

SSG Transition Zone Charge Test

2/25/2016

Wheel 1 Board 1 8 Trans 21 Magnets

Test #	Gap	RPM	Resistor	Charge Amps	Primary Amps	Charge Volts	Primary Volts	Discharge Volts	Charge Hrs	Discharge Hrs	Primary Watt-Hrs	Charge Watt-Hrs	Discharge Watt-Hrs	D/C Ratio	D/P Ratio	C/P
1	0.225"	228	w/o	0.85	1.65	13.03	12.13	12.35	1.66	1.83	33.22	18.39	15.17	0.82	0.46	0.553
2	0.215"	231	w/o	0.86	1.64	13.03	12.37	12.33	1.40	1.66	28.40	15.69	13.71	0.87	0.48	0.552
3	0.215"	231	w/o	0.82	1.62	12.90	12.37	12.33	1.40	1.57	28.06	14.81	12.94	0.87	0.46	0.528
4	0.300"	213	w/o	0.79	1.47	13.00	12.37	12.31	1.40	1.50	25.46	14.38	12.37	0.86	0.49	0.565
5	0.125"	254	w/o	0.95	1.87	13.01	12.21	12.33	1.40	1.83	31.97	17.30	15.14	0.88	0.47	0.541
6	0.115"	257	w/o	0.97	1.90	13.12	12.34	12.32	1.40	1.78	32.82	17.82	14.72	0.83	0.45	0.543
7	0.115"	256	w/o	0.94	1.91	13.05	12.15	12.33	1.40	1.80	32.49	17.17	14.87	0.87	0.46	0.529
8	0.160"	245	w/o	0.87	1.71	13.17	12.30	12.32	1.40	1.58	29.45	15.99	13.07	0.82	0.44	0.543
9	0.160"	257	w/R12	0.66	1.35	13.02	12.36	12.31	1.52	1.30	25.23	13.03	10.72	0.82	0.42	0.516

Purpose of the above tests was to compare relative charge performance inside and outside the transition zones of 227 and 257 RPM. The SSG Wheel #1 has a low free spin time and maxes out at ~264 RPM. All the above runs were without any additional trigger resistance. The voltages used in the power calculations are averages from the written test data. The average amperages taken from computer data. The discharge time is hours to drop to 12.16 volts on the Charge Battery. The D/C ratio is the Charge battery input vs loaded output power. This is the charge efficiency. Load for Discharge test was 0.67 Ah. The D/P ratio is calculated Discharge power vs. Primary input power to the SSG. For the Joule enthusiasts the watt conversion is times 3600. This can be interpreted as the overall COP of the configured machine.
 Test 7 added 02/26/16.
 Tests 8 and 9 added 3/21/16

SSG Transition Zone Charge Test

3/19/2016

Wheel 2 Board 1 8 Trans 21 Magnets

Test #	Gap	RPM	Resistor	Charge Amps	Primary Amps	Charge Volts	Primary Volts	Discharge Volts	Charge Hrs	Discharge Hrs	Primary Watt-Hrs	Charge Watt-Hrs	Discharge Watt-Hrs	D/C Ratio	D/P Ratio	C/P
1	0.340"	261	w/o	0.92	1.80	13.25	12.23	12.33	1.40	1.60	30.82	17.07	13.42	0.79	0.44	0.554
2	0.340"	274	w/R12	0.73	1.40	13.04	12.33	12.33	1.40	1.25	24.17	13.33	10.48	0.79	0.43	0.551
3	0.290"	265	w/o	0.95	1.87	13.24	12.16	12.31	1.40	1.63	31.83	17.61	13.64	0.77	0.43	0.553
4	0.290"	284	w/R12	0.75	1.51	13.02	12.30	12.31	1.40	1.33	26.00	13.67	11.13	0.81	0.43	0.526
5	0.240"	270	w/o	0.97	1.95	13.23	12.17	12.32	1.40	1.73	33.22	17.97	14.49	0.81	0.44	0.541
6	0.240"	290	w/R12	0.78	1.59	13.04	12.30	12.30	1.47	1.50	28.75	14.95	12.55	0.84	0.44	0.520
7	0.220"	272	w/o	0.99	1.97	13.26	12.26	12.32	1.40	1.77	33.81	18.38	14.83	0.81	0.44	0.544
8																
9	0.195"	272	w/o	1.01	2.01	13.28	12.24	12.34	1.40	1.83	34.44	18.78	15.36	0.82	0.45	0.545
10	0.195"	295	w/R12	0.81	1.61	13.06	12.33	12.32	1.40	1.50	27.79	14.81	12.57	0.85	0.45	0.533
11	0.170"	274	w/o	1.01	2.02	13.30	12.25	12.33	1.45	1.93	35.88	19.48	16.20	0.83	0.45	0.543
12											0.00	0.00	0.00			
13	0.130"	275	w/o	1.02	2.06	13.30	12.26	12.33	1.40	1.88	35.37	19.07	15.78	0.83	0.45	0.539
14	0.130"	300	w/R12	0.87	1.79	13.10	12.32	12.31	1.40	1.63	30.93	15.90	13.67	0.86	0.44	0.514

Low friction wheel used for the above runs. Same format and config as prior.

Charging hrs are a constant 1.4 hrs except as noted.

Charge battery discharged down to 12.19 volts with noted time (Discharge Hrs)

Primary watt-hrs calculated from average Primary amps and run voltage - same steps for Charge watt-hrs.

D/C equals (Discharge Watt hrs)/(Charge Watt hrs). This ratio can be interpreted as the Charge efficiency for this SSG configuration.

D/P equals (Discharge Watt hrs)/(Primary Watt hrs). This ratio can be interpreted as the overall power efficiency for this SSG configuration.

Watt hours can be converted to Joules by multiplying by 3600, however the result is a large number within the spreadsheet cell - too cumbersome.