

Reverse Osmosis Systems – RL Series



Standard Features

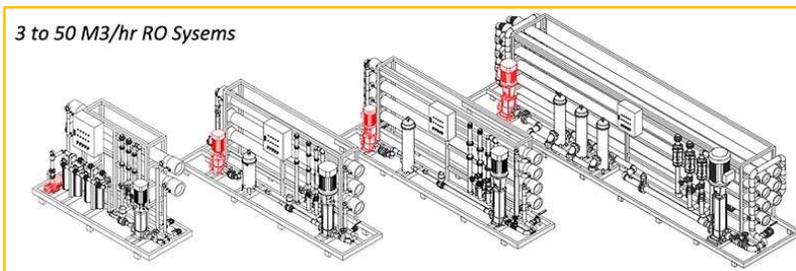
- Electropolished stainless steel space frame
- FRP high pressure membrane housings
- Stainless Steel flow control valves
- PLC Controller
- Flow rotameters
- Pressure gauges
- Single or dual conductivity monitors
- High and low pressure monitors
- Storage tank level sensor input
- Pretreatment interlock



Optional Features

Feedwater boost pressure pump, multi-element pre-filtration cartridges in s/s housing, CIP or provision for CIP, automated pre-treatment and chemical dosing systems, feedwater and reject water quality monitors, programmable VSD for the RO pump and touch screen HMI.

RL series reverse osmosis systems will remove up to 98% of dissolved contaminants commonly found in municipal supplies, dam, river and bore waters. Membrane pressure vessels are multi-element types to achieve high outputs with efficient hydraulic design and low energy consumption. Standard membrane permeate flush assists to maintain reliable membrane performance and service life. A dedicated PLC monitors input pressure, permeate quality, chemical dosing and permeate storage tank levels and shuts the system down on fault detection. A mimic panel displays system status and alarm conditions. CIP and chemical dosing pump connection points are available for inclusion with each system.



ROtek has a flexible OEM/ODM service to assist with customising your reverse osmosis system to suit most feedwater types with permeate flows to 400,000 litres/hour. Systems may be built with skid mounted pre and post-treatment stages and integrated CIP systems.

Reverse Osmosis Systems – RL Series

Model	RL 1.5T	RL 2T	RL 2.5T	RL 3T	RL 4T	RL 5T
*Permeate flow (lpd) max	36,000	48,000	50-60,000	72,000	96,000	120,000
Operating pressure	150-200psi (820-1380kPa)					
Pre-filtration	Cartridge filters in single or multi-element housings					
High pressure pump	Grundfos or equivalent s/s vertical multi-stage type					
Membrane type	High performance low energy type, FRP wrap					
Membranes	6 x 4040	8 x 4040	10 x 4040	12 x 4040	4 x 8040	6 x 8040
Membrane pressure vessel	High pressure FRP end port type					
Vessel size and quantity	3 x 8040	4 x 4080	5 x 4080	6 x 4080	2 x 8080	3 x 8080
Flow rotameters	Permeate, concentrate and reject recirculation					
Pressure gauges	Feedwater, pump discharge and membrane discharge					
Permeate quality monitor	Conductivity or TDS (optional)					
Electrical panel	PLC control, contactors, relays, fuses, mimic panel					

Model	RL 7T	RL 8T/9T/10T	RL 12T	RL 15T/16T	RL 20T/25T
* Permeate flow (lpd) max	160,000	200/220/250,000	280/300,000	340/380,000	480/600,000
Operating pressure (psi)	150 – 200psi (820 – 1380kPa)				
Pre-filtration	Cartridge filters in single or multi-element housings				
High pressure pump	Grundfos or equivalent s/s vertical multi-stage type				
Membrane type	High performance low energy type, FRP wrap				
Membranes	8 x 8040	9 x 8040	12 x 8040	16 x 8040	20/24 x 8040
Membrane HP vessel	High pressure FRP end port type				
Vessel size and quantity	4 x 8040	3x80120/2x80160	4 x 80120	4 x 80160	5 x 80160
Flow rotameters	Permeate, concentrate and reject recirculation				
Pressure gauges	Feedwater, pump discharge and membrane discharge				
Permeate quality monitor	Conductivity or TDS (optional)				
Electrical panel	PLC control, contactors, relays, fuses, mimic panel				

* Note that estimated system permeate outputs and recoveries will vary according to feedwater quality and stated outputs for each model are a guide only. Final system selection should only be made in consultation with ROTEK Australia after a comprehensive water analysis has been obtained

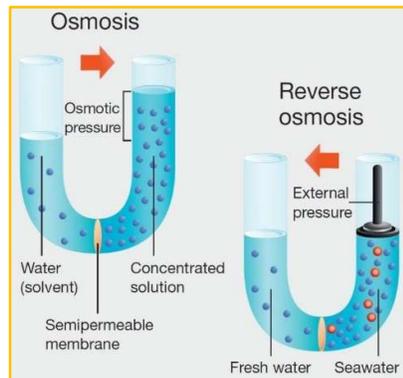


RL 50T Reverse Osmosis System

Reverse Osmosis Systems – RL Series

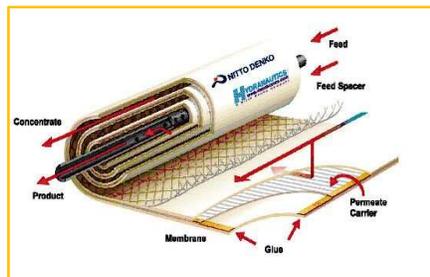
The Reverse Osmosis Process

Reverse osmosis is a very mature, well developed technology whose performance is easily measured. It is the method of choice for many industrial, municipal and commercial works when a reduction in feedwater TDS/conductivity or similar contaminants is required.



Osmosis is a term used to describe the diffusion of fluid through a semipermeable membrane from a solution with a low solute concentration to a solution with a higher concentration. Osmosis can be reversed if sufficient pressure is applied to the concentrated side of the membrane. This reversal process is used for water purification and desalination as the membrane allows only the water to pass through, but not larger molecules or ions (like salt).

For the reverse osmosis system to operate effectively, the feedwater must be filtered to remove suspended solids (to around 5 microns and then de-chlorinated). An anti-scalant injection system is generally required to remove hardness minerals (calcium, magnesium and iron) which would otherwise increase in concentration on the waste side of the membrane to the point where they form scale and foul the membranes. Water softeners may also be used to remove hardness minerals.



The pre-treated feedwater is pressurised and forced into a series of membrane and pressure vessel assemblies where the separation of pure water and contaminants occurs. Multiple membranes may be used for the higher flow rates and are housed in single or multi-place pressure vessels. RO membranes are available for a wide variety of feedwater types and all have a similar physical structure.

They differ in membrane polymer type, membrane thickness, surface area, spacer thickness, outer membrane covering and physical size. Surface modified membranes are used in more specialised areas to yield maximum stable performance and are preferred with difficult feedwater types.

The raw (untreated) feedwater source and quality of that source water are the key elements that directly affects the choice of pre-treatment equipment, pumps, piping, membranes and all system components. ROTeK has been designing Reverse Osmosis systems and their critical pre-treatment equipment for over twenty years to ensure our systems are suitable for each application. We can arrange thorough water testing through our NATA certified laboratory as well as on-site testing for limited parameters prior to making a recommendation to best suit your site.