

Correspondence: Executive Officer  
P.O. Box 282 NORTH RYDE  
N.S.W. 2113

Telegrams: NATSTANCOM SYDNEY  
Telephone: 888 3922

CERTIFICATE OF APPROVAL No 6/4D/70 **CANCELLED**  
VARIATION No 1

0/1

This is to certify that the following modifications of the patterns of the

Toledo Weighing Instrument Model 8401

approved in Certificate No 6/4D/70 dated 1 October 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: 4 April 1977

The approved modifications, described in Technical Schedule No 6/4D/70 - Variation No 1 and in drawings and specifications lodged with the Commission, provide for -

1. the instrument without price computing;
2. the instrument of capacity 15,01 kg by 0,01-kg graduations without price computing and with a remotely located combined purchaser's and vendor's weight indicator.

The approval is subject to review on or after 1 September 1981.

All instruments conforming to this approval shall be marked with the approval number "NSC No 6/4D/70".

Signed

  
Executive Officer

# CANCELLED

Cancelled  
2/1



## NATIONAL STANDARDS COMMISSION

### TECHNICAL SCHEDULE No 6/4D/70

Pattern: Toledo Weighing Instrument Model 8401

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

Date of Approval: 23 August 1976

All instruments conforming to this approval shall be marked "NSC No 6/4D/70".

#### Description:

The pattern (see Figures 1 and 2) is a self-indicating price-computing weighing instrument of capacity 7,005 kg by 0,005-kg graduations with price computing in 1-c increments to \$99,99 per kg and total price to \$99,99\*. Weight, unit price and total price are digitally indicated on both the vendor's and purchaser's sides. The unit price is entered sequentially by ten push-buttons and cancelled when the weight indicated is within ten graduations of zero or when the "0" button is pressed.

The load receptor is supported by a Toledo 12-kg cantilever load cell resistant mechanism and stayed by five flexure plates (see Figure 3).

The output voltage from the load cells, which is proportional to the load applied, is digitally encoded to continuously indicate weight and multiplied by the unit price, entered by the push-buttons to continuously indicate total price.

The instrument will rezero automatically whenever it comes to rest within one graduation of zero; this is indicated by the word "zero" being illuminated. A press-button marked "Z" is provided for rezeroing the instrument when zero has changed by more than one increment.

The instrument is provided with a level indicator and four adjustable feet. Adjacent to the level indicator is a notice advising that the

---

\* The total-price indicator will be blank for combinations of weight and unit price giving total prices above \$99,99.

instrument must be level when in use.

Successive operations of the "verify" button marked "V" can be used to blank out the indicator or display "all-8" while the button is depressed. This checks that the display is working correctly.

Three extra push-buttons, one marked "T" and two undenominated, are provided on the keyboard. The buttons are pinned to make them inoperative and their associated switch mechanisms are removed.

The instrument is marked adjacent to each weight reading face:

III

Max	=	7,005 kg
Min	=	0,1 kg
$d_a = e$	=	0,005 kg

An output socket on the instrument may be used to provide information to peripheral equipment which is not in use for trade. The use of peripheral equipment will not affect the operation of the instrument.

The approval includes:

1. The capacity 3,002 kg by 0,002-kg graduations, the load receptor being supported by a 6,5-kg cantilever load cell.
2. The weight and total-price indicators not continuously indicating, that is, remaining blank, other than at zero load, until the instrument reaches equilibrium.
3. Without the automatic cancellation of unit price when the load is removed and the indication falls to within ten graduations of zero.
4. The push-buttons on a keyboard located up to 1 metre from the weighing instrument (see Figure 4); the interconnecting cable is sealed to the instrument (see Figure 5).

#### Special Tests:

As this instrument is fitted with zero-drift tracking, the application of cumulative loads should not exceed five minutes' duration. Periodic removal of the load will allow the instrument to rezero and thus more closely simulate actual usage.

- 1, Zero Range — The indication of weight should not reset to zero when the zero-reset push-button "Z" is pressed with a load equivalent to 35 graduations on the load receptor.

2. "Zero Check" — Place a small weight equal to, say, 10 graduations ( $10 d_c$ ) 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  $0,25 d_c$ , that is,  $10,25 d_c$ , on the load receptor, readings of  $11 d_c$  and  $11 d_c$  indicate that the alignment of the instrument is not correct, readings of  $10 d_c$  and  $11 d_c$  or  $10 d_c$  and  $10 d_c$  are acceptable.

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

3. 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.
4. Price-computing Accuracy — The indications of weight, unit price and total price, as listed in Tables 1 or 2 as appropriate, will indicate that the price-computing and weight circuits are functioning correctly. The exact figures should be indicated as rounding is effected within the computer.

Note: This test does not establish correct weight indications; a separate test in accordance with the Commission's recommended testing procedure for the elimination of rounding errors — Document 104 — is necessary.

5. Keyboard — The three extra push-buttons should be immovable.
6. Range of Indication —
  - (a) The maximum weight indicated should not exceed the maximum capacity; above this weight the indicator should be blank.
  - (b) When the instrument is adjusted by means of the zero-reset push-button "Z" to indicate zero with a weight equivalent to one graduation on the load receptor, removal of the weight should cause the indicator to go blank.

TABLE 1

---

Indicated weight kg	Price per kg \$	Total price \$
0	0	0
0,100	99,99	10,00
0,105	98,99	10,39
0,110	97,99	10,78
0,12	96,99	11,64
0,13	95,99	12,48
0,14	94,99	13,30
0,15	93,99	14,10
0,16	92,99	14,88
0,17	91,99	15,64
0,18	90,96	16,37
0,19	89,88	17,08
0,2	79,77	15,95
0,3	69,66	20,90
0,4	59,55	23,82
0,5	49,44	24,72
0,6	39,33	23,60
0,7	29,22	20,45
0,8	19,11	15,29
0,9	9,14	8,23
1,0	99,99	99,99
2,0	20,03	40,06
3,0	17,50	52,50
4,0	17,00	68,00
5,0	15,00	75,00
6,0	14,00	84,00
7,005	5,54	38,81

---

Test Procedure — 7,005 kg by 0,005-kg Instrument

TABLE 2

---

Indicated weight kg	Price per kg \$	Total price \$
0	0	0
0,040	19,99	0,80
0,042	29,99	1,26
0,044	39,99	1,76
0,046	49,99	2,30
0,048	59,99	2,88
0,050	69,99	3,50
0,054	79,99	4,32
0,058	89,99	5,22
0,060	99,99	6,00
0,070	91,99	6,44
0,080	92,99	7,44
0,090	93,99	8,46
0,110	94,99	10,45
0,220	95,94	21,11
0,330	96,99	32,01
0,400	97,11	38,84
0,500	98,10	49,05
0,600	99,12	59,47
0,700	99,23	69,46
0,800	98,34	78,67
0,900	99,40	89,46
1,000	99,56	99,56
1,500	9,67	14,51
2,000	9,78	19,56
2,500	9,89	24,73
3,002	9,99	29,99

---

Test Procedure — 3,002 kg by 0,002-kg Instrument



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/4D/70

### VARIATION No 1

Pattern: Toledo Weighing Instrument Model 8401

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

Date of Approval of Variation: 4 April 1977

The modifications described in this Schedule apply to the patterns described in Technical Schedule No 6/4D/70 dated 1 October 1976.

All instruments conforming to this approval shall be marked "NSC No 6/4D/70".

#### Description:

The approved modifications provide for:

1. The instrument without price computing, indicating only weight on the purchaser's and vendor's sides.
2. The instrument, of capacity 15,01 kg by 0,01-kg graduations, without price computing and with a weighing unit and a weight-indicator unit in separate housings (see Figures 6 and 7). The weighing unit Model 3185 comprises a load receptor which is supported by a Toledo 22-kg cantilever load-cell resistant mechanism and stayed by five flexure plates. It is provided with a level indicator and adjustable feet. Adjacent to the level indicator is a notice advising that the instrument must be level when in use.

The weight-indicator unit comprises a combined purchaser's and vendor's weight indicator and associated electronic circuits. It may be located remote from but directly associated with the weighing unit.\* The interconnecting cable is sealed to the

---

\* Inspectors should ensure that the instrument is installed so that there is a self-evident association between the remote indicator and the weighing unit and so that the weight indications can be easily read by both the purchaser and the vendor.

load cell in the weighing unit (see Figure 8).

The instrument will rezero automatically whenever it is at rest within one graduation of zero; this is indicated by the word "zero" being illuminated. A press-button marked "Z" is provided for rezeroing the instrument when zero has changed by more than one increment.

Successive operations of the "verify" button marked "V" can be used to blank out the indicator or display "all-8" while the button is depressed. This checks that the display is working correctly.

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

(III)

Max	=	15,01 kg
Min	=	0,2 kg
$d_i = e$	=	0,01 kg

and with a notice advising that the remote display should be located so that it is directly associated with the weighing unit and so that the weight indications can be easily read by both the purchaser and vendor.

An output socket on the weight-indicator unit may provide data 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, store and process the data, or print receipts, etc. Provision is made to seal the output socket.

**Special Tests:**

The special tests described in Technical Schedule No 6/4D/70 dated 1 October 1976 apply to this variation.

---

\* 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 non-permanent visual display, for example, a seven-segment indicator.

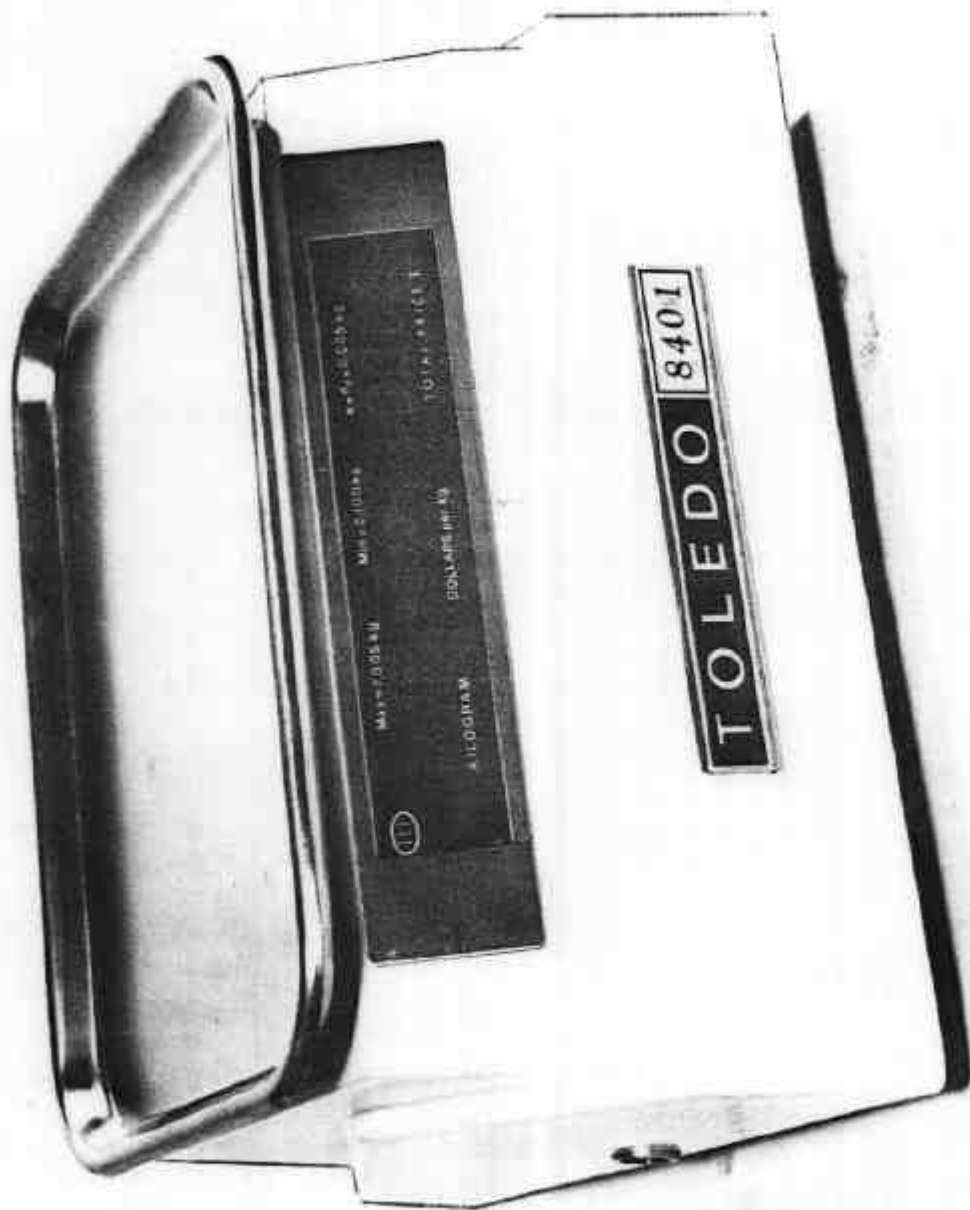


FIGURE 6/4D/70 - 1



Toledo Model 8401 — Vendor's Side

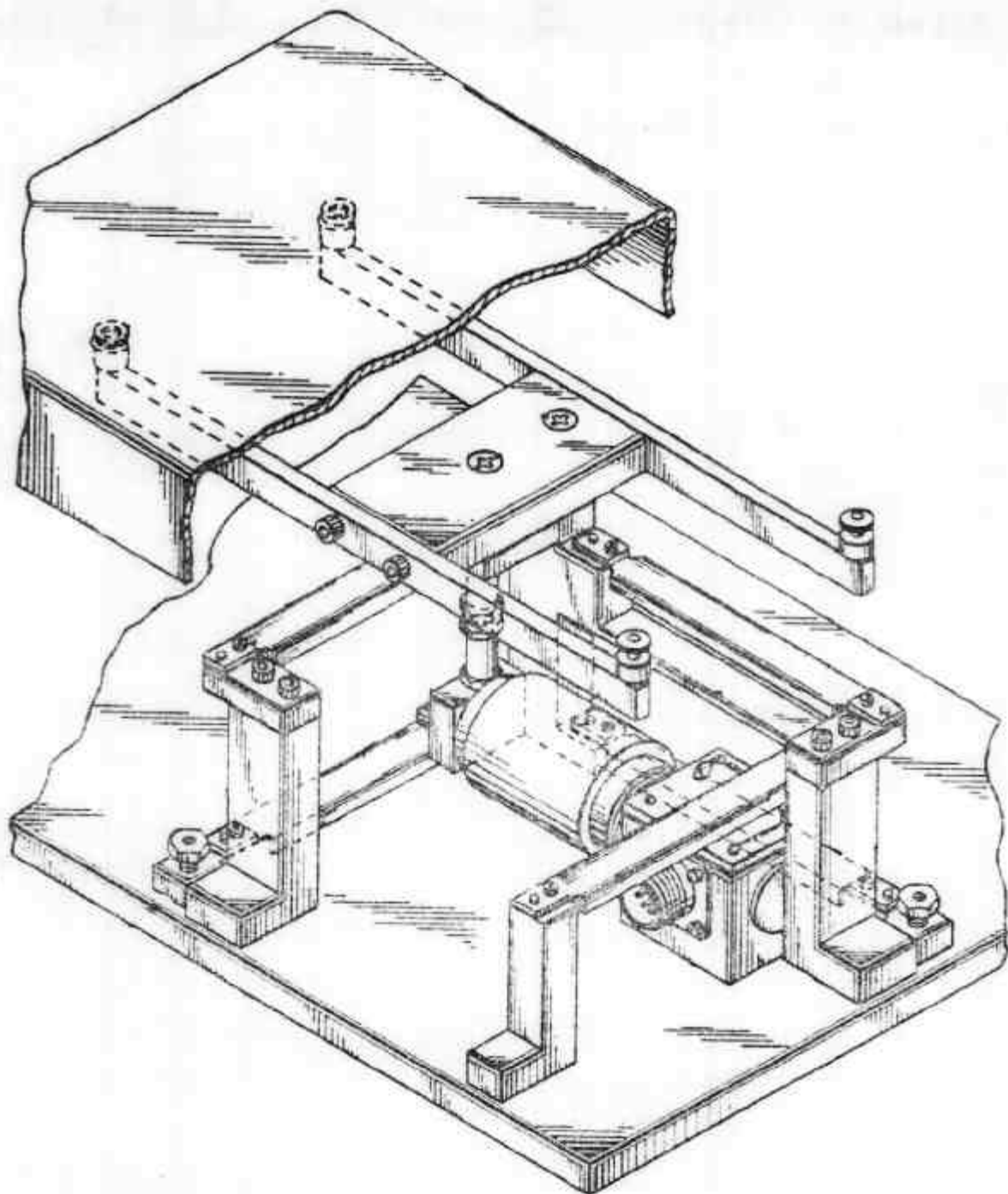
FIGURE 6/4D/70 - 2



Toledo Model 8401 — Purchaser's Side

1/10/76

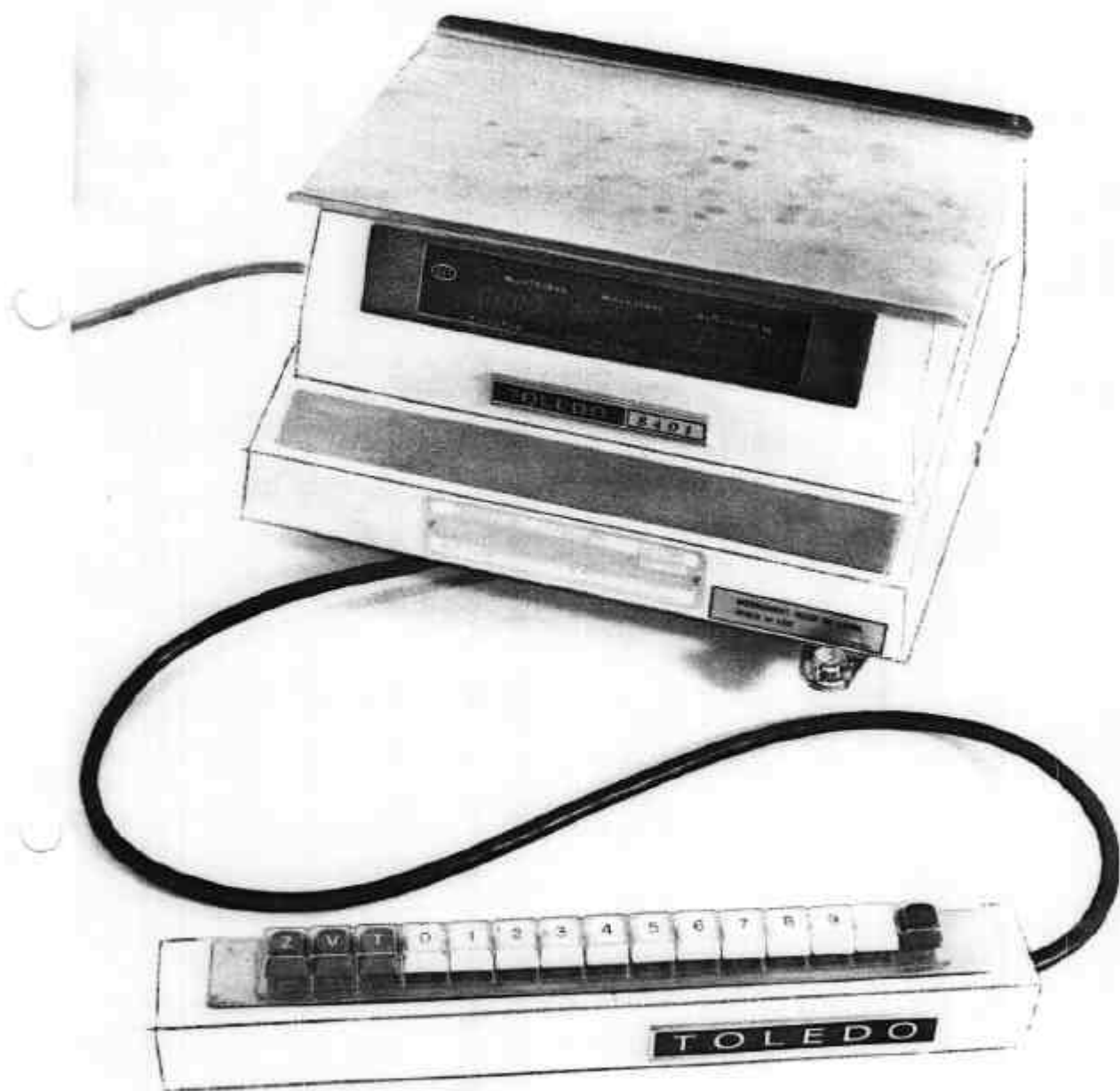
FIGURE 6/4D/70 - 3



Toledo Model 8401 — Schematic Drawing

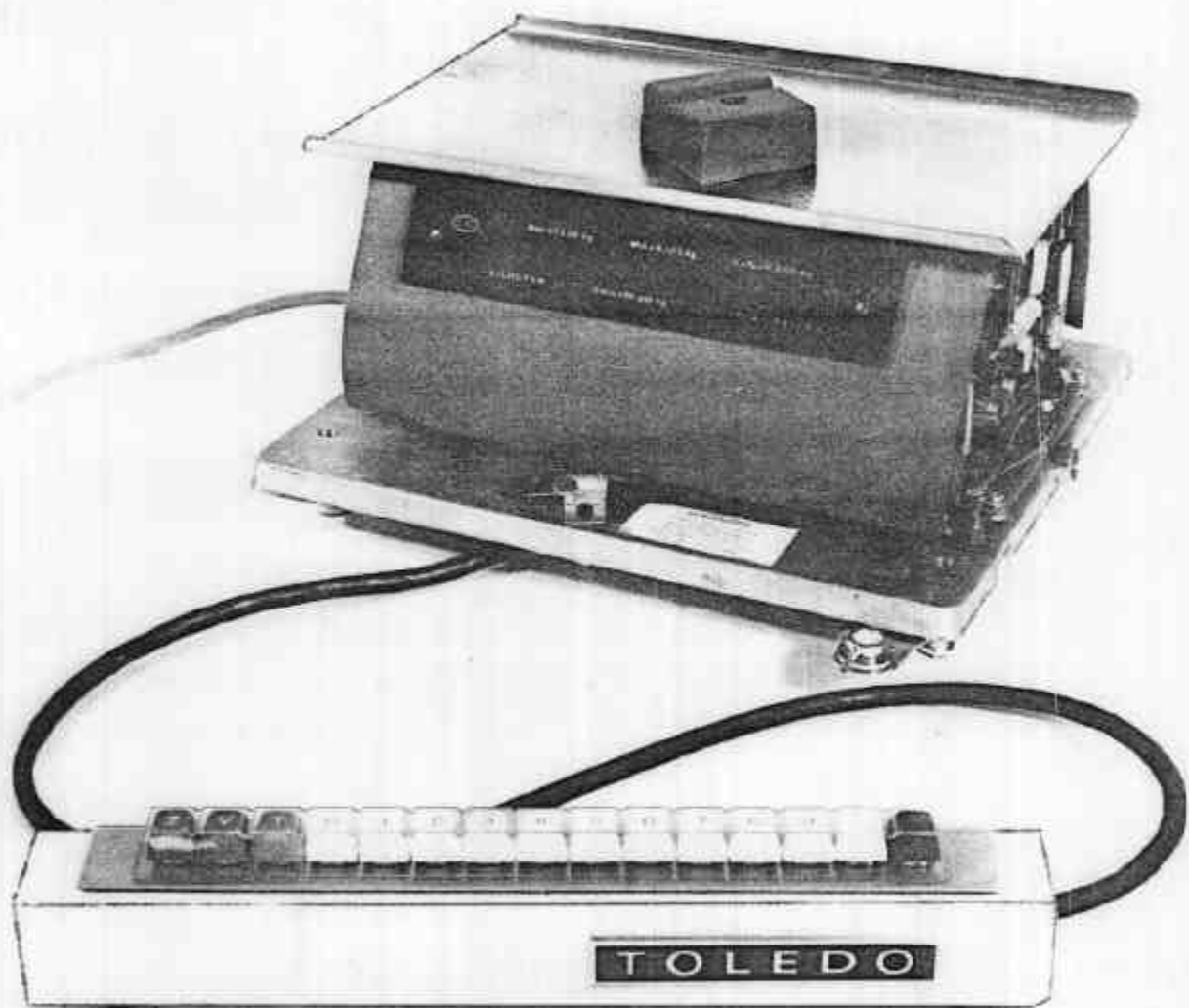
1/10/76

FIGURE 6/4D/70 - 4



Toledo Model 8401 with Remote Keyboard

1/10/76



Toledo Model 8401 — Sealing of Remote  
Keyboard Cable

1/10/76

FIGURE 6/4D/70 - 6



Toledo 3185 Weighing Unit

7/7/77

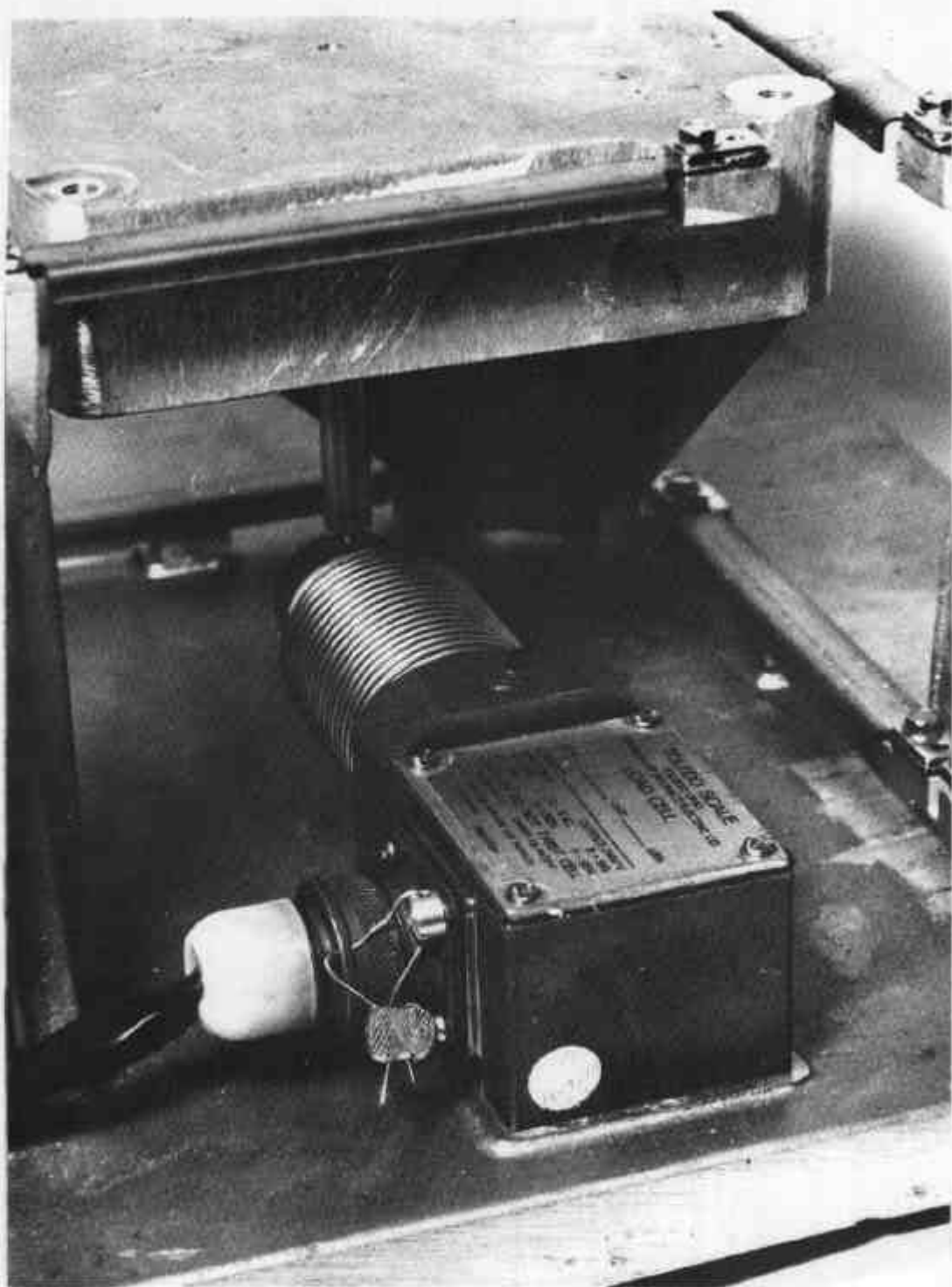
FIGURE 6/4D/70 - 7



Weight-indicator Unit

7/7/77

FIGURE 6/4D/70 - 8



Sealing of Interconnecting Cable to Load Cell

7/7/77