osmobilONE

OSMOBIL ONE

Translation of the original operating instructions in English

Current version as of February 2021.
All previous versions are replaced by this one.

CE

VF Reinigungstechnik
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OSMOBIL ONE

Technical data:

Permeate capacity	max. 200 l/h
Electrical connected load	0,245 kW
Total salinity input water	max. 1000 ppm
Salt retention	min. 95%
Yield	30-50%
Inlet water pressure	2,0-6,0 bar
Temperature of inlet water	8°-25°
Suitable inlet water	City water according to German drinking water ordinance
Ambient temperature	3°-40° C
Mains connection	230 V and 50 Hz
Dimensions in cm (H*W*D)	approx. 46x90x36
Weight (dry)	approx. 25 kg

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VF REINIGUNGS TECHNIK

osmobil

CE

EC Declaration of Conformity

We hereby declare that the mobile reverse osmosis system „OSMOBIL ONE“, with regard to its design and construction, complies with the applicable EC directives in the manner marketed by our company.

Any change to the system that has not been agreed with our company will invalidate this declaration.

Applicable EC Directive:

EC Machinery Directive (2006/42/EC)

Manufacturer: VF Reinigungstechnik
Blankenfohrweg 11
32139 Spenge
Tel. 05225.87198-15

Designation of the plant: OSMOBIL ONE
Serial number: see type plate

Signatory: Tobias Becker (Managing Partner)

Date/Signature of the manufacturer: 01.02.2021

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1 General and overview

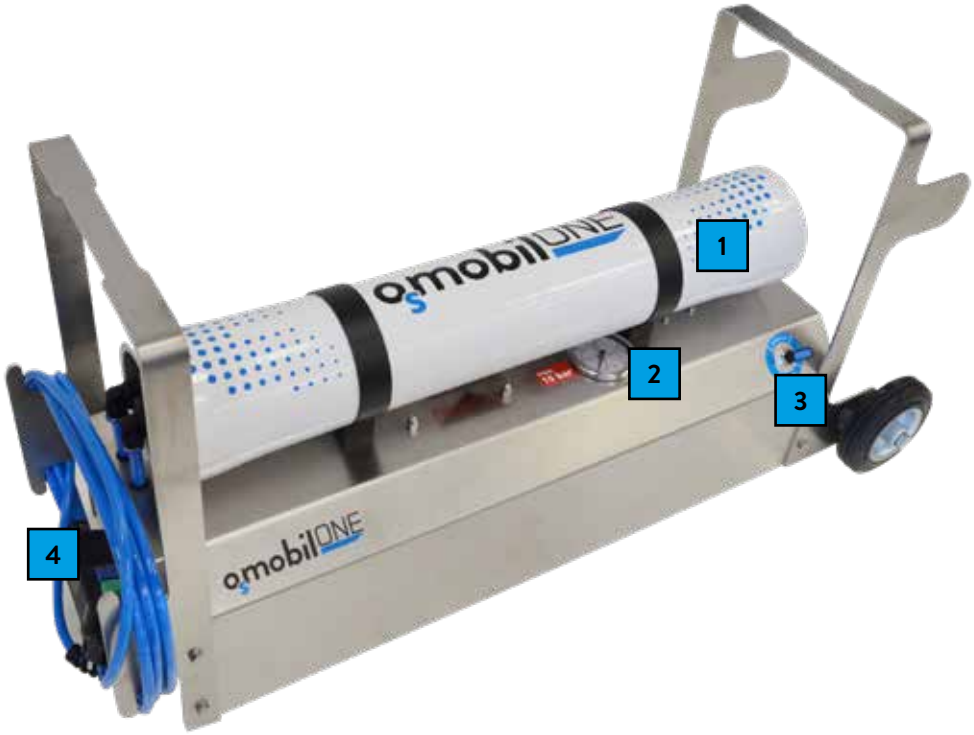
1.1 Introduction

Dear user,

herewith you receive the manual for your new reverse osmosis system „OSMOBIL ONE“. It describes in simple terms the basic functions and components of the device. In addition, it provides important information for your safety as a user and to avoid misuse and damage to the device or the environment.

Attention: Please read the instructions completely and carefully. This will prevent damage and misuse! The appliance may only be operated by competent persons who have read these instructions.

1.2 Overview - side view



1: Diaphragm housing
2: Pressure gauge
3: Flush valve
4: Personal protection plug

1.3 Overview - „Water“ header page

1: City water inlet
2: Concentrate outlet (water containing minerals)
3: Permeate outlet (pure H2O)

1.4 Function

The Osmobil ONE is based on a special reverse osmosis membrane in combination with an electronic pump. This enables production capacities of a maximum of 200 litres of ultrapure water per hour (depending on the water pipe and water temperature). The unit is designed to produce pure H2O without an additional buffer tank and with minimal running costs (less than 1,- € per 1.000 litres of ultrapure water). For this purpose, city water is pressed under high pressure (usually 10-15 bar) through a special membrane that only allows the H2O molecule to pass. The other components dissolved in the water remain in front of this membrane and are flushed out of the unit with the concentrate. In this way, the produced ultra-pure water reaches a quality of approx. 0.5-1% residual salt content (or 99-99.5% salt retention). This usually corresponds to a water quality of 0-15 ppm. Please refer to chapter 2.8 „Measuring the water quality“. The only component that needs to be replaced regularly is the pre-filter, which is located in a transparent housing on the underside of the unit (please refer to chapter 4 „Maintenance, care and safety“).

1.5 Intended use

The unit has been designed primarily for the following activities:
- Production of pure H2O for cleaning work

2 Production of pure H2O

2.1 Setting up the workplace

First of all, you should organise a city water and power supply of sufficient capacity at the respective work site. When doing so, make sure that in later operation vehicles, doors or other conditions do not cause hoses to the unit or away from the unit to be kinked or blocked. This could cause damage to the unit.

Attention: In addition, the strict spatial separation of current-carrying parts such as cables or cable drums, sockets, etc. from the water-carrying parts (hose, pump, device, etc.) must be ensured. Despite the built-in personal protection plug, we ask you to observe this for your own safety. In addition, the unit must not be placed under water or under permanently flowing water.

In addition, always choose a location for the appliance that is not sensitive to leaking water or has a floor drain. It is best to place the unit outdoors or on a tiled floor with a drain. Alternatively, the unit can be placed in a sufficiently large tub. If, due to improper use, hoses burst, the pressure relief valve on the unit „opens“ or water escapes in any other way, the possible consequential damage can be prevented in this way.

2.2 The right water source

Attention: When choosing the water source, pay special attention to where the water comes from that is to be used for production. The OSMOBIL in its normal configuration is only intended for use with approved city water! The use of other water can cause considerable damage to your OSMOBIL! And this after only a few litres of production. Therefore, make sure that you only use city water of drinking quality, which complies with the German Drinking Water Ordinance.

If you have no knowledge of the water sources at the respective place of use, please be sure to talk to people who have knowledge of the water supply on site (e.g. your clients, building technicians, etc.) before starting work. If, for example, you use water from a well, a cistern, a rain barrel or anything else, your unit may be damaged after just a few minutes! A sudden failure of the water supply (e.g. in agriculture due to animal feeding) can also cause damage to your unit. If there is no drinking water supply on the respective construction site or if you have to work frequently under such conditions, please contact your dealer. The respective problem can possibly be solved by additional pre-filters.

2.3 Hoses and couplings

Next, connect the supply water hose to the „city water“ connection on the unit. To do this, please use at least 3/4“ diameter (or larger) hoses. It is up to you which coupling system you want to use. The OSMOBIL ONE is delivered with sealing caps and with Gardena connections. However, you can also screw other couplings onto the existing 1/2“ external thread (without non-return or water stop technology!!). In addition, you should also direct the waste water (concentrate) of the unit by means of a hose into the sewer station or into another drain. Please always ensure that the drain is free and do not use „water stop couplings“ for this purpose. Connect an extension (not thicker than 1/2“ hose) or your desired telescopic rod directly to the clean water outlet (permeate).

2.4 Set flush valve and start water supply

Now you should make sure that the „flush valve“ is set to „flush“. Then you can first switch on the water supply or turn on the water tap. Before doing this, it makes sense to also rinse the pipe and hoses that are being used without connecting the OSMOBIL ONE. Rust residues and deposits can be rinsed out in this way and are not carried into the device or into the pre-filter.

2.5 Switch on pump

First connect the personal protection plug to the mains. Then press the green „RESET“ button on the personal protection plug of the OSMOBIL ONE. Now the pump should be running. After a short time, the containers will have filled up and the water will flow almost 100% from the „concentrate“ outlet.

2.6 Flush mode

The mode that is now active is called „flush mode“. This mode is used to clean the system, as residues deposited inside are flushed out of the membranes in this way. The flushing mode must always be activated for a few minutes before starting work and after finishing (see below) to ensure a long „life“ of your membranes. It is normal that the pump sometimes „nails“ a little or makes noises when work begins. These will subside during production operation at the latest.

Attention: Please always follow the rule for switching on the OSMOBIL ONE: „First water, then electricity!“. Attention: For the operation of the system, it must always be ensured that both the waste water and the ultrapure water can drain off completely. Therefore, do not use hose connections with water stops and ensure that there are no kinks or knots in the hoses used, nor that vehicles, objects or people are standing on the hoses.

2.7 Production mode

If you now want to start producing water, simply set the flush valve to the right to „Production“. Then the necessary pressure builds up in the system. When the necessary pressure is reached, a certain amount of water comes out of the waste water outlet („concentrate“). The other part now flows out of the ultrapure water outlet („permeate“). Depending on the inlet pressure (which must be high enough), both water outlets are now equal, or the outflow at the waste water outlet („concentrate“) is slightly higher than at the ultrapure water outlet („permeate“). The pump should run smoothly in this state (in rinse mode it can sometimes „nail“ a little). We call the ratio between permeate and concentrate „ratio“. It must never exceed 50/50 to the disadvantage of the ultrapure water (70% concentrate and 30% permeate are OK, the other way round is a problem).

Attention: If you produce more ultrapure water than waste water, please read chapter 4.7 „Troubleshooting“ under „Too much ultrapure water? This can be the case in industrial buildings with extremely high water pressure. When producing, please always observe the pressure display on the pressure gauge in addition to the ratio of the two water flows. This must not exceed 15 bar! This could otherwise cause damage to your machine! You also need a normal pre-pressure (approx. 2-4 bar). If your machine makes loud, nailing noises during the production process, interrupt the operation and look for a solution in the chapter „Troubleshooting“.

2.8 Measuring the water quality of the ultrapure water („permeate“)

After the system has built up pressure and is producing water, please measure the water quality at the ultrapure water outlet („permeate“) with your tester before you start the actual work. To do this, fill water into the cap of your tester. Then switch on the tester and insert it into the filled cap (for OSMOBILES with a permanently installed measuring device, simply switch it on). You will now find the water value on the display. It is shown in

the unit „PPM“. This means „parts per million“ and refers to the „remaining foreign molecules per molar ion of H2O molecules“. Basically, this unit shows the degree of purity of the H2O mixture.

The following applies to the water quality required in each case:

0-30 PPM – Perfect quality for façade, PV and solar cleaning
0-15 PPM – Perfect quality for window cleaning

Important for cleaning work with the H2O produced:
Within the first 1-2 minutes after switching on the unit, it is not unusual for the water level to still be around 20-30 PPM or higher. This will regulate itself downwards within a short time. In addition, with new units, it should be noted that up to 10,000 litres of water must be produced with the new unit or with the new membrane before the membranes reach their full capacity.

Once the necessary water quality has been achieved, you can start the desired work. Please follow the instructions that follow later in this manual. If you do not achieve the required water quality, you will find useful tips in the „Troubleshooting“ section.

2.9 Finish the work

When you want to finish the work, first set the „Flush valve“ to the „Flush“ position. Use the time of flushing to stow hoses and telescopic poles. Then press the test switch on the personal protection plug.

Caution: When switching off, always follow the rule „First power, then water“!

Then stow the unit away.

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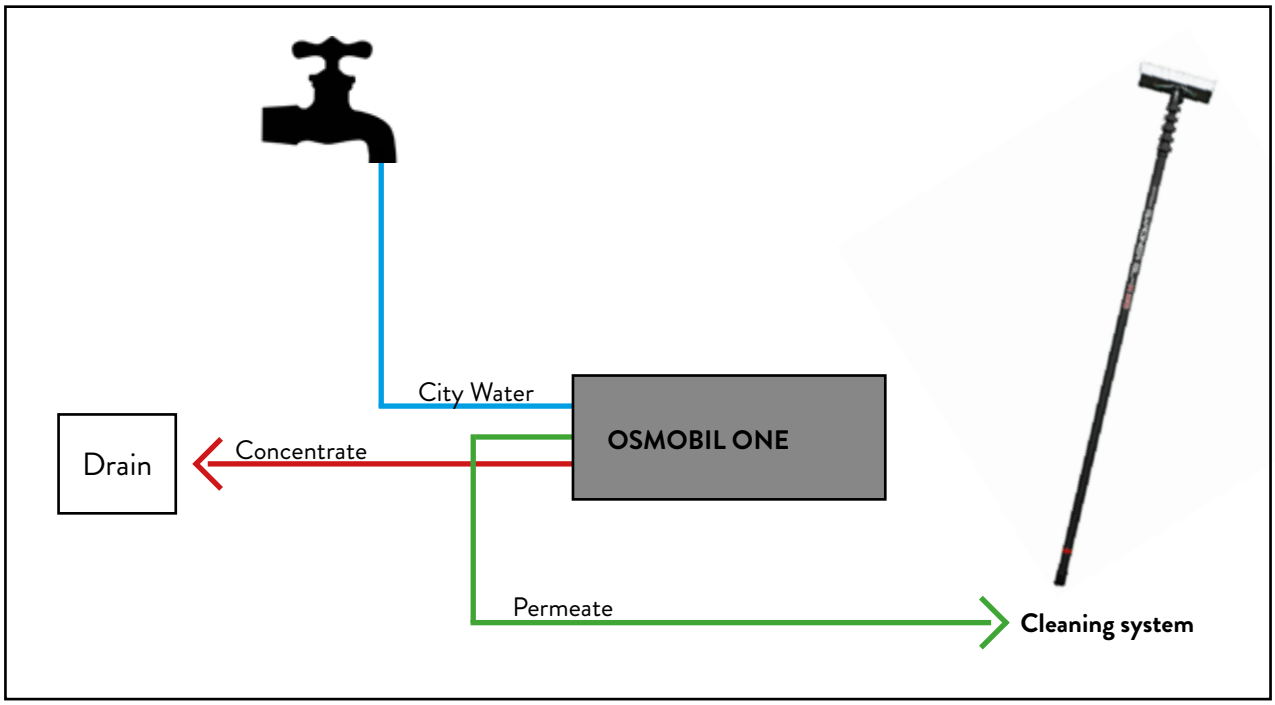
3 Cleaning with pure H2O

3.1 Layout - Cleaning



4 Maintenance, care and safety

4.1 Changing the pre-filter

The only filter or component that needs to be changed regularly on your OSMOBIL ONE is the pre-filter in the transparent housing below your device. To change it or to check its colour, place the OSMOBIL ONE „upright“ on the side of the wheels. As there is still water in the filter cup, you should choose an environment for the filter change that is not sensitive to leaking water. Now you can unscrew and remove the filter cup with one hand by turning it to the left. Then pour off the water and remove the filter cartridge. You can now dispose of it and replace it with a new one. Filter cartridges are available from your specialist dealer. Only original OSMOBIL filters should be used. If necessary, you should now clean the filter cup by simply rinsing it out. When inserting the filter cup into the unit, make sure that the filter cartridge is upright and that the filter cup is clean and also turned straight onto the thread.

4.2 When do I have to change the pre-filter?

The capacity of the prefilter depends on various factors. For this reason, it should be changed if one of the following points applies:

Colour:	If the filter is visibly very brown or red in colour.
Service life:	After 3 months at the latest, otherwise the existing filter may rot and damage the membrane.
Performance:	If your unit does not deliver enough water.
Flow rate:	After 25,000 litres of water flow.

4.3 When do I have to change the membrane?

Basically, the installed membrane runs without wear. However, a change after 1-2 million litres of water flow or 1-2 years must be expected. In the course of time, problems with the water value or water quality can occur due to improper use, damage caused by falling or transport, frost or other events. If this is the case, your dealer will help you find out if your membrane is damaged or if there is another problem. If the membrane needs to be replaced, you can open the membrane housing and simply replace the membrane body. Your specialist dealer will be happy to explain this to you.

4.4 Annual inspection

In order to maintain the performance and water quality of your osmosis unit in the long term, we recommend an annual inspection by your specialist dealer. Your membrane will be cleaned, maintained and, if desired, preserved. In addition, the unit is checked for leaks and the electronics are checked for function. If desired, your unit can also be given a UVV inspection including the corresponding documentation.

4.5 Decommissioning - shutdown in winter

If your unit will not be used for a longer period of time during the winter months or for other reasons, you need to do a few things to protect your membrane from damage:

1. Ensure frost-free storage of the unit.
2. Switch on the appliance briefly after 14 days at the latest to change the residual water. If you want to extend the standing time to up to 8 weeks until the next „rinsing process“, first rinse the unit with city water for 15 minutes and then place the three screw caps on the two water outlets and the water inlet to seal the unit airtight. Otherwise, the residual water could „tip over“ or rot and damage the unit or its membrane. The switch-on dates should be documented accordingly in order to keep track of them.
3. Keep to the replacement intervals for the pre-filter, even during periods of inactivity, in order to prevent germ contamination of your system.

4.6 General operating instructions and safety

4.6.1 Installation preconditions and protection against water damage

- Only set up the unit in areas that are not sensitive to water and have a floor drain!
- To avoid puddles, pools of water or damage to meadows and fields, you should also connect a hose to the waste water outlet to direct the water to a suitable location.
- Observe the respective conditions, regulations and guidelines at the installation site!

4.6.2 General operating instructions

- Hot water must not get into the unit (max. 25°C)!
- Protect your unit from knocks and falls!
- Store your unit frost-free!
- Inform yourself about the water supply!
- Only city water may be fed into the unit!
- Always ensure free water drainage!
- Do not leave the unit running unattended!

4.6.3 Safety instructions and special dangers

- If you discover any damage to cables and hoses or other water- or power-carrying components of the appliance, these must be repaired immediately by a suitable specialist.
- Before carrying out any maintenance or repair work, always ensure that the power supply to the appliance is disconnected and that all water-carrying parts are depressurised.
- The water produced by the OSMOBIL ONE is not suitable for drinking!
- Do not touch any electrical components if your hands are wet!
- When using the unit, strictly separate the power supply from the water supply.
- Protect the unit and primarily the live parts from rain or splashing water or other sources of water.

4.7 Troubleshooting

4.7.1 Your water value is not correct?

- Switch off the appliance completely and switch it on again in rinse mode. Wait a few minutes in rinse mode. Then switch to production mode and measure the water level regularly. As a rule, the water level regulates itself after a few minutes.
- Operate the unit for 30 minutes in rinse mode. Then measure the water value again in operating mode.
- Your membrane may be damaged by misuse (overpressure, wrong ratio, frost, well water). In these cases, please contact your specialist dealer.

- Ensure a clean and white pre-filter.
- In some cases, if the input water is extremely hard and a membrane has been used for several years, the water value may remain permanently too high. Please contact your specialist dealer. The problem can usually be solved by a pre-filter or a membrane change.

4.7.2 Your unite delivers too little water?

- Check the respective water tap. The water pressure can vary greatly here. As a general rule, a low inlet water pressure will cause the appliance to produce less water.
- Your pump may be incorrectly adjusted. If you are not sure how to use the pump screw, please contact your dealer!
- In a few cases, very hard incoming water can cause the system to calcify. Your specialist dealer will be happy to advise you on how to proceed in such cases.
- Please use a hose with at least 3/4“ diameter as supply line to the unit. A thinner hose can restrict the water production and cause the pump to „nail“. Basically, the following applies: „Thick hose towards the OSMOBIL, thin hose away from the OSMOBIL“.
- The use of non-approved drinking water may have clogged („blocked“) or destroyed your membrane (e.g. by „iron“, „silicic acid“, etc.).
  Please contact your specialist dealer.

4.7.3 Too much ultrapure water (more permeate than concentrate)?

In this case, you must urgently take one of the following steps:

- Slightly turn off the water tap on the wall until the ratio („Ratio“) fits (50/50 ratio or more waste water).
- Use a pressure reducer in front of the unit. Your specialist dealer will be happy to advise you on this.

4.7.4 Your pump makes loud noises and „nails“ in production mode?

- Low inlet pressure („too weak a pipe“) is often the problem.
- Use a thicker hose leading from the tap to the appliance.
- Try (exceptionally) to shorten the supply line from the tap to the appliance.
- Use a different water source.
- Use a pressure booster upstream of the OSMOBIL. Your dealer will be happy to advise you.

4.7.5 You produce too little water?

- Low water temperatures can reduce the performance of your system.

- Your pre-filter needs to be changed.
- The use of unapproved drinking water may have clogged („blocked“) or destroyed („iron“, „silicic acid“, etc.) your membrane.
  Please contact your specialist dealer.
- The respective water source has too low an outlet pressure - see chapter 4.7.4.

4.7.6 The pump cannot be switched on?

- Check the respective power supply.
- In many cases, a defective personal protection plug is to blame if the pump cannot be switched on. This safety component reacts particularly to moisture. Changing this plug usually solves the problem. Your specialist dealer will be happy to advise you on this.

5 Warranty

All OSMOBIL water systems are subjected to extensive quality control and testing before delivery. The construction of the devices is already designed for unconditional reliability and longevity. Should there nevertheless be any problems or a reason for complaint within the warranty period (24 months for natural persons, 12 months for tradesmen and companies), please direct the respective replacement claim to the company VF Reinigungstechnik. Please note that the warranty only covers units that are structurally unchanged and have been operated strictly according to the specifications in this manual. Wear items such as membranes and pre-filters are also excluded from the warranty.