

PL-430/460

Digital Battery Analyzer

For testing 6V and 12V automotive Starting batteries and for testing 12V charging systems and (only LP-460) starting systems.

INSTRUCTION MANUAL

TABLE OF CONTENTS

ITEM

CAUTION.....	
LANGUAGE SELECT.....	
BATTERY TESTING.....	
✂ Prior To Testing.....	
✂ Connecting The Tester.....	
✂ Key Pad.....	
✂ In-Vehicle and Out-of-Vehicle test.....	
✂ Battery Rating Systems.....	
✂ Battery Test Results.....	
✂	
CHARGING SYSTEM TEST	
VIEW TEST RESULTS.....	
PRINTING TEST RESULTS.....	
ADDITIONAL FEATURES.....	
✂ Surface Charge Removal.....	
✂ Temperature Compensation.....	
✂ Voltmeter.....	
TROUBLESHOOTING.....	
INTERNAL BATTERY REPLACEMENT.....	

CAUTION

Because of the possibility of personal injury, always use extreme caution when

LANGUAGE SELECT

Press the UP and DOWN arrow button together Before you connect the clamps, then connect the clamps, wait 5 seconds, the tester will display the language select, press up/down button to select the language you want, then press the ENTER button to make the selection.

BATTERY TESTING

PRIOR TO TESTING

IF TESTING OUT-OF-VEHICLE

- ✍ Clean battery terminals with a wire brush before testing.
- ✍ For Group 31 or side-post batteries, install and tighten lead terminal stud adapters.

Failure to properly install stud adapters, or using stud adapters that are dirty or worn may result in false test results.

IF TESTING IN-VEHICLE

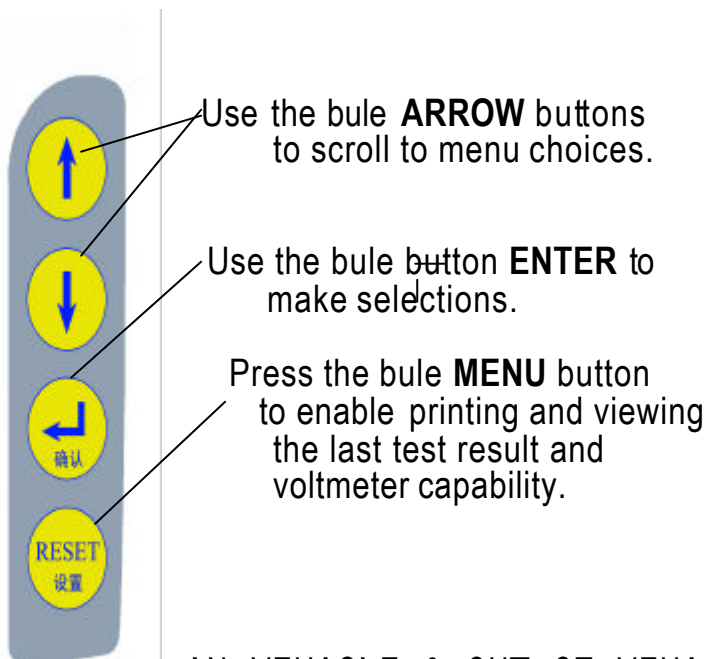
- ✍ At the beginning of a test sequence, make sure all vehicle accessory loads are off and the ignition is in the off position.

CONNECTING THE TESTER

- ✍ Connect red clamp to positive(+)terminal.
- ✍ Connect black clamp to negative(-)terminal.
- ✍ To ensure a proper connection, rock the clamps back and forth. The tester requires both sides of the clamp to be firmly connected prior to testing. A poor connection will prevent testing and a **CHECK CONNECTION** message will appear. If this occurs, clean the terminals and reconnect.

NOTE: *Batteries connected in parallel must have the ground cable disconnected to perform a battery test. Failure to disconnect may result in false battery test results.*

KEYPAD



IN-VEHICLE & OUT-OF-VEHICLE TEST

The tester will ask if the battery is connected in a vehicle or if it is out of a vehicle. Choose the appropriate selection by pressing the up or down arrow button then press the **ENTER** button to make the selection.

BATTERY RATING SYSTEMS

The PL-430/460 tests each battery according to the rating you choose. You will be prompted to choose the battery's rating system before scrolling to the actual rating.

The available rating systems are:

CCA-Cold Cranking Amps, as specified by SAE & BCI
The most common rating for cranking batteries at 0°F.

JIS-Japanese Industrial Standard
Shown on a battery as a combination of numbers and letters. For example:80D26.

DIN-Deutsche Industrie-Norm

IEC-International Electrotechnical Commission

EN-Europa-Norm

BATTERY TEST RESULTS

GOOD BATTERY	Return to service.
GOOD-RECHARGE	Fully charge battery and return to service.
CHARGE & RETEST	Fully charge battery and retest. <i>Failure to fully charge the battery before retesting may cause false readings.</i>
REPLACE BATTERY	Replace the battery and retest to perform a complete charging system analysis. (See note below)
BAD CELL-REPLACE	Replace the battery and retest to perform a complete system analysis.

NOTE: A REPLACE BATTERY result may mean a poor connection between the vehicle's cables and the battery. After disconnecting the vehicle's battery cables from the battery, retest the battery using the out-of-vehicle test before replacing.

CHARGING SYSTEM TEST

If the in-Vehicle test was selected, following the battery test, you may press the **ENTER** button to begin the charging system test.

Do not shut down the vehicle during the test. All electrical accessories should be in the **OFF** position. If any electrical loads are switched during the test, it can adversely effect the results(e.g.; engine cooling fan or glow plugs).

The tester will prompt you to start the engine, then display the live charging system voltage as well as a charging system result.

CHARGING VOLTAGE: NORMAL

The system is showing normal output from the alternator. No problem detected.

CHARGING VOLTAGE: LOW

The charging system is not providing sufficient charging current for the battery. Check the belts to ensure the alternator is rotating with the engine running. If the belts are slipping or broken, replace the belts and retest. Check the connections from the alternator to the battery. If the connections is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good working condition, troubleshoot the alternator according manufacture's recommendations.

CHARGING VOLTAGE: HIGH

The voltage output from the alternator to battery exceeds typical limits of a functioning regulator. Since most alternators have the regulator built-in, this will require you to replace the alternator.(In older vehicles, external voltage regulators were utilized. In these instances, only replacement of the voltage regulator may be required.)

The regulator is designed to control voltage output based on the battery voltage, underhood temperature, and vehicle loads being used. In other words, it controls the maximum voltage the system can produce based upon the current needs and amount of current that can be produced by the spinning of the rotor in the alternator. Typical high limit of an automotive

regulator is 14.7 ± 0.5 volts. Check manufacturer

specifications for the correct limit and replace the regulator if required. Since most alternators have the regulator built-in, this may require you to replace the alternator.

A high charging rate will overcharge the battery, which may decrease its life and cause it to fail. If the battery test decision is **REPLACE** and the charging system test shows a **CHARGING VOLTAGE HIGH**, check the levels of the electrolyte in the battery. A battery condition symptom of overcharging is fluid spewing through vent caps which causes low electrolyte levels and may harm the battery.

STARTING SYSTEM TEST

The PL-460 test the starting system and the charging system at the same time, after the charging system test, you may press the **ENTER** button to view the starting system test results.

VIEW TEST RESULTS

To view the last result while disconnected from the battery, press and hold the **MENU** button to activate the Option Menu. Use the **up/down** arrow buttons to scroll to **VIEW RESULTS** then press the **ENTER** button to select. Use the **ENTER** button to scroll through the test result.

! IMPORTANT

Once a new test is initiated by connecting to the battery, the last results in memory will be lost.

PRINTING TEST RESULTS

The PL-430/460 also has the ability to print the last test result using the IR output at the top of the tester and the IR receiver of the optional printer, which is available from KYD company.

While the clamps are disconnected and with the printer on, align the IR output from the PL-430/460 with the receiver on the printer and press the hold the **MENU** button. Select **PRINT RESULTS** from the Option Menu by pressing the up or down arrow button then press the **ENTER** button to make the selection.

HINTS:

- 1. The tester will continue to send data once the **ENTER** button is pressed. If the tester output and the printer input are not aligned, all the data may not print. If data has not printed, press the **ENTER** button a second time to cancel the print Job. Verify alignment between the tester and printer; then try to print the test results again.*
- 2. It takes approximately 30 seconds to print the full test results. While printing, the "testing" will be shown on the screen.*

! IMPORTANT

Once a new test is initiated by connecting to the battery, the last results in memory will be lost and can't print it again.

Refer to the enclosed printer manual for more detailed printer information.

ADDITIONAL FEATURES

SURFACE CHARGE REMOVAL

If surface charge is detected while testing in the vehicle, the tester will prompt you to turn on the headlights to remove the surface charge. Follow the instructions on the display. After detecting the removal of the surface charge, the tester will prompt you to turn off the headlights, if you ensure the headlights is

off, press the **ENTER** button, the tester will automatically resume testing.

TEMPERATURE COMPENSATION

If necessary, the tester will prompt the user to choose if the battery temperature is above or below 32°F. Choose the appropriate selection by pressing the up or down arrow button; then press the **ENTER** button to make the selection.

VOLTMETER

The PL-430/460 can also function as a voltmeter. The operating range of the voltmeter is 0 -30 VDC.

! IMPORTANT

If the PL-430/460 is connected above 30 VDC, the circuit board may be damaged.

To use the voltmeter function, while the clamps are disconnected, press and hold the blue **MENU** button. Then use the arrow buttons to scroll to **VOLTMETER**, then press the **ENTER** button to make the selection.

Use the red and black clamps as probes. The tester can not detect negative voltage. If the tester is connected in reverse polarity, the tester will shut off. To turn off the voltmeter function, disconnect from the voltage source and press the **ENTER** button over two seconds. The tester will automatically shut off if have no operation for 30 seconds.

TROUBLE SHOOTING

IF THE DISPLAY DOES NOT ILLUMINATE

- ✍ Check connection to the battery.
- ✍ Battery may be too low to power the tester (below 2.0 volts). Fully charge the battery and retest.
- ✍ Internal 9-volt battery may need to be replaced. Replace the 9-volt battery and retest.
- ✍ If the tester does not power up when the **MENU** button is pressed and held, replace the 9V battery.

TROUBLE WITH PRINTING

- ✍ Make sure the printer is on.
- ✍ If the printer is on and won't print, check the display of the PL-430/460. The tester display will show that printing is in progress and show "**testing**" as they are printed.
- ✍ If the tester is showing that it is sending data as described above, abort the print, turn off the printer and replace the batteries and turn on the printer, align the tester and printer IR ports; then try to print again.
- ✍ Direct sunlight interferes with the IR interface. If the signal is not being received by the printer, remove the tester/printer from direct sunlight. If the characters printed aren't clear or some characters are missing, replace the batteries and retry.
- ✍ Make sure the printer selected is the one that you are trying to print to. Press and hold the **MENU** button to activate the Option Menu. Use the up/down arrow buttons to scroll to **PRINTER SELECT** then press the **ENTER** button to select.
- ✍ If unable to print after ensuring the tester is functioning, the printer is on, the batteries are good, and the IR ports are aligned, check the printer manual for further instructions or call **KYD** company at (0086-10-64388403) or e-mail to boristxz@163.com and bjkyd2008@163.com for additional assistance.

INTERNAL BATTERY REPLACEMENT

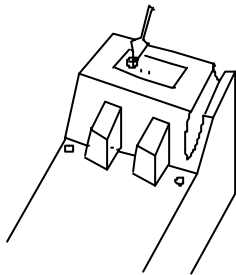
The **PL-430/460** uses a 9-volt battery (alkaline recommended) to allow testing of batteries down to 2 volt as well as supply power while the Option Menu is active. Should the internal battery require replacing, the display will show the following message when you connect to battery.

“INTERNAL BATTERY LOW”

It is recommended to change the battery as soon as the message is displayed. The PL-430/460 can test down to 6.5 volts when the internal 9-volt battery is not functioning.

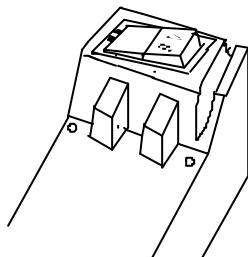
STEP 1

Remove the cover to the battery door using a small flat screwdriver.



STEP 2

Insert a 9-volt battery as shown, making sure the positive and negative terminals are replaced correctly.



STEP 3

Snap the back cover into place.