NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 6/10B/44

This is to certify that an approval has been granted by the Commission that the pattern and variants of the

Ultra-Hawke Model 9630 Weighing Instrument

submitted by Ultra Scales Pty Ltd
33-35 Judge Street
Sunshine, Victoria, 3020

are suitable for use for trade.

The approval of the pattern and variants is subject to review on or after 1/5/87.

Instruments purporting to comply with this approval shall be marked NSC No 6/10B/44.

Relevant drawings and specifications are lodged with the Commission.

Conditions of Approval

1. The load cells to be used in these instruments shall be subject to regular certification by the National Standards Commission.

2. Weighbridges marked model 9620, 9430 or 9420 shall all be remarked model 9630 prior to the next verification.

Signed

Executive Director

Descriptive Advice

Pattern: approved 1/4/82

. Ultra-Hawke model 9630 weighing instrument of 60 t capacity with six HBM model C3H2-30 t load cells and an Ultra Minipond II indicator displaying up to 3000 scale intervals.

Variants: approved 12/10/82

1. With HBM model C3H2-20 t load cells replacing the load cells of the pattern.

2. With the indicator in an alternative housing.

3. The pattern as additional models of various capacities.

Technical Schedule No 6/10B/44 dated 1/11/82 describes the pattern and variants 1 to 3.

Filing Advice

Certificate of Approval and Technical Schedule No 6/10B/44 dated 3/5/82 are replaced by this Certificate and Technical Schedule, and should be destroyed. Figures 1, 3 and 6 dated 3/5/82 are retained as part of the documentation. (Figure 6 should be renumbered Figure 4). Figure 2 is replaced by the attached Figure 2 dated 1/11/82.

The inclusion of the new variant 3 has superseded the requirement to show discrete capacities of weighbridges as shown previously. All weighbridges made in conformity with this Certificate will in future be designated model 9630.

The documentation for this approval now comprises:

Certificate of Approval No 6/10B/44 dated 1/11/82
Technical Schedule No 6/10B/44 dated 1/11/82
Test Procedure No 6/10B/44 dated 1/11/82
Figure 1 dated 3/5/82
Figure 2 dated 1/11/82
Figure 3 dated 3/5/82
Figure 4 (previously Figure 6) dated 3/5/82.

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/10B/44

Pattern: Ultra-Hawke Model 9630 Weighing Instrument

Submittor: Ultra Scales Pty Ltd
33-35 Judge Street
Sunshine, Victoria, 3020.

1. Description of Pattern

1.1 Instrument

A self-indicating weighing instrument with the load receptor supported on six ball-support mechanisms (Figures 2 and 3), with a maximum capacity of 60 t and approved for up to 3000 scale intervals.

The instrument uses an Ultra Minipond II indicator (as described in Technical Schedule No 6/10B/32) approved for up to 3000 scale intervals (Figure 1), with six HBM model C3H2-30 t load cells, also approved for up to 3000 scale intervals, mounted in the ball support mechanisms (Figure 3).

1.2 Load Cell Data

Type	HBM C3H2	Variant 1	Pattern
Capacity		20 t	30 t
Minimum dead load		1.6 t	1.6 t
Maximum number of verification scale intervals		3000	3000
Minimum verification scale interval		2 kg	3 kg

1.3 Zero

Zero within 0.25e, indicated by the ZERO light being illuminated, may be set using the ZERO knob on the front of the indicator.

1.4 Markings

1.4.1 Indicator

The indicator is marked with the following data, together in one location:

Manufacturer's name or mark	
Serial number	
NSC approval number	NSC No 6/10B/44
Accuracy class	(III)
Maximum capacity in the form:	Max = ...t*
Minimum capacity in the form:	Min = ...t*
Verification scale interval in the form:	e = d = ...t*

*These markings are repeated in the vicinity of the reading face, if not already there.

1.4.2 Load Cells

Each load cell should be marked with the following data:

Manufacturer's name or mark	HBM
Model number	C3H2
Serial number	....
Output in the form:	2 mV/V
Maximum capacity	....

1.5 Output Sockets

The pattern may be fitted with output sockets for the connection of peripheral devices.

1.6 Sealing

1.6.1 Indicator

The indicator is retained in its cabinet by a lead and wire seal with the wire passing through the heads of two set screws (Figure 1).

1.6.2 Load Cell Serial Numbers

The serial numbers should be marked on a plate, or on metal tags, sealed to the indicator cabinet.

2. Description of Variants

2.1 Variant 1

With HBM model C3H2-20 t load cells replacing the load cells of the pattern.

2.2 Variant 2

With the indicator in an alternative housing (Figure 4).

2.3 Variant 3

The pattern in various capacities and sizes using the load cells and indicator of the pattern and variants 1 and 2.

Instruments shall comply with the following:

(a) Capacity

The capacity of each load cell shall not be less than the marked capacity of the instrument (Max) + dead load[1], divided by:

4 for a 4 or 6 cell instrument, or
6 for an 8 cell instrument.

(b) Dead Load

The minimum dead load of each load cell shall not exceed the dead load[1] of the instrument divided by:

4 for a 4 cell instrument, or
8 for a 6 cell instrument, or
12 for an 8 cell instrument.

(c) Number of Verification Scale Intervals

The number of verification scale intervals[2] of the instrument shall not exceed the maximum number of verification scale intervals for each load cell or the indicator, whichever is the smaller.

(d) Value of the Verification Scale Interval

The minimum verification scale interval of each load cell shall not exceed the value of the verification scale interval of the instrument divided by:

4 for a 4 cell instrument, or
8 for a 6 cell instrument, or
12 for an 8 cell instrument.

Notes: 1 Dead load = Length of load receptor (m) x 1.0 t/m.

2 Number of verification scale intervals = $\frac{\text{Capacity}}{\text{Verification Scale Interval}}$

Sample Calculation

Instrument marked Max = 60 t
e = d = 0.05 t

Load receptor 20 m long with six HBM C3H2-30 t load cells.
Indicator approved for 3000e.

(a) Capacity

Actual maximum load on one load cell = (60 t + 20 m x 1.0 t/m) ÷ 4 = 20 t
Capacity of load cell = 30 t

(b) Dead Load

Actual minimum load on one load cell = (20 m x 1.0 t/m) ÷ 8 = 2.5 t
Minimum dead load of load cell = 1.6 t

(c) Number of Verification Scale Intervals

Actual number of verification scale intervals = $\frac{60\text{ t}}{0.05\text{ t}}$ = 1200e
Allowable maximum number for load cells = 3000e
Allowable maximum number for indicator = 3000e
Allowable minimum for Class III instrument (e = 0.05 t) = 750e

(d) Value of the Verification Scale Interval

Actual minimum proportion of scale interval for one load cell = 0.05 t ÷ 8 = 6 kg
Minimum verification scale interval of load cell = 3 kg

Conclusion

The instrument therefore complies with the load cell and indicator approval data.

1/11/82

All load applications should be in accordance with the Commission's recommended testing procedure for the elimination of rounding error, as set out in Document 104.

The maximum permissible errors are:

±0.5e for loads between 0 and 500e;
±1e for loads between 501e and 2000e; and
±1.5e for loads above 2000e.

1. Zero Range

The maximum range of operation of the zero device should not exceed 4% of the capacity of the instrument (±2% approximately). Satisfactory setting may be checked by the following method:

(a) With zero balance indicated apply a load of, say, 2.5% of maximum capacity to the instrument; it should not be possible to obtain zero balance by means of the ZERO adjustment.

(b) Reduce the load to, say, 1.5% of maximum capacity; it should now be possible to obtain zero.

2. Zero Balance

Check using Document 104, that when the ZERO light is illuminated, zero is set within 0.25e.

3. Range of Indication

(a) The maximum mass indicated should not exceed the maximum capacity (Max) by more than 10 scale intervals; above this the indicator should be blank.

(b) The minimum mass indicated should be zero; below this the indicator should blank.

4. Test Loads

Test loads are to be applied to the instrument increasing in not less than 5 approximately equal steps to maximum capacity, followed by decreasing loads in not less than 5 approximately equal steps to zero load.

The instrument should display these loads within the applicable tolerance as listed above.

F.G.

6/10B/44A
29/4/85

NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/10B/44A

CHANGE No 1

The following change is made to the approval documentation of the

Ultra-Hawke Model 9630 Weighing Instrument

submitted by Ultra Scales Pty Ltd
33-35 Judge Street
Sunshine Vic 3020.

In Test Procedure No 6/10B/44A dated 30/1/84,

paragraph 6. Stability Test should be deleted.

Signed

H. Poling

Executive Director

FG

NATIONAL STANDARDS COMMISSION

CANCELLATION CERTIFICATE FOR APPROVAL No 6/10B/44

This is to certify that Approval No 6/10B/44 for the

Ultra-Hawke Model 9630 Weighing Instrument

submitted by Ultra Scales Pty Ltd
33-35 Judge Street
Sunshine, Victoria, 3020

expired in respect of new instruments on 30/1/84.

Instruments which were verified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

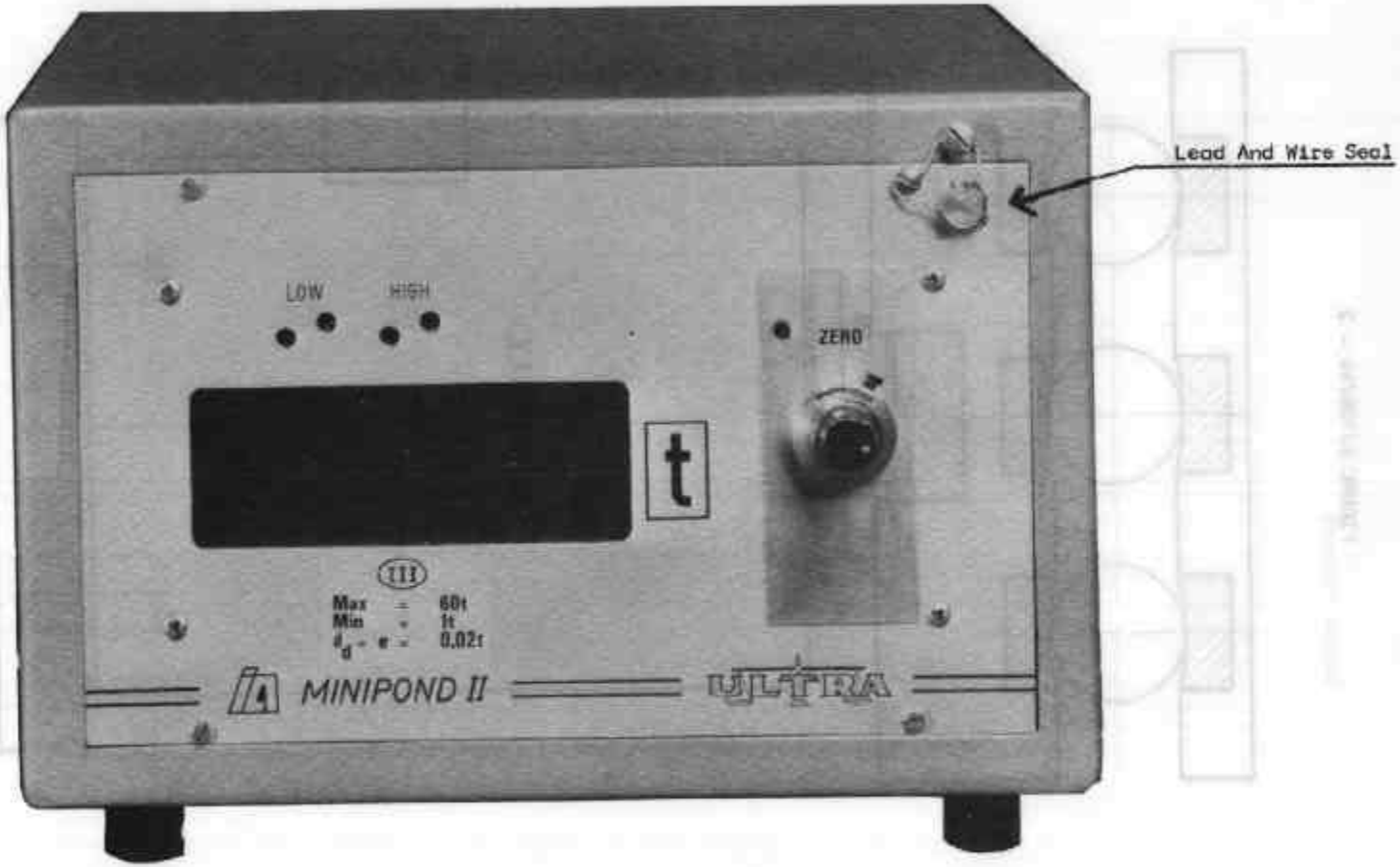
Signed

Executive Director

30/1/84

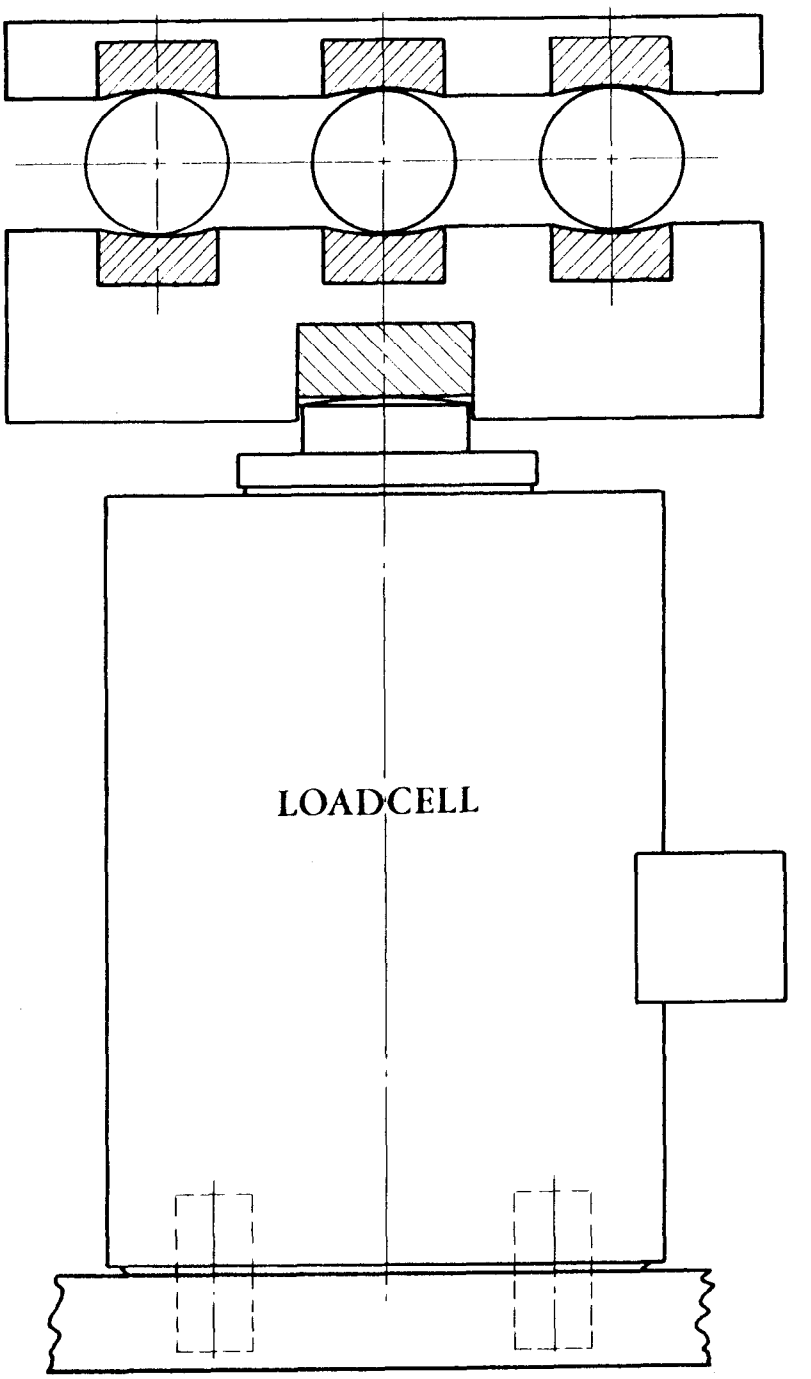
FIGURE 6/10B/44 - 1

3/5/82



Minipond II Indicator

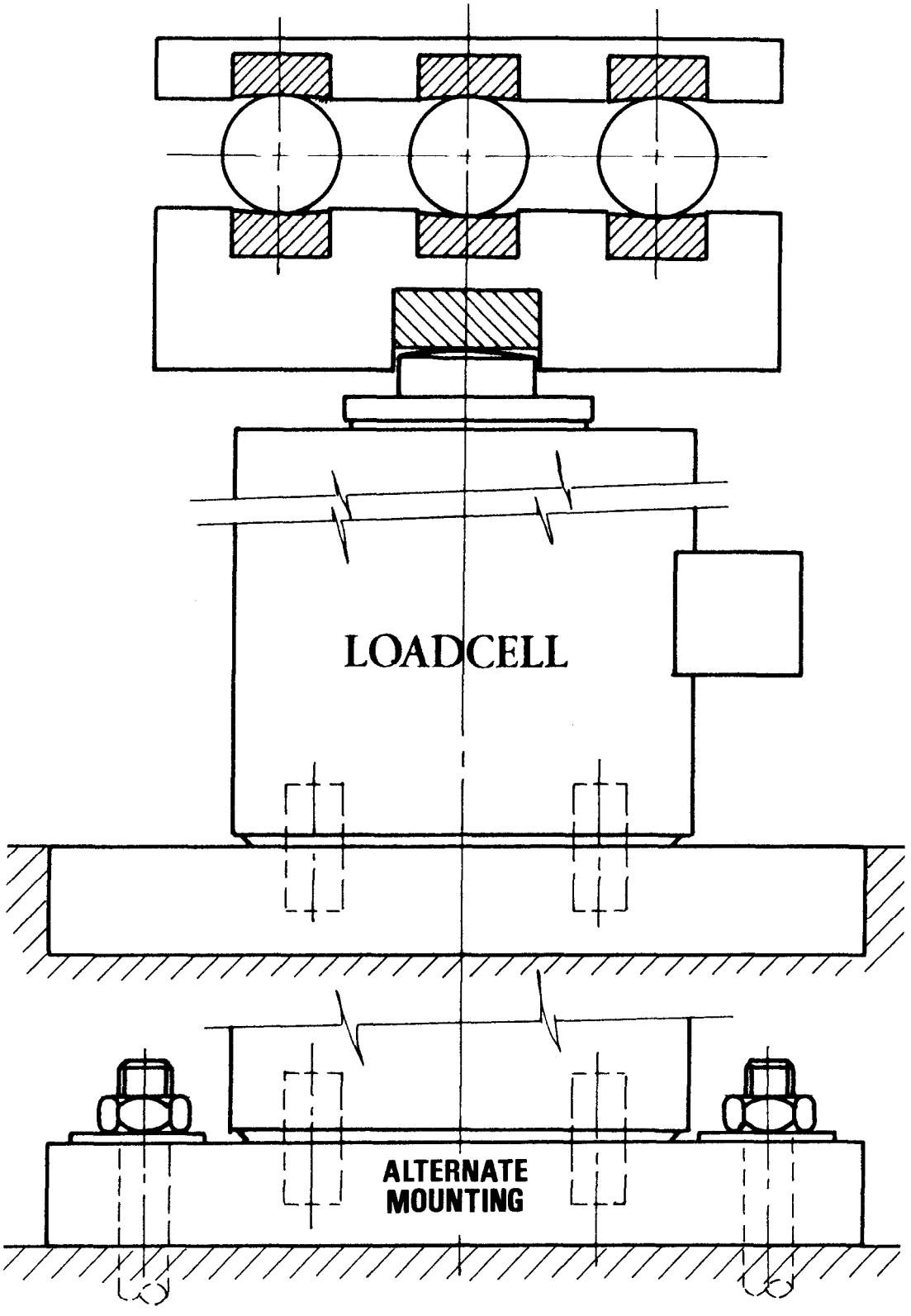
FIGURE 6/10B/44 - 2



Ball - Support Mechanism

3/5/82

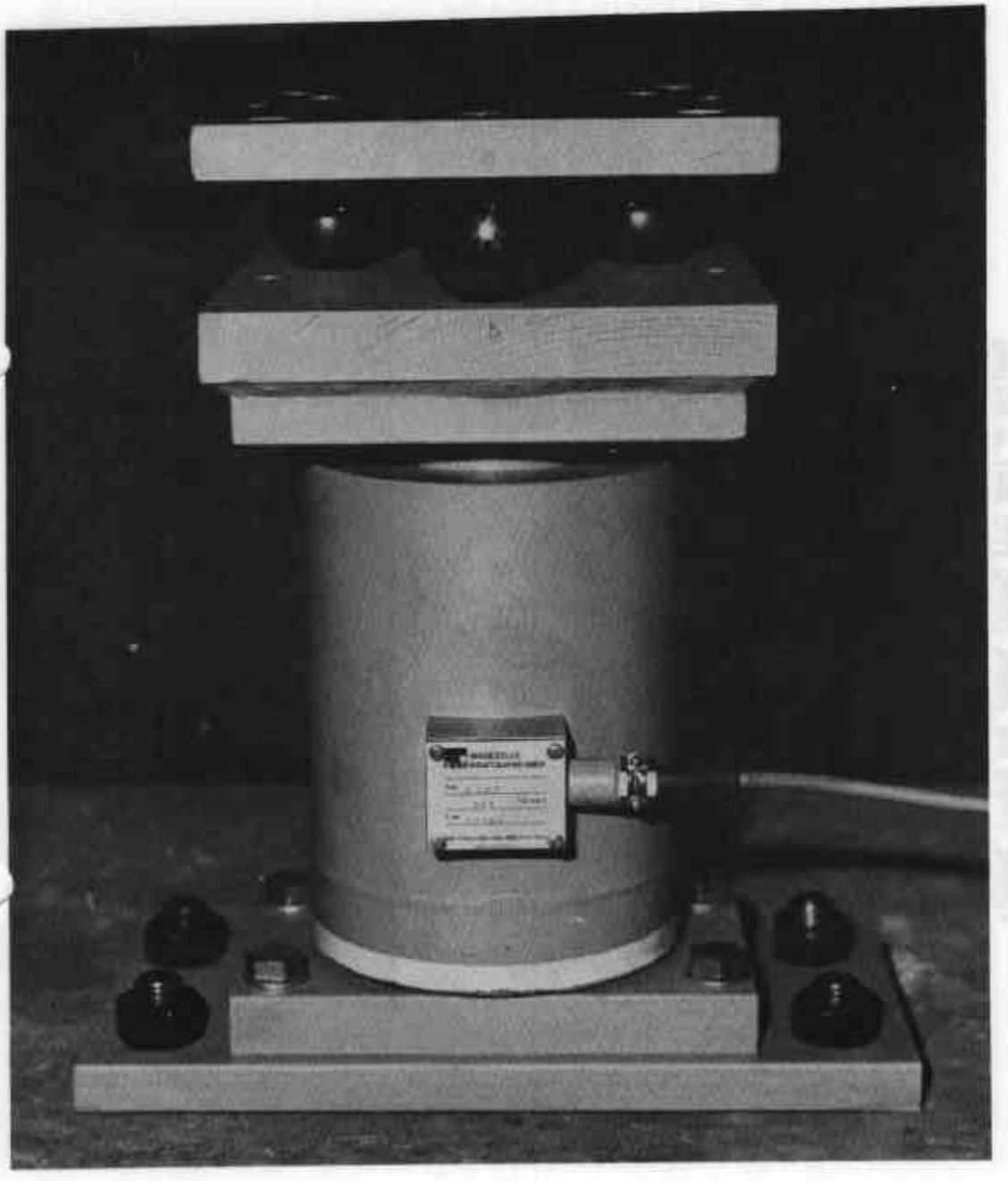
FIGURE 6/10B/44 - 2



Loadcell & Self-aligning Support Mechanism

1/11/82

FIGURE 6/108/44 - 3



HBM C3H2 Load Cell Including Mountings

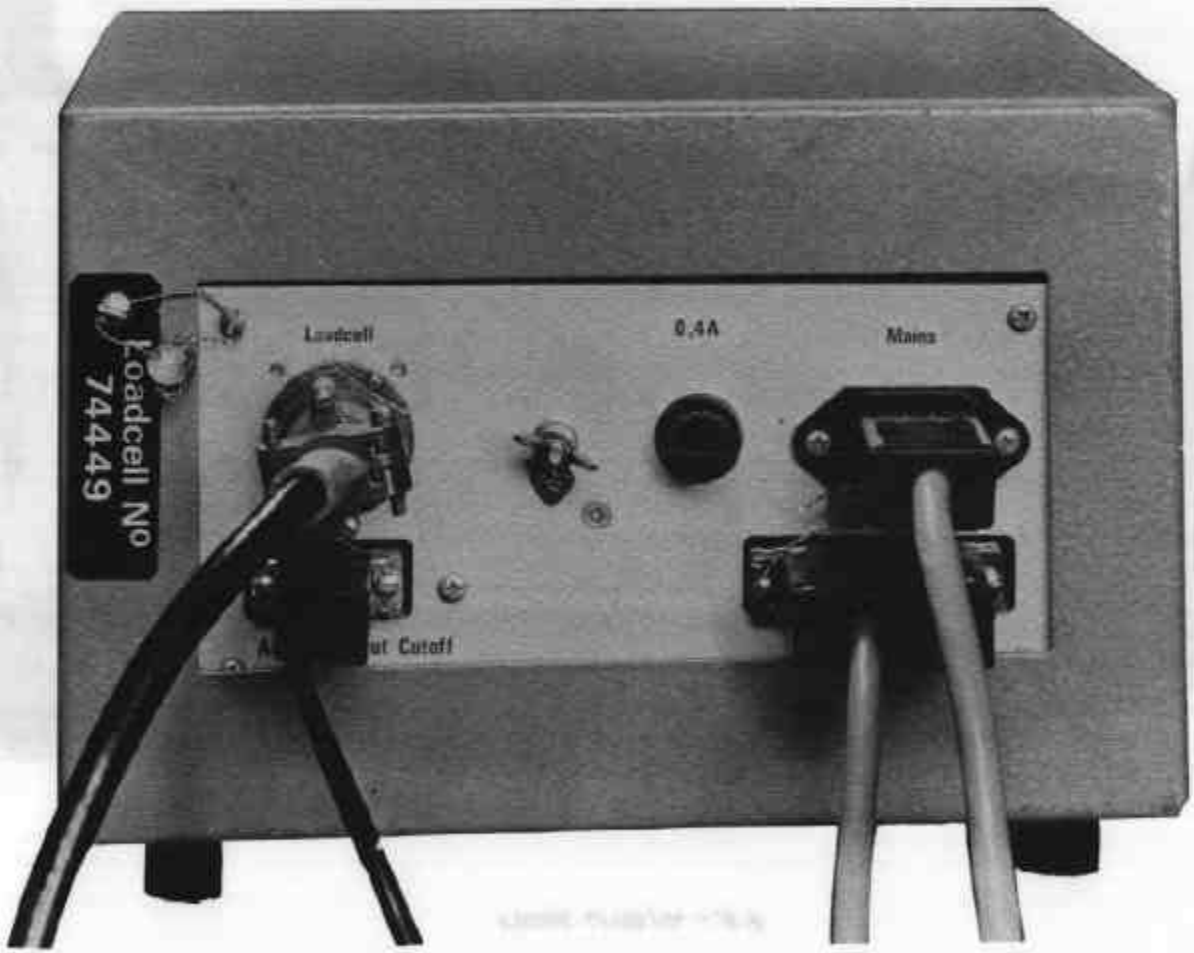
3/5/82

FIGURE 6/10B/44 - 4

Sealing Of Load Cell Serial Number And Output Sockets

(Note: A single seal may be used to seal the three sealing points)

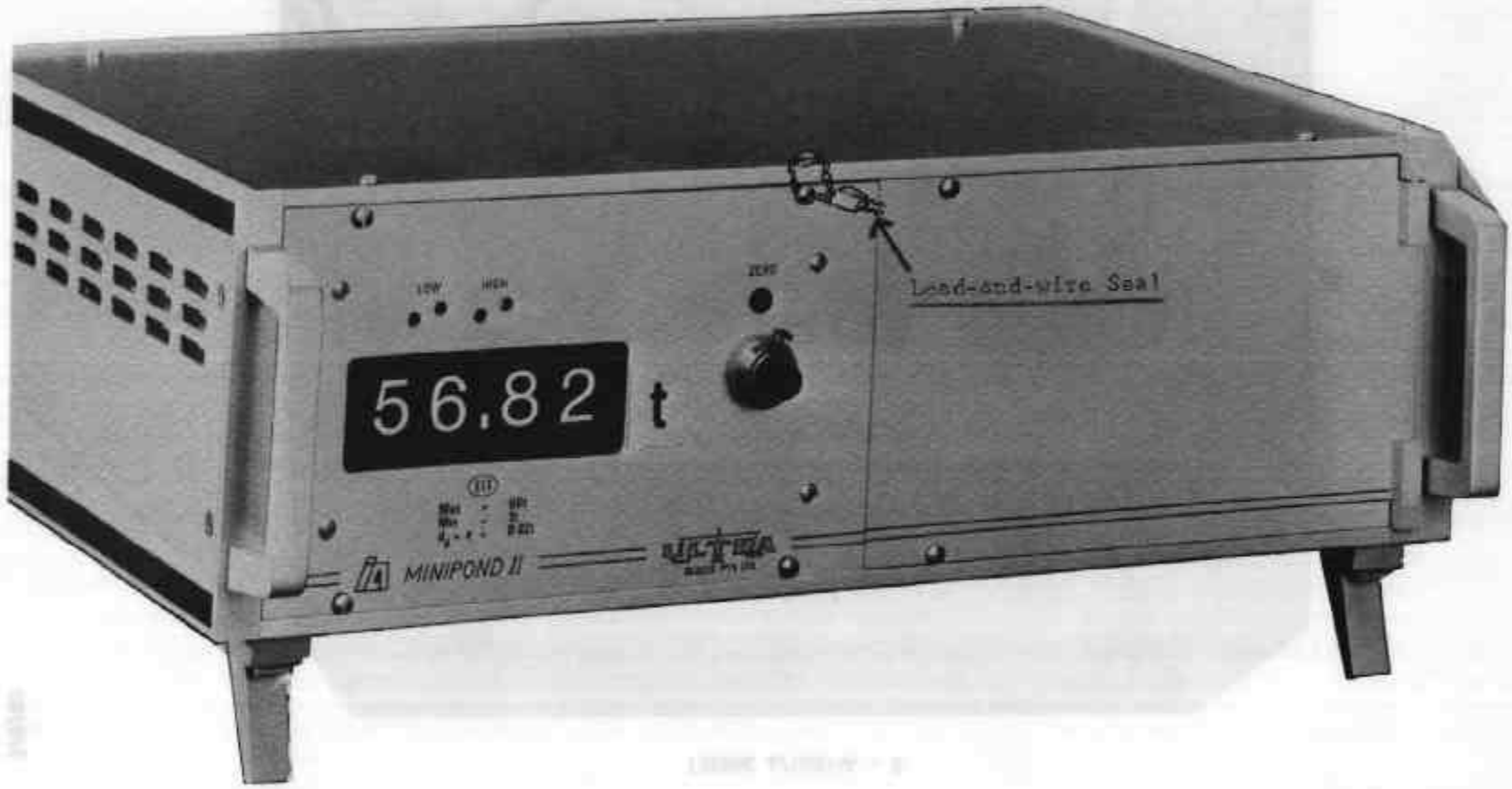
FIGURE 6/108/44 - 5



Sealing Of Load Cell Serial Number And Output Plugs To Output Sockets
(Note: A single seal may be used to seal the three sealing points)

3/5/82

FIGURE 6/10B/44 - 54



Minipond II Indicator In Alternate Hou[illegible]