



Clean Water Made Easy

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Fleck 7000 Tannin Filter Installation & Startup Guide

For Tannin Filters with Vortech Distributor Screen

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.

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

CALCITE 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

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Packing List

- Fleck 7000 Backwash Control Valve + Pipe connector kit 1" + Top Basket
- Tannin filter tank with Vortech distributor tube installed & Media funnel
 - We include two extra red clips with the pipe connector kit.

Plus the filter media as follows (use all media supplied):

- 1.0 cubic foot size: 1/4" x 1/8" gravel – 12 lb. bag; 1.0 cu. Ft. TANEX resin
- 1.5 cubic foot size: 1/4" x 1/8" gravel – 16 lb. bag; 1.5 cu. Ft. TANEX resin
- 2.0 cubic foot size: 1/4" x 1/8" gravel – 20 lb. bag; 2.0 cu. Ft. TANEX resin
- 2.5 cubic foot size: 1/4" x 1/8" gravel – 35 lb. bag; 2.5 cu. Ft. TANEX resin

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 system 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/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 (see Fig 2). The system is installed after the pressure tank.
2. Make sure to connect the IN pipe to the Fleck 7000 inlet and the OUT pipe 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 system 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 Tannin filter and before the second ball valve. This makes it easy to rinse your new filter on start-up and gives you a place to test the water before it enters your household plumbing. It also makes it much easier to perform maintenance in the future.
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 Tannin 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 filter and then copper after it, if you have copper plumbing.
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 system 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 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 Tannin Filter Works

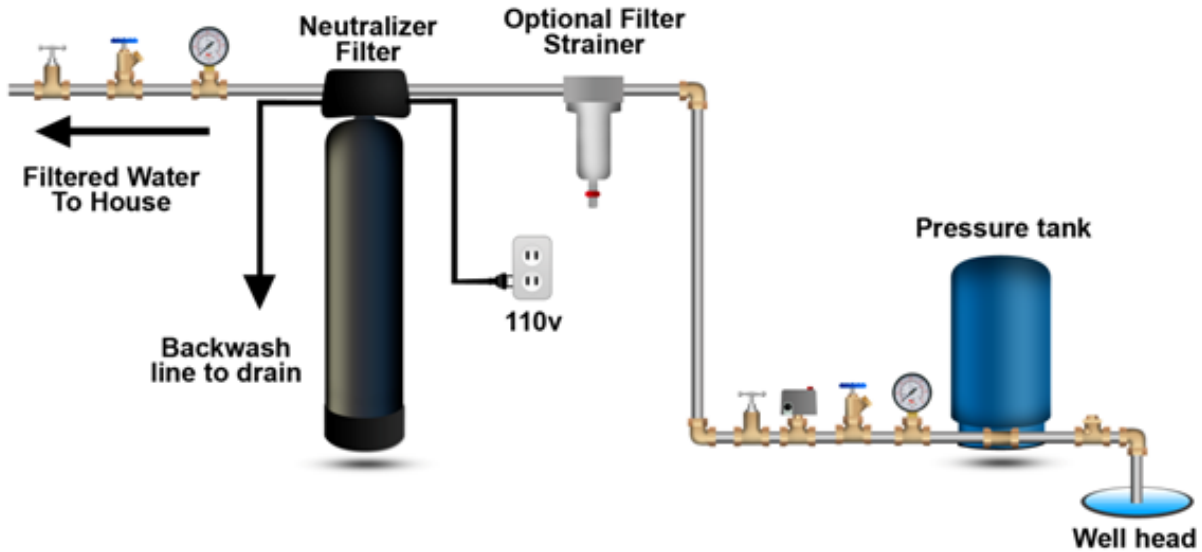
See Fig 1. In your Tannin filter, the water enters the top of the tank and flows down through the media and up the distributor tube. The downflow type Tannin filter removes sediment and can be backwashed, which cleans and re-classifies the Calcite, preventing channeling. During backwash, the water flow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

Fig 1 - Tannin Filter Tank Cut-away Illustration

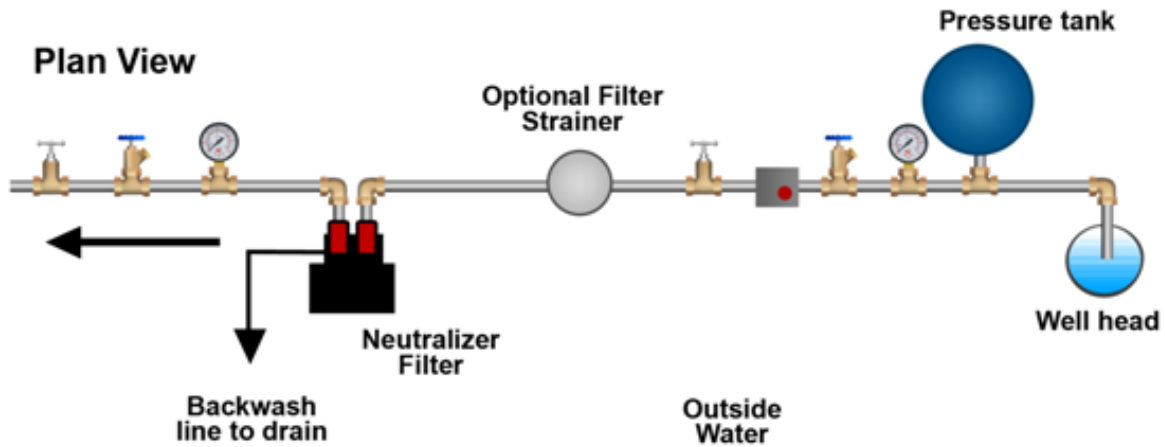


Fleck 7000 Tannin Filter Installation & Startup Guide

Fig 2 - Tannin Filter Full Installation Diagram



Plan View



Key

Water piping

Check Valve

Hose Bib

Pressure switch

Pressure Gauge

Gate or ball Valve

Assembly and Installation Instructions

1. By hand, unscrew the entire Fleck 7000 control valve from the top of the tank (if it was shipped screwed on). If not already done, make sure the blue cap is on top of the distributor tube, or wrap the top of distributor tube with electrical or duct tape. You do not want Calcite to go down the distributor tube.



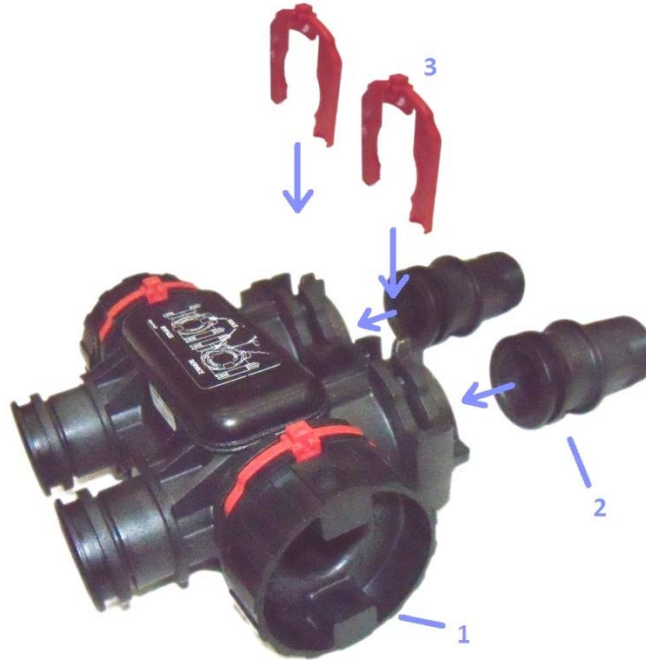
2. Next, add Calcite or Calcite-blend media. **If you are using a blend of Calcite and Corosex, make sure to read page 11 for more information on using and adding blends.**
3. Remove cap or tape from the top of distributor tube. Be careful not to pull up the distributor tube when removing cap or tape.
4. If possible at this point, fill tank completely with water. This will allow the Tannin filter media to settle and eliminate the need for purging air out of the tank later.
5. Next, insert the top distributor basket into the bottom of the Fleck 7000 control valve and rotate clockwise (see Fig 3.). This will keep the media from moving into the head during backwash.
6. Do not use pipe-joint compound, Teflon tape, Vaseline or other petroleum greases to lubricate tank threads. Do not over-tighten when threading Fleck 7000 control valve on to tank. Do not allow hard piping to cause stress on the Fleck 70000 valve, the pipes should not be pulling down or up on the valve. Flexible connectors avoid this problem and are recommended.

Fig 3 - Top Distributor Basket



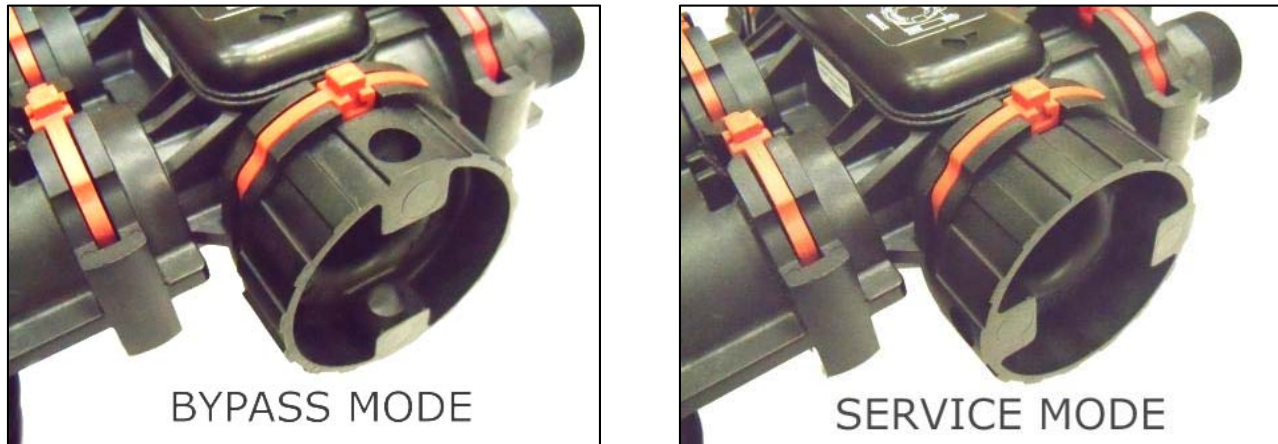
7. See how the Fleck by-pass is connected. Note that Items 2 in Fig 4 (below) are the pipe-connectors and the other end is what gets attached to the control valve. Items 3 are the red clips that hold the pipe connectors to the by-pass valve - we include two extra red clips with the pipe connector kit. Your Fleck 7000 is usually shipped in the by-pass position.

Fig 4 - Bypass Assembly



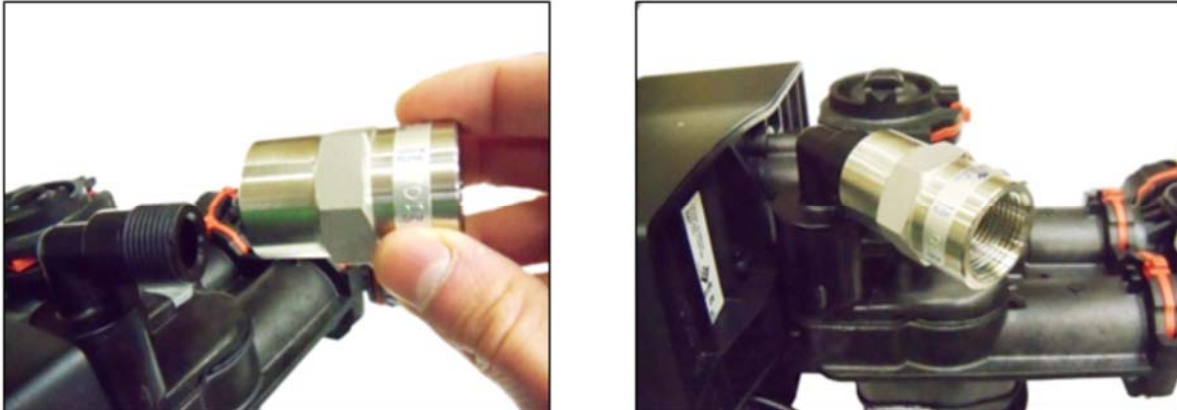
8. Lubricate the by-pass valve o-rings with vegetable oil or silicone grease and connect the bypass assembly to the Fleck 7000 control by sliding the bypass valve firmly into the body of the Fleck7000. Once the bypass is in far enough, you will be able to insert the red connector clips. **DO NOT** USE PETROLEUM GREASE ON ANY PART OF THE FLECK 7000 CONTROL VALVE.
9. Next lubricate the end-connectors (#2 in Fig 4) with silicone grease or vegetable cooking oil and insert them into the bypass valve, then insert the red clips (#3 in Fig 4).
10. 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 (#1 in Fig 4). 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 (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 (Fig 5, below).

Fig 5 - Bypass and Service Modes



11. Do NOT remove the red clips in order to put the bypass valve in either bypass or service; it is neither necessary nor desired to remove the red clips on the bypass valve hand knobs.
12. Now install your water pipes to the Fleck 7000 bypass end connectors. Make sure the inlet is installed to the 'In' pipe connector on the bypass valve and outlet is on the "Out" connector.
13. Connect some flexible tubing from the drain connection on the Fleck 7000 control valve to a suitable drain such as a septic tank or sewer drain. It is OK to run the drain line up and over the Fleck 7000 Tannin 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.
14. **For the 2.5 cubic foot and larger systems only:** use external drain backwash flow control. If you have a smaller size Tannin filter, then 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.

Fig 6 – Stainless Steel Backwash Drain Flow Control (2.5 Cubic Foot Systems Only)



15. Plug your Fleck 7000 control valve into an outlet. Your Tannin 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 Tannin filter will run before it backwashes and regenerates automatically. The default number of days between back wash is 7.
16. Press and hold either the Up or Down button 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.
17. Hold down the Up and Down buttons 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) you can set the backwash frequency to as little as every 14 days, but if not it is best to leave it to backwash every 7 days.
18. Press the Extra Cycle button once. Set the time of night that you want the Tannin filter to backwash; the default time is 2:00 am. Adjust the time by pushing the up or down arrow if desired.
19. Now press the Extra Cycle button once more. You are done programming!
20. Now you are ready to turn the water on. Turn the water on, leave the Tannin filter on bypass and check for leaks. Leave the ball valve after the Tannin filter closed, so water is still off to the house, but connect a garden hose and open up the hose bib after the Tannin 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 Tannin filter and you do not have a hose bib, you will need to turn the water on inside the house and let it run. Use a bath tub, laundry sink or other fixture that does not have an aerator screen.
21. Press the Extra Cycle button for a second or two which will start a manual backwash. If you ever wish to stop a backwash in progress, just push the Extra Cycle button once, and within 30 to 60 seconds

the control valve will change to Rinse cycle. Press the Extra Cycle button again, and it will skip through the Rinse cycle to Service mode, meaning it is in service and ready to use.

22. 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 (counter-clockwise) as you face the bypass valve knobs.
23. There should be no Calcite media coming out of the drain line, but the water will be milky or dirty looking. At this point the Tannin filter is in a backwash cycle which will take 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 to the Tannin filter slowly at first to prevent some Calcite fines from coming out the backwash. It is normal for a small amount of fines to come out during the backwash, but you do not want to see a large amount of media coming out as this means you have very high water pressure or the drain flow for the Fleck 7000 is missing.
24. If possible verify that the backwash flow is 5 gallons per minute, the recommended backwash flow rate for 1.0 and 1.5 cubic foot models. If you have a 2.5 cubic foot Tannin 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 Calcite media and prevent it from cementing together.
25. The next cycle is the Rinse cycle and this also runs for 10 minutes.
26. After the Tannin 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 Calcite media in the future; the Calcite media must be thoroughly backwashed and rinsed.
27. Refer to your Fleck 7000 service manual for more information about how your control valve is programmed if desired.

Maintaining Your Tannin Filter 7000 Filter System

1. Check the pH before and after the Tannin filter. You want to have a pH of at least 7.0 after the Tannin filter.
2. If the pH drops below 7, check the depth of the Calcite media by shining a bright light through the tank. Your tank should be about 2/3rds full of media. When the media level drops to ½ full, it is time to add more Calcite or Calcite blend media if you are using a blend.
3. For most residential applications, adding Calcite media once or twice a year is adequate. Do not fill more than 3/4ths full; about 2/3rds full is best.

How to Add Calcite Media to the Fleck 7000 Tannin Filter

CALCITE MEDIA CONTAINS DUST. USE PAPER MASK OR VENTILATE TO AVOID BREATHING DUST.

1. Begin by putting the Tannin filter on bypass, or turning the water pressure off before the Tannin filter.
2. Initiate a manual backwash cycle. Since it is on bypass, this will relieve the pressure inside the control valve so you safely unscrew the Media Fill Plug located on top of the Tannin filter tank.
3. Unplug the control valve cord from the wall outlet.
4. Unscrew the media fill plug with channel locks or pliers, and using a tube or hose siphon 2 to 3 gallons of water out of the filter tank. If you don't siphon water out before adding filter media, water will flow out the fill plug hole and onto the floor. If water on the floor is OK, then you do not have to siphon water out first before pouring Calcite media into the fill plug hole.
5. Add Tannin filter media until the tank is 2/3rds full. Do not over-fill; be sure to leave at least 12" of free space above the media to allow room for it to expand during a backwash.
6. Put the top fill plug back in. You can lubricate the threads with some vegetable oil or silicone grease, but do not use Teflon tape or plumbing grease.
7. Plug the control valve back in and press the Extra Cycle button so the Fleck 7000 control is in a backwash cycle.
8. Turn on the bypass valve - slowly at first - back to the service position (if it is in "service" this means it is in the proper position for filtering and neutralizing).
9. Allow the system to go through a complete backwash and rinse cycle. Repeat this backwash and rinse cycle by starting another manual cycle, so the Tannin filter is thoroughly backwashed and rinsed before going back into service.

Troubleshooting the Fleck 7000 Tannin Filter

Backwash Flow Rate:

One problem that may occur if you do not have enough backwash flow rate to properly clean the Tannin filter is a drop in water pressure, due to fouling of the media from rust or sediment. 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.

Programming:

In some cases, the Fleck 7000 may not be programmed correctly. Your Fleck 7000 should be set for FLTR or Filter mode and have two cycles, backwash and rinse. However, if you have a built-in flow sensor, it needs to be programmed differently. Please contact our office for the programming guide on how to set the Fleck 7000 if you have a built-in flow sensor that tracks gallons used.

Fleck 7000 Filter System (Non Flow Sensor) Standard

Programming Guide Standard

This is for the standard Tannin filter systems that do NOT have the optional flow sensor. If your system is equipped with a flow sensor, see next section (Page 15). There are two types of programming, standard USER PROGRAMMING, where you can set the time of day and 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 Tannin filter:

User Programming

1. Press and hold the Up and Down buttons simultaneously for five seconds while in service, and while 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**): In general set to 2:00 am 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.
4. Press the Extra Cycle button to end User Programming Mode. The timer will exit Diagnostic Mode after 60 seconds if no buttons are pressed. Press the Extra Cycle button to exit Diagnostic Mode at any time.

Master Programming

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 simultaneously 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 or set.

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 **Filtr**. This refers to 'Filter', which is correct. Press the Extra Cycle button to go to the next step.
3. Control Type (Display Code **CT**): Set to **TC**, which refers to Time Clock type. Press the Extra Cycle button.

4. Day Override (Display Code **DO**): Set to 7 or other 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.
5. Regeneration Time: (Display Code **RT**): In general set to 2:00 am 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.
6. Regeneration Cycle Step Times: Use this display to set the various minutes of each cycle. Press the Extra Cycle button to accept the setting and move to the next parameter.
 - a. B1 – Backwash: Set to 8 to 10 minutes.
 - b. B2 - 2nd Backwash: Set to 0 for most applications.
 - c. RR - Rapid Rinse: Set to 6 minutes
7. 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.

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 MangOX 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.
4. Feed Water Hardness: Use this setting to adjust the feed water hardness. Set to 20 for most applications. Press the Extra Cycle button. Note that actual 'Feed Water Hardness' is irrelevant to filter systems, since hardness is being removed.
6. 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 that we can take advantage of the flow meter in this Fleck 7000 5-cycle valve, but we won't be using all 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 wait until the pre-set regeneration (backwash and rinse cycles) time, typically in the middle of the night. Press the Extra Cycle button.
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.

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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.
 - 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.