

CERTIFICATE OF APPROVAL No 6/14B/9  
VARIATION No 1

CANCELLED

This is to certify that the following modifications of the patterns of the  
Toledo Weighing Instrument Model 2352-8130

0/3

approved in Certificate No 6/14B/9 dated 24 February 1976

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

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

Date of Approval: 11 August 1977

The approved modifications, described in Technical Schedule No 6/14B/9 -  
Variation No 1 and in drawings and specifications lodged with the  
Commission, provide for:

1. the basework to be replaced by other Commission-approved baseworks;
2. the 8130 weight indicator displaying up to 3000 increments;
3. a Toledo 8134 weight indicator.

The approval is subject to review on or after 1 December 1977.

All instruments conforming to this approval shall be marked with the  
approval number "NSC No 6/14B/9".

Signed



Executive Officer

24/9/77



CANCELLED

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31-12-90

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/14B/9

Pattern: Toledo 2352-8130 Weighing Instrument

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

Date of Approval: 18 November 1975

Condition of Approval:

All instruments conforming to this approval shall be marked "NSC No 6/14B/9".

Description:

The pattern is a self-indicating (hopper/tank) weighing instrument (see Figure 1) of maximum capacity 12 tonnes. It comprises a weighing unit with a load cell resistant mechanism and an electronic weight indicator displaying up to 2500 increments (see Figure 2).

The load receptor is in the form of a hopper or tank. The lever system (see Figures 1 and 3) comprises two main levers constructed from a steel tube with a long arm at one end and two shorter arms which carry the fulcrum and load knife-edges (see Figure 4). The load receptor is suspended from the load knife-edges by rods fitted with self-aligning bearings. The fulcrum knife-edges are supported by bearings in brackets suspended by rods from an overhead support.

A single vertical link and pullrod connects the long arms of the main levers to a Toledo 90-kg cantilever type load cell resistant mechanism (see Figure 5). The lever ratio is selected so that at maximum capacity the force applied to the load cell is between 360 N and 880 N (37 to 90 kgf).

The load receptor is fitted with test-weight receptors allowing an appropriate test load to be located near each main load bearing.

The weight indicator type 8130 (see Figure 2) converts the output from the load cell into a digital weight indication of up to 2500 increments. Zero is set by a screwdriver adjustment. A zero-check push-button displays zero in 1/5-graduation increments. Lights indicate when the weight displayed is below zero or the load is above capacity; the indicator is blank when the load is above capacity.

An output socket provides digital information to peripheral equipment. The output is inhibited by the motion detector until the signal sampled in successive counting periods is the same, that is, the instrument is in equilibrium, and also when the zero-check push-button is operated. The use of peripheral equipment will not affect the operation of the instrument.

The 8130 weight indicator is retained in its cabinet by a lead-and-wire seal as it is too fragile for a stamping-plug seal. The serial number of the load cell and the cable from the load cell are sealed to the weight indicator (see Figure 6).

The instrument is marked adjacent to the weight-reading face, for example:

III

Max	=	10 t
Min	=	0,25 t
d <sub>d</sub>	=	0,005 t

The approval includes:

1. The resistant mechanism being a Toledo 45-kg cantilever load cell, a Toledo 22-kg cantilever load cell or a Toledo 11-kg cantilever load cell. The lever ratios are selected so that at maximum capacity the force applied to the load cells is:
  - (a) 45-kg load cell -- between 175 N and 440 N (18 to 45 kgf);
  - (b) 22-kg load cell -- between 90 N and 220 N (9 to 22 kgf);
  - (c) 11-kg load cell -- between 45 N and 110 N (4,5 to 11 kgf).
2. A Toledo 132 basework selector unit allowing the output

from the load cell resistant mechanisms of up to six Toledo 2352-8130 weighing instruments, as described in the patterns, to be displayed on the one 8130 weight indicator (see Figure 7). Each load receptor has the same maximum capacity. The calibration circuits of the 8130 weight indicator are placed in the 132 basework selector, together with a calibration circuit for each additional basework. The 132 basework selector is retained in its cabinet by a lead-and-wire seal as it is too fragile for a stamping-plug seal. The serial number of each load cell and the cable from each load cell are sealed to the basework selector (see Figure 8). The 132 basework selector is located adjacent to the weight indicator.

3. A Toledo 133 basework-selector unit allowing the output from the load cell resistant mechanisms of up to four Toledo 2352-8130 weighing instruments, as described in the pattern, to be individually or in combination displayed on the one 8130 weight indicator (see Figure 9).<sup>\*</sup> Each load receptor may have a different maximum capacity. The calibration circuits of the 8130 weight indicator are placed in the 133 basework selector, together with a calibration circuit for each additional basework. Over-capacity monitor circuits fade out the weight indication if the weight on any one of the load receptors is more than the weight equivalent of five graduations above the instrument's maximum capacity with that load receptor selected. The 133 basework-selector unit is retained in its cabinet by a lead-and-wire seal as it is too fragile for a stamping-plug seal. The serial number of each load cell and the cable from each load cell are sealed to the basework selector. The cables to the weight indicator are sealed to the weight indicator and to

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<sup>\*</sup> Weights and Measures inspectors should note that the limiting factors on the use are that no load receptor should have a maximum capacity above 12 tonnes and that, singly or in combination, the maximum number of graduations is 2500.

the basework selector. The 133 basework selector is located adjacent to the weight indicator.

The 133 basework selector is marked, for example, as illustrated in Figure 9.

4. The fulcrum knife-edges supported by fulcrum stands (see Figure 10); the instrument is then known as the Toledo 2372-8130 weighing instrument.
5. The fulcrum knife-edges supported by fulcrum stands and the load receptor supported on free-moving suspension units (see Figure 11); the instrument is then known as the Toledo 2382-8130 weighing instrument.

The headwork or basework of these instruments is not interchangeable with other approved headworks or baseworks.

#### Special Tests:

1. Zero Balance -- When the indicator is adjusted to zero with the zero-check push-button depressed, it should indicate zero when the zero-check push-button is released.
2. Load-cell Creep -- Leaving a maximum-capacity load on the load receptor for a period of 30 minutes should not cause the weight indicated to be incorrect, and on removal of the load the weight indicated should be zero  ~~$\pm 0,25$  g~~  
 $\pm 0,5$  g.
3. Motion-detector Sensitivity -- Removal from the load receptor at any load of a load equal to 1,5 increments should cause the weight indicator to go blank for a perceptible period before indicating the new load.
4. Over-capacity Load -- When any load receptor is loaded with its maximum-capacity load, placing an additional load equal to five graduations on the load receptor should cause the weight indicator to go blank irrespective of which load receptor or combination of load receptors is selected. This test should be repeated with each load receptor loaded to maximum capacity plus five graduations.
5. Test Loads -- The application of the test loads specified in Table 1 and the display of these loads within the applicable tolerance is one method of checking that the instrument operates in accordance with the approved design.

TABLE 1

Test Load in Graduations\*

0	10	25	60	120	250	698,5
1	12	30	70	140	300	798,5
2	14	35	80	160	350	898,5
3	16	40	90	180	400	998,5
4	18	45	100	200	450	1198,5
5	20	50			500	1398,5
6						1598,5
7						1798,5
8						1998,5
9						2498

\* Test Load = Number of graduations x graduation value

Note: The test load should include a test at capacity,  
less the tolerance and less 0,5 graduation.



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/14B/9

### VARIATION No 1

Pattern: Toledo Weighing Instrument Model 2352-8130

Submitter: Toledo-Berkel Pty Ltd,  
525 Granam Street,  
Port Melbourne, Victoria, 3207.

Date of Approval of Variation: 11 August 1977

The modifications described in this Schedule apply to the patterns described in Technical Schedule No 6/14B/9 dated 24 February 1976.

All instruments conforming to this approval shall be marked "NSC No 6/14B/9".

### Description:

The approved modifications provide for -

1. Other Commission-approved baseworks to replace the basework described in the pattern, provided that:
  - (a) the basework is of an instrument conventionally known as a platform weighing machine, weighbridge or nopper scale, etc., where the headwork and basework are separate assemblies connected by a mechanical linkage;
  - (b) the force applied to the load cells is:
    - (i) 11-kg load cell — between 45 and 110 N;
    - (ii) 22-kg load cell — between 90 and 215 N;
    - (iii) 45-kg load cell — between 180 and 440 N; and
    - (iv) 90-kg load cell — between 360 and 880 N;
  - (c) the capacity of the instrument is not more than the capacity approved for the basework;
  - (d) a levelling device and an indicator are fitted, except for instruments installed in a fixed position, or

instruments which satisfy the following accuracy requirements and indication limits when tilted to a slope of 1 in 20:

Accuracy Requirements

- (i)  $\pm 0,5e$  for loads between zero and 500e inclusive;
- (ii)  $\pm 1e$  for loads between 500e exclusive and 2000e inclusive;
- (iii)  $\pm 1,5e$  for loads greater than 2000e;

Indication Limits

- (i) Tilting at no-load — the zero indication does not vary more than  $2e$  when tilted to a slope of 1 in 20, the zero being first adjusted in the reference (level) position; and
  - (ii) Tilting when loaded — the indication does not vary more than  $e$  when tilted to a slope of 1 in 20, the indication at zero being adjusted in the reference position before tilting and in the tilted position before reloading;
- (e) an instrument with one load receptor is marked:

"Approval Numbers

Headwork NSW No 6/14B/9  
Basework NSC No ....."; and

- (f) an instrument with several load receptors is marked, for example:

"Approval Numbers

Headwork NSC No 6/14B/9  
Basework No 1 NSC .....  
Basework No 2 NSC .....  
Basework No 3 NSC .....", etc.

2. The 8130 weight indicator displaying up to 3000 increments.
3. An 8134 weight indicator (see Figure 12) converting the output from the load cell into a digital weight indication of up to 3005 increments. The weight indication will be blank above capacity.

The instrument will automatically rezero within 0,25e whenever it comes to rest within 0,45e of zero; this is indicated by the word "zero" being illuminated. A push-button marked "Z" is provided for rezeroing the instrument when the zero is outside the automatic zero range.

A push-button marked "T" allows automatic taring of a container on the load receptor to within 0,25e. On removal of the container the value of the tare to the nearest whole graduation is indicated on the weight indicator prefixed by a minus (-) sign. The tare is subtractive and of maximum effect equal to the capacity of the instrument. When a tare is selected the word "tare" will illuminate and when the filled container is weighed the word "net" will also illuminate. The tare is cancelled automatically when the load is reduced to less than 10e. The word "gross" will then be illuminated and the instrument will "gross" weigh until a tare is selected.

Successive operations of the "verify" button marked "V" can be used to blank out the indicator or display "all-8", minus (-) sign, tare, gross, net and kg while the button is depressed. This checks that all displays are working properly.

The 8134 weight indicator is retained in its cabinet by a lead-and-wire seal as it is too fragile for a stamping-plug seal. The serial number of the load cells, and the cable from the load cell, are sealed to the weight indicator (see Figure 13).

An alternative housing for the 8134 weight indicator is illustrated in Figure 14. With this housing the load cell cable is permanently connected and the load cell serial number is attached to the weight-indicator seal.

The instrument is marked adjacent to the weight reading face, for example:

III

Max	=	10025 kg
Min	=	250 kg
d <sub>i</sub> = e	=	5 kg
T	=	- 10025 kg

A push-button marked "P" and keyboard with ten push-buttons numbered from 0 to 9 may be used by the operator to provide

a transfer-data instruction and numerical data to the output socket; no data is provided to the weighing instrument.

An output socket which has provision for sealing may be used to provide information to peripheral devices which are not a part of the measuring instrument.\* These devices, which may only be provided with the authorisation of the Weights and Measures Authority of the State, may, for example, print receipts or store and process the data, etc. This output information is inhibited until the signal sampled in successive counting periods is the same, that is, the instrument is in equilibrium.

The use of such peripheral equipment will not affect the operation of the weighing instrument.

#### Special Tests — 8134 Weight Indicator\*\*

Zero range — the maximum range of the push-button zero device should not exceed 4% of the capacity of the instrument ( $\pm 2\%$  approximately). Satisfactory setting may be checked by the following method:

1. with zero balance indicated, apply a load of, say, 2,4% of the instrument capacity, and press the "zero" button; the instrument should not rezero; and
2. reduce the load to, say, 1,6% of the instrument capacity and again press the "zero" button; the instrument should indicate zero balance.

Zero balance — place a small weight equal to, say, 10 graduations ( $10 d_d$ ) on the load receptor before checking "zero". Two readings are taken at each applied load with the instrument equilibrium being disturbed before each reading.

With an additional load of 0,25  $d_d$ , that is, 10,25  $d_d$ , on the load receptor, readings of 11  $d_d$  and 11  $d_d$  indicate that the alignment of the instrument is not correct, readings of 10  $d_d$  and 11  $d_d$  or 10  $d_d$  and 10  $d_d$  are acceptable.

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\* The measuring instrument examined and approved by the Commission is limited to the devices which determine the value of a physical quantity, control the measurement, and indicate the result of the measurement on a visual display, for example, a seven-segment indicator.

\*\* The special tests applicable to the 8130 weight indicator are detailed in Technical Schedule No 6/14B/9.

With an additional load of 0,75 d<sub>a</sub>, that is, 10,75 d., on the load receptor, readings of 10 d<sub>a</sub> and 10 d<sub>a</sub> indicate that the alignment of the instrument is not correct, readings of 10 d<sub>a</sub> and 11 d<sub>a</sub> or 11 d<sub>a</sub> and 11 d<sub>a</sub> are acceptable.

Level sensitivity — when the instrument is tilted so that the bubble in the level indicator moves 2 mm, zero should not change and, when tested in the tilted position, the instrument should satisfy the weighing-accuracy specifications, that is,  $\pm \frac{1}{2}$  graduation for the first 500 graduations and  $\pm 1$  graduation over 500 and up to 2000 graduations, and  $\pm 1,5$  graduations over 2000 graduations.

Load-cell creep — leaving a maximum-capacity load on the load receptor for a period of 30 minutes should not cause the weight indicator to be incorrect, and on removal of the load the weight indicated should be zero  $\pm 0,05$  e.  
 $\pm 0,5$  e

Motion-detector sensitivity — removal from the load receptor at any load of a load equal to 1,5 graduations should cause the weight indicator to go blank for a perceptible period before indicating the new load.

Over-capacity indication — when maximum capacity is indicated, placing an additional load equal to one graduation on the load receptor should cause the weight indicator to go blank irrespective of which load receptor or combination of load receptors is selected.

Test loads — the application of the test loads specified in Table 1 and the display of these loads within the applicable tolerance is one method of checking that the instrument operates in accordance with the approved design.

# National Standards Commission



## NOTIFICATION OF CHANGE

### VARIOUS CERTIFICATES OF APPROVAL

The following changes are made to the approval documentation for various approvals

submitted by Toledo Scale (Australia) Ltd  
525 Graham Street  
Port Melbourne VIC 3207.

In the Certificates and Technical Schedules listed overleaf, the following changes should be made: (Note: Only current approvals are listed.)

1. The submittor should be changed to read;  
  
Mettler Toledo Limited  
  
(the address remains unchanged)
2. All references to 'Toledo' instruments or components should be amended to read 'Toledo (or Mettler or Mettler Toledo)'.

NOTE: Any 'Toledo' instrument or component described in the approval documentation may now also be known as 'Mettler or Mettler Toledo'.

APPROVAL NUMBER	PATTERN
6/4C/65	8214 Weighing Instrument
6/4C/68	8215 Weighing Instrument
6/4D/242	8421 Weighing Instrument
6/9C/2A	2191 Weighing Instrument
6/9C/24A	2503 Weighing Instrument
6/9C/28	2020 Weighing Instrument
6/9C/24A 441	2985 Weighing Instrument
6/9C/76	2295 Weighing Instrument
6/9C/87	2375 Weighing Instrument
6/9C/97	2155 Weighing Instrument
6/9C/98	9118 Weighing Instrument
6/9C/206	6303 Weighing Instrument
6/9C/231	1938 Weighing Instrument
6/10B/46A	7560 Weighing Instrument
6/14B/9A	2352 Hopper Weighing Instrument
6/18/21	2299 Overhead Weighing Instrument
S253	8530 Digital Indicator
S266	8520 Digital Indicator
S283	8510 Digital Indicator
S111A	0721 Load Cell
S112A	0723 Load Cell
S143	0752 Load Cell
S172	0725 Load Cell
S211	0742 Load Cell
S252	0760 Load Cell
S264	0752 Load Cell
S268	RLC 5000 Load Cell

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.

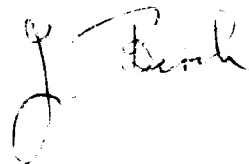
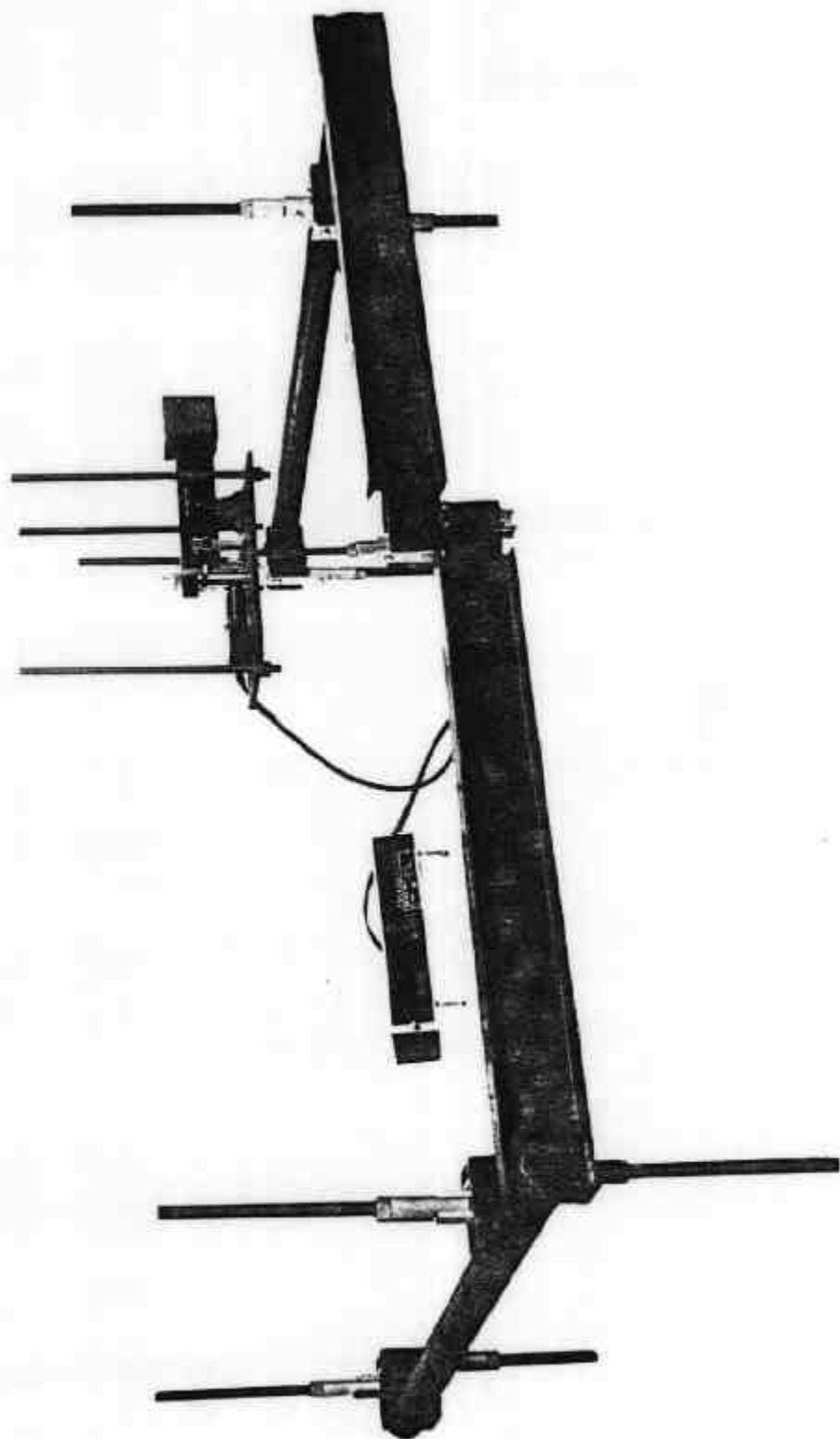


FIGURE 6/14B/9 - 1



Toledo 2352-8130 Weighing Instrument

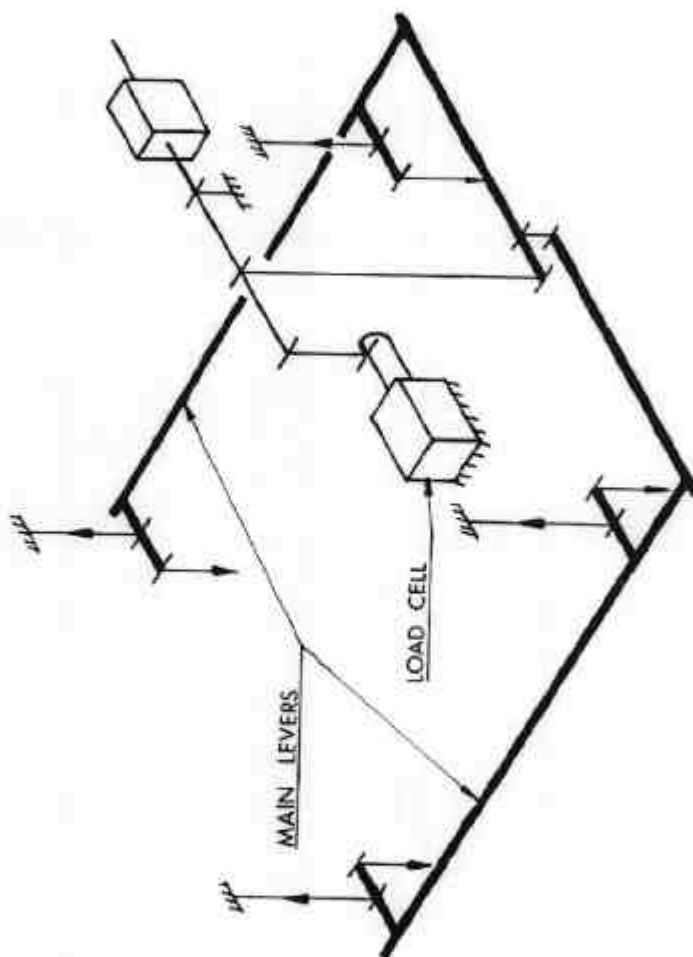
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FIGURE 6/14B/9 - 2



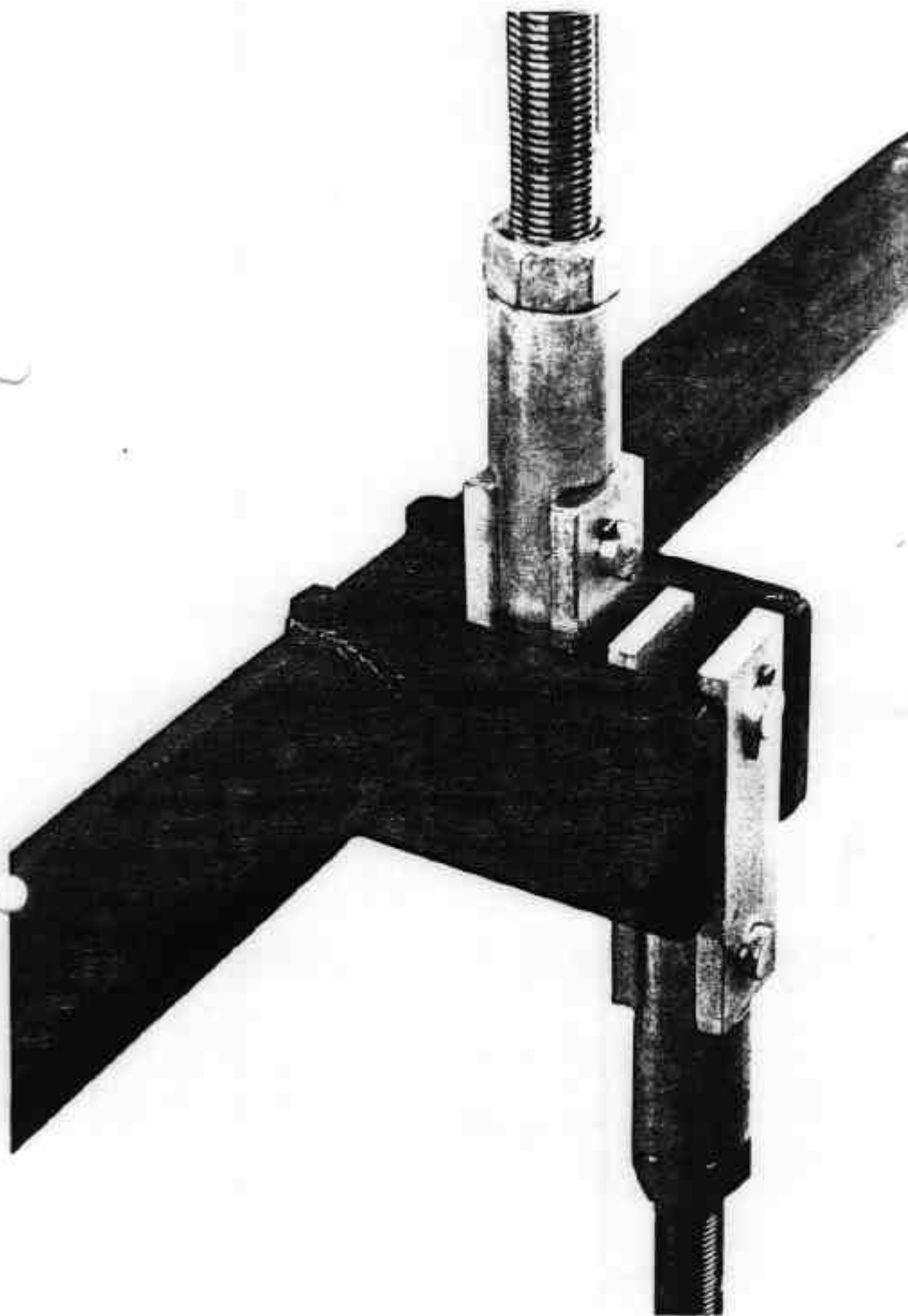
Toledo 8130 Weight Indicator

FIGURE 6/14B/9 - 3



Lever Mechanism --- Schematic Drawing

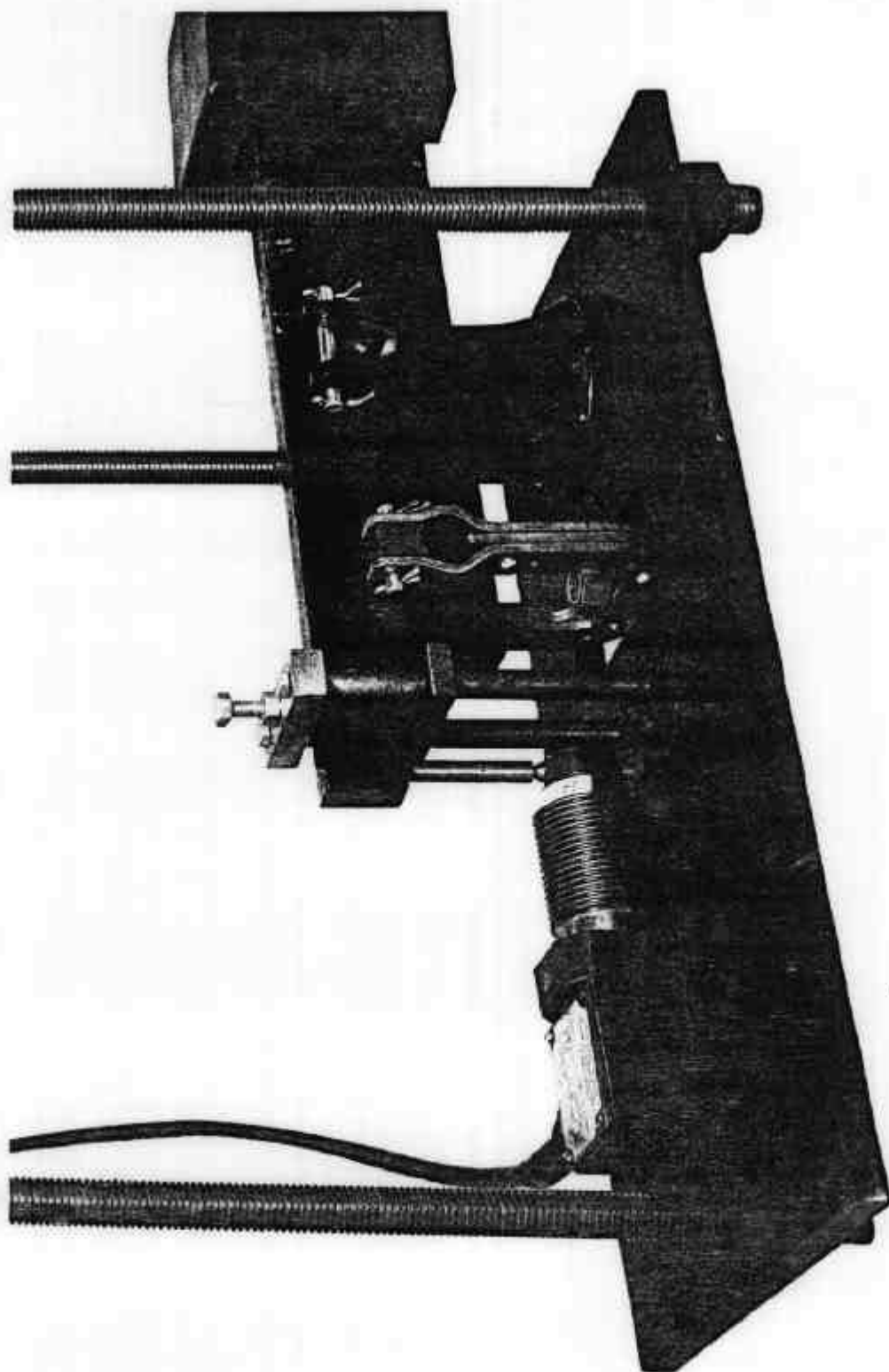
FIGURE 6/14B/9 - 4



Suspended Fulcrum with Suspended Hopper

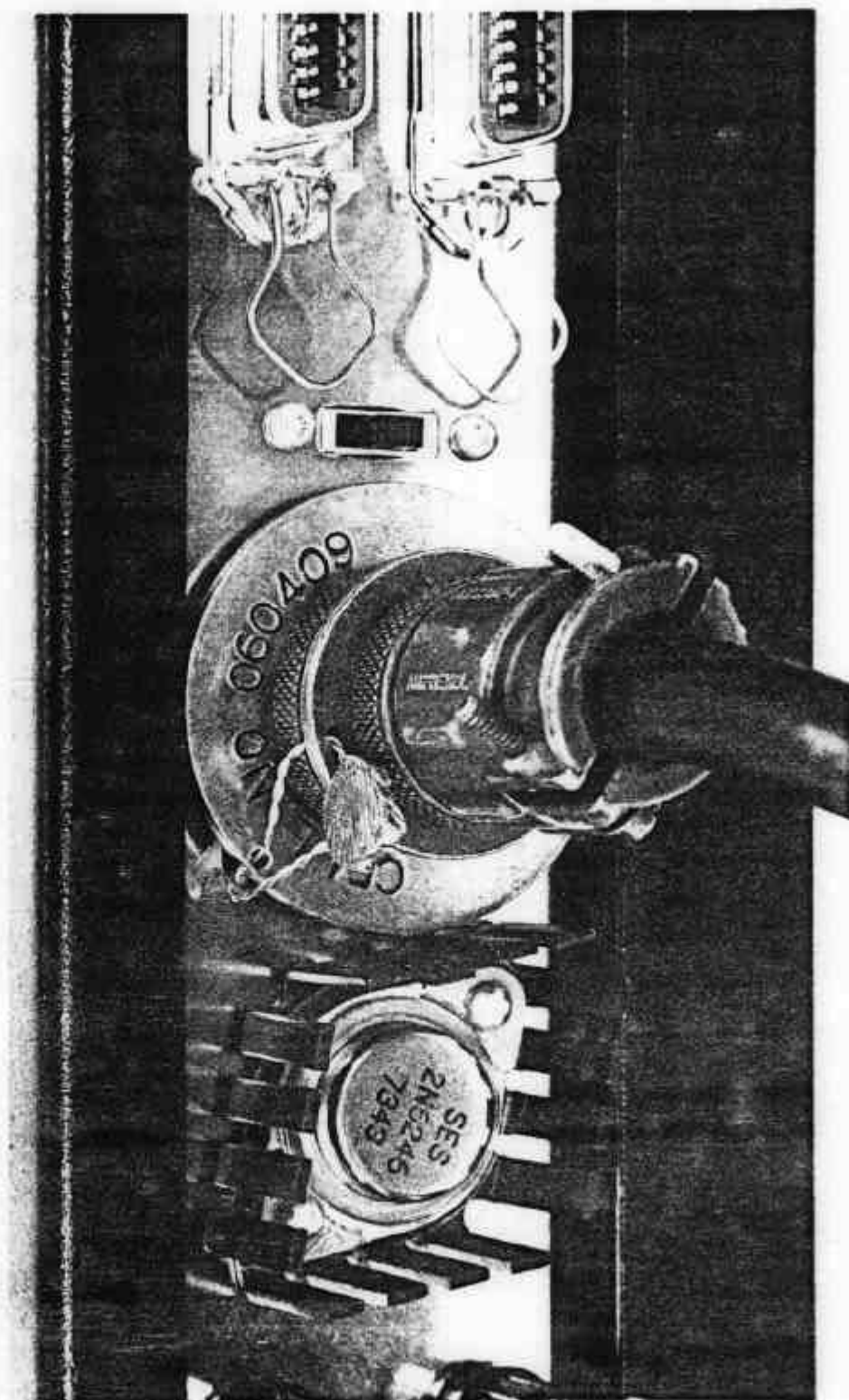
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FIGURE 6/14B/9 - 5



Load Cell Resistant Mechanism

FIGURE 6/14B/9 - 5



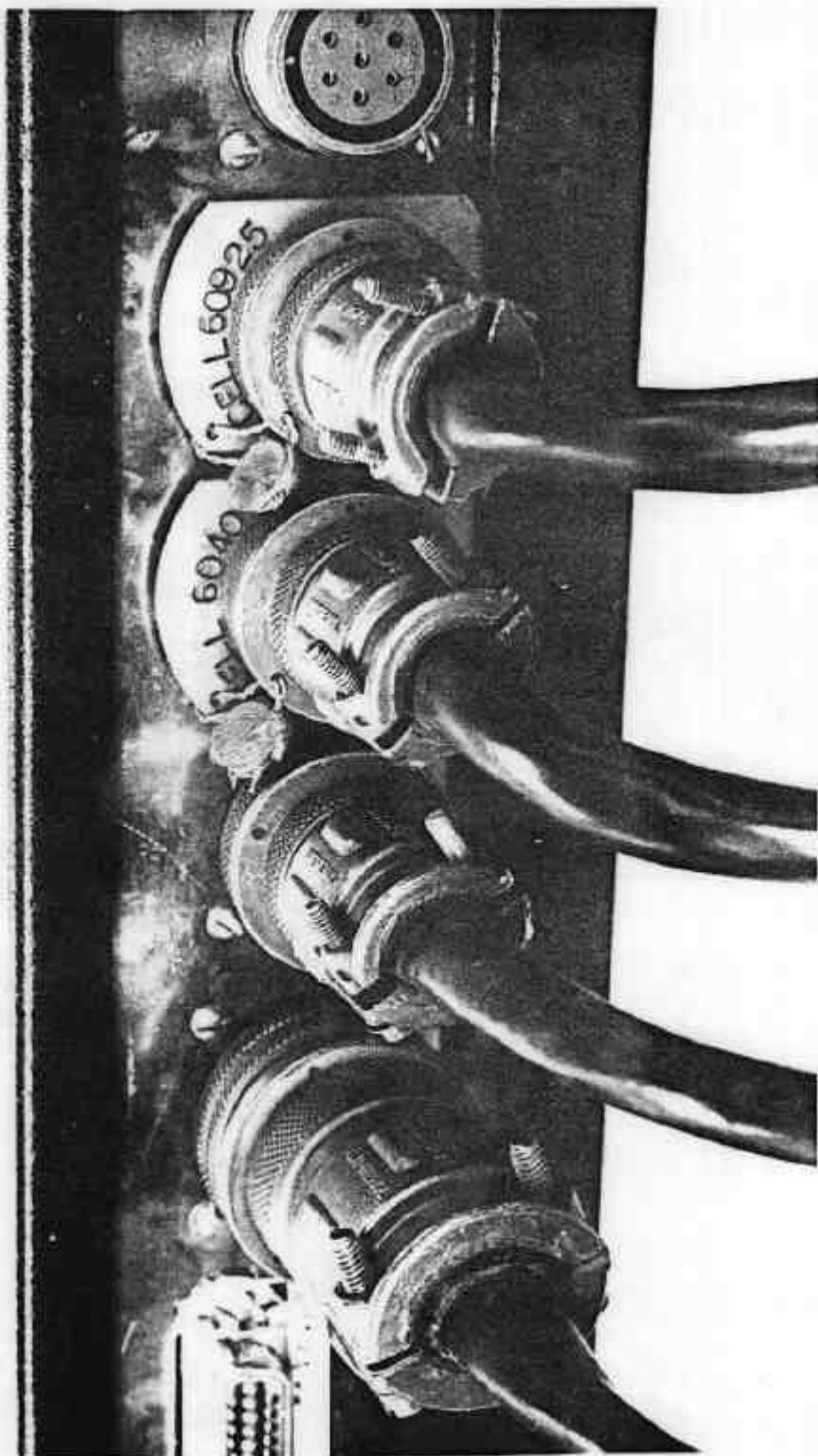
Toledo 8130 --- Load Cell Serial Number and Sealing of Load Cell Cable

FIGURE 6/14B/9 - 7



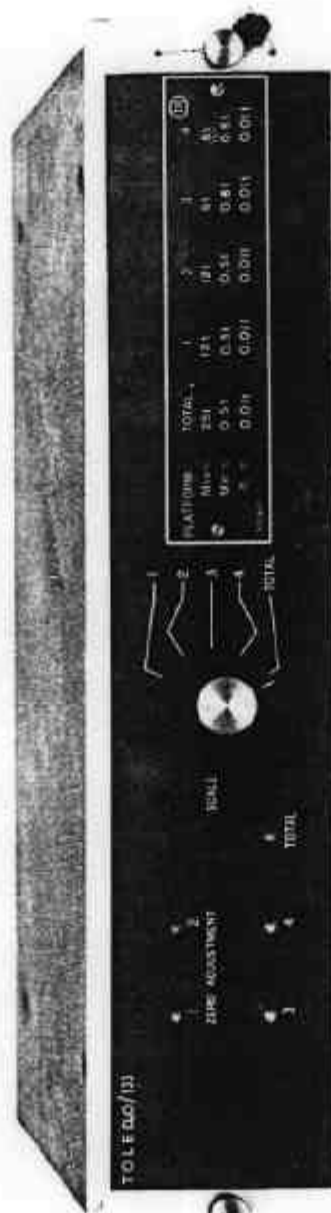
Toledo 132 Basework Selector

FIGURE 6/14B/9 - 8



Toledo 132 -- Load Cell Serial Numbers and Sealing of Load Cell Cables

FIGURE 6/14B/9 - 9



Toledo 133 Basework-selector Unit

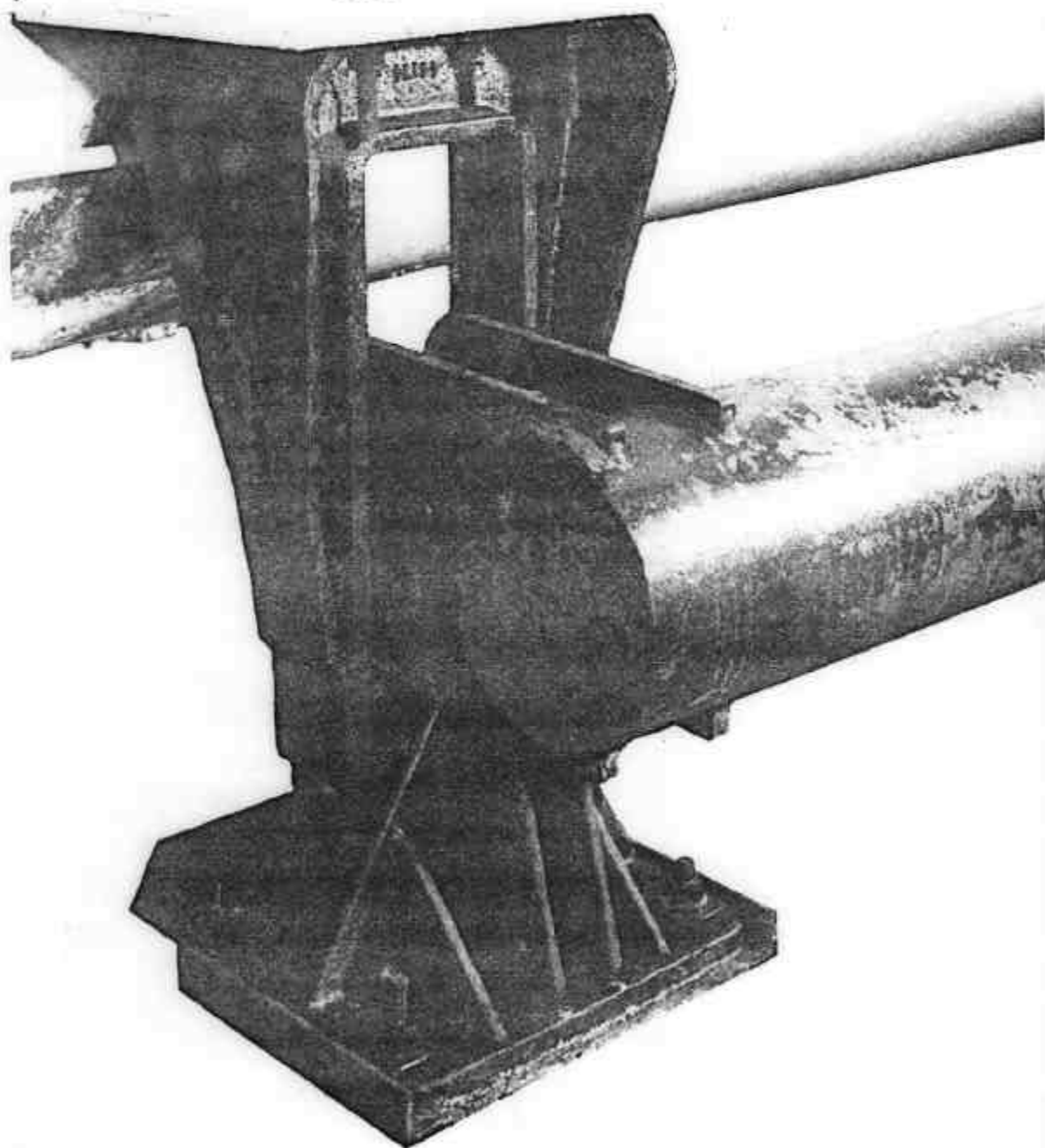
FIGURE 6/14B/9 - 10



Fulcrum Stand with Suspended Hopper

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FIGURE 6/14B/9 - 11



Fulcrum Stand with Hopper on Free-moving Suspension  
Units

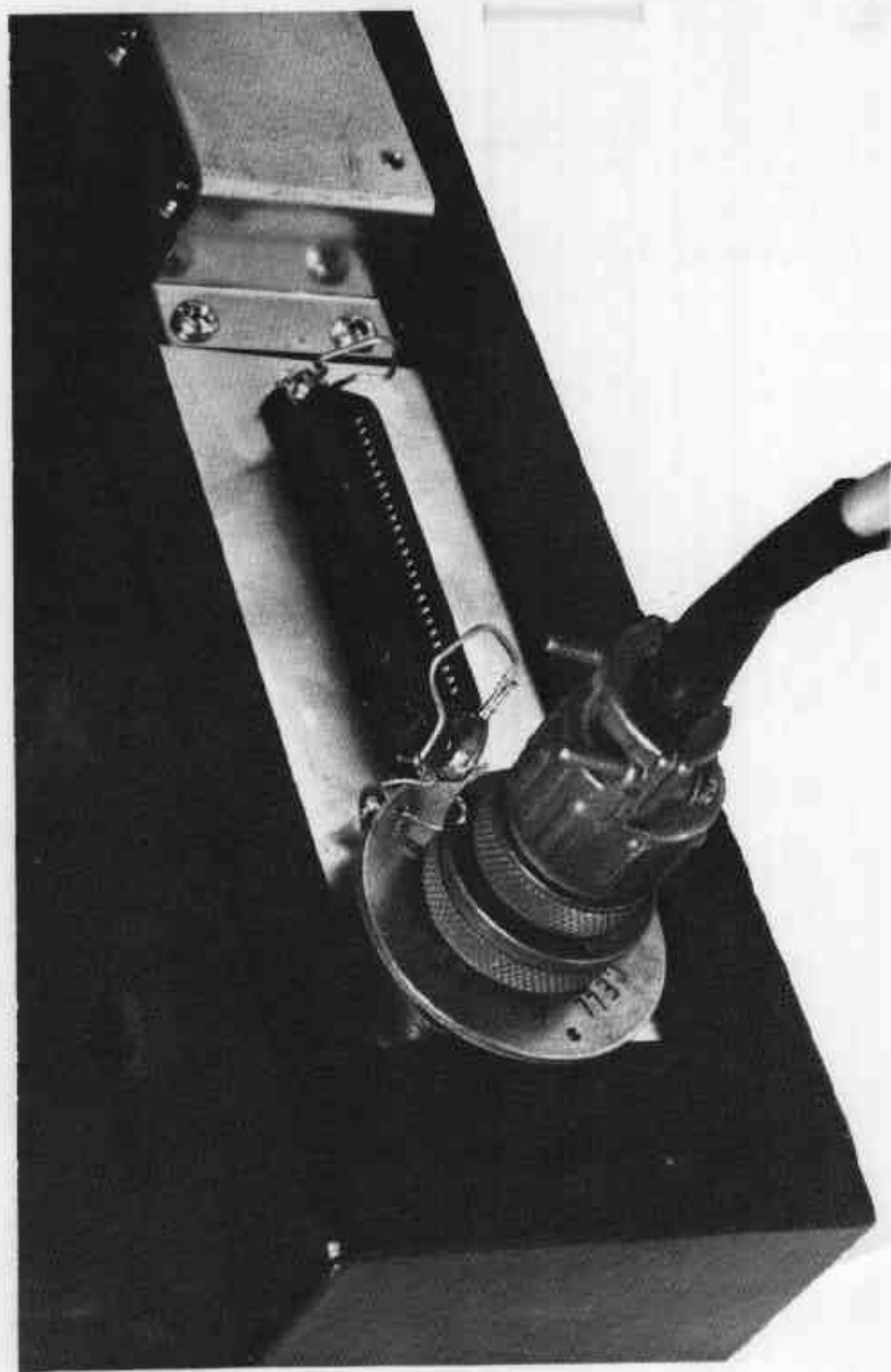
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FIGURE 6/14B/9 - 12



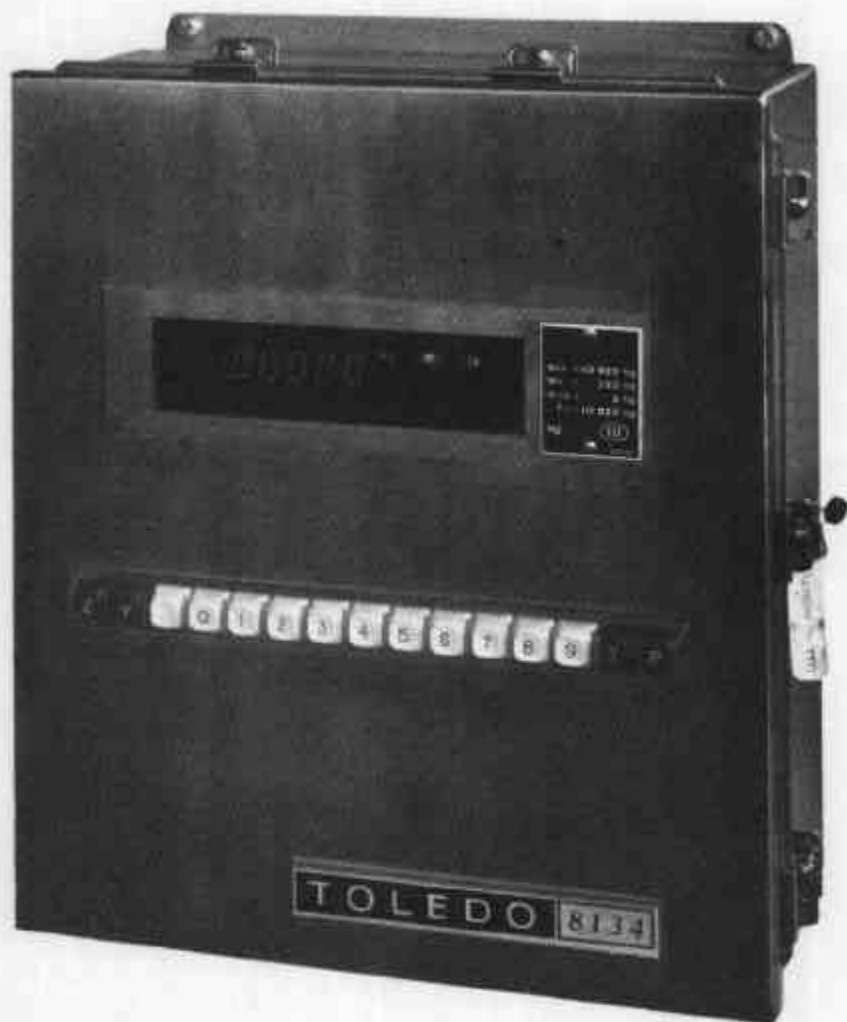
Toledo 8134 Weight Indicator

FIGURE 6/14B/9 - 13



Sealing — Load Cell Cable and Serial Number

FIGURE 6/14B/9 - 14



Toledo 8134 Weight Indicator — Alternative Housing

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