



NATIONAL STANDARDS COMMISSION

CERTIFICATE OF APPROVAL No 5/6B/33

This is to certify that the patterns of the
Wayne Flowmeter (Pipeline) with A. O. Smith T20 Meter
submitted by Wayne Pumps Australia Pty Ltd,
29 Anzac Highway,
Keswick, South Australia, 5035,

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

Date of Approval: 19 December 1978

The patterns are described in Technical Schedule No 5/6B/33, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1 January 1984.

All instruments conforming to this approval shall be marked with the approval number "NSC No 5/6B/33".

Approval is granted on condition that:

1. The maximum flow rate of an instrument is a flow rate between 450 and 900 L/min. The minimum flow rate is 20% of the maximum flow rate achievable with a particular instrument.
2. The viscosity of the liquid measured is between 0,4 and 8,3 mPa.s.
3. The liquid (commercial or technical name) for which the instrument is verified is nominated on the instrument data plate.
4. The pump suction operates under a positive liquid head.
5. 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

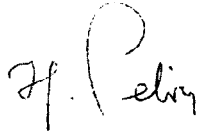
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level of the liquid falling to a level at which air could be drawn into the pump.

6. The liquid entering the meter is free of gas.

Signed

A handwritten signature in cursive script, appearing to read "H. Pelin". The signature is written in dark ink and is positioned centrally below the word "Signed".

Executive Director

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TECHNICAL SCHEDULE No 5/6B/33

Pattern: Wayne Flowmeter (Pipeline) with A. O. Smith T20 Meter

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

Date of Approval: 19 December 1978

Description:

The pattern (Figure 1) is a flooded-suction pipeline flowmeter.

The flowmeter comprises the following:

1. Supply tank.
2. Pump — a positive or non-positive displacement 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. The pump is for the exclusive use of the flowmeter, that is, without alternative outputs; alternatively the flowmeter flow rate stays within the appropriate flow-rate range for all combinations of alternative uses of the output from the pump.
3. Non-return valve in the pipe between the pump and the meter or an arrangement of the components and piping to keep the system full of liquid at all times.
4. Gas purger — a gas purger and strainer may be fitted.*
5. A. O. Smith T20 meter (Figure 2).
6. Veeder-Root 7085 or VR 789G zero-start single-handle reset

* The gas purger and strainer is not a part of the measuring instrument examined and approved by the Commission; its inclusion is approved by the Commission only on the basis that it may be used as a strainer.

indicator and ticket printer (Figure 2). The ticket printer has 1 litre increments and the indicator has a 1 litre scale interval; the first element is marked with ten scale-mark lines numbered from 0 to 9. The aperture through which the first element is viewed is widened in the direction of travel.

7. Outlet-control valve — located downstream from the meter with no intermediate offtake. It is followed by an anti-drain valve which retains a pressure of not less than 55 kPa, or is incorporated in an arrangement of piping which ensures that the meter and delivery pipe do not drain.

The anti-drain valve if fitted (or if not fitted, the outlet-control valve) is the point at which the delivery occurs.

8. Sealing —

- (a) the meter-calibration cover and the indicator attachment-mounting bolts are sealed with a sealing wire, the ends of which are terminated beneath a fixed lead-plug seal (Figure 3); and
- (b) a data plate marked: VERIFIED FOR PETROL or VERIFIED FOR KEROSENE, HEATING OIL AND DIESEL FUEL,** is attached to the instrument either by the above sealing wire or by a lead-plug seal (Figure 3).

The approval includes the following:

1. A Veeder-Root 1624 or VR 7887 zero-start indicator with a scale

** The approval for each of the following liquids is based upon the liquid having a viscosity within the range specified for temperatures of 5°C to 40°C, taking into account the variations in the viscosity of each product which occur with the output from a single refinery or between different refineries and at different times throughout each year:

<u>Specific liquid¹</u>	<u>Permitted viscosity range</u>
Petrols	0,4 to 0,7 mPa.s
Kerosene ²	0,6 to 2,2 mPa.s
Heating oil	1,1 to 4,0 mPa.s
Diesel fuel	1,7 to 8,3 mPa.s

Notes: ¹ A known trade abbreviation of the name of the liquid is acceptable.

² "Kerosene" includes white spirits and aviation turbine fuel.

interval of 1 litre; the first element is marked with ten scale-mark lines numbered from 0 to 9 (Figure 4). The aperture through which the first element is viewed is widened in the direction of travel.

2. A Veeder-Root 7084 single-handle reset accumulative ticket printer and zero-start indicator. The ticket printer has 1 litre increments and the indicator has a 1 litre scale interval; the first element is marked with ten scale-mark lines numbered from 0 to 9. The aperture through which the first element is viewed is widened in the direction of travel.
3. An A. O. Smith 343-30 or Veeder-Root 7889 preset counter* and preset-counter-operated outlet-control valve (Figure 5). The counter may cause the outlet-control valve to close in two stages. The preset-counter attachment bolts are sealed similarly to the indicator-attachment bolts. The sealing is illustrated in Figure 5. The counter is marked NOT IN USE FOR TRADE.
4. Pulse-transmitter unit, Type PE-SX, D or E (Figure 6), which provides quantity output pulses to peripheral devices which are not a part of the measuring instrument.** These devices, which may only be provided with the authorisation of the Weights and Measures Authority of the State, may, for example, store and process the data, etc. The attachment bolts of the pulse generator are sealed similarly to the indicator-attachment bolts. Provision is made to seal the outputs of the pulse-transmitter units to prevent the addition of peripheral equipment, or to seal peripheral equipment to the output.

The use of such peripheral equipment will not affect the operation of the flowmeter.

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

** Devices which determine and indicate the value of a physical quantity, devices which calculate price and in the presence of the purchaser or vendor indicate price, devices which control the measurement and devices which are intended to provide the purchaser or vendor with a printed record, recorded at the time of the measurement, of the physical quantity or physical quantity and price, are a part of the measuring instrument which requires approval by the Commission.

5. A rigid extension drive from the meter to the indicator and ticket printer, in which case separate seals are provided for the meter and the indicator and ticket printer.

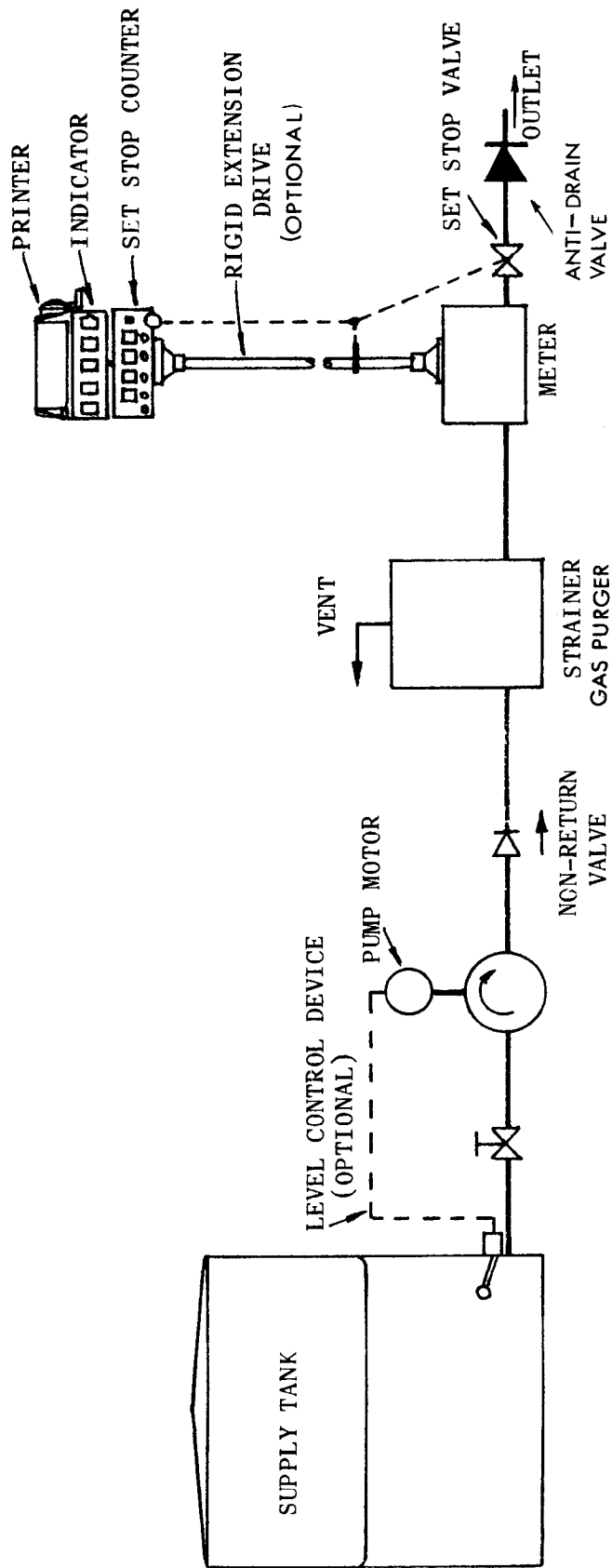
Special Tests:

1. The instrument should be tested with the liquid for which it will be used and which is marked on the instrument data plate.
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 quantity delivered should not exceed 1% of the minimum delivery.
3. Minimum delivery — the minimum delivery will be 200 litres when an accumulative ticket printer is fitted, 100 litres when a zero-start ticket printer is fitted, and 20 litres when only an indicator is fitted.
4. Flow rate —

If the pump has alternative outputs, check that the meter flow rate stays within the 5 to 1 flow range for all combinations of alternative uses of the output from the pump.

5. Positive head — a pressure gauge fitted to the inlet side of the pump should indicate a positive head at all flow rates.
6. 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 completing the delivery at a graduation line.

FIGURE 5/6B/33 - 1



Wayne Pipeline Flowmeter — Schematic Drawing

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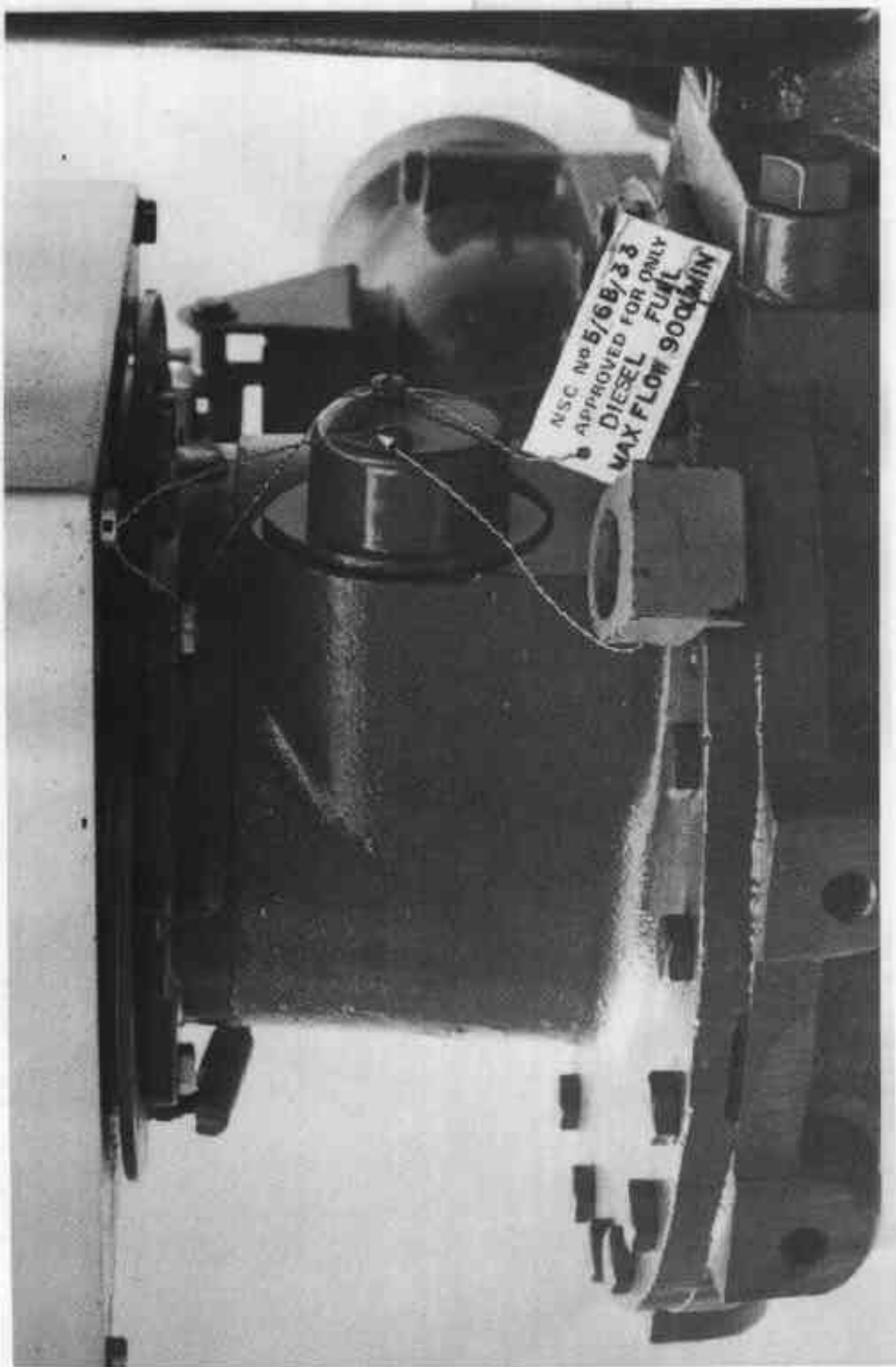
FIGURE 5/6B/33 - 2



A. O. Smith T20 Meter with VR 7890 Indicator and
Ticket Printer

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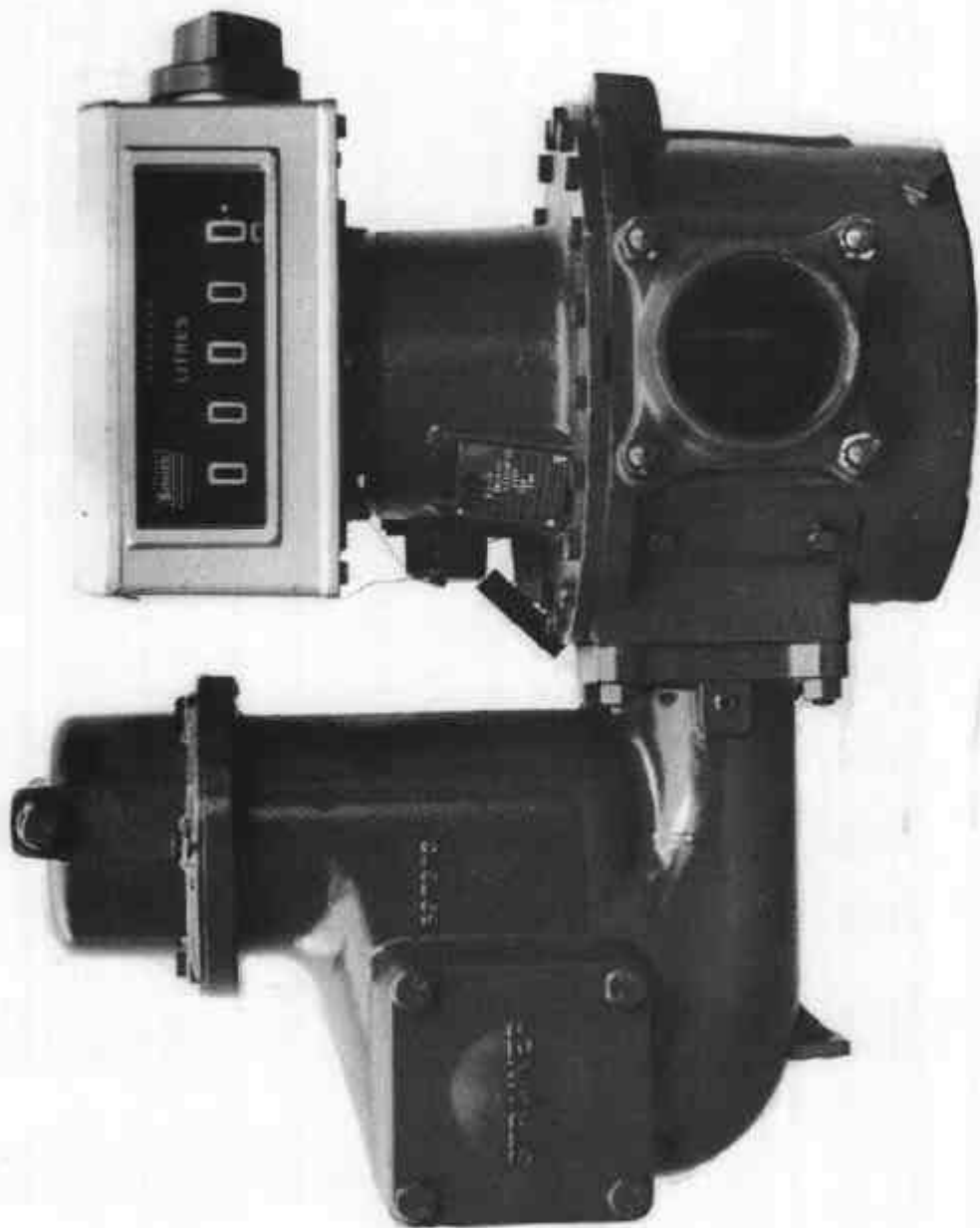
FIGURE 5/6B/33 - 3



A. O. Smith T20 Meter showing Sealing

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FIGURE 5/6B/33 - 4



A. O. Smith T20 Meter with VR 7887 Meter



A. O. Smith T20 Meter with VR 7889 Preset Counter and
Preset-counter-operated Outlet-control Valve

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PE-SX TRANSMITTER



'D' TRANSMITTER



'E' TRANSMITTER

Pulse Transmitter PE-SX, D and E (Method of sealing not illustrated)