

# EXHAUST MIST FILTERS FOR OIL SEALED ROTARY VANE PUMPS

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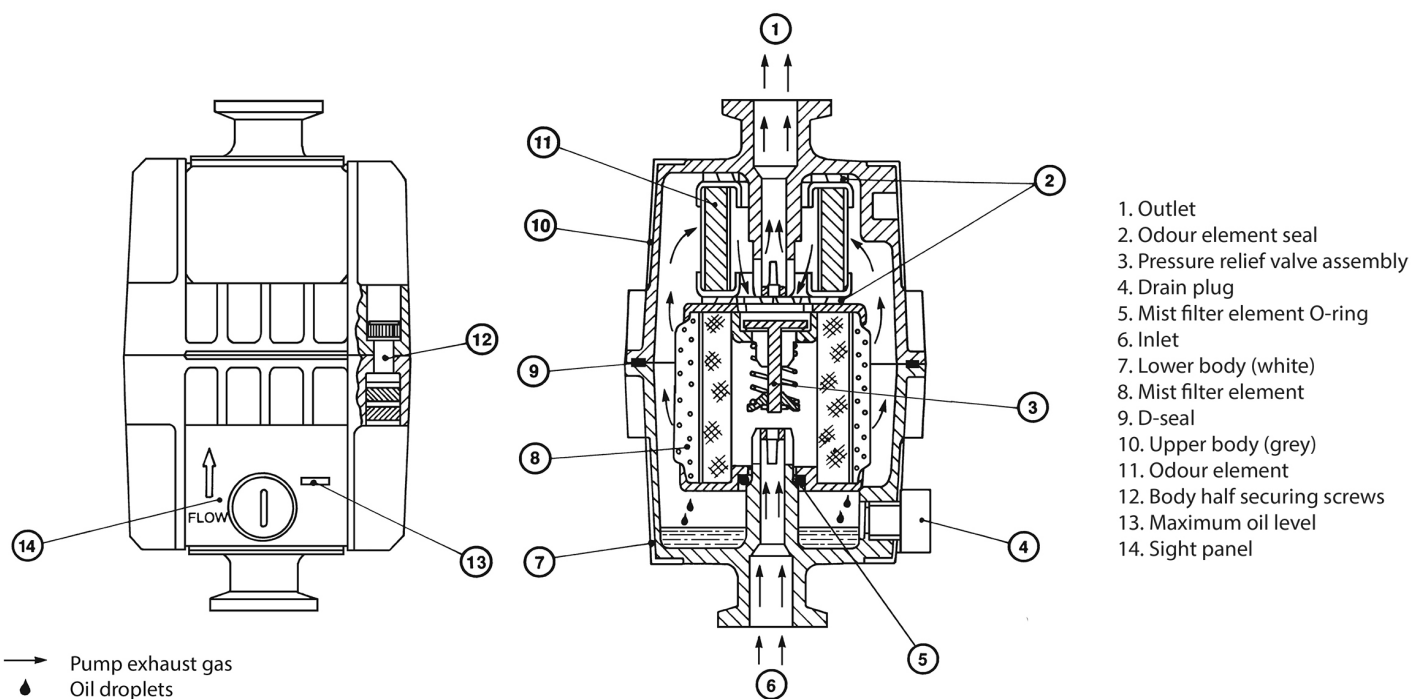
**Oil sealed rotary vane pumps emit oil mist from the exhaust ports when they are operated, and this regardless of their manufacturer.**

This “mist”, sometimes referred to erroneously as “smoke”, is actually a fine aerosol of the vacuum pump oil that forms as the oil is squeezed through the tiny clearances that are inside the pump mechanism and as an effect of the heightened temperature of operation. This hydrocarbon oil mist may represent a flammable hazard.

When an oil sealed rotary vane pump has high gas through put, for example when roughing a large chamber down from atmospheric pressure, oil mist will be seen at the pump’s exhaust. Examples of other occasions to generate oil mist at the exhaust include pumping a high gas flow introduced in the vacuum system or when running gas ballast. Over time, this oil mist can cause the pump to lose a significant amount of its oil charge, possibly emptying the pump’s oil. In a laboratory this can cause oil to be drawn into an exhaust ducting system or into the environment.



*Edwards RV oil sealed rotary vane pump range*



Even with a vacuum pump that is operating at its ultimate pressure there is generally a small amount of oil mist seen at the exhaust. Most modern oil sealed rotary vane pumps use an 'air bleed' internally that does not affect the vacuum performance, but prevents hydraulic "knocking" at very low pressures. This air bleed causes a small amount of oil mist to pass to the exhaust even with a pump that is apparently not pumping any gas.

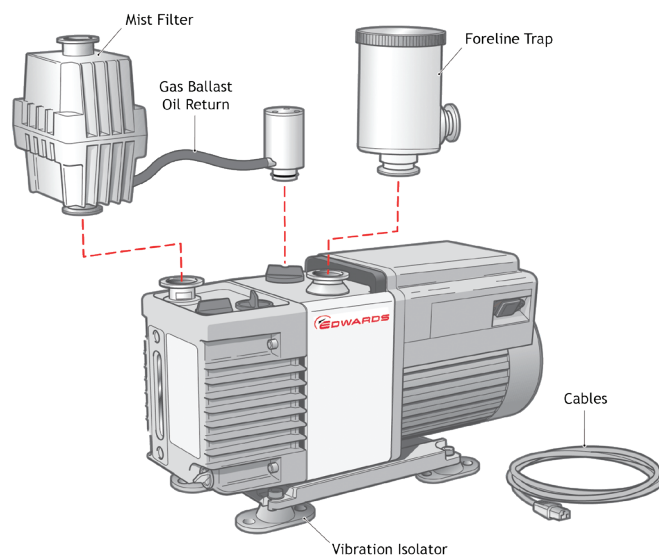
It is recommended that all oil sealed rotary vane pumps be fitted with an exhaust mist filter to capture oil mist and allow it to drain back into the pump oil box. Most exhaust mist filters are coalescing filters that allow the mist to form droplets which can't "float" in the air like an aerosol. Gravity drains the oil back into the mist filter body. This oil can then either be manually returned to the pump or returned automatically using an 'oil return' accessory.

Oil mist filters should incorporate some form of over-pressure device that will allow the filter to be "by-passed" if it becomes blocked. This prevents over pressure of the pumps oil box which will cause external oil leaks and poor pump performance and may lead to a dangerous 'over-pressure' situation.

A high quality exhaust mist filter will also contain an odour adsorbing element, usually activated charcoal, which will adsorb the oily "smell" from the exhaust of the pump too.

It should be noted that exhaust mist filters do not change the nature of exhaust gas and so if hazardous gases are pumped, they still need to be managed once exhaust mist filter has performed its duty. It is necessary also to assess the suitability and/or chemical compatibility of the exhaust mist filter with the gases being pumped.

The filtration elements are consumables and should be replaced periodically. A good guide would be to change them during routine oil changes to ensure efficient and effective operation.



*Edwards RV rotary vane pump and accessories, including exhaust mist filter*

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