



**Gebrüder Heyl**  
Analysentechnik  
GmbH & Co. KG

# PRODUCT CATALOG 2021



**Our new e-mail and  
web address:**  
[www.heylandanalysis.de](http://www.heylandanalysis.de)  
[info@heylandanalysis.de](mailto:info@heylandanalysis.de)

**Analysis Instruments, Controllers, Indicators, Analysis Kits and Test Kits**

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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.

#### Selection help

Since our selection of Testomat devices has gotten quite large, we offer you our selection help table on page 27 as a special overview which will tell you what device is especially appropriate for what application

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 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 **MultiControl CT** leads to less waste water, low conditioning agents use, and cost savings thanks to low energy requirements.

**Which companies can benefit from online analytical devices?**

Every company that has to monitor its process water cycle. We offer analytical devices for 14 different parameters including water and carbonate hardness, phosphate, sulphite, chromium VI, chlorine and chlorine dioxide.

Each of these parameters can be monitored continuously with one device. The data is then stored to provide documented evidence of the monitoring.

- bakeries
- meat processing plants
- steam generation sterilization
- laundry companies
- food and beverage industry (breweries, dairies)

- pulp and paper industry
- chemical industry
- pharmaceutical industry
- construction materials industry

For plant operators who want to comply with increasingly stringent process and effluent limit values, continuous online monitoring of their water treatment process is the safest solution.

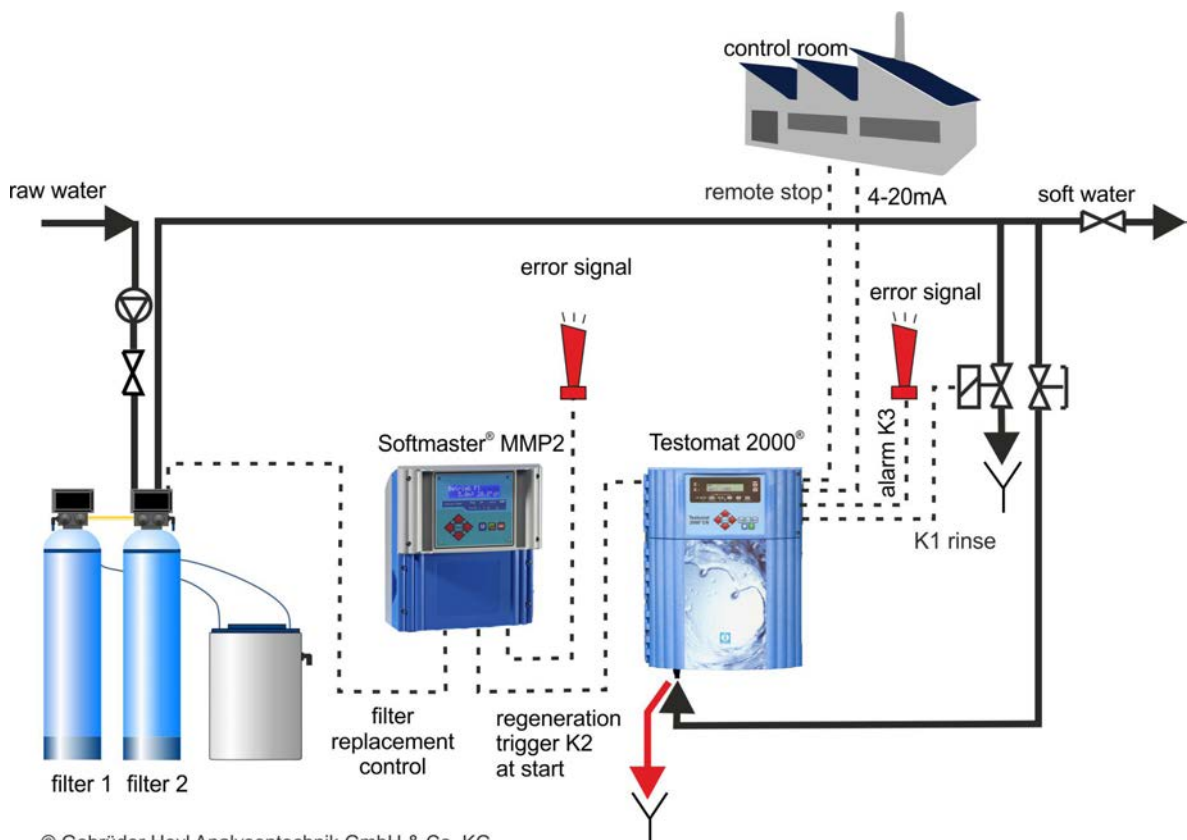
Technical information:

**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 that arise from deposits and possible solutions are highlighted.

The complete technical information can be found under Applications on our homepage, [www.heylandalysis.de](http://www.heylandalysis.de).

**Online monitoring of water quality with Gebrüder Heyl instruments**



**Desalination**

To prevent corrosion caused by salt, the conductivity of the feed water is controlled by the MultiControl monitoring instrument.

The MultiControl monitoring 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.



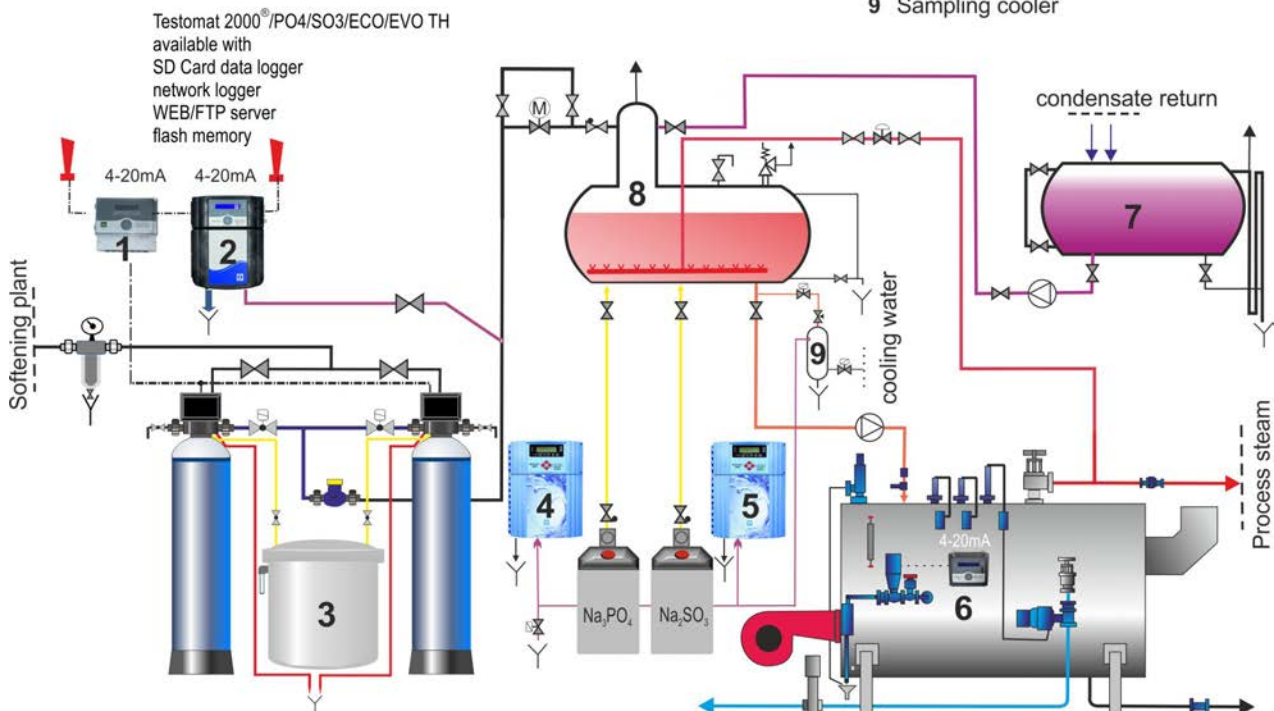
© Fotosearch.de



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.

**Boiler house concept with Heyl measuring and control devices**

- 1 Softmaster® MMP compact 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 MultiControl
- 7 Condensation collector
- 8 Feed water tank
- 9 Sampling cooler



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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**
- + **Softmaster® ROE1 and ROE2**

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

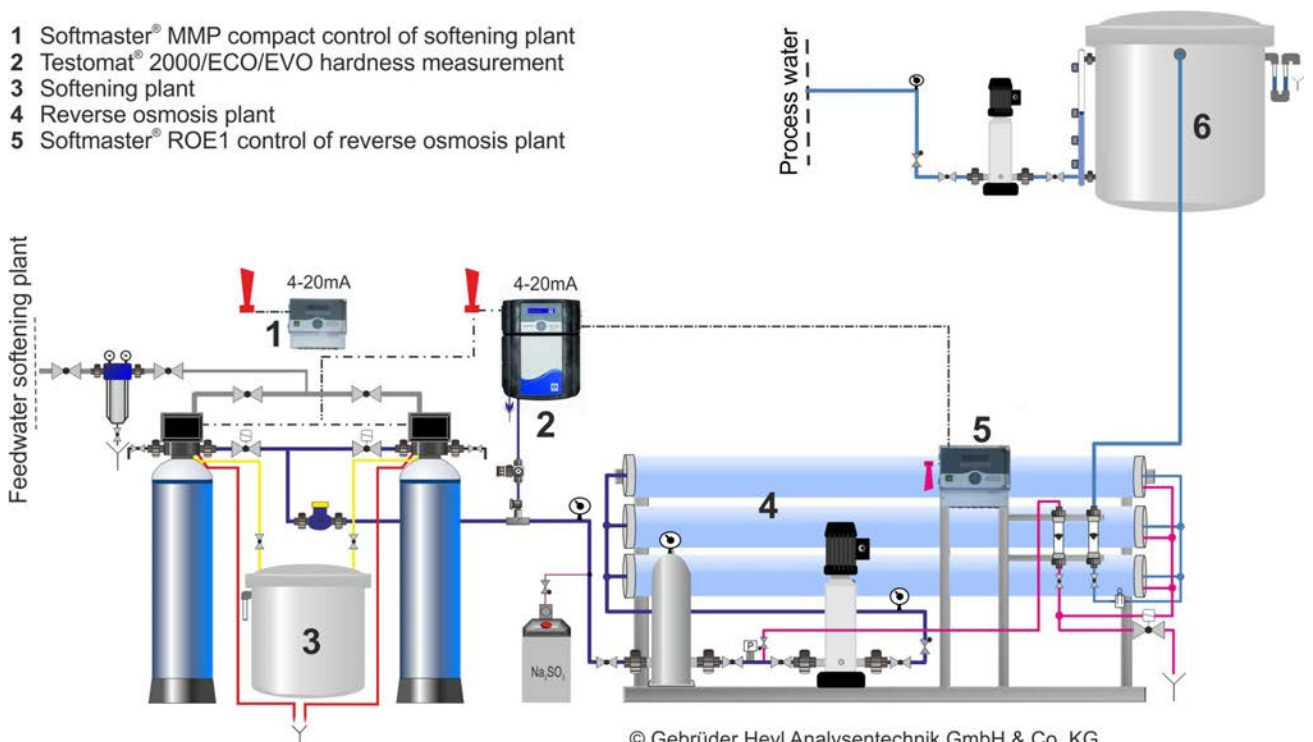
- Autotrol
- Fleck
- Siata

To support you, you can request connection diagrams for various valves from us or download the current operating instructions from our homepage [www.heylanalysis.de](http://www.heylanalysis.de).



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

- 1 Softmaster® MMP compact control of softening plant
- 2 Testomat® 2000/ECO/EVO hardness measurement
- 3 Softening plant
- 4 Reverse osmosis plant
- 5 Softmaster® ROE1 control of reverse osmosis plant



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© Kurita Europe GmbH, Viersen, Germanland

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

**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 – 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%.

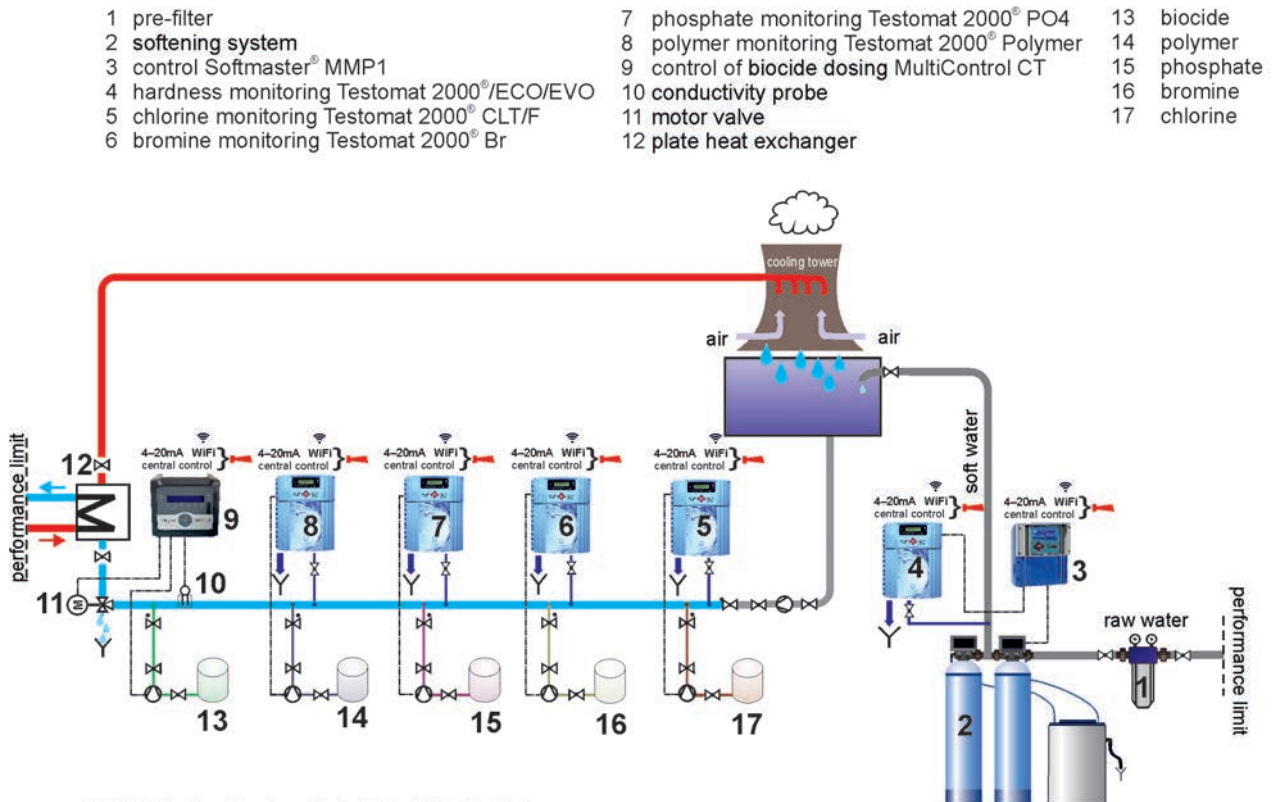
**Conclusion:**

**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**

Many parameters can be measured in the cooling circuit. Our example shows some of them that you can measure with our measuring instruments. It depends on the application and the parameters to be monitored. You can find an example for desalination in the cooling circuit on page 8.



Using untreated or partially softened water as the feed water for cooling water circuits or air washers usually causes problems such as:

- Limescale,
- Biological deposits by myxobacteria and algae (bacterial contamination)
- Corrosion of metallic materials.

Automatic monitoring and conditioning of the circulating water is important to prevent this from happening. We have developed the automatic desalination device **MultiControl CT** according to VDI 2047 part 1 and 2 for this application.

- **Desalination** can be controlled either by conductance or by TDS. There is a locking mechanism to stop desalination after a biocide dosing. The duration of desalination can be monitored.
- The **biocide dosing** may either take place after a certain number of days or regularly on certain days of the week at a fixed time. Preliminary desalination is available as an option.
- For quantity-based **inhibitor dosing**, there are various adjustment options available for the dosing point and dosing period.

- **Circulation** may either take place after a certain number of days or regularly on certain days of the week at a fixed time.
- In addition, **limit values**, for example for temperature (min and max) or pH value (min and max) can be monitored.

By using different plug-in cards on the two existing slots in the device, various sensors, a process controller with 0/4-20 mA input or a curve tracer can be connected.

The following plug-in cards are available in particular:

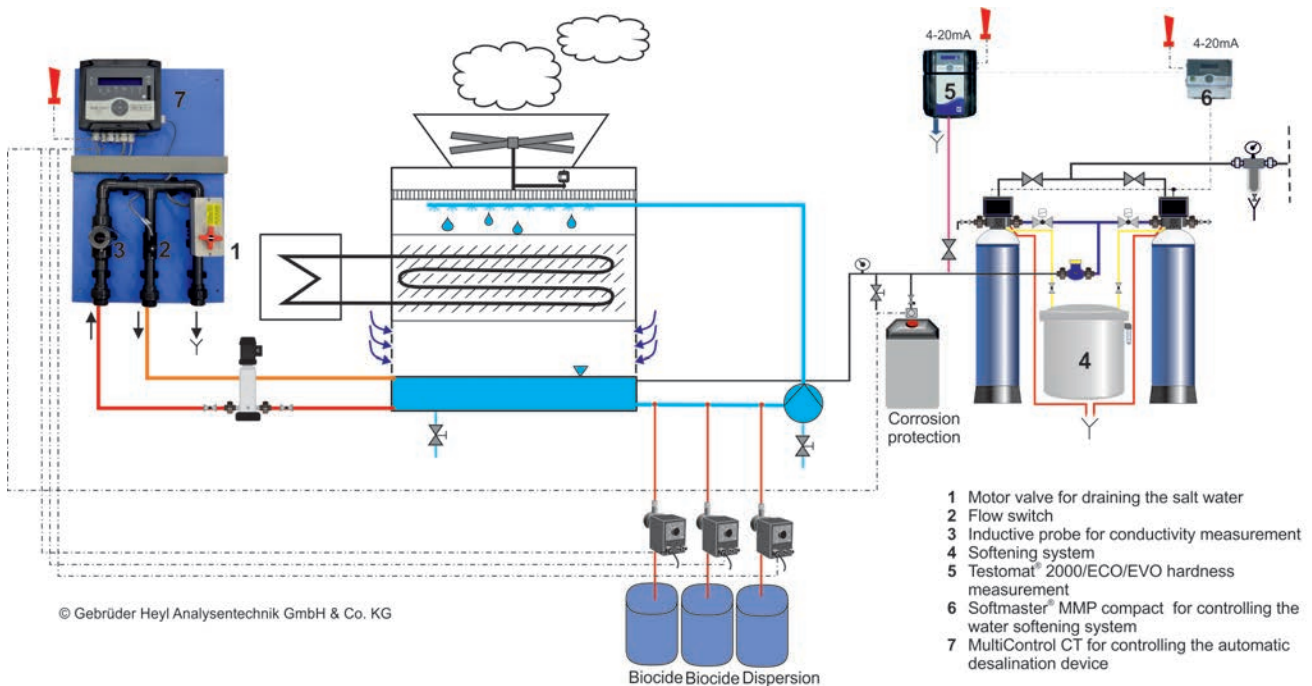
- Plug-in card for connecting a probe with two current outputs for measuring the inductive conductivity and temperature and for connecting a combination electrode for measuring the pH value.
- Plug-in card for connecting a probe with RS232 interface for measuring the inductive conductivity and temperature.
- Plug-in card for connecting a conductive conductivity probe, a PT100 or PT1000 temperature sensor with 2-, 3- or 4-wire technology

and a combination electrode for measuring the pH value.

- Plug-in card with two 0/4-20 mA outputs for outputting the measured values and one RS232 interface for connecting an inductive conductivity probe.

A SD card is used to log measured values, messages, alarms and status changes. Even the firmware can be updated in this way.

Water treatment of feed water in cooling circuits with measuring instruments from Gebr. Heyl



- 1 Motor valve for draining the salt water
- 2 Flow switch
- 3 Inductive probe for conductivity measurement
- 4 Softening system
- 5 Testomat<sup>®</sup> 2000/ECO/EVO hardness measurement
- 6 Softmaster<sup>®</sup> MMP compact for controlling the water softening system
- 7 MultiControl CT for controlling the automatic desalination device



The effect of a too low acid capacity on the water treatment facility and water quality is often underestimated.

Low acid capacity makes it difficult for the pH value in the swimming pool water to stabilize. The pH value in turn affects the filtration effect and therefore the disinfecting potential.

Acid capacity also strongly influences the occurrence of corrosion in parts of the facility that are in contact with water. The water is more aggressive the lower the acid capacity is.

This leads to corrosion on metal components such as pump drives and fiber backstops, untreated concrete water tanks and on gaps between tiles.

DIN 19643 recommends a weekly inspection of acid capacity in order to be able to permanently control the water quality and the state of the surfaces that are in contact with water.

It also recommends a maximum lower limit value of 0.3 mmol for the acid

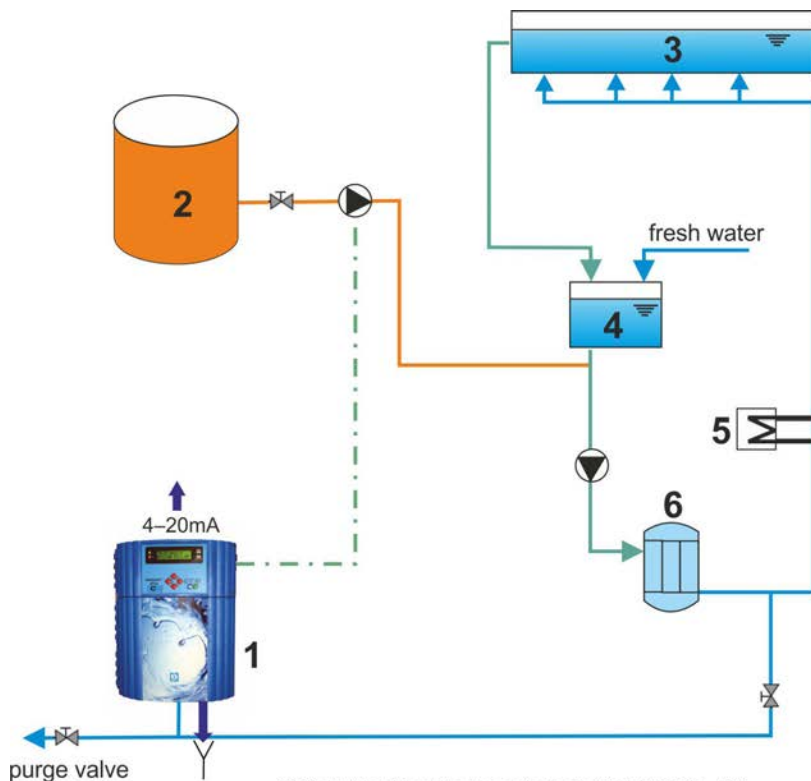


capacity in Jacuzzis and 0.7 mmol in swimmer's pools.

Through online analysis with the **Testomat ECO® C** the acid capacity can be stabilized automatically

Regular inspection also helps to reduce consumables such as disinfectants and stabilizers and thus helps to save costs.

Monitoring carbonate hardness in a swimming pool's water cycle with Gebr. Heyl measuring devices



- 1 Monitoring carbonate hardness Testomat ECO® C
- 2 Hardness increase sodium bicarbonate
- 3 Swimmer's pool
- 4 Gushing water container
- 5 Heat exchangers
- 6 Filters

**When is it necessary to measure phosphate levels?**

The measurement of the phosphate content in the wastewater of industrial processes becomes more and more important, because the phosphate values must be lower than the legally permitted values if the wastewater is discharged into the sewer system.

In accordance with § 11 of the German drinking water ordinance of 2001, the limits are 2,2 mg / l phosphorus (6.75 mg / l PO<sub>4</sub>) for phosphates added to the drinking water.

**Where do phosphates come from?**

Phosphates are mainly found in fertilizers and detergents. They are released into the groundwater by agricultural fertilizers in the soil or by domestic wastewater with phosphate detergents. In industrial plants, orthophosphates (PO<sub>4</sub>) are directly fed into the processing water to prevent corrosion in their piping systems.

Industrial and agricultural discharges in rivers and lakes lead to a nutrient

surplus in the waters. This results in undesirable algae growth and a falling oxygen content in the water. The ecological balance suffers sustained damage.

Through the water cycle, high amounts of phosphates and nitrates also enter the ground water.

In order to prevent this environmental hazard, policies for the concentration of phosphates and nitrates in water have been established.

**Phosphates in Sewage Treatment Plants**

In waste water treatment plants, phosphate concentration must be measured in order to ensure effective wastewater treatment. Phosphates are removed either by chemical precipitation or biological elimination from wastewater.

By feeding in dissolved iron salts (ferrous chloride), most of the phosphorus from wastewater is precipitated and deposited along with the contaminants from the primary settlement tank to the bottom of the basin.

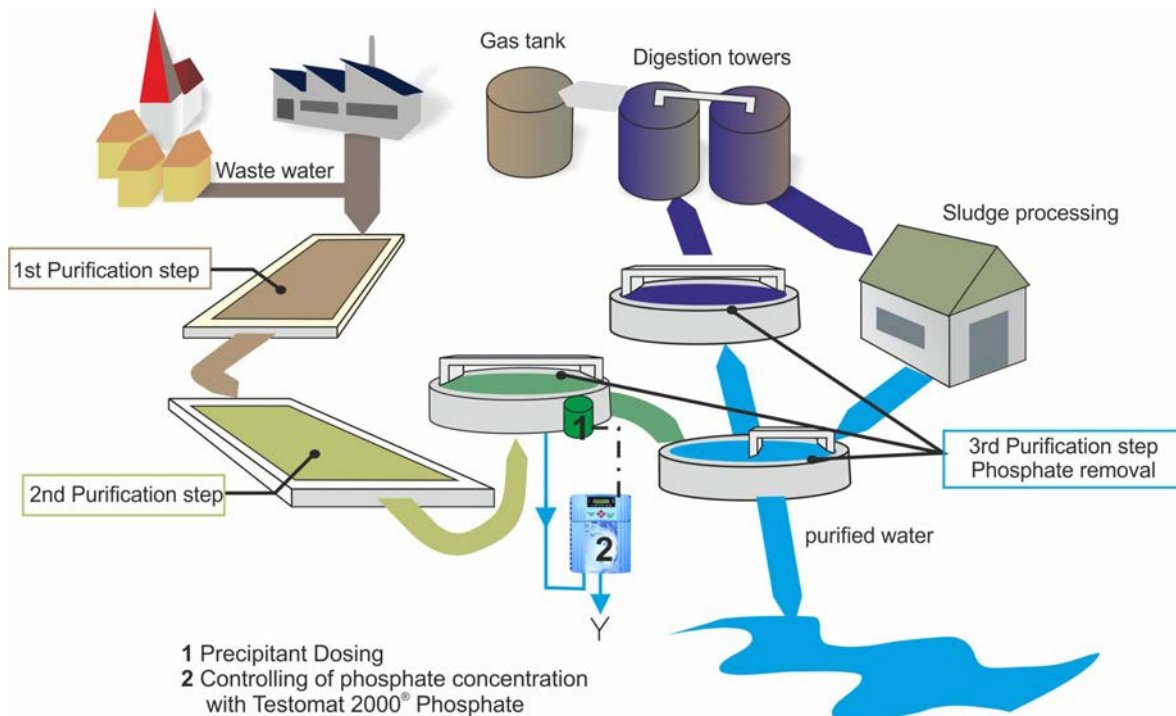
Increasingly important in wastewater treatment plants is the phosphate recovery from wastewater and sludge, since phosphorus is an important and finite raw material.

All these processes require an inspection of the phosphate content, which must be either conducted manually or continuously.

The **Testomat 2000® PO4** was developed for the online analysis of orthophosphate and operates within a measuring range of 0 - 10 mg/l PO<sub>4</sub>.

Find the complete technical information on phosphate measurement with the **Testomat 2000® PO4** in the download section of our website [www.heylyanalysis.de](http://www.heylyanalysis.de).

**Phosphate measurement at the water treatment plant with the Gebr. Heyl phosphate measuring instrument**



During galvanic processes such as copper plating, chromium plating or nickel plating or during surface treatment before painting (phosphating), large amounts of rinsing water are required after each process step.

Since the disposal of these process waters is very expensive, it makes sense for a company to process and reuse the process waters. The amount of waste water and fresh water can thus be limited.

Heavy metals and toxic constituents are removed during the on-site treatment.

In many cases, a chemical-physical process is used, e.g. ion exchangers. Regeneration of ion exchangers produces solutions with a high concentration of heavy metal salts, from which the metals are either deposited electrolytically or, in some cases, recycled directly to the galvanising baths.

The process water is neutralised with the help of acid or lye. Auxiliary substances and additional reaction steps eliminate any existing critical constituents such as cyanides or chromic acid.



Afterwards, sludge is produced with a flocculant, which removes oils, fats and heavy metals from the water.

The resulting clear phase can then be discharged into the sewer in consideration of the legal limit values.

**Limit values for chromium**

The Drinking Water Ordinance (TrinkwV 2001/amendment November

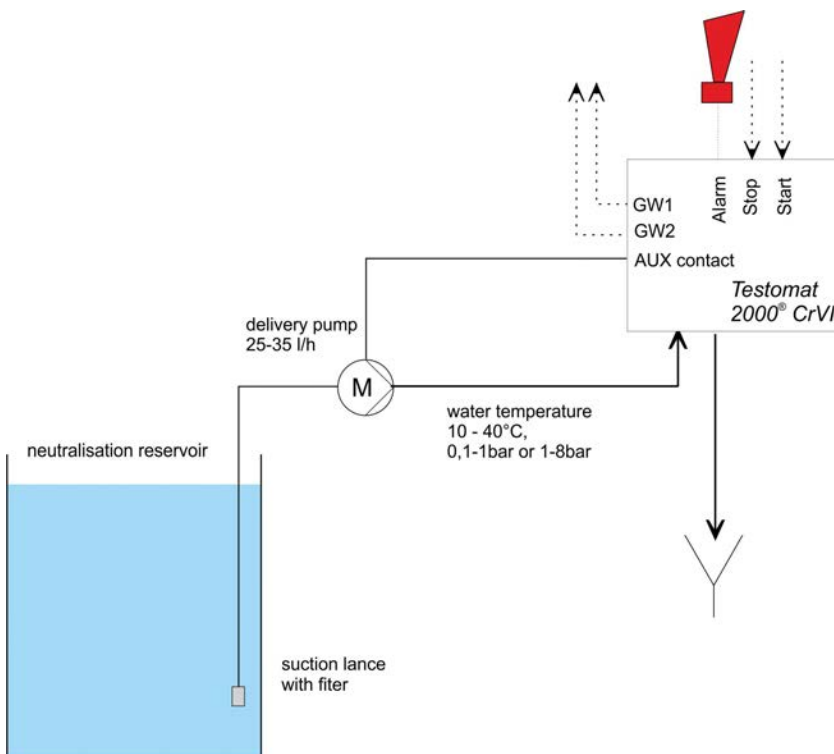
2011) prescribes a limit value of 0.05 mg/l chromium in drinking water.

The Waste Water Ordinance (AbwV) sets a limit of 0.05 mg/l chromium in the waste water of chemical industrial companies and a limit value of 0.25 g/t chromium for the iron, steel and malleable-iron foundry.

With a measuring range of 0.0-2.0 mg/l (chromate) and 0-1.0 mg/l (chromium VI), the **Testomat 2000® CrVI** is ideally suited for the required monitoring of these limit values.

Since the monitoring of limit values by the Testomat device takes place automatically online, the level of supervision required by personnel is low and the legal requirements are reliably and demonstrably adhered to and documented through data storage via SD card data loggers.

The analytical result is displayed after a reaction time of approx. 2 minutes. The **Testomat 2000® CrVI 0-5 ppm** can also be used for a broader monitoring range. The measuring range is 0.0-5.0 ppm (chromium VI) and 0.0-11.15 ppm (chromate).



The sterilisation of surgical instruments now plays a central role when it comes to quality assurance in hospitals.

The treatment process is subject to the requirements of the standard DIN EN 285 for steam sterilisation, among others. The steam or water used must not exceed the specified limit values, otherwise deposits and corrosion can occur on the metal surfaces of the instruments.

Demineralised water is therefore generally used for the sterilisation process. This process water (demineralised water) is produced in a water treatment system in the hospital.

DIN EN 285 stipulates the following limit values for the feed water quality to generate pure steam:

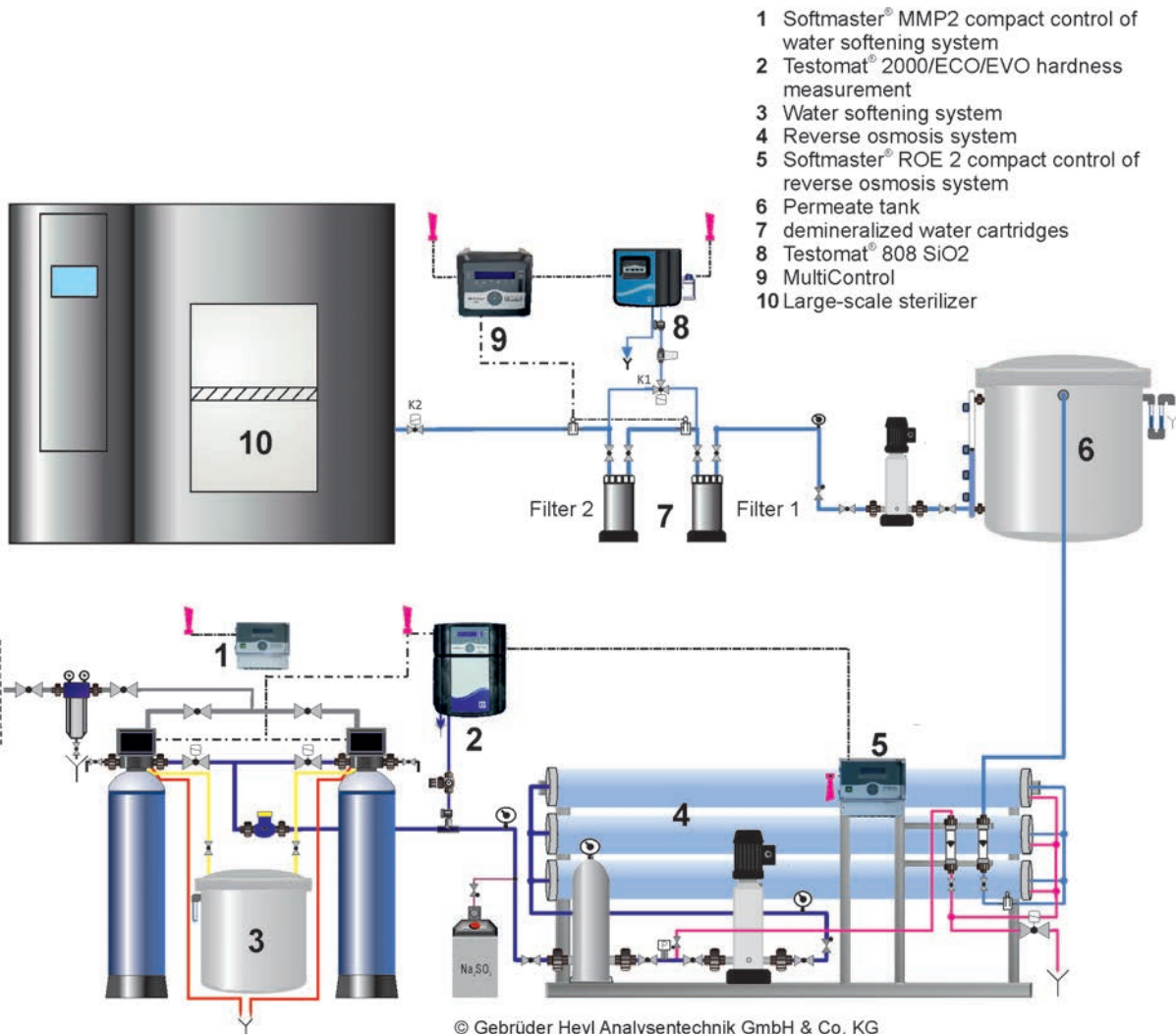
- Conductivity: < 15  $\mu\text{S}/\text{cm}$
- pH-value: 5 – 7
- Total hardness: < 0,02 mmol/l
- Salt content: < 10 mg/l
- Phosphate: < 0,5 mg/l
- Silicate ( $\text{SiO}_2$ ): < 1 mg/l
- Chloride: < 2 mg/l



To meet the need of hospitals for a simple, reliable silicate measuring device, Gebr. Heyl Analysentechnik has developed the **Testomat® 808 SiO<sub>2</sub>**.



This limit value measuring device can determine silicates in the measurement range from 0.3 to 1.2 ppm and thus corresponds to the specifications of the DIN standard EN 285 for a silicate monitoring device.

Find the complete technical information on **water treatment in hospitals** in the download section of our website [www.heylanalysis.de](http://www.heylanalysis.de).

Water treatment for the central sterilization with Gebr. Heyl measuring and control devices

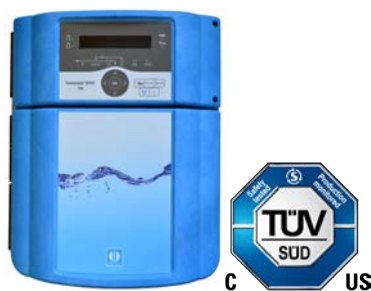


						
<b>Description</b>	limit value monitoring instrument for water hardness	limit value monitoring instrument for silica				
<b>Parameters</b>	water hardness	silica SiO <sub>2</sub>				
<b>Monitoring range</b>	0,02-5 °dH (0,4...89 ppm CaCO <sub>3</sub> )	0,3-1,2 ppm				
<b>Indicators</b> Limit values on pageSeite 44	Type 300, 300 S, 301, 302, 303, 305, 310, 320, 330, 350	Type A + B for Testomat® 808 SiO <sub>2</sub>				
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>• low water consumption</li> <li>• state-of-the-art electronics</li> <li>• modern indicator pump system</li> <li>• error display</li> <li>• indicator quantity display</li> <li>• external rinsing valve control</li> <li>• limit value evaluation/external control</li> <li>• alarm processing</li> <li>• internal and external rinsing via manual control</li> <li>• 72 hours without supervision possible (in BOB mode)</li> <li>• selector switch for pause interval; selector switch for adjusting the behavior of the relay when the limit value is exceeded</li> </ul>	<ul style="list-style-type: none"> <li>• Offering all the benefits of the Testomat® 808 - 2019</li> </ul> <p>in addition:</p> <ul style="list-style-type: none"> <li>• 2 selector switches for measuring intervals and evaluating limit values</li> </ul>				
<b>Application</b>	<p>applications of continuous residual hardness monitoring, e.g.:</p> <ul style="list-style-type: none"> <li>• reverse osmosis plants</li> <li>• soft water for commercial purposes</li> <li>• pure water production plants</li> <li>• galvanization</li> </ul>	<ul style="list-style-type: none"> <li>• Water treatment of sterilizations in hospitals</li> <li>• Monitoring of silicate content in industrial waters</li> </ul> <p>Application example on page 12</p>				
<b>Protection type/class</b>	IP44 / I	IP44 / I				
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz				
<b>Power consumption</b>	max. 16 VA	max. 16 VA				
<b>Dimensions</b>	approx. 14.3" x 12.4" x 5.4" (W x H x D) 364 x 314 x 138 mm	approx. 14.3" x 12.4" x 5.4" (W x H x D) 364 x 314 x 138 mm with side pocket: 17.4" x 12.4" x 5.4" 442 x 314 x 138 mm				
<b>Weight</b>	approx. 9.6 lbs (4.35 kg)	approx. 9.6 lbs (4.35 kg)				
<b>Operating pressure</b>	14.5 to 58 psi (1 to 4 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)	14.5 to 58 psi (1 to 4 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)				
<b>Menu languages</b>	—	—				
<b>Order numbers</b>						
	<b>24V</b>	<b>115 V</b>	<b>230 V</b>	<b>24V</b>	<b>115 V</b>	<b>230 V</b>
1-4 bar	100652	100651	100650	100662	100661	100660
0,3-1 bar	100655	100654	100653	100665	100664	100663

Product	Testomat® Modul TH	Testomat® Modul CL				
	 <div style="text-align: right; background-color: #003366; color: white; padding: 2px;">New</div>	 <div style="text-align: right; background-color: #003366; color: white; padding: 2px;">New</div>				
<b>Description</b>	measuring converter for residual total hardness	measuring converter for total chlorine				
<b>Parameters</b>	water hardness	total chlorine or free chlorine				
<b>Measuring range</b>	0,05-25 °dH	0 - 5 ppm (resolution 0,1)				
<b>Indicators</b> Limit values on pSeite 4240	TH 2005, TH 2025, TH 2100, TH 2250	Chlorine reagent set F (free) or Chlorine reagent set T (total)				
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>• device can be connected to an overriding control system</li> <li>• operation via function keys, which also serve as display elements</li> <li>• parameterisation with the Service Monitor program</li> <li>• output of measurement values via a 4-20 mA interface and a RS232 interface</li> <li>• 3 types of analysis triggers</li> <li>• shared output for the alarm</li> <li>• logging of error and maintenance messages with the SD card</li> <li>• firmware update with the SD card</li> <li>• USB connection for service purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Offering all the benefits of the Testomat® Modul TH</li> </ul>				
<b>Application</b>	Monitoring and checking of water quality e.g.: <ul style="list-style-type: none"> <li>• water treatment facilities</li> <li>• industrial boilers</li> <li>• process water monitoring</li> </ul>	Monitoring the decay behaviour in cooling towers after shock chlorination				
<b>Protection type/class</b>	IP43/40 (with/without cover) / I	IP43/40 (with/without cover) / I				
<b>Supply voltage</b>	24 VDC	24 VDC				
<b>Power consumption</b>	max. 1 A	max. 1 A				
<b>Dimensions</b>	approx. 10.6" x 13.8" x 5.8" 270 x 350 x 147 mm W x H x D	approx. 10.6" x 13.8" x 5.8" 270 x 350 x 147 mm W x H x D				
<b>Weight</b>	approx. 11.7 lbs (5.3 kg)	approx. 11.7 lbs (5.3 kg)				
<b>Operating pressure</b>	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)				
<b>Relay contact load</b>	max. 35 VAC / 60 VDC; max. 4 A	max. 35 VAC / 60 VDC; max. 4 A				
<b>Order numbers</b>	<b>24 V</b> <table border="1" style="margin: auto;"> <tr><td>116101</td></tr> <tr><td>116102</td></tr> </table>	116101	116102	<b>24 V</b> <table border="1" style="margin: auto;"> <tr><td>116105</td></tr> <tr><td>116106</td></tr> </table>	116105	116106
116101						
116102						
116105						
116106						
	with cover without cover					

Testomat® EVO TH

Testomat® EVO TH CAL



<b>Description</b>	automatic online analysis units for water hardness	Online-Analysenautomat für Wasserhärte mit Kalibrierfunktion		
<b>Parameters</b>	Water hardness	Water hardness		
<b>Measuring range</b>	0,05-25 °dH	0,05-25 °dH		
<b>Indicators</b> Limit values on pSeite 4240	TH 2005, TH 2025, TH 2100, TH 2250	TH 2005, TH 2025, TH 2100, TH 2250		
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>• Offering all the benefits of the Testomat ECO®</li> </ul> in addition: <ul style="list-style-type: none"> <li>• built-in SD card for                             <ul style="list-style-type: none"> <li>– recording data, alarm, errors</li> <li>– firmware updates</li> <li>– importing and exporting settings</li> </ul> </li> <li>• transfer of measurement data and status via the RS232 port</li> <li>• there is also scope to connect a field bus converter or a converter for telecommunication networks</li> <li>• Operation &lt;0.3 bar with MepuClip®</li> </ul>	<ul style="list-style-type: none"> <li>• Offering all the benefits of the Testomat® EVO TH</li> </ul> in addition: <ul style="list-style-type: none"> <li>• with calibration function</li> </ul>		
<b>Application</b>	Monitoring and checking of water quality e.g.: <ul style="list-style-type: none"> <li>• water treatment facilities</li> <li>• industrial boilers</li> <li>• process water monitoring</li> <li>• drinking water systems</li> </ul>	Monitoring and checking of water quality e.g.: <ul style="list-style-type: none"> <li>• water treatment facilities</li> <li>• industrial boilers</li> <li>• process water monitoring</li> <li>• drinking water systems</li> </ul>		
<b>Protection type/class</b>	IP44 / I	IP44 / I		
<b>Supply voltage</b>	100-240 VAC/ 100-353 VDC	100-240 VAC/ 100-353 VDC		
<b>Power consumption</b>	max. 30 VA	max. 30 VA		
<b>Dimensions</b>	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)		
<b>Weight</b>	approx. 19.8 lbs (9,0 kg)	approx. 19.8 lbs (9,0 kg)		
<b>Operating pressure</b>	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)		
<b>Menu languages</b>	German, English, French, Dutch, Spanish (more upon request)	German, English, French, Dutch, Spanish (more upon request)		
<b>Order numbers</b>				
	<b>24V</b>	<b>100-240 VAC</b>	<b>24V</b>	<b>100-240 VAC</b>
housing black	upon request	100701	upon request	upon request
housing blue	upon request	100704	upon request	100712

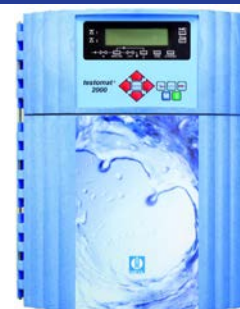
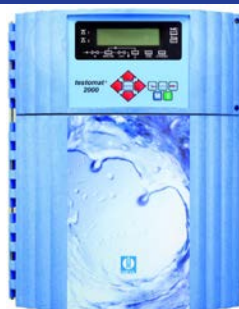


<b>Description</b>	automatic online analysis units for water hardness			
<b>Parameters</b>	water hardness, carbonate hardness, p-value, minus m-value			
<b>Measuring range</b>	0,05-25 °dH	water hardness		
	0,5-20 °dH	carbonate hardness		
	0,1-15 mmol/l	p-value		
	0,05-0,5 mmol/l	minus m-value		
<b>Indicators</b> Limit values on pSeite 4240	TH 2005, TH 2025, TH 2100, TH 2250 TC 2050, TC 2100, TM 2005, TP 2100			
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>• freely selectable hardness unit: °dH, °f, ppm CaCO<sub>3</sub>, or mmol/l</li> <li>• high measurement accuracy thanks to precise piston dosing pump</li> <li>• monitoring of two measuring points (switching via external magnet valves)</li> <li>• reliable, low-maintenance operation</li> <li>• very simple menu-driven operation and programming via plain-text display</li> </ul> <ul style="list-style-type: none"> <li>• BOB function</li> <li>• two independently programmable limit value contacts for monitoring and control tasks</li> <li>• 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</li> </ul>			
<b>Application</b>	<ul style="list-style-type: none"> <li>• water treatment plants</li> <li>• water blending plants</li> <li>• drinking water plants</li> <li>• water softening plants</li> </ul> <ul style="list-style-type: none"> <li>• decarbonization plants</li> <li>• desalination plants</li> <li>• boiler houses</li> <li>• cooling towers</li> </ul>			
<b>Protection type/class</b>	IP65 / I			
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz			
<b>Power consumption</b>	max. 30 VA			
<b>Dimensions</b>	approx. 15" x 18.9" x 11" 380 x 480 x 280 mm (W x H x D)			
<b>Weight</b>	approx. 20.9 lbs (9.5 kg)			
<b>Operating pressure</b>	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)			
<b>Menu languages</b>	German, English, French, Italian, Polish, Dutch			
<b>Order numbers</b>		<b>24V</b>	<b>115 V</b>	<b>230 V</b>
	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

Testomat 2000® CAL



<b>Description</b>	automatic online analysis units for hardness of water with elevated chlorine or H <sub>2</sub> O <sub>2</sub> content	automatic online analysis unit for water hardness with additional calibration function																																																
<b>Parameters</b>	water hardness, carbonate hardness, p-value, minus m-value	water hardness, carbonate hardness, p-value, minus m-value																																																
<b>Measuring range</b>	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																																																
<b>Indicators</b> Limit values on pSeite 4240	TH 2005, TH 2025, TH 2100, TH 2250, TC 2050, TC 2100, TM 2005, TP 2100	TH 2005, TH 2025, TH 2100, TH 2250, TC 2050, TC 2100, TM 2005, TP 2100																																																
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000® in addition:</li> <li>pump for dosing a reducing agent By adding the Antox solution before determining the hardness, the interference by oxidising agents (for example chlorine) is reliably eliminated up to a concentration of 10 mg/l (Antox solution, see page 40).</li> </ul>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000® in addition:</li> <li>with calibration function</li> </ul>																																																
<b>Application</b>	<ul style="list-style-type: none"> <li>control of water quality in areas where measurement errors can arise due to oxidizing agents</li> </ul>	control of water quality for which calibration of the measuring instrument is important, e.g.: <ul style="list-style-type: none"> <li>pharmaceutical industry</li> </ul>																																																
<b>Protection type/class</b>	IP65 / I	IP65 / I																																																
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																																																
<b>Power consumption</b>	max. 30 VA	max. 30 VA																																																
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<b>Operating pressure</b>	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)																																																
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	24V	115 V	230 V																																															
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English	100211	100216	100221																																															
French	100212	100217	100222																																															
Italian	100213	100218	100223																																															
Dutch	100214	100219	100224																																															

Product	Testomat 2000® self clean	Testomat 2000® V																																																
																																																		
<b>Description</b>	automatic online analysis units for water hardness with cleaning function for difficult water	automatic online analysis unit for water hardness for regulating blending water																																																
<b>Parameters</b>	water hardness, carbonate hardness, p-value, minus m-value	Water hardness, Carbonate hardness																																																
<b>Measuring range</b>	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 1,0–20,0 °dH      carbonate hardness																																																
<b>Indicators</b> Limit values on pSeite 4240	TH 2005, TH 2025, TH 2100, TH 2250, TC 2050, TC 2100, TM 2005, TP 2100	TH 2005, TH 2025, TH 2100, TH 2250, TC 2050, TC 2100,																																																
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> </ul> <p>in addition:</p> <ul style="list-style-type: none"> <li>with dosing pump for dosing our cleaning agent for cleaning the measuring chamber after analysis For the cleaning solution see page 40</li> </ul>	<p>Offering all the benefits of the Testomat 2000®</p> <p>in addition:</p> <ul style="list-style-type: none"> <li>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</li> <li>the selection of the reagent determines the working range of the controller (= measuring range)</li> </ul>																																																
<b>Application</b>	<ul style="list-style-type: none"> <li>use for difficult water, e.g. calcium, biofims, various other deposits</li> <li>extending service life</li> <li>reducing contamination in the measuring chamber</li> </ul>	<ul style="list-style-type: none"> <li>regulation of water blending systems (cooling circuits, process water)</li> </ul>																																																
<b>Protection type/class</b>	IP65 / I	IP65 / I																																																
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																																																
<b>Power consumption</b>	max. 30 VA	max. 30 VA																																																
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<b>Operating pressure</b>	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)																																																
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English	100171	100176	100181																																															
French	100172	100177	100182																																															
Italian	100173	100178	100183																																															

**Testomat 2000® DUO**

**Testomat 2000® DUO CN**

**Testomat 2000® CN**



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

automatic online analysis unit for water hardness for the Chinese market, with Chinese menu navigation

water hardness, carbonate hardness, p-value, minus m-value

water hardness, carbonate hardness, p-value, minus m-value

water hardness, carbonate hardness, p-value, 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

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

TH 2005, TH 2025, TH 2100,  
TH 2250, TC 2050, TC 2100,  
TM 2005, TP 2100

TH 2005, TH 2025, TH 2100,  
TH 2250, TC 2050, TC 2100,  
TM 2005, TP 2100

TH 2005, TH 2025, TH 2100,  
TH 2250, TC 2050, TC 2100,  
TM 2005, TP 2100

- Offering all the benefits of the 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

- Offering all the benefits of the Testomat 2000® DUO in addition:
- Chinese menu navigation for the Asian market

- Offering all the benefits of the Testomat 2000® in addition:
- Chinese menu navigation for the Asian market

- 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

- the same areas of application such as Testomat 2000®

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"  
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14.5 to 116 psi (1 to 8 bar) or  
4.4 to 14.5 psi (0.3 to 1 bar)

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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, Polish



Mandarin and English

Mandarin and English

	24V	115 V	230 V
German	100290	100295	100300
English	100291	100296	100301
French	100292	100297	100302
Italian	100293	100298	100303
Polish	100294	100299	100304

	24V	115 V	230 V
Mandarin	110219	110220	110221

	230 V
Mandarin incl. SD card data logger	110212
Mandarin without SD card data logger	110215

Product	Testomat 2000® THCL	Testomat 2000® CLO2																																
																																		
<b>Description</b>	automatic online analysis unit for determining total chlorine and water hardness	automatic online analysis unit for determining chlorine dioxide content																																
<b>Parameters</b>	total chlorine water hardness	chlorine dioxide ClO <sub>2</sub>																																
<b>Measuring range (resolution)</b>	0,00-0,99 mg/l (0,01) 1,0-2,5 mg/l (0,1) 0,25-2,5°dH (0,05) } total chlorine water hardness	0,00-1,88 mg/l (0,02) 1,9-4,7 mg/l (0,2)																																
<b>Indicators</b> Limit values on pSeite 4241	TH 2025, CL 2250 A, CL 2250 B, CL 2250 C	CLO2 reagent set A and B																																
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> <li>in addition:</li> <li>combination of total chlorine and hardness measuring instrument</li> </ul>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> <li>in addition:</li> <li>the analysis result is displayed after a reaction time of approx. one minute</li> </ul>																																
<b>Application</b>	<ul style="list-style-type: none"> <li>medical technology (dialysis)</li> <li>corrosion protection</li> <li>protection for reverse osmosis membranes</li> <li>monitoring of softener and chlorination systems for drinking water or swimming pools</li> </ul>	<ul style="list-style-type: none"> <li>disinfectant monitoring for drinking water and process water</li> </ul>																																
<b>Protection type/class</b>	IP65 / I	IP65 / I																																
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																																
<b>Power consumption</b>	max. 30 VA	max. 30 VA																																
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English	100271	100276	100281																															
French	100272	100277	100282																															
	24V	115 V	230 V																															
German	100500	100505	100510																															
English	100501	100506	100511																															
French	100502	100507	100512																															

**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 or free 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

0,00-0,99 mg/l (0,01)  
1,0-2,5 mg/l (0,1)

CL 2250 A, CL 2250 B

CL 2250 A, CL 2250 B, CL 2250 C

CL 2250 A, CL 2250 B, CL 2250 C

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. one minute

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. one minute
- can be converted for CLF (free chlorine)

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. one minute
- with dosing pump for dosing our cleaning agent for cleaning the measuring chamber after analysis (see page 39)

- 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)

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"  
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approx. 20.9 lbs (9.5 kg)

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14.5 to 116 psi (1 to 8 bar) or  
4.4 to 14.5 psi (0.3 to 1 bar)

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4.4 to 14.5 psi (0.3 to 1 bar)

German, English, French,

German, English, French,

German, English, French

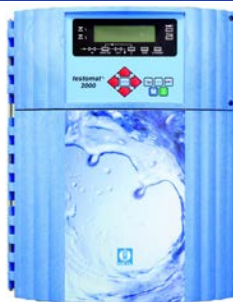
	24V	115 V	230 V	24V	115 V	230 V	24V	115 V	230 V
German	100230	100235	100240	100130	100135	100140	upon request	upon request	100245
English	100231	100236	100241	100131	100136	100141	upon request	100256	100246
French	100232	100237	100242	100132	100137	100142	upon request	upon request	100247

Product	Testomat 2000® Br	Testomat 2000® CrVI Testomat 2000® CrVI 0-5ppm																																															
																																																	
<b>Description</b>	automatic online analysis unit for determining bromine content	automatic online analysis unit for determining chromate or chromium VI content																																															
<b>Parameters</b>	bromine Br <sub>2</sub>	chromate (CrO <sub>4</sub> <sup>2-</sup> ) or chromium VI (CrVI)																																															
<b>Measuring range (resolution)</b>	0,00-2.23 mg/l and 2.3-5.6 mg/l	<table border="1"> <thead> <tr> <th>Type</th> <th>CrVI</th> <th>CrVI 0-5ppm</th> <th>resol.</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Chromate</td> <td>0,00 - 0,99</td> <td>0,00 - 0,99</td> <td>0,01</td> </tr> <tr> <td>1,0-2,0</td> <td>1,0-3,0</td> <td>0,1</td> </tr> <tr> <td>-</td> <td>3,0 - 5,0</td> <td>0,2</td> </tr> <tr> <td>Chromium</td> <td>0,00 - 0,99</td> <td>0,00 - 11,15</td> <td>0,01</td> </tr> </tbody> </table>	Type	CrVI	CrVI 0-5ppm	resol.	Chromate	0,00 - 0,99	0,00 - 0,99	0,01	1,0-2,0	1,0-3,0	0,1	-	3,0 - 5,0	0,2	Chromium	0,00 - 0,99	0,00 - 11,15	0,01																													
Type	CrVI	CrVI 0-5ppm	resol.																																														
Chromate	0,00 - 0,99	0,00 - 0,99	0,01																																														
	1,0-2,0	1,0-3,0	0,1																																														
	-	3,0 - 5,0	0,2																																														
Chromium	0,00 - 0,99	0,00 - 11,15	0,01																																														
<b>Indicators</b> Limit values on pageSeite 42	bromine reagent set	CrVI 2100 A, CrVI 2100 B																																															
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> </ul> <p>in addition:</p> <ul style="list-style-type: none"> <li>the analysis result is displayed after a reaction time of approx. one minute</li> </ul>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> </ul> <p>in addition:</p> <ul style="list-style-type: none"> <li>the analysis result is displayed after a reaction time of approx. 2 to 3 minutes</li> </ul>																																															
<b>Application</b>	<ul style="list-style-type: none"> <li>monitoring the dosing of disinfectant</li> </ul>	<ul style="list-style-type: none"> <li>monitoring of chromate content waste water in galvanization plants</li> <li>control of waste water in the metalworking industry</li> </ul> <p>Application example on page 11</p>																																															
<b>Protection type/class</b>	IP65 / I	IP65 / I																																															
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																																															
<b>Power consumption</b>	max. 30 VA	max. 30 VA																																															
<b>Dimensions</b>	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)																																															
<b>Weight</b>	approx. 20.9 lbs (9.5 kg)	approx. 20.9 lbs (9.5 kg)																																															
<b>Operating pressure</b>	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)																																															
<b>Menu languages</b>	German, English, French	German, English, French,																																															
<b>Order numbers</b>	<table border="1"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td>German</td> <td>100520</td> <td>100525</td> <td>100530</td> </tr> <tr> <td>English</td> <td>100521</td> <td>100526</td> <td>100531</td> </tr> <tr> <td>French</td> <td>100522</td> <td>100527</td> <td>100532</td> </tr> </tbody> </table>		24V	115 V	230 V	German	100520	100525	100530	English	100521	100526	100531	French	100522	100527	100532	<table border="1"> <thead> <tr> <th></th> <th>Type</th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td rowspan="3">CrVI</td> <td></td> <td>100310</td> <td>100315</td> <td>100320</td> </tr> <tr> <td></td> <td>100311</td> <td>100316</td> <td>100321</td> </tr> <tr> <td></td> <td>100312</td> <td>100317</td> <td>100322</td> </tr> <tr> <td rowspan="3">CrVI 0-5ppm</td> <td></td> <td>request</td> <td>request</td> <td>100640</td> </tr> <tr> <td></td> <td>request</td> <td>request</td> <td>100641</td> </tr> <tr> <td></td> <td>request</td> <td>request</td> <td>request</td> </tr> </tbody> </table>		Type	24V	115 V	230 V	CrVI		100310	100315	100320		100311	100316	100321		100312	100317	100322	CrVI 0-5ppm		request	request	100640		request	request	100641		request	request	request
	24V	115 V	230 V																																														
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		100312	100317	100322																																													
CrVI 0-5ppm		request	request	100640																																													
		request	request	100641																																													
		request	request	request																																													

Testomat 2000® Fe

Testomat 2000® PO4

Testomat 2000® Polymer



automatic online analysis unit for determining iron content

automatic online analysis unit for determining phosphate content

automatic online analysis unit for determining polyacrylate content

iron (Fe (II), Fe (III))

phosphate PO<sub>4</sub>

anionic polyacrylates

0,00-0,65 mg/l and  
0,7-1,0 mg/l

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

FE 2005 A, FE 2005 B

PO4 reagent set 2100

It is necessary to customize the Testomat 2000® Polymer because of the large amount of polyacrylates, which can be measured with this unit. Either use your existing reagents or use our polymer reagents.

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. 7 minutes

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. 10 minutes
- choose between the 500 ml bottles or the large reagent containers (20 and 5 litre containers)

- Offering all the benefits of the Testomat 2000®
- in addition:
- the analysis result is displayed after a reaction time of approx. 7 minutes
- scaling factor adjustable from 0.01 to 99,99 to accommodate the reagents used

- monitoring of systems for removing iron from well water
- controlling industrial or drinking water

- 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

Application example on page 10

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"  
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approx. 20.9 lbs (9.5 kg)

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14.5 to 116 psi (1 to 8 bar) or  
4.4 to 14.5 psi (0.3 to 1 bar)

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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,  
Italian, Polish

German, English, French, Dutch,  
Spanish

German, English, French

	24V	115 V	230 V	24V	115 V	230 V	24V	115 V	230 V
German	100150	100155	100160	100560	100565	100570	upon request	upon request	100470
English	100151	100156	100161	100561	100566	100571	upon request	100472	100473
French	100152	100157	100162	100562	100567	100572	upon request	upon request	100471
Italian	100153	100158	100163	—	—	—			
Polish	100154	100159	100164	—	—	—			
Dutch.	100186	100187	100188	100563	upon request	100573			
Spanish	—	—	—	100564	100568	upon request			

Product	Testomat 2000® SO3	Titromat® TH																																
																																		
<b>Description</b>	automatic online analysis unit for determining sulfite content	automatic titration unit for determining water hardness																																
<b>Parameters</b>	sulfite SO <sub>3</sub> <sup>2-</sup>	water hardness																																
<b>Measuring range (resolution)</b>	0,0-5 mg/l (0,1) 5 - 10 mg/l (0,5) 10-50 mg/l (1)	2,5-50,0 °dH (2,5)																																
<b>Indicators</b> Limit values on pageSeite 42	Sulfite reagent A Sulfite reagent B	TH 2500 reagent A, TH 2500 reagent B																																
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> </ul> <p>in addition:</p> <ul style="list-style-type: none"> <li>the analysis result is displayed after a reaction time of approx. 3 minutes</li> </ul>	<ul style="list-style-type: none"> <li>Offering all the benefits of the Testomat 2000®</li> </ul>																																
<b>Application</b>	<ul style="list-style-type: none"> <li>monitoring of boiler feed water in steam boiler systems (sulfite for oxygen binding)</li> </ul> <p>Application example on page 4</p>	<ul style="list-style-type: none"> <li>drinking water production and supply,</li> <li>raw water monitoring</li> </ul>																																
<b>Protection type/class</b>	IP65 / I	IP65 / I																																
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																																
<b>Power consumption</b>	max. 30 VA	max. 30 VA																																
<b>Dimensions</b>	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)																																
<b>Weight</b>	approx. 9,5 kg	approx. 9,5 kg																																
<b>Operating pressure</b>	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)																																
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<b>Order numbers</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td>German</td> <td>100350</td> <td>100355</td> <td>100360</td> </tr> <tr> <td>English</td> <td>100351</td> <td>100356</td> <td>100361</td> </tr> <tr> <td>French</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		24V	115 V	230 V	German	100350	100355	100360	English	100351	100356	100361	French				<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td></td> <td>110110</td> <td>110115</td> <td>110120</td> </tr> <tr> <td></td> <td>110111</td> <td>110116</td> <td>110121</td> </tr> <tr> <td></td> <td>110112</td> <td>110117</td> <td>110122</td> </tr> </tbody> </table>		24V	115 V	230 V		110110	110115	110120		110111	110116	110121		110112	110117	110122
	24V	115 V	230 V																															
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	110112	110117	110122																															



**Titromat® KH**

**Titromat® M1**

**Titromat® M2**



automatic titration unit for determining carbonate hardness

automatic titration unit for determining carbonate hardness

automatic titration unit for determining carbonate hardness

carbonate hardness

carbonate hardness (m-value)

carbonate hardness (m-value)

5-150 °KH (5)  
2-60 °KH (2)

0,05-1,00 °dH (0,025)  
0,09-1,80 °f (0,045)

0,05-2,00 °dH (0,05)  
0,09-3,60 °f (0,09)

TC 2150 reagent A,  
TC 2150 reagent B

TC 2010 reagent A,  
TC 2010 reagent B

TC 2020 reagent A,  
TC 2020 reagent B

- Offering all the benefits of the Testomat 2000®
- special for high hardness measuring ranges

- Offering all the benefits of the Testomat 2000®
- special for low hardness measuring ranges

- Offering all the benefits of the Testomat 2000®
- special for low hardness measuring ranges

- alkalinity of open coolant circuits

- corrosion monitoring in boiler feed water,
- residual alkalinity after decarbonization (e.g., breweries)

- corrosion monitoring in boiler feed water,
- residual alkalinity after decarbonization (e.g., breweries)

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

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approx. 15" x 18.9" x 11"  
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approx. 15" x 18.9" x 11"  
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approx. 9,5 kg

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14.5 to 116 psi (1 to 8 bar) or  
4.4 to 14.5 psi (0.3 to 1 bar)

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14.5 to 116 psi (1 to 8 bar) or  
4.4 to 14.5 psi (0.3 to 1 bar)

German, English, French

German, English, French

German, English, French

	24V	115 V	230 V	24V	115 V	230 V	24V	115 V	230 V
German	110190	110195	110200	110150	110155	110160	110130	110135	110140
English	110191	110196	110201	110151	110156	110161	110131	110136	110141
French	110192	110197	110202	110152	110157	110162	110132	110137	110142







Product	Testomat ECO®	Testomat ECO® C																				
																						
<b>Description</b>	automatic online analysis units for water hardness	automatic online analysis units for carbonate hardness																				
<b>Parameters</b>	Water hardness	Carbonate hardness Acid capacity																				
<b>Measuring range</b>	0,05-25 °dH	0,18-3,58 mmol/l / 0,36-7,16 mmol/l 0,5-10,0 °dH / 1,0-20,0°dH																				
<b>Indicators</b> Limit values on pageSeite 42	TH 2005, TH 2025, TH 2100, TH 2250	TC 2050, TC 2100																				
<b>Performance profile</b>	<ul style="list-style-type: none"> <li>• freely selectable hardness unit: °dH, °f, ppm CaCO<sub>3</sub> or mmol/l</li> <li>• high measurement accuracy thanks to precise piston dosing pump</li> <li>• two independent limit values (choice of 1, 2, or 3 bad analyses before the limit value relay switches) and adjustable switching functions</li> <li>• reliable, low-maintenance operation</li> <li>• very simple menu-driven operation and programming via plain-text display</li> <li>• two neutral changeover contacts</li> <li>• error message output (neutral changeover)</li> <li>• current output 0/4–20 mA</li> <li>• BOB function</li> </ul>	<ul style="list-style-type: none"> <li>• Offering all the benefits of the Testomat ECO®</li> </ul> <p>deviating from this:</p> <ul style="list-style-type: none"> <li>• determinable measuring of carbonate hardness/acid capacity in mmol/l via indicator selection</li> <li>• no BOB function</li> </ul>																				
<b>Application</b>	<p>monitoring and control of water quality, e.g.:</p> <ul style="list-style-type: none"> <li>• water treatment plants</li> <li>• drinking water plants</li> </ul>	<p>monitoring and control of water quality, e.g.:</p> <ul style="list-style-type: none"> <li>• water treatment plants</li> <li>• drinking water plants</li> <li>• Swimming pool water automatic hardness increase of swimming pool water via online analysis (application page 9)</li> </ul>																				
<b>Protection type/class</b>	IP65 / I	IP65 / I																				
<b>Supply voltage</b>	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz	230–240 VAC, 115 VAC, 24 VAC all 50–60Hz																				
<b>Power consumption</b>	max. 30 VA	max. 30 VA																				
<b>Dimensions</b>	approx. 15" x 18.9" x 11" 380 x 480 x 280 mm (W x H x D)	14.5 to 116 psi (1 to 8 bar) or 4.4 to 14.5 psi (0.3 to 1 bar)																				
<b>Weight</b>	approx. 19.8 lbs (9.0 kg)	approx. 20.9 lbs (9.5 kg)																				
<b>Operating pressure</b>	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)																				
<b>Menu languages</b>	German, English, French, Italian, Polish, Dutch, Spanish	German, English, French, Dutch																				
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	24V	115 V	230 V																			
	100112	100117	100122																			
without front sticker	100430	100431	100432																			
	24V	115 V	230 V																			
	100115	100116	100121																			

## Selection help

Our Testomat devices have many uses in water analysis. This table will help you find the Testomat device suited to your needs.

	chlorination systems	decarbonization systems	iron removal systems	water softening 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	sterilisation/hospitals	drinking water supply	monitoring disinfectant dosing	monitoring chromate content	monitoring conditioning agents	monitoring two measuring points	water treatment	water blending
Testomat® 808	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat® 808 SiO2	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat ECO®	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat® EVO TH	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat® EVO TH CAL	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
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	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat® Modul TH	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉
Testomat® Modul CL	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉	👉

👉 especially appropriate    👉 appropriate    ⚪ not appropriate

Plug-in Cards		SK 910 current interface	RS 910 interface card	UK 910 voltage interface
				
<b>Is used</b>		for Testomat 2000® devices, Titromat	for Testomat 2000® devices, Titromat	for Testomat 2000® devices, Titromat
<b>Order number</b>		270305	270310	270315
<b>Description</b>		plug-in card current interface	RS232 plug-in card (serial interface)	plug-in card voltage interface
<b>Technical data</b>		<ul style="list-style-type: none"> <li>• output current: 0–20mA or 4–20mA</li> <li>• maximum load: 500 Ohm</li> <li>• galvanic isolation</li> </ul>	<ul style="list-style-type: none"> <li>• for connecting a log printer or protocol converter (field bus, Ethernet, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• output voltage: 0/2–10V</li> <li>• galvanic isolation</li> </ul>
		Network logger	Switching power supply board	SD card data logger
				
<b>Is used</b>		for Testomat 2000®	for Testomat® EVO	for Testomat 2000® devices, Titromat
<b>Order number</b>		100492	32394	100490
<b>Description</b>		Plug-in card with a 100 MBit network connection	Switching power supply unit for the power supply of Testomat® EVO devices	plug-in card for storing measurement results and error messages on an SD card
<b>Technical data</b>		<ul style="list-style-type: none"> <li>• Web server, FTP server and built-in Flash storage</li> <li>• 8 MB Flash storage for 400,000 measurement values and notifications (around 5 years)</li> <li>• Generation of measurement and alarm data on a monthly basis</li> <li>• Files saved in "CSV" format and can be subsequently processed with Office packages.</li> </ul>	<ul style="list-style-type: none"> <li>• power supply 100-240 VAC / 100-350 VDC, 47-63 Hz</li> </ul>	<ul style="list-style-type: none"> <li>• now available for all Testomat 2000® and Titromat devices (after software update of older units)</li> <li>• including standard SD card up to 2GB</li> <li>• the data are available in CSV format and can be further processed or analyzed easily in a spreadsheet program</li> </ul>

USB data logger

OLED display module



New

**Is used**

for Testomat® 808

for Testomat® Moduls

**Order number**

100493

37764

**Description**

Data logger with USB connection


Plug-in card with OLED display for the measurement on Testomat modules

**Technical data**

- 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
- Cannot be used in the Testomat® 808 SIO2!


- Permanently plugged into the control board.
- Measurement display only, no menu for programming. The unit is always programmed via the Service Monitor programme, which is stored on an SD card in the Testomat® module.



			
<b>Is used</b>	for Testomat® and Titromat® devices		
<b>Order number</b>	270337		
<b>Description</b>	Service case for regular maintenance of a Testomat 2000® device		
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 10 20x2 O-rings</li> <li>• 10 10.82x1.78 O-rings</li> <li>• 5 4.47x1.78 O-rings</li> <li>• 5 18x2 EPDM O-rings</li> <li>• 20 24x2 flat gaskets</li> <li>• 5 x filter screen for inlet, 19.5dx25</li> <li>• 5 flow regulator cores</li> <li>• 2 springs for inlet</li> <li>• 10 stoppers for measuring chamber</li> </ul>	<ul style="list-style-type: none"> <li>• 6 fuses, T 0.08A</li> <li>• 6 fuses, T 0.1 A</li> <li>• 6 fuses, T0.16 A</li> <li>• 6 fuses, T 0.2 A</li> <li>• 6 fuses, T 0.315 A</li> <li>• 6 fuses, T 1.0 A</li> <li>• 6 fuses, M4A</li> <li>• 20 30x3 sight glasses</li> <li>• 3 screw caps with T2000 insert</li> <li>• 4 M3x40 screws</li> </ul>	<ul style="list-style-type: none"> <li>• 1 suction hose</li> <li>• 1 pressure hose</li> <li>• 6 different pipes</li> <li>• 1 cleaning brush set</li> <li>• 2 push-in angle joints</li> <li>• 2 magnetic stirring bars</li> </ul>

Repair and service case



			
<b>Is used for</b>	Testomat® 808	Testomat® 808 SiO2	
<b>Order number</b>	270342	270343	
<b>Description</b>	Case for regular maintenance of a Testomat® 808 / 808 SiO2 and on-site service		
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 8 3.68x1.78 O-rings</li> <li>• 8 1.78x1.78 O-rings</li> <li>• 8 4.5x1.5 O-rings</li> <li>• 8 24x2 flat gaskets</li> <li>• 1 pump head</li> <li>• 4 500ml inserts with screw cap</li> <li>• 1 100ml insert with screw cap</li> <li>• 1 cleaning brush set</li> <li>• 4 angle screw connectors</li> <li>• 6 fuses, T 0.1 A</li> </ul>	<ul style="list-style-type: none"> <li>• 6 fuses, T 0.2 A</li> <li>• 6 fuses, T 1.0 A</li> <li>• 6 fuses, T4A</li> <li>• 6 30x3 sight glasses</li> <li>• 2 pipes, l = 53 mm</li> <li>• 2 pipes, l = 140 mm</li> <li>• 1 SUB-D null modem cable</li> <li>• 1 USB serial adapter</li> <li>• 2 dosing needles</li> <li>• 4 hose adapters</li> <li>• 2 magnetic stirring bars</li> </ul>	<ul style="list-style-type: none"> <li>• 8 M3x12 screws</li> <li>• 4 M3x40 screws</li> <li>• 1 magnetic valve</li> <li>• documentation/software (1)</li> </ul> <p style="margin-left: 20px;">Testomat® 808 SiO2 differing:</p> <ul style="list-style-type: none"> <li>• 1 double pump head</li> <li>• 6 fuses T0.315A</li> <li>• 8 fuses T4A</li> <li>• 2 100ml insert with screw cap</li> </ul>







No longer included:  
Optics board + LED holder  
The optic set can be found on page 40.

T2000 service case  
Variant 2








<b>Is used</b>	for Testomat® and Titromat® devices		
<b>Order number</b>	270338		
<b>Description</b>	Service case for regular maintenance of a Testomat 2000® device		
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 4 20x2 O-rings</li> <li>• 4 10.82x1.78 O-rings</li> <li>• 2 4.47x1.78 O-rings</li> <li>• 2 18x2 EPDM O-rings</li> <li>• 4 24x2 flat gaskets</li> <li>• 2 x filter screen for inlet, 19.5dx25</li> <li>• 2 flow regulator cores</li> <li>• 2 springs for inlet</li> <li>• 6 stoppers for measuring chamber</li> <li>• 1x push-in connector for the drain hose</li> </ul>	<ul style="list-style-type: none"> <li>• 2 fuses, T 0.08A</li> <li>• 2 fuses, T 0.1 A</li> <li>• 2 fuses, T0.16 A</li> <li>• 2 fuses, T 0.2 A</li> <li>• 2 fuses, T 0.315 A</li> <li>• 2 fuses, T 1.0 A</li> <li>• 2 fuses, M4A</li> <li>• 4 30x3 sight glasses</li> <li>• 3 screw caps with T2000 insert</li> <li>• 2 M3x40 screws</li> <li>• 2 suction hose</li> <li>• 2 pressure hose</li> </ul>	<ul style="list-style-type: none"> <li>• 6 different pipes</li> <li>• 1 cleaning brush set</li> <li>• 2 push-in angle joints</li> <li>• 2 magnetic stirring bars</li> <li>• 2x valve set for dosing pump</li> <li>• 1x inlet connection</li> <li>• 1x screw-in connector G1/4"-6</li> <li>• Angled plug-in connector G 1/8"</li> </ul>

	Service set	Service set	1-Year service set
<b>Is used</b>	for Testomat® 808/808 SiO2	for Testomat 2000®, Testomat ECO®, EVO and Titromat®	for Testomat 2000®, Testomat ECO®, EVO and Titromat®
<b>Order number</b>	270351	270352	270360
<b>Description</b>	Set for regular maintenance	spare part kit for maintenance	small spare part kit for maintenance
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 15 24x2 flat gaskets</li> <li>• 6 sight glasses</li> <li>• 6 3.68x1.78 O-rings</li> <li>• 6 4.5x1.5 O-rings</li> <li>• 6 1.78x1.78 O-rings</li> <li>• 1 pipe, l = 53 mm / 2"</li> <li>• 1 pipe, l = 140 mm / 5.5"</li> <li>• 1 cleaning brush set</li> </ul>	<ul style="list-style-type: none"> <li>• 1 T2000 gasket kit</li> <li>• 2 30x3 sight glass</li> <li>• 1 flow regulator cores</li> <li>• 3 stoppers for measuring chamber</li> <li>• 1 valve kit for injection pump</li> <li>• 1 filter screen for intake 19.5 d x 25</li> <li>• 3 different pipes</li> <li>• 1 cleaning brush set</li> </ul>	<ul style="list-style-type: none"> <li>• 1 T2000 gasket kit</li> <li>• 2 30x3 sight glass</li> <li>• 1 flow regulator cores</li> <li>• 3 stoppers for measuring chamber</li> <li>• 1 valve kit for injection pump</li> <li>• 1 filter screen for intake 19.5 d x 25</li> </ul>

Accessories Testomat® / Titromat®	Service set Testomat® Moduls	Service set Testomat 2000® Polymer	Service set Testomat 2000® PO4
	 <div style="background-color: #00a0e3; color: white; padding: 2px; display: inline-block;">New</div>		
<b>Is used</b>	for Testomat® Moduls	for Testomat 2000® Polymer	for Testomat® PO4
<b>Order number</b>	270357	270353	270354
<b>Description</b>	spare part kit for maintenance	spare part kit for maintenance of Polymer device and PeriClip pump	spare part kit for maintenance of PO4 device and PeriClip pump
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 1 T2000 gasket kit</li> <li>• 2 30x3 sight glass</li> <li>• 1 flow regulator cores</li> <li>• 3 stoppers for measuring chamber</li> <li>• 2 x screw cap with insert for 500 ml bottle</li> <li>• 1 filter screen for intake 19.5 d x 25</li> <li>• 5 different pipes</li> <li>• 1 cleaning brush set</li> </ul>	<ul style="list-style-type: none"> <li>• 1 T2000 gasket kit</li> <li>• 2 30x3 sight glass</li> <li>• 1 flow regulator cores</li> <li>• 3 stoppers for m . chamber</li> <li>• 2 x pump head</li> <li>• 1 filter screen for intake</li> <li>• 3 different pipes</li> <li>• 1 cleaning brush set</li> <li>• 2 x tube connection</li> <li>• 2 x seal for tube connection</li> <li>• 2 x screw cap with insert</li> </ul>	<ul style="list-style-type: none"> <li>• 1 T2000 gasket kit</li> <li>• 2 30x3 sight glass</li> <li>• 1 flow regulator cores</li> <li>• 3 stoppers for m . chamber</li> <li>• 2 x pump head</li> <li>• 1 filter screen for intake</li> <li>• 3 different pipes</li> <li>• 1 cleaning brush set</li> <li>• 2 x tube connection</li> <li>• 2 x seal for tube connection</li> <li>• 2 x screw cap with insert</li> </ul>
Conversion kit for water inlet		Conversion kit for water connection USA	Conversion kit for 100ml-bottle
			
<b>Is used</b>	for Testomat 2000®, Testomat ECO®, EVO and Titromat®	for Testomat 2000®	for Testomat 2000®, Testomat ECO®, EVO and Titromat®
<b>Order number</b>	040123	40345	040143
<b>Description</b>	conversion kit for the water inlet for connecting a fabric hose	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
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 1/4" quick-connect plug</li> <li>• 1/4" quick-connect coupling to hose with d = 6 mm i</li> <li>• lock on the hose side</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing adaptor from 6 mm to 1/4"</li> </ul>	<ul style="list-style-type: none"> <li>• 100 ml / 3.4 oz bottle</li> <li>• used for screw cap with suction tube for 100 ml / 3.4 oz bottle</li> <li>• screw cap GL32 hole</li> </ul>



Accessories Testomat 808/808 SiO <sub>2</sub>	Testomat 2000 <sup>®</sup> connection kit	Connection set	Conversion kit for water connection
			
<b>Is used</b>	for Testomat 2000 <sup>®</sup> , Testomat ECO <sup>®</sup> , EVO and Titromat <sup>®</sup>	for Testomat <sup>®</sup> 808	for Testomat <sup>®</sup> 808
<b>Order number</b>	040187	37610	37576
<b>Description</b>	connection kit with ball valve, pipes, and reducing pieces for the water connection	for the water connection	conversion kit for converting the water connection from Testomat <sup>®</sup> to BOB Testomat 808 <sup>®</sup>
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 5 m (16.4 ft) pipe, plastic PE 6/4x1, blue</li> <li>• 2 m (6.6 ft) drain hose, d=12 mm i</li> <li>• 1 ball valve, PPSV 011223W</li> <li>• 1 10-6 reducing connector</li> <li>• 1 3/8"-1/2" reducing nipple</li> </ul>	The kit consists of: <ul style="list-style-type: none"> <li>• plastic hose, 6/4 x 1; length 5 m / 16.4 ft</li> <li>• 10 to 6 mm reducer</li> <li>• 3/8" a to 6 mm stopcock</li> </ul>	The kit consists of: <ul style="list-style-type: none"> <li>• plug connection G1/4" DN6</li> <li>• pipe, PE, D=6; length 5 m / 16.4 ft</li> <li>• screw-in connection G1/4"-6</li> </ul>

	Conversion kit pump head	Conversion kit double pump head	
			
<b>Is used</b>	for Testomat <sup>®</sup> 808 (up to device number 253060)	for Testomat <sup>®</sup> 808 SiO <sub>2</sub>	
<b>Order number</b>	040363	040395	
<b>Description</b>	Conversion kit for replacing the old pump head (37578) in the new version (37562)	Conversion kit for replacing the old double pump head (37859) in the new version (37801)	
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• 1 x pump head Testomat 808</li> <li>• 1 x shaft extension for pump head</li> <li>• 1 x spacer plate for pump head</li> <li>• 1 x screw M3x20</li> <li>• 1 x screw M3x25</li> <li>• 1 x threaded pin M3x3</li> <li>• 1 x 1,5 mm hexagon socket wrench</li> </ul>	<ul style="list-style-type: none"> <li>• 1 x double pump head Testomat 808 SiO<sub>2</sub></li> <li>• 1 x shaft extension for pump head</li> <li>• 1 x spacer plate for pump head</li> <li>• 1 x screw M3x40</li> <li>• 1 x screw M3x50</li> <li>• 1 x threaded pin M3x3</li> <li>• 1 x 1,5 mm hexagon socket wrench</li> </ul>	<div style="border: 1px solid red; padding: 5px;">                     The current testomat<sup>®</sup> 808 2019 and Testomat<sup>®</sup> 808 SiO<sub>2</sub> 2019 devices do not require the conversion kit, as they are factory equipped with the new pump head.                 </div>

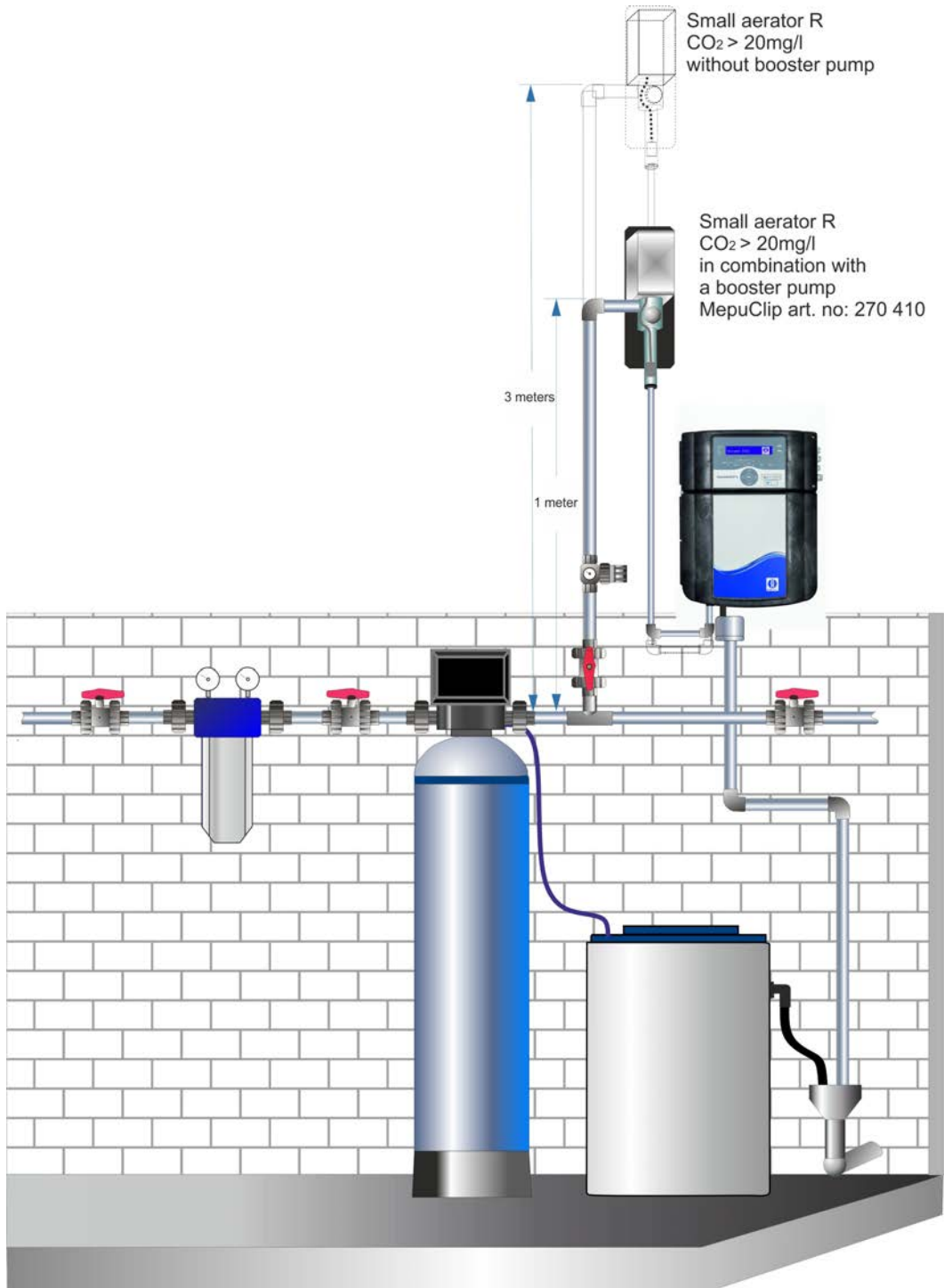
Example for assembly of aerator type R

The water intake connection of the small aerator can withstand a maximum of six bar. The water outlet from the small aerator is unpressurised. Therefore, the small aerator must be slotted in ahead of the Testomat device at least 3 m / 9,8 ft (0.3 bar / 4,35 psi) above the Testomat device.

During operation within a pressure range from 0.3 to 1 bar / 4,35 - 14,5 psi, or when supplied via a booster pump, please remove the valve body from the controller and filter housing of the Testomat device (see operating instructions for the Testomat device).

For installation heights lower than 3 m / 9,8 ft, use our booster pump MepuClip® in the Testomat 2000® or Testomat® EVO TH.

Testomat® ECO and Testomat® 808 cannot be fitted with the MepuClip® booster pump.





**Is used**

for Testomat 2000®/Testomat ECO®, EVO, 808

for Testomat® 808

**Order number**

130010

candle filter 37583  
filter insert 37584

**Description**

small aerator to reduce CO<sub>2</sub> content

candle filter with filter insert for filtering sample water before analysis

**Technical data**

- 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

- max. pressure: 10 bar/145 psi
- max. temperature: 50°C/122°F
- filter fineness: 100 µm
- 1/4" inlet/outlet



**Is used**

for all Testomat and Titromat devices

for Testomat® 808

for Testomat 2000®

**Order number**

040138

37602

suction lance (20 l container) 40535  
suction lance (5 l container) 40536

**Description**

tool kit for maintenance work on Testomat 2000®

the pressure regulator is used for pressures over 4 bar / 58 psi

long suction lances for large reagent containers

**Technical data**

- 1 Torx TX20 20x100 screwdriver
- 1 Torx TX10 10x80 screwdriver
- 1 Torx TX8 8x60 screwdriver







- max. inlet pressure 8 bar/116 psi
- ambient temp. 0–50°C / 32–122°F
- manometer connection, G1/8 on both sides
- non-reversible
- Particularly suitable for permeate and deionised water




- suction lances with different lengths for 20-litre containers and 5-litre containers








Article no. of the measuring chamber holder

	DUO 40370	DUO 40371	Trio 40372	Quad 40373	DUO 40375	DUO 40379	DUO 40382	Modul 40392	DUO 37856
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° Cr VI 0-5ppm						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					
Testomat° Modul TH								X	
Testomat° Modul CL									X
Titromat M1	X								
Titromat M2	X								
Titromat KH	X								
Titromat TH	X								


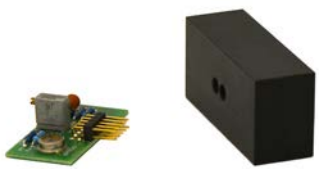




Spare parts Testomat® / Titromat®	Pressure regulator	Measuring chamber	Measuring chamber holder
			
<b>Is used</b>	for Testomat 2000®, Testomat ECO®, EVO, Modul, Titromat®	for Testomat 2000®, Testomat ECO®, EVO, Modul, Titromat®	for Testomat 2000®, Testomat ECO®, EVO and Titromat®
<b>Technical data</b>	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 040032 tenterhook 011210 plate stopper 24x2 flat gasket 033777 sight glass holder set with 2 screws (2 sight glass holders and 2 M3x40 screws) 040510	measuring chamber holder, 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  <i>For further article numbers for DUO , TRIO, and QUAD measuring chamber holders, see pageSeite 36</i>
	<b>Measuring chamber with double glazing</b>	<b>Measuring chamber with shortened measurement section</b>	<b>Gear motor</b>
			
<b>Is used</b>	for Testomat 2000® and Testomat® 808	for Testomat 2000® Cr VI 0-5ppm, Testomat 2000® PO4, Testomat® Modul CL	for Testomat® 808 / 808 SiO2
<b>Technical data</b>	The measuring chamber with double glazing can be used in the event of strong temperature differences between air and test water. Problems caused by steaming up in a humid environment are thus prevented in many applications.  Measuring chamber for Testomat 2000® 40559 Measuring chamber for Testomat® 808 37863  for both: sight-glass window 30x1,6 37833 sight-glass window holder 37806 seal 37808	Special measuring chamber for some Testomat devices. Cannot be used in all Testomat® devices  Order number 40378	gear motor 100494 12 V DC for the dosing pump of Testomat® 808 with installation guide  for Testomat 2000®  gear motor 39906 12 V DC for the dosing pump PeriClip

Spare parts Testomat®	Bottle connection/ suction device	Device spare parts	
			
<b>Is used</b>	for Testomat 2000®, Testomat ECO®, EVO TH and Titromat®	for Testomat 2000® /Testomat ECO® and Titromat®	
<b>Order number</b>	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	cable feedthrough, 5-7 040190 cable feedthrough, 7-10 040191 T2000 mains switch cover for mains 040197 switch 040198 ribbon cable, 10-pole, with ferrite ribbon cable, 26-pole, with ferrite 031713 loom 2V, complete (for valves) 040096 040060	loom 2P, complete (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 fuse M4 A 031582  drain funnel T2000 040315




	PMMA sight glasses	Sight glasses for shortened measurement section
		 <span style="background-color: #0070C0; color: white; padding: 2px;">New</span>
<b>Is used</b>	for Testomat® 808	for Testomat 2000® Cr VI 0-5ppm, Testomat 2000® PO4, Testomat® Modul CL
<b>Order number</b>	37653	40244
<b>Description</b>	PMMA sight glasses	Special sight glasses for the measuring chamber with shortened measurement section
<b>Technical data</b>	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 sight glasses are designed for use in the measuring chamber with a shortened measurement section.



Spare parts Testomat®	Device spare parts Testomat® EVO			Bottle connection/ suction device		
	 					
<b>Is used</b>	for Testomat® EVO TH			for Testomat 2000® Polymer/ Testomat 2000® PO4		
<b>Order number</b>	Cable ducting M16x1,5	37734	fuse GS-M 5x20E 4A MT	31582	screw cap with insert for 500 ml bottle	37644
	Nut for cable ducting M16x1,5	37735	fuse T0,315 A	31585	screw cap with insert for 100 ml bottle	37645
	Blanking plug for cable ducting	37736	fuse T0,16 A	31622		
	ribbon cable, 10-pole, with ferrite	31713	fuse T1,6 A	12140		
	loom 2V, complete (for valves)	40060	fuse T2,0 A	31655		
	loom 2P, complete (for max two dosing pumps)	40062	standard SD card 2 GB	37320		
			Lithium backup battery CR2032	31999		
			drain funnel	32187		

Device spare parts Testomat® Moduls						
	 					
<b>Is used</b>	for Testomat® Moduls TH/CL					
<b>Order number</b>	Cable ducting M16x1,5	37734	Pump head PeriClip SP	40362		
	Nut for cable ducting M16x1,5	37735	fuse GS-M 5x20E 2A MT	10843		
	Blanking plug for cable ducting	37736	standard SD card 2 GB	37320		
	Ribbon cable 2 x 7 pole	37832	Lithium backup battery CR2032	31999		
	loom 2V, complete (for valves)	40060	Cover	37798		
	loom 2P, complete (for max two dosing pumps)	40062				

Spare parts Testomat® 808/808 SiO2	Devices spare parts Testomat® 808 SiO2	Set optical board + LED socket	Measuring chamber Testomat® 808 SiO2
			
<b>Is used</b>	for Testomat® 808 SiO2	for Testomat® 808 / 808 SiO2	for Testomat® 808 / 808 SiO2
<b>Order number</b>	magnet valve 37570 double pump head* 37859 fuse, T1,0A 31592 fuse, T0,315A 31585 fuse, T0,2A 31584 fuse, T0,1A 31595 fuse,GS-T, 5x20, T A4 31666 cable ducting M16 x 1,5 37734 Nut for cable ducting M16 x 1.5 37735 Blanking plug for cable ducting 37736	Testomat® 808 - 2019: Full set with optics board and LED holder, 40393 synchronized by the factory Testomat® 808 SiO2 - 2019 Full set with optics board and LED holder, 40394 synchronized by the factory <u>For older instruments:</u> Testomat® 808: Full set with optics board and LED holder, 40364 synchronized by the factory Testomat® 808 SiO2 Full set with optics board and LED holder, 40365 synchronized by the factory	24x2 flat gasket 33777 30x3 sight glass pane 40170 sight glass holde 40176 M3x40 screw, A2, DIN 965 33253 M3x12 screw 33246 T808 SiO2 measuring chamber, complete (1-4 bar/14.5-58 psi) 37784 T808 SiO2 measuring chamber, complete (0.3-1 bar/4.4-14.5 psi) 37785 magnetic rod 40050 G1/8"-6 screw-in angle joint 40157
<p>*New pump heads for the Testomat® 808-2019 and Testomat® 808 SiO2-2019 device generation. For older devices up to serial number 253060, the conversion kit on page 33 must also be used.</p>			
Devices spare parts Testomat® 808		Measuring chamber	Bottle connection/ suction device
			
<b>Is used</b>	for Testomat® 808	for Testomat® 808	for Testomat® 808 / 808 SiO2
<b>Order number</b>	magnet valve 37570 pump head* 37562 fuse, T1.0A 31592 fuse, T0.8A 31593 fuse, T0.2A 31594 fuse, T0.1A 31595 fuse, GS-T, 5x20, T A4 31666 cable ducting M16 x 1,5 37734 Nut for cable ducting M16 x 1.5 37735 Blanking plug for cable ducting 37736	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	Testomat® 808: bottle insert with screw cap and suction tube, tube connection ø 2.4 mm 500 ml bottle 37579 100 ml bottle 37580 hose adapter ø 2.4 mm 37538 Testomat® 808 SiO2: bottle insert with screw cap and suction tube, tube connection ø 3.5 mm 500 ml bottle 37644 100 ml bottle 37645 hose adapter ø 3.5 mm 37643
<p>Spare parts for the Testomat® BOB can only be supplied to a limited extent. Please contact your distributor if you need spare parts.</p>			



Dosing pumps Testomat® / Titromat®	DOSIClip®	MEPUClip®	FLOWClip®
			
<b>Is used as</b>	dosing pump for Testomat devices	booster pump for Testomat 2000®/Titromat®	dosing pump for Testomat 2000® self clean
<b>Order number</b>	270470	270410	270440
<b>Description</b>	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
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• pump volume: 30 µl/stroke</li> <li>• max. suction height: approx. 0.5 m with water and 0.8 mm hose ID</li> <li>• max. pump pressure: approx. 1 bar /4.5 psi with water and 0.8 mm hose ID (max. 0.5 m length)</li> <li>• ambient temperature: 10–45°C / 50-113°F</li> <li>• mounting: on 35 mm / 1.4" DIN top-hat rail</li> </ul>	<ul style="list-style-type: none"> <li>• Flow rate at atmospheric pressure : 0.6 l/min</li> <li>• Maximum suction head: 3m H<sub>2</sub>O self-priming</li> <li>• ambient temperature: 10–45°C / 50-113°F</li> <li>• mounting: on 35 mm / 1.4" DIN top-hat rail</li> </ul> <p>When a „Testomat® with pump“ is ordered, installation occurs at the factory.</p>	<ul style="list-style-type: none"> <li>• Flow rate at atmospheric pressure : 0.1 l/min</li> <li>• Maximum suction head: 3m H<sub>2</sub>O self-priming</li> <li>• ambient temperature: 10–45°C / 50-113°F</li> <li>• mounting: on 35 mm / 1.4" DIN top-hat rail</li> </ul>

	PERIClip®	DOSIClip® Vi
		 <div style="text-align: right; margin-top: 5px;"><span style="background-color: #0056b3; color: white; padding: 2px 5px; font-weight: bold;">New</span></div>
<b>Is used as</b>	dosing pump for Testomat 2000® Polymer/PO4/Modul CL	dosing pump for Titromat® KH
<b>Order number</b>	270430	270471
<b>Description</b>	hose pump for aqueous media	electromagnetically driven piston dosing pump for dosing aqueous media that are free of suspended matter
<b>Technical data</b>	<ul style="list-style-type: none"> <li>• pump volume: 400–500 µl/min</li> <li>• ambient temperature: 10–45°C / 50-113°F</li> <li>• mounting: on 35 mm / 1.4" DIN top-hat rail</li> <li>• dimensions: 75 x 45 x 110 mm (HxWxD) 3" x 1,8" x 4.3"</li> </ul>	<ul style="list-style-type: none"> <li>• as with DosiClip</li> <li>• for use with strongly acidic media</li> </ul>

**Indicators/reagents**

Together for the Heyl Well (Our second fundraising campaign with the Neven Subotic Foundation)

We at Gebrüder Heyl Analysetechnik GmbH & Co. KG take our social commitment very seriously, with a particular focus on supporting young people. But we want to do even more.

We firmly believe that our fundraising activities with the Neven Subotic Foundation make a positive contribution to people who, due to various factors, do not have it as easy as we do.

This is why we donate a small amount from every 500 ml bottle of Testomat® hardness indicator sold to provide people with clean drinking water. After all,

water is our element and we want to contribute to ensuring that everybody has access to clean drinking water.

Our 2019 fundraising campaign for the Neven Subotic Foundation was successfully completed in early 2020. 10,086.60 euros were collected for the construction of the well.

Find out more about our fundraising campaign at: [www.heylanalysis.de](http://www.heylanalysis.de) or scan the QR code.



**Testomat 2000® indicators (500 ml bottle)**

Indicator type	Unit °dH (resolution)	°f (resolution)	ppm CaCO <sub>3</sub> (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 2050	0,50-5,00 (0,10)	0,89-8,90 (0,10)	8,90-89,0 (0,1)	0,09-0,89 (0,10)	in preparation
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 (1,00)	44,8-448 (10)	0,45-4,48 (0,10)	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

**Testomat 2000® indicators (100 ml bottle)**

Indicator type	Unit °dH (resolution)	°f (resolution)	ppm CaCO <sub>3</sub> (resolution)	mmol/l (resolution)	Order number
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
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 2050	0,50-5,00 (0,10)	0,89-8,90 (0,10)	8,90-89,0 (0,1)	0,09-0,89 (0,10)	in preparation
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 (1,00)	44,8-448 (10)	0,45-4,48 (0,10)	152250

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**

Reagent type	Device	Order number
self clean cleaning solution (500 ml)	T 2000 self clean	151105
Antox solution (2 x 100 ml) for eliminating oxidant-related disruptions	T 2000 Antox	151107

## Testomat 2000® reagents (500 ml bottle)



Reagent type	Parameters	for device	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
chlorine reagent set F*	free chlorine	CL F	0-2,5	156233
Chlor reagent set T	total chlorine	Modul CL	0-5	156239
Chlor reagent set F	free chlorine	Modul CL	0-5	156234 <span style="background-color: #0070C0; color: white; padding: 2px;">new</span>
CLO2 reagent set A u. B*	chlorine dioxide	ClO <sub>2</sub>	0-4,7	156265
CrVI 2100 A	chromate CrO <sub>4</sub> <sup>2-</sup> or chromium VI	CrVI	0-5,0 0-1,0	156220
CrVI 2100 B	chromate CrO <sub>4</sub> <sup>2-</sup> or chromium VI	CrVI	0-5,0 0-1,0	156221
FE 2005 A	iron dissolved ( I I ) u. ( I I I )	Fe	0-1,0	156250
FE 2005 B	iron dissolved ( I I ) u. ( I I I )	Fe	0-1,0	156251
Sulfite reagent A	sulfite	SO <sub>3</sub> <sup>2-</sup>	0-50	156240
Sulfite reagent B	sulfite	SO <sub>3</sub> <sup>2-</sup>	0-50	156241
Brom reagent set*	bromine	Br	0-5,6	156295
Polymer reagent A	polymer	Polymer	0-50	156271
Polymer reagent B	polymer	Polymer	0-50	156272
PO4 reagent set 2100	phosphate	PO <sub>4</sub>	0-10	156264
PO4 reagent 2100 A (20 litres)	phosphate	PO <sub>4</sub>	0-10	156281
PO4 reagent 2100 B (5 litres)	phosphate	PO <sub>4</sub>	0-10	156282

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

## Titromat® reagents (500 ml bottle)



Reagent type	for	Parameters	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



	Type	Limit value	Bottle	Order number
808/F-BOB	300	0,02 °dH residual hardness	100 ml	140001
	300S	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	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	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
808 SiO2	A	0,3 - 1,2 ppm SiO2	500 ml	141808
	B	0,3 - 1,2 ppm SiO2	500 ml	141809
	reagent set A+B	0,3 - 1,2 ppm SiO2	100 ml	141808

**Product**

**Softmaster® MMP1**

**Softmaster® MMP2**



**Controllers**

<b>Description</b>	Controller for water softening plants	Controller for water softening plants																																									
<b>Pluspunkte</b>	<ul style="list-style-type: none"> <li>• variable multi-purpose housing for control panel installation and wall installation</li> <li>• multilingual menu navigation</li> <li>• large blue LCD with 2 lines x 16 characters and backlight</li> <li>• error messages and operating mode displays are displayed alternately and stored in the error history</li> <li>• real-time clock</li> <li>• five potential-free relay outputs for two filters, service valves and error message, synchronizing contact</li> <li>• 12 V power supply for water turbine</li> <li>• 5 inputs: water flow meter, regeneration start/regeneration stop, salt and brine monitoring, and additional external program start</li> <li>• connection to various valves such as Autotrol, WWWS, Fleck, Siata</li> </ul>	<ul style="list-style-type: none"> <li>like Softmaster® MMP1, but with the following inputs and outputs:</li> <li>• eight potential-free relay outputs for two filters, service valves, two additional programs, and error message, synchronizing contact</li> <li>• output for metering pulse</li> <li>• 12 V power supply for water turbine</li> <li>• inputs for 2 water flow meters</li> <li>• 8 inputs: regenerationsstart/ regenerations-stop, brine level – empty/full, synchronous messages from valves, and error messages from Testomat instruments</li> </ul>																																									
<b>Protection type/class</b>	IP65 / I	IP65 / I																																									
<b>Mains connection</b>	230–240V, 115V, 24V +/-10% 50–60Hz	230–240V, 115V, 24V +/-10% 50–60Hz																																									
<b>Power consumption</b>	max. 9 VA	max. 9 VA																																									
<b>Dimensions</b>	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																																									
<b>Weight</b>	approx. 1.3 kg / 2.9 lbs	approx. 1.3 kg / 2.9 lbs																																									
<b>Measuring range</b>	—	—																																									
<b>Application</b>	<ul style="list-style-type: none"> <li>• fully automatic regeneration of water softening systems</li> <li>• suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems</li> <li>• quantity, time, or quality controlled activation of regeneration</li> </ul>	<ul style="list-style-type: none"> <li>• like Softmaster MMP1</li> <li>in addition:</li> <li>• parallel and serial connection</li> </ul>																																									
<b>Menu language</b>	D, GB, F, I, NL, PL	D, GB, F, I, NL, PL																																									
<b>Order numbers</b>	<table border="1"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td>attachable with RS232</td> <td>610100</td> <td>610101</td> <td>610102</td> </tr> <tr> <td>installable with RS232</td> <td>610110</td> <td>610111</td> <td>610112</td> </tr> <tr> <td></td> <td>—</td> <td>—</td> <td>—</td> </tr> </tbody> </table>		24V	115 V	230 V	attachable with RS232	610100	610101	610102	installable with RS232	610110	610111	610112		—	—	—	<table border="1"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> <th>230V/24V</th> </tr> </thead> <tbody> <tr> <td>attachable with RS232</td> <td>620000</td> <td>620001</td> <td>620002</td> <td>620003</td> </tr> <tr> <td>installable with RS232</td> <td>620200</td> <td>620201</td> <td>620202</td> <td>620203</td> </tr> <tr> <td></td> <td>620010</td> <td>620011</td> <td>620012</td> <td>—</td> </tr> <tr> <td></td> <td>620210</td> <td>620211</td> <td>620212</td> <td>—</td> </tr> </tbody> </table>		24V	115 V	230 V	230V/24V	attachable with RS232	620000	620001	620002	620003	installable with RS232	620200	620201	620202	620203		620010	620011	620012	—		620210	620211	620212	—
	24V	115 V	230 V																																								
attachable with RS232	610100	610101	610102																																								
installable with RS232	610110	610111	610112																																								
	—	—	—																																								
	24V	115 V	230 V	230V/24V																																							
attachable with RS232	620000	620001	620002	620003																																							
installable with RS232	620200	620201	620202	620203																																							
	620010	620011	620012	—																																							
	620210	620211	620212	—																																							

Product

Softmaster® MMP compact

Softmaster® ROE1



<b>Description</b>	Controller for water softening systems			Controller for reverse osmosis systems			
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• multilingual menu navigation</li> <li>• large LCD with 2 lines x 16 characters and backlight</li> <li>• error messages and operating mode displays are displayed alternately and stored in the error history</li> <li>• real-time clock</li> <li>• 4 non-potential-free relay outputs: 2 filters, service valves, and synchronous contact</li> <li>• one potential-free relay output for error message/additional program</li> <li>• 12 V power supply for water turbine</li> <li>• 5 inputs: water flow meter, regeneration start/regeneration stop, brine monitoring – empty and additional external program start</li> <li>• connection to various valves such as Autotrol, WWWS, Fleck, Siata</li> </ul>			<ul style="list-style-type: none"> <li>• variable multi-purpose body for control panel and wall installation</li> <li>• multilingual menu navigation</li> <li>• large blue LCD with 2 lines x 16 characters and backlight</li> <li>• error messages and operating mode displays are displayed alternately and stored in the error history</li> <li>• real-time clock</li> <li>• connection for conductivity probe with temperature sensor for permeate</li> </ul> <p>In addition, the following inputs and outputs:</p> <ul style="list-style-type: none"> <li>• 5 potential-free relay outputs: pump, inlet valve, flushing valve, dosing, and error message output</li> <li>• 5 inputs: water deficiency message, overpressure message motor protection, storage tank FULL /EMPTY, system stop</li> <li>• 12 V-power supply</li> </ul>			
<b>Protection type/class</b>	IP65 / I			IP65 / I			
<b>Mains connection</b>	230–240V, 115V, 24V +/-10% 50–60Hz			230–240V, 115V, 24V +/-10% 50–60Hz			
<b>Power consumption</b>	max. 9 VA			max. 9 VA			
<b>Dimensions</b>	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			
<b>Weight</b>	approx. 1.6 kg / 3.5 lbs			approx. 2.3 kg / 5 lbs			
<b>Measuring range</b>	—			0.1–50,000 µS/cm 0.01–5.0 cm <sup>-1</sup> cell constant			
<b>Application</b>	<ul style="list-style-type: none"> <li>• fully automatic regeneration of water softening plants</li> <li>• suitable for central control valves or pilot distributors, controlled via electrical toggle or pulse switch for single and double softening systems</li> <li>• quantity, time, or quality controlled activation of regeneration</li> </ul>			<ul style="list-style-type: none"> <li>• reverse osmosis plants with 1 conductivity measurement</li> </ul> <p>Application example on page 5</p>			
<b>Menu language</b>	D, GB, F, I, NL, PL			D, GB, F, I, NL, PL			
<b>Order numbers</b>		<b>24V</b>	<b>115 V</b>	<b>230 V</b>	<b>24V</b>	<b>115 V</b>	<b>230 V</b>
	attachable with RS232	610225	610226	610227	upon request	upon request	601102
	installable with RS232	—	—	—	—	—	—
		upon request	upon request	601112	—	—	—

### Softmaster® ROE2



Controller for reverse osmosis systems

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 (bypass) 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

IP65 / I

230–240V, 115V, 24V +/-10%  
50–60Hz

max. 9 VA

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. 2.3 kg / 5 lbs

0,1-50.000 µS/cm  
0,01-5,0 cm<sup>-1</sup> cell constant

- reverse osmosis plants with 1 conductivity measurement

D, GB, F, I, NL, PL

### Softmaster® ROE2/S5



Controller for reverse osmosis systems with programmable controller for water deficiency

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

IP65 / I

230–240V, 115V, 24V +/-10%  
50–60Hz

max. 9 VA

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. 2.3 kg / 5 lbs

0,1-50.000 µS/cm  
0,01-5,0 cm<sup>-1</sup> cell constant

- reverse osmosis plants with 1 conductivity measurement

D, GB, F, I, NL, PL

### Softmaster® ROE3



Controller for reverse osmosis systems

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

IP65 / I

230–240V, 115V, 24V +/-10%  
50–60Hz

max. 9 VA

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. 2.3 kg / 5 lbs

0,1-50.000 µS/cm  
0,01-5,0 cm<sup>-1</sup> cell constant

- reverse osmosis plants with second conductivity measurement for controlling an EDI module

D, GB, F, I, NL, PL

Softmaster® ROE2				Softmaster® ROE2/S5			Softmaster® ROE3		
24V	115 V	230 V	230V/24 V	24V	115 V	230 V	24V	115 V	230 V
request	request	request	request	—	—	upon request	upon request	upon request	upon request
request	request	request	request	—	—	—	upon request	upon request	603202
602010	request	602012	—	—	—	upon request	upon request	upon request	603012
602210	602211	602212	—	—	—	—	upon request	upon request	603212

Product	Softmaster® ROE compact	MultiControl CT								
										
<b>Description</b>	Controller for reverse osmosis systems	Controller for cooling systems								
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• multilingual menu navigation</li> <li>• large LCD with 2 lines x 16 characters and backlight</li> <li>• real-time clock</li> <li>• three potential-free relay outputs for pump, inlet valve and flushing valve</li> <li>• two potential-free relay outputs for measuring and error message output</li> <li>• 5 inputs: water deficiency message, concentrate monitoring, overpressure message, storage tank FULL / EMPTY, external motor protection switch, system stop</li> </ul>	<ul style="list-style-type: none"> <li>• LCD graphic display with background lighting</li> <li>• multi-language menu (DE, GB, FR, NL, PL, ES, TR)</li> <li>• relay outputs for attaching up to three pumps (dosing pump, circulation pump)</li> <li>• alarm output</li> <li>• inputs for external engine protection, water flow meter, biocide monitoring</li> <li>• two slots for conductivity probes and interface card</li> <li>• Error indicator on the display</li> <li>• error history for 20 notifications measurements and error notifications can be stored on SD card</li> <li>• ring buffer with 50 storage spaces</li> <li>• calibrating function for the conductivity probe</li> <li>• biocide metering dependent on time</li> <li>• 1 output for desalting valve (engine or magnet valve)</li> </ul>								
<b>Protection type/class</b>	IP54 / I	IP54 / I								
<b>Mains connection</b>	230–240V, 115V, 24V +/-10% 50–60Hz	230VAC, 24VAC +/-10% 50–60Hz or 100-240VAC, 100-353 VDC (wide-range power supply)								
<b>Power consumption</b>	max. 9 VA	max. 25 VA (without external load)								
<b>Dimensions</b>	approx. 357 x 214 x 135 mm 14" x 8.4" x 5.3" (W x H x D)	approx. 229 x 205 x 117 mm 8" x 9" x 4.6" (W x H x D)								
<b>Weight</b>	approx. 1.6 kg / 3.5 lbs	approx. 1,5 kg / 3.3 lbs								
<b>Measuring range</b>	0,1-50.000 µS/cm 0,01-5,0 cm <sup>-1</sup> cell constant	0-199,9 µS/cm bis 0-199,9 mS/cm (depending on cell constants)								
<b>Application</b>	<ul style="list-style-type: none"> <li>• reverse osmosis plants with 1 conductivity measurement</li> </ul>	<ul style="list-style-type: none"> <li>• Control of desalting and metering in cooling circuits Application example on page 7</li> </ul>								
<b>Menu language</b>	D, GB, F, I, NL, PL	D, GB, F, NL, PL, ES, TR								
<b>Order numbers</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>24V</th> <th>115 V</th> <th>230 V</th> </tr> </thead> <tbody> <tr> <td>attachable</td> <td>601225</td> <td>601226</td> <td>601227</td> </tr> </tbody> </table>		24V	115 V	230 V	attachable	601225	601226	601227	Order numbers for Multi-Control CT on page 52.
	24V	115 V	230 V							
attachable	601225	601226	601227							



## Is used

for process water circuits and cooling circuits



## Technical data

Dimensions	450 x 700 x 300 mm (W x H x D)
Mounting dimensions	629 x 407 mm
Piping material	PVC-U
Inlet	DN 32; inner diameter approx. 25 mm
Outlet	DN 32; inner diameter approx. 25 mm
Outlet duct	DN 32; inner diameter approx. 25 mm
Max. water pressure	4 bar
Power supply	230 VAC
Power consumption	6 VA
Ambient temperature	5 – 40°C
Water temperature	5 – 40°C
Weight	8.2 kg
Protection type	IP54

## Specific data

<u>Type I-S-P:</u>	
Control system	MultiControl CT
Conductivity measurement	Inductive probe
Measurement range	20 mS/cm
RS232 output	
Power consumption	20 V - 50 mA
Temperature sensor	0 - 100°C
Flow monitor	Type VH3
Nominal pressure	PN 25
Max. flow rate	100 l/min
Switching range	10.4...14.8 l/min
Motor valve	230 VAC 50-60 Hz
Motor power	4 W

## Order number

Type I-S-P for cooling circuits 310160

Application example on page 8




Device type	Voltage	plug-in card	Parameters	Order number
MultiControl CT	24 V	EC inductive/pH	Conductivity (inductive) pH value	341010
MultiControl CT	100-240VAC	EC inductive/pH	Conductivity (inductive) pH value	341020
MultiControl CT	230 V	EC inductive/pH	Conductivity (inductive) pH value	341030
MultiControl CT	24 V	EC/pH (conductive)	Conductivity (conductive), pH value	341070
MultiControl CT	100-240VAC	EC/pH (conductive)	Conductivity (conductive), pH value	341080
MultiControl CT	230 V	EC/pH (conductive)	Conductivity (conductive), pH value	341090

\* Please note that the plug-in card for the BKEX probe cannot be combined with other measuring cards.

We assembled and preconfigured the MultiControl device in the device variants listed above. Your service partner will gladly advise you on the selection of the suitable variant for you.

The suitable probes and accessories for the MultiControl device can be found on the following pages.

Inductive probes      Page 50  
pH probes              Page 52  
Conductive probes    Page 51

Inductive conductivity probes	Inductive probe CTI 500	PC interface for inductive probe CTI 500	ADI plug-in card
			
<b>Is used</b>	for MultiControl	for MultiControl	for MultiControl
<b>Order number</b>	310132	310133	37342
<b>Technical data</b>	<ul style="list-style-type: none"> <li>Inductive probe for the conductivity measurement</li> <li>For all measuring converters with 20 mA output</li> <li>Fully programmable in the range from 500 µS/cm - 2000 mS/cm; the PC interface (Item no. 310133) is required</li> </ul>	<ul style="list-style-type: none"> <li>to program the inductive probe CTI 500</li> </ul>	Plug-in card Analog Digital Interface  equipped with: <ul style="list-style-type: none"> <li>RS232 Interface</li> <li>2 x 20mA current output</li> </ul>

## 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]	Connection design	Measuring range [µS/cm]	Order no.
<b>Normal probes:</b>						
SO 1	PVC-U	0,10	40	PVC union nut Rp 1¼	1-2000	310001
SO 5	PVC-U	0,50	40	PVC union nut Rp 1¼	5-10000	310003
SO 10	PVC-U	1,00	40	PVC union nut Rp 1¼	10-20000	310014
<b>Screw-in probes:</b>						
SOE 0	V4A steel	0,01	130	external thread R ¾	0,1-200	310005
SOE 1	V4A steel	0,10	130	external thread R ¾	1-2000	310002
SOE 5	V4A steel	0,50	130	external thread R ¾	5-10000	310004
<b>Submersible probes:</b>						
SEI 5	PVC-U	0,50	40	DN 20, connection cable 5 m	5-10000	310103




Controllers




## 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]	Connection design	Measuring range [µS/cm]	Order no.
<b>Normal probes:</b>						
ST 1 / PT 100	PVC-U	0,10	40	PVC union nut Rp 1¼	1-2000	310120
ST 5 / PT 100	PVC-U	0,50	40	PVC union nut Rp 1¼	5-10000	310121
<b>Screw-in probes:</b>						
STE 0 / PT 100	V4A steel	0,01	130	external thread R ¾	0,1-200	310110
STE 1 / PT 100	V4A steel	0,10	130	external thread R ¾	1-2000	310125
STE 5 / PT 100	V4A steel	0,50	130	external thread R ¾	5-10000	310126
STE 5 / PT 100 for measuring probe	V4A steel	0,50	130	Vario Pin	5-10000	310135
<b>Submersible probes:</b>						
SEI 5 / PT 100	PVC-U	0,50	40	DN 20, connection cable 5 m	5-10000	310131

Accessories measuring instruments	pH combination electrodes	ESA screw-in fittings	pH-probe for measuring probe
			
<b>Is used</b>	for MultiControl, EcoControl pH to replace devices purchased prior to 05/2013.	for EMK 20 and EMK 50	for MultiControl, EcoControl pH
<b>Order number</b>	EMK 20      320301 EMK 50      320302	320310	310137
<b>Technical data</b>	<ul style="list-style-type: none"> <li>EMK 20:               <ul style="list-style-type: none"> <li>measuring range 1–12 pH</li> <li>temperature 0–80°C / 32–176°F</li> <li>pressure 10 bar / 145 psi</li> </ul> </li> <li>EMK 50 with PT 100:               <ul style="list-style-type: none"> <li>measuring range 0–14 pH</li> <li>temperature 0–135°C / 32–275°F</li> <li>pressure 16 bar / 232 psi</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>stainless steel</li> <li>max. medium temperature: 130°C / 266°F</li> <li>connection: R ¾ external thread</li> </ul>	<ul style="list-style-type: none"> <li>with PT 100</li> <li>measuring range 1–14 pH</li> <li>temperature – 5 ... 135°C (23 ... 275°F)</li> <li>pressure 10 bar / 145 psi</li> </ul>

	Cable for combination electrode	Conductivity probe connection cables	pH probe connection cables
			
<b>Is used</b>	High-impedance coaxial cable, pre-made with screw and BNC connectors	Probe cable with STE5 cable socket	Probe cable with pH VarioPIN cable socket
<b>Order number</b>	KOAX 5      320320 KOAX 10     320321 KOAX/PT 5   320325 KOAX/PT 10 320326	310136	310138
<b>Technical data</b>	<ul style="list-style-type: none"> <li>KOAX 5: for EMF 20/RMK 20, length 5 m / 16.4 ft</li> <li>KOAX 10: for EMK 20/RMK 20, length 10 m / 32.8 ft</li> <li>KOAX/ PT 5: for EMF 50 with potential matching line, length 5 m / 16.4 ft</li> <li>KOAX/ PT 10: for EMF 50 with potential matching line, length 10 m / 32.8 ft</li> </ul>	<ul style="list-style-type: none"> <li>length 10 m / 32.8 ft</li> <li>4-lead for probes with PT 100</li> <li>with STE5 plug for conductivity probes</li> </ul>	<ul style="list-style-type: none"> <li>length 10 m / 32.8 ft</li> <li>4-lead for probes with PT 100</li> <li>with VarioPin plug for pH probes</li> </ul>



**Is used**

for Softmaster® devices

for Softmaster® 2 devices

for Softmaster® 2 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 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



<b>Description</b>	Pilot distributor with 4 switch settings • <b>PVH / PVH 4</b> : toggle switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3PSI) pneumatic pressure • <b>PVP / PVP 4</b> : toggle switch for 8 bar (116 PSI) pneumatic pressure	• <b>PVH I / PVH I4</b> : pulse switch for 8 bar (116 PSI) hydraulic pressure or 4.5 bar (65.3 PSI) pneumatic pressure • <b>PVP I / PVP I4</b> : pulse switch for 8 bar (116 PSI) pneumatic pressure • without screw connections																									
<b>Description</b>	control of individual valves in automatic water treatment systems	<b>Order numbers</b>																									
<b>Mains connection</b>	230–240 V, 24 V +/-10% 50–60 Hz	<table border="1"> <thead> <tr> <th>Typ</th> <th>24V valves, opened when depressurized</th> <th>24V valves, closed when depressurized</th> <th>230V valves, opened when depressurized</th> <th>230V valves, closed when depressurized</th> </tr> </thead> <tbody> <tr> <td>PVH / PVH 4</td> <td>250002</td> <td>250004</td> <td>250001</td> <td>250003</td> </tr> <tr> <td>PVP / PVP 4</td> <td>250011</td> <td>250013</td> <td>250010</td> <td>250012</td> </tr> <tr> <td>PVH I / PVH I4</td> <td>250006</td> <td>250008</td> <td>250005</td> <td>250007</td> </tr> <tr> <td>PVP I / PVP I4</td> <td>250015</td> <td>250017</td> <td>250014</td> <td>250016</td> </tr> </tbody> </table>	Typ	24V valves, opened when depressurized	24V valves, closed when depressurized	230V valves, opened when depressurized	230V valves, closed when depressurized	PVH / PVH 4	250002	250004	250001	250003	PVP / PVP 4	250011	250013	250010	250012	PVH I / PVH I4	250006	250008	250005	250007	PVP I / PVP I4	250015	250017	250014	250016
Typ	24V valves, opened when depressurized	24V valves, closed when depressurized	230V valves, opened when depressurized	230V valves, closed when depressurized																							
PVH / PVH 4	250002	250004	250001	250003																							
PVP / PVP 4	250011	250013	250010	250012																							
PVH I / PVH I4	250006	250008	250005	250007																							
PVP I / PVP I4	250015	250017	250014	250016																							
<b>Protection type/class</b>	IP44 / I																										
<b>Power consumption</b>	max. 5 VA																										
<b>Dimensions</b>	approx. 125 x 120 x 210 mm 4.9" x 4.7" x 8.3" (W x H x D)																										
<b>Weight</b>	approx 1.6 kg / 3.5 lbs																										
<b>Ambient temperature</b>	0–45 °C / 32-113 °F																										

	Program disc	PVH/PVP screw connector	Seal for screw connector
			
<b>Is used</b>	for pilot distributor	for pilot distributor	for pilot distributor
<b>Order number</b>	PV S1 250031 PV S2 250032 PV S8 250038 PV S9 250039	033900	033475
<b>Description</b>	<p><b>PV S1</b> : additional disc and neutral contact for controlling a valve or a relay of a guard during the course of the program.</p> <p><b>PV S2</b> : like S1 but with two additional discs</p> <p><b>PV S3</b> : automatic return movement thanks to the upstream programming unit</p> <p><b>PV S9</b> : freely configurable program disc, e.g. for gravel filter systems</p>	screw connector for pilot distributor (8 pieces required)	seal for screw connector (8 pieces required)

Analysis kits	DIST 3 conductivity tester	DIST 4 conductivity tester	pHep+ pH tester
			
<b>Is used als</b>	electronic conductivity device for determining conductivity	electronic conductivity device for determining conductivity	electronic pH measuring device for determining pH value
<b>Order number</b>	330050	330060	330070
<b>Description</b>	<ul style="list-style-type: none"> <li>measuring range of 0,00–2000 <math>\mu\text{S}/\text{cm}</math></li> <li>resolution of 1 <math>\mu\text{S}/\text{cm}</math></li> <li>automatic temperature compensation</li> <li>automatic 1-point calibration</li> <li>Automatic shutdown after 8 or 60 minutes of non-use</li> </ul>	<ul style="list-style-type: none"> <li>measuring range of 0,00–20,00 <math>\text{mS}/\text{cm}</math></li> <li>resolution of 0,01 <math>\text{mS}/\text{cm}</math></li> <li>automatic temperature compensation</li> <li>automatic 1-point calibration</li> <li>Automatic shutdown after 8 or 60 minutes of non-use</li> </ul>	<ul style="list-style-type: none"> <li>measuring range of 0,00–14,00</li> <li>resolution of 0,01 pH</li> <li>Automatic one-point or two-point calibration</li> <li>automatic temperature compensation</li> </ul>
<b>Dimensions</b>	40 x 160 x 17 mm 1.6" x 6.3" x 0.7" (W x H x D)	40 x 160 x 17 mm 1.6" x 6.3" x 0.7" (W x H x D)	40 x 160 x 17 mm 1.6" x 6.3" x 0.7" (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 $\mu\text{S}/\text{cm}$	230 ml	425404
	conductivity solution 12,88 $\text{mS}/\text{cm}$	230 ml	425409



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.




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

Limit value kits

DUROGNOST® I



DUROGNOST® SR 0

DUROGNOST® SR




			
<b>Is used als</b>	quick colorimetric determination of residual hardness	limit value test for quick determination of residual hardness	limit value test for quick determination of residual hardness
<b>Order number</b>	400050	400056	400055
<b>Description</b>	<p>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<sub>3</sub> or 0,2 °f (French hardness)</p> <p>complete with measuring tube and spoon</p> <p>analyses: approx. 700</p> <p>measuring time: approx. ½ minute</p>	<p>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.</p> <p>complete with measuring tube and stopper</p> <p>analyses: approx. 250</p> <p>measuring time: approx. ½ minute</p>	<p>equipped like DUROGNOST® SR 0, but adapted for limit values of 0.5 and 0.25 °dH</p> <p>analyses: approx. 250</p> <p>measuring time: approx. ½ minute</p>




DUROGNOST® SR 1







DUROGNOST® special buffer solution




			
<b>Is used als</b>	limit value test for quick determination of residual hardness	buffer solution for alkaline water samples	
<b>Order number</b>	400054	400016	
<b>Description</b>	<p>equipped like DUROGNOST® SR0, but adapted to limit values of 1 and 0.5 °dH</p> <p>analyses: approx. 250</p> <p>measuring time: approx. ½ minute</p>	<p>for buffering strongly alkaline water samples (pH over 10) for determining total and residual hardness with DUROGNOST® and DUROVAL® kits (8 ml dropper bottle)</p> <p>analyses: approx. 200</p>	









Titration quick test kits	DUROVAL® 1 drop = 1 °dH	DUROVAL® 1 drop = 1 °f	DUROVAL® 1 Tr. = 10 ppm CaCO <sub>3</sub>
			
<b>Is used as</b>	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
<b>Order number</b>	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        400111 neutral inlays without folding box 50 piece kit     400113 neutral inlays without folding box 50 pieces        400119 neutral inlays with folding box	400012
<b>Description</b>	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 <sub>3</sub> analyses: approx. 30 (with an average hardness of 10 °f) approx. 30 (with an average hardness of 100 ppm CaCO <sub>3</sub> )




	DUROVAL® 1 drop = 1 °KH	DUROVAL® 1 drop = 0,1 °dH	DUROVAL® AP
			
<b>Is used as</b>	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
<b>Order number</b>	1 piece            400015 50 pieces        400120	400007	400021
<b>Description</b>	1 drop corresponds to 1 degree of carbonate hardness  analyses: approx. 30 (with an average hardness of 10 °dH).	1 drop corresponds to 0.1 degree of German hardness  analyses: approx. 30 (with an average hardness of 1 °dH).	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–30 °dH</li> <li>• 50 ml titration solution</li> </ul> analyses: approx. 100 (with an average carbonate hardness of 15 °dH) measuring time: approx. 2 minutes measurement accuracy: 0.5 °dH



	DUROVAL® A	DUROVAL® A with pipette 0-60°F	DUROVAL AF
			
<b>Is used as</b>	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
<b>Order number</b>	400020	400018	400022
<b>Description</b>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• liquid indicator</li> <li>• dosing pipette calibrated 0–30 °dH</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average carbonate hardness of 15 °dH) measuring time: approx. 2 minutes measurement accuracy: 0.5 °dH</p>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–60 °f (French hardness)</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average carbonate hardness of 26.7 °f) measuring time: approx. 2 minutes measurement accuracy: 1 °f</p>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–30 °dH</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average carbonate hardness of 15 °dH) measuring time: approx. 2 minutes measurement accuracy: 0.5 °dH</p>
	DUROVAL® B	DUROVAL® BP	DUROVAL® BF
			
<b>Is used as</b>	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
<b>Order number</b>	400030	400031	400032
<b>Description</b>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• liquid indicator</li> <li>• dosing pipette calibrated 0–2 °dH</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average hardness of 1 °dH) measuring time: approx 2 minutes measurement accuracy: 0.05 °dH</p>	<ul style="list-style-type: none"> <li>• with measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–2 °dH</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average hardness of 1 °dH) measuring time: approx 2 minutes measurement accuracy: 0.05 °dH</p>	<ul style="list-style-type: none"> <li>• with measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–60 °f (French hardness)</li> <li>• 50 ml titration solution</li> </ul> <p>analyses: approx. 100 (with an average hardness of 1.78 °f) measuring time: approx 2 minutes measurement accuracy: 0.1 °f</p>




Titration quick test kits	Water hardness DUO	DUROVAL® C	DUROVAL® CPM
			
<b>Is used as</b>	titration kit for determining water hardness	titration kit for determining carbonate hardness/m-value	kit for determining the carbonate hardness (m-value) and p-value
<b>Order number</b>	400005	400060	400065
<b>Description</b>	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	acid capacity up to pH 4,3; $K_{S4,3}$ analyses: approx. 100 (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	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

	DUROVAL® Chlorid	DUROVAL® CO <sub>2</sub>	DUROVAL® $K_{S4,3}$
			
<b>Is used as</b>	kit for determining the chloride content of water	test kit for the determination of free carbon dioxide in water via drop titration	titration kit for determining acid capacity up to pH 4.3
<b>Order number</b>	400090	400070	400067
<b>Description</b>	complete with all reagents and accessories analyses: approx 200 measuring time: approx. 2 minutes titration pipette: calibrated 0–300 mg/l Cl <sup>-</sup> measurement accuracy: 10 mg/l Cl <sup>-</sup>	complete with measuring tube, stopper. and three reagents analyses: approx. 200 (with an average concentration of 100 mg/l CO <sub>2</sub> )	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

	DUROVAL® K <sub>B8,2</sub>	DUROVAL® Sulfate	DUROVAL® TF
			
<b>Is used as</b>	titration kit for determining base capacity up to pH 8.2	kit for determining the sulfate content of water	industrial kit for water treatment plants
<b>Order number</b>	400077	400080	400042
<b>Description</b>	base capacity up to pH 8,2; K <sub>B8,2</sub> analyses: approx. 100 (with an average base 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  analyses: approx 30 titration pipette: calibrated 0–300 mg/l SO <sub>4</sub> <sup>2-</sup> measurement accuracy: 10 mg/l SO <sub>4</sub> <sup>2-</sup>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–60 °f (French hardness)</li> <li>• 30 ml titration solution</li> </ul> analyses: approx. 60 (with an average carbonate hardness of 26.7 °f )

	DUROVAL® TI	DUROVAL® TI with pipette 0–60 °f	DUROVAL® TP
			
<b>Is used as</b>	industrial kit for water treatment plants	industrial kit for water treatment plants	industrial kit for water treatment plants
<b>Order number</b>	400040	400038	400041
<b>Description</b>	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• liquid indicator</li> <li>• dosing pipette calibrated 0–30 °dH</li> <li>• 30 ml titration solution</li> </ul> analyses: approx. 60 (with an average carbonate hardness of 15 °dH)	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• liquid indicator</li> <li>• dosing pipette calibrated 0–60 °f (French hardness)</li> <li>• 30 ml titration solution</li> </ul> analyses: approx. 60 (with an average carbonate hardness of 26.7 °f )	<ul style="list-style-type: none"> <li>• measuring tube</li> <li>• powder indicator</li> <li>• dosing pipette calibrated 0–30 °dH</li> <li>• 30 ml titration solution</li> </ul> analyses: approx. 60 (with an average carbonate hardness of 15 °dH)

Titration quick test kits	KSS titration kit	Polyamine test kit	
			
<b>Is used as</b>	measuring kit for simple monitoring of cooling lubricant content	test kit for determining the polyamine concentration of circulating water	
<b>Order number</b>	400280	polyamine CCOH 400165 polyamine V 15/30 400166 polyamine K 26 400167 polyamine B42/C71 400168 polyamine A-853R 400169	
<b>Description</b>	complete with all reagents and accessories concentration range and accuracy are customerspecific	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	

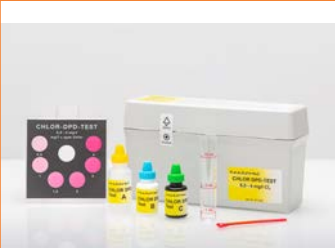





	Polyamine reagents	Polyamine titration solution	Polyamine NI / NT refill pack
			
<b>Is used as</b>	reorder polyamine reagents	reorder polyamine titration liquid	polyamine NT refill package (reagents C and titration solution)
<b>Order number</b>	reagentien A 400185 (10 bottles with 8 ml) reagentien B 400186 (10 bottles with 8 ml) reagentien C 400187 (10 bottles with 50 ml)	Polyamine CCOH 400188 (10 bottles with 50 ml) Polyamine V 15/30 400189 (10 bottles with 50 ml) Polyamine K 26 400190 (10 bottles with 50 ml) Polyamine B42/C71 400191 (10 bottles with 50 ml) Polyamine A-853R 400192 (10 bottles with 50 ml)	Polyamine CCOH 400175 Polyamine V 15/30 400176 Polyamine K 26 400177 Polyamine B42/C71 400178 Polyamine A-853R 400179  polyamine NI refill pack reagents A+B 400170 can be used universally for all polyamine products







**DUROVAL® refill pack**

	<b>Hardness grade</b>	<b>Quantity</b>	<b>Order number</b>
DUROVAL® A titration solution	0–30 °dH (0–60 °f)	bottle with 50 ml 50 bottles with 50 ml	400023 400123
DUROVAL® B titration solution	0–2 °dH (0–4 °f)	bottle with 50 ml	400033
DUROVAL® TI 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 <sub>4</sub> ion exchanger			400081
DUROVAL® SO <sub>4</sub> reagent A		2 bottles with 50 ml each	400082
DUROVAL® SO <sub>4</sub> reagent B		bottle with 8 ml	400083
DUROVAL® SO <sub>4</sub> titration solution C		bottle with 50 ml	400084
DUROVAL® chloride reagent A + B		2 bottles with 17 ml each	400091
DUROVAL® chloride titration solution		2 bottles with 50 ml each	400092
DUROVAL® KS 4,3 indicator,		bottle with 8 ml	400068
DUROVAL® KS 4,3 titration solution		bottle with 50 ml	400069
DUROVAL® KB 8,2 indicator,		bottle with 8 ml	400078
DUROVAL® KB 8,2 titration solution		bottle with 50 ml	400079




**Colorimetric test kits**
**Testoval® ammonium**
**Testoval® aluminum**
**Testoval® chlorine DPD method 0,1-1 mg/l**


<b>Is used as</b>	color comparison kit for the concentration range 0–10 mg/l NH <sub>4</sub> <sup>+</sup>	color comparison kit for the concentration range 0–1,5 mg/l Al	color comparison kit for concentration range 0.1–1 mg/l of free and total chlorine
<b>Order number</b>	410680	410650	410520
<b>Description</b>	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: 0–0,1–0,2–0,5–1–1,5 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: 0,1–0,2–0,3–0,5–0,75–1 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
			
<b>Is used as</b>	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 <sup>-</sup>	color comparison kit for concentration range 0–5 mg/l Cr
<b>Order number</b>	411520	410526	410532
<b>Description</b>	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: 1–5–10–25–50–100 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
			
<b>Is used as</b>	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 concentration range 0–1 mg/l N <sub>2</sub> H <sub>4</sub>
<b>Order number</b>	410547	410544	410556
<b>Description</b>	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

Colorimetric test kits	Testoval® copper	Testoval® manganese 0-0,5 mg/l	Testoval® manganese 0-20 mg/l
			
<b>Is used as</b>	color comparison kit for the concentration range 0–2 mg/l Cu	color comparison kit for the concentration range 0–0,5 mg/l Mn	color comparison kit for the concentration range 0–20 mg/l Mn
<b>Order number</b>	410562	410660	410568
<b>Description</b>	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	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
	Testoval® nitrite	Testoval® Phosphate® (orthophosphate)	Testoval® pH chlorine DPD
			
<b>Is used as</b>	color comparison kit for the concentration range 0–1 mg/l NO <sub>2</sub> <sup>-</sup>	color comparison kit for the concentration range 0–10 mg/l P <sub>2</sub> O <sub>5</sub>	monitoring pH value and chlorine content in swimming pools
<b>Order number</b>	410690	410592	410601
<b>Description</b>	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	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, Chlor 0,1–0,5–1 mg/l, complete with a set of reagents analyses: approx. 70 measuring time: approx. 3 minutes






	Testoval® pH value 5,5-8	Testoval® pH value 8-12	Testoval® dissolved silicate
			
<b>Is used as</b>	color comparison kit for pH range 5,5–8	color comparison kit for pH range 8–12	color comparison kit for the concentration range 0–10 mg/l SiO <sub>2</sub>
<b>Order number</b>	410610	410616	410622
<b>Description</b>	individual values: 5,5–6–6,5–7–7,5–8, complete with reagent analyses: approx. 250 measuring time: approx. 1 minute	individual values: 8–8,5–9–10–11–12, complete with reagent analyses: approx. 250 measuring time: approx. 1 minute	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



**Testoval®  
sulfite**

			
<b>Is used as</b>	color comparison kit for the concentration range 0–20 mg/l SO <sub>3</sub> <sup>2-</sup>		
<b>Order number</b>	410634		
<b>Description</b>	individual values: 0,5–1–2,5–5–10–20 mg/l, complete with 2 reagents analyses: approx. 150 measuring time: approx. 3 minutes		



	Product	Order number
aluminum	1 set of reagents for approx. 130 analyses	410651
	replacement color comparison device, complete	410652
ammonium	1 set of reagents for approx. 70 analyses	410681
	replacement color comparison device, complete	410682
chlorine DPD method 0.1–1 mg/l	1 set of reagents for approx. 70 analyses	410521
	replacement color comparison device, complete	410522
chlorine DPD method 0,5-4 mg/l	1 set of reagents for approx. 70 analyses	410521
	replacement color comparison device, complete	410523
chloride	1 set of reagents for approx. 40 analyses	410527
	replacement color comparison device, complete	410528
chromate CrVI	1 set of reagents for approx. 70 analyses	410533
	replacement color comparison device, complete	410534
dissolved iron (II) + (III) 0-1 mg/l	1 set of reagents for approx. 100 analyses	410548
	replacement color comparison device, complete	410549
dissolved iron (II) + (III) 0-10 mg/l	1 set of reagents for approx. 70 analyses	410545
	replacement color comparison device, complete	410546
hydrazine	1 set of reagents for approx. 100 analyses	410557
	replacement color comparison device, complete	410558
copper	1 set of reagents for approx. 100 analyses	410563
	replacement color comparison device, complete	410564
manganese 0-0,5 mg/l	1 set of reagents for approx. 70 analyses	410661
	replacement color comparison device, complete	410662
manganese 0-20 mg/l	1 set of reagents for approx. 100 analyses	410569
	replacement color comparison device, complete	410570
nitrite	1 set of reagents for approx. 100 analyses	410691
	replacement color comparison device, complete	410692
Phosphatest®	1 set of reagents for approx. 180 analyses	410593
	replacement color comparison device, complete	410594
pH-chlorine DPD	1 set of reagents for approx. 70 analyses	410602
	replacement color comparison device, complete	410603
pH value 5,5-8	1 set of reagents for approx. 250 analyses	410611
	replacement color comparison device, complete	410612
pH value 8-12	1 set of reagents for approx. 250 analyses	410617
	replacement color comparison device, complete	410618
dissolved silicate	1 set of reagents for approx. 100 analyses	410623
	replacement color comparison device, complete	410624
sulfite	1 set of reagents for approx. 150 analyses	410635
	replacement color comparison device, complete	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
			
<b>Is used</b>	for water analysis	for water analysis	for water analysis
<b>Order number</b>	410300	410305	410310
<b>Description</b>	<ul style="list-style-type: none"> <li>• titration kits: 1 Duroval® A, 1 Duroval® B, 1 Duroval® CPM</li> <li>• Testoval® color comparison kits: 1 hydrazine, 1 phosphate, 1 pH value 8–12</li> <li>• 1 aerometer, 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters</li> </ul>	<ul style="list-style-type: none"> <li>• titration kits: 1 Duroval® A, 1 Duroval® B, 1 Duroval® CPM</li> <li>• Testoval® color comparison kits: 1 sulfite, 1 Phosphatest, 1 pH value 8–12</li> <li>• 1 aerometer, 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters</li> </ul>	<p><b>Custom versions available upon request!</b> example:</p> <ul style="list-style-type: none"> <li>• titration kits: 1 Duroval® A, 1 Duroval® B, 1 Duroval® CPM</li> <li>• Testoval® color comparison kits: 1 sulfite, 1 Phosphatest</li> <li>• 1 Durognost® special buffer solution</li> <li>• 1 DIST 4 conductivity tester</li> <li>• 1 pHep+ pH tester</li> <li>• 1 100 ml measuring cylinder, 1 500 ml sampling container, 1 100 ml measuring cup, 1 funnel, 50 folding filters</li> </ul>

	Boiler house analysis case	Analysis case special version	
			
<b>Is used</b>	for water analysis in boiler houses	for water analysis in boiler houses	
<b>Order number</b>	410320	410360	
<b>Description</b>	<ul style="list-style-type: none"> <li>• titration kits: 1 Duroval® A, 1 Duroval® B, 1 Duroval® CPM</li> <li>• Testoval® color comparison kits: 1 sulfite, 1 Phosphatest</li> <li>• 1 pHep + pH tester, 1 pH 7,01 buffer solution in pouch, 1 pH 10,01 buffer solution in pouch</li> <li>• 1 DiST 4 conductivity tester, 1 5000 µS/cm conductivity solution</li> </ul>	<p><b>Custom versions available upon request!</b> example:</p> <ul style="list-style-type: none"> <li>• titration kits: 1 Duroval® A, 1 Duroval® B, 1 Duroval® CPM</li> <li>• Testoval® color comparison kits: 1 sulfite, 1 Phosphatest</li> </ul>	

**Product**

**Bioresin® BW 05**



<b>Is used als</b>	special resin for protection against microbial contamination in softening plants in idle state		
<b>Order number</b>	1 l Bioresin® BW 05	500002	
	10 l Bioresin® BW 05	500001	
	100 l Bioresin® BW 05	500006	
<b>Description</b>	<p>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.</p> <p>Metallic silver is practically non-watersoluble. The smell and taste of the water are not affected.</p>	<ul style="list-style-type: none"> <li>• effective against microbial recontamination of the resin at low flow rate and in idle state</li> <li>• does not negatively impact the disinfecting effect through backflushing and salting during filter regeneration, thus effective for a long time</li> <li>• existing systems can be retrofitted for use</li> </ul>	<ul style="list-style-type: none"> <li>• no need for expensive dosing equipment to disinfect the filter material</li> <li>• no premature regeneration of the softening system with sodium chloride necessary for disinfection, thus environmentally friendly and economical</li> <li>• maintenance-free</li> </ul>

**Accessories  
Chemie**

<b>Product</b>	<b>Order number</b>
measuring tube 1+ 5 + 10 ml	051010
connecting plug, white	051013
pipette, 0-60 polyamide	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



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.

### Water is our element

Our environmental policy specifies the principles of conduct for environmental protection that we follow at Gebr. Heyl Analysetechnik 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.

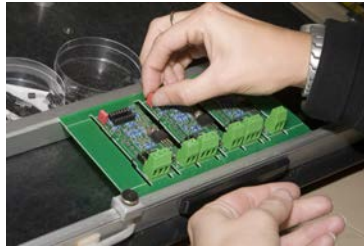
As a commercial enterprise, we accept our special responsibility to preserve our natural world. We're convinced that it is necessary to ensure that the free resources of water, air, and earth, as well as flora and fauna, be handled sparingly.





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®, MultiControl®, 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 (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



**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

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



All our newly developed devices undergo thorough testing in the climatic chamber and test space. Upon customer request, we can also produce OEM devices featuring individual front foils.

**§ 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 counterclaims 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**

- (1) 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.

(4) 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**

- (1) 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.





**Headquarters:**

Gebrüder Heyl Analysetechnik GmbH & Co. KG  
 Orleansstr. 75 b  
 31135 Hildesheim  
 Germany  
 Phone: +49 (0) 51 21 28 93 3-0  
 Fax +49 (0) 51 21 28 93 3-67  
 E-Mail info@heylanalysis.de  
 www.heylanalysis.de



**Germany sales:**

Gebrüder Heyl Vertriebsgesellschaft  
 für innovative Wasseraufbereitung mbH  
 Max-Planck-Str. 16  
 31135 Hildesheim  
 Phone: +49 (0) 5121 76 09-0  
 Fax: +49 (0) 5121 76 09-44  
 E-Mail: vertrieb@heylneomeris.de  
 www.heylneomeris.de



**France:**

Heyl Analysis Technologies  
 Techniparc  
 9 Rue d'Alembert  
 91240 Saint Michel sur Orge  
 Phone: +33 (0) 1 69 46 17 17  
 Fax: +33 (0) 1 69 46 17 40  
 E-Mail: contact@heyl-at.com  
 www.heyl-at.com



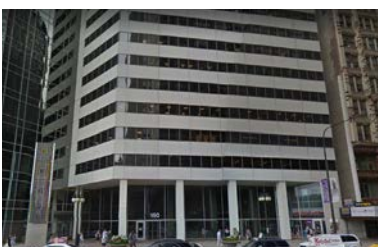
**Netherlands:**

Pro Water B.V.  
 Postbus 960  
 7550 AZ Hengelo  
 Phone: +31 (0) 74 29 15 150  
 Fax: +31 (0) 74 29 15 350  
 E-mail: info@prowater.nl  
 www.prowater.nl



**Switzerland:**

BWT AQUA AG  
 Hauptstr. 192  
 4147 Aesch  
 Phone: +41 (0) 61 755 88 99  
 Fax: +41 (0) 61 755 88 90  
 E-Mail: info@bwt-aqua.ch  
 www.bwt-aqua.ch



**USA:**

Heyl Brothers North America L.P.  
 150 North Michigan Avenue, 35th Floor  
 Chicago, Illinois 60601  
 Phone: +1 312-377-6123  
 Fax: +1 312-644-0738  
 E-Mail: USA@heylanalysis.de  
 www.heylbros.com

