

# X3 – SERIES INDUSTRIAL REVERSE OSMOSIS SYSTEMS



**X3 – 5280**  
Industrial Reverse Osmosis System

**AXEON® X3–Series Reverse Osmosis Systems** are engineered for seawater desalination and other high total dissolved solids (TDS) applications requiring high pressure pumps. The **X3–Series Reverse Osmosis Systems** are rated to handle total dissolved solids as high as 45,000.

The **X3–Series Reverse Osmosis Systems** range in capacity from 5.6 to 27.8 gallons per minute (8,000 to 40,000 gallons per day) utilize a clean design that allows for convenient installation, user–friendly operation.

Featuring robust components for enhanced performance, the **X3–Series Reverse Osmosis Systems** include a duplex stainless steel axial piston pump, high pressure hoses, stainless steel valving and FRP membrane housings with duplex stainless steel side ports.

### AXEON Naming Matrix

	<b>X3</b>	<b>5</b>	<b>2</b>	<b>80</b>
<b>X–Series Model</b>				
X3 Seawater Model				
<b>Housing Quantity Designation</b>				
1	1 Vessel			
2	2 Vessels			
3	3 Vessels			
4	4 Vessels			
5	5 Vessels			
<b>Membrane Quantity Per Housing</b>				
2	2 Membranes			
<b>8.0 Inch Membrane Diameter</b>				

## FEATURES

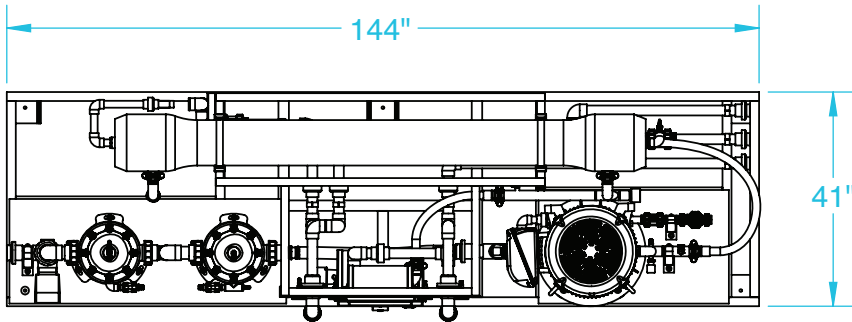
- 8-inch Low Energy Seawater Membrane Elements
- 8-inch Fiberglass Membrane Housings with Duplex Stainless Steel Side Ports (1000 psi)
- 2 Stage Glass-Reinforced, Polypropylene, Non-Metallic Pre-Filtration Housings
- 5-Micron Sediment Pre-Filter (Stage 1)
- 1-Micron Sediment Pre-Filter (Stage 2)
- Duplex Stainless Steel Axial Piston Pump
- Low and High Pressure Shut-Off Switch
- Pump Pressure Relief Valve
- S-150 Pre-Programmed Computer Controller with Soft Start
- Permeate and Concentrate Rotameters
- Permeate TDS Monitoring
- Pre- and Post-Filter 316L Stainless Steel Pressure Gauges Pump and Concentrate 316L Stainless Steel Pressure Gauges
- PVC Feed Motorized Ball Valve
- 316L Stainless Steel Needle Concentrate Valve
- Epoxy Powder Coated Carbon Steel Frame
- Sch80 Low Pressure PVC Piping
- Electroplated 316L Sch80 Stainless Steel Piping
- Nitrile High Pressure Hose with Duplex Stainless Steel Connections
- Clean-In-Place (CIP) Ports with Valves
- Permeate Sample Ports
- Chemical Feed Port
- Chemical Feed Power Outlet
- Composite Permeate Flush Solenoid Valve
- PVC Permeate Divert Motorized Ball Valve
- 460VAC 3PH 60Hz

## OPTIONS AND UPGRADES

- S-200 Computer Controller
  - Permeate and Concentrate Digital Paddlewheel Sensors
- VFD (Variable Frequency Drive)
- Programmable Logic Controller (PLC) with Touch Screen
- pH Sensor
- ORP Sensor
- Clean-In-Place Skid-Mounted System
- Chemical Feed System
- 8-inch Low Energy Seawater Membrane Elements (440 SF)
- Voltage Options: 220VAC 3PH
  - 60Hz, 220VAC 3PH 50Hz, 380VAC 3PH 50Hz

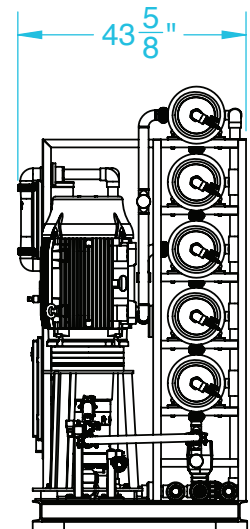
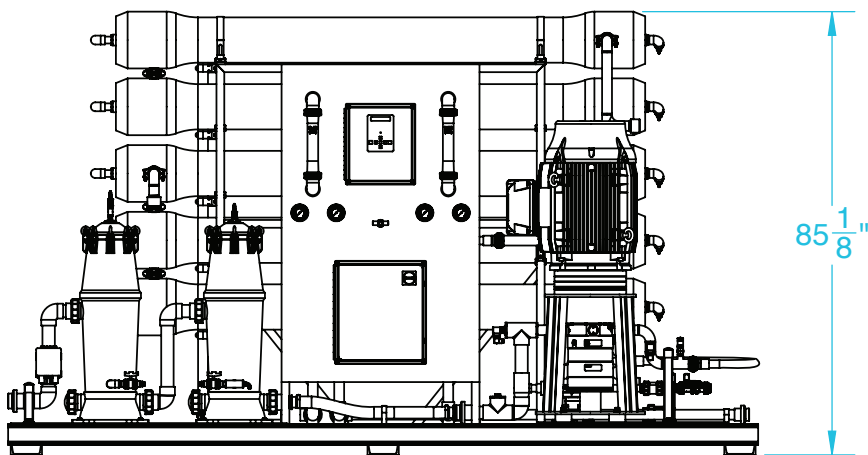


**X2-5280**  
*Industrial Reverse Osmosis System*



**Notes:**

1. All dimensions are given in inches.
2. Dimensions given for X3-1280 through X3-5280. (X3-5280 pictured)



# SPECIFICATIONS

MODELS	X3-1280	X3-2280	X3-3280	X3-4280	X3-5280
<b>Design</b>					
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feedwater TDS max (ppm) <sup>A</sup>	38,000	38,000	38,000	38,000	38,000
Standard Recovery %	30	45	50	50	50
<b>Rejection and Flow Rates<sup>B</sup></b>					
Nominal Salt Rejection %	99.8	99.8	99.8	99.8	99.8
Permeate Flow Rate (gpm / lpm)	5.60 / 21.00	11.10 / 42.00	16.70 / 63.00	22.20 / 84.00	27.80 / 105.00
Minimum Concentrate Flow Rate (gpm / lpm)	14 / 53	14 / 53	17 / 64	22 / 83	28 / 106
<b>Connections</b>					
Feed Connection (in)	2 FNPT	2 FNPT	2 FNPT	2 FNPT	2 FNPT
Permeate Connection (in)	1 1/4 FNPT	1 1/4 FNPT	1 1/4 FNPT	1 1/2 FNPT	1 1/2 FNPT
Concentrate Connection (in)	1 1/4 FNPT	1 1/4 FNPT	1 1/4 FNPT	1 1/2 FNPT	1 1/2 FNPT
Clean-in-Place Port (in)	1 1/2 FNPT	1 1/2 FNPT	1 1/2 FNPT	1 1/2 FNPT	1 1/2 FNPT
Chemical Feed Port (in)	1/2 NPT	1/2 NPT	1/2 NPT	1/2 NPT	1/2 NPT
<b>Membranes</b>					
Membranes Per Vessel	2	2	2	2	2
Membrane Quantity	2	4	6	8	10
Membrane Size	8040	8040	8040	8040	8040
<b>Vessels</b>					
Vessel Array	1	1:1	1:1:1	2:1:1	2:1:1:1
Vessel Quantity	1	2	3	4	5
<b>Pumps</b>					
Pump Type	Axial Piston	Axial Piston	Axial Piston	Axial Piston	Axial Piston
Motor HP / KW	20 / 15	20 / 15	25 / 19	40 / 30	40 / 30
<b>System Electrical</b>					
Standard Voltage + Amp Draw	460V, 60Hz, 3PH, 25.5A	460V, 60Hz, 3PH, 25.5A	460V, 60Hz, 3PH, 31A <sup>C</sup>	460V, 60Hz, 3PH, 48.5A	460V, 60Hz, 3PH, 48.5A
<b>System Dimensions</b>					
Approximate Dimensions <sup>D</sup> L x W x H (in / cm)	144 x 41 x 75 / 366 x 104 x 190	144 x 41 x 75 / 366 x 104 x 190	144 x 41 x 75 / 366 x 104 x 190	144 x 41 x 75 / 366 x 104 x 190	144 x 41 x 85 / 366 x 104 x 216
Approximate Weight (lbs / kg)	2230 / 1060	2660 / 1206	3090 / 1400	3860 / 1750	4220 / 1920

**Test Parameters:** 35,000 TDS Filtered (5-Micron), Dechlorinated, Municipal Feedwater, 65 psi / 4.50 bar Feed Pressure, 950 / 65.5 psi bar Operating Pressure, 77°F / 25°C, Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

- A. 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.
- B. Product flow and maximum recovery rates are based on feedwater conditions as stated above. Do not exceed recommended permeate flow.
- C. Varies with motor manufacturer.
- D. Does not include operating space requirements.

## OPERATING LIMITS<sup>E</sup>

Design Temperature (°F / °C)	77 / 25	Maximum SDI Rating (SDI)	< 3
Maximum Feed Temperature (°F / °C)	85 / 29	Maximum Free Chlorine (ppm)	0
Minimum Feed Temperature (°F / °C)	40 / 4	Maximum Hardness (gpg)	0
Maximum Ambient Temperature (°F / °C)	120 / 49	Maximum pH (continuous)	11
Minimum Ambient Temperature (°F / °C)	40 / 4	Minimum pH (continuous)	2
Maximum Feed Pressure (psi / bar)	72.5 / 5	Maximum pH (cleaning 30 minutes)	12
Minimum Feed Pressure (psi / bar)	45 / 3	Minimum pH (cleaning 30 minutes)	1
Maximum Piping Pressure (psi / bar)	950 / 66	Maximum Turbidity (NTU)	< 1

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