KING-GAGE®

Liquid Level Indicators

Tank Level Indicator

- Analog column easily conveys tank level
- Accurate and reliable hydrostatic balance principle
- Simple pneumatic operation (no electrical input)

KING-GAGE Indicators are precision manometric instruments designed for continuous display of liquid level in storage or processing tanks. A vertical column of indicating liquid within a glass tube rises in direct proportion to the pressure applied. This analog display is read against a custom-calibrated scale graduated in one or more units of depth, volume, or weight of tank contents.

Working as a frictionless hydrostatic balance, these indicators have none of the mechanical parts common to most gauges. This makes the KING-GAGE Indicator an inherently accurate and extremely rugged device. Used in conjunction with a pneumatic 1:1 output sensor, the indicator accepts a pressure signal that is directly proportional to tank depth.

Unlike electronic indicators or meters, KING-GAGE pneumatic indicators are inherently safe. Even in areas designated continuous explosion hazard, there are no intrinsic safety devices required. These indicators are in use worldwide and have proven their dependability over decades of service.

Model 7750
**Indicator Scales**

The critical factor affecting accuracy of the indicator is the read-out scale. KING-GAGE scales are computer calibrated according to tank capacity curves (or from wet calibrations) to provide precise level indication for a specific tank. These scales can be graduated in practically any unit of measurement desired. In fact, 2-unit scales can provide a combination of weight, volume or depth indication. The size of the indicator (column height) is governed by the length of scale required. The combination of scale length and type of indicating liquid determines the actual pressure range of the indicator. Overall scale length can vary based on the range and resolution desired for the gauging application.

Three types of indicating liquid are available. Mercury (silver) is best suited for deep tanks such as silos and provides the maximum pressure range. No. 294 (red) provides excellent visibility and works for most typical tank applications. No. 175 (purple) is the lightest fluid and is generally used for shallow tanks or special applications.

**Determining Scale Range**

Overall length of the scale can vary depending upon the range and degree of readability necessary for the application. This "readability" refers to the minimum readable change in liquid depth that can be observed at the indicator.

Three factors must be applied to determine scale length:
1 - maximum tank depth
2 - specific gravity (density) of tank product
3 - type of indicating liquid (scale factor)

A simple calculation using these factors will yield the minimum scale length required:

\[
D \times G \times L = \text{Scale Length}
\]

The resulting value represents the scale sizes available for the type of indicator and select one that will accommodate the calculated length for your application.

<table>
<thead>
<tr>
<th>Liquid</th>
<th>Color</th>
<th>Specific Gravity</th>
<th>Liquid Scale Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury (USP) No. 294 Red No. 175 Purple</td>
<td>Silver</td>
<td>13.546</td>
<td>.074</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>2.940</td>
<td>.337</td>
</tr>
<tr>
<td></td>
<td>Purple</td>
<td>1.750</td>
<td>.475</td>
</tr>
</tbody>
</table>
Specifications

Operation Principle
Well-type manometer acts as a frictionless hydrostatic force-balance. A liquid fill is raised in direct proportion to the magnitude of pressure applied. (Varies based on type of indicating liquid employed)

Resolution
Infinite based on type of indicating liquid employed.

Input Connection(s)
1/4” NPT tapped connection for typical tube fittings. Accepts pneumatic air/gas pressure input; high and low pressure inputs.

Materials of Construction
Formed channel indicator housing; brushed stainless steel (type 304). Heavy plate glass window; acrylic plastic window available as special order.

Wetted Parts
316 stainless steel liquid well and tubing

Indicating Tube
High strength, fully annealed glass (Pyrex®).

KING-GAGE Indicator
Single display tube. Available in wall mount housing only.
Scale Ranges: 20”, 35”, 43”, 51”, 66”, 81”

KING-GAGE Multi-Tube Indicator
Multiple display tubes; 2-, 4-, 6-, 8-, 10-tube configurations. Tubes are spaced on 2-5/16” centerlines. Available in either wall mount or flush panel mount housing with front bezel assembly.
Scale Ranges: 20”, 30”, 40”, 50”, 60”, 80”

Overflow Check Valve
Included as standard with all indicator packages.

® Pyrex is a registered trademark of Corning, Inc.
Overflow Check Valve
Prevents escape of liquid through the top of the tube should the indicator be overpresured. This float-type check valve is included with either the KING-GAGE or Multi-Tube Indicators.

SafeGard Control
This unit is an adjustable pressure-limiting control that prevents overpressuring of the indicator. Available as a separate component or can be ordered as part of a KING-GAGE pneumatic sensor package.

ClearGard Fluid
Designed for use with mercury, this specially formulated liquid silicone imparts a non-stick coating to the inside of the glass tube. Simply place a few drops to the top of the mercury column to prevent unsightly deposits from forming that could obscure the display. Order No. 6003-8.