

Busch vacuum pump oil quite literally is the “Life Blood” of the vacuum pump. There are 3 functions of the oil.

1. **Lubrication** – of the vanes, bearings, and touching parts.
2. **Sealing** – a thin layer coats the cylinder wall to create a seal which allows low ultimate pressure to be achieved.
3. **Cooling** – helps to distribute, transfer, and remove heat that is caused by friction and compression.

Oil Life & Oil Change Intervals

Oil change intervals can only be established by experience with the pump operating in the actual conditions. Develop the oil change interval by periodically checking an oil sample taken from the pump. When the oil sample has become dark in color (from solids and carbonized particles) or is milky looking (from water), it is time to discard it. Depending on the level of oil degradation, a thorough flushing may be required.

Oil life is dependent upon the conditions to which it is exposed. A clean, dry air stream and an oil operating temperature under 210°F are ideal conditions.

After the initial oil change, and when using R530 (hydrocarbon oil), it is recommended that oil changes are made every three (3) to four (4) months or 500 to 750 hours of operation, or as necessary if high heat is contaminating the oil. The use of Busch R570, R580 (synthetic) or R590 (semi-synthetic) oil may significantly extend the operating hours between oil changes.

Excessive Heat

Excessive heat is the worst enemy of vacuum pump oil. As the oil heats up, its ability to provide effective lubrication, sealing, and heat distribution is diminished. For every 20° rise in operating temperature, the useful life of the oil is cut in half.

The viscosity of the oil, which could be considered the single most important property of a lubricant, is greatly affected by heat. Changes in viscosity can cause exponential degradation resulting in poor vacuum, machine wear, or failure.

When the pump is subjected to operating conditions that will cause the oil to be heated above 210°F, the oil will carbonize and become contaminated after a relatively low number of operating hours. The higher the temperature, the quicker the oil becomes contaminated.



R5 Vacuum Pump Oil Life

Oil Level Readings

Oil level readings should be done only when the pump is turned off. Oil can be added to the oil fill port (Ref.88) if the pump is shut off and the circulating oil has sufficient time to return to the oil sump. The oil might appear to be foamy, which is a normal phenomenon with aerated oil. If there is no experience available with regard to the oil life under the prevailing operation conditions, it is recommended to have an oil analysis carried out every 500 operating hours and establish the change interval accordingly.

Oil Color Observation:

Clear / Light = Normal
Honey = Acceptable but getting close to the high heat tolerance. Will need to be changed soon.
Syrup = At high heat tolerance. Time to change the oil
Molasses = Burnt, past the high heat tolerance.
Milky = Water or other liquid has mixed with the oil.



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