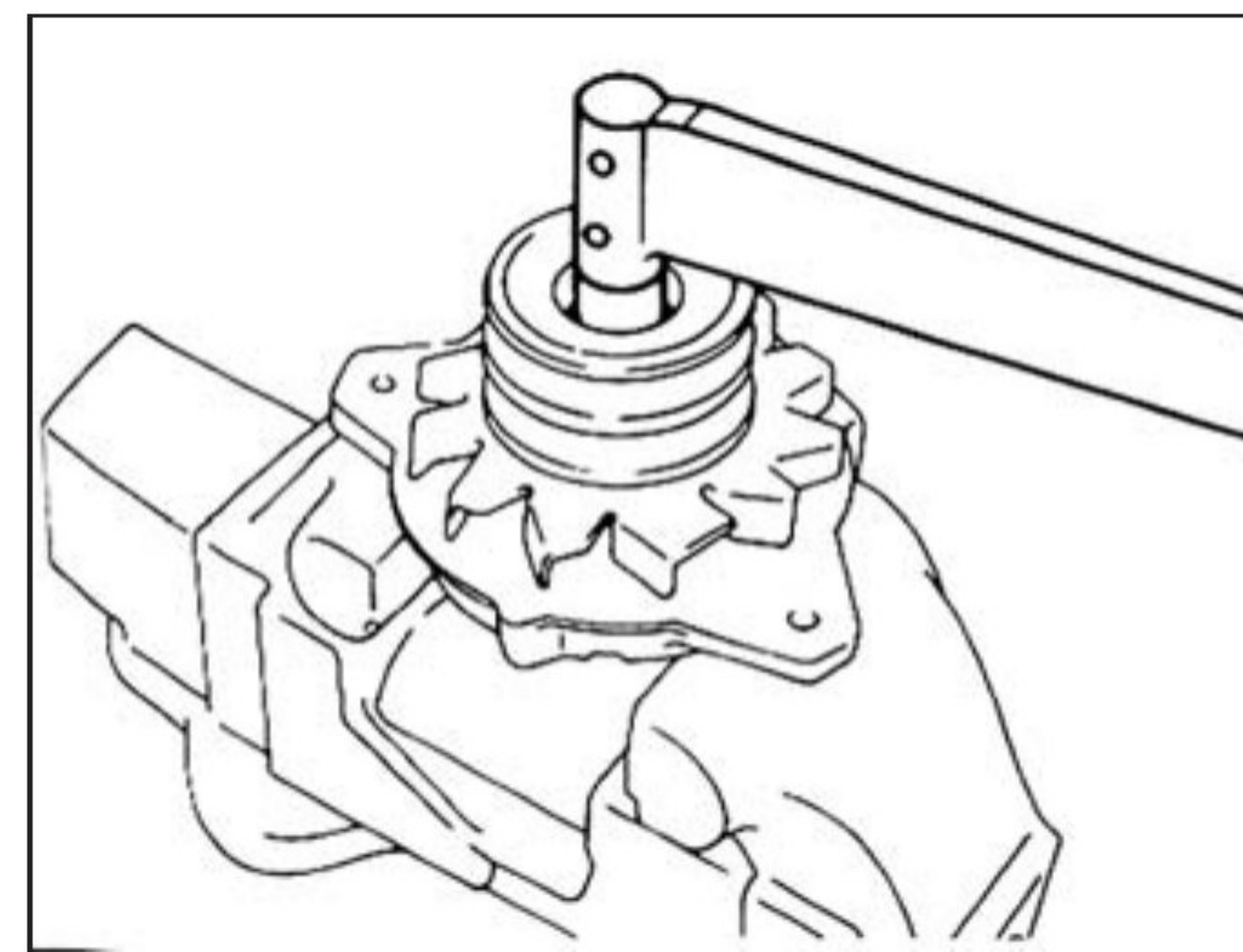
4. Install drive end frame, fan and pulley to rotor.



- Slide the snap ring and spacer ring onto the rotor shaft.
- Mount the rotor in a soft jaw vise.
- Slide the drive end frame and spacer collar.

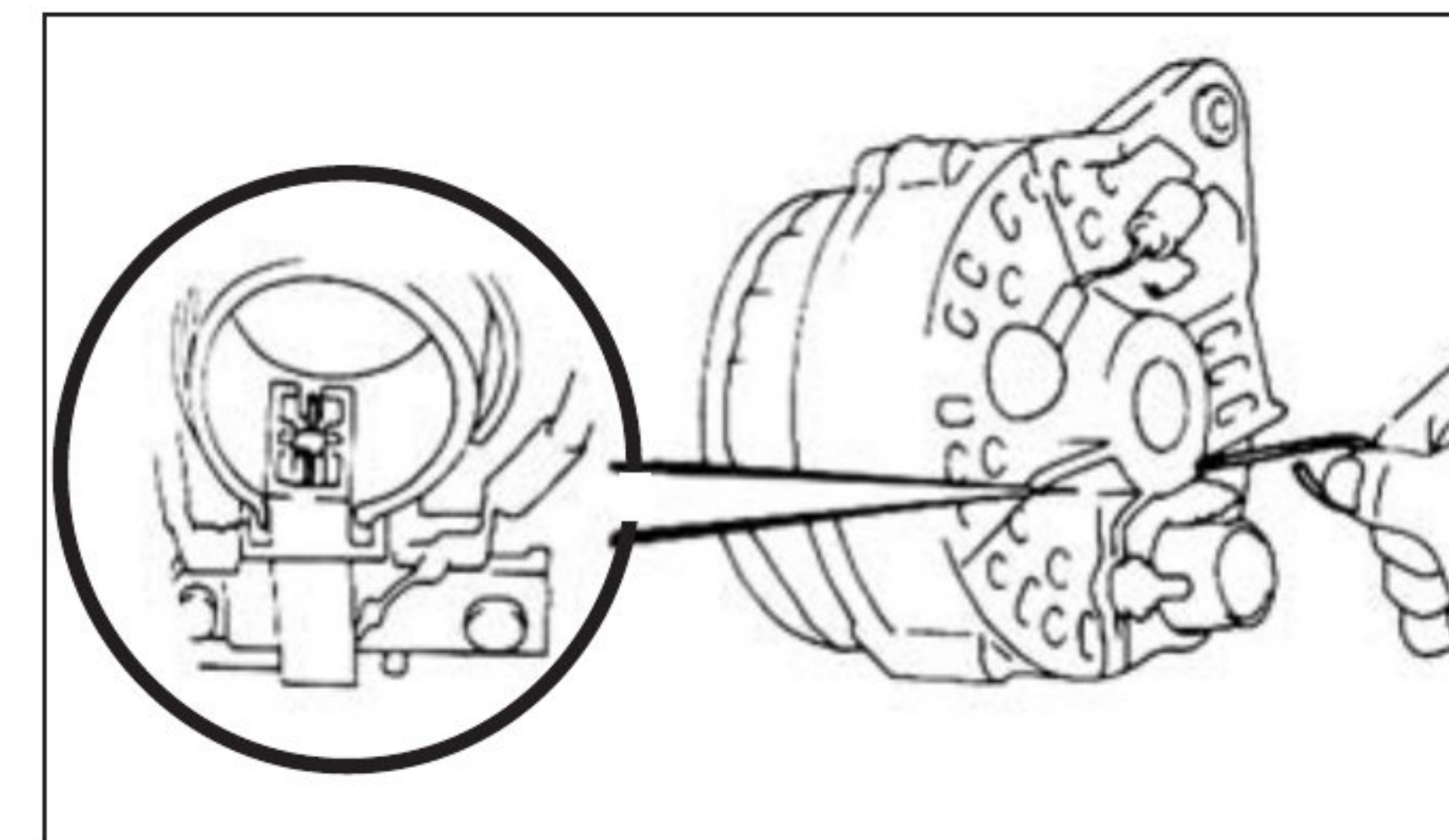


- Slide the fan, pulley and spring washer onto the rotor shaft.
- Install and torque the nut. Torque: 625 kg-cm (45 ft.-lb., 61 N-m).

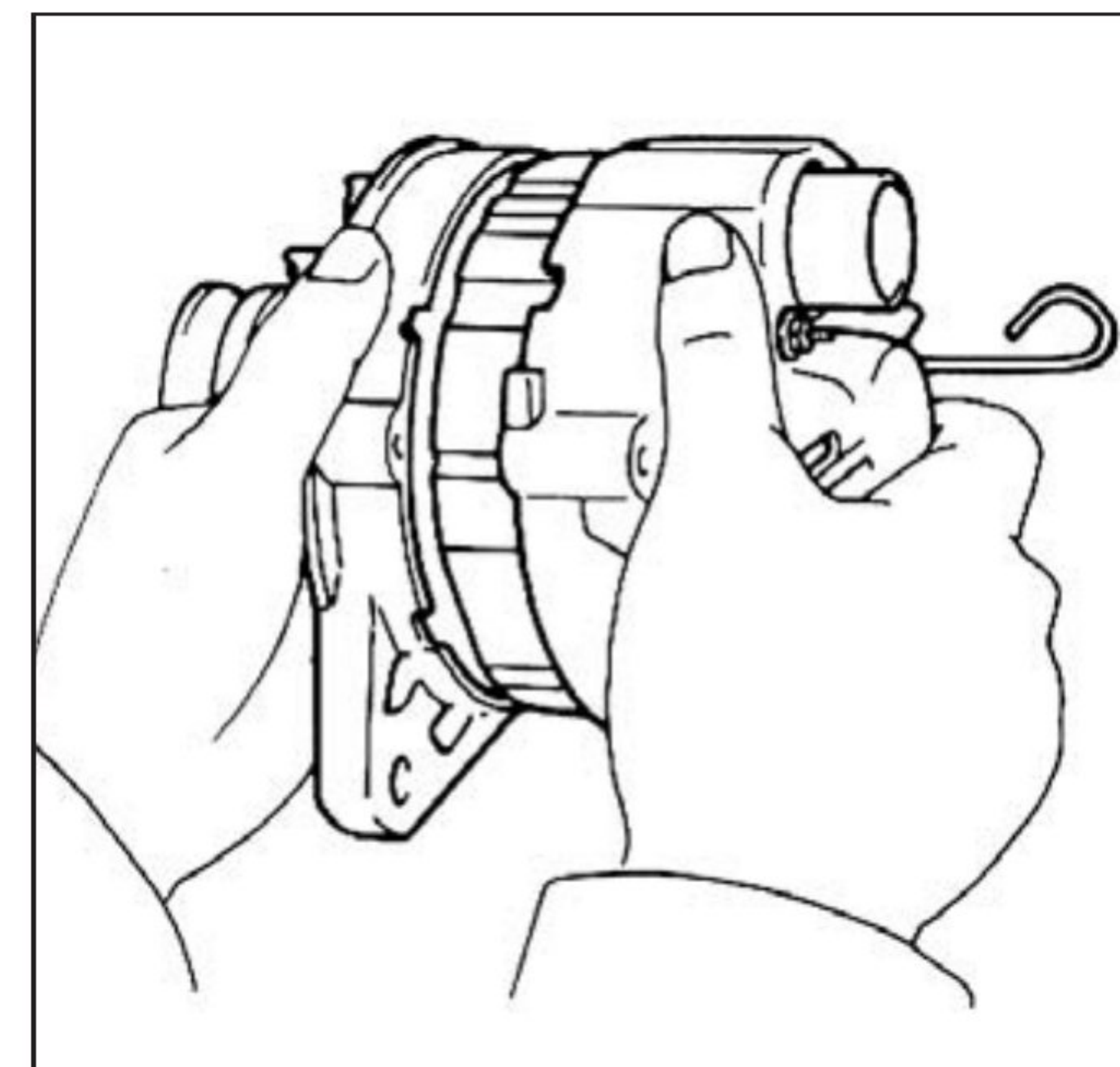


5. Assemble drive end frame and rectifier end frame.

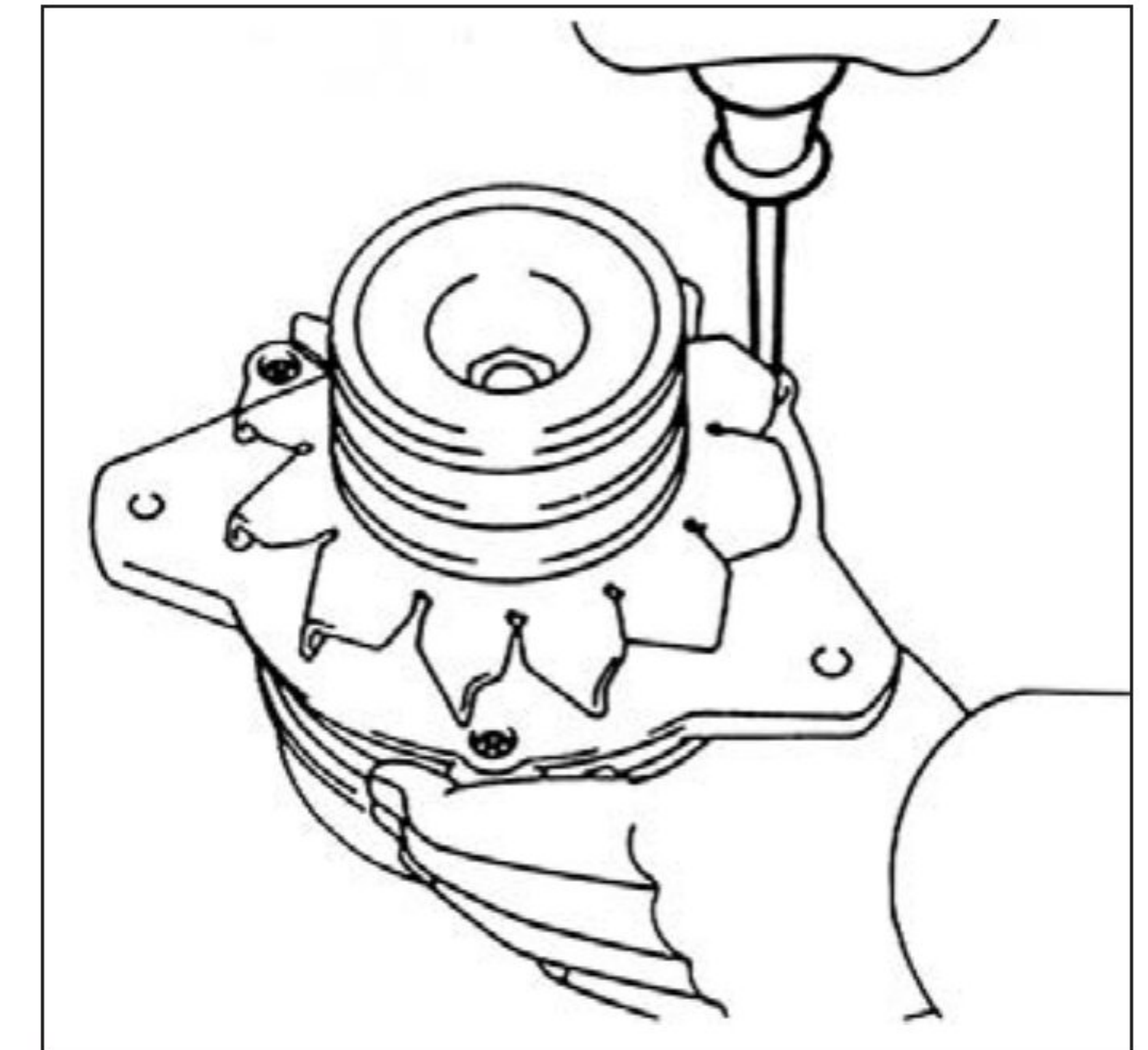
- Bend the rectifier lead wires back to clear the rotor.
- Using a curved tool, push the brushes in as far as they will go and hold them in place by inserting a stiff wire through the access hole in the rectifier end frame.



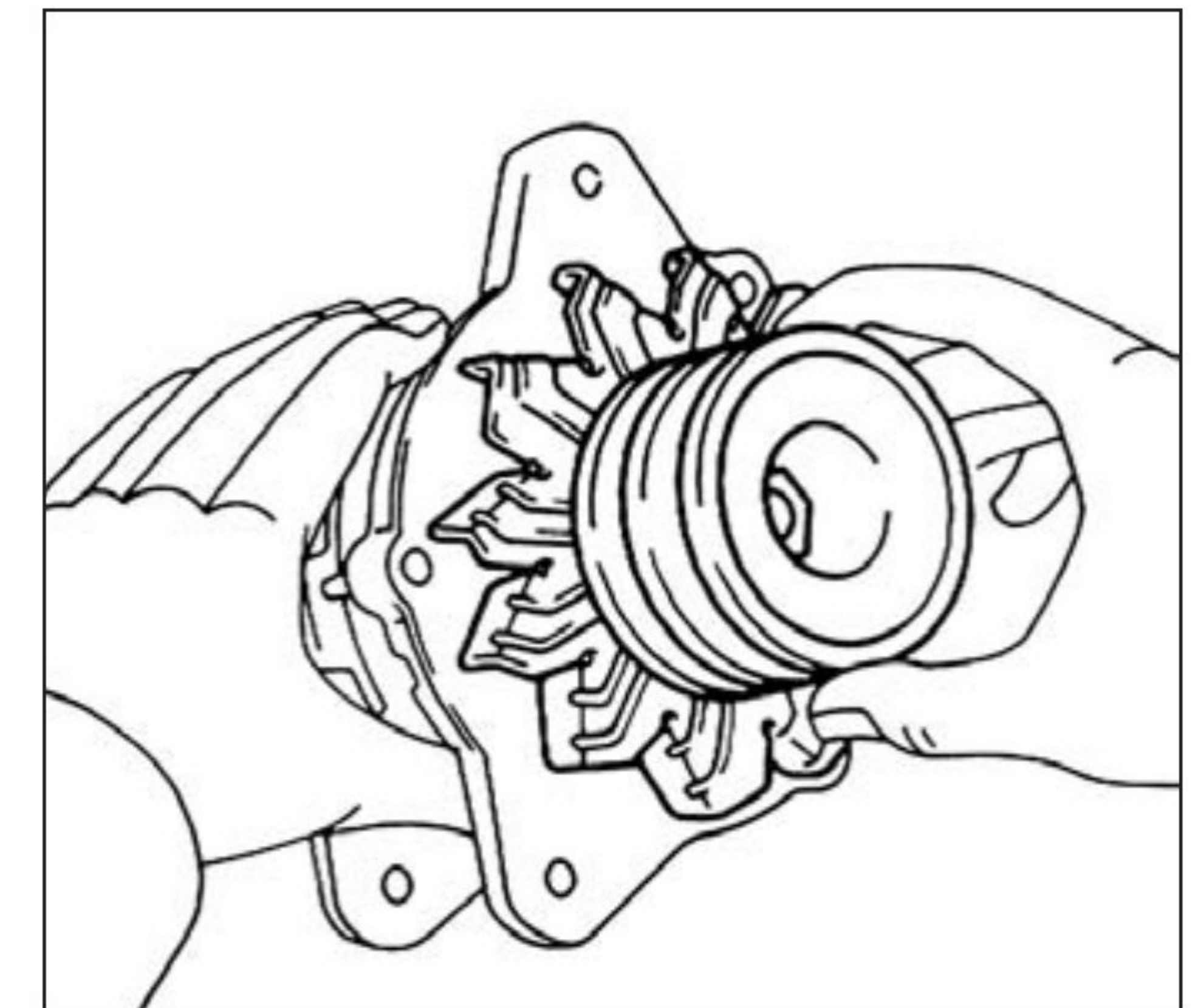
- Assemble the drive end frame and the rectifier end frame by inserting the rear bearing on the rotor shaft into the rectifier end frame.



- Install the three through screws.
- Remove the stiff wire from the access hole. Torque: 60 kg-cm (52 in.-lb., 5.9 N-m).



- Check that the rotor rotates smoothly.
- Seal the access hole.

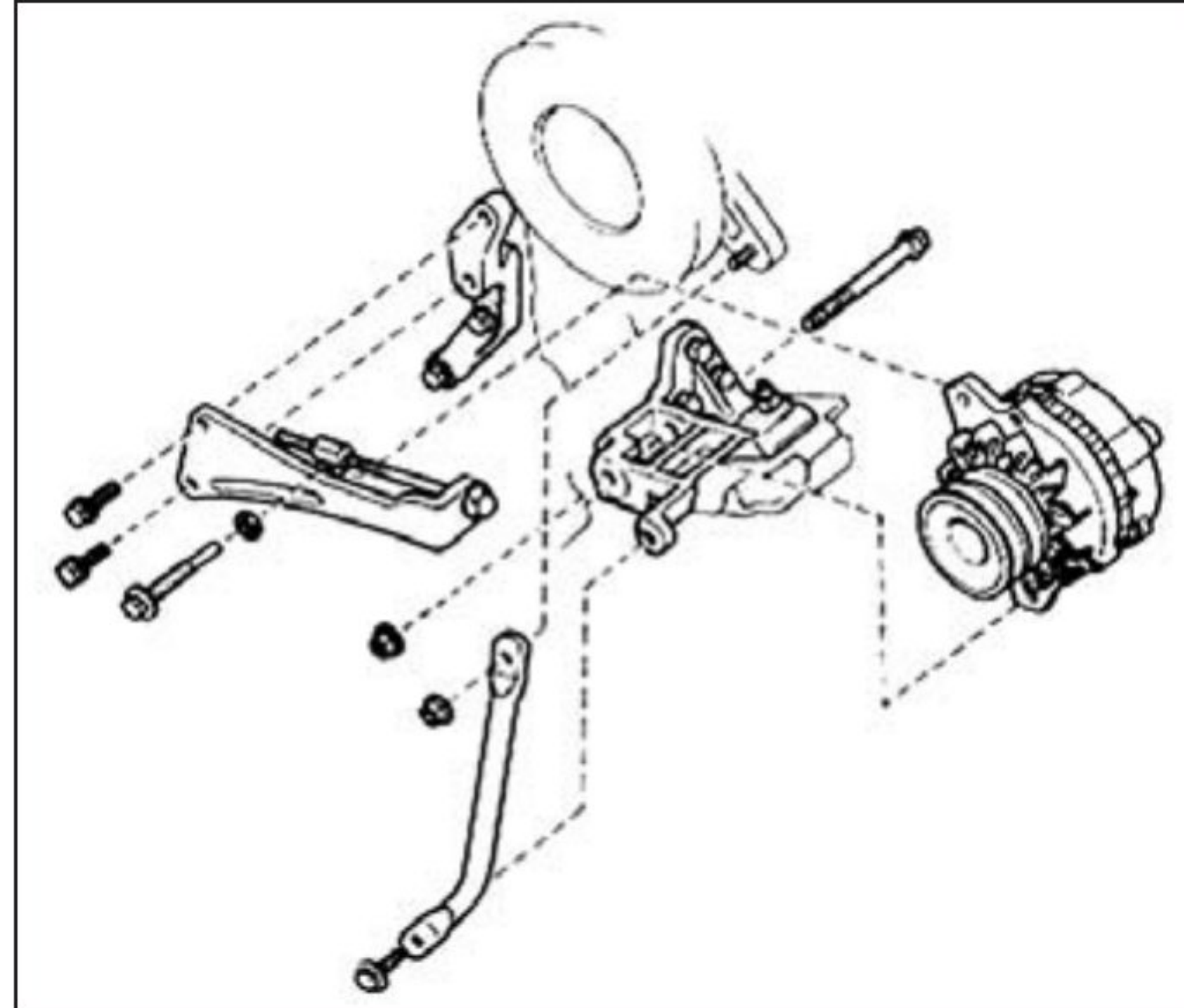


Installation of Alternator

1. Install alternator.

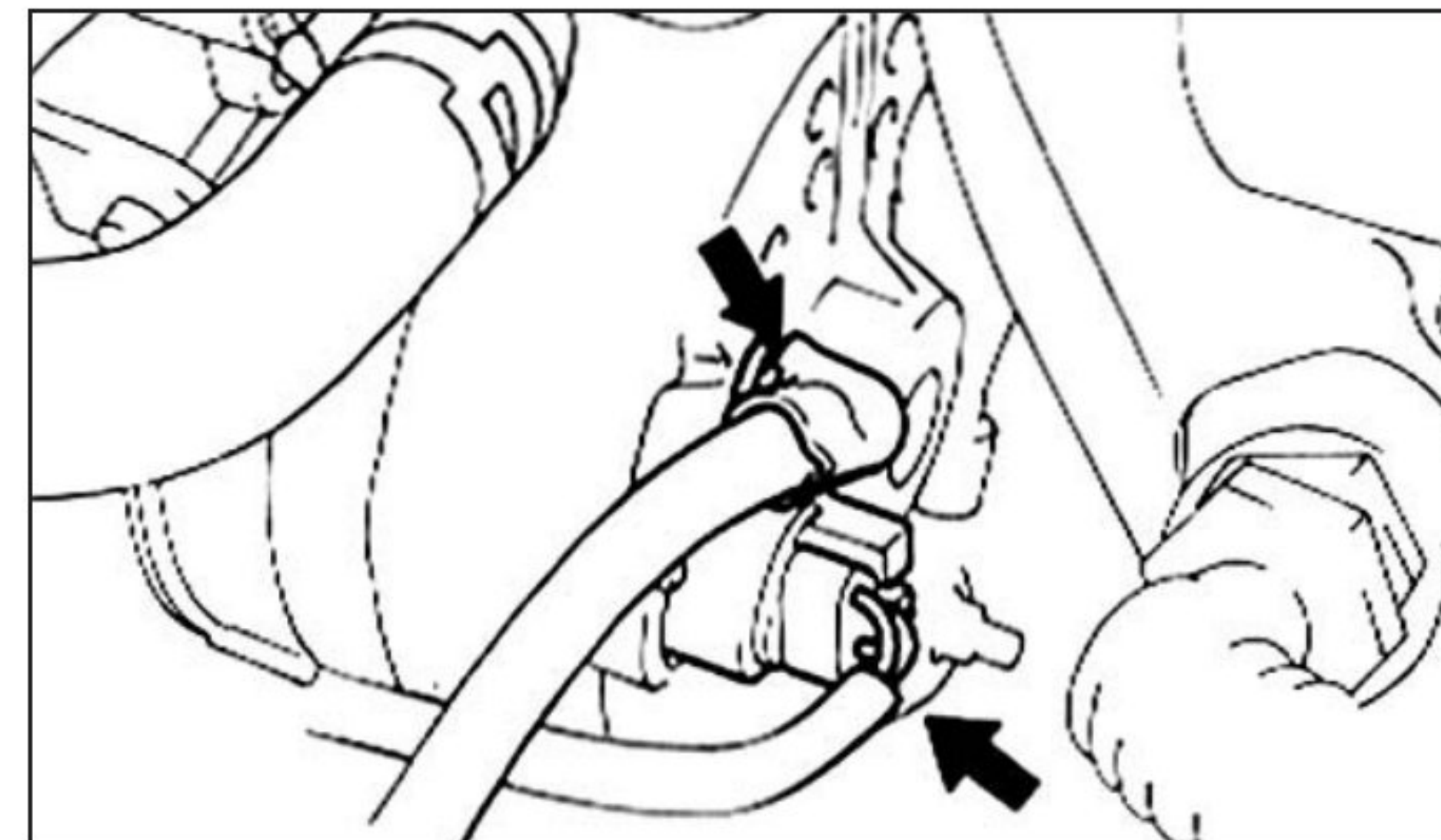
- Mount the alternator on the alternator bracket with pivot bolt and nut. Do not tighten the bolt and nut.
- Install the adjusting bar with the two bolts and adjusting lock bolt. Do not tighten the adjusting lock bolt.

- Install the air pump stay with the bolt and nut.



2. Install drive belts.

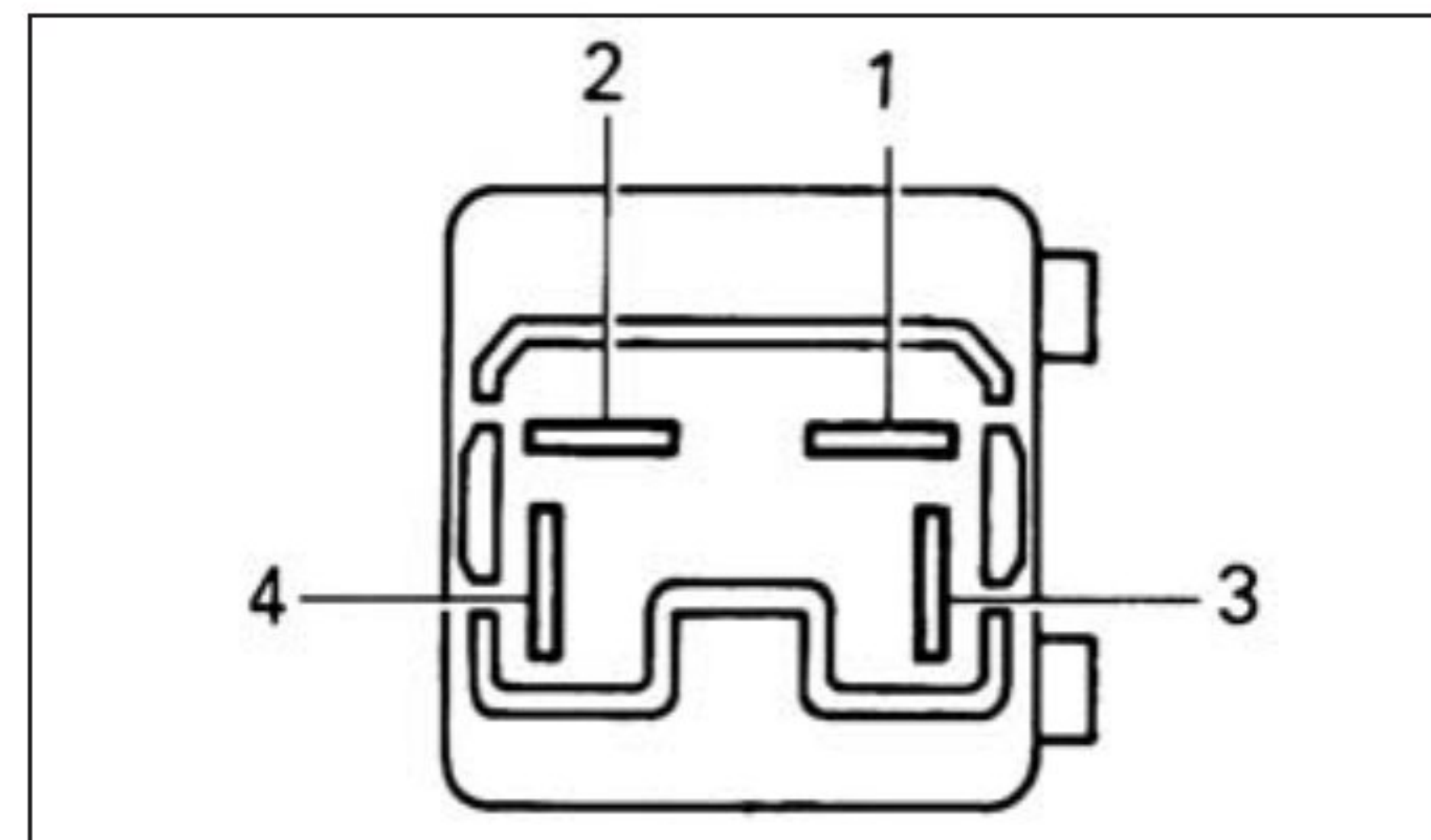
- Install the drive belt.
- Using a belt tension gauge, adjust the belt tension. Drive belt tension: New belt 145 ± 25 lb.; Used belt 100 ± 20 lb.
- Tighten the pivot and adjusting lock bolts.



3. Connect connector and wire to alternator.
4. Connect cable to negative terminals of battery.
5. Perform on-vehicle inspection.

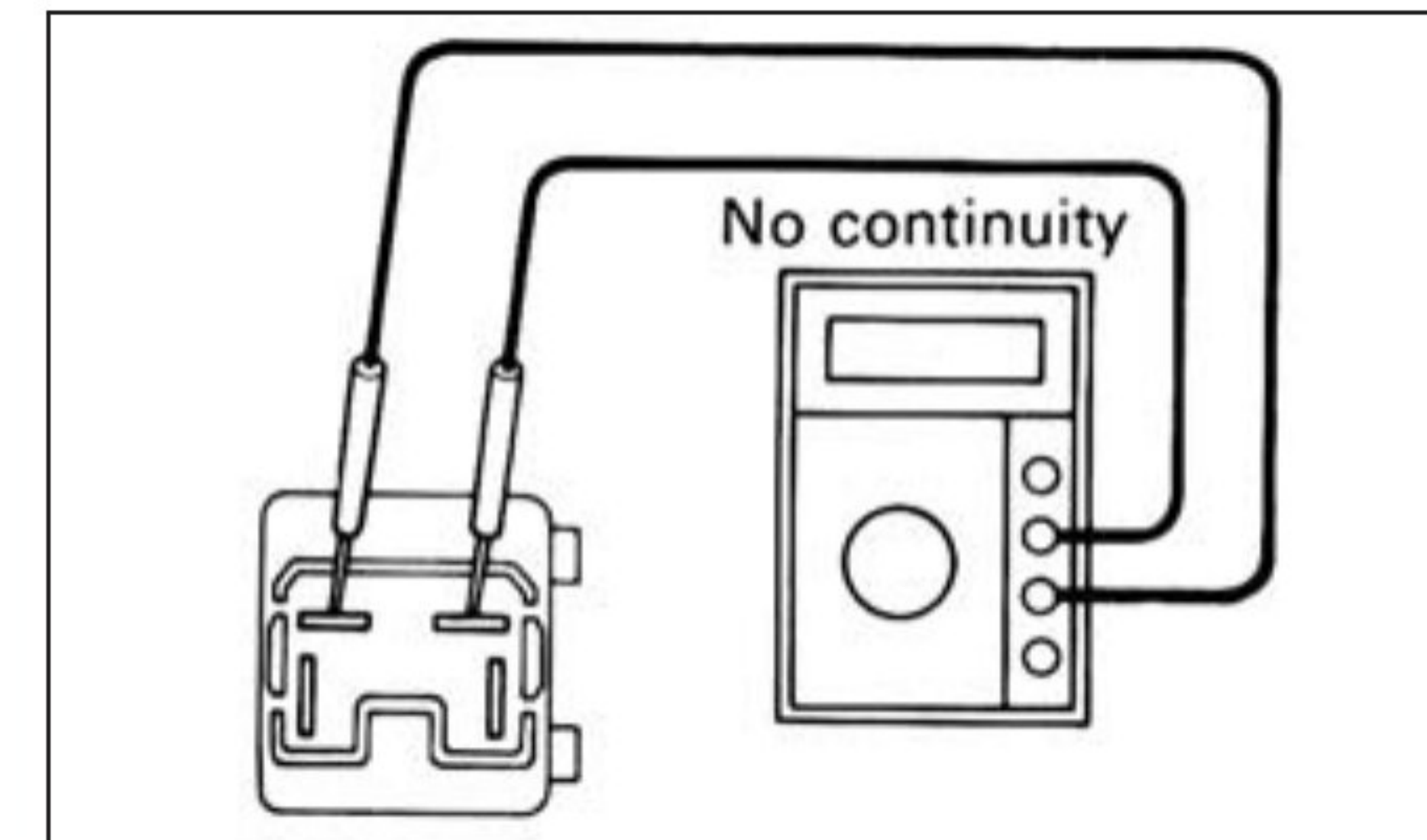
Charge Light Relay

Inspect charge light relay located in the engine room relay block.



1. Inspect relay continuity.

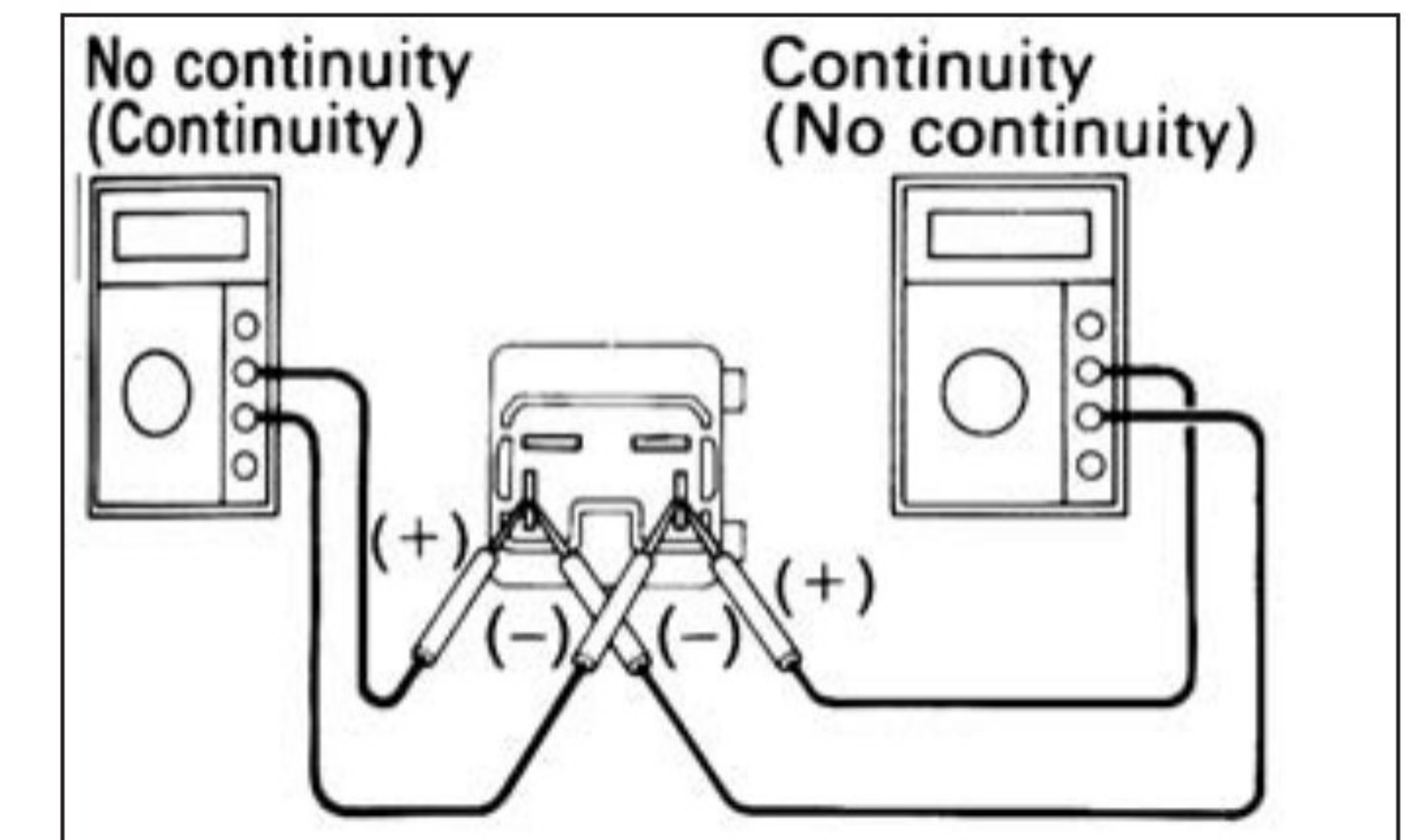
- Using an ohmmeter, check that there is no continuity between terminals 1 and 2.



- Connect the one test probe to terminal 3 and the other to terminal 4.
- Reverse the polarity of test probes, and repeat previous step.
- Check that one shows continuity and other shows no continuity. If continuity is not as specified, replace the relay (above right).

2. Inspect relay operation.

- Connect a positive lead from the battery to terminal 3.



- Connect a negative lead from the battery to terminal 4.
- Using an ohmmeter, check for continuity between terminals 1 and 2. If operation is not as specified, replace the relay.

