



CENTRIFUGAL PUMPS: AVOIDING CAVITATION



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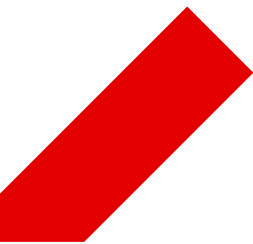
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WHAT IS PUMP CAVITATION?

Pump cavitation is the formation of bubbles or cavities in liquid, developed in areas of relatively low pressure around an impeller.

The imploding or collapsing of these bubbles trigger intense shockwaves inside the pump, causing significant damage to the impeller and/or the pump housing.



**WHAT DOES THIS MEAN FOR
YOUR PUMPS?**

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If left untreated, pump cavitation can cause:

- Failure of pump housing
- Destruction of impeller
- Excessive vibration - leading to premature seal and bearing failure
- Higher than necessary power consumption, which equals unnecessary cost
- Decreased flow and/or pressure

Cavitation in a centrifugal pump has a significant effect on the performance of the pump.

It degrades the performance of a pump, resulting in a fluctuating flow rate and discharge pressure.

Cavitation can also be highly destructive to the pumps internal components.

TYPES OF CAVITATION

SUCTION CAVITATION:

When a pump is under low pressure or high vacuum conditions, suction cavitation occurs. The pump is known to being 'starved' or not receiving enough flow.

When this happens, bubbles or cavities will form as a result at the eye of the impeller.

As the bubbles carry over to the discharge side of the pump, the fluid conditions change, compressing the bubble into liquid and causing it to implode against the face of the impeller.

An impeller that has fallen victim to suction cavitation will have large chunks or very small bits of material missing, causing it to look like a sponge.

Possible causes of suction cavitation:

- Clogged filters or strainers
- Blockages in the pipes
- Pump may be running too far right on the pump curve
- Poor piping design
- Poor suction conditions (NPSH requirements)

DISCHARGE CAVITATION

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When a pump's discharge pressure is extremely high, or runs at less than 10% of its best efficiency point (BEP), discharge cavitation occurs. The high discharge pressure makes it difficult for the fluid to flow out of the pump, so it circulates inside the pump. Liquid flows between the impeller and the housing at very high velocity, causing a vacuum at the housing wall and the formation of bubbles.

As with suction cavitation, the implosion of those bubbles trigger intense shock waves, causing premature wear of the impeller tips and pump housing. In extreme, discharge cavitation can cause the impeller shaft to break.

Possible causes of discharge cavitation:

- Blockage in the pipe on the discharge side
- Clogged filters or strainers
- Running too far left on the pump curve
- Poor piping design



CAVITATION PREVENTION

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If your pumps are experiencing cavitation, check these things to trouble shoot the problem:

1. Check filters and strainers

Clogs on the suction, or discharge side can cause an imbalance of pressure inside the pump

2. Reference the pump's curve

Use a pressure gauge and/or a flowmeter to understand where your pump is operating on the curve. Make sure it is running at its best efficiency point

3. Re-evaluate pipe design

Ensure the path the liquid takes to get to and from your pump is ideal for the pump's operating conditions

Check your pumps regularly and avoid costly damage!

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NOW YOU KNOW WHAT THE SIGNS OF CAVITATION ARE!

Should you require any assistance trouble shooting or servicing your pumps,

do not hesitate to contact Cougar Pumps.

Our electrically qualified and confined space entry trained engineers will be more than happy to take away any hassle.

