

# PROflex\*

60 Hz reverse osmosis machines from 35 to 550 gpm (8 - 125 m<sup>3</sup>/hr)



## flexible design

- PROflex has 15 base configurations using 12 to 108 elements that allows user to choose various pumps and membrane element types to work for their specific situation and capex budget.
- 3-bank and 2-bank designs available
- Footprint is same for all models
- New design allows for wired devices, motor starters, disconnects, monitors, to be configured and easily customized on the Instrument panel and assembly
- Pump is in front of skid for easy access and maintenance.
- Piping is clean and simple – allowing for easy modifications, as needed.

## standard features

All PROflex machines come standard with the following features:

- UL/cUL Electrical Panel
- Primary and final pressure transmitters
- RO permeate flush on shutdown
- UL / cUL Electrical Panel
- pH Meter on RO Feed
- Allen Bradley CompactLogix PLC Control Package
- Signet Control/Monitoring Package

## instrumentation

Flow Meters..... Permeate & Concentrate  
 Conductivity..... Permeate & Feed  
 Pressure..... Pre & Post Cartridge Filter  
 .....RO Feed, Pump Outlet, Inter-stage  
 ..... Concentrate & Permeate  
 Pressure Transmitter.....Pre & Post Elements  
 Pressure Switch..... Feed, Permeate, Concentrate  
 pH.....Feed

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## configurable options available

Go to our website, click on “Resources” then on “RO Configurator” for more details.

- Multiple Pump Options – use the Configurator Tool to help select the pumps right for your application.
- Membrane Options:
  - High Rejection Elements
  - Low Energy Elements
  - Nano Elements
- Motor Starters/Variable Frequency Drive: *Mounted or shipped loose.*
- Stainless Steel Upgrade options:
  - Housings
  - Low Pressure Piping
  - Cartridge Filter Housing
- Recycle
- Banks by bank cleaning on two stage (2S) systems
- 575V Motors
- NEMA 4X Control Panel
- Instrument Packages
  - Rosemount
  - E&H
  - No Instruments

## PRO NA accessories

- PRO Multi-Media filters
- PRO Activated Carbon and Softeners
- PRO Clean-in-Place units
- PRO Chemical Feed Systems
- Transfer Pumps and Storage Tanks

## operating parameters

Use Winflows as guide for specific rates and ranges with your machine.

- Design Recovery<sup>1</sup> ..... 77.5-80%
- Design Temperature ..... 60°F (16°C)
- Operating Temperature Range..... 35-85°F (2-29°C)
- Nominal rejection..... 97-99%
- System Inlet Pressure ..... 30-60 PSI

<sup>1</sup> Recovery Rate can vary +/- 5%

## materials of construction

High-pressure piping ..... 316 Stainless Steel, Sch. 10  
Low-pressure piping ..... PVC, Sch. 80  
Frame ..... Painted blue carbon steel  
Enclosure ..... Nema 4  
Clamps/fittings ..... Zinc-plated

## membrane elements and housings

Membrane Model ..... AG8040F-400  
Style ..... Spiral-wound elements  
Membrane type ..... TFC(Polyamide)  
Average membrane flux ..... 15-17 gfd'  
Membrane rejection..... 99.0 to 99.5%  
Membrane Element Manufacturer ..... SUEZ  
Housing material..... FRP or 316 Stainless Steel  
Housing Pressure Rating ..... 450 psi  
Housing Manufacturer ..... Codeline or Equal

<sup>1</sup> Use the configurator to choose the PROflex configuration needed to meet your desired flux.

## cartridge filtration

Housing model ..... ROPV or Equal  
Housing material..... FRP  
Cartridge filter..... 1-micron nominal, HF.Zs 01-40-FSB

## PROflex – true flexibility to design a system you want

PROflex offers the flexibility to choose a system that allows you to choose an aggressive or conservative design to meet the capital and FLUX requirements of your specific application. PROflex allows complete choice on arrays, number of elements, and pump sizes within each array. Figure 1 shows the PROflex product line and the flow ranges. The flow ranges are the hydraulic limits with each model. Users should choose their RO system by determining:

1. Desired permeate flow range
2. Temperature of the water
3. Square footage of the membranes needed (or flux limits), per element
4. Desired Recovery.
5. Recycle, if any.

NOTE: The Pre-Configured Starting points in Figure 1 give you a place to start, and are designs that we may have in stock. They show flow location using the base assumptions of:

1. 60°F Feedwater temperature
2. 400 sq. ft, elements AG Elements
3. 77.5-80% RO recovery
4. Tonkaflo\* Pump shown in the charts below

Use the Configurator Tool and Winflows to determine other designs that move you to different points in the bars above, for example: different elements, pumps, and recovery. These different points will allow you to see changes to the capital investment one makes and weighs with design considerations. Further, move left or right in above chart to further affect flux and capex spend.

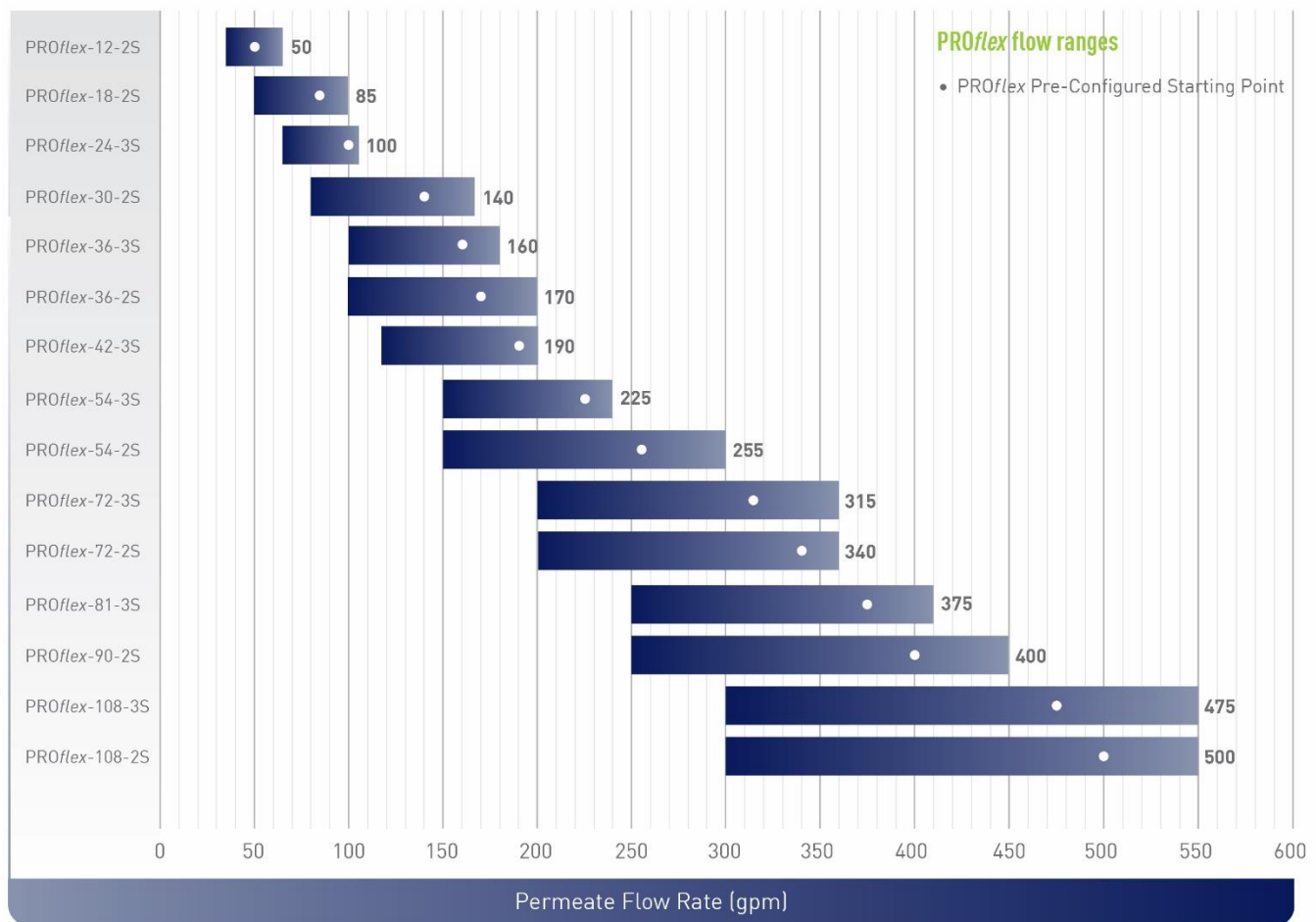


Figure 1: PROflex flow ranges

## PROflex 2 stage (2S) NA models

MODEL	PROflex-12-2S	PROflex-18-2S	PROflex-30-2S	PROflex-36-2S	PROflex-54-2S	PROflex-72-2S	PROflex-90-2S	PROflex-108-2S
Permeate Rate:	50 gpm (11 m <sup>3</sup> /hr)	85 gpm (20 m <sup>3</sup> /hr)	140 gpm (32 m <sup>3</sup> /hr)	170 gpm (38 m <sup>3</sup> /hr)	255 gpm (59 m <sup>3</sup> /hr)	340 gpm (78 m <sup>3</sup> /hr)	400 gpm (91 m <sup>3</sup> /hr)	500 gpm (114 m <sup>3</sup> /hr)
Concentrate Rate:	15 gpm (4 m <sup>3</sup> /hr)	25 gpm (6 m <sup>3</sup> /hr)	40 gpm (9 m <sup>3</sup> /hr)	50 gpm (11 m <sup>3</sup> /hr)	75 gpm (17 m <sup>3</sup> /hr)	100 gpm (23 m <sup>3</sup> /hr)	116 gpm (26 m <sup>3</sup> /hr)	145 gpm (33 m <sup>3</sup> /hr)
Concentrate Recycle:	~10 gpm (2 m <sup>3</sup> /hr)	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>	Not in stnd design <sup>3</sup>
Feed Rate:	65 gpm (15 m <sup>3</sup> /hr)	110 gpm (25 m <sup>3</sup> /hr)	180 gpm (41 m <sup>3</sup> /hr)	220 gpm (50 m <sup>3</sup> /hr)	330 gpm (75 m <sup>3</sup> /hr)	440 gpm (100 m <sup>3</sup> /hr)	516 gpm (117 m <sup>3</sup> /hr)	645 gpm (147 m <sup>3</sup> /hr)
Model:	SS8512	SS12512	SS24009	SS24009	AS40409	AS40409	AS62505	AS62506
Manufacturer:	Tonkaflø	Tonkaflø	Tonkaflø	Tonkaflø	Tonkaflø	Tonkaflø	Tonkaflø	Tonkaflø
Quantity:	1	1	1	1	1	1	1	1
Motor Power and type:	20 Hp (30 KW) TEFC	40 Hp (30 KW) TEFC	60 Hp (45 KW) TEFC	60 Hp (45 KW) TEFC	75 Hp (56 KW) TEFC	75 Hp (56 KW) TEFC	100 Hp (75 KW) TEFC	125 Hp (93 KW) TEFC
Installed Power:	15 KW	30 KW	45 KW	45 KW	56 KW	56 KW	75 KW	93 KW
Design Flow Rate:	75 gpm (17 m <sup>3</sup> /hr)	110 gpm (25 m <sup>3</sup> /hr)	180 gpm (41 m <sup>3</sup> /hr)	220 gpm (50 m <sup>3</sup> /hr)	330 gpm (75 m <sup>3</sup> /hr)	440 gpm (100 m <sup>3</sup> /hr)	516 gpm (175 m <sup>3</sup> /hr)	645 gpm (147 m <sup>3</sup> /hr)
Design boost pressure:	240 psig (16 Bar)	240 psig (16 Bar)	235 psig (16 Bar)	240 psig (16 Bar)	240 psig (16 Bar)	235 psig (16 Bar)	235 psig (16 Bar)	235 psig (16 Bar)
Membranes Quantity:	12	18	30	36	54	72	90	108
Memb. Housing Style:	6 element long, 4 port 1→1	6 element long, 4 port 2→1	6 element long, 4 port 3→2	6 element long, 4 port 4→2	6 element long, 4 port 6→3	6 element long, 4 port 8→4	6 element long, 4 port 10→5	6 element long, 4 port 12→6
Banking Arrangement:								
Housing Model:	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A
Housing Quantity:	1	1	2	2	3	3	4	5
Cartridge Filter Model:	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB
Cartridge Filter Length:	40-inch (120 cm)	40-inch (120 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)
Cartridge Filter Qty:	1 per housing, 1/change out	1 per housing, 1/change out	1 per housing, 2/change out	1 per housing, 2/change out	1 per housing, 3/change out	1 per housing, 3/change out	1 per housing, 4/change out	1 per housing, 5/change out
Inlet:	3.0" flange	3.0" flange	4.0" flange	4.0" flange	4.0" flange	4.0" flange	6.0" flange	6.0" flange
Permeate:	2.0" flange	2.0" flange	3.0" flange	3.0" flange	4.0" flange	4.0" flange	4.0" flange	6.0" flange
Concentrate:	1.5" flange	1.5" flange	1.5" flange	1.5" flange	2.0" flange	2.0" flange	3.0" flange	3.0" flange
Inlet Water Pressure:	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig
Air Pressure:	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free
Drain to be Sized for:	106 gpm (24 m <sup>3</sup> /hr)	106 gpm (24 m <sup>3</sup> /hr)	175 gpm (40 m <sup>3</sup> /hr)	213 gpm (49 m <sup>3</sup> /hr)	319 gpm (73 m <sup>3</sup> /hr)	425 gpm (98 m <sup>3</sup> /hr)	425 gpm (98 m <sup>3</sup> /hr)	425 gpm (98 m <sup>3</sup> /hr)
Power:	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz
Control Circuit	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz

MODEL	PROflex-12-2S	PROflex-18-2S	PROflex-30-2S	PROflex-36-2S	PROflex-54-2S	PROflex-72-2S	PROflex-90-2S	PROflex-108-2S
Height:	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)
Width:	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)
Depth:	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	67" (170 cm)	67" (170 cm)
Skid Shipping Weight Estimate Without Membranes:	4835 lb (2193 kg)	4995 lb (2270 kg)	5155 lb (2340 kg)	5235 lb (2380 kg)	5475 lb (2490 kg)	5715 lb (2600 kg)	5955 lb (2700 kg)	6195 lb (2810 kg)
Membranes Shipping Weight Estimate:	210 lb (95 kg)	315 lb (142 kg)	525 lb (240 kg)	630 lb (290 kg)	945 lb (430 kg)	1260 lb (580 kg)	1575 lb (715 kg)	1890 lb (857 kg)
Operating Weight Estimate:	6440 lb (2921 kg)	6810 lb (3090 kg)	7180 lb (3260 kg)	7370 lb (3350 kg)	7920 lb (3600 kg)	8550 lb (3880 kg)	9180 lb (4164 kg)	10440 lb (4736 kg)

<sup>2</sup> Permeate ranges are stated at the following design conditions: 500 ppm TDS, 80% recovery, 60F, pump listed, and using 400 ft AG elements. Your flow rate will vary greatly as you change temperature, elements and pump sizes and TDS levels. Consult SUEZ or Winflows for flows expected with your feed water conditions.

<sup>3</sup> Recycle Rate will vary with flux and feedwater conditions. When to use recycle will depend on the tradeoff user wants to make between permeate quality and membrane element life/frequency of cleaning. The base 3S models do not come with recycle but there is an option to add recycle in the configurator. 12-2S may vary, and if you provide us with additional flow and feed water characteristics, we can optimize design for you.

## PROflex 3 stage (3S) NA models

MODEL	PROflex-24-3S	PROflex-36-3S	PROflex-42-3S	PROflex-54-3S	PROflex-72-3S	PROflex-81-3S*	PROflex-108-3S
Permeate Rate <sup>1</sup> :	100 gpm (23 m <sup>3</sup> /hr)	160 gpm (37 m <sup>3</sup> /hr)	190 gpm (44 m <sup>3</sup> /hr)	225 gpm (52 m <sup>3</sup> /hr)	315 gpm (72 m <sup>3</sup> /hr)	375 gpm (85 m <sup>3</sup> /hr)	475 gpm (108 m <sup>3</sup> /hr)
Concentrate Rate:	25 gpm (6 m <sup>3</sup> /hr)	40 gpm (9 m <sup>3</sup> /hr)	48 gpm (11 m <sup>3</sup> /hr)	56 gpm (13 m <sup>3</sup> /hr)	79 gpm (18 m <sup>3</sup> /hr)	109 gpm (25 m <sup>3</sup> /hr)	119 gpm (27 m <sup>3</sup> /hr)
Concentrate Recycle:	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>	Not in std design <sup>2</sup>
Feed Rate:	125 gpm (29 m <sup>3</sup> /hr)	200 gpm (46 m <sup>3</sup> /hr)	238 gpm (55 m <sup>3</sup> /hr)	281 gpm (65 m <sup>3</sup> /hr)	394 gpm (91 m <sup>3</sup> /hr)	484 gpm (110 m <sup>3</sup> /hr)	594 gpm (135 m <sup>3</sup> /hr)
Model:	SS12512	SS24009	AS30012	AS30012	AS40409	AS62505	AS62506
Manufacturer:	Tonkafllo	Tonkafllo	Tonkafllo	Tonkafllo	Tonkafllo	Tonkafllo	Tonkafllo
Quantity:	1	1	1	1	1	1	1
Motor Power and type:	40 Hp (30 KW) TEFC	60 Hp (45 KW) TEFC	60 Hp (45 KW) TEFC	60 Hp (45 KW) TEFC	75 Hp (56 KW) TEFC	100 Hp (75 KW) TEFC	125 Hp (93 KW) TEFC
Installed Power:	30 KW	45 KW	45 KW	45 KW	56 KW	75 KW	93 KW
Design Flow Rate:	125 gpm (29 m <sup>3</sup> /hr)	200 gpm (46 m <sup>3</sup> /hr)	238 gpm (55 m <sup>3</sup> /hr)	281 gpm (65 m <sup>3</sup> /hr)	394 gpm (91 m <sup>3</sup> /hr)	484 gpm (110 m <sup>3</sup> /hr)	594 gpm (135 m <sup>3</sup> /hr)
Design boost pressure:	240 psig (16 Bar)	250 psig (17 Bar)	260 psig (18 Bar)	240 psig (16 Bar)	250 psig (17 Bar)	235 psig (16 Bar)	235 psig (16 Bar)
Membranes Quantity:	24	36	42	54	72	81	108
Memb. Housing Style:	6 element long, 4 port	6 element long, 4 port	6 element long, 4 port	6 element long, 4 port	6 element long, 4 port	6 element long, 4 port	6 element long, 4 port
Banking Arrangement:	2→1→1	3→2→1	4→2→1	4→3→2	6→4→2	9→4→2	9→6→3
Housing Model:	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A	HSG,HXHF01-3.0V-FRP-A
Housing Quantity:	2	2	2	3	3	4	5
Cartridge Filter Model:	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB	HF.Zs 01-40-FSB
Cartridge Filter Length:	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)	40-inch (102 cm)
Cartridge Filter Qty:	2 per housing, 2/change out	2 per housing, 2/change out	2 per housing, 2/change out	3 per housing, 3/change out	3 per housing, 3/change out	1 per housing, 4/change out	1 per housing, 5/change out
Inlet:	3.0" flange	4.0" flange	4.0" flange	4.0" flange	4.0" flange	6.0" flange	6.0" flange
Permeate:	3.0" flange	3.0" flange	3.0" flange	4.0" flange	4.0" flange	4.0" flange	6.0" flange
Concentrate:	1.5" flange	1.5" flange	1.5" flange	2.0" flange	2.0" flange	3.0" flange	3.0" flange
Inlet Water Pressure:	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig	30-60 psig
Air Pressure:	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free	80 psi, oil-free
Drain to be Sized for:	125 gpm (29 m <sup>3</sup> /hr)	200 gpm (46 m <sup>3</sup> /hr)	238 gpm (55 m <sup>3</sup> /hr)	281 gpm (65 m <sup>3</sup> /hr)	394 gpm (91 m <sup>3</sup> /hr)	394 gpm (91 m <sup>3</sup> /hr)	394 gpm (91 m <sup>3</sup> /hr)
Power:	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz	460-480 VAC, 3-phase, 60Hz
Control Circuit	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz

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Height:	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)	94" (234 cm)
Width:	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)	274" (696 cm)
Depth:	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	67" (170 cm)	67" (170 cm)
Skid Shipping Weight Estimate Without Membranes:	4995 lb (2270 kg)	5155 lb (2340 kg)	5235 lb (2380 kg)	5475 lb (2490 kg)	5715 lb (2600 kg)	5955 lb (2700 kg)	6195 lb (2810 kg)
Membranes Shipping Weight Estimate:	315 lb (280 kg)	525 lb (240 kg)	630 lb (290 kg)	945 lb (430 kg)	1260 lb (580 kg)	1420 lb (644 kg)	1890 lb (857 kg)
Operating Weight Estimate:	6810 lb (3090 kg)	7180 lb (3260 kg)	7370 lb (3350 kg)	7920 lb (3600 kg)	8550 lb (3880 kg)	9180 lb (4164 kg)	10440 lb (4736 kg)

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<sup>3</sup> Recycle Rate will vary with flux and feedwater conditions. When to use recycle will depend on the tradeoff user wants to make between permeate quality and membrane element life/frequency of cleaning. The base 3S models do not come with recycle but there is an option to add recycle in the configurator.

\*This model is not found on the configurator, but please call us for more details. Model is banked 9-4-2 with the first array of 9 housings short loaded with 5 elements, versus 6 elements in the rest of the arrays.

