

Regular Battery Inspection and Maintenance

Regular testing and inspection will help to maximise battery life. Periodic inspections are recommended and Century resellers (like Custom Auto Electrics) offer this service free every six months. A routine inspection at least once every two months is recommended to maintain optimum performance.

Use the following as a guide when examining your battery:

1. Check the battery's state of charge. Most batteries have a State of Charge Indicator on top of the battery that will give you an on the spot diagnosis of the battery condition. However, a more reliable way to check is with a voltmeter to determine the stabilised voltage or if the vent caps are removable a hydrometer to determine the specific gravity (SG) of the electrolyte. A charged Century battery will have a stabilised voltage above 12.5 volts and an SG reading above 1.240.



2. Ensure the battery top is clean, dry, free of dirt and grime. A dirty battery can discharge across the grime on top of the battery casing.
3. Inspect the terminals, screws, clamps and cables for breakage, damage or loose connections. These should be clean, tight and free of corrosion.
4. Apply a thin coating of high temperature grease or equivalent spray to posts and cable connections for added protection.
5. Inspect the battery case for obvious signs of physical damage or warpage. This usually indicates the battery has been overheated or has been overcharged.
6. If you have a maintainable battery, it is important to check if the battery has sufficient electrolyte covering the battery plates. If topping up is required, do not over fill as the fluid levels will rise when the battery is fully charged and may overflow. Top up using distilled or demineralised water and never fill with sulphuric acid.
7. When servicing a sealed maintenance free (SMF) battery, check the State of Charge Indicator. This gives you a snap shot of the battery's condition and whether the battery needs to be charged or replaced. The vehicle may still start the engine although the indicator outlines to replace the battery. If the State of Charge Indicator advises 'Replace Battery' it is important that the battery is replaced as the electrolyte levels may be below the plates which can lead to an internal explosion.
8. For batteries used in seasonal applications and stored long term, fully recharge the battery prior to storing. Check the state of charge or voltage regularly. Should the voltage drop below 12.5V, recharge the battery. It is important to check the battery completely before reconnecting to electrical devices.

If you are unsure about the condition or state of charge of the battery, take it to your local Century reseller.



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Battery Health & Safety



Battery Acid

Battery acid can cause burns. Suitable hand, eye and face protection and protective clothing must be worn.



First Aid

For advice, contact the poisons information centre (phone 13 11 26 in Australia) or a doctor immediately. If in eyes, hold eyelids apart and flush the eye continuously with running water.

Continue flushing until advised to stop by poisons information centre or doctor, or at least 15 minutes. If skin or hair contact occurs, remove contaminated clothing and flush skin or hair with running water.



Acid Spill Response

Bund and neutralise spills with soda ash or other suitable alkali. Dispose of residue as chemical waste or as per local requirements.



If Electrolyte is swallowed

Do NOT induce vomiting – give a glass of water. Seek immediate medical assistance.



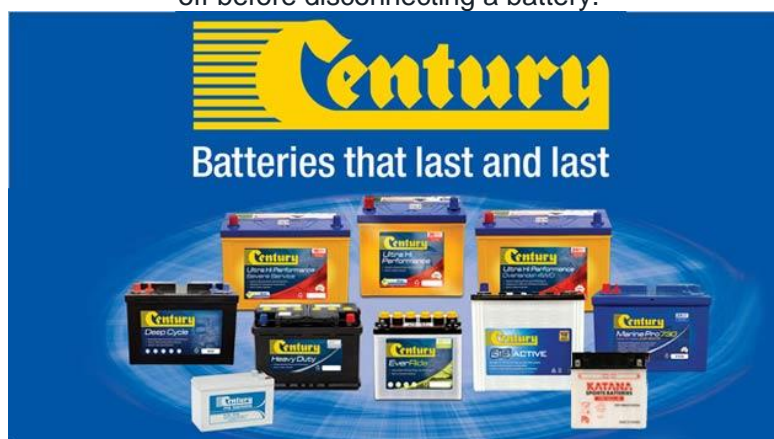
Exploding Battery

Batteries generate explosive gases during vehicle operation and when charged separately. Flames, sparks, burning cigarettes or other ignition sources must be kept away at all times. Exercise caution when working with metallic tools or conductors to prevent short circuits and sparks.



Always Wear Eye Protection When Working Near Batteries

When charging batteries, work in a well-ventilated area - never in a closed room. Always turn the battery charger or ignition off before disconnecting a battery.



Battery Testing

Battery testing should be considered an integral part of any periodic vehicle maintenance routine and should be performed whether or not a starting problem has occurred. Due to the increased electrical demands on the battery, little warning is given before failure. Pre-emptive battery replacement can help eliminate many of the costs and problems associated with a flat or end of life battery.

Before testing a battery, it is important that the battery is fully charged. Even a slightly discharged battery can give a false reading and deem the battery faulty when all that is required is a recharge.

There are many different types of testing equipment available. Adjustable load testers, and hydrometers are the most accurate, however correct training is required prior to using any of these testers to prevent personal injury or damage to the vehicle. A digital battery tester is the easiest option as they are safe, easy to use and offer a quick diagnosis of the condition of the battery.

Hydrometer



The state-of-charge of a lead acid battery can be determined by the specific gravity (SG) of the electrolyte (its density compared to a reference such as water). The SG can be measured directly with a hydrometer. Please note the temperature of the acid affects the result.

Load Tester - Adjustable/Analogue



Adjustable load testers are the most reliable method to determine the starting capacity of a battery as the test applies a real load similar to when cranking the engine. This load however may create a spark risk if leads are connected to corroded or loose terminals.

It is always recommended that individual manufacturer's specifications are checked.

Digital Battery Testers



Microprocessor controlled digital battery testers are easy to use, very safe and can help determine early battery failure. The tester works by transmitting a small signal through the battery that uses measurements of conductance or resistance (impedance) to indicate battery condition. Most models provide battery, starting and charging tests. Printer options enable results to be given to the customer. These are not as accurate as a load tester.

We highly recommend testing batteries with a Load Tester and hydrometer (where applicable).

Battery Charging

Charging a lead acid battery is the process of replacing the energy removed during discharge, plus EXTRA to compensate for any charging inefficiencies. The amount of energy necessary for complete recharge depends on the depth of discharge, rate of recharge and temperature. Typically 110% - 150% of the discharged ampere-hours depending on battery type must be returned to the battery to achieve full recharge.



Safety First

Before attempting to charge a battery with an external battery charger, it is important to be aware of the safety precautions when charging batteries and follow the instructions outlined by the charger manufacturer.

1. Turn the charger off before attaching, rocking or removing the terminal clamps.
2. Keep open flames and sparks away from the battery.
3. Remove vent caps - if applicable
4. Charge in well ventilated area.
5. Follow the battery charger manufacturer's instructions to avoid overheating.

Dangerous explosive gases are generated during the charging process that can be ignited by a variety of sources including, sparks, naked flames and static electricity. It is highly recommended to wear PPE (Personal Protection Equipment) including safety glasses, chemical resistant gloves and overalls.



Selecting the Correct Charger

Lead acid batteries should be charged in 3 stages; constant current (boost), constant voltage (absorption) and float charge.

When choosing a battery charger, it is important to select a charger that delivers the specified charging voltage and current to suit the battery type. Flooded, Absorbed Glass Mat (AGM) and Gel battery types require different charging specifications to provide optimum performance and service life.

Custom Auto Electrics recommends (and sells) Thunder battery chargers. These units automatically select the battery type and are an 8 stage automatic charger with digital display.

Ask us for more information.



Factors Affecting Battery Life

As batteries age they gradually lose their capacity as their function is performed. The constant charge and discharge eventually leads to failure. Components corrode over time, electrical shorts occur and vibration causes damage; all eventually causing failure. Overcharging and undercharging of a battery will also have a bearing on battery life.

Battery Inspection

Check electrolyte level - fluid below the tops of the separators indicates overcharging or poor maintenance. Overcharge condition may be due to incorrect voltage setting, low voltage caused by heat or internal defects, or old age deterioration.

- Is there electrolyte on the top of the battery? This can indicate overcharging or overfilling.
- Is the battery loose in the carrier? This can cause failure from vibration.
- Are the battery terminals tight?
- Does the battery have signs of damage or mistreatment? This can also cause failure.

Discharged (flat) Batteries

A flat battery should be checked with a hydrometer. A low Specific Gravity reading of 1.220 or less in all cells indicates a discharged battery and it must be charged before further examination and testing can occur. The discharged condition may be due to a problem in the electrical system (slipping alternator belt, faulty regulator or alternator, high resistance due to corrosion). Internal shorts may also be due to manufacturing defects or shorts through the ageing process or vibration damage.

Early Warning Signs

Batteries often fail when least expected. The usual warning is a slower than normal battery ability to crank the engine. Other less noticeable factors, such as changed driving patterns and colder/hotter weather will all have an effect on the life of a battery.

Technical Tips

Vibration can reduce a battery's life. Always use an approved battery clamp to limit vibration. Century batteries are built tough, using robust internal components to resist damage through abrasion and puncture from vehicle vibration.

- Many alleged 'dead batteries' are merely flat batteries. Drivers simply leave lights on, door(s) open or can have faulty alternators.
- Ensure your battery is properly tested before replacing a battery. A battery MUST be fully charged to be tested correctly. It's impossible to know exactly when a battery might fail. A slow starting engine is sometimes an indication.
- Old batteries can give trouble in colder weather.
- Equally, if an engine area becomes overheated in very hot weather and the battery is under strain from air conditioners it may fail. Regular battery checks are always advised.
- Old batteries can be recycled. Selected Century battery resellers (like Custom Auto Electrics) can take your old batteries and have them recycled at no cost to you.



Why do Batteries Fail?

Batteries have a finite life, determined by the application and the operating conditions. Battery failure can be attributed to various factors, however the causes of failure fall under two distinct categories: manufacturing and non-manufacturing faults.

Manufacturing Faults

Typically occur within the first 3 months.

Short Circuits/Dead Cells

Where one cell will show a dramatically lower Specific Gravity (SG) reading than the other cells.

Internal Break

Usually resulting from physical damage to a battery during transportation. Century's stringent quality assurance and inspection processes demanded by leading vehicle manufacturers ensure genuine manufacturing faults in Century Batteries are negligible.

Non-Manufacturing Faults

These fall outside of Century's strict quality control systems and are more likely to occur the longer the battery is in service. They are often attributed to a problem with the vehicle's electrical system, its operation or the battery application.

Wear and Tear

As a battery ages, grid metal corrodes and active material is lost from the plate. Over time this leads to a point where the battery will no longer be able to start a vehicle. High temperature will accelerate the degradation rates.

Physical Damage

Incorrect fitment, handling and storage often leads to external damage and subsequent battery failure.

Incorrect Application

Fitting a smaller, less powerful battery or a battery designed for another application can lead to early failure.

Negligence

Failure to maintain fluid levels exposes internal components and accelerates battery failure.

Sulphation

Occurs when the battery is allowed to stand in a discharged state for an extended period of time.

Over-Charging

Often caused if the alternator is incorrectly set or the alternator voltage control fails.

Under-Charging

Short journeys, stop start driving or faulty alternators will not fully recharge a battery.

Discharge

Lights or other accessories left on for extended periods.