GE Power
Water & Process Technologies

Fact Sheet

PRO*flex**

60 Hz Reverse Osmosis Machines from 50 to 360 gpm

Flexible Design

- PRO*flex* has 10 base configurations using 18 to 72 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 PRO*flex* 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

Find a contact near you by visiting www.gewater.com and clicking on "Contact Us".

Configurable Options Available

Go to www.gewater.com, 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[1] 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

[1] *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 ..... 16-17 gfd[1]
Membrane rejection ..... 99.0 to 99.5%
Membrane Element Manufacturer ..... GE
Housing material ..... FRP or 316 Stainless Steel
Housing Pressure Rating ..... 450 psi
Housing Manufacturer ..... Codeline or Equal

[1] *Flux can be reduced by using 440-sqft membranes.*

Cartridge Filtration

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

PRO*flex* – True *flexibility* to design a system you want

PRO*flex* offers the flexibility to choose a system that allows you to choose an aggressive or conservative design to meet the capital requirements of your specific situation. PRO*flex* allows complete choice on arrays, number of elements, and pump sizes within each array. Figure 1 shows the PRO*flex* 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.

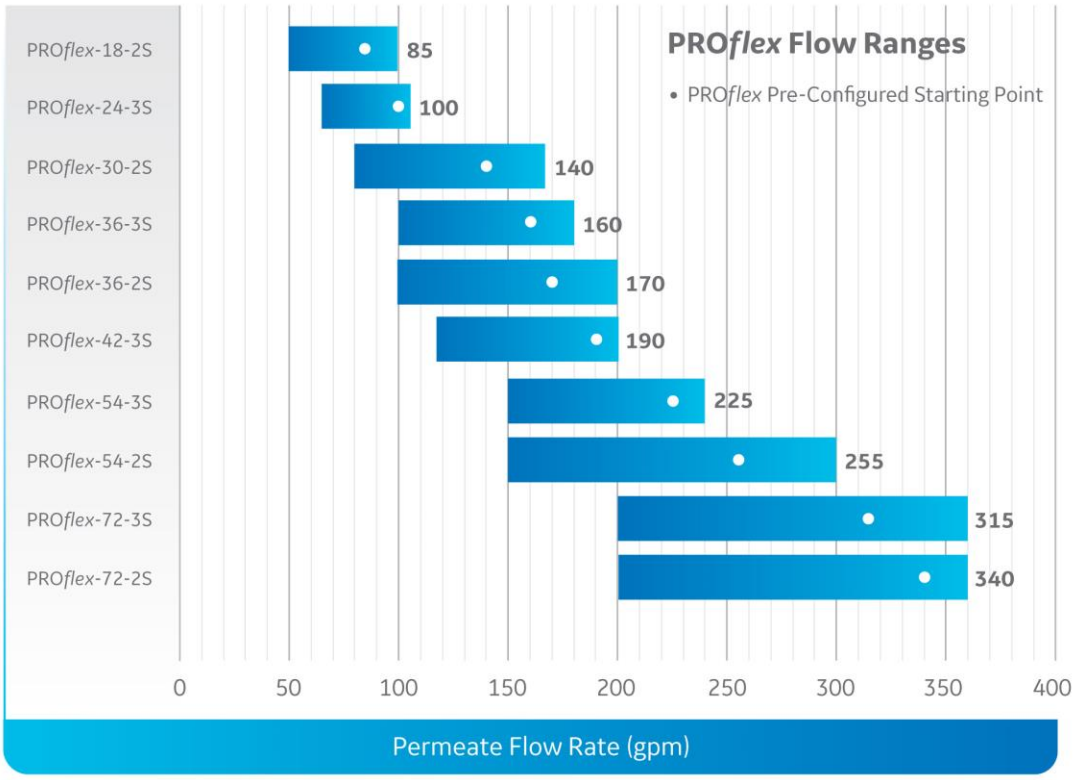

Figure 1: PRO*flex* flow ranges

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) 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 once makes and weighs with design considerations. Further, move left or right in above chart to further affect flux and capex spend.

PROflex 2 Stage (2S) NA Models

MODEL	PROflex-18-2S	PROflex-30-2S	PROflex-36-2S	PROflex-54-2S	PROflex-72-2S
Permeate Rate[2]:	85 gpm (20 m³/hr)	140 gpm (32 m³/hr)	170 gpm (38 m³/hr)	255 gpm (59 m³/hr)	340 gpm (78 m³/hr)
Concentrate Rate:	21 gpm (5 m³/hr)	35 gpm (8 m³/hr)	43 gpm (10 m³/hr)	64 gpm (15 m³/hr)	85 gpm (20 m³/hr)
Concentrate Recycle:	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]
Feed Rate:	106 gpm (24 m³/hr)	175 gpm (40 m³/hr)	213 gpm (49 m³/hr)	319 gpm (73 m³/hr)	425 gpm (98 m³/hr)
Model:	SS12512	SS24009	SS24009	AS40409	AS40409
Manufacturer:	Tonkaflo	Tonkaflo	Tonkaflo	Tonkaflo	Tonkaflo
Quantity:	1	1	1	1	1
Motor Power and type:	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
Installed Power:	30 KW	45 KW	45 KW	56 KW	56 KW
Design Flow Rate:	106 gpm (24 m³/hr)	175 gpm (40 m³/hr)	213 gpm (43 m³/hr)	319 gpm (73 m³/hr)	425 gpm (98 m³/hr)
Design boost pressure:	240 psig (16 Bar)	235 psig (16 Bar)	240 psig (16 Bar)	240 psig (16 Bar)	235 psig (16 Bar)
Membranes Quantity:	18	30	36	54	72
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
Banking Arrangement:	2→1	3→2	4→2	6→3	8→4
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
Housing Quantity:	1	2	2	3	3
Cartridge Filter Model:	HFZs 01-40-FSB	HFZs 01-40-FSB	HFZs 01-40-FSB	HFZs 01-40-FSB	HFZs 01-40-FSB
Cartridge Filter Length:	40-inch (120 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	2 per housing, 2/change out	2 per housing, 2/change out	3 per housing, 3/change out	3 per housing, 3/change out
Inlet:	3.0" flange	4.0" flange	4.0" flange	4.0" flange	4.0" flange
Permeate:	2.0" flange	3.0" flange	3.0" flange	4.0" flange	4.0" flange
Concentrate:	1.5" flange	1.5" flange	1.5" flange	2.0" flange	2.0" flange
Inlet Water Pressure:	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
Drain to be Sized for:	106 gpm (24 m³/hr)	175 gpm (40 m³/hr)	213 gpm (49 m³/hr)	319 gpm (73 m³/hr)	425 gpm (98 m³/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
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
Height:	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)
Depth:	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)
Skid Shipping Weight Estimate Without Membranes:	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)
Membranes Shipping Weight Estimate:	1260 lb (572 kg)	1260 lb (572 kg)	1260 lb (572 kg)	1260 lb (572 kg)	1260 lb (572 kg)
Operating Weight Estimate:	7550 lb (3425 kg)	7550 lb (3425 kg)	7550 lb (3425 kg)	7550 lb (3425 kg)	7550 lb (3425 kg)

[2] 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 GE or Winflows for flows expected with your feed water conditions.

[3] 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 2S models do not come with recycle but there is an option to add recycle in the configurator.

PROflex 3 Stage (3S) NA Models

MODEL	PROflex-24-3S	PROflex-36-3S	PROflex-42-3S	PROflex-54-3S	PROflex-72-3S
Permeate Rate[2]:	100 gpm (23 m3/hr)	160 gpm (37 m^3/hr)	190 gpm (44 m^3/hr)	225 gpm (52 m^3/hr)	315 gpm (72 m^3/hr)
Concentrate Rate:	25 gpm (6 m3/hr)	40 gpm (9 m^3/hr)	48 gpm (11 m^3/hr)	56 gpm (13 m^3/hr)	79 gpm (18 m^3/hr)
Concentrate Recycle:	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]	Not in stnd design[3]
Feed Rate:	125 gpm (29 m3/hr)	200 gpm (46 m^3/hr)	238 gpm (55 m^3/hr)	281 gpm (65 m^3/hr)	394 gpm (91 m^3/hr)
Model:	SS12512	SS24009	AS30012	AS30012	AS40409
Manufacturer:	Tonkaflo	Tonkaflo	Tonkaflo	Tonkaflo	Tonkaflo
Quantity:	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
Installed Power:	30 KW	45 KW	45 KW	45 KW	56 KW
Design Flow Rate:	125 gpm (29 m3/hr)	200 gpm (46 m^3/hr)	238 gpm (55 m^3/hr)	281 gpm (65 m^3/hr)	394 gpm (91 m^3/hr)
Design boost pressure:	240 psig (16 Bar)	250 psig (17 Bar)	260 psig (18 Bar)	240 psig (16 Bar)	250 psig (17 Bar)
Membranes Quantity:	24	36	42	54	72
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
Banking Arrangement:	2→1→1	3→2→1	4→2→1	4→3→2	6→4→2
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
Housing Quantity:	2	2	2	3	3
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
Cartridge Filter Length:	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
Inlet:	3.0" flange	4.0" flange	4.0" flange	4.0" flange	4.0" flange
Permeate:	3.0" flange	3.0" flange	3.0" flange	4.0" flange	4.0" flange
Concentrate:	1.5" flange	1.5" flange	1.5" flange	2.0" flange	2.0" flange
Inlet Water Pressure:	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
Drain to be Sized for:	125 gpm (29 m3/hr)	200 gpm (46 m^3/hr)	238 gpm (55 m^3/hr)	281 gpm (65 m^3/hr)	394 gpm (91 m^3/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
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
Height:	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)
Depth:	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)	50" (127 cm)
Skid Shipping Weight Estimate Without Membranes:	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)	5712 lb (2591 kg)
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