



## Pressure Measurement in Engineering



### Application:

## Diaphragm pressure gauges for the measurement of steam pressure in field kitchens

for manufacturers of field kitchens



A field kitchen is a mobile facility for the preparation of food. The field kitchen plays an important role in the military and also in emergency management, where big amounts of food have to be prepared to ensure the sustenance of the people.

### The problem:

Generally, different types of cooking modules in the application of field kitchens exist. In our particular case, it is a cooking module with double jacket (inner and outer wall welded steam tight). This jacket is partially filled with water. The water vaporises due to the temperature rise and leads to an equal heating in the boiler. Thus, the food is also equally heated. The operating pressure lies at 1.5 to 2 bar (at 130 °C (266 °F) in the double jacket) and may not exceed 3 to 3.5 bar. The pressure in the boiler would get too high and raise the risk of destruction of the boiler, also entailing a higher risk of injury.

### Our solution:

In order to save space, we apply a vertical diaphragm pressure gauge. A special thread connection according to DIN 2999, ensures that no steam can escape and the system remains tight. The boiler is operational at 1.5 to 2 bar. As the pressure rises into the scale area marked in red (3 to 3.5 bar), a safety valve opens automatically, steam escapes and the pressure drops. Water has to be refilled accordingly, and the system has to be bled in order to use the instrument again. If vacuum occurs (-0.6 to 0 bar), the boiler also has to be checked and, if necessary, has to be filled and bled.

### Measurement of steam pressure: Diaphragm pressure gauge PsPKOe 63 – 3

- ◆ Pressure range: -1 /+ 5 bar  
(30" Hg vac. / 100 psi)
- ◆ Operating pressure: 1.5 – 2 bar
- ◆ red (critical) range: 3 – 3.5 bar
- ◆ not operational: -0.6 – 0 bar  
(filling and bleeding necessary)
- ◆ Special thread connection made of 316 L  
R 3/4" conical DIN 2999 with  
extended connecting piece
- ◆ Case filling oil for ambient temperatures  
of -35 °C / +140 °C (-31 °F / 284 °F)

