

# INDICATING LIQUIDS

King Indicating Liquids are designed for use in manometric instruments such as King-Gage or Multi-Tube Indicators. Formulated to meet exacting measurement standards, they feature precise specific gravity and optimum stability over a wide temperature range.

Seven distinctively-colored liquids (including highly refined instrument-grade mercury) are available for use in virtually all King-Gage Indicators. Color-coded as to specific gravity, this selection permits a wide choice of range and sensitivity in column-type indicators.

## ClearGard™ FLUID

ClearGard Fluid is a special formulation silicone liquid used to improve and maintain the readability of Mercury Indicators. It imparts a non-stick coating on the inside of the glass tube. Two or three drops added occasionally to the top of a mercury column will help to prevent any unsightly deposits from forming within the tube. (Mercury Indicators Only.)



INDICATING LIQUID	SPECIFIC GRAVITY	SERVICE TEMP LIMITS	REMARKS	FLASH POINT	BOTTLE SIZES AVAILABLE
<b>RED</b> No. 294	2.940	2° to 100°F/ -16° to 38°C	A bromide/alcohol blend. Corrosive to iron, aluminum and carbon steel. Wetted parts should be glass, stainless steel or brass.	None	2 Fl. Oz. 8 Fl. Oz. 16 Fl. Oz.
<b>BROWN</b> No. 200	2.000	2° to 100°F/ -16° to 38°C	A bromide blend. Corrosive to iron, aluminum and carbon steel. Wetted parts should be glass, stainless steel or brass.	None	2 Fl. Oz. 8 Fl. Oz. 16 Fl. Oz.
<b>PURPLE</b> No. 175	1.750	2° to 100°F/ -16° to 38°C	A bromide blend. Corrosive to iron, aluminum and carbon steel. Wetted parts should be glass, stainless steel or brass.	None	2 Fl. Oz. 8 Fl. Oz. 16 Fl. Oz.
<b>GREEN</b> No. 120	1.200	0° to 140°F/ -18° to 60°C	A non-corrosive blend of petroleum distillates and refined oils.	203°F/ 95°C	2 Fl. Oz. 8 Fl. Oz. 16 Fl. Oz.
<b>BLUE</b> No. 100	1.000	10° to 140°F/ -12° to 60°C	A non-corrosive blend of petroleum distillates and refined oils.	203°F/ 95°C	16 Fl. Oz.
<b>ORANGE</b> No. 84	.824	20° to 140°F/ -7° to 60°C	A non-corrosive blend of petroleum distillates and refined oils.	203°F/ 95°C	16 Fl. Oz.
<b>Instrument Grade MERCURY</b>	13.546	Triple-Distilled Quality (U.S.P.) Highly refined and deoxidized for use in manometric instruments. Not compatible with brass or aluminum.		None	1 pound
<b>ClearGard™ Fluid</b>		Special silicone formulation imparts a non-stick coating to glass indicating tubes to improve and maintain the readability of Mercury Indicators. (Not for use with colored liquids listed above.)			2 Fl. Oz., 8 Fl. Oz., 16 Fl. Oz.


**King-Gage®**

### ACCURACY

A manometric instrument (such as the King-Gage Indicator) works as a frictionless hydrostatic balance. The indicating liquid rises within a glass tube in proportion to the pressure applied.

For any given pressure applied, the amount of vertical rise depends entirely upon the specific gravity of the indicating liquid. Accurate measurement, therefore, can only be ensured by using an indicating liquid whose specific gravity is precisely known.

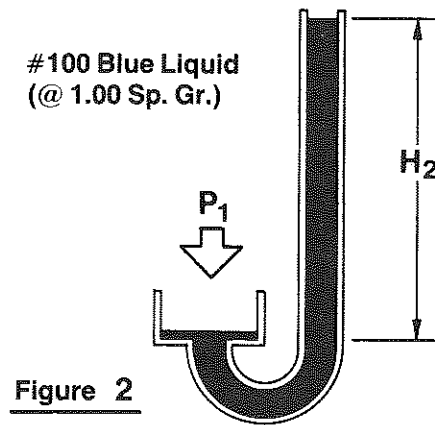
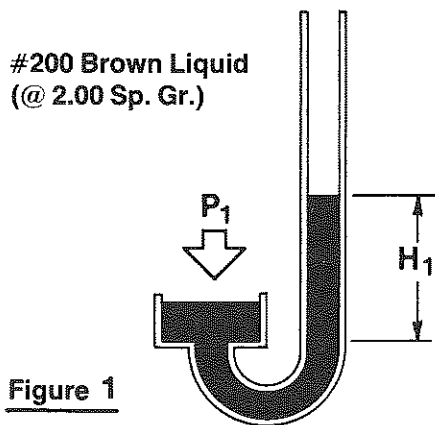
### INDICATOR SCALES

Scales that are graduated in units of depth, weight or volume have been calibrated for use with one specific indicating liquid. King-Gage scales are marked with the applicable indicating liquid required for the Indicator. Generally, one type of indicating liquid cannot be substituted for another. If the type of indicating liquid is changed, new scales will probably be required, calibrated to the specific gravity of the indicating liquid.

### SENSITIVITY

The degree of vertical rise of an indicating liquid in response to a given applied pressure can be expressed as its *sensitivity*. The lighter the specific gravity of an indicating liquid, the greater the rise in proportion to the pressure applied. Figures 1 and 2 illustrate this relationship between specific gravity and sensitivity. The vertical rise ( $H_1$ ) in Figure 1, due to the applied pressure ( $P_1$ ), is exactly half that of the liquid rise in Figure 2 ( $H_2$ ). In this example, it can be seen that #100 Blue Liquid (@ 1.00 Sp. Gr.) has twice the sensitivity of #200 Brown Liquid (@ 2.00 Sp. Gr.).

A practical application of the relationship between specific gravity and sensitivity is in determining the degree of "readability." Consider a tank filled with water (1.00 Sp. Gr.). Using mercury as the indicating liquid, the minimum *readable* change in tank depth would be about 1". If #294 Red is used, a change of 1/4" in tank depth could be read at the Indicator. Thus, the desired degree of readability is an important factor when selecting an indicating liquid.



PRESSURE UNITS	INCHES OF INDICATING LIQUID @ 68°F/20°C						
	MERCURY	RED # 294	BROWN #200	PURPLE #175	GREEN #120	BLUE #100	ORANGE #82
lbs/in. <sup>2</sup>	2.0434	9.4149	13.8399	15.8170	23.0664	27.6797	33.5919
in. Hg. @ 32°F/0°C	1.0036	4.6241	6.7975	7.7686	11.3291	13.5950	16.4987
MM Hg. @ 32°F/0°C	.0395	.1820	.2677	.3059	.4460	.5353	.6495
kilopascals (10 <sup>3</sup> N/M <sup>2</sup> )	.2964	1.3655	2.0073	2.2940	3.3455	4.0146	4.8721
Correction per degree Fahrenheit (from 68°F) per inch of reading	.000099	.00044	.00040	.00041	.00033	.00041	.00046