



**Australian Government**  
**National Measurement  
Institute**

Bradfield Road, West Lindfield NSW 2070

## **Certificate of Approval**

### **No 6/4D/334**

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.

Teraoka Model SM-500 Weighing Instrument

submitted by W W Wedderburn Pty Ltd  
101 Williamson Road  
Ingleburn NSW 2565

**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 **1/05/18**, and then every 5 years thereafter.

#### **DOCUMENT HISTORY**

<b>Rev</b>	<b>Reason/Details</b>	<b>Date</b>
0	Pattern & variants 1 to 12 approved – certificate issued	1/05/07
1	Variant 13 approved – certificate issued	30/10/07
2	Pattern & variants 1 to 13 reviewed & updated – certificate issued	28/08/13

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/4D/334' and only by persons authorised by the submittor.

It is the submittor'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.

### Special

Certain aspects of this instrument (in particular transaction record printing formats) are able to be configured by the user. Whilst NMI believes that acceptable formats can be achieved for typical basic sales modes, it is also possible for the instrument to be configured to produce unacceptable formats, and use of some formats may be inappropriate for different sales modes. It is the responsibility of the user to ensure that acceptable and appropriate formats are used in any particular situation.

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



Dr A Rawlinson

## TECHNICAL SCHEDULE No 6/4D/334

### 1. Description of Pattern approved on 1/05/07

A Teraoka model SM-500 (\*) class **III** non-automatic multi-interval self-indicating price-computing weighing instrument (Figure 1) with a verification scale interval  $e_1$  of 0.002 kg for up to 6 kg and with a verification scale interval  $e_2$  of 0.005 kg from 6 kg to 15 kg.

(\*) The full model number may have a suffix of up to three alpha characters, e.g. the pattern may be known as a model SM-500 DP and variant 4 ('elevated' style) may be known as a model SM-500 EV.

Instruments are fitted with a double-sided column-mounted colour liquid crystal display (LCD) panel. For each side, the display consists of one line for presentation of tare, weight, unit price and price information, and following lines capable of displaying alphanumeric information relating to product look up (PLU) items. Instrument may be provided with various size PLU keyboards.

Instruments are fitted with one or two integral printers, for printing of labels or tickets and also may be provided with a PLU keyboard.

Instruments have unit price to \$9999.99/kg, price to \$99999.99, and a product look up (PLU) facility.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

Instruments use a Teraoka K series or M series load cell, or alternatively a Minebea C2G\*\*\*-S23 load cell (where \*\*\* represents load cell capacity).

The instrument operates from mains AC power (240 V AC, 50 Hz).

#### 1.1 Zero

Zero is automatically corrected to within  $\pm 0.25e_1$  whenever power is applied and whenever the instrument comes to rest within  $0.5e_1$  of zero.

The initial zero-setting device has a nominal range of not more than 20% of the maximum capacity of the instrument.

The instrument has a semi-automatic zero-setting device with a nominal range of not more than 4% of the maximum capacity of the instrument.

#### 1.2 Tare

A semi-automatic subtractive tare device and/or non-automatic keyboard-entered pre-set subtractive tare device, each of up to 5.998 kg maximum capacity, may be fitted.

A separate display for tare values is provided.

Pre-set tare values may be associated with product look up (PLU) items.

#### 1.3 Levelling

The instrument is provided with adjustable feet and adjacent to the level indicator is a notice advising that the instrument must be level when in use.

#### 1.4 Display Check

A display check is initiated whenever power is applied.

### 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 to be sealed by means of a lead and wire seal and sealing screws or destructible labels placed over the joins of the removable baseplate and the chassis, on the underside of the instrument (Figure 2).

### 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	Teraoka
Name or mark of manufacturer's agent	WEDDERBURN
Indication of accuracy class	III
Pattern approval mark for the instrument	NMI 6/4D/334
Maximum capacity	Max ...../..... g or kg #
Minimum capacity	Min ..... g or kg #
Verification scale interval	e = ...../..... g or kg #
Maximum subtractive tare	T = - ..... g or kg
Serial number of the instrument	.....

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

### 2. Description of Variant 1 approved on 1/5/07

The pattern or variants as multi-interval instruments of certain capacities as listed below:

- (i) A multi-interval instrument with a verification scale interval of 0.001 kg up to 3 kg and with a verification scale interval of 0.002 kg from 3 kg up to 6 kg, and with a maximum semi-automatic and pre-set tare capacity of 2.999 kg; and
- (ii) A multi-interval instrument with a verification scale interval of 0.005 kg up to 15 kg and with a verification scale interval of 0.01 kg from 15 kg up to 30 kg, and with a maximum semi-automatic and pre-set tare capacity of 9.995 kg.

### 3. Description of Variant 2 approved on 1/5/07

The pattern or variants as single interval instruments of certain capacities as listed in Table 1 below:

A semi-automatic subtractive tare device and/or a keyboard-entered pre-set subtractive tare device, each of up to the maximum tare capacity shown in Table 1, may be fitted.

TABLE 1

Max	6 kg	6 kg	15 kg	15 kg	30 kg	30 kg
e	1 g	2 g	2 g	5 g	5 g	10 g
T	2.999 kg	2.998 kg	7.498 kg	7.495 kg	9.995 kg	9.990 kg

Max = maximum capacity of the instrument  
e = verification scale interval  
T = maximum tare capacity

**4. Description of Variant 3** **approved on 1/5/07**

The pattern or variants known as 'bench' style instruments which are similar to the pattern but the displays are incorporated within the main instrument housing (Figure 3).

**5. Description of Variant 4** **approved on 1/5/07**

The pattern or variants known as 'elevated' style instruments which are similar to the pattern however, the operator keyboard and the operator and customer displays are mounted on the column rather than attached to the main instrument housing (Figure 4).

**6. Description of Variant 5** **approved on 1/5/07**

The pattern or variants known as 'hanging' style instruments which are similar to the pattern but with a suspended load receptor (Figure 5).

The instrument is firmly mounted to a mounting rod and is provided with a level indicator; adjacent to the level indicator is a notice advising that the instrument must be level when in use.

Provision is made for the calibration adjustments to be sealed by means of destructible labels placed as shown in Figure 6.

**7. Description of Variant 6** **approved on 1/5/07**

The pattern or variants with a touch screen type operator display (Figure 7).

**8. Description of Variant 7** **approved on 1/5/07**

The pattern or variants with various styles of monochrome or colour displays for the operator and customer (Figure 8).

**9. Description of Variant 8** **approved on 1/5/07**

The models of the SM-500 series may be connected in a network with compatible approved Teraoka instruments, to share common PLU data, for totalisation across instruments ('floating system'), and to accumulate and retrieve management information.

In addition, the network may be interfaced with a computer for the collection of management data, or the downloading of PLU data.

Note: The weighing and price-computing functions of each weighing instrument in the network are independent, and the removal, repair or replacement of a particular weighing instrument does not necessitate reverification of any other weighing instrument in the network.

**10. Description of Variant 9** **approved on 1/5/07**

With one or more pre-set self-service PLU keyboards mounted on the display column (Figure 9. All keys on the integral keyboard, other than the REZERO key, may be disabled).

The use of a totalisation across instruments ('floating system') arrangement described in variant 8 is not approved in this self-service arrangement. (The collection of management data and downloading of PLU data may occur.)

This instrument may be used for other than self-service operation, however in this case the instrument is NOT FOR TRADING DIRECT WITH THE PUBLIC and carries a notice to this effect.

**11. Description of Variant 10** **approved on 1/5/07**

Without a customer display in which case instruments are either:

- (i) NOT FOR TRADING DIRECT WITH THE PUBLIC in which case instruments carries a notice to this effect; or
- (ii) Used in pre-pack application; or
- (iii) Used in a self-service arrangement and connected to a touch screen liquid crystal (LCD) display/keyboard which serves as a product look up (PLU) display/keyboard, as well as providing additional mass, unit price and price displays.

The use of a totalisation across instruments ('floating system') arrangement described in variant 8 is not approved in this self-service arrangement. The semi-automatic tare key is not functional, however stored tare values associated with PLU items may be operational (with the pre-set tare value shown in the tare display).

Note: Testing of the self-service arrangement should include checks to ensure that values displayed on the touch screen unit do not differ from those of the instrument.

**12. Description of Variant 11** **approved on 1/5/07**

Similar to the pattern but each side of the instrument is provided only with a single line LCD display capable of displaying alphanumeric information relating to product look up (PLU) items, as well as presentation of tare, weight, unit price and price information, and these are incorporated within the main instrument housing.

The display of the commodity name appears for a short period following its selection (i.e. after a PLU is selected) and the weighing and pricing information is always displayed whilst a label is printing.

**13. Description of Variant 12** **approved on 1/05/07**

The pattern or variants with the integral basework either disabled or removed when an external basework is connected. The approved external baseworks are as shown in Table 2.

**14. Description of Variant 13** **approved on 30/10/07**

The pattern or variants with the integral basework either disabled or removed when an external basework is connected. This variant approves the use of alternative external baseworks as shown in Tables 3(a) and 3(b). These baseworks are alternatives to those mentioned in variant 12.

TABLE 2 – External Baseworks

Make	Teraoka						
Basework model	S-YA			S-YB			
Platform size, mm	380 x 380			480 x 480			
Max, kg	30	60	150	30	60	150	300
e, kg	0.01	0.02	0.05	0.01	0.02	0.05	0.1
T, kg	9.990	9.980	9.950	9.990	9.980	9.950	9.9
Load cell make	Teraoka						
Load cell model	P			PM			
Load cell <i>E<sub>max</sub></i> , kg	45	90	225	45	90	225	450
No of load cell	1			1			
Load cell sensitivity at <i>E<sub>max</sub></i>	1.5 mV/V			1.5 mV/V			
Input impedance	1100 Ω			1100 Ω			
Excitation voltage (maximum)	20 V			20 V			
Cable length (±0.1m) (#)	3 m			3 m			
No of leads (plus shield)	4			4			

TABLE 3(a) – Single Interval

Make	Teraoka					
Basework model	SX-C or S-YC					
Platform size, mm	352 x 292 (for SX-C) or 341 x 284 (for S-YC)					
Max, kg	6	6	15	15	30	30
e, kg	0.001	0.002	0.002	0.005	0.005	0.01
T, kg	2.999	2.998	7.498	7.495	9.995	9.99
Load cell make	Teraoka					
Load cell model	K type					
Load cell <i>E<sub>max</sub></i> , kg	9	9	22.5	22.5	45	45
No of load cell	1					
Load cell sensitivity at <i>E<sub>max</sub></i>	1.5 mV/V					
Input impedance	350 Ω					
Excitation voltage (maximum)	20 V DC					
Cable length (±0.1m) (#)	3 m					
No of leads (plus shield)	4					

TABLE 3(b) – Multi interval

Make	Teraoka		
Basework model	SX-C or S-YC		
Platform size, mm	352 x 292 (for SX-C) or 341 x 284 (for S-YC)		
Max, kg	3 / 6	6 / 15	15 / 30
e, kg	0.001 / 0.002	0.002 / 0.005	0.005 / 0.01
T, kg	2.999	5.998	9.995
Load cell make	Teraoka		
Load cell model	K type		
Load cell <i>E<sub>max</sub></i> , kg	9	22.5	45
No of load cell	1		
Load cell sensitivity at <i>E<sub>max</sub></i>	1.5 mV/V		
Input impedance	350 Ω		
Excitation voltage (maximum)	20 V DC		
Cable length (±0.1m) (#)	3 m		
No of leads (plus shield)	4		

Max = maximum capacity of the basework

e = verification scale interval

T = maximum tare capacity

(#) The load cell cable length supplied with the basework shall not be shortened.

## TEST PROCEDURE No 6/4D/334

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

### **Maximum Permissible Errors**

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

For multi-interval instruments with verification scale intervals of  $e_1, e_2 \dots$ , apply  $e_1$  for zero adjustment, and maximum permissible errors apply  $e_1, e_2 \dots$ , as applicable for the load.

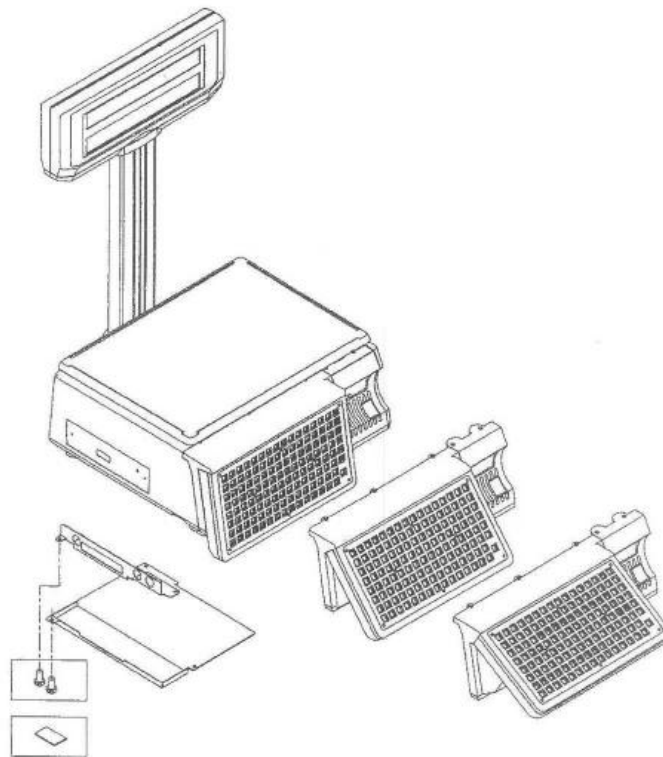


FIGURE 6/4D/334 – 1

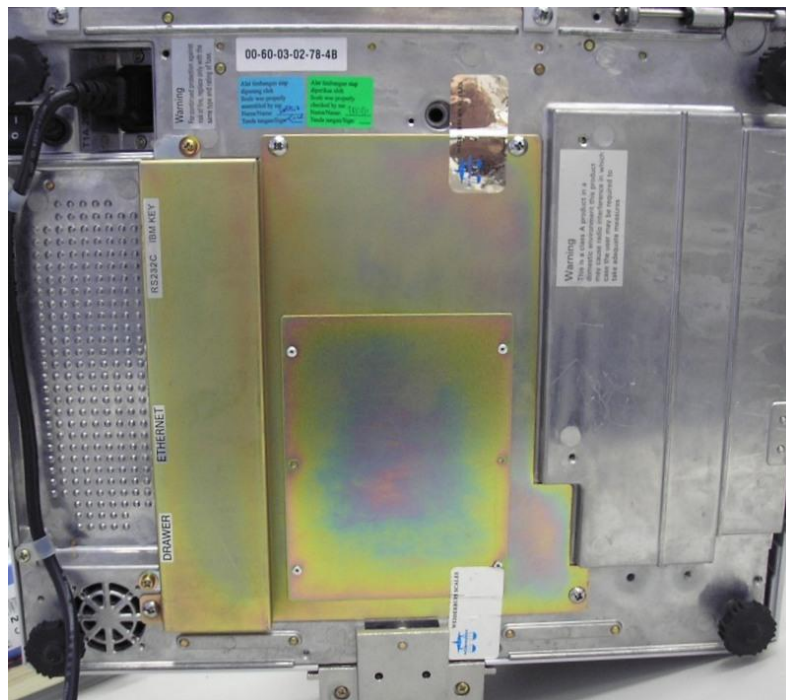


Teraoka Model SM-500 Weighing Instrument (The Pattern)

FIGURE 6/4D/334 – 2



Sealing Screws or  
Destructible Labels



Typical Sealing Arrangements – Teraoka Model SM-500 (Pattern and Variants)

FIGURE 6/4D/334 – 3



Teraoka Model SM-500 Bench-style Instrument (Variant 3)

FIGURE 6/4D/334 – 4



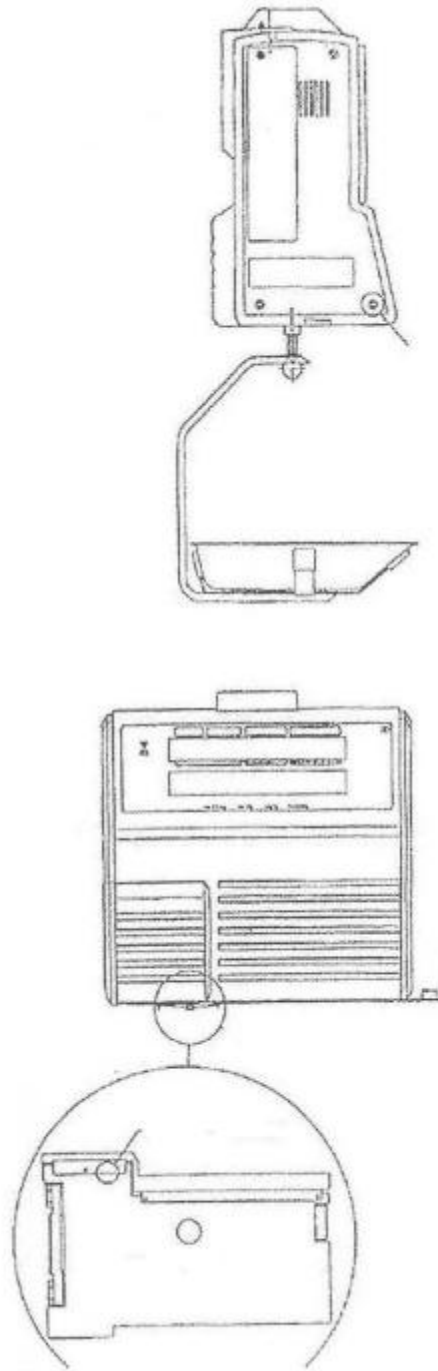
Teraoka Model SM-500 Elevated-style Instrument (Variant 4)

FIGURE 6/4D/334 – 5



Teraoka SM-500 Hanging-style Instrument (Variant 5)

FIGURE 6/4D/334 – 6



Typical Sealing of Teraoka SM-500 Hanging-style Instrument (Variant 5)



FIGURE 6/4D/334 – 7



With Typical Touch Screen Displays (Variant 6)

FIGURE 6/4D/334 – 8



Examples of Alternative Displays (Variant 7)

FIGURE 6/4D/334 – 9



With Typical Self-service Keyboards (Variant 9)

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