

# TECH BULLETIN 002



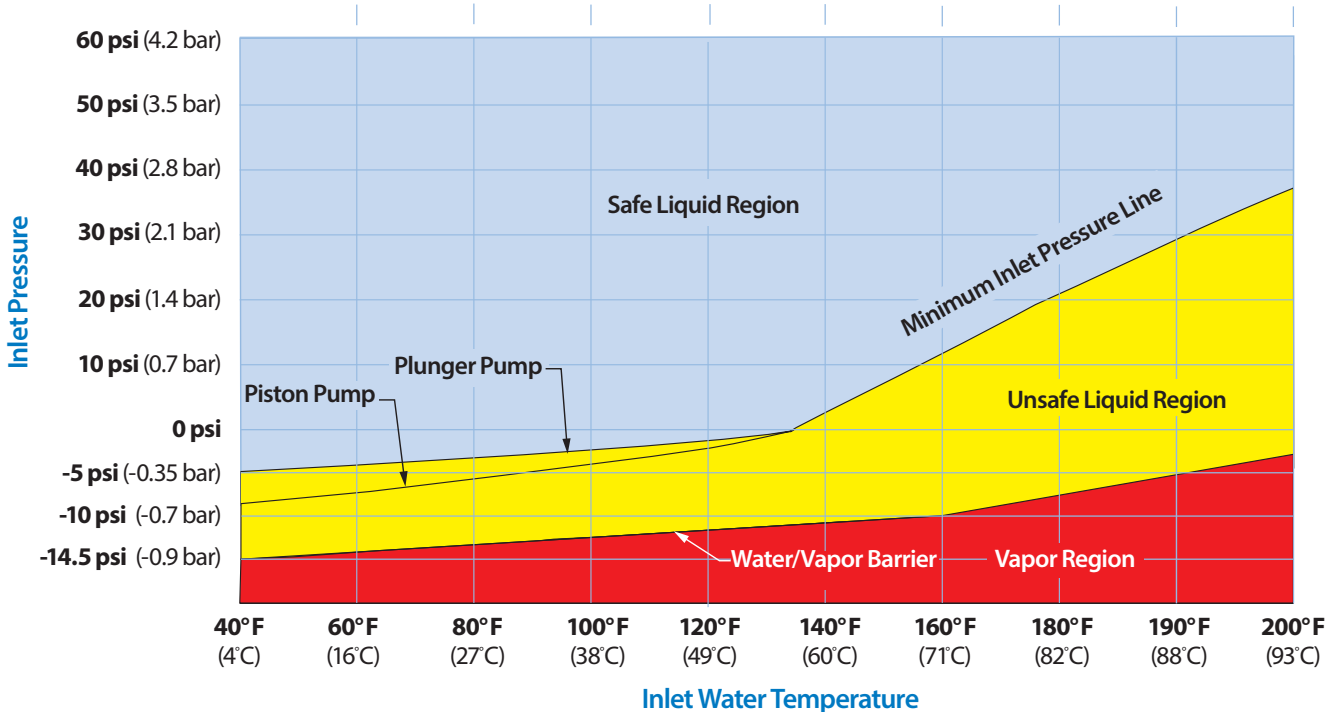
## Inlet Pressure vs. Water Temperature

As the temperature of the pumped water increases, the likelihood of vaporization and cavitation increases. Several aspects of the system should be considered with elevated temperatures to achieve optimum performance.

- Pressurize inlet above 130° F
- Reduce pump RPM
- Install inlet stabilizer in inlet line
- Increase inlet line size to the pump
- Properly-sized and baffled supply tank

## Maximum Pump Speed vs. Water Temperature

Seal Type	40°F	60°F	80°F	100°F	120°F	140°F	160°F	180°F	190°F	200°F
IPFE Seals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
C or K Style Flush Seals	100%	100%	100%	100%	100%	100%	100%	100%	80%	80%
STHT Seals	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%
HT Seals	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%
FPM Seals	100%	100%	100%	100%	100%	80%	60%	0%	0%	0%
NBR & EPDM Seals	100%	100%	100%	100%	100%	60%	0%	0%	0%	0%



## PRESSURIZED INLET

With ambient temperatures, piston pumps can handle a maximum negative suction of -8.5 psi (20 feet of water) and plunger pumps can handle a maximum negative suction -5 psi (11.5 feet of water). As the temperature of the water increases, the vapor pressure (pressure required to remain liquid) also increases. By increasing the inlet pressure to the pump, you can minimize the increased risk of cavitation.

To achieve the recommended inlet pressures with elevated temperatures, it is often necessary to use a booster pump. The booster pump should be approximately twice the system capacity to assure adequate flow into the pump. See chart on front page.

## REDUCTION IN RPM

In addition to increasing the inlet pressure to the pump as temperature increases, reducing the pump rpm will also offer added protection. Reducing the rpm reduces the acceleration and vaporization of the water. Lower rpm reduces the risk of cavitation and its damaging effects. See chart on front for recommended rpm.

## INLET STABILIZER

If more than 5-6 feet from the pump or long feed lines or a booster pump or high temperature are present, an inlet stabilizer should be installed to stabilize inlet pressure.

**Note: An inlet stabilizer will not function with a negative suction inlet.**

## INCREASED LINE SIZE

It is always important to have the inlet supply line sized to match or be one size larger than the pump inlet port for optimum performance, but it is most critical when the pumped liquid is at elevated temperatures. Under sizing the line will only compound the problems of high temperature vaporization. See individual pump data sheet.

## PROPERLY SIZED AND BAFFLED SUPPLY TANK

The optimum installation for ambient temperature water requires a properly sized baffled supply tank. The tank should be enclosed and 6-10 times the system capacity with at least two baffles.

## Cat Pumps

Technical Services Department

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