

R1-Series Reverse Osmosis Systems



R1-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.

Standard Features

- C22 Computer Control ♦ LED Display
 - ♦ Pre-Treatment Lockout ♦ Tank Level Input
 - ♦ Low Pressure Monitoring and Alarm ♦ TDS Monitoring ♦ Feed Flush
- Permeate and Concentrate Flow Meters and Concentrate Recycle Flow Meter
- Pre-Filter 0 – 100 psi Panel Mounted Glycerin Filled Gauge
- Pump Discharge and Concentrate 0 – 300 psi Panel Mounted Glycerin Filled Gauges
- 5 Micron Sediment Pre-Filter „Pentek Single O-Ring Heavy-Duty Filter Housing
- HF5 Ultra Low Energy Membrane Elements with Fiberglass Membrane Housings – 300 psi
- Permeate Sample Ports
- Goulds® Multi-Stage Stainless Steel Booster Pump
- Feed Solenoid Valve
- Feed Low Pressure Switch
- John Guest® Push and Pull Fittings with Locking Safety Clips
- White Powder Coated Aluminum Frame

* Product flow and recovery rates are based on equipment test parameters.

*** Treatment ability of the RO system is dependent on feed water quality. Performance projections must be run for each installation.

Test Parameters: 550 TDS Filtered (5 Micron), De-Chlorinated, Municipal Feed Water, 65 psi (4.5 bar) Feed Pressure, 100 psi (6.89 bar) Operating Pressure, 77 Degrees F (25 Degrees C), Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

Low temperatures and high feed water TDS levels will significantly affect the system's production capabilities. Computer projections should be run for individual applications which do not meet or exceed minimum and maximum operating limits.

Scale prevention measures must be taken to prolong membrane life.

Specifications

Models	R1-1140	R1-2140	R1-3140	R1-4140	R1-5140	R1-6140
Design						
Configuration: Single Pass	1,500 GPD	3,000.00 GPD	4,464 GPD	6,000 GPD	7,488 GPD	9,072 GPD
Feed Water Source***	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm
Standard Recovery Rate	50-75%	50-75%	50-75%	50-75%	50-75%	50-75%
Rejection and Flow Rates						
Nominal Salt Rejection %	99	99	99	99	99	99
Permeate Flow* gpm (lpm)	1.0 (3.9)	2.1 (7.9)	3.1 (11.8)	4.2 (15.8)	5.2 (19.7)	6.3 (23.7)
Minimum Feed Flow gpm (lpm)	4.0 (15)	5.1 (19)	6.1 (32)	7.2 (27)	8.2 (31)	9.3 (35)
Maximum Feed Flow gpm (lpm)	16 (61)	16 (61)	16 (61)	16 (61)	16 (61)	16 (61)
Minimum Concentrate Flow gpm (lpm) with Recycle Based on 75% Recovery	3 (11)	3 (11)	3 (11)	3 (11)	3 (11)	3 (11)
Connections						
Feed inch	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Permeate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	1 FNPT	1 FNPT
Concentrate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	1 FNPT	1 FNPT
Membranes						
Membranes Per Vessel	1	1	1	1	1	1
Membrane Quantity	1	2	3	4	5	6
Membrane Size	4040	4040	4040	4040	4040	4040
Vessels						
Vessel Array	1	1:1	1:1:1	1:1:1:1	1:1:1:1:1	1:1:1:1:1:1
Vessel Quantity	1	2	3	4	5	6
Pumps						
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP	1.5	1.5	1.5	1.5	3	3
RPM @ 60 (50 Hz)	3450 (2875)	3450 (2875)	3450 (2875)	3450 (2875)	3450 (2875)	3450 (2875)
Electrical						
Electrical						
Standard Voltage	220V, 60Hz, 1Ph, 8.7A	220V, 60Hz, 1Ph, 8.7A	220V, 60Hz, 1Ph, 8.7A	220V, 60Hz, 1Ph, 8.7A	220V, 60Hz, 1Ph, 16A	220V, 60Hz, 1Ph, 16A
Voltage Options	220V, 50Hz, 1Ph, 9.7A 220V, 50Hz, 3Ph, 7.9A 220V, 60Hz, 3Ph, 6.7A 460V, 60Hz, 3Ph, 3.9A	220V, 50Hz, 1Ph, 9.7A 220V, 50Hz, 3Ph, 7.9A 220V, 60Hz, 3Ph, 6.7A 460V, 60Hz, 3Ph, 3.9A	220V, 50Hz, 1Ph, 9.7A 220V, 50Hz, 3Ph, 7.9A 220V, 60Hz, 3Ph, 6.7A 460V, 60Hz, 3Ph, 3.9A	220V, 50Hz, 1Ph, 9.7A 220V, 50Hz, 3Ph, 7.9A 220V, 60Hz, 3Ph, 6.7A 460V, 60Hz, 3Ph, 3.9A	220V, 50Hz, 1Ph, 17A 220V, 50Hz, 3Ph, 9.1A 220V, 60Hz, 3Ph, 8.1A 460V, 60Hz, 3Ph, 4.6A	220V, 50Hz, 1Ph, 17A 220V, 50Hz, 3Ph, 9.1A 220V, 60Hz, 3Ph, 8.1A 460V, 60Hz, 3Ph, 4.6A
Systems Dimensions **						
L x W x H inch (cm)	29 x 26 x 61 (73 x 66 x 155)	29 x 26 x 61 (73 x 66 x 155)	29 x 26 x 61 (73 x 66 x 155)	33 x 26 x 61 (84 x 66 x 155)	33 x 26 x 61 (84 x 66 x 155)	33 x 26 x 61 (84 x 66 x 155)
Weight lb. (kg)	250 (110)	290 (130)	360 (160)	460 (210)	590 (270)	750 (340)

Operating Limits

Maximum Feed Temperature °F (°C)	85 (29)	Maximum Free Chlorine ppm	0
Minimum Feed Temperature °F (°C)	40 (4.4)	Maximum TDS ppm	2,000
Maximum Ambient Temperature °F (°C)	120 (48.9)	Maximum Hardness gpg	0
Minimum Ambient Temperature °F (°C)	40 (4.4)	Maximum pH (Continuous)	11
Maximum Feed Pressure psi (bar)	85 (5.9)	Minimum pH (Continuous)	5
Minimum Feed Pressure psi (bar)	45 (3.1)	Maximum pH (Cleaning 30 Min.)	12
Maximum Pressure psi (bar)	200 (13.8)	Minimum pH (Cleaning 30 Min.)	2
Maximum SDI Rating SDI	<3	Maximum Turbidity NTU	1

Test Parameters: 550 TDS Filtered (5 Micron), De-Chlorinated, Municipal Feed Water, 65 psi (4.5 bar) Feed Pressure, 100 psi (6.89 bar) Operating Pressure,



M1 series Standard Features

- S150 Computer Controller
- LCD Backlit Display
- Pre-Treatment Lockout
- Tank Level Input
- Low Pressure Monitoring and Alarm
- Dual TDS Monitoring and Expander Board
- Hour Meter
- Feed Flush
- Permeate and Concentrate Flow Meters
- Concentrate Recycle Flow Meter
- Stainless Steel Concentrate Globe Valve
- Pre-filter 0-100 psi Panel Mounted Glycerin Filled Gauges
- Pump Discharge and Concentrate 0-300 psi Panel Mounted Glycerin Filled Gauges
- FSI® Bag Filter Housing with Stainless Steel Stand
- FSI 5 Micron Filter Bag
- HF4 Extra Low Energy Membrane Elements - Fiberglass Pressure Vessels- 300 psi
- Goulds® Vertical Multi-Stage Stainless Steel Booster Pump
- Feed Solenoid Valve with Manual Bypass
- Feed Low Pressure Switch
- Clean-In-Place (CIP) Ports and Permeate Sample Ports
- Victaulic® Style Fittings
- White Powder Coated Aluminum Frame - Will not rust like systems with metal frames

Options & Upgrades

- S150 Expander Board and or Dual TDS Board
- Variable Frequency Drive (Standard on all 50Hz Systems)
- HF5 Extra Low Pressure Membrane Elements
- Hanna® BL 981411 pH Meter
- Hanna® BL 982411 ORP Meter
- Chemical Pump Outlet
- Pump Pressure Relief Valve
- Blending Valve
- Permeate Divert Valve

M1-Series Reverse Osmosis Systems

Specifications

Models	M1-4240	M1-6240	M1-8240	M1-10240	M1-12240
Design					
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feed Water Source***	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm	TDS<2,000 ppm
Standard Recovery Rate	50–75%	50–75%	50–75%	50–75%	60–75%
Rejection and Flow Rates					
Nominal Salt Rejection %	99	99	99	99	99
Permeate Flow* gpm (lpm)	8.3 (31.6)	12.5 (47.3)	16.7 (63.1)	20.8 (78.9)	25.0 (94.6)
Minimum Feed Flow gpm (lpm)	11.3 (42.9)	15.5 (58.7)	22.7 (85.8)	26.8 (101.6)	31.0 (117.4)
Maximum Feed Flow gpm (lpm)	48 (181.7)	48 (181.7)	48 (181.7)	48 (181.7)	48 (181.7)
Minimum Concentrate Flow gpm (lpm) with Recycle Based on 75% Recovery	3.00 (11.36)	4.17 (15.79)	5.56 (21.04)	6.95 (26.31)	8.33 (31.53)
Connections					
Feed inch	1.5" FNPT	1.5" FNPT	1.5" FNPT	1.5" FNPT	1.5" FNPT
Permeate inch	1" FNPT	1" FNPT	1" FNPT	1.5" FNPT	1.5" FNPT
Concentrate inch	1" FNPT	1" FNPT	1" FNPT	1.5" FNPT	1.5" FNPT
CPI inch	1" FNPT	1" FNPT	1" FNPT	1" FNPT	1" FNPT
Membranes					
Membrane(s) Per Vessel	2	2	2	2	2
Membrane Quantity	8	12	16	20	24
Membrane Size	4040	4040	4040	4040	4040
Vessels					
Vessel Array	1:1:1:1	2:2:1:1	3:3:2	3:3:2:2	3:3:2:2:2
Vessel Quantity	4	6	8	10	12
Pumps					
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP (kw)	3	3	5	7.5	7.5
RPM @ 60 Hz	3450	3450	3450	3450	3450
RPM @ 50 Hz	VFD at 60Hz	VFD at 60Hz	VFD at 60Hz	VFD at 60Hz	VFD at 60Hz
Electrical					
Standard Voltage	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 3Ph, 13.6A	220V, 60Hz, 3Ph, 19.2A	220V, 60Hz, 3Ph, 19.2A
Voltage Options	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3 Ph, 9A 460V, 60Hz, 3 Ph, 5A	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3 Ph, 9A 460V, 60Hz, 3 Ph, 5A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3 Ph, 7A	220V, 50Hz, 3Ph, 22.9A 460V, 60Hz, 3 Ph, 9.7A	220V, 50Hz, 3Ph, 22.9A 460V, 60Hz, 3 Ph, 9.7A
Systems Dimensions **					
L x W x H inch (cm)	31 x 100 x 64 (78 x 254 x 162)	31 x 100 x 64 (78 x 254 x 162)	31 x 100 x 64 (78 x 254 x 162)	31 x 100 x 64 (78 x 254 x 162)	31 x 100 x 64 (78 x 254 x 162)
Weight lb. (kg)	1060 (481)	1150 (520)	1260 (572)	1350 (612)	1450 (658)

* Product flow and recovery rates are based on equipment test parameters.

†† Standard for all 50Hz Systems

** Does not include operating space requirements.

*** Treatment ability of the RO system is dependent on feed water quality. Performance projections must be run for each installation.

Operating Limits

Maximum Feed Temperature °F (°C)	85 (29)	Maximum Free Chlorine ppm	0
Minimum Feed Temperature °F (°C)	40 (4.4)	Maximum TDS ppm	2,000
Maximum Ambient Temperature °F (°C)	120 (48.9)	Maximum Hardness gpg	0
Minimum Ambient Temperature °F (°C)	40 (4.4)	Maximum pH (Continuous)	11
Maximum Feed Pressure psi (bar)	85 (5.9)	Minimum pH (Continuous)	5
Minimum Feed Pressure psi (bar)	45 (3.1)	Maximum pH (Cleaning 30 Min.)	12
Maximum Operating Pressure psi (bar)	200 (13.8)	Minimum pH (Cleaning 30 Min.)	2
Maximum SDI Rating SDI	<3	Maximum Turbidity NTU	1

Test Parameters: 550 TDS Filtered (5 Micron), De-Chlorinated, Municipal Feed Water, 65 psi (4.5 bar) Feed Pressure, 100 psi (6.89 bar) Operating Pressure, 77 Degrees F (25 Degrees C), Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

Low temperatures and high feed water TDS levels will significantly affect the system's production capabilities. Computer projections should be run for individual applications which do not meet or exceed minimum and maximum operating limits.

Scale prevention measures must be taken to prolong membrane life.

R2-Series Reverse Osmosis Systems

Models	R2-1140	R2-2140	R2-3140	R2-4140	R2-5140	R2-6140
Design						
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feed Water Source ***	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm
Standard Recovery Rate	15 – 25%	30 – 40%	40 – 50%	40 – 55%	40 – 60%	40 – 65%
Rejection and Flow Rates						
Nominal Salt Rejection %	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%
Permeate Flow* gpm (lpm)	1.04 (3.94)	2.08 (7.89)	3.13 (11.83)	4.17 (15.77)	5.21 (19.72)	6.25 (23.66)
Minimum Feed Flow gpm (lpm)	4.04 (15.3)	5.08 (19.2)	6.13 (23.2)	7.17 (27.1)	8.21 (31.1)	9.25 (35.0)
Maximum Feed Flow gpm (lpm)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)
Minimum Concentrate Flow gpm (lpm)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)
Connections						
Feed inch	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Permeate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	1 FNPT	1 FNPT
Concentrate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	¾ FNPT	1 FNPT
CIP inch	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT
Membranes						
Membrane Per Vessel	1	1	1	1	1	1
Membrane Quantity	1	2	3	4	5	6
Membrane Size	4040	4040	4040	4040	4040	4040
Vessels						
Vessel Array	1	1:1	1:1:1	1:1:1:1	1:1:1:1:1	1:1:1:1:1:1
Vessel Quantity	1	2	3	4	5	6
Pumps						
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP (kw)	3	3	3	5	5	5
RPM @ 60/50 Hz	3450	3450	3450	3450	3450	3450
Electrical						
Standard Voltage	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 3Ph, 13.6A	220V, 60Hz, 3Ph, 13.6A	220V, 60Hz, 3Ph, 13.6A
Voltage Options	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A
Systems Dimensions **						
L x W x H inch (cm)	27 x 26 x 61 (69 x 66 x 155)	27 x 26 x 61 (69 x 66 x 155)	30 x 26 x 61 (75 x 66 x 155)	32 x 26 x 61 (80 x 66 x 155)	32 x 26 x 61 (80 x 66 x 155)	37 x 26 x 61 (94 x 66 x 155)
Weight lb. (kg)	560 (250)	590 (270)	620 (280)	650 (300)	680 (310)	700 (320)

* Product flow and recovery rates are based on equipment test parameters.

** Does not include operating space requirements.

*** Treatment ability of the RO system is dependent on feed water quality. Performance projections must be run for each installation.

Operating Limits

Maximum Feed Temperature °F (°C)	85 (29)	Maximum Free Chlorine ppm	0
Minimum Feed Temperature °F (°C)	40 (4.4)	Maximum TDS ppm	10,000
Maximum Ambient Temperature °F (°C)	120 (48.9)	Maximum Hardness gpg	0
Minimum Ambient Temperature °F (°C)	40 (4.4)	Maximum pH (Continuous)	11
Maximum Feed Pressure psi (bar)	85 (5.9)	Minimum pH (Continuous)	5
Minimum Feed Pressure psi (bar)	45 (3.1)	Maximum pH (Cleaning 30 Min.)	12
Maximum Operating Pressure psi (bar)	400 (27.6)	Minimum pH (Cleaning 30 Min.)	2
Maximum SDI Rating SDI	<3	Maximum Turbidity NTU	1

Test Parameters: 10,000 TDS Filtered (5 Micron), De-Chlorinated, Feed Water, 65 psi (4.5 bar) Feed Pressure, 350 psi (24.13 bar) Operating Pressure, 77 Degree F (25 Degrees C), Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

Low temperatures and high feed water TDS levels will significantly affect the system's production capabilities. Computer projections should be run for individual applications which do not meet or exceed minimum and maximum operating limits.

Scale prevention measures must be taken to prolong membrane life.