Water Make-Up Systems & Water Treatment Technology

Fillcontrol, Fillset, Fillsoft
From the initial idea to the solution
Smooth operation in supply engineering thanks to system solutions

Reflex Winkelmann GmbH belongs to the Heating & Water division of the Winkelmann Group with 4,200 employees worldwide. The company is a leading brand manufacturer and solution provider for the smooth operation of water-carrying systems in supply engineering and modern building services. In addition to expansion vessels, we develop, manufacture and distribute innovative components and complete solutions for pressure-maintaining, water make-up, degassing, water treatment and storage as well as heat exchangers.

Extensive Product Range

Reflex represents a large range of products and services, offering innovative systems for heating, cooling and hot-water supply and a multitude of other services.

The Reflex product range comprises:
- Expansion Vessels
- Pressurisation Systems
- Water Make-Up Systems & Water Treatment
- Degassing Systems & Separation Technology
- Hot Water Storage Tanks & Heat Exchangers

For constant reliable heat and water supply.

www.reflex.de

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Make-up Systems &amp; Water Treatment</td>
<td>4</td>
</tr>
<tr>
<td>Reflex Fillset Compact</td>
<td>6</td>
</tr>
<tr>
<td>Reflex Fillcontrol Plus Compact</td>
<td>7</td>
</tr>
<tr>
<td>Reflex Fillcontrol Plus</td>
<td>7</td>
</tr>
<tr>
<td>Reflex Fillcontrol Auto Compact</td>
<td>8</td>
</tr>
<tr>
<td>Reflex Fillcontrol Auto</td>
<td>8</td>
</tr>
<tr>
<td>Reflex Fillcontrol Auto 2P</td>
<td>10</td>
</tr>
<tr>
<td>Reflex Fillcontrol Auto 2PS</td>
<td>11</td>
</tr>
<tr>
<td>Reflex Fillsoft I / Fillsoft II</td>
<td>12</td>
</tr>
<tr>
<td>Reflex Fillsoft Theoretical Principles</td>
<td>13</td>
</tr>
<tr>
<td>Reflex Combination Options</td>
<td>14</td>
</tr>
</tbody>
</table>
Water Make-Up Systems & Water Treatment Technology

Water Make-up Systems & Water Treatment

Manual Water Make-up

Fillset Compact
Fillset

Automatic Water Make-up

Fillvalve
Fillcontrol Plus Compact
Fillcontrol Plus

Fillcontrol Auto Compact
Fillcontrol Auto
Fillcontrol P
Fillcontrol Auto 2P
Fillcontrol Auto 2PS

Softening Cartridge
Deionisation Cartridge

Fillsoft I
Fillsoft II
Water Make-Up Systems & Water Treatment Technology
Fillset

**Fillset Compact**

- Pre-fabricated assembly for direct connection of HVAC systems to water mains
- Prevents backflow of HVAC water into the water mains
- With German DVGW-approved BA-type backflow preventer
- Including wall bracket and isolation valves

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height</th>
<th>Minimum Flow Pressure</th>
<th>Volumetric Flow Rate (l/h)</th>
<th>Inlet-Outlet Connection</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillset Compact</td>
<td>6811305</td>
<td>70</td>
<td>175 x 214</td>
<td>P0 + 1.3 bar</td>
<td>0.8</td>
<td>R 1/2 - R 1/2</td>
<td>0.9</td>
</tr>
<tr>
<td>Fillset Compact M-Bus</td>
<td>9115630</td>
<td>70</td>
<td>285 x 214</td>
<td>P0 + 1.3 bar</td>
<td>0.8</td>
<td>R 1/2 - R 1/2</td>
<td>2.8</td>
</tr>
</tbody>
</table>

**Fillset**

- Pre-fabricated assembly for direct connection of HVAC systems to water mains
- Total quantity of make-up water is measured by a water meter
- Prevents backflow of HVAC water into the water mains
- With German DVGW-approved BA-type backflow preventer
- Including wall bracket and isolation valves

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height</th>
<th>Minimum Flow Pressure</th>
<th>Volumetric Flow Rate (l/h)</th>
<th>Inlet-Outlet Connection</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillset with Standard Water Meter</td>
<td>6811105</td>
<td>70</td>
<td>293 x 230</td>
<td>P0 + 1.3 bar</td>
<td>0.8</td>
<td>R 1/2 - R 1/2</td>
<td>1.7</td>
</tr>
<tr>
<td>Fillset Impuls</td>
<td>6811205</td>
<td>70</td>
<td>293 x 230</td>
<td>P0 + 1.3 bar</td>
<td>0.8</td>
<td>R 1/2 - R 1/2</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Reflex Fillvalve**

- For water make-up within systems which are equipped with compressor controlled pressurisation units
- Operates on 230 V output from pressurisation unit

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height</th>
<th>Minimum Flow Pressure</th>
<th>Volumetric Flow Rate (l/h)</th>
<th>Inlet-Outlet Connection</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillvalve</td>
<td>7858300</td>
<td>35</td>
<td>175 x 91</td>
<td>P0 + 1.3 bar*</td>
<td>1.5</td>
<td>G 3/4 - G 1/2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* In combination with Fillset
Fillcontrol

Fillcontrol Plus Compact

- Compact, automatic water make-up device for systems with conventional expansion vessels according to DIN 1988 and DIN EN 1717
- With system BA-type backflow preventer
- Monitored water make-up
- Dry contact (common fault)
- Input pressure max. 10 bar
- Flow rate ca. 0.5 m³/h at Δp = 1.5 bar

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height x Depth</th>
<th>Minimum Flow Pressure</th>
<th>Outlet Pressure</th>
<th>Inlet-Outlet Connection</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillcontrol Plus Compact</td>
<td>6811500</td>
<td>79</td>
<td>304 x 240 x 91</td>
<td>Po + 1.3 bar</td>
<td>0.5 - 5 bar</td>
<td>R 1/2 - R 1/2</td>
<td>2.0</td>
</tr>
<tr>
<td>Fillsoft External Pressure Sensor</td>
<td>9112004</td>
<td>78</td>
<td>90 x 70 x 35</td>
<td>-</td>
<td>-</td>
<td>G 1/2 - G 1/2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Fillcontrol Plus - Make-up Station Without Pump

- To monitor diaphragm expansion vessels and for the automatic water make-up of the set initial pressure
- Incl. wall bracket
- With Control Basic control unit
- RS 485 interface, connection of bus/extension modules possible
- Capacity monitoring of a Fillsoft water treatment system possible

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height x Depth</th>
<th>Minimum Flow Pressure</th>
<th>Volumetric Flow Rate Kvs</th>
<th>Inlet-Outlet Connection</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillcontrol Plus</td>
<td>8812100</td>
<td>70</td>
<td>320 x 340 x 190</td>
<td>Po + 1.3 bar*</td>
<td>0.7 m³/h*</td>
<td>G 1/4 - G 1/2</td>
<td>2.5</td>
</tr>
<tr>
<td>Fillcontrol Plus Stainles Steel</td>
<td>8812200</td>
<td>70</td>
<td>320 x 340 x 190</td>
<td>Po + 1.3 bar*</td>
<td>0.7 m³/h*</td>
<td>G 1/4 - G 1/2</td>
<td>2.5</td>
</tr>
</tbody>
</table>

* In combination with Fillset
Fillcontrol Auto Compact - Water Make-up Station With Pump

- Fully automatic water make-up systems with integrated pump
- Fillcontrol Auto Compact with integrated intermediate tank as a means of system separation
- Systems equipped with Control Basic for simple and clear operation
- RS 485 interface, connection of bus/extension modules possible
- Capacity monitoring of a Fillsoft water treatment system possible
- Including system separation in accordance with DIN 1988 and DIN EN 1717 with Fillcontrol Auto Compact

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height x Depth</th>
<th>Delivery Rate l/h</th>
<th>Min. Supply Rate l/h</th>
<th>Max. Supply Pressure bar</th>
<th>Inlet-Outlet Connection</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillcontrol Auto Compact</td>
<td>8688500</td>
<td>70</td>
<td>620 x 580 x 290</td>
<td>120 - 180</td>
<td>360</td>
<td>5.5</td>
<td>G 1/2 - DN 32</td>
<td>19.1</td>
</tr>
</tbody>
</table>

Fillcontrol Auto - Water Make-up Station With Pump

- Fully automatic water make-up systems with integrated pump
- Fillcontrol Auto for water make-up, e.g. from containers or conditioning systems
- Systems equipped with Control Basic for simple and clear operation
- RS 485 interface, connection of bus/extension modules possible
- Capacity monitoring of a Fillsoft water treatment system possible
- Fillcontrol Auto for applications suitable for max. 50 % anti-freeze

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Width x Height x Depth</th>
<th>Delivery Rate l/h</th>
<th>Min. Supply Rate l/h</th>
<th>Max. Supply Pressure bar</th>
<th>Inlet-Outlet Connection</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillcontrol Auto</td>
<td>8812300</td>
<td>70</td>
<td>690 x 470 x 440</td>
<td>4000</td>
<td>360</td>
<td>5.5</td>
<td>G 1 - G 1 1/4</td>
<td>25.0</td>
</tr>
</tbody>
</table>

Fillcontrol Auto P

A compact make up system with breaktank and ball valve. Perfect in combination with Reflex Variomat
- 18 l breaktank
- WRAS approved ball valve and type AB air gap
- Low water alarm
- Single pump
- LED for status report
- Compatible with Reflex Control Touch
- Compatible with Fillmeter

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Height x Width x Depth mm</th>
<th>Weight kg</th>
<th>Inlet/ outlet connection</th>
<th>Voltage V</th>
<th>Current A</th>
<th>Power kW</th>
<th>Max. operating pressure bar</th>
<th>Max. operating temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflex Fillcontrol P</td>
<td>8813100</td>
<td>70</td>
<td>589 x 487 x 320</td>
<td>28</td>
<td>1/2&quot; / 1/2&quot;</td>
<td>230/50</td>
<td>2.2</td>
<td>0.4</td>
<td>8</td>
<td>30</td>
</tr>
</tbody>
</table>
G-vessel with Fillcontrol Plus Compact

Static vessel in combination with Fillcontrol Plus Compact Fillsoft. If the system pressure drops below the setpoint, an appropriate amount of water will be filled into the unit from the water mains via the Fillcontrol Plus Compact device.

It also includes a RPZ valve for protection against backflow, providing protection against the contamination of mains cold water supply according to EN1717. By the Fillsoft device the system water can be totally softened or adjusted to the required level.

G-vessel with Fillcontrol Auto Compact

Static vessel in combination with Fillset RPZ valve, Fillsoft II water softening device and Fillcontrol Auto Compact. If the system pressure drops below the setpoint, an appropriate amount of water will be filled into the unit from the water mains via the Fillcontrol Auto Compact device. By the Fillsoft device the system water can be totally softened or adjusted to the required level.

The Fillset RPZ valve protects against backflow, providing protection against the contamination of mains cold water supply according to EN1717. By connecting the contact water meter to the Fillcontrol Auto Compact control unit the Fillmeter function is available.
Fillcontrol

Fillcontrol Auto 2P

Automatic water make up unit used in conjunction with static pressure expansion vessels.
- 18 l breaktank
- WRAS approved ball valve and type AB air gap
- 6 analogue outputs, 1 volt free contact default values:
  - min pressure
  - max pressure
  - low water cut off
  - pump failure
  - pressure level detection
  - time out
- System pressure sensor
- Two line LCD Display

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Height x Width x Depth mm</th>
<th>Weight kg</th>
<th>Inlet/Outlet connection</th>
<th>Voltage V</th>
<th>FLC A</th>
<th>Power kW</th>
<th>Max operating pressure bar</th>
<th>Max operating temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Fillcontrol Auto 2P</td>
<td>8813200</td>
<td>70</td>
<td>923 x 802 x 545</td>
<td>41</td>
<td>1/2&quot; / 1&quot;</td>
<td>230/50 Hz</td>
<td>2.62*</td>
<td>0.56*</td>
<td>2.5</td>
<td>90</td>
</tr>
<tr>
<td>50 Fillcontrol Auto 2P</td>
<td>8813400</td>
<td>70</td>
<td>1039 x 802 x 625</td>
<td>44</td>
<td>1/2&quot; / 1&quot;</td>
<td>230/50 Hz</td>
<td>3.22*</td>
<td>0.75*</td>
<td>4.5</td>
<td>90</td>
</tr>
</tbody>
</table>

* For each pump
Combined water make up unit which includes Servitec module for automatic vacuum degassing. Commissioning by setting the pO of the static pressure vessels.

- 18 l breaktank
- WRAS approved ball valve and type AB air gap
- 6 analogue outputs, 1 volt free contact default values:
  - min pressure
  - max pressure
  - low water cut off
  - pump failure
  - pressure level detection
  - time out
- System pressure sensor
- Two line LCD Display
- System degassing

**Fillcontrol Auto 2PS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Article No</th>
<th>Material Group</th>
<th>Height x Width x Depth mm</th>
<th>Weight kg</th>
<th>Inlet/Outlet connection</th>
<th>Voltage V</th>
<th>FLC A</th>
<th>Power kW</th>
<th>Max. operating pressure bar</th>
<th>Max. operating temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>8813300</td>
<td>70</td>
<td>1039 x 802 x 625</td>
<td>46</td>
<td>1/2&quot; / 1&quot;</td>
<td>230/50 Hz</td>
<td>2.62*</td>
<td>0.56*</td>
<td>2.5</td>
<td>90</td>
</tr>
<tr>
<td>50</td>
<td>8813500</td>
<td>70</td>
<td>1039 x 802 x 625</td>
<td>46</td>
<td>1/2&quot; / 1&quot;</td>
<td>230/50 Hz</td>
<td>3.22*</td>
<td>0.75*</td>
<td>4.5</td>
<td>90</td>
</tr>
</tbody>
</table>

* For each pump
**Fillsoft I / II Water Treatment Systems**

This softening unit is available in two basic versions, depending on the required capacity: Fillsoft I with one or Fillsoft II with two resin cartridges.

- Water softening device for initial filling and water make-up in heating systems
- Fillsoft I: Soft water capacity 6000 l x °dH
- Fillsoft II: Soft water capacity 12000 l x °dH
- Incl. shut-off with sample cock and segment connection*
- Fillset I incl. flow limiter

### Accessories

- **Softmix** - Only with softening
  - Article No: 9119219
  - Material Group: 78
- **External pressure sensor**
  - Article No: 9112004
  - Material Group: 86
- **Fillmeter**
  - Article No: 9119193
  - Material Group: 78
- **Total hardness testing kit**
  - Article No: 6811900
  - Material Group: 86
- **Fillguard Mini Conductivity Sensor**
  - Article No: 9125762
  - Material Group: 78

### Fillsoft Quick Selection

*°dH = 1.78 °F = 1.25 °E Limit for Total hardness (°dH) depending on the specific unit volume VA in acc. VDI 2035 T1*

<table>
<thead>
<tr>
<th>Group</th>
<th>Total capacity</th>
<th>&lt; 20 l / kW</th>
<th>≤ 20 l / kW and ≤ 50 l / kW</th>
<th>≥ 50 l / kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≤ 50 kW</td>
<td>≤ 11.2 °dH</td>
<td>≤ 11.2 °dH</td>
<td>≤ 0.11 °dH</td>
</tr>
<tr>
<td>2</td>
<td>50 - 200 kW</td>
<td>≤ 11.2 °dH</td>
<td>≤ 8.4 °dH</td>
<td>≤ 0.11 °dH</td>
</tr>
<tr>
<td>3</td>
<td>200 - 600 kW</td>
<td>≤ 8.4 °dH</td>
<td>≤ 0.11 °dH</td>
<td>≤ 0.11 °dH</td>
</tr>
<tr>
<td>4</td>
<td>&gt; 600 kW</td>
<td>≤ 0.11 °dH</td>
<td>≤ 0.11 °dH</td>
<td>≤ 0.11 °dH</td>
</tr>
</tbody>
</table>

* Spec. unit volume VA [l/kW] = unit volume / smallest single heating capacity

** in case of circulating water heater and systems elec. heating element

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The benefits of Fillsoft in detail:

- Well thought-out complete program for water softening
- Simple installation, both as a stand-alone unit and also linked to a Fillcontrol water make-up solution
- Durable, efficient heat transfer, as limescale build-up on boiler surfaces is prevented
- Long-term protection of your system, as partial thermal and mechanical overloading by lime scale build-up is avoided
- Maximum operational safety, as the system’s pH remains stable even if incorrectly operated
- Ease of handling by simple cartridge replacement and disposal of used cartridges with household waste
Theoretical principles

Fillsoft water treatment system for make-up water

Continuously increasing heating surface loads are demanded on modern boilers. This increases the risk of deposits of calcium in particular. These deposits may reduce the capacity and may ultimately cause boiler destruction. When aluminium is used as material, the water should be desalinated as the potential for corrosion is higher with untreated water. To prevent corrosion, Reflex offers Fillsoft, a programme designed for treating filling and make-up water as required by the standards.

Reflex recommends to install Fillsoft in every water make-up system as it significantly contributes to facility reliability at little expense. The core of Fillsoft is a pillar with a replaceable cartridge containing ions in synthetic resin beads. This pillar is equipped with connections for fresh water and filling or make-up water. A shut-off ball valve with test valve at the water make-up side completes the structure.

Softening

The softening process follows the principle of cation replacement. Hard fresh water is transported through the exchanger pillar. The magnesium and calcium ion hardening constituents are exchanged with the sodium ions of the resin beads, which process softens the water. The cartridge must be replaced when the sodium ion capacity is exhausted. Reflex recommends to install Fillsoft in every water make-up system.

Deionisation

Deionisation uses the principle of ion exchange of cations and anions. Fillsoft Zero offers the option to de-mineralise filling and make-up water. All minerals are absorbed through the cartridge. The cartridge capacity decreases and must be replaced when conductivity and the ion number increases.

Simple capacity monitoring for “Fillsoft Zero”

Fillguard Mini is a conductivity measuring cell for the capacity monitoring of “Fillsoft Zero” deionisation. It is easily and quickly installed at the Fillsoft Zero cartridge head. An additional adapter is not required.

The three-level LED display sends out a signal once the ion exchanger is depleted. Thus it is guaranteed that only desalinated water flows into the heating system. Fillguard Mini is only suited for “Fillsoft Zero” deionisation.

Combination Options:
- Fillsoft Zero + Fillmeter
- Fillsoft Zero + Fillguard Mini
- Fillsoft Zero + Fillmeter + Fillguard Mini

![Diagram of water treatment system](image)
The Reflex brand name is well known in Europe and throughout the world as a major leader in pressure control technology for heating, chilled and potable water applications. Our world wide growth has allowed us to build several state-of-the-art manufacturing facilities supplying the industry with outstanding quality products. Reflex Winkelmann GmbH having its headquarters in the Westfalian city of Ahlen is not only a recognized leader in expansion vessels but also a significant manufacturer of advanced system solutions such as compressor and pump-controlled pressurisation systems, automatic air separation systems and hot water heaters.
Reflex has achieved its significant global growth today thanks to the unique combination of its world-class manufacturing skills, dedication to high-product quality at an affordable price and its commitment to continuous technical training of its people, our most precious resource. Our tradition goes back to 1898. This family oriented company started its core business in the elaboration of steel. A business in which we are recognised leaders today. The Heinrich Winkelmann Group form the parent company to a whole group of diversified manufacturing companies serving the heating segment and the whole automotive industry with over 4,200 employees. A tradition of more than a hundred years in this business makes us real experts today.