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NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 6/9C/75

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

Toledo Platform Weighing Instrument

submitted by Toledo Scale Pty Ltd,
525 Graham Street,
Port Melbourne, Victoria, 3207

are suitable for use for trade.

The approval of the pattern and variants is subject to review on or after 30/6/86.

All instruments purporting to comply with this approval shall be marked NSC No 6/9C/75.

Relevant drawings and specifications are lodged with the Commission.

Conditions of Approval

1. The number of scale intervals applicable to the weighing instrument will be no greater than the number of verification scale intervals approved for the basework, or the load cell, or the headwork, whichever is the smallest.

2. The load cells used shall be subject to regular certification by the Commission.

Signed

Executive Director

Descriptive Advice

Pattern: approved 20/7/81.

. A self-indicating platform weighing instrument of capacity 150 kg by 0.05 kg, with mechanical basework, Toledo model 0721 load cell, and digital indicator.

Variants: approved 20/7/81.

1. With capacity 60 kg or 300 kg.

2. With an output socket.

3. Of capacity 30 kg by 0.01 kg with or without price computing in 1c increments to $999.99/kg and price to $999.99.

4. With the basework replaced by other Commission-approved baseworks.

Technical Schedule No 6/9C/75 dated 4/8/81 describes the pattern and variants 1 to 4.

5/7/82 .../2

Variant: approved 5/7/82

5. With a Toledo model 8135 indicator with its display replaced by one or two separate remote indicators.

6. Without the keyboard.

Technical Schedule No 6/9C/75 Variation No 1 dated 5/7/82 describes Variants 5 and 6.

Filing Advice

Certificate of Approval No 6/9C/75 dated 4/8/81 is superseded by this Certificate and may be destroyed.

The documentation for this approval now consists of:

Certificate of Approval No 6/9C/75 dated 5/7/82
Technical Schedule No 6/9C/75 dated 4/8/81
Technical Schedule No 6/9C/75 Variation No 1 dated 5/7/82
Test Procedure No 6/9C/75 dated 4/8/81
Test Procedure No 6/9C/75 Variation No 1 dated 5/7/82

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/75

Pattern: Toledo Platform Weighing Instrument

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

1. Description of Pattern

1.1 General

The pattern is a self-indicating platform weighing instrument, of 150 kg by 0.05 kg (Figure 1). It consists of a lever basework with a Toledo 0721 load cell in the nose end connected to an electronic measuring system incorporated in the basework (Figure 3). The indicator and keyboard are separate to the measuring system.

The indicator displays mass only to the vendor and purchaser. The indicator is installed so that the second set of digits on the purchaser's side (Figure 2) are not visible to the purchaser; these are used as an aid to adjustment and calibration and are not in use for trade.

The keyboard numerical section is disabled, the only active buttons being those marked ZERO, C and P.

1.2 Zero

An automatic zero-setting system is provided to monitor the mass information and reset zero within 0.25e whenever the instrument is brought to rest within 0.5e of zero by operating the button marked ZERO.

A separate zero-balance indicator is not provided as the automatic zero-setting system together with the self-initiating zero-check test programme ensures that the indication of zero mass always means zero within 0.25e. If an error in zero setting is encountered the mass indicator blanks out.

1.3 Display Check

Display is checked by pushing button marked C (refer to para. 8 of Test Procedure).

1.4 Reset Button

A button marked RESET is provided which allows the display to be cleared and reset for use after the DISPLAY CHECK operation.

1.5 Levelling

The instrument is to be provided with a level indicator and adjustable feet unless installed in a fixed position. When a level indicator is fitted, adjacent to the level indicator is a notice advising that the instrument must be level when in use.

1.6 Sealing

The electronics measuring system is sealed with a lead and wire seal. A tag bearing the load cell serial number is fitted under a sealing screw (Figure 3).

1.7 Marking

The instrument nameplate is marked with the following data:

Manufacturer's name	
Serial number of instrument	
NSC approval number in the form:	NSC No 6/9C/75
Accuracy class in the form:	(III)
Maximum capacity in the form:	Max .....*
Minimum capacity in the form:	Min .....*
Verification scale interval in the form:	$e = d_d$ = ...*

2. Variants

2.1 Variant 1

With capacity of 60 kg or 300 kg.

2.2 Variant 2

With an output socket.

2.3 Variant 3

With Toledo Model 3185 basework of capacity 30 kg as described in Variant 1 of Technical Schedule No 6/4C/25, and with keyboard and indicators as described in Variants 1 and 7 of Technical Schedule No 6/4D/97. Price computing is in 1c increments to a maximum unit price of $999.99/kg and a maximum price of $999.99 (Figure 4).

2.4 Variant 4

The headworks and load cell with other Commission-approved baseworks, in which case the electronics are in a separate housing.

*These markings are repeated in the vicinity of the reading face.

TEST PROCEDURE No 6/9C/75

1. 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.

2. 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 mass on the load receptor will then be 10e and 11e respectively.

3. Zero range

The maximum range of operation of the push-button zero device should not exceed 4% of the capacity of the instrument (± 2% approximately). Satisfactory setting may be checked by the following method:

> With zero balance indicated, apply a load of, say, 2½% capacity to the instrument and press the zero button; the instrument should not rezero.

4. 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.

5. Load tests

Test loads are to be applied to the instrument up to maximum capacity with the first load equal to the minimum capacity, then in not less than 5 steps to maximum capacity, followed by decreasing loads of not less than 5 steps to zero load.

All load applications to the instrument should be in accordance with the Commission's recommended testing procedure for the elimination of rounding errror as set out in Document 104.

The instrument should display these loads within the applicable tolerance as listed above.

6. Range of indication

(a) The maximum mass indicated should not exceed the maximum capacity (Max) plus 10e, above which the indicator should blank.

(b) The minimum mass indicated should be zero, below which the indicator should blank.

7. Price-computing accuracy - Variant 3

The indications of mass, unit price and total price, as listed in Table 1, will indicate that the price-computing and mass circuits are functioning correctly. The figures should be indicated exactly as in the table as rounding is effected within the computer.

8. Indicator check

Indicator segments are checked using the button marked C as follows:

(a) Press twice in succession, with approximately half a second between operations, and then hold down: causes the display to blank.

(b) Press three times in succession, with approximately half a second between operations, and then hold down: causes the display to show in sequence:

(i)	After first operation	All 0's
(ii)	After second operation	Blank
(iii)	After third operation	All 0's, then all 8's.

Indicated mass kg	Unit Price $/kg	Price $
0		
0.10	999.99	100.00
0.11	997.99	109.78
0.12	696.99	83.64
0.13	595.99	77.48
0.14	764.50	107.03
0.15	993.99	149.10
0.16	882.31	141.17
0.17	991.99	168.64
0.18	990.96	178.37
0.19	389.88	74.08
0.20	179.77	35.95
0.30	269.66	80.90
0.40	959.55	383.82
0.50	949.44	474.72
0.60	939.33	563.60
0.70	929.22	650.45
0.80	919.11	735.29
0.90	9.14	8.23
1.00	930.51	930.51
2.00	448.03	896.06
3.00	73.34	220.02
4.00	4.92	19.68
5.00	2.40	12.00
6.00	50.00	300.00
7.00	50.00	350.00
8.00	50.00	400.00
9.00	50.00	450.00
10.00	50.00	500.00
20.00	49.50	990.00
30.00	33.00	990.00

Test Procedure - 30.00 kg Instrument with Unit Price to $999.99/kg and Price to $999.99.

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/9C/75

VARIATION No 1

Pattern: Toledo Platform Weighing Instrument

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

1. Description of Variants

1.1.1 Variant 5

With a Toledo 8135 indicator with its display replaced by one or two separate remote indicators (Figure 5).

One indicator (Figure 6) has a ZERO control for the use of the vendor. The customer's indicator, which may be in a separate housing, is similar but without the ZERO control.

A typical basework has the electronics in a separate, sealed, Toledo model 8135 housing rather than in the basework as per the pattern.

1.1.2 Zero

Zero to within 0.25e, indicated by the ZERO light illuminating, may be obtained either, semi-automatically, using the ZERO push button, or automatically whenever the instrument comes to rest within 0.5e of zero.

1.1.3 Display Check

Pressing the ZERO button, when the indication is within the zero range, causes the mass indicator to blank showing only the centre segments of the display; it also causes all the indicator lights to illuminate. In addition there is an optional feature whereby automatic verification circuitry within the instrument continuously checks the condition of the displays. If this automatic verification detects a fault the bottom segment of each display is illuminated.

1.1.4 Markings

The instrument is marked with the following data, together in one location:

Manufacturer's name or mark	
NSC approval number	Instrument NSC No 6/9C/75 Basework NSC No .....¶ Load Cell NSC No .....¶
Serial number of instrument	
Serial number of basework	.....
Accuracy class	(III)
Maximum capacity	Max .....*
Minimum capacity	Min .....*
Verification scale interval	e = d .....*

Note: Serial number of load cell - refer 1.1.5.

¶ If not approved under 6/9C/75.

* These markings must be repeated in the vicinity of each reading face, if not already there.

1.1.5 Sealing

Access to the calibration adjustments in the electronics housing is prevented by a lead and wire seal (Figure 5). The load cell serial number is on a metal tag retained by one of the sealing screws.

1.2 Variant 6

Without the keyboard.

TEST PROCEDURE No 6/9C/75

VARIATION No 1

This Procedure should be used in conjunction with Test Procedure No 6/9C/75 dated 4/8/81 and with the relevant Test Procedures of any components not approved under 6/9C/75.

1. Zero Test

Check using Document 104 that when the ZERO light is illuminated zero is set to within 0.25e.

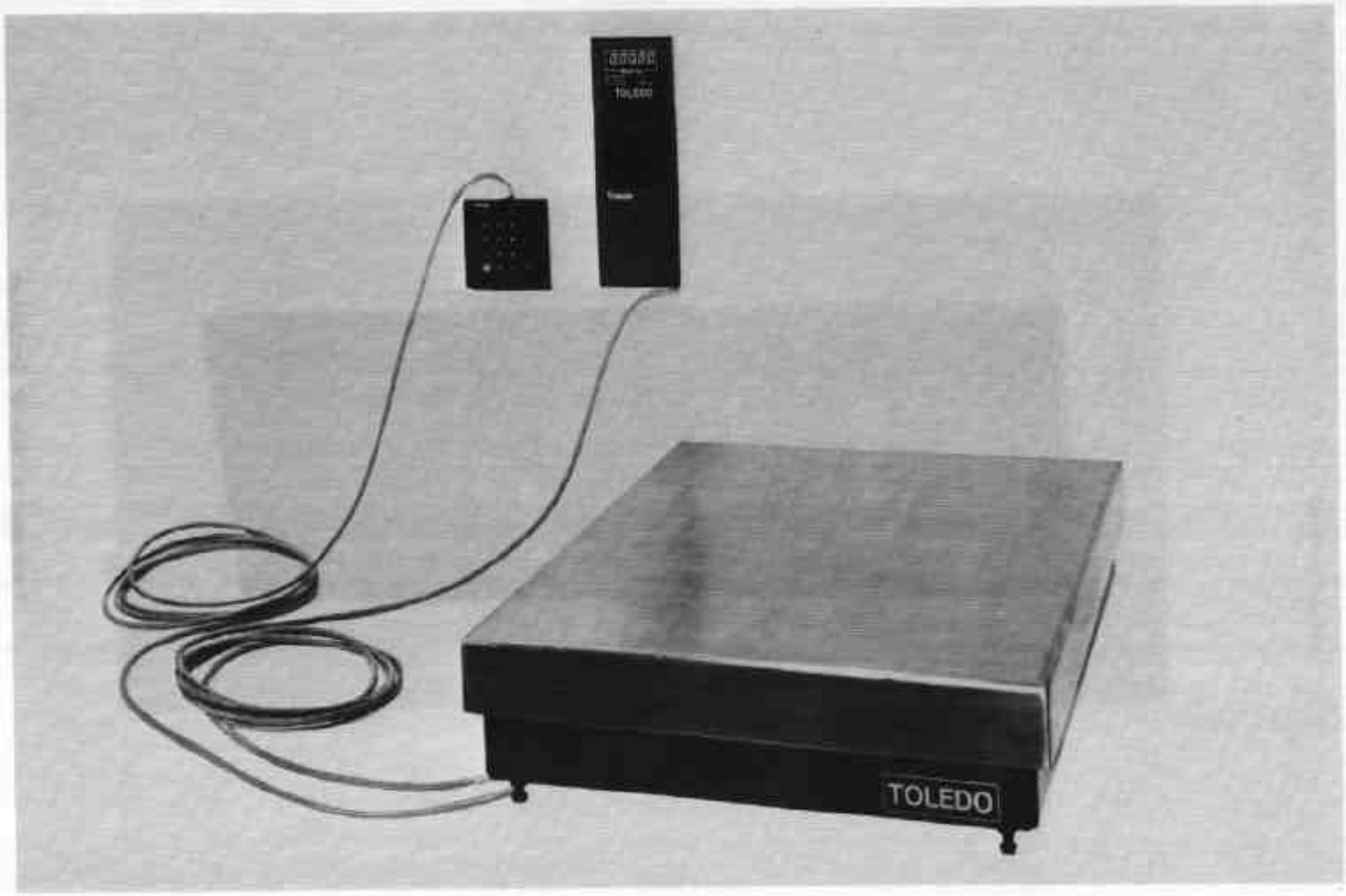
Note: This test is for semi-automatic devices and is in addition to test 2. Zero Test in Test Procedure No 6/9C/75.

2. Display Check

Pressing the ZERO button causes the mass indicator to blank showing only the centre segments of the display; it also causes all the indicator lights to illuminate.

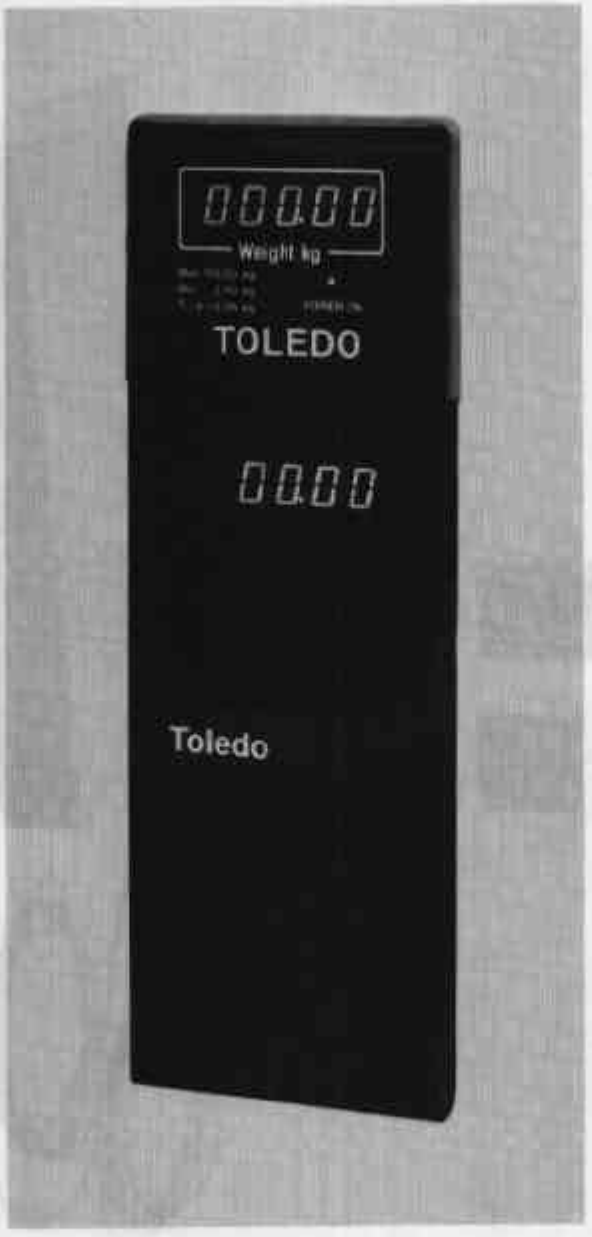
Note: For Variant 5, this test replaces test 8. Indicator Check, in Test Procedure No 6/9C/75.

FIGURE 6/9C/75 - 1



Toledo Platform Weighing Instrument showing Vendor's Side of Indicator

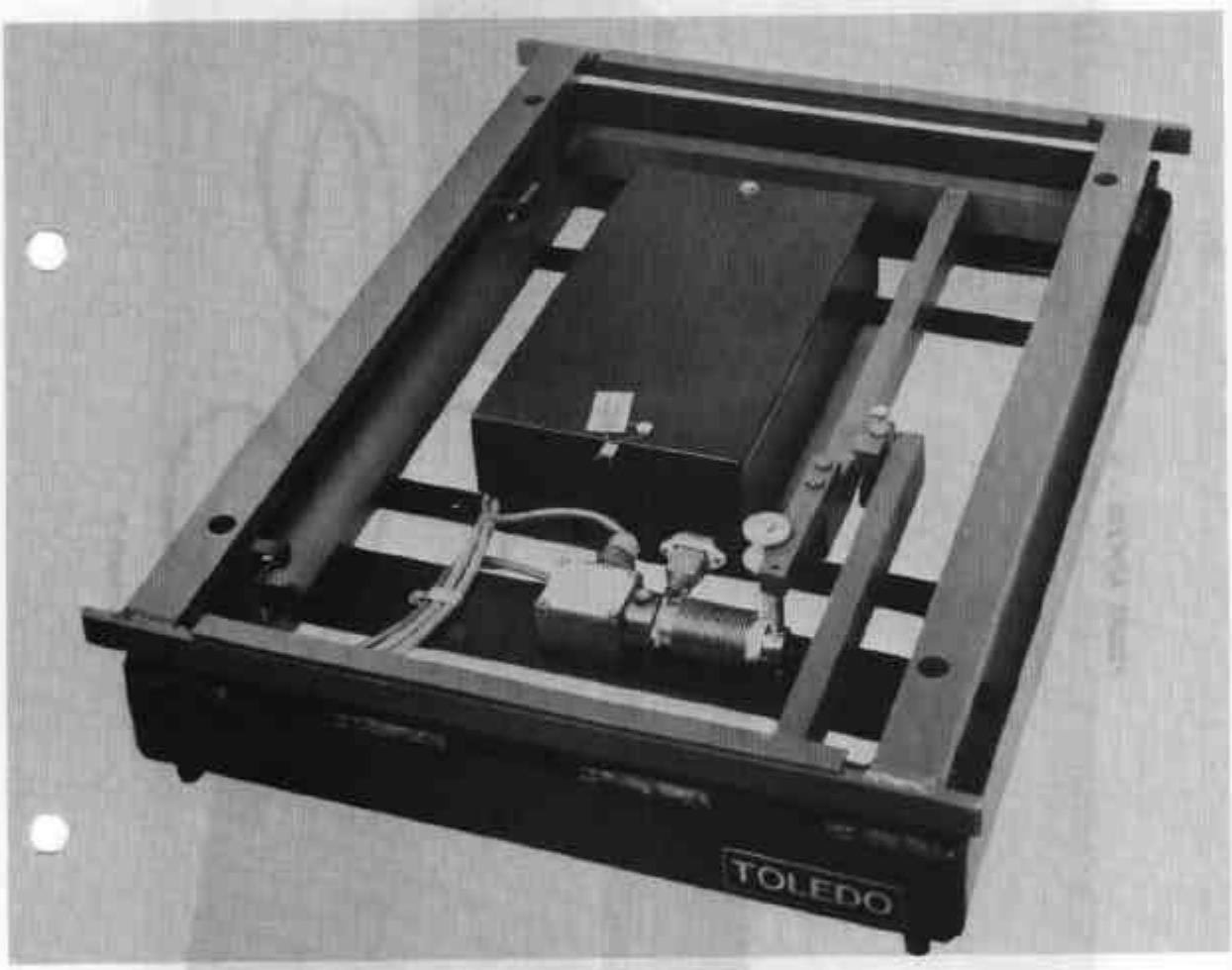
FIGURE 6/9C/75 - 2



Purchaser's Side of Indicator

4/8/81

FIGURE 6/9C/75 - 3



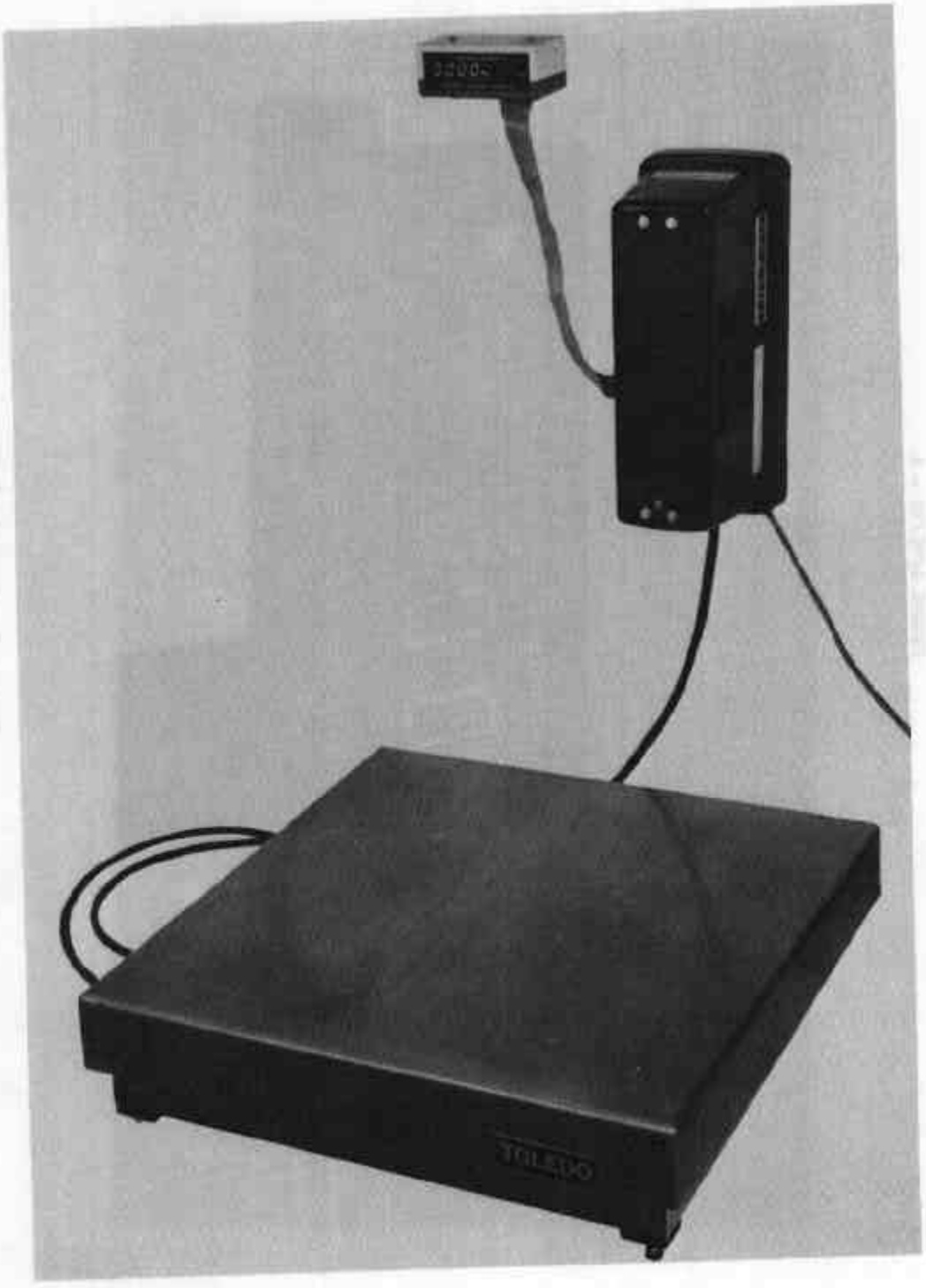
Basework with Cover removed showing
Load Cell and Sealing

4/8/81

FIGURE 6/9C/75 - 4

Variant 3

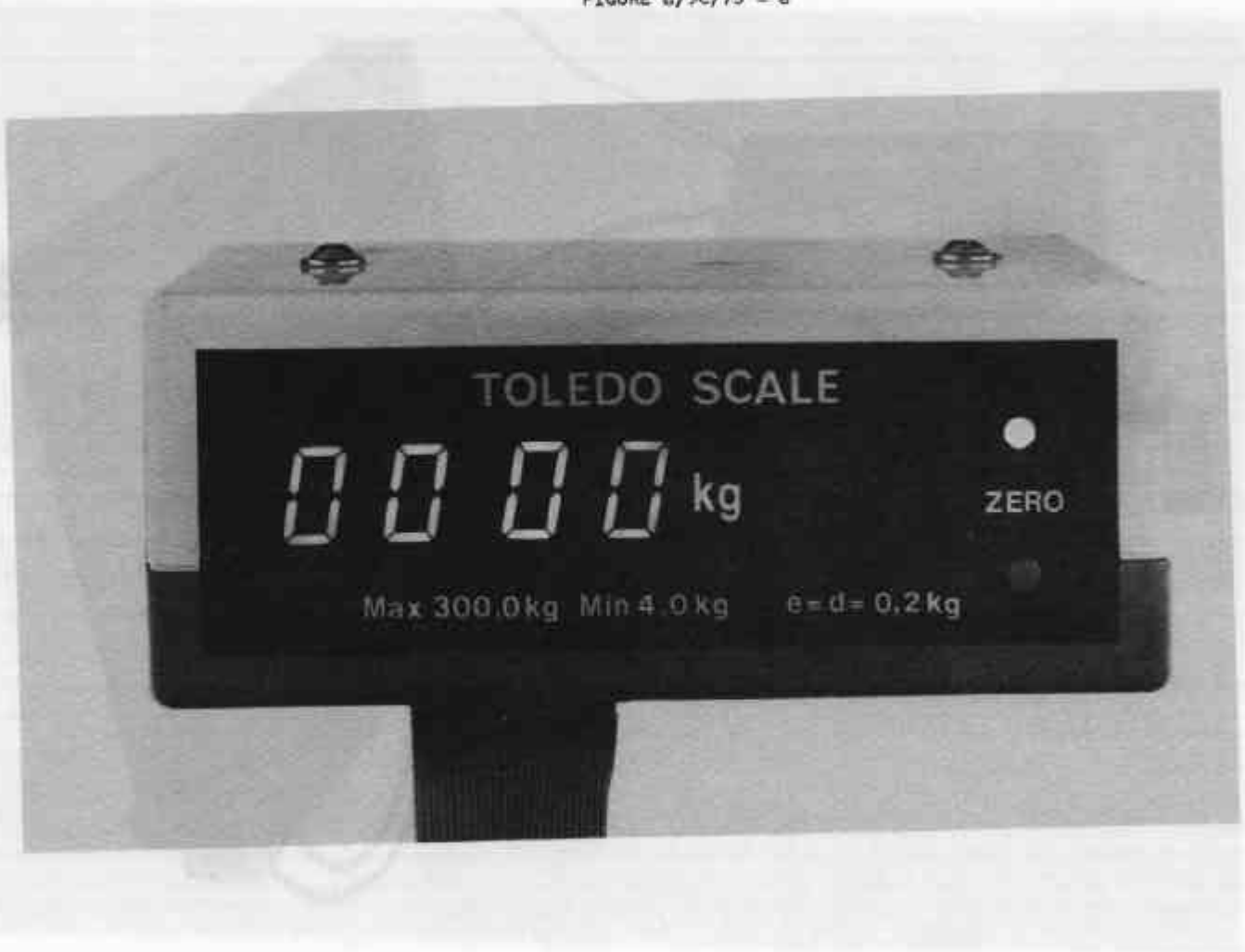
FIGURE 6/9C/75 - 5



Variant 5 - Typical Instrument

5/7/82

FIGURE 4/9C/75 - 6



Variant 5 - Vendor's Indicator