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TOPECH Instrument Company is more than a technical instrument manufacturer. We are committed to providing you with full support for your laboratory testing needs. Our extensive range of support services is brought to you by our staff of technically knowledgeable, trained specialists who are experienced in testing petroleum products and servicing instrumentation. We take care of you through the whole process... before and after your purchase from TOPECH

Kinematic Viscosity Tester
Model LY-445

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1.Outline

This tester is designed and manufactured specially according to the national standard ASTM D445 and“ GB265 – 88 Determination of kinematic viscosity of petroleum products “ . It’s suitable to determine kinematic viscosity of liquid petroleum products. This apparatus has the function of timing of the trial sample movement and can calculate the final result of kinematic viscosity. This method is suitable to determine kinematic viscosity of liquid petroleum products (It refers to Newtonian liquids), and its unit is m^2/s. Generally in actual utilization, the unit is mm^2/s. The dynamic viscosity is equal with the result which use kinematic viscosity to multiply the density of the liquid. By this method, it can determine the time that the liquid with the certain volume flows past the calibrated glass capillary viscometer under the gravity in the certain stable temperature and the value that the constant value of capillary in the viscometer multiplies the flowing time, that is , the determined kinematic viscosity of liquid at the temperature. At the temperature, the value that kinematic viscosity multiplies the density of the liquid in the same temperature is the dynamic viscosity at the temperature.

2. Main functions and characteristics

(1) LCD screen, with Chinese character , clear to see ,easy operation .

(2) With the keyboard, you can set up the parameters such as constant value of viscometer, controlled temperature value, fine-tune temperature value, test times etc. And the apparatus has the memory function.

(3) Use imported sensors, PID digital technology to control the temperature, has the wide range to control the temperature, has the high precision to control the temperature.

(4) Calendar clock no power down. When start, can show the present time automatically.

(5) Network communication, can choose the functions by remote control and glossary.

(6) When press the keypads, your hands feel very good.

(7) You can adjust the test times from once to six times, so you can be convenient to have the test.

(8) You can save the test record, so you can check the record afterwards conveniently.

3.Technical Specifications

(1) Liquid bath holes：4

(2) Range to control the temperature：-60—99℃

(3) Precision to control the temperature：≤±0.1℃

(4) Input power source：AC220V±10V　50HZ

(5) Heating power : 800W

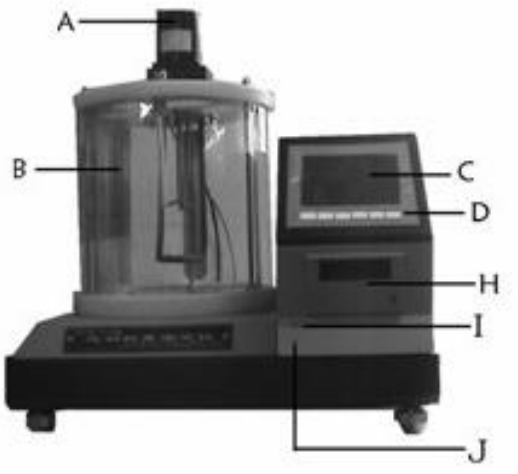
(6)Test times : from 1 to 6 times , can adjust.

4. Utilization conditions

(1) Environmental temperature: 0℃～40℃

(2) Relative humidity:<80%

5. Composition of apparatus



A：Stirring motor　　B ： Insulation cover

C : LCD Screen　　D : Keyboard

E : Power switch　　F : Fuse stand

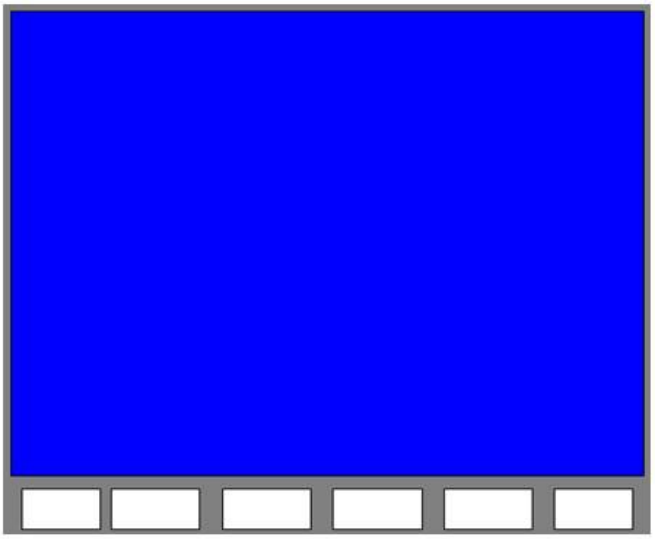
G : Power outlet　　H : Printer

Attention : For the model without printer, there is no H item.

It's composed with heating pipe, capillary, test stand, stirring motor, chassis constant temperature bathtub, lighting, electric control part, computer interface, LCD screen, keyboard etc.

6. Instruction of control panel

On the apparatus panel, there is 6 whiteboard keypads. For the different interface, there is the different function of keypad. On LCD of the keypad, it corresponds the function of the keypad.



Apparatus panel structure chart

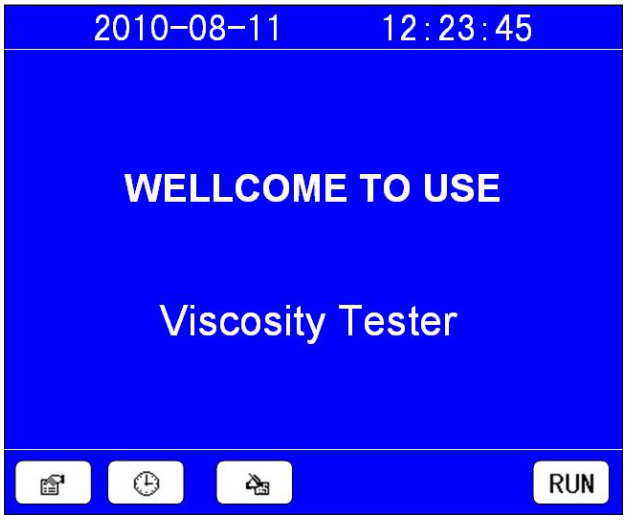
Keypad operation : Please press the corresponding whiteboard keypad with your finger , it's ok. When you press once, you can hear a key tone.

7. Operation process

(1)、After open the box, please check whether the apparatus is complete and without damage, whether the spare parts are complete, then put the apparatus in the place where is well ventilated and without direct sunlight, then install the accessories , please note the quantity of bath liquid that let the liquid level reach 20mm which is the distance between the down edge of the upper cover and the liquid level.

(2). Check the level of the upper cover in the apparatus , and rotate the four bolts in the bottom of the apparatus until the level keeps level.

(3). Plug the power cord, switch on the power switch. It will show the following picture on LCD screen of the apparatus :



If you press the whiteboard keypad under " ", you can enter the parameters setting page.

If you press the whiteboard keypad under " ", you can enter the system time setting page.

If you press the whiteboard keypad under " " , you can enter the test record inquiry page.

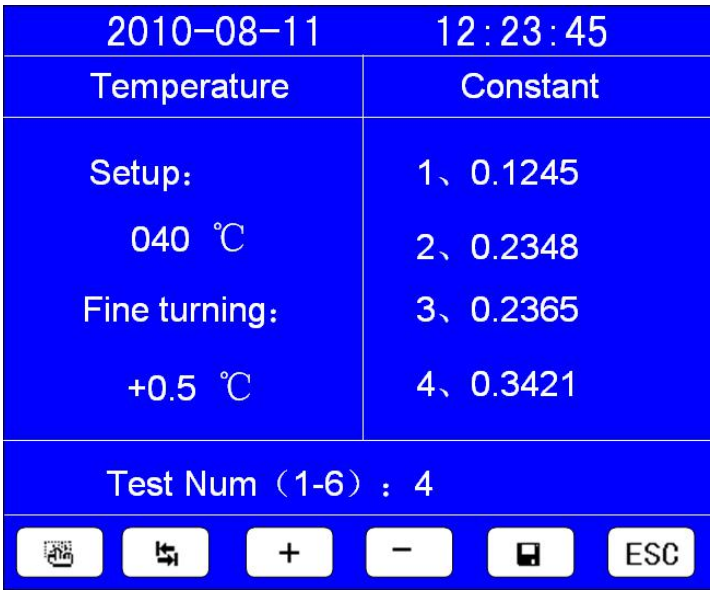
If you press the whiteboard keypad under "RUN", you can enter Kinematic Viscosity Test

page.

When Kinematic Viscosity Tester left the factory, we set that the bath liquid is 40℃, when start the apparatus , it shows the real-time bath liquid temperature. If you want to modify the setting bath liquid temperature, you can press “ ” to modify.

(4). Parameters setting :

If you press the whiteboard keypad under “ ”, it will appear the following picture and you can modify the parameters :



When press “ ”, you can choose the parameters with the cursor, when press “ ”, you can choose one of the selected parameters . When press “ ” or “ ” , you can modify the value of the selected parameters. After modification, please press “ ” to save the data, and press “ ESC” to return to the initial page.

Among them : Setting temperature range : from -60 to 099

Tuning temperature : from -3.0 to +3.0

Test number is 4 times generally. (International standard).

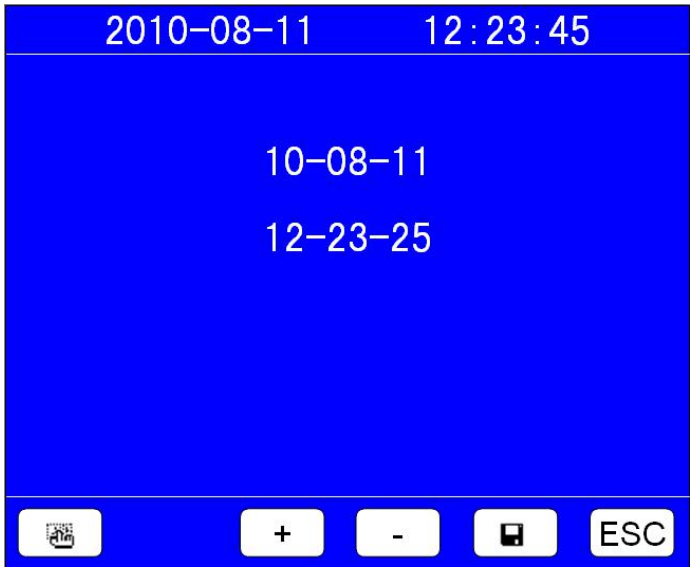
“ Setup” : Bath liquid temperature when test .

“Fine turning” : After the control temperature keeps stable, if there is a difference between the screen temperature and the actual temperature, you can adjust here. Firstly , please move the cursor to the tuning data. If the actual temperature is lower than the screen temperature, you should have positive fine tuning, and in front of the tuning temperature, it will appear “+”; meanwhile the valor of tuning adds from zero, but the maximum positive fine tuning valor is no more than +3.0℃; if the actual temperature is higher than the

screen temperature, you should have the negative fine tuning, and in front of the tuning temperature, it will appear "—", meanwhile the valor of tuning adds from zero, but the maximum negative fine tuning valor is no more than —3.0℃, when the tuning value reaches the expected value, you can press enter and the fine tuning is finished.

(5). Time setting :

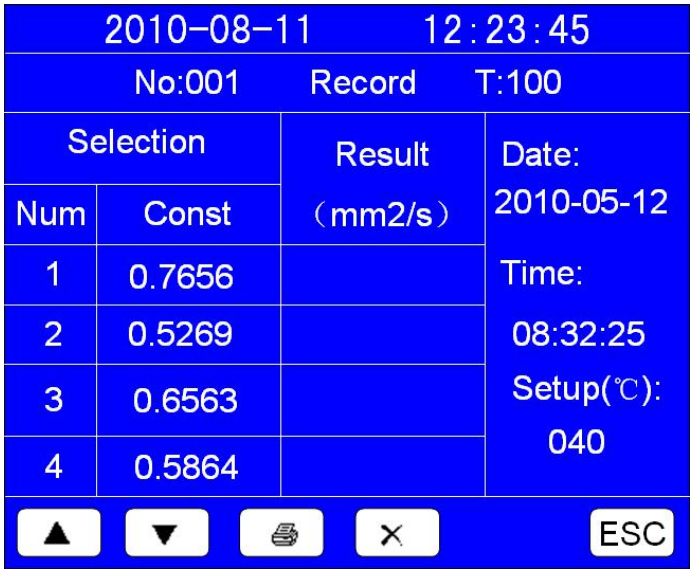
If you press the whiteboard keypad under " " , it will appear the following picture and you can modify the system time :



If you press " ", you can choose the parameters such as year, month, date, hour, minute , second. If you press "+" or "—" , you can modify the values of year, month, date, hour, minute , second. After modification, please press " " to save the data, and press "ESC" to return to the initial page.

(6). Check the test record :

If you press the whiteboard keypad under " " , it will appear the following picture and you can check the historic test records :



If without record, it will show " NO RECORD" in the right upper corner of the interface, otherwise it will show the latest record. As the following picture shows :

When you press "▲" or "▼" , you can check the test record. When you press "🖶", you can print the present record . And when you press " ✕ ", you can delete the present record.

When you press "ESC", you can return to the initial page.

(7). Test :

After set up the parameters, you can press the whiteboard keypad under "RUN", it will appear the following picture and you can enter the test choice page, and it will begin heating .

Note : “ Rising, Waiting…” , when the temperature rises to the setting temperature, it will note “ after preparation, please press start to test” !

At this time, after you choose the capillary, you can press “ ▶ ” to test , and you can see, in the column of timing , the second is adding. When the liquid level just reaches the inferior scale, you can press “ ■ ” to stop timing. At this time, in the superior line of key note field, it will show the used time of this test, pre-setting test number of a capillary, test time every time. After finish all the tests, the apparatus will automatically calculate kinematic viscosity value, if the test number is less than 3 times, you should take the average value. Otherwise you can calculate according to the international standard (it’s required to have the test for 4 times according to the international standard), for the unqualified data , it will draw a horizontal line under the test data to note. If the data meet with the international requirements, it can calculate the kinematic viscosity, otherwise the test result can’t be shown.

We will introduce briefly some keypads of the present page as following:

“ ” : This keypad is used to select the capillary number of the present test. When press “ ” once, the cursor will jump once, from “1” to “2” to “3” to “4” , then return to “ 1”, and so on.

“ ▶ ” : It’s used for timing. After press “ ▶ ” once, the note of this keypad will change to “ ■ ”, and then press “ ■ ” once, it will change to “ ▶ ”.

“ ■ ” : When the liquid level just reaches the inferior scale, please press the keypad.

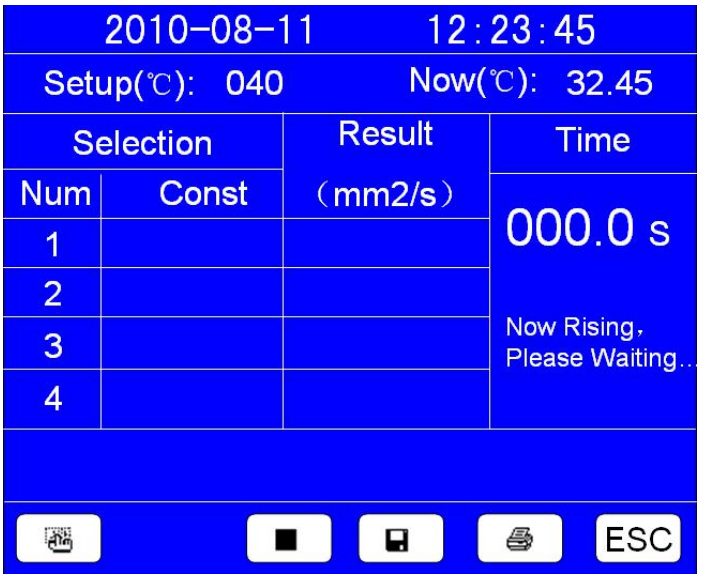
“ ” : After finish the re-setting test number, you can re-test. That is to say, you can get rid of the anterior group of data, and use the new group of data from the re-test and calculate.

“ ” : After finish all the tests, if you can calculate the test result of kinematic viscosity, now you can press “ ” to save the data. And this record will be saved according to your saving time.

“ ” : If your apparatus has the function of printer, you can press “ ” to print the present test record after finish the test .

“ESC” : After finish the test, you can press this keypad to return the initial page.

Stop page :



Re-test page :

(8). Attentions of test :

① Among the four holes, you can insert the capillaries respectively. Please note to keep the vertical of the capillary. Put the viscometer with the trial sample into the bath of constant temperature which is prepared beforehand, and fix the viscometer on the support

stand. In the fixed position , you must immerse in more than half of the extension part of the viscometer of the capillary. When test the kinematic viscosity of the trial sample, you should choose the suitable viscometer according to the test temperature. And the flow time of trial sample should be no less than 200 s, for the viscometer which inner diameter is 0.4mm, the flow time is no less than 350s. Before test the viscosity of the trial sample, you must wash the viscometer with solvent oil or petroleum ether, if there is dirt in the viscometer, please use chromic acid cleaning solution, water, distilled water or 95% ethanol to wash one by one. Then put it in the oven to dry it or use the hot air which is filtered by cotton to dry it. When test the kinematic viscosity , you can put the trial sample into the viscometer of capillary which inner diameter can meet the requirement and it's clean and dry . Before put it in , let the rubber pipe cover on the branch hose and use the finger to block up the nozzle of the hose, meanwhile invert the viscometer, and then insert the pipe body into the sample container. At this time, you can use the rubber ball to suck the liquid to the scale. And please note that don't make the pipe body, extension part and the liquid appear bubbles and cracks. When the liquid reaches the scale, please lift the viscometer from the container, and let in return to the normal state quickly. At the same time, wipe off the excess sample which stick to the outer surface of the hose end of the pipe body, and take out the rubber pipe from the branch hose and let the rubber pipe cover the pipe body.

② According to your operation arrange, you can confirm which group of capillary constant value is the first group of test frame, which is the second group of test frame . The other two groups are pre-heating stand. It's better to put the test oil into the pre-heating frame beforehand in order to keep the constant temperature better.

③ After put the capillary into the bathtub , you must wait for 15 minutes when the temperature reaches the required value, then you can test. We suggest that the user puts the capillary into the bathtub before it reaches the setting temperature, after the bath temperature reaches the setting value, the apparatus will turn to the choice page of capillary constant value automatically for test.

④ By the rubber pipe which covers the mouth of the capillary viscometer , you can suck the trial sample into the extension part and let the liquid level of trial sample be a little higher than the scale, and please note to avoid appearing the bubbles or cracks in the capillary and in the liquid of the extension part. And at this time, please pay attention to observing the flowing state of trial sample in the pipe body. When the liquid level just reaches the superior scale, you can press " ▶ " for timing. When the liquid level just reaches the inferior scale, you can press " ■" to stop timing. And in the screen , it will appear the movement time of this test . When the liquid of trial sample flows in the extension part, please note the stirring liquid in the bath of constant temperature need to keep the constant temperature, and in the extension part, it shouldn't appear the bubble. After it shows the last movement time, you can have the next sucking of oil . After the last test, the screen will show these movement times , in addition it will show the average time and the final viscosity result that the apparatus calculates automatically. If you execute the network on-line function, the apparatus will transmit the final result to the laboratory

computer and will produce the summary table automatically.

⑤The oil need to be sucked to the middle part of the superior sphere and need to ensure that the sucking pipe is the capillary that you have confirmed its constant valor in the anterior page.

⑥ You can have a test according to the international standard. If in the four movement times, there are two group which are unqualified according to the standard, so this group is unqualified, and need to remake the samples for four times.

Warranty

TOPECH INSTRUMENT guarantees that the services it provides are free from material, design or manufacturing errors. The warranty period is 24 months from the day of delivery;

Glass breakage is excluded from the warranty for electrodes and other glassware. The warranty for the accuracy corresponds to the technical specifications.


Kinematic VISCOSITY TESTER
Timer1
Temperature Setting
50.0 ℃
Actual Temperature
25.2 ℃
Temperature Contraol
Stir
Time1
0.0S
Time2
0.0S
Time3
0.0S
Time4
0.0S
Average Value
0.0S
Viscometer Number
1
Viscosity Coefficinet
Kinematic Viscosity
0.00
0.0s
Start
Stop
Timing
Pause
Reset
Print