

WS1 Sediment 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 filtered water for many years.

Your new system comes with a printed Clack Service manual, which along with this start-up guide will help guide you in the installation and start-up of your new system. The Clack service manual covers other types of systems as well such as water softeners and filters, so there may be information in your manual that does not pertain to your system. You can also find a summary programming card located inside the front cover of the Clack WS1 control valve. Review this card for basic programming steps. Please review this start-up guide entirely before beginning to install your system and follow the steps outlined for best results.



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Packing List by Model

1.0 Cubic Foot Sediment Filter:

Quantity	Description
1	WS1 Clack Backwash Control Valve
1	Pipe connector kit (either 1" or ¾")
1	WS1 Bypass valve
1	Filter tank with distributor tube installed
1	Media funnel
1	Gravel
2	½ cubic foot boxes of Chemsorb filter media

1.5 Cubic Foot Sediment Filter:

Quantity	Description
1	WS1 Clack Backwash Control Valve
1	Pipe connector kit (either 1" or ¾")
1	WS1 Bypass valve
1	Filter tank with distributor tube installed
1	Gravel
3	½ cubic foot boxes of Chemsorb filter media

2.5 Cubic Foot Sediment Filter:

Quantity	Description
1	WS1 Clack Backwash Control Valve
1	Pipe connector kit (either 1" or ¾")
1	WS1 Bypass valve
1	Filter tank with distributor tube installed
1	Media funnel
1	Gravel
5	½ cubic foot boxes of Chemsorb filter media

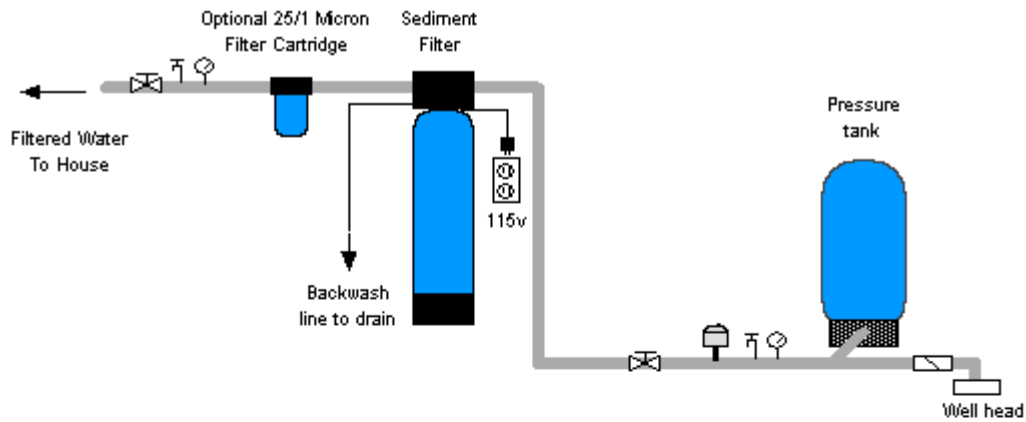
Pre-Installation

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

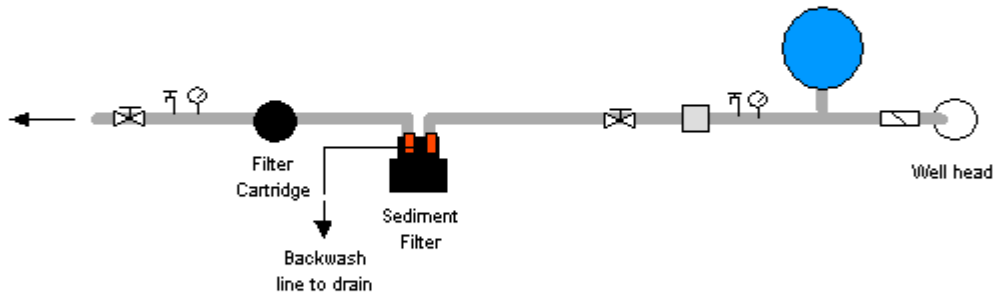
Best Practices for Piping & Drain Installation

1. See typical installation (see Fig 1). The Sediment Filter is installed after the pressure tank.
2. Make sure to follow to connect the in pipe to the Clack WS1 inlet and the outlet to the outlet (see Fig 2). As you face the Clack WS1 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 Clack WS1 Sediment Filter and also one after as shown in the diagram. The pressure gauges are optional and not necessary but a hose bib (which is a faucet that you can attach a garden hose to) is strongly recommended after the Sediment Filter 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.




Fig. 1 Typical Installation



Plan View



Key

-  Water piping
-  Check valve
-  Pressure gauge
-  Hose bib
-  Pressure switch
-  Gate or ball valve

Notes: Install after pressure tank. Water enters on right side of bypass valve as you face the system; follow arrows on bypass valve. Follow inlet and outlet arrows on filter for proper installation. Connect 1/2" flexible tubing from backwashing control valve to a drain. If the distance to the drain is more than 20 feet use 3/4" or 1" tubing. Drain backwashes under line pressure and can be up to 30 feet away and up to 6 feet above the top of the tank if necessary. If you install a hose bib & ball valve after the sediment filter as shown, it will make it easier to service and test the water at a later date. If the water contains very fine sediment, a dual-grade 25/1 micron filter can be used after the sediment filter. Follow all local plumbing and electrical codes.

4. If you will be using copper piping, do not sweat the copper pipe directly on to the Clack WS1 control valve. Avoid heating up the Clack WS1 control valve plastic with the torch.
5. You do not need unions to install your Clack WS1 control. If you need to remove it, the Clack WS1 has quick-release couplings that make it easy to put the Sediment Filter on by-pass and remove the filter system from the piping.

- The drain line tubing (not supplied) is connected to a drain from the drain outlet using flexible ½" ID tubing. Note that the drain can run up above the Clack WS1 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.

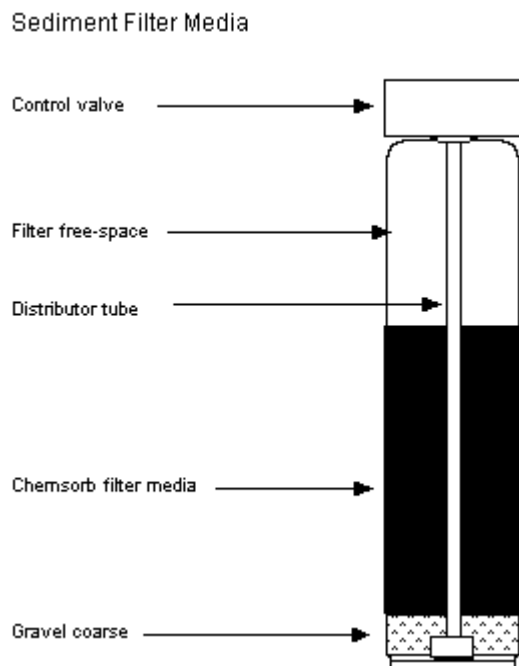
Fig. 1 - WS1 Backwash Sediment Filter



Installation Instructions

1. Unscrew by hand the entire Clack WS1 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. The idea is you do not want gravel or media to go down the distributor tube when you are adding media.

Fig 3 Filter diagram showing cut-away of media



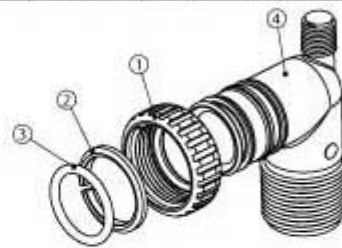
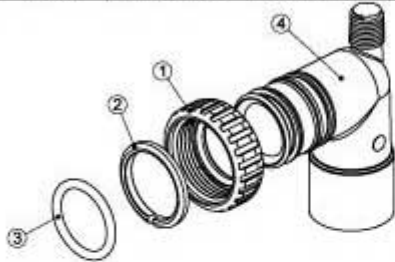
2. Add filter gravel supplied first, using the funnel sent with the Sediment Filter.
3. Next add Chemsorb media. Tank will be approximately 2/3 to the 3/4 full.
4. Remove cap or tape from top of distributor tube. Be careful not to pull up distributor tube when removing cap or tape.
5. If possible at this point, fill tank completely with water. This will allow the Chemsorb media to settle and eliminate the need of “purging” the air out of the tank later.

6. Add a small amount of silicone grease or vegetable oil to the tank threads and screw on Clack WS1 control valve carefully. Do not use pipe-joint compound, Teflon tape, or Vaseline or other petroleum greases to lubricate tank threads.

Pipe connectors on the WS1 backwash control valve:

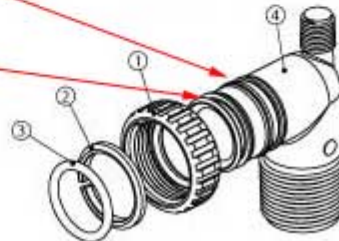
C0710-PVC – 3/4" x 1" PVC Solvent 90° Assembly			
No.	Part No.	Description	Qty.
1	C3151	Nut 1" Quick Connect	2
2	C3150	Split Ring	2
3	C3105	O-Ring 215	2
4	C3189	Fitting 3/4" x 1" PVC Solvent 90°	2

C10-PVC – 1" PVC Male NPT Elbow Assembly			
No.	Part No.	Description	Qty.
1	C3151	Nut 1" Quick Connect	2
2	C3150	Split Ring	2
3	C3105	O-Ring 215	2
4	C3149	Fitting 1" PVC Male NPT Elbow	2



IMPORTANT: Make sure the split ring is installed between these two ridges on the fitting.

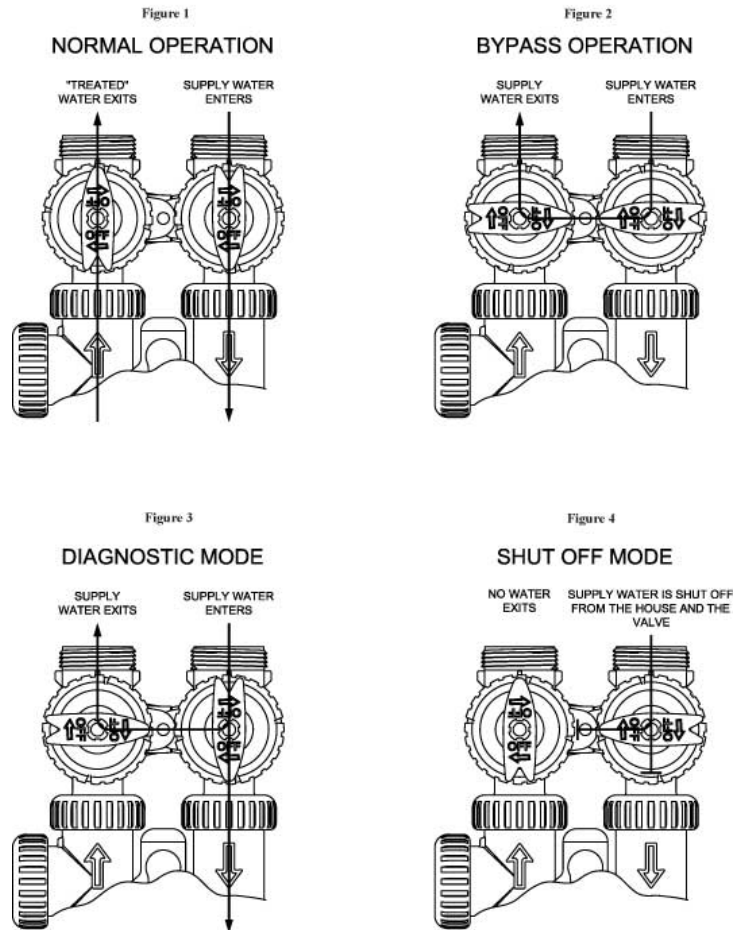
Make sure the o-ring is between the ridges in the front toward the valve.



7. Now install your water pipes to the Clack WS1 bypass end connectors. Make sure inlet is installed to the "In" pipe connector on the bypass valve and outlet is on the "Out" connector.
8. Connect some flexible tubing from the drain connection on the Clack WS1 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 Clack WS1 Sediment 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 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.

Figure 8 ByPass Valve

BYPASS VALVE OPERATION



9. Plug in your Clack WS1 control valve to an outlet.
10. Set current time of day: Press NEXT button until time of day is displayed. Press and hold the Up or Down button until the SET indicator is displayed and the hour flashes. Press the Up or Down button until the correct hour is displayed. Then press the NEXT button. The minutes will flash. Press the Up or Down button until the correct minute is displayed. Press the NEXT button to return to the Display Screens.

11. SIMPLE PROGRAMMING STEPS

Step 1: Press NEXT and the Down button simultaneously for 5 seconds and release.

Step 2: Select FILTERING if not already selected; Press NEXT

Step 3: Adjust the length of backwash to 10 (for 10 minutes); Press NEXT

Step 4: Adjust the length of rinse to 6 (for 6 minutes); Press NEXT to return to time of day.

Note if your display shows numbers for Draw or Fill, set those to OFF and press NEXT.

Step 5: Press Next and Up button for five seconds and release.

Step 6: Adjust days to 7 by using Up or Down buttons. If your water has a lot of sediment it can be adjusted to backwash every few nights, or even every night as needed. If you experience some loss of water pressure in the house after several days, you can always reset the WS1 to backwash more frequently.

Step 7: Use Up or Down button to change regeneration backwash time. Default is 2:00 am. If any water is used during the time the system is backwashing, the untreated water will flow into the house and the water will not be interrupted. Press NEXT to exit programming.

That is it! You are done programming.

12. By pressing NEXT you can toggle back between the current time and the days to the Next backwash.
13. Now you are ready to turn on the water. Turn on the water and leave the Sediment Backwash Filter on bypass and check for leaks. Leave the ball valve after the Sediment Backwash Filter closed, so water is still off to the house, but connect a garden hose and open up the hose bib after the Sediment Backwash Filter and allow the water to run for several minutes. This will help to clear out any foreign material that may be in the pipes from the piping installation. If you do not have a valve installed after the Sediment Backwash 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 aerator screen.
14. Press the REGEN button for several seconds which will start a manual backwash. You will hear the WS1 control valve motor start and move the control valve to the backwash position.
15. Now slowly turn the bypass valves 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 full service position.
16. At this point the Sediment Backwash Filter will be in a backwash mode, which is the first of two cycles it goes through during backwash (also called "regeneration"). The backwash takes 10 minutes. The next cycle is the rinse which takes 6 minutes. There should be no Chemsorb media coming out of the drain line, but the water will be gray or dirty looking.
17. After the backwash and rinse cycles are complete, repeat the process by pressing the REGEN button again for several seconds.
18. Note it is normal for some small amount of Chemsorb dust and fines to come out during the backwash, although you do not want to see a large amount of media coming out, which would mean you have very high water pressure, or the drain flow control for the Clack WS1 is missing.

19. If possible verify that the backwash flow rate is correct: 5.0 to 7.0 GPM for 1.0 cubic foot model; 7.5 gallons per minute for the 1.5 cubic foot models and 10 GPM for 2.5 cubic foot models. You can easily run the drain hose to a 5 gallon bucket and using a watch verify the flow rate in gallons per minute. An adequate backwash is critical to properly clean the Sediment Backwash media and prevent it becoming fouled.

Maintaining Your Chemsorb WS1 Filter System

There is no routine maintenance required. Every 4 to 6 years the Chemsorb media can be removed and replaced for best performance.