



This is a real world test that was measured by Richard Clark on a Audio Precision unit to portray what happens with a typical capacitor install.

The main point for those who point out the obvious differences between the Red (cap installed) and yellow (cap not installed)...how much of a dB difference is .1-.4 volts in terms of music? And do you feel you are going to hear this within a car?

On with the explanation:

Dark Blue curve---

For our first test we played the system with the engine off and no cap. The result was the purple trace at the bottom. We played the system as loud as we could get it that seemed to produce no audible distortion. This was track 30 of the IASCA disc. It starts off with fairly low level sounds for the first 34 seconds. In order to insure the electrical system was stable we did not start the measurement until we were 20 seconds into the song. This means that our 0 starting point is :20 on the CD counter. The battery was able to maintain it's voltage just below 12.5 until the loud bass hits at 34 seconds (14 seconds into our chart) At this time it dropped to about 11.5 and had a few large variations due to the music. According to the computer calculations (third chart) the average voltage for this test was 11.7volts. This test was done as a baseline for the following tests.

Yellow curve—no cap

For this test the volume was left as it was for the baseline test. The engine was started. Notice that at low volume the alternator was able to maintain about 14 volts. When the loud music hit the voltage dropped to about 12.5 where it remained except for a few short moments where it actually climbed back to over 13.5 volts. The computer averaged calculations for the average voltage during the 100 seconds of this test was 12.973 volts.

Red curve—cap added

This test was identical to the previous test except the cap (15 farad type) was added 6 inches from the amp with 4 gauge wire—no relays or fuses. The red curve seems to overlay the yellow except that the actual peaks don't rise as fast or as high during the brief quiet moments. I feel this would be due to the alternator having to recharge the cap. The voltage on loud passages hovered around 12.5 volts. The computer averaged calculations for this test show the average voltage to be 12.878 volts. I see no meaningful differences with or without the cap. I certainly don't see the voltage sitting solid at 14 volts.

One note I might add is that this was a two thousand watt system driven right to clipping and the average voltage stayed above 12.8 with a stock 80 amp alternator. Under these conditions the battery would never discharge!

The green and light blue curves were done just for kicks while we had the system set up. In both these tests we turned the volume up until the system was very distorted. This placed a severe load on the alternator and caused the voltage to dip as low as 12 volts. The curves seem to follow each other so closely that unless you have a good monitor it is doubtful you can tell there are two curves. The average voltage for these two curves were both 12.277 and 12.295 volts. If this volume were sustained for very long periods of time this battery would discharge