



## BVA-460 Operator's Manual

### *Hand Held-Accuracy with a Pulsed 120 Amp Load*

The BVA-460 is the ultimate hand-held tester. It is the auto industry's answer to portability in a professionally accurate load tester and system analyzer.

# CONGRATULATIONS!



You have purchased one of Auto Meter's hand-held Electrical System Analyzers. It is designed to test each component of a vehicle's electrical charging and starting system with speed and accuracy. If you should have any questions about your tester, testing procedures, or service see the last page of this booklet for contact information.

## **BVA-460**

Load Test Capacity.....	120 Amp
Battery sizes.....	100-1600 CCA
Display .....	7" (1280X800) LED, Wide Viewing Angle
Volt Ranges.....	Digital 0-30
Cooling.....	Vented
Leads .....	Load Amp-2 1/2 ft., 6 Gauge
Size .....	19" X 9" X 3"
Internal Battery.....	7.4 Volt Lithium Ion
Weight.....	7 lbs.

## **What to Expect from the BVA-460:**

***Immediately recognize a bad battery and perform a complete starting and charging system analysis.*** The BVA-460 is a portable full-featured menu-driven battery tester, starting, and charging system analyzer that provides quick, professional load results using Auto Meter's Digital Pulse Load. The BVA-460 is user friendly. It tells you what to do. Detailed test results provide next steps advice and are displayed after each test or can be reviewed and/or printed.

**Caution:** The BVA-460 grill may get hot after repeated use. Be sure to hold the unit from the side grips only. Keep hands away from the grill. Keep oil and liquids away from the grill and load coils.

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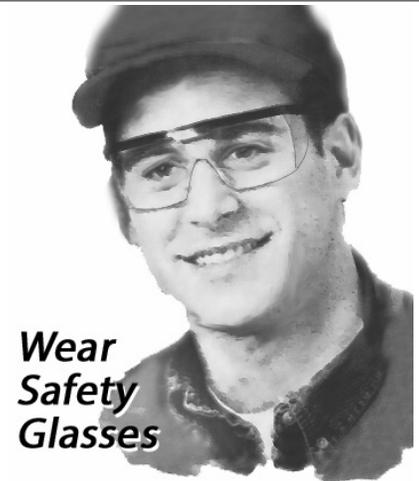


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**Note:** The BVA-460 checks and load tests 6 volt and 12 volt Batteries and tests the starting and charging systems on 12 volt and 24 volt systems. The following examples illustrated are for a 12 volt system. The BVA-460 automatically identifies the appropriate voltage and displays the menu selection and instructions needed for that system.

# SAFETY

- Carefully read all operating instructions before using the BVA-460
- Wear eye protection when working around batteries.
- Be sure each test is completed before removing load clamps to prevent arcing and potential explosion from battery gases. Never remove load clamps while testing. Keep sparks flames, or cigarettes away from batteries.
- Keep hair, hands, and clothing as well as tester leads and cords away from moving blades and belts.
- Provide adequate ventilation to remove car exhaust.
- In extremely cold temperatures, check for frozen electrolytic fluid before applying load. Do not attempt to Load Test or charge a battery under 20 degrees. Allow the battery to warm to room temperature before testing or charging.
- **Warning!** Never attach the BVA-460 to a battery that is connected to any other tester or charging unit. Damage may result.



**Wear  
Safety  
Glasses**

## **WARNING!**

### **TESTING OF HYBRID VEHICLES**

**DO NOT** test the starter, alternator and/or 12 volt starting battery while it is in the vehicle.

**DO NOT** remove, service or test the hybrid battery pack under any circumstances.

**Remove** the 12 volt starting battery, starter or alternator from the vehicle prior to testing.

## **CAUSE OF BATTERY FAILURE**

- **Incorrect Application:** Wrong size battery may have inadequate cold cranking rating for original vehicle specifications.
- **Incorrect Installation:** Loose battery hold-downs cause excessive vibration, which can result in damage to the plates.
- **Improper Maintenance:** Low electrolytic fluid and corrosion on battery connections can greatly reduce battery life and affect battery performance.
- **Age of Battery:** If the date code on the battery indicates it is fairly old, the failure may be due to natural causes.
- **Overcharging:** Overcharging caused by a high voltage regulator setting or incorrect battery charging can cause excessive gassing, heat and water loss.
- **Undercharging:** Undercharging caused by a faulty charging system or low voltage regulation can cause lead sulfate to gradually build up and crystallize on the plates greatly reducing the battery's capacity and ability to be recharged.

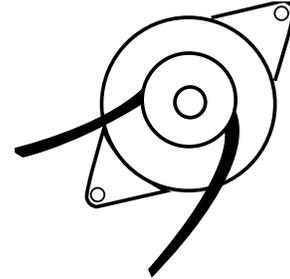
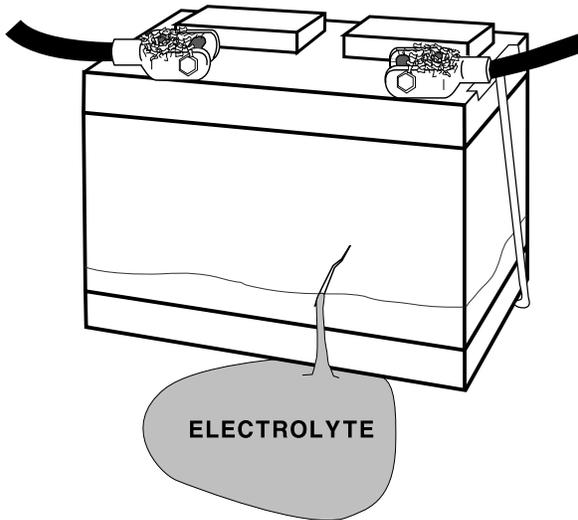
# INSPECTION



- Valid automotive electrical system testing depends on all the components being in good operating condition. In addition, the battery **MUST** have sufficient charge for testing. Carefully perform the following steps before attempting any electrical diagnosis.

## VISUAL CHECK

- **Inspect Belts** for cracks, glazed surface and fraying. Tighten loose belts.



- **Inspect Battery** for terminal corrosion, loose or broken posts, cracks in the case, loose hold-downs, low electrolyte level, moisture, and dirt around the terminals.
- If the battery terminals are corroded or dirty, clean terminals before performing any tests.

- **Inspect Starting System.** Check starter, solenoid, and regulator for loose connections, loose mounts and frayed or cracked wires.
- **Important Note:** A damaged battery must be replaced before proceeding.

# WIRELESS COMMUNICATION



## BLUETOOTH

The BVA-460 uses Bluetooth to communicate between the control module and load module. This allows you to make the connections, remove the control module and the run the tests from inside your vehicle.

The BVA-460 control module and load module come paired from the factory.

Bluetooth will work as long as the distance between the load module and control module is less than 30 feet. Walls, windows and other objects between the control module and load module will affect the range.

If you do experience any communication issues please look at the troubleshooting guide at the back of this manual on how to correct them.

## WiFi

The BVA-460 uses wifi to communicate between the control module and AMPNET server. The AMPNET service will provide firmware updates for the control module and the load module. You will need to pair the control module with your local wireless LAN. See WiFi section for instructions on setting up the wireless connection.

## AMPNET

The data from your BVA-460 can be downloaded to the optional data management software known as AMPNET. This is subscription based software that can be used to display and track your battery, starting system, and charging system test results in graphical form. Please see our website [www.autometer.com](http://www.autometer.com) for more information.

# CONTROLS AND FUNCTIONS

Control and Load Module  
Mated and Latched



Control Module



Power  
Button

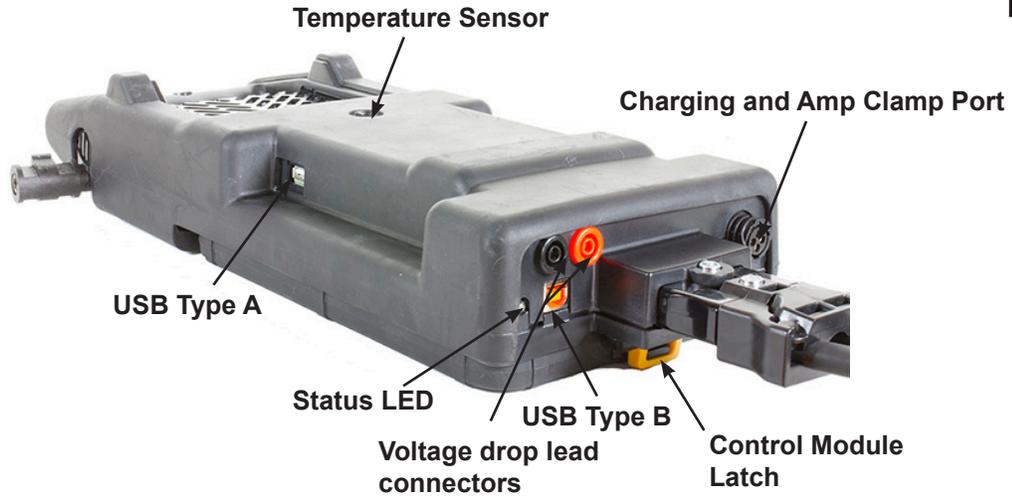
Load Module



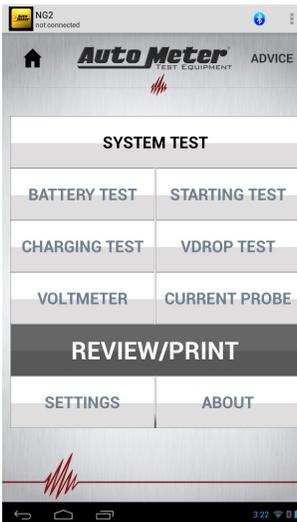
Load Module Push Button

**Power on:** Push and hold button for 1 second  
**Power off:** Push and hold for more than 5 seconds  
**Reboot/Reset:** Push and hold for 3 to 4 seconds

# CONTROLS AND FUNCTIONS cont.



LED Status	Load Module Mode
Off	Off
Solid Yellow	Initial boot-up or test in progress
Fast Blinking Green	Re-Flashing/Firmware Updated
Solid Green	Bluetooth Disconnected
Blinking Green (Double Flash)	Bluetooth Connected
Blinking Green ( Slow, once/sec)	Sleeping/Low Power
Solid Red	Internal Battery Charging
Blinking Red (Slow, once/sec)	Control Module Battery Charging
Blinking Red (Fast, twice/sec)	Initializing Bluetooth



**Main Menu:** When the Control Module powers up it will go to the main menu. From here the user can access all of the units functions such as, run tests, setup the unit, and review and print data.

## BVA-460 I/O Items

**USB Type A** - This port is used to connect USB memory sticks to save test data to. The Control module must be docked to the Load module to use this feature.

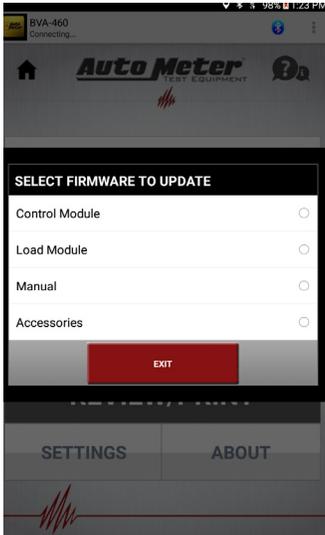
**USB Type B** - Factory use only.

**Temperature Sensor:** The Load module has an IR temperature sensor that is used to measure the temperature of the battery you are testing.

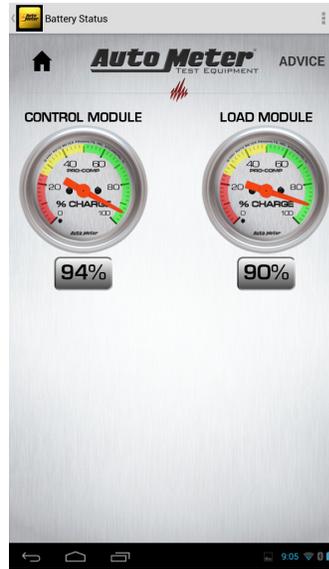
**Charging / Amp Clamp Port:** This connector serves two

purposes. When the unit is not being used the included AC charger can be connected to this port and the Control module and Load module batteries will be charged automatically. This port also connects to the optional charging station. When running tests with the unit, the optional Amp clamp can be connected.

# CONTROLS AND FUNCTIONS cont.



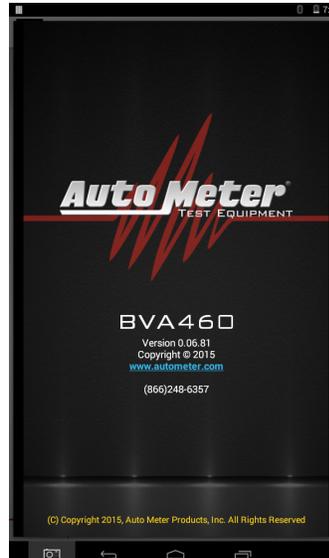
Update software screen allows the user to update the Control modules application, the Load module firmware, manuals, and accessories.



Battery Status screen shows the state of charge of the batteries in the Control module and the Load module.



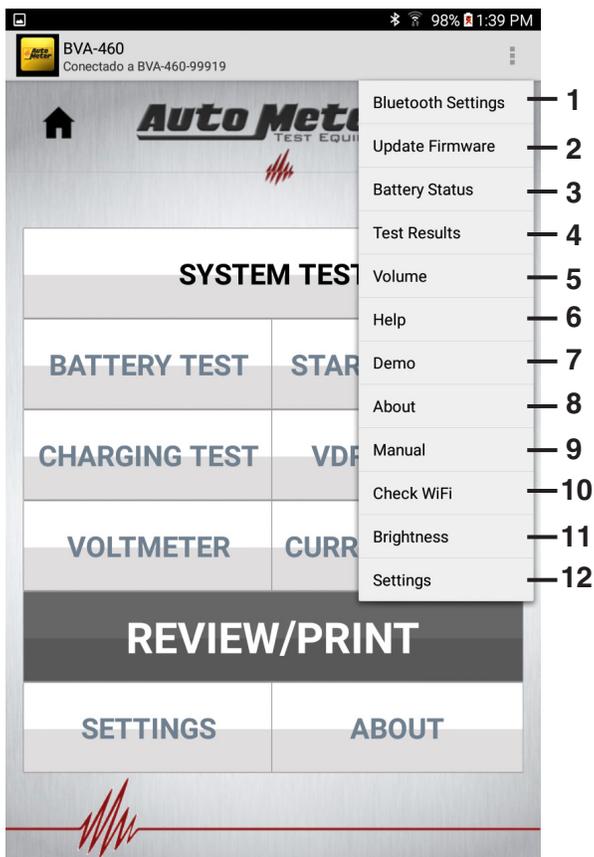
The Test Results screen shows a list of the test that have been done and allows the user to view all the details of the test.



The About screen give user the information about the applications version and how to contact Auto Meter.

# SET UP

## OPTION MENU DETAILS



1. Allows pairing to Bluetooth Devices
2. Update Control Module and Load Module software
3. Check Battery Status
4. Show list of Test Results
5. Adjust Control Module volume
6. Quick Main Menu help
7. Starts Demo Mode (if demo mode files are present)
8. About the Tester
9. Opens Owner's Manual Viewer
10. Check WiFi and Server Connection
11. Screen Brightness
12. Opens Tester Configuration Screen

## SET DATE/TIME & TIME ZONE

### Time Zone

- From Main Menu press SETTINGS.
- Scroll down and press Set Date and Time
- From Date & Time menu press Select Time Zone
- From resulting list choose your local time zone

### Date and Time

- If the tester will have a WiFi connection to the Internet leave Automatic date & time selected (check mark)
- If there will be no Internet connection press Automatic date & time to deselect option and continue to set the local date and time.

### Date

- Press Set date and enter today's date in the resulting setting box.

### Time

- Press Set time and enter the local time in the resulting setting box.
- Press the Back Arrow  twice to return to the main menu.

### Setup Wifi

- From Main Menu press SETTINGS.
- Scroll down and press WiFi Setup
- Select your local WiFi from resulting list
- Enter password for your local WiFi in resulting setting box
- Once password has been entered press Connect
- Press the Back Arrow  twice to return to the main menu

# TESTER CONFIGURATION



Tester Configuration

Store Name

Address

City

State

Zip Code

Store Phone Number

AMPNET Account Number

AMPNET Location Number

Default Email  
Do not send default email

Customer Email  
Do not send customer receipt

**ENTRY DEFAULTS**

Vehicle ID  
Do not allow entry of vehicle ID

Technician ID  
Do not allow entry of technician number

Battery Date Code  
Do not allow entry of battery date code

Battery Serial Number  
Do not allow entry of battery serial number

Vehicle VIN  
Do not allow entry of vehicle VIN

Vehicle Odometer  
Do not allow entry of vehicle odometer

Repair Order ID  
Do not allow entry of repair order ID

**TEST DEFAULTS**

Temperature Scale  
Fahrenheit

Use Previous Rating Unit   
Defaults to rating used on previous test

CCA Entry   
Use Previous CCA Value

Default CCA  
600

Use Near End of Life as Result   
Battery results are either Good or Bad

Calculate Cranking RPM   
User enters number of cylinders for calculation

**MISCELLANEOUS SETTINGS**

Language  
English

WiFi Setup  
"AutoMeter3" MAC Address 94:B1:0A:C2:91:48

Set Date and Time  
01/11/2018 09:43AM

Advanced Setup  
Advanced settings are under construction

**PRINTERS**

Printer Preference  
AC-14/PR-12

1. Dealer Information
2. For use with AMPNET. Set if email is desired for test result.  
Default Email: Email will be sent to the account associated with AMPNET Subscription.  
Customer Email: Allows the customer to provide a new email address to receive results.
3. Check these entries if you want this data saved along with the test data
4. Temperature °F or °C
5. Set to use previously used battery rating unit.  
Clear to default to CCA.
6. Setup default value for battery rating,  
Default value  
Previous value  
Always enter value
7. If above (6) set as default value, enter that value here
8. Set to show a Near End of Life result. Clear to show only Good and Bad battery result.
9. Set will calculate cranking RPM starter result.  
Clear skips calculation.
10. Choose language
11. Wi-Fi Setup.
12. Date and Time Setup.
13. Advanced setup
14. Select print device

StarterTest

Auto Meter

Vehicle VIN

Repair Order ID

Vehicle ID

Technician ID

Vehicle Odometer

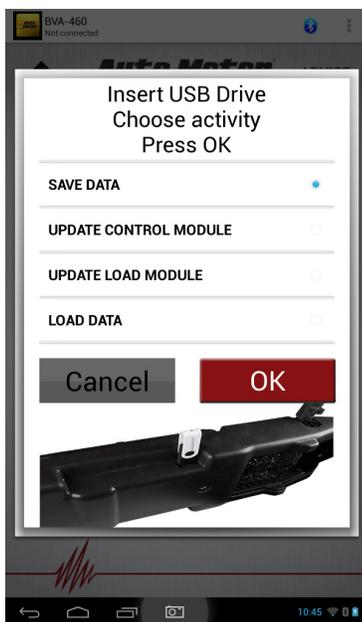
OK

This screen will appear at the beginning of a Battery, Starter, or Alternator test if any of the items in section 3 above are selected. Only the items that are selected will be on the screen. If no items are selected the screen will not appear.

# SAVING DATA to a USB FLASH DRIVE

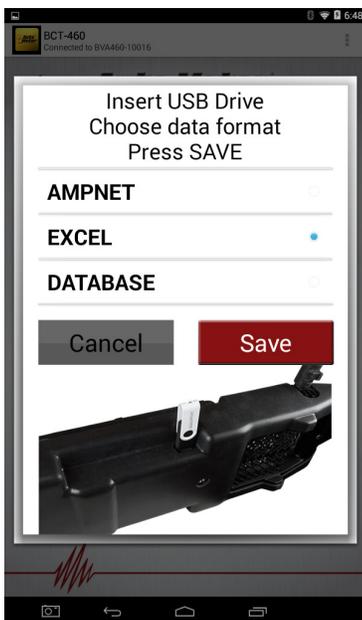


1. Control Module must be docked to Load Module.
2. Tester must be disconnected from all charging sources.
3. Plug USB flash drive into connector on the right side of tester.



4. Wait a few seconds for the USB flash drive to be detected. The following screen will be displayed.

5. Choose SAVE DATA and press OK.



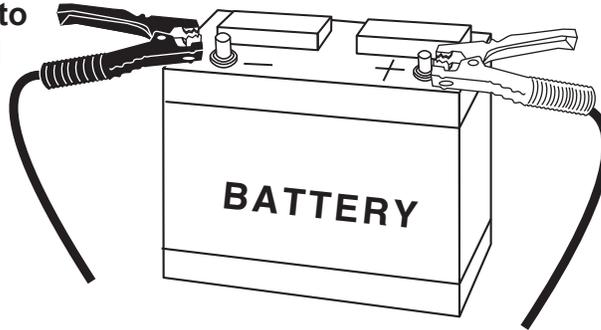
6. Choose data format and press SAVE.

7. Wait a few seconds and remove USB flash drive.

# HOOK UP



Connect Black Clamp to Negative (-) Terminal



Connect Red Clamp to Positive (+) Terminal

- Use the side terminal feature on the clamp to connect battery side terminals. When testing dual post batteries always check the post to which the system is attached.

## CONNECTION ERRORS

- If the clamps are reversed the Reversed Connection warning will be displayed on the Control Module with an audible beeping.
- If one or both of the clamps are not in complete contact (both of each clamp jaws) A "Check Connections" screen will appear on the control module.
- Clean battery terminals with a wire brush if battery terminals are corroded or dirty.
- Clean clamp jaws with 1 part ammonia and 10 parts water if clamp jaws are corroded or dirty. **(Do not use battery cleaner to clean clamps)**

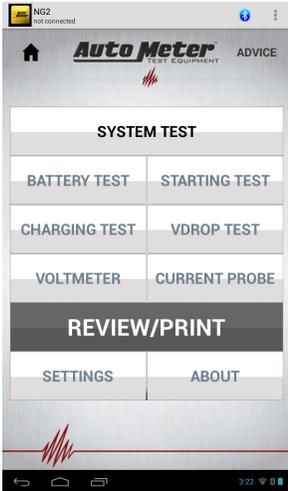


Clean Clamps

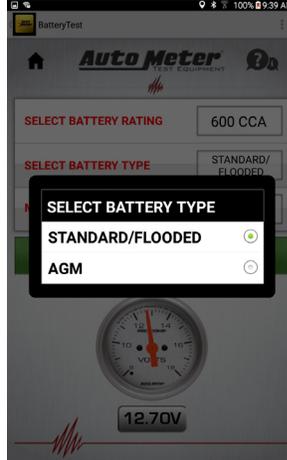


Corroded Clamps

# BATTERY TEST



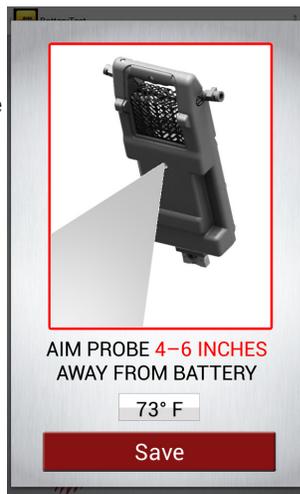
Select Battery Test from the main menu



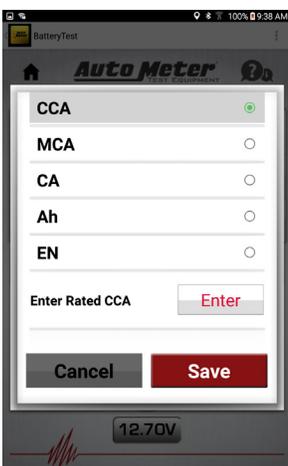
When the Select Battery Type area is pressed, the battery type can be selected. Press the battery type you are testing and the unit will go back to the Battery Test screen. The battery types the BVA-460 can test are Standard Flooded and AGM.



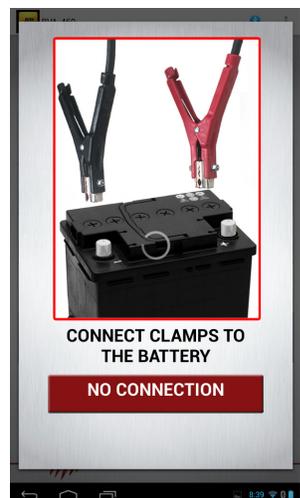
The following screen will appear for entering values for the battery rating, type and temperature. These can be entered by pressing the button on the right for the value you want to change. Press the Start Battery Test when all the entries are correct and you are ready to test the battery.



When the Measure Battery Temp area is pressed. The temperature probe screen is activated. Aim the probe at the battery from a distance of 4 to 6 inches. Press save to store the temperature reading and go back to the Battery Test screen.



When the Select Battery Rating area is pressed, the battery rating type can be changed by tapping on the rating type you need. The rating can be changed by pressing the rating button, then a keyboard will appear and the rating can be typed in. Press save to go back to the Battery Test screen.



If there is a connection issue the following screen will appear. Check the connections and make sure the battery post and clamps are clear of any corrosion.

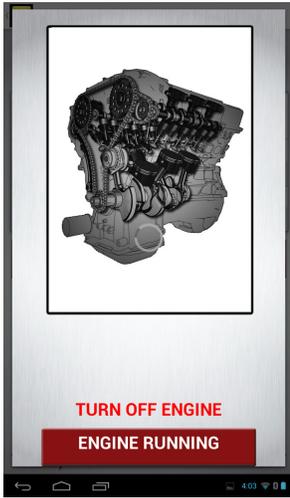


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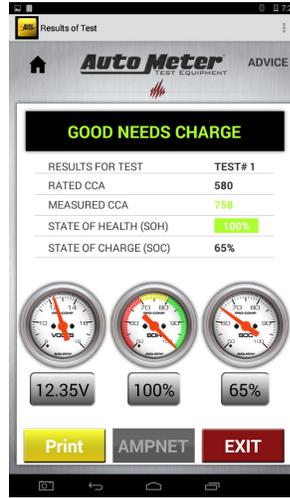
# BATTERY TEST cont.



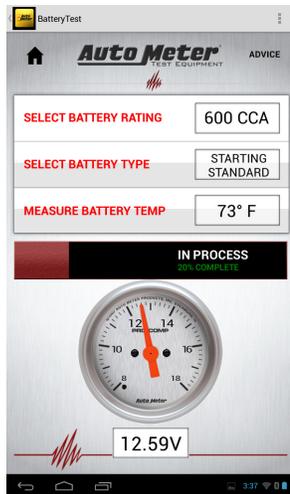
These screens show the results the BVA-460 will return after a battery test. The information shown is test number, measured capacity, rated capacity, the state of health and the battery's initial voltage. From here you can print the results or save the results to AmpNet\* if you have that service activated. All tests are saved internally in the BVA-460.



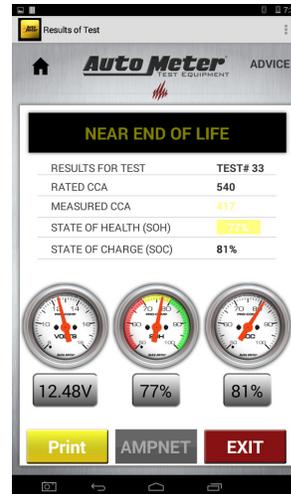
If the engine is running the charging system will affect the battery test. The BVA-460 will detect that and prompt you to shut off the engine before running the battery test.



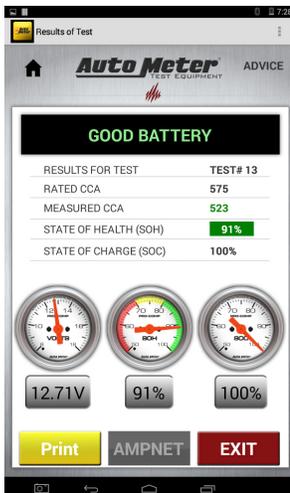
The battery passed the test but had a low initial voltage. Charge the battery and then return to service.



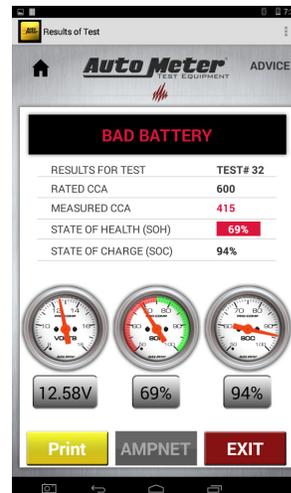
The BVA-460 will display the progress of the battery test



The battery passed the test, but is near its end of life. The battery is OK for mild conditions, but may not start a vehicle in hot or cold conditions.



The battery passed the test and can be returned to service.

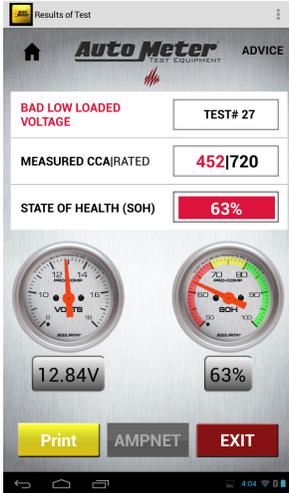


The battery did not have sufficient remaining capacity to pass the test. The battery should be replaced immediately.

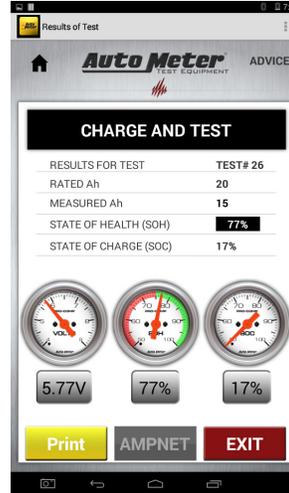


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# BATTERY TEST cont.



The battery did not have sufficient remaining capacity to pass the loaded portion of the test. The battery should be replaced immediately



The battery did not have a sufficient charge to do an accurate test. Charge the battery and then test the battery.



# STARTING TEST

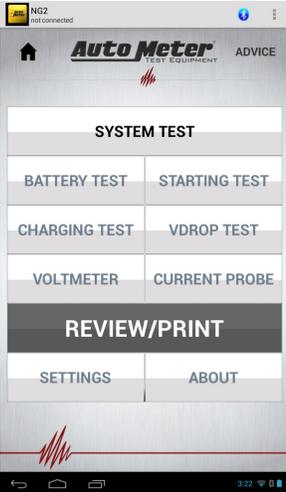
The starting system test measures the amount of current needed to crank the engine, cranking voltage, and cranking speed and provides the initial information to diagnose and/or further test the starting system if necessary.

## Symptomatic Check before Proceeding:

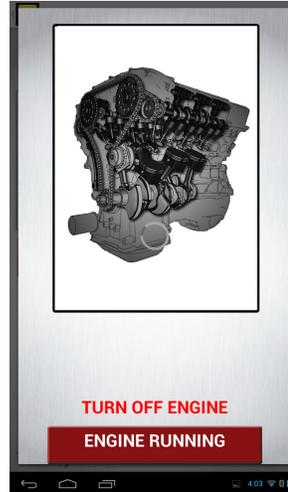
- Check all cables and connections.
- Check the battery for corrosion and dirty terminals.
- Check starter/solenoid for visual defects.
- Check the ignition switch and any magnetic switches for loose or bad wiring, loose mounting, or connections and sticking contacts.
- Check for starter/solenoid noise. The type of noise or the lack thereof can help in diagnosing the problem.
- Does the solenoid click, but the starter does not turn? Does the starter turn, but not engage the flywheel? Is the starter sluggish?



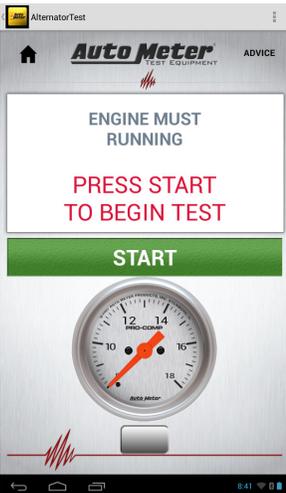
# STARTING TEST cont.



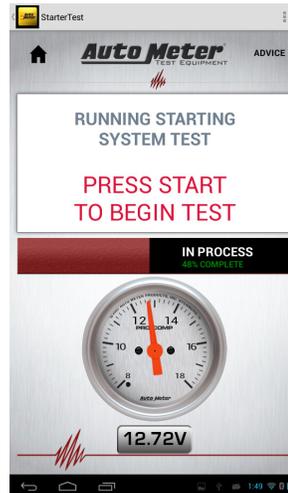
Disconnect the Control Module from the Load Module. Make sure the engine is off. Connect the Large clamps of the Load Module to the battery. Place the load module in a stable location in the engine compartment so it will not fall when the engine is started. Take the Control Module with into the vehicle. From the main menu press the Starting Test button.



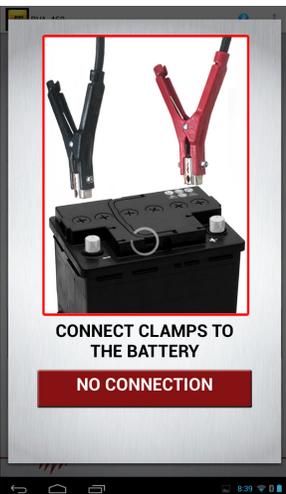
If the engine is running the BVA-460 detects that and displays this screen. Once the engine is off this screen will clear and the test will continue.



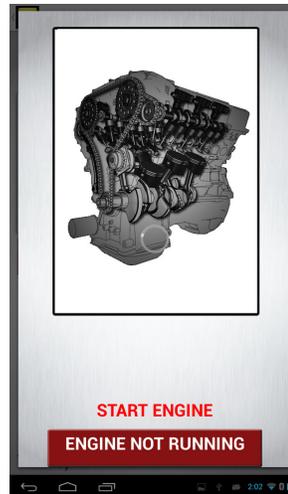
When you are ready to run the Starting test; for gasoline engines, make sure the ignition key is in the off position and all accessories are off. Press the Start button. For diesel engines, turn off all the accessories, turn the ignition key to the run position and wait for the glow plugs to turn on then turn off. Press the Start button.



Once the starting test begins, The BVA-460 does some preliminary measurements. This takes about 7 seconds.



If there is any connection issue, the following screen will appear. Check your connections to the battery and make sure the posts are free of corrosion. This screen will clear and the test will continue once the connection is correct.

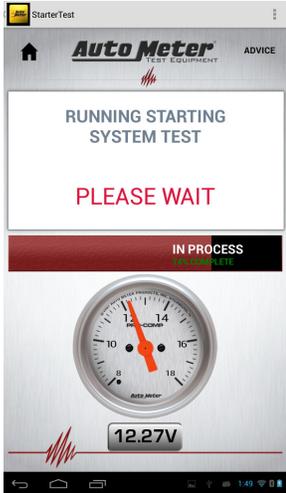


When the BVA-460 is ready it will prompt you to start the engine.

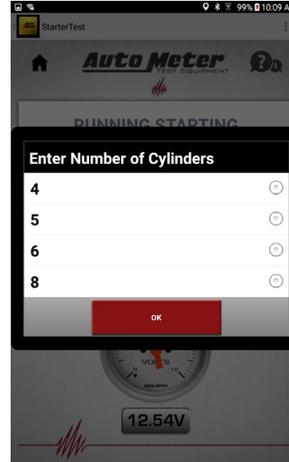


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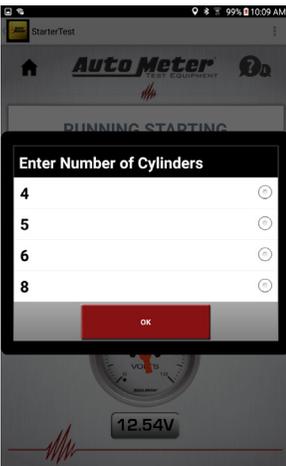
# STARTING TEST cont.



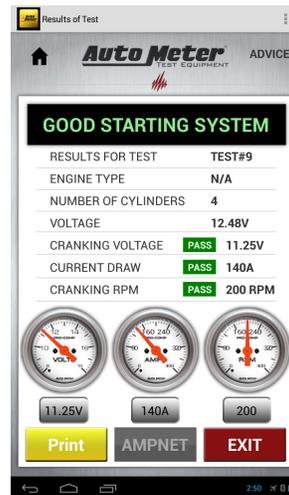
The BVA-460 will finish the starting test.



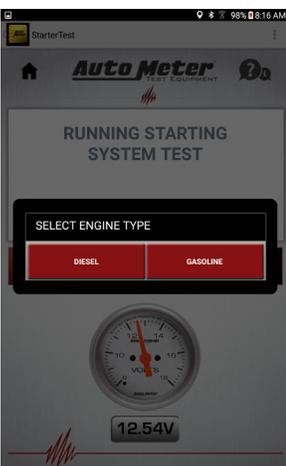
If a diesel engine was tested enter how many cylinders the engine has. The BVA-460 will finish the starter test.



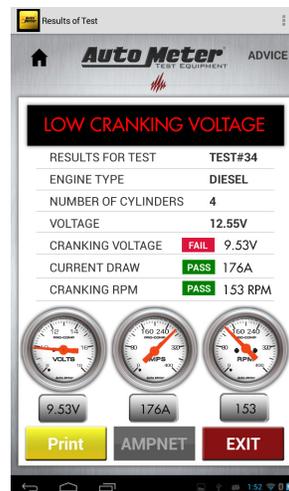
If the engine compression strokes were detected, The BVA-460 will ask how many cylinders the engine has so it can calculate the engine's cranking speed.



The Starting System passed.



**Note:** If Large starting current is detected it could be the result of a heavier load found in a diesel engine. This screen allows an engine type to be selected.

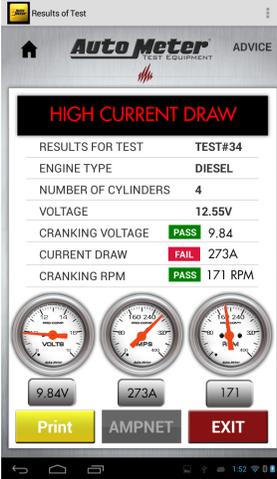


This screen will appear if the battery voltage during cranking was to low.

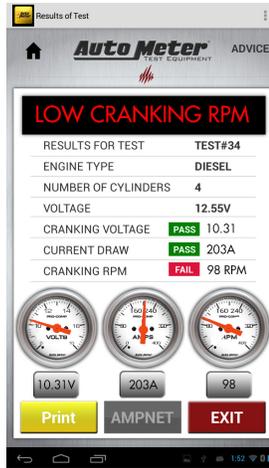


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# STARTING TEST cont.



This screen will appear if the starter current draw was too high.



If the tester detected the engine compression strokes during cranking, the result screen will show the engine cranking RPM. This screen will appear if the engine cranking speed during starting was too low.



If manufacturer's specifications are not available the chart below can be used as a general guideline. The amounts are in Amps.

4 Cyl Gas 120-250A	5 Cyl Gas up to 250A	6 Cyl Gas Up to 250A	8 Cyl Gas Up to 250A
4 Cyl Dsl Up to 350A	5 Cyl Dsl up to 400A	6 Cyl Dsl Up to 450A	8 Cyl Dsl Up to 650A

If the results are out of specification do the following:

- **Inspect the connectors for excessive voltage drop.**
- **Repair or replace any defective cables or connectors.**
- **Retest the system.**

If still out of specifications: **High** Amp reading may indicate engine's ignition system is out of time or a faulty starter. Some possible causes are shorted windings, bent armature, broken housing or bad bearings.

## STARTING CURRENT DRAW AND DIESEL ENGINES

There are a few points to consider in testing a starting system on a diesel engine. The BVA-460 is designed to recognize any significant amount of draw; this includes glow plugs in small diesel engines. In heavy-duty applications consider computer and accessory draw.

- **Make sure you start the engine quickly. The engine should be warm.**
- **Turn the ignition on and allow the glow plugs to heat up and click off before you run the Starting Test.**

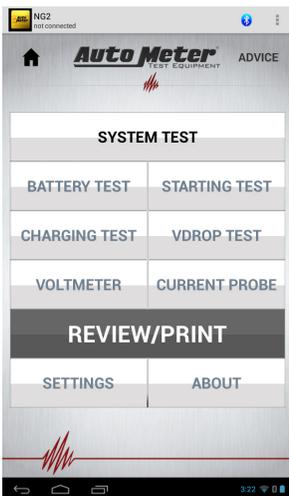
# CHARGING TEST



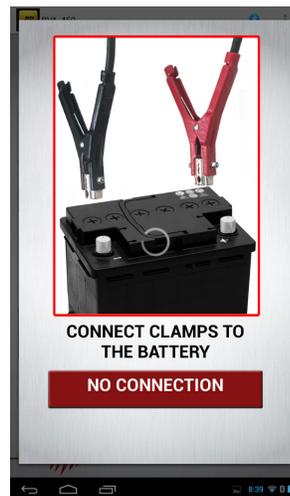
This test measures the output of the charging systems under load conditions. This information provides the basis for further charging system tests. It also detects the presence of an open or shorted diode that causes an output loss of several amps and can cause the failure of other diodes.

## Symptomatic Check before Proceeding:

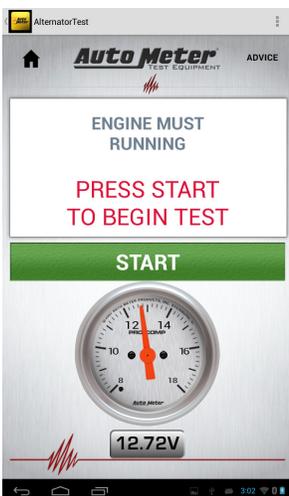
- Battery should be in good condition and charged before testing the Charging System.
- Check warning light indications.
- Check belt condition and tension.
- Check all cables and connections.
- Check the battery for corrosion and dirty terminals.
- Does the battery have a low state of charge?
- Make sure all electrical items are off.
- Check for Alternator noise.



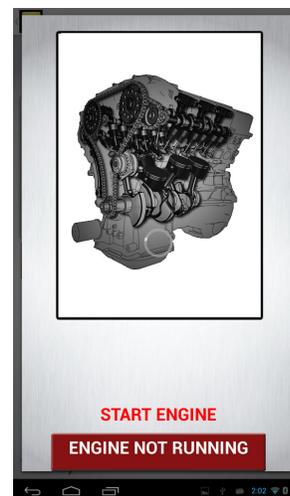
Select the Charging Test from the menu



If there is any connection issue, the following screen will appear. Check your connections to the battery and make sure the posts are free of corrosion. This screen will clear and the test will continue once the connection is correct.



Make sure the Load Module is connected to the battery and that the engine is running. Press the START button to start the test.

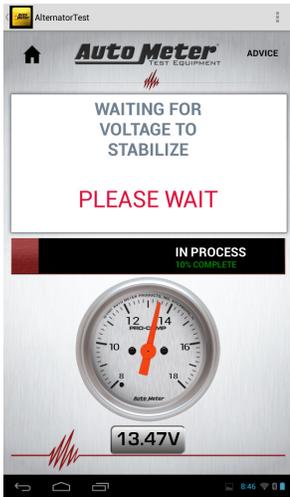


If the engine is not running, the BVA-460 will detect that and display the following screen.

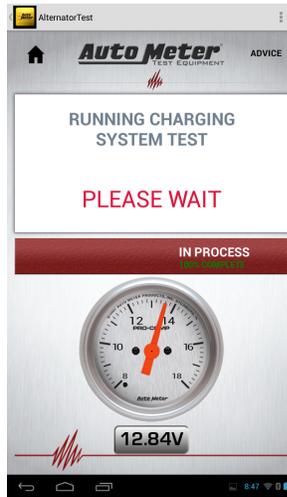


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# CHARGING TEST cont.

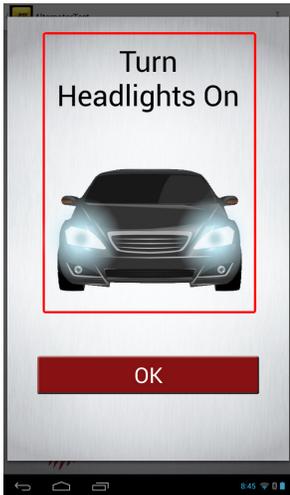


The BVA-460 will wait for the vehicles system voltage to stabilize. This can take up to 30 seconds.

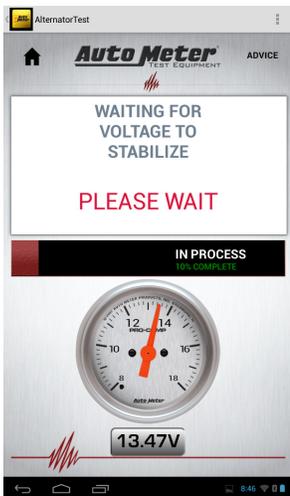


Once the voltage is stable the BVA-460 will test the charging system.

Once the charging test is complete. The BVA-460 will display the test results. These results include. Test Number. Voltage regulation. Voltage ripple. Output current. From here you can print the results or save the results to AmpNet if you have that service activated. All tests are saved internally in the BVA-460.



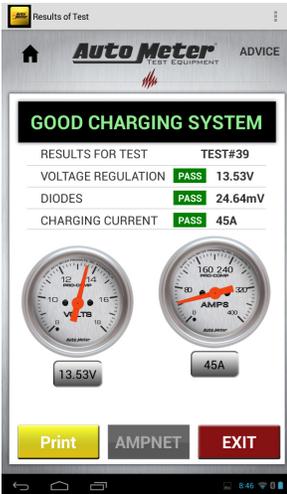
Some vehicles have a fuel saving mode that throttles back the alternator if the battery is charged and the loading is light. When the BVA-460 detects this it will ask you to turn on the headlights which will throttle up the alternator.



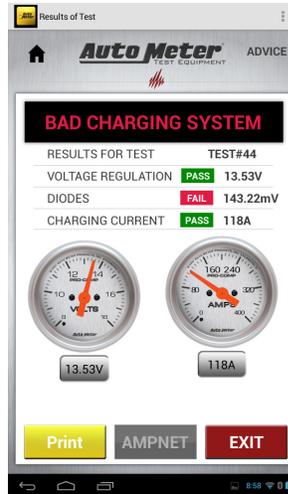
Again the BVA-460 will wait for the vehicles system voltage to stabilize. This can take up to 2 minutes.



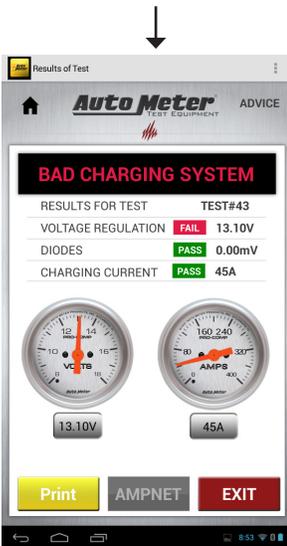
# CHARGING TEST cont.



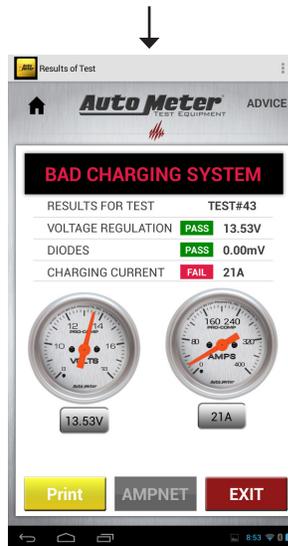
This screen will appear if the Charging system tests good.



This screen will appear if the voltage ripple is high which is an indicator of a diode failure in the alternator.



This screen will appear if the voltage regulation is bad.

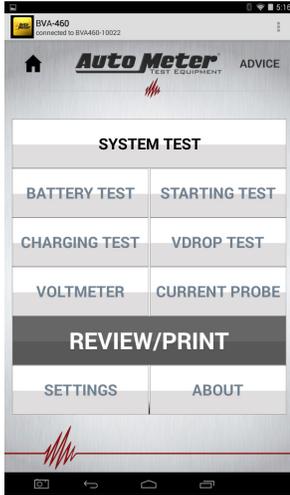


If the charging system fails for low charging current, rerun the test while holding the engine at a fast idle speed. (1500-2000 RPM)

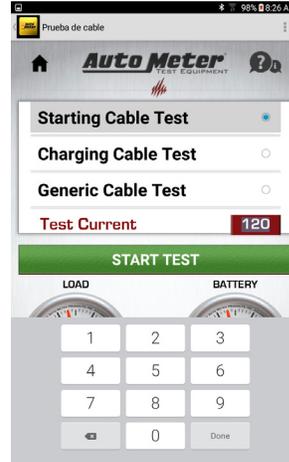
# VOLTAGE DROP TEST (Starter Cable Test)



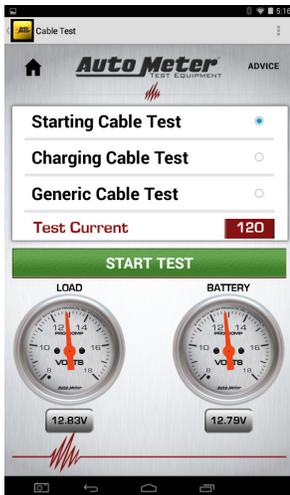
The voltage drop test allows you to measure the voltage drop across both the positive and negative cables running from the battery to the starter and alternator or any other device within your vehicle. This test can be used to determine if the cables or connections are the cause of any problems.



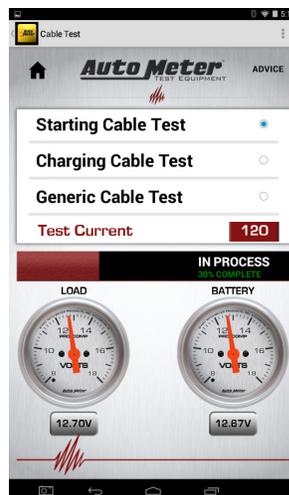
Select the V DROP Test from the main menu.



To set the test current, press the Test current box and a numeric keypad will appear. Enter in the Starter Current Draw for the vehicle you are testing. Press the Done button and then press the Start Test button.



Select Starting Cable Test.



Test in process, please wait.

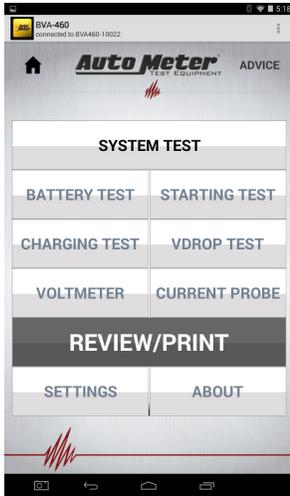


The screen will show you where to make your connections. The large clamps need to be connected to the starter terminals. The red clamp to the starter positive terminal, black to the starter ground. The small clamps need to be connected to the battery posts. The small red clamp to the battery +, the small black clamp to the battery.

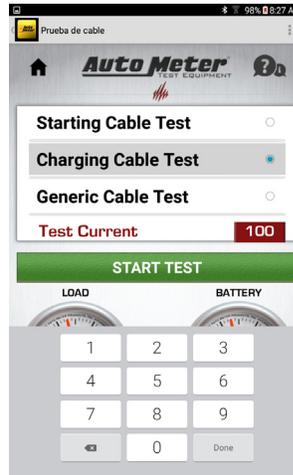


If the combined voltage drop of the positive and negative circuit is less than 500mV, the voltage drop test passes. If the voltage drop test fails you should start by troubleshooting and repairing the side of the circuit with the highest voltage drop.

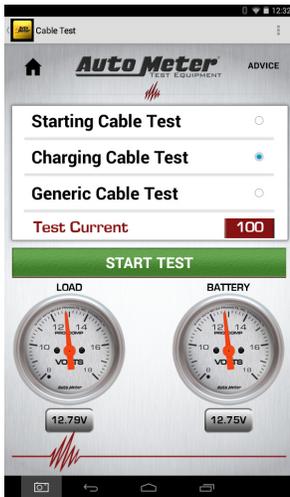
# VOLTAGE DROP TEST (Charging Cable Test)



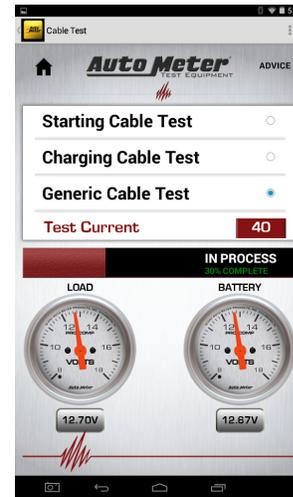
Select the V DROP Test from the main menu.



To set the test current, press the Test current box and a numeric keypad will appear. Enter in the alternator output for the vehicle you are testing. Press the Done button and then press the Start Test button.



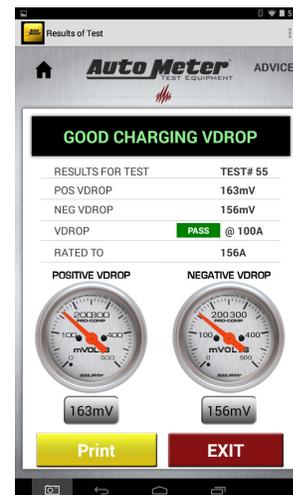
Select Charging Cable Test.



Test in process, please wait.



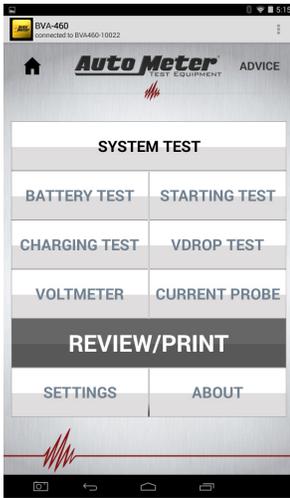
The screen will show you where to make your connections. The large clamps need to be connected to the alternator terminals. The red clamp to the alternator positive terminal, black to the alternator ground. The small clamps need to be connected to the the battery posts. The small red clamp to the battery +, the small black clamp to the battery.



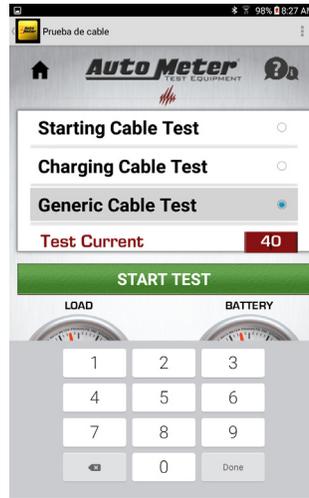
If the combined voltage drop of the positive and negative circuit is less than 500mV, the voltage drop test passes. If the voltage drop test fails you should start by troubleshooting and repairing the side of the circuit with the highest voltage drop.



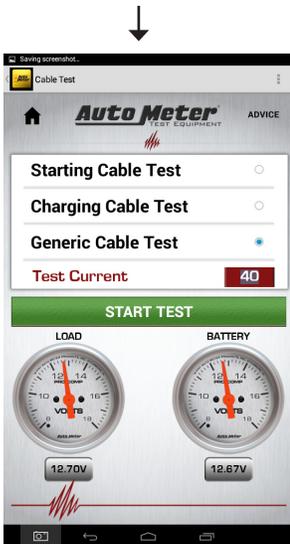
# VOLTAGE DROP TEST (Generic Cable Test)



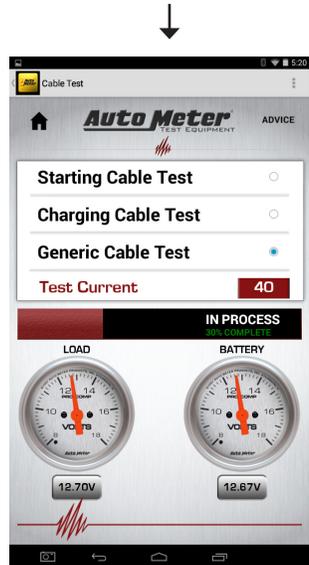
Select the V DROP Test from the main menu.



To set the test current, press the Test current box and a numeric keypad will appear. Enter in the test current for the circuit you are testing. Press the Done button and then press the Start Test button.



Select Generic Cable Test.



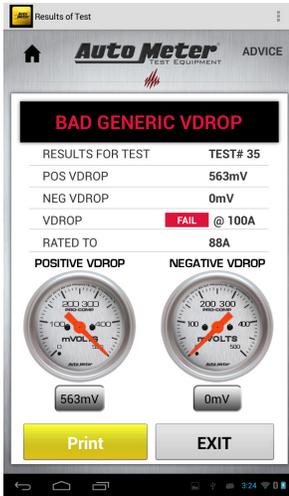
Test in process, please wait.



If you are doing a generic test, the screen will tell you to make your connections. The large clamps need to be connected to the end of the cables you are testing. The red clamp to the positive end, black to ground. The small clamps need to be connected to the battery posts. The small red clamp to the battery +, the small black clamp to the battery.

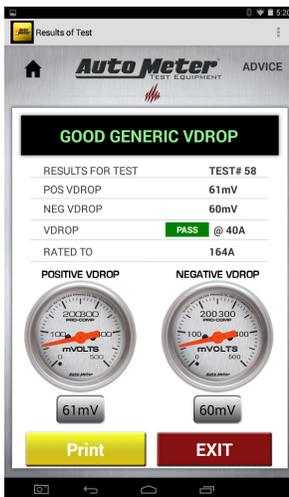
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# VOLTAGE DROP TEST (GENERIC CABLE TEST)



If the voltage drop is high the test will return a bad result. The cable that is bad can be determined by looking at the Pos and Neg drop results. In this screen the positive cable is the problem.

**NOTE:** If a total system voltage drop greater than 500mV is measured, the BVA-460 will show a failed voltage drop test.



If the combined voltage drop of the positive and negative circuit is less than 500mV, the voltage drop test passes. If the voltage drop test fails you should start by troubleshooting and repairing the side of the circuit with the highest voltage drop.

# USING THE CURRENT PROBE

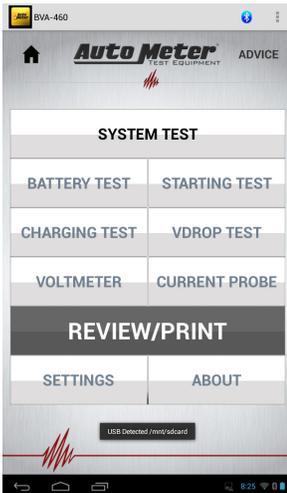


The Current Probe is optional. This section explains the proper use of the Current Probe, but is not required to run any of the tests. It only provides assured accuracy for those wanting these results.

When the probe is not connected push and turn to Zero the current probe.

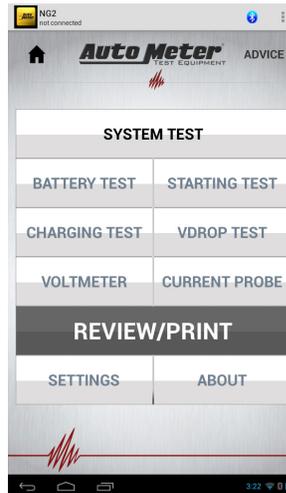


## Voltmeter



To use the Voltmeter function, press the Voltmeter button on the Main Menu.

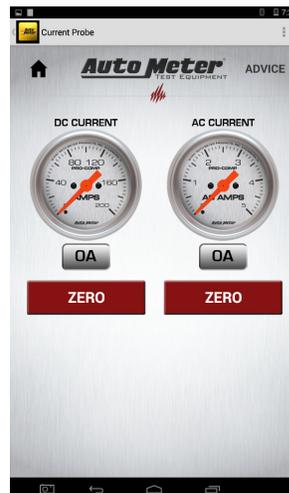
## Current Clamp



To use the Current Probe to measure current going through a cable, Press the Current Probe button.



This screen will appear and show the DC voltages on the large and small clamps. If the engine is running the ripple (AC Voltage) will be measured and displayed.



This screen will appear and display the measured DC and AC currents.

# PRINTING TEST RESULTS



Point the BVA-460 in the direction of the printer with the printer's IR receiver pointed in the direction of the BVA-460. Press (Print). You should be within 15 ft. of the printer. Wait for the screen to clear before moving the BVA-460. It takes a moment to send all the test data.

- Make sure the Infrared Printer is properly set up by pressing the "options menu" on the upper right corner of the control module screen. Choose "Settings". Scroll down to the bottom of the screen and choose "Print Preference". Choose appropriate printer preference setting. Press the back around arrow  to return to the Main Menu.
- After a test is made with the BVA-460 make sure the results are displayed on the screen. The results shown will be the results printed.
- Point the BVA-460 in the direction of the Infrared Printer or Receiver. (1-15 ft.)
- Press the <Print> key and the test results will be printed.
- After the <Print> key has been pressed, continue to point the BVA-460 in the direction of the until the print job is complete.
- Wait until the printer stops printing before you press the BVA-460 print key again.

**PR-12**



**BVA-460**



**AC-14**

## IR Printing Options:

1. PR-12 and AC-14 thermal printers
2. POSI-160 with PR-16 high speed printer.
3. XTC-160 with IR-1 printer interface and PR-16 high speed printer.

## Print Test Results from Email:

1. With an AMPNET Subscription, pressing the AMPNET button will allow you to email test results to your email account and print directly from your PC.

# TROUBLESHOOTING



PROBLEM	SOLUTION
The Control Module will not turn on.	<ul style="list-style-type: none"> <li>• On the Control module hold the power button on for at least 5 seconds.</li> <li>• If the Control Modules still does not turn on, place the Control Module into the Load Module.</li> <li>• Plug the charger into the Load Module and look for the Load Module's LED to go to a blinking red. This will indicate that the Control Modules is being charged.</li> <li>• Let the Control Module charge for at least 3 hours.</li> </ul>
The Load Module LED is off.	<ul style="list-style-type: none"> <li>• Remove the Control Module and press the Load Module button for one second.</li> <li>• The LED should turn red for about a second then turn green.</li> <li>• If the LED still does not turn on, the Load module battery may need recharging.</li> <li>• Plug in the charger and connect it to the Load Module. The LED should stay a steady red while charging. Let the Load module charge for 3 hours.</li> <li>• Note: Both the Control module and Load module batteries will be charged if the clamps are connected to a fully charged 12V battery.</li> </ul>
The Control Module will not make a Bluetooth connection to the Load Module	<ul style="list-style-type: none"> <li>• Shut down the Control Module by holding the power button down for 1 second.</li> <li>• Press the Power off button on the screen when it appears.</li> <li>• Answer OK, to the Power off prompt.</li> <li>• On the Load Module. Press the button for about two seconds. This will reset the Load Module. The LED will blink Red twice and then go off for less than a second, then turn Red, then turn Green</li> <li>• On the Control module hold the power button on for at least 5 seconds to turn it back on.</li> <li>• When the Auto Meter application loads, the Modules should now automatically connect.</li> </ul>
The BVA-460 says I need to connect the clamps when I have already connected them.	<ul style="list-style-type: none"> <li>• Make sure the both jaws of the clamps have a good connection.</li> <li>• Clean any corrosion from the battery post and the clamps.</li> <li>• If the battery is completely dead, (Voltage less than 1 volt.) the BVA-460 will not detect the battery. Charge the battery before testing.</li> </ul>
I have tested a battery and got a Charge and Test result after I have charged the battery.	<ul style="list-style-type: none"> <li>• A Charge and Test results occurs when the battery voltage is not high enough to perform an accurate test.</li> <li>• Make sure your charger is working properly.</li> <li>• The battery may not be taking a charge thus it can be rated as a bad battery if you continue to get a Charge and Test result.</li> </ul>
Completely Discharged Tablet Battery	Recognize a completely discharged tablet battery when the power button is pressed and held and the outline of a battery appears on the screen. The percentage of charge will show in the outline. To recover put tester on a charger.
To power on tablet while tablet is charging.	Press and hold power button until Auto Meter Logo appears. A few seconds later a battery outline will appear. When it does press and hold the power button again while the battery outline is visible. Once the battery outline goes away, release the button. The Auto Meter Logo will reappear and the tablet will continue to boot.
Load Module firmware recovery	If while updating the Load Module firmware, reflashing gets interrupted and fails, follow the on screen instructions to recover. In the unlikely event the Control Module returns to the main menu prior to update completing, restart the update process (Option Menu -> Update Firmware) and then follow the on screen instructions to recover.

# LIMITED WARRANTY



## **12 MONTHS FROM DATE OF PURCHASE**

The manufacturer warrants to the consumer that this product will be free from defects in material or workmanship for a period of twelve (12) months from the date of original purchase. (90 days for cables and clamps).

Products that fail within this 12 month warranty period will be repaired or replaced at the manufacturer's option to the consumer, when determined by the manufacturer that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of parts and the necessary labor by the manufacturer to effect the repair or replacement of the product. In no event shall the manufacturer be responsible for special, incidental or consequential damages or costs incurred due to the failure of this product.

Improper use, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. The manufacturer disclaims any liability or consequential damages due to breach of any written or implied warranty on its test equipment.

## **WARRANTY AND SERVICE INFORMATION**

Warranty claims to the manufacturer's service department must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser and is non-transferable. Shipper damage incurred during return shipments is not covered under this warranty. It is the responsibility of the shipper (the customer returning the Test Equipment) to package the tester properly to prevent any damage during return shipment. Repair costs for such damages will be charged back to shipper (customer returning the Test Equipment). Protect the product by shipping in original carton or add plenty of over-pack cushioning such as crumpled up newspaper.



***Auto Meter Products Inc.***

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Sycamore, IL 60178

Service (815) 899-0801  
Toll Free (866)-883-TEST (8378)

[www.autometer.com/test](http://www.autometer.com/test)