



## EXPONENTIAL POWER RECOMMENDED CAPACITY TEST FREQUENCY FOR VRLA STATIONARY BATTERIES

### VRLA batteries should receive an acceptance test at the time of manufacturer or installation

Exponential Power recommends an acceptance test upon installation as this verifies the performance of the battery as *installed* (including all final connections). Battery manufacturers don't intentionally send out bad batteries, but many new batteries are damaged or functionally destroyed through improper storage or improper installation. Performing an acceptance test upon installation ensures that your load is protected by a properly functioning battery.

**Exception:** We recommend that batteries installed in remote areas with expensive or difficult access, such as offshore oil and gas platforms or remote mountain tops, be fully assembled, charged, tested, and recharged at an accessible location. Then the battery would be disassembled, repackaged, and shipped to the final location for installation. While expensive, this method ensures that a fully functional and tested battery arrives at the final location, although shipping damage and improper installation are still possible.

**Following the initial acceptance test, VRLA batteries require a capacity test (either "performance" or "modified performance" as applicable) after two years of service and then every two years thereafter.**



VRLA batteries require annual capacity tests (either "performance" or "modified performance" as applicable) when:

- The battery contains one or more weak cells. A weak cell is a cell with a capacity 10% or more below the average cell capacity (battery capacity) but greater than 80% of rated capacity.

Example: The battery capacity is 110% but one cell has a capacity of 100%. The cell with 100% capacity still works but is considered a weak cell. The discharge performance of this cell indicates the presence of an internal issue that may result in premature failure. This is why annual testing is recommended when a battery contains one or more weak cells. Some battery users may choose to replace weak cells, but the battery manufacturer's warranty typically does not cover these replacement costs.

- The capacity of any cell is below 90% of rated capacity.
- The capacity of the battery drops by 10% or more between capacity tests.
- The capacity of the battery is less than 90% of the rated capacity.
- There is a significant unexplained deviation of internal ohmic values.
- The battery reaches 85% of the expected service life.
  - The service life of VRLA batteries is typically only 60-80% of the warranty life.
  - This is further reduced by operating temperatures above the standard temperature of 77°F/25°C or 68°F/20°C (as appropriate).
- All VRLA batteries will require annual capacity tests as they approach end-of-life.

**VRLA batteries should be replaced when their capacity drops to 80% of the rated capacity.**



## ABOUT EXPONENTIAL POWER



At Exponential Power, we provide peace of mind with stored power solutions tailored to your unique needs, ensuring they're ready when you need them most.

We offer the confidence that comes from knowing your power systems are reliable, keeping your operations running seamlessly. Whether you're in manufacturing, telecommunications, motive power, utilities, or data centers, our team of experts delivers solutions that keep your business powered and ready to perform.

*Powering Your Peace of Mind Across Industries*

### Battery Testing Expertise Tailored to Your Needs

At the forefront of Exponential Power technology, our team of expert battery testing professionals stands ready to address your most complex technical challenges. With decades of combined experience and cutting-edge analytical capabilities, we transform technical uncertainties into precise, actionable insights.

Whether you're developing advanced energy storage solutions, evaluating battery performance under extreme conditions, or seeking comprehensive diagnostic services, our specialists provide unparalleled technical guidance. We understand that every battery testing requirement is unique, which is why we offer personalized consultations designed to meet your specific industry and technological demands.

**Ready to optimize your battery testing process? Our experts are just a conversation away.**



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