



NATIONAL STANDARDS COMMISSION

S170
17/8/87

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

SUPPLEMENTARY CERTIFICATE OF APPROVAL No S170

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

Acme Model 5013-3 Flowmeter Indicator

submitted by Acme Oil Equipment Services Pty Ltd
Greens Road
Dandenong Vic 3175.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/10/89.
This approval expires in respect of new instruments on 1/10/90.

Instruments purporting to comply with this approval shall be marked NSC No S170.

This approval may be withdrawn if instruments are constructed other than as described in the drawings and specifications lodged with the Commission.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates Nos S1/0 and/or S2/0, as appropriate.

Signed

Executive Director

Descriptive Advice

Pattern: provisionally approved 4/9/84 - approved 24/4/85

- An Acme model 5013-3 indicator for use in a flowmetering system which incorporates a Commission-approved pulse generator and flowmeter.

Variant: approved 24/4/85

1. With 24 volt DC power supply and known as a model 5016-3.

Technical Schedule No S170 describes the pattern and variant 1.

Variant: approved 27/10/86

2. With a roll or slip ticket printer.

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Variants: approved 24/4/87

3. With a Wayne or Veeder-Root pulse generator.
4. With a turbine meter.
5. With linearisation correction facility.
6. With electronic temperature compensation, and known as the 502* series.

Technical Schedule No S170 Variation No 1 describes variants 2 to 6.

Filing Advice

Supplementary Certificate of Approval No S170 dated 28/5/85 is superseded by this Certificate and may be destroyed. The documentation for this approval now comprises:

Supplementary Certificate of Approval No S170 dated 17/8/87
Technical Schedule No S170 dated 28/5/85
Technical Schedule No S170 Variation No 1 dated 17/8/87 (incl. Table 1)
Test Procedure No S170 dated 28/5/85
Test Procedure No S170 Variation No 1 dated 17/8/87
Figure 1 dated 28/5/85
Figures 2 to 4 dated 17/8/87



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TECHNICAL SCHEDULE No S170

Pattern: Acme Model 5013-3 Flowmeter Indicator

Submitter: Acme Oil Equipment Services Pty Ltd
Greens Road
Dandenong Vic 3175

1. Description of Pattern

The Acme model 5013-3 flowmeter indicator (Figure 1) with totalising facility may be connected to an Acme model EPU 100 pulse generator (as described in NSC approval No S189), or to any other compatible Commission-approved pulse generator. The instrument is for use in mobile or fixed installations.

The flowmeter shall be used within a flow rate range such that the pulse generator output does not exceed 29400 pulses per minute.

1.1 Signal Interface

The indicator is for use with pulse generators which are interfaced in accordance with the circuit recommendations DIN 19234 and NAMUR.

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

Note: The totalising indication may be viewed only while the "Total" key is depressed.

Whenever power is applied, a display check is initiated which causes all segments to illuminate for approximately 5 seconds, after which the last volume delivered is displayed.

1.3 Power Supply

The power supply of the instrument is 12 volt DC. Disconnection of power causes the display to blank, but retains the totaliser value and the last volume delivered in a memory.

1.4 Installation

The instrument may be mounted directly to the pulse generator or placed in a remote location.

Connections of auxiliary devices shall be routed to minimise stray pulse pickups.

1.5 Markings

The instrument is marked with the following data, together in one location:

Manufacturer's name or mark
Model number
Serial number
Approval number

NSC No S170

1.6 Verification Provision

Provision is made for a verification mark to be applied.

2. Description of Variant 1

With a 24 volt DC power supply and then known as a model 5016-3.

TEST PROCEDURE No S170

The instrument should be tested in conjunction with any tests specified in the approval documentation for the flowmeter to which it is connected.

The results shall not exceed the maximum permissible errors as specified in Document 118.



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TECHNICAL SCHEDULE No S170

VARIATION No 1

Pattern: Acme Model 5013-3 Flowmeter Indicator

Submitter: Acme Oil Equipment Services Pty Ltd
Greens Road
Dandenong Vic 3175

1. Description of Variants (refer to Table 1 for models and configurations)

1.1 Variant 2

Fitted with either an integral electronic paper roll printer (Figure 2) or a separate electronic slip (paper insert) printer (Figure 3) in which case the model number of the indicator has the suffix PR or SP respectively, added. Sample tickets are shown in Figure 4, and show the delivered volume in litres and a transaction identification (delivery) number.

1.2 Variant 3

With a Wayne model WE-1 (part No 12576) or Veeder-Root model 761 pulse generator, having rotational speeds up to 240 r/min or 480 r/min, respectively.

1.3 Variant 4

With a turbine meter using a Commission-approved pulse generator providing an output not greater than 29400 pulses/min.

1.4 Variant 5

With electronic linearisation correction facility for correction of meter performance of up to $\pm 10\%$.

1.5 Variant 6

With electronic temperature compensation for deliveries of a product of a density between 0.500 kg/L and 0.600 kg/L at 15°C, at temperatures between 0°C and 45°C.

Instruments are known as the 502* series, with facilities including temperature compensation, linearisation and density setting. The indicator either includes a means of displaying the density, or is connected to a printer which prints the set density.

TABLE 1

		* SERIES TYPE:
		1. Standard totaliser.
		2. Totaliser with temperature compensation.
		* CASE CONSTRUCTION:
		1. Panel mount, terminal strip connection.
		2. Bench mount as above.
		3. Environmentally sealed, screw lock connections, 12 volt supply.
		6. As above for 3, but with 24 volt supply.
		* INPUT TYPE:
		1. Floating low voltage (turbine meter).
		2. TTL CMOS open collector (Wayne, Veeder-Root pulse generator).
		3. 0.25ma proximity switch (Acme EPU 100 etc).
		## OPTIONAL PRINTER:
		PR: With integral roll printer.
		SP: With separate slip printer.

Model 50** - *## (e.g. 5022 - 2PR)

Note: All the above models may be set to incorporate linearisation correction facility.

Approved Models and Configurations



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TEST PROCEDURE No S170

VARIATION No 1

Instruments should be tested in conjunction with any tests specified in the approval documentation for the flowmeter to which they are connected.

The results shall not exceed the maximum permissible errors specified in Document 118.

Instruments With Temperature Compensation

1. Density

Check that the density as represented by the code SP:** is the same as that displayed or printed.

2. Meter Tests

(a) Meter Test With Temperature Compensator Activated

- (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.

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.

(b) Meter Test With Temperature Compensator Deactivated

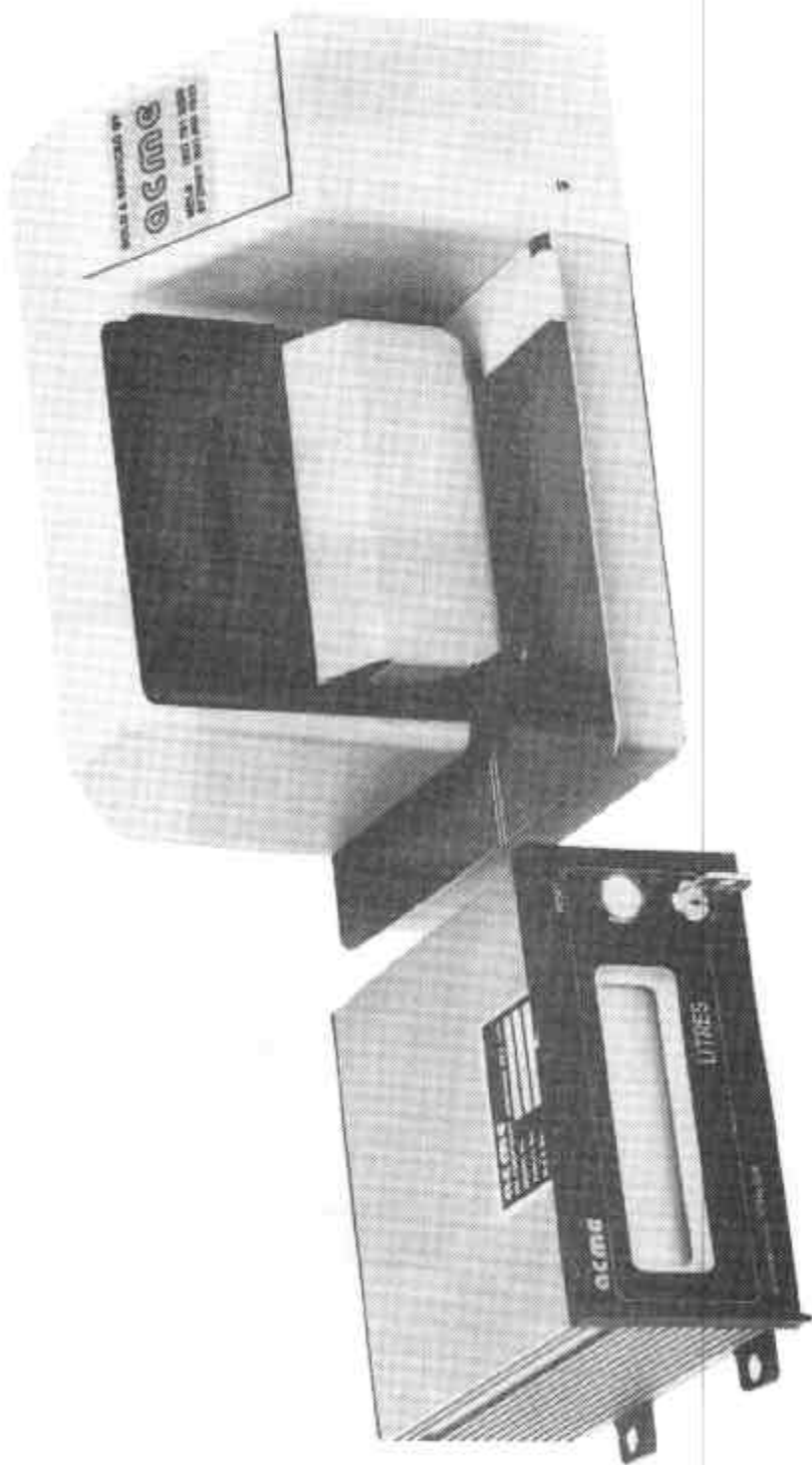
- (i) Select the DENSITY SET function as in Test 1. above, and then set the value to zero (SP:00).
- (ii) Repeat the above tests, as in Test 2(a).
- (iii) Reset the density value to that obtained in Test 1.

FIGURE S170 - 1



Typical Acme 501 Series Indicator

FIGURE S170 - 3



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With Separate Slip Printer

FIGURE S170 - 4

DENSITY 0.530 KG/L
ACC. TOTAL 124955 LITRES
QUANTITY 00138.7 LITRES
DELIVERY NUMBER 001

DENSITY 0.530 KG/L
ACC. TOTAL 125105 LITRES
QUANTITY 00149.3 LITRES
DELIVERY NUMBER 002

POWER INTERRUPTS: 00
METER DISCONNECTS: 00
DENSITY 0.530 KG/L
ACC. TOTAL 125105 LITRES
TOTAL DELIVERIES: 002

MINI TANKERS

Your Service Station
on Wheels
UNIT 2

DELIVERY SUMMARY

TOTAL DELIVERIES: 002
ACC. TOTAL 004464 LITRES
METER DISCONNECTS: 00
POWER INTERRUPTS: 00

MINI TANKERS

Your Service Station
on Wheels
UNIT 2

DELIVERY NOTE

DELIVERY NUMBER 002
QUANTITY 00278.9 LITRES
ACC. TOTAL 004464 LITRES

MINI TANKERS

Your Service Station
on Wheels
UNIT 2

DELIVERY NOTE

DELIVERY NUMBER 001
QUANTITY 00300.7 LITRES
ACC. TOTAL 004185 LITRES