



NATIONAL STANDARDS COMMISSION

CERTIFICATE OF APPROVAL No 6/18/6

This is to certify that the pattern and variants of the

Toledo Weighing Instrument Model 2250-8130

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.

Pattern: approved 18/11/75

- . Capacity 1200 kg, 8130 indicator with 2500 increments, 90 kg Toledo type 0721 load cell;
- . with 45 kg or 22 kg load cells of same type;
- . with Toledo 132 or 133 basework-selector unit.

Variation No 1: approved 11/8/77

- . The 8130 indicator with 3000 increments;
- . an 8134 indicator with 3005 increments.

Variation No 2: approved 15/8/79

- . The 8134 indicator with manual cancellation of tare.

The pattern and variants are described in Technical Schedule No 6/18/6 and Variations Nos 1 and 2 issued on 24/2/76, 23/9/77 and 29/8/79, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1/8/84.

All instruments conforming to this approval shall be marked with

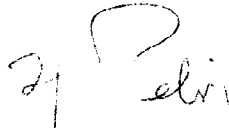
29/8/79

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the approval number "NSC No 6/18/6".

This Certificate replaces those issued on 24/2/76 and 23/9/77, which may be destroyed.

Signed

A handwritten signature in dark ink, appearing to read 'Z. P. elvi'. The signature is written in a cursive style with a large, looping 'P'.

Executive Director

29/8/79



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/18/6

Pattern: Toledo 2250-8130 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 6/18/6".

Description:

The pattern is a self-indicating overhead-track weighing instrument (see Figure 1) of maximum capacity 1200 kg. 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 weighing unit (see Figures 3 and 4) comprises a live weighing rail of up to 1,2 metres in length attached to a yoke at each end and suspended from two main levers which are in turn suspended by links from an overhead support. The live rail is aligned with the dead rail by two links at each end (see Figure 5). A stirrup connects the nose-end of the main levers to a Toledo 90-kg cantilever type load cell (see Figure 6) mounted on the overhead support. 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 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 7).

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	=	1200 kg
Min	=	25 kg
d _d	=	0,5 kg

The approval includes:

1. The resistant mechanism being a Toledo 45-kg cantilever load cell or a Toledo 22-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).
2. A Toledo 132 basework-selector unit allowing the output from the load cell resistant mechanisms of up to six Toledo 2250-8130 weighing instruments, as described in the patterns, to be displayed on the one 8130 weight indicator (see Figure 8). 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 9). 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 2250-8130 weighing instruments, as described in the pattern, to be displayed on the one 8130 weight indicator either individually or in combination (see Figure 10).^{*} 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 10.

Special Tests:

1. Zero Balance - When the indicator is adjusted to zero with the zero-check push-button depressed, it should

^{*} Weights and Measures inspectors should note that the limiting factors on the use are that no load receptor should have a maximum capacity above 1200 kg and that, singly or in combination, the maximum number of graduations is 2500.

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 ~~$\pm 0.25 \text{ dg}$~~
 $\pm 0.5 \text{ dg}$
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 6/18/6

VARIATION No 1

Pattern: Toledo Weighing Instrument Model 2250-8130

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 6/18/6 dated 24 February 1976.

All instruments conforming to this approval shall be marked "NSC No 6/18/6".

Description:

The approved modifications provide for:

1. the 8130 weight indicator displaying up to 3000 increments;
2. an 8134 weight indicator (see Figure 11) 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 12).

An alternative housing for the 8134 weight indicator is illustrated in Figure 13. 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 instrument is marked adjacent to the weight reading face, for example:

(III)			
Max	=	1005 kg	
Min	=	50 kg	
d ₁ = e	=	1 kg	
T	=	- 1005 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 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

* 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 $\pm 0,25 d_1$.

* The special tests applicable to the 8130 weight indicator are detailed in Technical Schedule No 6/18/6.

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

TECHNICAL SCHEDULE No 6/18/6

VARIATION No 2

Pattern: Toledo Weighing Instrument Model 2250-8130

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

Date of Approval of Variation: 15/8/79

Description of Variant:

The 8134 indicator with tare which is manually cancelled. 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 when the tare button is pressed with no load on the instrument. The word GROSS will then be illuminated and the instrument will gross weigh until a tare is selected.

Test Procedure:

As for Technical Schedule No 6/18/6.

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.

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NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/18/6

CHANGE No 1

The description of the

Toledo 2250-8130 Weighing Instrument

given in Technical Schedule No 6/18/6 issued on 24/2/76 is
altered by:

on page 4, changing the error allowed for the Load-cell
Creep test from $\pm 0,25 d_a$ to $\pm 0,5 d_a$.

12/12/79



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/18/6

CHANGE No 2

The following changes are made to the description of the Toledo Model 2250-8130 Weighing Instrument

given in Technical Schedule No 6/18/6 dated 24/2/76 (page 2)
and Technical Schedule No 6/18/6 Variation No 1 dated 23/9/77 (page 2):

Change the appropriate paragraphs (by deleting "not") to read;

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

Signed

Executive Director

18/2/83

FIGURE 6/18/6 - 1



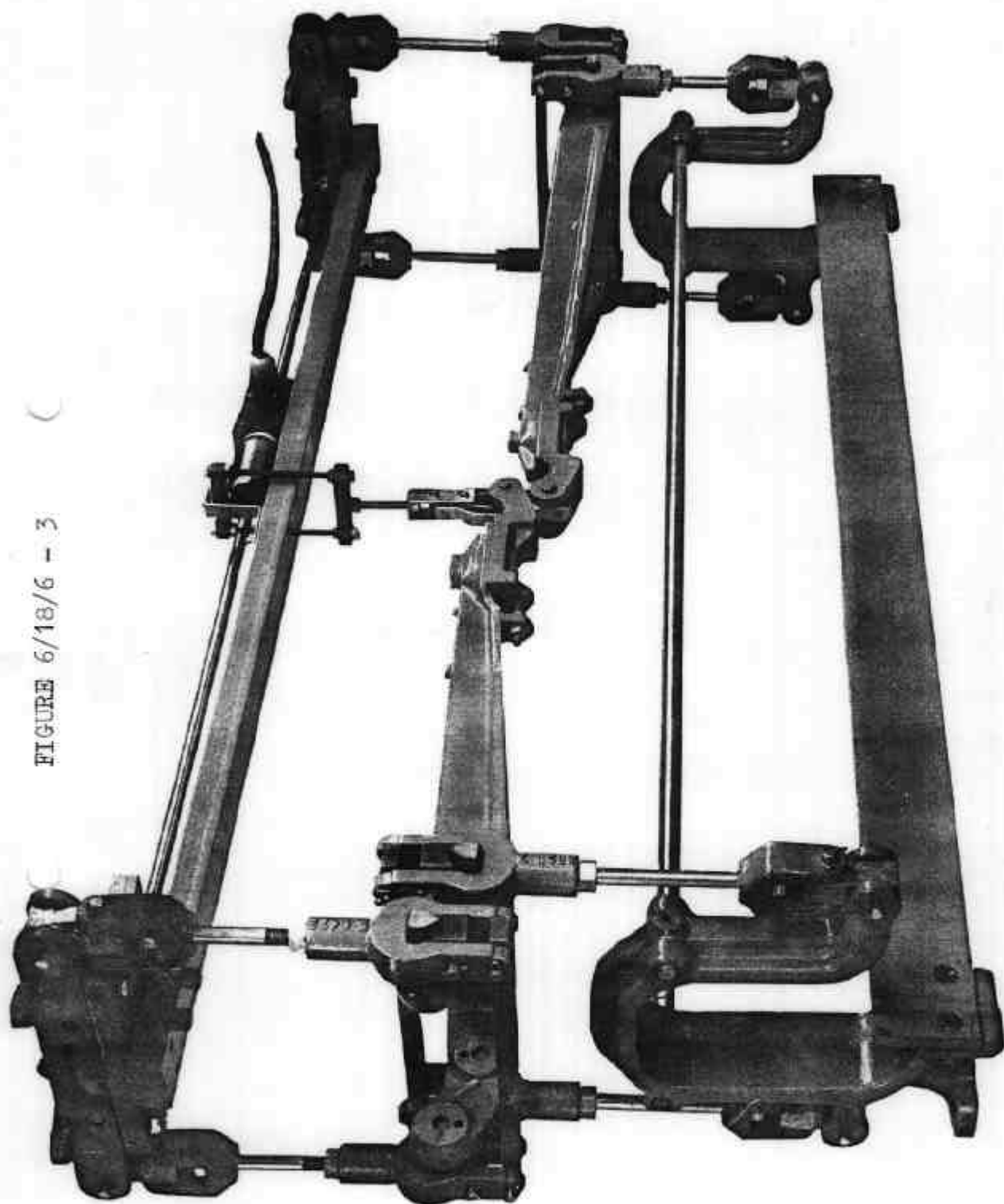
Toledo 2250-8130 Weighing Instrument

FIGURE 6/18/6 - 2



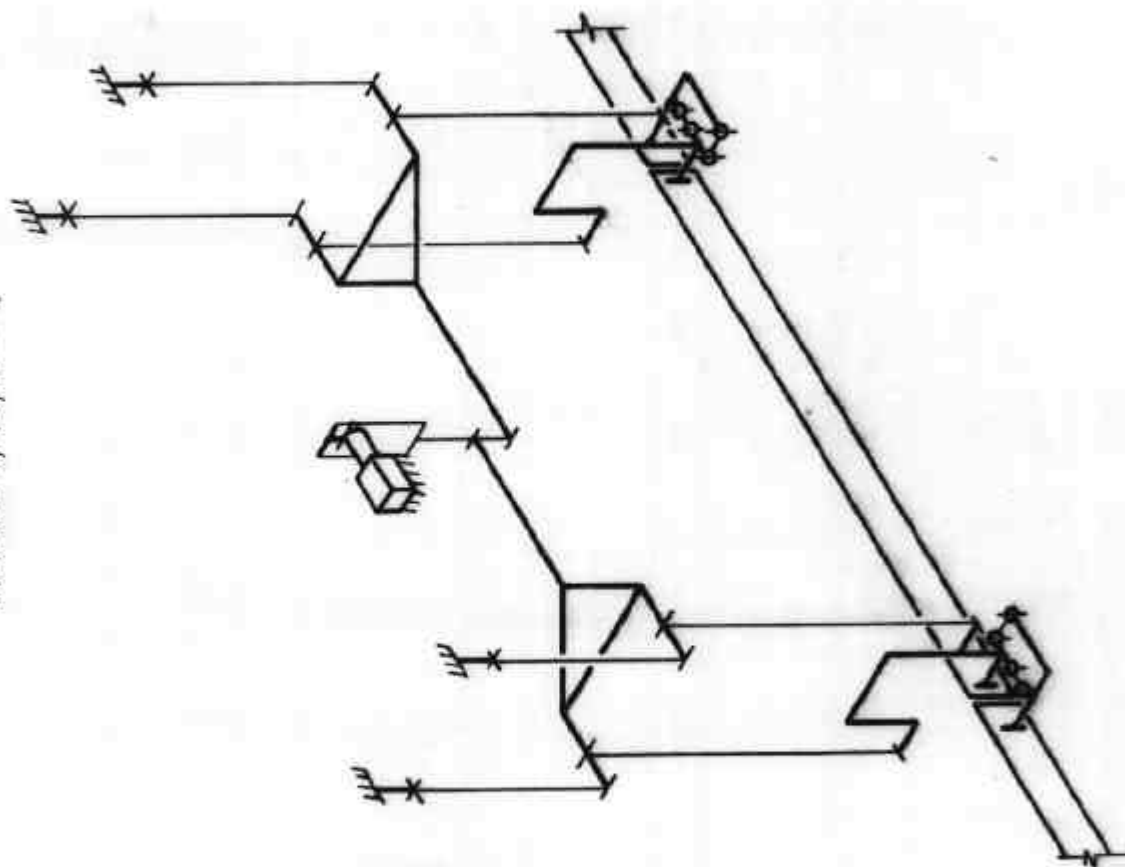
Toledo 8130 Indicator

FIGURE 6/18/6 - 3



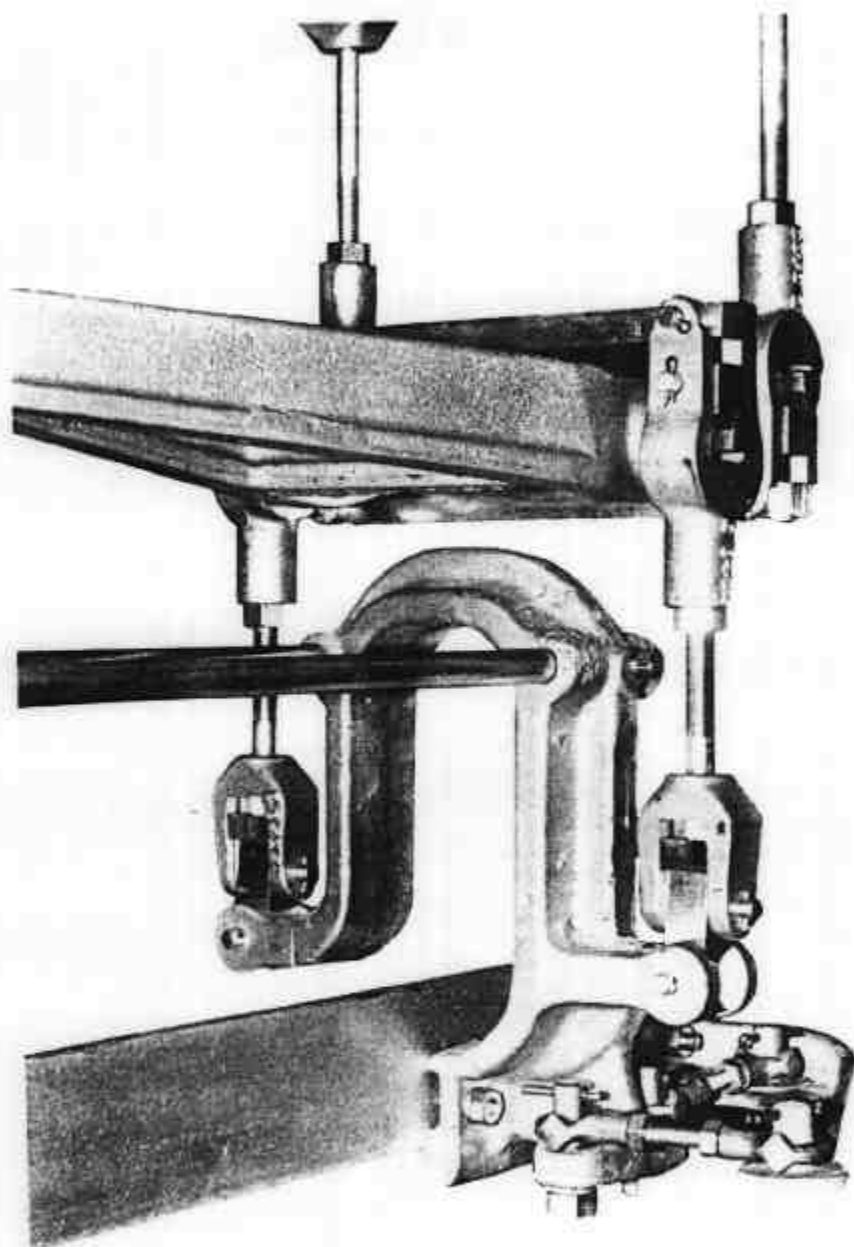
Overhead Lever Mechanism and Load Cell Resistant Mechanism

FIGURE 6/18/6 - 4



Overhead Lever System — Schematic Drawing

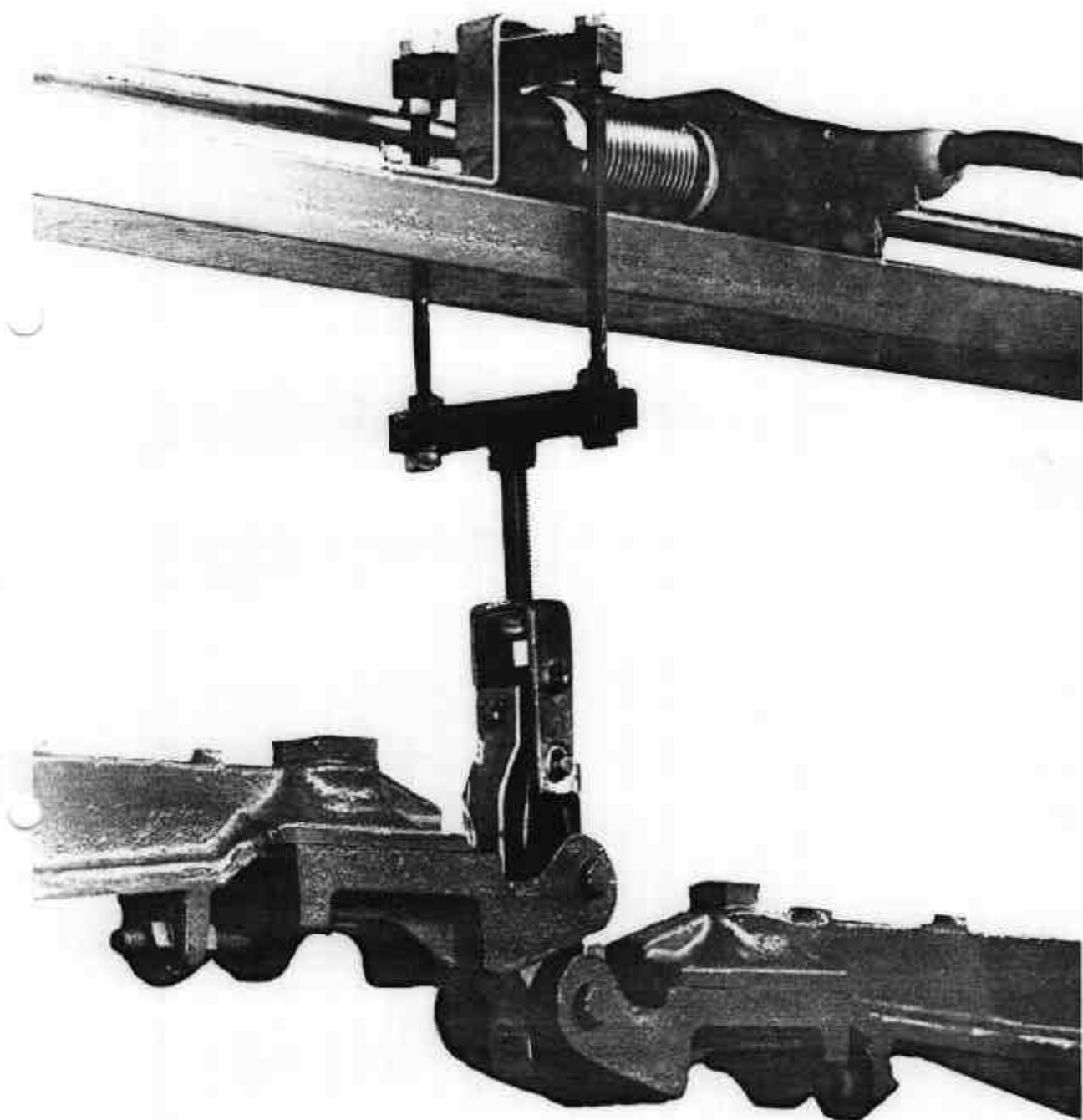
FIGURE 6/18/6 - 5



Live Rail Support Yoke and Alignment Links

24/2/76

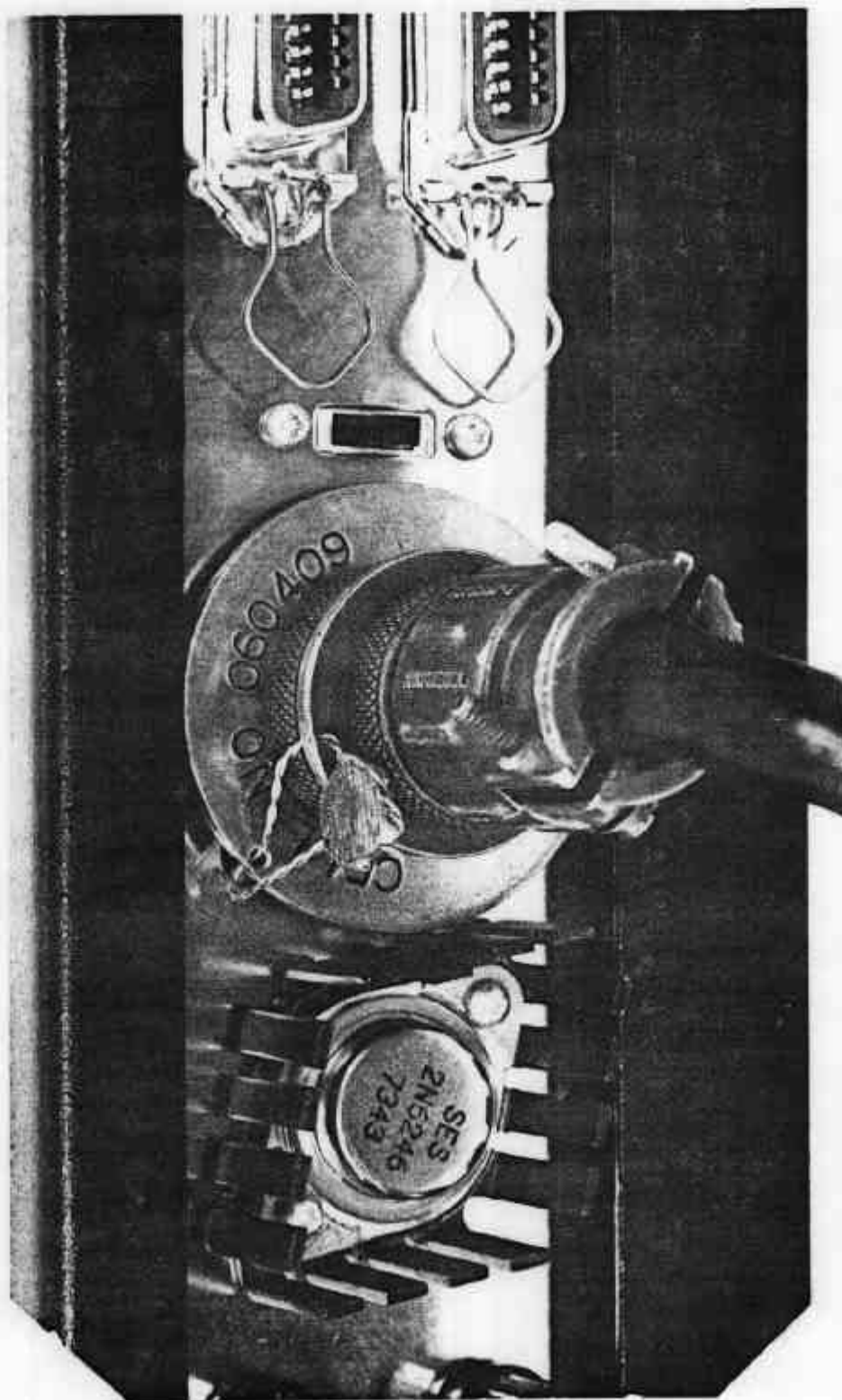
FIGURE 6/18/6 - 6



Nose-end of Main Levers and Stirrup

24/2/76

FIGURE 6/18/6 - 7



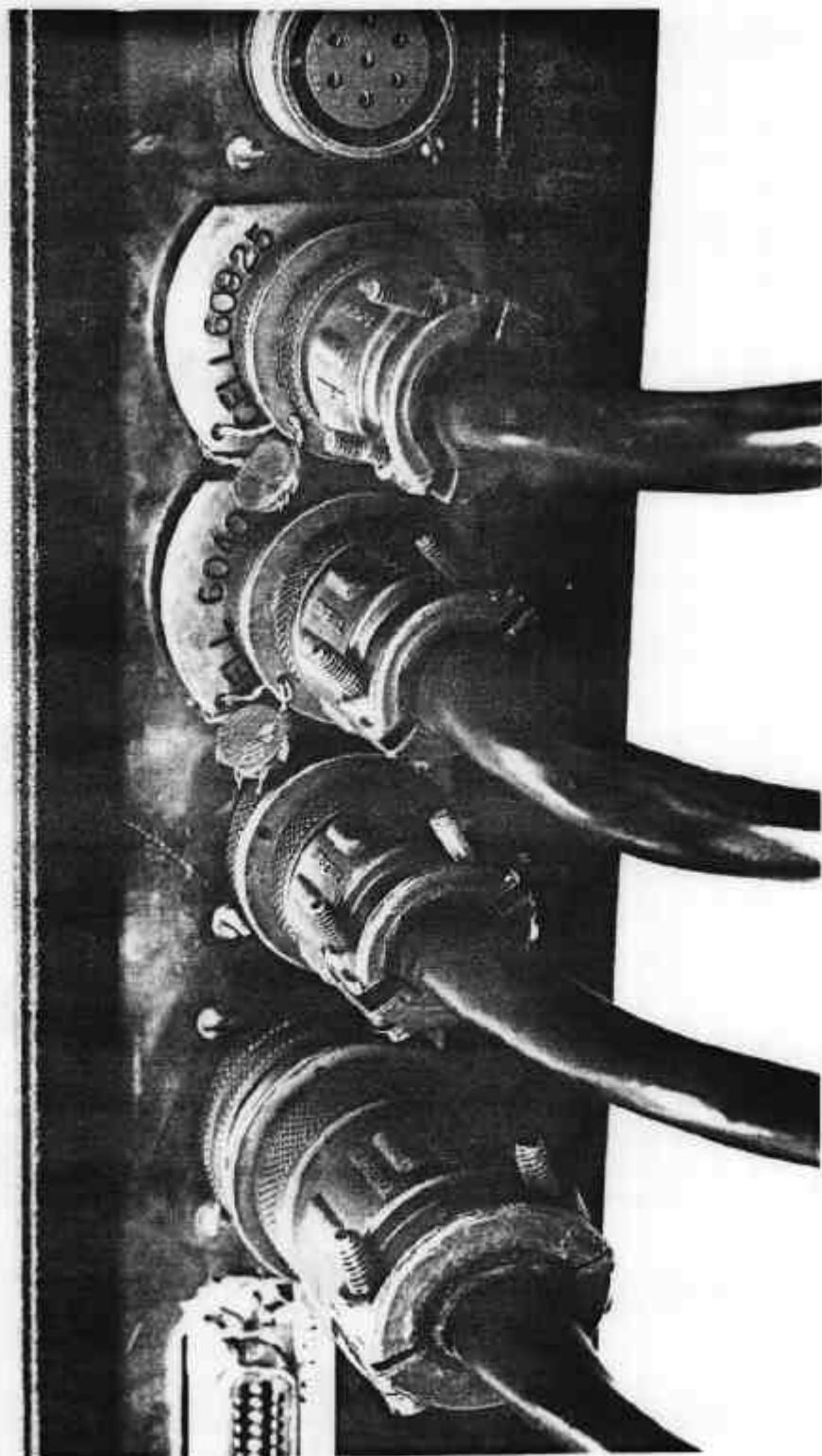
Toledo 8130 --- Load Cell Serial Number and Sealing of Load Cell Cable

FIGURE 6/18/6 - 8



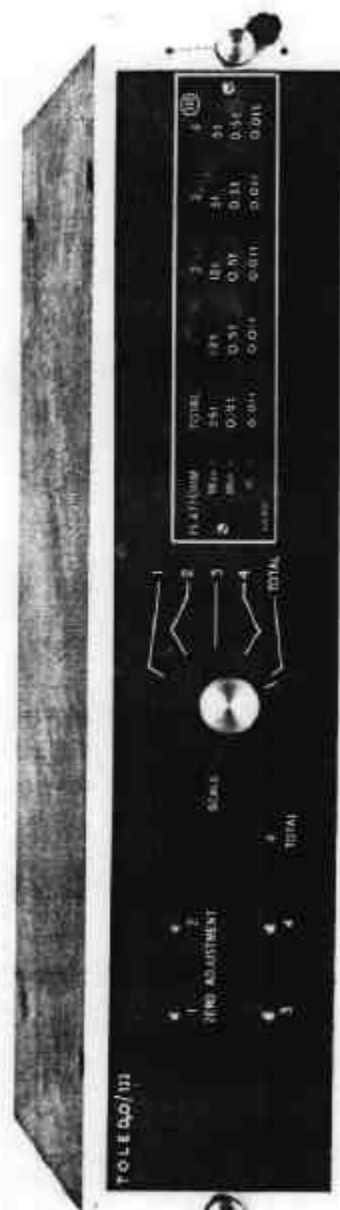
Toledo 132 Basework Selector

FIGURE 6/18/6 - 9



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

FIGURE 6/18/6 - 10



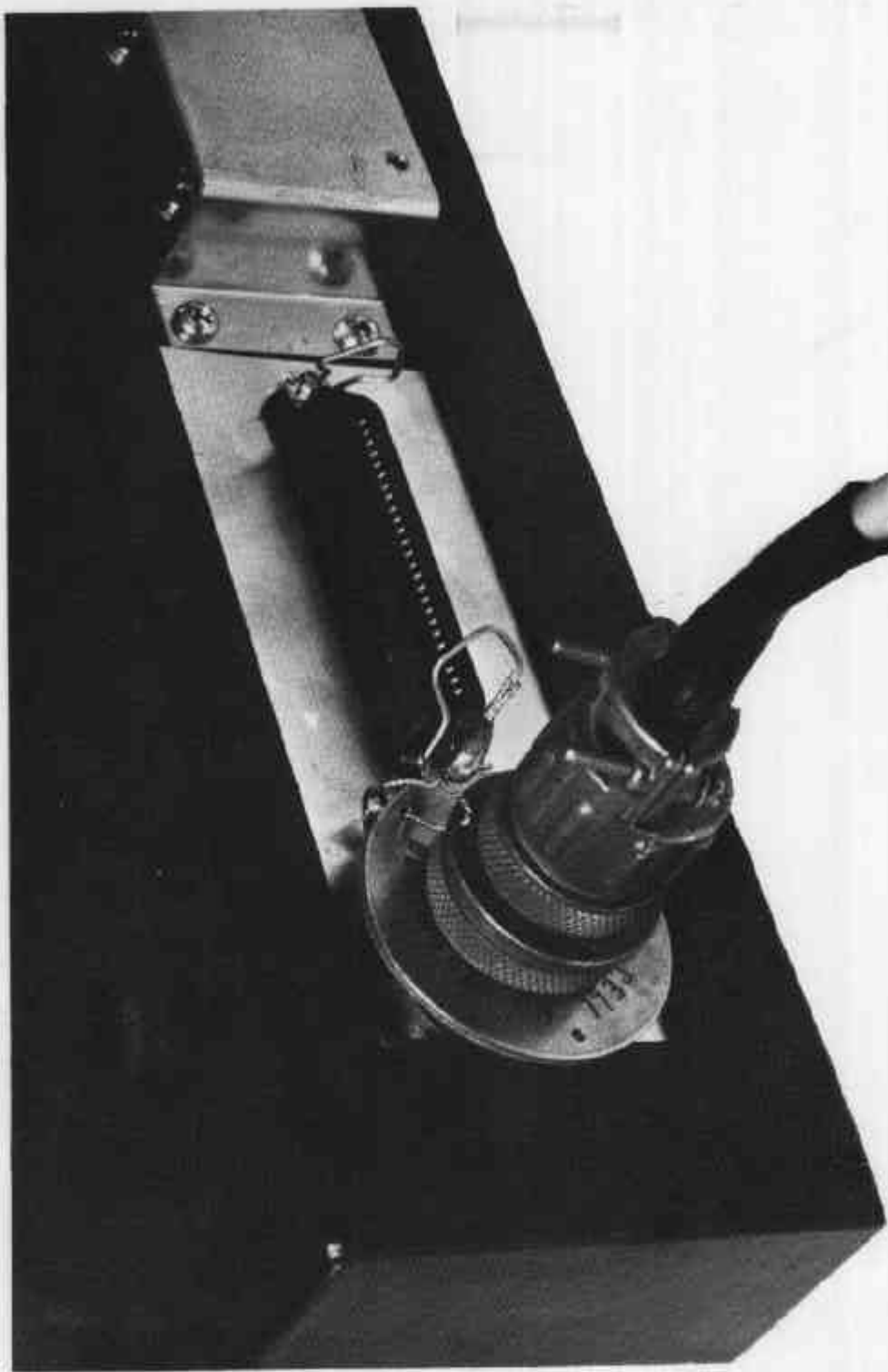
Teledc 133 Basework-selector Unit

FIGURE 6/18/6 - 11



Toledo 8134 Weight Indicator

FIGURE 6/18/6 - 12



Sealing — Load Cell Cable and Serial Number

FIGURE 6/18/6 - 13



Toledo 8134 Weight Indicator — Alternative Housing

23/9/77