Hand Held-Accuracy with a Pulsed 120 Amp Load

The BVA-260 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-260
Load Test Capacity...............120 Amp
Battery sizes .....................100-1600 CCA
Digital Back-Lit Display ..........1" x 2.5" - 4 line x 16 character
Volt Ranges .....................Digital 0-30
Cooling ...........................Vented
Leads ................Load Amp-2 1/2 ft., 6 Gauge
Size ..............................5 7/8" x 9 1/2" x 1 7/8"
Memory ........................Stores the last 150 tests
Internal Battery ................9 Volt Alkaline
Weight .........................4 lbs.

What to Expect from the BVA-260:

Immediately recognize a bad battery and perform a complete starting and charging system analysis. The BVA-260 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-260 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-260 grill may get hot after repeated use. Be sure to hold the unit from the side grips only. Keep hands away from the grill.

LIMITED WARRANTY

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. 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.

12 MONTHS FROM DATE OF PURCHASE
Select the rating from CCA, MCA, CA, AH.

You can also select the default rating to be the last entered CCA value or a particular amount such as 600 CCA.

If 'Y' is chosen, the measured battery capacity will be displayed on the battery test result screen and print out. If 'N' is chosen no measured battery capacity will be displayed or printed.

To toggle battery test results between "GOOD" or "BAD" only and "NEAR END OF LIFE", use + or - to change setting then use 'Y' to select.

To print to an Auto Meter stand alone IR printer choose "AC-14/PR-12". To print to the Auto Meter high speed PR-16 printer using the Auto Meter XTC-160 charger/tester and IR-1 printer interface choose "XTC-160/PR-16". To print to a network printer using the POSI-160 choose "Print Center".

Press 'Y' to change the time, or 'N' to continue.

Press 'Y' to enter or change the store address for use on print outs or 'N' to continue.

Note: The BVA-260 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-260 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-260.
- 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-260 to a battery that is connected to any other tester or charging unit. Damage may result.

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VOLT METER

Scroll Down to Volt Meter then select Volt Meter by pressing Y

---VOLT METER---

> VOLTS: 12.24V
> RIPPLE 00.0mV

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SETUP

Scroll Down to Setup, Select setup by pressing Y

---SET LANGUAGE:
> ENGLISH
> USE +/-
> 'Y' TO SELECT

---SET TEMPERATURE
> SCALE: F.
> USE +/-
> 'Y' TO SELECT

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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.

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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 gasing, 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.
PRINTING TEST RESULTS

Point the BVA-260 in the direction of the printer with the printer’s IR receiver pointed in the direction of the BVA-260. Press (Print). You should be within 15 ft. of the printer. Wait for the screen to clear before moving the BVA-260. It takes a moment to send all the test data. The BVA-260 also operates the AC-14 printer installed in Auto Meter’s XTC-160 tester/charger or BVA-2100 heavy duty tester/analyzer.

- Make sure the Infrared Printer is properly set up.
- After a test is made with the BVA-260 make sure the results are displayed on the LCD.
- Point the BVA-260 in the direction of the Infrared Printer (within 15 ft.)
- Press the <Print> key and the test results will be printed.
- Depending upon the test made the printer will sometimes yield more information than the LCD.
- Wait until the printer stops printing before you press the BVA-260 print key again.

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.
- 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.
CONTROLS AND FUNCTIONS

LCD:
Displays menus and test results.

KEYS:
When each key is pressed, a beep sounds to assure contact has been made.

On/Off Key:
This is the manual on/off key.

Y Enter Key:
This key selects the next menu, the cursor line item and answers ‘yes’ to a test progression.

N Esc Key:
This key cancels a test or progression. It also returns to the previous menu.

+Up Key:
This key moves the cursor up in order to select a menu line item and increments certain displayed values.

-Down Arrow Key:
This key moves the cursor down in order to select a menu line and decrements certain displayed values.

Print Key:
Point the BVA-260 infrared print light towards the IR Print Receiver and press the print key. Continue to point the print light towards the IR Print Receiver until printing is completed. Test results will be printed.

USB Ports:
USB Type A - for data download to flash memory and firmware upgrade.

USB Type Mini B - Future expansion factory use.

Infrared Print Light:
When the print button is pressed infrared data will be transmitted to the printer IR receiver if pointed in the appropriate direction (up to 15 ft.).

5 OTHER MENU ITEMS

REVIEW TESTS
Scroll Down to Review/Print

Press (Y Enter) to select Review/Print.

The last test will be displayed.

Press (N Esc.) to select previous test. Press (+Up) or (-Down) key to select the desired test.

ABOUT SCREEN

Scroll down to about. Press Y to select.

The about screen shows the model number, Firmware revision and the tester serial number. Press any key to go back to the menu.
NOTE 1: If the LCD reads "FAIL OUTPUT" it is recommended you run the test again with the engine at fast idle (2,000 RPM or more.)

If Measured Output is displayed the output may be low for some systems.

ALTERNATOR TEST cont.

#43 12V CHARGE
FAIL REG LOW
FAIL DIODES
FAIL OUTPUT <30A

MAINTENANCE

GATOR CLAMPS™
Both jaws of each clamp must firmly engage the battery terminal. One copper jaw contains the smaller gauge wire that reads the voltage and the other jaw connects to the larger conducting wire that draws the load in each test. Electrical insulation between jaws is necessary for accurate readings. For side terminal battery connection, the threaded stud connects to the smaller gauge wire that reads the voltage, and the load pad ring connects to the larger conduction wire that draws the load in each test. Damaged clamps or loose wires will affect the readings. Keep clamps clean and in good repair.

BATTERY CLAMP/LEAD REPLACEMENT
Over time the battery clamps will need to be replaced if any of the following are indicated:
- CCA values seem to be way off.
- If there is continuity between the copper jaws.
- If there is excessive damage or corrosion to the cables or clamps.

1. Remove protective rubber boot from tester.
2. Remove battery cover on the back of the tester by removing the 4 Philips head screws using a #1 Phillips screw driver.
3. Remove both volt lead Phillips head screws, lock washers, and flat washers using a #1 Phillips screw driver.
4. Remove the 8 mm hex head bolt, lock washer, and flat washer from the positive side current lead using an 8 mm socket.

CHECK OFTEN FOR LOOSE JAWS OR DAMAGED INTERNAL PLASTIC SHOULDER INSULATORS

Store clamps on posts as shown.
5. Remove the 10 mm hex head bolt, lock washer, and flat washer from the negative side current lead using an 10 mm drive socket.

6. Unthread both cable strain reliefs from the tester, and pull both cables out of the tester.

7. Remove rubber insert from both threaded fittings on tester.

8. Cut off small plastic fingers from both threaded fittings using a wire cutter.

9. Insert cables through threaded fittings. Fittings have a slot on the inside to clear the terminal. Align the terminal with the slot when inserting the cable through threaded fitting.

10. Continue installing replacement cable and clamp assemblies in reverse order of removal. Note hardware assembly order. (Fastener, lock washer, then flat washer)

11. Tighten hardware. Recommended torque:
   a. 8 mm and 10 mm hex head screws: 22 IN. LBS.
   b. Phillips head Volt lead screws: 6 IN. LBS

   **BATTERY REPLACEMENT**

   When the LCD indicates a low internal battery, the BVA-260 will shut down and not operate until the 9 volt battery is replaced. Remove rubber insulator boot, then remove the back cover and replace the battery.

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**ALTERNATOR 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? (See section 2 and 3)
- Make sure all electrical items are off.
- Check for Alternator noise.

Use the (+Up) and (-Down) arrows to move cursor to the desired test.

The BVA-260 will allow the voltage to stabilize before starting the test bar at the bottom of the screen that shows the test progress. Be patient, it can take up to 30 seconds for the voltage to stabilize.

Allow the alternator test to finish.

Bar at the bottom of the screen will show the tests progress.

Test result will appear. The following are examples.

- Alternator has GOOD regulation and GOOD output.
- High Regulation will damage the system. High Regulation is likely due to a faulty alternator and/or voltage regulator.
STARTER TEST cont

Use the (+ Up) and (- Down) keys to scroll through the screens. Press Y or N to go to the main menu.

<table>
<thead>
<tr>
<th>4 Cyl Gas</th>
<th>6 Cyl Gas</th>
<th>8 Cyl Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-250A</td>
<td>Up to 250A</td>
<td>Up to 250A</td>
</tr>
<tr>
<td>4 Cyl Dsl</td>
<td>6 Cyl Dsl</td>
<td>8 Cyl Dsl</td>
</tr>
<tr>
<td>Up to 350A</td>
<td>Up to 450A</td>
<td>Up to 650A</td>
</tr>
</tbody>
</table>

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 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-260 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.
- Repeat the test in different ways and compare results.

**CONNECTION ERRORS**

- If the clamps are reversed the Reversed Connection warning will be displayed on the LCD with an audible beeping.
- If one or both of the clamps are not in complete contact (both the copper and silver jaw) CHECK CONNECTIONS! will flash on the LCD.
BATTERY TEST

Select Battery Test from the main menu and then press (Y Enter).

If any of the tests (battery test or starter test, or alternator test) are selected and the clamps are not connected to the battery the following screen will appear.

CONNECT CLAMPS TO BATTERY. RED+, BLACK- 'Y' TO CONTINUE

Press 'Y' to continue once the clamps are connected the test will proceed.

>AIM TEMP PROBE AT BATTERY TEMP: 70F 'Y' TO CONTINUE

If the battery temperature is above 180°F the battery is too hot to safely test. the following screens will appear.

THE BATTERY IS TOO HOT TO TEST SAFELY 'Y' TO CONTINUE

THE BATTERY NEEDS TO COOL BEFORE TESTING 'Y' TO CONTINUE

Enter Rated CCA

Pressing 'Y' or 'N' will return to the main menu.
Let the battery cool before testing

Enter Rated CCA

Press the (+Up) or (-Down) key to increment or decrement to the rated CCA of the battery.

STARTER TEST cont

Press the (-Down) key to display the next screen. Press the (+Up) key to move to the previous screen

IF ALL CK GOOD ↑
RECOMMEND BENCH TESTING STARTER

WHAT TYPE ENGINE ARE YOU TESTING
USE +/- DIESEL 'Y' TO CONTINUE

HOW MANY CYLINDERS DOES ENGINE HAVE
USE +/- 4 'Y' TO CONTINUE

The chart on page 16 shows the current limits for the different engine types. If the starter is likely to have a problem the following screens will appear.

#74 12V STARTING CURRENT 680A - FAILED - 'Y' TO CONTINUE

Advice for what to do next.

Pressing 'Y' or 'N' will return to the main menu.
Let the battery cool before testing

THE BATTERY NEEDS TO COOL BEFORE TESTING 'Y' TO CONTINUE

The battery is too hot to test safely

THE BATTERY IS TOO HOT TO TEST SAFELY 'Y' TO CONTINUE

Use the +/- key to choose between gas and diesel.

If the engine is diesel the system will need to know the number of cylinders the engine has. Use the +/- key to choose either 4, 6 or 8.

#74 12V STARTING CURRENT 680A - FAILED - 'Y' TO CONTINUE

Advice for what to do next.

If the current is over 250A, the system will need more information to determine if the starter is good. The next screen will ask what type of engine you are testing.

WHAT TYPE ENGINE ARE YOU TESTING
USE +/- DIESEL 'Y' TO CONTINUE

HOW MANY CYLINDERS DOES ENGINE HAVE
USE +/- 4 'Y' TO CONTINUE

The chart on page 16 shows the current limits for the different engine types. If the starter is likely to have a problem the following screens will appear.
Wait for instructions before cranking engine.

START ENGINE

'N' TO CANCEL

The BVA-260 will test the starting system. A bar at the bottom of the screen will show the tests progress.

TESTING STARTING, SYSTEM PLEASE WAIT ...

If the current draw is between 75A & 250A (for gas powered engines) the starting system is likely good and the following screen will appear

$40 12V START CURRENT 200A - PASSED - 'Y' TO CONTINUE

If the current is under 75A a solenoid connection or corrosion problem is likely and the following screens appear.

$73 12V START CURRENT 60A - FAILED - 'Y' TO CONTINUE

Press the (-Down) key to display the next screen. Press Y or N to go to the main menu.

Press the (+Up) or (-Down) key to cycle through the battery types. Press 'Y' when it matches the type of battery you are testing.

BATTERY TYPE OPTIONS:
STARTING STANRD
STARTING AGM
DEEP CYCLE AGM
DEEP CYCLE STANRD

Confirm that the inputs are correct. Press "Y" if they are correct. The test will start. Press "N" to re-enter battery type, temp, and rating.

If the reading is below 7.2 Volts you will get the following:

>IS THIS A 6V BATTERY?

'N' OR 'Y'

REMOVING SURFACE CHARGE...
S#22010 T#32

Surface charge removed if detected.

TESTING BATTERY PLEASE WAIT...
S#22010 T#32

Bar at the bottom of the screen will show the tests progress.

Wait for test results.

The BVA-260 serial number and test number are displayed to help reference the test to the print out.
After the Digital Pulse Load Test is completed results similar to one of the following sample screens will appear.

**#32 12V BATT.**
**GOOD BATTERY.**
**12.84V CHG 100%**
**MEAS CCA 610**

Battery passes testing. Return to service.

**#33 12V BATT.**
**BAD BATTERY.**
**12.45V CHG 75%**
**MEAS CCA 400**

Battery did not have sufficient remaining capacity to pass tests. Battery should be replaced immediately.

**#34 12V BATT.**
**GOOD NEEDS CHARG.**
**12.24V CHG 50%**
**CK START-CHG SYS**

Charge battery and place into service.

**#35 12V BATT.**
**CHARGE & TEST.**
**12.06V CHG 25%**
**ADDL TEST REQ'D**

Battery did not have a sufficient charge for a Digital Pulse Load Test. Charge and retest battery.

**#36 12V BATT.**
**NEAR END OF LIFE.**
**12.80V CHG 100%**
**MEAS CCA 450**

Battery passes testing and is near end of life. Battery is ok for mild climate. May not start vehicle in hot or cold conditions.

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3. **STARTER TEST**

The starter test measures the amount of current needed to crank the engine 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?

**Note:** A remote starter switch can be used to bypass the ignition switch and crank the engine from under the hood. This way the sounds of the starter can be heard.

**STARTER TEST**

Press (N Esc.) to return to main menu. Select **Starter Test** then press (Y Enter).

Use the (+Up) and (-Down) to move cursor to the desired test

Press (Y) and tester prepares for the starter test. Bar at the bottom of the screen will show the progress.