



NATIONAL STANDARDS COMMISSION

G. H.
5/6B/78
29/7/88

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 5/6B/78

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

Liquid Controls Model MS 75-N-1 Bulk Flowmetering System

submitted by Emco Wheaton (Australia) Pty Ltd
145 Heidelberg Road
Northcote Victoria 3070.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/11/92.

This approval expires in respect of new instruments on 1/11/93.

Instruments purporting to comply with this approval shall be marked NSC No 5/6B/78.

This approval may be withdrawn if instruments are constructed other than in accordance with the drawings and specifications lodged with the Commission.

Signed

Executive Director

Descriptive Advice

Pattern: approved 8/10/87

- Liquid Controls model MS 75-N-1 bulk flowmetering system.

Technical Schedule No 5/6B/78 describes the pattern.

Filing Advice

The documentation for this approval comprises:

Certificate of Approval No 5/6B/78 dated 29/7/88
Technical Schedule No 5/6B/78 dated 29/7/88
Test Procedure No 5/6B/78 dated 29/7/88
Figures 1 to 3 dated 29/7/88



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6B/78

Pattern: Liquid Controls Model MS 75-N-1 Bulk Flowmetering System.

Submittor: Emco Wheaton (Australia) Pty Ltd
145 Heidelberg Road
Northcote Victoria 3070.

1. Description of Pattern

A bulk flowmetering system using a Liquid Controls model MS 75-N-1 flowmeter (Figure 1) which is approved for use with liquids having a viscosity range of 0.4 to 10 mPa.s at maximum and minimum flow rates of 2300 L/min and 550 L/min, respectively.

1.1 Pipeline Flowmetering System (Figure 2)

The system comprises:

- i) A supply tank.
- ii) 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) 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) A Liquid Controls model MS 75-N-1 flowmeter protected by an FS series strainer with a model A8919 gas purger attached (Figure 1). Provision is made for a pressure gauge to be connected downstream of the meter.
- v) A combination of the following assemblies:
 - (a) A Veeder-Root VR788700 zero start indicator with or without (c).
 - (b) A Veeder-Root VR789000 indicator/printer with or without (c).
 - (c) A Liquid Controls model D-5020 TVC/FG or D-5010 TVC/VG mechanical temperature compensator (Figure 3) approved for use with liquids of density 0.5 to 1.0 kg/L at 15°C, at temperatures between 0°C and 45°C.
 - (d) A Liquid Controls model D4130 or D4160 mechanical preset counter.
- vi) An outlet control valve located downstream of the meter with no intermediate outlet.

A flow rate control valve may be fitted.

1.2 Markings

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

Manufacturer's name or mark	
Meter model	
Serial number	
NSC approval number	5/6B/78
Maximum flow rate	... L/min
Minimum flow rate	... L/min
Nominal flow rate	(when flow rate is within ± 5% of nominal) ... L/min
Minimum delivery	
Type of liquid for which the meter is verified.	

1.3 Sealing and Verification Provision

Provision is made for sealing the indicator or indicator/ticket printer, and the calibrator. Provision is also made for a verification mark to be applied.



NATIONAL STANDARDS COMMISSION

5/6B/78
29/7/88

TEST PROCEDURE No 5/6B/78

Instruments should be tested with the liquid with which they will be used and which is marked on the data plate.

The maximum permissible errors at verification for instruments without a temperature compensator (or with the temperature compensator deactivated) are given in Document 118.

The maximum permissible errors at verification for instruments with the temperature compensator activated are:

$$\pm 0.5\% + 0.02\% \text{ per } ^\circ\text{C difference from } 15^\circ\text{C}.$$

1. 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.

2. Low Liquid-level Device Test

If a device is fitted to prevent the level of liquid in the supply tank falling to the level of the centrifugal 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.

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 device may operate during a normal day's operation.

3. Minimum Delivery

The minimum quantity to be delivered is the sum of:

- (i) 20 times the scale interval, if fitted with an analogue indicator, or
100 times the scale interval, if fitted with a digital indicator, or
100 times the scale interval, if fitted with a zero start indicator/
printer, or
200 times the scale interval, if fitted with an accumulative printer
or indicator, or

The largest of the appropriate minimum quantities as listed above, if more than one indicator and/or printer (analogue or digital) is fitted.

PLUS

- (ii) 100 times the gas purging error. This should be determined where there is a possibility of a supply tank emptying.

4. Meter Tests

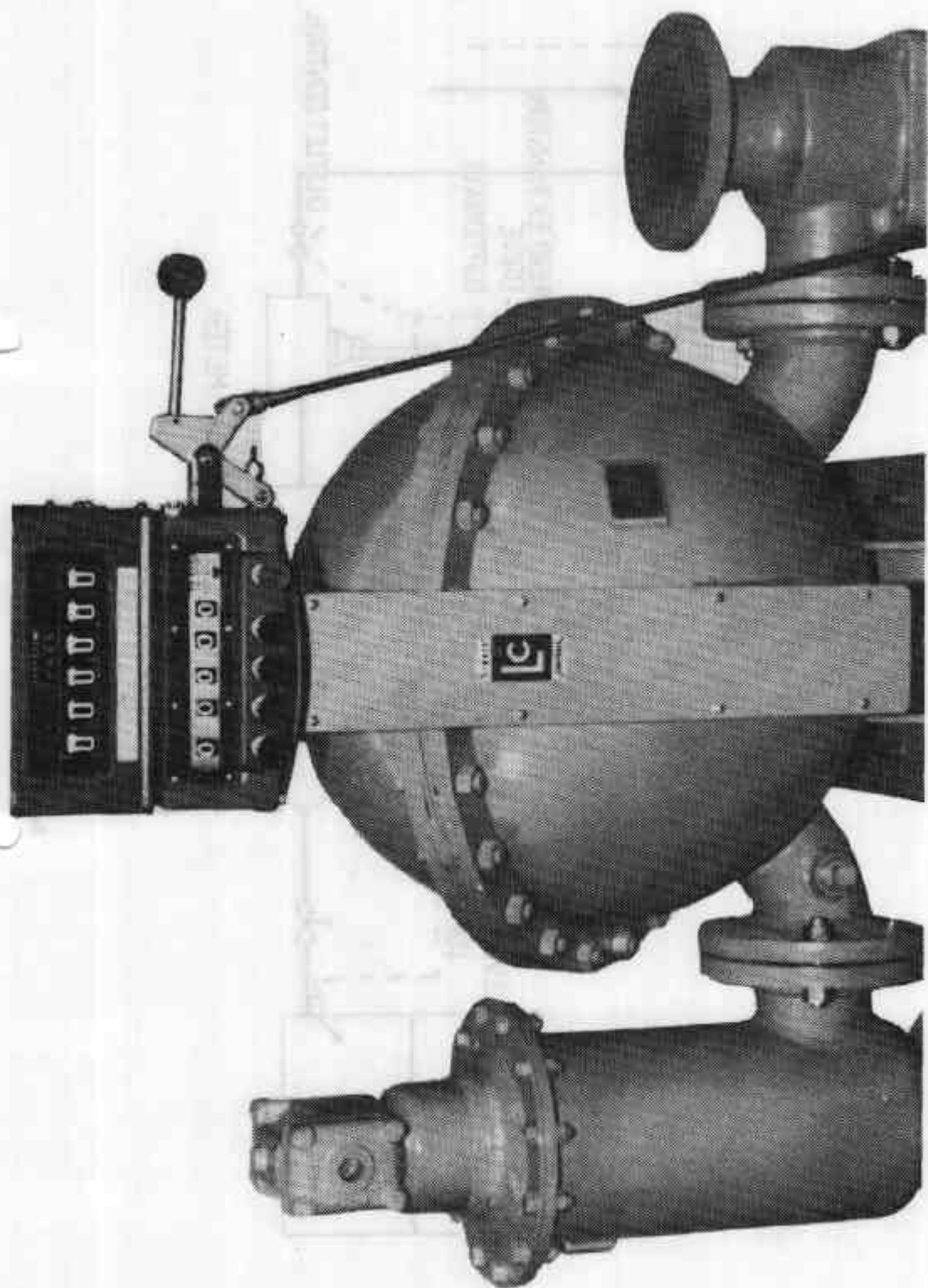
For instruments without a temperature compensator (or with the temperature compensator deactivated):

- (i) Carry out at least three runs at the normal flow rate at which the meter is used.
- (ii) Repeat the above test at the minimum flow rate.

For instruments with the temperature compensator activated:

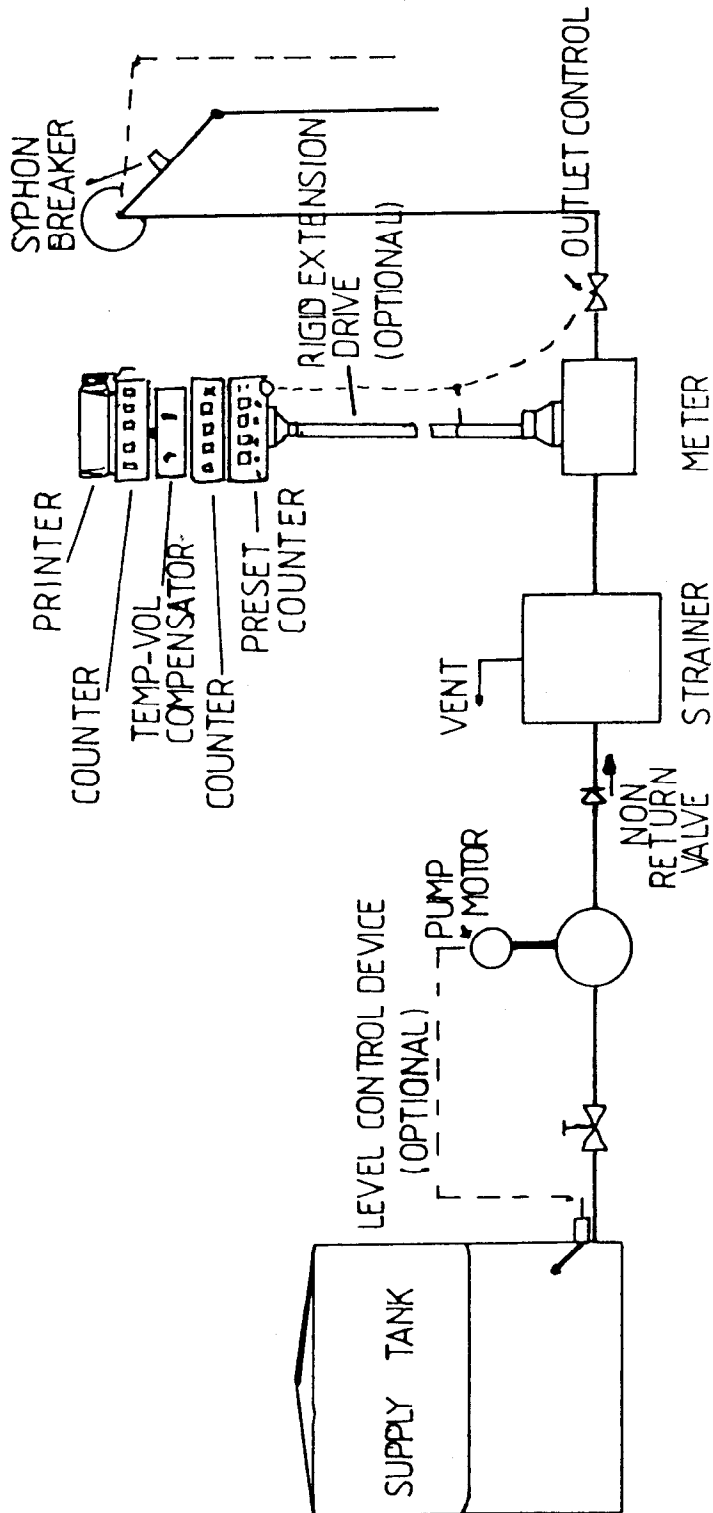
Repeat the above tests and calculate the equivalent volume that would have been delivered at 15°C using the temperature indicated at the meter and the ASTM-IP Petroleum Measurement Tables, for the density of the liquid for which the temperature compensator is set.

FIGURE 5/68/78 - 1

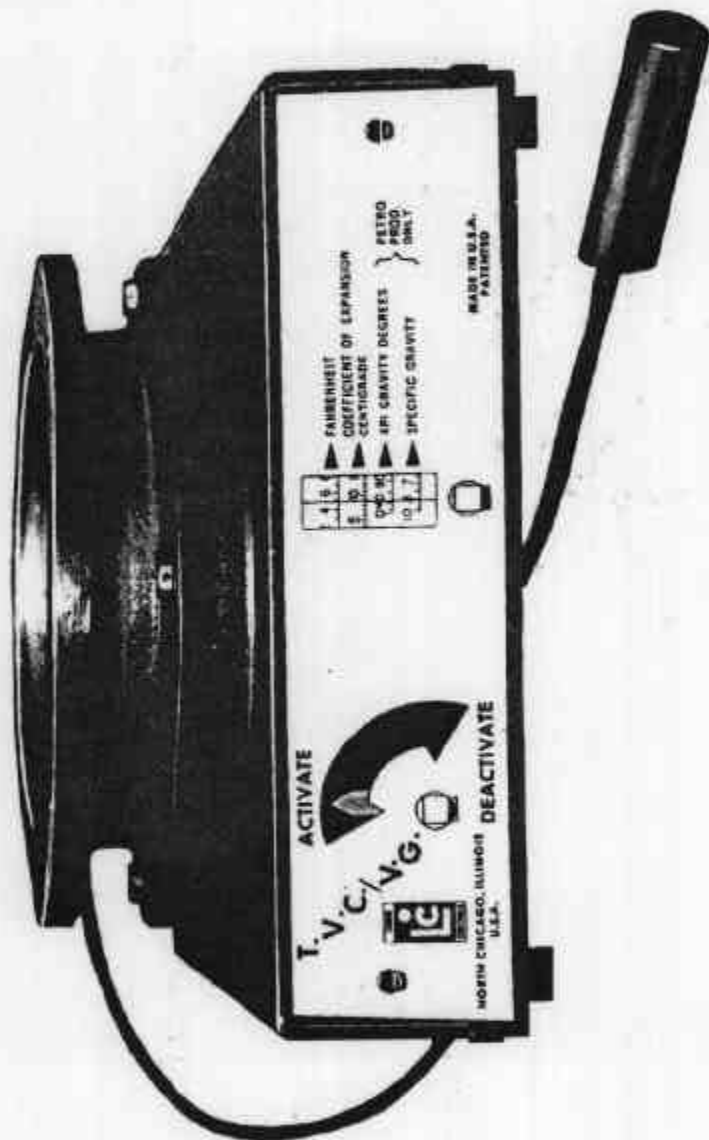


Liquid Controls MS 75-N-1 Flowmeter

5/68/78
29/7/88



Schematic of Typical System



Liquids Controls Temperature Compensator