



TRADE AND COMMERCE
CANADA

STANDARDS BRANCH

OTTAWA May 24, 1962.

TYPE APPROVAL

BARTON TYPE 199 METER BODY AND TYPES 202 AND 208 FLOW METERS

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

Apparatus Approved: Barton Type 199 Meter Body and Barton Types 202 and 208 Flow Meters, manufactured by the Barton Instrument Corporation, Monterey Park, California, U.S.A., and distributed in Canada by Precision Oilfield Services (1962) Ltd., 121 - 14th Street North West, Calgary, Alberta.

Application: Measurement of gas in conjunction with standard orifice plates.

Rating of Apparatus:

- Differential Ranges* 0-15, 0-20, 0-25, 0-50, 0-100,
0-150, 0-200 inches water gauge
- Working Pressure Brass 300 p.s.i.
(depends on chamber material) Forged Stainless 2500 p.s.i.
Forged Steel 1000 and 2500 p.s.i.
Forged Alloy 4500 p.s.i.
- Static Pressure Ranges 0-50 p.s.i. to 0-5000 p.s.i.

*Note: The standard ranges are listed; however, intermediate ranges between the limits of 0-15 and 0-300 inches water gauge are approved.

Description: The Model 199 Meter Body is a bellows type differential element which the manufacturer considers to be rupture proof. The unit consists essentially of a central support plate to which are attached a pair of opposed, mechanically-linked, liquid-filled metallic bellows, pressure housings surrounding the bellows, and a torque-tube drive for transmitting movement of the bellows to the indicating or recording mechanism.

The outer or closed ends of the bellows are joined by a dual valve stem which passes through a hole in the central support plate. The bellows thus form twin chambers joined by an annular passage around the valve stem. These chambers are filled and permanently sealed with clean, non-corrosive, low-freezing-point liquid. Therefore, when a differential pressure is applied to the unit, the bellows assembly moves as a unit in the direction of the lower pressure. In doing so, the bellows on the higher pressure side decreases its volume while the bellows on the opposite side expands and the liquid within the bellows assembly must pass from one bellows chamber to the other through the annular passage between the valve stem and the central plate. Movement of the

...../2
p.t.o.

bellows is transmitted to the recording mechanism by means of the torque-
ube assembly.

Dampening action is effected by the flow of the liquid from one
side of the central support plate to the other. The dampening is extern-
ally adjustable.

When an excessive differential pressure is applied, liquid
transfer will continue until one of the valves mounted on the stem con-
necting the two bellows closes against its valve seat located on the
central plate. With this arrangement full line pressure may be imposed
across the bellows unit in either direction without damage, regardless
of the differential range of the instrument. The range of the unit may
be simply changed by changing the range spring assembly on the end of
the bellows valve stem.

The unit is temperature-compensated by means of an auxiliary,
free-floating bellows attached to one end of the main bellows and by
choosing a fill liquid with a low coefficient of thermal expansion. For
extreme temperature changes, bellows with special fill liquids may be
obtained. In addition, for increased accuracy special Iso-Elastic stain-
less steel range springs may be fitted.

The Model 202 Flow Meter combines the Model 199 Meter Body with a
rectangular die-cast aluminum case. Either spring-driven or electric chart
drives are available with chart speeds ranging from 96 seconds to 30 days.

The Model 208 Recorder is a multiple pen meter having two Model 199
Meter Bodies mounted on one case. This meter, which occupies essentially
the same volume as the Model 202, may be used to measure either two com-
pletely different flow rates or to measure a single flow over widely vary-
ing rates. In the latter instance, the two differential units are connected
in parallel and are calibrated to the minimum and maximum differential
ranges.

The Models 202 and 208 Recorders are also approved when fitted with
static pressure pens actuated by a brass, beryllium-copper or type 410
stainless steel pressure helix or when fitted with any other approved
static pressure device.

E. F. Power

E. F. Power,
Chief, Electricity & Gas Division,
Standards Branch.

R. W. MacLean
R. W. MacLean,
Director,
Standards Branch.

Ref: A-344

