



SB-300 Manual

Hand Held-Accuracy with a 40 Amp Load

The SB-300 is a hand-held tester that is the auto industry's answer to portability in a professionally accurate battery load tester.

You have purchased one of Auto Meter's hand-held Battery Testers. If you should have any questions about your tester, testing procedures, or service see last page of this booklet for contact information.

SB 300

Load Test Capacity.....	40 Amp
Battery Sizes	100-1600 CCA
Digital Display	1" x 2.5" - 4 line x 16 character
Volt Ranges.....	Digital 0-30
Cooling	Heat Sink Ventilation
Leads	Load Amp-2 1/2 ft., 16 Gauge
Size	3 3/4" x 6 3/4" x 1"
Memory	stores the last 100 tests
Internal Battery.....	9 Volt Alkaline
<i>Optional</i> PR-12	Infrared printer
<i>Optional</i> AC-12	PC Interface adapter cord
<i>Optional</i> AC-24J.....	Carrying case only
<i>Optional</i> AC-32	Serial Port to USB adapter
<i>Optional</i> AC-62	AMP Link Data Download PC Software
Weight.....	1.34 lbs.

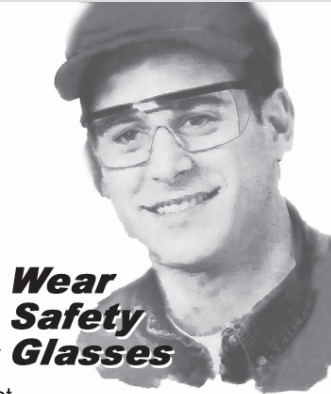
What to Expect from the SB-300:

Immediately determine battery. The SB-300 is a portable full-featured menu-driven battery tester that provides quick, professional load results using Auto Meter's Pulsed Load. The SB-300 is user friendly. It tells you what to do. It is professionally accurate. Detailed test results are LCD displayed after each test and can be reviewed and/or printed from memory.

	<u>Page</u>
Specifications	2
Safety	4
Cause of Battery Failure	4
Inspection and Visual Check	5
Controls and Functions.....	6
Maintenance	7
Clamp Replacement.....	7
Internal Battery Replacement.....	7
 Sections	
1. Hook Up	8
2. Battery Test	9 -11
3. Other Menu Items	
Review Tests	12
Printing Test Results.....	12-13
Voltmeter	14
Setup	14-15
PC Interface	16
Warranty Information	17
Contact Information	20

SAFETY

- Carefully read all operating instructions before using the SB-300
- Wear proper protection when working around batteries.
- Be sure each test is complete before removing load clamps to prevent arcing and potential explosion from battery gases. 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 SB-300 to a battery that is connected to any other tester or charging unit. Damage may result.



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.

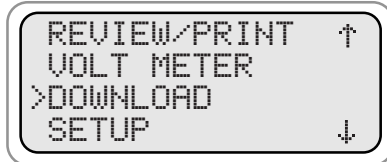
Remove the 12 volt starting battery, starter or alternator from the vehicle prior to testing.

CAUSE OF BATTERY FAILURE

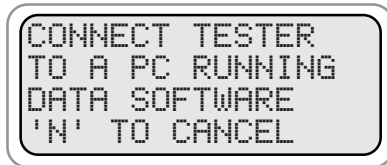
- **Incorrect Application:** Wrong size battery may have inadequate cold cranking Amp rating for original vehicle specifications.
- **Incorrect Installation:** Loose battery hold-downs cause excessive vibration, which can result in damage to the battery plates.
- **Improper Maintenance:** Low electrolytic 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 old, the failure may be caused by 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 charged.

PC INTERFACE

From the Main Menu scroll down to **DOWNLOAD**

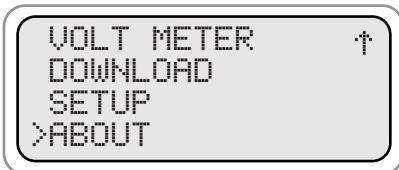


The following will be displayed

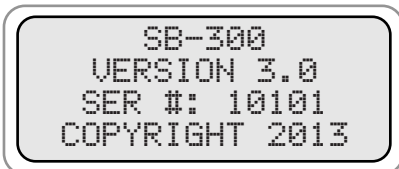


Using Auto Meter's optional adapter cord AC-12 insert the stereo plug into the jack on the SB-300 and then plug the serial adapter into a free serial port on the rear of your computer or connect to AC-32 serial port to USB adapter. Follow the instructions of the AC-62 AMP Link Data Download software to retrieve data from the SB-300.

ABOUT



NOTE: The down arrow is no longer displayed. **ABOUT** is the last menu item. The up arrow indicates previous menu selections.



Press (Y enter) and the version will be displayed.



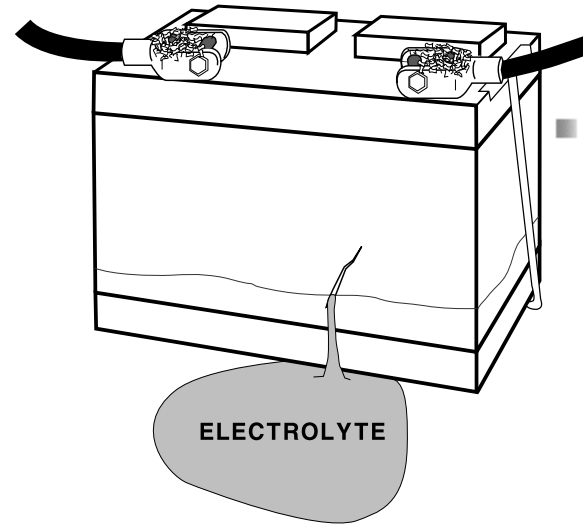
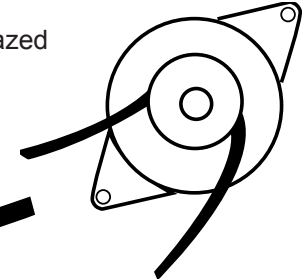
INSPECTION

- 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 before attempting any electrical diagnosis



VISUAL CHECK

- Inspect Belts and Pulleys** 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 known defective 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.

+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.

N Esc Key:

This key cancels a test or progression. It also returns to the previous menu.

Print Key:

Point the SB-300 infrared print light towards the *Optional PR-12* infrared printer receiver and press the print key. Test results will be printed.



Infrared Print Light:

When the print button is pressed infrared data will be transmitted to the printer when pointed in the direction of the printer (up to 15 ft.).

PC Download Jack:

Adapter cord AC-12 can be inserted here.



SETUP (cont.)

```
SET DEFAULT
RATING: CCA
USE +/-
'Y' TO SELECT
```

Select the rating from CCA, MCA, CA, AH, EN.

```
>SET DEFAULT CCA
AS: 600
USE +/-
'Y' TO SELECT
```

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

```
DO YOU WANT TO
DISPLAY MEASURED
BATTERY CAPACITY
'N' OR 'Y'
```

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.

```
USE TEST RESULT
NEAR END OF LIFE
USE +/-
'Y' TO SELECT
```

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

```
PRINTOUT OPTION
AC-14/PR-12
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 POSI-160".

```
DO YOU WANT TO
ENTER STORE INFO
'N' OR 'Y'
```

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

Entry Hints

Note: Address one & two and city have a max of 23 characters.

To change the text or number press the (+) or (-) keys. If you press 'N' at the beginning of the screen, no changes will be made. To make changes, use the (+) and (-) keys then press 'Y' to save the change. The cursor will then go to the next character or number. If you are done making changes but there is

more text keep pressing 'Y' until the cursor is on a blank space at the end of the lines of text. Pressing 'N' moves back the cursor position back one character. Pressing Print saves the text up to the cursor position. Any text after is deleted.



VOLT METER

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



```
>VOLT METER
DOWNLOAD
SETUP
ABOUT ↓
```

Press (Y Enter)

```
-VOLT METER-
VOLTS: 12.63V
RIPPLE 00.0mV
```

Note: If the car is running and the clamps are attached to the battery a high ripple (over 50mV) indicates bad diodes in the alternator.

SETUP

Scroll Down to Setup, Select setup by pressing Y

```
VOLT METER ↑
DOWNLOAD
>SETUP ↓
ABOUT
```

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

Choose between English, Spanish, or French using the (+Up) and (-Down) Keys to change the language. Press 'Y' to select.

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

Select the temperature in Fahrenheit or Centigrade.

MAINTENANCE



CLAMP MAINTENANCE:

CHECK OFTEN FOR LOOSE JAWS
OR DAMAGED INTERNAL INSULATOR

- Both jaws of each clamp must firmly engage the battery terminal. The wire soldered to the copper insert jaw must be insulated from the other wire soldered to the opposite handle. This insulation is required so that one can read the Amps and the other can read the Volts. Damaged clamps or loose wires will affect readings. Make sure the copper jaw insert is properly insulated from the clamp and the clamps are clean and in good repair.

Over time the battery clamps will need to be replaced if any of the following are indicated:

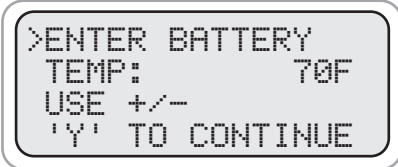
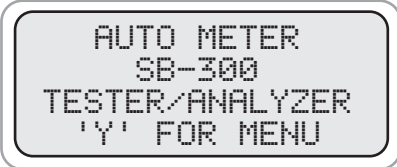
- CCA values seem extreme.
- If there is continuity between the copper insert and the clamps.
- If there is excessive damage or corrosion to the cables or clamps.

CLAMP and BATTERY REPLACEMENT

- Remove the screws from the back cover.
- Separate top and bottom cover and open like a book leaving the ribbon in contact with the PC board that will remain with the back cover.
- **CLAMPS:** Remove the cables and strain relief. With the new load clamp leads pointing down; insert the new strain relief into the back cover. Make sure the red clamp wires are attached to the left two screws of the green screw terminal (labeled POS) and the black clamp wires are connected to the right two screws (labeled NEG). It does not matter if either of the two red clamp wires is switched. The same applies to the two black clamp wires. Just make sure the red clamp wires are to the left (POS) and the black clamp wires are to the right. (NEG)
- **BATTERY:** Remove the battery and replace with a 9 Volt battery. Match the (+) on the new battery with the (+) on the PC board.
- Reverse the procedure to assemble the unit.

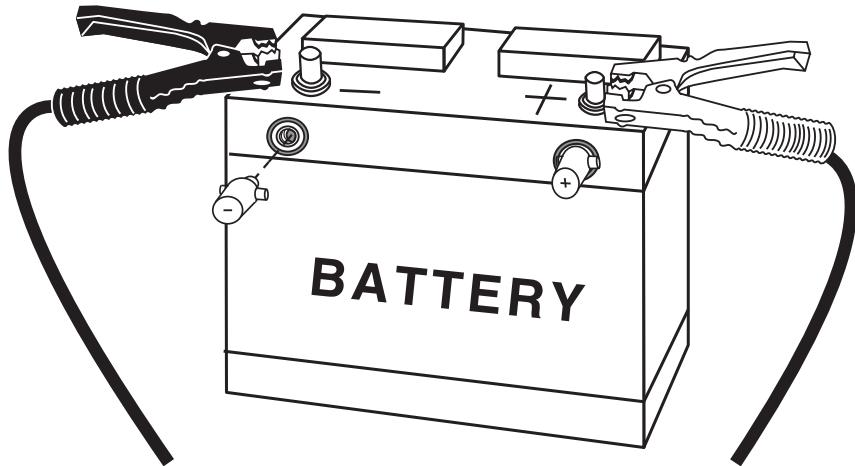
1 HOOK UP

Press the On/Off button: Connect the clamps as instructed on the LCD.



Enter the approximate battery temperature in degrees Fahrenheit or Celsius then press (Y Enter).

Note: Go to the setup to change temp scale to Celsius. The temperature request only appears once for each battery tested. If the clamps are disconnected you will be prompted again to begin a new battery test.



Note! Take special care when connecting to battery side terminals. If necessary use a side post adapter to prevent thread damage. When testing dual post batteries always connect load clamps to the post to which the system is attached.

CONNECTION ERRORS

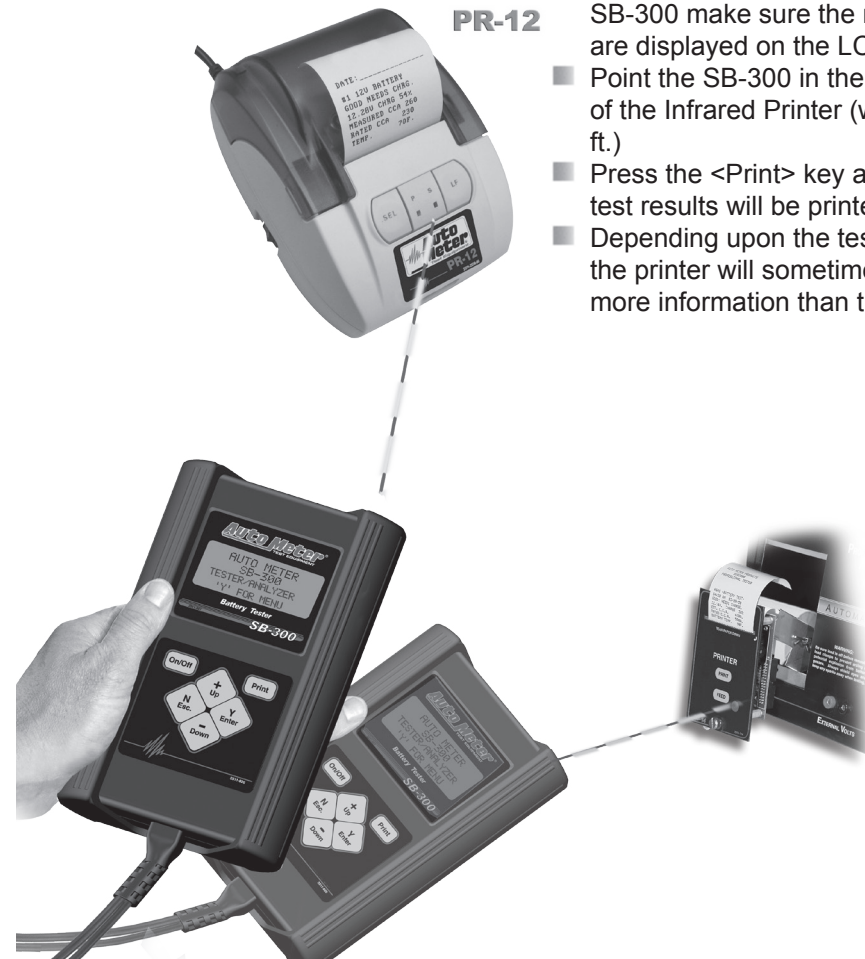
- If the clamps are reversed the Reversed Connection screen will flash.
- If one or both of the clamps are not in complete contact CHECK CONNECTIONS! will flash

PRINTING TEST RESULTS

Point the SB-300 in the direction of the PR-12 printer with the printer's IR receiver pointed in the direction of the SB-300. Press (Print). You should be within 15 ft of the printer. Wait for the screen to clear before moving the SB-300. It takes a moment to send all the test data. The SB-300 also operates the AC-14 printer installed in Auto Meter's XTC-160 tester/charger or BVA-2100 heavy-duty tester/analyzer, or Auto Meter's PR-16 Printer when used with a XTC-160 and IR-1 Printer Interface.



- Make sure the Infrared Printer is properly set up.
- After a test is made with the SB-300 make sure the results are displayed on the LCD.
- Point the SB-300 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.



4

REVIEW TESTS



From the main menu select REVIEW/PRINT.

```
BATTERY TEST
>REVIEW/PRINT
VOLT METER
DOWNLOAD
```

Press (Y Enter).

The last test will be displayed.

```
T#1 12V BATT.
GOOD BATTERY!
12.65V CHG 100%
MEAS CCA 650 ↓
```

Use the (+Up) or (-Down) key to select the desired test.

OPTIONAL INFRARED PRINTER

The optional PR-12 printer. An invisible infrared beam links the SB-300 to the printer from up to 15 ft away. No connection cords are needed. For more instructions on how to operate the printer consult the printer manual.

Printer Type ----- Thermal Printing
Paper ----2.25 in x 80 ft. Roll Thermal Paper (included)
Power ----AC and Cigarette Lighter adapters (included)

2

BATTERY TEST



```
>BATTERY TEST
REVIEW/PRINT
VOLTMETER
DOWNLOAD
```

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 THE BATTERY
RED + BLACK -
'Y' TO CONTINUE
```

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

```
ENTER BATTERY
TEMP: 70F
USE THE +/-
'Y' TO CONTINUE
```

Press the (+Up) and (-Down) keys to select the battery temperature. Press 'Y' to enter.

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
```

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

```
CHOOSE BATT TYPE
STARTING STANDRD
USE +/-
'Y' TO CONTINUE
```

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 STANDRD
STARTING AGM
DEEP CYCLE AGM
DEEP CYCLE STANDRD

3

BATTERY TEST (cont.)



```
>ENTER RATED CCA
600 USE +/-
12.68V
'Y' TO CONTINUE
```

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

SUMMARY SCREEN

```
STARTING STANDRD
TEMP: 70F
RATED CCA 600
'N' OR 'Y'
```

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#23456 T# 1
```

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

Wait for test results.

The SB-300 serial number and test number are displayed to help reference the test to the print out.

BATTERY TEST (cont.)



After the Digital Pulse Load Test is completed results similar to one of the following sample screens will appear.

```
T#1 12V BATT.
GOOD BATTERY!
12.84V CHRG 100%
'Y' TO CONTINUE
```

Battery passes testing. Return to service.

```
T#1 12V BATT.
BAD BATTERY!
12.68V CHRG 100%
'Y' TO CONTINUE ↓
```

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

```
T#1 12V BATT.
GOOD NEEDS CHRG.
12.38V CHRG 60%
'Y' TO CONTINUE ↓
```

Charge battery and place into service.

```
T#1 12V BATT.
CHARGE & TEST
12.08V CHRG 20%
'Y' TO CONTINUE ↓
```

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

```
T#1 12V BATT.
NEAR END OF LIFE
12.68V CHRG 100%
'Y' TO CONTINUE ↓
```

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