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# INSTALLATION MANUAL

## AEROFLOW PERFORMANCE

### ALTERNATOR

### WARNING!

BEFORE PROCEEDING WITH INSTALLATION PLEASE READ INSTRUCTIONS CAREFULLY. THIS PRODUCT REQUIRES DETAILED KNOWLEDGE OF AUTOMOTIVE SYSTEMS. WE RECOMMEND THAT THIS INSTALLATION BE CARRIED OUT BY A QUALIFIED AUTOMOTIVE TECHNICIAN.

*These instructions must be read and fully understood before beginning the installation. Failure to follow these instructions may result in poor performance, vehicle damage, personal injury or death. If these instructions are not fully understood, installation should not be attempted.*

#### INTRODUCTION

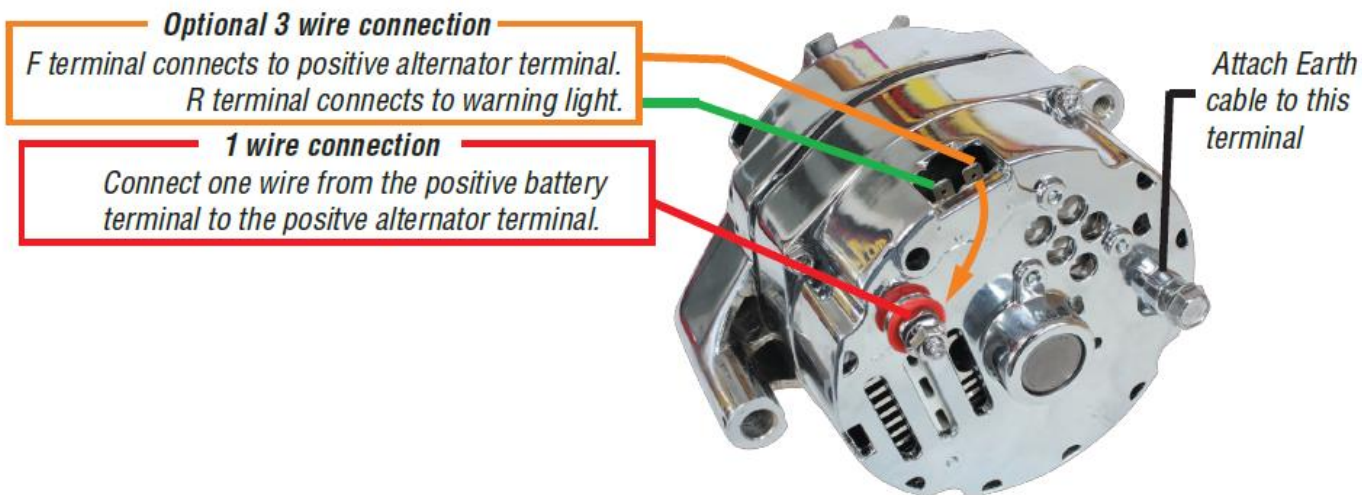
Congratulations on your purchase of the Aeroflow Performance 140-amp Chevy alternator. Aeroflow Performance products cannot and will not be responsible for any damage, or other conditions resulting from misapplication of the parts described herein. However, it is our intention to provide the best possible products for our customer, products that perform properly and satisfy your expectations. Should you have any questions? Please call technical support at +61 2 8825 1900 and have the product part number on hand when calling.

Aeroflow Performance alternators are assembled with top quality components and factory load tested to meet or exceed OEM specifications and ensure the highest output possible at low RPM. Supplied in a one-wire hook-up configuration enabling you to run a single wire from the alternator to the battery (positive). This internal, self-energizing voltage regulator is a great way to unclutter your engine compartment and simplify your charging system.

These alternators are available in a variety of amperages and to suit a variety of different makes and models. This allows the end user to choose the best model for your specific ride and the accessories you run. They each include either a fan/pulley combo or just a pulley on its own. Available in chrome, black or the OE natural finishes. So, whether you need an alternator for your truck, hot rod, muscle car or sport compact don't waste big dollars on having your original alternator rebuilt.

The Aeroflow Performance alternators do not require any external regulator. It can be completely removed from the vehicle, or left in place with the wiring disconnected from the regulator. They are designed as a self-exciting, or one-wire alternator. That means there is only one connection necessary, from the battery positive terminal to the charge terminal on the side of the alternator case housing. Simply run one wire from the alternator 'battery' terminal to the positive terminal of the battery or to the starter solenoid main lug, which should be connected to the positive battery post.

These 1-wire alternators also permit the use of a no charge warning (idiot) light. To wire a warning light using one of these alternators, simply remove the terminal plug cover and connect the #1 (Left terminal, looking from the back of the alternator) to the warning light wire. DO NOT wire #1 terminal directly to ignition "ON". A pigtail is available for sale separately for this application (AF49-1530).



The gauge wire that is used for this charge wire varies depending on the battery location and the current your vehicle will require. This chart provides the gauge recommended based on current demands and the length of the charge wire. Also, be sure to use quality terminals and connections. A wire size too small can allow the wire to overheat, melt the insulation and cause a fire or worse. Contact an auto electrician for recommendations of wire thickness.

	WIRE LENGTH		
AMPS	5' - 10'	11' - 19'	20' - 28'
30-70	10 - 8g	8 - 6g	6 - 4g
70-100	8 - 6g	6 - 4g	4 - 2g
100-150	6 - 4g	4 - 2g	2 - 0g
150-200	4 - 2g	2 - 0g	0 - 1/0g

In order for an alternator to charge properly, an alternator must be grounded to the engine block. If an alternator has paint or clear coat on the mounting surfaces, it may not be grounded and will not charge. Many mounting brackets are also powder coated, clear coated, painted, or plated. The alternator will not ground properly without a ground wire from the alternator housing to the engine block. (This wire should match charge wire size).

A fully charged battery is at least 12.6V, not 12.0V. A weak/defective battery will cause premature failure. Never disconnect the battery with engine running! This causes voltage spikes that will damage the alternator.

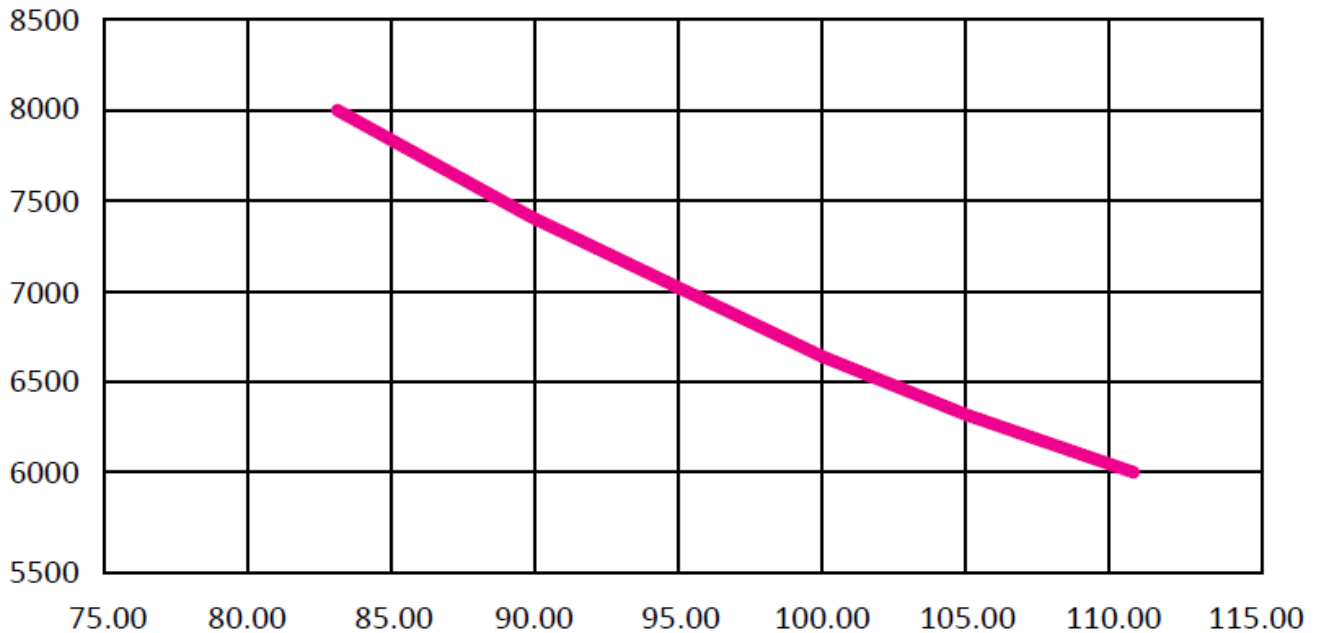
Aeroflow Performance alternators spin at approximately 2.5 times that of crankshaft RPM, so an engine at a 700 RPM idle would spin the alternator at 1,750 RPM. The maximum RPM of this alternator should not exceed 15,000 RPM which typically allows for a maximum of 6000 engine rpm. For engines that turn past 6000rpm it is recommended to check pulley sizes carefully to ensure the alternator stays under the 15000rpm maximum at all times. The alternator pulley supplied is 1.75" / 44.45mm diameter. The internal bearings and components are not designed for extremely high RPM's. We strongly recommend that you calculate your pulley ratio to determine if your alternator will operate within the safe RPM range.

To calculate your alternator pulley ratio, divide the engine crankshaft pulley diameter by the alternator pulley diameter. Using the ratio that you calculated, multiply that number by the highest anticipated engine RPM to determine the maximum alternator RPM.

Crank pulley diameter divided by alternator pulley diameter multiplied by maximum engine rpm = maximum alternator rpm.

Alternator Pulley (Diameter)			Crank Pulley (Diameter)		
Inch	mm	RPM	Inch	mm	RPM
1.75	44.45	15000	4.38	111.13	6000
1.75	44.45	15000	4.04	102.58	6500
1.75	44.45	15000	3.75	95.25	7000
1.75	44.45	15000	3.28	83.34	8000

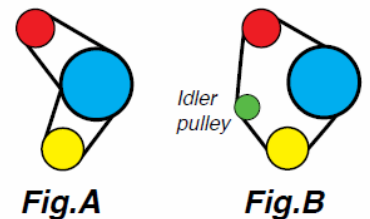
### ENGINE RPM TO MAXIMUM CRANK PULLEY DIAMETER (mm)



If your max calculation is greater than 15000 alternator RPM's, increase the alternator pulley diameter or decrease the crank pulley diameter to compensate. If changing the alternator pulley is not possible, use an engine rev limiter to control maximum engine RPM's.

**Alternator RPM**  
Two belts, one driving intermediate accessory pulley **Fig.A**  
One belt drives all accessories **Fig. B**

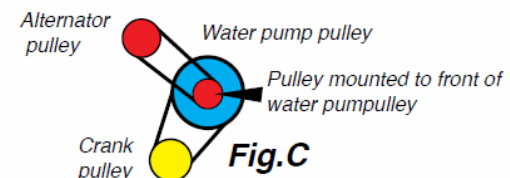
$$= \frac{\text{Crank Pulley O.D.}}{\text{Alternator Pulley O.D.}} \times \text{Engine RPM (Tach)}$$



**Alternator RPM**  
One belt, drives crankshaft and accessory pulley.  
Accessory changes O.D. and drives alternator **Fig.C**

$$= \frac{\text{Water Pump Pulley O.D.}}{\text{Alternator Pulley O.D.}} \times \text{Water Pump RPM}$$

$$\frac{\text{Crank Pulley O.D.}}{\text{Water Pump Pulley O.D.}} \times \text{Engine RPM (Tach)} = \text{Water Pump RPM}$$



For more information or technical enquires

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## **INSTALLATION INSTRUCTIONS**

Proper installation of this alternator is the responsibility of the installer. Improper modification or installation will void your warranty and may result in vehicle damage or personal injury.

Always use correct safety equipment when working on or underneath the vehicle. Ensure all electrical components are off and the battery has been disconnected.

Below is a basic guideline and each specific application may vary.

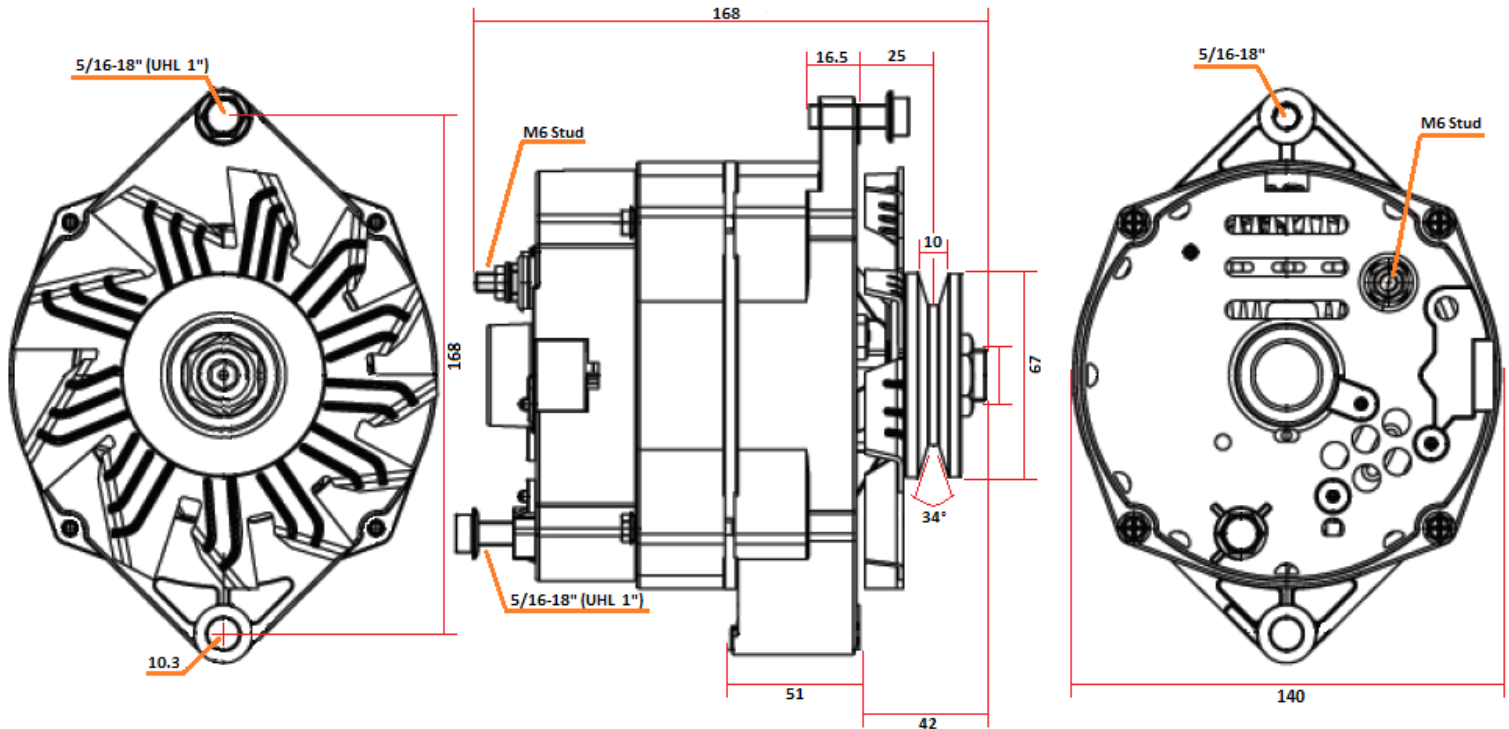
1. Disconnect the ground cable from the battery.
2. Disconnect all wire connections from the alternator and label wires for future replacement.
3. Loosen alternator mounting and/or tension arm bolts.
4. Remove alternator belt
  - I. Inspect belt for signs of cracking or glazing. Replace if needed. A loose belt will cause intermittent charging and generate excessive heat resulting in premature unit/bearing failure.
5. Hold the alternator securely while removing the mounting bolts and spacers. Remove old alternator and brackets.
  - I. Loose, damaged or misaligned alternator brackets can reduce the clearance between the alternator fan and belt.
6. Install new alternator and replace all mounting bolts and spacers. Do not fully tighten bolts.
7. Install alternator drive belt.
  - I. Adjust V-belt tension which should have ½" to ¾" play as light pressure is applied at the midway point between pulleys.
  - II. Loose or worn belts allow for movement and deflection which will decrease the gap between the fan and belt.
  - III. The supplied V-belt pulleys are designed to accommodate an 11a V-belt. Wider belts will not fully seat into the pulley groove.
  - IV. **NOTE** if using a Gilmer drive on this alternator, ensure the Gilmer belt is correctly tightened. If this Gilmer belt is tensioned incorrectly it will place more load onto the bearing and cause premature failure of the alternator bearings. **THIS WILL VOID YOUR WARRANTY.** Below is a basic guideline on how to correctly tension your Gilmer belt.

Fit the Gilmer belt and adjust so that when adjusted the belt can be turned at approx. 50% between pulleys (refer figure A). Some people will adjust the belt tighter in the hope of getting more 'whine' from the belt, this is **NOT recommended** as it will quickly wear out alternator and water pump bearings.

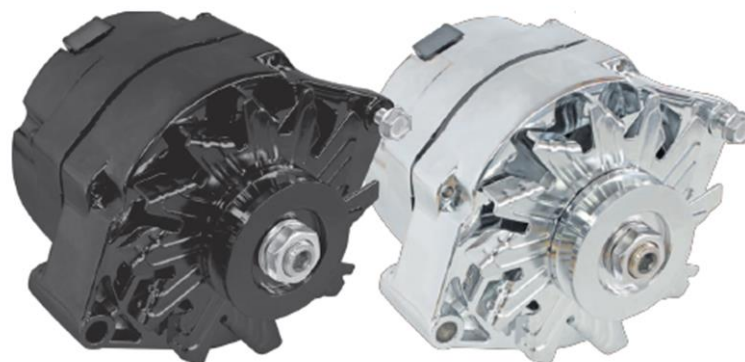


Figure A

8. Tighten all alternator and bracket bolts.
  - I. It is important to check the alignment of the pulleys. Place a straight edge on the water pump or crank pulley to the alternator pulley. If they are not aligned, the alternator may require shimming.
  - II. Check all bracket and mounting points are secure and withstand the weight of the new replacement alternator. If necessary, a support brace can be installed. An extra mounting hole is provided in the back of the alternator case housing.
  - III. Mounting brackets that only have a one solid mounting point such as systems that incorporate a turnbuckle or heim joint for tension adjustments. It is recommended to install a secondary support to dampen vibration.
9. Wire in the alternator positive and ground wires according to above text written earlier in this instruction sheet
10. Start the engine and using a volt meter, verify that the alternator is charging at least 13.8 volts @ 1,000 engine RPM's. This 'wakes up' the alternator for it to begin charging as needed. Check the voltage across the battery terminals. Voltage should be from 13 – 14.5 volts. Next, check the voltage at the output terminal of the alternator to engine ground. Compare this value to that from the battery terminals. There should not be more than a .40 volt drop between the two measurements. If there is, check for poor connections or replace the charge wire with a larger diameter wire. If you are not seeing proper charging values, it is recommended to run a ground wire from the alternator housing to the engine block.



All Measurements in Millimeters



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