AUTOMOTIVE Youth Educational Systems YES
The Passport to a Rewarding Automotive Career

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# Modern Automotive Technology Chapter 34

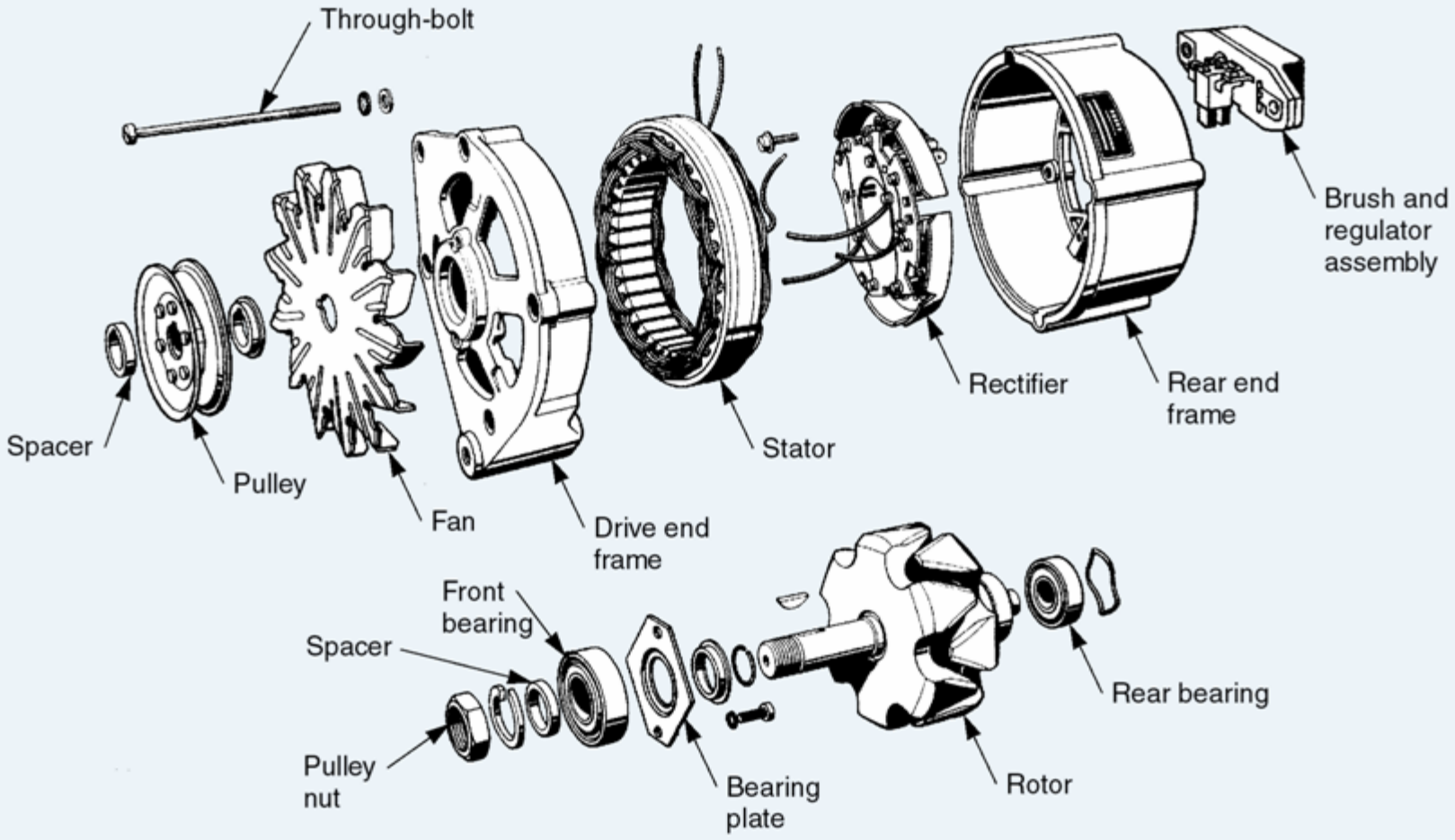
## Charging System Diagnosis, Testing, and Repair

North Montco Technical Career Center

# Learning Objectives

- Diagnose charging system troubles.
- Inspect a charging system.
- Test charging system output with a voltmeter or a load tester.
- Remove, test, repair, and replace an alternator.
- Adjust an alternator belt.
- Remove and replace a voltage regulator.
- Describe safety practices to follow when testing or repairing a charging system.

# Alternator Assembly



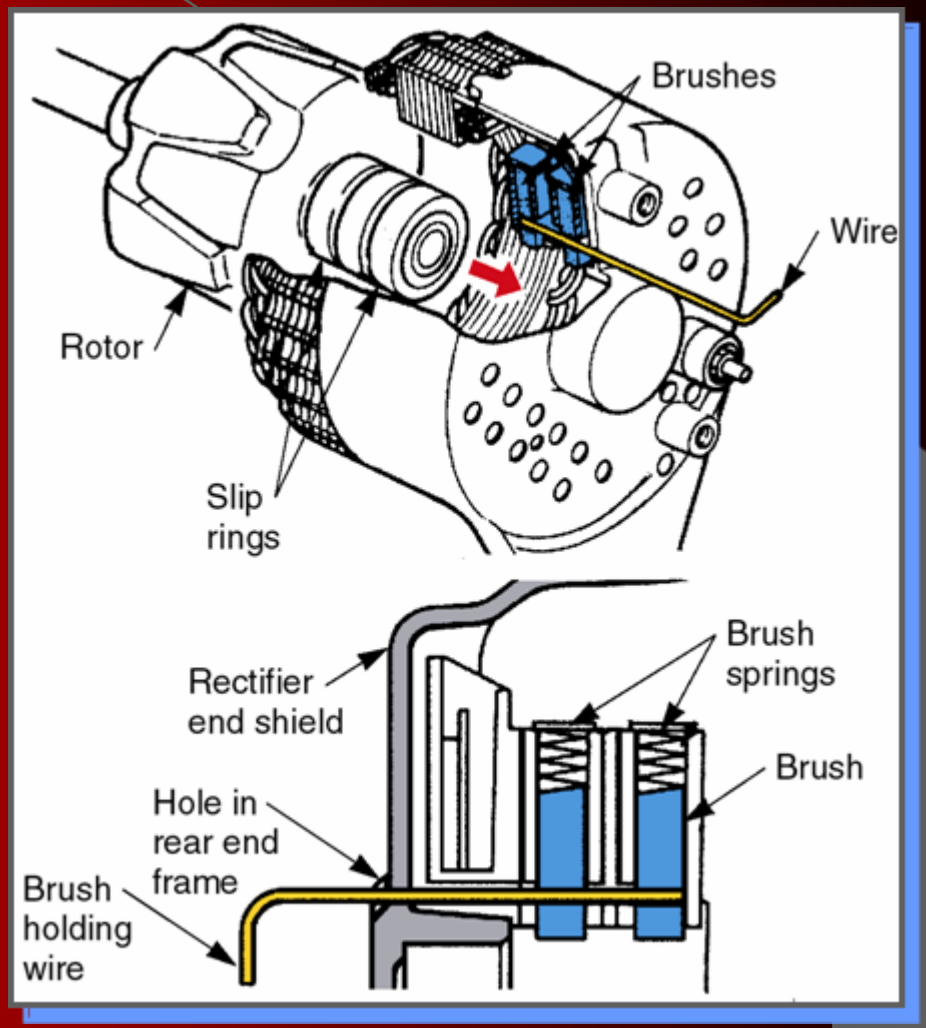
# Chapter 34

1. WORN BRUSHES cause reduced spring tension and brush pressure on the slip rings.

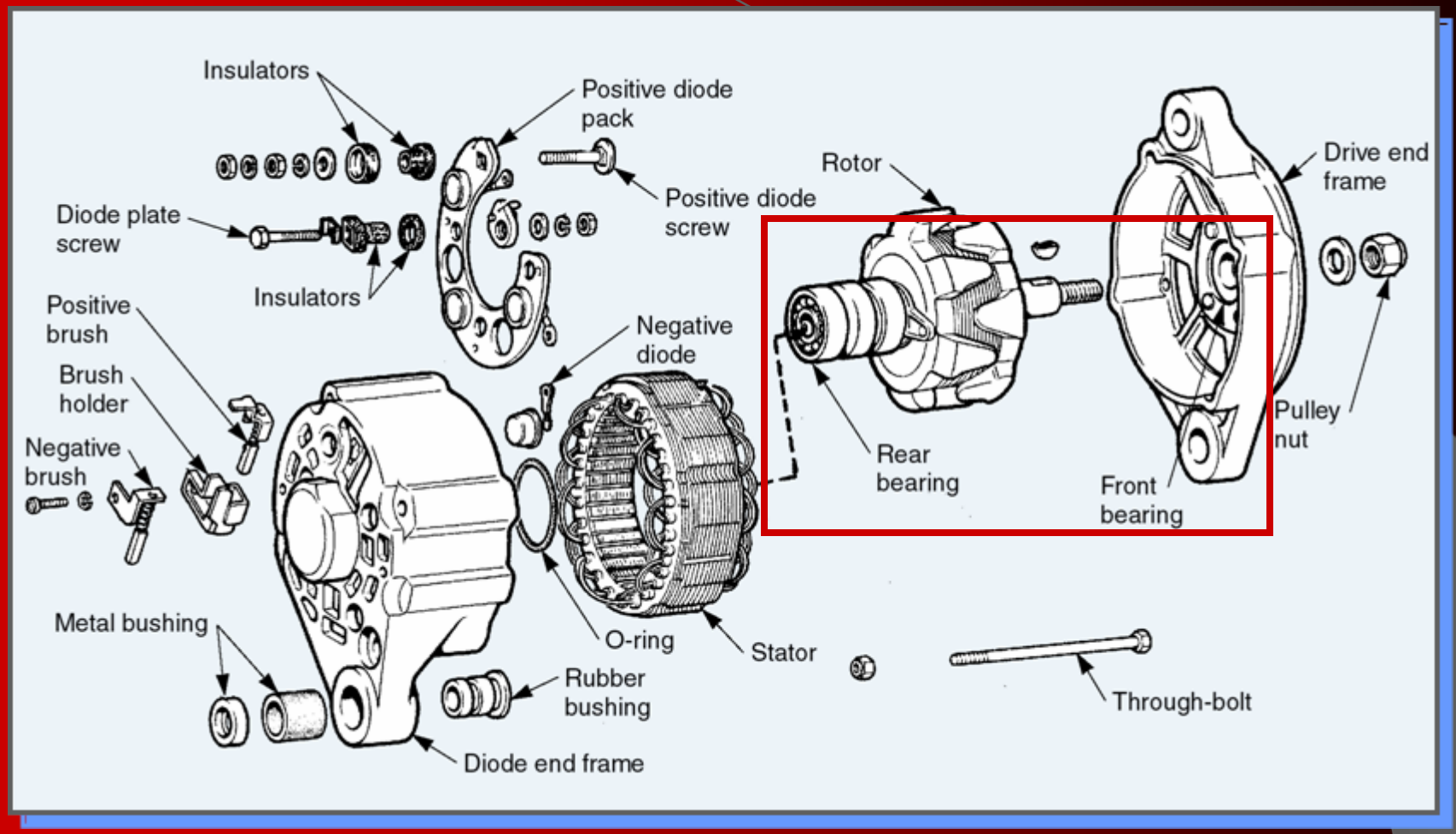
2. WORN or DRY ALTENATOR BEARINGS produces a rumbling or grinding noise during operation.

# Brush Assembly/Holder

A stiff wire may be needed to retain spring-loaded brushes in position for assembly



# Bearing Service




Do not clean electrical parts in solvent

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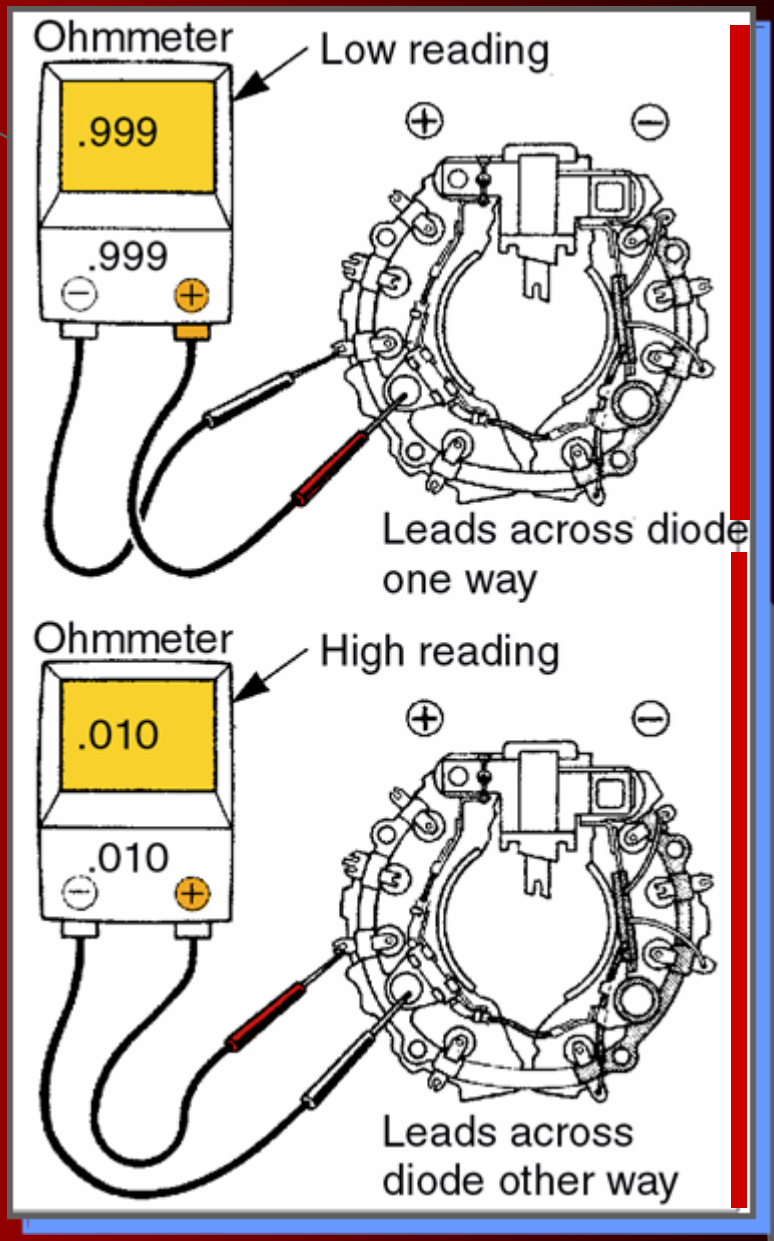
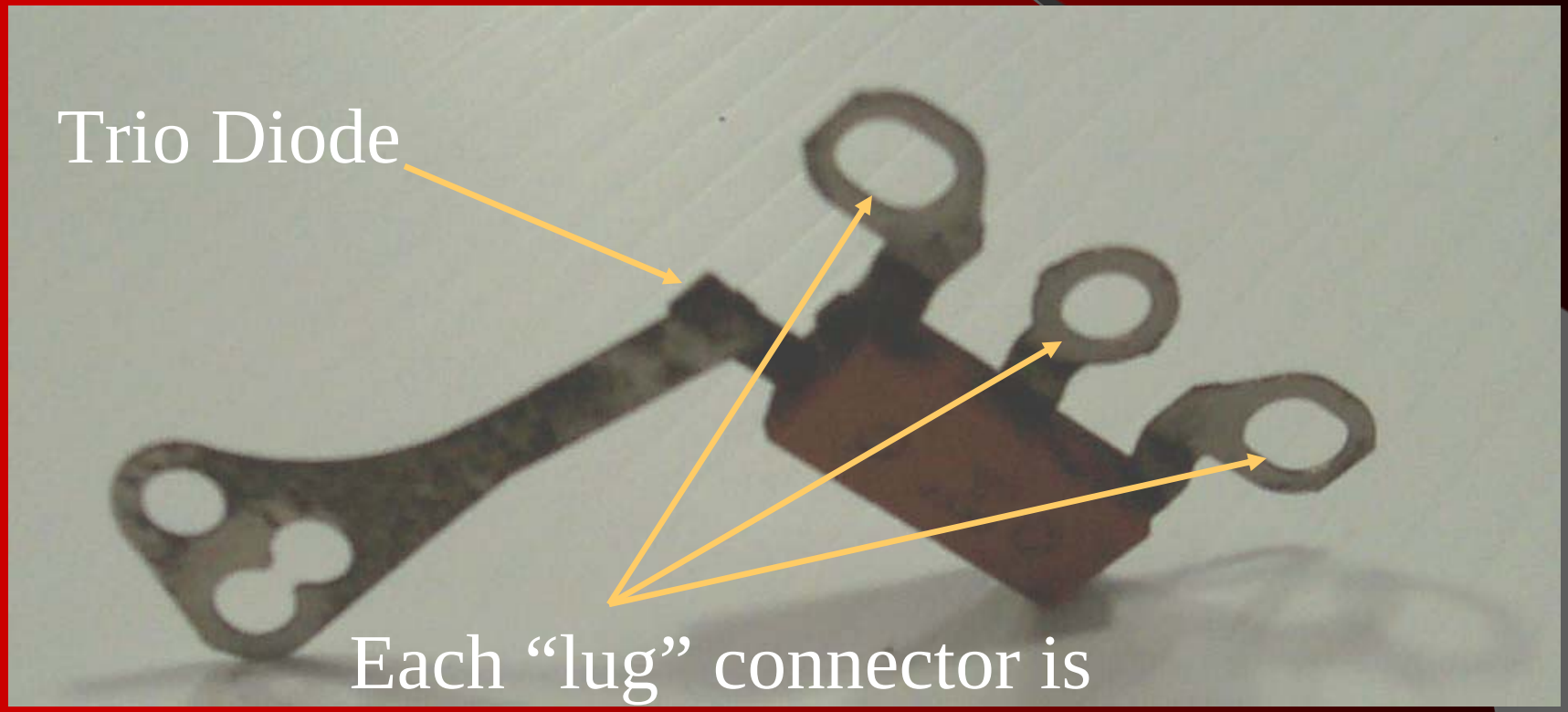
3. A SHORTED DIODE will have a low resistance reading in both directions, and must be replaced.

4. To check for a BAD ALTENATOR STATOR, connect an ohmmeter to the stator leads and test for open or grounded windings

# Diode Test Connections



# Trio Diode


Trio Diode
Each “lug” connector is attached to an individual diode

# Stator

Creates the magnate field

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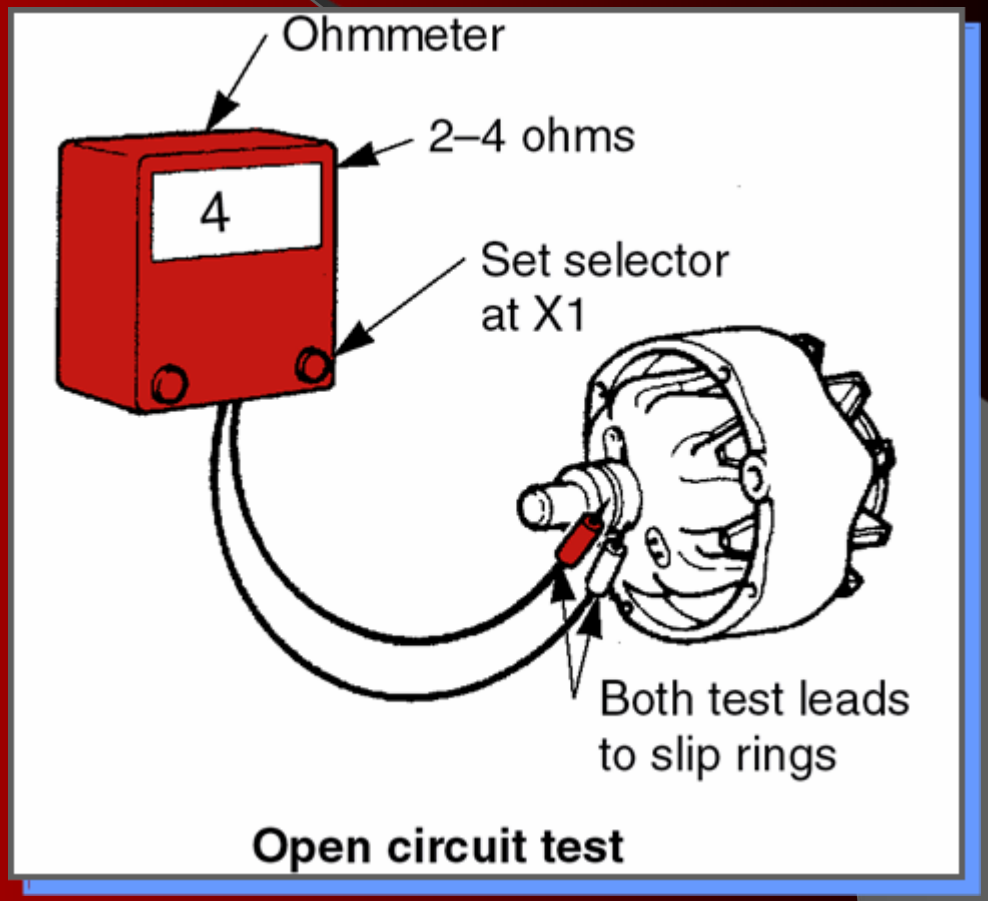
5. The LOAD TEST shows if the charging system is providing enough current for all electrical units, with enough current left over to recharge the battery.

6. To perform a GROUND-CURCUIT RESISTANCE TEST, place a voltmeter across the negative battery terminal and alternator housing

# Open Circuit Test

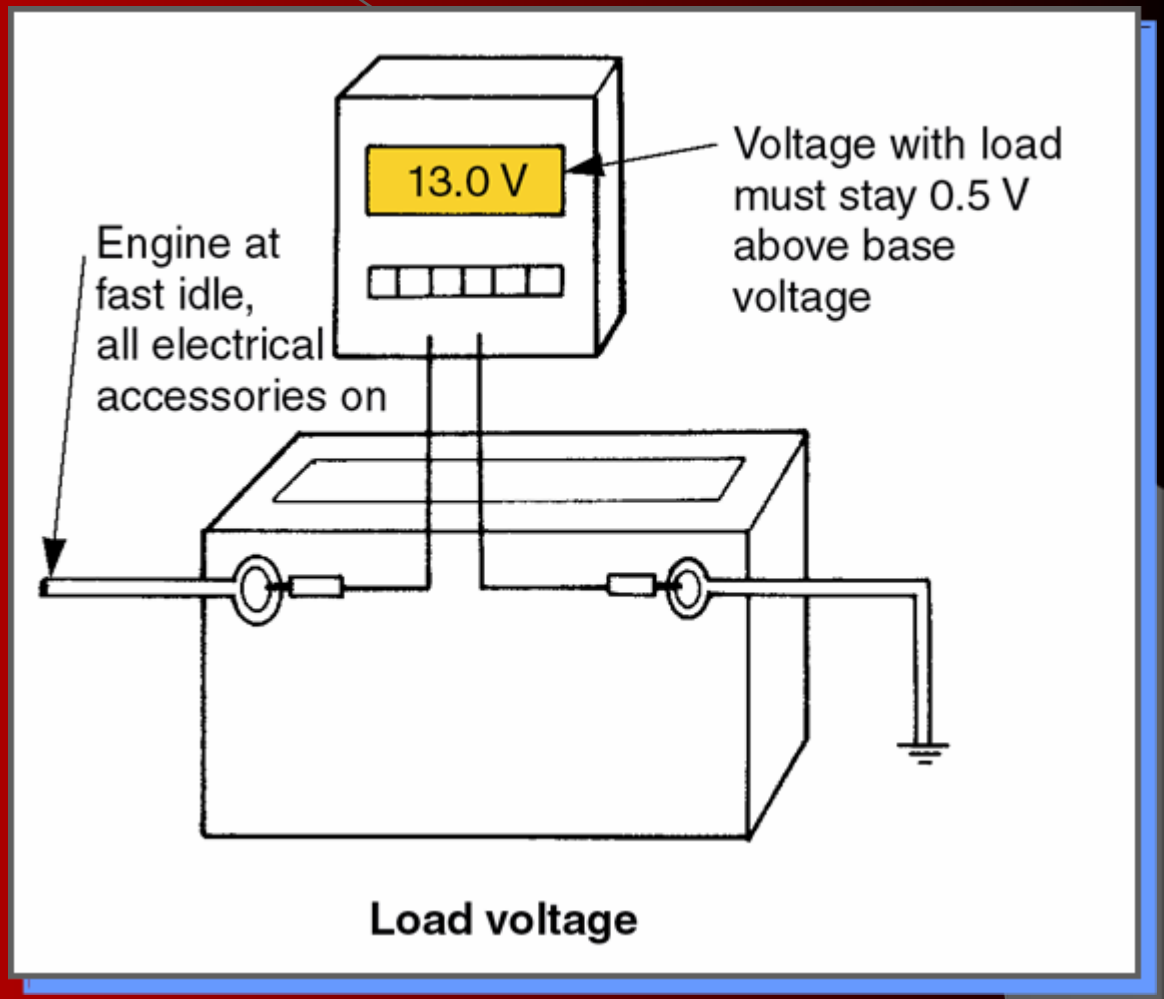
Measures resistance between slip rings

Ohmmeter should read low resistance (see manufacturer's specifications)

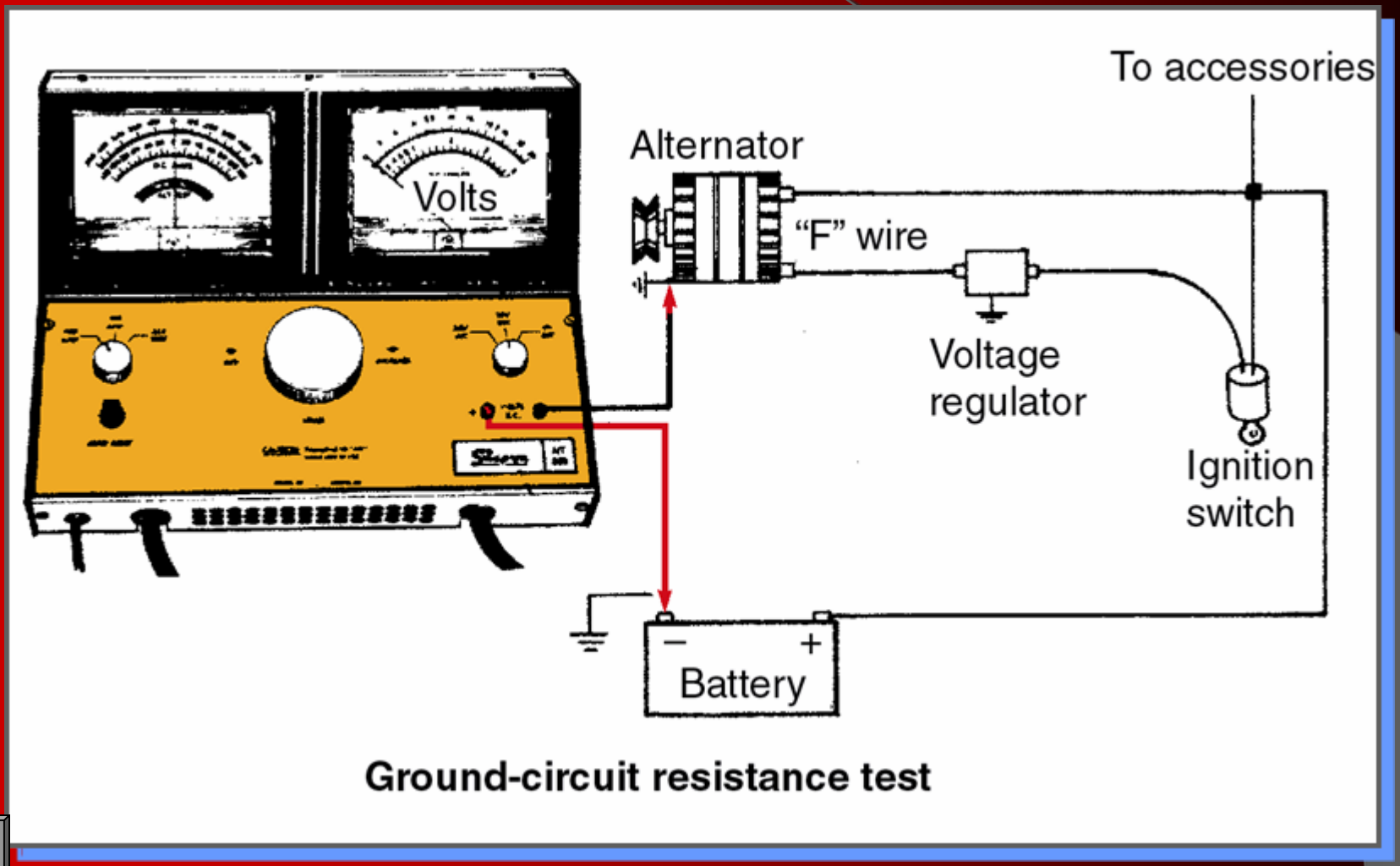


# Load Voltage

If reading is not at least 0.5 volts above base voltage, a system fault exists



# Ground Circuit Resistance Test




**Ground-circuit resistance test**

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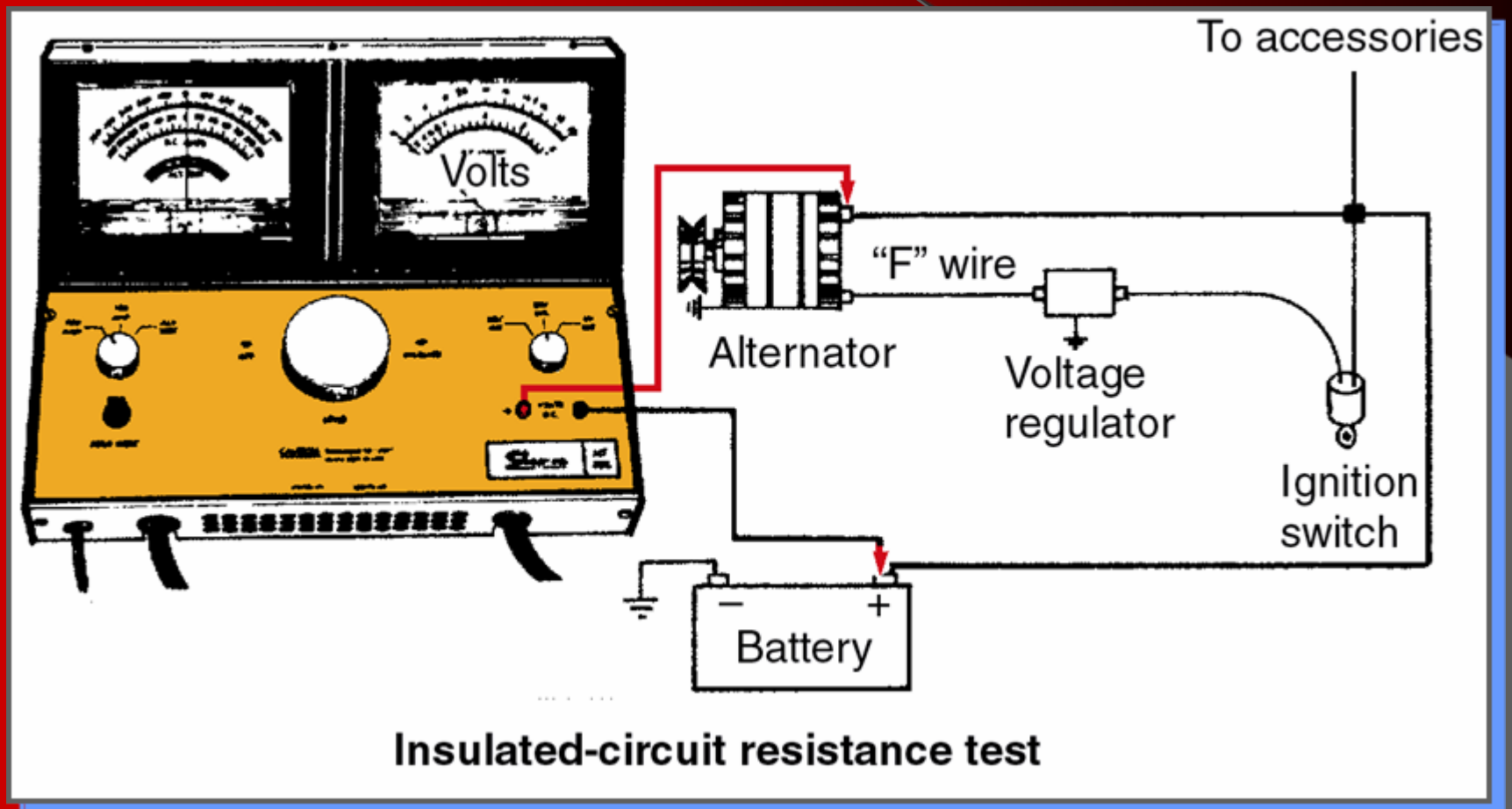
7. To perform an INSULATED-CURCUIT RESISTANCE TEST, place a voltmeter across the alternator output terminal and positive battery terminal.

8. The CURCUIT RESISTSNCE TEST measures resistance in insulated and ground circuits of charging system

# Insulated Circuit Resistance Test



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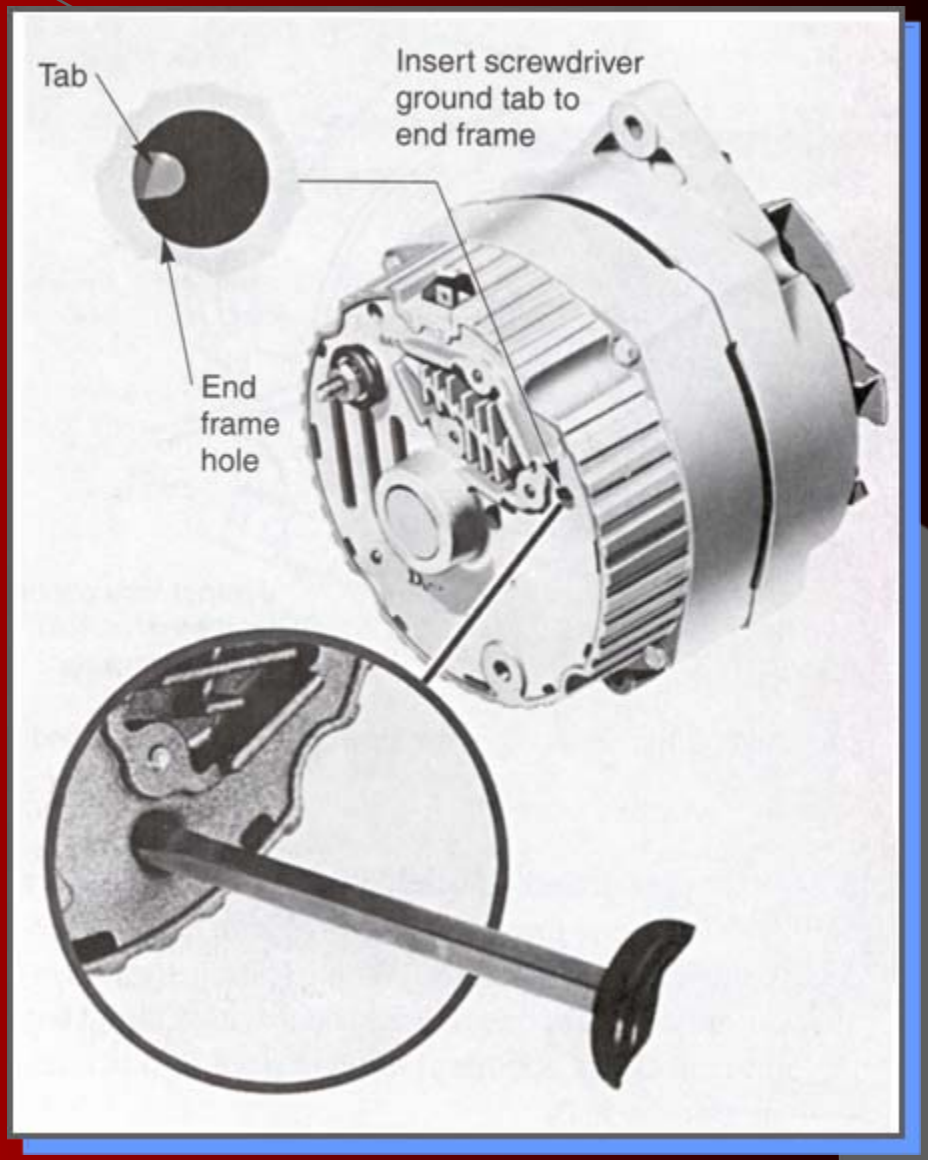
9. To perform a REGULATOR BYPASS TEST, connect full battery voltage to alternator field, leaving regulator out of circuit.

10. A CHARGING SYSTEM OUTPUT TEST measures current and voltage output under a load.

# Regulator Bypass Test

Shorting tab should make this alternator produce maximum output

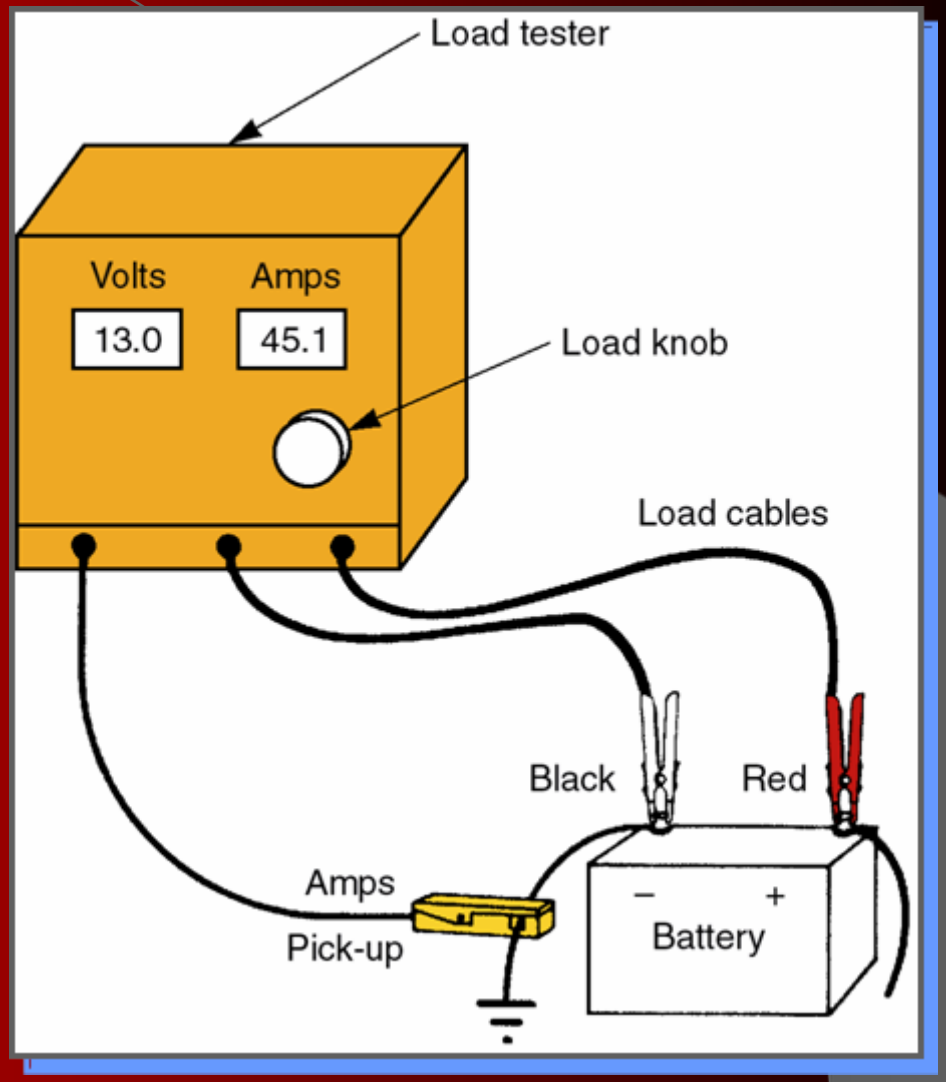


# Electronic Voltage Regulator

Contains no moving (this is an “electronic” part) or internal serviceable parts

# Charging System Output

Connect voltmeter leads across battery, inductive amps pickup on battery cable



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