

BattleBots Battery Discharge Sheet

Date _____
 Battery Make/Model _____
 Total Wattage Output _____

Current Draw _____
 Battery Temp _____
 Starting/ending _____

Voltage

13.0																					
12.5																					
12.0																					
11.5																					
11.0																					
10.5																					
10.0																					
9.50																					
9.00																					
	15	30	45	60	15	30	45	60	15	30	45	60	15	30	45	60	15	30	45	60	15

1.0 Min

2.0 Min

3.0 Min

4.0 Min

5.0 Min

Time (Minutes/Seconds)

Battery Testing Procedure:

ALWAYS WEAR GOGGLES and/or FACE SHIELDS when handling or testing batteries.
Always have a supervising adult present.

Tools/Materials

Battery Test Board
 Volt Meter
 Ammeter (200 amp+ rating)
 Shunt/Meter (optional)

Face Shields/Goggles
 Spare bulbs
 Stop Watch
 Pencils

Recording Sheets
 Comfortable Chair
 Chalk/white board
 Supervisory Adult
 Smart Charger

- 1.) Prepare a fully charged battery. (Refer to battery and battery charger manufacturer's data for procedures on obtaining maximum charge state of charge without damaging the batteries.
 Clean the terminals

Measure the open circuit voltage

Note: It is good practice to record and file the discharge cycles for competition batteries. Many matches are lost due to dead batteries.

2.) Make the necessary battery connections.

Volt Meter/ Ammeter/Electrical Test Circuits

3.) Determine and record the test current (in amperes). Create a unique ID for the battery and record the ID as well as the make and model. The initial battery tests of a new battery are critical pieces of information. This will become important archival data necessary to evaluate the “Health” of the battery after several discharge cycles. The extent to which the battery’s ability to accept 100% charge will diminish over time and use. By comparing later discharge tests, the degree to which the battery capacity has deteriorated can be evaluated. In this way former “Competition” batteries can be retired and used for less critical applications.

Note: Each test should be performed at a fixed and repeatable current draw. The current can be “Set” by switching lights on or off. Additional current draws can be obtained by adding more lights to the circuit. As the battery discharges the current will drop. Turning on additional lights will draw more current. Note however that as the battery is exhausted the voltage will drop appreciably as the current is increased. Finally reaching a point where neither design voltage nor design current can be maintained.

STOP THE TEST WHEN SLA BATTERIES REACH LESS THAN 75% of DESIGN VOLTAGE! Other wise permanent damage to the batteries will result.

4.) Prepare the test set up, including a person on the stop watch and determine how many lights you will need on to draw the required current.

5.) Begin the experiment and record battery voltage on the attached chart every 15 seconds until either:

5 minutes has elapsed or The battery voltage falls below 10.5 volts.

Conclusion

Note: Always account for all the tools and materials used, and store them safely and neatly. This habit pays big dividends. Sloppy, unorganized teams have left expensive equipment at competitions, and used money to replace the necessary gear with funds better used to help participants attend the events.

Compute the total Wattage output of the battery and record this value as follows:

Watts = Volts (Avg.) x Amperes (Avg.)

Compare the total wattage/time figure you obtain with manufacturer’s published data and account for significant discrepancies.

