



**Australian Government**

**National Measurement  
Institute**

Bradfield Road, West Lindfield NSW 2070

## **Certificate of Approval**

### **NMI 6/9C/97B**

Issued by the Chief Metrologist under Regulation 60  
of the  
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Mettler Toledo Model 2158 Weighing Instrument

submitted by           Mettler-Toledo Limited  
                                  Unit 3, 220 Turner Street  
                                  Port Melbourne   VIC   3207

**NOTE:** This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 76, *Non-automatic weighing instruments, Parts 1 and 2*, dated July 2004.

This approval becomes subject to review on 1/11/15, and then every 5 years thereafter.

#### **DOCUMENT HISTORY**

<b>Rev</b>	<b>Reason/Details</b>	<b>Date</b>
0	Pattern and variants 1 to 4 approved – interim certificate issued	29/10/99
1	Pattern and variants 1 to 4 – certificate issued	20/01/00
2	Variant 5 approved – interim certificate issued	7/07/00
3	Variant 5 – certificate issued	26/07/00
4	Pattern and variants 1 to 5 reviewed – change notice issued	18/01/06
5	Pattern and variants 1 to 5 reviewed & updated – certificate issued	2/09/11

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 6/9C/97B' and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates No S1/0/A or No S1/0B.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to the instrument shall be within the limits specified herein and in any approval documentation for the components where they are approved separately.

The pattern as approved herein or with substitute approved load cells and/or approved indicators and in other capacities, or with different platform sizes, shall comply with General Certificate of Approval No 6B/0.

Signed by a person authorised by the Chief Metrologist to exercise his powers under Regulation 60 of the *National Measurement Regulations 1999*.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke at the bottom.

## TECHNICAL SCHEDULE No 6/9C/97B

### 1. Description of Pattern

approved on 29/10/99

A Mettler Toledo model 2158 self-indicating class  $\text{III}$  platform weighing instrument (Figure 1) of 3000 kg maximum capacity and approved for use with up to 3000 verification scale intervals.

#### 1.1 Basework

The model 2158 basework (Figure 1) has a load cell at each corner of the simply supported platform. The basework includes a supplementary baseframe and the load cells are fitted with rocker pin assemblies (Figure 2).

The basework has a nominal size of 1800 × 1800 mm.

#### 1.2 Load Cells

Four Mettler Toledo model 0745 load cells of 1100 kg capacity are used.

The load cells are also described in the documentation of approval NSC S361.

#### 1.3 Indicator

A Mettler Toledo model Panther digital indicator is used.

The indicator is also described in the documentation of approval NSC S353.

#### 1.4 Levelling

The basework may be permanently fixed above ground, with or without loading ramps, or let into a pit with the platform level with the ground; in such cases no level indicator is required.

If the basework is not permanently fixed then it is fitted with levelling feet and a level indicator. Adjacent to the level indicator is a notice stating 'instrument must be level when in use', or similar wording.

Note that if approach ramps are provided, care shall be taken to ensure that these do not interfere with the platform.

#### 1.5 Verification Provision

Provision is made for the application of a verification mark.

#### 1.6 Sealing Provision

Provision is made for the calibration adjustments in the indicator to be sealed as described in the approval documentation for the indicator used.

## 1.7 Descriptive Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Manufacturer's mark, or name written in full	.....
Indication of accuracy class	Ⓜ
Maximum capacity	<i>Max</i> ..... kg #1
Minimum capacity	<i>Min</i> ..... kg #1
Verification scale interval	<i>e</i> = ..... kg #1
Maximum subtractive tare	<i>T</i> = - ..... kg #2
Serial number of the instrument	.....
Pattern approval mark for the instrument	NMI (or NSC) 6/9C/97B
Pattern approval mark for the indicator	S.....
Pattern approval mark for the load cells	S.....

#1 These markings are also shown near the display of the result if they are not already located there.

#2 This marking is required if *T* is not equal to *Max*.

### 2. Description of Variant 1 approved on 29/10/99

With a model 2155 basework which has the platform directly supported by four load cells which are connected to the supplementary baseframe by means of ball-and-cup assemblies (Figure 3). (Note that the load cell shown in Figure 3 has a different profile to that of the Mettler Toledo model 0745 load cell.)

### 3. Description of Variant 2 approved on 29/10/99

With a model 4100 basework which does not have a supplementary baseframe and where the self-aligning supporting feet are fitted directly to the four load cells which directly support the platform (Figures 4 and 5). (Note that the load cell shown in Figure 5 has a different profile to that of the Mettler Toledo model 0745 load cell.)

### 4. Description of Variant 3 approved on 29/10/99

In capacities from 100 kg up to 1499 kg.

### 5. Description of Variant 4 approved on 29/10/99

In capacities from 1500 kg up to 14 999 kg.

### 6. Description of Variant 5 approved on 7/07/00

Hopper weighing instruments in capacity ranges as listed below:

- in capacities from 100 to 1499 kg; and
- in capacities from 1500 to 14 999 kg.

Instruments are either:

- (a) fitted with 3, 4 or 5 load cells (arranged symmetrically to ensure even loading of each cell) where the hopper is a vertical cylindrical or tank-type load receptor directly supported by the load cells; or
- (b) fitted with 4 load cells where the hopper is a non-vertical cylindrical, or other hopper-type load receptor. Note: Instruments with more than 4 load cells will be acceptable if prior written agreement from NMI is obtained.

In addition suitable provision must be made for the application of suitable verified masses to the instrument as required for verification purposes.

It may be necessary for such masses to be incorporated within the design of the instrument.

### TEST PROCEDURE

Instruments shall be tested in accordance with any relevant tests specified in the national instrument test procedures.

#### **Maximum Permissible Errors**

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE 6/9C/97B – 1

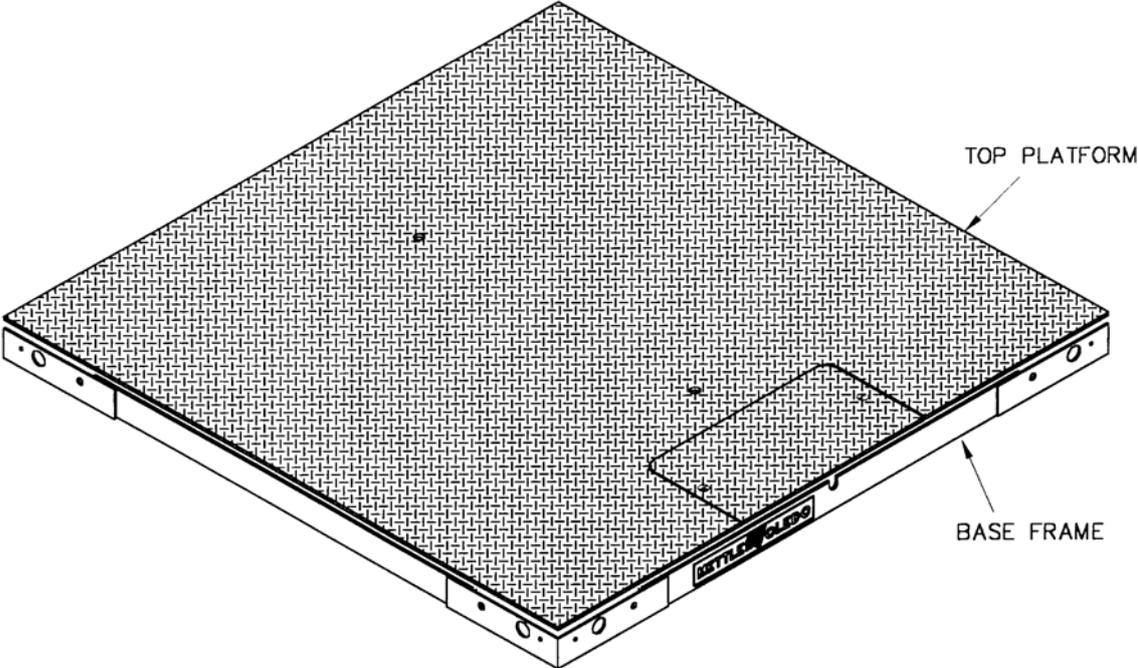
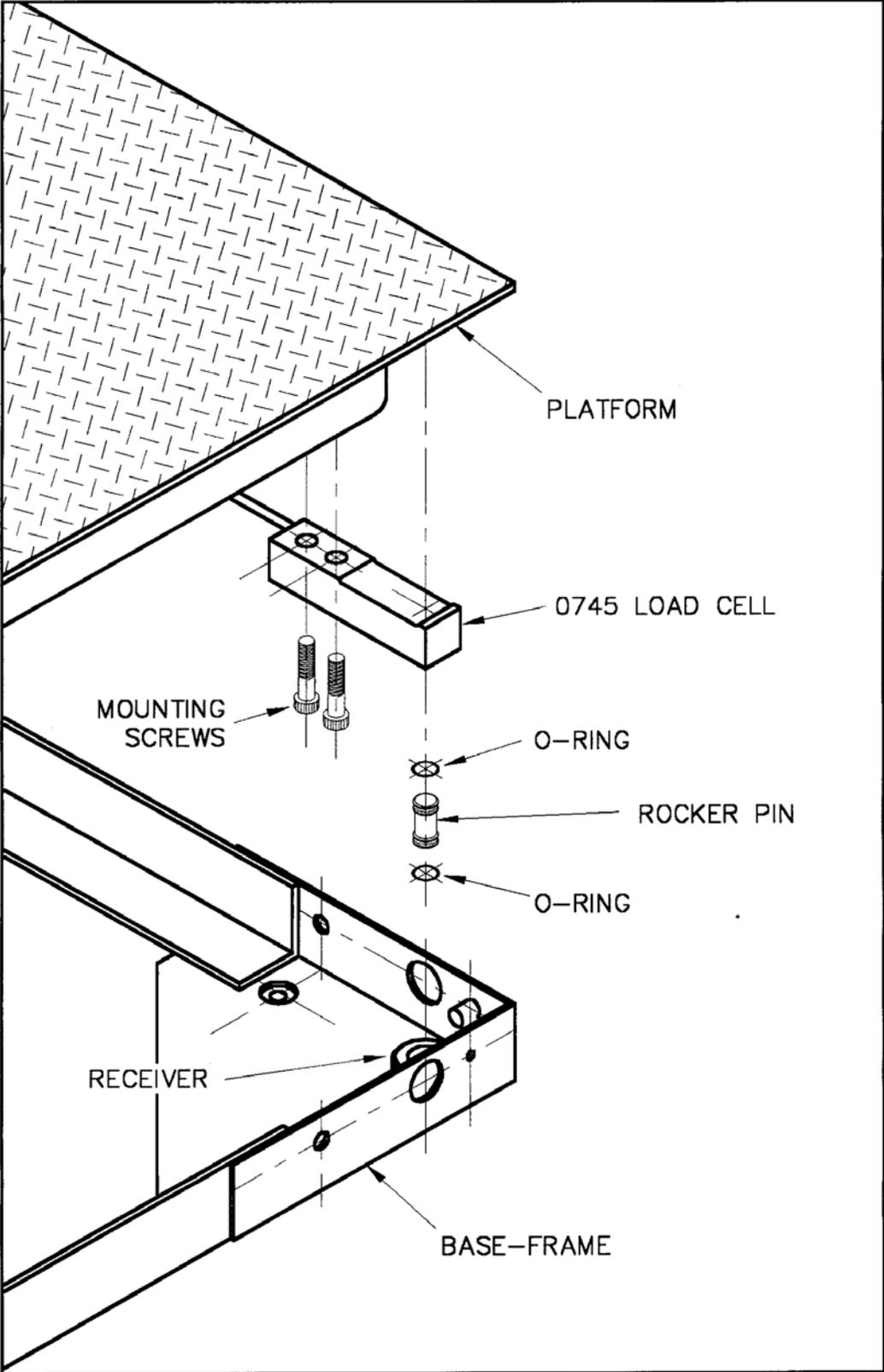
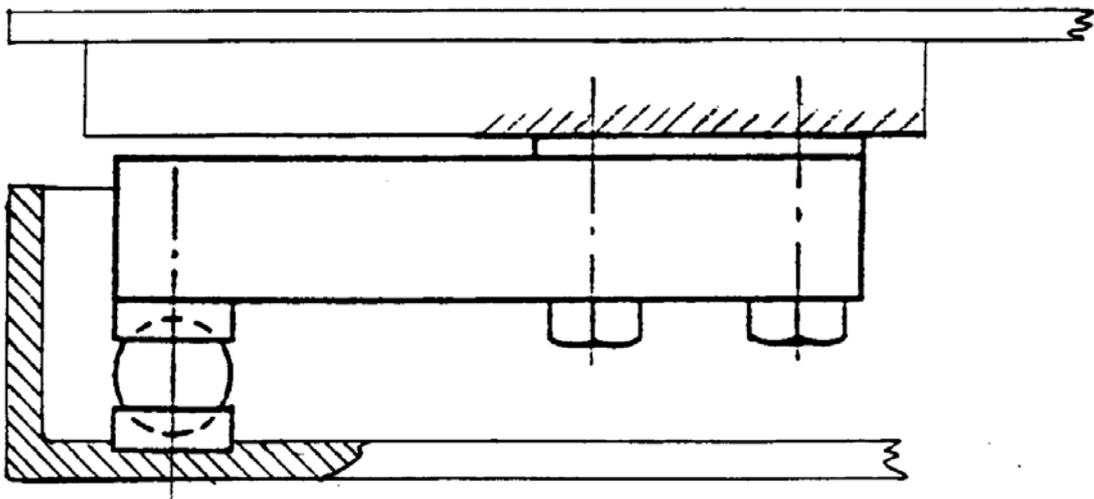


FIGURE 6/9C/97B - 2



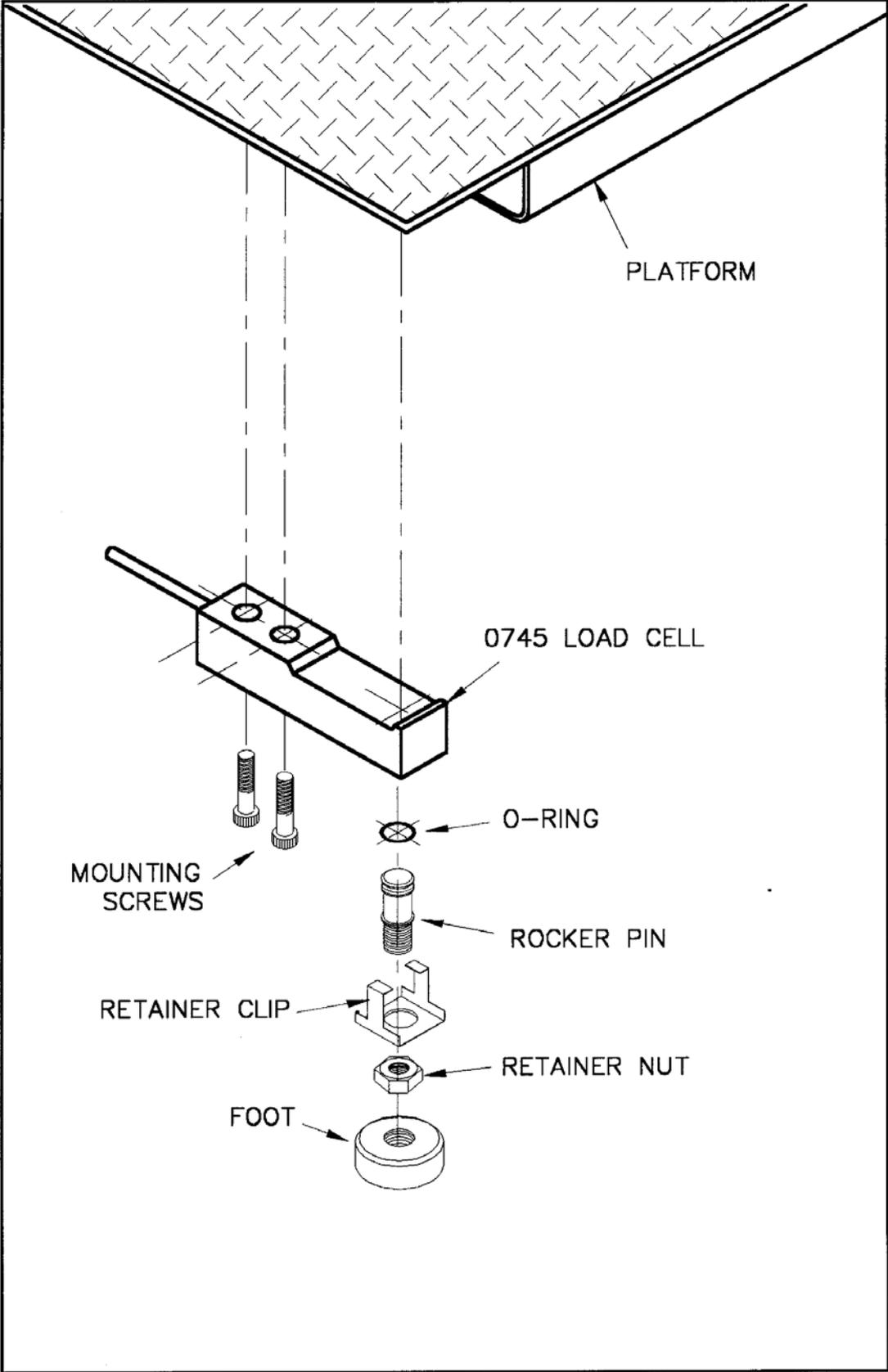
Load Cell Mounting - Model 2158 (The Pattern)

FIGURE 6/9C/97B – 3



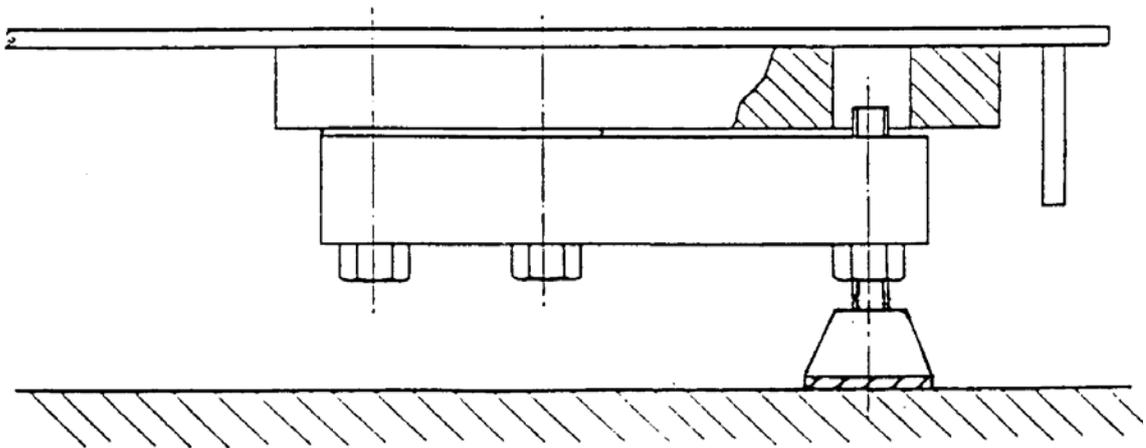
(Note that the load cell shown in Figure 3 has a different profile to that of the Mettler Toledo model 0745 load cell)

FIGURE 6/9C/97B - 4



Load Cell Mounting - Model 2158 (Variant 2)

FIGURE 6/9C/97B – 5



(Note that the load cell shown in Figure 5 has a different profile to that of the Mettler Toledo model 0745 load cell)

Alternative Load Cell Mounting – Model 4100 (Variant 2)