



US Water Systems Fusion Superfilters

Chemsorb, Calcite,
Carbon, Bone Char and
Katalox-Light

US Water
systems.com

Owners Manual



1. Read all instructions carefully before operation.
2. Avoid pinched o-rings during installation by applying (provided with install kit) NSF certified lubricant to all seals.
3. This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

US Water Systems
1209 Country Club Road
Indianapolis, IN 46234
1-800-608-8792
WWW.USWATERSYSTEMS.COM

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Unpacking / Inspection

Be sure to check the entire unit for any shipping damage or missing parts. Also note damage to the shipping cartons. Contact US Water Systems at 1-800-608-8792 for all damage and loss claims. A damage claim must be made within 24 hours of receipt of the unit or the claim may not be honored.

Small parts, needed to install the softener, are in a parts bag. To avoid loss of the small parts, keep them in the parts bag until you are ready to use them.

Safety Guide

For your safety, the information in this manual must be followed to minimize the risk of electric shock, property damage or personal injury.

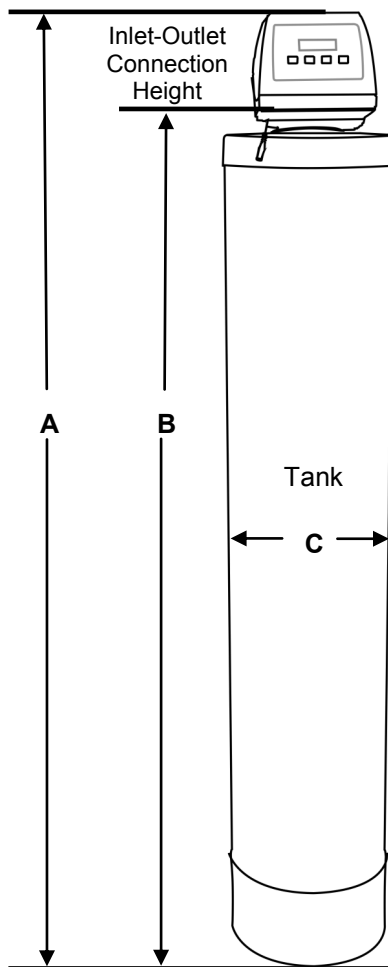
- Check and comply with your provincial / state and local codes. You must follow these guidelines.
- Use care when handling the filter tank. Do not turn upside down, drop, drag or set on sharp protrusions.
- The system works on 12 volt-60 Hz electrical power only. Be sure to use only the included transformer.
- Transformer must be plugged into an indoor 120 volt, grounded outlet only.
- **WARNING:** This system is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Proper Installation

This water filter system must be properly installed and located in accordance with the Installation Instructions before it is used.

- **Do not** install or store where it will not be exposed to temperatures below freezing or exposed to any type of weather. Water freezing in the system will break it. Do not attempt to treat water over 100°F.
- **Do not** install in direct sunlight. Excessive sun or heat may cause distortion or other damage to non-metallic parts.
- Properly ground to conform with all governing codes and ordinances.
- Use only *lead-free solder and flux* for all sweat-solder connections, as required by state and federal codes.
- Maximum allowable inlet water pressure is 125 psi. If daytime pressure is over 80 psi, night time pressure may exceed the maximum. Use a pressure reducing valve to reduce the flow if necessary.
- **WARNING:** Discard all unused parts and packaging material after installation. Small parts remaining after the installation could be a choke hazard.

Overall System



Model	Tank Size	A	B	C
FSF-150	10" X 54"	60.25"	57.25"	10"
FSF-200	12" X 52"	58.25"	55.25"	12"
FSF-250	13" X 54"	60.25"	57.25"	13"
FSF-300	14" x 65"	72.25"	68.25"	14"
FSF-400	16" x 65"	72.25"	68.25"	16"
FSF-500	18" x 65"	72.25"	68.25"	16"

Specifications

Specifications	CHEMSORB SEDIMENT FILTER			
	FSF-150	FSF-200	FSF-250	FSF-300
Service Flow Rates				
Normal	6.0 GPM	7.0 GPM	10.0 GPM	15 GPM
Peak	8.0 GPM	10.0 GPM	15.0 GPM	20.0 GPM
Micron Rating	5 micron	5 micron	5 micron	5 micron
Backwash Flow Rate	7.0 GPM	9.0 GPM	11.0 GPM	No Button
Filter Media Volume - Cubic Feet	1.5 FT3	2.0 FT3	2.5 FT3	3.0 FT3
Filter Tank Size	10" X 54"	12" X 52"	13" X 54"	14" X 65"
Tank Jacket	YES	YES	YES	NO
Plumbing Connections	3/4" or 1"			
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA			
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit			
Water Pressure	Min. 20 - Max 125 psi			

Specifications	GAC AND CATALYTIC CARBON FILTER				
	FSF-150	FSF-200	FSF-250	FSF-300	FSF-400
Service Flow Rates					
Normal	6.0 GPM	8.0 GPM	10.0 GPM	12.0 GPM	15.0 GPM
Peak	8.0 GPM	10.0 GPM	13.0 GPM	15.0 GPM	20.0 GPM
Backwash Flow Rate	5.0 GPM	7.0 GPM	11.0 GPM	No Button	No Button
Filter Media Volume - Cubic Feet	1.5 FT3	2.0 FT3	2.5 FT3	3.0 FT3	4.0 FT3
Filter Tank Size	10" X 54"	12" X 52"	13" X 54"	14" X 65"	16" X 65"
Tank Jacket	YES	YES	YES	NO	NO
Plumbing Connections	3/4" or 1"				
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA				
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit				
Water Pressure	Min. 20 - Max 125 psi				

Specifications	CALCITE				
	FSF-150	FSF-250			
Service Flow Rates					
Normal	4.0 GPM	8.0 GPM			
Peak	6.0 GPM	10.0 GPM			
Backwash Flow Rate	5.0 GPM	11.0 GPM			
Filter Media Volume - Cubic Feet	1.5 FT3	2.5 FT3			
Filter Tank Size	10" X 54"	13" X 54"			
Tank Jacket	NO	NO			
Plumbing Connections	3/4" or 1"				
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA				
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit				
Water Pressure	Min. 20 - Max 125 psi				

Specifications

Specifications	BONE CHAR				
	FSF-150	FSF-200	FSF-250	FSF-300	FSF-400
Service Flow Rates					
Normal	6.0 GPM	8.0 GPM	10.0 GPM	12.0 GPM	15.0 GPM
Peak	8.0 GPM	10.0 GPM	13.0 GPM	15.0 GPM	20.0 GPM
Backwash Flow Rate	5.0 GPM	7.0 GPM	11.0 GPM	No Button	No Button
Filter Media Volume - Cubic Feet	1.5 FT3	2.0 FT3	2.5 FT3	3.0 FT3	4.0 FT3
Filter Tank Size	10" X 54"	12" X 52"	13" X 54"	14" X 65"	16" X 65"
Tank Jacket	YES	YES	YES	NO	NO
Plumbing Connections	3/4" or 1"				
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA				
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit				
Water Pressure	Min. 20 - Max 125 psi				

Specifications	KATALOX LIGHT				
	FSF-100	FSF-150	FSF-200	FSF-250	
Service Flow Rates					
Normal	3.0 GPM	6.0 GPM	12.0 GPM	15.0 GPM	
Peak	5.0 GPM	10.0 GPM	15.0 GPM	20.0 GPM	
Backwash Flow Rate	5.0 GPM	5.0 GPM	7.0 GPM	11.0 GPM	
Filter Media Volume - Cubic Feet	1.0 FT3	1.5 FT3	2.0 FT3	2.5 FT3	
Filter Tank Size	9" X 48"	10" X 54"	12" X 52"	13" X 54"	
Tank Jacket	YES	YES	YES	YES	
Plumbing Connections	3/4" or 1"				
Electrical Requirements	Input 120V 60 Hz - Output 12V 650mA				
Water Temperature	Min 39 - Max. 100 degrees Fahrenheit				
Water Pressure	Min. 20 - Max 125 psi				

- Continuous operation at flow rates greater than the service flow rate may affect capacity and efficiency performance.
- The manufacturer reserves the right to make product improvements which may deviate from the specifications and descriptions stated herein, without obligation to change previously manufactured products or to note the change.
- Peak flow rates are intended for intermittent use only and are for residential application only
- At the stated service flow rates, the pressure drop through these devices will not exceed 15 psig

Before Starting Installation

Tools, Pipe, and Fittings, Other Materials

- Pliers
- Screwdriver
- Teflon tape
- Razor knife
- Two adjustable wrenches
- Additional tools may be required if modification to home plumbing is required.
- Plastic inlet and outlet fittings are included with the filter. To maintain full valve flow, 3/4" or 1" pipes to and from the filter fittings are recommended. It is important to maintain the same, or larger, pipe size as the water supply pipe, up to the softener inlet and outlet.
- Use copper, brass, or PEX pipe and fittings.
- Some codes may also allow PVC plastic pipe.
- ALWAYS install the included bypass valve, or 3 shut-off valves. Bypass valves let you turn off water to the filter for repairs if needed, but still have water in the house pipes.
- 5/8" OD drain line is needed for the valve drain.

Sizing Requirements

Water Pressure

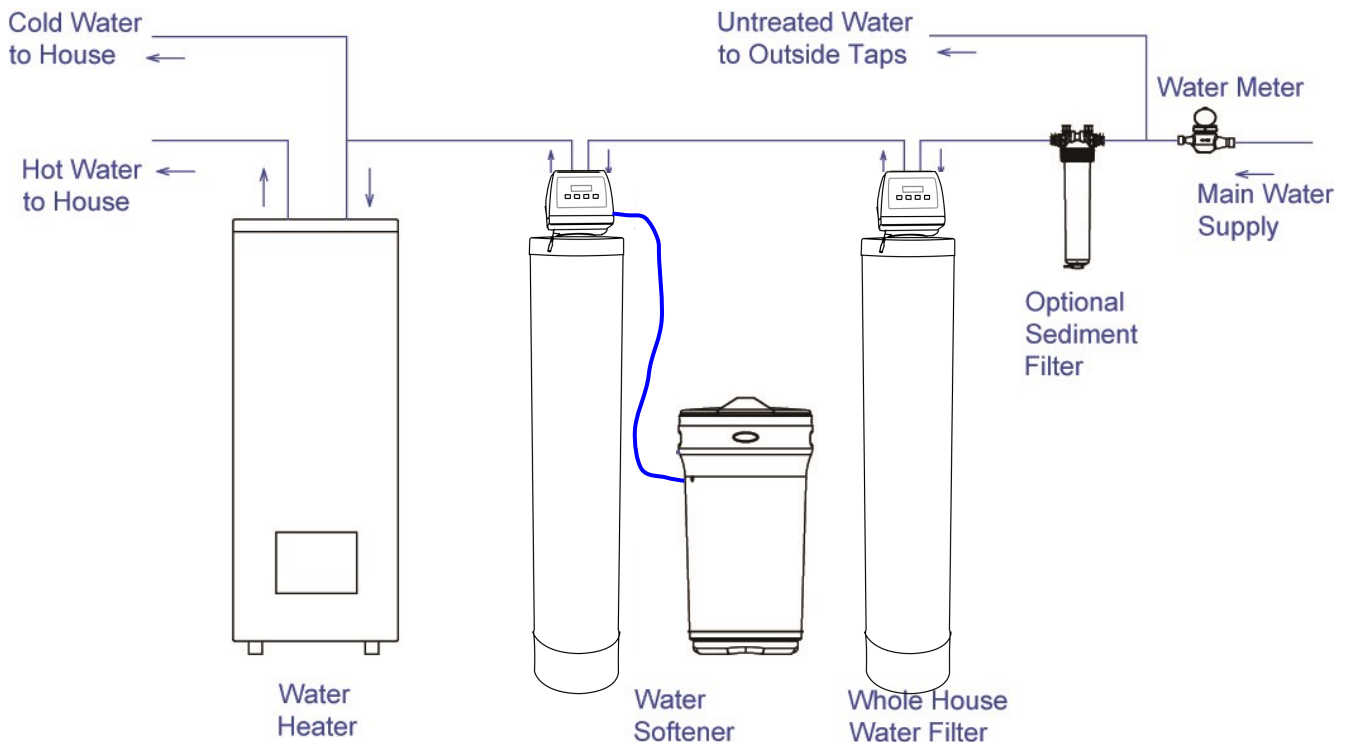
The water system must have a pump large enough to deliver the recommended backwash rate with a minimum pressure at the inlet of the filter of 30 psi. If the existing system cannot do this, it must be upgraded to do so. Whenever possible, the water system should be adjusted to deliver at least 30 psi for even more satisfactory results.

Backwash Flow Rates

The most important criteria in sizing a filter is the capacity of the pump. The water must pass through the filter media at the proper service flow rate. The filter must also be backwashed at a flow rate sufficient to dislodge and remove the captured particles. Failure to provide sufficient water will cause a build-up of particles in the filter media, impairing its ability. In order for your filter to backwash and rinse properly, your pump must be capable of providing the backwash flow rates indicated on page 4 & 5.

Where To Install The Filter

- Place the filter tank as close as possible to the pressure tank (well system) or water meter (city water).
- Place the filter tank as close as possible to a floor drain, or other acceptable drain point (laundry tub, sump, standpipe, etc.).
- Connect the filter to the main water supply pipe BEFORE the water heater. **DO NOT RUN HOT WATER THROUGH THE FILTER.** Temperature of water passing through the filter must be less than 100 deg. F.
- Do not install the filter in a place where it could freeze. **Damage caused by freezing is not covered by the warranty.**
- Put the filter in a place water damage is least likely to occur if a leak develops. The manufacturer will not repair or pay for water damage.
- A 120 volt electric outlet, to plug the included transformer into, is needed within 6 feet of the filter. The transformer has an attached 6 foot power cable. **Be sure the electric outlet and transformer are in an inside location, to protect from wet weather.**
- If installing in an outside location, you must take the steps necessary to assure the filter, installation plumbing, wiring, etc., are as well protected from the elements, contamination, vandalism, etc., as when installed indoors.
- **Keep the filter out of direct sunlight.** The sun's heat may soften and distort plastic parts.



Filter Preparation

Fusion Backwashing Filter Tank Installation Instructions

WATER PRESSURE: A minimum of 20 pounds of water pressure is required for regeneration valve to operate effectively.

ELECTRICAL FACILITIES: An uninterrupted alternating current (A/C) supply is required. Note: Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.

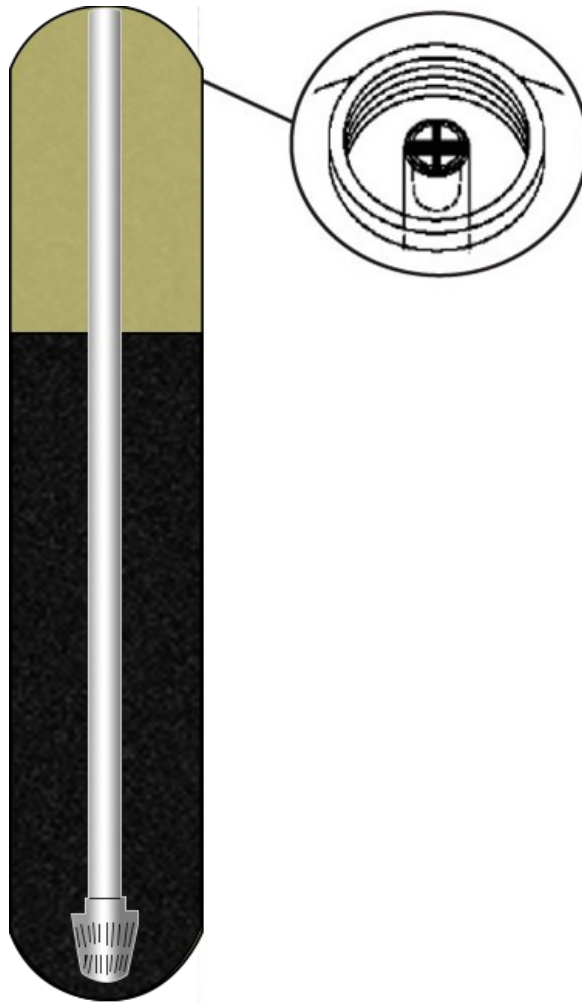
EXISTING PLUMBING: Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced.

LOCATION OF FUSION NLT TANK AND DRAIN: The Infusion tank should be located close to a drain to prevent air breaks and back flow.

CAUTION: Water pressure is not to exceed 80 psi, water temperature is not to exceed 110°F (43°C), and the unit cannot be subjected to freezing conditions.

Media Installation

- 1) Remove the tank from carton.
- 2) Verify the riser tube is centered in the bottom center of the tank. A flashlight may be necessary. The distributor tube will be flush with the top of the tank when it is centered.



Filter Preparation

3) Place a piece of duct tape over the riser tube so no media enters the riser while filling.



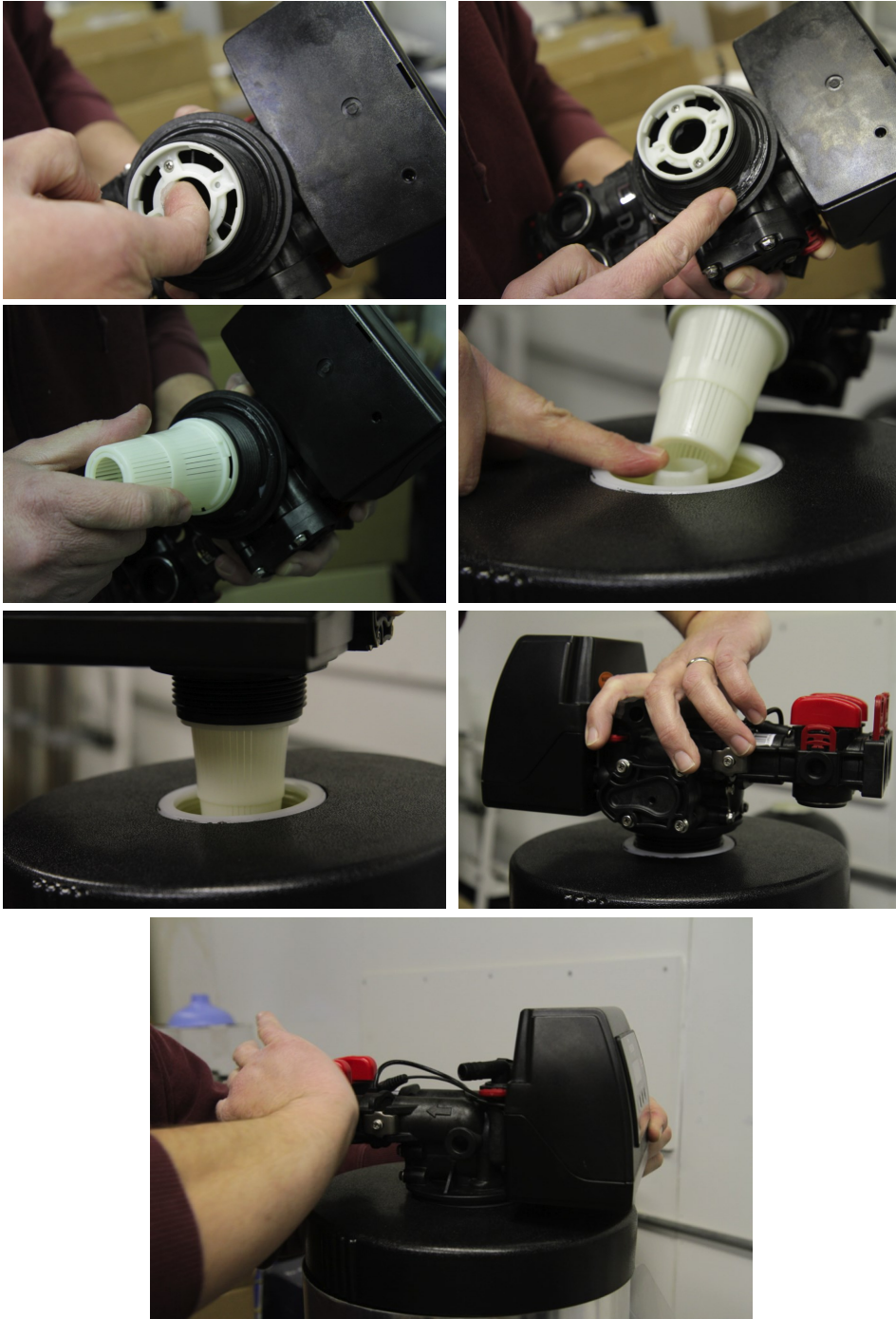
4) Use the Blue Funnel provided, to pour the gravel and media into the tank. Pour the gravel into the tank first, then the media. Pour the gravel and media evenly around the hole to ensure it is well distributed in the tank and pour slow enough, to keep from plugging the hole. A helper may be needed to hold the funnel during the filling process. It is recommended that a dust mask and safety goggles be worn to prevent possible injury. A shop vacuum can be used to capture dust during the filling procedure. Pour all the gravel and all the media shipped with the unit into the tank. US Water does not send extra/unused media.



5) When media is installed move tank side to side to settle the media. Remove the funnel and tape from the distributor tube.

Filter Preparation

6) Lubricate the distributor O-ring and the tank O-ring on the bottom of the control valve. Then install the upper basket on the bottom of the valve by lining up the tabs then turning the basket clockwise to lock it in place. Place the upper basket over the distributor tube and push the valve on the tank. Thread the valve on the tank by turning it clockwise. Be sure not to cross-thread the valve on the tank. Tighten the valve hand tight, then snug it further by tapping it with the palm of the hand. **DO NOT** use tools to tighten the valve or damage could occur.



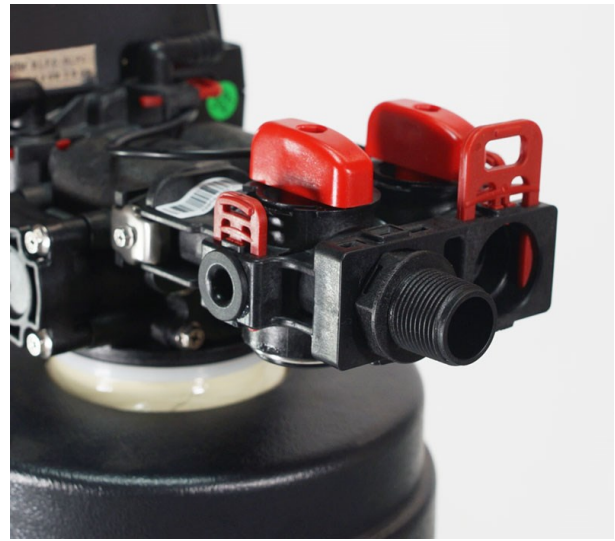
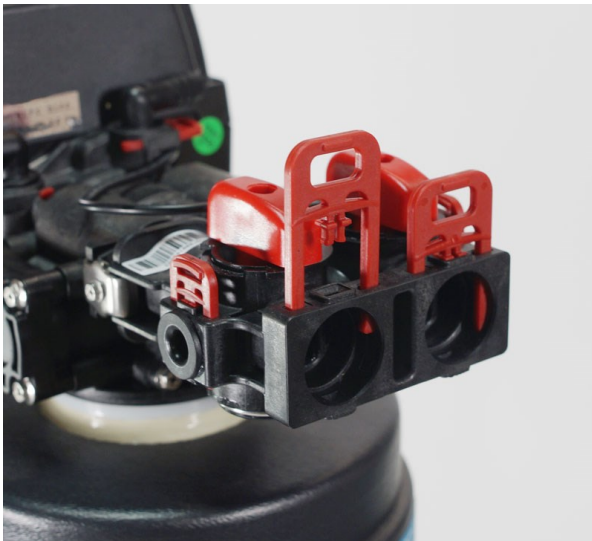
Installation Instructions

1. If your hot water tank is electric, turn off the power to it to avoid damage to the element in the tank.
2. If you have a private well, turn the power off to the pump and then shut off the main water shut off valve. If you have municipal water, simply shut off the main valve. Go to the faucet, (preferably on the lowest floor of the house) turn on the cold water until all pressure is relieved and the flow of water stops.
3. Locate the filter tank close to a drain where the system will be installed. The surface should be clean and level.
4. Connect the inlet and outlet of the filter using appropriate fittings. Perform all plumbing according to local plumbing codes. Pressure gauges should be added in some applications. There is a drawing on page 27 that shows gauge location.
 - **ON COPPER PLUMBING SYSTEMS BE SURE TO INSTALL A GROUNDING WIRE BETWEEN THE INLET AND OUTLET PIPING TO MAINTAIN GROUNDING WHEN APPLICABLE.**

Any solder joints being soldered near the valve must be done before connecting any piping to the valve. Always leave at least 6" (152 mm) between the control valve and joints being soldered when soldering pipes that are connected to the valve. Failure to do this could cause damage to the valve.

The Fusion Backwashing Filter is equipped with 1" removable connectors. It is recommended that these connectors are installed in the plumbing fitting using Teflon tape then lubricate the o-ring on the connector. Remove the red clips and push the connectors into the bypass valve once they are tight in the plumbing fitting. The red clips can then be re-installed to secure the connectors in the bypass valve.

The inlet and outlet can be identified on the bypass valve. There are arrows stamped in the bypass valve showing flow (See page 18 diagram). The arrow pointing toward the valve is the inlet and the arrow pointing away from the valve is the outlet.

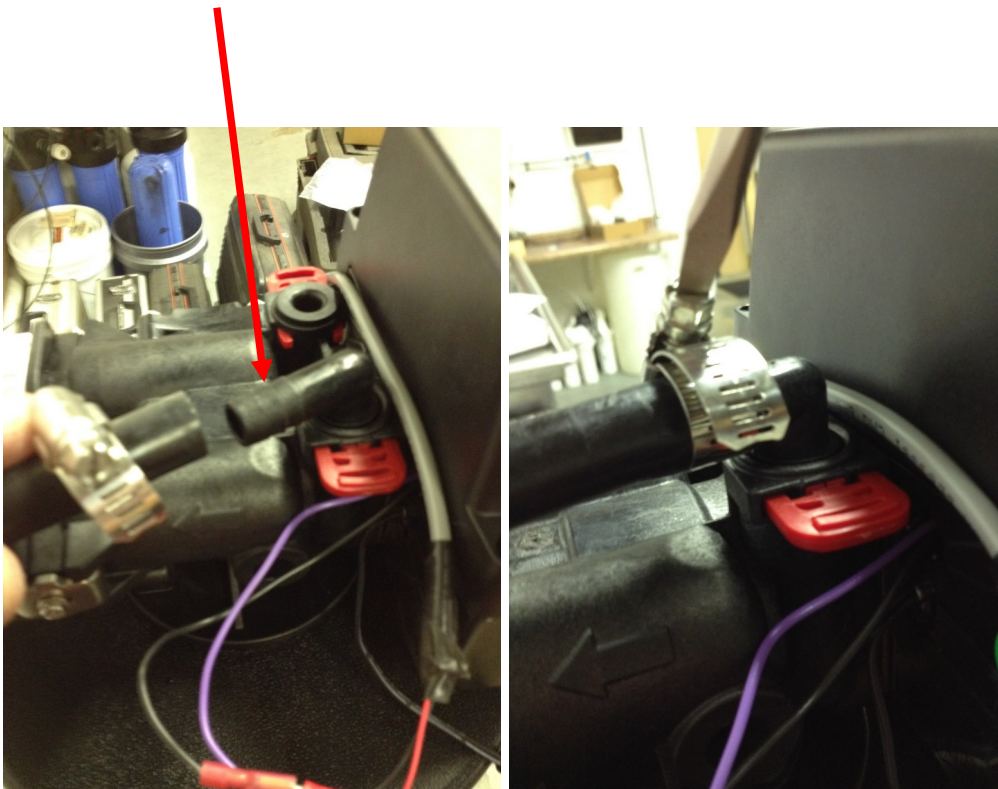


All piping should be secured to prevent stress on the bypass valve and connectors.

Installation Instructions

5. Connect the drain hose to the filter valve and secure it with a hose clamp. Run the drain hose to the nearest laundry tub or floor drain. This can be ran overhead or down along the floor. Drain hose should be a minimum of 1/2". If running the drain line more than 20 ft overhead, it is recommended to increase the hose size to 3/4". A DIRECT CONNECTION INTO A WASTE DRAIN IS NOT RECOMMENDED. A PHYSICAL AIR GAP OF AT LEAST 1.5" SHOULD BE USED TO AVOID BACTERIA AND WASTEWATER TRAVELING BACK THROUGH THE DRAIN LINE INTO THE FILTER.

**Hose barb fitting for drain line.
Be sure to use a hose clamp to
secure the line.**



Be sure to secure the drain line. The softener will drain with force and it should be secured to prevent a leak. Hose clamps should be used to secure the drain line at the connection points.

Installation Instructions

6. Using the Allen Key (included), place the unit in the bypass position (See page 18 for bypass valve handle placement). Slowly turn on the main water supply. At the nearest cold treated water tap nearby remove the faucet screen, open the faucet and let water run a few minutes or until the system is free of any air or foreign material resulting from the plumbing work.



7. Make sure there are no leaks in the plumbing system before proceeding. Close the water tap when water runs clean.
8. Proceed to start up instructions.

Note: *The unit is not ready for service until you complete the start-up instructions.*

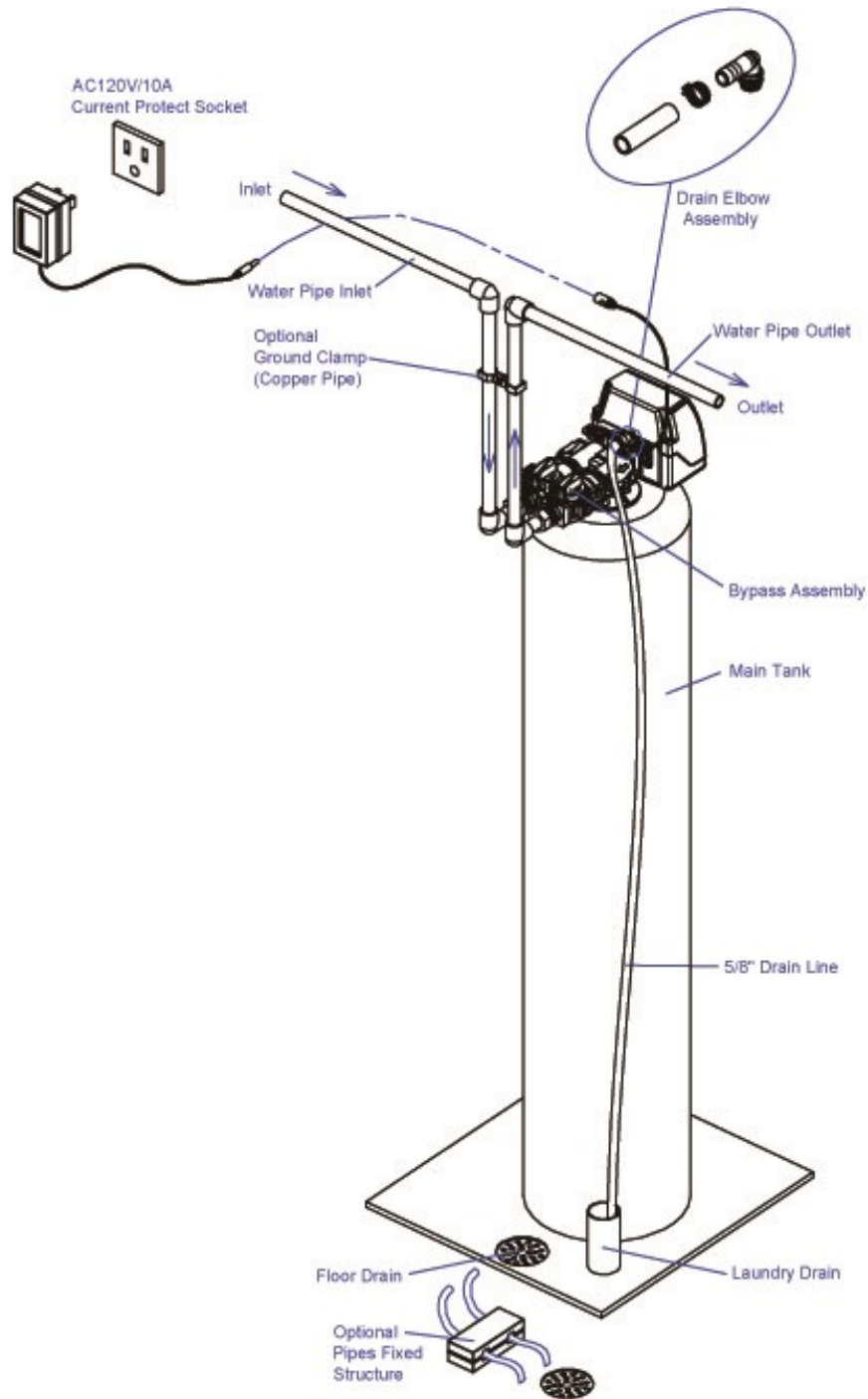
Filter Installation



Service Position



Bypass Position



System Start-Up

Key Pad Configuration

SET-TINGS	This function is to enter the basic set up information required at the time of installation.
MANUAL REGEN	This function is to initiate an immediate or delayed manual regeneration.
DOWN / UP	Increase or decrease the value of the settings while in the programming mode.



Manual Regeneration (Step / Cycle Valve)

DELAYED REGENERATION

Press and release the MANUAL REGEN. Button to set a delayed regeneration that will occur at the regeneration time. The main display page will show DELAYED REGEN ON. To cancel press and release the MANUAL REGEN. Button. The main display page will show DELAYED REGEN OFF.

IMMEDIATE REGENERATION

To start an immediate regeneration (or step valve through each position), press and hold the MANUAL REGEN. Button for 3 seconds (until beeps). The valve will start an immediate regeneration. Press any key to skip to the next cycle.

Start-up Instructions

1. Plug the valve into an approved power source.
2. When power is supplied to the control, the screen will display "INITIALIZING WAIT PLEASE" while it finds the service position.
3. Start an Immediate Manual Regeneration. The valve will immediately start moving to the BACKWASH position.
4. Partially open the inlet on the bypass valve **slowly** and allow water to enter the unit. Allow all air to escape from the unit before turning the water on fully then allow water to run to drain for 3-4 minutes or until all media fines are washed out of the softener indicated by clear water in the drain hose.

KATALOX SYSTEMS SHOULD BE BACKWASHED FOR A MINIMUM OF 1 HOUR. IN SOME CASES ADDITIONAL RINSING MAY BE NEEDED. For Katalox filters, when the valve is in the backwash position, unplug the power cord for the valve. This will keep the unit in the backwash cycle. Allow the system to backwash for 1 hour, then plug the power cord back in and go to step 5. All other media types can use the general backwash in Step 4.

5. Press any button to advance to the RINSE position. Slowly open the bypass inlet valve during the rinse cycle until it is fully opened. Check the drain line flow. Allow the water to run for 3-4 minutes or until the water is clear.
6. The valve will automatically advance to the SERVICE position after the RINSE cycle is complete. Open the outlet valve on the bypass, then open the nearest treated water faucet and allow the water to run until clear, close the tap and replace the faucet screen.
7. Program time, date, and number of days between regenerations into controller using the following Programming Instructions

Backwash Frequency

Contact US Water Systems at 1-800-608-8792 to help with the backwash frequency setting. This can be adjusted by the home owner to suite their individual needs with frequencies available from 1 – 99 days.

Programming Instructions

Settings

Press SETTINGS key (3 SECONDS / BEEP)

VALVE MODE
B.W. FILTER

TIME OF DAY
12:01 PM

YEAR
2012

MONTH
AUGUST

DAY
21

REGEN DAYS
3 DAYS

GALLONS
OFF

REGEN TIME
12:00 AM

PROGRAMMING
COMPLETE

TIME OF DAY, YEAR, MONTH, DAY.

Time of day is for normal operation of system and the scheduling of the re-generation time. The date is used in a diagnostic function to track the last time the system regenerated.

REGEN DAYS

This value is the number of days between regenerations or back washes to clean the filters.

GALLONS

Default value is OFF. This should not be changed.

REGEN TIME

This setting determines the time of day to perform a scheduled regeneration. The normal regen time for a filter is 12:00 AM.

FUSION SUPERFILTER PROGRAMMING	
Press and hold the Manual and Settings buttons for 3-5 seconds	
Language	English
Units	Gallons
Vac Mode	Off
Press and hold the Up and Down arrows for 3-5 seconds	
Valve Mode	B.W. Filter
BW	10
RR	10
Press and hold the Settings button for 3-5 seconds	
Time of Day and Date	Set by Customer
Regen Days	3
Gallons	Off
Regen Times	Set by Customer

About The System

Control Operation During A Power Failure

In the event of a power failure, the valve will keep track of the time and day for 48 hours. The programmed settings are stored in a non-volatile memory and will not be lost during a power failure. If power fails while the unit is in regeneration, the valve will finish regeneration from the point it is at once power is restored. If the valve misses a scheduled regeneration due to a power failure, it will queue a regeneration at the next regeneration time once power is restored.

Main Display

The main display page will pause on the Date and Time page for 5 seconds. Then it will continually scroll through all of the system diagnostic display pages. Depending on the Valve Type some pages will not be displayed. To manually scroll through the diagnostics, press the down or up key. To reset the TOTAL REGENS, TOTAL GALLONS OVER RUN TOTAL, or PEAK flow rates, press and hold the MENU until the value changes to zero.

PARAMETER	DESCRIPTION
JULY/17/2012 8:30 PM	Month, Day, Year, Time
TOTAL 1,500 GAL REMAIN 1,200 GAL	The total amount is the system capacity when fully regenerated. The remaining is the capacity left in the system.
LAST REGEN 9/24/12	The date of the last regeneration.
TOTAL REGENS 10	The total number of regenerations.
TOTAL GALLONS 001590 GAL	The total amount of gallons treated by the system.
TOTAL 4 DAYS REMAIN 3 DAYS	The number of days remaining before regeneration. This option is only in filter mode.
OVER RUN TOTAL 0000 GAL	The total amount of water that has exceeded the system capacity over the last 4 regenerations. When remaining goes to zero, the gallons used will be added to over run total.
CURRENT 1.5 GPM PEAK 6.5 GPM	The current flow rate and the peak flow rate since the last regeneration.
DELAYED REGEN OFF	Advises whether a delayed regeneration has been scheduled manually or automatically.
REGEN TIME 12:00 AM	The current setting for regeneration time.
VALVE MODE B.W. FILTER	The current setting of the valve mode.

Regeneration Process

Periodically the filter will require a back wash to clean the trapped particles and unpack the filter bed to restore the system flow rates. The table below explains the regeneration steps.

Step	Name	Description
#1	Back Wash	Fresh water is introduced to the bottom of the tank flowing upwards expanding the filter media to rinse out any dirt or small particles to the drain and to uncompact the bed to restore full service flow rates.
#2	Rinse	Fresh water is introduced from the top of the tank flowing down through the filter bed rinsing any unfiltered water to the drain.

New Sounds

You may notice new sounds as your filter operates. The regeneration cycle lasts up to 30 minutes. During this time, you may hear water running intermittently to the drain.

Automatic Raw Water Bypass During Regeneration

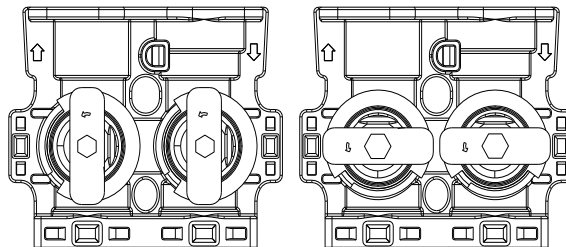
The regeneration cycle can last 30 minutes after which filtered water service will be restored. During regeneration, un-filtered water is automatically bypassed for use in the household. Hot water should be used as little as possible during this time to prevent un-filtered water from filling the water heater. This is why automatic regeneration is set for sometime during the night and manual regenerations should be performed when little or no water will be used in the household.

Normal regeneration time is 2:00 AM.

Manual Bypass

In the case of emergency you can isolate your water filter from the water supply using the bypass valve located at the back of the control. In normal operation the bypass is open with the on/off knobs in line with the inlet and outlet pipes.

To isolate the filter, simply rotate the knobs clockwise (as indicated by the word BYPASS and arrow) until they lock. You can use your water related fixtures and appliances as the water supply is bypassing the filter. However, the water you use will be hard. To resume water service, open bypass valve by rotating the knobs counterclockwise.



SERVICE POSITION

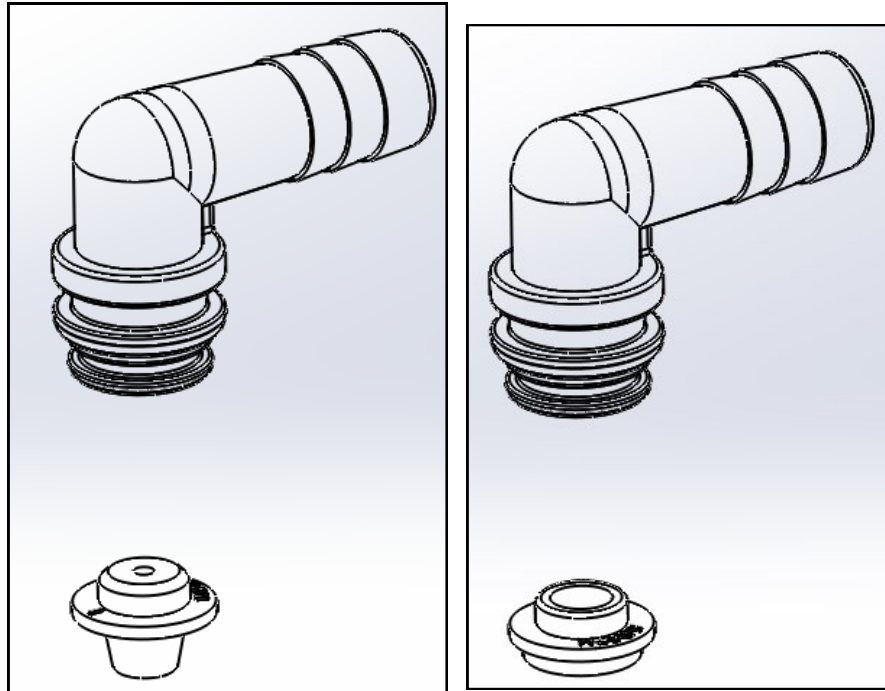
BYPASS POSITION

Maintenance

Maintenance of your new water filter requires very little time or effort but it is essential. Regular maintenance will ensure many years of efficient and trouble-free operation.

1. Periodically make sure your pump is performing satisfactorily to ensure sufficient water is available for backwashing the filter.
2. Periodically test your raw and filtered water to ensure conditions are still the same for your original settings and that the unit is working the way it is intended to. Water testing is often the best way to determine when the filter media will require replacement.
3. Periodically check that the drain line is clear and free from any obstructions.

Replacing Drain Line Flow Control (DLFC)

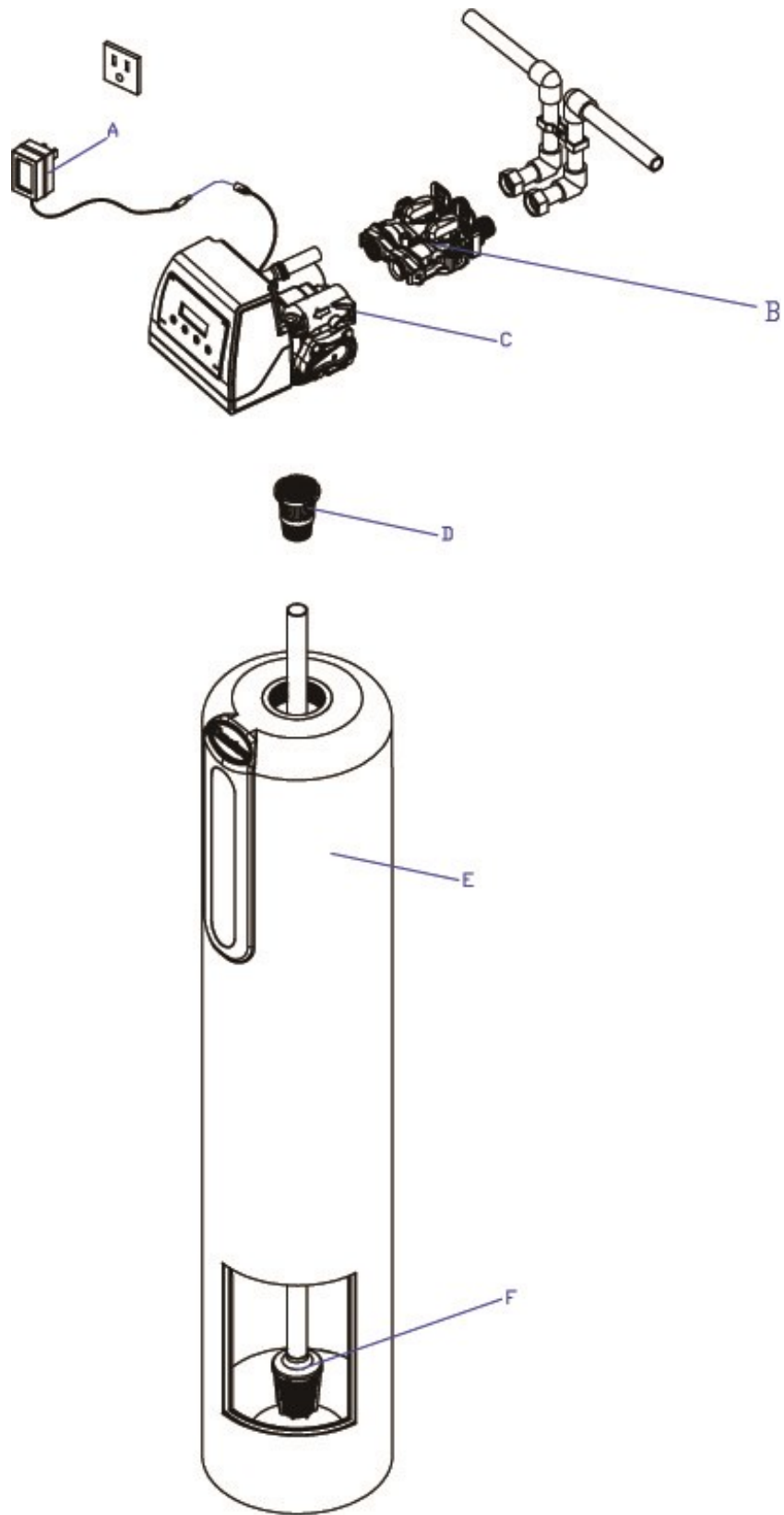


1. Remove the red clip that secures the drain line elbow.
2. Remove the BLFC washer from the elbow fitting.
3. Reassemble using the reverse procedure.

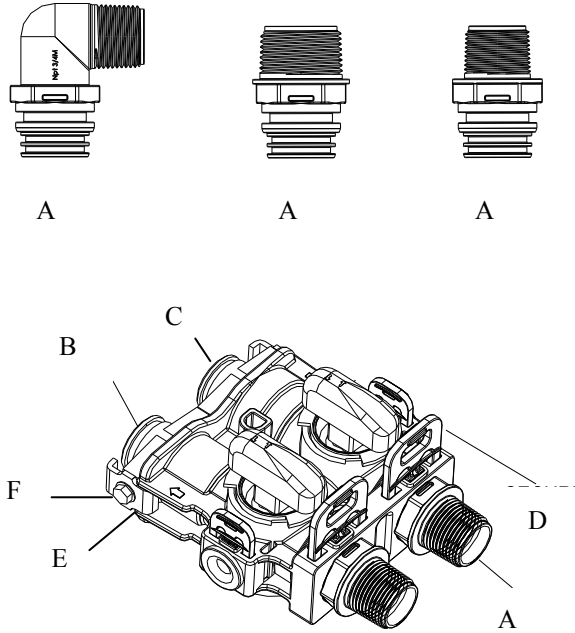
Main Repair Parts

REPLACEMENT PARTS - FILTER			
Replacement Part Number	Part Description	DWG #	Quantity
60010052	POWER TRANSFORMER 120V-12V	A	1
60010002	BYPASS / METER	B	1
10010063	485 UP DOWN FLOW FILTER VALVE	C	1
60010048	TOP CONE	D	1
25020041	844 TANK (75)	E	1
25020042	948 TANK (100)	E	1
25020043	1054 TANK (150)	E	1
25010058	1252 TANK (200)	E	1
25030007	1465 TANK (300)	E	1
50010005	DISTRIBUTOR 1X54	F	1

Filter Exploded View

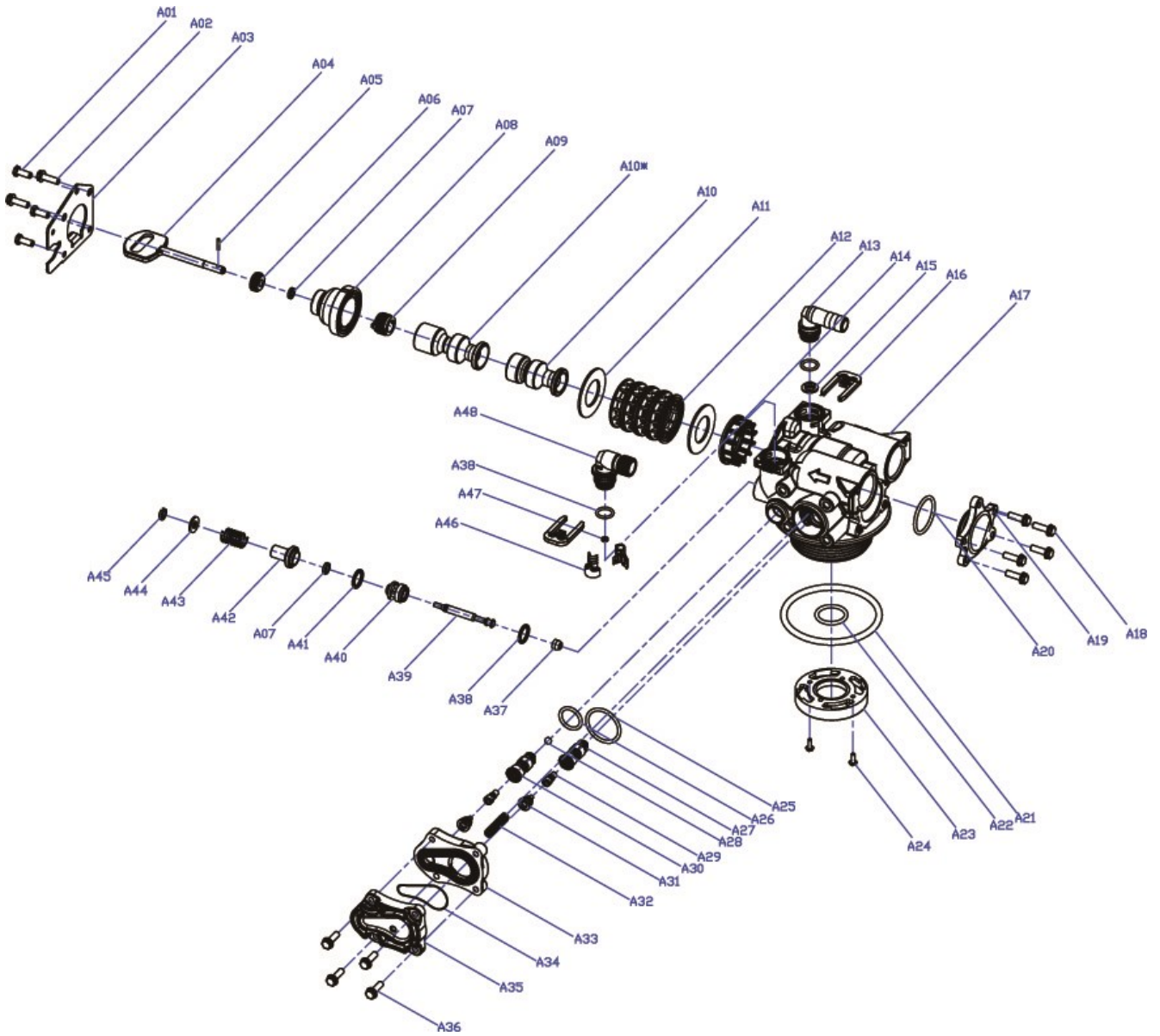


Main Repair Parts - Connectors



REPLACEMENT PARTS - CONNECTORS			
Replacement Part Number	Part Description	DWG #	Quantity
60010020	3/4" NPT ELBOW	A	2
60010019	1" NPT STRAIGHT	A	2
60010023	3/4" NPT STRAIGHT	A	2
60010079	VALVE COUPLING INLET	B	1
60010101	VALVE COUPLING OUTLET (METER SIDE)	C	1
60010025	PLASTIC SECURE CLIP	D	2
60010046	BYPASS SS CLIP	E	2
60010047	BYPASS SS SCREW	F	2

Control Valve Exploded View

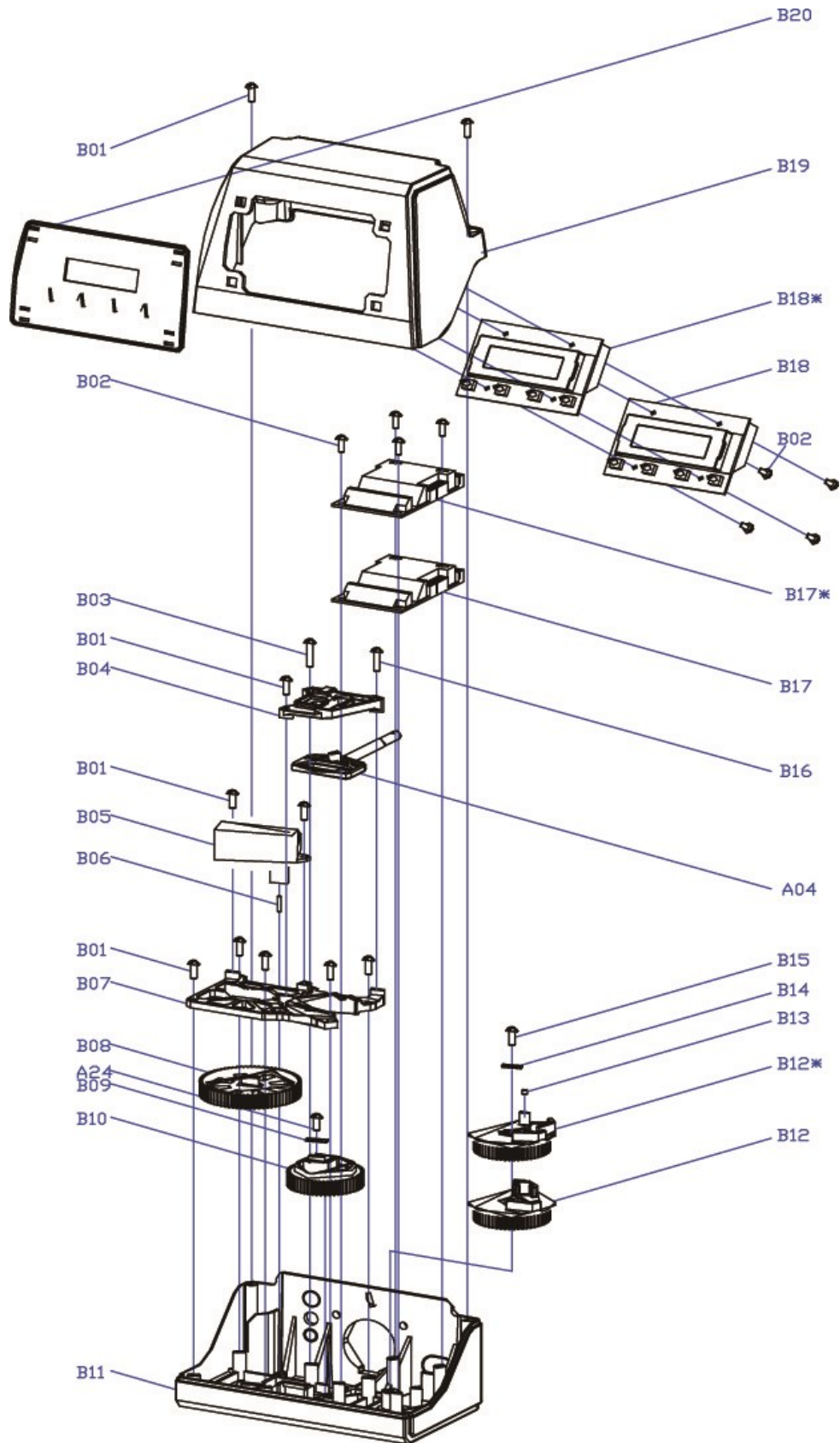


VALVE REPAIR PARTS LIST			
Replacement Part Number	Part Description	Replacement Part Number	Part Description
60010127	INJECTOR SET #0000 BLACK	60010129	85HE UPFLOW PISTON ASSEMBLY
60010126	INJECTOR SET #000 GREY	60010171	85HE DOWNFLOW PISTON ASSEMBLY
60010035	INJECTOR SET #00 VIOLET	60010130	85HE SEAL & SPACER KIT
60010034	INJECTOR SET #0 RED	60010131	85HE DLFC #1 1.5 GPM
60010033	INJECTOR SET #1 WHITE	60010132	85HE DLFC #2 2.0 GPM
60010032	INJECTOR SET #2 BLUE	60010133	85HE DLFC #3 2.4 GPM
60010031	INJECTOR SET #3 YELLOW	60010135	85HE DLFC #5 3.5 GPM
60010128	BLFC 0.2 GPM	60010136	85HE DLFC #A 5.0 GPM
60010110	BLFC 0.3 GPM	60010137	85HE DLFC #B 7.0 GPM
60010082	BLFC 0.7 GPM	60010138	85HE DLFC #C 10.0 GPM

Control Valve Parts List

485HE CONTROL VALVE (DOWNFLOW)				
Replacement Part Number	MFG Part Number	Part Description	DWG #	Quantity
	5056087	Screw-M5x12(Hexagon)	A01	3
	5056088	Screw-M5x16(Hexagon With Washer)	A02	2
	5056047	End Plug Retainer	A03	1
	5031016	BNT85HE Piston Rod	A04	1
	5056097	Piston Pin	A05	1
	5031015	BNT85HE Quad Ring Plug Cover	A06	1
	5056070	Quad Ring	A07	2
	5031011	BNT85HE End Plug	A08	1
	5031014	BNT85HE Piston Retainer	A09	1
	5057001	BNT85HE Piston(Electrical Downflow)	A10	1
	5056073	Seal	A11	5
	5056021	Spacer	A12	4
	5010082	Drain Fitting-B	A13	1
	5031005	BNT85HE Spacer	A14	1
	5056186	DLFC-2#	A15	1
	5056172	Secure Clip-s	A16	2
	5031002	BNT85HE Valve Body	A17	1
	5056508	Screw-M5x12(Hexagon With Washer)	A18	5
	5030004	BNT85 End Cover	A19	1
	5030013	O-Ring- ϕ 30x2.65	A20	1
	5056063	O-Ring- ϕ 78.74x5.33	A21	1
	26010103	O-Ring- ϕ 25x3.55	A22	1
	7060007	Valve Bottom Connector	A23	1
	13000426	Screw-ST2.9X13(Large Washer)	A24	2
	5031022	O-Ring- ϕ 32x3	A25	1
	5031021	O-Ring- ϕ 18x3	A26	1
	5031013	Injector Plug Body	A27	1
	30110007	Plastic Ball ϕ 6	A28	1
	30040089	Injector Throat	A29	2
	5031012	BNT85HE Injector Fixed Sleeve	A30	1
	30040090	Injector Nozzle	A31	2
	5056103	Injector Screen	A32	1
	5031003	BNT85HE Injector Cover Body	A33	1
	5031018	O-Ring- ϕ 40x2.65	A34	1
	5031004	BNT85HE Injector Cover Cap	A35	1
	5031027	Screw-M5x25(Hexagon With Washer)	A36	4
	5056075	Seal Mat	A37	1
	5056134	O-Ring- ϕ 12x2	A38	3
	5056054	Injector Stem	A39	1
	5056031	Injector Spacer	A40	1
	5056081	O-Ring- ϕ 12.5x1.8	A41	1
	5056030	Injector Cap	A42	1
	5056093	Injector Screen	A43	1
	5010049	Special Washer	A44	1
	5056105	Retaining Ring	A45	1
	5031010	BNT85HE BLFC Fixed Sleeve	A46	2
	5056076	BLFC-2#	A47	1
	5005629	Injector Fitting(3/8".Elbow)	A48	1

Power Head Exploded View



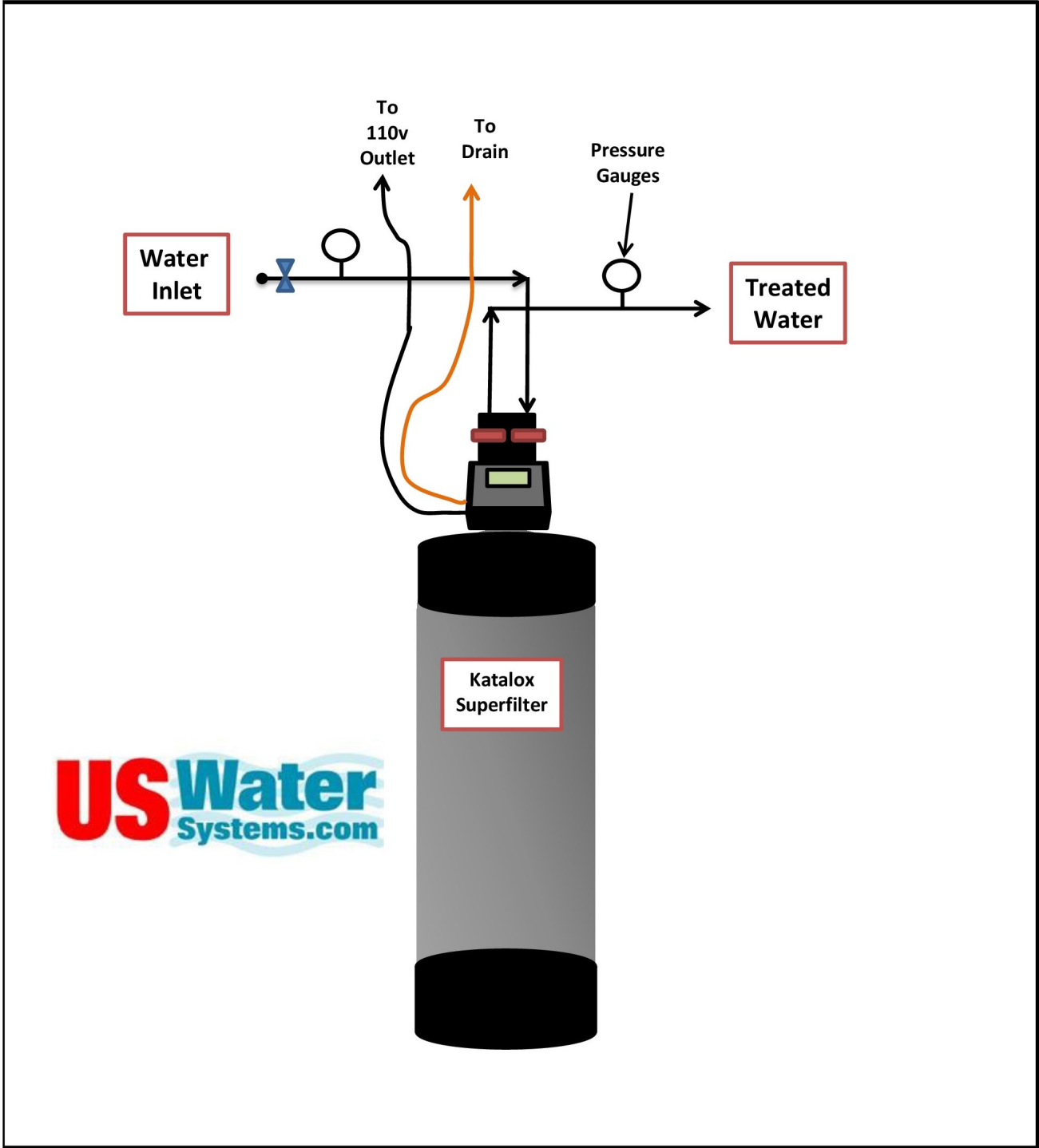
Power Head Parts List

485HE POWER HEAD (DOWNFLOW)				
Replacement Part Number	MFG Part Number	Part Description	DWG #	Quantity
	5056084	Screw-ST3.5X13	B01	10
	5010037	Screw-ST2.9X10	B02	9
	13000416	Screw-ST3.5X25	B03	1
	5031007	BNT85HE Piston Rod Guide Plate	B04	1
	5056510	Motor-12v/2rpm	B05	1
	5030014	Motor Power Cable		1
	11700005	Wire Connector		2
	5056098	Motor Pin	B06	1
	5031006	BNT85HE Mounting Plate	B07	1
	5030009	BNT85 Drive Gear	B08	1
	13000426	Screw-ST2.9X13(Large Washer)	A24	2
	5056139	Washer-3x13	B09	1
	5030007	BNT85 Main Gear	B10	1
	5030005	BNT185 Housing	B11	1
	5031017	BNT85HE Brine Gear(Downflow)	B12	1
	5010023	Magnet(3×2.7)	B13	1
	5056141	Washer-4x12	B14	1
	5056166	Screw-ST4.2X12(Large Washer)	B15	1
	5031016	BNT85HE Piston Rod	A04	1
	5010036	Screw-ST3.5X16	B16	1
	5031026	BNT85HE Main Pcb(Downflow)	B17	1
	5010031	Meter Assembly		1
	5010046	Meter Strain Relief		1
	5010029	Power Cable		1
	5010035	Power Strain Relief		1
	19010105	Wire Rope-3×100		2
	5031024	BNT85HE Display(Downflow)	B18	1
	5030021	BNT85 Wiring Harness		1
	5030003	BNT85 Cover	B19	1

Trouble Shooting

Issue	Possible Cause	Possible Solution
A. Unit fails to initiate a regeneration cycle.	1. No power supply.	Check electrical service, fuse, etc.
	2. Defective circuit board.	Replace faulty parts.
	3. Power failure.	Reset time of day.
B. FILTER BLEEDS TASTE AND ODOR OR SEDIMENT	1. By-pass valve open.	Close by-pass valve.
	2. Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug or switch)
	3. Defective or stripped media bed	Replace media
	4. Quality of water has worsened	Have water sample analyzed to determine any change
	5. Filter capacity too small	Replace with larger unit or add another filter
	6. Filter not backwashing enough	Be sure control is not clogged or drain line restricted. Be sure water pressure has not dropped and that pump has sufficient capacity.
	7. Leak between valve and central tube.	Check if central tube is cracked or o-ring is damaged. Replace faulty parts.
	8. Internal valve leak.	Replace valve seals, spacer, and piston assembly.
C. Low water pressure.	1. Iron or scale build up in line feeding unit.	Clean pipes.
	2. Iron build up inside valve or tank.	Clean control and add resin cleaner to clean bed. Increase regeneration frequency.
	3. Inlet of control plugged due to foreign material.	Remove piston and clean control valve.
D. Filter media in drain line.	1. Air in water system.	Check well system for proper air eliminator control.
	2. Incorrect drain line flow control (DLFC) button.	Check for proper flow rate.
E. Valve continuously cycles.	1. Defective position sensor PCB.	Replace faulty parts.
F. Flow to drain continuously.	1. Valve settings incorrect.	Check valve settings.
	2. Foreign material in control valve.	Clean control.
	3. Internal leak.	Replace seals, spacers, and piston assembly.

Pressure Differential Gauge Installation





Limited Lifetime Warranty

For the lifetime of the original purchaser, at the original residential place of installation of this *Fusion Katalox Light Superfilter* Water Conditioning System, *US WATER SYSTEMS, INC.* warrants the following:

LIFETIME COVERAGE

Media Tanks

Free of all costs to you except transportation and labor charges, we warrant that we will replace or repair the fiberglass media tank, if for any reason it is found to be defective, because of faulty materials or workmanship.

SEVEN YEAR COVERAGE

Valve Assembly & Electronics

We warrant that for seven (7) years from the date of purchase, we will replace the valve assemblies or electronic components at no charge to you except for transportation and standard labor charges. Electronics damaged due to environmental issues or improper installation are not covered.

USWater
Systems.com



GENERAL PROVISIONS

This warranty does not apply to any commercial or industrial installations or to any part of the water conditioner which has been subjected to misuse, neglect, alteration or accident; or to any damage caused by fire, flood, freezing, Acts of God, or any other casualty, or if the original serial numbers have been removed.

These warranties are in lieu of all other warranties expressed, or implied, and we do not authorize any person to assume for us any other obligation on the sale of this water conditioner. No responsibility is assumed for delays or failure to meet these warranties caused by strike, government regulations or other circumstances beyond the control of *US WATER SYSTEMS, INC.*

TO OBTAIN WARRANTY SERVICE, CALL OR WRITE: *US WATER SYSTEMS, INC. 1209 COUNTRY CLUB ROAD INDIANAPOLIS, IN 46234 (800) 608-USWA.*

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SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

THIS WARRANTY MAY BE TRANSFERRED TO A SUBSEQUENT OWNER WITH WRITTEN APPROVAL OF *US WATER* AND PAYMENT OF STANDARD TRANSFER FEE.