12050/BLK12050
170 Amp Billet Aluminum Alternator

PLEASE KEEP IN MIND...

- ALWAYS wear eye protection when working around batteries.
- ALWAYS disconnect battery ground terminal and cable assembly before replacing electrical components.
- NEVER disconnect a battery cable or alternator cable and wires when engine is running. Transient voltages (spikes) are produced when this occurs and some of these voltages exceed 200 volts. This can cause alternator voltage regulator or engine computer failure.
- AVOID short circuits. When working with live circuits, never jumper between terminals or from terminals to ground, nor try to trouble shoot by "sparking" terminals. Always use a quality voltmeter to check the operation of live circuits.
- CHECK the battery. Alternators and batteries work together. It is important that the battery be in good condition and fully charged when replacing the alternator. Do use an alternator to charge a dead battery.

DISCONNECT THE BATTERY.

REMOVE THE OLD ALTERNATOR. See the Tru Trac service manual for more details. remove the belt noting its routing and then remove the alternator. Be sure to label all wires before removing to assure proper reinstallation and location.

INSTALL THE ALTERNATOR PULLEY.

Install the alternator pulley per Powermaster's instructions on the back of this sheet.
Not following this proceedure will damage the alternator and void the warranty.

INSTALL THE NEW ALTERNATOR.

- Mount the alternator and check for interference with the brackets or other engine components. Tighten all the bolts.
- Check for proper belt alignment. Proper alignment is critical for serpentine belts.
- Install the belt per the Tru Trac instructions.
- Reconnect all wires and check labeling for correct location. If the Billet Specialties alternator is of a higher amperage that the alternator that came with the original Tru Trac then it is recomended that you upgrade the battery output cable from the alternator using the chart below.

AMPS	Recommended Charging Cable Gauge Size				
	Up to 4'	4' - 7'	7' - 10'	10' - 13'	13' - 16'
125-150	6	6	4	2	2
175-200	4	4	2	2	0

CONNECT THE BATTERY.

SYSTEM CHECK

♦ Apply a moderate load to the charging system (i.e., high beam headlights and A/C for example) and bring the engine to 1,500 rpm. Using a digital voltmeter measure the DC voltage from the a bare metal on the case of the alternator to the gegative battery terminal. Readings higher than 0.10VDC indicate a poor ground connection. Check the ground path including any paint or anodizing on the brackets, the engine ground strap, and the ground cable from the frame to the battery. (See figure 1).

♦ With battery fully charged and engine running at 1,500 rpm, measure the voltage at the positive post (+) and the ground post (-). Voltage should be 13.8~14.5VDC. Readings above 15.5VDC indicate a defective alternator and readings below 12.7VDC indicate that the alternator is not functioning or cannot supply the current amperageneeds of the vehicle at this engine speed.

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♦ Using the voltmeter, measure the voltage drop between the battery positive post (+) and the alternator output post (See Figure 2) Voltage should be less than 0.40VDC. If voltage is higher than 0.40VDC, check for poor connections between the alternator and the batter. Possible causes are unsized battery cables, loose or improperly crimiped terminals and corroded connections.

FIGURE 1

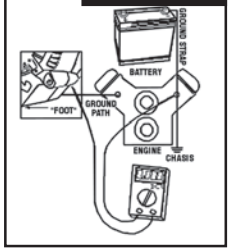
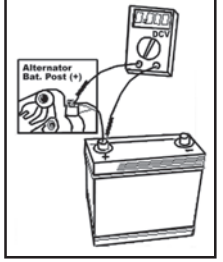


FIGURE 2



Why does my voltage test good at the alternator but low at the battery and fuse box?
Any resistance in the electrical path will decrease voltage. This includes all positive and negative conductors and connections between the alternator and the second test point. All connections must be secure and free of corrosion. All ground points must be free of paint and rust. Charging wires must be of adequate size for the amperage capabilities of your alternator. Improving any weak points in the electrical paths should bring voltage readings to within 0.5 volts of each other.

Why is my voltage low when I'm cruising around at a show or sitting at a traffic light?
All alternators have an output curve that increases with RPM. In other words, your alternator cannot provide as many amps at idle as it can at higher speeds. If you car demands more amperage than the alternator can supply at idle, the remaining amps must come from the battery thus a decrease in voltage results.

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Alternator Pulley and Fan, Removal & Installation Process.

1. Open box and remove alternator. Visually inspect alternator.
2. Place alternator on secure horizontal surface resting on packing foam from original shipping. (alternator should be sitting as if it were in the installed position on vehicle)
3. **NEVER** attempt to remove or install pulley w/alternator in the upright position. **Do not hold fan.**
4. Hold pulley firmly to brace for removal. Use of gloves is recommended. **Do not hold fan.** Using a thin wall 15/16 socket on an impact wrench. (Race alternators may have a different size nut) Hold pulley firmly and engage impact wrench counterclockwise to remove nut.

Step 1.

Step 2.

Step 3.

Step 4.

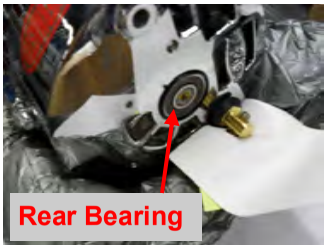
5. Pulley should slide off of shaft. Do not force pulley on or off alternator. (This may cause internal damage to the alternator)
6. Remove fan. Ensure bearing spacer is on alternator shaft before installing fan.
7. Slide fan and pulley onto alternator shaft. (Do not force pulley on, this may push the bearing out of the rear of the alternator and/or cause internal damage) Slide lock washer onto alternator shaft in front of pulley. Start nut onto alternator shaft by hand.

Step 5.

Step 6.

Step 7.

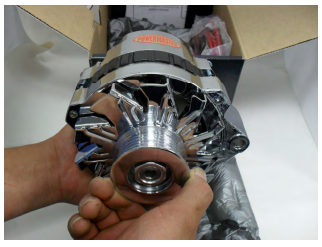
Step 7. cont.



8. Hold pulley firmly and engage impact wrench clockwise to tighten nut. (aprox 70 ft lbs)
9. Turn pulley by hand to verify free rotation.
10. If pulley rotates freely, the alternator is now ready to install. Ensure proper belt tension.

Step 8.

Step 9.



Step 10.

Proper belt tension is critical to the performance of the alternator!

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