Australian Government

National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation

Supplementary Certificate of Approval No S311

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 respect of the

GEC Avery Model L226 Digital Indicator

submitted by Salter Australia Pty Ltd
20 Terracotta Drive
Blackburn VIC 3130

has been cancelled in respect of new instruments as from 1 September 2006.

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

National Standards Commission

Supplementary Certificate of Approval

No S311

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

GEC Avery Model L226 Digital Indicator

submitted by Avery Berkel International
12-38 Talavera Road
North Ryde NSW 2113.

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.

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CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 August 1999, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No S311 and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked NSC No S311 in addition to the approval number of the instrument.

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.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to an instrument incorporating the pattern approved herein shall be within the limits specified herein and in any approval documentation for the other components.

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

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

DESCRIPTIVE ADVICE

Pattern: approved 4 July 1994

- A GEC Avery model L226 single or multi-interval digital indicator.

Variant: approved 22 August 1994

1. Certain other models.

Technical Schedule No S311 describes the pattern and variant 1.

Variant: approved 4 July 1996

2. Certain indicators for use with increased excitation current values.

Technical Schedule No S311 Variation No 1 describes variant 2

Variants: approved 28 November 1997

3. Models L117Ex, L217Ex and L227Ex.

4. Models L117Ex, L217Ex and L227Ex with battery power options.

5. Models L117Ex, L217Ex and L227Ex high impedance versions.

6. Models L117Ex, L217Ex and L227Ex high impedance versions with battery power options.

Technical Schedule No S311 Variation No 2 describes variants 3 to 6.

Variant: approved 20 August 1999

7. For use with certain digital load cells.

Technical Schedule No S311 Variation No 3 describes variant 7.

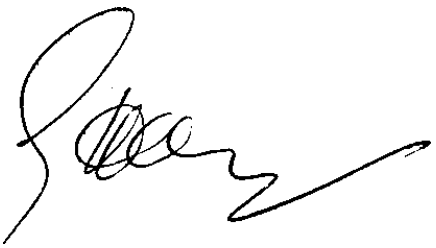
FILING ADVICE

Supplementary Certificate of Approval No S311 dated 10 July 1998 is superseded by this Certificate, and may be destroyed.

The documentation for this approval now comprises:

Supplementary Certificate of Approval No S311 dated 14 October 1999
Technical Schedule No S311 dated 14 December 1994 (incl. Table 1 & Test Procedure)
Technical Schedule No S311 Variation No 1 dated 1 October 1996
Technical Schedule No S311 Variation No 2 dated 10 July 1998
Technical Schedule No S311 Variation No 3 dated 14 October 1999
Figures 1 and 2 dated 14 December 1994
Figures 3 to 5 dated 10 July 1998
Figure 6 dated 14 October 1999

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 S311

Pattern: GEC Avery Model L226 Digital Indicator.

Submittor: GEC Avery Australia Limited
12 Rachael Close
Silverwater NSW 2141.

1. Description of Pattern

A GEC Avery model L226 digital mass indicator (Table 1) which may be fitted with input/output sockets for the connection of auxiliary and/or peripheral devices.

Instruments are fitted with an alphanumeric keyboard and are in a stainless steel, waterproof housing as shown in Figure 1.

The indicator may be used as a single-interval instrument (i.e. having only one value of verification scale interval; e) in which case it is approved for use with up to 5000 verification scale intervals. The indicator may also be used as a multi-interval instrument (i.e. having more than one value of verification scale interval; e_1, e_2) in which case it is approved for use with up to 5000 verification scale intervals per range, within the limits specified below.

1.1 Limits of Ranges

Multi-interval instruments may have up to 2 ranges and shall comply with the following:

(i) With a maximum of 5000 verification scale intervals per range.

(ii) $$\frac{\text{Maximum capacity of the lower range}}{\text{Verification scale interval of the next range}} \geq 500$$

1.1 Zero

Zero is automatically set to within ±0.25e for a single-interval instrument (±0.25e_1 for multi-interval) whenever the instrument comes to rest within ±0.5e (±0.5e_1 for multi-interval) of zero. If the instrument comes to rest outside that range but within the zero setting range, zero may be set by pressing the zero button.

The initial zero-setting device has a range of not more than ±20% of the maximum capacity of the instrument.

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1.2 Display Check

A display check is initiated whenever power is applied or when the test button is pressed.

1.3 Tare

A semi-automatic and/or a keyboard-entered non-automatic subtractive taring device, each of up to maximum capacity, may be fitted.

1.4 Linearisation Device

The instrument may be fitted with a programmable 10-point linearisation facility.

1.5 Verification/Certification Provision

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

1.6 Sealing Provision

Provision is made for the calibration adjustments of the instrument to be sealed.

1.7 Markings

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

Manufacturer's name or mark			
Serial number			
Accuracy class			(III)
Maximum capacity (for each range)			Max ..... *
Verification scale interval (for each range)			e = ... *
Minimum capacity			Min ..... *
NSC approval numbers	-	indicator	NSC No S311
	-	other components	NSC No ..... #

* Repeated in the vicinity of each reading face.
\# May be located separately from the other markings.

2. Description of Variant 1

Other models as listed below:

L225 Same features as L226 (the pattern) but in a non-waterproof plastic housing and with optional integral printer (Figure 2).

L216 Same features as L226 (the pattern) but with a numeric keyboard only (with memory).

L215 Same features as L216 but in a non-waterproof plastic housing and with optional integral printer.

L116 With less features than the L226 (the pattern) including with a numeric keyboard only (without memory).

L115 Same features as the L116 but in a non-waterproof plastic housing and with optional integral printer.

TABLE 1

Type: GEC Avery Models L226, L225, L216, L215, L116 & L115

Maximum number of verification scale intervals	5000
Minimum sensitivity	0.7×10^{-3} mV/scale interval
Excitation voltage	±5 V (10 V) DC
Minimum load impedance	75 Ω
Maximum excitation current	135 mA

TEST PROCEDURE

Instruments shall be tested 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.

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.

Maximum Permissible Errors at Verification/Certification

The maximum permissible errors for increasing and decreasing loads, expressed in terms of verification scale interval (e), with the instrument adjusted to zero within ±0.25e at no load, are:

±0.5e for loads from 0 to 500e;
±1.0e for loads over 500e up to 2000e; and
±1.5e for loads over 2000e.

For multi-interval instruments with verification scale intervals of e_1, e_2, ..., apply e_1 for zero adjustment and for maximum permissible errors apply e_1, e_2, ..., as applicable for the load.

1. Load Test (multi-interval instruments)

Test loads are to be applied to the instrument in not less than 9 steps increasing to maximum capacity, followed by decreasing loads in not less than 9 steps to zero load. The loads should be selected such that there are 3 approximately-equal steps in each range, but avoiding the changeover points of the ranges.

National Standards Commission

TECHNICAL SCHEDULE No S311

VARIATION No 1

Pattern: GEC Avery Model L226 Digital Indicator.

Submittor: GEC Avery Australia Limited
12 Rachael Close
Silverwater NSW 2141.

1. Description of Variant 2

Any model indicator of this approval marked with a serial number with the prefix 'AUS' approved for use with a maximum excitation current value of 230 mA.

TECHNICAL SCHEDULE No S311

VARIATION No 2

Pattern: GEC Avery Model L226 Digital Indicator.

Submittor: Avery Berkel International
12-38 Talavera Road
North Ryde NSW 2113.

1. Description of Variants

1.1 Variant 3

GEC Avery models L117Ex (Figure 3), L217Ex (Figure 4) and L227Ex (Figure 5).

These instruments are designed to satisfy explosion proof requirements and use different power supplies to the pattern.

The excitation voltage supplied by these indicators is dependent on the number of load cells connected. The following equation applies:

Excitation voltage (V) = 10 - (10 x 36 / (36 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

The maximum excitation current is 135mA. The excitation current required by a number of load cells is given by the following equation.

Excitation current (A) = 10 / (36 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

The features of these indicators are as follows:

Model L117Ex	Same features as the model L116;
Model L217Ex	Same features as model L216; and
Model L227Ex	Same features as model L226.

1.2 Variant 4

The models L117Ex, L217Ex and L227Ex with battery power options (both single and double-life batteries).

The excitation voltage supplied by these indicators is dependent on the number of load cells connected. The following equation applies:

Excitation voltage (V) = 5 - (5 x 18 / (18 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

The maximum excitation current is 135mA. The excitation current required by a number of load cells is given by the following equation.

Excitation current (A) = 5 / (18 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

1.3 Variant 5

The models L117Ex, L217Ex and L227Ex, high impedance versions, mains powered.

The excitation voltage supplied by these indicators is dependent on the number of load cells connected. The following equation applies:

Excitation voltage (V) = 10 - (10 x 112 / (112 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

The maximum excitation current is 135mA. The excitation current required by a number of load cells is given by the following equation.

Excitation current (A) = 10 / (112 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

1.4 Variant 6

The models L117Ex, L217Ex and L227Ex, high impedance versions, battery powered.

The excitation voltage supplied by these indicators is dependent on the number of load cells connected. The following equation applies:

Excitation voltage (V) = 5 - (5 x 56 / (56 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

The maximum excitation current is 135mA. The excitation current required by a number of load cells is given by the following equation.

Excitation current (A) = 5 / (56 + LCimp / nLC))

where LCimp = load cell input impedance (Ω)

and nLC = number of load cells.

TECHNICAL SCHEDULE No S311

VARIATION No 3

Pattern: GEC Avery Model L226 Digital Indicator.

Submittor: Avery Berkel International
12-38 Talavera Road
North Ryde NSW 2113.

1. Description of Variant 7

Models L215, L216, L225 and L226 with an additional two channel communications circuit board, a model T301 junction box (Figure 6) and a load cell scanning circuit board, enabling use with remote devices including Commission-approved Avery Berkel digital load cells.

When used with digital load cells, the maximum number of verification scale intervals (VSI) applicable is determined by the number of VSI given in the approval documentation for the load cells used.

Provision is made to seal the calibration adjustments in the T301 junction box by means of destructible labels over the join of the main housing and the removable cover.

S311
7 February 2003

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Supplementary Certificate of Approval No S311

Change No 1

The following changes are made to the approval documentation for the

GEC Avery Model L226 Digital Indicator

now submitted by Salter Australia Pty Ltd
20 Terracotta Drive
Blackburn VIC 3130.

1. In Supplementary Certificate of Approval No S311 dated 14 October 1999;

   The Condition of Approval referring to the review of the approval should be amended to read:

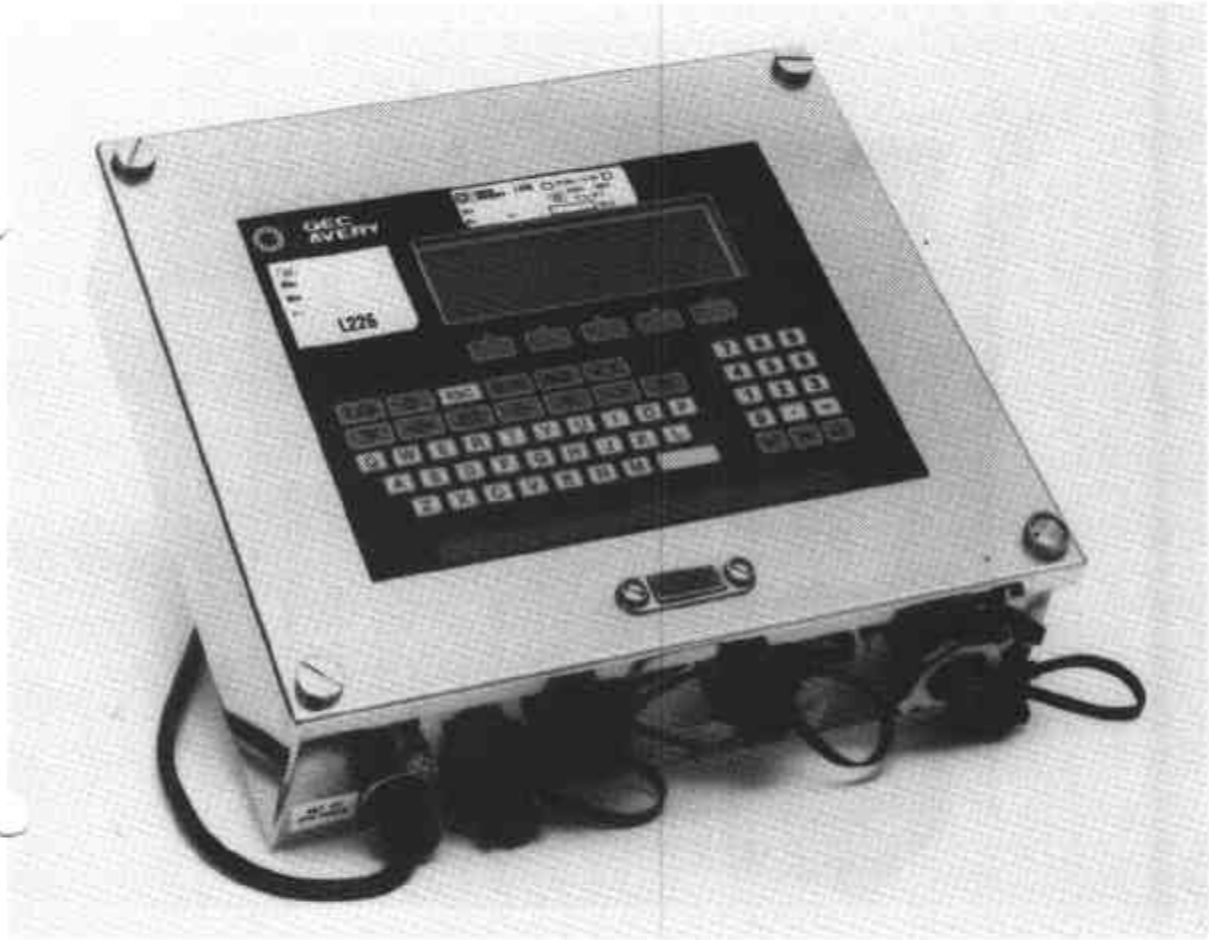
   "This approval becomes subject to review on 1 August 2004, and then every 5 years thereafter."

2. In Supplementary Certificate of Approval No S311 dated 14 October 1999, and in all the Technical Schedules listed in the Filing Advice of that Certificate, all references to the submittor and their address should read:

   "Salter Australia Pty Ltd
   20 Terracotta Drive
   Blackburn VIC 3130"

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.

FIGURE S311 - 1



GEC Avery Model L226 Digital Indicator

FIGURE S311 - 2

Model L225 Digital Indicator

FIGURE S311 - 3

Model L117 Digital Indicator

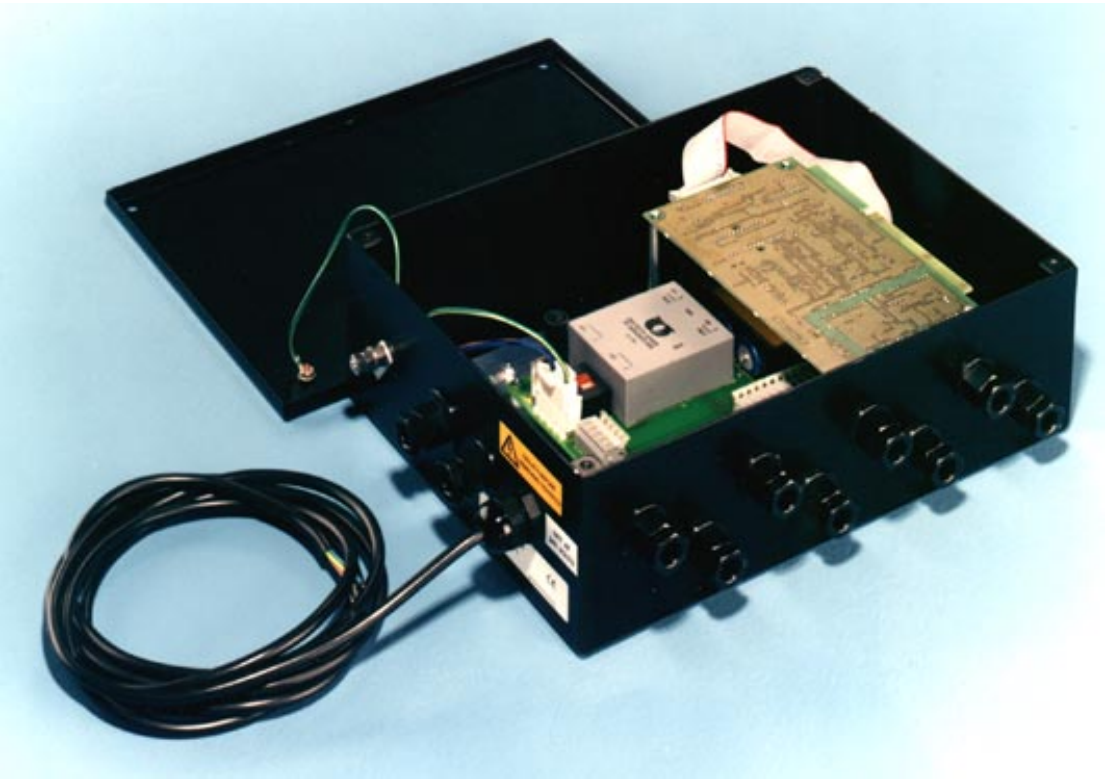
FIGURE S311 - 4

Model L217 Digital Indicator

FIGURE S311 - 5

Model L227 Digital Indicator

FIGURE S311 - 6



GEC Avery Model T301 Junction Box