PRODUCT CATALOG 2016

Gebrüder Heyl Analysentechnik GmbH & Co.KG

HEYL

Water is our element

Front grafic: designed by Freepik.com

Introduction

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To make it easy for you to find our products quickly, we've marked off our product sectors with different colors. This shows you at a glance what product area you're in.

Tradition and Future by your Side

For 58 years Gebrüder Heyl Analysentechnik has been active on the market with products for water analysis and industrial water treatment. Over the years, we have continuously developed new, innovative and user-friendly products which the industry has acclaimed.

Generation of EVO devices

In the fall of 2015 we introduced the first device of our new generation of analysis instruments into the market. The Testomat® EVO TH features a wealth of new functions to meet the increasingly stringent requirements imposed on modern water treatment facilities. Data transfer and online monitoring have been realized via an optional WLAN SD card in the device. We have thus created the prerequisites for the integration of our devices into networked production operations. The development of the hardness tester Testomat® EVO TH will be followed by devices with additional parameters currently at the planning stage.

New phosphate measuring instrument

We have developed the Testomat 2000® PO4 for the increased requirements of monitoring process water in cooling circuits. The phosphate measuring instrument measures orthophosphate in the measuring range of 0 – 10 mg/l. Monitoring phosphate content is also becoming increasingly important in water treatment plants.

According to paragraph 11 of the current Drinking Water Ordinance the limits for phosphates that may be added to the drinking water are at 2.2 mg/l phosphorus (equivalent to 6.75 mg/l PO_4). Continuous monitoring of the limits with a phosphate measuring instrument allows for the precise adjustment of precipitant consumption and a reduction in operating costs.

Expansion of indicator series

We have expanded the indicator series of the Testomat® 808 device to include the Type 350 indicator. You can now measure degrees of hardness up to 5°dH.

We have also developed a new set of reagents for the Testomat 2000® Polymer. Customers' own reagents have been used up to now. However, because of the large number of polyacrylates on the market our instrument needs to be adjusted further to the polyacrylate to be measured. Please contact one of our service partners in this regard to discuss the further procedure.

New development of the family of controllers

The controllers of the Softmaster series will also be given a facelift this year and will be completely revised.

The new series will probably be called MultiControl and marketed in different versions. Our initial plan includes controllers for cooling tower monitoring with desalination control and metering, for reverse osmosis systems and water softening plants. The controllers will feature a modular design and can be expanded with plug-in cards.

New carbonate measuring instrument

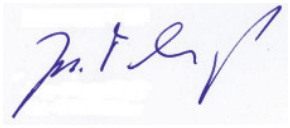
Based on the reasonably priced Testomat ECO® we will present the carbonate tester Testomat ECO® C during the first half of 2016.

The new measuring instrument will be especially suitable for online measurements of the acid capacity in swimming pool water. Thanks to continuous monitoring, the consumption of auxiliary agents such as flocculants and chlorine can be optimized and personnel who previously had to perform regular manual checks of the water are freed up for other tasks.

Silicate measurement based on Testomat® 808

Complying with the silicate limits is especially important in hospitals in the sterilization of instruments. A simple limit measuring instrument monitoring compliance with the limit according to EN 285 is sufficient here. Our Testomat® 808 SiO_2 will be developed exactly for this application and monitors the silicate content in the process water online. The market launch of our silicate instrument is scheduled for the first half of 2016.

Yours sincerely,



Jörg-Tilman Heyl

CEO

Devices for online analysis of aqueous media

Introduction of the Selfclean Series of Testomat 2000® at the ATD Congress (Association des techniciens de dialyse) in Toulouse, France 2015. The use of the Selfclean devices is also popular in dialysis units for water treatment.

Analysis devices: contents

Selection help

Since our selection of Testomat devices has gotten quite large, we offer your our selection help table on page 29 as a special overview which will tell you what device is especially appropriate for what application.

Our **Testomat 2000®** checks the hardness of your feed water and condensate water in your hot water boiler and steam boiler systems according to the current **TÜV WÜ 100** regulation and supports you in maximizing the cost-efficiency of your system.

Applications

Gebrüder Heyl process photometers and titration instruments have been putting their reliability and practicality to the test since 1958.
With improved accuracy and resolution, in combination with analysis functions that have undergone consistent further development, the current generation of instruments helps water treatment system operators reduce costs and guarantee optimal water quality.

Improve your water treatment process with online analysis instruments

Plant operators and plant technicians can increase the efficiency of the boiler water softening process with constant water quality monitoring. This enables operators to recognize whether the regeneration process is running correctly, the resin quality is still sufficient, and sufficient regeneration conditioning agents are present in the right consistency. The combination of Testomat 2000®, Softmaster® MMP2. and EcoControl EC Dos Desalt leads to less waste water, low salt use, and cost savings thanks to low energy requirements.

What companies can save energy costs by monitoring water quality with online analysis instruments?

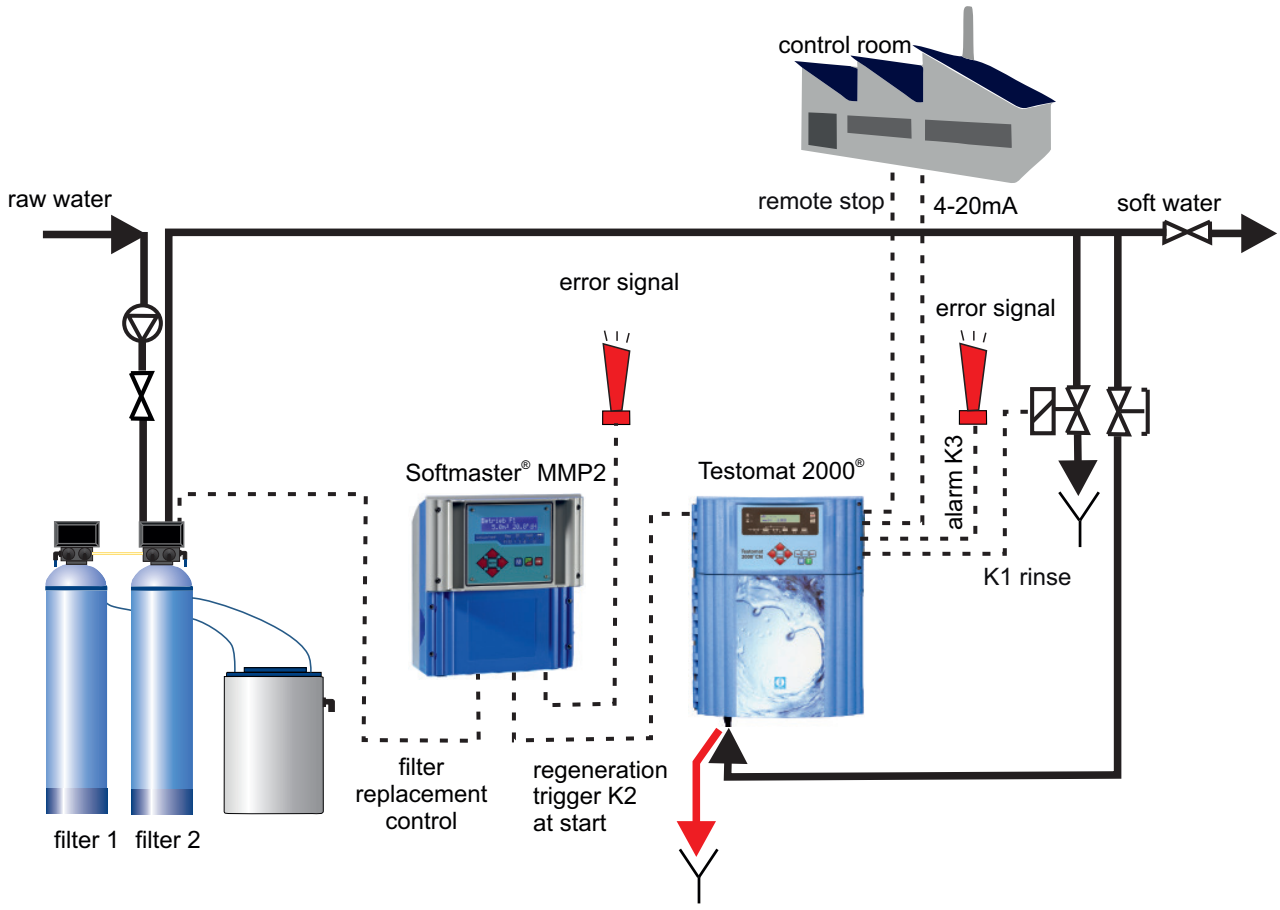
Companies that use low-pressure boilers, such as:

- bakeries
- meat processing plants
- steam generation sterilization
- laundry companies

High-pressure boilers are manufactured as large-volume boilers with an allowable operating pressure between 14.5 and 362.5 psi (1 and 25 bar). This technology is used by companies in the following sectors:

- food and beverage industry (breweries, dairies)
- pulp and paper industry
- chemical industry
- pharmaceutical industry
- construction materials industry

Online monitoring of water quality with Gebrüder Heyl instruments



Product	Testomat® 808	Testomat ECO®
		
Description	limit value measuring instrument for water hardness	automatic online analysis units for water hardness
Parameters	water hardness	water hardness
Measuring range	0.2–3 °dH (0.4 … 54 ppm $CaCO_3$)	0.05–25 °dH
Advantages	❍ low water consumption ❍ state-of-the-art electronics ❍ modern indicator pump system ❍ error display ❍ indicator quantity display ❍ external rinsing valve control ❍ limit value evaluation/external control ❍ alarm processing ❍ internal and external rinsing via manual control ❍ 72 hours without supervision possible (in BOB mode) ❍ selector switch for pause interval; selector switch for adjusting the behavior of the relay when the limit value is exceeded	❍ freely selectable hardness unit: °dH, °f, ppm, $CaCO_3$ or mmol/l ❍ high measurement accuracy thanks to precise piston dosing pump ❍ two independent limit values (choice of 1, 2, or 3 bad analyses before the limit value relay switches) and adjustable switching functions ❍ reliable, low-maintenance operation ❍ very simple menu-driven operation and programming via plain-text display ❍ two neutral changeover contacts ❍ error message output (neutral changeover) ❍ current output 0/4–20 mA ❍ BOB function
Protection type/class	IP54 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 16 VA	max. 30 VA
Dimensions	approx. 14.3” x 12.4” x 5.4” 364 x 314 x 138 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 9.6 lbs (4.35 kg)	approx. 19.8 lbs (9.0 kg)
Operating pressure	14.5 to 58 psi (1 to 4 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	–	German, English, French, Italian, Polish, Dutch, Spanish (others upon request)
Application	applications of continuous residual hardness monitoring, e.g.: ❍ reverse osmosis plants ❍ soft water for commercial purposes ❍ pure water production plants ❍ galvanization	monitoring and control of water quality, e.g.: ❍ water treatment plants ❍ drinking water plants

Testomat® EVO TH	Testomat 2000®	
 New		
automatic online analysis units for water hardness	automatic online analysis units for water hardness	
water hardness	water hardness, carbonate hardness, p-value, minus m-value	
0.05–25 °dH	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value	
❍ Offering all the benefits of the Testomat ECO® Plus: ❍ Built-in SD card for – Recording data, alarm, errors – Firmware updates – Importing and exporting settings ❍ Optional: WLAN access for wireless read access to the SD card ❍ Transfer of measurement data and status via the RS232 port ❍ There is also scope to connect a field bus converter or a converter for telecommunication networks.	❍ freely selectable hardness unit: °dH, °f, ppm, $CaCO_3$, or mmol/l ❍ high measurement accuracy thanks to precise piston dosing pump ❍ monitoring of two measuring points (switching via external magnet valves) ❍ reliable, low-maintenance operation ❍ very simple menu-driven operation and programming via plain-text display ❍ BOB function ❍ two independently programmable limit value contacts for monitoring and control tasks ❍ recording of analysis results with optional plug-in card (SK910 current interface) for a point or line recorder (0/4–20 mA), SD card, or printer	
IP65 / I	IP65 / I	
230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	
max. 30 VA	max. 30 VA	
approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	
approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)	
14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	
German, English, French, Dutch, Turkish (others upon request)	German, English, French, Italian, Polish, Dutch (others upon request)	
Monitoring and checking of water quality e.g.: ❍ Water treatment facilities ❍ Industrial boilers ❍ Process water monitoring ❍ Drinking water systems	❍ water treatment plants ❍ water blending plants ❍ drinking water plants ❍ water softening plants ❍ decarbonization plants ❍ desalination plants ❍ boiler houses ❍ cooling towers	

Product	Testomat 2000® Antox	Testomat 2000® CAL
		
Description	automatic online analysis units for hardness of water with elevated chlorine or H_2O_2 content	automatic online analysis unit for water hardness with additional calibration function
Parameters	water hardness, carbonate hardness, p-value, minus m-value	water hardness, carbonate hardness, p-value, minus m-value
Measuring range	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value
Performance profile	❍ the same advantages as Testomat 2000® in addition: ❍ additional pump for dosing a reducing agent before analysis for eliminating faults caused by oxidizing agents (chlorine, H_2O_2)	❍ the same advantages as Testomat 2000® in addition: ❍ with calibration function
Protection type/class	IP65 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 30 VA	max. 30 VA
Dimensions	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
Operating pressure	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	German, English (others upon request)	German, English, French, Italian (others upon request)
Application	❍ control of water quality in areas where measurement errors can arise due to oxidizing agents	control of water quality for which calibration of the measuring instrument is important, e.g.: ❍ pharmaceutical industry

Testomat 2000® CN	Testomat 2000® self clean	Testomat 2000® V
		
automatic online analysis unit for water hardness for the Chinese market, with Chinese menu navigation	automatic online analysis units for water hardness with cleaning function for difficult water	automatic online analysis unit for water hardness for regulating blending water
water hardness, carbonate hardness, p-value, minus m-value	water hardness, carbonate hardness, p-value, minus m-value	water hardness, carbonate hardness
0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value	1.0–25.0 °dH water hardness 1.0–20 °dH carbonate hardness
❍ the same advantages as Testomat 2000® in addition: ❍ Chinese menu navigation for the Asian market	❍ the same advantages as Testomat 2000® in addition: ❍ with additional dosing pump for dosing our cleaning agent for cleaning the measuring chamber after analysis	❍ the same advantages as Testomat 2000® in addition: ❍ suitable in connection with a 3/2-way motor valve with 0/4–20 mA interface as a control system for water hardness and carbonate hardness of blending water ❍ the selection of the reagent determines the working range of the controller (= measuring range)
IP65 / I	IP65 / I	IP65 / I
230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
max. 30 VA	max. 30 VA	max. 30 VA
approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Mandarin and English	German, English (others upon request)	German, English, French, Italian (others upon request)
❍ water treatment plants ❍ water blending plants ❍ drinking water plants ❍ water softening plants ❍ decarbonization plants ❍ desalination plants ❍ boiler houses ❍ cooling towers	❍ use for difficult water, e.g. calcium, biofims, various other deposits ❍ extending service life ❍ reducing contamination in the measuring chamber	❍ regulation of water blending systems (cooling circuits, process water)

Product	Testomat 2000® DUO	Testomat 2000® DUO CN
		
Description	automatic online analysis units for water hardness for monitoring two measuring points	automatic online analysis units for water hardness for monitoring two measuring points for the Chinese market
Parameters	water hardness, carbonate hardness, p-value, minus m-value	water hardness, carbonate hardness, p-value, minus m-value
Measuring range	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value	0.05–25 °dH water hardness 0.5–20 °dH carbonate hardness 0.1–15 mmol/l p-value 0.05–0.5 mmol/l minus m-value
Performance profile	❍ the same advantages as Testomat 2000® in addition: ❍ monitoring of two different measuring points with different indicator types, e.g. water hardness with different measurement ranges or water hardness and carbonate hardness ❍ automatic switching between measuring points ❍ one input available for limiting measuring point 1	❍ the same advantages as Testomat 2000®DUO in addition: ❍ Chinese menu navigation for the Asian market
Protection type/class	IP65 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 30 VA	max. 30 VA
Dimensions	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
Operating pressure	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	German, English, French, Italian, Polish (others upon request)	Mandarin and English
Application	❍ use in two circuits with different hardnesses ❍ measurement of inlet and outlet hardness	❍ use in two circuits with different hardnesses ❍ measurement of inlet and outlet hardness

Testomat 2000® CLF	Testomat 2000® CLT	Testomat 2000® CLT self clean
		
automatic online analysis unit for determining chlorine content	automatic online analysis unit for determining chlorine content	automatic online analysis unit for determining chlorine content with cleaning function for difficult water
free chlorine	total chlorine	total chlorine
0.00–0.99 mg/l (0.01) 1.0–2.5 mg/l (0.1)	Total chlorine or free chlorine 0.00–0.99 mg/l 0.00–0.99 mg/l 1.0–2.5 mg/l 1.0–2.5 mg/l	Total chlorine 0.00–0.99 mg/l (0.01) 1.0–2.5 mg/l (0.1)
❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. one minute	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. one minute ❍ can be converted for CLF (free chlorine)	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. one minute ❍ with additional dosing pump for dosing one cleaning agent for cleaning the measuring chamber after analysis
IP65 / I	IP65 / I	IP65 / I
230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
max. 30 VA	max. 30 VA	max. 30 VA
approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
German, English, French, Italian (others upon request)	German, English, French, Italian (others upon request)	German, English, French (others upon request)
❍ monitoring of chlorination systems for drinking water/swimming pool water ❍ protection for reverse osmosis membranes ❍ monitoring of biocides and conditioning agents containing chlorine	❍ monitoring of chlorination systems for drinking water/swimming pool water ❍ protection for reverse osmosis membranes ❍ monitoring of biocides and conditioning agents containing chlorine	❍ disinfectant monitoring for drinking water and process water ❍ medical technology (dialysis)

Product	Testomat 2000® CLO2	Testomat 2000® THCL
		
Description	automatic online analysis unit for determining chlorine dioxide content	automatic online analysis unit for determining total chlorine and water hardness
Parameters	chlorine dioxide ClO_2	total chlorine water hardness
Measuring range (resolution)	0.00–1.88 mg/l (0.02) 1.9–4.7 mg/l (0.2)	0.00–0.99 mg/l (0.01) } total chlorine 1.0–2.5 mg/l (0.1) 0.25–2.50°dH (0.05) water hardness
Performance profile	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. one minute	❍ the same advantages as Testomat 2000® in addition: ❍ two measurement parameters in one device ❍ combination of total chlorine and hardness measuring instrument
Protection type/class	IP65 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 30 VA	max. 30 VA
Dimensions	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
Operating pressure	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	German, English, French (others upon request)	German, English, French, Italian (others upon request)
Application	❍ disinfectant monitoring for drinking water and process water	❍ medical technology (dialysis) ❍ corrosion protection ❍ protection for reverse osmosis membranes ❍ monitoring of softener and chlorination systems for drinking water or swimming pools

Testomat 2000® Br	Testomat 2000® CrVI	Testomat 2000® Fe
		
automatic online analysis unit for determining bromine content	automatic online analysis unit for determining chromate or chromium VI content	automatic online analysis unit for determining iron content
bromine Br_2	chromate (CrO_4^{2-}) or chromium VI (CrVI)	iron (Fe (II)/Fe (III))
0.00–2.23 mg/l and 2.3–5.6 mg/l	0.00-0.99 mg/l (0.01) 1.0-2.0 mg/l (0.1) } chromate 0–1.0 mg/l chromium VI	0.00–0.65 mg/l and 0.7–1.0 mg/l
❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 1 minute	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 2 minutes	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 7 minutes
IP65 / I	IP65 / I	IP65 / I
230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
max. 30 VA	max. 30 VA	max. 30 VA
approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
German, English, French (others upon request)	German, English, French (others upon request)	German, English, French, Italian, Polish (others upon request)
❍ monitoring the dosing of disinfectant	❍ monitoring of chromate content waste water in galvanization plants ❍ control of waste water in the metalworking industry	❍ monitoring of systems for removing iron from well water ❍ controlling industrial or drinking water

Product	Testomat 2000® PO4	Testomat 2000® Polymer
	 New	
Description	automatic online analysis unit for determining phosphate content	automatic online analysis unit for determining polyacrylate content
Parameters	phosphate PO_4	polyacrylates
Measuring range (resolution)	0.0 - 7.0 mg/l (0.1) 7.0 - 10.0 mg/l (0.25)	customer-specific, e.g. 0.0–50.0 mg/l
Performance profile	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 5 to 15 minutes	❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 7 minutes ❍ scaling factor adjustable from 0.50 to 30.00 to accommodate the reagents used It is neccessary to customize the Testomat 2000® Polymer because of the large amount of polyacrylats, which can be measured with this unit. Either use your existing reagents or use our new polymer reagents.
Protection type/class	IP65 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 30 VA	max. 30 VA
Dimensions	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
Operating pressure	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	German, English (others upon request)	German, English (others upon request)
Application	❍ monitoring of process water ❍ conditioning of production water ❍ treated wastewater (sewage treatment plants, biogas plants) ❍ online – environmental analysis	❍ monitoring of conditioning agents in cooling and heating circuits

Testomat 2000® SO3	Titromat® KH	Titromat® M1
		
automatic online analysis unit for determining sulfite content	automatic titration unit for determining carbonate hardness	automatic titration unit for determining carbonate hardness
sulfite SO_3^{2-}	carbonate hardness	carbonate hardness (m-value)
0.0–9.9 mg/l and 10–20 mg/l	5–150 °KH (5) 2–60 °KH (2)	0.05–1.00 °dH (0.025) 0.09–1.80 °f (0.045)
❍ the same advantages as Testomat 2000® in addition: ❍ the analysis result is displayed after a reaction time of approx. 3 minutes	❍ the same advantages as Testomat 2000® ❍ special for high hardness measuring ranges	❍ the same advantages as Testomat 2000® ❍ special for low hardness measuring ranges
IP65 / I	IP65 / I	IP65 / I
230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
max. 30 VA	max. 30 VA	max. 30 VA
approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
German, English (others upon request)	German, English, French (others upon request)	German, English, French (others upon request)
❍ monitoring of boiler feed water in steam boiler systems (sulfite for oxygen binding)	❍ alkalinity of open coolant circuits	❍ corrosion monitoring in boiler feed water, ❍ residual alkalinity after de-carbonization (e.g., breweries)

Product	Titromat® M2	Titromat® TH
		
Description	automatic titration unit for determining carbonate hardness	automatic titration unit for determining water hardness
Parameters	carbonate hardness (m-value)	water hardness
Measuring range (resolution)	0.05–2.00 °dH (0.05) 0.09–3.60 °f (0.09)	2.5–50.0 °dH (2.5)
Performance profile	❍ the same advantages as Testomat 2000® ❍ special for low hardness measuring ranges	❍ the same advantages as Testomat 2000®
Protection type/class	IP65 / I	IP65 / I
Supply voltage	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz
Power consumption	max. 30 VA	max. 30 VA
Dimensions	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)	approx. 15” x 18.9” x 11” 380 x 480 x 280 mm (W x H x D)
Weight	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)
Operating pressure	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)
Menu languages	German, English, French (others upon request)	German, English, French, Italian (others upon request)
Application	❍ corrosion monitoring in boiler feed water, ❍ residual alkalinity after de-carbonization (e.g., breweries)	❍ drinking water production and supply, ❍ raw water monitoring

Order numbers

type	menu language	24 V	115V	230V
Testomat 2000®	German	100090	100100	100095
	German without front sticker	100420	100421	100422
	English	100091	100101	100096
	French	100092	100102	100097
	Italian	100093	100103	100098
	Polish	100094	100104	100099
	Dutch	100011	100012	100013
	Spanish	100014	100015	100016
Testomat 2000® Antox	German	100440	100450	100460
	English	100441	100451	100461
Testomat 2000® BR	German	100520	100525	100530
	English	100521	100526	100531
	French	100522	100527	100532
Testomat 2000® CAL	German	100210	100215	100220
	English	100211	100216	100221
	French	100212	100217	100222
	Italian	100213	100218	100223
	Dutch	100214	100219	100224
Testomat 200[0]® CLO2	German	100500	100505	100510
	English	100501	100506	100511
	French	100502	100507	100512
Testomat 2000® CLF	German	100230	100235	100240
	English	100231	100236	100241
	French	100232	100237	100242
	Italian	100233	100238	100243
Testomat 2000® CLT	German	upon request	upon request	100245
	English	upon request	upon request	100246
	French	upon request	upon request	100247
	Italian	100133	100138	100143
Testomat 2000® CLT self clean	German	100130	100135	100140
	English	100131	100136	100141
	French	100132	100137	100142
Testomat 2000® CN	Mandarin incl. SD-card data logger			110212
	Mandarin without SD-Card data logger			110215
Testomat 2000® CrVI	German	100310	100315	100320
	English	100311	100316	100321
	French	100312	100317	100322
Testomat 2000® DUO	German	100290	100295	100300
	English	100291	100296	100301
	French	100292	100297	100302
	Italian	100293	100298	100303
	Polish	100294	100299	100304
Testomat 2000® DUO CN	Mandarin	110221	110220	110219
Testomat 2000® Fe	German	100150	100155	100160
	English	100151	100156	100161
	French	100152	100157	100162
	Italian	100153	100158	100163
	Polish	100154	100159	100164
	Dutch	100186	100187	100188
Testomat 2000® PO4	German	100560	100565	100570
	English	100561	100566	100571
	French	100562	100567	100572
Testomat 2000® Polymer	German	upon request	upon request	100470
	English	upon request	100472	100473
	French	upon request	upon request	100471
Testomat 2000® SO3	German	100350	100355	100360
	English	100351	100356	100361

Order numbers

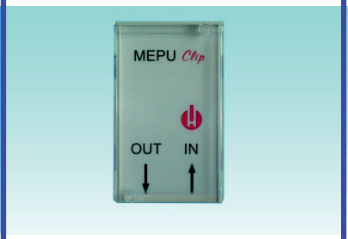
type	menu language	24 V	115V	230V
Testomat 2000® self clean	German	100380	100390	100370
	German without front sticker	–	–	100365
	English	100381	100391	100371
	French	100382	100392	100372
Testomat 2000® THCL	German	100270	100275	100280
	English	100271	100276	100281
	French	100272	100277	100282
	Italian	100273	100278	100283
Testomat 2000® V	German	100170	100175	100180
	English	100171	100176	100181
	French	100172	100177	100182
	Italian	100173	100178	100183

Type Testomat® 808	pressure range	24 V	115V	230V
Testomat® 808	1-4 bar	100612	100611	100610
	0,3-1 bar	100615	100614	100613

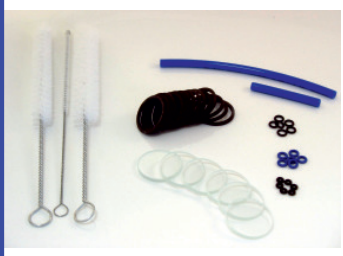
Type Testomat ECO®	menu language	24 V	115V	230V
Testomat ECO®	DE, GB, FR, NL, PL, ES, IT	100112	100117	100122
	without front sticker	100430	100431	100432

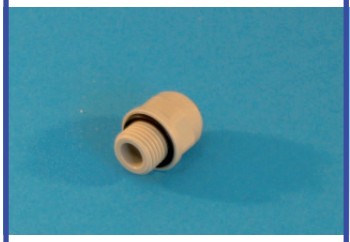
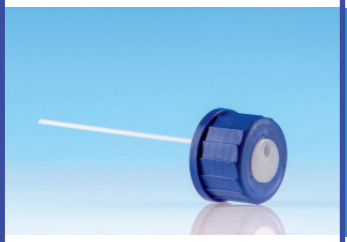
Type Testomat® EVO	menu language	24 V	multi voltage - power supply unit 100-240 VAC	230V
Testomat® EVO TH	DE, GB, FR, NL, ES, TR	upon request	100701	100700

Type Titromat®	menu language	24 V	115V	230V
Titromat® KH	German	110190	110195	110200
	English	110191	110196	110201
	French	110192	110197	110202
Titromat® M1	German	110150	110155	110160
	English	110151	110156	110161
	French	110152	110157	110162
Titromat® M2	German	110130	110135	110140
	English	110131	110136	110141
	French	110132	110137	110142
Titromat® TH	German	110110	110115	110120
	English	110111	110116	110121
	French	110112	110117	110122
	Italian	110113	110118	110123

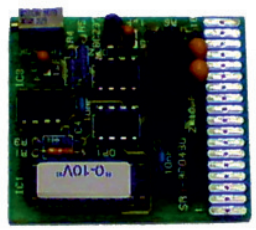
Accessories Testomat®/Titromat®	DOSIClip®	MEPUClip®	FLOWClip®
			
Is used	dosing pump for Testomat devices	booster pump for Testomat 2000®/Titromat®	dosing pump for Testomat 2000® self clean
Order number	270470	270410	270440
Description	electromagnetically driven piston dosing pump for dosing aqueous media that are free of suspended matter	installation of the membrane pump is necessary for water inlet pressure under 0.3 bar	membrane pump for dosing cleaning agent into the measuring chamber also possible for other reagents
Technical data	❍ pump volume: 30 µl/stroke ❍ max. suction height: approx. 0.5 m with water and 0.8 mm hose ID ❍ max. pump pressure: approx. 1 bar /4.5 psi with water and 0.8mm hose ID (max. 0.5 m length) ❍ ambient temperature: 10–45°C / 50-113°F ❍ mounting: on 35 mm / 1.4" DIN top-hat rail	❍ Flow rate at atmospheric pressure : 0.6 l/min ❍ Maximum suction head: 3mH_2O self-priming ❍ ambient temperature: 10–45°C / 50-113°F ❍ mounting: on 35 mm / 1.4" DIN top-hat rail When a "Testomat® with pump" is ordered, installation occurs at the factory.	❍ Flow rate at atmospheric pressure : 0.1 l/min ❍ Maximum suction head: 3mH_2O self-priming ❍ ambient temperature: 10–45°C / 50-113°F ❍ mounting: on 35 mm / 1.4" DIN top-hat rail

	PERIClip®	PERIClip® DUO	
			
		New	
Is used	dosing pump for Testomat 2000®/Titromat®	dosing pump for Testomat 2000®/Titromat®	
Order number	270430	270435	
Description	hose pump for aqueous media	Double-hose pumps for aqueous media	
Technical data	❍ pump volume: 400–500 µl/min ❍ ambient temperature: 10–45°C / 50-113°F ❍ mounting: on 35 mm / 1.4" DIN top-hat rail ❍ dimensions: 75 x 45 x 110 mm (HxWxD) 3" x 1,8" x 4.3"	❍ pump volume: 600–900 µl/min ❍ ambient temperature: 10–45°C / 50-113°F ❍ mounting: on 35 mm / 1.4" DIN top-hat rail ❍ dimensions: 75 x 100 x 110 mm (HxWxD) 3" x 3.94" x 4.3"	

Accessories Testomat®/Titromat®	Testomat 2000® connection kit	Connection set	Service set
			
Is used as	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat®808	for Testomat®808
Order number	040187	37610	270351
Description	connection kit with ball valve, pipes, and reducing pieces for the water connection	for the water connection	Set for regular maintenance
Technical data	❍ 5 m (16.4 ft) pipe, plastic PE 6/4x1, blue ❍ 2 m (6.6 ft) drain hose, d_i=12 mm ❍ 1 ball valve, PPSV 011223W ❍ 1 10-6 reducing connector ❍ 1 3/8"-1/2" reducing nipple	The kit consists of: ❍ plastic hose, 6/4 x 1; length 5 m / 16.4 ft ❍ 10 to 6 mm reducer ❍ 3/8"a to 6 mm stopcock	❍ 15 24x2 flat gaskets ❍ 6 sight glasses ❍ 6 3.68x1.78 O-rings ❍ 6 4.5x1.5 O-rings ❍ 6 1.78x1.78 O-rings ❍ 1 pipe, l = 53 mm / 2" ❍ 1 pipe, l = 140 mm / 5.5" ❍ 1 cleaning brush set

	Conversion kit for water connection USA	Conversion kit for 100ml bottle	Conversion kit for water inlet
			
	New		
Is used as	for Testomat 2000®	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®
Order number	40345	040143	040123
Description	Conversion kit for converting water connections from 6 mm to 1/4”	for using 100 ml / 3.4 oz bottles instead of the 500 ml / 16.9 oz bottles included in the delivery	conversion kit for the water inlet for connecting a fabric hose
Technical data	❍ Reducing adaptor from 6 mm to 1/4”	❍ 100 ml / 3.4 oz bottle ❍ used for screw cap with suction tube for 100 ml / 3.4 oz bottle ❍ screw cap GL32 hole	❍ 1/4" quick-connect plug ❍ 1/4" quick-connect coupling to hose with d_i = 6 mm ❍ lock on the hose side

UK 910 voltage interface



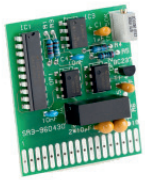
for Testomat 2000 devices, Titromat

270315

plug-in card
voltage interface

- output voltage: 0/2–10V
- galvanic isolation

SK 910 current interface



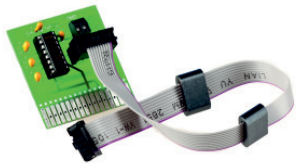
for Testomat 2000 devices, Titromat

270305

plug-in card
current interface

- output current: 0–20mA or 4–20mA
- maximum load: 500 Ohm
- galvanic isolation

RS 910 interface card



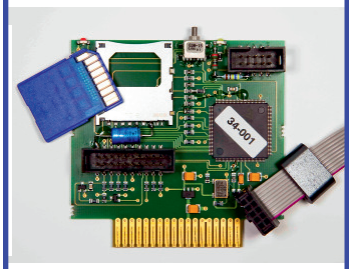
for Testomat 2000 devices, Titromat

270310

RS232 plug-in card (serial interface)

- for connecting a log printer or protocol converter (field bus, Ethernet, etc.)

SD card data logger



for Testomat 2000 devices, Titromat

100490

plug-in card for storing measurement results and error messages on an SD card

- now available for all Testomat 2000 and Titromat devices (after software update of older units)
- including standard SD card up to 2GB
- the data are available in CSV format and can be further processed or analyzed easily in a spreadsheet program

USB data logger

New

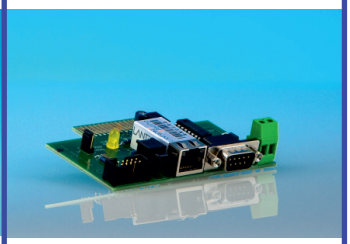
for Testomat® 808

100493

Data logger with USB connection

- The data logger stores the measurement values via the 20mA port at regular intervals. Data can be accessed by the integrated USB port
- Sufficient storage capacity for 32,768 values.
- Comes complete with driver and applications

Network logger



New

for Testomat 2000®

100492

Plug-in card with a 100 MBit network connection

- Web server, FTP server and built-in Flash storage
- 8 MB Flash storage for 400,000 measurement values and notifications (around 5 years)
- Generation of measurement and alarm data on a monthly basis
- Files saved in “CSV” format and can be subsequently processed with Office packages.

small aerator R

for Testomat 2000®, Testomat® EVO

130010

small aerator to reduce CO_2 content

- max. 12 l/h of water throughput when reducing the free carbon dioxide from max. 200 mg/l to under 20 mg/l
- dimensions (W x H x D): 150 x 500 x 100 mm 5.9" x 19.7" x 3.9"
- line voltage:230 V/50 Hz

Installation 3 m above device

Accessories
Testomat®/Titromat®

T2000 service case

Is used	for Testomat and Titromat devices
Order number	270337
Description	Service case for regular maintenance of a Testomat 2000® device

Technical data

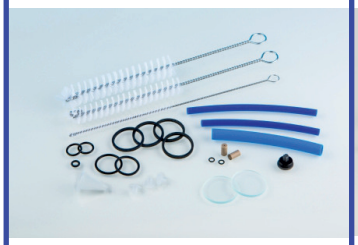
- ❍ 10 20x2 O-rings
- ❍ 10 10.82x1.78 O-rings
- ❍ 5 4.47x1.78 O-rings
- ❍ 5 18x2 EPDM O-rings
- ❍ 20 24x2 flat gaskets
- ❍ 5 x filter screen for inlet, 19.5dx25
- ❍ 5 flow regulator cores
- ❍ 2 springs for inlet
- ❍ 10 stoppers for measuring chamber
- ❍ 6 fuses, T 0.08A
- ❍ 6 fuses, T 0.1 A
- ❍ 6 fuses, T0.16 A
- ❍ 6 fuses, T 0.2 A
- ❍ 6 fuses, T 0.315 A
- ❍ 6 fuses, T 1.0 A
- ❍ 6 fuses, M4A
- ❍ 20 30x3 sight glasses
- ❍ 3 screw caps with
- ❍ T2000 insert
- ❍ 4 M3x40 screws
- ❍ 1 suction hose
- ❍ 1 pressure hose
- ❍ 6 different pipes
- ❍ 1 cleaning brush set
- ❍ 2 push-in
- ❍ angle joints
- ❍ 2 magnetic stirring bars

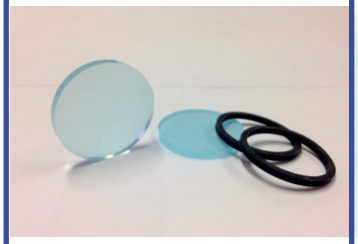
Repair and service case

Is used	for Testomat® 808
Order number	270342
Description	Case for regular maintenance of a Testomat® 808 and on-site service

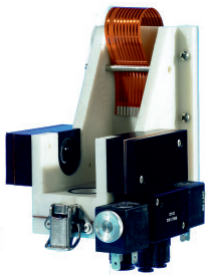
Technical data

- ❍ 8 3.68x1.78 O-rings
- ❍ 8 1.78x1.78 O-rings
- ❍ 8 4.5x1.5 O-rings
- ❍ 8 24x2 flat gaskets
- ❍ 1 pump head
- ❍ 4 500ml inserts with screw cap
- ❍ 1 100ml insert with screw cap
- ❍ 1 cleaning brush set
- ❍ 4 angle screw connectors
- ❍ 6 fuses, T 0.1 A
- ❍ 6 fuses, T 0.2 A
- ❍ 6 fuses, T 1.0 A
- ❍ 6 fuses, T4A
- ❍ 6 30x3 sight glasses
- ❍ 2 pipes, l = 53 mm
- ❍ 2 pipes, l = 140 mm
- ❍ 1 optical board
- ❍ 1 SUB-D null modem cable
- ❍ 1 USB serial adapter
- ❍ 2 dosing needles
- ❍ 4 hose adapters
- ❍ 2 magnetic stirring bars
- ❍ 8 M3x12 screws
- ❍ 4 M3x40 screws
- ❍ 1 LED socket
- ❍ 1 magnetic valve
- ❍ Documentation/software (1)

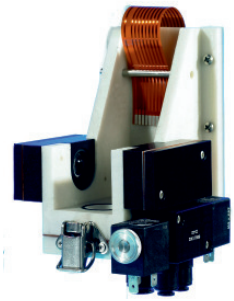
	Service set	1-Year service set	Service set Testomat PO4
			
			New
Is used	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat PO4
Order number	270352	270360	2703543
Description	spare part kit for maintenance	small spare part kit for maintenance	spare part kit for maintenance of PO4 device and PeriClip pump
Technical data	❍ 1 T2000 gasket kit ❍ 2 30x3 sight glass ❍ 1 flow regulator cores ❍ 3 stoppers for measuring chamber ❍ 1 valve kit for injection pump ❍ 1 filter screen for intake 19.5 d x 25 ❍ 3 different pipes ❍ 1 cleaning brush set	❍ 1 T2000 gasket kit ❍ 2 30x3 sight glass ❍ 1 flow regulator cores ❍ 3 stoppers for measuring chamber ❍ 1 valve kit for injection pump ❍ 1 filter screen for intake 19.5 d x 25	❍ 1 T2000 gasket kit ❍ 2 30x3 sight glass ❍ 1 flow regulator cores ❍ 3 stoppers for m. chamber ❍ 2 x pump head ❍ 1 filter screen for intake ❍ 3 different pipes ❍ 1 cleaning brush set ❍ 2 x tube connection ❍ 2 x seal for tube connection ❍ 2 x screw cap with insert

	PMMA sight glasses	Conversion kit for water connection	Service set Testomat Polymer
			
	New		New
Is used	for Testomat® 808	for Testomat® 808	for Testomat 2000®Polymer
Order number	37653	37576	270353
Description	PMMA sight glasses	conversion kit for converting the water connection from Testomat® BOB to Testomat® 808	spare part kit for maintenance of Polymer device and PeriClip pump
Technical data	PMMA sight glasses are used when the silicate content in the measuring water exceeds 15 mg/l and prevent silicates clogging up the sight glasses. The kit consists of: ❍ 2 24x2 flat gaskets ❍ 2 sight glasses	The kit consists of: ❍ plug connection G1/4" DN6 ❍ pipe, PE, D=6; length 5 m / 16.4 ft ❍ screw-in connection G1/4"-6	❍ 1 T2000 gasket kit ❍ 2 30x3 sight glass ❍ 1 flow regulator cores ❍ 3 stoppers for m. chamber ❍ 2 x pump head ❍ 1 filter screen for intake ❍ 3 different pipes ❍ 1 cleaning brush set ❍ 2 x tube connection ❍ 2 x seal for tube connection ❍ 2 x screw cap with insert

Accessories Testomat® 2000 / 808	Tool kit	Pressure regulator	Candle filter
			
Is used	for all Testomat and Titromat devices	Testomat® 808	Testomat® 808
Order number	040138	37602	candle filter 37583 filter insert 37584
Description	tool kit for maintenance work on Testomat 2000®	the pressure regulator is used for pressures over 4 bar	candle filter with filter insert for filtering sample water before analysis
Technical data	❍ 1 2 mm calibrating pin ❍ 1 Torx TX20 20x100 screwdriver ❍ 1 Torx TX10 10x80 screwdriver ❍ 1 Torx TX8 8x60 screwdriver	❍ max. inlet pressure 11 bar/159.5 psi ❍ ambient temp. 0–50°C / 32-122°F ❍ manometer connection, G1/8 ❍ on both sides ❍ non-reversible	❍ max. pressure: 10 bar/145 psi ❍ max. temperature: 50°C/122°F ❍ filter fineness: 150 µm ❍ 1/4" inlet/outlet ❍ 1/8" drain with plug

Spare parts Testomat®/Titromat®	Pressure regulator	Measuring chamber	Measuring chamber holder
			
Is used as	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®	for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®
Order number	regulator/filter holder, complete 040125 consists of: regulator/filter holder 040120 regulator stopper T2000, complete 040129 flow regulator core (1–8 bar/14.5-87 psi) 011225 holding pin for regulator stopper 011230 filter screen for inlet 011217 spring for inlet 011218 inlet connector 040121 G ¼" - 6 screw-in connector 040153	measuring chamber, complete 040022 consists of: 30x3 sight glass pane with gasket 040173 30x3 sight glass pane 040170 sight glass holder 040176 M 3x40 screw 033253 TL 800-7-1 tenterhook 040032 plate stopper 011210 24x2 EPDM 60 flat gasket 033777 sight glass holder set with 2 screws 040510 (2 sight glass holders and 2 M3x40 screws)	measuring chamber, complete (without valves) 040029 and accessories: magnetic rod 040050 plug connection for drain hose 040186 magnet valve, 2/2-ways 040018 pin for chamber holder, 5x60 mm 040181 *For further article numbers for DUO, TRIO, and QUAD measuring chamber holders, see page 23.*

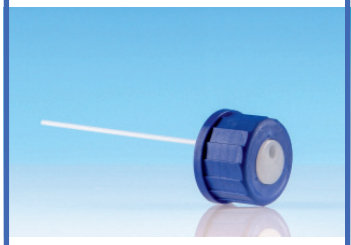
Measuring chamber holder DUO/TRIO/QUAD
Testomat®/Titromat®



	Article no. of the measuring chamber holder					
	DUO 40370	DUO 40371	Trio 40372	Quad 40373	DUO 40375	DUO 40378
Testomat 2000 Antox	X					
Testomat 2000 Br		X				
Testomat 2000 CLF		X				
Testomat 2000 CLT			X			
Testomat 2000 CLT self clean				X		
Testomat 2000 CLO2		X				
Testomat 2000 CN DUO	X					
Testomat 2000 Cr VI		X				
Testomat 2000 DUO	X					
Testomat 2000 Fe		X				
Testomat 2000 Polymer		X				
Testomat 2000 PO4						X
Testomat 2000 self clean	X					
Testomat 2000 SO3					X	
Testomat 2000 THCl				X		
Titromat M1	X					
Titromat M2	X					
Titromat KH	X					
Titromat TH	X					

Spare parts Testomat® /Titromat®

Bottle connection/ suction device



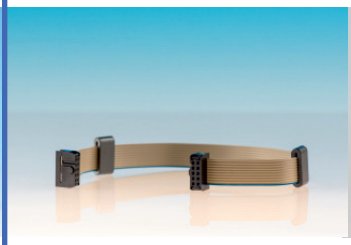
Is used

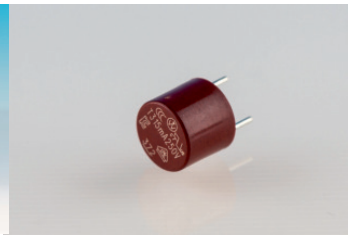
for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®

Order number

screw cap with T2000 insert for 500 ml bottle	040131
consists of: GL32 screw cap — hole	040130
insert for screw cap with suction pipe	040135

Device spare parts





for Testomat 2000®/Testomat ECO®, EVO TH and Titromat®

T2000 motherboard, complete, 230 V	037266
T2000 control board, complete	040092
T2000 plug-in board driver/receiver, complete T2000	040091
cable feedthrough, 5-7	040190
cable feedthrough, 7-10	040191
T2000 mains switch	040197
cover for mains switch	040198
ribbon cable, 10-pole, with ferrite	031713
ribbon cable, 26-pole, with ferrite	040096
Loom 2V, complete (for valves)	040060
Loom 2P, vomplete (for max two dosing pumps)	040062
Loom for main switch complete	040200
Fuse T 0.08 A	031596
Fuse T 0.315 A	031585
Fuse T 0.1 A	031595
Fuse T 0.16 A	031622
Fuse T 1.0 A	031592

Spare parts Testomat® 808

Devices spare parts

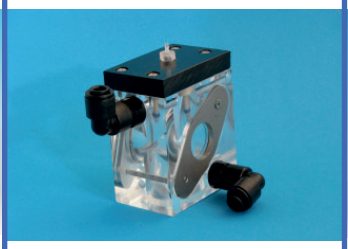
Is used as

for Testomat® 808

Order number

optical board	32375
control board	37322
mother board	37324
LED socket	37568
magnet valve	37570
pump head	37578
fuse, T1.0A	31592
fuse, T0.8A	31593
fuse, T0.2A	31594
fuse, T0.1A	31595
fuse, GS-T, 5x20, T A4	31666
cable feedthrough, 5–7, gray	40190
cable feedthrough, 7–10, gray	40191
cable loom, complete, with mains switch and cover	37400

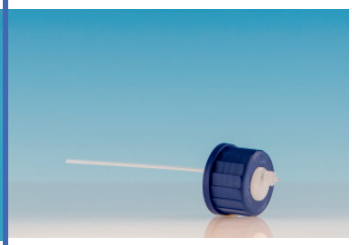
Measuring chamber



for Testomat® 808

24x2 flat gasket	33777
30x3 sight glass pane	40170
sight glass holder	40176
M3x40 screw, A2, DIN 965	33253
T808 measuring chamber, complete (1–4 bar/14.5-58 psi)	37615
T808 measuring chamber, complete (0.3–1 bar/4.4-14.5 psi)	37616
magnetic rod, processed	40050
G1/8"-6 screw-in angle joint	40157

Bottle connection/ suction device

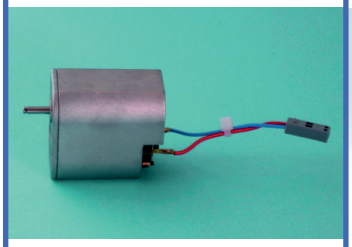


for Testomat® 808

bottle insert for screw cap and suction tube, 500 ml bottle	37579
bottle insert for screw cap and suction tube, 100 ml bottle	37580
Testomat 808, hose adapter	37538

Spare parts Testomat® 808/BOB

Gear motor



Is used

for Testomat® 808

Order number

Please note that we only have limited future scope to supply spare parts for the Testomat® BOB.

Gear motor 12 V DC for the dosing pump of Testomat® 808 with installation guide	100494

Spare parts for dosing insert

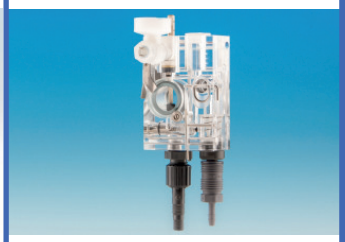
Is used

for Testomat® BOB

Order number

4.5x1.5 O-ring	011264
gasket	011269
swivel ring	011280
Quad ring, 3.2/11. 8dx1.8	011284
valve collar for dosing plunger	
6x1.5 O-ring	011296
dosing plunger (incl. 11295)	011548
electrode insert	011568
box nut	011572
dosing insert housing	011573
bottom for dosing insert, complete	011582

Measuring chamber/ dosing insert assembly kit



Is used

for Testomat® BOB

Order number

gasket set for dosing insert	011480
gasket set for measuring chamber	011482
gasket set for measuring chamber and dosing insert	011483
dosing insert, complete (F/C/M-BOB)	011531
measuring chamber, complete (F/C/M-BOB incl. 011531)	011536

Measuring chamber

Is used as

for Testomat® BOB

Order number

Regulator stopper 1 – 8 bar	010122
Regulator stopper 0,1 – 1 bar	010123
Measuring chamber body with clamp flap	011201
Sight glass window with gasket 27x4	011204
Sight glass window for chamber	011205
Sight glass window gasket 27x4	011206
Holding plate 3,1/12dx2	011207
Holding plate M3/12dx2	011208
Holding bolt M3x42	011209
filter screen for inlet	011217
spring for inlet	011218
flow regulator core (1–8 bar/14.5-116 psi)	011225
holding pin for regulator plug and valve shaft	011230
locking lever	011235
spring for locking lever	011236
axle for locking lever	011237
valve, complete (rinse button)	011244
pressure spring for valve shaft	011247
splash guard	011248
holding pin for dosing insert	011270
sealing plug for measuring chamber	011299
inlet screw connector	011510
inlet coupling	011511
inlet coupling with screw connector	011512
double nipple for drainage outlets	011513
drainage outlets, complete	011514

Indicators/reagents
Testomat 2000®/Testomat ECO®

Testomat 2000® indicators (500 ml bottle):
Testomat 2000®, Testomat 2000® CAL, Testomat 2000® CN, Testomat 2000® DUO, Testomat 2000® DUO CN, Testomat 2000® V, Testomat ECO®, Testomat® EVO TH, Testomat 2000® THCL (only indicators type TH)

Indicator type	Unit °dH (resolution)	°f (resolution)	ppm $CaCO_3$ (resolution)	mmol/l (resolution)	Order number
TH 2005	0.05–0.50 (0.01)	0.09–0.89 (0.02)	0.89–8.93 (0.2)	0.01–0.09 (0.01)	152005
TH 2025	0.25–2.50 (0.05)	0.45–4.48 (0.10)	4.48–44.8 (0.9)	0.04–0.45 (0.01)	152025
TH 2100	1.00–10.00 (0.20)	1.79–17.9 (0.40)	17.9–179 (3.8)	0.18–1.79 (0.04)	152100
TH 2250	2.50–25.00 (0.50)	4.48–44.8 (0.40)	44.8–448 (3.8)	0.45–4.48 (0.04)	152250
TC 2050	0.50–5.00 (0.50)	0.90–8.96 (0.90)	8.9–89.5 (8.9)	0.18–1.79 (0.18)	153050
TC 2100	1.00–20.00 (1.00)	1.79–35.8 (1.79)	18–358 (18)	0.36–7.14 (0.36)	153100
TM 2005				0.05–0.50 (0.05)	154005
TP 2010				0.1–1.5 (0.10)	155010
TP 2100				1–15.0 (1.00)	155100
TH 2005 (2 x 100 ml)	0.05–0.50 (0.01)	0.09–0.89 (0.02)	0.89–8.93 (0.2)	0.01–0.09 (0.01)	151005

Testomat 2000® indicators (100 ml bottle):
Testomat 2000®, Testomat 2000® CAL, Testomat 2000® CN, Testomat 2000® DUO, Testomat 2000® DUO CN, Testomat 2000® V, Testomat ECO®, Testomat® EVO TH, Testomat 2000® THCL

Indicator type	Unit °dH (resolution)	°f (resolution)	ppm $CaCO_3$ (resolution)	mmol/l (resolution)	Order number
TH 2005	0.05–0.50 (0.01)	0.09–0.89 (0.02)	0.89–8.93 (0.2)	0.01–0.09 (0.01)	151005
TH 2025	0.25–2.50 (0.05)	0.45–4.48 (0.10)	4.48–44.8 (0.9)	0.04–0.45 (0.01)	151025
TH 2100	1.00–10.00 (0.20)	1.79–17.9 (0.40)	17.9–179 (3.8)	0.18–1.79 (0.04)	151100
TH 2250	2.50–25.00 (0.50)	4.48–44.8 (0.40)	44.8–448 (3.8)	0.45–4.48 (0.04)	151250

Please note that a different bottle insert is required for the 100 ml from the insert included in the delivery.
(T2000 conversion kit, art. no. 40143)

Testomat 2000® special solutions
Testomat 2000® Antox, Testomat 2000® self clean

Reagent type	Device	Order number
self clean cleaning solution	T 2000 self clean	151105
Antox solution (2 x 100 ml) for eliminating oxidant-related disruptions	T 2000 Antox	151107

Indicators/reagents
Testomat 2000®

Testomat 2000® reagents/cleaning solutions (500 ml bottle):
Testomat 2000® Br, Testomat 2000® CLF, Testomat 2000® CLT, Testomat 2000® ClO_2, Testomat 2000® CrVI, Testomat 2000® Fe, Testomat 2000 THCL®, Testomat 2000® SO_3, Testomat 2000® Polymer, Testomat 2000® PO4

Reagent type	Test substance	T2000	Measuring range [mg/l]	Order number
CL 2250 A	total chlorine + free chlorine	CL T + CL F	0–2.5	156230
CL 2250 B	total chlorine + free chlorine	CL T + CL F	0–2.5	156231
CL 2250 C	total chlorine	CL T	0–2.5	156232
chlorine reagent set T*	total chlorine + free chlorine	CL T + CL F	0–2.5	156235
chlorine reagent set T 50%*	total chlorine + free chlorine	CL T + CL F	0–2.5	156237
CLO2 reagent sets A & B*	chlorine dioxide	ClO_2	0–4.7	156265
CrVI 2100 A	chromate CrO_4^{2-} or chromium VI	Cr VI	0–2.0 0–1.0	156220
CrVI 2100B	chromate CrO_4^{2-} or chromium VI	Cr VI	0–2.0 0–1.0	156221
FE 2005 A	dissolved (II) & (III)	Fe	0–1.0	156250
FE 2005 B	dissolved (II) & (III)	Fe	0–1.0	156251
SO_3 reagent A	sulfite	SO_3	0–20	156240
SO_3 reagent B	sulfite	SO_3	0–20	156241
bromine reagent set*	bromine	Br	0–5.6	156295
Polymer Reagent A	polymer New	polymer	0-50	156271
Polymer Reagent B	polymer	polymer	0-50	156272
PO4 reagent set 2100	phosphate New	PO_4	0-10	156264

*The reagent sets are designed for the uniform consumption of reagents; the capacities of the individual reagent bottles are therefore not identical.

Indicators/reagents
Titromat®

Titromat® reagents (500 ml bottle):
Titromat® KH, Titromat® M1, Titromat® M2, Titromat® TH

Reagent type	for	Test substance	Measuring range	Resolution	Order number
TH 2500 reagent A	TH	water hardness	2.5–50 °dH	2.5 °dH	155160
TH 2500 reagent B	TH	water hardness	2.5–50 °dH	2.5 °dH	155161
TC 2010 reagent A	M1	carbonate hardness	0.05–1 °dH	0.025 °dH	155172
TC 2010 reagent B	M1	carbonate hardness	0.05–1 °dH	0.025 °dH	155173
TC 2020 reagent A	M2	carbonate hardness	0.05–2 °dH	0.05 °dH	155170
TC 2020 reagent B	M2	carbonate hardness	0.05–2 °dH	0.05 °dH	155171
TC 2060 reagent A	KH	carbonate hardness	2–60 °dH	2 °dH	155176
TC 2060 reagent B	KH	carbonate hardness	2–60 °dH	2 °dH	155177
TC 2150 reagent A	KH	carbonate hardness	5–150 °dH	5 °dH	155178
TC 2150 reagent B	KH	carbonate hardness	5–150 °dH	5 °dH	155179

Indicators/reagents
Testomat® BOB/808

Testomat® indicator: 808, F-BOB, C-BOB, M-BOB

	Type	Limit value	Bottle	Order number
808/ F-BOB	300	0.02 °dH residual hardness	100 ml	140001
	300 S	0.05 °dH residual hardness	100 ml	140002
	301	0.1 °dH residual hardness	100 ml	140003
	302	0.2 °dH residual hardness	100 ml	140004
	303	0.3 °dH residual hardness	100 ml	140005
	305	0.5 °dH residual hardness	100 ml	140006
	310	1 °dH residual hardness	100 ml	140007
	320	2 °dH residual hardness	100 ml	140008
	330	3 °dH residual hardness	100 ml	140009
	350 New	5 °dH residual hardness	100 ml	140010
C-BOB	C 5	0.5 °dH carbonate hardness	100 ml	140020
	C 10	1 °dH carbonate hardness	100 ml	140021
	C 15	1.5 °dH carbonate hardness	100 ml	140022
	C 20	2 °dH carbonate hardness	100 ml	140023
	C 30	3 °dH carbonate hardness	100 ml	140024
	C 40	4 °dH carbonate hardness	100 ml	140025
M-BOB	M 1	0.1 mmol/l minus m-value	100 ml	140040
	M 3	0.3 mmol/l minus m-value	100 ml	140041
	M 5	0.5 mmol/l minus m-value	100 ml	140042
808/ F-BOB	300	0.02 °dH residual hardness	500 ml	141001
	300 S	0.05 °dH residual hardness	500 ml	141002
	301	0.1 °dH residual hardness	500 ml	141003
	302	0.2 °dH residual hardness	500 ml	141004
	303	0.3 °dH residual hardness	500 ml	141005
	305	0.5 °dH residual hardness	500 ml	141006
	310	1 °dH residual hardness	500 ml	141007
	320	2 °dH residual hardness	500 ml	141008
	330	3 °dH residual hardness	500 ml	141009
	350 New	5 °dH residual hardness	500 ml	141010
C-BOB	C 5	0.5 °dH carbonate hardness	500 ml	141020
	C 10	1 °dH carbonate hardness	500 ml	141021
	C 15	1.5 °dH carbonate hardness	500 ml	141022
	C 20	2 °dH carbonate hardness	500 ml	141023
	C 30	3 °dH carbonate hardness	500 ml	141024
	C 40	4 °dH carbonate hardness	500 ml	141025
M-BOB	M 1	0.1 mmol/l minus m-value	500 ml	141040
	M 3	0.3 mmol/l minus m-value	500 ml	141041
	M 5	0.5 mmol/l minus m-value	500 ml	141042

Selection help

	Testomat 808	Testomat ECO / EVO TH	Testomat ECO C	Testomat 2000	Testomat 2000 Antox	Testomat 2000 BR	Testomat 2000 CAL	Testomat 2000 CLO2	Testomat 2000 CLF	Testomat 2000 CLT	Testomat 2000 CLT self clean	Testomat 2000 CN	Testomat 2000 CrVI	Testomat 2000 DUO	Testomat 2000 DUO CN	Testomat 2000 Fe	Testomat 2000 PO4	Testomat 2000 Polymer	Testomat 2000 self clean	Testomat 2000 SO3	Testomat 2000 THCL	Testomat 2000 V
chlorination systems	○	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	◐	○
decarbonization systems	○	○	●	◐	◐	○	◐	○	○	○	○	◐	○	◐	◐	○	○	○	◐	○	○	◐
iron removal systems	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○
water softening systems	◐	◐	◐	◐	◐	○	◐	○	○	○	○	◐	○	◐	◐	○	○	○	◐	○	◐	◐
desalination systems	◐	◐	◐	◐	◐	○	◐	○	○	○	○	◐	○	◐	◐	○	○	○	◐	○	○	◐
galvanization	◐	◐	◐	◐	◐	◐	◐	○	○	○	○	◐	●	◐	◐	◐	○	○	◐	◐	○	◐
boiler feed water	◐	◐	◐	●	◐	○	○	○	○	○	○	●	○	◐	◐	◐	◐	○	◐	●	○	○
sewage treatment plants	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◐	●	○	○	◐	○	○
cooling towers	◐	◐	◐	◐	◐	○	○	◐	○	◐	◐	◐	○	◐	◐	○	○	●	◐	◐	○	○
medical technology	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○
with dosing of antioxidants	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
with calibration function	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
with self-cleaning measuring chamber	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	●	○	○	○
osmosis systems	●	◐	◐	◐	◐	○	◐	○	○	○	○	◐	○	◐	◐	◐	○	○	◐	◐	●	○
swimming pool	◐	◐	◐	◐	◐	○	○	◐	◐	◐	◐	◐	○	◐	◐	◐	○	○	◐	○	◐	○
drinking water supply	◐	◐	◐	◐	◐	◐	◐	●	◐	◐	◐	◐	○	◐	◐	●	○	○	◐	○	●	○
monitoring disinfectant dosing	○	○	○	○	○	●	○	●	○	○	○	○	○	○	○	○	○	○	○	○	◐	○
monitoring chromate content	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○
monitoring conditioning agents	○	○	○	○	○	○	○	○	○	◐	◐	○	○	○	○	○	●	●	○	○	◐	○
monitoring two measuring points	○	○	○	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	●	●	◐	◐	◐	◐	◐	●	◐
water treatment	◐	◐	◐	◐	◐	○	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	○	◐	◐
water blending	◐	◐	◐	◐	◐	○	◐	○	○	○	○	◐	○	◐	◐	○	○	○	◐	○	○	●

● especially appropriate ◐ appropriate ○ not appropriate

Microcontrollers for water treatment

The Softmaster® ROE controls a reverse-osmosis system

Controllers: Contents

Applications

Precise control attuned to the application can contribute to a significant improvement of the entire production process.
Therefore, we made it our mission decades ago to provide our customers with application-oriented solutions in which every individual component is attuned exactly to every other.

Monitoring and control of water treatment example: softening plant

The following parameters must be monitored:

- ❍ quality
- ❍ salt deficiency in the brine tank
- ❍ correct regeneration cycle

You can achieve this by using our controllers and measuring instruments in combination:

Testomat® 2000,
✚ **Softmaster® MMP2**,
✚ **EcoControl EC Dos Desalt**

Result:

- ❍ less waste water
- ❍ lower salt use
- ❍ cost savings thanks to lower energy requirements

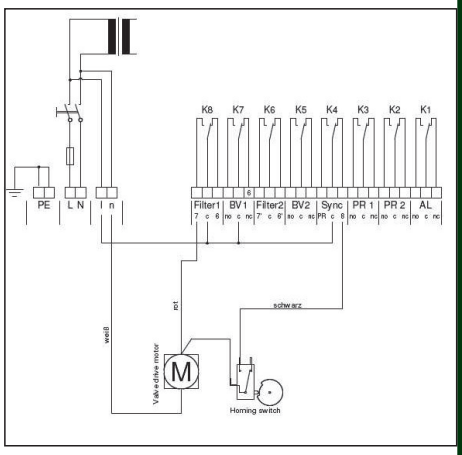
1- and 2-filter systems

All Softmaster MMP controllers can be connected to many current valves of 1- and 2-filter systems, e.g., valves from

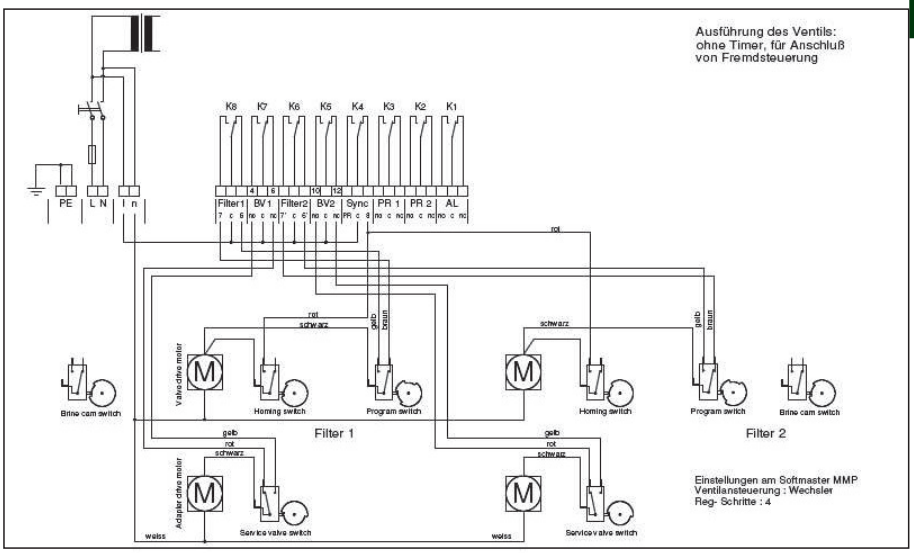
- ❍ Autotrol
- ❍ WWWS
- ❍ Fleck
- ❍ Siata

To support you, you can request connection diagrams for various valves from us or download the current operating instructions from our homepage.

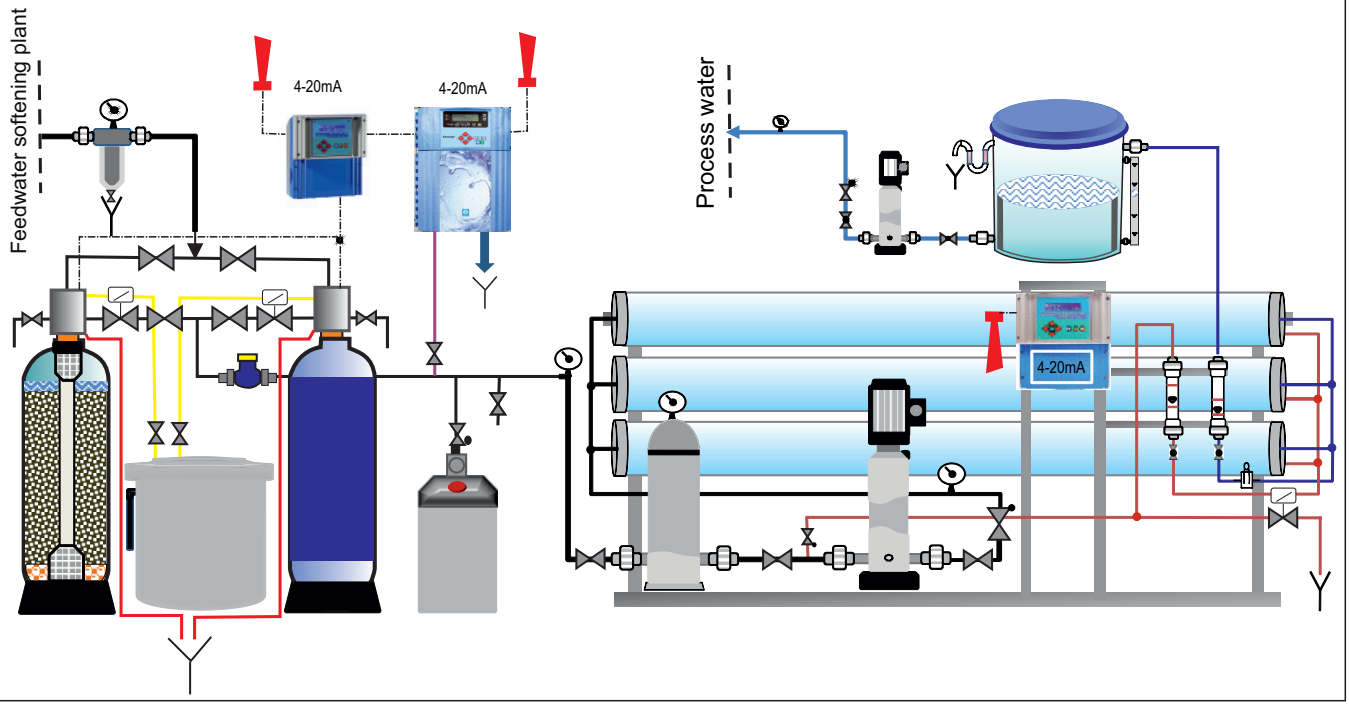
Example of Autotrol 952 with MMP1 on a 1-filter system:



Example of Fleck 2900 with MMP2 on a 2-filter system:



Softmaster controllers monitoring a reverse osmosis system together with Testomat® 2000



Product	Softmaster® MMP1	Softmaster® MMP2
		
Description	Controller for water softening systems	Controller for water softening plants
Advantages	❍ variable multi-purpose housing for control panel installation and wall installation ❍ multilingual menu navigation ❍ large blue LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ five potential-free relay outputs for two filters, service valves and error message, synchronizing contact ❍ 12 V power supply for water turbine ❍ 5 inputs: water flow meter, regeneration start/regeneration stop, salt and brine monitoring, and additional external program start ❍ connection to various valves such as Autotrol, WWWS, Fleck, Siata	like Softmaster® MMP1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two filters, service valves, two additional programs, and error message, synchronizing contact ❍ output for metering pulse ❍ 12 V power supply for water turbine ❍ inputs for 2 water flow meters ❍ 8 inputs: regenerations-start/regenerations-stop, brine level – empty/full, synchronous messages from valves, and error messages from Testomat® instruments
Protection type/class	IP65 / I	IP65 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 9 VA	max. 9 VA
Dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1" (W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
Weight	approx. 1.3 kg / 2.9 lbs	approx. 1.3 kg / 2.9 lbs
Measuring range	—	—
Application	❍ fully automatic regeneration of water softening systems ❍ suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems ❍ quantity, time, or quality controlled activation of regeneration	❍ like Softmaster MMP1 in addition: ❍ parallel and serial connection

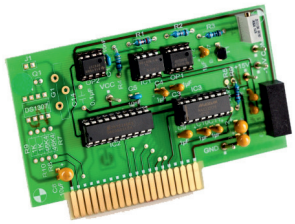
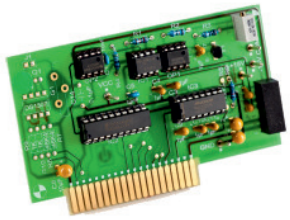
Softmaster® MMP compact	Softmaster® ROE1	Softmaster® ROE2
		
Controller for water softening systems	Controller for reverse osmosis systems	Controller for reverse osmosis plants
❍ multilingual menu navigation ❍ large LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ 4 non-potential-free relay outputs: 2 filters, service valves, and synchronous contact ❍ one potential-free relay output for error message/additional program ❍ 12 V power supply for water turbine ❍ 5 inputs: water flow meter, regeneration start/regeneration stop, brine monitoring – empty and additional external program start ❍ connection to various valves such as Autotrol, WWWS, Fleck, Siata	❍ variable multi-purpose body for control panel and wall installation ❍ multilingual menu navigation ❍ large blue LCD with 2 lines x 16 characters and backlight ❍ error messages and operating mode displays are displayed alternately and stored in the error history ❍ real-time clock ❍ connection for conductivity probe with temperature sensor for permeate In addition, the following inputs and outputs: ❍ 5 potential-free relay outputs: pump, inlet valve, flushing valve, dosing, and error message output ❍ 5 inputs: water deficiency message, overpressure message motor protection, storage tank FULL/EMPTY, system stop ❍12 V-power supply	like Softmaster® ROE1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two pumps, programmable function output, inlet valve, outlet valve, flushing valve, by-pass valve, and error message output ❍ output for metering pulse ❍ eight inputs for concentrate monitoring, emergency operation (by-pass) and external motor protection switch, water deficiency message, overpressure message, storage tank FULL/EMPTY, system stop ❍ two inputs for water flow meter ❍ 12 V power supply for water turbine ❍ 4–20 mA input for a pressure transducer
IP54/I	IP65 / I	IP65 / I
230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
max. 9 VA	max. 9 VA	max. 9 VA
approx. 257 x 214 x 135 mm 10.1" x 8.4" x 5.3" (W x H x D)	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
approx. 1.6 kg / 3.5 lbs	approx. 2.3 kg / 5 lbs	approx. 2.3 kg / 5 lbs
—	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant
❍ fully automatic regeneration of water softening plants ❍ suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems ❍ quantity, time, or quality controlled activation of regeneration	❍ reverse osmosis plants with 1 conductivity measurement	❍ reverse osmosis plants with 1 conductivity measurement

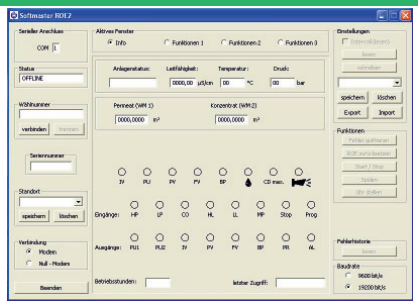
Product	Softmaster® ROE2/S5	Softmaster® ROE3
		
Description	controller for reverse osmosis systems with programmable controller for water deficiency	Controller for reverse osmosis systems
Advantages	like Softmaster® ROE2, but in addition: ❍ programmable function for control for water deficiency. You determine how often and after how much time the system should be turned back on. ❍ interval for restart after water deficiency message between 1 and 99 minutes can be selected	like Softmaster® ROE1 but with the following inputs and outputs: ❍ eight potential-free relay outputs for two filters, service valves, two add-on programs, and error message, synchronizing contact ❍ output for metering pulse ❍ 12 V power supply for water turbine ❍ inputs for 2 water flow meters ❍ 8 inputs: water deficiency message, concentrate monitoring, overpressure message, storage tank FULL/EMPTY, external motor protection switch, system stop
Protection type/class	IP65 / I	IP65 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 9 VA	max. 9 VA
Dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions	approx. 270 x 295 x 130 mm 10.6" x 11.6" x 5.1"(W x H x D) 262 x 146 mm / 10.3" x 5.7", +1 mm control panel cut-out approx. 90 mm / 3.5" installation depth 270 x 155 mm / 10.6" x 6.1" front frame dimensions
Weight	approx. 2.3 kg / 5 lbs	approx. 2.3 kg / 5 lbs
Measuring range	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant
Application	❍ reverse osmosis plants with 1 conductivity measurement	❍ reverse osmosis plants with second conductivity measurement for controlling an EDI module

Softmaster® ROE compact	EcoControl EC Dos Desalt	
		
Controller for reverse osmosis systems	controller for cooling circuits, desalination control, dosing	
❍ multilingual menu navigation ❍ large LCD with 2 lines x 16 characters and backlight ❍ real-time clock ❍ three potential-free relay outputs for pump, inlet valve and flushing valve ❍ two potential-free relay outputs for measuring and error message output ❍ 5 inputs: water deficiency message, concentrate monitoring, overpressure message, storage tank FULL/EMPTY, external motor protection switch, system stop	❍ blue LCD with 2 lines x 16 characters and backlight ❍ multilingual menu navigation ❍ relay outputs MIN/MAX limit values and error message output ❍ signal inputs for conductive conductivity probe and temperature sensor ❍ circular buffer for 20 to 10,000 measured values (variable) with date/time ❍ two programmable limit values for monitoring and control functions ❍ 0/4–20mA current interface and RS232 interface for measured value transfer	
IP54/I	IP54/I	
230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz	
max. 9 VA	max. 6 VA	
approx. 357 x 214 x 135 mm 14" x 8.4" x 5.3" (W x H x D)	approx. 166 x 155 x 115 mm 6.5" x 6.1" x 4.5" (W x H x D)	
approx. 1.6 kg / 3.5 lbs	approx. 0.8 kg / 1.8 lbs	
0.1–50,000 µS/cm 0.01–5.0 cm^{-1} cell constant	0–199.9 µS/cm to 0–199.9 mS/cm (depending on cell constant)	
❍ reverse osmosis plants with 1 conductivity measurement	❍ monitoring and regulation of process water circuits, cooling tower monitoring, boiler feed water	

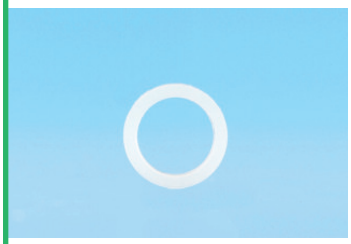
Product	PVH/PVH 4	PVP/PVP 4
		
Description	pilot distributor (hydraulic)	pilot distributor (pneumatic)
Advantages	❍ pilot distributor with four switch settings ❍ toggle switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3 PSI) pneumatic pressure ❍ without screw connections	❍ pilot distributor with four switch settings ❍ toggle switch for 8 bar (116 PSI) pneumatic pressure ❍ without screw connections
Protection type/class	IP44 / I	IP44 / I
Mains connection	230–240V, 24V +/-10% 50–60Hz	230–240V, 24V +/-10% 50–60Hz
Power consumption	max. 5 VA	max. 5 VA
Dimensions	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)
Weight	approx. 1.5 kg / 3.3 lbs	approx. 1.6 kg / 3.5 lbs
Ambient temperature	0–45°C / 32-113°F	0–45°C / 32-113°F
Application	control of individual valves in automatic water treatment systems	control of individual valves in automatic water treatment systems
Order numbers	valves, opened when depressurized 24V 250002 230V 250001 valves, closed when depressurized 24V 250004 230V 250003	valves, opened when depressurized 24V 250011 230V 250010 valves, closed when depressurized 24V 250013 230V 250012

PVH I/PVH I4	PVP I/PVP I4	
		
pilot distributor (hydraulic)	pilot distributor (pneumatic)	
❍ pilot distributor with four switch settings ❍ pulse switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3 PSI) pneumatic pressure ❍ without screw connections	❍ pilot distributor with four switch settings ❍ pulse switch for 8 bar (116 PSI) pneumatic pressure ❍ without screw connections	
IP44 / I	IP44 / I	
230–240V, 24V +/-10% 50–60Hz	230–240V, 24V +/-10% 50–60Hz	
max. 5 VA	max. 5 VA	
approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)	
approx. 1.6 kg / 3.5 lbs	approx. 1.6 kg / 3.5 lbs	
0–45°C / 32-113°F	0–45°C / 32-113°F	
control of individual valves in automatic water treatment systems	control of individual valves in automatic water treatment systems	
valves, opened when depressurized 24V 250006 230V 250005 valves, closed when depressurized 24V 250008 230V 250007	valves, opened when depressurized 24V 250015 230V 250014 valves, closed when depressurized 24V 250017 230V 250016	

Softmaster® accessories	Adapter plate	RS232 interface	Current interface
			
Is used	for Softmaster devices	for Softmaster 2 devices	for Softmaster devices
Order number	130011	037259	037309
Description	With the help of the adapter plate, you can easily replace your old Heyl controller with a Softmaster® controller without drilling	plug-in card for one RS232 interface and one current interface	plug-in card for one current interface
Technical data	❍ The old holes can can be used for mounting the adapter plate. The Softmaster® device is then attached to the adapter plate. ❍ dimensions (W x H x D): 264 x 280 x 8 mm 10.4" x 11" x 0.3"	❍ current output: 0–20mA ❍ RS232 serial interface	❍ current output: 0–20mA or 4–20mA ❍ maximum load: 500 Ohm ❍ galvanic isolation

Product	Heyl Remote Control Softmaster®	Heyl Remote Control Softmaster® retrofit kit
		
Is used	remote maintenance for Softmaster devices	retrofit kit for remote maintenance of software devices
Order number	790001	790003
Scope of delivery	❍ Software ❍ Softmaster®-modem cable connection ❍ license key	❍ Software ❍ Softmaster® modem cable connection ❍ RS232 plug-in card ❍ license key
Description	Using the remote maintenance software, software devices can be configured via computer. The settings no longer need to be entered directed on the device and can now be entered conveniently on a PC using a mouse and keyboard.	Using the remote maintenance software, software devices can be configured via computer. The settings no longer need to be entered directed on the device and can now be entered conveniently on a PC using a mouse and keyboard.

Pilot distributor accessories	Program disc PV S1	Program disc PV S2	Program disc PV S8
			
Description	additional disc and neutral contact for controlling a valve or a relay of a guard during the course of the program.	like S1 but with two additional discs	automatic return movement thanks to the upstream programming unit
Order number	250031	250032	250038

	Program disc PV S9	PVH/PVP screw connector	Seal for screw connector
			
Description	freely configurable program disc, e.g. for gravel filter systems	screw connector for pilot distributor (8 pieces required)	seal for screw connector (8 pieces required)
Order number	250039	033900	033475

Order numbers

Type	Languages	Device version	24 V	115V	230V	230V/24V
Softmaster® MMP1	D, GB, F,	attachable	610100	610101	610102	–
	I, NL, PL	installable	610110	610111	610112	–
Softmaster® MMP2		attachable	620000	620001	620002	620003
	D, GB, F,	with RS232	620200	620201	620202	620203
	I, NL, PL	installable	620010	620011	620012	–
		with RS232	620210	620211	620212	–
Softmaster® MMP compact	D, GB, F,	attachable	610225	610226	610227	–
	I, NL, PL					
Softmaster® ROE1	D, GB, F,	attachable	*	*	601102	–
	I, NL, PL	installable	*	*	601112	–
Softmaster® ROE2		attachable	*	*	*	*
	D, GB, F,	with RS232	*	*	*	*
	I, NL, PL	installable	602010	*	602012	–
		with RS232	602210	602211	602212	–
Softmaster® ROE2/S5	D, GB, F,	attachable	–	–	*	–
	I, NL, PL	installable	–	–	*	–
Softmaster® ROE3		attachable	*	*	*	–
	D, GB, F,	with RS232	*	*	603202	–
	I, NL, PL	installable	*	*	603012	–
		with RS232	*	*	603212	–
Softmaster® ROE compact	D, GB, F,	attachable	601225	601226	601227	–
	I, NL, PL					
EcoControl EC Dos Desalt	D, GB, F,	attachable	300203	300202	300201	–
	I, NL, PL					

*upon request

Process measuring and control instruments for water treatment

© Kurita Europe GmbH, Viersen, Germany

Mobile monitoring system for cooling towers with integrated Testomat 2000® Polymer for monitoring the conditioning agent.

Recooling plant conceptual solution

Control and monitoring of recooling plants

Today, cooling water controlling and monitoring are indispensable components of advanced energetic and hygiene-compliant operation of cooling towers according to VDI 2047-2 and VDI 3803-3.4.

A wide variety of recooling plants exists worldwide:

- ·Closed cooling systems
- ·Semi-open cooling systems
- ·Continuous flow cooling systems

More than 100,000 recooling plants of the above categories are installed in Germany.

What is the responsibility of the plant operator according to the new VDI 2047-2 directive?

Recooling plants and cooling towers are required in the industry and with large buildings to allow for the quick dissipation of excess heat in production processes or buildings.

Although measures have been employed over the past few years to operate these systems more economically and more safely in terms of hygiene, malfunctions and downtime still often occur due to deposits, corrosion or even legionella. Because of the design, they consequently spread quickly. Operators of evaporative cooling systems must therefore still act promptly to avoid mineral-based, corrosive and biological accumulations (such as legionella and pseudomonads).

The legislator has therefore issued a new hygiene directive, VDI 2047 Sheet 2 “Recooling plants - Ensuring the hygiene-compliant operation of evaporative cooling plants”. This directive is also referred to as the VDI cooling tower rule.

The duties of the operating company for the prevention of legionella are specifically regulated by this directive. All plant operators are advised familiarise themselves with the new VDI 2047-2 directive and take the required measures

Energy cost reduction through online water quality monitoring

This technical information concerns the effect of calcium and other deposits in steam boiler plants and cooling towers. Problems are that arise from deposits and possible solutions are highlighted.

The complete technical information can be found under Applications on our homepage, www.heyl.de.

Process measuring instruments: contents

Recooling plant conceptual solution

– disregarding the operator's duties may be punishable by law.

To be able to continually ensure the economic, troublefree and – according to the new VDI 2047-2 directive – hygiene-compliant operation of a cooling tower, system conditioning and continuous monitoring of the water are absolutely essential.

What are the main focuses of monitoring?

Part of the cooling water regularly evaporates in open, semi-open and also closed cooling systems. As a result, the salt concentration in the circulating water rises constantly.

However, the increased salt and mineral content in the circulating water causes limescale buildup, corrosion and mineral deposits in the cooling tower and circulating water system. Drip collectors, trickling filters and distribution channels as well as the heat exchangers in the system are especially affected by this. This is compounded by biological problems, such as from the formation of algae and biofilms introduced from the supply water and the ambient air.

VDI 3803 stipulates in section “3.4 for evaporative recooling plants” that the water condition of the circulating water must be adapted to the building materials of the cooling circuit.

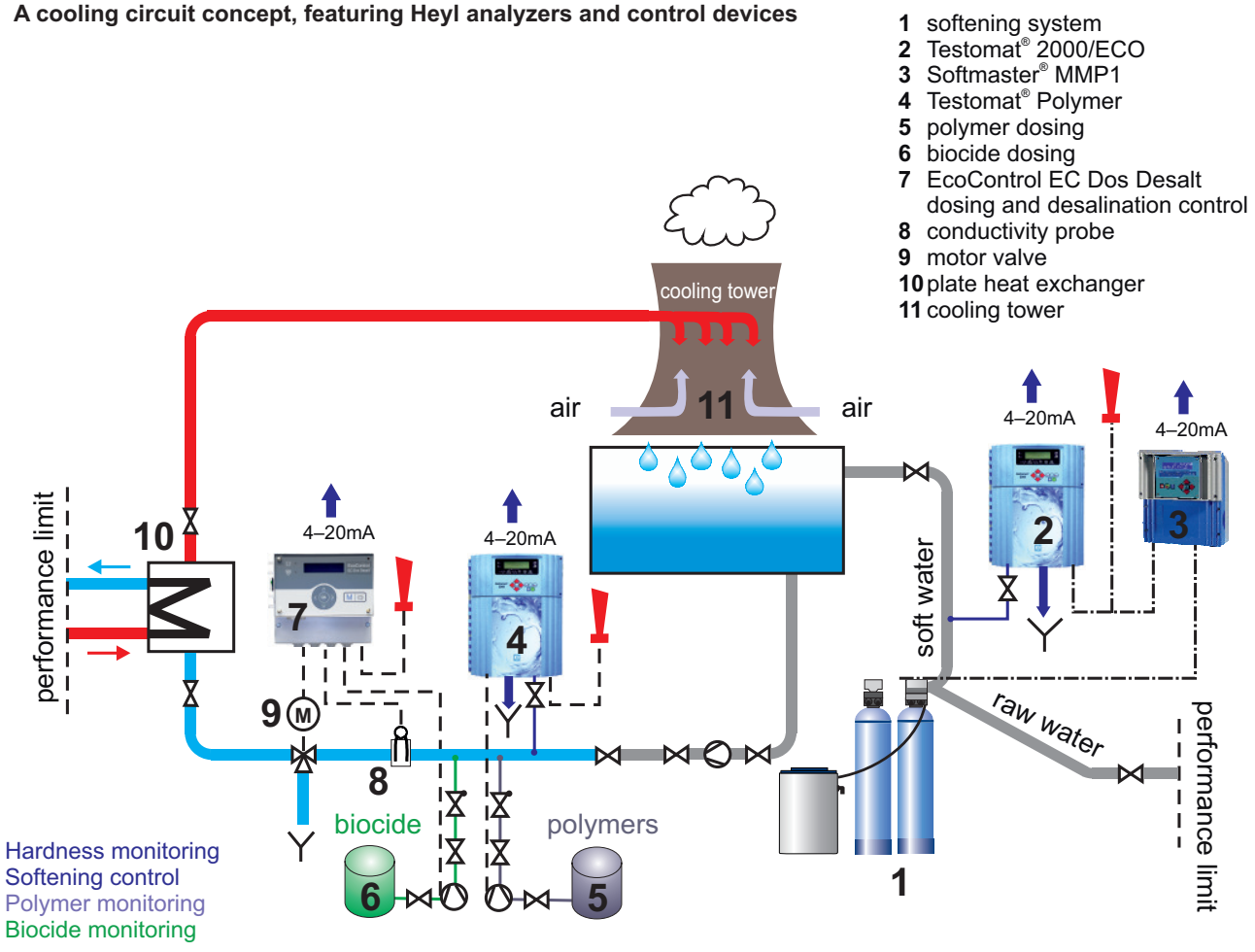
This means that the cooling water should be conditioned without fail to prevent corrosion, inorganic deposits (calcium and magnesium carbonates) as well as organic deposits (algae and bacteria strains) – also called biofilms – from causing major damage in the cooling circuits.

Biofilms, however, can not only cause blockages of fittings and pumps but also constitute the germ cell for legionella or pseudomonas bacteria, which are very dangerous for humans.

Biofilms are also energetically equivalent to mineral deposits such as calcium or silicate deposits. A layer of only 1 mm thickness can cause a loss of efficiency up to 30% with both types of deposits. This, in turn, results in additional energy costs of up to 12%.

Conclusion:
A controlled cooling tower system monitored online works in a hygienically compliant manner (according to VDI 2047-2), economically and without malfunctions (according to VDI 3803).

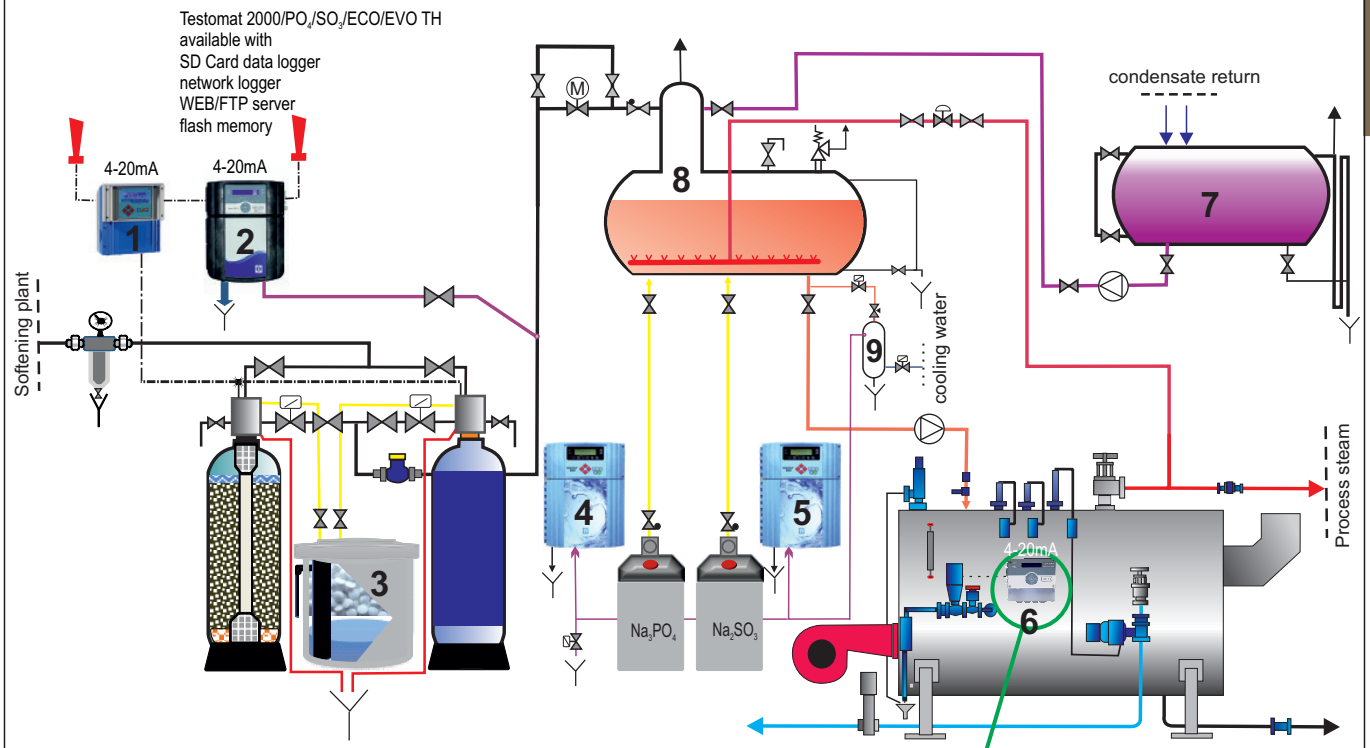
A cooling circuit concept, featuring Heyl analyzers and control devices



Boiler house conceptual solution

Boiler house concept with Heyl measuring and control devices

1 Softmaster® MMP1 control of softening plant
2 Testomat® 2000/ECO/EVO hardness measurement
3 Softening plant
4 Testomat® PO4 phosphate dosing
5 Testomat® SO3 sulfite dosing
6 EcoControl EC Dos Desalt Dosing and desalination control
7 Condensation collector
8 Feed water tank
9 Sampling cooler



Desalination
To prevent corrosion caused by salt, the conductivity of the feed water is controlled by the **EcoControl EC Dos Desalt** monitoring instrument. The **EcoControl EC Dos Desalt** process measuring instrument controls the desalination of boiler water with a high salt concentration and regulates the water supply as needed in order to maintain the correct salinity.

The desalination electrode is located in the upper region of the steam generator at the height of the lower water level.

Product	EcoControl EC Dos Desalt	EcoControl pH
	 New	
Description	process measuring instrument for conductivity or total dissolved solids	process measuring instrument for pH value
Advantages	❍ blue LCD with 2 lines x 16 characters and backlight, membrane keypad ❍ multilingual menu navigation (D, GB, F, NL, PL, I) ❍ relay outputs for MIN and MAX limit value and error message output ❍ signal inputs for conductive conductivity probe and temperature sensor ❍ circular buffer for 20 to 10,000 measured values (variable) with date/time ❍ two programmable limit values for monitoring and control functions ❍ 0/4-20mA current interface and serial RS232 interface for measured value transfer and circular buffer read-out	❍ blue LCD with 2 lines x 16 characters and backlight, membrane keypad ❍ multilingual menu navigation (D, GB, F, I) ❍ relay outputs for MIN and MAX limit values and error message output ❍ signal inputs for pH probe and temperature sensor ❍ circular buffer for 20 to 10,000 measured values (variable) with date/time ❍ two programmable limit values for monitoring and control functions ❍ 0/4-20mA current interface or serial RS232 interface for measured value transfer and circular buffer read-out
Protection type/class	IP54 / I	IP54 / I
Mains connection	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz
Power consumption	max. 6 VA	max. 6 VA
Dimensions	approx. 166 x 155 x 115 mm 6.5" x 6.1" x 4.5" (W x H x D)	approx. 166 x 155 x 115 mm 6.5" x 6.1" x 4.5" (W x H x D)
Weight	approx. 0.8 kg / 1.8 lbs	approx. 0.8 kg / 1.8 lbs
Measuring range	0–199.9 µS/cm to 0–199.9 mS/cm (depending on cell constants)	pH 0.0 – 14.0 0.01 pH resolution
Temperature display	0–99.9°C ± 0.5°C 32-211.8°F ± 33°F	0–99.9 °C ± 0.5 °C 32-211.8°F ± 33°F
Application	❍ conductivity measuring instrument with monitoring of 2 limit values ❍ can also be used as controller for cooling circuits	❍ measurement of the hydrogen concentration in aqueous media
Order number	24 V 300203 115V 300202 230V 300201	24 V 320103 115V 320102 230V 320101

Conductive conductivity probes without temperature sensor

We also construct special versions of our probes for your specific application upon request.

All probes are suitable for applications up to 6 bar / 87 psi.

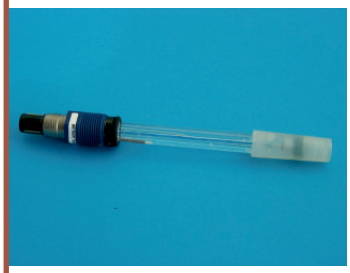
	Material	Cell constants [1/cm]	Maximum medium temp. [°C] / [°F]	Connection design	Measuring range [µS/cm]	Order no.
Normal probes:						
SO 1	PVC-U	0.10	40 / 104	PVC union nut Rp 1¼	1-2000	310001
SO 5	PVC-U	0.50	40 / 104	PVC union nut Rp 1¼	5-10000	310003
SO 10	PVC-U	1.00	40 / 104	PVC union nut Rp 1¼	10-20000	310014
Screw-in probes:						
SOE 0	V4A steel	0.01	130 / 266	external thread R ¾	0.1-200	310005
SOE 1	V4A steel	0.10	130 / 266	external thread R ¾	1-2000	310002
SOE 5	V4A steel	0.50	130 / 266	external thread R ¾	5-10000	310004
Submersible probes:						
SEI 5	PVC-U	0.50	40 / 104	DN 20, 5 m connection cable	5-10000	310103

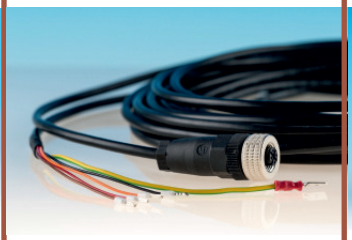
Conductive conductivity probes with temperature sensor

We also construct special versions of our probes for your specific application upon request.

All probes are suitable for applications up to 6 bar / 87 psi.

.	Material	Cell constants [1/cm]	Maximum medium temp [°C] / [°F]	Connection design	Measuring range [µS/cm]	Order no.
Normal probes:						
ST 1 / PT 100	PVC-U	0.10	40 / 104	PVC-union nut Rp 1¼	1-2000	310120
ST 5 / PT 100	PVC-U	0.50	40 / 104	PVC-union nut Rp 1¼	5-10000	310121
Screw-in probes:						
STE 0 / PT 100	V4A steel	0.01	130 / 266	external thread R ¾	0.1-200	310110
STE 1 / PT 100	V4A steel	0.10	130 / 266	external thread R ¾	1-2000	310125
STE 5 / PT 100	V4A steel	0.50	130 / 266	external thread R ¾	5-10000	310126
STE 5 / PT 100 for measuring probe	V4A steel	0.50	130 / 266	Vario pin	5-10000	310135
Submersible probes:						
SEI 5 / PT 100	PVC-U	0.50	40 / 104	DN 20, 5 m connection cable	5-10000	310131

Measuring instrument accessories	pH combination electrodes	ESA screw-in fittings	pH-probe for measuring probe
			
Is used	for EcoControl pH To replace devices purchased prior to 05/2013.	for EMF 20 and EMF 50	for EcoControl pH
Order number	EMK 20 320301 EMK 50 320302	320310	310137
Technical data	❍ EMK 20: measuring range 1–12 pH temperature 0–80°C 32-176°F pressure 10 bar 145 psi ❍ EMK 50 with PT 100: measuring range 0–14 pH temperature 0–135°C 32-275°F pressure 16 bar 232 psi	❍ stainless steel ❍ max. medium temperature: 130°C / 266°F ❍ connection: R ¾ external thread	❍ with PT 100 ❍ measuring range 1–14 pH ❍ temperature –5 ...135°C (23 ... 275°F) ❍ pressure 10 bar 145 psi

	Cable for combination electrode	Conductivity probe connection cables	pH probe connection cables
			
Is used	High-impedance coaxial cable, pre-made with screw and BNC connectors	Probe cable with STE5 cable socket	Probe cable with pH VarioPIN cable socket
Order number	KOAX 5 320320 KOAX 10 320321 KOAX/PT 5 320320 KOAX/PT 10 320321	310136	310138
Technical data	❍ KOAX 5: for EMF 20/RMK 20, length 5 m / 16.4 ft ❍ KOAX 10: for EMK 20/RMK 20, length 10 m / 32.8 ft ❍ KOAX/PT 5: for EMF 50 with potential matching line, length 5 m / 16.4 ft ❍ KOAX/PT 10: for EMF 50 with potential matching line, length 10 m / 32.8 ft	❍ length 10 m / 32.8 ft ❍ 4-lead for probes with PT 100 ❍ with STE5 plug for conductivity probes	❍ length 10 m / 32.8 ft ❍ 4-lead for probes with PT 100 ❍ with VarioPin plug for pH probes

Reliable and economical processes are the end-all and be-all of detailed water analysis. With the processes developed by Heyl, analyses can be performed on site without previous knowledge of chemistry or laboratory equipment – they are mobile, secure, rapid, and economical.

Testoval® and Duroval® reagents and the indicators for Testomat®devices have various uses in industrial water treatment, swimming pools and swimming pool technology, drinking water, process water, and industrial water, breweries and the beverage industry, and hospital dialysis centers. Heyl offers all reagents needed for boiler water testing in the analysis case.

The complete portable laboratory for all legally mandated tests in the area of boiler water and boiler feed water contains all reagents necessary for monitoring and the technical accessories necessary for taking and preparing samples. Heyl also custom-assembles the necessary analysis groups for other mobile water analyses such as for galvanization, monitoring of osmosis systems, fishkeeping, and various waste water tests. This lets customers perform their tests themselves on site.

We handle the development, production, bottling and shipment of our reagents and analysis kits in house.

A company logo on the supplement is free with purchase of more than 100 Duroval® or Durognost® articles.

Other combinations of analysis cases and cabinets are possible upon request.

Analysis systems: contents

Analysis kits	DIST 3 conductivity tester	DIST 4 conductivity tester	pHep+ pH tester
			
Is used as	electronic conductivity device for determining conductivity	electronic conductivity device for determining conductivity	electronic pH measuring device for determining pH value
Order number	330050	330060	330070
Description	❍ measuring range of 0–1999 µS/cm ❍ resolution of 1 µS/cm ❍ automatic temperature compensation ❍ manual 1-point calibration	❍ measuring range of 0–19.99 mS/cm ❍ resolution of 0.01 mS/cm ❍ automatic temperature compensation ❍ manual 1-point calibration	❍ measuring range of 0.0–14.0 ❍ resolution of 0.1 ❍ automatic temperature compensation ❍ manual 2-point calibration
Dimensions	41 x 175 x 23 mm 1.6" x 6.9" x 0.9" (W x H x D)	41 x 175 x 23 mm 1.6" x 6.9" x 0.9" (W x H x D)	41 x 175 x 23 mm 1.6" x 6.9" x 0.9" (W x H x D)

Buffer solution for analysis kits

	Product description	Quantity	Order number
buffer solution pH	buffer solution pH 4.0	100 ml	425304
	buffer solution pH 7.0	100 ml	425307
	buffer solution pH 9.0	100 ml	425309
	buffer solution pH 10.0	100 ml	425310
	storage solution for pH tester	230 ml	425370
conductivity solution	conductivity solution 1413 µS/cm	230 ml	425404
	conductivity solution 12.88 mS/cm	230 ml	425409
buffer solution pH	buffer solution pH 4.01	25 pouches of 20 ml	425504
	buffer solution pH 7.01	25 pouches of 20 ml	425507
	buffer solution pH 10.01	25 pouches of 20 ml	425510
conductivity solution	conductivity solution 1413 µS/cm	25 bags of 20 ml	425514
	conductivity solution 5000 µS/cm	25 bags of 20 ml	425550

Limit value kits	DUROGNOST® I	DUROGNOST® SR 0	DUROGNOST® SR
			
Is used as	quick colorimetric determination of residual hardness	limit value test for quick determination of residual hardness	limit value test for quick determination of residual hardness
Order number	400050	400056	400055
Description	special indicator in powder form for quick colorimetric determination of minimum hardness traces in the range of 0–0.1°dH or 0–2 ppm $CaCO_3$ or 0.2 °f (French hardness) complete with measuring tube and spoon analyses: approx. 700 measuring time: approx. ½ minute	special liquid indicator in a dropper bottle for monitoring the residual hardness of softened water, adapted for limit values of 0.1 and 0.05 °dH. complete with measuring tube and stopper analyses: approx 250 measuring time: approx. ½ minute	equipped like DUROGNOST® SR 0, but adapted for limit values of 0.5 and 0.25 °dH analyses: approx. 250 measuring time: approx. ½ minute

	DUROGNOST® SR 1	DUROGNOST® special buffer solution	
			
Is used as	limit value test for quick determination of residual hardness	buffer solution for alkaline water samples	
Order number	400054	400016	
Description	equipped like DUROGNOST® SR0, but adapted to limit values of 1 and 0.5 °dH analyses: approx. 250 measuring time: approx. ½ minute	for buffering strongly alkaline water samples (pH over 11) for determining total and residual hardness with DUROGNOST® and DUROVAL® kits (8 ml dropper bottle) analyses: approx. 200	

Titration quick test kits	DUROVAL® 1 drop = 1 °dH	DUROVAL® 1 drop = 1 °f	DUROVAL® 1 drop = 10 ppm $CaCO_3$
			
Is used as	titration kit for determining water hardness via complexometric titration	titration kit for determining water hardness via complexometric titration	titration kit for determining water hardness via complexometric titration
Order number	1 piece 400010 50 pieces 400110 neutral inlays without folding box 50 piece kit 400112 neutral inlays without folding box 50 pieces 400118 neutral inlays with folding box	1 piece 400011 50 pieces neutral inlays without folding box 50 piece kit 400113 neutral inlays without folding box 50 pieces 400119 neutral inlays with folding box	400012
Description	1 drop corresponds to 1 degree of German hardness analyses: approx. 30 (with an average hardness of 10 °dH).	1 drop corresponds to 1 degree of French hardness analyses: approx. 30 (with an average hardness of 10 °f)	1 drop corresponds to 10 ppm $CaCO_3$. analyses: approx. 30 (with an average hardness of 10 °f) approx. 30 (with an average hardness of 100 ppm $CaCO_3$)

	DUROVAL® 1 drop = 1 °KH	DUROVAL® A	DUROVAL® A with pipette 0–60°f
			
Is used as	titration kit for determining carbonate hardness via acidimetric titration	titration kit for determining water hardness via complexometric titration	titration kit for determining water hardness via complexometric titration
Order number	1 piece 400015 50 pieces 400120	400020	400018
Description	1 drop corresponds to 1 degree of carbonate hardness analyses: approx. 30 (with an average hardness of 10 °dH).	• measuring tube • liquid indicator • dosing pipette calibrated 0–30 °dH • 50 ml titration solution analyses: approx. 100 (with an average carbonate hardness of 15 °dH) measuring time: approx. 2 minutes measurement accuracy: 0.5 °dH	• measuring tube • liquid indicator • dosing pipette calibrated 0–60 °f (French hardness) • 50 ml titration solution analyses: approx. 100 (with an average carbonate hardness of 26.7°f) measuring time: approx. 2 minutes measurement accuracy: 1°f

DUROVAL® AF

titration kit for determining water hardness via complexometric titration

400022

- measuring tube
- powder indicator
- dosing pipette calibrated 0–60 °f (French hardness)
- 50 ml titration solution

analyses: approx. 100 (with an average carbonate hardness of 26.7 °f)
measuring time:
approx. 2 minutes
measurement accuracy: 1°f

DUROVAL® AP

titration kit for determining water hardness via complexometric titration

400021

- measuring tube
- powder indicator
- dosing pipette calibrated 0–30 °dH
- 50 ml titration solution

analyses: approx. 100 (with an average carbonate hardness of 15 °dH)
measuring time:
approx. 2 minutes
measurement accuracy:
0.5 °dH

DUROVAL® B

titration kit for determining water hardness via complexometric titration

400030

- measuring tube
- liquid indicator
- dosing pipette calibrated 0–2 °dH
- 50 ml titration solution

analyses: approx. 100 (with an average hardness of 1 °dH)
measuring time:
approx 2 minutes
measurement accuracy:
0.05 °dH

DUROVAL® BP

titration kit for determining water hardness via complexometric titration

400031

- with measuring tube
- powder indicator
- dosing pipette calibrated 0–2 °dH
- 50 ml titration solution

analyses: approx. 100 (with an average hardness of 1 °dH)
measuring time:
approx 2 minutes
measurement accuracy:
0.05 °dH

DUROVAL® BF

titration kit for determining water hardness via complexometric titration

400032

- with measuring tube
- powder indicator
- dosing pipette calibrated 0–60 °f (French hardness)
- 50 ml titration solution

analyses: approx. 100 (with an average hardness of 1.78 °f)
measuring time:
approx 2 minutes
measurement accuracy: 0.1°f

Water hardness DUO

titration kit for determining water hardness

400005

determining the hardness of raw water (0–30 °dH) and water after treatment (0–2 °dH)

measuring range: 0–30 °dH
resolution: 0.5 °dH
measuring range: 0–2°dH
resolution: 0.025 °dH
complete with all reagents and accessories

DUROVAL® C

titration kit for determining carbonate hardness/m-value

400060

acid capacity up to pH 4.3; $K_{S4,3}$

analyses: approx. 200 (with an average carbonate hardness of 10 °dH)
measuring time:
approx. 2 minutes
measurement accuracy:
0.5 °dH/0.25 mmol/l
complete with measuring tube, dosing pipette with calibration 0–20 °dH and 0–7 mmol/l, special connection stopper, indicator, and 50 ml titration solution

DUROVAL® CPM

kit for determining the carbonate hardness (m-value) and p-value

400065

equipped like Duroval C above, but with an additional p-value indicator

m-value: acid capacity up to pH 4.3; $K_{S4,3}$
p-value: acid capacity up to pH 8.2; $K_{S8,2}$
measuring time:
approx. 2 minutes
measurement accuracy:
0.5 °dH/0.25 mmol/l

Titration quick test kits	DUROVAL® Chloride	DUROVAL® CO2	DUROVAL® Sulfate
			
Is used as	kit for determining the chloride content of water	test kit for the determination of free carbon dioxide in water via drop titration	kit for determining the sulfate content of water
Order number	400090	400070	400080
Description	complete with all reagents and accessories analyses: approx 200 measuring time: approx. 2 minutes titration pipette: calibrated 0–300 mg/l Cl^- measurement accuracy: 10 mg/l Cl^-	complete with measuring tube, stopper. and three reagents analyses: approx. 200 (with an average concentration of 100 mg/l CO_2)	complete with all reagents and accessories analyses: approx 30 titration pipette: calibrated 0–30 mg/l SO_4^{2-} measurement accuracy: 10 mg/l SO_4^{2-}

	DUROVAL® $K_{S\ 4,3}$	KSS titration kit	Polyamine test kit
			
Is used as	titration kit for determining acid capacity up to pH 4.3	measuring kit for simple monitoring of cooling lubricant content	test kit for determining the polyamine concentration of circulating water
Order number	400067	400280	polyamine CCOH 400165 polyamine V 15/30 400166 polyamine K 26 400167 polyamine B42/C71 400168 polyamine A-853R 400169
Description	acid capacity up to pH 4.3; $K_{S4,3}$ analyses: approx. 100 (with an average acid capacity of 1 mmol/l) measuring time: approx. 2 minutes resolution: 0.05 mmol/l complete with measuring tube, dosing pipette with calibration 0–2 mmol/l, special connection stopper, indicator, and 50 ml titration solution	complete with all reagents and accessories concentration range and accuracy are customer-specific	product-specific adaptation of the titration solution, complete with all reagents and accessories analyses: approx. 100 (with an average concentration of 30 mg/l) measuring time: approx. 3 minutes resolution: 1 mg/l

DUROVAL® TF

industrial kit for water treatment plants

400042

- measuring tube
- powder indicator
- dosing pipette calibrated 0–60 °f (French hardness)
- 30 ml titration solution

analyses: approx. 60 (with an average carbonate hardness of 26.7 °f)

DUROVAL® TI

industrial kit for water treatment plants

400040

- measuring tube
- liquid indicator
- dosing pipette calibrated 0–30 °dH
- 30 ml titration solution

analyses: approx. 60 (with an average carbonate hardness of 15 °dH)

DUROVAL® TI with pipette 0–60 °f

industrial kit for water treatment plants

400038

- measuring tube
- liquid indicator
- dosing pipette calibrated 0–60 °f (French hardness)
- 30 ml titration solution

analyses: approx. 60 (with an average carbonate hardness of 26.7 °f)

DUROVAL® TP

industrial kit for water treatment plants

400041

- measuring tube
- powder indicator
- dosing pipette calibrated 0–30 °dH
- 30 ml titration solution

analyses: approx. 60 (with an average carbonate hardness of 15 °dH)

Polyamine NT refill pack

polyamine NT refill package (reagents C and titration solution)

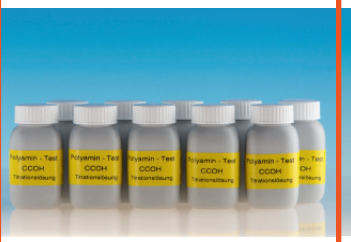
polyamine CCOH	400175
polyamine V 15/30	400176
polyamine K 26	400177
polyamine B42/C71	400178
polyamine A-853R	400179

Polyamine reagents

reorder polyamine reagents

reagents A (10 8 ml bottles)	400185
reagents B (10 8 ml bottles)	400186
reagents C (10 50 ml bottles)	400187

Polyamine titration solution



reorder polyamine titration liquid

polyamine CCOH (10 50 ml bottles)	400188
polyamine V 15/30 (10 50 ml bottles)	400189
polyamine K 26 (10 50 ml bottles)	400190
polyamine B42/C71 (10 50 ml bottles)	400191
polyamine A-853R (10 50 ml bottles)	400192

Polyamine NI refill pack

polyamine NI refill pack (reagents A+B)

400170

can be used universally for all polyamine products

DUROVAL® refill pack

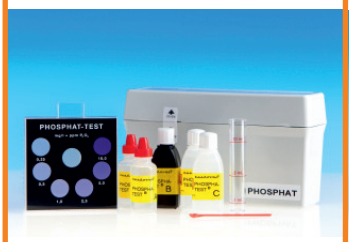
	Hardness grade	Quantity	Order number
DUROVAL® A titration solution	0–30 °dH (0–60 °f)	bottle with 50 ml	400023
DUROVAL® A titration solution	0–30 °dH (0–60 °f)	50 bottles with 50 ml	400123
DUROVAL® B titration solution	0–2 °dH (0–4 °f)	bottle with 50 ml	400033
DUROVAL® B titration solution	0–30 °dH (0–60 °f)	bottle with 25 ml	400043
DUROVAL® indicator fluid, 8 ml		liquid, 8 ml	400024
DUROVAL® indicator, 3 g (powder)		powder, 3 g	400025
DUROVAL® C titration solution		bottle with 50 ml	400061
DUROVAL® C indicator, 8 ml		bottle with 8 ml	400062
DUROVAL® P indicator, 8 ml		bottle with 8 ml	400066
DUROVAL® SO_4 ion exchanger			400081
DUROVAL® SO_4 reagent A		2 bottles with 50 ml each	400082
DUROVAL® SO_4 reagent B		bottle with 8 ml	400083
DUROVAL® SO_4 titration solution C		bottle with 50 ml	400084
DUROVAL® chloride reagent A + B		2 bottles with 18 ml each	400091
DUROVAL® chloride titration solution C		2 bottles with 18 ml each	400092
DUROVAL® $K_{S\,4,3}$ Indicator		bottle with 8 ml	400068
DUROVAL® $K_{S\,4,3}$ titration solution		bottle with 50 ml	400069

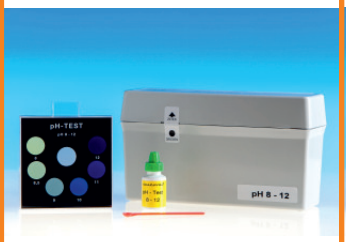
Colorimetric test kits	Testoval® Aluminum	Testoval® Ammonium	Testoval® chlorine DPD method 0.1–1 mg/l
			
Is used as	color comparison kit for the concentration range 0–2 mg/l Al	color comparison kit for the concentration range 0–10 mg/l NH_4^+	color comparison kit for concentration range 0.1–1 mg/l of free and total chlorine
Order number	410650	410680	410520
Description	individual values: 0–0.1–0.2–0.5–1–2 mg/l; by diluting the water sample 1:10 the measuring range can be extended to 10-times concentrations; complete with 2 reagents analyses: approx. 130 measuring time: approx. 6 minutes	individual values: 0.1–0.5–1–2.5–5–10 mg/l, complete with 3 reagents analyses: approx. 70 measuring time: approx. 4 minutes	individual values: 0.1–0.2–0.3–0.5–0.75–1 mg/l, complete with 3 reagents analyses: approx. 70 measuring time: approx. 1 minute

Colorimetric test kits	Testoval® chlorine DPD method 0.5–4 mg/l	Testoval® chloride	Testoval® chromate CrVI
			
Is used as	color comparison kit for concentration range 0.5–4 mg/l of free and total chlorine	color comparison kit for concentration range 0–100 mg/l Cl^-	color comparison kit for concentration range 0–5 mg/l of Cr
Order number	411520	410526	410532
Description	individual values: 0.5–1–1.5–2–3–4 mg/l, complete with 3 reagents analyses: approx. 70 measuring time: approx. 1 minute	individual values: 1–5–10–25–50–1000 mg/l, complete with 2 reagents analyses: approx. 40 measuring time: approx. 3 minutes	individual values: 0.1–0.25–0.5–1–2.5–5 mg/l, complete with 2 reagents analyses: approx. 180 measuring time: approx. 3 minutes

Testoval® iron (II) +(III), dissolved, 0–1 mg/l	Testoval® iron (II) +(III), dissolved, 0–10 mg/l	Testoval® hydrazine	Testoval® copper
			
color comparison kit for concentration range 0–1 mg/l of Fe	color comparison kit for concentration range 0–10 mg/l of Fe	color comparison kit for the concentration range 0–1 mg/l N_2H_4	color comparison kit for the concentration range 0–2 mg/l Cu
410547	410544	410556	410562
individual values: 0.05–0.1–0.25–0.5–0.75–1 mg/l; by diluting the water sample 1:10 the measuring range can be extended to 10-times concentrations; complete with 2 reagents analyses: approx. 100 measuring time: approx. 7 minutes	individual values: 0.25–0.5–1–2.5–5–10 mg/l, complete with 3 reagents analyses: approx. 60 measuring time: approx. 7 minutes	individual values: 0–0.05–0.1–0.25–0.5–1 mg/l, complete with reagent analyses: approx. 100 measuring time approx. 2 minutes	individual values: 0.1–0.25–0.5–1.0–1.5–2 mg/l, complete with reagent analyses: approx. 100 measuring time: approx. 2 minutes

	Testoval® manganese 0–0.5 mg/l	Testoval® manganese 0–20 mg/l	Testoval® nitrite
			
Is used as	color comparison kit for the concentration range 0–0.5 mg/l and	color comparison kit for concentration range 0–20 mg/l of Mn	color comparison kit for the concentration range 0–1 mg/l NO_2^-
Order number	410660	410568	410580
Description	individual values: 0.05–0.1–0.2–0.3–0.4–0.5 mg/l, complete with 3 reagents analyses: approx. 70 measuring time: approx. 17 minutes	individual values: 0.5–1–2.5–5–10–20 mg/l, complete with 2 reagents analyses: approx. 100 measuring time: approx. 1 minute	individual values: 0.05–0.1–0.2–0.3–0.5–1 mg/l; by diluting the water sample 1:10 the measuring range can be extended to 10-times concentrations; complete with reagent analyses: approx. 100 measuring time: approx. 15 minutes

	Phosphatest® (orthophosphate)	Testoval® pH chlorine DPD	
			
Is used as	color comparison kit for the concentration range 0–10 mg/l P_2O_5	monitoring pH value and chlorine content in swimming pools	
Order number	410592	410601	
Description	individual values: 0.25–0.5–1–2.5–5–10 mg/l, by diluting the water sample 1:10 the measuring range can be extended to 10-times concentrations; complete with 3 reagents analyses: approx. 180 measuring time: approx. 5 minutes	individual values: pH: 6.8–7, 4–8, chlorine: 0.1–0.5–1 mg/l, complete with a set of reagents analyses: approx. 70 measuring time: approx. 3 minutes	

Colorimetric test kits	Testoval® pH value 1–5.5	Testoval® pH value 5.5-8	Testoval® pH value 8–12
			
Is used as	color comparison kit for pH-range 1–5.5	color comparison kit for pH-range 5.5–8	color comparison kit for pH-range 8–12
Order number	410604	410610	410616
Description	individual values: 1–2–3–4–5–5.5 mg/l, complete with reagent analyses: approx. 250 measuring time: approx. 1 minute	individual values: 5.5–6–6.5–7–7.5–8 mg/l, complete with reagent analyses: approx. 250 measuring time: approx. 1 minute	individual values: 8–8.5–9–10–11–12 mg/l, complete with reagent analyses: approx. 250 measuring time: approx. 1 minute

	Testoval® dissolved silicate	Testoval® sulfite	
			
Is used as	color comparison kit for the concentration range 0–10 mg/l SiO_2	color comparison kit for the concentration range 0–20 mg/l SO_3^{2-}	
Order number	410622	410634	
Description	individual values: 0.25–0.5–1.0–2.5–5–10 mg/l; by diluting the water sample 1:10 the measuring range can be extended to 10-times concentrations; complete with 4 reagents analyses: approx. 100 measuring time: approx. 19 minutes	individual values: 0.5–1–2.5–5–10–20 mg/l, complete with 2 reagents analyses: approx. 150 measuring time: approx. 3 minutes	

Testoval® refill pack

	Product	Order number
aluminum	1 set of reagents for approx. 130 analyses	410651
	replacement color comparison device, complete (with cuvette)	410652
ammonium	1 set of reagents for approx. 70 analyses	410681
	replacement color comparison device, complete (with cuvette)	410682
chlorine DPD	1 set of reagents for approx. 70 analyses	410521
method 0.1–1 mg/l	replacement color comparison device, complete (with cuvette)	410522
chlorine DPD	1 set of reagents for approx. 70 analyses	410521
method 0.5–4 mg/l	replacement color comparison device, complete (with cuvette)	410523
chloride	1 set of reagents for approx. 40 analyses	410527
	replacement color comparison device, complete (with cuvette)	410528
chromate CrVI	1 set of reagents for approx. 70 analyses	410533
	replacement color comparison device, complete (with cuvette)	410534
dissolved iron (II) + (III)	1 set of reagents for approx. 100 analyses	410548
0–1 mg/l	replacement color comparison device, complete (with cuvette)	410548
dissolved iron (II) + (III)	1 set of reagents for approx. 70 analyses	410545
0-10 mg/l	replacement color comparison device, complete (with cuvette)	410546
hydrazine	reagent for approx. 100 analyses	410557
	replacement color comparison device, complete (with cuvette)	410558
copper	1 set of reagents for approx. 100 analyses	410563
	replacement color comparison device, complete (with cuvette)	410564
manganese 0–0.5 mg/l	1 set of reagents for approx. 70 analyses	410661
	replacement color comparison device, complete (with cuvette)	410662
manganese 0–20 mg/l	1 set of reagents for approx. 100 analyses	410569
	replacement color comparison device, complete (with cuvette)	410570
nitrite	reagent for approx. 100 analyses	410581
	replacement color comparison device, complete (with cuvette)	410582
Phosphatest®	1 set of reagents for approx. 180 analyses	410593
	replacement color comparison device, complete (with cuvette)	410594
pH-chlorine DPD	1 set of reagents for approx. 70 analyses	410602
	replacement color comparison device, complete (with cuvette)	410603
pH value 1–5.5	reagent for approx. 250 analyses	410605
	replacement color comparison device, complete (with cuvette)	410606
pH value 5.5–8	reagent for approx. 250 analyses	410611
	replacement color comparison device, complete (with cuvette)	410612
pH value 8–12	reagent for approx. 250 analyses	410617
	replacement color comparison device, complete (with cuvette)	410618
dissolved silicate	1 set of reagents for approx. 100 analyses	410623
	replacement color comparison device, complete (with cuvette)	410624
sulfite	1 set of reagents for approx. 150 analyses	410635
	replacement color comparison device, complete (with cuvette)	410636
cuvettes	replacement cuvette for color comparison devices	410001
	replacement cuvette for chloride color comparison device	410529

Analysis kits	Standard analysis cabinet H	Standard analysis cabinet S	Analysis cabinet special version
			 **Custom versions available upon request!**
Is used	for water analysis	for water analysis	for water analysis
Order number	410300	410305	410310
Description	❍ titration kits: 1 Duroval A, 1 Duroval B, 1 Duroval CPM ❍ Testoval color comparison kits: 1 hydrazine, 1 phosphate, 1 pH value 8–12 ❍ 1 aerometer, 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters	❍ titration kits: 1 Duroval A, 1 Duroval B, 1 Duroval CPM ❍ Testoval color comparison kits: 1 sulfite, 1 Phosphatest, 1 pH value 8–12 ❍ 1 aerometer, 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters	example: ❍ titration kits: 1 Duroval A, 1 Duroval B, 1 Duroval CPM ❍ Testoval color comparison kits: 1 sulfite, 1 Phosphatest ❍ 1 Durognost special buffer solution ❍ 1 DIST 4 conductivity tester ❍ 1 pHep+ pH tester ❍ 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters

	Boiler house analysis case	Analysis case special version	
		 **Custom versions available upon request!**	
Is used	for water analysis in boiler houses	for water analysis in boiler houses	
Order number	410320	410360	
Description	❍ titration kits: 1 Duroval A, 1 Duroval B, 1 Duroval CPM ❍ Testoval color comparison kits: 1 sulfite, 1 Phosphatest ❍ 1 pHep + pH tester, 1 pH 7.01 buffer solution in pouch, 1 pH 10.01 buffer solution in pouch ❍ 1 DiST 4 conductivity tester, 1 5000 µS/cm conductivity solution	Example: ❍ titration kits: 1 Duroval A, 1 Duroval B, 1 Duroval CPM ❍ Testoval color comparison kits: 1 sulfite, 1 Phosphatest	

Product	Bioresin® BW 05	
		
Is used as	special resin for protection against microbial contamination in softening plants in idle state	
Order number	1 l Bioresin® BW 05 500002 10 l Bioresin® BW 05 500001 100 l Bioresin® BW 05 500006	
Description	The disinfection effect of Bioresin® BW 05 is based on metallic silver, which has been firmly attached to the exchanger resin balls in a special procedure. Metallic silver is practically non-water-soluble. The smell and taste of the water are not affected.	
Advantages	❍ effective against microbial recontamination of the resin at low flow rate and in idle state ❍ does not negatively impact the disinfecting effect through backflushing and salting during filter regeneration, thus effective for a long time ❍ existing systems can be retrofitted for use ❍ does not negatively impact the smell and taste of the water ❍ no need for expensive dosing equipment to disinfect the filter material ❍ no premature regeneration of the softening system with sodium chloride necessary for disinfection, thus environmentally friendly and economical ❍ maintenance-free	

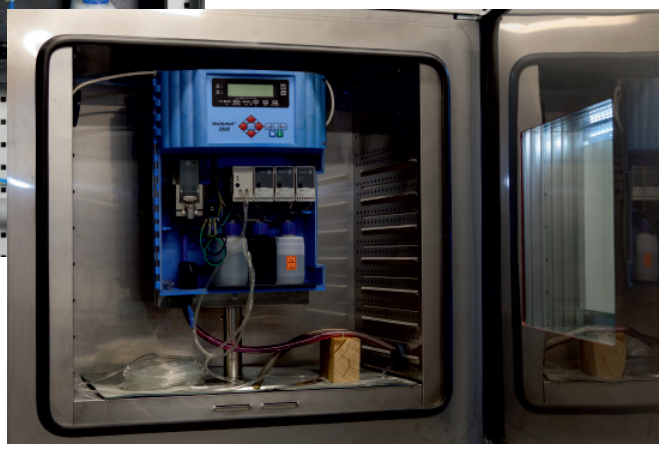
Chemistry accessories

Product	Order number	
measuring tube, 1+ 5 + 10 ml	051010	
connecting plug, white	051013	
pipette, 0–60 polyamine	051101	
pipette, 0–4.0 °f	051106	
pipette, 0–30 Duroval chloride and sulphate	051109	
pipette, 0–30 °dH	051110	
pipette, 0–2 °dH	051112	
pipette 0–20 °dH 0–7 mmol/l	051114	
pipette, 0–60 °f	051116	
replacement cuvette, normal	410001	
analysis cabinet, empty	410301	
aerometer	410302	
folding filters (pack of 50)	410303	
100 ml measuring cylinder	410304	
500 ml sampling container	410306	
funnel	410307	
100 ml measuring cup	410308	

Services of Gebrüder Heyl Analysentechnik GmbH & Co. KG

All our newly developed devices undergo thorough testing in the climatic chamber and test space.

Upon customers request, we can also produce OEM devices featuring individual front foils.



Services: Contents

Replacement Instruments

If you encounter problems with your instrument, you can send it in for repair. You can get a replacement instrument from us for this period so your equipment won't be running without monitoring during this period.

What do you need to note?
When you request a replacement instrument, we will send you an equivalent instrument that you can use in place of your own instrument until we have repaired your instrument.

You receive a bill with the replacement instrument.
You can now send your broken instrument in for servicing or repair.
When you receive your serviced or repaired instrument back, simply send the replacement instrument back to us, and you will receive a credit.

If you do not send the replacement instrument back, we cannot issue a credit.

If you would like to keep the replacement instrument, we will bill you for the repair of the instrument that was sent in so we can make further use of this instrument as a replacement instrument.

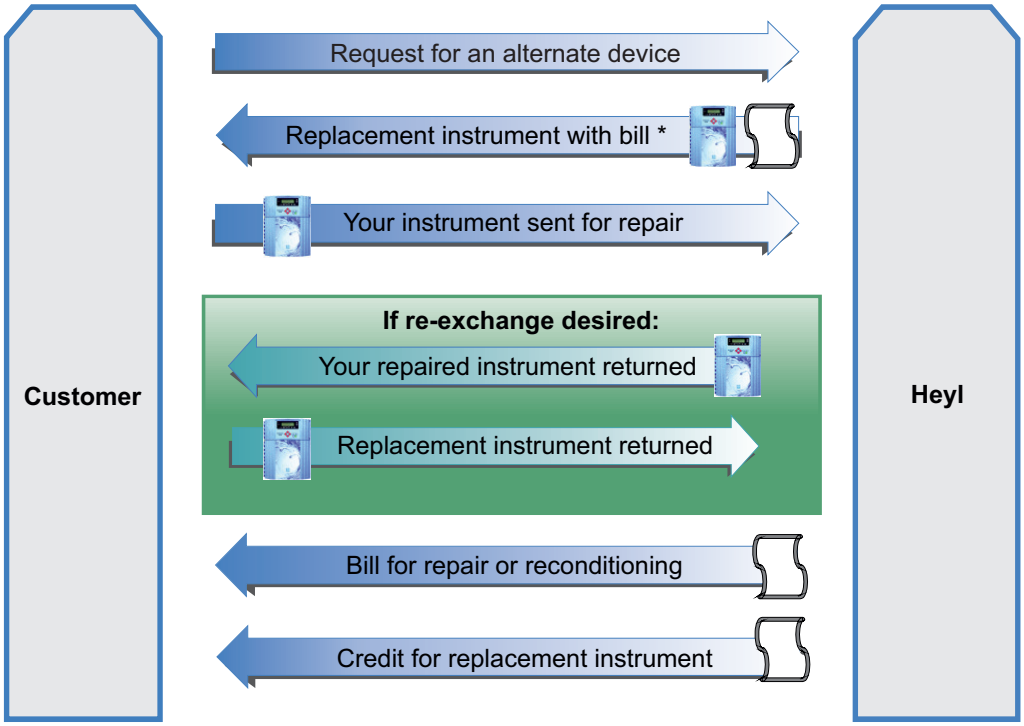
How can you request a replacement instrument?
You can request a replacement instrument in writing (e.g., by email) from your sales partner.
In the request, please note the type, serial number, and voltage of the instrument and include the completed checklist when sending it.
You can find the checklist in the operating or maintenance instructions for the instrument or on our website www.heyl.de in the Download section.

What about instruments that are still under warranty?
Please contact your sales partner regarding devices that are still under warranty.
He or she will provided expert assistance with further processing.

What instruments are available as replacement instruments?

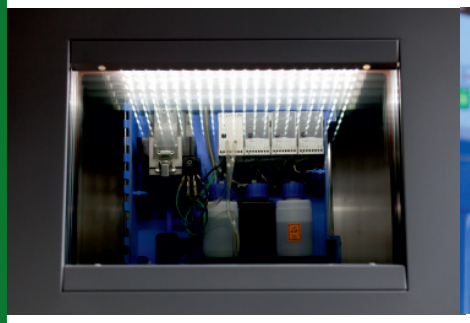
- Testomat 2000® family
- Testomat® 808
- Testomat ECO®

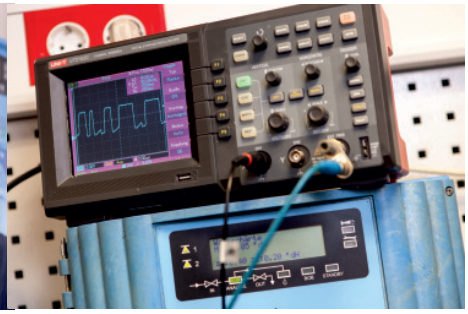
For all other instruments, please place a request with us.



*We don't charge rental fees for the replacement device. The bill you receive with the replacement device is our security in case we don't get the replacement instrument back.
If you send the replacement instrument back as intended, you pay for the repair of your instrument as usual and receive a credit for the bill for the replacement device.

Contract Development





We develop innovative, customized designs ourselves. But that's not all: We provide an appropriate housing design, prepare technical documentation, and obtain the necessary sales permissions and certificates. And if you would like, we also handle series production.

You choose between our two options:

1. From a "flash of inspiration" to the prototype – we develop the product you want according to your specifications

- ❍ We plan your product together and look for the best solution for you
- ❍ We develop the product according to your specifications
- ❍ We create prototypes
- ❍ We organize certificates (CE-marking, TÜV inspection, etc.)

2. Whether Softmaster®, EcoControl, or Testomat 2000® – we're happy to adapt our designs to your needs!

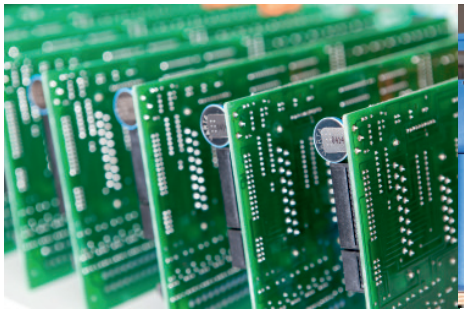
- ❍ We select the basic instrument corresponding to your needs together with you
- ❍ We design additional modules corresponding to your needs
- ❍ We develop software according to your specifications
- ❍ We create prototypes
- ❍ We organize certificates (CE-marking, TÜV inspection, etc.)

Brief overview of our contract development services

- ❍ Hardware and software development (e.g., analysis instruments, control and measuring devices, dosing pumps)
- ❍ Indicator and reagent development (e.g. water analysis)
- ❍ Test kit development
- ❍ Mechanics construction
- ❍ Material logistics
- ❍ Layout design
- ❍ Prototype fabrication
- ❍ Model series production
- ❍ Preparing operating instructions, instruction manuals, and safety data sheets
- ❍ Organizing desired or required certificates (e.g., CE-marking, TÜV inspection, etc.)
- ❍ Product maintenance
- ❍ Training

Development of new indicators in our chemical laboratory

Contract Manufacturing



We implement your idea!
We produce your product!

High quality, quick delivery times, customer orientation, and cooperative partnership are the foundations of our company, which operates in many countries. These maxims result in the continuous enhancement of our products and services and the continuous skill enhancement of our employees.

We attach great value to the reliability and durability of our products and have adapted the supply of spare parts to the long service lives of our instruments. In addition, we attach great value to multi-level 100% testing, only possible on the basis of small batch production. We test all assemblies separately before they are installed in our instruments and then subjected to a multi-day quality check in the instrument. Last but not least, we develop and produce our own products in order to satisfy our own extremely high quality demands. Our mission includes consistently catering to our customers' needs and developing the best solution together with them!

Brief overview of our contract manufacturing services

Small batch production in our workshop

We produce your product – in small batches too!

- Producing chemical formulations
- Filling into containers of any size
- Packaging
- Circuit board assembly
- Soldering
- Assembly
- Testing

We implement your idea!
You receive a final product from a single source:

- we optimize your product together and look for the best solution for you
- we look for the lowest-priced supplier
- we take care of purchasing all individual parts needed
- we coordinate cooperation with your partners
- we manufacture your product
- we subject the final product to extensive final checks
- we ship your finished product to the desired address in your name

Terms and Conditions of Gebrüder Heyl Analysentechnik GmbH & Co. KG

§ 1 Validity of the conditions

Our deliveries and services shall occur exclusively under these terms and conditions. At the same time, they are valid for all future business relations, even if they are not agreed expressly again. Customer's terms and conditions differing from them are not valid.

§ 2 Conclusion of a contract

(1) Our offers are non-binding. Technical changes as well as changes in shape, color, and/or weight within the scope of what is reasonable are reserved.

(2) Orders placed with us are binding offers which we can choose to accept within two weeks. Acceptance is declared either in writing or by delivery of goods to our customers.

(3) If customers place an order electronically, we shall immediately confirm receipt of the order. Receipt confirmation does not constitute a binding acceptance of the order, but can be combined with the declaration of acceptance. We shall store the contractual text and send it to the customer via e-mail together with these terms and conditions if requested.

(4) Conclusion of a contract occurs under reserve of the correct and timely delivery through our supplier, unless we are liable in the case of non-delivery, e.g. if a congruent hedging transaction has not been agreed with our supplier. We shall immediately inform the customer of any possible unavailability of the service and refund any service in return already received.

§ 3 Prices

(1) Our quotation prices are valid for 30 days after the quotation date, unless otherwise stated. In case of doubt, the prices specified in our confirmation of order are decisive.

(2) Our prices are valid, unless otherwise agreed, as net prices without cash discounts or any other allowances ex stock in Hildesheim, Germany, excluding packaging and shipping costs and plus the respective statutory VAT.

(3) If there is any change in labor costs, material costs, purchase conditions, etc. between the date of contract conclusion and the agreed and/or actual delivery date, we shall be entitled to adjust our prices accordingly and, if an agreement cannot be reached, to withdraw from the contract. This only applies for non-trade operators if the time between the date of contract conclusion and the delivery is more than four months.

(4) Our invoices are payable within 30 days of the delivery date with no deductions. In the event of default on payment, we are entitled, irrespective of the proof of greater damage caused by delay, to charge a higher default penalty interest at 8% points above the respective base rate.

(5) The off-setting of any counter-claims by the purchaser is permissible only if such counter-claims are undisputed or established in law. Purchasers can only exercise their right of retention if it is based on claims contained in this contract.

§ 4 Delivery

Delivery and service delays due to instances of force majeure or circumstances which make delivery difficult or impossible – e.g. strike, lock-out, administrative regulations, natural disasters, business disruptions, power failure, etc. irrespective of whether we or our suppliers are affected by such circumstances – will exempt us from our contractual deadlines and obligations. We then have the right to postpone the delivery or the service for the period of the hindrance. If the delivery or service becomes impossible or unreasonable and this is not due to our fault, we shall be entitled to terminate the contract. In this case the customer has no right to make claims for damages.

(2) We shall be entitled to carry out partial deliveries and partial services.

§ 5 Transfer of risk

(1) The risk of accidental loss and accidental deterioration of the goods passes to the customer as soon as the consignment has been transferred to the freight carrier in the case of mail order purchase or other parties designated by the customer to carry out delivery. This applies irrespective of which party bears the transport costs.

(2) Goods will still be delivered even if the customer is delayed in accepting the delivery.

(3) We shall only take out transport insurance at the customer's request and expense.

§ 6 Warranty against defect

(1) We provide warranty for two years at our own discretion via fault rectification or replacement delivery. If the fault cannot be eliminated within an acceptable time period or if rectification or replacement delivery is to be considered as failed due to other reasons, customers can, according to their choice, demand a reduction or terminate the contract. Failure can only be assumed if sufficient opportunity has been provided to us to rectify the fault or to deliver a replacement without the desired aim being achieved, if fault rectification or replacement delivery is impossible, if we refuse to rectify the fault of deliver a replacement or unacceptably delay fault rectification or replacement delivery, if there is justified doubt regarding the prospect of success, or if they are considered unacceptable due to other reasons. Cancellation is impermissible on the grounds of minor faults. Wear parts (e.g. seals, moving parts, etc.) are only guaranteed for one year. For such parts, deterioration due to proper use does not constitute a fault, We assume no liability for faults that arise due to improper use, nor for faults arising because the original HEYL Testomat® indicator is not used exclusively.

(2) For a commercial transaction our customer must check that the goods conform to the contract immediately upon their receipt, immediately notify us in writing of any visible damages upon receipt of the goods, and notify us of any other defects immediately after their identification (§ 377 HGB); otherwise the goods are considered as accepted. Other business requires written notification of visible damage within two weeks upon receipt of the goods. The burden of proof of the fault, the time of its identification, and the timely receipt of the complaint rests with the customer.

(3) Contrary to the aforesaid rules of warranty, we only sell used items, except in the case of fraudulent intent, with the exclusion of any form of warranty. This does not affect warranty commitments.

If customers decide to terminate the contract due to a fault after an unsuccessful rectification of faults, they are not entitled to an additional claim for damages due to this fault; the customer is obliged to return the goods. If customers make a claim for damages after an unsuccessful rectification of faults, the goods remain with the customers if this is reasonable for them. The claim for damages is then limited to the difference between the purchase price and the value of the faulty item. This is not valid if we have fraudulently attempted to violate the contract.

§ 7 Liability

(1) Our liability and the liability of our vicarious agents are hereby excluded for slight negligent breach of duty, provided that no contractual duties, damages to life, limb, or health, or agreed guarantees or claims in accordance with the German Product Liability Act are affected. In the case of violation of contractual duties our liability shall be limited to typical contractual losses which could have been reasonably foreseen.

(2) The period of limitation of one year applies for claims for damages against us which are not based on willful conduct attributable to us. This does not include suppliers' claims for recourse in accordance with section 478 of the BGB.

§ 8 Retention of title

(1) We retain the title to the goods until complete settlement of all claims against the customer that we are entitled to now or in the future.

(2) Our customers shall be entitled to process and resell the conditional goods in the ordinary course of business, provided that they are not in default. The pledging of goods or security transfers of ownership is not permissible. Claims resulting with respect to the conditional goods (including all balance claims from the current account) resulting from the resale or any other cause in law (insurance, unlawful act) shall now be assigned by the customer to us as security up to the amount of our claim. We hereby accept the transfer and authorize the customers to collect the claims assigned to us for their account in their own name. This authorization can only be revoked if our customers do not fulfill their payment obligations.

(3) Any adaptation and processing of the conditional goods by the customers shall always be carried out in our name and on our behalf. If processing occurs with goods which do not belong to us, we shall acquire co-ownership of the new goods in proportion to the value of the goods supplied by us to other processed goods. The same shall apply if the conditional goods are intermingled with other goods which do not belong to us.

(4) The customers shall keep our retention of title free of charge. They are obliged to take out insurance in a reasonable and usual scope. In the case of an intervention or seizure of the conditional goods by a third party – in particular by a marshal – our customers are obliged to indicate our ownership and to notify us without delay.

§ 9 Installation and maintenance

(1) If our customer asks us to carry out installation and maintenance work, which we do not carry out within the framework of our liability for defects, a separate contract for work and services comes into being. If not stated otherwise hereinafter these terms and conditions also apply for this contract for work and services. Payment takes place according to the respective valid prices for maintenance rates.

(2) A written estimate is required if our customer desires a binding quote. We are bound to this estimate for one complete month after submission.

(3) Customer rights due to defects of installation and maintenance work expire one year from acceptance of the repair item of work. This time limit does not apply if we acted with intent or gross negligence or if we are responsible for damages to life, limb, or health or for claims in accordance with the German Product Liability Act. In the case of contractors, we do not accept liability even for slight negligent breach of marginal contractual obligations.

§ 10 Miscellaneous

The exclusive place of jurisdiction for all disputes is Hildesheim, Germany, if our customer is a trader, a legal person governed by public law, or special public law funds. This shall also apply if our customers do not have a general place of jurisdiction in the Federal Republic of Germany or if their normal place or residence when legal action is brought is unknown.

(2) Changes or additions to this contract have to be in writing.
This also applies to the written form clause.

(3) Our customers consent to storage of their personal data for the purpose of contract conclusion.

(4) In the event that a provision of this contract or these terms and conditions is or becomes invalid or unenforceable, this shall not affect the validity of the remaining provisions.

(5) Only the relevant laws of the Federal Republic of Germany shall apply; the UN Convention on the International Sale of Goods is hereby excluded, even if our customer's registered seat is abroad.

Water is our element

Our environmental policy specifies the principles of conduct for environmental protection that we follow at Gebr. Heyl Analysentechnik GmbH & Co. KG. It is determined by the management and generally applicable.
As a commercial enterprise, we are part of a society and also part of the environment and the ecosystem. Consciousness of our responsibility to society, the environment, and the ecosystem is necessary for our children to be able to experience a happy, prosperous future.

As a commercial enterprise, we accept our special responsibility to preserve our natural world. We're convinced that it is necessary to ensure that the free resources of water, air, and earth, as well as flora and fauna, be handled sparingly.

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prowater
METEN REGELEN DOSEREN

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Analysentechnik GmbH & Co.KG
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Technique d'analyse de l'eau
L'eau est notre élément

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HEYL NEOMERIS

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German Water Partnership

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