

# Tank Level Measurement for Safety of Industrial Process

Measuring fluid level in tanks is a common requirement for almost every industrial process. It allows automatic level control and guarantees safe operation.

## Level measurement using a bridle

A vertical pipe (bridle) with an instrument mounted to it and connected to the side of a storage tank (vessel) is widely used to determine liquid levels in a tank.

The bridle contains a float chamber and an indicator for the fluid level. The fluid inside the bridle will rise and fall equally with the level of fluid inside the tank.



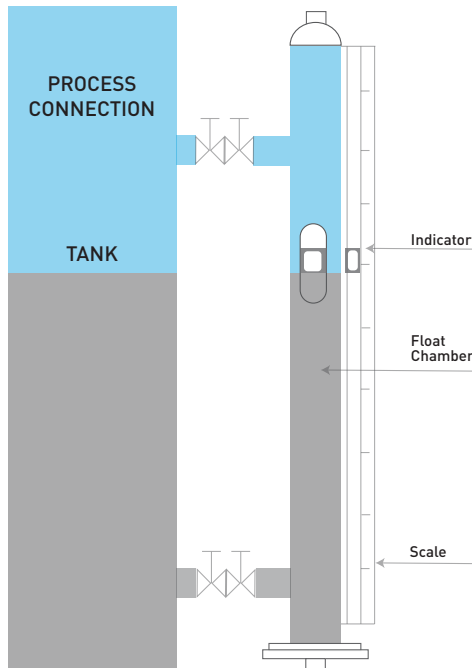
A bridle with Parker monoflanges for low viscosity fluids. Note the capillary leading to instrument transmitter.



Parker's double block and bleed valves are mounted between the bridle and the tank.

Safe removal of the bridle is enabled by the use of captive studs on monoflanges that are screwed through the valve body. They are then held in place using lock screws into a pre-drilled hole. This is a reliable and a secure method.

Parker's monoflanges are being used on low viscosity liquids where plugging is not likely.



A bridle attached to the side of a tank is often used to facilitate the measuring equipment.

When the fluid is of high viscosity - a straight through bore is required to avoid plugging.

Parker's Pro-Bloc flange x flange valves with bore sizes up to 2" and higher flange classes are utilized for this application.

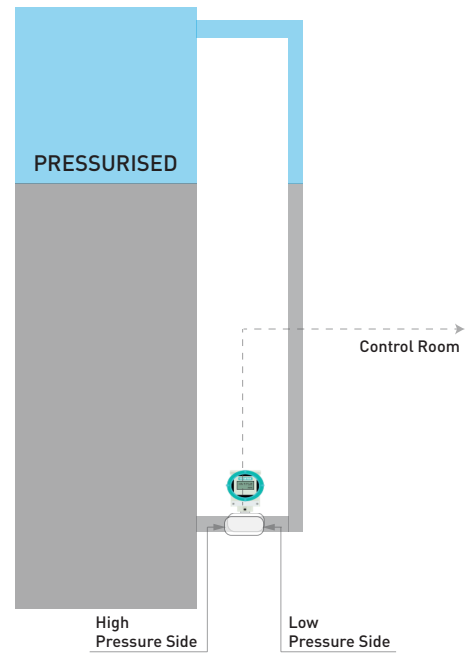
A bridle with Parker Pro-Bloc® valves for high viscosity fluids.

## LEVEL MEASUREMENT

### HIGHLIGHTS:

- Products: Monoflange, Pro-Bloc®
- Markets: Oil & Gas Offshore and Onshore, Chemical, Petrochemical.

A differential pressure transmitter is commonly used to determine the liquid level in a pressurised tank (vessel).



A differential pressure transmitter measuring tank level.

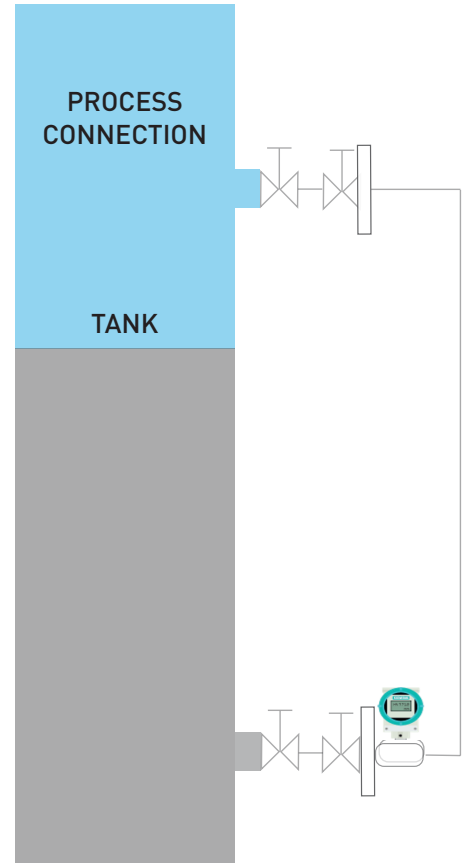
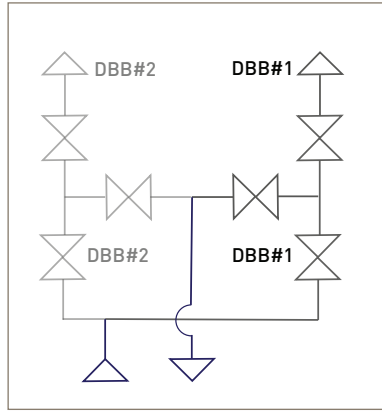
Wet legs are used on differential pressure measurement where both sides are filled with liquid.

The pressure at the bottom of a liquid filled container is directly related to the height of the liquid. The transmitter measures this hydrostatic head pressure and gives the resulting liquid level.

## Level measurement using a capillary method

The differential pressure transmitter is installed at the bottom of the tank. The capillaries are filled with a fluid that transfers the pressure to the transmitter sensor.

The Parker monoflange option being utilized in this case has two double block and bleed valves in one body with a common vent (See flow diagram).



A capillary with a differential pressure transmitter for tank level measurement.

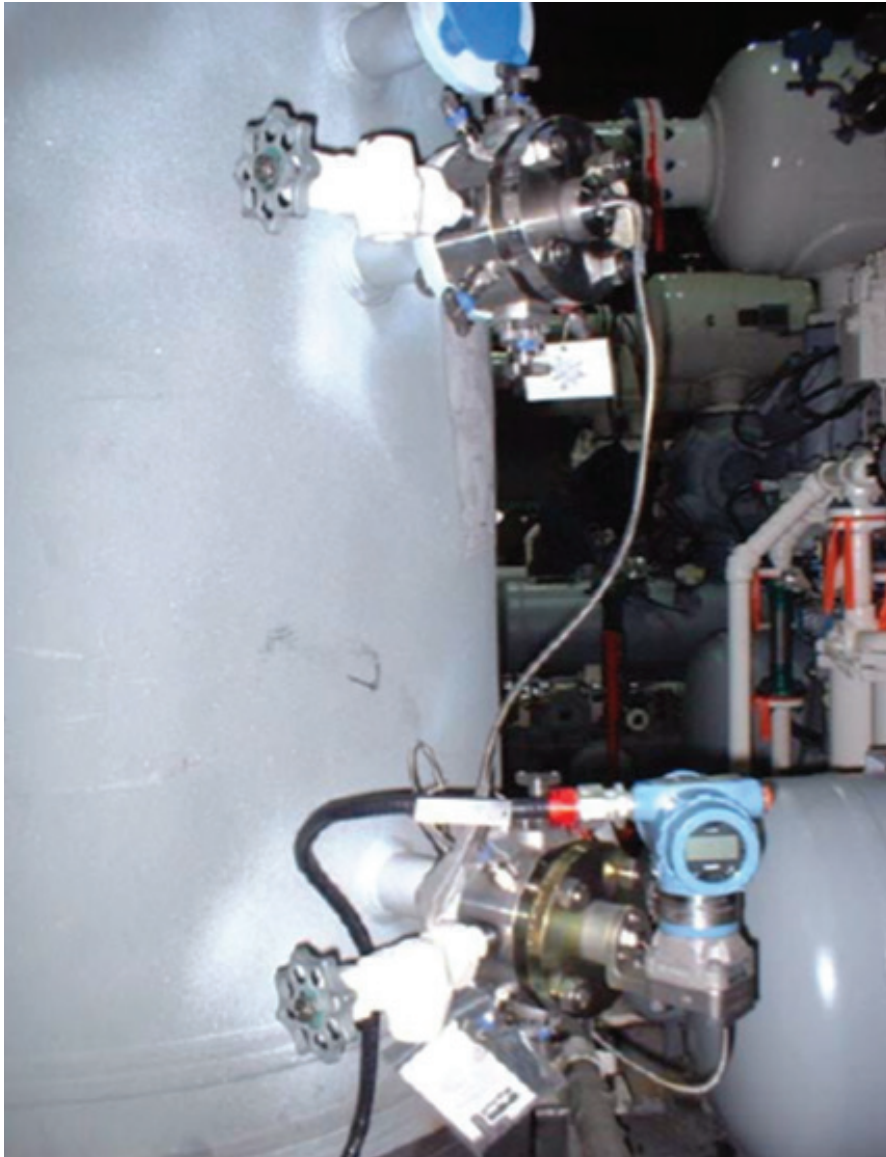
In the installation to the left the customer has utilised their own manual valve in one of the instrument outlets. The monoflange is a flange x flange valve to suit the chemical seal transmitter mounting.

Chemical seals offer significant installation flexibility and maintenance advantages over wet leg systems.

The seals do not need to be refilled or drained. Seals are also not susceptible to plugging or freezing; plus they can be easier to control than wet leg systems.

[Download technical product catalogue here.](#)

Contributed by Jim Breeze, Flanged Products Product Manager, Instrumentation Products Division, Europe.



A capillary with dual monoflanges and a chemical seal transmitter measuring tank level at a petrochemical plant.

