

Pump Problem Solving

Problem													Probable Causes	Solutions		
No flow	Under capacity	Irregular discharge	Low discharge pressure	Pump will not prime	Prime lost after starting	Pump stalls when starting	Pump overheats	Motor overheats	Excessive power absorbed	Noise and vibration	Pump element wear	Seizure			Mechanical seal leakage	
✓															Incorrect direction of rotation	Reverse motor
✓															Pump not primed	Expel gas from suction line and pumping chamber and introduce fluid
✓	✓	✓	✓		✓					✓					Insufficient NPSH available	Increase suction line diameter. Increase suction head. Simplify suction line configuration and reduce length. Decrease fluid temperature - check effect of increased viscosity?
	✓	✓	✓		✓					✓					Fluid vaporising in suction line	Increase suction line diameter. Increase suction head or pressure on fluid surface, Simplify suction line configuration and reduce length. Decrease fluid temperature - check effect of increased viscosity?
✓	✓	✓		✓	✓					✓					Air entering suction line	Remake pipework joints
	✓	✓		✓	✓					✓					Strainer or filter blocked	Service fittings
	✓				✓	✓	✓	✓	✓					✓	Fluid viscosity above rated figure	Increase fluid temperature. Increase motor speed. Check seal face viscosity limitations.
	✓														Fluid viscosity below rated figure	Decrease fluid temperature
							✓		✓	✓					Fluid temperature above rated figure	Cool the pump casing. Reduce fluid temperature . Check seal face and elastomer temperature limitations.
						✓		✓	✓						Fluid temperature below rated figure	Heat the pump casing. Increase fluid temperature.
										✓	✓	✓	✓		Unexpected solids in fluid	Clean the system. Fit strainer to suction line. If solids cannot be eliminated, consider fitting double mechanical seals.
✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		Discharge pressure above rated figure	Check for obstructions i.e. closed valve. Service system and change to prevent problem recurring. Simplify discharge line to decrease pressure.
														✓	Seal flushing inadequate	Increase flush flow rate. Check that flush fluid flows freely into seal area.
	✓						✓	✓	✓	✓	✓	✓			Pump casing strained by pipework	Check alignment of pipes. Fit flexible pipes or expansion fittings. Support pipework.
✓	✓						✓	✓	✓	✓	✓	✓			Metal to metal contact of pumping element	Check rated and duty pressures. Refer to pump maker.
	✓		✓												Worn pumping element	Fit new components
✓				✓											Suction lift too high	Lower pump or raise liquid level
														✓	Fluid pumped not compatible with materials used	Use optional materials
														✓	Pump allowed to run dry	Ensure system operation prevents this. Fit single or double flushed mechanical seals.
										✓					Faulty motor	Check and replace motor bearings
	✓														Too large clearance between impeller and back plate/casing	Reduce clearance between impeller and back plate/casing
	✓														Too small impeller diameter	Fit larger size impeller - check motor size
✓															Pumping element missing i.e. after service	Fit pumping element