



What has been done to a GPB reconditioned battery?

GPB reconditioned batteries are used batteries that are processed through a unique 18 step process which delivers high quality and reliable results!

Initial Inspection:

1. Visual inspection

The first step is trying to understand the batteries most obvious problems by a visual inspection, to name a few things that we go through:

- Symptoms of acid loss
- Automatic watering systems
- Corrosion
- IC connector problems (Inter-cell connectors)
- Signs of explosions
- Physical damage

2. Wash and neutralization

Here we wash the battery with water and acid neutralization chemicals. This helps provide clean and safe working conditions and also takes away eventual "creep currents".

3. IC resistance monitoring

High resistance causes a drop in voltage and excessive heat development. In this step we find and fix the high resistance parts of the battery, apart from eventual cells.

Typical causes of high resistance are:

- Loose screws or corroded IC connectors
- Sulfated /corroded connections
- Bad welds
- Bad cables

Diagnosis:

4. Pre-diagnosis cycling

With two high current short cycles "New sulfate crystals" are removed, which only leaves the bigger and more stubborn sulfate crystals, this is especially important when analyzing a battery that has not been in recent use.

5. Diagnosis load test

We measure all the cells OCV och SPGR when the battery is fully charged and thereafter perform a full load test thereby measuring the battery's Ah capacity and study the results.

Equalization:

6. Slow/low constant charge equalizaion

If differences in cell capacity are encountered during the load test an equalizing charge with low current is applied.

7. Quick load test

In this step we do a quicker load test to evaluate the results of the equalization charge to see if it proved sufficient or if other action is required.

8. Cell bridging

In case the equalization charge did not suffice and a minority of cells are too "strong" we disconnect them from the circuit and the rest of the battery is charged without them.

9. Single cell equalization

In case the equalization charge did not suffice and a minority of cells are too "weak" a circuit is built with these cells and they are charged apart from the battery.

10. Cell change if necessary

If the difference between cell capacity still is too large then there remains no other solution than a cell change.

Capacity maximization:

11. High current pulse desulfation

This step is the most important of all for capacity maximization of individual cells and destroys even the most stubborn sulfate crystals and returns them to their active state; sulfuric acid. The plates are also cleaned from other high resistance pollutants. This step takes 72 hours.

12. Max Charge

The battery is then charged with constant current to its maximum capacity in order to restore any lead sulfate particles that may be drifting in the electrolyte to their active state.

13. Load test

In this test we compare the SPGR with voltage under load to see which cells (if any) are in need of an acid adjustment.

14. Acid adjustment

Sulfuric acid is added to some cells in order to even out cell voltages under load.

15. Equalization charge

In this step we even out cell capacity with an additional equalization charge and mix the eventually added acid with the electrolyte.

16. Final capacity load test

One last load test is done in order to ensure that the battery has an acceptable capacity and that the cells perform evenly.

Finish:

17. Final charge

The battery is delivered fully charged, however we recommend that the battery still be charged before use in order to ensure maximum performance.

18. Paint and final preparation

The battery's casing is sanded and all corrosion is removed, then the battery is painted with anti corrosive and antioxidant paint, once the paint dries, stickers are added, the battery is wrapped in a protective plastic film and is placed on and securely fastened to pallet. Now the battery is finally ready for shipping.