

AQUA-CHEM ACX3-Series Industrial Sea Water Reverse Osmosis Systems are engineered for seawater desalination and other high total dissolved solids (TDS) applications requiring high pressure pumps, the ACX3-Series systems are rated to handle total dissolved solids as high as 38,000 ppm (with higher levels of TDS achievable by adjusting the recovery and/or flux rate) †. The ACX3-Series produces permeate water that meets WHO guidelines and has a TDS of <300 PPM.

The models of the ACX3-Series range in capacity from 8,000 to 96,000 gallons per day and utilize a clean utilitarian modular design that allows for convenient installation, user-friendly operation, and future expandability. The larger models in the series are designed with the pump vertically-mounted on a separate side-by-side skid for ultimate flexibility, efficient use of space, and ease of maintenance.



Featuring robust components selected for enhanced performance, the ACX3-Series includes a duplex steel plunger-type pump, high pressure hose, stainless steel valving, and FRP pressure vessels with duplex steel side ports. The larger models also include VFD motor control of the pump and a motorized feed valve.

Standard features include permeate flush and permeate divert. Optional features are available to upgrade or complement the ACX3-Series models including a PLC with touchscreen, energy-recovery device (ERD), pH and/or ORP sensors, chemical feed system, and clean-in-place system.

Standard Features

- **Controller**
 - S-150 Pre-programmed Computer Controller*
 - S-200 Pre-programmed Computer Controller w/ VFD**
- **Instrumentation**
 - Permeate and Concentrate Rotometers*
 - Permeate and Concentrate Digital Paddle Wheels**
 - Pre - and Post - Filter Pressure Gauges
 - Pump Pressure and Concentrate Pressure Gauges
 - Permeate TDS
- **Membrane Elements**
 - 8" Low Energy Seawater Elements
- **Pressure Vessels**
 - 1000 psig FRP vessels w/Duplex Steel Side Ports
- **Filter Housings**
 - Multi-Cartridge PVDF/Polypro Filter Housing
 - 5-Micron Sediment Cartridge Filters
- **Pump**
 - Plunger - Type Duplex Steel Pump
- **Flow Control**
 - Motorized Feed Valve
 - Stainless Steel Globe Throttling Valves
 - Low and High Pressure Shut-Off
 - Permeate Flush
 - Permeate Divert
- **Frame**
 - Powder-Coated Carbon Steel Frame
- **Piping**
 - Nitrile High Pressure Hose/Stainless Steel Pipe
 - Sch80 PVC Piping (Low Pressure Side)
- **Ports**
 - Chemical Feed Port
 - Chemical Feed Power Outlet
 - Permeate Sample Ports
- **Voltage**
 - 460VAC 3PH 60 HZ

*Standard on Models ACX3-8000, ACX3-16000, ACX3-24000, ACX3-32000, ACX3-40000

**Standard on Models ACX3-48000, ACX3-64000, ACX3-80000, ACX3-96000

ACX3-Series

Industrial Sea Water Reverse Osmosis Systems

Optional Features

- S-200 Computer Controller***
- VFD***
- Programmable Logic Controller (PLC) w/Touch Screen
- Permeate and Concentrate Digital Paddle Wheels***
- 8" Low Energy Seawater 440 SF Elements
- Clean-In-Place Skid-Mounted System
- Clean-In-Place Ports
- pH and/or ORP Sensor
- Chemical Feed System
- Energy Recovery Device (ERD)

***Option available for Models ACX3-8000, ACX3-16000, ACX3-24000, ACX3-32000, ACX3-40000. Standard on larger models.

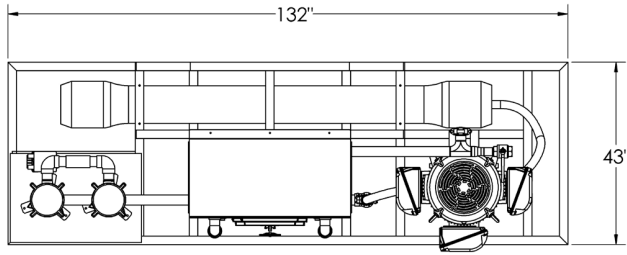


ACX3-40000

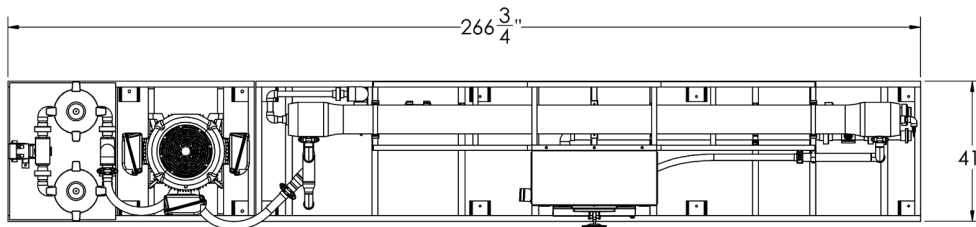
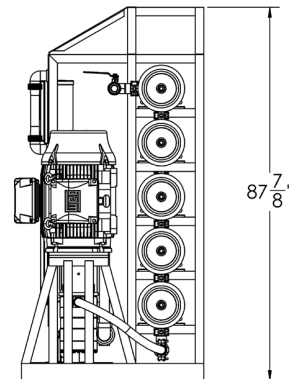
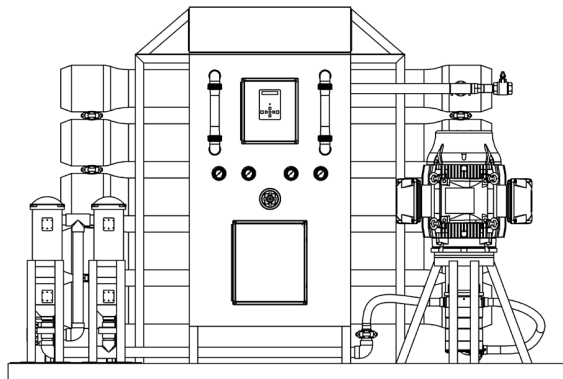


ACX3-96000

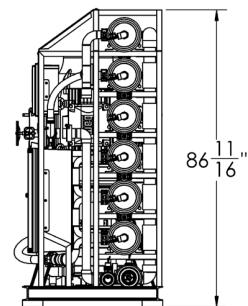
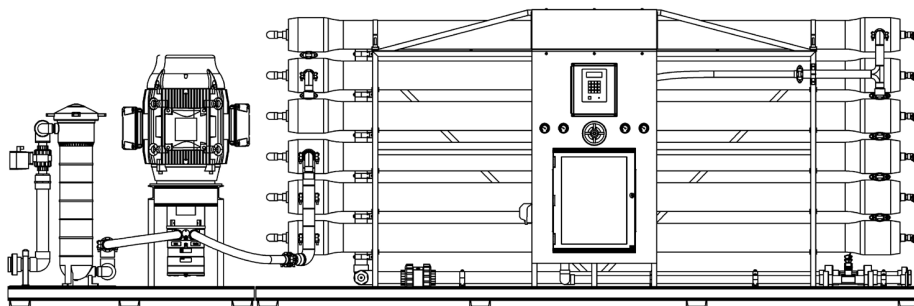
ACX3-Series Industrial Sea Water Reverse Osmosis Systems



- Notes:
1. All dimensions given in inches
 2. Dimensions given for ACX3-8000 to ACX3-40000 (ACX3-40000 Pictured)



- Notes:
1. All dimensions given in inches
 2. Dimensions given for ACX3-40000 to ACX3-96000 (ACX3-96000 Pictured)



ACX3-Series

Industrial Sea Water Reverse Osmosis Systems

Model	ACX3-8000	ACX3-16000	ACX3-24000	ACX3-32000	ACX3-40000	ACX3-48000	ACX3-64000	ACX3-80000	ACX3-96000
Design									
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feed Water Source	TDS <38000	TDS <38000	TDS <38000	TDS <38000	TDS <38000	TDS <38000	TDS <38000	TDS <38000	TDS <38000
Rejection and Flow Rates									
Nominal Salt Rejection	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%
Maximum Permeate Flow (gpd)*	8000	16000	24000	32000	40000	48000	64000	80000	96000
Maximum Permeate Flow (gpm)*	5.6	11.1	16.7	22.2	27.8	33.3	44.4	55.5	66.6
Minimum Concentrate Flow (gpm)	14	14	14	14	14	14	14	14	14
Nominal System Recovery	30%	45%	50%	50%	50%	50%	50%	50%	50%
Connections									
Feed (in)	2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT	3" FNPT	3" FNPT	3" FNPT	3" FNPT
Permeate (in)	1-1/4" FNPT	1-1/4" FNPT	1-1/4" FNPT	1-1/2" FNPT	1-1/2" FNPT	2" FNPT	2" FNPT	2" FNPT	2" FNPT
Concentrate (in)	1-1/4" FNPT	1-1/4" FNPT	1-1/4" FNPT	1-1/2" FNPT	1-1/2" FNPT	2" FNPT	2" FNPT	2" FNPT	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	2" FNPT	2" FNPT	2" FNPT	2" FNPT
Chemical Feed Port (in)	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT
Membranes									
Membrane Per Vessel	2	2	2	2	2	4	4	4	4
Membrane Quantity	2	4	6	8	10	12	16	20	24
Membrane Size	8080	8080	8080	8080	8080	8080	8080	8080	8080
Vessels									
Vessel Array	1	1:1	1:1:1	2:1:1	2:1:1:1	2:1	2:1:1	3:1:1	3:2:1
Vessel Quantity	2	2	3	4	5	3	4	5	6
Pumps									
Pump Type	Plunger	Plunger	Plunger	Plunger	Plunger	Plunger	Plunger	Plunger	Plunger
Motor (hp)	20	20	25	40	40	50	75	100	100
Electrical									
Standard Voltage**	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph	460V, 60Hz, 3Ph
System Dimensions									
L x W x H (in)	132 x 45 x 90	132 x 45 x 90	132 x 45 x 90	132 x 45 x 90	132 x 45 x 90	267 x 41 x 90	267 x 41 x 90	267 x 41 x 90	267 x 41 x 90
Weight (lb)	2330	2660	3090	3860	4220	5390	5870	7150	7570

*Product flow and recovery rates are based on feedwater conditions of 38000 ppm TDS at 77°F. Treatment ability of the RO system is dependent on feed water quality. Higher TDS and/or lower temperatures will reduce product flow. An AQUA CHEM Applications Engineer can rate the units for these other feed water conditions.

**Other voltage options are available.

Operating Limits

Design Temperature	77 °F	Design TDS	38000 ppm
Max. Feed Temperature	85 °F	Max. TDS[^]	Up to 40000 ppm
Min. Feed Temperature[^]	41 °F	Max. Turbidity NTU^{^^}	Up to 1
Max. Ambient Temperature	120 °F	Max. SDI Rating^{^^}	<3
Min. Ambient Temperature	40 °F	Max. Hardness GPG^{^^^}	1
Max. Feed Pressure	85 psi	Max. Operating pH	11
Min. Feed Pressure	45 psi	Min. Operating pH	3
Max. Operating Pressure	1000 psi	Max. pH during CIP (30 min.)	12
Max. Free Chlorine	0	Min. pH during CIP (30 min.)	2

[^]Product flow and recovery rates are based on feedwater conditions of 38000 ppm TDS at 77° F. Treatment ability of the RO system is dependent on feed water quality. Higher TDS and/or lower temperatures will reduce product flow. An AQUA CHEM Applications Engineer can rate the units for these other feed water conditions.

^{^^}Appropriate filtration must be installed in order to prevent premature membrane fouling.

^{^^^}Scale prevention measures must be taken to prolong membrane life.

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