

## SPECIFICATIONS

Battery Size Range	
Auto:	390 to 650 CCA 40 to 60 Ah
Truck:	>650 to 1700 CCA >60 to 250 Ah
Battery Condition	
Good:	80 to 100%
Marginal:	between 70 to 80%
Replace:	below 70%
DC Volt Range:	6V to 49.9V
DC Volts Accuracy:	± 2% Reading
Capacity/Volts Display:	4 LED's- 3 ½ Digit
Bar-graph Display:	10 color-coded LEDs
Operating Temperature:	32°F to 120°F
Weight:	.75 LBS
Dimensions:	7.5" x 3.5" x 1" H
Jaw Opening:	1.25"



## Model B400 HEAVY DUTY Battery Condition & Charging System Tester

Tests 12V Auto and Truck Batteries  
and 12/24/36V charging systems  
& 42V mild hybrid vehicles

## User Manual



### WARNING

- Batteries produce explosive gases and can explode.



Wear safety goggles. (user and bystanders)



Keep flames and sparks away from batteries.



Read and follow instructions.

*Battery explosion and ignited gases can cause injury.*



### WARNING

- Battery acid can cause chemical burns.



Wear protective clothing. (user and bystanders)

*Chemical burns can cause injury.*



## RETURN FOR REPAIR POLICY

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

SERVICE CENTER  
2651 W 81st Street  
Hialeah, FL 33016

## WARRANTY POLICY

The B400 Battery Diagnostic Tester is warranted to be free of defects in materials and workmanship for a period of two years from the date of purchase. This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use including unauthorized opening of the unit. Please ship warranty units that require repair freight prepaid to Service Center along with proof of purchase, return address, phone number and/or email address.

### CEC DECLARATION OF CONFORMITY 2006

Application of Council Directive(s)	
EMC Directive 89/329/EEC as amended by 92/31/EEC, 93/32/EEC, 95/14/EEC	
Manufacturer's Name: Made in U.S.A. for Snap-on Tools Corporation by Techno Tools Corporation 2651 W 81st Street Hialeah, FL 33016	
Equipment Type/Description 12V & 24V Electronic Battery Analyzers	
Model: B300B400 (Snap-on Tools stock #1 Y28132VAD254)	Date: August 5, 2005
Conformance to: EMC1000-4-2:2001 (RED), EN 61000-4-3:2001 (RED), EN 61000-4-2:2001 (RED)	Signature: Technical Specification
The Techno Tools Electronic Battery Analyzers were found to meet the requirements specified with the specifications of EN 61000-4	
Note: IEC 61000-4 and IEC 61000-4-6 however deemed unnecessary to test due to the length of the cables being less than 3m, as specified by the manufacturer	
The undersigned hereby declares that the equipment specified above conforms to the above CEC(RED):	
Signature: _____	Date: August 5, 2005
Signature: _____	Date: _____
Signature: _____	Date: _____
Signature: _____	Date: _____

Made in USA

PATENT # 6,768,309

## INTRODUCTION

Your new Model B400 Battery Diagnostic Tester employs conductance testing to determine the condition of the battery. The patented circuit eliminates the need for time consuming CCA input or conversions to other rating systems. When the **TEST** button is pressed, the B400 will immediately display **BOTH** the **percent available capacity** of the battery and the **condition** of the battery. The B400 also tests 12/24/36V alternator and starter systems.



← Displays % Capacity & DC Volts

← Bar Graph Indicator

← Low Volts Indicator

← Battery Size Indicator

← Battery Size Selector

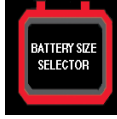
← Press to Test Battery

## Checking Battery Condition Out of Vehicle Testing

1. Connect the red clip to the positive battery post and the black clip to the negative post\*. The battery voltage will be displayed. *When testing 24V/36V battery packs, connect to the battery posts for each individual 12V battery.*

12.5

2. For **AUTO** batteries 390 to 650 CCA (40 to 60 Ah) **no size selection is necessary** (default size). The Auto indicator LED will be on.



For **TRUCK** batteries >650 to 1700 CCA (>60 to 250 Ah) press selector switch once. The LED indicator will switch to the **TRUCK** position.



3. Press and **hold down** the Test Button until the final reading is displayed.

The DIGITAL DISPLAY shows PERCENT AVAILABLE CAPACITY. *The Display and Bargraph will remain on until the Test Button is released.*

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4. The color-coded **LED BARGRAPH** will show **GOOD** (Green) **MARGINAL** (Yellow) or **REPLACE** (Red).



*\*When testing high capacity truck batteries, make sure clips make a solid connection with battery post.*

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

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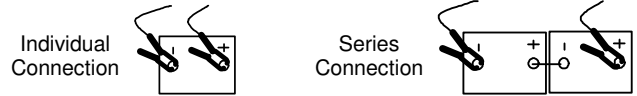
## Checking Charging System (Alternator)

### CHARGING SYSTEM TEST

*Note: Prior to performing this test, check the battery condition to make sure it is in good condition. (See In Vehicle Battery Test Instructions).*

1. Check first for a loose, worn or broken alternator belt. If okay, proceed to #2.

2. Connect the red clip to the positive battery terminal and the black clip to the negative terminal and start engine. For series batteries connect the test clips as shown below.



3. With engine running and lights on, the real time alternator output voltage will be displayed. The reading should display between 13.0 and 15.0 volts for 12V charging systems. Check manufacturer's specifications for 24V and 36V systems. **NOTE: Consult shop manual for instructions on testing 42V mild hybrid systems.**

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

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

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## Low Volt Indicator



Batteries that test **Marginal** or (just below Marginal) when the **Low Volts** LED indicator is on (below 12.3 Volts on 12V systems and below 24.6 Volts on 24 Volts systems) should be recharged and retested for more accurate results.

## Bad Cell Indicator



Capacity displayed below 20% and **only 1 red led on the bargraph** indicates that the battery has a defective cell. Defective battery cells are usually open or shorted and the battery must be replaced.

## In Vehicle Testing (Checking Battery Condition)

1. Engine should be off. Turn off all accessory loads.
2. Remove surface charge (battery voltage is greater than 12.8 Volts) by turning on the headlights for 15 seconds.
3. Follow instructions for **Out of Vehicle Testing** (see Page 2).
4. When testing batteries in 24/36 Volt systems, test each individual 12V battery separately. The B400 will display only the battery pack voltage when connected to two or more 12 Volt batteries-not the capacity of the pack when the TEST button is pressed.

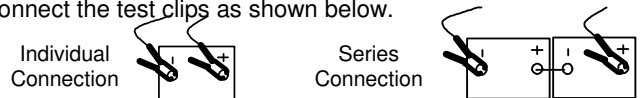


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## STARTER TEST

*Note: Check the battery condition to make sure it is in good condition before performing this test. (See In-Vehicle Battery Test Instructions page 3).*

1. Connect the red clip to the positive battery terminal and the black clip to the negative terminal. For series batteries connect the test clips as shown below.



2. Disengage the ignition. *(Check manufacturer's instructions)*. Read the voltage displayed while cranking the starter.

3. **Cranking Voltage is Normal:** For 12V systems the normal cranking voltage at the battery should be equal to or greater than 9.6 volts\*.

4. **Cranking voltage is Low:** If the cranking voltage is less than 9.6 volts\*, starting system has a problem. Check wires, connections and starter.

Check manufacturer's specifications for 24V and 36V systems. **NOTE: Consult shop manual for instructions on testing 42V mild hybrid systems.**

## Converting to CCA, Ah, DIN, JIS, EN

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

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