



TRADE AND COMMERCE  
CANADA

STANDARDS BRANCH

OTTAWA, April 20, 1960.

TYPE APPROVAL

HAGAN RING BALANCE, PRESSURE AND TEMPERATURE  
COMPENSATED FLOWMETER, MODEL "3000" SERIES

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: Pressure and Temperature Compensated Recording Ring Balance Flowmeter, Models 3001, 3002, 3003 and 3004, manufactured by Hagan Chemicals and Controls, Inc., Pittsburgh, Penna., and distributed in Canada by Hagan Corporation (Canada) Limited, Montreal, Quebec.

Rating of Apparatus:

Differential Pressure ..... the following rings with indicated pressure ratings:-

Ring Number	Full Scale Differential Pressure (inches w.g.)		Maximum Working Pressure (p.s.i.)
	Minimum	Maximum	
R-20	2.0	5.5, 6.5, 13.0*	50
R-21	4.0	7.0, 7.9, 15.4*	75
R-80	40	140	2,500
R-19	40	140	6,000
R-82	10	35	250
R-83	15	45	2,500
R-88	80	280	2,500
R-27	160	560	6,000

\* Different maximum pressure ranges are obtained by using sealing fluid of different specific gravity referred to by the maker as RB-80, RB-90 and RB-176 for specific gravity 0.8, 0.9 and 1.76 respectively; other rings use RB-1360 which is mercury.

Rings R-88 and R-27 are multiple rings assemblies.

Static Pressure Range ..... various ranges up to 3,000 p.s.i.

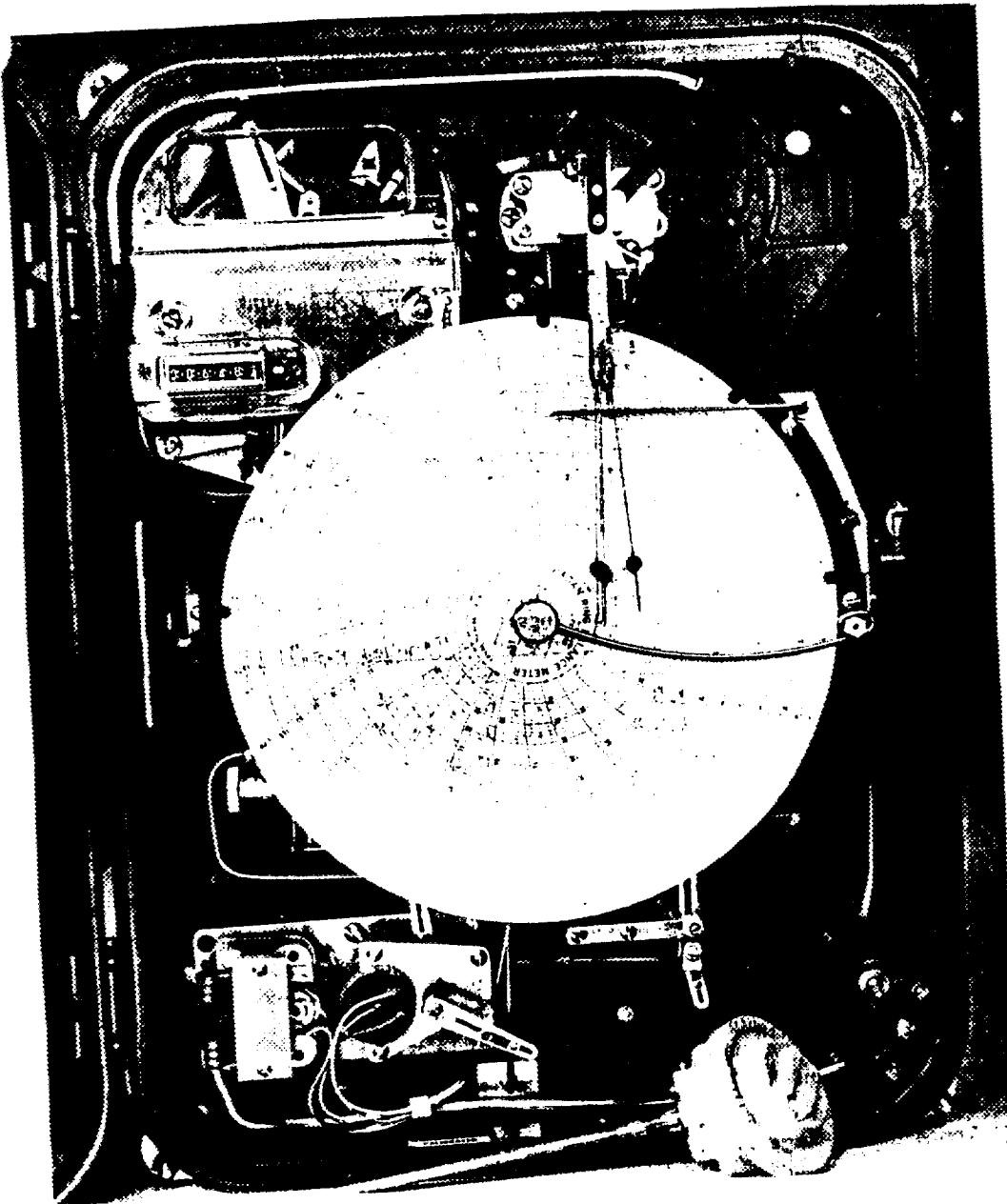
Temperature Range ..... -50°F to +150°F

Application: Measurement in distribution services of heating gases.

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(Description)



HAGAN PRESSURE AND TEMPERATURE COMPENSATED  
INTEGRATING RING BALANCE FLOWMETER





Description: The differential pressure unit together with the integrator and timing devices are identical to those described in Circular SD-GA.161 dated July 2, 1959. The static pressure element and a temperature measuring system, with recording pens attached, are added to form the compensated flowmeter. The introduction of the temperature and pressure compensation does not alter the model designation. The static pressure element may be of bellows or helical spring type. Resistance bulb element, forming one arm of a bridge circuit, is used for temperature measurement. A suitable electronic amplifier and a servo motor function to balance the bridge and position the recording pen at various temperatures. The system, described by the maker as 'PowrLog Model H-O Receiver', has the amplifier and the wiring terminal box mounted at the back of the meter case. The servo motor and the balancing circuit of the system is located inside the case.

The automatic compensation for static pressure and flowing temperature is provided by a suitable mechanical linkage system which causes the corrected pen to indicate the flow referred to the actual pressure and temperature conditions existing at the time. The flow is indicated as a percentage of full range, expressed in standard cubic feet per hour. The uncorrected flow pen is also provided for the purpose of calibration of the differential pressure unit, but it is not usually supplied with ink.

The integrator is linked with the corrected flow pen so that the accumulated quantity, in standard cubic feet, is indicated on the integrator counter, provided the specified multiplying factor is applied to the counter reading. This factor is obtained from the Instrument Specification Sheet provided by the maker for each meter installation.

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