S226A
7 November 2003

Australian Government

National Standards Commission

12 Lyonpark Road, North Ryde NSW 2113 Australia

Cancellation

Supplementary Certificate of Approval No S226A

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

Liquip Model EMH400 Pulse Generator/Indicator for Liquid-measuring Systems

submitted by Liquip Sales Pty Ltd
13 Hume Road
Smithfield NSW 2164

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.

S226A
30 April 2001

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Supplementary Certificate of Approval No S226A

Change No 1

The following change is made to the approval documentation for the

Liquip Model EMH400 Pulse Generator/Indicator for Liquid-measuring Systems

submitted by Liquip Sales Pty Ltd
13 Hume Road
Smithfield NSW 2164.

In Supplementary Certificate of Approval No S226A dated 3 April 1995;

The Condition of Approval referring to the expiry of the approval should be deleted.

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.

National Standards Commission

Supplementary Certificate of Approval

No S226A

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

Liquip Model EMH400 Pulse Generator/Indicator for Liquid-measuring Systems

submitted by Liquip Sales Pty Ltd
13 Hume Road
Smithfield NSW 2164.

NOTE: This Certificate relates only to the suitability of the pattern of the instrument for use for trade and 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 the requirements of any other Australian authority.

This Certificate is issued upon completion of a review of NSC approval No S226.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 November 1999.
This approval expires in respect of new instruments on 1 November 2000.

Instruments purporting to comply with this approval shall be marked NSC No S226A and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked NSC No S226A in addition to the approval number of the instrument.

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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.

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

DESCRIPTIVE ADVICE

Pattern: approved 18 October 1994

- A Liquip model EMH400 pulse generator/indicator for use in Commission-approved liquid-measuring systems.

Variants: approved 18 October 1994

1. As an indicator only.

2. Other models and capabilities as listed in Table 1.

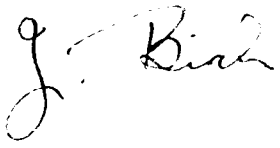
Technical Schedule No S226A describes the pattern and variants 1 & 2.

FILING ADVICE

The documentation for this approval comprises:

Supplementary Certificate of Approval No S226A dated 3 April 1995
Technical Schedule No S226A dated 3 April 1995 (incl. Table 1 and Test Procedure)
Figure 1 dated 3 April 1995

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 S226A

Pattern: Liquip Model EMH400 Pulse Generator/Indicator for Liquid-measuring Systems.

Submittor: Liquip Sales Pty Ltd
13 Hume Road
Smithfield NSW 2164.

1. Description of Pattern

The Liquip model EMH400 electronic pulse generator/indicator (Figure 1) is approved for use when mounted on the output shaft of any compatible Commission-approved positive displacement flowmeter.

1.1 Power Supply

The instrument operates with either 12 or 24 volt DC. Disconnection of power causes the display to blank, but the totaliser value and the last volume delivered are retained in a non-volatile memory.

1.2 Display

The maximum range of the indicator display is:

Volume (resettable)	99999.9 in 0.1 L increments
Totaliser	999999 in 1 L Increments

The density for which the instrument is currently set may be displayed by pressing the TOTALS button 5 times over a period of approximately 5 seconds. The density setting may be changed by keeping the TOTALS button depressed until the required setting is reached; 10 seconds after the button is released the instrument automatically reverts to normal operation and the density set is confirmed on the printed ticket.

1.3 Volume Conversion For Temperature

An electronic volume conversion for temperature facility is fitted to convert the measured volume to volume at 15°C of liquefied petroleum gas of density between 0.500 kg/L and 0.600 kg/L, at liquid temperatures between 0°C and 40°C. Volume conversion is based on Table 54 (LPG) of the ASTM-IP *Petroleum Measurement Tables.*

The volume conversion facility is deactivated when the density is set to 0.00.

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1.4 Linearisation

A linearisation correction facility is incorporated which may be used to linearise the meter calibration curve as a function of flow rate.

Up to 8 flow rates (frequencies) and K-factors over the flow rate range may be programmed using the calibration function. Each K-factor has a maximum correction range of ±10%.

1.5 Pulse Generator

The pattern contains a mono-directional pulse generator which can be internally connected to the indicator board to which it provides information on direction and speed of rotation. The pulse generator may be mounted remotely up to 10 metres.

The pulse generator specifications are:

Pulses per shaft revolution:	300 pulses/revolution
Maximum pulse generator shaft speed:	50 revolutions/minute

1.6 Markings

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

Manufacturer's name or mark	
Model number	
Serial number	
Approval number	NSC No S226A
Liquid density range	0.500 to 0.600 kg/L
Liquid temperature range	0°C to 40°C
Density for which volume convertor is set	..... kg/L
Operating (air) temperature range	-10°C to +45°C

The indicator reading face shall be marked with the unit of volume used (viz. Litres or Decalitres). In addition, when the volume conversion for temperature facility is activated the volume indicator (indicator facia) shall be marked 'Volume Delivered Converted to 15°C' or 'Reference Temperature 15°C'.

1.7 Verification Provision and Sealing

Provision is made for a verification mark to be applied.

Provision is made for sealing of the calibration facility.

For remote operation, the meter-mounted pulse generator cover is sealed.

2. Description of Variants

2.1 Variant 1

As an indicator only interfaced with a compatible Commission-approved pulse generator to a maximum input frequency of 250 pulses/second.

2.2 Variant 2

Other models and configurations as listed in Table 1. Instruments may also be in housings other than that shown in Figure 1.

TABLE 1

MODEL NUMBER	FEATURES (YES/NO)						
	A	B	C	D	E	F	G
EMH300-P	Y	N	N	Y	Y	N	N
EMH300-R	N	Y	N	Y	Y	N	N
EMH300-RP	N	N	Y	N	N	N	N
EMH300-T	Y	N	N	Y	Y	N	Y
EMH301	Y	Y	N	Y	Y	Y	Y
EMH302	Y	Y	N	Y	Y	Y	Y
EMH400	Y	Y	Y	Y	Y	Y	Y

A As a pulse generator/indicator
B As an indicator
C As a pulse generator (only for use with Liquip EMH indicators)
D With volume conversion for temperature facility
E With linearisation facility
F With resettable density facility
G With remote ticket printer

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.

Instruments Fitted With a Volume Conversion for Temperature Facility

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

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

FIGURE S226A - 1

Liquip Model EMH400 Pulse Generator/Indicator