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CERTIFICATE OF APPROVAL No 6/4C/25

VARIATION No 1

CANCELLED

0/1

This is to certify that the following modifications of the patterns of the Toledo Weighing Instrument Models 3165-8130 and Others approved in Certificate No 6/4C/25 dated 31 March 1977

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: 17 June 1977

The approved modifications, described in Technical Schedule No 6/4C/25 - Variation No 1 and in drawings and specifications lodged with the Commission, provide for:

1. a Toledo 8134 weight indicator;
2. the display of up to 3005 increments by the weight indicator.

The approval is subject to review on or after 1 March 1978.

All instruments conforming to this approval shall be marked with the approval number "NSC No 6/4C/25".

Signed



Executive Officer



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/4C/25

Pattern: Toledo Weighing Instrument Models 3165-8130 and Others

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

Date of Approval: 2 March 1977

All instruments conforming to this approval shall be marked "NSC No 6/4C/25".

### Description:

The pattern is a Toledo Model 3165-8130 self-indicating counter scale of maximum capacity up to 5 kg. It comprises a Model 3165 weighing unit, with a load cell resistant mechanism (see Figure 1) and Model 8130 electronic weight indicator (see Figure 2) displaying up to 2500 increments. The load receptor is supported by a Toledo cantilever load cell resistant mechanism and stayed by five flexure plates (see Figure 3). The load cell capacity is selected so that at maximum instrument capacity the force applied to the load cells is:

- (a) 2-kg load cell — between 7 N and 18 N (0,7 to 1,8 kgf) — maximum instrument capacity 1 kg; and
- (b) 7-kg load cell — between 30 N and 70 N (3 to 7 kgf) — maximum instrument capacity 5 kg.

The weigh unit is provided with a level indicator and four adjustable feet. Adjacent to the level indicator is a notice advising that the instrument must be level when in use.

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 negative 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 4).

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	=	5 kg
Min	=	0,04 kg
$d_d$	=	0,002 kg

The approval includes:

1. The instrument of maximum capacity up to 40 kg. The weighing unit Model 3185 is of heavier construction (see Figures 5 and 6). The load cell capacity is selected so that at maximum instrument capacity the force applied to the load cell is:
  - (a) 11-kg load cell — between 45 N and 110 N (4,5 to 11 kgf) — maximum instrument capacity 10 kg;
  - (b) 22-kg load cell — between 90 N and 215 N (9 to 22 kgf) — maximum instrument capacity 25 kg; and
  - (c) 45-kg load cell — between 175 N and 440 N (18 to 45 kgf) — maximum instrument capacity 40 kg.
2. A Toledo 132 basework-selector unit allowing the output from up to six load cells, each of the same maximum capacity, to be displayed on the one 8130 weight indicator (see Figure 7).

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\* Min = 10 e for e 100 mg to 1 g, 20 e for e 2 g to 20 g, and 50 e for e 50 g to 10 kg

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 up to four load cells, which may be of differing maximum capacities but the same graduation value, to be displayed individually or in combination on the one 8130 weight indicator (see Figure 9). 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 9.

#### 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  $0 \pm 0,25 d_d$ .
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.

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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 6/4C/25

VARIATION No 1

Pattern: Toledo Weighing Instrument 3165-8130 and Others

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

Date of Approval of Variation: 17 June 1977

The modifications described in this Schedule apply to the patterns described in Technical Schedule No 6/4C/25 dated 31 March 1977.

All instruments conforming to this approval shall be marked "NSC No 6/4C/25".

Description:

The approved modifications provide for:

1. A Toledo 8134 weight indicator replacing the Toledo 8130 weight indicator (see Figure 10). The weight indicator type 8134 converts 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 again "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 11).

An alternative nousing for the 8134 weight indicator is illustrated in Figure 12. With this nousing 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 instrument is marked adjacent to the weight reading face, for example:

(III)

Max	=	5,01 kg
Min	=	0,04 kg
$d_d = e$	=	0,002 kg
T	=	- 5,01 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 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.

2. The Model 8130 weight indicator displaying up to 3000 increments.

#### 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

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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 described in Technical Schedule No 6/4C/25 dated 31 March 1977.

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.

With an additional load of 0,75  $d_d$ , that is, 10,75  $d_d$ , on the load receptor, readings of 10  $d_d$  and 10  $d_d$  indicate that the alignment of the instrument is not correct, readings of 10  $d_d$  and 11  $d_d$  or 11  $d_d$  and 11  $d_d$  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 indicated to be incorrect, and on removal of the load the weight indicated should be zero  $\pm 0,25e$ .

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.



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# NATIONAL STANDARDS COMMISSION

## NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/4C/25

CHANGE No 1

The approval of the

Toledo Weighing Instrument Model 3165-8130

given in Certificate No 6/4C/25 dated 31 March 1977

and described in Technical Schedule No 6/4C/25 dated 31 March 1977

is changed by adding to the Special Tests:

"Level Sensitivity — when the instrument is tilted so that the bubble in the level indicator moves 2 mm, the zero should not change by more than 2 graduations, and when zero is reset in the tilted position the instrument should satisfy the weighing-accuracy specifications, that is,  $\pm 0,5$  graduation for the first 500 graduations,  $\pm 1$  graduation for graduations over 500 and up to 2000, and  $\pm 1,5$  graduations over 2000 graduations."

5/8/77



**CANCELLED**

Cert. no.

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**NATIONAL STANDARDS COMMISSION**

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/4C/25

CHANGE No 2

The following change is made to the description of the Toledo Model 3165-8130 Weighing Instrument

given in Technical Schedule No 6/4C/25 dated 31/3/77:

From the 2nd paragraph on page 2 delete "not", so that it will then read,

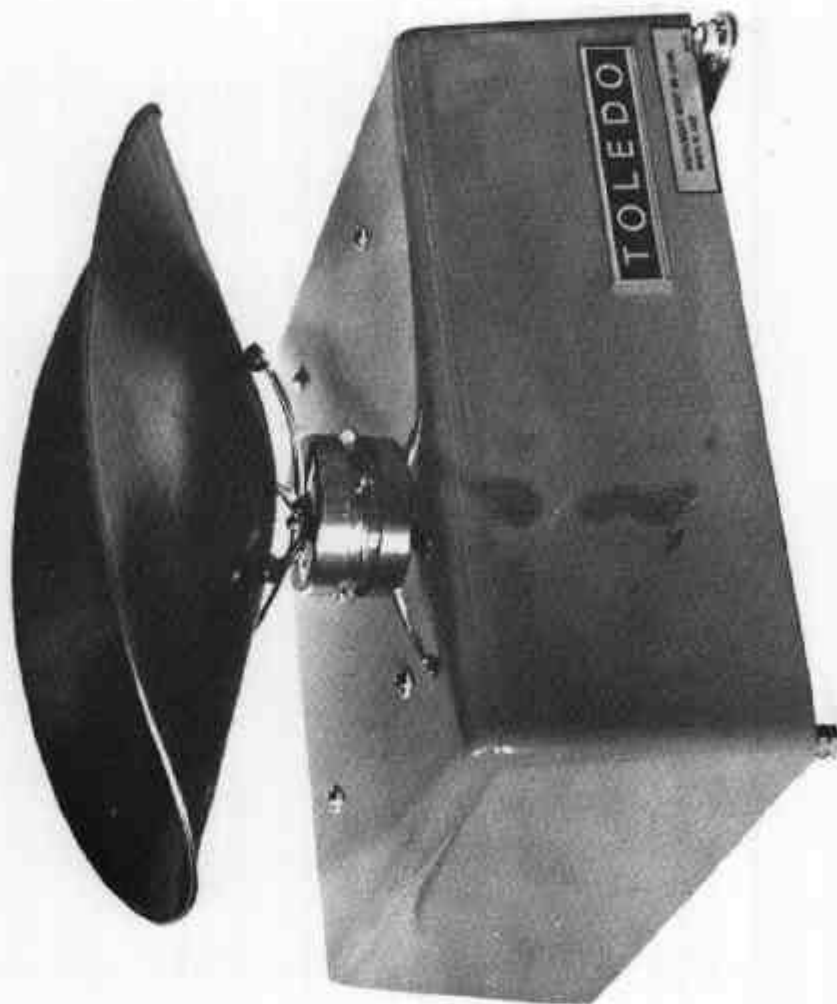
"The headwork or basework of this instrument is interchangeable with other approved headworks or baseworks."

Signed

Executive Director

18/2/83

FIGURE 6/4C/25 - 1



Toledo 3165 Weighing Unit

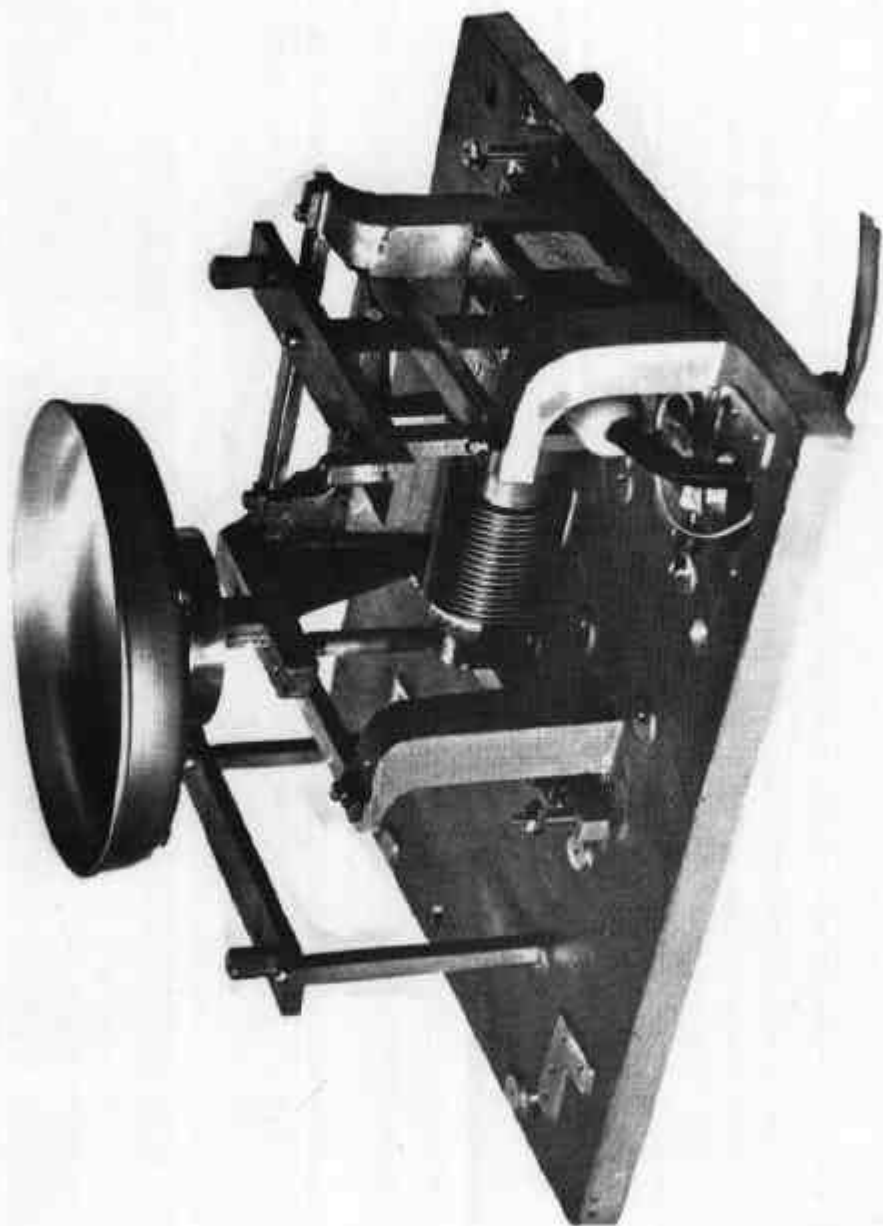
31/3/77

FIGURE 6/4C/25 - 2



Toledo 8130 Weight Indicator

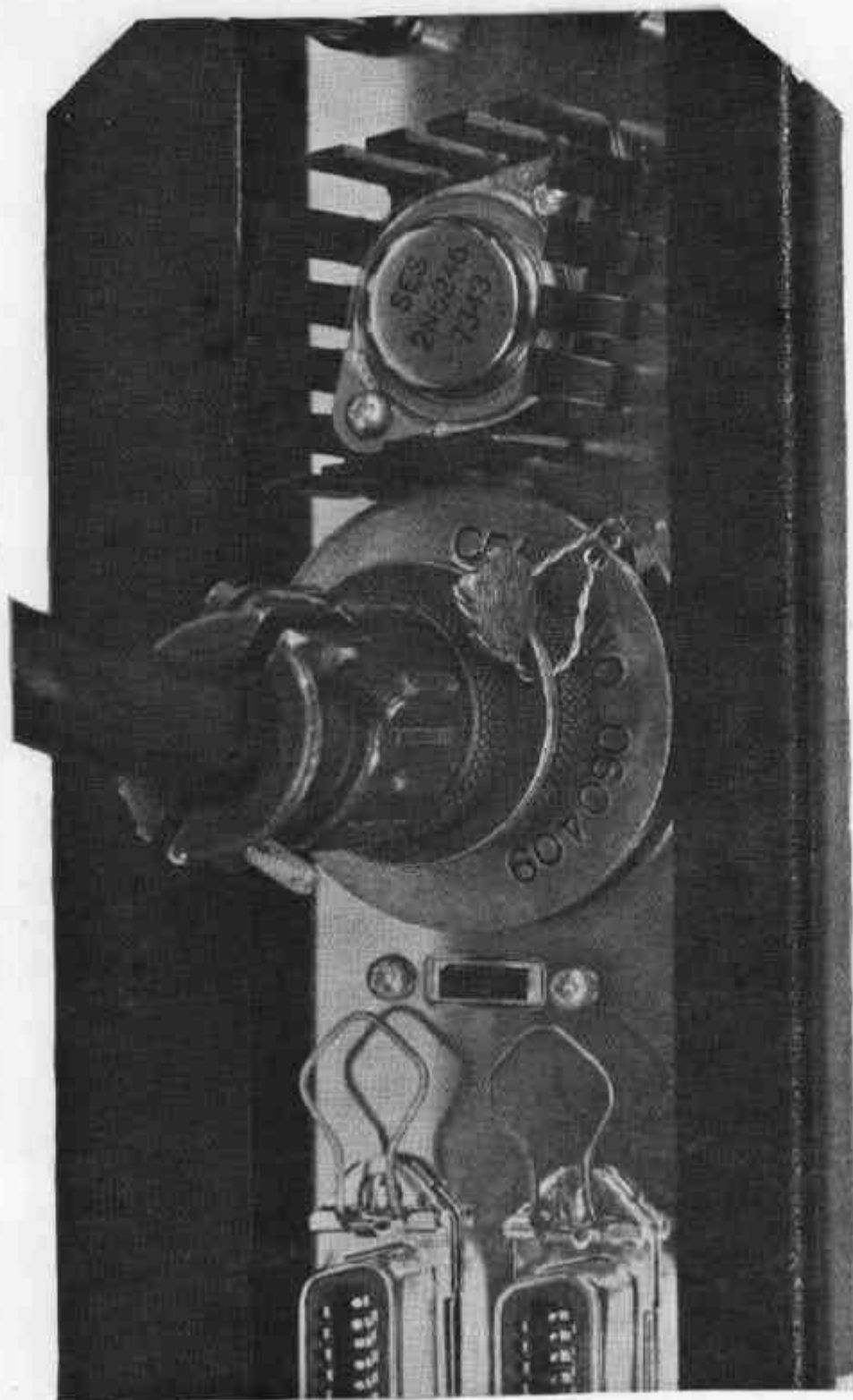
FIGURE 6/4C/25 - 3



Toledo 3165 Weighing Unit

31/3/77

FIGURE 6/4C/25 - 4



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

31/3/77



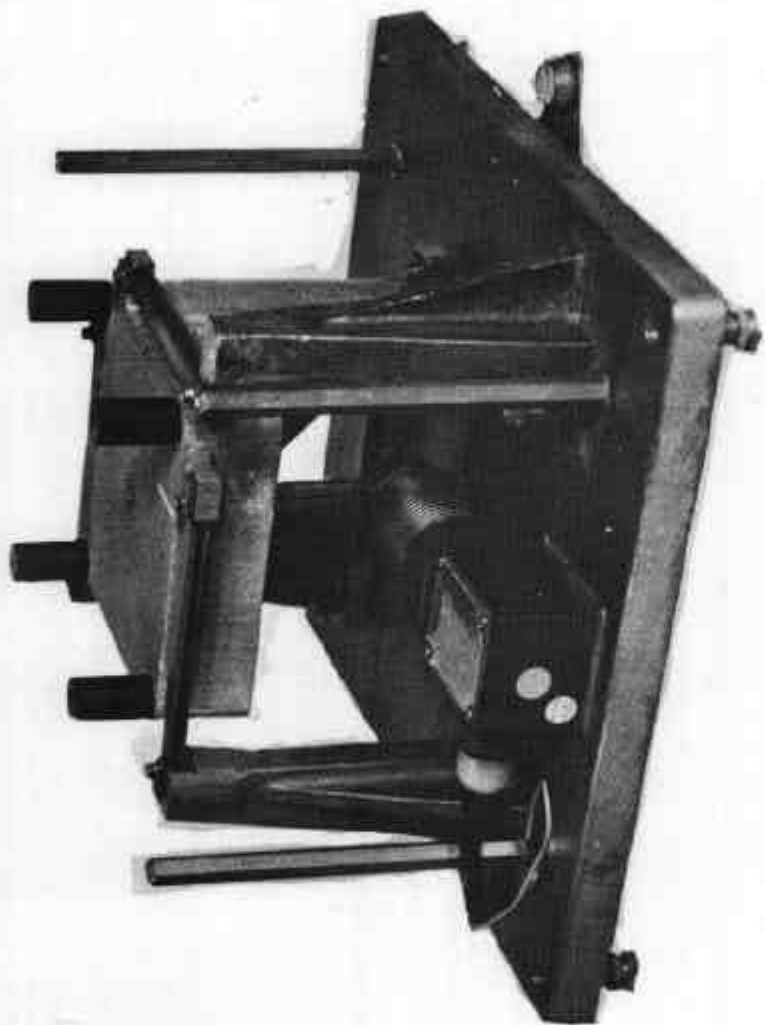
FIGURE 6/4C/25 - 5



Toledo 3185 Weighing Unit

C

FIGURE 6/4C/25 - 6



Toledo 3185 Weighing Unit

C

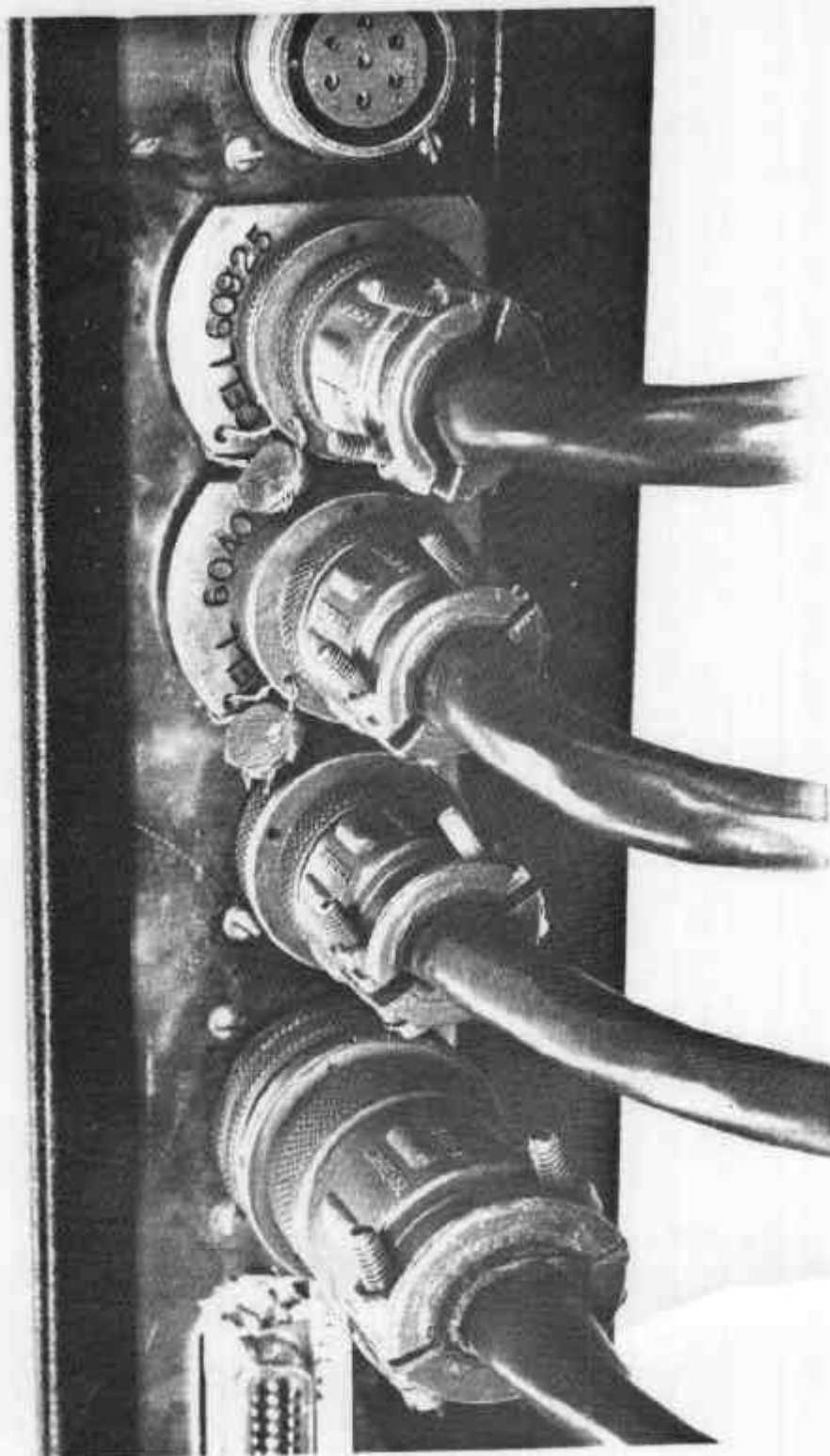
31/3/77

FIGURE 6/4C/25 - 7



Toledo 132 Basework Selector

FIGURE 6/4C/25 - 8



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

31/3/77

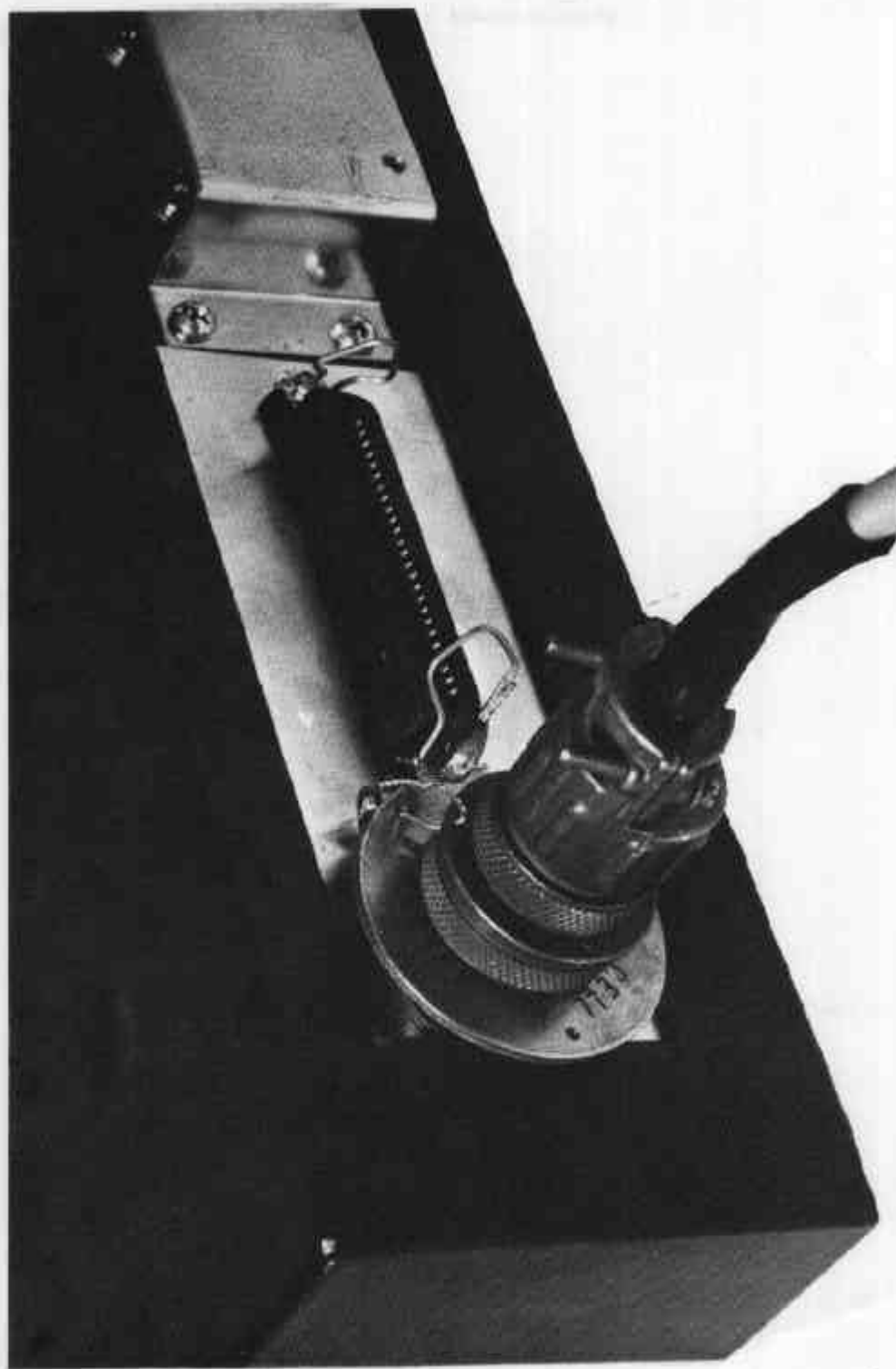


FIGURE 6/4C/25 - 10



Toledo 8134 Weight Indicator

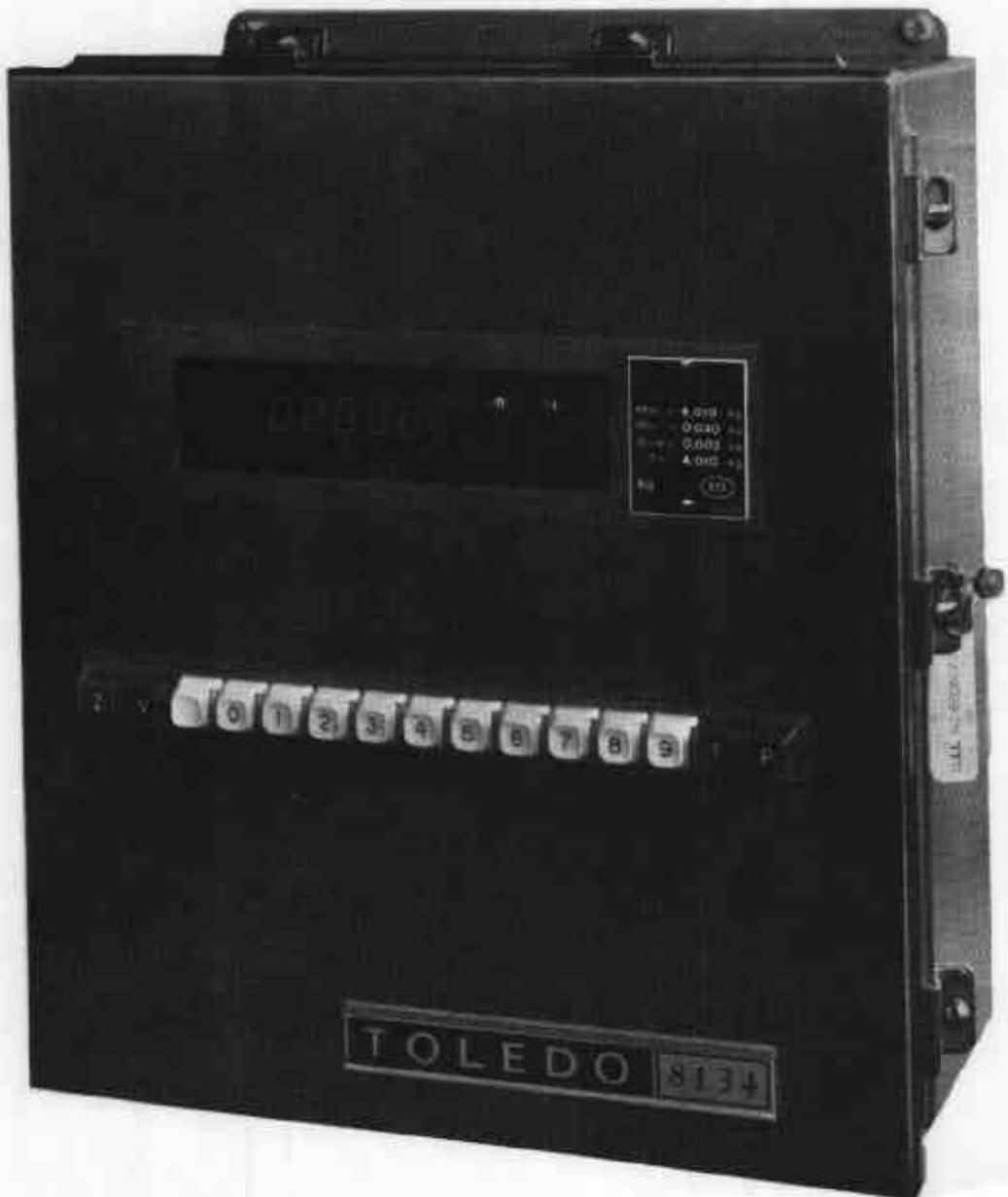
FIGURE 6/4C/25 - 11



Sealing of Load Cell Cable and Load Cell Serial Number to the Weight Indicator

30/9/77

FIGURE 6/4C/25 - 12



Toledo 8134 Weight Indicator — Alternative Housing

30/9/77