



TRADE AND COMMERCE
CANADA

STANDARDS BRANCH

OTTAWA May 15, 1963.

TYPE APPROVAL

ROCKWELL - REPUBLIC FLOW METER TYPE "40 Y"

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: Type "40 Y" Recording and Integrating Flow Meter, manufactured by Republic Flow Meters Canada Ltd., subsidiary of Rockwell Manufacturing Company of Canada Ltd., and distributed in Canada by the latter.

Rating of Apparatus:

Differential Pressure Range 1.19 to 118.51 inches water
Working Pressure up to 5000 p.s.i.

Description: The flow meter consists of two basic units - 1) the meter body and 2) the reading instrument:-

- 1) The meter body, type "40 Y", is basically a U-tube-type mercury differential pressure element enclosed in a weatherproof metal casing. The high pressure side contains a range tube which is available in various sizes and when combined with the appropriate resistance scale, located in the low-pressure side, provides a wide range of maximum differentials. As the mercury rises in the low-pressure side or contact chamber, it engages the resistance scale and progressively reduces the resistance in the electrical circuit to the reading instruments, thereby increasing the current. The resistances are so divided by the scale that the current corresponding to any given contact is directly proportional to the square root of the differential pressure.
- 2) The reading instrument, type "E", consists of two parts - a) the recorder and b) the integrator. Each of these parts is activated by the current existing in the circuit connecting the reading instrument with the resistance scale in the meter body:

- a) The recorder permanently records the percentage of the square root of the differential pressure on a 24-hour-per-revolution linear chart. The relationship between chart reading and differential pressure is

$$C.R. = \frac{\sqrt{h_w}}{\sqrt{h_w \text{ max.}}} \times 100$$

where C.R. is the chart reading, h_w is the existing differential pressure in inches of water and $h_w \text{ max.}$ is the maximum differential pressure, in this case 118.51 inches of water.

- b) The integrator is basically a watthour meter. The electrical energy to the integrator depends on the current which, in turn, is

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(proportional)

proportional to the square root of the differential pressure. The integrator continuously totalizes flow on a cyclometer register. For maximum chart reading the speed of the rotating disc on the integrator should be 25 r.p.m. The reading instrument can be located at a distance from the meter body and the line resistance can be compensated for by means of circuit resistance adjusters located on the panel at the back of the reading instrument. The maximum allowable circuit resistance is 40 ohms. The reading instrument returns to zero position when the rate of flow is less than 10% of the maximum or in this case the differential pressure is below 1.19 inches of water.

A list of factors accompanies the flow meter to enable the user to determine the instantaneous rate of flow in cubic feet per hour or the total volume of gas passed in cubic feet at standard conditions.

The graph traced on the chart, for differential pressures from 0 to 118.51, will not be smooth but will rise in steps with approximately 1% jumps at definite intervals. This is due to the distance from the bottom of one contact rod to the bottom of the adjacent one. This distance is such as to give less than 1% error for any given chart reading.

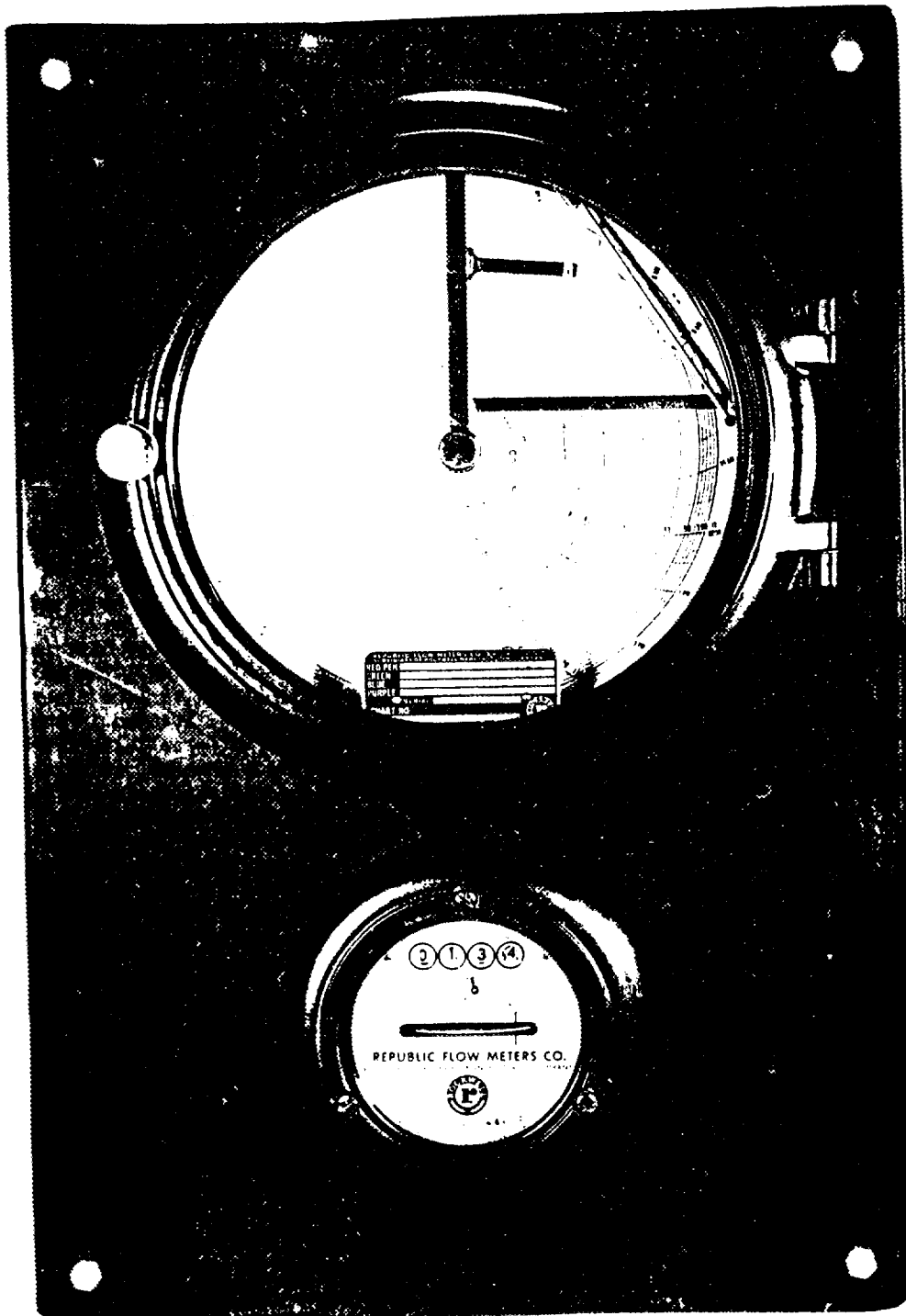
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Ref: A-975

ROCKWELL - REPUBLIC FLOW METER TYPE "40 Y"
(READING INSTRUMENT TYPE "E")



ROCKWELL - REPUBLIC FLOW METER TYPE "40 Y"
(METER BODY)



