

# SABRE HP Quick Start Guide

## System Test Results

**VEHICLE MAY HAVE KEY OFF DRAIN:** indicates the charging system is in good condition but the battery has a low charge. Suspect excessive parasitic current drain or accessories left on during the test.

**CHARGE BATTERY AND RETEST SYSTEM:** indicates the battery either has a low charge or is almost fully discharged and must be charged before the tester will run any tests.

**REPLACE BATTERY AND RETEST SYSTEM:** indicates the battery is bad and must be replaced before the tester will run any tests.

**DIODES GOOD:** indicates the rectifier diodes are good.

**DIODES BAD:** indicates the diode pack or alternator needs replacing.

**Note:** To prevent an erroneous diode test, the tester does not test diodes unless the battery condition is good.

**CHARGING SYSTEM GOOD:** indicates the charging system is in good condition.

**CHARGING VOLTS TOO LOW / HIGH or CHARGING SYSTEM NEEDS REPAIR:** indicates the charging system voltages are too low/high or the charging system is bad. If the no load voltage is too low, the battery test result may be GOOD/LOW CHARGE. This may also be the result if a heavy-power-consumption device was on during the test. If so, the message, "Was any accessory left on" may display. If so, check if any accessories were on, doors were open, etc. during the test. If they were not, the test result may indicate a battery with low charge.

**CRANKING GOOD:** indicates the starting system is in good condition.

**NO START CONDITION:** indicates the battery is bad or needs recharging. This result may also appear if the battery is too small for the vehicle, if the starter motor is defective, or if the cranking resistance is excessive. Make sure the battery size is correct and there are no starter or engine problems.

## Quick Start SABRE HP Test Steps

1. Ensure the SABRE HP has a sufficiently charged 9 volt battery installed
2. Turn off all vehicle loads
  - Allow the battery to settle for approx 3 minutes
  - After charging, allow the battery to sit for 10 minutes
3. Locate the battery
  - Test must be performed at the battery terminals
  - If the battery remotely located, jump start lugs can be used if they are within 3' from the battery
4. Clean the battery terminals
5. Connect the battery clamps to the terminals
  - Ensure that both sides of the jaws contact the battery terminal, one side of the jaw measures voltage, the other side applies the load
  - If testing a side terminal battery, ensure both jaws touch the terminal bolt; if it is out of the vehicle, use the supplied terminal post adapters
6. Follow the prompts on the SABRE HP to complete the test

## Battery Test Results

**BAT. GOOD:** the battery is in good condition and can hold a charge.

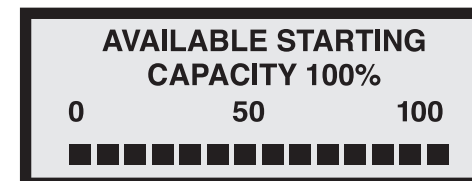
**BAT. GOOD / LOW CHARGE:** the battery is in good condition but needs charging.

**BAT. CHARGE & RETEST:** the battery is almost fully discharged and the battery condition cannot be determined reliably. Charge the battery and repeat the test.

**BAT. BAD:** the battery is bad, replace the battery.

**Note:** A bad battery can mask other charging system problems that will be caught when tested with a good battery. For example, a bad battery could make the diodes look bad.

**Available Starting Capacity (ASC)** is a representation of the remaining starting capacity of the battery, graphically expressed as a percentage, based on the original starting capacity of the battery when new. Use this as a gauge to identify batteries that are good, but marginal. A battery that is good, but has low ASC rating is an indication that the battery is nearing the end of its service life.



# How the SABRE HP works

The SABRE HP hand held battery testers utilize the SPX Micro Load technology to determine the dynamic Impedance.

**The first load is 1.5 Amps** and is applied for 5 seconds, this load

- Conditions the battery
- Establishes an accurate state of charge that is used for test corrections

**The second load is 15 Amps** and is applied for two seconds

- This load is used to measure the internal impedance of the battery and calculate the actual capacity of the battery. It does this by precisely measuring the voltage drop over the time that the 15 amp load is applied

**The battery is then allowed to recover for 5 seconds** The tester plots the recovery curve of the battery once the load is removed. Characteristics of problem batteries can be identified by how the battery recovers.

**Battery Test Results** are computed by first correcting for state of charge, comparing the test results to the capacity of the battery that was entered by the user and finally making any temperature corrections needed.

## Key Advantages of SABRE HP technology

- **State of charge correction** – Test batteries without charging them first
- **Temperature correction** – Test cold batteries
- **Definitive test results** – Good or Bad diagnosis
- **Actual capacity (CCA) is displayed** – Identify marginal batteries
- **Accurate for AGM batteries** – includes special algorithms for AGM's
- **Test does not discharge the battery** – Smaller loads do not remove significant charge from the battery

**Bottom line: Definitive, accurate test results for all types of batteries in all states of charge.**

# FAQ's

- Q:** How long has Micro Load technology been around  
**A:** The first handheld tool with micro load technology debuted in 2000. There are over 10,000 handheld battery testers in the field that utilize this technology.
- Q:** How does the Tester do it's test without a Heavy Load?  
**A:** "Dynamic Impedance" The tester uses the State of Charge combined with the Voltage under load to determine the condition of the battery.
- Q:** Why do I get different results when testing a battery with the SABRE HP and than a Heavy Load tester?  
**A:** The SABRE HP compensates for state of charge & temperature for more accurate results and detects failures that a load tester cannot. In order to get the same level of accuracy from a load tester, the battery must be fully charged, and be at room temperature. If testing with a SABRE HP after a load test, the battery must be allowed to recover from the heavy load for at least 10 minutes to allow the battery chemistry to equalize and the open circuit voltage to stabilize in order to get an accurate state of charge baseline.
- Q:** Does Terminal Cleaning need to be performed before testing the battery?  
**A:** YES – A Clean connection between the Tester Clamps and the battery is crucial. You do not have to take the cable off to clean it but the connection needs to be clean, especially of corrosion.
- Q:** How Long do I have to wait before I can run a second test (with any tester) again on the same battery?  
**A:** It takes a battery appx. 10 Minutes to Recover from any test, the more load the longer time needed to re-test.
- More Info** – If the battery is marginal it will move back and forth from "good" to "bad" depending on state of charge and time between tests. A strong Battery or weak battery will give consistent tests.
- Q:** Can I test a battery from the "Jump Start Lugs"?  
**A:** YES -- BUT – if the test comes back and says the battery is bad then you need to test the battery at the battery.
- More Info** – A good rule of thumb is that if the Lugs are farther than 3 Feet from the Battery then perform the test at the battery.
- Q:** How Long do I have to Wait to test a battery once I turn the Key off or I charge the Battery.  
**A:** The Minimum amount of time is 3 minutes. It is best to Wait 10 min if at all possible.
- Note** – This is a crucial step that is missed in a lot of tests. Without sufficient "stabilization time" the tester will provide inconsistent results.
- Q:** Can A "Frozen" Battery be tested?  
**A:** NO – If the battery is truly frozen DO NOT TEST IT. If it is Colder than 32 degrees it can be tested by the Sabre HP. If You are Testing the battery with something other then the Sabre HP it needs to be brought to room temperature.
- Note** – It is IDEAL to test any battery at Room Temp but the Sabre HP does take temperature into account but heavy Load Testers do not.
- Q:** Can the Key be Left On during a "Battery only" Test.  
**A:** NO – Make sure Key is OFF and all possible electronics are off. (i.e. doors closed, hood light off, brake off, DRL's off)