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PRODUCT SPECIFICATIONS

Defender Multi-Use Heavy Duty Revese Osmosis

Built for serious performance, the Defender RO System combines professional-grade components with intuitive operation and a compact footprint. Designed for well water or city water treatment, this skid-mounted system delivers reliable, efficient, and service-friendly operation—ready to install straight out of the box.

KEY BENEFITS

- **Ready for Immediate Delivery** – Ships pre-assembled and pre-tested to reduce installation time
- **Compact Design** – Fits tight spaces without compromising performance
- **Simple to Maintain** – Front-access controls and gauges streamline service and monitoring
- **Lower Lifetime Cost** – Built to last with durable components and efficient water recovery
- **Peace of Mind** – Backed by a 2-Year Limited Warranty and assembled in the U.S.A.

FEATURES

- **High-Efficiency Membranes**
  Delivers up to 16,000 GPD of purified water subject to water quality and configuration
- **Steel-Reinforced Fittings**
  Prevents common cracking and splitting of fittings for ultimate durability
- **Membrane Flush System**
  Extends membrane life and reduces scaling
- **Flexible Storage Tank Options**
  Water storage tanks available from 100 - 1,000 gallons in multiple dimensions
- **Pre-Treatment Integration** – Supports chemical injection, backwashing filtration, and UV disinfection
- **Stainless Steel Multi-Stage Centrifugal Pump**
  Commercial-grade pressure and flow in a quiet, efficient design
- **Fully Customizable**
  Easily adapts to unique applications - available in differing voltages and configurations
- **Modular Steel Frame**
  Black powder-coated, corrosion-resistant, and pre-drilled for accessory mounting
- **Double O-Ring Pre-Filter**
  5 micron sediment filter ensure system is protected
- **Proved Controls**
  Controls tank level input, automatic functionality, water quality, membrane flushing cycles

SPECIFICATIONS TABLE

Models	224-DFWHRO-4000	224-DFWHRO-6000	224-DFWHRO-8000
Configuration	Single Pass	Single Pass	Single Pass
Feed Water Source	City or Well Water	City or Well Water	City or Well Water
Standard Recovery Rate	48%	53%	62%
Recovery with Concentrate Recycle	Up to 75%	Up to 75%	Up to 75%
Vessel Array	1.1	1;1;1	1:1:1:1
Vessel Quantity	2	3	4
Nominal Salt Rejection %	98.5	98.5	98.5
Permeate Flow* gpm (lpm)	2.78 (10.52)	4.16 (15.80)	5.56 (21.13)
Min Feed Flow gpm (lpm)	7.00 (26.50)	7.16 (27.20)	8.56 (32.53)
Max Feed Flow gpm (lpm)	9.00 (34.07)	14.00 (53.00)	14.00 (53.00)
Max Concentrate Flow gpm (lpm)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP (kW)	1.5 (1.10)	1.5 (1.10)	1.5 (1.10)
RPM @ 60 (50Hz)	3450 (2900)	3450 (2900)	3450 (2900)
Feed Inch	1" FNPT	1" FNPT	1" FNPT
Permeate Inch	1/2" Tubing	1/2" Tubing	1/2" Tubing
Concentrate Inch	1/2" Tubing	1/2" Tubing	1/2" Tubing
Voltage	220V 60Hz 1PH	220V 60Hz 1PH	220V 60Hz 1PH
Voltage Amp Draw	8.3	8.3	8.3
Membrane Quantity	2	3	4
Membrane Size	4" x 40" (4040)	4" x 40" (4040)	4" x 40" (4040)
L x W x H Inch	32" x 25" x 65"	32" x 25" x 65"	32" x 25" x 65"
Weight (lbs)	340	370	400

Performance Testing Conditions: Performance data is based on testing with municipal feedwater that is dechlorinated, filtered to 5 microns, and contains approximately 550 ppm TDS. Operating conditions included a feed pressure of 65 psi (4.5 bar), system pressure of 100 psi (6.9 bar), water temperature of 77°F (25°C), pH of 7.0, and recovery rate as specified. Measurements were taken after 60 minutes of continuous operation.

A. System output and recovery rates are heavily influenced by water temperature and feedwater chemistry. Lower temperatures or elevated TDS levels can significantly reduce performance. Custom system projections are required for applications outside the normal operating range.

B. Flow rates and recovery estimates are valid only under the conditions specified above. Do not exceed the rated permeate flow to avoid damage or premature wear.
C. Power draw may vary based on the specific motor supplied.
D. Dimensions shown are system only and do not account for required clearance for installation or maintenance.

OPERATING LIMITATIONS

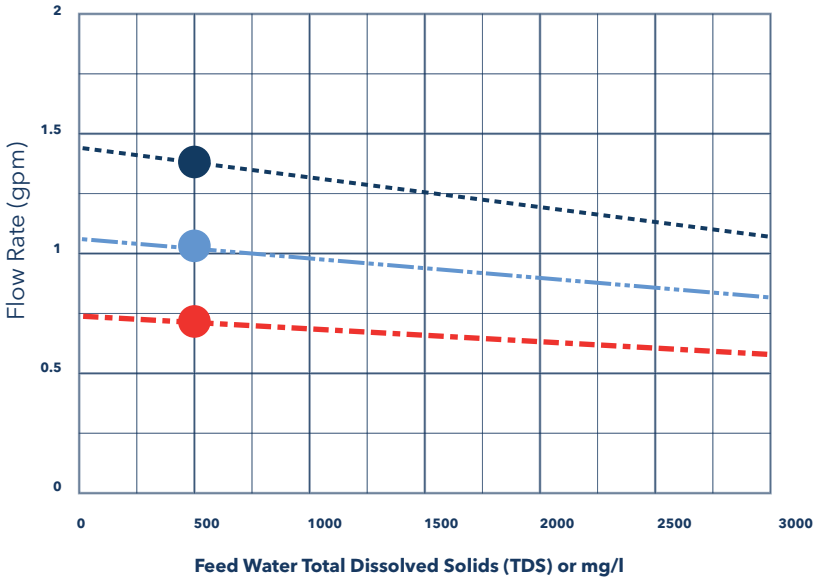
Max/Min Temperature °F (°C)	105 (40.96)/40 (4.44)	105 (40.96)/40 (4.44)	105 (40.96)/40 (4.44)
Max/Min Ambient Temperature °F (°C)	120 (48.89)/35 (1.66)	120 (48.89)/35 (1.66)	120 (48.89)/35 (1.66)
Max/Min Feed Pressure psi (bar)	85 (5.86)/35 (2.41)	85 (5.86)/35 (2.41)	85 (5.86)/35 (2.41)
Maximum Operating Pressure psi (bar)	150 (10.34)	150 (10.34)	150 (10.34)
Maximum SDI Rating	<3	<3	<3
Maximum Turbidity NTU	1	1	1
Maximum Free Chlorine ppm	0	0	0
Maximum TDS ppm	2000	2000	2000
Maximum Hardness gpg	< 1	<1	< 1
Max/Min pH (Continuous)	11pH/3pH	11pH/3pH	11pH/3pH

TEMPERATURE CORRECTION CHART

Temperature °F	Correction Factor	Corrected Flow (gpd)	Temperature °F	Correction Factor	Corrected Flow (gpd)
50	1.711	1168.9	51	1.673	1195.5
52	1.642	1218.0	53	1.605	1246.1
54	1.576	1269.0	55	1.541	1297.9
56	1.511	1323.6	57	1.480	1351.4
58	1.449	1380.3	59	1.422	1406.5
60	1.391	1437.8	61	1.366	1464.1
62	1.337	1495.9	63	1.313	1523.2
64	1.285	1556.4	65	1.258	1589.8
66	1.236	1618.1	67	1.210	1652.9
68	1.189	1682.1	69	1.164	1718.2
70	1.144	1748.3	71	1.120	1785.7
72	1.101	1816.5	73	1.078	1855.3
74	1.056	1893.9	75	1.038	1926.8
76	1.017	1966.6	77	1.000	2000.0
78	0.982	2036.7	79	0.968	2066.1
80	0.951	2103.0	81	0.937	2134.5
82	0.921	2171.6	83	0.905	2209.9
84	0.892	2242.2	85	0.877	2280.5
86	0.862	2320.2	87	0.776	2576.8

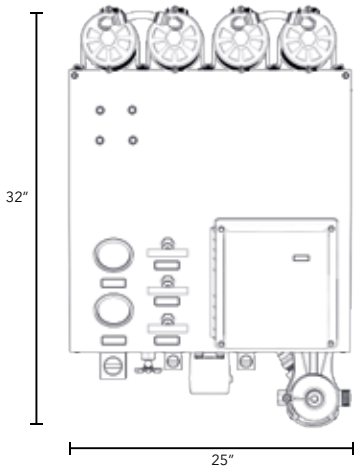
Corrected Flow Rate = Rated Flow Rate (2000 GPD per membrane) / (Correction Factor @ Feed Water Temp.)

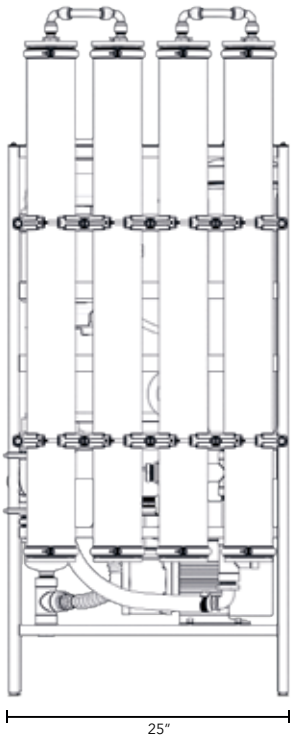
MEMBRANE COMPENSATED PERFORMANCE CURVE

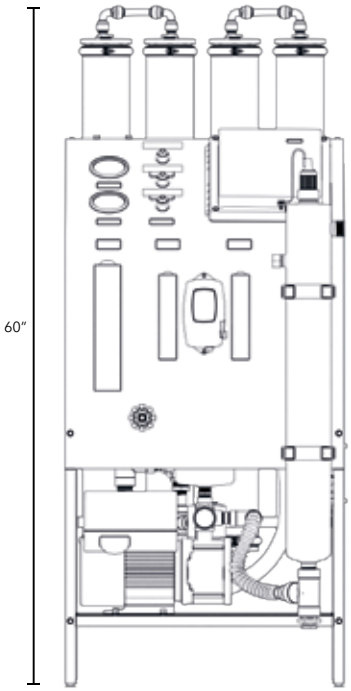


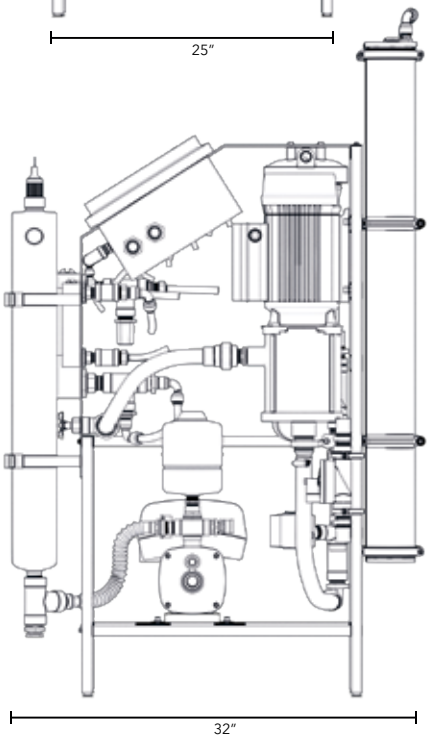
*Flow rates calculated under the following conditions: 35 psi influent water pressure, 0 psi backpressure on the permeate line, WX-4040 membrane, 150 psi test pressure. Membranes rated at 500 TDS feed.

DEFENDER REVERSE OSMOSIS SYSTEM
SPEC SHEET AND DIMENSION









CAUTION: Recycle is not always recommended. If the system is on well water, check with our technical support team first to verify water quality is within operating limits permitting recycle.

Adjust the system to the designed flow rates without exceeding 150 PSI on the pump / membrane pressure gauge. This adjustment is system and site specific. The concentrate valve, concentrate recycle valve, and the throttle valve on the pump will need to be balanced so the RO meets the designed flow rates for each stream without exceeding 150 PSI on the System Pressure Gauge.

ADJUSTING THE RO SYSTEM FLOW RATES					
System Size	Targeted Permeate Flow	Concentrate Flow (No Recycle)	Concentrate Flow (With Recycle)	Concentrate Recycle Flow	Maximum System Pressure
2000	1.39 GPM	3 GPM	0.5 GPM	2.5 GPM	150 PSI
4000	2.78 GPM	3 GPM	1 GPM	2 GPM	150 PSI
6000	4.17 GPM	3 GPM	1.5 GPM	1.5 GPM	150 PSI
8000	5.56 GPM	3 GPM	2 GPM	1 GPM	150 PSI

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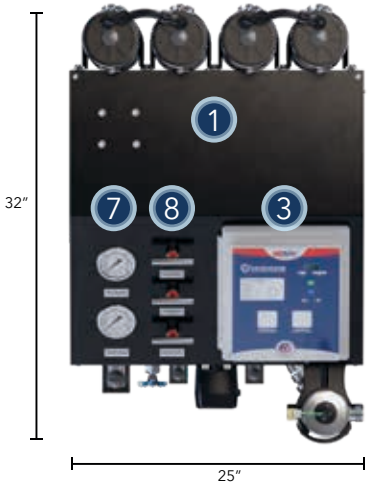

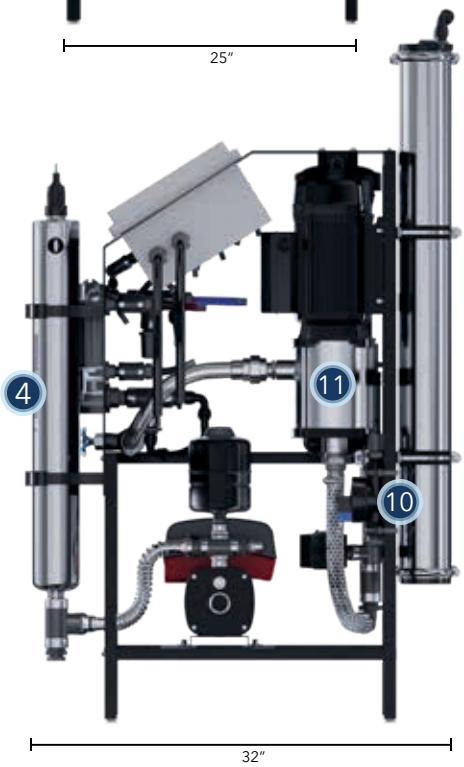

CONTENT SPECS

1. Defender Reverse Osmosis System
2. Stainless Steel Membrane Housing
3. Control Panel
4. Pulsar Ultraviolet Disinfection System
5. UV Controller
6. Flow Meters
7. Pressure Gauges
8. Adjustment Valves
9. CMBE 5-62 Booster Pump - 1 Phase, 200-240V
10. 1" NSF Composite Solenoid Valve
11. Booster Pump