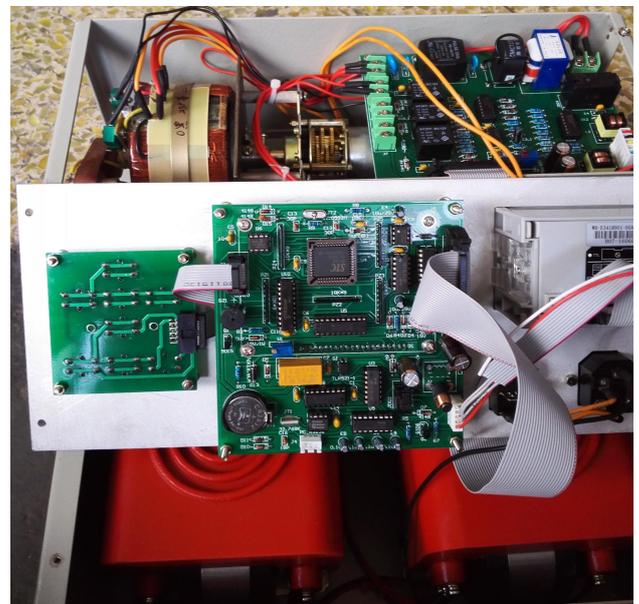


## HJT Series Fully Automatic Transformer Oil BDV Tester for 0 ~ 80KV~100KV



## I Introduction

HJT series fully automatic transformer oil BDV tester is applied to test the insulating oil's dielectric strength, which is designed as per the requirement of IEC156 Testing Method of Insulation Oil Medium Strength, which via proper programming, has got functions of auto boosting, step down, stirring, display and print out. After breakdown of oil medium, HV break off will operate within 10 seconds to enable an auto isolation of control system partly; this effectively safeguards the personnel security and equipment safety.

The automatic oil tester adopt industrial SCM to control, which is applied to integrate circuit, new model I/O connection, particular testing and anti-jamming technology which largely improve the machine's capacity .

### Main features:

1. Simple operation, automatically (can be finished just press on key)
2. Menu controlled. Input data can clear
3. Can store 99 groups' oil testing data which is convenient to reading and print. The testing data can keep 100 years under the condition of power off.
4. System time can go on running under power off;  
(The system time just for reference can not be the standard of timing)
5. Can upgrade software through RS232
6. High capacity of anti-jamming and high precision of testing.
7. Small volume, light which operated in the open air very conveniently.
8. The set shall be provided with smooth and continuous of output voltage between zero and maximum having no distortion of waveform.
9. Audio sound and visual signal will indicate at the instant of sample failure.

## II Technology and parameter data

1. Power Supply: 220  $\pm$ 10% VAC, 50HZ
2. Output: 60 KV,70KV, 80 KV, 100 KV
3. Capacity: 1.2 kVA (for 60kV), 1.6 kVA (for 80 kV), 2.0 kVA (for 100 kV)
4. Pressure increase rate: About 2 KVA/S
5. Pressure testing speed: 3%
6. Break down sensitivity : <2KV
7. Wave form distortion:  $\leq$ 3%
8. Time of break down:  $\leq$ 10ms
9. Working environment: temperature: 0 to 40 $^{\circ}$ C,  
humidity:  $\leq$  85% (Relative Humidity)
10. Storage environment: temperature: -20 to 60  $^{\circ}$ C, humidity:  $\leq$  75% (Relative Humidity)
11. Working Altitude: < 1500 meters. (If over 1500m, it can be customized)
12. Test cell: Glass, volume 300 to 500 ml, with protective cover and stirrer.
13. Electrodes: Stainless steel spherical 36 mm diameter/hemispherical 25 mm radius, 2.5 mm gap as per IEC-156.
14. Initial stand time of oil sample: 180 seconds

Intermediate stand time of oil sample: 60 seconds

String time of oil sample: 60 seconds

Number of consecutive test: 6

### 15. Dimension & Weight:

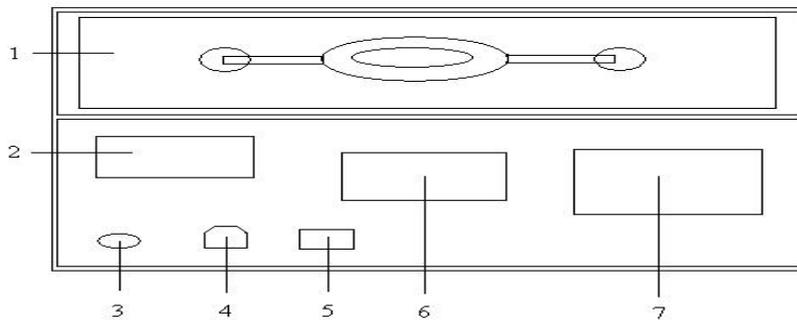
Before packed: 380 × 370 × 380 mm

Net Weight: 40 KGS

After packed: 480 × 470 × 465 mm

Gross Weight: 50 KGS

## III Control panel and introduction

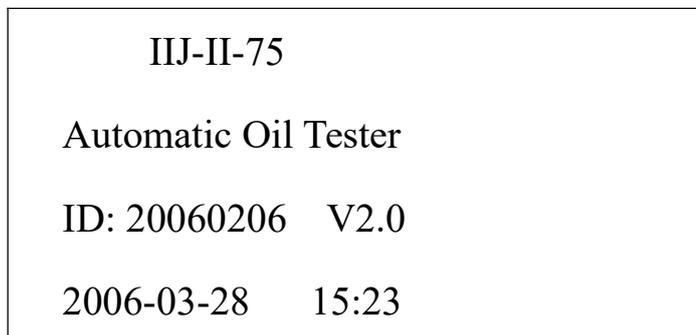


- 1-high voltage cabinet
- 2-printer
- 3- earth terminal
- 4-power socket
- 5-power switch
- 6-display
- 7- Keyboard operating zone

## IV Operation introduction

### 1. Prepare to start

To set the power switch to “OFF” position, connect earth wire in good condition. Connect AC 230V to device with special power wire, turn on the power, the LCD will display Model, name, code, system time, etc...basic information (starting logo)



### 2. Date Setting

2.1 set system time

2.1.1 Starting logo, press **【Menu】** button to enter main menu. There are three options including

setting system time, setting test data and data management.

Setting system time  
Setting test data  
Date management

2.1.2 move the shadow cursor to “setting system time” by pressing **【↑】** and **【↓】** buttons, then press **【enter】** to enter setting time interface.

Setting system time  
2006-02-28 10:12

2.1.3 move the shadow cursor to the data which is needed to change by press **【←】** and **【→】**, then change the data by enter **【↑】** and **【↓】**.

Setting system time  
2006-02-28 10;12

Setting system time  
2006-03-28 10:12

2.1.4. After revising, press **【enter】** to save data and return to previous menu.

Setting system time  
Setting test parameter  
Data management

2.2 Set testing model

2.2.1 Turn on LOGO, press **【menu】** to enter into main menu. There are three options: Setting system time”, “setting test parameter”, “data management”

Setting system time  
Setting test parameter  
Data management

2.2.2 Move shadow cursor to setting test parameter with 【↑】and 【↓】, then press the key of enter into parameter setting interface.

Setting system time  
Setting test parameter  
Data management

Setting testing parameter  
Testing serial:28  
Testing mode: user-defined  
**Highest voltage: 80KV**

2.2.3 Move shadow cursor to user-defined model with 【↑】and 【↓】 If choose user-defined model, then press enter key to revise.

2.2.4.1 If want to choose "IEC 156 mode". Move shadow cursor to "testing mode" with 【←】and 【→】. Press 【↑】 and 【↓】 to choose IEC 156.

Setting testing parameter  
Testing serial:28  
Testing mode: user-defined  
Highest voltage: 80kV

Press 【↑】 and 【↓】



Setting testing parameter  
Testing serial:28  
Testing mode: IEC 156  
Highest voltage: 80kV

press 【enter】

Setting system time  
Setting test parameter  
Data management

2.2.4.2 Move shadow cursor to user-defined model with 【↑】and 【↓】 If choose user-defined model, then press enter key to revise.

Testing times:06  
Settle time:010 seconds  
Stirring time: 010 seconds  
Standing time: 005 seconds

2.2.4.2.1 Move shadow cursor to the place where you want to revise data with 【←】 and 【→】 . Press 【↑】 and 【↓】 to revise.

Testing times:06  
Settle time:010minutes  
Stirring time: 010minutes  
Standing time: 006minutes

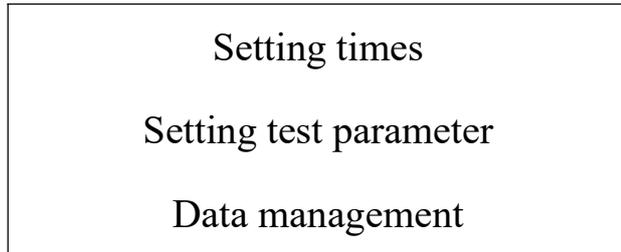
**Remark:** The preset data includes: highest voltage (usually no need modify), standing time, settle time, stirring time, testing times etc.

The highest pressure setting range is from 5KV to highest rated voltage and the smallest amplitude of accommodation is 1KV. Such as the highest voltage of 80KV oil tester can be set from 5 KV to 80KV; the highest voltage of 100KV oil tester can be set from 5 KV to 100KV; Standing time range is 0-999 seconds; Settle time range is 0-999 seconds; stirring time can be set 0-999 seconds;

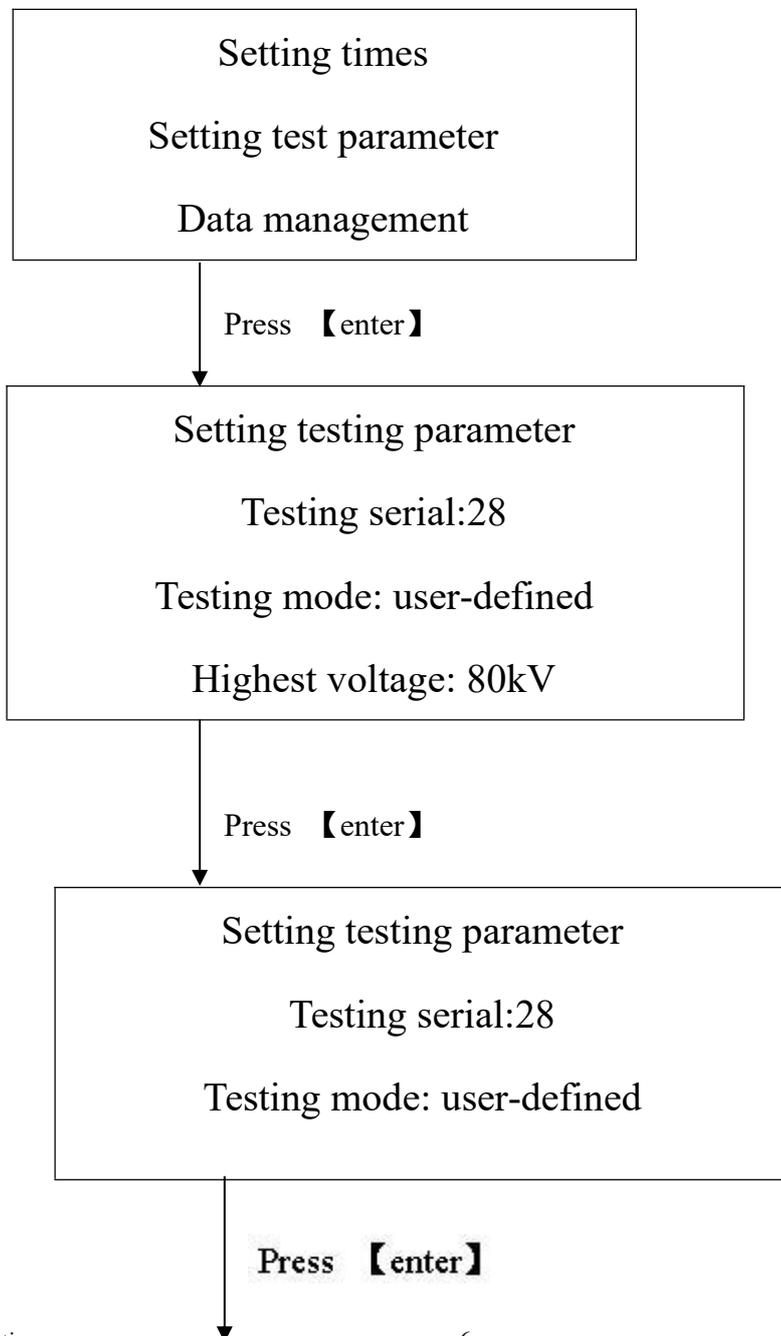
Testing times range is 1-6 times

### 2.3、Setting testing serial number

2.3.1、 Start LOGO, press **【menu】** button to enter in main menus. There are three choices: setting system time, setting test parameter and data management.



2.3.2 Move shadow cursor to setting test parameter with **【↑】** and **【↓】** , then press the key of enter into parameter setting interface.



Setting testing parameter:  
Testing serial:29  
Testing mode: user-defined  
Highest voltage: 80kV

2.3.3 Move shadow cursor to the place where you want to revise data with **【←】** and **【→】** . Press **【↑】** and **【↓】** to revise.

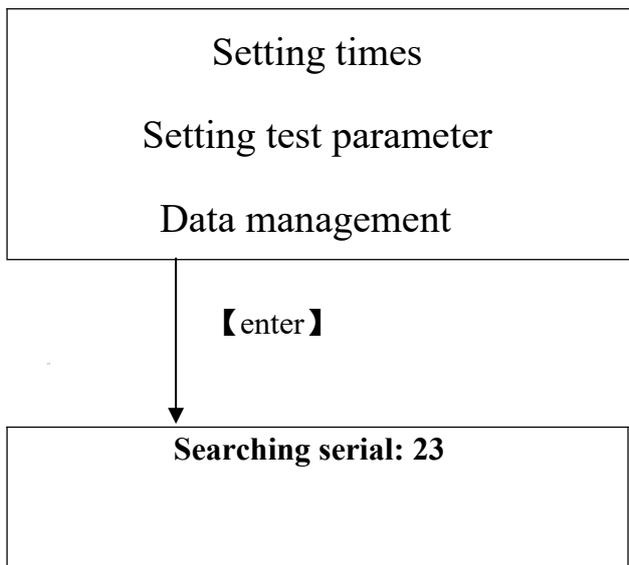
### 3. Data management

Data management including data searching and data print.

3.1 Start LOGO, press **【menu】** to enter in main menu. There are three choices: setting system time, setting test parameter and data management.

Setting times  
Setting test parameter  
Data management

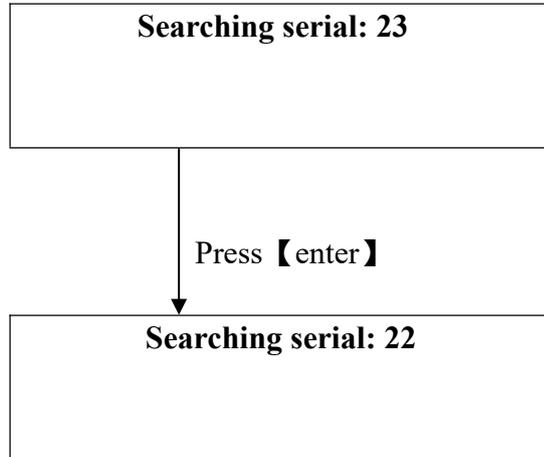
3.2 Move shadow cursor to data management with **【↑】** and **【↓】** , then press **【enter】** into data management mode. LCD show searching serial XX and the X is natural number from 0-9. The shadow cursor placed at the first X.



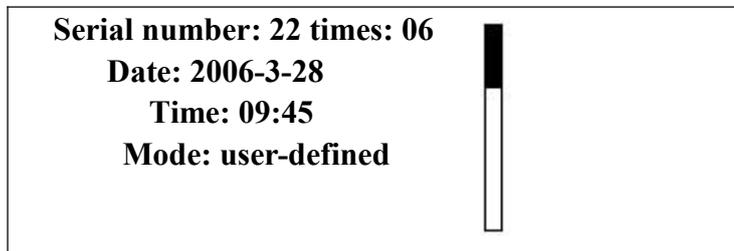
(Note: the power of printer should be on so that can be convenient to change paper)

3.3 Move shadow cursor to the data where you want to revise data with **【←】** and **【→】** . Press **【↑】** and **【↓】** to revise. ( For example: press **【→】** , **【↑】** and **【↓】** to revise data. Press **【menu】** into sales@hopufiltration.com

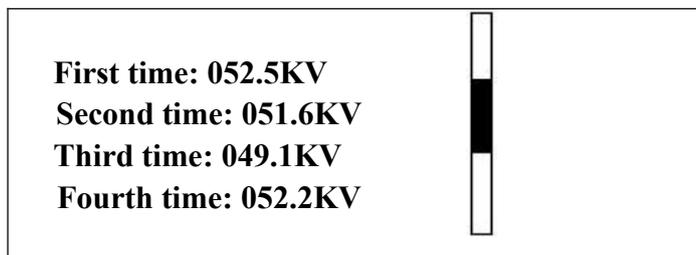
LOGO interface If don't need searching. )



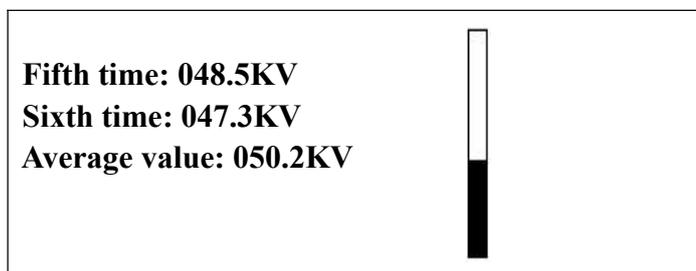
3.4 Press **【enter】** to searching mode after revising data, this tester show first page's test data of this serial number



3.5 Press **【↓】** you can search the test data of next page (second page) of this serial number.



3.6 Press **【↓】** you can search the test data of next page(third page) of this serial number.



(There's a black streaking on the right of LCD which shows the location of the current page in the whole pages. The black streaking on the top shows the first page, in the middle shows second page, at the bottom shows the third page.)

3.7 Under this condition, press **【←】** and **【→】** can search the data for other serial number (press **【←】** can search the previous serial number of current serial number, press **【→】** can search the

next serial number of current serial number

- 3.8 You can press [print] to print the data of current page at no matter which serial number and which page.
- 3.9 Under the print condition, press **【menu】** to stop printing and return to LOGO interface.
- 3.10 After searching/ print finished, press **【enter】** to return to the menu of searching serial number XX; Press **【menu】** return to LOGO interface.

#### 4. Start testing

4.0 The preparation before testing.

4.0.1 Open the top cover, put your hands on the two sides of the tester, take off the upper cover of organic glass insulating shield upwards slightly;

4.0.2 Put the oil cup filled with oil sample on the high voltage electrodes slightly, then switch on the Auto Micro Switch on the upper cover of organic glass insulating shield upwards slightly, otherwise it will show “Door Opened”.

4.0.3 Set the power switch to “OFF” position, and connect ground wire in good condition.

4.0.4 Connect AC230V to device with special power wire;

4.1 Start and enter Logo, press **【 Test 】** the tester will start to run as per setting model and parameter. (Take IEC 156 Mode as example) the display will be on standing interface (standing time is 300S as count down)

**Serial number:10 times:01**  
**Standing Time: 300 seconds**

4.1.1 The count down finish after standing 300 seconds. The tester get through main loop and the voltage increasing;

**Serial number:10 times:01**  
**Voltage increasing: 12.3KV**

4.1.2 When oil is broken down by high voltage or the voltage goes up to the maximum value, the tester will cut off main power immediately, LCD display closed. About 3 seconds later, LCD displays voltage decreasing;

**Serial number: 10 times:02**  
**Voltage decreasing: 58%**

4.1.3 LCD show Settling interface after voltage decreasing to zero

**Serial number: 10 times:02**  
**Settling: 58%**  
The first time test value: 58.6KV

4.1.4 The count down finished after settling time 300 seconds. LCD shows stirring interface. The tester stirs the oil sample automatically;

**Serial number: 10 times: 02**  
**Stirring: 30 seconds**  
**The first time test value: 58.6KV**

4.1.5 The count down finished after 30 seconds stirring time. The tester gets through main loop and the voltage start to increase;

**Serial number:10 times:02**  
**Voltage increasing: 22.5KV**

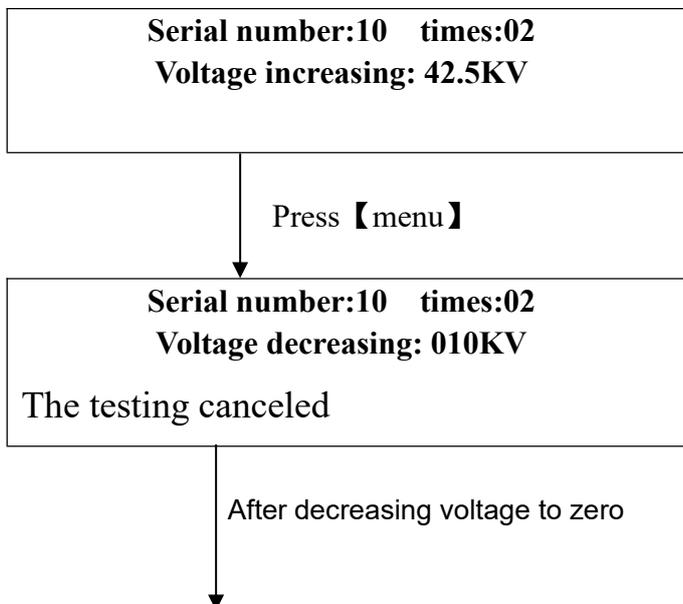
4.1.6 .....

After six times' testing, the tester will display and print test results. Press【 ↑ 】and【 ↓ 】can search and review the second page and third page of the testing for this time.

4.2 After printing, the printer stopped but the power is still on, meanwhile you can replace paper. LCD shows test result. Press【menu】 to power off printer and return to LOGO interface; Press【enter】 to power off printer and enter main menu directly for setting.

4.3 During testing, Pressing 【menu】 button can cancel this testing.

4.4 If the voltage is increasing, press 【 menu 】 to turn off the main power. LCD shows “testing cancelled, voltage decreasing...” After the voltage decrease to zero, the tester display LOGO.



**IIJ-II-100**

Automatic oil tester

ID:20060206 V2.0

2006-03-28 15:23

- 4.5 If the tester is under the condition of decreasing voltage, press **【menu】** , LCD display LOGO
- 4.6 If the tester is under the condition of timing or stirring, press **【menu】** , LCD display LOGO.
- 4.7 After canceling a test, you can still review and print the test results in this test. But the serial number at next time is the same as this time, unless you revise the test number manually.
- 5.0 The operation after power off (tester is off or power off suddenly) during testing.
- 5.0 During testing, the power is off (tester is off or power off suddenly). There are three menu options on display screen after turning on or get through electricity again: “(after 10S) go on testing” 、 “Testing again” 、 “Searching result of this time testing”.

**(after 10S) go on testing****Testing again**

Searching result of this time testing

**Notes:** Waiting for 10 seconds, then restart to turn on the tester after power off or power cutting.

- 5.2 Default option in system is “(after 10S) go on testing”. The tester will go on testing if no option is chose within 10 seconds.
- 5.3 Move shadow cursor **【 ↑ 】** and **【 ↓ 】** . 10S stop timing. “(after 10S) go on testing” changes to “(-S) go on testing”. Move shadow cursor to “testing again” then press **【enter】** and the tester begin testing of this serial number.
- 5.4 Move shadow cursor **【 ↑ 】** and **【 ↓ 】** to “Searching result of this time testing”. Press **【enter】** and the tester enter into the condition of data searching. The searching way is the same as 3.1---3.11.
- 5.5 Move shadow cursor to “(after --S) go on testing” with **【 ↑ 】** and **【 ↓ 】** then press **【enter】** so that can go on the testing which haven't finished before power off.
- 5.6 In 10S, press **【menu】** or move shadow cursor then press **【menu】** to return Logo interface directly.
- 5.7 Choose “go on testing” or “testing again” to testing. During testing, press **【menu】** which can cancel testing.(Same as 4.1-4.6).

## V、Notes & Cautions:

- (1) Please read the operation manual carefully before operating
- (2) Please check if the tester is well connected to earth before testing
- (3) It is forbidden to move or lift the testing cover in the course of testing to avoid injury by high

voltage. Power must be off before replace sampling oil.

- (4) Handle with care when taking off or closing high voltage testing cover!
- (5) If the tester works abnormally after insulating oil breaks down, please power off the tester for 10 seconds, then restart again.
- (6) After printing paper is exhausted, please refer to printer explanation part (or manual appendix) to replace printing paper to avoid damage of printer head.
- (7) Keep the tester far from moisture, dust and other corrosive materials, and keep it far away from high temperature sources.
- (8) Handle with care in transportation, don't put it upside down.

**Note:** The manual may be revised accordingly without further notice in advance. If any query, please feel free to contact us.

## VI、 Appendix 1

### How to sampling

(For reference only)

1. The standard oil sampling cup and the stir bar must be kept clean and dry.
2. The clean oil sampling cup and the stir bar should be dried before use. When drying them, the temperature should not be high, otherwise it's easy to damage sealing gasket of oil cup and plastic stir bar.
3. Please put the stir bar into oil sampling cup, fill in oil to 1/3 cup and then slightly rock the oil in the cup so as to clean the stir bar and cup. It is suggested to clean them twice or three times before testing.
4. Fill sample oil into oil cup, distance between oil surface and cup's top is about 8-12mm.
5. Clean oil outside of cup with clean lint-free soft cloth or zz paper.
6. Put the oil cup into high voltage cabinet carefully. Keep the hands of the operator clean or wear clean gloves.
7. After oil is put into oil cup, you'd better test it soon. The oil to be tested exposed in open air for long time may affect accuracy of test results.

## VII、 Appendix 2

### Install printer's paper/replace color ribbon

#### 1. Printing paper installation

Start and display LOGO, press **【enter】** button to enter main menu. Main menu has three options: "Set System Time", "Set Testing Parameter" and "Data Management". To press **【↑】** and **【↓】** button to move shadow cursor to "Data Management", press **【enter】** button to enter data management status, LCD will display "Testing Serial No.: XX". The power is on for printer at the moment.

Please cut the head end of new paper roll in a shape of triangle. Turn down front cover of printer, hold the spring clips which fixes the head of printer, pull out head about 2cm, press the triangle button

of the printer for 1 second, the printing paper begins to run, push the front end of paper into inlet, the paper will be rolled into the printer. When paper goes through the head of printer, switch off the power. Hold the two sides of paper axis slightly, install printing paper on the paper axis, get the head of paper go through paper outlet, close front cover.

### **Install the paper**

Note: before install the paper, pls close the electric power. The width of paper is  $57.5 \pm 0.5$ mm, thick: 0.07mm. the outside pathway of the paper which is install into the printer is less than 40mm. If the paper install outside of the machine, the outside pathway of paper is less than 80mm.

Catch the two side of the panel to open the panel. Then catch the two side of paper axis so that install the paper onto the bracket.

Open electric power (no under experiment), the printer is under on-line. Press the button above 2 seconds, the printer start to sending paper. Cut the front of paper into triangle corniform, then bent it. Put the paper into the printer, and the paper will be bring out by printer. When the printer has worked for a certain time, press the button and stop sending paper. The machine will be automatically turn on the light which show that the machine is under on-line.

### **2. Ribbon replacement**

After the ribbon being used for a period of time, the printed letters will be weak or unclear, you have to replace ribbon at the moment.

Open front cover of printer, hold the spring clips at the two sides of pulling board, pull the board outwards till ribbon box comes out, take off used ribbon, and replace a new one.

**Notice: Get the printing paper go through between ribbon box and ribbon.**