NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS - REGULATION 9

SUPPLEMENTARY CERTIFICATE OF APPROVAL No S123

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

Leeton Steel Electronics Digital Indicator/Printer

submitted by Leeton Steel Electronics Pty Ltd,
12-14 Pine Avenue,
Leeton, New South Wales, 2705,

are suitable for use for trade when replacing the indicator in any Commission-approved weighing instrument.

The approval of the pattern and variants 1 to 5, and 11 and 12, and 17 to 19, is subject to review on or after 1/11/85.

Note: Variant 17 now has full, not provisional, approval.

Provisional variants 6 to 10 and 13 to 16 are approved for 12 months from 1/3/82.

All instruments modified by the fitting of a digital indicator/printer purporting to comply with this approval, shall be marked NSC No S123 in addition to the approval number of the unmodified pattern.

Instruments marked NSC No 6/10B/41 are to be re-marked, immediately, with the appropriate approval numbers as specified in the Technical Schedule.

Relevant drawings and specifications are lodged with the Commission.

Conditions of Approval

1. The number of scale intervals applicable to the weighing instrument in which this digital indicator/printer is fitted, will not be greater than the number of verification scale intervals approved for the basework, or the load cell, or the digital indicator/printer whichever is the smallest.

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

3. Approval for variants 6 to 10 and 13 to 16 will remain provisional until a satisfactory site examination has been completed on each of these variants, or for 12 months whichever is the lesser.

4. The submittor is to advise the National Standards Commission of the first installation of instruments modified in accordance with provisional variants 6 to 10 and 13 to 16 inclusive before verification by the appropriate Weights and Measures Authority is sought.

5. Where Commission-approved weighbridges are connected to the digital indicator/printer (subject of this certificate), the weighbridges will be of a type known as 'full load cell' or will have been modified by the inclusion of a load cell in accordance with a Commission approved method specified in this or another Certificate of Approval.

Signed

Executive Director

28/7/82

...../2

Descriptive Advice

Pattern: approved 4/6/81

. Leeton Steel digital indicator with integral printer and program memory storage, connected to the output of one or two baseworks, and approved for up to 3000 scale intervals.

Variants: approved 4/6/81

1. Use of the pattern with an HBM Z3H2 1 tonne load cell when mounted in a basework complying with Certificate of Approval NSC No 6/10A/2.

2. With other Commission-approved load cells replacing the HBM Z3H2 1 tonne load cell in variant 1.

Variants: approved 4/3/82

3. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10A/1.

4. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10A/2.

5. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10A/4.

Provisional Variants 6 to 10: approved 4/3/82

6. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10A/3.

7. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10A/7.

8. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10B/1.

9. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10B/16.

10. With Toledo model 0721 90 kg load cell in baseworks complying with Certificate of Approval No 6/10B/23.

Variants: approved 4/3/82

11. Without the counterweight lever in the transfer lever system in variants 3 to 10.

12. With other Commission-approved load cells replacing the Toledo model 0721 90 kg load cell in variants 3 to 10.

Provisional Variants 13 to 16: approved 4/3/82

13. With a prefabricated lever arrangement for retrofit to existing steelyard headworks.

14. Variant 13 without the counterweight lever and steelyard.

15. Variant 13 without the steelyard.

16. Variant 15 with the counterweight lever reversed.

Variant: approved 4/3/82

17. The pattern modified so that the internal indicators are visible through the rear panel.

Technical Schedule No S123 dated 19/3/82 describes the pattern and variants 1 to 17.

Variants: approved 2/7/82

18. The pattern modified so that the internal indicators are visible through the front panel.

19. The pattern with modified front panel to provide angled base for the keyboard.

Technical Schedule No S123, Variation No 1 dated 28/7/82 describes variants 18 and 19.

Filing Advice

Supplementary Certificate of Approval No S123 dated 19/3/82 is superseded by this Certificate and may be destroyed.

Any reference to "provisional" variant 17 in Technical Schedule No S123 dated 19/3/82 should now be deleted as variant 17 now has full approval.

The documentation for this approval now comprises:

Supplementary Certificate of Approval No S123 dated 28/7/82
Technical Schedule No S123 dated 19/3/82
Technical Schedule No S123 Variation No 1 dated 28/7/82
Test Procedure No S123 dated 19/3/82
Figures 1 to 25 dated 19/3/82
Figure 26 dated 28/7/82

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE S123

Pattern: Leeton Steel Electronics Digital Indicator/Printer

Submittor: Leeton Steel Electronics Pty Ltd,
12-14 Pine Avenue,
Leeton, New South Wales, 2705.

1. Description of Pattern

1.1

The pattern is an indicating system consisting of one or two internal indicators connected to a micro-computer, VDU and ticket printer (Figure 1).

The system will have either one or two internal indicators depending on whether it is connected to one or two baseworks. The output from the indicator/s is fed into the micro-computer and is displayed on a VDU. Where there are two baseworks and hence two internal indicators, the mass on each basework (prefixed by #1 and #2), and the sum of the masses are displayed on the VDU (Figure 4A).

1.2 Printer

The individual masses, both gross and tare for each basework, and the respective totals are printed by the ticket printer. Figures 2 and 3 illustrate sample tickets, on which the only information relevant to pattern approval is the gross, net and tare mass.

1.3 Zero

Whether connected to one or two baseworks, a push button zero may be used to set the instrument to within 0.25e of zero.

When connected to one basework, operation of the zero push button will cause the word ZERO to be displayed immediately adjacent to the mass indication on the VDU.

When connected to two baseworks the word ZERO is displayed adjacent to the indication 00.00 (in emphasised digits) as well as adjacent to #1 and #2 on the VDU (Figure 4B). If a zero error condition occurs a display message will appear on the VDU. A typical example is shown in Figure 4C.

An automatic zero correction device corrects zero to within 0.25e whenever the instrument comes to rest within 0.5e of zero.

1.4 Markings

1.4.1

Instruments modified by the fitting of this pattern are to be marked with the following information, grouped together in one location:

(a) Manufacturer's name or mark
Accuracy class in the form: (III)
Maximum capacity in the form: Max = ...*
Minimum capacity in the form: Min = ...*
Scale interval in the form: d (or d_d) = e = ...*
NSC approval numbers in the form: Headwork NSC No.....¶
Basework NSC No....¶
Load cell NSC No....¶

Serial number of basework
Serial number of load cell

(b) For instruments with one basework and one internal indicator -

The markings as in (a) above, and in addition,

NSC approval number in the form: NSC No S123
Serial number of Leeton Steel Indicator

(c) For instruments with two baseworks and two internal indicators -

The markings as in (a) above for each basework under the headings Basework 1 and Basework 2, and, in addition,

System verification scale interval in the form: E = ∑e =
System scale interval in the form: d = ...
NSC approval number in the form: S123
Serial number of Leeton Steel Indicator

1.4.2

The internal indicators are marked NOT IN USE FOR TRADE.

1.5 Sealing

(a) A lead and wire seal passes through a retaining screw and lug on the internal indicator(s) (Figure 5), which are located inside the instrument cabinet.

(b) One or two output sockets on the internal indicator(s), which are used to provide information to the micro-computer, are sealed in a manner similar to that shown in Figure 6.

(c) The load cell serial numbers may be sealed to the instrument cabinet or marked on tags which are sealed to the instrument cabinet or the internal indicator(s).

2. Description of Variants

2.1 Variant 1

The pattern used with an HBM Z3H2 1 tonne load cell when mounted as shown in Figure 7 in a basework complying with Certificate of Approval NSC No 6/10A/2.

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* These markings must be repeated in the vicinity of the VDU face if not already there.

¶ These markings are to be affixed to the instruments in a permanent manner and will vary depending on the number of different modifications there are fitted. Abbreviations such as H/W, L/C and B/W are acceptable.

The load cell is described in Supplementary Certificate of Approval NSC No S121 and should be marked as described therein.

2.2 Variant 2

The pattern used with other Commission-approved load cells replacing the HBM Z3H2 1 tonne load cell specified for variant 1, mounted in accordance with the Supplementary Certificates for those load cells.

2.3 Variants 3, 4 and 5

The pattern used with a Toledo model 0721 90 kg load cell when mounted as shown in Figures 8, 9 and 10 in baseworks complying with the Certificate of Approval listed below:

Variant	Certificate of Approval (Baseworks)
3	6/10A/1
4	6/10A/2
5	6/10A/4

The load cell is described in Supplementary Certificate of Approval NSC No S111 and should be marked as described therein.

2.4 Provisional Variants 6, 7, 8, 9 and 10

Pattern used with a Toledo model 0721 90 kg load cell when mounted as shown in Figures 8, 9 and 10 in baseworks complying with the Certificates of Approval listed below:

Variant	Certificate of Approval (Baseworks)
6	6/10A/3
7	6/10A/7
8	6/10B/1
9	6/10B/16
10	6/10B/23

The load cell is described in Supplementary Certificate of Approval NSC No S111 and should be marked as described therein.

2.5 Variant 11

Without the counterweight lever in the transfer lever system and the counterweight on the steelyard re-balanced, in baseworks modified in accordance with variants 3 to 10 (Figures 11 and 12).

2.6 Variant 12

The pattern used with other Commission-approved load cells replacing the Toledo model 0721 90 kg load cell, (as per variants 3 to 10), mounted in accordance with the Supplementary Certificates for those load cells.

2.7 Provisional Variant 13

With a prefabricated lever arrangement retrofitted to any existing steelyard cabinet and retaining a counterweight lever and the existing steelyard (Figures 13, 14 and 15). The system is fitted with an adjustment for the centre knife-edge position.

2.7.1 Sealing

The slide adjustments are sealed as shown in Figures 24 and 25. Three are sealed by welded joints, the centre lever ratio adjustment being sealed top and bottom by tightening the bolts and fitting lead and wire seals.

2.8 Provisional Variant 14

Variant 13 without the counterweight lever and steelyard (Figures 16 and 17).

2.8.1 Sealing

As per 2.7.1.

2.9 Provisional Variant 15

Variant 13 without the steelyard (Figures 18 and 19).

2.9.1 Sealing

As per 2.7.1.

2.10 Provisional Variant 16

Variant 15, with the position of the counterweight lever reversed to suit cabinet size (Figures 20 and 21).

2.10.1 Sealing

As per 2.7.1.

2.11 Provisional Variant 17

The pattern modified so that the reading face(s) of the internal indicator(s) are visible through the back of the cabinet. In this case the indicators need NOT be marked NOT IN USE FOR TRADE. They then provide a back up indication if the VDU is not functioning.

2.11.1 Markings

In addition to the markings specified in 1.4, the following should be marked in the vicinity of the internal mass indicator(s) reading face(s):

Basework 1 (or 2) (or similar)

Maximum capacity in the form:	Max = ...
Minimum capacity in the form:	Min = ...
Scale interval in the form:	d (or d_d) = e = ...

(Figures 22 and 23)

TEST PROCEDURE No S123

Note: Where the indicator is connected to two baseworks, each should be tested independently in accordance with the original certificate for the basework and as modified in 1 to 4 below.

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.

Accuracy Requirements

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 and press the zero push button; the instrument should not re-zero.

(b) Reduce the load to, say, 1.5% of maximum capacity and again press the zero contactor; the instrument should indicate zero balance.

2. Zero Balance

Check, by means of Document 104 that when ZERO is illuminated, zero is set to within 0.25e.

As an automatic zero correction device is fitted, this may 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) When the maximum capacity (Max) is exceeded the mass indicator should blank at no more than 10 scale divisions above the maximum capacity.

When either or both mass indicators on the VDU blank at maximum capacity, the display of total mass should also blank and an error message should be displayed (Figure 4D). The printer should be inhibited until the overload condition is removed.

(b) Mass below zero may be indicated, prefixed by a minus sign.

4. Test Loads

Increasing test loads are to be applied to the complete weighing instrument in not less than 5 approximately equal steps to maximum capacity, followed by decreasing loads in not less than 5 approximately equal steps.

5. Multiple Indicators

5.1 Where the existing headwork is retained and used in conjunction with the pattern, the variation between indications or printings for the same load shall not be greater than the absolute value of the maximum permissible error for that load on the device with the largest verification scale interval.

5.2 The existing headwork should be marked according to its Certificate of Approval and tested in accordance with such.

5.3 Where variant 17 is installed, there should be no difference in indication between the indicator(s) and the VDU for the indication of mass on one or both basework(s).

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE S123

VARIATION No 1

Pattern: Leeton Steel Electronics Digital Indicator/Printer

Submittor: Leeton Steel Electronics Pty Ltd,
12-14 Pine Avenue,
Leeton, New South Wales, 2705.

1. Description of Variants

1.1 Variant 18

1.1.1 Detail

The pattern modified so that the reading face(s) of the internal indicator(s) are visible through the top left-hand corner of the front of the cabinet (Figure 26). In this case the indicator(s) need NOT be marked NOT IN USE FOR TRADE. They then provide a back-up indication if the VDU is not functioning.

1.1.2 Markings

In addition to the markings specified for the pattern, the following data should be marked in the vicinity of the internal indicator(s) reading face(s):

Basework 1 (or 2) (or similar)

Maximum capacity in the form:	Max = ...
Minimum capacity in the form:	Min = ...
Scale interval in the form:	d = e = ...

1.2 Variant 19

The pattern with a modified front panel to provide an angled base for the keyboard (Figure 26).

NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

SUPPLEMENTARY CERTIFICATE OF APPROVAL No S123

CHANGE No 1

The following change is made to the description of the Leeton Steel Electronics Digital Indicator/Printer

given in Technical Schedule No S123 dated 19/3/82.

In paragraph 1.1, first sentence;

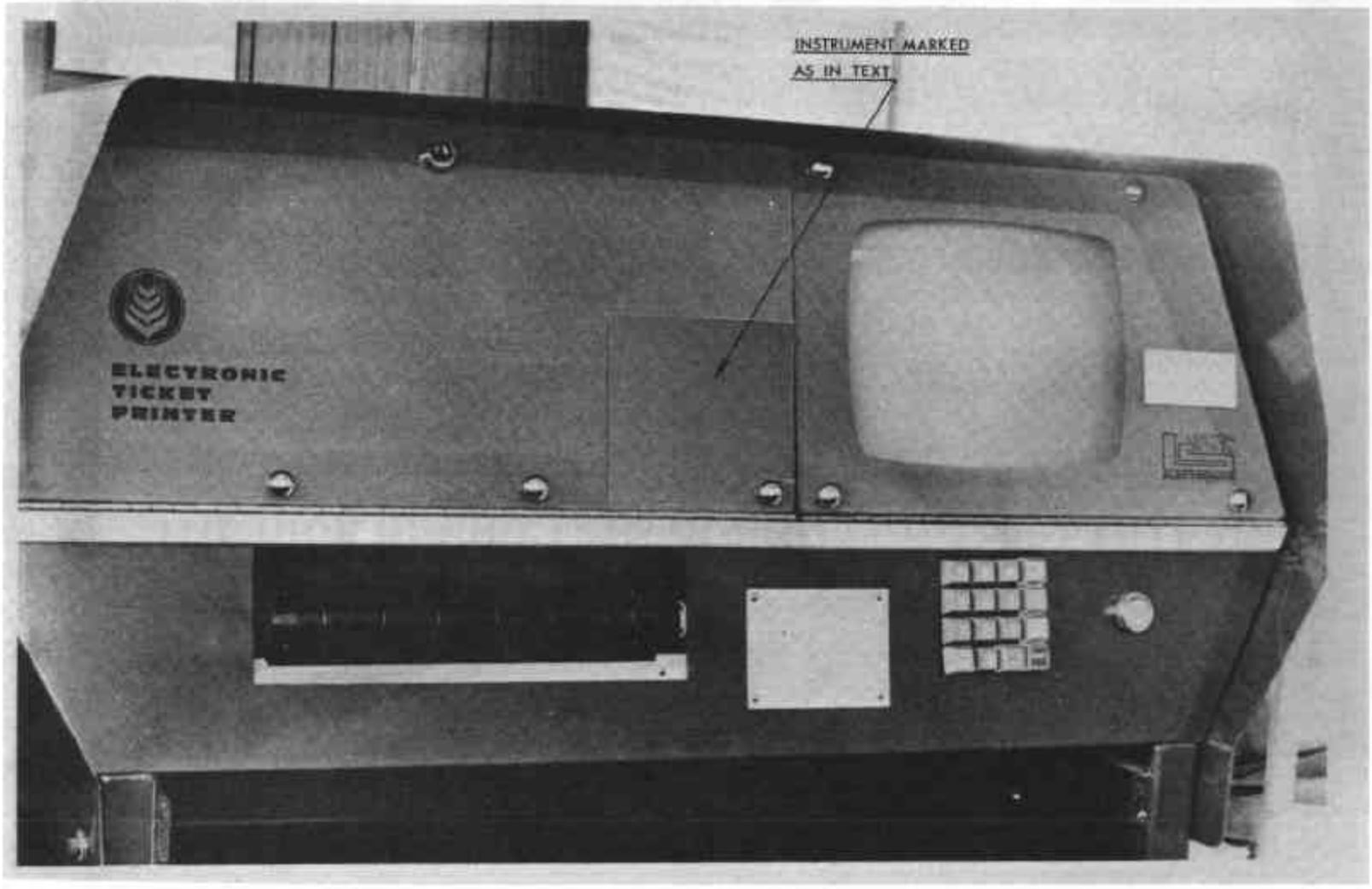
Add after "(Figure 1)"....., "approved for up to 3000 scale intervals."

Signed

Executive Director

23/7/82

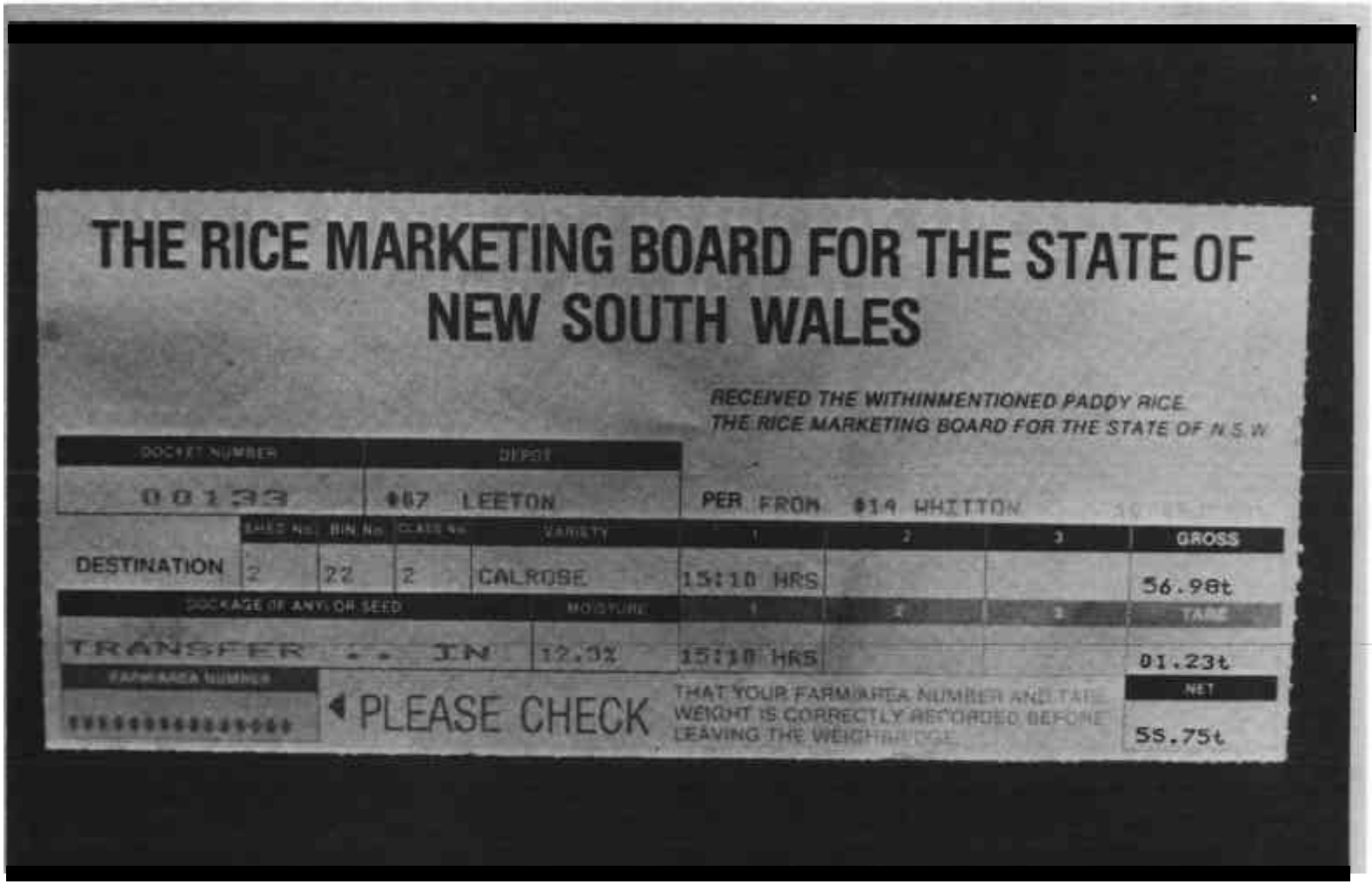
FIGURE S123 - 1



Leeton Steel Digital Indicator/Printer

re-issued 19/3/82

FIGURE S123 - 2



THE RICE MARKETING BOARD FOR THE STATE OF NEW SOUTH WALES

RECEIVED THE WITHINMENTIONED PADDY RICE
THE RICE MARKETING BOARD FOR THE STATE OF N.S.W.

DOCKET NUMBER	DEPOT
00133	#67 LEETON

PER FROM #14 WHITTON

	BAGS No.	BIN No.	CLASS No.	VARIETY	1	2	3	GROSS
DESTINATION	2	22	2	CALROSE	15:10 HRS			56.98t
DOCKAGE OF ANY OR SEED				MOISTURE	1	2	3	TARE
TRANSFER .. IN				12.3%	15:10 HRS			01.23t
FARM/AREA NUMBER								NET
**********	PLEASE CHECK				THAT YOUR FARM/AREA NUMBER AND TARE WEIGHT IS CORRECTLY RECORDED BEFORE LEAVING THE WEIGHBRIDGE			55.75t

Sample Ticket - Single Basework

re-issued 19/3/82

FIGURE S123 - 3

THE RICE MARKETING BOARD FOR THE STATE OF NEW SOUTH WALES

RECEIVED THE WITHINMENTIONED PADDY RICE.
THE RICE MARKETING BOARD FOR THE STATE OF N.S.W.

DOCKET NUMBER	DEPOT

PER

DESTINATION	SHED No.	BIN No.	CLASS No.	VARIETY	1	2	3	GROSS
					20.22t	11.22t		31.44t

DOCKAGE (IF ANY) OR SEED	MOISTURE	1	2	3	TARE
		03.25t	02.15t		05.40t

FARM/AREA NUMBER		NET
	◀ PLEASE CHECK THAT YOUR FARM/AREA NUMBER AND TARE WEIGHT IS CORRECTLY RECORDED BEFORE LEAVING THE WEIGHBRIDGE.	26.04t

Sample Ticket - Two Baseworks - Showing Individual And Total Masses

FIGURE S123 – 4

FIGURE 4A

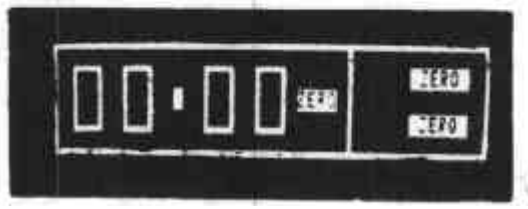


FIGURE 4B

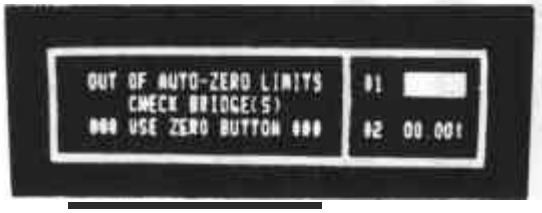


FIGURE 4C

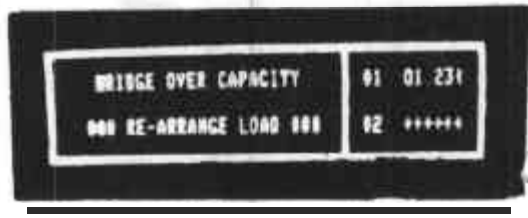
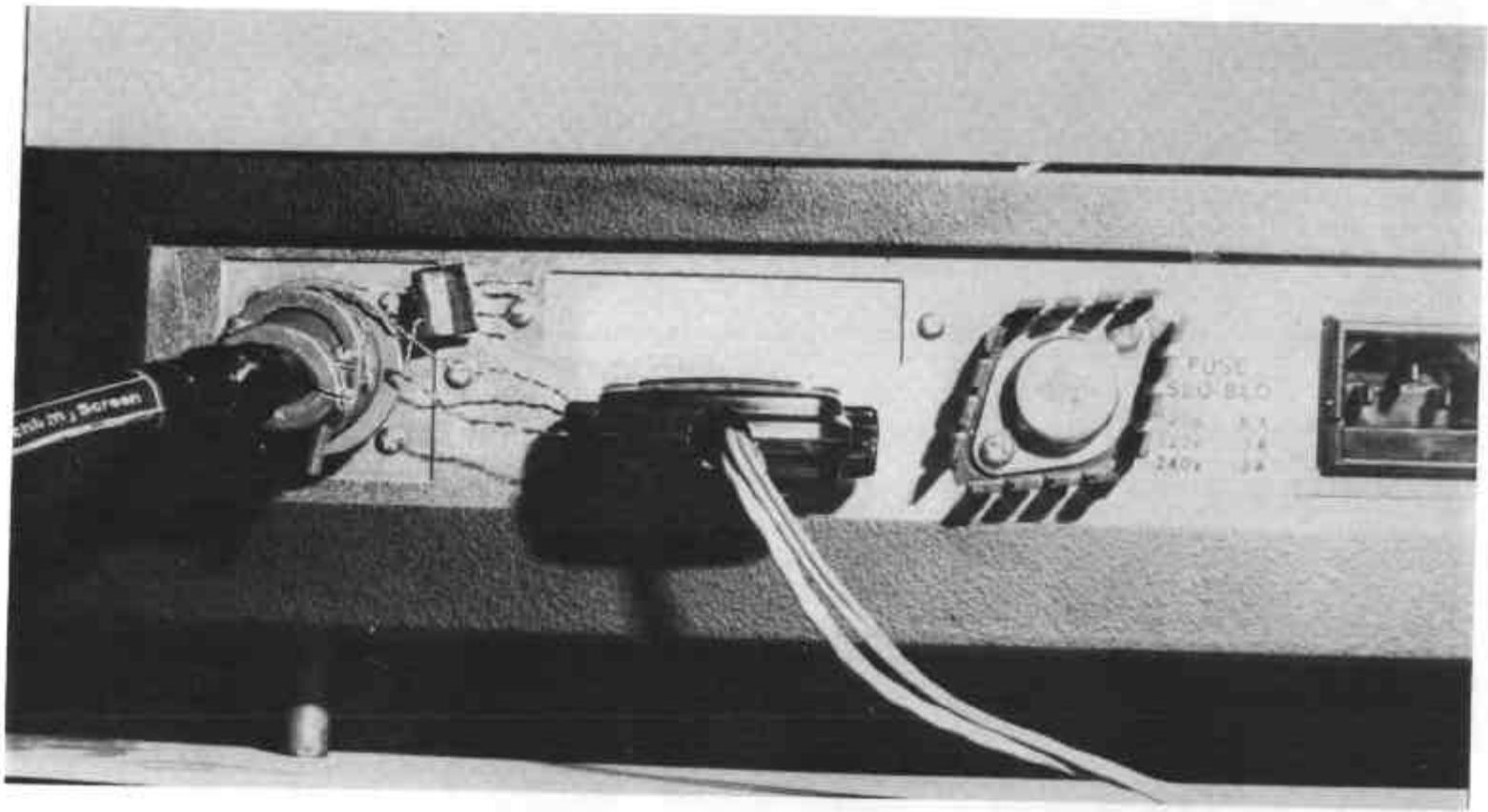


FIGURE 4D

Mass And Error Code Indications – Two Baseworks

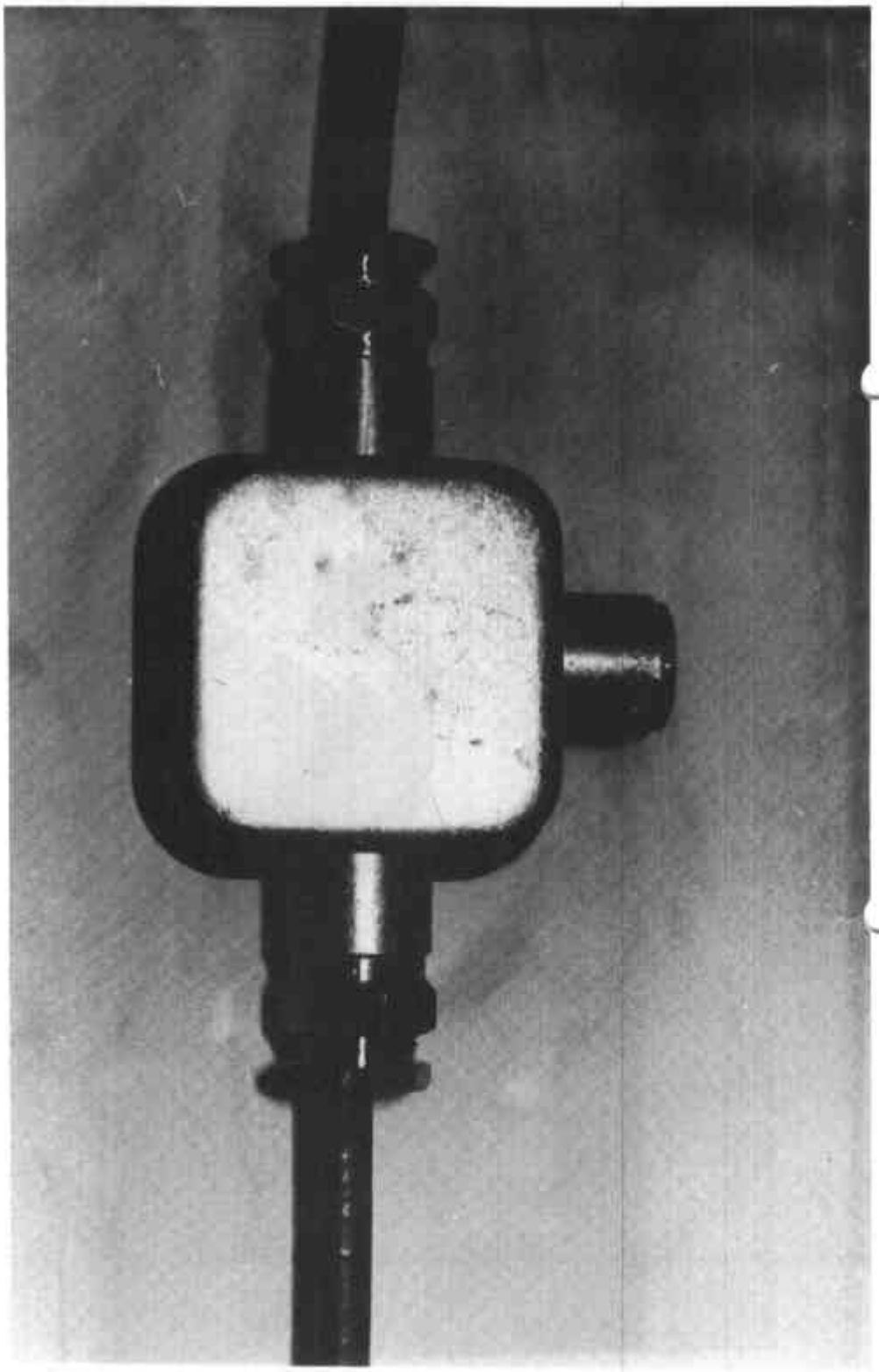
re-issued 19/3/82

FIGURE S123 - 5



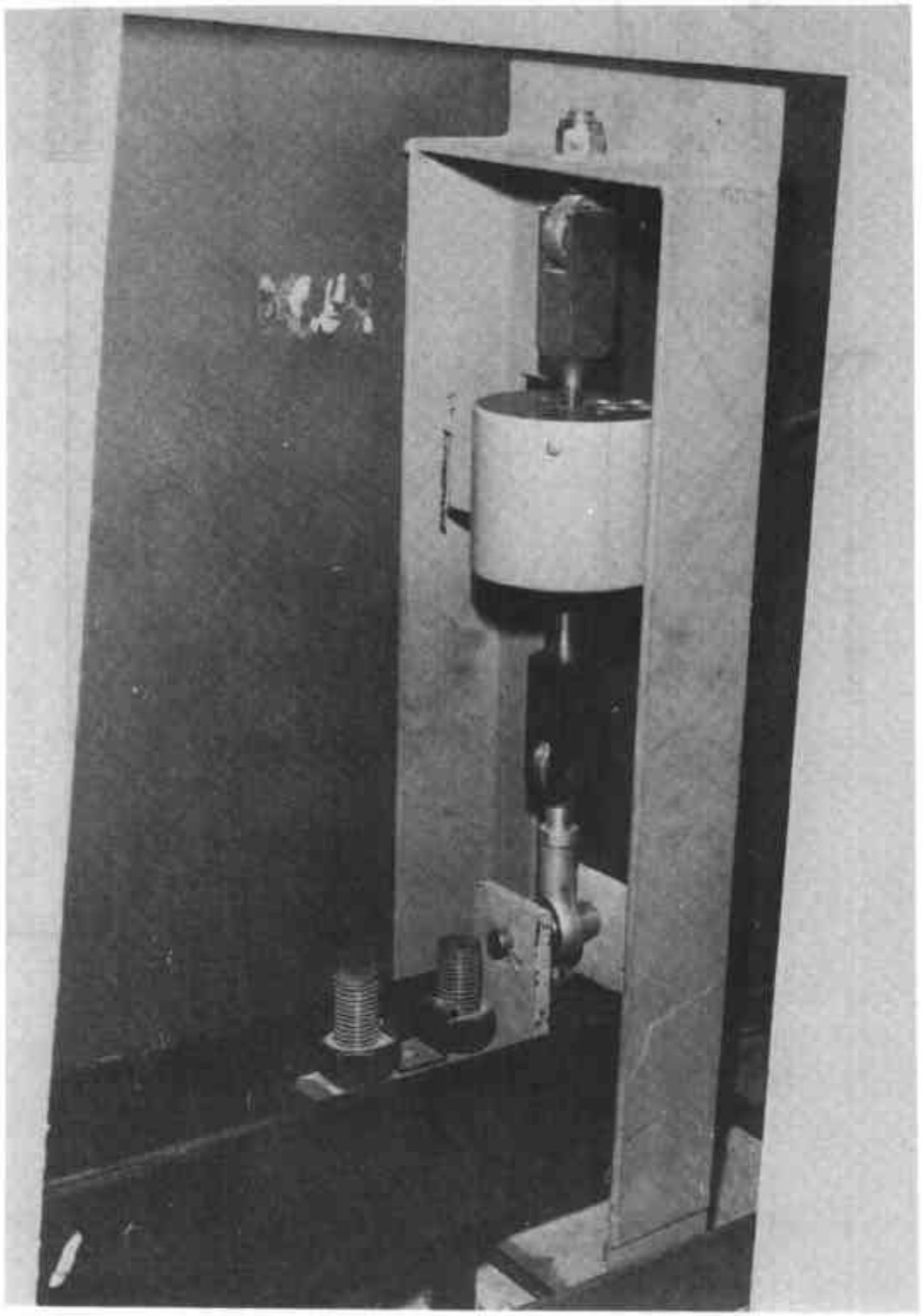
Sealing of Output Socket of Internal Indicator

FIGURE 5123 - 6



Junction Box

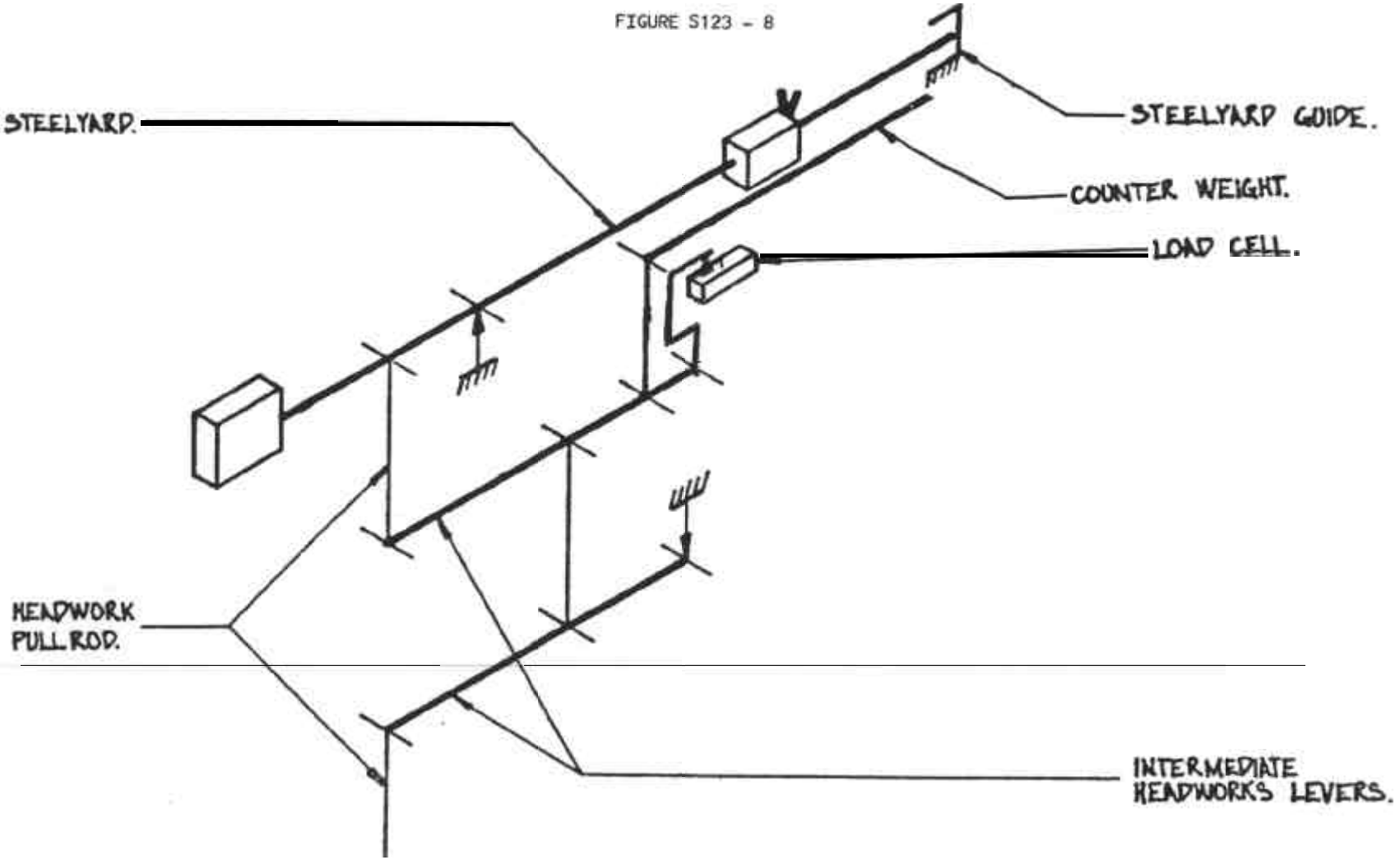
FIGURE S123 - 7



Load Cell HBM Z3H2 - Variant 1

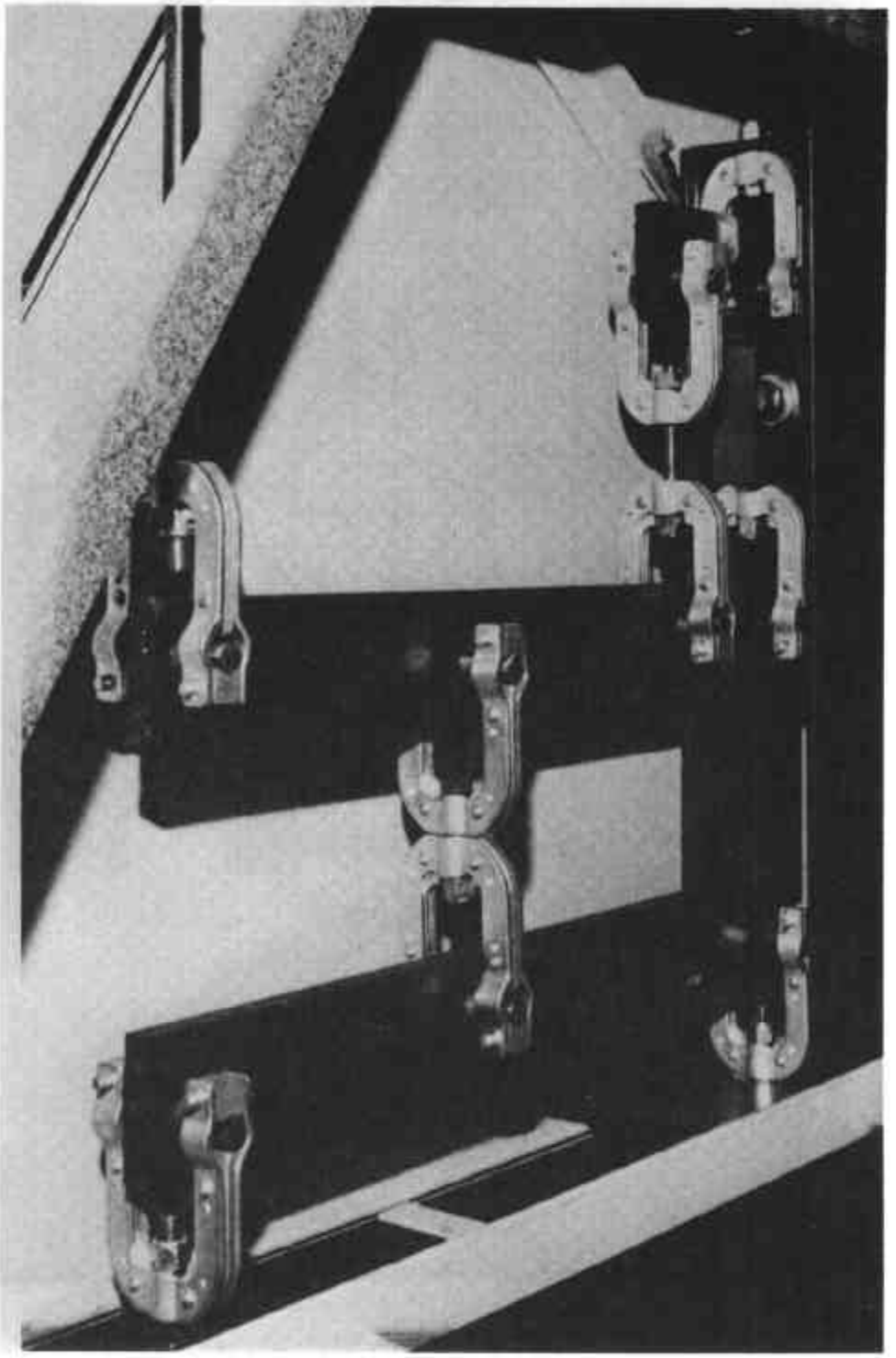
19/3/82

FIGURE S123 - 8



Schematic Of Load Cell Transfer Lever System - Variations 3 To 10

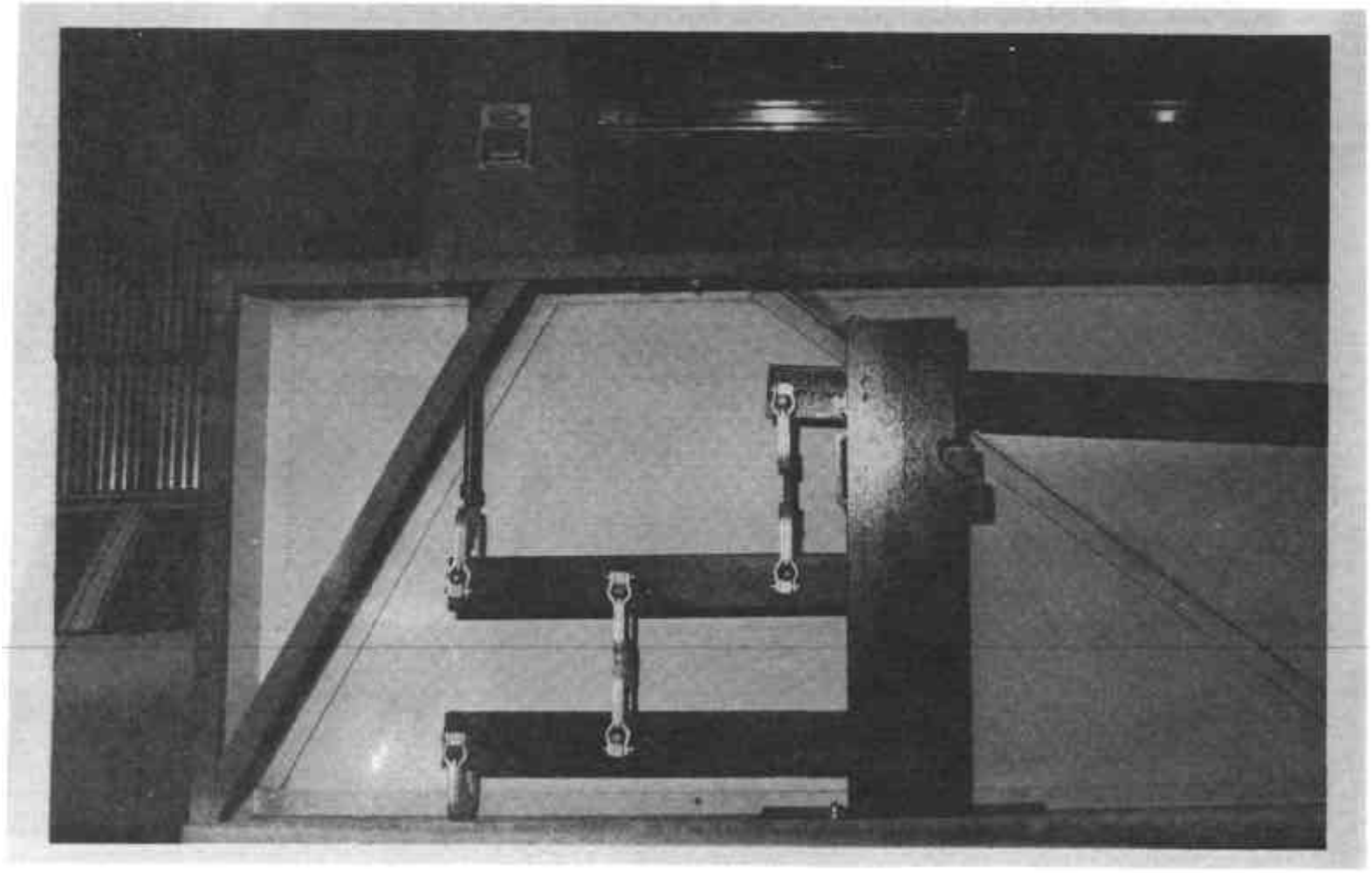
FIGURE S123 - 9



Load Cell Transfer Lever System - Variants 3 To 10

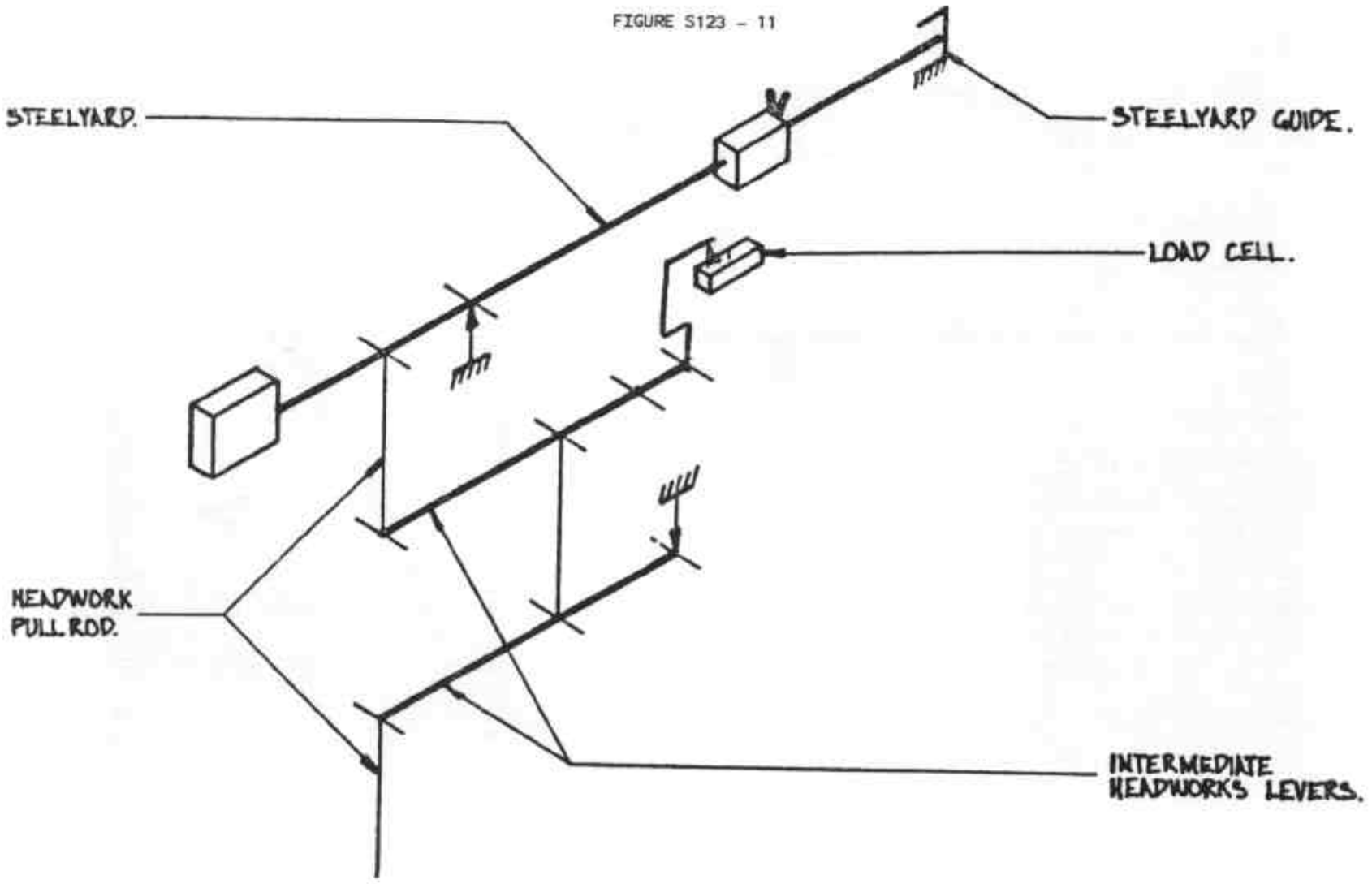
19/3/82

FIGURE 5123 - 10



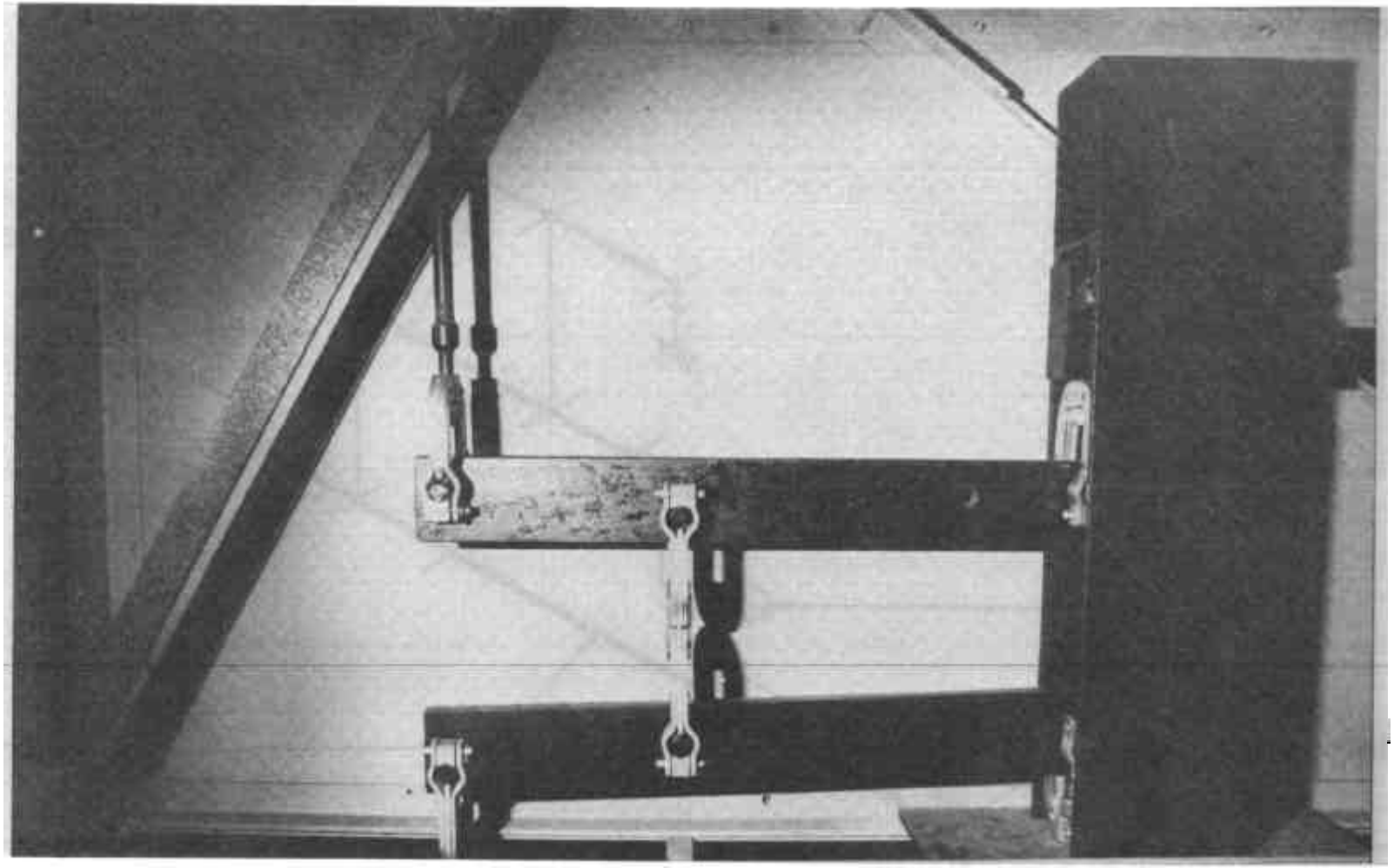
Headwork (inet Showing Load Cell Transfer Lever System(/ariants 3 To 10

FIGURE S123 - 11



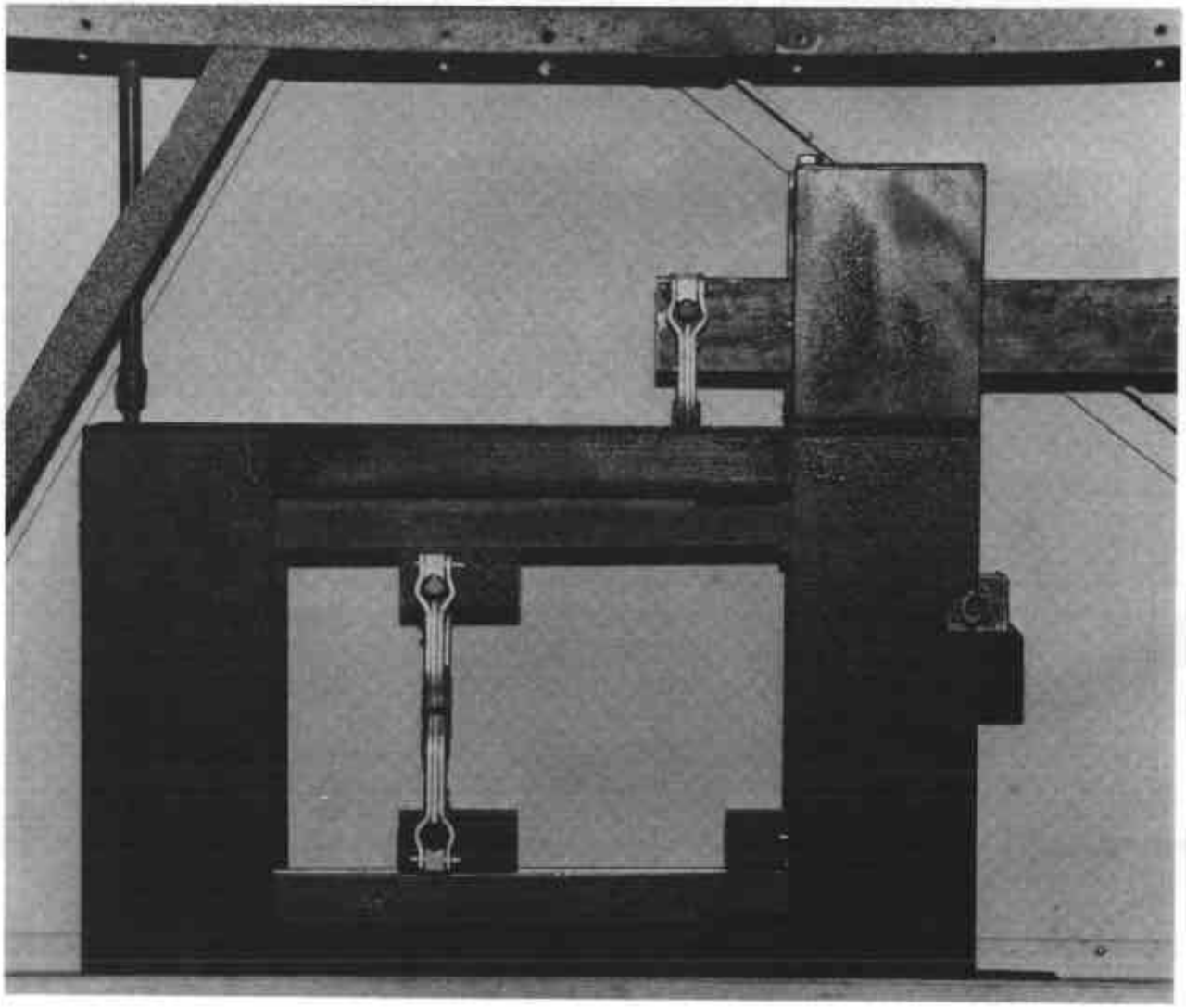
Schematic Of Load Cell Transfer Lever System Without Counterweight Lever - Variant 11

FIGURE S123 - 12



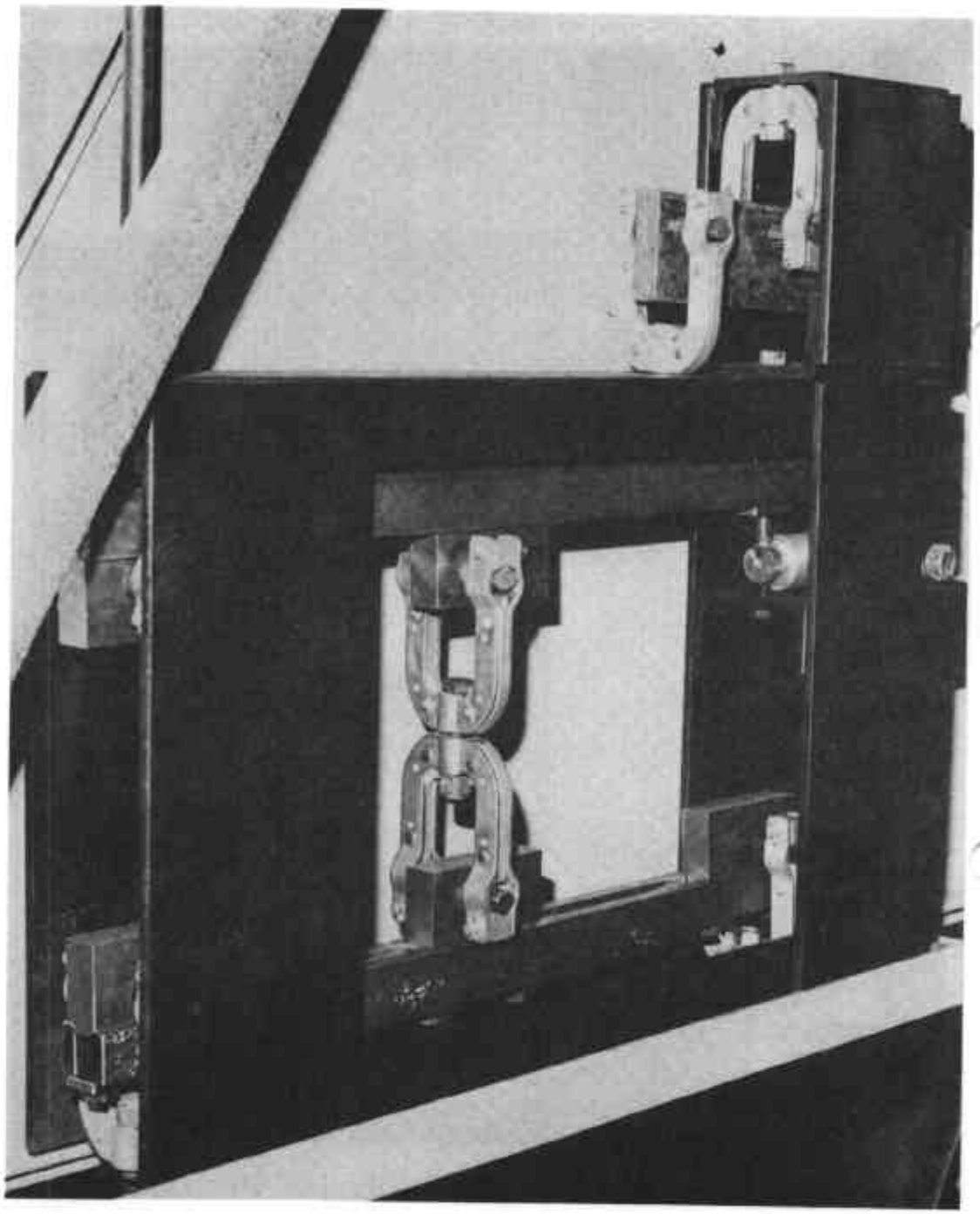
Load Cell Transfer Lever System With Counterweight Lever - Variant 11

FIGURE S123 - 13



Prefabricated Lever System - Variant 13

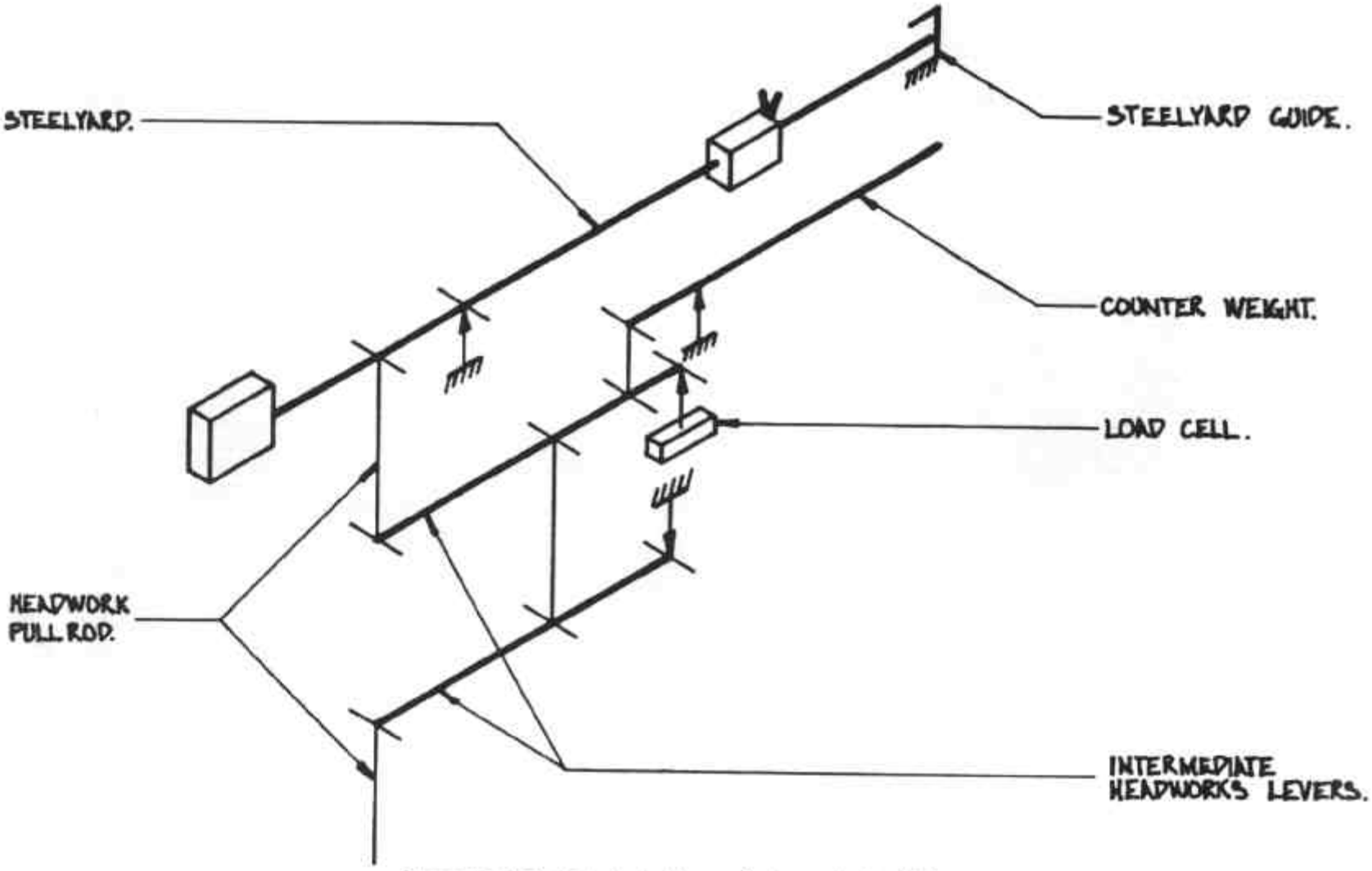
FIGURE S123 - 14



Prefabricated Lever System - Variant 13

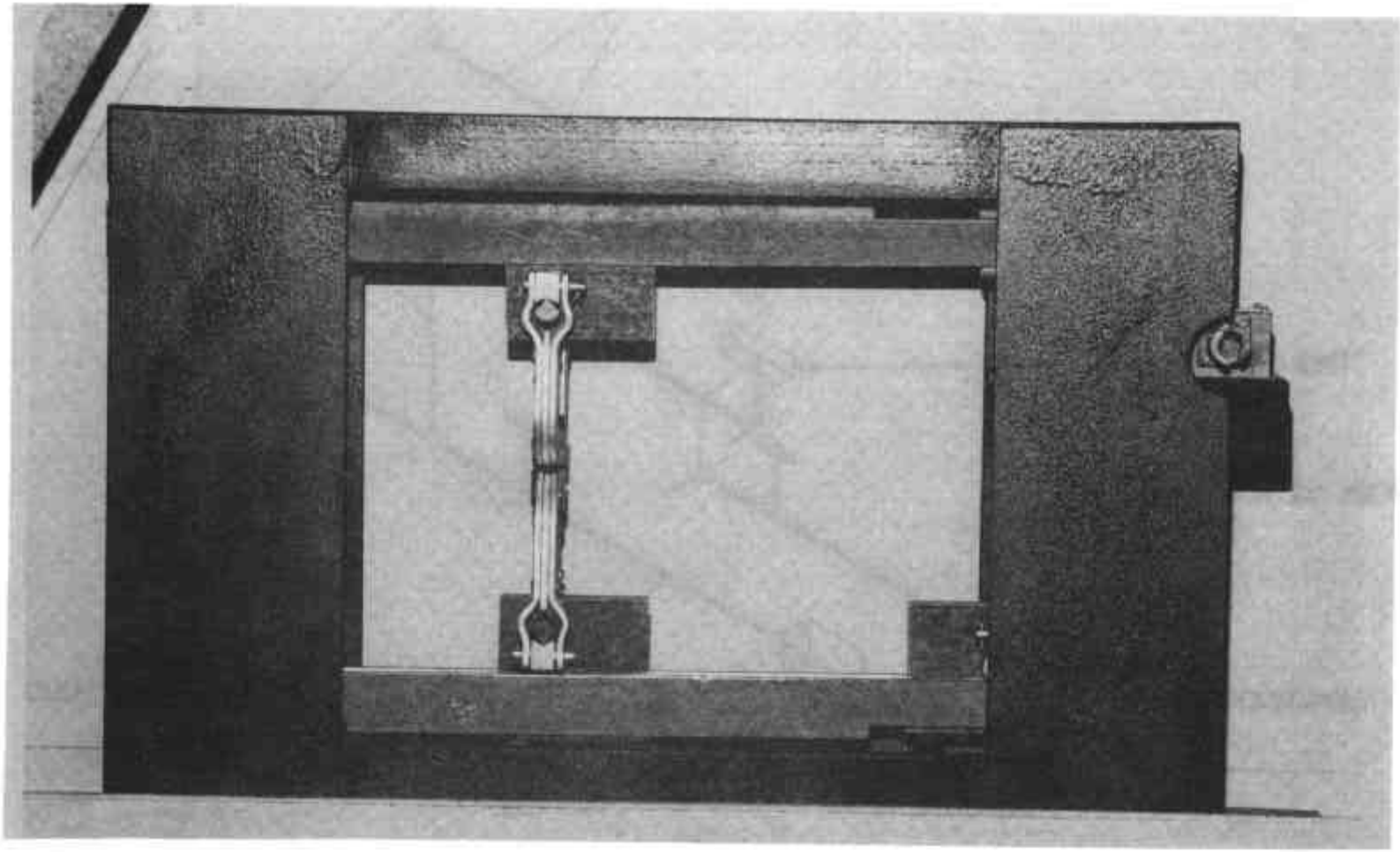
19/3/82

FIGURE S123 - 15



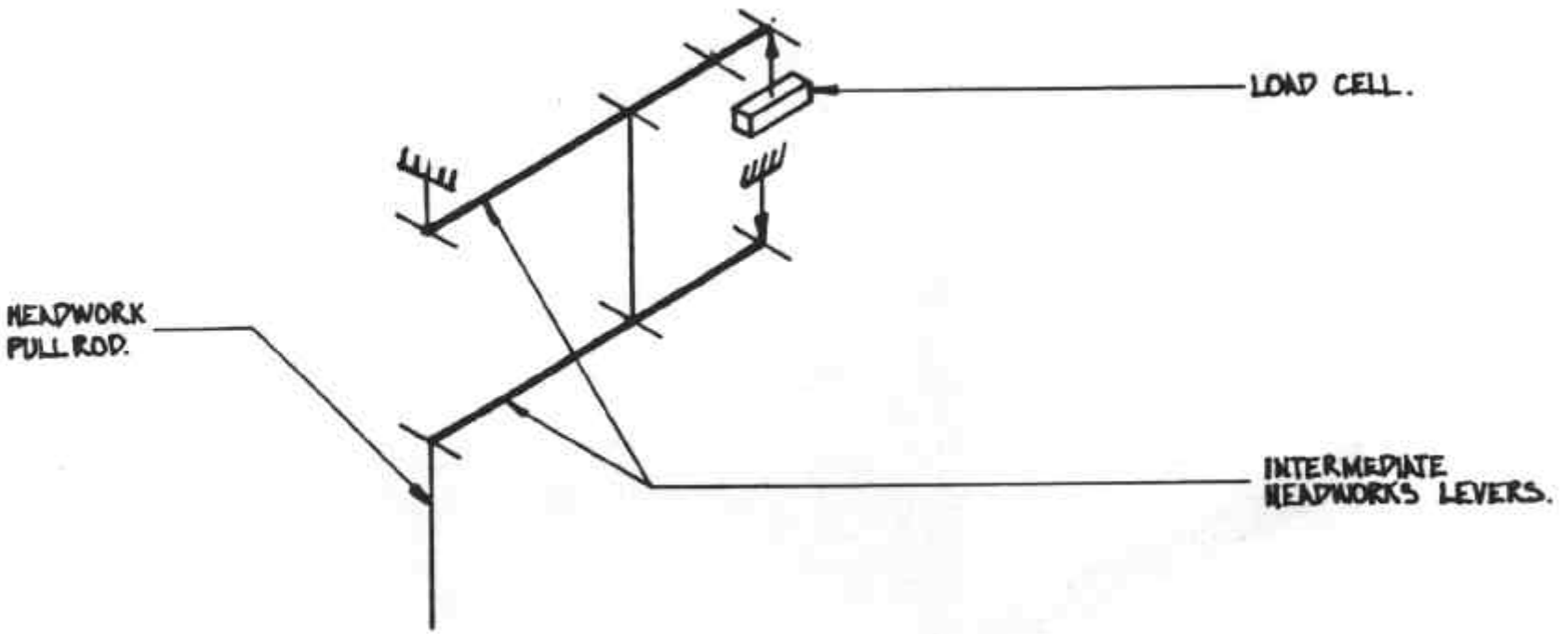
Schematic Of Prefabricated Lever System - Variant 13

FIGURE S123 - 16



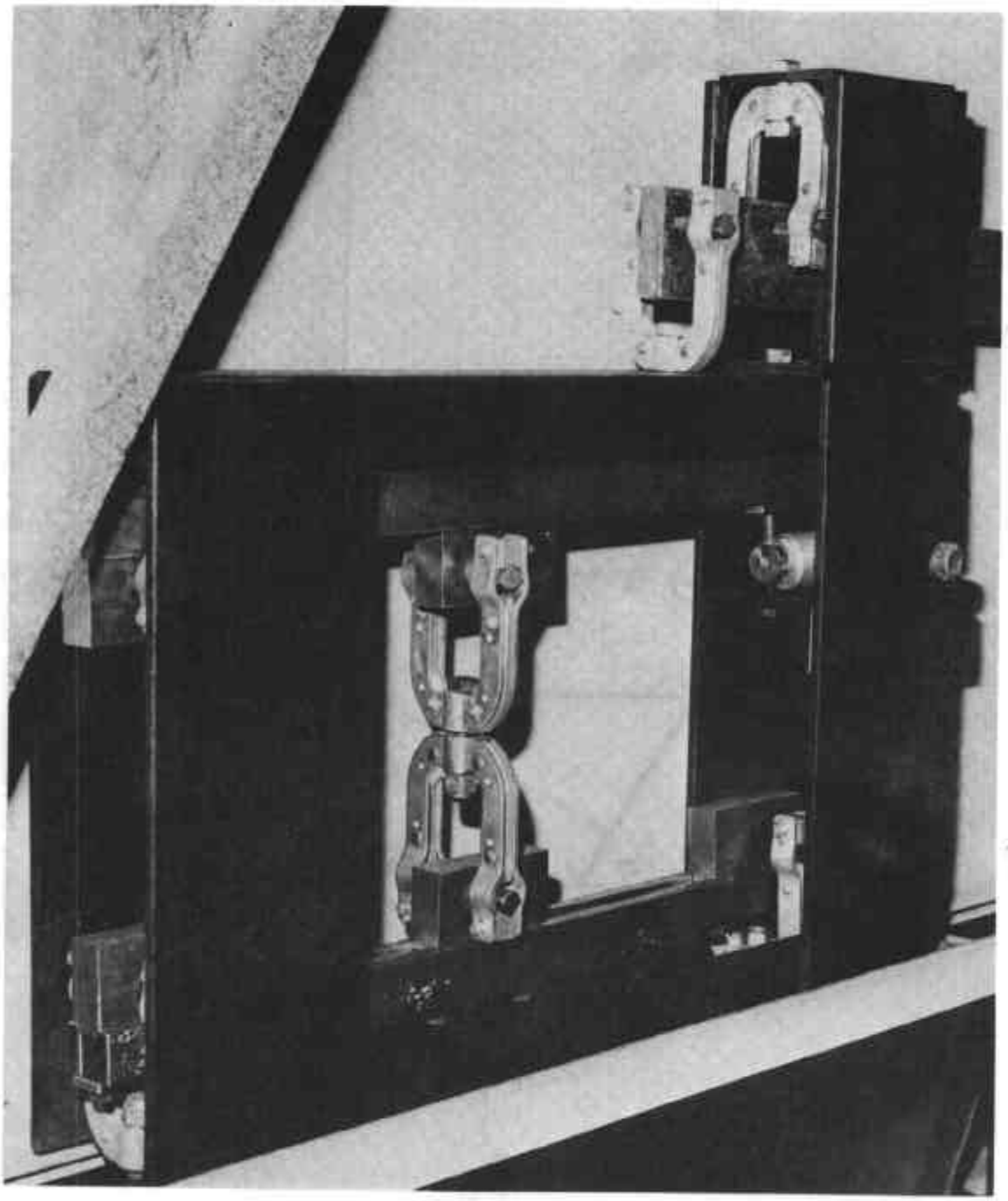
Prefabricated Lever System Without Counterweight Lever
And Steelyard - Variant 14

FIGURE S123 - 17



Schematic Of Prefabricated Lever System Without Counterweight Lever And Steelyard - Variant 14

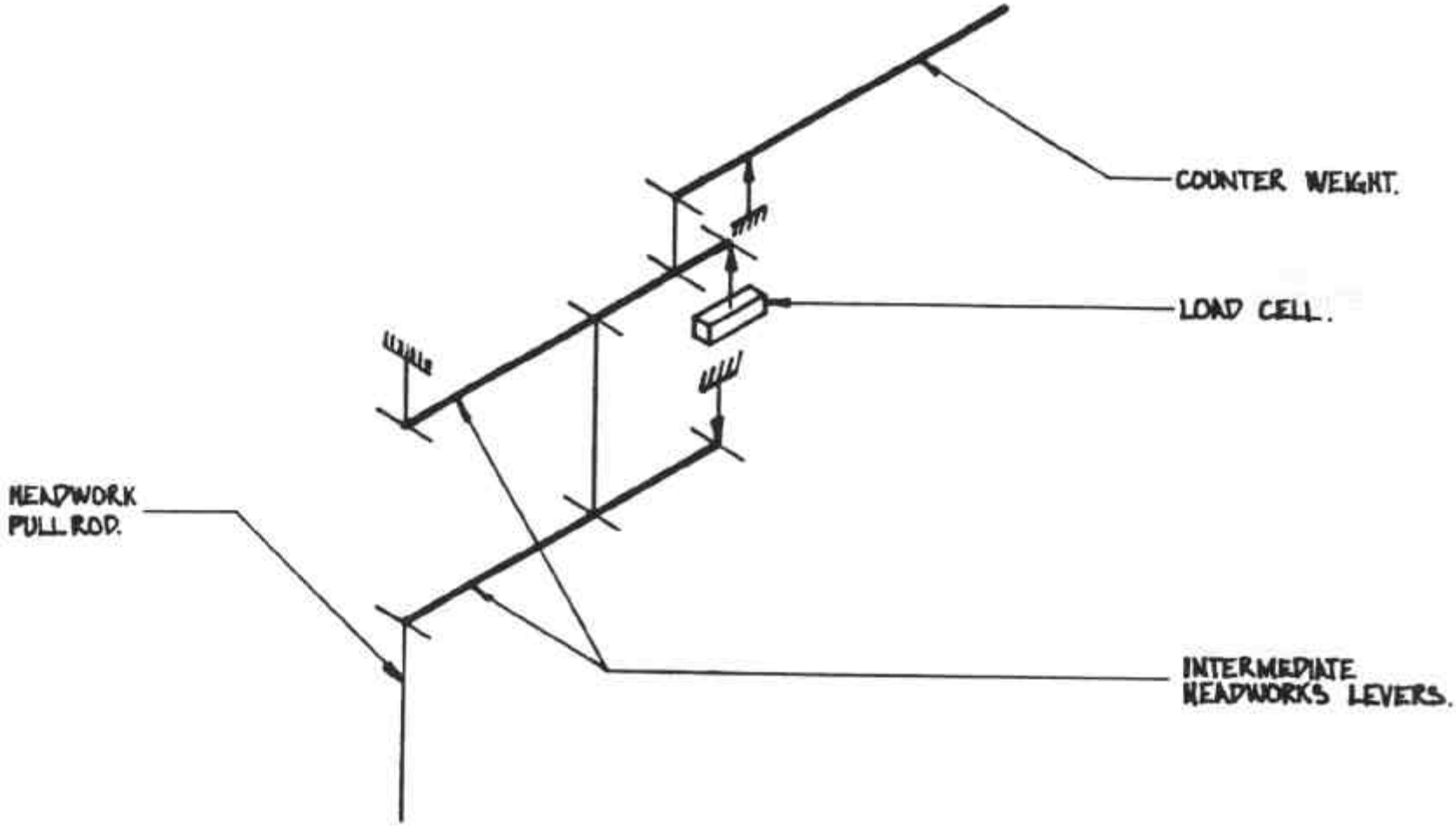
FIGURE S123 - 18



Prefabricated Lever System Without
Steelyard - Variant 15

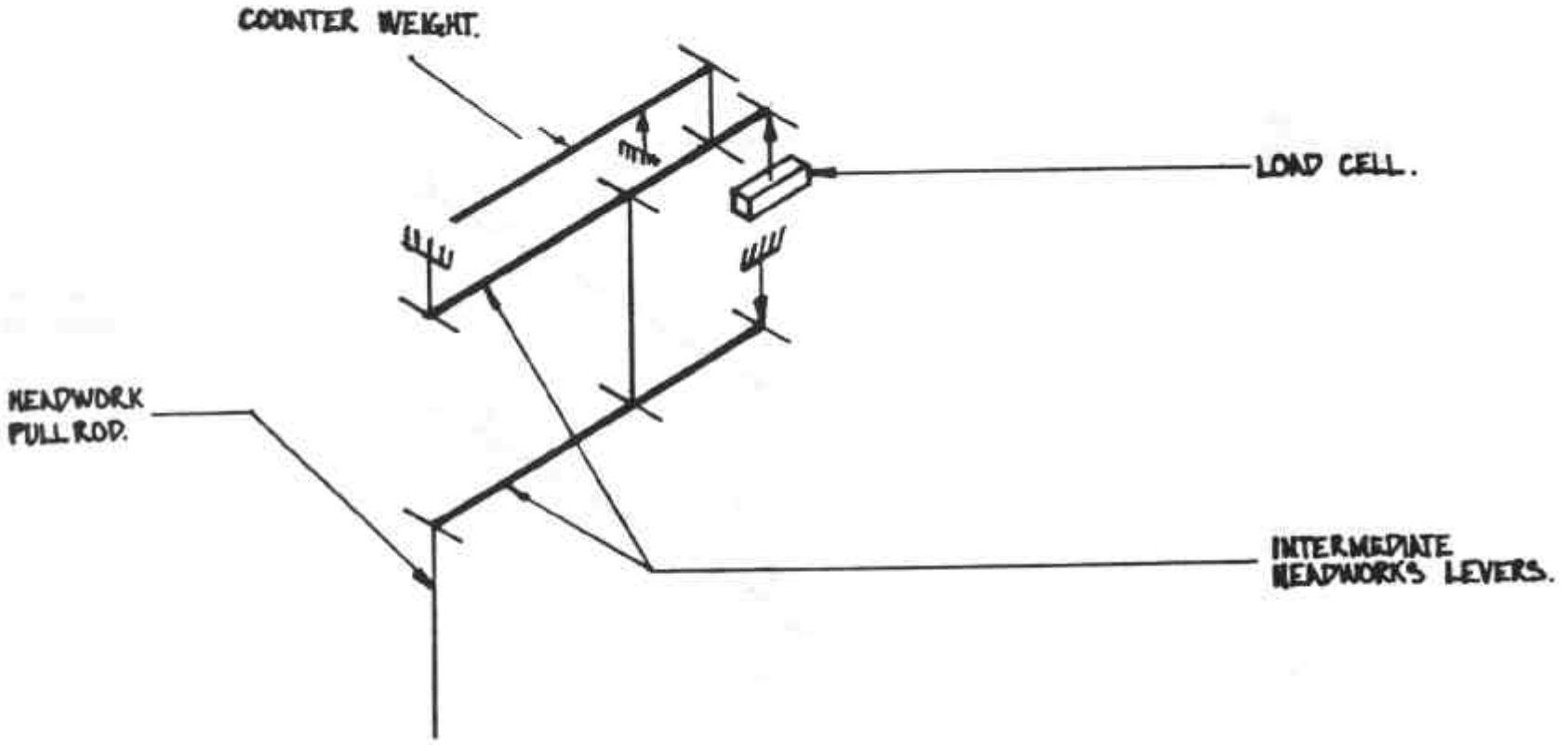
19/3/82

FIGURE S123 - 19



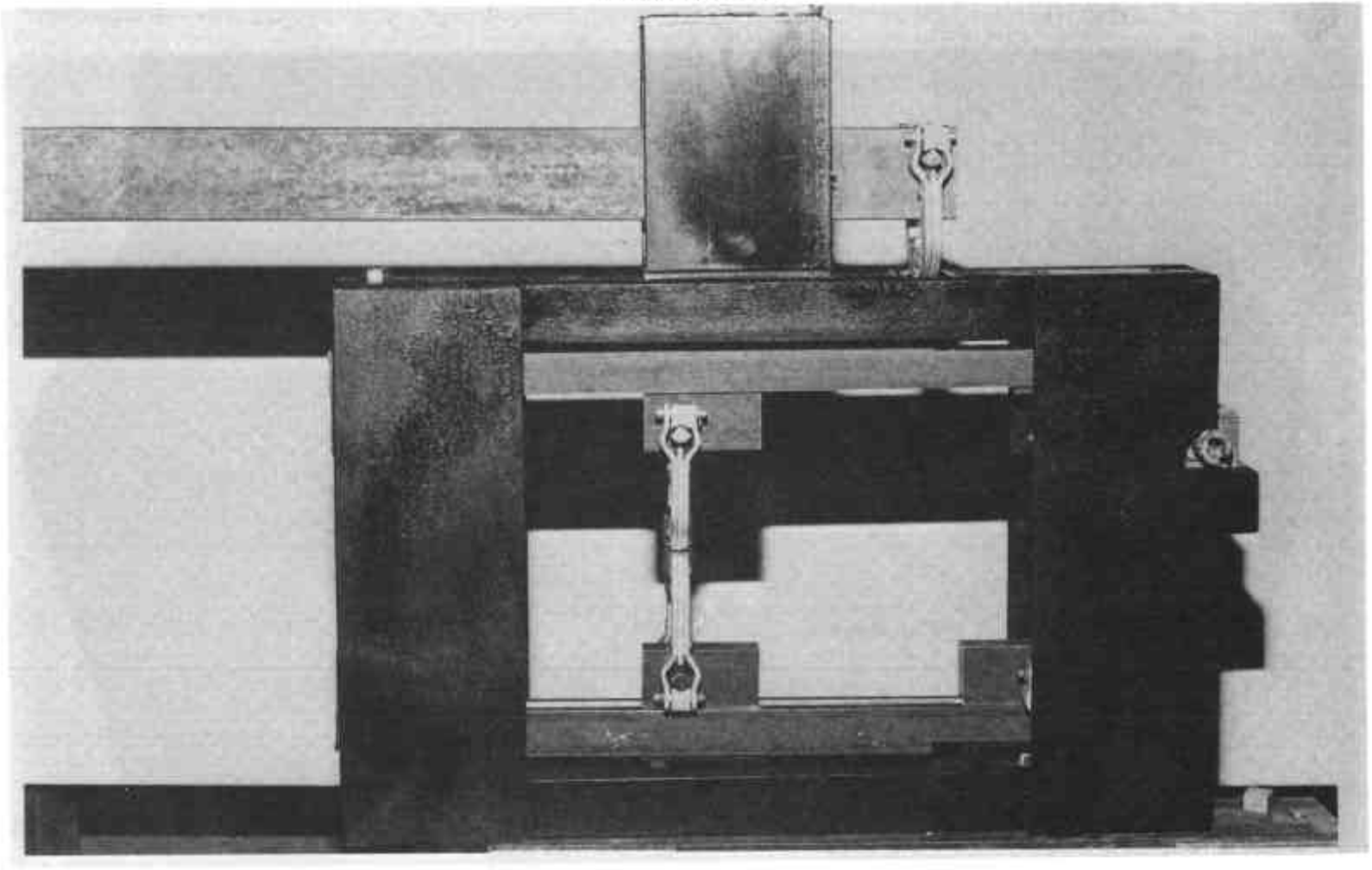
Schematic Of Prefabricated Lever System Without Steelyard - Variant 15

FIGURE S123 - 20



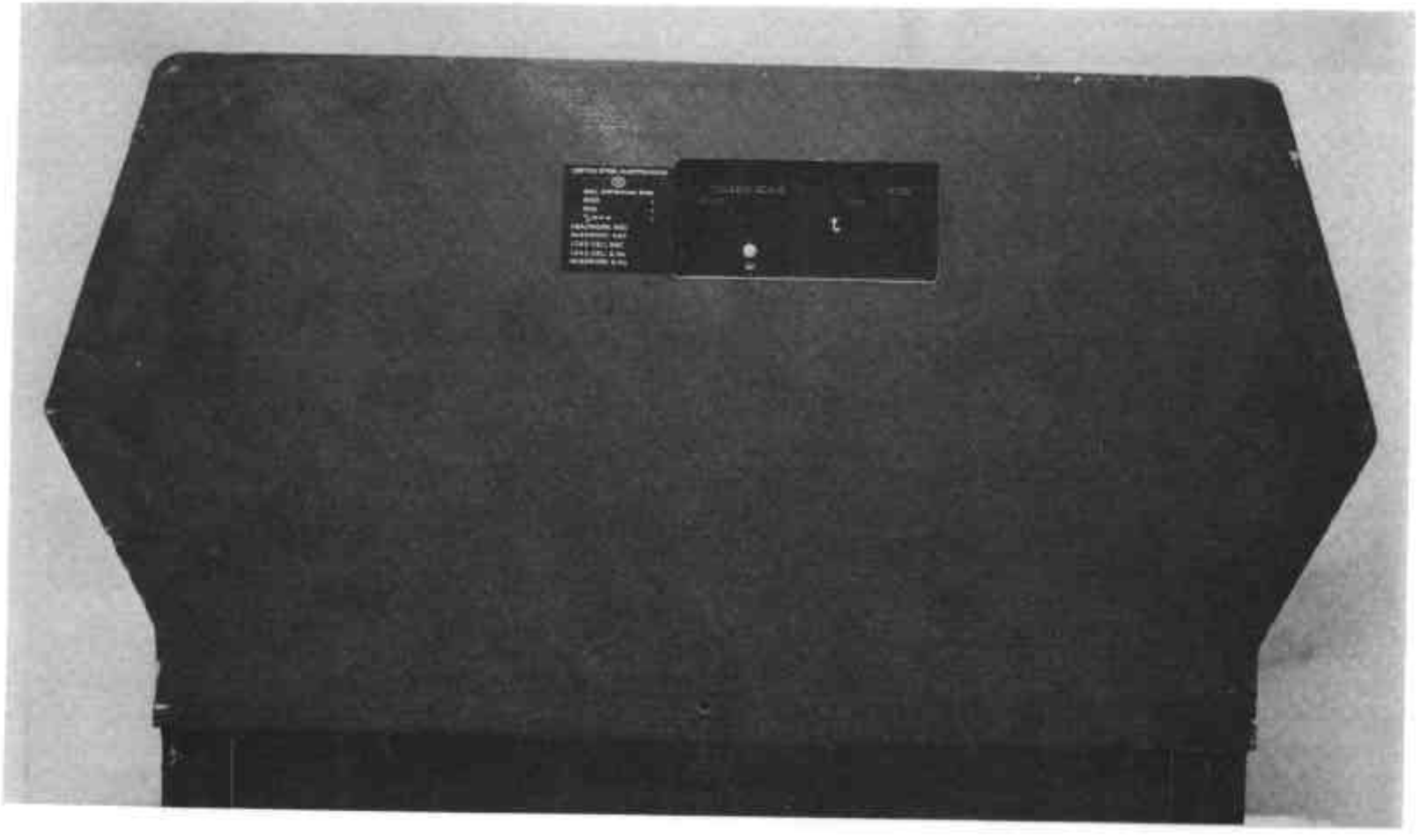
Schematic Of Prefabricated Steelyard System Without Steelyard And With Counterweight Lever Reversed - Variant

FIGURE S123 - 21



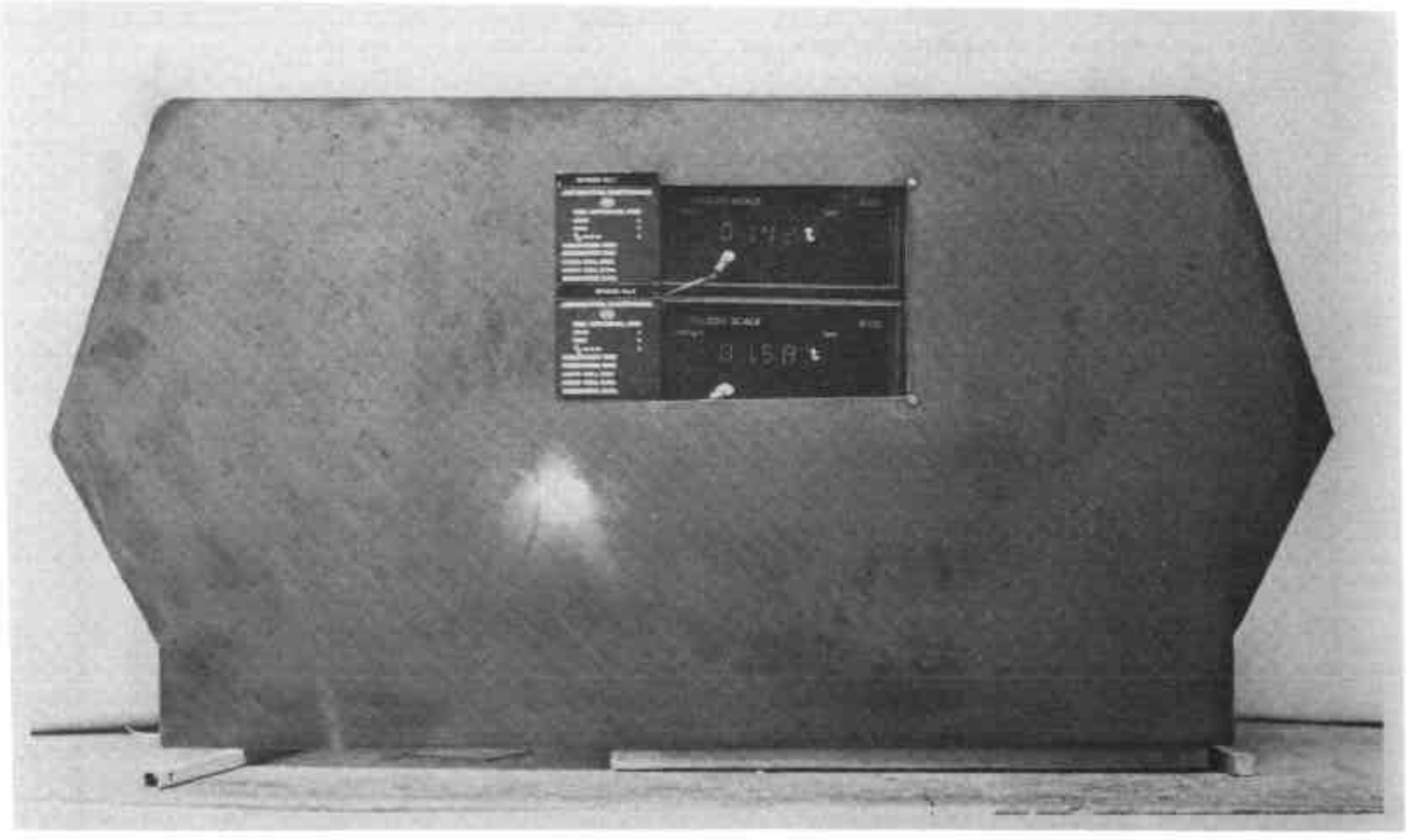
Prefabricated Lever System Without Steelyard And With
Counterweight Lever Reversed - Variant 16

FIGURE 5123 - 22



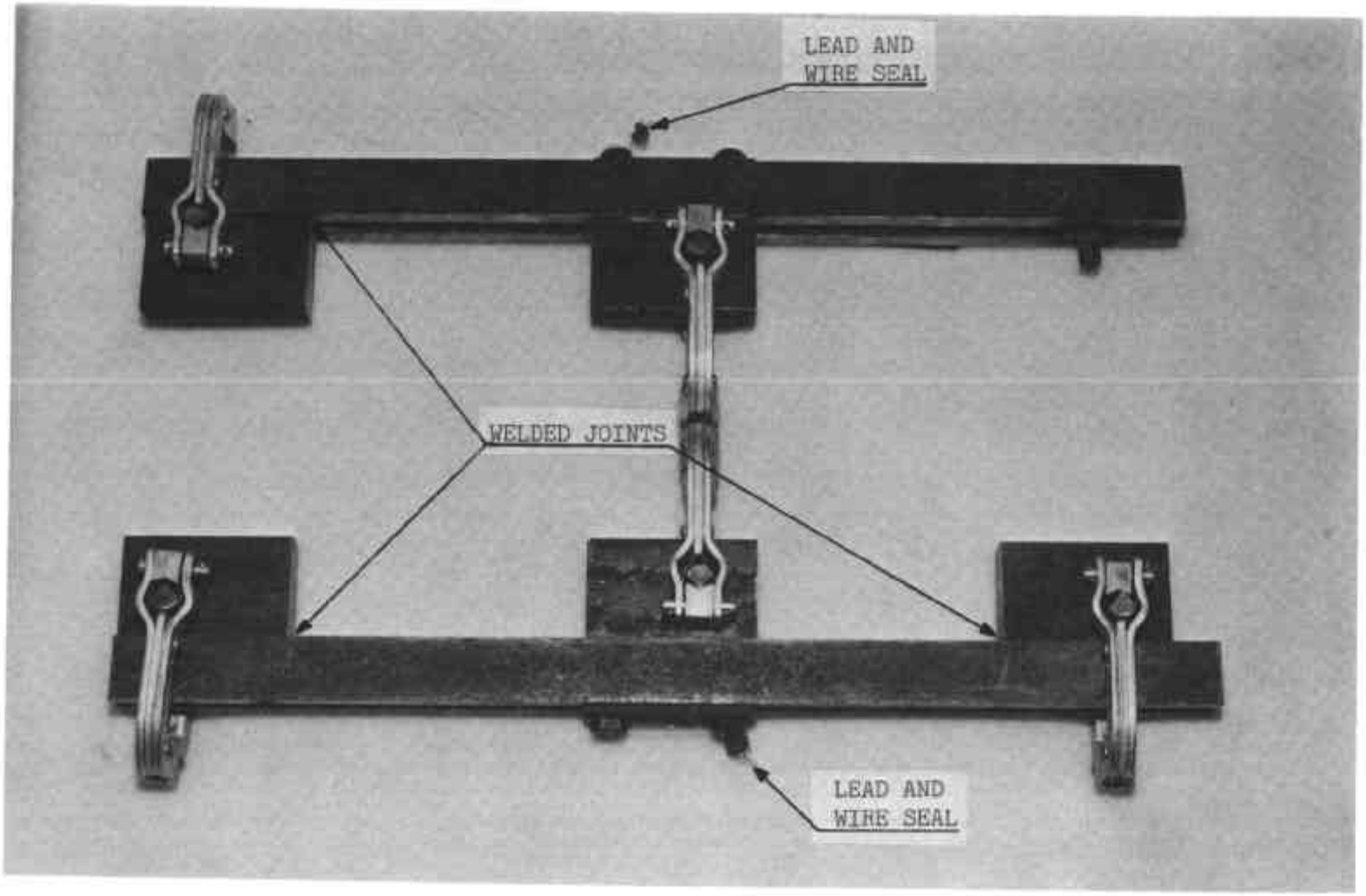
Variant 17, With One Indicator When Syst[illegible]s
Connected To One Basework

FIGURE S123 - 23



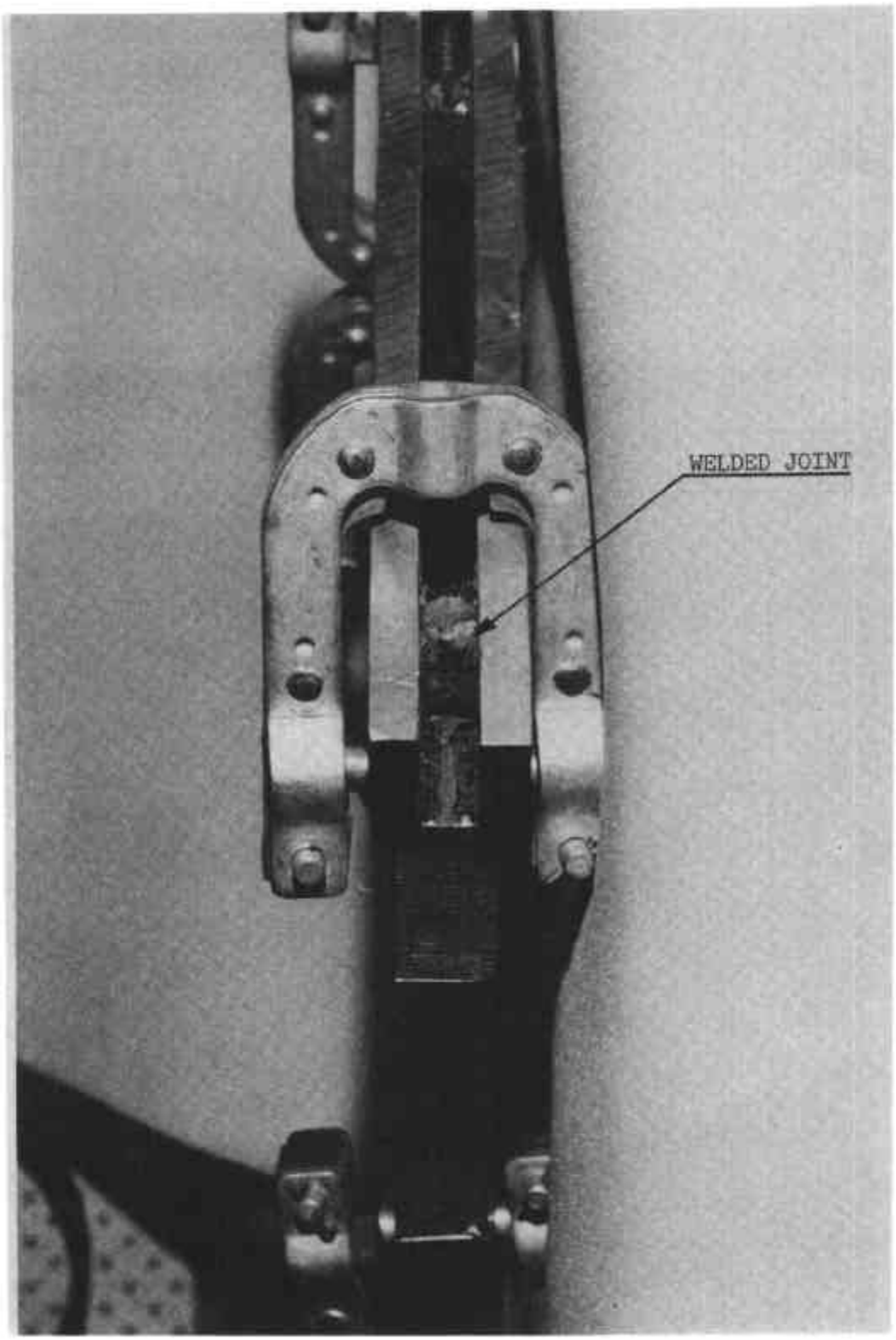
Variant 17, With Two Indicators When System Is Connected To Two Baseworks

FIGURE S123 - 24



Show.) Sealing Of Prefabricated Lever System - Variants 13 to 16

FIGURE S123 - 25



Close-up Of Sealing - Variants 13 To 16

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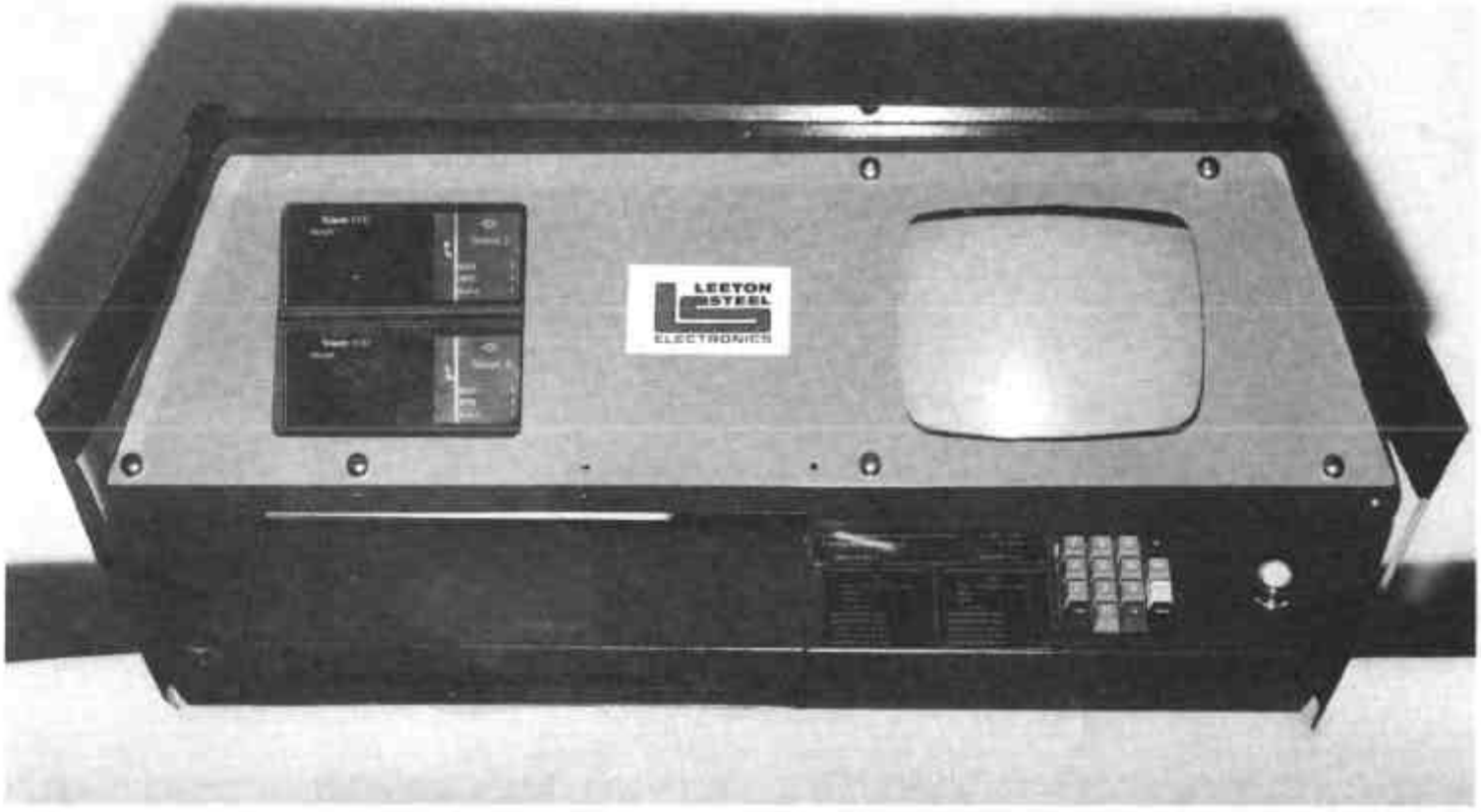
FIGURE S123 - 26



Modified Front Panel - Variants 18 And 19