National Standards Commission

Certificate of Approval

No 5/6B/86

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

This is to certify that an approval for use for trade has been granted in respect of the

Oval Engineering Model LB 554 Flowmetering System

submitted by Macnaught Industries Pty Ltd
41 - 45 Henderson Street
Turrella NSW 2205.

NOTE: This Certificate relates only to the suitability of the pattern of the instrument for use for trade and only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with the requirements of any other Australian authority.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 February 1998.
This approval expires in respect of new instruments on 1 February 1999.

Instruments purporting to comply with this approval shall be marked NSC No 5/6B/86 and only by persons authorised by the submittor.

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The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

Special: for provisional variant 1

This approval is subject to review on or after 1 October 1995.
This approval expires in respect of new instruments on 1 October 1996.

Instruments purporting to comply with this approval shall be marked NSC No P5/6B/86A and only by persons authorised by the submittor.

The submittor is to provide the Commission with copies of the results of all verification/certification tests.

In the event of suitable results not being received, this approval may be withdrawn.

DESCRIPTIVE ADVICE

Pattern: approved 19 January 1993

- A bulk flowmetering system using an Oval Engineering model LB 554 flowmeter.

Technical Schedule No 5/6B/86 describes the pattern.

Variant: provisionally approved 7 September 1994

1. For use with non-hydrocarbon liquids having a kinematic viscosity between 0.4 and 10 000 mm^2/s.

Technical Schedule No 5/6B/86 Variation No 1 describes variant 1.

FILING ADVICE

Certificate of Approval No 5/6B/86 dated 25 July 1994 is superseded by this Certificate and may be destroyed.

The documentation for this approval now comprises:

Certificate of Approval No 5/6B/86 dated 21 November 1994
Technical Schedule No 5/6B/86 dated 25 July 1994 (incl. Test Procedure)
Technical Schedule No 5/6B/86 Variation No 1 dated 21 November 1994
Figures 1 and 2 dated 25 July 1994

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

National Standards Commission

TECHNICAL SCHEDULE No 5/6B/86

Pattern: Oval Engineering Model LB 554 Bulk Flowmetering System.

Submittor: Macnaught Industries Pty Ltd
41 - 45 Henderson Street
Turrella NSW 2205.

1. Description of Pattern

A bulk flowmetering system using an Oval Engineering model LB 554 flowmeter (Figure 1) which is approved for use with liquids having a kinematic viscosity between 0.4 and 10 mm^2/s.

The system is approved for use with maximum and minimum flow rates of 150 L/min and 30 L/min respectively. The minimum quantity is 50 litres.

1.1 Pipeline Flowmetering System (Figure 1)

The system comprises:

(i) Tank

A supply tank.

(ii) Pump

A pump of either positive displacement or centrifugal type - in the latter case the pump is 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.

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 pump.

(iii) Non-return Valve

A non-return valve between the pump and the meter or an arrangement of the components and piping to keep the system full of liquid at all times.

(iv) Gas Purger/Strainer

A gas purger/strainer assembly fitted as close as practical to the meter inlet (Figure 2). The gas purger is approved on the condition that the pump is operated under a positive suction head.

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The gas purger/strainer assembly may be modified for use as a strainer only where the tank has automatic alarming of low-liquid level, or has a float-operated shut-off valve in the pump supply, or has other means to prevent gas entering the system.

(v) Meter

An Oval Engineering model LB 554 40 mm oval gear flowmeter (Figure 2) mounted horizontally or vertically in accordance with the manufacturer's instructions. Provision is made for a pressure gauge to be connected downstream of the meter.

(vi) Calibrator

An Oval Engineering model F3 calibrator (Figure 2) is driven directly by the meter shaft through a magnetic coupling.

(vii) Indicating System

Any of the following assemblies:

(a) An Oval Engineering model LW11 or model LW13 (Figure 2) non-resettable indicator comprising an analog dial indicator and a non-resettable semi-digital totaliser; or

(b) An Oval Engineering model LW42 resettable digital indicator (also known as a Veeder Root VR788700 series indicator); or

(c) An Oval Engineering model LW43 accumulative start or model LW44 zero start ticket printing/resettable digital indicator combination (also known as a Veeder Root VR789000 series indicator).

The marked and numbered scale interval is 1 L.

In addition the meter may be fitted with an Oval Engineering PG30 series pulse generator, which is driven directly from the F3 calibrator or the LW13 indicator assembly.

The pulse generator, which provides output pulses proportional to flow, may be connected to any compatible Commission-approved electronic indicator.

The pulse generator has the following specifications:

Signal voltage:	12 volts DC
Pulses per shaft revolution:	100 per rev
Maximum pulser shaft speed:	600 rev/min
Output pulses:	rectangular waveform

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(viii) Transfer Device

A transfer device in the form of a positive shut-off component such as a manually or automatically-operated control valve located downstream of the meter with no intermediate outlet.

1.2 Markings

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

Manufacturer's name or mark	
Meter model number	
Serial number	
NSC approval number	5/6B/86
Maximum flow rate	..... L/min
Minimum flow rate	..... L/min
Minimum quantity	 L
Type of liquid for which the meter is verified	..... #

May be located separately, e.g. on a metal tag sealed to the instrument.

1.3 Sealing and Verification/Certification Provision

The cover of the F3 calibrator shall be sealed.

Provision is made for a verification/certification mark to be applied.

TEST PROCEDURE

Instruments should be tested in accordance with the Inspector's Handbook using the liquid with which they will be used and which is marked on the data plate.

Maximum Permissible Errors at Verification/Certification

The maximum permissible error applied during a verification test from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule is ±0.3%.

National Standards Commission

TECHNICAL SCHEDULE No 5/6B/86

VARIATION No 1

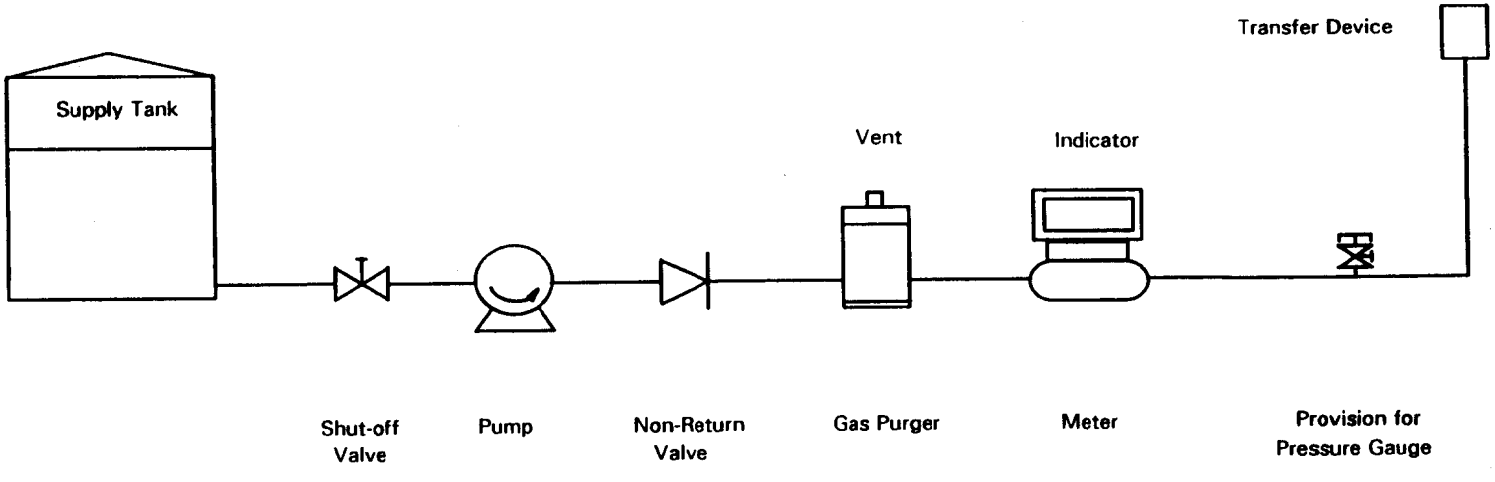
Pattern: Oval Engineering Model LB 554 Bulk Flowmetering System.

Submittor: Macnaught Industries Pty Ltd
41 - 45 Henderson Street
Turrella NSW 2205.

1. Description of Variant 1

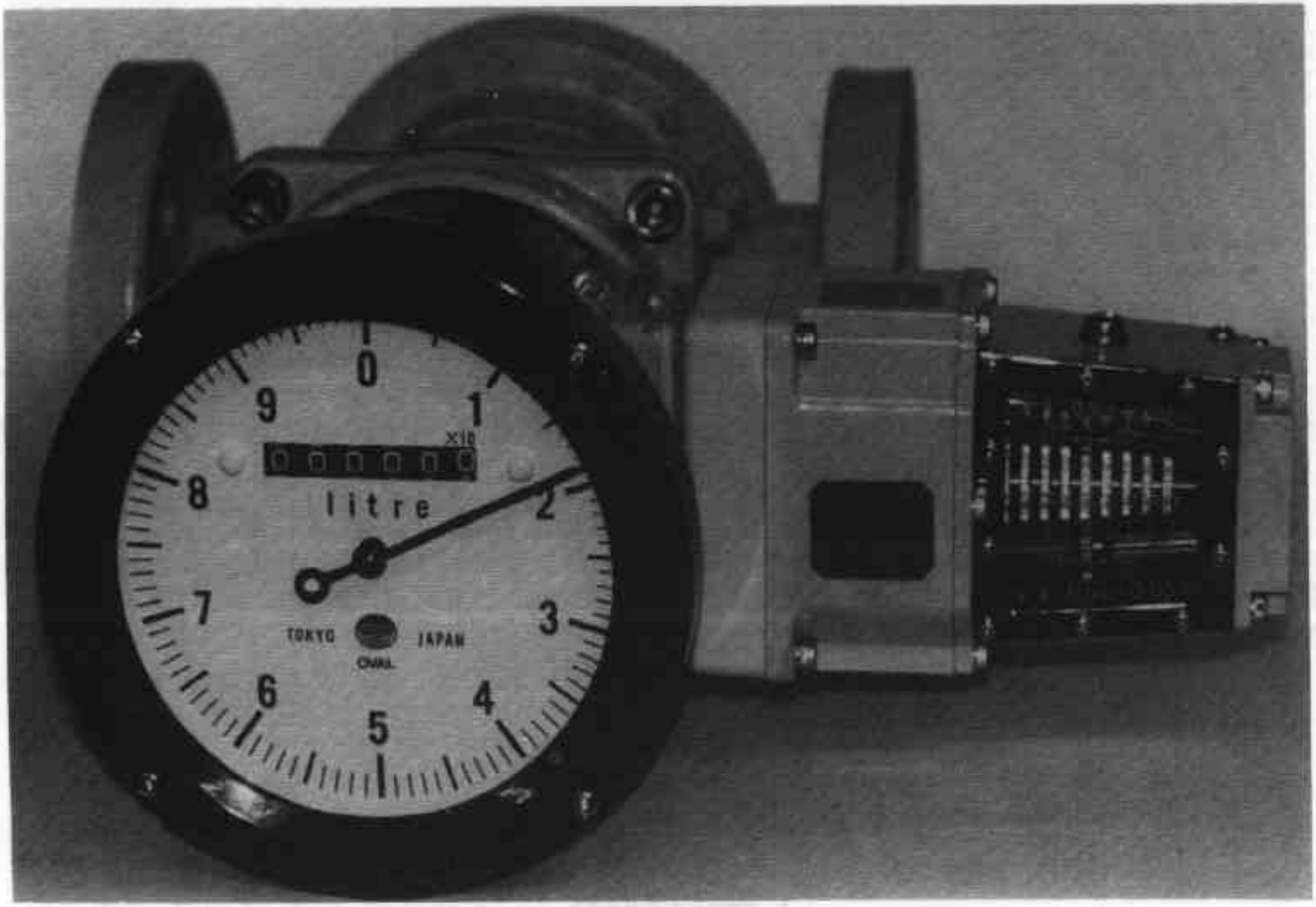
A bulk flowmetering system using an Oval Engineering model LB 554 flowmeter which is approved for use with non-hydrocarbon liquids having a kinematic viscosity between 0.4 and 10 000 mm^2/s.

FIGURE 5/6B/86 - 1



Typical Pipeline Flowmetering System

FIGURE 5/6B/86 - 2



Oval Model LB 554 Flowmeter