6/14B/14
24 November 2004

Australian Government

National Measurement Institute

12 Lyonpark Road, North Ryde NSW 2113

Cancellation

Certificate of

Approval No 6/14B/14

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 Certificate of Approval No 6/14B/14 issued 31 March 1999 in respect of the

Philips Model Pond 12 Automatic Totalising Hopper Weighing Instrument

submitted by Philips Scientific & Industrial Electronics
2 Greenhills Avenue
Moorebank NSW 2170

has been cancelled in respect of new instruments as from 1 January 2005.

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

Certificate of Approval

No 6/14B/14

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

Philips Model Pond 12 Automatic Totalising Hopper Weighing Instrument

submitted by Philips Scientific & Industrial Electronics
2 Greenhills Avenue
Moorebank NSW 2170.

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 November 2003, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 6/14B/14 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 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.

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

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to the instrument shall be within the limits specified herein and in any approval documentation for the components where they are approved separately.

DESCRIPTIVE ADVICE

Pattern: approved 22 October 1998

- A Philips model Pond 12 Class 0.2 automatic totalising hopper weighing instrument of 400 kg maximum capacity.

Technical Schedule No 6/14B/14 describes the pattern.

Variant: approved 18 June 1999

1. A Philips model Patch 1000 Class 0.2 automatic totalising hopper weighing instrument of 9000 kg maximum capacity.

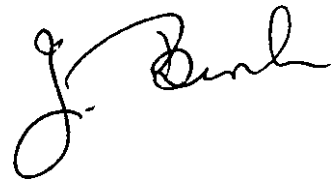
Technical Schedule No 6/14B/14 Variation No 1 describes variant 1.

FILING ADVICE

Certificate of Approval No 6/14B/14 dated 31 March 1999 is superseded by this Certificate, and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 6/14B/14 dated 20 September 1999
Technical Schedule No 6/14B/14 dated 31 March 1999 (incl. Test Procedure)
Technical Schedule No 6/14B/14 Variation No 1 dated 20 September 1999
Figures 1 to 5 dated 31 March 1999
Figures 6 and 7 dated 20 September 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.



TECHNICAL SCHEDULE No 6/14B/14

Pattern: Philips Model Pond 12 Automatic Totalising Hopper Weighing Instrument.

Submittor: Philips Scientific & Industrial Electronics
2 Greenhills Avenue
Moorebank NSW 2170

1. Description of Pattern

A Philips model Pond 12 automatic totalising hopper weighing instrument (Figure 1) of 400 kg maximum capacity.

1.1 Details

The instrument is a Class 0.2 automatic totalising hopper weighing instrument, with a maximum capacity of 400 kg and a minimum capacity of 200 kg. The instrument is approved for use with a minimum totalised load (E_{min}) of not less than 200 kg (*) and a totalisation scale interval of 0.2 kg.

(*) The actual value of E_{min} is determined on site for each installation.

1.2 Weighing System (Figures 1 and 2)

The pattern comprises:

a) A Berga model Pond 12 hopper-type weigh bin directly supported by three symmetrically-located load cells;

b) Three Philips model PR6246/32C3 load cells of 300 kg maximum capacity mounted as shown in Figure 3. The load cells are also described in the documentation of NSC approval No S350; and

c) A Philips model PR1613/03 digital indicator (Figure 4).

In addition, a Quantum model 140CPU42402 programmable logic controller (PLC) and a personal computer may be connected to monitor and supervise the operation of the installation which may comprise a number of Pond 12 weighing systems.

1.3 Indicator (Figure 4)

The Philips model PR1613/03 digital indicator controls all measurement functions, process starting and stopping, upper and lower gate controls, gate limit switches, and alarm functions. In normal operation the measurement data is read on the operator's personal computer. The indicator is also described in the documentation of NSC approval No S322.

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1.4 Programmable Logic Controller

A Quantum model 140CPU42402 programmable logic controller (PLC) is connected to the PR1613/03 indicator via an RS485 to RS232 convertor. The PLC provides process starting and stopping via a personal computer (PC), recording of the production total, control to the feed conveyor for the upper surge bin and to the removal conveyor for the lower surge bin, reporting of errors as displayed on the indicator, and system status to the PC.

1.5 Operation

The instrument operating parameters, such as the target load, are programmed via the keyboard on the indicator. The settling time is programmed via a personal computer connected to the serial port of the indicator; this port is sealed after verification/certification (refer clause **1.8 Sealing**).

The automatic weighing cycle is shown in the flow diagram of Figure 5.

1.6 Markings and Notices

(a) Instruments carry the following markings, in the form shown at right:

Manufacturer's mark, or name written in full	Philips
Model number	Pond 12
Serial number	.....
Pattern approval mark	NSC No 6/14B/14
Accuracy class	0.2
Maximum capacity	*Max* ..... kg
Minimum capacity	*Min* ..... kg
Verification scale interval	*e* = ... kg
Minimum totalised load	E_{min} ..... kg
Totalisation scale interval	*d* = ... kg
Material to be measured	……

(b) Instruments carry a notice visible to the operator stating TARGET LOAD SHALL BE NO LESS THAN 200 kg AND NO GREATER THAN 400 kg, or similar wording.

1.7 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

1.8 Sealing Provision

Provision is made for the calibration adjustments in the indicator to be sealed by means of the method described in the approval documentation for the indicator.

TEST PROCEDURE

Maximum Permissible Errors

For a class 0.2 instrument, the maximum permissible errors (MPE) applicable are the values below as a percentage of the mass of the totalised load rounded to the nearest totalisation scale interval. Maximum permissible errors apply to loads not less than the minimum totalised load (E_{min}).

±0.1% for initial verification; and
±0.2% in-service.

Test Procedure

This procedure is based on OIML R 107-1*, Discontinuous totalising automatic weighing instruments*, 1997.

1. Tests

Carry out the following tests. If the installation is used for one target load only then perform test 1 using only the target load.

Test 1

(a) Start up the weighing system, including surrounding equipment that is normally in use when the weighing instrument is in use.
(b) Set the target load close to minimum capacity.
(c) Set the instrument to the maximum rate of weighing cycles per hour.
(d) Run the instrument in automatic mode for at least 5 cycles to ensure normal working conditions.
(e) Stop the instrument and record the totalised load.
(f) Run the instrument in automatic mode for at least N cycles, determined for the capacity in step (b). (See **2. Determination of … cycles (N)**)
(g) Stop the instrument and record the totalised load.
(h) Determine the totalised load for the test, i.e. step (g) - step (e).
(i) Transport the weighed material to the checkweigher and weigh.
(j) Calculate the relative error.

$$\text{Error} = \frac{\text{control instrument indication - instrument totalised load}}{\text{control instrument indication}} \times 100$$

The relative error shall be within the MPE.

Test 2

Repeat Test 1 with the target load in step (b) set close to maximum capacity, and with the new value of N calculated for step (f).

2. Determination of the number of weighing cycles (N)

The number of weighing cycles (N) is determined by completing equations (A) and (B) and selecting the larger of the two 'N' values. N is rounded up to the next whole number.

Equation (A) ensures that the absolute error of the control instrument is less than 1/3 or 1/5 the maximum permissible errors of the totalising hopper weigher.

$$N = \frac{Error_{cont} \times 100}{Factor_{cont} \times Target\ Load \times MPE_{\%}} \qquad \text{equation (A)}$$

where:

- N = the number of weighing cycles rounded up to the nearest whole number.
- $Error_{cont}$ = the absolute error of the control instrument for the load that is weighed.
- Target Load = the mass of the discrete load being weighed for each cycle of the totalising hopper.
- $Factor_{cont}$ = 1/3 if the control instrument is tested immediately prior to the test or 1/5 if tested at some other time.
- $MPE_{\%}$ = the relative MPE applied to the totalised load for the required accuracy class.

Note: $Error_{cont}$ is determined using the changepoint and substitution load method (refer Inspectors' Handbook test procedure No 16).

Equation (B) ensures that the test load equals or exceeds the minimum totalised load.

$$N = \frac{100 \times d_t}{\text{Target Load} \times MPE_{\%}} \qquad \text{equation (B)}$$

where:

- N = the number of weighing cycles rounded up to the nearest whole number.
- d_t = the totalisation scale interval.
- Target Load = the mass of the discrete load being weighed for each cycle of the totalising hopper.
- $MPE_{\%}$ = the relative MPE applied to the totalised load for the required accuracy class.

TECHNICAL SCHEDULE No 6/14B/14

VARIATION No 1

Pattern: Philips Model Pond 12 Automatic Totalising Hopper Weighing Instrument.

Submittor: Philips Scientific & Industrial Electronics
2 Greenhills Avenue
Moorebank NSW 2170

1. Description of Variant 1

A Philips model Patch 1000 automatic totalising hopper weighing instrument (Figure 6) of 9000 kg maximum capacity.

1.1 Details

The instrument is a Class 0.2 automatic totalising hopper weighing instrument, similar to the pattern but with a maximum capacity of 9000 kg and a minimum capacity of 5000 kg. The instrument is approved for use with a minimum totalised load (E_{min}) of not less than 5000 kg (*) and a totalisation scale interval of 5 kg.

(*) The actual value of E_{min} is determined on site for each installation.

1.2 Weighing System (Figure 6)

The variant includes:

a) A Philips model Patch 1000 hopper-type weigh bin directly supported by four load cells; and

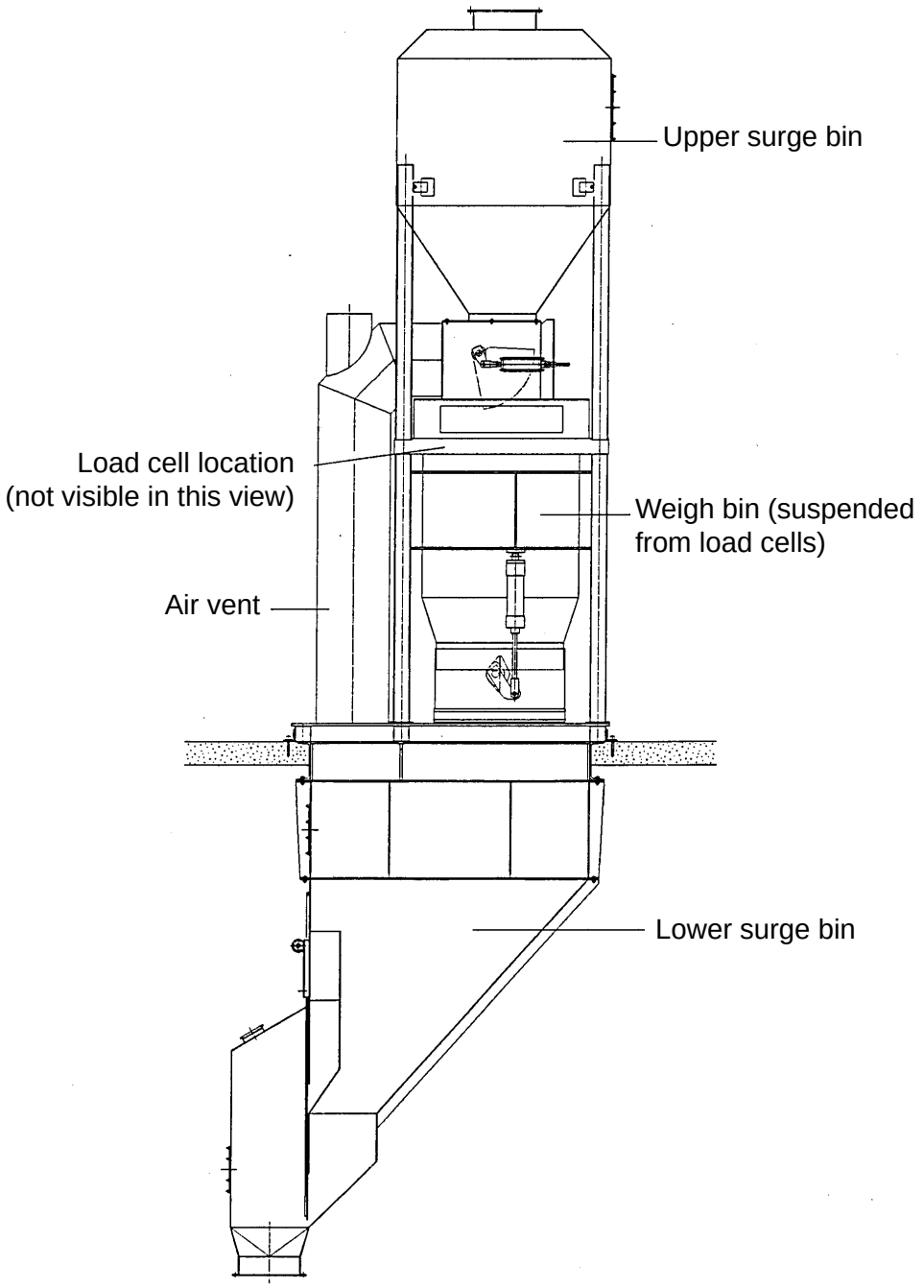
b) Four Philips model PR6201/53C3 load cells of 5000 kg maximum capacity mounted as shown in Figures 6 and 7. The load cells are also described in the documentation of NSC approval No S333.

1.3 Markings and Notices

Instruments are marked in accordance with clause **1.4 Markings and Notices** in Technical Schedule No 6/14B/14 dated 31 March 1999.

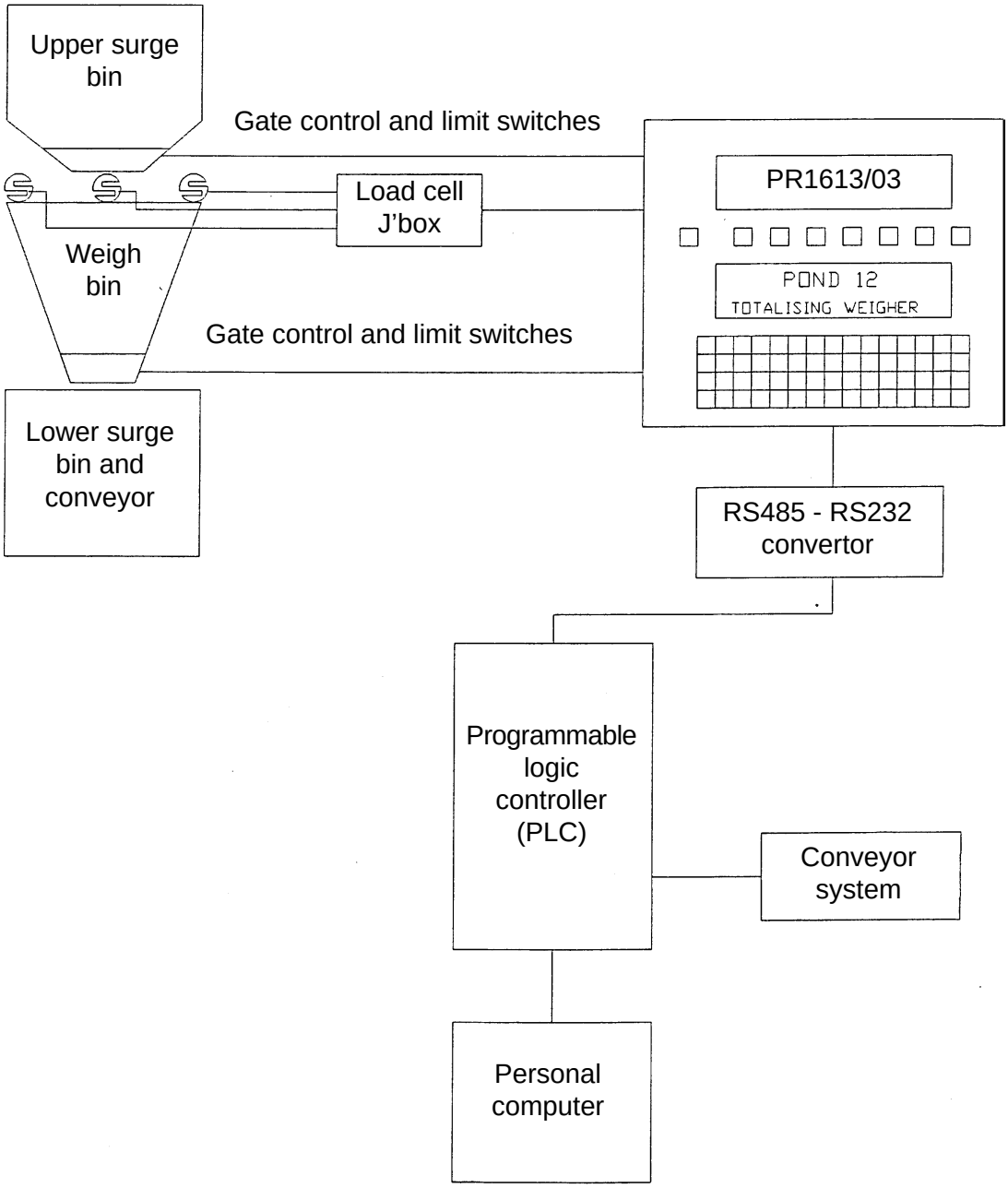
Instruments carry a notice visible to the operator stating TARGET LOAD SHALL BE NO LESS THAN 5000 kg AND NO GREATER THAN 9000 kg, or similar wording.

FIGURE 6/14B/14 - 1



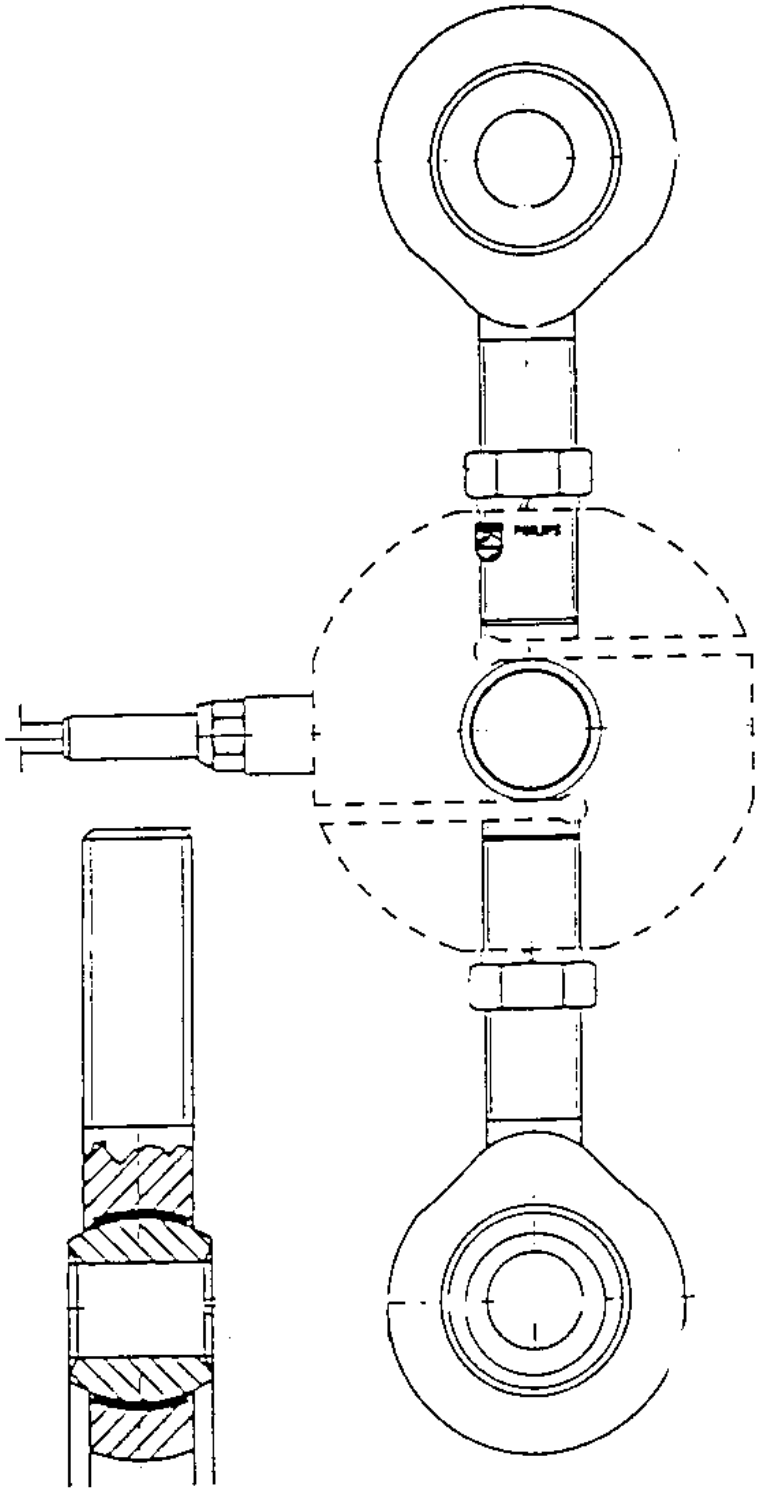
Philips Model Pond 12 Hopper Weighing Instrument

FIGURE 6/14B/14 - 2



System Layout Diagram

FIGURE 6/14B/14 - 3

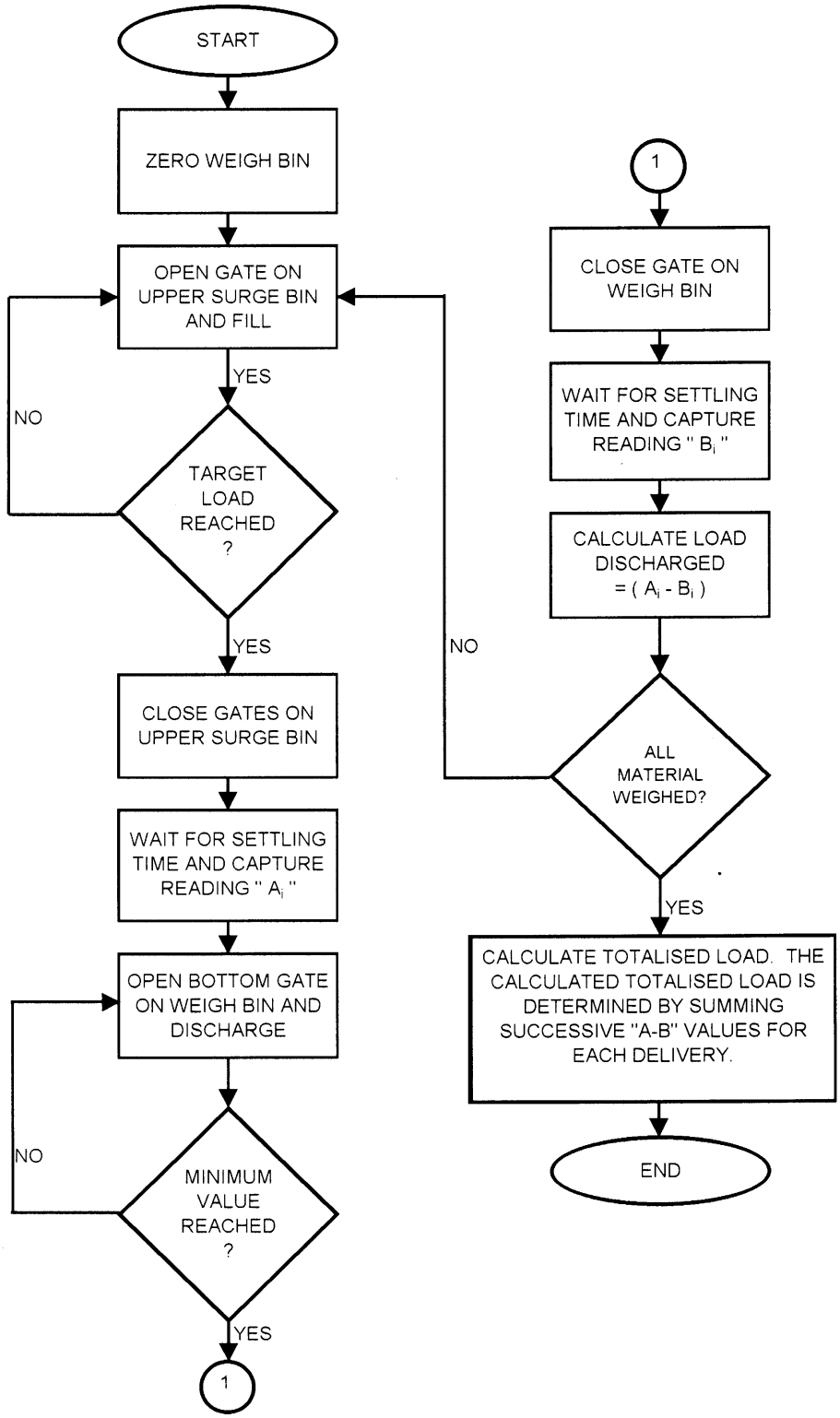


Philips Model PR6246/32C3 Load Cell Mounting

FIGURE 6/14B/14 - 4

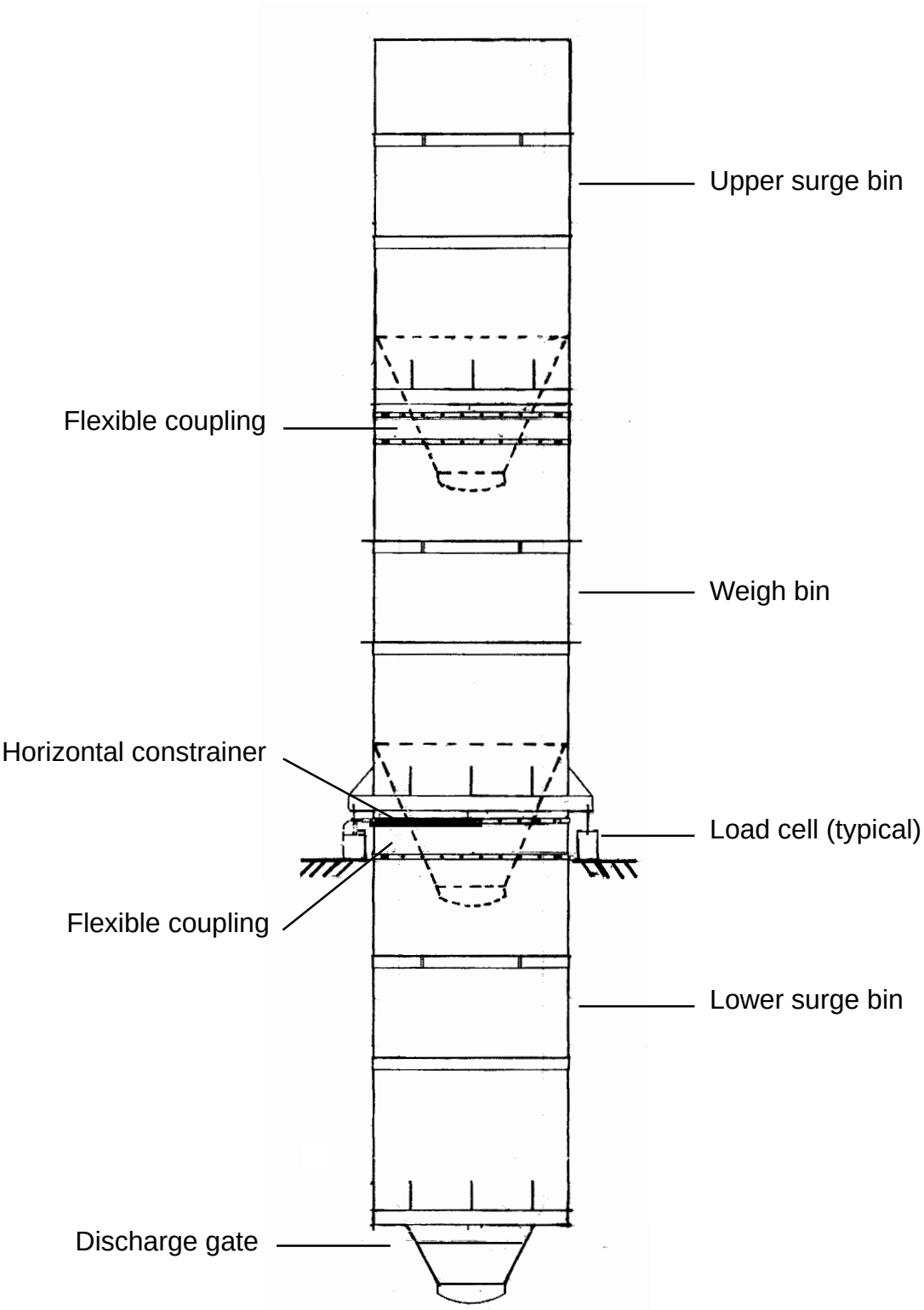
Philips Model PR1613/03 Digital Indicator

FIGURE 6/14B/14 - 5



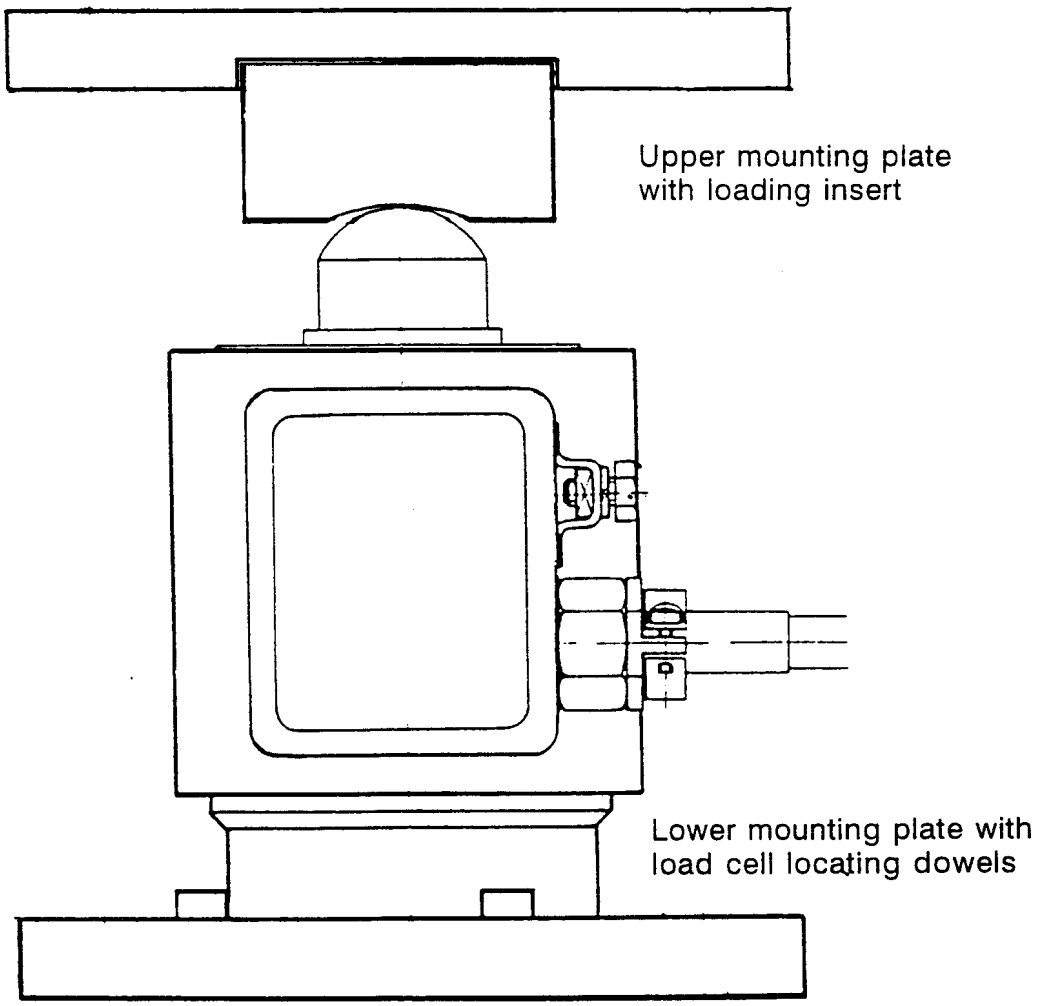
Philips Model Pond 12 Automatic Weighing Cycle

FIGURE 6/14B/14 - 6



Philips Model Patch 1000 Hopper Weighing Instrument

FIGURE 6/14B/14 - 7



Load Cell Mounting Method - Horizontal Constrainer Not Shown