10/2/3A
7 November 2003

Australian Government

National Standards Commission

12 Lyonpark Road, North Ryde NSW 2113 Australia

Cancellation

Certificate of Approval No 10/2/3A

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

Schlumberger Neptune Model Type 4E Bulk LPG Flowmetering System

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

has been cancelled in respect of new instruments as from 1 January 2004.

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.

10/2/3A
31 May 2000

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Certificate of Approval No 10/2/3A

Change No 2

The following changes are made to the approval documentation for the

Schlumberger Neptune Model Type 4D Bulk LPG Flowmetering System

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

1. In Certificate of Approval No 10/2/3A and its Technical Schedule, both dated 15 September 1993, all references to the 'submittor' should be amended to read;

   "Hurll Nu-Way Pty Ltd"

2. In Certificate of Approval No 10/2/3A dated 15 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.

National Standards Commission

Certificate of Approval

No 10/2/3A

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 4D Bulk LPG Flowmetering System

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

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 10/2/3.

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 10/2/3A 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.

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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.

DESCRIPTIVE ADVICE

Pattern: approved 28/6/93

- A bulk flowmetering system using a Schlumberger Neptune model Type 4D 50 mm flowmeter.

Variant: approved 28/6/93

1. With certain other size Schlumberger Neptune model Type 4D flowmeters.

2. With a Schlumberger Neptune mechanical volume conversion for temperature device.

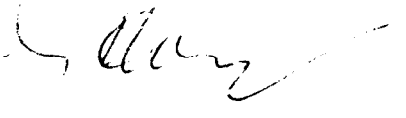
Technical Schedule No 10/2/3A describes the pattern and variants 1 and 2.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 10/2/3A dated 15/9/93
Technical Schedule No 10/2/3A dated 15/9/93 (incl. Table 1 and Test Procedure)
Figures 1 to 6 dated 15/9/93

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.



National Standards Commission

TECHNICAL SCHEDULE No 10/2/3A

Pattern: Schlumberger Neptune Model Type 4D Bulk LPG Flowmetering System.

Submittor: Norman J Hurll & 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 4D 50 mm flowmeter which is approved for the delivery of liquefied petroleum gas of density between 0.500 and 0.600 kg/L at 15°C, for liquid temperatures between 0 and 40°C.

The maximum and minimum flow rates are 380 L/min and 78 L/min respectively. (Refer also to clause 1.1 (v) and Table 1.) The minimum quantity is 100 litres.

1.1 Flowmetering System

The flowmetering system may be as shown in Figures 1 and 2, including being mounted on a vehicle or in a transportable module. The system comprises:

(i) Supply Tank

A supply tank located above the pump.

(ii) Pump

The pump is positioned as close as possible to the supply tank. The inlet pipe to the pump is the same size or larger than the outlet and has a continuous fall to the pump. A strainer may be fitted in the pipeline between the supply tank and 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) Gas Purger

The meter is protected from measurement of vapour by correct installation and by a Schlumberger Neptune 50 mm float-operated gas purger with integral strainer (Figure 3). The gas purger is vented through a non-return valve, via a vapour return line not less than 20 mm in diameter to the vapour space of the supply tank. A thermometer well is located in the gas purger.

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(iv) Meter (Figure 3)

A Schlumberger Neptune model Type 4D 50 mm LPG flowmeter is used.

(v) Pulse Generator

An Acme model EPU 100 pulse generator (as described in the documentation of NSC approval No S189A) is driven directly from the output shaft of the meter; it shall not be driven via a mechanical indicator nor via reduction gear trains. (NOTE: 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.)

(vi) Indicator

An Acme 502 series indicator incorporating an electronic volume conversion for temperature device (as described in the documentation of NSC approval No S170A). The temperature probe is located in the gas purger.

The indicator has a linearisation correction facility which may or may not be used; when it is used, the minimum flow rate is 38 L/min.

The indicator may be fitted with an integral roll printer or may be connected with a separate slip printer.

(vii) Pressure Differential Valve

A Schlumberger Neptune 50 mm spring-loaded diaphragm valve maintains a pressure of at least 100 kPa above the vapour pressure in the metering chamber to prevent the formation of vapour. A pressure-equalising pipe is connected from the differential valve to the supply tank, through the vapour return line from the gas purger vent.

(viii) Outlet Piping/Transfer Device

The pipe from the meter/pressure differential valve to the outlet has provision for a pressure gauge and is fitted with a non-return valve, and a control valve. A flow rate control valve may also be fitted.

If fitted with a delivery hose it shall comply with the SA code for hoses in use with liquefied petroleum gases. A shut-off device is fitted on the end of the hose.

The control valve/shut-off device is the transfer device for the measurement.

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	10/2/3A
Maximum flow rate	... L/min
Minimum flow rate	... L/min
Liquid temperature range (*)	0°C to 40°C
Approved for LPG of density (*)	... to ... kg/L
Density for which temperature convertor is set (#) (*)	... kg/L
Minimum quantity	... L
Maximum operating pressure	... kPa

(#) If the indicator does not have the facility to display the set density or is not connected to a printer which prints the set density, the density of the product used to calibrate the instrument shall be marked on a metal label attached to the instrument by the calibrator sealing wire.

(*) These may be marked on a metal label attached to the instrument by the calibrator sealing wire.

1.3 Sealing and Verification/Certification Provision

Provision is made for the signal input connection at the rear of the indicator or indicator/ticket printer to be sealed. Provision is made for the meter calibrator to be sealed.

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

2. Description of Variants

2.1 Variant 1

A bulk flowmetering system using any size Schlumberger Neptune model Type 4D LPG flowmeter listed in Table 1.

TABLE 1

Meter Size	Flow Rate (L/min) Maximum	Minimum	Minimum Quantity (L)
19 mm (3/4 inch) (*)	53	9	10
25 mm (1 inch) (*)	68	13	10
32 mm (1 1/2 inch) (#)	114	18	50
38 mm (1 3/4 inch) (#)	227	45 (@)	50
50 mm (2 inch)	380	78 (@)	100

(*) These instruments are known as the model Type 4D Style N LPG compact meters (Figure 4). They combine in one housing the meter, strainer, gas purger and pressure differential valve.

The float-operated gas purger employs a sleeve-type valve that permits a 'leak' flow from the vapour vent back to the supply tank. A spring-loaded piston-plug pressure differential valve is used.

(#) These meters are as shown in Figure 5, including the gas purger.

(@) When linearisation is used the minimum flow rate is 22 L/min for the 38 mm meter and 38 L/min for the 50 mm meter (the pattern).

2.2 Variant 2

With a Schlumberger Neptune mechanical volume conversion for temperature device with inbuilt temperature sensor, and approved for the delivery of LPG of density between 0.505 and 0.560 kg/L. For 19 and 25 mm meters a model Type 1 Style 2 M conversion device is used, and for 32, 38 and 50 mm meters a model Type 1 Style 22 conversion device is used.

The conversion device is activated when the anchor pin (located under the convertor cover) is in the 'Compensated Anchor' position and adjustment is performed by turning the calibration dial shown in Figure 6.

Provision is made for the conversion device cover to be sealed.

A thermometer well is provided in the conversion device body.

The mechanical conversion device may be used with either of the following indicators:

(a) A Schlumberger Neptune model 841 zero-start indicator or model 843 zero-start resettable indicator/ticket printer (as described in the documentation of NSC approval No S217A).

Provision is made for the indicator or indicator/ticket printer to be sealed.

(b) A Schlumberger Neptune model 600 zero-start indicator (Figure 4). The calibration is performed by removing the cover plate on the top of the indicator cover and adjusting the internal change gears.

Volume (resettable)	99999 in 1 litre increments
Totaliser	99999999 in 1 litre increments

Provision is made for the change gear cover to be sealed.

TEST PROCEDURE

Instruments should be tested in accordance with any tests included in the approval documentation for the indicator used, and in accordance with any relevant tests specified in the Inspector's Handbook.

Maximum Permissible Errors at Verification/Certification

The maximum permissible errors applied during a verification test from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule are:

±1.0% with volume conversion for temperature device deactivated, and

±1.2% with volume conversion for temperature device activated.

National Standards Commission

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 10/2/3A

CHANGE No 1

The following changes are made to the approval documentation for the

Schlumberger Neptune Model Type 4D Bulk LPG Flowmetering System

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

1. In Certificate of Approval No 10/2/3A, and its Technical Schedule, both dated 15 September 1993, all references to 'model Type 4D flowmeter' should be amended by adding "(may also be known as model Type 4D-MT flowmeter)".

2. In Technical Schedule No 10/2/3A dated 15 September 1993, Table 1 should be amended so that the column headed **'Meter Size'** now reads, in part:

"32 mm (1 1/4 inch) (#)" - not 1 1/2 inch
"38 mm (1 1/2 inch) (#)" - not 1 3/4 inch

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.

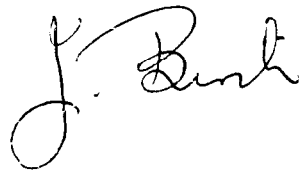
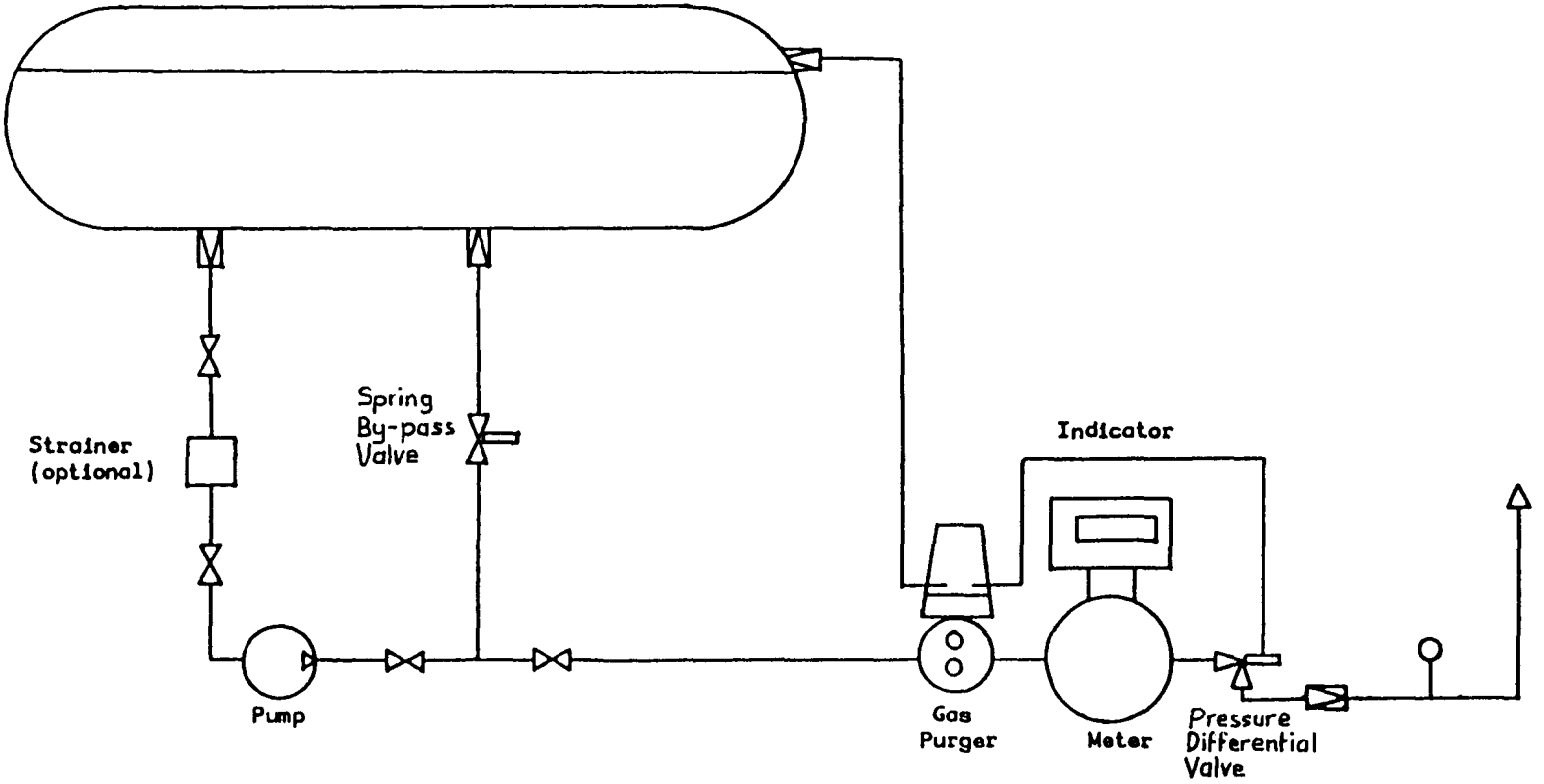
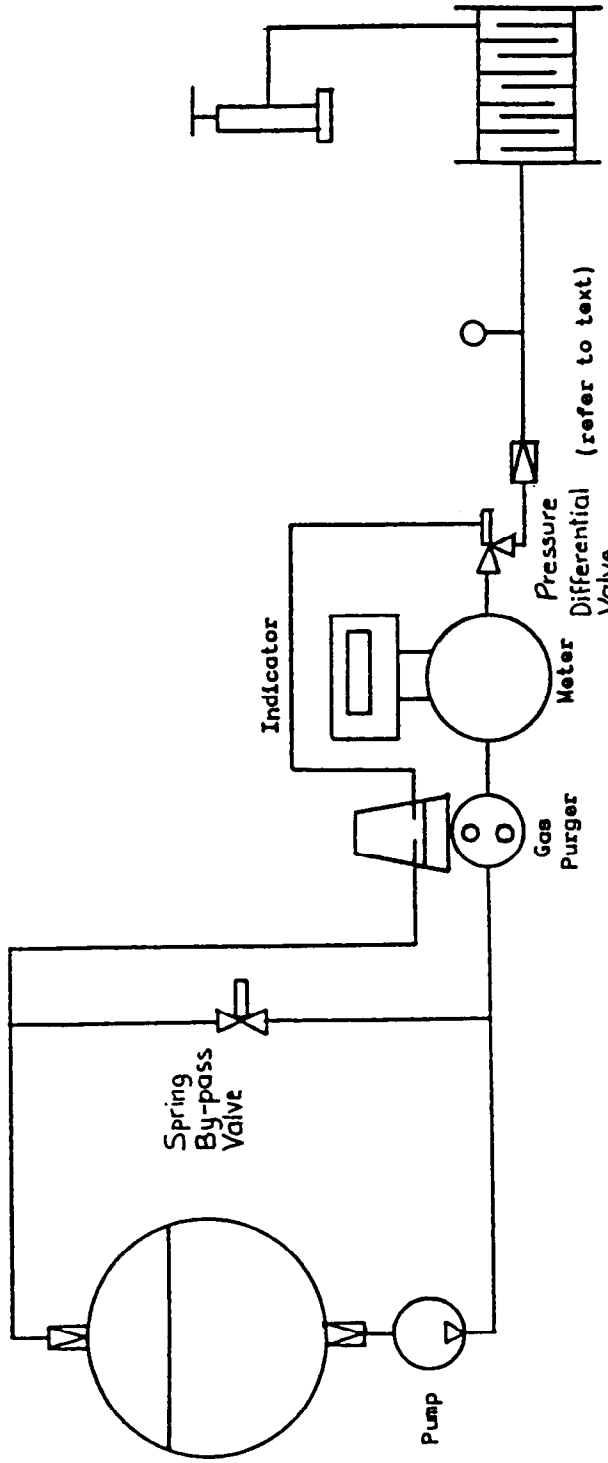


FIGURE 10/2/3A - 1



Typical Bulk LPG Flowmetering System

FIGURE 10/2/3A - 2



Typical Vehicle-mounted LPG Flowmetering System

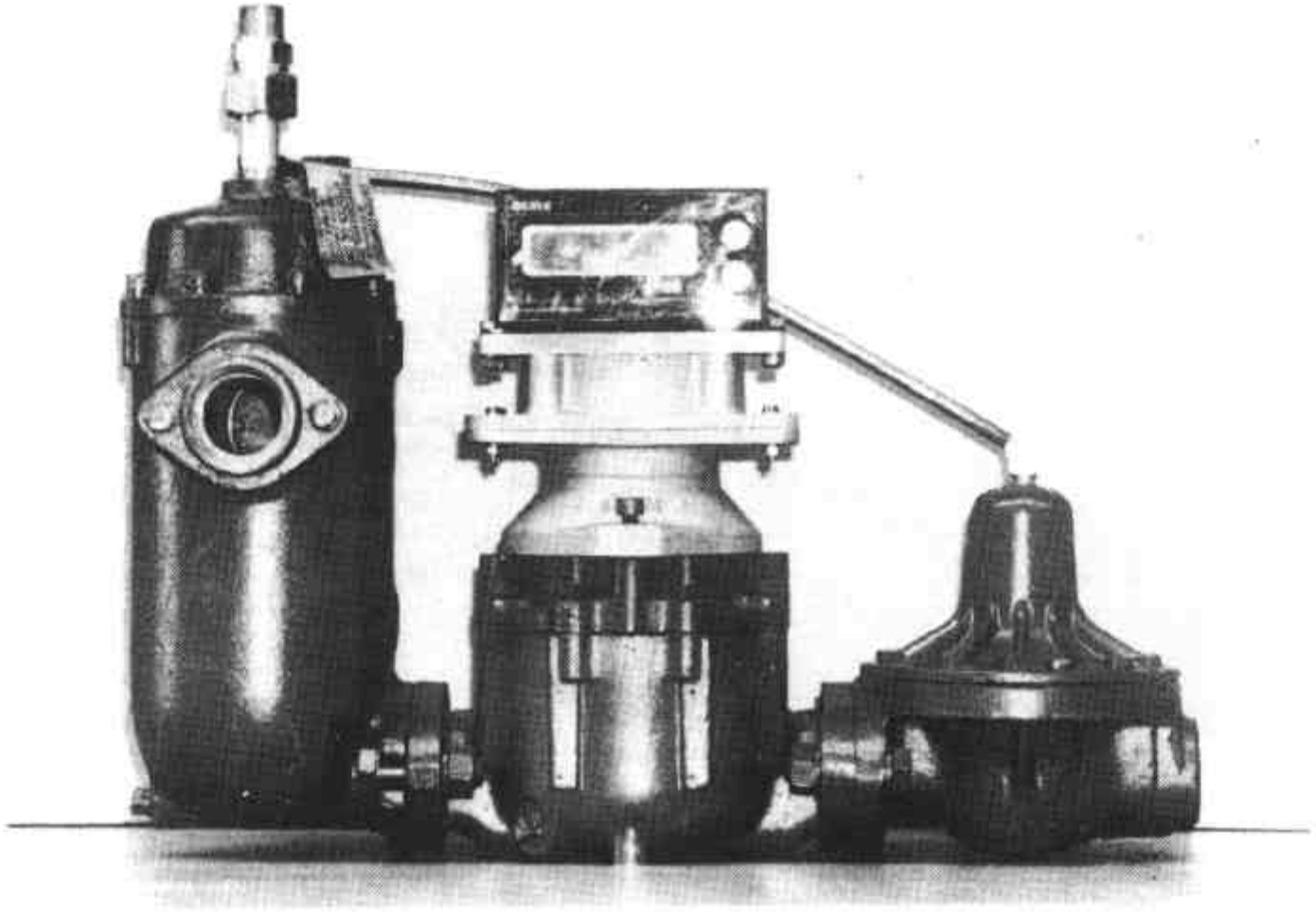
FIGURE 10/2/3A - 3

Schlumberger Neptune Model Type 4D 50 mm LPG Meter

FIGURE 10/2/3A - 4

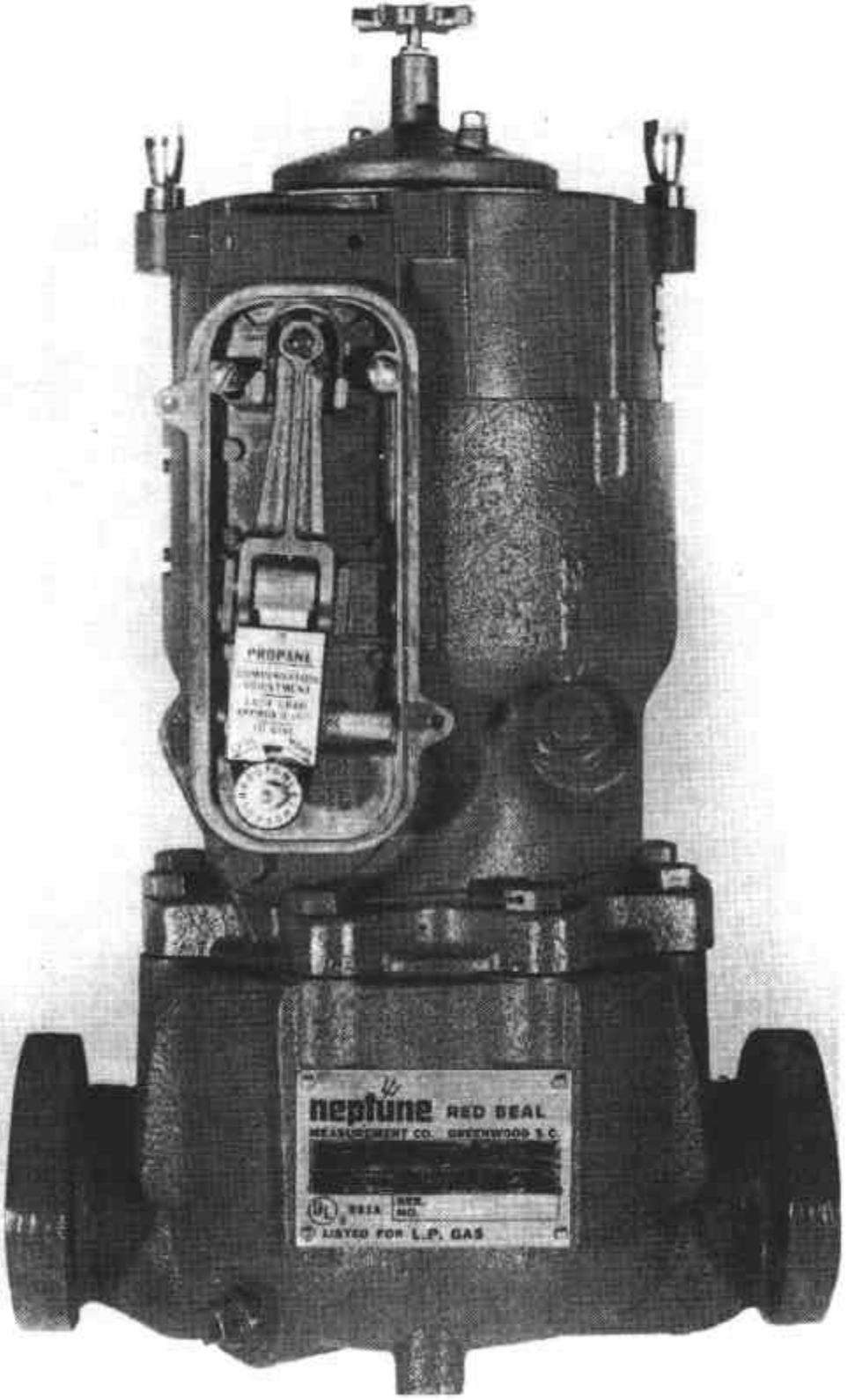
Model Type 4D Style N Meter With Model 600 Indicator

FIGURE 10/2/3A - 5



Model Type 4D 38 mm Meter With Acme Model 502 Indicator

FIGURE 10/2/3A - 6



Mechanical Volume Conversion For Temperature Device