

Maintenance

Diamond High Efficiency Filter Systems are designed for low maintenance. The following maintenance procedures outline recommended minimum frequency to help ensure continued trouble-free operation of your filter system. **Refer to component information sheets for individual component maintenance instructions specific to your equipment.**

NOTE: Keep a daily record of pressures, backwash count, performed maintenance, and unusual occurrences on the provided log sheet. This system log provides valuable information should factory service assistance be required. Contact Diamond Water Systems, Inc. (800-245-6601) if log sheets are needed.

Recommended minimum maintenance

1) Weekly

- a) Check automatic pump oilers (if applicable)
- b) Check pump strainer and clean as necessary

2) Monthly:

- a) Grease pump motors (if applicable)
- b) Check air/water cartridge filter, if equipped.
 - i) Replace as necessary

3) Quarterly:

- a) Change pump oil (if applicable)
- b) Check all control functions

4) Annually:

- a) Rebuild diaphragm valves, if equipped.
 - For internal metal components follow replacement schedule in OEM cut sheets.
- b) Check pressure differential switch for proper operation
- c) Inspect pump and pump motor for bearing wear
- d) Inspect pump for seal wear
- e) Inspect media.
 - Clean, add, or replace as necessary.
- f) Rebuild backwash flow control device, if necessary.

NOTE: Wear life for pump seal is approximately two years. This may vary due to site-specific operating conditions.

5) Check Control Functions

- a) Actuate manual backwash by depressing and holding manual backwash button until backwash light illuminates.
- b) Watch system through backwash cycle for smooth valve actuation and water flow.
 - Differential pressure should be 6 - 12 psig when system returns to filter mode.
 - See Start-up data sheet for pressure.

6) Rebuild Diaphragm Valves, if equipped.

- a) Follow instructions contained in rebuild kits.

NOTE: When ordering rebuild kits, be sure to note filter system serial number, valve model number (found on body of valve) and if valve is normally open or normally closed (see metal tag attached to valve).

- b) Special wrench may be needed to remove internal o-ring retainer.
 - i) Wrench may be ordered with rebuild kits.

7) Check Media Level and Condition

- a) Manually force backwash the filter system.
- b) Set filter pump switch to 'OFF' position.
- c) Isolate filter system from all water sources.
- d) De-energize power supply.
- e) Drain water from system.
- f) Remove vessel flanged closure and gasket.
- g) Inspect sand.
 - Sand should be loose and clean.
 - Remove any loose debris or small amount of accumulated cake.
 - Top of sand should be approximately 8" – 12" inches below bottom of inlet manifold.
 - Add or replace sand as necessary.
- h) Replace vessel flanged closure gasket and secure flanged closure.
- i) Close filter system drain.
- j) Open all water supply valves.
- k) Energize power supply.
- l) Return system to service with manual forced backwash.

8) Service Air/Water Cartridge

- a) Air Cartridge, if equipped:
 - Follow instructions contained in cut sheets.
- b) Water Cartridge, if equipped:
 - Isolate cartridge assembly with quarter-turn ball valves provided.
 - Relieve pressure and drain the sump by opening petcock on bottom of housing.
 - Remove cap nut with wrench and remove sump.
 - Empty liquid from sump and remove/discard old cartridge.
 - Clean all parts and replace gasket if necessary.
 - Install new cartridge.
 - Lubricate gasket lightly and reinstall sump.
 - Do not over-tighten cap.
 - Close petcock and open inlet isolation valve.
 - Check for leaks.
 - If leaks appear, close inlet valve and relieve pressure by opening drain.
 - Repeat procedure until leaks stop.
 - Open outlet isolation valve.

9) Pump Service

- a) Follow instructions contained in pump manufacturer cut sheets located at end of manual.

Trouble Shooting Guide

Symptom	Possible Cause	Remedy
No Water to Filter Pump	Isolation valves closed	Open all isolation valves
	Pump strainer plugged	Clean strainer
No Water to Filter (Filter Mode)	Valve #1 closed	Check control pressure to valves
	Pump rotation reversed	Rewire service to pump
No Water to Filter (Backwash Mode)	Backwash water isolation valve closed	Open valve
	Valve #3 closed	Check control pressure to valves
	Pump rotation reversed	Rewire service to pump
No Pressure Differential Across Filter	Filter in backwash mode	Normal Operation
	#1 and/or #2 valve closed	Check control pressure to valves
	Isolation valve(s) closed	Open all isolation valves
	Pump rotation reversed	Rewire service to pump
	Pump strainer plugged	Clean strainer
	Pump not operating	See pump section
	Filtered water returning to high line psi	Check system installation
High Pressure Differential Across Filter	Filter needs backwash	Initiate manual backwash
	Sand contaminated	Check sand for caking (consult factory representative)
	Flow through filter too high	Adjust filter outlet throttle valve
Valves Do Not Actuate	Low control pressure	Check control pressure to valves
	Jammed valve	Consult factory representative
	Air leaking by valve diaphragm	Rebuild valves
	Air or water filter clogged	Change filter
	Faulty Actuator, fuse or wiring	Check electrical connections/ fuses
Water Leaking From Diaphragm Valve Vent	Valve shaft 'O' ring failure	Rebuild valves
	Diaphragm failure	Rebuild valves
	Shaft guide failure	Rebuild valves

Trouble Shooting Guide

Symptom	Possible Cause	Remedy
Water Running To Waste	Low valve control pressure	Check control pressure
	Valve failure	Rebuild valves
	Valve failed open	Inspect valve diaphragm and seat
	Normal pump discharge	5 gallons/hour water lubricated pump
Filter Pump not Operating	Filter in backwash mode	Normal Operation
	Pump starter tripped	Reset starter
	Pump fuse blown	Replace fuse
	Service disconnect or pump switch off	Reset to 'On' position
	Solenoid failure	Rebuild solenoid
Pump Seal Leaks	Normal wear	Replace pump seal
	Abrasive material entering seal	Check pump strainer
	Excessive pressure on pump discharge	Open all valves
	Excessive pressure on pump suction	Check pressure to pump against rating
	Water lubricated seal	Normal 5 gallons per hour
System Does Not Backwash	Control power failure	Energize control panel
	Blown control panel fuse	Replace fuse
	PLC fault or failure	Consult factory representative
	Differential switch failure	Consult factory representative
	Micro switch failure	Consult factory representative
Improper Control Sequencing	Solenoid failure	Rebuild solenoid
	Power interruption/surge mid-cycle	Consult factory representative
	Low voltage to panel	Check power supply
Filter Pump keeps tripping Circuit Breaker	Wrong voltage to panel	Check power supply
	Short Circuit	Check wiring
	Wrong size fuse(s)	Check fuse rating
	Thermal Overload Set Wrong	Adjust Thermal Overload Set Point
Fuses Blowing	High voltage to panel	Check power supply
	Short Circuit	Check wiring
	Wrong size fuse	Check fuse rating

Trouble Shooting Guide

Symptom	Possible Cause	Remedy
Premature Media Failure	Bacterial loading	Consult factory representative
	Overloading of contaminant	Consult factory representative
	Air entering system, causing media disruption	Check for air in system and backwash lines
	System not backwashing properly	Check backwash control function and water pressure
System Piping Unusually Warm	Filter discharge to dead head	Open all valves
		Check automatic valve functions
		Check for proper system installation
	Media plugged	See media failure

If recommended remedy fails, contact Diamond Water Systems, Inc. (800-245-6601) for further information.

HELPFUL HINTS

ON THIS PAGE ARE SOME HELPFUL AND TIME-SAVING HINTS:

FOR THE FOLLOWING HINTS, THE SYSTEM MUST BE OFF-LINE FOR SERVICE...

VALVES:

1. If it takes all your effort and the valve tool still bends out of useful shape, it may be time to change the valve before the manifold cracks.
2. Removing disc assembly from shaft assembly - Use the nut supplied in the valve kit and double-nut the slotted end of the shaft. Then, you can remove the smaller nut on the opposite end of the shaft.
3. Greasing the O-rings - Grease all o-rings, including the one that goes around the shaft guide/o-ring retainer.
4. Reassembly of valve guts - Don't over-tighten the nut and please take care that the screwdriver doesn't slip out of the shaft slot and puncture the diaphragm.
5. Putting cover back on valve - Line up the cover and diaphragm contours with the shape of the valve body and make sure each bolt goes through the holes in the diaphragm. This ensures the valve doesn't leak and the diaphragm isn't pinched.

MEDIA:

1. Inspecting the media - Backwash the system before you drain water from the system and open the cover. Use a flashlight to look inside the tank: You should see beige, clean-looking sand. If the media looks like old pudding or contains mud balls, it's a sign that it's time to change the media.
2. Removing the old media - Use a wet-dry shop vacuum to suck the media out of the vessel. You may have to work around the top distributor. When you work your way down to the bottom 1/3 of the vessel, work your way around the bottom distributor to keep from hitting it. Try to get as much of the old media out of the tank. If you wash down the inside of the tank, the media breaks up and the task is easier. A little bit of sand and gravel on the bottom of the filter is okay.
3. Adding new media - Place a funnel with a large opening on the vessel opening and put some water in the tank to keep the dust levels down. After each layer is installed, spread the media around so it's as level as possible.