

REVERSE OSMOSE OSMO OPTIM



RO/NF is the separation of one component of a solution from another component by means of pressures exerted on a semipermeable membrane. Removal of ionic, organic and suspended / dissolved impurities occurs during the RO/NF process. Unlike a filter, which separates by "normal" filtration, the membrane separator separates using a process called crossflow filtration. Feedwater solution is separated into two streams, permeate and concentrate, and collected from both sides of the membrane. A semipermeable RO/NF membrane, under sufficient pressure, allows passage of purified water while rejecting and concentrating dissolved and suspended solids.

The system uses spiral-wound membrane package, with a turbulent flow design. This membrane module, called a separator, collects the purified water within a central tube, the permeate tube.

The feedwater passes through a replaceable 5-micron cartridge filter, which removes bulk suspended solids. Filtered water then flows to the inlet solenoid valve, which opens when the machine is turned on, allowing water to flow to the pump inlet. When the machine is turned off, the valve closes, preventing non-turbulent flow through the separators, which would lead to shortened membrane life.

The pump feeds water to the separator housings arranged in parallel combinations. The direction of water flow is indicated by an arrow on each separator housing. Water is separated by the membrane within the separators and leaves the separator housings in two streams: permeate and concentrate.

Permeate from each separator housing is collected in a common manifold. The permeate then flows through a flow meter and to the permeate outlet point of the machine. Permeate should be collected in no pressure storage tank. It could be directed with some backpressure but it must be never higher than Final Pressure of concentrate. It must be considered that backpressure decreases flow rate and water quality. The permeate quality depends on inlet water and is generally described as a $MgSO_4$ removal up to 96-98%.

The concentrate leaves separator housings and flows to the flow control center (recycle/concentrate manifold). At this point, the recycle valve channels a predetermined amount of concentrate into the pump inlet. Recycle increases recovery while maintaining adequate crossflow through the separators. The other concentrate valve controls the amount of concentrate flowing to the drain; it controls the pressure within the machine; and it helps control the system recovery. An autoflush solenoid valve is added parallel to concentrate valve with an additional tee. The concentrate then flows to the concentrate outlet point of the machine.



Technical Data (base Line models*):

MODEL	Permeate Flow Rate [m ³ /h]	Membrane size	Efficiency [%]	Operating pressure ⁽¹⁾ [bar]	Power input ⁽²⁾ [kW] ⁽²⁾	
					LE **	HP **
Osmo Optim 2k	0,1	2,5"x40"	50	8-16	0,35	
Osmo Optim 5k	0,2	2,5"x40"	50	8-16	0,35	
Osmo Optim 7k	0,3	2,5"x40"	75	8-16	0,55	
Osmo Optim 10k	0,4	2,5"x40"	75	8-16	0,75	
Osmo Optim 12k	0,5	2,5"x40"	75	8-16	1,10	
Osmo Optim 14k	0,6	4,0"x40"	75	8-21	1,1	1,8
Osmo Optim 22k	0,9	4,0"x40"	75	8-21	1,6	2,7
Osmo Optim 29k	1,2	4,0"x40"	75	8-21	1,7	2,9
Osmo Optim 43k	1,8	4,0"x40"	75	8-21	1,9	3,2
Osmo Optim 58k	2,4	4,0"x40"	75	8-21	2,2	3,6
Osmo Optim 65k	2,7	4,0"x40"	75	8-21	2,5	4,1
Osmo Optim 72k	3	8,0"x80"	75	8-21	3,3	5,5
Osmo Optim 120k	5	8,0"x80"	75	8-21	5,4	9,0
Osmo Optim 240k	10	8,0"x80"	75	8-21	9,0	15,0
Osmo Optim 360k	15	8,0"x80"	75	8-21	11,0	18,0
Osmo Optim 480k	20	8,0"x80"	75	8-21	13,0	21,0
Osmo Optim 720k	30	8,0"x80"	75	8-21	21,0	35,0
Osmo Optim 1200k	50	8,0"x80"	75	8-21	35,0	57,0

* Other models for individual design for request

** LE – Low Energy Membranes, HP – High Pressure Membranes

⁽¹⁾ Operating pressure depend on membrane type and water temperature

⁽²⁾ Calculated power. Final Power May be different depend on pump model and parameters assumed for final design

Dimensions and weight ***:

MODEL	Weight (aprox.) [kg]	Width [mm]	Deep [mm]	High [mm]
Osmo Optim 2k	40	600	400	1400
Osmo Optim 5k	44	600	400	1400
Osmo Optim 7k	48	600	400	1400
Osmo Optim 10k	52	600	400	1400
Osmo Optim 12k	56	600	400	1400
Osmo Optim 14k	60	1450	800	1800
Osmo Optim 22k	65	1450	800	1800
Osmo Optim 29k	70	1450	800	1800
Osmo Optim 43k	80	2450	800	1800
Osmo Optim 58k	90	2450	800	1800
Osmo Optim 65k	120	3450	800	1800
Osmo Optim 72k	200	3950	1100	1800
Osmo Optim 120k	300	5950	1100	1800
Osmo Optim 240k	350	3950	1100	1800
Osmo Optim 360k	500	4950	1100	1800
Osmo Optim 480k	650	7000	1600	1900
Osmo Optim 720k	850	5950	1600	1900
Osmo Optim 1200k	1200	7000	1600	1900

*** Final dimensions May be slightly different and may be changed for wishes using different housing configuration.

Note! During final installation and design the free space of min. 1m should be left both sides for membranes removal.



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