

**OWNER'S
MANUAL**

**Multi-Battery
ISOLATOR**

INSTALLATION GUIDE



Thank you for choosing a Phoenix Gold PowerFlow Multi-Battery Isolator. The latest state-of-the-art engineering plus years of experience in low-voltage electronics have gone into each PowerFlow product.

The attached instructions are provided to assist you with step-by-step installation. Test procedures are also provided and should be kept with your vehicle for future reference.

Every effort has been made to combine fine workmanship with the best materials. In the event that service is ever needed or if you have questions regarding the product, its installation or its performance, please call 1.800.962.2616 for assistance.

Multi-Battery Isolators

Phoenix Gold's multi-battery isolators are designed to operate at a full-rated load over an ambient temperature range of -40F to +200F. These solid-state isolators provide automatic charge distribution and load isolation for batteries. They eliminate operator intervention or unreliable mechanical solenoids.

Phoenix Gold isolators can be used in a broad range of vehicles and marine applications. We offer six different sizes from 70 amps to 240 amps.

Isolator rating

The correct size of isolator to use in a vehicle is determined by the peak output of the alternator, and should have a higher rating than the vehicle's alternator. For example, if the alternator is rated at 60 amps, our 70 amp MBG70 isolator should be used. For an 80 amp alternator, use our 95 amp MBG95, etc. All our isolators are negative ground for one-alternator systems utilizing one main battery and one auxiliary battery bank, which could consist of one or more batteries.

Note: The isolators may not be compatible with Hitachi, NipponDenso or Mitsubishi alternators.

Installation Instructions

1. Start the vehicle's engine and run at a fast idle. Measure the voltage at the battery terminals; it should be around 14 volts. (After the installation is completed, check the voltage again. It should measure the same.)
2. Stop the engine and disconnect the negative ground cable from the main vehicle battery.
3. Mount the isolator in a location away from engine heat where fresh air can circulate around it.
4. Disconnect all wires from the alternator's output post and attach them to **either one** of the outer isolator posts.
5. Connect a large power cable (minimum 4 gauge) between the alternator output stud and the center (A) post of the isolator. (We recommend our PS4R or PRO4R cables.)
6. Connect another large-gauge cable between the auxiliary battery bank and the second outer post.
7. If a circuit breaker is to be used, it should be installed near the auxiliary battery bank on the auxiliary load. **Do not** install a circuit breaker between the isolator and the alternator or the isolator and the starting battery.
8. Connect the car audio equipment loads and all other auxiliary loads to the auxiliary battery bank.
9. For isolators with a fourth "E" post, connect a 16 gauge wire from the "E" post to a switched 12V source.
10. Reconnect the negative ground cable to the starting battery.
11. Start the vehicle's engine again. Measure the voltage at the battery terminal as you did in Step 1. It should measure the same, around 14 volts.

Wire Size Chart

Alternator Output in Amps	Minimum Charging Wire Size (AWG) for Wire Length			
	0-5 ft	6-10 ft	11-20 ft	21-25 ft
Up to 70A	7	7	7	6
70A to 90A	7	7	4	4
90A to 120A	4	4	4	2
120A to 240A	4	4 or 2	2 or 1/0	1/0

Procedures for Testing an Isolator Using an Ohmmeter

1. Remove all wires from the isolator to read impedance of the diodes.
2. Set your ohmmeter to the 1x scale and connect or touch the positive probe to the "A" post and the negative probe to either of the other posts. An isolator that is working properly will show unimpeded current flow from the "A" post to both of the outer posts.
3. Now switch the probes so the negative probe is connected to the "A" post and the positive to either one of the outer posts. An isolator that is working properly will show no current flow.
4. Connect or touch either probe to the isolator's aluminum heatsink, being sure to establish a good connection. Now touch each of the outer post and the "A" post one at a time. An isolator that is working properly will show no current flow to any of the posts.

Test Result Specifications

1. With the engine off, the isolator post connected to the starting battery should read the voltage of the starting battery, and the other post should read the auxiliary battery bank voltage. The "A" post can read anywhere between 0 and 10 volts.
2. With the engine running and alternator charging, both outer posts should read the voltage setting of the voltage regulator or less, which is usually around 14 volts, and the "A" post should read 0.8 to 1 volt higher than the outer two posts. If the "A" post reads the same as the outer two posts, the regulator is sensing the alternator output rather than the main battery. (If using a PowerFlow alternator with a voltage regulator, check the red sensing lead running from the regulator to the isolator to insure that it is connected correctly.)

Recommended Test Result Readings

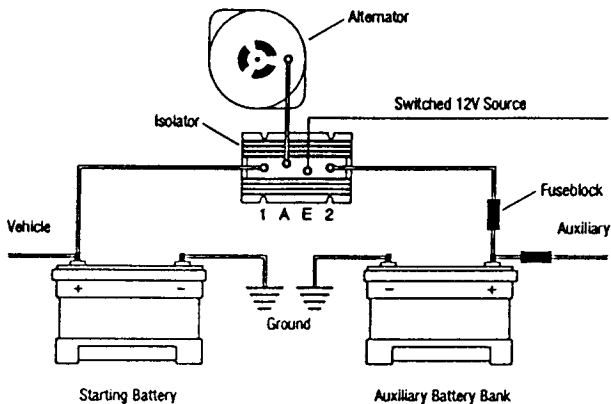
All voltages measured at the regulator (except the "F" terminal) come from sources other than the regulator. If your readings differ much from the voltages specified for each test point, check the voltage source. Field voltage should appear at terminal "F" if you have voltage on the "A" and "S" terminals. If no voltage appears at the field terminal with the key on, and all other voltages match specifications, the regulator is defective

Recommended Test Result Readings

Test Points	Ignition Off	Ignition On, Engine Off	Engine running
Pos. Battery Post	12.6V	12.6V	14V
Alternator Charging Post (Isolator without "E" terminal)	0V	0V	14.5-15V
Isolator Center Post (Isolator without "E" terminal)	0V	0V	14.5-15V
Isolator Center Post (Isolator with "E" terminal)	0V	12.6V	14.5-15V
Alternator Charging Post (Isolator with "E" terminal)	0V	12.6V	14.5-15V
Isolator Post B1	12.6V	12.6V	14V
Isolator Post B2 (with Battery Connected)	12.6V	12.6V	14V

All voltages measured at the regulator (except the "F" terminal) come from sources other than the regulator. If your readings differ much from the voltages specified for each test point, check the voltage source. Field voltage should appear at terminal "F" if you have voltage on the "A" and "S" terminals. If no voltage appears at the field terminal with the key on, and all other voltages match specifications, the regulator is defective.

OEM Installation



Installed with Phoenix Gold PowerFlow Alternator

