

AccuPump and BasePump

Optimizing Tubing Performance

There are two types of liquid transfer lines in a typical system, reservoir and delivery. Reservoir lines transfer liquid from a vessel to the input port of the pump. Delivery lines transfer liquid from the output pump port to another location (i.e., cuvette or test tube).

When selecting liquid lines, follow the parameters below:

Tubing Inside Diameter (ID)

- Suction Line ID
 - Too small will restrict flow causing the pump to cavitate.
 - Too large will generate additional priming requirements.
- Delivery Line ID
 - Too small will cause additional back pressure and excessive liquid velocity.
 - Too large will introduce back pressure, increasing the pressure at the pump.

Tubing Length

- Reservoir Line
 - Excessive length may prevent the pump from priming and introduce pressure drop that will restrict flow to the pump.
- Delivery Line
 - Excessive length will introduce back pressure, increasing the pressure at the pump.

Tubing Material

- Reservoir Line
 - Soft tubing (PVC) may collapse and pulse, causing flow restriction, blockage and pump cavitation.
- Delivery Line
 - Soft tubing may expand and pulse, causing flow fluctuations, undermining the system's Coefficient of Variation (CV).
 - Semi rigid tubing, (FEP/LDPE) is preferred for consistent performance of the liquid transfer system.

Port Connection

- Reservoir Line
 - Should be bubble tight to prevent introduction of micro-air bubbles into the pump input port.
- Delivery Line
 - Should be bubble tight to prevent leakage of liquid from the pump output port.
- Zero Dead Space
 - Configurations should be used to prevent particle entrapment and minimize flow turbulence. Particle entrapment may cause material to carry-over contamination. Flow turbulence may cause additional back pressure, effecting system performance.

Typical Configurations

