



Product Catalog

0612

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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)

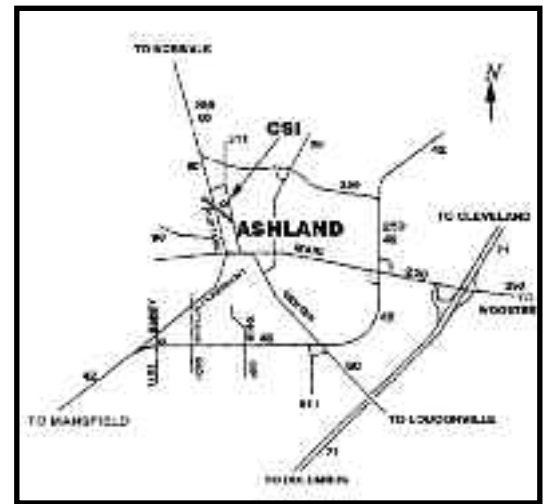
Internet Web Address

<http://www.csih2o.com>

General Email Address

info@csih2o.com

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



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 |

| General Specifications | Cabinet | | Two Tank | | | | | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|
| | CT24 | CT32 | TS24 | TS32 | TS48 | TS64 | | |
| | CM24 | CM32 | MS24 | MS32 | MS48 | MS64 | | |
| | CT24V | CT32V | TS24V | TS32V | TS48V | TS64V | TS96V | TS128V |
| | CM24V | CM32V | MS24V | MS32V | MS48V | MS64V | MS96V | 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.





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 | AT32-91 | AT48-91 | AT64-91 | AT96-91V |
|--|----------|----------|-----------|-----------|-----------|
| | AT24-91V | AT32-91V | AT48-91V | AT64-91V | |
| 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.



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

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 |



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

| 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.





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.



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.

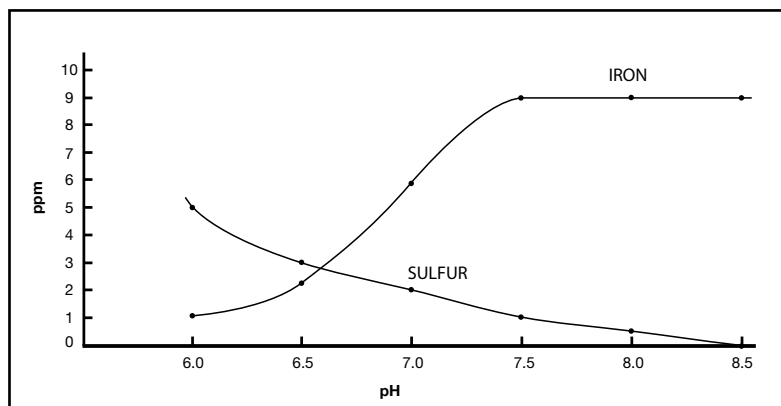


NITRO Treatment System



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 |
| Filtration (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 |

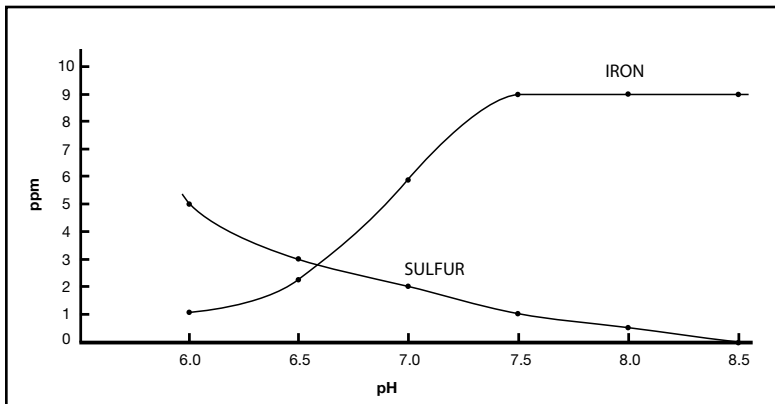
CSI Water Treatment, 710 Orange Street, Ashland, Ohio 44805 · Phone (419) 281-6829 · Toll Free 888-363-9434

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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**™!

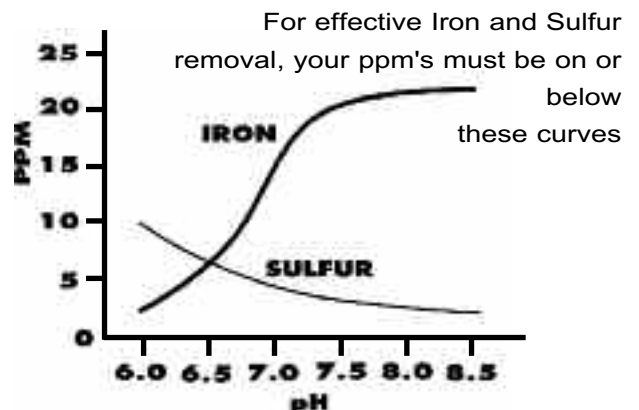
Manganese Removal

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 |

| | |
|------|-----|
| 10:1 | 7.0 |
| 5:1 | 7.8 |
| 1:1 | 8.3 |
| 0:1 | 8.5 |

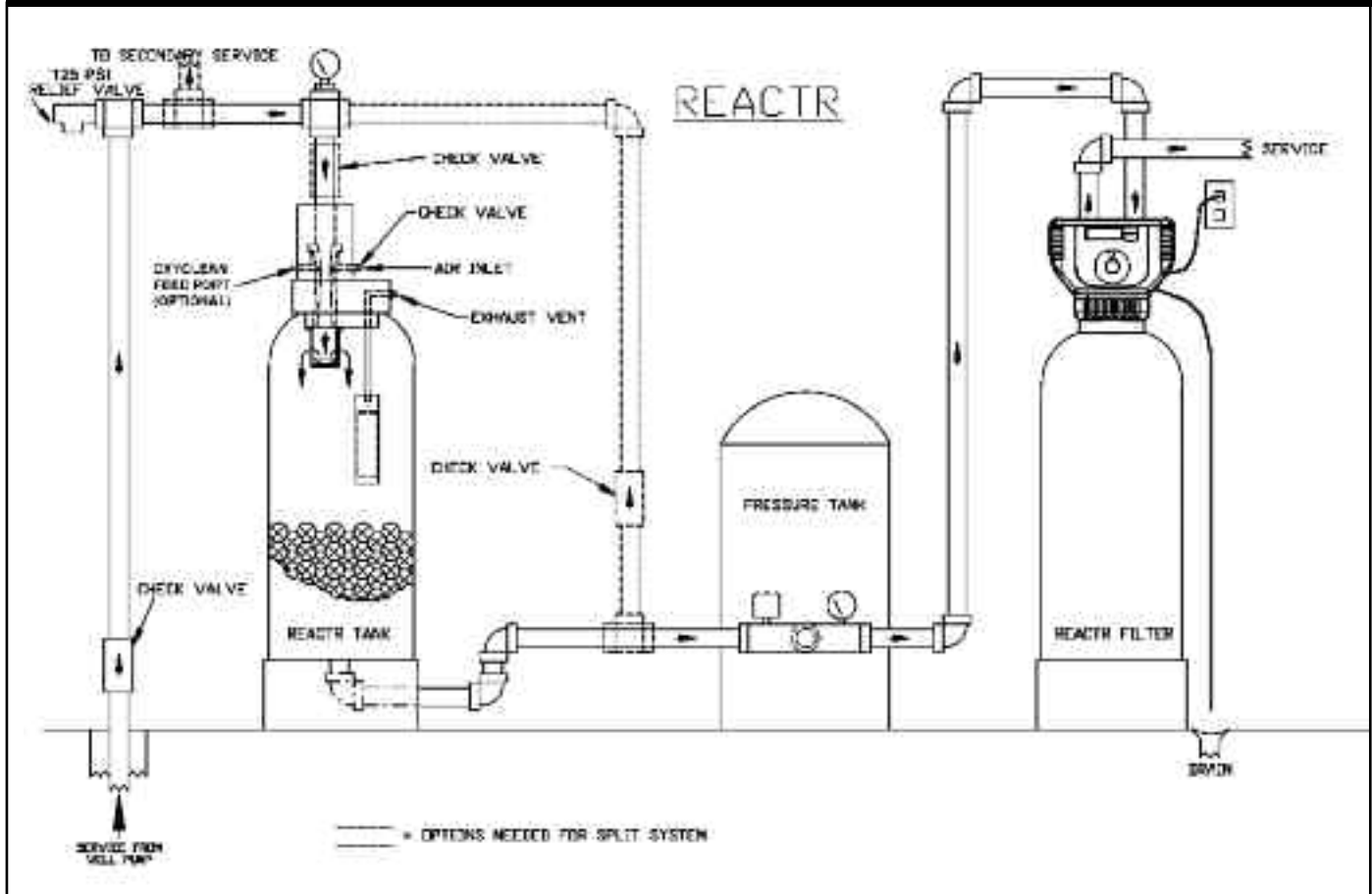
Iron and Sulfur Removal



| 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.

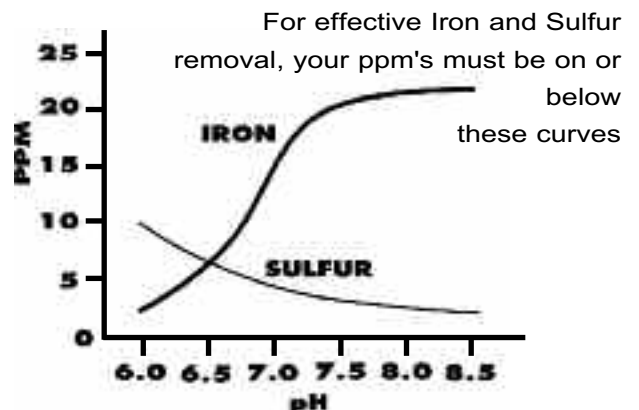
The **REACTR VS**™ System provides new technology treatment for new technology constant pressure pumping systems!

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 |

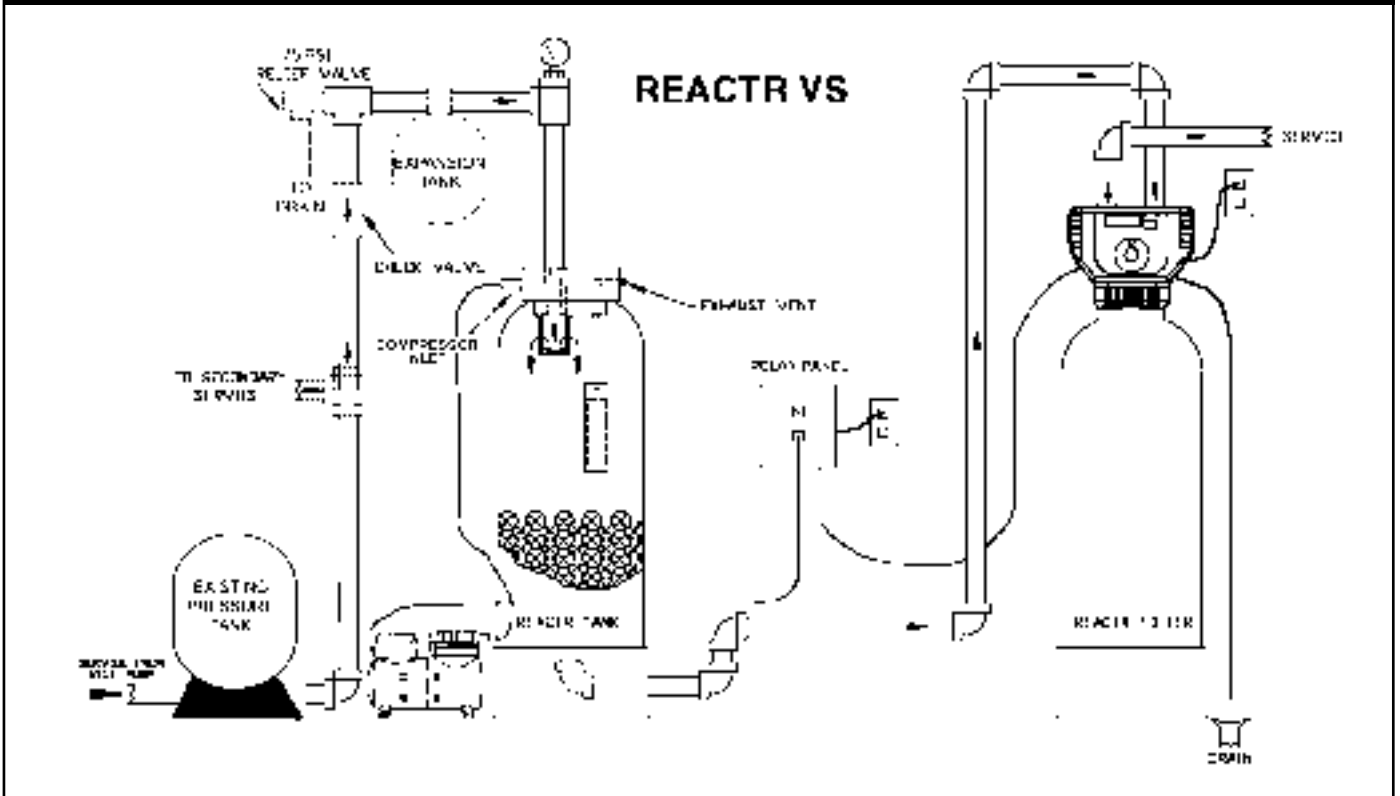
Iron and Sulfur Removal



| 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 existing **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.

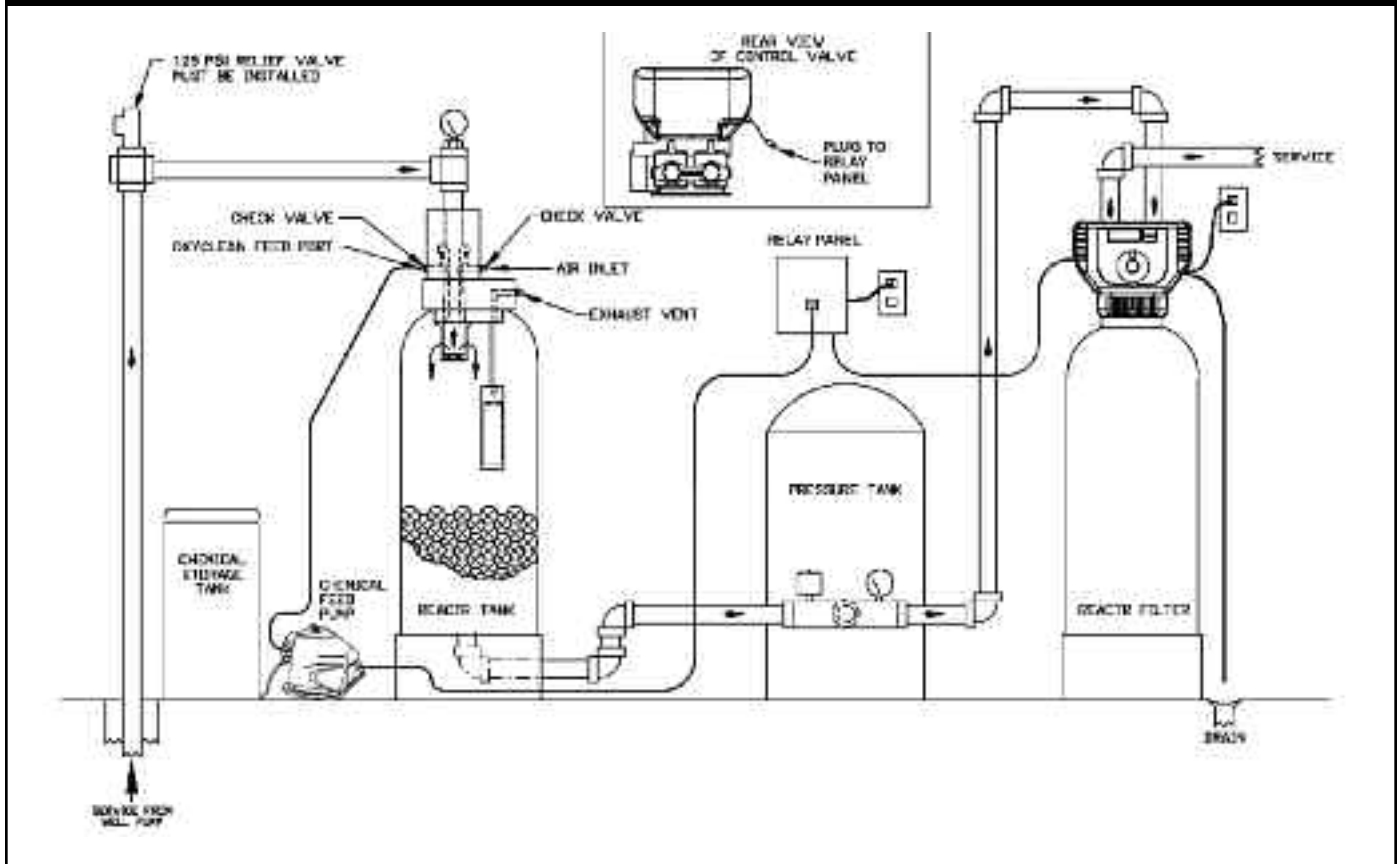
Installed in minutes the **OXYCLEAN™** System will automatically inject chlorine* during every backwash to clean the **entire REACTR™** system and associated plumbing such as inlet plumbing, tank tees, etc.

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





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

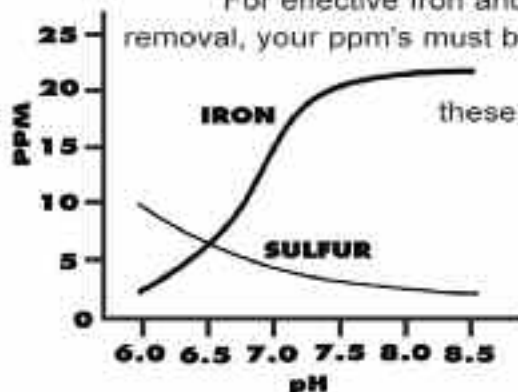
REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

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

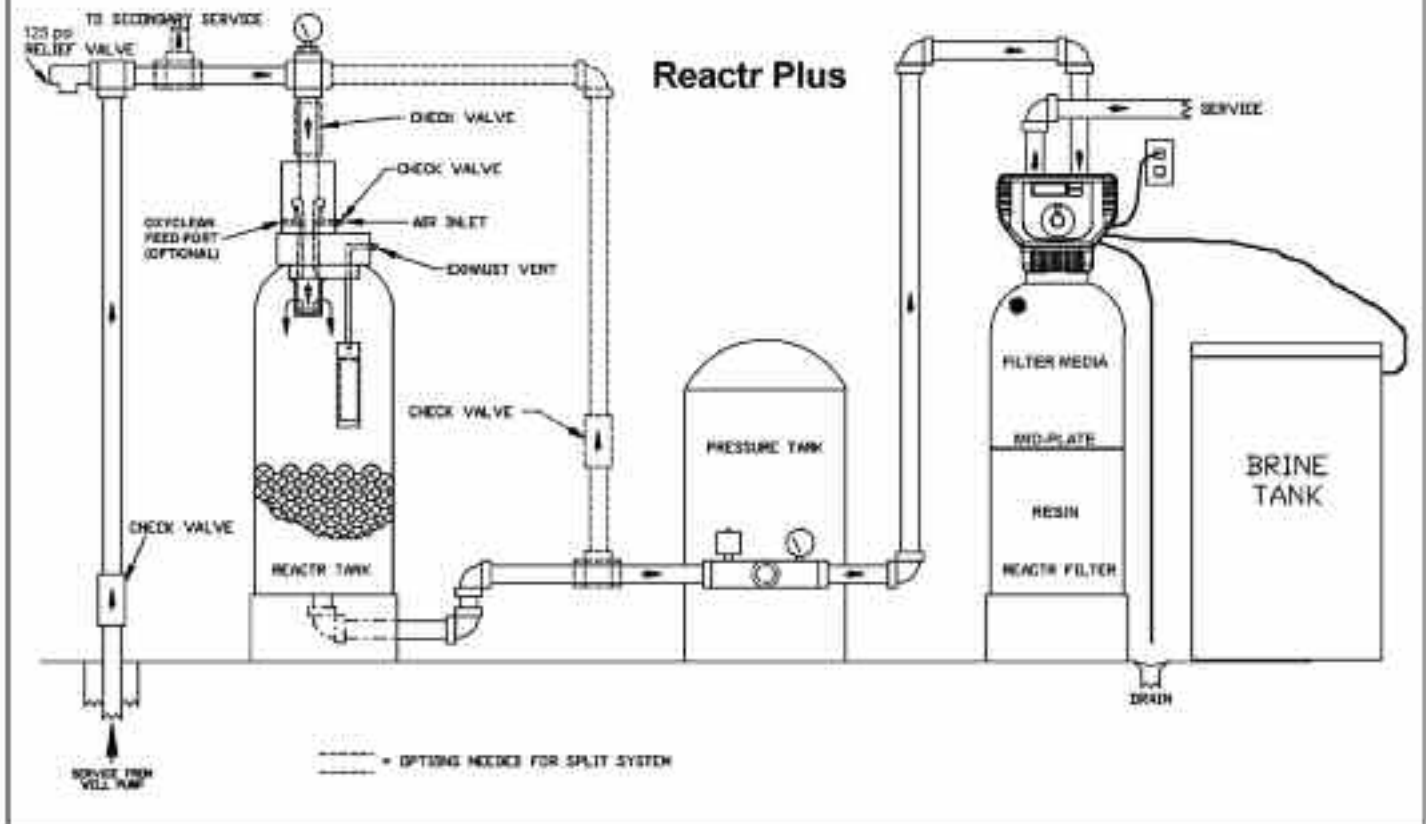


| General Specifications | Two Tanks in One | | | |
|--|------------------|------------|------------|------------|
| | RFTS32-10D | RFMS32-10D | RFTS48-15D | RFMS48-15D |
| Regeneration Type | Timed | Metered | Timed | Metered |
| Filter Media Capacity (Reactr Blend™) | 1 cu ft | 1 cu ft | 1.5 cu ft | 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

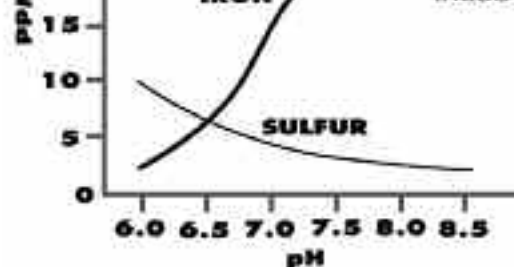
REACTR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

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

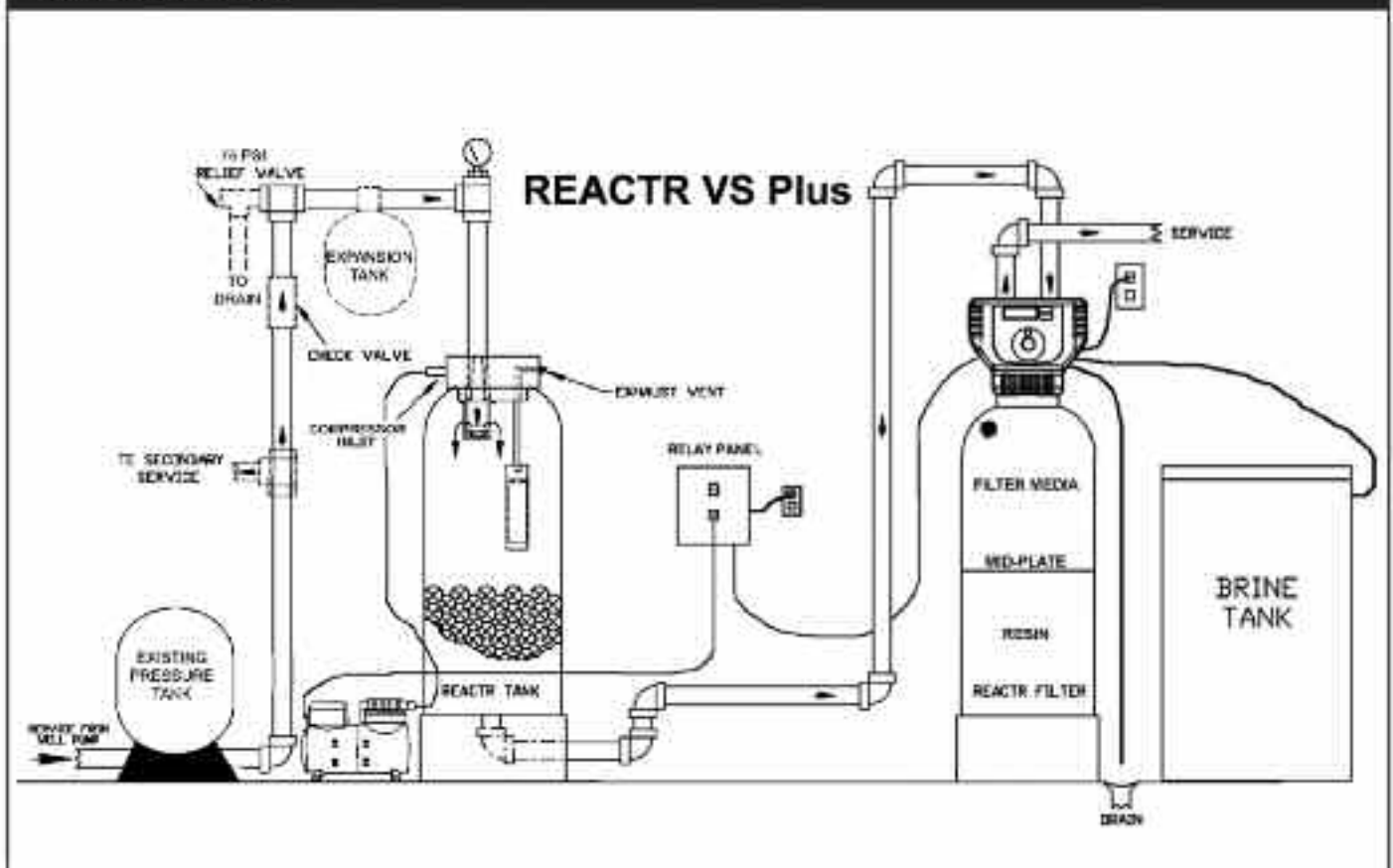
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



| 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

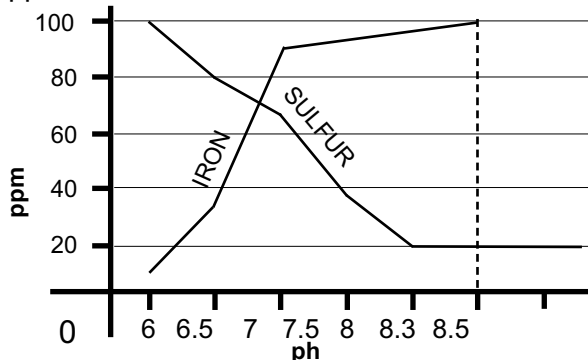
HydroxR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

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

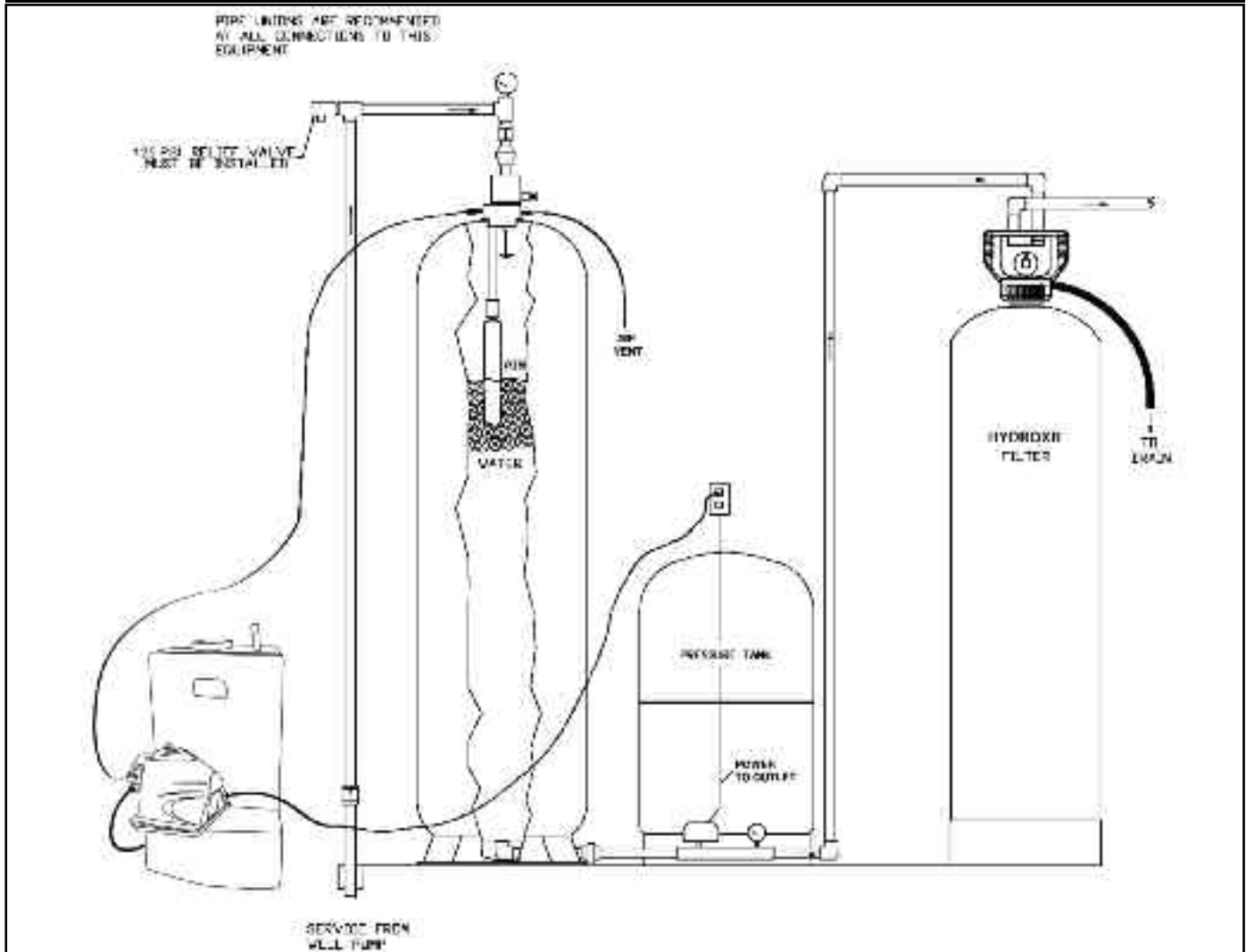
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



| 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

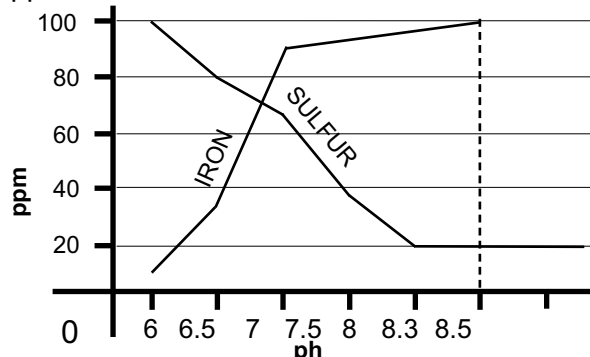
HydroxR™ capability to remove Manganese from water is critically dependent on the Iron and pH levels as shown below:

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

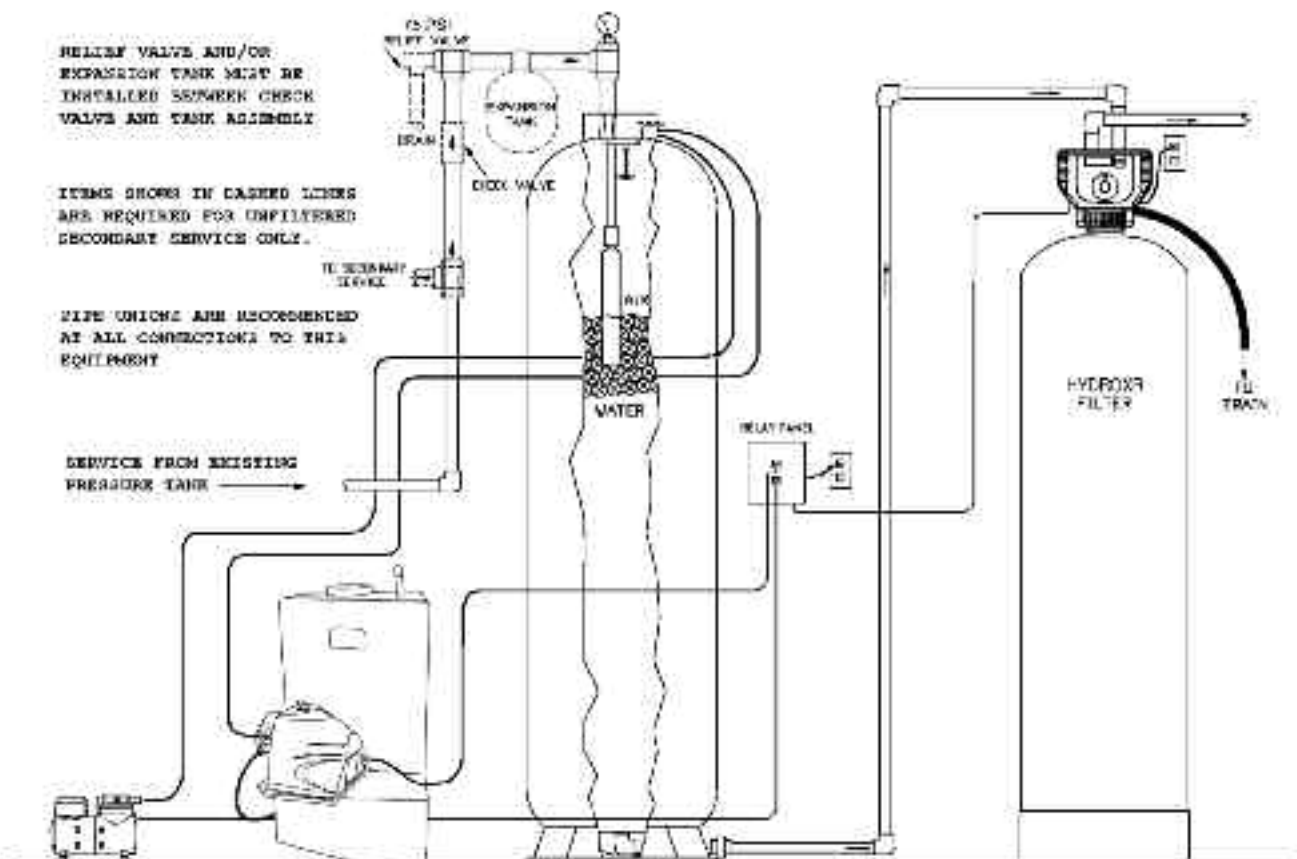
For effective Iron and Sulfur removal, your ppm's must be on or below these curves



| 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) <i>HydroxR™</i> 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 |

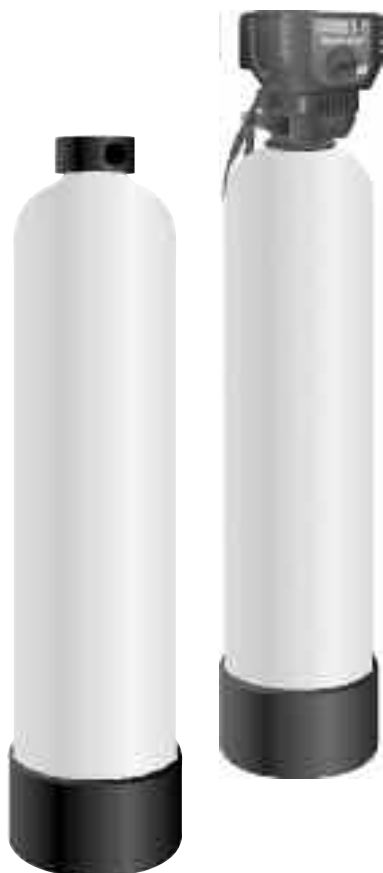
Note: Caution should always be used in sizing filters! Always choose a unit by first satisfying the *Backwash requirement*. Use of a flow control in the Service Line is highly recommended. Consult the factory or your field sales person with questions.

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 |
| | U | 9x9x52 | 10x10x58 | 12x12x56 | 13x13x58 | N/A |
| Approximate Shipping Weight (pounds) | WF | 27 | 32 | 35 | 40 | 49 |
| | U | | | | | 54 |

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 | | |
|------------------------------|--|---|
| 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/ft³ / The Filter Ag Plus filter beds operate at less than half the hydraulic loading rate vs. 20x40 mesh sand and 50% of sand/antracite 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.





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.



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. |
| Solenoid | | 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



| 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-Dichloroethylene | | | • | |
| 1.2-Dichloropropane | | | • | |
| 1.2-Diphenyl Hydrazine | | | | • |
| 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-Dichlorophenol | | | • | |
| 2.4-Dinitrophenol | | | • | |
| 2.4-Dinitrotoluene | | | • | |
| 2.6-Dinitrotoluene | | | | • |
| 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.



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% | Flouride | 93-95% |
| Arsenic | 94-96% | Lead | 96-98% |
| Bacteria | 99+% | Magnesium | 95-98% |
| Barium..... | 96-98% | Manganese | 94-96% |
| Cadmium | 95-97% | Mercury | 95-97% |
| Calcium | 94-97% | Nitrate | 92-95% |
| Chlorine | 90-95% | Phosphate | 97-98% |
| Chloride | 90-95% | Silver | 95-97% |
| Copper..... | 96-98% | Sodium | 94-98% |
| Cyanide | 90-95% | 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 KMNO₄ 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 |



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 | | | ● | |

*From Date of Installation

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

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 warranty 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 of 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



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.



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.



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 |

*Noryl is a registered trademark of General Electric Company.



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 | |

*Noryl is a registered trademark of General Electric Company.

**As defined in the Safe Drinking Water Act.



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) |
|---------------------|

*Noryl is a registered trademark of General Electric Company.



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 |



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 |

*Noryl is a registered trademark of General Electric Company.



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. |
|----------------------|-------------------|

*Noryl is a registered trademark of General Electric Company.

**As defined in the Safe Drinking Water Act.



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 |

*Noryl is a registered trademark of General Electric Company.



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.



Commercial Project Data Form

COMMERCIAL

| | | | |
|----------------------------|--|-----------------------------------|----------------|
| DISTRIBUTOR | | JOB NAME | |
| PERSON | | DATE: | |
| PHONE # | | RAW WATER | |
| FAX # | | | |
| DEALER / CONTRACTOR | | | |
| | | GPM | |
| | | PSI | |
| | | PIPE SIZE | |
| PERSON | | HARD-GR | |
| PHONE # | | pH | |
| FAX # | | IRON-PPM | |
| ENGINEER | | MANGANESE-PPM | |
| | | TANNIN-PPM | |
| | | SODIUM SALT-PPM | |
| | | TDS | |
| | | TURBIDITY | |
| PERSON | | COLOR | |
| PHONE # | | ODOR | |
| FAX # | | SUSP. MATTER | |
| HEALTH DEPT / EPA | | IRON BACTERIA | |
| | | SULFUR | |
| | | TREATED WATER REQUIREMENTS | |
| PERSON | | GPM | GAL.PRESS.TANK |
| PHONE # | | PSI | GAL.ATMOS.TANK |
| FAX # | | GAL/DAY | GPM BOOST PUMP |
| SALES REP | | TREAT FOR: | |
| | | | |
| | | FLOW SEQUENCE: | |
| | | | |
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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/110° 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.



Single Tank Water Softener Specifications

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 | | | 72" | |
| CMS60-10NT | 19 | 14 | 26 | 5 | 1" | 3/4" | | | | 1 | | | 81" | |
| CMS60-15NT | 30 | 22 | 42 | 5 | 1 1/2" | 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 | | | 72" | |
| CMS90-10NT | 18 | 13 | 25 | 5 | 1" | 3/4" | | | | 1 | | | 81" | |
| CMS90-15NT | 29 | 21 | 41 | 5 | 1 1/2" | 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 | | | 72" | |
| CTS120-20 | 47 | 34 | 64 | 7 | 2" | 1" | | | | 1 | | | 77" | |
| CMS120-10NT | 19 | 14 | 26 | 7 | 1" | 3/4" | | | | 1 | | | 81" | |
| CMS120-15NT | 32 | 23 | 43 | 7 | 1 1/2" | 1" | | | | 1 | | | 72" | |
| CMS120-20NT | 46 | 34 | 63 | 7 | 2" | 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 | | | 80" | |
| CMS150-15NT | 34 | 25 | 47 | 10 | 1 1/2" | 1" | | | | 1 | | | 74" | |
| CMS150-20NT | 50 | 37 | 66 | 10 | 2" | 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 | | | 79" | |
| CMS210-15NT | 37 | 27 | 50 | 12 | 1 1/2" | 1" | | | | 1 | | | 74" | |
| CMS210-20NT | 59 | 43 | 76 | 12 | 2 | 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 | | | 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 | | | 96" | |
| CMS450-20NT | 81 | 59 | 101 | 25 | 2" | 1" | | | | 1 | | | 95" | |
| CMS450-30NT | 151 | 110 | 201 | 25 | 3" | 2" | | | | 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 | | | 97" | |
| CMS600-20NT | 86 | 63 | 106 | 35 | 2" | 1" | | | | 1 | | | 98" | |
| CMS600-30NT | 176 | 129 | 236 | 35 | 3" | 2" | | | | 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 | 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 | 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

Ambient Air Temperature Range

Operating Pressure Range

Electronic Requirements

Influent Turbidity

Influent Chlorine

Iron/Manganese

35° – 110°F

35° – 120°F

20 – 125 psi

110v/60Hz

5 NTU

1 ppm max.

< 5 ppm



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/110° 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.



Multi-Tank Water Softener Specifications

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 # | 2 cf | 14" x 65" | 2 | 18" x 40" | 300# | 1 | 72" |
| CAT60-15 | 28 | 20 | 40 | 2) 5 | 1 1/2" | 1" | 40,000 GR @ 12 # | | | | | | 1 | 73" |
| CAT90-10 | 17 | 12 | 22 | 2) 5 | 1" | 1/2" | 90,000 GR @ 45 # | 3 cf | 14" x 65" | 2 | 18" x 40" | 300# | 1 | 73" |
| CAT90-15 | 27 | 19 | 37 | 2) 5 | 1 1/2" | 1" | 60,000 GR @ 18 # | | | | | | 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 # | 5 cf | 18" x 65" | 2 | 24" x 50" | 700# | 1 | 75" |
| CAT150-20NT | 50 | 37 | 66 | 2) 10 | 2" | 1" | 100,000 GR @ 30 # | | | | | | 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 # | 10 cf | 24" x 72" | 2 | 30" x 50" | 1000# | 2 | 87" |
| CMS300-203QDNT | 132 | 96 | 178 | 3) 15 | 2" | 1" | 200,000 GR @ 60 # | | | 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

Ambient Air Temperature Range

Operating Pressure Range

Electronic Requirements

Influent Turbidity

Influent Chlorine

Iron/Manganese

35° – 110°F

35° – 120°F

20 – 125 psi

110v/60Hz

5 NTU

1 ppm max.

< 5 ppm



STANDARD FEATURES

- High Flow Control Valves thru 3"– 140 gpm/tank
- Up to 24 cu.ft. Media per Tank
- Maximum Operating Pressure – 125 psi/110° 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

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

| MODEL NUMBER | BACKWASH | | | Service GPM | | | | | | Pipe Size NPT | | Filter Tank | Media |
|---------------|----------|-------|-------|-------------|---------|---------|--------|--------|--------|-------------------|------------|-----------------|-------------|
| | 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

- Select type of Media appropriate on the installation
- Use appropriate Flow Rate
Column listed in the media section below
- 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 35° – 110°F
Ambient Air Temperature Range 35° – 120°F
Operating Pressure Range 20 – 125 psi
Electronic Requirements (for CWF Series) 110v/60Hz



STANDARD FEATURES

- Catalog Systems to 200 gpm
- Aeration via Ambient Air – NO CHEMICALS
- Closed Pressure and Atmospheric Systems
- Maximum Operating Pressure – 125 psi/110° 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

***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.

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.

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 |

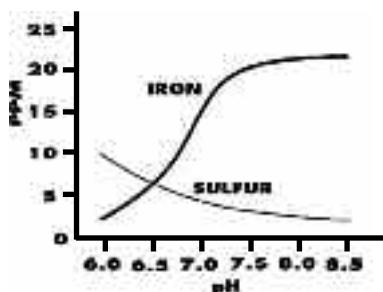
Manganese Removal

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)



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/110° 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 maintenance 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.

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:

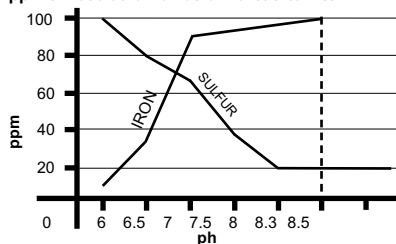
If the Iron to Manganese ratio is: Then the pH must be at least:

| | |
|-----|-----|
| 5:1 | 7.0 |
| 1:1 | 7.8 |
| 0:1 | 8.3 |

- 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

Iron and Sulfur Removal

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



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 |



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

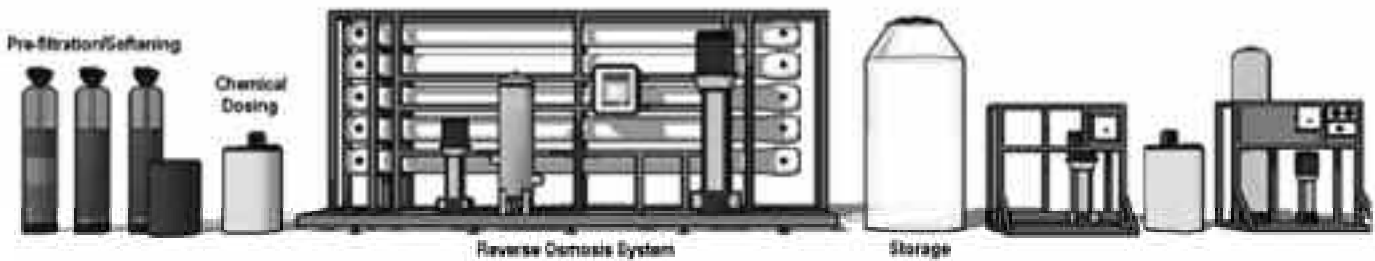
- Digital TDS Monitor/Controller
- RP or Stainless Steel Pressure Vessels
- Pump Discharge Pressure Gauge
- Automatic Fast Flush
- Atmospheric Storage Tank with Floats
- Pressurized Storage (3 tank sizes)
- Atmospheric Storage with Dispenser
- Brackish Water/Sea Water Applications
- System thru 400 gpm

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.



| Model# | GPD Production - 1000 TDS/°F | | | Inlet FPT | Outlet FPT | Motor HP | Volt* | Membrane Size | Qty | Dimensions HxWxL - inches |
|------------|------------------------------|--------|--------|-----------|------------|----------|-------|---------------|-----|---------------------------|
| | 77°F | 60°F | 45°F | | | | | | | |
| 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 77°F
- 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. Components 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



Technical Section

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.

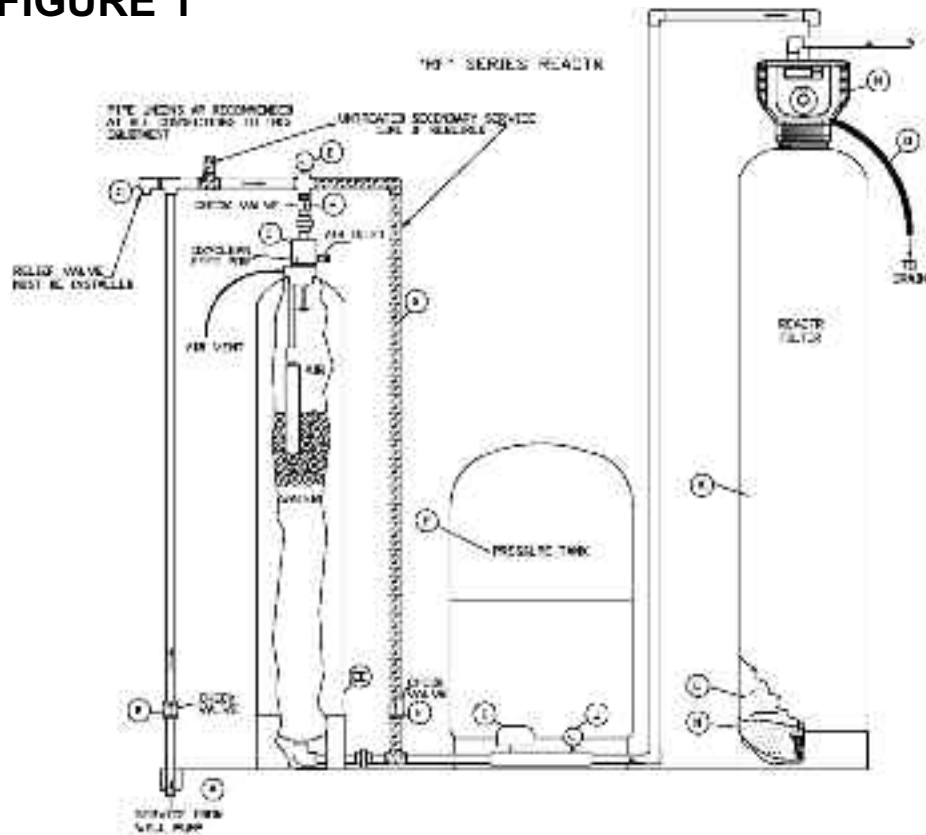
As we discuss the functions, we will move from the left to right on the diagram. Please refer to the circled letters within the figure of each component part or portion of the system we are discussing as shown alphabetically below.

- 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).

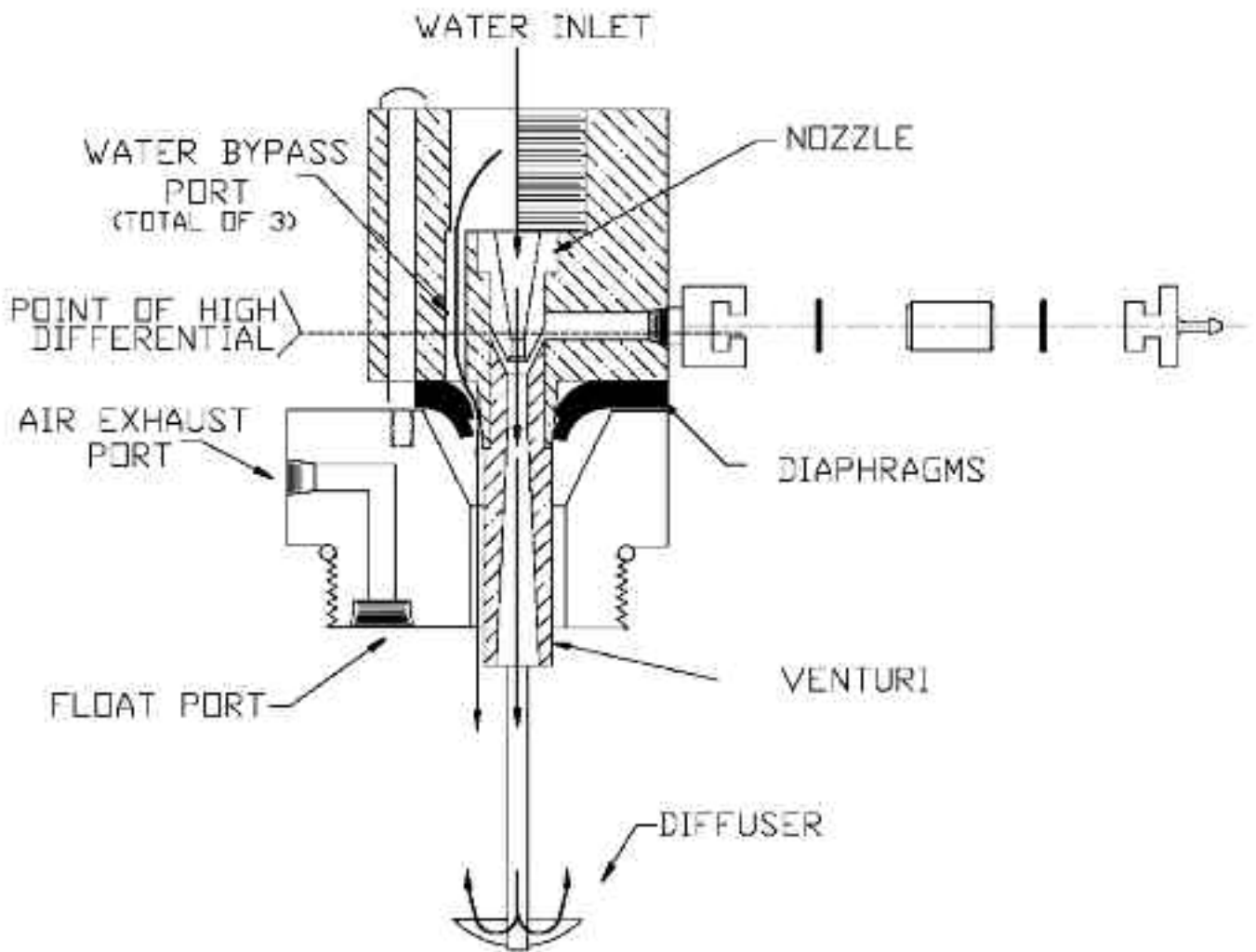
- B. **Check Valve** - It is recommended that a check valve be installed above ground as a back-up to the well check. In the event the primary check valve fails, the above ground check will prevent a back flow of water down the well. This could cause a negative pressure situation which can collapse the **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

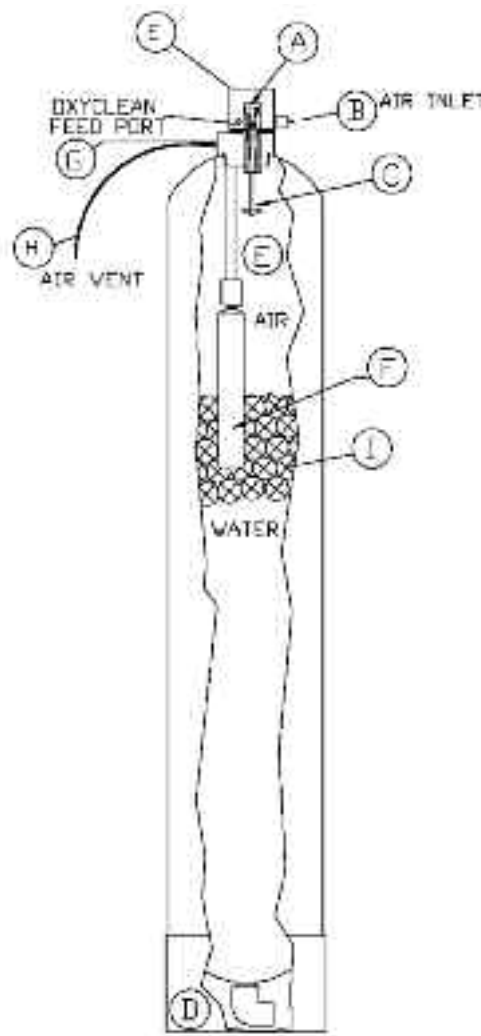
Simply determine the **Head Pressure (Gauge {D})** offered by the pump and subtract the constant of 20# differential required to operate the **REACTR™** manifold. The answer you get will tell you the point at which the **REACTR™** manifold will **stop** drawing air. This pressure number is the pressure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

$$\begin{array}{r} 65 \text{ psi (Gauge {D})} \\ - 20 \text{ psi (Differential Constant)} \\ \hline 45 \text{ psi (Will draw air to this system pressure)} \end{array}$$

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 its 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 Figure 1.

- 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 diaphragm / 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 :
 $1.5 \text{ cu. ft.} \times 15,000 \text{ ppm} / \text{cu. ft.} = 22,500 \text{ ppm}$

Estimated water usage :
 $4 \text{ people} \times 75 \text{ gpd} = 300 \text{ gals. per day}$

Iron / manganese removal per day :
 $300 \text{ gpd} \times 5 \text{ ppm} = 1,500 \text{ ppm} / \text{day}$

Required backwash frequency :
 $22,500 / 1,500 \text{ ppm} / \text{day} = \mathbf{15 \text{ days}}$

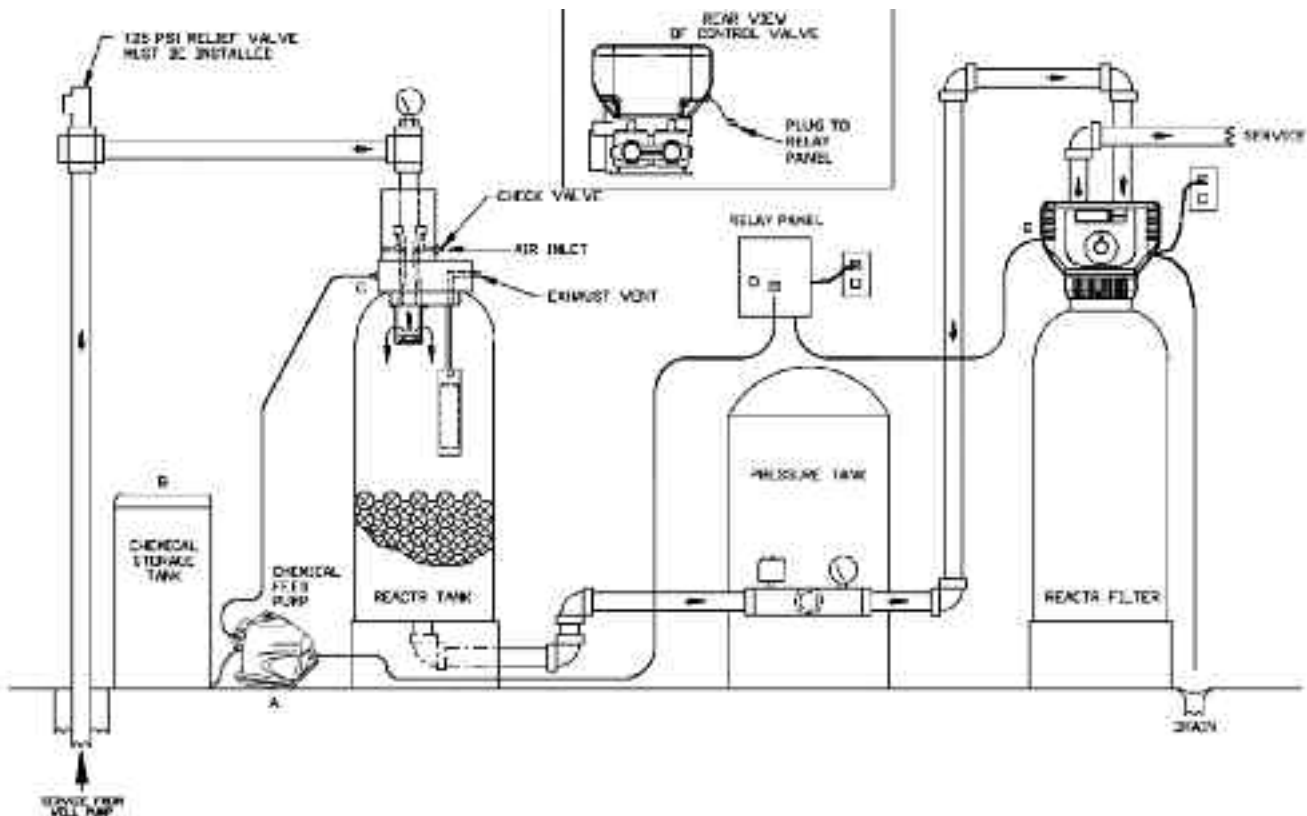
The required backwash frequency in this example is every 15 days. We want to backwash a minimum of every 6 days to assure orientation of the filter bed. Program the *Signature Series* control valve for every 6 days in this example.

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 **HAND ONLY!** The outlet tubing (upper fitting) from the pump should then be connected to the 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 |

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

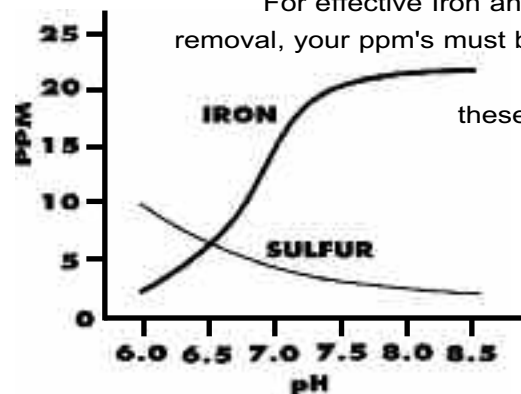


FIGURE 6

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

$$\begin{aligned} \text{GPM} &= (\text{Gallons collected} / \text{seconds in cycle}) \times 60 \\ \text{GPM} &= (9 / 72) \times 60 \\ \text{GPM} &= .125 \times 60 \\ \text{GPM} &= 7.5 \end{aligned}$$

* 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 diaphragm / 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.



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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!

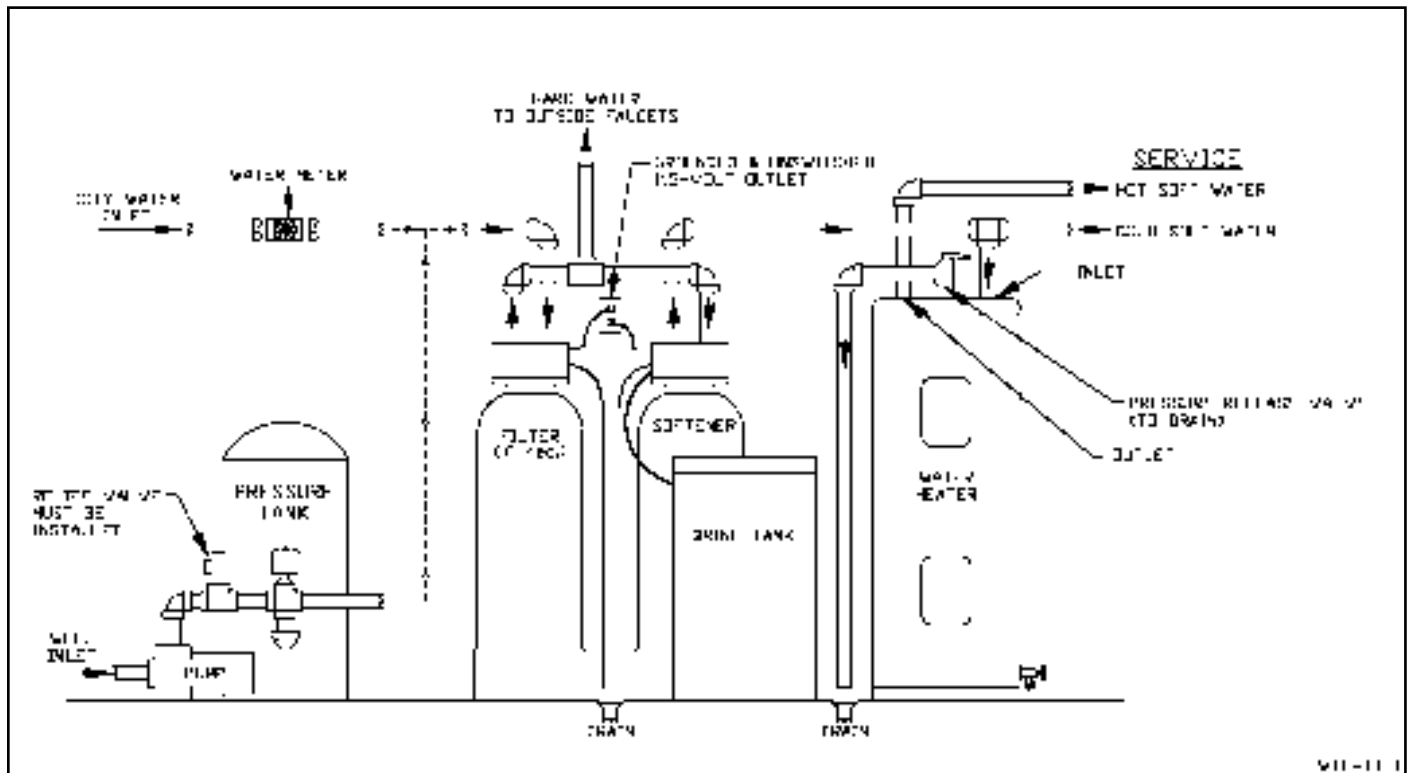
| HARDNESS TABLE | |
|-----------------|----------------|
| Soft | 0 - 3.5 gpg |
| Moderately Hard | 3.5 - 7.0 gpg |
| Hard | 7.0 - 10.5 gpg |
| Very Hard | 10.5+ gpg |

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 limitations.

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.

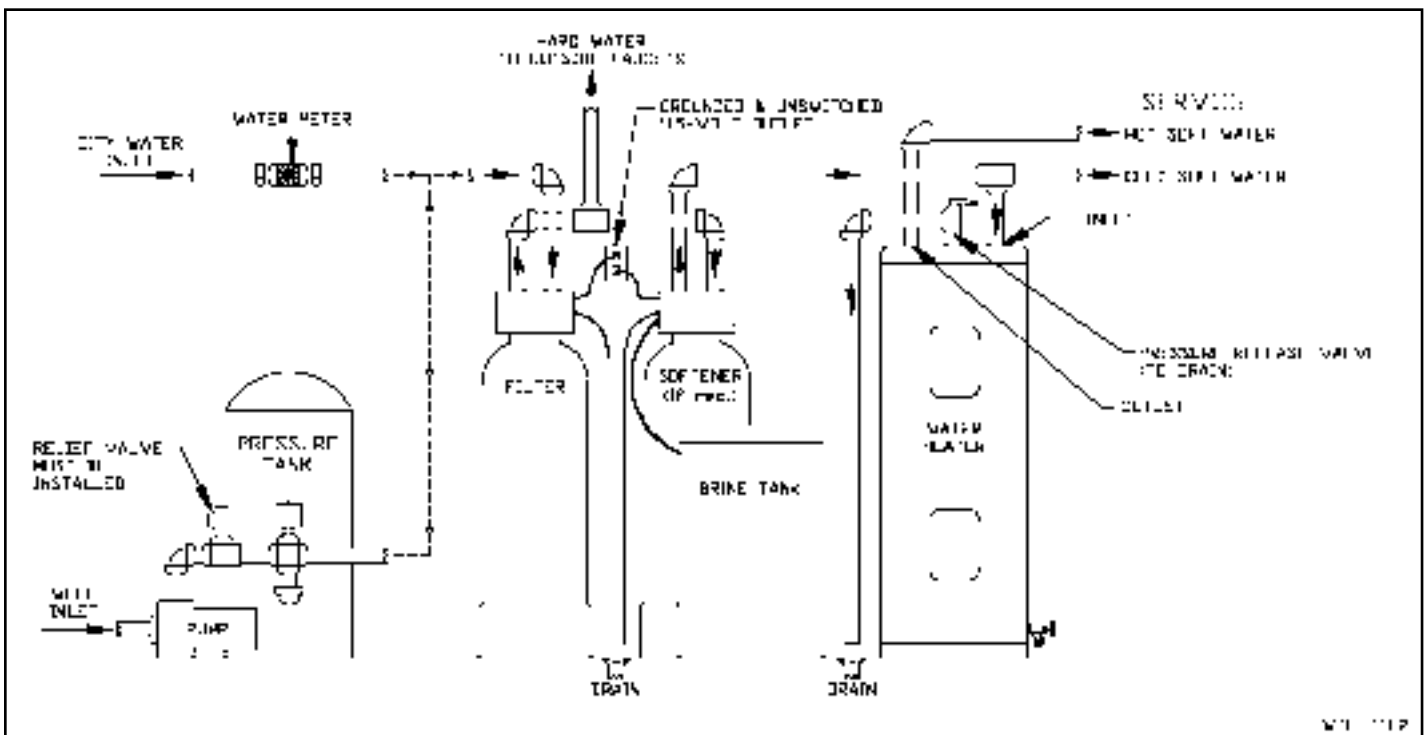
The following information is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

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

$$\text{GPM} = (\text{gallons collected} / \text{seconds in cycle}) \times 60$$

$$\text{GPM} = (9 / 72) \times 60$$

$$\text{GPM} = .125 \times 60$$

$$\text{GPM} = \underline{7.5}$$

(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 limitations.

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) | X | Required Dosage (ppm) | X | Solution 1440/Strength (ppm) | = | FEED PUMP OUTPUT (Gallons per Day) |
|---------------------------|---|--------------------------|---|---------------------------------|---|---------------------------------------|

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

| HOW TO DETERMINE PUMP CAPACITY | |
|---|--|
| <ol style="list-style-type: none"> 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 <u>all</u> water discharge until pump turns "on." 4. When pump turns "on," <u>immediately</u> close faucet and <u>start timing pump cycle</u>. 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. <p>(NOTE: Make certain no other water is being used during this test)</p> | |
| <p style="text-align: center;">Example</p> <p>Number of "gallons" collected during draw-down (step #3) = <u>9</u></p> <p>Number of "seconds" in pump cycle to refill tank (step #5) = <u>72</u></p> <p>GPM = (gallons collected / seconds in cycle) X 60</p> <p>GPM = (9 / 72) X 60</p> <p>GPM = .125 X 60</p> <p>GPM = <u>7.5</u></p> | |

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 |

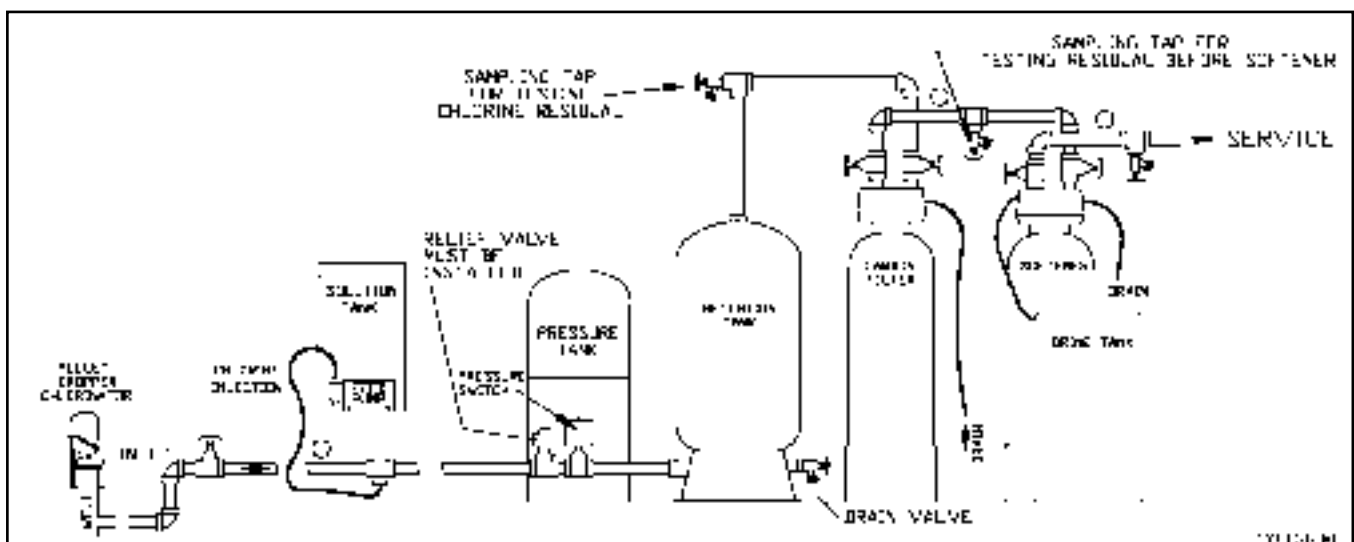
SAMPLE CALCULATION:

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 ($2 \times 1 = 2$); multiply the 4 ppm Hydrogen Sulfide by its factor of 3 ($4 \times 3 = 12$). 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.

$$(10.5 \text{ gpm}) \times (15 \text{ ppm}) \times (1440) / (52,500) = 4.3 \text{ gallons per day}$$

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.



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 catalysts 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 |

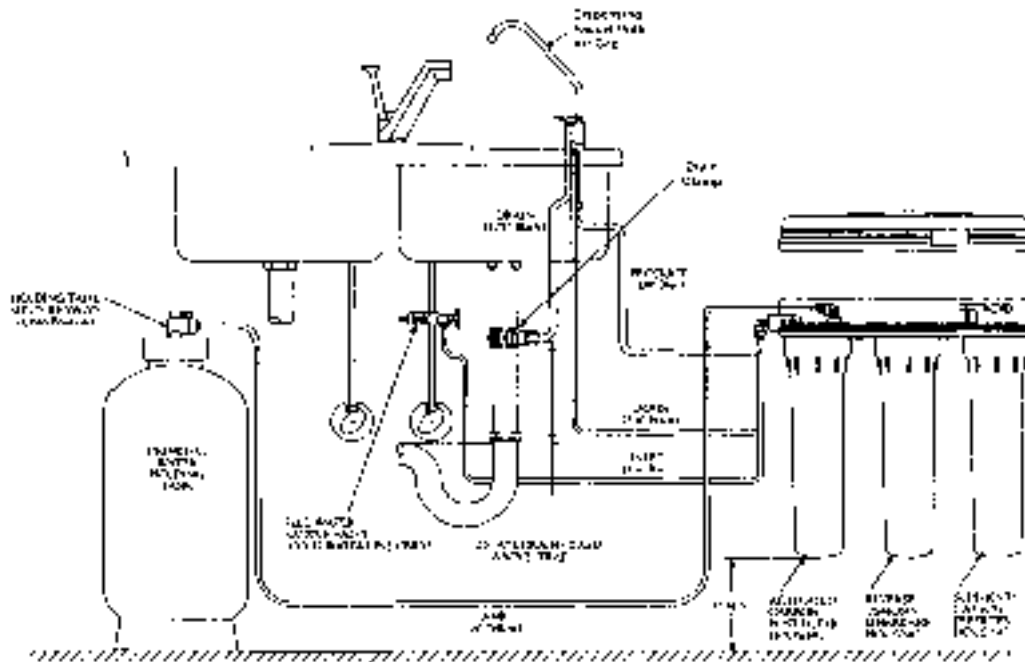
Note: "ppm" means parts per million - "gpg" means grains per gallon.

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 constituents (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 necessary) 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!

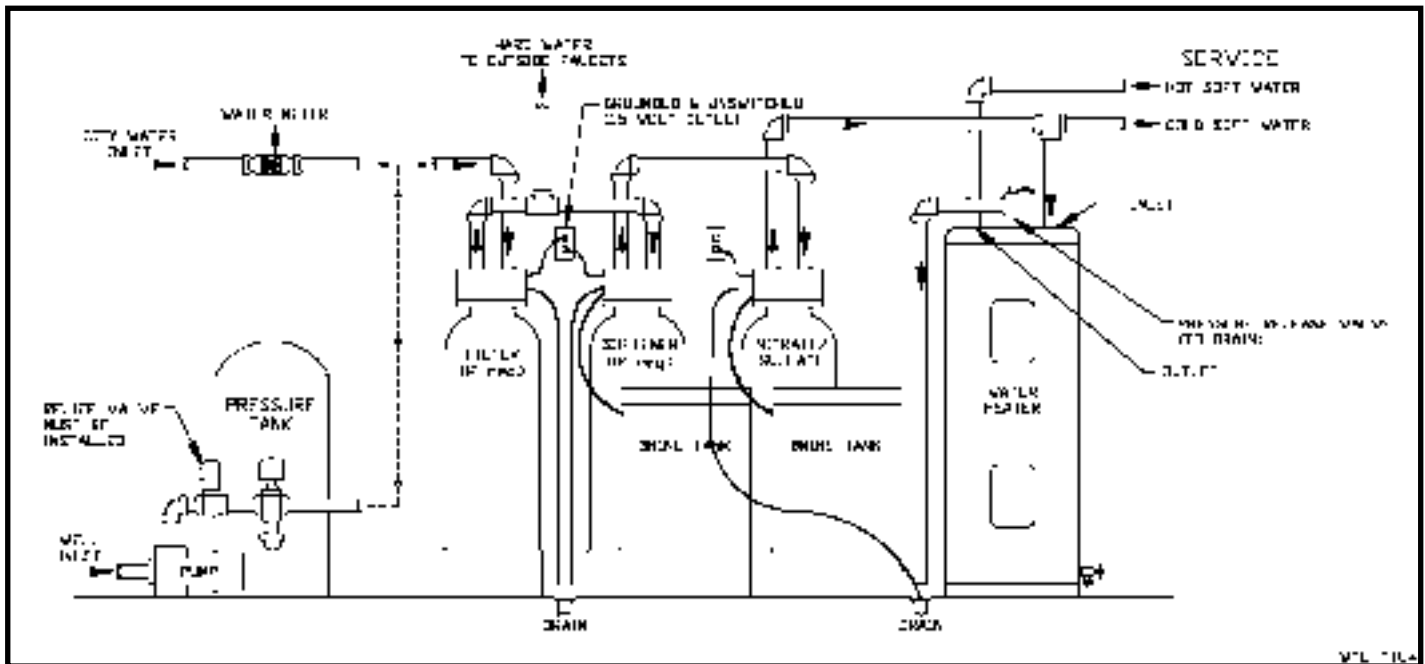
| RAW WATER LIMITATIONS | |
|-----------------------|----------------------------|
| Free Chlorine | 0.5 ppm |
| Turbidity | 5 units |
| Iron | 0.1 ppm |
| Manganese | 0.1 ppm |
| Hydrogen Sulfide | 0.1 ppm |
| Tannins | 0.5 ppm |
| Hardness | Preferably less than 5 gpg |

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 NO₃ (nitrate); and 10) Sulphates as SO₄ (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:

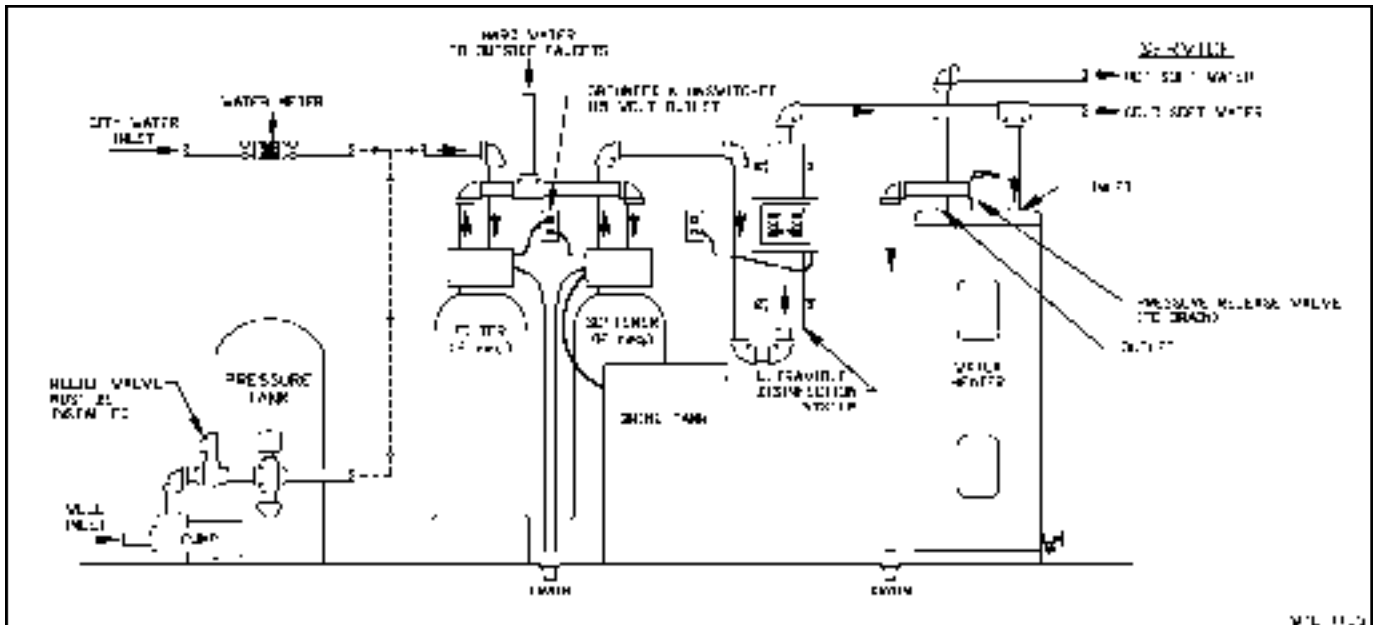
$$\begin{aligned} \text{Sulphate as } \text{SO}_4 \text{ ppm} \times 1.04 &= \text{Sulphate ppm as } \text{CaCO}_3 \\ \text{Nitrate as N ppm} \times 3.56 &= \text{Nitrate as } \text{CaCO}_3 \\ \text{Nitrate as } \text{NO}_3 \text{ ppm} \times 0.81 &= \text{Nitrate as } \text{CaCO}_3 \end{aligned}$$

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.

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 |

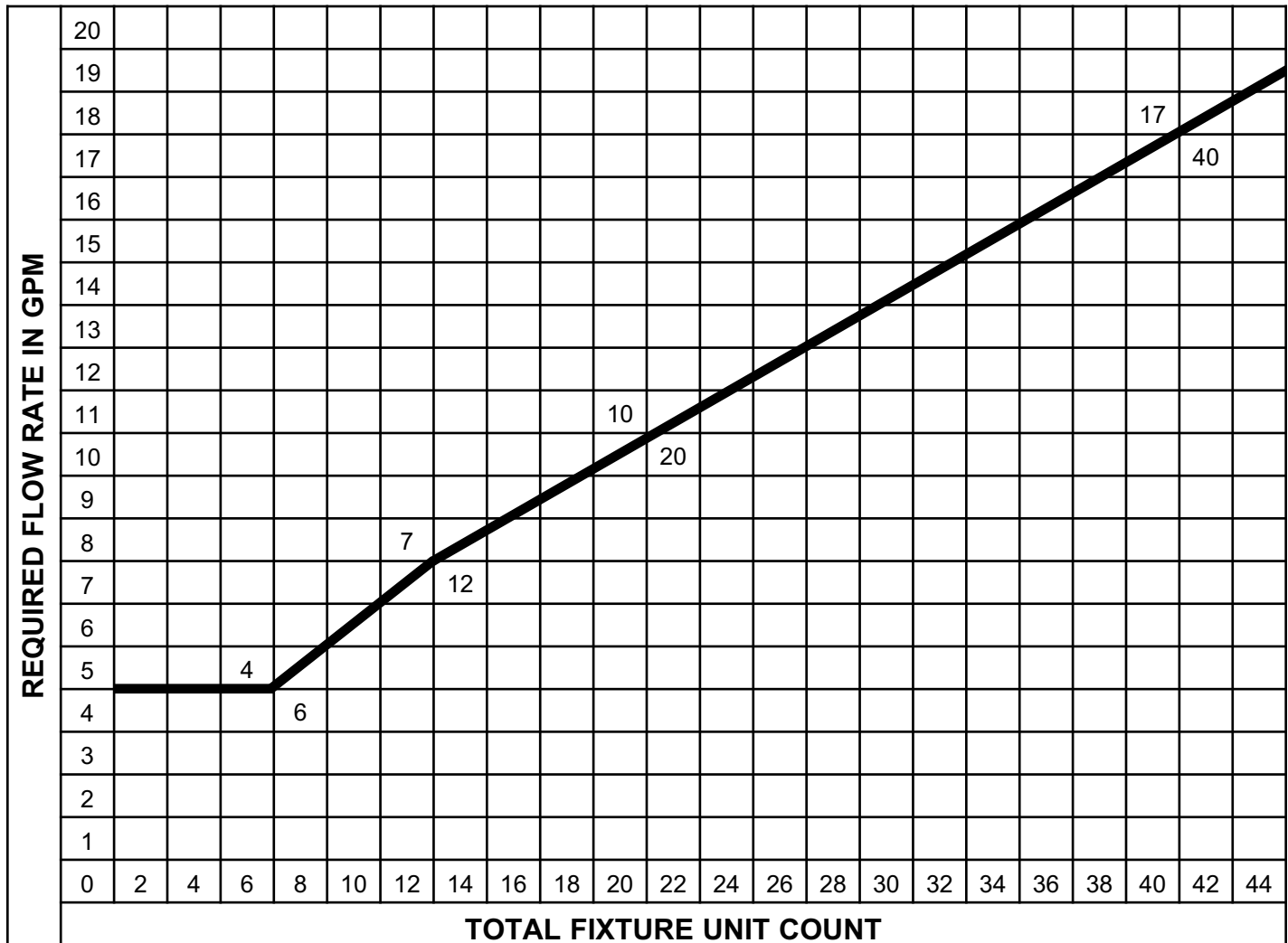
NOTE 1: Check with manufacturer of appliance or consult specifications manual for exact flow rate.

| B OUTLETS | Flow RATES (gpm) | TOTAL USAGE (gallons) | NUMBER of BATHROOMS in the HOME | | | |
|------------------------------------|---------------------------------|--------------------------------------|--|------------------|--------------------|--------|
| | | | 1 | 1 ^{1/2} | 2-2 ^{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 Req'd. | -- | -- | 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 calculations 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 accidentally 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

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

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

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 ultra-violet 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. |

| 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 ₂ O | 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 ₂ O | Atmosphere | 0.0294998 | Rod | Feet | 16.5 |
| Foot of H ₂ O | Bar | 0.0298907 | Square Foot | Square Inches | 144 |
| Foot of H ₂ O | 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 |

Table of Elements

| 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 |
| Beryllium | 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: $FT = 2.31 \times \text{psi}$

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) $\times .02917 =$ 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

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 microbial 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 microbial 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 Environmental 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 |
|--|--|---|--|
| <i>Cryptosporidium</i> | Note: 1-1 | Gastrointestinal illness (e.g., diarrhea, vomiting, cramps) | Absolute 1 micron filtration, Ultraviolet disinfection, Ozone, Chlorine disinfection |
| <i>Giardia lamblia</i> | 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 bacterial colonies per milliliter | 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 |
| <i>Legionella</i> | Note: 1-2 | Legionnaire's Disease, a type of pneumonia | same as above |
| Total Coliforms (including fecal coliform and <i>E. coli</i>) | 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 analyzed 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 nephelometric 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, Distillation, & Electrodialysis |
| Beta particles & photon emitters | 4 millirems per year | Increased Risk of Cancer | Ion Exchange, Reverse Osmosis, Distillation, & Electrodialysis |
| Radium 226 & Radium 228 (combined) | 5 pCi/L | Increased Risk of Cancer | Cation exchange, Reverse Osmosis, Distillation, & 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, Electrodialysis, 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 Electrodialysis |
| 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.

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| 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) | 0.0000003 | 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).

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| 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 |



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, Chlorination, 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 Aeration/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 Aeration/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, Deionization 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



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Parts



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 |



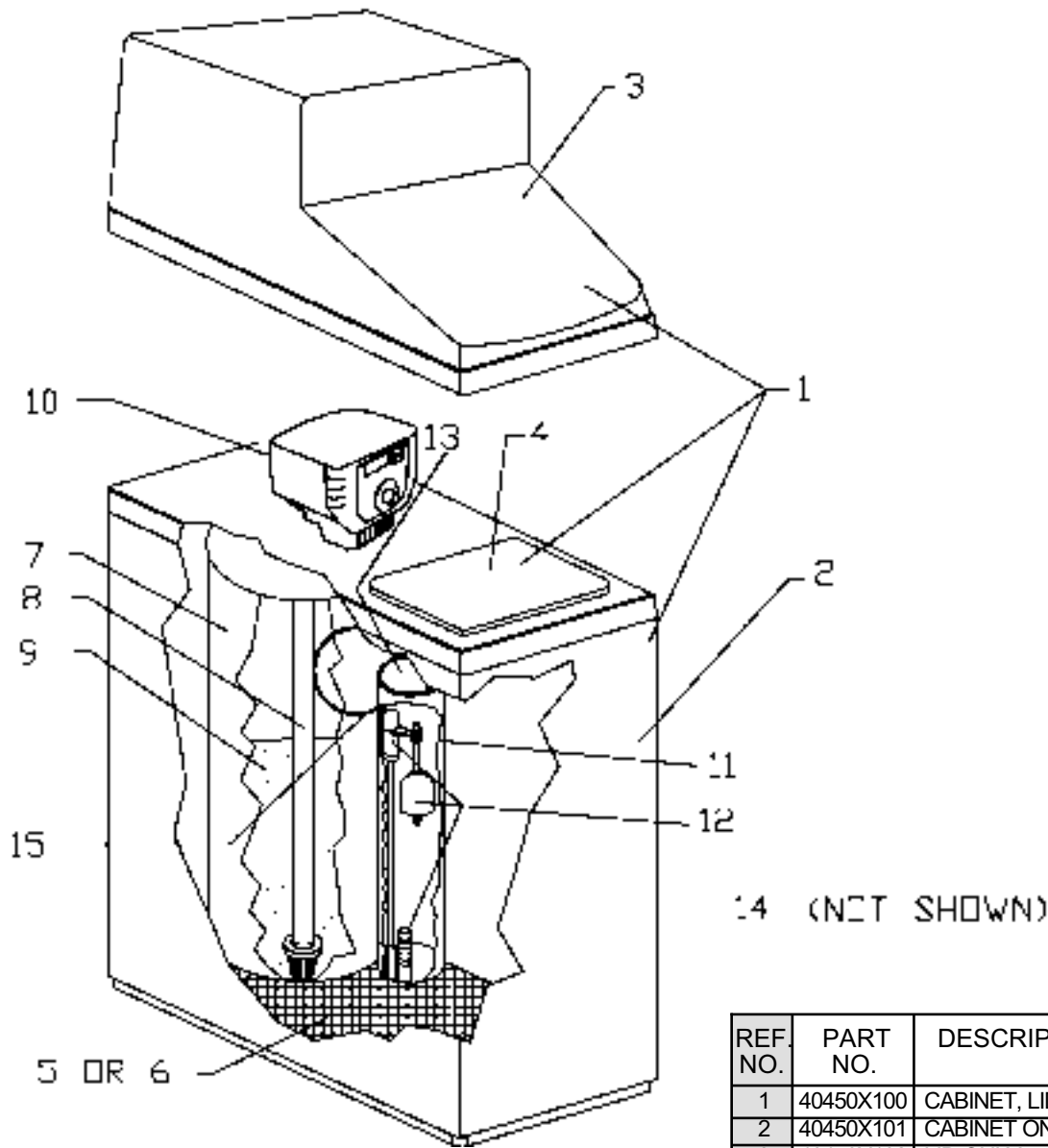
Valve Part Numbers - 2510 Valve

| 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 |

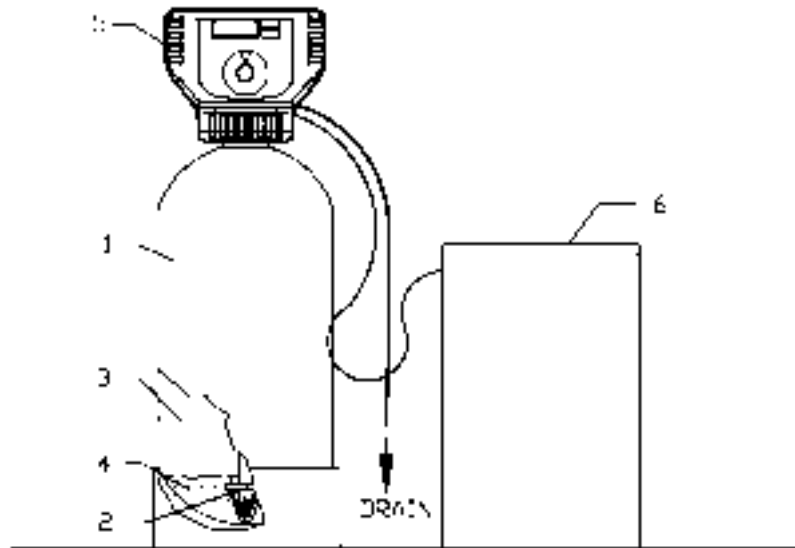
"CT" Series Softeners

| REF. NO. | DESCRIPTION | CT24(V) | CT24T | CT32(V) | CT32T |
|----------|---|-----------------------|-----------------------|------------------------|------------------------|
| 7 | RESIN TANK PART NO. SIZE | 30835X100 8" X 35" | 30835X100 8" X 35" | 31035X100 10" X 35" | 31035X100 10" X 35" |
| | VORTECH TANK PART NO. SIZE | 30935V100 9" X 35" | NA | 31035V100 10" X 35" | NA |
| 8 | DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY. | 330035X11 N/A | N/A 340035X11 | 330035X11 N/A | 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

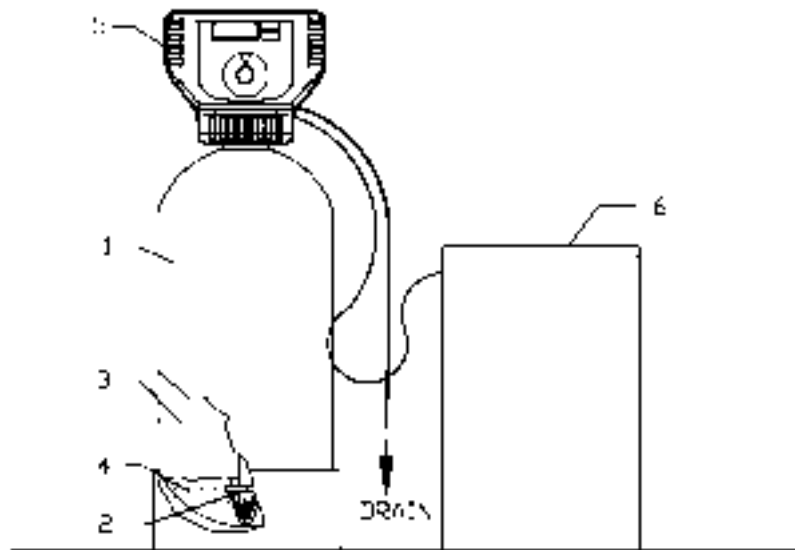
| REF. NO. | DESCRIPTION | CM24(V) | CM24T | CM32(V) | CM32T |
|----------|---|-----------------------|-----------------------|------------------------|------------------------|
| 7 | RESIN TANK PART NO. SIZE | 30835X100 8" X 35" | 30835X100 8" X 35" | 31035X100 10" X 35" | 31035X100 10" X 35" |
| | VORTECH TANK PART NO. SIZE | 30935V100 9" X 35" | NA | 31035V100 10" X 35" | NA |
| 8 | DISTRIBUTOR & TUBE ASSY. TURBULATOR & TUBE ASSY. | 330035X11 N/A | N/A 340035X11 | 330035X11 N/A | 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 |

Parts Diagram - "TS" Series Softeners



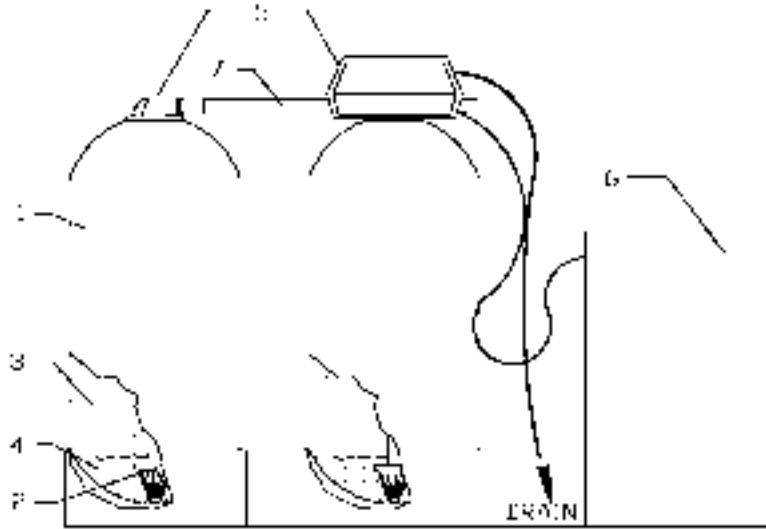
| REF NO. | DESCRIPTION | TS24(V) | TS24T | TS32(V) | TS32T | TS48(V) | TS48T | TS64(V) | TS64T | TS96V | TS128V |
|---------|--|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|------------------------|
| 1 | RESIN TANK PART NO. | 30844X100 | 30844X100 | 30948X100 | 30948X100 | 31054X100 | 31054X100 | 31348X100 | 31348X100 | 31465X100 | 31665X100 |
| | W/ BASE 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" | 16" X 65" |
| | VORTECH TANK PART NO. | 30942V100 | NA | 30948V100 | NA | 31054V100 | NA | 31348V100 | NA | 31465V100 | 31665V100 |
| | W/ BASE SIZE | 9" X 42" | | 9" X 48" | | 10" X 54" | | 13" X 48" | | 14" X 65" | 16" X 65" |
| 2 | DISTRIBUTOR & TUBE ASSY. | 330044X11 | N/A | 330048X11 | N/A | 330054X11 | N/A | 330048X11 | N/A | 330065X11 | 330065X11 |
| | TURBULATOR & TUBE ASSY. | N/A | 340044X11 | N/A | 340048X11 | N/A | 340054X11 | N/A | 340048X11 | N/A | 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 Diagram - "MS" Series Softeners

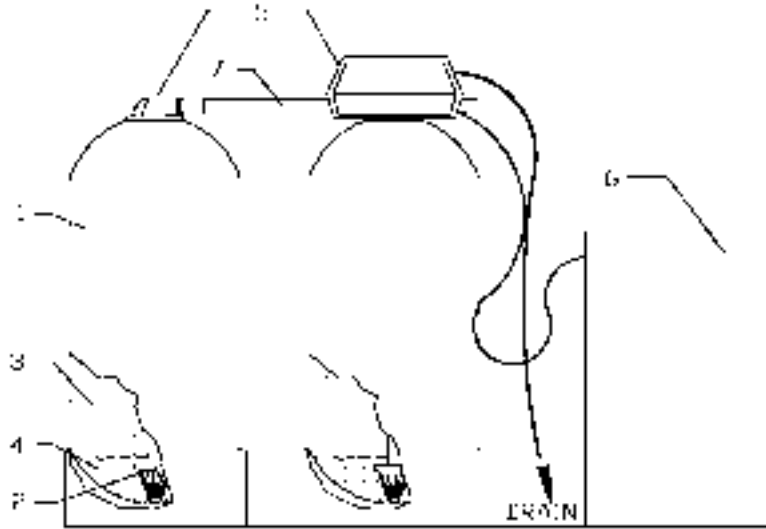


| REF NO. | DESCRIPTION | MS24(V) | MS24T | MS32(V) | MS32T | MS48(V) | MS48T | MS64(V) | MS64T | MS96V | MS128V |
|---------|--|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|------------------------|
| 1 | RESIN TANK PART NO | 30844X100 | 30844X100 | 30948X100 | 30948X100 | 31054X100 | 31054X100 | 31348X100 | 31348X100 | 31465X100 | 31665X100 |
| | W/ BASE 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" | 16" X 65" |
| | VORTECH TANK PART NO | 30942V100 | NA | 30948V100 | NA | 31054V100 | NA | 31348V100 | NA | 31465X100 | 31665X100 |
| | W/ BASE SIZE | 9" X 42" | | 9" X 48" | | 10" X 54" | | 13" X 48" | | 14" X 65" | 16" X 65" |
| 2 | DISTRIBUTOR & TUBE ASSY | 330044X11 | N/A | 330048X11 | N/A | 330054X11 | N/A | 330048X11 | N/A | 330065X11 | 330065X11 |
| | TURBULATOR & TUBE ASSY | N/A | 340044X11 | N/A | 340048X11 | N/A | 340054X11 | N/A | 340048X11 | N/A | 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 Diagram - "AT" Series Softeners

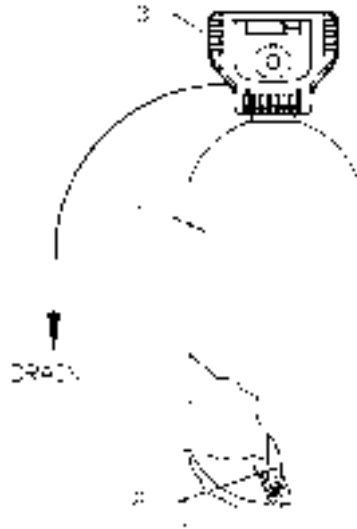


| REF NO. | DESCRIPTION | AT24(V) | AT24T | AT32(V) | AT32T | AT48(V) | AT48T | AT64(V) | AT64T | AT96V |
|---------|--|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| 1 | RESIN TANK PART NO. | 30844X100 | 30844X100 | 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 | | | | | | | | |



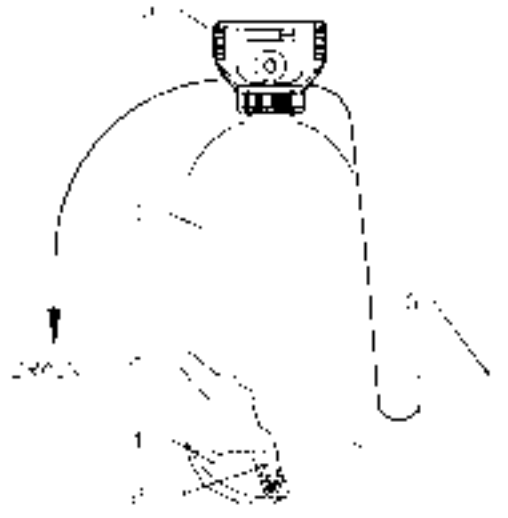
| REF NO. | DESCRIPTION | AT24(V)-91 | AT24T-91 | AT32(V)-91 | AT32T-91 | AT48(V)-91 | AT48T-91 | AT64(V)-91 | AT64T-91 | AT96-91V |
|---------|--|------------------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------------------|
| 1 | RESIN TANK 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 Diagram - "WF" Series Filters



| REF NO. | DESCRIPTION | | WF10 | WF15 | WF20 | WF25 | WF30 | WF40 |
|---------|---|----------|-------------|-------------|-------------|-------------|-------------|-----------------|
| 1 | MINERAL 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 | 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. | | DG20 | DG20 | DG50 | DG50 | DG50 | DG70 |
| | FILTER MEDIA CAPACITY | | 1.0 CU. FT. | 1.5 CU. FT. | 2.0 CU. FT. | 2.5 CU. FT. | 3.0 CU. FT. | 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 |

Parts Diagram - "IF" Series MTM Filters



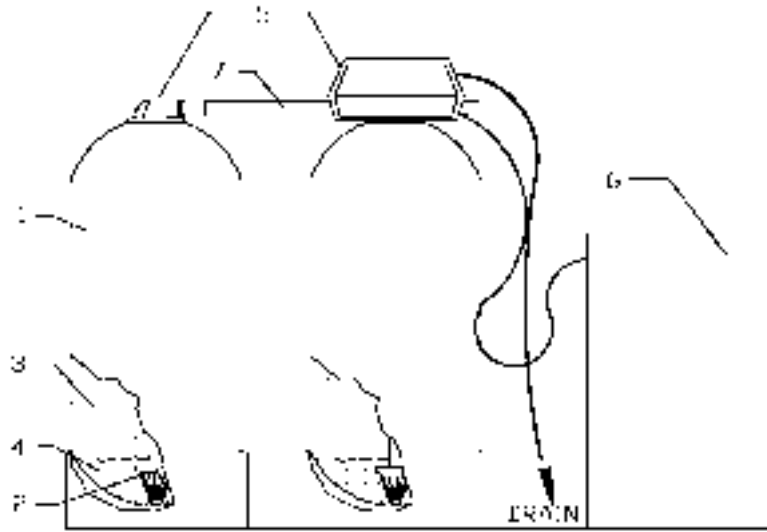
| REF NO. | DESCRIPTION | | IF10 | IF15 | IF20 | IF25 |
|---------|---|------------------|------------------------|------------------------|------------------------|------------------------|
| 1 | MINERAL TANK W/ BASE | PART NO. SIZE | 30948X100 9" X 48" | 31054X100 10" X 54" | 31348X100 13" X 48" | 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" | | | |

Parts Diagram - "U" Series Filters



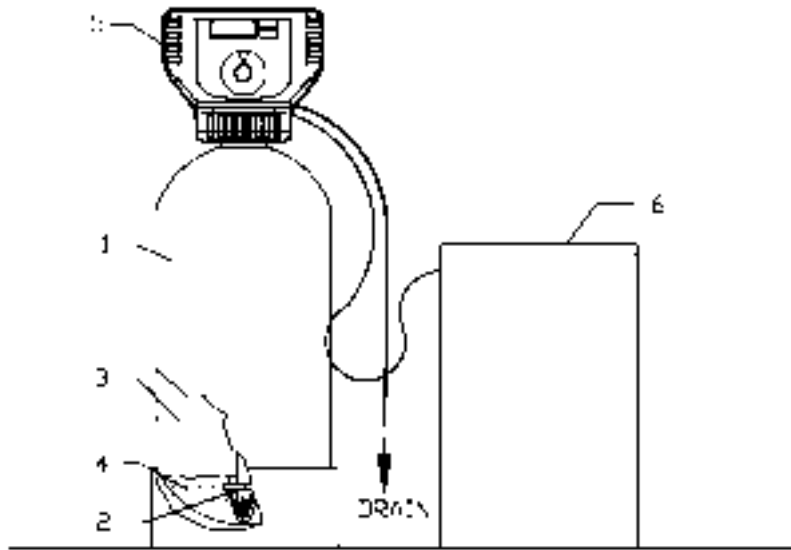
| REF NO. | DESCRIPTION | | U10 | U15 | U20 | U25 |
|---------|---|---------------|-----------------------|------------------------|------------------------|------------------------|
| 1 | MINERAL TANK W/ BASE | PART NO. SIZE | 30948X100 9" X 48" | 31054X100 10" X 54" | 31348X100 13" X 48" | 31354X100 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 |

Parts Diagram - "ATI" Series Eliminator



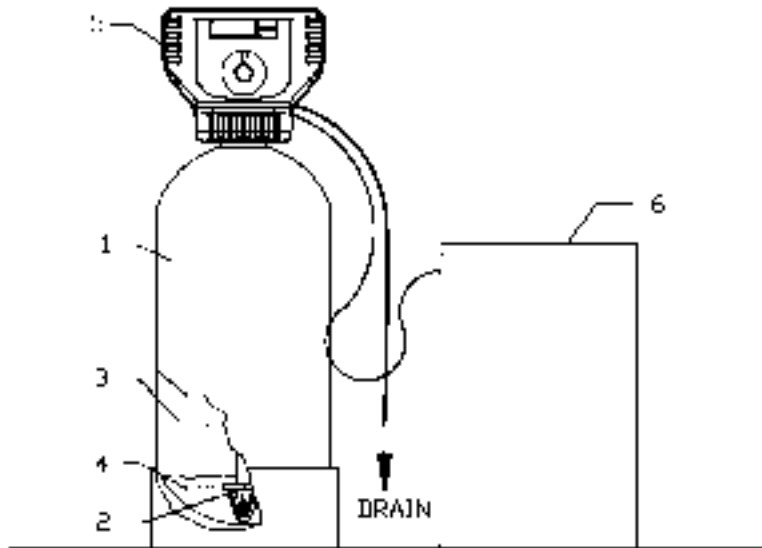
| REF NO. | DESCRIPTION | ATI24 | ATI32 | ATI48 | ATI64 | ATI96 |
|---------|--|------------------------|-----------|-----------|-----------|------------------------|
| 1 | MINERAL TANK W/ BASE (2) | PART NO 30942X100 | 30948X100 | 31054X100 | 31348X100 | 31465X100 |
| | SIZE 9" X 42" | 9" X 42" | 9" X 48" | 10" X 54" | 13" X 48" | 14" X 65" |
| | VORTECH TANK W/BASE (2) | PART NO 30942V100 | 30948V100 | 31054V100 | 31348V100 | 31465V100 |
| | SIZE 9" X 42" | 9" X 42" | 9" X 48" | 10" X 54" | 13" X 48" | 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 Diagram - "TSI" Series Eliminator Systems

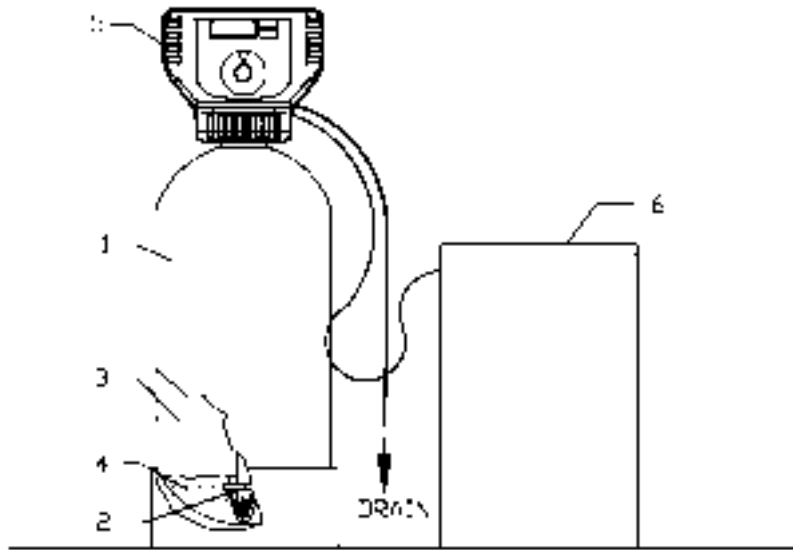


| REF NO. | DESCRIPTION | | TSI24 | TSI32 | TSI48 | TSI64 | TSI96 |
|---------|--|---------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| 1 | RESIN TANK W/ BASE | PART NO. SIZE | 30942X100 9" X 42" | 30948X100 9" X 48" | 31054X100 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. <small>Standard Tank Only</small> | | 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" |

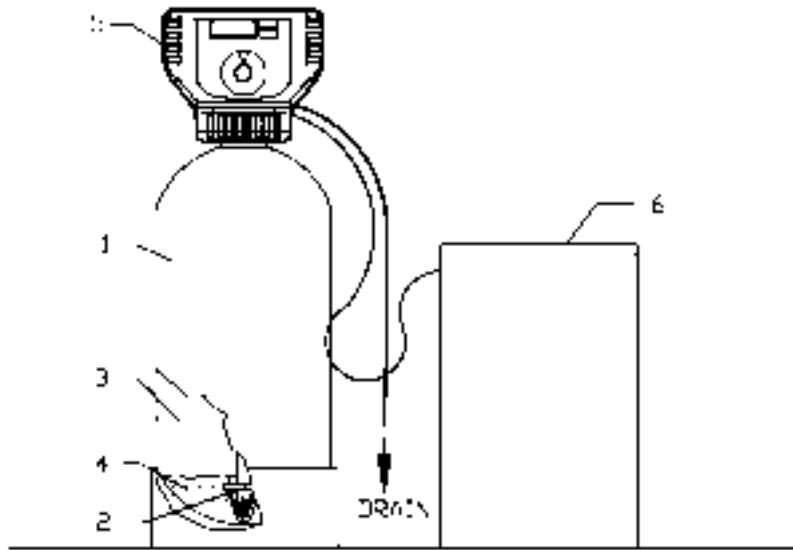
Parts Diagram - "MSI" Series Eliminator Systems



| 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" |

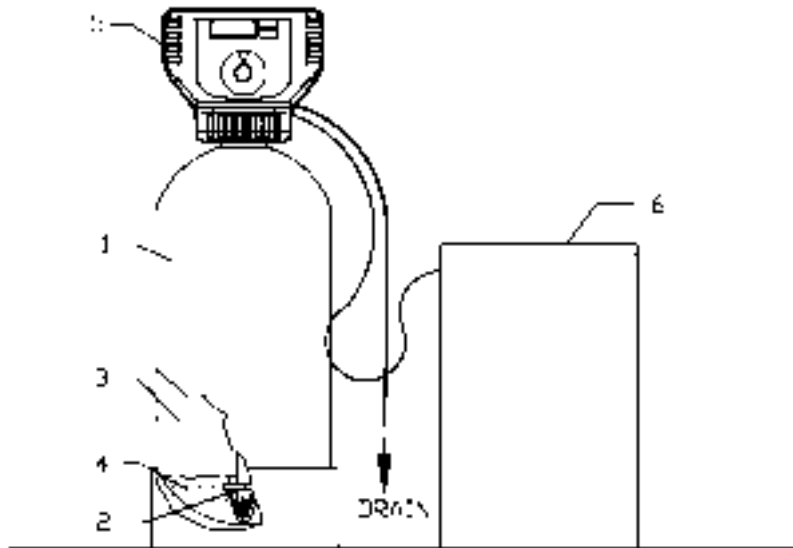


| REF NO. | DESCRIPTION | TST24 | TST32 | TST48 | TST64 |
|---------|---|------------------------|-----------------------|------------------------|------------------------|
| 1 | RESIN TANK PART NO. W/ BASE SIZE | 30942X100 9" X 42" | 30948X100 9" X 48" | 31054X100 10" X 54" | 31348X100 13" X 48" |
| | 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" | | | |



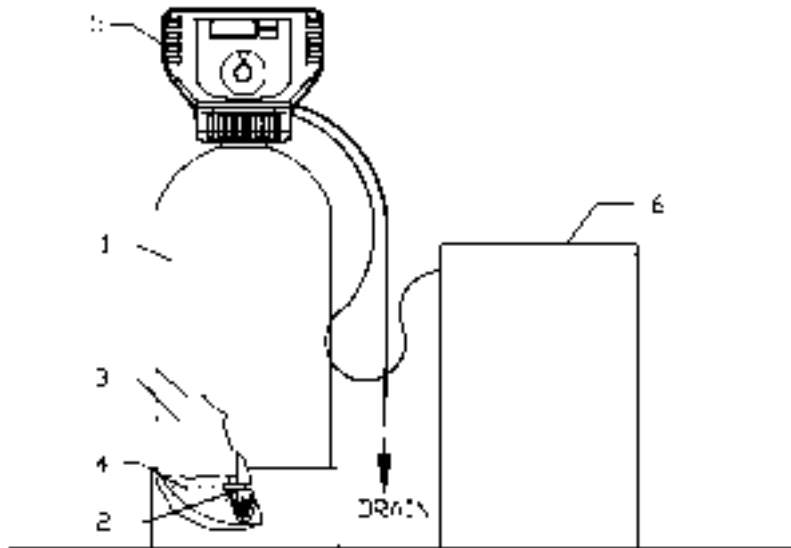
| REF NO. | DESCRIPTION | MST24 | MST32 | MST48 | MST64 |
|---------|---|------------------------|-----------------------|------------------------|------------------------|
| 1 | RESIN TANK PART NO. W/ BASE SIZE | 30942X100 9" X 42" | 30948X100 9" X 48" | 31054X100 10" X 54" | 31348X100 13" X 48" |
| | 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" | |

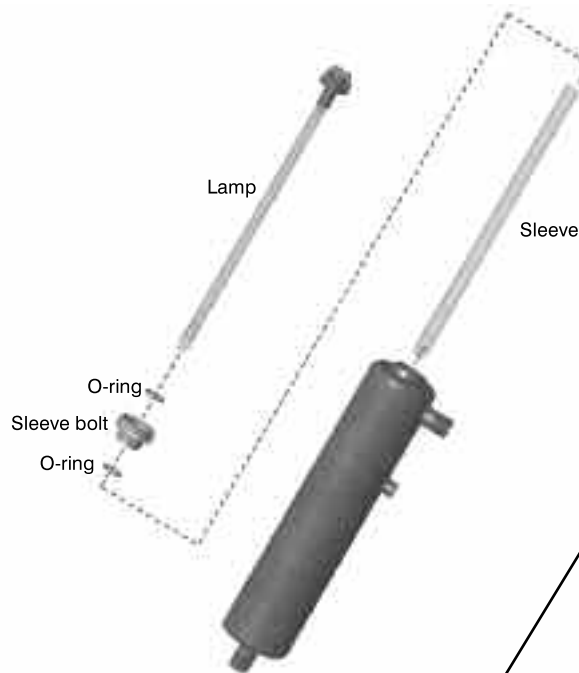
Parts Diagram - "MN" Nitrate / Sulfate System



| 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" | |

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. |

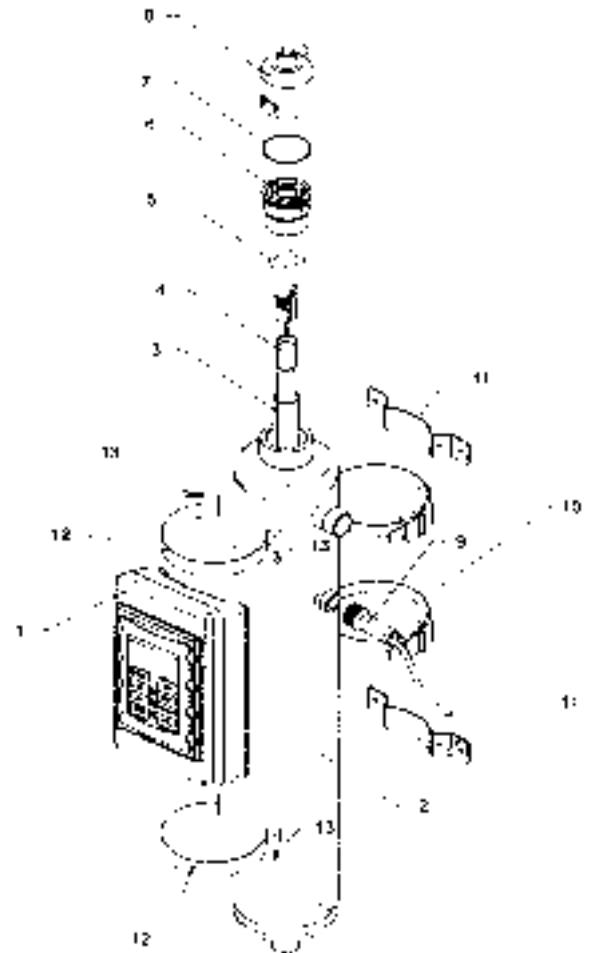


WEDECO - "DLR"

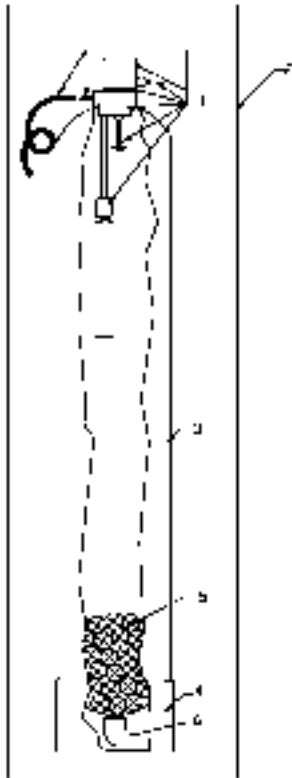
| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|----------|--------------------------------------|------|
| 1 | * | ELECTRICAL CONTROL BOX | 1 |
| 2 | * | DISINFECTION CHAMBER | 1 |
| 3 | DQ36648 | QUARTZ SLEEVE | 1 |
| 4 | AQ37086 | ULTRAVIOLET LAMP | 1 |
| 5 | AQ35492 | HEAD PIECE O-RING | 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

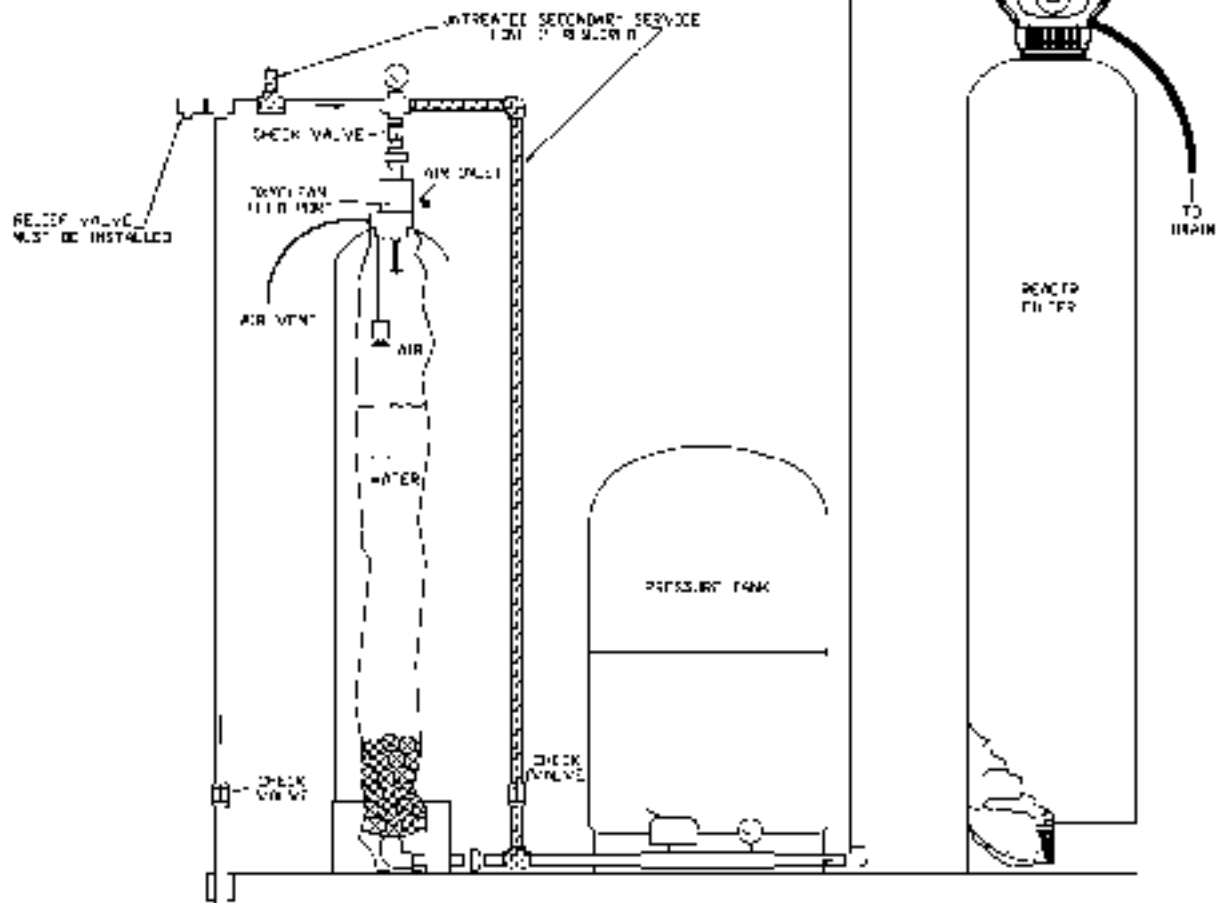
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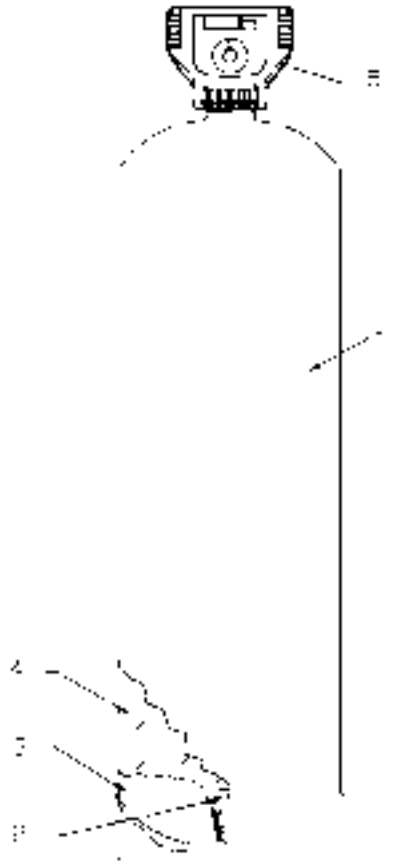
Parts Diagram - Reactr "RF" Series Tanks



| 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 |

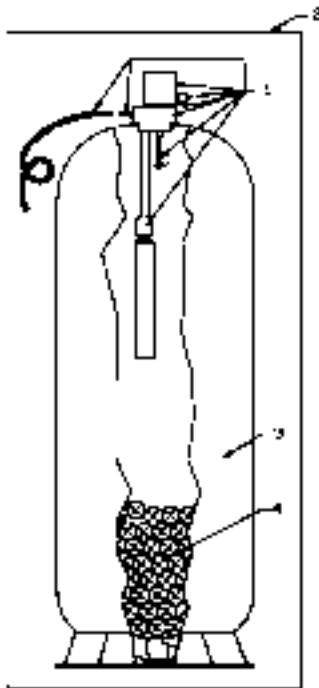


Parts Diagram - Reactr "UT" & "RF" Filter Tanks

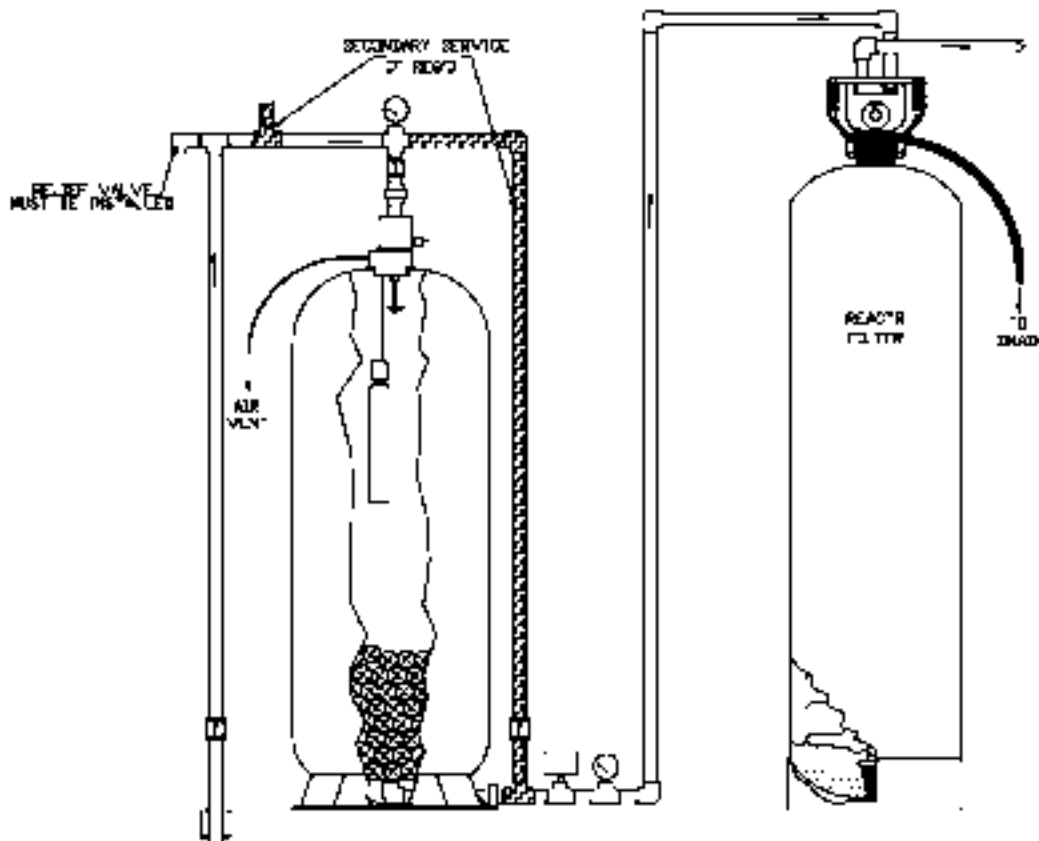


| REF NO. | DESCRIPTION | RF10 UT10 | RF15 UT15 | RF20 UT20 | RF25 UT25 | RF30 UT30 | UT40 |
|---------|--|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 1 | TANK PART NO. W/ BASE SIZE | 30948X100 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 PART NO. W/ BASE 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 | "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 |

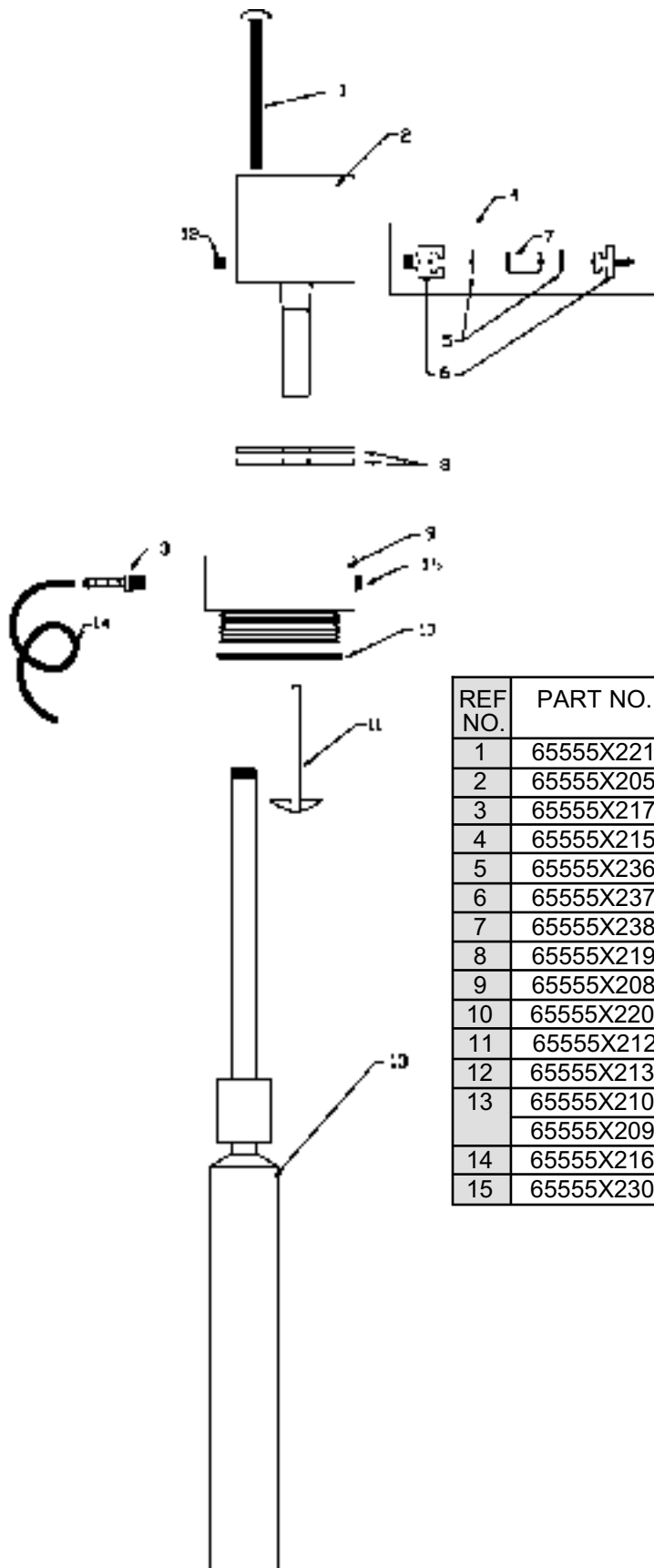
Parts Diagram - Reactr "UT" Series Tanks



| REF NO. | PART NO. | DESCRIPTION |
|---------|-------------------------------------|---|
| 1 | 65555X340 | REACTR MANIFOLD ASSEMBLY - 5.0 GPM INCLUDES : MANIFOLD, REACTR BODY, DIAPHRAGMS, 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. |

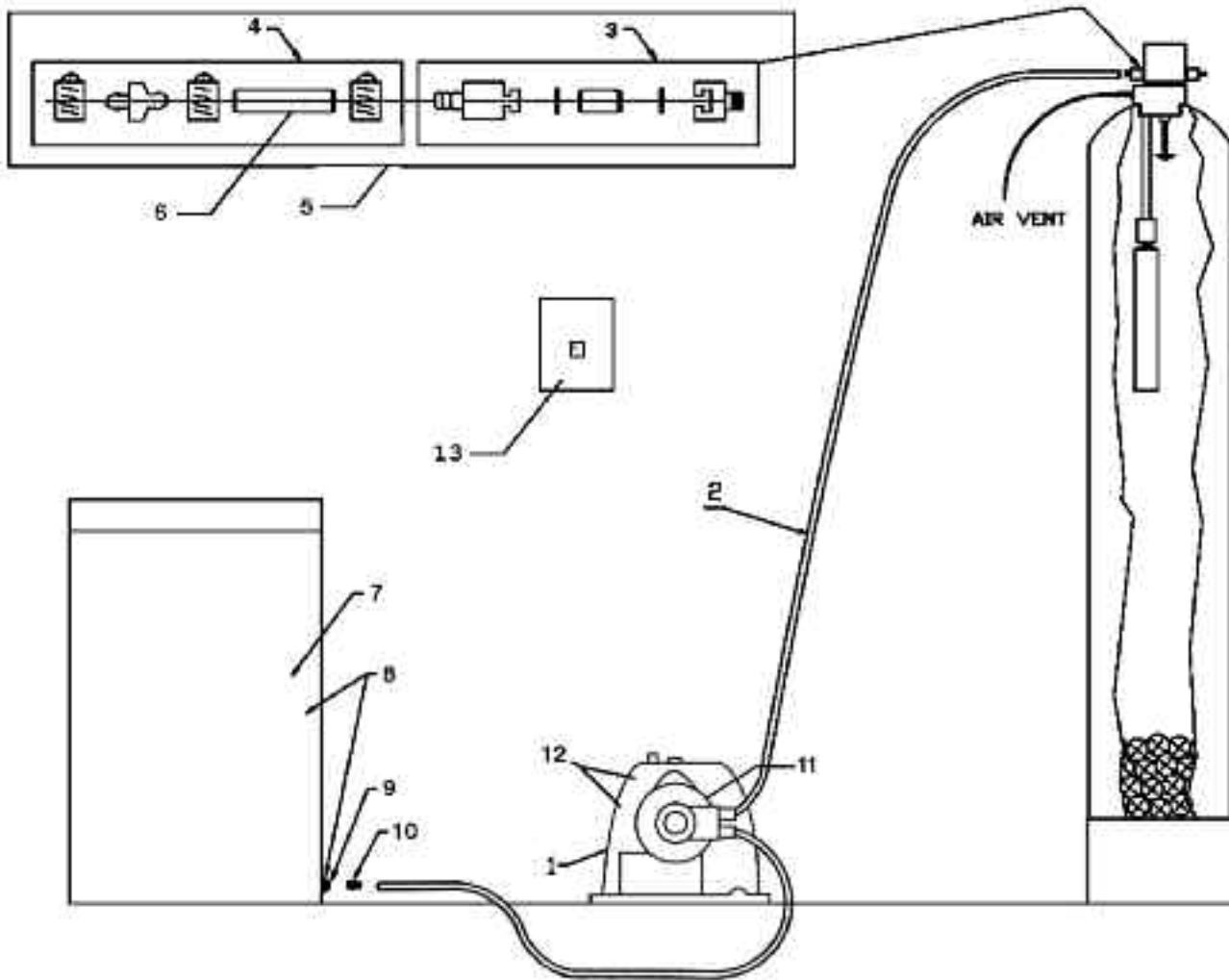


Parts Diagram - Reactr Body & Manifold Assembly



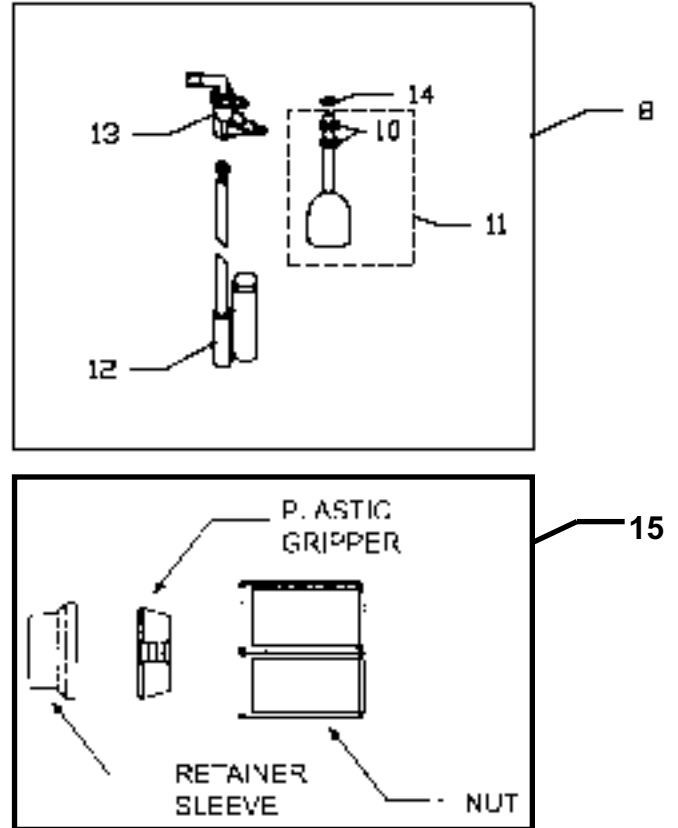
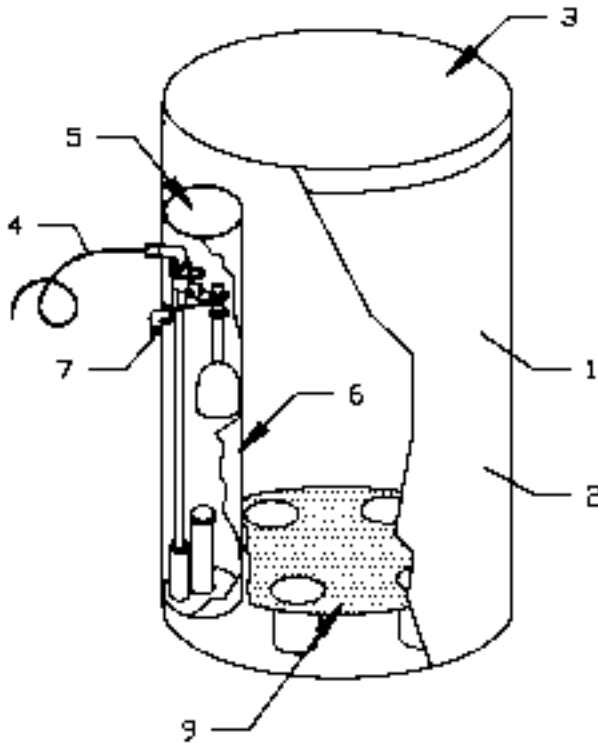
| REF NO. | PART NO. | DESCRIPTION |
|---------|-----------|--|
| 1 | 65555X221 | SCREW 1/4-20 X 3.5" S.S. PHILLIPS |
| 2 | 65555X205 | REACTR BODY W/ NOZZLE & THROAT ONLY - 5.0 GPM |
| 3 | 65555X217 | HOSE BARB - 1/4" X 1/4" NPT-M |
| 4 | 65555X215 | AIR INTAKE VALVE CHECK ASSEMBLY |
| 5 | 65555X236 | 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 | DIAPHRAGMS - 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 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, SAFETY 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

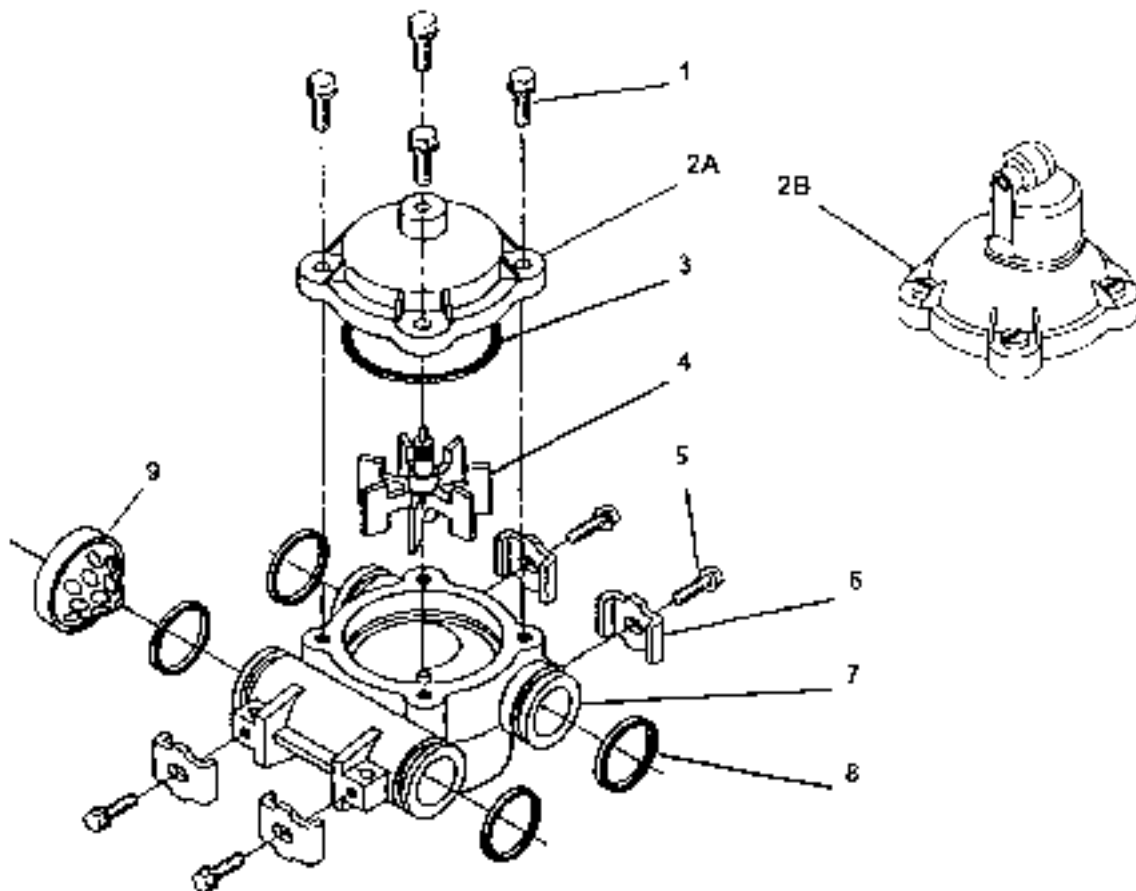


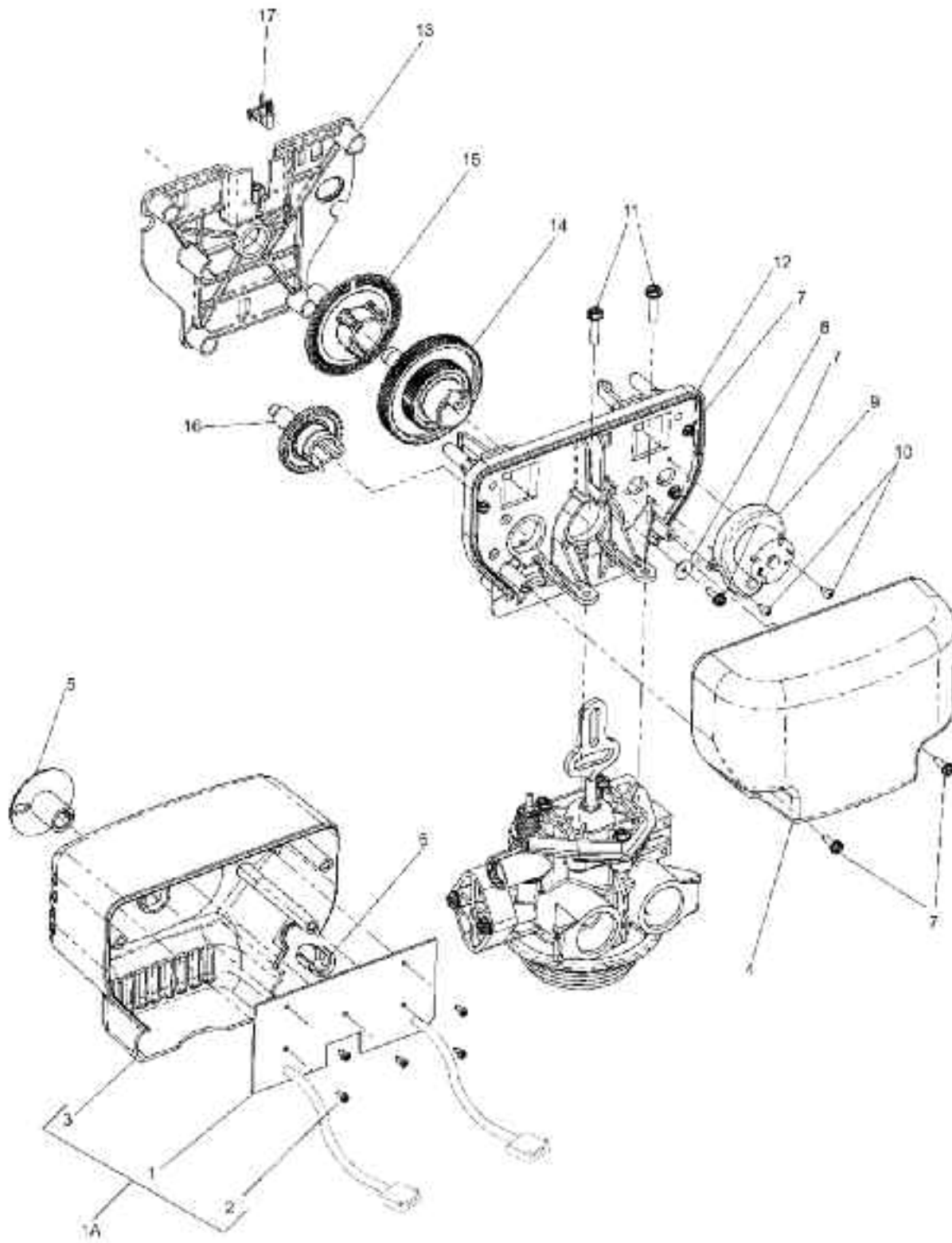
| REF NO. | PART NO. | DESCRIPTION |
|---------|-----------|---------------------------------------|
| 0 | 40330X000 | 18 X 33 BRINE TANK ASSY. COMPLETE |
| | 40330X010 | INJECTION MOLDED CSI LID |
| | | 18 X 33 BRINE TANK ASSY. COMPLETE |
| | | BLOW MOLDED LID |
| 1 | 40330X020 | BRINE TANK & LID ONLY - 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 |

Parts Diagram - 3/4" Plastic Bodied Meter Parts

| 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



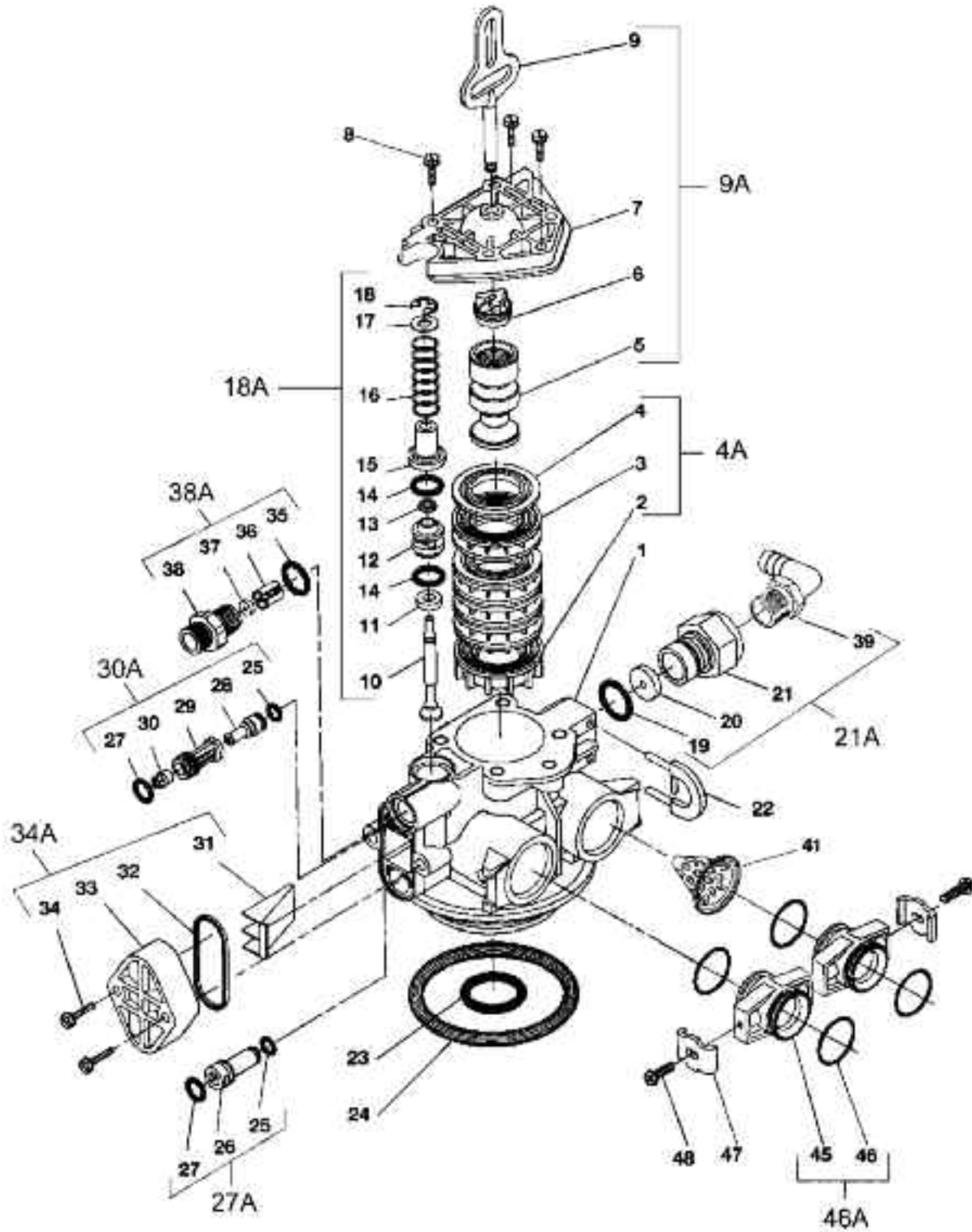


| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|--|------|
| 0 | 20001X100 | Timeclock Softener Powerhead Assembly Complete | 1 |
| | 20002X100 | Filter Powerhead Assembly Complete | 1 |
| | 20003X100 | Metered Softener Powerhead Assembly w/ Meter | 1 |
| | 20003X101 | Metered Softener 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





Parts List - Signature Series Control Valve Assembly

| 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 |

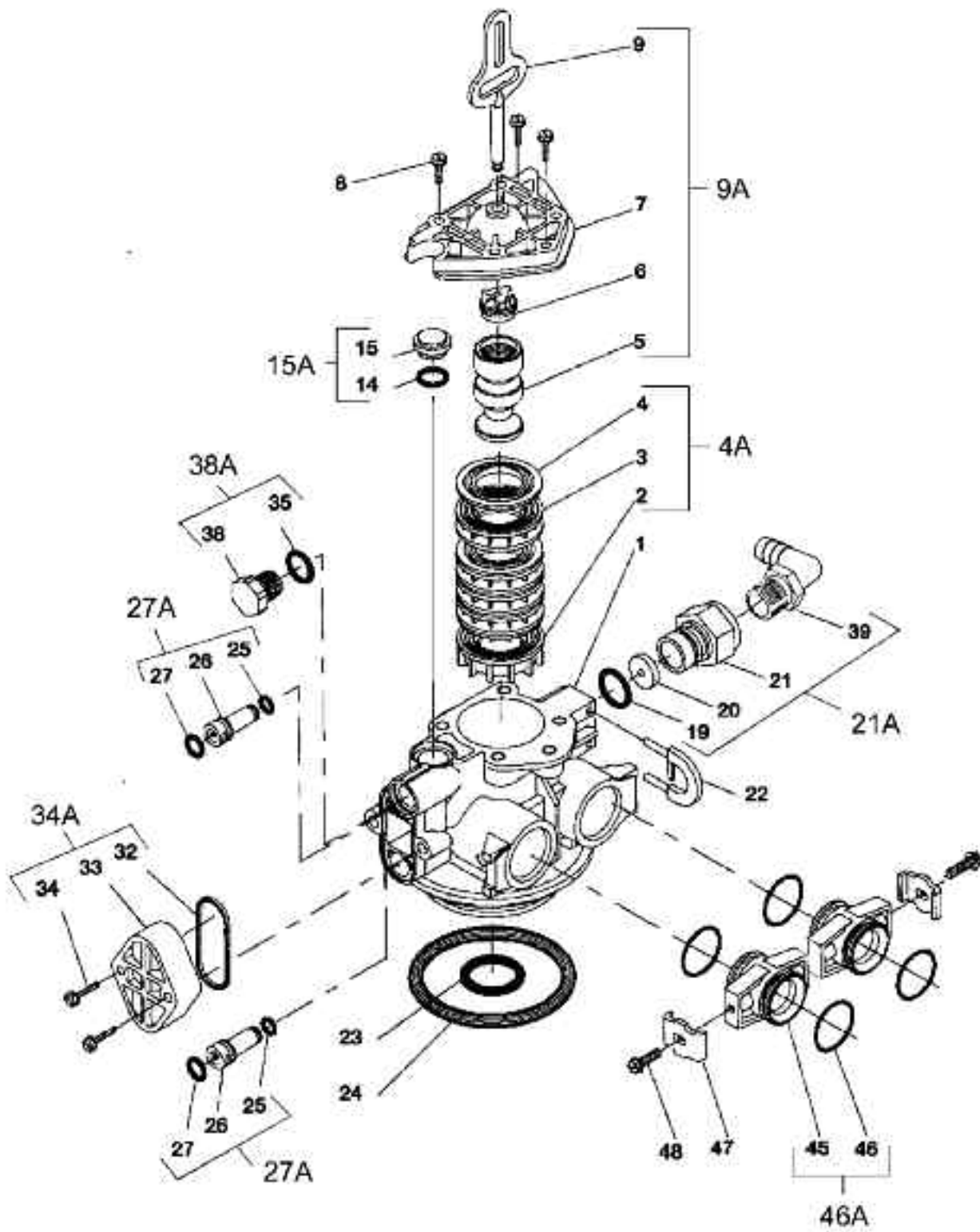
| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|--|------|
| 27A | 20001X217 | Injector Plug & O-Ring Assembly Includes (1) #25, (1) #26, & (1) #27 | 1 |
| 28 | N/S | Injector Throat | 1 |
| 29 | N/S | Injector Nozzle | 1 |
| 30 | N/S | Vortex Generator | 1 |
| 30A | 20001X219 | 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



| 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 |

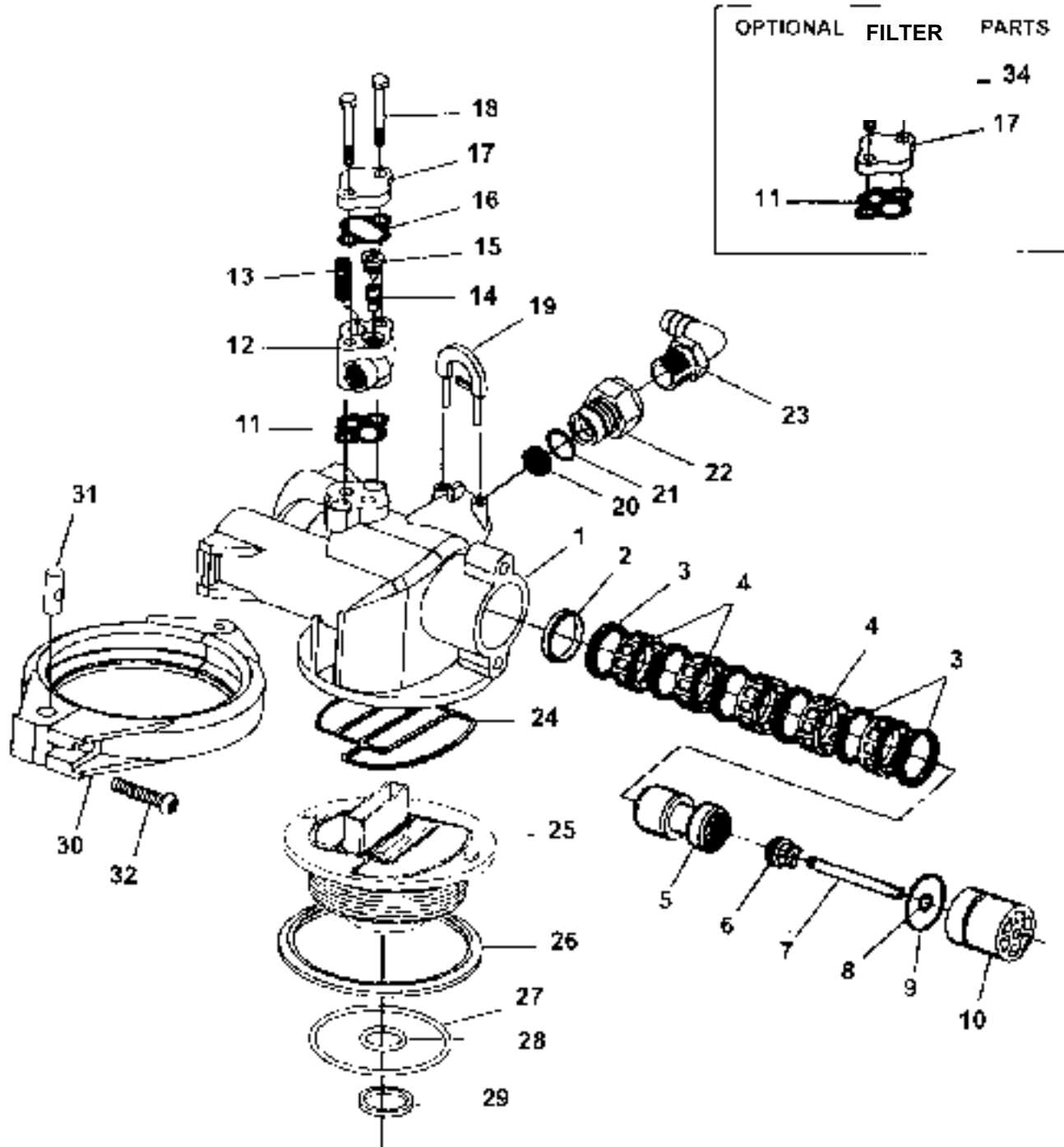
Filter Components Not Shown

| | | | |
|------------|-----------|---|---|
| 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

Parts Diagram - 2510 Series Valve



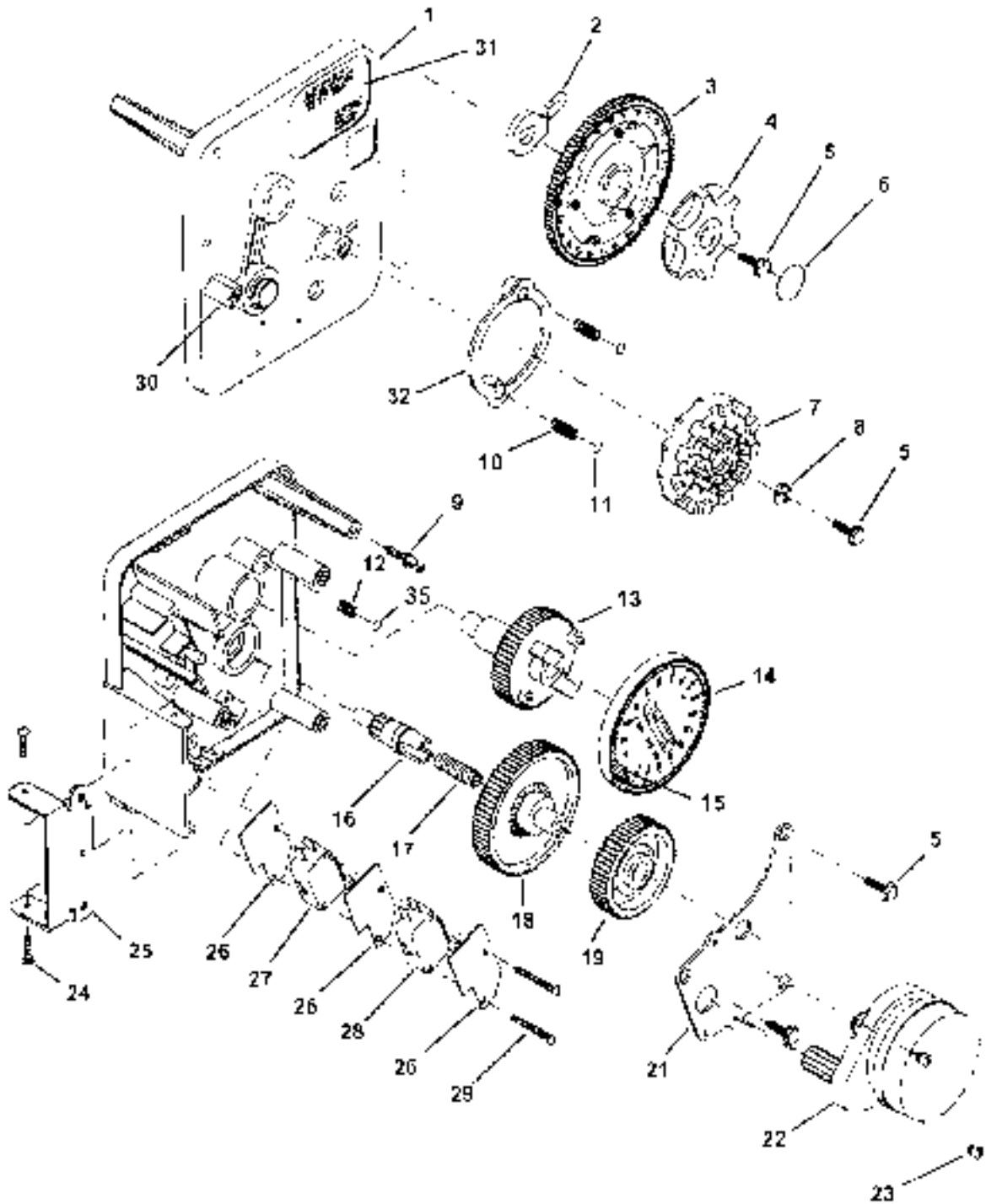
Parts List - 2510 Series Valve Parts

| 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 90° 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

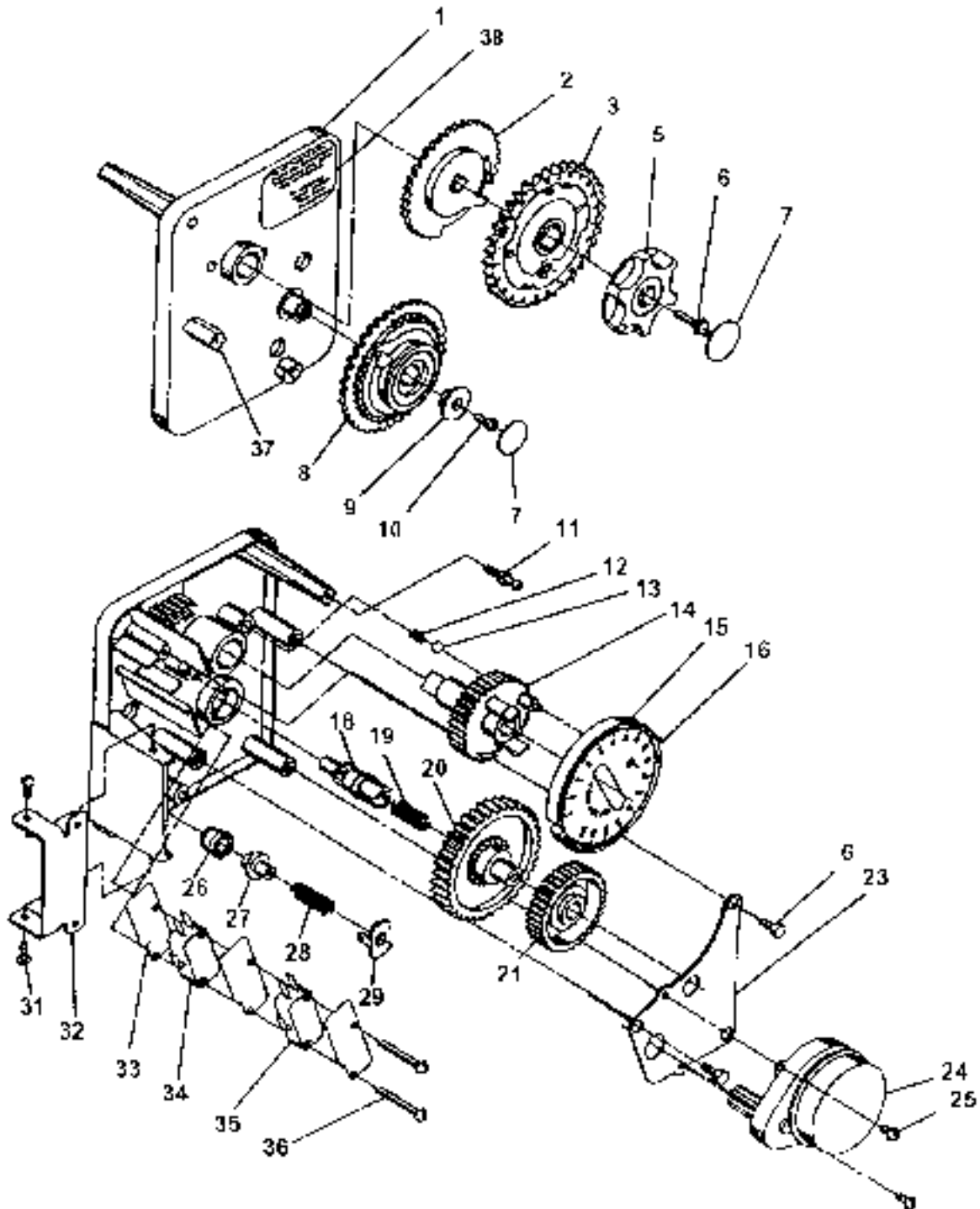
Shaded REF. No. Indicates Assembly or Kit



| 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

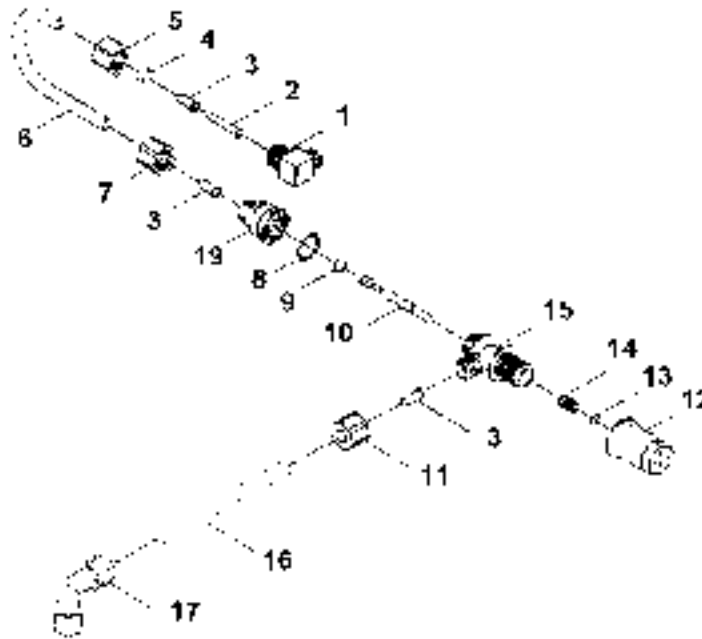


| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|-----------|-----------|---|------|
| 0 | 20253X100 | 3210 METER VALVE TIMER, 3/4" STD RANGE W/ CABLE - SPECIFY "K" | 1 |
| 1 | 20253X109 | TIMER HOUSING | 1 |
| 2 | 20253X110 | CYCLE ACTUATOR ARM | 1 |
| 3 | 20251X403 | 24 HOUR GEAR | 1 |
| 5 | 20251X405 | 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

Parts Diagram - Brine System for 2510 Valve



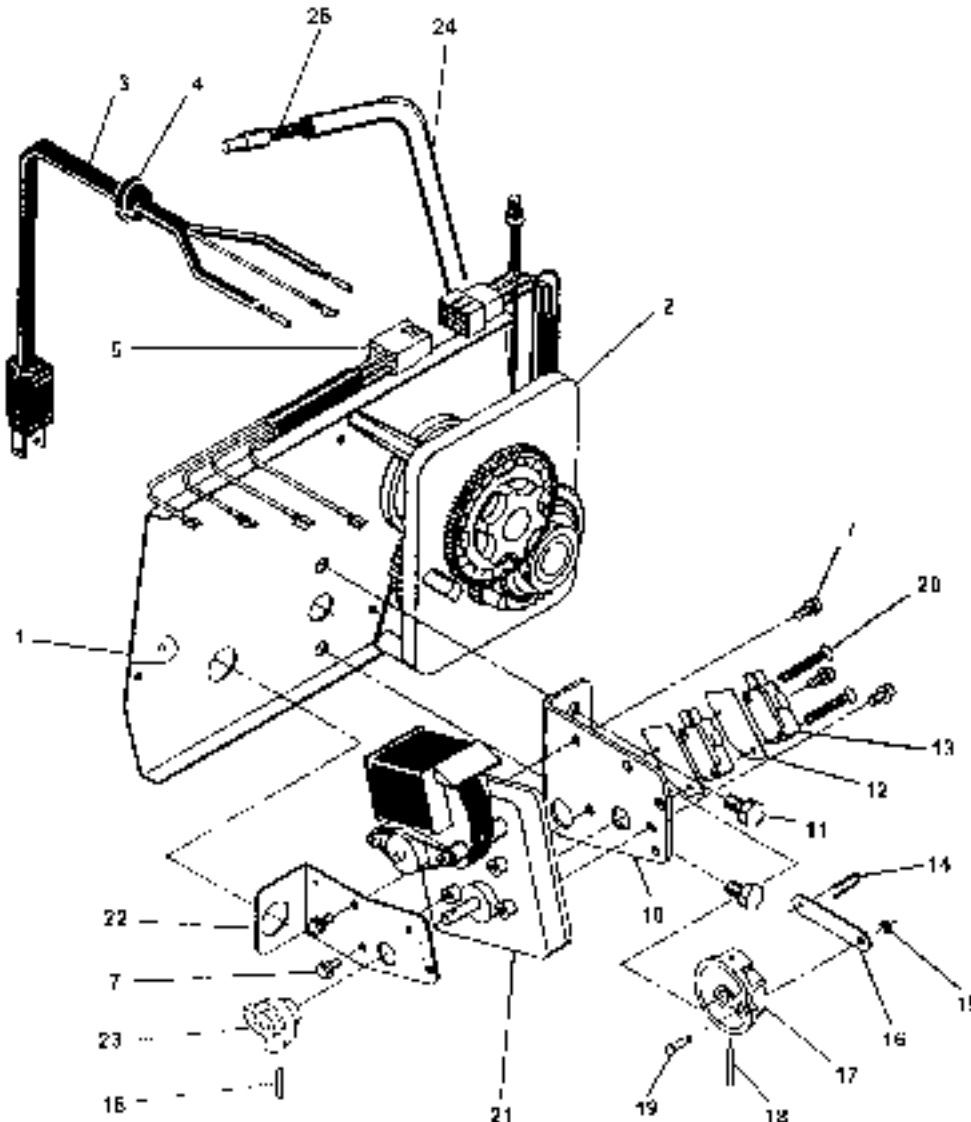
| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|---|------|
| 0 | 20251X300 | .5 GPM BRINE VALVE SYSTEM COMPLETE | 1 |
| 1 | 20251X301 | 1/4" NPT X 3/8" NPS 90° ELBOW | 1 |
| 2 | 20251X302 | BRINE LINE SCREEN | 1 |
| 3 | 20251X303 | INSERT SLEEVE (3/8" TUBE) | 3 |
| 4 | 20251X305 | 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 |

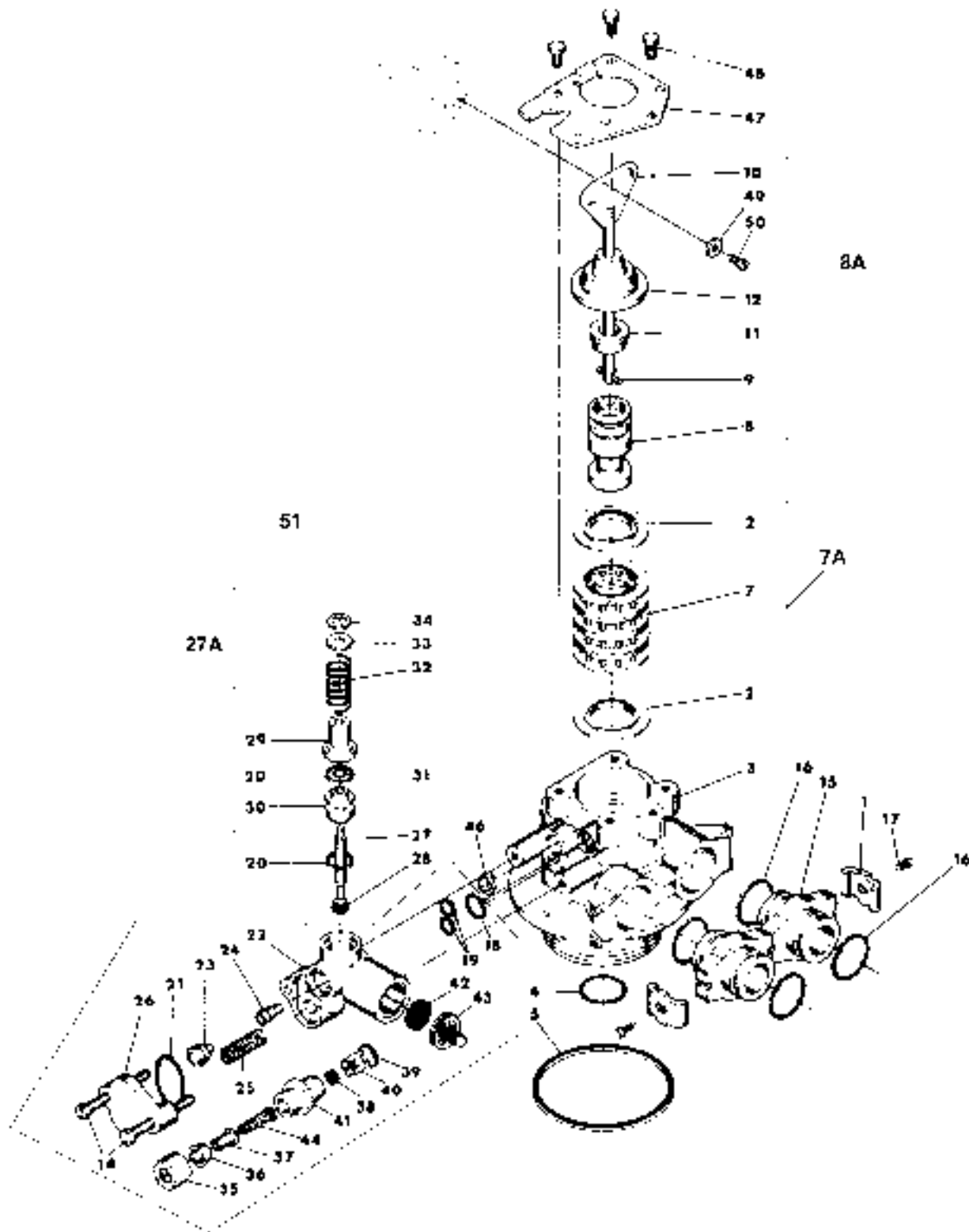
Shaded REF. No. Indicates Assembly or Kit

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 |





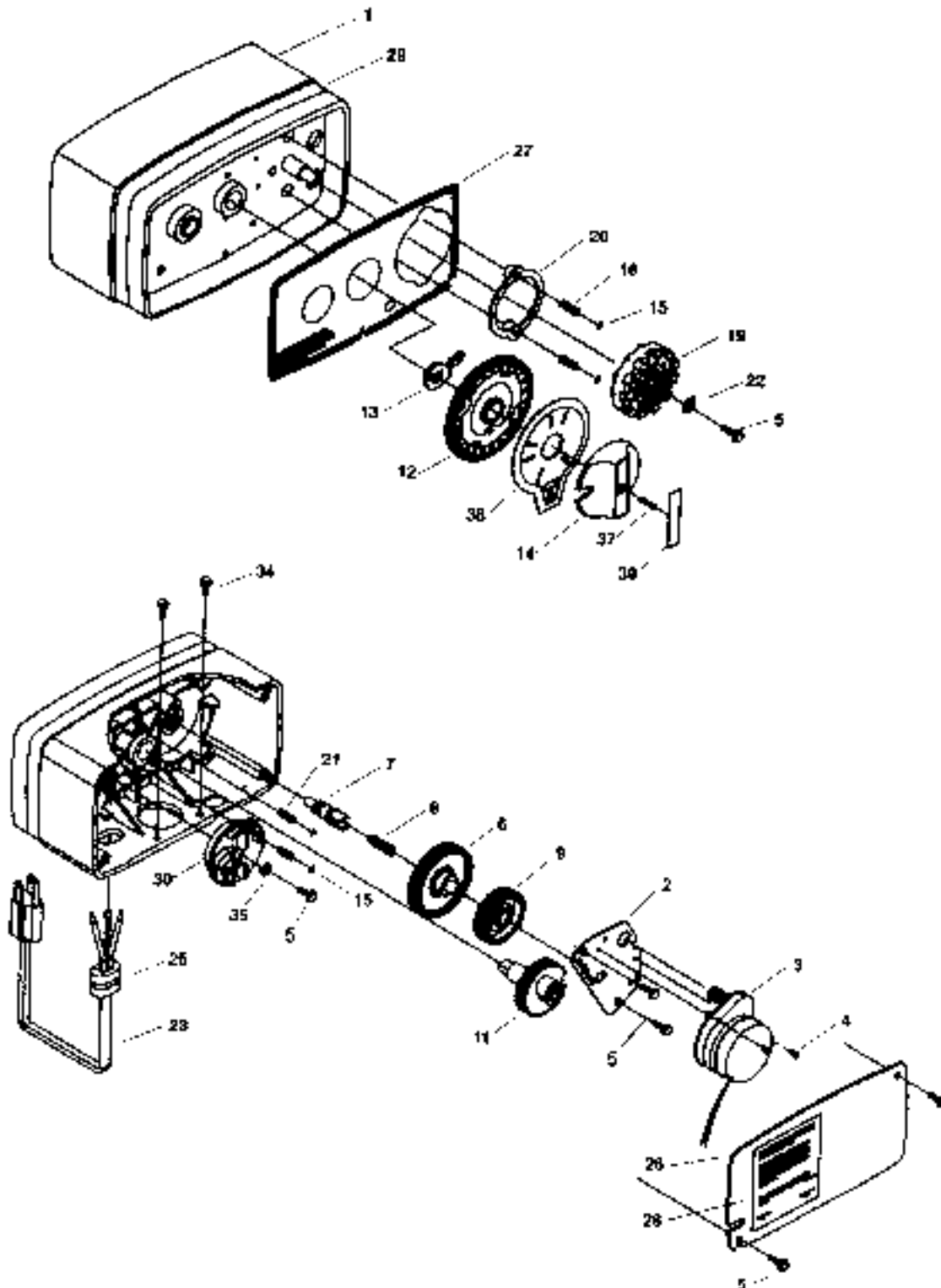
| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|--|------|
| 0 | 20561X200 | VALVE BODY COMPLETE | 1 |
| 1 | 20561X201 | ADAPTER CLIP | 2 |
| 2 | 20561X202 | SEAL | 5 |
| 3 | 20561X203 | VALVE BODY ONLY 1.05" DIST. | 1 |
| 4 | 20561X204 | DIST. TUBE O-RING 1.05" O.D. | 1 |
| 5 | 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 | 20521X205 | INJECTOR NOZZLE, # 1 WHITE | 1 |
| | 20521X241 | INJECTOR NOZZLE, # 2 BLUE | 1 |
| | 20521X235 | INJECTOR NOZZLE, # 2 PVC | 1 |
| 24 | 20521X206 | INJECTOR THROAT, # 1 WHITE | 1 |
| | 20521X242 | INJECTOR THROAT, # 2 BLUE | 1 |
| | 20521X236 | INJECTOR THROAT, # 2 PVC | 1 |
| 25 | 20521X204 | 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 | 20521X315 | BRINE VALVE SEAT | 1 |
| 29 | N/S | BRINE VALVE CAP | 1 |
| 30 | N/S | BRINE VALVE SPACER | 1 |
| 31 | 20521X312 | QUAD RING | 1 |
| 32 | N/S | BRINE VALVE SPRING | 1 |
| 33 | N/S | BRINE VALVE WASHER | 1 |
| 34 | N/S | RETAINING RING | 1 |
| 35 | 20521X304 | BRINE LINE COMPRESSION NUT | 1 |
| 36 | 20521X305 | BRINE LINE FERRULE | 1 |
| 37 | 20521X303 | BRINE LINE BRASS INSERT | 1 |
| 38 | 20521X318 | 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 | 20521X266 | FLOW CONTROL BUTTON 1.5 GPM | 1 |
| | 20521X267 | FLOW CONTROL BUTTON 2.0 GPM | 1 |
| | 20521X268 | FLOW CONTROL BUTTON 2.4 GPM | 1 |
| | 20521X269 | FLOW CONTROL BUTTON 3.0 PM | 1 |
| | 20521X270 | FLOW CONTROL BUTTON 3.5 GPM | 1 |
| | 20521X271 | FLOW CONTROL BUTTON 4.0 GPM | 1 |
| | 20521X272 | FLOW CONTROL BUTTON 5.0 GPM | 1 |
| | 20521X274 | 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 | 20521X406 | 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 | 20521X255 | DRAIN LINE FITTING 90° 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

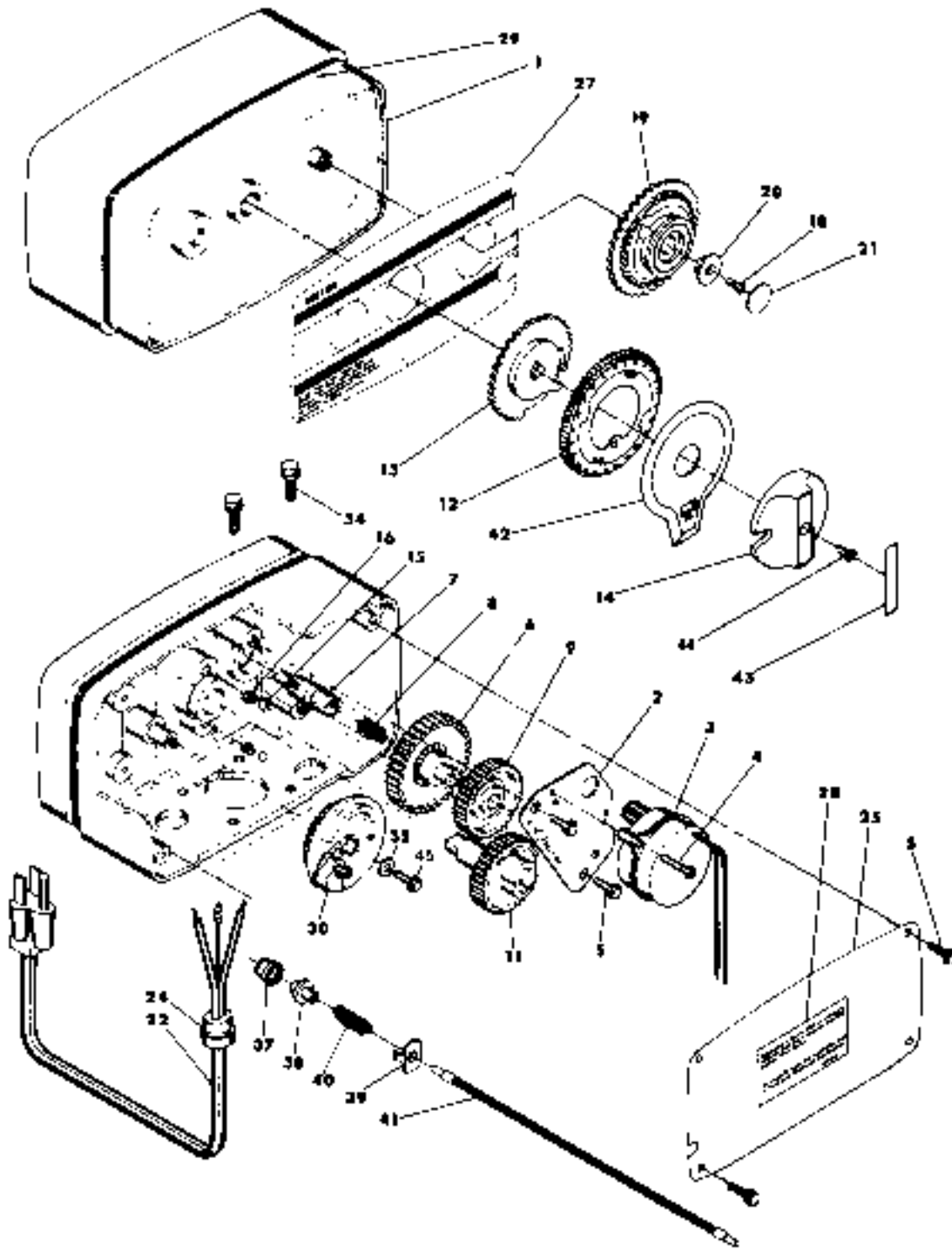


Parts List - 5600 Clock Regeneration Powerhead

| 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

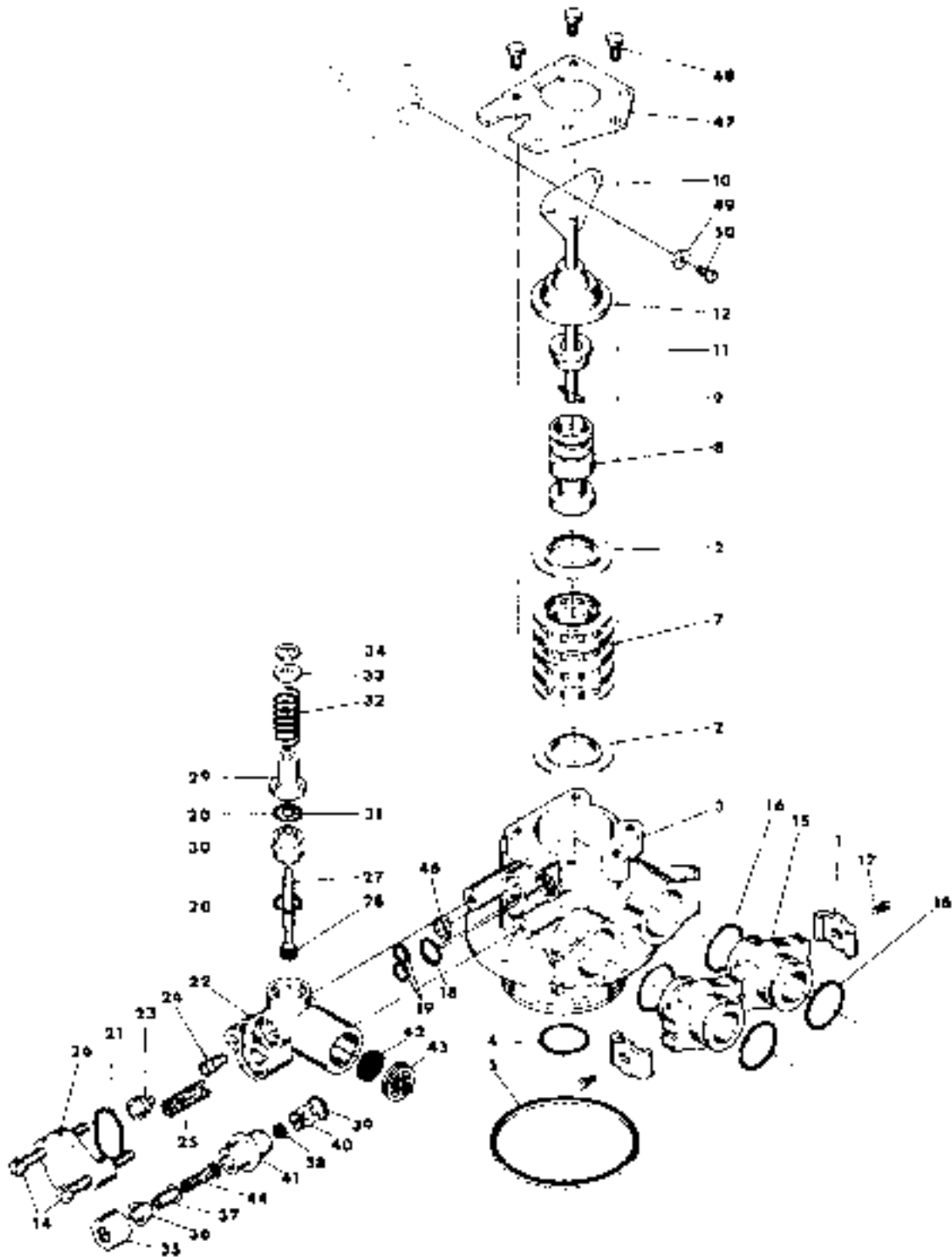
Shaded REF. No. Indicates Assembly or Kit



| 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



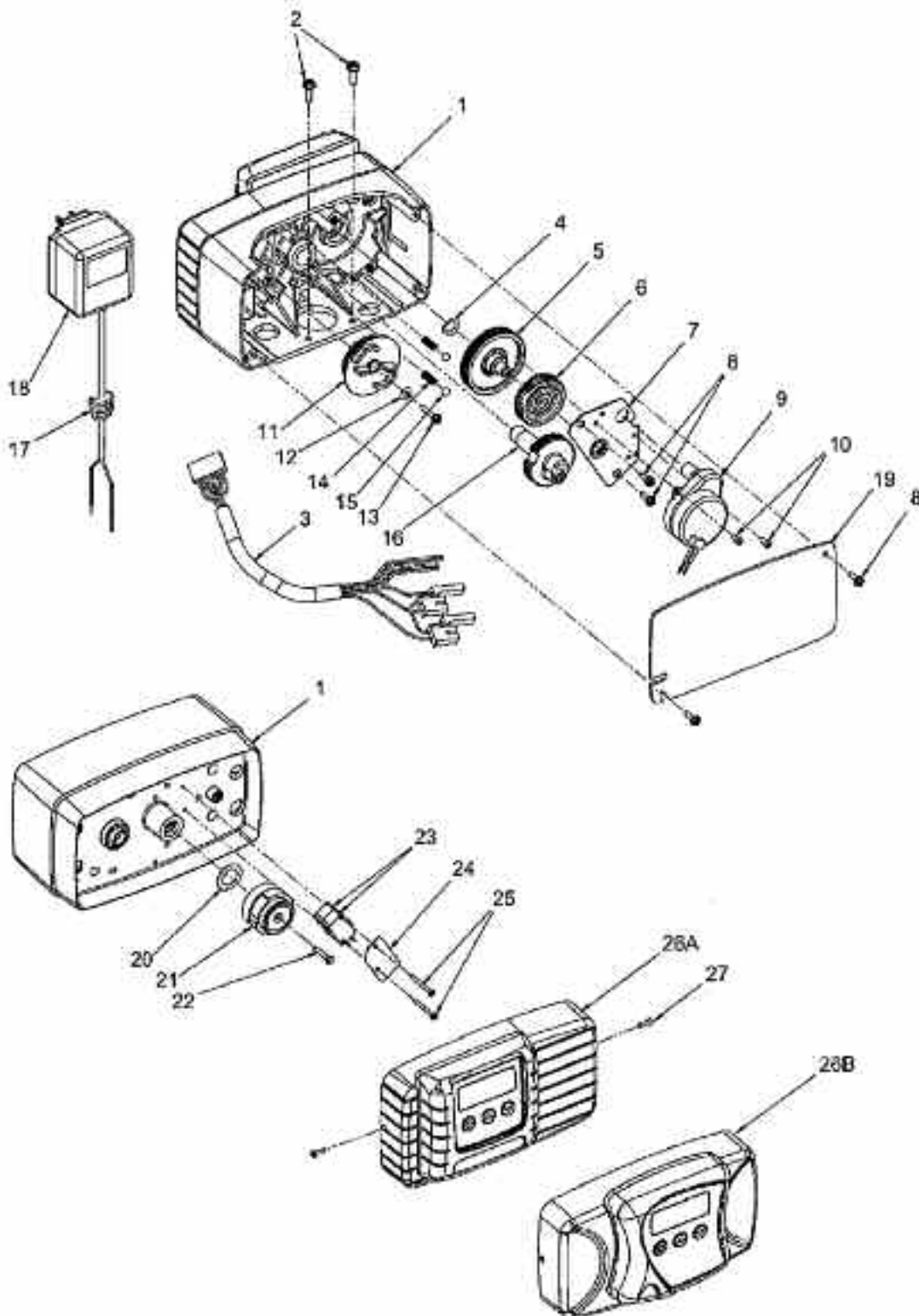
Parts List - 5600SXT Control Valve Assembly

| 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 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 |

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit

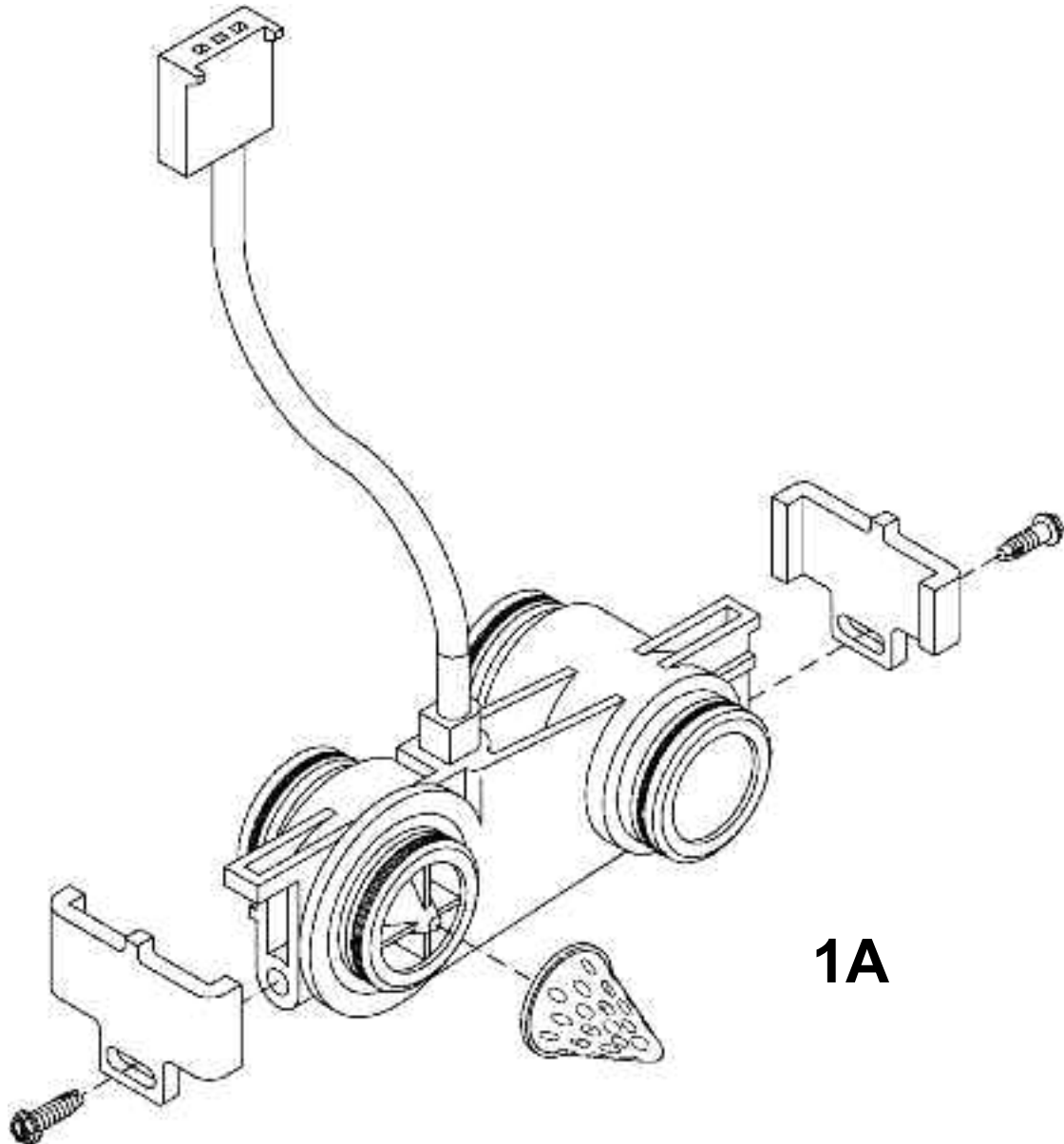


| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|--|------|
| 0 | 20564X100 | 5600SE POWERHEAD ASSY. COMPLETE | 1 |
| 1 | 20564X101 | DRIVE HOUSING | 1 |
| 2 | 20561X134 | DRIVE MOUNT SCREW | 2 |
| 3 | 20564X103 | POWER WIRE HARNESS | 1 |
| 4 | 20251X423 | SPRING WASHER | 1 |
| 5 | 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 TRANSFORMER (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. (BW FIRST LABEL) | 1 |
| 26B | 20564X105 | FRONT PANEL ASSY. (BW FIRST LABEL) | 1 |
| 27 | 20564X124 | FRONT PANEL SCREW | 2 |

N/S = Non Stocked Item

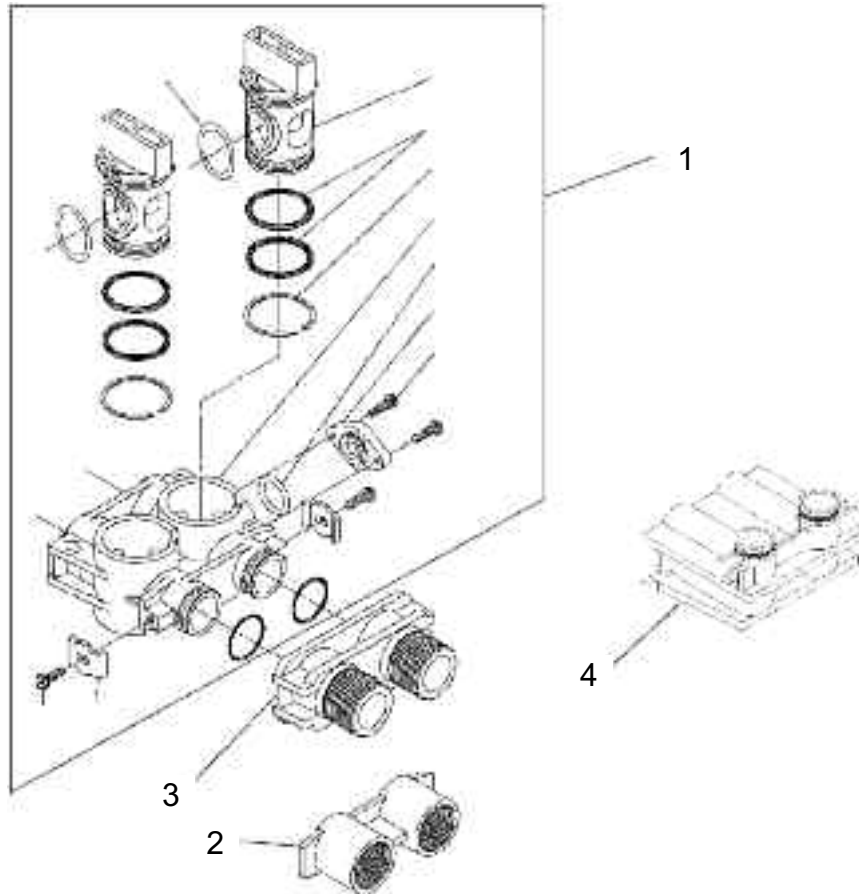
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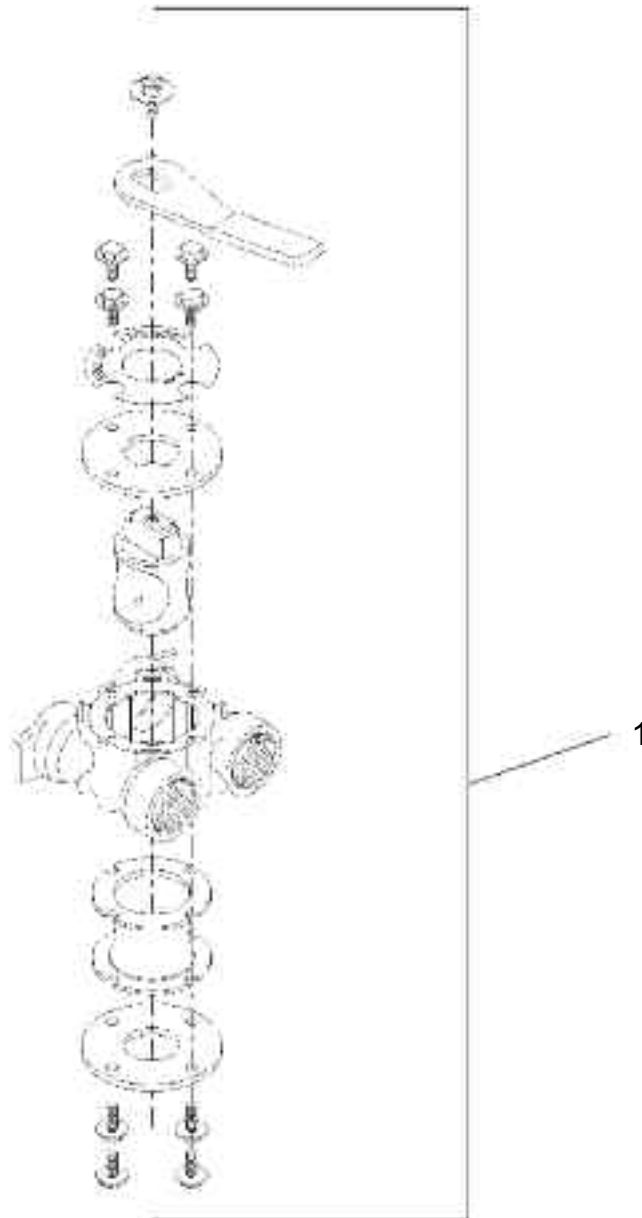


| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|----------------------------------|------|
| 1A | 20564X200 | Meter Assembly, Turbine Complete | 1 |

Parts Diagram - Plastic Bypass Valve



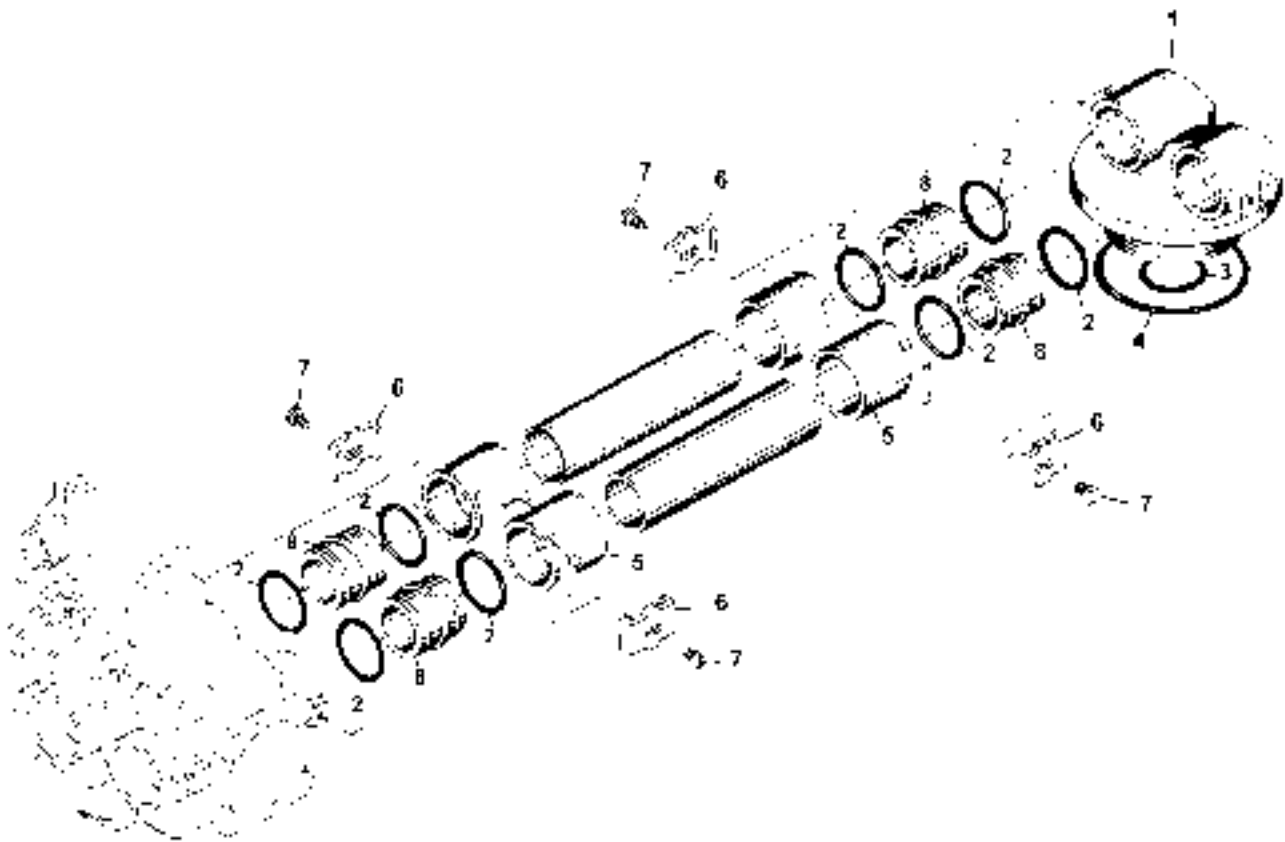
| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|-------------------------------|------|
| 1 | 20561X292 | Plastic Bypass Valve Assembly | 1 |
| 2 | 20561X290 | 1" Yoke - Stainless Steel | 1 |
| | 20561X291 | 1" Yoke - Stainless Steel | 1 |
| 3 | 20561X288 | 1" Yoke - Plastic | 1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

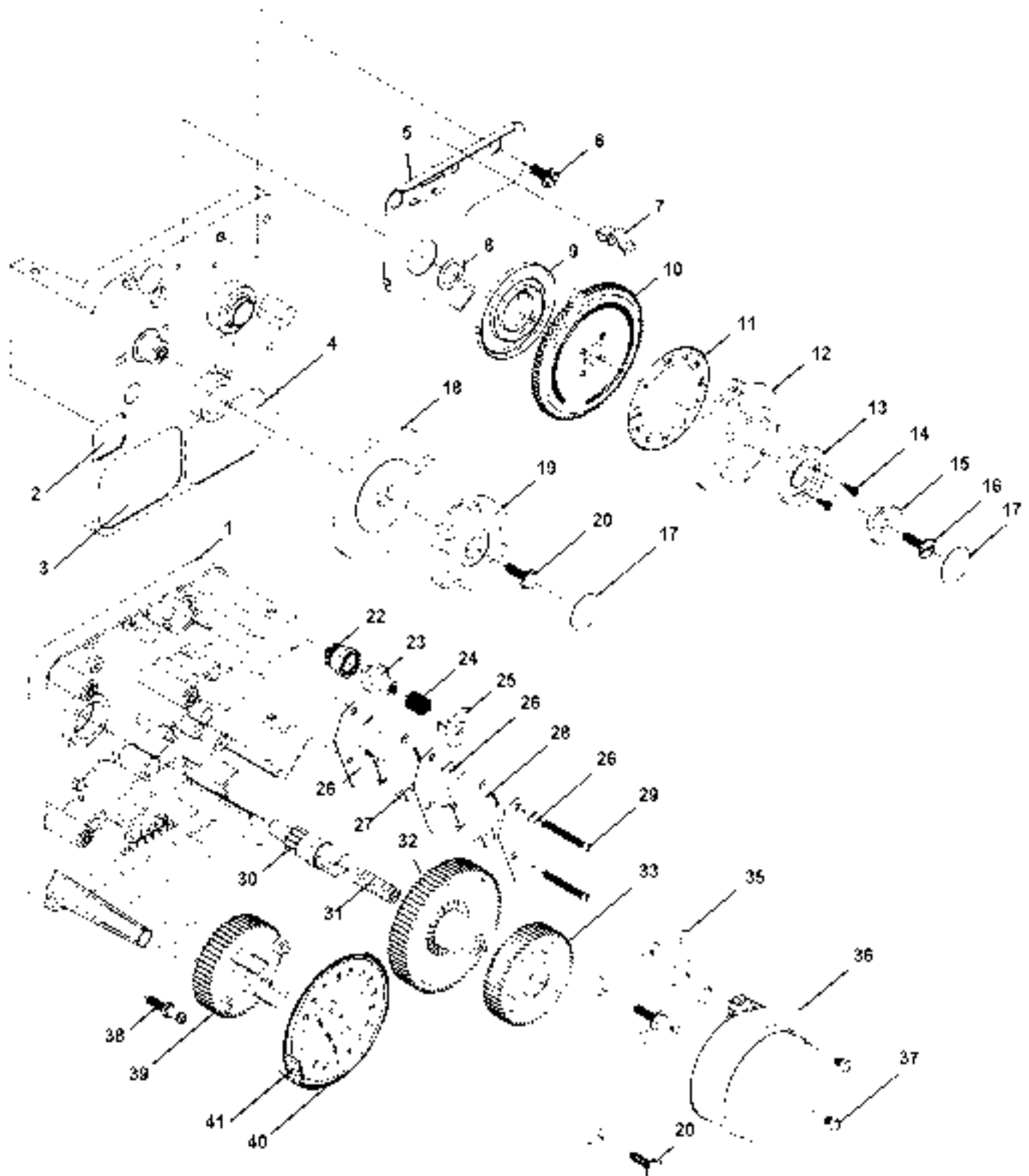


Parts List

| 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 |



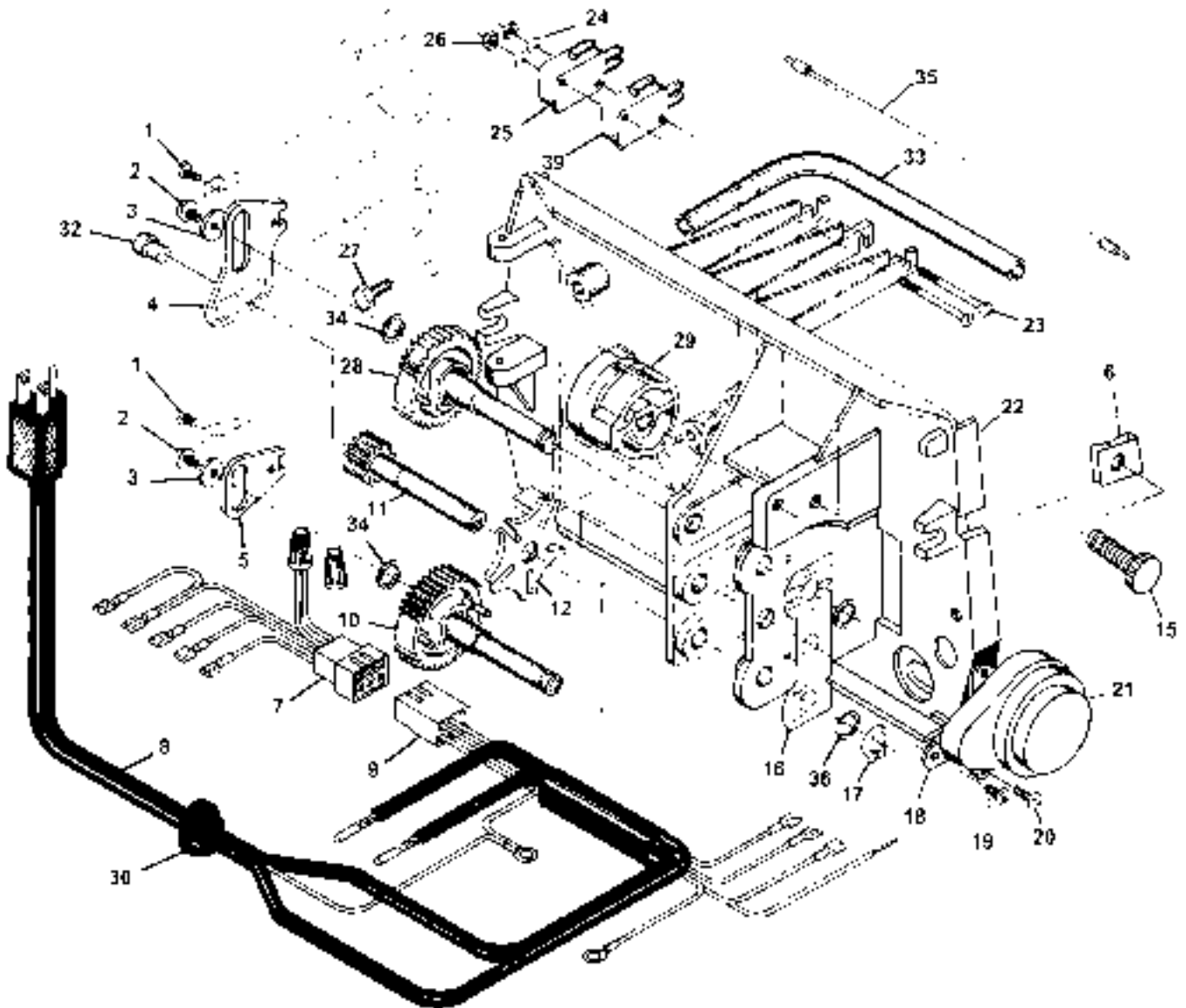


Parts List - 9000 Econominder Timer Assembly

| 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





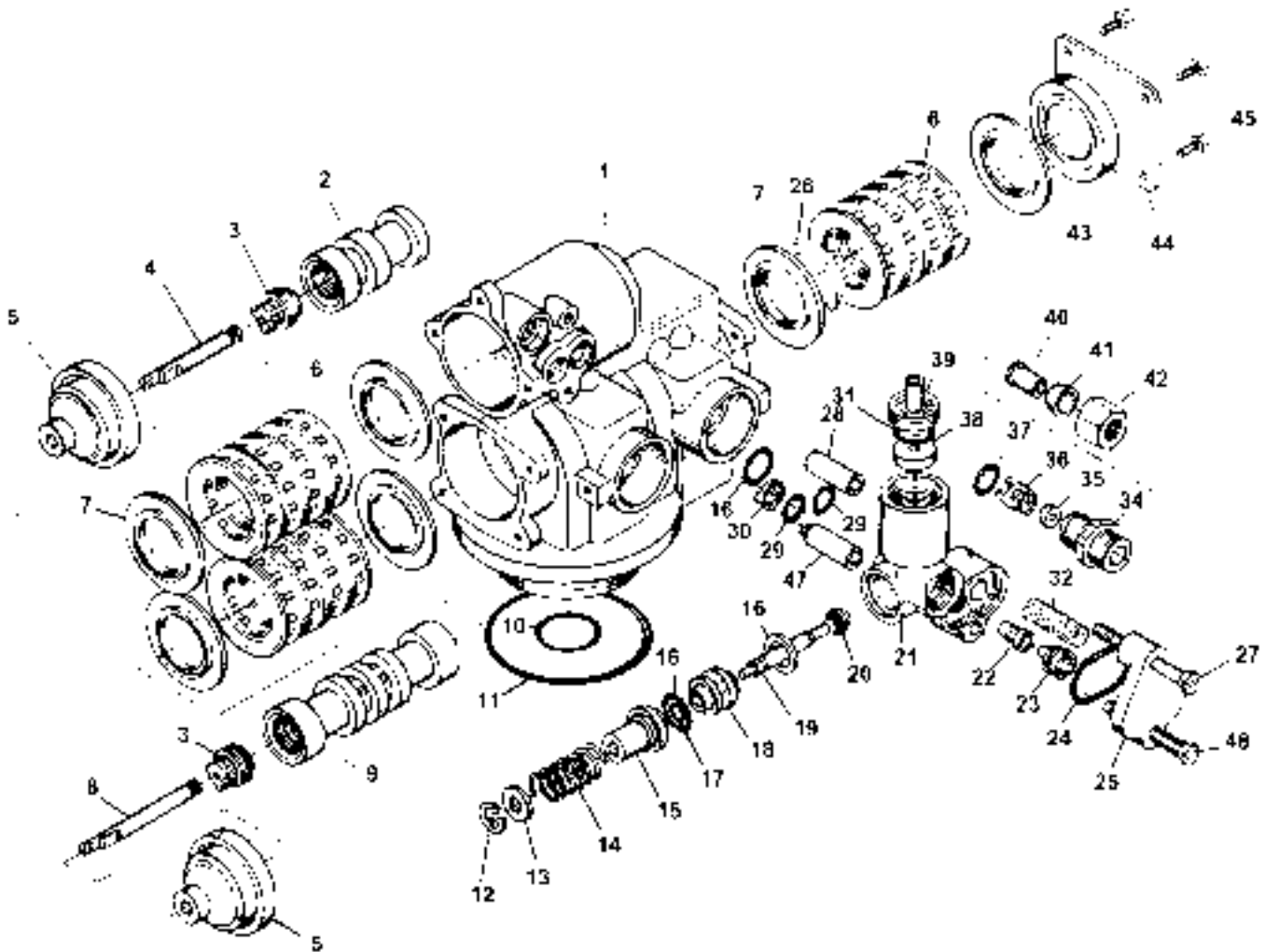
Parts List - 9000 Econominder Drive Assembly

| 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 |

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit





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 |

| REF. NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|---|------|
| 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 |

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit

| 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 |

N/S = Non Stocked Item

Shaded REF. No. Indicates Assembly or Kit

| 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 |

