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Fleck 7000 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 neutral pH water for many years.

Your new system comes with a printed Fleck Service manual, which along with this start-up guide will help guide you in the installation and start-up of your new system. The Fleck service manual covers other types of systems as well such as water softeners and filters, so there may be information in your Fleck service manual that does not pertain to your system. 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.

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

Birm Filter 1.0 cubic foot size

Quantity 1 Fleck 7000 Backwash Control Valve with Bypass Assembly and Pipe connector kit (1" or ¾")*

Quantity 1 10" x 44" filter tank with distributor tube

Blue media funnel for adding the birm media

12lbs. Filter gravel

1 cubic foot of Birm media

Birm Filter 1.5 cubic foot size

Quantity 1 Fleck 7000 Backwash Control Valve with Bypass Assembly and Pipe connector kit (1" or ¾")*

Quantity 1 10" x 54" filter tank with distributor tube

Blue media funnel for adding the birm media

16lbs. Filter gravel

1.5 cubic foot of Birm media

Birm Filter 2.0 cubic foot size

Quantity 1 Fleck 7000 Backwash Control Valve with Bypass Assembly and Pipe connector kit (1" or ¾")*

Quantity 1 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

Birm Filter 2.5 cubic foot size

Quantity 1 Fleck 7000 Backwash Control Valve with Bypass Assembly and Pipe connector kit (1" or ¾")*

Quantity 1 13" x 54" filter tank with distributor tube

Blue media funnel for adding the birm media

35lbs. Filter gravel

2.5 cubic foot of Birm media

* We include two extra red clips with the pipe connector kit.

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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 Birm Filter 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 filter is installed after the pressure tank.
2. Make sure to follow to connect the in pipe to the Fleck 7000 inlet and the outlet to the outlet (see Fig 2). As you face the Fleck 7000 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 Fleck 7000 Birm Filter 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 filter before the second ball valve. This makes it easy to rinse your new Birm Filter 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 Fleck 7000 control valve. Avoid heating up the Fleck 7000 control valve plastic with the torch.
5. If you have copper pipe before the Birm Filter and it is too difficult to change it, you may still experience some copper staining of fixtures and have a copper residual in the water, because of course 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.

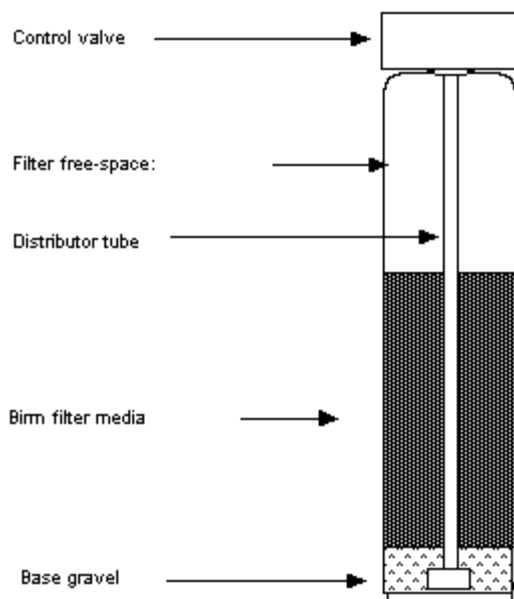
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6. You do not need unions to install your Fleck 7000 control. If you need to remove it, the Fleck 7000 has quick-release couplings that make it easy to put the Birm Birm Filter filter on by-pass and remove the filter system from the piping.
7. The 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 Fleck 7000 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

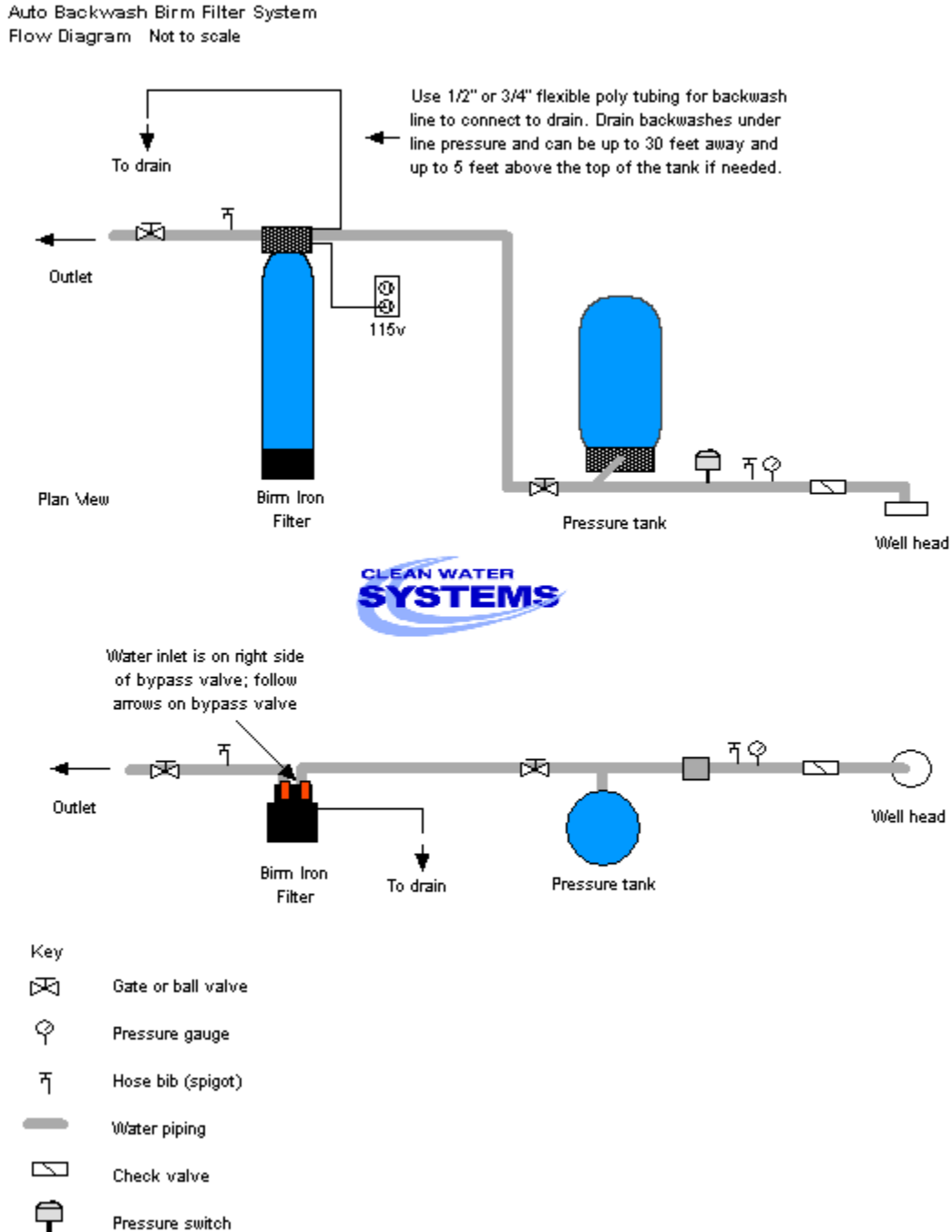
See Fig 1. In your Birm Filter the water enters the top of the tank and flows down through the media and up the distributor tube. The downflow type Birm Filter removes sediment and can be backwashed, which cleans and re-classifies the Birm, preventing channeling. During backwash, the water flow is reversed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

Fig 1 - Birm Filter Tank Water Flow



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Fig 2 - Typical Birm Filter Fleck 7000 piping installation with ball valve and hose bib after the filter



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Fig 3: Fleck 7000 from the rear showing the inlet and outlet end-connector fittings 1" or 1-1/4" NPT in Noryl plastic. Brass end-connectors are also available for connecting to copper tubing.



Fig 4: Fleck 7000 side view

Fleck 7000 Birm Control Valve

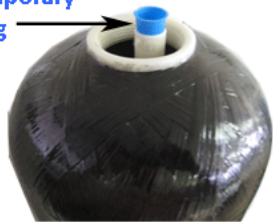


Assembly and Installation Instructions

1. Unscrew by hand the entire Fleck 7000 control valve from top of tank if it was shipped screwed on. Place distributor tube in tank if not already inside tank. If not already done, make sure 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 Birm 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



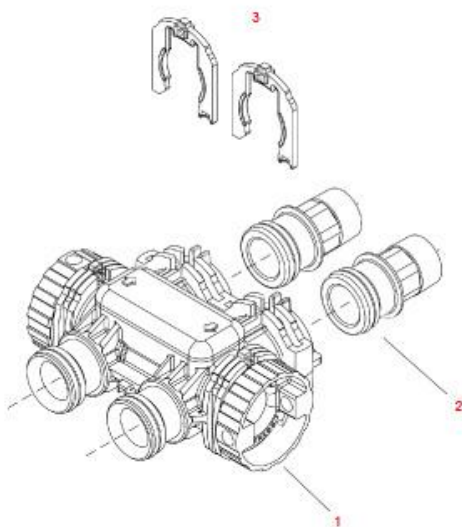
2. Add the filter gravel that came with your order. You want the gravel to cover the bottom distributor screen before adding the Birm media.
3. Next add Birm media. The tank will be about 2/3rds full of media.
4. Remove cap or tape from top of distributor tube. Be careful not to pull up distributor tube 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 Fleck 7000 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.



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7. Add a small amount of silicone grease or vegetable cooking oil to the tank threads and screw on Fleck 7000 control valve carefully. Do not use pipe-joint compound, Teflon tape, or Vaseline or other petroleum greases to lubricate tank threads.
8. See how the Fleck by-pass is connected. Note that Items 2 in Fig 3 below are the pipe connectors and the other end is what gets attached to the control valve. Items 3 are the red clips that hold the pipe connectors to the by-pass valve - we include two extra red clips with the pipe connector kit. **Your Fleck 7000 is usually shipped in the by-pass position.**

Fig 5: Fleck 7000 Bypass and Pipe Connectors



9. Lubricate the by-pass valve o-rings with some vegetable oil or silicone grease and connect the bypass assembly to the Fleck 7000 control by sliding the bypass valve firmly into the body of the Fleck 7000. Once bypass is in far enough, you will be able to insert the red connector clips.
10. Next lubricate the end-connectors (#2 in Fig 3) with some silicone grease or vegetable cooking oil and insert them into the bypass valve and then insert the red clips (#3).
11. Note that the Fleck 7000 is usually shipped in the bypass position. There is a bypass valve knob on both the inlet and the outlet (Fig 3 #1). You can easily tell if it is in bypass because the two holes on the bypass knob will be in the vertical position. If the valve is in the Service position (by which is the filtering position or 'in service' position) the holes will be in the horizontal position. Make sure both sides are in the by-pass position.
12. Do NOT remove the red clips in order to put the bypass valve in either bypass or service, it is not necessary nor desired to remove the red clips on the bypass valve hand knobs (see Fig 3 item 1, which are the knobs you will turn to move the bypass valves).

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13. Now install your water pipes to the Fleck 7000 bypass end connectors. Make sure inlet is installed to the 'In' pipe connector on the bypass valve and outlet is on the "Out" connector.
14. Connect some flexible tubing from the drain connection on the Fleck 7000 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 Fleck 7000 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.
15. For the 2.5 cubic foot and larger systems only: use external drain backwash flow control. If you have a 1.0 or 1.5 cubic foot or 2.0 cubic foot size, the flow control is internal and there is no external flow control. Wrap some Teflon tape on the black drain fitting, and screw on the flow control.

Stainless Steel Backwash Drain Flow Control (2.5 Cubic Foot Systems Only)



16. Plug in your Fleck 7000 control valve to an outlet. Your Birm Filter 7000 control valve is already pre-programmed*. All you need to do is to set the time of day, and then set the number of days the Birm Filter will run before it backwashes and regenerates automatically. The default number of days between back wash is seven.

***If you purchased a metered 7000 valve, see page twelve for programming instructions.**

17. Press and hold either the Up or Down buttons until the programming icon replaces the service icon and the parameter display reads TD. Set the time of day by pressing the up or down arrows until it is the current time of day. When the desired time is set, press the Extra Cycle button to resume normal operation, or wait 5 seconds and the unit will return to normal operation if no button is pressed.
18. Hold down the up arrow and down arrow at the same time for 5 seconds. Set the number of days between backwashes, typically for 7 days. If your water is very clean (no sediment or iron)

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you can set the backwash frequency to as little as every 14 days but its best to leave it to backwash every 7 days.

19. Press the Extra Cycle button once. Set the time of the night that you want the Birm Filter filter to backwash. The default time is 2:00 am. Adjust the time by pushing the up or down arrow if you want.
20. Now press the Extra Cycle button once more. You are done programming!
21. 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 the pipes from the piping installation. If you do not have a valve installed after the Birm Filter and you do not have a hose bib, 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.
22. Press and hold the Extra Cycle button for five seconds to start a manual backwash.
23. 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 Fleck 7000 bypass valve knobs are a little stiff, so you can use a screw driver placed in the holes to turn the knobs. Make sure you are turning the bypass valve knobs in the correct direction which is counterclockwise as you face the bypass valve knobs.
24. There should be no Birm media coming out of the drain line, but the water will be gray 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 Extra Cycle to move the Fleck 7000 control to the next cycle, the Rinse cycle. Then repeat the backwash and rinse after the rinse cycle is done, by pressing the Extra Cycle 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 for the Fleck 7000 is missing.
25. 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 Birm Filter 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.

26. The next cycle is the Rinse cycle and this also runs for 10 minutes.
27. After the Birm Filter has gone through the backwash and rinse, press the Extra Cycle button 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.
28. Refer to your Fleck 7000 service manual for more information about how your control valve is programmed if desired.

Fleck 7000 Metered Flow Sensor Filter System Programming Guide

This is for Fleck 7000 backwash filters that have are equipped with the optional built-in flow sensor only. There are two types of programming, standard USER PROGRAMMING, where you can set the time of day and gallons of water used and/or days between backwashes. The second type is MASTER PROGRAMMING where you can set the length of the backwash and rinse cycles, and make sure the control is set to the correct settings for your type of Birm filter:

User Programming

You can go into User Programming and make adjustments if you want to the flow meter setting or Day Override setting. Use the User Programming to avoid having to go through the Master Programming for quick changes to these settings below:

1. Press the Up and Down buttons for five seconds while in service, and the time of day is NOT set to 12:01 PM.
2. **Day Override (Display Code DO): Set to 1 to 14** based on your particular filter system requirements. Use the Up or Down arrows to change the setting. This is the critical setting that allows your filter to backwash every fixed number of days. See your Installation and Start-up Guide for more information or contact us for suggestions for this setting. Press the Extra Cycle button.
3. **Regeneration Time (Display Code RT): Set to 2:00 am** generally or sometime when no water is being used, and no other filter or softener is likely to be in a regeneration cycle. Press the Extra Cycle button.

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4. **Feed Water Hardness:** Use this setting to adjust the feed water hardness. Set for 20 for most applications. Press the Extra Cycle button. Note that actual 'Feed Water Hardness' is irrelevant to filter systems, since no hardness is being removed.
5. Press the Extra Cycle button to end User Programming Mode

Master Programming Mode (for Flow Sensor type)

Perform a Master Reset: Unplug the Fleck 7000 from the electrical wall outlet. Hold the Extra Cycle button while plugging in and powering up the unit. This resets all of the parameters in the unit.

Enter Master Programming Mode: Set the Time of Day display to **12:01 P.M.** Press the Extra Cycle button (to exit Setting Time of Day mode). Then press and hold the Up and Down buttons together until the programming icon replaces the service icon and the Display Format screen appears.

Note, that when the Master Programming Mode is entered, all available option setting displays may be viewed and set as needed. Depending on current option settings, some parameters cannot be viewed.

1. **Display Format (Display Code DF): Set display to GAL** (stands for U.S. Gallons), or change to Liters or Cubic Meters if out of the U.S. Press the Extra Cycle button to go to the next step.
2. **Valve Type (Display code VT): Set to DF2b.** This means it is set for standard Down-flow mode, similar to a water softener so we can take advantage of the flow meter in this Fleck 7000 5-cycle valve, but we won't be using all the 5 cycles that the water softeners use. Press the Extra Cycle button to go to the next step.
3. **Control Type (Display Code CT): Set to Fd. This is the Meter Delayed option.** This tells the Fleck 7000 control to meter or keep track of the amount of water used, but then wait until the pre-set regeneration (backwash and rinse cycles) time, typically in the middle of the night. Press the Extra Cycle button.

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4. **Unit Capacity (Display Code C): Set to 30.** Use this display to set the Unit Capacity. This setting specifies the treatment capacity of the unit. Since we are not using this for softening, where the capacity of the softening resin can be accurately defined, 30 is a number we can start with. This can be set higher or lower later which will allow the meter to backwash more or less frequently based on the capacity. Press the Extra Cycle button.

5. **Feed water Hardness (Display Code H): Set to 10 to 20.** This is the feed water hardness that allows the meter to calculate the number of gallons between backwashes. It is a little meaningless for filter valves, and is designed for water softeners which remove 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 Over-Ride.

6. **Reserve Selection (Display Code RS): Set to SF.** It is not relevant to filter control valves.

7. **Safety Factory (Display Code SF):** Set to 0.

8. **Day Override (Display Code DO): Set to 1 to 14** based on your particular filter system requirements. Use the Up or Down arrows to change the setting. This is the critical setting that allows your filter to backwash every fixed number of days. See your Installation and Start-up Guide for more information or contact us for suggestions for this setting. Press the Extra Cycle button.

9. **Regeneration Time: (Display Code RT): Set to 2:00 am** generally or sometime when no water is being used, and no other filter or softener is likely to be in a regeneration cycle. Press the Extra Cycle button.

10. **Regeneration Cycle Step Times:** Use this display to set the various minutes of each cycle. Some of the cycles will be set to 0. **Do not set any of the cycles to Off.** Use the Up or Down arrows to change the setting to the desired setting. Press the Extra Cycle button to accept the setting and move to the next parameter.

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- a. **B1 – Backwash: Set to 8 to 10 minutes.**
- b. **BD - Brine Draw: Set to 0.**
- c. **B2 - 2nd Backwash: Set to 0 for most applications.**
- d. **RR - Rapid Rinse: Set to 6 to 8 minutes**
- e. **BF - Brine Fill: Set to 0.**
- f. **SV - Service (meaning it is in Service or filtering mode) no setting is needed for this.**

Press the Extra Cycle button

11. Flow Meter Type (Display Code FM): Set to t1.2 (this is standard Fleck 7000 meter). Press the Extra Cycle button.

12. Press the Extra Cycle button to save all settings and exit Master Programming Mode. Note that the control valve may take several minutes to re-home and re-set after the Master Programming steps, do not unplug the control during this process.

Troubleshooting the Fleck 7000 Birm Filter

One problem that may occur is if you do not have enough backwash flow rate to properly clean the Birm Filter filter. You can verify the backwash flow rate by running the drain line into a bucket and timing it when the Fleck 7000 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 Fleck 7000 may not be programmed correctly. See the Fleck 7000 service manual for instructions on how to access the master programming.

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.

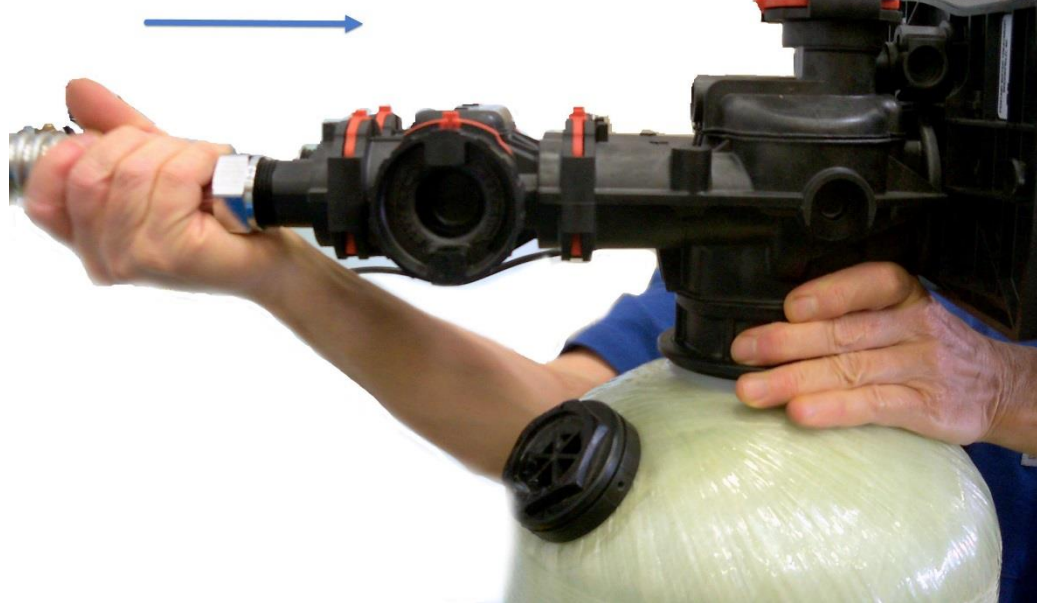
How to Remove the Red Clips from Fleck 7000 Control Valves without Breaking Them

The Fleck 7000 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 Fleck 7000 and relieve the water pressure by opening up a faucet in the house. You can also put the Fleck 7000 on bypass, by turning the bypass valves to bypass. **Either way, the 7000 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.