

HZBS-002
Abel Flash Point Tester

User Manual

Dear user:

Thank you for choosing HZBS-002 Abel Flash Point 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.General

1.1 Characteristics

HZBS-002 is designed according to ISO13736 and IP 170 by Abel close cup method, it is suitable to the determination of flash point of petroleum product and other flammable liquid with flash point between -30°C and 70°C . The precision for this method is only valid for flash points in range of -5°C and 66.5°C . **It is not applicable to water-borne paints.**

Main characteristics:

- ◆ Temperature rise controlled by SSR, which can satisfy requirements of different heating rate.
- ◆ Continuously stirring the sample and stirring is auto stopped during igniting.
- ◆ Electrical controlled ignition.
- ◆ Test cup lid with stirring device can be disassembled freely..

1.2 Operation condition

- ◆ Temperature: $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$ Humidity: $\leq 85\%$
- ◆ Condition: No dust, no corrosive gas and no influence of strong magnetic field.
- ◆ Power supply: $220\text{V}\pm 22\text{V}$, 50Hz, 5A grounded electrical socket
- ◆ Gas source: Liquid petroleum gas or propane

1.3 Configuration

The instrument consists of heating unit, test device, electrical control unit, test cup and gas source.

See Figure-1.



Figure-1 Configuration

1.3.1 Test device

The test device consists of stirrer, electrical control igniting system, disassemble test cup lid and igniter. It uses vertical model for ensuring the close seal between test cup and cover and precise test result. During test, the stirrer, test cup lid, igniter and shutter unit are linked together, release the lifter knob to drop the test device onto test cup to finish the operation.

Shutter unit: The motor drives the cam and driving axle to open or cover the shutter automatically.

1.3.2 Heating device

The heating voltage is adjusted by SSR, it is convenient to control the power frequency to meet different requirements on temperature rise rate. Stirring rate can be adjusted in range of 0-40 roll/min by stirrer adjust button. Stirrer will be stop working during ignition.

1.3.3 Gas source

Beside master gas valve, we have adjusting valves for flame size adjusting for both igniting and ever-burning flame.

1.4 Dimension and weight

Dimension: 390 x 270 x 430 mm

Weight: 12 kgs

1.5 Main parameters

Test temperature range: -30°C ~18.5°C if equipped with cooling bath (-30°C ~18.5°C if equipped with cooling bath

19°C ~70°C if normal working temperature

Heating power: 0 ~450W adjustable

Temperature rise rate: 1°C/min

Flame can be adjusted to 3~4mm

String rate: 0-40 roll/min adjustable

II. Installation and commissioning

2.1 Unpacking and checking

2.1.1 Open the packing case and put instrument out, check if the apparent clean and without damage, and put the instrument on test platform steadily.

2.1.2 Unpack the accessories carefully and inspect them according to “Accessory list”. Contact us if any shortage or damage. Start installation if no objection.

2.2 Installation requirement

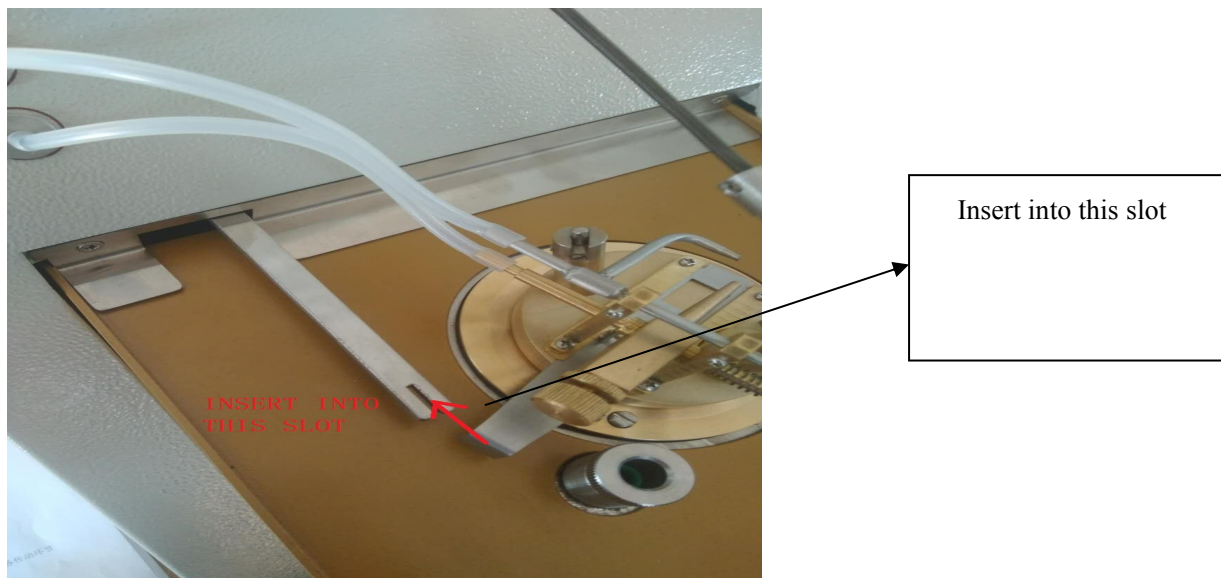
2.2.1 The instrument should be placed on steady test platform with no airflow around.

2.2.2 The distance between instrument and the walls or other shields should be not less than 200mm.

2.3 Installation and adjustment

2.3.1 Installation

Install test cup lid group onto the cup, insert the slider end into slot as below:



Insert stirrer soft rod into the stirrer as below:



Insert into interface

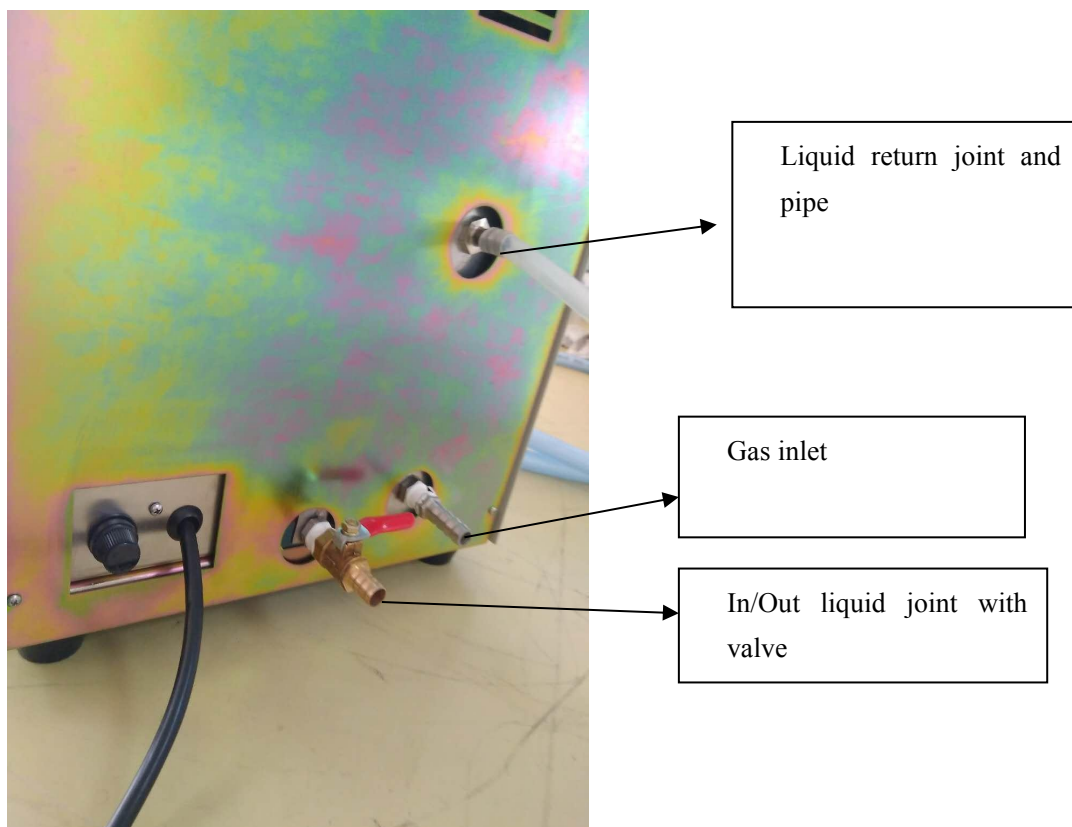
Insert two thermometers (by client) into holder. Connect the cables for power and test device into corresponding sockets. Connect the igniter and pilot to corresponding adjusting valves with silicon tubes.



Rear of instrument:

Connect gas source into gas inlet and fix well.

If test in low temperature, connect intake pipe to In/Out liquid joint, connect liquid return pipe to overflow pipe and fix well. If test not in low temperature, you can connect some PU pipe to In/Out liquid joint and drain into sewer, open the valve then the water inside the bath can be drained out. Connect some PU pipe to liquid return joint and also drain into sewer.



2.3.2 Adjustment

2.3.2.1 Pull the screw axle by hand to observe the flexibility of the sliding unit. If any trouble, inspect at each transmission joints for any loosening or barrier. Contact us if the trouble cannot be solved.

2.3.2.2 Move the stirrer and observe if it can touch the thermometer, if yes, adjust the position of blade.

2.3.2.3 Gas source connection: Turn off the master gas valve and adjusting valves, connect the gas source with the master gas valve. When igniting, turn on the master valve (Fully or half open depending on the gas pressure), and turn left the igniting adjusting valve slowly to adjust diameter of flame to standard size.

Note: When igniting, dispose the air in the tube and then adjust the valve slowly, carefully control the size of flame within stated range, so as to avoid fire hazard.

III. Operation

3.1 Commissioning

3.1.1 Power supply

Turn on “Power” switch and the light works.

3.1.2 Voltage adjustment

Turn the voltage adjusting wheel clockwise to the end, the pointer will be from 0 to maximum, otherwise the pointer will be from maximum to 0.

3.1.3 Choose stirring rate

Turn on "RUN", stir motor starts working. Observe if the stirrer blade is flexible and if stirring is even. Turn stir adjusting wheel to adjust stirring rate from 0-40 roll/min, for example, if you need adjust to 30 roll/min, you can rotate to 7.5 scale point.

3.1.4 Igniting

Push down "IGNITION" button on control panel, shutter slides and door opens, igniter descends to test cup's vapor space. When igniting, stir motor automatically stops.

3.1.5 Input medium

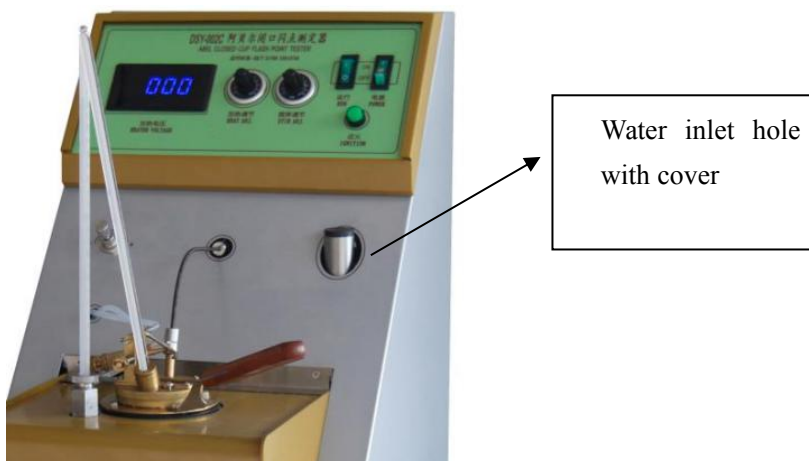
If flash point of sample around 15°C, user can use icy water as medium, and if flash point around 40°C, water with normal temperature can be used. Switch off the water inlet cover and funnel the medium into the bath. Slow the speed in the late of stage and observe if any liquid flow from liquid return pipe. Pay attention, if too fast, medium might flow out from thermometer hole or water inlet hole.

If flash point of sample at range of -30°C to 15°C, additional cooling bath should be used

Connect intake pipe to In/Out liquid joint, connect liquid return pipe to overflow pipe and fix well.

Open the stop valve slightly, and then open cooling bath, input medium slowly and observe if any liquid flow out. If observed, shut cooling bath and valve immediately.

Note: Circulating rate must not too fast, otherwise cold liquid might flow out and hurt operator.



3.2 Operation

3.2.1 Preparation

After successful commissioning, instrument can start normal operation. For testing operation procedures, see ASTM test method standard.

3.2.2 Heating rate

Load sample as requirement, turn on “POWER” and “RUN”: button, adjust voltage dial to heat the sample, observe thermometer reader, and adjust the voltage suitably so as to meet the test requirement.

Temperature rising rate: 1 °C/min

3.2.3 Test condition

Get through the gas source and ignite the ever-light flame and pilot flame, adjust the size of pilot flame to 3mm-4mm, and adjust ever-light flame to a little bigger. Press “FIRE” for 1 second, the pilot flame will be descended.

3.2.4 When test operation is complete, adjust voltmeter back to “0”, turn off “RUN”, switch off gas source, remove all liquid medium in the bath.

VI.Trouble and trouble shooting

Trouble	Cause	Solution
Power indicator light is dark	1. Power is disconnect 2. Power switch is broken 3. Fuse is broken	1. Check if power socket is connected 2. Replacement 3. Replacement
Voltmeter shows “0”	1. Potentiometer has open circuit 2. SSR has open circuit or loop is broken	1. Replacement 2. Replacement or connected broken loop
Voltmeter shows “220V”	1. SSR is broken	1. Replacement
Stir motor does not work	1. Stir switch is broken 2. Motor gets stuck 3. Motor is damaged	1. Replacement 2. Adjust shaft lever in main shaft, clean up dirt 3. Replacement
Ignition motor does not	1. Ignition switch is broken 2. Motor is damaged	1.Replacement 2.Replacement

work		
Stir motor is too noisy	Stir paddle and stationary shaft are not homocentric, friction occurs.	Open exterior case of instrument, loosen the screw fixing motor, adjust position of motor support board to make stir shaft and stationary shaft homocentric
Fire go out when ignition	1. Test flame too small 2. Disturbing air flow	1. Adjust flame size 2. Prevent air flow

V.Maintenance

5.1 The instrument should be placed at a draft and dry place.

5.2 After test, the test cup and all parts related to the sample steam should be clean

5.3 The instrument should be covered by cloth after being used.

5.4 The warranty is one year after delivery.