

National Standards Commission



Supplementary Certificate of Approval

No S262A

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

Avery Hardoll Model Masterload Flowmeter Control System for Liquid-measuring Systems

submitted by Gilbarco Aust. Ltd
 12-38 Talavera Road
 North Ryde NSW 2113.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade 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 any requirements regarding safety.

This Certificate is issued upon completion of a review of NSC approval No S262.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 September 2000.
This approval expires in respect of new instruments on 1 September 2001.

Instruments purporting to comply with this approval shall be marked NSC No S262A and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked NSC No S262A in addition to the approval number of the instrument.

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.

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

DESCRIPTIVE ADVICE

Pattern: approved 21 August 1995

- An Avery Hardoll model Masterload control system for use in Commission-approved liquid measuring systems.

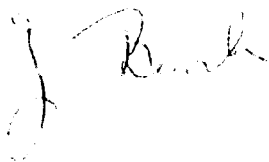
Technical Schedule No S262A describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Supplementary Certificate of Approval No S262A dated 10 July 1996
Technical Schedule No S262A dated 10 July 1996 (incl. Test Procedure)
Figures 1 and 2 dated 10 July 1996

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.

A handwritten signature in dark ink, appearing to be 'J. B. ...', is written over a faint, circular official stamp.



National Standards Commission

TECHNICAL SCHEDULE No S262A

Pattern: Avery Hardoll Masterload Flowmeter Control System for Liquid-measuring Systems.

Submittor: Gilbarco Aust. Ltd
12-38 Talavera Road
North Ryde NSW 2113.

1. Description of Pattern

An Avery Hardoll model Masterload bulk flowmeter control system for use in Commission-approved liquid-measuring systems incorporating an Avery Hardoll BM series flowmeter.

The pattern (Figure 1) comprises an indicator (with output sockets for auxiliary and/or peripheral devices), a power supply unit, a pulse generator mounted on the meter and a platinum resistance temperature probe.

1.1 Indicator

An Avery Hardoll flowmeter indicator is used which has a resettable volume display, a rate of flow display and a totaliser display. The indicator also has a multi-point linearisation correction facility, and an electronic volume conversion for temperature facility.

The model BEMY103/25 indicator (Figure 1) incorporates a preset facility with the capability for connection and operation of a solenoid controlled flow control valve. In addition to the markings shown in Figure 1, the preset indication shall be marked 'Preset Indication Not in Use For Trade'.

Alternatively, a model BEMY103/31 indicator (Figure 2) may be used which is similar to that shown in Figure 1 but without preset.

1.1.1 Display

When power is applied, a display check is initiated, after which the last volume delivered is displayed.

Volume (resettable)	9999.99 L in 0.01 L increments, or 999999 L in 1 L increments
Preset (resettable)	999999 L in 1 L increments
Rate of Flow	9999 L/min in 1 L/min increments
Totaliser	99999999 L in 1 L increments

1.1.2 Power Supply

A BEMY100 series power supply unit which includes a battery for indicator backup in the event of a power failure. In the event of a total power failure the totaliser value and the volume delivered are retained in a non-volatile memory.

Various models of this unit may be used identified by a 1 or 2 digit numeral suffix according to the operating voltage (12 or 24 V DC, or 110 or 240 V AC) and whether the indicator used also has a preset facility.

1.1.3 Volume Conversion For Temperature Facility

An electronic volume conversion for temperature facility is used to convert the measured volume to volume at 15°C of generalised petroleum products of density between 654 kg/m³ and 1074 kg/m³, at liquid temperatures between -10°C and 50°C. Volume conversion is based on Table 54B (generalised products) of the ASTM-IP Petroleum Measurement Tables.

The indicator may be configured to display the density setting and the liquid temperature. The density setting may be viewed in the volume display by pressing the RESET button.

The liquid temperature may be displayed in the rate of flow display, either on a continuous basis, or as a volume-related mean value at the end of the delivery.

1.1.4 Linearisation Facility

A linearisation correction facility for correcting the meter calibration as a function of flow rate up to ±100%.

Up to 8 correction factors over the flow rate range may be entered using the calibration function.

1.2 Pulse Generator

A model BEMY115 solid state pulse generator is used (as shown attached to the flowmeter in Figure 1) which produces pulses proportional to volume, when connected to a Commission-approved Avery Hardoll BM series flowmeter and interfaced with the Masterload indicator.

The pulse generator may be configured for the following specifications:

Pulses per shaft revolution:	33 pulses/rev. (triple capsule meter) 50 pulses/rev. (double capsule meter) 100 pulses/rev. (single capsule meter)
Maximum pulser shaft speed:	630 revolutions/minute

1.3 Sealing and Verification/Certification Provision

Access to the instrument's calibration mode is via a switch located behind a sealed plug at the base of the indicator.

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

1.4 Markings

- (a) Instruments are marked with the following data, together in one location:

Manufacturer's name or mark	
Model number	
Serial number	
NSC approval number	NSC No S262A
Liquid temperature range °C to °C
Liquid density range	654kg/m ³ to 1074kg/m ³

- (b) The preset indication shall be marked 'Preset Indication Not in Use For Trade'.
- (c) When the volume conversion device is activated, the indicator reading face shall be marked 'Converted to Litres at 15°C'.

TEST PROCEDURE

The maximum permissible shaft revolution of the pulse generator and the maximum flow rate of the flowmetering system shall be considered in conjunction with any tests specified in the approval documentation for the instrument to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the Inspector's Handbook.

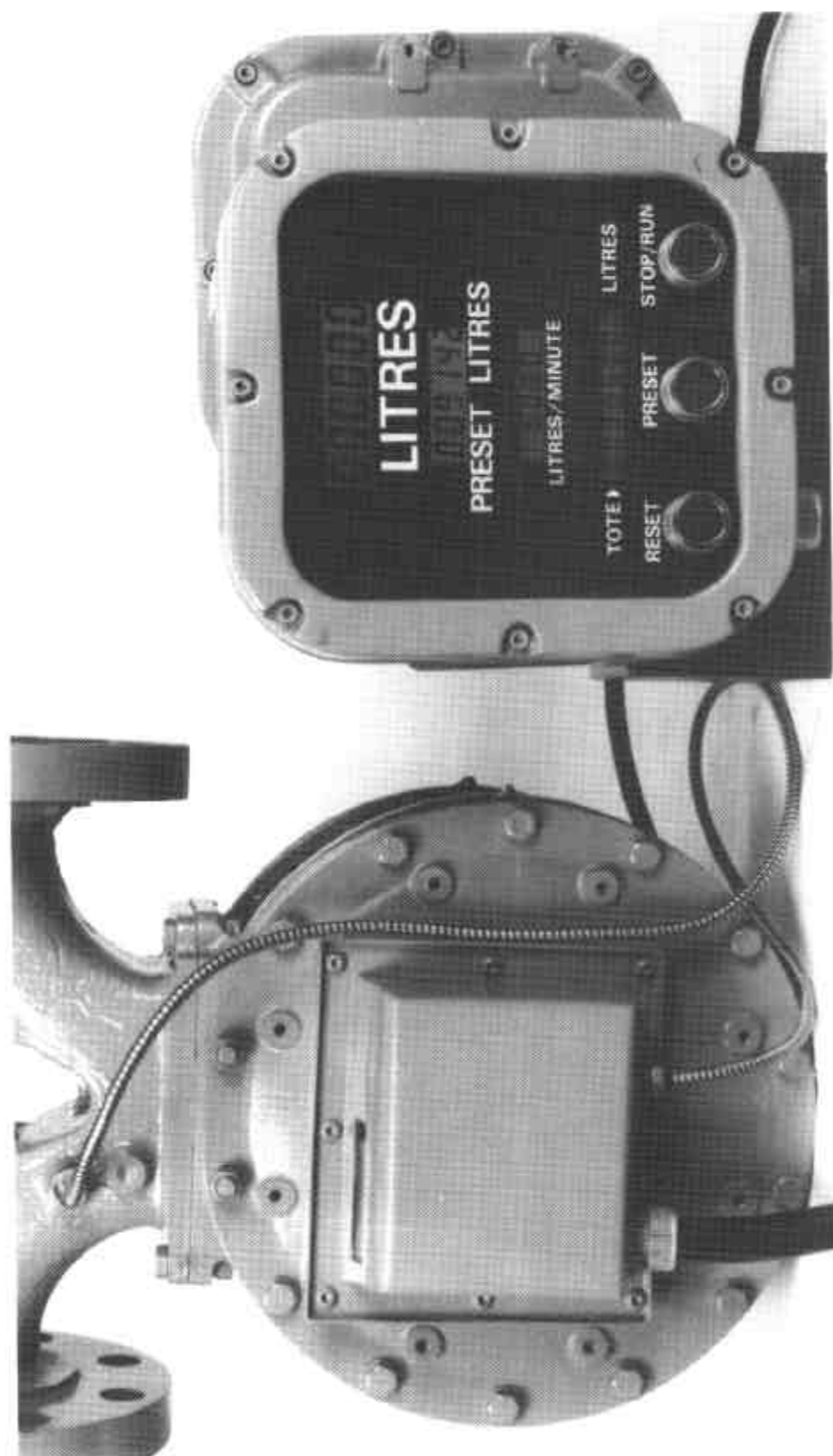
Maximum Permissible Errors at Verification/Certification

The maximum permissible errors applicable are those applicable to the system to which the instrument approved herein is fitted, as stated in the approval documentation for the system.

Where an instrument is fitted with a device to convert the indication of volume to volume at reference conditions, the maximum permissible error specified above is increased by 0.2% when the volume convertor is activated.

Reference conditions for petroleum liquids are specified in Australian Standard 2649 - 1983, *Petroleum Liquids and Gases - Measurement - Standard Reference Conditions*.

FIGURE S262A - 1



Avery Hardoll Model Masterload Control System

FIGURE S262A - 2



Model BEMY103/31 Indicator