

# HZJQ-3 Transformer Oil BDV Tester



Dear user:

Thank you for choosing HZJQ-3 Transformer Oil BDV Tester.

We hope that this instrument can make your work easier and more enjoyable, so that you can get the feeling of office automation in the test and analysis work.

Before using the instrument, please read this manual, and operate and maintain the instrument according to the manual to prolong its service life. "Just a light press, the test will be completed automatically" is the operating characteristics of this instrument.

If you are satisfied with this instrument, please tell your colleagues; if you are not satisfied with this instrument, please call (0312) 6775656 to tell you to serve you at all times-Baoding Huazheng Electric Manufacturing Co., Ltd., our company will definitely make you satisfied !

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## **I. Overview**

Many power systems, railway systems, large-scale petrochemical plants and enterprises have a lot of electrical equipment whose internal insulation are mostly oil-filled insulation type, and therefore, test on insulating oil dielectric strength is common and necessary. To meet the needs of the market, we have developed and produced a series of insulating oil dielectric strength testers according to national standard GB/T507-2002, industry standard DL429.9-91 and the latest Electric Power Industry Standard DL/T846.7-2004 by ourselves. This instrument, by using a single-chip microcomputer as the core, can operate in full automation with high accuracy, greatly improving work efficiency and reducing the labor intensity of workers.

## **II. Key Function and Feature**

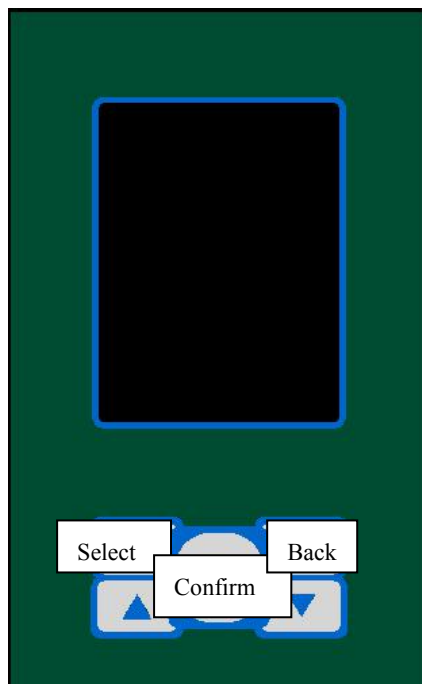
1. With a microprocessor, three cups of a body, automatically fulfill the withstand voltage test for oil circulation with a range of 0 ~ 80KV (including boosting, maintaining, mixing, standing, calculation, printing and other operations)
2. Display by large-screen LCD and prompt by English menu.
3. The instrument has the advantages of simple operation, the operators only need a simple setup, instrument will automatically set in accordance with 1-3 oil sample pressure test. Each oil sample, each breakdown voltage value and the number of cycles will be automatically stored, after completion of the test, the thermal printer can print out the breakdown voltage value and average value.
4. Maintain power down, can store 100 experimental results, and can display the current environment temperature and humidity.
5. Using single chip microcomputer control speed boost, voltage frequency accuracy to 50HZ, makes the whole process easy to control.
6. Equipped with over-voltage, over-current and limit protections to ensure the safety of operators
7. With the function of displaying the measured temperature and system clock.

8. Communicate with computer with a standard RS232 interface.

### III. Major Technical Indicators

- 1、 Output voltage: 0~80KV (optional)
- 2、 Voltage distortion rate: < 3%
- 3、 Voltage raising speed:0.5~5 KV/S (adjustable)
- 4、 Standing time: 15min (adjustable)
- 5、 Boosting interval: 5 min (adjustable)
- 6、 Boosting times: 0~ 10 time(s)
- 7、 Booster capacity: 1.5KVA
- 8、 Measuring accuracy:  $\pm 3\%$
- 9、 Supply voltage: AC220V $\pm 10\%$  50Hz $\pm 1$  Hz
- 10、 Power: 200W
- 11、 Applicable temperature: 0 $^{\circ}$ C~45 $^{\circ}$ C
- 12、 Applicable humidity: <75%RH
- 13、 Overall dimension: 585\*390\*410mm

### IV. Panel Description



▲ -- For increasing the setting value after pressing "SELECT"

▼ -- For decreasing the setting value after pressing "SELECT"

SELECT—for choosing functions (the item selected is on reverse display)

CONFIRM—for executing the function

BACK –for exiting the operating interface

## V. Operational Approach

### 1 Preparation before Test

① Connect the earth terminal (on the right side of the equipment) to the earth wire firmly before start the equipment.

② Sample the oil according to relevant standard. Adjust the electrode distance inside the oil cup with standard gauge. Clean the cup according to relevant requirements. Pour the sample into the cup and close the cap.

③ Switch on AC220V power supply after the above items are confirmed, ready for the test.

### 2 Testing

① Press the power switch and then enter the following interface:

<b>INSULATION OIL DIELECTRIC STRENGTH TESTER</b>		
TEMPERATURE : 30 °C	HUMIDITY:35%RH	09/07/06 08 : 08 : 45

<p><b>System Parameter Setting</b></p> <p><b>Start Testing</b></p> <p><b>Data Viewing and Printing</b></p>		
TEMPERATURE : 30 °C	HUMIDITY:35%RH	09/07/06 08 : 08 : 45

② Setting of system parameters:

Press “Enter” key and enter the following interface:

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <h3 style="margin: 0;">Setting of system parameters</h3> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>Boosting setting</b></p> <p>Stopping up voltage: 80kV</p> <p>Standing time:15 mins</p> <p>Boosting interval:5 mins</p> <p>Mixing switch:open</p> <p>Boosting times:6 times</p> <p>Boosting speed: 3.5kV/S</p> </div> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>Cup bit setting</b></p> <p>(1) : YES</p> <p>(2) : YES</p> <p>(3) : YES</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>Printing setting</b></p> <p>Automatic printing: Yes</p> </div> <div style="width: 45%; border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>Clock setting</b></p> <p>09/07/08</p> <p>08:09:56</p> </div> </div>		
Temperature:30 °C	Humidity: 35%RH	09/07/08 08:09:56

Setting of voltage boosting: the user may select based on actual demand.

Voltage of boosting stop: 10~80KV
Standing time: 0~15min
Interval of boosting: 0~5min
Stirring switch: On / Off
Boosting frequency: 1~6 time (s)
Voltage boosting rate: 0.5KV/S~5 KV/S

Cup bit setting: according to the user testing oil sample placed oil cup bit shall prevail.

(1): YES NO (2): YES NO (3): YES NO
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Print settings: Users choose for themselves.

Automatic Printing: YES NO
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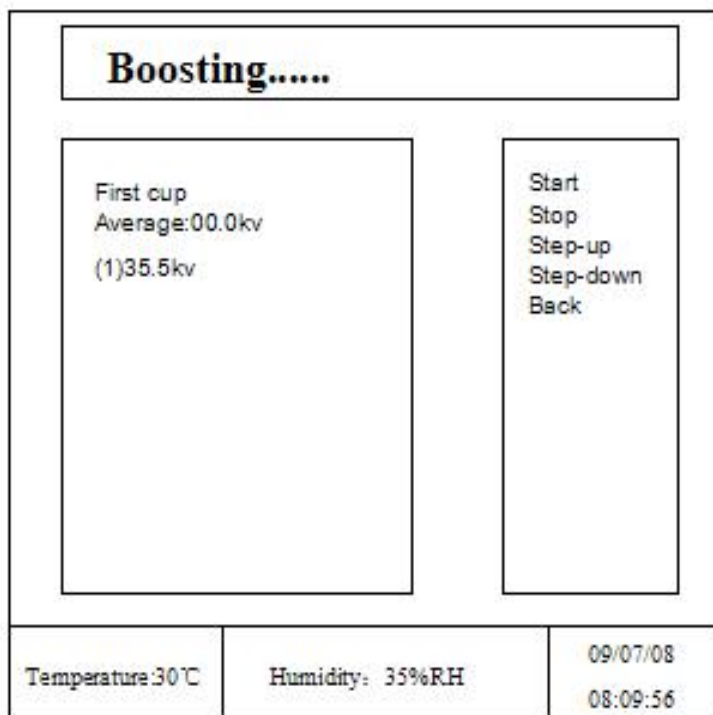
Clock settings: Users can make change when need to calibration time.

09/07/05 08:08:45
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Press "Esc" key to exit this interface after the setting is done.

③ Testing:

Press the "Select" key to select the "Start Test" menu and press the "Enter" key to enter the following interface:



Test from the 1th Cup starts, 1th cup bit lights, interface shows "Boosting" and "Stirring, Reducing voltage, and Delaying . . . . .", according to priority finish 3 cups bit, again from 1th to begin testing, until have completed the user setting the boost times, buzzer beep, press the "Back" key to return the initial interface.

④ Data viewing and printing:

Press the "select" key to select the "Data Viewing and Printing" menu and press the "Enter" key to enter the following interface:

<b>Data viewing and printing</b>		
<p>Third cup Average:33.1kv                      (1)36.9kv (2)25.7kv                      (3)35.1kv (4)29.9kv                      (5)35.3kv (6)35.9kv</p> <p>Temperature:30℃                      Humidity: 35%RH                      Date:09/07/05                      Time:08:08                      A total of 35, currently 01</p>	<p>Page Up</p> <p>Page Down</p> <p>Print</p> <p>Empty</p>	
Temperature:30℃	Humidity: 35%RH	<p>09/07/08</p> <p>08:09:56</p>

Select “Page Up” or “Page Down” and select the records to be printed and select “Print”.

## VI. Precautions

1. The selection, placing and electrode distance of the oil sample before testing shall meet relevant national and industrial standards.
2. The operators or other personnel are strictly forbidden to touch the casing after the power is switched on to avoid accidents.
3. The power shall be cut off immediately if any abnormal event is found during the operation.
4. New or newly cleaned oil cup should be breakdown 24 times before tested , oil cup with clean oil invasion of bubbles when without tested.

## VII. Maintenance

1. This equipment shall not be exposed in moist environment.
2. Keep the oil cup and the electrodes clean. Fill the cup with fresh transformer oil for protection during its idle. Check the electrode distance and check the tightness between the electrode tip and electrode bar screw thread before the cup is used again.
3. Instrument oil cup box high voltage electromagnetic switches are oil-filled insulation, there should be regular observation oil surface, through transparent switch shell, as oil surface at distances from the top of more than 10MM, should unscrew the plugs supplemented in line with the GB2536 25th of transformer oil.

## VIII. Oil Cup Cleaning Method and Common Fault Clearances

### 1. Oil Cup Cleaning Method

(1) Wipe the electrode surfaces and bars again and again with clean silk cloth.

(2) Adjust the electrode distance with standard gauge.

(3) Use petroleum ether (other organic solvents are forbidden) to clean three times. Each time shall follow the bellow procedures:

Pour the petroleum ether into the oil cup till the cup is  $1/4 \sim 1/3$  full.

Cover the cup mouth with a piece of glass cleaned by petroleum ether.

Shake the cup evenly for one minute with certain force.

Pour away the petroleum ether and dry the cup with a blower for 2~3 minutes.

(4) Use the oil sample to be tested to clean the cup for 1~3 times.

Pour the petroleum ether into the oil cup till the cup is  $1/4 \sim 1/3$  full.

Cover the cup mouth with a piece of glass cleaned by petroleum ether.

Shake the cup evenly for one minute with certain force.

Pour away the left oil sample and then the test starts.

## 2. Agitating Blade Cleaning Method.

(1) Wipe the agitating blade again and again with clean silk cloth until fine particles are not found on their surfaces. It is forbidden to touch the surfaces with hands.

(2) Use forceps to clamp the blade; put them into petroleum ether and wash.

(3) Use forceps to clamp the blade and dry them with a blower.

(4) Use forceps to clamp the blade; put them into the oil sample to be tested and wash.

## 3. Oil Cup Storage

Method 1 Fill the cup with good insulating oil after the test is finished and place it stable.

Method 2 Clean and dry the cup under the above procedures and then put it into a vacuum dryer.

Note: The oil cup and agitating blade shall be cleaned under the above procedures after the first test and tests with poor oil.

## 4. Common Fault Clearances

(1) Power light off, screen display off

① Check the plugging of power plug.

② Check the condition of the protector tube inside the power plug.

③ Check the socket electricity.

(2) No punch through oil cup

① Check inserting of connectors on circuit board.

② Check contacting of cap high-voltage switch.

③ Check attracting of high-voltage contacts.

- ④ Check break of high-voltage line.
- ③ Light display contrast
  - ① Adjust the potentiometer on the circuit board.
- ④ Printer failure
  - ① Check plugging of printer power line.
  - ② Check plugging of printer data line.