

Using a Pressure Transmitter as a Bubbler for Liquid Level

Pressure Transmitters

Filter-Regulator

Constant Differential Relay

Air Bubbler Theory

- 1 A constant flow of pressurized air is applied to the tube
- 2 A pressure transducer monitors the air pressure in the tube
- 3 The pressure in the tube equals the pressure at the tank's bottom
- 4 The liquid level equals the pressure inside the tube divided by the liquid's density
- 5 As long as the material density remains constant, the pressure is proportional to the liquid level in the tank

Advantages

- Not affected by foam or turbulence
- Can be used in small diameter pipes
- Easy to understand/proven technology
- Large installed base

Common Applications

- Determine head through a flume or weir
- Level in a lift station
- Tank level when foam is present
- Can be used with atmospheres other than air

A bubbler system is an inexpensive but accurate means of measuring the fluid level in open or vented containers, especially those in harsh environments such as cooling tower sumps, swimming pools, reservoirs, vented fuel tanks, drain sumps, or air washers.

A complete system consists of a source of compressed air, air flow restrictor, sensing tube, and pressure transmitter. The only component exposed to the elements is the sensing tube. All others can be remotely located in a protected area.



Air bubbler systems contain no moving parts, making them suitable for measuring the level of water, viscous fluids, liquids with large quantities of suspended solids, slurries, sewage, drainage water, and sludge. Since the only part of the bubbler that touches media is the air flow tube, it can be used for applications where you don't want the liquid to contact a sensor. And, since bubblers can be used in small diameter pipes, they allow for installations in tanks where other systems won't fit.

In the past, if you wanted a bubbler, you needed to buy all the components and assemble the bubbler system yourself. Now, you can do it the easy way and let Lesman build a bubbler for you. Your Lesman bubbler system comes pre-configured, wired, and ready to drop directly into your application.

All you need to do is identify your application depth below and decide whether you need an air purge to help keep your air flow tube clean.



A basic Lesman bubbler system includes:

- NEMA 4/12 carbon steel panel with hinged door, sub-panel, heater/thermostat, and wall mount flange bracket kit
- Air supply regulator with 0–60 PSIG output
- 0.3 Micron coalescing filter (replaceable element)
- Gauge pressure HART® transmitter, general purpose approval, configured for level
- Six-digit digital level indicator with two Form C relays and 4-20 mA output
- Constant differential relay for air flow volumetric rate with indicating flow rotameter
- Nylon tubing and brass push-to-connect fittings inside the enclosure, compression fitting bulkhead connections for air and bubbler supply
- Air purge for diptube, controlled by manual pushbutton
- Panel nameplate label (specify up to 40 characters)

Model Selection Guide

To build a complete model number, choose one option from each section below. Be sure to include your maximum level and label in your order.

Example: LSB100-020 Y= 75 Ft
Panel Label: North Side Sump, Capacity 7200 Gal

Description		Catalog Number	Price
Lesman Bubbler System (See included items list at left.)		LSB100-020	\$5880.00
Range	Specify Level: (XXX), units (% In, Ft, Gal)	Y= _ _ _	0.00
Panel Label	Specify Label: Up to 40 characters		0.00

For custom requirements, call the Lesman bubbler system specialists at 800-953-7626.