



NATIONAL STANDARDS COMMISSION
WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 6/4D/97

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

Toledo Model 8404 Weighing Instrument

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

are suitable for use for trade.

The approval is subject to review on or after 31/3/85.

Instruments purporting to comply with this approval shall be marked NSC No 6/4D/97.

The approval may be withdrawn if instruments are used other than as described in the drawings and specifications lodged with the Commission.

Signed

Executive Director

Descriptive Advice

Pattern: approved 28/3/80

- Toledo model 8404 weighing instrument of 15.020 kg capacity by 0.005 kg scale intervals, with a Toledo type 723 22 kg load cell.

Variants: approved 28/3/80

1. With the keyboard mounted separately.
2. Of 6.008 kg capacity by 0.002 kg scale intervals, with an 11 kg Toledo load cell.
3. The 6.008 kg instrument with price computing in 1c increments to \$99.99/kg and price to \$600.74.
4. The 15.020 kg instrument with price computing in 1c increments to \$99.99/kg and price to \$999.99.
5. With an output socket.
6. With a Toledo type 721 load cell instead of the type 723 load cell.
7. With the purchaser's indicator in a separate housing.
8. With the keyboard and vendor's display integral with instrument casing (model 8406).

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...../2

9. A prepackaging weighing instrument comprising a model 8404 or 8406 weighing unit and Toledo 3000 series label printer.
10. A retail weighing instrument with 3000 series ticket printer, printing tickets with mass, unit price and price, or price only.

Technical Schedule No 6/4D/97 dated 10/4/80 describes the pattern and variants 1 to 10.

Variants: approved 20/8/80

11. With externally-operated tare and unit price cancellation switch.
12. Without price computing, displaying mass only.

Technical Schedule No 6/4D/97 Variation No 1 dated 5/9/80 describes variants 11 and 12.

Variant: approved 11/6/82

13. With two purchaser's indicators.

Technical Schedule No 6/4D/97 Variation No 2 dated 25/6/82 describes variant 13.

Variants: approved 21/11/83

14. With price-look-up (PLU) facility.
15. With an alternative keyboard.
16. With a tare light in lieu of the tare mass indicator.
17. With a zero light.

Technical Schedule No 6/4D/97 Variation No 3 dated 9/12/83 describes variants 14 to 17.

Filing Advice

Certificate of Approval No 6/4D/97 dated 25/6/82 is superseded by this Certificate and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 6/4D/97 dated 9/12/83
Technical Schedule No 6/4D/97 dated 10/4/80 (including Test Procedures)
Technical Schedule No 6/4D/97 Variation No 1 dated 5/9/80 (including Test Procedure)
Technical Schedule No 6/4D/97 Variation No 2 dated 25/6/82
Technical Schedule No 6/4D/97 Variation No 3 dated 9/12/83
Tables 1 to 4 dated 10/4/80
Figures 1 to 11 dated 10/4/80
Figures 12 and 13 dated 5/9/80
Figure 14 dated 9/12/83.

9/12/83



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/4D/97

Pattern: Toledo Weighing Instrument Model 8404

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

Date of Approval: 28/3/80

Description:

The pattern is self-indicating price computing weighing instrument of capacity 15,020 kg by 0,005 kg scale interval with price computing in 1c increments to \$999,99/kg and total price in 1c increments to \$999,99 (Figures 1, 2 and 3). Mass, unit price and price are digitally indicated on both the vendor's and purchaser's sides of the instrument. The unit price is entered sequentially by ten push buttons and cancelled automatically after a weighing or when the button marked C is pressed.

The load receptor is supported by a Toledo type 723, 22 kg cantilever load cell resistant mechanism and stayed by five flexure plates (Figure 4).

An automatic zero-setting system is provided which monitors the mass information and resets zero within 0,25e whenever the instrument is brought to rest within 0,5e of zero by operating a 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 and total price indicators blank out and the unit price and tare indicators flash on and off.

The instrument 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.

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

A push button marked TR allows semi-automatic taring of a container on the load receptor to within 0,25e. The value of the tare to the nearest whole graduation is indicated on the display marked TARE and will automatically cancel after a weighing. The tare is subtractive with a maximum effect of 9,995 kg.

Marking:

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/97
Accuracy class in the form:	III
Maximum capacity in the form:	Max *
Minimum capacity in the form:	Min *
Verification scale interval in the form:	$d_1 = e = *$
Maximum subtractive tare:	$T = - *$

* These markings are repeated adjacent to each mass indicator.

Sealing:

1. A plate underneath the instrument covers access holes and one edge of the plastic cover around the instrument; it is fixed with bolts which cannot be removed from the outside (Figure 5).
2. The purchaser's indicator is bolted to the instrument body by one set screw and one bolt fitted with a captive nut accessible only from inside the housing. The stamping plug covers a sealing wire which passes through a screw retaining the stamping plug and level indicator brackets which in turn retain the plastic cover (Figure 5).

Variants:

1. With the keyboard mounted separately (Figure 6) in which case the connecting cable is internally connected within the instrument and the keyboard is sealed as illustrated in Figure 7.
2. An instrument of capacity 6,008 kg by 0,002 kg scale intervals with price computing in 1c increments to \$999,99/kg, price in 1c increments to \$999,99 with 11 kg Toledo cantilever load cell.

3. The 6,008 kg instrument with price computing in lc increments to \$99,99/kg and price in lc increments to \$600,74.
4. The 15,020 kg instrument with price computing in lc increments to \$99,99/kg and price in lc increments to \$999,99.
5. With an output socket to provide data to peripheral devices.
6. With Toledo type 721 sealed construction load cell replacing the type 723 open construction load cell.
7. With the purchaser's indicator of mass, unit price and price in a separate housing remote from the weighing unit (Figure 6). 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 (Figure 8).

The remote display is marked adjacent to the mass reading face as described above, and is installed so that there is a self-evident association between it and the weighing unit.

8. With the exterior casing of the instrument replaced by one having an integral keyboard/vendor display; the instrument is known as model 8406 (Figure 9).
9. A prepackaging weighing instrument comprising a Toledo 8404 or 8406 weighing unit with a Toledo 3000-series label printer (Figure 10). The serial number of the printer is sealed to the weighing unit. In addition to the semi-automatic tare mechanism a preselected tare mechanism may be fitted to the prepackaging instrument. Tare may be selected in increments which match the main display increment by pressing the appropriate numeral buttons on the keyboard and then the TR button. The tare will automatically cancel after a weighing or, will require cancelling by the 0 and TR buttons. The unit price will automatically cancel after a weighing or will require cancelling by the C button. A sample ticket is illustrated in Figure 11.
10. The retail weighing instrument with the series 3000 printer to provide a ticket with mass, unit price and price, similar to the sample label illustrated in Figure 11, or alternatively, price only. The printer is inhibited for loads less than 20e.

Test Procedures:Accuracy Requirements

The maximum permissible errors are:

$\pm 0,5e$ for loads between 0 and 500e;

$\pm 1e$ for loads between 501e and 2000e; and

$\pm 1,5e$ for loads above 2000e.

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, ^{1.5%}~~1%~~ capacity to the instrument and press the zero button; the instrument should not rezero; and
 - (b) reduce the load to, say, ^{0.5%}~~1%~~ capacity and again press the zero 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, 2, 3 and 4 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.

5. 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	Unit Price	Price
kg	\$/kg	\$
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	930,51	930,51
2,000	448,03	896,06
3,000	73,34	220,02
4,000	4,92	19,68
5,000	50,00	250,00
6,000	50,00	300,00
7,000	50,00	350,00
8,000	50,00	400,00
9,000	50,00	450,00
10,000	50,00	500,00
11,000	50,00	550,00
12,000	50,00	600,00
13,000	50,00	650,00
14,000	50,00	700,00
15,020	50,00	751,00

Test Procedure - 15,020-kg Instrument with Unit Price to
\$999,99/kg and Price to \$999,99

10/4/80

TABLE 2

Indicated mass	Unit price	Price
kg	\$/kg	\$
0,000	0,00	0,00
0,100	99,99	10,00
0,105	98,98	10,39
0,110	97,97	10,78
0,120	96,95	11,63
0,130	95,95	12,47
0,140	94,94	13,29
0,150	83,84	12,58
0,160	72,73	11,64
0,170	61,61	10,47
0,180	50,51	9,09
0,190	49,49	9,40
0,200	39,39	7,88
0,300	29,29	8,79
0,400	19,29	7,72
0,500	9,00	4,50
0,600	55,16	33,10
0,700	39,02	27,31
0,800	58,99	47,19
0,900	70,99	63,89
1,000	75,99	75,99
2,000	80,99	161,98
3,000	85,39	256,17
4,000	96,99	387,96
5,000	97,99	489,95
6,000	98,99	593,94
7,000	99,99	699,93
8,000	99,99	799,92
9,000	99,99	899,91
10,000	99,99	999,90
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
15,020	50,00	751,00

Test Procedure - 15,020-kg Instrument with Unit Price to
\$99,99/kg and Price to \$999,99

10/4/80

TABLE 3

Indicated mass	Unit price	Price
kg	\$/kg	\$
0,000	0,00	0,00
0,040	88,88	3,56
0,052	88,79	4,62
0,064	88,66	5,67
0,076	88,55	6,73
0,088	88,44	7,78
0,090	18,33	1,65
0,100	28,22	2,82
0,210	38,11	8,00
0,320	77,20	24,70
0,430	66,03	28,39
0,500	55,28	27,64
0,600	44,21	26,53
0,700	63,98	44,79
0,800	68,32	54,66
0,900	99,99	89,99
1,000	91,11	91,11
2,000	66,22	132,44
3,000	71,76	215,28
4,000	90,76	363,04
5,000	94,44	472,20
6,000	92,67	556,02
6,008	99,99	600,74

Test Procedure - 6,008 kg Instrument with Unit Price to
\$99,99/kg and Price to \$600,74

10/4/80

TABLE 4

Indicated mass	Unit price	Price
kg	\$/kg	\$
0,000	000,00	00,00
0,040	999,99	40,00
0,052	888,88	46,22
0,064	777,77	49,78
0,076	666,66	50,67
0,088	555,55	48,89
0,090	444,44	40,00
0,110	333,33	36,67
0,220	222,22	48,89
0,330	111,11	36,67
0,400	444,44	177,78
0,500	666,66	333,33
0,600	777,77	466,66
0,700	888,33	621,83
0,800	888,80	711,04
0,900	889,90	800,91
1,000	999,99	999,99
1,500	355,50	533,25
2,000	142,22	284,44
2,500	235,00	587,50
3,000	300,70	902,10
3,500	250,00	875,00
4,000	200,00	800,00
4,500	200,00	900,00
5,000	188,88	944,40
6,000	155,55	933,30
6,008	155,00	931,24

Test Procedure - 6,008-kg Instrument with Unit Price to
\$999,99/kg and Price to \$999,99

10/4/80



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/4D/97

VARIATION No 1

Pattern: Toledo Weighing Instrument Model 8404

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

1. Description of Variants

11. With an externally operated switch marked CANCEL MAN/AUTO replacing an internal switch and used to inhibit automatic cancelling of tare and unit price (Figure 12).
12. With no price computing, and displaying mass only (Figure 13).

2. Test Procedure

6. Switch

- (a) With the switch in the MAN position, check to ensure that tare can only be altered manually.
- (b) As (a) for unit price alterations.

5/9/80



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/40/97

VARIATION No 2

Pattern: Toledo Weighing Instrument Model 8404

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

1. Description of Variant

1.1 Variant 13

With two purchaser's indicators displaying mass, unit price, price and tare in separate housings remote from the weighing unit (Figure 6 shows an example of one indicator only). The interconnecting cables are internally connected within the weighing unit and within the purchaser's indicator units.

25/6/82



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/40/97

VARIATION No 3

Pattern: Toledo Model 8404 Weighing Instrument
Submitter: Toledo Scale Pty Ltd
525 Graham Street
Port Melbourne, Victoria, 3207.

1. Description of Variants

1.1 Variant 14

With price-look-up (PLU) facility.

1.2 Variant 15

With an alternative "touch" keyboard.

1.3 Variant 16

With a tare light in lieu of the tare mass indicator.

1.4 Variant 17

With a zero light.

1.5 Model Designations

Instruments complying with any of the variants 14 to 17 are known as either model 8408 or 8408E (Figure 14).



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/4D/97

CHANGE No 1

The description of the

Toledo Weighing Instrument Model 8404

given in Technical Schedule No 6/4D/97 issued on 10/4/80 is altered by:

On page 4, in para 2(a) change $2\frac{1}{2}\%$ to 1,5%, and in para 2(b) change $1\frac{1}{2}\%$ to 0,5%.

Note for inspectors:

The zero range of this instrument is adjusted to be approximately $\pm 1\%$ of capacity.

30/5/80



NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 6/4D/97

CHANGE No 2

The description of the

Toledo Weighing Instrument Model 8404

given in Technical Schedule No 6/4D/97 issued on 10/4/80 is altered by:

1. On page 2 of the Technical Schedule replace lines 1 and 2 with the following:

The display may be blanked or made to display all 8's by operation of the button marked C.

The operation of this button is as follows:-

- A. Press once: clears the display of whatever price has been preset.
- B. Press twice in succession, with approximately half a second between operations, and then hold down: causes the display to blank.
- C. 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.

2. On page 2 of the Technical Schedule alter line 4 to read:-

A push button, alternatively marked TR or T, allows ...

Signed


Executive Director

5/8/80

Figure 6/4D/97 - 1



Model 8404

10/4/80

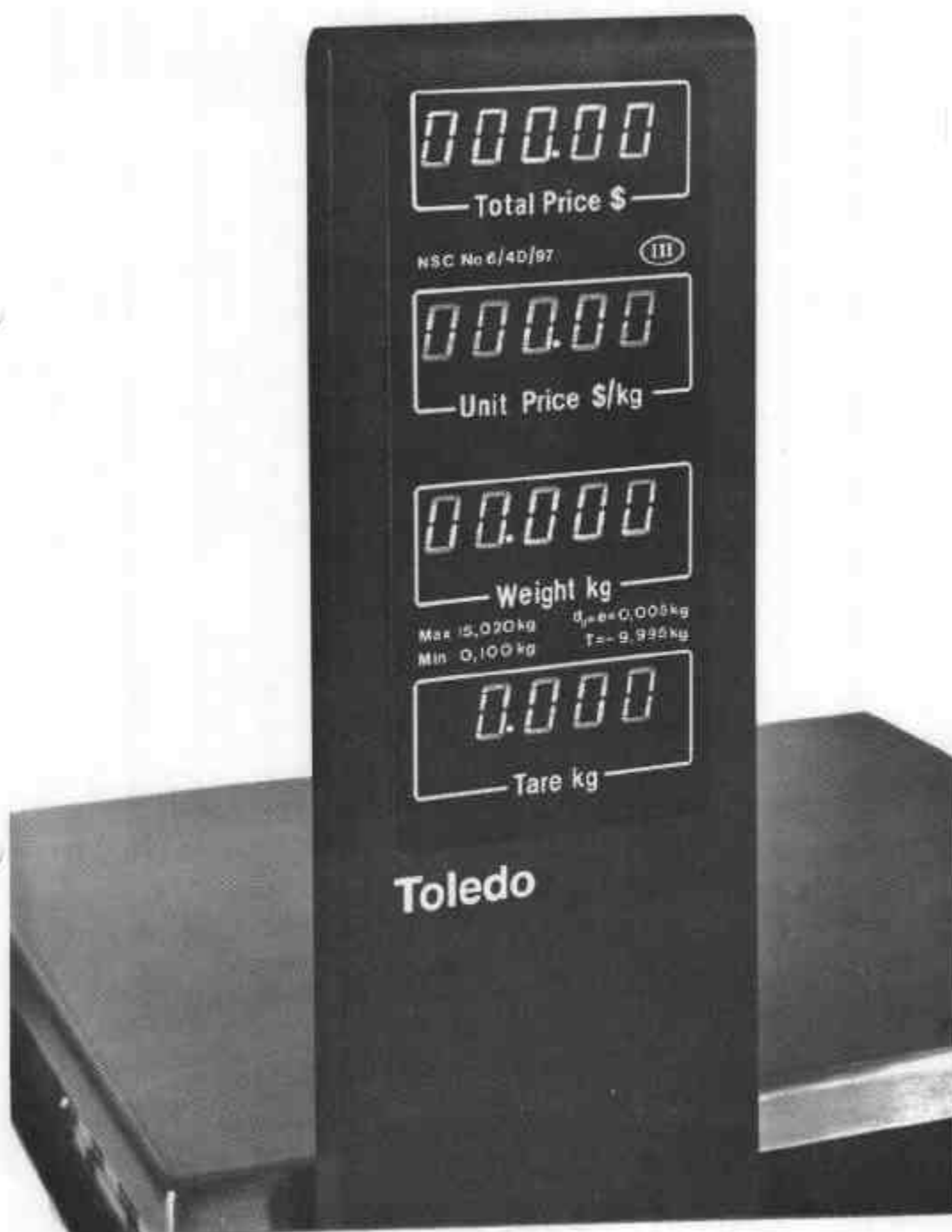
Figure 6/4D/97 - 2



Vendor's Indicator and Keyboard

10/4/80

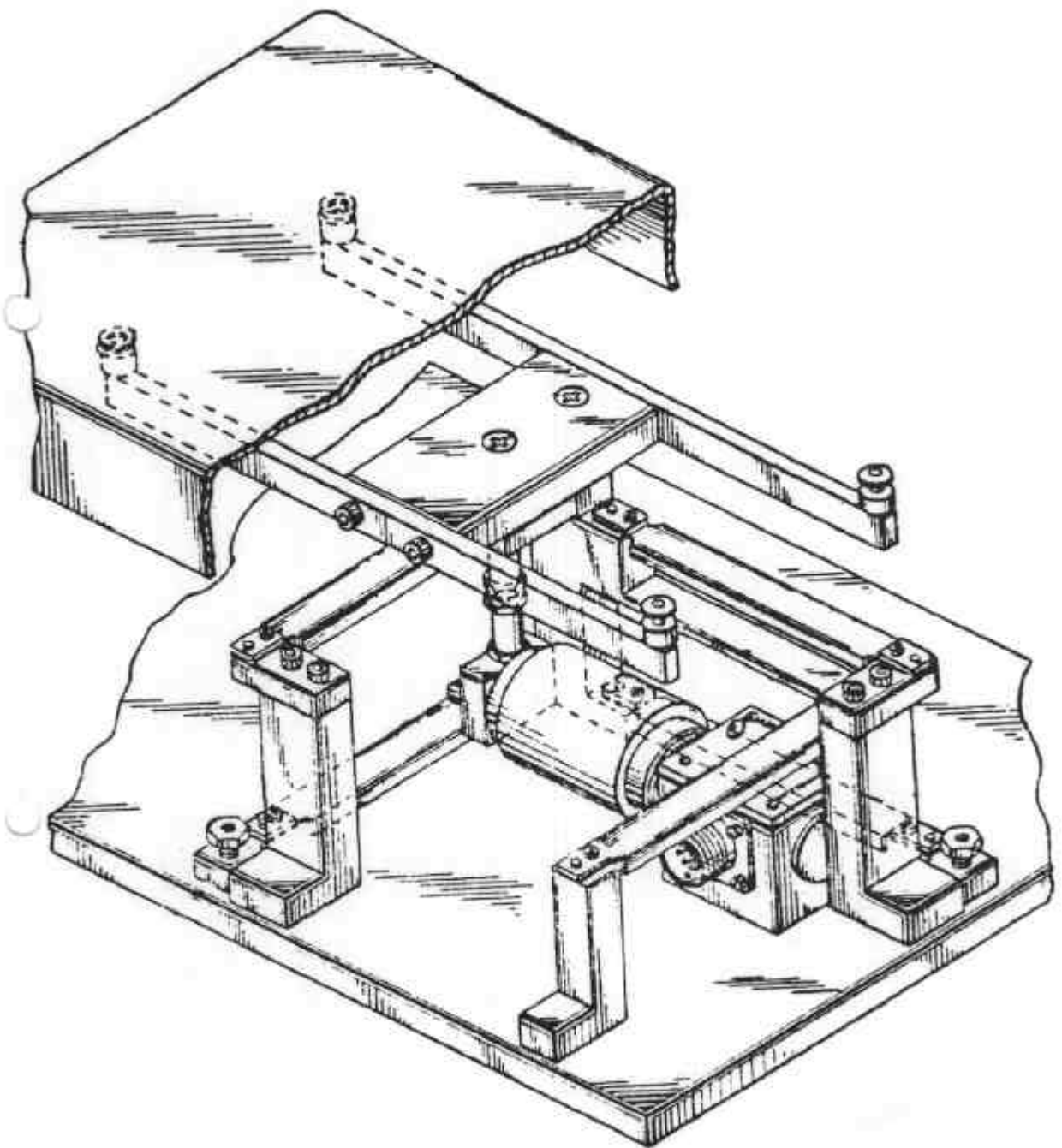
Figure 6/4D/97 - 3



Purchaser's Indicator

10/4/80

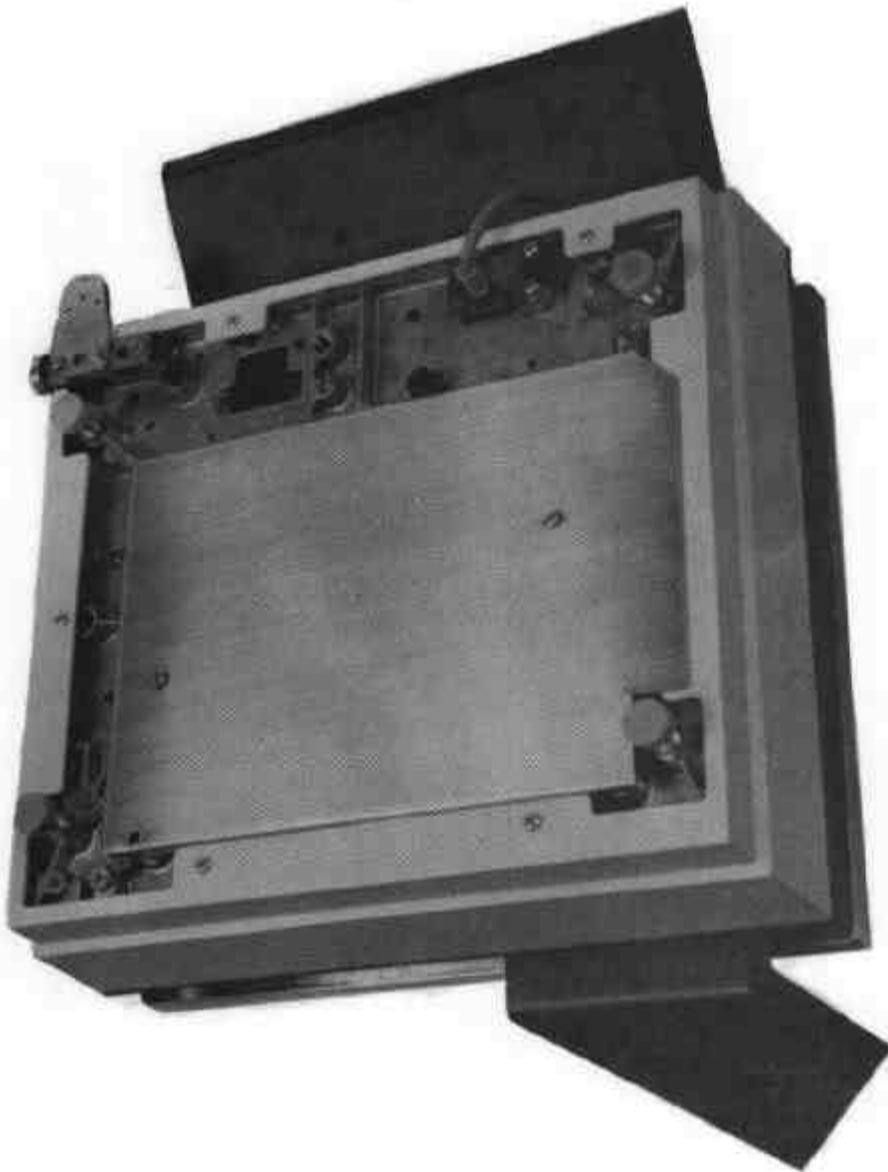
Figure 6/4D/97 - 4



Model 8404 Basework - Schematic Drawing

10/4/80

Figure 6/4D/97 - 5



Model 8404 - Bottom View, Showing Sealing

10/4/80

Figure 6/4D/97 - 6



Model 8404 with Keyboard and Indicators Mounted
Separately

10/4/80

Figure 6/4D/97 - 7



Keyboard - Bottom View, Showing Sealing

10/4/80

Figure 6/4D/97 - 8



Purchaser's Indicator - Rear View, Showing Sealing

10/4/80

Figure 6/4D/97 - 9



Model 8406

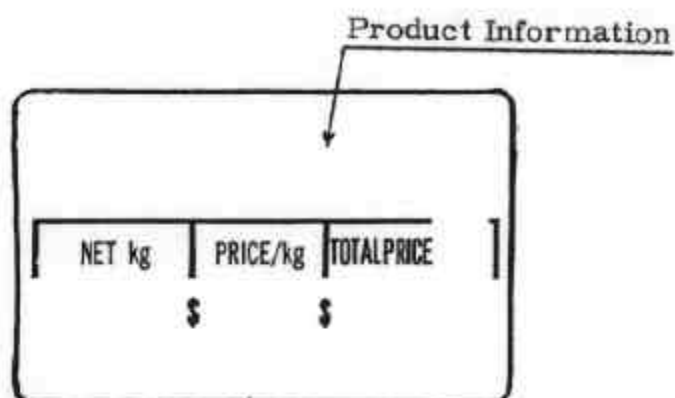
10/4/80



Toledo 3000 Ticket Printer

10/4/80

Product Information



NET kg	PRICE/kg	TOTALPRICE
\$	\$	

(a) Before printing

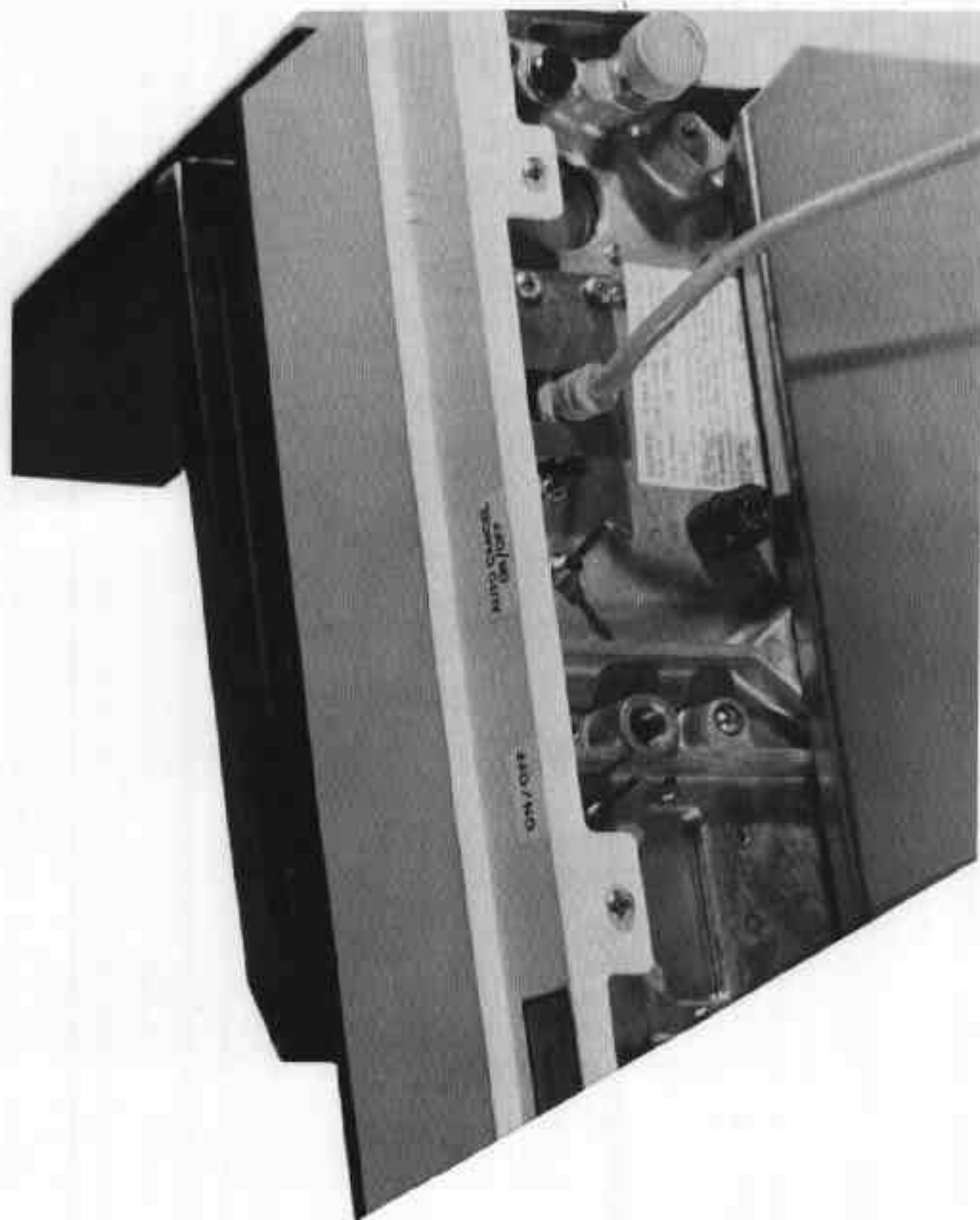
NET kg	PRICE/kg	TOTALPRICE
0,310	\$ 41,56 \$	12,88

(b) After printing

Toledo 3000 Ticket Printer - Sample Label (actual size)

10/4/80

FIGURE 6/4D/97 - 12



Rear View, showing External Switch

5/9/80

FIGURE 6/4D/97 - 13



Model 8404 without Price Computing

5/9/80

FIGURE 6/40/97 - 14



Toledo Model 8408 or 8408E

9/12/83