

Technical Manual

# WHOLEHOUSE WATER FILTER



Models:

- SF180
- SF260
- SF360
- SF500



## INHALTSVERZEICHNIS

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## WARNING & SAFETY INSTRUCTIONS

Before you begin the installation of the appliance, we advise you read and carefully follow the instructions contained in this manual. It contains important information about safety, installation, use and maintenance of the product. The actual system that you have received, may differ from the pictures/illustrations/descriptions in this Technical Manual.

Failure to follow the instructions could cause personal injury or damage to the appliance or property. Only when installed, commissioned and serviced correctly, the appliance will offer you many years of trouble-free operation.

The appliance is intended to ' filter ' the water , meaning it will remove specific undesired substances ; it will not necessarily remove other contaminants present in the water . The appliance will not purify polluted water or make it safe to drink!

Installation of the appliance should only be undertaken by a competent person, aware of the local codes in force. All plumbing and electrical connections must be done in accordance with local codes.

Before setting up the appliance, make sure to check it for any externally visible damage; do not install or use when damaged.

Use a hand truck to transport the appliance. To prevent accident or injury, do not hoist the appliance over your shoulder. Do not lay the appliance on its side.

Keep this Technical Manual in a safe place and ensure that new users are familiar with the content.

The appliance is designed and manufactured in accordance with current safety requirements and regulations. Incorrect repairs can result in unforeseen danger for the user, for which the manufacturer cannot be held responsible. Therefore repairs should only be undertaken by a competent technician, familiar and trained for this product.

In respect of the environment, the appliance should be disposed of in accordance with Waste Electrical and Electronic Equipment requirements. Refer to national/local laws and codes for correct recycling of this appliance.



## OPERATING CONDITIONS & REQUIREMENTS

### **OPERATING PRESSURE MIN-MAX: 2,0-8,3 bar / 29-120 psi**

- check water pressure regularly; it may fluctuate severely depending on the time of day, the day of the week or even the season of the year.
- take into account that night time water pressure may be considerably higher than day time water pressure.
- install a pressure reducer ahead of the appliance if necessary.
- Install a pressure booster, if it is likely that water pressure may drop below the minimum.

### **OPERATING TEMPERATURE MIN-MAX: 2-48 °C / 35-120 °F**

- do not install the appliance in an environment where high ambient temperatures (e.g. unvented boiler house) or freezing temperatures can occur.
- the appliance cannot be exposed to outdoor elements, such as direct sunlight or atmospheric precipitation.
- do not install the appliance too close to a water heater; keep at least 3 m (10 ft) of piping between the outlet of the appliance and the inlet of the water heater; water heaters can sometimes transmit heat back down the cold pipe into the appliance; always install a check valve at the outlet of the appliance.

### **ELECTRICAL CONNECTION:**

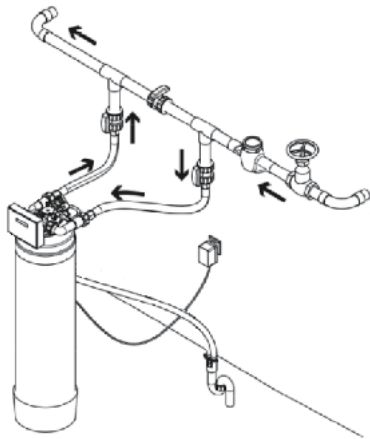
- the appliance only works on 24VDC; always use it in combination with the supplied transformer.
- make sure to plug the transformer into a power outlet, which is installed in a dry location, with the proper rating and over-current protection.

# INSTALLATION

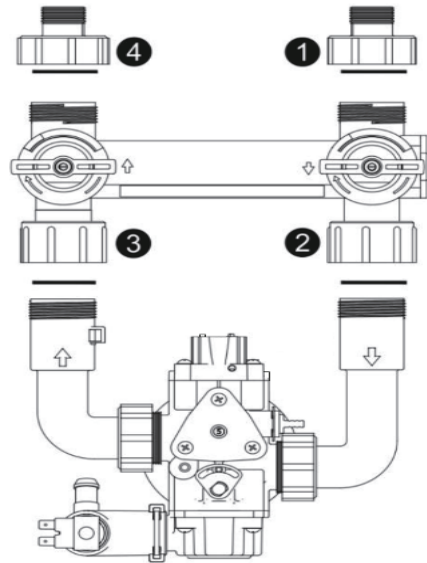
## PREPARATION

### Picture 1

To facilitate the installation, you may want to remove the cover from the appliance.



Picture 1



Picture 2

## INLET & OUTLET

❑ In case of high concentration of impurities in the inlet water, we recommend the installation of a sediment filter, ahead of the appliance.

❑ We strongly recommend the use of flexible hoses to connect the appliance to the water distribution system; use hoses with a large diameter in order to limit the pressure loss.

❑ If the appliance is not equipped with the factory bypass, we strongly recommend to install a 3-valve bypass system (not included with this product!) to isolate the appliance from the water distribution system in case of repairs. It allows to turn off the water to the appliance, while maintaining (untreated) water supply to the user.

### WITH FACTORY BYPASS (optional)

### Picture 2

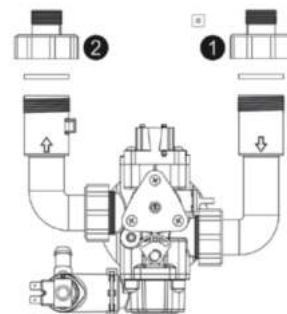
- ① = mains water supply (untreated water)
- ② = inlet of appliance (untreated water)
- ③ = outlet of appliance (treated water)
- ④ = house/application (treated water)

1. Screw the factory bypass onto the elbow connections of the appliance (②&③); make sure to install the gasket seals. Tighten the nuts firmly by hand.
2. Screw the connection kit with nuts onto the factory bypass (①&④); make sure to install the gasket seals. Tighten the nuts firmly by hand.
3. Connect the mains water supply to the adaptor on the inlet port of the factory bypass (①).
4. Connect the house/application to the adaptor on the outlet port of the factory bypass (④).

### WITH 3-VALVE BYPASS SYSTEM (not included)

### Picture 3

- ① = inlet of appliance (untreated water)
  - ② = outlet of appliance (treated water)
1. Install the 3-valve bypass system.
  2. Screw the connection kit with nuts onto the elbow connections of the appliance ; make sure to install the gasket seals. Tighten the nuts firmly by hand.
  3. Connect the 3-valve bypass system to the adaptors on the in and out elbow connections.
  4. Connect the mains water supply to the inlet of the 3-valve bypass system.
  5. Connect the house/application to the outlet of the 3-valve bypass system.



Picture 3

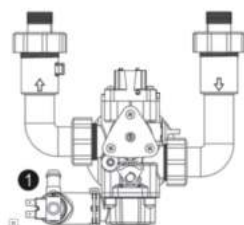
# INSTALLATION

## DRAIN

- ☑ We recommend the use of a stand pipe with P-trap.
- ☑ To prevent backflow from the sewerage system into the appliance, always install and use the included drain adaptor with air gap and double hose barb, to connect the drain hoses to the sewerage system.
- ☑ Always use separate drain hoses for the control valve (discharge of rinse water) and the brine cabinet's overflow.
- ☑ Lay-out the drain hoses in such a way that pressure loss is minimized; avoid kinks and unnecessary elevations.
- ☑ Make sure that the sewerage system is suitable for the rinse water flow rate of the appliance.

Picture 4

1. Install the drain adaptor to the sewerage system; it fits over a 32 mm pipe or inside a 40 mm pipe adaptor. Ensure a permanent and watertight connection.
2. Connect a 13 mm hose to the drain solenoid of the control valve (①); secure it by means of a clamp.
3. Run the drain hose to the drain adaptor and connect it to one of the hose barbs; secure it by means of a clamp. This drain line operates under pressure, so it may be installed higher than the appliance.

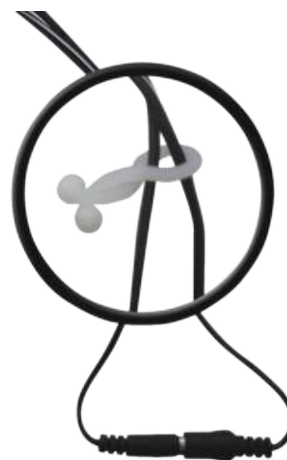


Picture 4

## ELECTRICAL

Picture 5

1. Plug the transformers output lead into the socket on the appliances power cord; secure it by means of the TwistLock clamp.
2. Plug the transformer into an electrical outlet.



Picture 5

## PRESSURIZING

1. Make sure the bypass system is in 'bypass' position.
2. Make sure the electronic controller of the appliance is in service mode.
3. Open the mains water supply.
4. Open a cold treated water faucet nearby the appliance and let the water run for a few minutes until all air is purged and all foreign material that may have resulted from the installation is washed out; close the tap.
5. Gently pressurize the appliance, by putting it into service:
  - factory bypass:*
    1. open the 'outlet' valve;
    2. slowly open the 'inlet' valve.
  - 3-valve bypass:*
    1. close the 'bypass' valve;
    2. open the 'outlet' valve;
    3. slowly open the 'inlet' valve.
6. After 2-3 minutes, open a cold treated water faucet nearby the appliance and let the water run for a few minutes until all air is purged from the installation and the resin bed is rinsed (it is normal for the rinse water to show some discoloration!); close the tap.
7. Check the appliance and all hydraulic connections for leaks.

*After the first regenerations of the appliance, some slight discoloration of the treated water might occur. This is totally harmless and will disappear rapidly!*

# ELECTRONIC CONTROL PANEL

## ELECTRONIC CONTROL PANEL

1. Program the electronic controller.

## PERFORM REGENERATION

1. Manually initiate a regeneration, by pressing the **scroll** button; the display will show:

**Regen in 10 sec**

2. Leave the appliance in this position; the countdown timer will countdown to 0 sec and start a regeneration.

Picture 6

symbol	button	function
⌚	SCROLL	to advance to the next parameter
▲	UP	to increase the value of the parameter
▼	DOWN	to decrease the value of the parameter



Picture 6

## POWER-UP

After power-up the display will show the installed software version for a period of 5 seconds.

## POWER FAILURE

In the event of a power failure, the program will remain stored in the NOVRAM® during an undefined period, while an incorporated SuperCap will maintain the correct time of day during a period of several hours; consequently, in case of prolonged power failure, the time of day might not be maintained; if this happens, the time of day will be reset to 8:00 when the power supply is re-established, while the indication will *flash*, indicating that the time of day needs to be set.

*When the power failure occurs during the execution of an automatic regeneration, the appliance will immediately return to the service mode; when the power supply is re-established, the appliance will resume the regeneration.*

## TIMER FAILURE

In the event of a timer failure, the display will show the message:

**Service Required**

The buzzer, if enabled (see Basic Settings), will beep continuously. If powering off/on the appliance doesn't solve this problem, professional service is required.

## MAINTENANCE REMINDER

*Only available if the maintenance reminder function has been activated and programmed by your supplier!*

Once the maintenance interval is reached, the following will happen:

1. the display will intermittently show the message:

**8:01 7 DAY REM  
Maintenance Now**

2. the buzzer, if enabled (see Basic Settings), will beep 3 times every 5 minutes.

While the appliance will continue to operate normally, it is recommended to have preventive maintenance performed by a professional.



## COMMISSIONING

To reset the maintenance reminder, simply access the configuration parameters programming mode.

### SERVICE MODE

In service mode the display shows the time of day and the number of days remaining until the next regeneration:

8:01 7 DAY REM

### REGENERATION MODE

In **regeneration mode** the display shows the actual regeneration time:

Cycle 1: XXX min

The appliance can be **reset to service mode** at any time by pressing the **scroll !** Button.

### MANUAL REGENERATION

It is possible to manually initiate an immediate regeneration or a delayed regeneration (at the preprogrammed time of regeneration).

1. Press the **scroll** button; the display will show:

Regen in 10 sec

- If the control panel is left in this position, the countdown timer will countdown to 0 sec and **start an immediate regeneration**.
- To cancel this mode, press the **scroll** button before the countdown timer has reached 0 sec; the display will show:

Regen @ 2:00

- If the control panel is left in this position, a **delayed regeneration** will be started at the indicated preprogrammed time of regeneration.
- To cancel this mode, press the **scroll** button repeatedly; the control panel will return to the service mode.

### HOLIDAYMODE

It is possible to put the appliance in holiday mode; this will prevent automatic regeneration from taking place, yet will ensure the appliance is automatically regenerated at the end of the holiday cycle.

1. Press the **scroll** button repeatedly until the display shows:

Holiday: OFF

Press the **up** or **down** button to activate the holiday mode by setting the number of full days away from home, or deactivate the holiday mode (OFF).

Once the control panel is back in service mode, the display will show:

8:01 Holiday

- The holiday mode is automatically cancelled when a regeneration is manually initiated !

### PROGRAMMING INSTRUCTIONS - BASIC SETTINGS

Before entering the programming mode, make sure that the appliance is in service mode.

In case no button is pressed in a period of 5 min, the control panel will automatically return to the service mode; any changes made will NOT be saved!

1. Press the **scroll** button and hold it for 2 sec until the display shows:

Language: English

- Press the **up** or **down** button to set the language.

2. Press the **scroll** button again; the display will show:

Set time: 8:01

- Press the **up** or **down** button to set the time of day.

## COMMISSIONING

3. Press the **scroll** button again; the display will show:

**Buzzer: ON**

- Press the **up** or **down** button to enable or disable the buzzer.

4. Press the **scroll** button again; the display will show:

**Interval: 7 Days**

- Press the **up** or **down** button to set the number of days between regenerations.

5. Press the **scroll** button again; the display will show:

**Exit**

- Press the **up** or **down** button to save the settings into the NOVRAM® and exit the programming mode.

The regeneration cycle is necessary to wash out impurities that are captured in the filter media during the service cycle, and to prevent 'caking' of the filter media, which may result in an increase of pressure drop over the appliance. Typically a regeneration every 7 days should be sufficient. In case of high flow rates, excessive water usage or a high concentration of impurities in the incoming water, it may be necessary to lower the number of days between regenerations.

# MAINTENANCE

## RECOMMENDATION

Notwithstanding the reliability of the appliance, we strongly recommend to have it serviced and maintained on a regular basis by a competent and duly trained technician. He will be able to determine the appropriate maintenance interval for the appliance, depending on your specific application and the local operating conditions. The advantages of performing regular maintenance are:

- regular check of the local operating conditions (water quality, pressure, etc);
- regular control and adjustment of the settings of the appliance, to guarantee it operates at maximum efficiency;
- minimize the risk of unexpected break-down.

Contact your dealer or installer for more information, or visit our website.

## ROUTINE CHECKS

Regularly the user should perform a basic check to verify if the appliance is functioning correctly, on the basis of the following control points:

1. Check settings of electronic control panel.
2. Measure water hardness before/after appliance.
3. Check drain line from control valve; there shouldn't be any water flow (unless appliance is in regeneration).
4. Check drain line from brine cabinet overflow; there shouldn't be any water flow.
5. Check appliance and surrounding area; there shouldn't be any water leakages.

## BYPASSING THE APPLIANCE

Occasionally it may be necessary to put the appliance hydraulically in bypass, i.e. to isolate it from the water distribution system; f.e.:

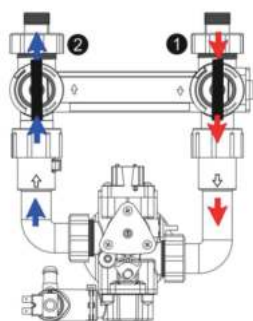
- in case of an urgent technical problem;
- when it is not necessary to supply treated water to the house/application (refill swimming pool, irrigation,...).

### WITH FACTORY BYPASS(optional)

## Picture 7

### SERVICE POSITION

- ① = inlet valve to appliance is OPEN  
② = outlet valve from appliance is OPEN

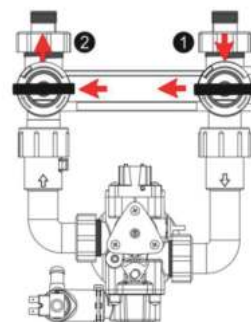


Picture 7

## Picture 8

### BYPASS POSITION

- ① = inlet valve to appliance is CLOSED  
② = outlet valve from appliance is CLOSED

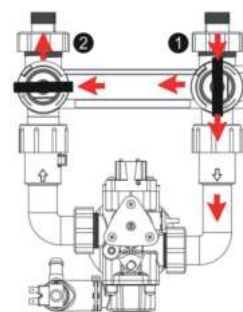


Picture 8

## Picture 9

### MAINTENANCE POSITION

- ① = inlet valve to appliance is OPEN  
② = outlet valve from appliance is CLOSED



Picture 9

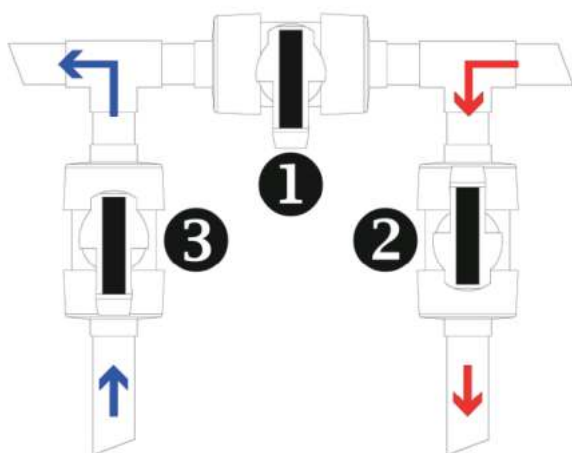
# MAINTENANCE

WITH 3-VALVE BYPASS SYSTEM (not included)

## Picture 10

### SERVICE POSITION

- ① = bypass valve is CLOSED
- ② = inlet valve to appliance is OPEN
- ③ = outlet valve from appliance is OPEN

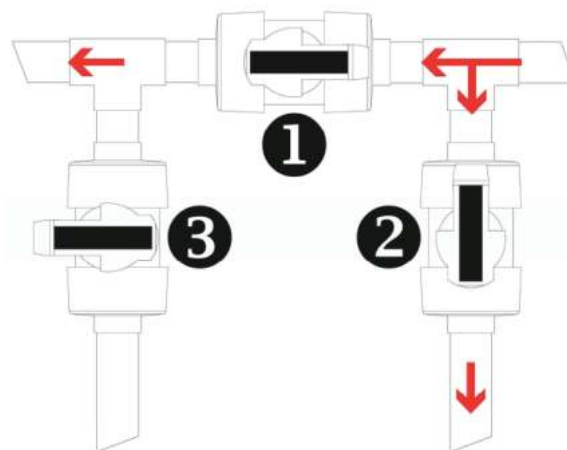


Picture 10

## Picture 12

### MAINTENANCE POSITION

- ① = bypass valve is OPEN
- ② = inlet valve to appliance is OPEN
- ③ = outlet valve from appliance is CLOSED

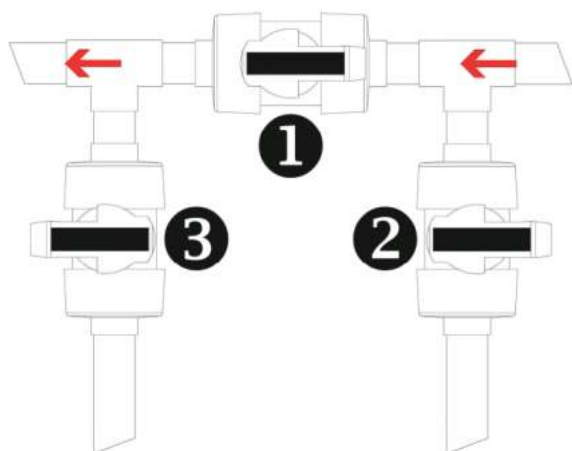


Picture 12

## Picture 11

### BYPASS POSITION

- ① = bypass valve is OPEN
- ② = inlet valve to appliance is CLOSED
- ③ = outlet valve from appliance is CLOSED



Picture 11

## APPEARANCE

To retain the appearance of the appliance, simply wipe it with a damp cloth or clean it with a mild soap solution; never use abrasive cleaners, ammonia or solvents.

## SANITIZING THE APPLIANCE

This appliance is manufactured from premium quality material and assembled in safe conditions to assure it is clean and sanitary. If installed and serviced correctly, this appliance will not infect or contaminate your water supply. However, as in any 'device' plumbed-in in your water distribution system, a proliferation of bacteria is possible, especially in case of 'stagnant water'. Therefore this appliance is equipped with a 'days override' feature, that will automatically rinse the resin bed periodically, even in case of low or absence of water usage.

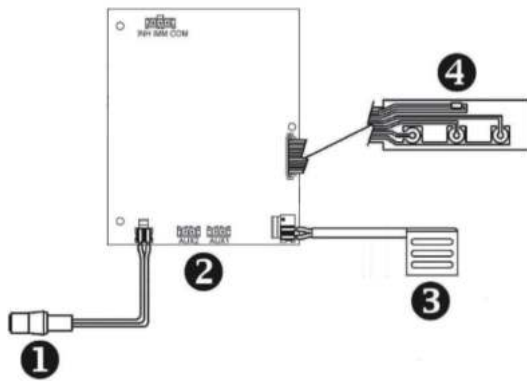
If the power supply to the appliance is disconnected for a longer period of time, we recommend, when the power supply is re-established, to manually initiate a complete regeneration.

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
<b>Untreated water to service</b>	Open or defective bypass	Close or replace bypass
	Appliance in regeneration	Wait until regeneration finishes or manually advance regeneration to end
	Excessive water usage	Initiate regeneration manually
	Change in raw water hardness	Verify composition of incoming untreated water and adjust regeneration frequency accordingly
	Appliance fails to regenerate	Refer to problem "Appliance fails to regenerate"
	Appliance fails to backwash properly	Refer to problem "Appliance fails to backwash properly"
	Valve body and timer out of synchronisation	Synchronize valve body and timer
	Decreasing filter capacity of filter media	Clean or replace filter media
	Loss of filter media	Refer to problem "Loss of filter media"
	Leak at riser tube	Verify that riser tube is seated correctly and is not cracked
<b>Low levels of contaminant in treated water</b>	Bypass not completely closed	Close bypass
	Excessive service flow rate	Lower service flow rate Increase filter capacity by increasing volume of filter media
	Leak at riser tube	Verify that riser tube is seated correctly and is not cracked
<b>Appliance fails to regenerate</b>	Faulty electrical supply	Verify electrical service (fuse, transformer,...)
	Defective PCB	Replace PCB
	Defective drive motor	Replace drive motor
	Regeneration frequency not programmed	Program regeneration frequency
<b>Loss of water pressure</b>	Mineral or iron build-up in resin tank	Clean resin bed and control valve; increase regeneration frequency
	Plugged lower and/or upper distributor	Verify that distributors are free of debris
	Crushed lower and/or upper distributor	Replace distributor(s)
<b>Drain line from control valve flows continuously</b>	Appliance in regeneration	Wait until regeneration finishes or manually advance regeneration to end
	Faulty electrical supply	Verify electrical service (fuse, transformer,...)
	Defective drive motor	Replace drive motor
	Defective micro switch	Replace micro switches
	Defective PCB	Replace PCB
	Valve body and timer out of synchronisation	Synchronize valve body and timer
<b>Loss of filter media</b>	Lower and/or upper distributor damaged	Replace distributor(s)
	Leak between riser tube and upper distributor	Verify that riser tube is seated correctly and is not cracked
<b>Appliance fails to backwash properly</b>	Low operating pressure	Check operating pressure; must be higher than 2,0 bar
	Insufficient water supply	Check water supply (flow rate/dynamic pressure)
	Restricted drain line	Verify drain line for kinks or restrictions
	Excessive build-up of impurities in pressure tank	Clean or replace filter media and control valve; increase regeneration frequency
	Plugged backwash flow control	Clean or replace backwash flow control
	Plugged top or bottom distributor	Verify that top and bottom distributor are clean and slots are not clogged by iron or other impurities
	Filter media is completely 'caked' (solid block)	Replace filter media and reduce regeneration interval
<b>Control valve cycles continuously</b>	Defective micro switch	Replace micro switches

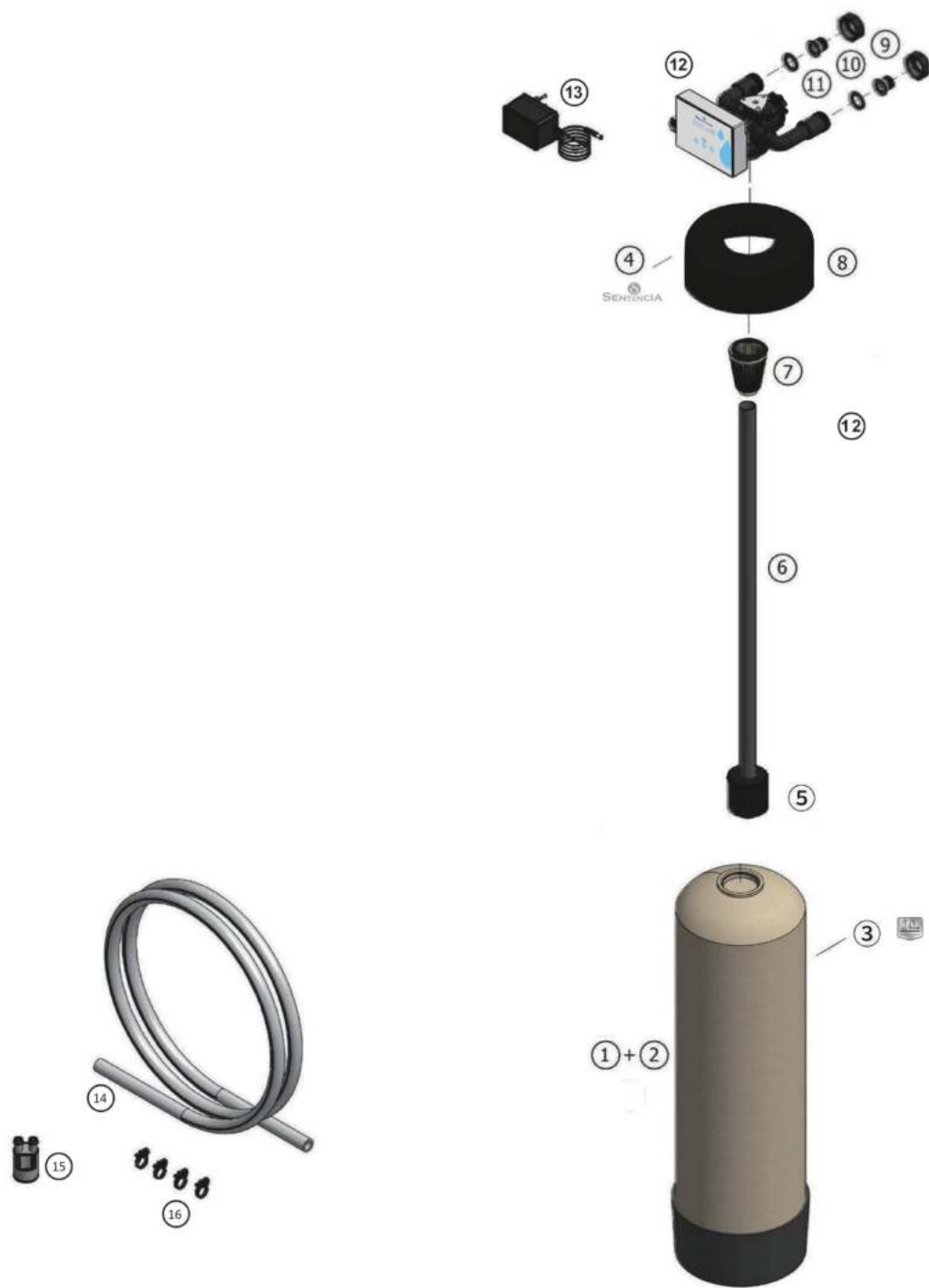
## ELECTRICAL WIRING DIAGRAMS

### ECO



- ① = power lead
- ② = auxilliary contacts (2 x 24VDC, max. 500mA)
- ③ = refill solenoid (marked 'RF')
- ④ = key pad

EXPLODED VIEW - WHF - SYSTEM



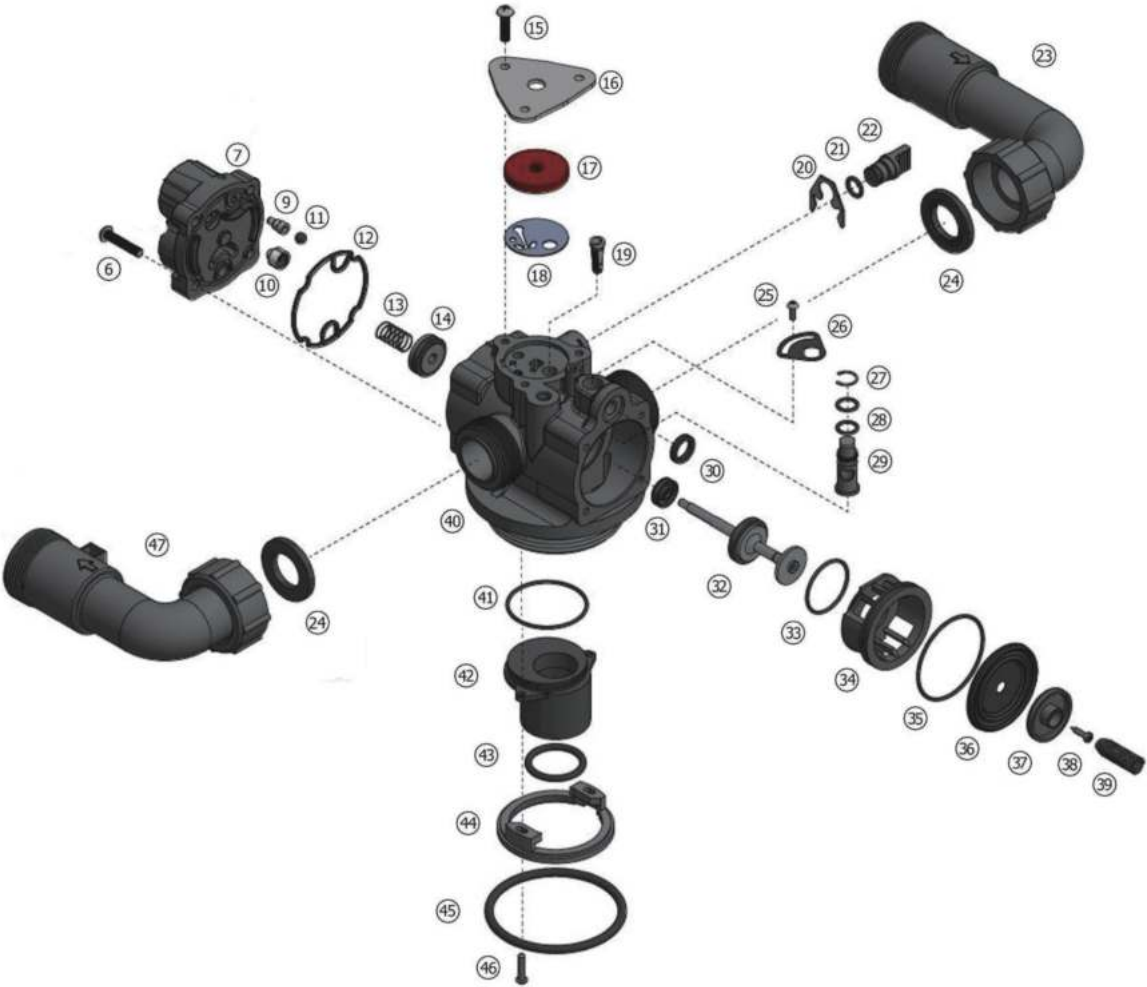
## EXPLODED VIEW - WHF - SYSTEM

Item	PN	Description	Remark	(*)
1	SF180 SF260 SF360 SF500	Pressure tank 10×16 Pressure tank 10×24 Pressure tank 10×35 Pressure tank 10×47	Eco 10L Eco 18L Eco 28L Eco 42L	√  √
2	E8000	Filter material		√
3	39004	Dome label '10year limited warranty'		
4	39099 39100	Label 'Stendencia' (mini) Label 'Sentencia' (midi)		
5	287/165	Bottom distributor		
6	38528	Riser tube assembly with deflector	to be cut to length	√
7	287/166	Top distributor		√
8	J/09 J/10	Tank jacket cover 9" Tank jacket cover 10"		
9	568/232	Nut, connection kit (2x)		√
10	74129	Adaptor ¾" BSP male plastic (2x)		√
11	71110	Gasket, connection kit (4x)		√
12	541N89/J80/SOF 541N84/J8J/SOF	Valve body & timer assembly Valve body & timer assembly	Eco	
13	74312	Transformer 100-230VAC - 24VDC,1,0A,EuroT plug		
14	74143	Drain hose 3 mtr		
15	74163	Air gap with double hose barb		
16	38521	Clamp, drain hose (4x)		

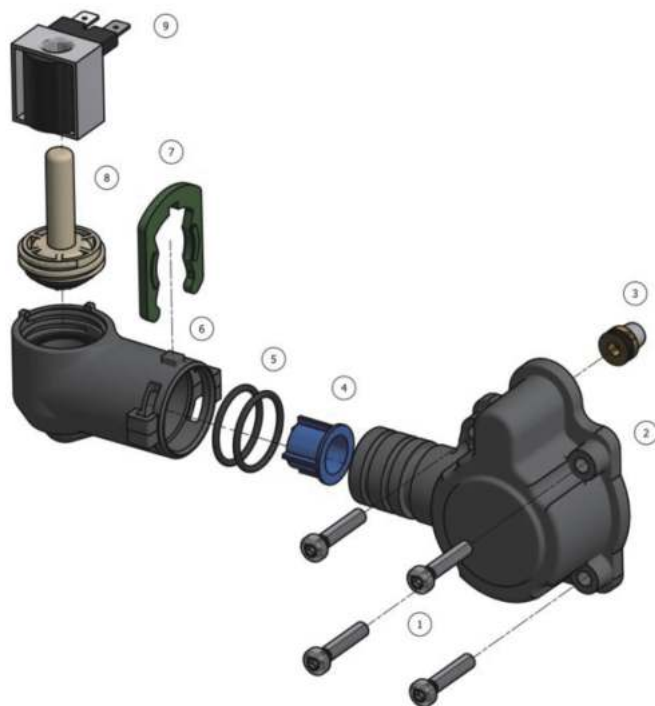
(\*) Recommended Spare Part



EXPLODED VIEW - VALVE BODY ASSEMBLY - ECO



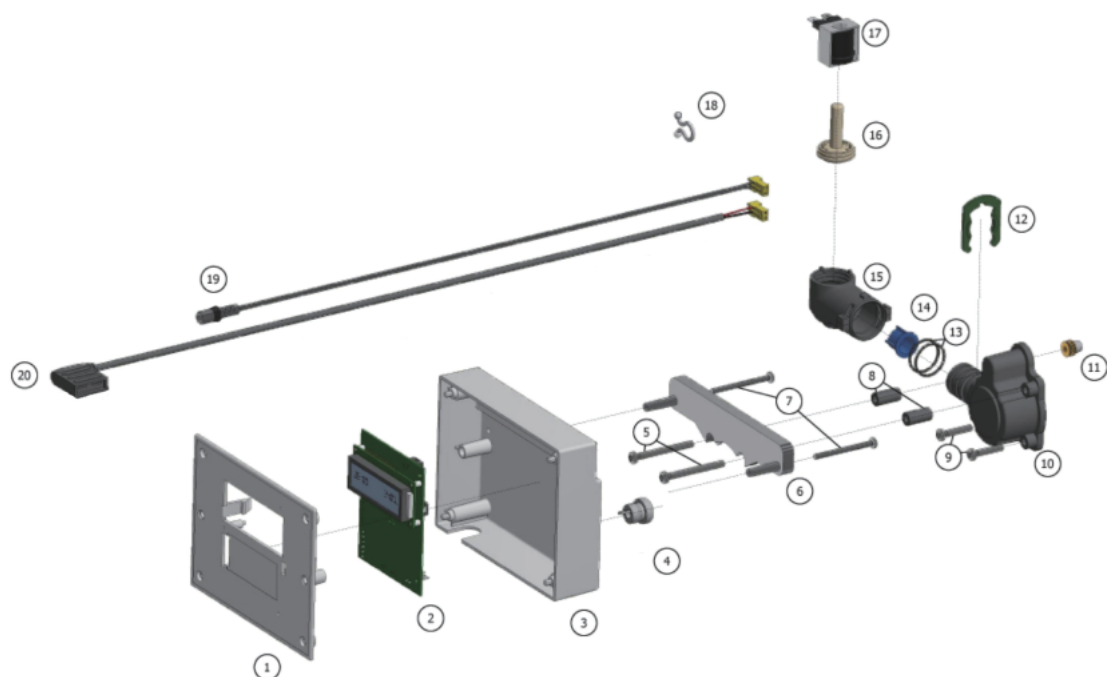
## EXPLODED VIEW - VALVE BODY ASSEMBLY - ECO



Item	PN	Description	Remark	(*)
1	74328	Screw, valve head		
2	74375	Valve head		
3	541/300/J	Drain flow control 2,6 gpm		
4	74371	Filter, drain solenoid		
5	74364	O-ring, valve head (2x)		
6	74376	Drain solenoid body		
7	74353	Clip, valve head		
8	74346	Solenoid assembly (guide, spring, plunger, diaphragm)		√
9	74345	Solenoid coil		√

(\*) Recommended Spare Part

## EXPLODED VIEW - WHF - VALVE HEAD & TIMER ASSEMBLY



Item	PN	Description	Remark	(*)
1	74230	PCB housing front assembly		√
2	74317	Printed Circuit Board, 24VDC	Eco	√
	74316	Printed Circuit Board, 24VDC		√
3	74026	PCB housing back		
4	28/8/28	Strain relief (2x)		
5	74393	Screw long, valve head (2x)		
6	74189	Timer mounting bracket		
7	74262	Screw, timer housing (2x)		
8	74387	Spacer, valve head (2x)		
9	74328	Screw short, valve head (2x)		
10	74375	Valve head		
11	541/300/J	Drain flow control 2,6 gpm		
12	74353	Clip, valve head		
13	74364	O-ring, valve head (2x)		
14	74371	Filter, drain solenoid		
15	74376	Holder, solenoid valve head		
16	74346	Solenoid assembly		
17	74345	Solenoid coil		
18	72263	Twist lock clamp, power cord		
19	74307	Power cord		√
20	74342	Backwash solenoid cable (marked 'BW')		√

(\*) Recommended Spare Part

## EXPLODED VIEW - WHF - VALVE HEAD & TIMER ASSEMBLY

### Technical specifications:

	WHF-Eco			
Model	SF180	SF260	SF360	SF500
filter material (Ltr)	10	18	28	42
Operating pressure min/max (bar)	2.0/8,3	2.0/8,3	2.0/8,3	2.0/8,3
Operating temperature min/max (°C)	2/48	2/48	2/48	2/48
Electrical connection	100-230/24VDC - 50/60Hz <sup>(1)</sup>	100- 230/24VDC - 50/60Hz <sup>(1)</sup>	100- 230/24VDC - 50/60Hz <sup>(1)</sup>	100- 230/24VDC - 50/60Hz <sup>(1)</sup>
Maximum power consumption (VA)	5,6	5,6	5,6	5,6
Hydraulic connection inlet/outlet	¾" BSP Male	¾" BSP Male	¾" BSP Male	¾" BSP Male

(1) Supplied with 24VDC transformer

### Performances @ 3 bar operating pressure <sup>(2)</sup>:

	WHF-Eco			
Model	SF180	SF260	SF360	SF500
filter material (Ltr)	10	18	28	42
Service flow rate @Δp 1 bar (m³/hr)	1	1.8	2.8	4.2
Recommended maximum service flow (m³/hr) <sup>(3)</sup>	1.8	2.6	3.2	4.5
Rinse water usage per regeneration (Ltr) <sup>(4)</sup>	132	132	132	132
Backwash flow rate (ltr/mim)	19	19	19	19

(2) Indicative numbers, performances depending on operating conditions and water quality

(3) Based on clean filter bed operation

(4) Flow rate at which filtration process is still executed adequately, higher (up to x2) intermittent flow rates are possible

### Dimensions & weights:

	WHF-Eco			
Model	SF180	SF260	SF360	SF500
filter material (Ltr)	10	18	28	42
Width(mm)(W)	264	264	264	264
Depth(mm)(D)	282	282	282	282
Depth,incl.factory bypass(mm)(D)	371	371	371	371
Height(mm)(H)	594	740	1030	1325

