SOLAR®
BATTERY TESTERS

125 Amp Battery Load Testers
Model No. 1850 - Analog
Model No. 1860 - Digital
User's Manual

⚠WARNING	
	Failure to follow instructions may cause damage or explosion, always shield eyes. **Read entire instruction manual before use.**

Warning: This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects and other reproductive harm. ***Wash hands after handling.***

⚠WARNING

	Read these instructions completely before using the ***SOLAR*** tester and save them for future reference. Before using the tester near a car, truck or boat, read these instructions and the instruction manual/safety information provided by the car, truck, boat or equipment manufacturer. Following all manufacturers' instructions and safety procedures will reduce the risk of accident.
	Working around lead-acid batteries may be dangerous. Lead-acid batteries release explosive gases during normal operation, charging and jump starting. Carefully read and follow these instructions for safe use. Always follow the specific instructions in this manual and on the ***SOLAR*** tester each time you use it. All lead-acid batteries (car, truck and boat) produce hydrogen gas which may violently explode in the presence of fire or sparks. ***Do not smoke, use matches or a cigarette lighter while near batteries.*** Do not handle the battery while wearing vinyl clothing because static electricity sparks are generated when vinyl clothing is rubbed. Review all cautionary material on the tester and in the engine compartment.
	Always wear eye protection, appropriate protective clothing and other safety equipment when working near lead-acid batteries. Do not touch eyes while working on or around lead-acid batteries.
	Use extreme care while working within the engine compartment, because moving parts may cause severe injury. Read and follow all safety instructions published in the vehicle's Owner's Manual.
	Batteries being tested with the ***SOLAR*** tester likely contain liquid acids which are hazardous if spilled.

⚠WARNING

	Surfaces of the tester become extremely hot during and following the testing process – ALWAYS hold tester using the integrated handle to avoid contact with hot surfaces.

Personal Precautions

Someone should always be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes. Protective eyewear should always be worn when working near lead-acid batteries.

If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.

Be extra cautious to reduce risk of dropping a metal tool onto a battery. It might spark or short circuit the battery or another electrical part that may cause explosion.

Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

Use the tester for testing lead-acid batteries only. Do not use for testing dry-cell batteries that are commonly used with home appliances.

NEVER test, charge or jump start a frozen battery.

Do not submerge in water.

Do not operate with flammables such as gasoline, etc.

If the tester receives a sharp blow or is otherwise damaged in any way, have it checked by a qualified service person.

Do not disassemble the tester. Have it checked by a qualified service person.

About Your SOLAR 125 Amp Battery Load Tester

Battery Tester Model Nos. 1850 and 1860 are designed to simulate vehicle loads by placing a true 125 Amp fixed load on the battery. Both models feature rugged construction using superior components and test batteries up to 1000 CCA. They should not be used on batteries larger than 1000 CCA, as this could result in damage to the tester. Both models allow assessment of starting and charging system performance in addition to their primary battery testing function.

Preparing Battery to Be Tested

1. Be sure area around battery is well ventilated while battery is being tested.
2. Clean battery terminals. Wire brush them if necessary. Be careful to keep corrosion from coming in contact with eyes.
3. Inspect the battery for cracked or broken case or cover. If the battery is damaged, do not use tester.
4. If the battery is not a sealed Maintenance Free battery, add distilled water in each cell until battery acid reaches level specified by the manufacturer. This helps purge excessive gas from cells. Be careful not to overfill.
5. Confirm that all vehicle accessories are turned OFF to ensure you do not cause any arcing.
6. If it is necessary to remove battery from vehicle to test, always remove ground terminal from battery first.

Tester Operation

Battery Testing: Model No. 1850 (6 or 12 Volt Batteries)

WARNING: Never attempt to charge or test a frozen battery.

1. Before you test a battery in a vehicle, turn off the ignition, all accessories and loads. Close all the vehicle doors and the trunk lid.
2. Make sure all the battery terminals are clean. See ***Preparing Battery to Be Tested.***
3. Connect tester leads to the battery, clamping the red clamp to the vehicle

positive battery terminal first. Then, clamp the black clamp to the vehicle negative battery terminal second.

Note: Whenever possible, connect directly to the terminals/posts of the battery.

4. The needle of the analog meter will reflect the Open Circuit Voltage of the battery.
5. The tester's analog meter is calibrated for nominal battery voltage and, in the case of 12 Volt batteries, battery capacity. Hold down the load switch for 10 seconds and observe the location and reaction of the needle of the analog meter. After 10 seconds, release the load switch.
6. Interpret meter readings as follows. For 12 Volt batteries, remember to focus on the specific area of the meter related to the size of the battery being tested.

OK (Green Band)	*Battery capacity is good. Battery may or may not be fully charged.*
Weak/Bad (Yellow Band/Steady)	*Battery capacity is low. Battery may be defective or discharged. Charge the battery and re-test. If the battery will not load test to a satisfactory level after charging, suspect that the battery is defective.*
Weak/Bad (Yellow Band/Falling or Red Band)	*Battery more than likely is defective. For a quick check, release the load switch and note the voltage meter reaction. If voltage recovers immediately following load test to more than 12.0 volts very quickly (in 3 – 5 seconds), battery is defective. If the voltage recovers slowly or not at all, the battery may simply be highly discharged. Charge the battery and re-test.*

7. Refer to the following chart as a reference point for assessment of testing results. If the tester indicates poor battery condition, allow the battery to stabilize for a few minutes and check the Open Circuit Voltage. This is a good measure of the percent charge in the battery. The battery is considered charged if it measures 75% or more. If a battery with 75% or greater charge fails the load test, it should be replaced. If a battery fails the load test when less than 75%, it should be charged and retested. Replace the battery if it fails again. The values in the chart are for 12 Volt batteries only – divide these values in half for 6 Volt battery values.

Open Circuit Voltage	% Charge
≤11.7 V	0%
12.0 V	25%
12.2 V	50%
12.4 V	75%
≥12.6 V	100%

Battery Testing: Model No. 1860 (12 Volt batteries only)

WARNING: *Never attempt to charge or test a frozen battery.*

1. Before you test a battery in a vehicle, turn off the ignition, all accessories and loads. Close all the vehicle doors and the trunk lid.
2. Make sure all the battery terminals are clean. See ***Preparing Battery to Be Tested.***
3. Connect tester leads to the battery, clamping the red clamp to the vehicle positive battery terminal first. Then, clamp the black clamp to the vehicle negative battery terminal second.

   Note: Whenever possible, connect directly to the terminals/posts of the battery.
4. The digital display will provide the Open Circuit Voltage of the battery.
5. Press “ENTER” to automatically load the battery and perform the test (Battery Test LED will light). Test will take approximately 10 seconds.
6. Tester will automatically complete the test and display an LED result and reflect the voltage drop on the battery during the test.

OK (Green LED light)	*Battery capacity is good. Battery may or may not be fully charged.*
OK + Weak (Green + Yellow LED light)	*Battery charge or capacity is low. Battery may be discharged or nearing the end of its useful life. Charge the battery and re-test.*
Weak (Yellow LED light)	*Battery capacity is low. Battery may be defective or discharged. Charge the battery and re-test. If the battery will not load test to a satisfactory level after charging, the battery is defective.*
Bad (Red LED)	*Battery is likely defective. Charge and re-test to confirm as warranted.*
Digital LED displays "c.b"	*If the Open Circuit Voltage of the battery when initially connected is lower than 12.3 volts or higher than 13.2 volts, the tester will display "c.b" (charge battery). Battery will need to be fully charged before testing. After charging, please wait at least 30 minutes to let the voltage stabilize prior to load testing. If the battery voltage is still below 12.3 volts after charging, the battery should be replaced. If the battery voltage is above 13.2 volts and you are testing a battery installed in a vehicle, turn off the engine and turn on the headlights for a few seconds for the voltage to drop below 13.2 volts before load testing the battery.*

7. Refer to the following chart as a reference point for assessment of testing results. If the tester indicates poor battery condition, allow the battery to stabilize for a few minutes and check the Open Circuit Voltage. This is a good

measure of the percent charge in the battery. The battery is considered charged if it measures 75% or more. If a battery with 75% or greater charge fails the load test, it should be replaced. If a battery fails the load test when less than 75%, it should be charged and retested. Replace the battery if it fails again. The values in the chart are for 12 Volt batteries only – divide these values in half for 6 Volt battery values.

Open Circuit Voltage	% Charger
≤11.7 V	0%
12.0 V	25%
12.2 V	50%
12.4 V	75%
≥12.6 V	100%

Charging System Testing: Model Nos. 1850 and 1860 (12 Volt Charging Systems Only)

1. Remain connected to the vehicle battery after the battery load test.
2. For Model 1860 only, press “ENTER” to advance to System Test Function (System LED will light).
3. Start the engine and allow it to reach 1200 to 1500 RPM. ***DO NOT*** press “ENTER”.

   WARNING: Stay clear of moving engine parts.

4a. Reading the Result - Model 1850

A reading in the green zone indicates that the charging system is performing properly. A reading in the red zone below optimal indicates that the charging system is undercharging the battery while a reading above the green zone indicates overcharging.

4b. Reading the Result - Model 1860

A reading between 13.6 Volts and 14.8 Volts will result in a Green (OK) LED display. A reading outside of this range will result in a Red (BAD) display. In this

case, verify manufacturer's charging system specifications to confirm that the system is not performing properly.

5. If your charging system test results in a Red (BAD) result, check belts and alternator connections, including ground connection.

Starting System Test: Model Nos. 1850 and 1860 (12 Volt Starting Systems Only)

1. Connect the positive (red) clamp to the positive (POS, P, +) battery post. Connect the negative (black) clamp to the negative (NEG, N, -) battery post. ***DO NOT*** press "ENTER" on Model No. 1860 or the load switch on Model no.1850
2. Disable the vehicle's ignition system so the car will not start.
3. Crank the engine and note the voltage reading during cranking.
4. A meter reading of ≤ 9V indicates excessive current draw. This result may be due to bad battery connections, may indicate a failing starter motor, or may result because the battery is too small to meet the vehicle's requirements.

Warranty

Clore Automotive, LLC warrants your ***SOLAR*** Battery Tester to be free from defects in material and workmanship for a period of one year from the date of sale to the original user or consumer purchaser.

This warranty excludes and does not cover defects, malfunctions, or failures of your tester which were caused by repairs made by an unauthorized person, mishandling, modifications, normal wear, unreasonable use or damage to the tester while in your possession, as determined by Clore Automotive, LLC.

In no event shall Clore Automotive, LLC be liable for consequential or incidental damages. Some states do not allow limitations on the length of the implied warranty or the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

This warranty is in lieu of all other express warranties. The duration of any implied warranty, including but not limited to any implied warranty of merchantability or fitness for a particular purpose, made in respect to your product is limited to the period of the express warranty set forth above.

Instructions for obtaining service under this warranty:

To obtain service under this warranty, return your ***SOLAR*** Battery Tester to the place of purchase, along with your dated sales receipt, for an exchange.