CSI
WATER TREATMENT SYSTEMS

Product Catalog

0612

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434
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Contacting Us Is Easy

Mailing & Shipping Address

CSI Water Treatment Systems
710 Orange St.
Ashland, Ohio 44805

Office Hours

8:00 a.m. - 5:00 p.m.
Eastern Time Zone - Monday through Friday

Telephone & Fax Numbers

(419)-281-6829
(888)-363-9434
(419)-281-2375 Fax
(Voice Mail is Active Evenings & Weekends)

Internet Web Address

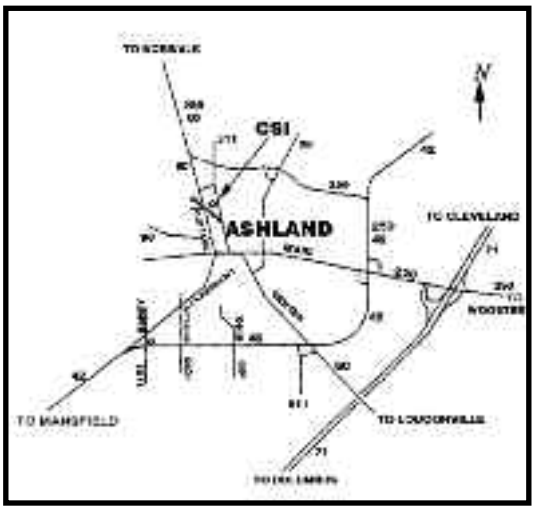
http://www.csih2o.com

General Email Address

info@csih2o.com

VISITING OUR FACILITY

We always love our current and prospective customers to come to Ashland for plant tours, training or just a friendly visit! Just let us know ahead of time when you will be arriving so that the proper people can make time to meet with you. Ashland is located in North Central Ohio at exit 186 off Interstate 71 between Cleveland and Columbus. Drive time from Cleveland Hopkins Airport is about 60 minutes and about 90 minutes from Port Columbus Airport. For those who visited our facility prior to January of 2008, please note that the CSI Water Treatment division moved to a new location on Orange St. CSI Controls still operates out of the facility on Ohio St. These maps should help you get right to our front door, however, should you get lost or need any other information just give us a call at (419) 281-6829. Remember, our office hours are **8:00 a.m. - 5:00 p.m., Monday - Friday.**



If your plans require an overnight in Ashland, we have a few different options.
Just off of Interstate 71 are:

Amerihost Inn	(419) 281-8090
Holiday Inn Express	(419) 281-2900
Days Inn	(419) 289-0101

In town by Ashland University:

Surrey Inn Hotel	(419) 289-7700

CSI WATER TREATMENT COMPANY PROFILE

On September 1, 1995, Bill Chandler Jr. formally began ***CSI Water Treatment Systems***, a division of ***Chandler Systems Inc.*** As one of the co-founders of Water Soft Inc., Bill has brought his experience and innovation to ***CSI*** that built one of the most successful water treatment companies in the industry.

After the sale of Water Soft Inc. to Amtrol Inc., Bill left to begin a new venture specializing in the manufacture of electrical control systems for the wastewater industry. Located in Ashland, Ohio, ***CSI Controls*** grew quickly and has become a major supplier of control panels, distributing its products through water systems and sewage wholesale distributors.

Many controls customers knew of Bill and his expertise in water treatment and expressed a desire that he begin a new residential and commercial water treatment manufacturing company. Shortly after, ***CSI Water Treatment*** was born. Bill knew that just assembling equipment would not be enough. An experienced technical support staff, along with innovative new products, were the keys to success in the past and would also be in the future.

Bill was able to acquire the talents of two water treatment professionals that had helped build Water Soft Inc. into the successful company it once was. Duane Baney and Russ Norris, with a combined experience of 30+ years in water treatment manufacturing, joined ***CSI Water Treatment*** in September of 1995.

Soon thereafter, ***CSI*** introduced an innovation in air injection technology - the **REACTR™**. The **REACTR™** utilizes a manifold that combines air induction with free air release for the oxidation of Iron, Manganese and Sulfur Gas.

An option for the **REACTR™** called the **OXYCLEAN™** has been developed to introduce chlorine automatically during the backwash cycle for cleaning of the system.

The **REACTR™** and **OXYCLEAN™** technology has evolved into a revolutionary product for almost unlimited levels of iron and sulfur gas reduction. The **HYDROXR™** combines aggressive aeration with the oxidation power of hydrogen peroxide.

To further our treatment capabilities for any type of water pumping system, ***CSI Water Treatment*** has developed **REACTR VS™** and **HYDROXR VS™** for constant pressure (variable speed) and jet type pumping systems.

To enhance a quality product line, the *Signature Series™* control valve was introduced to the market in July of 2003. Combining advanced electronic technology with high flow rates and simple to use programming, this proprietary control valve adds uniqueness and functionality to all ***CSI*** Systems.

CSI Water Treatment has been actively involved in the commercial/industrial water treatment market and has carried over the **REACTR™** technology into their full line of commercial products. Their forte has been specially engineered systems, combining their expertise in both controls and water treatment.

CSI Water Treatment distributes its residential/commercial products through a network of wholesale distributors across the United States and into certain foreign markets as well.

They are dedicated to the improvement of water quality through innovative development of water treatment products, design engineering services and educational programs to provide the utmost in quality and support to their valued customers.

Products Section

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 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

Cabinet & Two Tank Water Softeners - Signature Valve

FEATURES

- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple Programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- "V" units feature Enpress® Vortech™ distributor plate
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Space saving 11” x 11”, 15” x 17” and 18” x 40” brine tanks available (optional)
- Poly wound mineral tank
- Other valve options available at an additional cost

It's An Affordable Necessity!

Water hardness is actually dissolved rock! Calcium and Magnesium can cause scale build-up in pipes and hot water tanks, and cause laundry to come out stiff and gray. When iron is present, sinks, fixtures and clothes can be stained or ruined. It takes more energy and cost to heat hard water, plus you can use twice the amount of soaps, detergents, shampoos and related products compared to soft water.

Soft water can prevent soap build up and can give skin and hair a silky look and feel. Clothes are brighter and last longer without deposits trapped in their fabric. Water pipes and appliances run more efficiently without scaling.

Soften Water the Natural Way		Save Soap, Appliances, Clothing and Energy
CONDITIONED WATER SAVES MONEY		
Add up what you now spend and see what you can save		
Cost	Soap / Chemical Savings 70% Laundry Detergents, Fabric Softeners, Pre-Soaks, Bleach, Plus More Efficient Cleaning Saves Time	Save
Cost	Clothing Savings 33% Clothing Budget	Save
Cost	Appliance Savings 25% Maintenance, Depreciation and Replacement	Save
Cost	Water Heater Fuel Savings (22% Gas / 17% Electric) Gas Heater Fuel Electric Heater	Save
Cost	Personal Care Items 25% Bar Soap, Shampoos and Rinses, Razor Blades, Softener Chemicals (Save 100%) Bath Oils, Skin Creams TOTALS	Save

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Cabinet & Two Tank Water Softeners - Signature Valve

General Specifications	Cabinet		Two Tank					
	CT24 CM24 CT24V CM24V	CT32 CM32 CT32V CM32V	TS24 MS24 TS24V MS24V	TS32 MS32 TS32V MS32V	TS48 MS48 TS48V MS48V	TS64 MS64 TS64V MS64V	TS96V MS96V	TS128V MS128V
Grains Capacity / Regeneration	23,000	30,700	23,000	30,700	46,000	61,400	92,100	122,800
	14,100	18,800	14,100	18,800	28,200	37,600	56,400	75,200
	10,800	14,200	10,800	14,200	21,300	28,400	42,600	56,800
Salt Used / Regeneration (Pounds)	11.3	15.0	11.3	15.0	22.5	30.0	45.0	60.0
	6.8	9.0	6.8	9.0	13.5	18.0	27.0	36.0
	2.3	3.0	2.3	3.0	4.5	6.0	9.0	12.0
Maximum Raw Water Hardness (Grains)	50	75	50	75	100	100	100	100
Maximum Clear Iron / Manganese (ppm)	3	5	3	5	5	5	5	5
Exchange Resin (cu ft.)	.75	1.0	.75	1.0	1.5	2.0	3.0	4.0
Gravel Underbedding	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mineral Tank (polyglass)	8x35	10x35	8x44	9x48	10x54	12x52	14x65	16x65
Brine Tank (polyethylene w/ grid & safety)	N/A	N/A	18x33	18x33	18x33	18x33	18x40	24x50
Service Flow Rate (gpm)*	8.0	11.0	8.0	10.0	11.0	12.0	14.0	16.0
Backwash Flow Rate (gpm)	1.5	2.4	1.5	2.0	2.4	3.5	4.0	5.0
Gallons Used / Regeneration	61	80	61	72	83	120	155	180
Space Required (DxWxH inches)	23x14x45	23x14x45	18x26x53	18x27x56	18x28x62	18x30x60	18x32x74	24x40x74
Approximate Shipping Weight (pounds)	88	100	88	100	133	164	285	378

* The pressure drop does not exceed 15.0 psi at the service flow rate.

CSI WATER TREATMENT SYSTEMS

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

Alternating Twin Water Softener - 9100 Valve

FEATURES

- Fleck 9100 economical Noryl™ alternating control valve
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- "V" units feature Enpress® Vortech™ distributor plate
- High Flow brine safety float assembly, overflow fitting, gridplate and brine well
- Poly wound mineral tanks

General Specifications	AT24-91 AT24-91V	AT32-91 AT32-91V	AT48-91 AT48-91V	AT64-91 AT64-91V	AT96-91V
Grains Capacity / Regeneration	23,300	31,000	46,600	62,200	93,100
	19,400	25,800	38,800	51,700	77,500
	9,200	12,200	18,300	24,400	36,600
Salt Used / Regeneration (pounds per tank)	11.3	15.0	22.5	30.0	45.0
	6.8	9.0	13.5	18.0	27.0
	1.8	2.4	3.6	4.8	7.2
Maximum Raw Water Hardness (grains)	50	75	100	100	100
Maximum Clear Iron / Manganese (ppm)	3	5	5	5	5
Exchange Resin (cu. ft.) (per tank)	.75	1.0	1.5	2.0	3.0
Gravel Underbedding (per tank)	N/A	N/A	N/A	N/A	N/A
Mineral Tanks (polyglass)	(2) 8x44	(2) 9x48	(2) 10x54	(2) 12x52	(2) 14x65
Brine Tank (polyethylene with grid & safety)	18x33	18x33	18x33	18x33	18x40
Service Flow Rate (gpm per active tank)*	8.0	10.0	11.0	12.0	14.0
Backwash Flow Rate (gpm)	1.5	2.0	2.4	3.5	4.0
Gallons Used / Regeneration	61	72	83	120	155
Space Required (DxWxH inches)	18x34x52	18x34x56	18x36x62	18x36x60	18x42x73
Approximate Shipping Weight (pounds)	139	169	237	299	462

* The pressure drop does not exceed 15.0 psi at the service flow rate.

The **TerminatR** Water Treatment System - Signature Valve

FEATURES

- Eliminates hardness (Calcium & Magnesium)
- Eliminates Iron/Manganese stains and taste
- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- High capacity fine mesh cation exchange resin
- Garnet sand underbed to minimize pressure loss
- High Flow brine safety float assembly, overflow fitting, gridplate and brine well
- Includes Res-up Resin Cleaner Dispenser
- Other valve options available at an additional cost

It's An Affordable Necessity!

Water hardness is actually dissolved rock! Calcium and Magnesium can cause scale build-up in pipes and hot water tanks, and cause laundry to come out stiff and gray. When iron is present, sinks, fixtures and clothes can be stained or ruined. It takes more energy and cost to heat hard water, plus you can use twice the amount of soaps, detergents, shampoos and related products compared to soft water.

Soft water can prevent soap build up and can give skin and hair a silky look and feel. Clothes are brighter and last longer without deposits trapped in their fabric. Water pipes and appliances run more efficiently without scaling.

Soften Water the Natural Way	**CONDITIONED WATER SAVES MONEY** Add up what you now spend and see what you can save	Save Soap, Appliances, Clothing and Energy
Cost	Soap / Chemical Savings 70% Laundry Detergents, Fabric Softeners, Pre-Soaks, Bleach, Plus More Efficient Cleaning Saves Time	Save
Cost	Clothing Savings 33% Clothing Budget	Save
Cost	Appliance Savings 25% Maintenance, Depreciation and Replacement	Save
Cost	Water Heater Fuel Savings (22% Gas / 17% Electric) Gas Heater Fuel Electric Heater	Save
Cost	Personal Care Items 25% Bar Soap, Shampoos and Rinses, Razor Blades, Softener Chemicals (Save 100%) Bath Oils, Skin Creams TOTALS	Save

General Specifications	Two Tank			
	TSI32 MSI32	TSI48 MSI48	TSI64 MSI64	TSI96 MSI96
Grains Capacity / Regeneration	35,000	52,500	70,000	105,000
	32,000	48,000	64,000	96,000
	26,500	39,750	53,000	85,000
Salt Used / Regeneration (pounds)	15.0	22.5	30.0	45.0
	10.0	15.0	20.0	25.0
	6.0	9.0	12.0	18.0
Maximum Raw Water Hardness (grains)	75	100	100	100
Maximum Clear Iron / Manganese (ppm)	15	20	20	20
Exchange Resin (cu. ft.)	1.0	1.5	2.0	3.0
Garnet Sand Underbed	20 lbs.	30 lbs.	50 lbs.	50 lbs.
Mineral Tank (Vortech)	9x48	10x54	12x52	14x65
Brine Tank (polyethylene with grid & safety)	18x33	18x33	18x33	18x40
Service Flow Rate (gpm)*	10.0	11.0	12.0	14.0
Backwash Flow Rate (gpm)	1.2	1.5	2.0	3.0
Gallons Used / Regeneration	59	68	94	135
Space Required (DxWxH inches)	18x27x56	18x28x62	18x30x60	18x32x74
Approximate Shipping Weight (pounds)	115	148	169	320

* The pressure drop does not exceed 15.0 psi at the service flow rate.

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WATER TREATMENT SYSTEMS

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Alternating Twin **TerminatR** System - 9100 Valve

FEATURES

- Fleck 9100 economical Noryl™ alternating control valve
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- High capacity fine mesh resin
- Garnet sand underbed to minimize pressure loss
- High Flow brine safety float assembly, overflow fitting, gridplate and brine well
- Poly wound mineral tanks
- Includes Res-up Resin Cleaner Dispenser

General Specifications	ATI32-91	ATI48-91	ATI64-91	ATI96-91
Grains Capacity / Regeneration	35,000	52,500	70,000	105,000
	32,000	48,000	64,000	96,000
	26,500	39,750	53,000	85,000
Salt Used / Regeneration (pounds per tank)	15.0	22.5	30.0	45.0
	10.0	15.0	20.0	25.0
	6.0	9.0	12.0	18.0
Maximum Raw Water Hardness (grains)	75	100	100	100
Maximum Clear Iron / Manganese (ppm)	15	20	20	20
Exchange Resin (cu. ft.) (per tank)	1.0	1.5	2.0	3.0
Garnet Sand Underbed (per tank)	20 lbs.	30 lbs.	50 lbs.	50 lbs.
Mineral Tanks (Vortech)	(2) 9x48	(2) 10x54	(2) 12x52	(2) 14x65
Brine Tank (polyethylene with grid & safety)	18x33	18x33	18x33	18x40
Service Flow Rate (gpm per active tank)*	10.0	11.0	12.0	14.0
Backwash Flow Rate (gpm)	1.2	1.5	2.0	3.0
Gallons Used / Regeneration	59	68	94	135
Space Required (DxWxH inches)	18x34x56	18x36x62	18x36x60	18x42x73
Approximate Shipping Weight (pounds)	199	267	369	582

* The pressure drop does not exceed 15.0 psi at the service flow rate.

City Water Softener - Signature Valve

FEATURES

- Reduces hardness (Calcium & Magnesium)
- Reduces Chlorine, taste and odor
- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- High capacity cation exchange resin
- Dome fill opening for ease of service
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Other valve options available at an additional cost
- Features Enpress® Vortech™ mid plate technology

General Specifications	Two Tanks in One			
	TSC32-D	MSC32-D	TSC48-D	MSC48-D
Regeneration Type	Timed	Metered	Timed	Metered
Activated Carbon Media	.5 cu ft	.5 cu ft	1 cu ft	1 cu ft
Softening Capacity	32,000	32,000	48,000	48,000
Salt Used / Regeneration (lbs)	15	15	24	24
Maximum Raw Water Hardness (gpg)	75	75	100	100
Maximum Raw Water Iron (ppm)	5	5	5	5
Service Flow Rate (gpm)*	5	5	8	8
Intermittent Flow Rate (gpm)	7	7	10	10
Backwash Flow Rate (gpm)	5	5	7	7
Mineral Tank Size (inches)	10x54	10x54	13x54	13x54
Gallons Used / Backwash	130	130	170	170
Space Required (DxWxH inches)	18x28x62	18x28x62	18x31x62	18x31x62
Approximate Shipping Weight (pounds)	130	130	163	163

* The pressure drop does not exceed 15.0 psi at the service flow rate.

OPTIMIZR™ Combination Softener & Filter

FEATURES

- Perfect for Filtering and Softening in ONE system
- Features Enpress® Vortech™ mid plate technology
- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- High capacity cation exchange resin
- Dome fill opening for ease of service
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Other valve options available at an additional cost
- For Filter Media Options see Filter Media Guide (pg. 30)

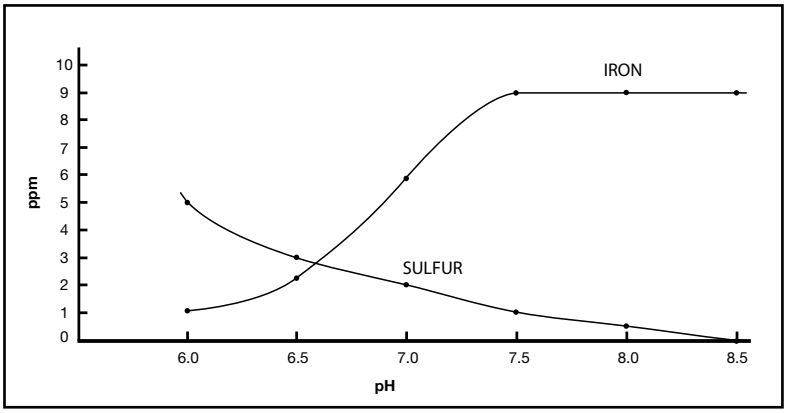
General Specifications	Two Tanks in One			
	TSF32-10D	MSF32-10D	TSF48-15D	MSF48-15D
Regeneration Type	Timed	Metered	Timed	Metered
Filter Media Capacity	1 cu ft	1 cu ft	1.5 cu ft	1.5 cu ft
Softening Capacity	32,000	32,000	48,000	48,000
Service Flow Rate (gpm)*	5	5	8	8
Intermittent Flow Rate (gpm)	7	7	10	10
Backwash Flow Rate (gpm)	5	5	7	7
Mineral Tank Size (inches)	10x65	10x65	13x65	13x65
Gallons Used / Backwash	130	130	170	170
Space Required (DxWxH inches)	18x28x73	18x28x73	18x31x73	18x31x73
Approximate Shipping Weight (pounds)	126	126	182	182

* The pressure drop does not exceed 15.0 psi at the service flow rate.

NITRO Treatment System

FEATURES

- Proprietary Signature 2 control valve with independently programmable air draw & backwash cycles saving THOUSANDS of gallons of water per year!!
- Simplicity of a single tank aeration system that can be used with any type of well pump and system (standard submersible, constant pressure, jet pump)
- Precise external air injection directly into the media tank to help prevent control valve fouling & for ease of service
- 9 volt battery back-up w/ drain line shut off position if power fails during backwash
- Operates on low 12 vdc power
- Smart Blend™ media for efficient reduction of iron, manganese, sulfur & correction of low pH
- Dome fill hole standard
- Enpress® Vortech™ distributor plate for exceptional backwashing capability
- Independently operated inlet/outlet bypass valve included w/ 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)

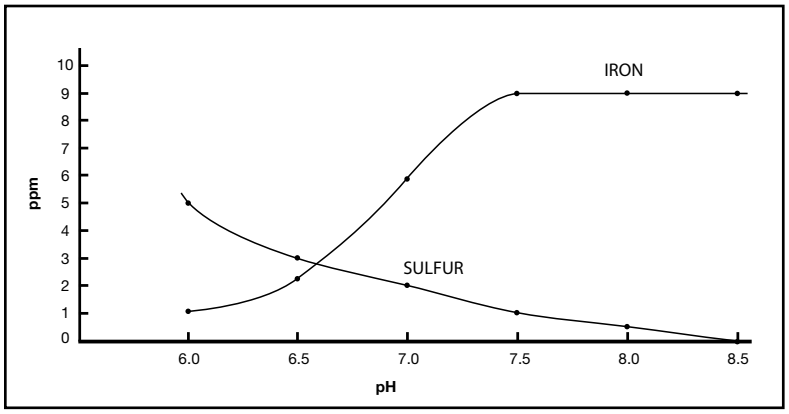


General Specifications	Series	
	NTF15	NTF25
Filltration (See "Filter Media" section for application	Smart Blend™	
Filter Media Capacity (cu. ft.)	1.5	2.5
Mineral Tank (Vortech™)	10x54	13x54
Service Flow Rate - Continuous (gpm)	5	8
Service Flow Rate - Intermittent (gpm)	7	10
Backwash Flow Rate (gpm)	5.0	7.0
Gallons Used / Backwash	106	146
Space Required (DxWxH inches)	10x10x62	13x13x62
Approximate Shipping Weight (pounds)	142	218

NITRO PRO Treatment System

FEATURES

- Proprietary Signature 2 control valve with TWEDO (Twin Electric Drive Operation) function (patent pending) permitting pumpless injection of chlorine or peroxide during backwash using the ready-to-use Oxyclean NP (optional)
- Simplicity of a single tank aeration system that can be used with any type of well pumping system (standard submersible, constant pressure, jet pump)
- Precise external air injection directly into the media tank to help prevent control valve fouling & for ease of service
- Advanced electronic technology w/ simple programming
- Weather/insect resistant, one piece slide cover providing quick no tool access
- 9 volt battery back-up w/ drain line shut off position if power fails during backwash
- Operates on low 12 vdc power
- Smart Blend™ media for efficient reduction of iron, manganese, sulfur & correction of low pH
- Dome fill hole standard
- Enpress® Vortech™ distributor plate for exceptional backwashing capability
- Independently operated inlet/outlet bypass valve included w/ 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)



General Specifications	Series	
	NTP15	NTP25
Filltration (See "Filter Media" section for application	Smart Blend™	
Filter Media Capacity (cu. ft.)	1.5	2.5
Mineral Tank (Vortech™)	10x54	13x54
Service Flow Rate - Continuous (gpm)	5	8
Service Flow Rate - Intermittent (gpm)	7	10
Backwash Flow Rate (gpm)	5.0	7.0
Gallons Used / Backwash	106	146
Space Required (DxWxH inches)	10x10x62	13x13x62
Approximate Shipping Weight (pounds)	142	218

REACTR™ Treatment System

FEATURES

- *Signature Series*™ control valve
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Battery Back-Up
- High backwash flow capability
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- Poly wound **REACTR™** Tank
- Poly wound mineral tank
- Other valve options available at an additional cost
- Large “UT” style aeration tank (optional)

The concept of air injection for the reduction of Iron, Manganese and Sulfur Gas is not new. In most cases, these contaminants can be treated in this manner without the use of chemicals, such as Chlorine or Potassium Permanganate.

CSI Water Treatment Systems reintroduces this technology with an innovative new approach - The **REACTR™**. Several new ideas are incorporated in the **REACTR™** Water Treatment System. Air injection and free air venting are accomplished through a common manifold assembly which simplifies installation and service. The **REACTR™** manifold assembly is mounted on a large air mixing tank that triples the amount of air contact and exposure time. A full 1" FNPT inlet and outlet is provided to install the **REACTR™** tank between the well pump and pressure tank. This exposes the **REACTR™** tank to full pump flow for increased air draw, air mixing and reduced plugging problems. Oxidized contaminants then enter the **REACTR™** filter where they are removed by the **REACTR™** blend filtration media. **REACTR™** blend is a proportioned mix of three proven filter medias to provide optimum performance with wide application potential. The filter is automatically maintained by the CSI Signature Series control valve that provides the advantages of adjustable cycle times and high backwash flow capability in a high tech electronic valve with simple programming and battery back-up. Combine all of these features with the benefits of no chemical treatment and you have the finest water treatment system available on the market today - The **REACTR™!**

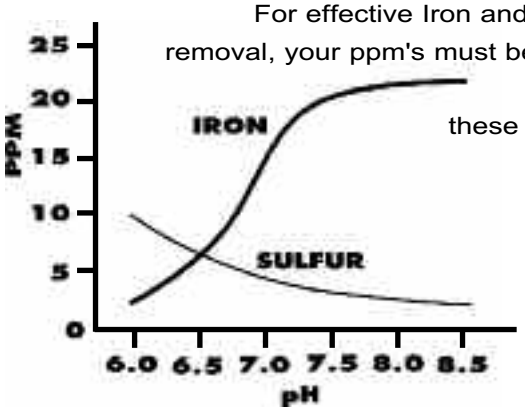
Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

Iron and Sulfur Removal

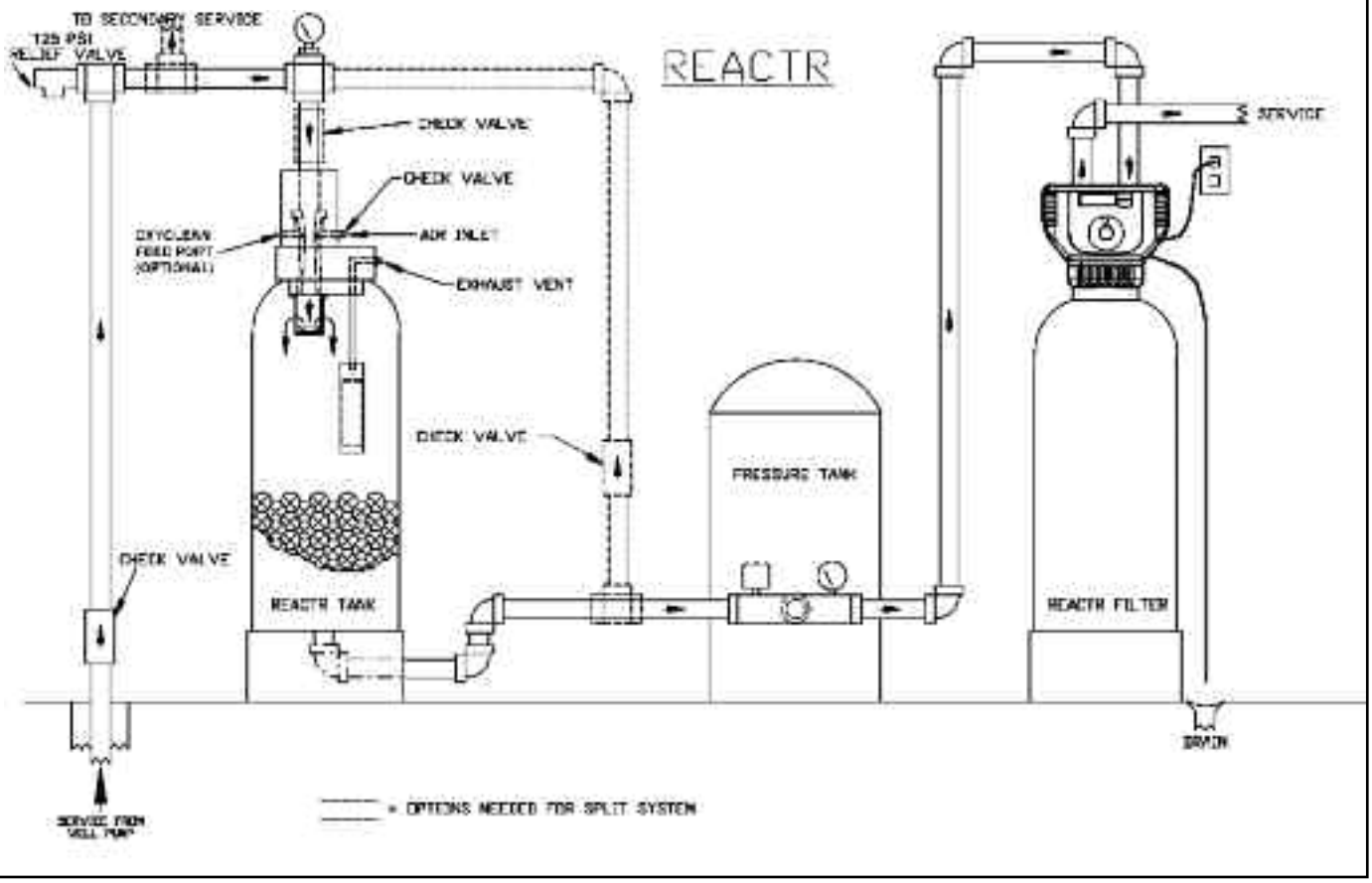
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



General Specifications	RF10	RF15	RF20	RF25	RF30	RF40
Filter Media Type	**REACTR™** Blend					
Filter Media Capacity (cu ft)	1.00	1.50	2.00	2.50	3.00	4.00
REACTR™ Tank (polyglass)	9x48	9x48	9X48	9x48	16x40	16x40
Mineral Tank (Vortech™)	9x48	10x54	12X52	13x54	14x65	16x65
Service Flow Rate - Continuous (gpm)	4	5	6	8	9	11
Service Flow Rate - Intermittent (gpm)	6	7	8	10	11	13
Backwash Flow Rate (gpm)	5.0	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash	100	100	120	140	200	300
Space Required (DxWxH inches) **REACTR™** Tank	9x9x62	9x9x62	9X9X62	9x9x62	16x16x51	16x16x51
Space Required (DxWxH inches) Filter Tank	9x9x56	10x10x62	12X12X60	13x13x62	14x14x73	16x16x74

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



REACTR VS™ Treatment System

FEATURES

- Designed for use with constant pressure (variable speed) and jet type pumping systems
- Quiet, high output, oil less air compressor for maximum aeration
- *Signature Series*™ Control Valve with meter for precise, field programmable compressor control
- Advanced electronic technology and simple programming
- Adjustable cycle times
- Battery backup
- High backwash flow capability
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- Poly wound **REACTR**™ tank
- Poly wound mineral tank
- Large “UT” style aeration tank (optional)

With the advent of constant pressure (variable speed) pumping systems, CSI Water Treatment went back to the drawing board to engineer a **REACTR**™ System that will effectively treat iron, manganese and sulfur gas when a constant pressure well system is utilized - the **REACTR VS**™.

The **REACTR VS**™ will work equally well for jet pump type systems, where typical air injection systems won't. Incorporating a quiet, high output, oil less air compressor, the **REACTR VS**™ provides the aeration power for chemical free treatment of problem well water. For those really tough jobs the **REACTR VS**™ is designed to add the ***Oxyclean***™ Option for chlorinating the entire system every backwash cycle.

The *Signature Series*™ Control Valve provides high backwash flow capabilities and utilizes an integral contact flow meter for precise compressor control.

The **REACTR VS**™ System provides new technology treatment for new technology constant pressure pumping systems!

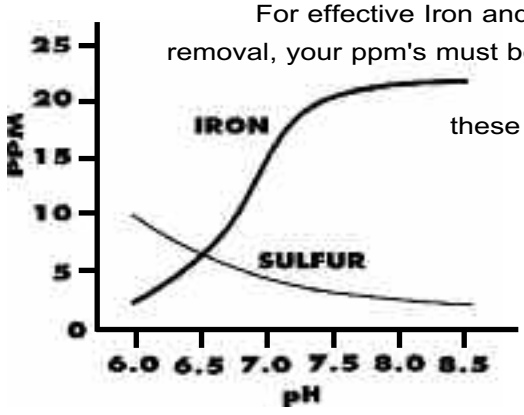
Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

Iron and Sulfur Removal

For effective Iron and Sulfur removal, your ppm's must be on or below these curves

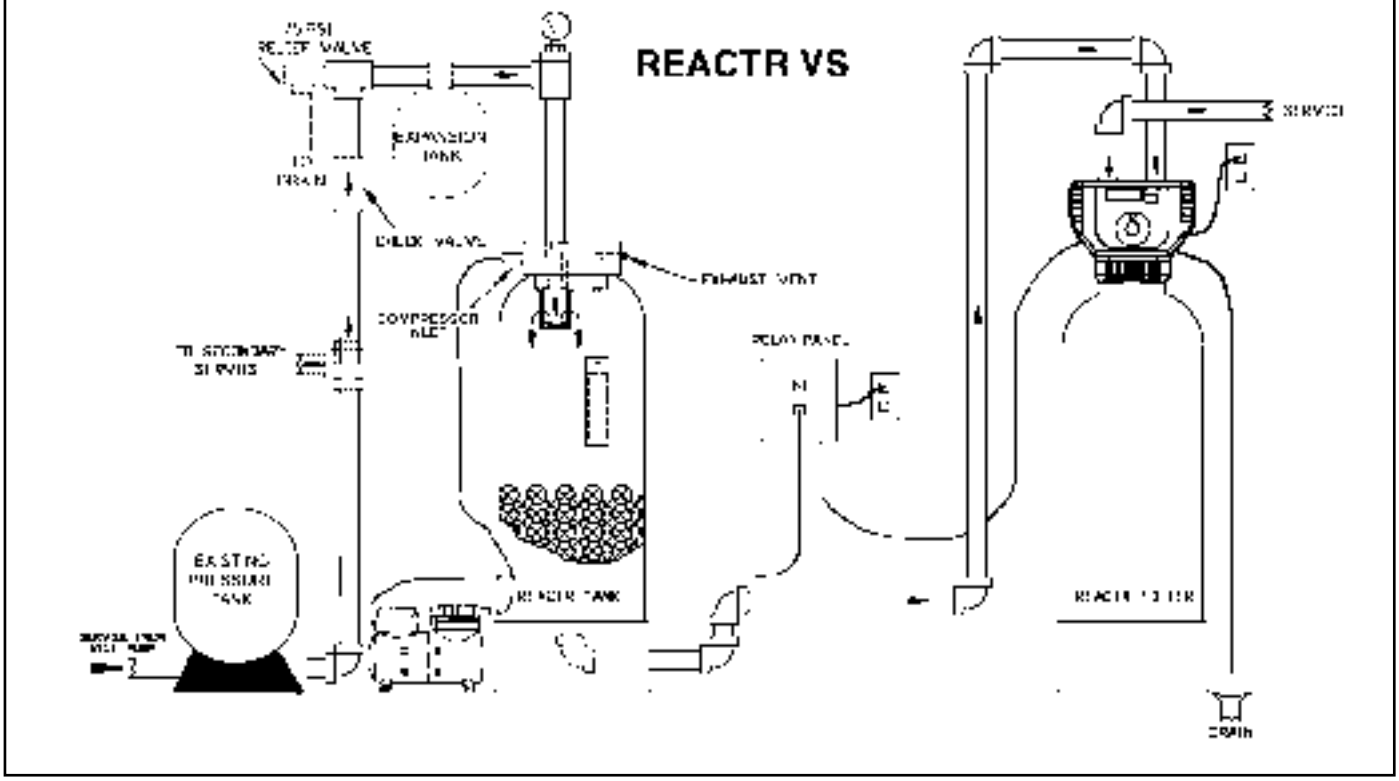


REACTR VS™ Treatment System

General Specifications	RF10VS	RF15VS	RF20VS	RF25VS	RF30VS	RF40VS
Filter Media Type	**REACTR™** Blend					
Filter Media Capacity (cu ft)	1.00	1.50	2.00	2.50	3.00	4.00
REACTR™ Tank (polyglass)	9x48	9x48	9X48	9x48	16x40	16x40
Mineral Tank (Vortech™)	9x48	10x54	12X52	13x54	14x65	16x65
Service Flow Rate - Continuous (gpm)	4	5	6	8	9	11
Service Flow Rate - Intermittent (gpm)	6	7	8	10	11	13
Backwash Flow Rate (gpm)	5.0	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash	100	100	120	140	200	300
Space Required (DxWxH inches) **REACTR™** Tank	9x9x62	9x9x62	9X9X62	9x9x62	16x16x51	16x16x51
Space Required (DxWxH inches) Filter Tank	9x9x56	10x10x62	12X12X60	13x13x62	14x14x73	16x16x74
Approximate Shipping Weight (pounds)	128	160	195	255	296	430

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



The **OXYCLEAN™** Automatic **REACTR™** Cleansing System

FEATURES

- Automatically cleans the entire **REACTR™** system with every backwash
- Ideal for situations where media bed becomes fouled by high levels of ferric iron, iron or sulfur bacteria* and tannins*
- Installs in minutes
- Can be added to any exsisting **REACTR™** system without changes to the plumbing or electrical wiring
- Effectively uses chlorine*
- No pump adjustments required
- No pump check valves to maintain

CSI first introduced the **REACTR™**, a truly innovative chemical free oxidation system for the reduction of iron, manganese and sulfur gas. Now after extensive research and development CSI is proud to introduce the **OXYCLEAN™** Automatic **REACTR™** Cleansing System. A system that will enhance the operating performance of a **REACTR™** installed on exceptionally poor water quality situations. Situations that are normally tough to handle and require a high level of maintenance can now be solved with the **OXYCLEAN™** Automatic Cleansing System.

Plugged pipes and fouled media beds can be the result of low levels of iron or sulfur bacteria*, tannins* and high levels of ferric iron. Many times these situations require a messy, time consuming service call. The **OXYCLEAN™** Automatic Cleansing System can reduce these types of calls.

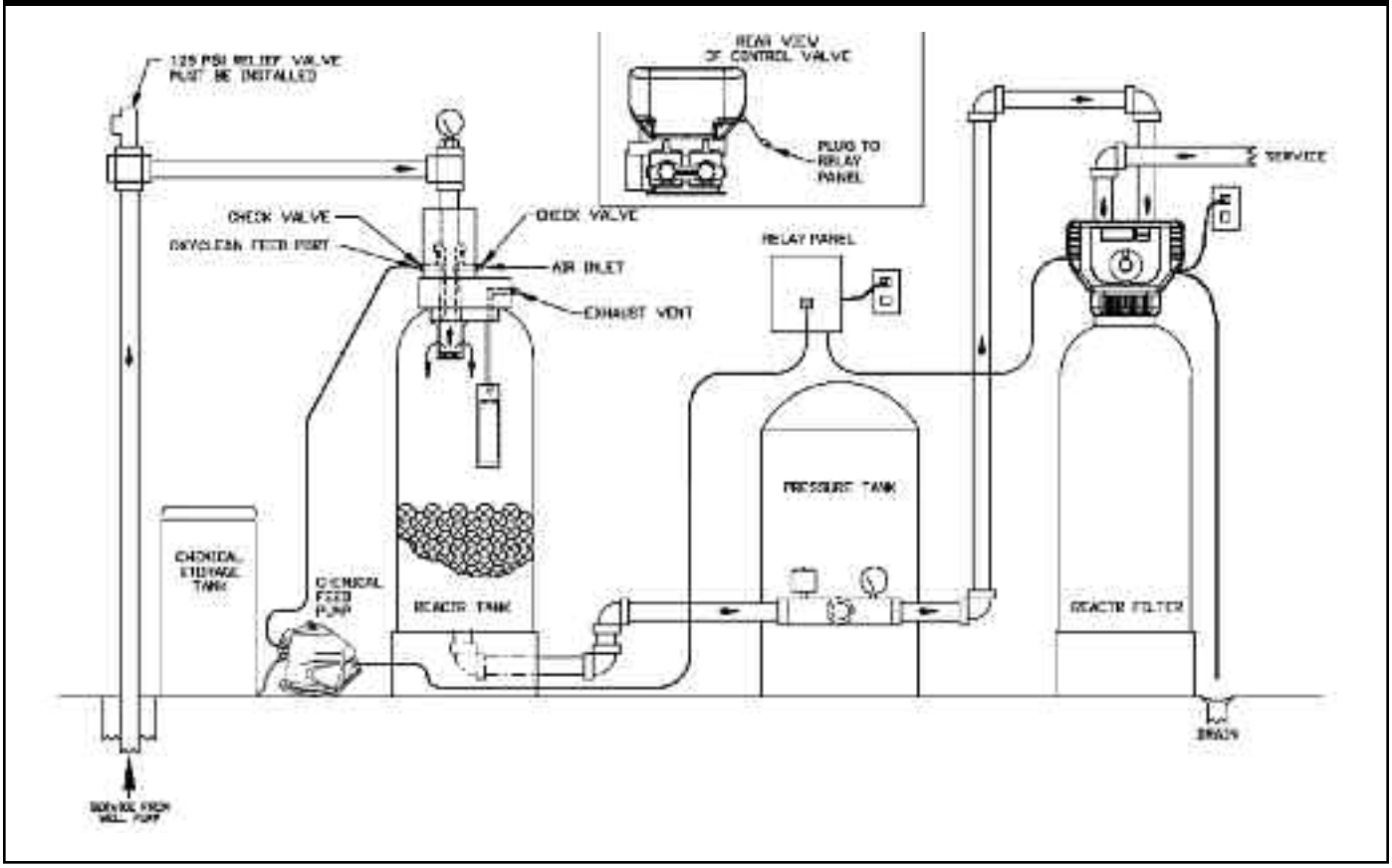
Installed in minutes the **OXYCLEAN™** System will automatically inject chlorine* during every backwash to clean the **entire REACTR™** system and associated plumbing such as inlet plumbing, tank tees, etc.

Every **REACTR™** System built has the optional **OXYCLEAN™** in mind, installation is easy and can be done during or after installation of the **REACTR™** without any changes to the plumbing or electrical wiring.

Install the **REACTR™** with the **OXYCLEAN™** Automatic Cleansing System today and reduce those annoying service calls tomorrow.

* Not to be substituted for accepted disinfection techniques for moderate or high levels of these contaminants.

Typical Installation



CSI
WATER TREATMENT SYSTEMS

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434
 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

REACTR Plus™ Treatment System

FEATURES

- Combines the oxidation power of Reactr & Softening in ONE system
- Features Enpress® Vortech™ mid plate technology
- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- Dome fill opening for ease of service
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Other valve options available at an additional cost
- Large "UT" style aeration tank (optional)

CSI Water Treatment Systems is proud to introduce a system that TRULY can handle most aesthetic contaminants found in problem well water. The **REACTR PLUS™** combines the oxidation & filtration power of **REACTR™** with high capacity softening capability in ONE cost effective system. Utilizing Enpress mid-plate tank technology & maintained by the reliable Signature Series time clock or meter initiated controls, this system will give your customer an economical & low maintenance solution for the treatment of high levels of iron, manganese, sulfur gas and hardness (see limitations).

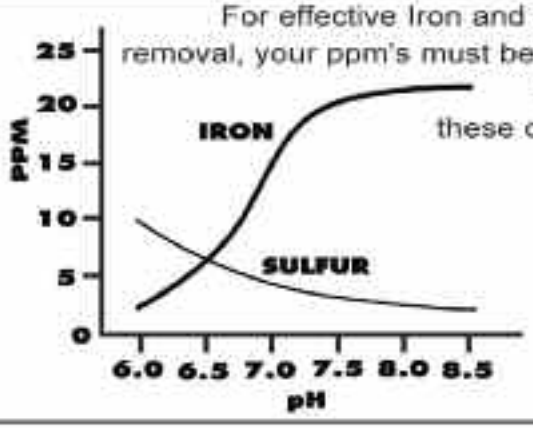
Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

Iron and Sulfur Removal

For effective Iron and Sulfur removal, your ppm's must be on or below these curves

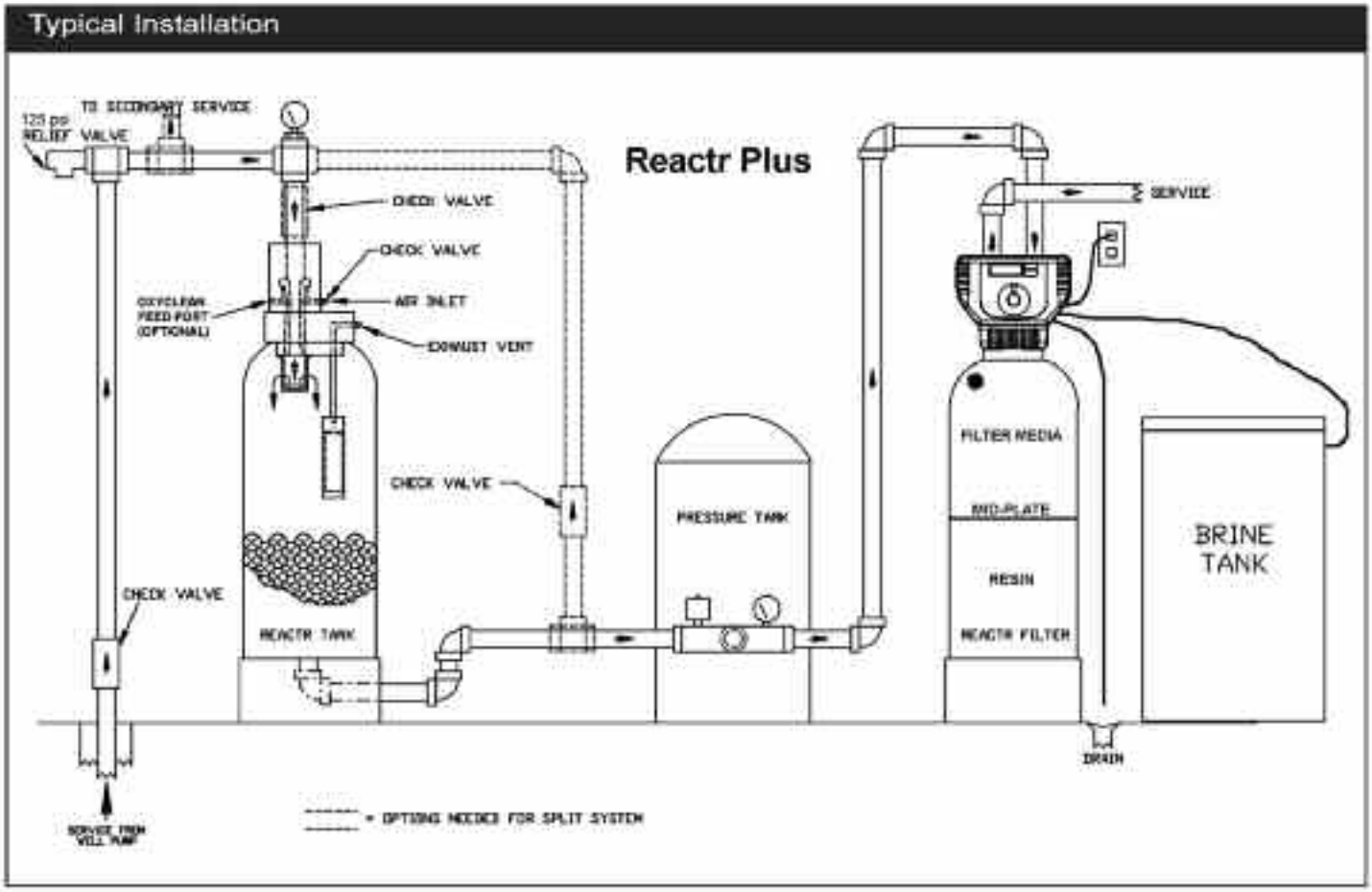


General Specifications	Two Tanks in One			
	RFTS32-10D	RFMS32-10D	RFTS48-15D	RFMS48-15D
Regeneration Type	Timed	Metered	Timed	Metered
Filter Media Capacity (Reactr Blend™)	1 cu ft	1 cu ft	1.5 cu ft	1.5 cu ft
Softening Capacity / Regeneration (grains)	32,000	32,000	48,000	48,000
Service Flow Rate (gpm)*	5	5	8	8
Intermittent Flow Rate (gpm)	7	7	10	10
Backwash Flow Rate (gpm)	5	5	7	7
Mineral Tank Size (inches)	10x65	10x65	13x65	13x65
Gallons Used / Backwash	130	130	170	170
Space Required (DxWxH inches) (***REACTR***™Tank)	9x9x62	9x9x62	9x9x62	9x9x62
Space Required (DxWxH inches) (Filter Tank)	18x28x73	18x28x73	18x31x73	18x31x73
Approximate Shipping Weight (pounds)	210	210	295	295

* The pressure drop does not exceed 15.0 psi at the service flow rate.

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



REACTR VS Plus™ Treatment System

FEATURES

- Combines the oxidation power of **REACTR™** & softening in one system
- Features Enpress® Vortech™ mid-plate technology
- Designed for use with constant pressure (variable speed) and jet type pumping systems
- Quiet, high output, oil less air compressor for maximum aeration
- ***Signature Series™*** Control Valve with meter for precise compressor control
- Advanced electronic technology and simple programming
- Adjustable cycle times
- Battery backup
- High backwash flow capability
- Independently operator inlet/outlet bypass valve
- ¾" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Large "UT" style aeration tank (optional)

With the advent of constant pressure (variable speed) pumping systems, CSI Water Treatment went back to the drawing board to engineer a **REACTR™** System that will effectively treat iron, manganese and sulfur gas when a constant pressure well system is utilized - the ***REACTR VS™***.

Now, this same technology is offered in the NEW ***REACTR VS Plus™***, which will soften the water while it filters. Aeration is precisely controlled by the versatile ***Signature Series™*** control valve. This also makes ***REACTR VS Plus™*** a perfect solution for problem well water systems utilizing jet type pumping systems.

The ***REACTR VS Plus™*** System provides new technology treatment for new technology constant pressure pumping systems!

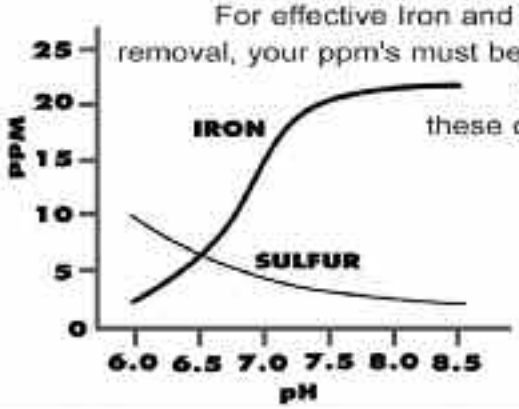
Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

Iron and Sulfur Removal

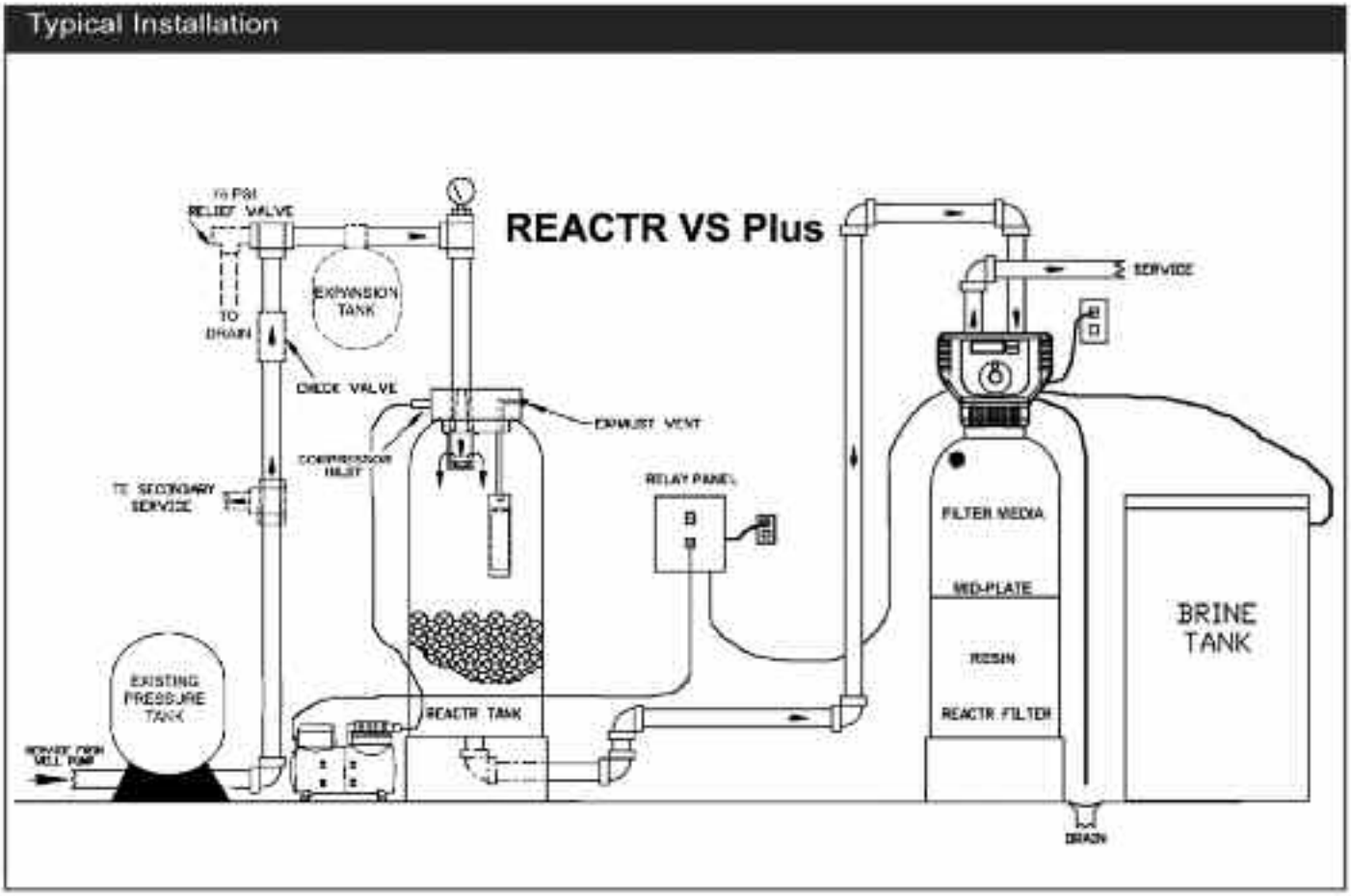
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



General Specifications	RFTS32-10DVS	RFTS48-15DVS
Filter Media Capacity (**REACTR**™ Blend)	1.00 (cu ft)	1.50 (cu ft)
Softening Capacity	32,000 gr.	48,000 gr.
REACTR™ Tank (polyglass)	9x48	9X48
Mineral Tank (polyglass)	10x65	13X65
Service Flow Rate - Continuous (gpm)	5	8
Service Flow Rate - Intermittent (gpm)	7	10
Backwash Flow Rate (gpm)	5.0	7.0
Gallons Used / Backwash	130	170
Space Required (DxWxH inches) **REACTR**™ Tank	9x9x62	9X9X62
Space Required (DxWxH inches) Filter Tank	18x28x73	18X31X73
Approximate Shipping Weight (pounds)	220	305

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



The **HydroxR™** Aeration / Peroxide System

FEATURES

- Combines aggressive pressurized aeration with the oxidation power of hydrogen peroxide (H2O2)
- For treatment of virtually unlimited levels of iron, manganese and sulfur gas (see limitation matrix chart)
- Disinfection properties with added contact time for iron, manganese and sulfur bacteria control
- Includes reliable peristaltic chemical feed pump package for self-priming operation
- ***Signature Series***™ Control Valve
- Advanced electronic technology and simple programming
- Adjustable cycle times
- Battery backup
- High backwash flow capability
- Independently operated inlet / outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- Poly wound HydroxR™and mineral tank

CSI Water Treatment Systems first introduced a truly revolutionary product for the reduction of iron, manganese, and sulfur gas - the **REACTR™**.

Now CSI unveils a system that combines the aggressive pressurized aeration technology of **REACTR™** with the oxidation power of hydrogen peroxide for treatment of virtually unlimited levels of iron, manganese and sulfur gas - the HydroxR™!

At the same time, bacteriological forms of these constituents are controlled without the creation of chemical byproducts, contact tanks or the on going maintenance of rebedding carbon filters.

The included chemical feed pump package is of a peristaltic design for self-priming operation.

Add the advanced electronic technology and features of the ***Signature Series***™ Control Valve and you have a system that will provide capabilities for problem water treatment that you never thought possible - the HydroxR™!

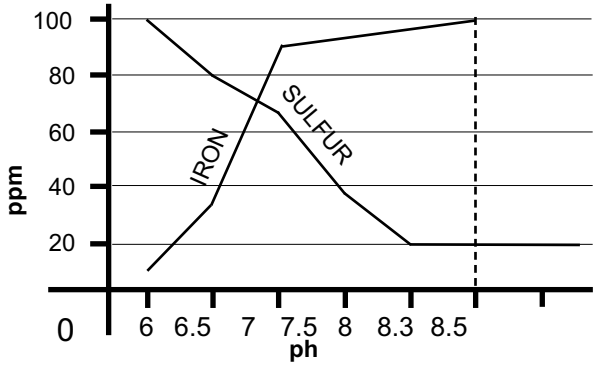
Manganese Removal

HydroxR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
5:1	7.0
1:1	7.8
0:1	8.3

Iron and Sulfur Removal

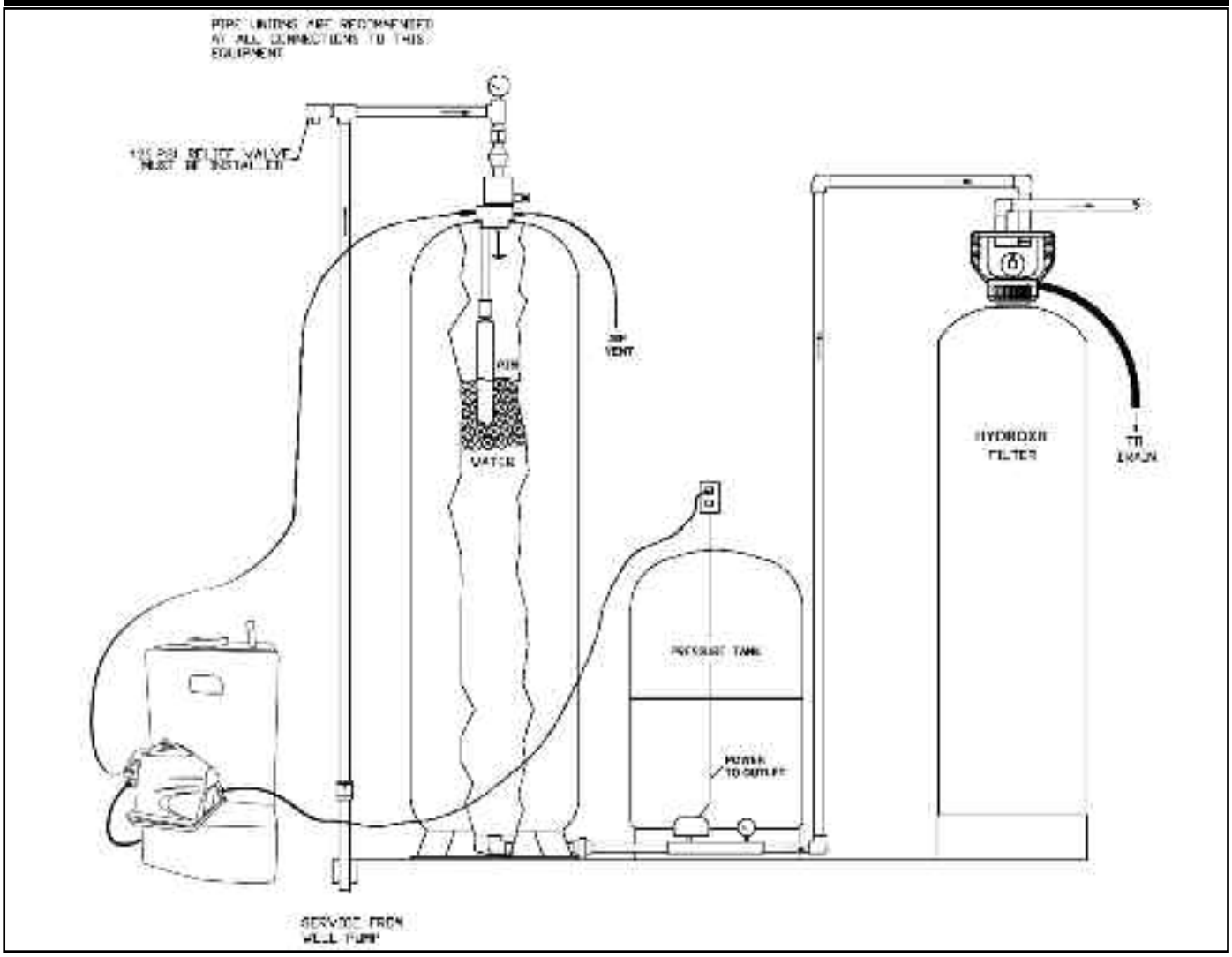
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



General Specifications	UTP15	UTP20	UTP25	UTP30	UTP40
Filter Media Type	**Filter Ag Plus™**				
Filter Media Capacity (cu ft)	1.50	2.00	2.50	3.00	4.00
Mineral Tank (Vortech™)	10x54	12x52	13x54	14x65	16X65
Service Flow Rate - Continuous (gpm)	5	6	8	9	11
Service Flow Rate - Intermittent (gpm)	7	8	10	11	13
Backwash Flow Rate (gpm)	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash	100	120	140	200	300
Space Required (DxWxH inches) HydroxR™ Tank	21x21x74	21x21x74	21x21x74	21x21x74	21x21x74
Space Required (DxWxH inches) Filter Tank	10x10x62	12X12X60	13x13x62	14x14x73	16x16x74
Space Required (DxWxH inches) Feed Pump System	17x17x28.5	17x17x28.5	17x17x28.5	17x17x28.5	17x17x28.5
Approximate Shipping Weight (pounds)	140	155	220	241	328

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*.
Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



The **HydroxR VS™** Peroxide System

FEATURES

- Specifically designed for use with constant pressure (variable speed) and jet style pumping systems where treatment of extreme levels of iron, manganese and sulfur gas is required
- Disinfection properties with added contact time for iron, manganese and sulfur bacteria control
- Includes reliable peristaltic chemical feed pump package for self-priming operation
- ***Signature Series***™ Control Valve with built in contact flow meter for precise metering of hydrogen peroxide
- Advanced electronic technology and simple programming
- Adjustable cycle times
- Battery backup
- High backwash flow capability
- Independently operated inlet / outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- Features Enpress® Vortech™ distributor plate
- Poly wound HydroxR™ and mineral tank

With the advent of constant pressure (variable speed) pumping systems, CSI Water Treatment went back to the drawing board to engineer a HydroxR™ System that will effectively treat extreme levels of iron, manganese and sulfur gas when a constant pressure well system is utilized - the HydroxR VS™.

The HydroxR VS™ will work equally well for jet pump type systems, where typical air injection systems won't.

The ***Signature Series***™ Control Valve provides high backwash flow capabilities and utilizes an integral contact flow meter for precise injection of hydrogen peroxide no matter what the flow rate.

The large HydroxR VS™ contact tank provides the necessary time for adequate disinfection of iron, manganese and sulfur bacteria.

The HydroxR VS™ System provides new technology treatment for new technology constant pressure pumping systems!

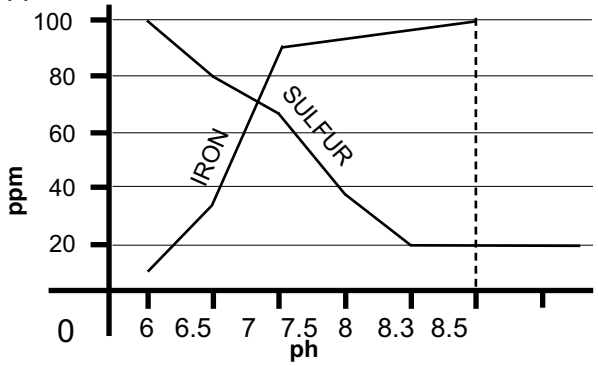
Manganese Removal

HydroxR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
5:1	7.0
1:1	7.8
0:1	8.3

Iron and Sulfur Removal

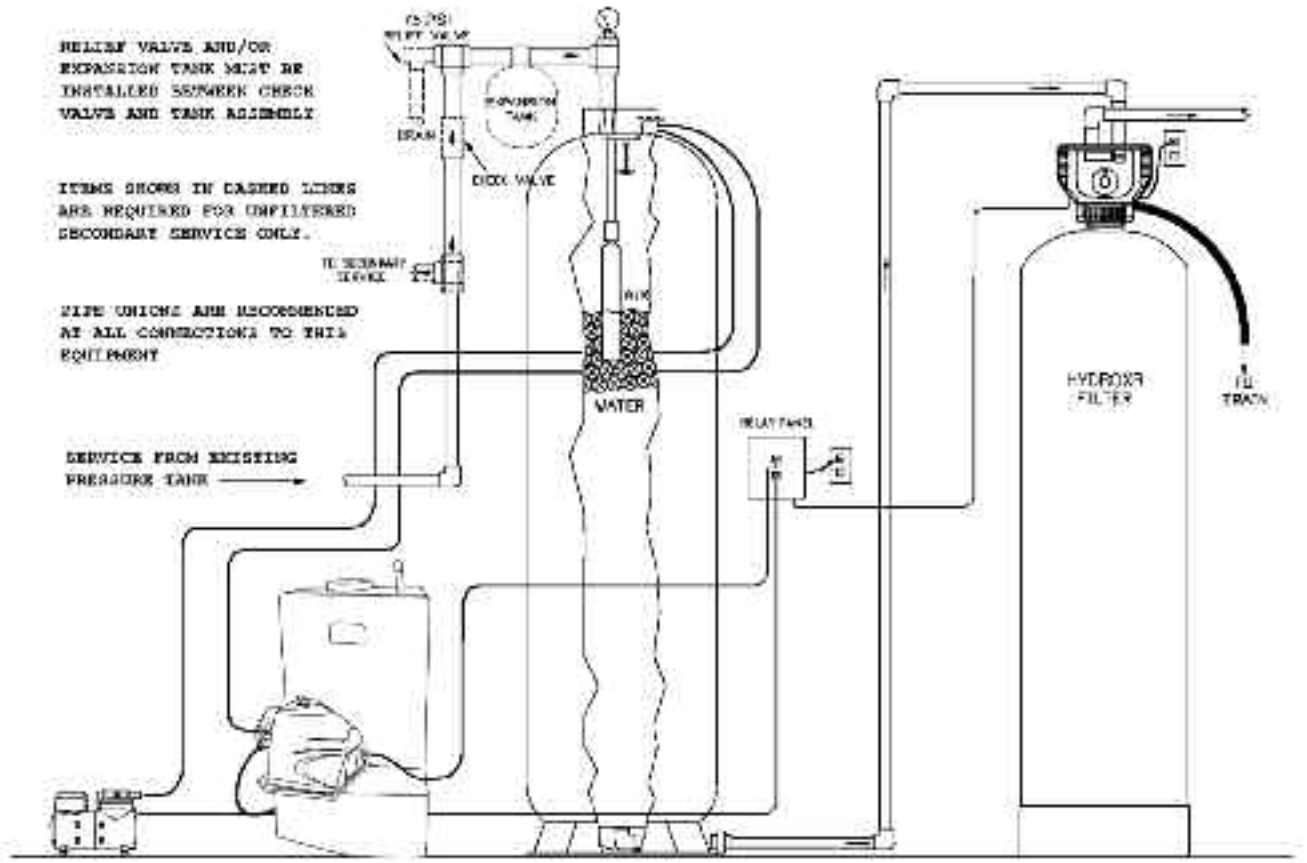
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



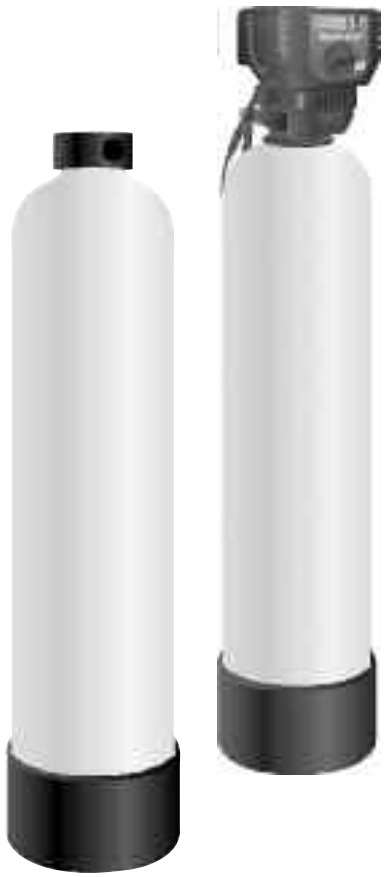
General Specifications	UTP15VS	UTP20VS	UTP25VS	UTP30VS	UTP40VS
Filter Media Type	**Filter Ag Plus™**				
Filter Media Capacity (cu ft)	1.50	2.00	2.50	3.00	4.00
Mineral Tank (Vortech™)	10x54	12x52	13x54	14x65	16x65
Service Flow Rate - Continuous (gpm)	5	6	8	9	11
Service Flow Rate - Intermittent (gpm)	7	8	10	11	13
Backwash Flow Rate (gpm)	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash	100	120	140	200	300
Space Required (DxWxH inches) HydroxR™ Tank	21x21x74	21x21x74	21x21x74	21x21x74	21x21x74
Space Required (DxWxH inches) Filter Tank	10x10x62	12X12X60	13x13x62	14x14x73	16x16x74
Space Required (DxWxH inches) Feed Pump System	17x17x28.5	17x17x28.5	17x17x28.5	17x17x28.5	17x17x28.5
Approximate Shipping Weight (pounds)	140	155	220	241	328

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

Typical Installation



Whole House & Upflow Filters - Signature Valve



FEATURES

- *Signature Series*™ control valve
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Battery Back-Up
- High backwash flow capability
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- Upflow filter includes 1" FNPT manifold
- Poly wound mineral tank
- Optional dome fill hole and closure
- Other valve options available at an additional cost
- Optional "natural" color
- Enpress® Vortech™ distributor plate - Provides vigorous backwash with no gravel underbed needed!

General Specifications		SERIES					
		WF10 U10	WF15 U15	WF20 U20	WF25 U25	WF30	WF40
Filtration[1] (see "Filter Media" section for applications)		**Less Filter Media**					
Filter Media Capacity (cu ft)		1.00	1.50	2.00	2.50	3.00	4.00
Mineral Tank (Vortech™)		9x48	10x54	12x52	13x54	14x65	16x65
Service Flow Rate - Continuous[2] (gpm)		4	5	6	8	9	11
Service Flow Rate - Intermittent[2] (gpm)		6	7	8	10	11	13
Backwash Flow Rate[3] (gpm) "WF" units only		5.0	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash "WF" units only		100	100	120	140	200	300
Space Required (DxWxH inches)	WF	9x9x56	10x10x62	12x12x60	13x13x62	14x14x74	16x16x74
	U	9x9x52	10x10x58	12x12x56	13x13x58	N/A	N/A
Approximate Shipping Weight (pounds)	WF	27	32	35	40	49	54
	U						

Note 1: See "Filter Media" section for selection of proper media for your filtration application. Note 2: Use of a flow control in the Service Line is highly recommended. Note 3: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Consult the factory or your field sales person with questions.

Filter Media Selection Guide

Filter Media Selection Guide		
Media	Description	Handles
Neutralizer	Granular / White / Sacrificial to water with pH < 7.0 / Max pH correction to 7.2 / Lowest pH application 5.8 / Must be replenished about every 3-6 months	Sediment (downflow) pH Correction
Corosex™	Semi-round / Off-White / Magnesium Oxide / Extremely reactive to pH dissolving rapidly adding alkalinity / 30% Corosex™ - 70% Neutralizer is best blend for correcting low pH / Will raise pH from lows around 5.0 to as high as 9.0+ / Must be replenished frequently / Consult factory with specific application questions	Sediment (downflow) pH Correction
Neu-Cor™	70% neutralizer / 30% Corosex™ mix. Sacrificial to water with any pH / max pH correction determined by contact time used for correction of extremely low pH down to 5.0 / Must be replenished every 3-6 months.	Sediment (downflow) pH correction
Granular Activated Carbon	Granular / Black / Wide application for removal of organics and some inorganics / Must be replaced on a regular basis / Life expectancy varies based on use	Sediment (downflow) Taste / Odor / Color Chlorine / Iodine
Birm™	Granular / Gray / Must not be used on waters with a pH < 6.8 / Must have dissolved oxygen present at a level of at least 15% of Iron & Manganese ppm / Max Iron & Manganese level 10ppm / Estimated life about 8-10 years	Sediment Iron (clear & red) Manganese (clear & red)
Filter Ag™	Granular / Off-White / Wide application for removal of sediment / Life expectancy is unlimited	Sediment
REACTR™ Blend	Granular / White-Black / Blend of Neutralizer, Filter Ag & Birm / Max life expectancy about 8-10 years but is dependent upon pH	Sediment Iron (clear & red) Manganese (clear & red) Sulfur Particles
Filter Ag Plus™	Light tan to near white in color/Mesh size 14x40/55lb/ft^3 / The Filter Ag Plus filter beds operate at less than half the hydraulic loading rate vs. 20x40 mesh sand and 50% of sand/anthracite or culti-media	Enhanced Particle Removal (Down to 5 microns)
"D" Gravel	Semi-Round / Brown / #20 Flint / Used as underbed for Non-Vortech Filters providing for excellent flow distribution in both service and backwash modes / Permanent unless fouled but can be cleaned and reused	Underbed

Filter media and gravel is shipped in convenient reusable buckets.

CSI WATER TREATMENT SYSTEMS

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

Tannin / Hardness Treatment System - Signature Valve

FEATURES

- Reduces hardness (Calcium & Magnesium)
- Reduces Tannin stains, taste and odor
- *Signature Series*™ timeclock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- High capacity cation exchange resin
- High capacity Tannin Anion exchange resin
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Other valve options available at an additional cost
- Features Enpress® Vortech™ Distributor plate

General Specifications	Two Tank		
	TST32 MST32	TST48 MST48	TST64 MST64
Grains Capacity / Hardness Regeneration	24,000	32,000	48,000
Salt Used / Regeneration (pounds)	12.0	15.0	24.0
Maximum Raw Water Hardness (grains)	50	75	100
Maximum Clear Iron / Manganese (ppm)	.50	.50	.50
Exchange Resin (cu. ft.)	.75	1.0	1.5
Tannin Resin (cu. ft.)	.25	.50	.50
Mineral Tank (Vortech™)	9x48	10x54	12x52
Brine Tank (polyethylene with grid & safety)	18x33	18x33	18x33
Service Flow Rate (gpm)*	10.0	11.0	12.0
Backwash Flow Rate (gpm)	1.2	1.5	2.0
Gallons Used / Regeneration	58	65	92
Space Required (DxWxH inches)	18x27x56	18x28x62	18x30x60
Approximate Shipping Weight (pounds)	130	163	204

* The pressure drop does not exceed 15.0 psi at the service flow rate.

Nitrate / Sulfate Treatment System - Signature Valve

FEATURES

- Reduces Nitrates (EPA MCL* – 10.0 mg/l)
- Reduces Sulfates (EPA SMCL** – 250 mg/l)
- Reduces Fluoride (EPA MCL* – 4.0 mg/l)
- ***Signature Series***™ time clock or meter initiated controls
- Advanced Electronic Technology & Simple programming
- Adjustable cycle times
- Calendar Day Override (metered versions only)
- Battery Back-Up
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- High capacity Nitrate Selective Anion exchange resin
- High Flow brine safety float assembly, overflow fitting, grid plate, and brine well
- Other valve options available at an additional cost
- Features Enpress® Vortech™ Distributor plate

* MCL – Maximum recommended primary contaminant level

** SMCL – Maximum recommended secondary contaminant level

General Specifications	TN15 MN15	TN25 MN25
Grains Capacity / Regeneration	15,000	25,000
Maximum Raw Water Nitrate /Sulfate (mg/l)	100	100
Maximum Clear Iron / Manganese (ppm)	0	0
Maximum Raw Water Hardness (grains)	3	3
Salt Used / Regeneration (pounds)	18.0	30.0
Exchange Resin (cu. ft.)	1.5	2.5
Mineral Tank (Vortech™)	10x54	13x54
Brine Tank (polyethylene with grid & safety)	18x33	18x33
Service Flow Rate (gpm)	5.0	8.0
Backwash Flow Rate (gpm)	1.2	2.4
Gallons Used / Regeneration	60	80
Space Required (DxWxH inches)	18x28x62	18x31x62
Approximate Shipping Weight (pounds)	133	225

Ultraviolet Disinfection Systems

NOW IN STOCK!

Benefits of Ultraviolet

- Provides protection against illness
- No harmful chemicals or byproducts
- No alteration of taste or water quality
- Simple to install and maintain
- Economical to operate

Trojan Features

- From 5gpm to 47gpm
- High Output UV Lamps
- Unique Water Chamber Design
- New Power Supply Technology
- Trojan UV Max reminds you to replace the lamp
- New UV Intensity Monitoring Device
- 5yr. Warranty on units and 1yr. Warranty on Lamps

General Specifications	UVMAXC4	UVMAXD4	UVMAXE4	UVMAXF4	PRO10	PRO20	PRO30
Lamp	602805	602805	602806	602807	602854	602855	602856
Sleeve	602732	602732	602733	602734	602974	602975	602976
Max GPM	9	9	15	25	10	20	30
Inlet/Outlet	3/4" NPT	3/4" NPT	1" NPT	1" NPT	1 1/4" NPT	1 1/4" NPT	1 1/4" NPT
Failure Alarm	x	x	x	x	x	x	x
NSF Approved					x	x	x
Chamber	19.5 x 3.5in.	19.5 x 3.5in.	29 x 3.5in.	43.5 x 3.5in.	21.4 x 4in.	31 x 4in.	41 x 4in.
Selenoid		Optional	Optional	Optional	Optional	Optional	Optional
UV Intensity Monitor					x	x	x
Cool Touch Kit					x	x	x

FEATURES

- NSF / ANSI Standard 42 for material & structural integrity
- Reinforced polypropylene
- Excellent chemical resistance
- Max Temperature 125°F
- Max Pressure 125psi

Filter Housings

General Specifications	CH10	CH10C	CH10J	CH20	CH20J
Color	Opaque	Clear	Opaque	Opaque	Opaque
Inlet / Outlet (inches)	3/4 FPT	3/4 FPT	1 FPT	3/4 FPT	1 FPT
Threads	Plastic	Plastic	Plastic	Plastic	Plastic
Cartridge Dimensions (inches)	2.5 x 10	2.5 x 10	4.5 x 10	2.5 x 20	4.5 x 20
Pressure Relief Button	X	X	X	X	X
Case Quantity	12	12	4	8	4

*Mounting brackets & sump wrenches are available for all models.

Carbon Block Filters for Taste and Odor Removal

General Specifications	CB10	CB10J	CB20	CB20J
Micron	5	5	5	5
Cartridge Dimensions (inches)	2.5 x 10	4.5 x 10	2.5 x 20	4.5 x 20
Case Quantity	20	9	20	6

Melt Blown Filters for Sediment Removal

General Specifications	MB510	MB510J	MB2010	MB2010J	MB520	MB520J	MB2020	MB2020J
Micron	5	5	20	20	5	5	20	20
Cartridge Dimensions (inches)	2.5 x 10	4.5 x 10	2.5 x 10	4.5 x 10	2.5 x 20	4.5 x 20	2.5 x 20	4.5 x 20
Case Quantity	40	12	40	12	20	6	20	6

Under Counter Activated Carbon Filter

FEATURES

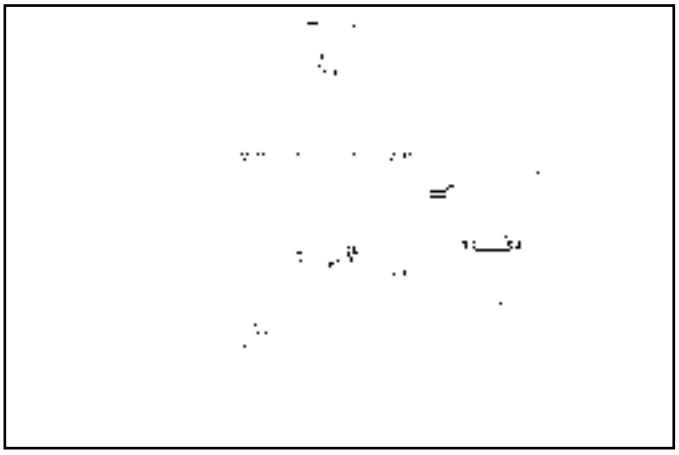
- Reduces Chlorine taste and odor
- Reduces Synthetic organics and Chlorine byproducts
- Reduces Sediment and Rust
- Contains 25 times more carbon than standard cartridge filters
- Treats all the cold water at the kitchen sink
- High capacity design - up to 2-3 years between rebedding
- No cartridges to replace
- Convenient tube lock fittings and installation kit included
- Optional faucet kit available
- Non-corrosive fiberglass mineral tank
- Rugged PVC manifold

Quality Water for a Quality Lifestyle

Granular activated carbon media is the most effective and economical method for reducing chlorine, natural / synthetic organics and byproducts associated with chlorination. The G.A.C. used in our Under Counter Activated Carbon Filter is made from a select grade of coal which is milled, compacted, sized and thermally steam activated to yield a strong dense product with a large surface area.

The UC-05 Under Counter Activated Carbon Filter is specially designed with the capability of absorbing organics and dechlorination of drinking water essentially giving you bottled water quality right at your kitchen sink!

General Specifications	
Model No.**	UC-05
Capacity*	19,710 gallons
Style	Down flow GAC
Flow Rate	2 gpm
GAC Qty.	5 lbs.
In / Out Connections	3/8"
Max. Operating Pressure	120 PSI
Operating Temperature	35° F – 120° F
Dimensions (DxWxH inches)	7"x7"x19"
Shipping Weight (pounds)	7 lbs.



* Based on water usage of 18 gal. / day, cold side kitchen sink, family of four

** Caution: Do not use where water is microbiologically unsafe or with water of unknown quality

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Name of Contaminant	No Removal	Modest Removal	Good Removal	Excellent Removal
1.1.1-Trichloroethane			•	
1.1.2.2-Tetrachloroethane			•	
1.1.2.2-Tetrachloroethylene			•	
1.1.2-Trichloroethane			•	
1.1-Dichloroethane			•	
1.1-Dichloroethylene			•	
1.1.2.4-Trichlorobenzene				•
1.2-Dichlorobenzene				•
1.2-Dichloroethane			•	
1.2-Dichlorothylene			•	
1.2-Dichloropropane			•	
1.2-Diphenyl Hydrazline				•
1.3-Dibromochloromethane			•	
1.3-Dichlorobenzene			•	
1.3-Dichloropropane			•	
1.4-Dichlorobenzene				•
2.4.5-TP				•
2.4.6-Trichlorophenol				•
2.4-Dimethylphenol				•
2.4-Dichlorophenal				•
2.4-Dinitrophenol				•
2.4-Dinitrotoluene				•
2.6-Dinitrotouene				•
2-Chloroethyl Vinyl Ether			•	
2-Chloronaphthalene				•
2-Chlorophenol			•	
2-Methyl-4.6-Dinitrophenol				•
2-Nitrophenol				•
4.4-DDD				•
4.4-DDE				•
4.4-DDT				•
4-Bromophenyl Phenyl Ether				•
4-Chlorophenyl Phenyl Ether				•
4-Nitrophenol				•
Acenaphthene				•
Acenaphthylene				•
Acrolein			•	
Aldrin				•
Alhpa-BHC				•
Anthracene				•
Benzene			•	
Benzidine				•
Benza (a) Pyrene				•
Benza (b) Fluoranthene				•
Beta-BHC				•
Bis (2-Chloroethoxy) Methane				•
Bis (2-Chloroethyl) Ether				•
Bis (2-Chloroisopropyl) Ether				•
Bis (2-Ethylhexyl) Phthalate				•
Bix (Chloromethyl) Ether				•
Bromodichloromethane			•	
Bromofrom				•
Butyl Benzyl Phthalate				•
Carbon Tetrachloride			•	
Chloramines		•		
Chlordane				•
Chlorobenzene				•
Chloroform			•	
Chrysene			•	
Di-n-octylphthalate				•
Dibutyl Phthalate				•
Dichlorodifluoromethane				•
Dieldrin				•
Diesel Fuel				•
Diethyl Phthalate				•
Dimethyl Phthalate				•
Dioxin				•
EDB				•
Endosulfan I			•	
Endosulfan II				•
Endosulfan Sulfate				•
Endrin				•
Ethylbenzene				•
Fluoranthene				•
Fluorene				•

Name of Contaminant	No Removal	Modest Removal	Good Removal	Excellent Removal
Fuel Oil				•
Gasoline				•
Heptachlor				•
Heptachlor Epoxide				•
Hexachlorobenzene				•
Hexachlorobutadiene				•
Hexachlorocyclopentadiene				•
Hexachloroethane				•
Isophorone			•	
Kerosine				•
Lindane				•
Malathion				•
Methane		•		
Methoxychlor				•
Methyl Bromide		•		
Methylene Chloride			•	
n-Nitroso-n-Propylamine			•	
n-Nitrosodimethylamine			•	
n-Nitrodoiphenyl Amine				•
Naphtalene			•	
Nitrobenzene				•
Oil			•	
Parathion				•
PCB's				•
PCB-1016				•
PCB-1221				•
PCB-1232				•
PCB-1242				•
PCB-1248				•
PCB-1254				•
PCB-1260				•
Pentachlorophenol				•
Phenanthrene				•
Phenol				•
Pyrene				•
TCA			•	
TCE			•	
Toluene				•
Total Organic Carbons			•	
Toxaphene				•
Toxic Herbicides				•
Toxic Insecticides				•
Toxic Pesticides				•
Trichloroethylene			•	
Trichlorofluoromethane			•	
Trihalomethanes (THM's)			•	
Unpleasant Colors			•	
Unpleasant Odors				•
Unpleasant Tastes				•
Aluminum	•			
Arsenic			•	
Asbestos	•			
Barium Sulfate		•		
Cadmium Oxide		•		
Calcium		•		
Chlorides	•			
Chlorine				•
Chromium Oxide		•		
Copper Oxide		•		
Fluoride	•			
Hydrogen Sulfide Gas (Sulfur)		•		
Iodine				•
Iron Oxide		•		
Lead Chromate		•		
Magnesium		•		
Manganese Oxide		•		
Mercury		•		
Nickel Oxide		•		
Nitrates	•			
Selenium		•		
Silver Chloride		•		
Sodium	•			
Toxic Heavy Metals		•		
Turbidity (Sediment & Scale)			•	
Zinc Oxide		•		

MICROLINE® Reverse Osmosis System

FEATURES

- WQA S-300-91 Validated & NSF Validated
- Chromed long reach air gap faucet
- Water saving shut-off valve
- Pressure boost pump (optional)
- Precharged storage tank
- TFC-4 includes an additional polishing filter for taste and odor removal

Quality Water for a Quality Lifestyle

Reverse Osmosis (R.O.) is one of the most convenient and economical methods of reducing unwanted contaminants in your drinking water. Reverse Osmosis is the process by which water molecules are forced, by water pressure, through a semipermeable membrane. Most of the impurities and other contaminants are rinsed to the drain while the refined water is routed to a special holding tank.

The Microline® TFC-3 & TFC-4 Reverse Osmosis Drinking Water Systems use the latest advances in plastics technology to produce the most streamlined and user friendly R.O. systems on the market. What sets the Microline® apart from other systems is its patented design. Injection molded from FDA compliant materials, the system directs the flow of the water through each filtration step without the need for tubes or fittings. This design also contains major component parts like the water saving automatic shut-off, drain control and safety check valve, making it easy to maintain and service.

Another Microline® innovation is its patented membrane seal. This feature makes membrane replacement a snap without the need for tools. The Microline® Reverse Osmosis Drinking Water System is validated by the National Sanitation Foundation (NSF) Water Quality Association (WQA) under Industry Standard S-300-91 and by the state of Wisconsin's Department of Industry, Labor and Human Relations. Let Microline® provide the quality water you deserve – you'll taste the difference.

General Specifications	Microline® TFC-3 & TFC-4
Membrane Production	41 - 53 gallons/day
Rating[1] TDS Reduction	96% minimum
System Warm[2] Production	14 gallons/day
Rating Climate TDS Reduction	93% Typical
Water Pressure (min/max)	40-100 psi
Maximum Raw Water TDS (ppm)	2,000
Temperature Range (min/max)	40–100° F
pH Range	4.0–11.0
Maximum Hardness (grains)	<10
Maximum Iron (ppm)	<0.1
Maximum Manganese (ppm)	<0.05
Maximum Hydrogen Sulfide (ppm)	None
Chlorine Range (min/max)[3]	None
Bacteria[4]	Must Be Potable
Replacement Prefilter Number	PRE-GAC
Replacement Membrane Number	MM-TFC
Replacement Postfilter Number	PST-GAC
In-Line Activated Carbon Filter	MPOLJG
Space Required (DxWxH)	12 x 20 x 18
Approximate Shipping Weight (lbs)	25

Note 1: Measured at Industry Standard condition of 65 psi, 77° F, 250 TDS and discharging to atmosphere.
Note 2: Actual capacity measured at 50 psi, 77° F, and 750 TDS.
Note 3: Chlorinated feed water must not come into contact with TFC membranes.
Note 4: Do not use where the feed water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.

PC5-38™ Promax Reverse Osmosis System

FEATURES

- PuROMax™
- 5 Stage 50 GPD R/O
- High Flow 3/8 Delivery
- NSF Approved QC Fittings
- NSF Approved Tank
- Color Coded Tubing
- Complete Intall Kit

Reverse osmosis processes water at the molecular level. By squeezing ordinary tap water against a special membrane, pure water molecules are separated from impurities. These impurities are automatically rinsed down the drain leaving only clean great tasting water.

Nominal Rejection Rates for typical R/O units

Aluminum 96-98%
Arsenic 94-96%
Bacteria ..... 99+%
Barium..... 96-98%
Cadmium 95-97%
Calcium 94-97%
Chlorine 90-95%
Chloride 90-95%
Copper..... 96-98%
Cyanide 90-95%
Flouride 93-95%
Lead 96-98%
Magnesium 95-98%
Manganese 94-96%
Mercury 95-97%
Nitrate 92-95%
Phosphate 97-98%
Silver 95-97%
Sodium 94-98%
Zinc 96-98%

Replacement Filter Description	Part Number
5 micron Sediment Pre-Filter	MB510
5 micron Carbon Block Pre- Filter	CB10
Carbon Post Filter	UDF10
Inline Carbon Filter	IAC10
Filter Kit Less Membrane	PC5-FLT
50 gpd TFC Membrane	S1764

MTM™ Filters - Signature Valve

FEATURES

- *Signature Series*™ control valve
- Advanced Electronic Technology & Simple programming
- Adjustable cycles
- Battery Back-Up
- High backwash flow capability
- Independently operated inlet/outlet bypass valve
- 3/4" FNPT stainless steel yoke connection
- 1" FNPT stainless steel yoke connection (optional)
- High Flow 1" distributor tube
- Poly wound mineral tank
- Includes $KMNO_4$ feed pot with grid platform and float shutoff
- Other valve options available at an additional cost
- Features Enpress® Vortech™ Distributor plate

General Specifications	IF10	IF15	IF20	IF25
Filter Media	**MTM**™ Media			
Filter Media Capacity (cu ft)	1.00	1.50	2.00	2.50
Garnet Sand Underbed (pounds)	20	30	50	50
Mineral Tank (Vortech™)	9x48	10x54	12x52	13x54
Potassium Permanganate Solution Tank Size	10x16			
Removal Capacities Iron / Sulfur	10 ppm / 3 ppm	10 ppm / 3 ppm	10 ppm / 3 ppm	10 ppm / 3 ppm
Service Flow Rate - Continuous (gpm)	4	5	6	8
Service Flow Rate - Intermittent (gpm)	6	7	8	10
Backwash Flow Rate (gpm)	5.0	5.0	6.0	7.0
Gallons Used / Regeneration	128	130	173	193
Space Required (DxWxH inches)	9x21x57	10x22x62	13x24x60	12x25x62
Approximate Shipping Weight (pounds)	82	102	125	170

Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

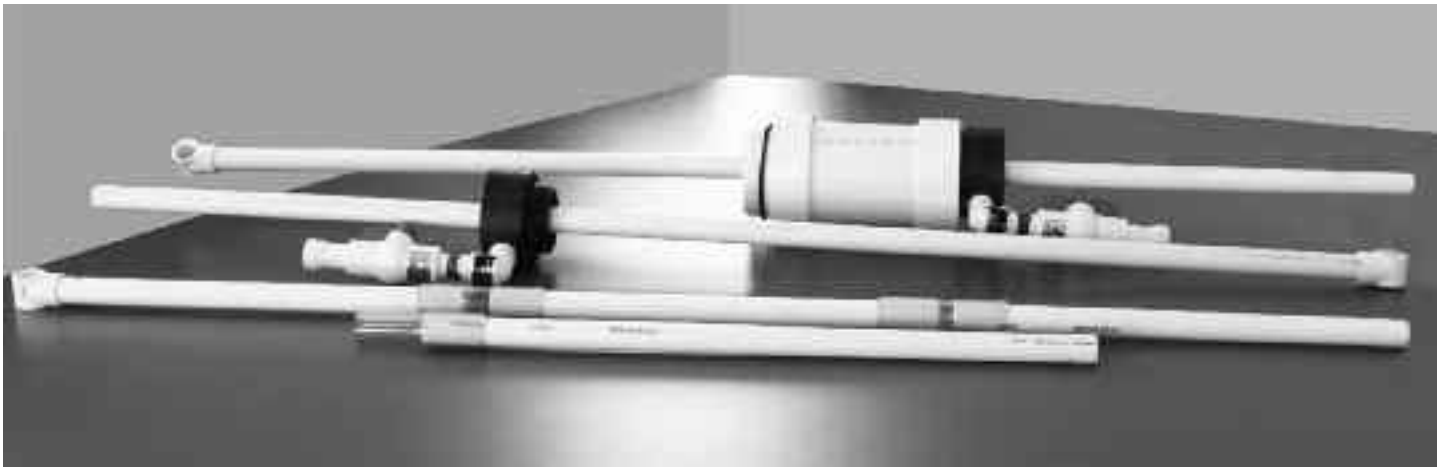
Test kits, Test Strips, pH/TDS Meters & Replacement Chemicals

Water Treatment Chemicals & Additives

Chemical Feed Equipment

Media Funnels, Flow Controls & Tubing

Mineral Extractors



Shark Skin Jacket

FEATURES

- Easy to apply with a quick zip
- No need to remove valve or plumbing
- Insulates tank
- No more condensation
- No more puddles on floor
- Can be applied to most media tank sizes
- Order separately from equipment – Black Color Only

Item Number	Description
SK9J	SharkSkin Jacket - 1.0 cf - for 9”x48”Tank
SK10J	SharkSkin Jacket - 1.5 cf - for 10”x54”Tank
SK134J	SharkSkin Jacket - 2.0 cf - for 13”x48”Tank
SK135J	SharkSkin Jacket - 2.5 cf - for 13”x54”Tank

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Vortech™

The Revolutionary New Distribution Technology From ENPRESS®

Vortech Bottom Plate Distributor

High Flow Vortech

The newest, innovative and most efficient bottom distribution system. Cleaning is greatly improved, freeboard is reduced, and it works with all softening and filtration medias. The Vortech's™ high flow design maximizes today's high efficiency valves.

The new Vortech Technology replaces conventional distributor tube and basket systems. No gravel underbed required. Garnet underbed used on only High Cap Softeners and MTM® Iron Filters.

FEATURES

- Permanent attachment of dip tube to distributor, so when servicing a valve, distributor stays in place.
- Elimination of gravel, save on net cost and unit weight for shipping.
- Improved system pressure drop characteristics.
- Increase softening capacity, due to improved flow through media.
- No channeling of media, providing a cleaner more efficient system.
- Environmentally friendly, reduction in required backwash times due to improved bed lift and mixing at lower flow rates.
- Most efficient softening regeneration, reducing salt consumption.

10 - 5 - 3 - 1
"LIMITED" WARRANTY
Water Treatment Equipment

During the time periods and subject to the conditions hereinafter set forth, CSI, will repair or replace to the original user or consumer, any portion of your new CSI product which proves defective due to defective materials or workmanship of CSI. Contact your nearest authorized CSI dealer for warranty service. At all times CSI shall have and possess the sole right and option to determine whether to repair or replace defective equipment, parts, or components. Damage due to conditions beyond the control of CSI is **NOT COVERED BY THIS WARRANTY.** (Contact parcel or freight company for claims on freight damage in transit.)

WARRANTY PERIODS:

Item	*10 Yrs	*5 Yrs	*3 Yrs	*1 Yrs
Residential Mineral Tanks	●			
Commercial Mineral Tanks		●		
Softener/Filter Control Valves		●		
Brine Tank Assemblies			●	

Item	*5 Yrs	*3 Yrs	*1 Yrs
Reverse Osmosis System	●		
Other Accessories & Parts			●

***From Date of Installation**

LABOR, ETC., COSTS: CSI shall **IN NO EVENT** be responsible or liable for the cost of field labor or other charges incurred by any customer removing and/or reaffixing any CSI product, part or component thereof.

THIS WARRANTY WILL NOT APPLY: (a) To defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units which are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) unit is used for purposes other than for what it was designed and manufactured, and (g) filter media and exchange resins.

RETURN OF REPLACED COMPONENTS: Any item to be replaced under this Warranty must be returned to CSI at Ashland, Ohio, or such other place as CSI may designate, freight prepaid.

PRODUCT IMPROVEMENTS: CSI reserves the right to change or improve its products or any portions thereof without being obliged to provide such change or improvement of units sold and/or shipped prior to such change or improvement.

WARRANTY EXCLUSIONS: As to any specific CSI product, after the expiration of the time period of the warrranty applicable thereto as set forth under the heading "Warranty Periods" above, **THERE WILL BE NO WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.**

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. No warranties or representations at any time made by any representative of CSI shall vary or expand the provisions hereof.

LIABILITY LIMITATION: IN NO EVENT SHALL CSI BE LIABLE OR RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY CSI PRODUCT OR PARTS THEREOF.

Some states do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

The Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For your warranty protection (Magnason-Moss Warranty Act) the warranty card must be completed and returned to CSI within ten (10) days of installation. In the absence or other suitable proof of installation date, the effective date of this warranty will be based upon the date of manufacture plus thirty (30) days.

Direct all notices, etc. To: Service Department, CSI, 220 Ohio Street, Ashland, Ohio 44805

Date: November 2011

CSI
WATER TREATMENT SYSTEMS

Control Valves

The following section describes the specifications and key features of the Control Valves offered by CSI Water Treatment Inc. The new Signature Series is the “standard” control specified and shipped on all units that have a Timeclock or Demand Initiated control valve with the exception of the Twin Demand System.

Other control valves are available upon request but have varying order numbers and possible price differences. Please consult your Distributor, Field Sales Representative or contact the factory with specific questions.

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434
 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

Signature Series Control Valve

Product Features

- 12 VDC operation
- 5 cycles, all fully adjustable
- Programming ease and options increase efficiency, save salt and water
- Downflow or upflow regenerations
- Strong, durable Noryl® valve body, weather-resistant enclosure
- Demand regeneration or timeclock versions and filters
- Timed brine refill with soft water
- Battery Back-Up
- Visual Indication of Valve Position
- Switch Output for:
  - Full Cycle Function
  - Backwash Function

Options

- Bypass valve (Noryl® or Stainless Steel)
- Backwash filter
- Meter initiated regeneration

Valve Specifications	
Valve material	Noryl®*
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	5

Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	21 GPM
Peak (25 psi drop)	27 GPM
CV (flow at 1 psi drop)	5.4
Max. backwash (25 psi drop)	17 GPM

Regeneration	
Downflow/Upflow	Downflow
Adjustable cycles	Yes
Time available	99 minutes per cycle

Meter Information	
Meter accuracy range	.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	1 - 9,999

Dimensions	
Distributor pilot	1.050" O.D.
Drain line	1/2" NPT Q.C.
Brine line	1600 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7.7"

Typical Applications	
Water softener	6"-16" diameter up to 4 $ft.^3$ capacity
Iron filter	6"-16" diameter
Sediment filter	6"-16" diameter
Carbon filter	6"-16" diameter
Neutralizing filter	6"-16" diameter

Additional Information	
Injector brine system	1610
Electrical rating	12 VDC
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F

*Noryl is a registered trademark of General Electric Company.

Signature Series 2 Control Valve

Product Features

- 12 VDC operation
- 5 cycles, all fully adjustable
- Programming ease and options increase efficiency, save salt and water
- Downflow or upflow regenerations
- Strong, durable Noryl® valve body, weather/insect resistant one-piece slide cover
- Demand regeneration or timeclock versions and filters
- 9V battery back-up
- Will motor to a drain line shut off position if power fails during regeneration
- Switch Output for:
  - Full Cycle Function
  - Backwash Function
- Limited 7 year warranty

Options

- Bypass valve (Noryl® or Stainless Steel)
- Backwash filter
- Meter initiated regeneration
- Nitro & Nitro Pro Single Tank Aeration Systems

Valve Specifications	
Valve material	Noryl®*
Inlet/Outlet	3/4", 1"
Cycles	5

Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	21 GPM
Peak (25 psi drop)	27 GPM
CV (flow at 1 psi drop)	5.4
Max. backwash (25 psi drop)	17 GPM

Regeneration	
Downflow/Upflow	Downflow
Adjustable cycles	Yes
Time available	99 minutes per cycle

Meter Information	
Meter accuracy range	.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	1 - 9,999

Dimensions	
Distributor pilot	1.050" O.D.
Drain line	1/2" NPT Q.C.
Brine line	1600 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7.7"

Typical Applications	
Water softener	6"-16" diameter up to 4 ft.^{3} capacity
Iron filter	6"-16" diameter
Sediment filter	6"-16" diameter
Carbon filter	6"-16" diameter
Neutralizing filter	6"-16" diameter

Additional Information	
Injector brine system	1610
Electrical rating	12 VDC
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F

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5600 Control Valve

Product Features

- Simple mechanical design is easy to understand
- Two valve body designs: one for downflow regeneration and one for upflow (covers every valve in the 5600 family - quick access to all internal components)
- Injector/drain modules containing the brine valve, flow controls and injector are removable from the valve's exterior
- Ruggedly built timer is designed with heavy-duty 3/8" wide plastic gears
- 5600 controls are user friendly and easy to program
- Non-corrosive, UV-resistant Noryl® valve body
- Choice of 7 or 12 day clock or demand regeneration with either mechanical or electronic meter
- Economical – small annual power consumption; keeps the time and activates the piston/valve mechanics with a single motor
- Designed with double backwash

Options

- Bypass valve (Noryl® or stainless steel)
- Backwash filter
- Upflow regeneration
- 35 day timer
- Low water use piston (uses as little as 29 gal./ regeneration)
- Meter initiated regeneration
- Auxiliary switches

Valve Specifications	
Valve material	Noryl®*
Inlet/Outlet	3/4", 1", 1-1/4" NPTF
Cycles	7
Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	20 GPM
Peak (25 psi drop)	26 GPM
CV (flow at 1 psi drop)	5.0
Max. backwash (25 psi drop)	7 GPM
Regeneration	
Downflow/Upflow	Both
Adjustable cycles	Brine flow only
Time available	180 minutes
Meter Information	
Meter accuracy range	.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	Standard: 125 - 2,125 Extended: 625 - 10,625
Dimensions	
Distributor pilot	0.8125" or 1.050"pipe O.D.
Drain line	1/2" NPTF
Brine line	1600 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7"
Typical Applications	
Water softener	6"-12" diameter
Iron filter	6"-10" diameter
Sediment filter	6"-10"diameter
Carbon filter	6"-10" diameter
Neutralizing filter	6"-10" diameter
Additional Information	
Injector brine system	1600
Electrical rating	24 v, 110 v, 220 v-50 Hz, 60 Hz
Max. VA	3
Estimated shipping weight	Time clock: 5 lbs. Metered valve: 6 lbs.
Pressure	Hydrostatic: 300 psi Working: 20 - 120 psi
Temperature	34° - 110° F
Approvals	
WQA Gold Seal system	0.5 - 2.0 cu. ft.
UL registered component	

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5600SXT Control Valve

Product Features

- Solid state microprocessor with LED display. Time of day, remaining capacity, regeneration cycle in process
- Compact turbine meter
- Downflow or upflow regeneration cycles
- Choose from 3 modes of operation: immediate meter regeneration, delayed meter regeneration, or delayed timeclock regeneration
- NOVRAM valve status and memory backup
- Continuous flow rate of 20 GPM
- Backwash capacity handles tanks up to 12” diameter for softener applications, 10” for filter applications
- Double backwash capability

Options

- Bypass valve
- Backwash filter
- Upflow regeneration
- Meter initiated regeneration
- Double backwash
- Auxiliary switches

Valve Specifications	
Valve material	Noryl®*
Inlet/Outlet	3/4”, 1” or 1-1/4”
Cycles	5

Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	20 GPM
Peak (25 psi drop)	26 GPM
CV (flow at 1 psi drop)	5.0
Max. backwash (25 psi drop)	7 GPM

Regeneration	
Downflow/Upflow	Both
Adjustable cycles	Yes
Time available	Up to 99 minutes per cycle

Meter Information	
Meter accuracy range	.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	1 - 9,999

Dimensions	
Distributor pilot	0.8125” or 1.05” pipe O.D.
Drain line	1/2” NPTF
Brine line	1600 - 3/8”
Mounting base	2-1/2” - 8 NPSM
Height from top of tank	7-1/2”

Typical Applications	
Water softener	6”-12” diameter
Iron filter	6”-10” diameter
Sediment filter	6”-10” diameter
Carbon filter	6”-10” diameter
Neutralizing filter	6”-10” diameter

Additional Information	
Injector brine system	1600
Electrical rating	24 v, 50 Hz, 60 Hz
Max. VA	8.4
Estimated shipping weight	Time clock: 6 lbs. Metered valve: 7 lbs.
Pressure	Hydrostatic: 300 psi Working: 20 – 125 psi
Temperature	34° – 110° F

Approvals
UL (powerhead only)

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2510 Control Valve

Product Features

- Fully adjustable 5-cycle top mount control delivers controlled upflow backwash, downflow brining and slow rinse, rapid rinse, brine refill and downflow service
- Time-tested hydraulically balanced piston, seal and spacer concept to control service flow and regeneration
- Non-corrosive, high-tech material construction
- Excellent flow rates – 19 GPM continuous, 24 GPM peak
- Backwash capacity handles tanks up to 16" diameter for softener applications, 16" diameter for filter applications
- Choice of 7 or 12 day clock, manual or meter initiated regeneration, mechanical or electronic control

Options

- Corrosion-free bypass valve
- Backwash filter
- Meter initiated regeneration
- Manual operation
- Environmental cover
- No hard water bypass piston
- Auxiliary switches

Valve Specifications	
Valve material	Fiber reinforced polymer
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	5

Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	19 GPM
Peak (25 psi drop)	24 GPM
CV (flow at 1 psi drop)	4.8
Max. backwash (25 psi drop)	17 GPM

Regeneration	
Downflow/Upflow	Downflow only
Adjustable cycles	Yes
Time available	Electromechanical: 164 minutes SE: 0 - 99 minutes ET: 0 - 999.9 minutes

Meter Information	
Meter accuracy range	.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	Standard: 125 - 2,125 Extended: 625 - 10,625 SE: 1 - 9,999 ET: 1 - 9,999,999

Dimensions	
Distributor pilot	1.05" O.D.
Drain line	1/2" O.D.
Brine line	1600 - 3/8", 1650 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7-1/2"

Typical Applications	
Water softener	6"-16" diameter (limited by maximum injector size)
Iron filter	8"-16" diameter (based on 10 GPM per sq. ft.)
Sediment filter	8"-16" diameter (based on 10 GPM per sq. ft.)
Carbon filter	8"-16" diameter (based on 10 GPM per sq. ft.)
Neutralizing filter	8"-16" diameter (based on 10 GPM per sq. ft.)

Additional Information	
Injector brine system	1600
Electrical rating	24 v, 110 v, 220 v - 50 Hz, 60 Hz
Max. VA	72
Estimated shipping weight	Time clock: 7 lbs. Metered valve: 10 lbs.
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F

9100 Control Valve

Product Features

- Salt and water savings by using 100% capacity of the tank in service, before switching to the second tank
- Regenerates immediately when needed for continuous soft water
- Regenerates with soft water and keeps system clean for optimum operating efficiency and minimum maintenance
- Proven technology and performance
- Corrosion-free Noryl®* valve body
- Innovative second tank quick connection
- No new moving parts

Options

- Noryl® or stainless steel Bypass valve
- Auxiliary switches
- 3200 mechanical timer, SE electronic timer
- 32 mm high flow distribution system

Valve Specifications

Valve material	Noryl®*
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	6

Flow Rates (50 psi Inlet) - Valve With Meter

	3/4" meter	3/4" turbine	1" meter
Continuous (15 psi drop)	18.2	19.4	20.1
Peak (25 psi drop)	23.5	25.0	26.0
CV (flow at 1 psi drop)	4.7	5.0	5.2
Max. backwash (25 psi drop)	8.5	8.5	8.5

Regeneration

Downflow/Upflow	Downflow only
Adjustable cycles	Yes
Time available	3200 timer: 82 or 164 minutes total SE timer: 99 minutes/cycle

Meter Information

Meter accuracy range	3/4": 0.25 - 15 GPM +/- 5% 1": 0.7 - 40 GPM +/- 5%
Meter capacity range (gal.) 3/4"	Standard: 125 - 2,125 Extended: 625 - 10,625 SE: 1 - 9,999
1"	Standard: 310 - 5,270 Extended: 1,550 - 26,350 SE: 1 - 9,999

Dimensions

Distributor pilot	1.05" O.D. & 32 mm w/ adapter
Drain line	1/2" NPT
Brine line	1600 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7.3"

Typical Applications

Water softener	6" - 16" diameter

Additional Information

Injector brine system	1600
Electrical rating	24 v, 110 v, 220 v - 50 Hz, 60 Hz
Max VA	8.9
Estimated shipping weight	Mechanical valve: 14.5 lbs SE valve: 12.0 lbs
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F

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9000 Control Valve

Product Features

- Fully adjustable 5-cycle control delivers controlled upflow backwash, downflow brining, slow rinse, rapid rinse, timed brine refill and downflow service
- Perfect for light commercial/heavy residential systems that require twin tank conditioning capabilities
- Continuous flow rate of 21 GPM
- All cycles easily adjustable; program just what's needed with "all cycle" variable time control
- Backwash capacity handles tanks up to 16"
- Choice of 3/4" or 1" meter satisfies wide range of operational needs

Options

- Noryl®* or stainless steel Bypass valve
- Hot water (150° F max., 1" only)
- Electronic timer, SE or ET
- Window cover
- No hard water bypass
- Auxiliary switches

Valve Specifications	
Valve material	Lead-free brass**
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	5

Flow Rates (50 psi Inlet) - Valve Alone		
Flow rate (50 psi inlet)	1" meter	3/4" meter
Continuous (15 psi drop)	21 GPM	18 GPM
Peak (25 psi drop)	28 GPM	24 GPM
CV (flow at 1 psi drop)	5.1	4.8
Max. backwash (25 psi drop)	8.5 GPM	8.5 GPM

Regeneration	
Downflow/Upflow	Downflow only
Adjustable cycles	Yes
Time available	164 or 82 minutes

Meter Information	
Meter accuracy range	
1"	0.7 - 40 GPM +/- 5%
3/4"	0.25 - 15 GPM +/- 5%
Meter capacity range (gal.)	
1"	Standard: 310 - 5,270 Extended: 1,550 - 26,350 SE: 1 - 9,999 ET: 1 - 9,999,999
3/4"	Standard: 125 - 2,125 Extended: 625 - 10,625 SE: 1 - 9,999 ET: 1 - 9,999,999

Dimensions	
Distributor pilot	1.05" O.D.
Drain line	1/2" NPT
Brine line	1600 - 3/8"
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	6-1/2"

Typical Applications	
Water softener	6"-16" diameter

Additional Information	
Injector brine system	1600
Electrical rating	24 v, 110 v, 220 v - 50 Hz, 60 Hz
Max. VA	8.9
Estimated shipping weight 3/4"	Metered valve: 19 lbs. 1" Metered valve: 23 lbs.
Pressure	Hydrostatic: 300 psi Working: 20 - 125 psi
Temperature	34° - 110° F

Approvals	
WQA Gold Seal system	1.0 - 6.0 cu. ft.

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**As defined in the Safe Drinking Water Act.

Clack WS1 Control Valve

Product Features

- Solid State microprocessor with easy access front panel settings
- Three modes of operation; meter immediate, meter delayed, or time clock delayed
- Double backwash feature offers optimum regeneration, cleaning ability, and efficiency
- 66 selectable pre-programmed regeneration cycles
- Days override feature; 1-28 days available
- Backwash and brining ability to 22" diameter tanks
- Downflow / Upflow regeneration
- Stores system configuration and operation data in non volatile memory
- Capacitor back-up with up to 2 hour power carry over
- 12-volt output AC adapter provides safe and easy installation
- Control valve design provides optimum service and backwash rates
- Treated water regenerant refill
- Reliable and proven DC drive

Options

- Bypass valve (Noryl®)
- Backwash filter
- Meter initiated regeneration

Valve Specifications	
Valve material	Noryl®*
Inlet/Outlet	3/4", 1" or 1-1/4"
Cycles	6

Flow Rates (50 psi Inlet) - Valve Alone	
Continuous (15 psi drop)	27 GPM
Peak (25 psi drop)	35 GPM
CV (flow at 1 psi drop)	7.0
Max. backwash (25 psi drop)	27 GPM

Regeneration	
Downflow/Upflow	Downflow
Adjustable cycles	Yes

Meter Information	
Meter accuracy range	.25 - 27 GPM +/- 5%
Meter capacity range (gal.)	20 - 50,000

Dimensions	
Distributor pilot	1.050" O.D.
Drain line	3/4" or 1" NPT
Brine line	3/8" or 1/2" OD Poly Tube
Mounting base	2-1/2" - 8 NPSM
Height from top of tank	7.375"

Typical Applications	
Water softener	6"-22" diameter up to 7 ft.^{3} capacity
Iron filter	6"-22" diameter
Sediment filter	6"-22" diameter
Carbon filter	6"-22" diameter
Neutralizing filter	6"-22" diameter

Additional Information	
Electrical rating	12 VAC
Pressure	Working: 20 - 125 psi
Temperature	40° - 110° F

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- NOTES -

CSI
WATER TREATMENT SYSTEMS

Commercial & Industrial Products

The following section is a brief selection of some of the more popular commercial products. A complete commercial catalog is available to qualifying customers. Please see your Distributor or Field Representative for complete information on our Commercial & Industrial products and design services.

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434
 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

Commercial Project Data Form

DISTRIBUTOR

PERSON

PHONE #

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DEALER / CONTRACTOR

PERSON

PHONE #

FAX #

ENGINEER

PERSON

PHONE #

FAX #

HEALTH DEPT / EPA

PERSON

PHONE #

FAX #

SALES REP

JOB NAME

DATE:

RAW WATER	
GPM	
PSI	
PIPE SIZE	
HARD-GR	
pH	
IRON-PPM	
MANGANESE-PPM	
TANNIN-PPM	
SODIUM SALT-PPM	
TDS	
TURBIDITY	
COLOR	
ODOR	
SUSP. MATTER	
IRON BACTERIA	
SULFUR	

	TREATED WATER REQUIREMENTS		
GPM		GAL.PRESS.TANK	
PSI		GAL.ATMOS.TANK	
GAL/DAY		GPM BOOST PUMP	

TREAT FOR:

FLOW SEQUENCE:

Single Tank Water Softeners

STANDARD FEATURES

- High Flow Control Valves thru 3" – Flow Rates 200+ gpm
- Up to 1.2 Million Grain Tank Capacity
- Maximum Operating Pressure – 125 psi/110º F
- Fleck™ Top-mount Control Valves
- Timeclock or Electronic Meter Regeneration
- Premium Cation Resin – 30K grains/cu.ft.
- Hard Water Bypass
- Brine Tank – HDPE material, Salt Grid Plate or Gravel Underbed, Safety Brine Valve (30" & smaller diameter), Air Check and Overflow
  All wetted components are NSF approved

OPTIONS

- Clean Water Backwash
- No Hard Water Bypass
- Clack™ Control Valves
- Electro-Mechanical Control Valve
- Steel and ASME rated Pressure Vessels
- Mechanical Flow Meter
- Side-mount Control Valves
- Flow Management with Motorized Ball Valves or Staged Diaphragm Valves
- Water Quality Monitor Initiated Regeneration
- High Capacity Resin

TYPICAL USE:

- Boiler Feed
- Cooling Tower
- Schools
- Light Industrial
- Hotels/Motels
- Apartments
- Nursing Home/ Assisted Living
- Condominiums
- Car/Truck Wash
- Corporate Campus
- Hospitals

Automatically reduce hardness (calcium/magnesium) and dissolved iron/manganese along with their unpleasant side-effects. Only the highest quality resin, controls and materials are used in CSI Commercial Water Softeners. Our motor-driven piston control valve is the most reliable under even severe water conditions and resists common adversaries such as hardness and iron. Meanwhile, our hub and lateral style or Vortech™ distribution systems within the corrosion resistant tanks maximize flow while reducing pressure loss through the units. Designed for use in commercial, industrial or domestic water applications.

As we remain **Committed to Innovation**, **CSI** provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation or a new construction project, replace or integrate new equipment into an existing process, we have the proper system options available to meet your needs.

COMMERCIAL SINGLE-TANK SOFTENERS

MODEL NUMBERS	GPM FLOW RATES				PIPE SIZE NPT		GRAINS EXCH CAP @ LBS SALT (PER RESIN TANK)	RESIN TANK			BRINE TANK			OVERALL HEIGHT
	SERVICE		PEAK	BACK WASH				CU. FT. RESIN			SALT CAPACITY LBS Per TANK			
	15 PSI LOSS	8 PSI LOSS	25 PSI LOSS	Flow GPM	SERVICE	DRAIN	MAXIMUM MINIMUM	DIA x HT		QTY	DIA x HT		QTY	
CTS60-10	20	15	27	5	1"	3/4"	60,000 GR @ 30 # 40,000 GR @ 12 #	14" x 65"	2	1	18" x 40"	300	1	72"
CTS60-15	31	23	43	5	1 1/2"	1"				1			1	72"
CMS60-10NT	19	14	26	5	1"	3/4"				1			1	81"
CMS60-15NT	30	22	42	5	1 1/2"	1"				1			1	72"
CTS90-10	19	14	26	5	1"	3/4"	90,000 GR @ 45 # 60,000 GR @ 18 #	14" x 65"	3	1	18" x 40"	300	1	72"
CTS90-15	30	22	42	5	1 1/2"	1"				1			1	72"
CMS90-10NT	18	13	25	5	1"	3/4"				1			1	81"
CMS90-15NT	29	21	41	5	1 1/2"	1"				1			1	72"
CTS120-10	20	15	27	7	1"	3/4"	6/22/10	16" x 65"	4	1	24" x 50"	700	1	72"
CTS120-15	33	24	45	7	1 1/2"	1"				1			1	72"
CTS120-20	47	34	64	7	2"	1"				1			1	77"
CMS120-10NT	19	14	26	7	1"	3/4"				1			1	81"
CMS120-15NT	32	23	43	7	1 1/2"	1"				1			1	72"
CMS120-20NT	46	34	63	7	2"	1"				1			1	77"
CTS150-15	35	26	48	10	1 1/2"	1"	150,000 GR @ 75 # 100,000 GR @ 30 #	18" x 65"	5	1	24" x 50"	700	1	74"
CTS150-20	51	37	72	10	2"	1"				1			1	80"
CMS150-15NT	34	25	47	10	1 1/2"	1"				1			1	74"
CMS150-20NT	50	37	66	10	2"	1"				1			1	80"
CTS210-15	39	28	53	12	1 1/2"	1"	210,000 GR @ 105 # 140,000 GR @ 42 #	21" x 62"	7	1	24" x 50"	700	1	74"
CTS210-20	60	43	77	12	2"	1"				1			1	79"
CMS210-15NT	37	27	50	12	1 1/2"	1"				1			1	74"
CMS210-20NT	59	43	76	12	2	1"				1			1	79"
CTS300-20	68	50	91	15	2"	1"	300,000 GR @ 150 # 200,000 GR @ 60 #	24" x 72"	10	1	30" x 50"	1,000	1	87"
CMS300-20NT	66	48	89	15	2"	1"				1			1	87"
CTS450-20	84	61	105	25	2"	1"	450,000 GR @ 225 # 300,000 GR @ 90 #	30" x 72"	15	1	30"x 50"	1,000	1	95"
CTS450-30	158	115	212	25	3"	2"				1			1	96"
CMS450-20NT	81	59	101	25	2"	1"				1			1	95"
CMS450-30NT	151	110	201	25	3"	2"				1			1	96"
CTS600-20	90	66	110	35	2"	1"	600,000 GR @ 300 # 400,000 GR @ 120 #	36" x 72"	20	1	42" x 60"	2,900	1	97"
CTS600-30	185	135	250	35	3"	2"				1			1	97"
CMS600-20NT	86	63	106	35	2"	1"				1			1	98"
CMS600-30NT	176	129	236	35	3"	2"				1			1	98"
CTS900-30	200	146	268	50	3"	2"	900,000 GR @ 450 # 600,000 GR @ 180 #	42" x 72"	30	1	50" x 60"	4,100	1	110"
CMS900-30NT	186	136	248	50	3"	2"				1			1	110"
CTS1200-30	213	156	280	70	3"	2"	1,200,000 GR @ 600 # 800,000 GR @ 240 #	48" x 72"	40	1	50" x 60"	4,100	1	107"
CMS1200-30NT	196	143	257	70	3"	2"				1			1	107"

CTS = Clock (Timer) CMS = Meter (Demand) NT = Electronic Timer and Turbine Meter

OPERATING INFORMATION

For use on Potable Water Only
Do not use on microbiologically unsafe or unknown quality water
Installation must comply with state and local plumbing/electrical codes
120v/24v CUL/UL listed transformer included with electronic meter systems
Tank warranty void if subject to vacuum
Low flow channeling – less than .5 gpm/cu. ft. resin – may cause hardness leakage

Water Temperature Range	35º – 110ºF
Ambient Air Temperature Range	35º – 120ºF
Operating Pressure Range	20 – 125 psi
Electronic Requirements	110v/60Hz
Influent Turbidity	5 NTU
Influent Chlorine	1 ppm max.
Iron/Manganese	< 5 ppm

Multi-Tank Water Softeners

STANDARD FEATURES

- High Flow Control Valves thru 3" – Flow Rates 700+ gpm
- Up to 1.2 Million Grain Tank Capacity per Tank
- Maximum Operating Pressure – 125 psi/110º F
- Fleck™ Top-mount Control Valves
- Electronic Meter Regeneration
- Duplex – Alternating Tank Operation
- Triplex – Progressive Flow Operation
- Premium Cation Resin – 30K grains/cu.ft.
- No Hard Water Bypass
- Brine Tank – HDPE material, Salt Grid Plate or Gravel Underbed, Safety Brine Valve (30" & smaller diameter),
- Air Check and Overflow
- All Wetted Components are NSF Approved

OPTIONS

- Clean Water Backwash
- Electro-Mechanical Control Valve
- Steel and ASME Rated Pressure Vessels
- Mechanical Flow Meter
- Side-mount Control Valves
- Flow Management with Motorized Ball Valves or Staged Diaphragm Valves
- Water Quality Monitor Initiated Regeneration
- High Capacity Resin
- Clack™ Control Valves

TYPICAL USE

- Boiler Feed
- Hospitals
- Large Schools and Universities
- Industrial Pre-treatment
- Hotels/Motels
- Apartments/Condos
- Nursing Home/ Assisted Living
- Laundry Facilities
- Food Service
- Corporate Park

Automatically reduce hardness (calcium/magnesium) and dissolved iron/ manganese along with their unpleasant side-effects. Only the highest quality resin, controls and materials are used in CSI Commercial Water Softeners. Our motor-driven piston control valve is the most reliable under even severe water conditions and resists common adversaries such as hardness and iron. Meanwhile, our hub and lateral style or Vortech™ distribution system within the corrosion resistant tanks maximize flow while reducing pressure loss through the units. Designed for use in commercial, industrial or domestic water applications.

As we remain **Committed to Innovation, CSI** provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation or a new construction project, replace or integrate new equipment into an existing process, we have the proper system options available to meet your needs.

COMMERCIAL MULTI-TANK SOFTENERS

	Service GPM		Peak	Backwash	Pipe Size NPT		Grains Exch Cap @ # Salt	Resin Tank			Brine Tank			Overall Ht
MODEL NUMBER	15 PSI LOSS	8 PSI LOSS	25 PSI LOSS	Flow GPM	Ctrl Valve Conn Size	Drain Line	Maximum Minimum	Resin Vol. cf / tank	Softener DIA x HT	Qty tanks	Brine DIA x HT	Salt # \ tank	Qty tanks	
CAT60-10	18	13	23	2) 5	1"	1/2"	60,000 GR @ 30 # 40,000 GR @ 12 #	2 cf	14" x 65"	2	18" x 40"	300#	1	72"
CAT60-15	28	20	40	2) 5	1 1/2"	1"							1	73"
CAT90-10	17	12	22	2) 5	1"	1/2"	90,000 GR @ 45 # 60,000 GR @ 18 #	3 cf	14" x 65"	2	18" x 40"	300#	1	73"
CAT90-15	27	19	37	2) 5	1 1/2"	1"							1	73"
CAT120-10	17	12	24	2) 7	1"	1/2"	120,000 GR @ 60 # 80,000 GR @ 24 #	4 cf	16" x 65"	2	24" x 50"	700#	1	72"
CAT120-15	29	21	40	2) 7	1 1/2"	1"							1	72"
CAT120-20NT	46	34	63	2) 7	2"	1"							2	77"
CAT150-15	33	24	44	2) 10	1 1/2"	1"	150,000 GR @ 75 # 100,000 GR @ 30 #	5 cf	18" x 65"	2	24" x 50"	700#	1	75"
CAT150-20NT	50	37	66	2) 10	2"	1"							2	80"
CAT210-15NT	35	25	45	2) 12	1 1/2"	1"	210,000 GR @ 105 # 140,000 GR @ 42 #	7 cf	21" x 62"	2	24" x 50"	700#	1	75"
CAT210-20NT	59	43	76	2) 12	2"	1"							2	79"
CAT300-20NT	66	48	89	2) 15	2"	1"	300,000 GR @ 150 # 200,000 GR @ 60 #	10 cf	24" x 72"	2	30" x 50"	1000#	2	87"
CMS300-203QDNT	132	96	178	3) 15	2"	1"				3			3	87"
CAT450-20NT	81	59	101	2) 25	2"	1"	450,000 GR @ 225 # 300,000 GR @ 90 #	15 cf	30" x 72"	2	30" x 50"	1000#	2	95"
CAT450-30NT	151	110	201	2) 25	3"	2"				2			2	96"
CMS450-203QDNT	162	118	202	3)25	2"	1"				3			3	95"
CMS450-303QDNT	302	220	402	3) 25	3"	2"				3			3	96"
CMS450-304QDNT	453	330	603	4) 25	3"	2"				4			4	96"
CAT600-20NT	86	63	106	2) 35	2"	1"	600,000 GR @ 300 # 400,000 GR @ 120 #	20 cf	36" x 72"	2	42" x 60"	2900#	2	97"
CAT600-30NT	176	129	236	2) 35	3"	2"				2			2	98"
CMS600-203QDNT	172	126	212	3) 35	2"	1"				3			3	97"
CMS600-303QDNT	352	258	472	3) 35	3"	2"				3			3	98"
CMS600-304QDNT	528	387	708	4) 35	3"	2"				4			4	98"
CAT900-30NT	186	136	248	2) 50	3"	2"	900,000 GR @ 450 # 600,000 GR @ 180 #	30 cf	42" x 72"	2	50" x 60"	4100#	2	110"
CMS900-303QDNT	372	272	496	3) 50	3"	2"				3			3	110"
CMS900-304QDNT	558	408	744	4) 50	3"	2"				4			4	110"
CAT1200-30NT	196	143	257	2) 70	3"	2"	1,200,000 GR @ 600 # 800,000 GR @ 240 #	40 cf	48" x 72"	2	50" x 60"	4100#	2	107"
CMS1200-303QDNT	392	286	514	3) 70	3"	2"				3			3	107"
CMS1200-304QDNT	588	429	771	4) 70	3"	2"				4			4	107"

Duplex CAT-series - Twin Demand Alternating Tank Operation, 24v electronic timer and turbine meter
(One tank is in operation and one tank is in standby/regeneration at all times)

- 1" One Valve/One Meter with hard pipe connection to off-tank manifold
- 1-1/2" One Valve/One Meter with hard pipe connection to off-tank manifold
- 2" One Valve per Tank/One Meter per system with Electronic Interconnect
- 3" One Valve per Tank/One Meter per system with Electronic Interconnect

Triplex/Quad - "QDNT" Progressive Flow Electronic Phased Operation, 24v electronic timer and turbine meter
Electronic timers on up to 4 softeners can be linked and programmed for optimal treatment over highly variable and high flow rate applications. Systems operators program the flow rates at which each tank enters/leaves service mode. System is interlocked, allowing only one tank to regenerate at a time (immediate regeneration). Flow rates shown are assuming one tank is off-line for regeneration.
(1, 2, 3, or 4 tanks in operation depending on flow rate and regeneration status)

OPERATING INFORMATION

For use on Potable Water Only
Do not use on microbiologically unsafe or unknown quality water
Installation must comply with state and local plumbing/electrical codes
120v/24v CUL/UL listed transformer included with electronic meter systems
Tank warranty void if subject to vacuum
Low flow channeling – less than .5 gpm/cu. ft. resin – may cause hardness leakage

Water Temperature Range	35º – 110ºF
Ambient Air Temperature Range	35º – 120ºF
Operating Pressure Range	20 – 125 psi
Electronic Requirements	110v/60Hz
Influent Turbidity	5 NTU
Influent Chlorine	1 ppm max.
Iron/Manganese	< 5 ppm

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

Automatic Water Filters

STANDARD FEATURES

- High Flow Control Valves thru 3”– 140 gpm/tank
- Up to 24 cu.ft. Media per Tank
- Maximum Operating Pressure – 125 psi/110º F
- Fleck™ Top-Mount Control Valves on Most Units
- Raw Water Backwashing – Raw Water Bypass
- Premium Grade and NSF Approved Media
- All Wetted Components are NSF Approved
- Upflow Filters Available for pH Adjustment or Organic
- Removal/
- Dechlorination - No Backwashing

OPTIONS

- Clean Water Backwash
- No Raw Water Bypass
- Clack™ Control Valves
- Steel and ASME rated Pressure Vessels
- Flow Management with Motorized Ball Valves or Staged Diaphragm Valves
- Water Quality Monitor and Pressure Loss Initiated Backwashing
- Special Media for Custom Applications
- Side-mount Control Valves
- Electronic Control Valves

COMMERCIAL

TYPICAL USE

- Pretreatment for Other Processes
- Hospitals
- Food/Beverage Mfg.
- Hotels/Motels
- Apartments/Condos
- Nursing Home/ Assisted Living
- Laundry Facilities
- Food Service
- Truck/Car Washes

Automatic backwashing and upflow water filters are the answer for solving common water quality problems. Only the highest quality, proven media and controls are used in CSI Automatic Water Filters; for removal of taste, odor, color, sediment, low pH and iron. Our motor-driven piston control valve is the most reliable under even severe water conditions and resists common adversaries such as dirt, iron and turbidity. Meanwhile, our Vortech™ or hub and lateral style distribution system within the corrosion-resistant tanks maximize flow while reducing pressure loss through the units. Designed for use in commercial, industrial or domestic water applications.

As we remain **Committed to Innovation, CSI** provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation or a new construction project, replace or integrate new equipment into an existing process, we have the proper system options available to meet your needs.

Commercial Automatic Filters

	BACKWASH			Service GPM						Pipe Size NPT		Filter Tank	Media
MODEL NUMBER	GPM A	GPM B	GPM C	Cont. A	Cont. B	Cont. C	Peak A	Peak B	Peak C	Service Conn Size	Drain Line	Size Dia. X Ht.	C.F. / Tank
CWF40_-10	12	15	20	7	7	14	11	14	21	1"	3/4"	16"x 65"	4
CWF40_-15										1 1/2"	1"		
CWF50_-10	15	20	25	9	9	18	15	18	27	1"	3/4"	18"x 65"	5
CWF50_-15										1 1/2"	1"		
CWF70_-10	20	25	35	12	12	N/A	20	20	N/A	1"	3/4"	21"x 62"	7
CWF70_-15					12	24		24	36	1 1/2"	1"		
CWF100_-15	25	30	45	16	16	31	25	31	47	1 1/2"	1"	24"x 72"	10
CWF140_-15	40	50	N/A	25	25	N/A	39	50	N/A	1 1/2"	1 1/4"	30"x 72"	14
CWF140_-20	40	50	70	25	25	39	39	50	59	2"	2"		
CWF180_-20	60	70	N/A	35	35	N/A	56	70	N/A	2"	2"	36"x 72"	18
CWF180_-20WSH	60	70	105	35	35	71	56	70	106	2"	2"		
CWF240_-20	80	100	N/A	48	48	N/A	77	84	N/A	2"	2"	42"x 72"	24
CWF240_-30WS	80	100	140	48	48	96	77	84	144	3"	3"		

▲ Letter(s) at this location indicates MEDIA; Refer to "Media Options" below. Example "CWF40F-10" is Filter-AG unit.

Commercial Upflow Filters (Neutralizer Only)

MODEL NUMBER	Service GPM	Pipe Size	Tank Size	Media CF/Tank
CU40N-10	11	1"	16"x 65"	4
CU50N-10	15	1"	18"x 65"	5
CU70N-10	16	1"	21"x 62"	7
CU70N-20	19	2"		
CU100N-10	17	1"	24"x 72"	10
CU100N-20	25	2"		
CU140N-20	39	2"	30"x 72"	14
CU180N-20	56	2"	36"x 72"	18

NOTICE - Always consider BACKWASH flow rate required; multiple tanks may be required.

MEDIA OPTIONS

Media	Application	BW Column	Cont. Flow	Peak Flow
F = Filter-AG	Turbidity, Sediment, etc.	A	A	A
N = Neutralizer	Acidic Water (from 5.8 pH)	B	A	A
C = Carbon	Chlorine, VOC, Taste,Odor,Color	A	B	B
B = Birm	Iron (up to 5 ppm)	B	B	B
FP = Filter-AG Plus	Turbidity, Sediment, etc.	C	C	C

EQUIPMENT SIZING AND SELECTION

1. Select type of Media appropriate on the installation
2. Use appropriate Flow Rate Column listed in the media section below
3. Match pump flow rate (or city supply) with the BACKWASH column specified

OPERATING INFORMATION

For use on Potable Water Only
Do not use on microbiologically unsafe or unknown quality water
Installation must comply with state and local plumbing/electrical codes
Tank warranty void if subject to vacuum

Water Temperature Range	35º – 110ºF
Ambient Air Temperature Range	35º – 120ºF
Operating Pressure Range	20 – 125 psi
Electronic Requirements (for CWF Series)	110v/60Hz

REACTR™ Treatment Systems

STANDARD FEATURES

- Catalog Systems to 200 gpm
- Aeration via Ambient Air – NO CHEMICALS
- Closed Pressure and Atmospheric Systems
- Maximum Operating Pressure – 125 psi/110º F
- Fleck™ Top-mount Control Valves
- Aeration Manifold Assembly Machined from Solid PVC Barstock
- Automatic Self-Regulating Air Volume Control
- Reactr™ Blend Filter Media*
- No Raw Water Bypass

OPTIONS

- Clean Water Backwash
- Clack™ Control Valves
- Multiple Aeration Tank Sizes
- Chemical Injection Ports on Aeration Manifold
- Forced Air Injection for Variable Speed Well Pump Systems
- Side-mount Control Valves
- Flow Management with Motorized Ball Valves or Staged Diaphragm Valves
- Water Quality Monitor Initiated Regeneration
- Custom Designed Systems
- Various Filter Medias as alternate to REACTR™ Blend
- Steel and ASME Rated Pressure Vessels
- Electronic Control Valves

TYPICAL USE

- Large Scale Irrigation
- Public Water Systems
- Dairy Operations
- Industrial Pre-treatment
- Hotels/Motels
- Apartments/Condos
- Nursing Home/ Assisted Living
- Laundry Facilities
- Food/Beverage Mfg.
- Livestock Operations
- Schools
- Hospitals

Our REACTR™ Treatment System incorporates aeration technology that efficiently mixes ambient air with water under pressure to convert iron, manganese and hydrogen sulfide gas to filterable particles. The REACTR™ eliminates the associated stains, taste and odor while eliminating sediment problems and neutralizing low pH on influent water. Only the highest quality controls and materials are used. Our motor-driven piston control valve is the most reliable under even severe water conditions and resists common adversaries such as dirt, iron and turbidity. Designed for use in commercial, industrial or domestic water applications.

As we remain Committed to Innovation, CSI provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation or a new construction project, replace or integrate new equipment into an existing process, we have the proper system options available to meet your needs.

******REACTR™ Blend* is the media used on the listed standard models. *REACTR™ Blend* is a proportioned mix of three proven filter medias that provide a spectrum of filtering capabilities for a wide range of water problems.

COMMERCIAL

Commercial REACTR™ Treatment System

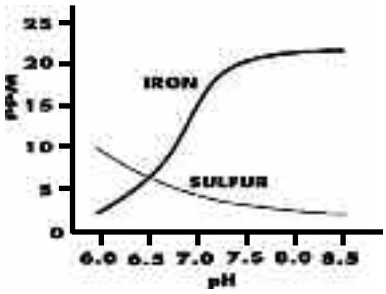
MODEL NUMBERS		Service GPM		Backwash	Pipe Size NPT		Filter Tank		Cu.Ft. Media
PRESSURE SYSTEMS	VARIABLE SPEED SYSTEMS	Continuous Flow Rate	Peak Flow Rate	Flow GPM	Ctrl Valve Conn Size	Drain Line	Tank Size	Tank Qty	Per System
CRF25-102	CRF25-102VS	9	14	7	1"	3/4"	13"x 54"	2	5
CRF40-102	CRF40-102VS	14	20	12	1"	3/4"	16"x 65"	2	8
CRF50-102	CRF50-102VS	18	22	15	1"	3/4"	18"x 65"	2	10
CRF70-102	CRF70-102VS	24		20	1"	3/4"	21"x 62"	2	14
CRF50-103	CRF50-103VS	30		15	1"	3/4"	18"x 65"	3	15
CRF70-103	CRF70-103VS	36		20	1"	3/4"	21"x 62"	3	21
CRF100-153	CRF100-153VS	45		30	1 1/2"	1 1/4"	24"x 72"	3	30
CRF140-152	CRF140-152VS	50		45	1 1/2"	1 1/4"	30"x 72"	2	28
CRF100-154	CRF100-154VS	60		30	1 1/2"	1 1/4"	24"x 72"	4	40
CRF180-202	CRF180-202VS	70		65	2"	2"	36"x 72"	2	36
CRF140-153	CRF140-153VS	75		45	1 1/2"	1 1/4"	30"x 72"	3	42
CRF240-202	CRF240-202VS	100		90	2"	2"	42"x 72"	2	48
CRF140-154	CRF140-154VS	100		45	1 1/2"	1 1/4"	30"x 72"	4	56
CRF180-203	CRF180-203VS	105		65	2"	2"	36"x 72"	3	54
CRF140-155	CRF140-155VS	125		45	1 1/2"	1 1/4"	30"x 72"	5	70
CRF180-204	CRF180-204VS	140		65	2"	2"	36"x 72"	4	72
CRF240-203	CRF240-203VS	150		90	2"	2"	42"x 72"	3	72
CRF180-205	CRF180-205VS	175		65	2"	2"	36"x 72"	5	90
CRF240-204	CRF240-204VS	200		90	2"	2"	42"x 72"	4	96

Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

Iron and Sulfur Removal



For effective Iron and Sulfur removal, your ppm's must be on or below these curves

Additional equipment is required for water containing organic and/or bacteria versions

For “Pressure System” models, at rated GPM, the inlet PSI at the Reactr Tank must be at least 25 PSI higher than max PSI at service. If supply pump cannot achieve this pressure, then use “Variable Speed Systems”

If needed, pH can be increased by injecting soda ash or caustic into the Reactr Tank Manifold

Periodic replenishing of the Neutralizer in the filter tanks will be required for water less than 7.0 pH (normally 6 to 12 months, depending on influent pH)

HydroxR™ Treatment Systems

STANDARD FEATURES

- Combines Aggressive Pressurized Aeration with the Oxidation Power of Hydrogen Peroxide (H2O2)
- Treats Extreme Levels of Iron, Manganese & Sulfur
- Disinfection Properties to Treat Iron, Manganese & Sulfur Bacteria
- Catalog Systems to 105 gpm
- Catalog Models for Pressure Systems (traditional 3450 rpm Submersible Pumps)
  -or- Clean Water Backwash Systems (Installed Ahead of Atmospheric Tank)
  -or- Pressure Variable Speed System (Constant Pressure, Jet Pumps or Other Low Inlet Pressure Applications)
- Maximum Operating Pressure – 125 psi/110º F
- Fleck™ Top-mount Control Valves
- Aeration Manifold Assembly Machined from Solid PVC Barstock
- Automatic Self-Regulating Air Volume Control
- Filter-Ag Plus® Filter Media
- No Raw Water Bypass
- Chemical Feed Pump & Solution Tank

TYPICAL USE

- Large Scale Irrigation
- Public Water Systems
- Dairy Operations
- Industrial Pre-treatment
- Hotels/Motels
- Apartments/Condos
- Nursing Home/ Assisted Living
- Laundry Facilities
- Food/Beverage Mfg.
- Livestock Operations
- Schools
- Hospitals

OPTIONS

- Clack™ Control Valves
- Multiple Aeration Tank Sizes
- Extra Chemical Injection Ports on Aeration Manifold
- Side-mount Control Valves
- Flow Management with Motorized Ball Valves or Staged Diaphragm Valves
- Water Quality Monitor Initiated Regeneration
- Custom Designed Systems, for Higher Flow Rates
- Various Filter Medias
- Steel and ASME Rated Pressure Vessels
- Electronic Control Valves

Our **HydroxR™ Treatment System** combines aggressive aeration technology with the oxidation power of hydrogen peroxide for treatment of virtually unlimited levels of iron, manganese and sulfur gas.
At the same time, bacteriological forms of these constituents are controlled without the creation of chemical byproducts, contact tanks or the on going maintenence of rebedding carbon filters.
The included chemical feed pump package is equipped with a Degas head for self-priming operation. Only the highest quality controls and materials are used. Our motor-driven piston control valve is the most reliable under even severe water conditions and resists common adversaries such as dirt, iron and turbidity. Designed for use in commercial, industrial or domestic water applications.
As we remain **Committed to Innovation, CSI** provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation or a new construction project, replace or integrate new equipment into an existing process, we have the proper system options available to meet your needs.

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 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

Commercial HydroxR™ Treatment System

MODEL NUMBERS		Service GPM		Backwash	Pipe Size NPT		Filter Tank		Cu.Ft. Media
PRESSURE SYSTEMS	VARIABLE SPEED SYSTEMS	Continuous Flow Rate	Peak Flow Rate	Flow GPM	Ctrl Valve Conn Size	Drain Line	Tank Size	Tank Qty	Per System
CUTP25-102	CUTP25-102VS	9	14	13.5-15	1"	3/4"	13"x 54"	2	5
CUTP40-102	CUTP40-102VS	14	20	20	1"	3/4"	16"x 65"	2	8
CUTP50-102	CUTP50-102VS	18	22	25	1"	3/4"	18"x 65"	2	10
CUTP40-103	CUTP40-103VS	21	24	20	1"	3/4"	16"x 65"	3	12
CUTP50-103	CUTP50-103VS	30		25	1"	3/4"	18"x 65"	3	15
CUTP70-153	CUTP70-153VS	36		35	1 1/2"	1 1/4"	21"x 62"	3	21
CUTP100-153	CUTP100-153VS	45		45	1 1/2"	1 1/4"	24"x 72"	3	30
CUTP100-154	CUTP100-154VS	60		45	1 1/2"	1 1/4"	24"x 72"	4	40
CUTP140-203	CUTP140-203VS	75		70	2"	2"	30"x 72"	3	42
CUTP140-204	CUTP140-204VS	100		70	2"	2"	30"x 72"	4	56
CUTP180-203	CUTP180-203VS	105		105	2"	2"	36"x 72"	3	54

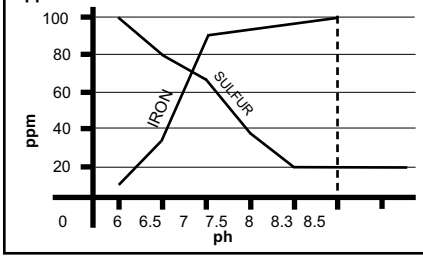
Manganese Removal

HydroxR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
5:1	7.0
1:1	7.8
0:1	8.3

Iron and Sulfur Removal

For effective Iron and Sulfur removal, your ppm's must be on or below these curves



- For "Pressure System" models, at rated GPM, the inlet PSI at the HydroxR™ Tank must be at least 25 PSI higher than max PSI at service. If supply pump cannot achieve this pressure, then use "Variable Speed Systems"
- If needed, pH can be increased by injecting soda ash or caustic into the HydroxR™ Tank Manifold

OPERATING INFORMATION

For use on Potable Water Only
Do not use on microbiologically unsafe or unknown quality water
Installation must comply with state and local plumbing/electrical codes
Tank warranty void if subject to vacuum

Water Temperature Range	35° – 110°F
Ambient Air Temperature Range	35° – 110°F
Operating Pressure Range	20 – 125 psi
Electronic Requirements	110v/60Hz

Reverse Osmosis Systems

STANDARD FEATURES

- Pre-Packaged Assembled Plug'n'Play Install
- Powder-Coated/Epoxy Steel Frame
- Small Footprint per Daily Gallon Capacity
- 304/316* Stainless Steel Multi-Stage Pump
- PVC Pressure Vessels
- High Rejection TFC Cold Water Membranes
- 5 Micron Sediment Pre-Filter
- Low Pressure Switch
- Permeate/Concentrate Pressure Gauge & Control Valve Package with Flow Meters
- Concentrate Recycle Valve & Flow Meter
- Low Pressure with Inlet Solenoid
- * - 316 thru 8K gpd; 304 at 10K gpd & Larger

OPTIONS

- Digital TDS Monitor/Controller
- RP or Stainless Steel Pressure Vessels
- Pump Discharge Pressure Gauge
- Automatic Fast Flush
- Atmospheric Storage Tank with Floats
- Pressurized Storage (3 tank sizes)
- Atmospheric Storage with Dispenser
- Brackish Water/Sea Water Applications
- System thru 400 gpm

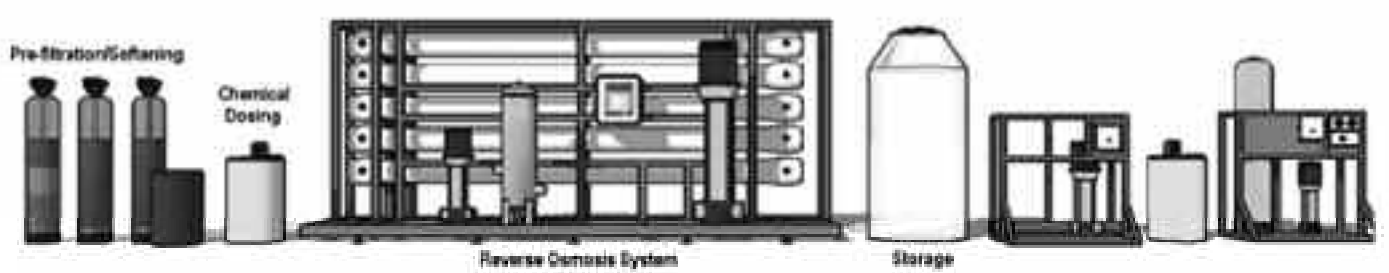
TYPICAL USE

- Restaurants
- Hospitals/Labs
- Industrial Processes
- Manufacturing
- Whole House
- Livestock
- Nursing Home/ Assisted Living
- Laundry Facilities
- Car Washes
- Convenience Stores

The **Reverse Osmosis (RO)** process uses a semi-permeable membrane to separate and remove Total Dissolved Solids (TDS), organics and submicron colloidal matter from the water. A high pressure RO pump is used to force raw water through the multi-layered membrane, leaving the impurities behind (concentrate) while creating pure water (permeate). Pre-treating the raw water with filtration and/or softening before the RO is commonly required. Reverse Osmosis is capable of removing 95 – 99% of the TDS from raw water.

As we remain **Committed to Innovation, CSI** provides the design and engineering support to ensure the most effective treatment solution for each installation. For a stand-alone installation on a new construction project, replacing existing equipment or integrating new equipment into an existing process, we have the proper system and equipment options available to meet your need.

Reverse Osmosis System Specifications



COMMERCIAL

Model#	GPD Production - 1000 TDS/°F			Inlet FPT	Outlet FPT	Motor		Membrane		Dimensions
	77°F	60°F	45°F			HP	Volt*	Size	Qty	HxWxL - inches
EPRO-150	150	117	93	1/2"	1/2"	1/3	115	2.5"X14"	1	53"X17"X17"
EPRO-250	250	195	155	1/2"	1/2"	1/3	115	2.5"X21"	1	53"X17"X17"
EPRO-600	600	468	372	1/2"	1/2"	1/3	115	2.5"X40"	1	53"X17"X20"
EPRO-1200	1,200	936	744	1/2"	1/2"	1/2	115	2.5"X40"	2	53"X17"X24"
EPRO-1500	1,500	1,170	930	3/4"	1/2"	1	230	4"X40"	1	53"X20"X26"
EPRO-3000	3,000	2,340	1,860	3/4"	1/2"	1	230	4"X40"	2	53"X20"X26"
EPRO-4500	4,500	3,510	2,790	3/4"	1/2"	1.5	230	4"X40"	3	53"X20"X26"
EPRO-6000	6,000	4,680	3,720	3/4"	3/4"	3	230	4"X40"	4	53"X20"X26"
EPRO-8000	8,000	6,240	4,960	3/4"	3/4"	3	230	4"X40"	5	53"X20"X26"
EPRO-10000	10,000	7,800	6,200	1.5"	1"	5	230	4"X40"	6	48"X64"X26
EPRO-11500	11,500	8,970	7,130	1.5"	1"	5	230	4"X40"	7	48"X64"X37"
EPRO-13000	13,000	10,140	8,060	1.5"	1"	5	230	4"X40"	8	48"X64"X37"
EPRO-14500	14,500	11,310	8,990	1.5"	1"	5	230	4"X40"	9	48"X64"X37"
EPRO-16000	16,000	12,480	9,920	1.5"	1"	5	230	4"X40"	10	48"X64"X37"
EPRO-17500	17,500	13,650	10,850	1.5"	1"	5	230	4"X40"	11	48"X64"X37"
EPRO-19000	19,000	14,820	11,780	1.5"	1"	7.5	230	4"X40"	12	48"X64"X37"
EPRO-20500	20,500	15,990	12,710	1.5"	1"	7.5	230	4"X40"	13	48"X64"X37"
EPRO-21500	21,500	16,770	13,330	1.5"	1"	7.5	230	4"X40"	14	48"X64"X37"

* - volt and phase options available

MODEL SELECTION CRITERIA

1. Type of raw water – Tap/Well Water (up to 2,000 TDS), Brackish Water (up to 10,000), Sea Water
2. Quality of Product Water Required – High Purity, Potable, Process (define target TDS/conductivity)
3. Volume of Product Water Required – gallons per day or gallons per minute
4. Installation Environment – atmospheric storage, re-pressurization, pressurized storage, custom

SYSTEM OPERATION PARAMETERS

Complete water analysis required for model and option selection

- System rated capacity above based on feed water with 1,000 TDS and temperature of 77ºF
- Inlet feed water pressure a minimum of 50 psi at 120% treated water flow rate demand
- 110-220VAC/ 60Hz /1Ph electrics up to 6,000 gpd; 230-460VAC/60Hz/3Ph for 10,000 gpd and larger
- Non-detectable levels of oxidizing disinfectants (chlorine, etc.) and hydrogen sulfide
- Ensure sufficient space available for removing/replacing membranes; refilling chemical solution tanks

DESIGN ADVANTAGES

1. Single Power Point for RO Machines
2. Skid Envelope Protects Major Components
3. Simple-to-operate Controls for all System Functions
4. Easy Startup, Commissioning & Maintenance
5. Configured by Our Application Engineers to Meet Your Specific Requirements (You Don't Buy What You Don't Need)
6. Conponents Integrated into a Simple to Install and Operate Unit
7. Solid Hydraulic Design Protects Your Investment
8. All RO Units are Tested Prior to Shipment

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

Technical Section

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I. General Information

The **REACTR™** Water Treatment System is a revolutionary product that has the capability of removing ***Iron, Manganese, Turbidity, Sulfur and other Gases***, improving taste, odor and color while also adjusting upwardly the pH of acid water. It does all of these things, under proper conditions, without the use of chemicals and/or regenerants like salt, chlorine and potassium permanganate.

The only maintenance required for most installations is an occasional backwashing which is done automatically. Most systems will require backwashing only once or twice in a six day period as you will see in the chart shown later in this technical information guide.

The key to a successful installation is, of course, having the proper water testing, water pumping system, equipment selection and installation. We hope to provide you with as much of this information as possible throughout the next few pages. Let's first see how the **REACTR™** accomplishes its task of providing naturally treated water.

II. REACTR™ : How Does It Work?

Please look over Typical Installation Figure 1 on the next page before we begin studying the various functions of the system.

As we discuss the functions, we will move from the left to right on the diagram. Please refer to the circled letters within the figure of each component part or portion of the system we are discussing as shown alphabetically below.

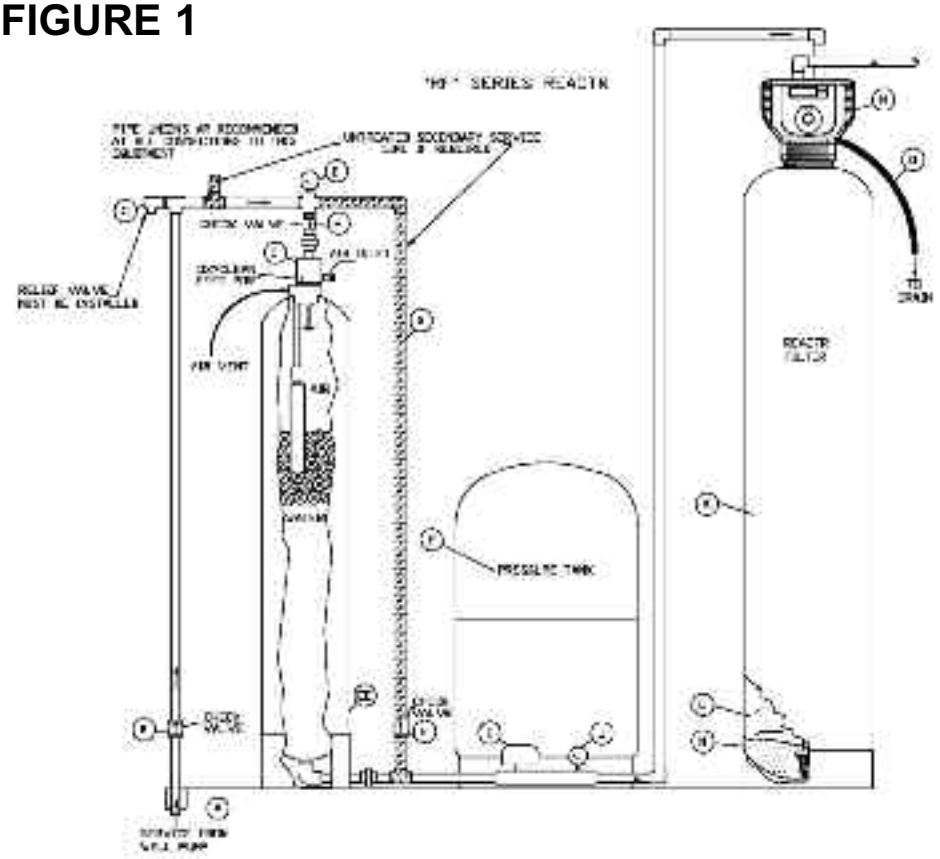
A. **Pump** - Since the **REACTR™** requires both sufficient flow and pressure to operate, you should generally limit installations to only those jobs where you have a submersible pump that has been properly sized for the well. There are only a few exceptions to this general rule that we will discuss later, but for most all cases, limit your installations to submersible pumps. Generally, jet pumps do not provide both flow and pressure in combination to let the **REACTR™** Manifold {E} work properly. If you do have a job that is to be treated where a jet pump is involved, either include a new submersible with the installation or contact your distributor or the CSI factory for acceptable non-submersible applications.
NOTE : REACTR™ cannot be used with constant pressure pump systems!! (Consult factory for details).

B. **Check Valve** - It is recommended that a check valve be installed above ground as a back-up to the well check. In the event the primary check valve fails, the above ground check will prevent a back flow of water down the well. This could cause a negative pressure situation which can collapse the **REACTR™** tanks. This cannot be covered under the standard warranty if this occurs.

C. **Pressure Relief Valve** - This is an optional piece of equipment that should be installed between the pump and the **REACTR™** tank. The relief valve will protect the system from an over pressure situation. A relief valve with a minimum 125 psi blow off should be used.

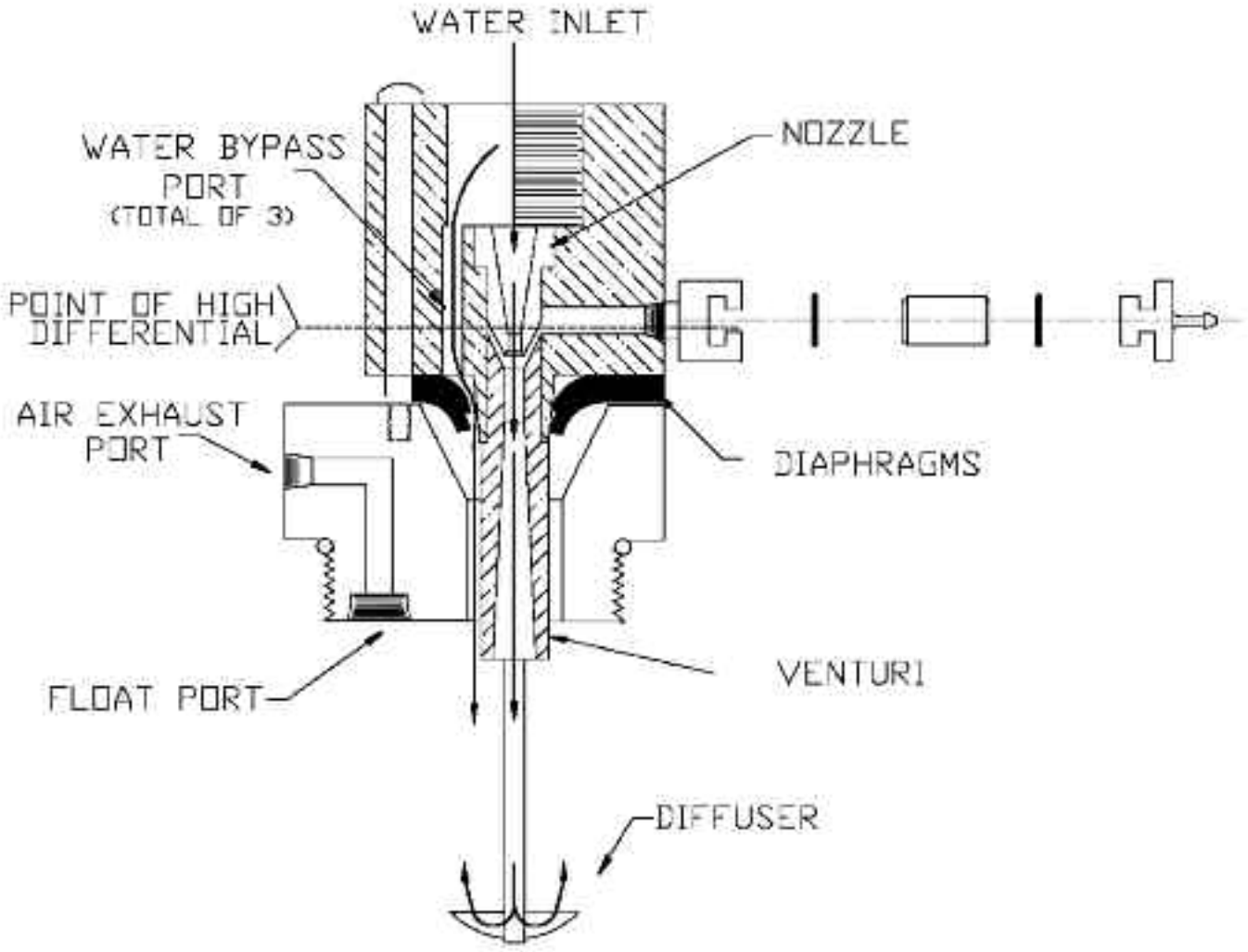
D. **Pressure Gauge** - It is highly recommended that a gauge be installed at this location for the purpose of reading actual head pressure being delivered from the pump during the pump cycle. A gauge at this location will be invaluable if later troubleshooting of the system is required.

FIGURE 1



E. **REACTR™** Tank Manifold - The **REACTR™** Tank Manifold is a special device designed and manufactured by CSI that brings air into the water system. This is where actual "treatment" of the water begins. This air starts the ***oxidation*** process of producing physical particles that will be trapped by the filter portion of the system. The relatively high pressure and flow delivered by the pump, compared with the lower system pressure (i.e. 30/50 psi switch setting), causes a point of low pressure and suction in the center of the **REACTR™** Tank Manifold. This suction is what draws air into the system through the air intake valve check located on the side of the **REACTR™** manifold.

FIGURE 2



The water flowing into the **REACTR™** Tank Manifold is somewhat restricted in the nozzle section. When the nozzle receives sufficient pressure, suction is then created at the point the water leaves the nozzle and enters the opening of the venturi section. This is where the air is pulled into the water flow. If there is more than the required amount of water flow entering the nozzle (5 gpm), a certain amount will go around the nozzle through the bypass ports. This prevents an unnecessary loss of flow and pressure while the pump is operating. This occurs automatically and does not require adjustments. The bypass water then rejoins the main stream of flow at the end of the venturi, where it mixes with the water flow that received the air injection. This mixing point assures that all of the water comes into contact with the air. (See Figure 2.)

The amount of differential pressure generally required to operate the **REACTR™** manifold is 20 psi. Consider this number as a constant in all residential systems. You can actually determine the air draw into the system by following this example :

How To Calculate Air Draw

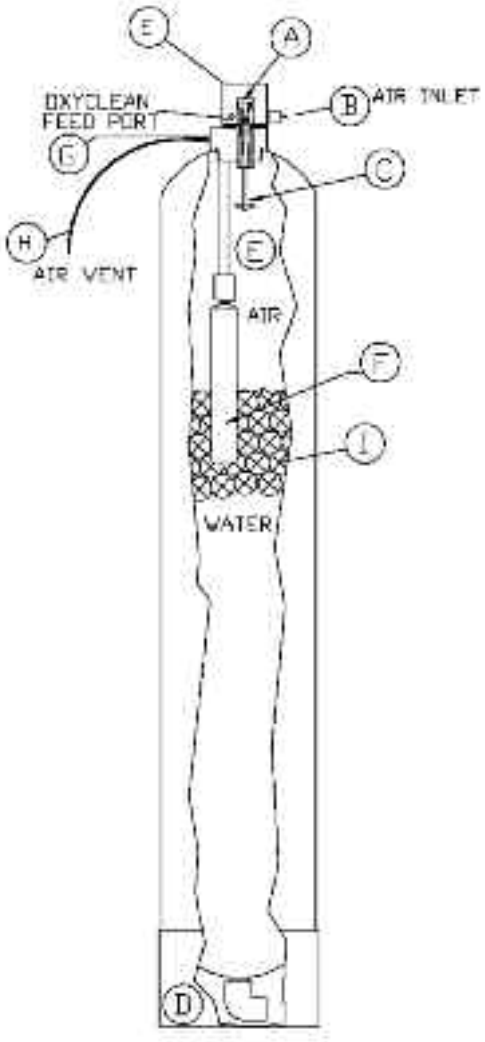
Simply determine the ***Head Pressure (Gauge*** {D}) offered by the pump and subtract the constant of 20# differential required to operate the **REACTR™** manifold. The answer you get will tell you the point at which the **REACTR™** manifold will ***stop*** drawing air. This pressure number is the pressure seen on gauge {J} - system pressure. If ***Head Pressure*** (gauge {D}) is 65 psi on a 30/50 system ...

65 psi (Gauge {D})
- 20 psi (Differential Constant)
45 psi (Will draw air to this system pressure)

In this case, air will be drawn by the **REACTR™** manifold from 30 psi to 45 psi (on gauge {J}) or 75% of the pump cycle.

As a general rule, we want to have at least a 25% air draw at the **REACTR™** manifold. The higher level of contamination in the water, the more air draw we need. You will find that most properly sized submersibles will easily give you from 50% to 100% air draw.

FIGURE 3



EE. **REACTR™ Tank** - This tank is critical to the operation of the **REACTR™** System. All water and excess air that is taken into the water system by the **REACTR™** manifold passes through this tank on its way to the pressure tank and then the **REACTR™** Filter. There are certain dynamics that occur in this tank which move contaminants closer to a fully oxidized state. Let's discuss just how the **REACTR™** tank works.

As we continue with the **REACTR™** tank, please refer to Figure 3. As water flows from the well pump and enters the **REACTR™** tank manifold {E}, the nozzle/venturi section {A} creates a suction and draws air into the water through the air intake valve check {B}. The valve check body is constructed of Isoplast™ and is totally serviceable. The inner valve check assembly is sealed on either side by Viton O-rings located in the cap and body utilizing a Hastelloy spring, and seals with a small Viton O-ring. To access the inner valve check, push in forcefully on the cap and turn 1/4 turn to the left. A minimum flow of 5 gpm is required to satisfy the nozzle/venturi section of the **REACTR™** manifold. Once the center nozzle/venturi section is satisfied with flow, any flow over 5 gpm will be automatically bypassed through the three bypass holes located around the outer perimeter of the nozzle/venturi section. This bypass flow will rejoin the aerated water on the outlet side of the **REACTR™** tank manifold. The combined air / water mixture then forcefully contacts the **REACTR™** diffuser {C} where the high level of free air separates and remains in the top section of the **REACTR™** tank. Water and contaminants move downwardly to the bottom of the tank {D} and exit towards the filter. After a short time, there will be a full head of air in essence **Aerating** the water as it sprays out away from the diffuser. This aeration process is very effective because air is forced into the water due to the fact that the **REACTR™** tank is under full line pressure. This is superior to atmospheric aeration due to the speed and efficiency that contaminants (e.g. iron and sulfur) are oxidized.

As more and more excess air is trapped in the top section {E} of the **REACTR™** tank, the water level moves lower in the tank. This is what we call the **maturity** level in the **REACTR™** tank. When additional air is introduced into the **REACTR™** tank thereafter, the water level falls and the weighted float inside the float guide {F} drops momentarily allowing a proportionate amount of air to escape from the **REACTR™** tank manifold through the exhaust vent {G} and out the air vent line {H} to a drain. When sufficient air has vented to allow the water level to rise back to the maturity point, the water rising allows the float to become buoyant once again. The float then closes off the exhaust vent so that air is kept in the **REACTR™** tank.

It is an important safety measure to run the exhaust vent line to a drain. Normally, there will be a very small amount of water discharged with the air as the system vents. However, in the event that the float malfunctions and stays "open", water will continuously run through this line until the float returns to shut-off or a repair is made. **Always** run this vent line to a drain to prevent flooding should a problem arise. The exhaust vent line can be run outside as long as measures are taken to prevent the line from freezing shut during cold weather. It is important to mention that if the **REACTR™** is being used to treat hydrogen sulfide gas (H2S), the air will oxidize most of the gas to a particle of elemental sulfur. Consequently, very little smell, if any, will be experienced out of the air vent line.

To this point, the contaminants in the raw water have been forced through the nozzle/venturi section of the **REACTR™** tank manifold where they are exposed to compression/decompression, a massive quantity of air, and forcefully at full pump flow diffused through the head of air in the top of the **REACTR™** tank. By this time, significant oxidation has occurred. But there is yet another function to be performed by the **REACTR™** tank. Notice the plastic air stripping balls {I} located in the **REACTR™** tank. These balls do not perform filtration, but serve to accomplish two other functions. Precipitated contaminants (e.g. ferric and manganic hydroxides) will form a thin coating on the surface of the air stripping balls. As the water / contaminant mixture moves over the balls on it's way to the bottom outlet of the **REACTR™** tank, the coating of oxidized contaminants on the balls chemically assists yet unoxidized contaminants to move closer to a fully oxidized state by a chemical process called **sorbing**.

The second function of the air stripping balls is to further mix the dissolved oxygen with the water and to help hasten the oxidation of certain gases (e.g. hydrogen sulfide). Due to the large openings in these balls, the water is **sheared** as it passes through them, and allows for a thorough mixing of oxygen, water and the separation of excess gases. As we continue our discussion, please refer back to Figure1.

F. **Pressure Tank** - All **REACTR™** Systems will require a pressure tank, unless installed ahead of an atmospheric storage tank. In the case of an atmospheric storage tank, the system will need to be configured for clean water backwash or a change in pump wiring will need to be done to provide pump flow for backwashing purposes. (Contact the factory or your sales representative for details.) Due to the fact that all the excess free air is being exhausted prior to the pressure tank, either a precharged diaphram / bladder type or air-to-water lined galvanized tank may be used.

G. ***Split System*** - If a secondary service line (split system) is to be installed ahead of the **REACTR™** tank to provide untreated water (e.g. irrigation, outside faucets, etc.), it is highly recommended that a bypass line be installed between the **REACTR™** tank and the pressure tank. This will allow draw down from the pressure tank to ***bypass*** the **REACTR™** tank until the pressure switch closes and turns the pump on providing true raw water to the secondary service line.

Note : In most irrigation applications, the well pump will be oversized to provide adequate flow for both the irrigation system and the home. In these cases, a **REACTR™** Manifold with a larger venturi/nozzle size will probably be required. (e.g. 10 gpm or 15 gpm). This will prevent high head pressure from developing when the irrigation system is not in use.

H. ***Check Valve*** - A one way check valve should be installed at the two locations shown. This will prevent free air from escaping the **REACTR™** tank into the secondary service line and also provide one way passage of flow from the pressure tank when secondary service is operated.

I. ***Pressure Switch*** - This is any good quality pressure switch usually preset to the 30 / 50 psi range. Remember that the point at which the pressure switch senses pressure must ***always*** be located ***after*** the **REACTR™** tank so that it reads ***SYSTEM*** and not pump head pressure.

Note : If it is ever desired to change the pressure switch setting (cut on / cut off), ***always*** drain the system and change the precharge in the pressure tank to 2 psi ***below*** the cut on pressure (e.g. 40 /60 setting - precharge = 38 psi). This is extremely important as maximum draw down, pump run time and contact time will be achieved.

J. ***Pressure Gauge*** - This is the gauge that shows current ***system*** pressure. It is the difference between this gauge and gauge {D} that will show you differential pressure for any given water system.

K. **REACTR™** ***Filter Tank*** - The filter tank serves several important functions. Its primary purpose is to trap the physical particles (e.g. ferric hydroxides and elemental sulfur) that have been produced by the oxidation process. We have simply taken unfilterable ***dissolved solids*** and converted them by an oxidation process to precipitated and filterable ***suspended solids***. In most cases, the particles are trapped on the surface and in the top portion of the mineral bed {L}.

L. The mineral bed of the **REACTR™** consists of a proportioned mixture of three (3) proven filter medias known as **REACTR Blend™** . The three media are:

Filter Ag™
Neutralizer
Birm™

This media is coarsely blended by CSI and serves the following functions. The entire bed provides excellent mechanical filtration due to the angular / granular nature of the individual minerals.

Filter Ag™ - Specifically, Filter Ag™ is non-hydrous aluminum silicate. It's only function is that of mechanical filtration.

Neutralizer - Neutralizer is a carefully graded white marble (calcium carbonate). It's primary function is to elevate the pH level of the filtered water by a slow, dissolving process. If the pH is below 7.0 (acidic), it will be raised to 6.8 - 7.2 pH depending on the raw water pH and the flow rate (contact time) through the system. If this is the case, then periodic replenishing of the neutralizer will be required.

Birm™ - The Birm™ is an active, insoluble catalyst that utilizes dissolved oxygen in water to convert clear iron and manganese to a filterable state. It serves as an "insurance policy" in the filter bed during peak demand periods to remove traces of iron and manganese in the event that they were not fully oxidized prior to entry into the filter bed.

NOTE : If sulfur gas is the primary water quality problem, the following filter media may be used instead of **REACTR™ Blend** to protect against breakthrough of odor and possible damage to the **REACTR™ Blend** media:

1. **Manganese Greensand** - A specially formulated media used in the oxidation of iron, manganese and sulfur gas. Minimum pH of the raw water should be 6.8 for effective results.

2. **MTM™ Media** - Uses the identical process as Manganese Greensand for the oxidation of iron, manganese and sulfur gas. This media is much lighter in weight which allows for a more thorough backwashing of the filter.

NOTE : When using either of these medias, an initial activation with potassium permanganate ($KMNO_4$) will be required. Consult the **REACTR™** Installation Instructions for the recommended method. Also, the Oxyclean Option (discussed in Section III) is strongly advised to help keep the media in an activated state by adding chlorine during the backwash cycle.

3. **Granular Activated Carbon** - This media will reduce synthetic organics also. Media should be replaced every 2-4 years.

M. ***Vortech™ Distributor Plate*** - Beneath the **REACTR Blend™** filter media {L} is the Vortech™ Distributor plate. The purpose of the Vortech is to permit even flow of the water during both ***service*** and ***backwash*** modes. Also, the Vortech™ provides a vigorous backwash helping to clean the filter media bed. **No gravel underbedding required!**

N. ***Filter Control Valve*** - The Filter Control Valve is used for the automatic cleaning (backwashing) of trapped oxidized contaminants from the filter. The control valve does this by directing the flow of water ***backwards*** through the filter, thus purging the contaminants from the tank and also reorienting the filter bed. This ***backwash*** water is then directed out of the control valve drain line {O}. After the backwash cycle is complete, the control valve will then direct the flow downwards through the filter tank ***(rapid rinse)***, recompacting the mineral bed and flushing any "dirty" water from the bottom section of the filter. During the backwash cycle, water is available to the house but will be ***untreated***. That is why the **REACTR™** control valve is factory preset to activate the backwash cycle at 12:00 a.m. on a night it is scheduled. Backwash frequency can be estimated using the formula below:

Combined iron and manganese removal for
REACTR™ Filter = 15,000 ppm per cu. ft. of filter media

Example :
Model - RF15
Qty. of Media - 1.5 cu. ft.
Iron / Manganese Content - 5 ppm
Number of People in Family - 4
Estimated Water Usage - 75 gals. per person per day

Total iron / manganese removal before backwashing is required :
1.5 cu. ft. x 15,000 ppm / cu. ft. = 22,500 ppm

Estimated water usage :
4 people x 75 gpd = 300 gals. per day

Iron / manganese removal per day :
300 gpd x 5 ppm = 1,500 ppm / day

Required backwash frequency :
22,500 / 1,500 ppm / day = **15 days**

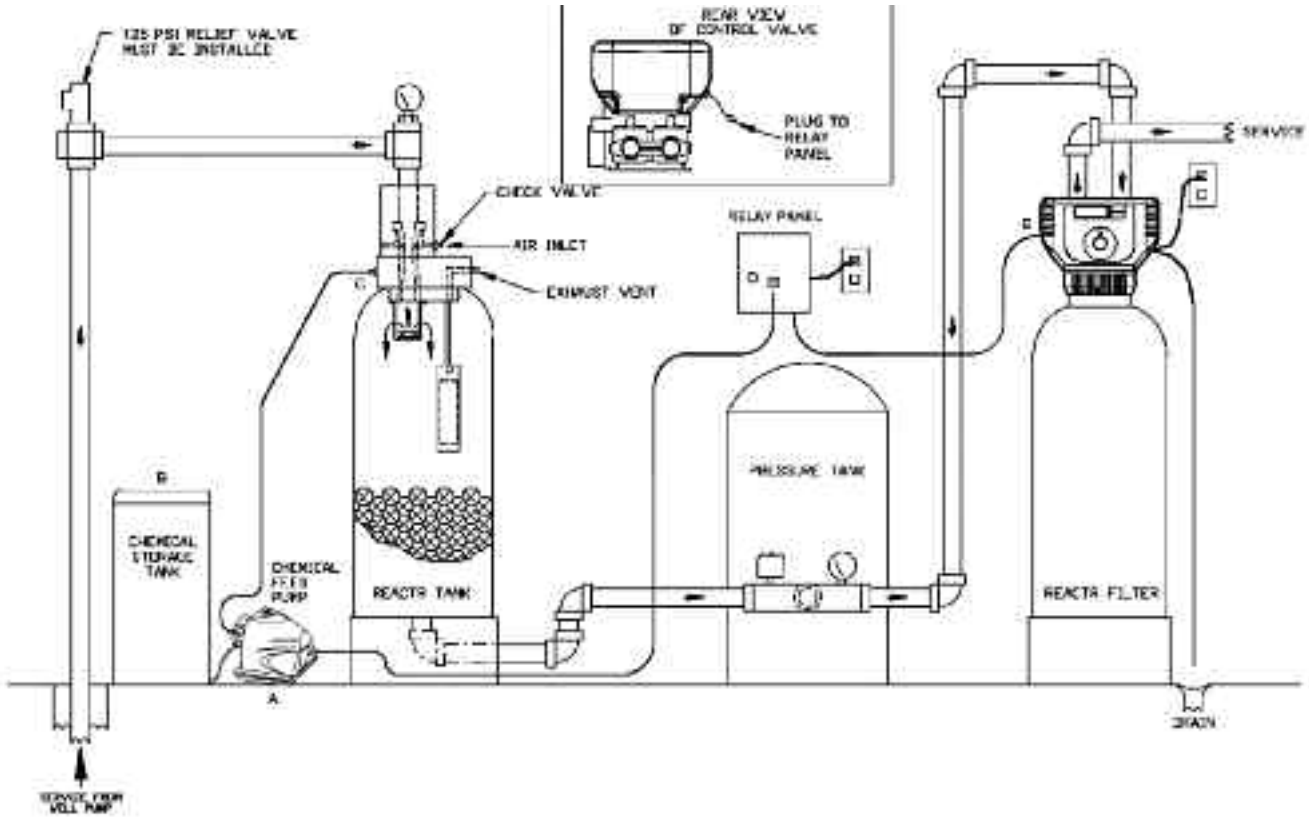
The required backwash frequency in this example is every 15 days. We want to backwash a minimum of every 6 days to assure orientation of the filter bed. Program the *Signature Series* control valve for every 6 days in this example.

Note : For sulfur gas removal, frequency of backwash should be accomplished twice as often as for iron / manganese. Also, if tannins and / or bacteria versions of these contaminants are involved, the **OXYCLEAN™** Option should be added to the system and backwash frequency increased to every 3 - 4 days.

The *Signature Series* Control is provided as the standard valve for the **REACTR™** System. It provides excellent backwash flow characteristics required for proper cleaning of the filter. It also features adjustable cycle length times (backwash and rapid rinse) for versatility when well capacities may be at a minimum. Also, the *Signature Series* control will ***motor*** to each position to provide full flow for the entire cycle duration. This provides for a better backwash and will help keep oxidized contaminants from collecting inside the valve by keeping water velocities high. For more information about operation and service of the *Signature Series* control valve, please consult the *Signature Series* Service Manual.

O. ***Drain Line*** - During any backwash cycle, water will automatically be directed through the **REACTR™** filter and out the drain line. A 1/2" I.D. by 5/8" O.D. clear drain line attached to the drain line hose barb is normally used. ***DO NOT*** use flimsy tubing that will kink, reducing drain line flow. Only semi-rigid drain tubing should be used. By removing the drain line hose barb, a 1/2" drain line can also be hard plumbed in PVC or copper. The drain line should be kept as short as possible and the diameter of the line should ***never*** be decreased to less than that of the hose barb provided with the filter. Decreasing the diameter will result in a back pressure situation due to friction loss and can result in insufficient backwashing. A 4" ***air gap*** should also be maintained to prevent a possible syphoning of water standing in the drain back into the filter.

FIGURE 4



III. **The OXYCLEAN™ Option** - Please refer to Figure 4 before we begin studying the function of the **OXYCLEAN™**.

The **OXYCLEAN™** is an optional piece of equipment that can be added to any new or previously installed **REACTR™** System. **OXYCLEAN™** is designed to introduce chlorine automatically during the backwash cycle for cleaning and disinfecting of the entire system.

In cases of iron bacteria or tannins that can cause fouling of the filter media or heavy iron (over 5 ppm) that can cause pipe plugging problems, the **OXYCLEAN™** Option can drastically reduce service calls associated with these situations.

The **OXYCLEAN™** Option includes the following items :

A. ***OXYCLEAN™ Feed Pump*** - The **OXYCLEAN™** Feed Pump is designed to deliver chlorine into the system during the backwash cycle. It is of a peristaltic design, so ball type check valves that usually require maintenance are not required. The head tubing is made of heavy duty Norprene™ for long life. Pump RPM and tubing size is factory designed to deliver eight (8) ounces of solution in a typical ten (10) minute backwash cycle. Consequently, there are no settings or adjustments required for the pump during or after installation. Because of the peristaltic design, the pump is totally self priming and will only require a short run time to fill the outlet tubing on initial installation. The pump is designed to set on the floor adjacent to the solution tank. This will provide flooded suction to the pump, although the pump may be elevated, if need be. The **OXYCLEAN™** pump is designed for 120 V / 60 Hz power and is plugged into the front of the **OXYCLEAN™** relay panel. **NOTE : *It is recommended that the Oxyclean Pump Tubing be replaced every 1 - 2 years. One (1) extra pump tube is included.***

B. ***OXYCLEAN™ Solution Tank*** - The **OXYCLEAN™** Solution Tank is designed to store chlorine for the **OXY-CLEAN™** pump. It has a five (5) gallon capacity and includes a tube lok type bulkhead fitting where the **OXY-CLEAN™** pump inlet tubing (lower fitting) is to be connected. Fill the **OXYCLEAN™** Solution Tank with straight 6.0% laundry bleach. Do not dilute with water. Chlorine bleach can lose it's strength over a period of time, so it is suggested to fill the solution tank with two to three gallons of bleach as this will last approximately six to eight months, depending on the frequency of backwash. A gravity overflow elbow is installed and 1/2” I.D. x 5/8” O.D. tubing should be attached and run to a drain.

C. **OXYCLEAN™ *Injection Check Valve*** - A 1/4" MNPT plastic pipe plug is threaded into the **manifold base** on every **REACTR™** system shipped. Depressurize the system, remove the pipe plug and carefully thread the **OXY-CLEAN™** Injection Check Valve (included with the installation kit) into the 1/4" port. Tighten the check valve by ***HAND ONLY!*** The outlet tubing (upper fitting) from the pump should then be connected to the injection check valve.

D. **OXYCLEAN™ Relay Control Panel** - A relay control panel is included to provide 120V power to the **OXY-CLEAN™** pump when signaled by the *Signature Series* Control Valve during backwash. The relay panel should be mounted in close proximity to the **REACTR™** system. The 120V power cord from the relay panel should be plugged into a 120V wall receptacle with the patch cord connected to the pigtail cord located on the right side of the *Signature Series* Control Valve.

E. *Signature Series* **Control Valve** - Every **REACTR™** System shipped is equipped with a pigtail cord located on the right side of the **REACTR™** *Signature Series* Control Valve. The control valve is designed with an internal contact that will close providing power to the relay panel only during the backwash cycle. To complete the **OXYCLEAN™** installation, simply insert the patchcord from the **OXYCLEAN™** relay panel into the pigtail and plug the **OXYCLEAN™** feed pump power cord into the receptacle located on the front of the relay panel. Then plug the relay panel power cord into a 120V wall receptacle. Backwashing frequency should be set to every 3 - 4 days.

The cycle times on all **REACTR™** *Signature Series* Control Valves will need to be changed to the following:

Oxyclean Cycle Time Settings

Backwash	10 minutes
Rest Period	20 minutes
Rapid Rinse	16 minutes
Total	46 minutes

By setting the first rest period to 20 minutes in length, we are able to achieve the contact time needed for chlorine disinfection. Setting the rapid rinse cycle to 16 minutes will assure that all chlorine residual is flushed from the system.

IV. ***Contaminants In Water***

It is critical that the water to be treated with any water treatment equipment be analyzed so that a proper selection of equipment can be made. Although **REACTR™** handles a wide variety of contaminants, there are certain things to keep in mind to insure a successful installation. The following is a discussion of various contaminants as they relate to **REACTR™**.

A. ***Iron*** - Concentrations of iron as low as .30 ppm can cause staining of fixtures and laundry. **REACTR™** can remove various types of iron up to a maximum raw water content of 20 ppm under suitable conditions. (See Figure 6.) Iron occurs in water in two basic forms;

1. Dissolved Solids - clear or ferrous iron
2. Suspended Solids - red or ferric iron

If you will remember, our goal with the **REACTR™** is to convert dissolved solids to suspended solids for removal by the filter media. In the case of clear or ferrous iron, the oxygen introduced by the **REACTR™** manifold starts the oxidation process, which will in essence turn the iron to a physical, rusty particle. The red or ferric iron is virtually ready for mechanical filtration since it is already precipitated.

B. ***Iron Bacteria*** - Bacterial forms of iron are non-pathogenic organisms that thrive off of the energy created by the oxidation of iron and manganese. Since the **REACTR™** oxidizes ferrous iron (clear) to ferric iron (red), iron bacteria in the water supply can adversely affect the operation of the system. In ***light*** to ***moderate*** amounts, the **REACTR™** can usually be successful in treating iron and associated iron bacteria, if the **OXYCLEAN™** Option is included with the system. When chlorine bleach is used, the **OXYCLEAN™** will inject solution during the back wash cycle only. This will allow for chemical free treatment of the potable water while adding chemistry during backwash to keep the **REACTR™** System clean and disinfected. Where heavy amounts of iron bacteria are encountered, a **HydroxR™** system will probably be recommended. If iron bacteria is suspected, shock treatment of the well and plumbing system prior to installation of equipment is advised.

NOTE : If a red slime type growth is observed in the water closet of a flush type toilet or growth is noted in a sample of water after a few days, iron bacteria is likely present in the water supply.

C. ***Manganese*** - Concentrations as low as .05 ppm of manganese can cause dark brown or black stains that ruin clothing and fixtures and can adversely affect the color and taste of foods and beverages. Fortunately, its occurrence in heavy concentrations is limited. There are certain things to remember when attempting to remove manganese with a **REACTR™**. When manganese occurs, there is usually iron also present. When iron is present, it assists with the oxidation of manganese from the manganous (dissolved) to the manganic (precipitated) state. If there is a 10:1 ratio of iron to manganese and there is sufficient air being drawn into the system by the **REACTR™** manifold, the **REACTR™** will not have trouble removing it. For example, if there is 5.0 ppm of iron, up to .5 ppm of manganese can be removed without concern unless the pH of the water is extremely low (we will discuss this later). If the pH is at normal (7.0) or above and air is being drawn from 80% - 100% of each pump cycle, a minimum of a 5:1 ratio may be possible. If a water supply contains manganese with no iron present, a different treatment approach must be taken. In this case, the pH of the water should be raised above 8.3 by use of a chemical feed pump feeding soda ash or caustic soda or if hardness is present, a water softener may be the best choice. Manganese by itself in water is extremely difficult to oxidize unless the pH level is significantly into the alkaline range. (See Figure 5.) If questions arise regarding a particular manganese situation, contact your distributor or CSI for assistance.

D. ***Turbidity*** - This is nothing more than physical particles suspended in water. Concentrations of a unit measure over 1 NTU is cause for treatment. Particles can be sand, silt, scale, precipitated oxides, etc. Their removal with a **REACTR™** is assured due to the granular media in the filter tank.

E. ***Taste / Odor / Color*** - The **REACTR™** is capable of improving the taste, odor and color of water due to the multiple functions it performs. Many of these problems are corrected due to contact with air and the mechanical filtration of organic particles. The application is wide ranging but efficient removal is determined by the root cause of such problems.

F. ***Sulfur*** - This term is what most people refer to when there is a rotten egg smell in their water supply. It is due to the presence of hydrogen sulfide gas. Concentrations as low as .05 ppm are offensive to many people. Additionally, sulfur corrodes copper, iron and brass and causes black stains on fixtures and clothing. It also affects the taste, odor and color of foods and beverages. **REACTR™** is capable of handling concentrations of up to 10 ppm. The air introduced into the system at the **REACTR™** manifold, the aeration in the **REACTR™** tank and the scrubbing that occurs in the system, all contribute to the oxidation and conversion of hydrogen sulfide gas to elemental sulfur particles. These particles are then removed by the filter media. Although hydrogen sulfide gas can be oxidized at a pH level above neutral (7.0), it occurs much more readily at a pH level below 7.0. (See figure 6.) The basic thing to remember about sulfur removal with **REACTR™** is ... the more sulfur you have, the more air you need to be rid of it.

G. ***Gases*** - Due to the high levels of air introduced into the system and the aeration and venting nature of the **REACTR™** tank, low levels of certain gases like methane, natural gas and radon gas can be driven out of the water system. Proper venting of the system is critical to prevent an explosive situation from developing. Consult CSI before attempting to handle elevated concentrations of these gases.

H. ***pH*** - The pH of water is a measure of its acidity or alkalinity. As you may have guessed by reading about the other contaminants above, pH plays a great role in the successful removal of iron, manganese and sulfur. Water with a pH less than 7.0 is considered acidic ... with a pH above 7.0, alkaline. Water with a pH level at 7.0 is neutral. The further away from 7.0 on either scale, the more acidic or alkaline it becomes. Acidic waters are corrosive and can literally destroy plumbing and appliances and can cause significant staining of fixtures. The **REACTR™** automatically corrects the problem of low pH by two methods. Firstly, a high level of carbon dioxide in water can form carbonic acid which obviously lowers the pH to an acid condition. When the carbon dioxide is exposed to air (oxygen) intake at the **REACTR™** manifold and additional exposure to air in the **REACTR™** tank, the carbon dioxide level is reduced, making the water less corrosive. Secondly, as the water enters the filter media, the neutralizer material in the bed is dissolved in the water thus raising the pH level even further. If the pH of water to be treated is below 7.0, additional neutralizer material will have to be added to the filter tank. The frequency of adding media is in direct relation to the pH level and the volume of water being used. In a normal home, frequency of adding material will range from 12 months to two years.

I. ***Hardness*** - The **REACTR™** System is not capable of removing hardness (calcium and magnesium ions) from water. Hardness is very objectionable due to its tendency to clog piping, cause white deposits on fixtures, create soap scum in laundry and bathing as well as increasing the operating and maintenance costs of hot water heaters. Generally, a level of 3.5 grains per gallon (gpg) or above in the water supply should be treated. A water softener will need to be installed ***after*** the **REACTR™** if hardness is a problem.

J. ***Tannins*** - Decayed organic matter in water is what is commonly referred to as tannins or humic acid. Present in some water supplies, they can be clear or impart a light brown color and can cause problems with any oxidizing filter. Levels above .5 ppm can begin to form a viscous, sticky coating on the filter media granules. This coating can impair the removal of precipitants and slow, if not halt, the correcting of the pH. The effect of tannins on the **REACTR™** vary widely due to their diverse nature. On water containing over 2 ppm, it is advisable to contact CSI before proceeding with the installation. The **OXYCLEAN™** Option would be recommended where tannins are concerned.

V. ***Equipment Selection Procedure***

We have reviewed how the **REACTR™** works and discussed the various contaminants that can be present in a given water supply. Let's proceed with the proper method for selecting the correct equipment for the job. Please review the specification charts below and the contaminant matrix chart (Figure 6) for **REACTR™** capabilities.

General Specifications	RF10	RF15	RF20	RF25	RF30	RF40
Filter Media Type	**REACTR™** Blend					
Filter Media Capacity (cu ft)	1.00	1.50	2.00	2.50	3.00	4.00
REACTR™ Tank (polyglass)	9x48	9x48	9X48	9x48	16x40	16x40
Mineral Tank (Vortech™)	9x48	10x54	12X52	13x54	14x65	16x65
Service Flow Rate - Continuous (gpm)	4	5	6	8	9	11
Service Flow Rate - Intermittent (gpm)	6	7	8	10	11	13
Backwash Flow Rate (gpm)	5.0	5.0	6.0	7.0	10.0	15.0
Gallons Used / Backwash	100	100	120	140	200	300
Space Required (DxWxH inches) **REACTR™** Tank	9x9x62	9x9x62	9X9X62	9x9x62	16x16x51	16x16x51
Space Required (DxWxH inches) Filter Tank	9x9x56	10x10x62	12X12X60	13x13x62	14x14x73	16x16x74
Approximate Shipping Weight (pounds)	128	160	195	255	296	430

TECHNICAL

Manganese Removal

REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

If the Iron to Manganese ratio is:	Then the pH must be at least:
10:1	7.0
5:1	7.8
1:1	8.3
0:1	8.5

FIGURE 5

Iron and Sulfur Removal

For effective Iron and Sulfur removal, your ppm's must be on or below these curves

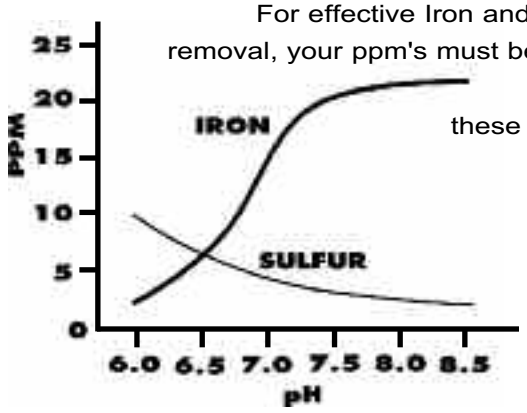


FIGURE 6

Step 1 : Perform a water analysis for concentrations of iron, manganese, sulfur (if ***rotten egg*** odor is detected), pH, hardness and tannins. Are all levels within the range of performance of the **REACTR™**? If not, contact your distributor or CSI for assistance.

Step 2: Determine the actual pumping capacity of the water system by following this procedure.

How To Determine True Pump Capacity

1, Open any faucet and run until pump turns ***on***.
2. Close faucet and let pump fill pressure tank and turn ***off***.
3. Open any faucet and collect ***all*** water discharged until pump turns ***on.****
4. When pump turns ***on***, ***IMMEDIATELY*** close faucet and ***start timing pump cycle***.
5. When pump turns ***off***, record cycle time to refill pressure tank (in seconds).
6. Measure total number of ***gallons*** collected in step # 3.
7. Divide the number of gallons collected in step # 3 by number of seconds in step # 5.
8. Multiply the answer derived in step # 7 by "60".
9. The answer in step # 8 is the true pumping capacity of the system.

Example : Number of ***gallons*** collected during draw down (step # 3) = 9
Number of ***seconds*** in pump cycle to refill tank (step # 5) = 72

GPM = (Gallons collected / seconds in cycle) x 60
GPM = (9 / 72) x 60
GPM = .125 x 60
GPM = 7.5

* Make certain no other water is being used in the system during the test!!

There are two reasons why the actual pumping capacity must be known before selecting equipment.

A. ***REACTR™ Manifold*** - The **REACTR™** Manifold must receive an adequate flow of water in order for it to work properly. The flow requirement is a minimum of 5 gpm.

B. ***Backwashing*** - The filter bed must receive an adequate flow of water in order to lift the contaminants from the filter bed during backwash. The requirements are shown under the "Backwash Flow Rate" section of the specifications chart.

Model # Series	Backwash Requirements
RF10	5.0 gpm
RF15	5.0 gpm
RF20	6.0 gpm
RF25	7.0 gpm
RF30	10.0 gpm
RF40	15.0 gpm

Now that the flow rate has been determined and you understand its importance, a **REACTR™** System can be selected. Below is a chart showing flow rate ranges and the **REACTR™** by model number series that would be proper.

Calculated Pump Flow Rate (gpm)

Model #	Minimum	Maximum
RF10	5.0	10.0
RF15	5.0	10.0
RF25	7.0	14.0
RF30	10.0	20.0
RF40	15.0	25.0
*(2) RF25	14.0	28.0
*(2) RF30	20.0	40.0
*(3) RF15	15.0	30.0
*(3) RF25	21.0	42.0
*(3) RF30	30.0	60.0
* In Parallel		

Note : It is advisable to contact your distributor or CSI when dealing with flow rates above 10 gpm.

VI. ***Installation Tips*** - Please consult the **REACTR™** Installation Instructions and *Signature Series*™ Service Manual for specific details on installation and service procedures. Call your distributor or CSI with any questions you may have.

A. Do a ***full*** water analysis.

B. Check the water closet of a flush type toilet for signs of bacterial growth (e.g. iron bacteria).

C. Refer to the **REACTR™** Matrix Chart (Figure 6) for contaminant limitations.

D. Do a pump capacity test.

E. Size the **REACTR™** System for the ***backwash flow requirement***.

F. If more ***service flow*** is required consider :
1. Use multiple residential systems in ***parallel.***
2. Add a large diaphram / bladder type pressure tank ***after*** the **REACTR™** (stored treated water).
3. Consider a small commercial system.

G. The **REACTR™** Filter will need to be loaded in the field. Always load media at the approximate location of installation, if possible.

H. ***Always*** plug the end of distributor tube with a cork or similar method to prevent media from entering tube.

I. Fill the mineral tank 1/3 with water before adding media to filter tank. Add water occasionally while filling media to help soak material.

J. ***Do not*** use petroleum based plumber's dope or O-ring lubricant on PVC / plastic parts or O-ring connections. ***Only Teflon*** based tape / paste and silicone O-ring lubricants are acceptable!

K. If sweat soldering copper pipe, protect control valve bypass and ***all*** plastic parts from heat damage.

L. If installing **REACTR™** tank using PVC pipe, solvent weld adapter ***before*** threading into **REACTR™** manifold to prevent cement from entering the venturi/nozzle section.

M. Never connect the drain line ***directly*** to a soil line! At least a ***4" air gap*** is required to prevent waste water backflow into the **REACTR™** filter.

N. If the drain line needs to be elevated and/or exceeds 20 feet in length, increase drain line diameter to 3/4".

O. ***Always*** install the **REACTR™** System ***before*** water softening equipment.

VII. ***Side Effects of Aeration*** - The following is an excerpt from the **What You Should Know About Your New REACTR™ Water Filter System** brochure that is included with every unit. We encourage the installing contractor to make certain the customer reviews this information ***before*** installation.

The **REACTR™** uses the air we breath to naturally reduce the effects of iron, manganese and sulfur gas. By introducing oxygen to water, contaminants chemically change to a physical particle that can be mechanically filtered out of the water. This natural process called ***Oxidation***, is usually accomplished in other systems by using chemicals such as chlorine or potassium permanganate. Since the **REACTR™** does not use chemicals to treat the water, maintenance and chemical byproducts associated with these types of systems are eliminated. The energy required to operate this system is provided by using extra power that is available in your well pump to inject free air into the water. There are several normal side effects that may or may not occur when water is treated in this manner:

1. ***Cloudy or milky appearance to the treated water*** - This side effect is usually more pronounced when the iron, manganese and sulfur gas levels are low. Since the **REACTR™** uses oxygen for the treatment of these contaminants, it can be expected to have some amount left over in the treated water. The higher contamination levels are, the less oxygen there will be. It is the oxygen that gives the cloudy or milky appearance. Once the faucet is opened and the water is drawn, pressure is released and allows the oxygen to escape. This usually will take from a few seconds to a minute depending on the amount of oxygen and the pressure. This noticeable side effect tells you the system is working properly and will actually enhance the palatability of the water. It's oxygen that gives water it's fresh, crisp taste.

2. ***Sputtering or slight coughing from the hot water side faucets*** - This is a normal phenomenon that usually occurs first thing in the morning. As the high oxygenated **REACTR™** water is exposed to heat in the hot water tank a small amount of oxygen will separate. The longer the water is allowed to sit in the hot water tank, the more this will be noticed.

   Usually, this will only occur if the hot water is allowed to sit idle for eight (8) hours or more. Consequently, when hot water is drawn after an extended period of no water use, a slight sputtering or coughing may be experienced for a few seconds. If this causes the hot water to splash out of the sink, the problem is reduced by simply turning on the cold water first and blending in the hot for several seconds. If there is a large amount of free air noticed on the ***cold water side***, there is a possible malfunction of the system and your CSI Dealer should be contacted to service the unit.

VIII. ***Summary*** - We have attempted to review the most pertinent technical information as it relates to understanding the **REACTR™** ***Water Treatment System***. This system will provide many years of service for the removal of the water contaminants we have discussed. Proper analysis, equipment selection and installation procedures are the critical keys to successful operation. Please refer to the **REACTR™** Instructions and *Signature Series* Service Manual for complete particulars on the proper steps for installation and troubleshooting.

- NOTES -

The following information is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE and CAPABILITIES: An ion exchange water softener is designed to remove (exchange) water hardness ions (calcium & magnesium) from water supplies using specialized softening resin as the catalyst and salt (sodium) as the regenerant. Water passes downwardly through the mineral bed where the ion exchange takes place. Softeners can easily remove upwards of 100 grains per gallon of hardness (depending upon the cubic foot capacity). They can also remove very high quantities (20 ppm+) of ferrous (clear water) iron and manganous (clear water) manganese. HOWEVER, making a softener work this hard may run you into problems of bed fouling and iron/manganese breakthrough. Additionally, the amount of salt required to regenerate resin where iron/manganese is concerned is four times that of hardness. Therefore, removing iron and manganese with a softener consumes a tremendous amount of salt and puts higher levels of sodium into the water . Standard cation exchange water softeners can also remove or reduce Aluminum, Copper {20%-90%}, Zinc, Radium, Barium, Beryllium, Cadmium, Chromium (+3), Lead {20%-90%}, Mercury (+2) {20%-90%}, Nickel and Thallium. **WARNING:** Although softeners can reduce the foregoing water constituents, do not make such claims regarding health-related contaminants. Attempting to handle such problems as those other than basic Hardness, Iron and Manganese requires special testing and equipment application. Always check with CSI before attempting anything other than standard applications!

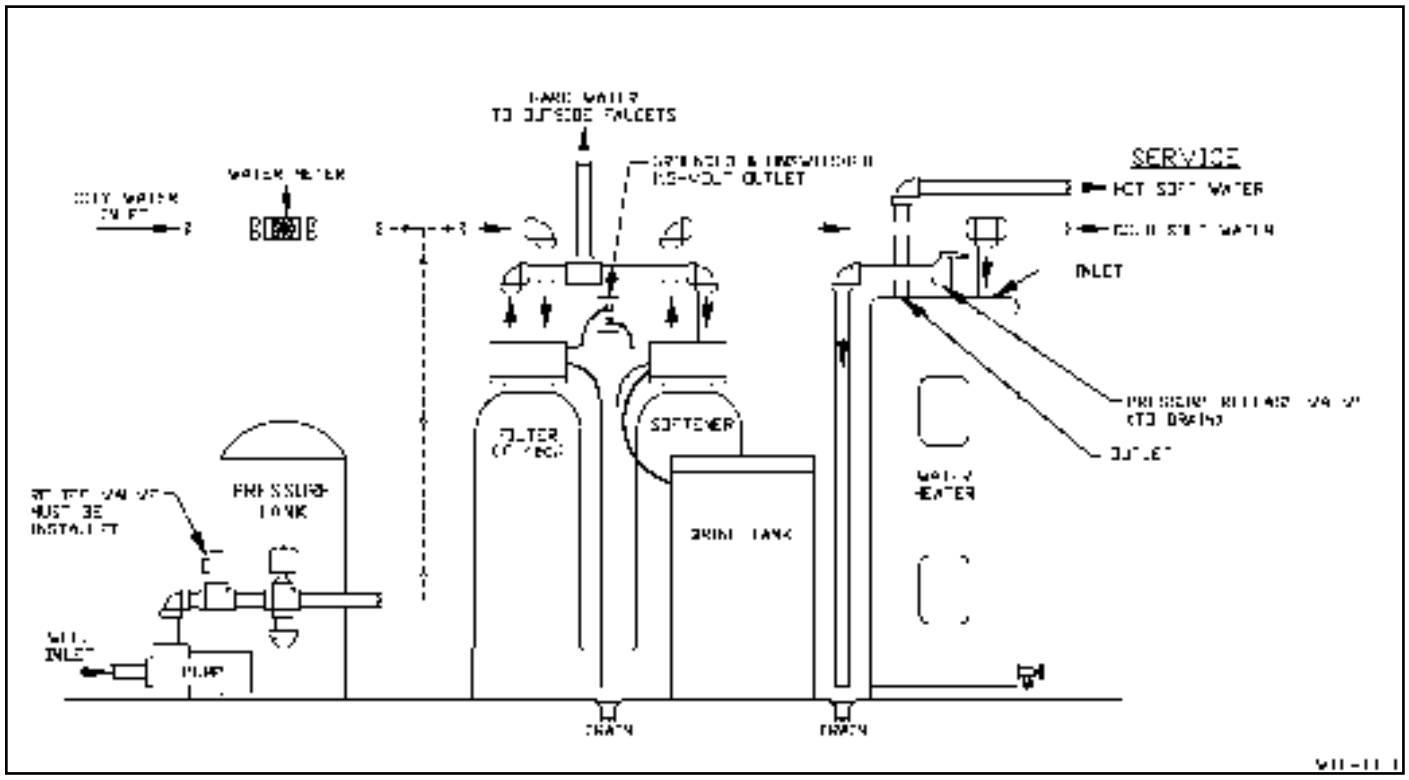
HARDNESS TABLE	
Soft	0 - 3.5 gpg
Moderately Hard	3.5 - 7.0 gpg
Hard	7.0 - 10.5 gpg
Very Hard	10.5+ gpg

NOTE: "gpg" means grains per gallon.

LIMITATIONS: Softeners cannot remove hydrogen sulfide, iron bacteria, tannins, foul tastes, odors & colors nor should they be used to remove anything other than very, very light sediment. Iron bacteria will eventually cause fouling and plugging of the bed. High levels of hydrogen sulfide and chlorine can damage the exchange capacity of the mineral beads. Various size units have different hardness, iron/manganese, service and backwash flow rates. Always consult the specification sheet in order to make a proper selection.

WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide {if rotten egg odor is present}; and 7) Chlorine {if on treated water supply}. Consult specification sheet to check for limtations.

INSTALLATION: Softeners should be installed on a level surface; on cold water line only; after filtration equipment; after outside sillcock lines; and, before the piping splits to the water heater. Below is a diagram of a typical installation.



Never elevate the mineral tank more than 1-2 feet above the brine tank so as not to cause problems with brine draw. Avoid installations in direct sunlight and where freezing may occur. Locate the unit near a 115V, unswitched outlet (except manual units that require no electricity) and near a drain. Where the drain line must be elevated above the system or runs for more than 20 feet, increase the drain line size to 3/4". NEVER decrease the size of the drain line! It is advisable (and code in most areas) that there be at least a 4" air gap between the drain and drain line. Check all local codes before installing equipment.

PROGRAMMING THE SYSTEM: After all plumbing has been completed according to the installation instructions, find the section in the instructions regarding programming the control valve. It is quite simple but you must first consult your water test results. You have determined the amount of hardness, iron, manganese, etc. Remember that iron and manganese must have special consideration. To calculate "Compensated Hardness," add the total of iron and manganese together and multiply by four (4). Add this answer to the amount of hardness (in grains per gallon) to arrive at compensated hardness. Use this number when programming either a Timeclock or Demand initiated control valve. It is always advisable to both disinfect the unit and test the system cycles. Consult the installation instruction manual.

REGULAR MAINTENANCE: All that's necessary for normal softener maintenance is to keep good quality softener salt in the brine tank. Where iron/manganese are also being removed, it is a good idea to occasionally use either a resin cleaner (Res-Up) or a bag of salt that has rust inhibitor in the formulation. Some prefer to use this type of salt instead of standard salt. That's fine, but it is more costly. If iron bacteria has entered the system, you will need to put the system through one or more regenerations using 5.25% sodium hypochlorite (standard household bleach). Adding a cup of bleach to the brine tank prior to regenerating will usually suffice. Should the system become terribly fouled, it may be necessary to remove the control valve, empty the resin and wash the beads in a stronger solution. It is also a wise move to clean the brine tank about once per year.

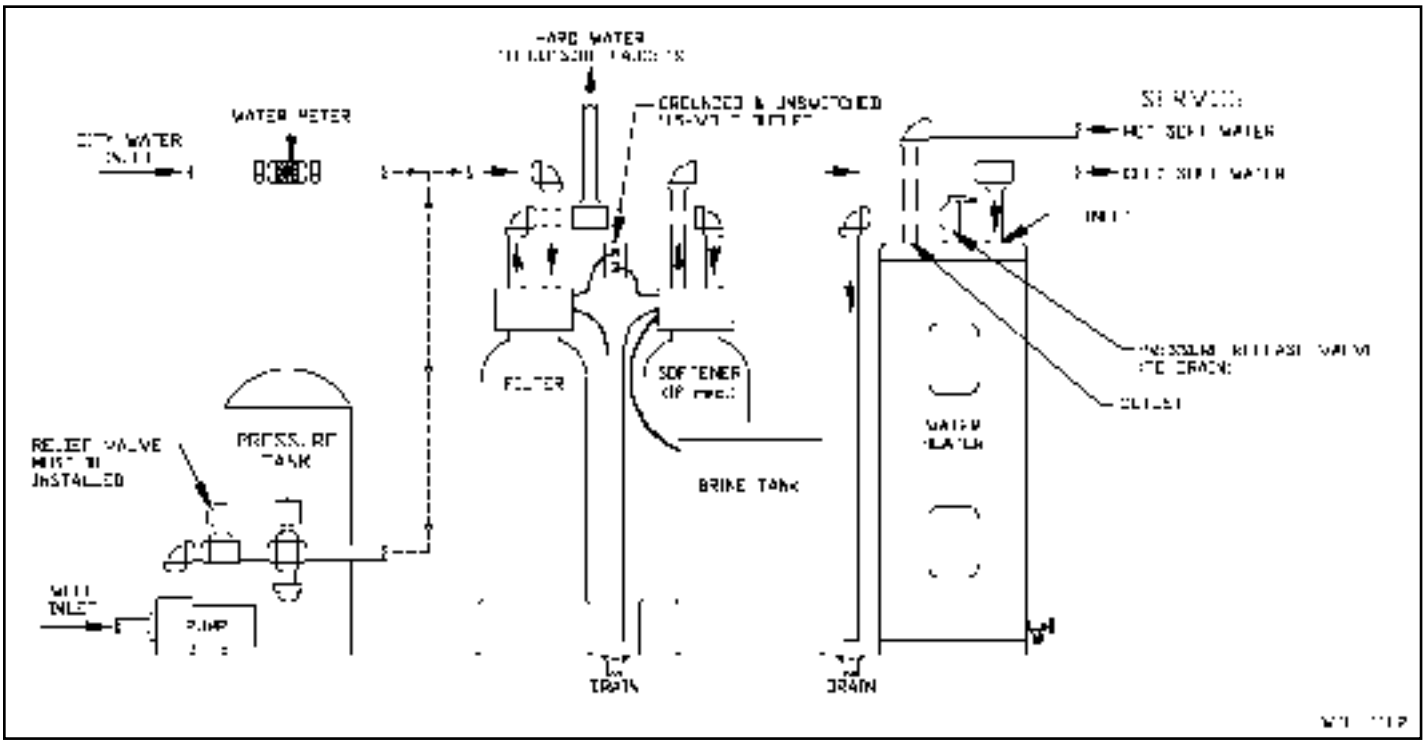
The following information is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE and CAPABILITIES: Standard whole house (point-of-entry) water filters can be used to solve many different water problems for the home, business or farm. All work on the same principle of downflow treatment. Filtration media are granular in design so that the granules nest tightly together to provide for excellent compaction and filtration. After a period of time, they simply backwash (upwardly through the media to drain). The differences are the size of tank and media selection. See the Filter Media Selection Guide for the various media and their applications. Residential filter tanks are available in 9, 10, 13, 14 and 16 inch diameters. All must have either a "D" gravel or Garnet Sand underbed to insure a proper distribution system for both service and backwash modes.

Various medias are available for handling problems such as Turbidity (sediment), Iron, Manganese, Hydrogen Sulfide, low pH, Taste, Odor, Color, Chlorine and Organics reduction. All but the Manganese Greensand units operate without the use of chemicals. They simply backwash, rinse then return to service position.

A specialized filter is the Upflow System. It has no control valve, instead, a simple "INLET" / "OUTLET' manifold. It works exactly the opposite of the standard "downflow" filters. Water enters the unit first running down the distributor tube then UP through the media. This means that it is not designed to handle sediment! Since the flow is upward, the granules do not compact to provide the desired straining effect needed for sediment removal. The only media that you would ever use in Upflow filters are Neutralizer and Activated Carbon. Again, refer to the Filter Media Selection Guide for more information on media selection. Always check with CSI before attempting anything other than standard
applications!

LIMITATIONS: An automatic downflow filter must have sufficient water flow rate supplied to it for proper backwashing to take place. It is, therefore, critical to test the output capacity of the pumping or water supply system before making a selection. It is often the case that filters require more water for backwash than they can offer in treated, service flow. Another limitation is that of service flow. If you attempt to get too much water through a filter, one of two things will
happen. First, the water may not be completely treated leaving stains, odors, etc. in the finished service water. Secondly, there may be tremendous pressure drop across the filter bed if too much water is forced through the filter. Proper sizing is critical! Check the individual specifications sheets for backwash requirements and service flows.



HOW TO DETERMINE PUMP CAPACITY

1. Open any faucet and run until pump turns “on.”
2. Close faucet and let pump fill pressure tank and turn “off.”
3. Open any faucet and collect all water discharged until pump turns “on.”
4. When pump turns “on,” immediately close faucet and start timing pump cycle.
5. When pump turns “off,” record cycle time to refill pressure tank (in “seconds”).
6. Measure total number of “gallons” collected in step #3.
7. Divide the number of “gallons” collected in step #3 by the number of “seconds” in step #5.
8. Multiply the answer derived in step #7 by “60.”
9. The answer in step #8 is the average pumping capacity of the system.

(Note: Make certain no other water is being used during this test)

Example

Number of “gallons” collected during draw-down (step #3) = 9
Number of “seconds” in pump cycle to refill tank (step #5) = 72
GPM = (gallons collected / seconds in cycle) X 60
GPM = (9 / 72) X 60
GPM = .125 X 60
GPM = 7.5
(Simply select a filter requiring 7.5 gpm, or less, backwash)

WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide {if rotten egg odor is present}; and 7) Chlorine {if on treated water supply}. Consult specification sheet to check for limtations.

INSTALLATION: Filters should be installed on a level surface; on cold water line only; typically after outside sillcock lines; before softeners; and, before the piping splits to the water heater. Above is a diagram of a typical installation. Avoid installations in direct sunlight and where freezing may occur. Locate the unit near a 115V , unswitched outlet (except manual units that require no electricity) and near a drain. Where the drain line must be elevated above the system or runs for more than 20 feet, increase the drain line size to 3/4 ". NEVER decrease the size of the drain line! It is advisable (and code in most areas) that there be at least a 4" air gap between the drain and drain line. Check all local codes before installing equipment.

PROGRAMMING THE SYSTEM: After all plumbing has been completed according to the installation instructions, find the section in the instructions regarding programming the control valve. It is quite simple but you must first consult your water test results. You have determined the pH, amount of iron, manganese, etc. It's typical to set filters to backwash from every 3 to 6 days. It is always advisable to both disinfect the unit and test the system cycles. Consult the installation instruction manual.

REGULAR MAINTENANCE: All that's necessary for normal filter maintenance is regular backwashing. If iron bacteria has entered the system, you will need to remove the control valve and add 5.25% sodium hypochlorite (standard household bleach), leave it sit for at least 30 minutes then backwash. Should the system become terribly fouled, it may be necessary to empty the filter bed washing the granules in a stronger solution. If this doesn't sufficiently clean the medium, a replacement bed will be necessary. You'll need to replace and/ or replenish media according to the ***Filter Media Selection Guide.***

The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE and CAPABILITIES: Chemical feeding can serve a number of purposes including feeding chlorine for disinfection and oxidation of certain contaminants such as iron, manganese, hydrogen sulfide, tannins and organic complexes. It is also useful for controlling pH levels. Selecting the right chemical feed pump is critical for proper treatment. The following formula applies whether disinfecting, oxidizing or controlling pH:

Well Pump Output (gpm)		Required Dosage (ppm)		Solution 1440/Strength (ppm)		FEED PUMP OUTPUT (Gallons per Day)
	X		X		=	

Well Output Rate - Use the following formula for determining pump capacity:

HOW TO DETERMINE PUMP CAPACITY

1. Open any faucet and run until pump turns “on.”
2. Close faucet and let pump fill pressure tank and turn “off.”
3. Open any faucet and collect all water discharge until pump turns “on.”
4. When pump turns “on,” immediately close faucet and start timing pump cycle.
5. When pump turns “off,” record cycle time to refill pressure tank (in “seconds”).
6. Measure total number of “gallons” collected in step #3.
7. Divide the number of “gallons” collected in step #3 by the number of “seconds” in step #5.
8. Multiply the answer derived in step #7 by “60.”
9. The answer in step #8 is the average pumping capacity of the system.

(NOTE: Make certain no other water is being used during this test)

Example

Number of “gallons” collected during draw-down (step #3) = 9
Number of “seconds” in pump cycle to refill tank (step #5) = 72
GPM = (gallons collected / seconds in cycle) X 60
GPM = (9 / 72) X 60
GPM = .125 X 60
GPM = 7.5

Dosage Required - The following are chlorine dosage requirements for common water constituents:

For Every	Chlorine Required .....
1 ppm Hydrogen Sulfide	3 ppm
1 ppm Iron	1 ppm
1 ppm Manganese	1-2 ppm
1 ppm Tannin	1-3 ppm

Simply multiply the required amounts of chlorine by the ppm presence of each contaminant and add them together. Also, remember that it is usually necessary to have a chlorine residual of, say, 1 ppm after contact time. Whatever answer you determine, add “1 ppm” for the residual.

Solution Strength - The following are strengths of typical chemicals for feeding:

Chemical	Strength
5.25% Chlorine Bleach	52,500 ppm
12.5% Chlorine Bleach	125,000 ppm
Potassium Permanganate (1/4# per gallon water)	30,000 ppm
Polyphosphate (1# per 10 gallons water)	12,000 ppm
Soda Ash (.926# per 1 gallon water)	10% Solution

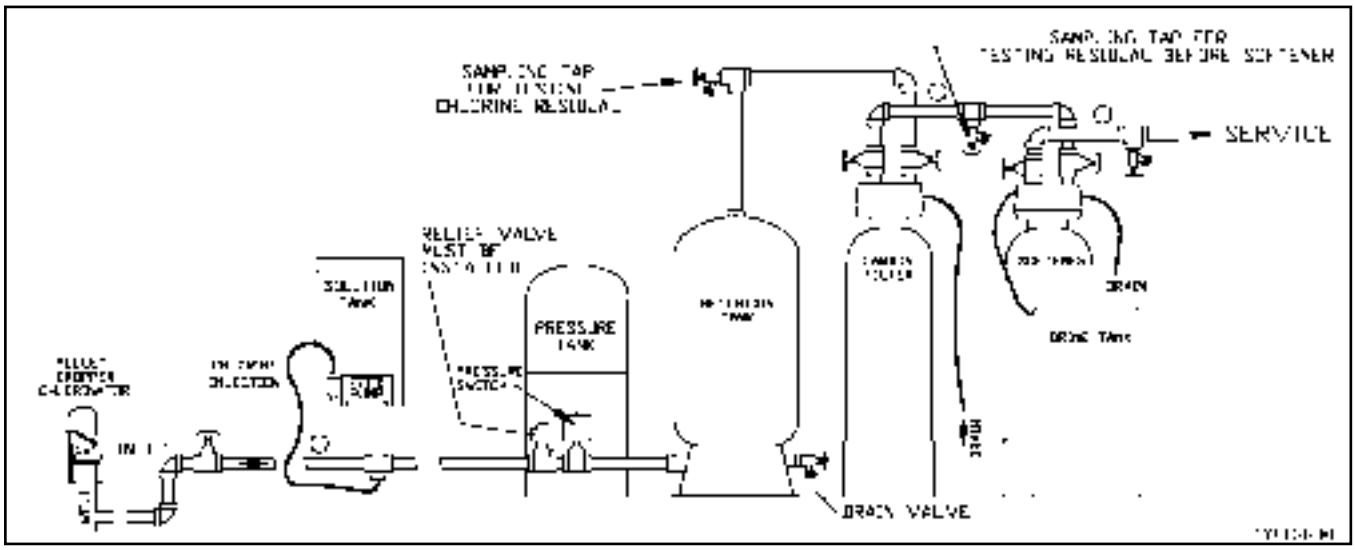
SAMPLE CALCULATION:

You've determined that the pump capacity was 10.5 gallons per minute. There are 2 ppm Iron; 4 ppm Hydrogen Sulfide; and, a 1 ppm Residual is desired. Simply multiply the 2 ppm Iron by its dosage requirement factor of 1 (2 X 1 = 2); multiply the 4 ppm Hydrogen Sulfide by its factor of 3 (4 X 3 = 12). Add the totals (2 + 12 = 14) then add the residual amount to that total (14 + 1 = 15) for the dosage required. If you are feeding 5.25% chlorine bleach full strength, you can now calculate the above formula to determine the number of gallons per day that will be fed in this example.

(10.5 gpm) X (15 ppm) X (1440) / (52,500) = 4.3 gallons per day

In this example, 4.30 gallons of chlorine bleach will need to be fed to insure that all contaminants are oxidized and a 1 ppm residual of chlorine is left over.

It is now necessary to choose a chemical feed pump that will deliver 4.3 gallons of chlorine in a 24 hour period. For example, choosing a 7 gpd with a maximum output daily would be a correct choice. However, a pump should not be set below 50% of its setting. To check your selection, simply divide the required output by the capacity of the pump... in this case, 4.3 / 7.0 = 61.43%. Therefore, the setting would be at 61% and above the 50% mark. If, however, you were diluting the chlorine (say 3 parts water to 1 part chlorine), you would need to select a 24 gpd since the daily output would be 17.2 gallons of solution. (12.9 + 4.3 = 17.2) Remember, proper sizing is critical! Check the individual specification sheets and contact your Distributor or CSI with questions.



Tannin/Hardness Technical Information Guide

The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE* and *CAPABILITIES: The Tannin/Hardness ion exchange equipment is designed to remove (exchange) water hardness ions (calcium & magnesium) and organic tannins from water supplies using a combination of specialized resins as catalyts using salt (sodium) as the regenerant. Water passes downwardly through the mineral bed where the ion exchange takes place. These systems can easily remove hardness and tannins when they occur in water (depending on the cubic foot capacity). They cannot remove iron, manganese, sulphur and other water constituents. Attempting to do so may run you into problems of bed fouling and hardness/tannin breakthrough. Always check with CSI before attempting anything other than standard applications!

HARDNESS TABLE	
Soft	0 - 3.5 gpg
Moderately Hard	3.5 - 7.0 gpg
Hard	7.0 - 10.5 gpg
Very Hard	10.5 + gpg

Note: “gpg” means grains per gallon.

WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide (if rotten egg odor is present); 7) Chlorine (if on treated water supply). Consult specification sheet to check for limitations.

RAW WATER LIMITATIONS	
Free Chlorine	0.1 ppm
Turbidity	5 units
Iron	0.50 ppm
Manganese	0.50 ppm
Hydrogen Sulfide	0.1 ppm

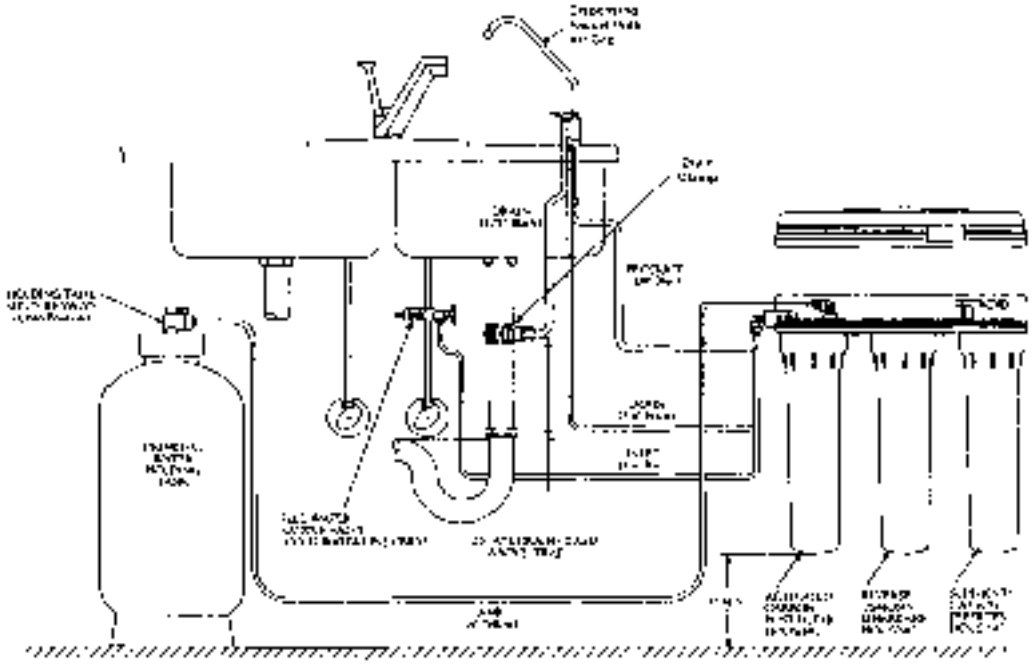
Note: “ppm” means parts per million - “gpg” means grains per gallon.

NOTE: For Limitations, Installation, Programming and Maintenance, refer to the Softener Technical Information Guide as Tannin/Hardness units have the same requirements.

The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE* and *CAPABILITIES: Reverse Osmosis systems are highly specialized water treatment devices that deal with contaminants at the molecular level. Influent water passes through a membrane that allows water to pass to a storage tank (service) and rejects the contaminants running them to a drain. They work very slowly to produce high quality water and must have significant water pressure in order to work properly. The TDS (total dissolved solids) are significantly reduced through R/O systems.

LIMITATIONS: An R/O system must receive water that is pretreated for best results. Iron, manganese, hydrogen sulfide, and hardness should be reduced to minimum levels. They are limited to small quantities of output water per day with CTA (Cellulose Tri Acetate) systems producing 14 gallons per day and TFC (Thin Film Composite) systems upwards of 24 gallons per day. Check the individual specification sheets for requirements and limitations.



WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide (if rotten egg odor is present); 7) Chlorine (if on treated water supply); and, 8) TDS. Consult specification sheet to check limitations.

INSTALLATION: R/O systems are typically installed under the kitchen sink, in closets or basements with a treated line running to the kitchen sink faucet provided with each unit. If “air gap” systems are required in your state or local areas, make certain that you order and install the proper system.

PROGRAMMING THE SYSTEM: There is nothing to program on an R/O system. Simply connect to source plumbing and drain line.

REGULAR MAINTENANCE: The membrane of an R/O system should be replaced at least every 12 months. The pre and post-filter elements should be replaced every 6 months. It is also advisable to completely drain the system (simply using the faucet) periodically to insure that the water in the storage tank is fresh. Complete maintenance details are included with each set of installation instructions.

The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE* and *CAPABILITIES: An ion exchange Nitrate/Sulfate system is designed to remove (exchange) nitrate and sulphate ions from water supplies using a very specialized resin as the catalyst and salt (sodium) as the regenerant. Water passes downwardly through the mineral bed where the ion exchange takes place. These systems can easily remove these constitutents (depending upon the cubic foot capacity). They are not designed to remove hardness, iron or manganese! As a matter of fact, the water should be pretreated (if necesary) so that certain other contaminants are not present in the water to be treated. If they are not removed, you may run into some problems of bed fouling and nitrate/sulphate breakthrough. The amount of salt (per cubic foot of resin) required to backwash these systems is actually less than that required to regenerate a softener of a similar size.

WARNING: Although these systems can reduce the foregoing water constituents, YOU MUST make certain that you take precautions for proper sizing, installation and water testing since these constituents (especially nitrates) can have serious health-related consequences!! Always check with CSI before attempting anything other than standard applications!

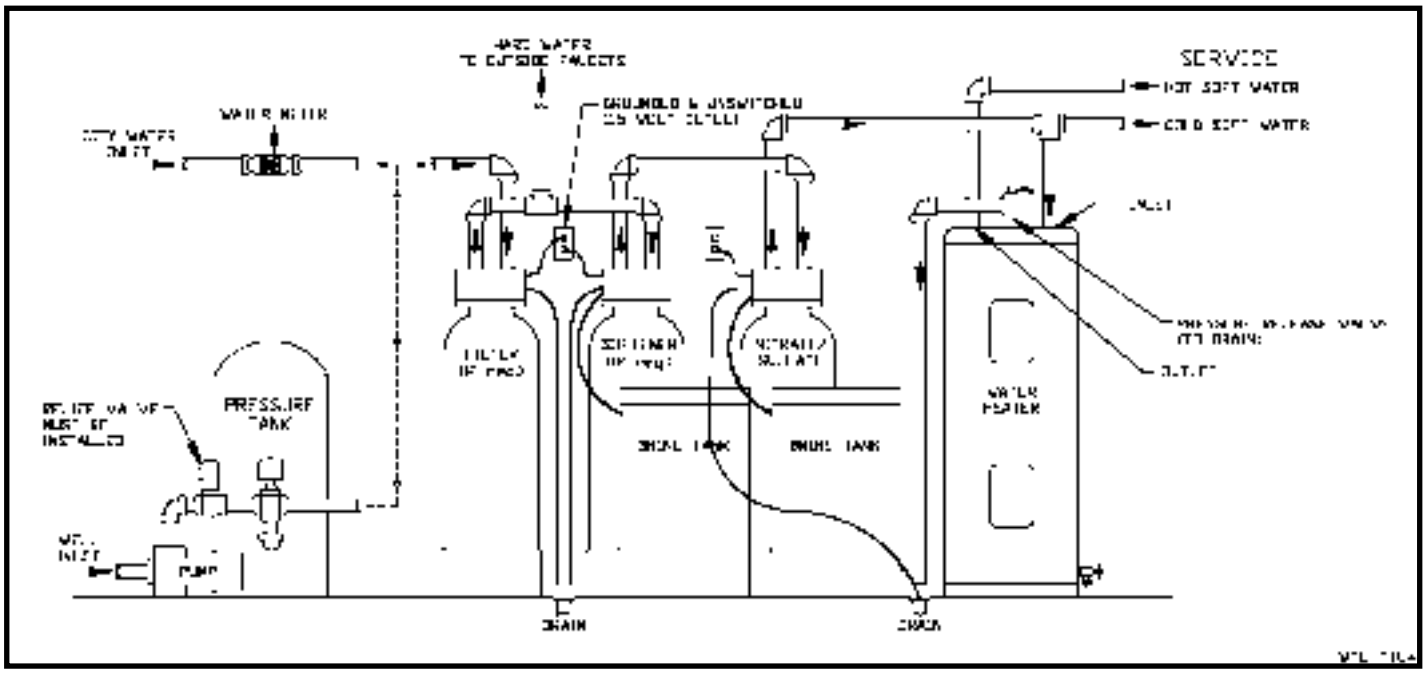
RAW WATER LIMITATIONS	
Free Chorine	0.5 ppm
Turbidity	5 units
Iron	0.1 ppm
Manganese	0.1 ppm
Hydrogen Sulfide	0.1 ppm
Tannins	0.5 ppm
Hardness	Preferably less than 5 gpg

Note: “ppm” means parts per million - “gpg” means grains per gallon.

LIMITATIONS: Remember, Nitrate/Sulphate systems cannot remove hardness, iron, manganese, hydrogen sulfide, iron / manganese / sulfur bacteria, tannins, tastes, odors & colors nor should they be used to remove anything other than Nitrates and Sulphates. Presence of any of the above constituents can cause these systems to become less efficient or fail to remove nitrates and sulphates! Various size units have different service and backwash flow rates. Always consult the specification sheet in order to make a proper selection.

WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide (if rotten egg odor is present); 7) Chlorine (if on treated water supply); 8) Nitrates as N (nitrogen); 9) Nitrates as NO_3 (nitrate); and 10) Sulphates as SO_4 (sulphate)

INSTALLATION: Nitrate / Sulphate systems should be installed on a level surface, on cold water line only; after filtration and softeners; after outside sillcock lines; and, before the piping splits to the water heater. Note typical installation.



Never elevate the mineral tank more than 1-2 feet above the brine tank so as not to cause problems with brine draw. Avoid installations in direct sunlight and where freezing may occur. Locate the unit near a 115V, unswitched outlet (except manual units that require no electricity) and near a drain. Where the drain line must be elevated above the system or runs more than 20 feet, increase the drain line size to 3/4". NEVER decrease the size of the drain line! It is advisable (and code in most areas) that there be at least a 4" air gap between the drain and drain line. Check all local codes before installing equipment.

PROGRAMMING THE SYSTEM: After all plumbing has been completed according to the installation instructions, find the section in the instructions regarding programming the control valve. It is quite simple but you must first consult your water test results. Refer to the **"Capacity/Regeneration"** box in order to determine the regeneration frequency for either Timeclock or Demand initiated control valves. Always check system cycles and consult the installation instruction manual.

REGULAR MAINTENANCE: All that's necessary for normal maintenance is to keep good quality softener salt in the brine tank. Should the system become fouled, it may be necessary to remove the control valve, empty the resin and wash the beads. It is also wise to clean the brine tank about once per year.

Capacity/Regeneration

In order to properly size Nitrate/Sulphate systems, the amounts of each in the raw water must be known. They must be expressed as equivalents as calcium carbonate ($CaCO_3$). Use the test results and follow these steps:

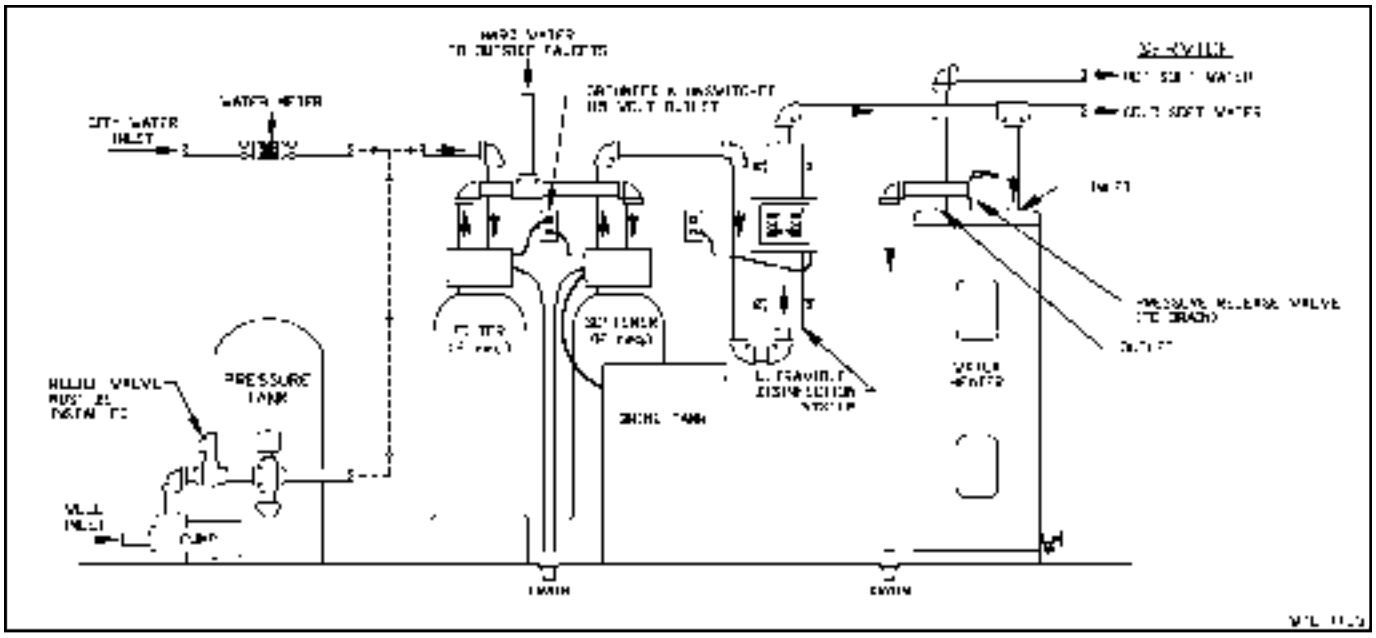
Sulphate as SO_4 ppm X 1.04 = Sulphate ppm as $CaCo_3$
Nitrate as N ppm X 3.56 = Nitrate as $CaCO_3$
Nitrate as NO_3 ppm X 0.81 = Nitrate as $CaCO_3$

Add all $CaCO_3$ ppm quantities together and divide by 17.1 to find equivalent grains per gallon (gpg). Then, divide the total grain capacity of the unit by the gpg of $CaCO_3$ to determine how many gallons can be treated before regeneration.

The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE* and *CAPABILITIES: Ultra Violet systems are highly specialized water treatment devices that disinfect water. Influent water passes through the cylindrical, stainless steel chamber where a certain wavelength of light destroys or deactivates many bacteria and viruses. Each unit has a built-in flow control so that proper contact time can be maintained to insure high disinfection rates.

LIMITATIONS: An Ultra Violet system must receive water that is pretreated for best results. Iron, manganese, hydrogen sulfide, and hardness should be reduced to minimum levels. They are not designed to kill forms of iron/manganese/sulfur bacteria nor cysts like Giardia lamblia. As a matter of fact, tannins and slime producing bacteria (iron bacteria) coat the quartz tube and reduce light penetration. See specification sheet for requirements and limitations.



WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide (if rotten egg odor is present); 7) Chlorine (if on treated water supply); and, 8) TDS. Consult specification sheet to check limitations.

INSTALLATION: U/V systems are typically installed at the point-of-entry in a home or business where all water can be treated. It is strongly advisable to install a drain on the lower section of the plumbing for easy draining during cleaning. Make certain that it is connected to an uninterrupted power supply!

PROGRAMMING THE SYSTEM: There is nothing to program on a U/V system. Simply connect to source plumbing and power supply.

REGULAR MAINTENANCE: The U/V lamp should be replaced annually and the entire unit cleaned about every six months to prevent build-up on the quartz tube. It is also advisable to use a strong chlorine solution in the stainless steel housing each time the system is cleaned. If the unit has a failsafe feature, check the solenoid for proper operation. Complete details on preventative maintenance are included with each set of installation instructions.

Water Use Estimates

Airports
Per Passenger = 3 - 5 gal. / day

Apartments
Based on 3 persons per apartment
Hot and Cold = 150 gal. / unit / day
Hot Only = 60 gal. / unit /day

Barber Shops
55 gal. / chair / day

Beauty Salons
270 gal. / station / day

Boilers
To determine daily makeup in gallons:
1. Multiply boiler h.p. by 4.25.
2. Then multiply by hours per day of operation.
3. Then multiply by the % operating rating.
4. Then subtract the % condensate returns.

Note: When ratings are given in pounds of steam per hour, divide by 500 to obtain GPM requirement. When ratings are given in BTU's divide by 12,000. For every 12,000 BTU's, there is an equivalent of 1 h.p.

Camps
Day (No meals) = 15 gal. / person/day
Resorts = 50 gal. / person/day
Tourist = 35 gal. / person/day

Cooling Water
To determine daily makeup in gallons:
1. Multiply the tonnage by four (this includes 2 gal. / hr / day / ton bleed off).
2. Then multiply by the number of hours per day of operation.

Dentist
4,000 gal. / month / chair

Dormitories
Hot and Cold = 40 gal. / person / day
Hot Only = 20 gal. / person / day

Dwellings
Boarding Houses
= 50 gal. / person / day
Luxury = 100-150 gal. / person / day
Multiple Family Apts.
= 40 gal. / person / day
Rooming Houses
= 60 gal. / person / day
Single Family
= 50-75 gal. / person / day

Factories
15 - 35 gal. / person/ shift

Hospitals
Meter reading preferred
Hot and Cold = 250 gal. / bed / day
Hot Only = 170 gal. / bed / day

Hotels
With Private Baths (2 persons)
= 60 gal. / day
Without Private Baths
= 50 gal. / person / day

Laundry
Hot and Cold = 2.5 x lb. capacity is equivalent to gallons per cycle

Lawns
25 gal. / square foot / season

Livestock & Poultry
Cow, Beef = 12 gal. / animal / day
Cow, Dairy = 20 gal. / animal / day
Goat = 2 gal. / animal / day
Hog = 12 gal. / animal / day
Horse = 12 gal. / animal / day
Mule = 12 gal. / animal / day
Sheep = 2 gal. / animal / day
Chickens = 10 gal. / each 100 / day
Turkeys = 18 gal. / each 100 / day

Motels
With bed and toilet (no kitchen)
40 gal. / bed space / day

Nursing Homes
Hot and Cold = 100 gal. / bed / day
Hot Only = 50 gal. / bed / day

Office Buildings
Hot and Cold = 20 gal. / person / day
Hot Only = 3 gal. / person / day

Parks
Overnight with flush toilets
= 25 gal. / camper / day
Trailers with individual bath units
= 50 gal. / camper / day

Picnic Areas
With bath houses, showers and flush toilets = 20 gal. / picknicker / day
With toilet facilities only
= 10 gal. / picknicker / day

Schools
Elementary :
Hot and Cold = 13 gal. / student / day
Hot Only = 5 gal. / student / day
Junior High :
Hot and Cold = 20 gal. / student / day
Hot Only = 10 gal. / student / day
Senior High:
Hot and Cold = 35 gal. / student / day
Hot Only = 15 gal. / student / day

Service Stations
10 gal. / vehicle / day

Shopping Centers
300 gal. / 1,000 square foot / day

Stores
400 gal. / toilet room / day

Swimming Pools
10 gal. / swimmer / day

Theaters
Indoor = 5 gal. / auditorium seat / day
Drive-In = 5 gal. / car space / day

Trailer Parks
150 gal. / trailer / day

Workers
Construction = 50 gal. / person / shift
Office = 15 gal. / person / shift

Estimating Flow Rate Requirements

The following information describes estimated maximum GPM flows from certain typical fixtures and appliances. Estimates do not consider "water saving" devices. The "fixture count" columns are factors to be used to determine estimated flow rate requirement for homes, apartments and commercial facilities. Other types of equipment not listed below, but present on the premises must be also considered in the analysis.

A **FIXTURE / APPLIANCE**	**ESTIMATED FLOW RATE (gpm)**	**"RESIDENTIAL" FIXTURE UNITS**	**"PUBLIC" FIXTURE UNITS**
Lavatory	4	1	2
Bathtub	6	2	4
Shower Head	5	2	4
Toilet (with flush tank)	3	3	5
Toilet (with flush meter)	15	6	10
Urinal (with flush tank)	3	---	3
Urinal (with flush meter)	10	---	5
Kitchen Sink	5	2	4
Dishwasher	2	1	3[1]
Laundry Tray / Service Sink	5	3	3
Automatic Clothes Washer	5	2	4[1]
Drinking Water Faucet / Water Fountain	.75	.25	.50

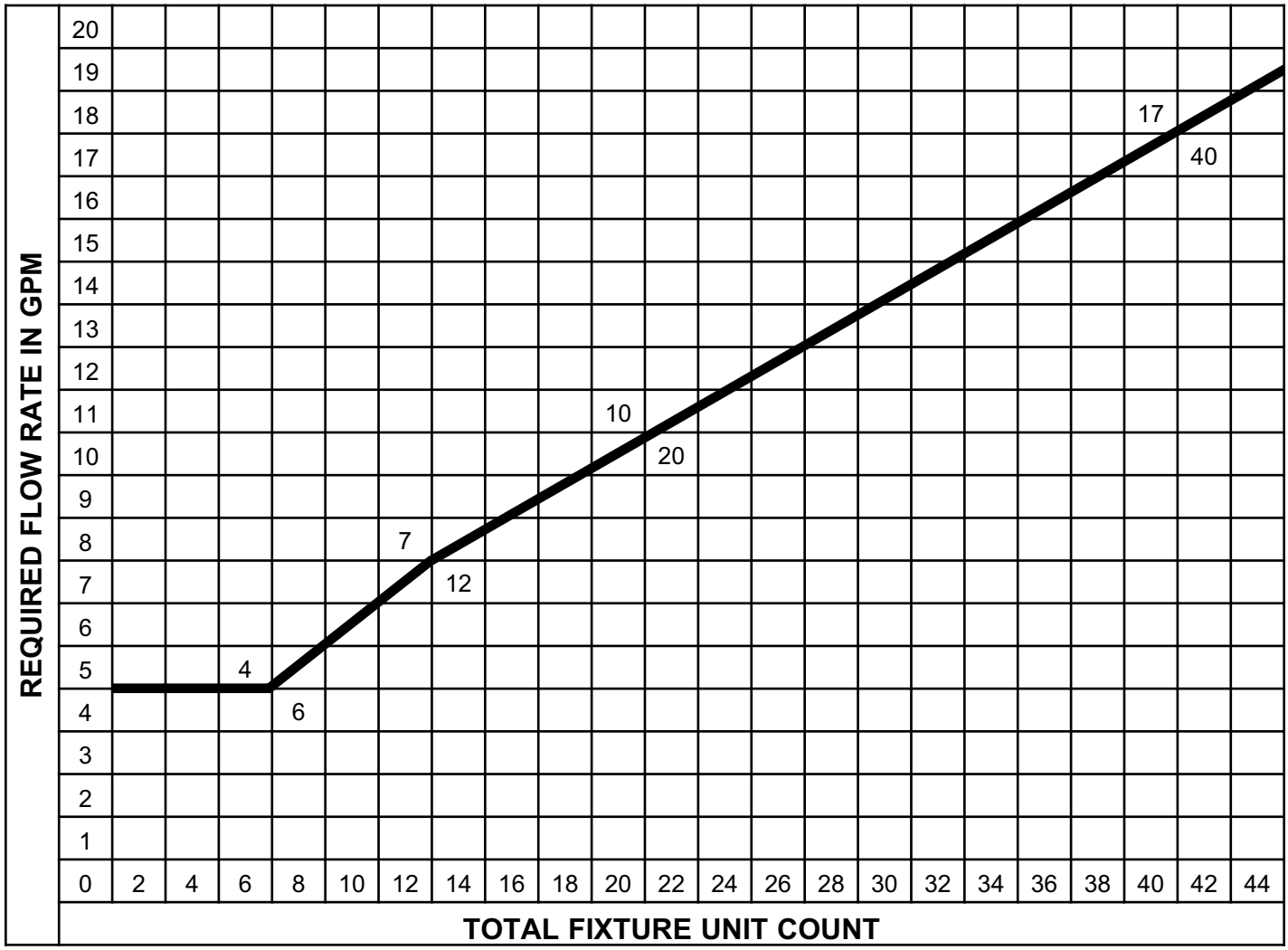
NOTE 1: Check with manufacturer of appliance or consult specifications manual for exact flow rate.

B **OUTLETS**	**Flow RATES (gpm)**	**TOTAL USAGE (gallons)**	**NUMBER of BATHROOMS in the HOME**			
			1	$1^{1/2}$	$2\text{-}2^{1/2}$	3-4
Shower / Bath Tub	5	35	35	35	53	70
Lavatory Sink	4	2	2	4	6	8
Toilet	4	5	5	10	15	20
Kitchen Sink	5	3	3	3	3	3
Automatic Washer	5	35	--	18	18	18
Dishwasher	2	14	--	--	3	3
Seven Minute *Peak Demand	--	--	45	70	98	122
Minimum Sized Pump Required	--	--	7 gpm	10 gpm	14 gpm	17 gpm
Minimum Treatment Equipment Reqd.	--	--	5 gpm	6 gpm	7 gpm	10 gpm

* Peak demand can occur several times during morning and evening.

NOTE 1: It is always better to have larger flow rate capacity treatment equipment if the pump capacity is available for backwashing.

NOTE 2: Chart B was adapted from *Ground Water Age* magazine, December 1991, page 22.



In reading the above chart, use the vertical line to the right of the horizontal numbers. Use the line above the vertical numbers.

HOW TO USE THIS TABLE

The estimated flow rate requirement for plumbing fixtures used intermittently on a water supply line may be obtained by multiplying the number of each kind of fixture times its individual "fixture count" value as determined from Table A on the previous page entitled *ESTIMATING FLOW RATE REQUIREMENTS.* Add the sums together to get a grand total "fixture unit count."

Looking at the chart above, find the fixture count on the lower edge of the chart that most closely matches the number you calculated. At that point, go upward on the vertical line until you hit the curve on the chart. Follow the intersecting horizontal line to the left in order to determine the flow rate requirement for treatment equipment. The gpm flow rate that is discovered using this chart will be very adequate for the facility. You could actually use about 70% of the number as a minimum for equipment sizing.

Remember that "estimating" charts and tables are just that.....estimates. The more information you have, the better your calcluations will be. Also refer to Table B on the previous page for more rules-of-thumb on treatment requirements in gpm based on number of bathrooms in the home.

Shock Chlorination Procedure

Shock Chlorination is the procedure for cleaning and sanitizing a well or spring with chlorine. Concentrations of chlorine used in shock chlorination are 100 to 400 times the amount of chlorine found in "city water." The highly chlorinated water is held in the pipes for 12 to 24 hours before it is flushed out and the system is ready for use.

Periodic shock chlorination may also be effective to reduce an **iron bacteria** problem.

For wells, the amount of chlorine needed to shock chlorinate a water system is determined by the amount of water standing in the well. Table 1 lists the amount of chlorine laundry bleach or powdered high-test hypochlorite (HTH) needed for wells. If in doubt, it is better to use more chlorine than less.

Table 1

Amount of chlorine needed for shock chlorination

Laundry bleach (about 5.25% Hypochlorite)

Depth of Water in well	Casing Diameter				
	4 inch	**6 inch**	**8 inch**	**10 inch**	**12 inch**
10 feet	1/2 cup	1 cup	1 1/2 cup	1 pint	2 pints
25	1 cup	1 pint	2 pints	3 pints	4 1/2 gallons
50	1 pint	1 quart	2 quarts	3 quarts	1 gallon
100	1 quart	2 quarts	1 gallon	1 1/2 gallon	2 gallons
150	3 pints	3 quarts	1 1/2 gallon	2 gallons	3 gallons

High-Test Hypochlorite (HTH 65-75% Hypochlorite)

Depth of Water in well	Casing Diameter				
	4 inch	**6 inch**	**8 inch**	**10 inch**	**12 inch**
10 feet	--	--	--	--	--
25	--	--	--	1/4 lb.	1/2 lb.
50	--	--	1/3 lb.	1/2 lb.	3/4 lb.
100	--	1/3 lb.	3/4 lb.	1 lb.	1 1/2 lb.
150	1/4 lb.	1/2 lb.	1 lb.	1 1/2 lb.	2 lbs.

To Shock Chlorinate a Well:

1. Pour the proper amount of chlorine bleach or powdered chlorine dissolved in a small amount of water directly into the well.

2. Connect a garden hose to a nearby faucet and wash down the inside of the well.

3. Re-circulate the chlorinated water into the well for a minimum of one (1) hour (2 to 3 hours is preferable).

4. Open each faucet one by one and let water run until a strong odor of chlorine is detected. If a strong odor is not detected, add more chlorine to the well.
   Note: Bypass all installed water treatment equipment.

5. Let the water stand in the water system for at least 12 to 24 hours.

6. Flush the system of remaining chlorine. Start by turning on outside faucets and letting them run until the chlorine smell dissipates. Let the water run on the ground to reduce the load on your septic system. Finally, run the indoor faucets until the system is completely flushed.

Shocking chlorination of a spring is more difficult. If possible, divert spring water away from the spring box. Mix about 1/2 cup of household bleach in 5 gallons of water and scrub the walls of the spring box or holding tank or both. Return the flow of spring water back into the spring box and let the fresh water carry the chlorine through the pipeline to disinfect the plumbing.

Most water treatment equipment, such as water softeners and iron filters, should be bypassed. Check the manufacturer's literature before chlorinating treatment equipment and pressure tank to prevent damage from strong chlorine solutions. ***Do not*** chlorinate carbon or charcoal filters; doing so will use up their capacity. Rebedding of these type fixtures will be required.

Be Careful when handling concentrated chlorine solutions. Wear rubber gloves, goggles and protective apron. If chlorine accidently gets on your skin, flush immediately with clean water.

Never mix chlorine solutions with other cleaning agents or ammonia, because toxic gases are formed.

Do not use "fresh scent" bleach or other special laundry products to disinfect wells. Use the plain and usually least expensive laundry bleach.

Retest your water supply for bacteria after waiting 1 to 2 weeks. If shock chlorination does not eliminate a bacteria problem, continuous disinfection may be necessary.

Ref: OCES Ohio Cooperative Extension Service

The following will help you in determining how to program a Timeclock softener for regeneration. If you have a Demand system, this chart is not necessary as the control valve decides when to regenerate.

DETERMINE	EXAMPLE	YOUR CALCULATION
Hardness (in gpg) Iron & Manganese (in ppm - combined) Number of persons in the family Capacity of the softener (total grains)	20 2 4 32,000	_____ _____ _____ _____
STEP #1: Figure number of gallons used per day # of people x "75"	300	_____
STEP #2: Figure Compensated Hardness gpg of Hardness + (ppm Iron/Manganese x "4")	28	_____
STEP #3: Figure total grains used per day Step #1 answer x Step #2 answer	8,400	_____
STEP #4: Figure Days between Regenerations Softener Capacity / Step #3 answer	3.81	_____

NOTE: Always round "down" to the next lowest number of days between regeneration when programming. In the example above, the answer was 3.81 days between regenerations. For a 32,000 Grain Capacity Softner you would set the softener to regenerate every "3" days.

PROBABLE CAUSE	GENERAL EFFECT	PROBABLE REMEDY
HARDNESS (calcium & magnesium)	Scale in pipes and water heaters; causes "soap curd" on fixtures, tile, dishes and laundry; low sudsing characteristics.	Removal by ion exchange softener.
IRON/MANGANESE	Causes discolored water; red, brown, orange or black stains on fixtures, appliances and laundry; dark scale in pipes and water heaters.	Low level (2ppm) removal by ion exchange softener when hardness is also present; best removed by oxidizing iron filter; aeration and/or chlorination followed by filtration in some cases.
IRON/MANGANESE/SULFUR Bacteria	Same general effects as above plus slimy deposits that form in pumps, pipes, softeners and toilet tanks.	Low level removal possible by oxidizing iron filter; best removed by chlorination followed by filtration.
HYDROGEN SULFIDE GAS	Foul rotten-egg odor; corrosion to plumbing; tarnishes silver and stains fixtures and laundry; ruins the taste of foods and beverages.	Best removed by aeration, scrubbing and filtration; also removed by oxidizing filters or chlorination followed by filtration.
TUBIDITY	Suspend matter in water; examples include mud, clay, silt and sand; can ruin seats, seals and moving parts in appliances.	Removal by backwashing sediment filters; extra fine treatment utilizing sediment cartridge elements.
ACID WATER (low pH)	Corrosive water attacks piping and other metals, red and/or green staining of fixtures and laundry.	Best corrected by neutralizing filters or soda ash feeding.
TASTE/ODOR/COLOR (organic matter)	Makes water unpalatable; can cause staining.	Depending on the nature of contaminant, aeration followed by filtration; carbon filtration; chlorination followed by filtration.
TANNINS/HUMIC ACID	Can impart an "iced-tea" color to water; causes light staining; can affect the taste of foods and beverages.	Removal by special ion exchange or oxidizing agents and filtration.
COLIFORM BACTERIA	Can cause serious disease and intestinal disorders.	Chlorination and filtration is most widely practiced; iodination, ozonation and ultraviolet treatment are used to a lesser degree.
ORGANIC HALIDES (e.g. Herbicides & Pesticides)	Can cause serious disease and/or poisoning.	Most are readily removed by absorption with carbon filters; some can also be removed by hydrolysis and oxidation.
NITRATES/CHLORIDES & SULPHATES	Can cause health-related problems if quantities are high.	Removal by special ion exchange, deionization process or reverse osmosis.
SODIUM SALTS	Imparts an alkaline or soda taste to water.	Removal by deionization process or reverse osmosis; distillation can be used.

CSI Water Treatment Freeboard Chart

Model Number	From Top of Tank to Mineral
CT24, CM24	8”
CT32, CM32	12”
TS24, MS24, AT24, TST24, MST24	17”
TS32, MS32, AT32, TST32, MST32	21”
TS48, MS48, AT48, TST48, MST48	20”
TS64, MS64, AT64, TST64, MST64	17”
TS96, MS96, AT96	28”
TS128, MS128	24”
WF40, UT40, UTP40, UTP40VS	24”
TSI24, MSI24, ATI24	14”
TSI32, MSI32, ATI32	18”
TSI48, MSI48, ATI48	17”
TSI64, MSI64, ATI64	13”
U10, WF10, RF10, RF10VS, UT10, IF10	18”
U15, WF15, RF15, UT15, UTP15, IF15, RF15VS, UTP15VS	17”
U20, WF20, RF20, UT20, IF20, RF20VS, UTP20, UTP20VS	15”
U25, WF25, RF25, UT25, IF25, RF25VS, UTP25, UTP25VS	18”
WF30, RF30, UT30, RF30VS, UTP30, UTP30VS	28”

Slot Opening Equivalents

The following chart details the opening sizes of slots for distributor systems and screens.

Inches	Microns	U.S. STD. Mesh *
.0002	5	--
.0006	15	1000
.001	25	--
.0012	30	500
.0015	37	400
.002	50	270
.0024	61	250
.003	75	200
.004	100	150
.005	125	120
.006	149	100
.007	177	80
.008	200	70
.010	250	60
.012	305	50
.014	355	45
.016	400	40
.020	500	35
.023	590	30
.028	710	25
.033	840	20
.039	1000	18
.047	1190	16
.055	1410	14
.066	1680	12
.094	2380	8
.111	2790	7
.132	3330	6
.157	4000	5

*Note: The higher the Mesh number, the “finer” job of filtration it will do.

To Convert From	To	Multiply By	To Convert From	To	Multiply By
Acre	Square Feet	43,560	Gallon (US liq)	Ounce (US fluid)	128
Acre-Foot	Cubic Yard	1613.333	Gallon (US liq)	Pint (US liq)	8
Angstrom	Nanometer	0.1	Gallon (US liq)	Quart (US liq)	4
Atmosphere	Foot of H_20	33.89854	Gallon (Brit)	Gallon (US liq)	1.200950
Bar	Atmosphere	0.9869233	Grain/Gal (Brit)	Milligram/liter	14.25377
Bushel	Cubic Foot	1.244456	Grain/Gal (US)	Milligram/liter	17.11806
Bushel	Gallon (US liq)	9.309177	Inch	Centimeter	2.54
Centimeter	Foot	0.03280840	Inch	Millimeter	25.4
Centimeter	Inch	0.3937008	Kilogram	Grains	15,432.358
Centimeter	Micrometer	10,000	Kilogram	Pounds	2.2046226
Centimeter	Millimeter	10	Liter	Cubic Feet	0.03531467
Chain(Gunter's)	Feet	66	Liter	Cubic Inches	61.02374
Cubic Foot	Cubic Cm	28,316.847	Liter	Gallons (US)	0.26417205
Cubic Foot	Cubic Inch	1,728	Liter	Milliliters	1,000
Cubic Foot	Gallon (US liq)	7.480519	Liter/Minute	Gallon (US)/Hr	15.85032
Cubic Foot	Liter	28.316847	Meter	Feet	3.2808399
Cubic Meter	Cubic Foot	35.31467	Meter	Inches	39.37007874
Cubic Meter	Cubic Inch	61,023.74	Micrometer	Millimeters	0.001
Cubic Meter	Gallon (US liq)	264.1721	Micrometer	Mils	0.03937008
Celsius (°C)	Fahrenheit (°F)	1.8	Micron	Micrometer	1
Fahrenheit (°F)	Celsius (°C)	0.5555556	Milligram/Liter	Grains/Gal (US)	0.05841783
Foot	Centimeter	30.48	Parts/Million	Milligram/Liter	1
Foot	Meter	0.3048	Pint (US liq)	Ounce (US liq)	16
Foot	Millimeter	304.8	Quart (US liq)	Ounce (US liq)	32
Foot of H_20	Atmosphere	0.0294998	Rod	Feet	16.5
Foot of H_20	Bar	0.0298907	Square Foot	Square Inches	144
Foot of H_20	Inch of Hg	0.882671	Square Mile	Acres	640
Gallon (US liq)	Cubic Feet	0.13368056	Square Yard	Feet	9
Gallon (US liq)	Cubic Inches	231	Tablespoon	Millimeter	14.79
Gallon (US liq)	Gallon (Brit liq)	0.8326742	Teaspoon	Millimeter	4.93
Gallon (US liq)	Liter	3.785412	Watt	BTU/Hour	3.41214

Name	Sym	Num	Name	Sym	Num	Name	Sym	Num
Actinium	Ac	89	Helium	He	2	Radium	Ra	88
Aluminum	Al	13	Holmium	Ho	67	Radon	Rn	86
Americium	Am	95	Hydrogen	H	1	Rhenium	Re	75
Antimony	Sb	51	Indium	In	49	Rhodium	Rh	45
Argon	Ar	18	Iodine	I	53	Rubidium	Rb	37
Arsenic	As	33	Iridium	Ir	77	Ruthenium	Ru	44
Astatine	At	85	Iron	Fe	26	Samarium	Sm	62
Barium	Ba	56	Krypton	Kr	36	Scandium	Sc	21
Berkelium	Bk	97	Lanthanum	La	57	Selenium	Se	34
Berylium	Be	4	Lawrencium	Lr	103	Silicon	Si	13
Bismuth	Bi	83	Lead	Pb	82	Silver	Ag	47
Boron	B	5	Lithium	Li	3	Sodium	Na	11
Bromine	Br	35	Lutetium	Lu	71	Strontium	Sr	38
Cadmium	Cd	48	Magnesium	Mg	12	Sulfur	S	16
Caesium	Cs	55	Manganese	Mn	25	Tantalum	Ta	73
Calcium	Ca	20	Mendelevium	Md	101	Technetium	Tc	43
Californium	Cf	98	Mercury	Hg	80	Tellurium	Te	52
Carbon	C	6	Molybdenum	Mo	42	Terbium	Tb	65
Cerium	Ce	58	Neodymium	Nd	60	Thallium	Tl	81
Chlorine	Cl	17	Neon	Ne	10	Thorium	Th	90
Chromium	Cr	24	Neptunium	Np	93	Thulium	Tm	69
Cobalt	Co	27	Nickel	Ni	28	Tin	Sn	50
Copper	Cu	29	Niobium	Nb	41	Titanium	Ti	22
Curium	Cm	96	Nitrogen	N	7	Tungsten	W	74
Dysprosium	Dy	66	Nobelium	No	102	Unnihexium	Unh	106
Einsteinium	Es	99	Osmium	Os	76	Unnilpentium	Unp	105
Erbium	Er	68	Oxygen	O	8	Unnilquadium	Unq	104
Europium	Eu	63	Palladium	Pd	46	Unnilseptium	Uns	107
Fermium	Fm	100	Phosphorus	P	15	Uranium	U	92
Flourine	F	9	Platinum	Pt	78	Vanadium	V	23
Francium	Fr	87	Plutonium	Pu	94	Xenon	Xe	54
Gadolinium	Gd	64	Polonium	Po	84	Ytterbium	Yb	70
Gallium	Ga	31	Potassium	K	19	Yttrium	Y	39
Germanium	Ge	32	Praseodymium	Pr	59	Zinc	Zn	30
Gold	Au	79	Promethium	Pm	61	Zirconium	Zr	40
Hafnium	Hf	72	Protoactinium	Pa	91	**Total**	**107**	

Probably the number one question arising during a discussion of water softening is that of the "sodium" issue. It is greatly misunderstood due to all the bad press about too much salt (sodium) in the average American's diet today. Various studies contradict one another on the actual health-impact of sodium in the diet. We must have sodium to live...but how much is enough...how much is too much? We will not attempt to answer those questions. However, we can put the topic into perspective by showing where the sodium in one's life comes from daily.

The standard sodium ion exchange (softening) process uses sodium (salt) to exchange-out the hardness ions (calcium & magnesium). Therefore, when you remove the hardness ions, they are replaced with sodium ions. The amount of sodium produced in the softening process is quite small and should not present any health problems for a healthy person. As a matter of fact, the U.S. drinking water regulations have dropped sodium as a regulated component of water. However, if a person has a question about whether or not they should consume water softened by the sodium ion exchange process, they should consult with their own health professional.

The basic information below should put soft water sodium into perspective for you relative to sodium in foods. For example, if you drank 3 quarts of water that was 10 grains hard before softening you would only take-in 223 milligrams of sodium or about 4.3% of the average daily intake of sodium attributable to the water. This would be less than the amount of sodium contained in two slices of white bread.

FOOD	APPROXIMATE SODIUM CONTENT IN MILLIGRAMS
BREAKFAST	
1/2 cup canned tomato juice	270
1 egg (no salt added)	60
2 slices bacon	150
2 biscuits or toast	300
2 teaspoons margarine	100
LUNCH	
Luncheon meat, corned beef or ham (3 oz.)	900
Processed cheddar cheese (1 oz.)	420
2 slices white bread	300
1 cup milk	120
1 large olive	130
1 dill pickle	930
1 teaspoon mustard	60
Potato chips, about 10	200
DINNER	
Steak, 6 oz., no salt added	80
Green salad with 1 ounce French Dressing	450
Baked potato, salt added	240
Two pats margarine	100
Bread, 2 slices or equivalent	300
TOTAL SODIUM.....5,110 (Milligrams)	

TABLE 1 - Sodium Added to Water from Cation Exchange Softening

Initial Water Hardness	Sodium added by Cation Exchange Softening of Water	
Grains per Gallon	Milligrams Na+/gal.	Milligrams Na+/qt.
1	30	7.5
5	149	37
6	179	44
7	209	52
8	239	60
9	269	68
10	298	75
15	447	112
20	596	150
30	894	225
40	1,191	300

TABLE 2 - Sodium Intake from Softened Water Compared to Total Sodium Intake

Initial Water Hardness/ Grains per Gallons	Milligrams Na+ Per 3 qts. Softened Water	Milligrams Na+ from Food Water	Total Na+ Consumed Milligrams	% of Total from Softened
1	23	5,000	5,023	0.4%
5	112	5,000	5,112	2.2%
10	223	5,000	5,223	4.3%
15	335	5,000	5,335	6.5%
20	447	5,000	5,447	8.2%
30	670	5,000	5,670	12.5%
40	893	5,000	5,893	15.2%

To convert pressure (in pounds per square feet) to “Feet of Head” pressure, use the following formula: FT = 2.31 x psi

One U.S. gallon of water contains 231 cu inches and weighs about 8.333 pounds.

A cubic foot of water contains about 7.50 gallons and weighs about 62.5 pounds.

To find the pressure in “psi” of a column of water, multiply the height of the column in feet by .434.

One pound of water occupies 27.70 cubic inches.

One cubic foot of salt water weighs about 64.33 pounds.

One standard “barrel” of water contains 31.50 gallons.

Barrels per day (42 gallons) x .02917 = gallons per minute

Friction of liquids in piping increases as the square of the velocity.

Doubling the diameter of a pipe increases its capacity four times.

A “miner’s inch” of water is approximately equal to a supply of 12 gpm (9 in some states).

The gallons per minute which a pipe will deliver equals .0408 times the square of the diameter in inches, multiplied by the velocity of water in feet per minute.

To find the capacity of a pipe or cylinder in gallons, multiply the square of the diameter in inches by the length in inches then multiply by .0034.

The weight of water (in pounds) in any length pipe is obtained by multiplying the length in feet by the square of the diameter in inches then multiply by .340.

One common water pail will hold 2.27 U.S. gallons or about 19 pounds of water.

Sharp angles or sudden bends in pipes cause an increase in friction and, consequently, more power is necessary. Where change of direction is desired, it should be made with long, easy curves or by using 45 degree elbows whenever possible.

About 80% of the earth’s surface is covered by water.

Around 97% of the earth’s water is contained in the oceans, 2% is in glaciers and icecaps; the remaining 1% is found in other surface waters, groundwater and living tissue.

Rainfall in the U.S. ranges from about 7-130 inches per year depending on geography, averaging out to about 30 inches.

About 52% of our fresh water is used for industrial processes; 40% for irrigation, and 8% for all other uses.

Man can survive for about 30 days without food but only about 7 days without sufficient water.

The average human contains about 10 gallons of water or around 65% of bodyweight.

Bone is about 20% water, the brain about 80%.

An average man needs about 2.50 gallons of water per day for proper health (from foods and beverages).

It is currently estimated that per capita consumption of water in the U.S. is 70-100 gallons per day for all uses.

Water boils at 212°F (100°C) and freezes at 32°F (0°C).

Most things contract when they freeze. Water, however, is one of the very few things that expands (by about 10%).

To find the circumference of a circle, multiply the diameter by 3.1416.

To find the circumference of a circle, multiply the radius by 6.283185.

To find the diameter of a circle, multiply the circumference by .31831.

To find the diameter of a circle, multiply the square root of the area by 1.12838.

To find the radius of a circle, multiply the square root of the area by 0.56419.

To find the area of a circle, multiply the square of the diameter by .7854.

To find the area of a circle, multiply the square of the circumference by 0.07958.

To find the surface of a sphere, multiply the square of the diameter by 3.1416.

To find the cubic inches in a sphere, multiply the cube of the diameter by .5236.

To find the U.S. gallon capacity of any size tank with given dimensions of the cylinder in inches, multiply the square of the diameter by the length then multiply by .0034.

Steam rising from water at its boiling point has a pressure equal to the atmosphere (14.7 psi).

The expansion of water from its freezing point to boiling is 1 gallon in each 23 or approximately 4.333%.

SOURCE: Water Well Handbook, Keith Anderson, pp. 39 & 254, 1989

Environmental Hotlines

Listed below are a number of agencies that may be of assistance to you in the event you have questions or need to report an emergency situation. Information was determined correct at the time of printing, however, for the most up to date information check with the EPA online at www.epa.gov

AGENCY	ADDRESS / TELEPHONE
U.S. E.P.A. (Safe Drinking Water Hotline) For information on standards and contaminants	(800) 426-4791
E.P.A. Region I (ME,MA, NH, VT, RI & CT)	1 Congress St. (888) 372-7341 Boston, MA 02114-2023 (617) 918-1111
E.P.A. Region II (NY, NJ, PR & VI)	290 Broadway 212-637-5000 New York, NY 10007-1866
E.P.A. Region III (VA, WV, PA, DE, MD & DC)	1650 Arch Street (3PM52) (800) 438-2474 Philadelphia, PA 19103-2029 (215)814-5000
E.P.A. Region IV (FL, GA, NC, SC, KY, TN, MS & AL)	61 Forsyth Street, SW 800-241-1754 Atlanta, GA 30303-3104 (404) 562-9900
E.P.A. Region V (IL, IN, MI, MN, OH & WI)	77 W. Jackson Blvd. 312-353-2000 Chicago, IL 60604 800-621-8431
E.P.A. Region VI (TX, NM, OK, AR & LA)	1445 Ross Avenue Suite 1200 Dallas, Texas 75202 (214) 665-6444
E.P.A. Region VII (NE, KS, IA & MO)	901 N. 5th Street 800-223-0425 Kansas City, KS 66101
E.P.A. Region VIII (MT, WY, UT, CO, ND & SD)	303-312-6312 800-227-8917
E.P.A. Region IX (CA, NV, HI, AZ)	(415) 947-8021 (866)-EPA-WEST
E.P.A. Region X (AK, WA, OR & ID)	1200 Sixth Avenue (800) 424-4EPA Seattle, WA 98101 (206) 553-1200
RCRA Superfund Hotline For general information on sites and hazardous waste laws	(800) 424-9346
National Institute for Occupational Safety Health For questions about workplace health hazards	(800) 35-NIOSH
National Response Center Hotline To report release of a spill or oil or hazardous waste	(800)424-8802
Consumer Products Safety Commission To report products with actual or potential Hazards	(800) 638-2772
National Pesticide Hotline For information on health risks of pesticides	(800) 858-7378

National Primary Drinking Water Regulations

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting levels of contaminants in drinking water.

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems, but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

Definitions

Maximum Contaminant Level Goal (MCLG) --The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

Maximum Contaminant Level (MCL) -- The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

Maximum Residual Disinfectant Level Goal (MRDLG) -- The level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbal contaminants.

Maximum Residual Disinfectant Level (MRDL) -- The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbal contaminants.

Treatment Technique (TT) -- A required process intended to reduce the level of a contaminant in drinking water.

***Note:** *This document addresses the United States Evironmental Protection Agency Drinking Water Regulations in effect at its time of publication. These regulations are continually being reviewed and updated at the federal level. If there is any question as to validity of the current data, simply contact a state EPA office in your area.*

EPA National Primary Drinking Water Standards
MICROORGANISMS

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Cryptosporidium	Note: 1-1	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Absolute 1 micron filtration, Ultraviolet disinfection, Ozone, Chlorine disinfection
Giardia lamblia	99% Removal/ inactivation	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Absolute 1 micron filtration, Ultraviolet disinfection, Ozone, Chlorine disinfection
Heterotrophic plate count (HPC)	No more than 500 baterial colonies per mililiter	No health effects; it is an analytic method used to measure a variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	Ultraviolet disinfection, ozone, hydrogen peroxide or chlorine disinfection
Legionella	Note: 1-2	Legionnaire's Disease, a type of pneumonia	same as above
Total Coliforms (including fecal coliform and E. coli)	Note: 1-3	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present	Ultraviolet disinfection, ozone, hydrogen peroxide or chlorine disinfection
Turbidity	Note: 1-4	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease -causing organisms are present). These organisms can cause symptoms such as nausea, cramps, diarrhea, and headaches.	Coagulation/Filtration, Submicron Filtration, Ultrafiltration, Reverse Osmosis, Cartridge Filtration matched to Turbidity Particle size, or Distillation
Viruses (enteric)	99% Removal inactivation	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Ultraviolet disinfection, ozone, hydrogen peroxide or chlorine disinfection

Notes:

1-1. *Cryptosporidium* (as of 1/1/02 for systems serving more than 10,000 and 1/14/05 for systems serving less than 10,000) 99% removal.

1-2. *Legionella*: No limit, but EPA believes that if Giardia and viruses are removed/inactivated, *Legionella* will also be controlled.

1-3. Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems. No more than 5.0% total coliform-positive in a month. Every sample that has total coliform must be anlayzed for either fecal coliforms or *E. coli* if two consecutive TC-positive samples, and one is also positive for *E. coli* fecal coliforms, system has an acute MCL violation.

1-4. Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5) for conventional or direct filtration in at least 95% of the daily samples in any month. As of January 1, 2002, for systems servicing more than 10,000, and January 14, 2005, for systems servicing less than 10,000, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.

RADIONUCLIDES

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Alpha particles	15 picocuries per Liter (pCi/L)	Increased Risk of Cancer	Ion Exchange, Reverse Osmosis, Distallation, & Electrodialysis
Beta particles & photon emitters	4 millirems per year	Increased Risk of Cancer	Ion Exchange, Reverse Osmosis, Distallation, & Electrodialysis
Radium 226 & Radium 228 (combined)	5 pCi/L	Increased Risk of Cancer	Cation exchange, Reverse Osmosis, Distallation, & Electrodialysis
Uranium	30 ug/L as of 12/08/03	Increased Risk of Cancer, kidney toxicity	Coagulation/Filtration, Submicron Filtration, Anion Exchange, Activated Alumina, Reverse Osmosis, Distillation, and Electrodialysis

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Antimony	0.006	Increase in blood cholesterol; decrease in blood sugar	Coagulation/Filtration, Submicron Filtration, Reverse Osmosis, Ultrafiltration, and Distillation
Arsenic	0.010 as of 1/23/06	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Coagulation/Filtration, Submicron Filtration, Anion Exchange, Activated Alumina, Reverse Osmosis, Distillation, Electro-dialysis, and granular ferric oxide media filt.
Asbestos (Fibers > 10 micrometers)	7 million fibers per Liter (MFL)	Increased Risk of developing benign intestinal polyps	Coagulation/Filtration, Submicron Filtration, Reverse Osmosis, Ultrafiltration, and Distillation
Barium	2	Increase in blood pressure	Cation Exchange, Reverse Osmosis Distillation, and Electrodialysis
Beryllium	0.004	Intestinal lesions	Coagulation/Filtration, Submicron Filtration/Activated Carbon, Activated Alumina, Cation Exchange, Reverse Osmosis, Distillation, and Electrodialysis
Cadmium	0.005	Kidney Damage	Coagulation/Filtration, Submicron Filtration, Cation Exchange, Reverse Osmosis, Distillation, and Electrodialysis
Chromium (total)	0.1	Allergic dermatitis	Coagulation/Filtration, Cation Exchange, Reverse Osmosis, Distillation, Anion Exchange, and Electrodialysis
Copper	Note: 2-1 1.3 action level	Short term exposure: Gastrointestinal distress. Long term exposure: Liver or kidney damage.	Cation Exchange (20%-90%), Reverse Osmosis, Distillation, and Electrodialysis
Cyanide (as free cyanide)	0.2	Nerve damage or thyroid problems	Chemical Oxidation/Disinfection at pH > 10, Anion Exchange, Reverse Osmosis, Distillation, and Electrodialysis
Flouride	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Activated Alumina, Activated Carbon, Reverse Osmosis, Distillation, and Electrodialysis
Lead	Note: 2-1 0.015 action level	Infants and Children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems, high blood pressure	Cation Exchange (20%-90%), Coagulation/Filtration, Submicron Filtration/Activated Carbon, Reverse Osmosis, Distillation, and Electrodialysis
Mercury (inorganic)	0.002	Kidney damage	Submicron Filtration/Activated Carbon, Cation Exchange (20%-90%), Reverse Osmosis, Distillation, Anion Exchange, and Electrodialysis
Nitrate (measured as Nitrogen)	10	Infants below the age of six months who drink water containing nitrate or nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Anion Exchange, Reverse Osmosis, Distillation, and Electroradialysis
Nitrite (measured as Nitrogen)	1		Chemical Oxidation/Disinfection, Anion Exchange, Reverse Osmosis, Distillation, and Electrodialysis
Selenium	0.05	Hair or fingernail loss; numbness of fingers or toes; circulatory problems	Coagulation/Filtration, Submicron Filtration/Activated Carbon, Activated Alumina, Anion Exchange, Reverse Osmosis, Distillation, and Electrodialysis
Thallium	0.002	Hair loss; changes in blood; kidney, intestine or liver problems	Cation Exchange, Activated Alumina, and Distillation

Note:
2-1. Lead and Copper are regulated by a treatment technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed action level, water systems must take additional steps.

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Acrylamide	Note: 3-1	Nervous systems or blood problems	Control of water treatment chemicals and surfaces in contact with water
Alachlor	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Activated Carbon, Aeration
Atrazine	0.003	Cardiovascular system or reproductive problems	Activated Carbon
Benzene	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Activated Carbon, Aeration
Benzo(a)pyrene (PAHs)	0.0002	Reproductive difficulties; increased risk of cancer	Activated Carbon
Carbofuran	0.04	Problems with blood, nervous system, or reproductive system	Activated Carbon
Carbon tetrachloride	0.005	Liver problems; increased risk of cancer	Activated Carbon, Aeration
Chlordane	0.002	Liver or nervous system problems; increased risk of cancer	Activated Carbon
Chlorobenzene	0.1	Liver or kidney problems	Activated Carbon
2,4-D	0.07	Kidney, liver, or adrenal gland problems	Activated Carbon
Dalapon	0.2	Minor kidney changes	Activated Carbon
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	Reproductive difficulties; increased risk of cancer	Activated Carbon
o-Dichlorobenzene	0.6	Liver, kidney, or circulatory system problems	Activated Carbon, Aeration
p-Dichlorobenzene	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Activated Carbon, Aeration
1,2-Dichloroethane	0.005	Increased risk of cancer	Activated Carbon, Aeration
1,1-Dichloroethylene	0.007	Liver problems	Activated Carbon, Aeration
cis-1,2-Dichloroethylene	0.07	Liver problems	Activated Carbon, Aeration
trans-1,2-Dichloroethylene	0.1	Liver problems	Activated Carbon, Aeration
Dichloromethane	0.005	Liver problems; increased risk of cancer	Aeration
1,2-Dichloropropane	0.005	Increased risk of cancer	Activated Carbon, Aeration
Di(2-ethylhexyl) adipate	0.4	Weight loss, liver problems, or possible reproductive difficulties	Activated Carbon, Aeration
Di(2-ethylhexyl) phthalate	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Activated Carbon
Dinoseb	0.007	Reproductive difficulties	Activated Carbon
Dioxin (2,3,7,8-TCDD)	0.00000003	Reproductive difficulties; increased risk of cancer	Activated Carbon
Diquat	0.02	Cataracts	Activated Carbon
Endothall	0.1	Stomach and intestinal problems	Activated Carbon
Endrin	0.002	Liver problems	Activated Carbon
Epichlorohydrin	Note: 3-1	Increased cancer risk, and over a long period of time, stomach problems	Control of water treatment chemicals and surfaces in contact with water

Note:

3-1. Each water system must certify, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified as follows: Acrylamide = 0.05% dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent).

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Ethylbenzene	0.7	Liver or kidney problems	Activated Carbon, Aeration
Ethylene dibromide	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Activated Carbon, Aeration
Glyphosate	0.7	Kidney problems; reproductive difficulties	Activated Carbon
Heptachlor	0.0004	Liver damage; increased risk of cancer	Activated Carbon
Heptachlor epoxide	0.0002	Liver damage; increased risk of cancer	Activated Carbon
Hexachlorobenzene	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Activated Carbon
Hexachlorocyclopentadiene	0.05	Kidney or stomach problems	Activated Carbon, Aeration
Lindane	0.0002	Liver or kidney problems	Activated Carbon
Methoxychlor	0.04	Reproductive difficulties	Activated Carbon
Oxamyl (Vydate)	0.2	Slight nervous system effects	Activated Carbon
Pentachlorophenol	0.001	Liver or kidney problems; increased cancer risk	Activated Carbon
Picloram	0.5	Liver problems	Activated Carbon
Polychlorinated biphenyls (PCBs)	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Activated Carbon
Simazine	0.004	Problems with blood	Activated Carbon
Styrene	0.1	Liver, kidney, or circulatory system problems	Activated Carbon, Aeration
Tetrachloroethylene	0.005	Liver problems, increased risk of cancer	Activated Carbon, Aeration
Toluene	1	Nervous system, kidney, or liver problems	Activated Carbon, Aeration
Toxaphene	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Activated Carbon
2,4,5-TP (Silvex)	0.05	Liver problems	Activated Carbon
1,2,4-Trichlorobenzene	0.07	Changes in adrenal glands	Activated Carbon, Aeration
1,1,1-Trichloroethane	0.2	Liver, nervous system, or circulatory problems	Activated Carbon, Aeration
1,1,2-Trichloroethane	0.005	Liver, kidney, or immune system problems	Activated Carbon, Aeration
Trichloroethylene	0.005	Liver problems; increased risk of cancer	Activated Carbon, Aeration
Vinyl Chloride	0.002	Increased risk of cancer	Aeration
Xylenes (total)	10	Nervous system damage	Activated Carbon, Aeration

DISINFECTANT

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Chloramines (as Cl_2)	MRDL = 4.0	Eye/nose irritation; stomach discomfort, anemia	Activated Carbon
Chlorine (as Cl_2)	MRDL = 4.0	Eye/nose irritation; stomach discomfort	Activated Carbon
Chlorine Dioxide (as ClO_2)	MRDL = 0.8	Anemia; infants & young children, nervous system effects	Activated Carbon

DISINFECTANT BYPRODUCT

Contaminant	MCL(mg/L)	Potential Health Effects from Exposure above the MCL	Treatment Methods
Bromate	0.010	Increased risk of cancer	Call EPA for more info.
Chlorite	1	Anemia; infants & young children, nervous system effects	Call EPA for more info.
Haloacetic acids (HAA5)	0.060	Increased risk of cancer	Call EPA for more info.
Total Trihalomethanes (TTHMs)	0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Activated Carbon

CSI WATER TREATMENT SYSTEMS

EPA National Secondary Drinking Water Standards

Contaminant	Secondary Standard	Treatment Methods
Aluminum	0.05 to 0.2 mg/L	Cation Exchange, Reverse Osmosis, Distillation, Electrodialysis
Chloride	250 mg/L	Reverse Osmosis, Distillation, Anion Exchange, Electrodialysis
Color	15 (color units) Note: 1	Anion Exchange, Reverse Osmosis, Activated, Carbon, Distillation, Filtration, Ozonation, Chloronation, Activated Alumina
Copper	1.0 mg/L	Reverse Osmosis, Distillation, Cation Exchange (20%-90%), Electrodialysis
Corrosivity	Non-corrosive	Calcite or Calcite/Magnesium Oxide (Magnesia), (5 to 1) Filter to raise pH, Soda Ash Chemical Feed, Sodium Silicate Feed, Reduce TDS via Reverse Osmosis (partial, split stream treatment), Coatings, Insulating Unions
Fluoride	2.0	Activated Alumina, Activated Carbon, Reverse Osmosis, Distillation
Foaming Agents	0.5 mg/L	Chlorination, Reverse Osmosis, Activated Carbon, Distillation, Ozonation
Iron	0.3 mg/L Note: 2	Filtration (oxidizing filters), Cation Exchange, Reverse Osmosis, Pressure Areation/Filtration, Chlorination - Precipitation/Filtration, Distillation, Electrodialysis
Manganese	0.05 mg/L Note: 3	Filtration (oxidizing filters), Cation Exchange, Reverse Osmosis, Distillation, Chlorination - Precipitation/Filtration, Pressure Areation/Filtration, Electrodialysis
Odor	3 threshold odor # Note: 4	Activated Carbon, Aeration, Oxidation
pH	6.5 - 8.5	pH may be increased by alkalies and may be decreased by acids, Ion Exchange, Neutralizing Filter (Calcite, Magnesia)
Silver	0.10 mg/L	Coagulation/Filtration, Submicron Filtration/Activated Carbon, Ion Exchange (Anion or Cation depending on complexed Ion Species)
Sulfate	250 mg/L	Reverse Osmosis, Distillation, Anion Exchange, Electrodialysis
Total Dissolved Solids (TDS)	500 mg/L	Reverse Osmosis, Distillation, Deionzation by Ion Exchange (Cation/Anion in two bed or mixed bed), Electrodialysis
Zinc	5 mg/L	Reverse Osmosis, Distillation, Cation Exchange, Electrodialysis

Notes:

1. Color - Color units are based on the APHA recommended standard of 1 color unit being equal to 1 mg/L of platinum or chloroplatinate ion.

2. Iron - Ferrous Iron (clear water iron) is readily converted to ferric iron (red water iron) in the presence of any air or oxidizing material; precipitating ferric iron must be prevented to avoid fouling and interference with effective reverse osmosis membrane rejection.

3. Manganese - Manganese must be maintained in the soluble manganous (Mn^{+2}) stated to avoid fouling and interference with effective reverse osmosis membrane rejection.

4. Odor - Chlorine and hydrogen sulfide are examples of odors that may be reduced by the treatment methods suggested

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434
 · FAX 419-281-2375 · www.csih2o.com · info@csih2o.com

Parts

CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

Valve Part Numbers - Signature Series Valve

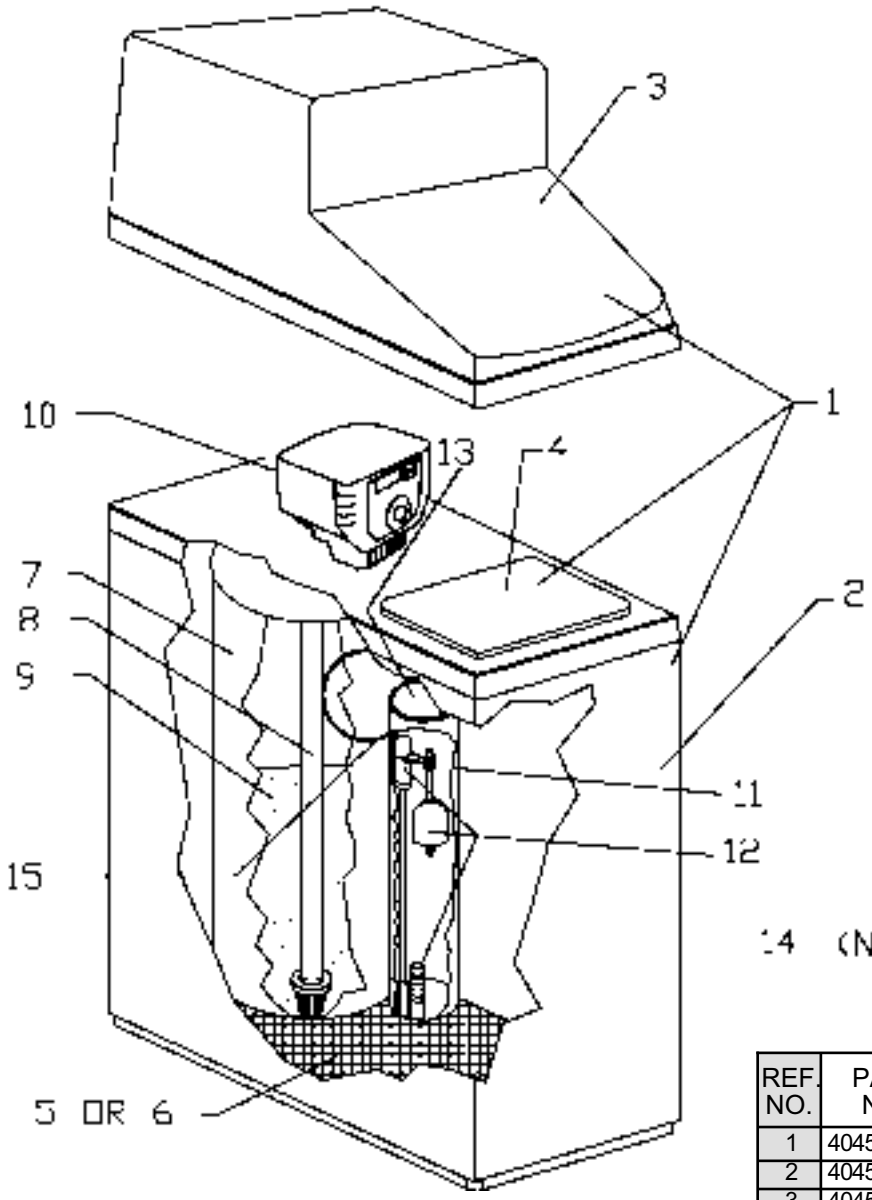
Complete Control Valve Part No.								
w / Plastic Bypass & 3/4" Stainless Steel Yoke	w / Plastic Bypass & 1" Stainless Steel Yoke	Without Bypass or Yoke	w / Plastic Bypass & yoke 3/4"	w / Plastic Bypass & yoke 1"	w / Stainless Steel Bypass 3/4"	w / Stainless Steel Bypass 1"	Drain line Flow cntrl	Model Number Used On
20001X461	20001X466	20001X471	20001X481	20001X486	20001X491	20001X496	1.5	CT24(V)
20001X462	20001X467	20001X472	20001X482	20001X487	20001X492	20001X497	2.0	CT24T
20001X463	20001X468	20001X473	20001X483	20001X488	20001X493	20001X498	2.4	CT32(V)
20001X464	20001X469	20001X474	20001X484	20001X489	20001X494	20001X499	3.0	CT32T
20001X521	20001X531	20001X541	20001X551	20001X561	20001X571	20001X581	1.5	TS24(V), TSI48, TST48
20001X522	20001X532	20001X542	20001X552	20001X562	20001X572	20001X582	2.0	TS24T, TS32(V), TN25
20001X523	20001X533	20001X543	20001X553	20001X563	20001X573	20001X583	2.4	TS32T, TS48(V), TSI64, TST64
20001X524	20001X534	20001X544	20001X554	20001X564	20001X574	20001X584	3.0	TS48T, TSI96
20001X526	20001X536	20001X546	20001X556	20001X566	20001X576	20001X586	4.0	TS64(V)
20001X527	20001X537	20001X547	20001X557	20001X567	20001X577	20001X587	5.0	TS64T, TS96(V)
20001X528	20001X538	20001X548	20001X558	20001X568	20001X578	20001X588	5.0	IF10, IF15
20001X529	20001X539	20001X549	20001X559	20001X569	20001X579	20001X589	1.2	TN15, TST32, TSI32
20001X530	20001X540	20001X550	20001X560	20001X570	20001X580	20001X590	7.0	IF25, TS128(V)
20002X521	20002X531	20002X541	20002X551	20002X561	20002X571	20002X581	5.0	WF10, WF15
20002X523	20002X533	20002X543	20002X553	20002X563	20002X573	20002X583	7.0	WF25
20002X524	20002X534	20002X544	20002X554	20002X564	20002X574	20002X584	10.0	WF30
20002X525	20002X535	20002X545	20002X555	20002X565	20002X575	20002X585	15.0	WF40
20003X461	20003X466	20003X471	20003X481	20003X486	20003X491	20003X496	1.5	CM24(V)
20003X462	20003X467	20003X472	20003X482	20003X487	20003X492	20003X497	2.0	CM24T
20003X463	20003X468	20003X473	20003X483	20003X488	20003X493	20003X498	2.4	CM32(V)
20003X464	20003X469	20003X474	20003X484	20003X489	20003X494	20003X499	3.0	CM32T
20003X520	20003X530	20003X540	20003X550	20003X560	20003X570	20003X580	1.2	MN15, MST32, MSI32
20003X521	20003X531	20003X541	20003X551	20003X561	20003X571	20003X581	1.5	MS24(V), MST48, MSI48
20003X522	20003X532	20003X542	20003X552	20003X562	20003X572	20003X582	2.0	MS24T, MS32(V)
20003X523	20003X533	20003X543	20003X553	20003X563	20003X573	20003X583	2.4	MS32T, MS48(V), MST64, MSI64
20003X524	20003X534	20003X544	20003X554	20003X564	20003X574	20003X584	3.0	MS48T, MSI96
20003X526	20003X536	20003X546	20003X556	20003X566	20003X576	20003X586	4.0	MS64(V)
20003X527	20003X537	20003X547	20003X557	20003X567	20003X577	20003X587	5.0	MS96(V), MS64T
20003X528	20003X538	20003X548	20003X558	20003X568	20003X578	20003X588	7.0	MS128(V)
20005X521	20005X531	20005X541	20005X551	20005X561	20005X571	20005X581	5.0	RF10(VS), RF15(VS), UT10, UT15, UTP15
20005X523	20005X533	20005X543	20005X553	20005X563	20005X573	20005X583	7.0	RF25(VS), UT25, UTP25
20005X524	20005X534	20005X544	20005X554	20005X564	20005X574	20005X584	10.0	RF30(VS), UT30, UTP30
20005X525	20005X535	20005X545	20005X555	20005X565	20005X575	20005X585	15.0	UT40, UTP40

Valve Part Numbers - 2510 Valve

Complete Control Valve Part No.								
w / Plastic Bypass & 3/4" Nickel Plate Yoke	w / Plastic Bypass & 1" Nickel Plate Yoke	Without Bypass or Yoke	w / Plastic Bypass & yoke 3/4"	w / Plastic Bypass & yoke 1"	w / Nickel Plated Bypass 3/4"	w / Nickel Plated Bypass 1"	Drain line Flow cntrl	Model Number Used On
20251X461	20251X466	20251X471	20251X481	20251X486	20251X491	20251X496	1.5	CT24(V)
20251X462	20251X467	20251X472	20251X482	20251X487	20251X492	20251X497	2.0	CT24T
20251X463	20251X468	20251X473	20251X483	20251X488	20251X493	20251X498	2.4	CT32(V)
20251X464	20251X469	20251X474	20251X484	20251X489	20251X494	20251X499	3.0	CT32T
20251X521	20251X531	20251X541	20251X551	20251X561	20251X571	20251X581	1.5	TS24(V), TSI48, TST48
20251X522	20251X532	20251X542	20251X552	20251X562	20251X572	20251X582	2.0	TS24T, TS32(V), TST48, TN15
20251X523	20251X533	20251X543	20251X553	20251X563	20251X573	20251X583	2.4	TS32T, TS48(V), TSI64, TST64, TN25
20251X524	20251X534	20251X544	20251X554	20251X564	20251X574	20251X584	3.0	TS48T
20251X526	20251X536	20251X546	20251X556	20251X566	20251X576	20251X586	4.0	TS64(V)
20251X527	20251X537	20251X547	20251X557	20251X567	20251X577	20251X587	5.0	TS96(V), TS64T
20251X528	20251X538	20251X548	20251X558	20251X568	20251X578	20251X588	5.0	IF10, IF15
20251X529	20251X539	20251X549	20251X559	20251X569	20251X579	20251X589	1.2	TN15, TST32, TSI32
20251X530	20251X540	20251X550	20251X560	20251X570	20251X580	20251X590	7.0	IF25, TS128(V)
20252X521	20252X531	20252X541	20252X551	20252X561	20252X571	20252X581	5.0	WF10 WF15
20252X523	20252X533	20252X543	20252X553	20252X563	20252X573	20252X583	7.0	WF25
20252X524	20252X534	20252X544	20252X554	20252X564	20252X574	20252X584	10.0	WF30
20253X461	20253X466	20253X471	20253X481	20253X486	20253X491	20253X496	1.5	CM24(V)
20253X462	20253X467	20253X472	20253X482	20253X487	20253X492	20253X497	2.0	CM24T
20253X463	20253X468	20253X473	20253X483	20253X488	20253X493	20253X498	2.4	CM32(V)
20253X464	20253X469	20253X474	20253X484	20253X489	20253X494	20253X499	3.0	CM32T
20253X520	20253X530	20253X540	20253X550	20253X560	20253X570	20253X580	1.2	MN15, MSI32, MST32
20253X521	20253X531	20253X541	20253X551	20253X561	20253X571	20253X581	1.5	MS24(V), MST48, MSI48
20253X522	20253X532	20253X542	20253X552	20253X562	20253X572	20253X582	2.0	MS24T, MS32, MSI64
20253X523	20253X533	20253X543	20253X553	20253X563	20253X573	20253X583	2.4	MS32T, MS48(V), MSI64, MST64, MN25
20253X524	20253X534	20253X544	20253X554	20253X564	20253X574	20253X584	3.0	MS48T, MSI96
20253X526	20253X536	20253X546	20253X556	20253X566	20253X576	20253X586	4.0	MS64(V)
20253X527	20253X537	20253X547	20253X557	20253X567	20253X577	20253X587	5.0	MS96(V), MS64T
20255X521	20255X531	20255X541	20255X551	20255X561	20255X571	20255X581	5.0	RF10, RF15, UT10 UT15, UTP15
20255X523	20255X533	20255X543	20255X553	20255X562	20255X573	20255X583	7.0	RF25, UT25, UTP25
20255X524	20255X534	20255X544	20255X554	20255X563	20255X574	20255X584	10.0	RF30, UT30, UTP30

Complete Control Valve Part No.								
w / Plastic Bypass & 3/4" Nickel Plate Yoke	w / Plastic Bypass & 1" Nickel Plate Yoke	Without Bypass or Yoke	w / Plastic Bypass & yoke 3/4"	w / Plastic Bypass & yoke 1"	w / Nickel Plated Bypass 3/4"	w / Nickel Plated Bypass 1"	Drain line Flow cntrl	Model Number Used On
20561X461	20561X466	20561X471	20561X481	20561X486	20561X491	20561X496	1.5	CT24(V)
20561X462	20561X467	20561X472	20561X482	20561X487	20561X492	20561X497	2.0	CT24T
20561X463	20561X468	20561X473	20561X483	20561X488	20561X493	20561X498	2.4	CT32(V)
20561X464	20561X469	20561X474	20561X484	20561X489	20561X494	20561X499	3.0	CT32T
20561X501	20561X511	20561X521	20561X531	20561X541	20561X551	20561X561	1.5	TS24(V), TSI32, TST32
20561X502	20561X512	20561X522	20561X532	20561X542	20561X552	20561X562	2.0	TS24T, TS32(V), TSI48, TST48, TN15
20561X503	20561X513	20561X523	20561X533	20561X543	20561X553	20561X563	2.4	TS32T, TS48(V), TSI64, TST64, TN25
20561X504	20561X514	20561X524	20561X534	20561X544	20561X554	20561X564	3.0	TS48T
20561X506	20561X516	20561X526	20561X536	20561X546	20561X556	20561X566	4.0	TS64(V)
20561X507	20561X517	20561X527	20561X537	20561X547	20561X557	20561X567	5.0	TS96
20561X500	20561X510	20561X520	20561X530	20561X540	20561X550	20561X560	1.2	TSI32, TST32, TN15
20563X461	20563X466	20563X471	20563X481	20563X486	20563X491	20563X496	1.5	CM24(V)
20563X462	20563X467	20563X472	20563X482	20563X487	20563X492	20563X497	2.0	CM24T
20563X463	20563X468	20563X473	20563X483	20563X488	20563X493	20563X498	2.4	CM32(V), MN25
20563X464	20563X469	20563X474	20563X484	20563X489	20563X494	20563X499	3.0	CM32T
20563X501	20563X511	20563X521	20563X531	20563X541	20563X551	20563X561	1.5	MS24(V)
20563X502	20563X512	20563X522	20563X532	20563X542	20563X552	20563X562	2.0	MS24T, MS32(V)
20563X503	20563X513	20563X523	20563X533	20563X543	20563X553	20563X563	2.4	MS32T, MS48(V)
20563X504	20563X514	20563X524	20563X534	20563X544	20563X554	20563X564	3.0	MS48T
20563X506	20563X516	20563X526	20563X536	20563X546	20563X556	20563X566	4.0	MS64(V)
20563X507	20563X517	20563X527	20563X537	20563X547	20563X557	20563X567	5.0	MS96(V), MS64T
20563X500	20563X510	20563X520	20563X530	20563X540	20563X550	20563X560	1.2	MSI32, MST32, MN15
20563X501	20563X511	20563X521	20563X531	20563X541	20563X551	20563X561	1.5	MSI48, MST48
20563X503	20563X513	20563X523	20563X533	20563X543	20563X553	20563X563	2.4	MSI64, MST64, MN25

Complete Control Valve Part No.								
w / Plastic Bypass & 3/4" Nickel Plate Yoke	w / Plastic Bypass & 1" Nickel Plate Yoke	Without Bypass or Yoke	w / Plastic Bypass & yoke 3/4"	w / Plastic Bypass & yoke 1"	w / Nickel Plated Bypass 3/4"	w / Nickel Plated Bypass 1"	Drain line Flow cntrl	Model Number Used On
20564X461	20564X466	20564X471	20564X481	20564X486	20564X491	20564X496	1.5	CM24(V)
20564X462	20564X467	20564X472	20564X482	20564X487	20564X492	20564X497	2.0	CM24T
20564X463	20564X468	20564X473	20564X483	20564X488	20564X493	20564X498	2.4	CM32(V)
20564X464	20564X469	20564X474	20564X484	20564X489	20564X494	20564X499	3.0	CM32T
20564X501	20564X511	20564X521	20564X531	20564X541	20564X551	20564X561	1.5	MS24(V)
20564X502	20564X512	20564X522	20564X532	20564X542	20564X552	20564X562	2.0	MS24T, MS32(V)
20564X503	20564X513	20564X523	20564X533	20564X543	20564X553	20564X563	2.4	MS32T, MS48
20564X504	20564X514	20564X524	20564X534	20564X544	20564X554	20564X564	3.0	MS48T
20564X506	20564X516	20564X526	20564X536	20564X546	20564X556	20564X566	4.0	MS64(V)
20564X507	20564X517	20564X527	20564X537	20564X547	20564X557	20564X567	5.0	MS96(V), MS64T
20564X500	20564X510	20564X520	20564X530	20564X540	20564X550	20564X560	1.2	MSI32, MST32, MN15
20564X501	20564X511	20564X521	20564X531	20564X541	20564X551	20564X561	1.5	MSI48, MST48
20564X503	20564X513	20564X523	20564X533	20564X543	20564X553	20564X563	2.4	MSI64, MST64, MN25



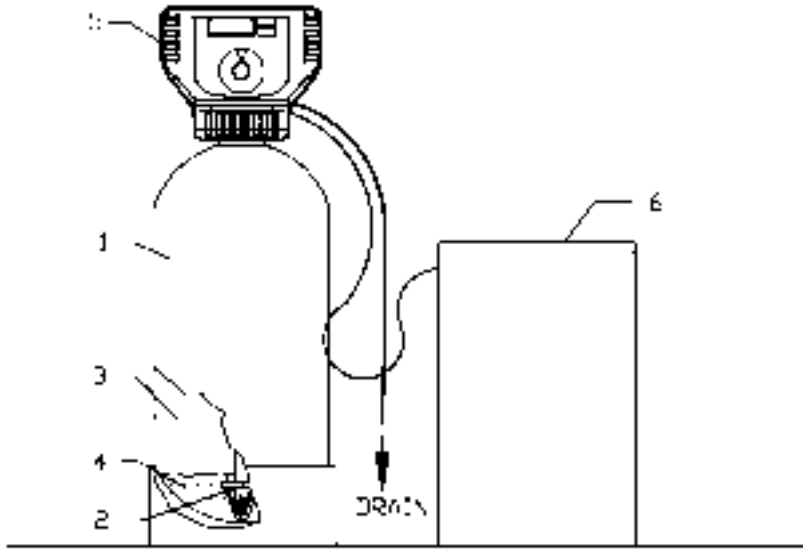
REF. NO.	PART NO.	DESCRIPTION
1	40450X100	CABINET, LID & COVER ASSEMBLY
2	40450X101	CABINET ONLY
3	40450X102	LID ONLY
4	40450X103	COVER ONLY
5	40450X105	GRID PLATE 10" TANK
6	40450X104	GRID PLATE 8" TANK
7	----	RESIN TANK SEE CHART NEXT PAGE
8	----	DISTRIBUTOR & TUBE ASSY. SEE CHART NEXT PAGE
9	----	CATION RESIN SEE CHART NEXT PAGE
10	----	CONTROL VALVE SEE CHART NEXT PAGE
11	40330X105	BRINE WELL
12	40330X107	SAFETY BRINE & FLOAT ASSY.
13	40330X104	4" BRINE WELL CAP
14	40330X106	OVERFLOW FITTING & NUT
15	40330X103	BRINE TUBING - 3/8" OD X 48" LG

“CT” Series Softeners

REF. NO.	DESCRIPTION	CT24(V)	CT24T	CT32(V)	CT32T
7	RESIN TANK PART NO.	30835X100	30835X100	31035X100	31035X100
	SIZE	8" X 35"	8" X 35"	10" X 35"	10” X 35"
	VORTECH TANK PART NO.	30935V100	NA	31035V100	NA
	SIZE	9" X 35"		10" X 35"	
8	DISTRIBUTOR & TUBE ASSY.	330035X11	N/A	330035X11	N/A
	TURBULATOR & TUBE ASSY.	N/A	340035X11	N/A	340035X11
9	CATION RESIN SR75 3/4 CU. FT. SR10 1 CU. FT.	(1) SR75	(1) SR75	(1) SR10	(1) SR10
10	CONTROL VALVE W/ DLFC	1.5	2.0	2.4	3.0
	SIGNATURE VALVE W/ BYPASS & S.S. YOKE 3/4"	20001X461	20001X462	20001X463	20001X464
	SIGNATURE VALVE W/ BYPASS & S.S. YOKE 1"	20001X466	20001X467	20001X468	20001X469
	SIGNATURE VALVE W/O BYPASS & YOKE	20001X471	20001X472	20001X473	20001X474
	SIGNATURE VALVE W/ BYPASS & 1" YOKE	20001X481	20001X482	20001X483	20001X484
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20001X486	20001X487	20001X488	20001X489
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20001X491	20001X492	20001X493	20001X494
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20001X496	20001X497	20001X498	20001X499

“CM” Series Softeners

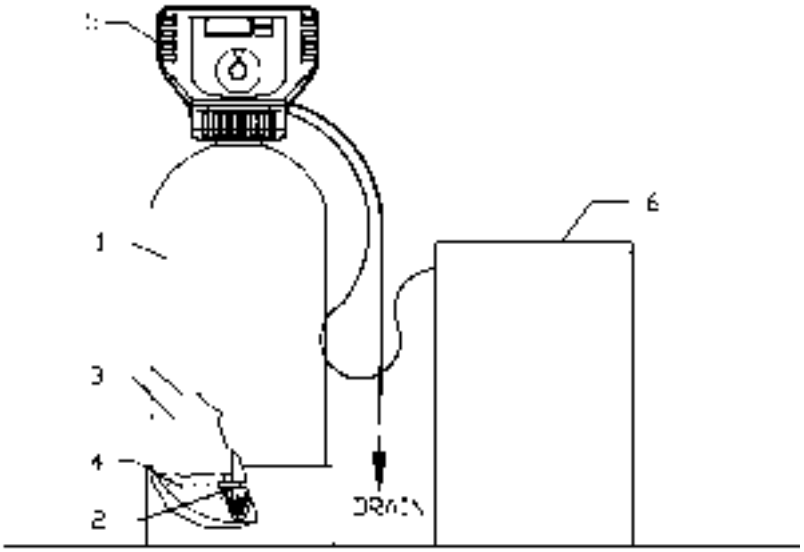
REF. NO	DESCRIPTION	CM24(V)	CM24T	CM32(V)	CM32T
7	RESIN TANK PART NO.	30835X100	30835X100	31035X100	31035X100
	SIZE	8" X 35"	8" X 35"	10" X 35"	10” X 35"
	VORTECH TANK PART NO.	30935V100	NA	31035V100	NA
	SIZE	9" X 35"		10" X 35"	
8	DISTRIBUTOR & TUBE ASSY.	330035X11	N/A	330035X11	N/A
	TURBULATOR & TUBE ASSY.	N/A	340035X11	N/A	340035X11
9	CATION RESIN SR75 3/4 CU. FT. SR10 1 CU. FT.	(1) SR75	(1) SR75	(1) SR10	(1) SR10
10	CONTROL VALVE W/ DLFC	1.5	2.0	2.4	3.0
	SIGNATURE VALVE W/ BYPASS & S.S. YOKE 3/4"	20003X461	20003X462	20003X463	20003X464
	SIGNATURE VALVE W/ BYPASS & S.S. YOKE 1"	20003X466	20003X467	20003X468	20003X469
	SIGNATURE VALVE W/O BYPASS & YOKE	20003X471	20003X472	20003X473	20003X474
	SIGNATURE VALVE W/ BYPASS & 1" YOKE	20003X481	20003X482	20003X483	20003X484
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20003X486	20003X487	20003X488	20003X489
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20003X491	20003X492	20003X493	20003X494
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20003X496	20003X497	20003X498	20003X499



REF NO.	DESCRIPTION	TS24(V)	TS24T	TS32(V)	TS32T	TS48(V)	TS48T	TS64(V)	TS64T	TS96V	TS128V
1	RESIN TANK PART NO. W/ BASE SIZE	30844X100 8" X 44"	30844X100 8" X 44"	30948X100 9" X 48"	30948X100 9" X 48"	31054X100 10" X 54"	31054X100 10" X 54"	31348X100 13" X 48"	31348X100 13" X 48"	31465X100 14" X 65"	31665X100 16" X 65"
	VORTECH TANK PART NO. W/ BASE SIZE	30942V100 9" X 42"	NA	30948V100 9" X 48"	NA	31054V100 10" X 54"	NA	31348V100 13" X 48"	NA	31465V100 14" X 65"	31665V100 16" X 65"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330044X11 N/A	N/A 340044X11	330048X11 N/A	N/A 340048X11	330054X11 N/A	N/A 340054X11	330048X11 N/A	N/A 340048X11	330065X11 N/A	330065X11 N/A
3	CATION RESIN SR75 = 3/4 CU. FT. SR10 = 1 CU. FT.	(1) SR75	(1) SR75	(1) SR10	(1) SR10	(2) SR75	(2) SR75	(2) SR10	(2) SR10	(3) SR10	(4) SR10
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50 LBS.	70 LBS.
5	CONTROL VALVE W/ DLFC	1.5	2.0	2.0	2.4	2.4	3.0	4.0	5.0	5.0	7.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & 3/4" S.S. YOKE	20001X521	20001X522	20001X522	20001X523	20001X523	20001X524	20001X525	20001X526	20001X527	CONSULT FACTORY
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" S.S. YOKE	20001X531	20001X532	20001X532	20001X533	20001X533	20001X534	20001X535	20001X536	20001X537	
	SIGNATURE VALVE W/O BYPASS & YOKE	20001X541	20001X542	20001X542	20001X543	20001X543	20001X544	20001X545	20001X547	20001X548	
	SIGNATURE VALVE W/ BYPASS & 3/4" YOKE	20001X551	20001X552	20001X552	20001X553	20001X553	20001X554	20001X555	20001X556	20001X557	
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" YOKE	20001X561	20001X562	20001X562	20001X563	20001X563	20001X564	20001X565	20001X566	20001X567	
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20001X571	20001X572	20001X572	20001X573	20001X573	20001X574	20001X575	20001X576	20001X577	
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20001X581	20001X582	20001X582	20001X583	20001X583	20001X584	20001X585	20001X586	20001X587	
6	BRINE TANK ASSEMBLY	40330X000 18" X 33"								40440X000 18" X 40"	40500X000 24" X 50"

PARTS

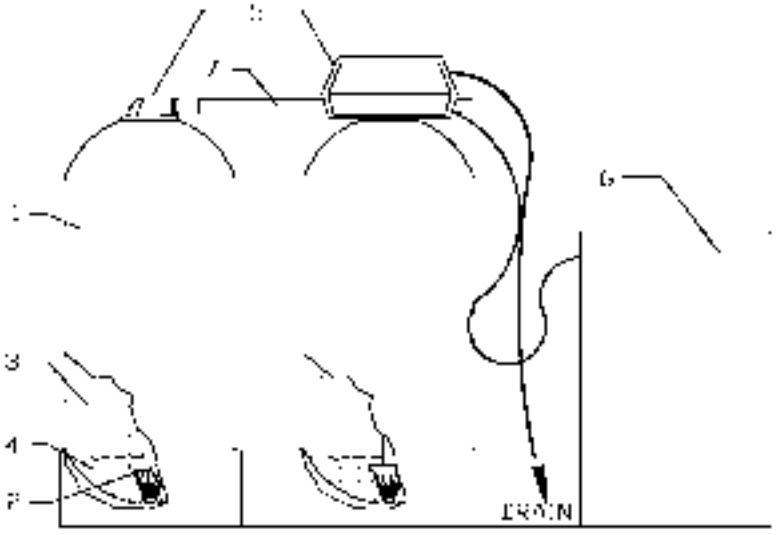
Parts Diagram - "MS" Series Softeners



REF NO.	DESCRIPTION	MS24(V)	MS24T	MS32(V)	MS32T	MS48(V)	MS48T	MS64(V)	MS64T	MS96V	MS128V
1	RESIN TANK PART NO W/ BASE SIZE	30844X100 8" X 44"	30844X100 8" X 44"	30948X100 9" X 48"	30948X100 9" X 48"	31054X100 10" X 54"	31054X100 10" X 54"	31348X100 13" X 48"	31348X100 13" X 48"	31465X100 14" X 65"	31665X100 16" X 65"
	VORTECH TANK PART NO W/ BASE SIZE	30942V100 9" X 42"	NA	30948V100 9" X 48"	NA	31054V100 10" X 54"	NA	31348V100 13" X 48"	NA	31465X100 14" X 65"	31665X100 16" X 65"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330044X11 N/A	N/A 340044X11	330048X11 N/A	N/A 340048X11	330054X11 N/A	N/A 340054X11	330048X11 N/A	N/A 340048X11	330065X11 N/A	330065X11 N/A
3	CATION RESIN SR75 = 3/4 CU. FT. SR10 = 1 CU. FT.	(1) SR75	(1) SR75	(1) SR10	(1) SR10	(2) SR75	(2) SR75	(2) SR10	(2) SR10	(3) SR10	(4) SR10
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50 LBS.	70 LBS.
5	CONTROL VALVE W/ DLFC	1.5	2.0	2.0	2.4	2.4	3.0	3.5	4.0	5.0	7.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & 3/4" S.S. YOKE	20003X521	20003X522	20003X522	20003X523	20003X523	20003X524	20003X525	20003X526	20003X527	CONSULT FACTORY
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" S.S. YOKE	20003X531	20003X532	20003X532	20003X533	20003X533	20003X534	20003X535	20003X536	20003X537	
	SIGNATURE VALVE W/O BYPASS & YOKE	20003X541	20003X542	20003X542	20003X543	20003X543	20003X524	20003X525	20003X526	20003X527	
	SIGNATURE VALVE W/ BYPASS & 3/4" YOKE	20003X551	20003X552	20003X552	20003X533	20003X533	20003X534	20003X535	20003X536	20003X537	
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" YOKE	20003X561	20003X562	20003X562	20003X563	20003X563	20003X564	20003X565	20003X566	20003X567	
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20003X571	20003X572	20003X572	20003X573	20003X573	20003X574	20003X575	20003X576	20003X557	
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20003X581	20003X582	20003X582	20003X583	20003X583	20003X584	20003X585	20003X586	20003X587	
6	BRINE TANK ASSEMBLY	40330X000 18" X 33"								40440X000 18" X 40"	40500X000 24" X 50"

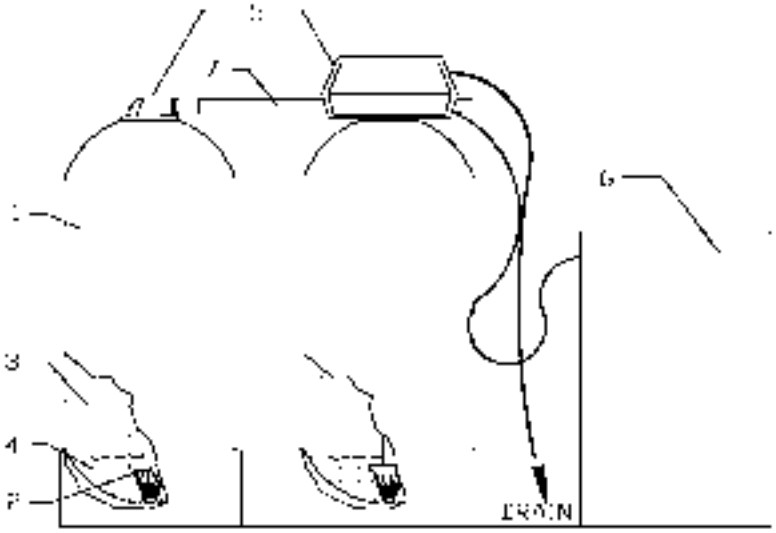
PARTS

Parts Diagram - "AT" Series Softeners



REF NO.	DESCRIPTION	AT24(V)	AT24T	AT32(V)	AT32T	AT48(V)	AT48T	AT64(V)	AT64T	AT96V
1	RESIN TANK PART NO.	30844X100	30844X100	30948X100	30948X100	31054X100	31054X100	31348X100	31348X100	31465X100
	W/ BASE (2) SIZE	8" X 44"	8" X 44"	9" X 48"	9" X 48"	10" X 54"	10" X 54"	13" X 48"	13" X 48"	14" X 65"
	VORTECH TANK PART NO	30942V100	NA	30948V100	NA	31054V100	NA	31348V100	NA	31465V100
	W/ BASE (2) SIZE	9" X 42"		9" X 48"		10" X 54"		13" X 48"		14" X 65"
2	DISTRIBUTOR & TUBE ASSY. - (2) REQUIRED	330044X11	N/A	330048X11	N/A	330054X11	N/A	330048X11	N/A	330065X11
	TURBULATOR & TUBE ASSY. - (2) REQUIRED	N/A	340044X11	N/A	340048X11	N/A	340054X11	N/A	340048X11	N/A
3	CATION RESIN SR75 = 3/4 CU. FT. SR10 = 1 CU. FT.	(2) SR75	(2) SR75	(2) SR10	(2) SR10	(4) SR75	(4) SR75	(4) SR10	(4) SR10	(6) SR10
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(2) DG50
5	CONTROL VALVE W/ DLFC, 2nd TANK ADPT. & METER	1.5	2.0	2.0	2.4	2.4	3.0	3.5	4.0	5.0
	W/ PLASTIC BYPASS & 3/4" S.S. YOKE	20908X501	20908X502	20908X502	20908X503	20908X503	20908X504	20908X505	20908X506	20908X507
	-1Y MODELS - W/ PLASTIC BYPASS & 1" S.S. YOKE	20908X511	20908X512	20908X512	20908X513	20908X513	20908X514	20908X515	20908X516	20908X517
	-WO MODELS - W/O BYPASS & YOKE	20908X531	20908X532	20908X532	20908X533	20908X533	20908X534	20908X535	20908X536	20908X537
	-P MODELS W/PLASTIC BYPASS & 3/4" YOKE	20908X541	20908X542	20908X542	20908X543	20908X543	20908X544	20908X545	20908X546	20908X547
	-1P MODELS -W/ PLASTIC BYPASS & 1" YOKE	20908X551	20908X552	20908X552	20908X553	20908X553	20908X554	20908X555	20908X556	20908X557
	-B MODELS W/STAINLESS STEEL BYPASS 3/4"	20908X561	20908X562	20908X562	20908X563	20908X563	20908X564	20908X565	20908X566	20908X567
	-1B MODELS W/STAINLESS STEEL BYPASS 1"	20908X571	20908X572	20908X572	20908X573	20908X573	20908X574	20908X575	20908X576	20908X577
6	BRINE TANK ASSEMBLY	40330X000 18" X 33"								40440X000 18" X 40"
7	INTERCONNECT PIPES	20908X218								

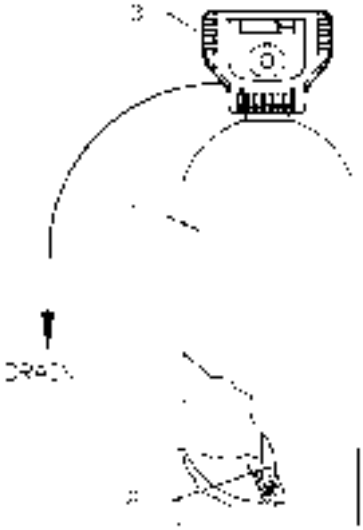
PARTS



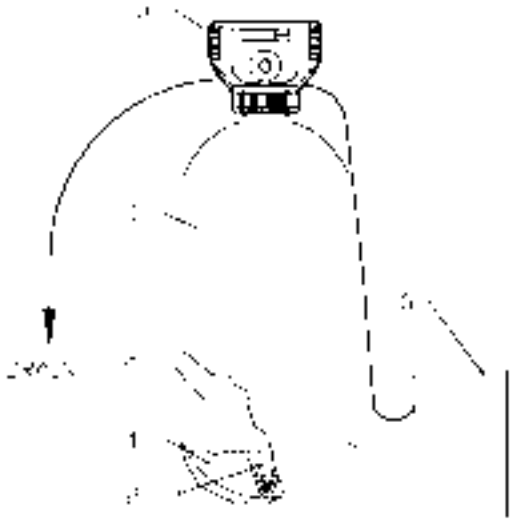
REF NO.	DESCRIPTION	AT24(V)-91	AT24T-91	AT32(V)-91	AT32T-91	AT48(V)-91	AT48T-91	AT64(V)-91	AT64T-91	AT96-91V
1	RESIN TANK PART NO.	30844X100	30844X100	30948X100	30948X100	31054X100	31054X100	31348X100	31348X100	31465X100
	W/ BASE (2) SIZE	8" X 44"	8" X 44"	9" X 48"	9" X 48"	10" X 54"	10" X 54"	13" X 48"	13" X 48"	14" X 65"
	VORTECH TANK PART NO.	30942V100	NA	30948V100	NA	31054V100	NA	31348V100	NA	31465V100
	W/ BASE (2) SIZE	9" X 42"		9" X 48"		10" X 54"		13" X 48"		14" X 65"
2	DISTRIBUTOR & TUBE ASSY. - (2) REQUIRED	330044X11	N/A	330048X11	N/A	330054X11	N/A	330048X11	N/A	330065X11
	TURBULATOR & TUBE ASSY. - (2) REQUIRED	N/A	340044X11	N/A	340048X11	N/A	340054X11	N/A	340048X11	N/A
3	CATION RESIN SR75 = 3/4 CU. FT. SR10 = 1 CU. FT.	(2) SR75	(2) SR75	(2) SR10	(2) SR10	(4) SR75	(4) SR75	(4) SR10	(4) SR10	(6) SR10
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	(2) DG50
5	CONTROL VALVE W/ DLFC, 2nd TANK ADPT. & METER	1.5	2.0	2.0	2.4	2.4	3.0	3.5	4.0	5.0
	W/ PLASTIC BYPASS & 3/4" S.S. YOKE	20909X501	20909X502	20909X502	20909X503	20909X503	20909X504	20909X505	20909X506	20909X507
	-1Y MODELS - W/ PLASTIC BYPASS & 1" S.S. YOKE	20909X511	20909X512	20909X512	20909X513	20909X513	20909X514	20909X515	20909X516	20909X517
	-WO MODELS - W/O BYPASS & YOKE	20909X521	20909X532	20909X532	20909X533	20909X533	20909X534	20909X535	20909X536	20909X537
	-P MODELS W/PLASTIC BYPASS & 3/4" YOKE	20909X531	20909X542	20909X542	20909X543	20909X543	20909X544	20909X545	20909X546	20909X547
	-1P MODELS -W/ PLASTIC BYPASS & 1" YOKE	20909X541	20909X552	20909X552	20909X553	20909X553	20909X554	20909X555	20909X556	20909X557
	-B MODELS W/STAINLESS STEEL BYPASS 3/4"	20909X551	20909X562	20909X562	20909X563	20909X563	20909X564	20909X565	20909X566	20909X567
	-1B MODELS W/STAINLESS STEEL BYPASS 1"	20909X561	20909X572	20909X572	20909X573	20909X573	20909X574	20909X575	20909X576	20909X577
6	BRINE TANK ASSEMBLY	40330X000 18” X 33”								40440X000 18” X 40”
7	INTERCONNECT PIPES	20908X218								

PARTS

Parts Diagram - "WF" Series Filters

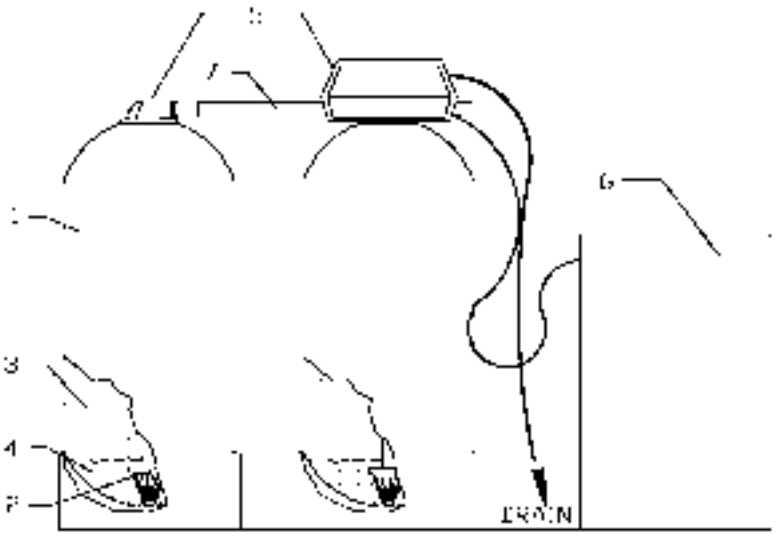


REF NO.	DESCRIPTION		WF10	WF15	WF20	WF25	WF30	WF40
1	MINERAL TANK W/ BASE	PART NO. SIZE	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"	31354X100 13" X 54"	31465X100 14" X 65"	31665X100 16" X 65"
	VORTECH TANK W/ BASE	PART NO. SIZE	30948V100 9" X 48"	31054V100 10" X 54"	31348V100 13" X 48"	31354V100 13" X 54"	31465V100 14" X 65"	31665V100 16" X 65"
2	DISTRIBUTOR & TUBE ASSY.		330048X11	330054X11	330048X11	330054X11	330065X11	330065X11
3	CONTROL VALVE W/ DLFC		5.0	5.0	7.0	7.0	10.0	15.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"		20002X521	20002X521	20002X523	20002X523	20002X524	N/A
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"		20002X531	20002X531	20002X533	20002X533	20002X534	CONSULT FACTORY
	SIGNATURE VALVE W/O BYPASS & YOKE		20002X541	20002X541	20002X543	20002X543	20002X544	CONSULT FACTORY
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"		20002X551	20002X551	20002X553	20002X553	20002X554	N/A
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"		20002X561	20002X561	20002X563	20002X563	20002X564	CONSULT FACTORY
	SIGNATURE VALVE W/ S.S. BYPASS 3/4"		20002X571	20002X571	20002X573	20002X573	20002X574	N/A
	SIGNATURE VALVE W/ S.S. BYPASS 1"		20002X581	20002X581	20002X583	20002X583	20002X584	CONSULT FACTORY
	GRAVEL UNDERBED REQ. FILTER MEDIA CAPACITY		DG20 1.0 CU. FT.	DG20 1.5 CU. FT.	DG50 2.0 CU. FT.	DG50 2.5 CU. FT.	DG50 3.0 CU. FT.	DG70 4.0 CU. FT
	OPTION - POLYGLASS TANK W/ DOME FILL PLUG - GRAY		30948X104	31054X104	31348X104	31354X104	N/A	N/A
	OPTION - POLYGLASS TANK W/ DOME FILL PLUG - NATURAL		30948X105	31054X105	31348X105	31354X105	N/A	N/A
	DOME HOLE PLUG USED W/ POLYGLASS TANKS ABOVE		35100X105		N/A	35100X105	N/A	N/A



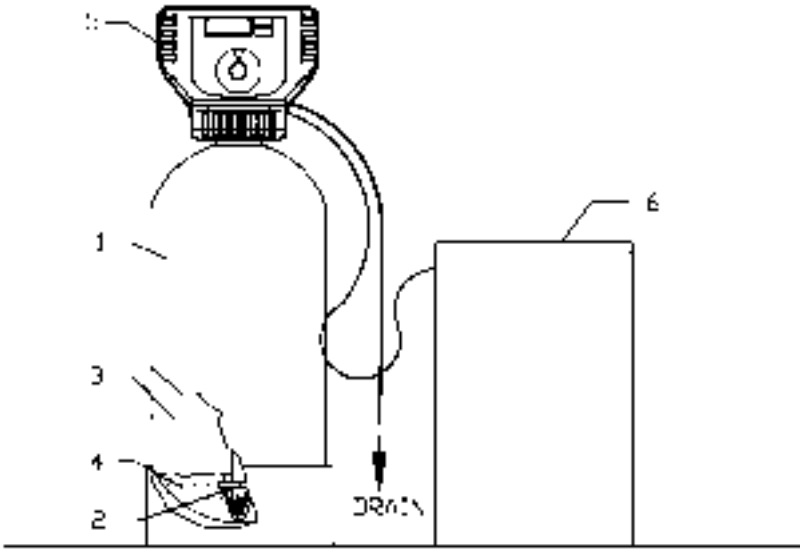
REF NO.	DESCRIPTION		IF10	IF15	IF20	IF25
1	MINERAL TANK W/ BASE	PART NO. SIZE	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13” X 48”	31354X100 13" X 54"
	VORTECH TANK W/ BASE	PART NO. SIZE	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13” X 48”	31354X100 13" X 54"
2	DISTRIBUTOR & TUBE ASSY.		330048X11	330054X11	330048X11	330054X11
3	MTM MT75 = 3/4 CU. FT. MT10 = 1 CU. FT.		(1) MT10	(2) MT75	(2) MT10	(1) MT10 (2) MT75
4	"D" GRAVEL UNDERBED DG20 20 LBS. "D" GRAVEL DG50 50 LBS. "D" GRAVEL		(1) DG20	(1) DG20	(1) DG50	(1) DG50
5	CONTROL VALVE W/ DLFC		5.0	5.0	7.0	7.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"		20001X528	20001X528	20001X530	20001X530
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"		20001X538	20001X538	20001X540	20001X540
	SIGNATURE VALVE W/O BYPASS & YOKE		20001X548	20001X548	20001X550	20001X550
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"		20001X558	20001X558	20001X560	20001X560
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"		20001X568	20001X568	20001X570	20001X570
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"		20001X578	20001X578	20001X580	20001X580
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"		20001X588	20001X588	20001X590	20001X590
6	FEEDER TANK ASSEMBLY	PART NO. SIZE	40461X000 10" X 16"			

REF NO.	DESCRIPTION		U10	U15	U20	U25
1	MINERAL TANK W/ BASE	PART NO. SIZE	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13” X 48”	31354X100 13" X 54"
	VORTECH TANK W/ BASE	PART NO. SIZE	30948V100 9" X 48"	31054V100 10" X 54"	31348V100 13” X 48”	31354V100 13" X 54"
2	DISTRIBUTOR & TUBE ASSY.		330048X14	330054X14	330048X14	330054X14
3	MANIFOLD W/ DIFFUSER & O-RING 1" IN / OUT		62128X109	62128X109	62128X109	62128X109
	GRAVEL UNDERBED REQUIRED		DG20	DG20	DG50	DG50
	FILTER MEDIA CAPACITY		1.0 CU. FT	1.5 CU. FT.	2.0 CU. FT.	2.5 CU. FT.
	OPTION - POLYGLASS TANK W/ DOME FILL PLUG - GRAY		N/A	31054X104	31348X104	31354X104
	OPTION - POLYGLASS TANK W/ DOME FILL PLUG - NATURAL		N/A	31054X105	31348X105	31354X105
	DOME HOLE PLUG USED W/ POLYGLASS TANKS ABOVE		35100X105		N/A	35100X105

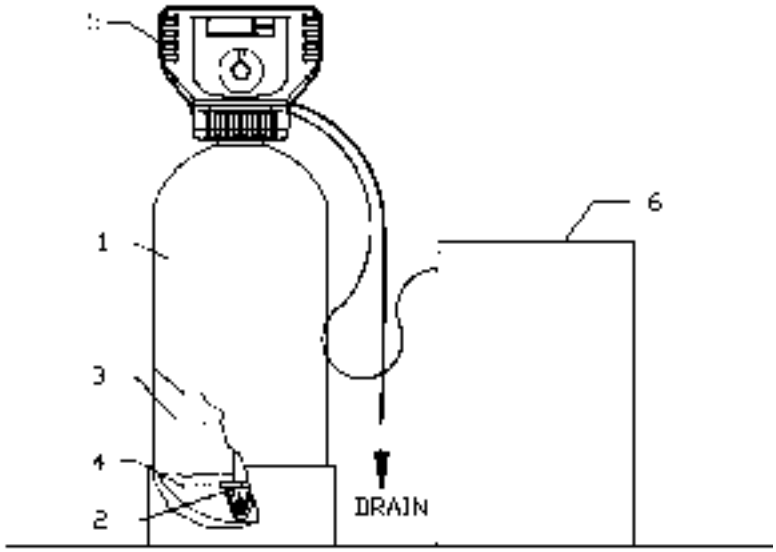


REF NO.	DESCRIPTION		ATI24	ATI32	ATI48	ATI64	ATI96
1	MINERAL TANK W/ BASE (2)	PART NO. SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"	31465X100 14" X 65"
	VORTECH TANK W/BASE (2)	PART NO. SIZE	30942V100 9" X 42"	30948V100 9" X 48"	31054V100 10" X 54"	31348V100 13" X 48"	31465V100 14" X 65"
2	DISTRIBUTOR & TUBE ASSY. - 2 REQ'D.		330044X15	330048X15	330054X15	330048X15	330065X15
	TURBULATOR & TUBE ASSY. - 2 REQ'D.		N/A	N/A	N/A	N/A	N/A
3	FINE MESH CATION RESIN FR75 = 3/4 CU. FT. FR10 = 1 CU. FT.		(2) FR75	(2) FR10	(4) FR75	(4) FR10	(6)FR10
4	GARNET SAND 8 X 12 GS30 - 30 LBS. GS70 - 70 LBS.		(2) GS20	(2) GS30	(2) GS30	(2) GS70	(2) GS70
5	CONTROL VALVE W/ DLFC, 2ND TANK ADAPTOR & METER		1.0	1.2	1.5	2.4	3.0
	W/ PLASTIC BYPASS & S.S. YOKE 3/4"		20908X500	20908X501	20908X502	20908X503	N/A
	-1Y MODELS - W/ PLASTIC BYPASS & S.S. YOKE		20908X510	20908X511	20908X512	20908X513	20908X514
	W/O BYPASS & YOKE		20908X530	20908X531	20908X532	20908X533	20908X534
	-P MODELS - W/ PLASTIC BYPASS & YOKE 3/4"		20908X540	20908X541	20908X542	20908X543	N/A
	-1P MODELS - W/ PLASTIC BYPASS & YOKE 1"		20908X550	20908X551	20908X552	20908X553	20908X554
	-B MODELS - W/ STAINLESS STEEL BYPASS 3/4"		20908X560	20908X561	20809X562	20908X563	N/A
	-1B MODELS - W/ STAINLESS STEEL BYPASS 1"		20908X570	20908X571	20908X572	20908X573	20908X574
6	BRINE TANK ASSY.		40330X000 18" X 33"				40440X000 18" X 40"
7	INTERCONNECT PIPES		20908X218				Consult CSI

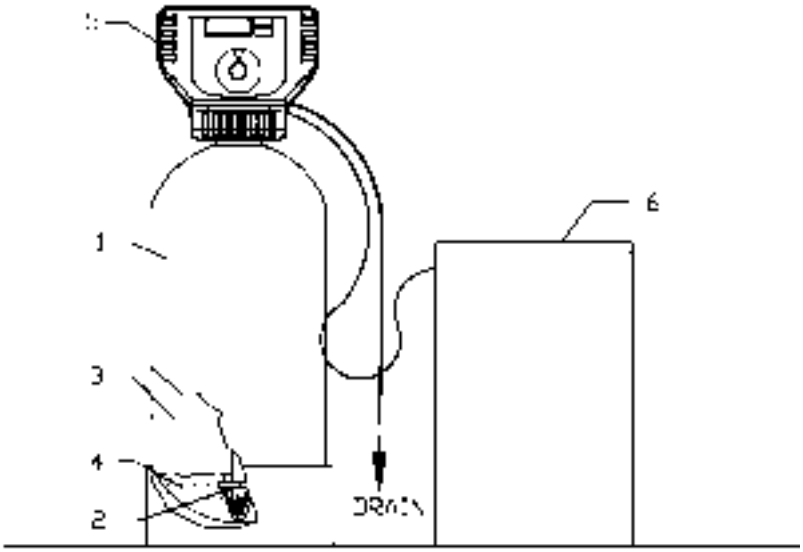
PARTS



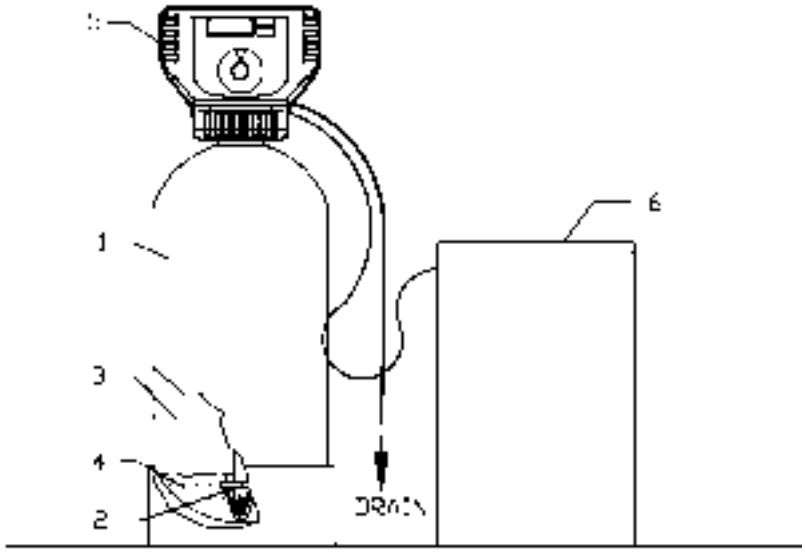
REF NO.	DESCRIPTION		TSI24	TSI32	TSI48	TSI64	TSI96
1	RESIN TANK W/ BASE	PART NO. SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"	31465X100 14" X 65"
	VORTECH TANK W/ BASE	PART NO. SIZE	30942V100 9" X 42"	30948V100 9" X 48"	31054V100 10" X 54"	31348V100 13" X 48"	31465V100 14" X 65"
2	DISTRIBUTOR & TUBE ASSY.		330044X15	330048X15	330054X15	330048X15	330065X15
	TURBULATOR & TUBE ASSY.		N/A	N/A	N/A	N/A	N/A
3	FINE MESH CATION RESIN FR75 = 3/4 CU. FT. FR10 = 1 CU. FT.		(1) FR75	(1) FR10	(2) FR75	(2) FR10	(3) FR10
4	GARNET SAND 8 X 12 GS30 - 30 LBS. GS70 - 70 LBS.	Standard Tank Only	GS20	GS30	GS30	GS70	GS70
5	CONTROL VALVE W/ DLFC		1.0	1.2	1.5	2.4	3.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"		20001X529	20001X521	20001X522	20001X523	20001X524
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"		20001X539	20001X531	20001X532	20001X533	20001X534
	SIGNATURE VALVE W/O BYPASS & YOKE		20001X549	20001X541	20001X542	20001X543	20001X544
	SIGNATURE VALVE W/ PLASTIC BYPASS & 3/4" YOKE		20001X559	20001X551	20001X552	20001X553	20001X554
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" YOKE		20001X569	20001X561	20001X562	20001X563	20001X564
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"		20001X579	20001X571	20001X572	20001X573	20001X574
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"		20001X589	20001X581	20001X582	20001X583	20001X584
6	BRINE TANK ASSY.		40330X000 18" X 33"				40440X000 18" X 40"



REF NO.	DESCRIPTION		MSI24	MSI32	MSI48	MSI64	MSI96
1	RESIN TANK W/ BASE	PART NO. SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"	31465X100 14" X 65"
	VORTECH TANK W/ BASE	PART NO. SIZE	30942V100 9" X 42"	30948V100 9" X 48"	31054V100 10" X 54"	31348V100 13" X 48"	31465V100 14" X 65"
2	DISTRIBUTOR & TUBE ASSY.		330044X15	330048X15	330054X15	330048X15	330065X15
	TURBULATOR & TUBE ASSY.		N/A	N/A	N/A	N/A	N/A
3	FINE MESH CATION RESIN FR75 = 3/4 CU. FT. FR10 = 1 CU. FT.		(1) FR75	(1) FR10	(2) FR75	(2) FR10	(3) FR10
4	GARNET SAND 8 X 12 GS30 - 30 LBS. GS70 - 70 LBS.	Standard Tank Only	GS20	GS30	GS30	GS70	GS70
5	CONTROL VALVE W/ DLFC		1.0	1.2	1.5	2.4	3.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"		20003X520	20003X521	20003X522	20003X523	20003X524
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"		20003X530	20003X531	20003X532	20003X533	20003X534
	SIGNATURE VALVE W/O BYPASS & YOKE		20003X540	20003X541	20003X542	20003X543	20003X544
	SIGNATURE VALVE W/ PLASTIC BYPASS & 3/4" YOKE		20003X550	20003X551	20003X552	20003X553	20003X554
	SIGNATURE VALVE W/ PLASTIC BYPASS & 1" YOKE		20003X560	20003X561	20003X562	20003X563	20003X564
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"		20003X570	20003X571	20003X572	20003X573	20003X574
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"		20003X580	20003X581	20003X582	20003X583	20003X584
6	BRINE TANK ASSY.		40330X000 18" X 33"				40440X000 18" X 40"

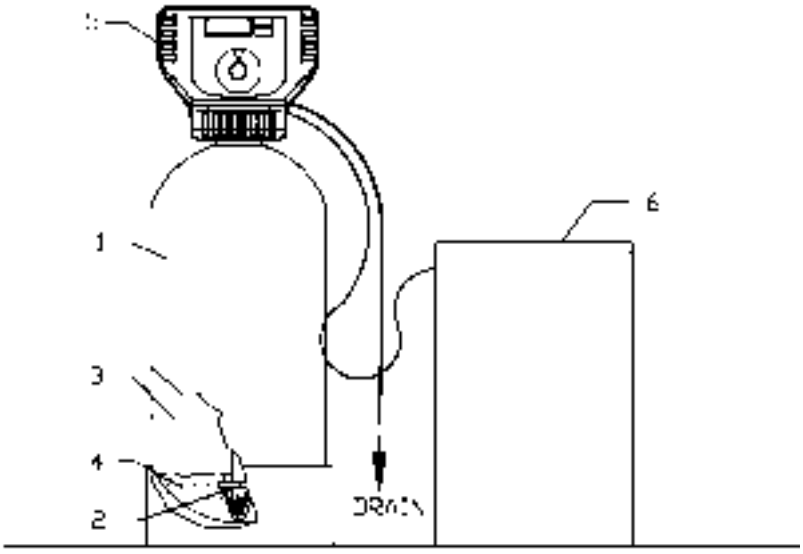


REF NO.	DESCRIPTION	TST24	TST32	TST48	TST64
1	RESIN TANK PART NO. W/ BASE SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"
	VORTECH TANK PART NO. W/ BASE SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330044X11 N/A	330048X11 N/A	330054X11 N/A	330048X11 N/A
3	CATION RESIN TANNIN RESIN SR50 = 1/2 CU. FT. TR25 = 1/4 CU. FT. SR75 = 3/4 CU. FT. TR50 = 1/2 CU. FT. SR10 = 1 CU. FT.	(1) SR50 (1) TR25	(1) SR75 (1) TR25	(1) SR10 (1) TR50	(2) SR75 (1) TR50
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A
5	CONTROL VALVE W/ DLFC	1.0	1.2	1.5	2.4
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"	20001X529	20001X521	20001X522	20001X523
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"	20001X539	20001X531	20001X532	20001X533
	SIGNATURE VALVE W/O BYPASS & YOKE	20001X549	20001X541	20001X542	20001X543
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20001X559	20001X551	20001X552	20001X553
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"	20001X569	20001X561	20001X562	20001X563
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20001X579	20001X571	20001X572	20001X573
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20001X589	20001X581	20001X582	20001X583
6	BRINE TANK ASSEMBLY 40330X000	40330X000 18” X 33”			

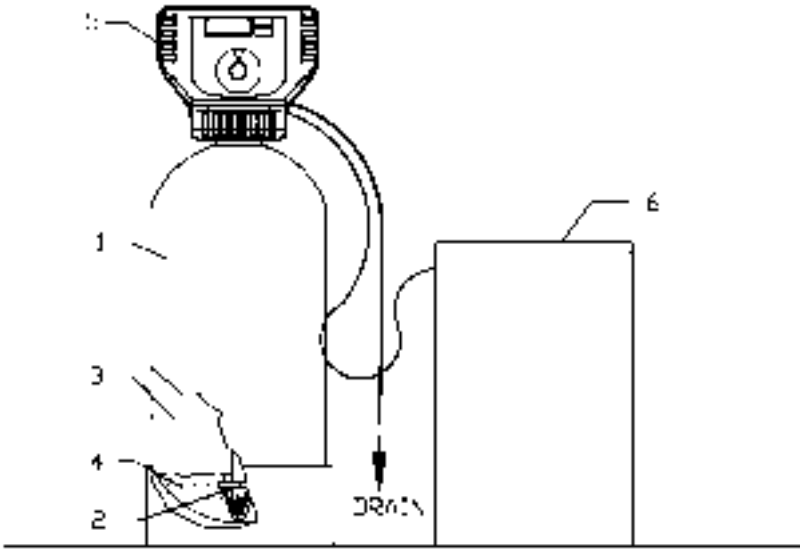


REF NO.	DESCRIPTION	MST24	MST32	MST48	MST64
1	RESIN TANK PART NO. W/ BASE SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"
	VORTECH TANK PART NO. W/ BASE SIZE	30942X100 9" X 42"	30948X100 9" X 48"	31054X100 10" X 54"	31348X100 13" X 48"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330044X11 N/A	330048X11 N/A	330054X11 N/A	330048X11 N/A
3	CATION RESIN TANNIN RESIN SR50 = 1/2 CU. FT. TR25 = 1/4 CU. FT. SR75 = 3/4 CU. FT. TR50 = 1/2 CU. FT. SR10 = 1 CU. FT.	(1) SR50 (1) RF25	(1) SR75 (1) TR25	(1) SR10 (1) TR50	(2) SR75 (1) TR50
4	"D" GRAVEL UNDERBED	N/A	N/A	N/A	N/A
5	CONTROL VALVE W/ DLFC	1.0	1.2	1.5	2.4
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"	20003X520	20003X521	20003X522	20003X523
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"	20003X530	20003X531	20003X532	20003X533
	SIGNATURE VALVE W/O BYPASS & YOKE	20003X540	20003X541	20003X542	20003X543
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20003X550	20003X551	20003X552	20003X553
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"	20003X560	20003X561	20003X562	20003X563
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20003X570	20003X571	20003X572	20003X573
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20003X580	20003X581	20003X582	20003X583
6	BRINE TANK ASSEMBLY	40330X000 18” X 33”			

Parts Diagram - “TN” Nitrate / Sulfate System



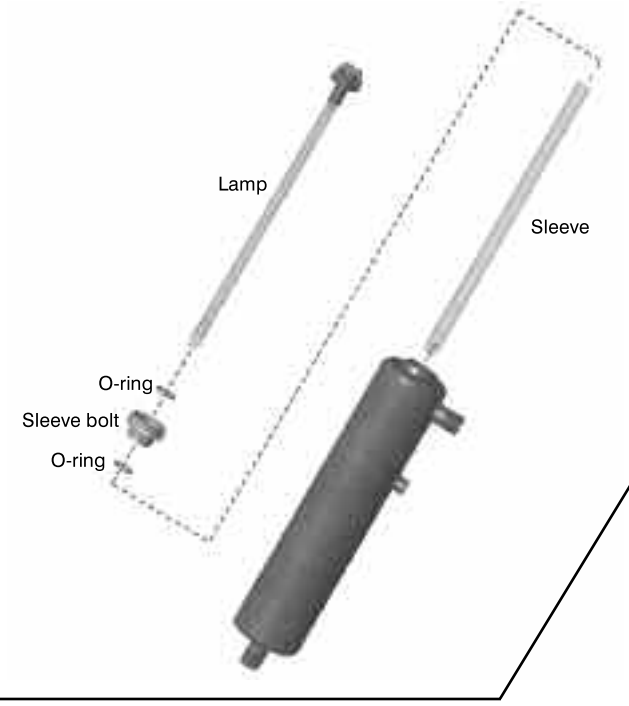
REF NO.	DESCRIPTION	TN15	TN25
1	RESIN TANK PART NO. W/ BASE SIZE	31054X100 10" X 54"	31354X100 13" X 54"
	VORTECH TANK PART NO. W/ BASE SIZE	31054X100 10" X 54"	31354X100 13" X 54"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330054X11 N/A	330054X11 N/A
3	NITRATE RESIN NR75 = 3/4 CU. FT. NR10 = 1 CU. FT.	(2) NR75	(2) NR75 (1) NR10
4	"D" GRAVEL UNDERBED	N/A	N/A
5	CONTROL VALVE W/ DLFC	1.2	2.4
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"	20001X522	20001X525
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"	20001X532	20001X535
	SIGNATURE VALVE W/O BYPASS & YOKE	20001X542	20001X545
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20001X552	20001X555
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"	20001X562	20001X565
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20001X572	20001X575
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20001X582	20001X585
6	BRINE TANK ASSY.	40330X000 18” X 33”	



REF NO.	DESCRIPTION	TN15	TN25
1	RESIN TANK PART NO. W/ BASE SIZE	31054X100 10" X 54"	31354X100 13" X 54"
	VORTECH TANK PART NO. W/ BASE SIZE	31054X100 10" X 54"	31354X100 13" X 54"
2	DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY.	330054X11 N/A	330054X11 N/A
3	NITRATE RESIN NR75 = 3/4 CU. FT. NR10 = 1 CU. FT.	(2) NR75	(2) NR75 (1) NR10
4	"D" GRAVEL UNDERBED	N/A	N/A
5	CONTROL VALVE W/ DLFC	1.2	2.4
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"	20001X522	20001X525
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"	20001X532	20001X535
	SIGNATURE VALVE W/O BYPASS & YOKE	20001X542	20001X545
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20001X552	20001X555
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"	20001X562	20001X565
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20001X572	20001X575
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20001X582	20001X585
6	BRINE TANK ASSY.	40330X000 18” X 33”	

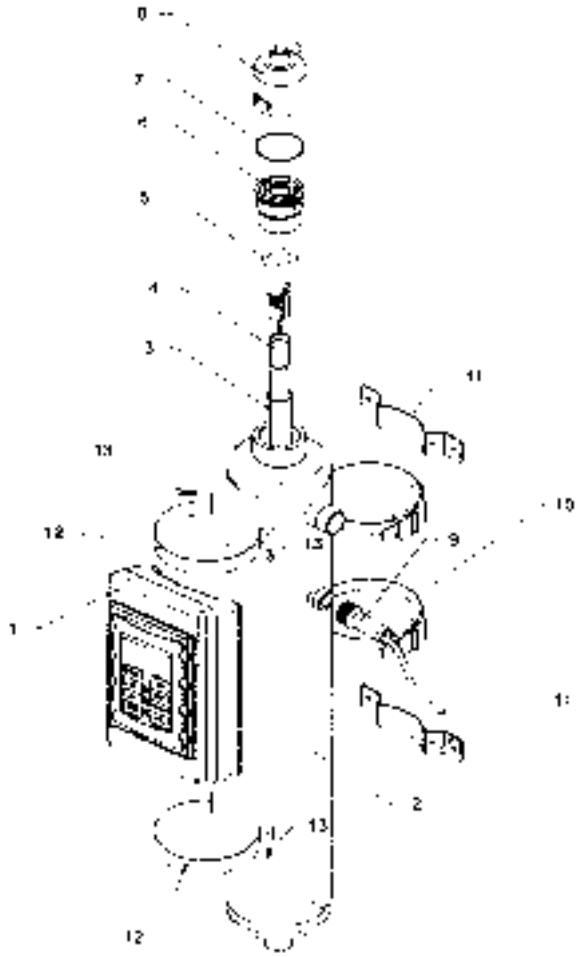
Trojan - UVMAX

General Specifications	MAX C4	MAX D4	MAX E4	MAX F4	PRO10	PRO20	PRO30
Lamp	602805	602805	602806	602807	602854	602855	602856
Sleeve	602732	602732	602733	602734	602974	602975	602976
Chamber	19.5 x 3.5in.	19.5 x 3.5in.	29 x 3.5in.	43.5 x 3.5in.	21.4 x 4in.	31 x 4in.	41 x 4in.



WEDECO - "DLR"

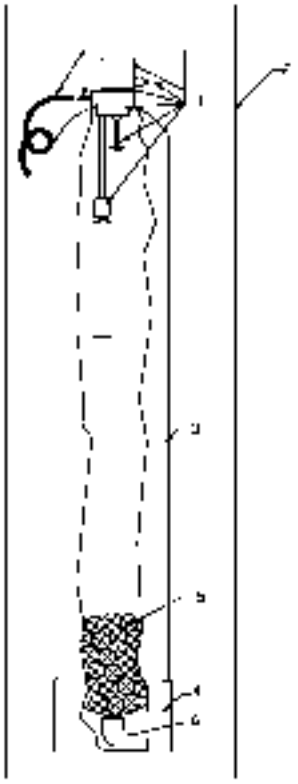
REF. NO.	PART NO.	DESCRIPTION	QTY.
1	*	ELECTRICAL CONTROL BOX	1
2	*	DISINFECTION CHAMBER	1
3	DQ36648	QUARTZ SLEEVE	1
4	AQ37086	ULTRAVIOLET LAMP	1
5	AQ35492	HEAD PIECE O-RING	1
6	AQ36538	HEAD PIECE	1
7	AQ36617	GLO-CAP O-RING	1
8	AQ36799	GLO-CAP	1
9	AQ702576	SENSOR ASSEMBLY(EXCLUDES "AP"MODEL)	1
10	AQ36942	ELECTRICAL CONTROL BOX STRAP	2
10A	AQ36992	STRAP BUCKLE	2
11	*	WALL MOUNT BRACKET	2
12	*	WALL MOUNT BRACKET STRAP	2
13	*	WALL MOUNT BRACKET STRAP SCREW	4
14**	*	FLOW CONTROL	1
15**	*	SOLENOID VALVE (OPTIONAL)	1
16**	AQ36944	POWER CORD	1



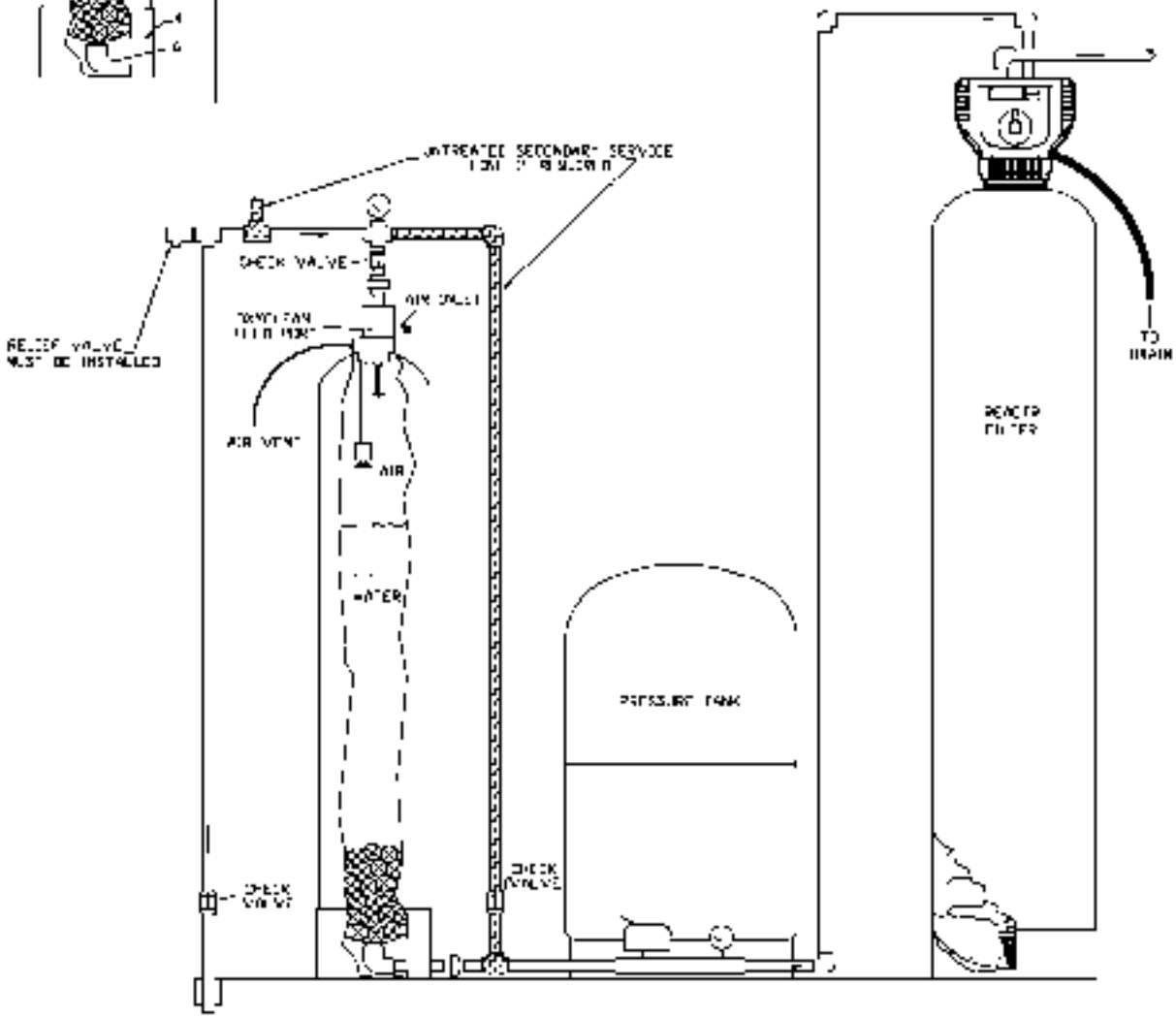
* Determined by serial number

** Not Shown

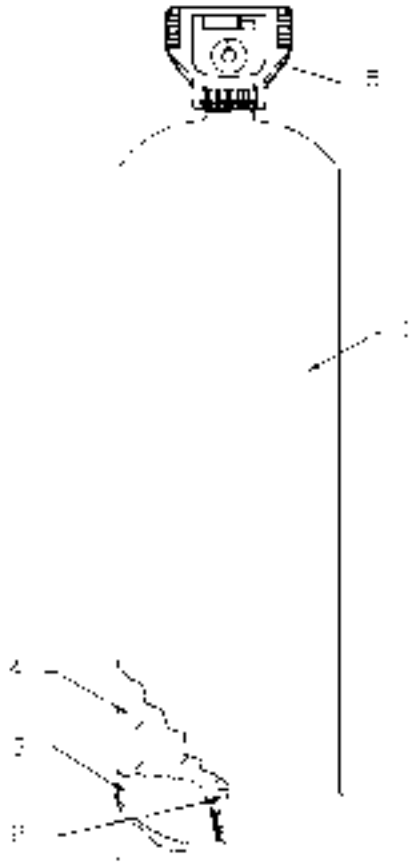
PARTS



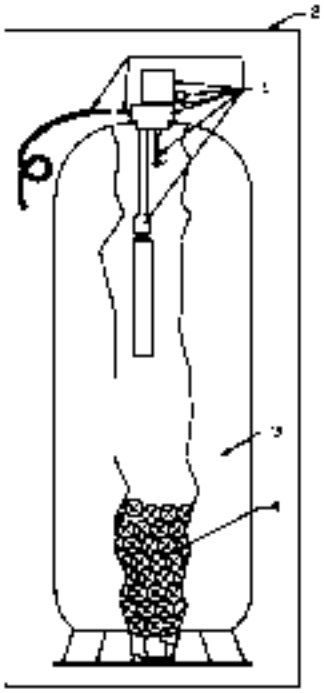
REF NO.	PART NO.	DESCRIPTION
1	65555X330	REACTR MANIFOLD ASSEMBLY - 5.0 GPM INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB AND TUBING
2	65555X000 "RF" SERIES	REACTR TANK & MANIFOLD ASSEMBLY COMPLETE INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB, TUBING, 9" X 48" POLYGLASS TANK, AERATION BALLS, BOTTOM ELBOW ASSEMBLY
3	30948X000	9" X 48" TANK W/ BASE
4	32009X103	9" TANK BASE
5	65555X214	AERATION BALLS - 50 PER PKG. - 1 REQ'D.
6	65555X229	FITTING PACKAGE - REACTR TANK BOTTOM



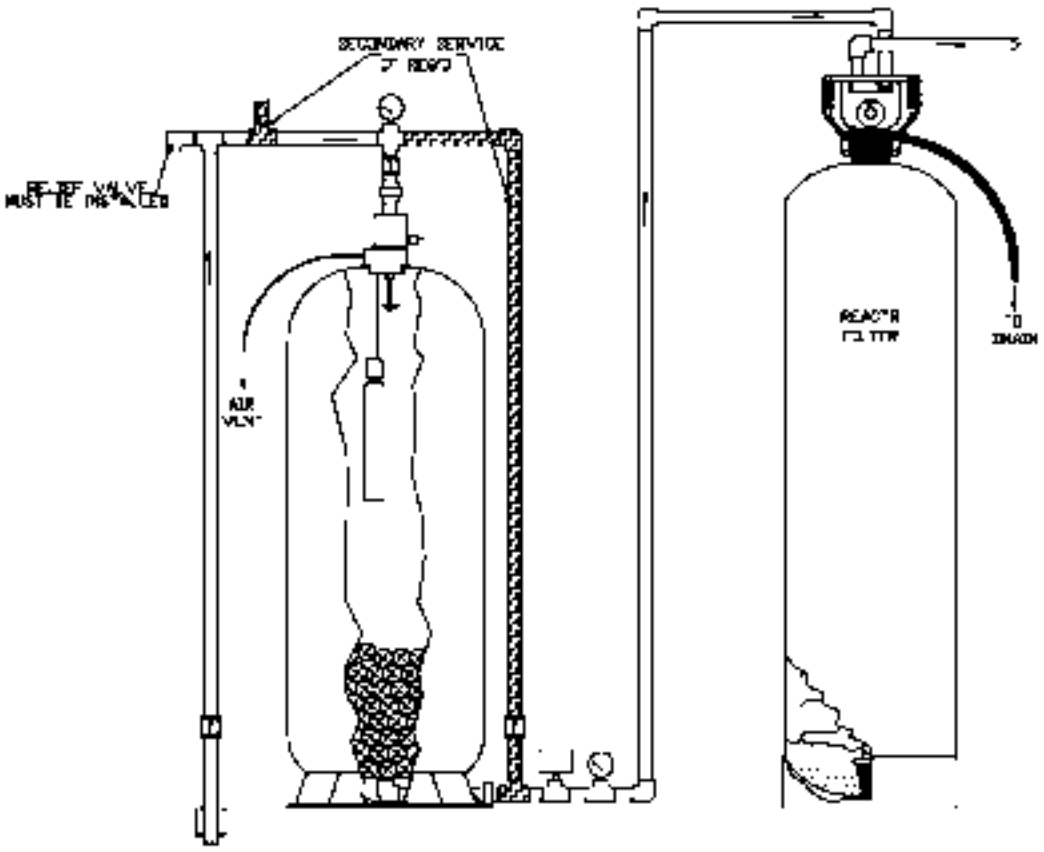
PARTS



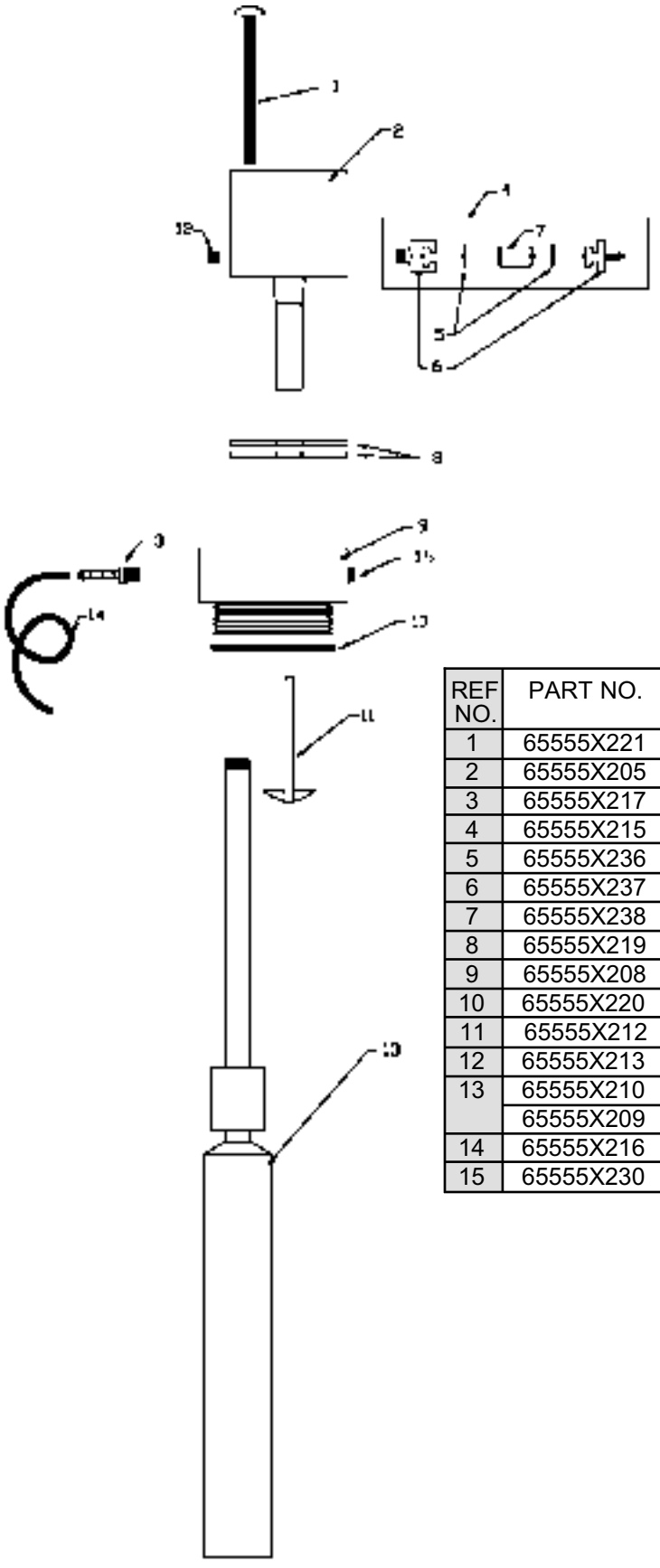
REF NO.	DESCRIPTION	RF10 UT10	RF15 UT15	RF20 UT20	RF25 UT25	RF30 UT30	UT40
1	TANK PART NO.	30948X100	31054X100	31348X100	31354X100	31465X100	31665X100
	W/ BASE SIZE	9" X 48"	10" X 54"	13" X 48"	13" X 54"	14" X 65"	16" X 65"
	VORTECH TANK PART NO.	30948V100	31054V100	31348V100	31354V100	31465V100	31665V100
	W/ BASE SIZE	9" X 48"	10" X 54"	13" X 48"	13" X 54"	14" X 65"	16" X 65"
2	DISTRIBUTOR & TUBE ASSY.	330048X11	330054X11	330048X11	330054X11	330065X11	330065X11
3	"D" GRAVEL UNDERBED DG20 = 20 LBS. DG50 = 50 LBS.	(1) DG20	(1) DG20	(1) DG50	(1) DG50	(1) DG50	(1) DG70
4	REACTR BLEND MEDIA RB75 = 3/4 CU. FT. RB10 = 1 CU. FT.	(1) RB10	(2) RB75	(2) RB10	(2) RB75 (1) RB10	(3) RB10	(4) RB10
5	CONTROL VALVE W/ DLFC	5.0	5.0	7.0	7.0	10.0	15.0
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 3/4"	20005X521	20005X521	20005X523	20005X523	20005X524	20005X525
	SIGNATURE VALVE W/ PLASTIC BYPASS & S.S. YOKE 1"	20005X531	20005X531	20005X533	20005X533	20005X534	20005X535
	SIGNATURE VALVE W/O BYPASS & YOKE	20005X541	20005X541	20005X543	20005X543	20005X544	20005X545
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 3/4"	20005X551	20005X551	20005X553	20005X553	20005X554	20005X555
	SIGNATURE VALVE W/ PLASTIC BYPASS & YOKE 1"	20005X561	20005X561	20005X563	20005X563	20005X564	20005X565
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 3/4"	20005X571	20005X571	20005X573	20005X573	20005X574	20005X575
	SIGNATURE VALVE W/ STAINLESS STEEL BYPASS 1"	20005X581	20005X581	20005X583	20005X583	20005X584	20005X585



REF NO.	PART NO.	DESCRIPTION
1	65555X340	REACTR MANIFOLD ASSEMLBY - 5.0 GPM INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB AND TUBING
2	65555X010 "UT30" SERIES	"UT30" REACTR TANK & MANIFOLD ASSY. COMPLETE INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAGMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB, 16" X 44" "UT" TANK, AIR VENT TUBING AND AERATION BALLS
	65555X020 "UT40" SERIES	"UT40" REACTR TANK & MANIFOLD ASSY. COMPLETE INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAGMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB, 16" X 56" "UT" TANK, AIR VENT TUBING AND AERATION BALLS
	65555X030 "UT40S" SERIES	"UT40S" REACTR TANK & MANIFOLD ASSY. COMPLETE INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAGMS, DIFFUSER, AIR INLET VALVE CHECK, FLOAT ASSEMBLY, CHLORINE PORT PLUG, EXHAUST VENT HOSE BARB, 21" X 35" "UT" TANK, AIR VENT TUBING AND AERATION BALLS
3	30030X100 30040X100 30040X101	16" X 44" "UT" TANK ONLY 16" X 56" "UT40" TANK ONLY 21" X 35" "UT40S" TANK ONLY
4	65555X214	AERATION BALLS - 50 PER PKG. - 2 REQ'D.



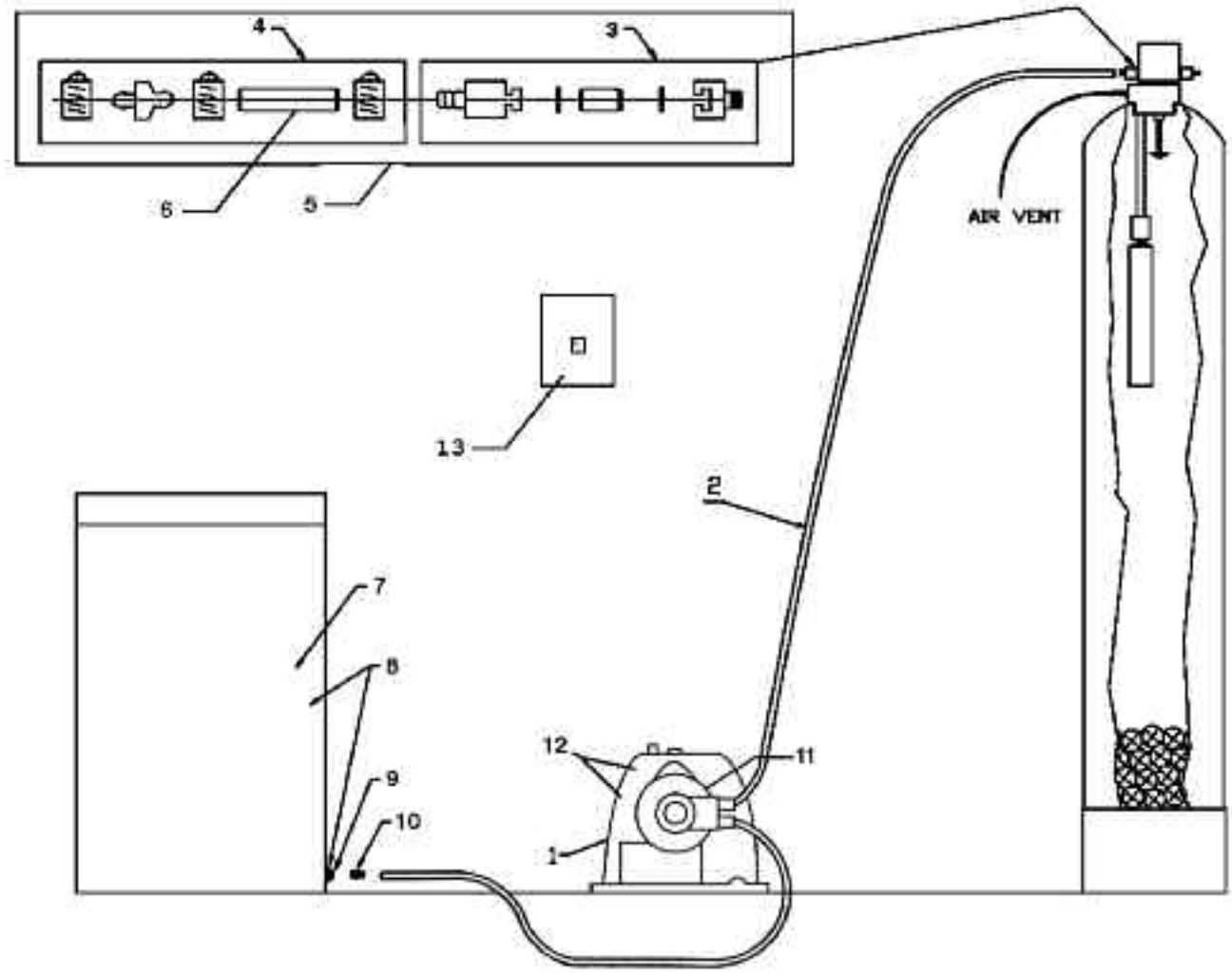
Parts Diagram - Reactr Body & Manifold Assembly



REF NO.	PART NO.	DESCRIPTION
1	65555X221	SCREW 1/4-20 X 3.5" S.S. PHILLIPS
2	65555X205	REACTR BODY W/ NOZZLE & THROAT ONLY - 5.0 GPM
3	65555X217	HOSE BARB - 1/4" X 1/4" NPT-M
4	65555X215	AIR INTAKE VALVE CHECK ASSEMBLY
5	65555X236	AIR INTAKE VALVE CHECK VITON O-RING - 2 REQ'D.
6	65555X237	AIR INTAKE VALVE CHECK BODY ASSEMBLY ONLY
7	65555X238	AIR INTAKE VALVE CHECK ONLY
8	65555X219	DIAPHGRAMS - 2 REQ'D.
9	65555X208	MANIFOLD - REACTR ONLY
10	65555X220	O-RING - MANIFOLD TO TANK SEAL
11	65555X212	DIFFUSER W/ SCREWS
12	65555X213	1/8" NPT PLASTIC PIPE PLUG
13	65555X210	FLOAT ASSEMBLY FOR "RF" SERIES
	65555X209	FLOAT ASSEMBLY FOR "UT" SERIES / HYDROXR
14	65555X216	3/8" OD X 1/4" ID X 12 FT. VENT TUBING
15	65555X230	1/4" NPT PLASTIC PIPE PLUG

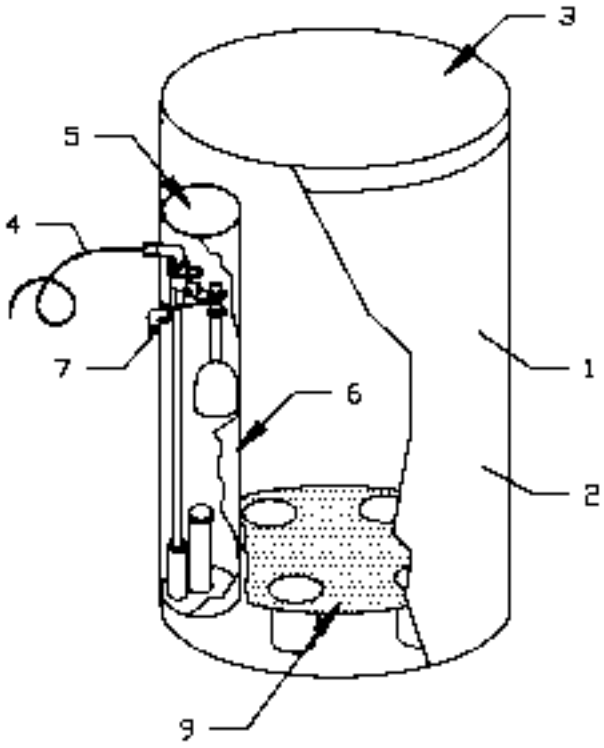
PARTS

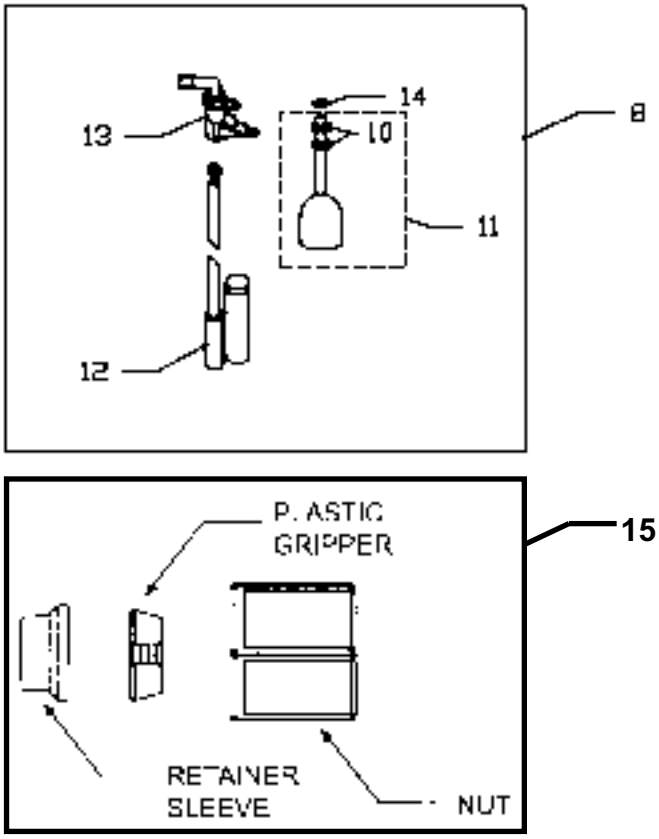
Parts Diagram - Reactr Oxyclean Option



REF NO.	PART NO.	DESCRIPTION
0	OXY-08	COMPLETE "OXYCLEAN" OPTION - INCL. REF. NO. 1, 5, 8, 13 & (2) CLAMPS
1	66555X100	OXYCLEAN PUMP ASSY. INCL. PUMP, HOSE & ENCLOSURE
2	66555X101	OXYCLEAN PUMP TUBING - (82" LONG)
3	66555X102	HOSE BARB TYPE CHECK VALVE
4	66555X112	HIGH PRESSURE TUBING, SAFTEY CHECK, & CLAMPS
5	66555X115	COMPLETE ASSEMBLY - INCL. REF. NO. 3 & 4
6	66555X116	HIGH PRESSURE TUBING
7	66555X104	5 GAL. SOLUTION TANK ONLY
8	66555X103	5 GAL. SOLUTION TANK W/ BULKHEAD FITTING
9	66555X105	SOLUTION TANK BULKHEAD FITTING ONLY
10	65555X217	HOSE BARB - 1/4" X 1/4" NPT-M
Not Shown	66555X106	OXYCLEAN TUBING CLAMP ONLY - 2 REQ'D.
11	65555X107	OXYCLEAN PUMP ONLY
12	65555X108	OXYCLEAN PUMP ENCLOSURE ASSY. ONLY
13	SSRBO1	RELAY BOX FOR REACTR OXYCLEAN
NOTE : OXYCLEAN OPTION REQUIRES SIGNATURE OR 2510 REACTR VALVE FOR POWER SUPPLY AND CYCLING.		

Parts Diagram - 40330X000 Brine System

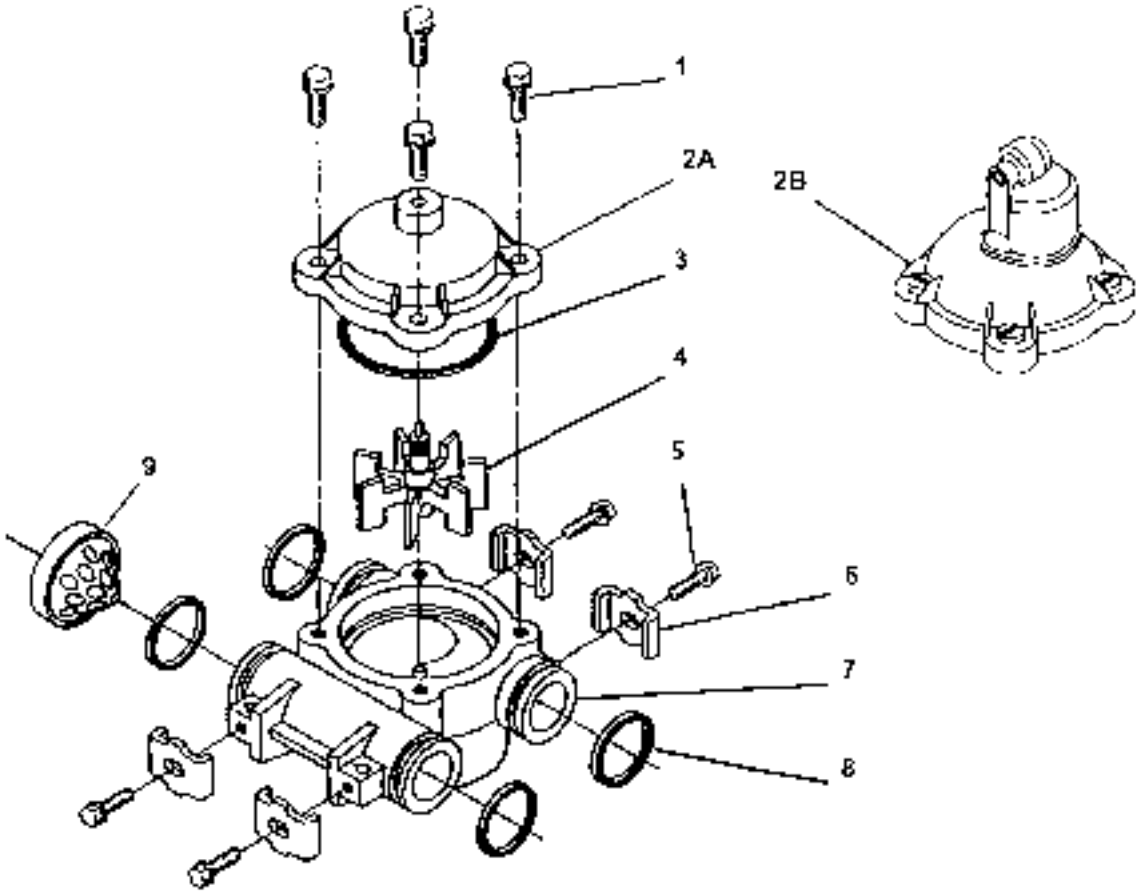




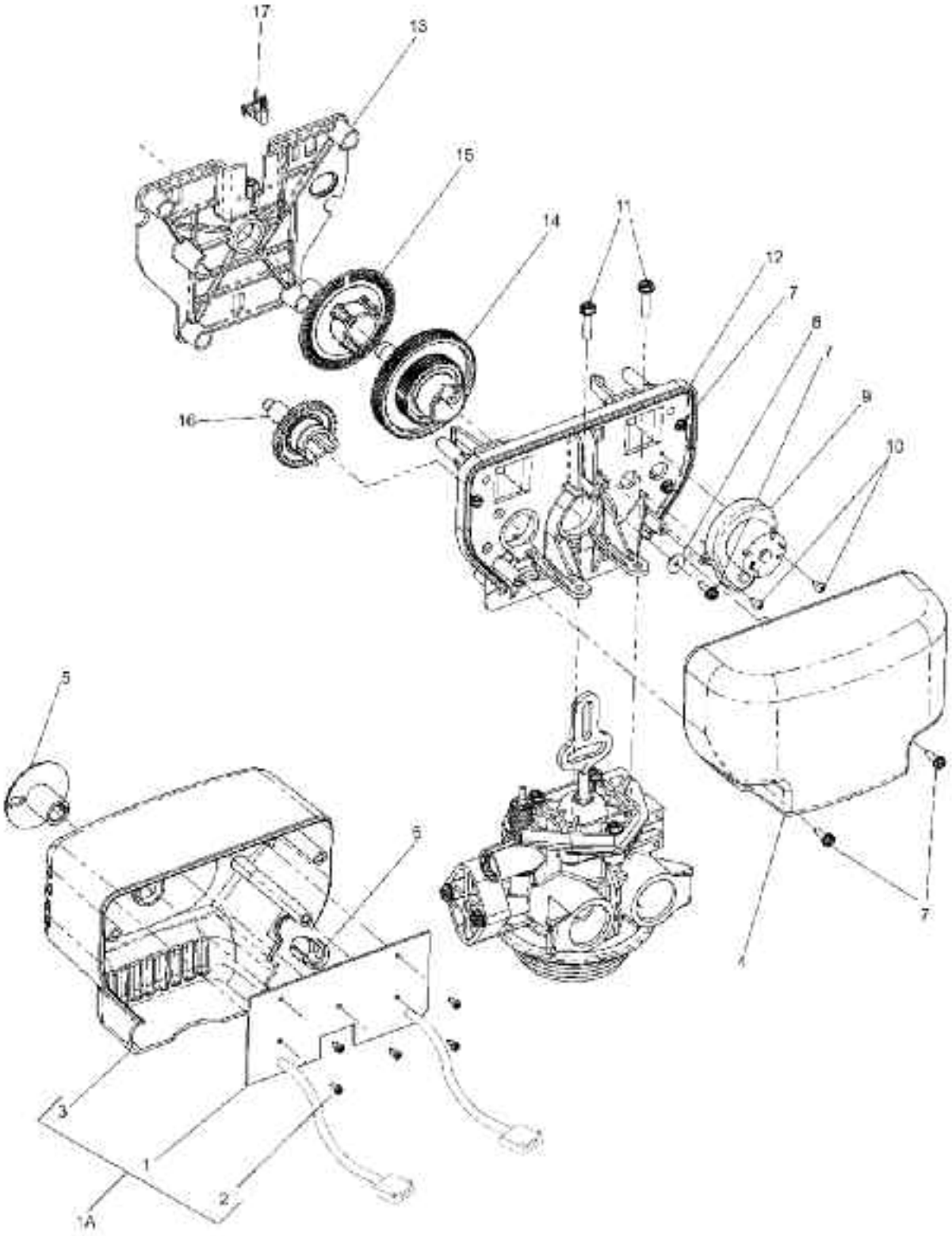
REF NO.	PART NO.	DESCRIPTION
0	40330X000	18 X 33 BRINE TANK ASSY. COMPLETE INJECTION MOLDED CSI LID
	40330X010	18 X 33 BRINE TANK ASSY. COMPLETE BLOW MOLDED LID
1	40330X020	BRINE TANK & LID ONLY - BLOW MOLDED
2	40330X100	TANK BOTTOM ONLY
3	40330X101	LID ONLY - INJECTION MOLDED CIS
	40330X102	LID ONLY - BLOW MOLDED
4	40330X103	3/8" OD X 1/4" ID X 4' BRINE TUBING
5	40330X104	4" BRINE WELL CAP
6	40330X105	4" X 28" BRINE WELL
7	40330X106	OVERFLOW FITTING & NUT
8	40330X107	SAFETY BRINE VALVE, FLOAT & AIR CHECK
9	40330X108	18" POLY GRID PLATE
10	40330X109	GROMMET
11	40330X112	FLOAT ASSY.
12	40330X117	# 500 AIR CHECK - 48" LONG
13	40330X118	SAFETY BRINE, VALVE ONLY
14	40330X119	GROMMET RETAINER
15	40330X110	NUT & FERRULE KIT

REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20563X200	METER MODULE COMPLETE - STD. RANGE	1
1	20561X134	METER COVER ASSY. SCREW	4
2	20563X202	METER COVER ASSY. - STD. RANGE	1
	20563X211	METER COVER ASSY. - EXT. RANGE	1
2B	20253X202	METER COVER - RIGHT ANGLE - STD. RANGE	1
	20253X203	METER COVER - RIGHT ANGLE - EXT. RANGE	1
3	20563X203	METER COVER ASSY. O-RING	1
4	20563X204	IMPELLER	1
5	20561X217	ADAPTER CLIP SCREW	4
6	20561X201	ADAPTER CLIP	4
7	20563X207	METER BODY	1
8	20561X216	METER BODY O-RING	4
9	20563X209	FLOW STRAIGHTENER	1

Shaded REF. No. Indicates Assembly or Kit



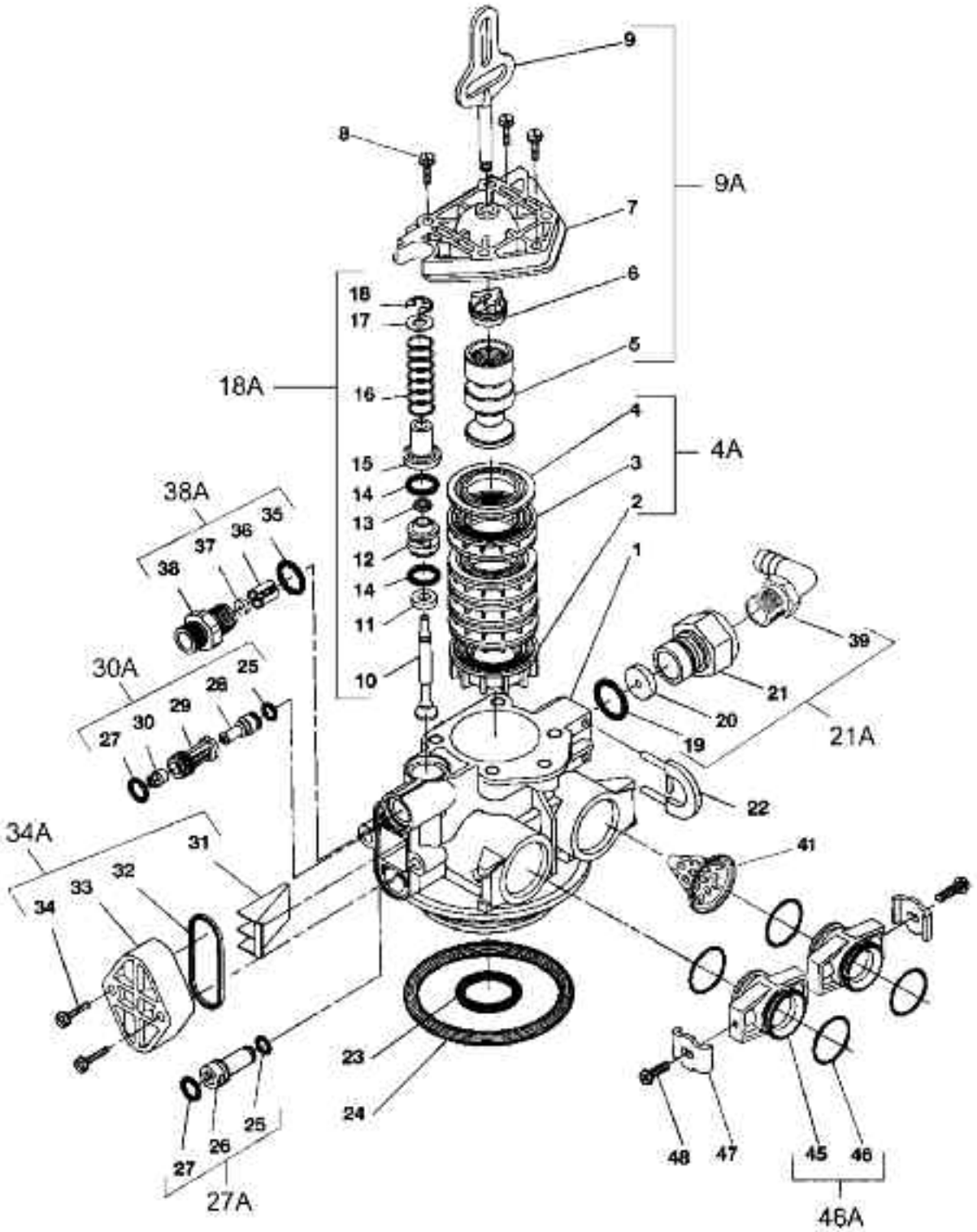
PARTS



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20001X100	Timeclock Softener Powerhead Assembly Complete	1
	20002X100	Filter Powerhead Assembly Complete	1
	20003X100	Metered Softener Powerhead Assembly w/ Meter	1
	20003X101	Metered Softener Powerhead Assembly w/o Meter	1
	20005X100	Reactr Powerhead Assembly Complete	1
1A	20001X101	Circuit Board Assembly Includes (1) Ref. #1, (5) Ref. #2 & (1) Ref. #3	1
1	N/S	Circuit Board	1
2	N/S	Screw	5
3	N/S	Front Cover and Label	1
4	20001X106	Rear Cover	1
5	20001X109	Indicator Dial	1
6	20001X110	Hayco Fitting	1
7	20001X111	Screw	1
8	20001X112	Washer	3
9	20001X113	Drive Motor 12 VDC	1
10	20001X114	Screw	1
11	20001X116	Screw	1
12	20001X118	Back Plate	1
13	20001X119	Front Plate	1
14	20001X120	Main Gear	1
15	20001X121	Encoder Wheel	1
16	20001X122	Brine Cam	1
17	20001X124	Encoder	1
18	20001X125	Power Supply (not pictured)	1

N/S = Non Stocked Item
Shaded REF. No. Indicates Assembly or Kit

CSI
WATER TREATMENT SYSTEMS



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20001X200	Valve Body Complete	1
1	20001X201	Valve Body Only	1
2	N/S	End Spacer	1
3	N/S	Spacer	4
4	N/S	Seal	5
4A	20001X232	Seal & Spacer Kit Includes (1) Ref. #2, (4) Ref. #3 & (5) Ref. #4	1
5	N/S	DownFlow Piston	1
6	N/S	Piston Rod Retainer	1
7	N/S	End Plug Assembly	1
8	N/S	Hex Washer HD. 10-24 X 13/16" Screw	3
9A	20001X231	Piston Assembly Includes (1) Ref. #5, (1) Ref. #6, (1) Ref. #7, & (1) Ref. #9	1
10	N/S	Brine Valve Stem	1
11	N/S	Brine Valve Seat	1
12	N/S	Brine Valve Spacer	1
13	N/S	Quad Ring	1
14	N/S	O-Ring	1
15	N/S	Brine Valve Cap	1
16	N/S	Brine Valve Spring	1
17	N/S	Plain Nylon Washer	1
18	N/S	Retaining Ring	1
18A	20001X210	Brine Assembly Includes Ref. #10 Thru 18	1
19	20251X254	O-Ring	1
20	20251X266	Flow Control Button 1.5 GPM	1
	20251X267	Flow Control Button 2.0 GPM	
	20251X268	Flow Control Button 2.4 GPM	
	20251X269	Flow Control Button 3.0 GPM	
	20251X270	Flow Control Button 3.5 GPM	
	20251X271	Flow Control Button 4.0 GPM	
	20251X272	Flow Control Button 5.0 GPM	
	20251X274	Flow Control Button 7.0 GPM	
21	N/S	Plastic Flow Control Housing	1
21A	Flow Control Assembly - Specify GPM on Order. Includes (1) #19, (1) #20, (1) #21, & (1) #39		1
	20251X256	Flow Control Assembly 1.5 GPM - PVC	
	20251X257	Flow Control Assembly 2.0 GPM - PVC	
	20251X258	Flow Control Assembly 2.4 GPM - PVC	
	20251X259	Flow Control Assembly 3.0 GPM - PVC	
	20251X260	Flow Control Assembly 3.5 GPM - PVC	
	20251X261	Flow Control Assembly 4.0 GPM - PVC	
	20251X262	Flow Control Assembly 5.0 GPM - PVC	
	20251X264	Flow Control Assembly 7.0 GPM - PVC	
22	20001X214	Drain Retainer	1
23	20561X204	O-Ring	1
24	20001X215	O-Ring	1
25	N/S	O-Ring	2
26	N/S	Injector Plug	1
27	N/S	O-Ring	2

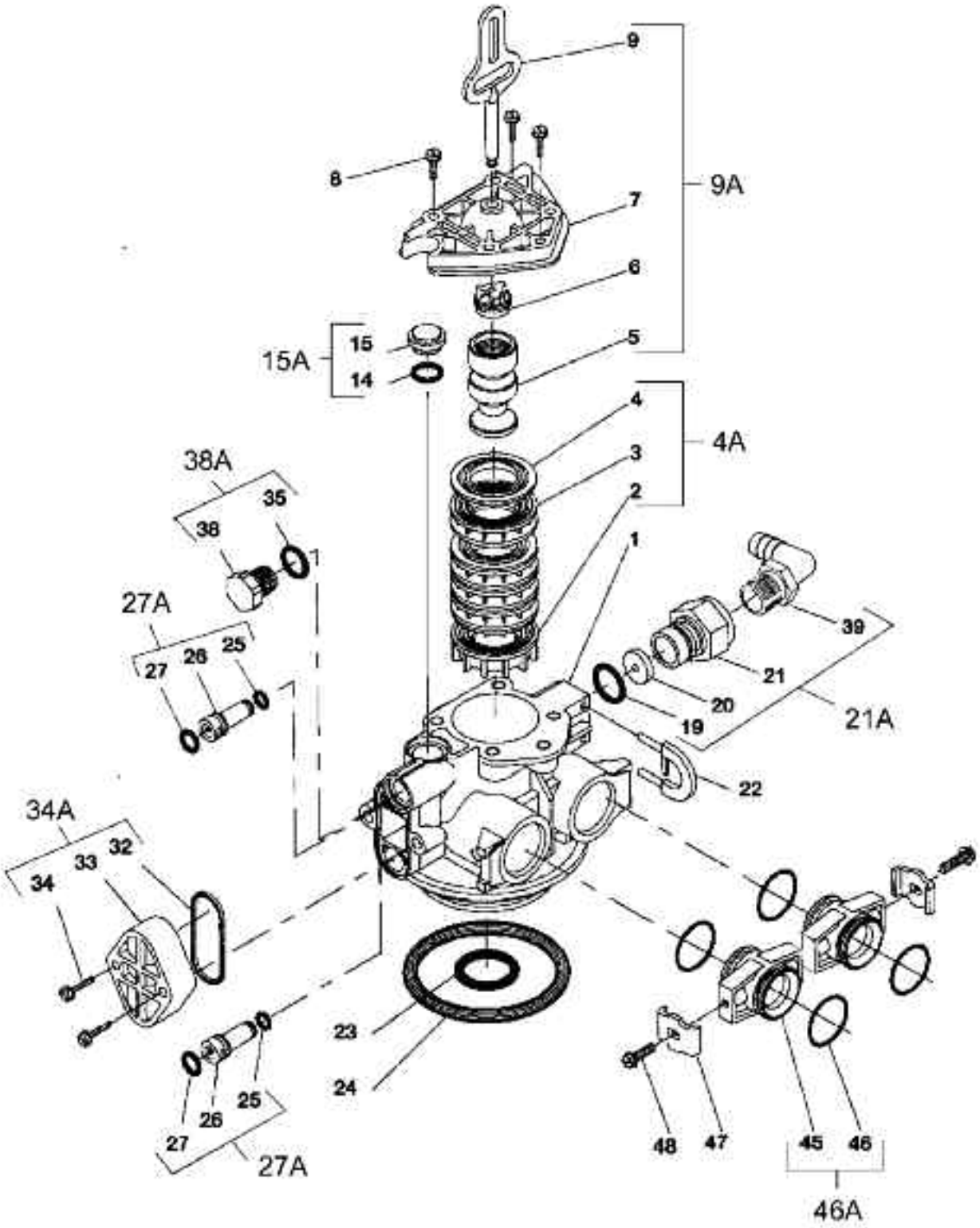
REF. NO.	PART NO.	DESCRIPTION	QTY.
27A	20001X217	Injector Plug & O-Ring Assembly Includes (1) #25, (1) #26, & (1) #27	1
28	N/S	Injector Throat	1
29	N/S	Injector Nozzle	1
30	N/S	Vortex Generator	1
30A	20001X219	Injector Assembly - Specify Size. Includes 1 Each of Ref. #25, 27, 28, 29, & 30	1
31	20001X222	Injector Screen	1
32	20001X224	Injector Seal	1
33	20001X223	Injector Cap	1
34	20001X226	10-24 X 1 Hex Washer HD Screw	2
34A	20001X220	Injector Kit - Specify Size. Includes 1 Each of Ref. #30A, 31, 32, 33, & (2) of Ref. #34	1
35	20561X239	O-Ring	1
36	20561X240	BLFC Button Retainer	1
37	20251X318	5 GPM BLFC Button	1
38	20561X241	BLFC Adapter	1
38A	20001X228	BLFC Assembly .5 GPM. Includes 1 Each of Ref. #35, 36, 37, & 38	1
39	20251X255	Drain Line Fitting 90 Degree Elbow 1/2" NPT X 1/2" Tubing	1

Items 45 Thru 48 Used Only With Clock Regen.

45	N/S	Adapter Coupling	2
46	20561X216	O-Ring	4
46A	20561X215	Adapter Coupling & O-Ring Assembly. Includes Ref. (1) #45 & (2) #46	1
47	20561X201	Mounting Clip	2
48	20561X217	8-18 X 5/8" Hex Washer HD Screw	2

N/S = Non Stocked Item
Shaded REF. No. Indicates Assembly or Kit

CSI WATER TREATMENT SYSTEMS



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20001X200	Valve Body Complete	1
1	20001X201	Valve Body Only	1
2	N/S	End Spacer	1
3	N/S	Spacer	4
4	N/S	Seal	5
4A	20001X232	Seal & Spacer Kit Includes (1) Ref. #2, (4) Ref. #3 & (5) Ref. #4	1
5	N/S	DownFlow Piston	1
6	N/S	Piston Rod Retainer	1
7	N/S	End Plug Assembly	1
8	N/S	Hex Washer HD. 10-24 X 13/16" Screw	3
9A	20001X231	Piston Assembly Includes (1) Ref. #5, (1) Ref. #6, (1) Ref. #7, & (1) Ref. #9	1
14	N/S	O-Ring	1
15	N/S	Brine Valve Cap	1
15A	20001X230	O-Ring & Brine Valve Plug Assembly	1
19	20251X254	O-Ring	1
20	20251X266	Flow Control Button 1.5 GPM	1
	20251X267	Flow Control Button 2.0 GPM	
	20251X268	Flow Control Button 2.4 GPM	
	20251X269	Flow Control Button 3.0 GPM	
	20251X270	Flow Control Button 3.5 GPM	
	20251X271	Flow Control Button 4.0 GPM	
	20251X272	Flow Control Button 5.0 GPM	
	20251X274	Flow Control Button 7.0 GPM	
21	N/S	Plastic Flow Control Housing	1
21A	Flow Control Assembly - Specify GPM on Order. Includes (1) #19, (1) #20, (1) #21, & (1) #39		1
	20251X256	Flow Control Assembly 1.5 GPM - PVC	
	20251X257	Flow Control Assembly 2.0 GPM - PVC	
	20251X258	Flow Control Assembly 2.4 GPM - PVC	
	20251X259	Flow Control Assembly 3.0 GPM - PVC	
	20251X260	Flow Control Assembly 3.5 GPM - PVC	
	20251X261	Flow Control Assembly 4.0 GPM - PVC	
	20251X262	Flow Control Assembly 5.0 GPM - PVC	
	20251X264	Flow Control Assembly 7.0 GPM - PVC	
22	20001X214	Drain Retainer	1
23	20561X204	O-Ring	1
24	20001X215	O-Ring	1
25	N/S	O-Ring	2
26	N/S	Injector Plug	1
27	N/S	O-Ring	2

REF. NO.	PART NO.	DESCRIPTION	QTY.
27A	20001X217	Injector Plug & O-Ring Assembly Includes (1) #25, (1) #26, & (1) #27	1
32	20001X224	Injector Seal	1
33	20001X223	Injector Cap	1
34	20001X226	10-24 X 1 Hex Washer HD Screw	2
35	N/S	O-Ring	1
38	N/S	Filter Plug 1	
38A	20001X229	O-Ring & Filter Plug Assembly. Includes 1 Each of Ref. #35 & #38	1
39	20251X255	Drain Line Fitting 90 Degree Elbow 1/2" NPT X 1/2" Tubing	1

Items 45 Thru 48 Used Only With Clock Regen.

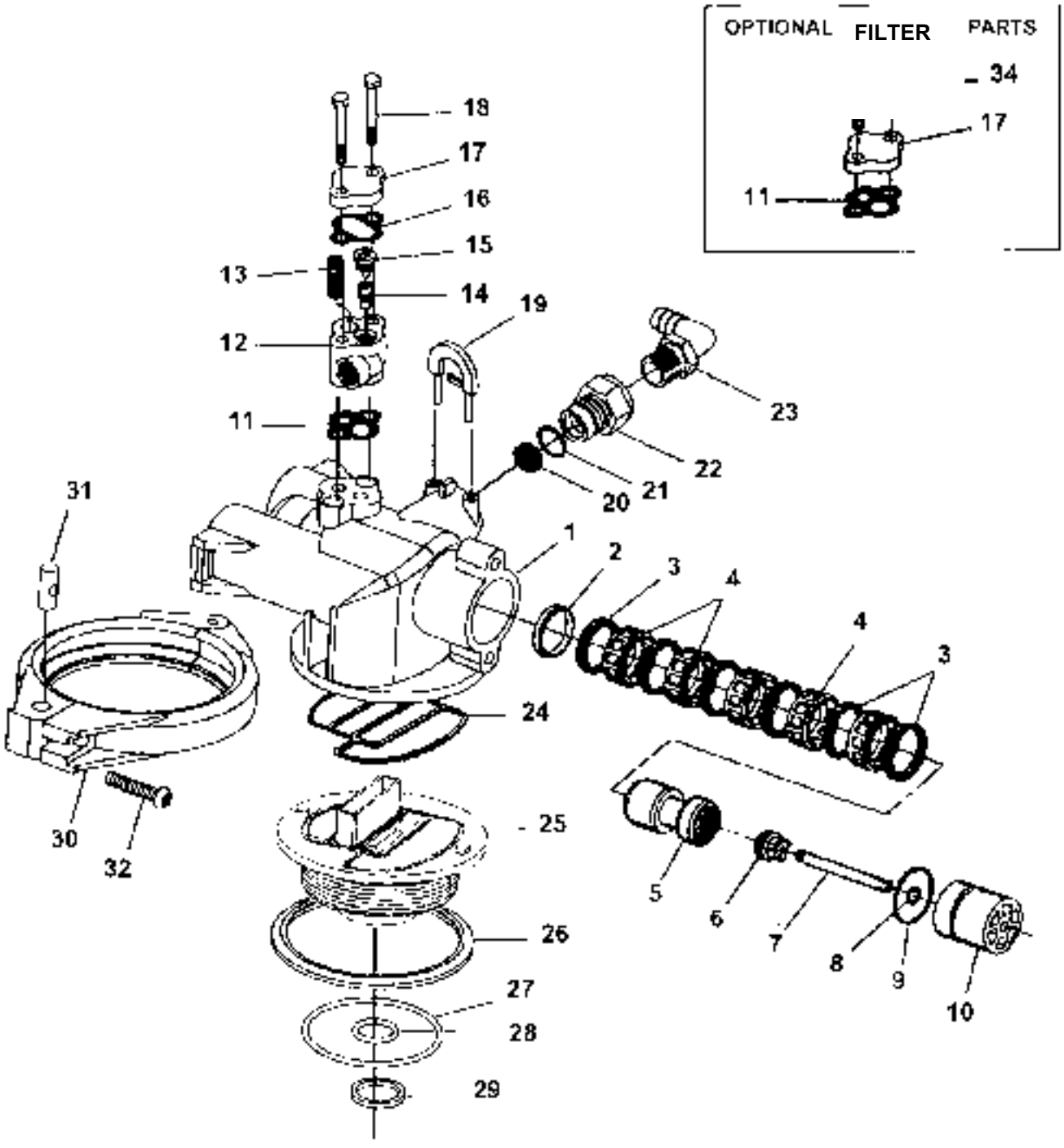
45	N/S	Adapter Coupling	2
46	20561X216	O-Ring	4
46A	20561X215	Adapter Coupling & O-Ring Assembly. Includes Ref. (1) #45 & (2) #46	1
47	20561X201	Mounting Clip	2
48	20561X217	8-18 X 5/8" Hex Washer HD Screw	2

Filter Components Not Shown

34A	20001X221	Filter Conversion Kit. Includes 1 Each of Ref. #15A, 27A, 38A, 32, 33, & (2) # 34's	1

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit



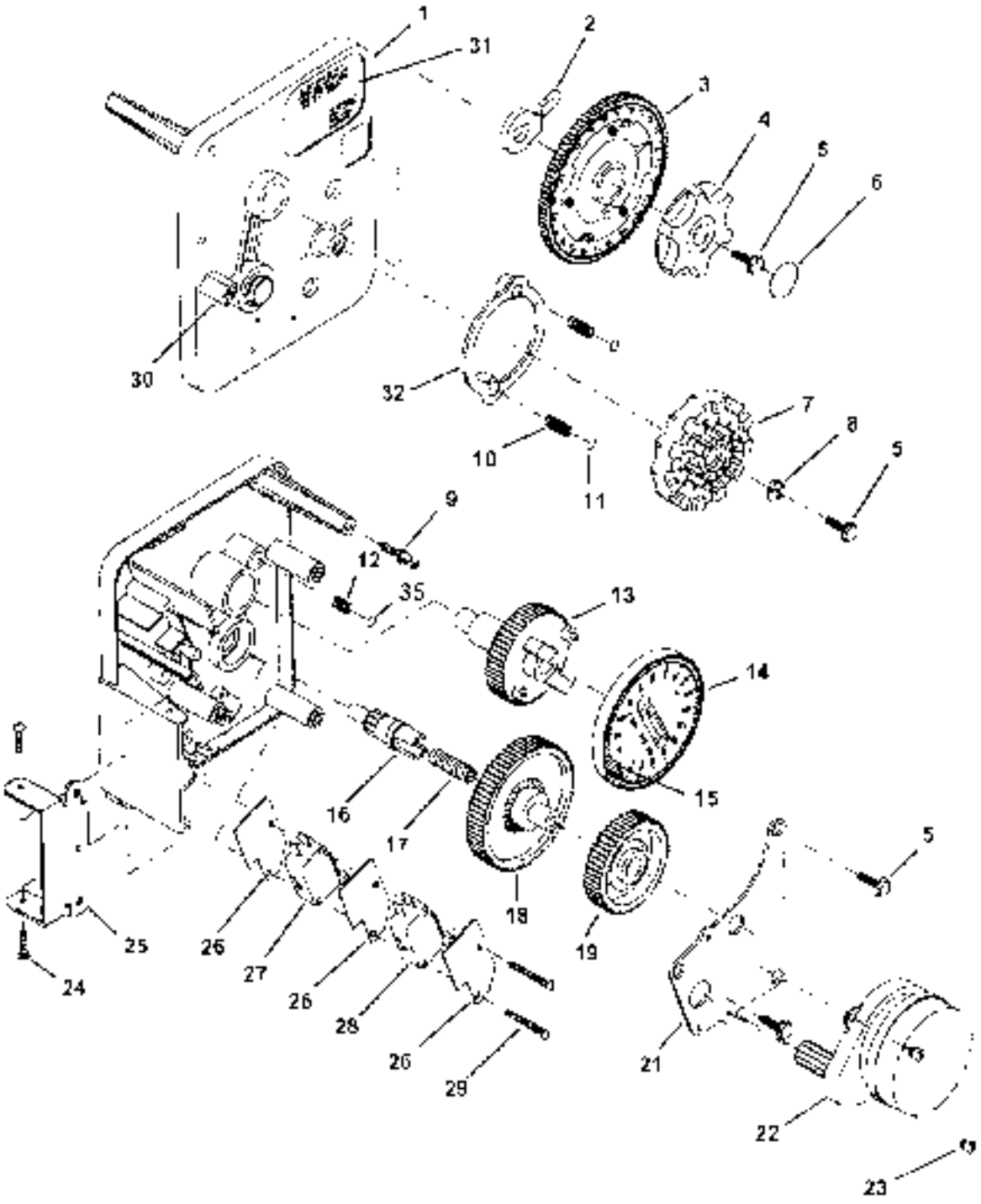
REF. NO.	PART NO.	DESCRIPTION	QTY.
1	20251X450	VALVE BODY	1
2	20251X210	END SPACER	1
3	20251X211	SEAL RING	6
4	20251X212	SPACER	5
4A	20251X232	SEAL & SPACER KIT INCL. (1) NO. 2, (6) NO. 3 & (5) NO. 4	1
5	20251X215	PISTON	1
6	20251X218	PISTON ROD RETAINER	1
7	20251X216	PISTON ROD	1
8	20251X221	QUAD RING SEAL	1
9	20251X219	END PLUG O-RING SEAL	1
10	20251X222	END PLUG ASSEMBLY	1
10A	20251X231	PISTON ASSEMBLY INCL. (1) EA. NO 5, 6, 7, 8 9 & 10	1
11	20251X208	INJECTOR BODY GASKET	1
12	20251X207	INJECTOR BODY - PLASTIC	1
13	20251X204	INJECTOR SCREEN	1
14	20251X206	INJECTOR THROAT, # 1 WHITE	1
	20251X242	INJECTOR THROAT, # 2 BLUE	1
	20251X236	INJECTOR THROAT, # 2 PVC	1
15	20251X205	INJECTOR NOZZLE, # 1 WHITE	1
	20251X241	INJECTOR NOZZLE, # 2 BLUE	1
	20251X235	INJECTOR NOZZLE, # 2 PVC	1
16	20251X203	INJECTOR COVER GASKET	1
17	20251X202	INJECTOR COVER (PLASTIC BODY)	1
18	20251X201	INJECTOR BODY SCREW	1
19	20251X214	DRAIN RETAINER	1
20	20251X266	FLOW CONTROL BUTTON 1.5 GPM	1
	20251X267	FLOW CONTROL BUTTON 2.0 GPM	1
	20251X268	FLOW CONTROL BUTTON 2.4 GPM	1
	20251X269	FLOW CONTROL BUTTON 3.0 GPM	1
	20251X270	FLOW CONTROL BUTTON 3.5 GPM	1
	20251X271	FLOW CONTROL BUTTON 4.0 GPM	1
	20251X272	FLOW CONTROL BUTTON 5.0 GPM	1
	20251X274	FLOW CONTROL BUTTON 7.0 GPM	1
21	20251X254	FLOW CONTROL O-RING SEAL	1
22	N/S	FLOW CONTROL HOUSING - PLASTIC	1
23	20251X255	1/2" PIPE X 1/2" HOS X 90º DRAIN FITTING	1
24	20251X451	BASE SEAL	1
25	20251X452	ADAPTER BASE (2.5 - 8 THREAD)	1
26	20251X453	SLIP RING	1
27	20001X215	TANK O-RING	1
28	20561X204	DISTRIBUTOR O-RING	1
29	20251X454	DISTRIBUTOR TUBE O-RING RETAINER	1
30	20251X455	CLAMP ASSEMBLY	1

REF. NO.	PART NO.	DESCRIPTION	QTY.
31	20251X456	CLAMP PIVOT	1
32	20251X457	CLAMP SCREW	1
33	20252X202	CAP - FILTER ONLY	1
34	20252X201	CAP SECURING SCREWS - FILTER ONLY	2
Not Shown		FLOW CONTROL ASSEMBLY INCL. 20, 21 & 22	
	20251X256	FLOW CONTROL ASSY. 1.5 GPM - PVC	1
	20251X257	FLOW CONTROL ASSY. 2.0 GPM - PVC	1
	20251X258	FLOW CONTROL ASSY. 2.4 GPM - PVC	1
	20251X259	FLOW CONTROL ASSY. 3.0 GPM - PVC	1
	20251X260	FLOW CONTROL ASSY. 3.5 GPM - PVC	1
	20251X261	FLOW CONTROL ASSY. 4.0 GPM - PVC	1
	20251X262	FLOW CONTROL ASSY. 5.0 GPM - PVC	1
	20251X264	FLOW CONTROL ASSY. 7.0 GPM - PVC	1

N/S = Non Stocked Item

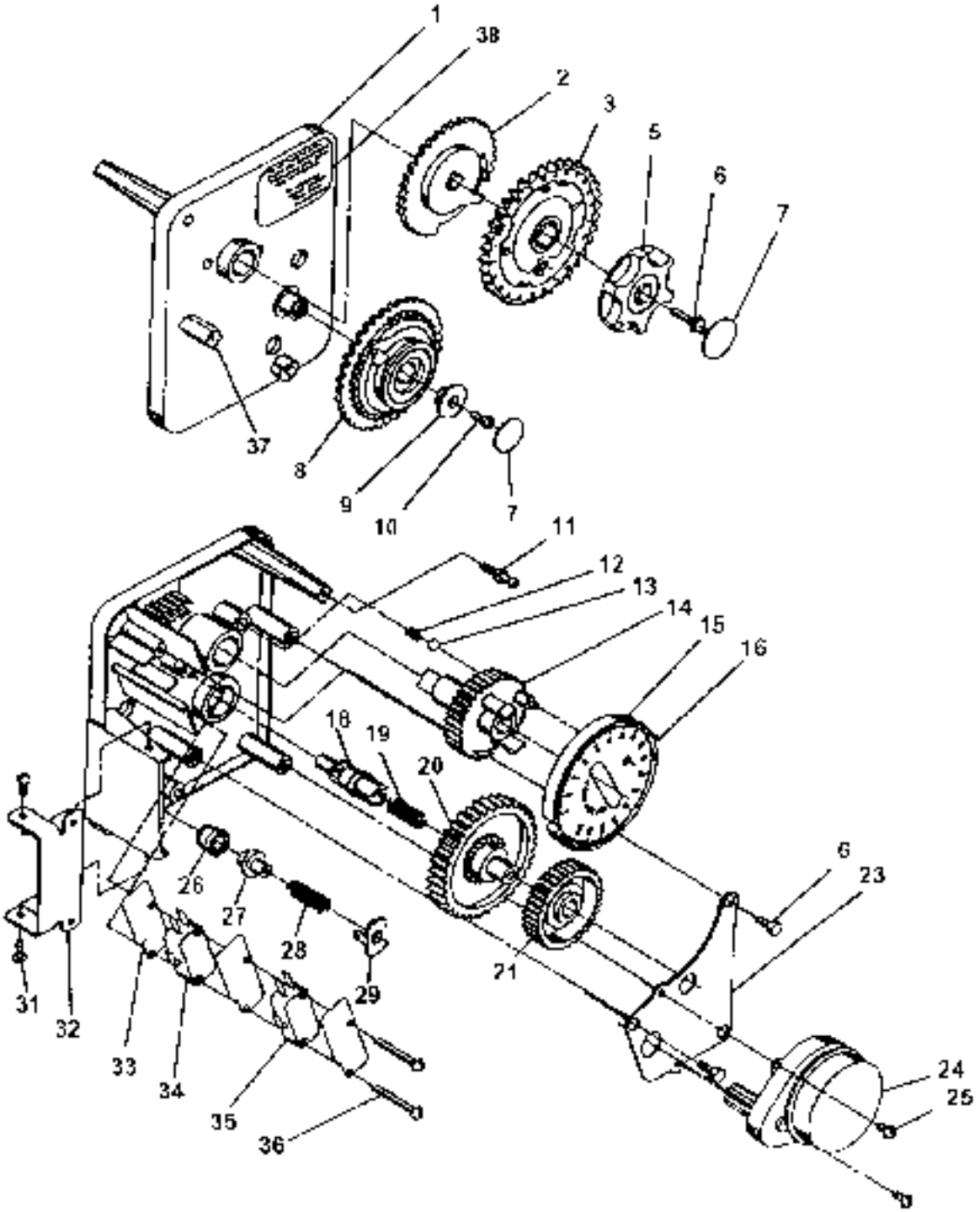
Shaded REF. No. Indicates Assembly or Kit

CSI WATER TREATMENT SYSTEMS



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20251X104	3200 TIMER ASSEMBLY - 12 DAY	1
	20251X105	3200 TIMER ASSEMBLY - 7 DAY	1
1	20251X401	TIMER HOUSING	1
2	20251X402	CYCLE ACTUATOR ARM	1
3	20251X403	24 HOUR GEAR	1
4	20251X405	KNOB	1
5	20251X406	SCREW - TIMER KNOB & MOTOR MOUNT	5
6	20251X407	BUTTON DECAL	1
7	20251X408	SKIPPER WHEEL ASSEMBLY - 12 DAY	1
8	20251X410	REGENERATION POINTER	1
9	20251X411	SPRING CLIP	1
10	20251X412	SPRING - SKIPPER WHEEL DETENT	2
11	20251X413	BALL - 1/4" DIAMETER	2
12	20251X414	SPRING - MAIN GEAR DETENT	1
13	20251X415	MAIN DRIVE GEAR	1
14	20251X416	PROGRAM WHEEL	1
15	20251X417	ROLL PIN	21
16	20251X419	IDLER SHAFT	1
17	20251X420	IDLER SPRING	1
18	20251X421	IDLER GEAR	1
19	20251X422	DRIVE GEAR	1
NOT SHOWN	20251X423	CURVED WASHER	1
21	20251X424	MOTOR MOUNTING PLATE	1
22	20251X425	MOTOR - 110 V / 60 HZ	1
23	20251X426	SCREW - MOTOR MOUNTING	2
24	20251X427	SCREW - TIMER HINGE	3
25	20251X428	HINGE BRACKET	1
26	20251X429	INSULATOR	3
27	20251X430	SWITCH	1
28	20251X431	SWITCH	1
29	20251X432	SCREW - SWITCH MOUNTING	2
30	20251X433	DECAL - TIME OF DAY	1
31	20251X434	DECAL - INSTRUCTIONS	1
32	20251X435	SKIPPER WHEEL RING	1
NOT SHOWN	N/S	HARNESS (NOT SHOWN)	1
35	20251X438	1/4" DIAMETER DELRIN BALL	1
NOT SHOWN	20251X441	GROUND WIRE (NOT SHOWN)	1
NOT SHOWN	20251X404	24 HOUR LABEL - SILVER	1
NOT SHOWN	N/S	SKIPPER WHEEL LABEL	1
NOT SHOWN	N/S	PROGRAM WHEEL DECAL	1

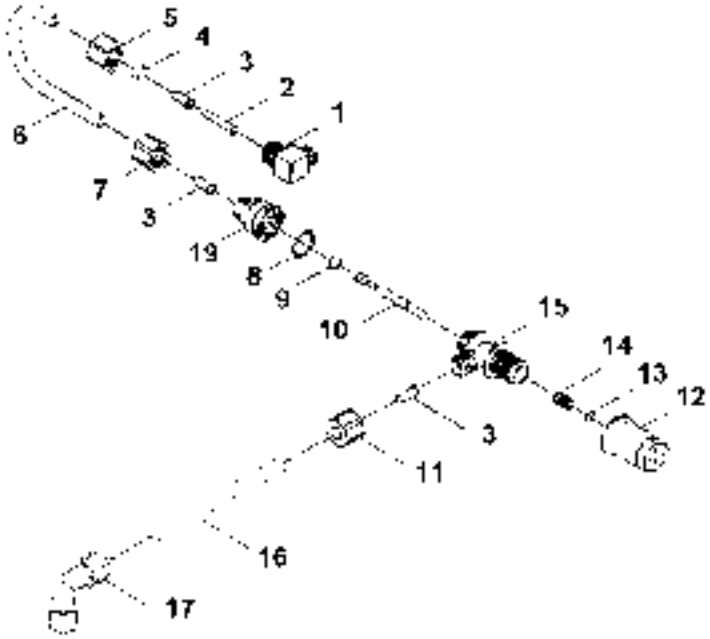
N/S = Non Stocked Item
Shaded REF. No. Indicates Assembly or Kit



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20253X100	3210 METER VALVE TIMER, 3/4" STD RANGE W/ CABLE - SPECIFY "K"	1
1	20253X109	TIMER HOUSING	1
2	20253X110	CYCLE ACTUATOR ARM	1
3	20251X403	24 HOUR GEAR	1
5	20251X405	KNOB	1
6	20251X406	SCREW - TIMER KNOB & MOTOR MOUNT	5
7	20251X407	BUTTON DECAL	1
8	20253X113	PROGRAM WHEEL ASSEMBLY - SPECIFY "K"	1
9	20253X111	PROGRAM WHEEL RETAINER	1
10	20253X108	PROGRAM WHEEL SCREW	1
11	20251X411	SPRING CLIP	1
12	20251X414	SPRING - MAIN GEAR DETENT	2
13	20251X438	BALL - 1/4" DIAMETER DELRIN	2
14	20251X415	MAIN DRIVE GEAR	1
15	20251X416	PROGRAM WHEEL	1
16	20251X417	ROLL PIN	21
18	20251X419	IDLER SHAFT	1
19	20251X420	IDLER SPRING	1
20	20251X421	IDLER GEAR	1
21	20251X422	DRIVE GEAR	1
NOT SHOWN	20251X423	CURVED WASHER	1
23	20251X424	MOTOR MOUNTING PLATE	1
24	20251X425	MOTOR - 110 V / 60 HZ	1
25	20251X426	SCREW - MOTOR MOUNTING	2
26	20563X137	DRIVE PINION - PROGRAM WHEEL	1
27	20563X138	CLUTCH - DRIVE PINION	1
28	20563X140	SPRING	1
29	20563X139	SPRING RETAINER	1
31	20251X427	SCREW - TIMER HINGE	3
32	20251X428	HINGE BRACKET	1
33	20251X429	INSULATOR	3
34	20251X430	SWITCH	1
35	20251X431	SWITCH	1
36	20251X432	SCREW - SWITCH MOUNTING	2
37	20251X433	DECAL - TIME OF DAY	1
38	20251X434	DECAL - INSTRUCTIONS	1
NOT SHOWN	20501X122	WIRE CONNECTOR (NOT SHOWN)	2
NOT SHOWN	20251X441	GROUND WIRE (NOT SHOWN)	1

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit



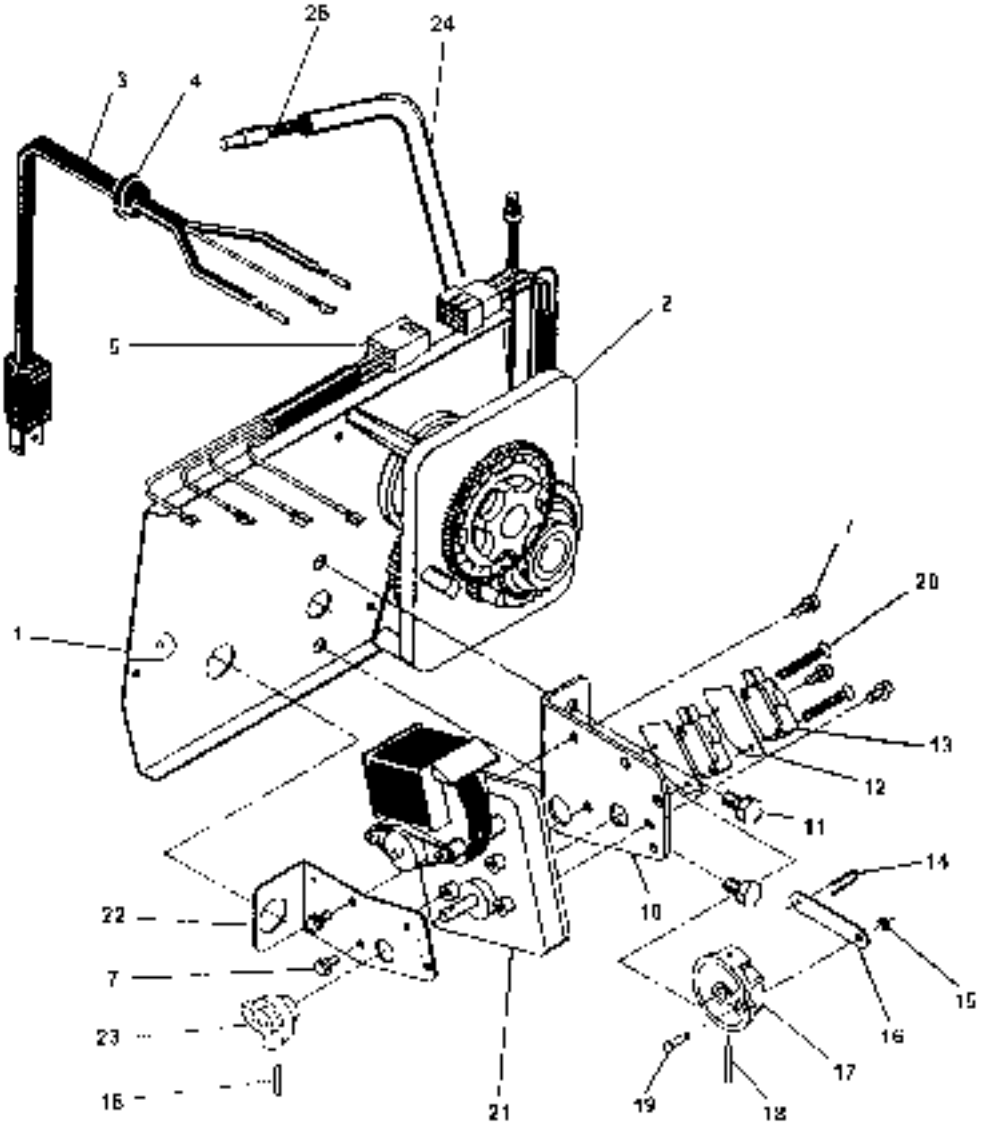
REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20251X300	.5 GPM BRINE VALVE SYSTEM COMPLETE	1
1	20251X301	1/4" NPT X 3/8" NPS 90º ELBOW	1
2	20251X302	BRINE LINE SCREEN	1
3	20251X303	INSERT SLEEVE (3/8" TUBE)	3
4	20251X305	DELRIN SLEEVE (3/8" TUBE)	1
5	20251X304	TUBE FITTING NUT 3/8" BRINE	1
6	20251X306	BRINE VALVE TUBE	1
7&11	20251X318	ASSEMBLY GFN NUT	2
8	20251X316	O-RING	1
9	20251X315	SEAT, BRINE VALVE	1
10	20251X314	BRINE VALVE STEM 1600	1
12	20251X308	GUIDE, BRINE VALVE STEM	1
13	20251X307	RETAINING RING	1
14	20251X311	BRINE VALVE SPRING	1
15	20251X313	BRINE VALVE BODY PLASTIC	1
16		3/8" TUBING	1
17	20251X312	ELBOW, 3/8 TUBE POLY, WHITE	1
19	20251X317	BRINE LINE FLOW CONTROL ASSY. - .5 BLFC	1

Shaded REF. No. Indicates Assembly or Kit

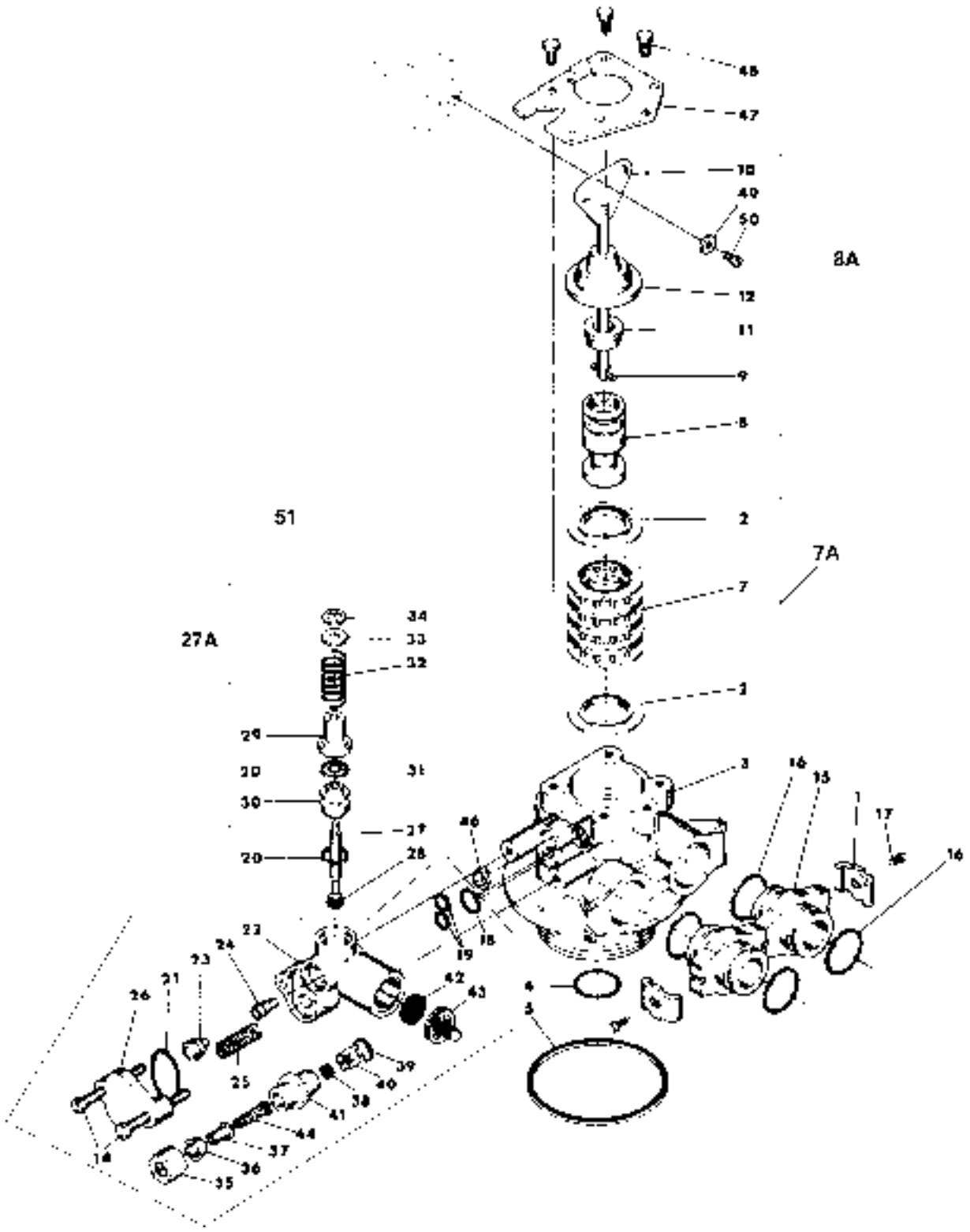
Parts Diagram - 2510 Series Valve Timer

REF. NO.	PART NO.	DESCRIPTION	QTY.
1	20251X130	BACKPLATE FOR 2500 DESIGNER	1
2	20253X100	3210 METER VALVE TIMER W/ CABLE 3/4" STD METER - SPECIFY "K" LABEL	1
Not Shown	20251X104	3200 TIMER ASSY. 12 DAY	1
Not Shown	20251X105	3200 TIMER ASSY. 7 DAY	1
3	20251X101	POWER CORD	1
4	20251X102	STRAIN RELIEF	1
5	20251X132	WIRING HARNESS	1
7	20251X128	DRIVE MOTOR MOUNTING SCREW	5
10	20251X124	MOTOR MOUNTING BRACKET	1
11	20251X123	SCREW 1/4"-20 X 1/2"	2
12	20251X114	INSULATOR	2
13	20251X113	MICROSWITCH	2
14	20251X115	CONNECTING LINK PIN	1
15	20251X307	RETAINING RING	1
16	N/S	CONNECTING LINK	1

REF. NO.	PART NO.	DESCRIPTION	QTY.
17	20251X118	DRIVE CAM ASSEMBLY (WHITE)	1
18	20251X119	ROLL PIN	2
19	N/S	DRIVE BEARING	1
20	20251X125	SCREW 4-40 X 1"	2
21	20251X126	DRIVE MOTOR	1
22	20251X127	BRINE VALVE SIDE BRACKET	1
23	20251X309	BRINE CAM WHITE	1
	20251X310	BRINE CAM BLACK	1
24	20253X104	METER CABLE GUIDE	1
25	20253X105	10.5" METER CABLE	1
Not Shown	20251X103	TIMER MOUNTING SCREW	2
Not Shown	20251X135	DESIGNER COVER (BLACK PLASTIC)	1
Not Shown	N/S	SLANT COVER	1
Not Shown	20251X425	3200 OR 3210 TIMER MOTOR 110 V / 60 Hz	1



PARTS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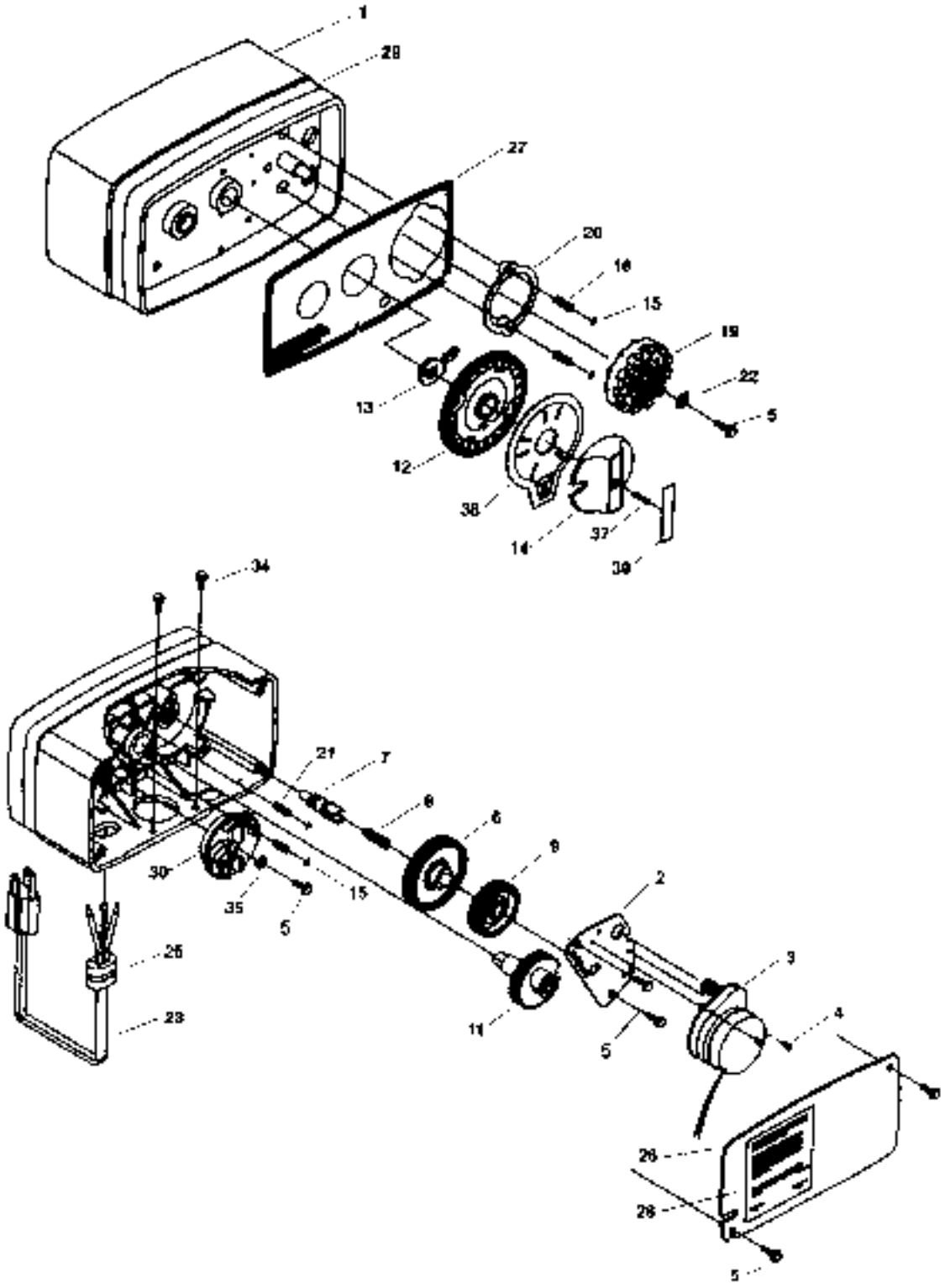
REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20561X200	VALVE BODY COMPLETE	1
1	20561X201	ADAPTER CLIP	2
2	20561X202	SEAL	5
3	20561X203	VALVE BODY ONLY 1.05" DIST.	1
4	20561X204	DIST. TUBE O-RING 1.05" O.D.	1
5	20561X205	VALVE TO TANK O-RING	1
7	20561X207	SPACER	4
7A	20561X253	SEAL & SPACER KIT INCL. 5 - #2 & 4 - #7	1
8	20561X208	PISTON ONLY	1
8A	20561X254	PISTON & END PLUG ASSY. INCL. #8, 9, 10, 11 & 12	1
9	20561X209	PISTON PIN	1
10	20561X210	PISTON ROD ASSEMBLY	1
11	20561X211	PISTON RETAINER	1
12	20561X212	END PLUG ASSEMBLY	1
14	20561X214	INJECTOR MOUNTING SCREW	2
15	20561X215	BYPASS ADAPTER (AUTOMATICS ONLY)	2
16	20561X216	BYPASS ADAPTER O-RING	4
17	20561X217	ADAPTER CLIP SCREW 8-18 X 5/8"	2
18	20561X218	DRAIN O-RING	1
19	20561X219	INJECTOR O-RING	2
20	20561X220	BRINE SPACER O-RING	2
21	20561X221	INJECTOR COVER O-RING	1
22	20561X222	INJECTOR BODY	1
23	20251X205	INJECTOR NOZZLE, # 1 WHITE	1
	20251X241	INJECTOR NOZZLE, # 2 BLUE	1
	20251X235	INJECTOR NOZZLE, # 2 PVC	1
24	20251X206	INJECTOR THROAT, # 1 WHITE	1
	20251X242	INJECTOR THROAT, # 2 BLUE	1
	20251X236	INJECTOR THROAT, # 2 PVC	1
25	20251X204	INJECTOR SCREEN	1
26	20561X226	INJECTOR COVER	1
27	N/S	BRINE VALVE STEM ONLY	1
27A	20561X225	BRINE VALVE ASSY. - INCL. 27 TO 34	1
28	20251X315	BRINE VALVE SEAT	1
29	N/S	BRINE VALVE CAP	1
30	N/S	BRINE VALVE SPACER	1
31	20251X312	QUAD RING	1
32	N/S	BRINE VALVE SPRING	1
33	N/S	BRINE VALVE WASHER	1
34	N/S	RETAINING RING	1
35	20251X304	BRINE LINE COMPRESSION NUT	1
36	20251X305	BRINE LINE FERRULE	1
37	20251X303	BRINE LINE BRASS INSERT	1
38	20251X318	BLFC BUTTON .5 GPM	1
39	20561X239	BRINE LINE O-RING	1
40	20561X240	BLFC BUTTON RETAINER	1
41	20561X241	BLFC BRASS FITTING	1

REF. NO.	PART NO.	DESCRIPTION	QTY.
42	20251X266	FLOW CONTROL BUTTON 1.5 GPM	1
	20251X267	FLOW CONTROL BUTTON 2.0 GPM	1
	20251X268	FLOW CONTROL BUTTON 2.4 GPM	1
	20251X269	FLOW CONTROL BUTTON 3.0 PM	1
	20251X270	FLOW CONTROL BUTTON 3.5 GPM	1
	20251X271	FLOW CONTROL BUTTON 4.0 GPM	1
	20251X272	FLOW CONTROL BUTTON 5.0 GPM	1
	20251X274	FLOW CONTROL BUTTON 7.0 GPM	1
43	20561X246	DLFC BUTTON RETAINER	1
46	20561X248	AIR DISPERSER	1
47	20561X249	END PLUG RETAINER	1
48	20561X250	10-24 X 1/2" SCREW	3
49	20561X251	WASHER	1
50	20251X406	6-32 X 1/2" SCREW	1
51	20561X260	INJECTOR MODEL ASSY. # 1 INJ, .5 BLFC, SPECIFY DLFC. INCL. (2) #14, (1) #18, (2) #19 & #20, (1) EA. #21 THRU #27, (1) EA. #28 THRU #43	1

FILTER COMPONENTS NOT SHOWN			
Not Shown	20562X263	FILTER MODULE ASSY. SPECIFY DLFC	1
Not Shown	20561X256	DRAIN LINE FITTING STRAIGHT 1/2" NPT X 1/2" TUBING	1
Not Shown	20251X255	DRAIN LINE FITTING 90º ELBOW 1/2" NPT X 1/2" TUBING	1
Not Shown	20562X102	BRINE VALVE PLUG - FILTER ONLY	1
Not Shown	20561X220	BRINE VALVE PLUG O-RING	1
Not Shown	20562X103	BLFC PLUG - FILTER ONLY	1
Not Shown	20561X239	BLFC PLUG O-RING	1
Not Shown	20562X254	PISTON ASSY. - FILTER ONLY	1
Not Shown		INJECTOR NOZZLE UNDRILLED	1

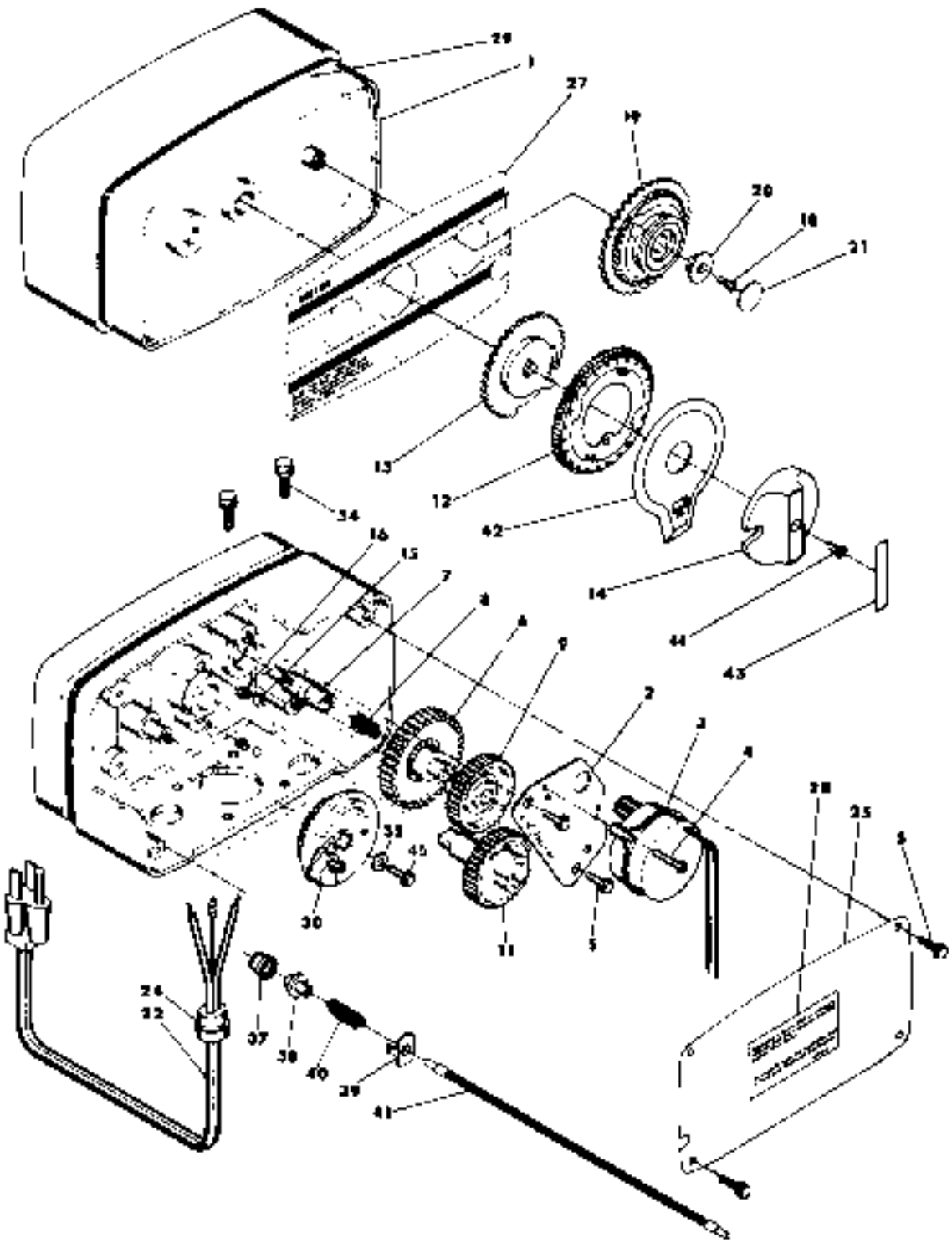
N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20561X100	5600 12 DAY SOFTENER POWERHEAD ASSY. COMPLETE	1
1	20561X101	DRIVE HOUSING	1
2	20561X102	MOTOR MOUNTING PLATE	1
3	20251X425	MOTOR, 110 V / 60 HZ	1
4	20251X427	MOTOR MOUNT AND GROUND SCREW	3
5	20251X406	COMPONENT MOUNTING SCREW	6
6	20251X421	IDLER GEAR	1
7	20251X419	IDLER PINION	1
8	20251X420	IDLER SPRING	1
9	20251X422	DRIVE GEAR	1
NOT SHOWN	20251X423	CURVED WASHER	1
11	20561X111	MAIN GEAR AND SHAFT	1
12	20251X403	24 HOUR GEAR	1
13	20251X402	CYCLE ACTUATOR ARM	1
14	20561X114	MANUAL REGENERATION KNOB	1
15	20251X413	BALL, 1/4" DIA. SST	4
16	20251X412	SKIPPER WHEEL DETENT SPRING	2
NOT SHOWN	20251X404	24 HOUR LABEL	1
NOT SHOWN	N/S	SKIPPER WHEEL LABEL	1
19	20251X408	SKIPPER WHEEL ASSY. - 12 DAY	1
20	20251X435	SKIPPER WHEEL RING	1
21	20251X414	MAIN GEAR DETENT SPRING	2
22	20251X410	REGEN POINTER	1
23	20561X123	POWER CORD	1
25	20251X102	STRAIN RELIEF	1
26	20561X126	BACK COVER	1
27	20561X127	FRONT LABEL - BLUE / SILVER	1
28	N/S	REAR LABEL	1
29	20561X129	BLUE TAPE STRIPE	1
30	20561X130	BRINE CAM ASSY. 6-36	1
NOT SHOWN	N/S	TIME FILL CAM SCREW	1
NOT SHOWN	N/S	TIME FILL CAM NUT	1
NOT SHOWN	N/S	TIME FILL CAM	1
34	20561X134	DRIVE MOUNTING SCREW	2
35	20561X135	WASHER	1
NOT SHOWN	N/S	"LBS. OF SALT" LABEL	1
37	20561X137	KNOB SCREW	1
38	20561X138	VALVE POSITION DIAL	1
	N/S	VALVE POSITION DIAL - FILTER ONLY	1
39	20561X139	SILVER KNOB LABEL	1
	20561X125	DESIGNER COVER - 5600	1

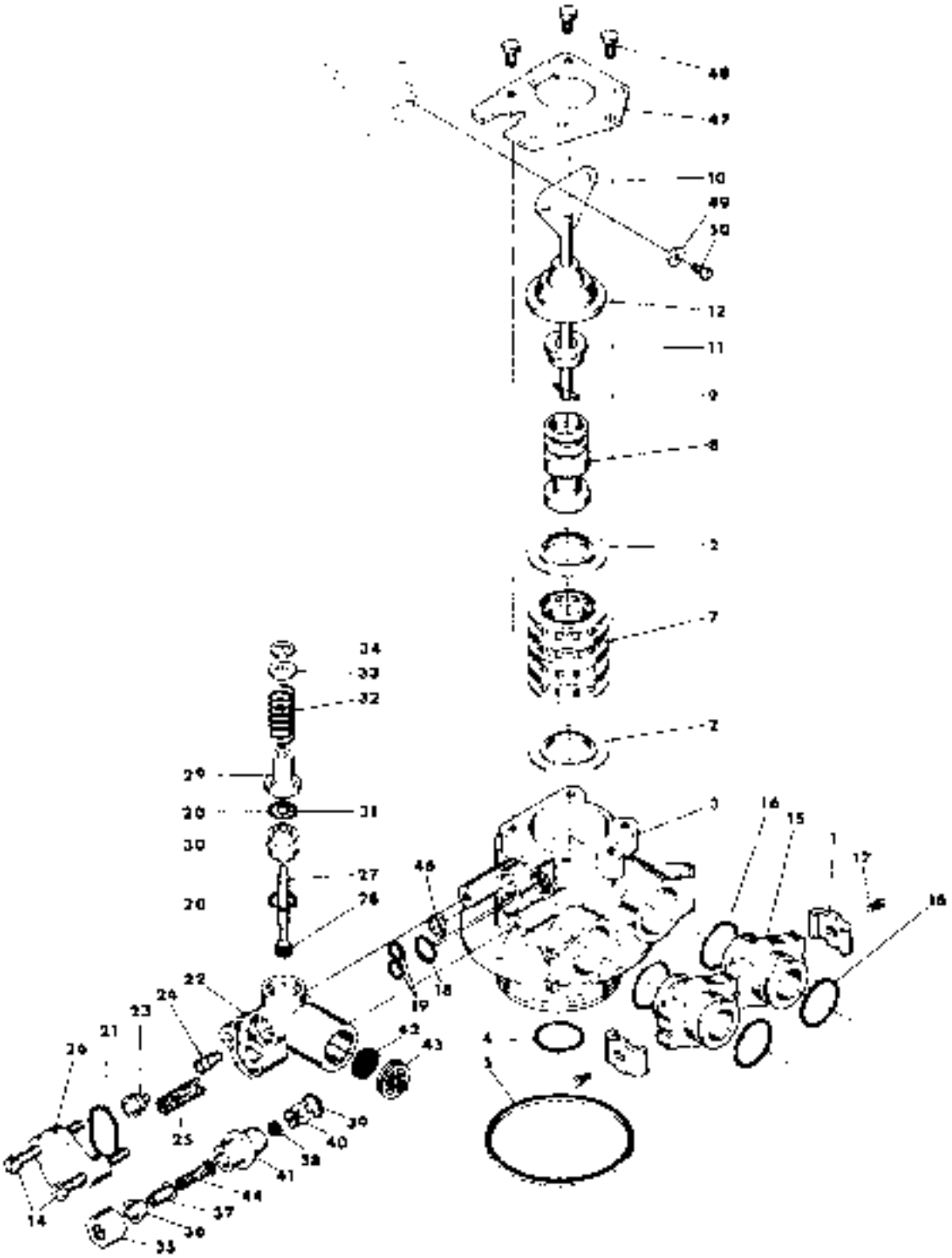
N/S = Non Stocked Item
Shaded REF. No. Indicates Assembly or Kit



REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20563X100	5600 METER SOFTENER POWERHEAD ASSY. COMPLETE	1
1	20563X101	DRIVE HOUSING	1
2	20561X102	MOTOR MOUNTING PLATE	1
3	20251X425	MOTOR, 110 V / 60 HZ	1
4	20251X427	MOTOR MOUNT AND GROUND SCREW	3
5	20251X406	COMPONENT MOUNTING SCREW	5
6	20251X421	IDLER GEAR	1
7	20251X419	IDLER PINION	1
8	20251X420	IDLER SPRING	1
9	20251X422	DRIVE GEAR	1
NOT SHOWN	20251X423	CURVED WASHER	1
11	20561X111	MAIN GEAR AND SHAFT	1
12	20251X403	24 HOUR GEAR	1
13	20253X110	CYCLE ACTUATOR ARM	1
14	20561X114	MANUAL REGENERATION KNOB	1
15	20251X413	BALL, 1/4" DIA. SST	2
16	20251X414	SPRING DETENT	2
NOT SHOWN	20251X404	24 HOUR LABEL	1
18	20253X108	PROGRAM WHEEL SCREW	1
19	20563X119	PROGRAM WHEEL ASSY' - SPECIFY "K"	1
20	20253X111	PROGRAM WHEEL RETAINER	1
21	20563X121	PROGRAM WHEEL COVER LABEL	1
22	20561X123	POWER CORD	1
24	20251X102	STRAIN RELIEF	1
25	20561X126	BACK COVER	1
27	20563X127	SILVER FRONT LABEL	1
28	N/S	REAR LABEL	1
29	20561X129	SILVER TAPE STRIPE	1
30	20561X130	BRINE CAM ASSEMBLY 6-36	1
NOT SHOWN	N/S	TIME FILL CAM SCREW	1
NOT SHOWN	N/S	TIME FILL CAM NUT	1
NOT SHOWN	N/S	TIME FILL CAM	1
34	20561X134	DRIVE MOUNTING SCREW	2
35	20561X135	WASHER	1
NOT SHOWN	N/S	"LBS. OF SALT" LABEL	1
37	20563X137	PROGRAM WHEEL DRIVE PINION	1
38	20563X138	DRIVE PINION CLUTCH	1
39	20563X139	SPRING RETAINER	1
40	20563X140	SPRING	1
41	20563X141	CABLE ASSY. STANDARD 8.25"	1
	20563X142	CABLE ASSY. EXT. 6.75"	1
42	20561X138	VALVE POSITION DIAL STANDARD	1
43	20561X139	SILVER KNOB LABEL	1
44	20561X137	KNOB SCREW	1
NOT SHOWN	20561X125	DESIGNER COVER - 5600	1

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit



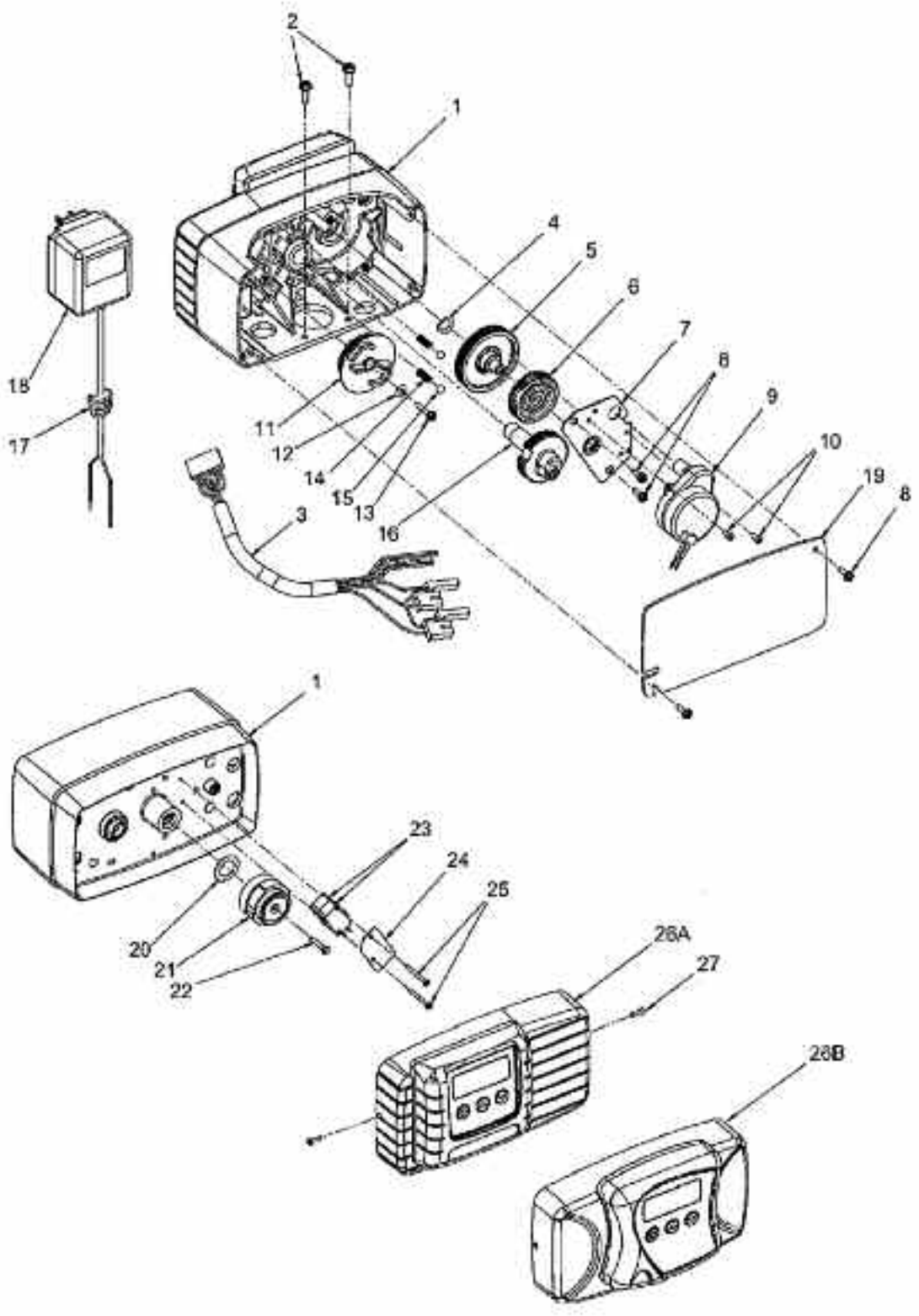
Parts List - 5600SXT Control Valve Assembly

REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20564X000	VALVE BODY COMPLETE	1
1	20561X201	ADAPTER CLIP	2
2	20561X202	SEAL	5
3	20561X203	VALVE BODY ONLY 1.05" DIST.	1
4	20561X204	DIST. TUBE O-RING 1.05" O.D.	1
5	20561X205	VALVE TO TANK O-RING	1
7	20561X207	SPACER	4
7A	20561X253	SEAL & SPACER KIT INCL. 5 - #2 & 4 - #7	1
8	20564X208	PISTON ONLY	1
8A	20564X254	PISTON & END PLUG ASSY. INCL. #8, 9, 10, 11 & 12	1
9	20564X209	PISTON PIN	1
10	20564X210	PISTON ROD ASSEMBLY	1
11	20561X211	PISTON RETAINER	1
12	20564X212	END PLUG ASSEMBLY	1
14	20561X214	INJECTOR MOUNTING SCREW	2
15	20251X215	BYPASS ADPATER (AUTOMATICS ONLY)	2
16	20561X216	BYPASS ADAPTER O-RING	4
17	20561X217	ADAPTER CLIP SCREW 8-18 X 5/8"	2
18	20561X218	DRAIN O-RING	1
19	20561X219	INJECTOR O-RING	2
20	20561X220	BRINE SPACER O-RING	2
21	20561X221	INJECTOR COVER O-RING	1
22	20561X222	INJECTOR BODY	1
23	20251X205	INJECTOR NOZZLE, # 1 WHITE	1
	20251X241	INJECTOR NOZZLE, # 2 BLUE	1
	20251X235	INJECTOR NOZZLE, # 2 PVC	1
24	20251X206	INJECTOR THROAT, # 1 WHITE	1
	20251X242	INJECTOR THROAT, # 2 BLUE	1
	20251X236	INJECTOR THROAT, # 2 PVC	1
25	20251X204	INJECTOR SCREEN	1
26	20561X226	INJECTOR COVER	1
27	N/S	BRINE VALVE STEM ONLY	1
27A	20561X225	BRINE VALVE ASSY. - INCL. 27 TO 34	1
28	20251X315	BRINE VALVE SEAT	1
29	N/S	BRINE VALVE CAP	1
30	N/S	BRINE VALVE SPACER	1
31	20251X312	QUAD RING	1
32	N/S	BRINE VALVE SPRING	1
33	N/S	BRINE VALVE WASHER	1
34	N/S	RETAINING RING	1
35	20251X304	BRINE LINE COMPRESSION NUT	1
36	20251X305	BRINE LINE FERRULE	1
37	20251X303	BRINE LINE BRASS INSERT	1
38	20251X318	BLFC BUTTON .5 GPM	1
39	20561X239	BRINE LINE O-RING	1
40	20561X240	BLFC BUTTON RETAINER	1
41	20561X241	BLFC BRASS FITTING	1

REF. NO.	PART NO.	DESCRIPTION	QTY.
42	20251X266	FLOW CONTROL BUTTON 1.5 GPM	1
	20251X267	FLOW CONTROL BUTTON 2.0 GPM	1
	20251X268	FLOW CONTROL BUTTON 2.4 GPM	1
	20251X269	FLOW CONTROL BUTTON 3.0 PM	1
	20251X270	FLOW CONTROL BUTTON 3.5 GPM	1
	20251X271	FLOW CONTROL BUTTON 4.0 GPM	1
	20251X272	FLOW CONTROL BUTTON 5.0 GPM	1
	20251X274	FLOW CONTROL BUTTON 7.0 GPM	1
43	20561X246	DLFC BUTTON RETAINER	1
46	20561X248	AIR DISPERSER	1
47	20561X249	END PLUG RETAINER	1
48	20561X250	10-24 X 1/2" SCREW	3
49	20561X251	WASHER	1
50	20251X406	6-32 X 1/2" SCREW	1
51	20561X260	INJECTOR MODEL ASSY. # 1 INJ, .5 BLFC, SPECIFY DLFC. INCL. (2) #14, (1) #18, (2) #19 & #20, (1) EA. #21 THRU #27, (1) EA. #28 THRU #43	1

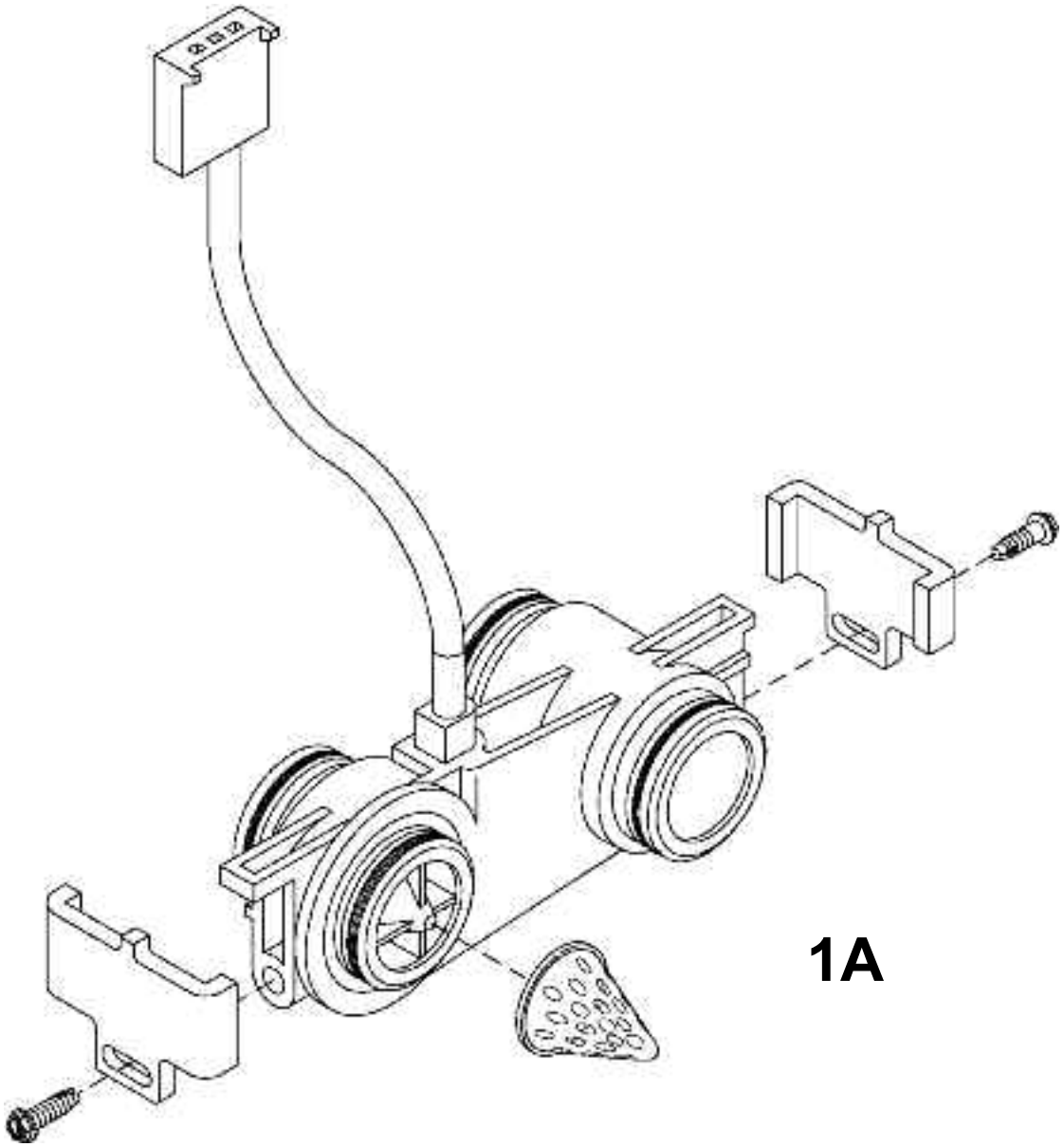
N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit

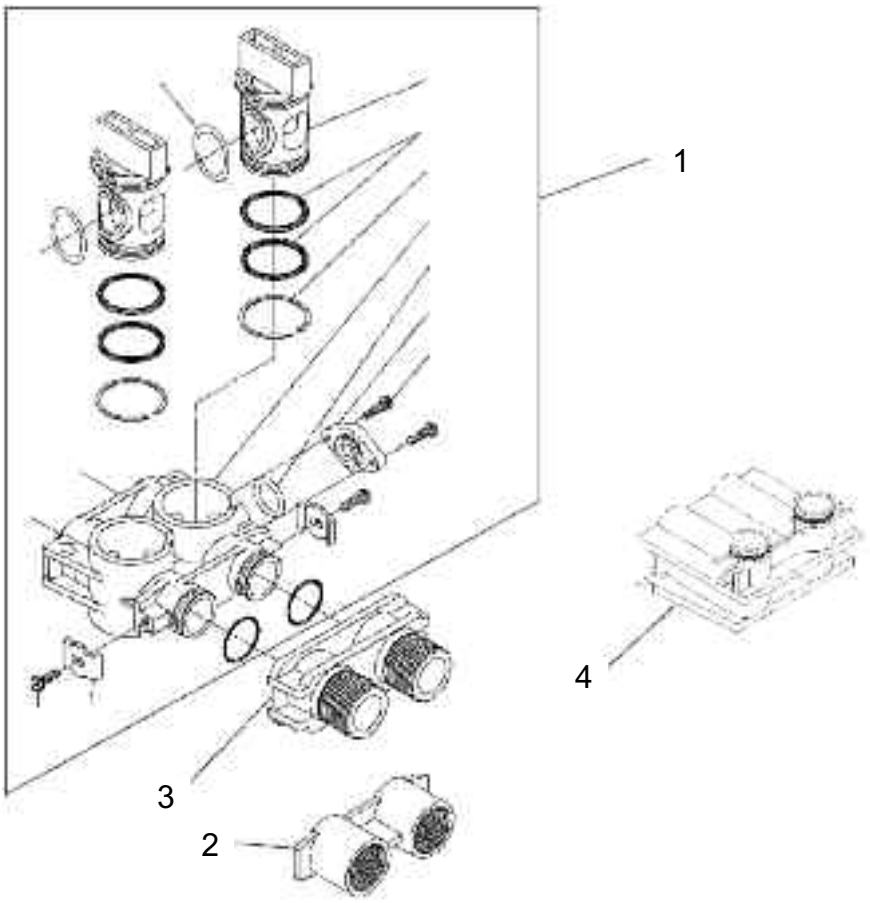


REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20564X100	5600SE POWERHEAD ASSY. COMPLETE	1
1	20564X101	DRIVE HOUSING	1
2	20561X134	DRIVE MOUNT SCREW	2
3	20564X103	POWER WIRE HARNESS	1
4	20251X423	SPRING WASHER	1
5	20251X421	IDLER GEAR	1
6	20564X106	DETENT SPRING	2
7	20561X102	MOTOR MOUNTING PLATE	1
8	20251X406	COMPONENT SCREW	4
9	20564X107	DRIVE MOTOR 2 RPM 24 V 50 / 60 HZ	1
10	20251X427	MOTOR SCREW	3
11	20564X116	BRINE VALVE CAM	1
12	20251X135	WASHER	1
13	20564X128	SCREW	2
14	20564X109	DRIVE GEAR	1
15	20251X413	DETENT BALL	2
16	20564X108	Main Drive Gear & Shaft-Downflow-Black	1
17	20251X102	STRAIN RELIEF	1
18	20564X117	24 V 9.6 VA TRASNFORMER (OPTIONAL)	1
19	20561X126	BACK PLATE	1
20	20564X119	FRICTION WASHER	1
21	20564X110	CYCLE CAM (DOWNFLOW BRINE - BLACK)	1
22	20561X137	CYCLE CAM SCREW	1
23	20251X113	MICROSWITCH	2
24	20251X114	INSULATOR	1
25	20564X122	MICROSWITCH SCREW	2
26A	20564X104	FRONT PANEL ASSY. (B/W FIRST LABEL)	1
26B	20564X105	FRONT PANEL ASSY. (B/W FIRST LABEL)	1
27	20564X124	FRONT PANEL SCREW	2

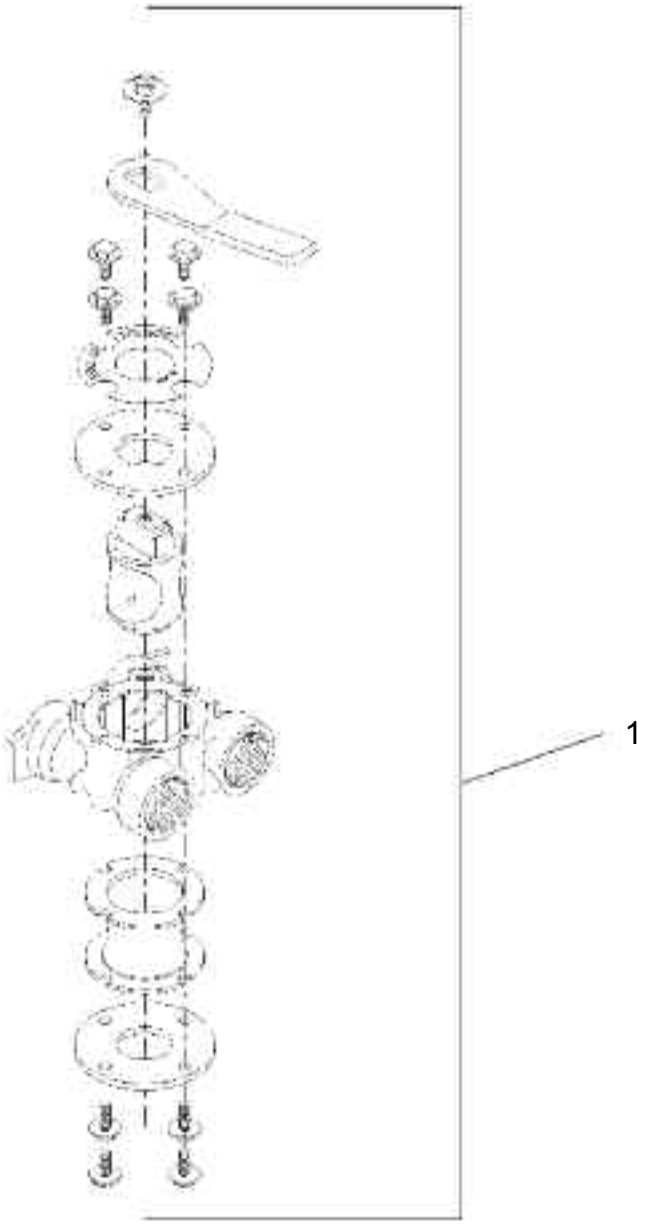
N/S = Non Stocked Item
Shaded REF. No. Indicates Assembly or Kit



REF. NO.	PART NO.	DESCRIPTION	QTY.
1**A**	20564X200	Meter Assembly, Turbine Complete	1



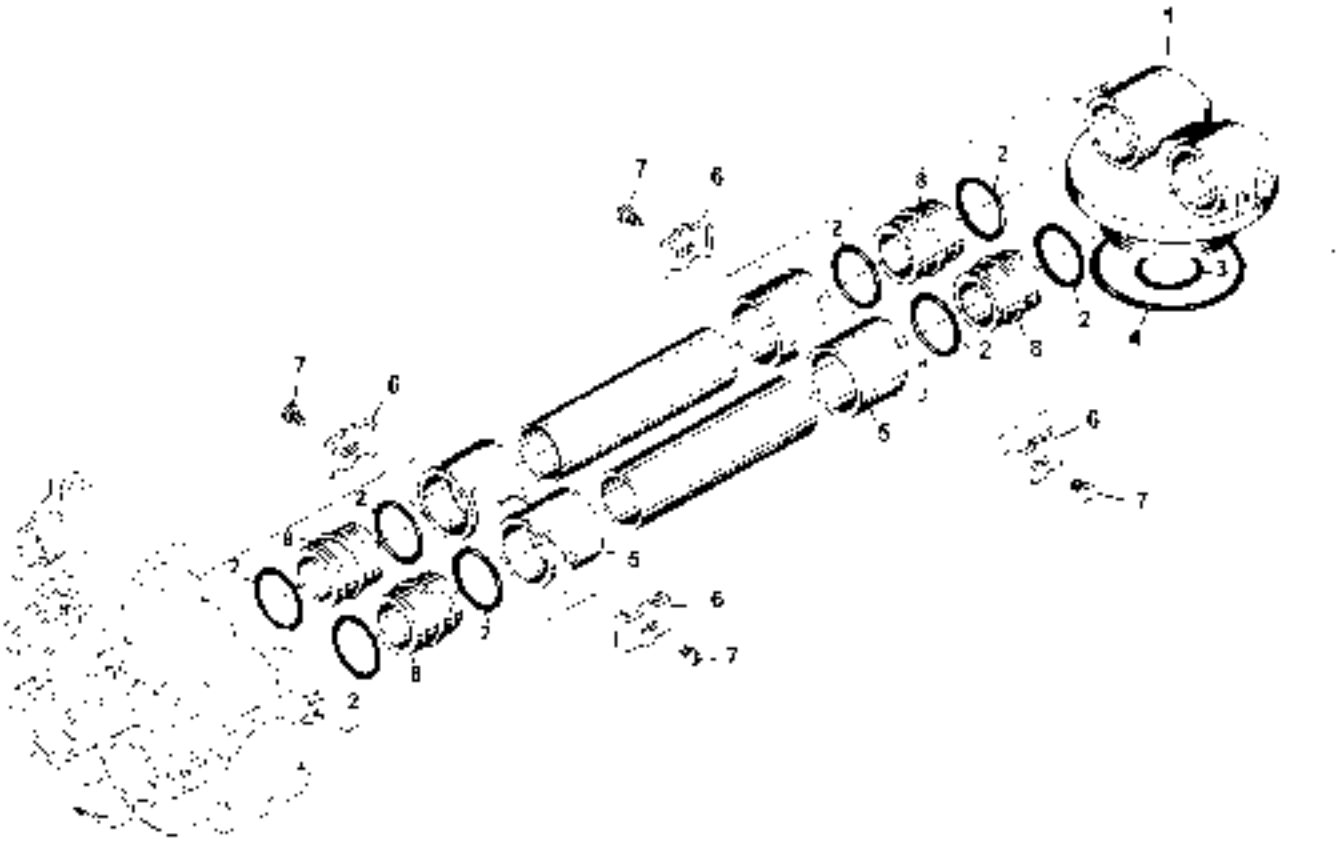
REF. NO.	PART NO.	DESCRIPTION	QTY.
1	20561X292	Plastic Bypass Valve Assembly	1
2	20561X290	fl" Yoke - Stainless Steel	1
	20561X291	1" Yoke - Stainless Steel	1
3	20561X288	fl" Yoke - Plastic	1
	20561X289	1" Yoke - Plastic	1
4	20561X296	Adapter Coupling Assembly 90°	1

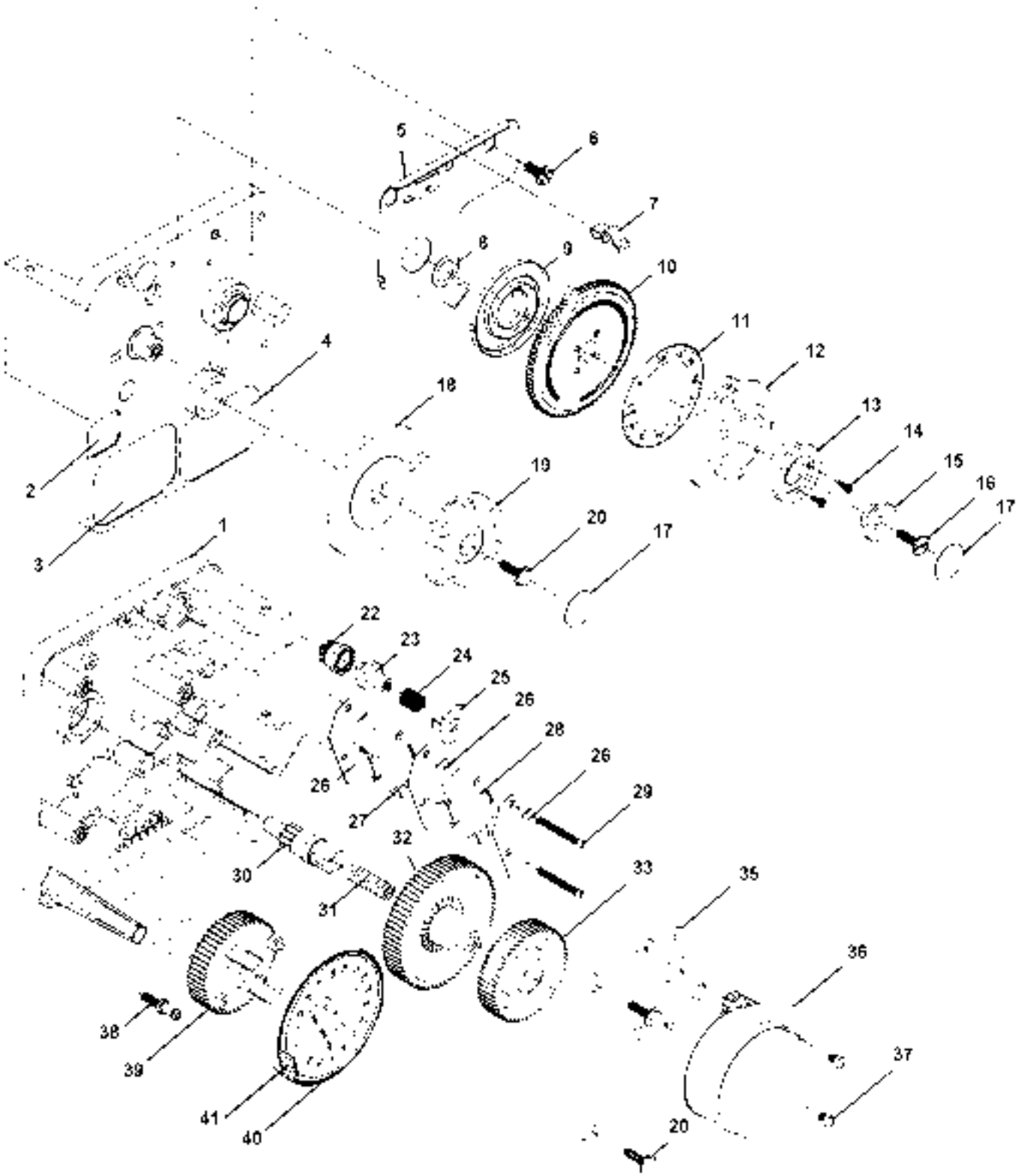


Parts List

Ref. No.	Quantity	Part No.	Description
1	1	20561X270	Bypass Valve fl" Stainless Steel
	1	20561X283	Bypass Valve 1" Stainless Steel

REF. NO.	PART NO.	DESCRIPTION	QTY.
1	N/S	SECOND TANK ADAPTER	1
2	20561X216	O-RING	8
3	20908X115	O-RING	1
4	20561X205	O-RING	1
5	N/S	YOKE	2
6	20561X201	HOLD DOWN CLIP	4
7	N/S	8-32 X 3/8" HEX WSHR HD SCREW	4
8	20908X215	COUPLING	4
9	20908X218	INTERCONNECT PIPES - SPECIFY TANK SIZE	2

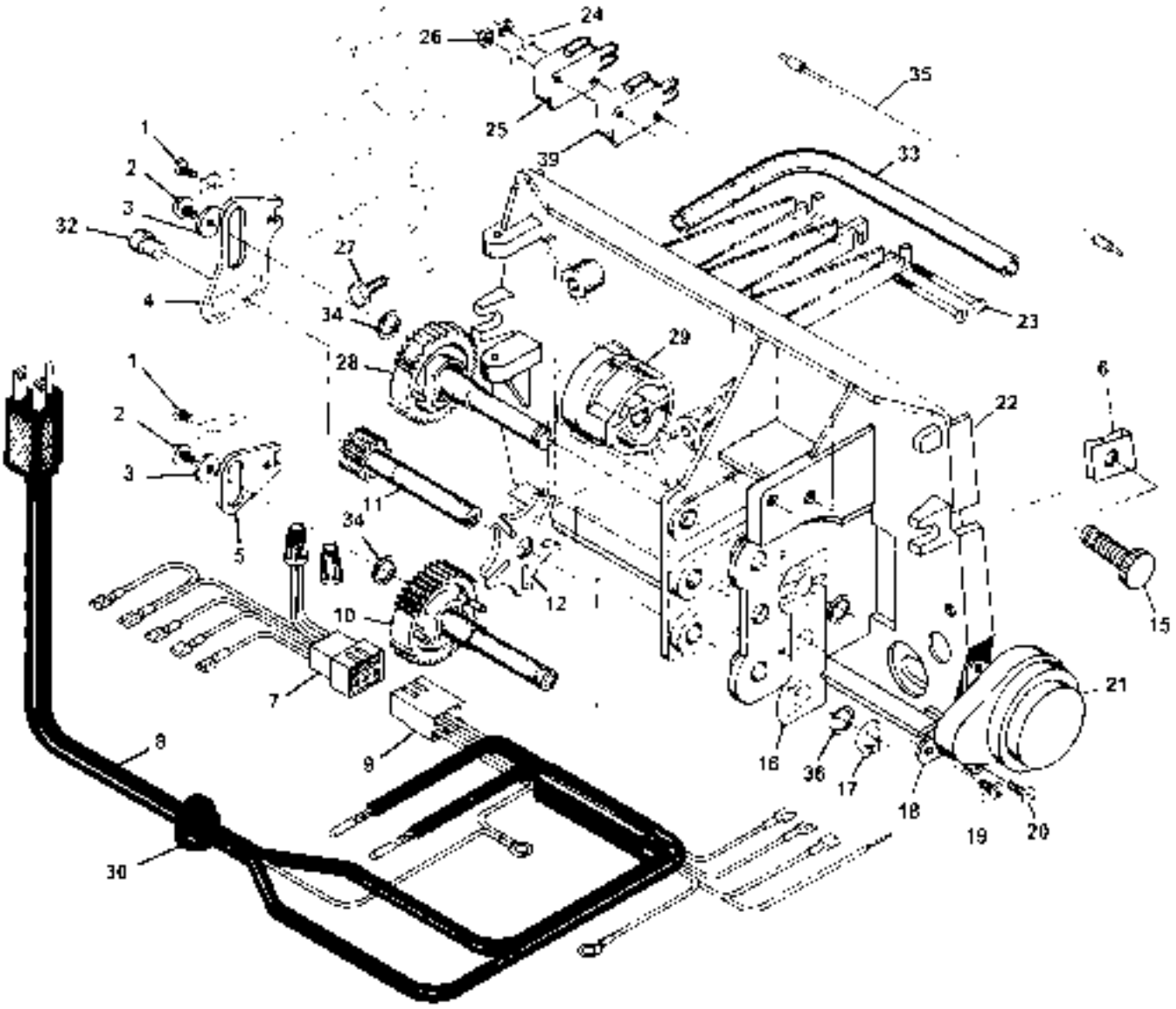




REF. NO.	PART NO.	DESCRIPTION	QTY.
1	N/S	TIMER HOUSING ASSY.	1
2	N/S	CAPACITY GALLONS LABEL	1
3	N/S	CAUTION LABEL	1
4	N/S	INSTRUCTION LABEL	1
5	N/S	ACTUATOR PLATE	1
6	N/S	# 8 HEX WASHER HD SCREW	1
7	20908X114	SPRING CLIP	1
8	N/S	# 4 PLAIN WASHER	1
9	20908X113	SPRING	1
10	N/S	PROGRAM WHEEL DRIVE GEAR	1
11	N/S	3/4" METER GALLON LABEL	1
12	N/S	ADJUSTING DISC	1
13	N/S	PROGRAM WHEEL COVER	1
14	N/S	4 - 40 FILL HD SCREW STNLS SCREW	2
15	20253X111	PROGRAM WHEEL RETAINER	1
16	20253X108	6-20 X 1/2" FLT HD ST SCREW	1
17	20251X407	BUTTON DECAL	2
18	N/S	CYCLE ACTUATOR GEAR	1
19	20251X405	KNOB	1
20	20251X406	6-20 X 1/2" HEX WASHER HD SCREW	4
21	N/S	5-20 X 3/8" SLT RD HD MACH SCREW	2
22	N/S	DRIVE PINION	1
23	N/S	DRIVE PINION CLUTCH	1
24	20563X140	METER CLUTCH SPRING	1
25	20563X139	RETAINER	1
26	20251X429	INSULATOR	3
27	20908X201	SWITCH	1
28	20251X431	SWITCH	1
29	20251X432	4-40 X 1/8" PAN HD MACH SCREW	2
30	20251X419	IDLER SHAFT	1
31	N/S	IDLER SHAFT SPRING	1
32	20251X421	IDLER GEAR	1
33	20251X422	DRIVE GEAR	1
35	20251X424	MOTOR MOUNTING PLATE	1
36	20251X425	MOTOR - 120 V 60 Hz - 1/30 RPM	1
37	20251X426	6-32 X 1/8" FIL HD MACH SCREW	2
38	20251X411	SPRING CLIP	1
39	N/S	MAIN DRIVE GEAR	1
40	N/S	PROGRAM WHEEL ASSY.	1
41	20251X417	ROLL PIN	20
NOT SHOWN	N/S	6 X 1/4" HEX WASHER HD SCREW	1

N/S = Non Stocked Item

Parts Diagram - 9000 Econominder Drive Assembly



PARTS

REF. NO.	PART NO.	DESCRIPTION	QTY.
0	20908X200	9000 TIMER ASSY. 1/30 RPM	1
1	N/S	4-40 X 3/16 SCREW	2
2	N/S	6-20 HEX WASHER HD SCREW	2
3	20561X251	WASHER	2
4	N/S	UPPER PISTON ROD LINK	1
5	N/S	LOWER PISTON ROD LINK	1
6	N/S	8-32 "U" TYPE NUT CLIP	2
7	N/S	TIMER WIRING HARNESS	1
8	20251X101	POWER CORD	1
9	N/S	DRIVE WIRING HARNESS	1
10	20908X203	LOWER DRIVE GEAR ASSY.	1
11	20908X204	DRIVE GEAR	1
12	20908X205	GENEVA WHEEL	1
15	N/S	COVER SCREW ASSY.	2
16	N/S	POSITION DECAL	1
17	N/S	RETAINING RING	1
18	N/S	GROUND PLATE	1
19	N/S	6 X 1/4" HEX WASHER SCREW	1
20	20251X426	6-32 X 1/4 RD HD SCREW	2
21	20908X206	DRIVE MOTOR KIT 110 V - 60 Hz	1
22	N/S	CONTROL PANEL	1
23	N/S	4-40 X 1-3/8" F H MACH SCREW	2
24	N/S	# 4 LOCK WASHER	2
25	20251X113	MICRO SWITCH	1
26	N/S	4-40 HEX NUT	2
27	N/S	10-24 X 3/4 HEX WASHER HEAD SCREW	7
28	20908X207	UPPER DRIVE GEAR ASSY.	1
29	N/S	TRIPLE CAM	1
30	20251X102	STRAIN RELIEF	1
NOT SHOWN	N/S	DRIVE GEAR REATINING RING	1
32	N/S	UPPER PISTON ROD LINK GUIDE PIN	1
33	N/S	CABLE GUIDE	1
34	N/S	THRUST WASHER	2
35	20908X209	METER CABLE ASSY. 1" METER	1
	20908X208	METER CABLE ASSY. 3/4" METER	1
36	N/S	SPACER	2
NOT SHOWN	20251X114	INSULATOR	1
39	20908X210	PROGRAM MICRO SWITCH	1
NOT SHOWN	N/S	TOP COVER	1
NOT SHOWN	N/S	BOTTOM COVER	1

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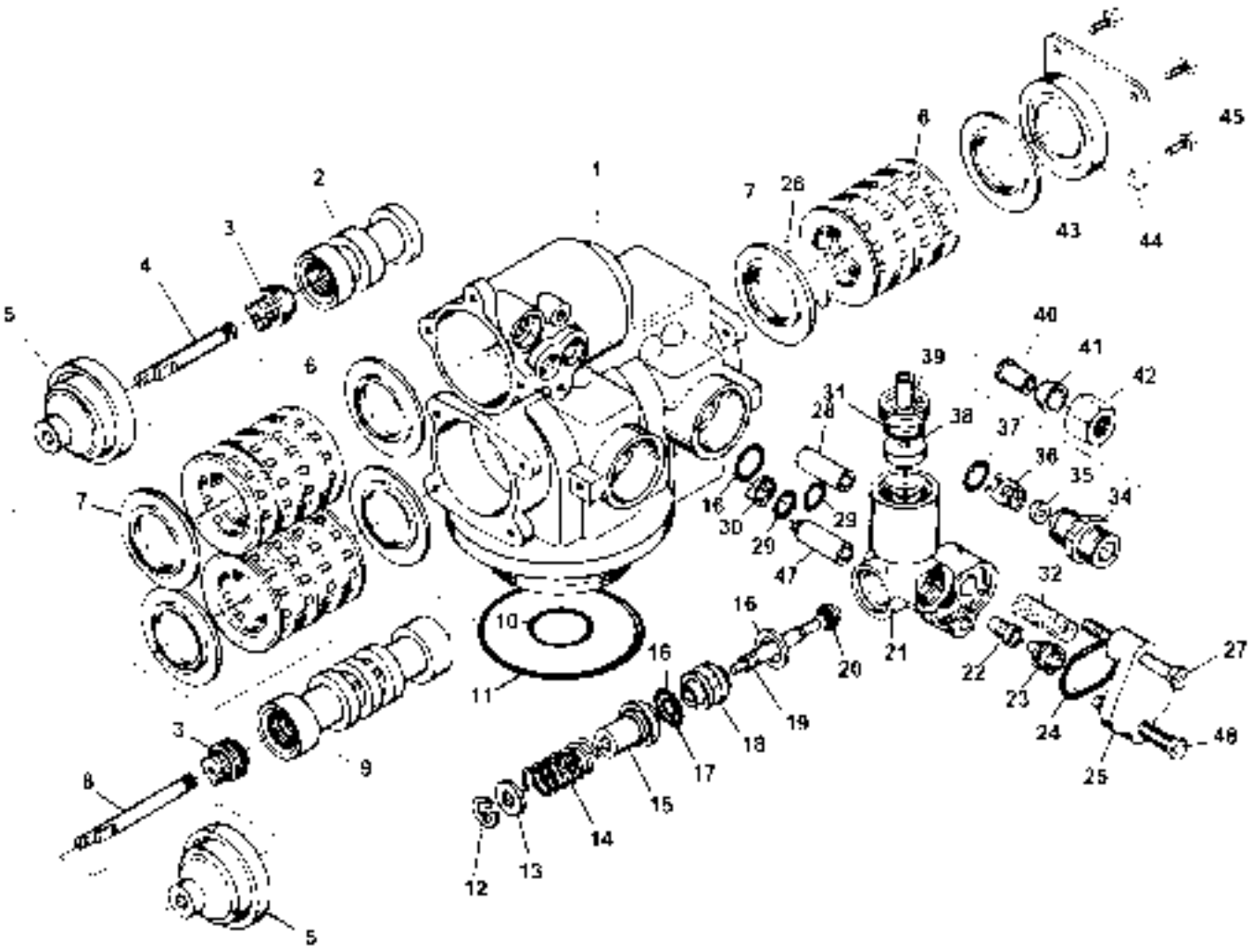
CSI
WATER TREATMENT SYSTEMS



Parts List - 9000 Econominder Valve Assembly

REF. NO.	PART NO.	DESCRIPTION	QTY.
1	N/S	VALVE BODY ONLY	1
2	N/S	UPPER PISTON	1
3	20251X218	PISTON ROD RETAINER	2
4	N/S	UPPER PISTON ROD	1
5	20561X212	END PLUG ASSY.	2
5A	20908X212	UPPER PISTON ASSY. INCL. (1) EA. # 2 THRU # 5 PLUS SCREW & LINK	1
6	20561X207	SPACER	12
7	20561X202	SEAL	16
7A	20561X253	SEAL & SPACER KIT UPPER INCL. (5) # 7 AND (4) # 6	1
8	N/S	LOWER PISTON ROD	1
9	N/S	LOWER PISTON	1
9A	20908X213	LOWER PISTON ASSY. INCL. (1) Each # 3, 5, 8 & 9 PLUS SCREW & LINK	1
9B	20908X211	LOWER SEAL & SPACER KIT INCL. (11) # 7, (8) # 6 & (1) # 26	1
10	20908X115	O RING	1
11	20561X205	O-RING	1
12	N/S	RETAINING RING	1
13	N/S	NYLON BRINE VALVE WASHER	1
14	N/S	BRINE VALVE SPRING	1
15	N/S	BRINE VALVE CAP	1
16	20561X220	O-RING	3
17	20251X312	QUAD RING	1
18	N/S	BRINE VALVE SPACER	1
19	N/S	BRINE VALVE STEM	1
20	20251X315	BRINE VALVE SEAT	1
20A	20908X116	BRINE ASSY. INCL. (1) EA. # 12 THRU # 15, (2) EA. # 16, (1) EA. # 17 THRU # 20	1
21	N/S	INJECTOR BODY	1
22	20251X206	INJECTOR THROAT, # 1 WHITE	1
	20251X242	INJECTOR THROAT, # 2 BLUE	1
23	20251X205	INJECTOR NOZZLE, # 1 WHITE	1
	20251X241	INJECTOR NOZZLE, # 2 BLUE	1
24	20561X221	O-RING	1
25	20561X226	INJECTOR COVER	1
26	N/S	SPACER	1
27	N/S	10-24 X 1-3/4 HEX HD MACH SCREW	1
28	N/S	INJECTOR SPACER	1
29	20561X219	O-RING	2
30	20561X248	AIR DISPERSER	1
31	N/S	O-RING	1
32	20561X204	INJECTOR SCREEN	1
34	20561X241	BLFC FITTING	1
35	20251X318	.5 GPM BLFC BUTTON	1
36	20561X240	BLFC BUTTON RETAINER	1
37	20561X239	O-RING	1
38	20251X266	FLOW CONTROL BUTTON 1.5 GPM	1
	20251X267	FLOW CONTROL BUTTON 2.0 GPM	1
	20251X268	FLOW CONTROL BUTTON 2.4 GPM	1
	20251X269	FLOW CONTROL BUTTON 3.0 GPM	1
	20251X270	FLOW CONTROL BUTTON 3.5 GPM	1
	20251X271	FLOW CONTROL BUTTON 4.0 GPM	1
	20251X272	FLOW CONTROL BUTTON 5.0 GPM	1
39	20561X246	DLFC BUTTON RETAINER	1
40	20251X303	3/8" TUBE INSERT	1
41	20251X305	3/8" FERRULE	1
42	20251X304	3/8" TUBE NUT	1
42A	20908X214	INJECTOR/DRAIN ASSY. INCL. (1) Each # 20A, # 21 THRU # 27, (2) # 29 & (1) Each # 30 THRU # 42 - .5 BLFC & NO. 1 INJECTOR/THROAT FURNISHED SPECIFY DLFC REQUIRED	1
43	N/S	STUB END PLUG	1
44	N/S	END PLATE	1
45	N/S	10-24 X 3/8" HEX WASHER HD SCREW	4
47	N/S	BRINE VALVE STAND OFF	1
48	20561X214	10-24 X 1-3/16" HEX WSHR HD SCREW	1

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REF. NO.	PART NO.	DESCRIPTION	QTY.
1	57100X096	Auto. Shut Off Screws	4
2	57100X097	Auto. Shut Off Cap	1
3	57100X098	Auto. Shut Off Cap O-Ring	1
4A	57100X100	Auto. Shut Off Repair Kit (Includes: 4 - 7)	1
4	N/S	Auto. Shut Off Diaphragm - Large	1
5	N/S	Auto. Shut Off Piston	1
6	N/S	Auto. Shut Off Piston Ring	1
7	N/S	Auto. Shut Off Diaphragm - Small	1
8	57100X106	Manifold Plate	1
9	57100X104	Duckbill Check Valve 1/8"	1
10	57100X105	Duckbill Check Valve Retainer	1
11	PRE - GAC	Sediment/Carbon Cartridge -TFC Models	1
	PRE - SED	Sediment Filter Cartridge - CTA Models	1
12	MM -TFC	T.F.C. R.O. Membrane (50 GPD)	1
	MM - CTA	C.T.A. R.O. Membrane (14 GPD)	1
13	57100X111	Sump O-Ring	1
14	57100X108	Sump	1
15	N/S	1/4" Plug	1
16	57100X107	3/8" Union Elbow	1
17	57100X103	Drain Restrictor (Specify CTA or TFC)	1
18	N/S	Cover	1
19	PST - GAC	Activated Carbon Post Filter Cartridge	1
21	57100X102	Wrench for Sumps	1
22	N/S	1/4" - 3/8" Fitting Wrench	1

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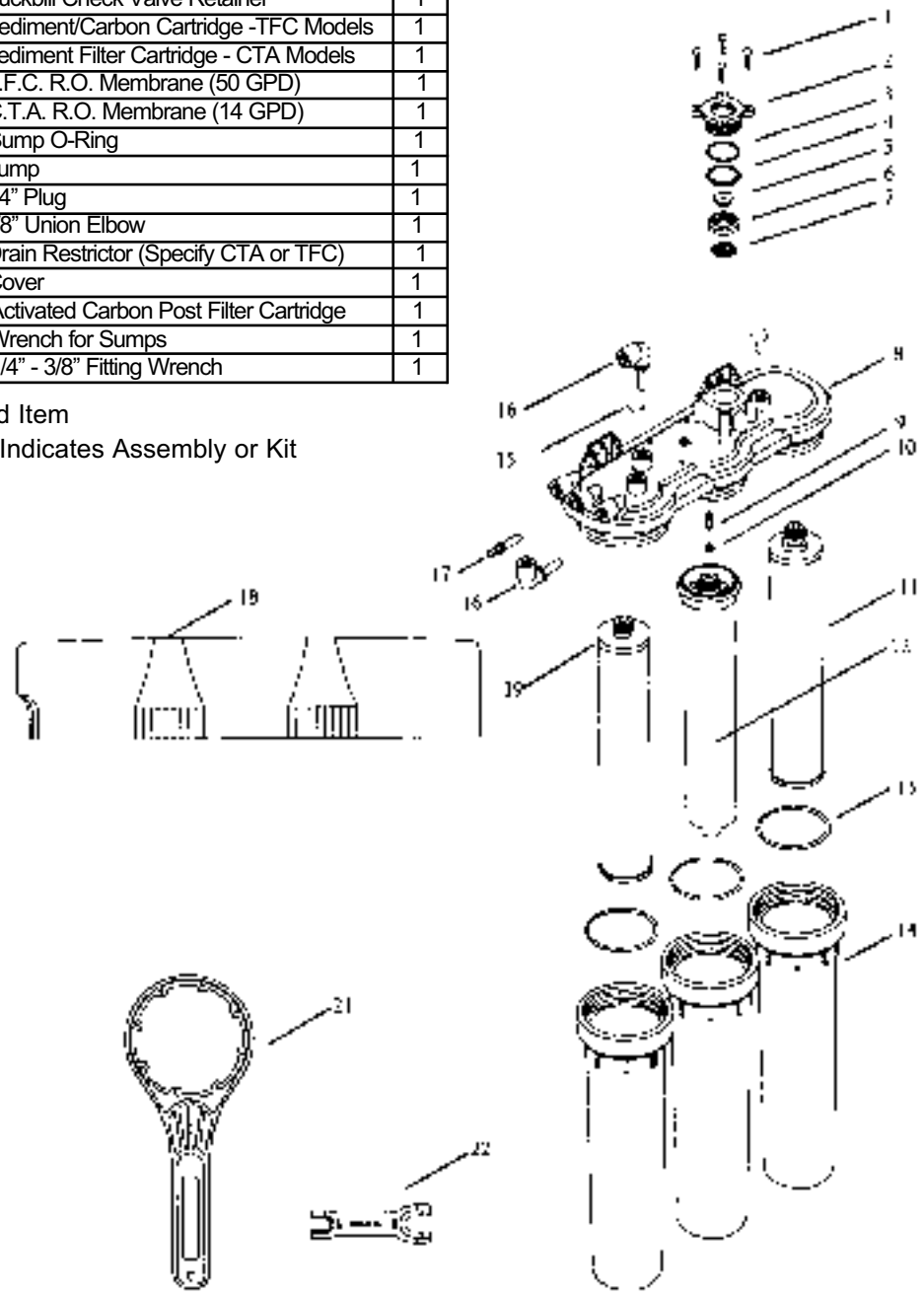
REF. NO.	PART NO.	DESCRIPTION	QTY.
Not Shown	57100X112	Drain Clamp 3/8"	1
Not Shown	57100X113	Self Piercing Saddle Valve Tap 1/4"	1
Not Shown	57011X102	Tank Shut Off 3/8"	1
Not Shown	57100X115	Tank R/O - 3.0 Gallon Capacity	1
Not Shown	57005X100	R/O Faucet 3/8" Long Reach Non Air Gap	1
Not Shown	57005X101	R/O Faucet 3/8" Long Reach Air Gap	1
Not Shown	RO-100-C	1/4" R.O. Tubing - Clear 100' Rolls	1



PARTS