

Correspondence: Executive Officer  
P.O. Box 282 NORTH RYDE  
N.S.W. 2113  
Telegrams: NATSTANCOM SYDNEY  
Telephone: 888 3922

CERTIFICATE OF APPROVAL No 6/10B/28

CANCELLED

This is to certify that the patterns of the

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Avery Weighing Instrument Model Z3H/SB 350-5109

submitted by Avery Australia Ltd,  
3-5 Birmingham Avenue,  
Villawood, New South Wales, 2163,

has been approved under the Weights and Measures (Patterns of Instruments) Regulations as being suitable for use for trade.

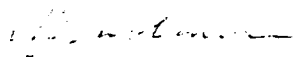
Date of Approval: 21 December 1977

The patterns are described in Technical Schedule No 6/10B/28, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1 January 1983.

All instruments conforming to this approval shall be marked with the approval number "NSC No 6/10B/28".

Signed



Acting Executive Officer



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/10B/28

Pattern: Avery Weighing Instrument Model Z3H/SB 350-5109

Submitter: Avery Australia Ltd,  
3-5 Birmingham Avenue,  
Villawood, New South Wales, 2163.

Date of Approval: 21 December 1977

All instruments conforming to this approval shall be marked "NSC No 6/10B/28".

### Description:

The pattern is a mechanical-lever weighbridge of capacity 50 tonnes with a load-cell resistant mechanism and an electronic weight indicator displaying up to 2500 increments (see Figures 1, 2 and 3).

The load receptor is supported by an Avery Model 5109 three-lever two-section basework with the transfer lever applying the load through a pullrod to a Hottinger 1000-kg tension load cell which is supported from a fixed beam. The lever ratio is selected so that at maximum capacity the force applied to the load cell is between 3900 N and 9800 N (400 to 1000 kgf).

The weight indicator, Avery Type SB 350, converts the output from the load cell to a digital weight indication of up to 2500 increments.\* Coarse and fine tool-operated zero adjustments are provided on the front of the weight indicator. A light marked "zero" illuminates when zero is set within 0,25e.

A push-button marked "Tare" allows automatic taring of a container on the load receptor to within 0,25e. On removal of the container the value of the tare to the nearest whole graduation is indicated on the weight indicator, prefixed by a - (minus) sign. The tare is subtractive and of maximum effect equal to the capacity of the

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\* As the indication is by "nixie" tubes an "all-8" test is not applicable.

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instrument. When tare is selected the word "tare" will illuminate. The tare is cancelled by pressing the gross button; the word "gross" will then be illuminated and the instrument will "gross" weigh until a tare is selected.

The weight indicator is retained in its cabinet by a lead-and-wire seal as it is too fragile for a stamping-plug seal (see Figure 4). The serial number of the load cell and the cable from the load cell are sealed to the weight indicator (see Figure 5).

The instrument is marked adjacent to the weight reading face, for example:

(III)

Max	=	50 t
Min	=	1 t
$d_a = e$	=	0,02 t
T	=	- 50 t

An output socket may be used to provide weight information to peripheral devices which are not a part of the measuring instrument.\* These supplementary devices, which may only be provided with the authorisation of the Weights and Measures Authorities of the State or Territory, may, for example, print receipts or store and process the data, etc. The output information is inhibited until the signal sampled in successive counting periods is the same, that is, the instrument is in equilibrium. Provision is made to seal the output socket to prevent the use of peripheral devices or to seal such devices to the measuring instrument (see Figure 6).

The use of such peripheral equipment will not affect the operation of the weighing instrument.

The approval includes the baseworks of other Commission-approved patterns replacing the Avery 5109 basework described in the pattern, provided that:

1. the basework\*\* is of an instrument conventionally known as a platform weighing machine, weighbridge or nopper scale, etc.,

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\* The measuring instrument examined and approved by the Commission is limited to the devices which determine the value of a physical quantity, control the measurement, and indicate the result of the measurement on a visual display, for example, a nixie-tube indicator or a seven-segment indicator.

\*\* The basework design may be varied by reducing the lever ratio of the transfer lever or by including an additional force breakdown or transfer lever to match the pullrod force to the load cell.

where the headwork and basework are separate assemblies connected by a mechanical linkage;

2. the force applied to the load cell is between 3900 N and 9800 N;
3. the capacity of the instrument is not more than the capacity approved for the basework;
4. a levelling device and an indicator are fitted, except for instruments installed in a fixed position, or instruments which satisfy the following accuracy requirements and indication limits when tilted to a slope of 1 in 20:

Accuracy requirements

- (i)  $\pm 0,5e$  for loads between zero and 500e inclusive;
- (ii)  $\pm 1e$  for loads between 500e exclusive and 2000e inclusive;
- (iii)  $\pm 1,5e$  for loads greater than 2000e.

Indication limits

- (i) Tilting at no-load — the zero indication does not vary more than  $2e$  when tilted to a slope of 1 in 20, the zero being first adjusted in the reference (level) position; and
  - (ii) Tilting when loaded — the indication does not vary more than  $e$  when tilted to a slope of 1 in 20, the indication at zero being adjusted in the reference position before tilting and in the tilted position before reloading.
5. If a level indicator is required, its sensitivity shall be such that, when the instrument is tilted so that the bubble in the level indicator moves 2 mm, the zero should not change by more than two graduations, and when zero is reset in the tilted position the instrument should satisfy the weighing-accuracy specification, that is,  $\pm \frac{1}{2}$  graduation for the first 500 graduations,  $\pm 1$  graduation for graduations over 500 and up to 2000, and  $\pm 1\frac{1}{2}$  graduations over 2000 graduations. A notice adjacent to the level indicator shall advise that the instrument must be level when in use.
  6. The instrument is marked:

"Approval Numbers

Headwork NSC No 6/10B/28

Basework NSC No .....

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**Special Tests:**

1. Zero balance — illumination of the "zero light" indicates that zero is set within 0,25e; this may be checked in accord with the Commission's digital zero test (Design Manual No 1, Document 104, Testing Procedures for the Elimination of Rounding Error for Weighing Instruments with Digital Indication).
2. Zero range — the maximum range of operation of the zero device should not exceed 4% of the capacity of the instrument ( $\pm 2\%$  approximately).
3. Load-cell creep — leaving a maximum-capacity load on the load receptor for a period of 30 minutes should not cause the weight indicated to be incorrect, and on removal of the load the weight indicated should be zero.
4. Test loads — the application of the test loads specified in Table 1 and the display of these loads within the applicable tolerance is one method of checking that the instrument operates in accordance with the approved design.
5. Range of indication — the maximum weight indicator should not exceed the maximum capacity (max); above this indicated weight the indicator should be blank.

TABLE 1

Test Load in Graduations\*

0	10	25	60	120	250	698,5
1	12	30	70	140	300	798,5
2	14	35	80	160	350	898,5
3	16	40	90	180	400	998,5
4	18	45	100	200	450	1198,5
5	20	50			500	1398,5
6						1598,5
7						1798,5
8						1998,5
9						2498

\*Test Load = Number of graduations x graduation value

Note: The test load should include a test at capacity, less the tolerance and less 0,5 graduation

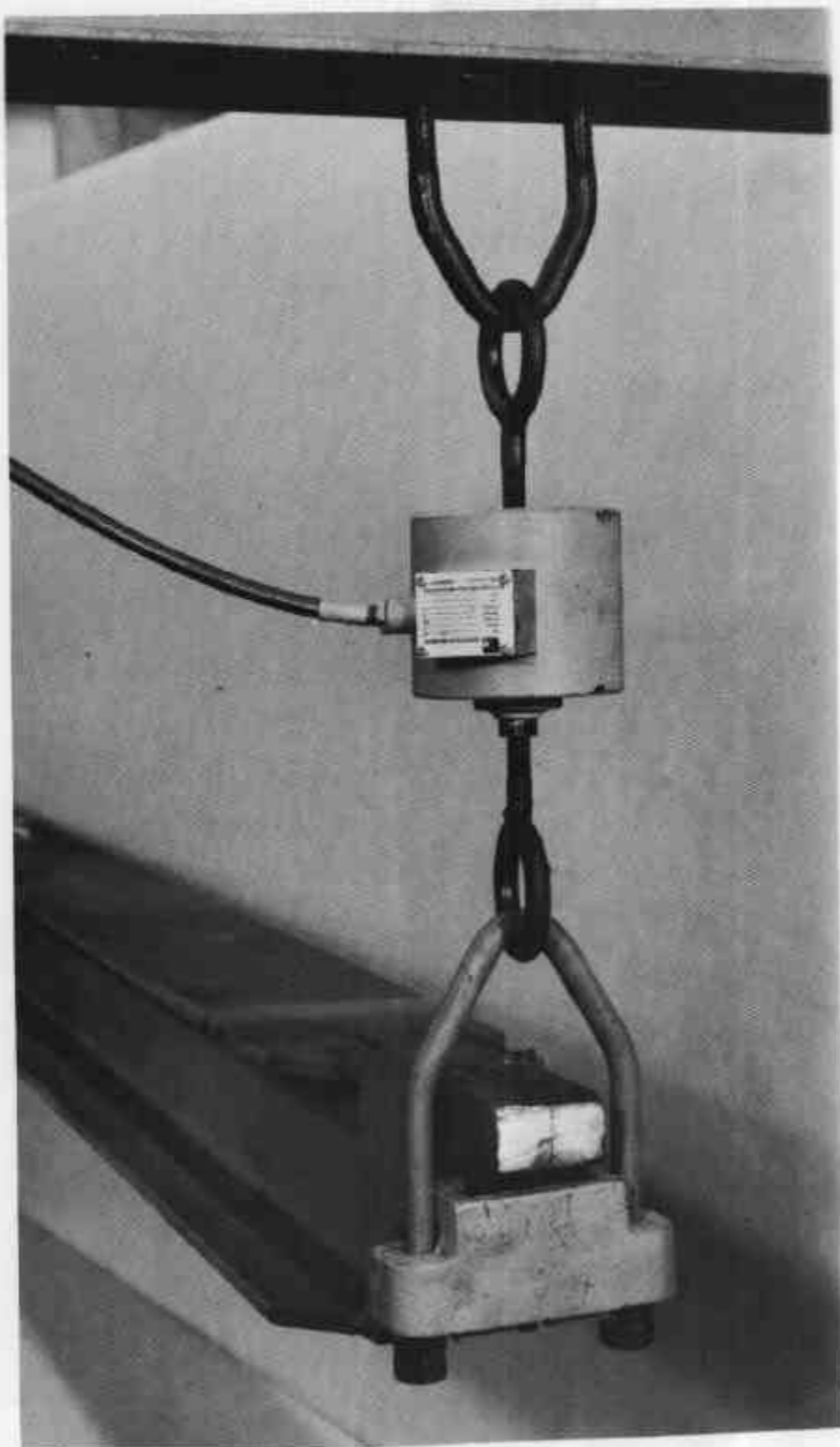
FIGURE 6/10B/28 - 1



Avery Weight Indicator Type SB 350

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FIGURE 6/10B/28 - 2

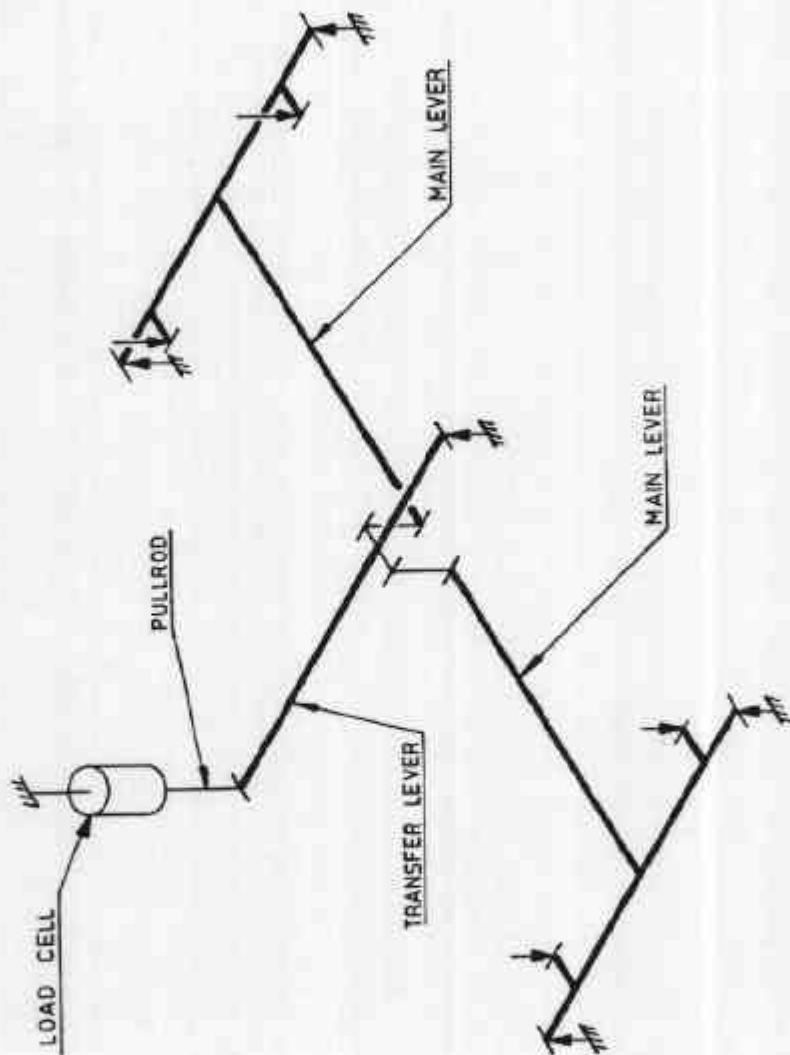


Hottinger 1000-kg Load Cell Resistant Mechanism

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FIGURE 6/10B/28 - 3



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Sealing of Weight Indicator

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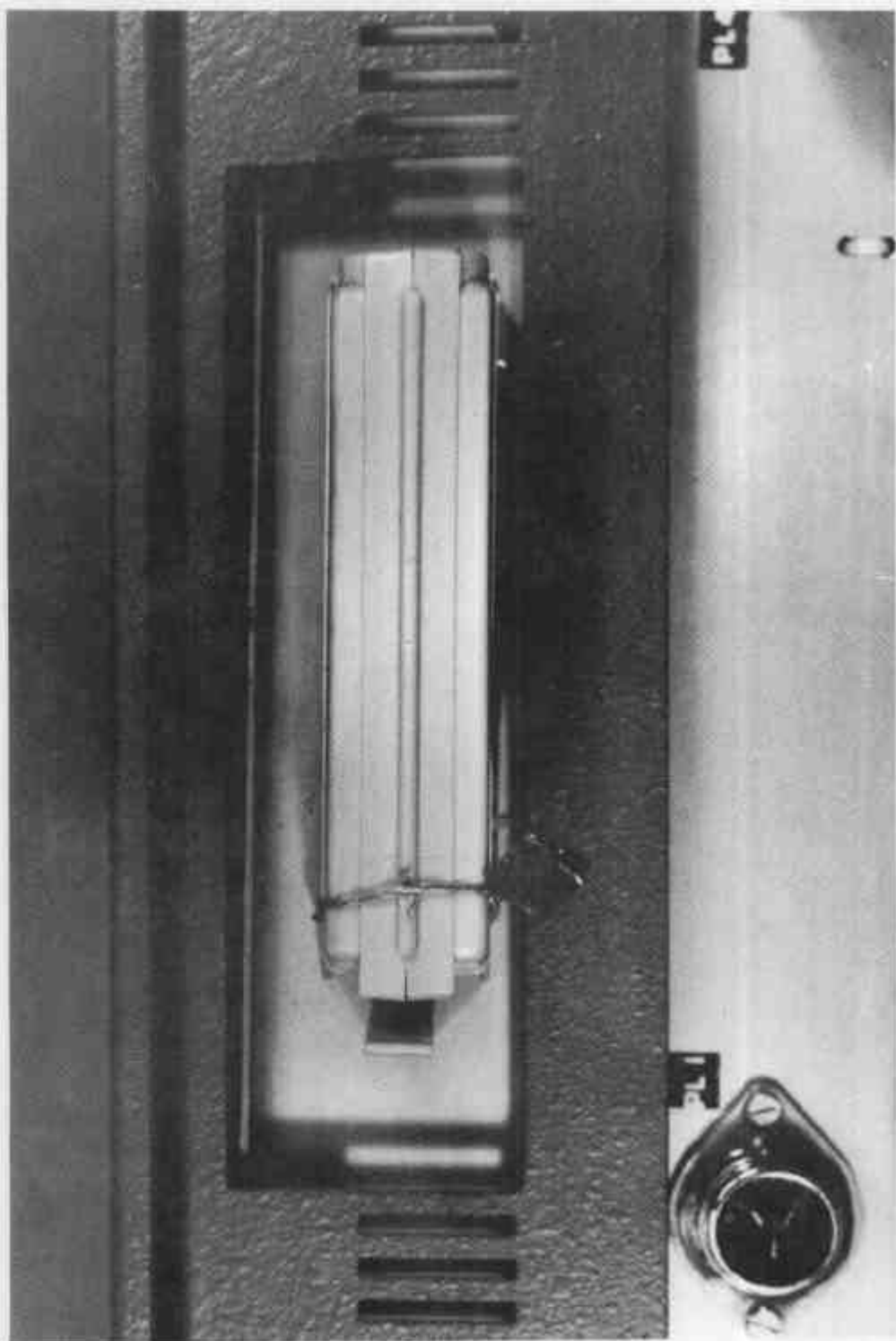
FIGURE 6/10B/28 - 5



Sealing of Load-cell Cable and Load-cell Serial Number to the Weight Indicator

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FIGURE 6/10E/28 - 6



Sealing of the Output Socket

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