

The Care and Feeding of Vacuum Pumps

The following are observations from the trenches. After 50 years + of managing a high vacuum pump service center, you pick up a few pointers. So, in no particular order . . .



#1: Change your oil. This can be done more often than necessary, but like we say, change your oil too much and you waste some oil – don't do it enough and you waste a whole pump.

#2: Never pump high concentrations of oxygen with a hydrocarbon oil-filled pump. BOOM. A pump that will, or may see high concentrations of oxygens, must be built w/ non-hydrocarbon / synthetic vacuum pump fluid.

#3: Do not leave a pump under vacuum when you shut it off, if possible. If you are not using the pump, vent the intake line prior to or right after cutting the power.

#4: When changing your oil, run the pump for 20 minutes or so to warm it up, then drain and change the oil.

#5: Never use an exhaust line smaller than the intake line.

#6: Never run a vacuum pump without it pulling a vacuum on something.

#7: Never wear a neck tie near belt-drive pumps.

#8: Oil levels should be checked and adjusted while the pump is running. The oil level, when the pump is not running may appear low, but who cares? The pump is not running!

#9: On a pump driven by a 3-phase motor, check rotation upon installation. 'Bump' the starter briefly while observing motor fan. Should pump be spinning backward, reverse any 2 of the 3 power wires (with power off) then recheck.

#10: Smoke (oil vapor) coming from a pump exhaust means you have an air leak. Remember, smoke out = air in.

#11: 0-30" mm is the normal range for a vacuum pump. 30" is all there is, so beware of someone selling a pump that can go over 30". Not possible.

#12: When using a high vacuum gauge, essentially, the 30th inch of vacuum is split into tiny pieces, called 'microns' or 'millitorr' . On this type of gauge, unlike the 0-30" gauge, the smaller the numbers, the better the vacuum. Ie; 5 microns is better than 10 microns.

#13: Test your vacuum pump by itself, before trying to vacuum test the complete system. This is most easily done by temporarily mounting a gauge directly on to the intake of the pump. This gives you best / most accurate idea of pump performance.

#14: Check your pump oil for color, clarity, and level before starting your process and regularly during use.

#15: Install a ball valve between the vacuum chamber and the vacuum pump, so when the pump is turned off, the vacuum line can be closed off, so as to not suck vacuum oil from the pump crank case, into the vacuum chamber.

#16: Keep it Cool. Any pumps natural enemy is heat. Your pump should have a supply of fresh air. If it is enclosed, use a fan for cooling. If you can, install the pump in an area with open air. The heat will lower the viscosity of your oil, hindering its ability to pull a good vacuum. If your vacuum pump doesn't pull a good vacuum, things can deteriorate rapidly.

#17: Overheated oil is bad. Unintended application conditions can make a pump work beyond its capacity and overheat the oil. When the oil is overheated, it often has a burned odor. Overheated oil can harden when it cools, which will lock-up the pump.

#18: Intake Control. The intake port of the pump will suck in anything available; it does not discriminate. Please take care that only filtered gases enter the pump. Liquids and/or solids entering the pump, especially water, will cause premature pump failure. If a pump fails due to water entry, it should be repaired ASAP. The water will destroy the pump's internal metal parts due to oxidation. Unavoidable vapor contamination requires more frequent oil changes.

#19: On/Off Switches. Most pumps do not have an on/off switch for a couple of reasons. For one thing, pumps are usually shoved under a bench or into the back of the equipment they are supporting. As such, the switch becomes rather difficult to access. But mostly it is bad form to operate a pump via the electrical switch. It is far better to let a pump continue to run as needed and utilize a vacuum isolation valve. It is better for the pump to run while pulling a vacuum against a closed vacuum valve than it is to electrically turn the unit on and off. The electrical switch should be used to turn th unit off at the end of the day while during the day a valve can be used to manipulate the vacuum as needed.

#20: If you have ANY questions regarding your high vacuum pumping equipment, feel free to call us at **800-747-2821**. We will be glad to help



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