

Check List Testomat 2000[®] and Testomat[®] ECO

Dear customers and service technicians,

This check list cannot replace your expertise or extensive experience in fault resolution. It is intended to support fast and systematic error diagnosis and error documentation. This list does not claim to be complete. We are therefore always grateful for any advice and information you may be able to provide. General user instructions can be found on the rear of this check list.

The Instrument Manufacturer

Block 1 / Plant and instrument data

		Testomat 2000 [®]				
		Testomat [®] ECO				
Plant type		Instrument type	Instrument number	Indicator type	Software status	Pump no.

Block 2 / Error message and error history Please mark appropriately (X)

What does your instrument's error history display? (“i” and “Enter” key => operating instructions)				(Error history text)
Does an error message appear on the display? For example, “Mf. analysis”, “Low water level”, etc. (See operating instructions: “Error messages / Troubleshooting”)	Yes	No		(Error message text)

Block 3 / Visual inspection and functional test Please mark appropriately (X) If applicable, values / comments

Is the instrument connected to the mains voltage specified on the rating plate?	Yes	No	
Does a message appear on the display?	Yes	No	
Does the instrument display a plausible measured value? (possible manual measurement _____ value)	Yes	No	Measured value:
Are the measuring chamber and sight-glass windows clean?	Yes	No	
Are the measuring chamber and the water-carrying hoses free of leaks?	Yes	No	
Is the indicator's expiry date still valid? (See expiry date printed on the indicator bottle)	Yes	No	Expiry date:
Has the correct indicator type been programmed? (TH 2025 => 0.25 to 2.5 °dH = factory setting)	Yes	No	Type:
Is the water pressure within the specified range (400 ml/min)? (See the type plate on the instrument)	Yes	No	Plant pressure:
Does the drain hose prevent the risk of backwater? (No “syphoning effect”!!)	Yes	No	
Is the drain hose free of blockages? (Microorganisms caused by contamination, etc.)	Yes	No	
Does the set flushing time/quantity of flush water ensure that only freshwater is measured?	Yes	No	Flushing time:
Are the hoses at the dosing pump free from air bubbles? (Operate the pump manually / Carry out a manual analysis)	Yes	No	

CARRYING OUT A (MANUAL) ANALYSIS

Does the water column rise evenly up to the overflow borehole when filling the measuring chamber (5 mm below the upper edge of the measuring chamber)? (If not: check the water pressure, water throughput/flow controller)	Yes	No	
Does the indicator pump dose correctly when starting an analysis? (LED at the pump illuminates!)	Yes	No	No. of dosing strokes:
Have the indicator and water been mixed properly in the measuring chamber after the dosing process? Check the magnetic stirring bar! =>see maintenance manual “Adjust mode”	Yes	No	

PROGRAMMING DATA / OPERATING CONDITIONS

Have the limit values been set correctly? (Within the measuring range/according to the performance limit of the plant?)	Yes	No	Limit values:
Is the Testomat instrument always supplied with mains voltage – except during maintenance work/emergency situations? (Temporary shutdown only via the “Standby” key or the “Stop” input!)	Yes	No	See the “General instructions for operating Testomat 2000 [®] and Testomat [®] ECO”

Please refer to “Error messages / Troubleshooting” in the **operating instructions** for further information on error messages and possible causes of faults.

Further functional tests (e.g. overflow detection and amplification setting => “Special function Adjust mode”) and service instructions can be found in the **maintenance manual**.

After completing these checks, experience shows that it can be assumed that the checked functions (Block 3) are in effective working order if you have answered all the questions with “Yes”. We recommend you to carry out these checks during each inspection or if faults occur.

General user instructions for Testomat 2000[®] and Testomat[®] ECO

Basic design of the instrument

Both Testomat 2000[®] and Testomat[®] ECO are designed for the permanent monitoring of water with up-to-the-minute measurements. Numerous measurements are carried out each day in standard application areas. If the instruments are to be operated with large analysis intervals, please observe the flushing times and the quantity of flush water for the respective plant type. Non-observance may result in residual or mixed water being measured from the lines and limit values being exceeded. The expiry date of the indicator can, in certain cases, also be exceeded. The following example will illustrate this:

If the instrument is used once a day to check soft water at roughly zero degrees, the annual requirement of indicator would be approximately 21.6 ml !! (Approx. 360 days x 60µl). The bottle contains 500 ml. More than 95% of the indicator must be replaced and disposed of, since the expiry date has been reached.

Large intervals often make little sense. Instead of achieving the desired savings, you may be left with unnecessary problems. The amount of water required per analysis is also only approx. 100 ml.

Switching off the instruments / Stopping the measurements

Always use the specified "Standby" (at the instrument) and "Stop" (external) functions to stop measurements. We do not recommend **disconnecting the mains power supply** to switch off the instruments, as

- the instruments may stop with a full measuring chamber, resulting in increased soiling of the measuring chamber/sight-glass windows/stirring bar, as well as the diffusion of water in the indicator hose
- an alarm message is output when restarting the instruments (due to the safety-related "de-energised contact function" of the alarm relay)
- the error history will be deleted.

In these cases, malfunctioning cannot be ruled out due to incorrect restart and unclear error messages.

If an instrument is to be switched off for several days, make sure the measuring chamber is empty and that the instrument is restarted in the same way as it was initially started. The dosing pump, at least, should be operated manually until the hose is free of air.

Initial start-up of new plants

In the case of new plants, we recommend you to **flush the pipelines** thoroughly prior to connecting the instrument. All the instruments are equipped with a fine filter for inlet water, which may become blocked with increased concentrations of solid particles. If this is not detected, the reduced water throughput may result in faults and error messages. At such high concentrations and despite the installed filter, particles can reach the solenoid valves whose functioning may be impaired as a result.

Operation/Indicator

Correct operation of Testomat instruments can only be achieved when **using original Heyl Testomat[®] indicators**. These indicators allow the precise measurement of even the smallest quantities of substances. As with all reactive chemical substances, the effectiveness is also influenced by ambient conditions.

The specified expiry dates relate to usage and storage at a room temperature of 15 to 20°C and away from direct sunlight. Deviating or, as yet, untested determining factors and ambient parameters may result in the expiry date being modified.

The indicator should always be replaced after reaching its expiry date in order to ensure reliable functioning. Please pay attention to the expiry date printed on the label.

Water inlet

Always observe the pressure range specified on the type plate for the water inlet. Insufficient water throughput (e.g. also when the sieve is soiled) results in incorrect filling of the measuring chamber and a poor analysis.

The measuring procedure is repeated several times, finally resulting in the error messages "Measuring fault analysis" (Display => "Mf analysis") or "Low water level".

Water outlet

When installing Testomat instruments, make sure there is no risk of **backwater** in the **outlet**. This is described in more detail in the operating instructions under "Water outlet". A "syphoning effect" in the drain hose will prevent correct filling of the measuring chamber, forcing water through the vent hole in the measuring chamber. The overflowing water may cause further damage to the instrument. This assembly fault leads to complaints of a "leaky instrument / measuring chamber". The message "Mf analysis" appears on the display due to, amongst other things, the incorrect amount of water in the measuring chamber.

Contamination of the plant

If the upstream plant contains a large number of germs, it can, depending on their type and concentration, lead to an increase in microorganisms and thus clogging of the entire drain duct in exceptional cases. This must be prevented by carrying out appropriate plant inspections and maintenance.

Instrument settings

Caution!

Your settings may be deleted if repairs are carried out. Therefore, note down your instrument settings in the table below before sending the instrument to our service team for repairs. Please enclose a copy of the table with the instrument. If you have noted down the settings, they can be easily re-entered by your service staff once any repairs have been completed.

Menu	Setting
MODE OF OPERATION	
Time-controlled	
Volume interval	
Dynamics	
External (Start)	
DISPLAY UNIT	
Display in °dH	
Display in °f	
Display in ppm CaCO ₃	
Display in mmol/l	
TYPE OF REAGENT	
500ml-bottle	
100ml-bottle	
TH2005 Water hard.	
TH2025 Water hard.	
TH2100 Water hard.	
TH2250 Water hard.	
TC2050 Carbon. hardn.	
TC2100 Carbon. hardn.	
TM2005 minus-m-value	
TP2100 p-value	
LIMIT VALUES	
Limit val. 1:	
Limit val. 2:	
FLUSH TIMES/INTERVAL	
Internal flush time	
External flush time	
Interval pause	
MEASURING POINTS	
1 Measuring point	
2 Measuring points	
TYPE OF WATER METER	
1 Litre/Impulse	
2,5 Litres/Impulse	
5 Litres/Impulse	
10 Litres/Impulse	
100 Litres/Impulse	
500 Litres/Impulse	
1000 Litres/Impulse	
LOCK OUT	
Off	
Limit val. 1:	
Limit val. 2:	
PLANT CONTROL	
Min. Res. Quant.	
Limit val. 1:	
Limit val. 2:	
BOB-OPERATION	
Function off	
Function on	
BOB-duration	

FUNCTION LV1	
Duration	
Impulse	
Interval	
Two point	
Time:	
FUNCTION LV2	
Duration	
Impulse	
Interval	
Time:	
HYSTERESIS LV1	
Analysis (1,2,3)	
HYSTERESIS LV2	
Analysis (1,2,3)	
ALARM/MESSAGE	
Reagent low level	
Low water pressure	
Mf. analysis	
Ff. optics	
Ff. dosing fault	
Ff. dosing pump	
Ff. outlet to drain	
Mf. dirtiness	
power failure 24 V	
Mf. turbid	
Plant control	
Transfer error	
Meas. range exceeded	
Maint. int. exceeded	
FUNCTION IN1	
Normally open contact	
Normally closed contact	
FUNCTION STOP	
Normally open contact	
Normally closed contact	
INTERFACES	
Type 0-20 mA	
Type 4-20 mA	
Type RS232	
FUNCTION AUX	
Contact before analysis	
Contact during analysis	
Contact after analysis	
Time:	
OPERATING TIME	
MAINTENANCE INTERV.	
CUSTOMER SERVICE	

Instrument settings

Caution!

Your settings may be deleted if repairs are carried out. Therefore, note down your instrument settings in the table below before sending the instrument to our service team for repairs. Please enclose a copy of the table with the instrument. If you have noted down the settings, they can be easily re-entered by your service staff once any repairs have been completed.

Menu	Setting
MODE OF OPERATION	
Time-controlled	
Volume interval	
DISPLAY UNIT	
Display in °dH	
Display in °f	
Display in ppm CaCO ₃	
Display in mmol/l	
TYPE OF REAGENT	
500ml-bottle	
100ml-bottle	
TH2005 Water hard.	
TH2025 Water hard.	
TH2100 Water hard.	
TH2250 Water hard.	
LIMIT VALUES	
Limit val. 1:	
Limit val. 2:	
FLUSH TIMES	
Flush	
TYPE OF WATER METER	
1 Litre/Impulse	
2,5 Litres/Impulse	
5 Litres/Impulse	
10 Litres/Impulse	
100 Litres/Impulse	
500 Litres/Impulse	
1000 Litres/Impulse	
BOB-OPERATION	
Function off	
Function on	
FUNCTION LV1	
Duration	
Impulse	
Interval	
Two point	
Time:	
FUNCTION LV2	
Duration	
Impulse	
Interval	
Time:	

HYSTERESIS LV1	
Analysis (1,2,3)	
HYSTERESIS LV2	
Analysis (1,2,3)	
FUNCTION STOP	
Normally open contact	
Normally closed contact	
INTERFACES	
Type 0-20 mA	
Type 4-20 mA	
Type RS232	
LANGUAGE	
German	
English	
French	
Italian	
Polish	
Dutch	
Spanish	

