Adaptive Industrial Solutions
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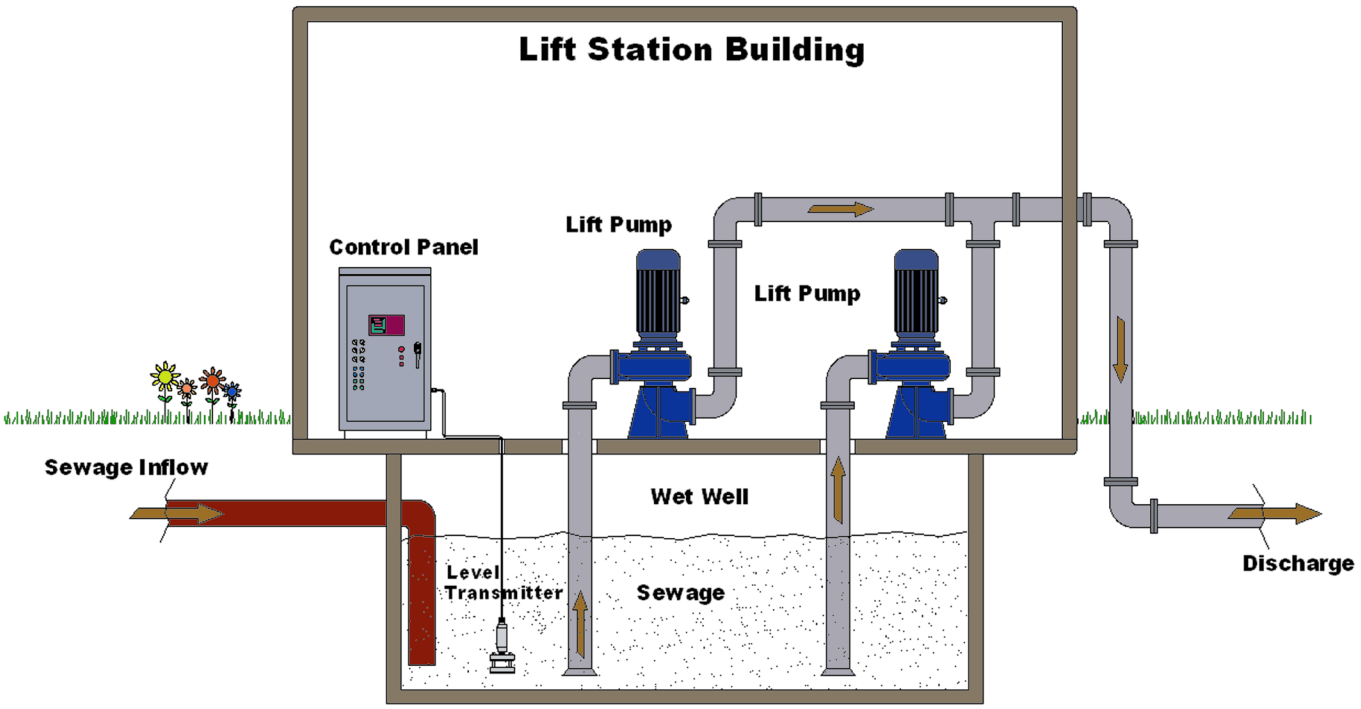
(877) 818-5009

PUMPING OR LIFT STATION LEVEL CONTROL

Application Note #1

The purpose of a lift station is to raise or lift the sewage to a higher elevation where it can then flow downhill via gravity to the wastewater treatment plant. Raw sewage flows by gravity to the lift station into what is called a wet well. This wet well acts as a holding tank for the raw sewage. When a set level in the wet well is reached, a pump will automatically start to pump down the well to a consistent level. If the first pump cannot maintain the set level a second pump will start and run until a low level set point is reached. Some pump stations have as many as 4 pumps to maintain level. With millions of lift or pump stations throughout the US a reliable, accurate level transmitter is required to avoid overflow.

A typical sewage lift station layout is shown here.



The purpose of the level transmitter is to provide feedback to the pump allowing them to turn on and off when the level reaches a set height. Floats, bubbler systems, radar and ultrasonic are all ways to indicate level. However these methods can have installation difficulties, maintenance issues, high costs or reliability issues due to the environment.

Blue Ribbon Corp has developed the Model BC001, a submersible, hydrostatic level transmitter that can withstand the environmental conditions and provide a reliable, accurate level control. The large diameter sensing element is designed to resist clogging which is critical due to the level of fats, oil and grease found in the wet well. This design provides low maintenance, installation and initial purchase cost.

The Model BC001 provides a heavy duty baffle plate, some times known as a Birdcage® design, to protect the sensing element from installation issues or debris found floating in the effluent. The transmitters construction provides a weighted advantage to keep the transmitter in place at the bottom of the wet well. The all stainless steel body provides a corrosion resistant design with an integral Polyurethane or Tefzel cable to resist compatibility issues. The cable also provides an integral breather tube that allows for barometric reference.

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Installation is simple due to the transmitters design. The transmitter is inserted in the wet well from the top and lowered to the bottom of the well. The reinforced cable doesn't require additional support, but in severe applications or for ease of retrieving the cable if dropped into the wet well an external support cable is recommended.

Typically the transmitter is terminated in a control panel where the signal is feed into a pump controller. Blue Ribbon Corp also provides a 2 or 4 channel pump controller that provides programmable pump rotation, level indication, alarms, seal leakage indication and other features required for pump station control.

Model BC001

Features
- Non-Clogging 3-1/2" Diameter sensor face
- All 316 Stainless Steel construction to resist corrosion
- ½" NPT Male electrical conduit connection for rigid installation support
- Integral lightning protection
- ~6lbs in weight to limit cavitation and movement

Critical Specification Overview:
(see data sheet for full specs)
Pressure Ranges: 0-30" WC thru 0-300 PSI
Accuracy: ±0.5% FSO (±0.25% FSO available
Output: 4-20mA (0-5 VDC available)
Wetted Materials: 316 Stainless Steel, Polyurethane & Neoprene.
Temperature compensated: 0-140 °F

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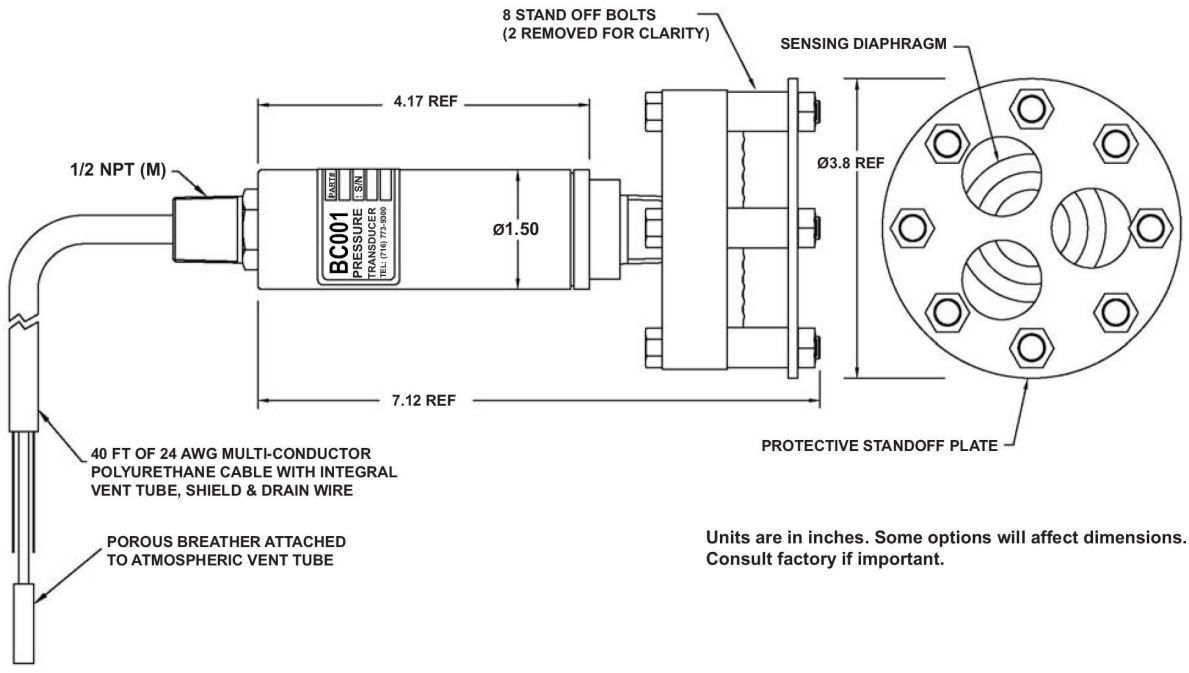

Units are in inches. Some options will affect dimensions. Consult factory if important.