

Procedure for Koehler Digital Constant Temperature Viscosity Bath

Intro:

This unit is designed to perform kinematic viscosity tests using glass capillary viscometers, for this lab you will be using Cannon-Fenske Calibrated Opaque Viscometers.

Cannon-Fenske Calibrated Opaque Viscometers:

This is a reverse flow type viscometer, which permits the measurement of a dark liquids meniscus that cannot be seen using a standard Cannon-Fenske Routine viscometer. The specifications for this type of viscometer conform to the ASTM Standard D-446.

Viscosity Bath:

The viscosity bath should be filled 5 cm (2") from the top of the bath tank, providing proper depth for immersing the viscometers and allowing for thermal expansion.

Bath Fluids:

1. Distilled Water: for tests from ambient to 50°C
2. Highly Refined Technical Oil (Marcol 72, ESSO Product): for tests that are run above 50°C. This oil contains an oxidization inhibitor to limit clouding at high temperature.
3. Clear Silicone heat Transfer Fluid: for tests that are run above 110°C. This oil is highly oxidation resistant and has low volatility.

Pt-100 RTD Probe:

This probe must be installed into the holder provided at the top of the bath. The connector for the RTD must be inserted into the connector on the rear panel.

Thermometer:

Installation of an appropriate ASTM thermometer should be made using the holder provided in the cover plate of the bath.

Viscosity Bath Temperature:

The desired bath temperature should be set with the digital temperature controls on the front of the machine.

Operation Instructions:

Set the desired operating temperature by adjusting the setpoint bath temperature with the up (▲) or down (▼) keys on the controller. The setpoint will be displayed in **GREEN**, and the actual bath temperature will be displayed in **RED**. (See Figure 1)

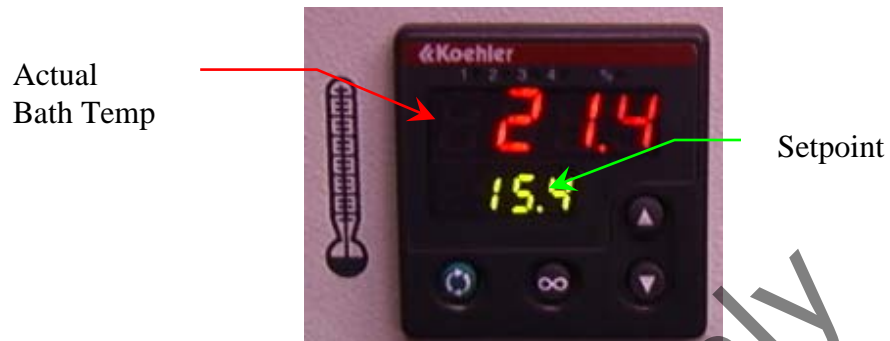


Figure 1: Controller

Once the set point temperature is attained, allow 10-15 minutes for the bath to reach steady state.

Testing Procedures:

Proceed with performing the desired kinematic viscosity tests according to the following standard test method:

- ASTM D445
- ASTM D446
- ASTM D2170
- IP 71
- IP 319
- ISO 3140
- DIN 51550
- FTM 791-305

Over Temperature Protection (OTP):

The Digital Constant Temperature Viscosity bath is equipped with over temperature protection (OTP), which protects the system and prevents the bath from exceeding safe

operating temperatures. If the bath temperature is unable to maintain the setpoint temperature and it begins to decline the OTP circuitry may have been activated.

Procedure to rectify the situation:

1. Turn off the unit power switch and disconnect the line cord.
2. Locate the front tray where the temperature controller and timer are located. Remove the screw holding the tray closed.
3. Open the front tray, locate the OTP circuit breaker unit, and press the reset button.
4. Determine the source of the problem and correct the situation.
5. Close the front tray and replace the screw to keep the tray locked and closed.
6. Restart the unit, and monitor the bath operations to ensure that the unit is operating properly. If you are still experiencing trouble contact Mr. Crone at 966-5461.

Reference Only

Over Power Protection:

The Digital Constant Temperature Viscosity bath is equipped with an over power protection circuit which prevents operating this unit under unsafe electrical conditions. If the power to the unit is lost then initiate the following sequence of steps.

Procedure to rectify the situation:

1. Turn off the unit power switch and disconnect the line cord.
2. Locate the front tray where the temperature controller and timer are located. Remove the screw holding the tray closed.
3. Open the front tray, locate the circuit breaker unit, which is located directly behind the temperature controller, and flip the switch.
4. Close the front tray and replace the screw to keep the tray locked and closed.
5. Restart the unit, and monitor the bath operations to ensure that the unit is operating properly. If you are still experiencing trouble contact Mr. Peace at 966-5461.

Reference Only

2. VERSION HISTORY

Handwritten amendments to the official procedures can be made by a single line through the text, along with the date, and initialed by the authorized individual making the correction. Changes are to be noted below. Formal changes to this SOP are made on the date of revision or sooner, where required.

Section	Changes Made	Date	Initials

Reference Only