



Model ATD-5494

Battery Condition & Charging System Tester

**Tests 12V Auto/Truck/Non Auto/Compact Auto
Batteries**

12/24V starter/charging systems

User Manual



Made in USA

INTRODUCTION

Your new Model ATD-5494 Battery Diagnostic Tester employs conductance testing to determine the condition of all types of lead acid batteries, including Flooded, AGM, and Gel Cell batteries. The patented circuit eliminates the need for time consuming CCA input or conversions to other rating systems. When the ENTER button is pressed, the ATD-5494 will immediately display BOTH the percent available capacity of the battery and the condition of the battery. The ATD-5494 also tests 12V alternator systems and displays charging test data for Rev, Idle, and Load conditions including Ripple output. The ATD-5494 will display up to 33V output in Voltmeter Mode and can also test 24V charging systems in this mode.

FEATURES

- Displays % of available battery capacity
- Tests all 12V lead acid batteries
- Tests AGM, GEL and sealed lead acid batteries
- 50 CCA to 1700 CCA battery size range
- Color Coded LED Bar Graph
- 4 Range Battery Size Selection
- Voltmeter Mode 5.5V to 39.9V
- Tests discharged batteries down to 5.5V
- No need to input battery CCA's
- Patented conductance technology
- Reverse polarity protection
- Tests 12V Start/Charging Systems
- Color Graphic Display
- Alternator Rev, Load & Ripple Test
- Bad cell is detected and displayed

SPECIFICATIONS

Stock part number	ATD-5494
Description	Battery Condition & Starter/ Charging Tester
Battery Size Range:	50 to 1700 CCA
Battery Selection Range	Non Auto, Compact Auto, Auto, Truck
Battery Voltage Range :	12V Batteries
DC Voltage: Range Volts Mode	5.5V to 33V
Accuracy (Volts)	+/- 2% of reading
Color Graphic LCD Display	128 x 160 pixels resolution
Battery cable length	24"
Dimensions	7.25" x 4"
Weight	.8 lbs

Model ATD-5494



WARNING

Batteries produce explosive gases and can explode



Wear safety goggles (user and bystander)



Wear protective clothing (user and bystander)

Chemical burns can cause injury



Keep flames and sparks away from batteries



Read and follow instructions

Battery explosion and ignited gases can cause injury

TESTING BATTERY STATE OF CHARGE

Connect the red clip to the positive battery post and the black clip to the negative post*. The ATD-5494 obtains its power from the battery under test. The battery's State of Charge (SOC) voltage will be displayed as follows:

>12.5V to 12.9V = "GOOD", Bar Graph Green
12.3V to 12.4V = "MARGINAL", Bar Graph Yellow
< 12.3V = "LOW", Bar Graph Red

Other messages:

13.0V to 13.9V = "SURFACE CHARGE", (No Bar Graph)
<11.0V = "BAD CELL", 1 Red Flashing
>13.5V = "CHARGING DETECTED" (ie Engine Running)

**Note: always connect to the lead battery post with at least part of the clip on the post. For side mount batteries, use adapter posts P/N B555 (not included- sold separately).*

VOLTMETER MODE

Press ENTER while displaying the SOC screen to use the ATD-5494 as a voltmeter. The ATD-5494 will automatically switch to VOLTMETER MODE when the (non- charging) voltage at the battery is >14.0V.

TESTING BATTERY CONDITION

1. Select the battery size range by pressing the TEST OPTIONS button. The ATD-5494 will scroll the four ranges on the display each time the TEST OPTIONS button is pressed as follows:

AUTO:	390 to 749 cca
TRUCK:	750 to 1700 cca
NON AUTO:	50 to 199 cca
COMPACT AUTO:	200 to 389 cca

2. Once the correct battery size range is displayed, Press the ENTER button and the battery condition will be displayed as percent available capacity.

80% to 100%* = GOOD, bar graph- 1 or more green led's
70% to 79% = MARGINAL, bar graph- 1 or more yellow led's
< 70% = REPLACE, bar graph- 1 or more red led's

Notes:

1. Some batteries may display above 100%. This means that the available capacity is greater than the rated capacity.

2. Recharge and retest MARGINAL batteries that show SOC LOW voltage.

3. New Batteries: nearly all new batteries will not reach full capacity until cycled 10-30 times. A brand new battery will have a capacity of about 5-10% less than the rated capacity. Inactivity can be extremely harmful to a battery. New batteries that have been on the shelf for many months may show "marginal" or "replace" when tested, depending on the storage conditions. In that case, always charge and retest the battery before replacing.

STARTER TEST- 12V SYSTEM

Note: The battery condition must be tested to make sure it is in good condition before performing this test.

1. After testing the battery condition and while still clamped to the battery, press the TEST OPTIONS button.
2. "RUN THE STARTER TEST" will be displayed.
3. Press ENTER. "ACCESSORY OFF, START THE ENGINE" will be displayed.
4. Crank engine until engine starts and then turn engine off. Depending on the starter, the following test results may be displayed:
GOOD = $\geq 9.8V$ bar graph- GREEN
MARGINAL = 9.7V bar graph YELLOW
CHECK STARTER or RETEST battery = $<9.7V$ bar graph RED
5. For 12V systems the normal cranking voltage at the battery should be equal to or greater than 9.7 volts*.

REVIEW 12V STARTER TEST RESULTS

Once STARTER TEST is completed the starter test results appears at the bottom of the screen. The voltage readings will be displayed for the INITIAL VOLTS and CRANKING VOLTS.

If the cranking voltage is less than 9.7 volts, starting system or battery has a problem. Retest battery or check wires, connections and starter and check manufacturer's specifications for 12V systems.*

STARTER TEST- VOLTMETER MODE (for 12V and 24V systems).

After connecting the battery clips to the battery posts and displaying the battery SOC, press ENTER. In this VOLTMETER MODE the real-time voltage at the battery will be displayed. For 12V systems the normal cranking voltage at the battery should be equal to or greater than 9.7V and equal to or greater than 19.4V for 24V systems. Note: Press ENTER again to return to the SOC screen.

CHARGING SYSTEM TEST TIP

**Note: After running the STARTER TEST, the CHARGING SYSTEM TEST can be run next without testing the battery condition. Otherwise, the battery condition must be tested first to make sure it is in good condition before performing this test.*

NOTE: Start this test with Engine and Accessories (Lights, A/C, Heater Radio etc) OFF. The ATD-5494 will auto-detect engine started and begin recording the test voltages automatically. For this reason, it is not necessary to view the display on the tester during the revving and idle sequences. Once the engine is started, wait 5 seconds and begin REVVING the engine for 15 seconds. While continuing to revv, turn on the lights and revv for another 15 seconds. Then idle for 15 seconds before turning engine off.

12V CHARGING SYSTEM TEST

Note: First check for a loose, worn or broken alternator belt. If okay, proceed to #1. If monitoring the display, the following messages will be displayed:

1. With engine off after testing the battery condition or Starter Test and while still clamped to the battery, press the TEST OPTIONS button until "RUN THE CHARGER TEST" is displayed.
2. Press ENTER. The display will show: "ACCESSORY OFF-START ENGINE". IDLE ENGINE.
3. Start engine. The display will auto detect engine started after displaying "ENGINE RUNNING ACCESSORIES OFF-IDLE ENGINE" for approximately 5 seconds.
4. The display will then show "REVV ENGINE". Revv engine to 2500 to 3000 RPM for 15 seconds. The tester will auto detect engine revving and then display "ACCESSORIES ON" (while continuing to revv for another 15 seconds).
5. The display will show "IDLE ENGINE" for the final 15 seconds with accessories on.
6. Press ENTER to review the test results as follows:
CHARGER NORMAL, GREEN ARROW (PASS)
NO CHARGING DETECTED, RED (FAIL)
BAD DIODE REPLACE ALTERNATOR, RED (>.250mv Ripple) (FAIL)
REPLACE REGULATOR, RED (charging >15V (FAIL)
CHECK CONNECTIONS, RED (FAIL)

CHARGING TEST- VOLTMETER MODE (for 12V and 24V systems).

12V and 24V Charging systems can be tested in VOLTMETER MODE. After connecting the battery clips to battery posts and displaying the battery SOC, press ENTER. In this VOLTMETER MODE the real- time voltage at the battery is displayed. *Note: Press ENTER again to return to the SOC screen.*

1. With engine running and lights on, the real time alternator output voltage will be displayed. The reading should display between 13V and 15V for 12V charging systems and 26.0V to 30V for 24V charging systems.
2. Low charging voltage: Check belts for slippage. Check connections from the alternator to the battery. If no problems are found, replace the alternator.
3. High charging voltage: Check for loose connections including the ground connection. If OK, replace the voltage regulator. Newer alternators house the regulator inside. In this case replacing the alternator is necessary.

REVIEW 12V CHARGING TEST RESULTS

Once CHARGING TEST is completed, press ENTER to review charging test results. The following messages will display for each charging condition and the bar graph will display the corresponding voltage measured.

Press TEST OPTIONS to scroll the following test results for each of the charging conditions displayed below:

UNLOAD IDLE

UNLOAD REVING

LOAD REVING

LOAD IDLE

NOTE: RIPPLE readings appear in bottom right corner

For each of these charging conditions, the Voltages will be displayed.

CHARGING VOLTAGES

NORMAL (GREEN)	≥ 13.5V
MARGINAL (YELLOW)	13.0-13.4V
NO CHARGING DETECTED	Volts = SOC
CHECK CONNECTIONS	<13.5V
REPLACE REGULATOR (RED)	>15V

RIPPLE VOLTAGES

GOOD (GREEN)	<200mV
MARGINAL (YELLOW)	200mV - 300mV
BAD DIODES REPLACE ALTERNATOR (RED)	>300mV

Low charging voltage: Check belts for slippage. Check connections from the alternator to the battery. If no problems are found, replace the alternator.

High charging voltage: Check for loose connections including the ground connection. If OK, replace the voltage regulator. Newer alternators house the regulator inside. In this case replacing the alternator is necessary.

CONVERTING % CAPACITY TO CCA CAPACITY

If required, the available CCA can easily be determined by multiplying the percent displayed times the battery's original rating. For example, a 600 CCA battery with 80% capacity available would have 480 CCA (.80 x 600) available.



RETURN FOR REPAIR POLICY

Every effort has been made to provide reliable, superior quality products. However, in the event your instrument requires repair, forward unit to Service Center freight prepaid to the address below with return address, phone number and/or email address.

**SERVICE CENTER
2651 W 81st Street
Hialeah, FL 33016**

WARRANTY POLICY

The ATD-5494 Battery Diagnostic Tester is warranted to be free of defects in materials and workmanship for a period of two years from the date of purchase. This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use including unauthorized opening of the unit. Please ship warranty units that require repair freight prepaid to Service Center along with proof of purchase, return address, phone number and/or email address.

US PATENT # 6,768,309