

Model 7500

Effective: May, 2009

DATA SHEET 1000-5

Tank Level Indicator

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

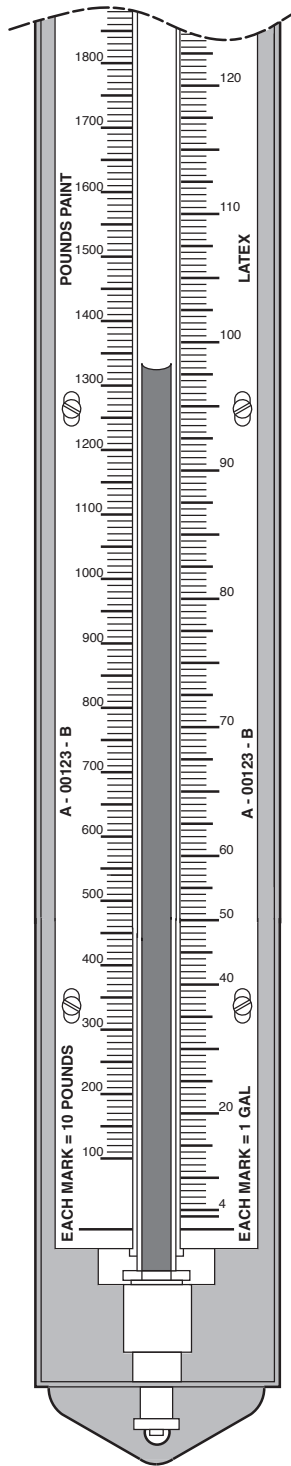
KING-GAGE Indicators are precision manometric instruments designed for continuous display of liquid level in storage or processing tanks. A vertical column of indicating liquid within a glass tube rises in direct proportion to the pressure applied. This analog display is read against a custom-calibrated 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



Pneumatic column indicator has tube with liquid fill that rises in proportion to tank level. Graduated scale indicates corresponding weight, volume or depth of tank contents.

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:

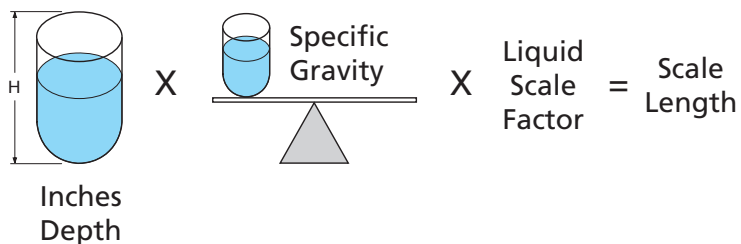
- 1 - maximum tank depth
- 2 - specific gravity (density) of tank product
- 3 - type of indicating liquid (scale factor)

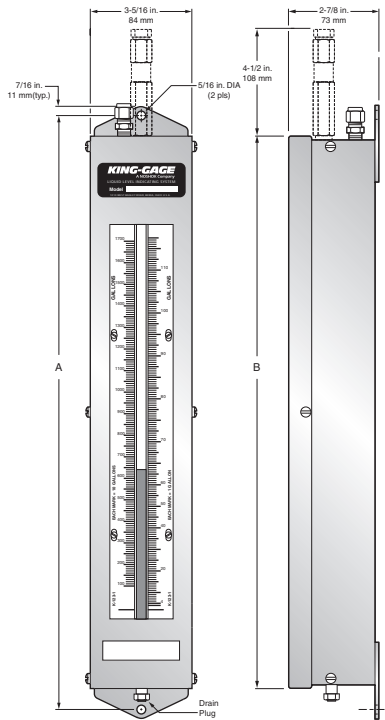
A simple calculation using these factors will yield the minimum scale length required:

$$D \text{ (depth)} \times G \text{ (sp. gr.)} \times L \text{ (liquid scale factor)} = \text{Scale Length}$$

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.

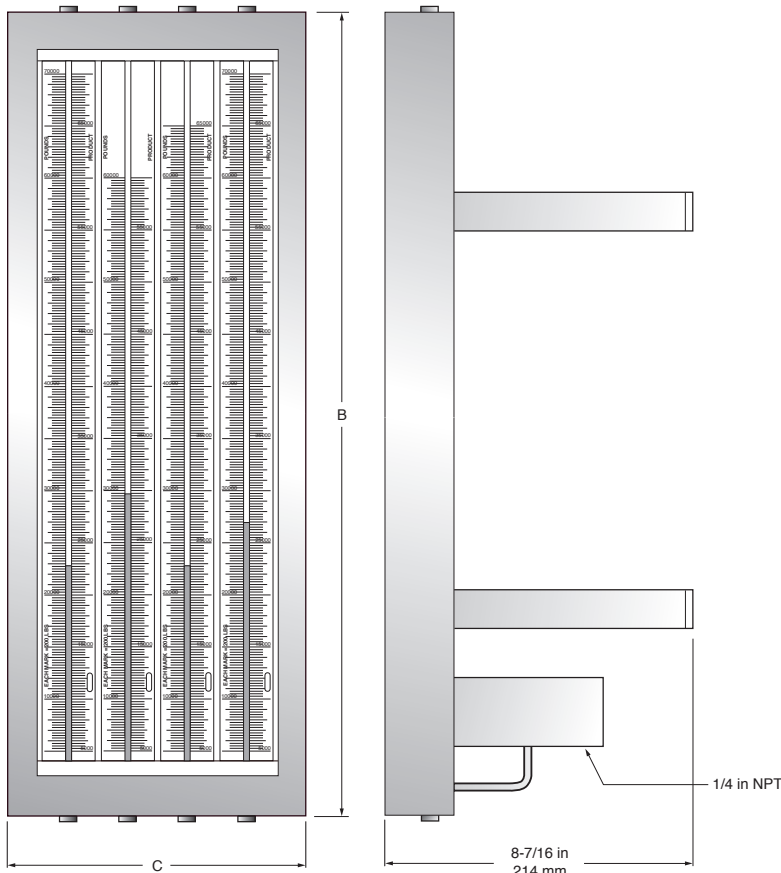
Liquid	Color	Specific Gravity	Liquid Scale Factor
Mercury (USP)	Silver	13.546	.074
No. 294 Red	Red	2.940	.337
No. 175 Purple	Purple	1.750	.475





KING-GAGE Indicator

Physical Dimensions - A	
Range	
20 in	27-1/8 in 689 mm
35 in	43-1/8 in 1095 mm
43 in	51-1/8 in 1299 mm
51 in	59-1/8 in 1502 mm
66 in	75-1/8 in 1908 mm
81 in	91-1/8 in 2314 mm
Physical Dimensions - B	
Range	
20 in	25-1/2 in 648 mm
30 in	35-1/2 in 902 mm
40 in	45-1/2 in 1156 mm
50 in	55-1/2 in 1410 mm
60 in	65-1/2 in 1664 mm
80 in	85-1/2 in 2172 mm
Physical Dimensions - C	
Range	
2	5-5/8 in 143 mm
4	10-1/4 in 260 mm
6	14-7/8 in 378 mm
8	19-1/2 in 495 mm
10	24-1/8 in 613 mm



**KING-GAGE Multi-Tube Indicator
(Wall Mount version shown)**

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

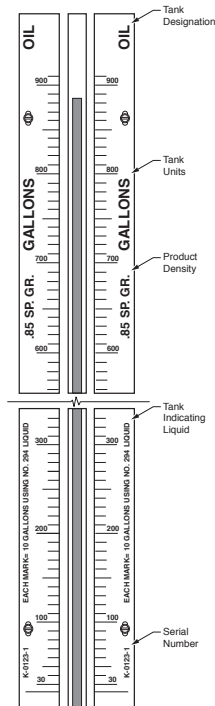
Multiple display tubes; 2-, 4-, 6-, 8-, 10-tube configurations. Tubes are spaced on 2-5/16" centerlines. Available in either wall mount or flush panel mount housing with front bezel assembly.

Scale Ranges: 20", 30" 40", 50" 60", 80"

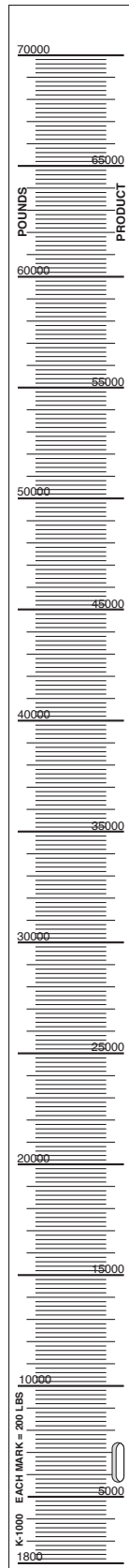
Overflow Check Valve

Included as standard with all indicator packages.

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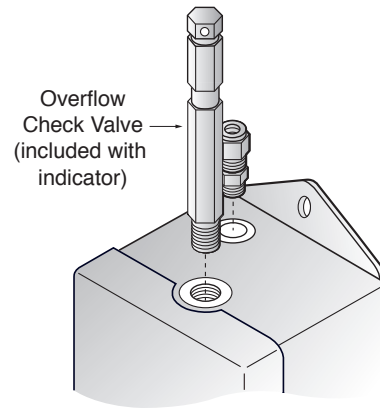
KING-GAGE Indicator uses a pair of scales mounted on either side of the glass tube. 20 in. range scales shown in two units (pounds, gallons).



Multi-Tube Indicator has a single scale mounted behind the glass tube. 30 in. range shown marked in one unit (pounds).

Overflow Check Valve

Prevents escape of liquid through the top of the tube should the indicator be overpressured. 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 to prevent unsightly deposits from forming that could obscure the display. Order No. 6003-8.