



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/46

Pattern: Toledo 2503-8130 Weighing Instrument

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

Date of Approval: 19 November 1975

Condition of Approval:

All instruments conforming to this approval shall be marked "NSC No 6/9C/46".

Description:

The pattern is a self-indicating platform weighing instrument (see Figure 1) of maximum capacity 21 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 supported by a double-ball unit (see Figure 3) or by a parallel-link unit (see Figure 4) on two main levers (see Figures 5 and 6). In capacities above 6 tonnes backing plates support the knife-edges along their length. A transfer lever connects the main levers by a pullrod to a Toledo 90-kg cantilever type load cell resistant mechanism (see Figure 7). 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 fulcrum stands are floor-mounted.

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 8).

The headwork or basework of this instrument is not interchangeable with other approved headworks or baseworks.

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

III

Max	=	20 t
Min	=	0,5 t
d _d	=	0,01 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 2503-8130 weighing instruments, as described in the patterns, to be displayed on the one 8130 weight indicator (see Figure 9). 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 10). 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 2503-8130 weighing instruments, as described in the pattern, to be displayed individually or in combination on the one 8130 weight indicator (see Figure 11).^{*} 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 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 11.

4. The basework having a maximum load capability of 12 tonnes; the instrument is then known as the Toledo 2273-8130 weighing instrument.
5. The basework having a maximum load capacity of 6 tonnes; the instrument is then known as the Toledo

^{*} Weights and Measures inspectors should note that the limiting factors on the use are that no load receptor should have a maximum capacity above 21 t, and that singly or in combination the maximum number of graduations is 2500.

2173-8130 weighing instrument.

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 $\pm 0,25 d_d$.
 $0,5 d_d$
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 6/9C/46

VARIATION No 1

Pattern: Toledo Weighing Instrument Model 1503-8130

Submittor: 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 6/9C/46 dated 14 April 1976.

All instruments conforming to this approval shall be marked "NSC No 6/9C/46".

Description:

The approved modifications provide for:

1. the 8130 weight indicator displaying up to 3000 increments;
2. 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 headwork or basework of this instrument is not interchangeable with other approved headworks or baseworks. The basework is not portable, that is, it is permanently installed.

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

(III)

Max	=	10025 kg
Min	=	250 kg
d ₁ = e	=	5 kg
T	=	- 10025 kg

A 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 or numerical data to the output socket; it does not provide data 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

* 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.

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 ($10 d_1$) 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 $0,25 d_1$, that is, $10,25 d_1$, on the load receptor, readings of $11 d_1$ and $11 d_1$ indicate that the alignment of the instrument is not correct, readings of $10 d_1$ and $11 d_1$ or $10 d_1$ and $10 d_1$ are acceptable.

With an additional load of $0,75 d_1$, that is, $10,75 d_1$, on the load receptor, readings of $10 d_1$ and $10 d_1$ indicate that the alignment of the instrument is not correct, readings of $10 d_1$ and $11 d_1$ or $11 d_1$ and $11 d_1$ are acceptable.

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 $\pm 0,25 e$.

* The special tests applicable to the 8130 weight indicator are detailed in Technical Schedule No 6/9C/46.

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

CANCELLATION CERTIFICATE FOR APPROVAL No 6/9C/46

This is to advise that the approval of the

Toledo Model 2503-8130 Platform Weighing Instrument

submitted by Toledo Scale Australia Limited
525 Graham Street
Port Melbourne Victoria 3207

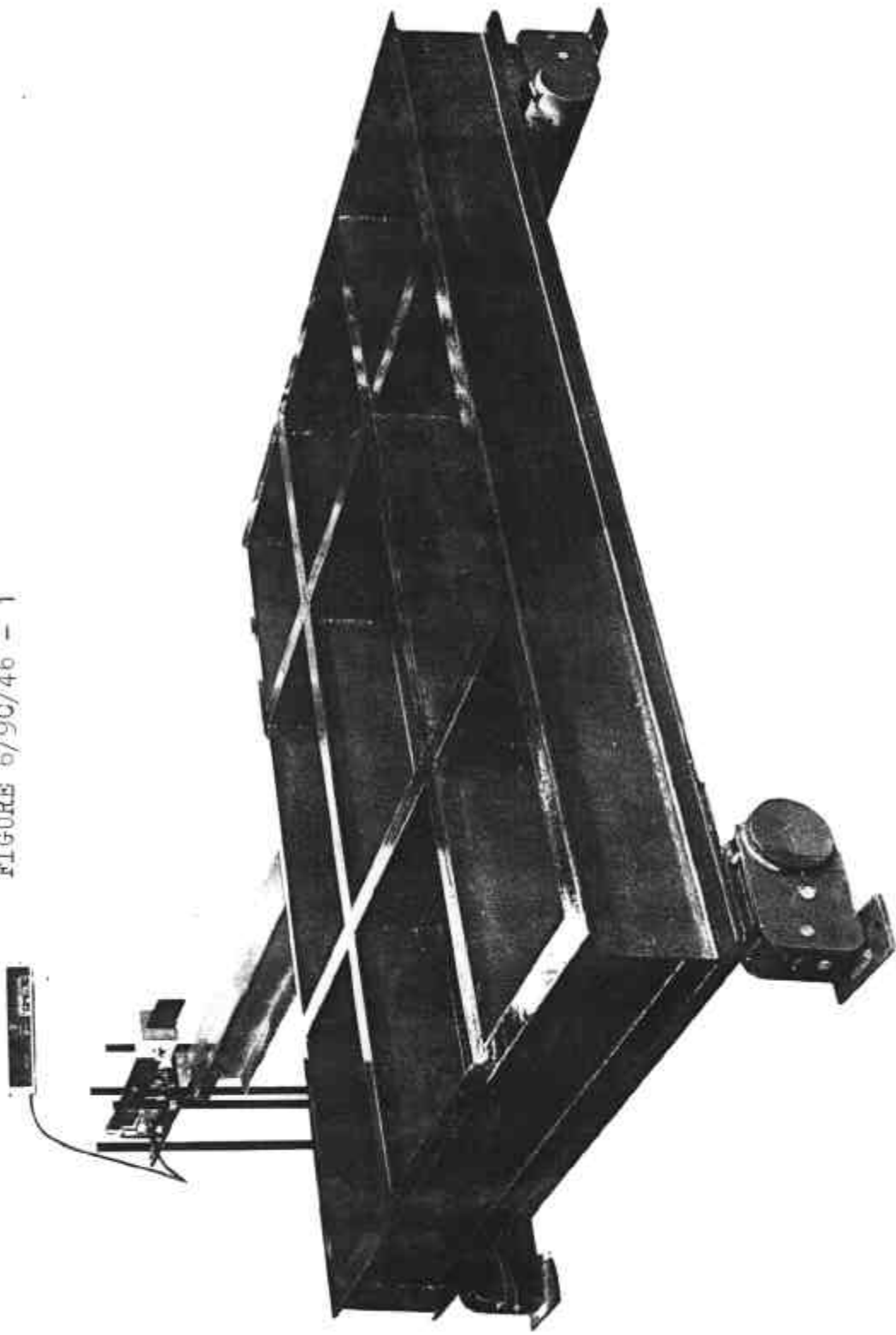
expired in respect of new instruments on 28/8/84.

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

Signed

Executive Director

FIGURE 6/90/46 - 1



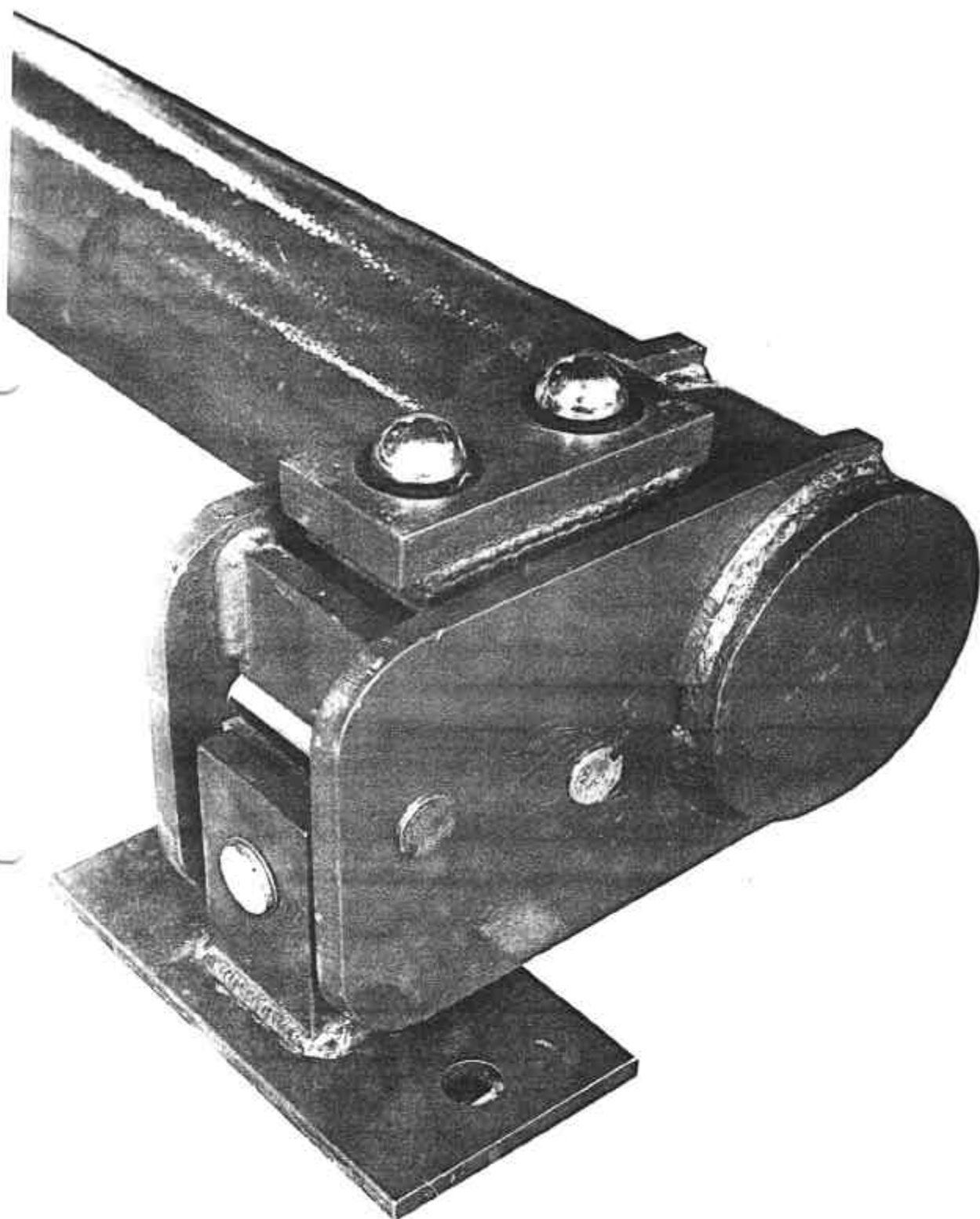
Toledo 2503-8130 Weighing Instrument

FIGURE 6/90/46 - 2



Toledo 8130 Weighing Indicator

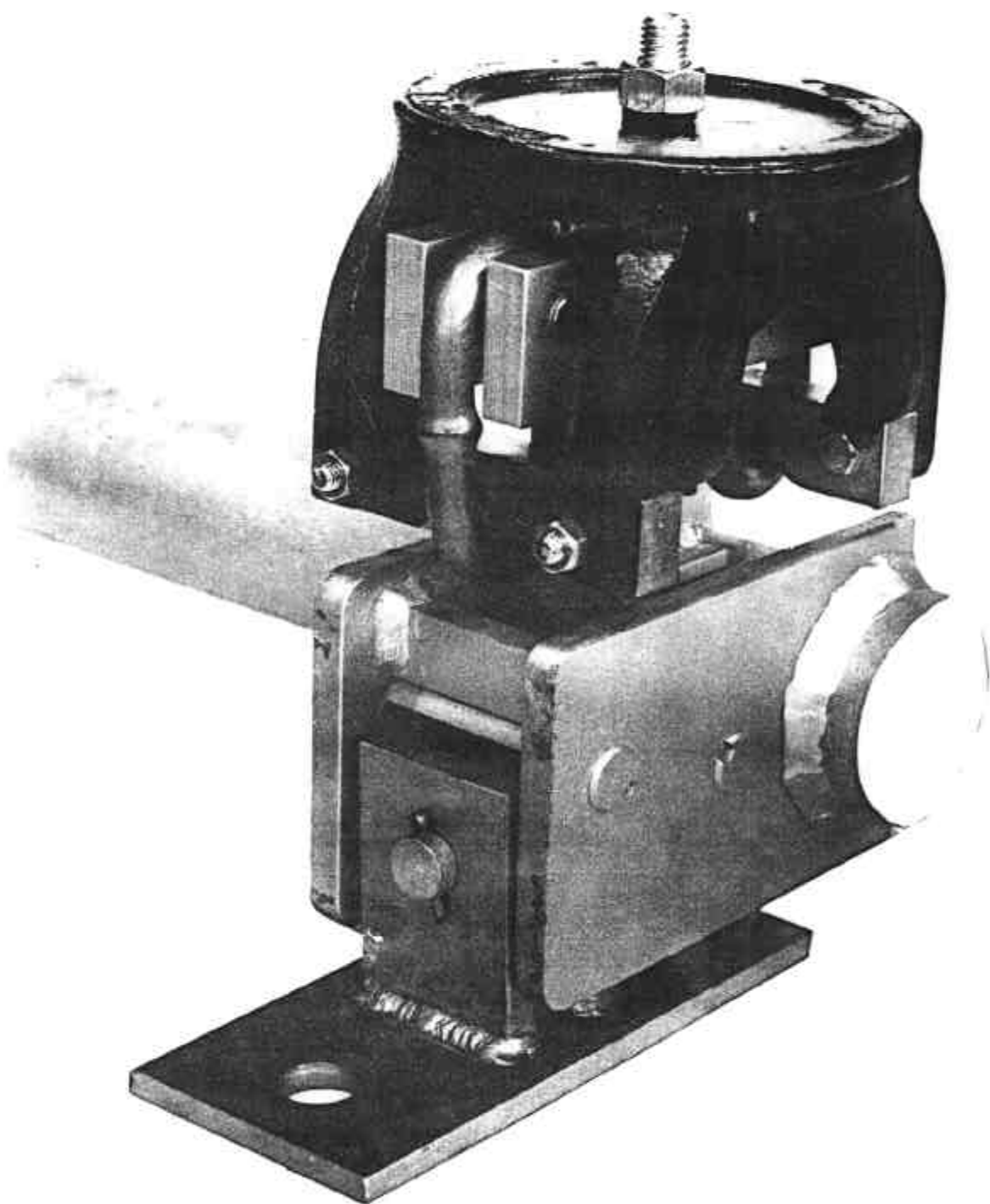
FIGURE 6/9C/46 - 3



Lever Support and Double-ball Load-receptor Support

14/4/76

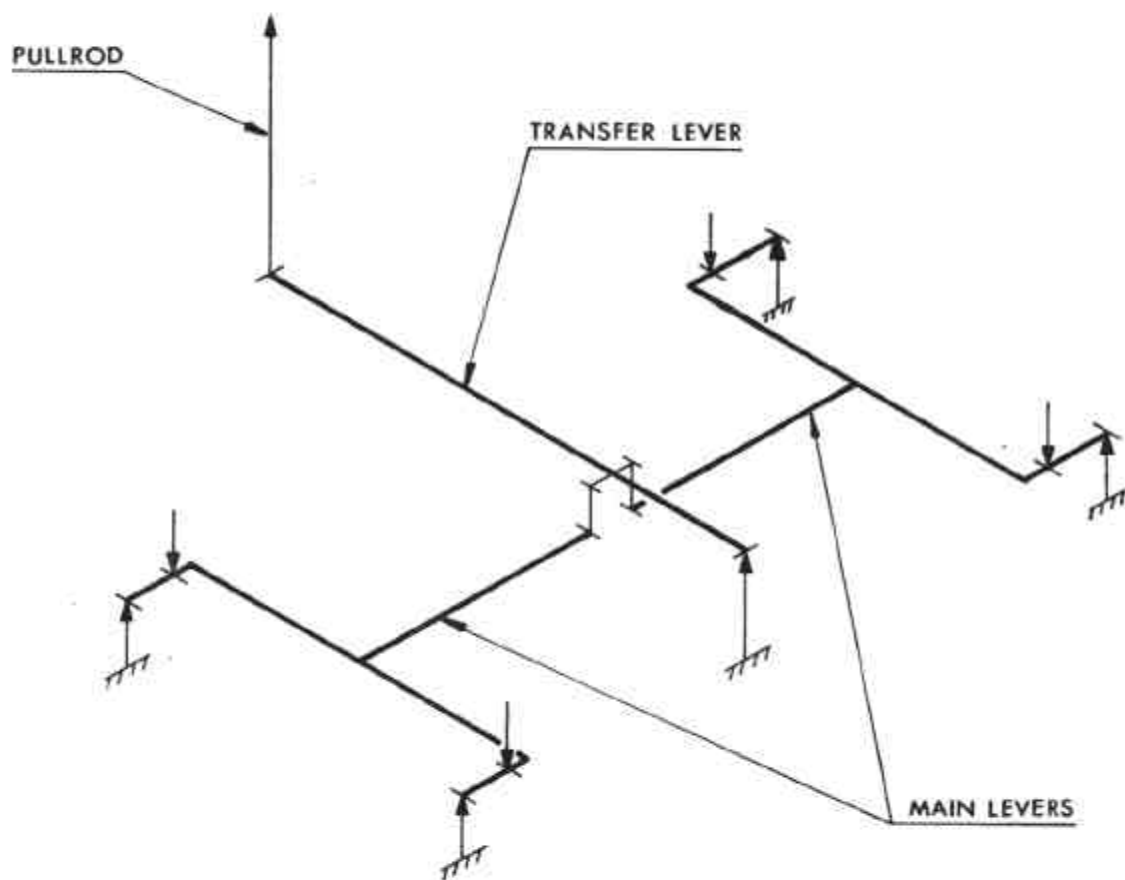
FIGURE 6/9C/46 - 4



Parallel-link Load-receptor Support

14/4/76

FIGURE 6/9C/46 - 5



Lever System - Schematic Diagram

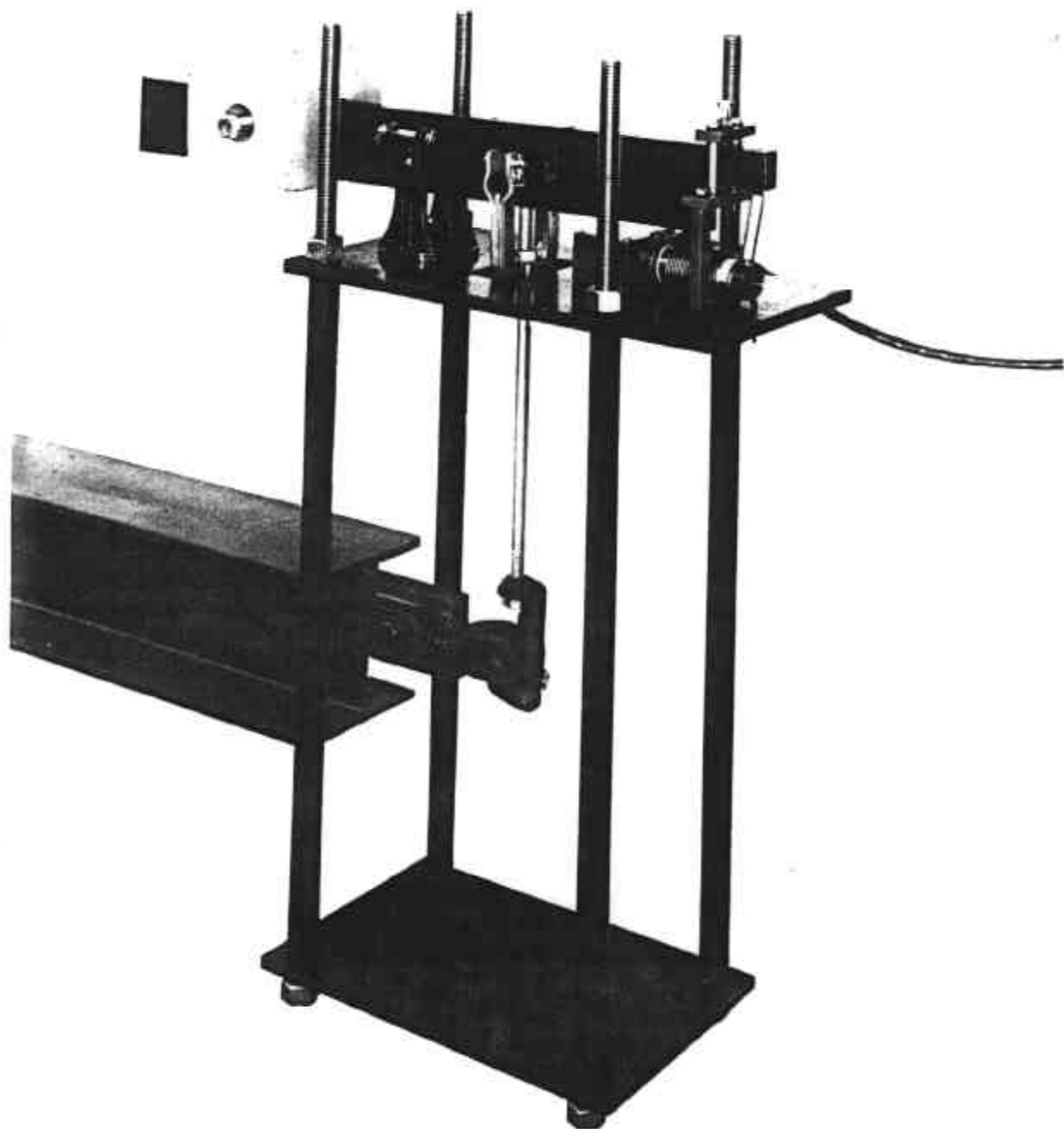
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FIGURE 6/OC/46 - 6



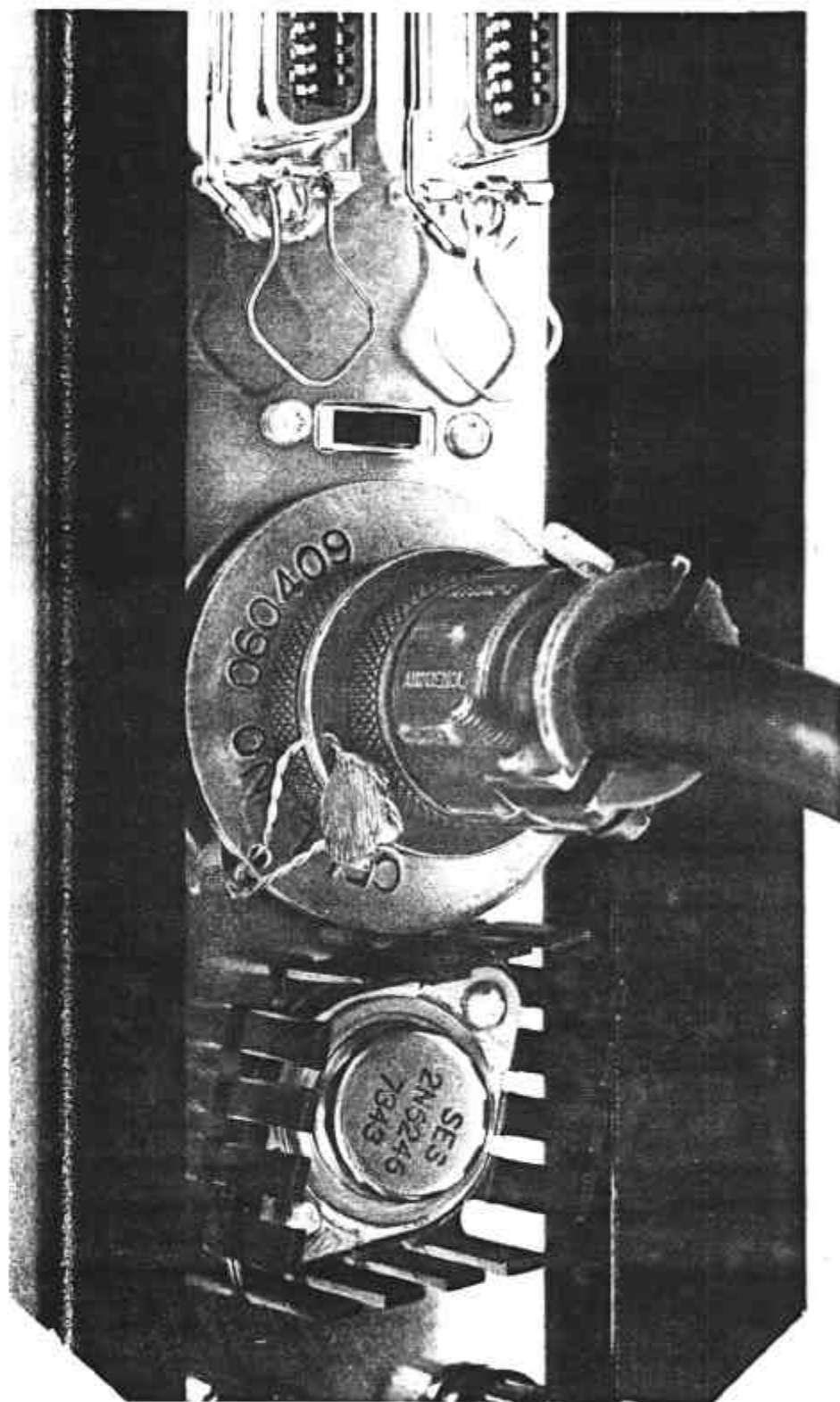
Lever System

FIGURE 6/9C/46 - 7



Load Cell Resistant Mechanism

FIGURE 6/90/46 - 8



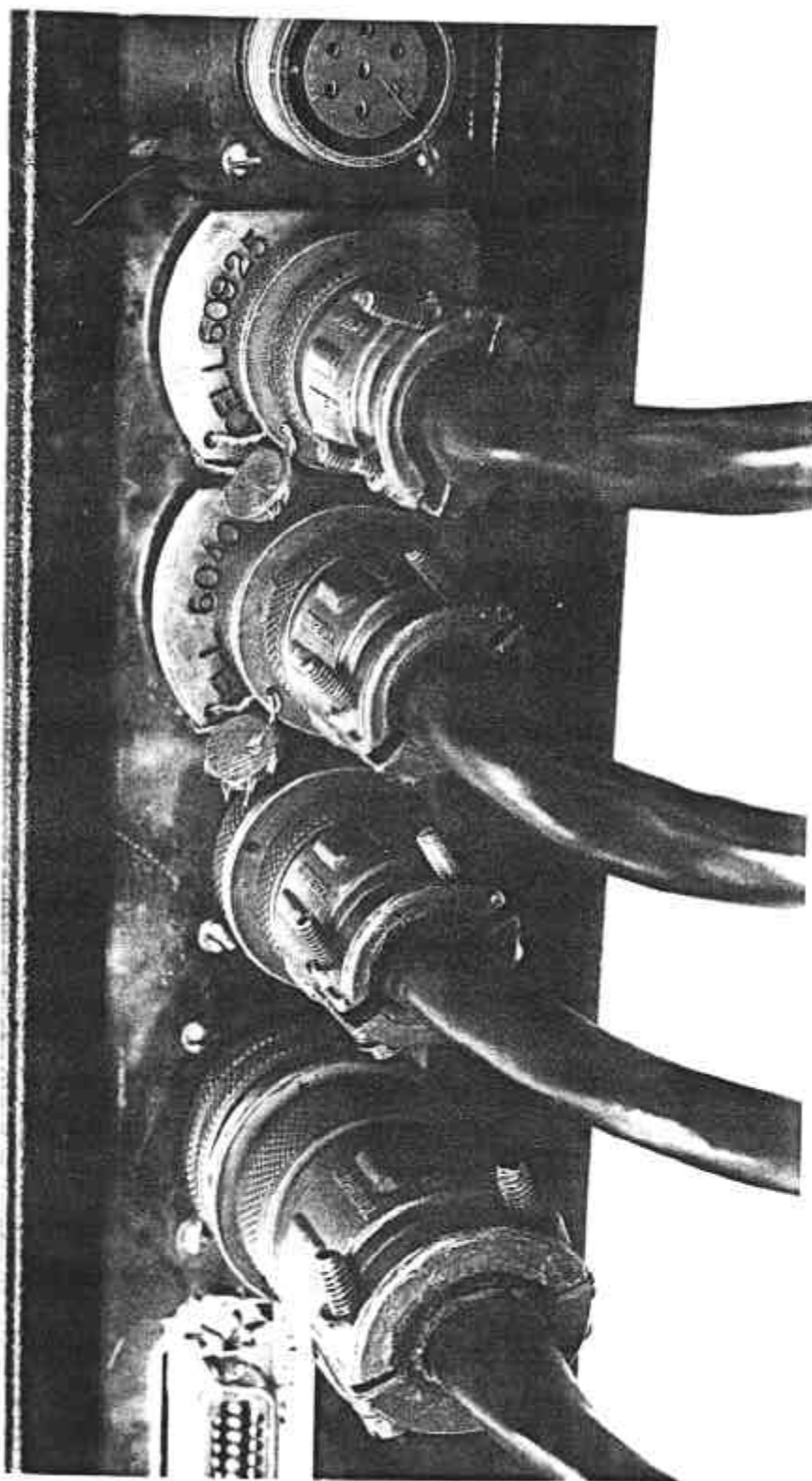
Toledo 8130 --- Load Cell Serial Number and Sealing of Load Cell Cable

FIGURE 6/9C/46 - 9



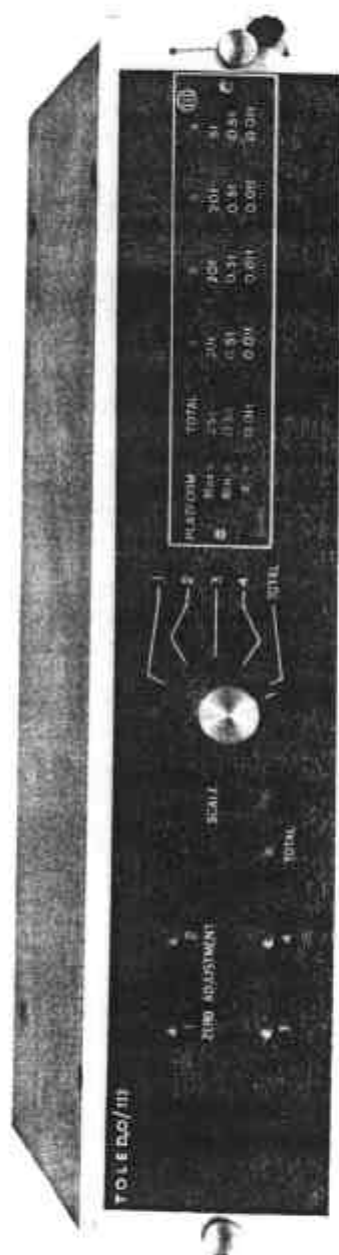
Toledo 132 Basework Selector

FIGURE 6/9C/46 - 10



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

FIGURE 6/9C/46 - 11



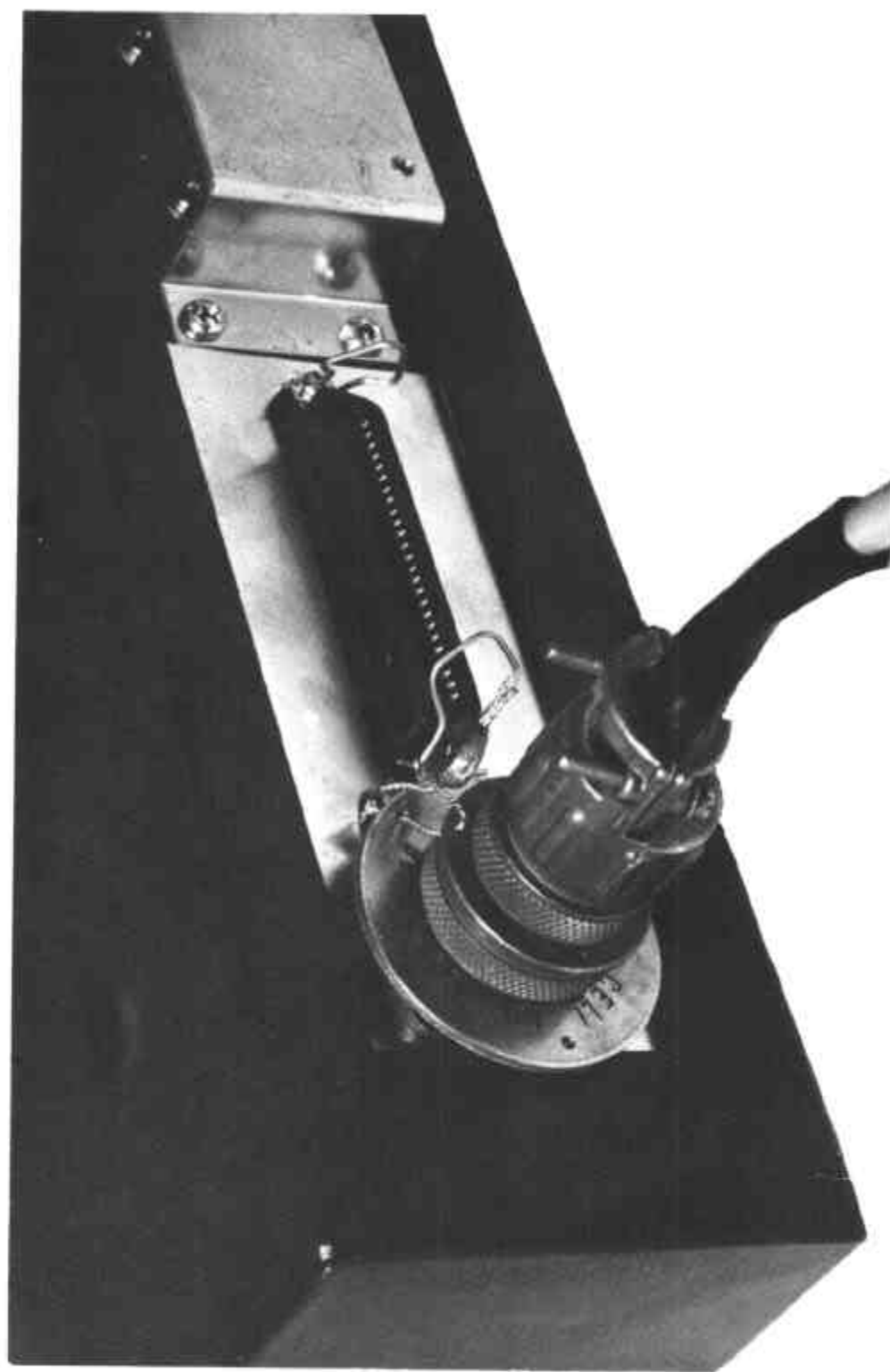
Toledo 133 Basework-selector Unit

FIGURE 6/9C/46 - 12



Toledo 8134 Weight Indicator

FIGURE 6/9C/46 - 13



Sealing — Load Cell Cable and Serial Number

FIGURE 6/9C/46 - 14



Toledo 8134 Weight Indicator - Alternative Housing

23/9/77