



NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 5/6B/54

This is to certify that an approval has been granted by the Commission that the pattern and variants of the

Pipeline/Loading Rack System with AO Smith "F" Series Flowmeter

submitted by Wayne Pumps Australia Pty Ltd,
29 Anzac Highway,
Keswick, South Australia, 5035,

are suitable for use for trade.

The approval of the pattern and variants is subject to review on or after 1/10/85.

All instruments purporting to comply with this approval shall be marked "NSC No 5/6B/54". Instruments currently marked NSC No P5/6B/54 are required to have this number changed to NSC No 5/6B/54 at their next verification.

Relevant drawings and specifications are lodged with the Commission.

This Certificate replaces Provisional Certificate of Approval No P5/6B/54, which is hereby cancelled.

Conditions of Approval

1. The maximum and minimum flow rates are 2750 L/min and 500 L/min respectively.
2. When the difference between maximum and minimum flow rate in normal conditions of use exceeds 275 L/min, these maximum and minimum flow rates shall be marked on the data plate.

When the flow rate in normal conditions of use is within $\pm 5\%$ of a nominal flow rate, the nominal flow rate shall be marked on the data plate.

3. The instrument is not used for liquified gases.
4. The type of liquid for which the instrument is verified is marked on the data plate, namely, petrol, kerosene, heating oil or distillate.
5. The system is designed so that gas cannot enter the meter.
6. Instruments are installed in the manner described in Technical Schedule No 5/6B/54.
7. The Commission reserves the right to inspect any installation incorporating a meter covered by this approval.

Signed

Executive Director

Descriptive Advice

Pattern: approved 10/4/81

- . Pipeline or Loading Rack System with AO Smith "F" Series meter.

Variants: approved 10/4/81

1. Without ticket printer.
2. Without preset-control indicator and preset valve.
3. With rigid extension between the meter and indicator.
4. Without pulse transmitters.
5. Without flow-rate control valve.

Filing Advice

This Certificate and its Technical Schedule replace Certificate of Approval No P5/6B/54 and Technical Schedule No P5/6B/54.

Figures 1 to 4 of Technical Schedule No P5/6B/54 are to be renumbered 5/6B/54 and retained as part of the new Technical Schedule. Figure 5 is re-issued herewith. Certificate No P5/6B/54 and the remainder of Technical Schedule No P5/6B/54 may be destroyed.

11/5/81



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/68/54

Pattern: Pipeline/Loading Rack System with AO Smith "F" Series Flowmeter

Submitter: Wayne Pumps Australia Pty Ltd,
29 Anzac Highway,
Keswick, South Australia, 5035.

1. Description of Pattern

1.1 Pipeline Flowmeter

Refer to Figure 1.

The system comprises:

- (a) Supply tank.
- (b) 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 appropriate flow rate range of the meter.
- (c) 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.
- *(d) Strainer with air release head or strainer with separate de-aerator (Figures 3 and 4).
- (e) AO Smith "F" series flowmeter (Figure 3).
- (f) One of the following combinations of assemblies:
 - (i) Indicator model VR1624.
 - (ii) Indicator model VR1624 with accumulative or zero-start ticket printer.
 - (iii) Indicator model VR7887.
 - (iv) Indicator model VR7887 with accumulative or zero-start ticket printer.

The indicators and ticket printers are single-handle reset. A preset indicator, either VR7889 or Smith 300B, 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.
- (g) A single pulse transmitter or a multiple-head transmitter with a maximum of three pulsers with interface to remote indicators which are not in use for trade.

* Neither the strainer with air release head nor the strainer with separate de-aerator is a part of the measuring instrument examined and approved by the Commission.

- (h) Flow rate control valve.
- (i) 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 sharply defined weir at a fixed level from which the delivery pipe drains to the outlet for all configurations of the loading arm whilst in operation; 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 Systems

1.3.1 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 operating over a range of more than
Minimum flow rate) 275 L/min)
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, preset indicator and pulse transmitter are sealed by passing a sealing wire through the attachment-mounting bolts. The calibration is sealed by the same wire or a separate wire terminating beneath a lead-stamping plug (Figure 5).
- (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 5).
- (c) If peripheral equipment is fitted, sealing is to be provided at the peripheral equipment plugs and sockets.

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

Without ticket printer.

2.2 Variant 2

Without preset-control indicator and preset valve.

2.3 Variant 3

With rigid extension between the meter and indicator.

2.4 Variant 4

Without pulse transmitters.

2.5 Variant 5

Without flow rate control valve .

TEST PROCEDURE 5/68/54

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) $\pm 0.3\%$ for all flow rates when operating over a flow rate range, within the marked maximum and minimum flow rates, of more than 275 L/min; or
 - (b) $\pm 0.15\%$ when operating at a flow rate within $\pm 5\%$ of nominal as marked on the meter.
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 on the indicator.



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No P5/6B/54

CHANGE No 1

The description of the

Pipeline/Loading Rack System with AO Smith "F"
Series Flowmeter

given in Certificate of Approval No P5/6B/54 is
altered by:

on page 1, 8th line from bottom, alter 5000 L/min
to read 500 L/min.

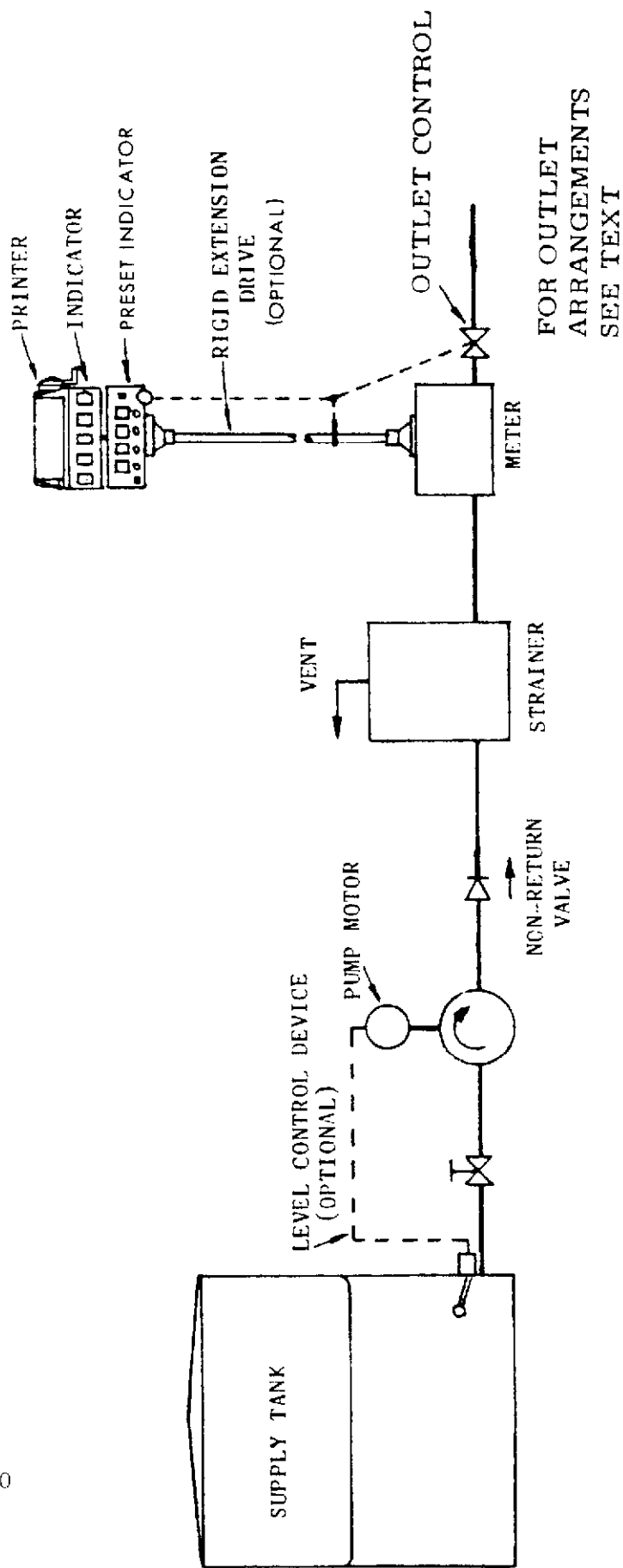
Signed

Executive Director

19/12/80

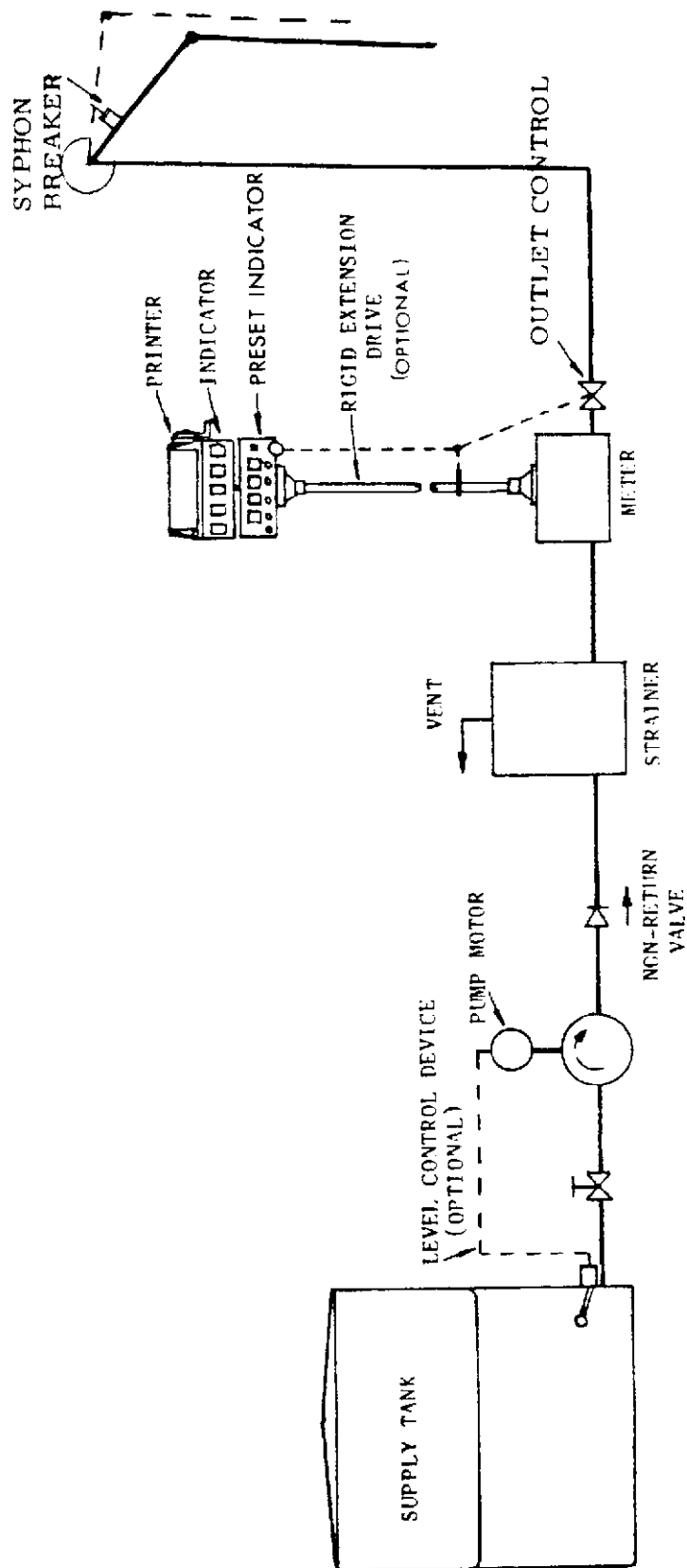
FIGURE P5/6B/54 - 1

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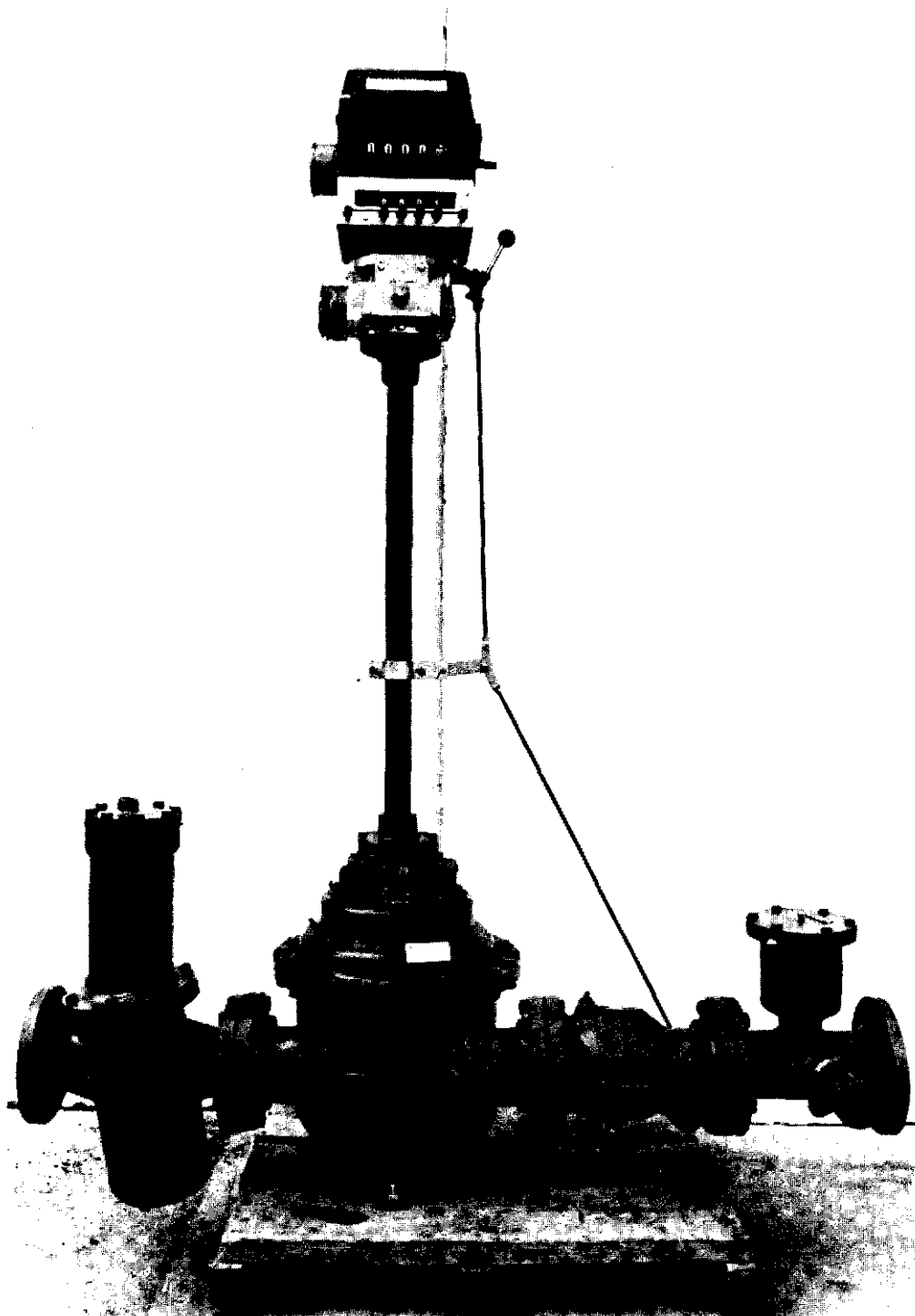
Pipeline Flowmeter - Schematic Diagram

FIGURE P5/6B/54 - 2



Loading-rack Flowmeter - Schematic Diagram

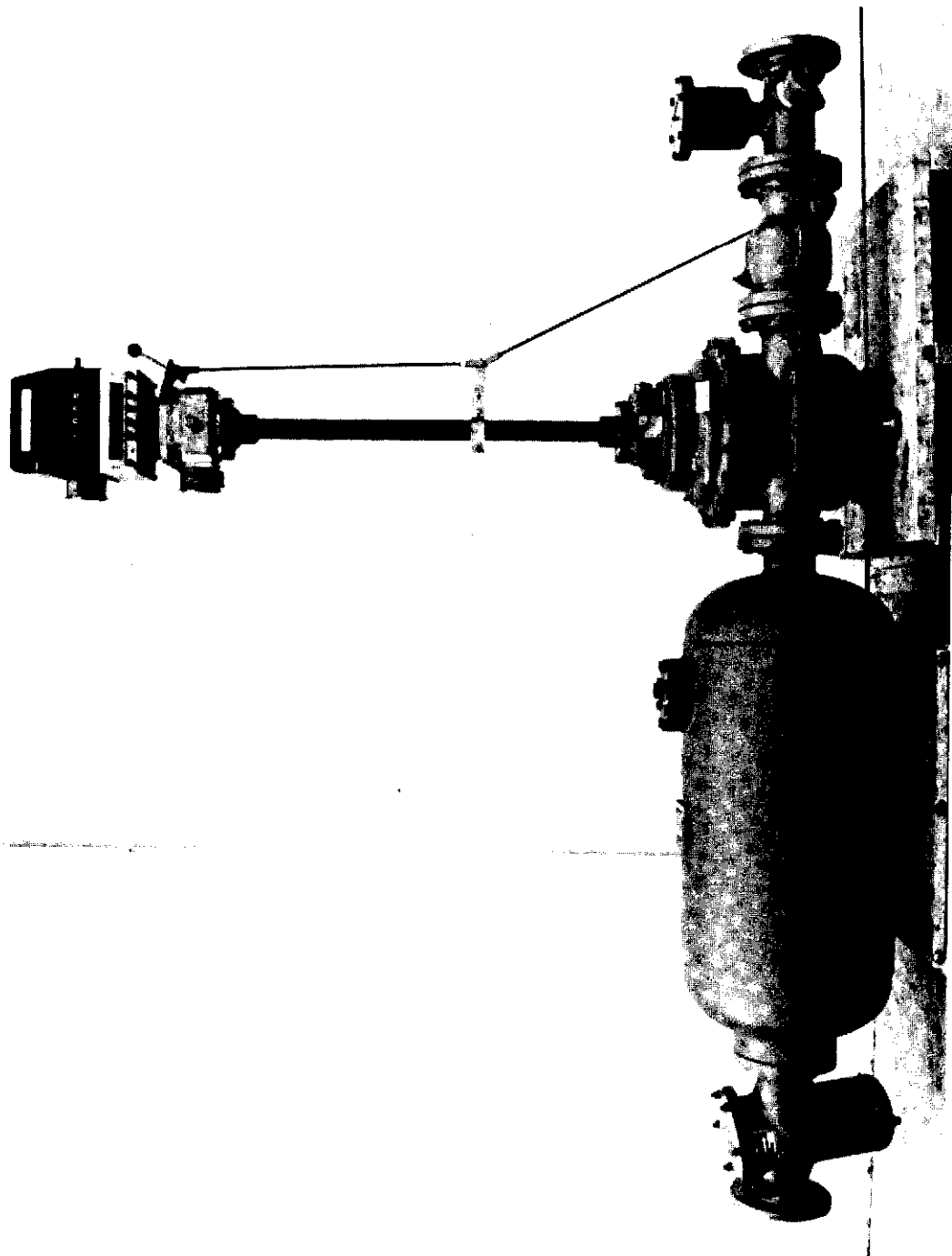
FIGURE P5/6B/54 - 3



Meter and Strainer with Air Release Head

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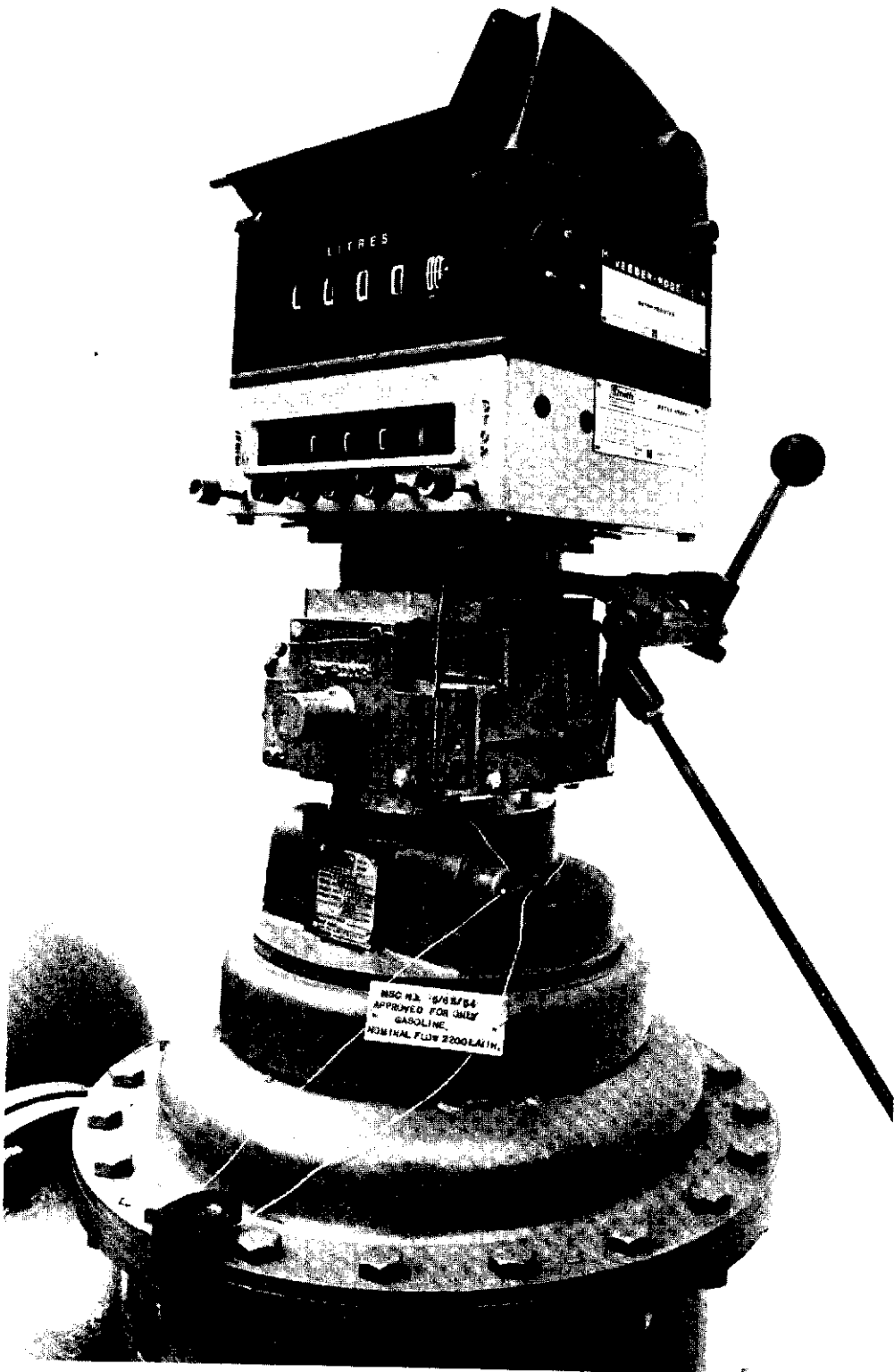
FIGURE P5/6B/54 - 4



Meter and Strainer with Separate De-aerator

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FIGURE 5/6B/54 - 5



AC Smith "F" Series Meter and
Attachments showing Sealing

11/5/81