

# "Power Flow" Alternator Installation Guide

ASG

130 R

SN# 1931

PLS

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## CONGRATULATIONS

Thank you for choosing a Phoenix Gold "Power Flow" product. The latest state-of-the-art low-voltage engineering plus years of experience in the low-voltage field have gone into each "Power Flow" 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 us at 1-503-288-2008.

### SELECTING THE PROPER ALTERNATOR

Phoenix Gold manufactures high-output "Power Flow" alternators which are bolt for bolt replacements on domestic GM and Ford vehicles. Chrysler and Imports require brackets and/or bracket fabrication.

In selecting an alternator for your special Car Audio applications, always select an alternator with 20% more amperage capability than the worst case vehicle load of all accessories or 35-40% more if S.A.E., Cold rating of

the alternators output is used. Larger output wires are necessary when installing a higher output alternator on any vehicle. A minimum of #4 gauge fine stranded wire is recommended for lengths up to 16 feet; over 16 feet refer to the wiring chart on the reverse side. The factory amp meter (Ford and Chrysler) will be bypassed when installing the larger output wire. A volt meter should be installed to monitor the charging system. Please contact us if additional assistance is required.

### DETERMINING THE CHARGING REQUIREMENTS OF YOUR VEHICLE

Using the information provided below, add the amp values that closely match your vehicle's accessories. Remember to total up all the accessories which may be used simultaneously, ie: the worst-case circumstance.

To most accurately obtain amp load, make actual measurements. Two of the most common ways to obtain the amp readings are the use of a (1) In-line amp meter or (2) a shunt meter.

Compare the resulting figure with your alternator output rating. (Caution: mass-produced alternators will lose up to 40% of their rated

output at operating temperatures up to 200°F.)

### TYPICAL AMPERAGE VALUES

Typical amperage requirements for various components found in motor vehicles:

- Headlights	15-25 Amps
- Engine Operation	10
- Windshield Wipers	15-20A
- Lighting	1A per bulb
- Heater	25-35A
- Air Conditioner	25-35A

- Larger vehicles typically use the higher figure, while smaller vehicles use the lower figure.

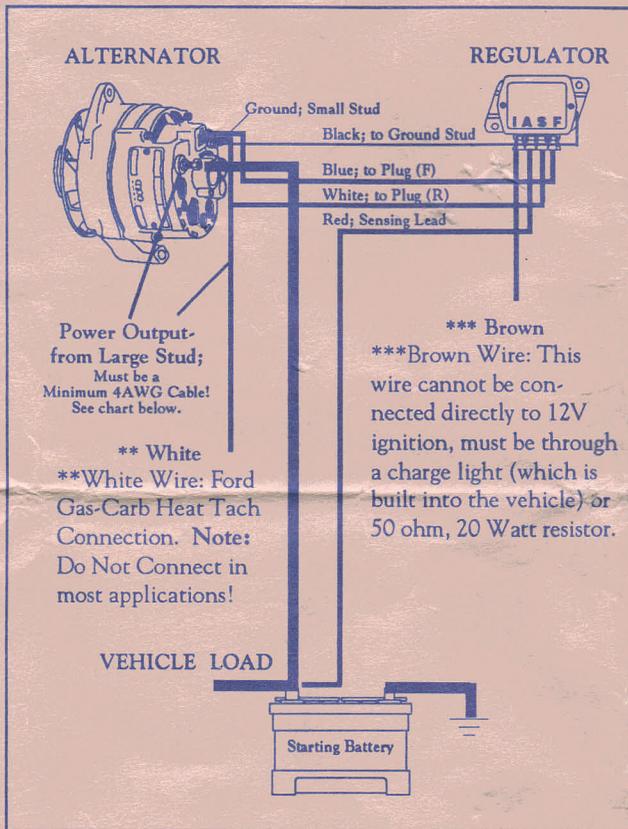
- A smaller vehicle will have 55-65 amps of current draw from the vehicle's accessories under worst-case situations.

- Auxiliary batteries can require 10-60 amps to recharge depending on current drain while not running the vehicle.

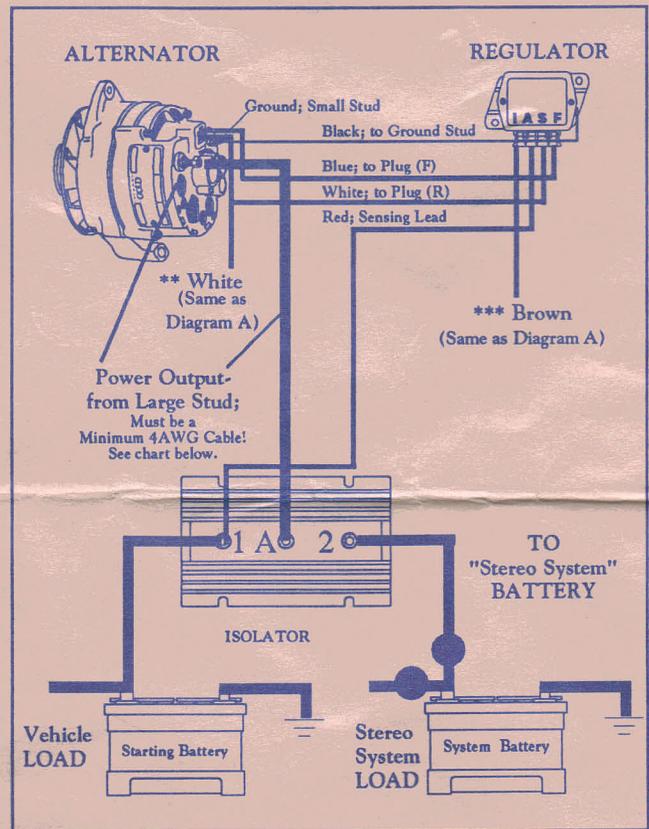
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## "Power Flow" Alternator Installation Guide

(A) Wiring Diagram for Alternator and Regulator with 4-Wire Harness



(B) Wiring Diagram when "Power Flow" Alternator, Regulator with 4-Wire Harness and Multi-Battery Isolator are Used



— Control Wiring

— Power/Ground Cable

● Circuit Breaker or FuseHolder

The Power Cable must be fine stranded, high-current style with 105C rating and Oil/Gas resistant jacket.

Length in Feet  
0-10ft.

Wire Size for 130A Alt.  
4 AWG

Wire Gauge for 165A Alt.  
2 AWG

\*\* White Wire: Ford Gas-Carb Heat Tach Connection. Note: Do Not Connect in most applications!

11-20ft.

2 AWG

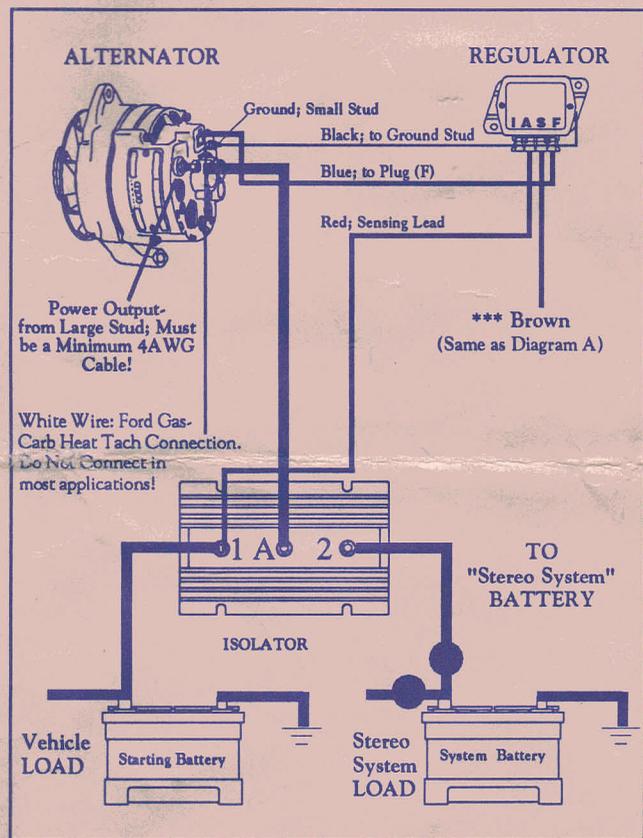
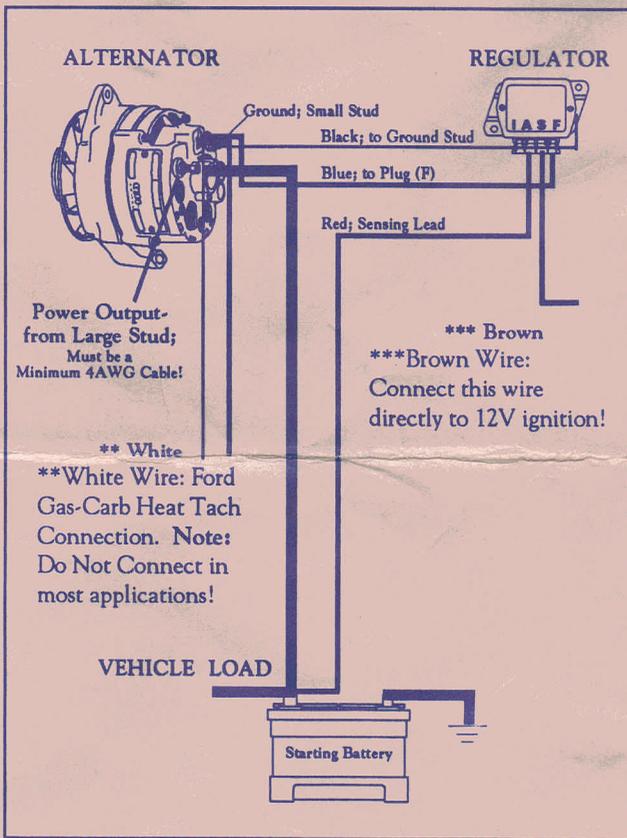
2 AWG

\*\*\* Brown Wire: This wire cannot be connected directly to 12V ignition, must be through a charge light (which is built into the vehicle) or 50 ohm, 20 Watt

### ATTENTION: THIS IS THE SYSTEM DIAGRAM FOR THE THREE (3) WIRE HARNESS....

(A) Wiring Diagram for Alternator and Regulator with 3-Wire Harness

(B) Wiring Diagram when "Power Flow" Alternator, Regulator with 3-Wire Harness and Multi-Battery Isolator are Used



— Control Wiring

— Power/Ground Cable

● Circuit Breaker or FuseHolder

**NOTE: For the 3-Wire regulator harness, please follow the Installation Instructions for the "PowerFlow" Alternator and Regulator as listed on the opposite page, except for step # 9. The Brown Wire is connected directly to 12 Volt Ignition with the 3-Wire regulator harness only!!!!!!**

If you have any doubts or questions please call 1-503-288-2008!!!!!!

## Installation Instructions for the "Power Flow" Alternator and Regulator:

**Note before starting installation:** A good ground between the alternator and the engine block, is essential! If necessary, connect a minimum run of 4 gauge Ground wire from the alternator mounting flange (mounting bolt) to the engine block and then to the frame or body of the vehicle. Make sure to check the ground points with an ohm-meter, should be read in hundreths of ohms, ie: .00 ohms.

1. Disconnect negative cable from the battery.
2. Remove original equipment alternator. Tape and **DO NOT USE** the original charge wire.
3. Install PowerFlow Alternator.
4. Install a new charge cable, refer to Power Cable Chart for proper size, from alternator to one of the options listed below:
  - A. Positive battery connection on starter solenoid.
  - B. Direct to positive post of starting battery.
  - C. To Alternator post of Multi-Battery Isolator.

### CAUTION:

If original equipment charge wire is used with the high output alternator, serious damage to vehicle electronic components can occur. **DO NOT** install circuit breaker or fusible link between alternator and starting battery.

5. Mount the regulator to a flat surface in as cool a location as possible. The regulator does not like heat. Case must be grounded (mounted to metal). Check with ohm-meter. The black ground wire from regulator to alternator provides a ground. Plastic fenders or plywood do not provide a ground.
6. Plug the **grey plug** (130A or 105A alternator) or **black plug** (165A alternator) on the regulator harness into alternator input marked "R & F".
7. Connect the **black wire** on the regulator harness (same side as the input for the regulator plug) to the ground "GRD" terminal on alternator. Be sure the Alternator is grounded, refer to note above!
8. Connect the **red wire** on the regulator harness to the positive terminal on battery (this connection can be made at the starting battery positive connection) or Terminal #1 on isolator when used. **Note:** Please refer to the isolator instruction sheet; points 2-7 when installing an isolator. This is the sensing wire for regulating the output at the alternator.
9. Connect the **dark brown wire** on the regulator harness to the ignition wire in original regulator plug. **Note:** Must be through the charge light; ie: there must be some resistance or a 50 ohm, 20 watt resistor in series with the wire. Using a VOM this should read between 5 and 11.5 Volts.
10. The fan belt must be tight. For proper service, turn engine off, tighten fan belt, then run engine 15 minutes and tighten fan belt. Use a 6" screwdriver in the cooling fins of alternator as pry bar try to loosen the fan belt, if it slips, it is too loose. If the fan belt slips, it is too loose. Remember, a slipping fan belt creates heat, which in turn causes bearing failure.
11. A slight whine from the alternator under load is normal, as the alternator is charging.
12. Your dash amp meter will be inoperative. Install or rely on your volt meter.

### Test Points

	<u>IGNITION OFF</u>	<u>IGNITION ON ENGINE NOT RUNNING</u>	<u>ENGINE RUNNING</u>
Reg. Term. I	0	8 - 12 Volts approx.	8 - 12+ Volts
Reg. Term. A	12.6V	12.6V approx.	14V
Reg. Term. S	0	0V approx.	7V approx.
Reg. Term. F	0	9 - 11V approx.	1 - 12V; depends on the load!
Alt. R	0	0	7 - 8V approx.
Alt. F	0	9 - 11V approx.	1 - 12V; depends on the load!
Alt. Battery	12.6V	12.6V	14V
* Alt. Battery	0	0	14.5 - 15V
* Iso. A Term.	0	0	14.5 - 15V
* Iso. B1 Term.	12.6V	12.6V approx.	14V
* Iso. B2 Term.	(#B2 battery voltage if battery connected)		14V

\* Test points when Isolator is used. See Diagram B.

If the approximate voltages are not at the test points, check source for that test. All voltages at regulator, except field terminal (Term. F) are from other sources. Field voltage will appear at regulator terminal F if you have voltage on "A" and "I" terminals per the above chart. If no power on terminal "I", check wire and charge-light bulb. If no voltage appears at field terminal with key on and all other voltages are as per the above chart, the regulator is defective.

To  
PowerFlow  
Alternator

**PHOENIX**  
**GOLD**

# PowerFlow System

1&2

**TOP MOUNT BATTERY CLAMP**  
Top Mount Battery Clamp with 24kt Gold  
Stainless Steel Hardware. (TMC-20Gold)

**PROTECTIVE RUBBER BOOT**  
Red 105°C Protective Boot (RB-001)

**GOLD SIDE MOUNT POST**  
**Option:** Gold Side Mount Battery  
Extension Post for GM Vehicles  
(SME-10Gold or SME-20Gold)

3

**4 GAUGE POWER CABLE**  
High-Current and PRO-Series "InnerFlow"  
Power Cables with 105°C and 125°C,  
Oil and Gas Resistant Jackets respectively

**OUTER FLOW BRAID**  
OFB, a Tin Braided Copper Shield which may  
be slipped over the Power Cable to eliminate  
Radiated Noise (RFI).

4

**CIRCUIT BREAKER**  
Low Resistant, Firewall Mountable 200, 140 or  
100 Amp Manual Reset Circuit Breakers with  
both thermal and time constant (rated at 150-  
200% for 5 seconds). 1/4" studs for increased  
current handling. (CB-200, CB-140 & CB-100)

**DC TERMINALS AND SLEEVES**  
24kt Gold Terminals and Protective Sleeves

**WATERPROOF FUSEHOLDER**  
**Option:** 10-60A in-line fuseholder may be used  
instead of our Circuit Breaker. (FH-100/200)

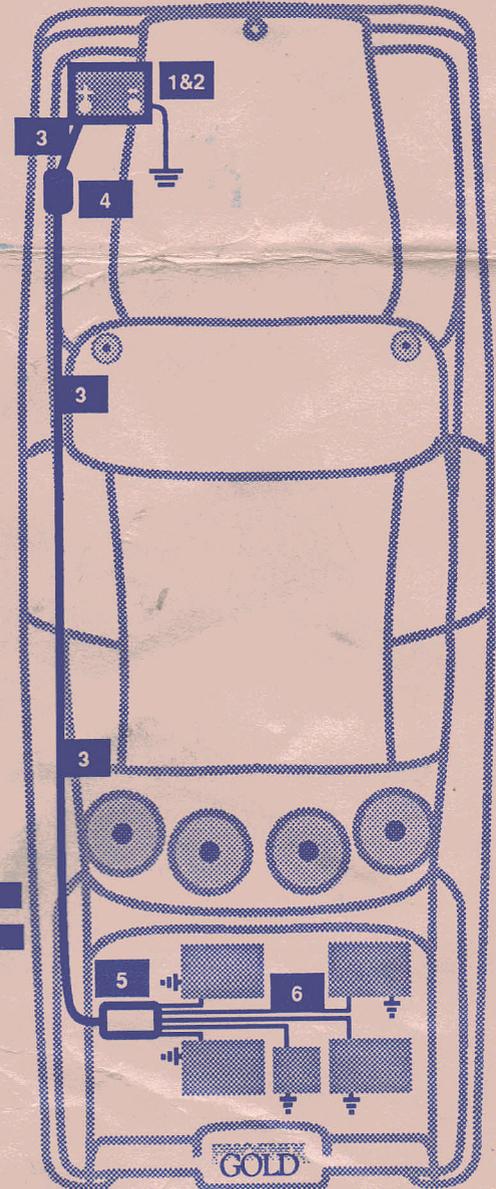
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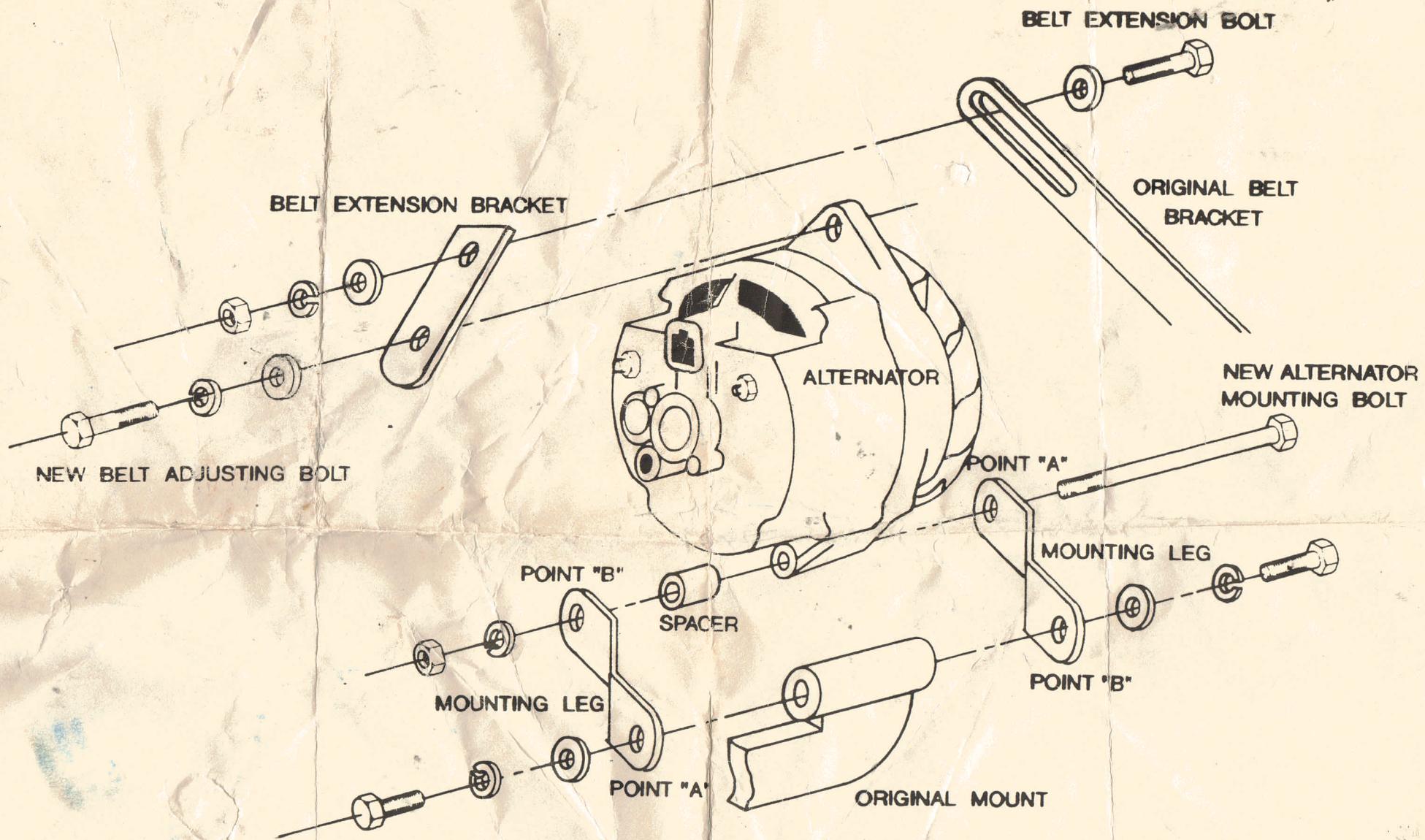
**POWER DISTRIBUTION BLOCK**  
A 1 input 1/0-8 gauge to 4 Outputs 7-14  
gauge. (PDB-14Gold)

**Option:** A 1 input 1/0-8 gauge to 6 outputs  
4-14 gauge (PDB-16Gold). A 2 input 1/0-8  
gauge to 6 outputs 4-14 gauge. (PDB-26Gold)

6

**7 GAUGE, 9 GAUGE & 12 GAUGE**  
High Current Power and Ground Cable avail-  
able in Red, Yellow and Black with a 105°C,  
Oil and Gas Resistant Jacket.





**UNIVERSAL BRACKET KIT**

**USE ORIGINAL MOUNTING BOLT OR BOLTS.  
INSTALL MOUNTING LEGS AS SHOWN.**