

# REVERSE OSMOSIS



## Selection Guide

### REVERSE OSMOSIS SYSTEMS

	Product	System Production	Product Water Flow l /Hr 25°C/60 psi	Reservoir Capacity Options	Mounting	Page
<i>The Ultimate RO System!</i>	Diamond™ RO	From 50 to 400 l /day	6-24	30, 60 or 100 liters	Wall or Bench	WP66
<i>Smaller Size, But Not Smaller Volume!</i>	EASYpure® RO	Up to 100 l /day	10	30 liters	Wall or Bench	WP69
<i>Larger Volume Requirements? No Problem!</i>	ULTROpure	Up to 1325 l /day	60, 80, 110, or 157	100+ liters	Wall or Bench	WP70
<i>Simple and Efficient!</i>	ROpure LP	From 100 to 400 l /day	15, 20, 30, or 40	100+ liters	Wall	WP71
<i>Type II Water Directly from Your Tap!</i>	ROpure ST	From 50 to 350 l /day	11	30 liters	Wall or Bench	WP72

### STORAGE RESERVOIRS

	Product	Storage Capacity	Material of Construction	Mounting	Page
<i>Compact Storage System!</i>	Diamond RO Storage	60 liters	Fluorinated Polyethylene	Wall or Bench	WP68
<i>Storage for All Your Water Requirements!</i>	Diamond RO Storage	30 liters	Fluorinated Polyethylene	Wall or Bench	WP74
<i>Our Most Versatile Reservoir!</i>	100 Liter	100 liters	Polyethylene	Wall	WP75
<i>Our Largest Storage Reservoirs!</i>	Fiberglass Tanks	50, 100, Or 200 gallons	Premium Fiberglass Resin	Floor	WP76

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## What is Reverse Osmosis?

### Osmosis

To understand reverse osmosis we must first understand osmosis. During natural osmosis, water flows from a less concentrated solution through a semipermeable membrane to a more concentrated solution until concentrations and pressure on both sides of the membrane are equal. (See Figure 1.)

### Reverse Osmosis

Reverse osmosis requires external pressure to reverse natural osmotic flow. Pressure is applied to the more concentrated (feed water) side of the membrane. This forces the feed water through the semipermeable membrane. The impurities are deposited on the membrane surface and sent to drain and the water that passes through the membrane as product water is for the most part free of impurities (See Figure 2.)

### Reverse Osmosis Membrane

A reverse osmosis membrane has a thin microporous surface that rejects impurities, but allows water to pass through. The membrane rejects bacteria, pyrogens, and 90%-95% of inorganic solids. Polyvalent ions are rejected easier than monovalent ions. Organic solids with a molecular weight greater than 300 are rejected by the membrane, but dissolved gases are not as effectively removed. Reverse osmosis is a percent rejection technology. The purity of the product water depends on the purity of the inlet water. The purity of reverse osmosis product water is typically 95% higher than the purity of the feed water. (See Figure 3.)



Figure 1: Osmosis



Figure 2: Reverse Osmosis

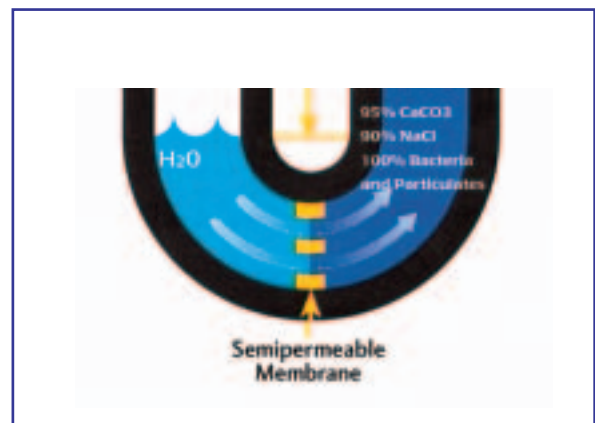


Figure 3: Rejection Characteristics

	Deionization	Distillation	Reverse Osmosis	
DISSOLVED INORGANIC SOLIDS	Large drop	Large drop	Small drop	Large drop: Excellent Medium drop: Good Small drop: Poor
DISSOLVED GASES	Small drop	Small drop	Small drop	
DISSOLVED ORGANICS	Medium drop	Medium drop	Medium drop	
PARTICULATES	Small drop	Large drop	Large drop	
BACTERIA	Small drop	Large drop	Large drop	
PYROGENS	Small drop	Large drop	Large drop	

Figure 4



## Principles of Reverse Osmosis

### Reject Water

A percentage (50-80%) of the feed water does not pass through the membrane but flows across the membrane surface, constantly cleaning it and carrying the inorganic and organic solids to drain. This water is called “reject” or “concentrate.”

### Barnstead Membranes

Barnstead offers the following three reverse osmosis membrane materials:

- Cellulose acetate
- Polyamide
- Thin film

### Feed Water Factors

Feed water factors affecting membrane performance and life include the following:

#### Pressure

Feed water pressure affects both the quantity, and to a lesser degree, the quality of reverse osmosis product water. Lower feed water pressure causes lower product flow rates and slightly lower product purity.

#### pH

Feed water pH range is important and Barnstead recommends using wider pH range membranes when feed water is basic, acidic, or unstable.

### Langlier Saturation Index (LSI)

The LSI indicates the tendency for scale to form on a membrane surface. It requires feed water testing for temperature, total inorganic solids, calcium hardness, alkalinity, and pH. If the LSI calculation is positive, Barnstead recommends installing a water softener (cation exchange) or MPS (membrane protection system) prior to the reverse osmosis system. A water softener exchanges scale forming ions with sodium. The MPS envelopes the membrane surface and prohibits scale build up.

### Free Chlorine and Bacteria

Cellulose acetate membranes requires feed water containing free chlorine to prevent bacterial growth and membrane damage. In contrast, polyamide and thin film membranes are damaged by the presence of free chlorine in the feed water. Activated carbon is used to remove free chlorine when polyamide and thin film membranes are chosen.

### Temperature

Reverse osmosis product volume ratings are based on feed water temperatures of 25°C. For every 1°C below 25°C product water quantity is reduced by 3%. When feed water temperature is regularly below 25°C, Barnstead recommends a hot and cold water mixing valve to increase the temperature to 25°C. Feed water which is greater than 35° will damage most membranes.

### Silt Density Index

The SDI is a measurement of particles and their tendency to block membranes. To determine SDI, flowing water at specific pressure is filtered through a membrane disc and collected for a fixed period of time. The speed of water flow and total volume collected determine the index value.

### Turbidity

Turbidity is a measurement of suspended particles that obscure light rays.

### Selecting a System

Prior to choosing a reverse osmosis system, a Barnstead W.A.T.E.R.™ analysis is highly recommended.

## MEMBRANE FEED WATER REQUIREMENTS

	Cellulose Acetate Membrane	Polyamide Membrane	Thin Film Composite Membrane
pH	4-8	1-11	1-11
Langlier Index	Negative	Negative	Negative
Free Chlorine	0.2 - 1.0 ppm of free	Damaged by free chlorine; requires carbon pretreatment	Damaged by prolonged exposure to free chlorine requires carbon pretreatment
Bacteria	Damaged by bacteria; requires free chlorine	Not affected	Not affected
Temperature	4°C - 30°C	4°C - 30°C	4°C - 50°C
Still Density Index	< 5%	< 5%	< 5%
Turbidity	< 1 NTU	< 1 NTU	< 1 NTU

## Diamond™ RO

### *The Ultimate Reverse Osmosis System!*

- 6, 12 or 24 liters per hour
- Automatic operation
- Compact design

#### Product Description

- Three systems are available providing product water flow rates of 6, 12 or 24 liters per hour.
- Short on space... The Diamond RO small footprint allows you to mount it virtually anywhere.
- 12 and 24 liter per hour system uses new pump technology to provide for silent operation. 6 liter per hour system uses available in-house line pressure.
- One model all voltages.
- CSA and CE listed.
- Can be Wall mounted or Bench mounted. No additional components are needed.
- Each system supplied with everything you need for operation; arrives complete with prefilter, MPS (Membrane Protection System) cartridge, extruded carbon filter and membrane(s).
- Unique Membrane Protection System cartridge eliminates the need to soften your water.
- Automatic flush cleanses the RO membranes helping to eliminate the build-up of scale on the membrane assuring you maximum membrane life.
- A series of internal pressure gauges allow you to monitor membrane operating pressure and pressure drops across the pretreatment filters.
- Controls provide for fully automatic operation.
- Monitor system operation with indicator lights on the control panel alerting you of vital information including membrane performance and reservoir level.
- Mount your controls and indicators up to 10 feet (3 meters) away from your system with the remote mounting control panel accessory.

#### Operation

- Control panel indicates the status of the system including "Stand By" indicating that the reservoir is full.
- This unit includes a special Membrane Protection System (MPS) to enhance membrane life and performance. This unique system inhibits scale build up on the membrane surface to give you the best performance possible.
- System alerts you if the carbon needs changing or the membrane is not functioning.



Diamond RO



Inside of Diamond RO unit showing membranes



#### 30 and 60 Liter Storage Reservoirs

The Diamond RO system requires product water storage to provide you with the quantity of water you require when you need it. Our rigid fluorinated polyethylene reservoirs are specially designed for operation with our NANOpure Diamond series systems. The reservoirs are filtered to prevent airborne contamination and incorporate level controls to start and stop your Diamond RO when needed as well as preventing the NANOpure Diamond from operating if there is not sufficient water in the reservoir to satisfy its requirements. They also contain outlets for your NANOpure, dishwasher and allows you to draw water directly from the tank. The tanks are also fluorinated to prevent recontamination of the water from contact with impure surfaces.

**Diamond™ RO**

*Diamond RO shown with optional storage reservoir*



*Internal gauges allow you to monitor membrane and filter pressures*



**ORDERING INFORMATION**

Model #	Type	Volts	Unit Includes	Overall Dimensions Inches (cm)		
				W	H	D
D12671 <sup>1,2</sup>	6 LPH* (Line pressure)	100-240 VAC 47-63 Hz 1 phase	Prefilter, MPS Cartridge, Extruded Carbon Filter, 1 membrane and wall bracket	13.5 (34.3)	19.5 (49.5)	16.9 (42.9)
D12651 <sup>1,2</sup>	12 LPH	100-240 VAC 47-63 Hz 1 phase	Pump, Prefilter, MPS Cartridge, Extruded Carbon Filter, 1 membrane and wall bracket	13.5 (34.3)	19.5 (49.5)	16.9 (42.9)
D12661 <sup>1,2</sup>	24 LPH	100-240 VAC 47-63 Hz 1 phase	Pump, Prefilter, MPS Cartridge, Extruded Carbon Filter, 2 membranes and wall bracket	13.5 (34.3)	19.5 (49.5)	16.9 (42.9)

\*Based on inlet pressure of 2. bar (30 psig) and feed water of 25°C.

<sup>1</sup> CSA. <sup>2</sup> CE

**PRODUCT SPECIFICATIONS**

Shipping Weight:	45 lb. (20.4 kg)
Inlet Pressure:	30 psig minimum - 100 psig maximum
Plumbing Connections:	
Feed water:	3/8" OD tubing (supplied)
Product Water:	1/4" OD tubing (supplied)
Reject Water:	3/8" OD tubing (supplied)
% Recovery:	20-30%

**Membrane Specifications**

Type:	Composite Polyamide
Operating Pressure:	60 psi
Product Flow Rate:	6-12-24 l /hr <sup>1</sup>
Water Consumption:	100 l /hr
Chlorine Tolerant to:	1000 ppm-hours
Rejection Rates:	Monovalent Ions: 90-95% Polyvalent Ions: 95-99% Particles: > 99% Microorganisms: > 99% Organics: > 99%

**Membrane Feed Water Requirements**

pH:	
Optimum range:	6.5 - 7.5
Operating range:	3 - 10
Temperature Range:	34 - 95°F (1 - 35°C)
Silt Density Index:	< 5%
Turbidity:	< 1.0 NTU
Maximum TDS:	800 ppm (CaCO <sub>3</sub> )
Langlier (LSI) Index:	< 1
Iron Total as Fe:	< 0.5 ppm

<sup>1</sup>At 25°C feed water ± 2 lph

**ACCESSORIES**

Model #	Description
D9021	60 Liter Infinity Storage Reservoir
D12681	30 Liter Reservoir, Diamond RO
D2622	100 Liter Storage Reservoir
AY1265X1	Remote Mounting Control Panel Accessory, Diamond RO
AY1268X2	Bench Mounting Stand for D12681 Reservoir
D7427	Hot and Cold Water Mixing Valve, Diamond RO
D502113	5 Micron Prefilter, Diamond RO
D502114	MPS Cartridge, Diamond RO
D502115	Extruded Carbon Filter, Diamond RO
FL1265X1	Membrane, Diamond RO
PU902X1	Optional Distribution Pump for 60 Liter Reservoir, 120V
PU902X2	Optional Distribution Pump for 60 Liter Reservoir, 240V
TU902X1	Optional Sight Glass for 60 liter Infinity Reservoir

## Diamond™ RO Storage Reservoirs



60 Liter Storage Reservoir



30 Liter Storage Reservoir

### Compact Storage System!

- 30 and 60 liter storage capacity
- Automatic operation with Diamond RO
- Range of accessories

#### Product Description

- Complete with automatic controls, ensuring automatic operation when used in conjunction with ROPure Infinity® and DIAMOND RO reverse osmosis systems.
- Draw-off points include spigot, dishwasher port, and feed to NANOpure® DIAMOND systems.
- Constructed of rigid fluorinated polyethylene, providing strength and protection against material contamination of the water.
- Can be bench or wall mounted.
- Vent protected to eliminate the introduction of airborne contamination.
- Pump protector provided; protects NANOpure to ensure it will not be damaged when there is not enough water in the reservoir.
- 30 liter tank sends signal to DIAMOND RO displaying the water level on the RO control panel.

#### Optional Accessories

##### Sight Glass for 60 Liter Reservoir

- Available to alert you of water level within the reservoir.

##### Distribution Pump

- Perfect for supplying water to a remote NANOpure or glassware washer.
- Easily mounts to base of 60 liter Infinity reservoir.
- Can supply reverse osmosis water up to 35 feet away.
- Capable of delivering up to 1 gallon of water/min. at 15 psi.
- Automatically circulates water for 15 minutes every hour when in standby.
- Pump Protector: ensures distribution pump will not operate when tank is empty.

#### ACCESSORIES

Model #	Description
PU902X1	Optional Distribution Pump for D9021 60 Liter Reservoir, 120V
PU902X2	Optional Distribution Pump for D9021 60 Liter Reservoir, 240V
TU902X1	Optional Sight Glass for D9021 60 Liter Reservoir
AY1268X2	Optional Bench Stand for D12681 Reservoir

#### PRODUCT SPECIFICATIONS

Model #	Dimensions Inches (cm)			Shipping Weight Lb. (kg)	Operating Weight Lb. (kg)
	W	H	D		
D9021	20 (51)	24 (61)	17 (43.2)	35 (15.8)	168 (76)
D12681	20 (51)	18.3 (46.5)	15 (38)	23 (10.5)	104 (47)

#### ORDERING INFORMATION

Model #	Description
D9021	60 Liter Storage Reservoir
D12681	30 Liter Storage Reservoir

**Smaller Size But  
Not Smaller Volume!**

- Compact size
- Bench or wall mountable
- Automatic operation
- 6.5 liter reservoir included



EASYpure RO



**Product Description**

- Integral pump provides consistent flow rate.
- Microprocessor control allows for 24-hour, fully automatic, unattended operation.
- Automatic or manual flush protects RO membranes against contamination.
- Rejection monitor indicates membrane's performance, alerting the operator if problems exist.
- A built-in low pressure switch prevents pump burnout due to low pressure feed water.
- The system's compact design allows it to be wall mounted or used anywhere on a bench. An optional bracket is available for easy wall mounting.
- 6.5 liter reservoir incorporates an air filter to prevent airborne impurities from contaminating water during storage.
- An optional 30 liter reservoir provides additional storage as required.

- An automatic reject water flow control simplifies operation and prolongs the life of the RO membranes.
- Panel-mounted indicator lights register the unit's current status, including "stand-by," when the reservoir is full, when the pretreatment cartridge needs changing, and when the membranes require replacement.
- The EASYpure RO is ideally suited for pretreating EASYpure II LF, UF, UV and UV/UF compact ultrapure water systems.
- Offers an excellent purification option for applications requiring up to 100 liters of RO water daily.
- All components are constructed of inert materials ensuring maximum ionic and organic purity.

**PRODUCT SPECIFICATIONS**

Membrane Type:	Thin Film Polysulfone
Product Flow Rate:	10 liters/hr.
Inlet Pressure:	30 psig minimum (2 bar) 100 psig maximum (6.5 bar)
Water Consumption:	54 liters/hr.
Recovery:	19%
System Rejection Rates:	Monovalent Ions: 90-95% Polyvalent Ions: 95-99% Particles: > 99% Microorganisms: > 99% Organics (300 mw): > 99%

**ACCESSORIES**

Model #	Description
D7426	Start-up Kit- Consists of (2) membranes and (1) pretreatment cartridge (required)
D13324	Wall Bracket EASYpure
D7424	Optional Bench Mounting Stand (To be used if bench mounting an EASYpure RO used in conjunction with an optional 30 liter reservoir)
TY742X2A	Optional 30 liter reservoir
D7425	Membrane
D7427	Hot & Cold Water Mixing Valve, EASYpure RO
D50245	Sanitization Cartridge EASYpure RO
D50246	Pretreatment Cartridge EASYpure RO

**ORDERING INFORMATION**

Model #	Electrical (50/60 Hz)	W	Overall Dimensions Inches (cm)		Shipping Weight Lb. (kg)
			H	D	
D7421 <sup>1</sup>	120 VAC	12.25 (31.1)	18.5 (47)	18.75 (47.6)	35 (15.8)
D7422-33 <sup>1,2</sup>	240 VAC	12.25 (31.1)	18.5 (47)	18.75 (47.6)	35 (15.8)
D7428 <sup>1</sup>	120 VAC	for low feed water pressures, 9-15 psig	35 (15.8)	18.75 (47.6)	35 (15.8)
D7429-33 <sup>1,2</sup>	240 VAC	for low feed water pressures, 9-15 psig	35 (15.8)	18.75 (47.6)	35 (15.8)
TY742X2A*	N/A	18 (47)	29.5 (75)	14.7 (38)	61.6 (28)

<sup>-33</sup> Models CE Marked

\* Optional 30 Liter Reservoir, Operating Weight is 130 lb. (60 kg)

<sup>1</sup> CSA. <sup>2</sup> CE

**ULTROpure™**



ULTROpure



Pressure Gauges and flow meters



LED Control Panel

**Larger Volume Requirements?  
No Problem!**

- Fully automatic operation
- Can produce up to 1325 liters per day
- Great purified water for entire lab, floor, or small building
- Purity monitor, gauges and flow meters standard

**Product Description**

- If you require reverse osmosis to pretreat a NANOpure® or provide water for an entire laboratory, floor or small building, the ULTROpure™ reverse osmosis unit is the logical system.
- Capable of delivering between 60-157 liters per hour, making it ideal for central systems requiring up to 1325 liters per day.
- Up to 50% feed water recovery conserves valuable water.
- Microprocessor controlled, allowing for fully automatic and unattended operation.
- Monitor system performance with the percent rejection monitor. Provides a real-time indication of membrane performance, including resistivity and temperature of the feed and product water.
- High and low pressure switches prevent low pressure pump burnout and high pressure hardware damage.
- Product and reject flow meters allow for quick and easy adjustment and evaluation of system performance.
- Pressure gauges both pre- and post-prefilter, alerting you when the need exists to change the prefilter.
- Four membranes available, providing for increased versatility in feed water and flow requirements.
- Automatic and manual flush, reduces the build-up of contaminants on the membrane surface.
- Wall mounted, available to be floor mounted with the addition of the optional floor stand, which provides for more flexibility in choosing the location.
- Computer aided water analysis, in addition to a W.A.T.E.R.™ analysis, provides for optimal pretreatment and membrane choice, as well as operating conditions.
- Operates in conjunction with 100 liter reservoir (page WP75) and large capacity fiberglass reservoir (page WP76)

**ORDERING INFORMATION**

Model #	Description
D6821	ULTROpure with monitor and prefilter, 120V
D6822	ULTROpure with monitor and prefilter, 240V

**ACCESSORIES**

Catalog #	Description
D6827	Optional floor mounting stand
D6828	Standard cellulose acetate membrane. Produces 60 lph (15 gph) in ULTROpure at 25°C, 200 psi* <sup>1</sup>
D6829	High flow cellulose acetate membrane. Produces 110 lph (29 gph) in ULTROpure at 25°C, 200 psi* <sup>1</sup>
D68210	Polyamide membrane. Produces 157 lph (41 gph) in ULTROpure at 25°C, 200 psi* <sup>1</sup>
D68211	TFM™ membrane. Produces 80 lph (21 gph) in ULTROpure at 25°C.* Operates in pH range of 4-11. Zero chlorine tolerance in feed water. <sup>1</sup>
D0605	Automatic mixing valve. Connects to hot and cold water lines and maintains feed water temperature at 25°C. Ensures specified output capacity.
D2622	100 liter storage reservoir, rigid polyethylene tank including high water control. (Order NANOpure low water pump protector separately.)
FL583X1	Pre-filter 10" (25.4 cm), 5 micron
D8451	Optional Carbon Canister 1 cu. ft., processes up to 1 million gallons (25°C, 1ppm free chlorine)

\* Membrane life: one to three years dependent upon feed water conditions.

TFM is a trademark of Desalination Systems, Inc.

<sup>1</sup> See page WP73 for membrane specifications.



## ROpure™ LP

### Simple and Efficient!

- Operates on inlet pressure eliminating the need for a pump
- Produces 100-400 liters per day
- Quiet operation

### Product Description

- An economical reverse osmosis system designed to operate on inlet line feed water pressure, eliminating the need for high pressure pumps.
- Capable of delivering between 15-40 liters per hour product flow, making it the ideal pretreatment system for point-of-use pure water requirements.
- Operates from inlet line pressure eliminating high pressure pumps and providing for quiet operation.
- Automatic flush helps eliminate the build-up of contaminants on the membrane surface.
- Four membranes to choose from, providing for versatility in flow rates and less pretreatment.
- Fixed orifice on the reject line provides for constant recovery without the need of manual adjustments.
- Simple operation provides for economical unit with minimal maintenance.



ROpure LP

### PRODUCT SPECIFICATIONS

#### Plumbing Connections:

Feed water:	3/8" NPT
Product Water:	(2) 1/2" NPT (2 adapters supplied .4" hose barb x.5" NPTM .4" OD tube x .5" NPTM)
Reject:	3/8" OD Tube
Overall Dimensions: Inches (cm)	21" (53) W x 38" (96) H x 9" (23) D
Weight:	Shipping 75 lb. (34 kg) Operating 75 lb. (34 kg)
Electrical Requirements:	115 VAC, 60 Hz, 1 phase, 8.0 amps 230 VAC, 50 Hz, 1 phase, 4.0 amps

### ORDERING INFORMATION

Model #	Description
D2716	ROpure LP reverse osmosis system including prefilter, 120 VAC, 60 Hz., 8.0 amps. (Order membrane and reservoir separately.)
D2717	ROpure LP reverse osmosis system including prefilter, 240 VAC, 50 Hz., 4.0 amps. (Order membrane and reservoir separately.)

### ACCESSORIES

Model #	Description
D2730	Cellulose acetate RO membrane* Standard, 15 liters/hour, <sup>1</sup> (4 gph) <sup>2</sup>
D2731	Cellulose acetate RO membrane* Hi Flow 30 liters/hour, <sup>1</sup> (8 gph) <sup>2</sup>
D2734	TFM™ RO membrane 20 liters/hour, <sup>1</sup> (5 gph) <sup>2</sup>
D2732	Polyamide RO Membrane* 40 liters/hour, <sup>1</sup> (10 gph) <sup>2</sup>
D2729	ROpure LP prefilter 10" (25.4 cm), 5 micron
D0605	Mixing valve connects to hot and cold water lines and maintains feed water temperature at 25°C ±2°C Ensures specified output capacity
D2622	100 liter storage reservoir including high level control
D8451	Optional Carbon Canister, 1 cu. ft., processes up to 1 million gallons (25°C, 1ppm free chlorine)

\* Membrane life: one to three years dependent upon feed water conditions

<sup>1</sup> Based on 60 psi and 25°C.

TFM is a trademark of Desalination Systems, Inc.

<sup>2</sup> See page WP73 for membrane specifications.

## ROpure™ ST

### Type II Water Directly from Your Tap!

- Microprocessor controlled for fully automatic operation
- Complete with 30 liter storage tank
- Type II water on demand

#### Product Description

- Reservoir is filtered to prevent airborne contamination.
- Automatic flush helps maintain the membrane cleanliness.
- Integral pump provides for consistent flow rates.
- Built-in pressure switch prevents low pressure pump burnout.
- Rejection monitor provides an indication of membrane performance, alerting you when a problem exists.
- Bench and wall mounted units provide flexibility in choosing site location.
- Simple installation.
- Optional mixed bed cartridge provides a minimum resistance of 1 megaohm-cm water to the storage unit meeting type II standards.
- State-of-the-art membranes provide for greater flexibility in feedwater pretreatment.
- Larger storage tanks available if your demand dictates.

#### MEMBRANE SPECIFICATIONS

Production Rate:	11/19 lph
Inlet Pressure:	30 - 100 psig
Water Consumption:	77 lph
pH:	4-11
TDS (Max. ppm CaCo3):	800
Maximum Temperature:	31°C (87.8°F)
Silt Density Index:	<5%
Free Chlorine:	0.2-1.0 ppm
Langlier Saturation Index of Feedwater:	Negative
Turbidity:	<1 NTU
Iron Total as Fe:	<0.5 ppm
Rejection Rates:	
Monovalent Ions:	90-95%
Polyvalent Ions:	95-99%
Particles:	>99%
Microorganisms:	>99%
Dissolved Organics (300 MW):	>99%

#### ORDERING INFORMATION

Model #	Description
D0605	Automatic mixing valve connects to hot and cold water lines and maintains feedwater temperature at 25°C ±2°C. Ensures specified output capacity.
TY631X2A	100 liter rigid polyethylene storage reservoir. (Order NANOpure low water pump protector separately.)



ROpure ST

#### Applications

- Laboratory pretreatment up to 350 liters per day
- Pure water source for Type II applications
- Purified water for glassware washing

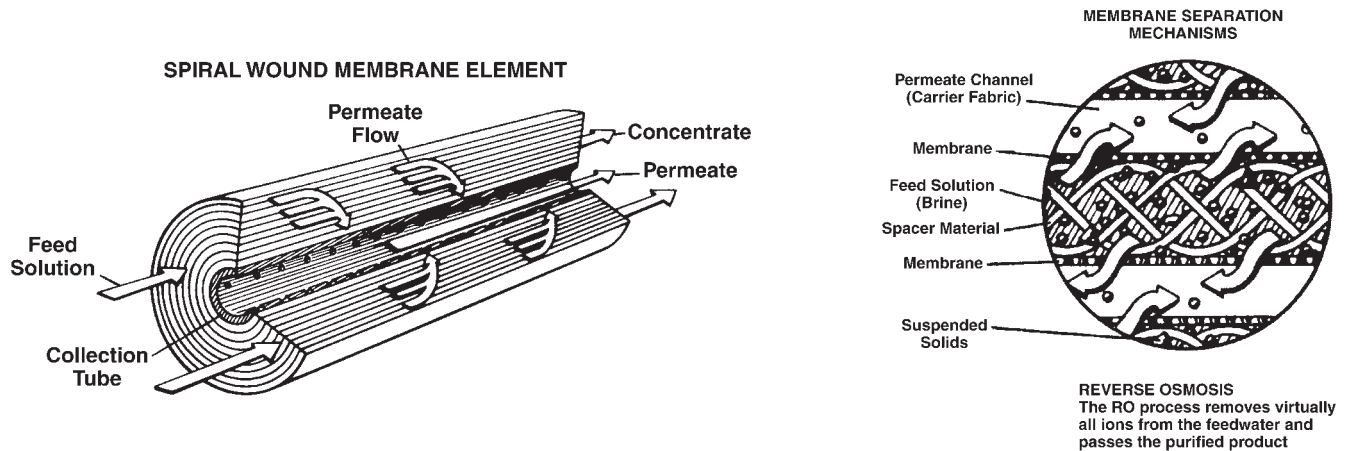
#### PRODUCT SPECIFICATIONS

Purity:		Min. 1 megohm-cm
(with the use of optional D5027 ultrapure cartridge)		
Dimensions:	W x D x H	
Inches (cm)	Wall Mount	22(55.9) x 14(35.6) x 28(71.1)
	Bench Mount	22(55.9) x 16(40.6) x 32(81.3)
Operating Pressure:		50-60 psig
Electrical:		120 VAC, 50/60 H, 1 Phase, 3.0 Amps.
Plumbing Connections:	Feedwater	3/8" OD tubing (supplied) or 1/4" NPT
	Product Water	Integral valve and 3/8" OD tubing (supplied from storage)
	Reject Water	3/8" OD tubing (supplied)
	Overflow	3/8" OD tubing (supplied)
Weight:	Wall Mount	Shipping 69 lbs. (31.3 kg)
		Operating 137 lbs. (62.1 kg)
	Bench Mount	Shipping 88 lbs. (39.9 kg)
		Operating 156 lbs. (70.8 kg)

#### ACCESSORIES

Model #	Description
D6311	ROpure ST wall mount includes reservoir and fully automatic controls, 120 VAC, 50/60 Hz, 3.0 amps. (Order membrane and prefilters, separately.)
D6317	Membrane cellulose acetate 11 lph (2.9 gph)
D6318	Membrane thin film 19 lph (5.0 gph)
D63112	Pretreatment and prefilter cartridge, thin film membrane
D63111	Prefilter 5 micron, cellulose acetate
D5027	Optional mixed bed Ultrapure cartridge

## Membranes for ULTROpure™ and ROpure™ LP



### PRODUCT SPECIFICATIONS AND ORDERING INFORMATION

	Standard Cellulose Acetate		High Flow Cellulose Acetate		Polyamide		Thin Film Membrane	
	D2730	D6828	D2731	D6829	D2732	D68210	D2734	D68211
<b>Product Flow Rate (±15% at 25°C)</b>								
ROpure LP	15 lph (4 gph)		30 lph (8 gph)		40 lph (10 gph)		20 lph (5 gph)	
ULTROpure	60 lph (16 gph)		110 lph (29 gph)		157 lph (41 gph)		80 lph (21 gph)	
ULTROpure Series 682		60 lph (15 gph)		110 lph (29 gph)		157 lph (41 gph)		80 lph (21 gph)
<b>Rejection Rates:</b>								
Monovalent Ions	95%	90-95%	90-95%	90-95%	90-95%	90-95%	90-95%	90-95%
Polyvalent Ions	95-99%	95-99%	95-99%	95-99%	95-99%	95-99%	95-99%	95-99%
Particulates, most	> 99%	> 99%	> 99%	> 99%	> 99%	> 99%	> 99%	> 99%
Organics (>300 MW), Bacteria and Pyrogens								
Recovery <sup>2</sup>	10%	10-50%	10%	30-50%	10%	30-50%	10%	30-50%
<b>Feed water Requirements<sup>2</sup></b>								
Inlet Residual Chlorine	0.2 to 1.0 ppm	0.2 to 1.0 ppm	0.2 to 1.0 ppm	0.2 to 1.0 ppm	zero	zero	< 0.1 ppm	< 0.1 ppm
Inlet pH Range	4-8	4-8	4-8	4-8	4-11	4-11	4-11	4-11
<b>TDS (Max. ppm CaCO<sub>3</sub>)<sup>2</sup></b>								
	800							
<b>Inlet iron total (as Fe)</b>								
		< 0.5 ppm						
<b>Turbidity</b>								
			< 1.0 NTU					
<b>Langlier Saturation Index</b>								
					Negative			
<b>Silt Density Index (S.D.I.)</b>								
							< 5%	

<sup>1</sup> Membrane performance is dependent upon membrane condition, pressure, recovery, water temperature and water composition. Listed membrane performance for a new membrane is based on 25°C (77°F) feed water temperature, feed water composition of 1000 ppm NaCl at a pH of 6.0-6.5 and stated design specifications for operating pressure and feed water recovery for each model.

<sup>2</sup> Feed water suitability MUST be determined by a Barnstead W.A.T.E.R.™ analysis. This service is provided FREE. Please contact the Barnstead International technical service hotline at 563-556-2241 or 1-800-446-6060 and request an ULTROpure W.A.T.E.R. Kit.

<sup>3</sup> Based on results of ULTROpure W.A.T.E.R. analysis.

## Storage Reservoirs



*Diamond™ RO - 30 Liter Storage Reservoir - NANOpure® Diamond*

### Storage for All Your Water Requirements!

- 30 liters to 200 gallon capacity
- Strong, inert materials
- Completely automatic operation

#### Product Description

- Reverse osmosis systems require storage to eliminate back pressure on the reverse osmosis membrane and provide the quantity of water that will meet your requirements.
- Barnstead provides a variety of storage reservoirs ranging in volume from 30 liters to 200 gallons, depending upon your needs. All tanks are designed to ensure automatic operation when used in conjunction with Barnstead reverse osmosis systems.

### CHOOSE THE REVERSE OSMOSIS SYSTEM AND STORAGE RESERVOIR TO MEET YOUR LABORATORY REQUIREMENTS

	30 Liter	60 Liter	100 Liter	Fiberglass Tanks 50, 100 & 200 gallon
EASYpure® RO	Optional			
Diamond RO	Yes	Yes	Yes	Yes
ROpure™ LP			Yes	Yes
ULTROpure™			Yes	Yes

### ACCESSORIES

Model #	Description
D7424	Optional Bench Mounting Stand (to be used if bench mounting an EASYpure RO when used in conjunction with an optional 30 Liter Tank)
PU902X1	Optional Distribution Pump for 60 Liter Reservoir, 120V
PU902X2	Optional Distribution Pump for 60 Liter Reservoir, 240V
TU902X1	Optional Sight Glass for 60 Liter Infinity Reservoir
AY1268X2	Bench Mounting Stand for Diamond RO 30 Liter Reservoir
16975BI	Float Assembly 50-200 Gallon Fiberglass Reservoirs

### ORDERING INFORMATION

Model #	W	Dimensions Inches (cm) H	D	Operating Weight (Full) Lb. (kg)	Shipping Weight Lb. (kg)
<b>EASYpure RO 30 Liter Storage Reservoir</b>					
TY742X2A	18 (45.7)	29.5 (14.9)	14.7 (37.3)	130 (59)	61.5 (28)
<b>ROpure Infinity and Diamond RO 60 Liter Storage Reservoir</b>					
D9021	20 (51)	24 (61)	17 (43.2)	168 (76)	35 (15.9)
<b>Diamond RO 30 Liter Storage Reservoir</b>					
D12681	20 (51)	18.3 (46.5)	15 (38)	104 (47.2)	23 (10.4)



## Storage Reservoir



100 Liter Storage Tank

### *Our Most Versatile Reservoir!*

- Rigid polyethylene
- 100 liter capacity
- 24-hour, automatic controls

### Product Description

- Reverse osmosis systems require storage to eliminate back pressure on the reverse osmosis membrane and provide the quantity of water that will meet your requirements. Barnstead provides a variety of storage reservoirs ranging in volume from 30 liters to 200 gallons, depending upon your needs.
- All tanks are equipped to ensure automatic operation when used in conjunction with the Barnstead reverse osmosis systems. Whether your need is for small volumes to feed a NANOpure, E-pure, or EASYpure II, or large volumes to feed an entire building, Barnstead has the tank for you.
- Complete with automatic controls, ensuring automatic operation in conjunction with Barnstead reverse osmosis systems (except ROpure ST).
- Draw-off points include spigot and feed port to NANOpure, E-pure, and EASYpure II systems.
- Port to provide for installation of all style NANOpures and E-pure pump protectors.
- Rigid polyethylene, providing strength and protection against material recontamination.
- Optional sight glass available to alert you of water level within the reservoir.

### ORDERING INFORMATION

Model #	Dimensions Inches (cm)			Operating Weight (Full) Lb. (kg)	Shipping Weight Lb. (kg)
	W	H	D		
D2622	20.25 (51)	38 (97)	10.25 (26)	256 (116)	75 (34)

### ACCESSORIES

Model #	Description
D2623	Optional sight glass for 100 L reservoir

## Storage Reservoirs

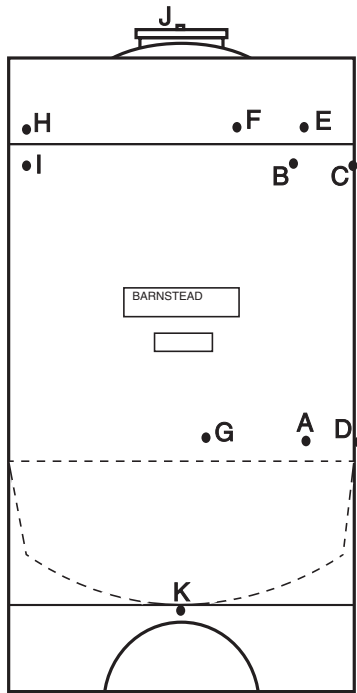


Diagram storage reservoir

### Our Largest Storage Reservoir!

- 50, 100, and 200 gallon capacity
- Multiple access ports for distribution
- Rigid fiberglass construction

#### Product Description

- Reverse osmosis systems require storage to eliminate back pressure on the reverse osmosis membrane and provide the quantity of water that will meet your requirements.
- Barnstead provides a variety of storage reservoirs ranging in volume from 50 liters to 200 gallons, depending upon your needs. All tanks are designed to ensure automatic operation when used in conjunction with Barnstead reverse osmosis systems. For automatic operation with the fiberglass storage reservoir, please order the float switch accessory.
- Whether your need is for small volumes to feed a NANOpure®, E-pure, or EASYpure® II, or large volumes to feed an entire building, Barnstead has the tank for you.

### PRODUCT SPECIFICATIONS

#### Fiberglass Tanks—Tank Fitting Schedule

	50 gallon	100 gallon	200 gallon
A: Low Level Monitor	1/2" NPT	1/2" NPT	1/2" NPT
B: Overflow	3/4" NPT	3/4" NPT	3/4" NPT
C: Bypass/Pump Return	3/4" NPT	3/4" NPT	1" NPT
D: Outlet	3/4" NPT	3/4" NPT	1" NPT
E: Auxiliary	1/2" NPT	1/2" NPT	1/2" NPT

#### Fiberglass Tanks—Tank Fitting Schedule

	50 gallon	100 gallon	200 gallon
F: Vent	1/2" NPT	1/2" NPT	1/2" NPT
G: Spare (for spigot)	3/4" NPT	3/4" NPT	3/4" NPT
H: High Level Float Switch	1/2" NPT	1/2" NPT	1/2" NPT
I: Inlet	3/4" NPT	3/4" NPT	3/4" NPT
J: Fillwell/Removable Cover	5" Diameter	5" Diameter	10" Diameter
K: Drain/Auxiliary Pump Suction	1" NPT	1" NPT	2" NPT

### ORDERING INFORMATION

Model #	Dimensions Inches (cm)		Approximate Storage Volume gal.	Shipping Weight Lb. (kg)
	H	D		
<b>Fiberglass Storage Reservoirs</b>				
B5041	44 (111.8)	24 (60.9)	50	32 (14.5)
B5042	70 (177.8)	24 (60.9)	100	44 (19.9)
B5043	79 (200.7)	32 (81.3)	200	89 (40.4)

### ACCESSORIES

Model #	Description
16975BI	Float switch assembly for fiberglass storage reservoirs