12 VOLT DIGITAL BATTERY ANALYZER

Stock Number W2998

OWNER'S MANUAL

Performance Tool®

⚠WARNING: *READ, UNDERSTAND AND FOLLOW ALL INSTRUCTIONS AND WARNINGS BEFORE OPERATING THIS TOOL. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE AND WILL VOID WARRANTY.*

PT® Performance Tool

DESCRIPTION

Portable, fast, and very simple to use battery starting and charging system analyzer.
Digital display indicates the condition of your battery and charging system.
Tests 12V DC systems, guiding you through the testing process.
Clear and easy to understand results to indicate systems condition.

SPECIFICATIONS:

Battery CCAs:..... 100-2000
Battery Types:.....LA, AGM, EFB, GEL and VRLA
Voltage:.....7-15V DC
Testing Standards:.....SAE, DIN, EN, IEC, GB, JIS, BCI, CCA, MCA and CA

SAFETY GUIDELINES / DEFINITIONS

This instruction manual is intended for your benefit. Please read and follow the safety, installation, maintenance and troubleshooting steps described within to ensure your safety and satisfaction. The contents of this instruction manual are based upon the latest product information available at the time of publication. The manufacturer reserves the right to make product changes at any time without notice.

⚠**WARNING:** *Read and understand this entire instruction manual before attempting to assemble, install, operate or maintain this product. Failure to comply with the instructions may result in serious personal injury and/or property damage!*

The following signal words are used to emphasize safety warnings that must be followed when using this product:

⚠**DANGER:** *Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury.*

⚠**CAUTION:** *Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury.*

⚠**WARNING:** *Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury.*

⚠**NOTE:** *Indicates important information, which if not followed, MAY cause damage to equipment.*

SAFETY RULES

- Maintain a safe working environment. Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris.
- Maintain labels and nameplates on this product. These carry important information. If unreadable or missing, contact Performance Tool for a replacement.
- Be alert for hot engine parts to avoid accidental burns.
- Avoid accidental fire and/or explosion. Do not smoke near engine fuel and battery components.

⚠**WARNING**: *The warnings, precautions, and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. The operator must understand that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.*

- Working near lead acid batteries can be dangerous, they produce explosive gases. To reduce risk, follow the manufacture instruction on handling the battery.
- Avoid the risk of contact, battery fluid is a highly corrosive sulfuric acid and WILL burn.
- You must be sure the area is well ventilated while the battery is being tested.

PRIOR TO BATTERY TEST

Determine Battery Type:
REGULAR FLOODED – Lead Acid
AGM BATTERY – Absorbing Glass Mat
GEL BATTERY – Gelatum sealed lead acid battery
VRLA BATTERY – Vent Regulating Lead Acid
EFB BATTERY – Enhanced Version of Standard Wet-Flooded Lead Acid

Determine Battery Rating:
SAE, DIN, IEC, GB, JIS, EN, BCI, CA , CCA & MCA
CCA: Cold Cranking Amps, specified by SAE & BCI, most frequently used value for starting battery at 0°F (-18°C)

BCI: Battery Council International standard
CA: Cranking Amps standard, effective starting current value at 0°C
MCA: Marine Cranking Amps standard, effective starting current value at 0°C
JIS: Japan Industrial Standard, displayed on the battery as combination of the numbers and letters, e.g. 55D23,80D26

DIN: German Auto Industry Committee Standard

IEC: Internal Electro technical Commission Standard

EN: European Automobile Industry Association

SAE: Society of Automotive Engineers Standard (United States Standard)

EN: European Standard

DIN: German Standard

IEC: International electrical science and technology association

GB: China National Standard

Testing Range:

Measure Standard	Measure Range	Measure Standard	Measure Range
CCA	100 - 2000	DIN	100 - 1400
BCI	100 - 2000	IEC	100 - 1400
CA	100 - 2000	EN	100 - 2000
MCA	100 - 2000	SAE	100 - 2000
JIS	26A17 – 245H52	GB	30 - 220

OPERATING INSTRUCTIONS

Vehicle Mounted Battery

1. Before testing the battery the ignition needs to be turned off. Be sure everything is off, all accessories and loads. Close all the vehicle doors and the trunk lid.
2. Determine which post of the battery is ground (-) typically a black cable connected to the chassis. This is your negative connection. Now determine which post of the battery is positive (+) typically a red cable connected to the starter. This is your positive connection.
3. Connect the **POSITIVE** (red) clamp from battery tester to **POSITIVE** (+) post of battery first.
4. Connect the **NEGATIVE** (black) clamp away from the battery. Typically a heavy gauge metal part of the frame, vehicle chassis, or engine block is a good choice. Do not connect clamp to carburetor, fuel lines, or sheet metal body parts.

NOTE: *When disconnecting, remove clamp from vehicle chassis first, then remove the* ***POSITIVE*** *(+) clip from the battery post.*

5. Once connected to the vehicle, the screen will display **BATTERY TEST**. The battery voltage will also be displayed with __. __ **V**. Press the **ENTER** button to go to the next step.
6. The screen will display **BATTERY TYPE**. Press the **ARROW** button to select the battery type: **REGULAR FLOODED, AGM BATTERY**, **VRLA/GEL BATTERY, EFB BATTERY**. Press the **ENTER** button to confirm choice.
7. The screen will show **RATING STANDARD**. Press the **ARROW** button to select the battery standard: **SAE DIN IEC EN** or **CA (MCA) SAE:** United States Standard **EN:** European Standard **DIN:** German Standard **IEC:** International electrical science and technology association **CA (MCA):** Normal starting current or maritime starting current Press the **ENTER** button to confirm the choice and go to next step.
8. The screen will show **RATING CAPACITY**. Press the **ARROW** button to select the battery capacity of **CCA**. With each press of the button, the value will increase or decrease Press the **ENTER** button to confirm the input value and begin the test.

9. The screen will show the message, **TESTING**. The test result will display after 2 seconds.

10. If the display reads **BATTERY CHARGED** Press the **ARROW** button to select **YES** or **NO**. Press the **ENTER** button to confirm your choice and proceed to the next step.

NOTE: *The Tester will judge the battery status & decide whether to show this Step or not, it doesn't appear every time.*

11. When the test is completed, the display shows the actual available **CCA**. Press the **ARROW** button to see the **SOH**, state of health as a percentage, then press the **ARROW** button to see the **SOC**, state of Charge as a percentage, at last press the **ARROW** button to see the Voltage and Internal Resistance.

Bench Testing Battery

1. Follow all the above steps. Disregard the power off from step 1 above, there will be no load draw.

Test Messages

In some cases the tester asks for additional information before completing a test. It may also warn you of a condition that prevents proper testing.

Test Message Interpretation

BATTERY TEMP. ABOVE or BELOW 0° C

If the tester detects that the temperature of the battery may make a difference in the result, it will ask you to select if the battery temperature is above or below 0 ˚C. It will resume the test after you make your selection.

BEFORE or AFTER CHARGE

For a more decisive result, the tester may ask if you are testing the battery before or after charging. If the vehicle has just been driven, select **BEFORE CHARGE**. It will resume the test after you make your selection.

TEST RESULTS

A. GOOD PASS - The battery is good and capable of holding a charge.

B. GOOD RECHARGE - The battery is good but needs to be recharged.

C. RECHARGE RETEST - Battery is discharged, the battery condition cannot be determined until it is fully charged. Recharge and retest the battery.

D. BAD REPLACE - The battery will not hold a charge. It should be replaced immediately.

E. TEST ERROR - The clamps are not connected properly. Please fully charge the battery and retest after excluding both previous reasons. If reading is the same, the battery should be replaced immediately.

STARTING SYSTEM TEST

1. Connect the tester to a vehicle battery; tester will be in default **BATTERY TEST** mode.

2. Press the **ARROW** button once to enter **SYSTEM TEST**. The voltage, __. __ **V**. will appear on the screen.

3. Press the **ENTER** button to go to next step. The screen will show **TURN OFF LOADS START ENGINE.**

4. Turn off all vehicle accessory loads such as lights, air conditioning, and radio. Everything must be off for an accurate test. Start the engine, wait for the tester to detect the cranking voltage.

5. With the engine running and test complete, one of the three results will be displayed along with the actual voltage reading measured.

A. CRANKING VOLTS NORMAL The system cranking voltage is in a good range.

B. CRANKING VOLTS LOW The cranking voltage is below normal limits; troubleshoot the starter with manufacturers recommended procedure.

C. CRANKING VOLTS NOT DETECTED The cranking voltage is not detected, retest. Press the **ENTER** button to go to first step.

DISPLAY ADJUSTMENT

1. Correctly connect the clamps to the vehicle battery.
2. Tester will default to the battery test display.
3. Press right arrow button three times, LCD BRIGHTNESS will display.
4. Press enter button, LCD Brightness in percentage will display.
5. Press the right or left arrow button to adjust the LCD brightness percent.
6. Press enter to save the setting.

SCREEN DISPLAY

BATTERY TEST

GOOD PASS - Battery is good and capable of holding a charge.

GOOD RECHARGE - Battery is good but needs to be recharged.

CHARGE RETEST - Battery condition cannot be determined until fully charged.

BAD REPLACE - Battery will not hold a charge, it should be replaced.

TEST ERROR - Clamps are not connected properly.

COLD CRANKING VOLTAGE TEST

CRANKING VOLTS NORMAL - System cranking voltage is in a good range.

CRANKING VOLTS LOW - Cranking voltage is below normal limit.

CRANKING VOLTS NOT DETECTED - Cranking voltage is not detected, retest.

CHARGING SYSTEM TEST

ALT. IDLE VOLTS NORMAL - System is showing normal output from the alternator.

ALT. IDLE VOLTS LOW - Alternator is not providing sufficient current to the battery.

ALT. IDLE VOLTS HIGH - Alternator voltage output exceeds normal limits of the regulator.

ACCESSORY LOADS TEST

ALT. LOAD VOLTS NORMAL - System is showing normal output from the alternator.

ALT. LOAD VOLTS LOW - Alternator not providing sufficient current for the systems electrical load.

ALT. LOAD VOLTS HIGH - Alternator voltage to the battery exceeds normal limits of the regulator.

MAINTENANCE

1. When you've finished your test, store the tester in an area where it will not be exposed to inclement weather, corrosion, or any harmful elements.
2. Keep the tester clean and free of any corrosive fluid.
3. Clean clamps thoroughly to prevent corrosion from battery fluid.
4. Wipe case with a damp rag, never submerge the tool in water or cleaner.

1 YEAR WARRANTY

PERFORMANCE TOOL® extends only the following warranties, and only to original retail purchasers. These warranties give specific legal rights. Except where prohibited by local law, the law of the State of Washington governs all warranties and all exclusions and limitations of warranties and remedies. There may be other rights which vary from state to state.

PERFORMANCE TOOL® warrants the product to be free from defects in materials and workmanship under normal use and service. A defective product may be returned for a free replacement within 90 days from the date of purchase, provided that product is returned to place of purchase immediately after discovery of defect. After 90 days and up to one year from date of purchase, PERFORMANCE TOOL® will replace at no charge any parts which our examination shall disclose to be defective and under warranty. These warranties shall be valid only when a sales receipt showing the date of purchase accompanies the defective product or defective part (s) being returned. For part (s) after 90 days, please remit your request, postage prepaid to:

PERFORMANCE TOOL, P.O. Box 88259 Tukwila, WA 98138

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