Mechman Alternators 14009390

Mechman 390-Amp High Output Alternator User Manual

Model: 14009390
Brand: Mechman Alternators

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your Mechman 390-Amp High Output Alternator. Designed for 1996-2020 GM Trucks and SUVs, this alternator delivers reliable and efficient performance for various automotive electrical needs, including modern AGM style batteries and high-power audio systems. Please read this manual thoroughly before installation and use to ensure proper function and safety.

Image 1.1: The Mechman 390-Amp High Output Alternator, featuring a natural finish and a black pulley with 'MECHMAN.COM' branding.

2. Safety Information

Always prioritize safety when working with automotive electrical systems. Failure to follow these guidelines may result in injury or damage to your vehicle.

- Disconnect the vehicle's battery before beginning any installation or maintenance work.
- Wear appropriate personal protective equipment, including safety glasses and gloves.
- Ensure the vehicle is on a stable, level surface and properly secured before working underneath it.
- Avoid contact with hot engine components.
- Do not short-circuit electrical terminals.
- Consult a qualified automotive technician if you are unsure about any part of the installation process.

3. Product Overview

The Mechman 390-Amp High Output Alternator is engineered for superior performance in compatible GM vehicles. Key features include:

- Fits most 1996 to 2020 GM Trucks and SUVs.
- Comes with harnesses for both 1996-2004 (H104) and 2005-2020 (P101 and P103 combo) models.
- One-wire turn-on capability.

- Multiple bracket capable for versatile mounting.
- Voltage output of 14.5 to 15V, with optional voltage booster harnesses for up to 17 volts for lithium-based batteries.
- Designed and assembled in the USA.

4. Installation

Proper installation is crucial for the optimal performance and longevity of your Mechman alternator. Follow these steps carefully.

4.1 Pre-Installation Checks

- Ensure the vehicle's battery is disconnected.
- Verify that the new alternator matches the mounting points of your original unit.
- Acquire a half-inch shorter serpentine belt. Refer to the belt size chart below for specific part numbers based on your engine and year.
- It is highly recommended to upgrade your vehicle's main power and ground wiring (often referred to as the "Big 3" upgrade) to 0-gauge wire directly to your battery for optimal performance with a high-output alternator.

Engine	Year	Brand	Belt size for 240, 320, 370 and 400 amp units	Belt size for 250 amp units
4.3L	96-99	Dayco	5060960	5060965
	00-04	Dayco	5060945	5060950
	05-13	Dayco	5060955	5060960
	14-18	Dayco	5060870	5060875
4.8L	99-07 classic	Dayco	5060923	5060930
	07 non-classic-13	Dayco	5060930	5060935
	14-18	Dayco	5060710	5060715
5.0L	96-99	Dayco	5060960	5060968
5.3L	99-07 classic	Dayco	5060923	5060930
	07 non-classic-13	Dayco	5060930	5060935
	14-18	Dayco	5060710	5060715
5.7L	96-99	Dayco	5060960	5060968
6.0L	99-07	Dayco	5060923	5060930
	08-14	Dayco	5060930	5060935
	15-18	Dayco	5060923	5060930
6.2L	07-13	Dayco	5060930	5060935
	14-18	Dayco	5060710	5060715
7.4L	96-01	Dayco	5061000	5061005
8.1L	01-06	Dayco	5060945	5060950

Image 4.1: Belt size reference chart for various GM engine displacements (4.3L, 4.8L, 5.0L, 5.3L, 5.7L, 6.0L, 6.2L, 7.4L, 8.1L) and years, providing Dayco belt part numbers for 240, 320, 370, 400 amp units and 250 amp units.

4.2 Alternator Removal and Installation

1. Carefully remove the original alternator from your vehicle.
2. Mount the new Mechman 390-Amp Alternator in the factory location.
3. Install the shorter serpentine belt, ensuring proper tension.

4.3 Wiring Harness Connection

Your Mechman alternator comes with specific wiring harnesses to ensure compatibility with different GM model years.

For 1996-2004 Models: Use H104 Harness

Connect the H104 harness as shown in the diagram. The yellow wire from the H104 harness must be connected to a 12V+ switched ignition source. This means the wire should receive 12 volts only when the key is in the "Run" position.

Image 4.2: Diagram illustrating the connection of the H104 harness. It shows the vehicle's original alternator harness connecting to one end of the H104, and the other end connecting to the alternator regulator connector. A yellow wire from the H104 is indicated to connect to a 12V+ switched ignition source.

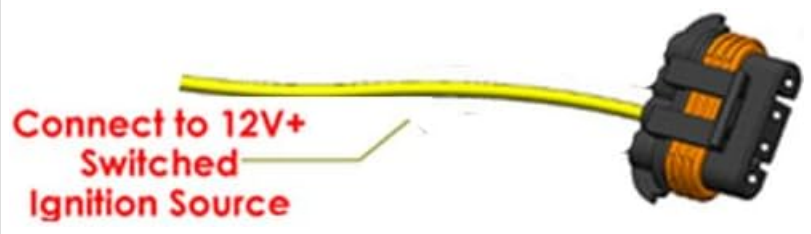


Image 4.3: Close-up view of the yellow wire from the harness, indicating it should be connected to a 12V+ switched ignition source.

For 2005-2020 Models: Use P101 and P103 Combo

For these models, use the P101 and P103 module combination. The P103 module connects between the factory vehicle harness and the Mechman alternator. Ensure a secure connection.

Image 4.4: The Mechman P103 Module, a black plastic connector with a single male end and a female receptacle.

Image 4.5: Diagram showing the Mechman P103 Module connected between the factory vehicle harness and the alternator. A green checkmark indicates a correct connection, while a red 'X' indicates an incorrect connection point on the alternator's threaded head.

4.4 Pulley Ratio Considerations

Some high output alternators require a smaller pulley to charge well at engine idle RPM. Over-spinning an alternator can cause catastrophic failure and will void the warranty. It is crucial to calculate your pulley ratio to determine if this alternator is suitable for your application.

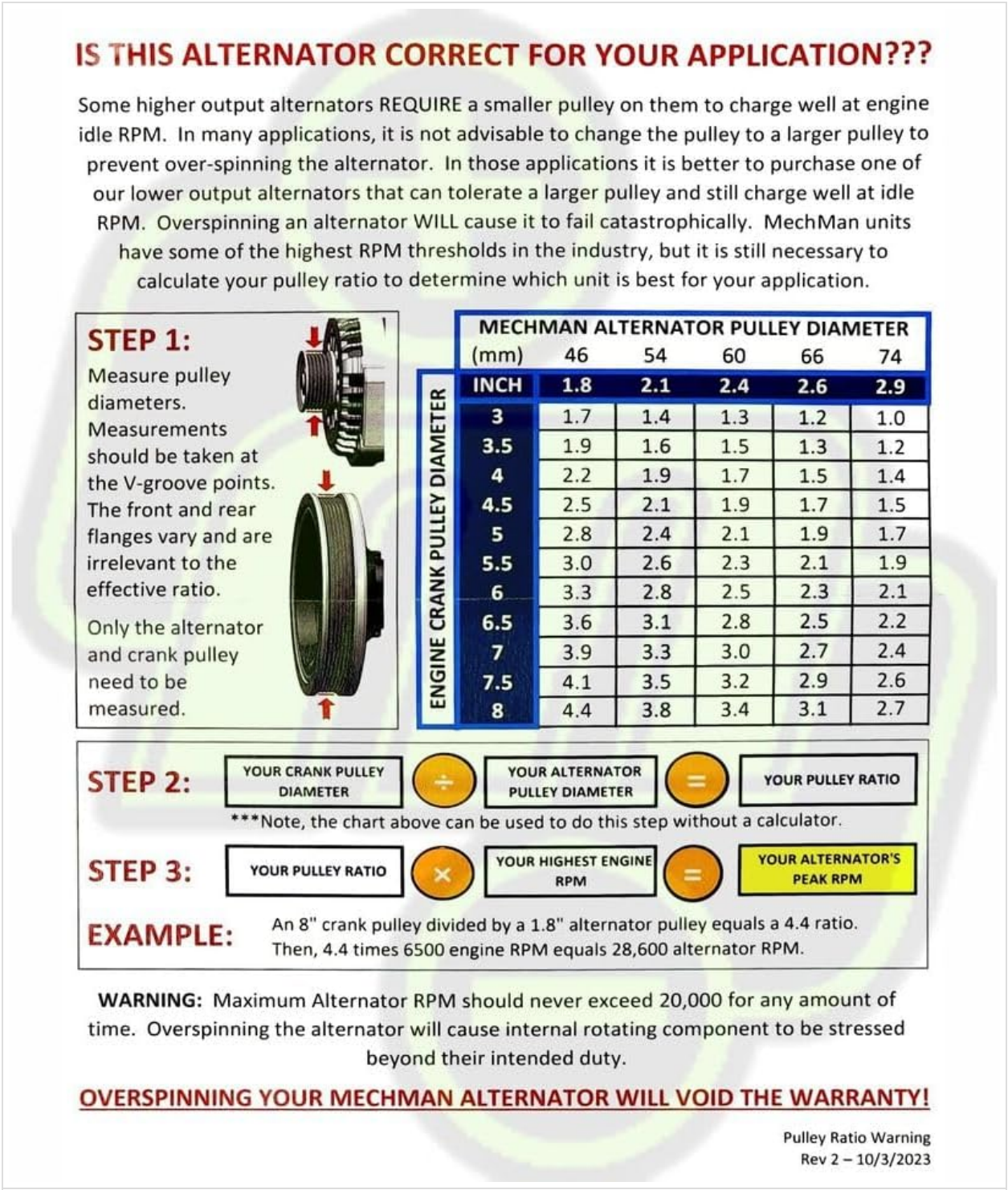


Image 4.6: Diagram explaining how to measure pulley diameters and calculate the pulley ratio. It includes a chart of Mechman Alternator Pulley Diameters (in mm and inches) and corresponding ratios for various engine crank pulley diameters. A warning states that maximum alternator RPM should never exceed 20,000 for any amount of time, and over-spinning will void the warranty.

WARNING: Maximum Alternator RPM should never exceed 20,000 for any amount of time. Over-spinning the alternator will cause internal rotating component stress beyond its intended duty and WILL VOID THE WARRANTY!

5. Operating Instructions

Once properly installed, your Mechman 390-Amp High Output Alternator operates automatically to maintain your vehicle's electrical system voltage and charge the battery. It is designed to provide a consistent voltage of

14.5 to 15V under normal operating conditions. For higher voltage output, such as for lithium-based batteries, Mechman voltage booster harnesses can be used with the GM 4-pin regulator.

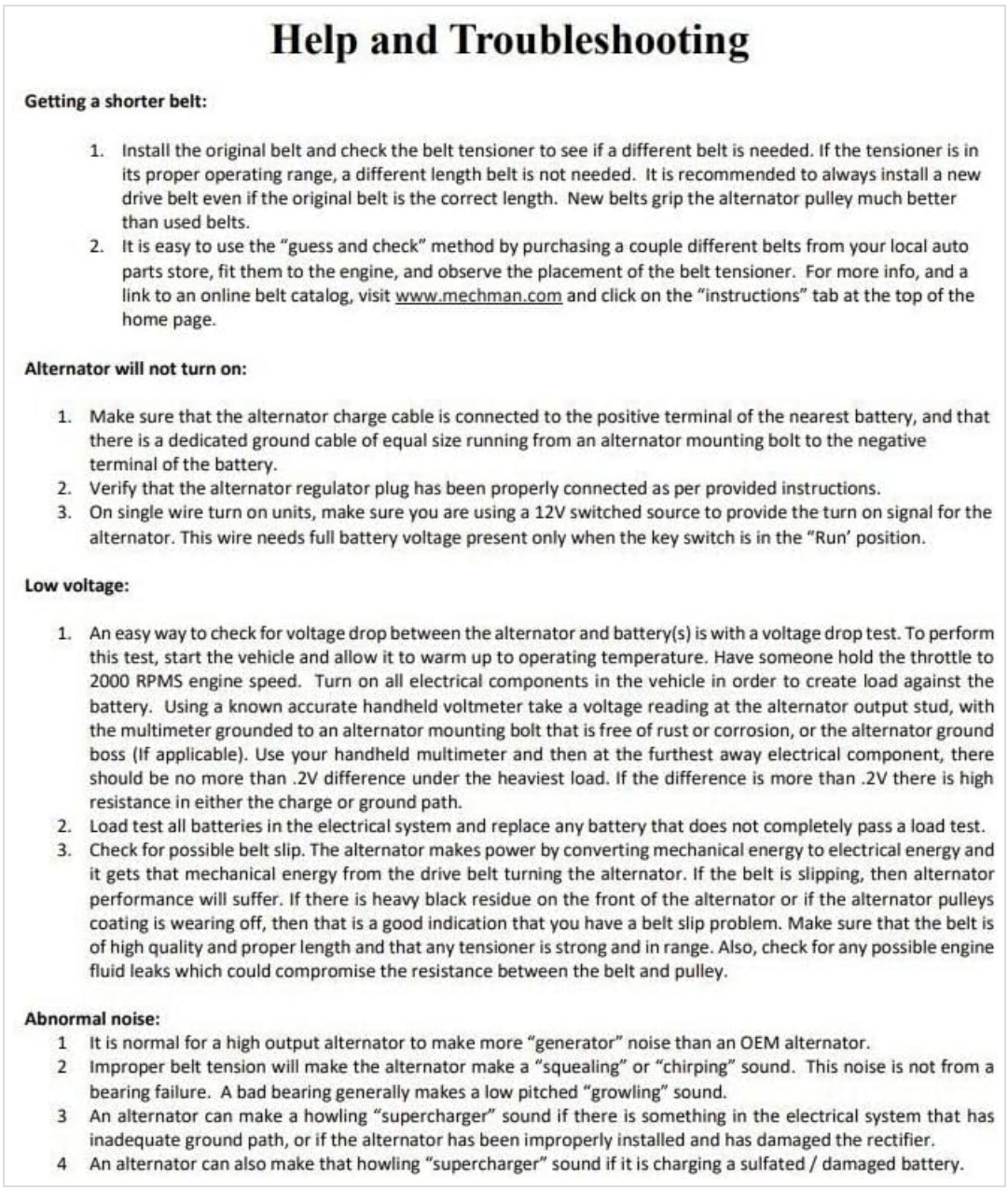
6. Maintenance

The Mechman alternator is designed for durability and requires minimal maintenance. However, regular checks can help ensure its longevity:

- Periodically inspect the serpentine belt for wear, cracks, or fraying. Replace if necessary.
- Ensure all electrical connections to the alternator are clean, tight, and free of corrosion.
- Keep the alternator clean and free from excessive dirt, oil, or debris.
- Monitor your vehicle's voltage gauge for any unusual fluctuations.

7. Troubleshooting

This section addresses common issues you might encounter with your alternator.



Help and Troubleshooting

Getting a shorter belt:

1. Install the original belt and check the belt tensioner to see if a different belt is needed. If the tensioner is in its proper operating range, a different length belt is not needed. It is recommended to always install a new drive belt even if the original belt is the correct length. New belts grip the alternator pulley much better than used belts.
2. It is easy to use the "guess and check" method by purchasing a couple different belts from your local auto parts store, fit them to the engine, and observe the placement of the belt tensioner. For more info, and a link to an online belt catalog, visit www.mechman.com and click on the "instructions" tab at the top of the home page.

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 an alternator mounting bolt to the negative terminal of the battery.
2. Verify that the alternator regulator plug has been properly connected as per provided instructions.
3. On single wire turn on units, 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 an alternator mounting bolt that is free of rust or corrosion, or the alternator ground boss (If applicable). Use your handheld multimeter and then 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.
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 residue on the front of the alternator or if the alternator pulleys coating is wearing off, then that is a good indication that you have a belt slip problem. Make sure that the belt is of high quality and proper length and that any tensioner is strong and in range. 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 that howling "supercharger" sound if it is charging a sulfated / damaged battery.

Image 7.1: A detailed text guide for troubleshooting common alternator issues, including getting a shorter belt, alternator not turning on, low voltage, and abnormal noise.

7.1 Getting a Shorter Belt

1. Install the original belt and check the belt tensioner to see if a different belt is needed. If the tensioner is in its proper operating range, a different length belt is not needed. It is recommended to always install a new drive belt even if the original belt is the correct length. New belts grip the alternator pulley much better than used belts.
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8. Specifications

Attribute	Value
Brand	Mechman Alternators
Model Number	14009390
Item Weight	16 pounds
Country of Origin	USA
Exterior Finish	Cast

Voltage Output	14.5 to 15V (standard)
Amperage	380+ Amps
Rotation	Clockwise
Included Components	Alternator and harnesses (H104, P101, P103)

9. Warranty and Support

9.1 Warranty Information

The Mechman 390-Amp High Output Alternator comes with a 2-year manufacturer warranty. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims. Note that over-spinning the alternator (exceeding 20,000 RPM) will void the warranty.

9.2 Customer Support

For technical assistance, warranty claims, or any questions regarding your Mechman alternator, please contact Mechman Alternators directly. Refer to their official website or the contact information provided with your purchase for support details.

10. Important Notes

- This product is not intended for racing use.
- This Mechman 390-Amp High Output Alternator is an Amazon Exclusive product.
- Always ensure proper ventilation around the alternator for optimal cooling.

Image 10.1: A sticker with the Amazon logo and the text "AMAZON EXCLUSIVE".