



# NATIONAL STANDARDS COMMISSION

## WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

### REGULATION 9

#### CERTIFICATE OF APPROVAL No 6/4D/81

This is to certify that an approval has been granted by the Commission that the pattern and variants of the

Ishida Weighing Instrument Model LC-1200

submitted by Sumitomo Australia Limited,  
8-18 Bent Street,  
Sydney, New South Wales, 2000,

are suitable for use for trade.

The approval of the pattern and variants is subject to review on or after 1/8/84.

All instruments purporting to comply with this approval shall be marked NSC No 6/4D/81.

Relevant drawings and specifications are lodged with the Commission.

Signed

Acting Executive Director

#### Descriptive Advice

Pattern: approved 20/7/79

- Self-indicating price-computing weighing instrument of 12 kg capacity by 5 g scale intervals, with price-computing in 1c increments to \$99.99/kg and price to \$1199.88.

#### Variants

1. Of capacity 15 kg by 5 g, with price to \$1499.85 (Model LC-1500).

Technical Schedule No 6/4D/81 dated 31/7/79 describes the pattern and Variant 1.

2. With output socket for peripheral equipment.
3. With purchaser's indicator of mass, tare and price in a separate housing.
4. With the keyboard in a separate housing.

5. With hand-operated zero button on the keyboard or on the instrument.

Technical Schedule No 6/4D/81 Variation No 1 dated 8/11/79 describes Variants 2 to 5.

6. With programmable unit-price keyboard (Model LC-1200 DX or LC-1500 DX).

Technical Schedule No 6/4D/81 Variation No 2 dated 13/6/80 describes Variant 6.

7. With re-arranged keyboard including push-button zero.

8. With audible push-button tone on keyboard.

Technical Schedule No 6/4D/81 Variation No 3 dated 16/1/81 describes Variants 7 and 8.

9. Model LC-1500 DX with unit price to \$999.99/kg and price to \$9999.90.

Technical Schedule No 6/4D/81 Variation No 4 dated 27/3/81 describes Variant 9.

Filing Advice

Certificate of Approval No 6/4D/81 dated 16/1/81 is superseded by this Certificate and may be destroyed.

Technical Schedule No 6/4D/81 dated 31/7/79, and Variations 1, 2 and 3 dated 8/11/79, 13/6/80 and 16/1/81 are retained as part of this approval.



# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/4D/81

Pattern: Ishida Weighing Instrument Model LC-1200

Submittor: Sumitomo Australia Pty Ltd,  
8-18 Bent Street,  
Sydney, New South Wales, 2000.

Date of Approval: 20/7/79

### Description of Pattern:

The pattern (Figures 1 and 2) is a self-indicating price-computing weighing instrument of 12 kg capacity by 5 g scale intervals, with a semi-automatic additive tare of 0,475 kg, price computing in 1 c increments to \$99,99 per kilogram, and total-price indication to \$1199,88. Mass, tare mass, unit price and price are digitally indicated on both sides of an elevated headwork which can be rotated through 90°. Unit price is entered by pressing the appropriate push-buttons 0 to 9, and cleared either by pressing button C or automatically when the mass indicator returns to zero. Pressing the button marked S retains the unit price when the mass indicator returns to zero, and pressing the button marked Sc tests the nine bars of each digit. When power is turned on to the instrument, all indicators are blank until the instrument is zeroed.

The load receptor is supported by a spider which is attached to the load cell.

The output voltage from the load cell, which is proportional to the load applied, is digitally encoded to continuously indicate mass, and is 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 0,5e of zero; this is indicated by a zero light being illuminated when zero is set within 0,25e. A tool-operated contactor marked ZERO is provided for rezeroing the instrument when zero has changed by more than one increment.

The indications of mass and computed price blank out when the load is below zero, or above capacity, or when the load is not steady.

A container of mass up to 0,475 kg placed on the load receptor is automatically tared to within 0,25e when the button marked TA is pressed. The value of the tare is indicated to the nearest scale interval on both sides of the instrument and the mass indicator displays zero. When the container is removed the mass indicator goes blank; the tare value remains displayed.

When the filled container is placed on the load receptor, net mass is indicated and the tare value is still displayed. The tare can only be cancelled by pressing the TA button after removing the load.

The instrument 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. A lead plug seal over a steel bracket prevents access to one of the top cover retaining screws (Figure 3).

The nameplate is marked with the following data:

Manufacturer's name	
Serial number of instrument	
NSC approval number in the form:	NSC No 6/4D/81
Accuracy class in the form:	III
Maximum capacity in the form:	Max 12 kg *
Minimum capacity in the form:	Min 0,1 kg *
Verification scale interval in the form:	e = d <sub>a</sub> = 5 g *

\* These markings are repeated adjacent to each mass indicator

Variants:

1. The instrument of capacity 15 kg by 5 g scale intervals with total-price indication to \$1499,85 and maximum tare of 0,5 kg, known as Model No LC-1500.

Test Procedures:

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.

As the instrument is fitted with zero-drift tracking, the application of cumulative loads should not exceed 5 minutes' duration. Periodic removal of the load will allow the instrument to rezero and thus

more closely simulate actual usage.

1. Zero test — as the automatic device resets zero when the weighing mechanism is in equilibrium within 0,5 scale interval of zero, zero should be checked as described in the Commission's Test Procedure for the Elimination of Rounding Error for Weighing Instruments with Digital Indication (Document 104) with, say, a load equal to  $10e$  on the load receptor. The indication with 0,25e and 0,75e additional weight on the load receptor will then be  $10e$  and  $11e$  respectively.
2. Zero range — the maximum range of operation 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:
  - (a) with zero balance indicated, apply a load of, say, 0,35 kg to the instrument and press the PRESS TO BALANCE button; the instrument should not rezero; and
  - (b) reduce the load to, say, 0,20 kg, and again press the PRESS TO BALANCE button; the instrument should indicate zero balance.
3. Level sensitivity — as the automatic zero device may prevent the zero from changing when the instrument is tilted at zero load, the effect of tilt should be initially checked with a small load on the instrument, say,  $10e$ .

When the instrument is tilted so that the bubble in the level indicator moves 2 mm, the indication  $10e$  should not change by more than  $2e$ , and when the  $10e$  load is removed and zero allowed to automatically reset, or is manually reset, in the tilted position, the instrument should satisfy the accuracy requirements given above.

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

Note: This test does not establish correct mass indications; a separate test, which may be carried out in conjunction with this test, in accordance with the Commission's recommended testing procedure for the elimination of rounding errors — Document 104 — is necessary.

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5. Taring — at any load within the capacity of the tare mechanism, the tare mechanism in conjunction with the automatic zero device should be able to reset the mass indicator to zero within 0,25e. This may be checked as described for ZERO TEST.
6. Range of indication
- (a) The maximum mass indicated should not exceed the maximum capacity (Max); above this indicated mass the indicator should be blank.
  - (b) The minimum mass indicated should be zero; below this indicated mass the indicator should be blank.

TABLE 1

Indicated mass kg	Price/kg \$	Total price \$
0	0	0
0,100	99,99	10,00
0,105	98,99	10,39
0,110	97,99	10,78
0,120	96,99	11,64
0,130	95,99	12,48
0,140	94,99	13,30
0,150	93,99	14,10
0,160	92,99	14,88
0,170	91,99	15,64
0,180	90,96	16,37
0,190	89,88	17,08
0,200	79,77	15,95
0,300	69,66	20,90
0,400	59,55	23,82
0,500	49,44	24,72
0,600	39,33	23,60
0,700	29,22	20,45
0,800	19,11	15,29
0,900	9,14	8,23
1,000	30,57	30,57
2,000	70,03	140,06
3,000	84,67	254,01
4,000	92,00	368,00
5,000	95,00	475,00
6,000	97,00	582,00
7,000	99,00	693,00
8,000	99,50	796,00
9,000	99,99	899,91
10,000	99,99	999,90
11,000	99,99	1099,98
12,000	99,99	1199,88

Test Procedure — 12 kg Instrument with  
Unit Price to \$99,99/kg and Total Price to \$1199,88

TABLE 2

Indicated mass kg	Price/kg \$	Total price \$
0	0	0
0,100	99,99	10,00
0,105	98,99	10,39
0,110	97,99	10,78
0,120	96,99	11,64
0,130	95,99	12,48
0,140	94,99	13,30
0,150	93,99	14,10
0,160	92,99	14,88
0,170	91,99	15,64
0,180	90,96	16,37
0,190	89,88	17,08
0,200	79,77	15,95
0,300	69,66	20,90
0,400	59,55	23,82
0,500	49,44	24,72
0,600	39,33	23,60
0,700	29,22	20,45
0,800	19,11	15,29
0,900	9,14	8,23
1,000	30,57	30,57
2,000	70,03	140,06
3,000	84,67	254,01
4,000	92,00	368,00
5,000	95,00	475,00
6,000	97,00	582,00
7,000	99,00	693,00
8,000	99,50	796,00
9,000	99,99	899,91
10,000	99,99	999,90
11,000	99,99	1099,89
12,000	99,99	1199,88
13,000	99,99	1299,87
14,000	99,99	1399,86
15,000	99,99	1499,85

Test Procedure: 15 kg Instrument with  
Unit Price to \$99,99 and Total Price to \$1499,85





# NATIONAL STANDARDS COMMISSION

## TECHNICAL SCHEDULE No 6/4D/81

### VARIATION No 1

Pattern: Ishida Weighing Instrument Model LC-1200

Submittor: Sumitomo Australia Ltd,  
8-18 Bent Street,  
Sydney, New South Wales, 2000.

#### Description of Variants:

2. The instrument with an output socket mounted inside the cabinet to provide data to peripheral devices which are not a part of the measuring instrument.\*
3. With the purchaser's indicator of mass, tare, unit price, price and zero balance in a separate housing remote from the weighing unit (Figure 4). The interconnecting cable is internally connected within the weighing unit and within the purchaser's indicator unit. A lead-and-wire seal prevents the cover of the purchaser's indicator from being removed.

The remote display is marked adjacent to the mass reading face, as described in Technical Schedule No 6/4D/81.

Note: Inspectors should ensure that the instrument is installed so that there is a self-evident association between the remote indicator and the weighing unit.

4. The instrument with the keyboard in a separate housing (Figure 4); the connecting cable is internally connected within the instrument.
5. The instrument with hand-operated zero button located on the keyboard or on the side of the instrument.

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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.

Sealing:

The weighing instrument is sealed with a stamping plug which retains a right-angled bracket over one of the top cover retaining screws. The stamping cup and bracket are fixed to the instrument either by:

- (i) a screw and a rivet or pin (instruments with serial numbers between 1001 and 1100 inclusive);
- (ii) a screw and a dimple on the bracket which matches a hole in the stamping plug cup (instruments with serial numbers between 1101 and 1200 inclusive); or
- (iii) two screws (instruments with serial numbers above 1201).



# NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/4D/81

VARIATION No 2

Pattern: Ishida Weighing Instrument Model LC-1200

Submittor: Sumitomo Australia Ltd,  
8-18 Bent Street,  
Sydney, New South Wales, 2000.

Description of Variant:

6. The instrument with programmable unit price keyboard and known as Model LC-1200 DX or LC-1500 DX (Figure 5).

13/5/80



# NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/4D/81

VARIATION No 3

Pattern: Ishida Weighing Instrument Model LC-1200

Submitter: Sumitomo Australia Ltd,  
8-18 Bent Street,  
Sydney, New South Wales, 2000.

Description of Variants

7. The instrument with rearranged keyboard including push-button zero (Figure 6);
8. The instrument with audible push-button tone on the keyboard.



# NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/40/81

VARIATION No 4

Pattern: Ishida Weighing Instrument Model LC-1200

Submittor: Sumitomo Australia Limited,  
8-18 Bent Street,  
Sydney, New South Wales, 2000.

1. Description of Variant

1.1 Variant 9

Model LC-1500 DX of 15 kg capacity by 5 g scale interval, with unit price in 1c increments to \$999.99/kg and price to \$9999.90.

TEST PROCEDURE

Test procedures are as described in Technical Schedule No 6/40/81 dated 31/7/79 except that price-computing accuracy is checked using Table 3 (attached).

TABLE 3

Indicated mass	Unit price	Price
kg	\$/kg	\$
0.000	0	0
0.100	999.99	100.00
0.105	498.99	52.39
0.110	997.99	109.78
0.120	696.99	83.64
0.130	595.99	77.48
0.140	764.50	107.03
0.150	993.99	149.10
0.160	882.31	141.17
0.170	991.99	168.64
0.180	990.96	178.37
0.190	389.88	74.08
0.200	179.77	35.95
0.300	269.66	80.90
0.400	959.55	383.82
0.500	949.44	474.72
0.600	939.33	563.60
0.700	929.22	650.45
0.800	919.11	735.29
0.900	9.14	8.23
1.000	910.57	910.57
2.000	870.03	1740.06
3.000	784.67	2354.01
4.000	950.52	3802.08
5.000	884.96	4424.80
6.000	906.99	5441.94
7.000	899.64	6297.48
8.000	949.53	7596.24
9.000	988.72	8898.48
10.000	999.99	9999.90
11.000	50.00	550.00
12.000	50.00	600.00
13.000	50.00	650.00
14.000	50.00	700.00
15.000	50.00	750.00

Test Procedure - 15-kg Instrument with Unit Price to \$999.99/kg and Price to \$9999.90



# NATIONAL STANDARDS COMMISSION

## NOTIFICATION OF CHANGE

### CERTIFICATE OF APPROVAL No 6/4D/81

#### CHANGE No 1

The description of the

Ishida Weighing Instrument Model LC-1200

given in Technical Schedule No 6/4D/81 is altered as follows:

1. In last line on page 1 delete "or above capacity" and, following the end of that sentence, insert "when the load is above capacity the computed price blanks out and 'OL' appears on the mass indicator".
2. On page 4, in the last line of paragraph 6 (a), delete "blank" and insert "OL".



# NATIONAL STANDARDS COMMISSION

## NOTIFICATION OF CHANGE

### CERTIFICATE OF APPROVAL No 6/40/81

#### CHANGE No 2

The following changes are made to the description of the Ishida Weighing Instrument Model LC-1200:

1. In Certificate of Approval No 6/40/81 dated 27/3/81, change the description of Variant 9 to read:

"Model LC-1500 or LC-1500 DX ....."

2. In Technical Schedule No 6/40/81 Variation No 4 dated 27/3/81, change paragraph 1.1 Variant 9 to read:

"Model LC-1500 or LC-1500 DX ....."

Signed

Executive Director





6/4D/81  
17/6/88

## NATIONAL STANDARDS COMMISSION

### CANCELLATION CERTIFICATE OF APPROVAL No 6/4D/81

This is to certify that the approval for use for trade granted in respect of the pattern and variants of the

Ishida Model LC-1200 Weighing Instrument

submitted by Sumitomo Australia Limited  
8-18 Bent Street  
Sydney NSW 2000

has been cancelled in respect of new instruments as from 17 June 1988.

Signed

Executive Director

FIGURE 6/4D/81 - 1



LC-1200 — Vendor's Side

31/7/79

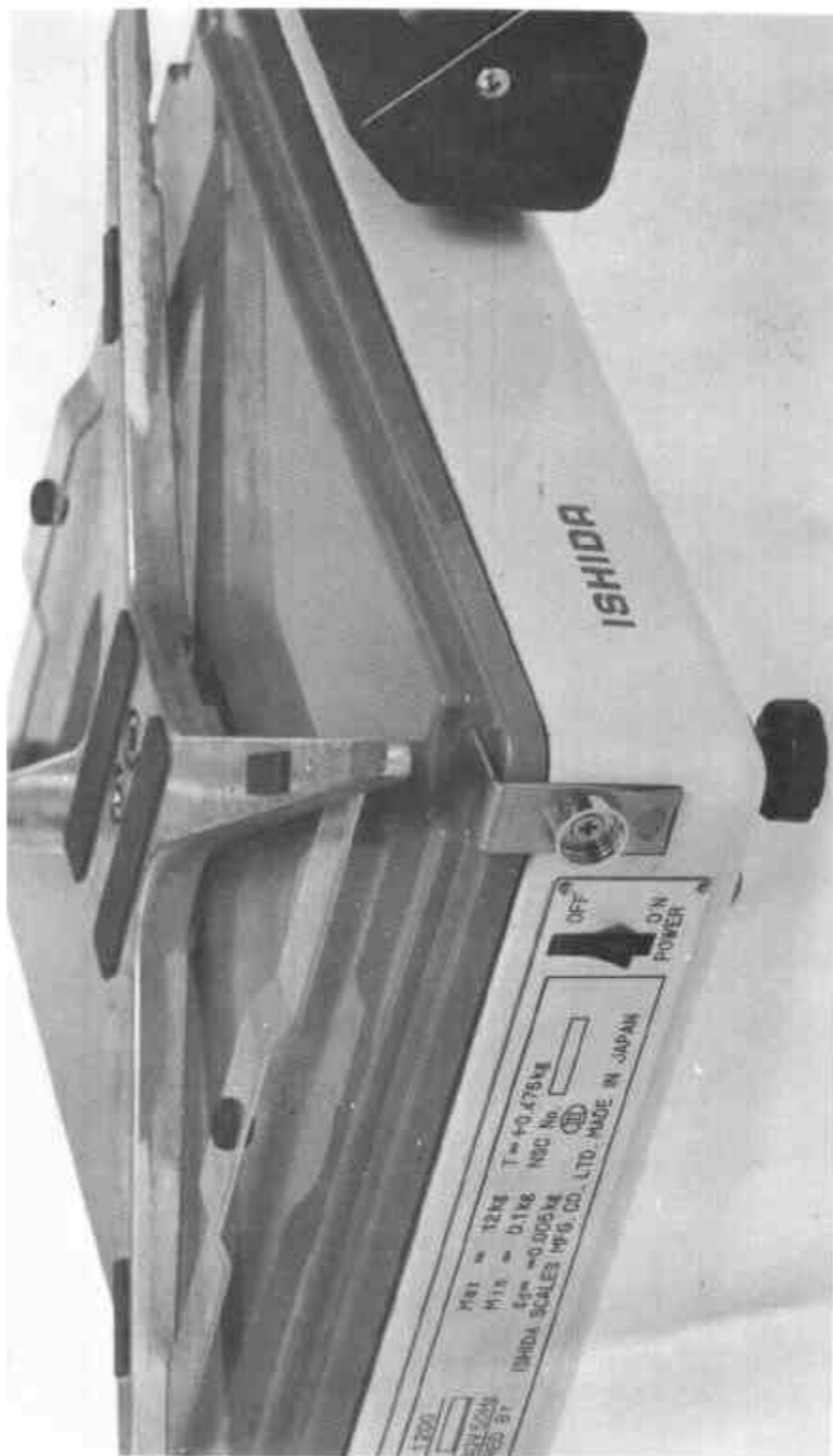
FIGURE 6/4D/81 - 2



Ishida LC-1200 — Purchaser's Side

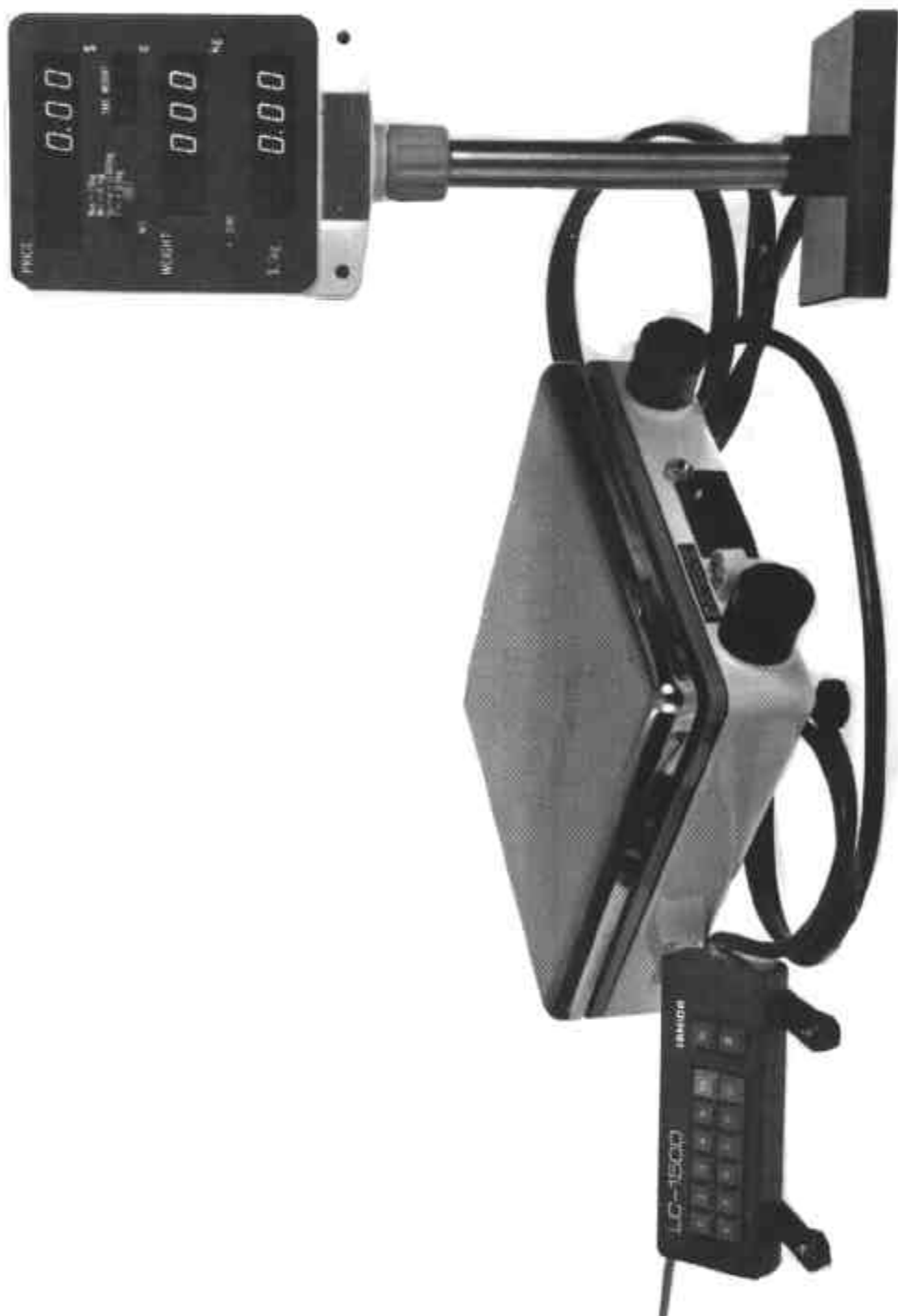
31/7/79

FIGURE 6/4D/81 - 3



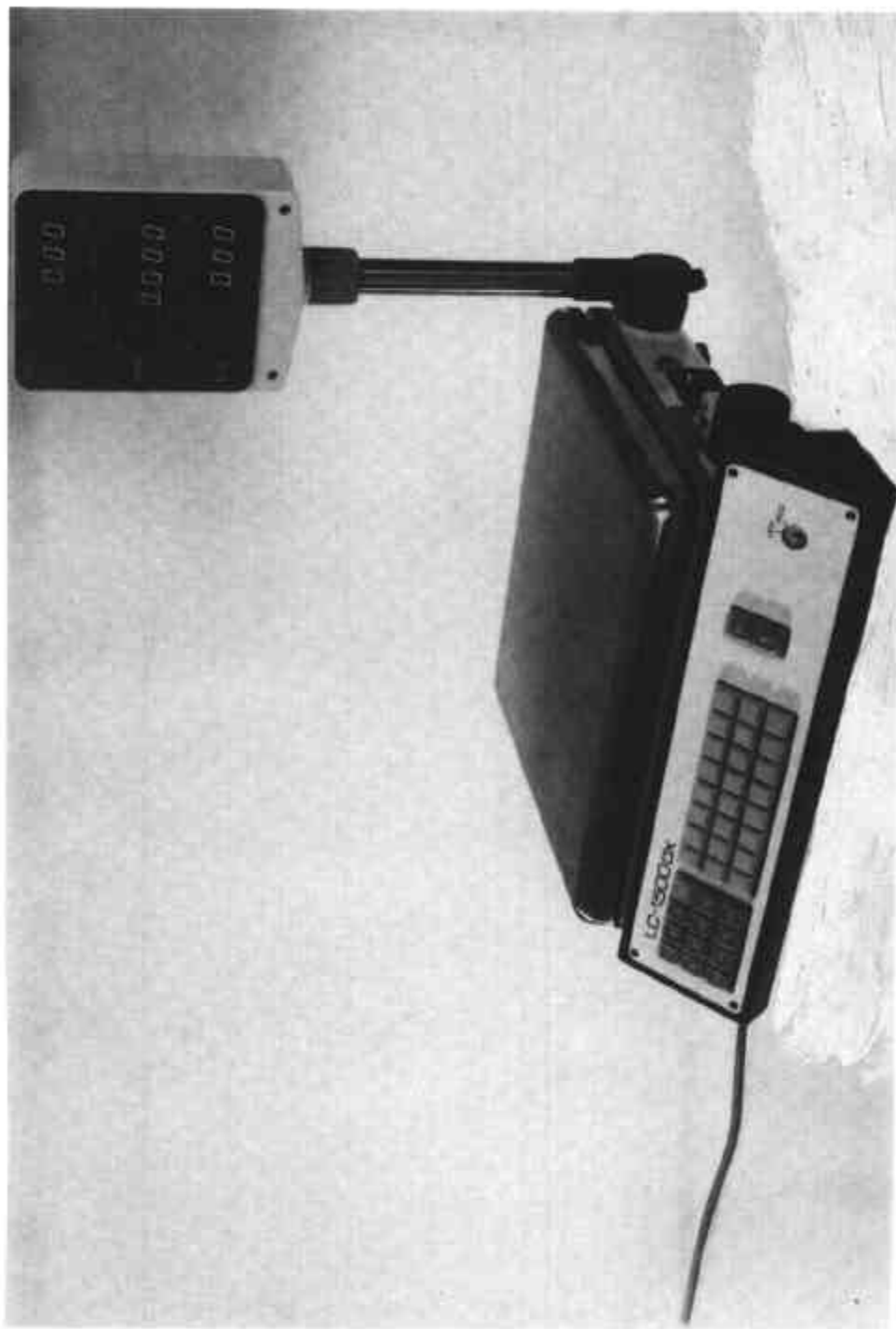
Ishida LC-1200 — Showing Sealing Plug and Bracket

FIGURE 6/4D/81 - 4



Ishida LC-1200 with Separate Keyboard and Separate Printer's Indicator

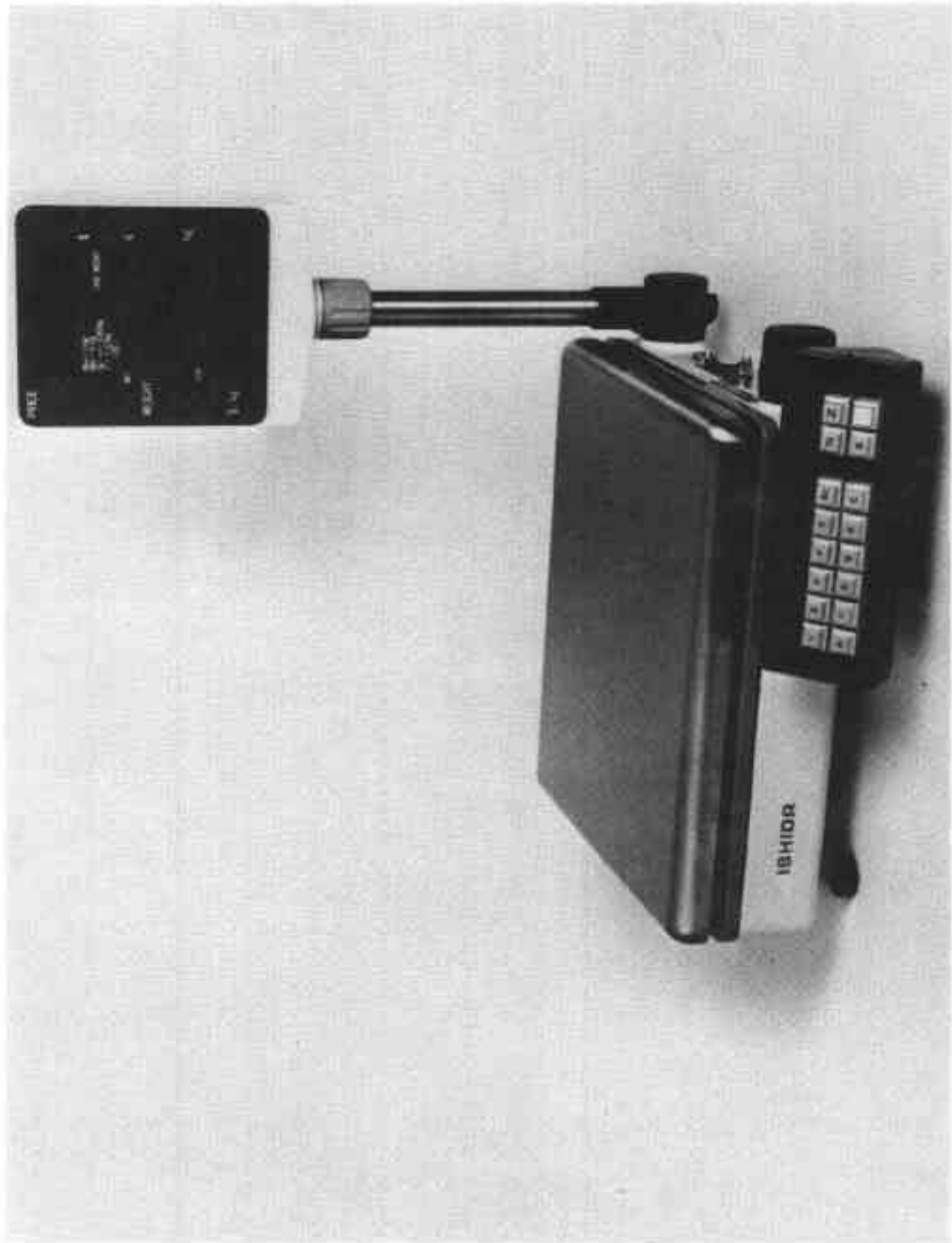
FIGURE 6/4D/81 - 5



Model LC-1500 DX

13/6/80

FIGURE 6/4D/81 - 6



Ishida with New Keyboard