

CERTIFICATE OF APPROVAL No 5/6B/47

This is to certify that the pattern and variants of the

Brooks B-40 DB Flowmeter

submitted by K. J. Baillie Pty Ltd,
12 Whiting Street,
Artarmon, New South Wales, 2064,

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

Date of Approval: 1 May 1979

The pattern and variants are described in Technical Schedule No 5/6B/47, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 31 May 1984.

All instruments conforming to this approval shall be marked with the approval number "NSC No 5/6B/47".

Signed



Executive Officer



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6B/47

Pattern: Brooks B-40 DB Flowmeter

Submitter: K. J. Baillie Pty Ltd,
12 Whiting Street,
Artarmon, New South Wales, 2064.

Date of Approval: 1 May 1979

1. Conditions of Approval

- 1.1 The maximum and minimum flow rates are 375 L/min and 75 L/min respectively.
- 1.2 The instrument is used only for kerosene, heating oil or distillate.
- 1.3 The liquid for which the instrument is verified is marked on the data plate.
- 1.4 The system shall be designed so that gas cannot enter the meter.
- 1.5 All instruments conforming to this approval shall be marked "NSC No 5/6B/47".

2. Description of "Pipeline" Flowmeter System

Refer to Figures 3 and 4.

The system comprises:

- 2.1 Supply tank.
- 2.2 Pump — mounted lower than the minimum height of the liquid in the supply tank; the supply pipe from the tank has a continuous fall to the pump; provision is made for a pressure gauge to be connected to the suction side of the pump; if the pump is not for the exclusive use of the flowmeter, the flow rate must stay within the appropriate flow-rate range for all combinations of alternate uses of the output from the pump.

- 2.3 A non-return valve in the pipe between the pump and the meter or an arrangement of the components and the piping to keep the system full of liquid at all times.
- 2.4 Strainer (not approved as a gas separator).
- 2.5 Brooks B-40 DB meter.
- 2.6 One of the following combinations of assemblies:
- (a) Veeder-Root VR 7887 indicator — a zero-start indicator with a scale interval of 1 litre; the first element is marked with ten scale-mark lines numbered from 0 to 9 (Figure 3); the aperture through which the first element is viewed is widened in the direction of travel; a shutter covers the indicator elements during the zero reset.
 - (b) Veeder-Root VR 7890 indicator and ticket printer — a single-handle zero-start indicator and a zero-start or accumulative-start printer (Figure 4); the ticket printer has 1 litre increments; the first element of the indicator is marked with ten scale-mark lines numbered from 0 to 9; the aperture through which the first element of the indicator is viewed is widened in the direction of travel; a shutter covers the indicator elements during the zero reset.
- 2.7 Optionally, a Veeder-Root VR 7889 preset control (the indicator of which is not approved for trade use) and a Brooks 2 inch outlet-side control valve (Figure 4). The two-stage preset quantity control allows flow to zero from a preset quantity; the first stage allows the delivery before the second stage starts off and delivery at zero. In combination with the VR 7887 indicator, VR 7889 is known as VR 7891, and with indicator and printer it is known as VR 7892.
- 2.8 With or without a rigid extension drive from the meter to the indicator, ticket printer and preset control.
- 2.9 Manual control valve — located downstream from the meter with no intermediate outlet; the piping is kept full of liquid by an anti-drain valve downstream of the manual valve (retaining a pressure of not less than 55 kPa) or by arrangement of the piping.

3. Description of Loading-rack Flowmeter System

Refer to Figures 2, 3 and 4.

- 3.1 This system is identical to that described in item 2, excluding item 2.9.
- 3.2 Top-loading arrangement - the highest point of the pipework forms a weir at a fixed level from which the delivery pipe drains to the outlet for all configurations of the loading arm; an outlet control valve is installed at or upstream of the highest point and a syphon breaker is installed to ensure complete draining of the pipework downstream of the weir.
- 3.3 Bottom-loading arrangement - an anti-drain valve retaining a pressure of not less than 55 kPa, or a drybreak coupling, is located at the delivery point of the piping.

4. Marking

- 4.1 Systems intended to be used over a 5 : 1 flow-rate range are marked with the maximum flow rate achievable at verification, and the minimum flow rate, namely, 75 L/min.
- 4.2 Systems intended to be used at a constant flow ($\pm 5\%$ of nominal) are marked with the nominal flow rate.
- 4.3 A data plate marked with the maximum and minimum flow rates (item 4.1 above) or the nominal flow rate (item 4.2 above), and the liquid for which the instrument is verified, is sealed to the instrument.

5. Sealing

- 5.1 The indicator, ticket printer and preset control are sealed by passing a sealing wire through at least two of the attachment-mounting bolts and terminating the ends beneath a lead stamping plug.
- 5.2 The calibration adjustment is sealed by passing the same or a different sealing wire through the calibrator adjustment-cover screws and terminating it in the lead stamping plug.

- 5.3 The instrument data plate is sealed to the instrument by a lead stamping plug or by threading the indicator sealing wire through a hole in the data plate.

6. Minimum Delivery

The following minimum deliveries are applicable:

- 20 L with VR 7887 indicator only,
- 200 L with zero-start printer and indicator,
- 400 L with accumulative-start printer and indicator.

7. Test Procedure

- 7.1 The maximum permissible error at verification is:
- (a) for systems intended to operate over a 5 : 1 flow-rate range, $\pm 0,3\%$ at any flow rate; or
 - (b) for systems intended to operate at a constant flow rate ($\pm 5\%$ nominal), $\pm 0,15\%$ at any flow rate.
- 7.2 The instrument should be tested with the liquid for which it will be used and which is marked on the data plate.
- 7.3 If a device is fitted to prevent the level of the liquid in the supply tank falling to the level of the pump, at least one delivery should occur during which the device stops the delivery. It will be necessary to refill the supply tank to finish the delivery into the proving measure. The effect on the measurement of the quantity delivered should not exceed 1% of the minimum delivery.
- 7.4 Flow rate - if the pump supplying the meter delivers to other systems, check that the meter flow rate remains within the approved range.
- 7.5 Pump-inlet pressure - check that the pressure at the pump inlet is greater than atmospheric at maximum flow rate.
- 7.6 Test delivery - if the test delivery is less than 10 times the minimum delivery, the reading error of the indicator or the rounding error of the ticket printer is minimised by completing the delivery at a graduation line.



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6B/47

CHANGE No 1

The description of the

Brooks B-40 DB Flowmeter

given in Technical Schedule No 5/6B/47 issued on 15/6/79
is altered as follows:

Replace pages 3 and 4 with the attached pages, which describe the sealing procedures in more detail and correct the statement regarding constant flow rate.

5/6B/47
14/8/86



NATIONAL STANDARDS COMMISSION

CANCELLATION CERTIFICATE OF APPROVAL No 5/6B/47

This is to certify that the approval for use for trade granted in respect of the pattern of the

Brooks B-40 DB Flowmeter

submitted by K J Baillie Pty Ltd
12 Whiting Street
Artarmon NSW 2065

has been cancelled in respect of new instruments as from 2 July 1986.

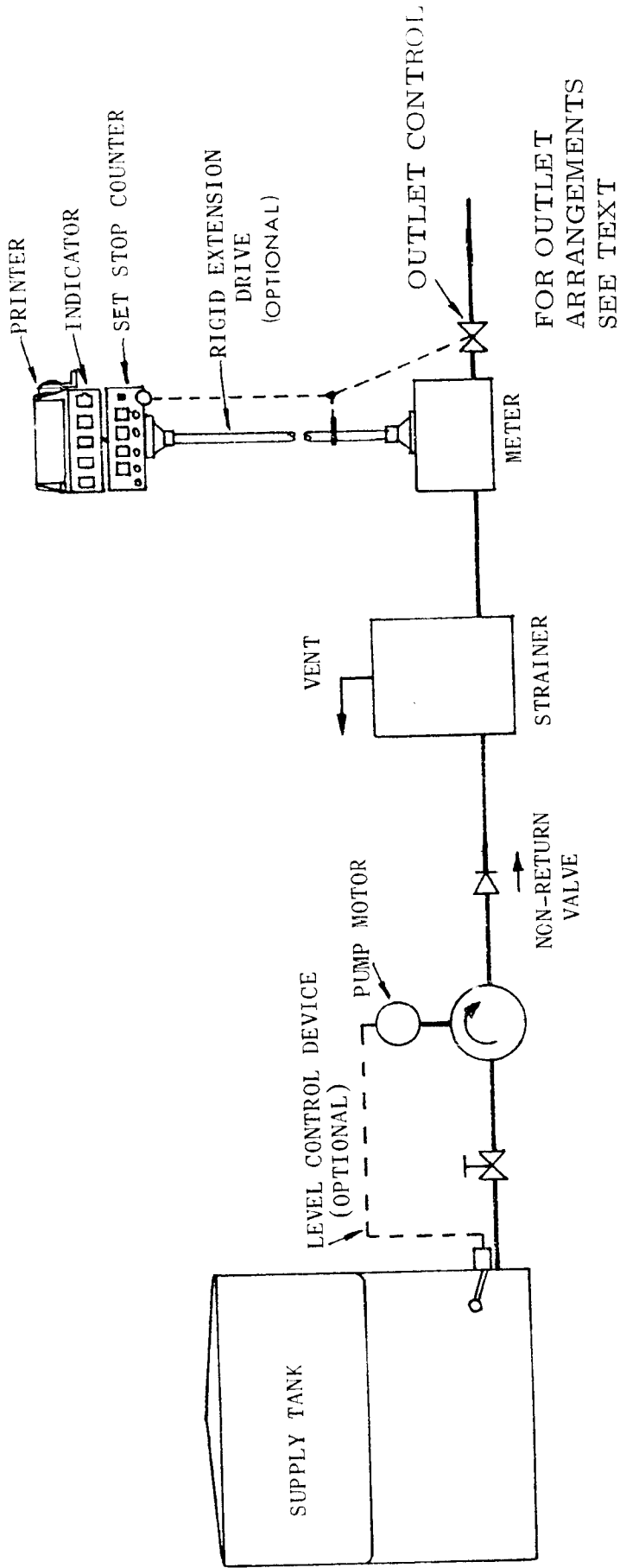
Instruments which were verified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

Signed



Executive Director

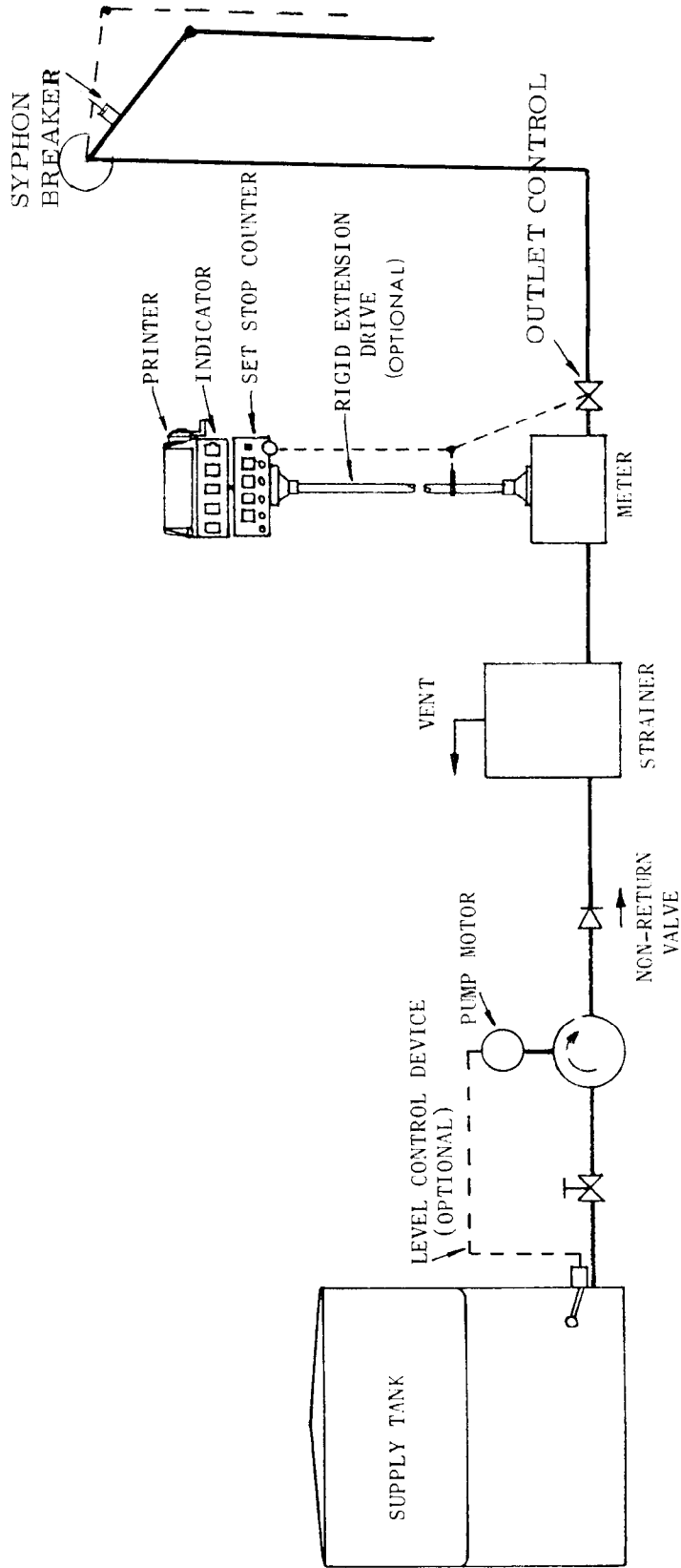
FIGURE 5/6B/47 - 1



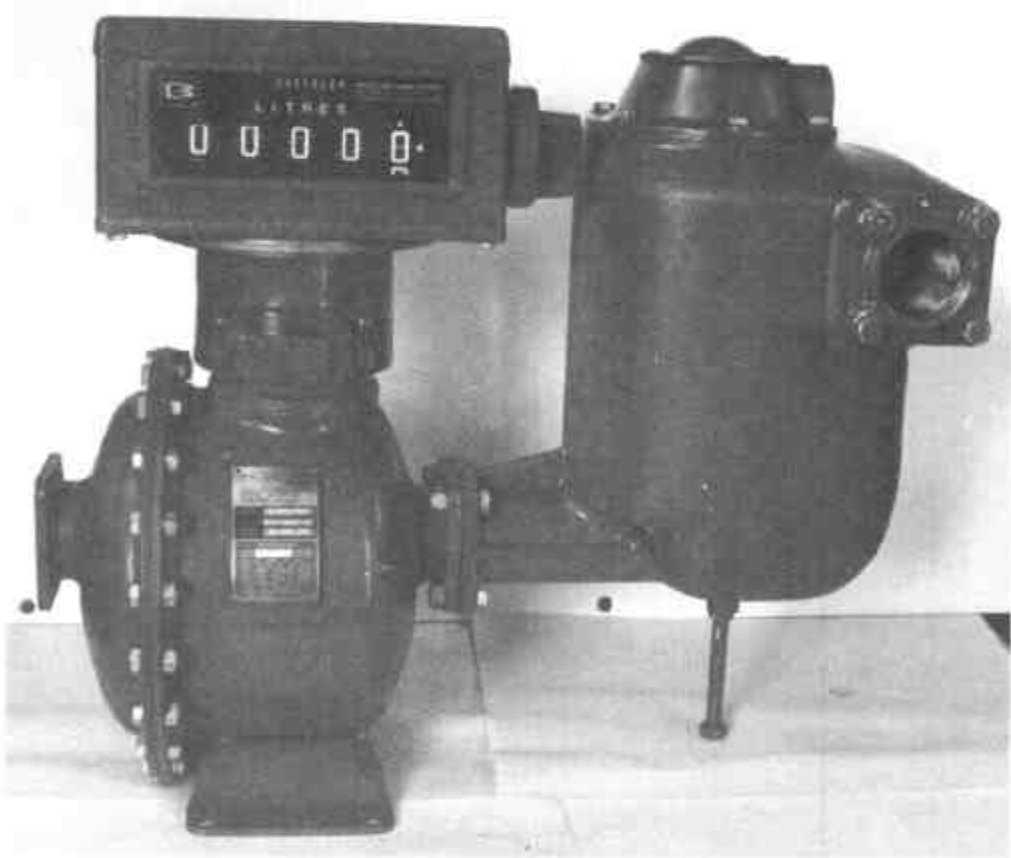
FOR OUTLET
ARRANGEMENTS
SEE TEXT

Pipeline Flowmeter — Schematic Diagram

FIGURE 5/6B/47 - 2



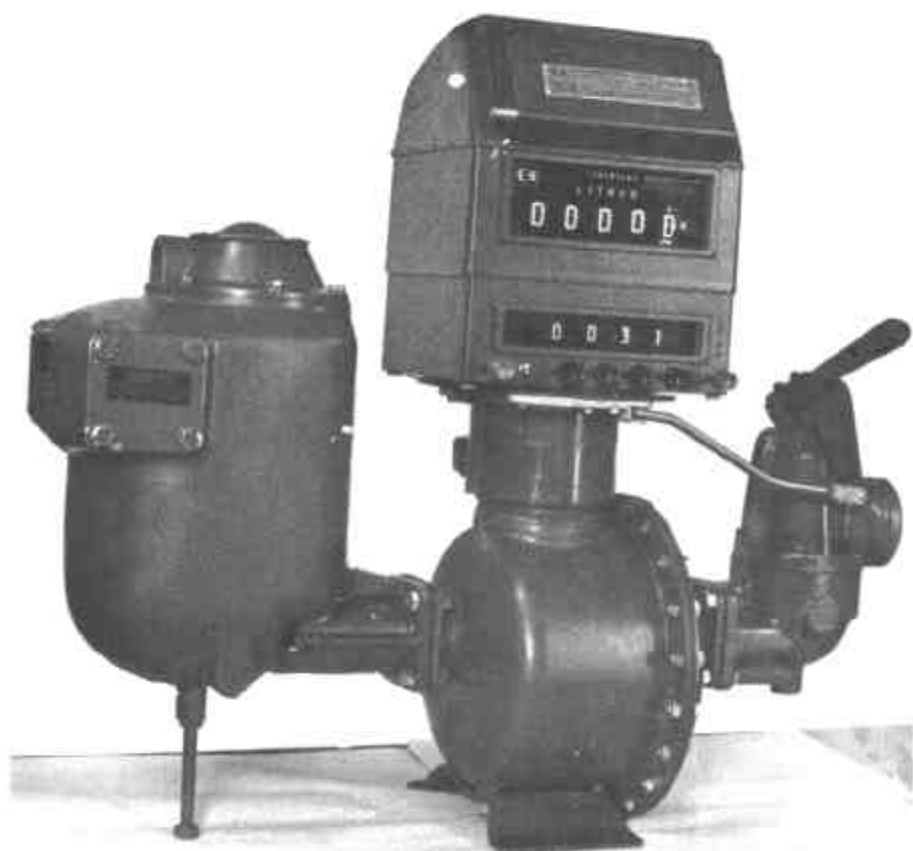
Loading-rack Flowmeter — Schematic Diagram



Brooks B-40 DB Meter, Strainer, and VR 7887
Indicator

15/6/79

FIGURE 5/6B/47 - 4



B-40 DB Meter, Strainer, VR 7892 Indicator/Ticket Printer
and Preset Control Unit, and 2 inch Outlet Control Valve

15/6/79