



Clean Water Made Easy

www.cleanwaterstore.com

5700-E Birm Filter Installation & Start-Up Guide



Thank you for purchasing a Clean Water System! With proper installation and a little routine maintenance your system will be providing Iron free water for many years.

Please review this start-up guide entirely before beginning to install your system, and follow the steps outlined for best results.

BIRM MEDIA CONTAINS DUST. USE PAPER MASK AND VENTILATE TO AVOID BREATHING DUST.

Questions?

Call us toll-free: 1-888-600-5426 or 1-831-462-8500

Email us: support@cleanwaterstore.com

See more information on our website: www.cleanwaterstore.com/resources



Clean Water Made Easy

www.cleanwaterstore.com

Table of Contents

Packing List.....	3
Birm Filter 0.75 cubic foot size.....	3
Birm Filter 1.0 cubic foot size.....	3
Birm Filter 1.5 cubic foot size.....	3
Birm Filter 2.0 cubic foot size.....	3
Pre-Installation.....	4
Best Practices for Piping & Drain Installation	4
How Your Birm Filter Works	5
Fig 1 - Birm Filter Tank Water Flow.....	5
Fig 2 - Typical Birm Filter 5700-E piping installation with ball valve and hose bib after the filter	6
Fig 3: 5700-E from the rear showing the inlet (left) and outlet (right) end-connector fittings 3/4" or 1" NPT in Noryl plastic. Brass end-connectors are also available for connecting to copper tubing.....	7
Fig 4 5700-E Bypass/Service Modes.....	7
Assembly and Installation Instructions.....	8
Fig 5: 5700-E Bypass and Service Positions.....	9
Initial Programming	10
Starting the Initial Backwash.....	12
Troubleshooting the 5700-E Birm Filter.....	13
Immediate Regeneration	13
Restore Factory Settings	13
Power Outage Memory.....	13
Changing or Adjusting the Drain Line Fitting	14

Packing List

Birm Filter 0.75 cubic foot size

5700-E Backwash Control Valve w/ Bypass Assembly and Pipe connector kit (1" or ¾")

8" x 44" filter tank with distributor tube

Blue media funnel for adding the Birm media

8 lbs. Filter gravel

0.75 cubic foot of Birm media

Birm Filter 1.0 cubic foot size

5700-E Backwash Control Valve w/ Bypass Assembly and Pipe connector kit (1" or ¾")

9" x 48" filter tank with distributor tube

Blue media funnel for adding the Birm media

12 lbs. Filter gravel

1 cubic foot of Birm media

Birm Filter 1.5 cubic foot size

5700-E Backwash Control Valve w/ Bypass Assembly and Pipe connector kit (1" or ¾")

10" x 54" filter tank with distributor tube

Blue media funnel for adding the Birm media

16 lbs. Filter gravel

1.5 cubic foot of Birm media

Birm Filter 2.0 cubic foot size

5700-E Backwash Control Valve w/ Bypass Assembly and Pipe connector kit (1" or ¾")

12" x 52" filter tank with distributor tube

Blue media funnel for adding the Birm media

20lbs. Filter gravel

2.0 cubic foot of Birm media

Pre-Installation

1. Review your packing list and make sure you have received all the parts before beginning installation.
2. If you are going to be turning off the water to the house and you have an electric water heater, shut off the power to the water heater before beginning installation in case water heater is accidentally drained.
3. Pick a suitable location for your filter system on a dry level spot where it won't be exposed to freezing temperatures. A minimum of 20 PSI is required. Maximum pressure is 90 PSI.
4. Get all of your plumbing parts together before beginning installation. Installation typically takes 3 to 5 hours. However, after installation the Birm Filter must be allowed to run through a complete backwash and rinse cycle.
5. After the system is installed and running, your water may be discolored, or full of sediment or rust, particularly if this is older or corroded piping. This typically clears up over a day or two.

Best Practices for Piping & Drain Installation

1. See typical installation on page 7 (Fig 2). The Birm filter is installed after the pressure tank.
2. Make sure to connect the IN pipe to the 5700-E inlet and the OUT pipe to the outlet (see Fig 2). As you face the 5700-E control from the front, the water enters on the right and exits on the left. From the back (see Fig 2) the water enters on the left. The inlet and outlet are attached to the bypass valve, which is marked with arrows as well.
3. Make sure there is a working gate or ball valve before the 5700-E Birm Filter and also one after as shown in Fig 2. The pressure gauges are optional and perhaps not necessary but a hose bib (which is a faucet that you can attach a garden hose to) is strongly recommended after the Birm Filter and before the second ball valve. This makes it easy to rinse your new Birm Filter on start-up and gives you a place to test the water before it enters your household plumbing.
4. If you will be using copper piping, do not sweat the copper pipe directly on to the 5700-E control valve. Avoid heating up the 5700-E control valve plastic with the torch.
5. If you have copper pipe before the Birm Filter and it is too difficult to change out, you may still experience some copper staining of fixtures and have a copper residual in the water because this section of pipe will still have acidic water flowing through it. We recommend PEX or PVC pipe up to the Birm Filter and then copper after it, if you have copper plumbing.

CWS Plus Birm Filter Installation & Startup Guide

6. You do not need unions to install your 5700-E control valve. If you need to remove it, the 5700-E has quick-release couplings that make it easy to put the Birm filter on by-pass and remove the filter system from the piping.
7. The drain line tubing (not supplied) is connected to a drain from the drain outlet using flexible ½" ID tubing. Note that the drain can run up above the 5700-E control and into a drain, it does not have to drain down, as the filter backwashes under line pressure from your well pump. Most plumbing codes require an air-gap connection, so that if your sewer or septic tank backs up, it cannot cross connect with the drain tubing.

How Your Birm Filter Works

See Fig 1 below. In your Birm Filter the water enters the top of the tank (red arrows) and flows down through the media and up the distributor tube (blue arrows). The downflow type Birm Filter removes sediment and can be backwashed, which cleans and re-classifies the media, preventing channeling. During backwash the flow of water is reversed and water flows down the distributor tube and up through the media, lifting and expanding the media. During the backwash the media is cleaned of any iron by the action of the water flowing through it.

Fig 1 - Birm Filter Tank Water Flow

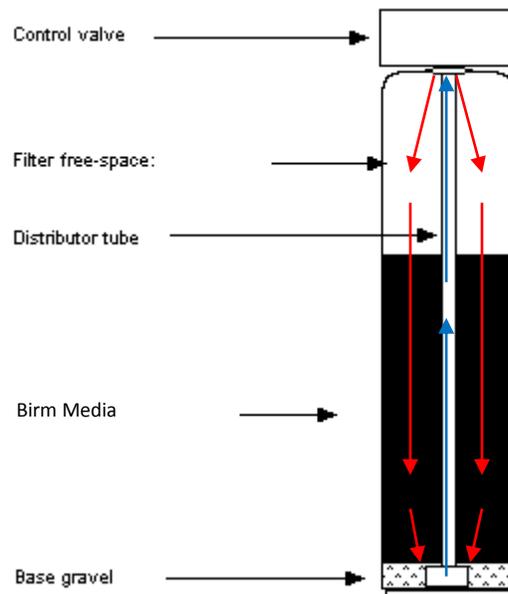
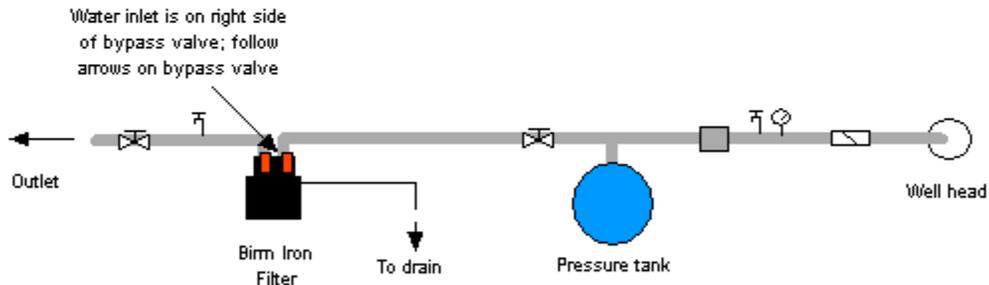
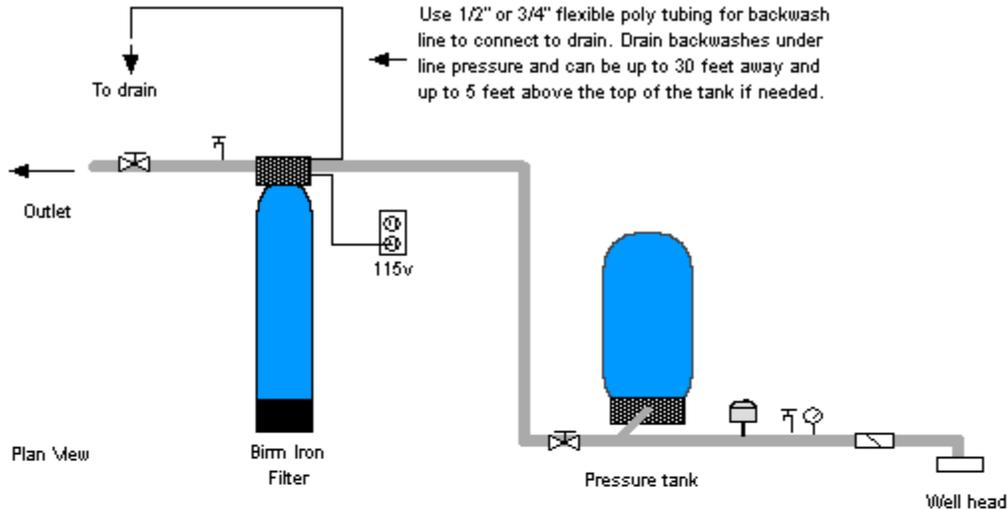


Fig 2 - Typical Birm Filter 5700-E piping installation with ball valve and hose bib after the filter

Auto Backwash Birm Filter System
Flow Diagram Not to scale



- Key
-  Gate or ball valve
 -  Pressure gauge
 -  Hose bib (spigot)
 -  Water piping
 -  Check valve
 -  Pressure switch

Fig 3: 5700-E from the rear showing the inlet (left) and outlet (right) end-connector fittings 3/4" or 1" NPT in Noryl plastic. Brass end-connectors are also available for connecting to copper tubing.

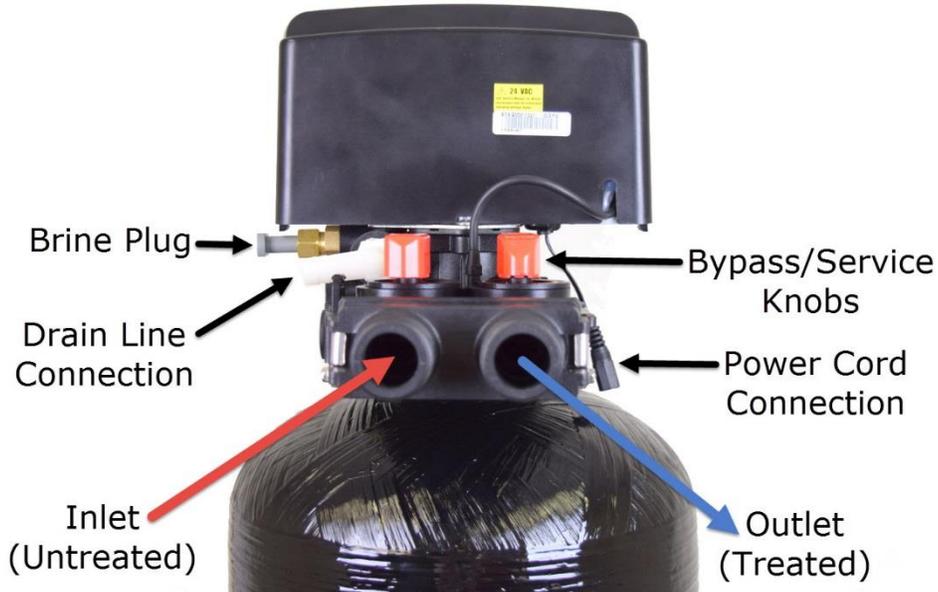
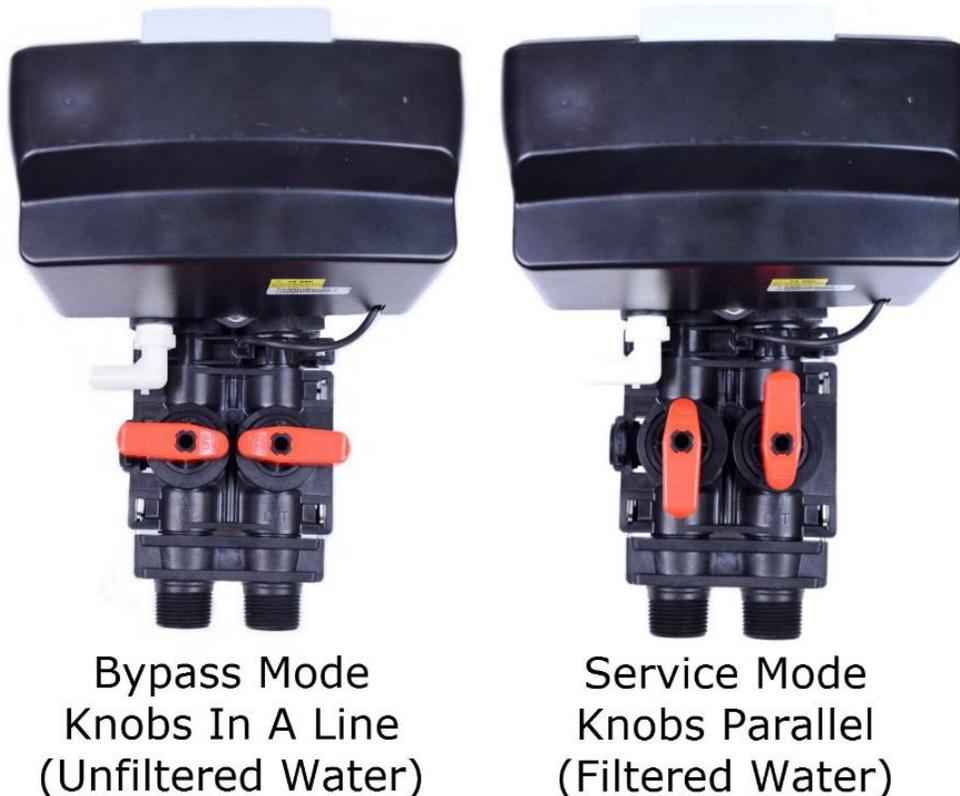


Fig 4 5700-E Bypass/Service Modes



CWS Plus Birm Filter Installation & Startup Guide

Assembly and Installation Instructions

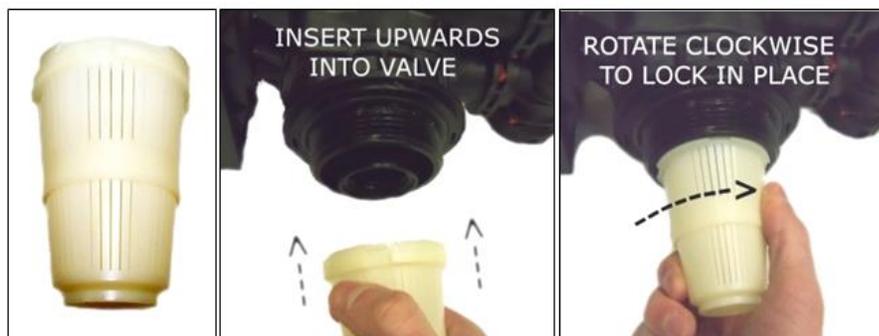
1. By hand, unscrew the entire 5700-E control valve from top of tank if it was shipped screwed on. Place distributor tube in tank if not already inside. If not already done, make sure the blue cap is on top of distributor tube, or wrap the top of distributor tube with electrical or duct tape. You do not want gravel or media to go down the distributor tube.

Plug or tape top of distributor tube to prevent media from entering distributor tube when adding media. Remove when finished.

Temporary plug



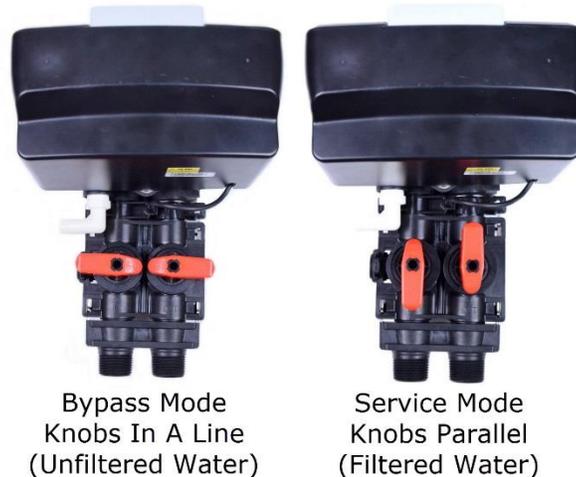
2. Add the filter gravel that came with your order. You want the gravel to cover the bottom distributor screen before adding the media.
3. Next add media. The tank will be about 2/3rds full of media, do not fill it past 2/3rds, even if there is some left over.
4. Remove cap or tape from top of distributor tube. Be careful not to pull up distributor tube when removing cap or tape.
5. If possible at this point, fill tank completely with water. This will allow the Birm Filter media to settle and eliminate the need of “purging” the air out of the tank later.
6. Attach plastic top screen to the under-side of the 5700-E control valve. It is a funnel-shaped plastic screen that snaps on to the control valve and prevents resin from being backwashed out to drain during the regeneration cycles.



7. Add a small amount of silicone grease or vegetable cooking oil to the tank threads and screw on the 5700-E control valve carefully. Do not use pipe-joint compound, Teflon tape, or Vaseline or other petroleum greases to lubricate tank threads.

- See how the bypass assembly is connected. Note the pipe connectors in Fig. 5, while the other end is what gets attached to the control valve. Your CWS 5700-E valve is usually shipped in the bypass position.

Fig 5: 5700-E Bypass and Service Positions



- Lubricate the bypass valve O-rings with some vegetable oil or silicone grease and connect the bypass assembly to the control valve by sliding the bypass valve firmly into its body.
- Next, lubricate the end-connectors with some silicone grease or vegetable cooking oil and insert them into the bypass valve.
- Make sure both knobs are in the bypass position.
- Now install your water pipes to the bypass valve's end connectors. Make sure the inlet is installed to the IN pipe connector and the outlet to the OUT connector.
- Connect some flexible tubing from the drain connection on the 5700-E control valve to a suitable drain such as a septic tank or drain to a sewer. It is OK to run the drain line up and over the 5700-E Birm Filter up to 4 feet above the top of the tank. If the drain line will be more than 20 feet, use larger diameter tubing such as $\frac{3}{4}$ " or 1". Note that it is desirable to be able to run the drain line into a bucket in order to test the backwash flow rate in the future. This is why hard piping the drain line is discouraged, however, if you do use hard PVC piping for the drain line, and you are able to remove the hard PVC drain piping and attach flexible tubing should you ever desire for testing purposes, it is OK to use rigid PVC pipe for the drain. Make sure the drain tubing is firmly clamped to the barbed fitting with a hose clamp to prevent leaks.
- Plug your 5700-E control valve into an outlet. After being plugged in, the screen may display "WAITING PLEASE" while it finds the service position. By default, the control valve will be set to work like a Water Softener, but that's not correct for this application. So, next you will need to program the system to work as a Birm Filter. There are a few settings that must be changed before the system can be put into service.

Initial Programming

Your valve should have been pre-programmed by us, however, you will still need to finish the rest of the programming based on your own requirements, and verify the rest of the programming.

Your Birm Iron Filter is programmed to Timed Meter Mode (TM). Timed Meter Mode tracks the number gallons used, but waits until its set time to regenerate instead of immediately. A buffer period is factored in to prevent you from running out of treated water.

Press and hold the settings button for 3 seconds to start the initial programming.

(Press the settings button to light up the backlight)

Initial Startup

Time Setting - Current time and period of the day will be flashing. After pressing the Regen button, only the hour portion will be flashing. Use the up and down arrows to adjust the time. Press the gear again to switch to the minute portion. Note, once the timer passes a 12 hour period it will automatically change A.M. to P.M. Press the Regen button once the time has been set.

Set Hardness - Pressing the Regen button will allow changes to hardness to be made. The unit has a range of 1-99 grains per gallon. This is the feedwater hardness, which allows the meter to calculate the number of gallons between backwashes. It is a little meaningless for an Iron filter valve, and is designed for water softener which removes calcium hardness in grains per gallons. However, **if you set it to 20 to start with**, you will later see the number of gallons between cycles when you are finished programming based on your size of system. It is not that critical, because you want the filter to backwash once a week or every few days based on the type of filter system you have, by setting the Day Override. Press the Regen button once the time has been set.

Calendar Day Override – This setting allows the user to set a time to regenerate by if the unit hasn't met its set meter amount within that time period. Default setting is 0 days, but can range from 0-99 days. **The recommended setting for an Iron filter is every 3 days, depending on Iron concentrations.**

CWS Plus Birm Filter Installation & Startup Guide

The advanced Menus should have already been programmed for you, but it is a good idea to verify the programming before you put the filter into service.

Advanced Menus

Set Regeneration Mode – This should be set to **TM for Timed Meter Mode**. Timed Meter Mode tracks the number gallons used, but waits until its set time to regenerate instead of immediately. A buffer period is factored in to prevent you from running out of treated water.

Set Time – Verify the correct time of day is set.

P1 Backwash – This should be set to **10 minutes** for an Iron Filter.

P2 Brine Draw - Set to 0 as you do not have a side tank.

P3 Rapid Rinse - This should be set to **10 minutes** for an Iron Filter.

BF Brine Refill - Set to 0 as you do not have a side tank.

Capacity – Verify that the capacity is set correctly according to this formula: *Gallons = (Capacity/Hardness) x .75

For a 0.75 cf unit, set at 24.

For a 1.0 cf unit, set at 32.

For a 1.5 cf unit, set at 48.

For a 2.0 cf unit, set at 64.

You are done programming your valve! Now put it into a backwash to check for leaks, drain the media of fines, and get the filter ready to be put into service.

Starting the Initial Backwash

1. Now you can start the initial manual backwash. Press and hold the Regen button (Button with 3 arrows) until BW flashes and the number of minutes that you programmed (10 is default) will display. Now, unplug the valve to stop the cycle, and proceed to the following step.
2. Very slowly turn the inlet knob on the bypass valve towards the service position, but DO NOT open the valve all the way. We want to allow all of the air in the tank to escape before allowing the water to flow freely. The bypass valve knobs may be a little stiff at first.
3. Once water begins to flow from the drain line open the inlet valve all the way. Continue to let the water run from the drain line for about five minutes or until any media fines in the water are no longer present.
4. If possible verify that the backwash flow is 5 gallons per minute, which is the recommended backwash flow rate for 1.0 and 1.5 cubic foot models. If you have a 2.5 cubic foot system it should be backwashing at 10 gallons per minute. You can easily run the drain hose to a bucket and using a watch verify the flow rate in gallons per minute. An adequate backwash is critical to properly clean the Birm media and prevent it from cementing together.
5. Once the water is clear, press the Regen button to advance to the “Rinse” position, make sure to wait for the display to read “RR”. Once again, allow the water to flow for about five minutes or until the water is clear.
6. Press the Regen button to advance to the “Service” position. Next, open the outlet on the bypass valve and then open the nearest treated water faucet to the unit and allow the water to run until it is clear. We advise using a bathtub, laundry sink, or other fixture that does not have an aerator screen as any remaining residue may get caught in the screen.

Congratulations, you are done installing and your filter is ready for service!

Troubleshooting the 5700-E Birm Filter

One problem that may occur is if you do not have enough backwash flow rate to properly clean the Birm filter. You can verify the backwash flow rate by running the drain line into a bucket and timing it when the 5700-E is in Cycle 1 or backwash. A 1.0 or 1.5 cubic foot system should have 5 gallons per minute and a 2.5 cubic foot system should have 10 gallons per minute of backwash.

In some cases, the 5700-E may not be programmed correctly. See the 5700-E service manual for instructions on how to access the master programming.

Immediate Regeneration

While in service position, hold the Regen button in for 5-6 second to initiate an immediate regeneration.

Pressing the Regen button again will jump to the next cycle phase. Holding the two arrow buttons together will terminate Immediate Regeneration and return the unit to service position.

Restore Factory Settings

Hold the Regen button while plugging in the power supply to the unit. After the unit has powered up release Regen button. Next press the Regen button again to select no next to reset. Using the down arrow, scroll to yes. Hitting the Gear will begin resetting the unit.

Power Outage Memory

During a loss of power, all program settings will be stored in permanent memory. The current valve position, cycle step and time of day are all stored as well, but upon power up a reset of the current time will be necessary.

If the unit were to lose power during a regeneration stage, the valve will return back to its prior position when the outage occurred. *The unit will take 4 -5 minutes to reset back to that position.*

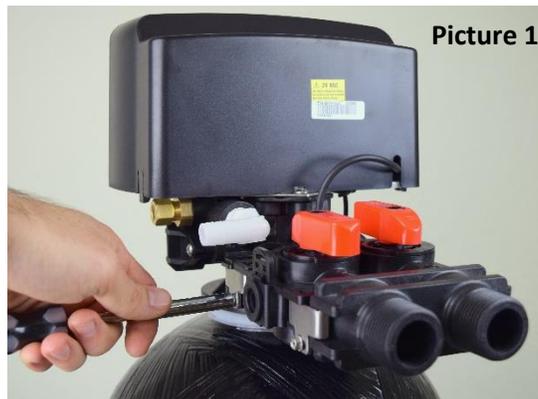
Changing or Adjusting the Drain Line Fitting

Step 1: Begin by shutting off the water before the system. Depressurize it by opening a faucet after the system or in the house, then close the faucet after there is no more water coming out. Now the pressure has been relieved from the system, however some water will come out as you do the following steps.

Step 2: On the bypass assembly, turn the bypass knobs into the bypass position so that the knobs are in a line.

Step 3: Disconnect the drain tubing from the drain line connection (barbed fitting).

Step 4: Using a Philips head screwdriver (or a 1/4in hex nut driver) unscrew the bypass adapter clips from both sides, the clips closest to the body of the control valve that connects the flow meter and bypass assembly to the body of the control valve (Picture 1). You are now going to separate the tank and valve head assembly from the bypass assembly. To do this, you must either; walk the tank and valve forward until it disconnects, or pull the bypass valve assembly backwards (this is easy to do if you have flexible pipe connectors to the back of the bypass valve assembly). Once you have done this, determine which side the flow meter assembly (the piece with the cable attached) is still connected to. If the piece with the cable is still attached to the valve head, use a small flathead screwdriver to pry the flow meter piece apart (Picture 2)



Picture 1



Picture 2

Step 5: Now you can unscrew the barbed drain line connector to change the fitting.

Step 6: Wrap some Teflon tape on the fitting to prevent leaks and screw back on the appropriate barbed drain line fitting. If it is a 90 degree elbow fitting, make sure that it is pointing away from the control valve so that the drain line tubing will not run into the bypass assembly. It does not need to be tightened down all the way, and may point towards the bypass if it is tightened down all the way, which will not work. Simply hand tighten the fitting so that it is pointed away from the bypass.

Step 7: Now that the fitting has been replaced, it is time to reconnect the system. Lubricate the O-rings prior to reassembly and also be careful not to roll or pinch the O-rings. Reattach the bypass assembly and reconnect the drain line. Turn on the water before the bypass valve, then **slowly** open the inlet side only, checking that the water from the drain line tube is flowing freely and that there are no media fines present. At this point, check for leaks and if there are none, open the outlet side bypass so that both knobs are in the service position.

Step 8: Finally, it would be a good idea to perform a manual backwash to make sure everything is working correctly and there are no leaks on the drain line. Hold the Regen button for 5-6 seconds to initiate an immediate regeneration.