



NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 5/68/64

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

Petroleum Product Flowmetering System with Liquid Controls M15 Series Flowmeter

submitted by Engineering Products Pty Ltd
418-428 Burnley Street
Burnley, Victoria, 3121

are suitable for use for trade.

The approval of the pattern is subject to review on or after 1/9/88.

The approval of Provisional Variant 1 is subject to review on or after 1/9/84.

Instruments purporting to comply with this approval shall be marked NSC No 5/68/64.

Relevant drawings and specifications are lodged with the Commission.

Conditions of Approval

1. The maximum and minimum permissible flow rates are 760 L/min and 76 L/min respectively.
2. When the range of flow rates in service exceeds 76 L/min, the maximum and minimum flow rates shall be marked on the data plate.

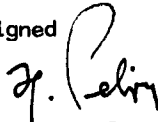
When the flow rate in normal conditions of use remains within $\pm 5\%$ of a nominal flow rate, the nominal flow rate shall be marked on the data plate.
3. The system is not used for liquefied gases.
4. The type of liquid for which the instrument is verified is marked on the data plate, that is, kerosene, heating oil or distillate; Provisional Variant 1 allows the use of petrol.
5. The system is designed so that gas cannot enter the meter.
6. Instruments are installed in the manner described in Technical Schedule No 5/68/64.
7. The Commission reserves the right to inspect any installation covered by this approval.

In addition, for Provisional Variant 1

8. Each system is tested in a manner approved by the Commission at intervals of approximately three months, or, if the throughput is less than 2 ML per month, at intervals of not less than 6 ML, such tests to be arranged by the submitter, and the results sent to the Commission.

9. In the event of unsatisfactory performance or if suitable test results are not received, the approval of the Provisional Variant may be cancelled.

Signed



Executive Director

Descriptive Advice

Pattern: approved 1/8/83

- . Petroleum product flowmetering system with Liquid Controls M15 series flow-meter.

Provisional Variant: approved 1/8/83

1. For use with petrol.

Technical Schedule No 5/68/64 dated 29/8/83 describes the pattern and provisional variant 1.

Filing Advice

The documentation for this approval comprises:

Certificate of Approval No 5/68/64 dated 29/8/83
Technical Schedule No 5/68/64 dated 29/8/83
Test Procedure No 5/68/64 dated 29/8/83
Figures 1 to 4 dated 29/8/83.

29/8/83



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6B/64

Pattern: Petroleum Product Flowmetering System with Liquid Controls M15 Series Flowmeter

Submittor: Engineering Products Pty Ltd
418-428 Burnley Street
Burnley, Victoria, 3121.

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 for all combinations of alternative uses of the output from the pump. The pump by-pass valve pressure is set so that the maximum no-flow system pressure is 600 kPa. If a gas purger is fitted, provision for a pressure gauge is made between the pump and the gas purger.
 - (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.
 - (e) Liquid Controls M15 series flowmeter (Figure 4) with or without a rigid extension between the meter and the indicator.
 - (f) One of the following combinations of assemblies:
 - (i) Indicator model VR1624, VR1692 or VR7887, or
 - (ii) Ticket printer/indicator model VR7890.
- Note: A preset indicator model VR7889 and preset control valve model V-15 may also be fitted (Figure 4).
- (g) Flow rate control valve.
 - (h) Outlet control valve located downstream of the meter with no intermediate outlet.

* The strainer is not a part of the measuring instrument examined and approved by the Commission.

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 Vehicle-mounted Flowmeter System

This system is similar to the pipeline system except that the outlet control valve is in the form of either a nozzle at the end of a reeled hose (Figure 3) or a drybreak coupling. A non-return valve, downstream of the meter prevents syphon-back of metered liquid.

1.3.1 Nozzle

Any nozzle with integral outlet control valve. If fitted with an integral anti-drain valve, the valve shall be immediately before the outlet control valve.

1.3.2 Anti-drain Valve

If the nozzle anti-drain valve retaining pressure is less than 55 kPa, a separate anti-drain valve must be fitted to the nozzle end of the hose.

1.4 Features Common to All Three Systems

1.4.1 Marking

Instruments are marked with the following data, together in one location:

Manufacturer's name or mark	
Meter model	
Serial number	
NSC approval number	NSC No 5/6B/64
Maximum flow rate (760 L/min)	(when operating over a range of more
Minimum flow rate (76 L/min)	than 76 L/min)
Nominal flow rate	(when flow rate is within $\pm 5\%$ of nominal)
Type of liquid for which the instrument is verified	
Minimum delivery	

1.4.2 Sealing And Verification Provision

- (a) The indicator or ticket printer/indicator may be sealed by passing a sealing wire through the attachment-mounting bolts terminating in a lead seal. The calibrator is sealed by the lead stamping plug provided for verification (Figure 4).
- (b) The instrument data plate is attached to the instrument or framework by a lead stamping plug or by threading the indicator sealing wire through a hole in the data plate.

1.4.3 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. Description of Provisional Variant 1

For use with petrol, subject to Conditions of Approval 1 to 9.

TEST PROCEDURE No 5/6B/64

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 any flow rate when operating over a flow rate range of more than 76 L/min (but within the marked maximum and minimum flow rates); or
 - (b) $\pm 0.15\%$ when operating at a flow rate within $\pm 5\%$ of nominal as marked on the meter.
2. The maximum permissible variation between indicators is 0.2 scale intervals.
 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.

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

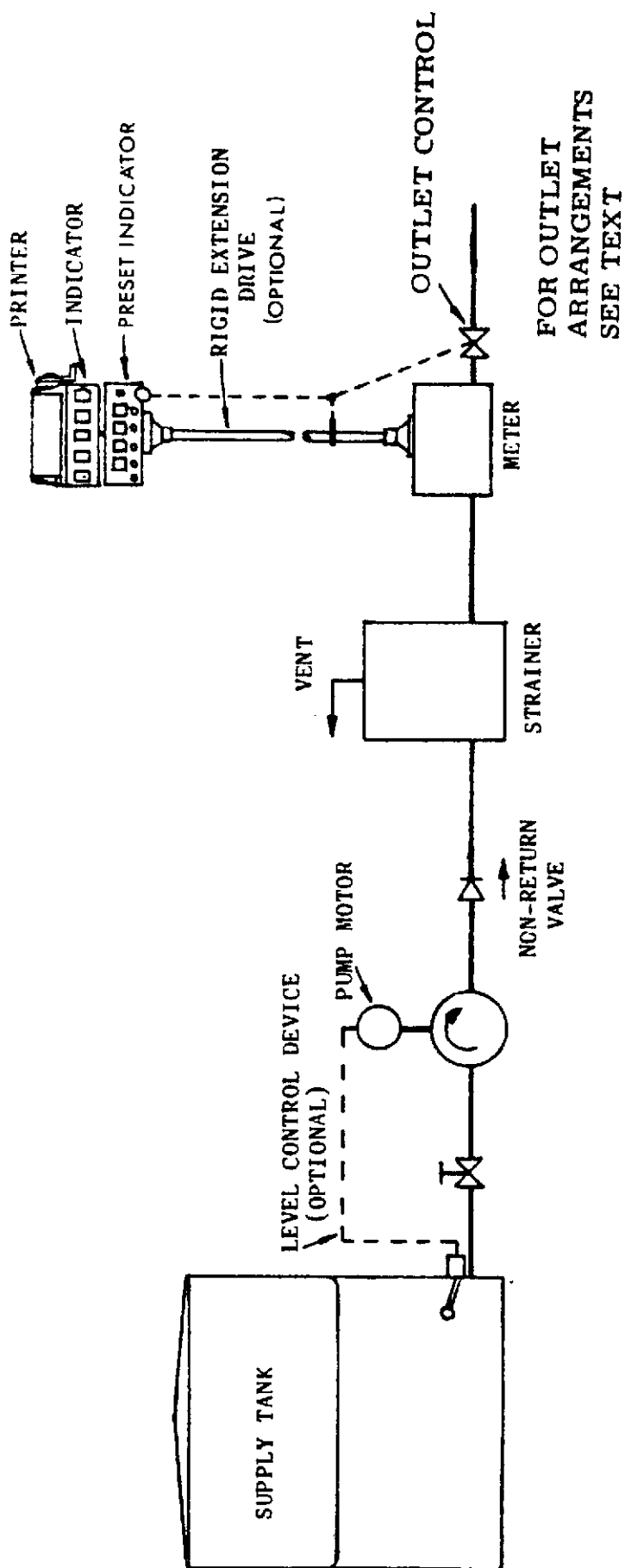
4. Test delivery - if the test delivery is less than ten times the minimum delivery, the reading error of the indicator or the rounding error of the ticket printer is minimised by completing the delivery at a graduation line.

Additionally for the Provisional Variant, the following information shall be recorded, for sending to the Commission, at each periodic test as detailed in the Conditions of Approval:

- (a) NSC approval number
- (b) Installation address
- (c) Meter serial number
- (d) Identification of meter assembly in terms of the pattern and variant described in this Schedule
- (e) Totaliser reading at beginning of test
- (f) Type of liquid
- (g) Temperature of liquid entering the meter
- (h) Information from the Weights and Measures inspection as to the calibration results recorded in 1. above.

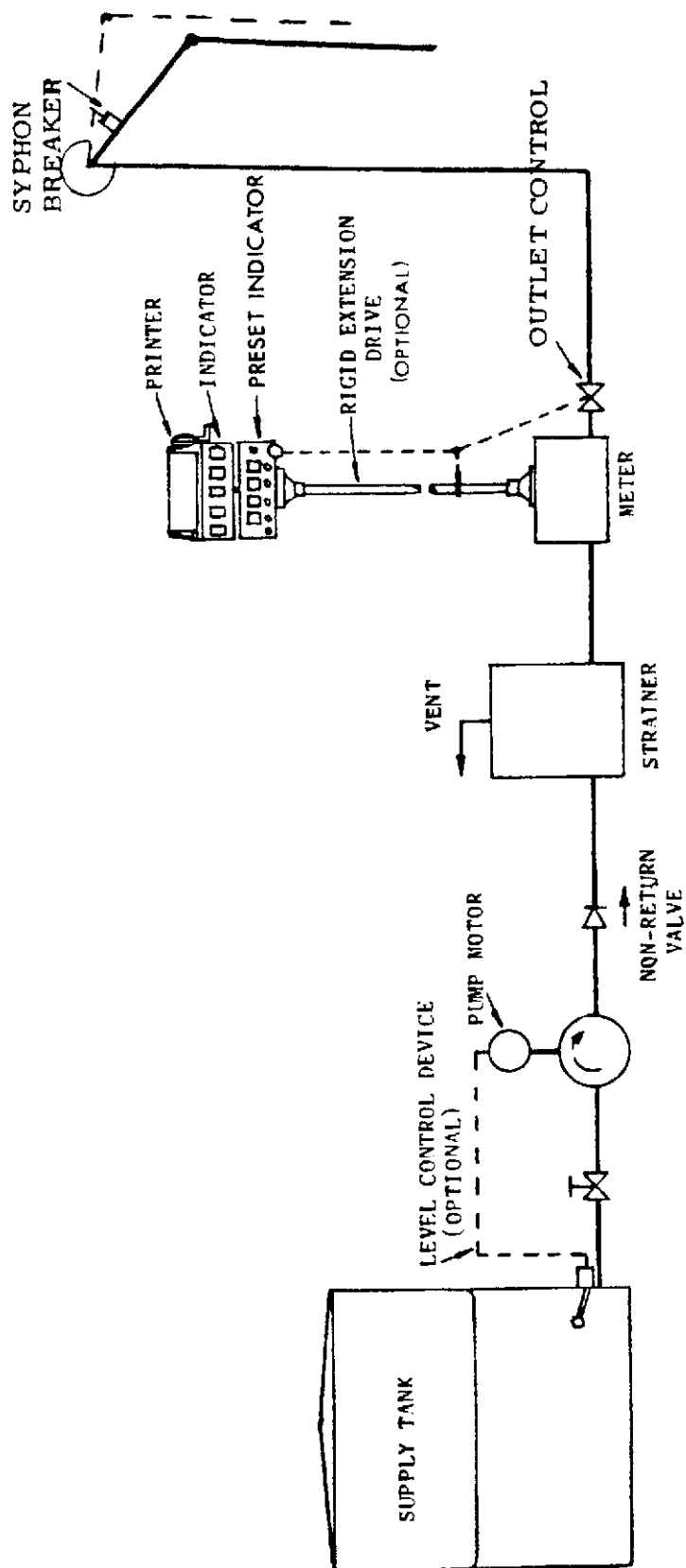
FIGURE 5/6B/64 - 1

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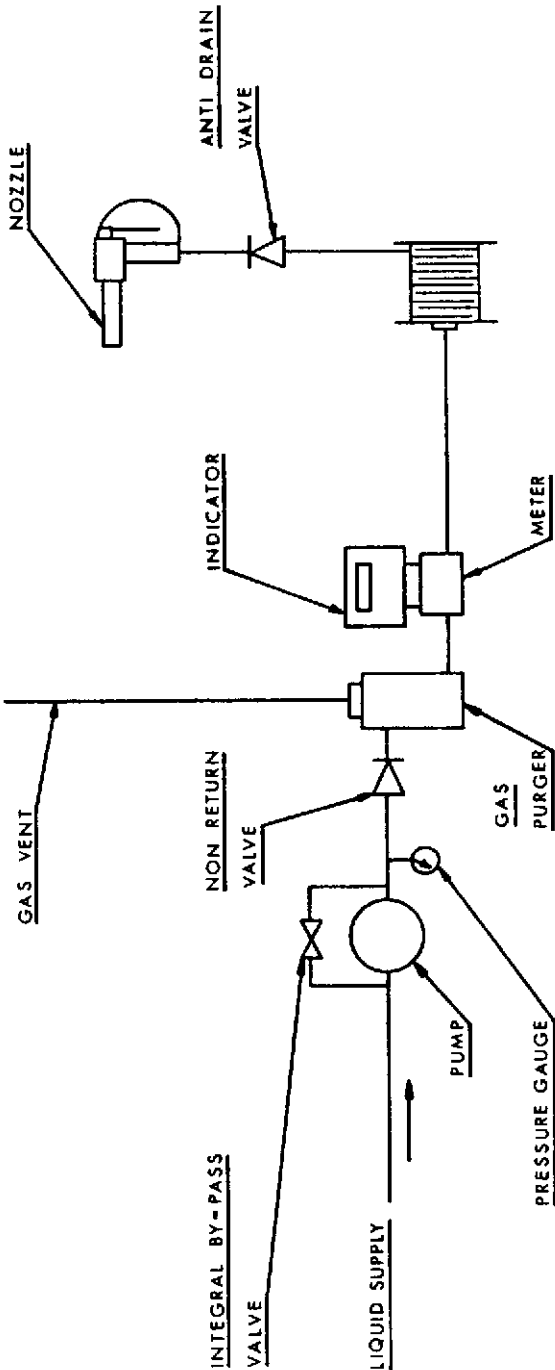
Pipeline Flowmeter System

FIGURE 5/68/64 - 2



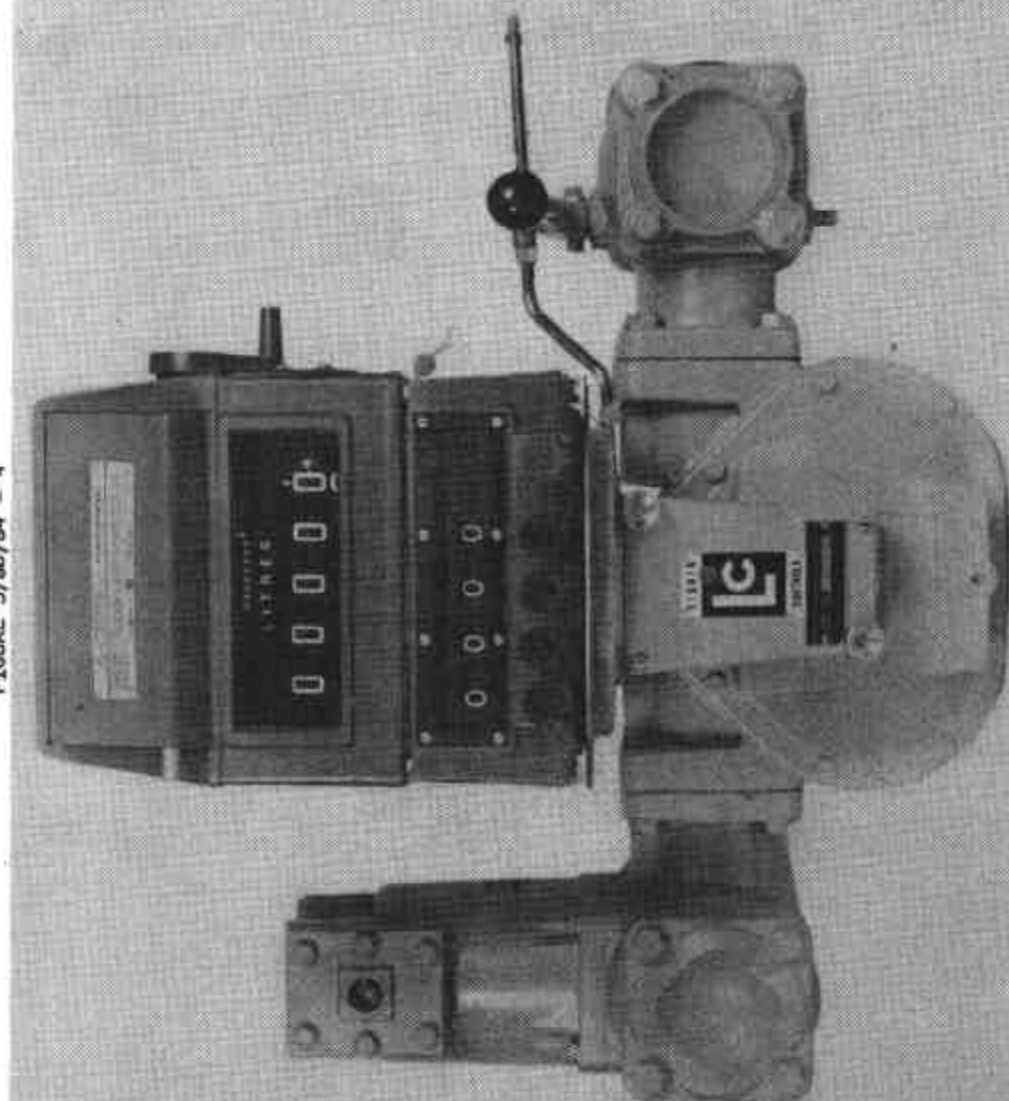
Loading-rack Flowmeter System

FIGURE 5/6B/64 - 3



Typical Vehicle-mounted Flowmeter System

FIGURE 5/68/64 - 4



Meter With Ticket Printer/Indicator And Preset