



# LIQUID CONTROLS FEATURES

The LC Meter consists of a housing in which three rotors turn in synchronized relationship within three cylindrical bores with no metal-to-metal contact within the meter element. Each rotor is supported on either end by a bearing plate through which the rotor shafts protrude.

The bladed displacement rotors, alternately move through the two half-cylinder bores of the meter element, while the single blocking rotor rotates within its bore in such a way as to produce a continuous capillary seal between the unmetere, upstream product and the metered, downstream product.

At one end of each rotor shaft is a timing gear. The blocking rotor gear, having twice the number of teeth of each of the displacement rotor gears, rotates at half the RPM of the displacement rotors.

Throughout the meter element the mating surfaces are either flat surfaces or cylindrical faces and sections that are most accurately

machined. No oscillating or reciprocating motion within the device permits extremely close and consistent tolerances within the LC Meter.

Because the dynamic force exerted by the product flowing through the meter is at right angles to the faces of the displacement rotors, and because the meter is designed so that the rotor shafts are always in a horizontal plane, *there is no axial thrust*. Therefore, the rotors automatically seek the center of the stream between the two bearing plates thereby eliminating wear between the ends of the rotors and the bearing plates.

The oversize design of the sleeve bearings, as well as the specially selected materials from which they are made, assure maximum throughput before bearing replacement is required.

As a result the LC Meter provides unequalled accuracy, long operating life and exceptional dependability.

## Accuracy/Performance

Liquid Controls design . . . unique, rotary positive displacement metering principle for sustained accuracy and minimum maintenance.



- **Superior Accuracy at constant flow:** *With all other conditions being constant*, the LC Meter does not vary more than 0.05% in repeatability over a 100:1 range.
- **Accuracy over the widest range of flow:** The LC Meter has a most ideal *combination of minimum seal or slippage area with lowest pressure differential across this seal*. This results in better accuracy over a wide range of flow than available in any other commercially produced, positive displacement meter.
- **Sustained accuracy:** There is no metal-to-metal contact within the meter element . . . and *no contact means no wear . . . no wear means no increase in clearances . . . no increase in clearances means no increase in slippage . . . and no increase in slippage means no deterioration in accuracy*.
- **Accuracy regardless of pressure fluctuations:** Because of the LC Meter's unique dual-case design, the bearing surfaces of the meter element are internally and externally subjected to the same system pressure. Therefore, *the meter element cannot be stretched or distorted*, causing changes in seal area that would adversely affect accuracy.
- **Accuracy regardless of temperature variation:** Due to the *common coefficients of expansion of the critical parts* of the LC Meter element, products can be metered accurately from  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ), to  $+160^{\circ}\text{F}$  ( $+71^{\circ}\text{C}$ ).
- **Accuracy regardless of viscosity:** Due to the minimum area in shear and the smooth flowing characteristics of the LC Meter (no compression or vacuum exerted on the product), the standard LC design has accurately metered product from 150 SSU (25 centipoise) to 1,500,000 SSU (325,000 centipoise) *without calibration change*.
- **Linearity:**  $\pm .125\%$  over a 5:1 range from maximum nominal meter capacity.
- **Linearity:**  $\pm .22\%$  over a 10:1 range from maximum nominal meter capacity.
- **Linearity:**  $\pm .5\%$  over a 40:1 range from maximum nominal meter capacity.

Note: Accuracy obtainable when all variables remain constant. Reading/measurements must be equal to a minimum of one minute of flow at selected rate(s). All accuracy statements based on metering Shell 140 Solvent, approximate viscosity 1 CPS. On higher viscosity products, the average deviation in accuracy will be even less.

- **Regulatory:** Meets NIST and other international weights & measures accuracy requirements. Meets performance requirements of USA Military Specifications.