



USER MANUAL

VeroVis

FULLY AUTOMATIC KINEMATIC VISCOMETER

The Atlantic-style tube has a viscosity range of 350-fold, between 1 mm²/s (cSt) and 10,000 mm²/s (cSt), or approximately 4.635 SUS to 46,350 SUS (depending on viscosity-temperature conversion), from 5°C to 150°C (41°F to 302°F) with available options. The VeroVis also meets the requirements of ASTM D446 and ISO 3105 standards. It is suitable for oil analysis, hydraulic oil analysis, additives analysis, marine fuel testing, base stock analysis, light and heavy fuel testing, waxes/paraffin, crude oil testing, glycols, and other viscous liquids.

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USING THE VeroVis EFFECTIVELY

Guidelines for optimal use and performance of the VeroVis.

TECHNICAL

SPECIFICATION

Model	VeroVis Automatic Kinematic Viscometer
Methodology	ASTM D445/D446, ISO 3104/3105, IP 71
Applications	Kinematic Viscosity for Newtonian Liquids
Device Dimensions	Width: 38 cm (15 inches), Depth: 40 cm (15.75 inches), Height: 74 cm (29.13 inches)
Weight	32 kg (70.55 lbs)
Operation System	Windows 10
User Interface	10.1-inch capacitive touch screen
Result Storage Capacity	10000 results
Result Format	PDF
Power Supply	220 Volt 50-60 Hz
Power Consumption	500 W (Max)
Device Operating Environment	10 °C to 50 °C (50°F to 122°F)
Oil Bath	1.6 lt Volume (0.42 gallons US)
Fast Cooling	From 100 °C to 40 °C (212 °F to 104 °F) within 15 minutes.
Temperature Range	5°C to 150 °C (With Chiller Options) (41°F to 302°F)
Temperature Resolution	0.01 °C (32.018 F)
Automated Sample Capacity	2 Sample
Sample Heating Function	Yes (Integrated with Sample Holder)
Automated Wash Capacity	2 Solvent Input
Required Sample Volume	20 ml (0.68 Ounces)
Required Solvent (per test)	10 – 20 ml (depending wash settings) (0.3 -0.6 Ounces)
Timing Resolution	0.001 Second

CONTROL
ELEMENTS AND
ACCESSORIES

CONTROL ELEMENTS AND ACCESSORIES



Figure 1: Front Panel

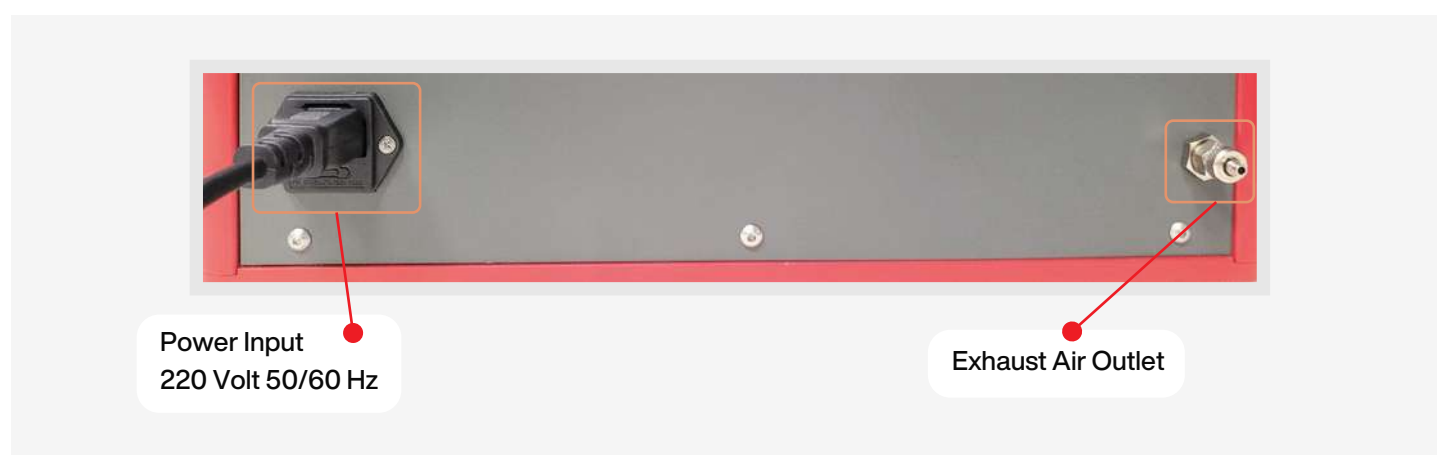


Figure 2: Rear Panel

CONTROL ELEMENTS AND ACCESSORIES



Figure 3: Left Panel

- Wash In/Out: Waste bottle connection.
- Solvent 1 In/Air: Solvent 1 bottle connection
- Solvent 2 In/Air: Solvent 2 bottle connection.
- Dry Air: Device air inlet, supply with 2-3 bar pressure dry air.
- Bath Oil Discharge: Drain outlet for changing the oil. Viscosity bath contains 1.6 liters oil. Do not drain if the oil is at high temperatures
- Bath Cooling: Coolant inlets and outlets for rapid cooling of bath oil.



Power
On/Off Button

Figure 4: Right Panel

CONTROL ELEMENTS AND ACCESSORIES

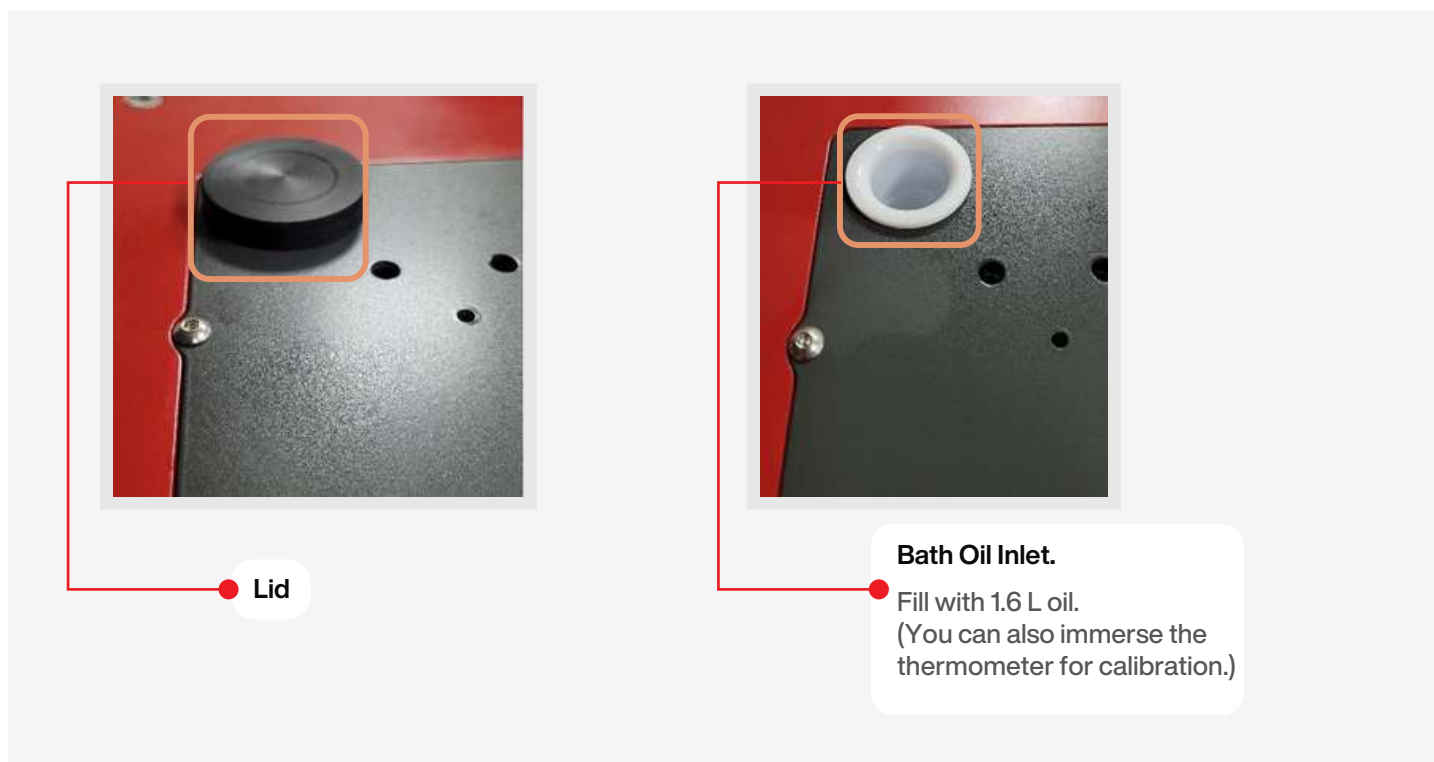


Figure 5: Top Panel 1

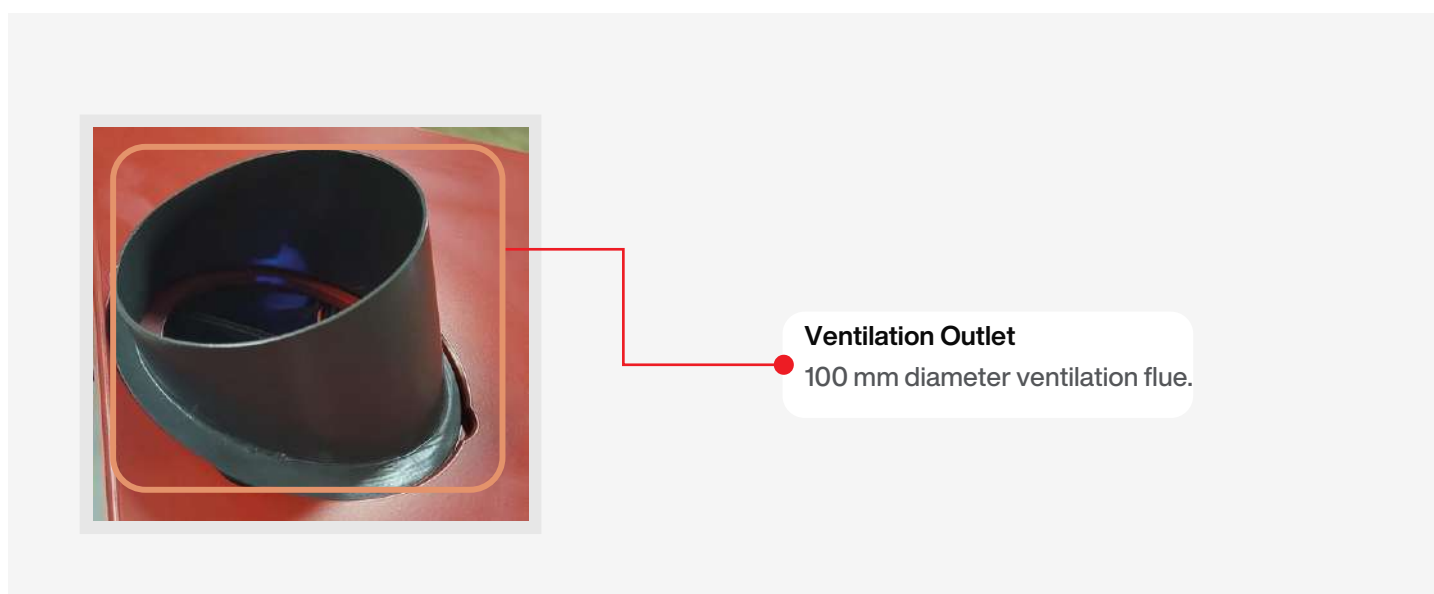


Figure 6: Top Panel 2



USING THE
VeroVis
EFFECTIVELY

USING THE VeroVis EFFECTIVELY

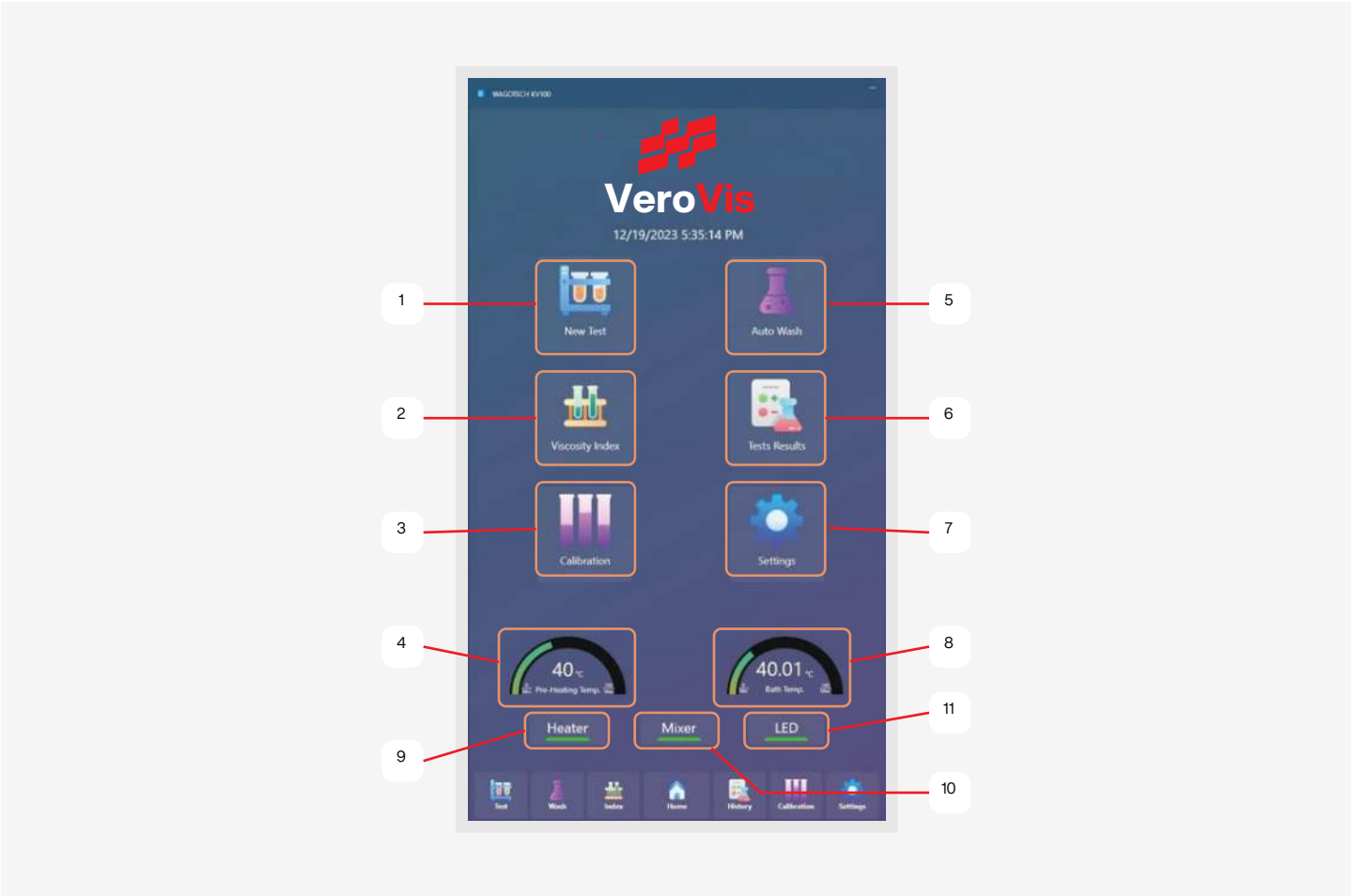


Figure 7: Main Screen

NO	DEFINITION
1	Test Button
2	Index Measurement Button
3	Calibration Button
4	Preheating Temperature Indicator
5	Washing Button
6	Test Results Button
7	Settings Button
8	Oil Bath Temperature Indicator
9	Oil Bath Heater On/Off Button
10	Oil Bath Mixer On/Off Button
11	Oil Bath Light On/Off Button



USING THE VeroVis EFFECTIVELY

SET THE BATH TEMPERATURE

1. Touch the Oil Bath Temperature Indicator

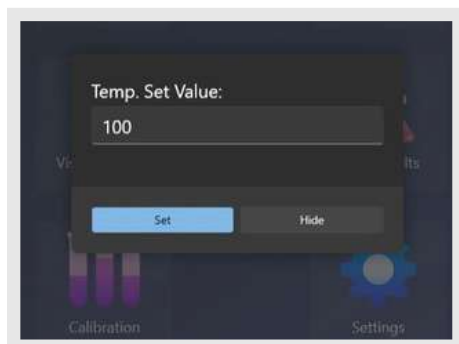
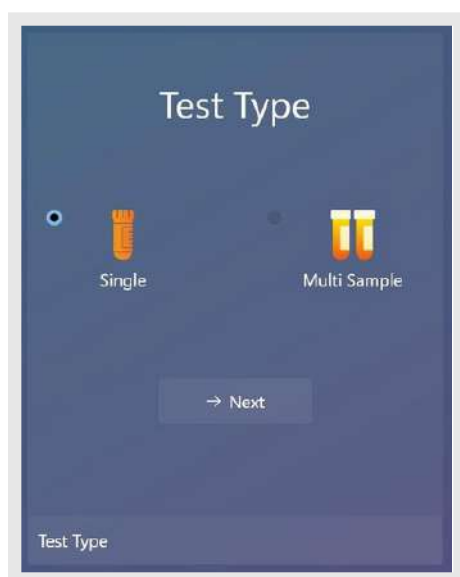


Figure 8: Temperature Set Screen

2. Enter the desired temperature in the window that opens, and click the Set button. (The heater and mixer will start automatically.)

NEW TEST



1. Touch the New Test button.
2. If processing a single sample, select Single.
If processing multiple samples, select Multi Sample.

Figure 9: Test Type Menu

USING THE VeroVis EFFECTIVELY

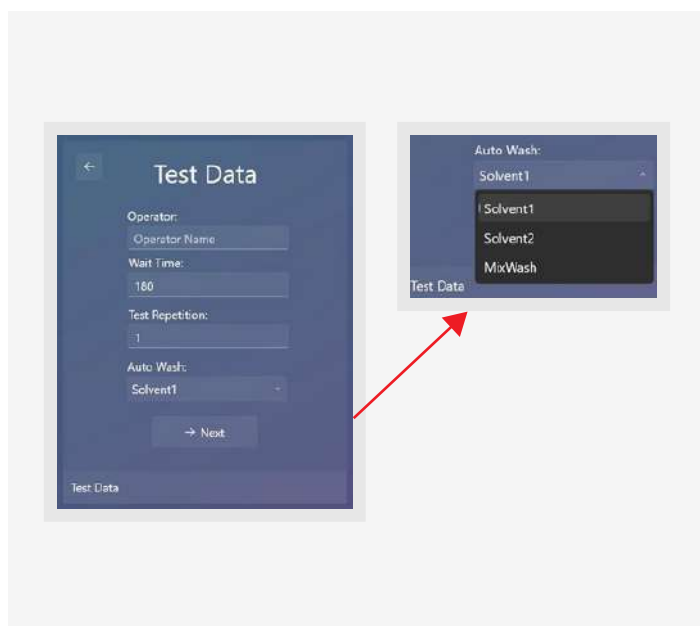


Figure 10: Test Data Menu

3. Complete the fields with information according to the test requirements.

- 3.1. **Wait Time:** This field specifies the duration required to maintain the oil at the appropriate temperature after being aspirated into the instrument. For precise testing, a minimum of 180 seconds is recommended.
- 3.2. **Number of Repeated Tests:** This field indicates the number of tests to be performed on the sample. Conducting multiple tests is recommended to calculate averages for more precise results.
- 3.3. **Auto Wash:** Three options are available in the dropdown menu. Select the appropriate option based on the characteristics of your oil and the test temperature.

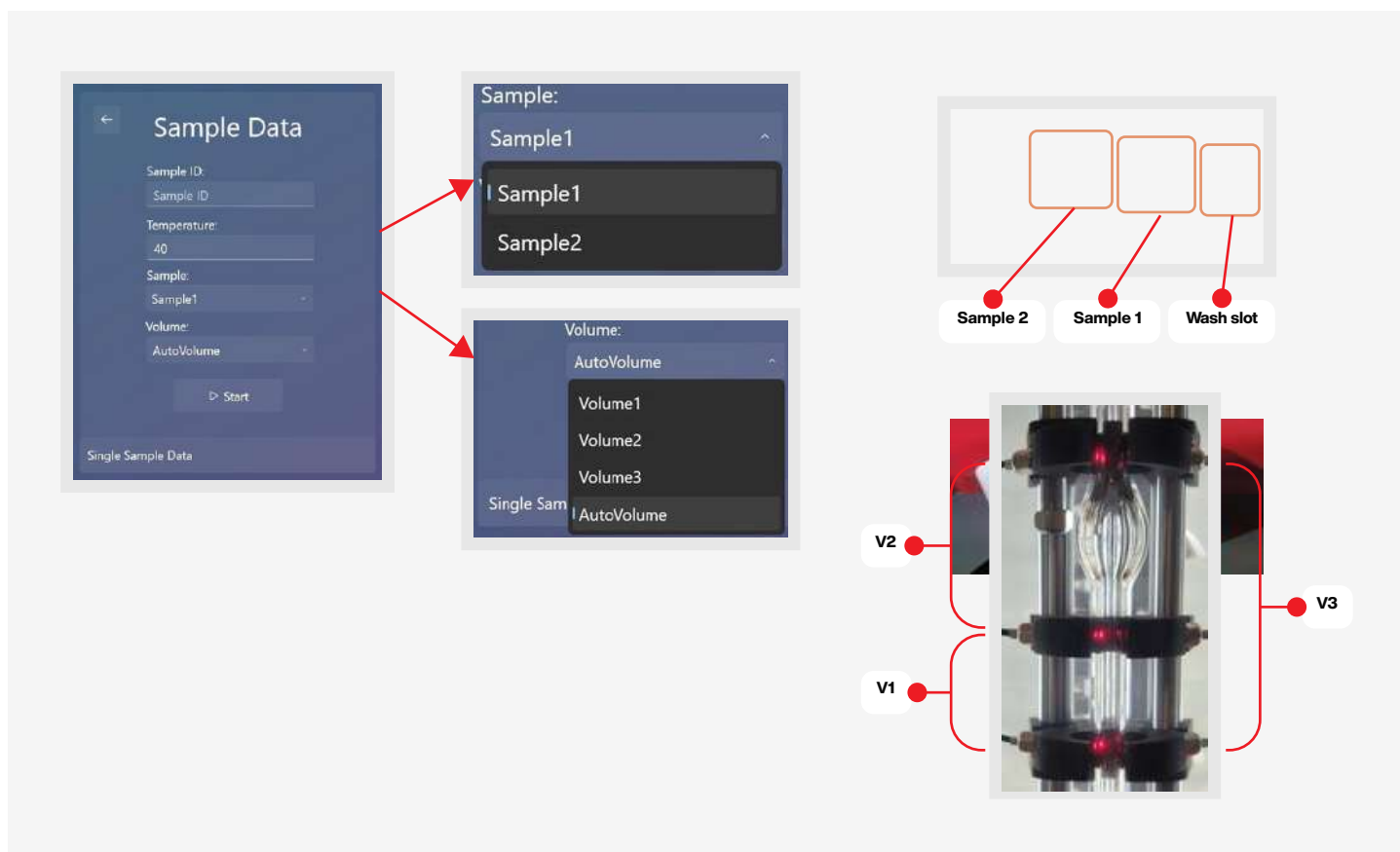


Figure 11: Sample Data

USING THE VeroVis EFFECTIVELY

4. Pressing the Next button will open the sample data menu.
 - 4.1. Temperature: If the bath temperature has already been set, it will automatically populate in this field. To test at a different temperature, enter the desired value. The bath will adjust accordingly to the newly entered temperature.
 - 4.2. Sample: Select the sample corresponding to its placement in the instrument. For instance, if the sample is placed in slot 1, select Sample 1; if it is placed in slot 2, select Sample 2.
 - 4.3. Volume: Specify the volume you wish to test. Alternatively, select the automatic volume option, which allows the device to determine the volume based on the viscosity of your sample.
5. Test Screen: All relevant test information will be displayed on the test screen. Once the test is complete, the device will automatically clean the viscosity tube using the specified solvent, preparing it for the next test.



The screenshot displays the VeroVis Test Screen, which is divided into two main sections for Sample 1 and Sample 2. Each section shows test parameters and a data table.

Sample 1 Parameters:

- Viscosity (m²/s): 0 cSt, 0 sec
- ID: test
- Volume: AutoVolume
- Temp.: 100 °C
- Wait Time: 180 sec
- Wash: Solvent1
- Constant: 0

Sample 1 Data Table:

No.	Time	Viscosity
1	0	0
2	0	0
3	0	0
4	0	0
Avg	0	0

Sample 2 Parameters:

- Viscosity (m²/s): 0 cSt, 0 sec
- ID:
- Volume: AutoVolume
- Temp.: 100 °C
- Wait Time: 180 sec
- Wash: Solvent1
- Constant: 0

Sample 2 Data Table:

No.	Time	Viscosity
1	0	0
2	0	0
3	0	0
4	0	0
Avg	0	0

Figure 12: Test Screen

VISCOSITY INDEX

1. Activate the Viscosity Index function by touching the corresponding button.
2. Enter the operator name and sample name in the designated fields.
3. Place the same sample into both the Sample 1 and Sample 2 slots.
4. The device will perform the test for Sample 1 by setting the oil bath temperature to 40°C (104°F).
5. The device will then test Sample 2 by adjusting the oil bath temperature to 100°C (212°F).
6. The results will be displayed on the test screen (refer to Figure 13).



Figure 13: Viscosity Index Test Menu



Figure 14: Viscosity Index Test Menu 2

CALIBRATION

1. Touch the Calibration button to begin the process.
2. Place the calibration standard into the Sample 1 slot of the instrument.
3. Enter the viscosity values (in mm²/s or cSt) and the temperature values (in °C and °F) as specified by the calibration standard.
4. Input the volume you wish to calibrate (in milliliters and fluid ounces).
5. Press the Start Calibration button to initiate the process.
6. The device will perform two measurements on the same standard, calculate the average viscosity, and determine the calibration coefficient.

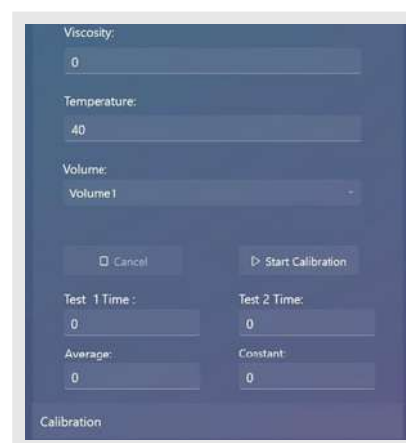


Figure 15: Calibration Menu

AUTO WASH

1. Touch the Autowash button to activate the cleaning function.
2. Select the desired type of wash to be performed from the available options.
3. This function is recommended when the device has been inactive for an extended period or when there are concerns about the cleanliness of the viscosity tube.

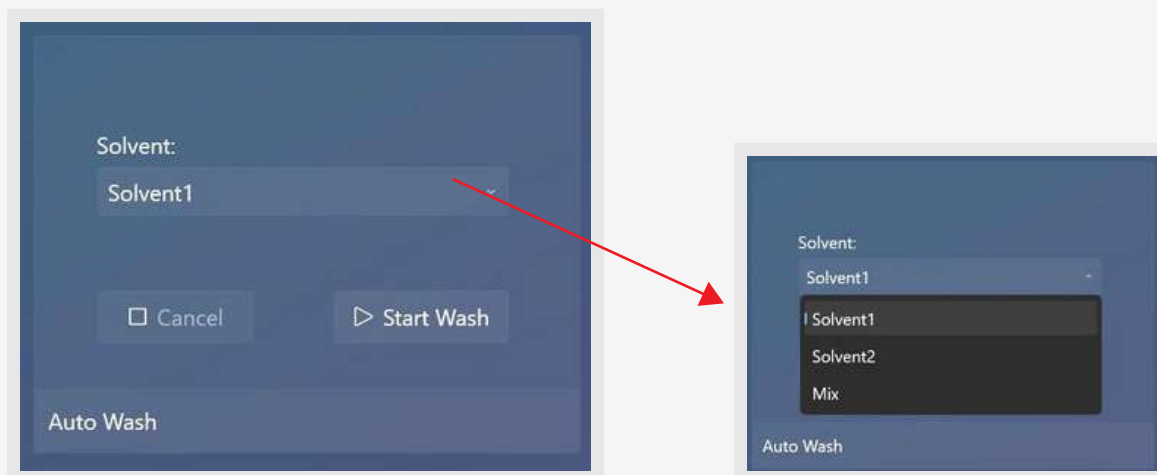


Figure 16: Autowash Menu

TEST RESULTS

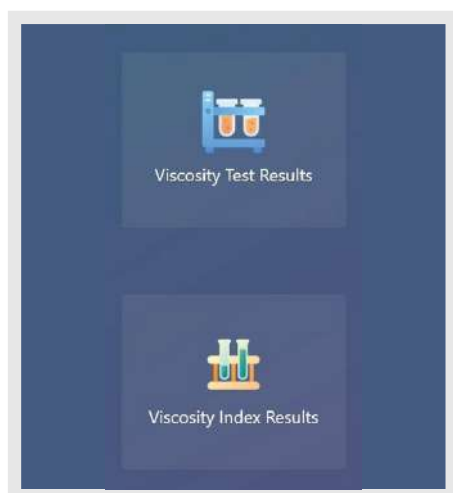


Figure 17-18: Test Results Menu

1. Touch the Test Results button to access the stored test data.
2. Select either Viscosity Test Results or Viscosity Index Results (refer to Figure 17).
3. To locate a specific test result, click the arrow located to the right of the Sample ID box (see Figures 13 and 14).
4. Use the Search function to find the desired result. Test details can be accessed by double-clicking the corresponding entry.
5. Results may be deleted or saved as a PDF file, depending on the user's preference.



Figure 19: Viscosity Test Results

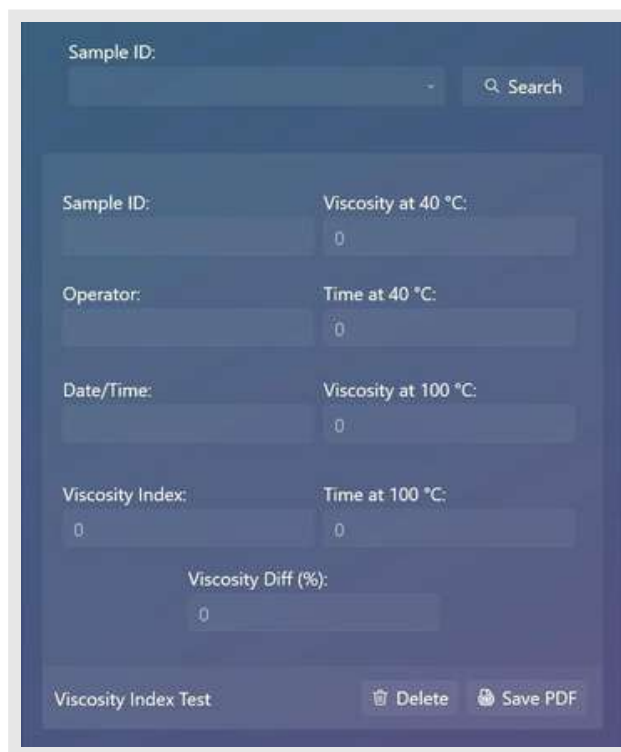


Figure 20: Viscosity Index Test Results

SETTINGS

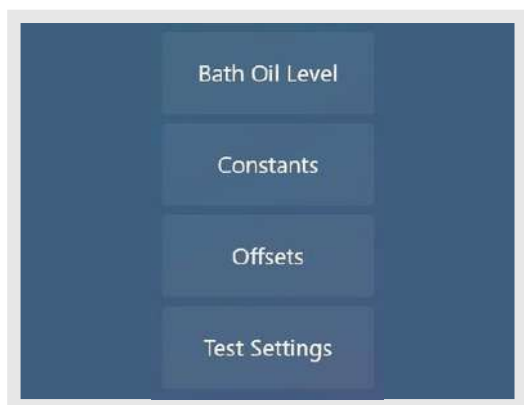


Figure 21: Settings Menu

1. Touch the Settings button to access the settings menu.
2. Four menu options will appear, as shown in Figure 15.
3. Clicking on the Bath Oil Level button will open the menu displayed in Figure 16, where the oil level can be viewed. If the oil level drops below the required threshold, the device will automatically disable the heater to ensure safety.

4. **Constants Button:** The coefficients determined as a result of the calibration process will be displayed (refer to Figure 23).
5. **Offsets Button:** Pressing the Offsets button allows for the necessary adjustments to the temperature and pressure sensors on the device (refer to Figure 24).
6. **Test Settings Button:** Pressing the Test Settings button will display a password entry screen. As this menu contains critical settings, it is essential to ensure that only authorized personnel have access to the password (refer to Figure 19).



Figure 22: Bath Oil Level

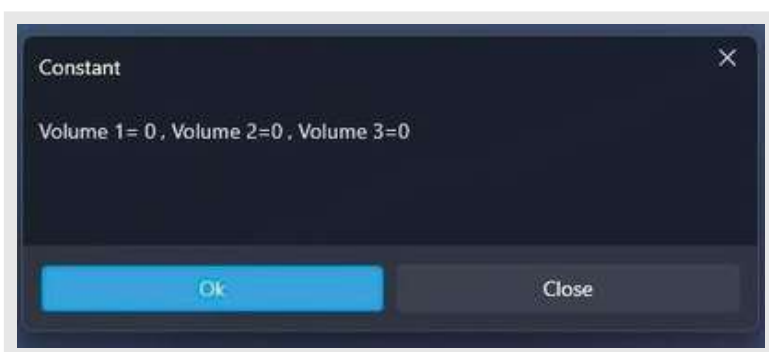


Figure 23: Constants Button



Figure 24: Offsets Menu

SOFTWARE INTERFACE AND COMPATIBILITY

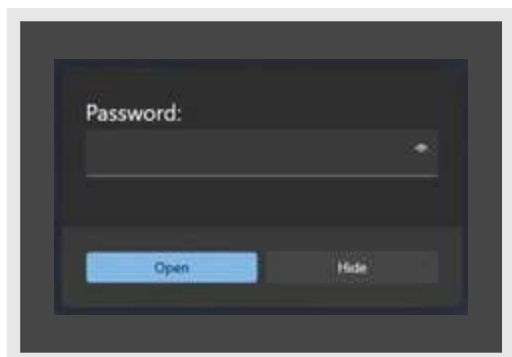


Figure 17-18: Test Results Menu



Figure 17-18: Test Results Menu

- **Volumes Percentage (1)**
Defines how much of the sample the device will use to fill the measurement volumes.
- **Tube Cleaning Percentage (2)**
Indicates the rate of dry air required to empty the viscosity tube after testing is completed.
- **Set Auto Tuning (3)**
This function calculates the PID values necessary for precise temperature control of the oil bath. It is recommended to use this function if the oil bath's temperature control is not accurate.
- **After setting**
Once the desired temperature is set from the main menu, tuning can be initiated by accessing the settings and selecting this function.
- **Pre-Heating (4)**
Enables or disables the preheating function of the device.
- **Wash Air Duration (5)**
Specifies the duration for which air is blown to dry the viscosity tube after it has been washed with a solvent. A minimum of 180 seconds is recommended for optimal drying.
- **Auto Volume Time (6)**
Configures how the device utilizes the volume of the viscosity tube during operation.
- **Auto Wash (7)**
Adjusts the wash level based on the condition of the test sample.

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