

TRADE AND COMMERCE
CANADA

STANDARDS BRANCH

OTTAWA, January 6, 1961.

TYPE APPROVALCHANDLER 'AcMe' RECORDING GAS GRAVITOMETER

The apparatus specified and illustrated herein has been duly approved by the Standards Branch under the provisions of the Gas Inspection Act, Chap.129, R.S. 1952, and may be admitted to verification in Canada.

Apparatus Approved: 'AcMe' Recording Gas Gravitometer, manufactured by the Chandler Engineering Company, Tulsa, Oklahoma, U.S.A.

Application: Used in connection with the determination of the specific gravity factor in the measurement of manufactured, natural and petroleum gases.

Range of Apparatus:

Specific Gravity 0.5 to 1.0

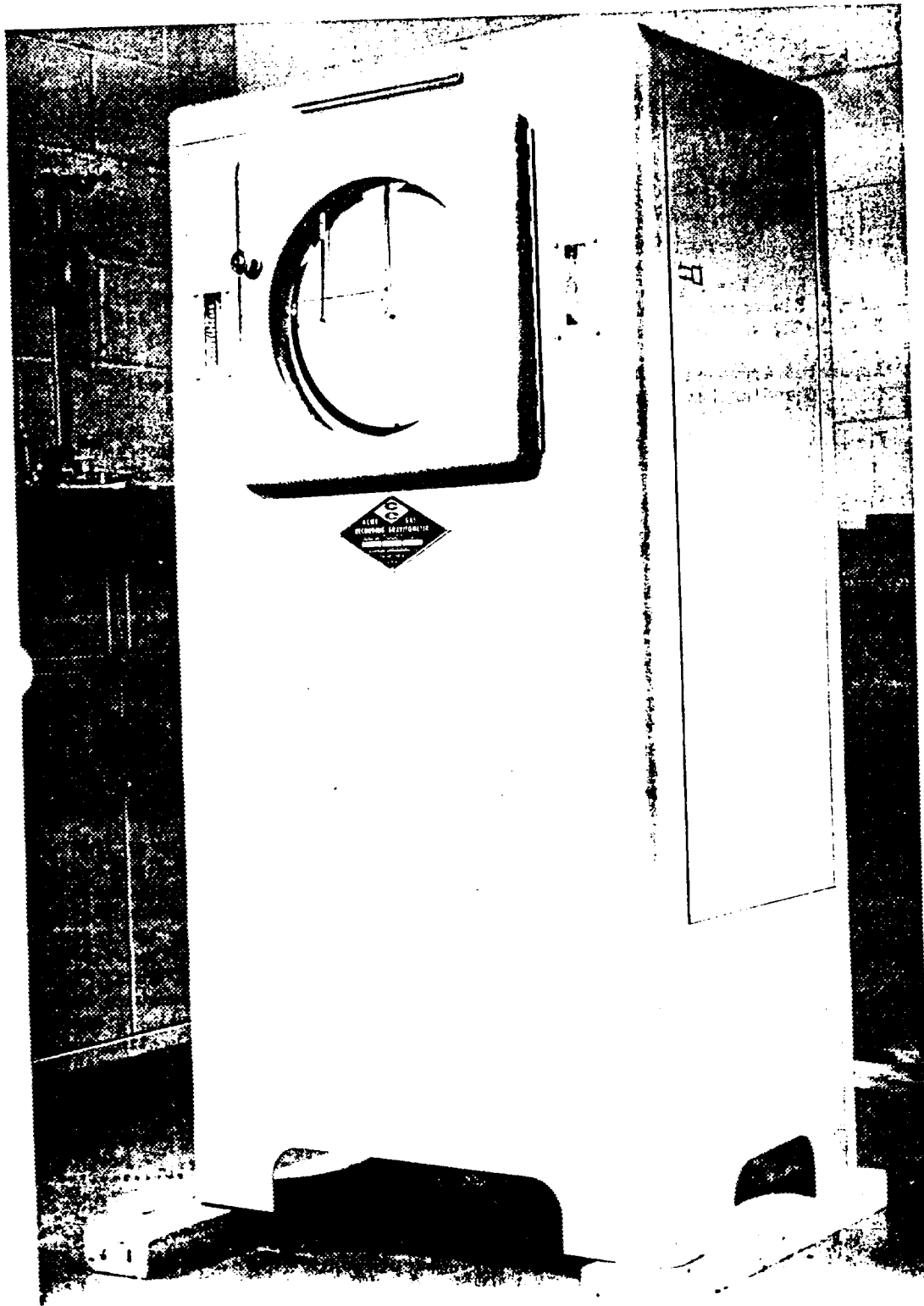
Rate of Flow of Gas 4 to 15 cubic feet per hour

Description: The recording gravitometer is basically a balance having a large, light metal float suspended at one end of a beam and balanced by a counterweight at the other end. Through a suitable linkage system the movement of the beam is transferred to the recording pen. At the bottom of the float an oil seal provides separation of gas from the outside air, permitting free movement of the float. The level of the seal oil is maintained constant by an automatic oil-filling arrangement. The gas supply for the gravitometer passes through a pressure-reducing regulator, adjustable needle valve and flow indicator, and through a small tubing into the top part of the inside of the float where it is discharged. At the bottom of the float a one-inch pipe outlet carries the gas outside.

When the float is filled with air of the same density as that surrounding it, the beam maintains a horizontal position and the pen records unity on chart. When gas lighter than air fills the float, the force due to the buoyancy of the air is greater than the weight of gas and the float will rise, until new balance conditions are obtained, moving the recording pen to indicate the value of the specific gravity. The gravitometer is calibrated for the constant conditions of 14.4 p.s.i. and 60°F and, in order that this calibration be maintained at different temperature and pressure conditions, an automatic compensator has been added. It consists of a mercury container positioned vertically above the calibrating rod, a mercury gauge, and an air-filled, closed temperature compensating tubing. The mercury container, open to the atmosphere, forms one column of a "U"

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CHAMBER 'AcMe' RECORDING GAS GRAVIMETER



gauge. The top of the other column is connected to the temperature-compensating tubing. In operation, changes of either temperature or pressure will alter the level of mercury in the open container and change the centre of gravity of the balanced system, thus correcting the position of the beam and consequently the recording pen. The gravitometer compensator chart, correlating the barometric pressure, temperature and compensator gauge readings, is provided underneath the top cover.

Five equal calibrating weights are placed on top of the float during normal operation. They are used for calibration of the gravitometer when the float is filled with the same air as outside. A conventional, escapement-type spring-wound clock provides chart drive at speeds of either 24 hours or 7 days per revolution.

In field testing the 'AcMe' specific gravity balance shall be used to determine the specific gravity of the gas passing through this recorder.

This approval covers the use of this instrument for billing only where the ambient temperature is relatively temperate and the fluctuations in temperature are not great.

E. F. Power

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