

BACK WASHING POROPLATE® FILTER ELEMENTS

Poroplate® diffusion bonded wire cloth laminate filter elements are designed and manufactured to withstand repeated high pressure back washing. The surface type filter media characteristic of Poroplate® media allows for repeated cleaning of the element in place, i.e., without removal from the filter housing. The number of back flush cycles prior to element removal depends on a number of factors including back wash duration and pressure, flow rate, terminal pressure drop, and the physical properties of the contaminant being filtered.

There are several accepted methods of back washing Poroplate® filter elements. The method selected should take into consideration the available plant equipment as well as the fluid being filtered and the nature of the contaminant. Listed below are a few generally accepted procedures for effective back washing. These procedures apply only to liquid service filters.

GAS/AIR BLOW DOWN

This method of back washing is the least expensive as it does not require the use of any solvents or other back wash liquid.

The flow to the filters is stopped. The product being filtered remains in the filter chamber. The outlet valve leading downstream and inlet valve coming from the pump are dosed. The gas/air inlet valve is opened, as is the backwash discharge valve. The product on the clean (downstream) side of the filter is forced in a reverse direction through the filter elements and out of backwash discharge valve. Once the product has been forced from the element, the gas continues to flow to purge the system of any residual solids inside the vessel.

This method utilizes the force of the air or gas pressure and the product on the clean side of the filter element to force the debris from the surface of the element. In cases where the contaminant is particularly heavy or has an adhesive nature, multiple air or gas blow down cycles may be required. A gas pressure of 80 -100 psi is recommended for best results.

REVERSE FLOW OF SOLVENT OR CLEAN PRODUCT

This technique uses a liquid that is pumped in the reverse flow direction to effectively back wash the elements. The solvent is usually allowed to soak in the vessel with dirty elements for a predetermined length of time depending on the degree of contamination and the solubility of the contaminant in the solvent used. After the soak time has been completed, additional solvent is pumped backwards through the elements. The solvent is then evacuated by a gas purge.

If clean product is used for the back wash liquid, no soak time is required. The vessel must be equipped with piping and valves to accommodate reverse clean product flow.

In each case, the flow rate during back washing should be high enough to allow the filter media to generate at least 1-2 psi resistance. ***(Note that the initial back wash pressure drop will be high but will decrease as the contaminant is flushed from the pores of the filter media)***. This resistance will promote even liquid flow over the entire surface of the media, and will enhance uniform contaminant removal from the filter media.

The duration of the reverse flow will be determined by how quickly the elements return to a pressure drop comparable to clean filter pressure drop. Flow rate and viscosity affect pressure drop in a near linear manner. During back washing, the user can correlate the pressure drop to normal operating conditions by adjusting for flow rate and viscosity. For example, if the back wash flow rate of 100 gpm yields a pressure drop of 2 psi, then the normal operating condition of 200 gpm would yield a pressure drop of 4 psi. ***(Note: This applies only to the pressure drop through the filter media. Please contact factory for calculation of pressure drop through the media and fittings of the filter elements)***. If the viscosity of the fluid being used to back wash is different from the normal product being filtered, a correction must be made to calculate the pressure drop. For example, if the back wash fluid being used has a viscosity of 10 cp and the normal product being filtered has a viscosity of 100 cp, the actual pressure drop in normal operating conditions will be 10 times higher than during back washing, assuming the same flow rate.

HOT CONDENSATE

This method employs the hot condensate from the plant's steam system. The condensate is fed into the outlet of the filter housing at a pressure that does not exceed the limits of the filter elements - normally 125 psi. The condensate is allowed to flow until the pressure drop across the elements reaches an acceptably clean level.

Hot condensate can also be used as a polishing step after solvent back washing.

Purolator Facet can provide specific instructions for back washing for each application. Please contact the factory for assistance.