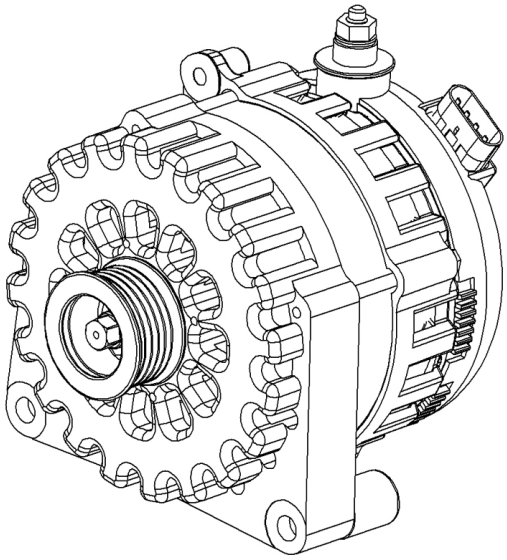
Alternator Installation

(2019 and later GM Trucks with Stretch-Fit Alternator Belt)

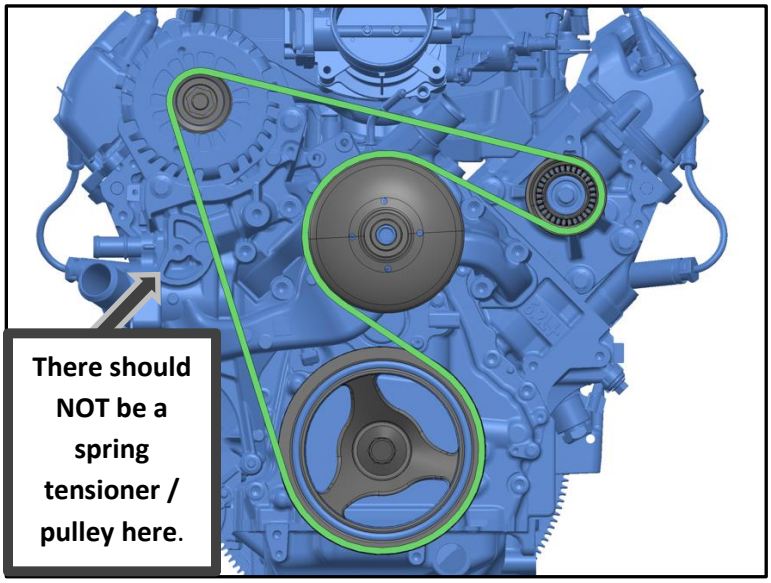


If you are experiencing problems upon installation - DO NOT RETURN THIS PRODUCT! **Most installation problems can be easily solved.**
First contact technical support at: **Service@mechman.com**
1 (888) MECHMAN or 865-522-6166

General

- **Eye protection must be worn when working on 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.

Application note: This alternator is designed specifically for 2019 and later GM V8 trucks with the below belt path and a stretch-fit belt. This alternator may work on other unintended applications that utilize a tensioner, but a custom length belt will need to be sourced in that situation.



Pulley note: This alternator is specifically designed to work with GM truck's original stretch fit belt. Changing the pulley diameter would impact the required belt length. Only the supplied Mechman pulley should be used.

RPM note: Because this alternator is overdriven for optimal amperage output, it should NOT be used in high RPM performance applications, or the alternator may be overspun and damaged.

Installation steps:

1. **Turn off the engine and let it fully cool.**

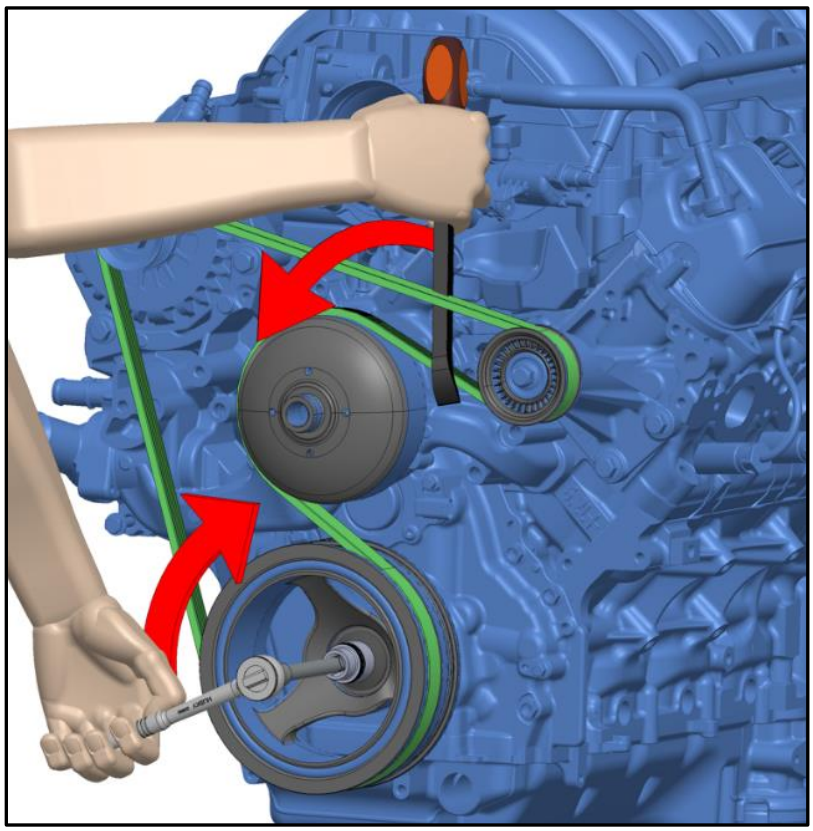
2. **Disconnect the negative cable from the battery/batteries.**

3. **In most cases your application will require removal of the air intake tube. If removal process details are needed, refer to your vehicle's specific service manual.**

Note: If your application has a bracket from the air enclosure to the alternator, remove this bracket. It will not be used with the Mechman alternator. Secure any related harnesses safely back with nylon cable ties.

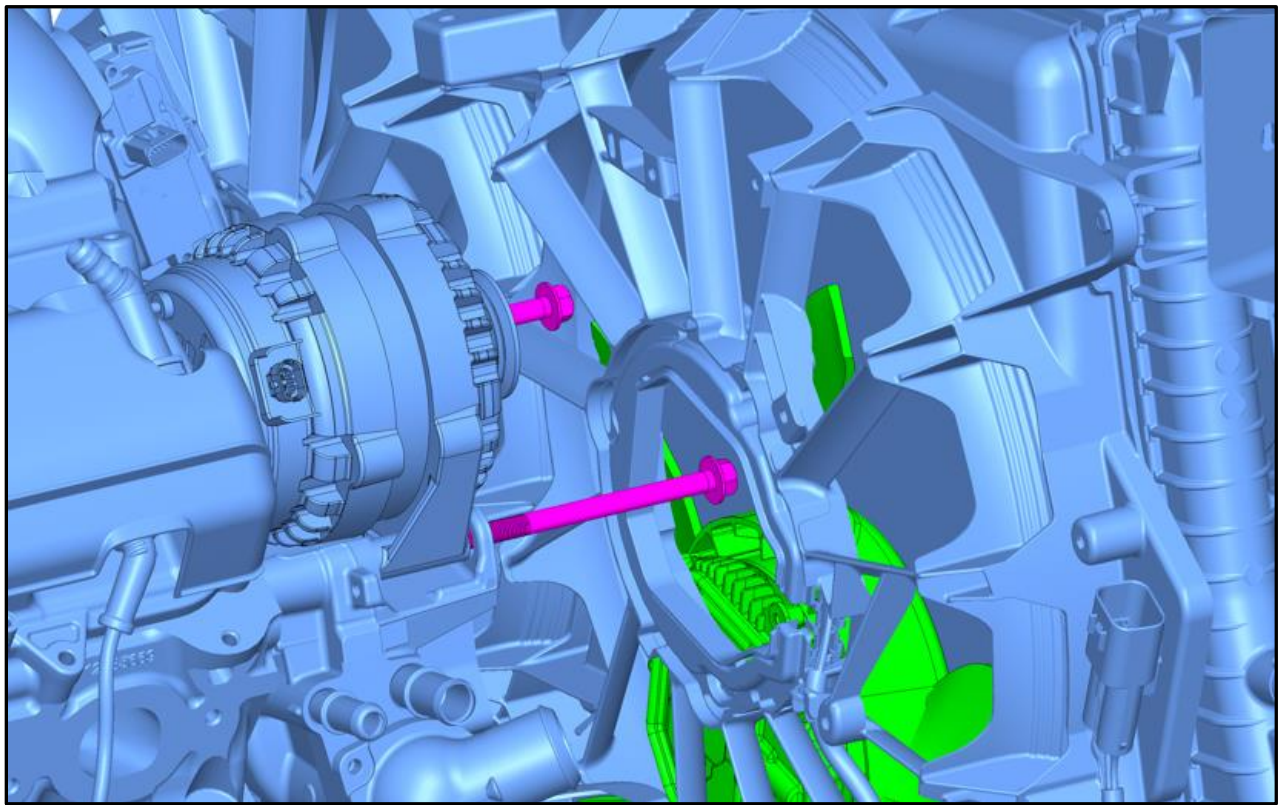
4. **Remove the belt (note the belt routing before removing). If the belt is going to be replaced, the old belt can be cut for easy removal. If replacing, it is recommended the new belt be purchased before removing the old belt.**

   - Insert straight bar through belt as shown in the image to the right.
   - Gently pull the top of the bar toward you.
   - Using a 24-millimeter socket and rachet rotate the crank pulley clockwise.
   - The belt will slowly walk off the grooved idler pulley.



5. **Disconnect all wiring from the alternator.**

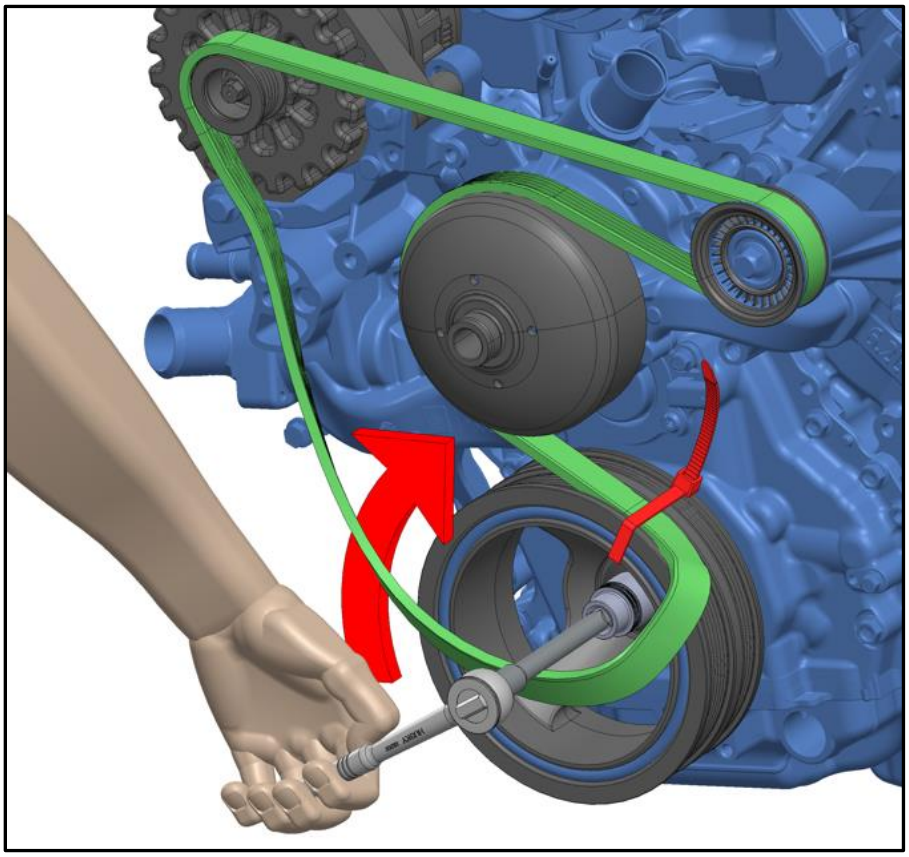
6. **Remove the alternator / bracket bolts and original alternator.**



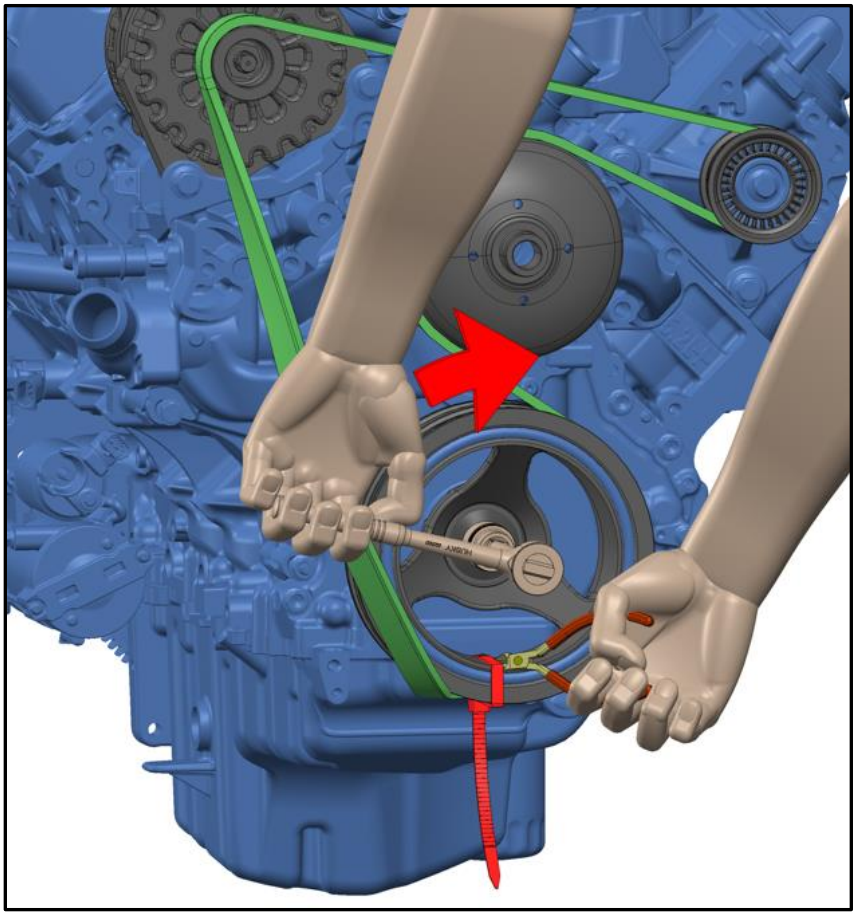
Note: The passenger side alternator bolt is very long and will interfere with the fan motor upon removal. Disconnect the wire connector, remove the fan motor's perimeter bolts, and carefully position the fan assembly out of the way inside the shroud. Be careful not to let the fan contact the radiator or damage could occur.

7. **Mount the new Mechman alternator using the original bolts and reinstall the fan assembly.**

8. **Inspect the belt and replace if there are any signs of wear or damage. Install the belt.**



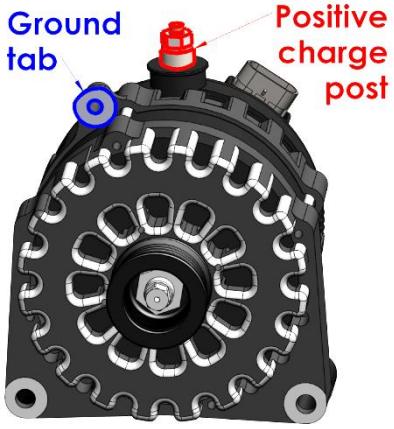
- Route the belt around the upper three pulleys.
- Next, start the belt in the grooves at the top of the crank pulley.
- Route a heavy-duty nylon cable tie through the crank pulley at the location shown in RED and tighten against the belt.
- Rotate crank pulley clockwise while monitoring the belt. It will slowly work its way onto the pulley. Make sure the ribs on the belt stay facing towards the crank pulley as they may start to flip over.



- Once the nylon tie rotates to the 6 o'clock position, you will need to remove the nylon tie to prevent it from contacting the A/C compressor belt.
- Continue rotation until the belt is fully seated in the crank pulley's grooves.

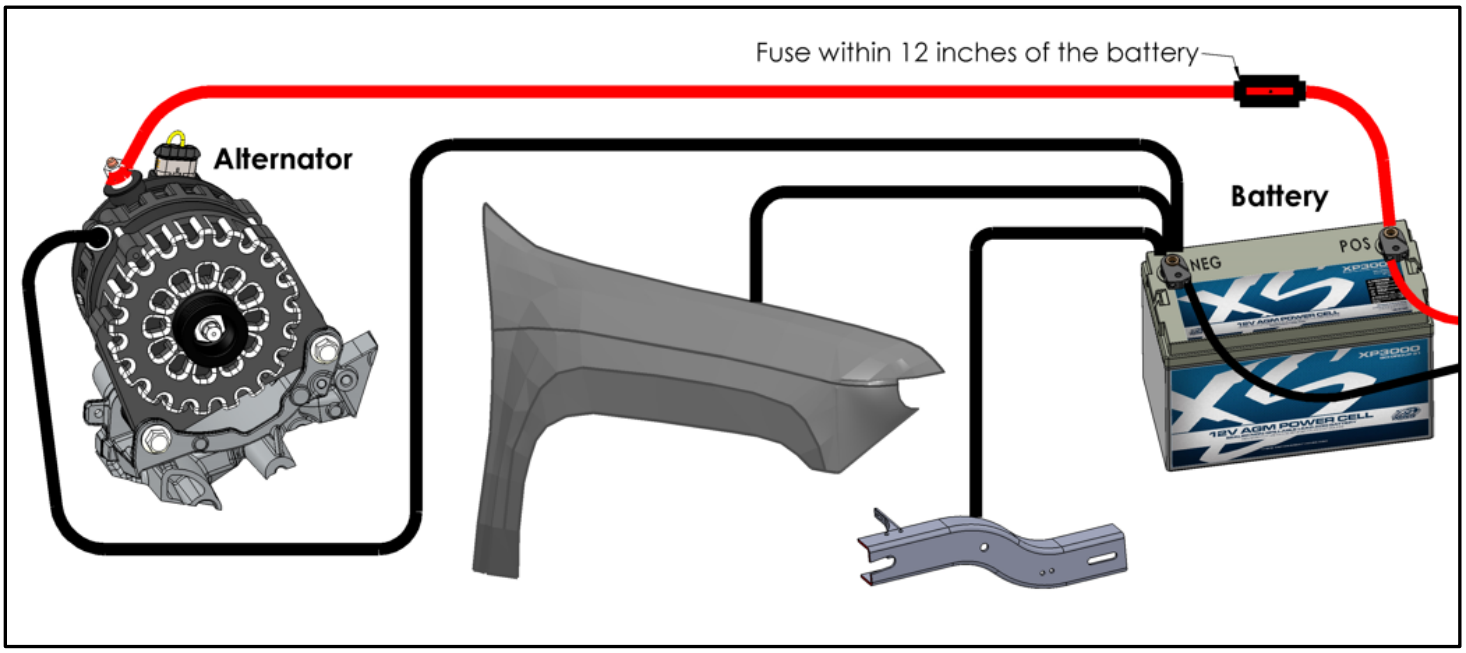
9. **Make certain the belt is in the proper grooves on all pulleys. After installation confirm the belt is routed correctly and clear of any obstructions.**

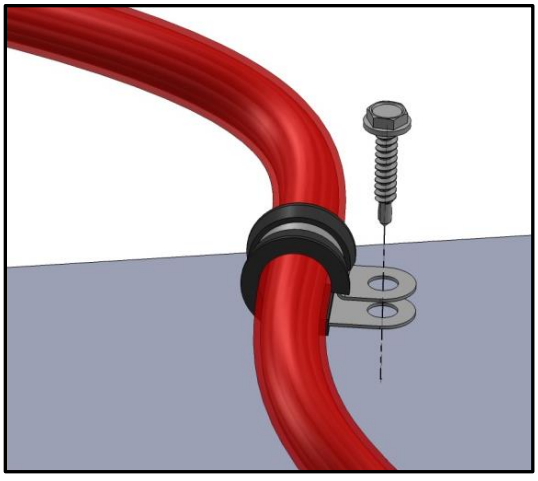
10. **Install/replace the alternator charge wire: It is important you increase the size of the battery charge cable to accept the higher amperage of your new alternator. In most cases the original charge wire can either be removed and replaced or left on the vehicle with a 1/0 AWG (zero gauge) cable stacked on the alternator charge post for more amperage carrying capacity. The charge wire should be fused within 12" of the battery terminal for safety. The fuse installed in the 1/0-gauge cable needs to be of equal amperage capacity as the alternator being installed. To support this alternator's amperage, it's essential to use a 1/0 pure copper cable, connecting it directly from the alternator charge post directly to the battery positive post.**



11. **Upgrading the alternator grounds: The ground boss tab on the rear alternator housing ABSOLUTELY must be used. Anodized billet alternators are non-conductive internally. A 1/0-gauge ground cable MUST be run from the alternator ground tab, directly to the negative terminal of the battery. Failure to do so will cause damage to the alternator and cause potential harm to other components.**

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. Run 1/0 frame and body ground cables from the NEGATIVE TERMINAL OF THE BATTERY. No more than two 1/0-gauge cables should be connected to the alternator housing ground tab.





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

Warning: It is critical that all electrical wiring be kept at least 12" away from heat sources such as exhaust manifolds and other exhaust components.

Also, avoid 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 and potential shorts.

12. **Plug the P103 module into the factory harness that was disconnected from the original alternator (Figure A). Tie the harness and P103 safely away from heat sources and abrasions.**

Figure A

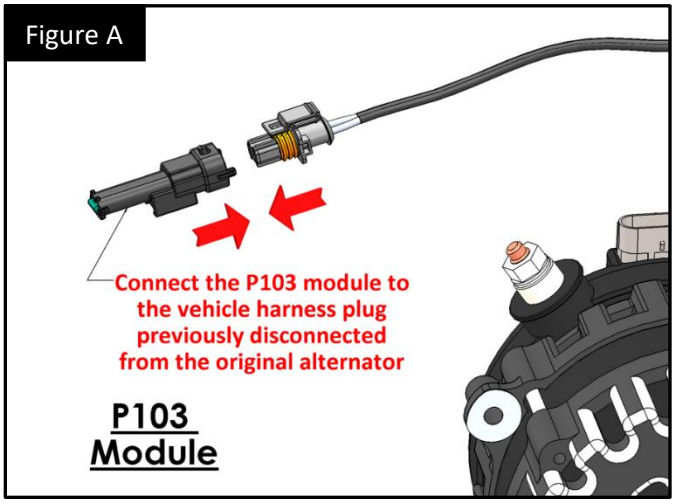
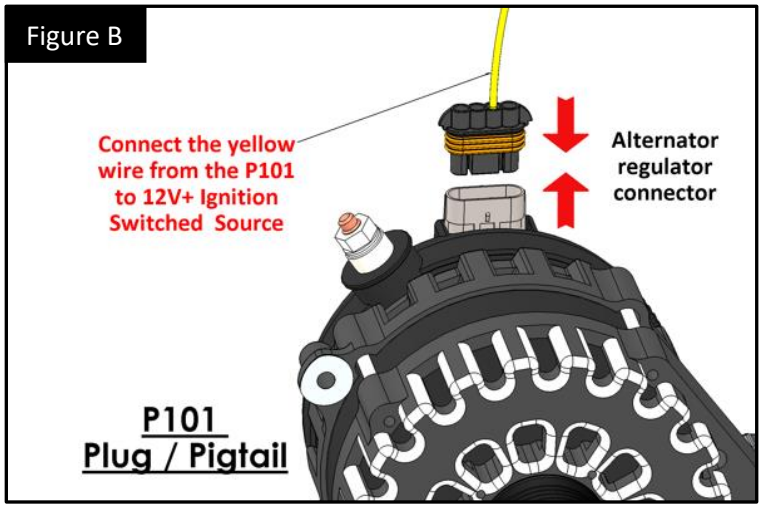


Figure B



13. **Insert the P101 plug into the alternator as shown in figure B. Connect the yellow wire to switched voltage that is ON when the key is in the run position. A switched source can be found in the under-hood fuse box.**

- With a multimeter, ground the negative probe to the ground tab on the alternator. Using the positive probe check each fuse's top until a circuit is found that is only ON when the key is in the run position **(Figure C)**.

- Remove the fuse. Check to see which of the two terminals is showing voltage. This is the feed terminal **(Figure D)**.

- Install the included fuse circuit tap oriented as shown relative to the feed terminal **(Figure E)**. Install the original fuse in the tap's lower socket, and the Mechman supplied fuse in the upper socket. The tap's wire pigtail should then be connected to the P101's yellow wire.

Figure C

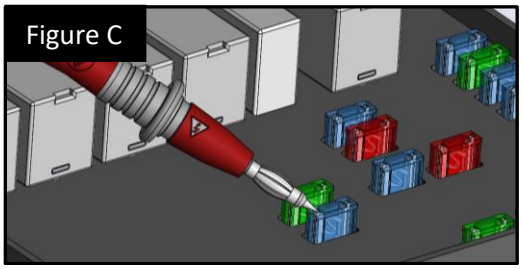


Figure D

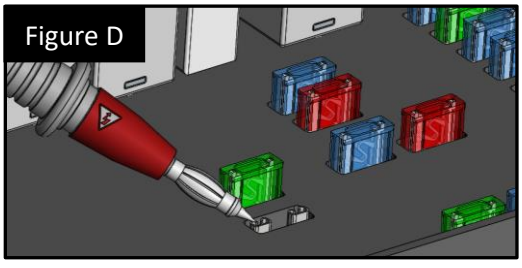
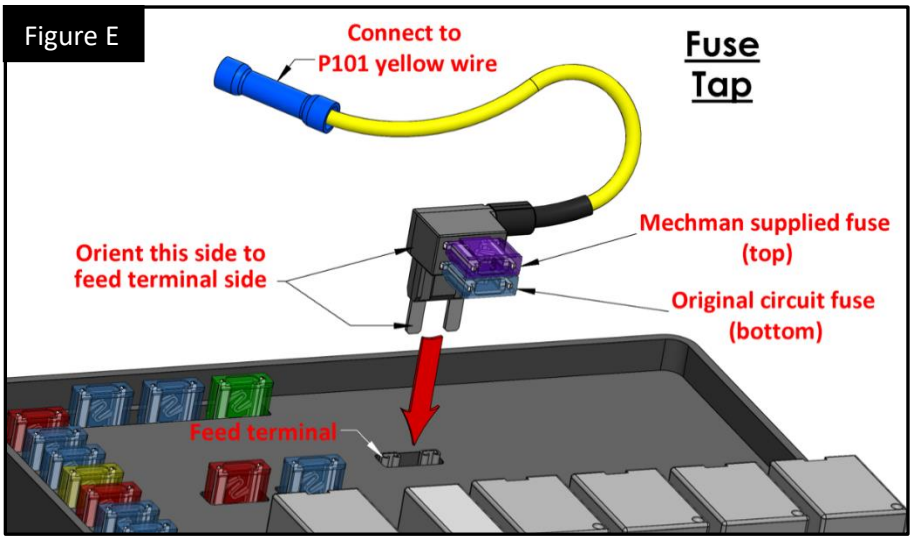


Figure E



14. **Reconnect the battery ground and confirm all other electrical connections are complete.**

15. **Before starting the vehicle, check to confirm the battery is charged. Starting the vehicle with a discharged battery puts unnecessary strain and heat into the alternator and may damage it. Use a battery charger to fully charge the battery BEFORE starting the engine.**

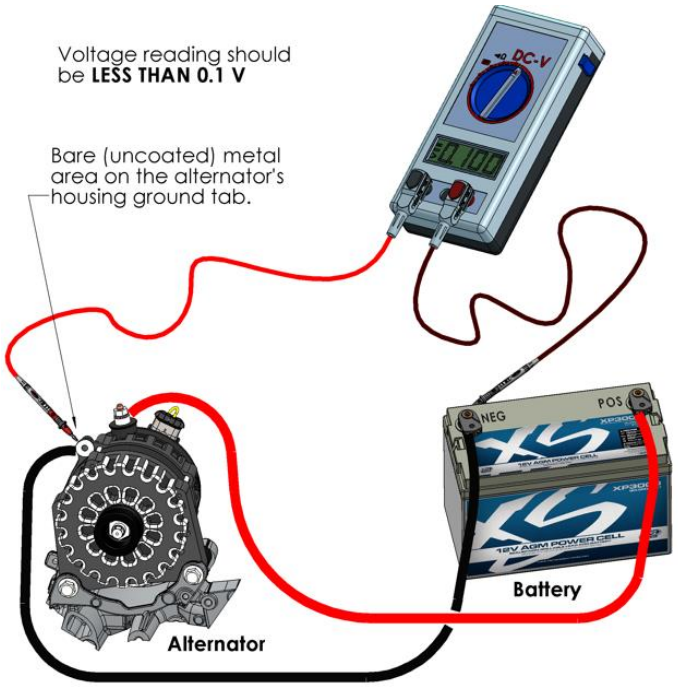
System Voltage	Charged battery
12 V Battery	12.5 V or higher
14 V Battery	14.6 V or higher
16 V Battery	16.7 V or higher

16. Start the vehicle and turn only the headlights ON. Keep audio system and other electrical loads OFF. Perform system testing below.

Ground path test

If greater than 0.1V is measured improve:

- Ground connection surfaces. Confirm all paint, anodizing, rust is 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.



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

Alternator test

If voltages aren't obtained:

- Recheck all connections.
- Remove the alternator and take it to a local auto parts store and have it tested for functionality.
- Call for technical support: 1-888-632-4626

Help and Troubleshooting

Alternator will not turn on:

1. Make sure that the alternator charge cable is connected to the positive terminal of the nearest battery, and that there is a dedicated ground cable of equal size running from the alternator grounding pad bolt to the negative terminal of the battery.
2. Verify that the alternator regulator plug has been properly connected as per provided instructions.
3. Make sure you are using a 12V switched source to provide the turn on signal for the alternator. This wire needs full battery voltage present only when the key switch is in the “Run’ position.

Low voltage:

1. An easy way to check for voltage drop between the alternator and battery(s) is with a voltage drop test. To perform this test, start the vehicle and allow it to warm up to operating temperature. Have someone hold the throttle to 2000 RPMS engine speed. Turn on all electrical components in the vehicle in order to create load against the battery. Using a known accurate handheld voltmeter, take a voltage reading at the alternator output stud, with the multimeter grounded to the alternator ground tab. Using the multimeter take a voltage reading at the furthest away electrical component. There should be no more than .2V difference under the heaviest load. If the difference is more than .2V, there is high resistance in either the charge or ground path. Most commonly, this is caused by one or more compromised cable end connections.
2. Load test all batteries in the electrical system and replace any battery that does not completely pass a load test.
3. Check for possible belt slip. The alternator makes power by converting mechanical energy to electrical energy and it gets that mechanical energy from the drive belt turning the alternator. If the belt is slipping, then alternator performance will suffer. If there is heavy black powdery rubber residue on the front of the alternator, or if the alternator pulley’s coating is wearing off, it is a good indication that you have a belt slippage problem. Make sure that the belt is of high quality and proper length. Also, check for any possible engine fluid leaks which could compromise the resistance between the belt and pulley.

Abnormal noise:

1. It is normal for a high output alternator to make more “generator” noise than an OEM alternator.
2. Improper belt tension will make the alternator make a “squealing” or “chirping” sound. This noise is not from a bearing failure. A bad bearing generally makes a low pitched “growling” sound.
3. An alternator can make a howling “supercharger” sound if there is something in the electrical system that has inadequate ground path, or if the alternator has been improperly installed and has damaged the rectifier.
4. An alternator can also make a howling “supercharger” sound if it is charging a sulfated / damaged battery.