

STANDARDS DIVISION

OTTAWA, December 12, 1952.

TYPE APPROVAL

BAILEY TYPE "C" FLOW MECHANISM

The apparatus specified and illustrated herein has been duly approved by the Standards Division under the provisions of the Gas Inspection Act, Chapter 82, R.S. 1927, as amended, and may be admitted to verification in Canada.

Apparatus Approved: Type "C" Flow Mechanism, manufactured by the Bailey Meter Company Limited, Montreal, P.Q.

Application: Measurement of fluids in conjunction with standard orifice plates and approved pressure gauges.

Rating of Apparatus:
Differential Ranges 57.22" water gauge 129.55" water gauge
Working Pressure up to 800 p.s.i. with semi-steel casing
up to 1500 and 2500 with heavy cast steel casings

Description: The type "C" Flow Mechanism is the basic high differential pressure element which the manufacturer uses in a variety of flow meters. For the purposes of gas measurement it may be associated with any approved static pressure element, integrator or other auxiliary device. Number suffixes on the type designation distinguish the various styles of meter employing this element, but it is not considered that styles other than the types "C-35" and "C-36" will be used for billing. The type "C-35" is a rectangular case recording meter and the type "C-36" is similar but includes an integrator.

The figure on the back of the circular shows the construction of the type "C" flow mechanism. The pressure existing at the inlet side of the primary element is applied to the interior of the mercury-sealed Ledoux bell, and the lower pressure at the outlet side is applied to the exterior of the bell. Changes in the differential pressure move the bell up and down. As the bell rises, its walls emerge from the mercury, changing the buoyant force and thereby counterbalancing the upward force of the differential pressure. Due to the internal shape, vertical movements of the bell are such that movements of the direct-connected recording pen are directly proportional to changes in the rate of flow, i.e. to Vh. Thus, if the chart is graduated 0-100 linearly, the reading on the chart will represent the percentage of full flow. With the proper choice of orifices, pipe runs, charts, etc., the application of simple multipliers to the chart and integrator readings will give directly the rate of flow or flow respectively for the specified operating conditions. Correction factors for static pressure, temperature, specific gravity, etc., are required when the actual operating conditions differ from the specified conditions. By means of a forked lever and spindle, vertical motion of the Ledoux bell is converted to rotary motion and transferred through the bell casing to the indicating pointer, recording pen and integrator. Leakage around the spindle is prevented by a Balley pressure-tight bearing. It is claimed that an advantage of the shaped bell is that at low rates of flow where differential pressures are small, a much greater area is subjected to these differentials to provide ample power for operation of the meter. The bell casing itself serves as the mercury reservoir, thus tending to ensure permanent calibration since the mercury cannot be spilled. As an additional precaution against sudden overloads, a rubber plate is located in the top of the Ledoux bell which comes in contact with the top shut-off under extreme conditi

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