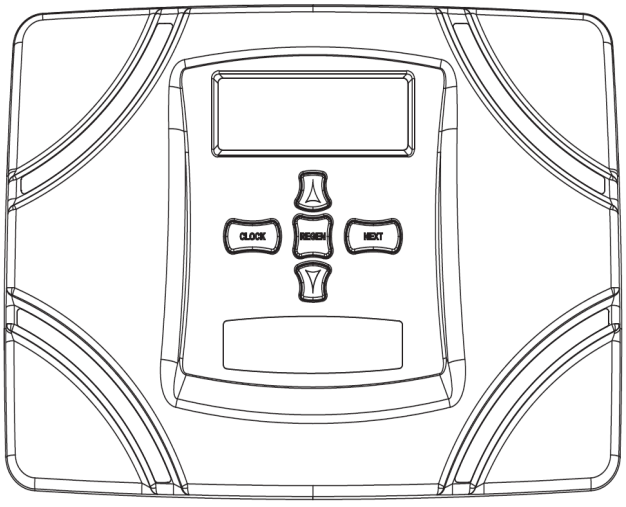
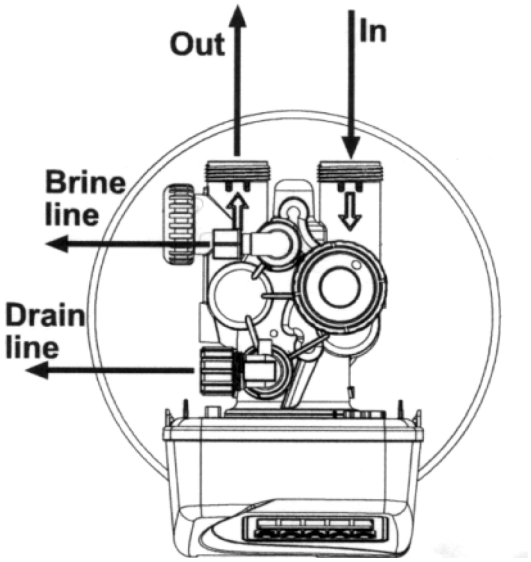
CERTIFLOW WATER

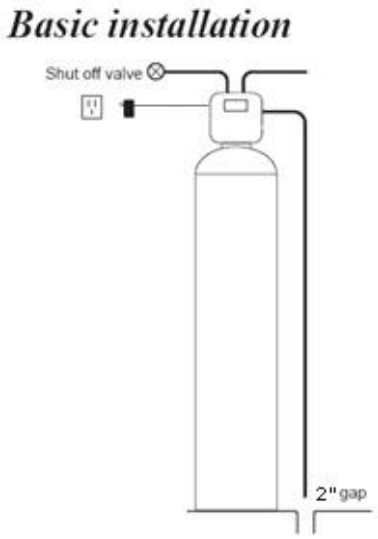
REFINER SERIES FILTER



REFINER SERIES BACKWASH FILTER INSTALLATION & USER MANUAL

BASIC INSTALLATION





General installation & Guide

The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.

Do not use Vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicone lubricant may be used on black o-rings but is not necessary. Avoid any type of lubricants, including silicone on red or clear lip seals.

Do not use pipe dope or other sealants on threads. Teflon tape must be used on the plumbing threads of the 1" & 1.25" connection and on the threads for the drain line connection only- that are having plumbing fittings threaded on to them. Teflon tape is not necessary on the nut connections or cap because o-rings seals are used. The nuts and caps are designed to be tightened by hand or with the special plastic service wrench, #V3193-XXX. If necessary a pliers can be used to unscrew the nut or cap. **Do not** use a pipe wrench. **Do not** place screwdriver in slots on caps and/or tap with a hammer.

1. The distance between the drain and the water FILTER should be as short as possible. Drain tube/pipe should be a minimum of 5/8" (5/8" minimum) size and no longer than 20' run on same elevation.
2. All plumbing should be done in accordance with local plumbing codes.
3. Do not install any Water Filter with less than **15 feet of piping** between its outlet and the inlet of a water heater- because of hot water back feed. Hot water back feed will ruin water filter & void warranty.
4. Install a vacuum breaker if the installation could be prone to vacuum.
5. Do not locate unit where it or its connections (including the drain and overflow lines) will ever be subjected to room temperatures under 34F. Outside installations not recommended. Protect from UV sunlight and weather elements.
6. Inlet/outlet plumbing: connect to a supply line and install an inlet shutoff valve.
7. Drain line: Be sure that the drain can handle the backwash rate of the system and install a flexible plastic tube to the Drain Line Assembly.
8. Never insert drain line directly into a drain, sewer line or trap. Always allow a code legal airgap between the drain line and the waste water to prevent the possibility of sewage being back-siphoned into the KDC Water Filter.
9. ****Check your water pressure! Water pressure over 90 PSI will void warranty. Install pressure regulator on high pressure over 80 PSI.**
10. **NOTE: Brine line fitting in above drawing has been capped off- as it is not used on backwash only filter systems.**

****Not for Installation in California****

CERTIFLOW REFINER SERIES FILTER

**NOTE & Disclaimer: This system should not be installed on water that is microbiologically unsafe or of unknown quality.
**This system is designed for chlorine & chloramine reduction & for organic reduction, tastes & odors.
**This systems media (Carbons & KDF) must be changed every 3 to 7 years on average (1,000,000 to 2,000,000 gallons of treated water) maximum, depending on usage raw water quality.

This system does NOT soften water

Not for installation in California

Installation Information

To be filled out completely by the installer

Installed By:_____

Company Name:_____

Install Date:_____

Serial #:_____

Model #:_____

Water Pressure Tested @ PSI:_____

City Water or Private Well Water:_____

Installed Before or After the Water Softener:_____

****Note: On chlorinated water supplies, this filter should be installed inline, in front of the water softener, to protect the water softener resin from high levels of chlorine- which will cause damage to the water softener resin****

Tested Incoming Chlorine Level:_____

Main Water Line Size:_____

Total Number of People Living in the Home:_____

NOTE: These filter systems & filter media listed in this manual do NOT remove or kill bacteria. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before and after the system.

Features & Benefits

- **Whole Home reduction of Chlorine & Chloramines on city water supplies.**
- **Great solution for a low maintenance & cost effective filter to be used as the Pre-filtration to a water softener that is installed on city water supply with Chlorine & or Chloramines in the city water. These filters will prolong the life of your water softener resins- as long as they are properly maintained with the carbon & KDF media being replaced on a regular schedule.**
- **Designed to reduce the HIGH levels of Chlorine & Chloramines in the city water supply, before entering your water softener.**
- **High levels of Chlorine & Chloramines will drastically reduce the life of your water softening resin & rubber components on all fixtures in your home .**
- **Carbon also reduces organics that can cause unpleasant tastes and smells in the water.**
- **The Media is a combination of Coconut Shell Carbon & KDF-55 Medias.**
- **Average of 3-7 year Carbon life, depending on raw water Chlorine & Chloramine levels and usage of the filter and filter size. (Life expectancy calculated based off of size of filter and raw chlorine and chloramine levels in the water = expected total gallons of treated water/ life of the carbon filter media.)**
- **No chemical regeneration.**
- **10 year warranty on the mineral tank. (Against manufacture defect only)**
- **5 year warrant on control valve. (Against Manufacture defect only)**
- **All components carry ANSI NSF Certification.**
- **These filter systems & filter media listed in this manual do NOT remove or kill bacteria. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before and after the system.**

****Not for Installation in California****

- **REFINER SERIES 60 Flow Rate: 3 GPM to 6 GPM is the optimal continuous flow rate for best reduction & contact time with media. Higher flow rates can run through the system on peak flow rates with less contact time & less reduction. Reduction is dependent on specific raw water quality & flow rate. (Control Valve Only Rating: 27 GPM)**
- **REFINER SERIES 70 Flow Rate: 4 GPM to 8 GPM is the optimal continuous flow rate for best reduction & contact time with media. Higher flow rates can run through the system on peak flow rates with less contact time & less reduction. Reduction is dependent on specific raw water quality & flow rate. (Control Valve Only Rating: 27 GPM)**
- **REFINER SERIES 90 Flow Rate: 5 GPM to 10 GPM is the optimal continuous flow rate for best reduction & contact time with media. Higher flow rates can run through the system on peak flow rates with less contact time & less reduction. Reduction is dependent on specific raw water quality & flow rate. (Control Valve Only Rating: 34 GPM)**

Carbon Media Life

- **The carbon media in this filter system MUST be replaced on a regular basis.**
- **It is important to keep record of the dates that the carbon filter media has been replaced.**
- **Average life of the carbon filter media will range between 3 years and 7 years. This is all based off of incoming chlorine level and water usage in gallons.**
- **To figure out the life expectancy of the carbon, you must know what the raw chlorine levels are in your water, along with knowing how much water your home is using per year.**
- **The carbon media will give roughly: 1 million gallons of treated water- per cubic foot of carbon media @ 1 ppm of chlorine in influent/incoming water.**
- **It is VERY important to properly maintain this carbon filter systems- by replacing the carbon & KDF-55 media on a set service schedule.**
- **To help you better understand daily your water usages, you could go off of the following average water usage per person, per day:**

  -The national average of total water used per person- per day will range between 50 to 100 gallons per person- per day.

  - **That is an average of 18,250 to 36,500 gallons of water- per person- per year. Use the above averages, along with the incoming chlorine level to figure out your "Average Life" of your carbon filter:**
  - **Example:**
  - **3 people in your home. 300 total gallons of water usage per day (3X100=300). 109,500 total gallons of water used per year (300X365=109,500). 2 PPM of chlorine in your influent/incoming water. 1 Cubic foot of carbon media. Estimated life of carbon= 4.5 years. Change your carbon media every 4 years.**

****Never overrun the service life of the carbon filter system**

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- **REFINER SERIES 70 Flow Rate: 4 GPM to 8 GPM is the optimal continuous flow rate for best reduction & contact time with media. Higher flow rates can run through the system on peak flow rates with less contact time & less reduction. Reduction is dependent on specific raw water quality & flow rate. (Control Valve Only Rating: 27 GPM)**
- **REFINER SERIES 90 Flow Rate: 5 GPM to 10 GPM is the optimal continuous flow rate for best reduction & contact time with media. Higher flow rates can run through the system on peak flow rates with less contact time & less reduction. Reduction is dependent on specific raw water quality & flow rate. (Control Valve Only Rating: 34 GPM)**

****Not for Installation in California****

Carbon & KDF Media Replacement Records

- **Date of Original Installation:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

- **Date of Replacement:**_____
- **Name of Service Company:**_____

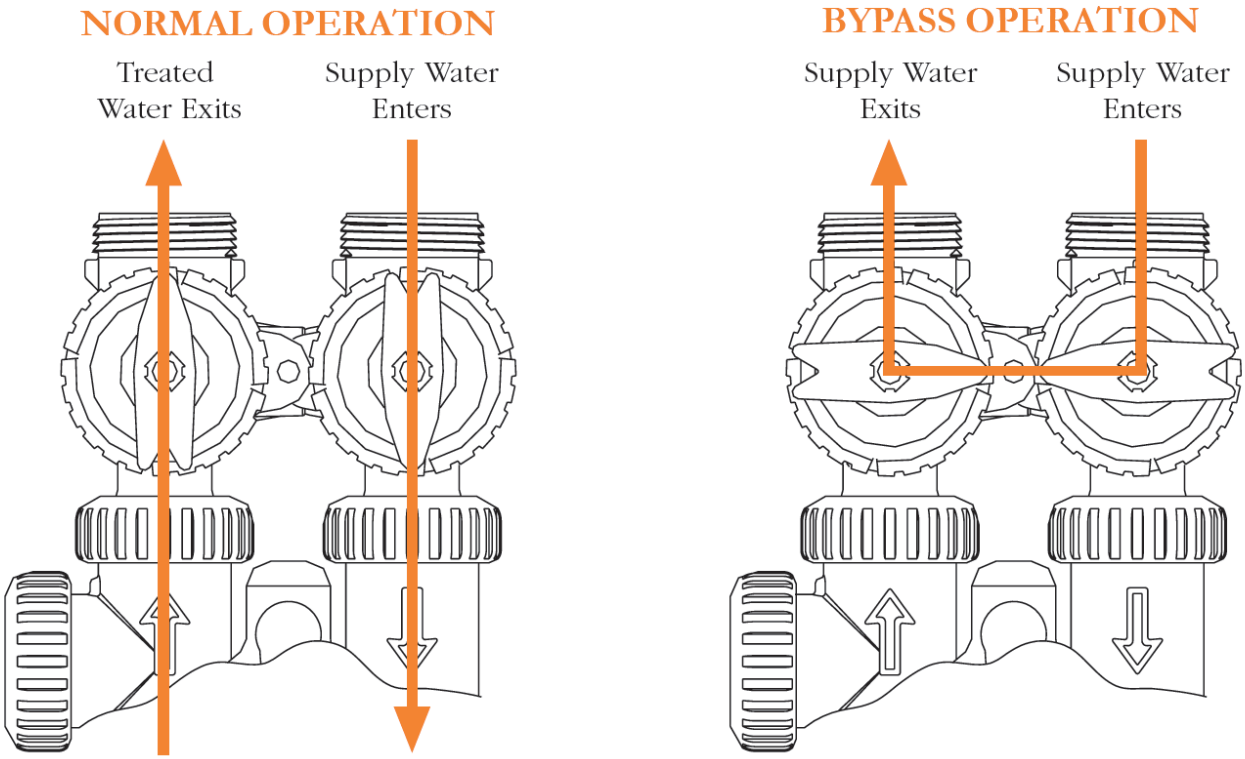
- **Date of Replacement:**_____
- **Name of Service Company:**_____

Installation Notes:

1- This REFINER SERIES Filter unit consists of 1 total media tank with control valve and bypass valve. (NO SALT/BRINE TANK)
2- Install/plumb system in-line before a water softener if you want to protect the longevity of the water softener. You can install the REFINER Filter inline after a water softener to improve the taste of the water if chlorine/chloramines are not an issue or not in the raw water.
3- Install this system in accordance with all local & state plumbing codes.
4- Run a 5/8" OD or ¾" drain line off of unit to an air-gap floor drain or P-trap with a legal air gap.
5- Follow Inlet & Outlet arrows on bypass & valve head for proper installation
6- CHECK your water pressure! Install a new PRV valve (Pressure Reducing Valve) if your water pressure is over 80 PSI or has fluctuating water pressures. High water pressure will VOID the warranty.
7- Do not locate/Install where the system can freeze, or be outside in the weather elements as it will VOID the warranty.
8- Do not locate when the system is in direct sunlight. UV will damage your system & VOID the warranty.
9- Only install on cold water feed line. Do NOT run HOT water through your system. Hot water will VOID the warranty.
10- Install on piping prior/in front of your water softener (to protect water softener from chorine)
11- Install a vacuum breaker if the installation is prone to vacuum.
12- Protect this system from hot water back feed from water heater. Make sure a working expansion tank is installed on the water heater on the inlet line of the water heater. Expansion tank must be between the outlet of this filter system and the inlet of the water heater.
13- Protect the system from reverse flow.

Bypass Valve

To **shut-off water** to the system, please position arrow handles as shown in the **bypass operation** diagram below. If your valve doesn't look like the diagram below, contact your service technician for instructions on how to shut-off water.

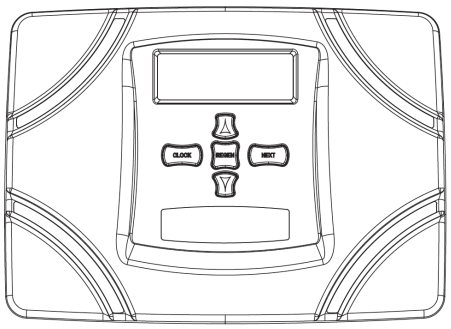


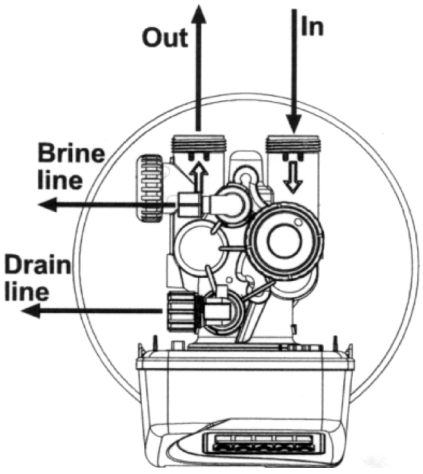
Bypass Valve

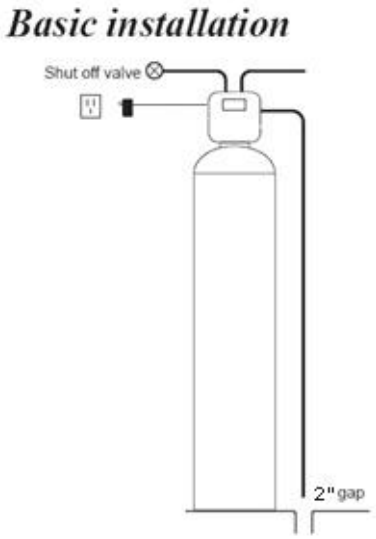
The bypass valve is used to isolate the control valve from the plumbing system in order to perform valve repairs or maintenance.

1. **Normal Operation Position:** The inlet and outlet handles point in the direction of flow indicated by the engraved arrows on the control valve.
2. **Bypass Position:** The inlet and outlet handles point to the center of the bypass. Untreated water is supplied to the plumbing system.

Start-up Instructions:







- **After installation is completed, & while main water supply is off in home, rotate the bypass handles on the water softener to the bypass position.**
- **Fully open a cold water faucet in the home & turn water supply back on in the home.**
- **Allow water to run until clear to rid pipes of debris, which may have occurred during installation.**

- **The system is now ready for start-up:**

(1) Set Time of Day:

Setting the Time of Day:

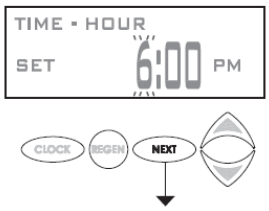
Set Time of Day

The user can also set the time of day. Time of day should only need to be set if the battery has been depleted because of extended power outages or when daylight saving time begins or ends. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset. The non rechargeable battery should also be replaced.

STEP 1U

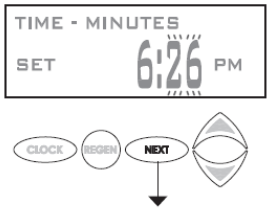
STEP 1U – Press CLOCK.

STEP 2U



STEP 2U - Current Time (hour): Set the hour of the day using ▼ or ▲ buttons. AM/PM toggles after 12. Press NEXT to go to Step 3U.

STEP 3U

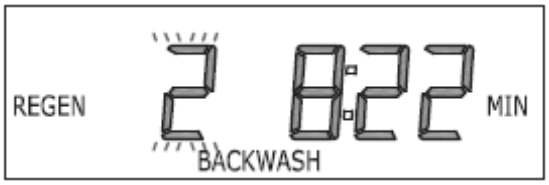


STEP 3U - Current Time (minutes): Set the minutes of the day using ▼ or ▲ buttons. Press NEXT to exit Set Time of Day. Press REGEN to return to previous step.

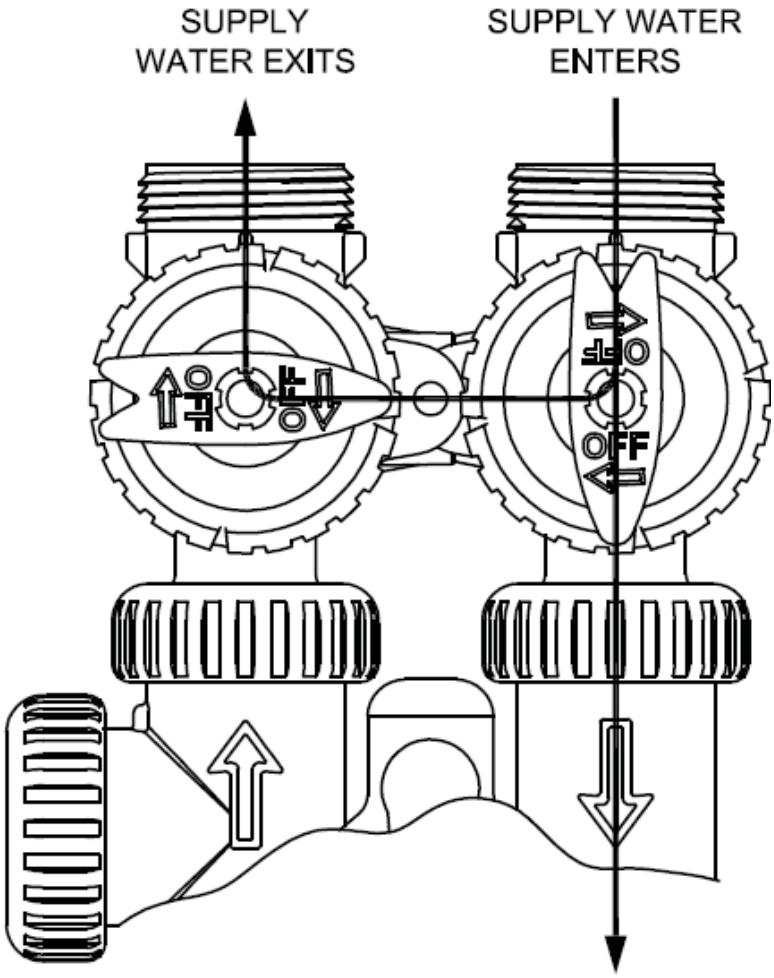
RETURN TO NORMAL MODE

(2) Backwash the system:

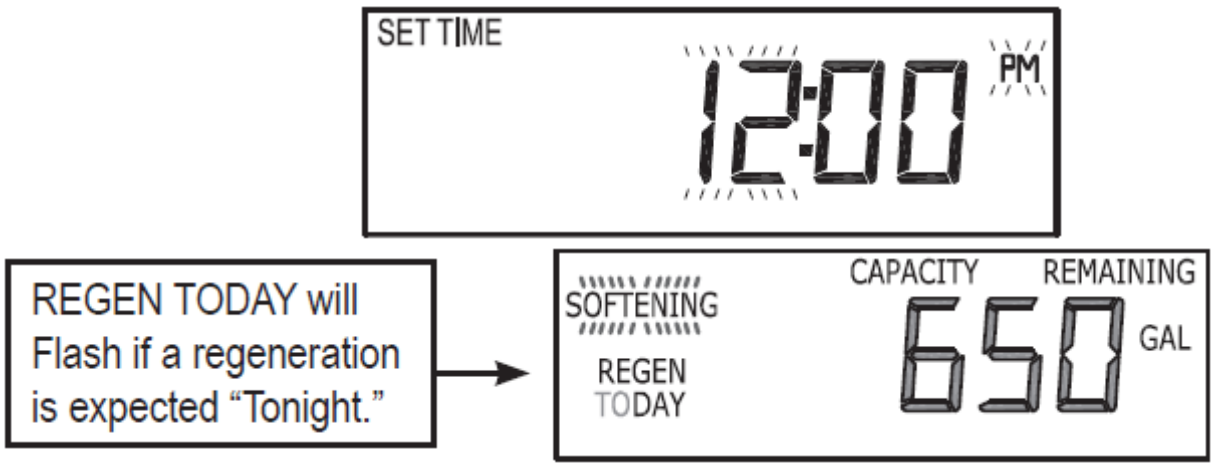
1. **Press and hold the "REGEN" button for five seconds until the drive motor starts. Wait until the motor stops running and the display will read "BACKWASH".**



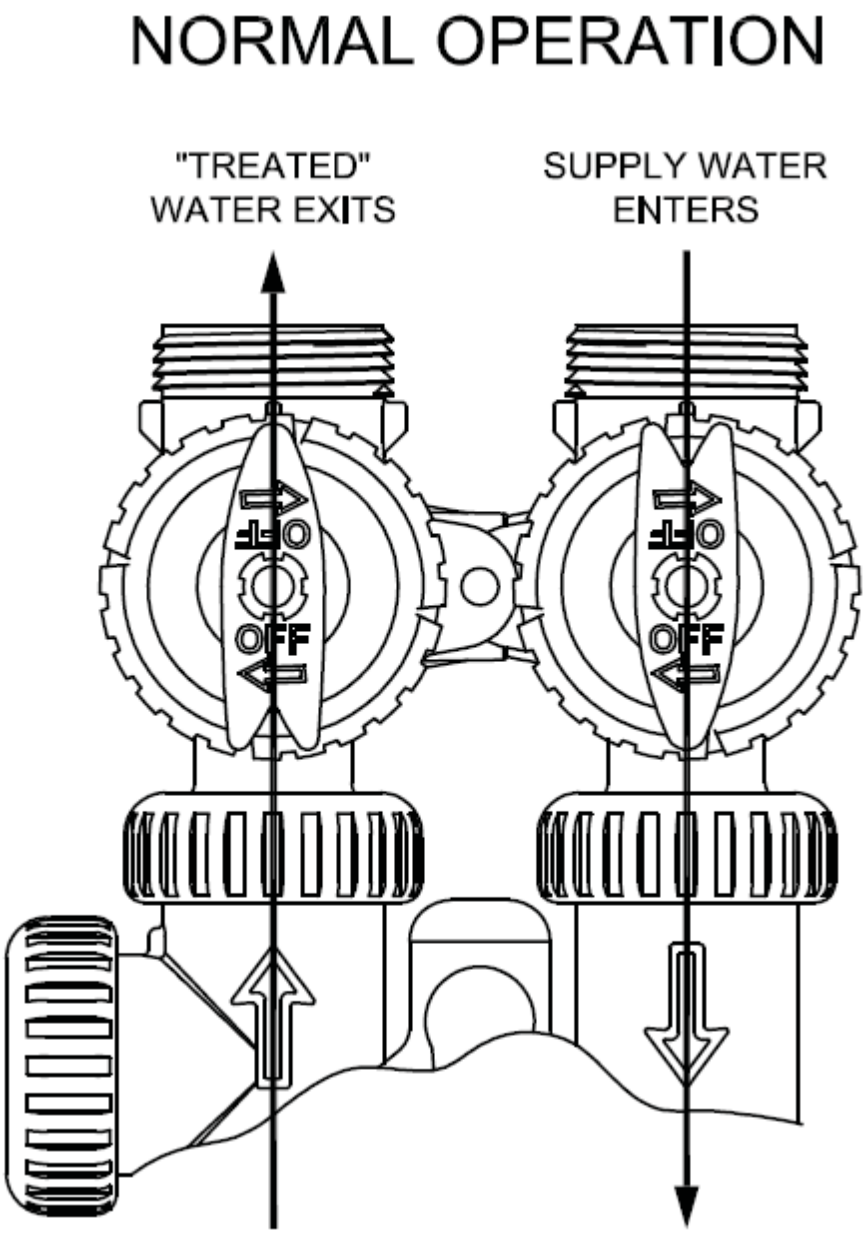
2. **Open the inlet handle of the bypass valve very slowly, ½ way open, allowing water to fill the tank slowly in order to expel air.**
3. **When the water is flowing steadily to the drain without the presence of air, fully open the inlet bypass valve handle & let the water flow to drain for 8 minutes.**



4. **Press the REGEN button & release. When the motor stops running, the display will now read RINSE.**
5. **Allow water to run to drain for the remaining time on the screen.**
6. **The system will automatically return to the service position on its own.**
7. **Once your system is displaying time of day or gallons remaining.**



8. Slowly open the outlet bypass handle to the fully open position.



9. **Your system is now operational and servicing the home.**
10. **Make sure to check floe leaks and also make sure to check that the homes drain system can support the amount of water being used during a regeneration cycle.**

General Operation:

User Display Settings

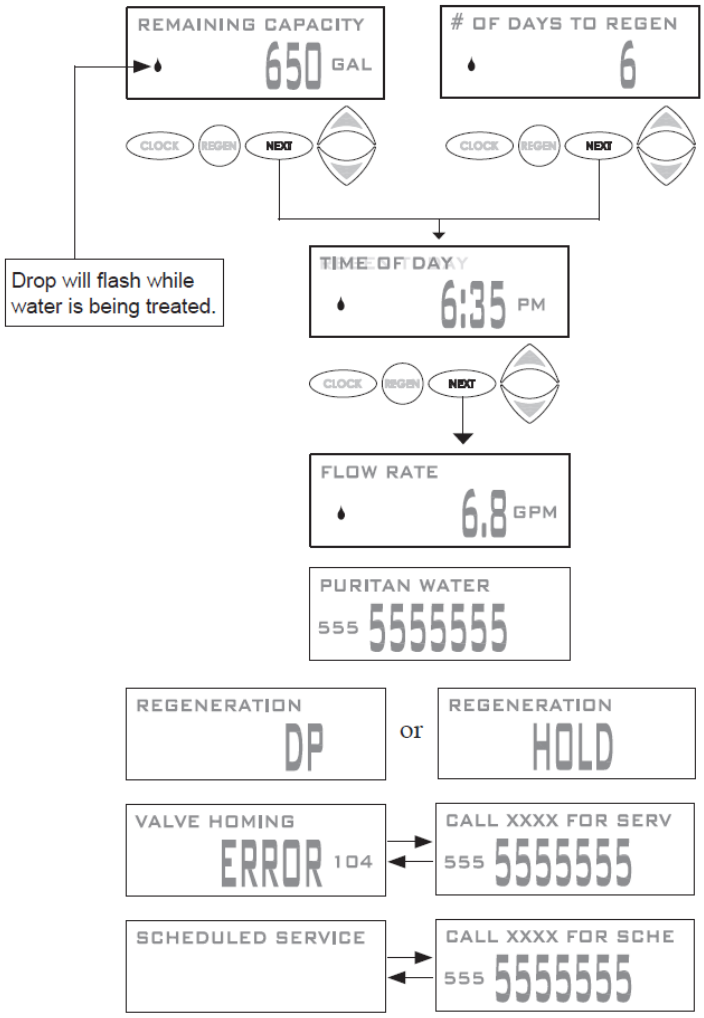
General Operation

When the system is operating, one of six displays may be shown. Pressing NEXT will alternate between the displays. One of the displays is always the current time of day. The second display is one of the following: days remaining or volume remaining. Days remaining is the number of days left before the system goes through a regeneration cycle. Capacity remaining is the gallons that will be treated before the system goes through a regeneration cycle. Pressing the ▼ button while in the Capacity Remaining or Days Remaining displays will decrease the capacity remaining in 10 gallon increments or the Days Remaining in 1 day increments, and will also increase the volume used impacting the recorded values in Diagnostics Steps 3D, 4D and 5D and Valve History, Step 4VH.

The third display shows the current treated water flow rate through the system. The fourth display will display contact screen information, if it was edited. The fifth display will show either dP or hold if the dP switch is closed. The sixth display indicates the user should call for service. The service display will not appear if OFF is selected in Step 12S of OEM Softener System Setup. To clear the Service Call reminder, press the ▲ and ▼ buttons simultaneously while the number and banner text screen is displayed.

If the system has called for a regeneration that will occur at the preset time of regeneration, the words REGEN TODAY will alternate with the header on the display.

If a water meter is installed, the water drop flashes on the display when water is being treated (i.e. water is flowing through the system).



Power Loss

If the power goes out the system will keep time until the battery is depleted. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset and the non rechargeable battery replaced. The system will remember the rest.

Regeneration Mode

Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when a household is asleep. If there is a demand for water when the system is regenerating, untreated water will be used.

When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The current cycle display will alternate with the regen time remaining screen. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.

To initiate a manual regeneration immediately, press and hold the "REGEN" button for three seconds. The system will begin to regenerate immediately. The request cannot be cancelled.

BYPASS VALVE OPERATION

Figure 1

NORMAL OPERATION

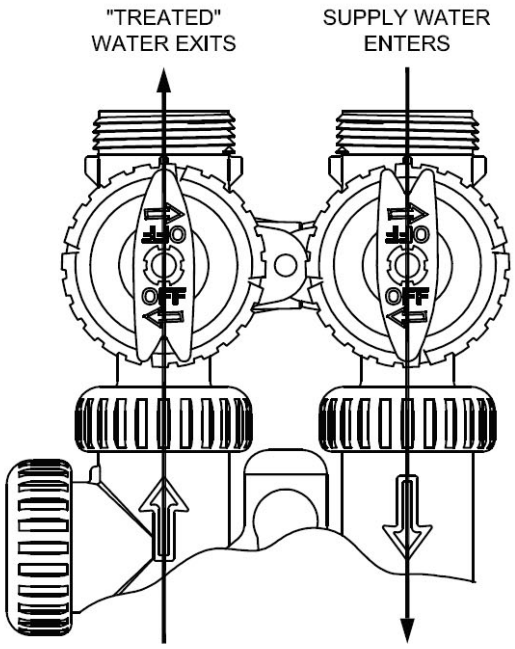


Figure 2

BYPASS OPERATION

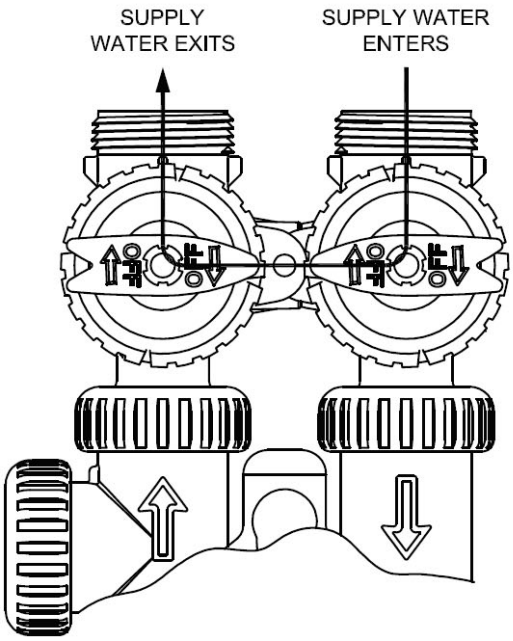


Figure 3

DIAGNOSTIC MODE

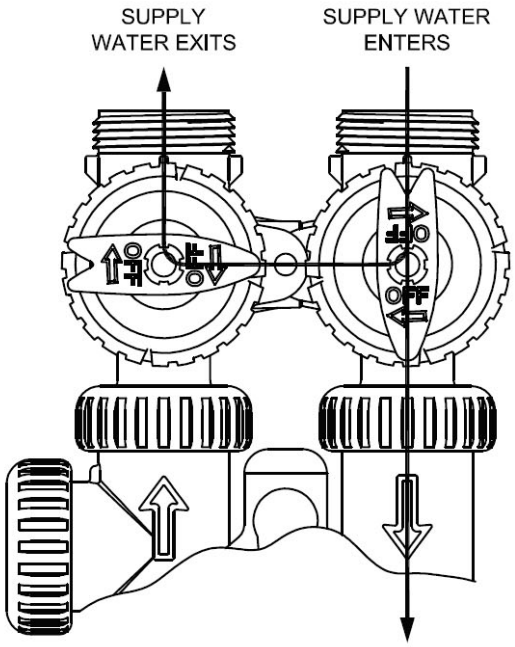
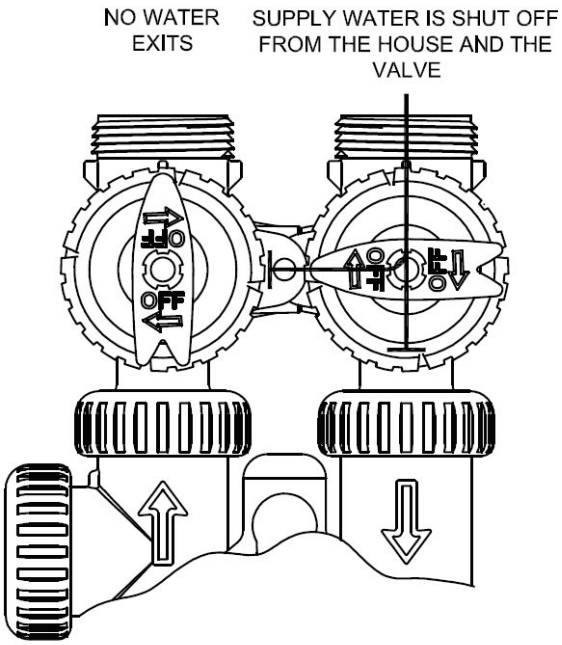


Figure 4

SHUT OFF MODE



PR Front Cover and Drive Assembly

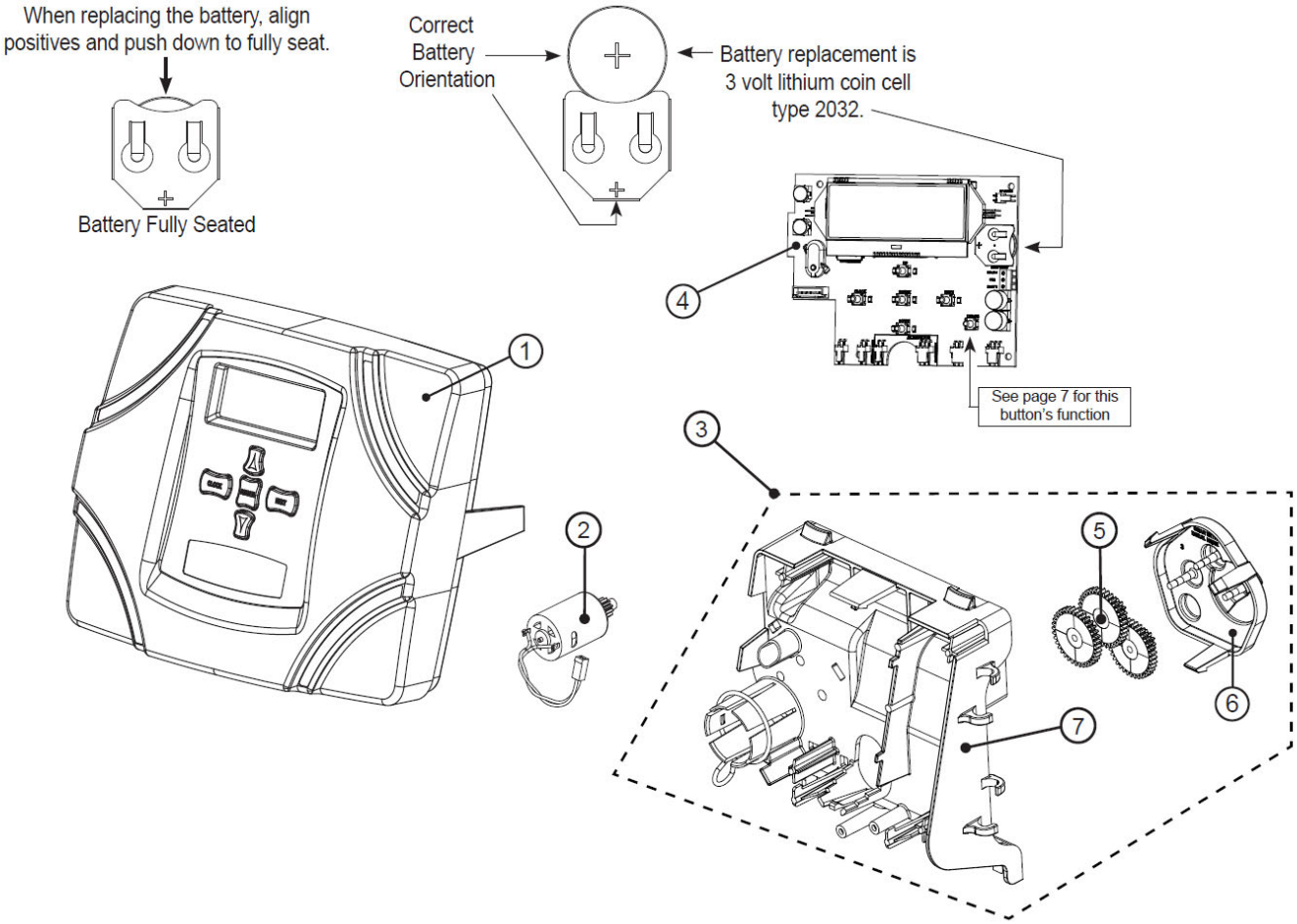
Drawing No.	Order No.	Description	Quantity
1	V4392-01	WS1NA FRONT COVER ASY	1
2	V3107-01	WS1 MOTOR	1
3	V3002-A	WS1 DRIVE BRACKET ASY	1
4	V3757PR-03BOARD	WS1THRU2L/2 PR PC BOARD 20POS REPLACE	1
5	V3110	WS1 DRIVE GEAR 12X36	3
6	V3109	WS1 DRIVE GEAR COVER	1
7	V3106-01	WS1 DRIVE BRACKET & SPRING CLIP	1
Not Shown	V3186-05	WS1 POWER SUPPLY US 15VDC VI	1
	V3186EU-05	WS1 POWER SUPPLY EU 15VDC VI	
	V3186UK-05	WS1 POWER SUPPLY EK 15VDC VI	
	V3186-01	WS1 POWER CORD ONLY	
Not Shown	V3343	WS1 DRIVE BACK PLATE	1

Refer to Control Valve Service Manual for other drawings and part numbers.

Relay Driver Output Type – Dual Solid-State 12VDC "wet" contacts - N.O.
Relay Driver Output Capacity - 12VDC @100mA per relay output (total current through both outputs not to exceed 200mA).
NOTE: Check for proper mounting dimensions on valve backplate prior to mounting an external relay under control cover.

Power Supply	U.S.	International
Supply Voltage	100-120 VAC	100-240 VAC
Supply Frequency	50/60 Hz	50/60 Hz
Output Voltage	15 VDC	15 VDC
Output Current	500 mA	500 mA

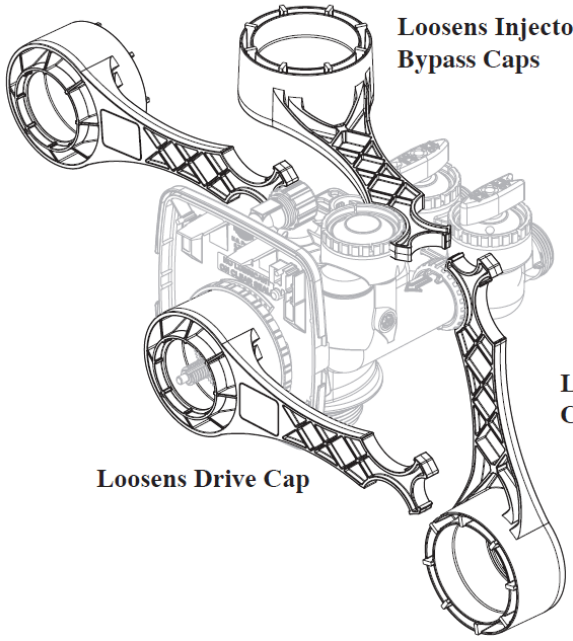
Wiring For Correct On/Off Operation	
PC Board Relay Terminal Block	Relay
RELAY1	Coil -
COM	Coil +
RELAY2	Coil -



Service Wrench - CV-P-V3193-02

Not provided with system. Separate purchase required. Bypass and depressurize system before using wrench.

Loosens Drain Nut in Polytube Applications



Loosens Injector And Bypass Caps

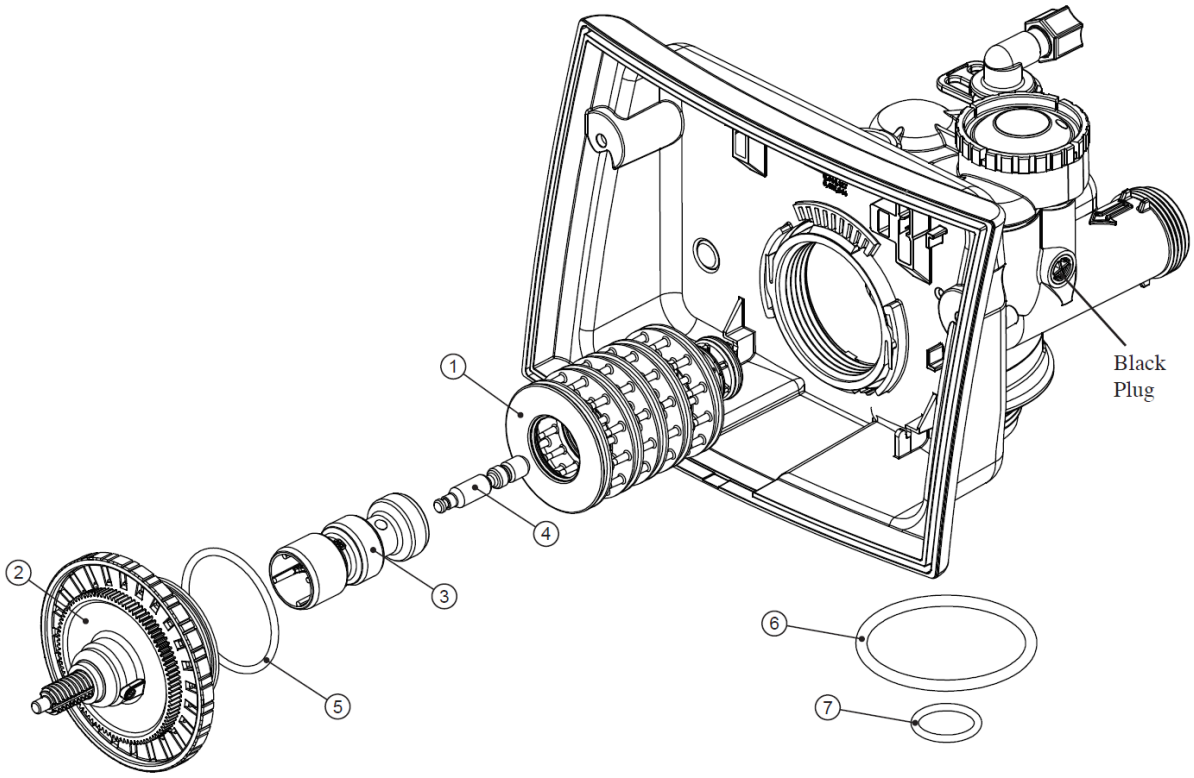
Although no tools are necessary to assemble or disassemble the valve, the Service Wrench, (shown in various positions on the valve) is available to aid in assembly or disassembly.

Loosens Quick Connect Nuts

Loosens Drive Cap

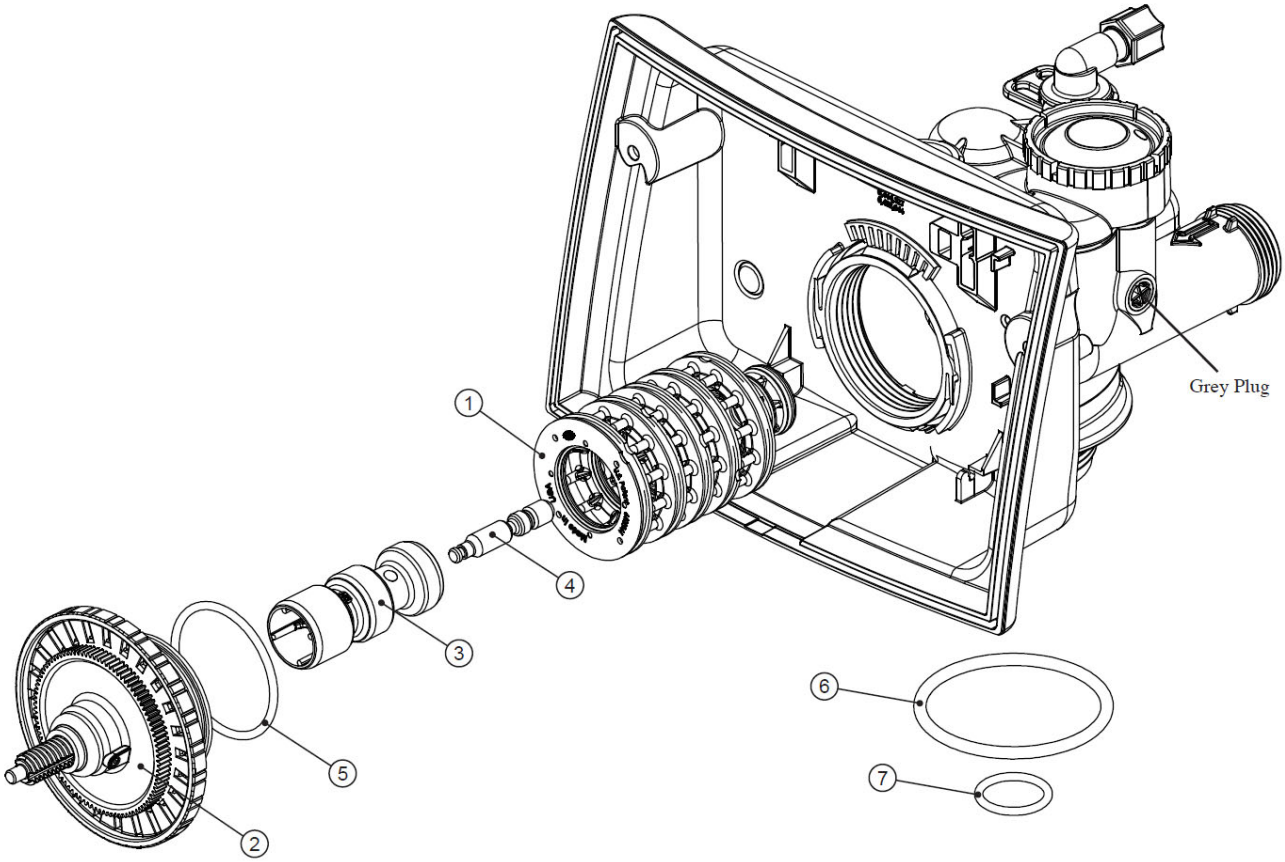
1” Control Valve

Drawing No.	Order No.	Description	Quantity
1	CV-P-V3005	Spacer Stack Assembly	1
2	CV-P-V3004	Drive Cap ASY	1
3	CV-P-V3011	Piston Downflow ASY	1
4	CV-P-V3174	Regenerant Piston	1
5	CV-P-V3135	O-ring 228	1
6	CV-P-V3180	O-ring 337	1
7	CV-P-V3105	O-ring 215 (Distributor Tube)	1



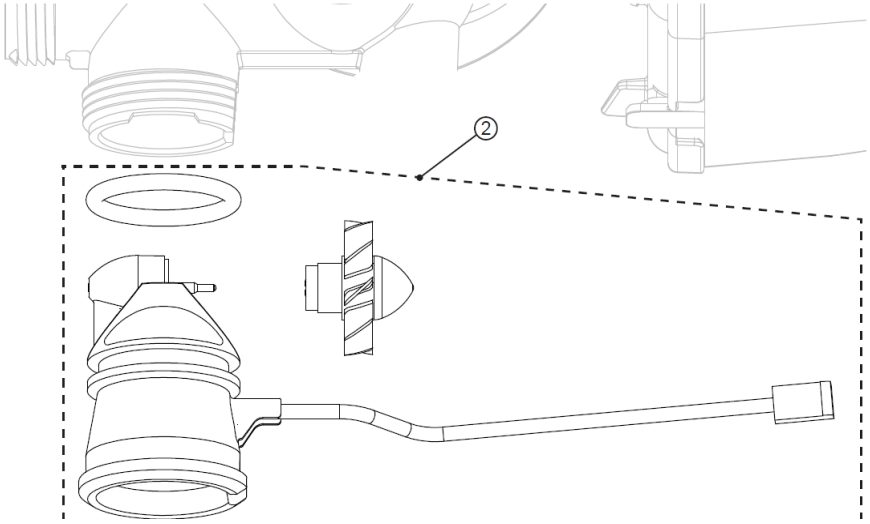
1¼” Control Valve

Drawing No.	Order No.	Description	Quantity
1	CV-P-V3430	1.25 Spacer Stack Assembly	1
2	CV-P-V3004	Drive Cap ASY	1
3	CV-P-V3407	1.25 Piston Downflow ASY	1
4	CV-P-V3174	Regenerant Piston	1
5	CV-P-V3135	O-ring 228	1
6	CV-P-V3180	O-ring 337	1
7	CV-P-V3358	O-ring 219 (Distributor Tube Opening 1.32")	1



Water Meter

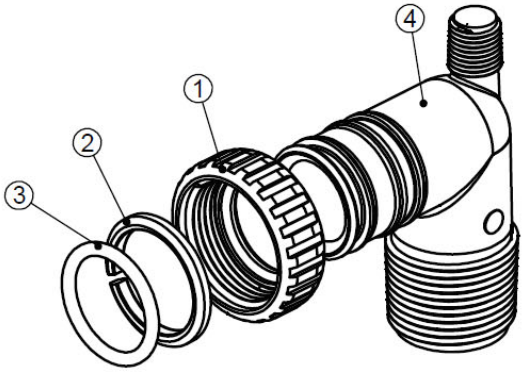
Drawing No.	Order No.	Description	Quantity
1	CV-P-V3151	Nut 1" QC	1
2	CV-P-V3003	Meter ASY	1



Installation Fitting Assemblies

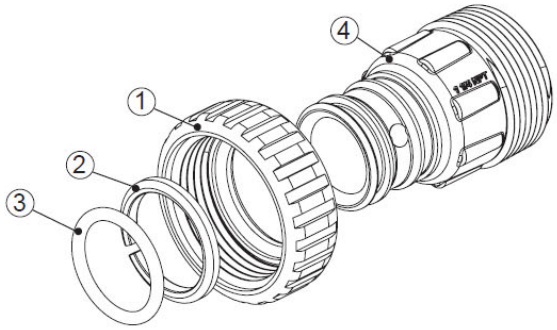
Order No: **BP-C-V3007**
Description: **Fitting 1" PVC Male NPT Elbow Assembly**

Drawing No.	Order No.	Description	Quantity
1	CV-P-V3151	Nut 1" Quick Connect	2
2	CV-P-V3150	Split Ring	2
3	CV-P-V3105	O-Ring 215	2
4	CV-P-V3149	Fitting 1 PVC Male NPT Elbow	2



XT-90
Order No: **BP-C-V3007-05**
Description: **Fitting 1-¼" Plastic Male NPT Assembly**

Drawing No.	Order No.	Description	Quantity
1	CV-P-V3151	Nut 1" Quick Connect	2
2	CV-P-V3150	Split Ring	2
3	CV-P-V3105	O-Ring 215	2
4	CV-P-V3317	Fitting 1-¼" Plastic Male NPT	2



Coconut Shell-High Activated Carbon (CS-HAC) may be used for a variety of water treatment applications requiring the reduction of chlorine, tastes and odors.

Coconut Shell-High Activated Carbon (CS-HAC)

Clack granular activated carbon is designed for reduction of tastes, odors and dissolved organic chemicals from municipal and industrial water supplies. Manufactured from select grades of coconut shell coal to produce a high density, durable granular product capable of withstanding the abrasion and dynamics associated with repeated hydraulic transport, backwashing and mechanical handling. Activation is carefully controlled to produce exceptionally high internal surface area with optimum pore size for the adsorption of a broad range of low molecular weight organic contaminants and oxidizing agents like chlorine and ozone.

One of the most common applications for Clack Coconut Shell-High Activated Carbon (CS-HAC) is the reduction of the undesirable tastes and odors present in many chlorinated water supplies. CS-HAC has been successful for many years in the reduction of free chlorine from water supplies. The end product is clean, fresh water with no objectionable taste or odor characteristics.

To obtain maximum efficiency of the activated carbon in the adsorption process, it is desirable to have the greatest possible surface area in the smallest practical volume. This is necessary because the rate of adsorption is proportional to the amount of surface area of the adsorbing media. CS-HAC has a surface area of 1,050 square meters per gram. This results in high efficiency and greater system economy. Clack has for many years provided activated carbon to the OEM and replacement market as a pre-treatment for other water purification systems as well as for use in individual treatment equipment for the removal of specific impurities.

CS-HAC requires periodic backwashing to eliminate accumulated suspended matter and to re-grade the filter bed. CS-HAC has an extremely high capacity but must be replaced when the filter bed loses the capacity for reduction of taste and odor. CS-HAC may be used in either domestic or industrial applications using gravity flow or pressurized filter vessels.

ADVANTAGES

- CS-HAC is an outstanding material for applications requiring taste, odor and dissolved organic chemical removal from water with suspended matter present. This product can be used for filtering waters having a wide range of pH levels.
- Large surface area results in an exceptionally high capacity and efficiency.
- Balanced pore structure gives a more efficient adsorption range.
- CS-HAC is very durable so losses due to attrition are kept to a minimum.
- CS-HAC has a very high carbon-low ash content.
- Service rates of 5 gpm/sq. ft. are practical for ordinary taste, odor and chlorine loads.
- CS-HAC will impart a high "polish" to the filtered water.

PHYSICAL PROPERTIES

- Color: Black
- Mesh Size: 12 x 40
- Bulk Density: 28 lbs./cu. ft.
- Effective Size: 0.55-0.75 mm
- Ash Content: 2.5%
- Iodine Number: 1,000 mg/g
- Moisture as packed: 3%
- pH 10

CERTIFICATIONS AND APPROVALS

- NSF/ANSI Standard 61

CONDITIONS FOR OPERATION

- Water to be filtered should preferably be free of oil and suspended matter
- The water to be filtered should be relatively free of iron and turbidity for maximum service life
- Water pH range: wide range
- Bed depth: 26-30 in.
- Freeboard: 50% of bed depth (min.)
- Service flow rate: 5 gpm/sq. ft.
- Backwash flow rate: 10-12 gpm/sq. ft.
- Backwash bed expansion: 30-40% of bed depth
- Upon installation, backwash to remove carbon fines before placing unit into service

Catalytic - High Activated Carbon (CAT-HAC) may be used for a variety of water treatment applications including the reduction of chloramines and hydrogen sulfide from potable water.

Catalytic-High Activated Carbon (CAT-HAC)

Clack Catalytic Activated Carbon is a high activity coconut shell based granular carbon that is specifically designed for the reduction of chloramines and hydrogen sulfide from potable water.

Manufactured from select grades of coconut shell coal to produce a high density, durable granular product capable of withstanding the abrasion and dynamics associated with repeated hydraulic transport, backwashing and mechanical handling. Activation is carefully controlled to produce exceptionally high internal surface area with optimum pore size for the adsorption of a broad range of low molecular weight organic contaminants and oxidizing agents like chlorine and ozone.

The catalytic activity of CAT-HAC makes it highly effective for the reduction of chloramines and hydrogen sulfide from potable water. Its large micropore volume also makes it particularly well suited for the removal of low molecular weight organic compounds and their chlorinated by-products such as chloroform and other trihalomethanes (THMs).

To obtain maximum efficiency of the activated carbon in the adsorption process, it is desirable to have the greatest possible surface area in the smallest practical volume. This is necessary because the rate of adsorption is proportional to the amount of surface area of the adsorbing media. CAT-HAC has a surface area of 1,060 square meters per gram. This results in high efficiency and greater system economy. Clack has for many years provided activated carbon to the OEM and replacement market as a pre-treatment for other water purification systems as well as for use in individual treatment equipment for the removal of specific impurities.

CAT-HAC requires dissolved oxygen concentration of 4ppm (mg/L) to insure effective removal of iron and hydrogen sulfide.

CAT-HAC requires periodic backwashing to eliminate accumulated suspended matter and to re-grade the filter bed. CAT-HAC has an extremely high capacity but must be replaced when the filter bed loses the capacity for reduction of chloramines and hydrogen sulfide. CAT-HAC may be used in either domestic or industrial applications using gravity flow or pressurized filter vessels.

ADVANTAGES

- CAT-HAC is an outstanding coconut shell based material for applications requiring chloramine, hydrogen sulfide and dissolved organic compound reduction. This product can be used for filtering water having a wide range of pH levels.
- Large surface area results in an exceptionally high capacity and efficiency.
- Balanced pore structure gives a more efficient adsorption range.
- CAT-HAC is very durable so losses due to attrition are kept to a minimum.
- CAT-HAC has a very high carbon, low ash content.
- CAT-HAC will impart a high "polish" to the filtered water.

PHYSICAL PROPERTIES

- Color: Black
- Mesh Size: 12 x 40
- Bulk Density: 28 lbs./cu. ft.
- Effective Size: 0.55-0.75 mm
- Ash Content: Max 4%
- Iodine Number: 1,000 mg/g
- Moisture as packed: Max 5%
- pH 10

CERTIFICATIONS AND APPROVALS

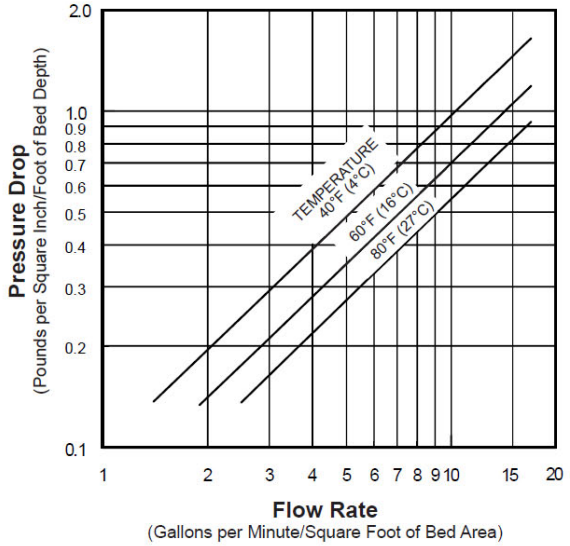
- NSF/ANSI Standard 61
- AWWA B604-96
- EN12915

$$\text{Empty Bed Contact Time in Minutes} = \frac{\text{BedVolume (ft}^3\text{) x 7.481 gal/ft}^3}{\text{Flowrate (gpm)}}$$

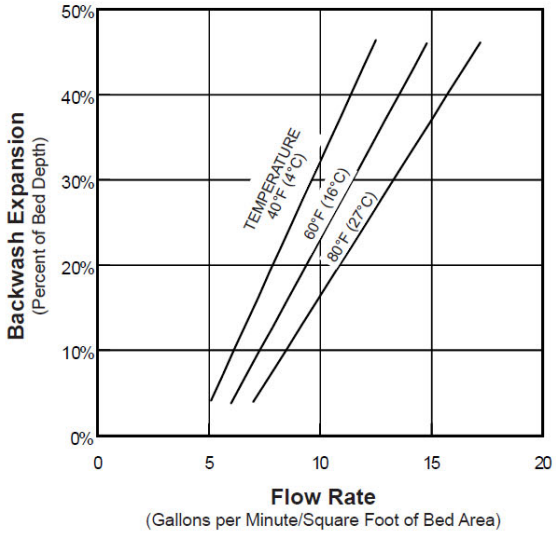
CONDITIONS FOR OPERATION

- Water to be filtered should preferably be free of oil and suspended matter
- The water to be filtered should be relatively free of turbidity for maximum service life
- Water pH range: wide range
- Bed depth: 26-30 in.
- Freeboard: 50% of bed depth (min.)
- Empty bed contact time 3 minutes minimum
- Dissolved Oxygen Concentration 4 ppm (mg/L)
- Service flow rate: 5 gpm/sq. ft.
- Backwash flow rate: 8-10 gpm/sq. ft.
- Backwash bed expansion: 30-40% of bed depth
- Upon installation, backwash to remove carbon fines before placing unit into service

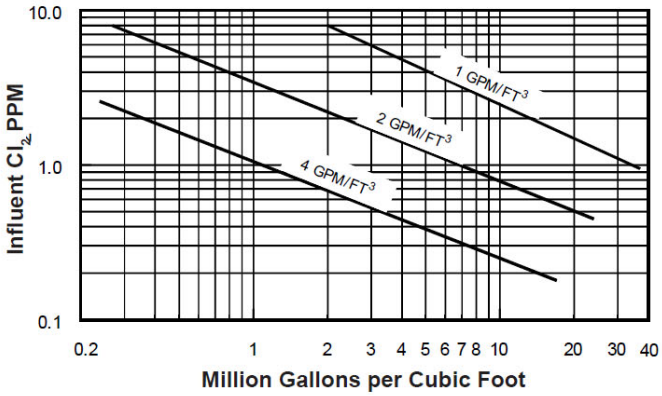
Service Flow Pressure Drop



Backwash Bed Expansion



Dechlorination of Water (pH 7, 21°C)



$$\text{Empty Bed Contact Time in Minutes} = \frac{\text{BedVolume (ft}^3\text{) x 7.481 gal/ft}^3}{\text{Flowrate (gpm)}}$$

Certified to NSF/ANSI Standard 61

Catalytic - High Activated Carbon (CAT-HAC) is manufactured by Jacobi Carbons, Inc.

ORDER INFORMATION

Part No.	Description	Cu. Ft./Bag	Wt./Cu. Ft.*	Bags/Pallet	Weight/Pallet	Pallet Dimensions
A8062	CAT-HAC 12x40 mesh	1	28 lbs.	40	1170 lbs.	39" x 45" x 44"

*Weight per cubic foot is approximate.

CAT-HAC manufactured by Jacobi Carbons Inc. is made in Sri Lanka.

NOT FOR INSTALLATION IN CALIFORNIA

The information and recommendations in this publication are based on data we believe to be reliable. They are offered in good faith, but do not imply any warranty or performance guarantee, as conditions and methods of use of our products are beyond our control. As such, Clack makes no express or implied warranties of any kind with respect to this product, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. We recommend that the user determine whether the products and the information given are appropriate, and the suitability and performance of our products are appropriate, by testing with its own equipment. Specifications are subject to change without notice.

The information and recommendations given in this publication should not be understood as recommending the use of our products in violation of any patent or as a license to use any patents of the Clack Corporation.

The filter medias listed in this brochure do not remove or kill bacteria. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Clack will not be liable under any circumstance for consequential or incidental damages, including but not limited to, lost profits resulting from the use of our products.

KDF® 55 Process Medium helps you offer your customers less

When you use ***KDF® 55 Process Medium*** ahead of the granular activated carbon (GAC) stage in point-of-use (POU) water filters, you do three things:

One, you offer your customers a lot less than they're used to:

- Less bacteria
- Less free chlorine
- Less heavy metal content
- Less scale buildup
- Less filter maintenance

Two, you enhance the performance of the carbon.

Three, you also extend the useful life of the carbon.

Proprietary Process Media

The full line of ***KDF Process Media*** is so unique that it is protected by 15 US patents and numerous foreign patents. That doesn't include the patents currently pending. We have no direct competition because there is nothing else quite like ***KDF Process Media***.

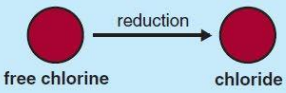
No one else—and we stress *no one else*—can offer you and your customers the purity or all of the benefits of using ***KDF Process Media***. Period. In addition to ***KDF 55 Process Medium*** for POU water filters, **KDF Fluid Treatment, Inc.** manufactures ***KDF Process Media*** in other forms for other specific water filtration applications.

How KDF 55 Process Medium Works

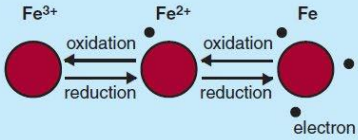
KDF 55 Process Medium is a high-purity copper-zinc alloy. When used in a water treatment unit, it undergoes a chemical process known as redox. Redox is short for oxidation-reduction, which is a chemical reaction where electrons are transferred between molecules. In some cases, such as free chlorine, this transfer results in the formation of benign substances, such as chloride in this case, which then passes through the filter. In a similar way, copper, lead, mercury, and other heavy metals react to plate out onto the medium's surface effectively being removed from the water supply. ***KDF 55 Process Medium*** is so effective that it removes up to 98% of inorganic water-soluble heavy metals that are a concern to many public health officials and many consumers.

In addition, ***KDF 55 Process Medium*** controls microorganisms and reduces lime scale in problem areas like showers and tubs. ***KDF 55 Process Medium*** even changes waterborne calcium molecules that inhibit scale buildup and improves the taste of some of your favorite beverages.

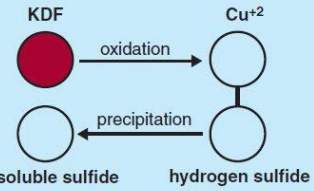
Typical Redox Reaction



Harmful chlorine is removed by changing free chlorine into chloride ions.



KDF process media act as catalysts to change soluble ferrous cations into insoluble ferric hydroxide, which is easily removed by regular backwashing.



KDF process media converts hydrogen sulfide to insoluble sulfide, which can be removed by backwashing.

Ahead Of The Carbon, Ahead Of The Game

KDF 55 Process Medium is the ideal complement to GAC. Because GAC removes chlorine by surface chemistry, it actually fosters bacterial growth. But, unlike carbon, ***KDF 55 Process Medium*** is truly bacteriostatic. The electrolytic field created by the redox process is an environment deadly to some microorganisms; it also creates hydroxyl radicals and hydrogen peroxides that interfere with the ability of some other microorganisms to function.

Helping Carbon Do What Carbon Does Best

By reducing inorganic contaminants before they get to the carbon bed, ***KDF 55 Process Medium*** protects GAC from bacterial fouling and bacterial buildup, thus reserving the adsorption capacity of GAC for removing organic contaminants. This means less frequent carbon re-bedding and less frequent carbon media disposal. Remember, carbon is not re-cyclable but ***KDF 55 Process Medium*** is.

Less carbon lasts longer. ***KDF 55 Process Medium*** is more effective than carbon in removing chlorine. Not only does this mean the carbon works more efficiently, it also means the amount of carbon can be reduced. Less carbon means smaller filters. Smaller filters mean less maintenance. Less maintenance means reduced operating costs. Your customers will appreciate you more for less.

Now that carbon is available to do what it does best—control odor and improve taste—its effective life can be extended by up to fifteen times.

KDF 55 Process Medium Improves The Performance Of Shower Filters

At higher water temperatures, such as used for showering, the very capacity of GAC that makes it so effective and desirable in a water filtration system (trapping odor-causing contaminants, including chlorine) works against it in the shower. Higher temperatures can cause some contaminants trapped in the carbon bed to re-enter the water flow. Hot water, however, has no such effect on ***KDF 55 Process Medium***. In fact, the higher the water temperature, the more effective ***KDF 55 Process Medium*** becomes in reducing free chlorine.

As noted above, ***KDF 55 Process Medium*** improves the performance of carbon. Less contaminants get to the carbon so less can go through it. Your customer will see less of the effects of chlorine such as dry flaky skin and damaged hair while the ***KDF 55 Process Medium*** helps control the unwanted growth of bacteria, fungi, algae, mold and lime scale in the tub or shower.

Use KDF 55 Process Medium At Every Point-Of-Use

Although this is not an exhaustive list, it hints at the broad range of applications where your customers will benefit from the advantages of your adding ***KDF 55 Process Medium*** to your carbon-based filters.

- Basements
- Bathrooms
- Boats/Marinas
- Cafes
- Coffee houses
- Concession stands
- Convenience stores
- Drinking fountains
- Factories
- Gas stations
- Groceries
- Hospitals
- Hotels/motels
- Icemakers
- Inns
- Kidney dialysis centers
- Kitchens
- Laundry facilities
- Medical laboratories
- Nursing or assisted-living facilities
- Offices
- Pharmaceutical manufacturers
- Recreational vehicles
- Restaurants (including fast food)
- Schools
- Soft drink dispensers
- Spas
- Supermarket produce misters
- Taverns
- Water-vending machines

Wherever there's a water faucet supplying private, public or commercial needs for drinking, eating or washing, ***KDF 55 Process Medium*** will make a welcome difference.

KDF 55 Process Medium Improves The Performance Of Other Water Filtration Systems, Too

There are many water filtration systems available today. Reverse osmosis (RO) and deionization (DI) are two popular options. ***KDF 55 Process Medium*** enhances performance in these systems, too. Just as it does with GAC, ***KDF 55 Process Medium*** allows RO and DI systems to concentrate on their strengths while protecting membranes and ion exchange resins downstream.

Certiflow Product Warranty

Congratulations on purchasing one of the finest water filter systems on the market today. To the original purchaser at the original installation site your new water filter system carries a comprehensive Warranty on some of the components on the filter system.

10 Year Warranty Items:

- **Mineral tank carries a manufactures 10 year Warranty against manufactures defects and workmanship only.**

5 Year Warranty:

- **Control valve head carries a 5 year Warranty against manufactures defects and workmanship only.**

Warranty Exclusions:

- **Defective part or parts will be repaired or replaced at manufactures option, F.O.B. Fairview, Utah.**
- **All service must be performed by an Authorized factory trained technician.**
- **Product warranty does not cover or include any freight or service charges.**
- **This warranty does not apply to filter systems that have been neglected, wrongfully applied, installed or have had hot water run through or back feeding through unit.**
- **This warranty does not apply to filter systems that have been installed on water pressure below 40-PSI or over 90-PSI.**
- **Manufacture or Certiflow is not liable for any freight, loss & damage, service & or labor charges due to defective part.**
- **This warranty does not apply due to any of the following:**

  Installation Errors, High water pressure, Vacuum, Organic Loading, Hot Water Back Feed, Electrical Issues, Flooding, Fire, Freezing, UV Exposure, Earthquakes, Weather elements, or any other natural disaster!

Certiflow Water LLC
19648 Lariat Circle
Fairview, Utah 84629
Phone 800-946-8870

*****Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before and after the system*****

Not for installation in California