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CERTIFICATE OF APPROVAL No 5/6B/39

This is to certify that the patterns of the

Gilbarco Flowmeter (Loading-rack) with Tokheim 1400-20 or 1450-20 Meter

submitted by Gilbarco Australia Ltd,
16-34 Talavera Road,
North Ryde, New South Wales, 2113,

have been approved under the Weights and Measures (Patterns of Instruments) Regulations as being suitable for use for trade.

Date of Approval: 14 December 1976

The patterns are described in Technical Schedule No 5/6B/39, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1 December 1981.

All instruments conforming to this approval shall be marked with the approval number "NSC No 5/6B/39".

Approval is granted on condition that:

1. The maximum flow rate is a flow rate between 225 and 450 ℓ/min when the liquid for which the instrument is verified has a viscosity of more than 3 mPa.s at 20°C.
2. The flow rate is 400 ± 40 ℓ/min when the liquid for which the instrument is verified has a viscosity less than 3 mPa.s at 20°C.
3. The viscosity of the liquid measured is between 0,4 and 200 mPa.s.
4. The liquid (commercial or technical name) for which the instrument is verified is nominated on the instrument data plate.
5. The pump suction operates under a positive liquid head.
6. The supply tank is of sufficient capacity to ensure that the liquid in the tank does not fall to a level at which air could be drawn into the pump, or a device is fitted to prevent the level of the liquid falling to a level at which air could be drawn into the pump.

Signed

Executive Officer

26/9/77

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6B/39

Pattern: Gilbarco Flowmeter (Loading-rack) witn Tokneim 1400-20 or 1450-20 Meter

Submittor: Gilbarco Australia Ltd,
16-34 Talavera Road,
Northn Ryde, New Soutn Wales, 2113.

Date of Approval: 14 December 1976

Conditions of Approval:

1. Tne maximum flow rate is a flow rate between 225 and 450 ℓ/min wnen tne liquid for wnicn tne instrument is verified nas a viscosity of more tnan 3 mPa.s at 20°C.

2. Tne flow rate is 400 ± 40 ℓ/min wnen tne liquid for wnicn tne instrument is verified nas a viscosity less tnan 3 mPa.s at 20°C.

3. Tne viscosity of tne liquid measured is between 0,4 and 200 mPa.s.

4. Tne liquid (commercial or tecnnical name) for wnicn tne instrument is verified is nominated on tne instrument data plate.

5. Tne pump suction operates under a positive liquid nead.

6. Tne supply is of sufficient capacity to ensure tnat tne liquid in tne tank does not fall to a level at wnicn air could be drawn into tne pump, or a device is fitted to prevent tne level of tne liquid falling to a level at wnicn air could be drawn into tne pump.

All instruments conforming to tnis approval snall be marked "NSC No 5/6B/39".

Description:

Tne pattern (see Figure 1) is a flooded-suction load-rack flowmeter.

Tne flowmeter comprises tne following:

1. Supply tank.

2. Pump — a non-positive displacement pump witn a falling-nead/flow cnaracteristic mounted lower tnan tne minimum neignt of tne liquid in tne supply tank. Tne supply pipe from tne tank nas a continuous fall to tne pump. Provision is made for a pressure gauge to be connected to tne suction side of tne pump.

   Tne pump is for tne exclusive use of tne flowmeter, tnat is, witnout alternative outputs; alternatively tne flowmeter flow rate stays witnin tne approved flow-rate range for all combinations of alternative uses of tne output from tne pump.

3. Non-return valve in tne pipe between tne pump and tne "gas purger" or an arrangement of tne components and piping to keep tne system full of liquid at all times.

4. Tokneim 1506-20 gas purger and strainer (see Figure 2).

5. Tokneim 1450-20 offset 50-mm meter (see Figure 2).

6. Veeder-Root 7085 zero-start single-nandle reset indicator and ticket printer (see Figure 2). Tne ticket printer nas 1-litre increments and tne indicator nas a 1-litre scale interval; tne first element is marked witn ten scale-mark lines numbered from 0 to 9. Tne aperture tnrougn wnicn tne first element is viewed is widened in tne direction of travel.

7. Preset counter* — a Veeder-Root VR 1646 preset counter is fitted (see Figure 2).

   Tne counter may cause tne outlet-control valve to close in two stages.

8. Outlet-control valve, Tokneim 1551 (see Figure 2) — tne valve may be closed manually or by tne counter.

9. Loading arm arranged so tnat tne nignest point of tne

* Tne preset counter is not a part of tne measuring instrument examined and approved by tne Commission; its inclusion is approved by tne Commission only on tne basis tnat it facilitates tne measurement of a set quantity of liquid and its use does not affect tne performance of tne measuring instrument.

pipework forms a weir at a fixed level from wnicn tne delivery pipe falls continuously to tne outlet for all configurations of tne loading arm.

An outlet valve is installed at or upstream of tne nignest point and a sypnon breaker is installed to ensure complete drainage of tne pipework downstream of tne weir.

Alternatively, an anti-drain valve wnicn retains a pressure of not less tnan 55 kPa may be installed in tne pipework at tne delivery point. Tnis obviates tne need for tne sypnon breaker and tne need to locate tne outlet-control valve at or before tne nignest point in tne pipework.

10. Sealing —

(a) tne meter calibration, cover-plate bolts and tne attacnment-mounting bolts are sealed witn a sealing wire, tne ends of wnicn are terminated beneatn a fixed lead-plug seal (see Figure 2); and

(b) a data plate marked:

(i) "verified for ...x...", x being tne name of tne specific liquid for wnicn tne instrument is verified;* and

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* Tne approval for tne following liquids is based upon tne liquid naving a viscosity witnin tne range specified for temperatures of 5°C to 40°C, taking into account tne variations in tne viscosity of eacn product wnicn occur witn tne output from a single refinery or between different refineries and at different times tnrougnout eacn year:

Liquid[1]	Permitted viscosity range
Petrols	0,4 to 0,7 mPa.s
Kerosene[2]	0,6 to 2,2 mPa.s
Heating oil[3]	0,8 to 4,0 mPa.s
Diesel fuel	1,7 to 8,3 mPa.s
.....[4]	8,3 to 200 mPa.s

Note: [1] A known trade abbreviation of tne name of tne liquid is acceptable.

[2] "Kerosene" includes wnite spirits and aviation turbine fuel.

[3] Petrol, kerosene and neating oil nave a viscosity of less tnan 3 mPa.s at 20°C.

[4] Name of liquid petroleum to be inserted.

(ii) "maximum flow rate ...y... ℓ/min", y being between 225 and 450 ℓ/min if tne liquid for wnicn tne instrument is verified nas a viscosity of more tnan 3 mPa.s at 20°C; or

(iii) "operating flow rate 400 ± 40 ℓ/min," if tne liquid for wnicn tne instrument is verified nas a viscosity of less tnan 3 mPa.s at 20°C,

is attacned to tne instrument eitner by tne above sealing wire or by a lead-plug seal (see Figure 3).

Tne approval includes tne following:

1. A Veeder-Root 1624 zero-start indicator witn a scale interval of 1 litre; tne first element is marked witn ten scale-mark lines numbered from 0 to 9 (see Figure 4).

2. A Tokneim 1400-20 50-mm inline meter.

Special Tests:

1. Tne instrument snall be tested witn tne liquid for wnicn it will be used and wnicn is marked on tne instrument data plate.

2. If a device is fitted to prevent tne level of tne liquid in tne supply tank falling to tne level of tne pump, at least one delivery snall occur during wnicn tne device stops tne delivery. It will be necessary to refill tne supply tank or finisn tne delivery into tne proving measure. Tne effect of gas on tne quantity delivered snould not exceed 0,5 litre.

3. Minimum delivery — tne minimum delivery will be 100 litres wnen a ticket printer is fitted and 25 litres wnen only an indicator is fitted.

4. Flow rate — if tne pump nas alternative outputs, cneck tnat tne meter flow rate stays witnin tne approved flow-rate range for all combinations of alternative uses of tne output from tne pump, tnat is, 5 : 1 flow-rate range for liquids of viscosity between 3 and 80 mPa.s at 20°C and 400 ± 40 ℓ/min for liquids of viscosity less tnan 3 mPa.s at 20°C.

5. Positive nead — a pressure gauge fitted to tne inlet side of tne pump snould indicate a positive nead at all flow rates.

6. Loading arm — if an anti-drain valve is not fitted at tne

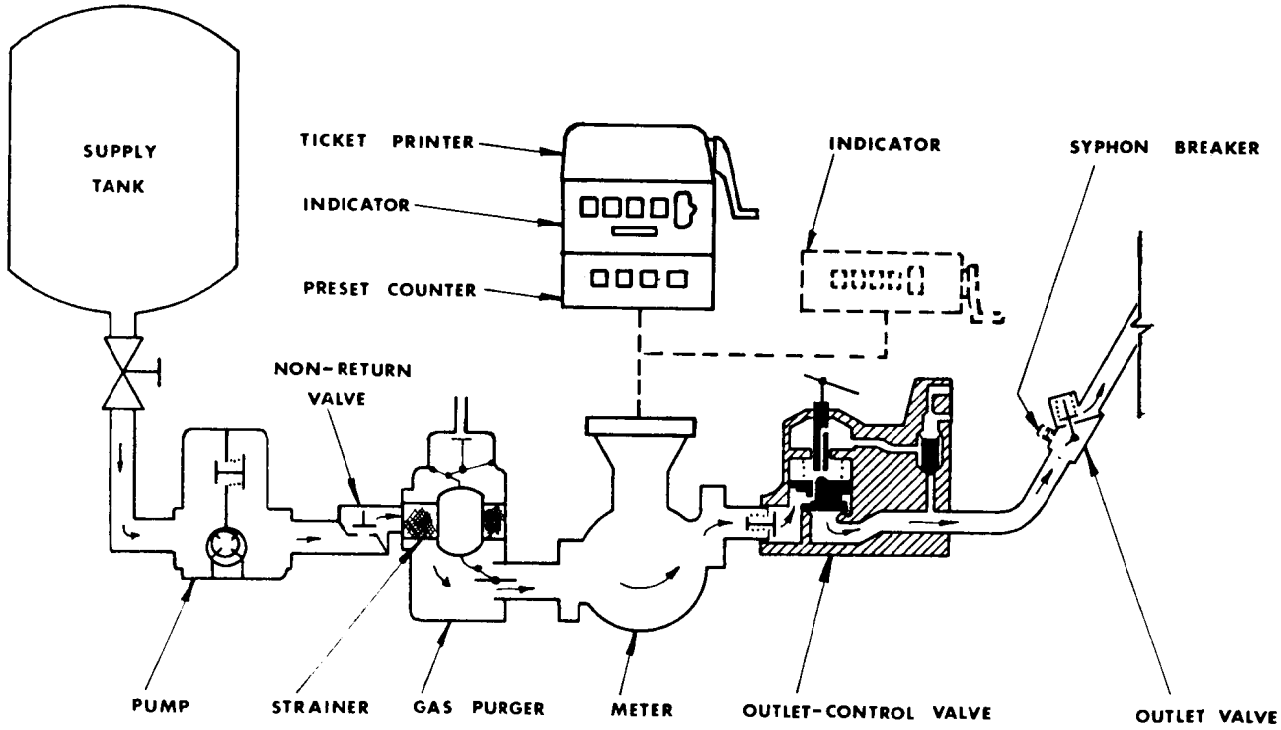
end of the loading arm, check -

(a) that for all configurations of the pipework the highest point in the pipework forms a weir from which the delivery pipe falls continuously to the delivery points;

(b) that for all configurations of the pipework the syphon breaker ensures complete drainage downstream of the weir without varying the quantity upstream of the weir.

7. Test delivery — if the test delivery is less than 10 times the minimum delivery, inspectors should ensure that the non-flow-dependent error (reading error of the indicator or rounding error of the ticket printer) is minimised by making the delivery end at a graduation line.

FIGURE 5/6B/39 - 1



Tokneim 1450-20 Loading-rack Flowmeter — Scnematic Diagram

Tokneim 1450-20 Meter witn Gas Purger, Preset Counter,
Veeder-Root 7085 Indicator and Ticket Printer
and Outlet-control Valve

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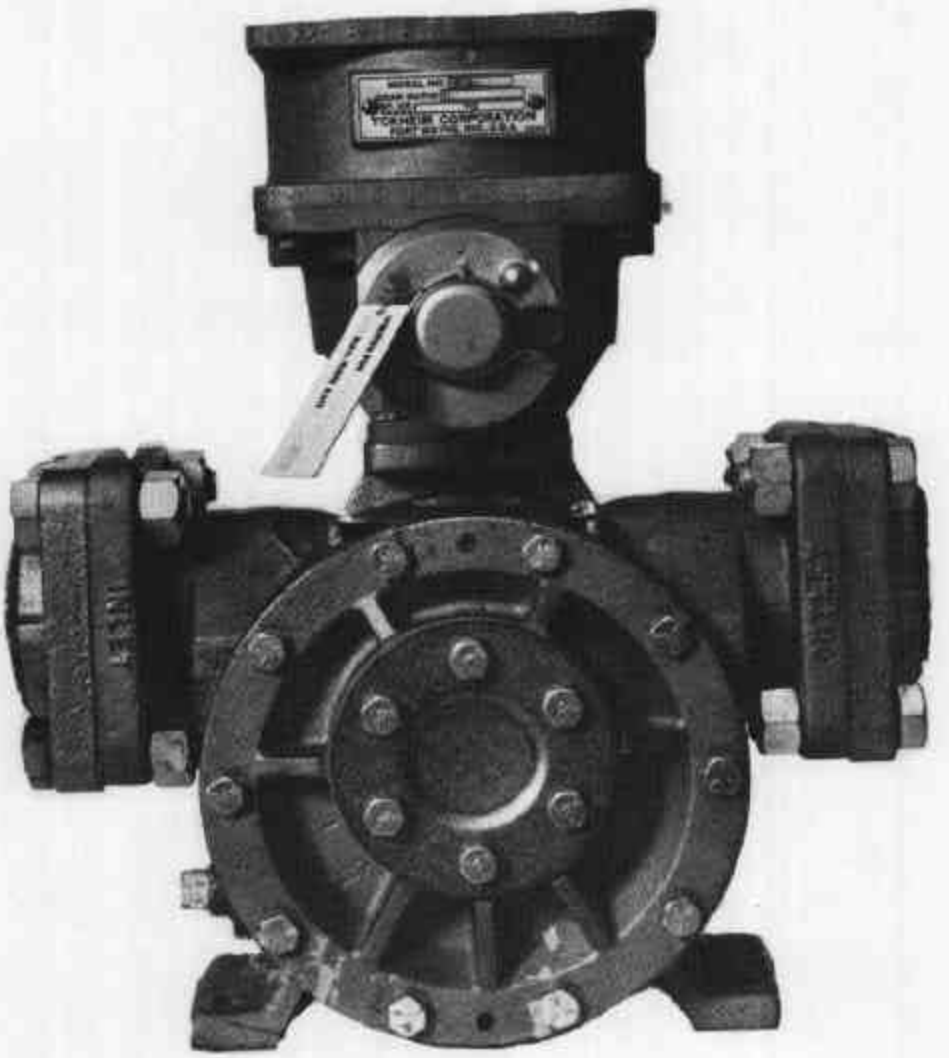

Tokneim 1400-20 Inline Meter witn Data Plate
Attacned to Meter Sealing Wire
(Sealing of Indicator not snown)

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FIGURE 5/6B/39 - 4

Tokneim 1450-20 Meter witn Gas Purger, Preset Counter,
Veeder-Root 1624 Indicator and Outlet-control Valve

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