



**Operation manual for
*reverse osmosis unit Easy Line 90/150***

Reverse osmosis units for the desalination of tap water

With the purchase of an Aqua Medic reverse osmosis unit, you have selected a quality product which has been especially developed for the use at home and has been tested by professionals.

With this unit you can remove the inorganic and organic substances, dissolved in your tap water to a percentage of about 95 - 98% without adding any chemicals.

In the aquarium, you prevent overfertilisation of water from the tap. The growth rate of diatoms and other microalgae is reduced. Residues of pesticides and other toxic substances do not get into the aquarium.

Please read the manual carefully. This prevents failures and complaints!

1. Delivery

The Aqua Medic reverse osmosis units are compact and highly efficient units. They consist of the following parts:

- Sediment pre-filter, 10" 5 µm pore size
- activated carbon prefilter, 10"
- reverse osmosis module with a first class synthetic membrane (Polyamide/Polysulfon, TFC) which has the following capacity:

Reverse osmosis unit...	Litre/Day
Easy Line 150	110 - 150 l
Easy Line 90	75 - 90 l

- Flow restrictor: at this valve, the permeate/concentrate ratio is adjusted to 1:4.
- Tap water connection fitting with pressure tube.
- Hose's plug

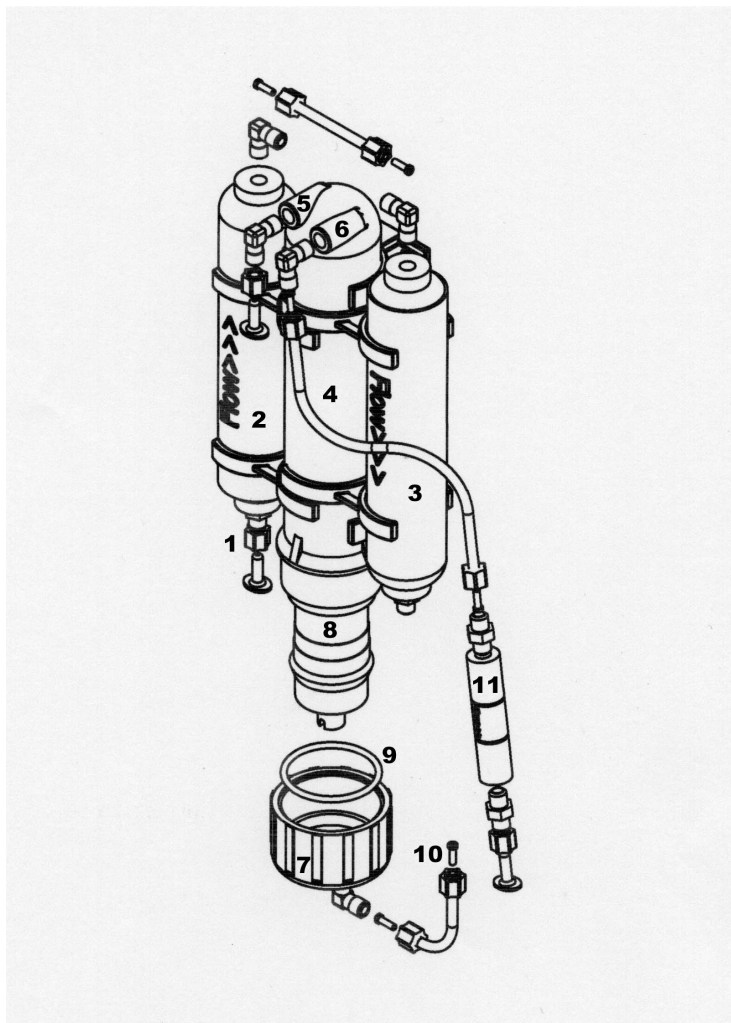


Fig. 1:

1. water inlet
2. sediment filter
3. activated carbon filter
4. reverse osmosis module
5. pure water outlet
6. waste water outlet incl. flow restrictor
7. cap of module housing
8. membrane
9. O-Ring
10. hose's plug
11. flow restrictor

2. Set-Up

To fix the unit at a wall, disconnect the 2 wall clamps from the module and fix them directly on the wall or on a mounting plate - preferably near a tap connection. Press module into the clamps - ready.

Then mount the membrane and connect the tubes. To avoid any failures, follow the instructions carefully:

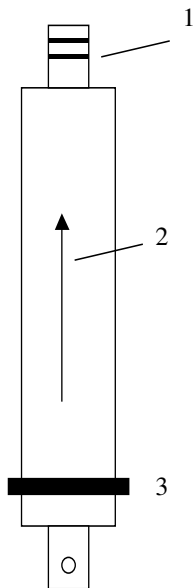
Tube Fittings:

Put the nut and small ring on the tube.
Push the tube tight into the fitting and fix the nut.

The connections of the unit are:

1. connection between sediment filter and module
2. tap water inlet - into the sediment filter
3. concentrate outlet (waste water) at flow restrictor
4. pure water (permeate)
5. tap water connection

Fix the water connection piece to a 3/4" water cock. If it does not fit, use a reduction piece (not included).



Mounting of the membrane:

Remove the screw cap from the module housing (Fig 1, 7).
Take the membrane out the plastic bag and put it into the membrane housing. Take care to insert the membrane in the right direction, with both sealings (1) directed to water outlet. The membrane has to be pushed forward until the 2 sealings are in the right position at the top and the big pure wastewater seal (3) is fixed. Now the housing can be closed again.

3. Starting

When all connections are tight, you can open the tap faucet. The minimum water pressure for the unit is 3 bar. The nominal capacity is reached at 4 bar. If the pressure drops below 3 bar, the production capacity is reduced, below 2 bar it reduces also the reduction rates.

Firstly, check all connections on water tightness. If leakage occurs, tighten the fittings or the housing.

Now the concentrate flows out of the outlet. After some minutes also purified water flows out of the permeate outlet, however, at a lower flow rate.

Reverse osmosis unit...	Flow Rate (Liter/Hour) at 4 bar and 15° C	
	Pure water/permeate	Waste water/concentrate
Easy Line 90/150	3,0 - 3,75 l / 4,5 - 6,25 l	approx. 14 l / 25 l

The pure water, produced in the first 2 hours, has to be discarded because it may contain residues of the disinfection liquid which has been filled in the module for storage. After 2 hours, the water can be used.

4. Use of the water

Rejection rate:

The rejection rate of the membrane for most salts and organic substances varies between 95 and 98% (except nitrate and silicate). The water can be used in various areas:

In salt water aquariums:

- for preparation of sea water
- for preparation of „Kalkwasser“ or Calcium enriched water
- for refilling evaporated water

In fresh water aquaria:

- pure - for breeding soft water fish (Discus, etc.)
- hardened up with Hydrocarbonate in all fresh water tanks
- pure - for refilling evaporated water

In households:

- for preparation of drinks and meals
- for car batteries and flat irons
 - for home plants, especially orchids, bromelids and cacti.
 -

In laboratories and industry:

- everywhere, where up to now distilled or deionised water has been used and a conductivity of 20
- 50 $\mu\text{S}/\text{cm}$ is accepted.

5. Maintenance

- **Pre-filter.** If the tap water is not extremely polluted, a yearly replacement of both pre-filters will be sufficient. If the water is higher polluted, the filters have to be changed more often - as required. If the pre-filter is blocked, the water production will slow down.

- **Membrane.** The membrane normally has a lifetime of several years. Afterwards, it has to be replaced.

6. Failures

- Waste water flow rate is too low:

Check the pre-filter for blocking. Connect water inflow directly to the module. If the waste water flow is normal again, change the pre-filter. If the flow is still too low, the flow restrictor has to be renewed.

- Pure water flow rate is too low:

Check the waste water flow rate. If it is low too, change the pre-filter.

- Tap water pressure is too low:

If you are connected to a municipal water supply, you are not able to influence the water pressure. For the reverse osmosis unit, a minimum water pressure of 3 bar is required.

- The module is blocked or used up:

The membrane has to be changed.

As spare parts all standard 18"- membranes with the model specific capacity can be used. Only TFC- membranes made of Polyamide/Polysulfone should be used. We recommend to use original Aqua Medic TFC-membranes. If you want to use a membrane with a different capacity, you also have to change the flushing valve.

- Rejection rate is too low:

Check water flow rates (waste water, pure water).

If the water flow is ok, flush the unit for approx. 60 min. by removing the flow restrictor. If the rejection rate increases, go on flushing until the value is acceptable. If the rate does not improve, change the membrane.

7. Important Notes

- **Connection:** Connect the reverse osmosis unit only to cold water supply. Higher temperatures increase the pure water production, but at temperatures above 40 °C, the membrane will be destroyed.

- **Stopping the unit:** If you stop the unit, always close the tap water supply. Never put a valve into pure water. If you run the unit automatically with a solenoid valve, switch the valve between pre-filter and module. Take care that waste water and pure water can flow away freely.

- **Disconnection of the unit:** If you want to disconnect the unit for a longer period than 6 weeks, you should add Aqua Medic disinfection liquid into the module housing. If the unit is started again, flush it for 15 min. We recommend flushing also after shorter periods of stopping.

- **Storage:** The unit has to be stored at temperatures above 0° C. Freezing would destroy the membrane.

- **Temperature:** At low temperatures in winter, the permeate production slows down. For the calculation of the production rate, see the following table.

8. Warranty

Should any defect in material or workmanship be found within twelve months of the date of purchase AB Aqua Medic GmbH undertakes to repair or, at our option, replace the defective part free of charge – always provided the product has been installed correctly, is used for the purpose that was intended by us, is used in accordance with the operating instructions and is returned to us carriage paid. The warranty term is not applicable on the all consumable products.

Proof of Purchase is required by presentation of an original invoice or receipt indicating the dealer's name, the model number and date of purchase, or a Guarantee Card if appropriate. This warranty may not apply if any model or production number has been altered, deleted or removed, unauthorised persons or organisations have executed repairs, modifications or alterations, or damage is caused by accident, misuse or neglect.

We regret we are unable to accept any liability for any consequential loss.

Please note that the product is not defective under the terms of this warranty where the product, or any of its component parts, was not originally designed and / or manufactured for the market in which it is used.

These statements do not affect your statutory rights as a customer.

If your AB Aqua Medic GmbH product does not appear to be working correctly or appears to be defective please contact your dealer in the first instance.

Before calling your dealer please ensure you have read and understood the operating instructions.

If you have any questions your dealer cannot answer please contact us

Our policy is one of continual technical improvement and we reserve the right to modify and adjust the specification of our products without prior notification

AB AQUA MEDIC GmbH - Gewerbepark 24 - 49143 Bissendorf/Germany

- Technical changes reserved -

Appendix:

Table 1: Relation between pure water capacity of Aqua Medic reverse osmosis membranes and water pressure before membrane and water temperature. The values are mean values, the spread is: + / - 15%.

Pressure	Temperature °C	Capacity in l/day.Type 30 l/day	Capacity in l/day.Type 90 l/day	Capacity in l/day.Type 150 l/day
3 bar	5°	24	46	79
	10°	28	55	94
	15°	33	64	110
	20°	38	76	130
	25°	45	88	151
4 bar	5°	31	61	105
	10°	37	73	125
	15°	44	86	147
	20°	51	101	173
	25°	61	118	201
5 bar	5°	39	76	131
	10°	47	91	156
	15°	55	107	184
	20°	65	126	216
	25°	75	147	252
6 bar	5°	47	92	157
	10°	56	109	221
	15°	66	129	267
	20°	56	156	267
	25°	90	177	302