

So what is cavitation?

Cavitation means that air cavities are forming in the liquid that we are pumping. When these cavities form at the suction of a pressure washer pump several things happen all at once:

1. We experience a loss in capacity
2. The efficiency drops
3. The thousands of cavities or bubbles will collapse (explode) when they pass into the higher regions of pressure causing noise, vibration, and damage to many of the components.

In some cases it produced an explosion within the pump strong enough to blow a hole through the metal manifold casing. These cavities form for four basic reasons and it is common practice to lump all of them into the general **classification of cavitation**:

- *Vaporisation*
- *No Inlet flow or interruption of flow*
- *Air ingestion*
- *Flow turbulence*

A fluid vaporises when its temperature is too high. In designing pumps the assumption that fresh water at 68 degrees Fahrenheit (20 degrees Centigrade) is the fluid being pumped. You can lower the fluid temperature caused from excessive time in bypass mode by squeezing the trigger gun which introduces new cool water into the pump. A thermal relief valve may be added to help prevent this. It is an even better idea not to leave a pump in bypass mode for more then 2-3 minutes without squeezing the trigger gun or shutting down the power source. Remember a pump can "heat up" faster than you would think when in bypass mode.

Both vaporisation and air ingestion have an effect on the pump. The air bubbles (cavities) collapse as they pass from the inlet of the pump to the higher pressure side. The main effect of air ingestion is loss of capacity. The ultimate effect is total pump failure. Although air ingestion and vaporisation can both occur they have separate causes and solutions in some types of pumps. Air ingestion is not as severe as vaporization but both can and will cause serious damage. We would prefer to have the inlet liquid flowing at constant pressure and flow. Variations are referred to as turbulence which can cause the suction of the pump to introduce air into the system.

The most obvious sign of cavitation is a hammering noise. This noise can be either consistent or intermittent depending upon the degree of cavitation and damage to the pump. Vibration of the pump and system will also be noticeable as the pump is starved of fluid. Eventually flow and pressure will decrease.

Check your system for these conditions which may contribute to, or directly cause, cavitation:

- Inadequate inlet line size
- Insufficient inlet flow or excessive suction
- Excessive inlet line length
- Rigid inlet plumbing
- Too many elbows and/or fittings
- Excessive temperature build-up of pumped fluid
- Air leak in inlet plumbing
- Agitation in supply reservoir(turbulence)
- Inadequate increase of inlet flow for fluids of greater specific gravity
- Inadequate increase of inlet flow for higher temperature fluids
- Clogged inlet filters.

It is important to carefully check your system during assembly and operation to avoid the serious damage that can be caused by cavitation. Understanding the causes and symptoms of cavitation is critical for any owner and operator of any high pressure equipment.

ALL warranties are voided in cases of pump cavitation, by even the highest quality pump manufacturers