

Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

211

VIKING®

6/12 VOLT BATTERY LOAD AND SYSTEM TESTER



Visit our website at: <http://www.harborfreight.com>
Email our technical support at: productsupport@harborfreight.com

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When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

WARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.

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WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

IMPORTANT SAFETY INSTRUCTIONS

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

WARNING – When using tools, basic precautions should always be followed, including the following:

1. Wear ANSI-approved safety goggles during set up and use of the Battery Tester.
2. Test in a well ventilated area. Explosive gases may be produced during testing. Do not smoke, cause sparks, or strike matches near the battery when testing.
3. Refer to the user manual of the Battery being tested for testing instructions and precautions prior to using the Battery Tester.
4. Do not expose this product to rain or wet conditions.
5. Maintain this product. Check for breakage of parts and any other condition that may affect this product's operation. If damaged, have the unit repaired before use.
6. Use this product in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of this product for operations different from those intended could result in a hazardous situation.
7. This product is not a toy. Keep it out of reach of children.
8. Maintain labels and nameplates on the unit. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
9. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. Caution is necessary when near coil, spark plug cables, or distributor of running engine. Engine should be off during distributor adjustment.
10. Undercharged lead-acid batteries will freeze during cold weather. **Do not test or charge a frozen battery.**

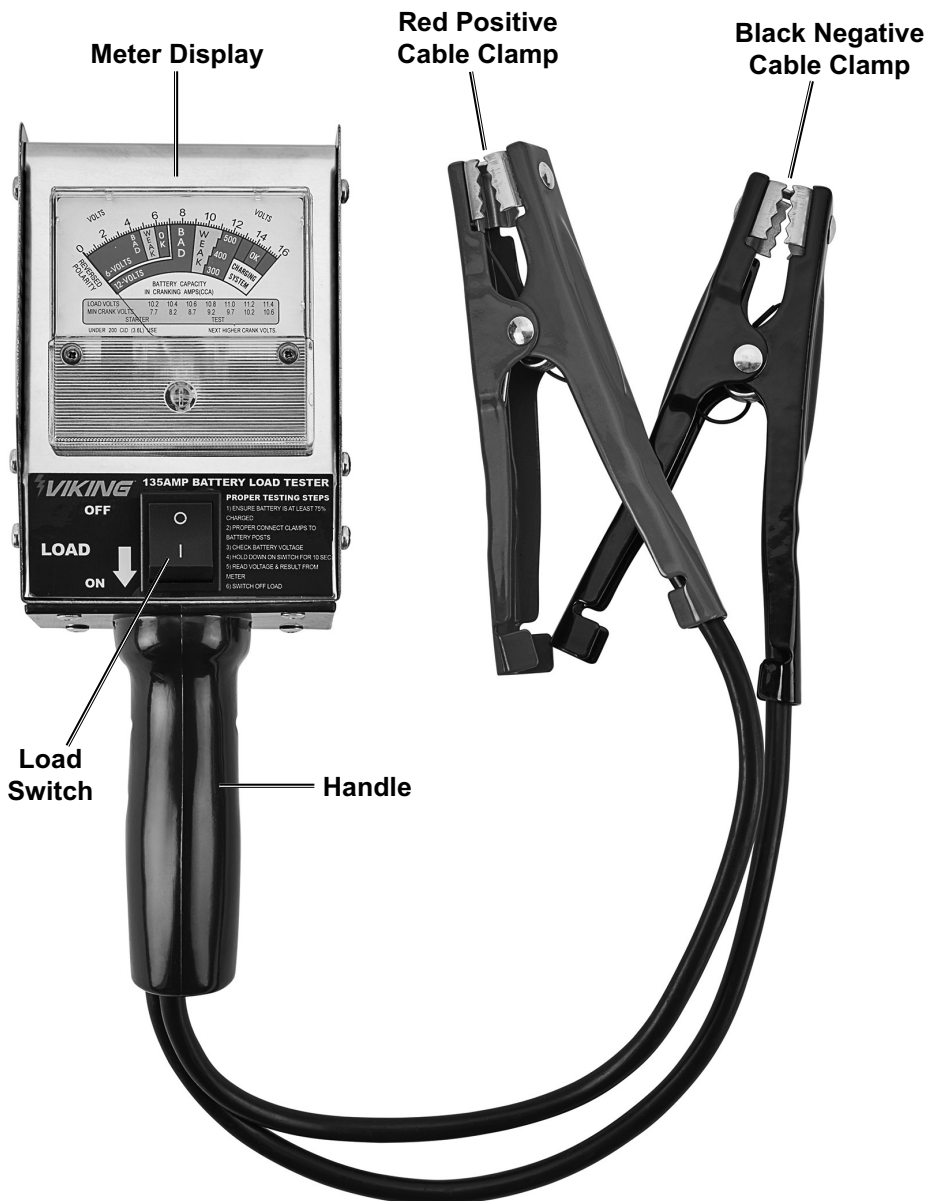
11. When connecting the Battery Cables to the battery, avoid creating sparks; especially when the battery is being charged. Explosive gases are created during charging. Sparking could also damage the vehicle electrical system.
12. Do not touch the cooling vents on the Battery Tester during or immediately after testing the battery. They become very hot.
13. When placing the Battery Tester in the vehicle's engine compartment, take special care that the metal housing of the Tester does not come in contact with either terminal of the battery or other electrical connections.
14. Be certain of the test battery polarity before connecting the test Cable Clamps. The red Cable Clamp goes to the positive terminal of the battery. The black Cable Clamp goes to the negative terminal of the battery. Reversing Battery Tester Cable Clamps on the battery will damage the tester.
15. Do not drop the Battery Tester as it may affect proper operation.
16. Do not smoke or have open flames near the battery.
17. Do not connect the Battery Tester to the battery while the engine is running. Turn the engine off before connecting.
18. The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

 **SAVE THESE INSTRUCTIONS.**

Specifications

Testing Capability	6 and 12 VDC Battery Tester
Load Test Capacity	135 amps; 200 ~ 1000 cold cranking amps
Display Meters	Analog, 0 ~ 16 VDC (max.)
Test Cycle	10 seconds per test with 1 minute cool down; 3 tests in 5 minutes

Functions



Operating Instructions



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Testing the Battery

1. To help ensure a good connection, wipe battery terminals with a cloth to remove any dirt and grease.
2. Connect red (positive) Cable Clamp to the positive terminal (+) on the 6 or 12V lead-acid battery.
3. Connect black (negative) Cable Clamp to the negative terminal (-) on the battery. Turn clamps slightly to ensure a good connection.

6V Battery Test

Note: The Load Switch is a rocker switch that must be held down to operate properly.

1. Read Meter and confirm that battery voltage is in the green area (see *Battery Condition* section on page 6).

2. Press and hold Load Switch "ON" for a maximum of 10 seconds. Read the Meter. The needle should remain in the green area. If not, battery is weak or bad.

NOTICE: To prevent overheating, allow tester to cool for 1 minute before depressing the load switch again, if further testing is required.

12V Battery Test

1. Press and hold Load Switch "on" for a maximum of 10 seconds. Read the Meter. Then, refer to *Battery Condition* section on page 6 for the result.
2. Release the Load Switch and remove Cable Clamps from battery.
3. **IMPORTANT:** During the first use of the Tester, you will notice smoke and/or a burning smell. This is normal and temporary. During regular use, the metal housing of the unit will get hot enough to burn skin or cause property damage. **Carry only by the handle.**

NOTICE: To prevent overheating, allow tester to cool for 1 minute before depressing the load switch again, if further testing is required.

4. **⚠ WARNING! TO PREVENT SERIOUS INJURY: RISK OF FIRE. Tester becomes extremely hot. Do not place near anything flammable. Do not leave unattended during use.**

Testing the Charging System

⚠ WARNING

Avoid carbon Monoxide poisoning. This gas comes from the vehicle's exhaust and is colorless and odorless. It can cause **SERIOUS INJURY** or **DEATH** if inhaled.

Note: Perform the following tests with two people, one at the battery and the other at the driver seat of the vehicle.

1. Connect Cable Clamps to battery as previously described.
2. Outside, or in a well ventilated area, start the vehicle engine and run at idle speed for a few minutes.
3. Rev engine up to between 1500-2000 RPM and hold for 15 seconds.
4. After 15 seconds, read Meter. If needle points to the red block, the charging system has undercharged the battery. If the needle points beyond the OK block, charging system has overcharged the battery.
5. Turn off engine and remove Clamps.

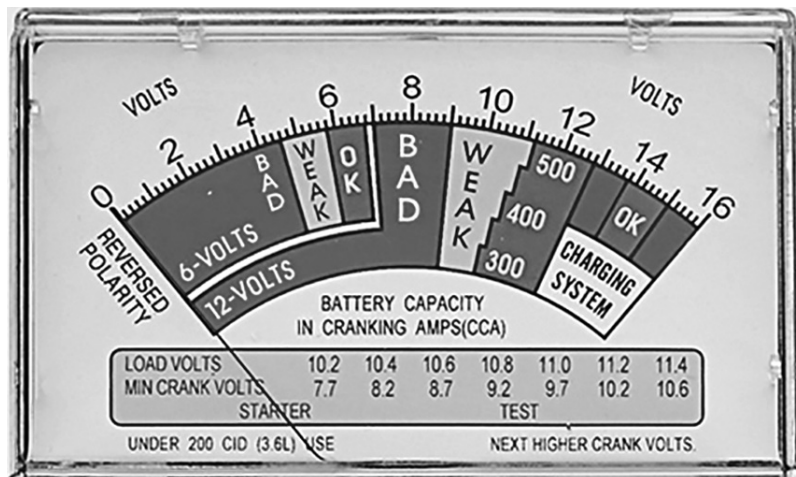
Testing the Starter

Note: The engine should be at normal operating temperature and the battery should be **fully charged** before doing this test. **FOR 12V ONLY.**

1. Connect Cable Clamps to battery as previously described.
2. Disable the ignition so engine will not start. (Refer to your vehicle's manual.)
3. Have an assistant crank the engine. Note voltage reading during cranking.
4. View Meter Display and read the voltage. A reading of 9 Volts or less indicates excessive current draw. This may be due to a poor connection, a failing starter, or a battery of insufficient size for the motor.
5. When finished, disconnect Cable Clamps, restore ignition and store tool in a clear, dry location away from children.

Battery Analysis

Battery Condition



Meter Display

Load Test / 10 Seconds (Display Reading)	Battery Condition
OK (Green Area)	Battery capacity is good. May or may not be fully charged. Check the charge state by testing the Specific Gravity (SG) with a Hydrometer (not included). If SG is less than full charge, check for possible charging system trouble. Recharge to full level.
Weak (Yellow Area)	If the Display Meter needle is steady, the battery capacity is not good. Battery may be defective or partly discharged. Check SG. If over 1.225, the battery is defective. If below 1.225, recharge battery and retest. If there is a difference in SG between cells over 2 points (0.025), a particular cell may be damaged. If charging does not bring SG to full charge level, then battery is either sulfated or has lost its active material.
Bad (Red Area)	If the Display Meter needle is falling, the battery is defective or has a bad cell. For a quick check, release the load Toggle Switch and note Display Meter reaction. If voltage recovers to its full potential after only a few seconds, the battery is probably defective. If the voltage recovers slowly, the battery may only be run down. Check SG, recharge and retest.
Charging System (Alt. & Reg Test)	If the Display Meter needle reads OK, charging system is functional. If it falls on the low red or high red areas, charging system may be malfunctioning.

Battery Temperature Compensation

Battery Temperature	Crank Amps Loss
+20°F	50A
0°F	100A
-20°F	150A

Open Circuit Voltage

If the load indicates poor battery condition, allow the battery to stabilize for a few minutes and check the open circuit voltage by voltmeter:

- a. Battery is considered charged if it measures 75% or more. If it failed the load test with 75% charge, replace battery.
- b. If Battery charge measures less than 75%, it should be charged and load tested again. Replace battery if it fails again. The values in the following table are for a 12V battery; divide values in half for a 6V battery.

Open Circuit Voltage	% of Charge
11.7V or Lower	0%
12.0V	25%
12.2V	50%
12.4V	75%
12.6V or Higher	100%

User-Maintenance Instructions



Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠ WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:
Do not use damaged equipment. If abnormal noise or vibration, occurs, have the problem corrected before further use.

Inspection, Maintenance, and Cleaning

Note: These procedures are in addition to the regular checks and maintenance explained as part of the regular operation of the air-operated tool.

1. Periodically check all nuts, bolts, and screws for tightness.
2. Store in a clean, dry location.
3. Clean the outside of the unit with a damp cloth. Never use solvents to clean any parts of this tool. **Allow tool to dry completely before use.**
4. Use compressed air to blow out debris from the load vents.
5. After each use, clean the Cable Clamps of any possible battery electrolyte. Apply a thin coat of silicon grease to prevent corrosion.

Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.
Replacement parts are not available for this item. Reference UPC 193175451699.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.



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