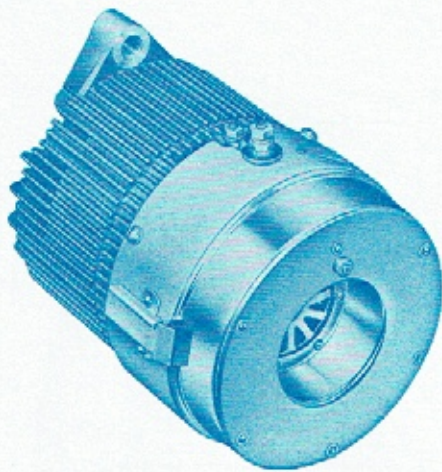


training chart manual



**FUNDAMENTALS  
OF DELCOTRON®  
GENERATORS**

Delco Remy 



30-SI

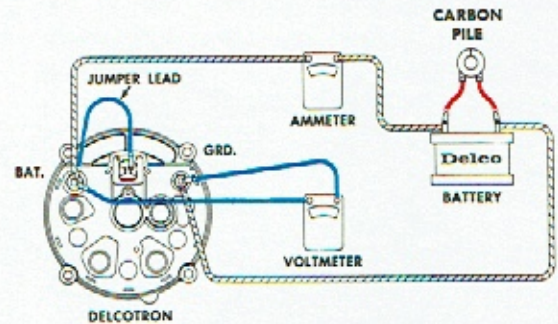
A generator used on construction equipment in the 30-SI Series is similar to the oil-cooled type, except it is air-cooled by a fan and has a completely static semi-conductor regulator built onto the generator assembly. It is of brushless construction with all current-carrying conductors being stationary. This type of design represents a completely integrated, compact unit having high current output capacity.

Although there are many design and structural variations from those presented in this section, the more popular and basic design features have been described.

## generator tests

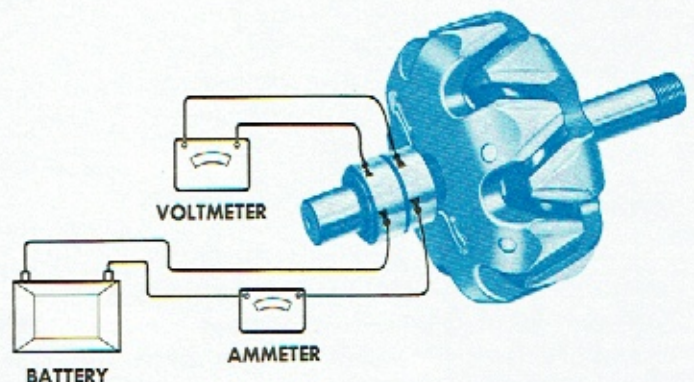
When making tests on Delcotron generators, reference should be made to the appropriate Delco-Remy service bulletin for specifications.

### output check



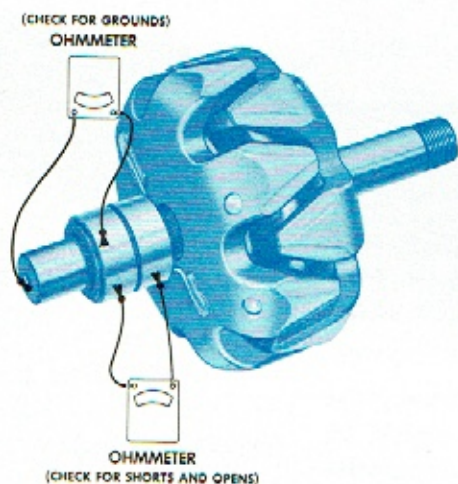
To check a Delcotron generator for output, connect a jumper lead from the generator output or "BAT" terminal to the field or "F" terminal, a voltmeter from the "BAT" terminal to ground, and an ammeter in the circuit at the "BAT" terminal. If two field terminals are present, ground the other field terminal with a jumper lead. Operate the generator at specified speed, adjust the variable load connected across the battery to obtain specified voltage, and observe the current output. If the output does not meet specifications, disassemble the generator for checks of the rotor, stator, and diodes.

### rotor



The rotor windings may be checked by connecting a battery, ammeter and voltmeter to the edge of the slip rings. If the current draw is above specifications, the windings are shorted, and if the current draw is low, excessive resistance is indicated.

An ohmmeter may be used in place of the battery and ammeter. The specified resistance may be calculated by dividing the voltage by the current listed in the specifications booklet. A low resistance indicates shorted windings, and a high resistance an open or poor connection.

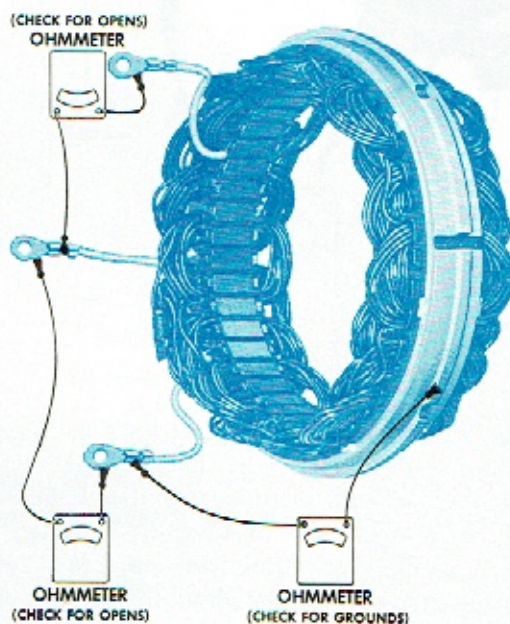


An ohmmeter connected from either slip ring to the shaft should show a high resistance. A low resistance indicates the field windings are grounded.

A test light may be used in place of an ohmmeter to check for opens and grounds, but the test light will not check for shorts. When connected across the slip rings, failure to light indicates an open. The windings are grounded if the lamp lights when connected from either slip ring to the shaft.

### stator

Checks on the stator should be made with all diodes disconnected from the stator. It is not practical to check the stator for shorts due to the very low resistance of the windings. Also, it is not practical to check the delta stator for opens because the windings are connected in parallel.



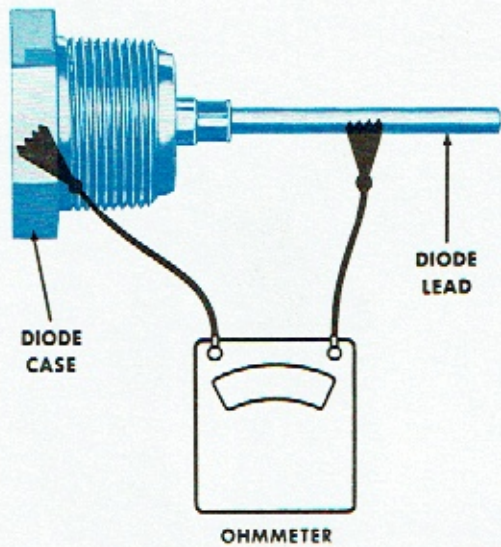
To check the "Y"-connected stator for opens, connect an ohmmeter or test light across any two pairs of terminals. A high ohmmeter reading, or no light, will reveal an open winding.

Either type of stator winding may be checked for grounds by connecting an ohmmeter or test light from either terminal to the stator frame. The windings are grounded if the ohmmeter reads low, or if the lamp lights.

If all checks are satisfactory, including the diode tests listed below, but the generator fails to provide rated output, a shorted "Y"- or delta stator winding, or an open delta winding, can be suspected.

### diodes

Diodes when disconnected from the stator can be checked for defects with an ohmmeter having a 1½ volt cell. Using the lowest range scale, connect the ohmmeter leads to the diode case and the diode stem, and then reverse



the connections. On push-in type diodes, if both readings are very low, the diode is shorted. If both readings are very high, the diode is open. On threaded-type diodes, if both readings are below 300 ohms, or if both readings are above 300 ohms, the diode is defective. The 300 ohm value should be near mid-scale for accuracy. A good diode will give one very low and one very high reading. CAUTION: Do not use high voltage such as a 110 volt test light to check diodes.

### summary

The above checks are general. When checking Delcotron generators, always follow the specific procedures given in the appropriate Delco-Remy Service Bulletin.

### **the Delco-Remy education program**

The Delco-Remy Education Program is designed to provide to mechanics and students up-to-date technical information on automotive electrical equipment.

This manual, one of a series, is a part of the program. Used in a classroom in conjunction with training charts, these manuals aid in explaining the theory of operation and construction of electrical units.

Also available to servicemen and students is a series of Maintenance Service Bulletins. They serve as a reference in the maintenance and testing of electrical units.

Test Specification Booklets contain service test data for the electrical units manufactured by Delco-Remy. These booklets are designed for automotive electricians engaged in maintenance and testing.

Strip films with records and film booklets cover the basic operation and maintenance of units in electrical systems. There are many pictures and a wealth of information in diagrams and legends.

Other booklets cover various phases of maintenance and testing procedures for Delco-Remy electrical units and their related circuits.

**Delco**   
**Remy**

ANDERSON, INDIANA, U.S.A.

DIVISION OF GENERAL MOTORS CORPORATION