CERTIFICATE OF APPROVAL No 6/14B/3

VARIATION No 1

This is to certify that the following modification of the pattern and variants of the

Toledo Totalizing Hopper Weighing Instrument

approved in Certificate No 6/14B/3 dated 2 June 1970

submitted by Toledo-Berkel Pty Ltd, 525 Graham Street, Port Melbourne, Victoria, 3207,

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

The approved modification is:

converting all weighing instrument models to indicate in metric units in accordance with Appendix 8 of the General Specifications for Measuring Instruments to be Used for Trade.

Approval was granted on 28 May 1974.

This variation is described in Technical Schedule No 6/14B/3, Variation No 1, and in drawings and specifications lodged with the Commission.

The expiry date of the approval of the pattern and some variants advised in Certificate No 6/14B/3 dated 2 June 1970 is cancelled, and the approval period is extended.

The service period for instruments with more than 600 graduations on the dial is three months.

The approval is subject to review on or after 1 June 1979.

All instruments conforming to this approval shall be marked with the approval number "NSC No 6/14B/3".

Signed

Executive Officer

28/5/74 Issued

CANCELLED 0/3 31-12-90

COMMONWEALTH OF AUSTRALIA

NATIONAL STANDARDS COMMISSION

Weights and Measures (National Standards) Act 1960-1964

Weights and Measures (Patterns of Instruments) Regulations

Certificate of Approval

CERTIFICATE NUMBER 6/14B/3

In respect of the pattern of

Toledo Totalizing Hopper Weighing Machine and Variants 1 to 12.

Submitted and manufactured by: Toledo-Berkel Pty. Ltd.,
525 Graham Street,
Port Melbourne,
Victoria. 3207.

This is to certify that the pattern and variants of the instrument illustrated and described in this Certificate have been examined by the National Standards Commission under the provisions of the abovementioned Regulations and have been approved as being suitable for use for trade.

Approval was granted for:

1. The pattern and variants 1, 2, 3 and 4 on 1st June, 1970, for a limited duration expiring on 25th July, 1970.

2. Variants 5 to 12 on 1st June, 1970.

Approval was granted on condition that:

1. All instruments made in conformity with the pattern or its variants:

   (a) are appropriately marked NSC No 6/14B/3; and

Cont'd over

(b) except for variant 1, comply with the General Specifications for Weighing and Measuring Instruments to be Used for Trade.

2. Variant 1 is limited to the instrument (Serial No 907216) located at South Australian Co-operative Bulk Handling Ltd., Port Lincoln, South Australia.

This Certificate comprises:

Pages 1 to 9 dated 2nd June, 1970.
Figures 6/14B/3 - 1 to 12 dated 2nd June, 1970.

Date of issue 2nd June, 1970.

Signed

Ian Hoerlein

A person authorised by the Commission to sign Certificates under the abovementioned Regulations.

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DESCRIPTION OF PATTERN

The pattern (see Figure 1) is of a self-indicating hopper scale of 12 tons capacity with a remote automatic control system and a totalizing ticket printer (see Figure 2). The instrument automatically fills, weighs, prints and empties for any number of cycles up to 9999.

Hopper Lever System

The hopper lever system is shown in Figure 3. Each of the two second-order main levers comprises a steel tube with an I-section long arm welded to one end and two short arms of box section to which the fulcrum and load knife-edges are fitted.

The hopper is suspended from the four load knife-edges of the main levers by rods fitted with self-aligning bearings. The main lever fulcrum knife-edges are supported in bearings positively located in floor-mounted fulcrum stands (see Figure 4). The nose-end knife-edges of the main levers are coupled together by a vertical link while an extension of one lever is coupled to the transfer lever by another vertical link (see Figure 5). The first-order transfer lever is supported on a floor-mounted pedestal and is coupled to the headwork pullrod. All bearings in the vertical links are self-aligning.

Headwork

The hopper transfer lever is coupled to the main headwork lever and resistant mechanism through an intermediate lever projecting through the side of the cabinet.

The pendulum-resistant mechanism described in Certificate No 6/9C/2 is mounted in a dial housing with a 28 inch diameter, 12 ton × 0.01 ton dial (see Figure 6). The headwork is also fitted with a Model 440 Remote Data Transmitter described in Certificate No 6/9C/2. The weight indication is transmitted to a remote Addo-X totalizing ticket printer described in Certificate No 6/9C/2 which prints in 0.01 ton increments (see Figure 2). The keyboard is not used and is covered by a metal box fixed from beneath the machine casing. The weight is printed on a continuous

tape premarked with the legends "weight in tons" and "T = Total, S = Subtotal" along the left-hand edge. The gross weight of each hopper load is printed in black, the tare weight in red with a negative sign, and the subtotal and total are printed in black with an S and T sign following them (see Figure 7).

The headwork is fitted with two photo-electric switches operated by a paddle fitted to the indicator spindle. The gross photo-electric cell is set at approximately 10 tons and controls the filling of the hopper while the zero photo-electric cell is set at zero and controls the emptying of the hopper (see Figure 8).

A photo-electric switch, operated by the main headwork lever, is set at an overload condition of 11 tons in the hopper.

Control Cabinet

The control system allows either automatic or manual operation of the hopper scale. The control panel (see Figure 9) which, together with the printer, is located remote from the headwork, has the following control switches:

(a) Power "on-off" switch.
(b) Cycle "manual-automatic" switch.
(c) "Start cycle" button.
(d) "Stop cycle" button.
(e) "Total" switch.
(f) "Cut-off by-pass" button.
(g) "Silence alarm" button.
(h) "Preset drafts" counter with 4 digits.
(i) "Recycle decoder" button.
(j) "Clear overload" button.

The following indicating lights are mounted on the control panel:

(a) "Cycle on".
(b) "Weighing".

(c) "Discharging".
(d) "RDT error".
(e) "Data error".
(f) "Overload".
(g) "Upper garner full".
(h) "Lower garner full".

The control cabinet contains a panel on which is mounted relays, stepping switches, timing switch, test switch and buttons (see Figure 10).

These control the filling, weighing, printing, emptying and totalizing of the hopper scale and provide interlocks to prevent incorrect weight recording in the event of any malfunction occurring in the system.

The timing switch adjustment knob is covered by a metal bracket with two studs which pass through the panel with the retaining nuts being sealed.

Auxiliary Control Station

This is located beside the headwork and allows the hopper scale to be used manually. It contains the following push-buttons and indicator lights:

(a) "Start cycle" push-button.
(b) "Stop cycle" push-button.
(c) "Cycle complete" light.
(d) "Trim weigh" push-button.
(e) "Manual discharge" push-button.

AUTOMATIC OPERATING PROCEDURE

An automatic cycle is initiated by positioning the cycle selector switch to "auto", setting the number of drafts required on the counter, turning the power switch to "on" and pressing the "start cycle" button. The sequence of the operation is as follows:

1. The "cycle on" light will be illuminated and the adding machine

will print 0. 00T on the tape, indicating that all previous information has been cleared.

2. The upper garner gates will open and material will flow into the hopper, during which time the "weighing" light is illuminated.

3. When the gross photo-electric cell is actuated, the upper garner gates will close, stopping the flow of material.

4. The timing switch will start timing and after 4 to 5 seconds, during which time the indicator will have come to rest, the printer is actuated and the gross weight recorded.

5. The hopper discharge gates will open and material will discharge from the hopper, during which time the "discharge" light is illuminated.

6. When the zero photo-electric cell is actuated the hopper discharge gates will close.

7. The timing switch will start timing and after 4 to 5 seconds, during which time the indicator will have come to rest, the printer is actuated and the tare weight recorded.

8. The adding machine printer will total all the gross and tare weights printed since the 0. 00T was recorded and print a subtotal.

9. The counter will subtract one digit and the upper garner gates will open, so repeating the cycle.

10. The cycle will be repeated until the counter reads zero when the system will stop, the "cycle on" light will be extinguished and the "cycle complete" light will be illuminated.

11. The total load weighed can be brought up to a desired amount by using the "trim weigh" button on the auxiliary control station and reading the weight on the dial. This can be transferred to the printed tape by pressing the "start cycle" button, which completes one cycle, prints a subtotal and stops.

12. Actuating the total switch prints a total of all weights recorded and clears the printer of these weights in preparation for the next automatic cycle.

MANUAL OPERATING PROCEDURE

By switching the cycle switch to "manual" the hopper can be filled and emptied by using the "trim weigh" and "manual discharge" control buttons on the auxiliary control station and observing the weight on the dial.

The printer and all interlocks and alarms are inoperable in manual control.

CONTROL SYSTEM INTERLOCKS

The control system is arranged so that each step in the automatic cycle cannot commence unless the previous step is complete or the next step is ready, as follows:

(a) Gross or tare weight cannot be printed until the upper garner or hopper discharge gate respectively is closed.

(b) The upper garner or hopper discharge gates cannot open until the tare or gross weight respectively has been printed.

(c) The hopper cannot be filled or discharged if the gross and overload or zero photo-electric cell respectively has failed.

(d) The hopper cannot discharge if the lower garner is full.

(e) If the printer decoder on the headwork cannot transmit a normal signal (for example, if the indicator stops within the ungraduated part of the dial), the "data error" light on the control panel is illuminated, an alarm rings and the cycle stops.

(f) If the printer is incapable of receiving the signal from the headwork (for example, if the cable is disconnected), the "RDT error" light on the control panel is illuminated, an alarm rings and the cycle stops.

(g) If the cycle switch or test switch is moved to "manual" or "test" during an automatic cycle, the cycle continues until the next subtotal is printed and then stops.

(h) If a power failure occurs during an automatic cycle, the cycle stops and will continue normally when power is restored.

(i) If the supply of material ceases before a full hopper is obtained, the "cut-off by-pass" button on the control panel can be pressed, which by-passes the gross weight photo-electric cell. The cycle can then be completed and a total weight obtained on the printer.

DESCRIPTION OF VARIANTS

1. Having an Addo-X ticket printer with printed figures 2.8 mm high.

2. In other capacities less than the capacity of the pattern provided there are no more than 1200 graduations on the dial.

3. Having the bearings supporting the main lever fulcrum knife-edges mounted in brackets suspended by rods from an overhead support (see Figure 11).

4. Having the hopper replaced by a tank, in which case the levers are supported on fulcrum stands as described in the pattern and the tank is supported on the levers by four free-moving suspension units; each unit consists of a yoke which bears on a cross-bar pivoted in a link suspended from the load knife-edge bearing (see Figure 12).

5. Having the pattern or variants 2, 3 and 4 without the automatic control system, the photo-electric control switches, the remote data transmitter and the printer.

6. Having the self-indicating headwork of variant 5 fitted with manual or automatic unit weights up to a maximum of 9, as described in Certificate No 6/9C/2.

7. Having the self-indicating headwork of variant 5 fitted with the Toledo 400 Series Printweigh ticket-printing devices described in Certificate No 6/9C/2.

8. Having the self-indicating headwork with other forms of indication described in Certificate No 6/9C/2.

9. Having the self-indicating headwork located in any reasonable position in relation to the basework, in which case one or more transfer levers may be used.

10. Having the dial suspended from an overhead support instead of on a floor-mounted cabinet as described in Certificate No 6/18/2.

11. Having the self-indicating headwork of variant 5 fitted with tare bars.

12. Having the self-indicating headwork of variant 5 replaced by the non-self-indicating headwork described in Certificate No 6/10A/3.

GENERAL NOTES

Notice of approval of the manual and automatic unit weights, printing devices and other forms of indication approved in Certificate No 6/9C/2, referred to in variants 6, 7 and 8, was given in Memorandum of Approval No 48 dated 8th December, 1966, and Memorandum of Approval No 110 dated 3rd April, 1968.

Notice of approval of the overhead-suspended headwork approved in Certificate No 6/18/2, referred to in variant 10, was given in Memorandum of Approval No 124 dated 7th June, 1968.

Notice of approval of the non-self-indicating headwork approved in Certificate No 6/10A/3, referred to in variant 12, was given in Memorandum of Approval No 129 dated 1st August, 1968.

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/14B/3

VARIATION No 1

Pattern: Toledo Totalizing Hopper Weighing Instrument

Submittor: Toledo-Berkel Pty Ltd,
525 Graham Street,
Port Melbourne, Victoria, 3207.

Date of Approval of Variant: 28 May 1974

The modification described in this schedule applies to the pattern and variants described in the following pages and figures of Certificate No 6/14B/3 dated 2 June 1970:

Pages 3 to 9 dated 2 June 1970
Figures 6/14B/3 - 1 to 12 dated 2 June 1970

The expiry date of the approval of the pattern and some variants, advised in Certificate No 6/14B/3 dated 2 June 1970, is cancelled and the approval is extended.

The service period for instruments with more than 600 graduations on the dial is three months.

All instruments conforming to this approval shall be marked "NSC No 6/14B/3".

Description:

This variation approves the conversion of all models to indicate in metric units in accordance with Appendix 8 of the General Specifications for Measuring Instruments to be Used for Trade.

FIGURE 6/14B/3 - 1

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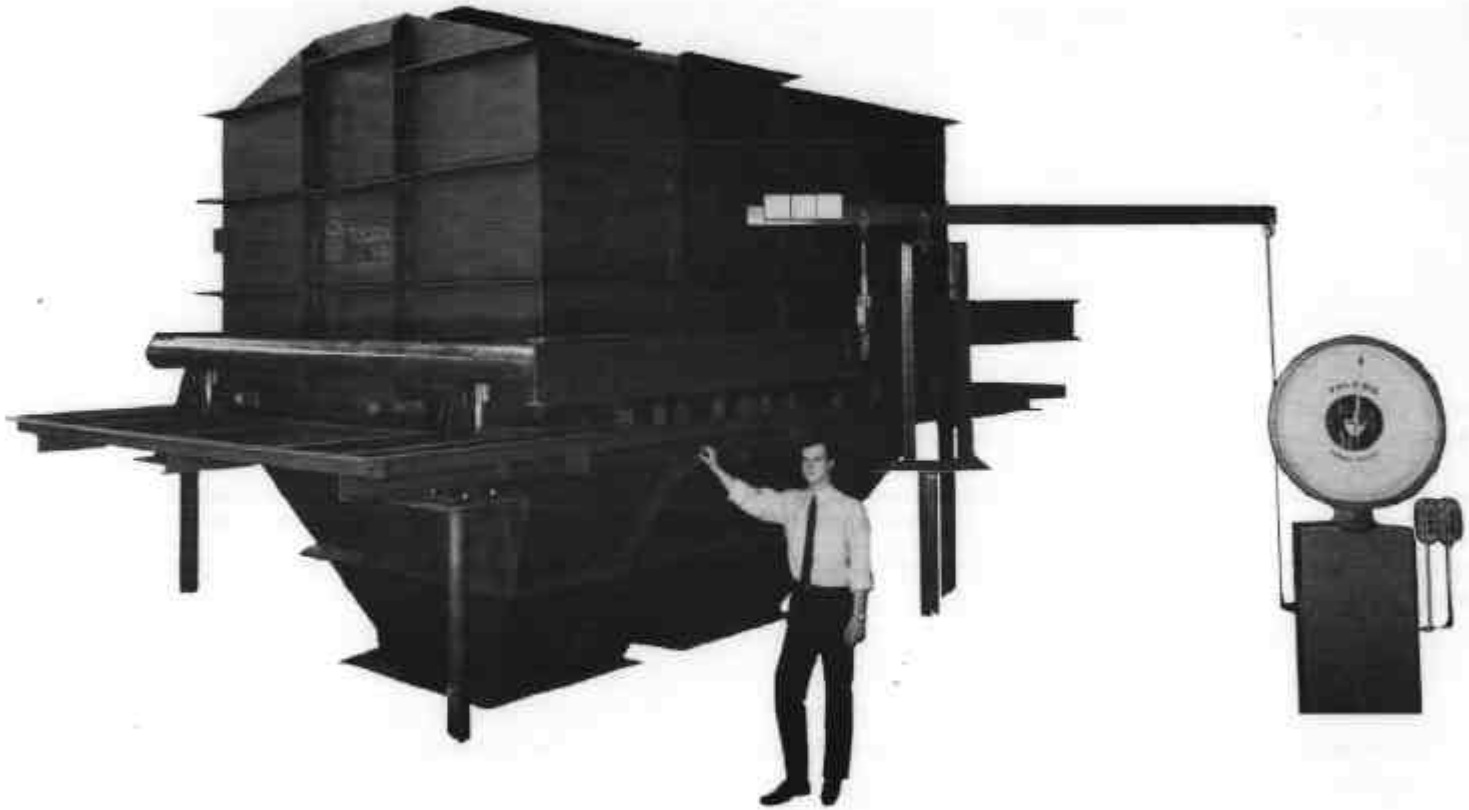

Hopper, Lever System and Headwork

FIGURE 6/14B/3 - 2

Control Cabinet and Printer

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FIGURE 6/14B/3 - 3

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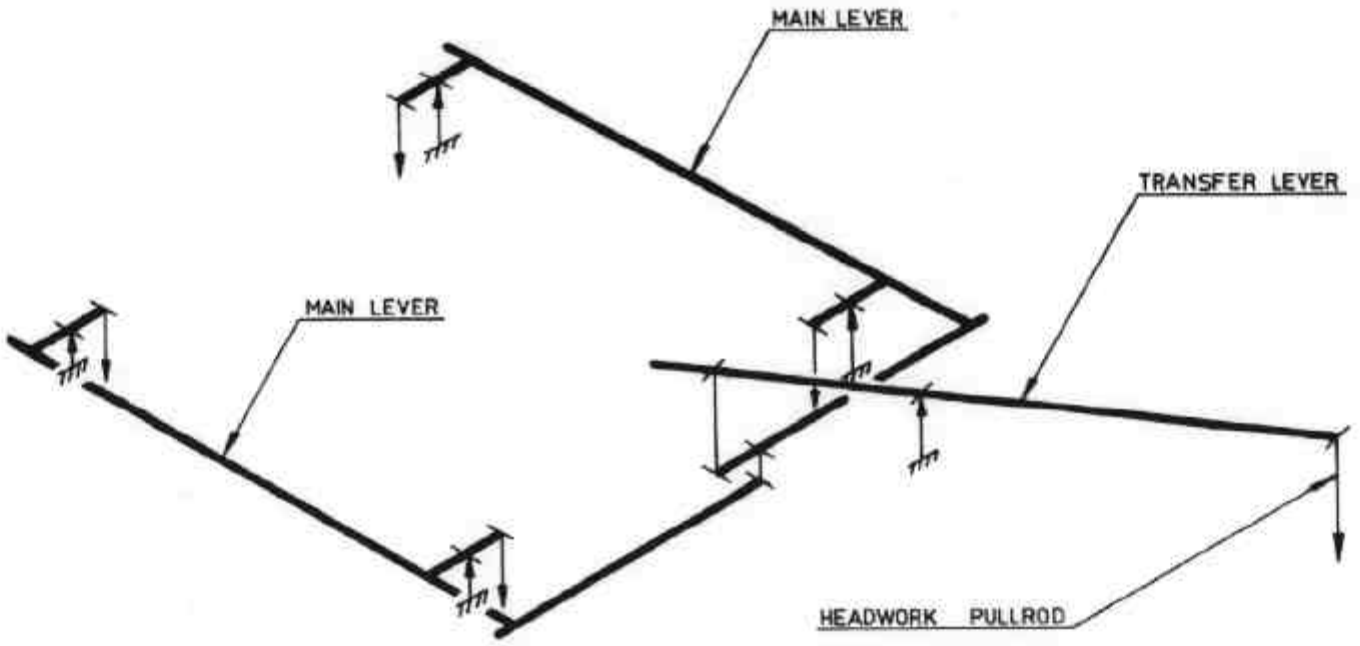
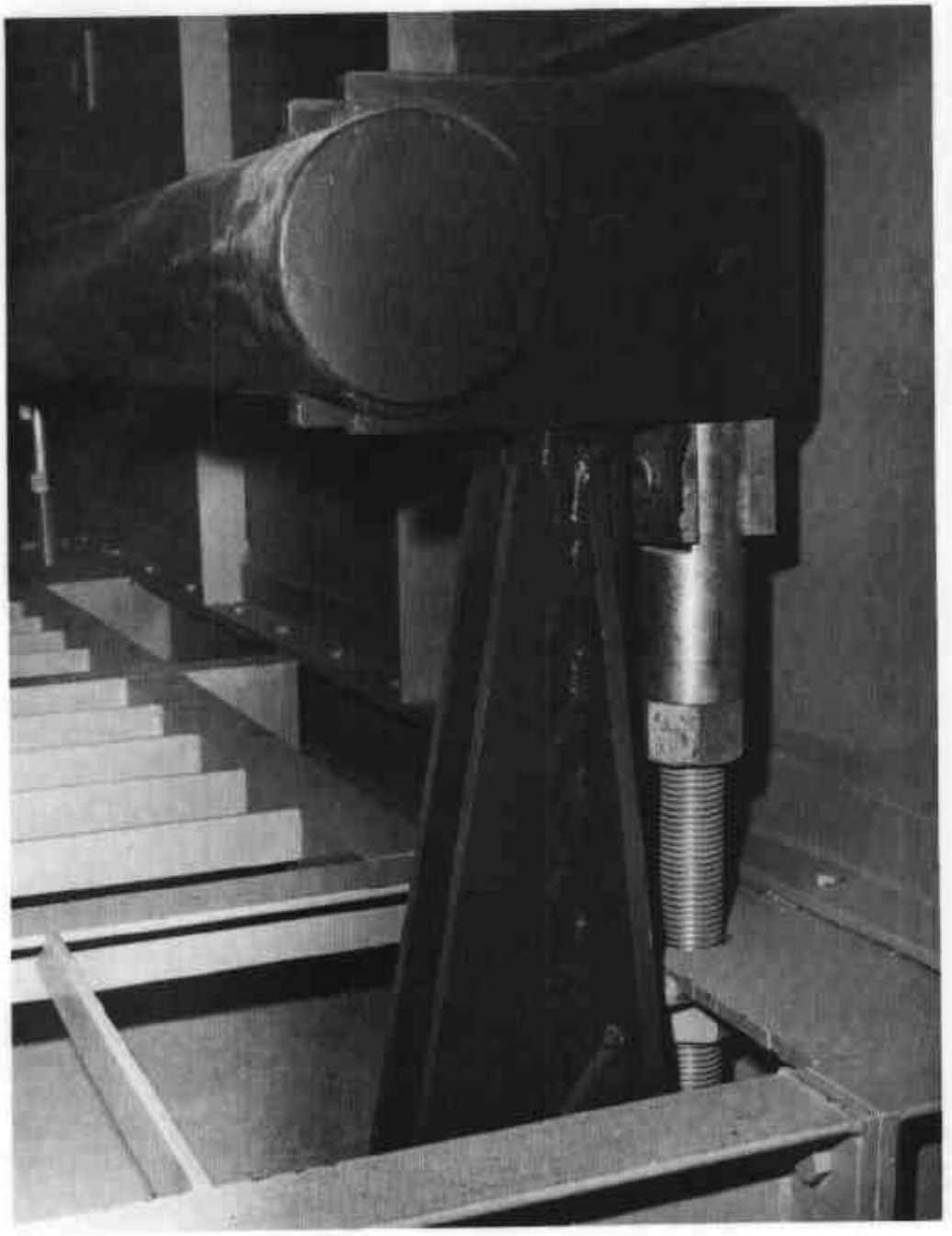


Hopper Lever System with Fulcrum Stands

FIGURE 6/14B/3 - 4



Hopper Support Rods, Fulcrum Stands and Main Lever

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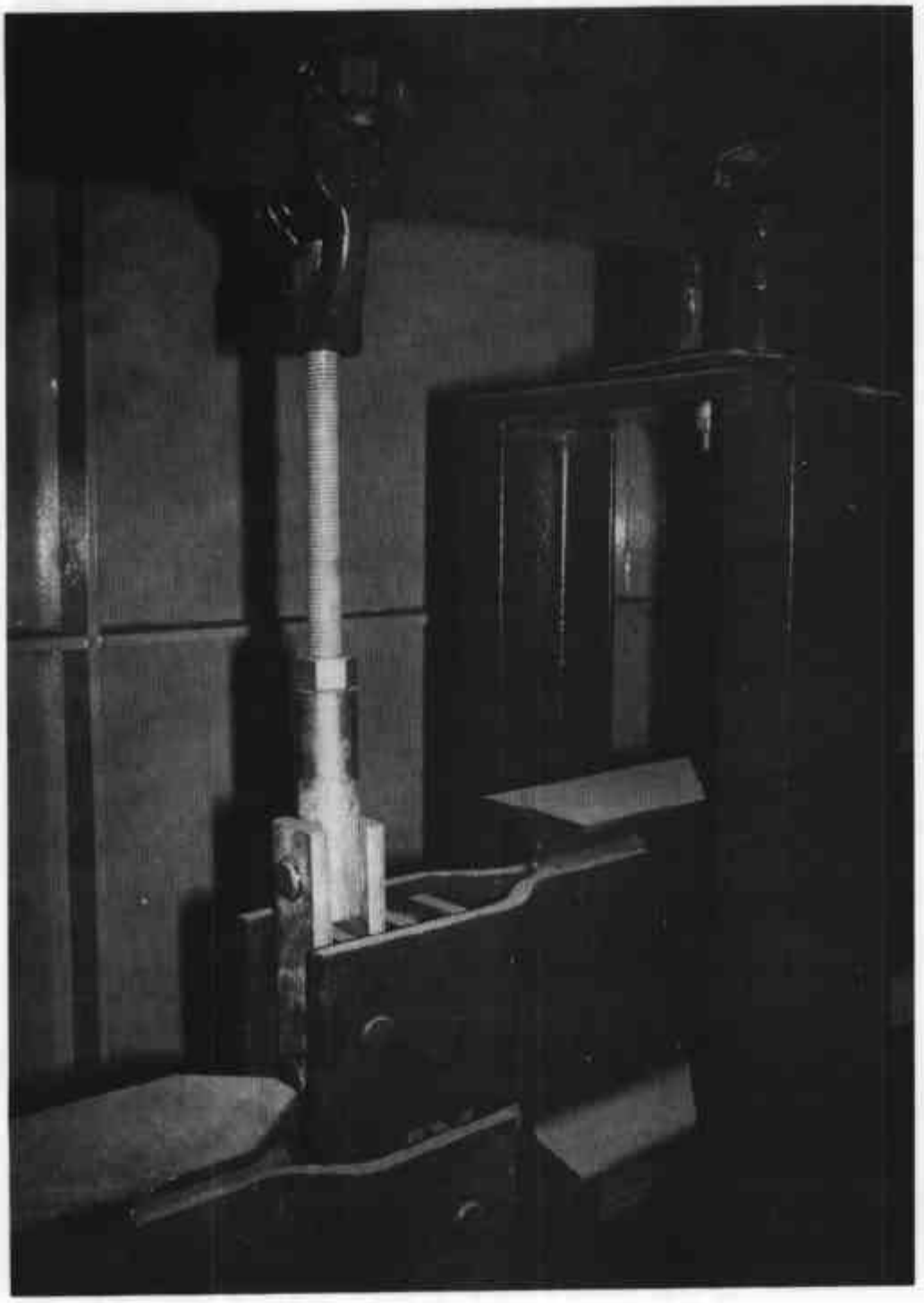
FIGURE 6/14B/3 - 5



Main Lever Nose-end Connection and
Transfer Lever Connection

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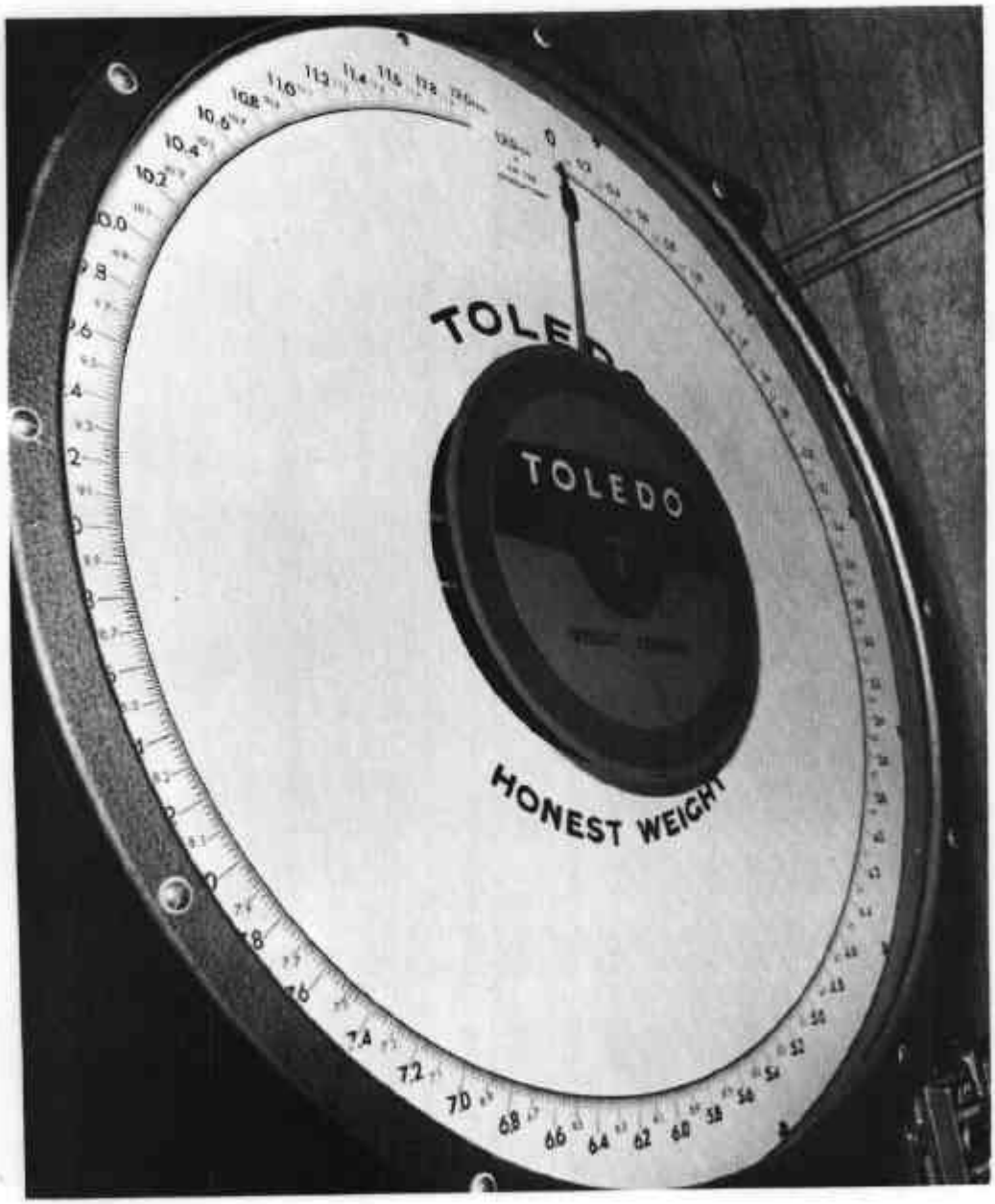
FIGURE 6/14B/3 - 6



Dial and Indicator

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FIGURE 6/14B/3 - 7

T = Total, S = Subtotal,
WEIGHT IN TONS

T = Total, S = Subtotal,
WEIGHT IN TONS

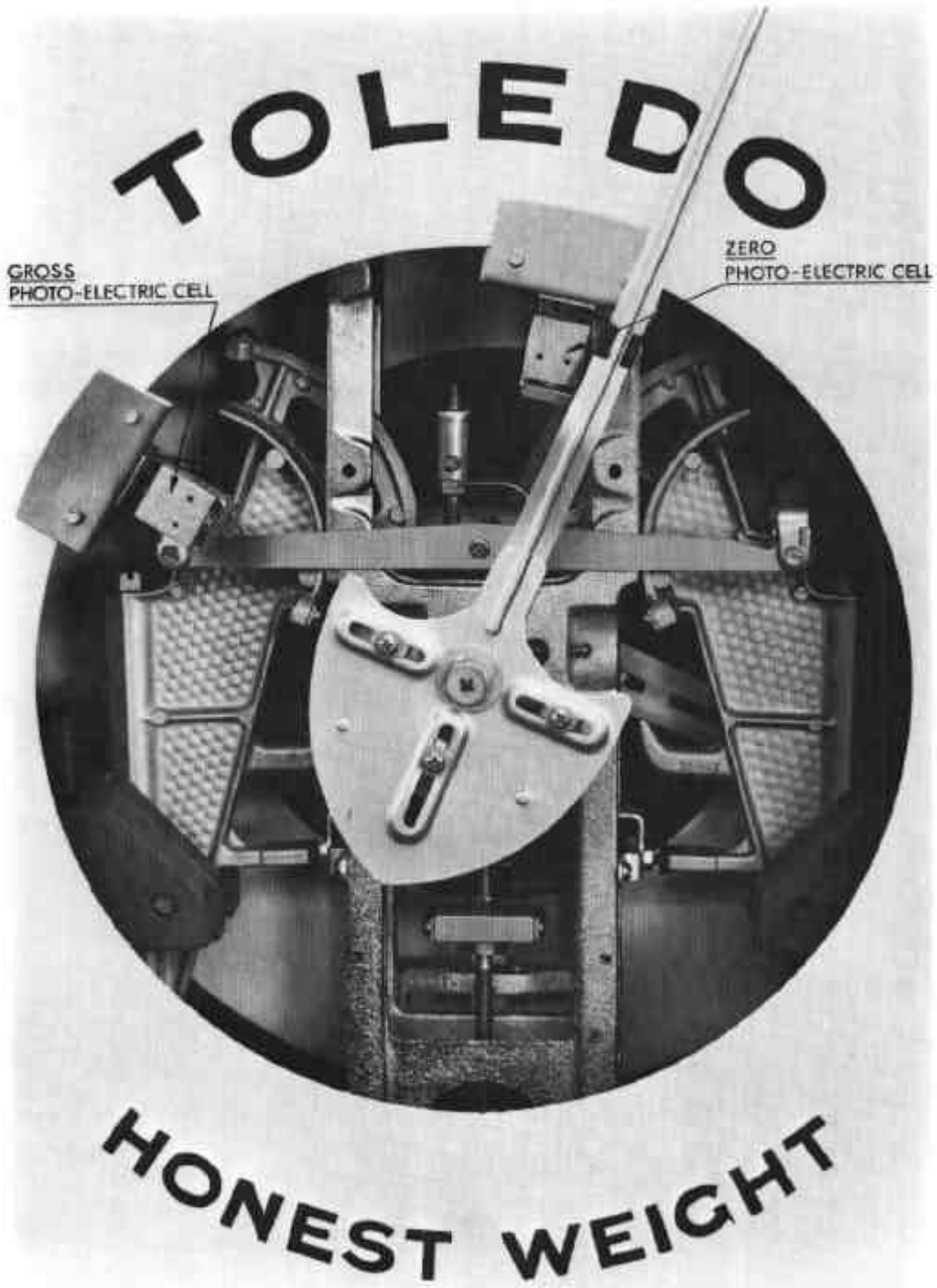
T = Total, S = Subtotal,
WEIGHT IN TONS

```
      0. 0 0 T

1     0. 3 5
      0. 0 1 -
1     0. 3 4 S
      9. 8 3
      0. 0 1 -
2     0. 1 6 S
      9. 8 3
      0. 0 1 -
2     9. 9 8 S
      9. 8 3
      0. 0 1 -
3     9. 8 0 S
      9. 8 3
      0. 0 1 -
4     9. 6 2 S
      9. 8 4
      0. 0 1 -
5     9. 4 5 S
      9. 8 3
      0. 0 1 -
6     9. 2 7 S
      9. 8 3
      0. 0 1 -
7     9. 0 9 S
      9. 8 3
      0. 0 1 -
8     8. 9 1 S
      9. 8 4
      0. 0 1 -
9     8. 7 4 S
9     8. 7 4 T
```

Ticket Showing 10 Cycles and Total

FIGURE 6/14B/3 - 8



Indicator, Paddle and Photo-electric Switches

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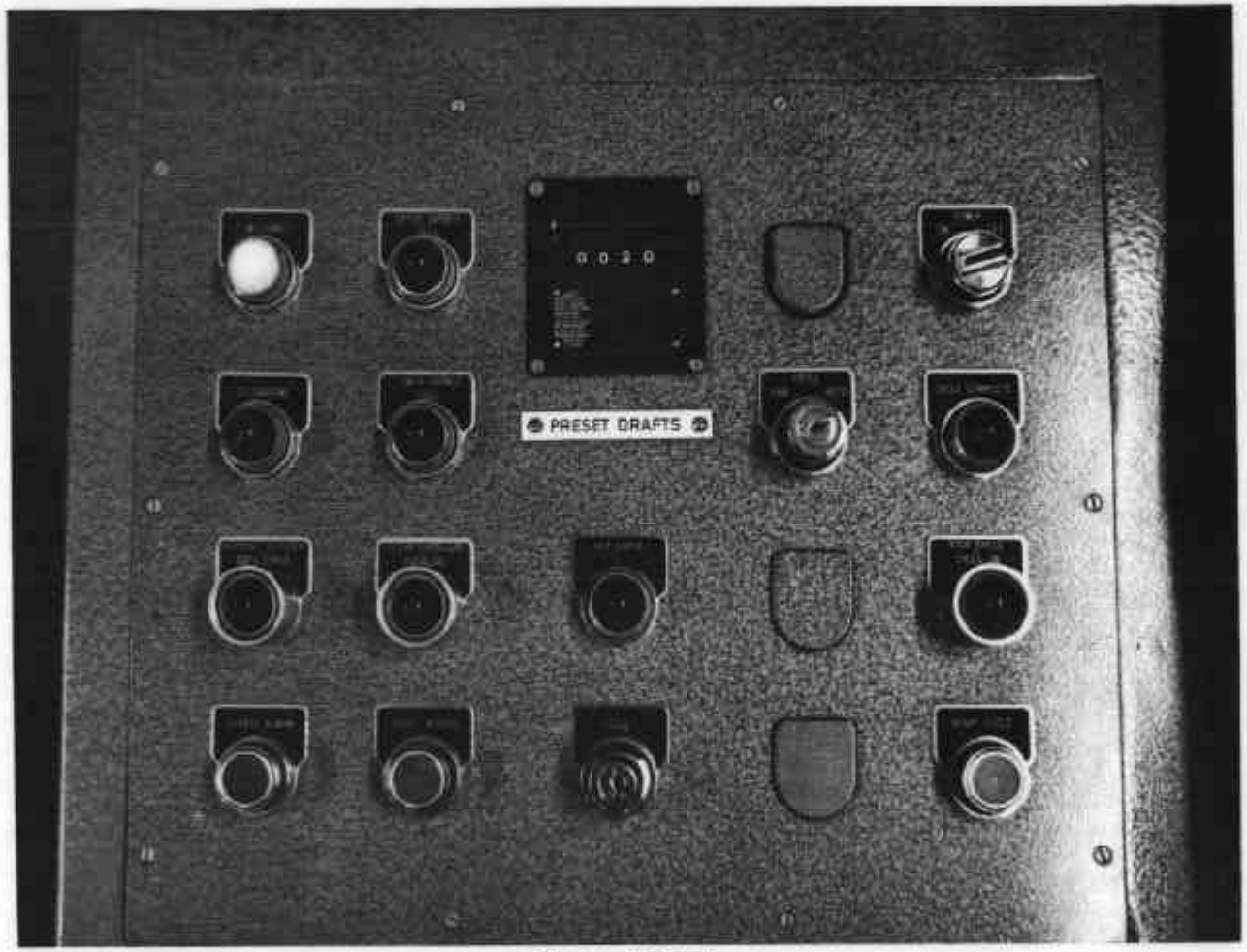
FIGURE 6/14B/3 - 9



Control Panel

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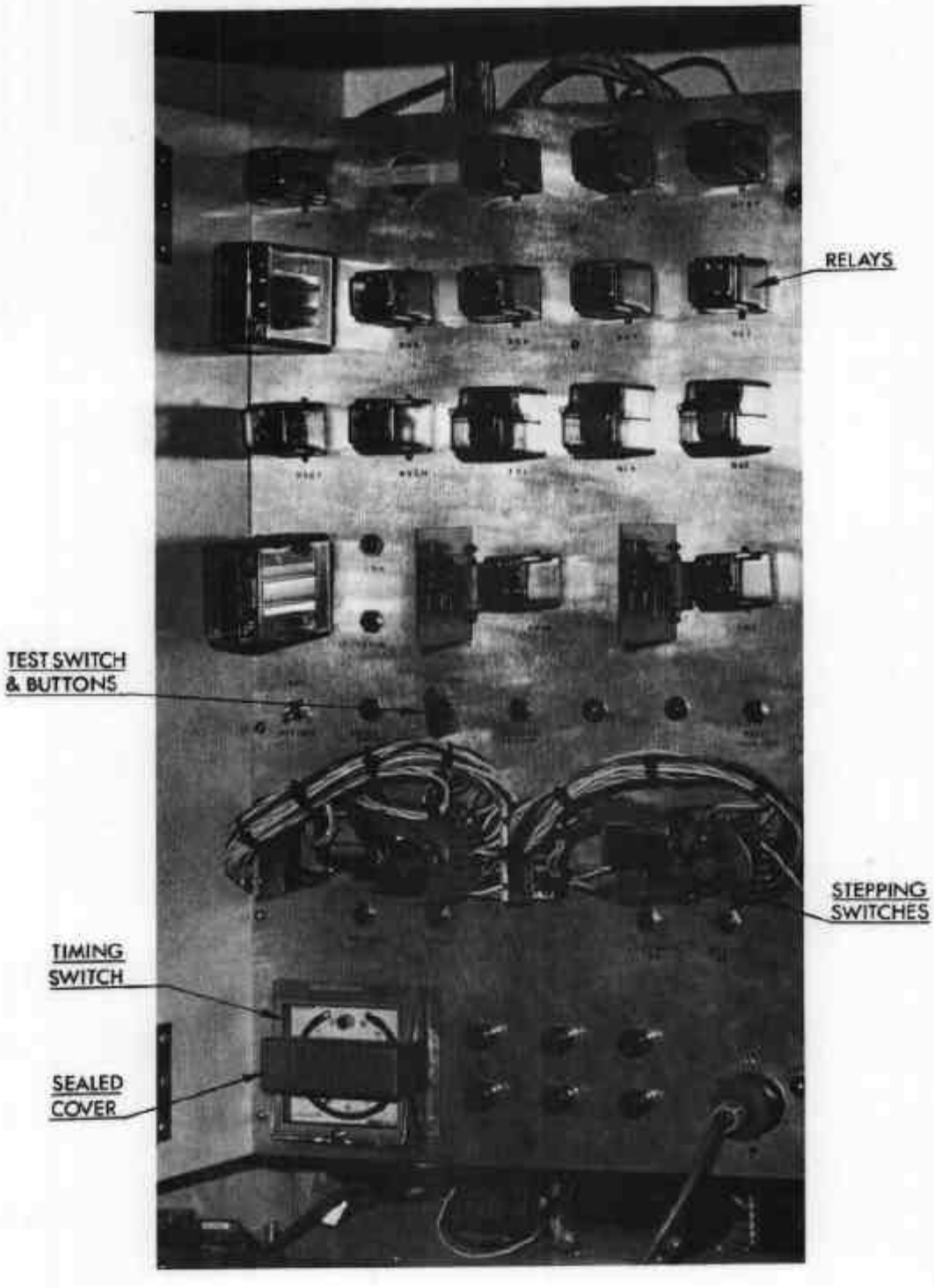
FIGURE 6/14B/3 - 10



Control Cabinet

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FIGURE 6/14B/3 - 11

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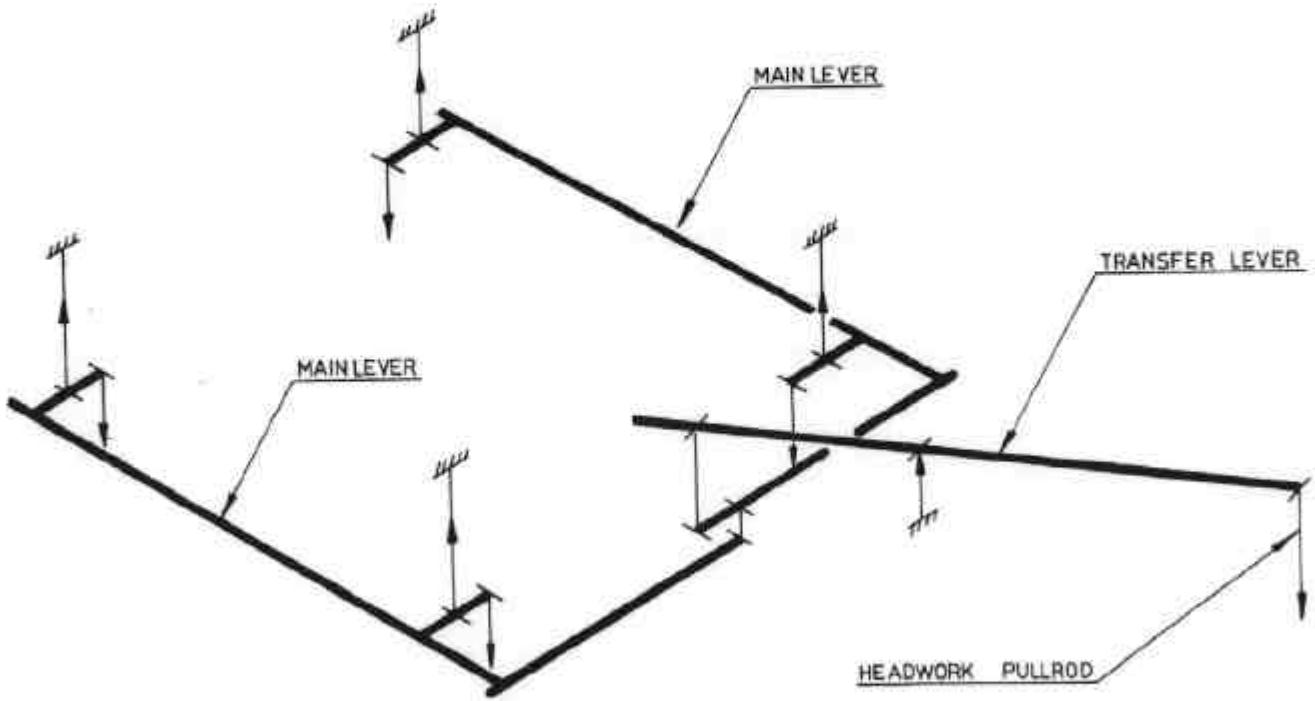
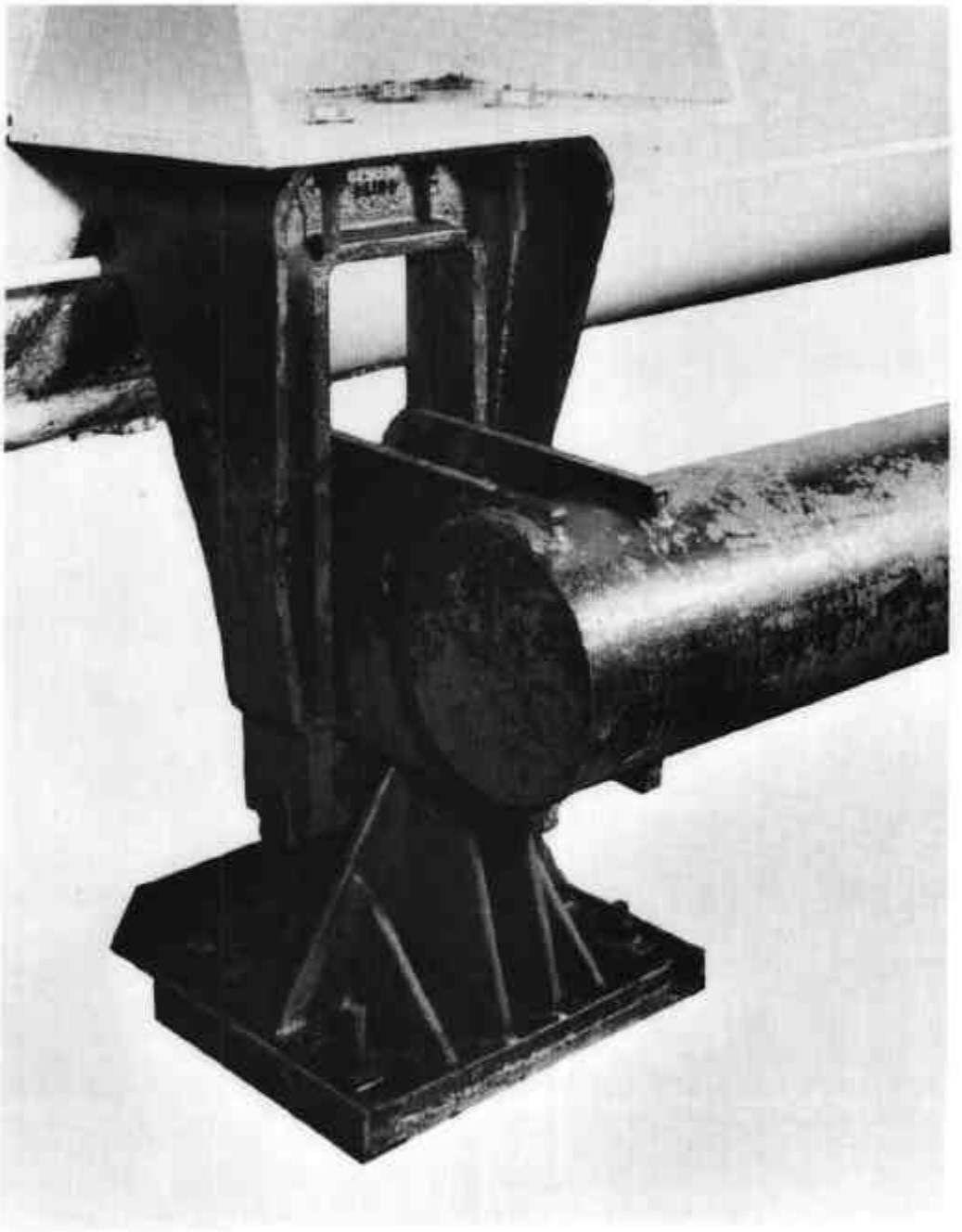


Hopper Lever System with Suspended Fulcrum Supports

FIGURE 6/14B/3 - 12



Tank Suspension Unit

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