


POWERING YOUR FLEET FORWARD

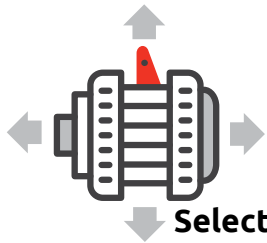
Helpful tips and information to help enhance heavy-duty vehicle operation, increase uptime and lower Total Cost of Ownership (TCO).

- 
- **Tips to Maximize Fleet Uptime**
 - **Your Alternator Matters**
 - **Seasonal Maintenance Tips**
 - **Charging Etiquette**
 - **Common Battery Misconceptions**
 - **Tell-tale Signs it's Time for a Battery Replacement**
 - **Frequently Asked Battery Questions**

TIPS TO MAXIMIZE FLEET UPTIME

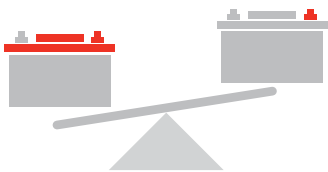
It's best practice in the industry to do periodic preventative maintenance checks on your trucks. Whether it is every 6 months or every so many miles, having a preventative maintenance plan can keep your fleet running and your drivers safe.

As part of your preventative maintenance program, you should also consider checking the trucks electrical system and its batteries. Here are some tips to keep in mind as it relates to your trucks batteries and electrical system.



Select the proper alternator size

Be sure to understand the amperage load needed for your truck so that you can choose a sufficient alternator. This not only will keep all your accessories running at an optimal level, but will minimize strain on your battery.



Be sure to choose the right battery chemistry

With a variety of chemistries to choose from, it's important to select the right kind for your heavy-duty application. Some things to consider when it's time to invest in a new battery include its Cold Cranking Amps (CCA) rating, reserve capacity and rated voltage. It might also be beneficial to purchase more than one battery to help power hotel loads and any added onboard accessories while not overwhelming the starting batteries with additional energy demand.



Protect your battery from extreme heat and cold

Battery performance and life is impacted by temperature, so if a vehicle is operating in extreme cold, a battery with the highest CCA available is needed to help deliver reliable starts.



Proper installation

Every battery is different and as such, each one has its own set of installation guidelines based on model, size and fit. Be sure to follow the manufacturer's instructions and direct any questions to your battery professional. ■



YOUR ALTERNATOR MATTERS

Aftermarket experts are beginning to find that short-lived batteries in fleets may be due to the wrong choice in the vehicle alternator.

Over the years, the alternator's job has become more complex. Before, the typical heavy-duty vehicle could operate effectively with 40 amps of electrical current, which was enough to power the ignition, fuel and light systems. Fast forward to today and that threshold is rapidly advancing toward 100 amps of current – making the drain on the alternator greater than ever.

In addition to powering things like heated seats, sound systems, electronic power steering, air injection pumps, and steering and braking controls, the alternator (also referred to as the “generator”) helps power high-end aftermarket accessories and add-ons such as subwoofers and video displays.

In a heavy-duty vehicle, the alternator and battery work together as a team to keep everything running properly during operation. The battery is the chemical storage provider and initiates the charging cycle by using chemical energy to crank the engine and supply field voltage to the alternator. The alternator, which is the electro-mechanical player of the team, takes over by using engine torque to generate enough electrical

current to help keep the engine and vehicle accessories running properly. Simultaneously, the alternator is also working to replenish the current drawn from the battery for starting.

Collectively, the battery and alternator maintain the system voltage at levels that allow the vehicle's electronics systems to efficiently manage vehicle operations. If the alternator has low output and unable to keep the battery fully charged during periods of high accessory use at low engine speeds, the battery will become partially discharged. This could lead to diminished battery health and performance.

Testing the condition of the battery is the most important step in diagnosing any alternator problem and finding the right balance between the two components for optimal vehicle operation. ■





SEASONAL MAINTENANCE TIPS



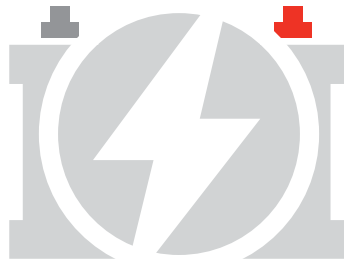
When handling batteries, always use protective gloves and eyewear, as well as insulated tools. Be sure to follow the manufacturer's guidelines for proper battery maintenance and care and direct any questions to your battery professional.



- Check the battery's State of Charge (SOC)
- If the battery is a conventional flooded lead acid battery, check the electrolyte and replenish as needed
- Inspect the case, terminals, cables and clamps for damage, wear and dirt
- Check the battery for corrosion
- To clean the battery, disconnect it and wash dirt from the cables and connectors with ammonia or a paste of one part baking soda and three parts water
- Use an emery cloth for the battery terminals and use water to clean the case and clamps
- Rinse, dry and reconnect the battery, then coat the terminals with dielectric grease, anti-corrosion spray or petroleum jelly
- If the battery needs replacement, be sure to disconnect all cables from the battery before removing it from the vehicle



CHARGING



ETIQUETTE

Kee the battery at full charge to minimize sulfation, which is the accumulation of lead sulfate crystals on the plates that ultimately impedes the battery's ability to hold a charge. The manufacturer's specifications will indicate the proper charge current required. Each battery chemistry has its own charging requirements. The current should be high enough to fully charge the battery, but not so high that it overheats the battery.



A digital voltmeter measures the Open Circuit Voltage (OCV) to determine the battery's SOC. For an accurate reading, wait six to eight hours after the battery has been charged to perform this test so that the chemical reactions in the battery reach an equilibrium and the surface charge is gone. Consult the manufacturer's specifications for the OCV that corresponds to 100 percent SOC. If a charge is necessary, the battery manufacturer's specifications will also indicate the proper level of charge. ■





COMMON BATTERY MISCONCEPTIONS

Batteries play a critical role in vehicle operation, so it's important to separate fact from fiction and make informed decisions that help to ensure optimal performance.

MISCONCEPTION

1

You should never store a battery directly on concrete to avoid damaging it.

At one time that may have been good advice, but today's state-of-the-art battery cases are made of tough plastics such as polycarbonate or polypropylene for great impact resistance. These plastics are strong and don't degrade the way hard rubber can. So, the truth is that it is perfectly fine to place a battery directly on concrete.

MISCONCEPTION

3

Your alternator has no impact on battery performance.

Alternator sizing in relation to electrical system demands along with the battery capacity and number of batteries should be considered when choosing an alternator of the appropriate size. Generally, when you add hotel loads or auxiliary batteries your alternator capacity should also increase.

MISCONCEPTION

2

Any type of charger can be used to recharge a battery, regardless of the battery's chemistry, make or model.

Different battery types (AGM vs Flooded) and chemistries (lead acid vs Li-Ion) require different charging profiles for proper recharge. Using a flooded charge profile on an AGM battery could cause the battery to be overcharged due to higher charge voltage than an AGM should experience.

MISCONCEPTION

4

A battery can be mounted anywhere in your vehicle.

The further the battery is from the charging source, the greater the impact of voltage loss is due to long cables. Using a heavier gauge cable may be required to help ensure the charge voltage is correct at the battery terminals.

Also, temperature is a concern, so batteries closer to heat sources will have a negative impact on battery performance.

TELL-TALE SIGNS IT'S TIME FOR A **BATTERY REPLACEMENT**

Engine cranks slowly when being started.

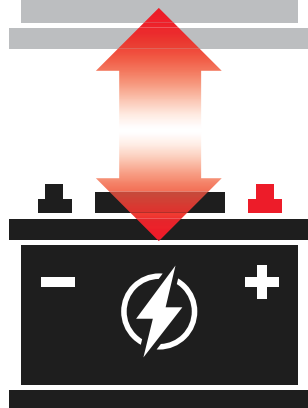
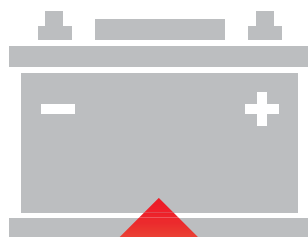
A slow cranking engine could mean that your battery is beginning to fail. It's best to first check all battery connections as well as the starter and fuel system to determine the root cause.

Lights dim or problems with electronic/electrical devices, such as electric windows or locks.

As with slow starting, lights that dim or electric windows and locks that are slow to operate may indicate that the battery is compromised in some way.

Engine won't start after sitting overnight or after it was just turned off.

If the battery will not operate properly after being idle for several hours, or after the engine is started and shut off, this issue may indicate that the battery is near end of life.



Accessory runtime is decreasing.

Hotel loads on the vehicle require higher reserve capacity. If DVD players, lights or other additional accessory runtime is needed, a heavy-duty battery should be considered.

Additional loads are added to the vehicle.

As more additional loads are added to the vehicle such as a microwave, fans, etc., there will be greater demand on the battery. To get the longest battery life, a larger capacity/heavy-duty battery is needed.

Vehicle is operated in high vibration environments.

Battery life is impacted by high vibration, so if a vehicle is frequently exposed to harsh environments, a heavy-duty battery with increased vibration resistance is needed for the optimal life outcome.

FREQUENTLY ASKED QUESTIONS

<p>Q: Why won't my vehicle start on winter mornings?</p> <p>A: Heavy-duty vehicle engines need twice as much energy to operate when the temperature falls below freezing, and if you have a weak or damaged battery that can't produce sufficient power, it could explain why your vehicle fails to start on icy mornings.</p>	<p>Q: Do I need to replace my battery if I dropped it on the concrete during installation?</p> <p>A: If the battery was accidentally dropped it is possible to damage the internal connections as well as the external container, ultimately leading to needed replacement. Batteries with any kind of visible external damage should not be used.</p>
<p>Q: Should I use more than one battery to power my heavy-duty vehicle and its onboard accessories?</p> <p>A: Having a dedicated accessory battery can help avoid no-start situations when accessories have inadvertently discharged the main battery.</p>	<p>Q: How long should my heavy-duty vehicle battery last?</p> <p>A: Predicting battery life is challenging as it depends on many factors such as how often the battery is used, how the battery is maintained during period of non-use and battery temperature.</p>
<p>Q: How do I know what battery type (conventional flooded lead acid, Absorbed Glass Mat, Lithium-ion, etc.) is the right one for my application?</p> <p>A: The reason for all the different types of batteries is related to how they are being used. For example, traditional flooded batteries are best suited for starting only applications. They do not work well in an application where both starting and deep-cycle use is required. Lithium-ion batteries are generally best for use in deep-cycle applications. Thin Plate Pure Lead (TPPL) AGM batteries are very flexible and can be used in both starting and deep-cycle applications.</p>	<p>Q: Can I use an AGM charger to charge my flooded lead acid battery?</p> <p>A: It is typically OK to use an AGM charger on a flooded battery, but the opposite is generally not appropriate. The best practice is to use a charge profile that matches the battery type.</p>

FREQUENTLY ASKED QUESTIONS

Q: What is an Ah rating?	Q: What if my engine overheats in the summer? How does that impact my battery?
A: The Ampere Hour (Ah) rating defines the capacity of a battery. A battery rated at 100Ah at the 10-hour rate of discharge will deliver 10A for 10 hours before the terminal voltage drops to 10.5 volts for a 12-volt battery.	A: Engine heat in the summer can indirectly affect your battery. Especially if your battery is close to the engine. Extreme heat can accelerate the chemical reactions inside the battery, causing it to degrade faster than usual. Additionally, high temperatures can lead to increased water loss in the battery, which can affect its performance and lifespan.
Q: How do I properly mount my battery?	
A: Batteries should be mounted to help ensure that they are secured against vibration.	

Contact your ODYSSEY® battery representative
for more information by visiting our website at:
www.odysseybattery.com.



EnerSys World Headquarters
2366 Bernville Road
Reading, PA 19605, USA
Tel: +1-800-964-2837

EnerSys EMEA
EH Europe GmbH
Baarerstrasse 18
6300 Zug, Switzerland

EnerSys Asia
No. 85, Tuas Avenue 1
Singapore 639518
Tel: +65 6558 7333

Want more info?
Scan code to access
the ODYSSEY® Battery
Literature Library

