

Technical Manual
WATER FILTER - Fe, Mn, H₂S

ProFlow

Models: **PF-OXY1**
PF-OXY1,5

TABLE OF CONTENT

Table of content.....	Page 2
Warning & Safety instructions.....	Page 3
Operating conditions & Requirements	Page 4
Assembly.....	Page 6
Installation	Page 8
Commissioning.....	Page 9
Electronic control panel	Page 10
Maintenance.....	Page 13
Troubleshooting.....	Page 15
Electrical wiring diagrams	Page 17
Default configuration parameter settings.....	Page 18
Composition overview	Page 19
Exploded view - PF-OXY1 - System	Page 20
Exploded view - PF-OXY1 - Timer assembly	Page 22
Exploded view - PF-OXY1 - Valve body	Page 24
Exploded view - PF-OXY1,5 - System	Page 26
Exploded view - PF-OXY1,5 - Timer assembly	Page 28
Exploded view - PF-OXY1,5 - Valve body.....	Page 30
Exploded view - PF-OXY1,5 - Piston assembly.....	Page 32
Technical data - PF-OXY1.....	Page 33
Technical data - PF-OXY1,5.....	Page 34

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

- **APPLICATION LIMITATIONS:**

- **pH:** for Iron removal: 6,8 - 9,0
for Manganese removal: 8,0 - 9,0
for Iron & Manganese removal: 8,0 - 8,5

- **maximum contaminant content:**

Iron (Fe ²⁺)	15 mg/L
Manganese (Mn ²⁺)	2 mg/L
Hydrogen Sulfide (H ₂ S)	5 mg/L

- **organic matter:** max. 4,0 mg/L; higher level may hinder the correct operation of the system and may require more frequent regenerations and/or a higher backwash flow rate. In case of excessive amounts of organic matter or suspended solids, install a sediment filter ahead of the appliance.
- **chlorine:** max. 1,0 mg/L
- **iron bacteria:** if iron bacteria are present, frequent service may be necessary, while the life of the system may be limited; by properly controlling the iron bacteria with chlorine or another approved method of bacterial reduction, the system will function properly.

- **OPERATING PRESSURE MIN-MAX: 2,5-8,0 bar / 36-116 psi**

- low operating pressure may lead to insufficient backwash of the filter media, resulting in an increase in pressure drop and/or a reduction of the filtration capacity during the service cycle.
- if installed on a well, verify that the well pump is powerful enough to provide sufficient flow rate for the backwash cycle.
- 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: 4-48 °C / 39-120 °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:**

- this appliance only works on 24 VAC; always use it in combination with the supplied transformer.
- in case of damage to the power supply cable of the transformer, immediately disconnect the transformer from the power outlet and replace the transformer.

OPERATING CONDITIONS & REQUIREMENTS

- 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.

ASSEMBLY

CONTENT CHECK

- Actual parts that you have received, may differ from the pictures/illustrations in these Instructions!*
- Only on systems with ≥ 3 cuft of filter media: for ease of transportation and installation, the filter media is NOT loaded in the pressure tank, but delivered in separate bags of 1 cuft; it must be loaded on-site, after positioning of the pressure tank.*

Check the content of the system, using the Composition Overview in these Instructions. Identify and lay-out the different components to facilitate the assembly.

SIMPLEX

Picture 1.a, 2.a, 3.a

A Simplex system consists of 1 single filter module (pressure tank, filter media, control valve).

During normal operation, the system delivers treated water. As soon as it initiates a regeneration, it automatically goes into bypass, guaranteeing uninterrupted supply of untreated water.

It is possible to install a so called Normally Open Service Valve (e.g. a solenoid operated diaphragm valve) in the outlet of the system, that is controlled by the electronic timer of the system; this Service Valve will be activated during the entire duration of the regeneration, to close-off the control valve's standard 'untreated water bypass during regeneration'.

MULTIPLEX PARALLEL

Picture 4

A Multiplex **PARALLEL** system consists of 2 or more Simplex systems, that:

- are hydraulically installed **in parallel**;
- are programmed for different times of regeneration;
- may have a so called Normally Open Service Valve (e.g. a solenoid operated diaphragm valve) in the outlet of each Simplex system, that is controlled by the electronic timer of each Simplex system; this Service Valve will be activated during the entire duration of the regeneration, to close-off the control valve's standard 'untreated water bypass during regeneration'.

During normal operation, all Simplex systems are in service, doubling/tripling/... the service flow rate!

In case of a power failure, all Service Valves will be deactivated, meaning the outlet of all Simplex systems will be open, guaranteeing uninterrupted supply of water.

FILTER MEDIA LOADING (only on systems with ≥ 3 cuft of filter media)

- The filter media may contain some dust. Make sure to wear appropriate personal protective equipment when filling the pressure tank with filter media*

1. Move the pressure tank to the correct installation location; position it on a flat and level surface. Make sure to leave enough space for ease of service.
2. Position the riser assembly upright and centred in the pressure tank; plug the top of the riser tube with a piece of tape or clean rag, to prevent filter media from entering the tube.
3. Place a funnel on the pressure tank opening and fill the pressure tank with filter media; make sure the riser assembly remains centered in the pressure tank.
4. Rinse the pressure tank opening to remove any grains of filter media from the threaded section.
5. Unplug the top of the riser tube.

CONTROL VALVE

only for PF-OXY1

1. Make sure the O-ring in the riser insert and the tank O-ring (around the threaded section of the control valve) are in the correct position.
2. Screw the top distributor onto the control valve.
3. Lubricate the threaded section of the pressure tank, the top of the riser tube and the tank O-ring of the control valve; use a silicon-based lubricant.
4. Lower the control valve straight down onto the riser tube, until the riser tube is correctly inserted in the riser insert; then push it down firmly and screw it onto the pressure tank.

only for PF-OXY1,5

Picture 5

1. On the brass valve seat:
 - make sure the O-ring in the riser insert is in the correct position;
 - install the top distributor and fix it by means of the 2 stainless steel screws;
 - install the tank O-ring in the groove on the flange around the threaded section.
2. Lubricate the threaded section of the pressure tank, the top of the riser tube and the tank O-ring of the valve seat; use a silicon-based lubricant.
3. Lower the valve seat straight down onto the riser tube, until the riser tube is correctly inserted in the riser insert inside the valve seat; then push it down firmly and screw it onto the pressure tank.
4. Install the valve seat O-ring in the groove on the valve seat.
5. Install the control valve onto the valve seat; mind the alignment pin!
6. Bolt the control valve to the valve seat by means of the 4 stainless steel bolts; tighten firmly.

AIR INJECTION SYSTEM

only for PF-OXY1

 **Picture 6.a**

Make sure the air injection system is installed in vertical position, with the check valve and air intake filter screen pointing upwards. Rotate it to this position if necessary.

only for PF-OXY1,5

 **Picture 6.b**

1. Install the air injection system on the control valve; tighten the nut firmly by hand.

INSTALLATION

INLET & OUTLET

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.

We strongly recommend the installation of a 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 full-flow (untreated) water supply to the user.

To prevent air from escaping from the compressed air chamber, make sure the inlet line runs vertically upwards into the water filter. If this is not possible, install a check valve in the inlet line.

only for PF-OXY1: with factory bypass (optional)

Picture 1

- ❶ = mains water supply (untreated water)
- ❷ = inlet of control valve (untreated water)
- ❸ = outlet of control valve (treated water)
- ❹ = application (treated water)

1. Screw the factory bypass onto the in/out ports on the control valve (❷&❸); make sure to install the gasket seals. Tighten the nuts firmly by hand.
2. Screw the connection kit with nuts onto the factory bypass (❶&❹); 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 (❶).
4. Connect the application to the adaptor on the outlet port of the factory bypass (❹).

only for PF-OXY1: with 3-valve connection kit (not included)

Picture 2

- ❶ = inlet of control valve (untreated water)
- ❷ = outlet of control valve (treated water)

1. Install the 3-valve connection kit.
2. Screw the connection kit with nuts onto the in/out ports on the control valve (❶&❷); make sure to install the gasket seals. Tighten the nuts firmly by hand.
3. Connect the IN valve of the 3-valve connection kit to the adaptor on the in port of the control valve (❶).
4. Connect the OUT valve of the 3-valve connection kit to the adaptor on the out port of the control valve (❷).
5. Connect the mains water supply to the inlet of the 3-valve connection kit.
6. Connect the application to the outlet of the 3-valve connection kit.

only for PF-OXY1,5: with 3-valve connection kit (not incl.)

Picture 3

- ❶ = inlet of control valve (untreated water)
- ❷ = outlet of control valve (treated water)

1. Install the 3-valve connection kit.

2. Insert the adaptors in the in/out ports on the control valve (❶&❷); make sure not to damage the O-rings. Install the nuts and tighten them firmly by hand.
3. Connect the IN valve of the 3-valve connection kit to the adaptor on the in port of the control valve (❶).
4. Connect the OUT valve of the 3-valve connection kit to the adaptor on the out port of the control valve (❷).
5. Connect the mains water supply to the inlet of the 3-valve connection kit.
6. Connect the application to the outlet of the 3-valve connection kit.

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 a drain adaptor with air gap (included with PF-OXY1), to connect the drain hose to the sewerage system.

Lay-out the drain hose 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.

only for PF-OXY1

Picture 7

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 connection of the control valve (❶); 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.

only for PF-OXY1,5:

Picture 8

1. Connect a pipe to the 1" BSP Male drain connection of the control valve (❶); use an appropriate sealant.
2. Run the pipe to the sewerage system and connect it, ensuring sufficient air gap between the end of the pipe and the sewerage system. This drain line operates under pressure, so it may be installed higher than the appliance.

SERVICE VALVE (optional)

Picture 9

1. Plug the DIN plug on the connection cable of the Service Valve into the DIN socket at the back of the electronic timer head of the control valve (❶).

COMMISSIONING

ELECTRICAL

1. Connect the appliances power cord to the transformers output.
2. Plug the transformer into an electrical outlet.

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 faucet.
5. Gently pressurize the appliance, by putting it into service:
 - close the 'BYPASS' valve;
 - open the 'OUT' valve;
 - slowly open the 'IN' 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 filter media is rinsed (it is normal for the rinse water to show some discoloration!); let the water run until the rinse water is clear; close the faucet.
7. Check the appliance and all hydraulic connections for leaks.

During the passage through the compressed air chamber, the treated water will get highly oxygenated. As a consequence it may become slightly non-transparent (milky appearance) when it flows from the tap into a glass. This is totally harmless for the quality of the treated water and will disappear rapidly if the water is left standing for a moment!

ELECTRONIC CONTROL PANEL

1. Program the electronic controller.

INITIATE A REGENERATION

We recommend to postpone the execution of this 'start-up' regeneration by at least 2 hours. The filter media needs sufficient time to absorb water and reach its normal service weight. If the regeneration is performed too soon, the filter media may be pushed against the top distributor during the backwash cycle, possibly resulting in loss of filter media or damage to the top distributor.

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 count-down timer will count down to 0 sec and start a regeneration.

ELECTRONIC CONTROL PANEL

Picture 10

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

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 control valve will remain in its last position; when the power supply is re-established, the control valve will return to the service position, stay there for 60 sec. and restart a complete regeneration from the beginning.

TIMER FAILURE

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

Service Required

If powering off/on the appliance doesn't solve this problem, professional service is required.

MAINTENANCE REMINDER

Once the maintenance interval is reached, the display will intermittently show the message:

Maintenance Now

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

SERVICE MODE

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

8:01 4 DAY REM

REGENERATION MODE

In **regeneration mode** the display shows the actual regeneration cycle and, where relevant, the total remaining regeneration time and the remaining cycle time:

RECHARGING AIR

Rgn:123 CycY:456

The appliance can be **reset to service mode** at any time by pressing the **scroll** button, as such manually advancing it through the regeneration cycles.

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; the control panel will return to the service mode.

HOLIDAY MODE

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!

ELECTRONIC CONTROL PANEL

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.

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

Rech. daily: ON

- Press the **up**  or **down**  button to activate/deactivate the daily recharge of the compressed air chamber.

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

Interval: 4 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 filtration capacity of the appliance mainly depends on the daily water usage and the iron/manganese content in the water; many other factors may also have a significant impact on the filtration capacity. Therefore it is recommended to regenerate the appliance on a regular time basis. In most applications a regeneration every 3 to 4 days should be sufficient.

In case of excessive:

- iron/manganese content,
- water consumption,
- amounts of organic matter or suspended solids,

it is recommended to lower the regeneration interval to 1 or max. 2 days.

PROGRAMMING INSTRUCTIONS - CONFIGURATION PARAMETERS

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

All configuration parameters on this appliance have been pre-programmed in the factory, to offer optimal performance in a wide range of applications and situations. Nevertheless it may be necessary or desirable to change any of these parameters, to further optimize the appliances performance or to adapt it to the specific requirements of the installation.

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 6 sec until the display shows:

System Check

2. Within 10 sec, press the **up**  button; the display will show:

Units: Metric

- Press the **up**  or **down**  button to set the units of measure (Metric or US).

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

MaintInt: 24mths

- Press the **up**  or **down**  button to activate the maintenance reminder function by setting the maintenance interval, or deactivate the maintenance reminder function.

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

Cycle 1: XX min

- Press the **up**  or **down**  button to set the length of the regeneration cycle.
- Press the **scroll**  button again to advance to the next regeneration cycle.

Cycle 1	Backwash
Cycle 2	Air intake
Cycle 3	Fast rinse
Cycle 4	No function (PF-OXY1,5)

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

Regen @ 0:00

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

6. 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.

ELECTRONIC CONTROL PANEL

DIAGNOSTICS MODE

- ☑ *Before entering the Diagnostics mode, make sure that the appliance is in service mode.*
- ☑ *In the Diagnostics mode several operating parameters can be consulted; particularly during a service intervention, these parameters can be helpful to identify the cause of a problem or malfunction.*
- ☑ *In case no button is pressed in a period of 5 min, the control panel will automatically return to the service mode!*

Accessing the Diagnostics mode

1. Press the **scroll** ⤴ button and hold it for 5 sec until the display shows:

System Check

2. Within 10 sec, press the **down** ⬇ button; the display will show:

Regen XXdays ago

- You are now in the Diagnostics mode.
- Press the **scroll** ⤴ button to advance to the next diagnostics parameter.

Available diagnostics parameters

- **Regen X days ago**: number of days since last regeneration.
- **In Srvc**: total number of days in service.
- **# of Regens**: number of regenerations since installation.
- **Regen @**: setting of time of regeneration.
- **Rech. Daily**: setting of daily recharge of the compressed air chamber
- **Interval**: setting of number of days between regenerations.
- **Cycle X**: setting of length of corresponding regeneration cycle.
- **Units**: control is programmed for Metric units.
- **Valve Type**: setting of valve type.
- **MP Resets**: number of resets of the microprocessor.
- **Memory Reset**: number of corrupt memory start-ups.
- **EZRSDg**: software version.

Exiting the Diagnostics mode

1. If no button is pressed within 5 minutes, the microprocessor will exit the diagnostics level and return to the service mode.
2. Press the **scroll** ⤴ button repeatedly until the display shows:

Exit

- Press the **up** ⬆ or **down** ⬇ button to exit the Diagnostics mode.

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. Check water composition before/after appliance.
3. Check drain line from control valve; there shouldn't be any water flow (unless appliance is in regeneration).
4. 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 application.

WITH FACTORY BYPASS (optional) (only for PF-OXY1)

Picture 11.a

SERVICE POSITION

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

Picture 11.b

BYPASS POSITION

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

Picture 11.c

MAINTENANCE POSITION

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

CLEANING THE FILTER MEDIA

Other contaminants (f.e. suspended solids or organic matter) present in the water can cause the filter media to get:

- prematurely clogged, resulting in inadequate backwashing and loss of filtration capacity,
- fouled, resulting in a loss of oxidizing capacity.

In case of premature clogging of the filter media, the filter media must be backwashed 'aggressively'.

1. If possible, increase the inlet pressure.
2. Remove the backwash flow control from the drain outlet of the control valve.
3. Manually initiate a regeneration, by pressing the **scroll**  button; the display will show:

Regen in 10 sec

4. Leave the appliance in this position; the count-down timer will count down to 0 sec and start a regeneration.
5. As soon as the control valve has reached cycle 1 (= backwash cycle), unplug the transformer from the electrical outlet.
6. Leave the appliance in the backwash position for at least 20 min, to thoroughly backwash the filter media.
7. Plug the transformer back into an electrical outlet; the control valve will return to the service position, stay there for 60 sec. and restart a complete regeneration from the beginning.

We strongly recommend to lower the regeneration interval to prevent premature clogging of the filter media in the future.

In case of fouling of the filter media, the filter media should be regenerated using an oxidizing agent, such as potassium permanganate (KMnO₄).

Picture 6

1. Prepare the regeneration solution by mixing in a recipient:
 - KMnO₄: ±2 gr per liter of filter media,
 - water: ±5 cl per gram of potassium permanganate.
2. Manually initiate a regeneration, by pressing the **scroll**  button; the display will show:

Regen in 10 sec

3. Leave the appliance in this position; the count-down timer will count down to 0 sec and start a regeneration.
4. As soon as the control valve has reached cycle 2 (= air suction), remove the air intake filter from the check valve of the air injection system.
5. Insert one end of a piece of 3/8" polytube into the check valve of the air injection system and the other end of the polytube in the recipient with the regeneration solution, to suck up the regeneration solution.
6. As soon as the recipient is empty, remove the polytube from the check valve of the air injection system and reinstall the air intake filter.
7. Press the **scroll**  button to advance the control valve to cycle 3 (fast rinse).
8. As soon as the rinse water to the drain turns pink, put the appliance hydraulically in bypass.
9. Leave the appliance in this position for at least 2 hrs, to thoroughly soak the filter media.

MAINTENANCE

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

Regen in 10 sec

11. Leave the appliance in this position; the count-down timer will count down to 0 sec and start a regeneration.
12. As soon as the control valve has reached cycle 1 (= backwash cycle), put the appliance hydraulically back in service and unplug the transformer from the electrical outlet.
13. Leave the appliance in the backwash position for at least 20 min, to thoroughly backwash the filter media.
14. Plug the transformer back into an electrical outlet; the control valve will return to the service position, stay there for 60 sec. and restart a complete regeneration from the beginning.

SANITIZING THE APPLIANCE

The appliance is manufactured from premium quality material and assembled in safe conditions to assure it is clean and sanitary. If installed and serviced correctly, the 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 the appliance will automatically rinse the filter media periodically.

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

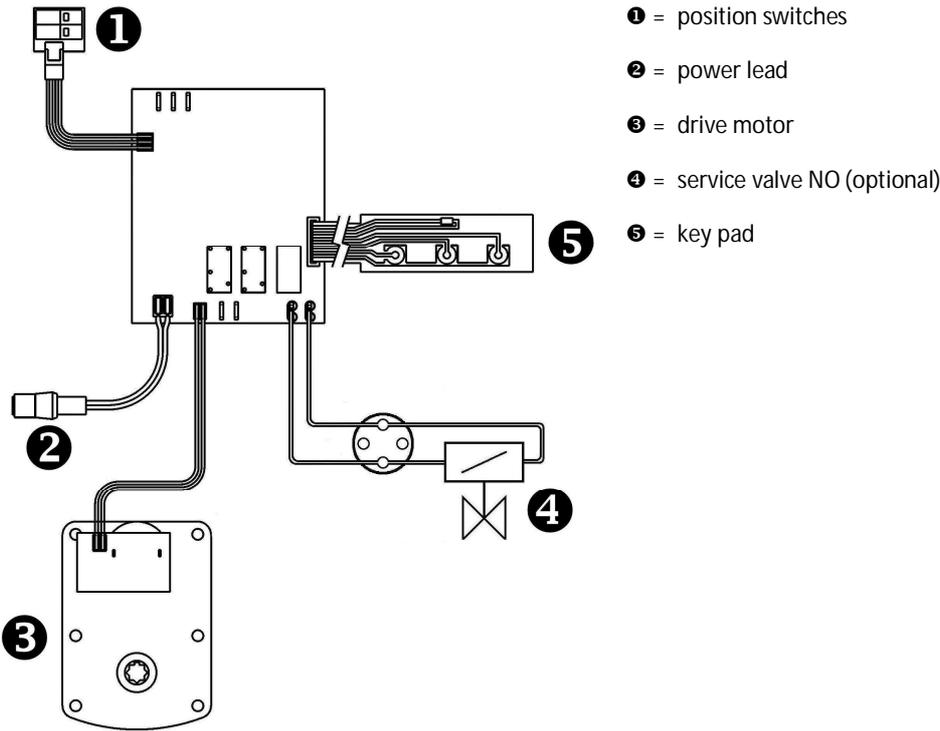
PROBLEM	CAUSE	SOLUTION
Untreated water to service	Open or defective bypass	Close or replace bypass
	Appliance in regeneration	Wait until regeneration finishes or manually advance regeneration to end
	Excessive water usage	Initiate regeneration manually
	Change in raw water composition	Verify composition of incoming untreated water and adjust regeneration frequency accordingly
	Appliance fails to start a regeneration	Refer to problem "Appliance fails to start a regeneration"
	Appliance fails to backwash properly	Refer to problem "Appliance fails to backwash properly"
	<i>PF-OXY1 only</i> : valve body and timer out of synchronisation	Synchronise 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 between riser tube and control valve body	Verify that riser tube is seated correctly and is not cracked
Low levels of contaminant in treated water	Bypass not completely closed	Close bypass
	Excessive service flow rate	Lower service flow rate Increase filter capacity by increasing volume of filter media
	Appliance fails to backwash properly	Refer to problem "Appliance fails to backwash properly"
	Leak between riser tube and control valve body	Verify that riser tube is seated correctly and is not cracked
Air from compressed air chamber rapidly escapes to outlet	Leak between riser tube and control valve body	Verify that riser tube is sealing off correctly inside control valve body
	Bypass between inlet and outlet of system	<i>PF-OXY1 only</i> : check that mixing valve on factory bypass is completely closed Check that bypass valve on 3-valve bypass system is closed
	Valve body and timer out of synchronisation	Synchronise valve body and timer
Treated water is slightly non-transparent and/or effervescent	Passage through compressed air chamber causes water to become highly oxygenated	Totally harmless for quality of the treated water and will disappear rapidly if water is left standing for a moment
Appliance fails to start a regeneration	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
Loss of water pressure	Build-up of impurities in pressure tank	Clean filter media and control valve; increase regeneration frequency
	Plugged lower and/or upper distributor	Verify that distributors are free of debris
Drain line from control valve flows continuously	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
	<i>PF-OXY1 only</i> : defective micro switch	Replace micro switches
	<i>PF-OXY1,5 only</i> : defective optical switch	Replace optical switch
	Defective PCB	Replace PCB
<i>PF-OXY1 only</i> : valve body and timer out of synchronisation	Synchronise valve body and timer	
Loss of filter media	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

TROUBLESHOOTING

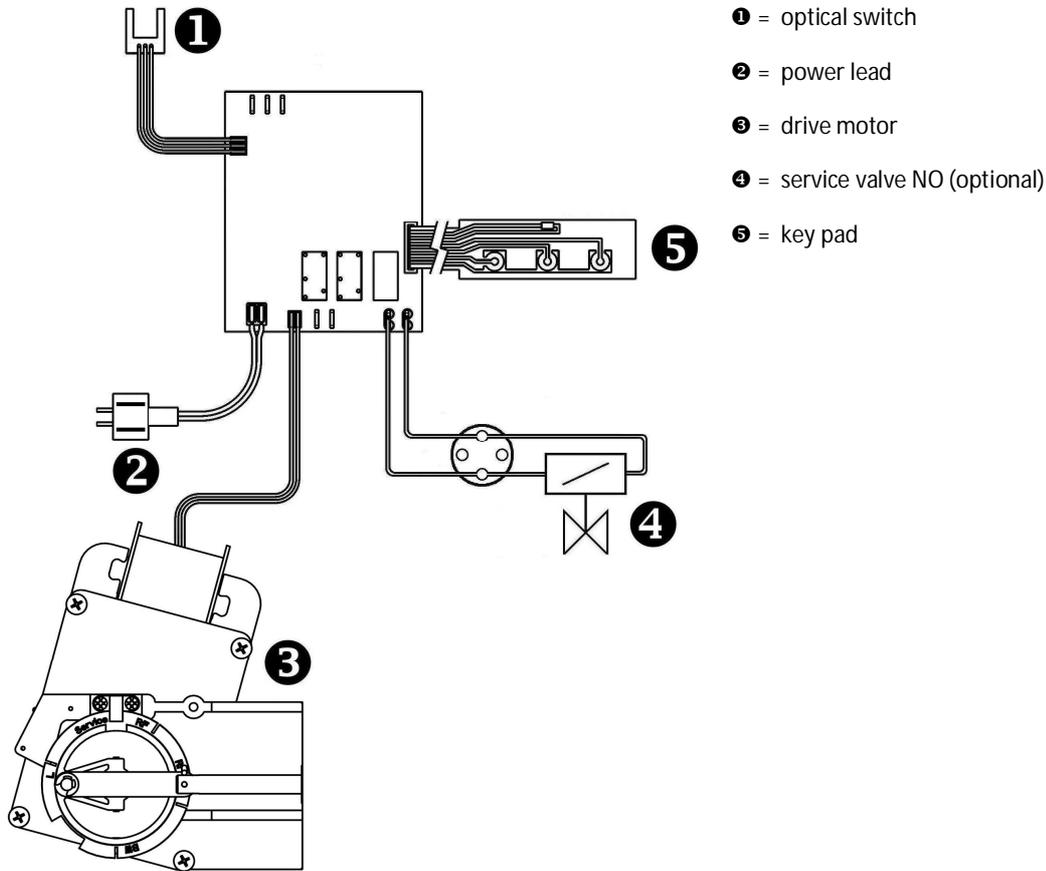
PROBLEM	CAUSE	SOLUTION
Appliance fails to backwash properly	Low operating pressure	Check operating pressure; must be higher than 2,5 bar
	Insufficient water supply	Check water supply (flow rate/dynamic pressure)
	Restricted drain line	Verify drain line for kinks or restrictions
	Excessive build-up of impurities in pressure tank	Clean or replace filter media and control valve; increase regeneration frequency; increase backwash flow rate
	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
Control valve cycles continuously	<i>PF-OXY1 only:</i> defective micro switch <i>PF-OXY1,5 only:</i> defective optical switch	Replace micro switches Replace optical switch

ELECTRICAL WIRING DIAGRAMS

PF-OXY1



PF-OXY1,5



DEFAULT CONFIGURATION PARAMETER SETTINGS

Model	PF-OXY1		
Filter media (cuft)	1	2	3
Units	Metric	Metric	Metric
MaintInt (mths)	24	24	24
Cycle 1: BACKWASH (min)	10	10	10
Cycle 2: AIR INTAKE (min)	10	20	30
Cycle 3: PURGE (min)	1	1	1
Regen @	0:00	0:00	0:00

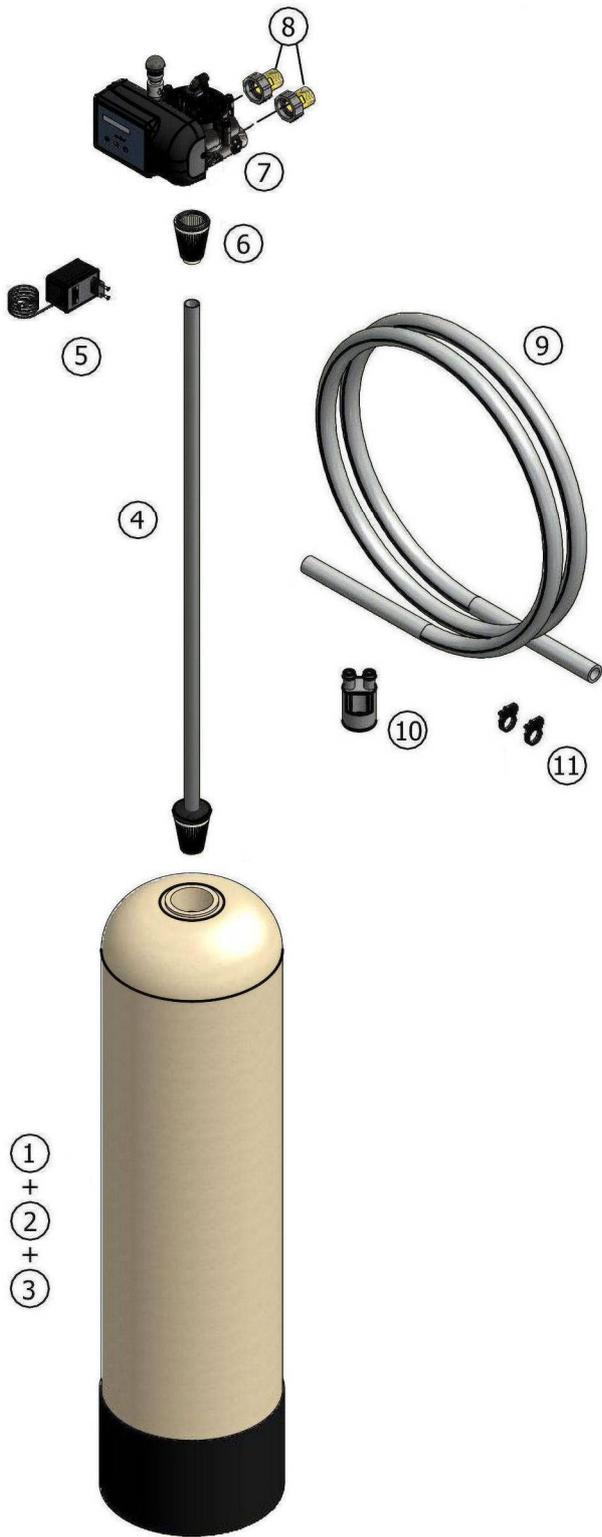
Model	PF-OXY1,5				
Filter media (cuft)	3	4	5	7	10
Units	Metric	Metric	Metric	Metric	Metric
MaintInt (mths)	24	24	24	24	24
Cycle 1: BACKWASH (min)	10	10	10	10	10
Cycle 2: AIR INTAKE (min)	9	12	15	21	30
Cycle 3: PURGE (min)	1	1	1	1	1
Cycle 4: no function	0	0	0	0	0
Regen @	0:00	0:00	0:00	0:00	0:00

COMPOSITION OVERVIEW

Model	Media volume	PN	Control valve, incl. transformer, 1" male BSP connections		Pressure tank, incl. distributor assy		Underbedding		Filter media (1 cuft bag)	
	cuft		model	#	model	#	type	ltr	type	#
PF-OXY1	1	35669	2400TF/J5N/SV/AIR	1	10x40	1	Gravel 2-4 mm	4	Birm	1
	2	35670	2400TF/J5Q/SV/AIR	1	12x52	1	Gravel 2-4 mm	6	Birm	2
	3	35708	2400TF/J5S/SV/AIR	1	14x65	1	Gravel 2-4 mm	8	Birm	3

Model	Media volume	PN	Control valve, incl. transformer, 1,5" male BSP connections		Pressure tank, incl. distributor assy		Underbedding		Filter media (1 cuft bag)	
	cuft		model	#	model	#	type	ltr	type	#
PF-OXY1,5	3	35862	EV1.5TF/J/100/AIR	1	14x65	1	Gravel 2-4 mm	12	Birm	3
	4	35863	EV1.5TF/J/150/AIR	1	16x65	1	Gravel 2-4 mm	15	Birm	4
	5	35864	EV1.5TF/J/200/AIR	1	18x65	1	Gravel 2-4 mm	18	Birm	5
	7	35865	EV1.5TF/J/250/AIR	1	21x62	1	Gravel 2-4 mm	22	Birm	7
	10	35866	EV1.5TF/J/350/AIR	1	24x72	1	Gravel 2-4 mm	26	Birm	10

EXPLODED VIEW - PF-OXY1 - SYSTEM

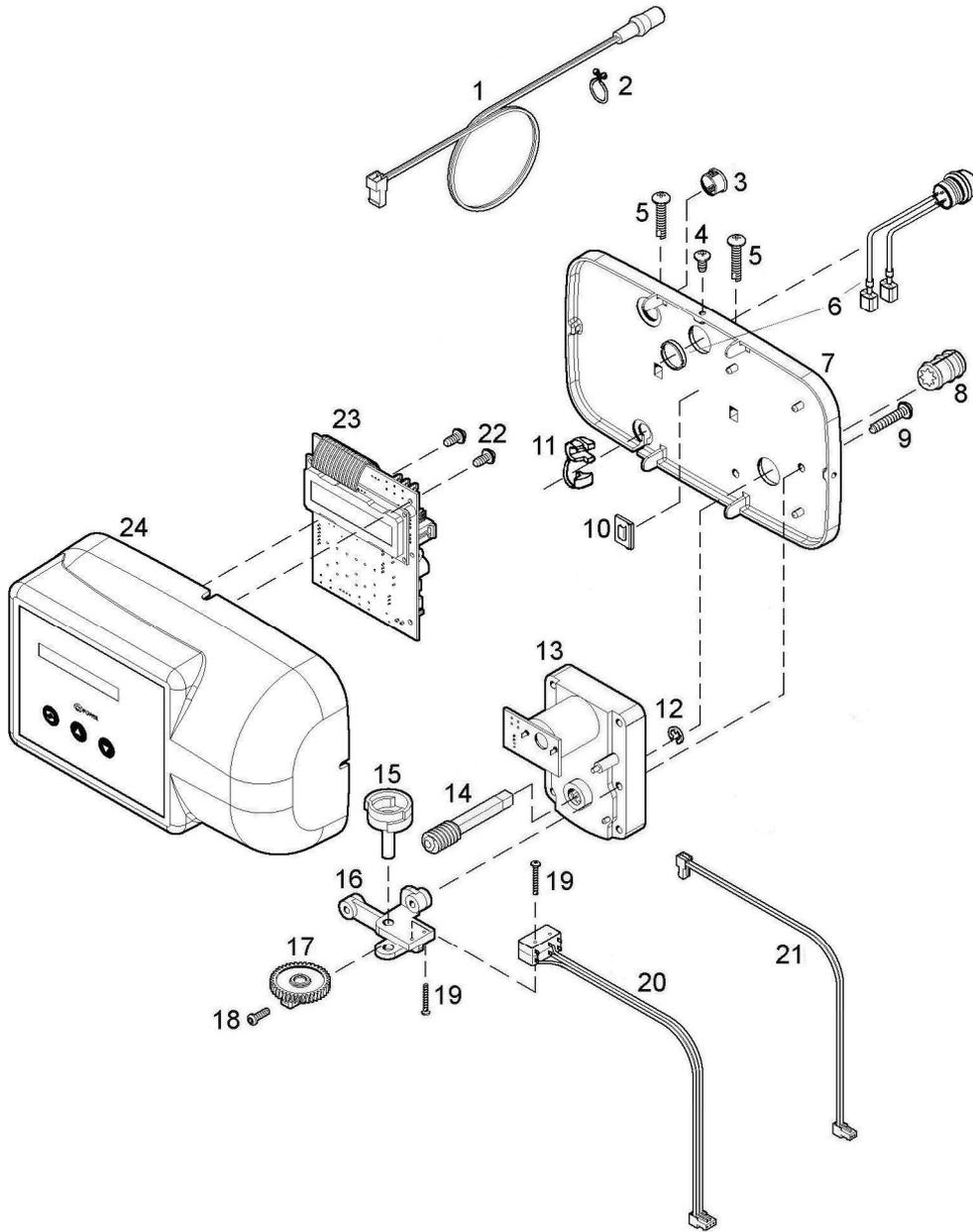


EXPLODED VIEW - PF-OXY1 - SYSTEM

Item	PN	Description	Remark	(*)
1	PT/1040/BA	Pressure tank 10x40	1 cuft	✓
	PT/1252/BA	Pressure tank 12x52	2 cuft	✓
	PT/1465/BA	Pressure tank 14x65	3 cuft	✓
2	A8006	Birm	multiple of 1 cuft	✓
3	A1000	Gravel	multiple of 25 kg (=17 ltr)	
4	39116	Riser tube assembly	to be cut to length	✓
5	28/298/11	Transformer 230/24V - 50 Hz, 24VA, EuroT plug		✓
	28/298/18	Transformer 230/24V - 50 Hz, 24VA, UK plug		✓
6	287/166/LS	Top distributor (large slots)		✓
7	2400TF/J5N/SV/AIR	Control valve	1 cuft	
	2400TF/J5Q/SV/AIR	Control valve	2 cuft	
	2400TF/J5S/SV/AIR	Control valve	3 cuft	
8	568/303/1	Connection kit 1" BSP male		✓
9	38522	Drain hose	to be ordered per meter	✓
10	74163	Air gap with double hose barb		
11	38521	Clamp, drain hose (2x)		

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1 - TIMER ASSEMBLY

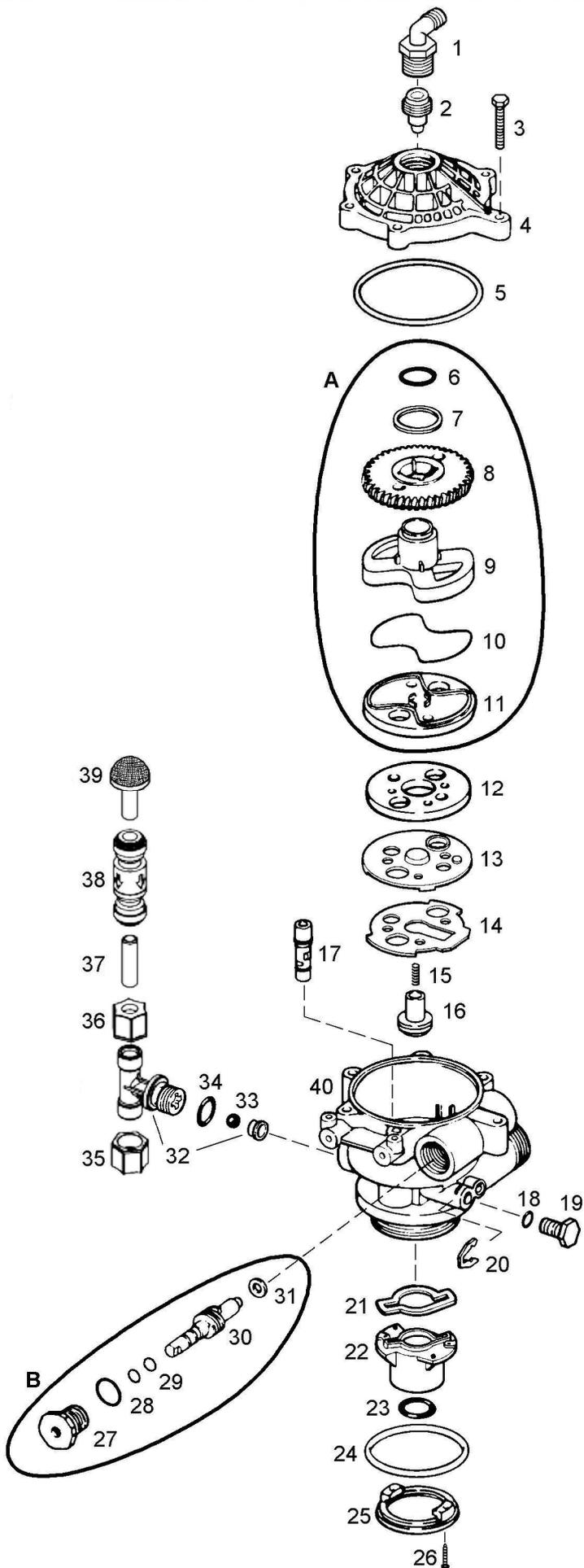


EXPLODED VIEW - PF-OXY1 - TIMER ASSEMBLY

Item	PN	Description	Remark	(*)
1	70971	Power lead with plug		✓
2	72263	Clamp		
3	28/244/1	Plug (large)		
4	71502	Screw, timer cover (3x)		
5	15/222	Screw, back plate (2x)		
6	74135	Socket and cable assembly, Service Valve		
7	74251	Back plate		
8	75157	Worm coupling		✓
9	15/222	Screw, drive motor assembly (2x)		
10	74267	Cable clamp		
11	70312	Strain relief, power lead		
12	75158	Retaining ring, worm drive shaft		✓
13	72261	Drive motor		✓
14	75156	Worm drive shaft		✓
15	70965	Switch cam		
16	568/386	Bracket, micro switches		
17	568/310	Gear, switch cam		
18	15/184/7	Locking screw, switch cam		
19	15/173/12	Screw, micro switches (2x)		
20	72451	Micro switch assy		✓
21	71679	Cable set, drive motor		✓
22	15/102	Screw, PCB (2x)		
23	74282	Printed Circuit Board		✓
24	72614	Timer cover assembly		

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1 - VALVE BODY

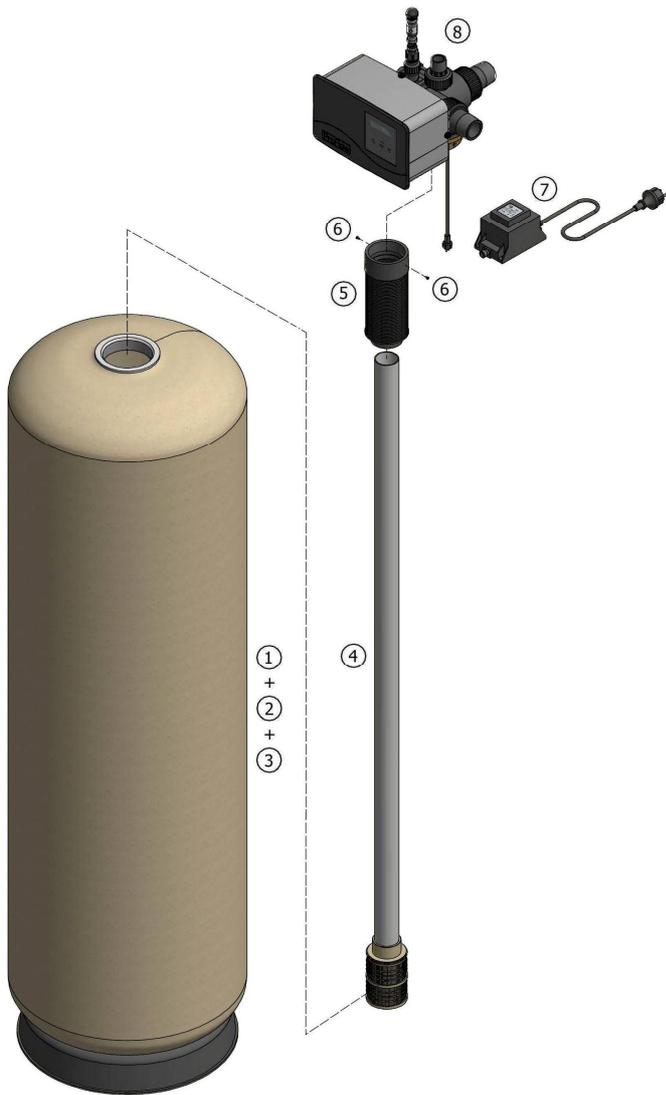


EXPLODED VIEW - PF-OXY1 - VALVE BODY

Item	PN	Description	Remark	(*)
1	21/83	Drain connection		
2	568/271/N 568/271/Q 568/271/S	Backwash flow control N (22,7 Ltr/min) Backwash flow control Q (30,3 Ltr/min) Backwash flow control S (37,8 Ltr/min)	1 cuft 2 cuft 3 cuft	
3	72678	Bolt, valve cover (6x)		
4	568/254/3	Valve cover		
5	185/154/1	O-ring, valve cover		
6	186/112	O-ring, Teflon		
7	72327	Washer, PE		
8	568/260	Worm gear		
9	568/259	Rotor cam		
10	185/041/1	O-ring, rotor		
11	568/345/2	Rotor plate		✓
12	568/256	Seal disk		✓
13	568/383	Insert plate		
14	568/384	Gasket		
15	51/5/105	Spring, float valve		
16	568/270/4	Float valve		
17	568/274/5	Injector (green)		
18	186/118	O-ring, plug (small)		
19	541/273	Plug (small)		
20	541/254	Spring clip, plug (small)		
21	570/251	Gasket, riser		
22	568/334	Riser insert		
23	185/214/1	O-ring, riser tube		
24	185/337/1	O-ring, tank		
25	541/232	Adapter ring		
26	15/207/12	Screw, adapter ring (2x)		
27	72772	Packing gland nut (plastic)		
28	185/211/1	O-ring, packing gland nut		
29	186/115	O-ring, worm drive shaft (2x)		
30	568/208/2	Worm drive shaft		
31	14/43	Washer, worm drive shaft		
32	568/340	Air intake Tee		✓
33	26/47/12N	Check ball, air intake Tee		
34	185/208/1	O-ring, air intake Tee		
35	38812	Blind nut		
36	21/88	Nut, air intake Tee		
37	18772	Extension tube (2x)		
38	19734	Check valve		✓
39	19856	Air intake screen		
40	72800	Valve body		
A	RK/568/259/2	Repair kit rotor		✓
B	RK/75154	Repair kit packing gland nut		

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1,5 - SYSTEM

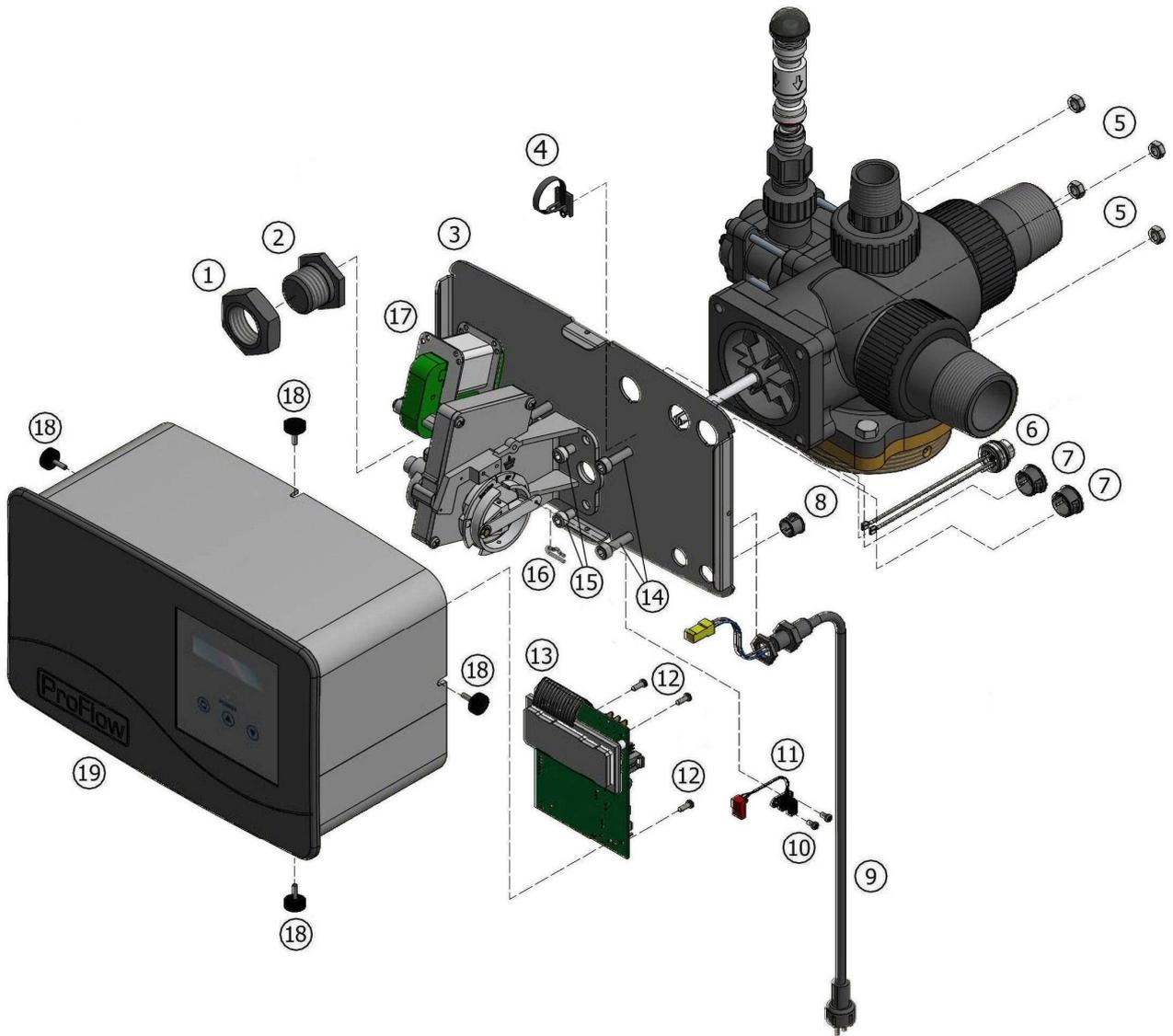


EXPLODED VIEW - PF-OXY1,5 - SYSTEM

Item	PN	Description	Remark	(*)
1	PT/1465/4/BA	Pressure tank 14x65, 4" top opening	3 cuft	✓
	PT/1665/4/BA	Pressure tank 16x65, 4" top opening	4 cuft	✓
	PT/1865/4/BA	Pressure tank 18x65, 4" top opening	5 cuft	✓
	PT/2162/4/BA	Pressure tank 21x62, 4" top opening	7 cuft	✓
	PT/2472/4/BA	Pressure tank 24x72, 4" top opening	10 cuft	✓
2	A8006	Birm	multiple of 1 cuft	✓
3	A1000	Gravel	multiple of 25 kg (=17 ltr)	
4	39107	Riser tube assembly	to be cut to length	✓
5	EV/TD/LS	Top distributor (large slots)		✓
6	EV/20533	Screw, top distributor		
7	28/500/11/IL	Transformer 230/24V - 50 Hz, 120VA, EuroT plug		✓
	28/500/18/IL	Transformer 230/24V - 50 Hz, 120VA, UK plug		✓
8	EV1.5TF/J/100/AIR	Control valve	3 cuft	
	EV1.5TF/J/150/AIR	Control valve	4 cuft	
	EV1.5TF/J/200/AIR	Control valve	5 cuft	
	EV1.5TF/J/250/AIR	Control valve	7 cuft	
	EV1.5TF/J/350/AIR	Control valve	10 cuft	

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1,5 - TIMER ASSEMBLY

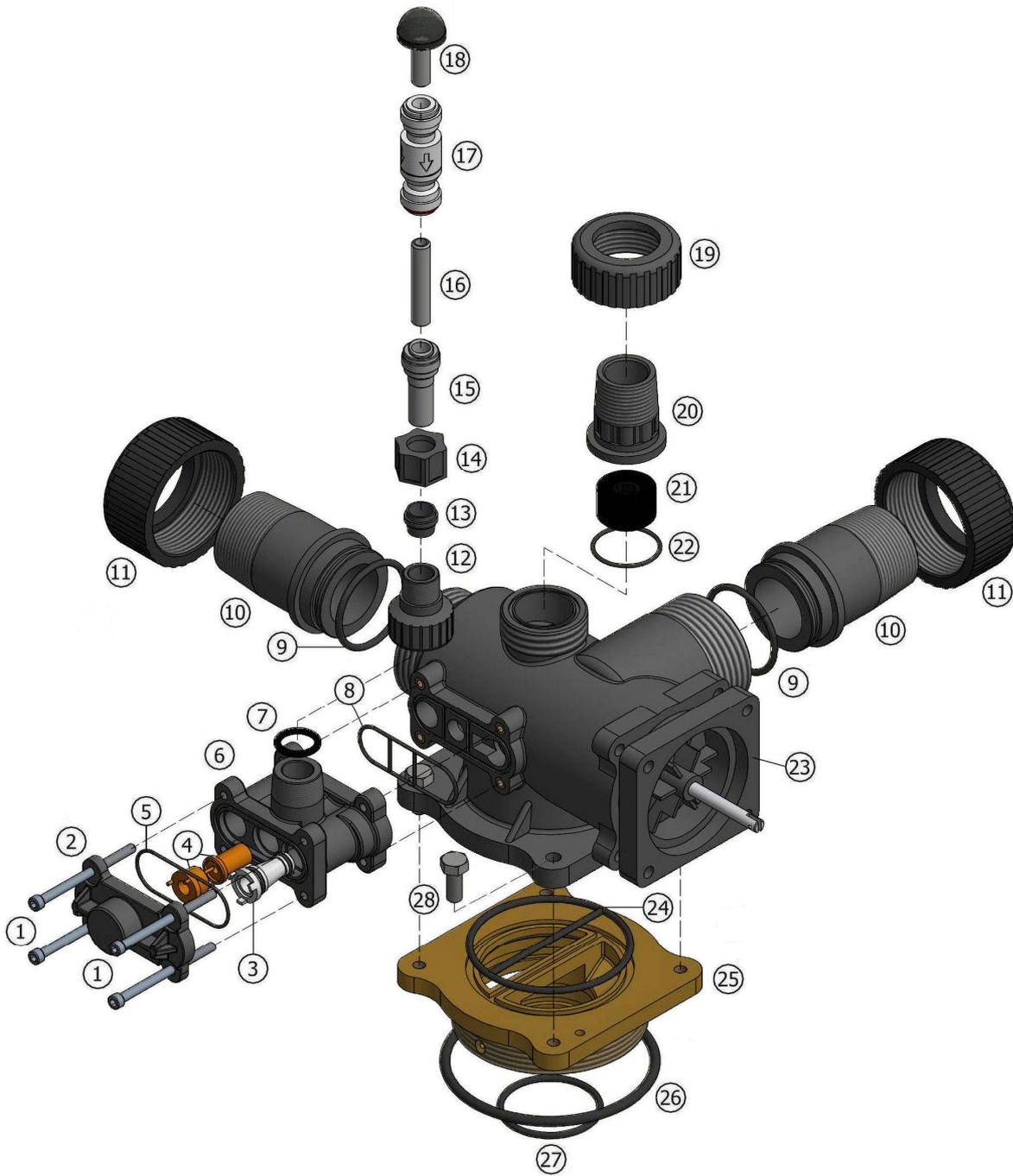


EXPLODED VIEW - PF-OXY1,5 - TIMER ASSEMBLY

Item	PN	Description	Remark	(*)
1	EV/50195	Nut, drive motor assembly		
2	EV/11538	Bolt, drive motor assembly		
3	EV/20644/1	Back plate		
4	74267	Cable clamp		
5	EV/20648	Nut, back plate (4x)		
6	74224	Socket and cable assembly, Service Valve		
7	74226	Plug (large) (2x)		
8	28/244/1	Plug (small)		
9	28/500/11	Power lead with plug	incl. with transformer	
10	EV/20761	Screw, optical sensor (2x)		
11	74235	Optical sensor		✓
12	15/102	Screw, PCB (3x)		
13	74281	Printed Circuit Board		✓
14	EV/20647	Bolt, back plate (4x)		
15	EV/20649	Bolt, drive motor assembly (2x)		
16	EV/20653	R spring pin		
17	EV/20960	Drive motor assembly		
18	EV/11125	Screw, timer cover (4x)		
19	74206	Timer cover assembly		

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1,5 - VALVE BODY

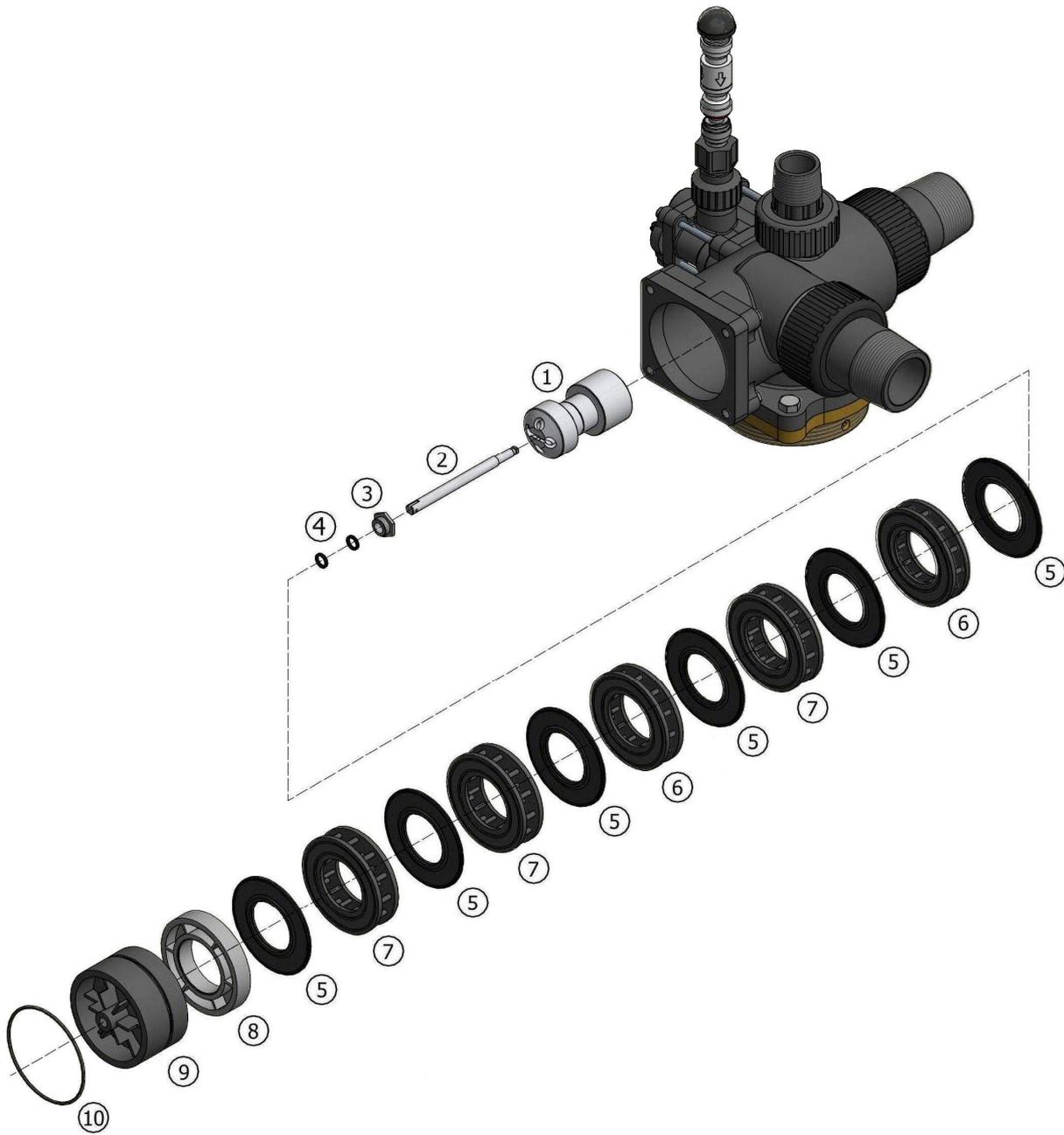


EXPLODED VIEW - PF-OXY1,5 - VALVE BODY

Item	PN	Description	Remark	(*)
1	EV/20660	Bolt, cover plate (4x)		
2	EV/11101/1	Cover plate		
3	EV/11537	Plug		
4	74237	Injector 6 (orange)		
5	EV/11118	Gasket, cover plate		✓
6	EV/11097	Injector block		
7	EV/11085	Gasket, injector block adaptor		
8	EV/11115	Gasket, injector block		✓
9	EV/11092	O-ring, inlet/outlet adaptor (2x)		✓
10	EV/11094-1	Inlet/outlet adaptor 1,5" BSP Male (2x)		
11	EV/11093	Nut, inlet/outlet adaptor (2x)		
12	EV/11095	Adaptor, injector block		
13	EV/10983	Compression ring ½"		
14	EV/10982	Nut, compression connection ½"		
15	74252	Adaptor ½" stem - ⅜" PushFit		
16	18772	Extension tube		
17	19734	Check valve		✓
18	19856	Air intake screen		
19	EV/11089	Nut, drain adaptor		
20	EV/11090	Drain adaptor 1" BSP male		
21	74245 74246 74247 74254 74255	Drain Line Flow Controller 10.0 GPM Drain Line Flow Controller 15.0 GPM Drain Line Flow Controller 20.0 GPM Drain Line Flow Controller 25.0 GPM Drain Line flow Controller 35.0 GPM	3 cuft 4 cuft 5 cuft 7 cuft 10 cuft	
22	EV/11088	O-ring, drain adaptor		
23	EV/11075	Front plate		
24	EV/11114	Gasket, valve seat		
25	EV/11113	Valve seat		
26	EV/11273	O-ring, tank		
27	EV/11374	O-ring, riser tube		
28	EV/20658	Bolt, valve seat (4x)		

(*) Recommended Spare Part

EXPLODED VIEW - PF-OXY1,5 - PISTON ASSEMBLY



EXPLODED VIEW - PF-OXY1,5 - PISTON ASSEMBLY

Item	PN	Description	Remark	(*)
1	EV/20646	Piston		✓
2	EV/20654	Stem		
3	EV/11104	Bushing		
4	EV/11105	O-ring, bushing (2x)		✓
5	EV/11080	Seal disk		✓
6	EV/11082	Spacer (narrow) (2x)		
7	EV/11081	Spacer (wide) (3x)		
8	EV/11078	Compression spacer		
9	EV/11076	End cap		
10	EV/11077	O-ring, end cap		

(*) Recommended Spare Part

TECHNICAL DATA - PF-OXY1

Technical specifications:

Model	PF-OXY1		
	1	2	3
Filter media (cuft)			
Operating pressure min/max (bar)	2,5/8,3		
Operating temperature min/max (°C)	4/48		
Electrical connection (V/Hz)	230/50 ⁽¹⁾		
Max. power consumption (VA)	12		
Hydraulic connection inlet/outlet	1" BSP Male		
Hydraulic connection drain	13 mm hose barb		
Pressure tank	10x40	12x52	14x65

(1) Supplied with 24V transformer

Performances @ 3 bar operating pressure⁽²⁾:

Model	PF-OXY1		
	1	2	3
Filter media (cuft)			
Service flow rate @ Δp 1 bar (m ³ /hr) ⁽³⁾	3,4	3,4	3,5
Recomm. max. service flow (m ³ /hr) ⁽⁴⁾	1,0	1,5	2,0
Rinse water usage per regeneration (ltr)	290	413	536
Backwash flow rate (ltr/min)	23	31	38

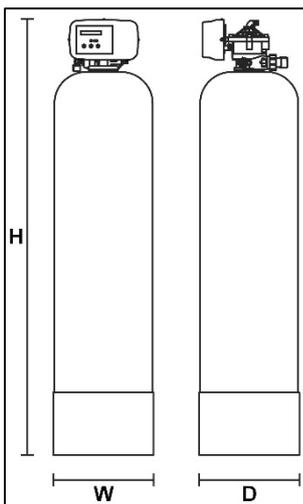
(2) Indicative numbers, performances depending on operating conditions and water quality

(3) Based on clean filter bed operation

(4) Flow rate at which, in case of moderate contaminant levels, filtration process is still executed adequately; higher intermittent flow rates are possible, but may result in incomplete removal of contaminants

Dimensions:

Model	PF-OXY1		
	1	2	3
Filter media (cuft)			
Width (mm) (W)	264	311	365
Depth (mm) (D)	282	311	365
Depth, incl. factory bypass (mm) (D)	371	376	403
Height (mm) (H)	1.182	1.500	1.836



TECHNICAL DATA - PF-OXY1,5

Technical specifications:

Model	PF-OXY1,5				
Filter media (cuft)	3	4	5	7	10
Operating pressure min/max (bar)	2,5/8,0				
Operating temperature min/max (°C)	4/48				
Electrical connection (V/Hz)	230/50 ⁽¹⁾				
Max. power consumption (VA)	80				
Hydraulic connection inlet/outlet	1,5" BSP Male				
Hydraulic connection drain	1" BSP Male				
Pressure tank	14x65	16x65	18x65	21x62	24x72

(1) Supplied with 24V transformer

Performances @ 3 bar operating pressure⁽²⁾:

Model	PF-OXY1,5				
Filter media (cuft)	3	4	5	7	10
Service flow rate @ Δp 1 bar (m ³ /hr) ⁽³⁾	7,8	7,8	7,8	7,9	8,0
Recomm. max. service flow (m ³ /hr) ⁽⁴⁾	2,0	2,7	3,4	4,1	6,0
Rinse water usage per regeneration (ltr)	556	811	1.065	1.366	1.922
Backwash flow rate (ltr/min)	38	57	76	95	133

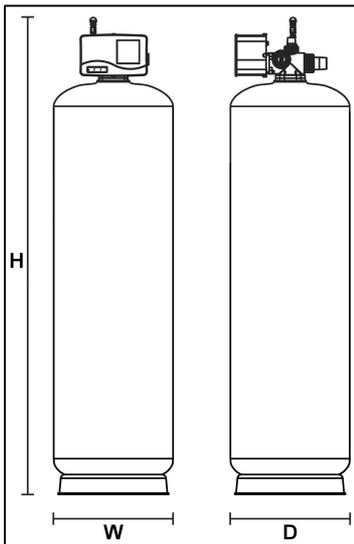
(2) Indicative numbers, performances depending on operating conditions and water quality

(3) Based on clean filter bed operation

(4) Flow rate at which, in case of moderate contaminant levels, filtration process is still executed adequately; higher intermittent flow rates are possible, but may result in incomplete removal of contaminants

Dimensions:

Model	PF-OXY1,5				
Filter media (cuft)	3	4	5	7	10
Width (mm) (W)	408	434	491	555	635
Depth (mm) (D)	408	434	491	555	635
Height (mm) (H)	1.955	1.952	2.003	2.002	2.199





Manufactured & Assembled by
erie water treatment
a division of **Aquion, Inc.**

www.eriewaterreatment.com