CAUTION: Because of the possibility of personal injury, always use extreme caution when working with batteries. Follow all BCI (Battery Council International) safety recommendations.

WARNING: (Required by California Prop. 65) Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. **Wash hands after handling.**

Testing Out-of-Vehicle:
Clean the battery posts or side terminals with a wire brush. For testing side-post batteries, install and tighten the lead terminal stud adapters. **Failure to properly install the stud adapters, or using stud adapters that are dirty or worn, may result in false test results. Do not use steel bolts.**

Testing In-Vehicle:
Turn off the vehicle and all accessory loads. ***Testing with the ignition switch on or vehicle loads on may cause inaccurate readings.***

If the vehicle was running prior to testing, turn on the headlights for 30 seconds to remove the surface charge. Let the battery rest for 1 minute to recover before testing.

For testing 12-volt automotive starting batteries rated in CCA, SAE, DIN, IEC, and EN

INSTRUCTION MANUAL

1. SELECTING THE RATING SYSTEM

1. Connect the tester clamps to the battery: red to the positive (+) terminal, black to the negative (–) terminal. For a good connection, rock each clamp back and forth.
2. The battery rating system last selected will appear on the display for 3 seconds, then the default rating. If the rating system is correct, go to step 3 in "2. Battery Test."
3. Disconnect the clamps and connect the black clamp to the negative (–) terminal.
4. Press and hold the TEST button.
5. Connect the positive clamp (red) to the positive (+) terminal.
6. After the display shows the letters of the rating system with dots (for example, **.C.C.A**), release the TEST button.
7. Use the ARROW buttons to scroll to the correct rating system.

Rating System*	Increment	Default	Range
CCA	20	500	100–1400
SAE	20	600	100–1400
EN	20	600	100–1400
IEC	10	280	100–800
DIN	10	280	100–800

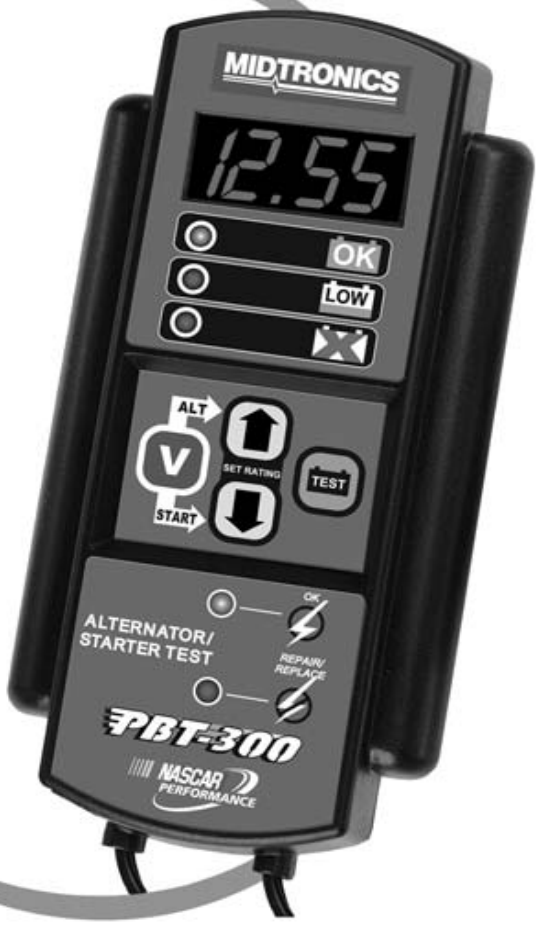
** For JIS, use the conversion table on the back of the PBT-300.*

8. Press the TEST button to select the rating system. The default rating will appear.
9. Continue with step 3 in "2. Battery Test."

MIDTRONICS

PBT-300

Advanced Battery Conductance/ Electrical System Tester



2. BATTERY TEST

1. If testing in-vehicle, make sure all vehicle loads (lights, etc.) are off and the key is removed. Connect the tester clamps to the battery: red to positive(+), black to negative (–). Rock each clamp back and forth to make a good connection.
2. The battery rating system last selected will appear on the display for 3 seconds, then the default rating value. (To change the rating system, follow the steps in "1. Selecting the Rating System.")
3. Use the ARROW buttons to scroll to the battery's rating.
4. Press the TEST button.
5. One or more top-panel LEDs (green, green and yellow, yellow, or red) will light to indicate the battery's condition. The display will alternate between the voltage and available power.

3. BATTERY TEST RESULTS

Top-Panel LEDs	Decision
GREEN OK	The battery is good. Return it to service.
GREEN OK **YELLOW** LOW	Fully charge the battery and return it to service.
YELLOW LOW	Fully charge the battery and retest. If you get the same result after charging, replace the battery.
RED	The battery has failed or is weak and may soon fail. Replace the battery.

4. STARTING SYSTEM TEST

NOTE: The battery must be good and fully charged for this test.

1. Connect the tester clamps to the battery: red to the positive (+) terminal, black to the negative (–) terminal. Rock each clamp back and forth to make a good connection.
2. Press the **V** button to read the live voltage.
3. Start the vehicle.
4. Press and hold the DOWN ARROW to read the cranking voltage.

5. STARTING SYSTEM TEST RESULTS

Bottom-Panel LEDs	Decision
GREEN OK	The cranking voltage is greater than 9.6 V. The starting system is OK.
RED REPAIR/ REPLACE	The cranking voltage is less than 9.6 V, which indicates a starting system problem. Check the connections, wiring, and starter.

6. CHARGING SYSTEM TEST

NOTE: The battery must be good and fully charged for this test.

1. When the vehicle is running, connect the tester clamps to the battery: red to the positive (+) terminal, black to the negative (–) terminal. Rock each clamp back and forth to make a good connection.
2. Press the **V** button to read the live voltage.
3. Rev the engine at 2000 rpm for 15 seconds.
4. Press and hold the UP ARROW to read the highest average charging voltage.

7. CHARGING SYSTEM TEST RESULTS

Bottom-Panel LEDs	Decision
GREEN OK	The highest average charging voltage is between 13.3 V and 15.5 V. The charging system is OK.
RED REPAIR/ REPLACE	The highest average charging voltage is less than 13.3 V or greater than 15.5 V, which indicates a charging system problem. If less than 13.3 V, check the connections, wiring, and alternator. If greater than 15.5 V, check the regulator.

TROUBLESHOOTING

If the display flashes or shows one flashing letter, the battery is too low (< 8 volts) to test. Fully charge the battery and retest.

A message that alternates between **bAd** and **CELL** means one or more battery cells are bad. Replace the battery.

A **conn** message means there is a bad connection. Disconnect the clamps and reconnect. Make sure to rock the clamps back and forth to make a good connection.

If the top-panel red LED lights **when you test in-vehicle**, there may be a poor connection between the battery cables and the vehicle. Disconnect the battery cables and retest at the battery posts before replacing the battery.

Excessive electromagnetic interference may cause the tester to reset during testing. Before retesting, reconnect the clamps and:

- Make sure all vehicle loads and the ignition are off.
- Move away from the noise source, which may be a charger or other high-current device.
- If you are unable to find the noise source, fully charge the battery and retest at the battery posts. If the top-panel red LED lights again, replace the battery.