Department of consumer and corporate affairs / Ministère de la consommation et des corporations

STANDARDS BRANCH - DIRECTION DES NORMES

NOTICE OF APPROVAL
AVIS D'APPROBATION

G - 102

OTTAWA November 20, 1973.

Romet Limited
Rotary Type Positive Displacement
Gas Meter, Model 2,000

Apparatus

Maximum displacement, cu. ft./hr.	2,000
Displacement per rev. of primary mechanism, cu. ft.	.015
Gear reduction ratio	666:1
Counter increment cu. ft.	100
Test dial increment cu. ft.	10
Capacity per rev. of instr. drive output shaft, cu. ft.	10
Number of counter digits	5
Flange connection size, inches	1½
Max. working press. psig	175

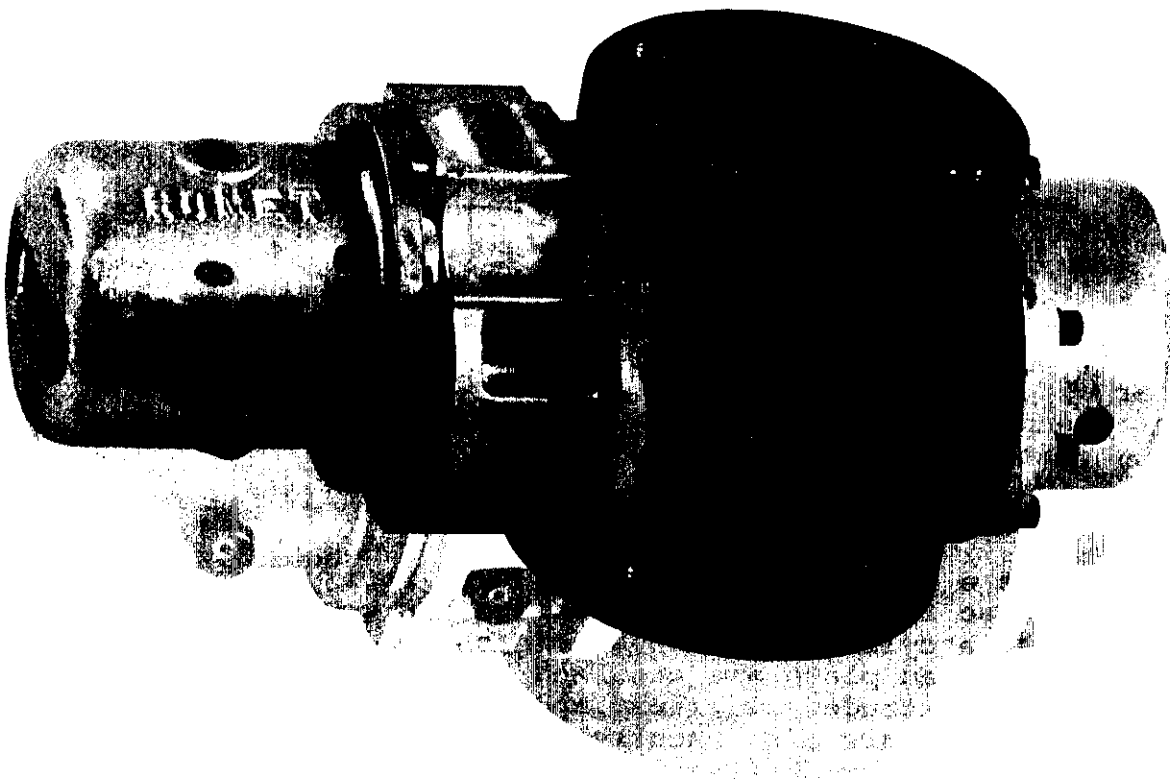
Description

This is a conventional impeller type rotary gas meter. The meter case is made of cast aluminum and consists of five parts: a cylinder, two head plates and two end covers. Cylinder and head plate are anodized after machining to resist wear. Extruded aluminum impellers have stainless steel shafts and are also anodized after machining and balancing. Impeller shafts are supported by ball type bearings. Gears are machined of steel or bronze. Pressure tightness in joints is secured by O-rings.

Both end covers serve as oil sumps for lubrication. Bullseye type oil sight gauges are provided for maintaining the correct oil level.

In operation gas entering through the inlet causes the impellers to rotate, and with each complete revolution of the impellers four volumes of gas are discharged into the outlet. These volumes have been established by calculation and are built into the meter at manufacture. The total displaced volume is permanent and cannot be adjusted after manufacture.

ROMET ROTARY TYPE POSITIVE DISPLACEMENT GAS METER MODEL 2,000



Impeller rotations are transferred through a magnetic clutch and reduction gear train to a counter or instrument drive. The magnetic clutch elements are provided with a pressure seal, therefore the reduction gear train and counter end of the meter are not pressurized. The lowest counter volume is 10 cu. ft. per revolution. The counter is a seven digit model with only 5 digits visible. Thus, the readout number is to be multiplied by 100 in order to arrive at the total volume passed by the meter. Power take-off for an instrument is designed to accept all standard instruments.

This rotary meter measures gas volume at line conditions and when these fluctuate and billing volume refers to other than meter conditions, suitable and approved volume correcting devices shall be used to account for changes in volume caused by the effects of temperature, pressure and supercompressibility. Pressure connections to these correcting devices shall be taken from the inlet side of the meter.

The computation of the volume of 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 in the form of a Supercompressibility factor (Fpv), 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

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

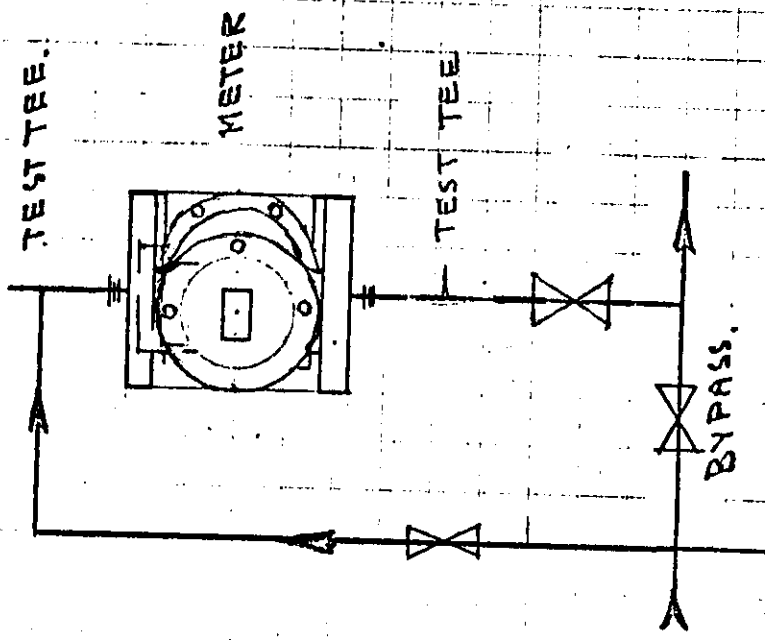
Tm = Temperature multiplier

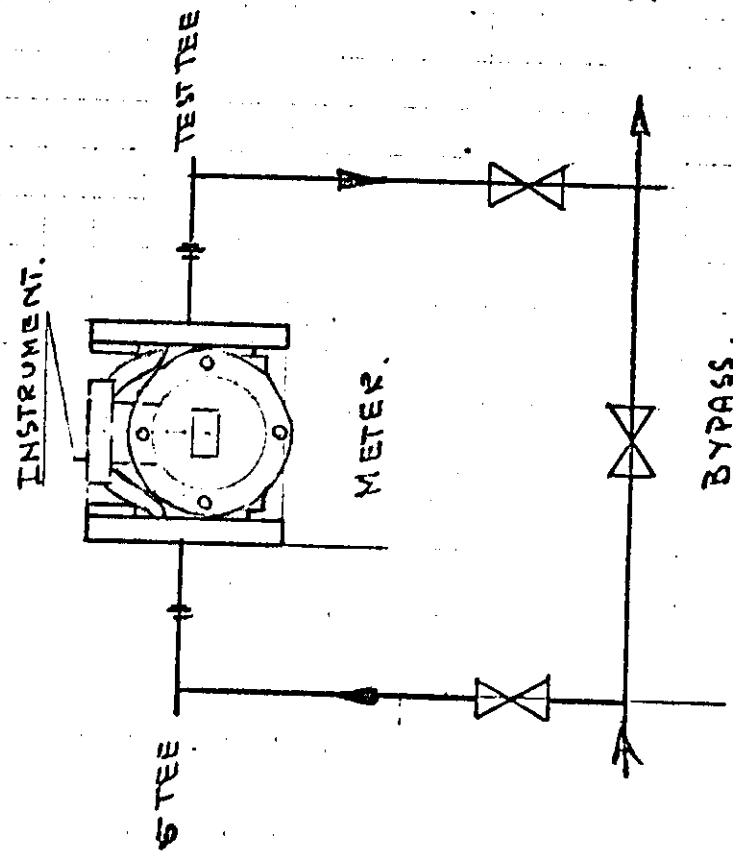
$$= \frac{\text{Temperature base + 460}}{\text{Weighted average flowing gas temperature + 460}}$$

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 Fpv values.

ROMET ROTARY TYPE POSITIVE DISPLACEMENT GAS METER MODEL 2,000

SUGGESTED INSTALLATIONS OF 1½"SIG METER.





ROMET LTD.

The selection of the weighted average supercompressibility factor, Fpv, should be based on a record of the flowing gas volumes, pressures and temperatures. Whether such record is available or not, the variations in pressure and temperature normally existing in the line must not introduce an error greater than $\pm$ 0.5% in the used $(Fpv)^2$ factor.

Meters may be installed in either horizontal or vertical gas lines which carry clean and dry gas. Preferred installation, however, is in a vertical pipe line due to self-cleaning action of the meter. In vertical lines the flow through the meter must always be downward. These line mounted meters are designed for direct in-the-line mounting, requiring no additional means of direct support. The manufacturer's suggested installation requirements for the top and side inlet mounting are shown on two sketches.

All meters accepted for service shall be effectively sealed to ensure that no access can be gained to the register of the meter.

Any meter which is not equipped with an instrument drive or does not incorporate an auxiliary pressure correcting device is APPROVED FOR USE ON LOW PRESSURE ONLY of approximately seven ounces per square inch pressure, or less, unless it is used for approved pressure factor metering application.

Approval granted to:

Romet Limited,
Mississauga, Ontario.

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Metrology & Laboratory Services.

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