

The INDSPECT High Frequency fill level control is a measuring system for determining the fill level in glass and plastic bottles. With this measuring system, overfilled and underfilled bottles can be detected. The measuring system is safe and robust. It does not require any special permission.

A manual adjustment by means of a threaded spindle is provided to adjust the bottle height. The height can be read off on a mechanical counter.



In the case of strong foam formation in the bottle (for example after the beer filler), a foam suppression must be used since the foam can influence the HF measurement.

In principle, the HF measuring system operates as a capacitive measurement.

The fact that water increases the capacity of a capacitor arrangement by a factor of 80 is made use of when measuring the filling height.

Gain values of different materials,  $\epsilon_r$

Air	1,00059
Plastic	2,2 .. 2,9
Glass	5 .. 7
pure Alcohol	20 .. 30
Oil	3 .. 7
Water	80 .. 90

The values shown indicate that the HF measurement is much less sensitive to alcohol and that no measurement is possible with oil. Metal acts as a shield on the liquid. Therefore, the HF measurement cannot be used to determine the level in cans and kegs. The measurement of the filling level under a metallic foil is problematic and must be tested in the individual case by means of samples. The bottle speed has no influence on the measurement result. If the fill mirror is sloshing, the measurement becomes less precise. Of course the measured values, which are determined when a bottle passes through the measuring bridge, are mathematically smoothed.

#### Closure control:

When the bottle is passing the measuring bridge, sensors are used to determine whether a cap or cork is present on the bottle.

The HF filling height control is easy to operate. The required parameters are determined and stored in a teach-in process. The values can be edited manually. Once the values have been determined, they can be stored for next filling of this product.

Dimensions:	Height	550 mm over Conveyor
	Width:	150 mm
	Weight:	about 8 kg
Working area	min. Bottle	120 mm - 0,2 Liter
Other areas on request.	max. Bottle	350 mm - 1,5 Liter
Bottle speed	max.	60.000 Bottles/hour
Conveyor speed	max.	1,2 m/ sec.
Accuracy	Depending on bottle form	± 1,5 mm
Power supply	out of the control unit	app. 100 VA
Height adjustment		manuell
Closure control		Optical or Inductive
Foam suppression	optional	Optical Sensor
Measurement of depth of cork or plastic cap	optional	Optical Sensor

Influence of an aluminum-neck foil on the measurement:

The diagram below shows that it is not possible to measure the filling level under the foil. The measurement is only made when the level is below the foil.

