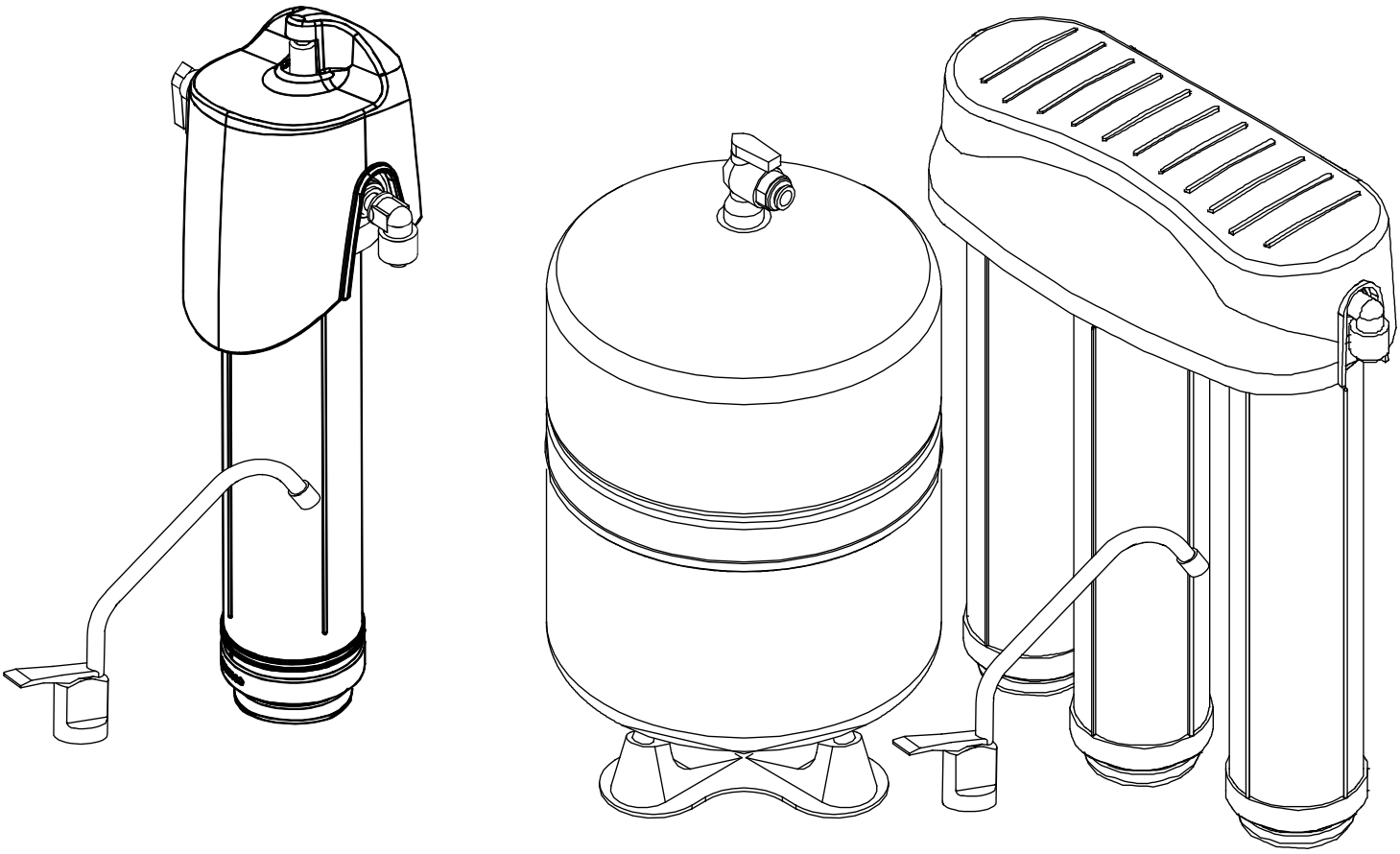
Kinetico®
water systems

Technical Manual

Drinking Water System and Filters



Models:

AquaKinetic® A200 Drinking Water System (13554)

Kinetico Drinking Water Filter with MACguard® Model 7000 (4049B)

Kinetico Drinking Water Filter with MACguard® Model 7500 (4050B)

Table of Contents

I. About this Manual

This manual provides additional technical information and guidance for the advanced service and setup of Kinetico Drinking Water Systems. Various icons help highlight issues that are relevant to the safe operation of this equipment. The following icons will be used as described:

General information regarding the application of this product will be highlighted by this icon. This will include technical specifications and expected operational results.

Maintain safe pressure
This sign indicates the safe operating pressure range.

Consult Maintenance Section
Refer to the maintenance section for specific instructions.

Consult Equipment Specifications Section
Refer to the equipment specifications section for specific instructions.

Consult MSDS Sheets

A **caution icon** will be used to present any information that may hold a potential hazard or concern during the installation, use or maintenance of this product. Should this information not be followed, it may result in damage to this equipment and its surroundings.

Pinch point or crushing hazard

Chemical hazard

The **warning icon** will be used to present any information that may result in a severe hazard or concern during the installation, use or maintenance of this product. Should this information not be followed, it may result in severe physical harm.

Stay Clear

Do Not Touch

No Access
Only properly trained and authorized persons can enter area or open panel.

Any tools or materials required during the installation, use or maintenance of this equipment will be preceded by this icon. Using these specific tools will minimize time and effort. Not using the proper tool may result in damage to this equipment, its surroundings or even physical harm.

II. System Overview

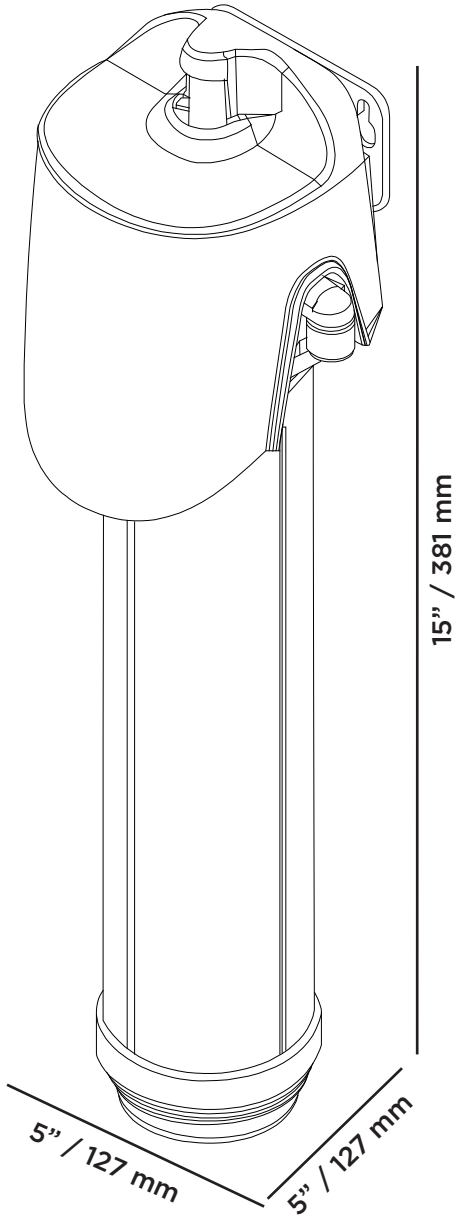
Kinetico Drinking Water Filters with MACguard®

With most water treatment systems, it's difficult to know when to replace the filters. Filters left in too long can actually make the water worse rather than better.

Kinetico Drinking Water Filters include MACguard (Metered Automatic Cartridge), a monitoring device that measures the amount of filtered water. After approximately 500 gallons, the system dramatically reduces the water flow from the faucet, alerting you it is time for a filter change. Once replaced, the flow of water returns to normal.

System Specifications

System Components		
System Controller	None	
Frame	Anodized Aluminum	
Cartridge:		
9306B		
Aesthetic Chlorine, Taste and Odor Removal	Activated Carbon Block	
9308A		
Aesthetic Chlorine, Taste and Odor, Lead, MTBE and VOC	Activated Carbon Block	
Inlet Water Quality		
Pressure Range (Dynamic Pressure)	20- 120 psi	1.4 – 8.3 bar
Temperature Range	35˚ - 100˚F	2˚ - 38˚C
pH Range	3 - 11 SU	
Free Chlorine Cl_2 (Max.)	4.0 mg/L	
Total Dissolved Solids, TDS (Max.)	N/A	
Operating Specs		
Normal Operating Pressure	500 gallons	1,892 liters
Dimensions (Width x Depth x Height)	5" x 5" x 15"	127 mm x 127 mm x 381 mm
Weight (Operating / Shipping)	3 lb / 1 lb	1.5 kg / 0.5 kg
Connections		
Inlet	0.250" Tube	
Outlet	0.250" Tube	
Power	None	
System Part Number		
Kinetico Drinking Water Filter with MACguard model 7000 (Aesthetic Chlorine, Taste and Odor Cartridge)	4049A	
Kinetico Drinking Water Filter with MACguard model 7500 (Aesthetic Chlorine, Taste and Odor, Lead, MTBE and VOC Cartridge)	4050A	



AquaKinetic® A200 Drinking Water System

Since the early 1960s, the use of reverse osmosis to process water has gained in popularity. The first application of this process was to desalinate sea water. Today, reverse osmosis is being used to produce potable water from sea water at rates of millions of gallons per day.

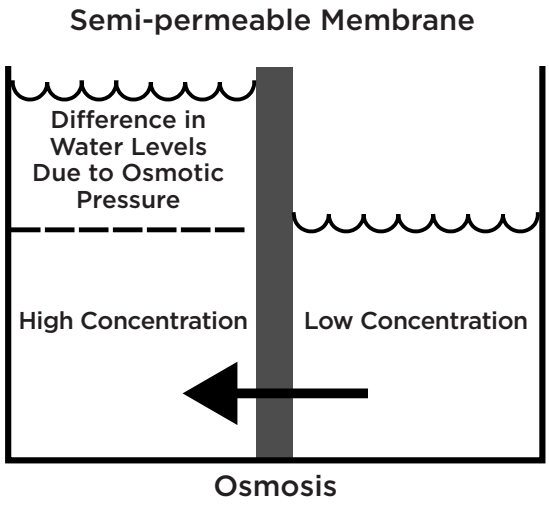
As the technology was refined, reverse osmosis systems were increasingly popular in homes to improve the quality of drinking and cooking water. Today, thousands of these systems have been installed as a more viable alternative to bottled water or distillers.

Osmosis

The osmotic process makes life itself possible. It is used to transfer nutrients into and waste products out of every cell in the human body.

Osmosis occurs when two water solutions of differing concentrations of dissolved solids are separated by a semi-permeable membrane. A semi-permeable membrane allows small molecules and ions to pass through it but acts as a barrier to larger particles or dissolved substances. Water molecules can pass through the membrane, but molecules or particles of the substance dissolved in the water cannot.

If two different concentrations of solution are arranged on either side of a semi-permeable membrane as shown in the figure above right, the water molecules will migrate through the semi-permeable membrane and cause the level on the more concentrated side to rise. Even though the solutions on both sides of the membrane are at the same pressure, water flows from one side to the other, due to osmosis.



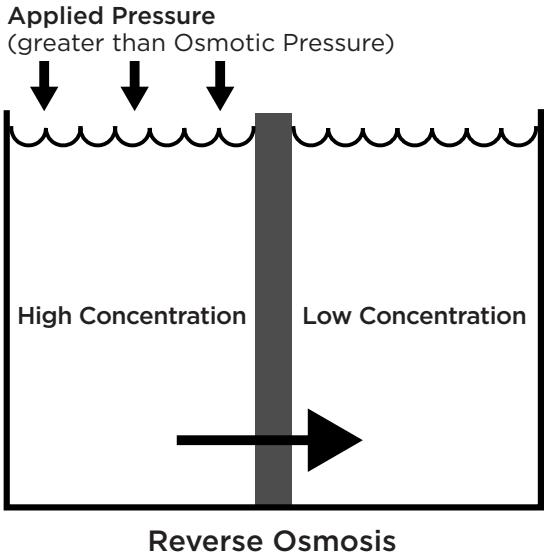
The difference in water level between the two solutions represents the force moving the water from one side of the membrane to the other. This force is the osmotic pressure.

Reverse Osmosis

If pressure greater than the osmotic pressure is applied to the more concentrated solution, passage of water through the semi-permeable membrane is reversed, causing water to move from the more concentrated solution to the less concentrated solution. This is called reverse osmosis, and is the process by which all reverse osmosis membranes work. In the reverse osmosis process, water is separated from the minerals dissolved in it. Most conventional filter methods work by removing particles from the water.

Application

In the household reverse osmosis unit, the driving pressure on the feed water side of the membrane is the water pressure in the home. As the pressure increases, the flow of water permeating through the membrane also increases. Permeate water is water that has diffused through the membrane by reverse osmosis.



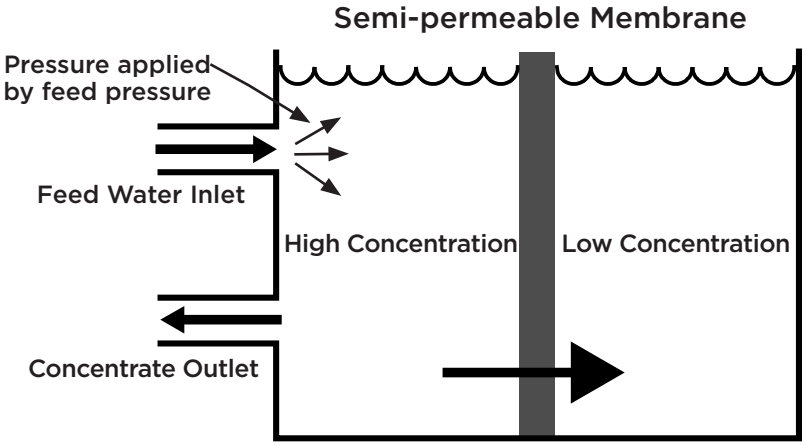
In actual applications, the membrane is not completely impermeable to solids dissolved in the water. They still move through the membrane, but at much slower rates than the water molecules. Thus, small amounts of the dissolved solids are still found in the treated water. The flow of dissolved solids does not increase as the pressure increases. Therefore, higher pressure on the feed water side not

only increases the flow of permeate water, it also increases the quality of the water. Simply stated, higher pressure yields more water of a better quality.

As permeate water is produced, the concentration of ions on the feed water side increases and can eventually cause the membrane element to scale up, plug and stop working. To prevent this, a continuous flow of water running past the membrane helps remove the rejected ions. This is illustrated in the drawing above by the Concentrate Outlet flow. This is also known as Drain Flow.

Application Limits

The effectiveness of reverse osmosis treatment for specific impurities and/or dissolved solids depends on a number of variables. Pressure, temperature, pH, membrane material and the chemical composition of the feed water all factor into how effective a reverse osmosis element will be in a specific application. Charts and tables are provided in the Specifications section to help determine the effectiveness of a reverse osmosis unit in a specific application. General guidelines are provided to help determine whether a reverse osmosis unit should even be considered.



Reverse Osmosis Application

Reverse osmosis membranes are very well suited for inorganic contaminants. When dissolved in water, inorganic materials dissociate into positively charged cations and negatively charged anions. These charged particles tend to be rejected at the membrane.

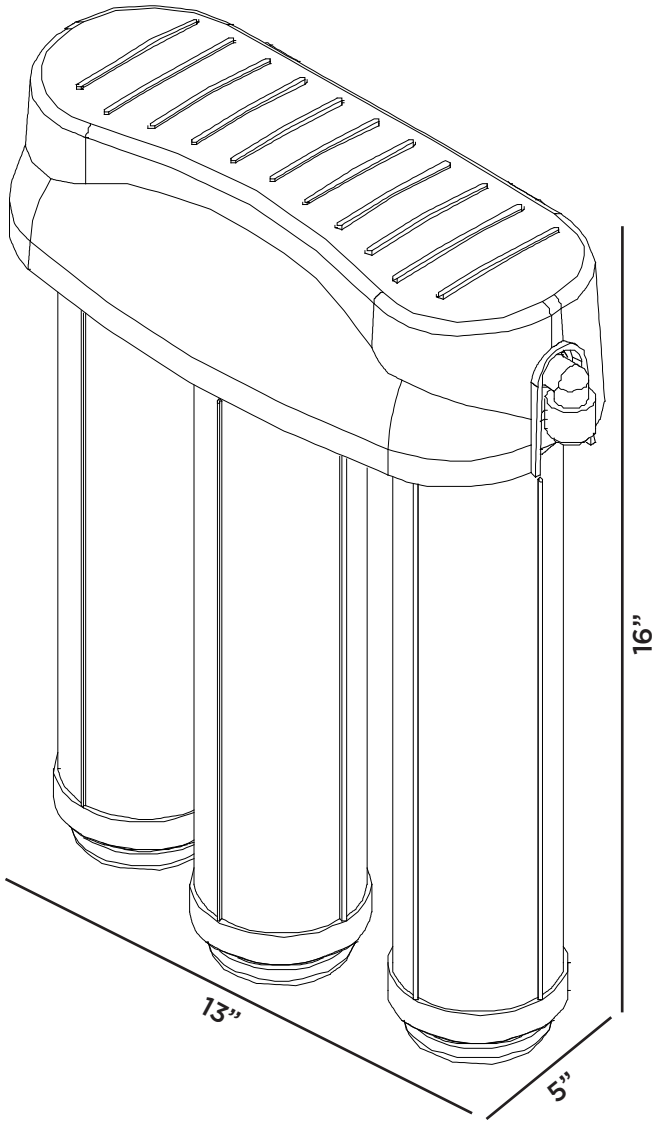
Organic contaminants are a different matter. Reverse osmosis membranes reject organic contaminants based on their molecular weight. Organic substances with a molecular weight greater than 300 will generally be rejected at the membrane. Organics with lower molecular weights, such as trihalomethanes, can pass through the membrane. The large size of viruses and bacteria generally prohibit them from passing through the membrane.

Softening is strongly recommended as a preconditioning process for the feed water, especially in areas where hardness exceeds 10 grains and/or iron exceeds 0.1 ppm.

⚠ The Kinetico Drinking Water System is not to be used on microbiologically unsafe water or water of unknown quality!

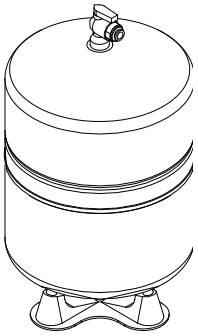
System Specifications

System Components	
Prefilter (Qty.)	
Chlorinated Feed Water	(1) Granular Activated Carbon
Non-chlorinated Feed Water	(1) 5 micron Sediment
Postfilter (Qty.)	(1) Granular Activated Carbon
Membrane Housing (Qty.)	(1) Quick Connect, Engineered Plastic
Primary Membrane (Qty.)	(1) Thin Film Composite
Primary Membrane Size	1.7" x 10.0" (8.0 ft^2)
Array Configuration	Single
Drain Control	0.026" Capillary Tube
System Shutoff Control	Hydraulic Controller
Permeate Quality Monitor	Optional
System Controller	Hydraulic Controller
Frame	Anodized Aluminum
Inlet Water Quality	
Pressure (Dynamic Pressure)	35- 100 psi
Temperature Range	35 ° - 100 ° F
pH Range	3 - 11 SU
Free Chlorine Cl_2 (Max.)	
with carbon prefilter	4.0 mg/L
with sediment prefilter	0.05 mg/L
Hardness as $CaCO_3$ (Max.)	<10 gpg (170 mg/L)
Silica (Max.)	10.0 mg/L
Iron (Max.)	<0.01 mg/L
Total Dissolved Solids, TDS (Max.)	<3,000 mg/L
Operating Specs	
Daily Production (77 ° F, 500 mg/L Feed Water)	10.9 gallons/day
Recovery Rating	24.66%*
Efficiency Rating	14.08%**
Reject Rate (NaCl / CaC03)	95% / 98%
Normal Operating Pressure	60 psi
Dimensions (Width x Depth x Height)	13" x 5" x 16"
Weight (Operating / Shipping)	4 / 4 lb
Connections	
Inlet	0.375" Tube
Permeate	0.375" Tube
Drain Connection	0.250" Tube
Power	None
System Part Number	
AquaKinetic A200 Drinking Water System	13554



* Recovery Rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is by-passed.

** Efficiency Rating means the percentage of influent water to the system that is available to the user as reverse osmosis treated water under operating conditions that approximate typical daily usage.



Storage Tank Options

Tank Description	3 gallon
Tank Part Number	9344C
Tank Height	14 ⅛"
Tank Footprint	9 1/16"
Material	Steel

Operating Profile

The system shall use reverse osmosis technology to reduce the total dissolved solids (TDS) level in water by a minimum of 90.0%. The system shall use line pressure for energy required to separate TDS from water. Normal system operating pressure shall be 60 psi. The system uses an internal valve that closes and depressurizes the system when the unit goes into shutdown. System shutdown is achieved when permeate pressure increases to 2/3 inlet pressure.

Membranes and Housings

The system shall use thin film composite membranes in a spiral wound configuration with dimensions of 1.7" x 10.0". One membrane will be used to permeate 10.9 gpd of water, based on a 77˚ F operating temperature. Membrane construction will provide for low energy requirements by operating at a minimal working pressure. Housings shall be of engineered plastic rated to 100 psi. One housing shall be used, designed to contain one 1.7" x 10.0" membrane element.

Plumbing Configuration

The system shall be rated for a maximum working pressure of 100 psi. Primary plumbing components shall be of polypropylene and engineered plastic. A capillary tube shall control reject flow. Membrane shall be configured in a single stage orientation.

System Controls

System function is completely automatic. The operational sequence is controlled by hydraulic signals within the RO system. These signals control the pressurization and depressurization of the membrane.

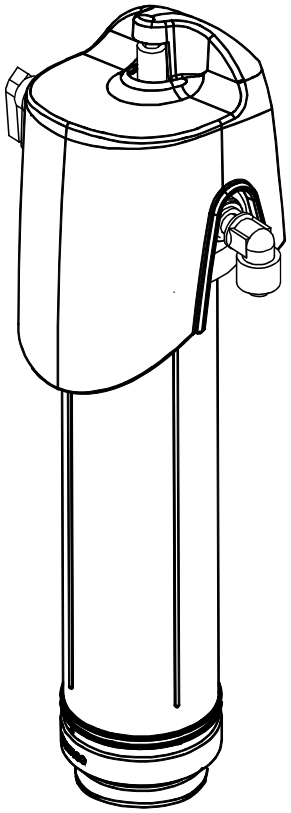
Frame

System dimensions shall not exceed 13" x 5" x 16". Units shall use an anodized coated aluminum frame.

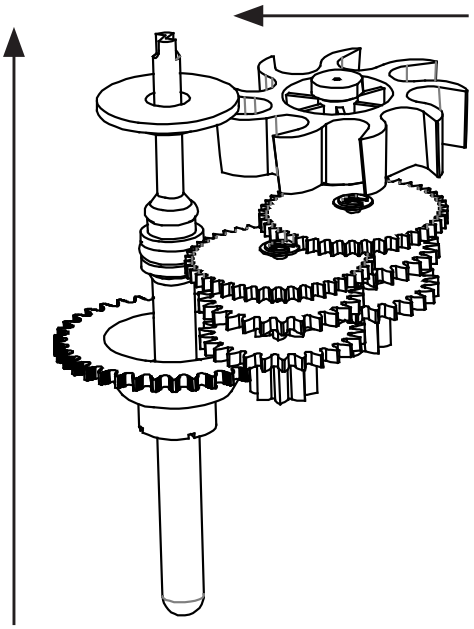
III. Operation and Function

Kinetico Drinking Water Filters with MACguard

After approximately 500 gallons have passed through the MACguard filter, it dramatically reduces the flow of water to the tap. The filter cartridge must be replaced at this time to restore the flow of water and effectively filter the water. For optimal performance Kinetico recommends replacing your filter every twelve months, even if you have not yet reached 500 gallons of usage.



MACguard Cartridge Filters



In MACguard cartridges, water flow is measured by a turbine located in the path of incoming water. As water flows past the turbine, it turns. The number of revolutions the turbine makes is an accurate measure of how much water has flowed past the turbine and through the filter.

As water flows past the turbine, it turns and drives a gear train. This gear train is connected to a shut-off valve in the flow path of water. As the turbine turns, it slowly closes the shut-off valve. The turbine and gear train are sized so that the valve is closed after approximately 500 gallons of water have flowed through the filter.

Once the valve has closed, it is completely disengaged from the gear train. In order to allow any more water flow, the filter cartridge must be replaced.

MACguard cartridges insure the filter will always be replaced at the end of its useful life. Once the filter cartridge has been exhausted, no more water will flow until the cartridge is replaced.

⚠ Kinetico Drinking Water Filters will not make biologically unsafe water safe to drink. Activated carbon will not kill bacteria. When applying Kinetico Drinking Water Filters to non-chlorinated water supplies, additional treatment steps may be necessary to insure that the water's bacteriological content is compatible with activated carbon final treatment.

Flow Path

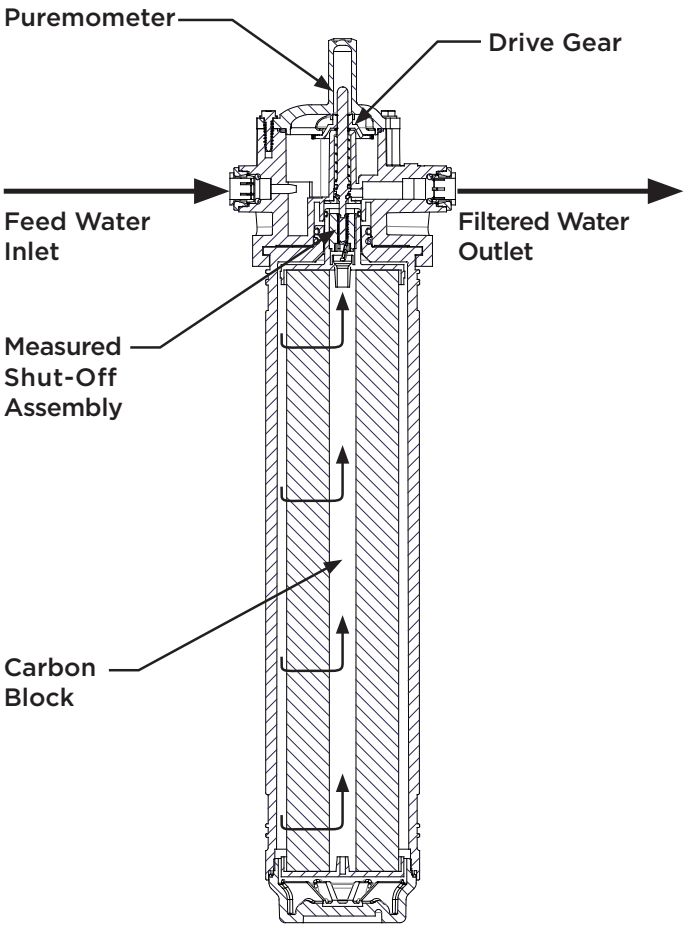
Carbon Block (C/B) Cartridge

Unfiltered water flows into the Feed Water Inlet and flow is directed past the Turbine.

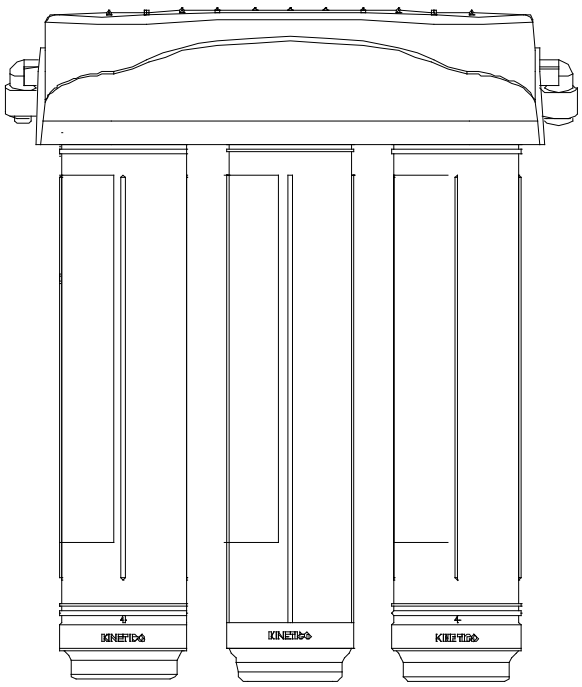
The turbine is connected to gearing that gradually closes the Measured Shut-off Assembly. When approximately 500 gallons have passed through the filter, the Measured Shut-off Assembly is closed, preventing any more water from flowing through the filter.

Water passes into the outside of the filter assembly and through the Carbon Block of the filter assembly.

Water then flows up into the center of the filter, through the Flow Control orifice and out through the Filtered Water Outlet for use.



AquaKinetic® A200 Drinking Water System



Feed water is input to a prefilter. After prefiltering, water flows to the R.O. membrane where reverse osmosis occurs. Since permeate water is produced at a rate slower than it may be used, treated water is produced and stored for later use. The water is stored under pressure in an air-charged holding tank. The more water that is stored, the higher the tank pressure is. From the R.O. membrane and the holding tank, water flows to a postfilter. After postfiltering, water is delivered for use at the tap.

Softening is strongly recommended as a preconditioning process for the feed water, especially in areas where hardness exceeds 10 grains per gallon and/or iron exceeds 0.1 ppm.

In A200 models, the reverse osmosis process is controlled by a shut-off valve attached to the bracket assembly. The operating parameters are controlled by the pressure signals received by the shut-off valve. When the shut-off valve senses that the holding tank is sufficiently full (holding tank pressure is approximately 2/3 of the feed pressure), it stops feeding water to the system. The shut-off valve will not allow water flow to the system until the holding tank pressure drops to 1/3 of feed pressure.

Component Function

Model Numbers

Kinetico model numbers for reverse osmosis systems represent different combinations of options for each component in the system.

Prefilter Cartridge

Either a Sediment or Carbon/Sediment cartridge may be installed in the prefilter. If a Thin Film (TF) RO membrane is being used in conjunction with a chlorinated feed water source, the Carbon/Sediment cartridge must be used to remove chlorine. When using on a chlorinated water source, a carbon/sediment prefilter must be used to eliminate chlorine before the RO membrane. Chlorine will damage a TF membrane.

Reverse Osmosis Membrane

A Thin Film (TF) membrane is used for Kinetico Drinking Water Systems. The RO membrane will perform differently depending upon water temperature, pressure, water quality, etc.

Tap

Either an air gap (AG) or non-air gap (NAG) tap may be installed. Local codes often require an air gap, but the installer of Kinetico Drinking Water Systems may elect to construct the air-gap externally from the tap. Kinetico Drinking Water Systems must be installed in accordance all with local codes.

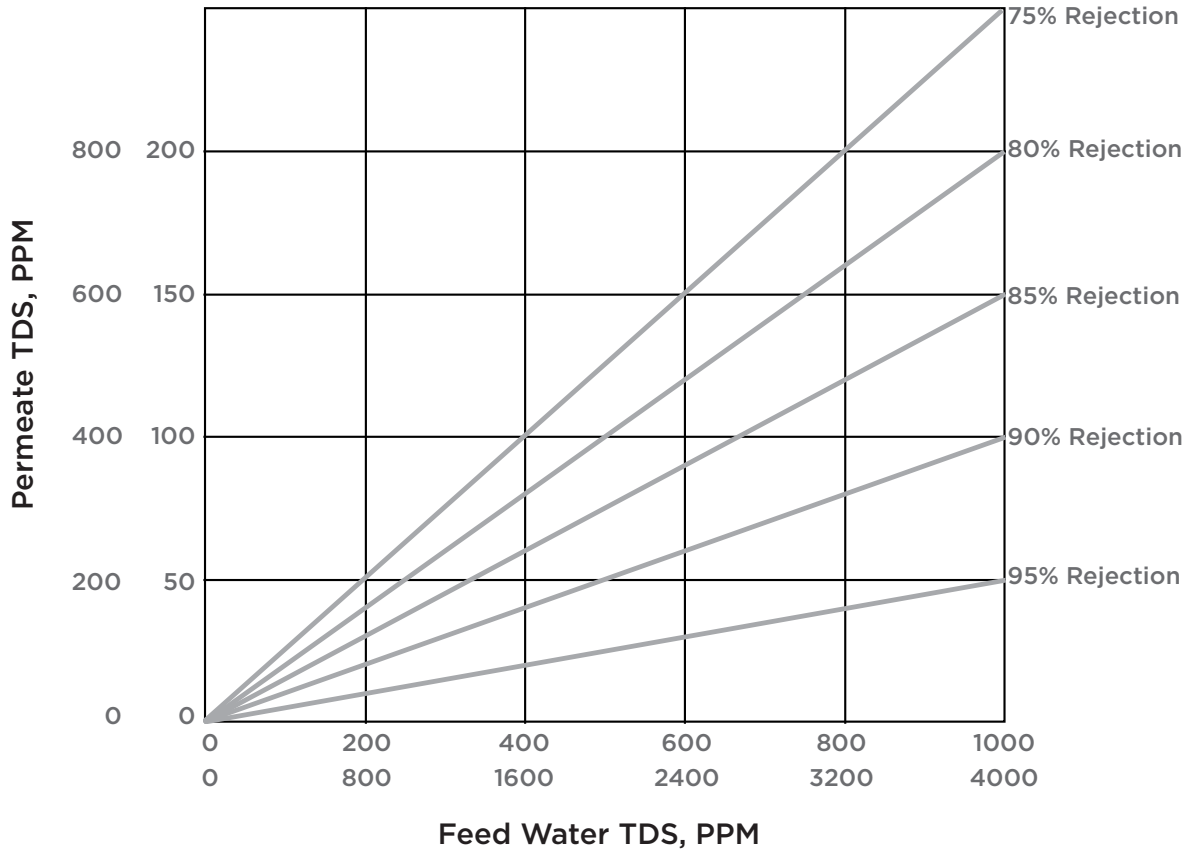
Postfilter Cartridge

Kinetico Drinking Water System –Granular Activated Carbon Cartridge.

Contaminant Reduction Capabilities

Available from Kinetico are Performance Data Sheets for all Kinetico Drinking Water Systems. These sheets contain information based on testing conducted to NSF Standards. They offer information on the expected reduction of various total dissolved solids by the RO membrane as well as Volatile Organic Compounds by a VOC cartridge.

Rejection and Recovery



Definitions

- **Rejection** - percent of TDS that does not pass through the membrane
- **Recovery** - percent of feed water collected as permeate water
- **TDS** - Total Dissolved Solids mg/L (=ppm)

Legend

A = concentrate water flow
B = permeate water flow
C = feed water TDS
D = permeate water TDS

Rejection Calculation

Rejection (%) = 100 - (D/C x 100)

Example: If Feed Water TDS (C) = 1000 PPM and Permeate TDS (D) = 50 PPM
Rejection = 100 - (50/1000 x 100) = 95%

See graph above for calculations.

Recovery Calculation

Recovery (%) = [B(A + B)] x 100

Example: If permeate water flow (B) = 20 ml/min. and concentrate (drain) water flow rate = 80 ml/min.
Recovery = [20/(80 + 20)] X 100 = 20%

TF Water Production Rate - 3 Gallon Tank

Typical average rejection rates for thin film membranes are listed below. All results are averaged from actual tests performed on water at 60 psig and 77°F. TF membranes must not be exposed to oxidizers such as chlorine.

Inorganic Rejection Rates (Cation)

Name	Symbol	Rejection (%)
Aluminum	AL^{+3}	80 - 92
Ammonium	NH^{+1}	94 - 98
Barium	Ba^{+2}	96 - 98
Cadmium	Cd^{+2}	87 - 94
Calcium	Ca^{+2}	95 - 98
Trivalent Chromium	Cr^{+3}	95 - 98
Hexavalent Chromium	Cr^{+6}	96 - 99
Copper	Cu^{+2}	86 - 92
Total Hardness	Ca^{+2}	98 - 99
Ferrous Iron	Fe^{+2}	98 - 99
Lead	Pb^{+2}	98 - 99
Manganese	Mn^{+2}	96 - 99
Magnesium	Mg^{+2}	94 - 98
Mercury	Hg^{+2}	96 - 98
Nickel	Ni^{+2}	93 - 96
Potassium	K^{+1}	96 - 98
Silver	Ag^{+1}	96 - 98
Sodium	Na^{+1}	96 - 98
Strontium	Sr^{+2}	96 - 98
Zinc	Zn^{+2}	98 - 99

Inorganic Rejection Rates (Anion)

Name	Symbol	Rejection (%)
Arsenate	AsO_4^{-3}	80 - 95
Arsenite	AsO_2^{-1}	60 - 70
Bicarbonate	HCO_3^{-1}	90 - 96
Borate	$B_4O_5(OH)_4^{-2}$	30 - 70 *
Bromide	Br^{-1}	94 - 96
Chloride	Cl^{-1}	90 - 95
Chromate	CrO_4^{-2}	90 - 98
Cyanide	CN^{-1}	90 - 95
Ferrocyanide	$Fe(CN)_6^{-4}$	99+
Fluoride	F^{-1}	90 - 96
Nitrate	NO_3^{-1}	60 - 90
Phosphate	PO_4^{-3}	99+
Selenate	SeO_4^{-2}	94 - 97
Selenite	SeO_3^{-2}	94 - 97
Silicate	SiO_4^{-4}	95 - 97
Sulfate	SO_4^{-2}	99+
Sulfite	SO_3^{-2}	98 - 99
Thiosulfate	$S2O_3^{-2}$	99+

* Extremely dependent on pH and pressure.

TF Membrane Limits

Maximum TDS	3,000 ppm
pH Range	3 – 11 SU
Pressure Range	35 – 100 psi
Temperature Range	35 – 100˚F
Water Supply *	0 – 10 gpg hardness, 0 – 0.1 ppm iron

* Recommended hardness for extended product life is 0 gpg and 0 ppm iron.

Inorganic Rejection Rates (Cation)

Name	Rejection (%)
Acetic Acid	50
Asbestos	99.9
Bacteria and Virus	99.9 *
Cyst and Turbidity	99.9
Detergents	99
Dyes	99.9
Formaldehyde	20
Glucose	99.9
Organic Pesticides	99
Phenol	50
Protein	99.9
Pyrogen	99.9
Protein	99.9
Pyrogen	40-60

* Bacteria growth through the membrane may occur in time

Using Operating Charts

The charts in this section are provided to help predict how units will perform in an application. Every attempt was made to ensure accuracy. These figures represent predicted performance under actual operating conditions; field results may vary.

Water Production and Time to Fill Empty Tank

Tables are provided to predict water production (gallons per day) and the time to fill an empty holding tank (hours). These values are dependent on the type of R.O. membrane, line pressure, Total Dissolved Solids (TDS) in the feed water and the temperature of the feed water. To use these charts:

1. Pick the applicable Kinetico Drinking Water System.
2. Pick the appropriate chart for the membrane used in the R.O. Unit.
3. Use the incoming line pressure to locate the correct set of rows on the chart.
4. Use TDS to narrow the choice to one row.
5. Use the temperature range to choose the correct column on the chart.

Maximum Water Stored

A graph is provided to predict the maximum amount of water stored in the standard storage tank. This is dependent on air pre-charge of the tank, line pressure entering the system and independent of the type of membrane. Use the incoming line pressure to locate the correct point on the curve and read the volume of stored water.

Gallons per Day*

Pressure (psig)	**TDS** (ppm)	40˚F	50˚F	60˚F	70˚F	80˚F	90˚F
40	100	3.7	4.4	5.2	6	7.1	8.3
	500	2.8	3.3	3.9	4.5	5.3	6.3
	1000	1.6	1.9	2.3	2.7	3.1	3.7
	1500	0.5	0.6	0.7	0.8	0.9	1.1
	2000	- - -	- - -	- - -	- - -	- - -	- - -
	3000	- - -	- - -	- - -	- - -	- - -	- - -
	4000	- - -	- - -	- - -	- - -	- - -	- - -
50	100	5.3	6.2	7.3	8.5	10	11.8
	500	4.4	5.1	6	7	8.3	9.7
	1000	3.2	3.7	4.4	5.2	6.1	7.1
	1500	2	2.4	2.8	3.3	3.9	4.5
	2000	0.9	1	1.2	1.4	1.7	1.9
	3000	- - -	- - -	- - -	- - -	- - -	- - -
	4000	- - -	- - -	- - -	- - -	- - -	- - -
60	100	6.8	8	9.4	11.0	13.0	15.2
	500	5.9	6.9	8.1	9.5	11.2	13.1
	1000	4.7	5.6	6.5	7.7	9.0	10.5
	1500	3.6	4.2	4.9	5.8	6.8	8.0
	2000	2.4	2.8	3.3	3.9	4.6	5.4
	3000	0.1	0.1	0.1	0.2	0.2	0.2
	4000	- - -	- - -	- - -	- - -	- - -	- - -
70	100	8.4	9.8	11.5	13.5	15.9	18.6
	500	7.4	8.7	10.3	12.0	14.1	16.6
	1000	6.3	7.4	8.7	10.2	11.9	14.0
	1500	5.1	6.0	7.1	8.3	9.7	11.4
	2000	4.0	4.6	5.5	6.4	7.5	8.8
	3000	1.6	1.9	2.3	2.6	3.1	3.6
	4000	- - -	- - -	- - -	- - -	- - -	- - -
80	100	9.9	11.6	13.7	16.0	18.8	22.1
	500	9.0	10.5	12.4	14.5	17.0	20.0
	1000	7.8	9.2	10.8	12.7	14.8	17.4
	1500	6.7	7.8	9.2	10.8	12.6	14.8
	2000	5.5	6.5	7.6	8.9	10.4	12.3
	3000	3.2	3.7	4.4	5.1	6.0	7.1
	4000	0.9	1.0	1.2	1.4	1.6	1.9
90	100	11.5	13.5	15.8	18.5	21.7	25.5
	500	10.5	12.4	14.5	17.0	20.0	23.4
	1000	9.4	11.0	12.9	15.1	17.8	20.9
	1500	8.2	9.6	11.3	13.3	15.6	18.3
	2000	7.0	8.3	9.7	11.4	13.4	15.7
	3000	4.7	5.5	6.5	7.6	9.0	10.5
	4000	2.4	2.8	3.3	3.9	4.6	5.4
100	100	13.0	15.3	17.9	21.0	24.7	28.9
	500	12.1	14.2	16.6	19.5	22.9	26.9
	1000	10.9	12.8	15.0	17.6	20.7	24.3
	1500	9.8	11.4	13.4	15.8	18.5	21.7
	2000	8.6	10.1	11.8	13.9	16.3	19.1
	3000	6.3	7.4	8.6	10.1	11.9	14.0
	4000	3.9	4.6	5.4	6.4	7.5	8.8

* The above calculations include holding tank back pressure and are based on 6 psig air pre-charge

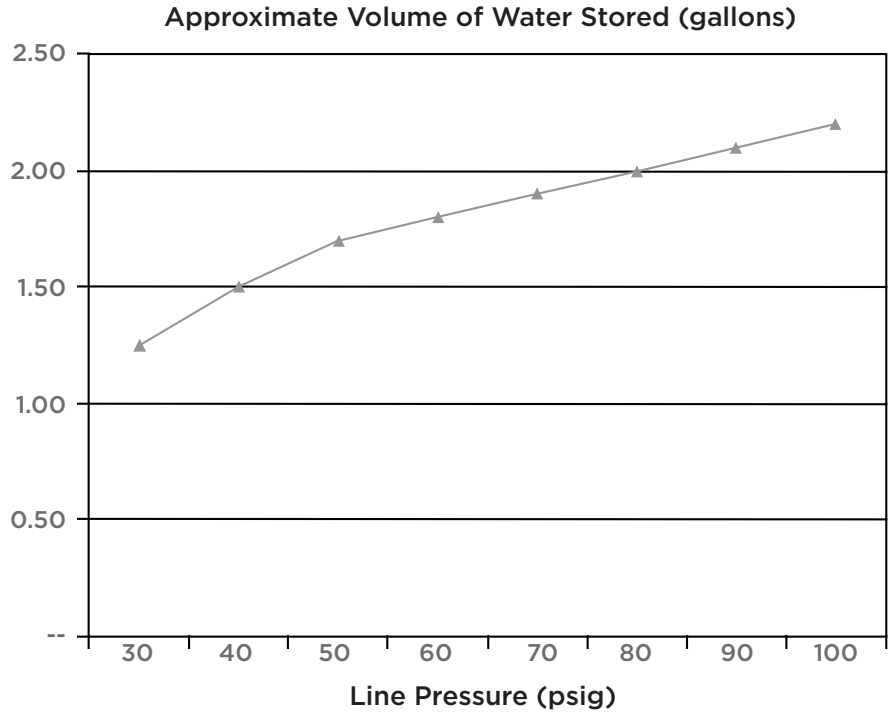
Hours per Tank*

Pressure (psig)	TDS (ppm)	40˚F	50˚F	60˚F	70˚F	80˚F	90˚F
40	100	8.1	6.9	5.9	5.0	4.3	3.7
	500	10.1	8.6	7.3	6.2	5.3	4.5
	1000	14.4	12.3	10.5	8.9	7.6	6.5
	1500	25.4	21.6	18.4	15.7	13.4	11.4
	2000	- - -	- - -	- - -	- - -	- - -	- - -
	3000	- - -	- - -	- - -	- - -	- - -	- - -
	4000	- - -	- - -	- - -	- - -	- - -	- - -
50	100	7.1	6.0	5.1	4.4	3.7	3.2
	500	8.3	7.1	6.0	5.1	4.4	3.7
	1000	10.6	9.0	7.7	6.5	5.6	4.8
	1500	14.6	12.4	10.6	9.0	7.7	6.5
	2000	23.4	19.9	17.0	14.5	12.3	10.5
	3000	- - -	- - -	- - -	- - -	- - -	- - -
	4000	- - -	- - -	- - -	- - -	- - -	- - -
60	100	6.3	5.3	4.6	3.9	3.3	2.8
	500	7.1	6.1	5.2	4.4	3.7	3.2
	1000	8.5	7.3	6.2	5.3	4.5	3.8
	1500	10.7	9.1	7.8	6.6	5.6	4.8
	2000	14.3	12.1	10.4	8.8	7.5	6.4
	3000	- - -	36.9	31.5	26.8	22.9	19.5
	4000	- - -	- - -	- - -	- - -	- - -	- - -
70	100	5.6	4.8	4.1	3.5	3.0	2.5
	500	6.2	5.3	4.5	3.9	3.3	2.8
	1000	7.2	6.1	5.2	4.5	3.8	3.2
	1500	8.6	7.3	6.2	5.3	4.5	3.9
	2000	10.6	9.0	7.7	6.5	5.6	4.7
	3000	19.7	16.8	14.3	12.2	10.4	8.9
	4000	- - -	- - -	- - -	- - -	- - -	- - -
80	100	5.1	4.3	3.7	3.1	2.7	2.3
	500	5.5	4.7	4.0	3.4	2.9	2.5
	1000	6.3	5.3	4.6	3.9	3.3	2.8
	1500	7.2	6.2	5.2	4.5	3.8	3.2
	2000	8.5	7.2	6.2	5.3	4.5	3.8
	3000	13.2	11.2	9.6	8.1	4.6	5.9
	4000	29.2	24.9	21.2	18.1	10.4	13.1
90	100	4.6	4.0	3.4	2.9	2.4	2.1
	500	5.0	4.3	3.6	3.1	2.6	2.3
	1000	5.6	4.7	4.0	3.4	2.9	2.5
	1500	6.3	5.3	4.5	3.9	3.3	2.8
	2000	7.2	6.1	5.2	4.4	3.8	3.2
	3000	10.0	8.6	7.3	6.2	5.3	4.5
	4000	16.8	14.3	12.2	10.4	8.9	7.6
100	100	4.3	3.6	3.1	2.6	2.2	1.9
	500	4.6	3.9	3.3	2.8	2.4	2.1
	1000	5.0	4.3	3.6	3.1	2.6	2.3
	1500	5.5	4.7	4.0	3.4	2.9	2.5
	2000	6.2	5.3	4.5	3.8	3.3	2.8
	3000	8.2	7.0	5.9	5.1	4.3	3.7
	4000	12.0	10.2	8.7	7.4	6.3	5.4

* The above calculations include holding tank back pressure and are based on 6 psig air pre-charge

Maximum Water Stored

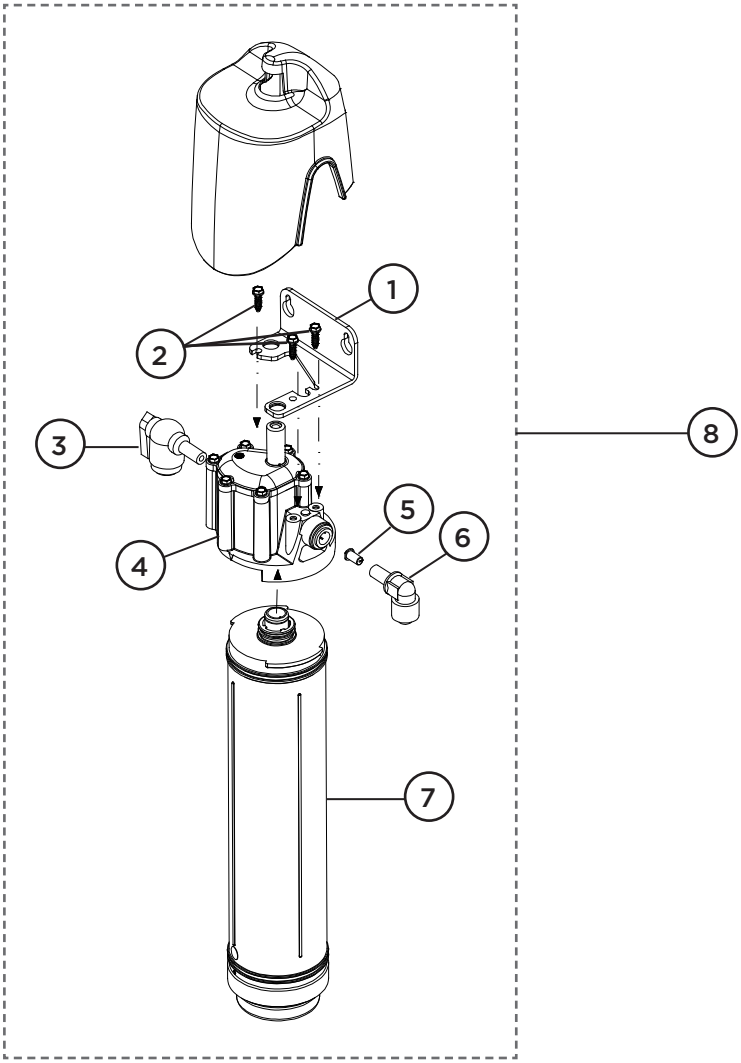
3 Gallon Tank (Air-Charge)



Note: The above graph is based on a 3 gallon tank with 6 psig air pre-charge.

IV. Parts

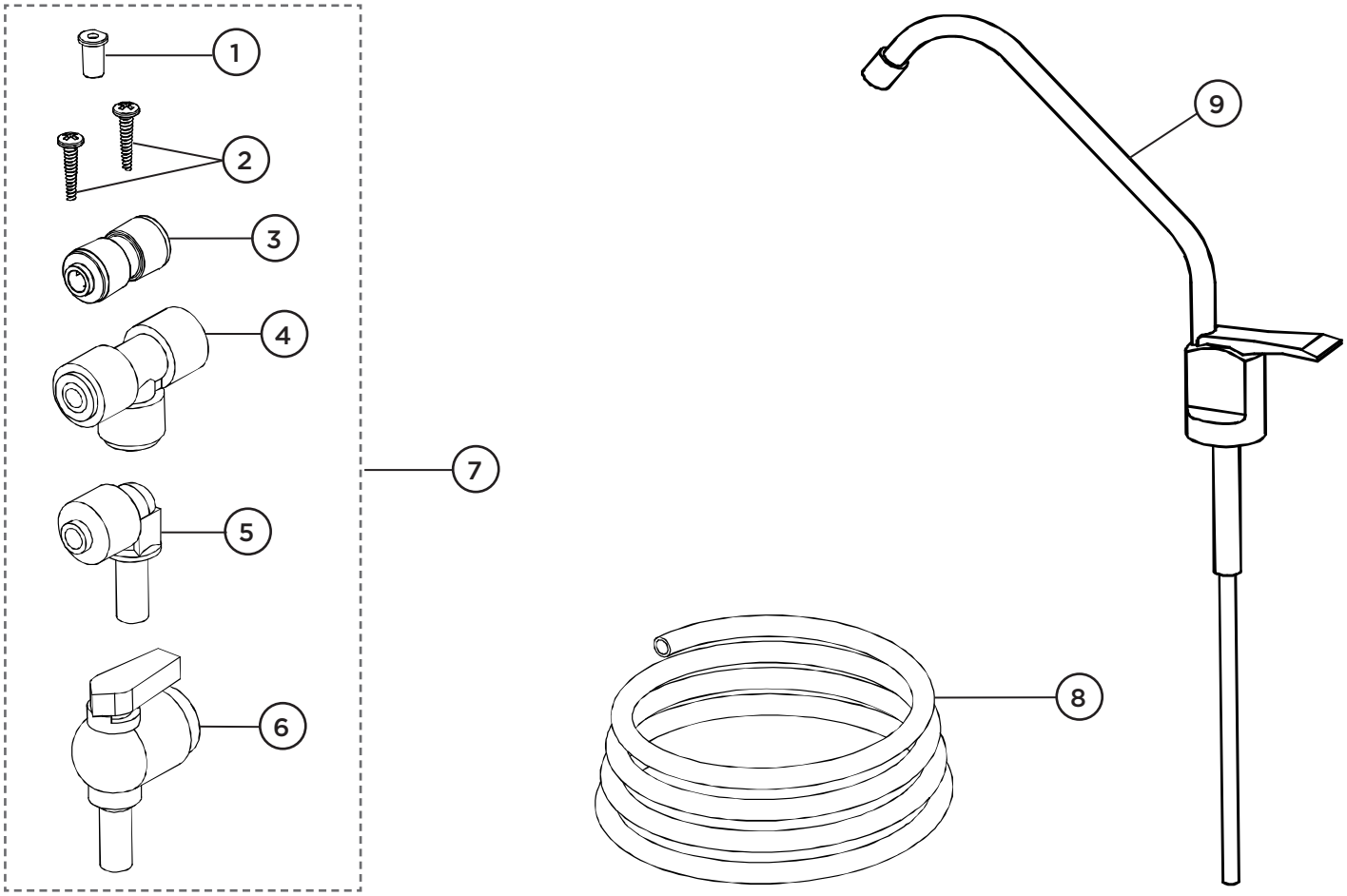
Kinetico Drinking Water Filters with MACguard



Assembly Parts

Dwg. No.	Description	Part No.
1	Bracket	9328
2	Screws (3 required)	1010
3	Valve, Ball - Elbow, ¼" Tube x ⅜" Stem	15792
4	MAC Head *(includes bracket and screws)*	12870A
5	K5 Flow Supressor*	13477
6	Elbow, ¼" Tube x ⅜" Stem, V/L*	15791
	Elbow, ¼" Tube x ⅜" Stem, GAC	15793
7	Cartridge, MAC, V/L	9308A
	Cartridge, MAC, GAC	9306B
8	Drinking Water Filter, Model 7000 with install kit	16432
	Drinking Water Filter, Model 7500 with install kit	16433

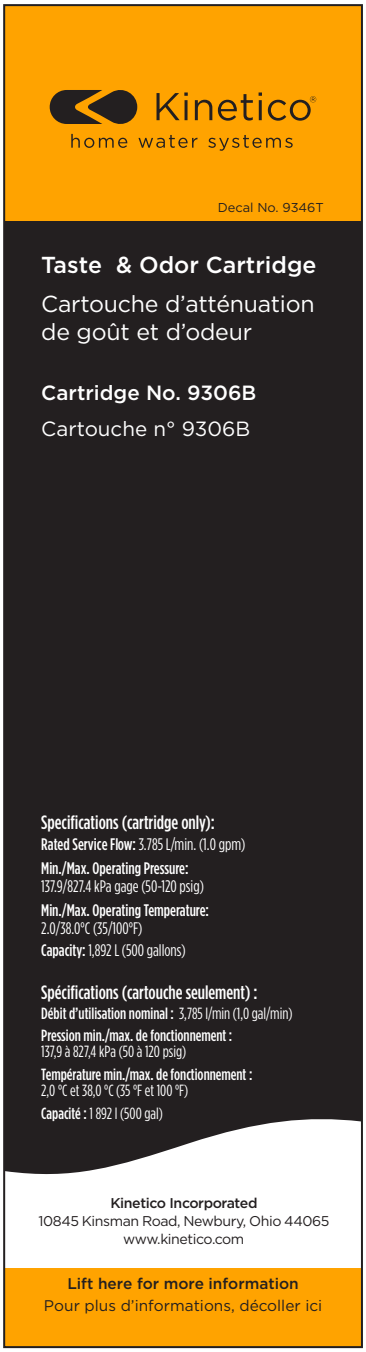
**For the use in MAC 7500 only*

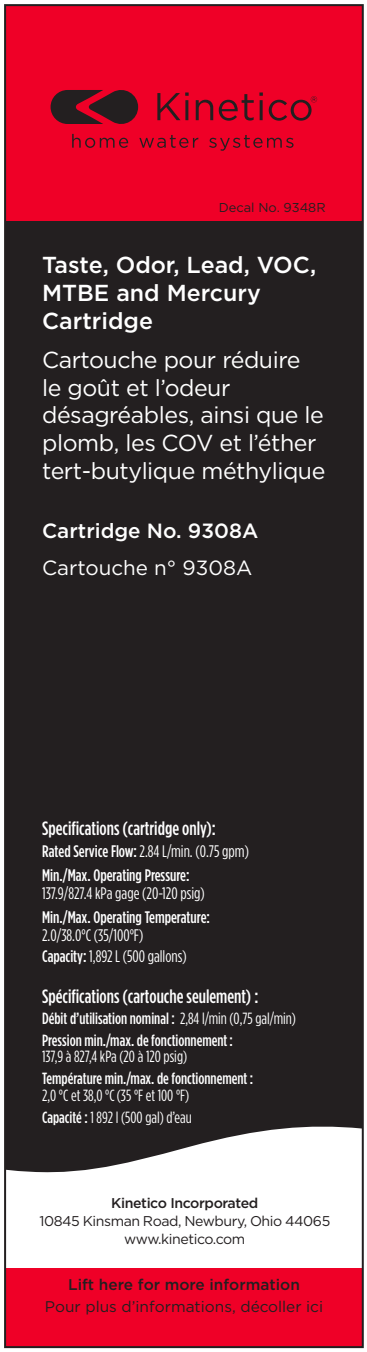


Faucet and Assembly Kits

Dwg. No.	Description	Part No.
1	K5 Flow Supressor*	13477
2	Mounting Screws (2 required)	3321A
3	Union Connector, ¼" T x ¼" T	9847A
4	Tee, ⅜" x ¼"	9207B
5	Elbow, ¼" Tube x ⅜" Stem, V/L*	15791
	Elbow, ¼" Tube x ⅜" Stem, GAC	15793
6	Valve, Ball - Elbow, ¼" Tube x ⅜" Stem	15792
7	Assembly Kit, V/L	14938A
	Assembly Kit, GAC	14937A
8	Tubing, ¼" x 10'	8554A
9	Faucet, non-air gap	11450B

**For the use in MAC 7500 only*

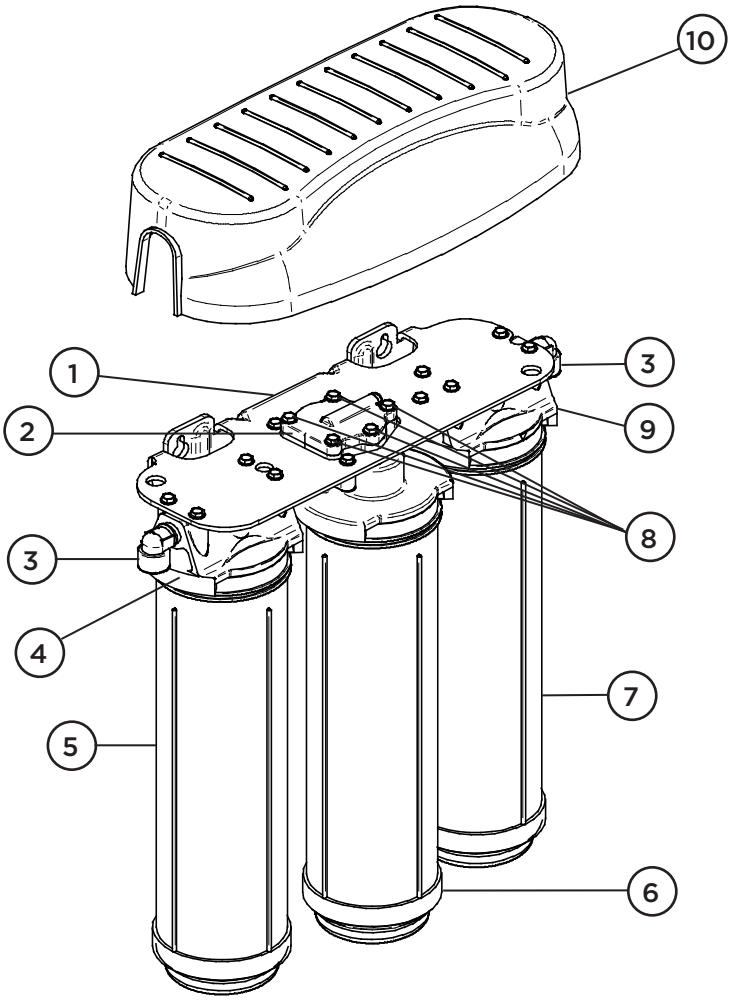




Replacement Cartridges

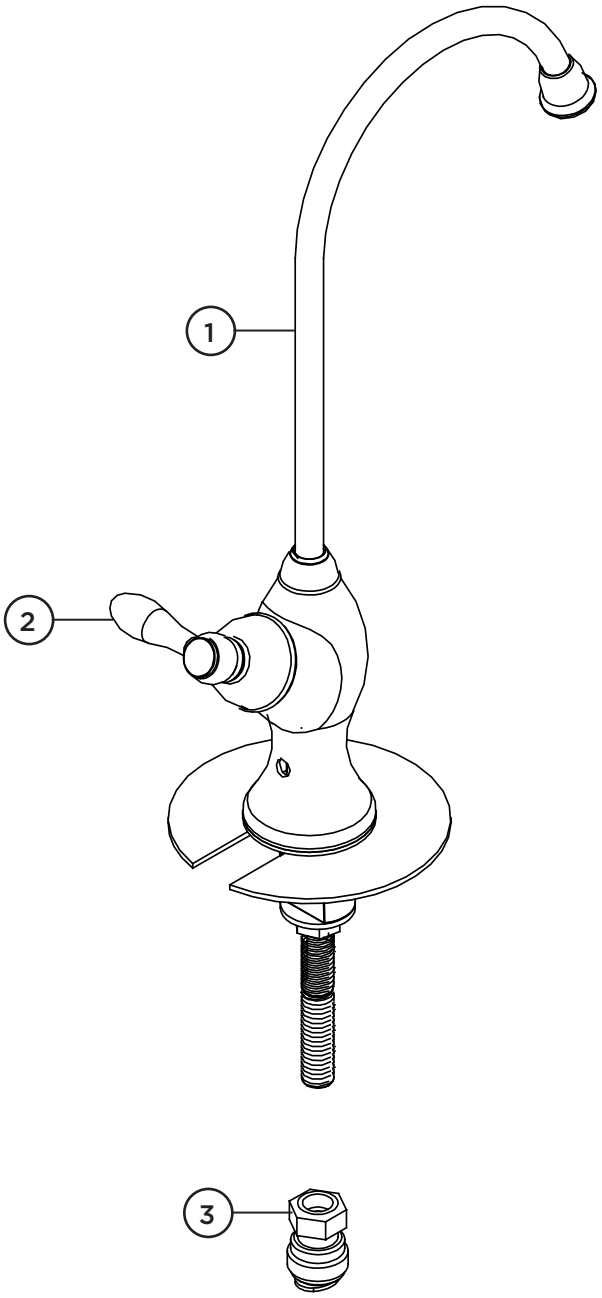
Color Code	Description	Part No.
Orange	Cartridge, Taste & Odor Filter	9306B
Red	Cartridge, Taste, Odor, Lead & VOC Filter	9308A
---	Insert	9305A

AquaKinetic® A200 Drinking Water System



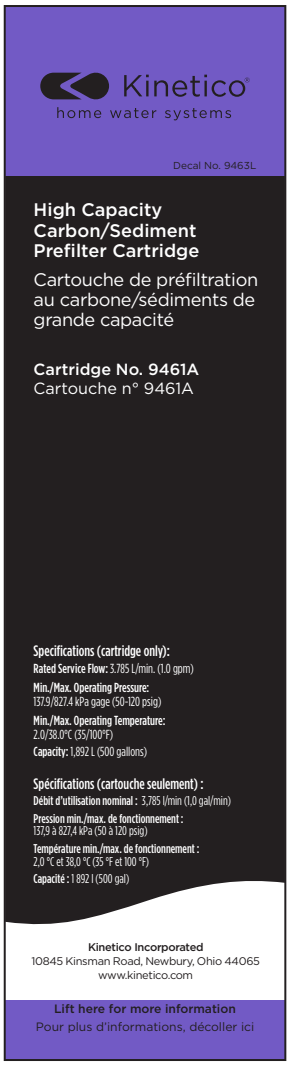
Bracket Assembly

Dwg. No.	Description	Part No.
1	Bracket	9441
	Bracket Assembly	9442A
2	Module Head Assembly	9440
3	Elbow, ⅜" Tube x ⅜" Stem	17285
4	Prefilter Head	9313D
5	Cartridge, Prefilter - Sediment	9309A
	Cartridge, Prefilter, Carbon/Sediment, High Capacity	9461A
6	Cartridge, Membrane	9428A
7	Cartridge, MAC GAC Postfilter	9306B
8	Cap screws	1010
9	Postfilter head	9426E
10	Bracket Cover	9443B
---	Tank Elbow	8552A
---	Flow Restrictor, Capillary, A200	10803A
---	Drain Elbow	8551A
---	Economy Faucet, non-air gap	11450B
---	Economy Faucet, air gap	11451B



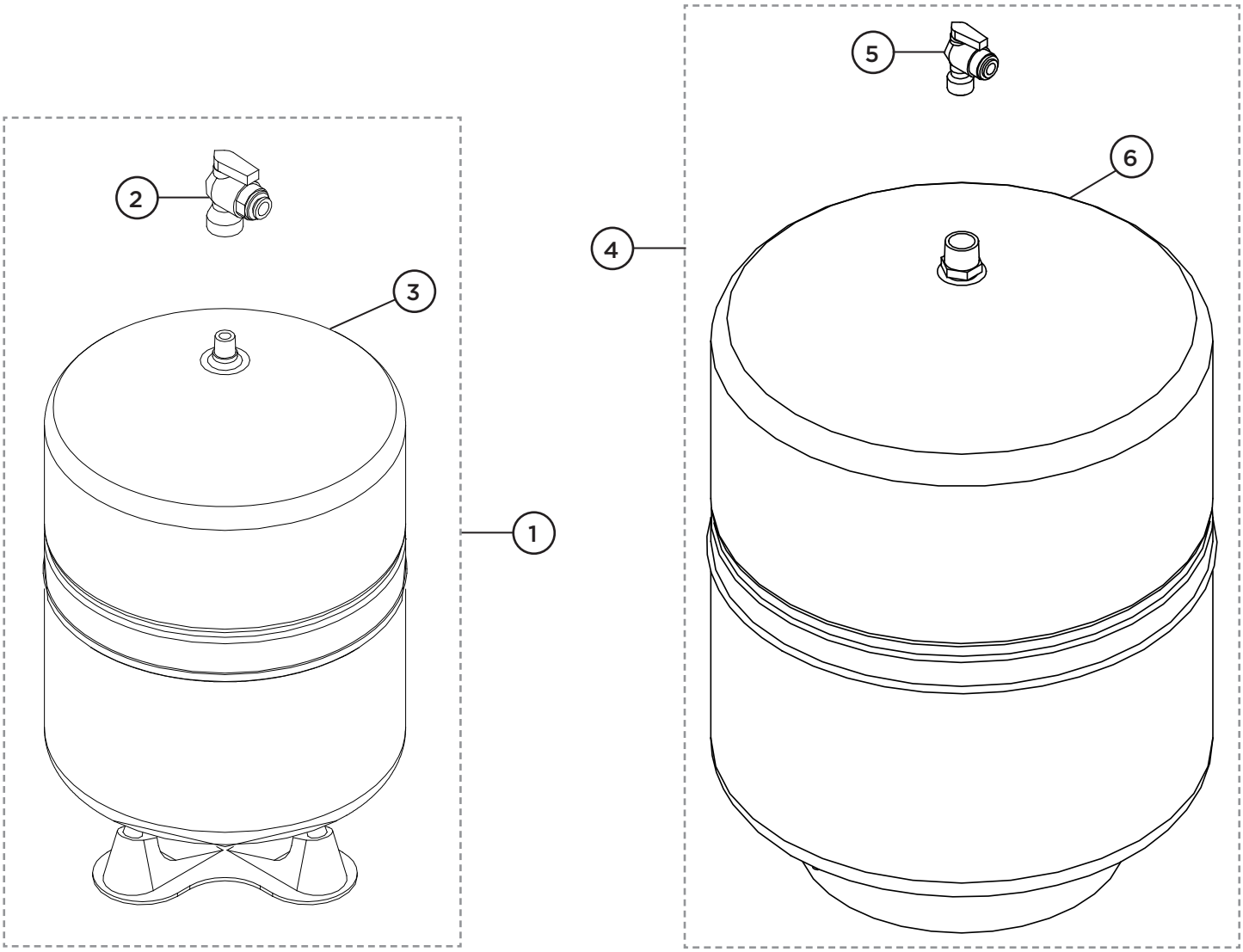
Faucets

Dwg. No.	Description	Part No.
Non-Air Gap Taps:		
1	Tap, Economy Chrome	11450B
Air Gap Taps:		
1	Tap, Economy Chrome	11451B
2	Tap Handle	9380
3	Fitting, ⅜" Tube - Faucet	12939
---	Connector, ¼ x ⅜,	8561A



Replacement Cartridges

Color Code	Description	Part No.
Orange	Cartridge, Taste & Odor Filter	9306B
Yellow	Cartridge, Sediment Prefilter	9309A
Purple	Cartridge, Hi-Cap Carbon/Sediment Prefilter	9461A
Tan	Cartridge, Membrane	9428A

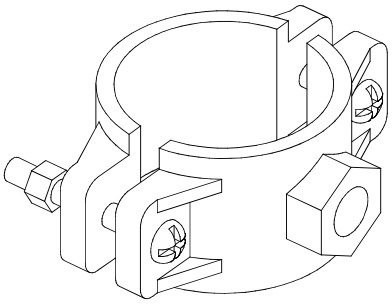
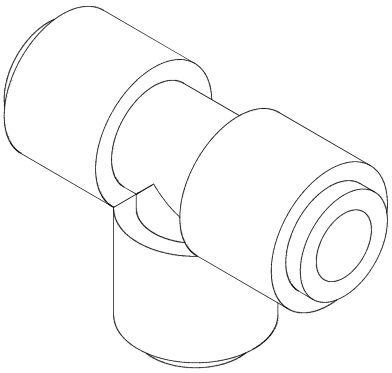
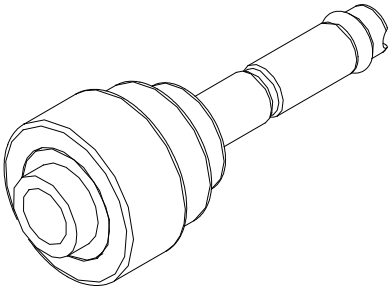
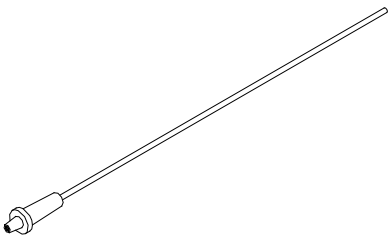


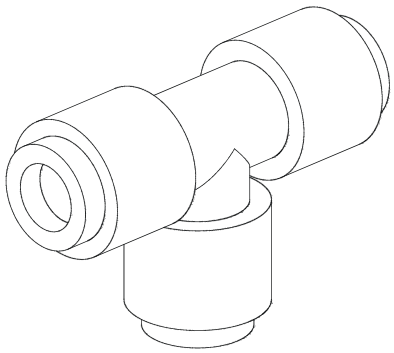
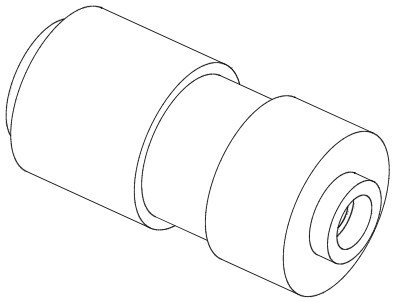
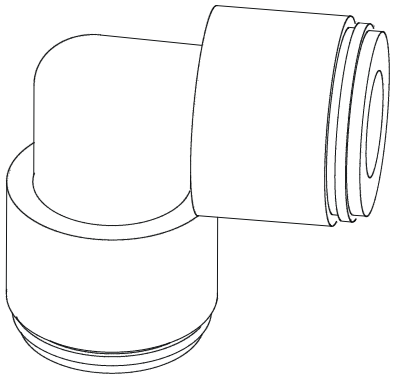
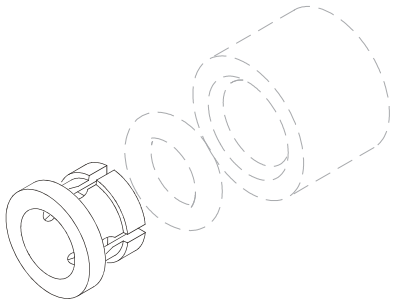
Storage Tanks

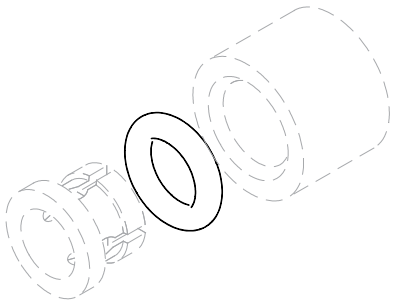
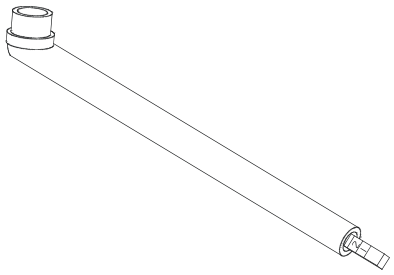
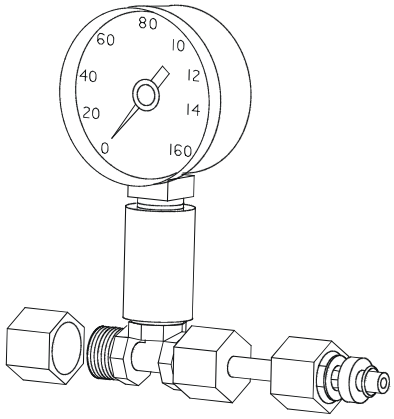
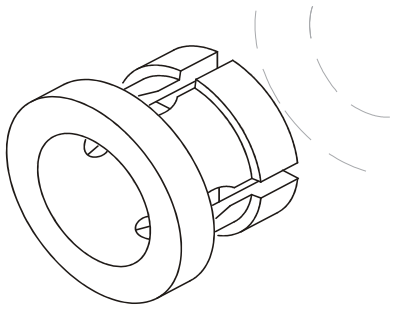
Dwg. No.	Description	Part No.
1	Storage Tank Assembly - 3 Gallon	9344C
2	Ball Valve, ¼ FNPT x ⅜T	12583A
3	Storage Tank, 3 Gallon	17331/17332
4	Storage Tank Assembly - 14 Gallon	104170
5	Ball Valve, ¼ FPT x ⅜T	102071
6	Storage Tank, 14 Gallon	107145

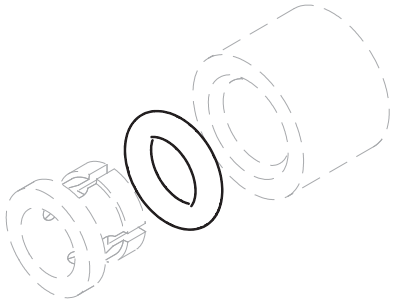
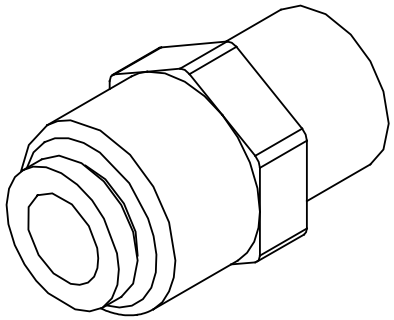
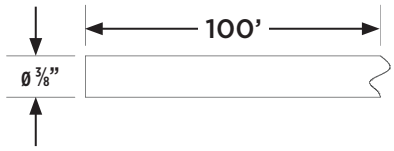
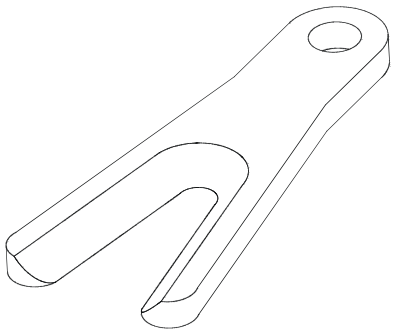
V. System Components and Accessories

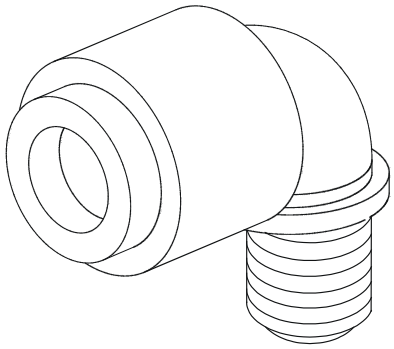
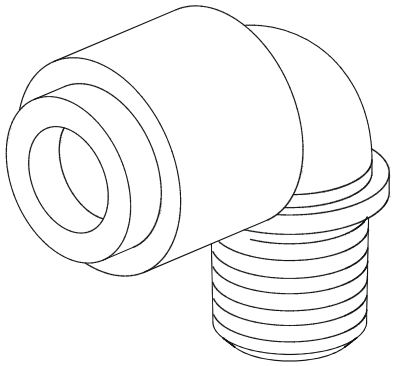
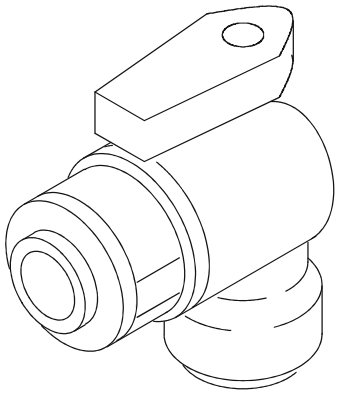
RO Tubing, Tools and Fittings

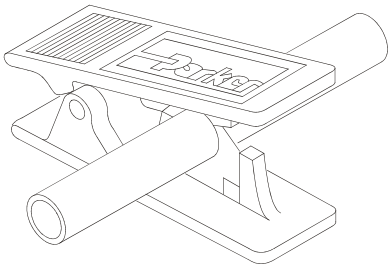
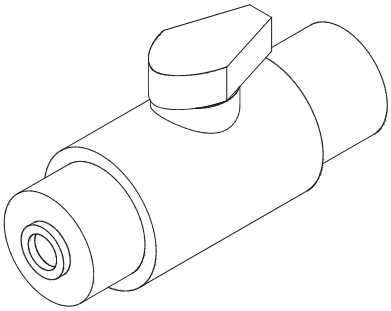
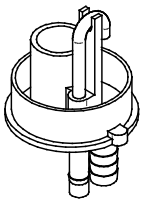
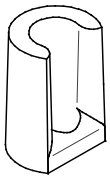
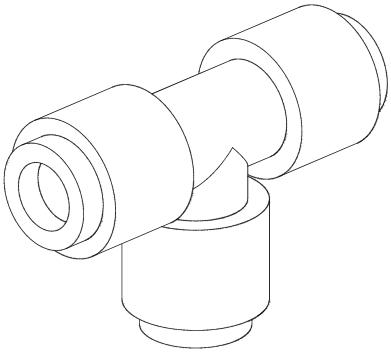
Drawing	Description	Part No.
	Drain Saddle	4806
	Tee, ¼" x ¼" x ¼" w/ Metal Gripper	8748
	Manifold Adapter Pin	9410
	Flow Restrictor, Capillary, A200	10803A

Drawing	Description	Part No.
	Tee, ⅜" x ⅜" x ⅜"	8968
	Union Connector, ⅜" T x ¼" T	8561A
	Swivel Elbow	7761
	⅜" Diameter Collet	8574

Drawing	Description	Part No.
	⅜" Diameter O-ring	8575A
	Gauge, Low Pressure	3977
	Assembly Pressure Test	5024
	¼" Diameter Collet	8563

Drawing	Description	Part No.
	¼" Diameter O-ring	8564A
	Fitting, ⅜" Adapter Ice Maker	11439
	Tubing, ⅜" Diameter x 100'	1890
	Tool, Tubing Release	8586

Drawing	Description	Part No.
	Elbow, ¼" NPT x ¼" Tube	8551A
	Elbow, ¼" NPT x ⅜" Tube	8552A
	Valve, Ball Tank ⅜" Stem	11378
	Tubing, ¼" Diameter x 100'	8555

Drawing	Description	Part No.
	Tool, Tubing Cutter	8587
	Ball Valve, ¼", Plastic	8560
 	Kit – Air Gap	12961A
	Tee, ⅜" x ⅜" x ¼ (¼ Collet is Color Coded Orange)	9207B

Notes:

Notes:

Notes:

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Rev 09.20.2022

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