



48-Volt Alternator Installation

General Instructions

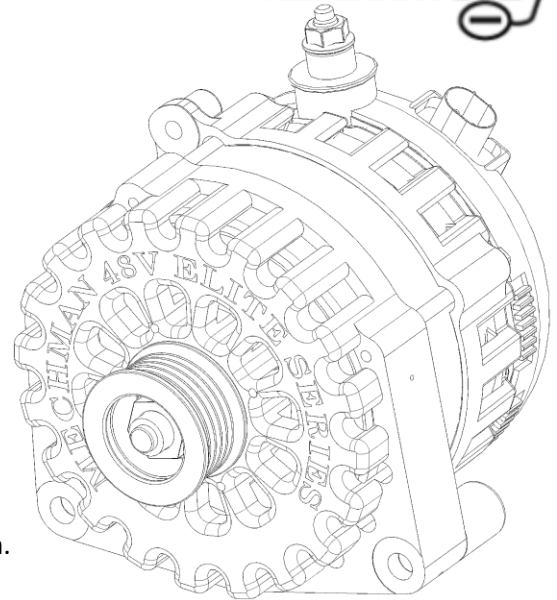
DO NOT RETURN THIS PRODUCT TO THE DEALER.

For support, contact Mechman Tech:

✉ 48volt@mechman.com | ☎ 1-888-MECHMAN or 865-522-6166

Important Safety Notes

- Wear eye protection while working on vehicle systems.
- Remove all jewelry to prevent shorting hazards.
- Disconnect the negative terminals of all batteries before installation.
- 48V systems are high-voltage — use proper PPE and caution when handling components.
- Refer to included **INST-48VWARN** warning sheet before performing any work.



General Installation Overview

This alternator is typically installed as a secondary charging unit in a dual-voltage or hybrid power system. Ensure there is adequate space and clearance before proceeding.

Installation Steps

1. Ensure the engine is cool and the ignition is OFF.
2. Disconnect the negative cables from all batteries in the vehicle.
3. Mount the 48V alternator using the provided or OEM-compatible hardware. Some brackets may require custom fabrication or modification to ensure proper fit.
4. Install a new drive belt or modify the current belt system as needed. Ensure correct routing, tension, and pulley alignment. Use only high-quality belts for proper grip and longevity.
5. Torque all hardware to OEM or bracket manufacturer specifications.

48V Charge & Ground Wiring Guidelines

- Cable sizing depends on current demand and cable length. Since 48V systems operate at higher voltage, they typically require smaller gauge wire than 12V systems for the same wattage.
- Use pure copper cable and aim to limit voltage drop to 2% between the alternator and the battery bank.
- Below is a general reference chart for recommended cable sizes based on amperage and cable length:

Max Current (Amps)	Cable Length (Feet, one way)	Recommended Gauge
Up to 100A	5 ft	6 AWG
Up to 150A	10 ft	4 AWG
Up to 200A	15 ft	2 AWG
Up to 250A	20 ft	1/0 AWG

⚠ Always verify wire sizing using voltage drop calculators or consult a qualified installer, especially for runs longer than 20 ft or systems exceeding 250A.

- Fuse the positive charge cable within 12 inches of the battery bank connection.
- Ground cables must be of equal or greater size than the positive cable and must connect directly from the alternator to the battery bank.
- Avoid the use of billet adapters or oversized terminals that reduce surface contact at the alternator output post.
- Secure all cabling to prevent movement and strain on terminals and mounting points.

System Integration & Regulator Setup

This alternator is designed for use with Wakespeed regulators. Refer to the Wakespeed-specific instruction sheet for wiring and setup procedures.

Do not attempt to operate the system without a properly configured regulator. Improper wiring or regulator configuration can result in overcharging, electrical system damage, or safety hazards.

Important 48V System Notes

- Charge all 48V batteries fully with a compatible charger before first startup.
- Avoid grounding the 48V alternator through sheet metal or factory grounds — run a dedicated ground cable.
- Monitor temperatures and system performance during initial operation.

Post-Install Check & Startup

6. Confirm battery is fully charged.
7. Start the vehicle, apply a modest electrical load
8. Raise RPM to 2500.
9. Use a multimeter to verify charging: Measure voltage directly at the 48V battery bank. Voltage should rise by at least 1V over resting battery voltage.
10. Perform voltage drop checks: Ground and charge paths should each show <0.1V drop under load.

Common Issues & Troubleshooting

System not charging:

- - Confirm regulator setup and activation
- - Verify all wiring and grounds

Low voltage:

- - Check for belt slip, weak batteries, or high-resistance connections

Unusual noise:

- - Squealing = Belt issue
- - Howling = Grounding issue or battery problem
- - Growling = Possible bearing concern

Wakespeed errors: Consult Wakespeed documentation for fault codes and resolution.



Warranty Disclaimer

Mechman will only provide regulator programming support for battery models officially supported by **Wakespeed**. These supported batteries have undergone extensive testing to ensure accurate and reliable charging profiles.

⚠ Any attempt to modify or adjust the regulator programming beyond what is provided by Mechman will void all warranty coverage.