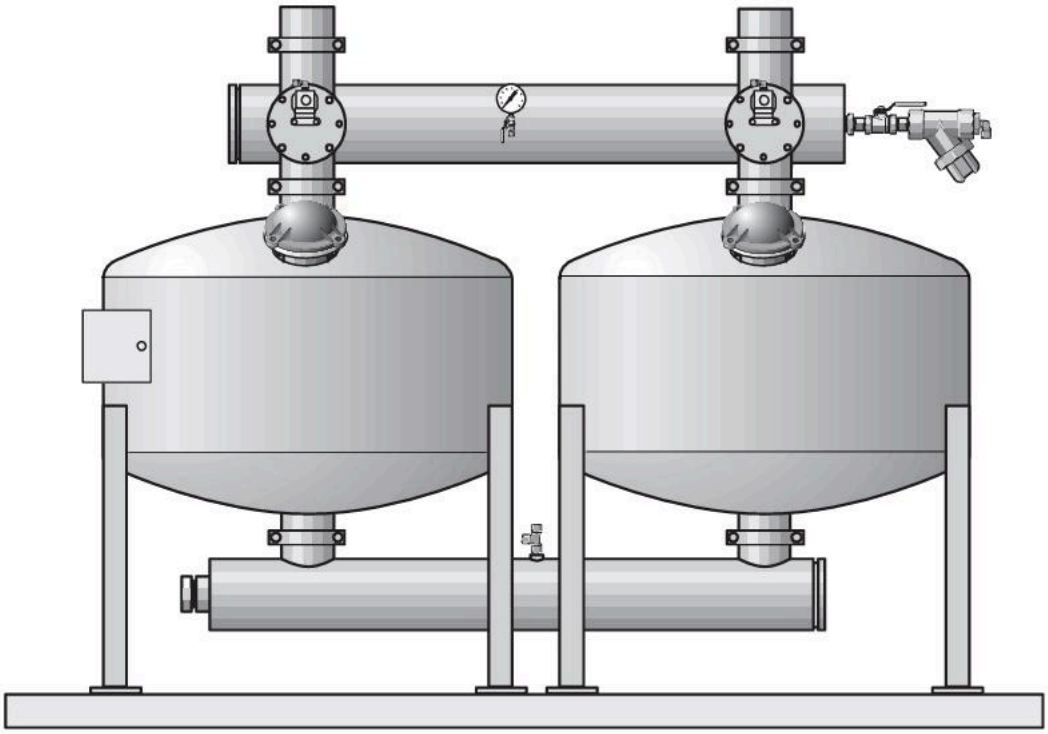
Vertical Sand Media Filters

Flow-Guard Maintenance Recommendations



FRESNO
Valves & Castings, Inc.

Recommended Maintenance Schedule

The following maintenance schedule is based on field observations of typical Flow-Guard installations. It should be thought of as a starting point for a systematic maintenance program, not as a hard-set list of tasks that must be completed to be successful.

Spring Start-Up

Note: This assumes that the Autumn Shutdown procedures were performed. If this assumption is incorrect, please review the Autumn Shutdown section.

1. Inspect all portholes, drains, air vents, pressure relief valves, control filters and hydraulic tubing, ball valves, flow meters and backwash manifolds to insure they are ready for start-up.
2. Start the system and initiate a backwash sequence with very low pressure on the tanks, if possible (20-25 psi). Because the tanks were drained, there is a good likelihood that they contain trapped air. This air has the potential of disrupting the media bed when a backwash is sequenced under high pressures.

At Every Irrigation

1. Check the filter pressure differential.
2. Check the flow meter.
3. Check the water treatment injection systems.

The First Week of Every Month

1. Check the hydraulic command.
2. Remove and clean the charging manifold screen at the end of the outlet manifold.
3. Observe a filter backwash sequence and confirm that there is sufficient time to flush the media in all of the tanks.
4. Check pressure gauge during operation. Be sure gauge returns to “O” when at rest.
5. Check P.D. reading after backwash and adjust flush time if needed.
6. Check manual backwash throttle valve for proper setting. If it has been tampered with, readjust the valve.
7. Check the reservoirs (if applicable) to confirm that the algae control program is appropriate.
8. To keep tanks looking good in corrosive atmospheres, wash with soap and water, dry and coat with WD40.

Mid Season

1. Open all of the sand media tanks and inspect the media down to the underdrains to determine if the backwash controllers are appropriately adjusted.
2. Check sand level in each tank.
3. Top-off the sand levels as needed.

Autumn Shutdown

1. Initiate a normal backwash cycle. Do not add cleaners or additives of any kind to the water system. Time the sequencing of the backwash valves' opening and closing speeds with a stopwatch and make note of the time.
2. Disconnect power to the controller.
3. Rinse and drain all filters, manifolds, control filters, ball valves, backwash valve actuators, backwash lines, chemigation valves, booster pump volutes...all above ground components that may freeze.
4. Inspect and lubricate all of the filter backwash valves. Replace any leaking porthole gaskets or troublesome bolts & nuts.
5. Brush any rusted spots on the cast iron filter components with a wire brush down to clean metal and apply a minimum of two coats of paint.

Other Maintenance Considerations

Some of the other maintenance considerations of your Flow-Guard Filters involve the pressure gauges, backwash valves and view tube, rubber gaskets and seals. The **pressure gauge** is subject to frequent pressure shocks and in time may lose its sensitivity or not return to "0" when the system is de-pressurized. Because the gauge is an important diagnostic tool for the entire irrigation system, it should be frequently checked and replaced if it appears to be giving erroneous readings.

The **backwash valves** have a stainless steel operating stem that slides through a PVC guide bushing and a set of o-rings. This is lubricated with lithium-based grease. Placing a yearly shot of grease on the stem through the drain hole on the bottom of the valve actuator body should keep it in good shape. The backwash valves also contain a rolling diaphragm that is subject to wear and may leak after a number of years. Water leaking through the drain hole during backwash is an indication of hydraulic command water passing through the diaphragm. If water drains continually through the drain hole, not just during backwash, it is an indication that the o-ring seals on the piston guide bushing have failed, and unfiltered water is leaking through from the "wet side" of the valve. Another sign of wear in the backwash valves is water continually weeping into the backwash discharge manifold, visible through the sight tube. This is an indication that the plunger seal is not fully seated against the valve. This is usually caused by either a defective plunger seal or chipped epoxy on the valve seat. Removing the valve by

taking off the three grooved couplers will allow visual inspection. Removing a backwash valve is quite simple and requires very little time to maintain.

The **backwash view tube** is clear acrylic plastic. It needs to be protected from sunlight for two reasons. First, the acrylic is not UV stable and will darken and stress crack. Second, sunlight will promote algae growth in the tube, rendering it useless for monitoring the backwash efficiency. Protecting the view tube with a suitable shade is a necessity. A short piece of PVC pipe, split lengthwise and slipped over the view tube will provide excellent protection.

The **rubber gaskets and grooved coupler seals** may harden with age. If they begin to leak, replace them. Gaskets that continually weep will soon become a worker safety issue as algae growth will make the concrete pad dangerously slick. Because the irrigators will be opening the tank ports to inspect the sand, it is a good idea to have a couple spare port gaskets on hand. Applying anti-seize compound to the bolt threads will also keep the inspections a simple task.

The **cast iron components** of the filters (painted blue) will corrode if the epoxy paint is chipped. It is a good idea to annually inspect the valves, covers and coupler clamps for signs of corrosion. Clean the rust with a stiff wire brush and apply two coats of touch-up paint. The **stainless steel components** will remain shiny in corrosive atmospheres if they are periodically washed with soap and water and given an application of light oil, such as WD-40.

Chemigation and Fertigation (the injection of chemicals and fertilizers into an irrigation system) are very common practices. Although the Flow-Guard filters are constructed of Type 304 Stainless Steel (Type 316 Stainless Steel is optional), careful consideration should be given to the compatibility of the material being injected with the natural salts present in the source water as well as the potential corrosiveness to stainless steel. The injection of various fertilizers can result in the formation of precipitates that have the potential of plugging the irrigation filter and emission devices. In general, it is advisable to place the injection point downstream of the main irrigation system filters. (CAUTION: This requires placing a suitable filter on the injection line.) By injecting downstream of the filters, there is no threat of plugging the main irrigation filters or of discharging chemicals or fertilizers with the backwash water.

In certain types of source water it may be necessary to **pre-treat the source water** to prevent natural precipitation, such as lime scale (calcium carbonate) or iron hydroxide. It may be advantageous to inject these water pre-treatments ahead of the media tanks.

The compatibility of these compounds with stainless steel and their ultimate fate in the backwash discharge are important concerns.

Note: As with all chemical use, a clear understanding is required. It is recommended that you contact your dealer for assistance.

Reference: **Flow-Guard Maintenance and Operation Manual (PDF)**