

Descriptive Advice

Pattern: approved 9/7/81

. Pipeline/Loading-rack System with Avery-Hardoll 200 Series Flowmeter

Variants: approved 9/7/81

1. With Avery-Hardoll 900 series flowmeter.
2. Without ticket printer.
3. Without preset-control indicator and preset valve.
4. With rigid extension between the meter and indicator.
5. Without pulse transmitter.
6. Without flow-rate indicator.
7. Without flow-rate control valve.

Technical Schedule No P5/6B/46 dated 4/8/81 describes the pattern and variants 1 to 7.

4/8/81



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No P5/6B/46

Pattern: Pipeline/Loading-rack System with Avery-Hardoll 200 Series Flow-meter

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1. Description of Pattern

1.1 Pipeline Flowmeter

Refer to Figure 1.

The system comprises:

1.1.1

Supply tank.

1.1.2

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 through the meter must stay within the flow-rate range of the meter.

1.1.3

A non-return valve 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.

1.1.4

Strainer.

1.1.5

Avery-Hardoll 200 series flowmeter (Figure 3).

1.1.6

One of the following combinations of assemblies:

- (a) Indicator model VR1624.
- (b) Indicator model VR1624 with accumulative or zero-start ticket printer.
- (c) Indicator model VR7887.
- (d) Indicator model VR7887 with accumulative or zero-start ticket printer.

The indicators and ticket printers are single-handle reset. A preset indicator and preset-control valve may be fitted to the indicator with or without a ticket printer. The preset indicator is not approved for trade use.

1.1.7

A pulse transmitter with interface to a remote indicator which is in use for trade.

1.1.8

Flow-rate control valve.

1.1.9

Outlet-control valve located downstream of the meter with no intermediate outlet.

1.2 Loading-rack Flowmeter System

This system is identical to the pipeline system except for the outlet, which is replaced by one of the following:

Top-loading arrangement (Figure 2) - 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; the 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,

OR

Bottom-loading arrangement - drybreak coupling located at the delivery point of the piping.

1.3 Features Common to Both Systems1.3.1 Marking

The instrument data plate is marked with the following:

Manufacturer's name or mark
Meter model
Serial number
NSC number
Maximum flow rate) (when flow rate varies by more than 10% of maximum)
Minimum flow rate)
Nominal flow rate (when flow rate is within $\pm 5\%$ of nominal)
Viscosity range or type of liquid for which the instrument is verified
Minimum delivery

1.3.2 Sealing

- (a) The indicator, ticket printer and pulse transmitter are sealed by passing a sealing wire through the attachment-mounting bolts and terminating the ends beneath a lead stamping plug on the calibration-adjustment cover.
- (b) 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 (Figure 3).
- (c) If the peripheral equipment is fitted, sealing is to be provided at the connection of the peripheral equipment plugs and sockets to the system.

1.4 Minimum Delivery

The following minimum deliveries are applicable:

100 L with indicator only;
200 L with zero-start printer and indicator;
400 L with accumulative-start printer and indicator.

2. Variants

2.1 Variant 1

With Avery-Hardoll 900 series flowmeter (Figure 4).

2.2 Variant 2

Without ticket printer.

2.3 Variant 3

Without preset-control indicator and preset valve.

2.4 Variant 4

With rigid extension between the meter and indicator.

2.5 Variant 5

Without pulse transmitter.

2.6 Variant 6

Without flow-rate indicator.

2.7 Variant 7

Without flow-rate control valve.

TEST PROCEDURE No P5/6B/46

1. The instrument should be tested with the liquid for which it will be used and which is marked on the data plate.

The maximum permissible errors at verification are:

- (a) when operating over a flow range varying by more than 10% of the maximum for the relevant series, $\pm 0.3\%$ for all flow rates; or
 - (b) when operating at a flow rate $\pm 5\%$ of nominal, $\pm 0.15\%$.
2. 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.

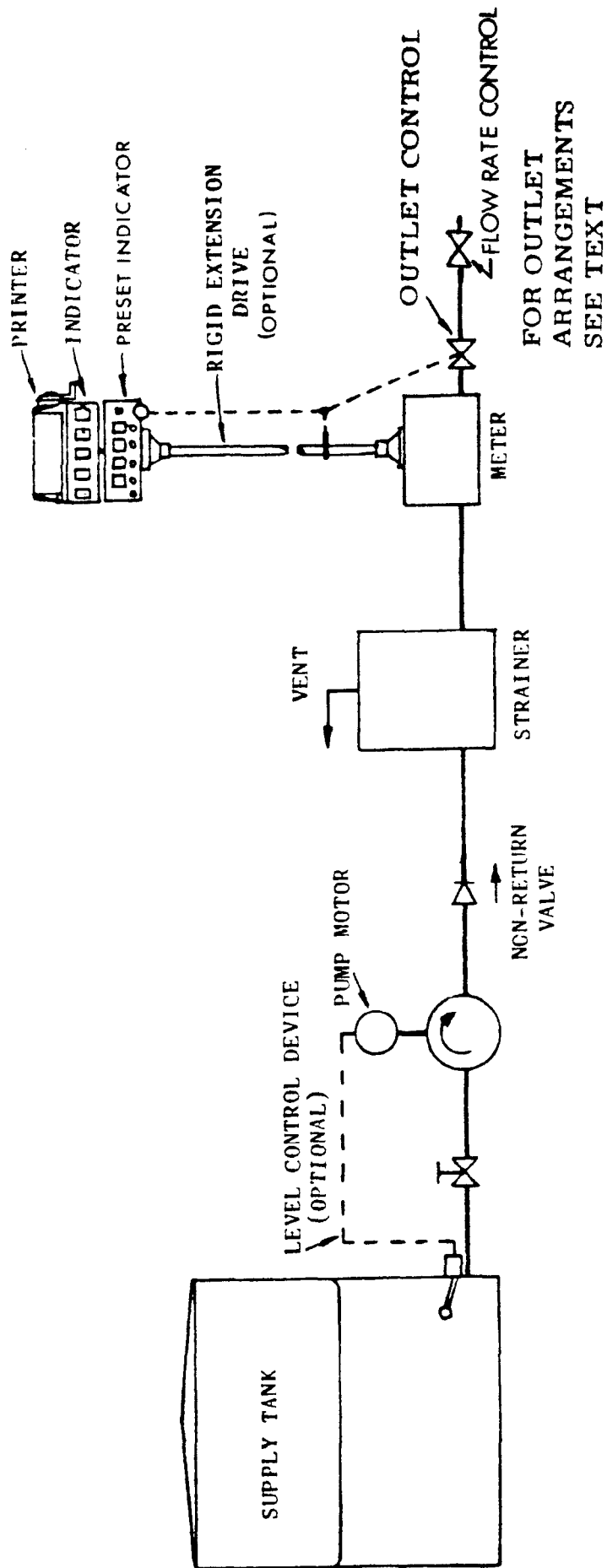
Note: This test should only be done where it could be expected that the low-level device may operate during a normal day's trading.

3. Test delivery - if the test delivery is less than ten 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.

The following information shall be recorded for sending to the Commission:

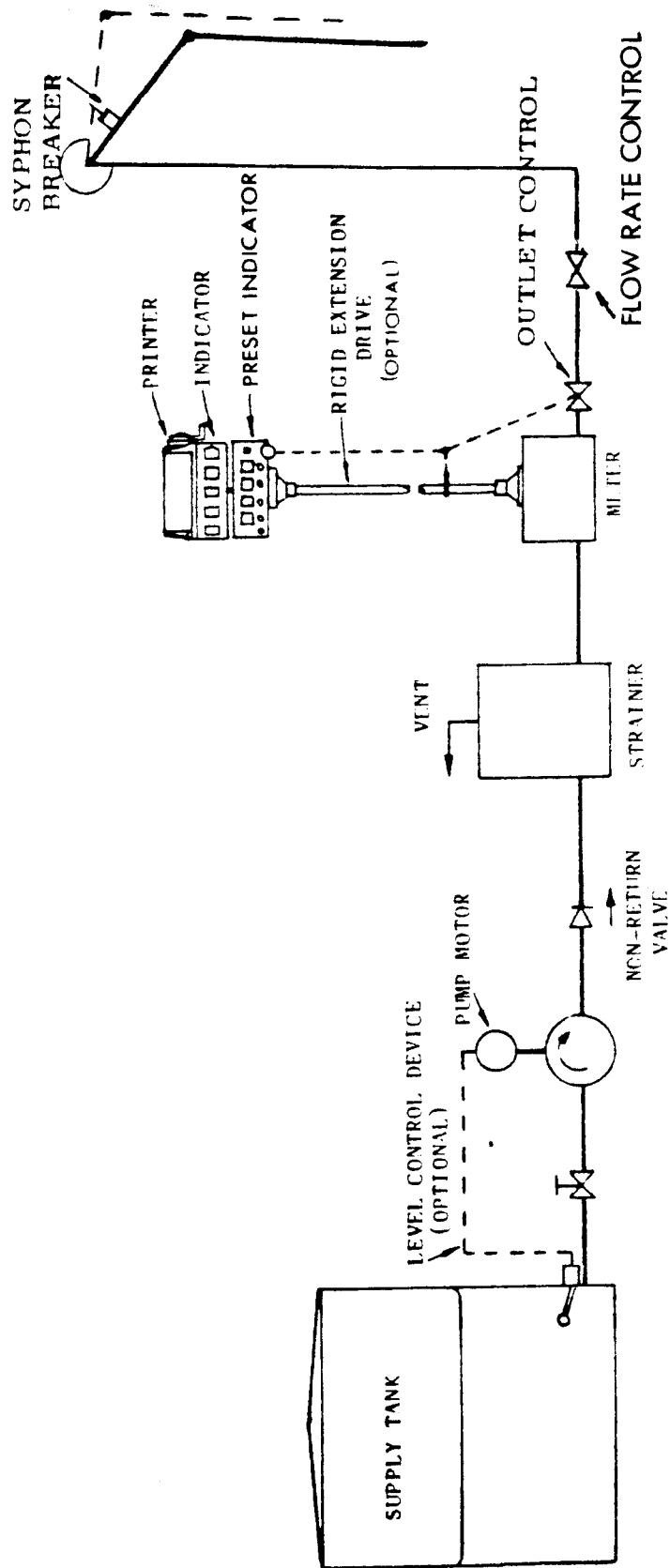
- (a) NSC approval number
- (b) Installation address
- (c) Meter serial number
- (d) Identification of meter assembly in terms of pattern and variants described in this Schedule
- (e) Totaliser reading at beginning of test
- (f) Type of liquid
- (g) Temperature of liquid entering the meter.

FIGURE P5/6B/46 - 1



Pipeline Flowmeters - Schematic Diagram

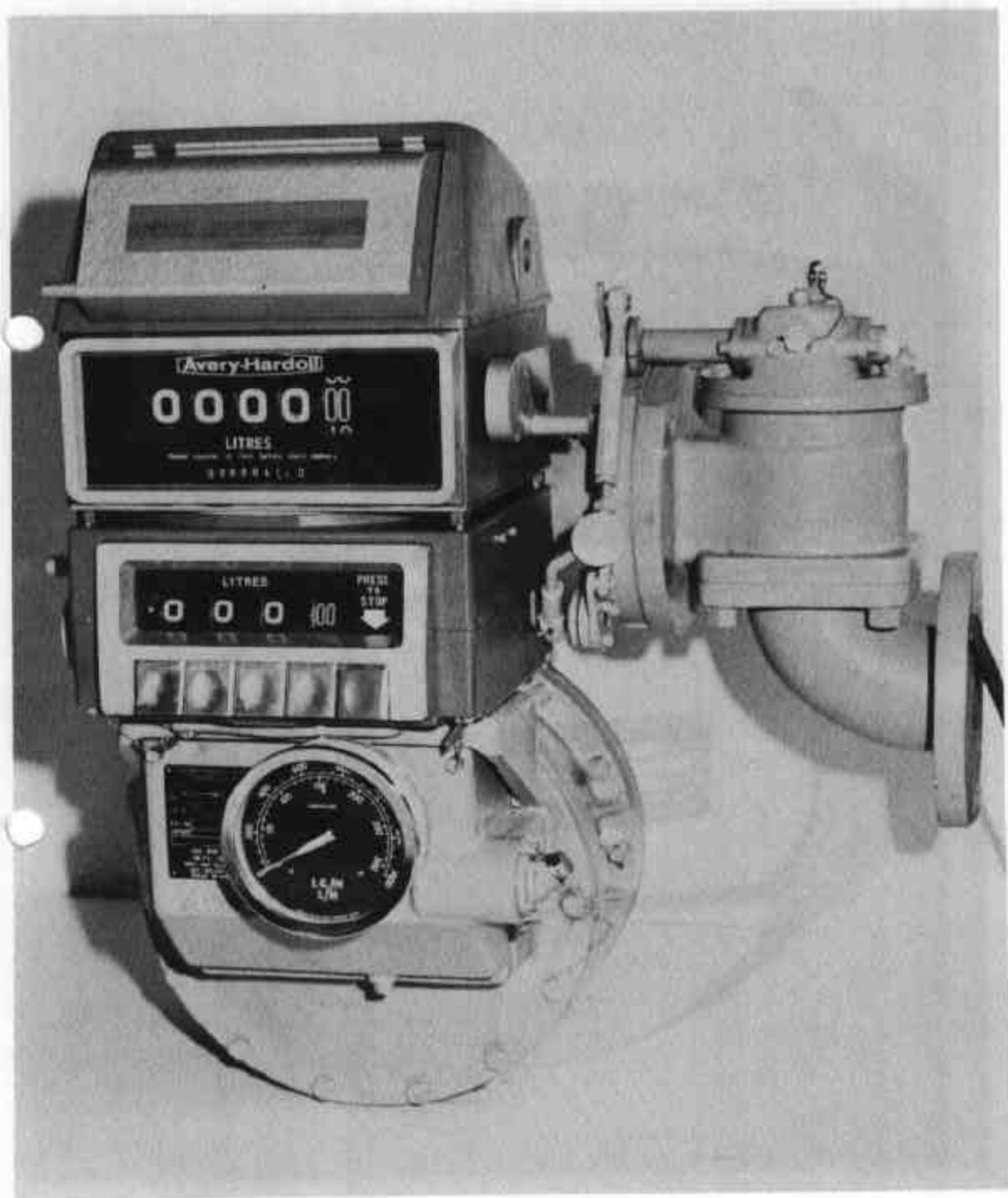
FIGURE P5/6B/46 - 2



Loading-rack Flowmeter - Schematic Diagram

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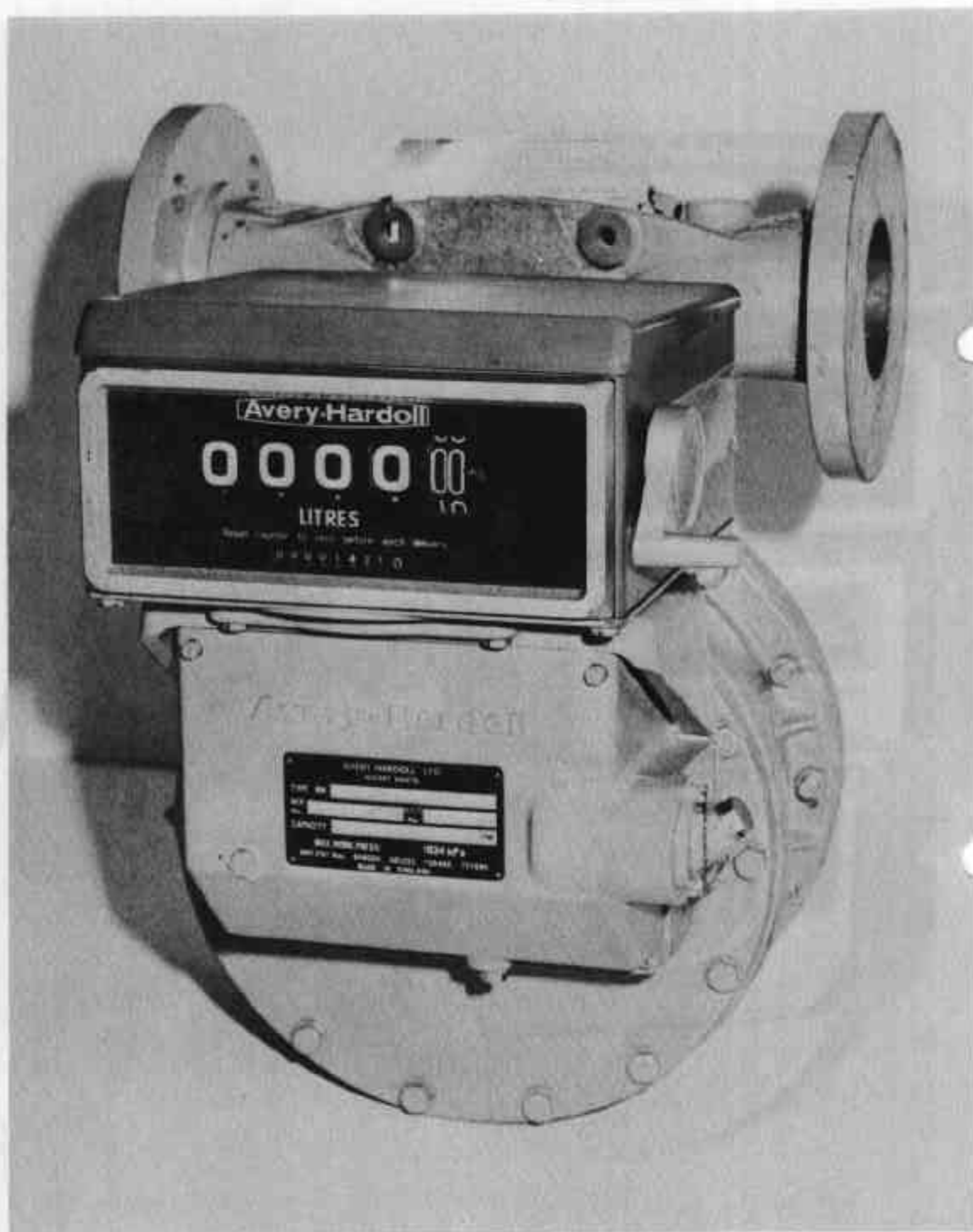
FIGURE P5/6B/46 - 3



Avery-Hardoll 200 Series Meter with Indicator,
Printer, Preset and Preset Valve

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FIGURE P5/68/46 - 4



Avery-Hardoll 900 Series Meter