

F.C.

6/10B/32A
21/5/85



NATIONAL STANDARDS COMMISSION

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 6/10B/32A

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

Ultra Series 6000 Weighing Instrument

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

are suitable for use for trade.

This Certificate is issued upon completion of reviews of NSC approvals No 6/10A/4, No 6/10A/7 and No 6/10B/32 which will all expire on 1/5/85 with the effect that no new instruments purporting to comply with those approvals will be accepted for verification after that date.

CONDITIONS OF APPROVAL

General

This approval is subject to review on or after 1/5/90.

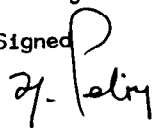
Instruments purporting to comply with this approval shall be marked NSC No 6/10B/32A.

This approval may be withdrawn if instruments are constructed and used other than as described in the drawings and specifications lodged with the Commission.

Special

The number of scale intervals applicable to the whole instrument shall be no greater than the number of verification scale intervals approved for the basework, or the load cell or the headwork, whichever is the smallest.

The load cells to be used shall be subject to regular certification by the Commission.

Signed 
Executive Director

Descriptive Advice

Pattern: approved 16/4/85

Ultra self-indicating weighbridge of up to 200 t capacity.

Variants: approved 16/4/85

1. With the self-indicating headwork of the pattern replaced by a non-self-indicating headwork.
2. With tare bars.
3. With the basework replaced by other Commission-approved lever baseworks.

4. With the headwork replaced by other Commission-approved mechanical headworks.
5. With an Ultra model Minipond II indicator and an HBM model Z3H2 load cell.
6. With other Commission-approved load cells.

Technical Schedule No 6/10B/32A describes the pattern and variants 1 to 6.

Filing Advice

The documentation for this approval comprises:

Certificate of Approval No 6/10B/32A dated 21/5/85
Technical Schedule No 6/10B/32A dated 21/5/85
Test Procedure No 6/10B/32A dated 21/5/85
Figures 1 to 8 dated 21/5/85



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/10B/32A

Pattern: Ultra Series 6000 Weighing Instrument

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

1. Description of Pattern

The pattern is a self-indicating weighbridge of either 40 t, 150 t or 200 t capacity. The pattern may be fixed into the ground or fitted on a steel framework, with the headwork connected by a transfer lever.

1.1 Basework

1.1.1 Lever System

The lever system, approved for use with up to 10000e, comprises two or more main levers and a number of transfer levers. The levers are fabricated and of first, second or third order in Y, T or straight form. The various levers are connected by simple or compound vertical links. Figure 1 shows one arrangement.

Additional transfer levers may be required to connect the headwork if remote from the basework.

1.1.2 Platform Support

The platform is supported in either of the following ways:

- (a) Directly supported through bearings on the main lever load knife-edges in which case the lever fulcrum knife-edges are located on bearings mounted in links suspended from either floor-mounted pedestals (Figure 2) or from a steel frame surrounding the basework (Figure 3); or
- (b) Mounted on the main lever knife-edges through a ball-bearing support assembly in which case the lever fulcrum knife-edges are located on bearings mounted in fixed floor-mounted pedestals (Figure 4).

1.2 Headwork

Consists of a unit-weight cabinet and a dial housing (Figure 5) which may have a double-sided indicator. A locking handle for the main headwork lever may be fitted but only for a single-sided indicator. The headwork may require intermediate levers and may have up to nine unit-weights which are deposited either automatically via a geared motor, or via a cam-driven arrangement using a handle on the front. A tool-operated zero adjustment is provided.

The instrument is approved for use with up to 6000e and with dials of up to either 500 or 600 scale intervals full scale deflection (Ashworth Ross or Fairbanks Morse respectively).

The headwork may be fitted with a ticket printer operated by stepped discs attached to the indicator shaft and the unit-weight mechanism and a series of fingers. A keyboard may be included for printing of non-weight information. A mechanical motion detector attached to the end of the main lever in conjunction with a time delay, prevents the printer from operating until the mass indicator is steady.

1.3 Markings

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

Manufacturer's name or mark	
Serial number of instrument	
NSC approval number	NSC No 6/10B/32A
Accuracy class in the form	III
Maximum capacity in the form	Max *
Minimum capacity in the form	Min *
Verification scale interval in the form	e = *

2. Description of Variants

2.1 Variant 1

Having the self-indicating headwork replaced by a non-self-indicating headwork approved for use with up to 10000e. The final transfer lever is connected through a pullrod direct to a full-capacity steelyard, or alternatively through an intermediate lever in the headwork cabinet (Figure 6).

2.2 Variant 2

With graduated or ungraduated tare bars fitted to the self-indicating headwork, in which case only a single dial and indicator may be used and on the same side of the headwork cabinet as the tare bars, locking lever and unit-weight controls.

2.3 Variant 3

With the basework replaced by other Commission-approved lever baseworks.

2.4 Variant 4

With the headwork replaced by other Commission-approved mechanical headworks.

2.5 Variant 5

With an Ultra Minipond II digital indicator (Figure 7) and an HBM model Z3H2 load cell (as approved in NSC approval No S137) for use with up to 3000 scale intervals.

The load cell may be connected to a suitably shortened headwork lever, a typical example of which is illustrated in Figure 8. (The U links which support the load cell may be replaced with fabricated links.) If the existing headwork is retained, only one method of mass indication may be in use at any time; the other indicator shall be rendered inoperative.

Alternatively the load cell may be fitted directly in the pullrod from the nose-end knife-edge of the basework transfer lever or main levers.

Lever ratios are varied to allow the use of this load cell in instruments of up to 200 t capacity.

2.6 Variant 6

With other Commission-approved load cells, installed in accordance with the relevant approval documents.

* These markings are repeated in the vicinity of each reading face.

TEST PROCEDURE No 6/10B/32A

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

Note: Some of the following tests will only apply to instruments fitted with a digital indicator. This Test Procedure should be conducted in conjunction with any tests specified in the approval documentation for the indicator.

The maximum permissible errors are:

- ± 0,5e for loads between 0 and 500e;
- ± 1,0e for loads between 501e and 2000e; and
- ± 1,5e for loads above 2000e.

1. Zero Range

Check that the range of the zero adjustment is not more than 4% of the maximum capacity ($\pm 2\%$ approximately). With zero balance indicated, apply a load of, say, 2.5% of maximum capacity to the instrument, and adjust the zero control; the instrument should not rezero.

2. Zero Test

- (a) Check by means of Document 104, that when the zero light is lit, zero is set within 0,25e.
- (b) As the automatic zero tracking device resets zero when the weighing mechanism is in equilibrium within 0,5 scale interval of zero, zero should be checked with a load equal to, say, 10 scale intervals on the load receptor. The indications with 0,25e and 0,75e additional mass on the load receptor will then be 10e and 11e respectively.

3. Range of Indication

- (a) The maximum mass indicated should not exceed the maximum capacity (Max) by more than 10 scale intervals; above this indicated mass the indicator should be blank or show non-numerical characters.
- (b) Below zero the indication may be blank or the mass will be indicated, prefixed by a minus sign.

4. Test Loads

Test loads should be applied in not less than 5 approximately equal steps increasing to maximum capacity, followed by decreasing loads of not less than 5 approximately equal steps.

R.S

6/10B/32A
24/10/85



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/10B/32A

CHANGE No 1

The following changes are made to the approval documentation for the

Ultra Series 6000 Weighing Instrument

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

In Technical Schedule No 6/10B/32A dated 21/5/85,

1. Amend the first sentence of clause 1. Description of Pattern to read:

The pattern is a self-indicating weighbridge of up to 200 t capacity.

2. Amend the third sentence of clause 2.5 Variant 5 to read:

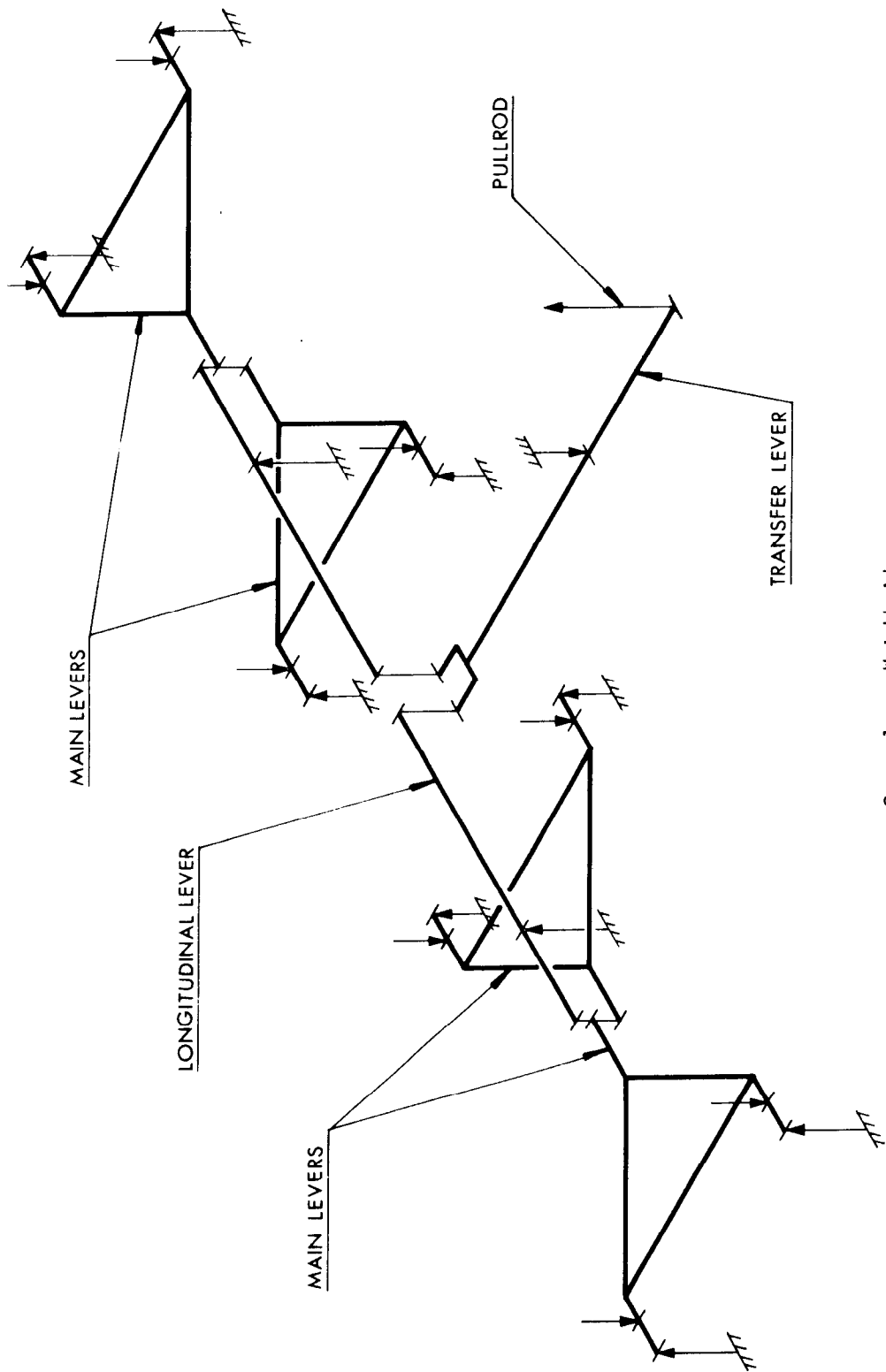
Alternatively, a load cell may be fitted either directly in the pullrod from the nose-end knife-edge of the basework transfer lever, or installed at the nose-end of each pair of main levers.

Note: Figure 3 dated 21/5/85 was printed upside-down.

Signed

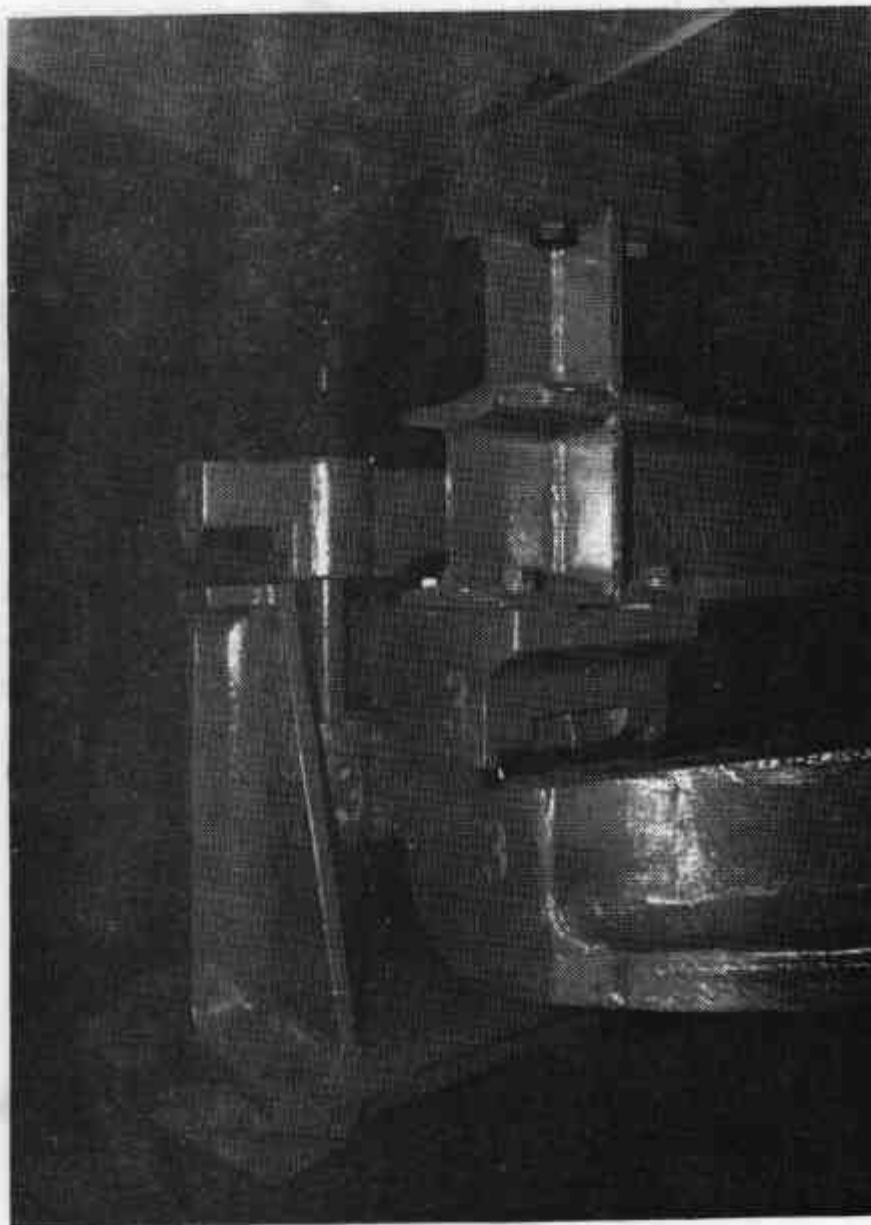
Executive Director

FIGURE 6/10B/32A - 1



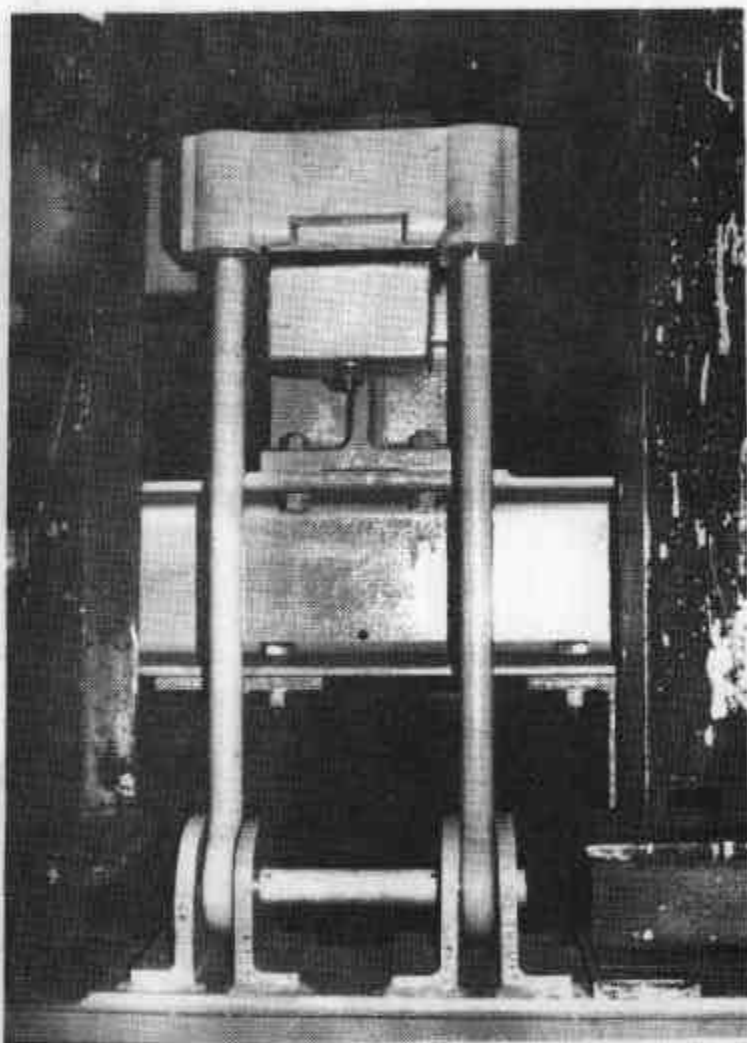
Seven-level Weighbridge

FIGURE 6/10B/32A - 2



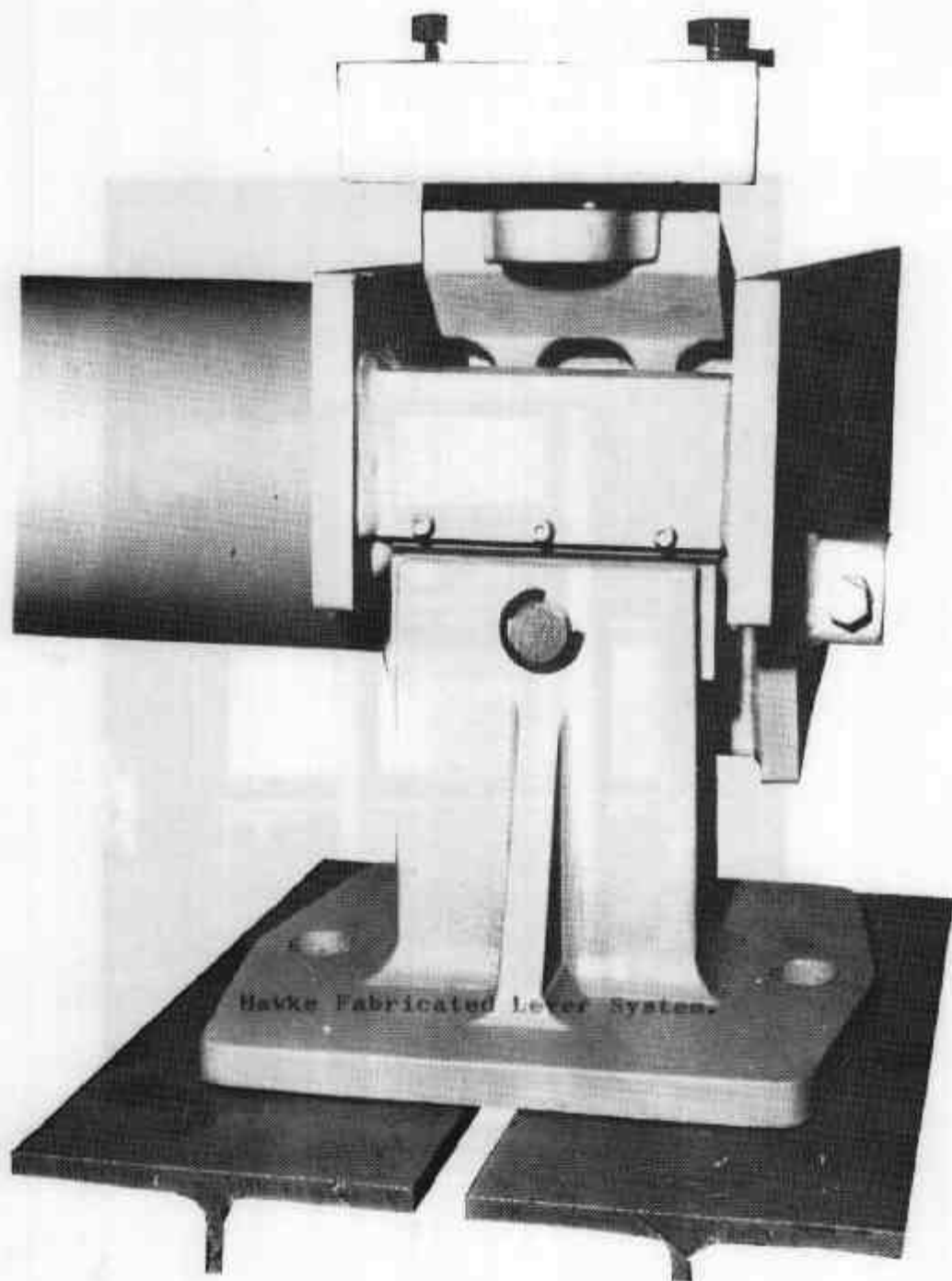
Main Lever Load Knife-edge and Fulcrum Knife-edge
Pedestal Support

FIGURE 6/108/32A - 3



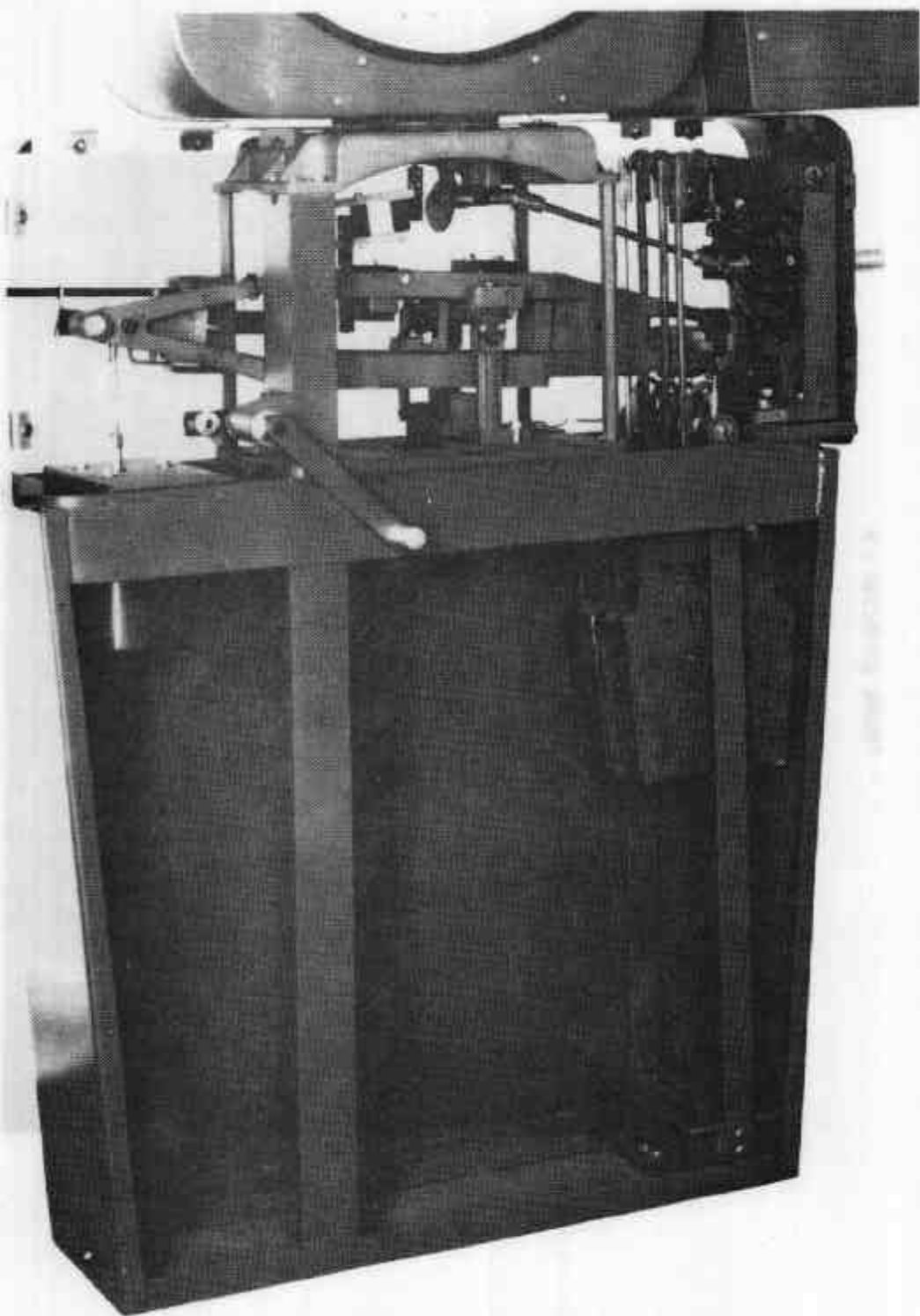
Main Lever Fulcrum Knife-edge Suspension Support

FIGURE 6/10B/32A - 4



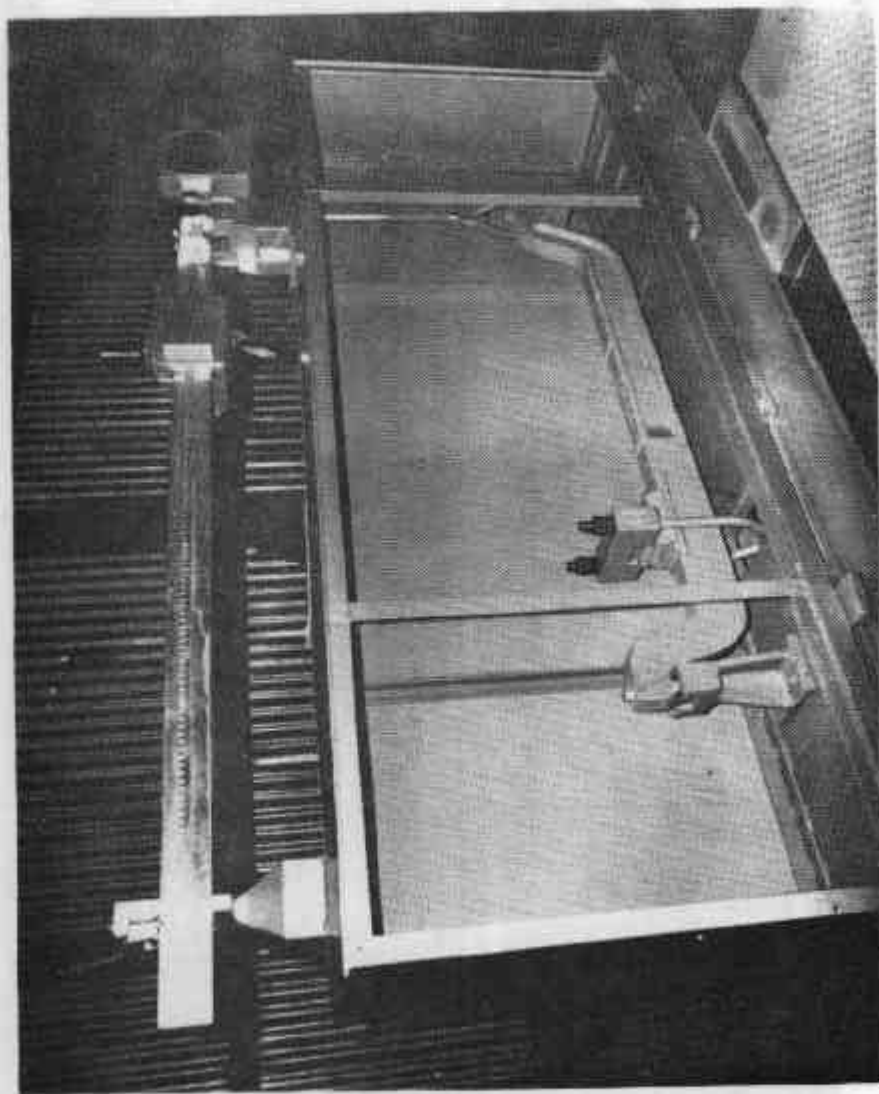
Ball-bearing Support Unit and Pedestal

FIGURE 6/10B/32A - 5



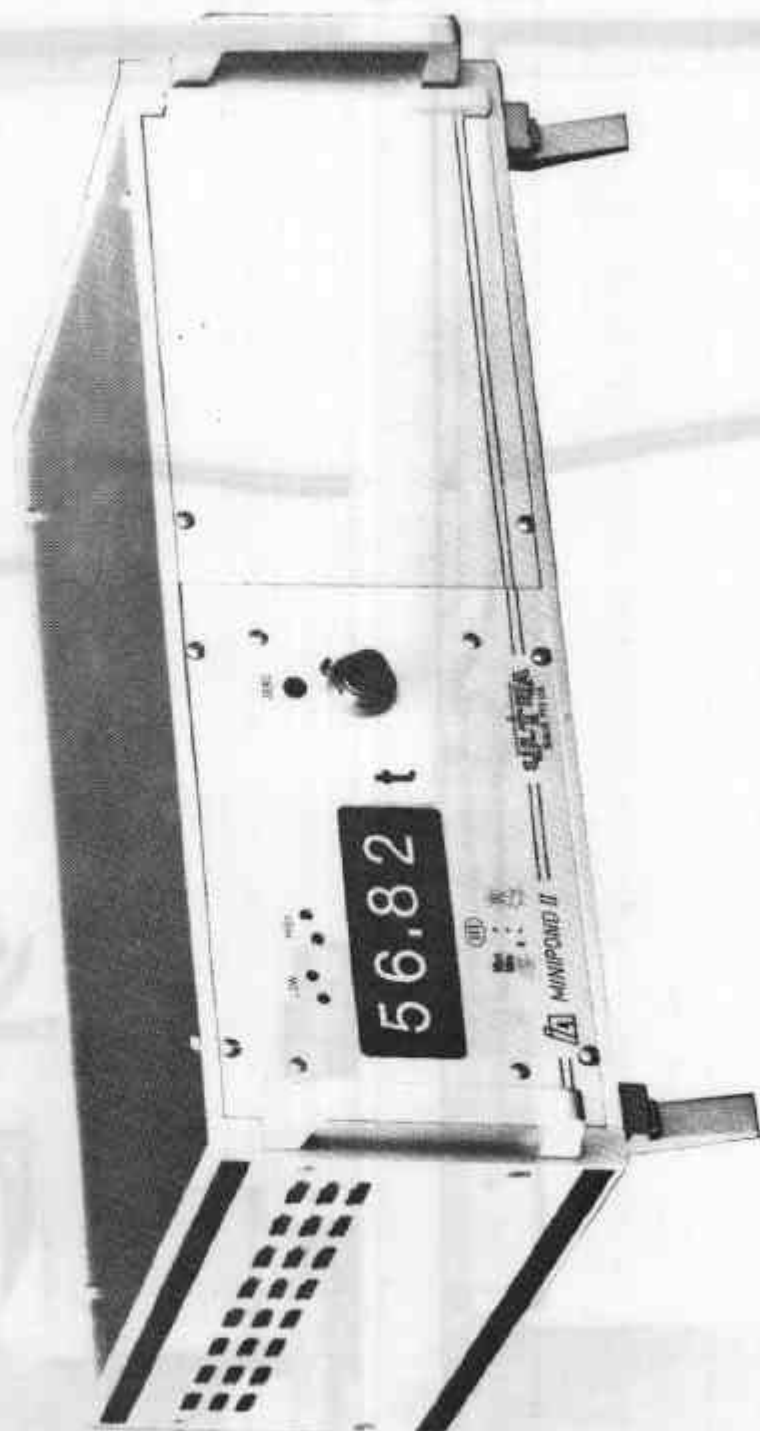
Lower Headwork with Manual Unit-weight Mechanism

FIGURE 6/108/32A - 6



Headwork

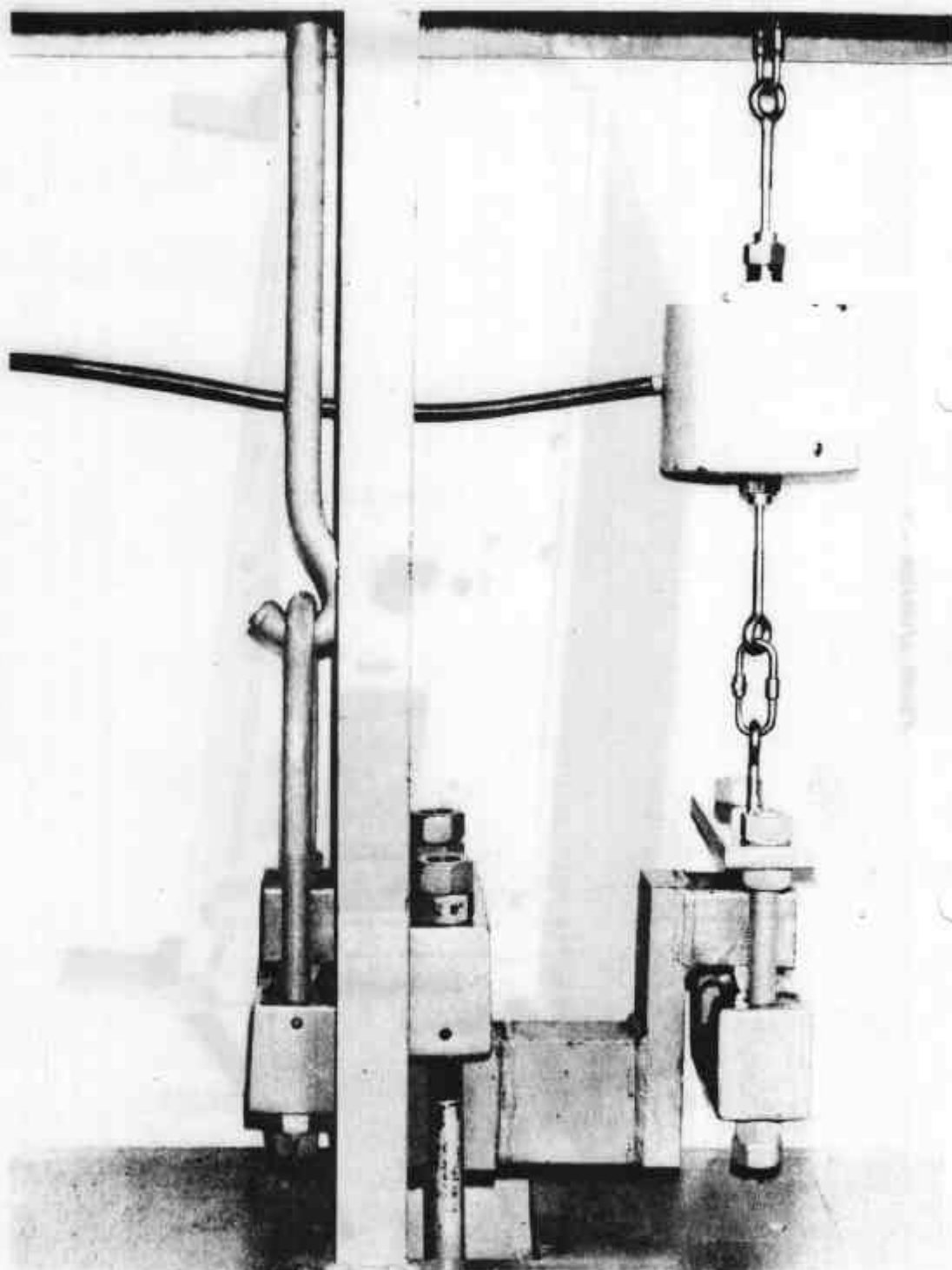
FIGURE 6/108/32A -- 7



Minipond II Indicator

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FIGURE 6/108/32A - B



HBM Load Cell in Headwork Lever