

Guidelines for pumping viscous fluids

When pumping viscous fluids the friction losses in the suction pipework increase with fluid viscosity.

For effective pump performance the suction / inlet feed conditions are most important together with the operating speed of the pump.

The suction / inlet pipe must be as short and as large a diameter as possible, with no elbow, valves or filters that will restrict the flow into the pump. The minimum fluid level should always be above the inlet of the pump (positive suction head). The higher the viscosity the higher the minimum level of fluid of suction head required. In certain cases a pressurized inlet should be considered to force higher viscosity fluids into the pumping chamber. This can be achieved with a booster pump or positively charging the supply tank with an inert gas.

Never run the pump at maximum speed since a viscous liquid will not flow as easily as water and therefore needs more time to enter the pumping chambers, a guideline is half to three-quarters of max pump speed depending on viscosity. The greater the viscosity, the slower the pump should run.

Always use the X-cam for best suction results.

Always verify the suction conditions. If there is a risk of liquid starvation, this can cause a partial vacuum in the pumping chambers which will affect the stability and repeatability of flow. If there is a potential for this to occur, more inlet pressure will be required, or a slower pump speed with an oversized pump.

A loss in flow in relation to water (published speed / flow curves) can be expected due to the viscous fluid affecting the closing action of the valves; a point will eventually be reached where a further increase in pump speed does not increase flow. A motor with a speed control drive should be selected to optimize the flow conditions.

Very approximate guidelines for max viscosity, given ideal inlet conditions:

G03/G04	1000cps	G21	2000cps
G10	3000cps	G15	1500cps
G25	4000cps	G35	6000cps
G40	10000cps		

Always consult Wanner for best pump selection in these cases.

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