



Clean Water Made Easy

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Birm 7800 Iron 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 AREA TO AVOID BREATHING DUST DURING INSTALLATION

IMPORTANT: YOU MAY NOT NEED TO ADD ALL THE FILTER MEDIA YOU RECEIVED. THE FILTER TANK SHOULD NOT BE FILLED MORE THAN 2/3 FULL.

Questions?

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

Email us: support@cleanwaterstore.com

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Packing List by Model

Each system comes with the following:

- | | |
|---|---|
| 1 | 7800 Backwash Control Valve with Pipe connector kit (either 1" or ¾") |
| 1 | Enpress filter tank with distributor tube installed |
| 1 | Media funnel |

In addition, each system comes with the following, depending on the model ordered:

1.0 Cubic Foot Birm:

Quantity	Description
1	12 lbs Gravel
2	½ cubic foot boxes of Birm filter media

1.5 Cubic Foot Birm:

Quantity	Description
1	16 lbs Gravel
3	½ cubic foot boxes of Birm filter media

2.0 Cubic Foot Birm:

Quantity	Description
1	20 lbs Gravel
4	½ cubic foot boxes of Birm filter media

2.5 Cubic Foot Birm:

Quantity	Description
1	35 lbs Gravel
5	½ cubic foot boxes of Birm filter 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. Typically this clears up over a day or two.

Best Practices for Piping & Drain Installation

1. See typical installation (see Fig 2). The Birm filter is installed after the pressure tank. If you are also installing a water softener, install the softener after the Birm filter.
2. Make sure to connect the in pipe to the 7800 control valve inlet and the outlet to the outlet (see Fig 3). As you face the 7800 control from the front, the water enters on the right and exits on the left. From the back (see Fig 3) 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 7800 Birm filter and also one after as shown in the diagram 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 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 7800 control valve. Avoid heating up the 7800 control valve plastic with the torch.
5. You do not need unions to install your 7800 control. If you need to remove it, the 7800 has quick-release couplings that make it easy to put the Birm filter on by-pass and remove the filter system from the piping.

- 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 7800 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 System Works

See Fig 1. 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). Iron and manganese in the water turns to an oxidized particle upon contact with the media and is trapped in the media. During backwash, the water flow is reversed and water flows down the distributor tube and up through the media, lifting and expanding the Birm (BIRM, also called 'Filox') media, and removing all the iron and rust trapped in the filter. During the backwash the Birm filter media is cleaned by the action of the water flowing up through it.

Fig 1 - Birm Filter Tank Diagram

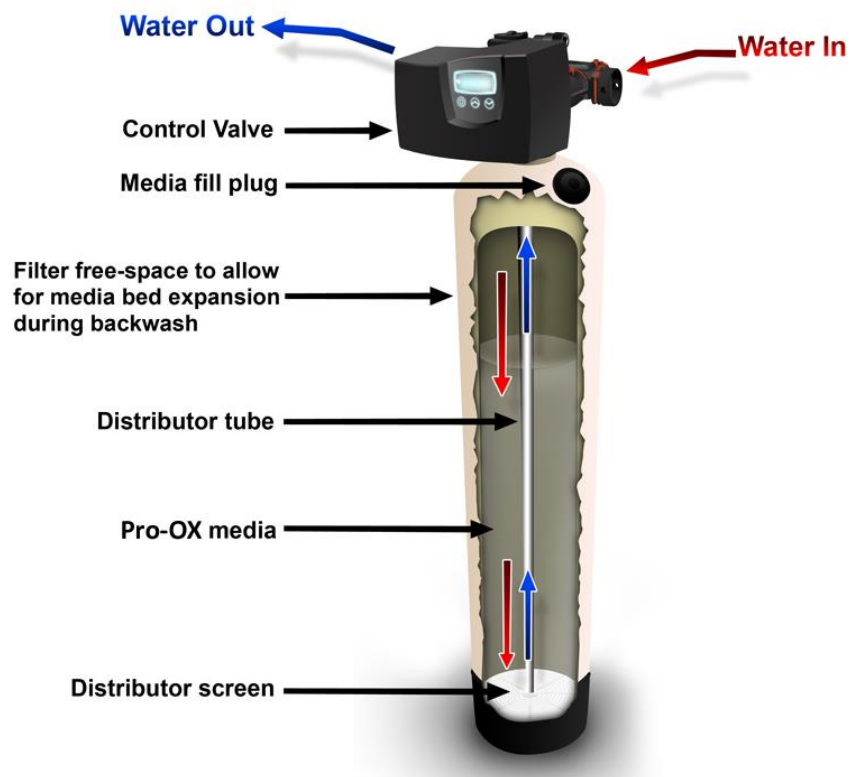
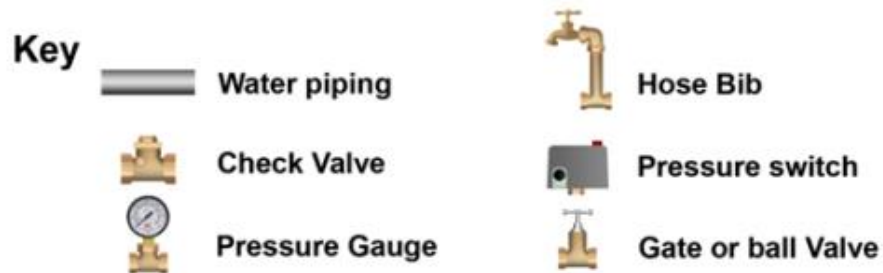
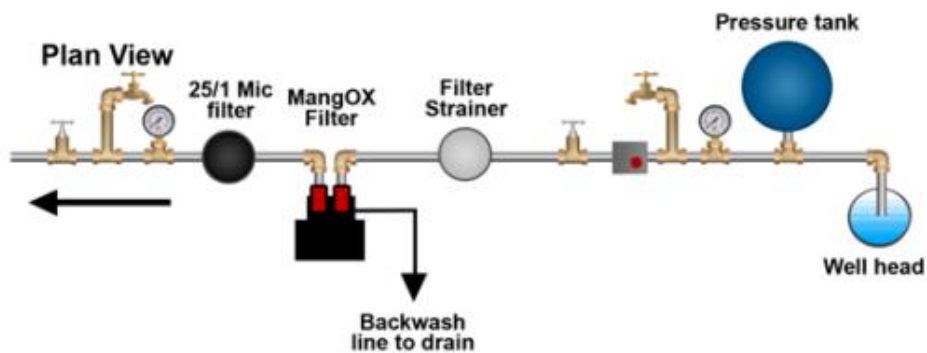
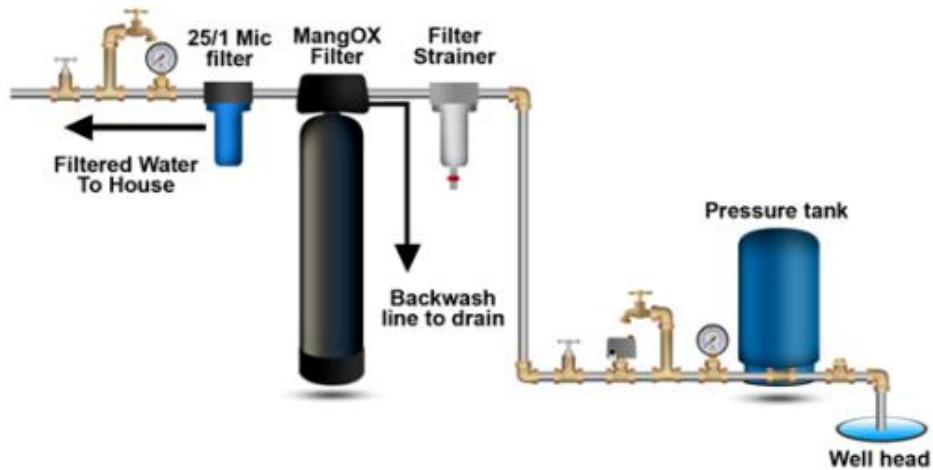


Fig 2 - Typical Birm piping installation with ball valve and hose bib after the filter. Filter strainer is optional, and useful if there is sand or grit in the water. The 25/1 micron filter after is optional, and used when there is very fine sediment or colloidal particles over 1 micron present.



Assembly and Installation Instructions

1. Unscrew by hand the entire 7800 control valve from top of tank if it was shipped screwed on. The Vortech distributor tube is already installed in the tank. If not already done, make sure blue temporary plug is on top of distributor tube, or wrap the top of distributor tube with electrical or duct tape.

You do not want gravel or filter media to go down the distributor tube.

Fig. 3: Media Funnel Use

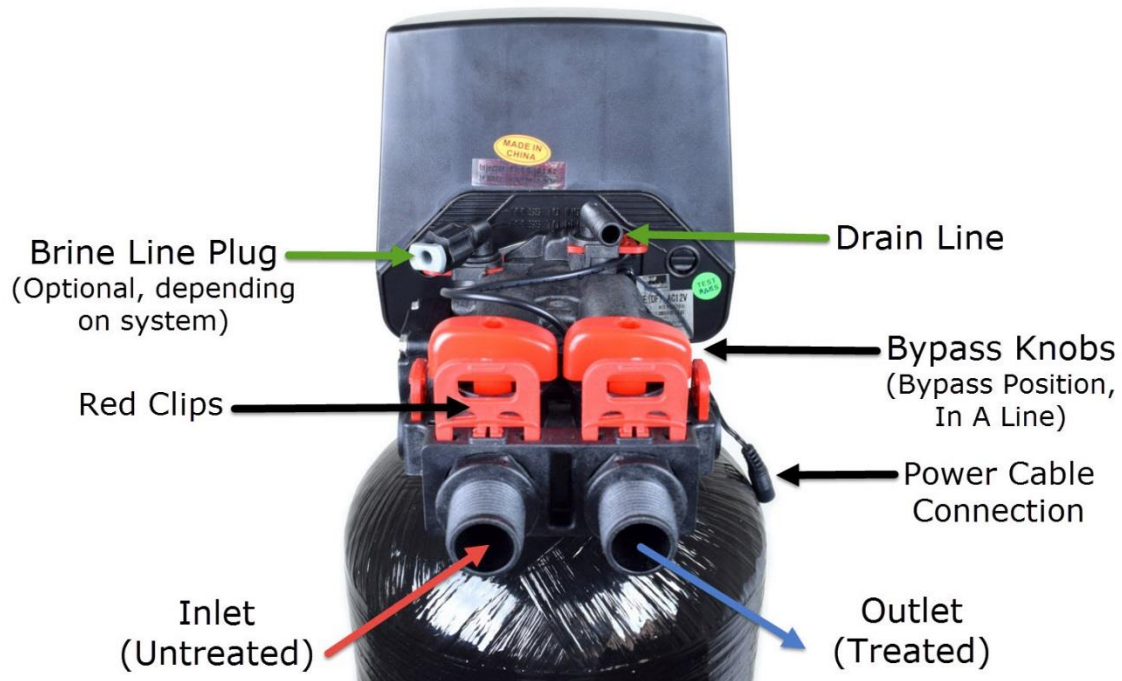
Temporary cap
on top of
distributor tube



2. Add filter gravel supplied first, using the funnel sent with the Birm filter. **NOTE: Be sure not to let any parts of the bag or foreign materials enter the tank when you are adding media.**
3. Next add the Birm media. Tank will be approximately 60% full. Do not fill past 60%, even if there is some extra media left over.
4. Remove cap or tape from top of distributor tube.
5. Add 2 cups of household bleach down the inside of the distributor tube and fill tank completely with water. This will allow the Birm media to become activated and also sanitize the media. It will also eliminate the need of “purging” the air out of the tank later.
6. **NOTE Regarding Teflon tape and pipe sealants:** It is OK to use Teflon tape and pipe sealant on the water pipe connector threads, where you attach your pipes or plumbing to the 7800. **DO NOT USE any Teflon tape or pipe joint compound on the tank itself or on the threads where the 7800 threads into the tank.** Please Note: When installing the 7800 backwash control-timer valve on to the top of the filter tank, do not over-tighten. Tighten by hand; there is no need for a pipe wrench or other wrench.
7. See how the by-pass is connected (Fig 4). Note that the pipe connectors and the other end is what gets attached to the control valve, while the red clips hold the pipe connectors to the by-pass valve. To put the system on or off bypass do NOT remove the red clips, just turn knobs. **The 7800 is usually shipped in by-pass position.**

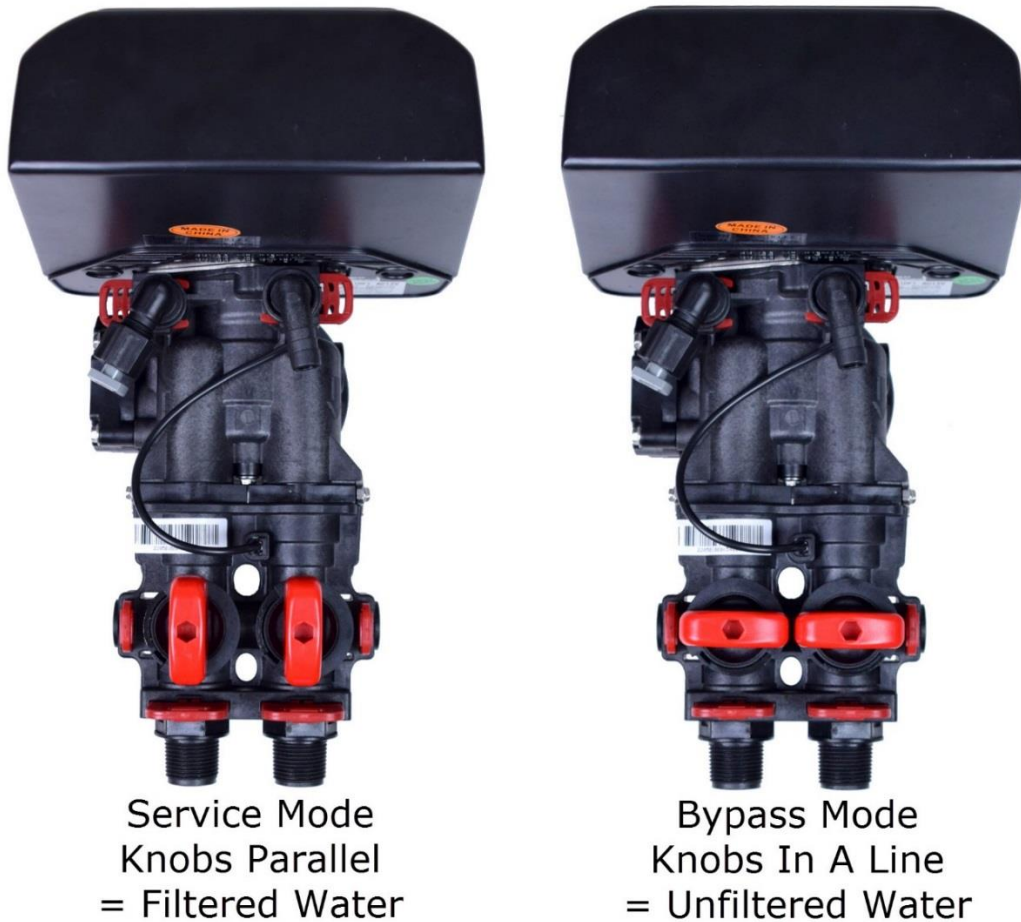
8. Make sure the by-pass valve is in the bypass position when starting the installation. Follow the IN and OUT arrows on the bypass valve and control valve for proper connection of in and out water piping. Leave in the BY-PASS position for now.

Fig. 4: 7800 Bypass & Pipe Connectors



9. Lubricate the **by-pass valve o-rings only** on the pipe connectors with some vegetable oil or silicone grease and connect the bypass assembly to the 7800 control by sliding the bypass valve firmly into the body of the 7800. Once bypass is in far enough, you will be able to easily insert the red connector clips. **DO NOT USE PETROLEUM GREASE ON ANY PART OF THE 7800 CONTROL VALVE.**

Fig. 5: 7800 Bypass and Service Positions



10. Now install your water pipes to the 7800 bypass end connectors. Our preferred method is to wrap the pipe threads with 2 or 3 wraps of Teflon tape, then apply a thin coating of white non-hardening Teflon joint compound paste (available at all hardware stores) before attaching the pipe fittings. Make sure inlet is installed to the 'In' pipe connector on the bypass valve and outlet is on the "Out" connector.
11. Connect some flexible tubing from the drain connection on the 7800 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 7800 Birm filter up to 4 feet above the top of the tank. If the drain line will be more than 20 feet, and especially if your system is a 2.0 or 2.5 cubic foot size, 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.

Programming Instructions

12. Plug in your 7800 control valve to an outlet
13. From the display screen, press and hold the settings button for three seconds to access the programming menu.
14. **Set Time of Day** – Use the up and down arrows to select the proper value. Once the proper value is set, press the Settings button (Enter) to proceed to the next setting. Hitting the Manual Regen button at any time will take you out of the programming and back to the main menu
15. **Set Year** - Use the up and down arrows to select the proper value. Once the proper value is set, press the Settings button (Enter) to proceed to the next setting
16. **Set Month** - Use the up and down arrows to select the proper value. Once the proper value is set, press the Settings button (Enter) to proceed to the next setting
17. **Set Day** - Use the up and down arrows to select the proper value. Once the proper value is set, press the Settings button (Enter) to proceed to the next setting
18. **Set Regen Days** - Set the number of days between backwashes, typically for every 3 days for moderate to heavy iron. If the iron level is low and water usage is light you can try setting it for every 4 days, but a setting of every 3 days is recommended by the manufacturer. If your iron is very high (over 4.0 ppm) and you use a lot of water you can set it to every night. Frequent backwashing prolongs the life of the media by several years.
19. **Gallons On/Off** – Select Off to program it to be used as an Iron Filter
20. **Regen Time** - Set the time of the night that you want the Birm filter to backwash. The default time is 2:00 am. Adjust the time by pushing the up or down arrow if you want.
21. **Programming Complete** – If you need to go back and change anything, simply press and hold the Settings button to go through the programming menu again.

Starting The Initial Backwash

22. Now you are ready to turn on the water. Turn on the water and leave the Birm filter on bypass and check for leaks. Leave the ball valve after the Birm filter closed, so water is still off to the house, but connect a garden hose and open up the hose bib after the Birm filter and allow the water to run for several minutes. This important step clears out any foreign material that may be in pipes from the installation. If you do not have a valve and hose bib installed after the Birm filter, you will need to turn the water on inside the house to let the water run. Use a bathtub or laundry sink or other fixture that does not have an aerator screen.

23. Press and hold the Manual Regen button for three seconds which will start a manual backwash, watch the display and wait until it starts counting down. Now unplug the power supply and proceed to step 24.
24. Now you can slowly turn the bypass valve to the service position. **You do NOT remove the red clips on the bypass knobs in order to turn the bypass valves from the bypass to the service position.** First open the Inlet Side of the bypass valve. Second slowly open the Outlet Side of the bypass until it is in the full service position. The 7800 bypass valve knobs are a little stiff, so you can use Allen wrench placed in the holes to turn the knobs. Turn the bypass valve knobs in the correct direction which is counter-clockwise as you face the bypass valve knobs.
25. There should be no Birm media coming out of the drain line, but the water will be black or dirty looking. At this point the Birm filter will be in a backwash cycle. The backwash takes 10 minutes. If the water slows down or stops during the first 10 minutes of backwash, press the Manual Regen button to move the 7800 control to the next cycle, the Rinse cycle. Then repeat the backwash and rinse after the rinse cycle is done, by pressing and holding the Manual Regen button for three seconds again. If you have high water pressure you may need to turn on the water slowly to the Birm filter at first to prevent some Birm fines from coming out the backwash. However it is normal for some small amount of fines to come out during the backwash, although you do not want to see a large amount of media coming out, which would mean you have very high water pressure, or the drain flow control for the 7800 is missing.
26. If possible verify that the backwash flow rate. You can easily run the drain hose to a bucket and using a watch verify the flow rate in gallons per minute. For example, if the backwash fills a 5 gallon bucket in 30 seconds, you have 10 gallons per minute or 10 GPM. **An adequate backwash is critical to properly clean the Birm media and prevent it from cementing together.**
 - 1.0 Cubic Foot Model: 5 GPM recommended**
 - 1.5 Cubic Foot Model: 5 GPM recommended**
 - 2.0 Cubic Foot Model: 7 GPM recommended**
 - 2.5 Cubic Foot Model: 10 GPM recommended**
27. The next cycle is the Rinse cycle and this runs for 6 to 8 minutes. After the backwash, the 7800 will automatically advance to the rinse cycle.
28. After the Birm filter has gone through the backwash and rinse, press and hold the Manual Regen button for three seconds and repeat the backwash and rinse. This is the same procedure that needs to be done each time you add Birm media in the future, that is, the Birm media must be thoroughly backwashed and rinsed.

Maintaining Your Birm Filter System

There is little or no maintenance required. Every 6 – 10 years the Birm media can be replaced for best results.

Troubleshooting the Birm 7800 Iron Filter System

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 7800 is in backwash.

If you are still getting some iron through the system, you can adjust the filter to backwash every 1 or 2 days.

What to Do If Your Filter Tank Does Not Sit Level on the Floor

Your black filter tank base is not glued to the bottom of your tank. Occasionally tank bases will become crooked during shipment. If you find that that your tank does not sit level on the floor, you can easily adjust it by holding the empty tank and rapping it on a concrete or solid floor once or twice in order to level it.

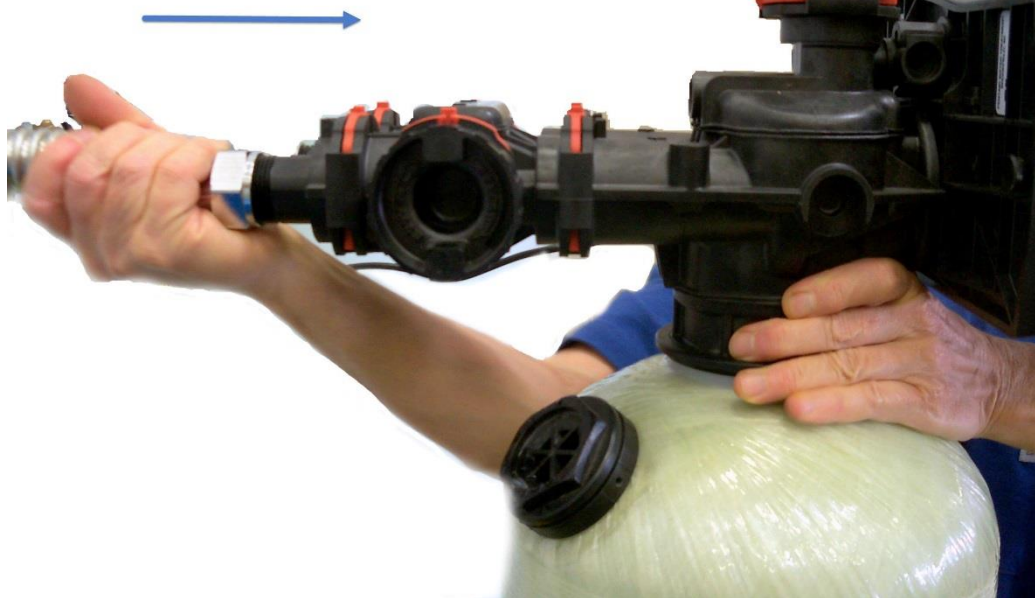
How to Remove the Red Clips from CWS 7800 Control Valves without Breaking Them

The CWS 7800 is a great programmable control valve that lasts many years. While it is easy to install and program, reading this guide prior to installation can save you some time when removing the red clips.

What happens is, when the water is first turned on and the control valve comes up to line pressure, the bypass valve and pipe connectors push out or push apart slightly and lock in the red clips. When the water is turned off, and even if there is no water pressure, it's impossible to remove the jammed in clips, without great difficulty, and eventually most customers end up breaking them to get them out.

Step 1: Turn off water to the CWS 7800 and relieve the water pressure by opening up a faucet in the house. You can also put the CWS 7800 on bypass, by turning the bypass valves to bypass. **Either way, the 7800 control valve must be depressurized before removing the red clips.**

1. Push the bypass and pipe connectors against the body of the control valve.



Step 2: At that point they can practically be removed with your fingertips, although a small flat head screw driver or needle nose pliers works best to pull out the red clips.