Huazheng®

HZSR-3
Automatic Water Soluble Acid Determinator

User Manual

Huazheng Electric Manufacturing (Baoding) Co., Ltd

Dear user:

Thank you for choosing HZSR-3 Automatic Water Soluble Acid Determinator.

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.Product Overview and Technical Index

1.Product Overview

The instrument is according to GB/T7598-2008 "in the operation of the transformer oil, turbine oil soluble acid assay (colorimetry), design and development, specifically for transformer oils, turbine oil, fuel and other petroleum products are water soluble acid (pH) determination.Instruments and high degree of automation, only need according to the regulations of the standards,inject oil and water, then the instrument will be in strict accordance with the standards prescribed by the sequential heating, oscillation, oil-water separation, extraction of double water samples, separately to join two indicator (bromocresol green and bromocresol purple), color, colorimetric determination, display and print the results.

The instrument while improve the work efficiency and test accuracy, reduce user contact sample and reagent, the maximum guarantee its safety.

No manual measurement, just put the sample injection and water into the sample cup, instruments, automatically filling, heating oscillation, determination, drainage process and display the results.

One time you start can determine 1~3 sample,can according to user requirements for determination of sample selection, easy to use and operate.

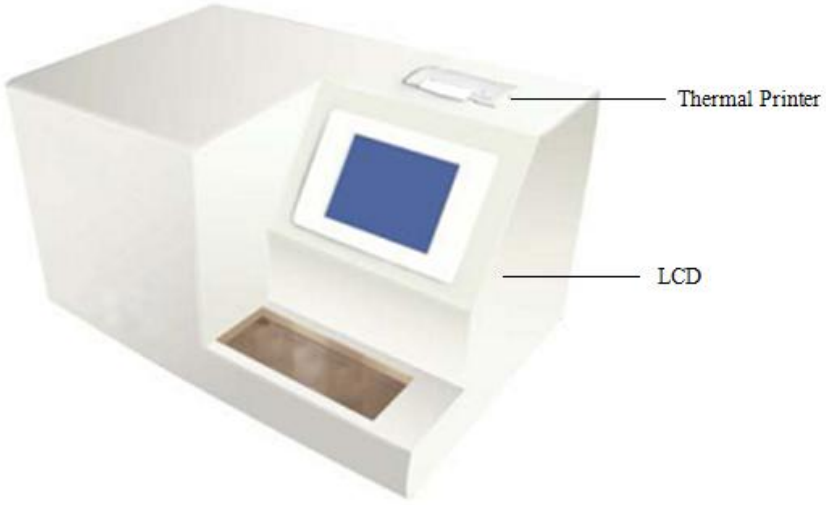
2.The Main Technical Indicators

1. Applies to GB/T7598-2008,standards
2. The test range: PH4.0～7.0
3. Measurement error:≤±0.05PH
4. Repeatability:≤0.05PH
5. Applicable temperature: 10 to 45 degree celsius
6. Suitable humidity: 30%～85%
7. Power supply: AC220V/50Hz

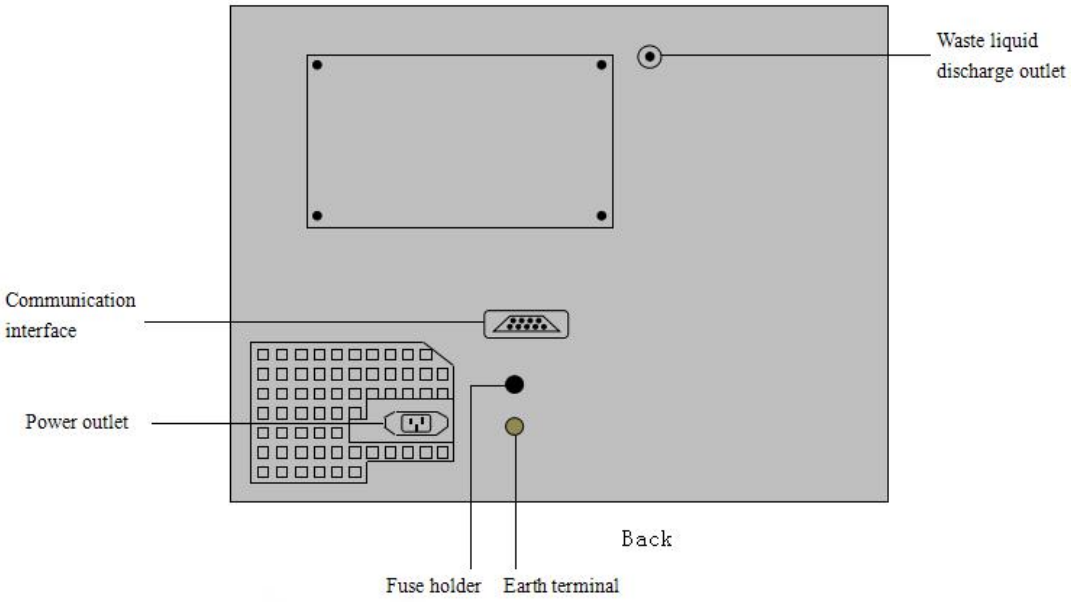
8. Power:500W

II.Structure and Installation

1.Host Structure



Front



2.Installation

1. Open box: open the box, remove the accessory box, counting attachments. Remove the hosts put on a solid work surface.

2. The ground wire end fixed to the ground terminal on the rear of the instrument, the other end reliably grounded.
3. Plug the power cord back end into the instrument panel power outlet, plug in prison.
4. The liquid hose liquid outlet, the rear panel hose at the other end in a suitable liquid bottle.
5. Open the front panel will be marked with bromocresol green peristaltic pump tubes connected to the indicator bromocresol green bottle, then marked with the peristaltic pump of bromocresol purple tube connected to the indicator bromocresol purple bottle. Three respectively under the pressure of the peristaltic pump pressure arm and lever lock. Close the front doors.

Safety tips:

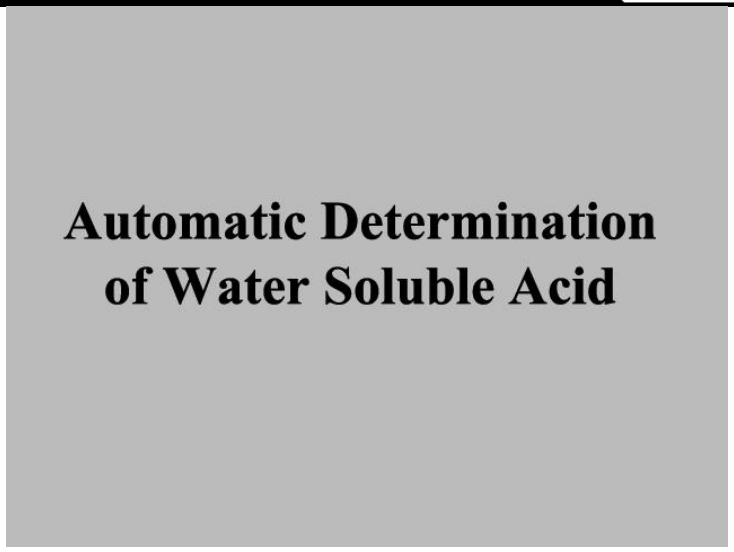
1. The instrument use ~ 220 v power source, instrument shell should be through the grounding terminal is reliable, to prevent electric shock accident!

2. In the process of instruments measuring, should be wary of contact with moving parts in case of any part of the human body mechanical injury accident!

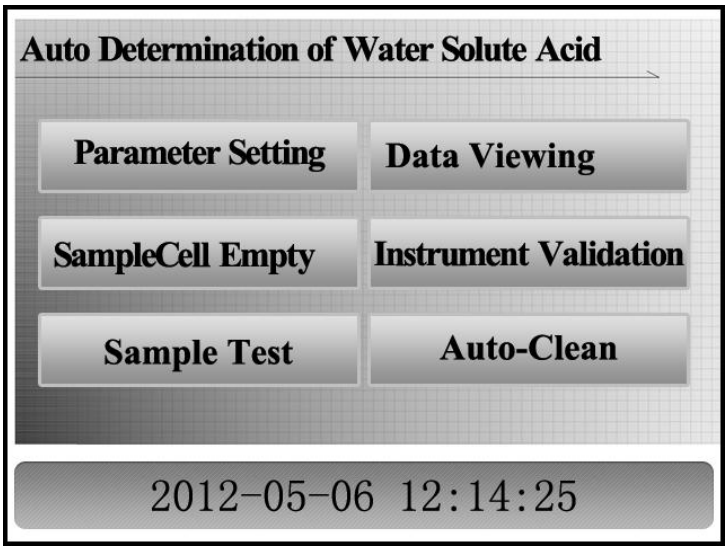
III.Instrument Operation

1.Boot Screen

Touch the instrument front panel power switch, instrument into the main interface as follows:



Meantime, instrument for self-inspection and initialization reduction, to display instructions after the completion of the main interface, the user can operate:



2.Add Sample

Open the cover on the instrument, internal fixation with 1#~3# a total of 3 specimen bottles maximum simultaneous determination of 6 samples. Each sample bottle graduated cylinder into the first 50ml boiled for 5 minutes in advance of deionized water, then with the other tank injected into 50ml oil samples to be tested, cover the lid.

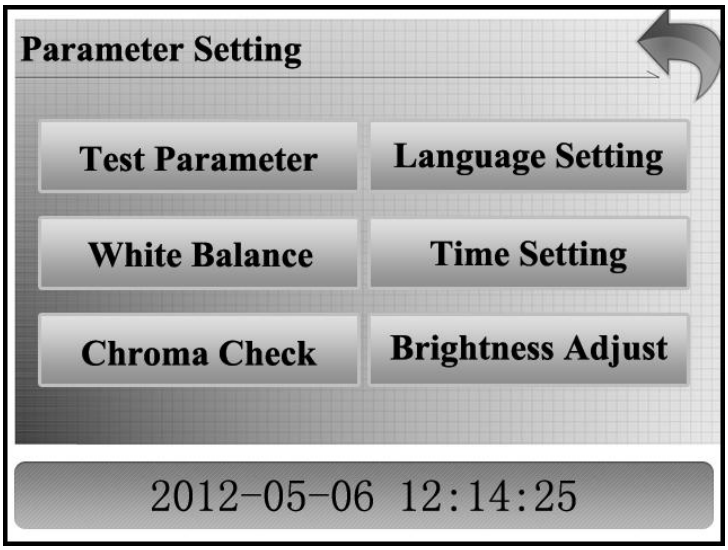
3.Place Disposable Cuvette

According to the number of under test samples, take 3 ~ 9 disposable

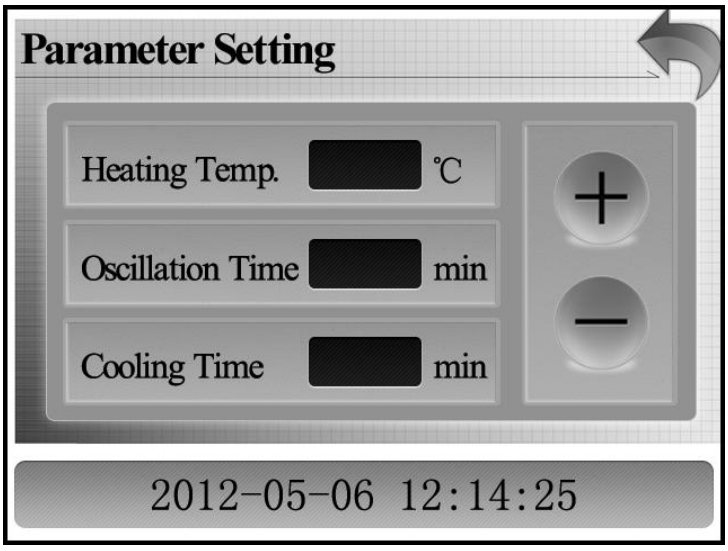
reaction cup, each of three columns, in the order from left to right, mounted on the instrument at the reaction of the cup tray hole.

4.Parameter Setting

Touch the display screen on the "parameter setting" button, enter the following interface:



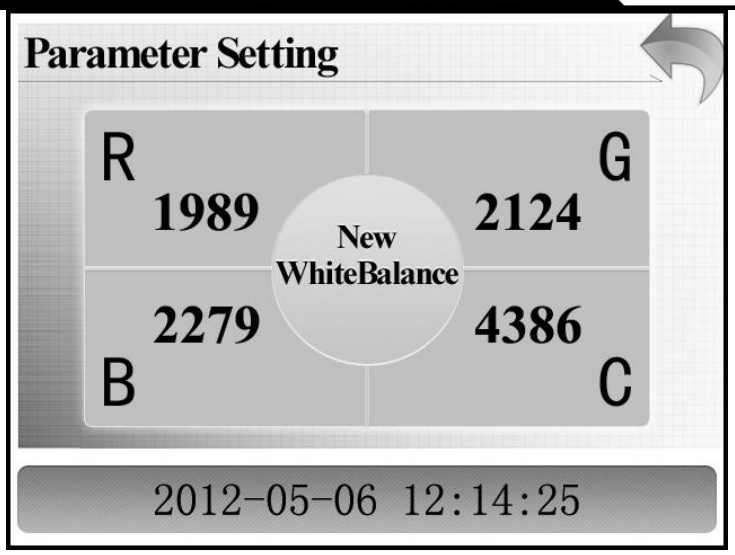
1. Test parameter setting



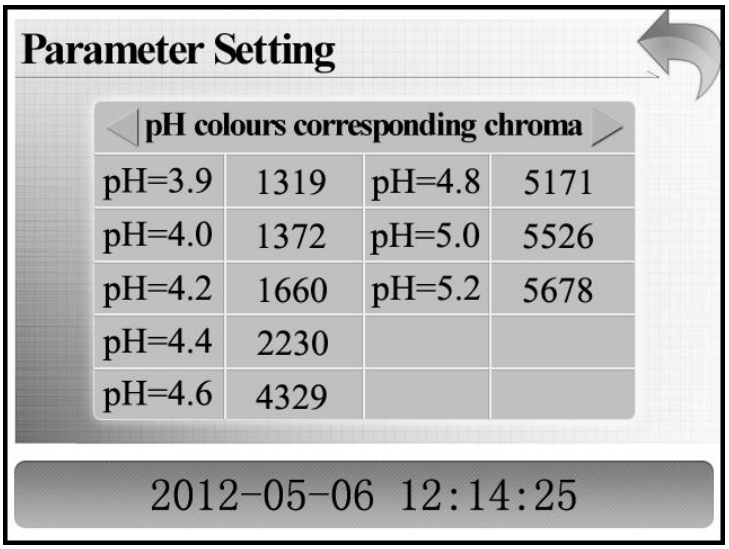
Instrument parameter setting interface

Adjust the parameters, click on the blank boxes need to modify the parameters, and then touch "+" or "-" button, you can increase, decrease the parameter values.

2. Correcting white balance

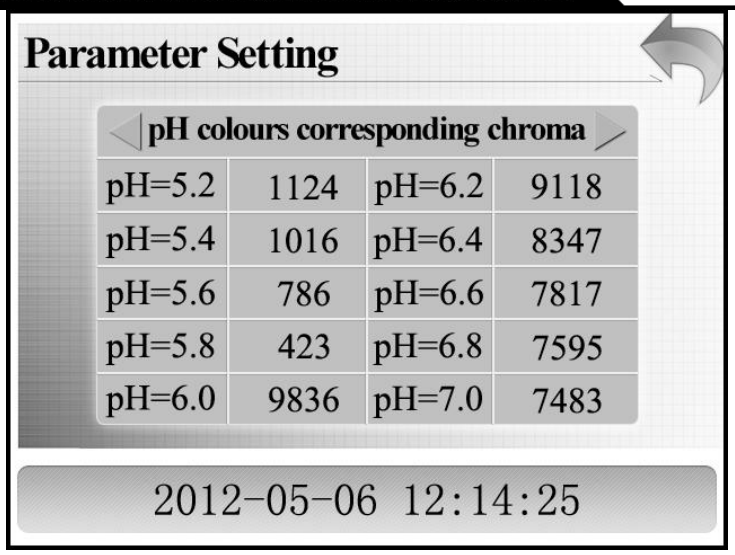


3. Chromaticity query



Bromocresol green-tints of the corresponding color scale queries

Touch "PH levels corresponding to the chromaticity value" on both sides of the arrow, you can switch chromaticity value query interface.



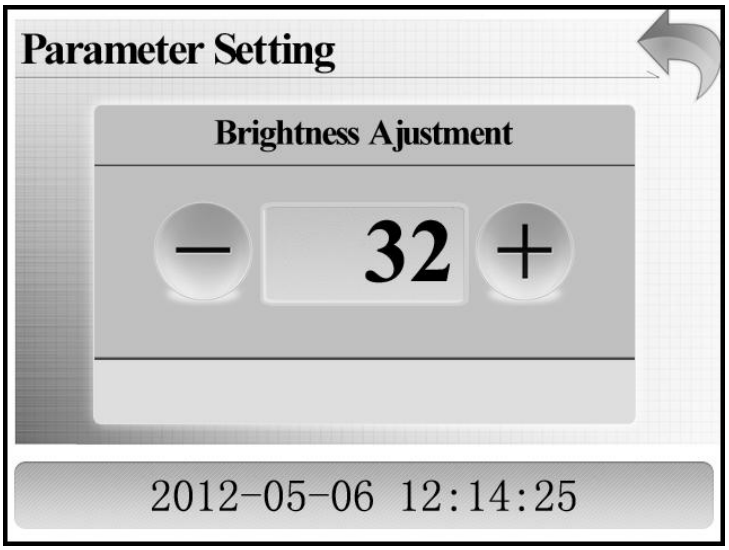
4. Language selection

5. Time setting

Touch the display screen on the "time set" button, enter the following interface:

After entering this interface, in the blank can appear "20?? -?? -???? :?? :??" Words, click on the corresponding numeric button input the right time, press the "confirm" key, modify the time and return to main interface.

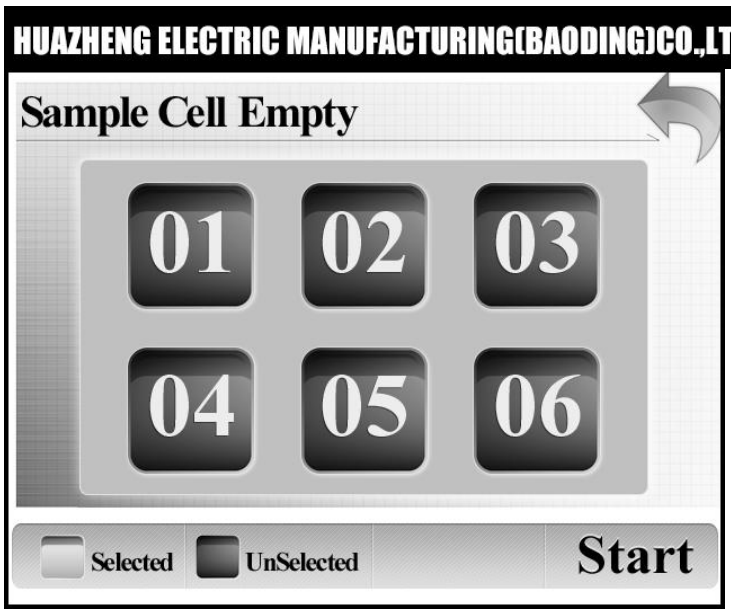
6. Display brightness inquiry



Note: white balance correction, chromaticity query for factory set up good, users cannot modify without permission, modified in normal use.

5.Sample Cup Empty

Light touch < sample cup empty > key, enter the following interface:



Light touch button < 01 >, < 02 >,the bottom right box there is "√" displays,indicate instrument will empty the 1th and 2nd oil sample of the oil sample cup

Tap the bottom of <start empty> button, the instrument automatically starts to empty sample cups.

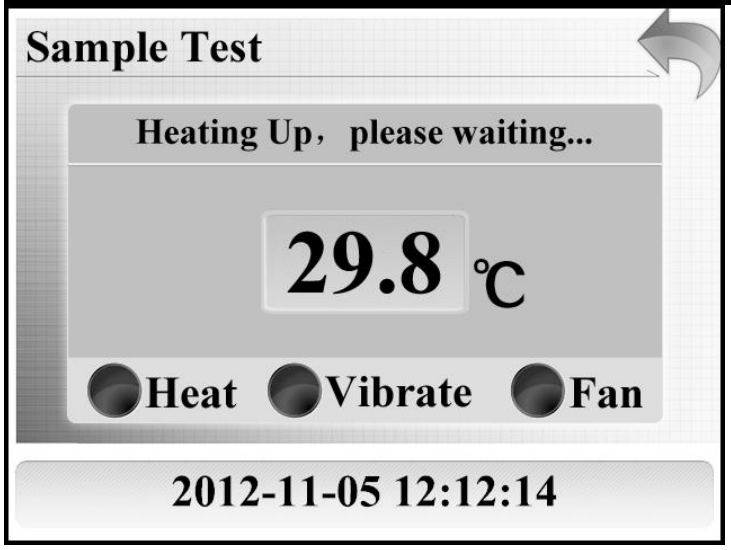
Pending completion of the action, the display automatically switches to the main interface.

6.Sample Determination

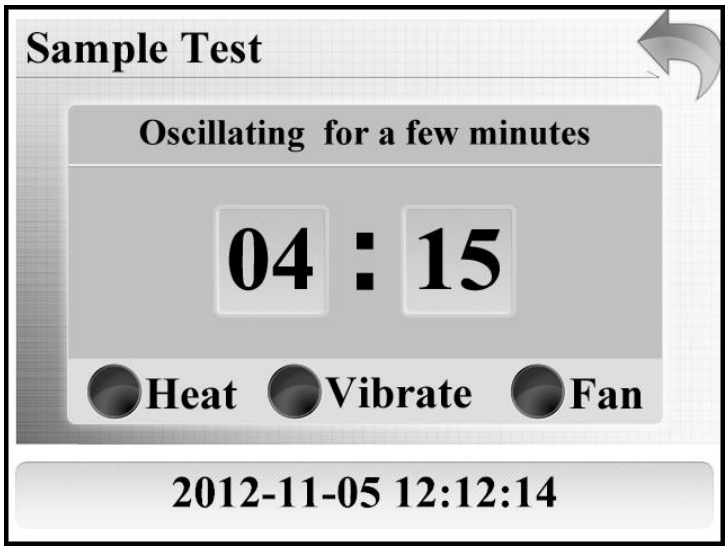
Light touch <sample test> key, first into the sample cup selection interface, operation method is the same as the sample cup empty.

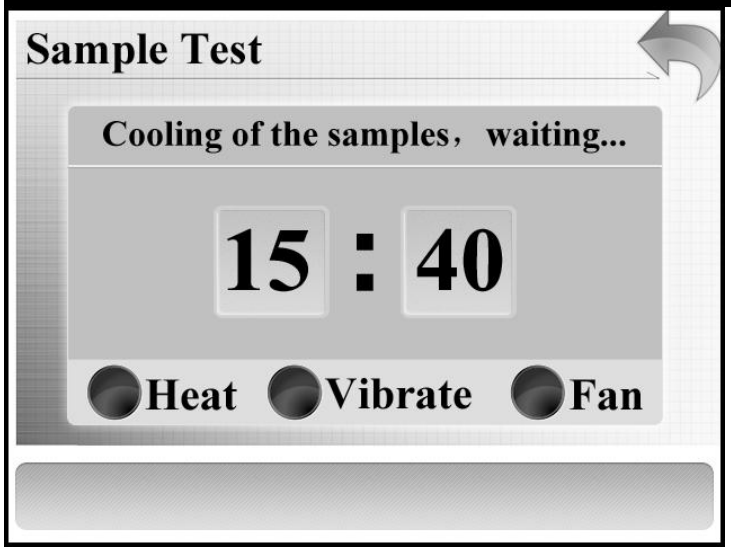
Choose the right test sample cup,click <start>, enter the testing interface,the instrument will follow the steps of the standard,in order by one time heating,vibrate,static,pumping water sample,coloration, colorimetric,judgment pH value,until all the samples of all the pre-set measurement is completed, the instrument displays the measurement results and storing, this interface will be automatically transferred to the <data query> interface;

1. Heating, the required testing of the specimen temperature up to 80℃

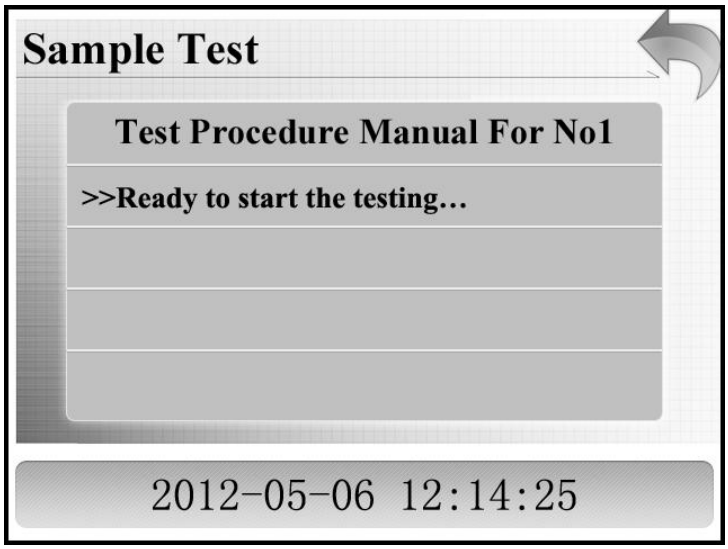


2. Vibrating for 5 minutes, while accompanied by a fan for cooling,radiating,vibrate has been completed,is going to rest for a period of time, make its sample stratification and cool to room temperature.

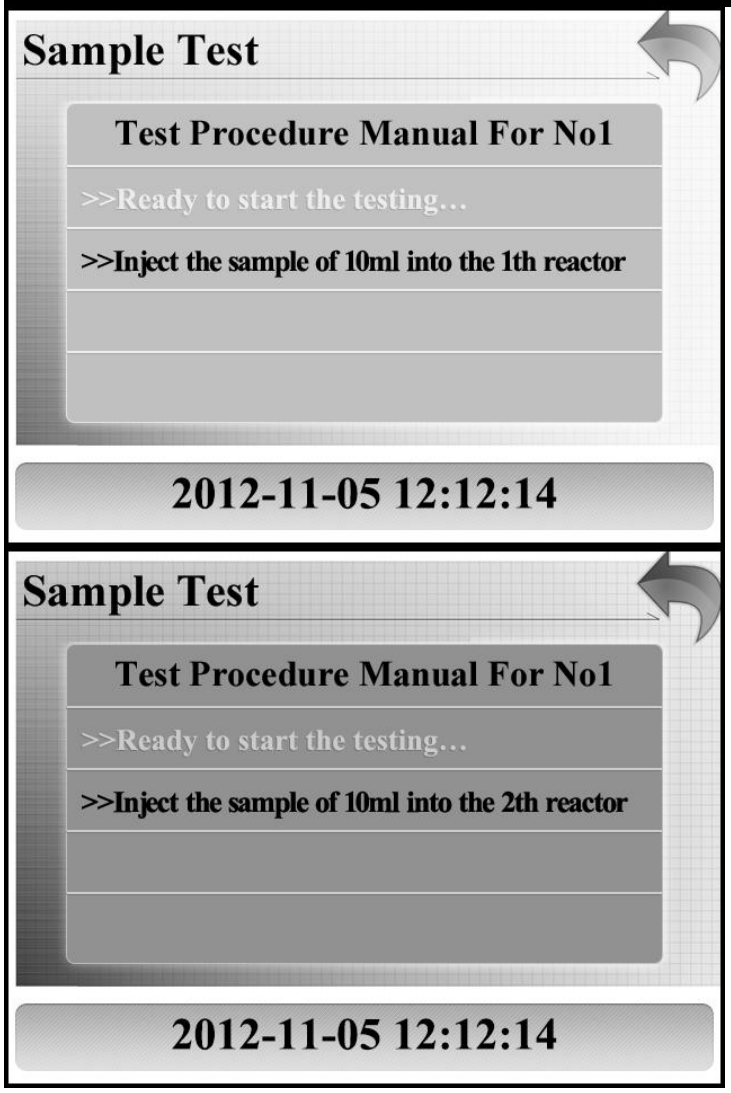




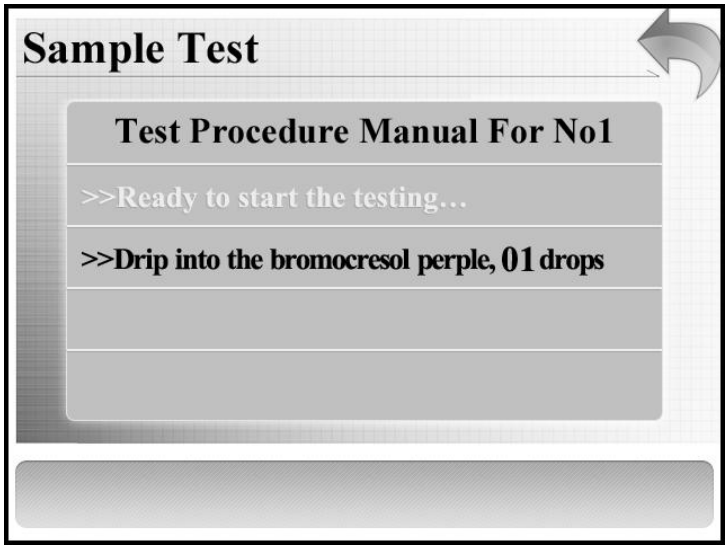
3. Start test

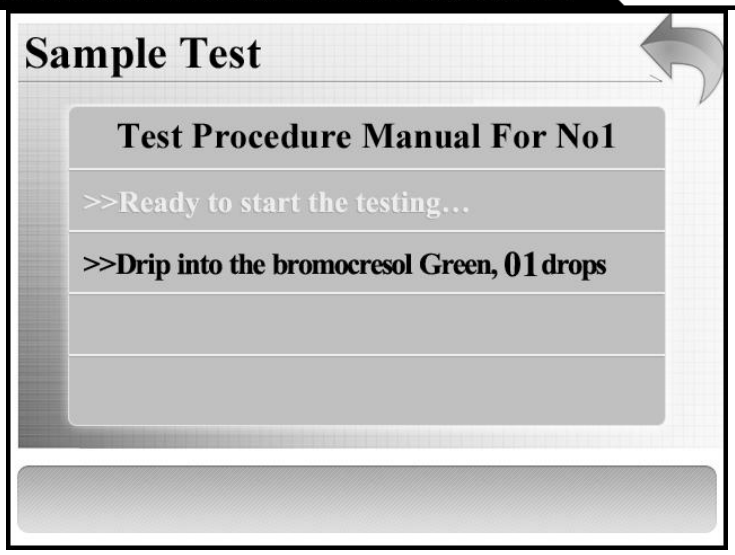


Open the valves for the oil sample to test, taking samples,respectively injection two reaction cup (the reaction of the first injection sample cup, said reaction cup 1; the second injection sample cup said reaction cup 2)

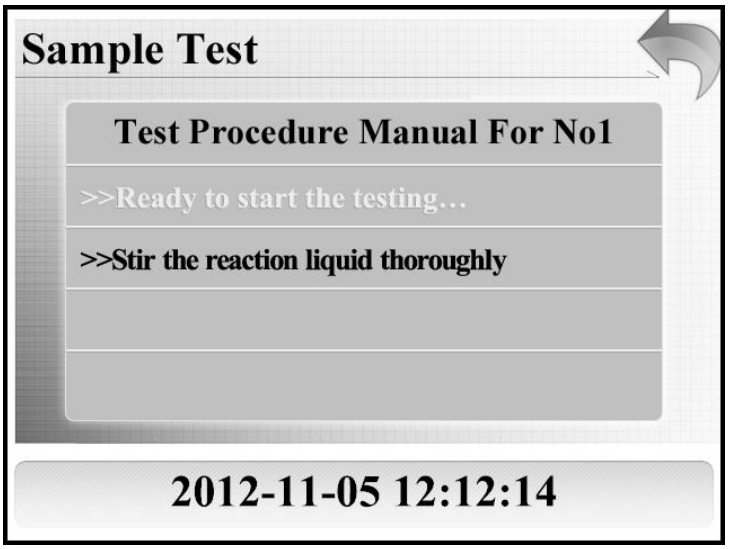


Start the titration indicator bromocresol green and bromocresol purple, careful calculation, two kinds of indicator droped nine drops, respectively.





To stir, make its full reaction, rest for a few seconds

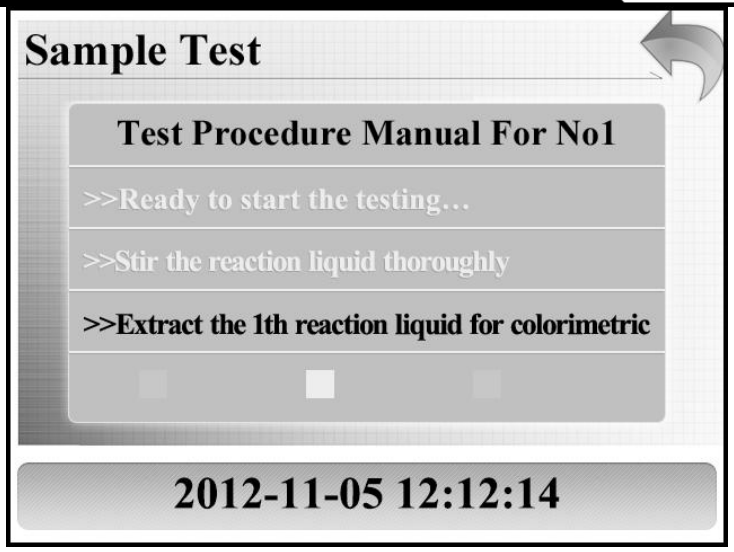


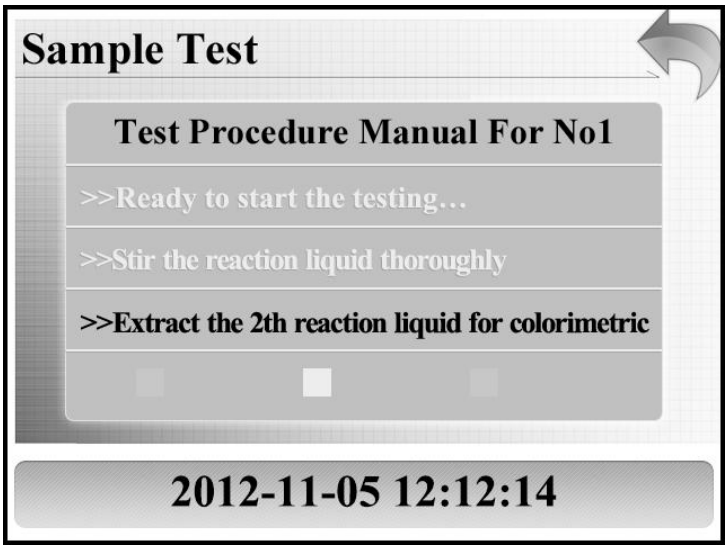
Extract two kinds of reaction solution in turn, to the cuvette, for colorimetric test.

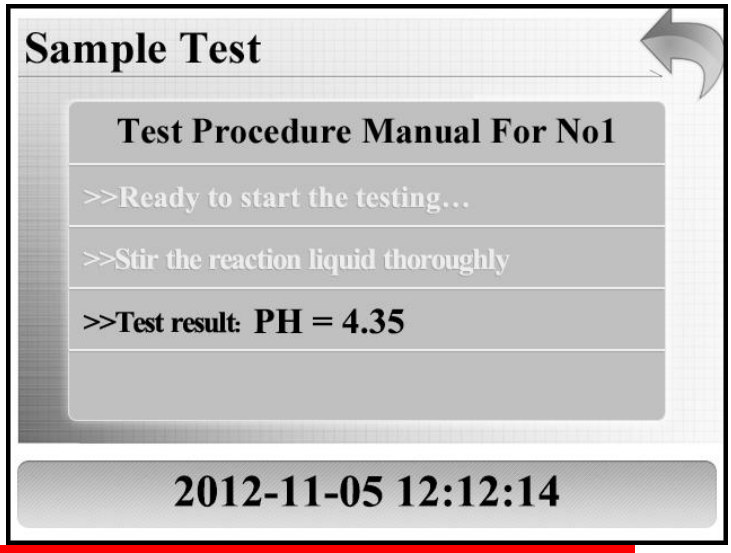
Note:

Drip into the bromocresol green sample, said reaction liquid 1;

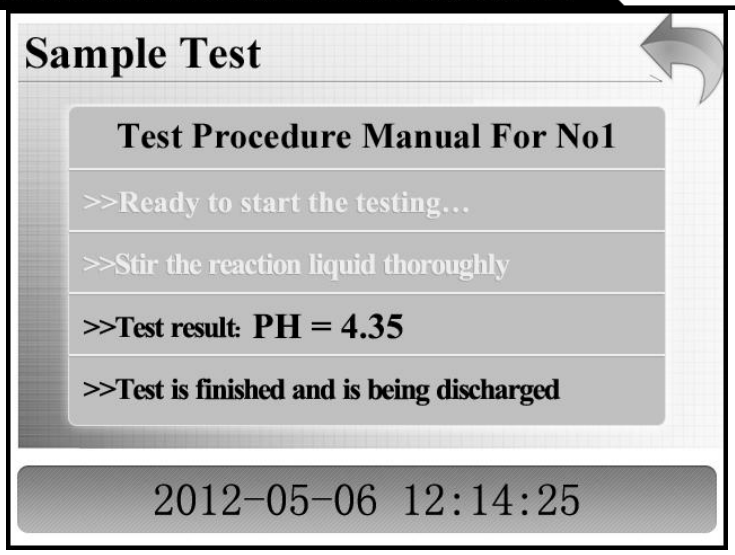
Drip into the bromocresol purple sample, said reaction liquid 2;







After the completion of the tests, the reaction liquid discharge.

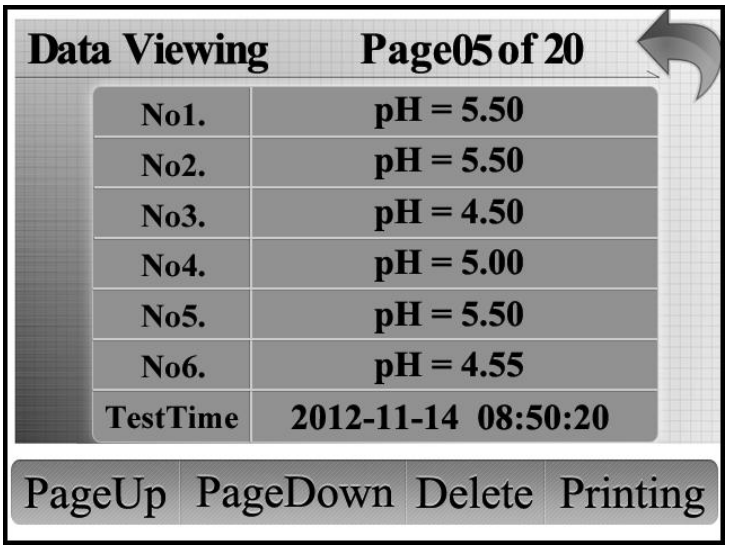


At this time the 1st oil sample test is completed, the test results show that the pH of 5.80.

The above for a sample of water-soluble acid value of the whole test process.

7.Data Query

Light touch < data query > key, enter the following interface:



< Previous page >, and < next page >: browse the testing data;

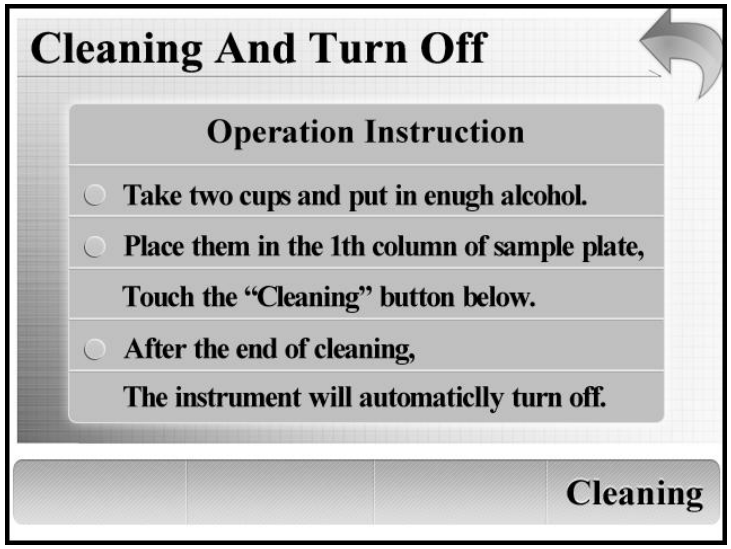
< Delete > : delete the current screen data;

< Print >: print screen currently displayed data

Top right corner arrow: return the main interface;

8.Cleaning Off

Touch screen for "Cleaning off" button, enter the following interface:



According to the display screen tips operation, taking two one-time sample cup, adding suitable amount of ethanol, placed the position of No1., light touch < start > key instrument for cleaning;After the end of cleaning, the instrument automatic turn off.

<Exit> key,return to the main menu.

9. End of the determination, remove the disposable Cuvette, discard; open the instrument cover and unscrew the sample bottle, use detergent and hot water wash, dry, spare.

10. Open the front doors, release the pressure peristaltic pump arm levers.

IV.Factory Setting

According to the GB/T7598-2008 standard, the instrument measured by colorimetric method of water-soluble acids content in oils, the results indicated by a PH value. Before leaving the factory, to accurate calibration of instruments, the standard solution PH value corresponding to the chromaticity value stored in the instrument control system, test sample of chromaticity values and their comparison, can get the water soluble acid value of the sample size. The main work is as follows:

Configure standard PH value solution

1) Reagents and materials

①Demineralized water or two distilled water, after boiling, pH value is 6.0~7.0, the conductivity is less than 3 μg s/cm (25 ℃)

②Potassium hydrogen phthalate :standard reagent

③Potassium Phosphate Monobasic:standard reagent

④Sodium hydroxide: analytical reagent AR

⑤Hydrochloric acid: AR, the relative density is 1.19

⑥Anhydrous sodium dihydrogen phosphate: organic pure

⑦pH indicator: the bromocresol green, bromocresol purple. Its composition and color ranges see table 1

Table 1 Preparation of indicator

Indicator name	Colour range	Method
bromocresol green	3.8～5.4 yellow～blue	Make 0.1 g bromocresol green and 7.5 mL0.02 mol/L Sodium hydroxide to grind together,demineralized water diluted to 250mL, 0.1mol / L Sodium hydroxide or Hydrochloric acid,adjusting a pH of 4.5 to 5.4
bromocresol purple	5.2～6.8 yellow～purple	Make 0.1g bromocresol Purple is soluble in 9.25mL0.02mol/L sodium hydroxide，0.1mol / L Sodium hydroxide or Hydrochloric acid,adjusting a pH of 6.0

2)Preparation of buffer solutions

①0.2mol/L Potassium hydrogen phthalate solution

Weigh accurately 100 ℃ ~110 ℃ in advance of dry potassium hydrogen phthalate 40.846g, dissolved in water, move into the 1000mL volumetric flasks, and then diluted to scale, and shake well.

②0.2mol/L Potassium Phosphate Monobasic solution

Weigh accurately 100 ℃ ~110 ℃ in advance of dry Potassium Phosphate Monobasic 7.218g, dissolved in water, move into the 1000mL volumetric flasks, and then diluted to scale, and shake well. pH is 3.8～7.0,interval 0.2

③0.1mol/L Hydrochloric acid solution

Measuring 17 ml concentrated hydrochloric acid into 1000 ml volumetric flask, dilute

with water to scale (the solution concentration of about 0.2 mol/L), reoccupy according to GB/T601 calibration standard of the preparation of alkaline solution, prepared according to 0.1 mol/L HCL solution.

④0.1mol/L potassium hydroxide solution

Quickly said in 8 g sodium hydroxide into small beaker, add 50 ml ~ 60 ml distilled water to dissolve it, into 1000 ml volumetric flask, add 2 ml ~ 3 ml10 % of barium chloride solution with precipitated carbonates, diluted to scale, let stand for clarification, take the supernatant fluid (the solution volume is about 0.2 mol/L), with the standard of GB/T601 preparation acid solution for calibration, mixture of 0.1 mol/L sodium hydroxide solution.

⑤pH standard buffer solution

According to the requirement of table 2 to prepare pH standard buffer solution

Table 2 prepare pH standard buffer solution

PH	0.1mol/L Hydrochloric acid/ml	0.2mol/L Potassium phthalate monobasic/mL	0.1mol/L Sodium hydroxide/mL	0.2mol/L Potassium Phosphate Monobasic/mL	Dilute to volume/mL
4.0	0.1	25			100
4.2		25	3.0		100
4.4		25	6.6		100
4.6		25	11.1		100
4.8		25	16.5		100
5.0		25	22.6		100
5.2		25	28.8		100
5.4		25	33.1		100
5.6		25	38.8		100
5.8		25	42.3		100
6.0			5.6	25	100
6.2			8.1	25	100
6.4			11.6	25	100
6.6			16.4	25	100

6.8			22.4	25	100
7.0			29.1	25	100

V.Care and Maintenance

1.Replacement Reagents

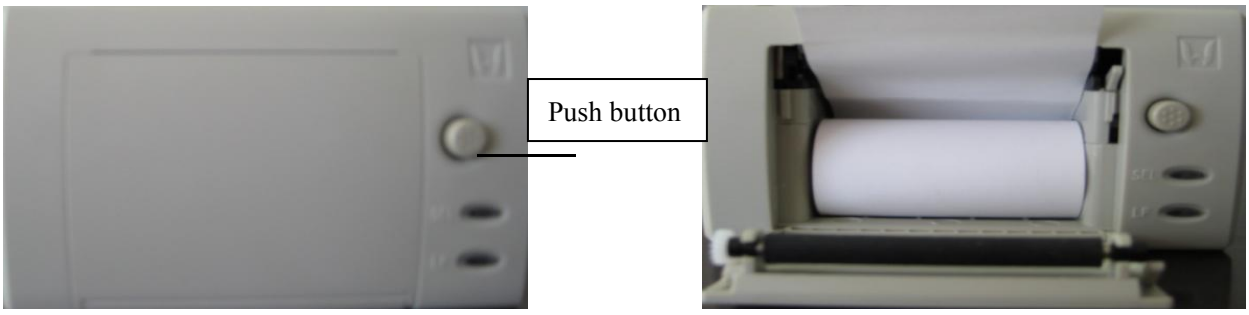
Indicator bromocresol green and bromocresol purple exhausted after take out the original bottle, replace, and the same back in place.

2.Replace The Peristaltic Pump Tube

Turn on the instrument door, turn the peristaltic pump of the lever to the right, loosen pump tubing clamps, remove the old tubing wear, quit the old pump hose on the hose clamps, set of tubes for a new pump, is provided then the new pipe into pump body, setting down the pump tube back in place with a lever.

3.Replacing Printer Paper

Press the button to open the printer cover will be printed,according to the illustration on the cover of the printer in the printer and close the front cover.



Left **Right**

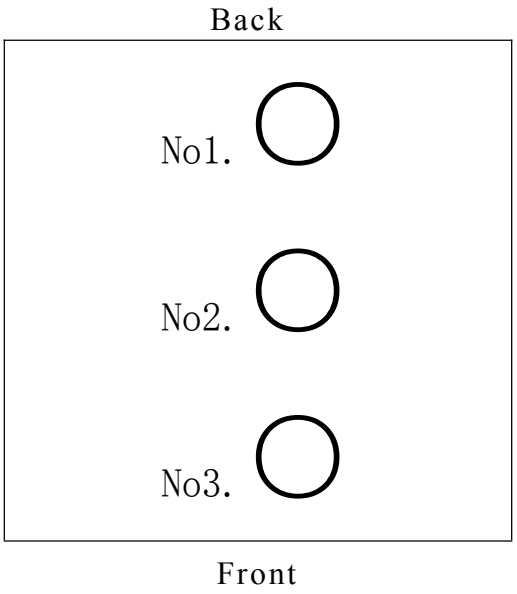
VI.Points for Attention

1.A peristaltic pump

Instrument after using, please loosen the peristaltic pump pressure arm, prevent the peristaltic pump the hose is long-term extrusion pressure arm, and cause damage.

2.Test water

Before test sample,deionized water (or distilled water) to boiling，out of the carbon dioxide.



VII.Packing list

No.	Name	Quantity
1	Main Engine	1
2	Neutralizer	2
3	Cas-wash	1
4	Stabdard Acid	1
5	Alcohol	1
6	Neutralizer	1
7	Cas-wash	1
8	Neutralizer	1
9	Indicator	1
10	Extract	1
11	Sample cup	4
12	Power line	1
13	Alcohol cover	1
14	Cas-wash cover and Neutralizer cover	1
15	Connecting pipe	2
16	Print paper	2
17	100μl micro injector	1
18	Extract	2
19	Indicator	1
20	Fuse pipe	2
21	Stirrer	5