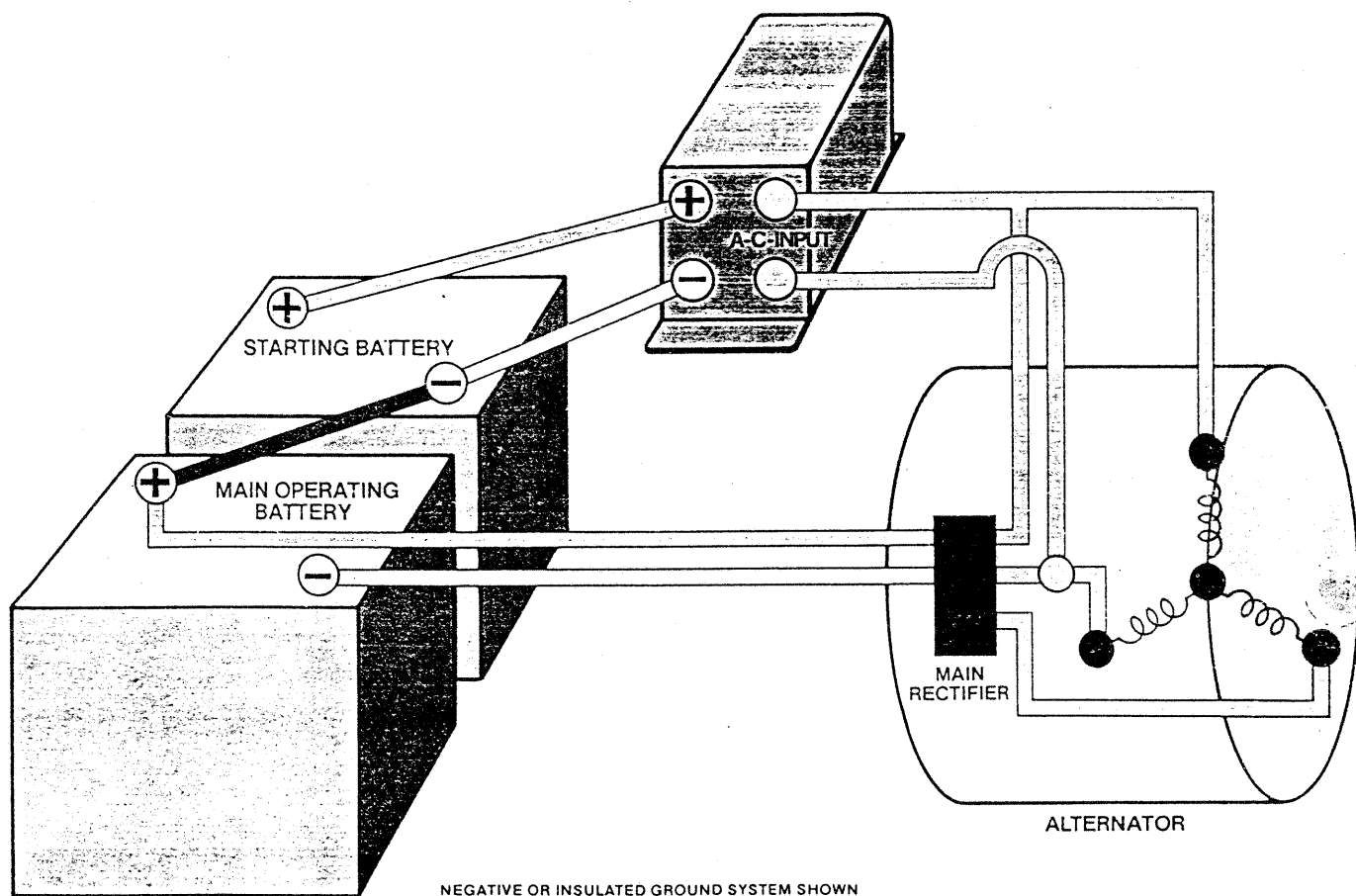


# The Electrodyn<sup>TM</sup> 12/24 Start-Charge Unit

A unique, reliable solution to 24 volt starting, 12 volt running in heavy duty truck, construction, farm, and marine applications.

- Offers advantages of 24 volt starting with economies of 12 volt operating wiring, switches, lights, and accessories.
- A simple, reliable transformer/rectifier circuit.
- No mechanical or electrical wearing parts.
- Eliminates need for unreliable series/parallel switches and circuitry.
- Compact size.
- Simplifies overall wiring systems.
- Compatible with most alternators and wiring systems for OE or retrofit installation.
- Substantially reduces number of high current connections.
- Eliminates parallel battery wiring configuration in which one "failed" battery can run down the other battery.
- Makes possible accurate dash readout of individual battery charge/discharge condition (with simple dash-mounted switch).
- Capable of operating with positive, negative, or insulated ground systems.
- Can be used with four 6 volt or two 12 volt battery installations.
- 12/24 unit available integrally mounted in all Electrodyn alternators.
- Extended warranty.
- Internal components individually sealed from adverse environmental conditions.



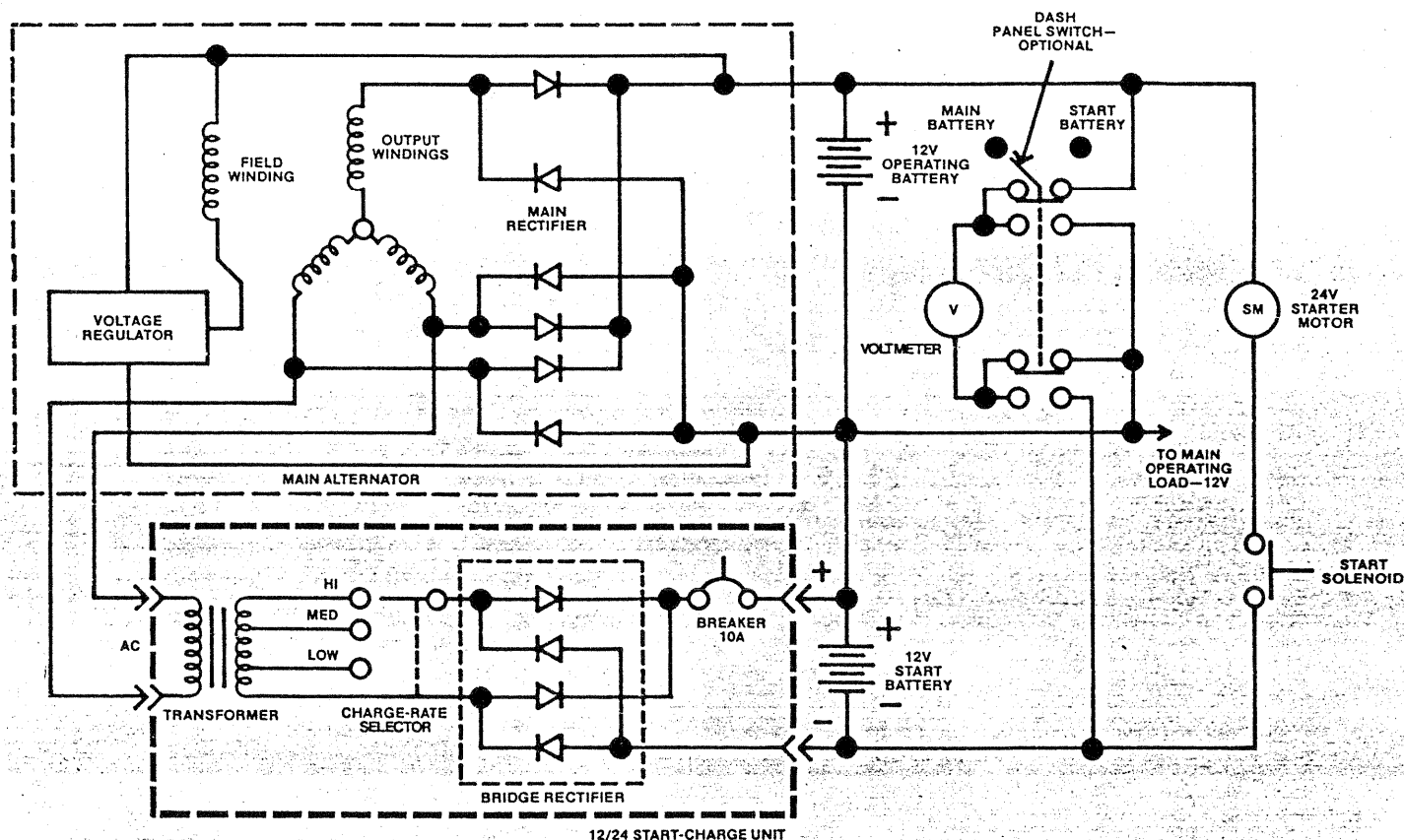
# Method of Operation

The Electrodyne 12/24 Unit allows separation of the 12 volt main operating battery and the 12 volt auxiliary starting battery in individual, isolated circuits for operating purposes. For starting, both batteries are permanently wired together in series to provide 24 volts. There is no switching of the batteries into or out of series and parallel configurations. Electrical isolation of the starting and operating circuits is accomplished by the transformer in the 12/24 unit. The primary output of the alternator provides power for the operating load and for recharging the main operating battery upon demand. The Electrodyne 12/24 Unit receives single phase AC power from the alternator, transforms it to approximately 13.5 volts, rectifies to DC, and charges the auxiliary starting battery upon demand. Thus, both the operating and starting batteries are recharged independently according to individual battery requirements. The Electrodyne unit contains a three-position selector for setting the starting battery charging voltage to correspond

to the frequency of starting of the engine. The unit also allows dash panel readout of the charge/discharge condition of each individual battery with installation of a simple switch in conjunction with the meter. (In series/parallel configurations, the meter gives only the average of the condition of each battery.)

The Electrodyne 12/24 Start-Charge Unit consists of:

- An isolation transformer with three voltage taps.
- A single phase silicon diode full-wave rectifier.
- A three position selector switch for obtaining different charging rates.
- A circuit breaker to provide overload short-circuit protection for the transformer and reverse polarity protection for the rectifier.
- A compact aluminum housing which can be mounted in the engine or battery compartment.



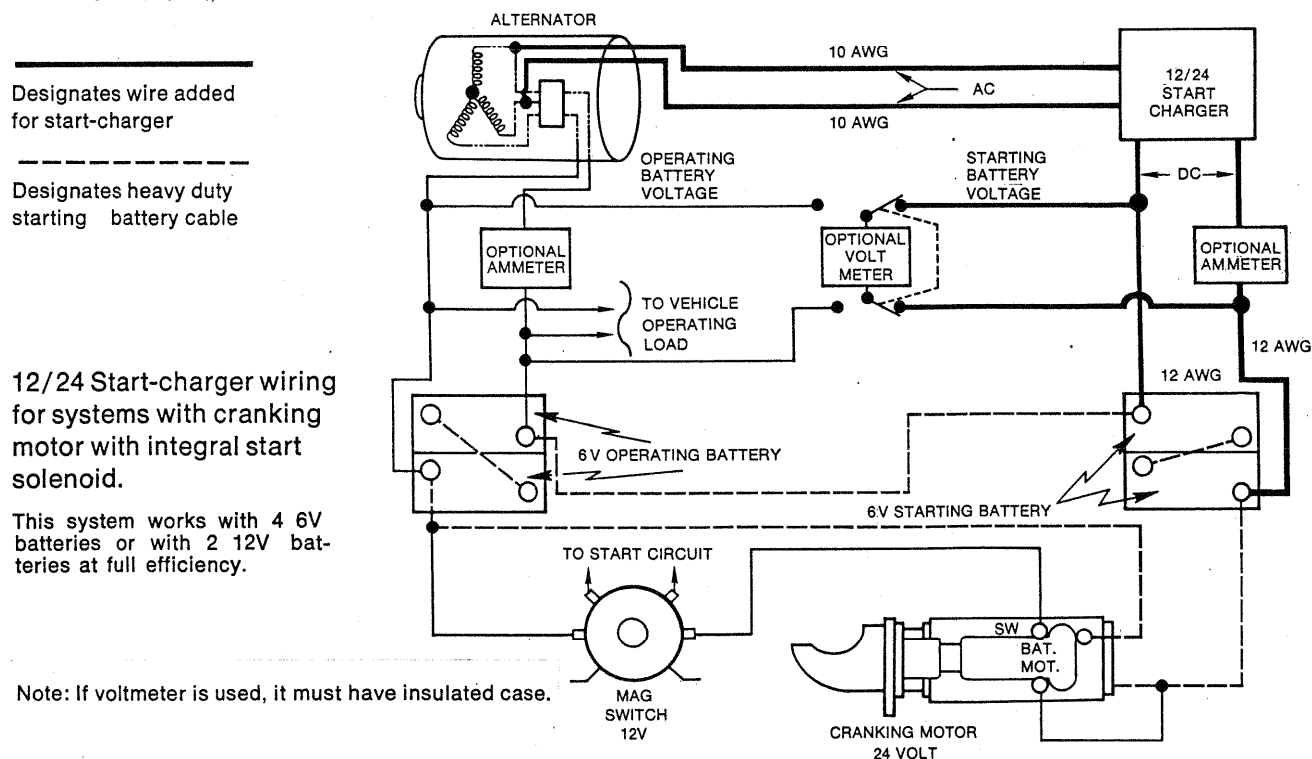
The operating principle of the Electrodyne Start-Charger is that the main and starting battery sets are permanently wired in series electrically to provide 24 volts for the starting motor. The alternator and start-charger are permanently wired in parallel electrically with the battery sets so that when the engine is running they are recharged separately, with the primary DC output of the alternator being supplied to the main or service batteries and the Start-Charger DC output supplying the starting battery set. The Electrodyne Start-Charger may be used in positive, negative or insulated ground electrical systems.

IMPORTANT: PRIOR TO REMOVING OR INSTALLING ANY COMPONENT, FOLLOW THE STEPS BELOW.

1. Test all batteries for equal capacity and recharge or replace as required.
2. Clean battery posts and terminals.
3. Determine the electrical system ground polarity: Negative (-) or Positive (+).
4. Determine the battery types used: A combination of 6 volt or a combination of 12 volt batteries. (The schematics on other side show 6 volt batteries.) If your installation uses 12 volt batteries, treat each pair of 6 volt batteries in the schematic as one (1) 12 volt battery.

After installation make an operational test as follows:

1. Connect voltmeter across (+) and (-) terminals of the Start-Charger portion of the alternator and measure voltage with the engine stopped.
2. Start the engine and run at approximately 1,200 engine RPM for a few minutes. The voltmeter reading should increase from the original reading.
3. If voltage readings are not within specifications, make an operational check of the alternator system, (Refer to trouble shooting procedure E5950-76), and recheck all circuits for proper installation.
4. If alternator output is within specifications, and circuitry is properly installed, further diagnosis will require removal of the alternator for disassembly of the system. (Refer to Start-Charger sections of alternator Trouble Shooting and Service Manuals.)



## 4

