DEPARTMENT OF CONSUMER AND CORPORATE AFFAIRS

STANDARDS BRANCH

G-39

OTTAWA, January 30, 1969.

NOTICE OF APPROVAL

FOR

CANADIAN METER COMPANY, BASE PRESSURE INDEX, TYPE 4

Apparatus

Model and Pressure Element Designation	Static Pressure Range		
BP 30 Special	0 - 24" w.g.	to	0 - 5 psig.
BP 30	0 - 12 psig	to	0 - 15 psig.
BP 45	0 - 25 "	to	0 - 30 "
BP 60	0 - 35 "	to	0 - 45 "
BP 120	0 - 90 "	to	0 - 100 "
BP 180	0 - 125 "	to	0 - 165 "
BP 300	0 - 230 "	to	0 - 300 "
BP 360	0 - 270 "	to	0 - 350 "
BP 600	0 - 500 "	to	0 - 600 "
BP 1200	0 - 1000 "	to	0 - 1200"

Identification of Approved Front Counters

Currently Used Counters	Possible Replacement Counters	Advance of Lowest Digit per Counter Shaft Rev.
12836G001	12836G103	1/10
12836G002	12836G104	1
12836G003	12836G105	10
12836G023 *	12836G113 *	10
12836G024 *	12836G114 *	1

* These counters are used with instruments incorporating a telemike impulse unit. (Rev. Circular S-GA.311).

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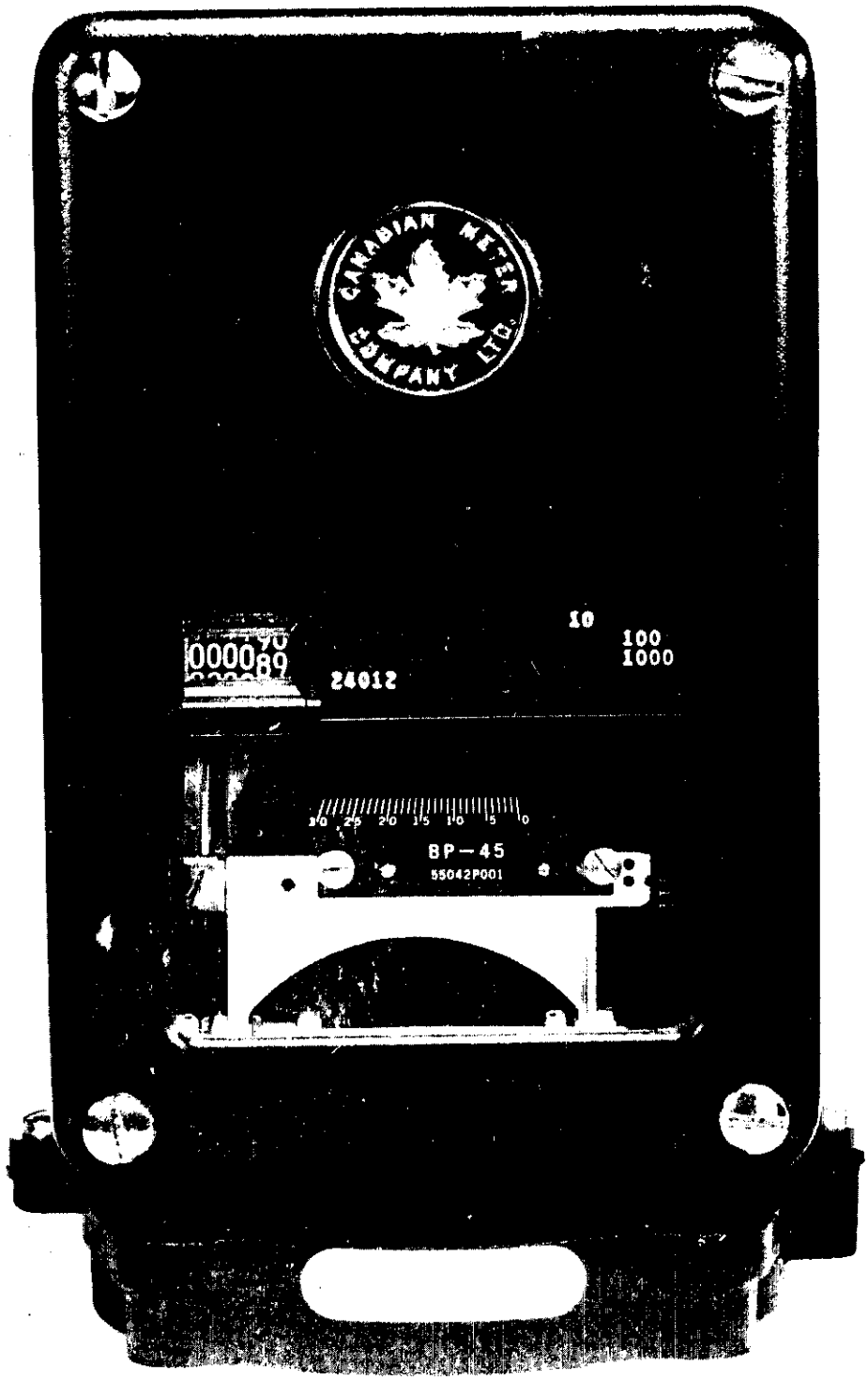
CANADIAN METER COMPANY, BASE PRESSURE INDEX, TYPE 4



Identification of Approved Back Counters

Currently Used Counters	Plastic Replacement Counters	Advance of Lowest Digit per Counter Shaft Rev.
11516G001	11516G011	1
11516G002	11516G012	10

Note: Some Base Pressure Indexes of very early manufacture may include front counters identified by Nos. 12833, 12836 or 13137, and back counters identified by Nos. 11516 or 14393.

Description

The computation of the volume of a gas, at the contract temperature and pressure, which has been registered in cubic feet at line conditions is based on the ideal gas laws modified by a deviation factor available to us in the form of a Supercompressibility factor (Fpr), determined according to the A.G.A. Gas Measurement Committee Report No. 3, Orifice Metering of Natural Gas.

The general equation for converting the meter readings at line conditions to a contract base pressure and temperature is

$$Qs = Qd\ Pm\ Tm\ (Fpv)^2$$

Qs = Quantity of gas at the contract base pressure and temperature, cu. ft.

Qd = Actual (displaced) gas passed at existing meter conditions, cu. ft.

Pm = Pressure multiplier

$$= \frac{\text{Weighted average existing gauge pressure + barometric pressure}}{\text{absolute pressure base}}$$

Tm = Temperature multiplier

$$= \frac{\text{Temperature base + 460}}{\text{Weighted average flowing gas temperature + 460}}$$

Fpv = Supercompressibility factor based upon the weighted average gas pressure and temperature and the normal composition of the gas. The composition is represented by its specific gravity, its content of nitrogen and carbon dioxide and its calorific value as used in the derivation of the Fpv values.

The Base Pressure Index is designed to sense and indicate the line pressure and to automatically and continuously apply the momentary pressure multipliers. This function is achieved through the employment of a cylinder type integrator, whose raised cam is properly shaped to effect the required correction.

The device is driven directly from the meter to which it is attached in place of a standard register.

The Base Pressure Index does not automatically correct for the super-compressibility factor.

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The instrument consists of three basic components, which are:

1. uncorrected, rear counter which indicates the volume passed through the meter at line conditions.

2. pressure measuring system with associated linkage and pointer which indicates the line pressure and in conjunction with the integrating cylinder actuates a gearing train which drives the front counter.

3. the front counter which indicates the volume passed through the meter at a specified base pressure.

The integrating cylinder has a raised portion on its surface over which slides the stylus of the indicating pointer. During the time the stylus is on the raised portion a gearing arrangement engages the micrometer wheel which is permanently geared to the front counter. The duration of the engagement of the micrometer wheel increases with increasing line pressure.

In normal construction of this instrument a shaft is inserted through two brackets to support cylindrical cam for integration. Recently the manufacturer introduced trunnion type bearings which permit adjustments to minimize end play and afford better freedom of rotation of the cam. Both versions of support are approved.

There are two types of the rear counters and five types of the front counters available for use with the Base Pressure Index. Proper multipliers are selected for each counter and these are stamped on the coefficient plate, together with the drive shaft rate in cubic feet per revolution and the instrument's serial number. The coefficient plate is visible through a window in the front cover.

Base Pressure Indexes may be used on any approved diaphragm or rotary type positive displacement gas meter, provided the instrument base plate fits the meter properly and carries its designation.

Base Pressure Indexes may be used in conjunction with any approved Volume and Pressure Gauge, or 'Telemike' or 'Telecount' Transmitter manufactured by the Canadian Meter Company Limited.

Each instrument has a nameplate mounted on the inside of the front cover which contains information as to Type, Model Serial number, Pressure range, Atmospheric and Base Pressure.

The selection of a weighted average Fpv factor for use on the corrected index reading must be based on a record of the flowing volumes, temperatures and pressures. If no continuous record is available and an Fpv is selected (other than a factor of one) the variations in pressure and temperature normally existing at the meter must be such as to create no more than a $\pm$ 0.5% error in the $(Fpv)^2$ used.

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This Approval Circular consolidates and brings up to date the information on the Base Pressure Indexes previously approved under Circulars SD-GA.141, S-GA.268 and S-GA.308.

Approval granted to: Canadian Meter Company Limited,
Milton,
Ontario.

(or)

Edmonton, Alberta.

J.S.T. Swanson,
Chief, Standards Laboratory,
Standards Branch.

W.J.S. Fraser,
Chief, Electricity & Gas Division,
Standards Branch.

Ref: SL-100-187 (j)

Consommation et Corporations Canada
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Legal Metrology Laboratories
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Your file Votre référence

Our file Notre référence
G-6635-C6-41
December 17, 1984
AML-G-11

Canadian Meter Company
3037 Derry Road, West
Milton, Ontario
L9T 2X6

Attn: Mr. G. Wilson
Quality Control Manager

Re: Modified Pressure Indicating Scales on Canadian Meter Company Base Pressure Index, Type 5

Dear Mr. Wilson:

This letter is in response to your letter dated December 10, 1984, regarding a modification to the type/models of meters described above, which are currently approved in Notices of Approval G-39. I am advised that the Gas Laboratory has evaluated the modification, of replacing the approval pressure scales having regular spaced minor graduations with scales indicating zero, mid and maximum of the pressure range for the device. The conclusion is that it may be regarded as insignificant, in relation to the approval provisions of the Gas Inspection Act.

Accordingly, pursuant to the authority delegated to me by the Director under section 7 of the Gas Inspection Regulations;

1. your letter is hereby acknowledged as satisfying the notification requirements of subjection 7(2) of the regulations; and

2. the proposed alteration is hereby accepted, in accordance with subsection 7(3) of the Regulations, as being an immaterial one and hence included within the approval.

All recipients of Notices of Approval under the Cas Inspection Act are being informed of this decision by copy of this letter. For our records you are requested to advise us of the starting serial number when the change is initiated in production.

Yours truly,

W.R. Virtue
Chief,
Legal Metrology Laboratories

WRV:kl
cc: Mailing List (Gas Approvals)

Canada