Testing the Leading Brand 2A Charger vs. Renaissance<sup>™</sup> Charger <sub>6/27/07-7/2/07</sub>



- **Abstract:** It is well known in the art that batteries, especially starter batteries, are extremely susceptible to damage and/or a shortened lifespan from deep discharges. It would be therefore a great advantage to provide the industry a charger that would be effective in charging a battery that has been subjected to this condition.
- **Purpose:** To prove which charger is more effective in charging a battery that has been deeply discharged.

### **Test Procedure:**

- 1) Obtain (2) brand new batteries.
- 2) Discharge them into 2 identical loads, at the same time, while measuring voltage to prove they are in virtually the same condition.
- 3) Charge up one battery with the Leading Brand 2A pulse charger (A very good, "smart" battery charger). Charge the other battery with the Renaissance<sup>™</sup> charger.
- 4) Discharge the batteries respectively through 2 identical load banks while measuring the voltage of each.
- 5) Repeat steps 3 and 4 above 2 more times.

# Step 1) Obtain 2 approximately identical batteries.

Obtained 2 identical U17-R Everstart 275 CCA lawn tractor batteries from Wal-Mart 6/27/07 at 8:30AM. Labeled one as **Battery A** and the other as **Battery B**.





Step 2) Discharge the batteries to prove they behave similarly.

Began test at 9:30A. As can be seen from the pictures above, **Battery B** appears to be in *slightly* better condition.

Load Time (Min.)	Battery A	Battery B
1	11.67	11.74
2	11.65	11.72
3	11.62	11.68
4	11.58	11.65
5	11.55	11.62
6	11.52	11.60
7	11.49	11.56
8	11.46	11.53
9	11.42	11.49

10	11.38	11.45
11	11.33	11.41
12	11.28	11.36
13	11.22	11.30
14	11.15	11.24
15	11.06	11.16
16	10.94	11.06
17	10.79	10.92
18	10.40	10.69
19	3.73	9.36
20	2.13	6.25
21	2.34	4.27
22	2.60	1.12
23	2.61	.65
24	1.49	.84
25	1.37	.82
26	1.07	.83
27	.86	1.02



Load Bank A ((3) paralleled 120W headlights) shown on top. Load Bank B on the bottom.





As can be seen above, the Load A is virtually the identical to Load B, both banks of lights drawing the same (+/-0.5%) current.

Graphed below, **Battery B** is proven to be in *slightly* better condition.



Discharging (2) Brand New U17-R Batteries - Load (3) 120W Headlights Test Conducted by Energenx, Inc., 06/22/07

## **Step 3) Charging the Batteries**

For the purpose of this test, **Battery A**, in slightly worse condition than **Battery B**, was chosen to be charged with the Renaissance Charger while **Battery B** was charged by the Leading Brand Charger set at the 2A setting.



Step 4) Cycling the Batteries

<b>1st Discharge Cycle</b>	6/28/07 6:50AM
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Load Time (Min.)	Battery A	Battery B
0	13.38	13.29
1	11.86	11.88
2	11.87	11.89
3	11.86	11.88
4	11.85	11.87
5	11.84	11.85
6	11.82	11.84
7	11.80	11.81
8	11.77	11.79
9	11.75	11.76

10	11.72	11.73
11	11.69	11.70
12	11.66	11.67
13	11.63	11.64
14	11.59	11.60
15	11.55	11.56
16	11.51	11.51
17	11.47	11.47
18	11.42	11.42
19	11.37	11.37
20	11.32	11.31
21	11.25	11.25
22	11.18	11.19
23	11.09	11.11
24	10.96	11.03
25	10.77	10.93
26	10.43	10.81
27	7.35	10.66
28	4.34	10.38
29	4.33	9.91
30	4.10	7.05
31	2.52	5.34
32	2.54	3.49
33	2.55	1.77
34	2.51	1.10
35	1.75	.74



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2nd Discharge Cycle 06/29/07 7:10AM

Load Time (Min.)	Battery A	Battery B
0	13.53	13.28
1	11.90	11.89
2	11.91	11.90
3	11.90	11.90
4	11.89	11.88
5	11.87	11.87
6	11.85	11.85
7	11.83	11.82
8	11.81	11.80
9	11.78	11.77
10	11.76	11.74
11	11.73	11.71
12	11.70	11.68
13	11.66	11.65
14	11.63	11.61
15	11.59	11.57
16	11.55	11.53
17	11.51	11.48
18	11.46	11.43
19	11.41	11.37
20	11.36	11.31
21	11.29	11.24
22	11.22	11.17

23	11.15	11.09
24	11.04	10.98
25	10.90	10.86
26	10.70	10.71
27	10.32	10.53
28	7.43	10.26
29	5.57	9.82
30	4.26	8.60
31	3.99	5.53
32	2.83	4.27
33	2.45	2.59
34	2.43	1.56
35	2.34	.64

# 3rd Discharge Cycle 6/30/07 8:01AM

Load Time (Min.)	Battery A	Battery B
0	13.64	13.29
1	11.90	11.87
2	11.90	11.90
3	11.91	11.89
4	11.89	11.87
5	11.87	11.86
6	11.85	11.83
7	11.83	11.81
8	11.81	11.78
9	11.78	11.76
10	11.75	11.72
11	11.73	11.69
12	11.70	11.66
13	11.66	11.62
14	11.63	11.58
15	11.59	11.54
16	11.55	11.49
17	11.50	11.44
18	11.46	11.38
19	11.41	11.32
20	11.35	11.25
21	11.28	11.16
22	11.21	11.07
23	11.12	10.96
24	11.00	10.83
25	10.84	10.66
26	10.59	10.44
27	10.10	10.15
28	7.05	9.64
29	5.59	8.84
30	4.16	6.91
31	3.99	4.88
32	2.87	3.69
33	2.29	2.38
34	1.88	1.29
35	1.28	.69

Load Time (Min.)	Battery A	Battery B
0	13.54	13.26
1	11.93	11.87
2	11.94	11.88
3	11.93	11.87
4	11.91	11.85
5	11.89	11.83
6	11.87	11.80
7	11.85	11.78
8	11.82	11.75
9	11.80	11.72
10	11.77	11.68
11	11.74	11.65
12	11.70	11.61
13	11.66	11.56
14	11.64	11.52
15	11.60	11.47
16	11.55	11.41
17	11.51	11.35
18	11.47	11.28
19	11.41	11.18
20	11.35	11.11
21	11.29	11.00
22	11.21	10.87
23	11.11	10.71
24	10.98	10.51
25	10.81	10.22
26	10.56	9.76
27	9.92	8.96
28	7.27	7.67
29	5.50	6.16
30	4.09	4.87
31	4.00	3.62
32	3.22	2.57
33	1.76	1.64
34	1.10	1.13
35	1.07	.65

## 4th Discharge Cycle 7/1/07 8:46AM

## 5th Discharge Cycle 7/2/07 7:28AM

Load Time (Min.)	Battery A	Battery B
0	13.56	13.26
1	11.89	11.87
2	11.92	11.90
3	11.91	11.89
4	11.90	11.87
5	11.88	11.84
б	11.85	11.82
7	11.83	11.79

8	11.81	11.76
9	11.78	11.73
10	11.76	11.69
11	11.73	11.66
12	11.70	11.62
13	11.67	11.57
14	11.63	11.52
15	11.60	11.46
16	11.56	11.40
17	11.52	11.33
18	11.48	11.25
19	11.43	11.15
20	11.38	11.04
21	11.32	10.91
22	11.26	10.76
23	11.18	10.55
24	11.09	10.28
25	10.99	9.87
26	10.84	9.19
27	10.64	8.15
28	10.29	6.88
29	8.94	5.70
30	5.92	4.61
31	4.03	3.73
32	3.96	2.82
33	3.21	2.09
34	2.19	1.50
35	1.83	1.04



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