



Australian Government

**National Measurement
Institute**

12 Lyonpark Road, North Ryde NSW 2113

Cancellation
Supplementary Certificate of
Approval No S313

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in Supplementary Certificate of Approval No S313 issued 23 May 1996 in respect of the

Contrec Model 1010 Bulk Flowmetering System Controller

submitted by Contrec Systems Pty Ltd
22 Hall Street
Hawthorn East VIC 3123

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

Signed by a person authorised by the Chief Metrologist
to exercise his powers under Regulation 60 of the
National Measurement Regulations 1999.

A handwritten signature in black ink, appearing to be 'J. H. T.', is written over the signature line.

National Standards Commission



Supplementary Certificate of Approval

No S313

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

Contrec Model 1010 Bulk Flowmetering System Controller

submitted by Contrec Systems Pty Ltd
22 Hall Street
Hawthorn East VIC 3123.

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 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 S313 and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked NSC No S313 in addition to the approval number of the instrument.

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

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.

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

DESCRIPTIVE ADVICE

Pattern: approved 6 October 1994

- A Contrec model 1010 control system for use in a Commission-approved liquid-measuring system.

Variants: approved 6 October 1994

1. With one or more additional indicators.

Technical Schedule No S313 describes the pattern and variant 1.

Variants: approved 11 March 1996

2. For use with bitumen and emulsions.

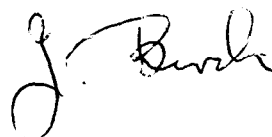
Technical Schedule No S313 Variation No 1 describes variant 2.

FILING ADVICE

Supplementary Certificate of Approval No S313 dated 28 April 1995 is superseded by this Certificate and may be destroyed. The documentation for this approval now comprises:

Supplementary Certificate of Approval No S313 dated 23 May 1996
Technical Schedule No S313 dated 28 April 1995 (incl. Test Procedure)
Technical Schedule No S313 Variation No 1 dated 23 May 1996
Figures 1 to 4 dated 28 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 S313

Pattern: Contrec Model 1010 Bulk Flowmetering System Controller.

Submittor: Contrec Systems Pty Ltd
22 Hall Street
Hawthorn East VIC 3123.

1. Description of Pattern

A Contrec model 1010 control system for use in a Commission-approved liquid-measuring system.

1.1 The System (Figure 1)

The pattern is interfaced with up to two Commission-approved bulk flowmeters fitted with compatible Commission-approved pulse generators. A 250 Ω platinum resistance temperature probe and a digital flow control valve are required for each flowmeter.

1.2 Indicator

The pattern (Figure 2) comprises a controller/indicator which contains all the control electronics and has two volume displays, an alphanumeric message display and a keyboard.

The pattern incorporates a preset function, a multi-point linearisation correction facility, and an electronic volume conversion for temperature facility. It may also include a card-reader facility.

1.2.1 Display

When power is applied, a display check is initiated, after which the last volume delivered is displayed.

Volume (resettable)	9999.9 L in 0.1 L increments, or 99999 L in 1 L increments
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Totaliser	99999 L in 1 L increments
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The volume delivered can be displayed as whole numbers, or with one decimal point on the individual indicators. If one decimal point is selected and the indicator reaches 9999.9 the indicator will roll over to 10 000 and continue incrementing without the decimal point (i.e. 10 001, 10 002, etc).

1.2.2 Power Supply

The instrument operates with 240 V AC mains supply. If power is disconnected, the totaliser value and the last volume delivered are retained in a non-volatile memory.

1.2.3 Volume Conversion For Temperature Facility

An electronic volume conversion for temperature facility is used to convert the measured volume to volume at 15°C of generalised petroleum products of density between 654 kg/m³ and 1074 kg/m³, at liquid temperatures between 0°C and 50°C. Volume conversion is based on Table 54B (generalised products) of the ASTM-IP *Petroleum Measurement Tables*.

The converted volume, temperature and density setting may be viewed by pressing the DISPLAY button.

1.2.4 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 10 frequencies and K-factors can be programmed through the calibration function. Linear interpolation is used between the entered K-factors, up to a maximum input frequency of 4 kHz.

1.3 Pulse Generator

The pulse generator shall be interfaced in accordance with the manufacturers' recommendations, and the maximum flow rate (L/min) of the flowmeter shall be no greater than the equivalent of 4 kHz produced by the pulse generator.

1.4 Operating Procedure

The following is a typical operating sequence, however each site may require a different operating procedure.

- (a) Connect overfill protection system.
- (b) Enter driver personal identification number (PIN).
- (c) Enter truck PIN.
- (d) Select the required loading-arm.
- (e) Enter a compartment number.
- (f) Enter preset quantity.
- (g) Enter a compartment number.
- (h) Press start or cancel.
- (i) Enter another load.

During the operating procedure other optional prompts may be displayed.

The controller will now proceed to fill the selected compartment. Other compartments may be filled at any time by repeating steps (f) to (i). When all interlocks are disconnected, the transaction is considered complete.

1.5 Verification/Certification and Sealing Provision

Provision is made for a verification mark to be applied.

Access to the instrument's calibration mode is via a sealed switch.

1.6 Markings and Notices

- (a) The following information shall be clearly and permanently marked on one or more permanently attached nameplates:

Manufacturer's name or mark

Model number

Serial number

NSC approval number

NSC No S313

Liquid temperature range

..... °C to °C

Liquid density range

..... kg/m³ to kg/m³

- (b) The preset indication is marked 'Preset Indication Not in Use For Trade'.
- (c) When the volume conversion device is activated, the indicator reading face shall be marked 'Converted to Litres at 15°C'.

2. Description of Variant 1

With one or more additional indicators enabling up to 6 Commission-approved flowmeters to be used (Figure 3). These indicators may be as shown in Figure 4, including with an optional card-reader.

TEST PROCEDURE

The maximum permissible shaft revolutions 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, 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.

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

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



National Standards Commission

TECHNICAL SCHEDULE No S313

VARIATION No 1

Pattern: Contrec Model 1010 Bulk Flowmetering System Controller.

Submittor: Contrec Systems Pty Ltd
22 Hall Street
Hawthorn East VIC 3123.

1. Description of Variant 2

For use with bitumen and emulsions in which case the electronic volume conversion for temperature facility is configured to convert the measured volume to volume at 15°C for product temperatures between 100°C and 250°C. The volume conversion factors for bitumen are given in the tables or obtained from the equation included in NSC Circular 365.

The density of the product measured shall be within $\pm 5 \text{ kg/m}^3$ of the density value set at the indicator.

TEST PROCEDURE

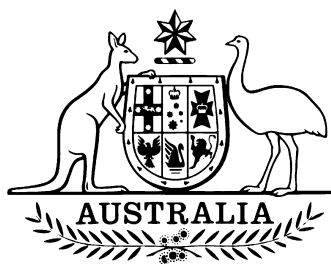
VARIATION No 1

Maximum Permissible Errors at Verification/Certification

The maximum permissible errors applicable are those applicable to the system to which Variant 2 approved herein is fitted, as stated in the approval documentation for the system.

Instruments are fitted with a device to convert the indication of volume to volume at reference conditions. The maximum permissible error specified above is increased by $\pm 0.4\%$ when the volume convertor is activated.

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



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Supplementary Certificate of Approval No S313

Change No 1

The following change is made to the approval documentation for the

Contrec Model 1010 Bulk Flowmetering System Controller

submitted by Contrec Systems Pty Ltd
22 Hall Street
Hawthorn East VIC 3123.

In Supplementary Certificate of Approval No S313 dated 23 May 1996 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.

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

FIGURE S313 - 1

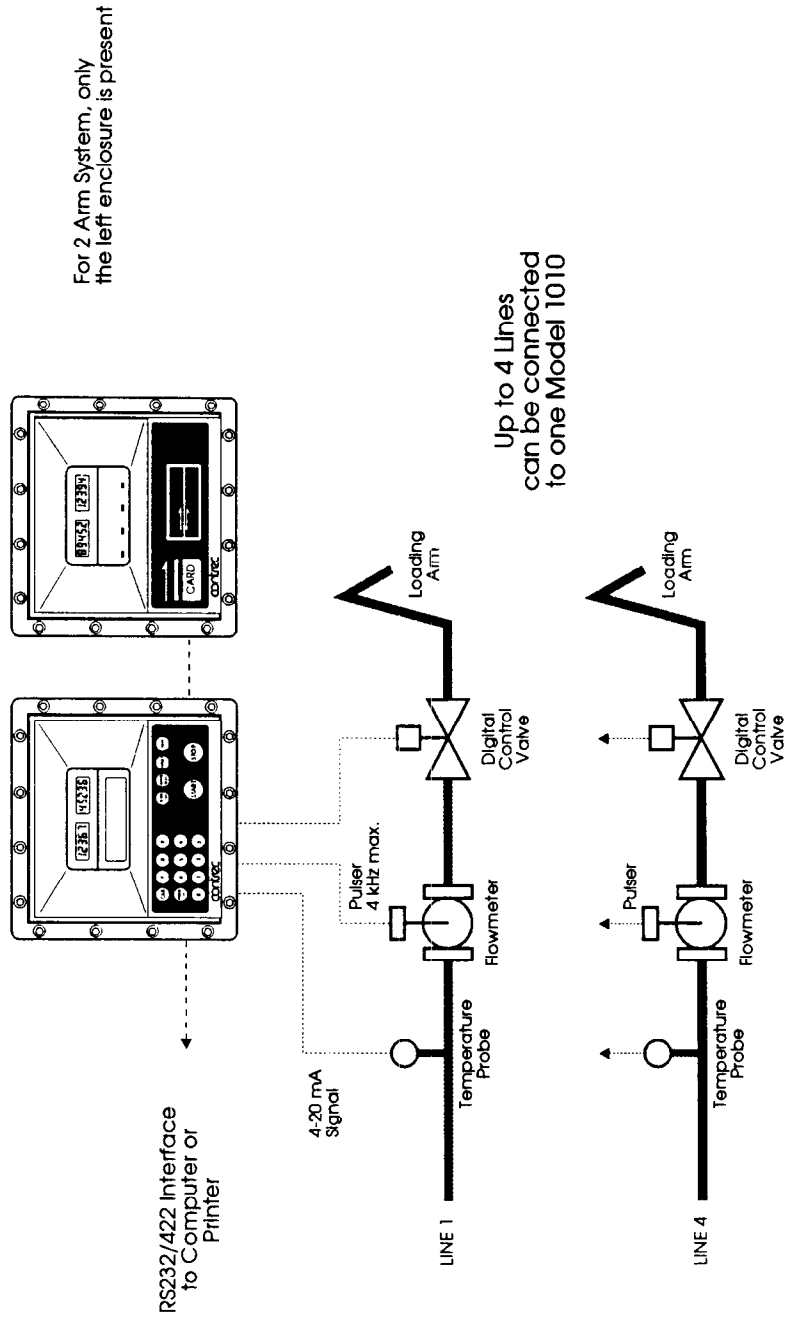
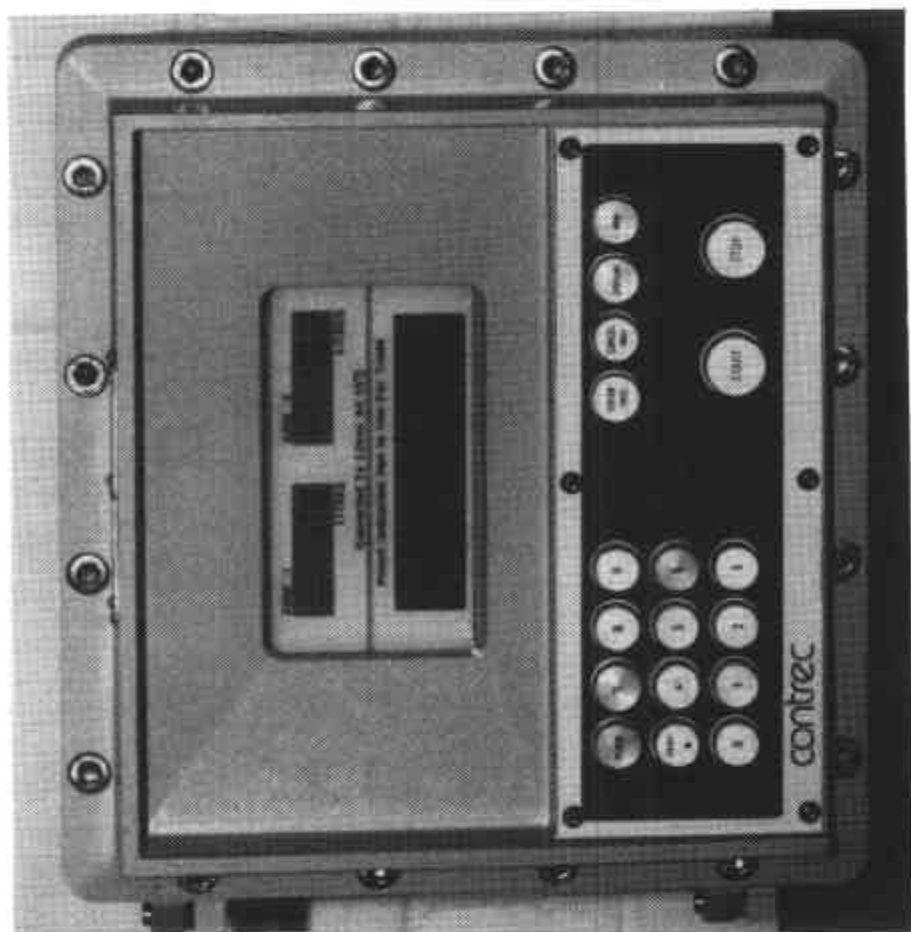
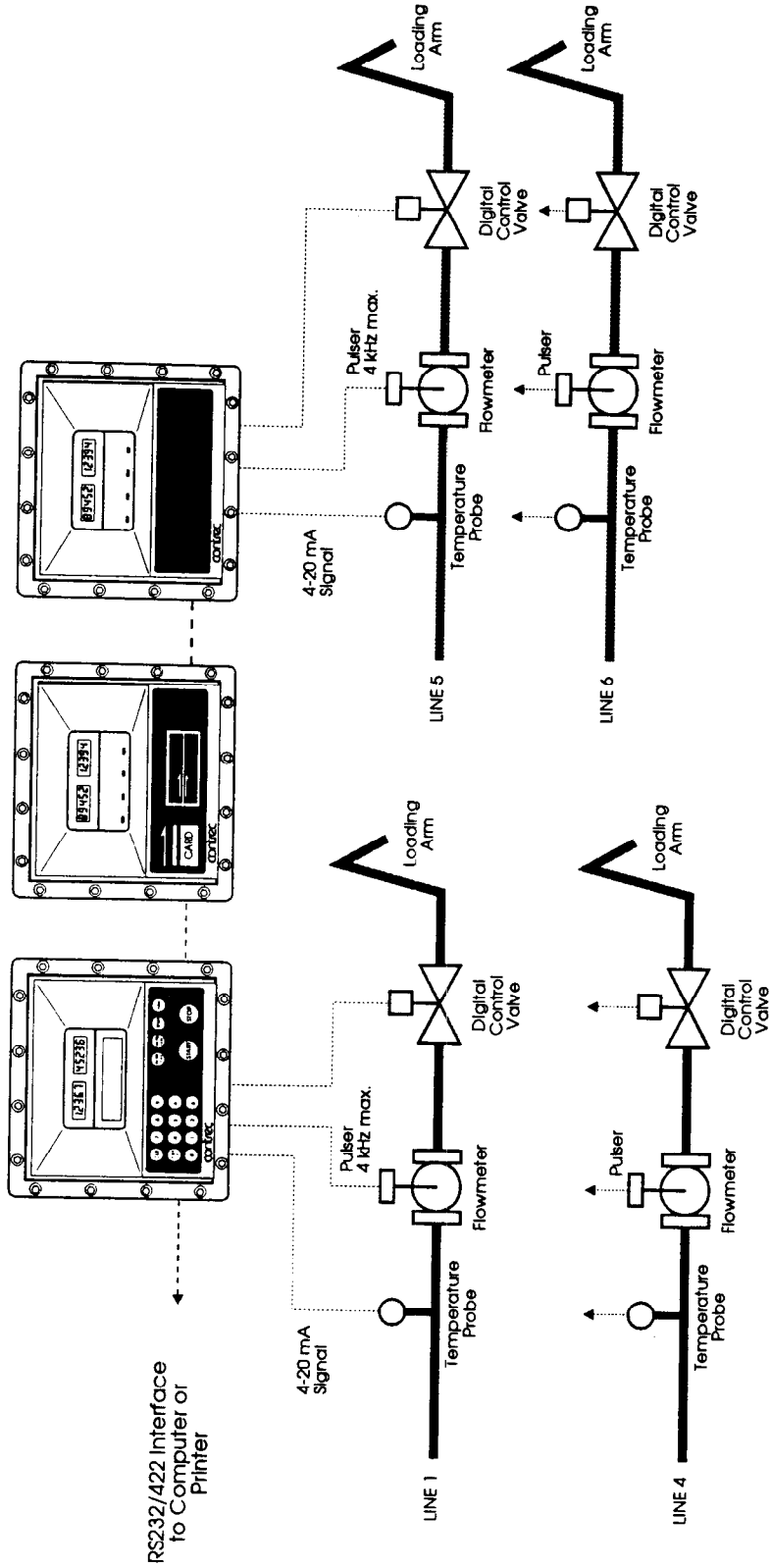


FIGURE S313 - 2



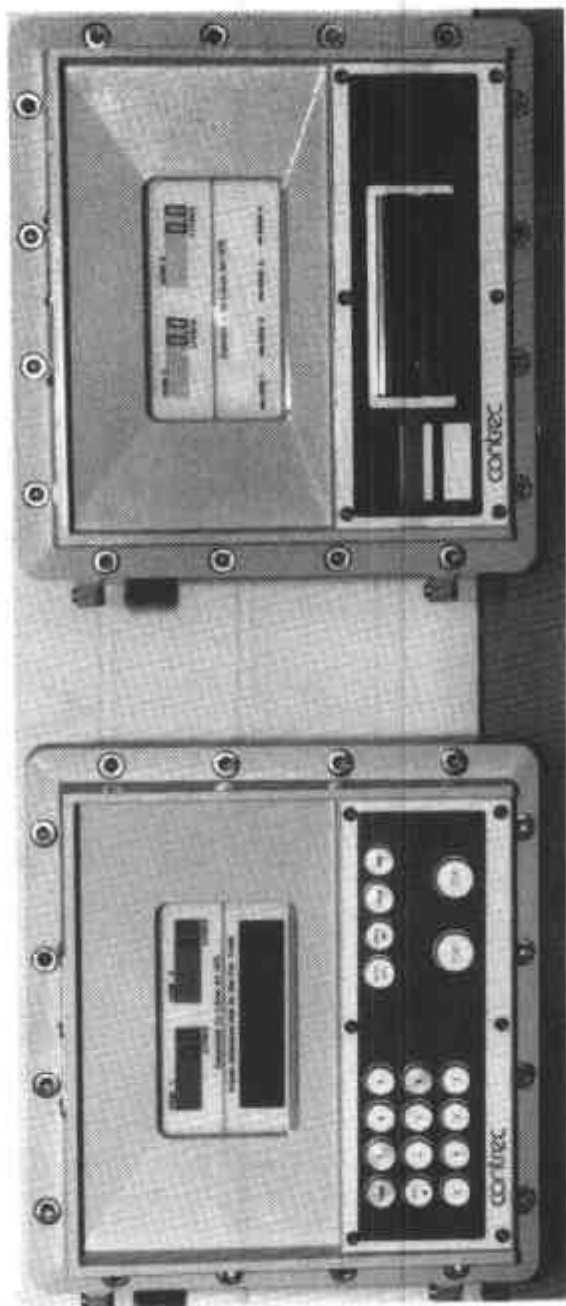
Contrec Model 1010 Controller/Indicator

FIGURE S313 - 3



System With up to 6 Flowmeters (Variant 1)

FIGURE S313 - 4



Controller/Indicator and Indicator With Card-reader