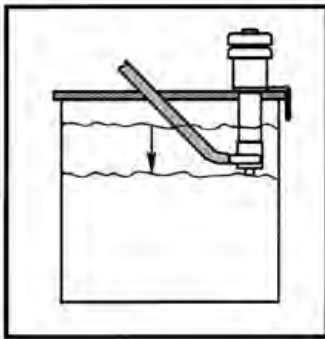




<b>PUMP SIZE</b>	Should be considered since it determines the frequency of pump operation. Oversize your sump when possible to keep the pump operating for longer periods, rather than constantly stopping and starting, to avoid torque vibration and possible misalignment.
<b>LENGTH x SPEED</b>	Pumps should be specified as short as possible and driven as slowly as possible, since the longer the pump, or the faster the RPM, the greater the radial load on the bearing surfaces.
<b>ABRASIVE CONDITIONS</b>	Cantilever shaft, bearing-free pumps are recommended for pumping solutions containing abrasives. However, on bearing containing pumps, abrasive conditions may be met if a separate, clean, compatible liquid can be used for flushing to lubricate and cool the bearings. This is especially required when more than one bearing is used.
<b>FLOAT SETTINGS</b>	Make certain adequate liquid is above the pump's impeller to begin pumping, but low enough to prevent damage to the motor. If it is necessary to pump to a greater depth than the length of the pump, continue to pump to a level below the intake with a suction extension. However, on bearing containing pumps using a product flush to cool and lubricate the bearing(s), the pump shut-off must be set above the impeller level to prevent the pump from continuing to run after the reservoir level has dropped too low to provide the necessary product flush for the bearing(s).
<b>ALIGNMENT</b>	Although factory aligned and inspected, positioning of the pump and motor should be checked initially and after periodic operating intervals to assure that misalignment has not occurred, which would place undue wear on the bearing or seal ring surfaces.
<b>AUXILIARY PUMP</b>	For standby operation, design for the possibility of pump operating interruptions. Employ two or more pumps for continuous or partial operation. For example, for a 100 GPM requirement, employ two pumps at 100 GPM each or three at 50 GPM each, keeping one ready for service.

## SUGGESTED INSTALLATIONS



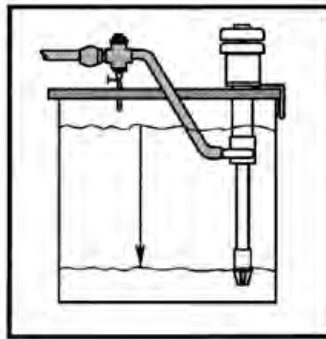
1.

### 1. BASIC IN-TANK INSTALLATION

The Vertical Series may be immersed in the liquid being pumped. No priming is required when the pump discharge port is submerged in the liquid. (See drawing #1)

### 2. IN-TANK INSTALLATION WITH INLET EXTENSION FOR DEEPER TANKS OR SUMPS

Pumps can be used for sump pumping and emptying deeper tanks by adding an extension to the inlet port. With the suction casing immersed (as shown in Drawing #2), the pump will begin pumping immediately and will pump down to the bottom of the inlet extension.

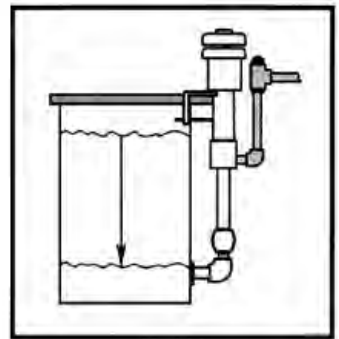


2.

\* In order to continue pumping when the fluid level drops below the discharge port, it may be necessary to maintain a slight back pressure on the discharge line. The following chart contains specific details on maximum inlet extension length.

### USE OF FOOT VALVE

The installation of a foot valve on the inlet extension enables pump restarting and priming when the tank level is below the pump discharge port (see Drawing #2). The pump must be immersed to the discharge port or primed with a priming tee on initial start-up.



3.

### 3. OUT-OF-TANK (OR CONTAINER INSTALLATION

Care must be taken to mount the pump so that the motor is never below the maximum liquid level in the tank. This insures against accidental motor flooding. It is recommended that a drain return line be attached to the vent hole in the pump column and routed back to the tank or container (see Drawing #3). The return line will allow any inadvertent leakage to drain back into the tank. This mounting is often used where tank space is limited, on fume scrubbers or to isolate the motor from heavy corrosive fumes.