

HRO 6 – Series Reverse Osmosis Systems

HRO 6 – Series Reverse Osmosis Systems are designed for overall superior performance, high recovery rates, minimal energy consumption and offer great savings with low maintenance and operation costs.

HRO 6 – Series Reverse Osmosis Systems feature a new, innovative design. These systems feature only the highest quality components, including a programmable computer controller with many built-in standard features, a stainless steel booster pump for high performance and corrosion resistance, ultra low energy membranes and fiberglass membrane housings for enhanced performance and durability.

HRO 6 – Series Reverse Osmosis Systems have been engineered for capacities ranging from 1,800 – 21,600 gallons per day.



HRO 6
Reverse Osmosis System

Benefits

- Fully Equipped and Customizable
- Skid Mounted
- Decreased Size of Dimensional Footprint from Standard Reverse Osmosis Systems
- Components Easily Accessible Pre-Plumbed, Wired and Assembled
- Individually Tested and Preserved Low Operation and Maintenance Costs
- Easy Maintenance and Servicing
- 20% Less Energy Use than Standard Reverse Osmosis Systems
- 1-Year Limited Warranty

Standard Features

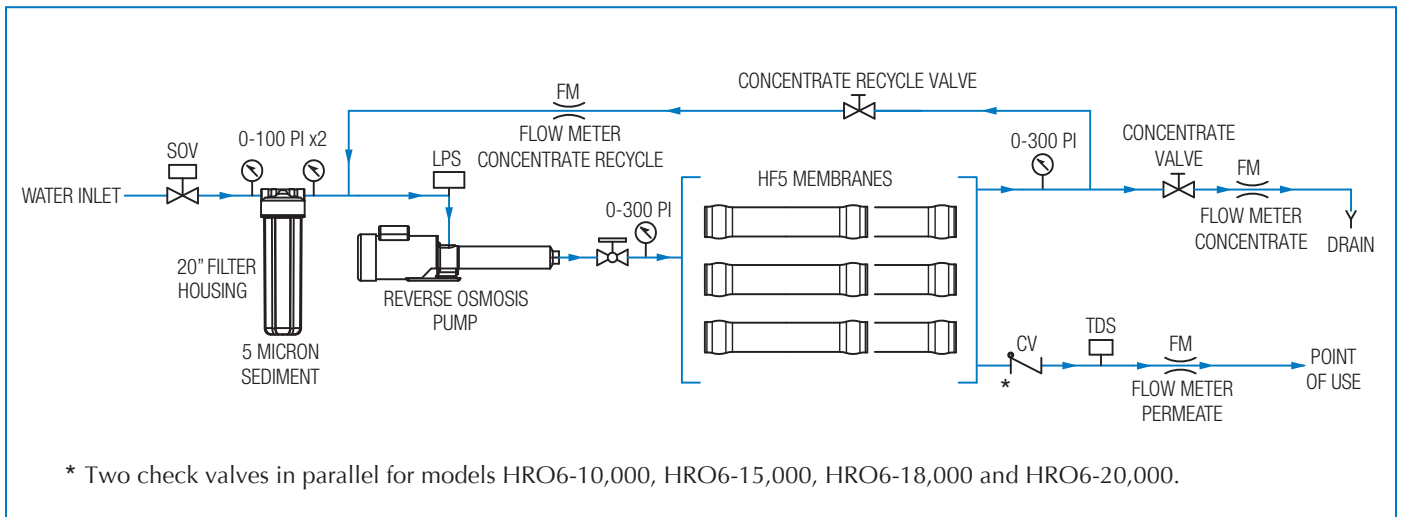
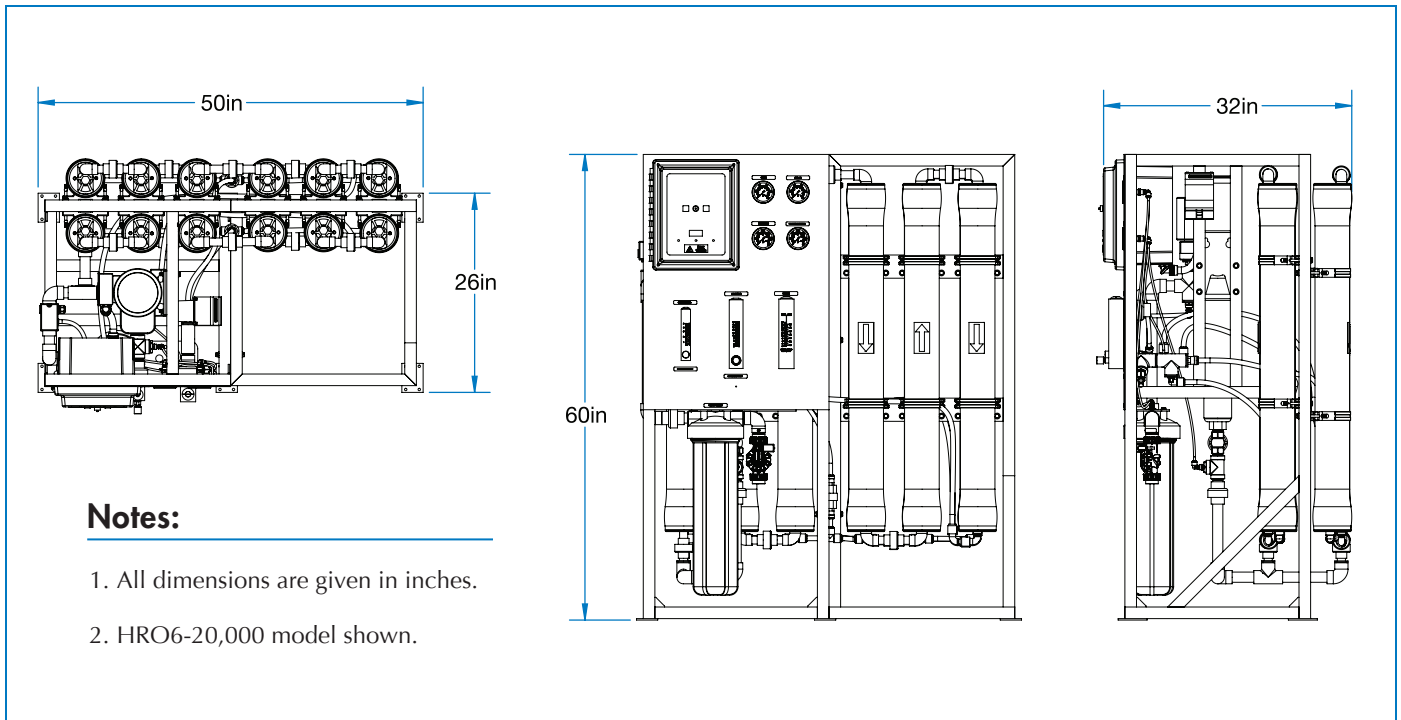
- S – 150 Computer Controller
 - LCD Backlit Display
 - Pre-Treatment Lockout
 - Tank Level Input
 - Low Pressure Monitoring and Alarm
 - TDS Monitoring
 - Feed Flush
 - Hour Meter
- Permeate and Concentrate Flow Meters
- Concentrate Recycle with Flow Meter
- Pre-Filter 0 – 100 psi Panel Mounted Glycerin Filled Gauges
- Pump Discharge and Concentrate 0 – 300 psi Panel Mounted Glycerin Filled Gauges
- 5 – Micron Sediment Pre-Filter
- HF5 – Series Ultra Low Energy Membrane Elements
- FRP – Series Membrane Housings – 300 psi
- Pentek® 20" Big Grey Cartridge Housings
- Goulds® Multi-Stage Stainless Steel Booster Pump
- ASCO™ Composite Feed Solenoid Valve
- Feed Low Pressure Switch
- White Powder Coated Aluminum Frame
- Dual Chemical Pump Outlets

Options and Upgrades

- S – 150 Expander Board
- S – 150 Dual TDS Board and Sensor
- Filmtec® LCLE Membrane Elements SS – Series Membrane Housings NF3 – Series Membrane Elements NF4 – Series Membrane Elements HR3 – Series Membrane Elements Hanna® BL 981411
- pH Controller
- Permeate Flush
- Permeate Divert
- Permeate Sample Valves
- Pump Pressure Relief Valve
- Blending Valve
- High Pressure Tank Switch
- Wooden Crate



HRO 6
Reverse Osmosis System



Array Specifications

Model	Vessel Array	Vessel Size	Vessel Quantity	Membrane Size	Membrane Quantity
HRO6 - 1800	1	4040	1	4040	1
HRO6 - 4000	1:1	4040	2	4040	2
HRO6 - 5000	1:1:1	4040	3	4040	3
HRO6 - 7000	1:1:1:1	4040	4	4040	4
HRO6 - 9000	1:1:1:1:1	4040	5	4040	5
HRO6 - 10,000	2:2:2	4040	6	4040	6
HRO6 - 15,000	2:2:2:2	4040	8	4040	8
HRO6 - 18,000	2:2:2:2:2	4040	10	4040	10
HRO6 - 20,000	2:2:2:2:2:2	4040	12	4040	12

Product Specifications

Models	HRO6-1800	HRO6-4000	HRO6-5000	HRO6-7000	HRO6-9000	-10,000	-15,000	-18,000	-20,000
Design									
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feedwater TDS max (ppm) [†]	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Standard Recovery %	29	45	56	63	68	56	63	68	71
Rejection and Flow Rates^{†††}									
Permeate Flow Rate (gpd / lpd)	1,800 / 6,813	3,600 / 13,627	5,400 / 20,441	7,200 / 27,254	9,000 / 34,068	10,800 / 40,882	14,400 / 54,509	18,000 / 68,137	21,600 / 81,764
Permeate Flow Rate (gpm / lpm)	1.25 / 4.73	2.50 / 9.46	3.75 / 14.19	5.00 / 18.93	6.25 / 23.66	7.50 / 28.39	10.00 / 37.85	12.50 / 47.32	15.00 / 56.78
Minimum Concentrate Flow Rate (gpm / lpm)	3 / 11.35	3 / 11.35	3 / 11.35	3 / 11.35	3 / 11.35	6 / 22.71	6 / 22.71	6 / 22.71	6 / 22.71
Concentrate Recycle Flow Rate (gpm / lpm)	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93	Up to 5 / 18.93
Connections									
Feed Connection (in)	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Permeate Connection (in)	3/4 FNPT	3/4 FNPT	3/4 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Concentrate Connection (in)	3/4 FNPT	3/4 FNPT	3/4 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Membranes									
Membrane(s) Per Vessel	1	1	1	1	1	1	1	1	1
Membrane Quantity	1	2	3	4	5	6	8	10	12
Membrane Size	4040	4040	4040	4040	4040	4040	4040	4040	4040
Nominal TDS Rejection %	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
Vessels									
Vessel Array	1	1:1	1:1:1	1:1:1:1	1:1:1:1:1	2:2:2	2:2:2:2	2:2:2:2:2	2:2:2:2:2:2
Vessel Quantity	1	2	3	4	5	6	8	10	12
Pumps									
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP	1.5	1.5	1.5	1.5	3	3	3	3	3
RPM at 60 Hz	3450	3450	3450	3450	3450	3450	3450	3450	3450
System Electrical									
Standard Voltage + Amp Draw	220V, 60Hz, 1PH, 8.8A**	220V, 60Hz, 1PH, 8.8A**	220V, 60Hz, 1PH, 8.8A**	220V, 60Hz, 1PH, 8.8A**	220V, 60Hz, 1PH, 16A**	220V, 60Hz, 1PH, 16A**	220V, 60Hz, 1PH, 16A**	220V, 60Hz, 1PH, 16A**	220V, 60Hz, 1PH, 16A**
Systems Dimensions									
Approximate Dimensions* L x W x H (in / cm)	26 x 26 x 60 / 73.66 x 66.04 x 154.94	26 x 26 x 60 / 73.66 x 66.04 x 154.94	26 x 26 x 60 / 73.66 x 66.04 x 154.94	32 x 26 x 60 / 78.74 x 66.04 x 154.94	32 x 26 x 60 / 78.74 x 66.04 x 154.94	32 x 26 x 60 / 78.74 x 66.04 x 154.94	32 x 50 x 60 / 83.82 x 127 x 154.94	32 x 50 x 60 / 83.82 x 127 x 154.94	32 x 50 x 60 / 83.82 x 127 x 154.94
Approximate Weight (lbs / kg)	250 / 113.40	290 / 131.54	330 / 149.68	370 / 167.83	430 / 195.05	470 / 213.19	510 / 231.33	550 / 249.48	590 / 267.62

Test Parameters: 550 TDS Filtered (5 – Micron), Dechlorinated, Municipal Feedwater, 65 psi / 4.50 bar Feed Pressure, 80 psi / 5.5 bar Operating Pressure, 77°F / 25°C, Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

* Does not include operating space requirements.

** Varies with motor manufacturer.

Operating Limits^{††}

Maximum Feed Temperature (°F / °C)	85 / 29	Maximum Free Chlorine (ppm)	0
Minimum Feed Temperature (°F / °C)	40 / 4	Maximum TDS (ppm)	2,000
Maximum Ambient Temperature (°F / °C)	120 / 49	Maximum Hardness (gpg)	0
Minimum Ambient Temperature (°F / °C)	40 / 4	Maximum pH (Continuous)	11
Maximum Feed Pressure (psi / bar)	85 / 6	Minimum pH (Continuous)	2
Minimum Feed Pressure (psi / bar)	45 / 3	Maximum pH (Cleaning 30 Minutes)	13
Maximum Pressure (psi / bar)	200 / 14	Minimum pH (Cleaning 30 Minutes)	1
Maximum Feed Silt Density Index (SDI)	<3	Maximum Turbidity NTU	1

[†] Low temperatures and feedwater quality, such as high TDS levels will significantly affect the systems production capabilities and performance. Computer projections must be run for individual applications which do not meet or exceed minimum and maximum operating limits for such conditions.

^{††} System pressure is variable due to water conditions. Permeate flow will increase at a higher temperature and will decrease at a lower temperature.

^{†††} Product flow and maximum recovery rates are based on feedwater conditions as stated above. Do not exceed recommended permeate flow. Design conditions are not identical to test conditions, please contact the manufacturer or your supplier for more information.