



Automatic Oil Acidity Tester LB-100AT

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1. Safety Measures

- The sample cup must be cleaned with petroleum ether or detergent and dried with a fan before use.
- During the test, the concave surfaces on both sides of the sample cup must be kept clean to avoid affecting the test accuracy.
- When putting the experimental oil cup into the cup tray, ensure that the bottom of the cup is completely placed in the cup holder of the tray to prevent the cup from being placed incorrectly to affect light absorbance detection.
- When using it for the first time or when it has not been used for a long time, adjust the titration rate to 1 drop per second in the **[Neutralization Titration]** of **[Instrument Self-Test]**. If the acid value of the sample is relatively large, it can be adjusted to 3 drops in 2 seconds.
- At the end of the experiment, the neutralization solution and extraction solution bottles should be sealed and stored in a shading place to avoid deterioration.
- When the scrubbing liquid produces precipitation, the scrubbing liquid should be reconstituted (5-6 pieces of potassium hydroxide add about 60mL of distilled water or ethanol) to avoid affecting the filtering effect.
- Clean the sediment in the neutralization bottle in time to avoid blockage of the pipeline.
- After each test is completed, if there will be no other test on the same day, be sure to clean the pipeline before shutting it down to prevent the neutralizing liquid in the pipeline from crystallizing, blocking the pipeline and needles, and bringing you unnecessary trouble.
- If the instrument has not been used for a long time, fill the neutralization bottle with absolute ethanol and clean the neutralization pipeline to avoid crystallization of the neutralization solution and block the pipeline.

2. Introduction

Automatic Oil Acidity Tester LB-100AT measures acidity levels from 0.001 mg KOH/g to 99 mg KOH/g. It supports simultaneous testing of up to six samples through automatic switching between sample cups. Our Oil Acidity Tester is equipped with a high-speed thermal dot printer for fast result printing, ensuring efficient reporting. It also features a 7-inch color LCD with an english input menu, providing a user-friendly interface for easy navigation.

3. Features

- Automatic liquid addition, titration, and stirring
- Corrosion-resistant, easy-to-clean steel shell
- Automatic pipe cleaning and bubble elimination
- Acid-base titration with micro-computer control
- Automatic error detection

4. Specifications

Model No.	LB-100AT
Testing Range	0.001 to 99 mg KOH/g
Accuracy	0.001 to 0.100 mg KOH/g (± 0.0005 mg KOH/g) 0.1 to 0.5 mg KOH/g ($\pm 5\%$ of indicated value)
Resolution	0.001 mg KOH/g
Repeatability	± 0.004 mg KOH/g
Display	7-inch color LCD
Printing Method	High-speed thermal dot printing
Sample Testing	Automatic switching and testing between six sample cups
Pipe Cleaning	Automatic cleaning
Data Storage	Stores up to 260 test data groups
Environmental Humidity	$\leq 85\%$
Power Supply	220V $\pm 10\%$, 50Hz $\pm 5\%$
Dimension (L $\times$ W $\times$ H)	440 $\times$ 300 $\times$ 220 mm
Weight	16 kg

5. Applications

Automatic Oil Acidity Tester LB-100AT is used for measuring oil acidity in industries like food processing, petrochemicals, and lubricants, as well as in research and quality control laboratories.

6. Instrument Introduction

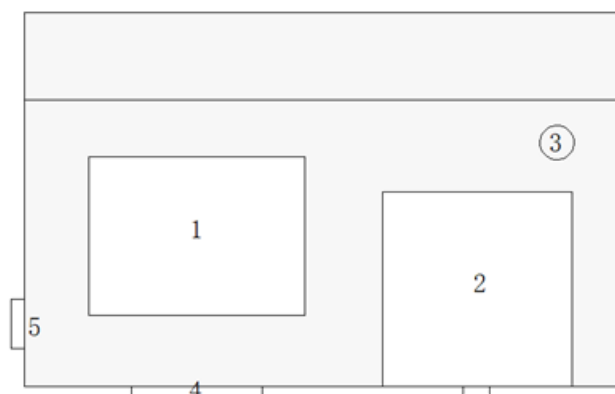


Figure-1 Instrument frontside

- 1) Screen
- 2) Upper lid
- 3) Neutralization titration speed regulator
- 4) Printer
- 5) Switch socket

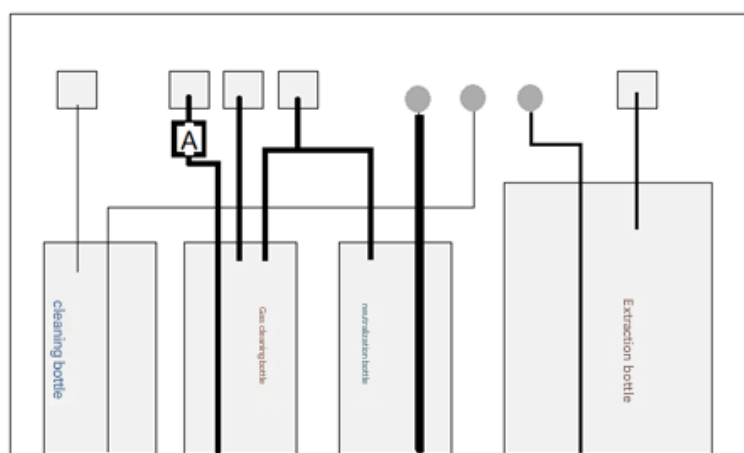


Figure-2 Instrument backside

A: Flow stop valve: The function is to prevent the reagent in the gas washing bottle from flowing back into the air pump and damaging the air pump.

■	Outlet of the air pump.
●	Reagent inlet.
—	It is the neutralization and extraction liquid pipeline.

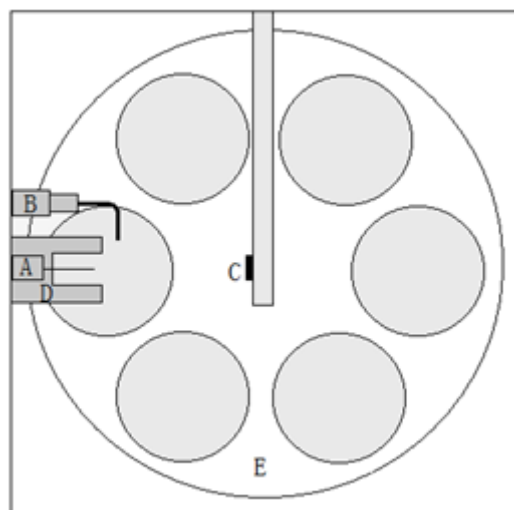


Figure-3 Instrument testing area

- A: Neutralizing fluid needle
- B: Extract liquid needle
- C: Endpoint detector
- D: Neutralizing titration detector
- E: Test rotating plate

7. Installation

Preparation before starting the instrument:

- 1) The device should be installed in a room without corrosive gas and placed on a stable workbench.
- 2) Put 5-6 pieces of potassium hydroxide into the gas scrubber, then pour about 60ml of ethanol or distilled water, shake it repeatedly to make it fully dissolved, tighten the rubber stopper, and make sure it does not leak air.
- 3) Inject the extraction liquid (approximately 500mL) into the extraction bottle supplied with the machine, tighten it, and ensure that there is no air leakage.
- 4) Inject the neutralization solution (about 60-100mL) into the neutralization bottle that comes with the machine, tighten it, and ensure that there is no air leakage.
- 5) Connect the 220V power supply. (the power supply should have a good grounding wire!)
- 6) Install the paper roll (coming along with the instrument).

8. Software Operations

8.1 Power on

Switch on, and the power indicator light on, the screen displays the testing interface.

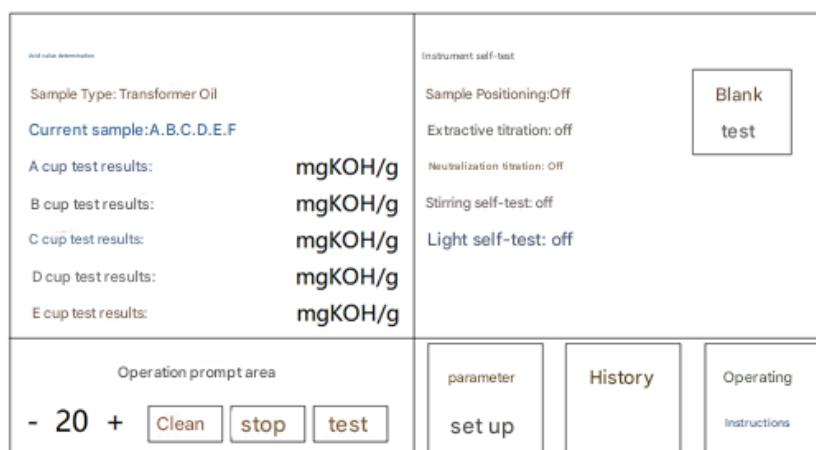


Figure-4

8.2 Instrument self-test

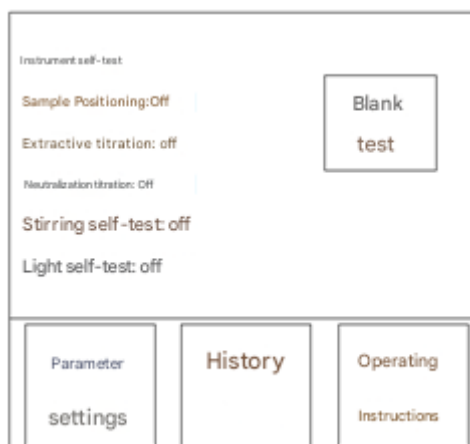


Figure-5

For the first use, or after long-term no use, or after replacement of reagents, perform a self-test to check whether the components are operating normally.

- 1) **Sample positioning:** Observe whether the display positioning letter is consistent with the sample turntable.
- 2) **Extraction titration:** Click to titrate, and the extracted liquid will flow out from the needle.
- 3) **Neutralization titration:** Click to titrate, and the neutralization solution will drip out from the needle. Adjust the knob to make the titration rate to be one drop per second. At the same time, observe whether the number on the display screen is consistent with the titration number of [Neutralizing Liquid Titration Needle].

- 4) **Stirring self-test:** After clicking, the stir bar starts to stir.
- 5) **Light self-test:** After clicking, the light turns on.
- 6) If the titration does not count, check if the [Neutralizing Liquid Needle] is at the upper end of the [Detection Optocoupler] (at the white dot), if not, adjust the needle, as shown below:

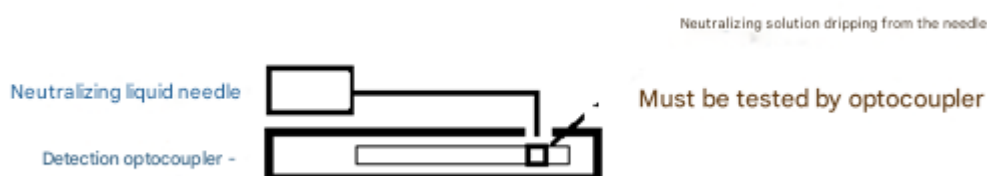


Figure-6

- 7) **Blank test:** If using the extracted liquid produced by us, don't need to do this step.

8.3 Parameter setting

In **[Parameter Setting]**, modify the corresponding values, the standard configuration doesn't include the balance data import.

Sample number:00000		Background settings	Optional function: balance data import
Sample Type: Transformer Oil			
A cup mass: 8.7500g	Is this cup tested?	☐	
B cup mass: 8.7500g	Is this cup tested?	☐	
C cup mass: 8.7500 g	Is this cup tested?	☐	
D cup mass: 8.7500g	Is this cup tested?	☐	
E cup weight: 8.7500g	Is this cup tested?	☐	
Print settings: Yes			
Neutralizing liquid concentration: 10%		Stirring time: 30 s	
XX year	XX month	XX days	XX time
			XX minutes
			XX seconds
			quit

Figure-7

8.4 Adding sample

Add the right amount of sample to the scale line of the sample cup, put the agitator inside, then rotate the sample turntable in turn, and put the sample cup on the tray correspondingly.

Attention:

To get more accurate results, use the electronic balance to weigh a sample of a certain quality for testing.

8.5 Start testing

After confirming that all parts of the instrument are operating normally, check whether the reagents are sufficient, and confirm whether the parameter settings are correct, press the **[Test]** key, and the instrument will start automatic measurement.

Acid value determination Sample Type: Transformer Oil Current sample: A.B.C.D.E.F A cup test results: mgKOH/g B cup test results: mgKOH/g C cup test results: mgKOH/g D cup test results: mgKOH/g E cup test results: mgKOH/g		Instrument self-test Sample Positioning: Off Extractive titration: off Neutralization titration: Off Stirring self-test: off Light self-test: off Blank test	
Operation prompt area - 20 + Clean stop test		Parameter settings	History
		Operating Instructions	

Figure-8

At this time, the sample tray will be automatically positioned at the F cup position, and a certain amount of liquid will be automatically discharged to ensure that the bubbles in the neutralization liquid pipeline or the remaining liquid after the last cleaning are discharged.

Then, the instrument automatically fills the extraction liquid according to the setting content. After filling a certain amount, it automatically stops adding liquid. To ensure that the weak acid in the sample can be fully extracted, wait for about 1 minute after filling the extraction liquid, the instrument will automatically titrate the neutralizer. When the titration reaches the endpoint, the instrument automatically judges the test result. If the printer is set to on, the test result will be printed automatically. If it is set to continuously measure multiple samples, the instrument will automatically enter the measurement of the next sample without manual intervention.

After the measurement is completed, the instrument automatically calculates, displays, and prints the acid value of the sample.

9. Troubleshooting

Faults	Causes	Solutions
Neutralization solution titration is extremely slow or does not titrate.	The neutralization solution bottle cap is not tightened, causing air leakage.	Check whether the rubber ring in the bottle cap is in the bottle cap groove, and tighten the bottle cap.
	Neutralization solution needle blocked.	Replace the neutralization needle and adjust the angle of the needle to make the drop numbers detection accurate.
	The neutralization air pump is damaged.	Replace the air pump.
Neutralization solution titration doesn't count.	The neutralization solution needle is not aligned with the detection optical coupler.	Adjust the needle to make the needle tip above the optical coupling detection white spot.
Neutralization fluid, extraction fluid or cleaning fluid cannot be discharged.	The cap and rubber ring are not fully sealed, resulting in air leakage.	Check whether the rubber ring in the bottle cap is in the bottle cap groove and tighten the bottle cap.
		The air pump is damaged.
		The stainless steel tube is inserted too deep into the bottle, causing the sealing plug to be not tightly sealed. The stainless steel tube can be pulled out.
Bad data repeatability	The concave surface of the sample cup is the detection surface, where the inner and outer walls must be clean, otherwise, it will affect the light transmission and cause poor repeatability.	Use a clean sample cup for measurement.
	When the two cups are measured, the neutralization titration speed is inconsistent, sample color change speed will also be inconsistent, which will cause errors in the light detection data and poor repeatability.	In the [Instrument self-check], adjust the titration rate to one drop per second, and then do the sample measurement.



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