



# NATIONAL STANDARDS COMMISSION

## NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

### REGULATION 9

#### CERTIFICATE OF APPROVAL No 5/6B/71

This is to certify that an approval has been granted that the pattern of the  
Liquip Model SBM75 Flowmetering System

submitted by Liquip Sales Pty Ltd  
212-216 Railway Terrace  
Guildford NSW 2161

is suitable for use for trade.

#### CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/7/90.

Instruments purporting to comply with this approval shall be marked NSC No 5/6B/71.

This approval may be withdrawn if instruments are constructed and used other than as described in the drawings and specifications lodged with the Commission.

The Commission reserves the right to examine any instrument purporting to comply with this approval.

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

Signed

Executive Director

#### Descriptive Advice

Pattern: approved 13/6/85

. Liquip model SBM75 flowmetering system.

Technical Schedule No 5/6B/71 describes the pattern.

#### Filing Advice

The documentation for this approval comprises:

Certificate of Approval No 5/6B/71 dated 17/9/85  
Technical Schedule No 5/6B/71 dated 17/9/85  
Test Procedure No 5/6B/71 dated 17/9/85  
Figures 1 to 5 dated 17/9/85



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 5/6B/71

Pattern:           Liquip Model SBM75 Flowmetering System

Submitter:       Liquip Sales Pty Ltd  
                  212-216 Railway Terrace  
                  Guildford NSW 2161

### 1. Description of Pattern

A bulk flowmetering system using a Liquip SBM75 flowmeter (Figure 1) which is approved for use with liquids having a viscosity range of 0.4 to 10 mPas at maximum and minimum flow rates of 500 and 100 L/min respectively.

#### 1.1 Pipeline Flowmetering System (Figure 2)

The system comprises:

- i) A supply tank.
- ii) A pump of either positive 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. Provision is made for a pressure gauge to be connected downstream of the meter.  
  
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 alternate uses of the pump.
- iii) A Liquip non-return valve (Figure 3) 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 Liquip model SBM75 flowmeter with model FDA 75AL strainer/gas purger.
- v) A combination of the following assemblies:
  - (a) Veeder Root zero start indicator, with or without (c).
  - (b) Veeder Root indicator/printer with or without (c).
  - (c) Veeder Root preset indicator (which is not for trade use and must be so marked).
  - (d) Any compatible Commission-approved pulse generator and electronic bulk flowmeter indicator.
- vi) An outlet control valve located downstream of the meter with no intermediate outlet.

A flow rate control valve may be fitted.

#### 1.2 Loading-rack Flowmeter System

This system is similar to the pipeline system except that the outlet control valve is replaced by one of the following:

- a) Top-loading arrangement (Figure 4) - 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 whilst in operation. 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.

Alternatively, an anti-drain valve which retains a pressure of not less than 55 kPa may be installed at the delivery point of the pipework; or

- b) Bottom-loading arrangement - a dry-break coupling located at the delivery point of the pipework.

### 1.3 Vehicle-mounted Flowmeter System (Figure 5)

This system is similar to the pipeline and loading-rack systems except that the outlet control valve is in the form of either a nozzle or a dry-break coupling at the end of a flexible hose. The pump is located lower than the minimum height of the liquid in the supply tank.

#### 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.

A separate anti-drain valve may be fitted to the nozzle end of the hose if an integral anti-drain valve is not part of the nozzle.

The anti-drain valve retaining pressure shall be not less than 55 kPa.

### 1.4 Features Common to all Systems

#### 1.4.1 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 5/68/71  
Maximum flow rate  
Minimum flow rate  
Nominal flow rate (when flowrate is within  $\pm$  5% of nominal)  
Minimum delivery  
Type of liquid for which the meter is verified.

#### 1.4.2 Sealing and Verification Provision

The indicator or indicator/ticket printer 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.

TEST PROCEDURE No 5/68/71

The instrument should be tested with the liquid with which it will be used and which is marked on the data plate.

The maximum permissible errors at verification are given in Document 118.

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-level 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 low-level device may operate during a normal day's operation.

3. Minimum Delivery

The minimum delivery is 100 times the largest non-flow error plus hose dilation and gas purging error.

(a) The non-flow errors are as follows:

With a digital indicator the error is  $\pm 0.2$  L.

With an analogue indicator the error is  $\pm 1$  L.

With a zero start indicator/printer the error is  $\pm 1$  L.

With an accumulative printer or indicator the error is  $\pm 2$  L.

Note: If more than one indicator and/or printer (analogue or digital) is used, the larger of the above is the non-flow error.

(b) Hose dilation may be found as follows:

With the pump stopped and the hose fully wound onto its reel or in its normal hang-up position, open the nozzle to reduce the hose pressure. Then fully unwind the hose from the reel or its hang-up position, zero the indicator or printer, start the pump and, after allowing the hose to fully dilate, the quantity on the indicator or printer is equal to the hose dilation.

(c) Where there is a possibility of the supply tank emptying, the gas purging error should be determined for inclusion in the non-flow errors.



NATIONAL STANDARDS COMMISSION

**CANCELLED**

cert. no. 2

G.H.  
5/6B/71  
28/12/87

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6B/71

CHANGE No 1

The following change is made to the approval documentation for the

Liquip Model SBM75 Flowmetering System

submitted by   Liquip Sales Pty Ltd  
                  212-216 Railway Terrace  
                  Guildford   NSW   2161.

In Test Procedure No 5/6B/71 dated 17/9/85, amend Test 3 to read:

" 3. Minimum Delivery

(a) 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

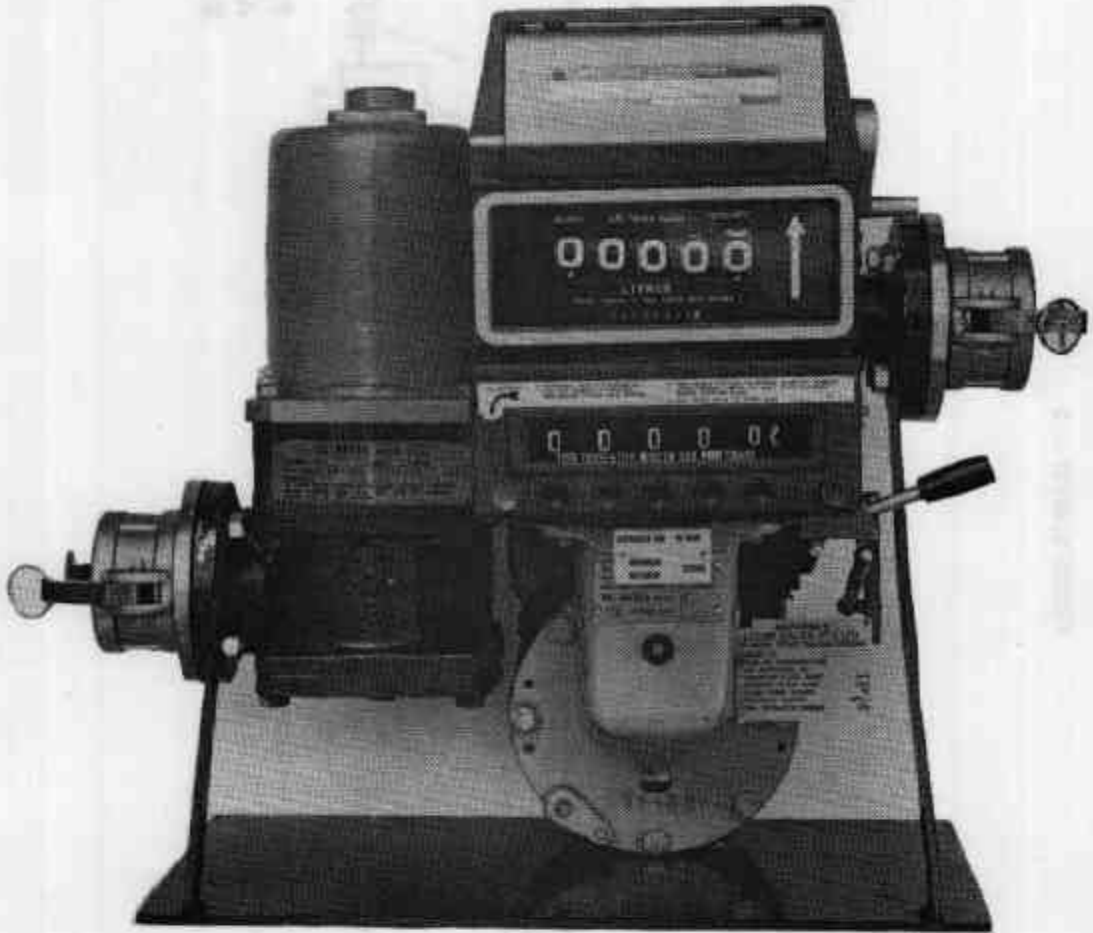
- (ii) 100 times the sum of the hose dilation and the gas purging error.  
The latter should be determined where there is a possibility of a  
supply tank emptying."

Signed

Executive Director

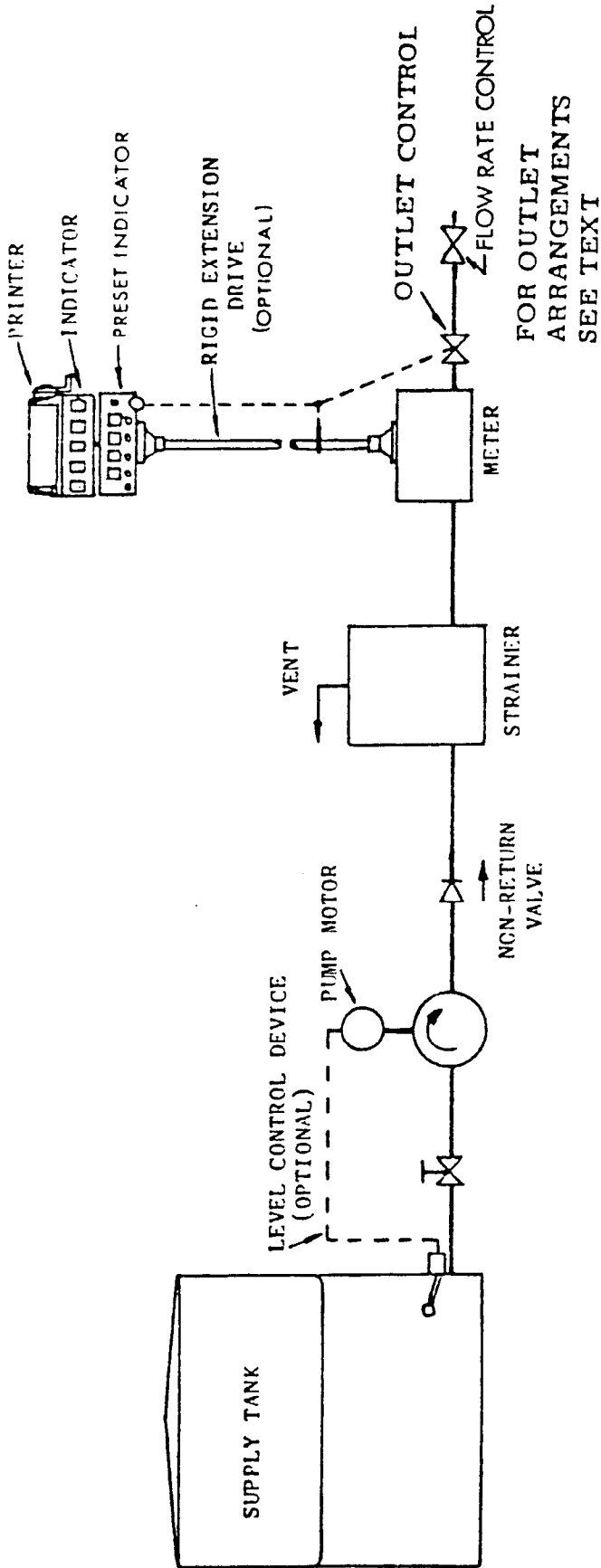
5/68/71  
17/9/85

FIGURE 5/68/71 - 1



Liquip SBM75 Meter Assembly

FIGURE 5/68/71 - 2



Pipeline Flowmeter System

5/68/71  
17/9/85

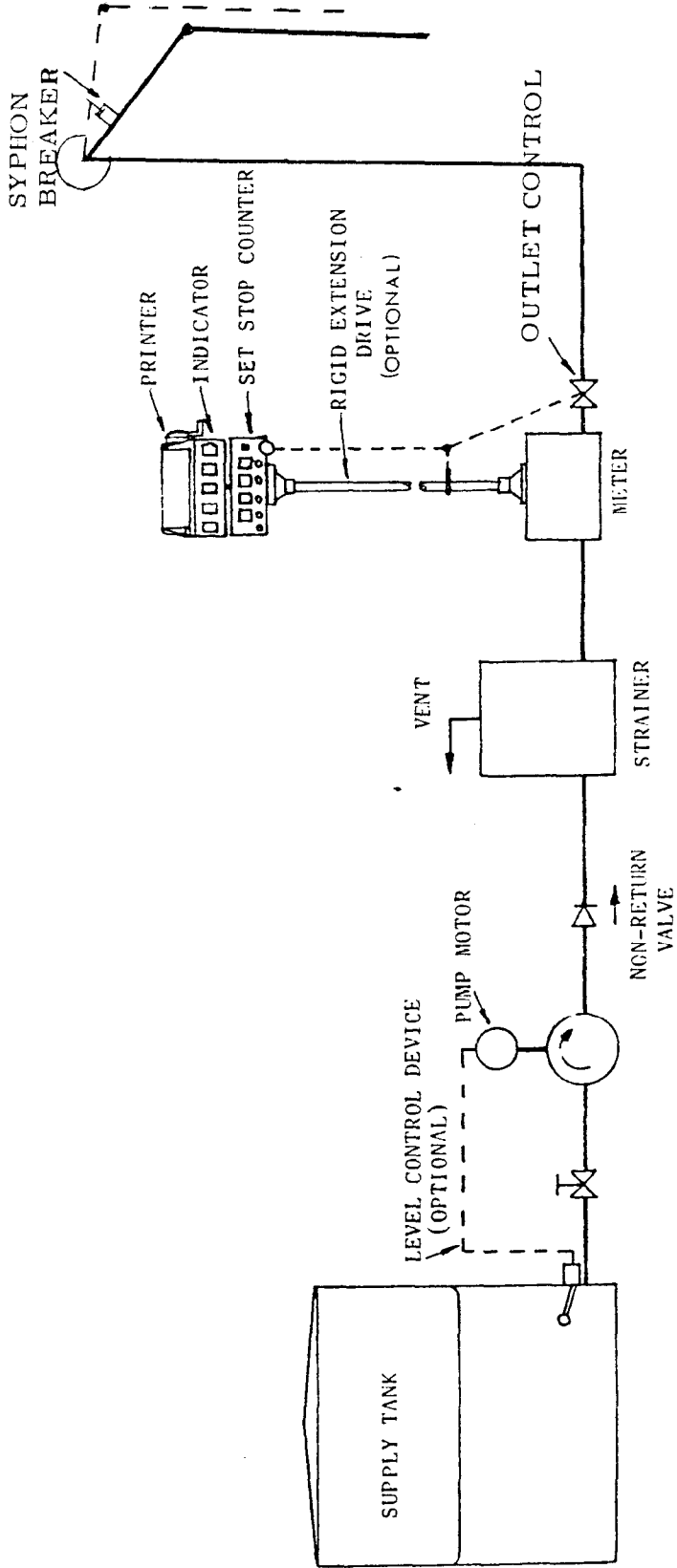
FIGURE 5/68/71 - 3



Liquid Non-return Valve

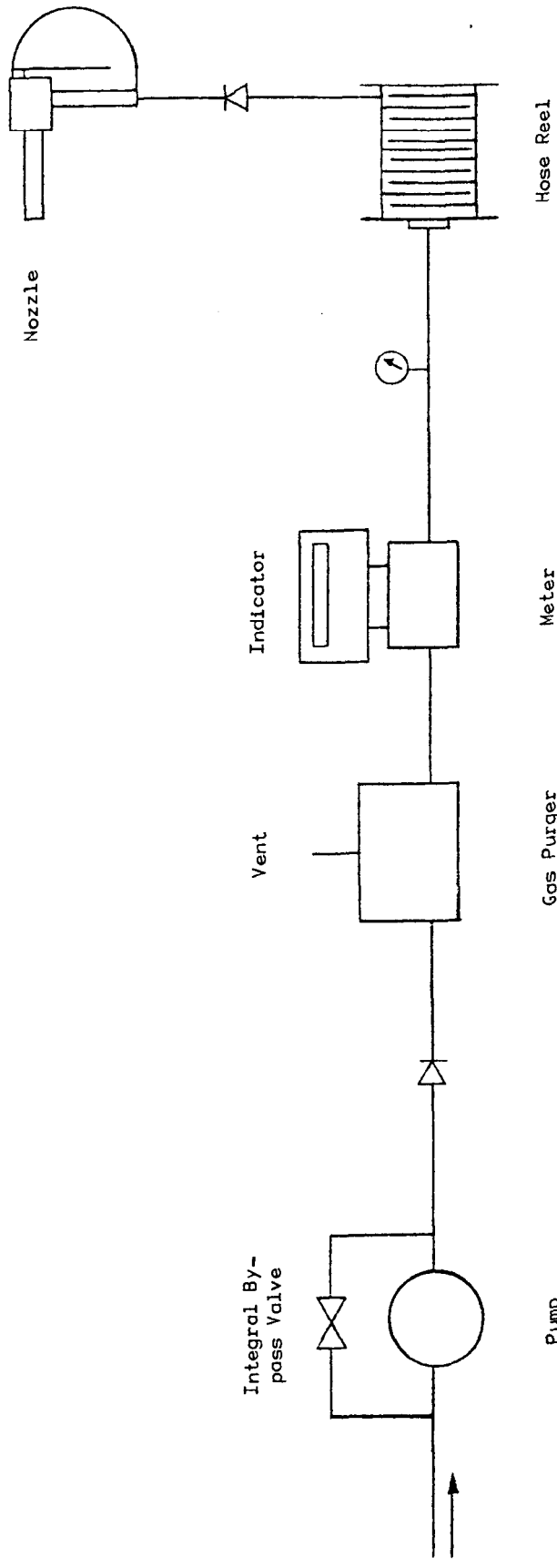


FIGURE 5/68/71 - 4



Loading-rack Flowmeter System

FIGURE 5/68/71 - 5



5/68/71  
17/9/85

Vehicle-mounted Flowmeter System