Australian Government
National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S681

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

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Veeder-Root Model 7890 Calculator/Indicator for Liquid-measuring Systems

submitted by Gilbarco Australia Limited
20 Highgate Street
Auburn NSW 2144

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 approval has been granted with reference to document NMI R 117 Measuring Systems for Liquids Other than Water, dated June 2011.

This approval becomes subject to review on 1/06/20, and then every 5 years thereafter.

NOTE: The pattern & variant were previously described in approval NMI S184B which was cancelled on 1/12/12.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variant 1 approved – certificate issued	29/05/15

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI S681' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S681' in addition to the approval number of the instrument, and only by persons authorised by the submittor.

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 National Measurement Institute (NMI) 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 document NMI P 106.

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

Mario Zamora

TECHNICAL SCHEDULE No S681

1. Description of Pattern approved on 29/05/15

A Veeder-Root model 7890 (#) mechanical zero-start calculator/indicator with integral printer (Figure 1) for use in compatible NMI-approved liquid-measuring systems. The pattern is fitted with an integral printer.

(#) Abbreviated model number – the full model number is in the form 'XXX78AAXX-XXX' (which may include an optional 3-digit prefix) – refer to Table 1 for explanations.

1.1 Field of operation

The field of operation of the calculator/indicator is determined by the following characteristics:

- The maximum speed of rotation of the right-hand element of the calculator/ indicator shall not exceed 200 rpm.
- Environmental temperature range: –25°C to 55°C
- For use with flowmeters approved for minimum measured quantities (*Vmin*) of not less than 20 litres.

1.2 Indicator Display

The indicator has five elements indicating volume in 1 litre increments with each element marked and numbered 0 to 9 (Figure 1). To reset the indicator to zero, the handle is rotated in the clockwise direction; a shutter covers the indicator elements until resetting is complete.

The indicator incorporates an eight digit non-resettable mechanical totaliser.

Volume	up to 99999 L in 1 L increments
Totaliser	up to 99999999 L in 1 L increments

1.3 Markings and Notices

Instruments are marked with the following data, together in one location (Figure 2), in the form shown below at right:

Manufacturer's mark, or name written in full	.....
Model number	.....
Serial number	.....
Pattern approval number	NMI S681
Year of manufacture	.....
Accuracy class	0.5
Environmental class	C, I

The minimum measured quantity specified for the fuel dispenser is marked or displayed on the face of the indicator in the form 'Minimum Delivery 1000 L'.

Also, the indicator face is marked with the notice DO NOT RESET WHILE COUNTING.

1.4 Verification Provision

Provision is made for the application of a verification mark.

1.5 Sealing Provision

Provision is made for the calibration adjustments to be sealed using the sealing bolts shown in Figure 1.

2. Description of Variant 1 approved on 29/05/15

Certain other models identified using the information in Table 1 below, including:

(a) The pattern (the model 7890 (#) calculator/indicator) but without a printer and then known as a model 7887 (#) (Figure 3).

(b) A model 7890 (#) calculator/indicator where the indicator has five elements with the first four elements marked and numbered 0 to 9 and the right-hand element marked and numbered in 0.1 litre increments (Figure 4).

For use with flowmeters approved for minimum measured quantity *(Vmin)* of not less than 2 litres.

Volume	up to 9999.9 L in 0.1 L increments
Totaliser	up to 9999999.9 L in 0.1 L increments

(c) Instruments may be fitted with a mechanical preset facility which is not approved for trade use and must be so marked.

(#) Abbreviated model number – the full model number is in the form 'XXX78AAXX-XXX' (which may include an optional 3-digit prefix) – refer to Table 1 for explanations.

TABLE 1 – Model Designations

Model Designation:

XXX	78	AA	XX-XXX
Prefix – Non metrological designations	Base Series number	Manufactures configuration from factory: 83 - 6 wheel register with printer 86 - 6 wheel register only 87 – 5 wheel register only 90 – 5 wheel register with printer 91 – 5 or 6 wheel register with preset 92 – 5 or 6 wheel register with preset and printer	Used to designate manufacturers assembly instructions

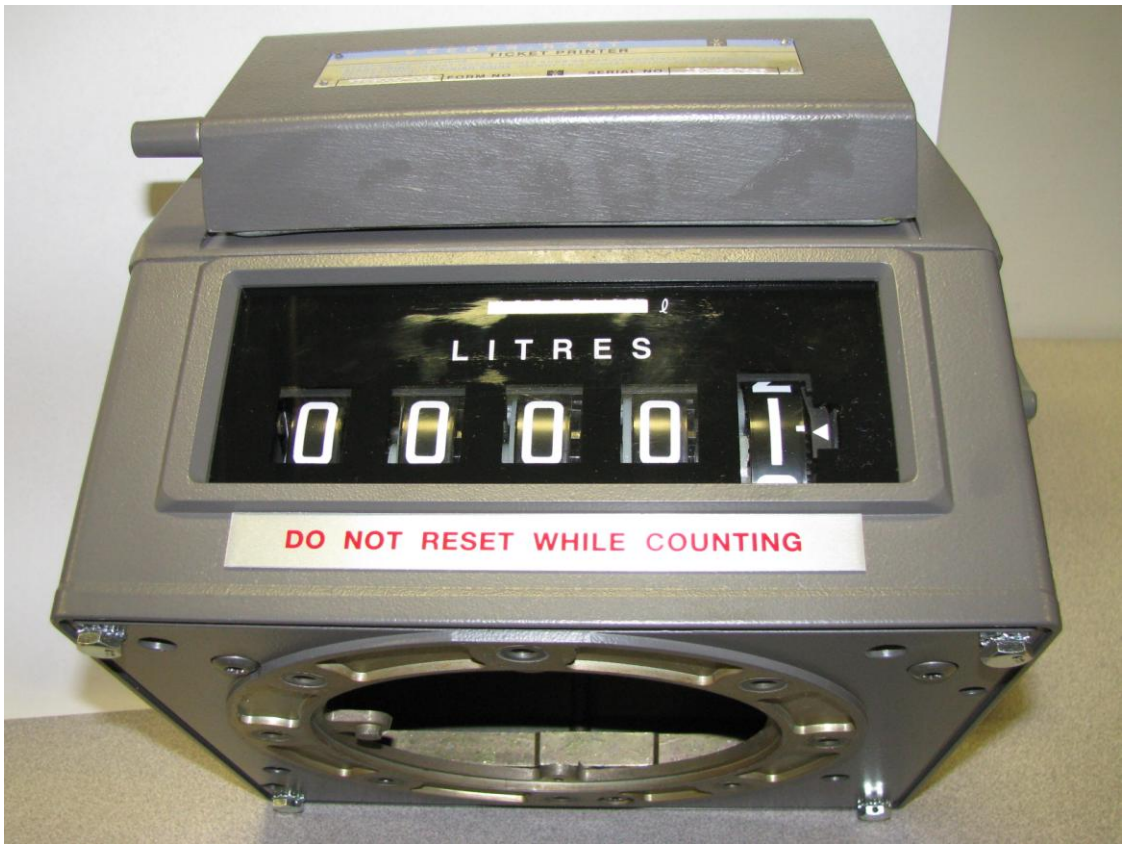
- **Note:** Printers and presets may be added to the manufactures configuration at a later time.
  (For example: a 7887 would be sent as a register only, but may be found with a preset and a printer installed)

TEST PROCEDURE

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

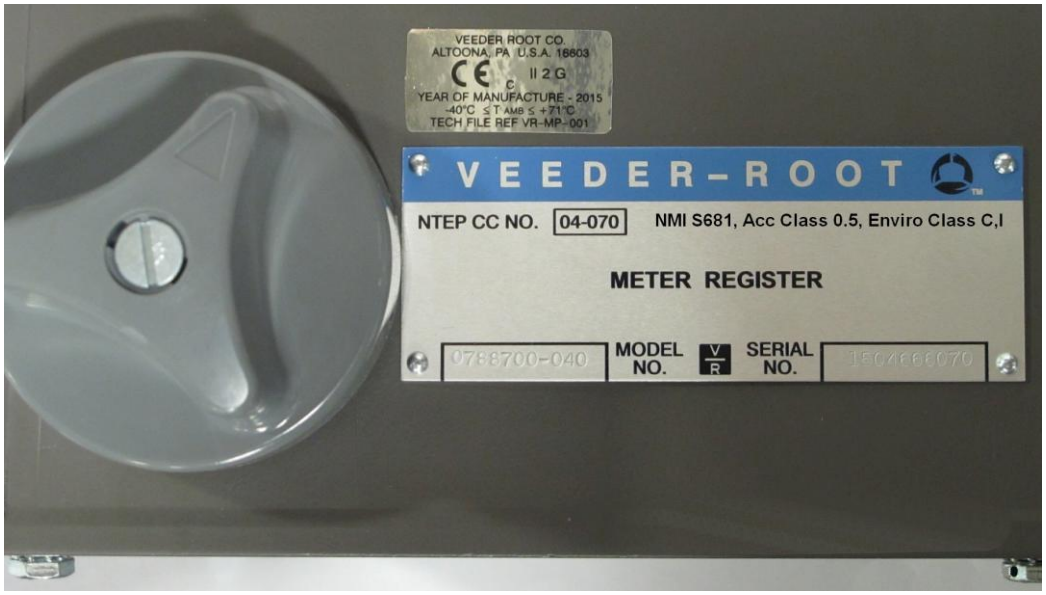
The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

FIGURE S681 – 1



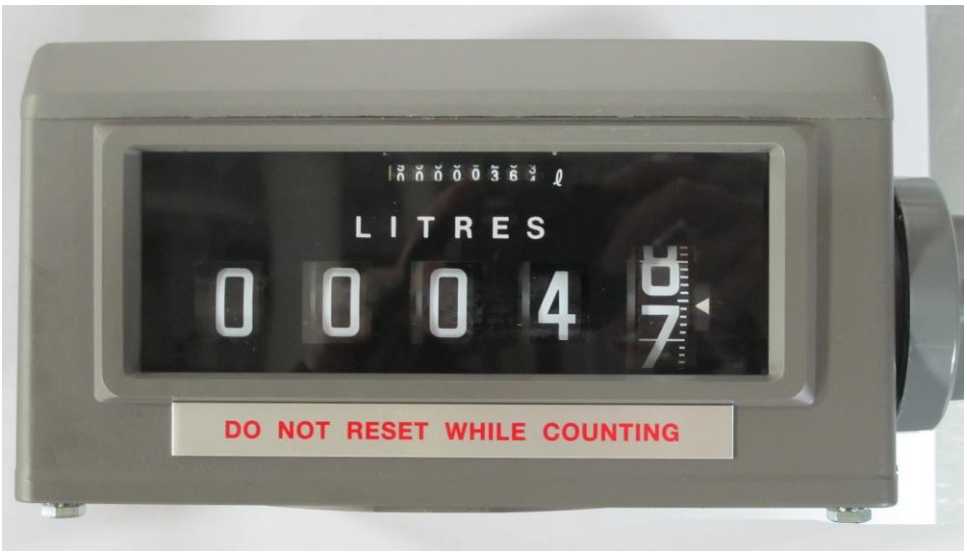
Veeder-Root Model 7890 Calculator/Indicator (The Pattern)
– incl. Sealing Bolts at Rear Underside

FIGURE S681 – 2



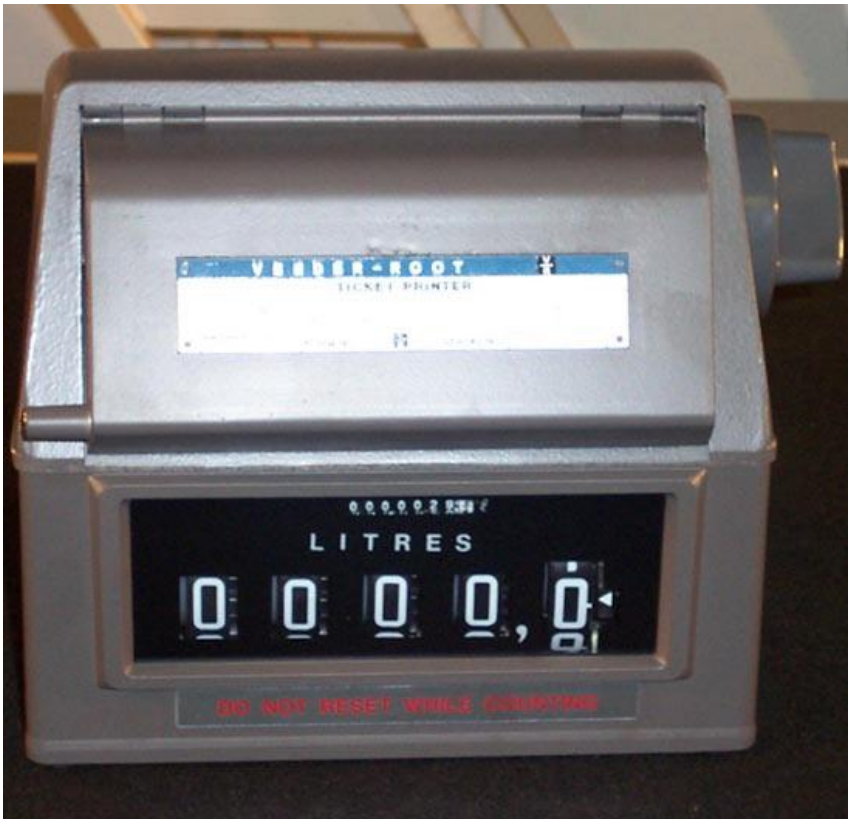
Typical Sample Nameplate

FIGURE S681 – 3



Model 7887 Calculator/Indicator Without a Printer (Variant 1)

FIGURE S681 – 4



Model 7890 Calculator/Indicator With 0.1 Litre Increments (Variant 1)

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