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Large NPT Exhaust Filters for Vacuum Pumps

Exhaust filters are often used on oil sealed rotary vane vacuum pumps. The main reason to use an exhaust filter is to eliminate or minimize oil mist that can often be a byproduct of the vacuum pumps operation.

Oil mist is often generated by vacuum pumps for a variety of reasons. The most prevalent and common cause is operating the vacuum pump at "high" pressures. Generally speaking operating pressures above 1 Torr or 1000 micron can cause oil mist to be apparent. Oil mist creation is not unusual and "No the pump isn't on fire." The most common cause is operating the pump by pumping against an "open" or leaky system. The pump then has very high gas flows going through it, and in the process will atomize oil molecules (aerosol) and they will then attempt to exit the pump and bearing no filter media to prevent this, they will.

An exhaust filter or "oil mist eliminator" is a more advanced filter usually containing a replaceable element that will stop oil mist on a molecular basis or at least make a good effort at it. Exhaust (oil mist) discharge can be cut significantly by adding one of these filter items to your vacuum pump. Not only does it keep the oil mist out of your workspace; it also will keep the pump oil in the pump where it belongs.

There are two basic types and numerous variations in these two categories. The first is a standard exhaust filter; generally coalescing, that will trap most of the oil mist, keep the oil in the pump and exhaust into the workplace. Coalescing means that the oil drains back into the pump after it condenses on the insides of the filter element itself. The second type of exhaust filter does the same as the first, but also includes an exhaust port from the exhaust filter. We call this a capture filter. With this filter a hose can be hooked up to the filters exhaust port and any oil mist that gets by the element can be directed via hose connection to a hood to remove from the workplace.

HyVac vacuum filter elements have been designed to 99.999% DOP efficiency on .2- .3 micron particles. They are rated at 5 parts per million at 60 Torr maximum carryover.

Oil mist filters are designed for oil mist. These are pretty large molecules. If you are dealing with volatile solvents or other types of work place unfriendly items, then the second type of exhaust filter is the filter for you. These types of filters usually entail a little more installation cost due to need to run hoses from pump exhaust to the hood but because they present a closed loop to the hood for exhaust the user is assured a clean environment.

All of the exhaust filters from HyVac are very easy to install and either thread into the exhaust port of the pump or can be clamped on in some relatively simple manner.

Filters will require changing from time to time and the frequency depends on the amount of use the filter element in the filter gets. A simple maintenance program can be put in place once the

frequency of actual changes needed becomes apparent. If a filter is allowed to operate after being all clogged up over time, then back pressure may start to develop in your pump and may put undo pressure on the shaft seals or other exit ports from the pump itself. The motor will also tend to work harder in this situation, so it is important to replace the element every 6 months or so. Again it really depends on the amount of use the system gets. Filter change out generally should occur when there is a pressure differential of 2.5 psid across the filter.

Do I really need this thing? Depending on what you are pumping out of your system a good exhaust filter, with a port to a hood may be a prudent investment. Your pump has less of a chance of running out of oil with this type of item in place. There is less exposure for local personnel to the exhaust by products and vapor streams from the pump. It is feasible to port the exhaust directly to a hood, but then monitoring of the pumps oil level should be made a routine preventative maintenance practice. Take care to avoid any low spots in the exhaust line as oil may collect there and again cause back pressure during operation.

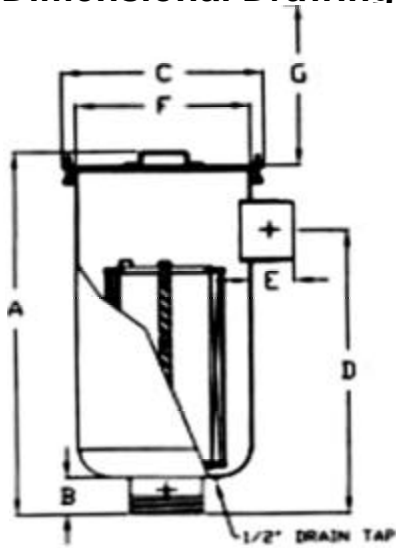
Some typical Applications that use exhaust filters with oil sealed pumps.

Aerosol Scrubbing	Oil removal for pressure unloading vents on piston compressors
Any application requiring low delta p coalescing of large air volumes	Vacuum Coating
Blower Exhaust Oil Mist	Vacuum Drying
Captures oil fog, mist, or smoke from exhaust on oil flooded vacuum pumps	Vacuum Freeze Drying
Custom vacuum pumping systems	Vacuum Furnaces
Food Processing-Pressure	Vacuum Metalizing
Industrial Vacuum Processes Medical	Vacuum Ovens

Features of the Large NPT Exhaust Filters

- 0-5 PSIG Operating, 10 PSIG Proof Pressure
- 1.47 PSID back pressure drop at rated flow when saturated
- Filter change out differential: 2.5 PSIG
- Five internal 'Mist Coalescing' stages in single element design with fast flow oil drainage design
- High gravimetric efficiency means low oil carryover
- Minimum 99.97% D.O.P.on 0.3 micron diameter particles
- Pleated filter medium increases surface area which allows low velocity separation of ultra-fine oil mist
- Positive sealing O-ring seal system
- ppmw = parts per million by wt.
- Temperature (continuous) min 40° F (4° C) max 220°

Dimensional Drawing



Dimensions and Specifications

Catalog Number	MN PT Size	Length (A)	(B)	Housing Diameter (C)	Height to Outlet (D)	Outlet OD (E)	Nominal Vacuum Pump Rating	SCFM of Element	Weight
93126-008	3	31.12	3	14.0	22.5	3	300	500	75
93126-009	4	31.12	3	14.0	22.5	3	500	500	75
93126-010	5	38.12	3	18.5	29.5	3	800	1100	160
93126-011	6	39.12	4	18.5	30.5	4	1100	1100	160
93126-012	8	38.80	4	21.0	25.5	4	1800	1800	180

Options

Activated carbon-post filter to reduce odor

Available in Stainless Steel

Custom internal multi-stage layering to meet specific application needs.

Epoxy or other specially coated housings

Vacuum flange connections

Larger sizes available

Pre-separator demister stage (For severe applications)

Specialty media & gaskets/seals for custom installations/applications