

FLOCLEAR

FOUNTAIN SOLUTION RECYCLING

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Re: Understanding Pressure Gauge Readings and When to Replace the Cartridges.

Understanding the pressure gauge readings and the relationship between the filters is essential to knowing when to change the filters, and will contribute to optimizing cartridge life.

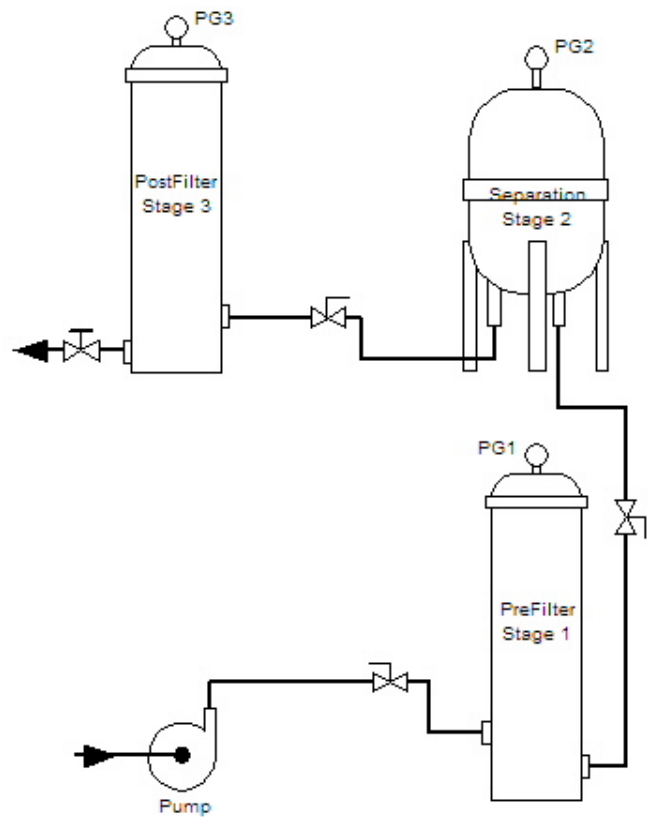
The single most important fact to keep in mind is that the Prefilter (Stage 1) is responsible for protecting the Separation Cartridge (Stage 2) from the larger particles that can cake and blind the Separation Cartridge, greatly reducing its life. The Separation Cartridge is the most expensive cartridge so it makes sense to change the Prefilter more frequently. Secondly, understanding the pressure readings on the different stages will help identify which cartridge needs changing and when. Typically it is not necessary to change all three stages at the same time.

In interpreting the meaning of the pressure gauge readings it is most important to realize that each pressure gauge indicates the total pressure of all stages downstream of the location of the gauge. Specifically:

Pressure Gauge “PG1” measures the pressure between the pump output and before the Prefilter Cartridges. Basically the combined back-pressure from the Stages 1, 2 and 3. A high pressure reading on PG1 does not necessarily mean that only the Prefilters are loaded. It is an indication of everything downstream; i.e. the total of all three filters.

Pressure Gauge “PG2” indicates the pressure after the Prefilter Stage 1 and before the Separation Stage 2.

Pressure Gauge “PG3” indicates the pressure after the Separation Stage 2 and before the Post-Filter Stage 3. A label on the top of the Prefilter housing tells the operator to change the Prefilter and Post-Filter when PG1 reads 35 psi.





A label on the side of the Separation housing tells the operator to change the Separation cartridge when PG2 reads 50-55 psi.

Explanation

Think of the pressure readings as an indication of “work” that the pump is required to do as it moves fluid through the system. Resistance to the pump’s effort to move the fluid is indicated on the gauge as “pressure.” As the filters do their job and remove contaminants from the fluid the resistance to flow increases and the pressure on the gauge rises. It requires more “work” to push the water through a dirty Prefilter, so the gauge reading will increase. Since the pump is limited to a certain amount of “work,” the available “work” left after a loaded Prefilter is reduced (Scenario #3 example) and the pressure gauge reading on gauges 2 and 3 (after the prefilter) will be lower. It requires less “work” to push the water through a clean Prefilter so there is more available “work” to push through the remaining stages. This is why it is not uncommon for the pressure readings on stages 2 and 3 to go up after changing the Prefilter.

NOTE: If the Prefilter is not changed regularly, the high flow rate from the pump will eventually push the contaminant through the Prefilters. The Separation cartridge is then going to load with the larger contaminant very quickly, reducing its life substantially.

Pressure Reading Scenario #1 “Prefilter Pressure does not go down after changing the Prefilters.”

PG1 reads 35 psi, PG2 reads 35 psi and PG3 reads 14 psi. This is a common scenario and if the Prefilter has not been changed recently it probably indicates that it is time for a Prefilter change. However, after the Prefilter change, the PG1 pressure still reads close to 35 psi. This is caused by the fact that Stage 2 is still providing 35 psi of back-pressure causing PG1 to still read 35 psi. As the new Prefilters load the pressure reading at PG2 will typically start to drop or will stay close to 35 psi.

“How do I know when to change the Prefilters when the pressure is 35 psi right after a filter change?”

The key is good record keeping. **Documentation of the pressure readings and filter changes along with understanding the pressure readings enables you to predict the next filter change.** Watch the three pressure readings and typically after changing the Prefilters the pressure at PG1 will stay at 35 for several days or weeks and the pressure rise at PG2 will slow down due to the fact that the Prefilters are catching more of the contaminant. You will not change the Prefilters again until you see the pressure rise on PG1 over the pressure reading on PG2 or when you exceed the lifetime of the first set of Prefilters. Alternatively, the Prefilters are inexpensive enough that changing on a monthly basis is cost effective.



Pressure Reading Scenario #2 “All pressures are high, do all filters need changing?”

PG1 reads 40 psi, PG2 reads 40 psi and PG3 reads 40 psi. IMPORTANT: This does NOT indicate that all stages need to be changed. In fact, it probably means that only the Post-Filter needs changing. Remember PG1 will sense the backpressure from everything downstream of it. Start with changing the Stage 3 cartridges only and all the pressures will typically drop. Then take another reading and pressures will be completely different.

Post-Filter Cartridges that plug usually indicates heavy solvent or plate cleaner contamination. Plate cleaners that contain meta-silicates when mixed with an acid fountain solution will form a gel that forms between Stage 2 and 3 that will quickly plug the Post-Filters. The Post-Filter Cartridge micron rating is at least 100 times more open than the Separation Cartridge since it uses adsorption and chemical reactions as its reduction method.

Pressure Reading Scenario #3 “Pressure readings go up on PG2 and PG3 after the Prefilter change.”

PG1 reads 45 psi, PG2 reads 24 psi and PG3 reads 12 psi. In this scenario the Prefilter is almost completely loaded and the pressure is pushing contaminant through the Prefilter and it is loading the Separation Cartridge. Change the Prefilter immediately. When the Prefilter is changed and the system is restarted it is not uncommon for the readings on PG2 and PG3 to go UP! This is due to the increased flow allowed through to stages 2 & 3 by clean Prefilters. Readings might be as follows: PG1 reads 35 psi, PG2 reads 35 psi and PG3 reads 14 psi. This is normal and does not indicate a need to change the Separation Cartridge