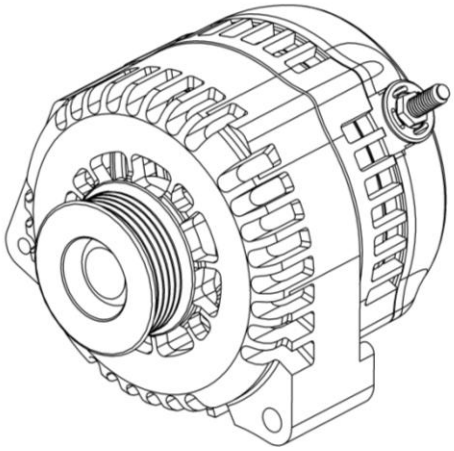
Alternator Installation



DO NOT RETURN THIS PRODUCT!
First contact technical support at: **1 (888) MECHMAN**

General

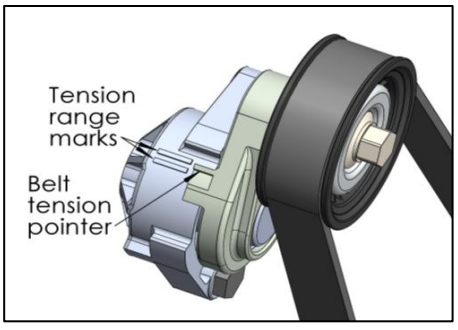
Eye protection must be worn when working near batteries.

Remove all jewelry before working on the electrical system.

Always refer to a service manual for specifics about
Your vehicle's alternator installation and electrical system.

Installation steps:

1. **Turn off engine and let it fully cool.**
2. **Disconnect the negative cable from the battery/batteries.**
3. **Disconnect all other wiring from the alternator.**
4. **Remove the belt (note the belt routing before removing).**
5. **Remove the bracket bolts and original alternator.**
6. **Mount the new alternator. In most cases the original bolts will be used.**
7. **Inspect the belt and replace if there are any signs of wear. It is suggested you replace the belt when installing a high output alternator. Install the belt. Make sure routing is correct and the belt is aligned to all pulley grooves.**



Serpentine belt notes:
The new alternator pulley MAY BE smaller than the original pulley. This is to further increase low RPM performance. In some cases the original belt will still work, but the tensioner must be in its marked range or a shorter belt must be purchased. After belt installation is complete check belt alignment to the alternator, all pulleys, and the tensioner.

8. **Install/replace the alternator charge wire. NOTE: It is Absolutely critical that all ring terminals at both ends of the positive and ground cables fit the bolt or stud that you are putting them on perfectly. If the hole in the ring terminal is larger in diameter than the bolt or stud you are putting it on, you will not have a good connection, and in some cases may melt the end of the cable off and cause a fire.**

It is important you increase you battery charge wire to accept higher amperage of your new alternator. In most cases the original charge wire can either be removed or can be left in place on the vehicle with the upgraded larger cable supplementing the stock charge cable. The charge wire should be fused within 12" of the battery terminal for safety. See chart for sizing.

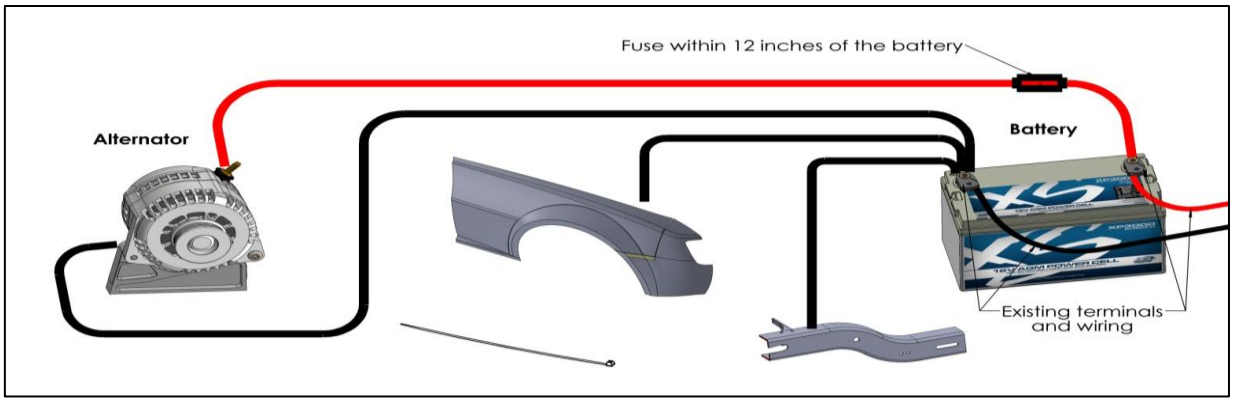
Alternator rating	Primary battery location	Recommended ground and charge wire size	Recommended battery fuse size
Less than 200 amps	Engine compartment	4 gauge pure Copper or 2 gauge CCA	250 Amp
Less than 250 amps	Trunk compartment	1/0 gauge copper or 2/0 CCA	250 Amp
250-400 amps	Any location	1/0 gauge copper or 2/0 CCA	400 Amp

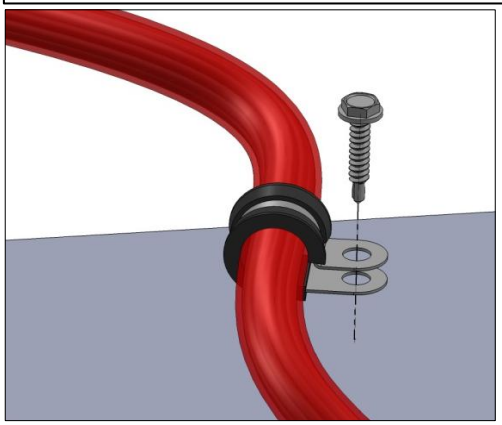
9. Upgrading the alternator grounds

The return path (ground path) must be of the same capability as the positive Alternator charge cable. Any less capable sections of the ground side of the circle could cause a fire and MUST be upgraded to the same size as the positive charge cable that is properly sized for the amperage of the alternator .

Frame/body connections: Clean all metal surface of any paint or rust with a wire brush or die grinder. Use a conductive corrosion inhibitor available at any electrical parts supply house.

Uni-body frame warning (grounding): Many newer vehicles have "uni-body" or sheet metal frame structures with no traditional "full frame". Because of seams and adhesive attached body components, additional steps may be required for proper chassis grounding. Choose the location on the sub-frame with the thickest metal possible. If there is lower than spec charging voltage at the battery, move ground connections or add additional ground cables to different frame components.





Use screws and insulated mounting clamps (not included) to secure larger cables to the vehicle.

Warning: It is critical that all electrical wiring is kept at least 12" away from heat sources such as exhaust manifolds and other exhaust components or the jacket of the cable could catch fire.

Also, route the cable away from moving components such as cooling fans and suspension components. When wiring must be routed through metal panels, be sure to use a grommet to prevent chaffing the cable jacket.

10. Additional wiring of the alternator

Some alternators will utilize the OEM alternator plug. In some cases an alternator may require an in-line adapter harness in order for the OEM alternator plug to fit the socket on the alternator. This adapter harness may be included with the alternator, or may need to be purchased separately depending on the application.

One wire alternators
Self Exciting or "one wire" alternators will have no plug on the alternator whatsoever, and the OEM alternator harness plug will be left disconnected. This type of alternator requires only the positive and negative battery cables to be connected to the alternator to function. These alternators are internally regulated, and will turn themselves on and off with engine rotation, and also regulate their own charging voltage.

Single wire turn on alternators
If your alternator comes with a pigtail that plugs into the alternator with a single loose wire coming out of it, this small exciter wire will need to be connected to an ignition switched source to turn the alternator on and off with the key switch. Connect the "exciter" terminal on the alternator to switched voltage that is ON when the key is in the run position. Many vehicles have an indicator light in the dash that can be placed in series in the turn on wire so that the indicator light will still function. Any voltage of 5V+ to 15V positive is suitable to turn on the alternator.

Gauges
If your vehicle is an early model and came with an ammeter gauge in the dash, it is highly recommended you add a dash mounted volt gauge. Many OEM Ammeters are not rated to carry the amount of current the alternator will produce, so it is not recommended to connect the ammeter to the alternator charge cable. A voltmeter will provide better feedback on the alternator's function anyway. Connect the gauge's voltage sensing wires as close to the battery's ground and positive terminals as possible.

11. **Connect the battery ground and confirm all other electrical connections are complete. Confirm the belt path is correct and clear of obstacles.**

12. **Before starting the vehicle, check to confirm the battery is charged. Starting the vehicle with a discharged battery can damage the alternator. Use a battery charger the charge the battery first if voltages are not adequate.**

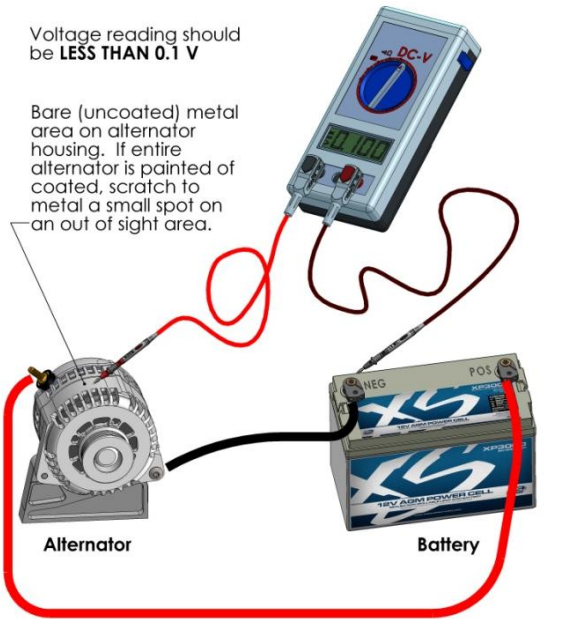
System Voltage	Charged battery
12 V Battery	12.5 V or higher
14 V Battery	14.6 V or higher
16 V Battery	16.7 V or higher

13. **Start the vehicle and turn on only the headlights. Keep the audio system and other electrical loads OFF during testing. Bring engine RPM to 2000 RPM. Measure voltage with a hand held voltmeter at the battery terminals. The voltage of the battery should increase by at least one full volt to indicate that the alternator is charging.**

Ground path test

If greater than 0.1V is measured improve:

- Ground connection surfaces. Confirm all paint, anodizing, rust are removed and the connections are to bare metal.
- Make certain all terminals are tight to the wire.
- Make certain the ground wire is of adequate size (see wire size chart page 2).



Charge path test

If greater than 0.1V is measured improve:

- Terminal is tight to alternator charge post.
- Make certain all terminals are tight to the wire.
- Make certain charge wire is of adequate size (see wire size chart page 2).

Pulley changing instructions (typically not recommended)

In a few cases the pulley may need to be changed. Keep in mind that the pulley on the high output alternator will typically be a different diameter than the OEM pulley, and belt length may need to be adjusted to maintain proper belt tension. Changing the alternator pulley may cause the pulley ratio to be incorrect for the application, always consult with the tech department before changing pulleys. The easiest and safest way to remove and reinstall the pulley is with an electric or air actuated impact driver. While wearing mechanics gloves, hold the pulley with one hand and use the impact driver to remove the pulley nut in a standard counter clockwise direction. (most applications) Remove and install the replacement pulley. Double check to make sure that the back of the pulley does not contact the face of the alternator housing, and that the pulley offset is the same as the pulley that came off of the alternator. Also be sure that there is enough threaded shaft protruding through the pulley for proper thread engagement. Start the nut by hand, hold the pulley by hand, and then tighten clockwise with the impact wrench. *torque the nut to 70 ft. lbs. with a torque wrench.*

Alternator rear housing re-clocking directions (typically not recommended)

In rare situations the rear of the alternator may need to be rotated relative to the front mounting. This will reposition the charge post and regulator plug (if there is one). The best way to re-clock the alternator is to first remove the pulley (see above). Second, remove the bolts that hold the alternator halves together. In some cases the rear cover may need to be removed to access these bolts. ***IMPORTANT!*** *Through this entire process do not let the shaft assembly move forward from the rear half of the alternator. This would cause the spring loaded brushes to come out of their chamber, and could possibly damage the brushes. Keeping the alternator shaft pointed up for the rest of this process will help prevent this.* While holding the shaft down into the alternator, use a soft hammer to tap the front housing up enough it can be rotated into the new position. Reinstall the bolts and pulley, starting them by hand first. In an even criss cross pattern, re torque the through bolts in 2 ft lb increments to 6 ft lbs.