

A bridle (or cage, isolating column, bypass pipe, external chamber, etc.) is a vertical pipe connected to the side of a storage tank or process vessel typically with side/side or side/bottom connections. Because the fluid inside the bridle will rise and fall equally with the level of fluid inside the tank or vessel, the bridle has been adapted for level measurement on a broad scale.

Magnetrol's use of the term "bridle" refers to a bypass chamber on a larger process vessel on which the level instrumentation for that vessel is mounted. Bridles usually do not have level equipment extending into the bridle itself. Level equipment is typically placed in its own cage or nozzle attached to the bridle.

## Bridle Advantages

Bridle level measurement has provided industrial users with distinct advantages:

**Isolation:** Because a level instrument mounted in a bridle is isolated from the process it can be calibrated or maintained without disturbing the process.

**Fewer Connections:** A bridle reduces the number of connections necessary on the process vessel. This is especially important on boiler code vessels that require qualified welders and procedures.

**Prudent Design:** Level instrumentation is often the last consideration on a project. Mounting the instrumentation on a bridle eliminates the need for planning multiple instrumentation connections on the vessel.

**Saves Time:** Because instrumentation is typically left until the end, ordering a bridle with all the level instrumentation cuts down on the time necessary to add connections and install the instrumentation at the project deadline.

**Avoids Obstructions:** When a tank has mixers, agitators, aerators, ladders, or structural bracing, a bridle avoids any interference between these objects and the level controls.

**Reduces Turbulence, Foam:** In a highly agitated vessel, a bridle calms the surface to be measured and reduces foam to improve measurement accuracy.

## BRIDLE ANATOMY

- 1 A bridle is connected to the side of a tank or vessel. Level equipment is typically placed in its own cage that is attached to the bridle.
- 2 A Magnetic Level Indicator (MLI) can provide both local and remote level indication as well as redundant level control for optimum reliability. The transmitter is shown with a local remote extension which offers more convenient access to the transmitter.
- 3 A caged switch (float-type shown) is a practical solution for narrow level differential applications such as high and low level alarms.
- 4 A nozzle-mounted point switch (ultrasonic-type shown) provides low-low level indication.
- 5 A cage-mounted Guided Wave Radar transmitter is an ideal solution for many new and retrofit bridle applications.
- 6 Isolation valves are often located between the instrument cage and the bridle so that the instrument can be isolated from the process for maintenance or repair.

