



Australian Government

National Standards Commission

12 Lyonpark Road, North Ryde NSW 2113 Australia

Cancellation

Certificate of Approval No 5/6B/88

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

Schlumberger Neptune Model Type 4E Bulk Flowmetering System

submitted by Norman J Hurl & Company (Australia) Pty Ltd
(now known as Hurl Nu-Way Pty Ltd)
14 Aristoc Road
Glen Waverley VIC 3150

has been cancelled in respect of new instruments as from 1 December 2003.

Signed by a person authorised under Regulation 60
of the National Measurement Regulations 1999 to
exercise the powers and functions of the
Commission under this Regulation.

A handwritten signature in black ink, appearing to be 'JH', is written over a light-colored rectangular background.



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Certificate of Approval No 5/6B/88

Change No 2

The following changes are made to the approval documentation for the

Schlumberger Neptune Model Type 4E Bulk Flowmetering System

submitted by Norman J Hurl & Company (Australia) Pty Ltd
(now known as Hurl Nu-Way Pty Ltd)
14 Aristoc Road
Glen Waverley VIC 3150.

1. In Certificate of Approval No 5/6B/88 and its Technical Schedule, both dated 6 September 1993, all references to the 'submitter' should be amended to read;
"Hurl Nu-Way Pty Ltd"
2. In Certificate of Approval No 5/6B/88 dated 6 September 1993, the Condition of Approval referring to the expiry of the approval should be deleted.

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

A handwritten signature in black ink, appearing to read 'Jim Bennett'.

National Standards Commission



Certificate of Approval

No 5/6B/88

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

Schlumberger Neptune Model Type 4E Bulk Flowmetering System

submitted by Norman J Hurl & Company (Australia) Pty Ltd
14 Aristoc Road
Glen Waverley Victoria 3150.

This Certificate is issued upon completion of reviews of NSC approvals Nos
5/6B/28, 5/6D/26, 5/6D/29 and 5/6H/9.

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.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/7/98.
This approval expires in respect of new instruments on 1/7/99.

Instruments purporting to comply with this approval shall be marked
NSC No 5/6B/88 and only by persons authorised by the submittor.

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

It is the submitter'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.

DESCRIPTIVE ADVICE

Pattern: approved 28/6/93

- A bulk flowmetering system using a Schlumberger Neptune model Type 4E flowmeter which is approved for use with liquid hydrocarbons having a kinematic viscosity range between 0.5 and 12.5 mm²/s.

Variants: approved 28/6/93

1. As a modular flowmetering system.
2. As a bulk flowmetering system using other Schlumberger Neptune flowmeters.

Technical Schedule No 5/6B/88 describes the pattern and variants 1 and 2.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6B/88 dated 6/9/93
Technical Schedule No 5/6B/88 dated 6/9/93 (incl. Table 1 and Test Procedure)
Figures 1 to 3 dated 6/9/93

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.

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National Standards Commission

TECHNICAL SCHEDULE No 5/6B/88

Pattern: Schlumberger Neptune Model Type 4E Bulk Flowmetering System.

Submitter: Norman J Hurl & Company (Australia) Pty Ltd
14 Aristoc Road
Glen Waverley VIC 3150.

1. Description of Pattern

A bulk flowmetering system using a Schlumberger Neptune model Type 4E flowmeter which is approved for use with liquid hydrocarbons having a kinematic viscosity range between 0.5 and 12.5 mm²/s.

The system is approved for use for a flow rate range of 57 L/min to 570 L/min for normal operation, but may be used for short periods up to an extended maximum flow rate of 650 L/min.

The minimum quantity is 200 litres.

1.1 Pipeline Flowmetering System (Figure 1)

(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.

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

A Schlumberger Neptune model Type 4E 50 mm flowmeter (Figure 2). Provision shall be made for a pressure gauge to be connected downstream of the meter.

(vi) Indicating System

Any of the following assemblies:

- (a) A Schlumberger Neptune model 841 zero-start indicator (*).
- (b) A Schlumberger Neptune model 843 zero-start indicator/ticket printer (*).

NOTE: (*) As described in the documentation of NSC approval No S217A.

- (c) Any compatible Commission-approved pulse generator, electronic bulk flowmeter controller/indicator (which may incorporate a volume conversion for temperature device), and flow control valve.

NOTE: Where systems include a pulse generator and electronic indicator, the pulse generator shall be driven directly from the output shaft of the meter; it shall not be driven via a mechanical indicator nor via reduction gear trains.

The use of a right-angled drive would be considered as direct as long as the drive consists of two bevel gears with a 1:1 ratio and provided the right-angled drive is before the drive to any mechanical indicator.

Where the pulse generator is not driven directly, any electronic indicator connected to it shall be marked NOT IN USE FOR TRADE.

(vii) 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 Sealing and Verification/Certification Provision

Provision is made for sealing the mechanical calibration of the meter. If an electronic indicator is used which incorporates calibration facilities, provision shall be made for sealing access to such facility.

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

1.3 Markings

Instruments are marked with the following data:

Manufacturer's name or mark	
Meter model	
Serial number	
NSC approval number	5/6B/88
Maximum flow rate L/min (*)
Minimum flow rate L/min
Minimum quantity L
Type of liquid for which the meter is verified
Maximum operating pressure kPa

(*) Refer clause 1.

2. Description of Variants

2.1 Variant 1

A bulk flowmetering system using any Schlumberger Neptune flowmeter listed in Table 1.

TABLE 1

Meter Model	Flow Rate (L/min)		Minimum Quantity (L)
	Maximum	Minimum	
32 mm Type 4	114	19	50
32 mm Type A	114	19	50
38 mm Type 4 (#)	227 (#)	45 (#)	50
38 mm Type 40	227	45	50
38 mm AFF Type 40	227	45	50 Aircraft
50 mm Type 4	379	76	100
50 mm Type 4E (**)	570 (*)	57	200
50 mm Type E	568	76	200
50 mm AFF Type E	568	76	200 Aircraft
75 mm Type 4	568	114	200

(#) May be used with liquid hydrocarbons having a kinematic viscosity range between 12.5 and 1100 mm²/s, for a flow rate range of 45 to 100 L/min.

(**) The pattern.

(*) Refer clause 1.

2.2 Variant 2

As a modular flowmetering system (Figure 3) which is similar to the pipeline system, except that it is a module of metering components in its own assembly rather than built into another structure. It may be portable, including being vehicle-mounted.

The system consists of a gas purger/strainer, a meter and a transfer device. It may contain the pump, together with a pressure control valve (if necessary), and a hose reel; in the latter case, the transfer device is in the form of either a nozzle or 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. A non-return valve is located between the pump and the meter, or the components and piping are arranged to keep the system full of liquid at all times.

Any nozzle used shall have an 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.

TEST PROCEDURE

Instruments should be tested in accordance with the Inspector's Handbook using the product with which they will be used and which is marked on the data plate. Tests should be conducted in conjunction with any tests specified in the approval documentation for any indicator and/or conversion device, etc. used.

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 $\pm 0.3\%$.

Where an instrument is fitted with a device to convert the registered volume to volume at reference conditions, the maximum permissible error specified above is increased by 0.2%. Reference conditions for petroleum liquids are specified in Australian Standard AS 2649 - 1983, *Petroleum Liquids and Gases - Measurement - Standard Reference Conditions*.

5/6B/88
8 November 1994

National Standards Commission



NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6B/88

CHANGE No 1

The following change is made to the approval documentation for the

Schlumberger Neptune Model Type 4E Bulk Flowmetering System

submitted by Norman J Hurl & Company (Australia) Pty Ltd
14 Aristoc Road
Glen Waverley VIC 3150.

In Certificate of Approval No 5/6B/88 and its Technical Schedule both dated 6 September 1993, all references to 'model Type 4E flowmeter' and 'model Type 4 flowmeter' should be amended by adding "(may also be known as model Type 4-MT flowmeter)".

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.

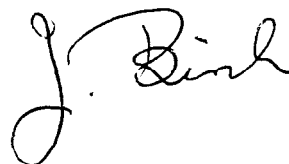
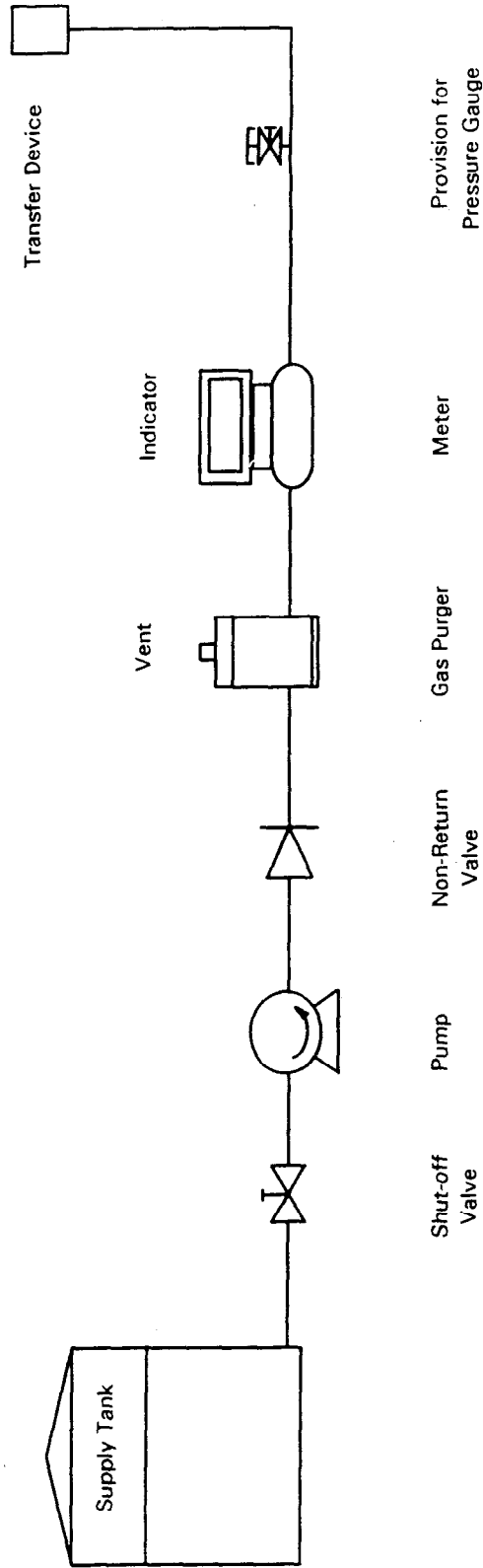
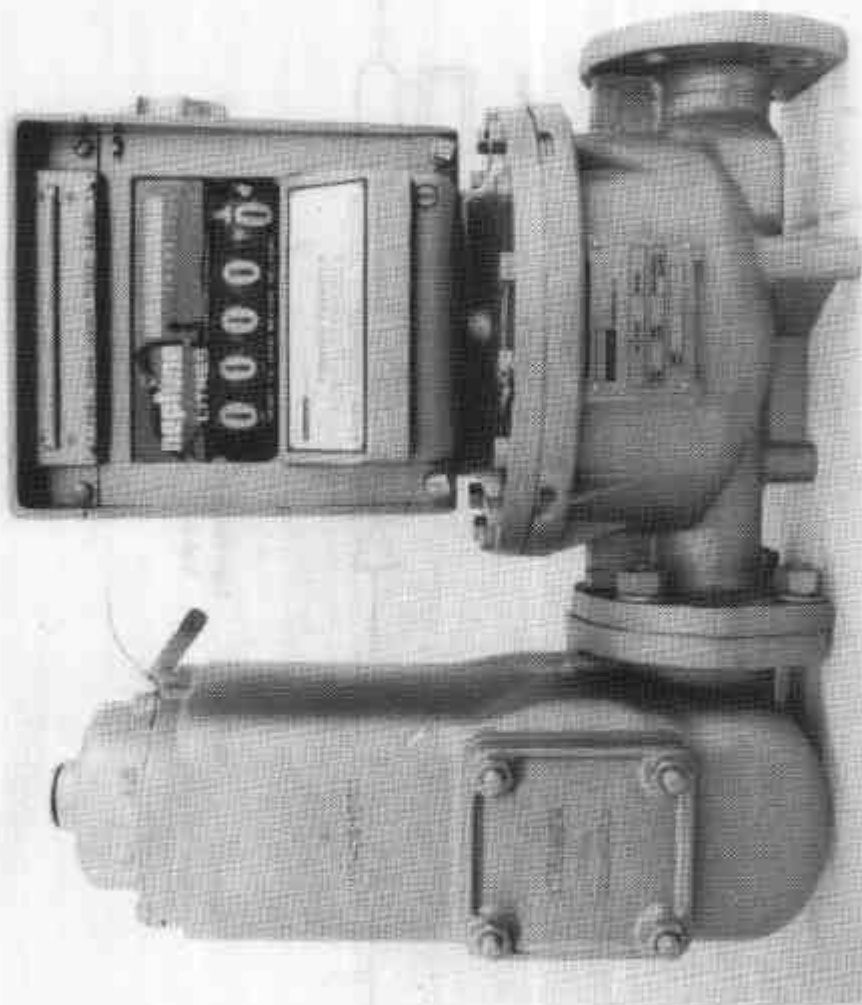


FIGURE 5/6B/88 - 1



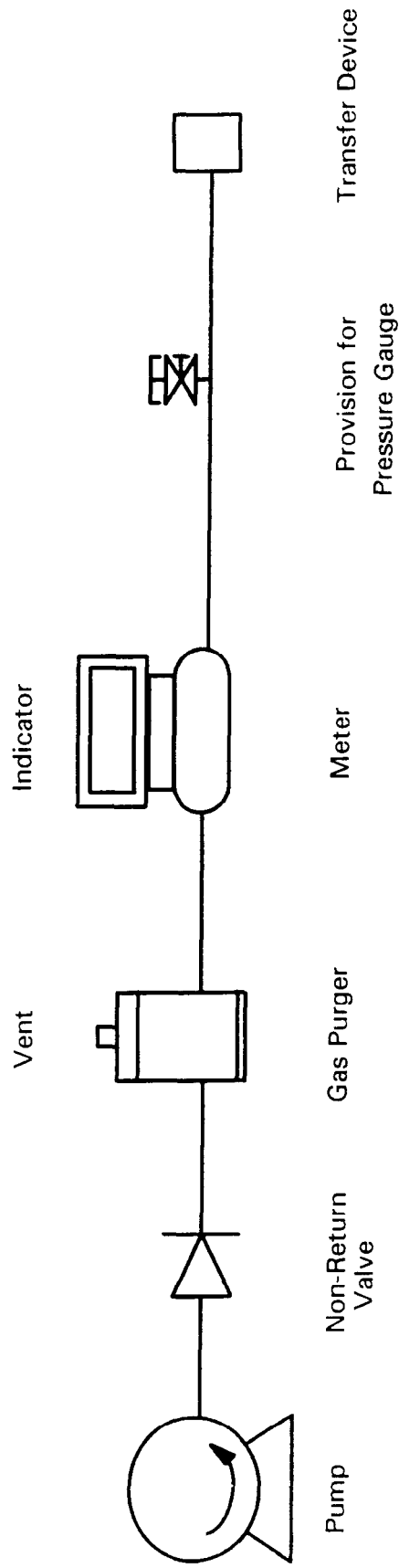
Typical Pipeline Flowmetering System

FIGURE 5/6B/88 - 2



Schlumberger Neptune Model Type 4E Meter

FIGURE 5/6B/88 - 3



Typical Modular Flowmetering System