NOVO™

WATER CONDITIONING PRODUCTS

PRODUCT CATALOG

Water Conditioning Products
For the Plumbing Professional

EXCEPTIONAL VALUE

INNOVATION QUALITY
EXPERTISE EFFICIENCY

A Division of

Canature WaterGroup

NOVO™
WATER CONDITIONING PRODUCTS

EXCEPTIONAL VALUE
INNOVATION QUALITY
EXPERTISE EFFICIENCY

*Our Mission is to provide customers with **EXCEPTIONAL VALUE** for their hard earned dollar.*

We have been in the Water Conditioning Manufacturing & Distribution Business in North America for over 50 Years.

We believe our longevity is a testament to our singular focus on value creation by Efficiently delivering Innovative, High Quality Products - all backed with Expert Support.

*Canature WaterGroup has over **50 years of Innovation, Quality, Efficiency ... and Growth!** Our focus has not changed much since I started the business back in 1968! Our mission has always been to create the most value possible for our customers. As a result, we have built many long-term partnerships over the years. I call them partnerships because that is really what they are. Our success depends on our customers' success.*

I want to thank our customers, old and new, for being great partners and allowing myself and my team to have continued success in an industry we are very passionate about.

Don Fettes, President & CEO

Corporate Capability Brochure Circa 1989

Trade & Commerce Magazine 1977

EXCEPTIONAL VALUE
INNOVATION QUALITY EXPERTISE EFFICIENCY

Continuous Innovation

- Consumer Driven Features That Set You Apart
- Leading High-Efficiency Technology
- Dedicated Product Development Team
- Fast, Efficient Innovation – From Design to Finished Product to Your Door

EXCEPTIONAL VALUE
INNOVATION QUALITY EXPERTISE EFFICIENCY

Superior Quality

- ISO9001:2008 Certified, 1,200,000 sq ft Manufacturing Facility
- World Class Testing Laboratory
- Dedicated Quality Control Team
- 3rd Party Certified Systems & Components

EXCEPTIONAL VALUE
INNOVATION QUALITY EXPERTISE EFFICIENCY

Industry Expertise

- Over 150 Factory Trained Employees
- Largest Field Sales Force in North America
- Customer Service Team Averaging 20+ Years
- Over 15 P. Eng. & PhD's on Staff
- Dedicated Commercial Engineering Division

EXCEPTIONAL VALUE
INNOVATION QUALITY EXPERTISE EFFICIENCY

Higher Efficiency

- Manufacturer-Direct Business Model Eliminates Non-Value Added Activity
- State-of-the Art Manufacturing Ensures High Quality Products at the Lowest Possible Cost

U.S. Head Office
Carmel, IN
9760 Mayflower Park Dr.
Suite 110, 46032

Distribution Centers:
Phoenix, AZ
4655 W McDowell RoadSuite 108, 85035

Pottstown, PA
56 Lightcap Road, 19464

NOVO™
WATER CONDITIONING PRODUCTS

1-877-288-9888
www.novowater.com

Technical Support
supportusa@canaturewg.com
supportcanada@canaturewg.com
Order Desk
ordersusa@canaturewg.com
orderscanada@canaturewg.com

Canadian Head Office
Regina, SK
855 Park St., Regina, SK S4N 6M1

Distribution Center:
Cambridge, ON
490 Pinebush Road,
Unit 1, N1T 0A5

A Division of
Canature WaterGroup

Supporting Plumbing Professionals

We understand that the plumbing trade is not always focused on the changes occurring in the water treatment industry. That is why we make sure that we provide all the important information the trade requires to make profiting from water treatment easy:

- Product & Application Training
- Expert Technical Support
- Field Representation
- Sales Support Material
- Water Testing
- Commercial Expertise
- E-Newsletters
- Knowledgeable Customer Service

Effective Sales & Product Training Program

Novo 'hands on' training programs provide you and your staff with the knowledge needed to properly sell, apply, size, install and service Novo equipment.

Industry Leaders in Customer Service

Novo Field Representatives work with your local plumbing wholesaler to provide you with the best products and support in the industry!

Our Customer Service Team & Commercial Engineering Group has over 250 Years combined Industry Experience.

The Industries Water Conditioning Experts are only ever a 1-800 call away.

Free Professional Marketing Tools

- 9"x 4" Quad-fold Novo Solutions Brochures
- "Protect Your Biggest Investment" In-Home -Sales Tools (Pipe Hangers & Brochures)
- Counter Water Sample Test Kit Display
- Laminated Softener Sizing Guides
- Posters / Banners

NOVO ProAdvantage Program

Turn Opportunity into Profit With a Program That Offers REAL Value!

The **NOVO ProAdvantage Program** is specifically developed for the dedicated plumbing professional who wants to make the most out of the water conditioning segment of their business.

LEVEL ONE BASIC TRAINING

Online Video Training

Complete our simple on-line ***video-based basic training program*** today & we'll give you all the tools you need to get started making the most out of the growing water conditioning market!

- Test Kits
- Sizing Guide
- Sales Materials

UPON COMPLETION WE'LL SEND YOU A *FREE* WATER CONDITIONING STARTER KIT (RETAIL VALUE $50) ...

LEVEL TWO CERTIFIED INSTALLER

Comprehensive Hands-on Training

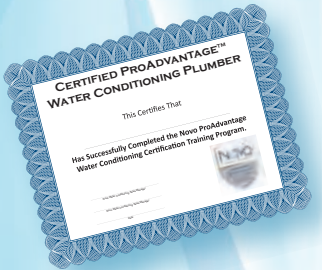
Work with one of Novo's **Regional Sales Managers** to complete the **Level Two Comprehensive Training Program** and get your **Certified Installer Marketing Tool Kit** for **FREE!**

- Certified Uniform Patch
- Vehicle Decals
- Showroom Poster
- Certified Installer Wall Certificate
- And *MORE!* ...

Custom display stand

Water sample kit

Vehicle decal



FREE framed certificates and uniform patches upon completion.

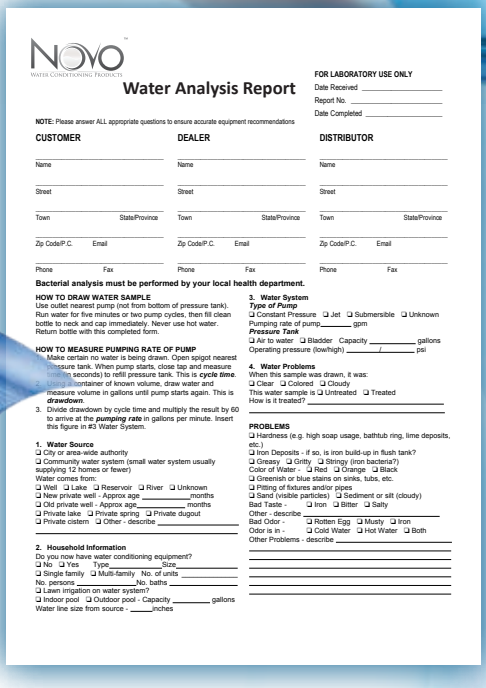
REGISTER TODAY!

www.novowater.com

Free Water Testing Services

Recommending a proper solution starts with a water analysis. Novo labs in Regina, SK, Cambridge, ON, & Carmel, IN can test your water samples for:

1) Hardness
2) Iron
3) Manganese
4) pH
5) Tannins
6) TDS



NOVO
WATER CONDITIONING PRODUCTS

Water Analysis Report

FOR LABORATORY USE ONLY
Date Received _____
Report No. _____
Date Completed _____

NOTE: Please answer ALL appropriate questions to ensure accurate equipment recommendations

CUSTOMER / **DEALER** / **DISTRIBUTOR**

Name
Street
Town State/Province
Zip Code/P.C. Email
Phone Fax

Bacterial analysis must be performed by your local health department.

HOW TO DRAW WATER SAMPLE
Use outlet nearest pump (not from bottom of pressure tank). Run water for five minutes or two pump cycles, then fill clean bottle to neck and cap immediately. Never use hot water. Return bottle with this completed form.

HOW TO MEASURE PUMPING RATE OF PUMP
1. Make certain no water is being drawn. Open spigot nearest pressure tank. When pump starts, close tap and measure time (in seconds) to refill pressure tank. This is ***cycle time***.
2. Using a container of known volume, draw water and measure volume in gallons until pump starts again. This is ***drawdown***.
3. Divide drawdown by cycle time and multiply the result by 60 to arrive at the ***pumping rate*** in gallons per minute. Insert this figure in #3 Water System.

1. Water Source
❑ City or area-wide authority
❑ Community water system (small water system usually supplying 12 homes or fewer)
Water comes from:
❑ Well ❑ Lake ❑ Reservoir ❑ River ❑ Unknown
❑ New private well - Approx age _____months
❑ Old private well - Approx age_____ months
❑ Private lake ❑ Private spring ❑ Private dugout
❑ Private cistern ❑ Other - describe _____

2. Household Information
Do you now have water conditioning equipment?
❑ No ❑ Yes Type_____ Size_____
❑ Single family ❑ Multi-family No. of units _____
No. persons _____No. baths _____
❑ Lawn irrigation on water system?
❑ Indoor pool ❑ Outdoor pool - Capacity _____ gallons
Water line size from source - _____inches

3. Water System
Type of Pump
❑ Constant Pressure ❑ Jet ❑ Submersible ❑ Unknown
Pumping rate of pump_____ gpm
Pressure Tank
❑ Air to water ❑ Bladder Capacity _____ gallons
Operating pressure (low/high) _____/_____ psi

4. Water Problems
When this sample was drawn, it was:
❑ Clear ❑ Colored ❑ Cloudy
This water sample is ❑ Untreated ❑ Treated
How is it treated? _____

PROBLEMS
❑ Hardness (e.g. high soap usage, bathtub ring, lime deposits, etc.)
❑ Iron Deposits - if so, is iron build-up in flush tank?
❑ Greasy ❑ Gritty ❑ Stringy (iron bacteria?)
Color of Water - ❑ Red ❑ Orange ❑ Black
❑ Greenish or blue stains on sinks, tubs, etc.
❑ Pitting of fixtures and/or pipes
❑ Sand (visible particles) ❑ Sediment or silt (cloudy)
Bad Taste - ❑ Iron ❑ Bitter ❑ Salty
Other - describe _____
Bad Odor - ❑ Rotten Egg ❑ Musty ❑ Iron
Odor is in - ❑ Cold Water ❑ Hot Water ❑ Both
Other Problems - describe _____

Water Testing Kits & Sample Bottles

Novo sells a complete line of easy to use test kits so you can accurately test water in the field. Not sure of the proper product application? Give us a call with the results and we'll provide you with a product recommendation.
Water Sample Collection Kits are available at Stocking Wholesalers & include a sample bottle, mailing tube and sample collection instructions.

If you have concerns about the safety (potability) of the water supply we recommend a complete water analysis be conducted. These are usually conducted for a small fee at a State or Provincial Lab.

Operations & Product Development

Toby Hughes P. Eng.
Chief Operations Officer

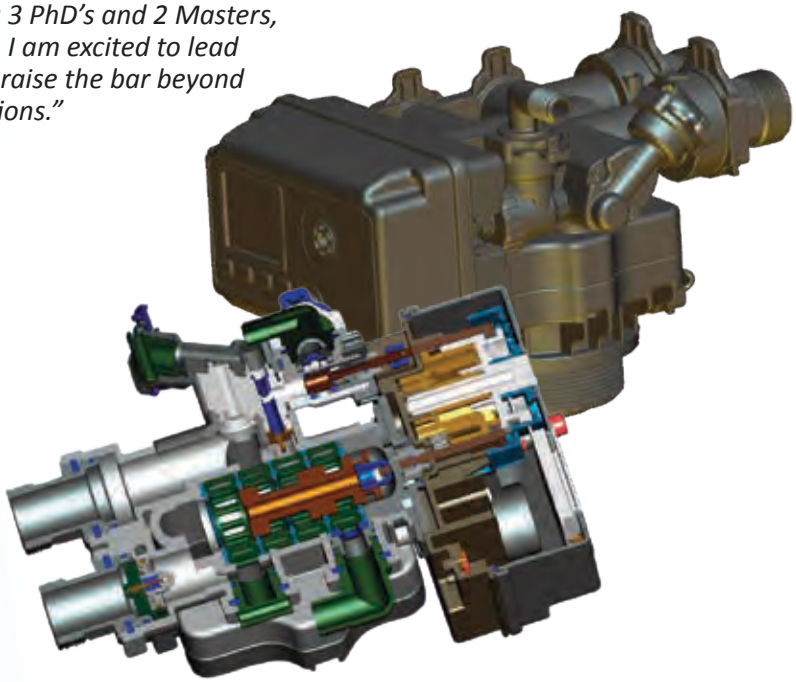
Toby Hughes has managed some of the industries largest water conditioning manufacturing operations as well as toured the facilities of most industry manufacturers across the globe.

Toby brings over 20 years of extensive industry experience to Novo. Toby has managed product development as well as implemented Lean manufacturing, Continuous Improvement and Quality Assurance programs, MRP (Material Requirement Planning) systems to create an efficient, low cost and quality driven manufacturing environment.

"The Novo Product Development Center and manufacturing operations are beyond comparison in our industry. The investment in technology and commitment to leading manufacturing practices & innovation has resulted in higher quality and lower cost products with meaningful 'Installer / Service Driven' features. This all adds up to better value for our customers.

My staff of 17 Professional Engineers, including 3 PhD's and 2 Masters, are some of the brightest minds in the industry. I am excited to lead Novo's Global Engineering and Operations and raise the bar beyond industry standards and our customers expectations."

Toby Hughes, P.Eng., Chief Operations Officer



Control Valves

Novo NSF/ANSI 44 Certified control valves meet or exceed the most vigorous industry performance and reliability standards. Familiar piston, seal and spacer design has been enhanced to improve performance and product life.

The addition of a piston stabilizer reduces the side load force between the piston rod and end plug seal as it firmly guides the piston while it travels up and down. An added rib on the seal improves the sealing pressure so that the valve can withstand over 700psi! These are just a few of the design features that make Novo valves more reliable and and better performing. Learn more about the 'Dealer-driven' control valve design features on page 13.

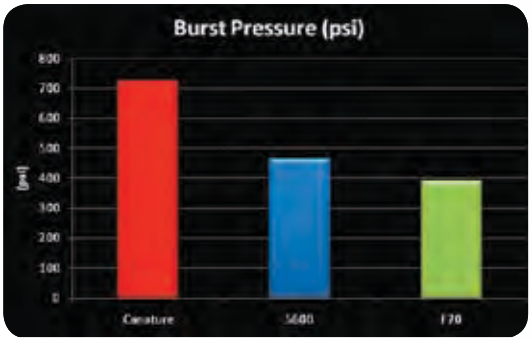
NSF Certified chloramine resistant rubber seals

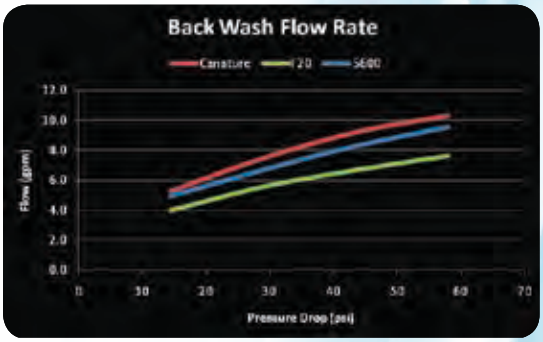
Added Rib Improves Seal

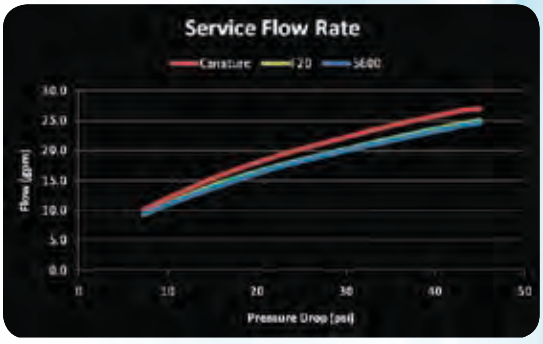
Piston Stabilizer

Novo NSF/ANSI 44 Certified control valves meet or exceed competitive equivalents in all four key measures:
1) Service Flow Rate, 2) Back Wash Flow Rate, 3) Burst Pressure and 4) Cycle Testing.

NSF COMPONENT







Fiberglass Tanks

Novo NSF/ANSI 44 Certified filament wound tanks are not only strong and reliable but the finish is unparalleled in the industry. No need for a tank jacket (although we offer those too) with the neatly wound, high gloss finish. Strict tank height control measures mean no surprises when installing a duplex system.

The tanks are made in the World's first and only fully automated, robotic manufacturing process.

Assembly, Testing & Distribution

All water softeners and whole-house filters are engineered, assembled, tested and and distributed from our North American Regional facilities. All control valves are 100% wet tested and air tested before leaving the factory. Control valves are then set up to engineering specifications for the particular unit, air tested a second time and then assembled into the finished product. All assembled products are packaged in durable, double walled high impact cardboard to ensure products arrive undamaged.

Mike Cummings assembling a softener in Regina, SK facility

Quality Assurance Department

Novo employs a strict and formalized quality control program. The 925,000 sq. ft. Shanghai Manufacturing facility is ISO9001:2008 Quality Assurance and ISO 14001:2004 Environmental Management Systems standards certified.

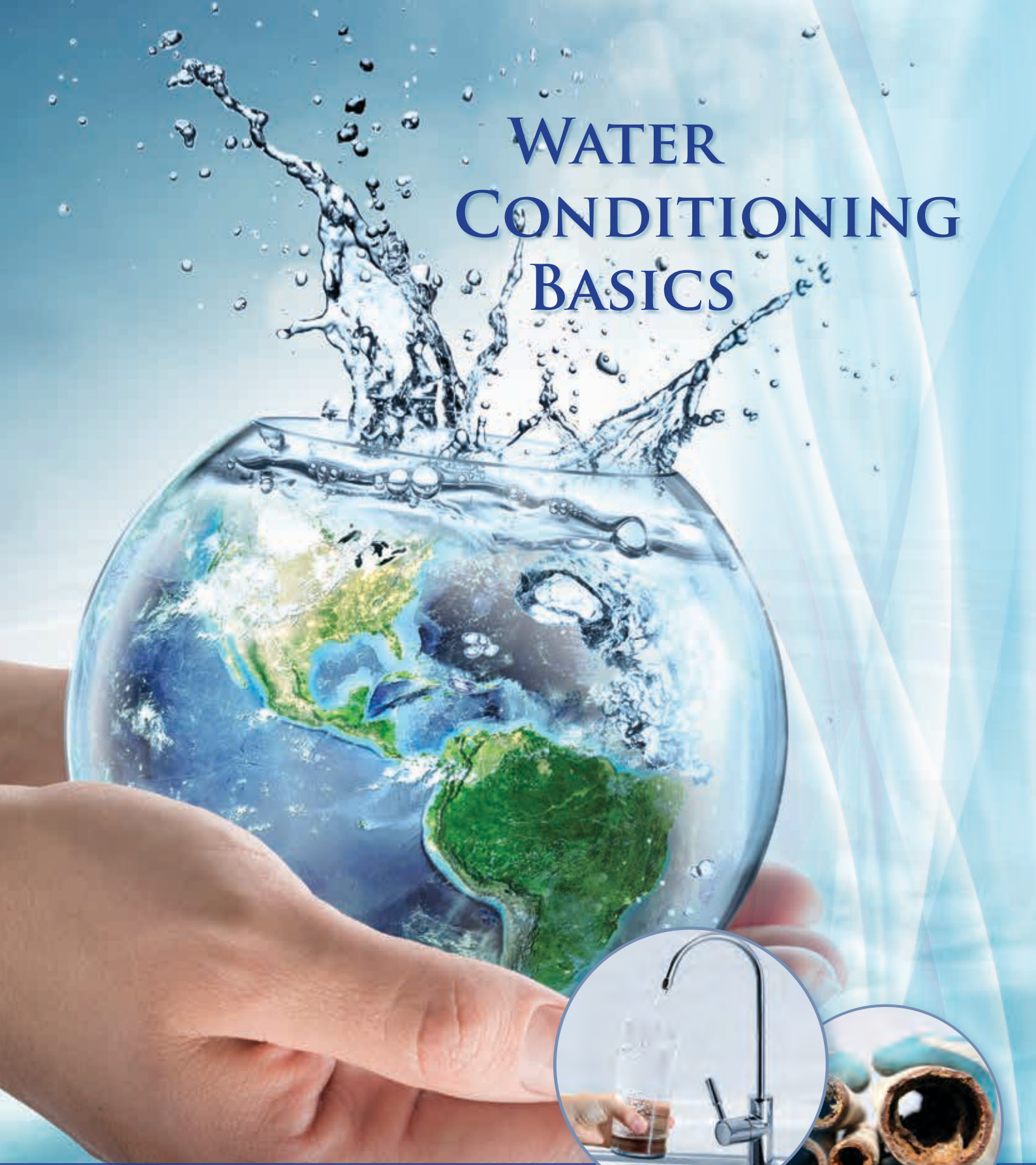
Quality Control systems:

- Document Management
- Receiving Inspection
- In-process Quality Control
- Final Inspection
- Engineering Change Orders
- First Piece & Production Part Approval
- Test Equipment Calibration
- Statistical Process Control
- Vendor Quality Management
- Customer Feedback System

World Class Testing Laboratory

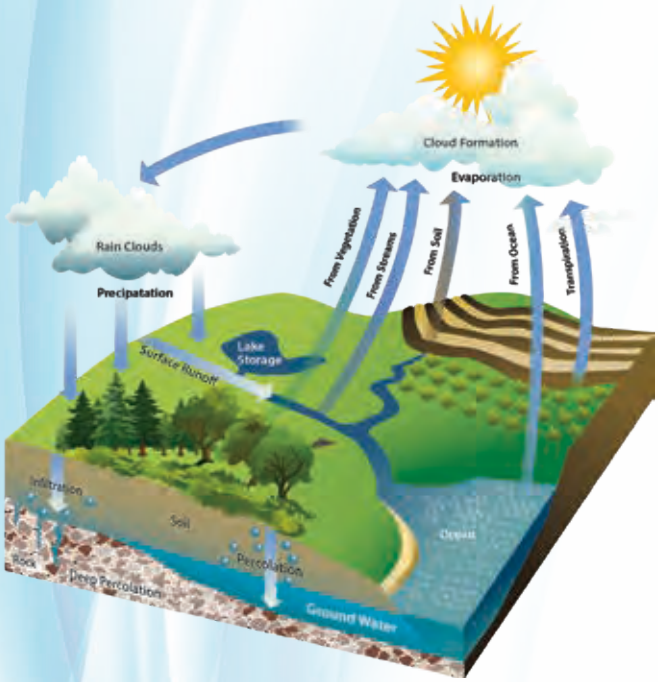
- **Burst Testing:** High pressure testing of tanks and valves to determine the maximum burst strength.
- **Cycle Pressure Testing:** High pressure cycling testing to simulate the fatigue strength of the tanks and valves over their life.
- **Flow Bench:** Precisely measure flow rates and pressure drops.
- **Reliability Testing:** Continuously cycling the valve through regeneration while taking flow measurements and counting the number of cycles.
- **Computer Aided Optical Comparator:** Used for precise measurement of very small details such as fillets or radius's.
- **Coordinate Measuring Machine (Cmm):** Used for precise geometrical x, y, and z measurement coordinates.
- **3d Prototype Printer:** Makes 3D models for rapid prototyping.
- **Chemical Analysis Laboratory:** Complete chemical analysis of raw materials including metals, plastics and media to ensure quality and integrity.

Water Conditioning Basics



The Hydrologic Cycle
Guidelines for Solving Water Problems, Terminology, Water Analysis, Sizing Parameters

The Hydrologic Cycle



The total area of the earth is composed of 2/3 water, making it one of the most plentiful and most important materials available. Without potable water, mankind cannot survive.

Pure water consists of two parts hydrogen and one part oxygen, chemically combined to form pure water.

The only pure source of water is the earth's atmosphere (sometimes called the hydrological cycle). Impure water from the earth's oceans, lakes, rivers and surface evaporates into the atmosphere, then condenses to form rain droplets which are totally pure. The above process operates basically the same as a man-made still, which evaporates all the impurities from the water, then returns the condensates into pure water. If this process did not exist, there would likely not be enough potable water to support the earth's population.

> "The only pure source of water is the earth's atmosphere."

The pure water vapor, which forms in the earth's atmosphere (clouds), begins to pick up impurities. As it begins to fall to earth in the form of rain, snow, etc., impurities are immediately absorbed. These impurities may be dust, micro-organisms, gases, etc. - at least a little of everything found in the atmosphere on the way to the surface.

The rain or snowfall finds its way to various sources of water supplies on the earth's lakes, rivers, oceans or it may soak into the ground and become a part of an underground stream or lake.

Characteristics of Various Water Sources

Rain Water

After the water picks up impurities in the atmosphere and percolates through the ground, it comes into contact with carbon dioxide and then forms carbonic acid. This dissolves some of the mineral content of the soil or rock it contacts, thus adding these minerals to the water.

Surface Water

Water from streams may be turbid due to the presence of silt, clay, etc. However, in larger surface water, a greater amount of self-purification takes place through aerobic digestion, plant life, fish, etc. and the quality of the water could change to a great degree.

Ground Water

Normally picks up the minerals it flows through. As a general rule, water from deep wells contains a higher mineral content and is less likely to contain organics or turbidity. Water from shallow wells is usually lower in mineral content and may be subjected to pollution or other bacteria which is available from various sources nearby (e.g. spring run-off through forests and hills, plants, industrial wastes, etc. which will all pass various bacteria into the water).

Impurities

Impurities in water are divided into two classifications:

1. Dissolved Solids

Those which naturally dissolve into water. NOTE: Gases may also dissolve into water unless they combine chemically with other impurities. They will be released into the atmosphere upon boiling and are not truly classified as dissolved solids. Upon evaporation, only the dissolved solids would remain in the actual mineral form and then can be analyzed by actual weight of the various elements.

2. Suspended Solids

Consist of clay, mud, silt, etc. and will not dissolve into water naturally but remain as such in their present state.

Water treatment and pollution control is one of the largest and most important industries in the modern day world. As can be seen from the preceding information, water treatment is a very broad and varied field and chemical analysis of certain water supplies is virtually impossible to completely break down. In time, modern man may discover additional information regarding the field of water treatment and the entire cycle of the earth's largest and most important single resource.

The following sections will attempt to clarify some of the more common problems and solutions presently available.

Guidelines for Solving Water Problems

PROBLEM	SYMPTOM	CAUSE	CORRECTIVE EQUIPMENT
Hard Water	Spotting on dishes and glassware; scale on inside of water heater, pipes and water-using appliances; soap curd and bathtub ring; clothes look gray and dingy.	Calcium and magnesium in water, measuring 1.0 gpg or more.	Water Softener (Max. Hardness 100 gpg) (Max. Clear Water Iron 1.5 ppm)
Clear Water Iron (Ferrous)	Yellow, brown or rusty stains on plumbing fixtures, water-using appliances and fabrics; metallic taste in foods and beverages; water is clear when drawn from the faucet but oxidizes when exposed to air, then changes color ranging from yellow to brown.	Iron in the water measuring 0.3 ppm or more.	0.3-1.5 ppm Water Softener. 1.5-7.5 ppm SIM Specialty System Softener. 1.5-30 ppm Chemical Free Iron Filter (Note 1).
Red Water Iron (Ferric)	Same symptoms as Clear Water Iron but iron has already oxidized and has a yellow to rust color when drawn from the faucet.	Iron in the water measuring 0.3 ppm or more.	0.3-30 ppm Chemical Free Iron Filter (Note 1). 0.3-10 ppm Iron & Sulfur Filter.
Bacterial Iron	Same symptoms as Clear & Red Water Iron but can have clumps or balls that may foul plumbing lines and other water-using appliances; particularly noticeable as a yellow to reddish slime in toilet flush tanks.	Iron bacteria are a group of bacteria which thrive in ironbearing water, utilizing iron as an energy source. This bacteria is not a health hazard.	Chemical Free Iron Filter (Note 1). Chemical feed pump feeding chlorine followed by a Multimedia Filter (Note 3).
Manganese	Blackish stain on fixtures and laundry; manganese content above 0.05 ppm causes stains.	Interaction of carbon dioxide or organic matter with manganese bearing soils. Usually found in combination with iron.	0.05-1.0 ppm Chemical Free M Iron Filter (Note 1). 1.0-2.0 ppm Neutralizing Filter followed by Iron & Sulfur Filter (Note 2).
Acid Water	Blue/green or rusty stains and corrosion of plumbing fixtures and other water-using appliances; pitting of porcelain and enamel fixtures and dishes. Pin holes in copper plumbing lines.	Generally associated with water with a pH value of less than the neutral 7.0.	pH 6.0-6.9 Neutralizing Filter. pH 4.0-6.9 Chemical Feed Pump feeding soda ash. Consult our Customer Service Dept.
Aggressive/Corrosive Water	Same symptoms as Acid Water but pH is 7.0 or higher.	Alkalinity and carbon dioxide or high dissolved oxygen in water. Electrolysis - two dissimilar metals in plumbing lines.	Consult our Customer Service Dept.
Hydrogen Sulfide	Rotten egg taste and/or odor. Turns copper plumbing lines black. Very corrosive.	Hydrogen sulfide is a dissolved gas found in some water supplies.	0.1-3.0 ppm Chemical Free Iron Filter or Iron & Sulfur Filter. 3.0-15 ppm Chemical Feed Pump feeding chlorine followed by a Multimedia Filter (Note 3).
Marshy, metallic or chlorine taste and/or odors	Objectionable tastes and/or odors other than hydrogen sulfide.	Dissolved minerals or gases; organic contamination or chlorination.	Activated Carbon Filter for whole house water supply or Taste & Odor Cartridge Filter for individual faucets.
Turbidity (Sand/ Sediment)	Foreign particles, dirty or cloudy water.	Tiny suspended particles that are the result of water main scale or silt. Private wells often contain sand or clay.	Turbidity Filter for whole house water supply or a Sediment Cartridge Filter for individual faucets.
Tannins	Yellow or brown tint or cast in water supply; tannins measuring 0.5 ppm or higher may cause staining and/or interference with various water treatment processes.	Result of decaying vegetative matter.	Organic Color Removal Filter. Consult our Customer Service Dept.

Note 1 - Water must have a minimum pressure of 20 psi, pumping rate of 5 gpm and a pH of 6.5 or higher for proper operation. Most water supplies contain calcium and magnesium which are not removed by an iron filter. We recommend following an iron filter with a water softener.
Note 2 - Oxidation of manganese is more pH dependent than iron. Therefore a pH of 8.2 or higher must be maintained. If the manganese level is >2.0 ppm or bacterial iron is present, consult our Customer Service Department.
Note 3 - This system also requires a retention tank to allow adequate contact time (minimum 20 minutes). An optional activated carbon filter for the whole house water supply or a taste & odor cartridge filter for individual faucets may be installed to remove any objectionable taste or odor.

Terminology

Grains per Gallon - gpg

1/7000 of a pound - normally used in relation to hardness.

Parts per Million - ppm

One part dissolved material in one million parts of water. Used as a measurement for iron, manganese, TDS, hydrogen sulfide, chlorides, sulfates and tannins.

Milligrams per Liter - mg/l

For our purpose, same as ppm. Normally used for a more accurate measurement or where small quantities of certain elements cause big problems in relation to iron, manganese, sulfur, nitrates and silica.

Converting gpg (US Gallon) to ppm or mg/l

1 gpg = 17.1 ppm (mg/l)

Total Dissolved Solids - TDS

The weight of solids, per unit volume of water, which are in true solution. Can be determined by the evaporation of a measured volume of filtered water and determination of the residue weight. A common alternative method to determine TDS is to measure the conductivity of water.

Hardness

A characteristic of natural water due to the presence of dissolved calcium and magnesium. Water hardness is responsible for most scale formation in pipes and water heaters and forms insoluble “curd” when it reacts with soaps. Hardness is usually expressed in grains per gallon (gpg), parts per million (ppm) or milligrams per liter (mg/l), all as calcium carbonate equivalent.

Ferric Iron

Iron that is oxidized in water and is visible. Also called red water iron.

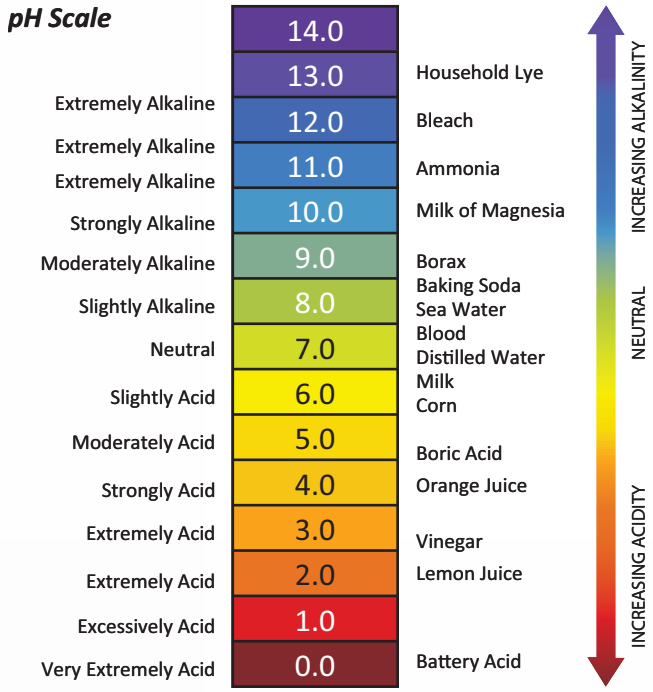
Ferrous Iron

Iron that is dissolved in water. Also called clear water iron.

pH

pH is a measure of the intensity of the acidity or alkalinity of water on a scale from 0 to 14, with 7 being neutral. When acidity is increased, the hydrogen ion concentration increases, resulting in a lower pH value. Similarly, when alkalinity is increased, the hydrogen ion concentration decreases, resulting in higher pH.

The pH value is an exponential function so that pH 10 is 10 times more alkaline than pH 9 and 100 times more alkaline than pH 8. Similarly, a pH 4 is 100 times more acid than pH 7.



Note: A complete glossary can be found in the Water Conditioning Glossary section.

Water Analysis

For correct sizing and application of water conditioning equipment, a water analysis is required. A basic water analysis includes tests for the following:

- **Hardness**
- **Iron**
- **Manganese**
- **pH**
- **TDS (Total Dissolved Solids)**

Water samples should be taken as near the source as possible and represent the average water condition. Clean containers must be used. When performing the analysis, the test equipment must be clean and rinsed with the test water and the test water should be between 68°F and 77°F (20°C and 25°C). Use rubber stops as supplied. Do not use your fingers as contaminants and acids could affect test results.

Additional tests can be performed for tannins and hydrogen sulfide (H2S). The test for H2S must be performed on-site for accurate results. Special tests can be performed for chlorides, sulfates and alkalinity by specified laboratories. If it is suspected the water supply is contaminated with coliform bacteria or nitrates, a sample must be collected in an approved sterilized container and submitted to a government approved laboratory. Iron bacteria will not be detected with the standard iron test and can be tested for by a government approved laboratory.

If the TDS is over 1000 ppm and hardness is less than 30% of the TDS, a complete water analysis should be performed to discover what other contaminants exist in the water.

If a contaminant exceeds the limits detectable by any test method, the raw water sample can be diluted with distilled water until a reading can be taken. A calculation must then be performed to determine the actual degree of contamination. All test chemicals are subject to age and extreme temperatures. Proper storage techniques and expiry dates should be observed.

The Water Analysis Report shown on the next two pages must be completed accurately to determine the correct equipment to recommend for the water problem(s) being experienced.

Hard Water

Water with a total hardness of 1.0 gpg or more as calcium carbonate equivalent.

Less than 1.0 gpg	Soft
1.0 - 3.5 gpg	Slightly hard
3.5 - 7.0 gpg	Moderately hard
7.0 - 10.5 gpg	Hard
More than 10.5 gpg	Very hard

Hardness

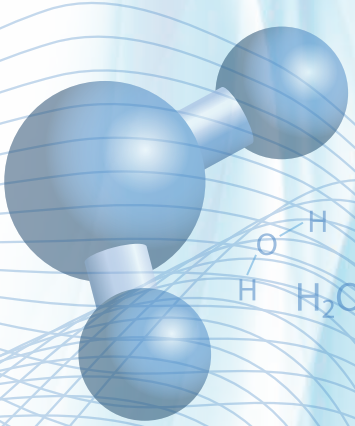
A characteristic of natural water due to the presence of dissolved calcium and magnesium. Water hardness is responsible for most scale formation in pipes and water heaters and forms insoluble “curd” when it reacts with soaps. Hardness is usually expressed in grains per gallon (gpg), parts per million (ppm) or milligrams per liter (mg/l) all as calcium carbonate equivalent.

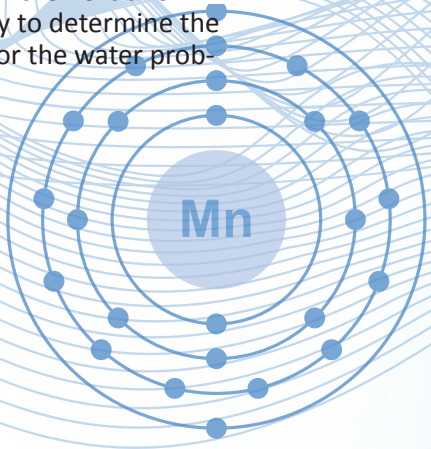
Soft Water

Any water which contains less than 1.0 gpg (17.1 mg/l) of hardness minerals, expressed as calcium carbonate equivalent.

Softened Water

Any water that is treated to reduce hardness minerals, expressed as calcium carbonate equivalent.





NOVO™
WATER CONDITIONING PRODUCTS

FOR LABORATORY USE ONLY

Date Received _____

Report No. _____

Date Completed _____

Water Analysis Report

NOTE: Please answer ALL appropriate questions to ensure accurate equipment recommendations

CUSTOMER	DEALER	DISTRIBUTOR
Name	Name	Name
Street	Street	Street
Town State/Province	Town State/Province	Town State/Province
Zip Code/P.C. Email	Zip Code/P.C. Email	Zip Code/P.C. Email
Phone	Phone	Phone

Analysis for Bacteria, Arsenic, Lead and other heavy metals must be performed by your local health department or an independent laboratory.

HOW TO DRAW WATER SAMPLE

Use outlet nearest pump (not from bottom of pressure tank). Run water for five minutes or two pump cycles, then fill clean bottle to neck and cap immediately. Never use hot water. Return bottle with this completed form.

HOW TO MEASURE PUMPING RATE OF PUMP

1. Make certain no water is being drawn. Open spigot nearest pressure tank. When pump starts, close tap and measure time (in seconds) to refill pressure tank. This is ***cycle time***.
2. Using a container of known volume, draw water and measure volume in gallons until pump starts again. This is ***drawdown***.
3. Divide drawdown by cycle time and multiply the result by 60 to arrive at the ***pumping rate*** in gallons per minute. Insert this figure in #3 Water System.

1. Water Source

❑ City or area-wide authority

❑ Community water system (small water system usually supplying 12 homes or fewer) Water comes from:

❑ Well ❑ Lake ❑ Reservoir ❑ River ❑ Unknown

❑ New private well - Approx age: _____ months

Depth of Well: _____

❑ Old private well - Approx age: _____ months

❑ Private lake ❑ Private spring ❑ Private dugout ❑ Other - describe:

_____

_____

2. Household Information

Do you now have water conditioning equipment?

❑ No ❑ Yes Type: _____ Size:_____

❑ Single family ❑ Multi-family No. of units:_____

No. persons: _____ No. baths: _____

Do baths have high flow demand? ❑ No ❑ Yes

❑ Lawn irrigation on water system? ❑ Indoor pool

❑ Outdoor pool - Capacity:_____ gallons

Water line size from source:_____inches

3. Water System

Type of Pump

❑ Constant Pressure ❑ Jet ❑ Submersible ❑ Unknown

Pumping rate of pump: _____ gpm

Pressure Tank

❑ Air to water ❑ Bladder Capacity:_____ gallons

Operating pressure: (low/high)_____ /_____ psi.

4. Water Problems

When this sample was drawn, it was:

❑ Clear ❑ Colored ❑ Cloudy

This water sample is ❑ Untreated ❑ Treated

How is it treated? (List Brand and Model #'s): _____

_____

PROBLEMS

❑ Hardness (e.g. high soap usage, bathtub ring, lime deposits, etc.)

❑ Iron Deposits - if so, is iron build-up in flush tank?

❑ Greasy ❑ Gritty ❑ Stringy (iron bacteria?)

Color of Water - ❑ Red ❑ Orange ❑ Black

❑ Greenish or blue stains on sinks, tubs, etc.

❑ Pitting of fixtures and/or pipes

❑ Sand (visible particles) ❑ Sediment or silt (cloudy)

Bad Taste - ❑ Iron ❑ Bitter ❑ Salty

Other - describe: _____

_____

Bad Odor: ❑ Rotten Egg ❑ Musty ❑ Iron

Odor is in: ❑ Cold Water ❑ Hot Water ❑ Both

Other Problems - describe:

_____

_____

_____

_____

5. Standard Laboratory Tests

Total Hardness: _____ gpg

Iron: _____ mg/l

Manganese: _____ mg/l

pH: _____

Total Dissolved Solids: _____ mg/l

6. Other Tests

Hydrogen Sulfide: _____ mg/l
(test must be performed on-site)

Tannins: _____ mg/l

If TDS is over 1000 ppm and hardness is less than 30% of the TDS, a total water analysis is required.

7. Explanation of Water Analysis

A. Total Hardness
This indicates the efficiency or workability of the water for everyday household use. Water in excess of 3 gpg is generally considered hard and should be softened.

B. Iron
Over 0.3 ppm of iron will cause discoloration of water and staining. Fully automatic water conditioners will correct this problem. Some extreme water situations may require filtration.

C. Manganese
Manganese is frequently encountered in iron-bearing water but to a lesser degree. Manganese is similar to iron in that it stains and clogs pipes and valves. Concentrations as low as 0.05 mg/l of manganese can cause problems.

D. pH
A scale used to measure the acidity or alkalinity of water. A pH reading below 6.5 normally indicates highly corrosive water and neutralizing equipment should be used. A pH reading in excess of 8.5 could indicate contaminated water and generally requires bacteriological and chemical analysis.

E. Hydrogen Sulfide (H_2S)
Testing for hydrogen sulfide should occur on-site. Hydrogen sulfide imparts a rotten egg odor and taste that makes water all but undrinkable and also promotes corrosion. In addition, it can foul the resin bed of a water conditioner. The use of a water conditioner is not recommended unless the water is first treated for the removal of hydrogen sulfide.

F. Total Dissolved Solids (TDS)
A measure of the soluble solids present in the water.

G. Tannins
Tannic acid is formed by decaying organic matter. Tannins alone are not harmful, although they can affect the proper operation of a chemical free iron filter.

RECOMMENDATIONS

Recommendations are based entirely on the information supplied and the water sample chemistry results at the time of analysis.

_____

_____

_____

_____

_____

Recommended by: _____

Date: _____

Return completed form to:

A Division of Canature WaterGroup

NOVO™ Water Conditioning Products

Sizing Parameters

Water Softener Sizing is Based On

- 60 gallons per person per day - total household use
- Three day minimum between regenerations
- Capacity between regenerations at factory salt settings or gallons capacity
- Number of people x 60 gallons per person x gpg of hardness x 3 days = capacity required between regenerations
- Consult your factory representative for water that is 75 gpg or harder

Water Softener/Iron Removal Combination Units

- This unit should be recommended only when dictated by special circumstances or the needs of the customer.
- The customer should be made aware that a separate iron filter and softener is preferred because it is a more efficient way to deal with the water.
- When recommending a combination unit, follow the guidelines provided in the specifications.

Water Consumption for Regeneration

The volume of water used during the regeneration process of a water softener will vary depending on:

- Amount and type of resin
- Cycle time settings
- Flow controllers
- Salt settings
- Tank diameter

Generally, water usage for regeneration is based on the cubic feet of resin per water softener from a low of 30 gallons of water per cubic foot, up to a normal of 75 gallons of water per cubic foot, to a maximum of 100 gallons of water per cubic foot. Manufacturing specs and settings for each model size should be checked to verify exact amounts.

Three Day Sizing Method

The three day sizing method is used for the following reasons:

1. To determine the size of the water conditioner to be used
2. To allow for reserve capacity between regenerations so the customer does not run out of soft water
3. To provide the most economical operation cost

Conversion Factors & Compensated Iron & Manganese

Total Hardness converted from ppm or mg/l to Grains/US Gallon (gpg)
ppm (mg/l) ÷ 17.1 = gpg

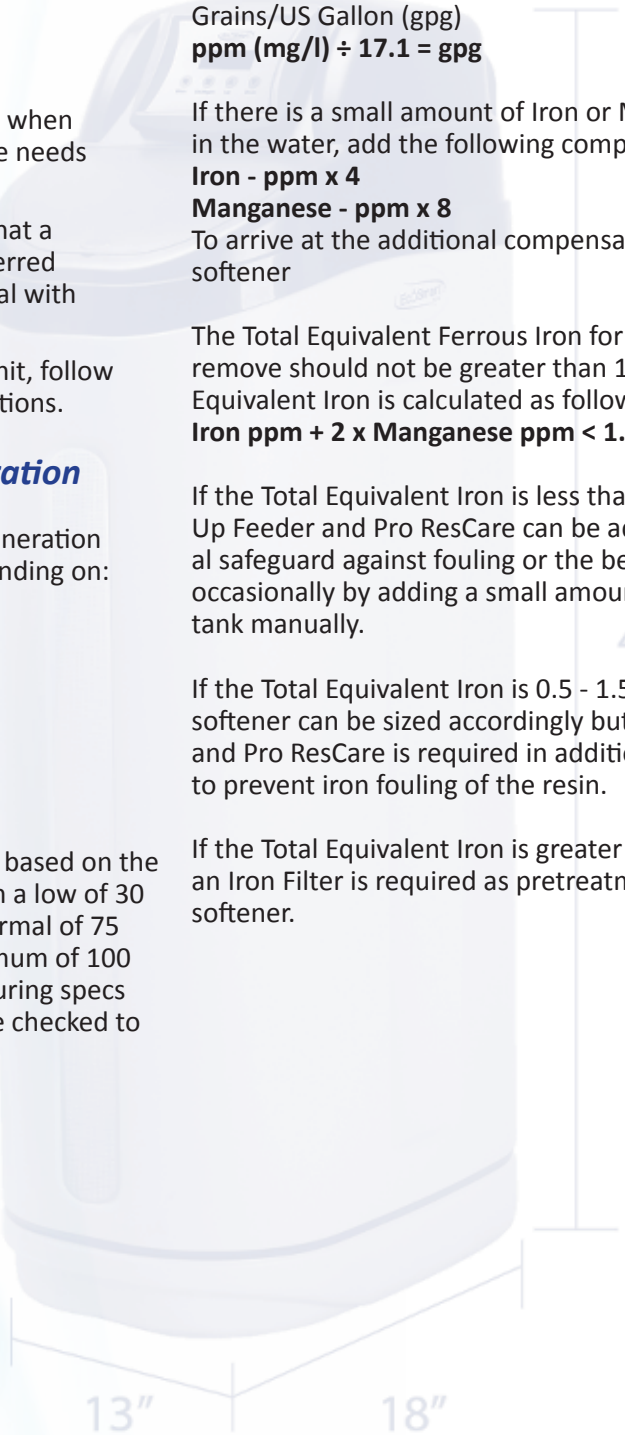
If there is a small amount of Iron or Manganese in the water, add the following compensated values:
Iron - ppm x 4
Manganese - ppm x 8
To arrive at the additional compensated load on the softener

The Total Equivalent Ferrous Iron for the softener to remove should not be greater than 1.5 ppm. Total Equivalent Iron is calculated as follows:
Iron ppm + 2 x Manganese ppm < 1.5 ppm

If the Total Equivalent Iron is less than 0.5 ppm, a Res-Up Feeder and Pro ResCare can be added as an optional safeguard against fouling or the bed can be cleaned occasionally by adding a small amount to the brine tank manually.

If the Total Equivalent Iron is 0.5 - 1.5 ppm, the softener can be sized accordingly but a Res-Up Feeder and Pro ResCare is required in addition to the softener to prevent iron fouling of the resin.

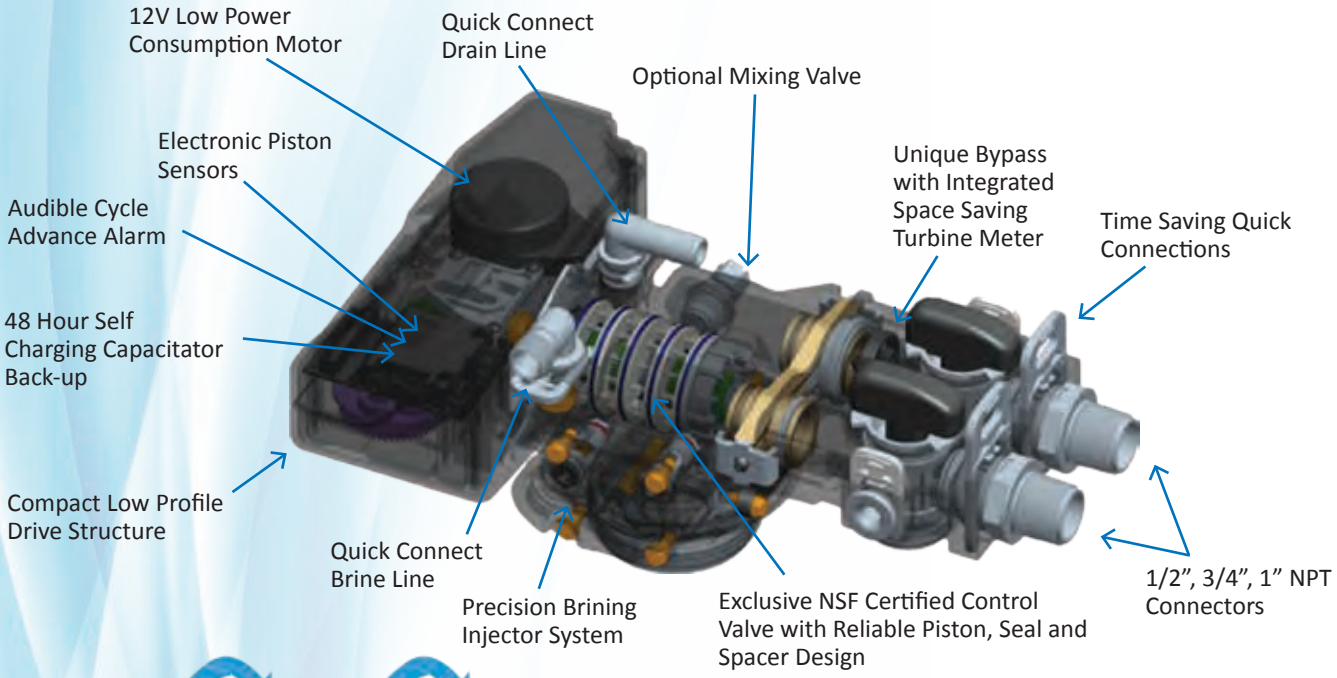
If the Total Equivalent Iron is greater than 1.5 ppm, an Iron Filter is required as pretreatment prior to the softener.



Soft, Clean & Clear

Softeners, Filters & Specialty Systems

Unique Features Designed with the Plumber in Mind



Quick Connect Features for Ultimate Convenience

All units include pre-installed bypass

The quick connect bypass comes installed on every unit with both 90° 3/4 " elbows and straight 1" NPT connectors. Optional quick connect adaptors include 3/4 " straight shark bite and 3/4" straight NPT connectors.

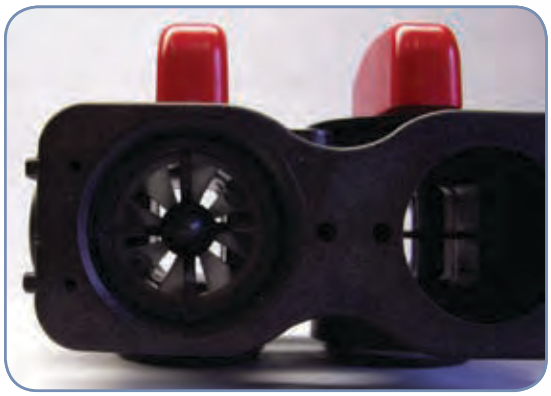
Standard QC Fittings

Optional Fittings

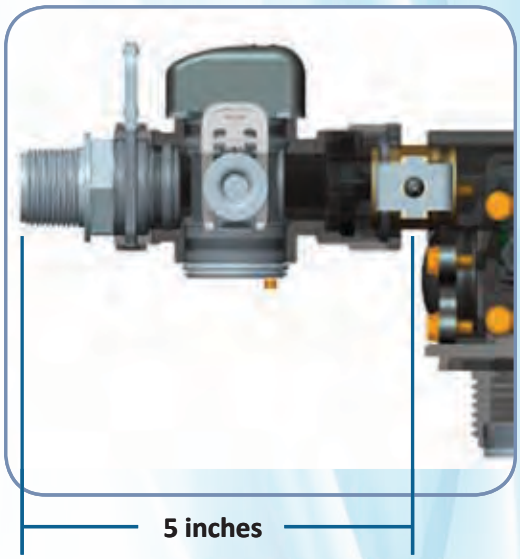
New Quick Connect Stainless Steel Flexi-Connector Kits
Two 18" flexible water connectors with 3/4" John Guest© Quick Connect fittings and proprietary bypass valve connection for all Canature WaterGroup manufactured water softeners and whole-house filters. Excludes 89 1" Control Valve Series.

Space Saving Improved Design

Eliminate 4” and unnecessary connections for neat, quick installations. Bypass with integrated meter avoids ‘meter jamming’ which is caused from weight of pipes creating torque on turbines causing them to bind and stop metering.



integrated meter in bypass



1 Connection Comes pre-installed

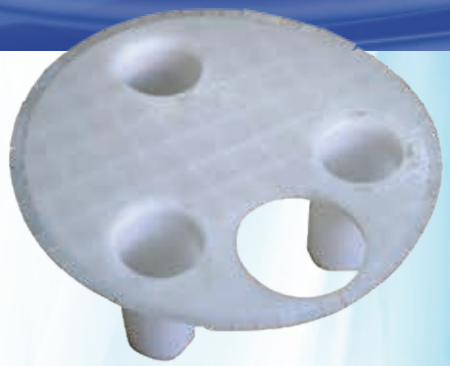
QC Power Cable

- Simplifies installation or removal of the valve from the tank
- No tangled or wrapped up power cords!

3 Connections

High Quality Brine Components

- Closed bottom brine well reduced intrusion of unwanted impurities
- Injection molded brine grids reduce bridging
- Solvent free distributor tube with spun weld collector avoids glue and solvents
- Injection molded reliable brine valve



Heavy Duty Packaging

Novo uses only durable double-walled high impact cardboard with carrying straps to ensure you do not have to deal with the headache of receiving damaged products.

"Our focus is to build the highest quality water conditioning products in the industry... so when it comes to protecting them from damage during shipping & handling we don't 'cheap out'!"

Toby Hughes, P.Eng
Chief Operations Officer

Water Softener Sizing Guide

Choosing the Right Size Softener

# of People	Total Hardness (Grains per Gallon)									
	10	15	20	25	30	40	50	60	70	75
1	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-100 EFT30	NVO485-100 EFT30	NVO485-150 EFT40	NVO485-150 EFT40	NVO485-150 EFT40
2	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-100 EFT30	NVO485-100 EFT30	NVO485-150 EFT40	NVO485-150 EFT40	NVO485-150 EFT60
3	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-100 EFT30	NVO485-150 EFT60	NVO485-150 EFT60	NVO485-200 EFT60	NVO485-200 EFT60
4	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-75 EFT30	NVO485-100 EFT30	NVO485-150 EFT60	NVO485-150 EFT60	NVO485-200 EFT90	NVO485-300 EFT90	NVO485-300 EFT90
5	NVO485-75 EFT20	NVO485-75 EFT20	NVO485-100 EFT30	NVO485-100 EFT40	NVO485-150 EFT60	NVO485-150 EFT60	NVO485-200 EFT90	NVO485-300 EFT90	NVO485-300 EFT90	NVO485-300
6	NVO485-75 EFT20	NVO485-75 EFT30	NVO485-100 EFT40	NVO485-150 EFT60	NVO485-150 EFT60	NVO485-200 EFT90	NVO485-300 EFT90	NVO485-300 EFT90	NVOHEDP-300	Call for Sizing
7	NVO485-75 EFT20	NVO485-75 EFT30	NVO485-150 EFT40	NVO485-150 EFT60	NVO485-200 EFT60	NVO485-200 EFT90	NVO485-300 EFT90	NVOHEDP-300	Call for Sizing	Call for Sizing
8	NVO485-75 EFT20	NVO485-100 EFT30	NVO485-150 EFT60	NVO485-200 EFT60	NVO485-200 EFT60	NVO485-300 EFT90	NVO485-300	Call for Sizing	Call for Sizing	Call for Sizing
9	NVO485-75 EFT30	NVO485-150 EFT40	NVO485-150 EFT60	NVO485-200 EFT60	NVO485-300 EFT90	NVO485-300 EFT90	NVOHEDP-300	Call for Sizing	Call for Sizing	Call for Sizing
10	NVO 485-100 EFT30	NVO485-150 EFT60	NVO485-200 EFT60	NVO485-200 EFT90	NVO485-300 EFT90	NVOHEDP-300	Call for Sizing	Call for Sizing	Call for Sizing	Call for Sizing

Notes:
We recommend contacting Novo Water Customer Service for any hardness levels above 75 gpg for proper recommendations.
Cabinet models are available for all 75 and 100 models.

Water Softeners

Novosoft 485HE Series Water Softener

Novo's premier high-efficiency softener sets the new standard for high performance while offering more features designed to make installations faster & easier than ever!

Cabinet model **Twin tank model**

Two piece cabinet design

IAPMO R & T Certified against CSA B483.1

7 Year Warranty Control Valve

Lifetime Warranty Pressure tank

Features:

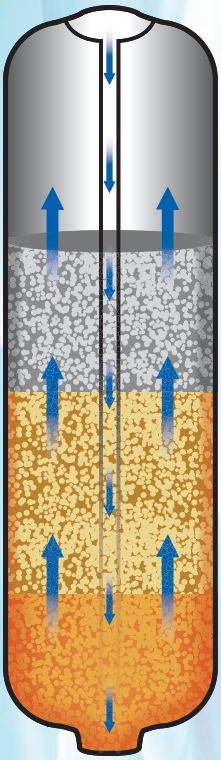
- Reverse Flow regeneration preserves unused portion of softening bed from unnecessary exchange saving salt
- Precision Brining calculates the exact amount of brine required to regenerate saving up to 30% more salt
- Automatic Backwash Frequency Preset for clean municipal water saves water by matching back wash to water quality need
- Soft Water Brine Tank Refill keeps tank & injectors clean
- Automatic System Refresh flushes stagnant water after 7 days of non-use preventing bacteria growth
- Soft Water Recharge Mode ensures soft water during unusually heavy water usage
- Compact two-piece cabinet or traditional twin tank
- Condensation tank jacket (8", 9" & 10" twin tank models)
- NSF Certified fibreglass pressure tank
- IAPMO R & T Certified cation resin
- IAPMO R & T Certified against CSA B483.1
- User-friendly backlit LCD display
- "No Touch" information display rotates key info like last regeneration date and volume remaining
- Unique bypass with integrated turbine meter saves space, eliminates connections and is more durable
- Time saving quick connect fittings on bypass, drain & brine line. Power cord even has quick connect for easier installations.
- Drain line o-ring eliminates the need for Teflon
- Brine safety valve for added overflow protection
- Plastic salt grid prevents bridging (twin tank only)
- 48 hour self charging battery back-up
- Includes hose clamp and 10' of drain tubing

Designed, Engineered & Assembled in the U.S.A.

High Performance Features:

Reverse Flow Regeneration with Precision Brining

Traditional 'downflow' softeners deplete the unused portion of the resin bed with every regeneration. It is like draining the gas tank in your car every time before filling it up!



'Reverse Flow Regen' - drives the hardness minerals up through the already depleted resin and out to drain - saving both salt and the unused portion of the resin for future use.

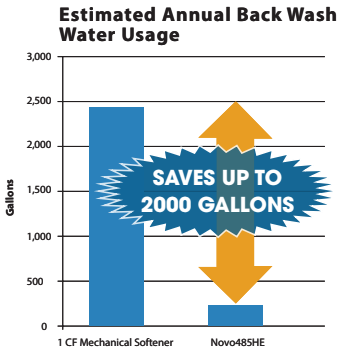
Soft Water Recharge - If total capacity goes below 3%, a short 15 minute 'recharge' will restore additional capacity so the softener can soften until the regular 2:00 a.m. regeneration time.

Precision Brining - saves additional salt by pre-making only 70% of the brine. Just before regeneration, the computer calculates the precise amount of brine top-up needed to regenerate only the depleted resin saving up to 30% more salt!

Soft Water Brine Tank Refill - Conserve capacity and keep brine tank cleaner by adding only treated soft water to brine tank rather than raw untreated hard water.

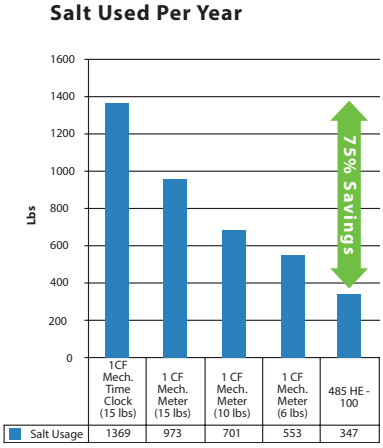
Automatic System Refresh – If no water is used for seven days, the system will perform an automatic refresh preventing bacteria growth.

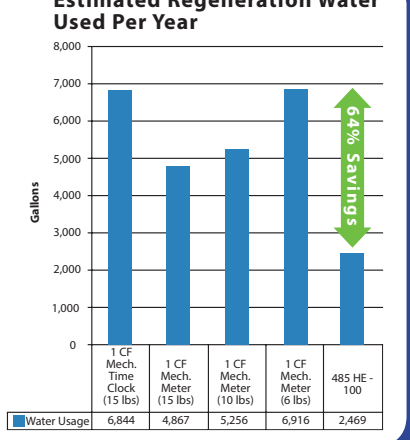
Automatic Backwash Override - On clean municipal water supply there is no need to backwash and clean the bed every regeneration. Save water each regeneration by skipping up to 10 backwash cycles.

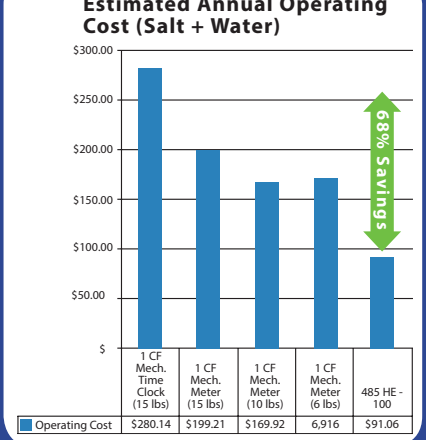


Ultimate Salt & Water Savings!

Use 75% Less Salt & 64% Less Water! It's good for you & good for the environment!







485HE Water Softener

Specifications

Model Number	485HE-75C	485HE-100C	485HE-75	485HE-100	485HE-150	485HE-200	485HE-300
Item Number	15010450	15010451	15010452	15010453	15010454	15010455	15010456
Optional Settings - High Efficiency							
Salt Used - Per Regeneration	2.3 lbs	3.0 lbs	2.3 lbs	3.0 lbs	4.5 lbs	6.0 lbs	9.0 lbs
Water Used - Regeneration	22.7 gal	28.3 gal	22.6 gal	31.6 gal	44.3 gal	60.9 gal	102.2 gal
Hardness Removal - Grains	11,250	15,000	11,250	15,000	22,500	30,000	45,000
Factory Settings - Standard Capacity							
Salt Used - Per Regeneration	4.5 lbs	6.0 lbs	4.5 lbs	6.0 lbs	9.0 lbs	12.0 lbs	18.0 lbs
Water Used - Regeneration	40.5 gal	48.6 gal	34.0 gal	43.4 gal	62.7 gal	87.1 gal	139.2 gal
Hardness Removal - Grains	18,750	25,000	18,750	25,000	37,500	50,000	75,000
Optional - High Capacity							
Salt Used - Per Regeneration	7.5 lbs	10.0 lbs	7.5 lbs	10.0 lbs	15.0 lbs	20.0 lbs	30.0 lbs
Water Used - Regeneration	56.1 gal	69.5 gal	49.6 gal	64.3 gal	90.3 gal	124.6 gal	196.2 gal
Hardness Removal - Grains	22,500	30,000	22,500	30,000	45,000	60,000	90,000
Resin Quantity - Cubic Feet	0.75 ft	1.0 ft	0.75 ft	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Tank Size	9x35	10x35	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	16.5 x 19.3 x 43.3	16.5 x 19.3 x 43.3	18.1 x 34.5	18.1 x 34.5	18.1 x 34.5	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	175 lbs	175 lbs	240 lbs	240 lbs	240 lbs	350 lbs	420 lbs
Flow Rate @ 15 psi Pressure Drop	11.6 gpm	12.0 gpm	10.4 gpm	11.0 gpm	11.2 gpm	12.2 gpm	12.6 gpm
Flow Rate @ 25 psi Pressure Drop	15.6 gpm	16.0 gpm	14.3 gpm	15.0 gpm	15.1 gpm	16.2 gpm	16.6 gpm
Back Wash Flow Rate	2.0 gpm	2.4 gpm	1.5 gpm	2.0 gpm	2.4 gpm	3.5 gpm	5.0 gpm
Shipping Weight	93 lbs	110 lbs	105 lbs	122 lbs	155 lbs	172 lbs	244 lbs
Regeneration Type	Counter Current / Up Flow						
Maximum Efficiency	5,060 grains /lb salt						
Plumbing Connections	¾" and 1" connections						
Resin Type	Aquafine 8% High Capacity Ion Exchange Resin						
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA						
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit						
Water Pressure	Min. 20 - Max. 125 psi						

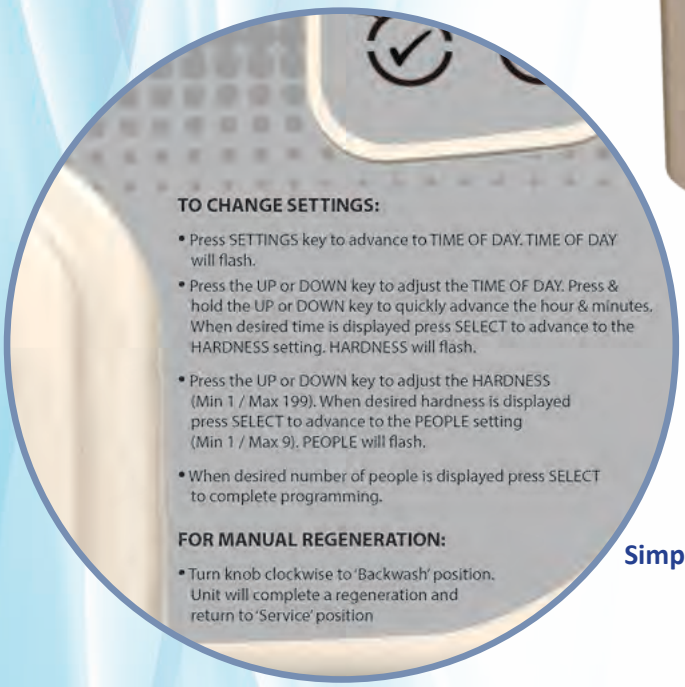
Designed, Engineered & Assembled in the U.S.A.

EconoFlo Series Water Softener

The economical and reliable EconoFlo Series Water Softener offers simple electronics for the same price as mechanical metered units. Offer your customers more for less. Manually index cycle position for easier, faster installation and service.

All Systems Include:

- **NSF Certified** pressure tank
- **NSF Certified** control valve
- **IAPMO approved** cation exchange resin
- **48 hour self charging** battery back-up
- **Pre-installed** bypass
- **Injection molded** brine grids (twin tanks only)



*Compared to conventional calendar clock models

5 Year Warranty Control Valve

10 Year Warranty Pressure tank

Simpler than setting your alarm clock!

IAPMO R & T Certified against CSA B483.1

Model Number	Item Number	Capacity - Grains			Flow Rate		Mineral Tank Size (Inches)	Total Resin (cu. ft.)	Cabinet or Brine Tank Size Inches (WXDXH)	Salt Capacity (lbs)	Shipping Weight (lbs)
		@ 10 lbs/ cu ft	@ 6 lbs/cu ft Factory Setting	@ 3 lbs/ cu ft	Service USGPM	Backwash USGPM					
EFC20	2117	19,875	**16,500**	10,500	8	2	9 X 35	0.75	13.8 X 23.6 X 34.5	225	93
EFC30	2118	26,500	**22,000**	14,000	10	2.4	10 X 35	1	13.8 X 23.6 X 34.5	225	110
EFT20	2119	19,875	**16,500**	10,500	8	2	9 X 35	0.75	18.1 X 34.5	230	93
EFT30	2120	26,500	**22,000**	14,000	10	2.4	10 X 35	1	18.1 X 34.5	230	110
EFT40	2121	33,125	**27,500**	17,500	12	2.4	10 X 47	1.25	18.1 X 34.5	230	141
EFT60	2122	53,000	**44,000**	28,000	13	3.5	12 X 52	2	20.3 X 37.4	270	158
EFT90	2123	79,500	**66,000**	42,000	15	5	14 X 65	3	23.0 X 40.5	700	244
Regeneration Type	Co current / Down Flow										
Plumbing Connections	Includes 3/4" 90°Elbows & 1" Straight NPT										
Resin Type	Aquafine 8% High Capacity Ion Exchange Resin										
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA										
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit										
Water Pressure	Min. 20 - Max. 125 psi										

Designed, Engineered & Assembled in the U.S.A.

85 TA 1" Series Water Softener

Our **85 TA 1" (Twin Alternating) Series** softeners provide up to 16.6 gpm of continuous soft water 24 hours a day. They are engineered and thoroughly tested to provide years of reliable, trouble free performance with minimal maintenance.

Operating Parameters

- Operating pressure: 20 - 100 psi
- Operating temperature: 39 - 100° F
- Electrical: Input 120V 60 Hz - Output 12VAC 650mA

Materials of Construction

- Control Valve: Plastic PPO (Noryl)
- Resin Tanks: Corrosion resistant fibreglass reinforced polyethylene NSF 44 Certified
- Brine Tank: High density polyethylene (includes plastic salt plate, brine well & cap, air check, and safety float)
- Ion Exchange Resin: High Capacity IAPMO certified 8% Canature resin
- Internal Distributors
- Optional: Stainless steel piping manifold

Standard Features

- Up-flow: Provides high efficiency and ultra low hardness leakage
- Master Controller: Fully programmable electronic controller with adjustable cycles
- Alternating Flow: One tank is always off-line for regeneration or ready in stand by.
- Advanced Diagnostic Information: Easily trouble shoot and access system information displayed in real time
- Back Wash Override: Reduces regeneration water usage by skipping pre set number of back wash cycles
- Softwater Refill: Adds treated water to the brine tank to keep brine clean and reduces maintenance
- Optional: Stainless steel piping manifold
- Optional: Aux output closed during full regeneration cycle

85 TA 1" Series Water Softener

Model	Item Number	Capacity	Resin per Tank	Salt Usage		Flow Rates per Tank: Critical	Flow Rates per Tank: 85TA		Flow Rates per Tank: Max Flow	Dimensions	
		@15 lbs/Ft3	Ft^3	@15 lbs/Ft3	@10 lbs/Ft3	Flow	@ 15 PSI	@ 25 PSI	To Drain	Mineral Tank	Brine Tank
		@10 lbs/Ft3	M^3	Lbs (Kg)	Lbs (Kg)	USGPM	USGPM	USGPM	USGPM	in	in
						l/s	l/s	l/s	l/s	mm	mm
85TA-23	**97002305**	23,000	0.77	11.5 (5.2)	6.75 (3.1)	3.75	10.4	14.3	1.5	8 x 44	18 x 35
		20,000	0.02			0.24	0.66	0.9	0.09	203 x 1118	460 x 876
85TA-30	**97002306**	30,000	1	15 (6.8)	10 (4.5)	5.0	11	15	2	9 x 48	18 x 35
		27,000	0.03			0.32	0.69	0.95	0.13	229 x 1219	460 x 876
85TA-45	**97002307**	45,000	1.5	23 (10.2)	15 (6.8)	7.5	11.2	15.1	2.4	10 x 54	18 x 35
		40,500	0.04			0.47	0.71	0.95	0.15	254 x 1372	460 x 876
85TA-60	**97002308**	60,000	2	30 (13.6)	20 (9.1)	10	12.2	16.2	3.5	12 x 52	20 x 37
		54,000	0.06			0.63	0.77	1.02	0.22	305 x 1321	516 x 950
85TA-90	**97002309**	90,000	3	45 (20.5)	30 (13.6)	15	12.6	16.6	5	14 x 65	23 x 41
		81,000	0.08			0.95	0.79	1.05	0.32	356 x 1651	584 x 1029

Water Softeners

EcoSmart Series Water Softener

ECS-20
#15010410

ECS-24
#15010411

ECS-34/39
#15010412 (ECS-34)
#15010414 (ECS-39)

Features:

- Engineered for ultimate efficiency on clean municipal water applications
- Compact design for small spaces
- Uses up to 60% less salt & water than conventional water softeners
- EcoSmart™ Intelligent electronic control:
  - Simple intuitive electronics. No confusing codes or symbols!
  - Rotating performance information display!
  - Adjustable cycles for peak efficiency!
- High-efficiency fine mesh cation resin
- Quality injection & blow molded cabinet
- Push release hinged salt lid for easy salt refill
- Brine safety valve provides additional overflow protection
- ECS-34 model not only softens but also filters out bad tastes & odors caused by chlorine & organics
- Removes up to 10 ppm ferrous iron

Designed, Engineered & Assembled in the U.S.A.

Eco-Friendly Efficiency

Compact Design

Super compact design is perfect for main floor laundry or where space is at a premium!

Quality & Warranty

EcoSmart™ Water Softeners are built to last! All softeners are third party certified to meet the industry's most exacting standards and backed by one of the industries strongest warranties:

- Seven Year System Warranty
- Lifetime Pressure Tank & Cabinet Warranty

7 Year Warranty Control Valve

Lifetime Warranty Pressure tank

EcoSmart™ control valve & pressure tanks are NSF Certified

COMPONENT

IAPMO R & T Certified against CSA B483.1

IAPMO R & T Certified against NSF/ANSI 44

Easy Installation

Complete installation kit including bypass, plumbing fittings & drain tubing. Quick connect fittings for simple installation. Includes easy to follow installation guide.

- 3/4" 90 degree elbows & 1" straight NPT quick connect adapators

Installation Kit (Included)
- 3/4" Male Quick Connects
- 10 ft Drain Line
- Drain Line Clamp

Installation Kit (Optional)
- New Quick Connect Stainless Steel Flexi-Connector Kits
- Two 18" flexible water connectors with 3/4" John Guest© Quick Connect fittings

Specifications	ECS-20 Item #15010410	ECS-24 Item #15010411	ECS-34 Item #15010412	ECS-39 Item #15010414
Maximum Hardness Removal	19,500 grains	24,180 grains	34,320 grains	39,000 grains
Factory Settings - High Efficiency				
Salt Used	1.5 lbs	2.1 lbs	2.4 lbs	3.0 lbs
Water Used	9.6 gal	11.7 gal	15.8 gal	17.9 gal
System Capacity	7,300 grains	10,200 grains	11,700 grains	15,400 grains
High Capacity Settings				
Salt Used	3.0 lbs	3.7 lbs	5.3 lbs	6.0 lbs
Regeneration Water Used	16.9 gal	21.4 gal	32.5 gal	34.6 gal
System Capacity	12,000 grains	16,800 grains	19,200 grains	25,000 grains
Coconut Activated Carbon	No	No	**Yes**	No
Integrated Meter in Bypass	Yes	Yes	Yes	Yes
Plumbing Connections	3/4" or 1"	3/4" or 1"	3/4" or 1"	3/4" or 1"
Flow Rate @ 15 psi Pressure Drop	10.9 gpm	10.2 gpm	10.0 gpm	10.0 gpm
Salt Storage Capacity	80 lbs	120 lbs	170 lbs	170 lbs
Shipping Weight	58.5 lb	68.3 lb	84.3 lb	87.5 lb
Maximum Efficiency	5,600 grains /lb salt			
Electrical Requirements	120V 50/60 Hz			
Maximum Water Temperature	120 degrees Fahrenheit			
Water Pressure	min. 20 - max. 120 psi			
Foot Print	13 inches wide x 18 inches long			

Shower Softener

Just want soft water for your shower? This compact water-proof shower unit requires no electricity. The one-step manual regeneration is easy to operate. Small portable design makes it perfect for non-winterized cottages.

Features:

- Easy installation
- No electricity required
- Waterproof slide cover
- One step regeneration process

Item #	Model	Mineral Tank Size (IN)	Resin Cu Ft	Brine Tank / Cabinet Size Inches (WxDxH)	Ship Weight (Lbs)
15180001	SHOWER SOFTENER	7 x 13	0.22	8.7 x 14.2 x 19.2	20

New Quick Connect Stainless Steel Flexi-Connector Kits

We are pleased to introduce our new **Quick Connect Stainless Steel Flexi-Connector Kits** designed specifically for Canature WaterGroup control valves.

The connectors are not only affordable, they provide for faster, easier installations while eliminating two connection points.

Each kit consists of:

- Two 18” long flexible water connectorswith John Guest© Quick Connect fittings on one end and proprietary Canature WaterGroup control ¾” valve bypass connection* on the other
- Polybag with merchandising header

Simply push to connect to any 3/4” or 1” copper, CPVC or PEX piping with no tools!

60010618 3/4” J6 x 3/4 Canature WaterGroup Bypass
60010619 1” J6 x 3/4 Canature WaterGroup Bypass

Whole-House Automatic Water Filters

Protect Your Plumbing From Bad Taste and Odor Caused by Chlorine and Other Chemicals.

Remove Disinfectants From Your Water

Once water arrives safely at your home there is no further need for disinfectants. In fact they are undesirable!

- **Taste and bad odor**
- **Dry skin**
- **Damage plumbing**
- **Can produce potentially harmful by-products**

Leaky Faucet or Toilet?

Chlorine is a strong oxidant that quickly **destroys plastic & rubber seals & gaskets** in appliances & plumbing causing leaks.

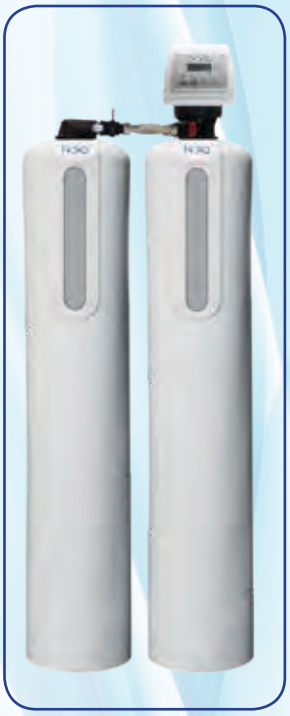
Pin Hole Leaks in Pipes!

Chloramines are **corrosive** by nature and will eventually cause costly damage to plumbing – causing pitting & pin hole leaks.

NovoClear 485HE Series Water Filters

Problem water is no problem with our full line of Novo-Clear 485 Water Filters. Eliminate iron, sediment, bad tastes, stains and odors, as well as, color caused by organics. The high-efficiency control valve monitors water usage and flushes the system automatically, readying it for operation again.

- **Taste & Odor Filters:** Chlorine and organic matter can make your water smell and taste terrible. The **Novo Clear 485 Taste & Odor filter** uses high-quality granular activated carbon to absorb the problem-causing substances.
- **Chloramine removal Filters:** Chloramines are now commonly used to disinfect municipal water supplies causing taste & odor problems. To remove chloramines a special catalytically enhanced carbon is required.
- **Multi Media Filters:** Cloudy water means you likely have suspended silt: or sediment. Restore your water to crystal clear as the **NovoClear 485 Multi-Media** filter traps particulate matter as small as 20 microns.
- **Nexsand Turbidity Filters:** Remove suspended solids, Ferric Hydroxide (Red Water Iron) or Sediment from your well or water system down to 5 Microns. Nexsand has proven extremely effective and will double the service flow of Multi Media or Sand Filters.
- **Neutralizing Filters:** The **NovoClear 485 Neutralizing** filters raise the pH of acidic water to neutralize corrosiveness protecting fixtures, pipes and appliances.
- **Iron & Sulfur Filters:** Water comes in contact with manganese greensand causing oxidization into solids which can be trapped in the filter bed



Chloramine (CLA) Units use Two Tank System for effective reduction of chloramines

7 Year Warranty Control Valve

Lifetime Warranty Pressure tank

Features:

- Exclusive NSF Certified control valve with reliable electronic sensors, adjustable cycle time and proven piston, seal & spacer design
- NSF Certified fibreglass pressure tank
- Tank jackets reduce condensation. Standard on 8", 9" & 10" tanks
- User-friendly backlit LCD display
- Simple set up and programming with no confusing codes or symbols to remember
- Automatic Vacation Mode prevents media cementing
- "No Touch" LCD information display rotates key info like last regeneration date, current flow rate & peak flow rate
- Unique, compact one piece bypass with integrated turbine meter
- Time saving quick connect fittings on bypass, drain & brine line. Even the power cord has quick connects
- Drain line o-ring. No need for Teflon
- Audible Cycle Advance Alarm
- 48 hour self charging battery back-up
- Meter with Day Over ride
- Includes hose clamp and 10' of drain tubing

Designed, Engineered & Assembled in the U.S.A.

Filter Specifications

Specifications	485MM-75	485MM-100	485MM-150	485MM-200	485MM-300
	15054001	15054002	15054003	15054004	15054005
Normal Service Flow Rate	4.0 gpm	5.0 gpm	7.0 gpm	10.0 gpm	12.0 gpm
Peak Service Flow Rate	5.0 gpm	7.0 gpm	10.0 gpm	12.0 gpm	15.0 gpm
Micron Rating	15-20 micron	15-20 micron	15-20 micron	15-20 micron	15-20 micron
Backwash Flow Rate	4.0 gpm	5.0 gpm	7.0 gpm	10.0 gpm	12.5 gpm
Filter Media Volume - Cubic Feet	0.75 ft^3	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Filter Tank Size	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	No	No
Shipping Weight	79 lbs	118 lbs	144 lbs	198 lbs	342 lbs

Specifications	485TO-75	485TO-100	485TO-150	485TO-200	485TO-300
	15054006	15054007	15054008	15054009	15054010
Normal Service Flow Rate	4.0 gpm	5.0 gpm	7.0 gpm	10 gpm	12.0 gpm
Peak Service Flow Rate	5.0 gpm	7.0 gpm	10.0 gpm	12.0 gpm	15.0 gpm
Backwash Flow Rate	3.5 gpm	4.0 gpm	5.0 gpm	7.0 gpm	10.0 gpm
Filter Media Volume - Cubic Feet	0.75 ft^3	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Filter Tank Size	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	No	No
Shipping Weight	50 lbs	60 lbs	78 lbs	95 lbs	138 lbs

Specifications	485NU-75	485NU-100	485NU-150	485NU-200	485NU-300
	15054011	15054012	15054013	15054014	15054015
Normal Service Flow Rate	2.0 gpm	3.0 gpm	5.0 gpm	6.0 gpm	7.0 gpm
Peak Service Flow Rate	3.5 gpm	5.0 gpm	8.0 gpm	10.0 gpm	12.0 gpm
Backwash Flow Rate	3.5 gpm	4.0 gpm	5.0 gpm	7.0 gpm	10.0 gpm
Filter Media Volume - Cubic Feet	0.75 ft^3	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Filter Tank Size	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	No	No
Shipping Weight	93 lbs	120 lbs	164 lbs	207 lbs	330 lbs

Specifications	485IS-75	485IS-100	485IS-150	485IS-200	485IS-300
	15054016	15054017	15054018	15054019	15054020
Normal Service Flow Rate	3.0 gpm	3.0 gpm	4.0 gpm	5.0 gpm	6.0 gpm
Peak Service Flow Rate	4.0 gpm	5.0 gpm	8.0 gpm	10.0 gpm	12.0 gpm
Backwash Flow Rate	3.5 gpm	4.0 gpm	5.0 gpm	7.0 gpm	10.0 gpm
Compensated Iron Removal Capacity	4,500 ppm	6,000 ppm	9,500 ppm	12,000 ppm	18,000 ppm
KMn04 per Regen	4 oz	4 oz	4 oz	8 oz	8 oz
Filter Media Volume - Cubic Feet	0.75 ft^3	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Filter Tank Size	8x44	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	Yes	No	No
Shipping Weight	113 lbs	129 lbs	179 lbs	233 lbs	352 lbs
Maximum Combination of Iron X 1, Manganese X 2, H_2S X3		10.0 ppm	Maximum Hydrogen Sulfide		3.0 ppm
Maximum Iron (Ferrous)		7.0 ppm	Maximum Manganese		5.0 ppm
Bacterial Iron		0.0 ppm	Minimum pH		7.0

Specifications	48NEX-75	485NEX-100	485NEX-150	485NEX-200
	15054029	15054030	15054033	15044034
Normal Service Flow Rate	4.0 gpm	5.0 gpm	8.0 gpm	10.0 gpm
Peak Service Flow Rate	7.0 gpm	8.0 gpm	10.0 gpm	12 gpm
Micron Rating	3-5 micron	3-5 micron	3-5 micron	3-5 micron
Backwash Flow Rate	5.0 gpm	7.0 gpm	10.0 gpm	14.0 gpm
Filter Media Volume - Cubic Feet	0.75 ft^3	1.0 ft	1.5 ft	2.0 ft
Filter Tank Size	8x44	9x48	10x54	12x52
Tank Jacket	Yes	Yes	Yes	No
Shipping Weight	90 lbs	135 lbs	205 lbs	255 lbs

Specifications	485CLA-75	485CLA-100	485CLA-150	485CLA-200
	15054035-1	15054036-1	15054037-1	15054038-1
Recommended Flow Rates	4.0 gpm	5.0 gpm	7.5 gpm	10.0 gpm
Backwash Flow Rate	3.5 gpm	4.0 gpm	5.0 gpm	7.0 gpm
Filter Media Volume - Cubic Feet	1.5 ft^3	2.0 ft	3.0 ft	4.0 ft
Filter Tank Size (qty 2)	8x44	9x48	10x54	12x52
Tank Jacket	Yes	Yes	Yes	No
Shipping Weight	100 lbs	120 lbs	155 lbs	190 lbs
Carbon Type	Canature Catalytic Carbon			

All Filters	
Plumbing Connections	3/4" and 1" connections
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit
Water Pressure	Min. 20 - Max. 125 psi

NovoClear 465 BIF Chemical Free iron Filter

Features:

- Natural oxidation removes iron, manganese and hydrogen sulfide without chemicals, air pumps or a venturi
- Low maintenance two tank system
- Regenerates less frequently than traditional iron filters using up to 50% less water than manganese greensand filters
- NSF Certified electronic control valve
- NSF Certified fibreglass pressure tanks
- Meter Immediate, Meter Delayed, Meter with Day Override, Vacation and Calendar Clock mode
- Adjustable cycle times
- Unique bypass with an integrated space saving turbine meter and sample port on the inlet. One-piece design avoids meter jamming
- Time saving quick connect fittings on bypass
- Quick connect drain line o-ring eliminates need for Teflon
- Power cord even has quick connect for easy valve spin on
- Hose clamp and 10' of drain tubing included

Tank Mate™-
Patent Pending
Included with all systems

7 Year Warranty
Control Valve

Lifetime Warranty
Pressure tank

Item #	Model	Media Cu Ft	Flow Rate USGPM			Mineral Tank Size	Air Contact Tank	Pipe Size Inches	Ship Weight Lbs
			Service	Peak	Backwash				
15050051-1	NVO465BIF-100	1.0	3.0	6.0	5.0	10 x 44	8 x 44	3/4"	150
15050067-1	NVO465BIF-150	1.5	4.0	10.0	5.0	10 x 54	10 x 54	3/4"	188
15050071-1	NVO465BIFMN-100	1.0	3.0	6.0	5.0	10 x 44	8 x 44	3/4"	150
15050072-1	NVO465BIFMN-150	1.5	4.0	10.0	5.0	10 x 54	10 x 54	3/4"	188
15050141-1	NVO465BIF-100 with Multi Media	1.0	3.0	6.0	5.0	10 x 44	8 x 44	3/4"	150
15050142-1	NVO465BIF-150 with Multi-Media	1.5	4.0	10.0	7.0	10 x 54	10 x 54	3/4"	188
940364-1	NVO465BIF-100 with Catalytic Carbon	1.0	3.0	6.0	5.0	10 x 44	8 x 44	3/4"	150
940360-1	NVO465BIF-150 with Catalytic Carbon	1.5	4.0	10.0	5.0	10 x 54	10 x 54	3/4"	188

- BIF MN Models for low pH and/or high manganese applications
- BIF Iron and Hydrogen Sulfide Filter With Multi Media For Use on Tannin Bearing Water
- BIF Iron & Hydrogen Sulfide Removal With Catalytic Carbon For Higher Than Normal H2S Removal (up to 10ppm)

Contact Customer Service or Your Sales Representative for Application Guidelines

Maximum Iron	30.0 ppm
Hydrogen Sulfide	5.0 ppm
Manganese	BIF Model 0.0 ppm / BIFMN Models up to 1.0 ppm
Iron Bacteria Removal	No
pH	BIF Models pH 7.0 - 8.5 / BIFMN Models pH 6.5 -6.9

Designed, Engineered & Assembled in the U.S.A.

AIO Chem Free Iron Filter

The AIO Chemical Free Iron filter is intended to be an effective and economical way to remove iron from water without the use of messy and dangerous chemicals or expensive pumps or an external venturi. The AIO valve uses a patented construction to create an air bubble at the upper portion of the tank to oxidize any ferrous iron prior to being filtered by the media. It can also used to remove low concentrations of dissolved hydrogen sulfide and manganese from water.

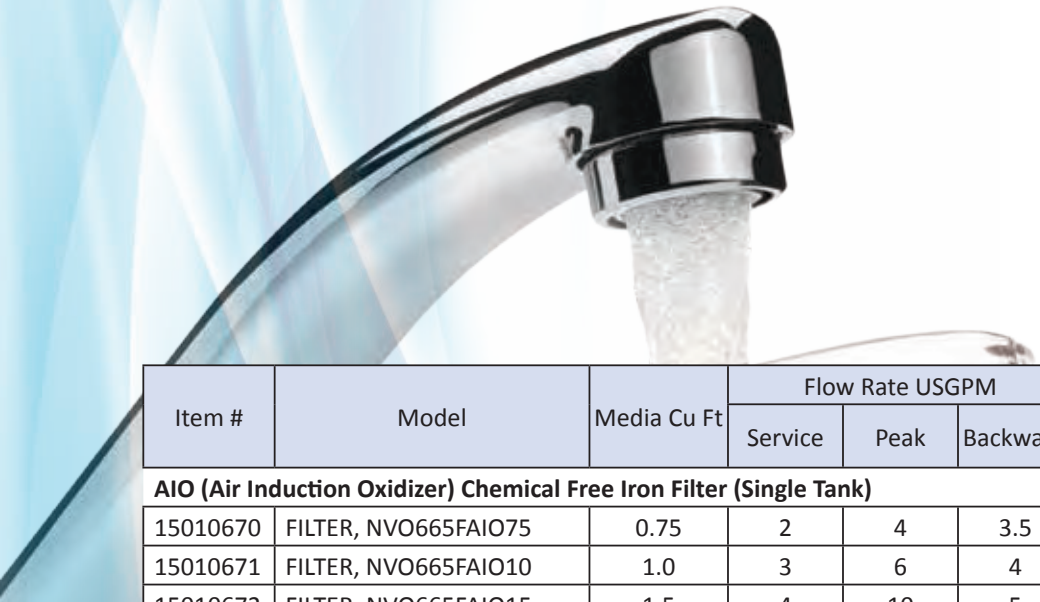
How does the AIO (Air Induction Oxidization) filter work?

This filter works by adding oxygen to the incoming water by passing it through a bubble of compressed air. The water is then passed through a special filter bed

The special media not only increases the pH of the water to enhance iron removal but also acts as a physical barrier to trap iron precipitate.

As more water passes through this iron filter, the oxygen in the unit is used up, and the media gets loaded with iron. The regeneration process then begins in order to replenish the supply of oxygen, and to backwash the precipitated iron trapped in the media bed. The iron removal efficiency will be more effective with high pH water.

The filter is fitted with an inlet check valve to prevent any air from flowing backwards out of the filter tank.

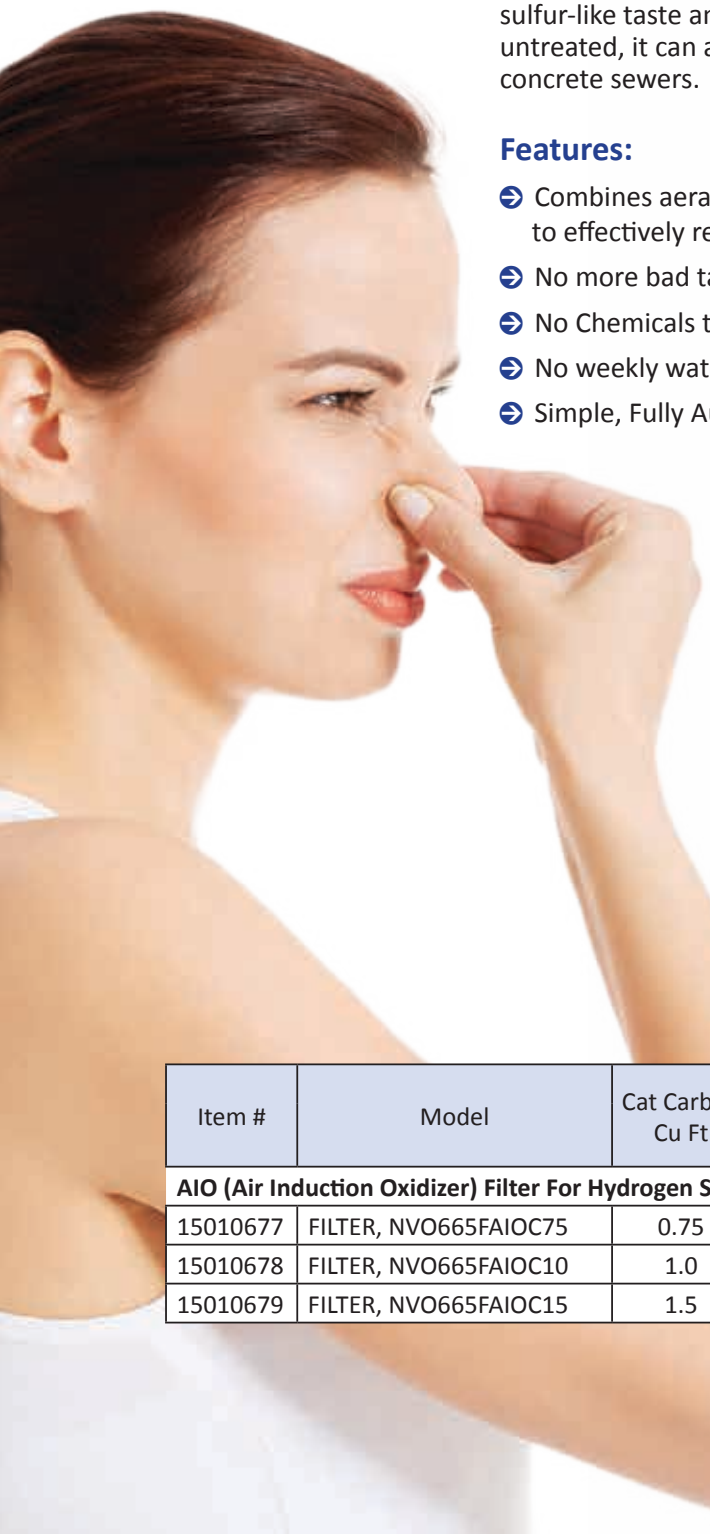


Item #	Model	Media Cu Ft	Flow Rate USGPM			Mineral Tank Size	Pipe Size Inches	Ship Weight Lbs
			Service	Peak	Backwash			
AIO (Air Induction Oxidizer) Chemical Free Iron Filter (Single Tank)								
15010670	FILTER, NVO665FAIO75	0.75	2	4	3.5	8 x 44	3/4”	110
15010671	FILTER, NVO665FAIO10	1.0	3	6	4	9 x 48	3/4”	145
15010672	FILTER, NVO665FAIO15	1.5	4	10	5	10 x 54	3/4”	250
15010674	FILTER, NVO665FAIO75M	0.75	2	4	3.5	8 x 44	3/4”	110
15010675	FILTER, NVO665FAIO10M	1.0	3	6	4	9 x 48	3/4”	145
15010676	FILTER, NVO665FAIO15M	1.5	4	10	5	10 x 54	3/4”	250

Bed Type	Application Parameters			
	Iron (ppm)	Manganese (ppm)	Hydrogen Sulfide (ppm)	pH Range
AIO Chem Free	0.0 - 30.0	0.0	0.0 - 1.0	7.0 - 8.5
AIOM Chem Free	0.0 - 30.0	0.0 - 1.0	0.0 - 1.0	6.5 - 8.5

Designed, Engineered & Assembled in the U.S.A.

Hydrogen Sulfide Reduction AIO Filter



Does Your Water Stink?

Hydrogen sulfide (H2S) is a nuisance. It adds an objectionable sulfur-like taste and “rotten egg” odor to drinking water. Left untreated, it can also lead to corrosion in drainage pipes and concrete sewers.

Features:

- Combines aeration with catalytic carbon technology to effectively reduce sulfur from water.
- No more bad taste or odor.
- No Chemicals to buy, mix or add
- No weekly water tests to perform
- Simple, Fully Automatic regeneration with Air

Item #	Model	Cat Carbon Cu Ft	Flow Rate USGPM			Mineral Tank Size	Pipe Size Inches	Ship Weight Lbs
			Service	Peak	Backwash			
AIO (Air Induction Oxidizer) Filter For Hydrogen Sulfide Reduction (Single Tank)								
15010677	FILTER, NVO665FAIOC75	0.75	2	4	3.5	8 x 44	3/4”	110
15010678	FILTER, NVO665FAIOC10	1.0	3	6	4	9 x 48	3/4”	145
15010679	FILTER, NVO665FAIOC15	1.5	4	10	5	10 x 54	3/4”	250

Bed Type	Application Parameters			
	Iron (ppm)	Manganese (ppm)	Hydrogen Sulfide (ppm)	pH Range
AIOC Catalytic Carbon	0.0 - 10.0	0.0	0.0 - 3.0	7.0 - 8.5

Designed, Engineered & Assembled in the U.S.A.

Novo NRV (Non-Regenerating Valve) Whole House Carbon Filter

Economical Reduction of Chlorine, Chloramines and Other Bad Taste & Odors

Once water arrives safely at your home there is no further need for disinfectants. In fact they are undesirable! Disinfectants cause taste and bad odor, dry skin, damage plumbing, and can produce potentially harmful by-products.

Clean, Clear
Odor Free
Water

Novo NRV (Non-Regenerating Valve) Whole House Carbon Filter

Features:

- Economical whole-house carbon filtration solution for reducing chlorine and other bad tastes and odors. TOK models reduce chlorine plus hydrogen sulfide (H2S) caused by sulphate reducing bacteria common in warmer climates.
- Includes factory installed one-piece bypass
- Time saving quick connect fittings (90° ¾" NPT Elbows and 1" Straight NPT) included for faster, easier installation. Optional quick connect SharkBite® fittings also available.
- Five year warranty on Distribution Head.
- Ten Year Warranty on NSF Certified tank.

90° ¾" NPT Elbows

Economical non-back-washing distribution head with convenient quick connect fittings

1" Straight NPT

Specifications	NRV TO-100 15054073	NRV TO-150 15054074	NRV TOK-100 15054075	NRV TOK-150 15054076
Peak Flow Rates	4.0 gpm	5.0 gpm	4.0 gpm	5.0 gpm
Filter Media Volume - Cubic Feet	1.0 ft^3	1.5 ft^3	1.0 ft^3	1.5 ft^3
Filter Tank Size	9 x 48	10 x 54	9 x 48	10 x 54
Media Type	Coconut Carbon	Coconut Carbon	Coconut Carbon With KDF Distributor	Coconut Carbon With KDF Distributor
Media Loaded	Yes	Yes	Yes	Yes
KDF Protector	No	No	Yes	Yes
Tank Jacket	No	No	No	No
Shipping Weight	60 lbs	78 lbs	60 lbs	78 lbs
Plumbing Connections	Includes 3/4" 90°Elbows & 1" Straight NPT. Bypass Included			
Electrical Requirements	None			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Max. 125 psi			

The life expectancy of the carbon media bed in these units will be reduced as compared to a back washing style carbon filter. The actual media bed life will vary depending on water consumption, chlorine/chloramines concentration and flow rate. Exceeding the peak flow rate listed above will drastically reduce the life expectancy of the carbon media.

Designed, Engineered & Assembled in the U.S.A.

Specialty Systems: SIMTAN PLUS Series

Soften & Filter Problems From Your Water

Many ground water supplies often have multiple problems that are not only an issue from an aesthetic standpoint but in terms of cost when pipes become clogged, fixtures stained and laundry discolored.

Combination units provide one solution for multiple problems saving you space and money

NovoClear 485 Series Specialty Combination Systems

Novo offers a variety of specialty systems to fix a variety of water problems commonly found in combination in one water supply.

SIMTAN PLUS Series

Hardness, Iron, Manganese, Natural Organic Matter (including Tannins) and Ammonium Removal

Rid your water of hardness minerals (calcium and magnesium) and enjoy soft skin, silky hair, spot free dishes and brighter laundry while protecting your plumbing and water using appliances from scale build-up.

Removing iron and manganese will keep fixtures from getting stained as well as removing the taste and smell.

Tannins, caused by decaying organic matter, are normally found in surface water systems and cause a yellow or brown color in the water that does not settle and will stain laundry.

Ammonium, often found as a by-product in water disinfected with chloramines, is undesirable and can cause bad taste and odor.

*Do **NOT** use **Pro Res Care** or other media cleaners with these units as it will damage the media*

7 Year Warranty
Control Valve

Lifetime Warranty
Pressure tank

Specifications	SIMTANPLUS-150 15010481-P	SIMTANPLUS-200 15010482-P	SIMTANPLUS-250 15010502-P	SIMTANPLUS-300 15010483-P
Salt Used - Per Regeneration	9.0 lbs	12.0 lbs	15.0 lbs	18.0 lbs
Water Used - Regeneration	74.6 gal	98.9 gal	126.6 gal	153.0 gal
Hardness Removal - Grains	17,100	22,800	28,500	34,200
Advanced Exchange Media (ft3)	1.32ft	1.76 ft	2.20 ft3	2.64 ft
Tank Size	10x54	12x52	13x54	14x65
Top Cone	Yes	Yes	Yes	Yes
Tank Jacket / Media Loaded	Yes	No	No	No
Brine Tank (Inches)	20.3 x 37.4	20.3 x 37.4	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	350 lbs	350 lbs	350 lbs	420 lbs
Critical Service Flow Rate	4-6 gpm	6-8 gpm	8-10 gpm	10-12 gpm
Back Wash Flow Rate	2.4 gpm	4.0 gpm	5.0 gpm	7.0 gpm
Shipping Weight	141 lbs	158 lbs	198 lbs	244 lbs
pH	5-9			
Other	Free Chlorine < 1 ppm, TDS < 4000 ppm			
Regeneration Type	Down Flow			
Plumbing Connections	Includes 3/4" 90°Elbows & 1" Straight NPT			
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA			
Water Temperature	Min 39 - Max. 100° F			
Water Pressure	Min. 20 - Max. 125 psi			

The SIMTAN PLUS needs to be used on well water where the well is greater than 140 feet deep.
CALL CUSTOMER SERVICE TO DETERMINE CORRECT MODEL. WATER TEST RESULTS REQUIRED.

Raw Water Quality Requirements and Efficiency of Purification

Parameters	Influent limitations	Max. Efficiency, %
Hardness	45 gpg	97
Iron*	4 ppm	98
Manganese	2 ppm	98
TOC** (including tannins)	3 ppm	98
Ammonium	4 ppm	90

**All installations require 5 micron pre-filter to be installed prior to this unit. We recommend our 10" or 20" Big Value filter housings with a 5 micron cartridge. If ferric iron levels exceed 3ppm, or high volumes of sediment/turbidity is also present, a regenerating nexsand or multi-media filter should be installed prior to this unit.*

***TOC (total organic carbon) is used as a measure of natural organic matter content*

Specialty Systems: SIM Series

SIM Series

Softener, Ferrous Iron and Manganese Combination Removal

Combining proven water softener capabilities with the ability to remove clear water iron, the SIM Series system provides an effective and economical solution to hard and iron contaminated water. In addition, the system, is specially designed for application in low pH (acidic) water. Hard water contains dissolved calcium and magnesium which build up inside your water heater, plumbing fixtures and appliances. The minerals also react with soap to form a scum which appears as bathtub ring, greys your laundry and leaves your hair dull and your skin itchy. Iron water leaves yellow, orange or brown stains on your laundry, sinks, tubs and toilets.

The SIM Series system contains a bed of fine mesh ion exchange resin beads. As water passes through the bed, calcium and magnesium, the hardness minerals, and any clear water iron are removed and held by the resin. The media combines to raise low pH water to prevent corrosion.

Eventually, the resin beads become saturated and must be regenerated. A brine solution is drawn into the bed to drive out the accumulated minerals.This process is called ion exchange. After the minerals and brine are rinsed out with fresh water, the regenerated resin is ready to soften your water again. The demand regeneration control valve includes a metering system which monitors your soft water use, regenerating only when necessary based on your water usage. Consequently, you save salt, water and money.

Specifications	485SIM-100 15010460	485SIM-150 15010461	485SIM-200 15010462	485SIM-300 15010463
Factory Settings - Iron & Manganese				
Salt Used - Per Regeneration	12.0 lbs	18.0 lbs	24.0 lbs	36.0 lbs
Water Used - Regeneration	52.2 gal	74.4 gal	101.4 gal	166 gal
Hardness Removal - Grains	30,000	45,000	60,000	90,000
Resin Quantity - Cubic Feet	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Tank Size	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	18.1 x 34.5	20.3 x 37.4	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	240 lbs	350 lbs	350 lbs	420 lbs
Flow Rate @ 15 psi Pressure Drop	11.0 gpm	11.2 gpm	12.2 gpm	12.6 gpm
Flow Rate @ 25 psi Pressure Drop	15.0 gpm	15.1 gpm	16.2 gpm	16.6 gpm
Back Wash Flow Rate	2.1 gpm	2.4 gpm	3.5 gpm	5.0 gpm
Shipping Weight	125 lbs	158 lbs	175 lbs	247 lbs
Regeneration Type	Co-Current / Down Flow			
Maximum Hardness	75 Grains Per Gallon			
Maximum Iron (Ferrous)	10 ppm			
Maximum Manganese	5 ppm			
Resin Type	Purolite® SST-60			

SIM Series includes Pro Easy Feeder Starter Kit.

IAPMO R & T Certified against CSA B483.1

All Specialty Systems	
Plumbing Connections	¾" and 1" connections
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit
Water Pressure	Min. 20 - Max. 125 psi

Designed, Engineered & Assembled in the U.S.A.

Specialty Systems: NOVO TAN Series Tannin Removal

This system uses Anion exchange resin to remove color caused by organic decay - greatly improving aesthetics and preventing costly staining.

Specifications	485TAN-100	485TAN-150	485TAN-200	485TAN-300
Purolite 850 Models*	15010489	15010490	15010491	15010492
Purolite 860 Models*	15011489	15011490	15011491	15011492
Factory Settings - High Capacity				
Salt Used - Per Regeneration	12.0 lbs	18.0 lbs	24.0 lbs	36.0 lbs
Water Used - Regeneration	64.3 gal	90.3 gal	124.6 gal	196.2 gal
Tannins Removal	2000 ppm	3000 ppm	4000 ppm	6000 ppm
Resin Quantity - Cubic Feet	1.0 ft	1.5 ft	2.0 ft	3.0 ft
Tank Size	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	18.1 x 34.5	20.3 x 37.4	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	240 lbs	350 lbs	350 lbs	420 lbs
Recommended Service Flow Rate	3.0 gpm	4.5 gpm	6.0 gpm	9.0 gpm
Flow Rate @ 15 psi Pressure Drop	11.0 gpm	11.2 gpm	12.2 gpm	12.6 gpm
Flow Rate @ 25 psi Pressure Drop	15.0 gpm	15.1 gpm	16.2 gpm	16.6 gpm
Back Wash Flow Rate	2.0 gpm	2.4 gpm	3.5 gpm	5.0 gpm
Shipping Weight	122 lbs	155 lbs	158 lbs	244 lbs
Regeneration Type	Co-Current / Down Flow			
Maximum Tannins	3.0 ppm (Contact Customer Service for higher levels)			
Plumbing Connections	¾” and 1” connections			
Resin Type	Purolite® A850 and A860 anion resin			
Electrical Requirements	Input 120V 60 Hz - Output 12V 550mA			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Min. 20 - Max. 125 psi			

* CALL CUSTOMER SERVICE TO DETERMINE CORRECT MODEL. WATER TEST RESULTS REQUIRED

Designed, Engineered & Assembled in the U.S.A.

Specialty Systems: Novoclear 485 HTO Hardness, Taste & Odor Removal

Rid your water of hardness & bad tastes and odor caused by chlorine, chloramines or organic matter.

The unique two tank system keeps the two media beds separate and allows for more carbon contact improving chlorine, chloramines and organic removal.

Because the carbon may need to be replaced before the softening resin, the two tank system allows for replacement without having to change the resin bed unlike many traditional mixed bed systems. Same benefit as separate systems but with cost of only one control valve.

IAPMO R & T Certified against CSA B483.1

Features:

- Dedicated softening & carbon filtration tanks provide truly refined water
- NSF Certified control valve with electronic sensors, adjustable cycles & proven piston, seal & spacer design
- Reverse Flow regeneration preserves unused portion of softening bed from unnecessary exchange saving salt
- Precision brining calculates the exact amount of brine required to regenerate saving up to 30% more salt
- Backwash Frequency Preset for clean municipal water saves water by matching backwash to water quality need
- Soft Water brine tank refill keeps tank & injectors clean
- Automatic system refresh flushes stagnant water
- NSF Certified fibreglass pressure tank
- WQA Gold Seal Certified cation resin
- User-friendly backlit LCD display
- "No Touch" rotating information display
- Unique bypass with integrated turbine meter saves space, eliminates connections
- Time saving quick connect fittings on bypass, drain line, brine line & power cord
- Drain line o-ring. No need for Teflon
- Brine safety valve provides added overflow protection
- Plastic salt grid prevents bridging
- 48 hour self charging battery back-up
- Includes hose clamp & 10' of drain tubing

Specifications	485HTO-100 15010484-1	485HTO-150 15010485-1	485HTO-200 15010486-1	485HTO-300 15010487-1
Factory Settings				
Salt Used - Per Regeneration	6.0 lbs	9.0 lbs	12.0 lbs	18.0 lbs
Water Used - Regeneration	86.4 gal	148 gal	162.4 gal	224.8 gal
Hardness Removal - Grains	25,000	37,500	50,000	75,000
Tank #1 Carbon Quantity - Cubic Feet	1.0 ft	1.50 ft	2.0 ft	3.0 ft
Tank #2 Resin Quantity - Cubic Feet	1.0 ft	1.50 ft	2.0 ft	3.0 ft
Tank Size	9x48	10x54	12x52	14x65
Tank Jacket / Media Loaded	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	18.1 x 34.5	18.1 x 34.5	20.3 x 37.4	23.0 x 40.5
Salt Storage Capacity	240 lbs	240 lbs	350 lbs	420 lbs
Flow Rate @ 15 psi Pressure Drop	7.2 gpm	7.4 gpm	9.0 gpm	9.2 gpm
Flow Rate @ 25 psi Pressure Drop	10.0 gpm	10.1 gpm	11.9 gpm	12.1 gpm
Back Wash Flow Rate	2.4 gpm	3.5 gpm	4.0 gpm	5.0 gpm
Shipping Weight	154 lbs	171 lbs	214 lbs	232 lbs
Regeneration Type	Counter Current / Up Flow			
Plumbing Connections	¾" or 1"			
Resin Type	AquaFine 8% High Capacity Ion Exchange Resin			
Carbon Type	AquaFine Catalytic Carbon			
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Min. 20 - Max. 125 psi			

7 Year Warranty Control Valve

Lifetime Warranty Pressure tank

Designed, Engineered & Assembled in the U.S.A.

Specialty Systems: Novo 485 HEDP Dual Pass Softening System

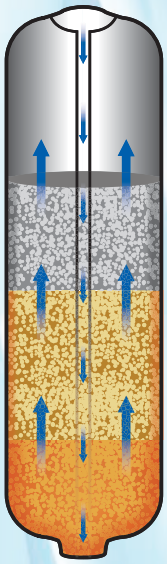
On very hard water supplies (> 75 gpg), a common problem with single tank water softeners is the extreme hardness requires extra media bed depth to complete the exchange process.

The Novo High-Efficiency Dual Pass (HEDP) Water Softener uses a two tank system to prevent this problem. The first tank acts as the workhorse by significantly reducing the water hardness. The second tank acts as a 'polisher' and prevents slippage as the overpowering high hardness condition has been significantly reduced. This also increases the contact time with the softening resin meaning more consistent, softer water.

Salt efficiency is even more important on high hardness situations. The Novo HEDP offers salt-efficient reverse flow regeneration with precision brining for ultimate salt savings.

Features:

- Two tank system provides softer, more consistent water quality and prevents hardness slippage which can occur in single tank systems
- Perfect for high hardness (typically > 75 gpg) residential and light commercial applications such as boiler feed systems
- More cost effective than larger single tank systems
- **Reverse Flow Regeneration** preserves unused portion of softening bed from unnecessary exchange saving salt
- **Precision Brining** calculates the exact amount of brine required to regenerate saving up to 30% more salt
- **Backwash Frequency Preset** for clean municipal water saves water by matching backwash to water quality need
- **Soft Water Brine Tank Refill** keeps tank & injectors clean
- **Automatic Vacation Mode** flushes stagnant water



Reverse flow regeneration *saves salt by pushing the hardness minerals up & out to drain instead of down through the sodium-charged portion of the softener bed needlessly depleting it.*

Specifications	485HEDP-100	485HEDP-150	485HEDP-200	485HEDP-250
	15010495-1	15010496-1	15010497-1	15010498-1
Factory Settings				
Salt Used - Per Regeneration	12.0 lbs	18.0 lbs	24.0 lbs	30.0 lbs
Water Used - Regeneration	86.4 gal	148 gal	162.4 gal	224.8 gal
Hardness Removal - Grains	30,000	45,000	60,000	75,000
Tank #1 Resin Quantity - Cubic Feet	1.0 ft	1.50 ft	2.0 ft	2.5 ft
Tank #2 Resin Quantity - Cubic Feet	1.0 ft	1.50 ft	2.0 ft	2.5 ft
Tank Size	9x48	10x54	12x52	13x54
Tank Jacket / Media Loaded	Yes	Yes	No	No
Brine Tank / Cabinet Size (Inches)	20.3 x 37.4	23.0 x 40.5	23.0 x 40.5	23.0 x 40.5
Salt Storage Capacity	350 lbs	420 lbs	420 lbs	420 lbs
Flow Rate @ 15 psi Pressure Drop	7.2 gpm	7.4 gpm	9.0 gpm	9.2 gpm
Flow Rate @ 25 psi Pressure Drop	10.0 gpm	10.1 gpm	11.9 gpm	12.1 gpm
Back Wash Flow Rate	2.0 gpm	2.4 gpm	3.5 gpm	4.0 gpm
Shipping Weight	184 lbs	201 lbs	244 lbs	262 lbs
Regeneration Type	Counter Current / Up Flow			
Plumbing Connections	3/4" & 1"			
Resin Type	Canature 8% High Capacity Ion Exchange Resin			
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Min. 20 - Max. 125 psi			

Designed, Engineered & Assembled in the U.S.A.

Specialty Systems: Novo 485 NeutraSoft Two Tank Water Conditioning System

Neutralize Corrosiveness & Remove Hardness to Protect Fixtures, Pipes & Appliances

Acidic waters on contact slowly dissolve the Calcite media contained in the first tank to raise the pH which reduces the potential leaching of copper, lead and other metals typically found in plumbing systems.

As the Calcite neutralizes the water, it will increase the hardness of the water. The second tank contains cation exchange resin to remove the hardness leaving you with pH balanced, luxuriously soft water.

Features:

- Economical two tank system is operated using one control valve. Simplifies installation and lowers cost.
- Dome hole neutralizing tank allows for easy replenishment of consumable calcite media
- Exclusive Novo 485 Series control valve with reliable electronic sensors, piston, seals and spacer technology
- High-efficiency upflow regeneration for ultimate salt savings and softer water
- Time saving quick connect fittings for faster, easier installation
- Factory installed one-piece bypass with incorporated meter
- Fully adjustable cycle times
- Meter Delayed
- Integrated turbine meter
- 48 hour self charging battery back-up keeps time-of-day stored while program settings are kept in permanent memory
- Large user friendly color display shows time of day, total remaining capacity, and flow indication
- Simple electronics and programming.
- Lifetime Warranty on NSF Certified tank
- Seven year warranty on NSF Certified control valve

NSF COMPONENT

Specifications	485 HNU-150 15010499-1
Service Flow Rates	
Normal	5.0 gpm
Peak	8.0 gpm
Backwash Flow Rate	5.0 gpm
Filter Media Volume - Cubic Feet	1.5 ft
Resin Quantity - Cubic Feet	1.5 ft
Tank Size	10x54
Tank Jacket / Media Loaded	No
Brine Tank / Cabinet Size (Inches)	18.1 x 34.5
Salt Storage Capacity	240 lbs
Shipping Weight	311 lbs
Regeneration Type	Counter Current / Up Flow
Plumbing Connections	Includes 3/4" 90°Elbows & 1" Straight NPT
Resin Type	Aquafine 8% High Capacity Ion Exchange Resin
pH Adjustment Media	Canature Calcite
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit
Water Pressure	Min. 20 - Max. 125 psi

Dome hole port on tank allows for easy replenishment of Calcite neutralizing media

Designed, Engineered & Assembled in the U.S.A.

Marketing Materials

Literature Order Form

Catalog and Consumer Literature

	Item #	Description	Quantity		Item #	Description	Quantity
	80151000	Catalog			80151020	Soft Water Solutions (25/pack)	
	80151001	Price List (Canada)			80151021	Drinking Water Solutions (25/pack)	
	80151031	Price List (USA)			80151023	Problem Water Solutions (25/pack)	
	80155030	Pro Advantage Program Overview Brochure			80151027	Eco Smart Softeners (25/pack)	

Spec Sheets - Aqua Flo

	Item #	Description	Quantity		Item #	Description	Quantity
	80157000	475 Series RO (25/pack)			80157003	Platinum QCRO Series RO(25/pack)	
	80157001	Economy Series RO (25/pack)			80157002	Platinum 1240 Series RO (25/pack)	
	80157019	75GPD HERO RO (25/pack)			80157021	GEN 4 UV (25/pack)	
	80157015	AquaFlo Platinum POU Brochure (25/pack)			80157022	GEN H4 UV (25/pack)	

Marketing Materials

Literature Order Form

Spec Sheets - Aqua Flo - cont'd

	Item #	Description	Quantity		Item #	Description	Quantity
	80157005	GEN 5 UV (25/pack)			80157009	GEN 5 Rack System UV (25/pack)	
	80157006	GEN 5H UV (25/pack)			80157011	UVB Series (25/pack)	
	80157007	GEN 6 UV (25/pack)			80157012	UV20 Series (25/pack)	
	80157008	GEN H6 UV (25/pack)			80157013	UV Big Boy Series (25/pack)	
	80157020	GEN 4 Rack System UV (25/pack)			80157014	EPCB/ UV Add On Series (25/pack)	

POSTERS/BANNERS/MISC.

	Item #	Description	Quantity		Item #	Description	Quantity
	80151033	Carbon Pipe Hanger (25/pack)			80155016	Novo Vinyl Banner with grommets (2x4)	
	80151030	Water Hardness Pipe Hanger (25/pack)			80155025	Acrylic Brochure Stand	
	80155017	Sizing Guide			80160000	Showroom Display ($195.00)	
	80155018	Novo Wholesale Showroom Poster (22x28)			80051105	Water Sample Kit (Mailing Tube, Bottle & Instruction)	

Marketing Materials

Literature Order Form

PRO ADVANTAGE PROGRAM							
	Item #	Description	Quantity		Item #	Description	Quantity
	80155030	Pro Advantage Program Overview Brochure			80155023	Pro Advantage Vehicle Decal	
	80151038	Pro Advantage Help Line Sticker			80155019	Pro Advantage Banner	
	80155022	Pro Advantage Shirt Patch (Sew On)			80155020	Pro Advantage Dealer Showroom Poster	
	80155024	Pro Advantage Window Static Cling Decal					

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US Orders: ordersusa@canaturewg.com

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Contact Name: _____ **City, Province/ State:** _____

Mailing Address: _____ **Postal Code/ Zip:** _____

Telephone #: _____ **Fax #:** _____

Email Address: _____ **Sales Representative:** _____

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Water Conditioning Glossary

Absorption - The process in which one substance is taken into the body of another substance, termed the absorbent. An example is the absorption of water into soil.

Acid - A substance which releases hydrogen ions when dissolved in water. Most acids will dissolve the common metals and will react with a base to form a neutral salt and water.

Activated Carbon - A granular material usually produced by the roasting of cellulose base substances, such as wood or coconut shells, in the absence of air. It has a very porous structure and is used in water conditioning as an adsorbent of organic matter and certain dissolved gases. Sometimes called "activated charcoal."

Adsorption - The process in which matter adheres to the surface of the adsorbent.

Aeration - The process in which air is brought into intimate contact with water, often by spraying water through air or by bubbling air through water. Aeration may be used to add oxygen to the water for oxidation of matter such as iron or to cause the release of dissolved gases such as carbon dioxide or hydrogen sulfide from the water.

Alkalinity - The quantitative capacity of a water or water solution to neutralize an acid. It is usually measured by titration with a standard acid solution of sulfuric acid and expressed in terms of its calcium carbonate equivalent.

Anion - A negatively charged ion in solution such as bicarbonate, chloride or sulfate.

Anion Exchange - An ion exchange process in which anions in solution are exchanged for other anions from an ion exchanger. In demineralization, for example, bicarbonate, chloride and sulfate anions are removed from solution in exchange for a chemically equivalent number of hydroxide anions from the anion exchange resin.

Aquifer - A layer or zone below the surface of the earth which is capable of yielding a significant volume of water. Atom - The smallest particle of an element that can exist either alone or in combination with smaller particles of the same element or of a different element.

Attrition - The process in which solids are worn down or ground down by friction, often between particles of the same material. Filter media and ion exchange materials are subject to attrition during backwashing, regeneration and service.

Backwash - The process in which beds of filter or ion exchange media are subjected to flow opposite to service flow direction to loosen the bed and to flush suspended matter collected during the service run to waste.

Bacteria - Unicellular micro-organisms which typically reproduce by cell division. Although usually classed as plants, bacteria contain no chlorophyll.

Bacteriostatic - A feature of a carbon filter that is supposed to inhibit the growth of bacteria within the filter - usually by the addition of silver.

Base - A substance which releases hydroxyl ions when dissolved in water. Bases react with acids to form a neutral salt and water.

Bed - The ion exchange or filter media in a column or other tank or operational vessel.

Bed Depth - The height of the ion exchange or filter media in the vessel after preparation for service.

Boiling Point - The temperature at which a substance will change from a liquid state to a gaseous or vapor state.

Brackish Water - Water containing between 1000 and 1500 mg/l of dissolved solids is generally considered to be brackish.

Brine (R.O.) - Same as reject water. One of two streams of fluids generated by a reverse osmosis unit. It contains the impurities removed from the feed water.

Brine (Softening) - A strong solution of salt(s), such as sodium chloride, and water used in the regeneration of ion exchange water softeners but also applied to the mixed sodium, calcium and magnesium chloride waste solution from regeneration.

Calcium (Ca) - One of the principal elements making up the earth's crust, the compounds of which, when dissolved, make the water hard. The presence of calcium in water is a factor contributing to the formation of scale and insoluble soap curds which are a means of clearly identifying hard water.

Calcium Hypochlorite (CaCl2O2) - A chemical compound used as a bleach and a source of chlorine water treatment; specifically useful because it is stable as a dry powder and can be formed into tablets.

Capacity - An expression of the quantity of an undesirable material which can be removed by a water conditioner between servicing of the media (i.e. cleaning, regeneration or replacement) as determined under standard test conditions. For ion exchange water softeners, the capacity is expressed in grains of hardness removal between successive regenerations and is related to the pounds of salt used in regeneration. For filters, the capacity may be expressed in the length of time or total gallons delivered between servicing.

Caustic Soda - The common name for sodium hydroxide.

Cation - An ion with a positive electrical charge, such as calcium, magnesium and sodium.

Cation Exchange - Ion exchange process in which cations in solution are exchanged for other cations from an ion exchanger.

Cellulose Acetate (CA) and Cellulose Triacetate (CTA) - A family of synthetic materials based on cellulose used to make reverse osmosis membranes. While CTA is superior to CA, under adverse water conditions both are effective in removing a wide spectrum of impurities from water. The disadvantage of cellulose-type membranes is that they are subject to bacterial attack, particularly in unchlorinated water supplies. CTA has superior bacterial resistance.

Channeling - The flow of water or other solution in a limited number of passages in a filter or ion exchange bed instead of distributed flow through all passages in the bed.

Water Conditioning Glossary

Chloramines - Chemical complexes formed from the reaction between ammonia and chlorine. They are presently being used to disinfect municipal water supplies because, unlike chlorine, they do not combine with organics in the water to form potentially dangerous carcinogens such as trihalomethanes (THMs). Chloramines can exist in three forms, the proportions of which depend on the physical and chemical properties of the water. Water containing chloramines may not be used for fish or kidney dialysis equipment.

Chlorides (Cl) - an ion which forms acids when combined with hydrogen and salts when combined with metal ions. Chlorides can be corrosive and impart a salty taste to water.

Chlorine (Cl2) - A gas widely used in the disinfection of water and an oxidizing agent for organic matter, iron, etc.

Coagulant - A material, such as alum, which will form a gelatinous precipitate in water and cause the agglomeration of finely divided particles into larger particles which can then be removed by settling and/or filtration.

Colloid - Very finely divided solid particles which will not settle out of a solution; intermediate between a true dissolved particle and a suspended solid which will settle out of solution. The removal of colloidal particles usually requires coagulation to form larger particles which may be removed by sedimentation and/or filtration.

Compensated Hardness - A calculated value based on the total hardness - the magnesium to calcium ratio and the sodium concentration of a water. It is used to correct for the reductions in hardness removal capacity caused by these factors in cation exchange water softeners. No single method of calculation has been widely accepted.

Conductivity - The quality or power to carry electrical current. In water, the conductivity is related to the concentration of ions capable of carrying electrical current.

Contact Time - The length of time water is in direct contact with activated carbon (R.O.) or chlorine (chlorination system.) This is a major factor in determining how effectively impurities will be removed.

Corrosion - The destructive disintegration of a metal by electrochemical means.

Cycle Time - The amount of time in seconds elapsed between pump start and pump shut-down.

Dechlorination - The removal of excess chlorine residual, often after super-chlorination.

Deionization (DI) - The removal of all ionized minerals and salts (both organic and inorganic) from a solution by a two-phase ion exchange procedure. First, positively charged ions are exchanged for a chemically equivalent amount of hydrogen ions. Second, negatively charged ions are removed by an ion exchange resin for a chemically equivalent amount of hydrogen ions. The hydrogen and hydroxide ions introduced in this process unite to form water molecules. The term is often used interchangeably with demineralization.

Disinfection - A process in which pathogenic, disease producing bacteria are killed. May involve disinfecting agents such as chlorine or physical processes such as heating.

Dissolved Solids - The weight of matter in true solution in a stated volume of water. Includes both inorganic and organic matter and is usually determined by weighing the residue after evaporation of the water at 105°F or 180°C.

Distillation - The process in which a liquid, such as water, is converted into its vapor state by heating and the vapor cooled and condensed to the liquid state and collected. Used to remove solids and other impurities from water. Multiple distillations are required for extreme purity.

DNA - Deoxyribonucleic acid constituting the genetic material of the chromosome in a cell, responsible for reproductive characteristics.

Drawdown - The amount of water delivered by the storage tank between pump shut-down and pump start.

E Coli (Escherichia Coli) - One of the members of the coliform group of bacteria indicating fecal contamination.

Effluent - The stream emerging from a unit, system or process such as the softened water from an ion exchange softener.

Exhaustion - The state of an ion exchange material in which it is no longer capable of effective function due to the depletion of the initial supply of exchangeable ions. The exhaustion point may be defined in terms of a limiting concentration of matter in the effluent or, in the case of demineralization, in terms of electrical conductivity.

Fecal - Matter containing or derived from animal or human waste.

Feed Pressure - The pressure at which water is supplied to the R.O. module.

Feed Water - A term which refers to the water supply that is put into a water treatment system for processing (removal of impurities.)

Flocculation - The agglomeration of finely divided suspended solids into larger, usually gelatinous, particles. The development of a 'floc' after treatment with a coagulant by gentle stirring or mixing.

Flow Control - A device designed to limit the flow of water or regenerant to a predetermined value over a broad range of inlet water pressures.

Flow Rate - The quantity of water or regenerant which passes a given point in a specified unit of time, often expressed in gallons per minute.

Flux - The flow rate of water through reverse osmosis membranes, per square foot of surface.

Fouling - The process in which undesirable foreign matter accumulates in a bed of filter media or ion exchanger, clogging pores and coating surfaces and thus inhibiting or retarding the proper operation of the bed.

Freeboard - The vertical distance between a bed of filter media or ion exchange material and the overflow or collector for backwash water. The height above the bed of granular media available for bed expansion during backwashing. May be expressed either as a linear distance or a percentage of bed depth.

Grain (gr) - A unit of weight equal to 1/7000 of a pound or 0.0648 gram.

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Grain per Gallon (gpg) - A common basis for reporting water analysis in the United States and Canada. One grain per U.S. gallon equals 17.12 milligrams per liter (mg/l) or parts per million (ppm). One grain per British (Imperial) gallon equals 14.3 mg/l or ppm.

Greensand - A natural mineral, primarily composed of complex silicates, which can be coated with manganese oxide to form a catalytic absorptive surface. This surface is used to attract ferrous iron and manganese as well as to absorb dissolved oxygen which is used to oxidize iron, manganese or hydrogen sulfide.

Hardness - A characteristic of natural water due to the presence of dissolved calcium and magnesium. Water hardness is responsible for most scale formation in pipes and water heaters and forms insoluble "curd" when it reacts with soaps. Hardness is usually expressed in grains per gallon (gpg), parts per million (ppm) or milligrams per liter (mg/l), all as calcium carbonate equivalent.

Hard Water - Water with a total hardness of 1 gpg or more as calcium carbonate equivalent.

Hydrologic Cycle - The natural water cycle, including precipitation of water from the atmosphere as rain or snow, flow of water over or through the earth and evaporation or transpiration to water vapor in the atmosphere.

Hydrogen Sulfide (H2S) - A gas characterized by an offensive odor, commonly referred to as "rotten egg" odor. Flammable and poisonous in high concentrations, corrosive to most metals and can even tarnish silver. Detectable by most people in concentrations as low as 0.5 ppm.

Hydrocharger - Trade name of a particular type of air induction or injector valve.

Hydrolysis - The chemical degradation of an R.O. membrane in water due to certain conditions such as high pH. Cellulose based membranes are quite susceptible to hydrolysis while the TFC type are virtually immune.

Influent - The stream entering a unit, stream or process, such as the hard water entering an ion exchange water softener.

Ion - An atom, or group of atoms, which function as a unit and have a positive or negative electrical charge due to the gain or loss of one or more electrons.

Ion Exchange - A reversible process in which ions are released from an insoluble permanent material in exchange for other ions in a surrounding solution; the direction of the exchange depends upon the affinities of the ion exchanger for the ions present and the concentrations of the ions in the solution.

Iron (Fe) - An element often found dissolved in ground water (in the form of ferrous iron) in concentrations usually ranging from 0-10 ppm (mg/l). It is objectionable in water supplies because of the staining caused after oxidation and precipitation (as ferric hydroxide); because of the tastes; and because of unsightly colors produced when iron reacts with tannins in beverages such as coffee and tea.

Iron Bacteria - Organisms which are capable of utilizing ferrous iron, either from the water or from steel pipe in their metabolism and precipitating ferric hydroxide in their sheaths and gelatinous deposits. These organisms tend to collect in pipelines and tanks during periods of low flow and to break loose in slugs of turbid water to create staining, taste and odor problems.

Magnesium (Mg) - One of the elements making up the earth's crust, the compounds of which, when dissolved in water, make the water hard. The presence of magnesium in water is a factor contributing to the formation of scale and insoluble soap curds.

Manganese (Mn) - An element sometimes found dissolved in ground water, usually with dissolved iron but in lower concentrations. Causes black stains and other problems similar to iron.

Manganese Greensand - Greensand which has been processed to incorporate in its pores and on its surface the higher oxides of manganese. The product has a mild oxidizing power and is often used in the oxidation and precipitation of iron, manganese and/or hydrogen sulfide and their removal from water.

Mechanical Filtration - The process of removing suspended particles from water by a straining action. The finest mechanical filters can remove bacteria as small as 0.2 microns.

Media - The selected materials in a filter that form the barrier to the passage of certain suspended solids or dissolved minerals. (Singular of media is medium).

Milligrams per Liter (mg/l) - A unit concentration of matter used in reporting the results of water and wastewater analysis. In dilute water solutions, it is practically equal to parts per million but varies from the ppm in concentrated solutions such as brine. As most analysis are performed on measured volumes of water, the mg/l is a more accurate expression of the concentration and is the preferred unit of measure.

Micron - A linear measure equal to one millionth of a meter or .00003937 inch. The symbol for the micron is the Greek letter "µ".

Micron Rating - The term applied to a filter or filter medium to indicate the particle size above which all suspended solids will be removed throughout the rated capacity. As used in industry standards, this is an "absolute" not "nominal" rating. (Refer to S-200, Recommended Industry Standards for Household & Commercial Water Filters.)

Mineral - A term applied to inorganic substances such as rocks and similar matter found in the earth strata as opposed to organic substances such as plant and animal matter. Minerals normally have definite chemical composition and crystal structure. The term is also applied to matter derived from minerals such as the inorganic ions found in water. The term has been incorrectly applied to ion exchangers, even though most of the modern materials are organic ion exchange resins.

Mineral Salts - The form in which minerals from dissolved rock exist in water. Same as Total Dissolved Solids. This is the so-called inorganic form of minerals. In excess, they cause water to have a disagreeable taste. Some are harmful to human health.

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Molecular Weight - The sum of the atomic weights of the individual atoms (from a periodic chart) that make up a molecule of a particular substance (e.g. H2O) H=1 atomic weight, 0=16 atomic weight, therefore, molecular weight = 2 + 16 = 18.) Cellulose based membranes can remove substances as light as MW of 300, while TFC type membranes remove substances as light as MW of 200.

Nanometer - A measure of a wavelength in the electromagnetic spectrum. One nanometer equals 109 meter.

Neutralization - In general, the addition of either an acid or a base to a solution as required to produce a neutral solution. The use of alkaline or basic materials to neutralize the acidity of some waters is common practice in water conditioning.

Organic Iron - A ferrous iron molecule which is enveloped in an organically complex molecule that resists oxidation. May be present in water that contains a great deal of colored colloidal turbidity.

Organics - Any of the compounds whose chemical structure is based on carbon (e.g. carbon dioxide, wood, sugar, protein, plastics, methane, THM, TCE, etc.)

Osmosis - A process of diffusion of a solvent, such as water through a semipermeable membrane, which will transmit the solvent but impede most dissolved substances. The normal flow of solvent is from the dilute solution to the concentrated solution. (See Reverse Osmosis).

Osmotic Pressure - The pressure created by the tendency of water to flow in osmosis. Every 100 ppm of TDS generates about 1 pound per square inch (psi) of osmotic pressure. This osmotic pressure must first be overcome by the water pressure for the reverse osmosis membrane to be effective.

Oxidation - A chemical process in which electrons are removed from an atom, ion or compound. The addition of oxygen is a specific form of oxidation. Combustion is an extremely rapid form of oxidation while the rusting of iron is a slow form.

Oxidizing Agents - Any substance that oxidizes another substance and is itself reduced in the process. Common examples include: oxygen, chlorine, potassium permanganate, hydrogen peroxide, iodine and ozone.

Ozone (O3) - An unstable form of oxygen occurring naturally in the upper atmosphere or artificially produced because of its strong oxidizing or disinfection characteristics.

Particle Size - As used in industry standards, the size of a particle suspended in water as determined by its smallest dimension, usually expressed in microns.

Parts per Million (ppm) - A common basis for reporting the results of water and waste water analysis, indicating the number of parts by weight of water or other solvent. In dilute water solutions, on part per million is practically equal to one milligram per liter, which is the preferred unit. 17.12 ppm equals one grain per U.S. gallon.

Pathogen - An organism which may cause disease.

PCB - Polychlorinated Biphenyls - A highly toxic organic contaminant found in water supplies which is suspected of causing cancer in humans.

pH - or the potential of hydrogen ion activity or concentration. pH is a measure of the intensity of the acidity or alkalinity of water on a scale from 0 to 14, with 7 being neutral. When acidity is increased, the hydrogen ion concentration increases, resulting in a lower pH value. Similarly, when alkalinity is increased, the hydrogen ion concentration decreases, resulting in higher pH. The pH value is an exponential function so that pH is 10 times as alkaline as pH 9 and 100 times as alkaline as pH 8. Similarly, a pH 4 is 100 times as acid as pH 6 and 1000 times as acid as pH 7.

Potassium Chloride (KCl) - a compound consisting of potassium and chloride, becoming increasingly popular as a substitute for sodium chloride in regenerating water softeners.

Potassium Permanganate (KMnO4) - A powerful oxidizing agent consisting of dark purple crystals with blue metallic sheen. Explosive in contact with sulfuric acid or hydrogen peroxide. Increases flammability of combustible materials. Used to renew the black manganese oxide coating on greensand media.

Precipitate - To cause a dissolved substance to form a solid particle which can be removed by settling or filtering such as in the removal of dissolved iron by oxidation, precipitation and filtration. The term is also used to refer to the solid formed and the condensation of water in the atmosphere to form rain or snow.

Pre-treatment - Whatever alterations of the raw feed water are required to prevent damage to the reverse osmosis membrane.

Product Water - The pure water that has been separated from the feed water stream by the reverse osmosis membrane.

Pumping Rate - The amount of actual water that can be drawn from a pressure system expressed in gallons per minute (gpm) obtained by dividing the drawdown (gallons) by the cycle time (seconds) and multiplying the result by 60 (seconds.)

Quartz - A high grade of glass made using quartz sand.

Raw Water - Untreated water or any water before it reaches a specific water treatment device or process.

Recovery - The amount of product water as compared with the total amount of feed water. This will give a measure of the efficiency of operation. For example, starting with 10 gallons of feed water, if 6 gallons is product water and 4 gallons reject water, the recovery is 60%.

Regenerant - A solution of a chemical used to restore the capacity of an ion exchange or oxidation system.

Regeneration - In general, includes the backwash, brine and fresh water rinse steps necessary to prepare a water softener exchange bed for service after exhaustion. Specifically, the term may be applied to the “brine” step in which the sodium chloride solution is passed through the exchanger bed. The term may also be used for similar operations relating to demineralizers and certain filters.

Rejection - The percentage of TDS removed from the feed water. Typically greater than 90% rejection is achieved with reverse osmosis.

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Reject Water (same as Brine) - That portion of the feed water that does not pass through the R.O. membrane and which carries the remaining impurities to the drain.

Residual Chlorine - Chlorine remaining in a treated water after a specified period of contact time to provide protection throughout a distribution system. The difference between the total chlorine added and that consumed by oxidizable matter.

Resin - Synthetic organic ion exchange material such as the high capacity cation exchange resin widely used in water softeners.

Reverse Osmosis (R.O.) - A process that reverses, by the application of pressure, the flow of water in the natural process of osmosis so that the water passes from the more concentrated to the more dilute solution through a semi-permeable membrane.

Sediment - The sum of particles of dirt, clay, silt and vegetation which float or are suspended in water and can be removed by mechanical filtration. See Turbidity.

Semi-permeable - A term which applies to special materials, both natural and synthetic, which allow certain substances such as water to pass through (to permeate) while blocking or rejecting the passage of other substances such as dissolved solids and organics.

Service (Peak) Flow Rate - The greatest amount of water (expressed in gallons per minute) that a particular filter can effectively process based on short pump runs of less than 10 to 15 minutes maximum.

Sequester - A chemical reaction in which certain ions are bound into a stable, water soluble compound, thus preventing undesirable action by the ions.

Soap - One of a class of chemical compounds which possesses cleaning properties, formed by the reaction of a fatty acid with a base of alkali. Sodium and potassium soaps are soluble and useful but can be converted to insoluble calcium and magnesium soaps (curd) by the presence of these hardness ions in water.

Soda Ash - The common name for sodium carbonate, a chemical compound used as an alkaline builder in some soap and detergent formulations to neutralize acid water and in the lime soda ash water conditioning process.

Total Hardness - The sum of all hardness constituents in a water, expressed as their equivalent concentration of calcium carbonate. Primarily due to calcium and magnesium in solution but may include small amounts of metals, such as iron, which can act like calcium and magnesium in certain reactions (see Hardness.)

Toxic - Having an adverse physiological effect on man.

Toxic Metals - Elemental metals that find their way into water supplies from natural and industrial sources and which are detrimental to human health (e.g. lead, cadmium, mercury, arsenic.)

Toxic Organics - Carbon-based chemicals which are frequently found in our water supplies and are harmful to human health. They are usually from agricultural and industrial effluents and hazardous waste dumps (e.g. TCE, PCB, DCBP, pesticides, etc.)

Turbidity - Suspended biological, inorganic and organic particles in water which may be in sufficient amount to make the water seem cloudy (see Sediment.)

Virus - The smallest form of life known to be capable of producing disease of infection, usually considered to be of large molecular size. They multiply by assembly of component fragments in living cells, rather than by cell division as do most bacteria.

Volatile Organic Chemical (VOC) - Chemicals or compounds with boiling points below 212°F, facilitating their evaporation before water.

Water Softening - The removal of calcium and magnesium, the ions which are the principal cause of hardness, from water.

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