Elastocon®

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Manual

Fogging Tester, EB 03/EB 03C

Contents

Technical documentation supplied on USB flash drive

ma-eb03_17_1911

0. Introduction

The Fogging Tester is used to determine the windscreen fogging either as reflectometric or gravimetric values according to ISO 6452, SAE J1756 and other automotive specifications.

1. Setting up the Fogging Tester

Place the Fogging Tester on a stable bench and adjust the feet so the Fogging Tester is placed in a horizontal position with the help of the spirit level.

Connect the equipment to a grounded outlet of 220-240 V having a 10 A fuse.

We recommend the use of an Earth Leakage Detector.

EB 03 – Connect cooling water (tap water) to the back of the Fogging Tester, to the connection marked ”Cooling water in”.

Connect a drain hose, to the connection marked ”Cooling water out”.

EB 03C – Connect the power supply for the cooling elements to a separate grounded power supply having a 10 A fuse.

1.1 Heating and cooling media

Fill the cooling bath to the right with distilled or de-ionized water up to about 50 mm from the top.

Fill the heating bath to the left with a suitable heating fluid. We recommend a modified polyvalent aliphatic alcohol EB03.12, which has a suitable viscosity and is easy to clean. About 20 l of heating fluid is needed.

1.2 Heating bath level indicator

Adjust the level of heating fluid to 60 ± 2 mm below the glass plates. The level indicator placed on the left outside of the bath shows the min and max level. The level indicator may need to be checked periodically. A hole for topfilling can be found in front of the for topfilling can be found in front of the agitator motor.

Note: The level shall be adjusted with all beakers in the bath. Be aware that the level needs to be adjusted after any temperature change.

2. Running the Fogging Tester

2.1 Starting

Note: Make sure that there is sufficant liquid in the heating bath and the cooling bath.

- Switch on the Power.
- If the controllers are showing [OFF] – press the out/off button (no. 14. see chapter 2.3 on both controllers for approx. 3 sec, until the controllers start up).
- Set the heating bath temperature with the left controller (for appropriate temperature see relevant standard).
- Set the cooling bath temperature with the right controller. (For appropriate temperature see relevant standard).

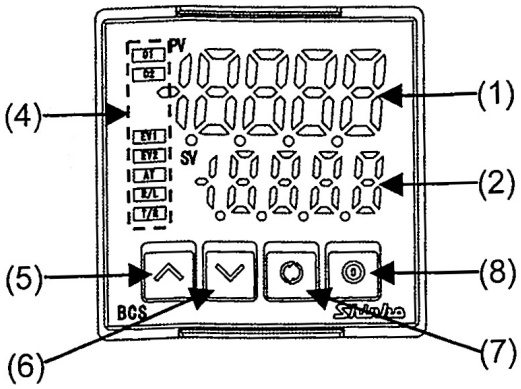
2.2 Cooling water

EB 03 – Open the cooling water tap for the cooling bath and use a flow between 0,1 to 1,0 l/min depending of tap water temperature. The flow is set with the needle valve in the bottom of the flowmeter. We recommend to start with about 0,5 l/min.

2.3 Set the temperature

Set the temperature according to the figure. Press MODE and then set the desired temperature by pressing up arrow (5) or down arrow (6).

Names and functions of the sections



(1) PV display: Indicates the input value with a red LED.

(2) SV display: Indicates the setting value with a green LED.

(4) O1 indicator: Lit when control output OUT1 is ON.

(4) EV1 indicator: Lit when Event output 1 is ON.

(4) AT indicator: Flashes while AT or Auto-reset is performing.

(4) T/R indicator: Lit during Serial communication.

(5) Increase key: Increases the numeric value.

(6) Decrease key: Decreases the numeric value.

(7) Mode key: Selects the setting mode or registers the setting value. (By pressing the Mode key, the setting value or selected value can be registered).

(8) OUT/OFF key: The control output ON/OFF function or Auto/Manual control function can be switched. (To cancel the control output ON/OFF function, press the OUT/OFF key again for approx. 1 second).

2.4 Set the alarm limits

The instrument for the heating bath is preset to a limit of ± 0,5 °C and the instrument for the cooling bath is preset to ± 1 °C. The controllers are locked. To set another limit consult the manual for the controllers.

2.5 Water pump and agitator

Start the pump for the water circulation with the “Pump” switch. Try to eliminate any air in the cooling plates, by turning the plates around. If there is air in the cooling plates, it may restrict the water flow.

Note: If you leave the instrument switched on without running a test, switch off the pump to avoid unnecessary wear on the pump motor.

2.6 Start the test

For the exact procedure see ISO 6452, or relevant national standard. When the temperatures are reached, you can put your samples in the beakers, place the steel rings on top of the samples, place the glass plates on top of the beakers with the sealing rings attached to the beakers, place filter papers on top of the glass plates and finally the cooling elements. The beakers should rest on the attached aluminium rings.

2.7 Cooling water return temperature

To check the cooling water return temperature during test, press the small red lever switch called ”Return Temperature” placed between the two controllers and read the return temperature on the controller for the cooling bath.

Note: To avoid alarm, switch off the alarm before doing this.

3. Temperature sensors

The three temperature sensors in the fogging tester have PT 100 elements with 1/3 DIN tolerance. This means a maximum error of 0,1 °C at 0 °C, or 0,27 °C at 100 °C.

For calibration see the attached calibration certificate.
The sensors and controllers should be calibrated annually.

To set the temperature more accurately the deviation found at the calibration can be used.

Note: It is very important to maintain the temperature in the hot bath very accurately, as a temperature difference of 0,5 °C can influence the result.

4. Service and maintenance

The Fogging tester shall be cleaned on both the outside and inside, at regular intervals.

The instrument can be cleaned with water and a detergent or ethanol on the outside.

Note: The water needs to be replaced at regular intervals to avoid microbiological growth in the cooling system or the addition of a fungicide may help to avoid growth.

5. Troubleshooting

If the water circulation through the cooling plates is low, check for air bubbles in the circulation.

Where the mains cord is attached there are 2 x 10 A fuses (slow).

Two fuses are located on the printed circuit board, one of 2 A for the instruments and one of 500 mA for the 12V DC, both rapid blow.

If the heaters in the cooling or heating bath do not heat, check the temperature fuses (93 °C and 152 °C). These fuses can be reached from the pump chamber.

Before changing a defective fuse, check for any possible short circuit, causing the fuse to burn.

6. Safety

Be aware of the hot liquid when inserting or removing the beakers.

7. Technical specification Fogging Tester, EB 03

Temperature range:		
heating bath,°C:		+40 to +130
cooling bath,°C:		+20 to +80
Accuracy:		
heating bath,°C:		± 0,5
cooling bath,°C:		± 0,5
Dimensions, w × h × d, mm:	**EB 03**	955 × 435 × 585
	EB 03C	955 × 530 × 585
Weight, approx, kg:	**EB 03**	57
	EB 03C	67
Beakers:		6
Voltage, V/phase/freq:		220–240/1/50
Power, W:		2 100
Colour:		bluegreen
Services, l/min:	**EB 03**	cooling water; 0,1 to 1,0 (max 18 °C)
Peltier cooling elements, W:	**EB 03C**	200
Standards:		ISO 6452, SAE J1756

7.1 Part list

The EB 03, EB 03C Fogging Tester includes the following:
(can also be purchased as spare parts)

- 2 pc temperature controllers, with 0,1 °C setpoint, and alarm
- 2 pc solid state relays for safe control
- 1 pc temperature sensor selector switch
- 6 pc Beakers according to ISO (EB 03.03)
- 6 pc Sealing rings of silicone rubber (EB 03.01)
- 6 pc Cooling plates (EB 03.06)
- 2 sets of test glass (7 pc × 2) (EB 03.04) including stand (EB 03.05)
- 6 pc Stainless steel rings for loading the samples (EB 03.07)
- 6 pc Aluminium rings for holding the beakers (EB 03.08)
- 1 pc Stainless steel stand for the beakers (in the hot bath)(EB 03.05)
- 1 pc Spirit Level
- 10 pc Aluminium foil discs for gravimetric tests (EB 03.09)
- 1 pc Spacer of plastic film (EB 03.11)
- 10 pc Filter papers (EB 03.10)

Optional

- Stove bath fluid (modified, aliphatic alcohol) (EB 03.12)
- DIDP reference liquid (EB 03.13)
- UV lamp, 254 nm hand held, for checking the tin side of glass panes (EB 03.14)
- Cutting die for cutting specimen with a cutting press (EP 04-dia 80)
- High precision analytical Balance (KEABT 220 - 5DM)
- Gloss meter (BY-4442)
- Sealing rings of fluro rubber (EB 03.16)

Support

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