

Fleck 9100 Softener System

Introduction

Your new All-in-One System is designed to be simple to install and use; these instructions are designed to walk you through the installation and setup process. Whether you decide to tackle the job yourself or defer to a plumber's expertise, it is imperative that the instructions are read through completely. **** The most common problem we have is people (particularly plumbers) assuming they know how to do it and missing a vital step covered in the instructions. **** We recommend reading through the ALL of these instructions before you even open the first box, and preferably before you receive your system. This will ensure that you know what to expect before beginning, and can help you notice any shipping problems right away. If having a plumber install the system, print off a copy for them to reference during installation.

**** Please read through the entire instruction manual carefully. **** Most installation questions are answered in these instructions. Please note: that these instructions do cover a wide range of all-in-one systems using the Fleck 9100 and 9100SXT. While we try to note any system specific instructions we cannot account for every possible configuration and situation. If you have read through the entire manual and still have questions you may contact us for further help. **** Please direct plumbing related questions to a locally qualified plumber. **** We pride ourselves on our knowledge of our systems and how they work, however, we are not plumbers and different areas have codes that only a local plumber may be aware of.

System Requirements

The first step in getting your new system installed is verifying you meet the requirements necessary for a successful installation. While it is preferable to check these things BEFORE ordering, checking these requirements before unboxing your system can save time and hassle if the requirements are not met. A suitable installation location provides ALL of the following:

- Water pressure minimum of 20 PSI (1.38 BAR) and maximum of 90 PSI (6.20 BAR).
- Water temperature minimum of 34 °F (1.1 °C) and maximum of 110 °F (43.3 °C).
- System must be protected from freezing
- A firm surface that is level and flat and large enough to accommodate the system. Standard dimensions are listed in the inventory section.
- A grounded (preferably GFCI) 3-prong, 120V outlet within 5 ft. (1.5 m) of the control head. Ensure the outlet is not controlled by a switch. Extensions cords are NOT recommended, but a properly rated extension cord may be used temporarily until a permanent outlet can be installed. **** Please Note: **** 220V control heads are available by special order.
- A suitable standpipe (preferably 1.5 inches, similar to a washing machine drain), sump pit, or outside drain. Ideally located within 15 feet (3 m) of the system, longer distances will require larger drain tubing. Most plumbing codes require an air gap, essentially the drain line cannot directly touch standing water. The drain line can be run overhead, as the water from the drain line is pressurized. If running outside it is best to avoid running to an area with plants, trees, or shrubs to prevent possible problems/discoloration that may be associated with the waste water.

**** Please note: **** Running the drain to a septic/sewer system is fine and is preferable in most situations. A properly configured drain system will NOT be damaged by the waste water. Due to system and plumbing variations the amount of water used during regeneration will vary, 1 cubic foot systems typically use around 70 gallons (265 L) with larger systems using incrementally more.

Once all conditions have been verified, you may begin system installation.

Installation Summary

This is just a quick summary of the steps involved in installation, further details are provided below and cover most common questions. **** Please read through all the detailed instructions carefully before beginning. **** Doing so will save time and money and make the installation process easier.

1. Verify system inventory
2. Prepare and fill the tank
 - 2.1. Inspect tank for damage
 - 2.2. Place tank in installation location
 - 2.3. Inspect and place riser tube
 - 2.4. Fill tank partially with water **** Optional ****
 - 2.5. Load media/resin and gravel— **** gravel goes in first ****

- 2.6. Finish filling tank with water **** Optional ****
- 2.7. Allow media to soak for 12-24 hours **** Optional ****
3. Attach the control head
 - 3.1. Inspect control head for damage
 - 3.2. Inspect and install top distributor basket if applicable
 - 3.3. Lubricate tank O-ring and distributor O-ring with silicone lubricant. **** DO NOT use Vaseline ****
 - 3.4. Screw on control head **** hand tight only ****
4. Hookup drain line
5. Prepare and connect brine tank
 - 5.1. Inspect brine tank for damage
 - 5.2. Adjust float rod so the top of the float is a couple inches below overflow
 - 5.3. Use 3/8 inch line to connect brine tank to control head
 - 5.4. Connect overflow to floor drain **** Optional ****
 - 5.5. Add salt to the brine tank, **** water is not necessary ****
6. Connect inlet/outlet lines
 - 6.1. Prepare the connection fittings
 - 6.2. Secure connection fittings to the control head
 - 6.3. Turn off main water supply
 - 6.4. Remove section of pipe large enough to accommodate system connections
 - 6.5. Verify water flow direction
 - 6.6. Connect incoming (untreated) water line to the valve inlet
 - 6.7. Connect valve outlet to outgoing (treated) water line
 - 6.8. Ensure bypass valve is in bypass position
 - 6.9. Turn on main water supply and **** check for leaks ****
7. Setup control head
 - 7.1. Plug control head into grounded GFCI outlet
 - 7.2. Mechanical valve setup
 - 7.3. Digital valve setup
8. Place system in service
 - 8.1. Open bypass valve **** slowly ****
 - 8.2. **** Check for leaks ****
 - 8.3. Flush the system
 - 8.4. Initiate manual regeneration
 - 8.5. Verify proper operation

1—Verify System Inventory

Parts Included

**** Parts received and parts listed may vary. **** Variances occur based on exact system configuration, warehouse differences, part availability, specific order requests, new designs, and individual application differences. This is NOT a definitive list, but is intended as a guideline to help understand typical. Differences in parts pictured and parts received can be expected and does not mean there is a problem.

All systems come with:

- (1) Fleck 9100 OR 9100SXT control head
- (1) 2nd tank adapter
- (1) Yoke Assembly (for connecting two tanks)
- (1) Brine Tank
- (1) 2nd tank adapter
- (1) Bypass valve
- (1) Media funnel
- (2) Riser/distributor tubes

**** Please note: **** Smaller parts, including the control head, may ship in the brine tank

Depending on system size you will also receive the following tank and media/resin:

**** Note **** The inventory is for each tank, so on the dual tank systems you will have double the listed parts.

Standard Capacity	16k	24k	32k	48k	64k	80k	96k	110k
Tank (in inches)	8 x 44	8 x 44	9 x 48	10 x 54	12 x 48	13 x 54	14 x 65	14 x 65
Gravel	10 lb	10 lb	12 lb	16 lb	20 lb	35 lb	50 lb	50 lb
Fine Mesh Resin ** Iron Pro **	0.5 ft ³	0.75 ft ³	1 ft ³	1.5 ft ³	2 ft ³	2.5 ft ³	3 ft ³	3.5 ft ³
Fine Mesh Resin ** Water Pro **	0.25 ft ³	0.5 ft ³	0.75 ft ³	1 ft ³	1.5 ft ³	1.5 ft ³	2 ft ³	2.5 ft ³
Catalytic Carbon ** Water Pro **	0.25 ft ³	0.25 ft ³	0.5 ft ³	0.5 ft ³	1 ft ³	1 ft ³	1 ft ³	1 ft ³
KDF ** Water Pro ** ** Iron Pro PLUS **	5 lb	5 lb	5 lb	10 lb	10 lb	15 lb	15 lb	15 lb
** Please note: ** Media/resin may be preloaded in systems shipped by truck								

2—Prepare and Fill Your Tank

**** Money-saving tip: **** If hiring a plumber to do the installation you can save some money by preparing the tank ahead of time. This cuts down on the time the plumber has to spend and doing so is simple enough that most people can accomplish it in less than an hour.

2.1—Inspect tank for damage

Before filling the tank check it for any damage that may have occurred during shipping. Look for any obvious damage on the tank such as gouges or cracks. Also look carefully around the lip of the tank where the control head seals, ensuring there are no nicks or cuts. Minor nicks and cuts can be smoothed out with sandpaper, while tanks that arrive with larger nicks and cuts may require filing a damage claim for a replacement.

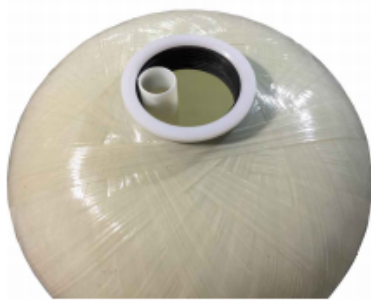
2.2—Place tank in installation location

Proper location of your system will ensure effective treatment and satisfaction with your system. If you are on a well the system will need to be installed **** after the pressure tank. **** This ensures even pressure to the system for proper operation and prevents pressure bursts that can force media/resin into your plumbing. If you are installing other tank systems, the typical order for installation is: sediment filter > pH filter > iron filter > carbon filter > water softener > arsenic filter. Whole house cartridge systems are typically installed after any tank systems, the Scale Sentry system after the cartridge system(s), and any UV systems will be last.

Make sure your chosen location will be level, dry, and protected from possible freezing conditions. The black boot on the resin tank is slightly adjustable for floors that are not quite level. If the boot does not provide enough leveling, shims made from small, flattened pieces of copper pipe, or some other non-corrosive material may be used. **** Do not use wood or make-shift platforms ****, they are not very sturdy and may cause damage the tank, injury to people, or damage to property. If the floor is excessively uneven it is recommended to have the floor leveled before installing the system, or install the system in a different location.

Next, stand back and look at your resin tank, and make sure it is standing straight up and not tilted to one side. The black boot on the bottom of the tank may get knocked out of alignment during shipment, if it does you will need to straighten it out before filling the tank. If your tank is a bit tilted, simply pick the tank up 2–3 inches (5–8 cm) off the floor and drop it gently but firmly down, favoring the side that needs to be adjusted to make the tank stand straight.

2.3—Inspect and place riser tube



Img 1 - Tank & Riser

Look inside your resin tank and there will be a plastic tube inside—**Img 1**. This is your riser (or distributor) tube that helps manage water flow through the system. Inspect the riser tube to make sure it is intact and without damage, removing it from the tank to ensure the distributor basket on the end is intact as well.. These are very durable and would rarely ever be damaged, but it is a good idea to check. **** Verify the riser tube fits and seals into the control head. **** A mismatched riser tube will prevent proper treatment, and it is much easier to correct the problem before the media is loaded. Place the riser tube back into the tank, there is a depression at the bottom of the tank in the center that it will sit in. With the riser tube properly positioned, ensure that it is no more than 1/4 inch (6 mm) above the top of the tank.

If higher than 1/4 inch (6 mm) use a sharp knife, PVC cutter, or similar tool to cut it flush with the top of the tank. **** Do not cut the riser tube too short. **** If your riser tube is too short it will not seal inside the control head properly and your system will not work properly.

2.4—Fill tank partially with water **** Optional ****

This optional step will help buffer the media/resin as it is poured in and will also help minimize air bubbles upon initial startup. Simply pour water into the tank until it is 1/4 - 1/3 filled with water. If partially filling the tank with water is not an option you may skip this step.

2.5—Load media/resin and gravel— **** gravel goes in first ****

**** Your system will have a smaller tank used for salt, DO NOT load the media/resin in this tank ****

To prevent media/resin from getting in the riser tube (and later in your plumbing) you will need to **** cover the opening of the riser tube ****. If it does not have a plug in it, simply put something over the end of the tube, such as a piece of tape, to prevent anything from falling into the riser tube. Once the riser tube is covered you may load the media/resin into the tank.

Loading the media/resin and gravel is fairly easy. Some systems include a funnel to make loading the media/resin easier—**Img 2**. If you do not have a large funnel to fit, the next best thing to use is your household blender pitcher. Take the bottom blade section off of your blender and the pitcher will screw directly into your tank making a great funnel.



Img 2 - Tank with Funnel

With the funnel in place, you may begin loading the tank. **** The gravel goes in first! ****

Make sure to empty all boxes to verify it is not in the bottom of the tank box or in a box with the media/resin.

When filling the tank, do so slowly and ensure the riser tube stays correctly positioned and centered in the tank. If you have more than one bag of media/resin the order does not matter, and **** all of it will be used ****. On dual tank systems the media/resin will be split evenly between the two tanks. Once all the media/resin is loaded the tank will not be completely full, this is normal. Empty space is required at the top for proper operation, and the exact amount of space varies between systems.

2.6—Finish filling tank with water **** Optional ****

Once the media/resin is loaded it is recommended to finish filling the tank with water. Filling the tank with water now will reduce problems that may be caused by air bubbles in the tank. A tank prefilled with water also minimizes the chances of media/resin getting pushed into the plumbing by turning the water on too fast during initial startup. Fill the tank with water, leaving approximately 2 inches (5 cm) at the top to allow the control head to screw down. **** Please note: **** As water fills the tank it can and will fill the riser tube as well. If filling the tank with water is not an option you can skip this step, just make sure to turn the water on VERY slowly when first placing the system in service.

2.7—Allow media to soak for 12-24 hours **** Optional ****

Once the tank is full of water it is a good idea to allow the media/resin to soak for 12-24 hours. This allows smaller air bubbles to work their way out of the media/resin and also helps reduce the initial flush time. If you are filling the tank yourself and having a plumber install the system it is recommended to plan the install after the media/resin has had time to soak. If a plumber is filling the tank or if time does not allow for soaking this step may be skipped, but a longer initial flush can be expected.

3—Attach the Control Head

3.1—Inspect control head for damage



Img 3 - Control Head O-rings

Inspect the control head for any damage. Look for any damage to the threads (that screw into the tank), check all fittings to ensure they are whole and undamaged, and look for any other obvious signs of damage. Check to ensure the pilot and tank O-rings are present and free from nicks or kinks—**Img 3**. It is also a good idea to verify that the riser tube fits snugly into the pilot hole and that the O-ring seals around it.

3.2—Inspect and install top distributor basket if applicable

Depending on system configuration your system may include a top distributor basket—**Img 4**. If you have more than one system you can match it up to the control head and riser to ensure it goes on the right system. In general, water softeners ship with an upper basket while other systems do not. If you did not receive one that is normal, they are not required and you can use the system without one. If you do have one the larger end will fit inside the bottom of your control valve, with the smaller end sliding over the riser tube pointing down into the tank. Most styles push into the control head and then turn clockwise to lock onto the control head, some just push in to the control head until snug.



Img 4 - Top Distributor Basket

on the pilot O-ring (inside the opening on the bottom of the control head) and the tank O-ring (at the base of the threads on the control head) as well. This helps to lubricate the O-rings and ensure a smooth, quality seal. **** DO NOT use petroleum based lubricants! **** These include Vaseline, WD-40, 3-In-One oil, and similar products. They will degrade the O-rings over time, leading to seal failure and resulting in leaks.

3.4—Screw on control head **** hand tight only ****

**** DO NOT apply anything (pipe dope, plumbers paste, Teflon tape, etc.) to the threads on the control head or the resin tank! ****

Position the control head over the resin tank and lower into place, making sure the riser tube slips inside the pilot opening in the bottom of the head. Have someone hold the tank as you tighten the head onto the tank. Hold the valve near the base, as the solid body of the head will provide a sturdy grip. Screw the head down onto the resin tank until solid contact is made between the tank and O-ring, then tighten about another 1/4–1/3 of a turn and STOP. **** Do not over tighten the control head as this can cause damage. **** Once properly tightened down check to ensure the tank and control head meet evenly all the way around.

4—Connect Drain Line

**** Please note: **** Drain water comes out under line pressure, so it can be run vertically to connect to an overhead drain pipe.



Img 5 - Drain Fitting

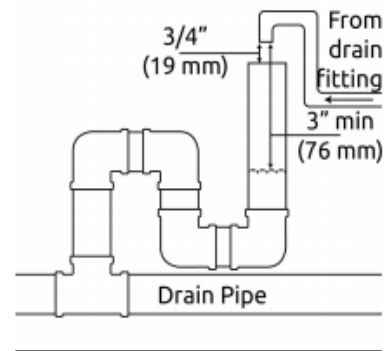
Your system requires a drain line connection for elimination of wastewater during the regeneration cycle. To determine what kind of drain pipe and fittings are needed, first check the drain fitting on the control head—**img 5**. The drain fitting itself will be a standard threaded connection. Some systems will include a barbed fitting that will screw into the main drain fitting, this allows for easy connection to flexible tubing. You will also need to measure the distance to the drain point, which should be a suitable standpipe (preferably 1.5 inches [38 mm], similar to a washing machine drain), sump pit, or outside drain. For residential systems with where the drain point is less than 10 feet (3 m) from the system you can use 1/2 inch (13 mm) inner diameter semi-flexible tubing connected to a barbed fitting (either the included one or one purchased separately). Make sure to **** use non collapsible tubing**

****** to prevent problems with the regeneration caused by flow restrictions. If the drain point is more than 10 feet (3 m) from the system you will need step up to a 3/4 inch (19 mm) PVC or CPVC drain line.

Please check with your local health department or plumber for local codes specific to your area. **** Never make a direct connection into a waste water drain. **** A physical air gap of at least 3 inches (76 mm) between the end of the drain line and the wastewater level in the drain pipe should be used to avoid contamination of the line. An additional gap of 3/4 inch (19 mm) between the drain pipe and drain line is recommended to prevent any problems in the case of a pipe overflow. Using a simple P-trap as shown

—**img 6**—is ideal as well, but a stand pipe with a diameter of at least 1.5 inches (38 mm) is adequate. As the water coming out is under pressure, make sure to ***** secure the drain line ***** so that it does not move and create a mess.

***** Do not tie multiple systems into a single drain line. Do not use additional fittings on the drain line. ***** If hooking up multiple systems, each system needs a separate, independent drain line to ensure proper operation and prevent damage. Systems can all be run to the same standpipe/sump/outside drain, but the drain line from each system needs to be separate. Avoid installing any additional fittings (check valves, ball/gate valves, etc.) as this can prevent proper backwash and cause premature system failure.



img 6 - Example Drain w/ Air Gap

5—Prepare and Connect Brine Tank

5.1—Inspect brine tank for damage



img 7 - Brine Tank

**** Design and color may vary ****

Locate the brine tank, it is a plastic tank about the size of a 30–40 gallon (113–151 L) trash can—**img 7**. This tank is used to hold the salt (**** not Included ****) used for regeneration. Remove the lid and look down inside, you will see the brine well—a cylinder about 4 inches (10 cm) in diameter—that houses the float assembly. Remove the brine well cap and you will see the float assembly inside. Check all components and ensure there is no visible damage to anything. **** Please note: **** Some systems may have a salt grid—a plastic grid on the bottom of the tank—but most do not as they are not needed when using pelleted salt as recommended. If your system came with one you can use it, but if it did not there is no need for it.

5.2—Adjust float rod

Remove the float assembly (you may need to remove a nut or two before removing the float) and remove any shipping bands that may be in place. The float will usually arrive preadjusted, but it is a good idea to check it. ***** The float is NOT used to adjust the salt dosage. ***** The float assembly is a safety mechanism designed to prevent over-filling in the event of a control head malfunction. It should be set to shut the water off before the water hits the overflow hole (the lowest hole on the outside of the tank). If it needs adjusted simply slide the grommets up or down until the float is properly positioned. If adjusting results in excess rod above the top of the brine well you may cut off the excess, but be sure to leave 1–2 inches (2.5–5 cm) of the rod above the grommet in case future adjustments are needed. Place the float back into the brine well and replace any nuts that secure it in place.



Img 8 - Two Most Common Float Assemblies

5.3—Use 3/8 inch line to connect brine tank to control head



Img 9 - Float Assembly Fitting

You will need a 3/8 inch flexible line long enough to reach from the control head to the brine tank, with a little extra to allow for some slack. There are two common types of float fittings —**img 10**, the compression on the left and quick connect on the right. If you have the quick connect, simply push the tubing into the fitting, the tubing will stop and a little extra push will slide the tubing another 1/8-1/4



Img 10 - Brine Fitting

inch and seal in place. If you have the compression style, remove the large nut from the end of the elbow on the float assembly and slide it over one end of a 3/8 inch flexible line. If your float fitting has an insert (some do and some do not) push it into the end of the tubing AFTER sliding the nut on. Push the tubing into the float fitting and secure in place with the nut. Repeat the process on the other end of the brine line to connect it to the brine fitting on the control head—**img 10**. Some systems will include a wire mesh screen, if you have one install it inside the brine line on the control head side, inside of the insert if there is one.

5.4—Connect overflow to floor drain **** Optional ****

The brine tank has a hole that can be used to run an overflow line to a floor drain. The overflow is a fail-safe should both the control head and the float mechanism malfunction, as such it is extremely unlikely that it would be utilized, but it can be hooked up if desired. To make use of it, you will need a bulkhead fitting for a 5/8 inch hole (available at most hardware stores), with a barbed or other connection of your choice. Connect the fitting to a matching flexible line and run it to the nearest floor drain. ***! Do not tie in to drain from control head, and do not run above the level of the overflow outlet. *!** The overflow is gravity based and

will not run above the level of the fitting. Connecting it to the same line that the drain fitting on the control valve uses will cause the brine tank to fill with drain water.

5.5—Add salt to the brine tank, **** water is not necessary ****

Once the brine tank is connected you may add salt to it. You can add as much salt as you want as long as the salt does not cover the top of the brine well. Salt used per regeneration will vary depending on system configuration, but it is typically recommended to keep a minimum of one bag (40 lb or ~18 kg) worth of salt in the tank at all times. Depending on water quality and usage you can either add a bag or two at a time every month or so to keep the tank full, or you can wait until it is almost empty and fill it up every few months. **** Please note: **** You do NOT need to add water to the brine tank. The resin is precharged and able to treat the water out of the box. Once the installation is complete **** an initial regeneration is run to ensure the proper amount of water is in the brine tank ****, ready for the next required regeneration. If for some reason an initial regeneration is not run, you will need to add approximately 5 gallons (~19L) to the brine tank to allow for proper regeneration when the first cycle is run.

6—Connect Inlet/Outlet Lines

**** Before you continue **** Many homeowners install their own water systems with basic plumbing skills; if you are not comfortable with projects like this, please hire a professional plumber. Make sure to check local plumbing codes and follow any codes that apply. Before shutting off the water or making any cuts, it is a good idea to rough in your plumbing. This simply means dry fit your connections and have your pipe sections cut and ready. Doing so will ensure you have everything you need to get the system installed and will reduce the amount of time you are without water.

6.1—Prepare the connection fittings



OR



Img 11 - Connection Fitting

Your unit comes with connection fittings that allows the control head to connect to standard plumbing, either a single stainless steel bypass valve or a two part plastic bypass and yoke connection—**img 11**. The included connection may or may not be installed on the control head, if it is, remove it for this step. To remove it, locate the metal clips holding it in place. Remove those and the connection will pull away from the control head. Note the direction of flow as indicated by the arrows, also note the direction of flow on the head itself, also indicated by arrows. The inlet side arrow will point toward the front of the head for incoming (untreated) water, the outlet side arrow will point away from the head for outgoing (treated) water. **** Correct inlet/outlet connections are vital. **** Connecting the system in reverse (with the incoming water connected to the outgoing connection) will prevent proper operation

and can result in media/resin being thrown into your home's plumbing system, causing damage to your plumbing and the control head. **** The direction of flow can not be changed. **** Turning the connection

upside down will not change the direction of the water flow, if your water flow runs differently than the control head, you will have to use some extra fittings to get the pipes to the correct side of the valve.

The connection will be either 3/4 inch or 1 inch NPT, depending on your order. You will need to get adapters, fittings, and pipe to connect from these connections to your home's plumbing.

**** If soldering: **** Before connecting any adapters to the connection fittings, first solder a short (min 3-inch [7.6-cm]) piece of copper pipe onto the adapters, away from the valve. **** Do not solder close to the valve or any rubber components. **** Excess heat generated by soldering pipe into the adapters can cause damage and can lead to improper system function.

**** For threaded adapters: **** Use a high quality thread sealant (pipe joint compound or Teflon/PTFE tape) on all threaded plumbing fittings to ensure a leak-free install. **** Do not tighten the adapters into fittings while it is connected to the control head. **** This may damage the control head and prevent you from tightening the adapters properly.

6.2—Secure connection fittings to the control head

Once the adapters are connected to the connection fittings you are ready to secure it to the control head. The connection fittings seal with O-rings, and are held in place with metal clips. The meter assembly—**img 12**—sits between the connection fittings and the control head, allowing the two to connect and measuring the volume of water as it is treated. A flow straightener is used to ensure consistent flow through the meter for accurate results. It is a small cone shaped piece with holes in it about 1 inch tall. If it is not already installed, it will be placed between the control head and the meter assembly on the outlet side, with the top of the cone pointing away from the head. Verify the O-rings are all in good condition (no kinks or visible damage) and lubricate them with silicon lubricant or a vegetable based oil. Push the connection fittings onto the control



img 12 - Fleck meter assemblies

head, making sure the flow arrows are lined up properly, and secure it in place. **** Please note: **** The connection assembly will travel slightly up and down. This is normal due to the way the O-rings seal and is not a cause for concern. **** Do not overtighten the screws. **** The clips simply hold the connection fittings together and the screws only need tightened enough to keep the clips in place. Further tightening will not stop leaks and tightening too much can damage the system, which will not be covered under warranty. The meter assembly is expensive to replace, so extra care is recommended on these systems. The connection assembly may be supported in a level position with a temporary brace until the pipes are joined together and any pipe straps are installed. This will result in a neater, straighter connection.

6.3—Turn off main water supply

If you have private well, turn the power off to the pump then shut off the main water shut off valve. If you have municipal (city) water, simply shut off the main valve. Go to a faucet, (preferably as close to the

installation location as possible) turn on the cold water until all pressure is relieved and the flow of water stops. If your hot water tank is electric, turn off the power to it to avoid damage to the element in the tank.

6.4—Remove section of pipe large enough to accommodate system connections

With a pencil, mark a section of pipe to be removed from the main line. This is where you will direct the water to the system and then from the system back to your plumbing, called your cut in point. Allow yourself plenty of room to connect any necessary fittings. Once you have established the cut in point, make the cuts and remove the section of pipe. After doing so it is usually a good idea to double check your rough in connections to ensure everything still matches up.

6.5—Verify water flow direction

If you are unsure of the direction the water flows through your pipes now is a good time to find out for sure. To do so, simply place a bucket underneath the open pipes from the section you just removed. Turn the main water supply on very slowly, just until water starts to come out of one of the open pipe ends. This pipe is the incoming (untreated) water and will connect to the inlet side of the system.

6.6—Connect incoming (untreated) water line to the valve inlet

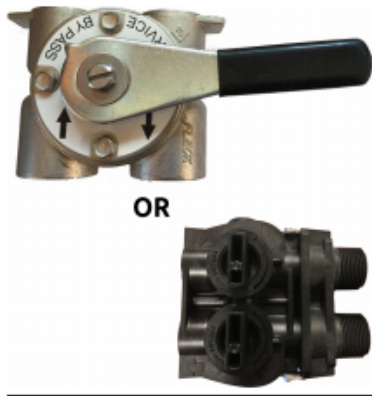
Using fittings and pipe as necessary, connect the inlet side of the control head. This is the incoming, untreated water will flow into the control head and be passed through the system for treatment. Follow any local plumbing codes and ensure all connections are secure and well sealed. **** Please direct any plumbing related questions to a qualified plumber. **** We are very knowledgeable regarding our systems, but we are not plumbers and are not able to answer plumbing related questions.

6.7—Connect valve outlet to outgoing (treated) water line

Using fittings and pipe as necessary, connect the outlet side of the control head. This is the outgoing, treated water that has passed through the system and is being sent out into the home. Again, follow any local plumbing codes and ensure all connections are secure and well sealed.

6.8—Ensure bypass valve is in bypass position

Once all your connections are made and have been allowed to set, if you have a bypass valve ensure it is in the bypass position—**img 13**. To verify this, turn the black handle(s) on the bypass valve perpendicular (at a 90-degree angle) to the inlet and outlet fittings. Ensuring the system is in bypass will allow you to check for leaks in the bypass valve/connections and prevent water from rushing into the tank and causing lost media/resin and/or air pockets.



Img 13 - Bypass Position

6.9—Turn on main water supply and ***** check for leaks *****

Slowly open the main water supply valve. Check all connections and fittings and ensure there are no leaks. Open a nearby faucet to let air out of the lines and ensure water is filling the pipes. It may be a good idea to wait 15-20 minutes after releasing the air to ensure no leaks develop. If any leaks are discovered, turn off the main water supply and correct them before continuing.

7—Setup Control Head

7.1—Plug control head into grounded GFCI outlet

The control head requires a grounded (preferably GFCI) 3-prong, 120V outlet within 5 ft. (1.5 m) to supply power to run the system. **** Extensions cords are NOT recommended, **** but a properly rated extension cord may be used ***** temporarily ***** until a permanent outlet can be installed. Once plugged in, verify the system is receiving power and ensure the outlet is not on a switch that might get turned off. On digital valves the display should light up and start flashing a time, on mechanical valves you may hear a quiet hum of the motor.

7.2—Mechanical valve setup

You will need to calculate the gallon capacity of your system (how many gallons the system can go through before it needs to regenerate). To calculate this number you will need to know the system capacity, (for example, a 48k system has a 48,000 grain capacity) and the hardness of the water in grains per gallon (GPG). If your test shows hardness as parts per million (ppm) or milligrams per liter (mg/l) simply divide by 17.1 to get grains per gallon. With iron or manganese in the water you will need adjust the hardness to compensate. To do so, taking the combined level of iron and manganese, in parts per million (ppm) or milligrams per liter (mg/l), and multiply by 4. Add the result to the hardness in GPG, and this is your compensated hardness. As an example, if the water hardness is 12 GPG, iron is 2.5 ppm, manganese is 0.5 ppm your compensated hardness is $12 + (3 \times 4) = 12 + 12 = 24$ GPG. Take the capacity of the system and divide by this number, this is your total capacity. Multiply the number of people in the house by 75, this is your reserve capacity. Subtract the reserve capacity from the total capacity and this is how many gallons you will set your system to. The

gallon capacity of the system is denoted by a gear with the numbers 1-21, these numbers represent the number of gallons x 100 that you system is set to regenerate at. To set your system, pull out the capacity knob and rotate the knob until the correct number is lined up with the white dot. As an example, if the water hardness is 24 GPG and you have a 48k system with 3 people, your gallon capacity would be $(48,000/24)-(75 \times 3) = 1775$ gallons. You would line the white dot up between the numbers 17 & 18. If unsure of the size of your system you may contact us for assistance, be sure to include the name the system was ordered under when contacting us. If your water is extremely hard or if you have high water use a larger reserve capacity may be needed.

To set the time, locate the 24 hour time gear (the large gear located behind the manual cycle knob) and note the current time arrow. Push the red time set button in and rotate the 24 hour time gear until the current time arrow lines up with the current time of day. A white arrow will point at the current gallon capacity remaining. Once the countdown reaches zero the system will regeneration that night at midnight or 2 AM (depending on the system, the time is usually indicated on a label located on the back of the valve). The system needs to regeneration when there is no water being used, and the default time is usually fine for most homes. If need to have it regeneration at a different time (for example if you work late and are up and using water at the default time) you will need to adjust the current time of day to trick the system into doing so at the desired time. For example: if the system is set to regeneration at 2 AM and you want it to regeneration at 8 AM, set the current time of day 6 hours behind, that way the system will think it is 2 AM when it is actually 8 AM.

7.3—Digital valve setup

Plug the control head into an outlet. The SXT controller uses an LCD display and touchpad controls to simplify programming the system. The diagram indicates the various controls and displays you will use. When referring to a setting, the following format will be used:

[Parameter Display - Data Display]

Brief explanation of what the setting controls and recommendations for correctly setting it.

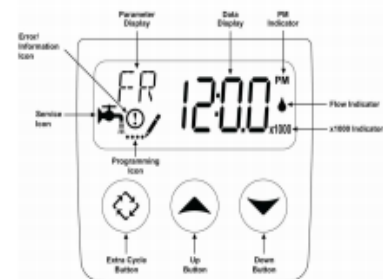
[Parameter Display - ****]

A setting that should not be shown if setup correctly. If you are seeing this setting check to ensure other settings are set correctly.

[TD - 8:50]

Time of Day, tells the system what the current time is. To change the time, press and hold the up OR down arrow until the service icon is replaced with the programming icon. Use the up and down arrows to set the time of day (PM is indicated in the upper right corner of the screen). Once the time is set, press the extra cycle button or don't press anything for 5-10 seconds to return to normal operation.

** User Programming Setup **



Img 14 - SXT Controls

To enter user programming mode, ensure clock DOES NOT say 12:01 pm. Press and hold the up AND down arrow buttons together for 5-10 seconds until the programming icon appears and a parameter code is displayed. Once each setting has been entered, use the extra cycle button to advance to the next setting. **

Please Note: ** The settings shown are only examples, settings will vary depending on situational differences.

[DO - 7]

Day Override, this setting will cause the system to regeneration after the set number of days regardless of usage. Typically set no higher than 7 to ensure the media/resin gets lifted and cleaned off to prevent iron fouling

[RT - **]**

If you are seeing this setting check to ensure other settings are set correctly..

[H - 15]

Hardness, this is the hardness of the water as measured in grains per gallon (GPG). If your test shows hardness as parts per million (ppm) or milligrams per liter (mg/l) simply divide by 17.1 to get grains per gallon. With iron or manganese in the water you will need adjust the hardness to compensate. To do so, taking the combined level of iron and manganese, in parts per million (ppm) or milligrams per liter (mg/l), and multiply by 4. Add the result to the hardness in GPG, and this is your compensated hardness. As an example, if the water hardness is 12 GPG, iron is 2.5 ppm, manganese is 0.5 ppm your compensated hardness is $12+(3 \times 4)=12+12=24$ GPG.

[RC - 150]

Reserve Capacity, this is the number of gallons the controller subtracts from the system's capacity as a reserve, usually set to 75 gallons per person. Since the system does not regenerate immediately when the capacity reaches 0, the reserve allows it to continue softening the water until it is able to regenerate. For large families or homes with high hardness a higher reserve capacity may be needed.

[CD - **]**

If you are seeing this setting check to ensure other settings are set correctly.

Once all parameters have been set, press the extra cycle button one more time to save your settings (setting changes will be canceled if no buttons are pressed for 60 seconds). The display should then show the service icon, with the data display flashing between the current time of day and remaining system capacity. As water flows through the system the flow indicator will flash and the system capacity will count down. Once it reaches 0 the system will queue a regeneration for the set time. A flashing service icon indicates that a regeneration is queued. A manual regeneration can be queued by pressing the extra cycle button, and an immediate regeneration can be initiated by holding the extra cycle button for about 5 seconds.

**** Master Programming ****

!! Your capacity will need to be set. Other than the capacity setting, do not make changes without first consulting one of our experts. !! The settings below are just examples and SHOULD NOT be used as a definitive programming guide. Each system is different so variations will occur. When first installing the system it is a good idea to double check these settings to ensure proper operation, any changes other than those specifically recommended should NOT be made until verified by one of our experts. Slight differences in cycle timing is to be expected due to differences in system sizes.

Set clock to 12:01 pm and **wait for the TD code to disappear** from the corner. Hold both the up and down arrow buttons together for 5-10 seconds until display changes, the service icon will be replaced with the programming icon and the parameter display should show [DF]. Once each setting has been entered, use the extra cycle button to advance to the next setting. **Please Note:** Improper settings can lead to shortened system life, improper filtration, and damage to the system and/or your home.

[DF - Gal]

Display format, shown settings is gallons. Liters [Ltr] and Cubic Meters [Cu] are alternative settings, however, all instructions are written on the basis of the [Gal] display format.

[VT - dF1b]

Valve type, set to the downflow single backwash setting shown.

[CT - F]

Control Type, sets the operation of the controller. Alternating tank softeners use a meter (flow) immediate setting, this regenerates the system as soon as the capacity reaches 0.

[NT - 2]

Number of tanks holding media/resin for treatment.

[TS - U1]

Tank in service. Indicates which tank is currently treating the water.

[C - 48]

System Capacity tells the control head the capacity of the system in grains, **this setting will usually need adjusted to match your system**. Note the x1000 indicator will light up to indicate you are setting x1000, so a 48 setting is used for 48,000 grain (48k) systems. Reference the chart in the inventory section for help in finding the standard capacity for common tank sizes. If adjusting salt dosages for increased efficiency this setting will need to be changed to reflect those adjustments.

[H - 15]

Hardness, the same setting seen in the user programming. This is the hardness of the water as measured in grains per gallon (GPG). If your test shows hardness as parts per million (ppm) or milligrams per liter (mg/l) simply divide by 17.1 to get grains per gallon. With iron or manganese in the water you will need adjust the hardness to compensate. To do so, taking the combined level of iron and manganese, in parts per million (ppm) or milligrams per liter (mg/l), and multiply by 4. Add the result to the hardness in GPG, and this is your

compensated hardness. As an example, if the water hardness is 12 GPG, iron is 2.5 ppm, manganese is 0.5 ppm your compensated hardness is $12+(3 \times 4)=12+12=24$ GPG.

[RS - rc]

Reserve selection, set to use a fixed reserve capacity.

[SF - **]**

If you are seeing this setting check to ensure other settings are set correctly.

[RC - 150]

Reserve Capacity, the same setting seen in the user programming. This is the number of gallons the controller subtracts from the system's capacity as a reserve, usually set to 75 gallons per person. Since the system does not regenerate immediately when the capacity reaches 0, the reserve allows it to continue softening the water until it is able to regenerate. For large families or homes with high hardness a higher reserve capacity may be needed.

[DO - 7]

Day Override, the same setting seen in the user programming. This setting will cause the system to regeneration after the set number of days regardless of usage. Typically set no higher than 7 to ensure the media/resin gets lifted and cleaned off to prevent iron fouling

[RT - **]**

If you are seeing this setting check to ensure other settings are set correctly..

[BW - 10]

Backwash, the length of time used for the backwash part of the cycle, actual setting varies depending on system size.

[BD - 60]

Brine Draw, the length of time where the system draws water from the brine tank to rejuvenate the resin.

[RR - 10]

Rapid rinse, the length of time used for the rapid rinse part of the cycle, actual setting varies depending on system size.

[BF - 10]

Brine fill, the length of time where the system puts water into the brine tank, actual setting varies depending on system size. This setting is used to adjust salt dosages, please contact one of our experts for help if you want to adjust this setting.

[D1 - **]**

If you are seeing this setting check to ensure other settings are set correctly.

[CD - ***]

If you are seeing this setting check to ensure other settings are set correctly.

[FM -P0.7]

[FM -t0.7]

Flow Meter Type, tells the controller the type of flow meter being used. There are two types of common meters used, the 3/4-inch paddlewheel and the 3/4-inch turbine. The meter assembly sits between the bypass valve and the control head itself and it is easy to tell them apart. The paddlewheel meter is most common and is about 4-5 inches long with a dome shape on the top where the meter cable plugs in. The paddlewheel meter has one set of clips and screws that secure it to the control head and a second set secures the bypass valve. If you have this flow meter you will use the P0.7 setting. The turbine meter is much smaller, only about 1 inch long and there is only one set of clips that hold the bypass and control head together with the turbine meter sandwiched between them. If you have this flow meter you will use the t0.setting.

[K - ****]

If you are seeing this setting check to ensure other settings are set correctly.

[UD - sync]

[Calc]

After making adjustments to the programming, the display may display one of the above screens to indicate it is making the adjustments the new settings require.

** Soft Reset **

Press and hold the extra cycle and down buttons for 25 seconds while in normal service mode. This resets all parameters to the system default values except the volume remaining.

** Master Reset **

Unplug the unit. While holding down the extra cycle button, plug the unit back in and continue to hold the button. Once the display powers on you can let go of the button. This resets all of the parameters in the system. You will need to go through master programming and verify all settings.

8—Place System in Service

8.1—Open bypass valve ****!** slowly **!****

If you have more than one system, ensure the other systems are bypassed to prevent any possible problems. Open a faucet that is near the system, a laundry sink or outside faucet (if it will be treated by the system) is ideal, this will allow the air to bleed out of the system. ****!** Slowly **!**** open up the bypass valve just to the point of allowing water to enter the system at a trickle, and leave it like that until the tank is full of water. If you pre-filled the system it should only take a minute or two. Once the tank is full, slowly open the bypass valve the rest of the way. Allow water to run out of the faucet for 15-20 minutes to ensure all the air is worked out of the tank and off of the , then close the faucet.

8.2—***!* Check for leaks *!***

Check the system for any leaks, paying attention to the seal between the tank and control head as well as the connections between the bypass valve and control head. Open a nearby faucet and check to ensure there is no leaks that show up when water is running.

8.3—Flush the system

Open a nearby faucet. The water may be discolored at first, this is normal. Let water run out of the faucet for at least 10 minutes, or until any discoloration clears up. Depending on the system this may be almost immediate, or it may take a couple of hours. Once the water is cleared up a manual regeneration should be run.

8.4—Initiate manual regeneration

It is a good idea to allow the system to run through a manual cycle. On mechanical valves, turn the main knob until it clicks into the first position. On digital systems, hold the extra cycle button for 5-10 second until the backwash starts.

8.5—Verify proper operation

Watch the system as it steps through each cycle, make sure it moves to each position, that water is not leaking from any other fittings, and that water is flowing down the drain line. The brine line will have water flowing through it during the appropriate cycles as well. **** Please Note: **** With the brine tank empty the system will not draw water out of the brine tank during the brine draw cycle. This cycle can be skipped during the initial startup by pressing the extra cycle button after the [BD - xxx] cycle has started counting down. The resin is precharged and the brine water is not needed for the first cycle, the initial cycle is run to ensure the brine tank has the correct amount of water for the first automatic cycle.

**** Be sure to return any other systems to the service position. ****

