

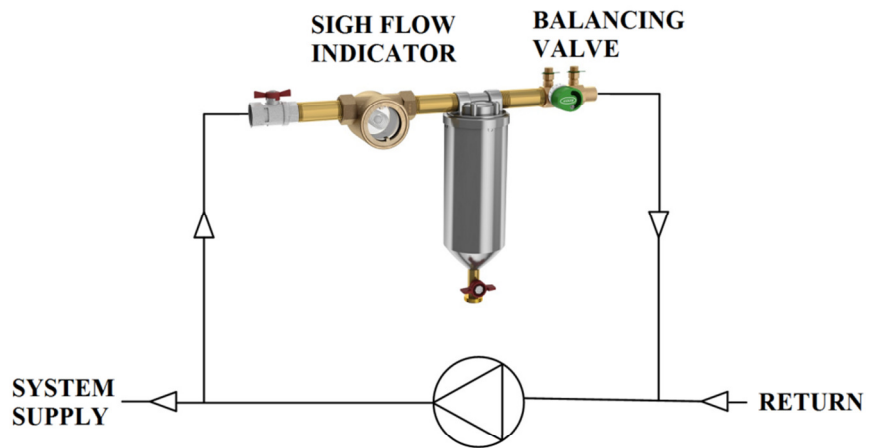


## Maintaining a Clean Hydronic System

It's a good idea to keep any hydronic system clean for a number of reasons; less erosion and corrosion, better heat transfer, and fewer problems with things like mechanical seals, etc. Iron oxide particles can cause problems as well, particularly in system lubricated circulators.

One of the most common and easiest ways to get systems clean and keep them clean is to use a side stream filter mounted across the pump, as shown in Figure 1. A portion of the system flow is diverted at the discharge of the pump, run through the filter and returned to the inlet side of the pump. The filter media is very fine, usually rated at 25 microns (there are 25,400 microns in an inch). Finer 5 micron filters are available for use after the system has been run for a while. It is a good idea to use conventional pipeline strainers to remove larger bits before they get to the side stream filter. Note that the filter cannot remove anything that is dissolved in the fluid, like scaling agents.

Eventually all of the fluid in the system will see the filter and the system should be free of any suspended particles. One thing that has to be decided is how much flow should be directed through the filter. One common rule-of-thumb is 5-10% of the pump design flow. Other specifications call for the filter flow rate to be high enough to have the total system volume run through the filter a certain number of times per day. These recommendations can vary from 4-8 system volumes per day. On that basis a system with a volume



**Figure 1:** Schematic diagram of the SFP series side stream filter package mounted across the pump.



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of 500 US gallons and running 24 hours a day would only require a sidestream filter flow rate of about 3 USgpm to get 8 volume turnovers. Small systems should get adequate filtration with a filter flow rate of one US gpm.

One thing to remember is that the pump has to generate the filter flow plus the system flow. Most HVAC closed system pumps have got some extra capacity and flat curves so it's not necessary to allow for the side stream flow in the pump selection. Problems can arise, however, if the flow rate through the filter is too high, and this can easily happen because the filter usually sees the full pump head. It's important to get the filter flow rate adjusted to near the desired value as crazy high filter flow will deprive the system of flow. That's why we include a balance valve with our side stream filter packages.

New systems or systems that have been worked on will have a lot of stuff to clean out and it is usually necessary to change the filters often for the first while. The sight flow indicator in the filter circuit gives a visual indication of when the filter is plugged and requires changing. The best sight flow indicators (like ours) will have a window on both sides of the housing to give a good visual indication of the fluid color/clarity and also make it easier to see the movement of the flow indicator ball.