

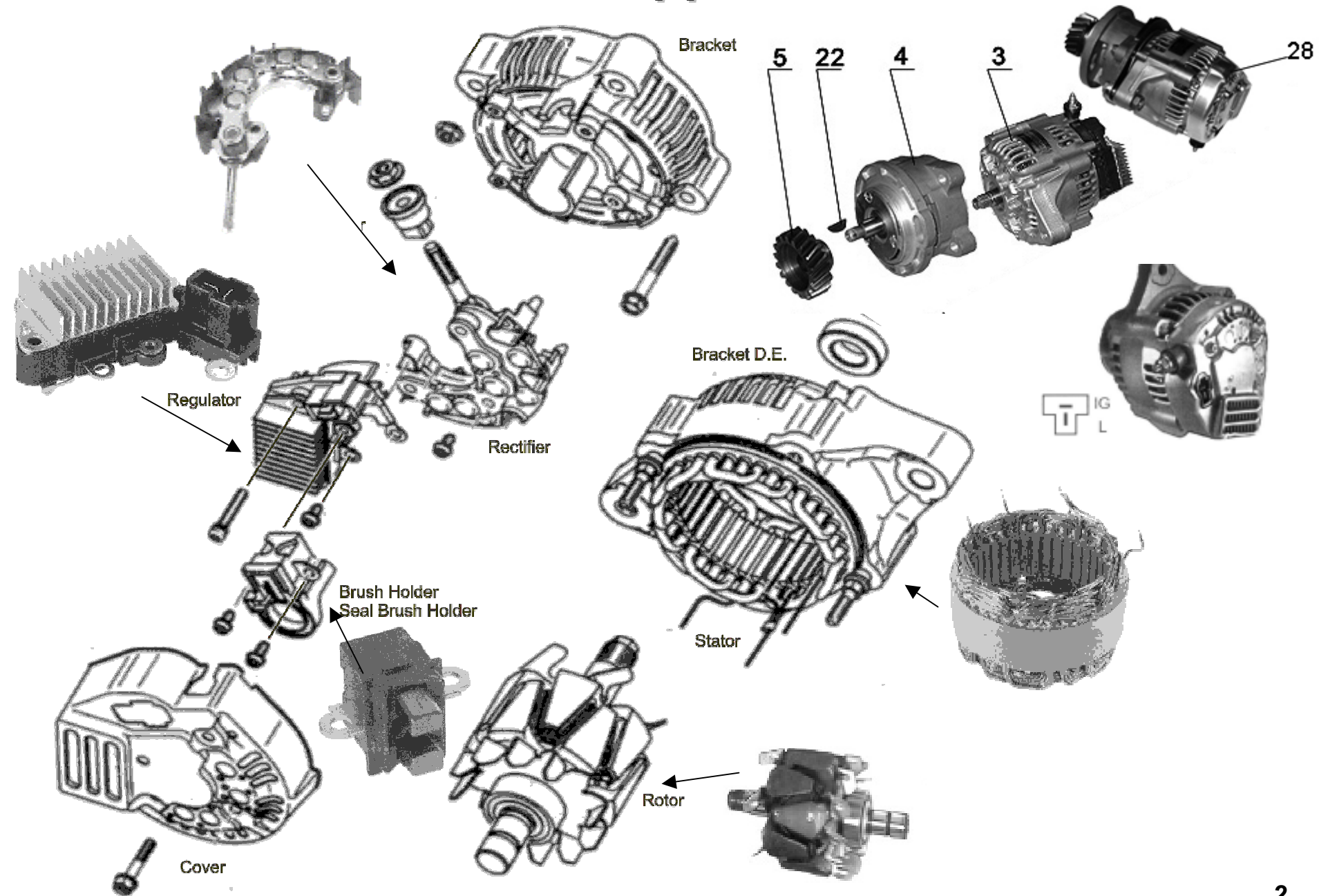


Ural and Dnepr Generators and Alternators Part VI: Repair of Nippon-Denso Alternator

(Translation of <http://www.smug.ru/ural-remont/>)

***Ernie Franke
eafranke@tampabay.rr.com
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Parts Breakdown of Nippon-Denso Alternator

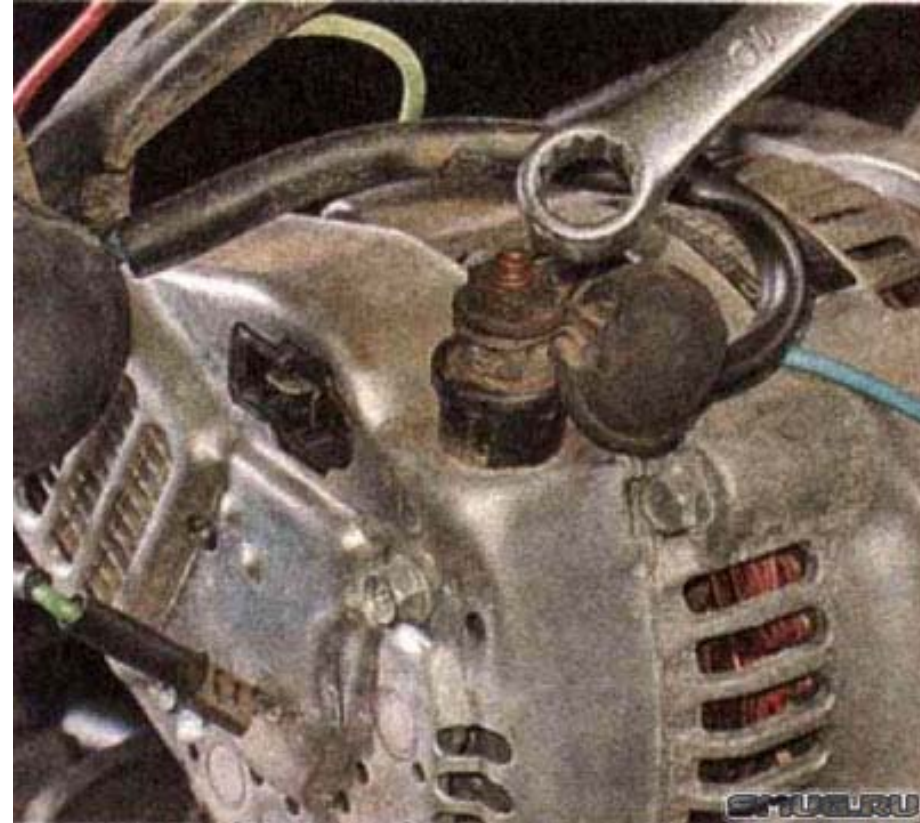


Alternator Removal and Installation

- ***Remove Fuel Tank***
- ***Remove Air Filter***
- ***Disconnect Negative Wire from Battery Terminal***

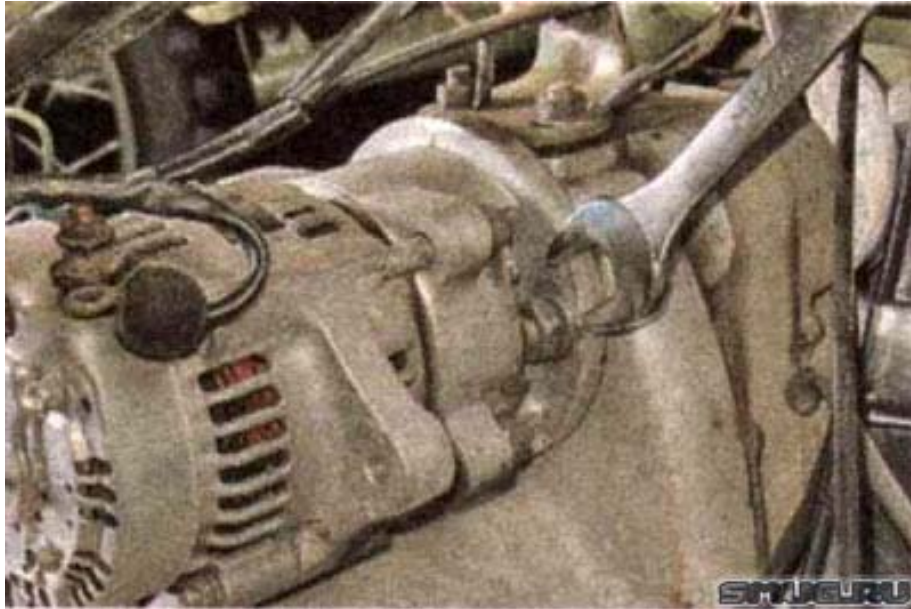


1. Disconnect Two Wires from Terminals on Back Cover of the Alternator.

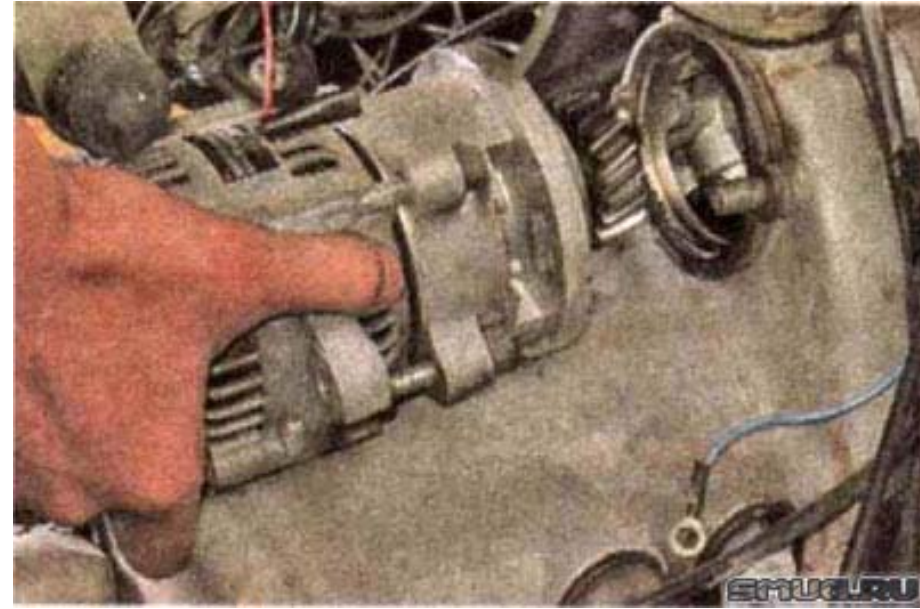


2. Use a 10 mm Box Wrench to Remove Nut from Power Terminals.

Alternator Removal and Installation (cont.)



3. Use 17 mm Open-End Wrench to Loosen Flange Nuts Holding the Alternator to the Crankcase.



4. Extract Alternator Housing

5. Remove Paper Gasket from Alignment Pins. If Gasket Is Torn or Alternator Has Other Mechanical Damage, It Should Be Replaced by a New One. Installation Is Reverse Sequence. Install New Gasket in Place, after Brushing It on Both Sides with Thin Layer of Engine Oil.

Alternator Repair: Diagnostics

- ***Nippon Denso Alternator***
 - ***Integrated Voltage Regulator***
 - ***Installed on Urals from 2004***
 - ***Alternator Is Mounted on Top of the Engine***
 - ***Bevel Drive Gear to Camshaft Gears***
 - ***Alternator Installation Uses a Special Adapter with Damping Elements***
- ***Diagnosis of Integrated Voltage Regulator***
 - ***Requires a Multi-Meter***
 - ***1. Check the Electrolyte Level and Degree of Battery Charge***
 - ***Top-Up with Distilled Water and Charging the Battery***
 - ***2. Run the Engine Throttle Control Speed to 3,500-4,000 rpm***
 - ***Turn Off All Electrical Devices, Except for the Ignition System***
 - ***3. Measure the Voltage at the Battery Terminals***
 - ***With Proper Voltage Regulator should be 13.9 - 14.5 Volts***

Diagnosis of Alternator



1. Remove the Alternator from the Motorcycle
2. Remove the Back Cover of the Alternator, Brush Assembly with the Voltage Regulator and Rectifier Unit.
3. Check the Rotor Windings: Applying the Ohmmeter Leads to the Slip Rings of the Rotor and Check the Field Winding for an Open-Circuit. Serviceable Winding Resistance Should be 3 to 10 Ohms.

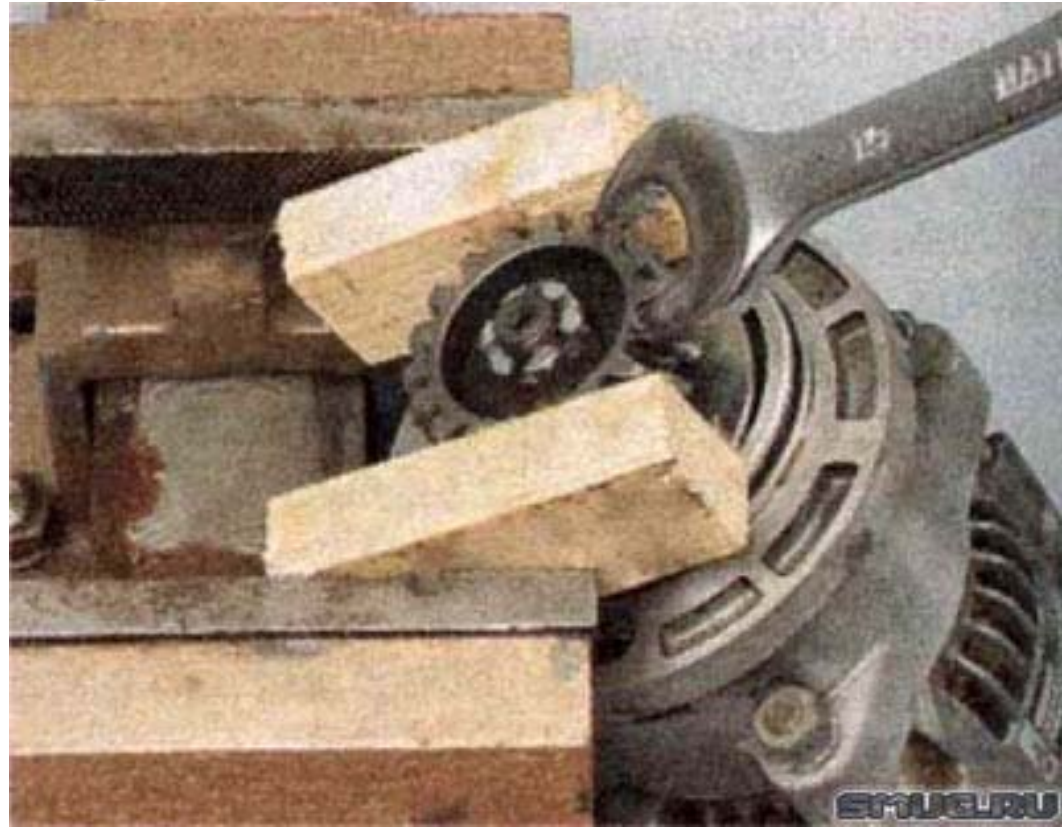
4. Rotate the Stator Winding: Alternately Connect Ohmmeter Leads to the Ends of the Stator Winding. The Ohmmeter Should Show a Small Electrical Resistance (10 Ohms).

Diagnosis of Alternator (cont.)



5. Check the Stator Winding of the Alternator Housing by Connecting the Ohmmeter Leads to the Ends of the Stator Winding and the Body of the Alternator. If the Stator Is Indeed Isolated from the Chassis, the Ohmmeter Will Show Infinite Electrical Resistance.
6. Checking the Rectifier Unit of the Alternator Is Rather Difficult, as All the Diodes Have a Special Thermal Compound. In Case of Suspicion of the Rectifier, the Entire Rectifier Unit Must Be Replaced.

Disassembly of Alternator

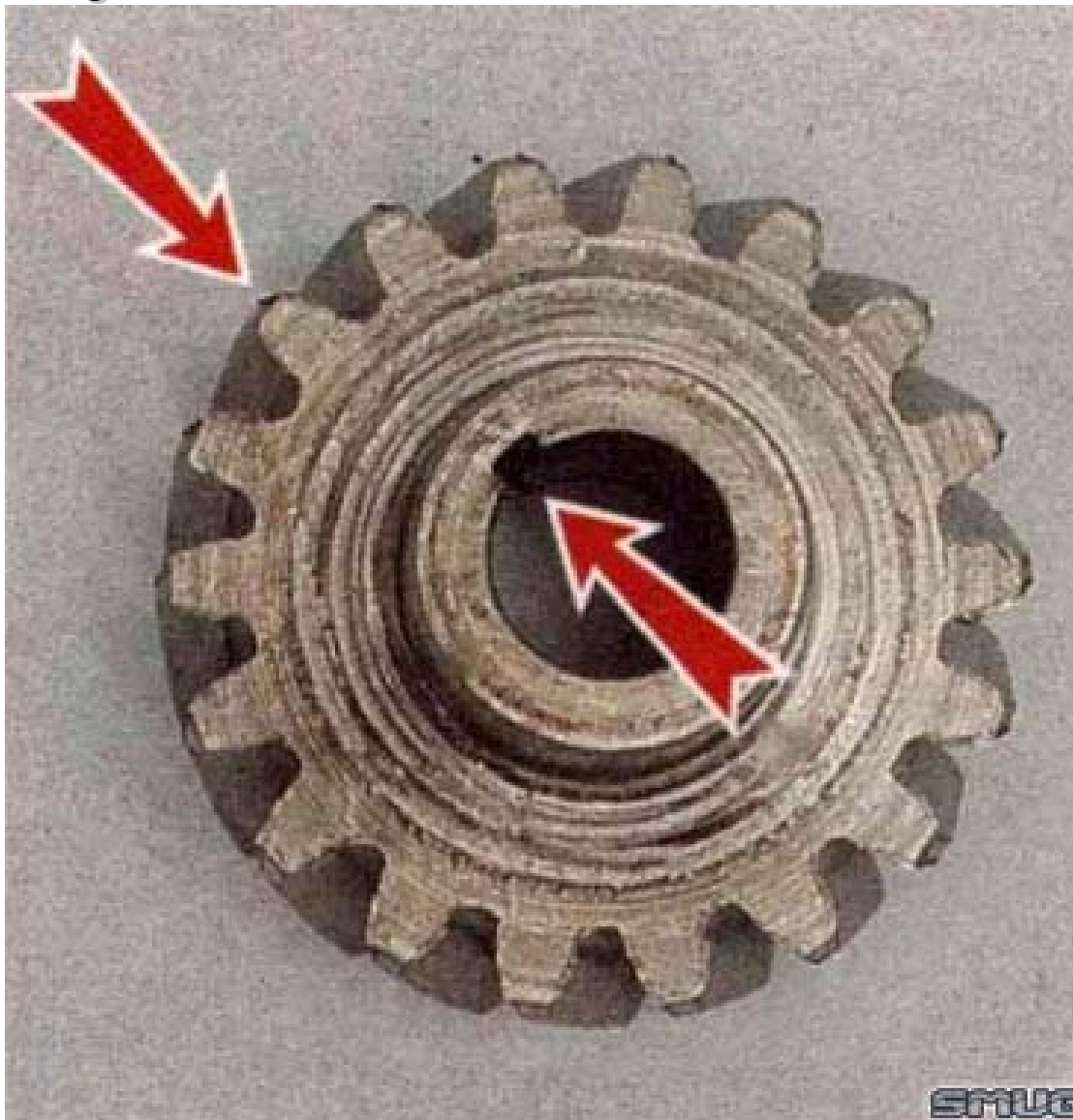


Complete Disassembly and Repair of the Alternator Is Recommended by a Specialist Workshop. Before Removing the Alternator, Conduct Diagnostics with the "Negative" Battery Terminal Disconnected. Do Not Operate the Alternator with the Battery Disconnected. This Will Cause the Occurrence of Voltage Spikes That can Damage the Voltage Regulator and Other External Electrical Devices. Do Not Short-Circuit the Alternator and Regulator Connections.

1 . Using Pliers, Remove the Pin Drive Gear Nut .

2. Fix the Alternator Gear in the Grip from Rotating (must use wooden blocks to avoid damaging the gear teeth). Use a 19 mm Wrench to Remove the Nut.

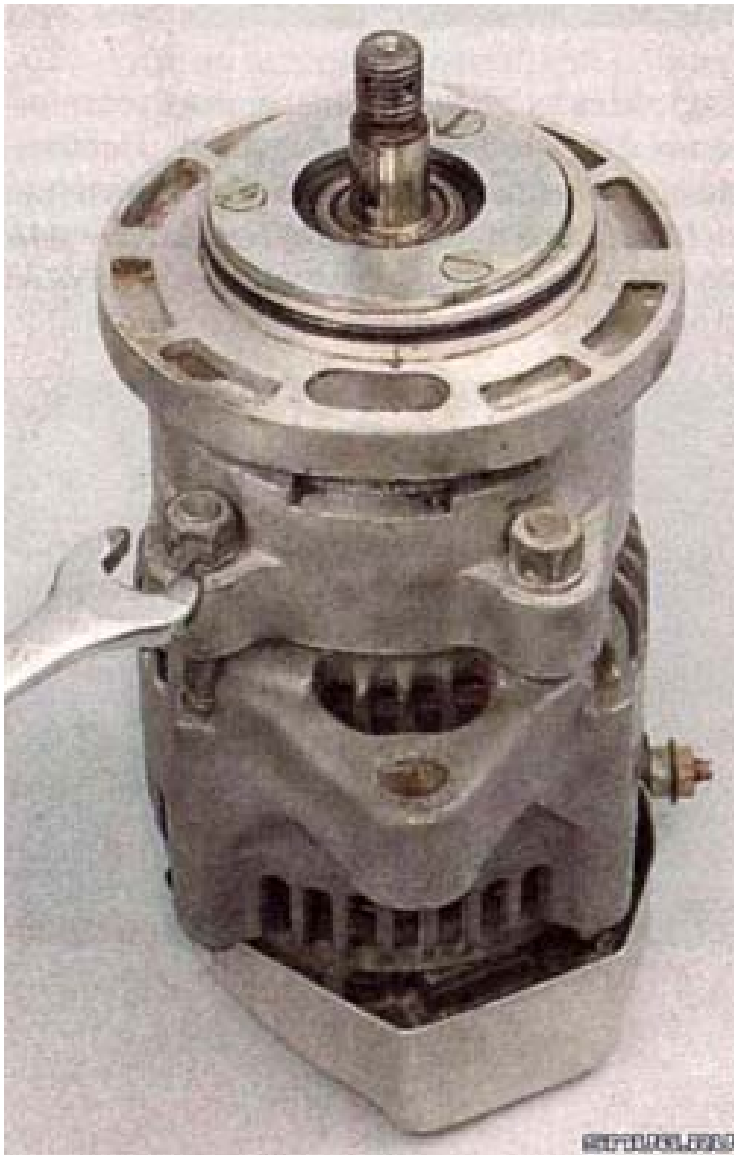
Disassembly of Alternator (cont.)



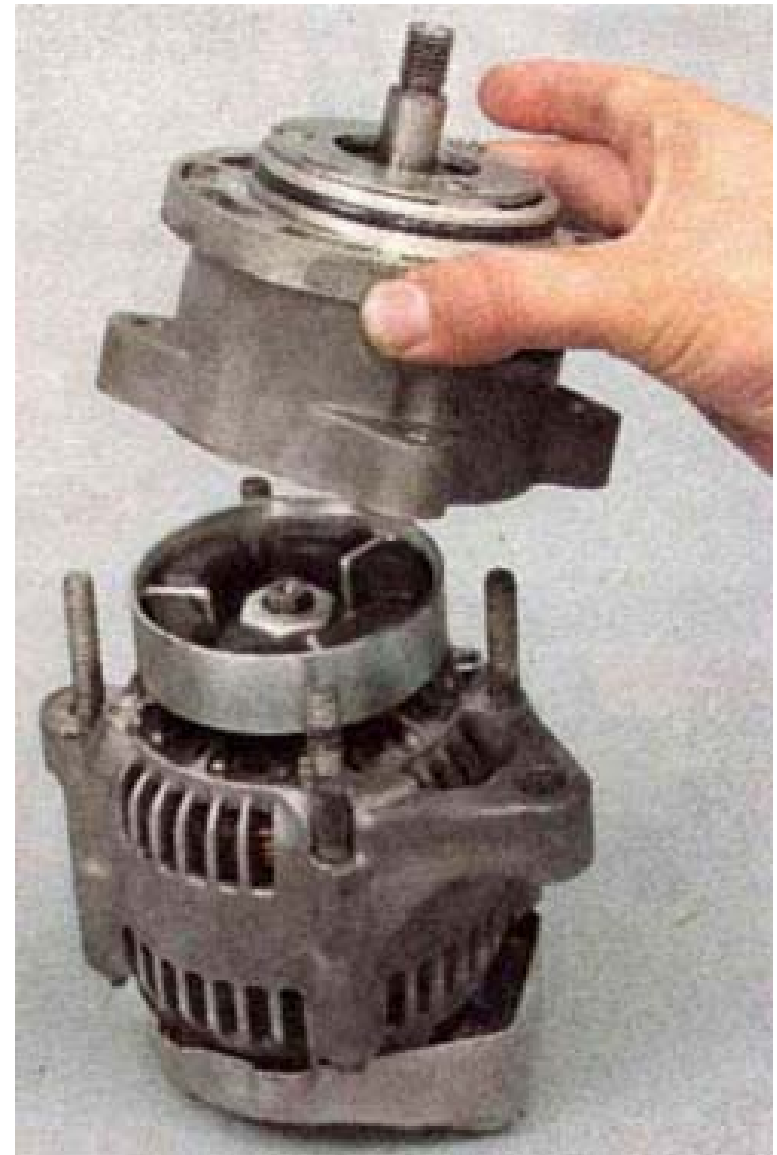
3. Using a Pully-Puller, Remove the Gear Compressed on the Alternator Shaft.

4. Carefully Inspect the Gear for Damaged Teeth and Keyway. If Damaged, Gear Must Be Replaced.

Disassembly of Alternator (cont.)



5. Use a 12 mm Open-End Wrench to Remove the Four Stud Nuts of the Adapter.



6. Unscrewing the Nuts and Removing the Spring Washers from the Bolts, Disconnect the Adapter from the Alternator.

Disassembly of Alternator (cont.)



7. Loosen the Three Screws Securing the Plate (recommended to use an impact screwdriver) and Remove the Plate Covering the Bearing Adapter.



8. To Install the Adapter Using a Vise, Lightly Hammer Blows Using a Drift of Soft Metal on the Extruded Shaft.

Disassembly of Alternator (cont.)



9. Inspect the Shaft Adapter and Bearing Seats for Damage. The Shaft Must Be Free of Discoloration and Deformation of the Keyway.



10. Using a Tall 17 mm Ratchet Socket and a Hammer, Tap with Light Blows to Remove the Bearing Pressed with a Support Ring.

Disassembly of Alternator (cont.)



11. A Steel Support Ring Is Installed between the Shaft Bearings. Check the Bearings for Longitudinal and Transverse Backlash. They Must Rotate Evenly, without Noise and jamming.



12. Use a 27 mm Ratchet Socket For Removing the Radial Shaft Adapter.

Disassembly of Alternator (cont.)



13. Using a Flat-Blade Screwdriver, Remove the Rubber Damping Elements, from the Cage Adapter. Damper Elements Should Not Have Bubbles, Cracks or Other Damage.



14. Use a Phillips Screwdriver to Remove Three Bolts of the Voltage Regulator Cover (behind the alternator).

Disassembly of Alternator (cont.)

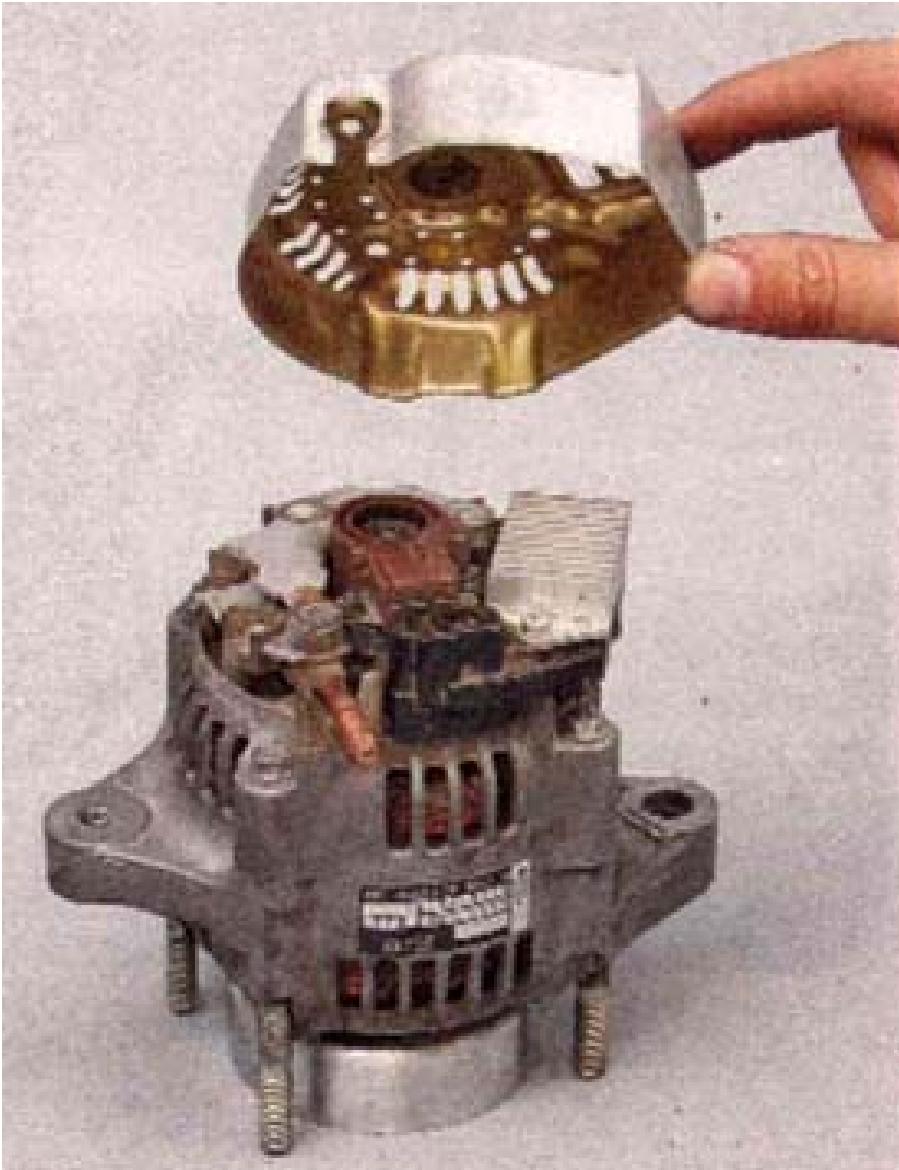


15. Using a 10 mm Open-End Wrench, Loosen Two Nuts on the Positive Terminal of the Alternator.

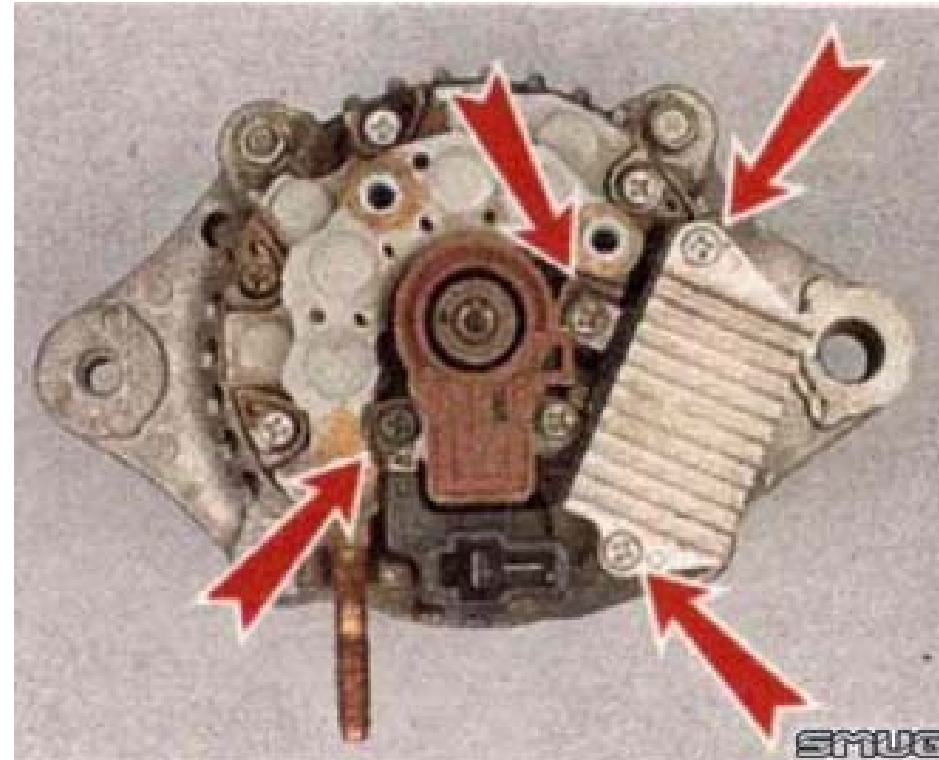


16. Remove the Plastic Grommet from the Body.

Disassembly of Alternator (cont.)

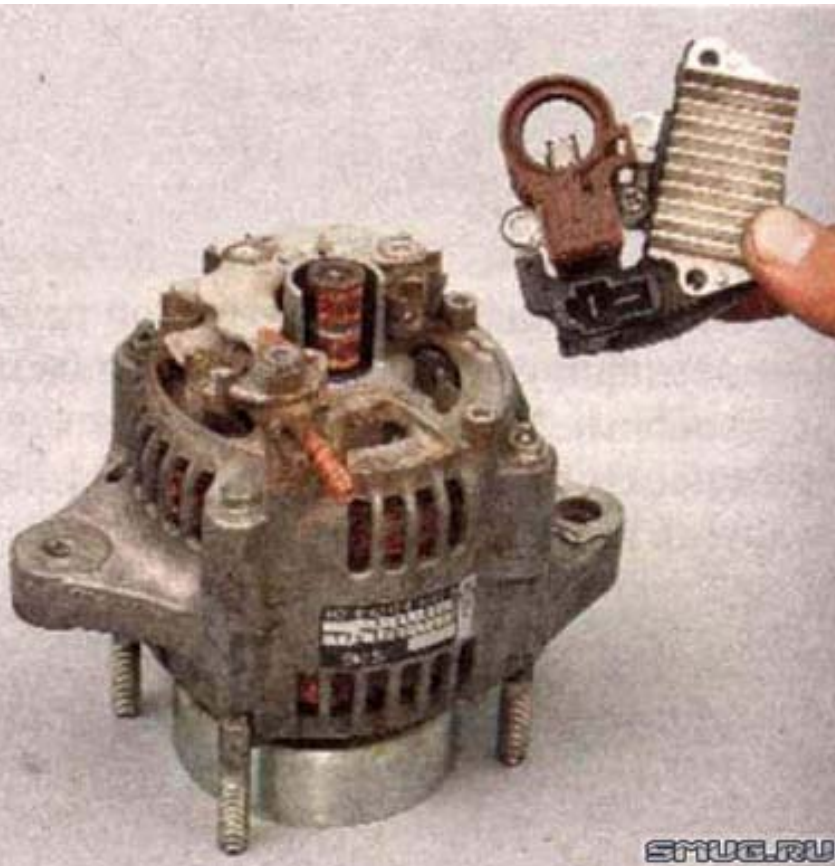


17. Remove the Cover of the Voltage Regulator.



18. To Remove the Voltage Regulator, Unscrew the Four Phillips Screws Holding It.

Disassembly of Alternator (cont.)

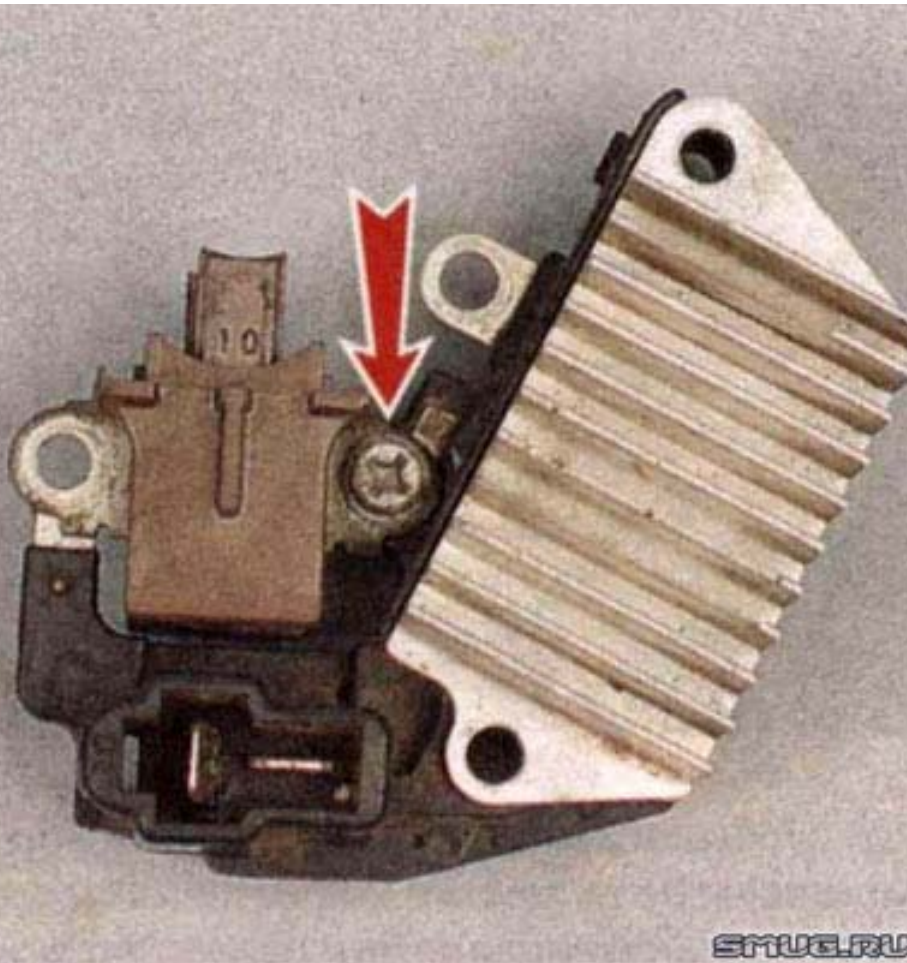


19. Remove the Voltage Regulator Assembly with Brush Assembly. Located on the Controller Block with Two terminals: Ig (ignition) and L (lamp). Block Must Be Cleaned of Contaminants.

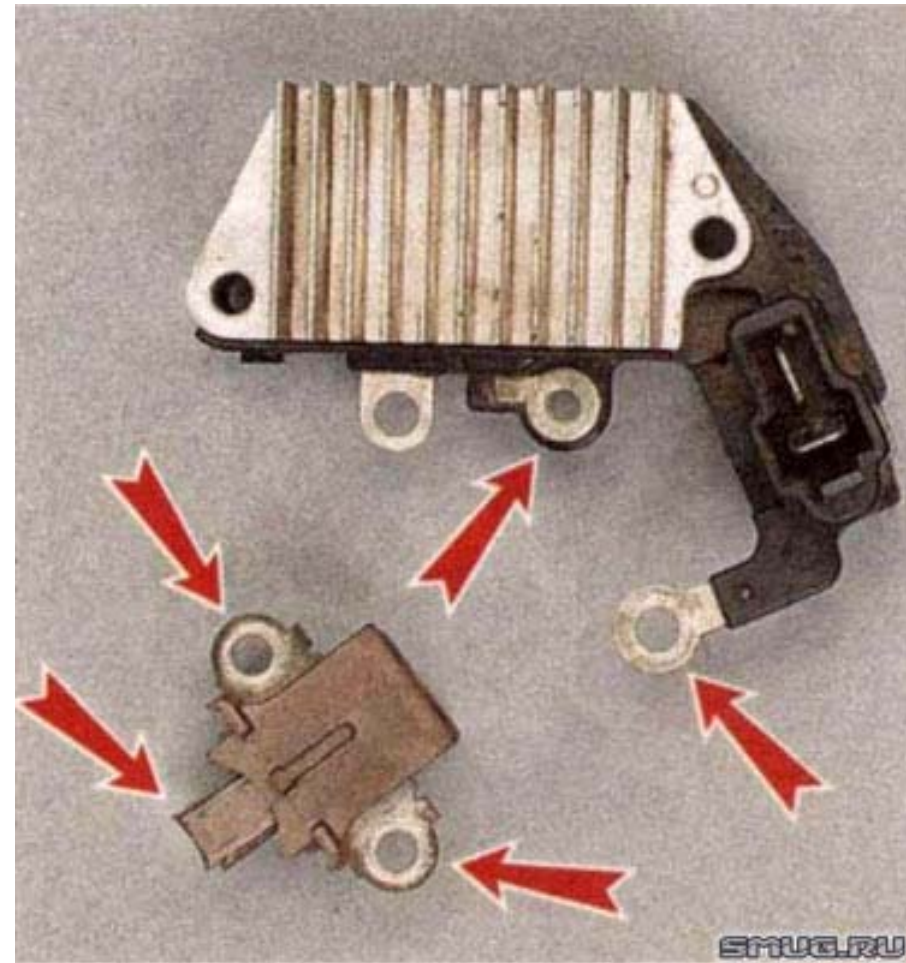


20. Before Removing the Brush Assembly, Remove the Rubber Boot.

Disassembly of Alternator (cont.)

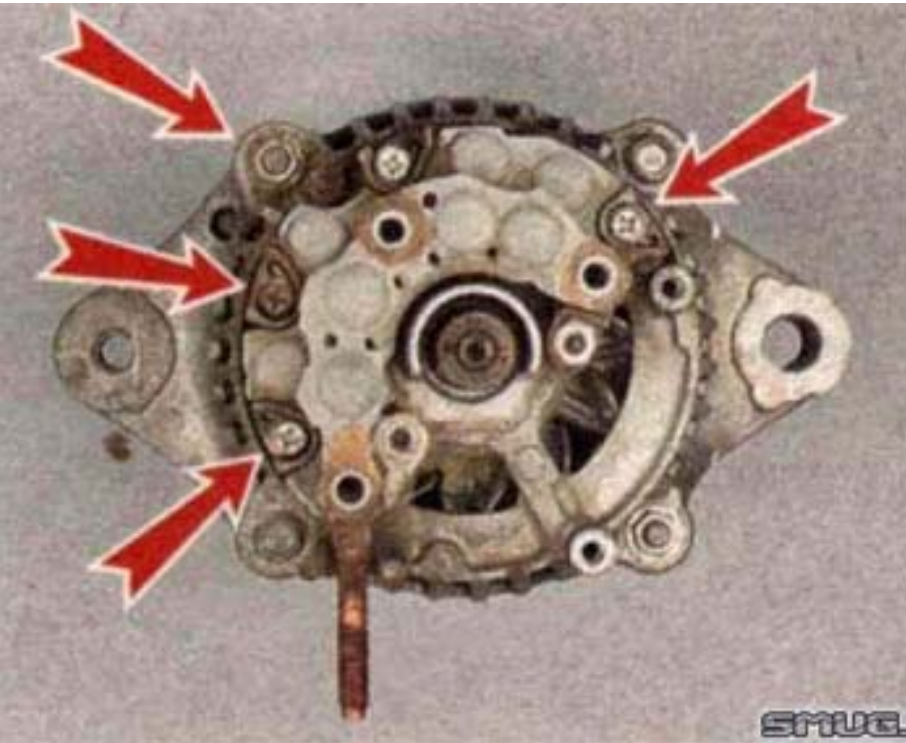


21. Use a Phillips Screwdriver to Remove the Brush Assembly with Voltage Regulator.



22. If Necessary, Clean the Brushes of Wear Debris and Dust. May Also Need to Clean the Brush Assembly Terminals and the Voltage Regulator from the Oxides Occurring during Operation. Remove Debris between Contact Rings. The Brushes Should Click Back in the Grooves Under Spring-Loading. Protrusion Brush in a Free State to Be Not Less than 5 mm, Otherwise It Is Necessary to Replace the Brush Assembly.

Disassembly of Alternator (cont.)



23. A Phillips Screwdriver Is Used to Remove the Rectifier Unit. Four Screws Hold It to the Alternator Frame.

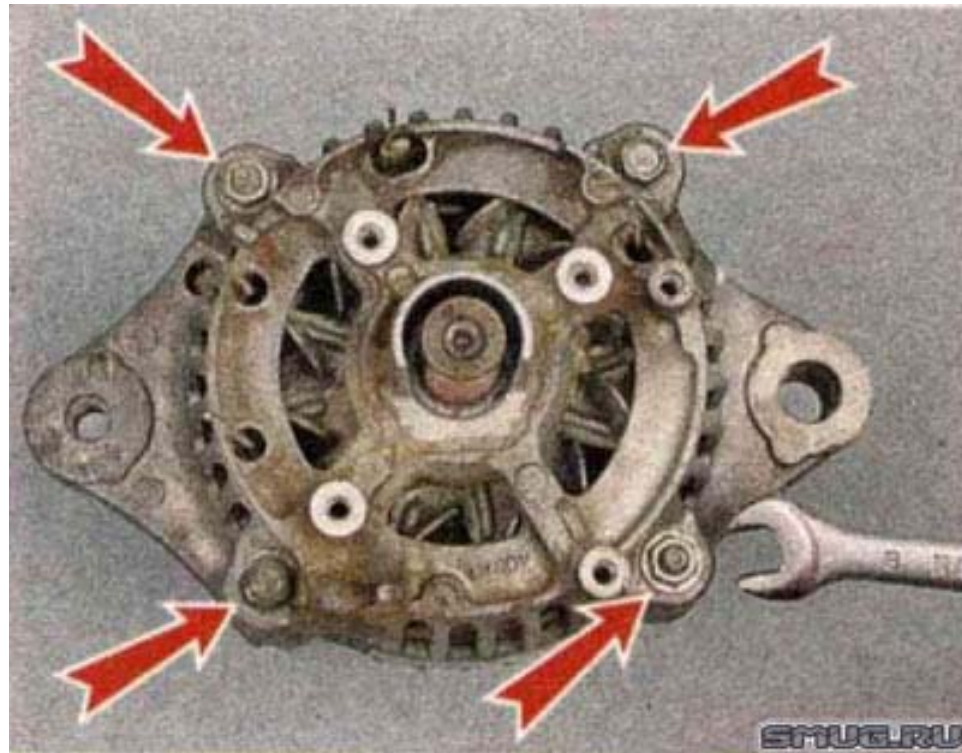


24. Access to the Ends of the Alternator Windings Under the Screw Heads Is Accomplished by Removing the Screws. Use Pliers to Straighten Them. This Must Be Done Very Carefully, So As Not to Damage the Ends.

Disassembly of Alternator (cont.)

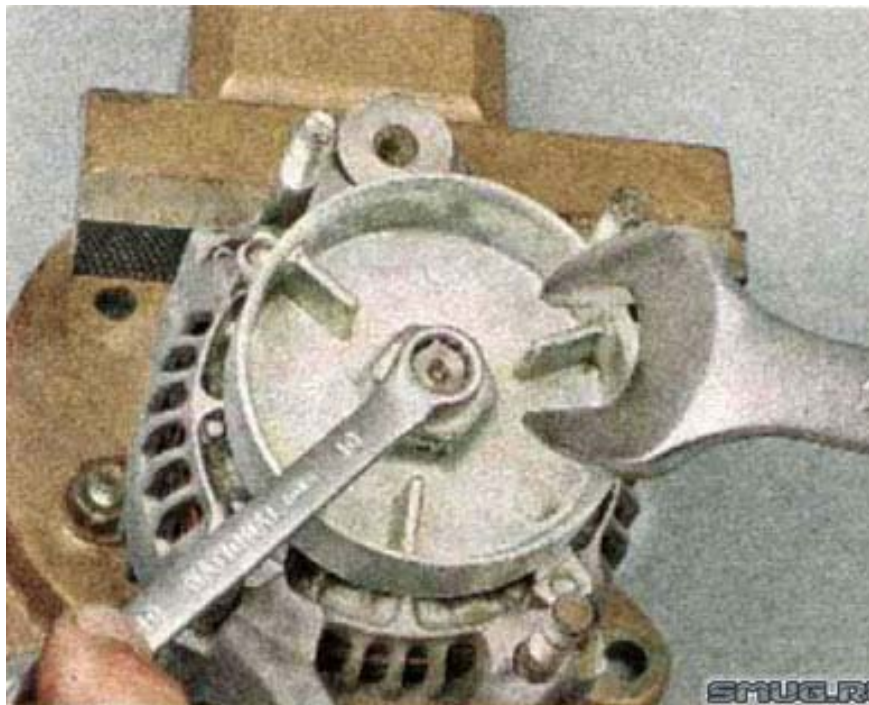


25. Remove the Rectifier Unit.



26. Use Open-End Wrench to Remove Two 8 mm Nuts and Bolts, tightening generator housing.

Disassembly of Alternator (cont.)

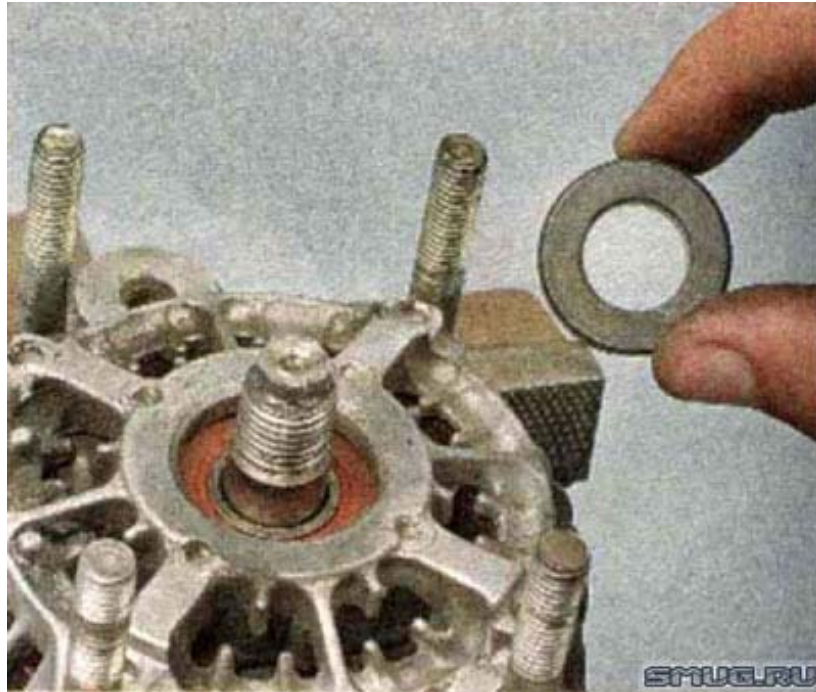


27. Hold the Alternator Shaft from Rotating with a 10 mm Wrench. A 22 mm Wrench Is Used to Loosen the Clip Damper.

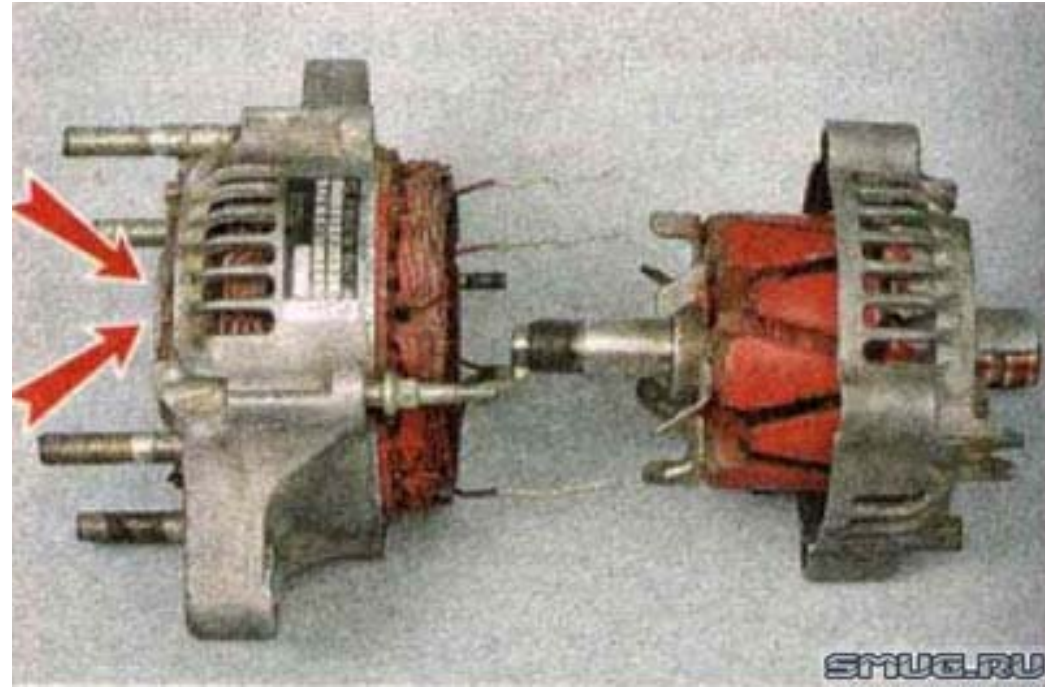


28. Remove the Clip Damper, Underneath Which Is a Remote Bushing.

Disassembly of Alternator (cont.)

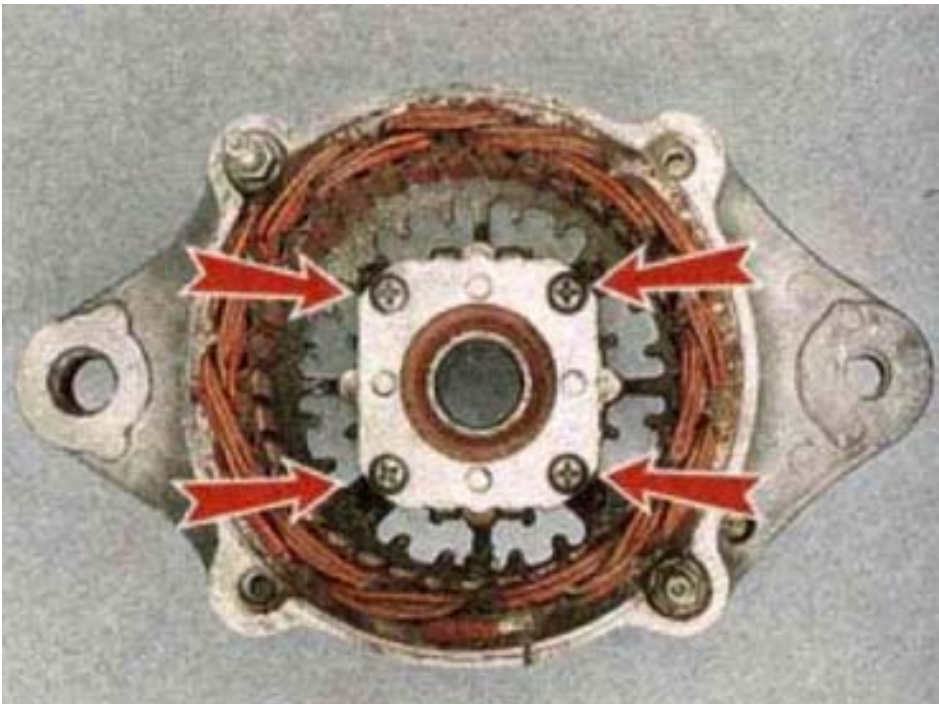


29. Remove the Spacer Sleeve from the Shaft.

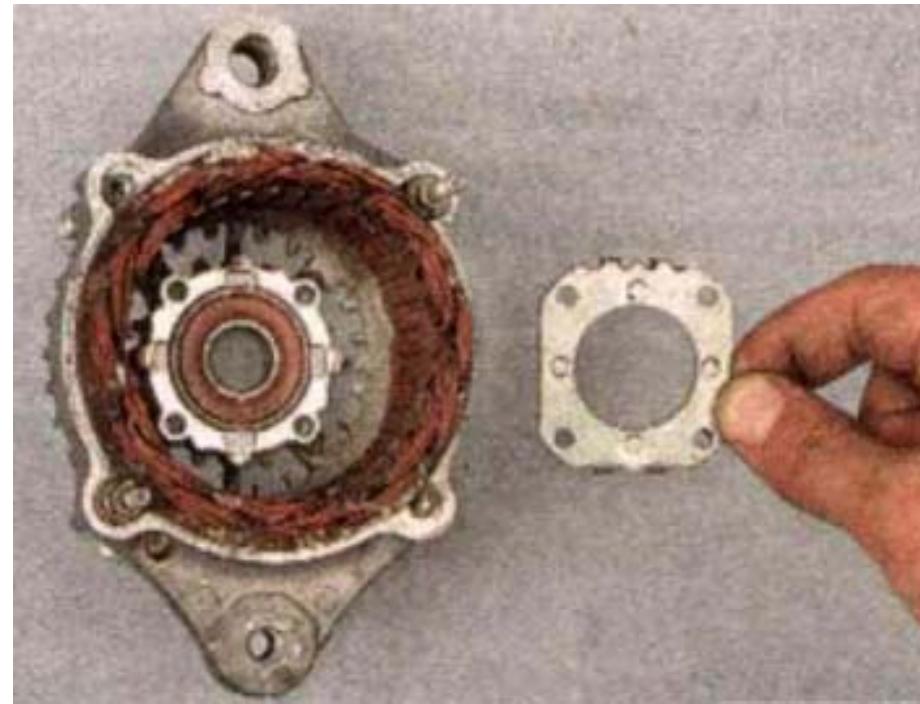


30. Remove the Alternator Cover and Press Out the Rotor.

Disassembly of Alternator (cont.)



31. Loose the Four Screws in the Plate Covering the Front Bearing.



32. Remove the Plate. Also Check the Condition of the Stator Winding Wires. They Should Not Show Any Damage.

Disassembly of Alternator (cont.)



33. A 19 mm Ratchet Socket or Mandrel Is Used to Extract the Front Bearing.



34. Check the Condition of the Rear Bearing, Its Rotation Should Be Smooth, Without Play, with Negligible High-Speed Rotational Noise. If Needed, Use a Standard Pulley-Puller to Remove the Defective Bearing from the Shaft and Replace It.

Assembly:

Alternator Assembly Is in Reverse Order After Cleaning All Parts of the Alternator from Dirt and Wear. Bearings Press-Fit onto the Shaft Using Mandrels or Ratchet Sockets, Coinciding with the Diameter of the Inner Bearing Ring. Bearing Seats in the Cover of the Alternator Should Not Be Deformed. When Assembling, Thread-Lock Must Be Applied to All the Bolts to Prevent Loosening under Vibration. Nut Tightening Levels for a Torque Wrench Are 14-15 Nm, Damper Cage: 40-50 Nm, Castellated Nut Gear: 50-60 Nm.