



***HEATING CONSTANT TEMPERATURE
BATHS "VIS-T-01", "VIS-T-02"***

Operating manual

! *Before using this instrument, carefully read the operating manual.*

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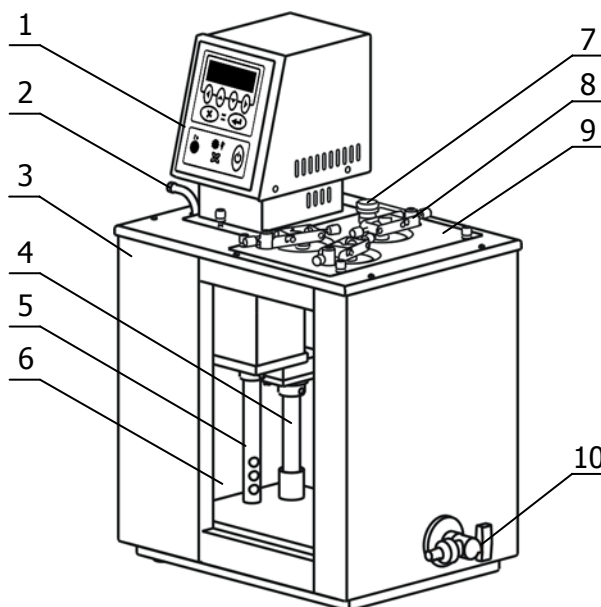
This manual provides the information needed to operate heating constant temperature baths "VIS-T-01" and "VIS-T-02". Baths differ in the range of working temperature.

INTRODUCTION

Intended use

Heating constant temperature baths "VIS-T-01", "VIS-T-02" are intended for standard viscosity test of liquids by means of glass capillary viscometers according to ASTM D445, IP 71, ISO 3104 or DIN 51366.

Appearance and parts names



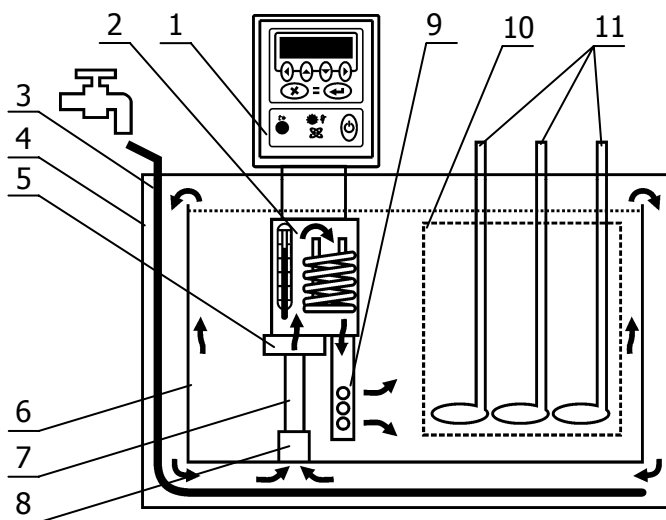
- 1 - heating immersion circulator M03;
- 2 - cooling coil connectors;
- 3 - stainless-steel bath tank with insulating glass window;
- 4 - input pipe;
- 5 - output pipe;
- 6 - glass panel;
- 7 - adapter for test thermometer;
- 8 - viscometer holders;
- 9 - bath cover;
- 10 - tank drain valve.

The operating principle of the heating constant temperature bath is based on supporting a preset constant temperature of flowing thermal fluid in the bath tank and providing a good temperature uniformity of the operating space.

The circulation of the thermal fluid and maintaining of the preset temperature by means of heating is provided by immersion circulator 1.

The cooling of the thermal fluid is carried out by means of heat exchange with environment or cooling liquid, passed through internal coil of the immersion circulator.

The operating principle of the heating constant temperature bath is shown in the figure below:



- 1 - heating immersion circulator M03;
- 2 - chamber with heater and temperature sensor;
- 3 - built-in cooling coil;
- 4 - outer bath tank;
- 5 - pump;
- 6 - inner bath tank;
- 7 - input pipe;
- 8 - inner bath clutch;
- 9 - output pipe;
- 10 - glass panel;
- 11 - glass viscometers.

Pump 5 of the heating immersion circulator 1 pours thermal fluid from outer bath 4 to chamber 2 with heater and temperature sensor by means of input pipe 7 connected to bath clutch 8. In the chamber thermal fluid temperature is adjusted and poured into inner bath tank 6 through output pipe 9. Then thermal fluid returns to outer bath tank 4 by overflowing.

Pouring of thermal fluid from inner bath to outer one and its flowing in the space between the walls provides an even temperature field in the inner bath.

Environmental Conditions

Indoor use only.

Ambient temperature: +10...+35 °C.

Air humidity: max. relative humidity 80 % for temperatures up to +31 °C,

Max. mains fluctuation of ±10 % are permissible.

Safety Recommendations

Avoid strikes to the housing, vibrations, damage to the operating element panel (keypad, display), and contamination.

Do not store the instrument in aggressive atmosphere.

Protect the instrument from contamination.

Only qualified personnel are authorized to perform configuration, installation, maintenance and repairs of the circulator.

Routine operation can also be carried out by untrained personnel who should however be instructed by trained personnel.

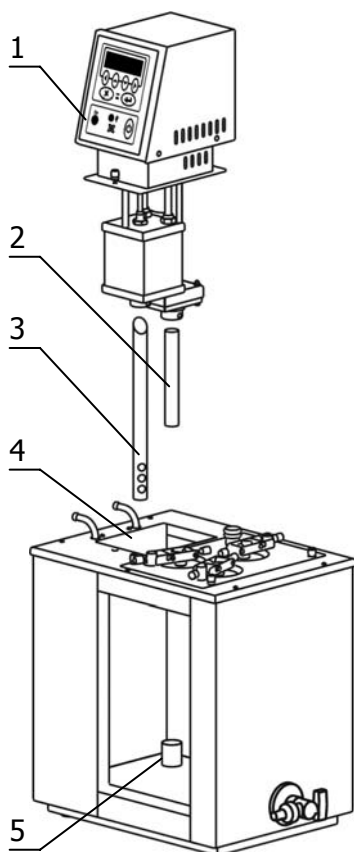
! *CAUTION: The instrument is not for use in explosive atmosphere.*

USING THE HEATING CONSTANT TEMPERATURE BATHS

! *NOTE: Throughout this manual, keystrokes are represented in **bold type**; references to messages on the display are in "quotes."*

Before using baths, carefully read the operating manual.

Preparation



Carefully select a spot for installing instrument with free air access for circulator ventilation. Make sure it is far away from any kind of heat source.

Place the instrument on an even surface with a pad, made of nonflammable material.

Insert input pipe 2 15 mm deep in the corresponding socket of the circulator and secure it with a screw.

Insert output pipe 3 with diagonal cut up to the stop in corresponding socket and secure it with a screw. Place apertures on the output pipe in a way that viscometers are stable while pouring thermal fluid.

Install circulator 1 into the adapter on the bath cover 4. Input pipe 2 should be inserted in the clutch of inner bath tank 5. Secure the circulator with screws.

While setting up the circulator, supply cord should not be connected to the power source.

Fill up the bath tank with thermal fluid through aperture under the bath cover. Level of thermal fluid should be 10-20 mm lower than the cover level.

When powering the circulator on, the pump turns on which lowers the level of thermal fluid. Add more thermal fluid. It should be 10-20 mm lower than the top end of the glass. Viscometer marks should be easy to see. As a backlight, a lamp or any other light source can be used.

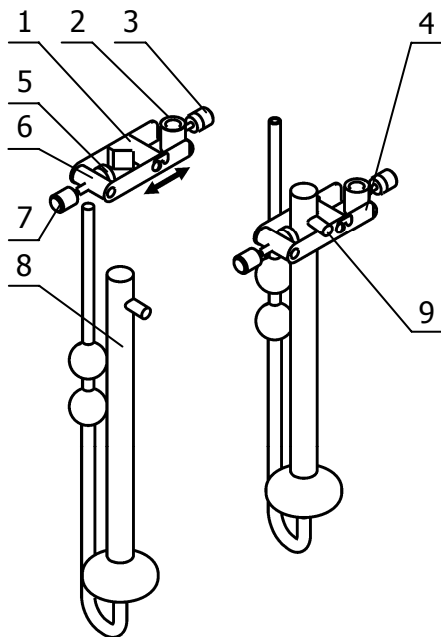
! *When filling the bath up, do not spill any thermal fluid on the front panel of the circulator.*

When operating instrument with thermal fluid temperature close to ambient, it might be necessary to provide the cooling by means of internal coil. In order to do that, connect instrument to tap water supply with hoses, attached to the coil connectors. The flow of the cooling water must be even and slightly weak. The cooling is not necessary if thermal fluid temperature is at least 15 °C higher than ambient temperature.

To operate the instrument, read the "M03 Heating Immersion Circulator. Operating manual."

Installing viscometers

Holders from our delivery package are intended for installing capillary glass viscometers in "VIS-T-01" and "VIS-T-02" bath tanks.



To install viscometers:

- weaken the prism 1 mounting screws and withdraw it back to a support sleeve 2;
- rotating knob 7 counter-clockwise, put clamping disk 5 in extreme position before it touches shaft 6;
- insert thick pipe of the full viscometer in the holder so that drain pipe 9 is placed on the ridge of holder 4;
- slide prism 1 towards clamping disk 5 and secure it with the screws;
- rotating knob 7 clockwise, secure viscometer in the holder;
- install the holder with viscometer on the bath tank. In order to do that, put support sleeve 2 of the holder on the post, which can be found on the cover next to the test spot;
- secure the holder on the post with screw 3.

GENERAL SPECIFICATIONS

Working temperature range:	
• VIS-T-01	+20...+100 °C
• VIS-T-02	+20...+150 °C
Set-point resolution	0.01 °C
Display resolution	0.01 °C
Temperature stability	±0.01 °C
Temperature uniformity	±0.01 °C
Digital setting accuracy	±0.3 °C
Digital setting repeatability	±0.02 °C
Heating capacity	2000 W
Bath volume	20 Liters
Dimensions, W×D×H	400×265×580 mm
Bath opening	130×155 mm
Bath depth	315 mm
Size of glass panel	165×275 mm
Weight	21 kg
Power supply	230 V, 50/60 Hz
Warranty	2 years