



Australian Government  
Department of Industry and Science

**National  
Measurement  
Institute**

**Cancellation  
Certificate of Approval  
NMI 6/4C/259**

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

This is to certify that the approval for use for trade granted in respect of the  
Teraoka Model DS-162SS Weighing Instrument

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

has been cancelled in respect of new instruments as from 1 October 2015.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 3 approved – certificate issued	20/04/09
1	Variant 3 amended – notification of change issued	16/07/09
2	Pattern & variants 1 to 3 cancelled – cancellation certificate issued	20/08/15

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

A handwritten signature in black ink, appearing to read 'Dr A Rawlinson'.

Dr A Rawlinson



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

Bradfield Road, West Lindfield NSW 2070

## **Certificate of Approval**

### **No 6/4C/259**

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

Teraoka Model DS-162SS Weighing Instrument

submitted by W W Wedderburn Pty Ltd  
90 Parramatta Road  
Summer Hill NSW 2130.

**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.

#### **CONDITIONS OF APPROVAL**

This approval becomes subject to review on 1 May 2014, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 6/4C/259' 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.

The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

#### DESCRIPTIVE ADVICE

**Pattern:** approved 17 April 2009

- A Teraoka model DS-162SS class  $\text{III}$  non-automatic multi-interval self-indicating mass only weighing instrument with a maximum capacity of 15 kg.

**Variants:** approved 17 April 2009

1. Model DS-162SS multi-interval instruments in certain other capacities.
2. Model DS-162SS single interval instruments in certain capacities.
3. Using alternative NMI approved indicators.

Technical Schedule No 6/4C/259 describes the pattern and variants 1 to 3.

#### FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 6/4C/259 dated 20 April 2009

Technical Schedule No 6/4C/259 dated 20 April 2009 (incl. Table 1 and Test Procedure)

Figures 1 and 2 dated 20 April 2009



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, appearing to be 'J. J. J.', located to the right of the signature text.

## TECHNICAL SCHEDULE No 6/4C/259

**Pattern:** Teraoka Model DS-162SS Weighing Instrument

**Submittor:** W W Wedderburn Pty Ltd  
90 Parramatta Road  
Summer Hill NSW 2130

### 1. Description of Pattern

A Teraoka model DS-162SS class  $\text{III}$  non-automatic multi-interval self-indicating weighing instrument (Figure 1) with a verification scale interval  $e_1$  of 0.002 kg up to 6 kg and with a verification scale interval  $e_2$  of 0.005 kg from 6 kg to 15 kg.

The instrument includes a model DI-162SS digital indicator having a liquid crystal display (LCD) with backlight capability, for display of the weight value.

The instrument includes a model S-GE basework having a platter size of 340 mm  $\times$  285 mm.

Instruments shall be marked 'NOT FOR TRADING DIRECT WITH THE PUBLIC' (or similar wording).

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

#### 1.1 Zero

Zero may be automatically corrected to within  $\pm 0.25e$  whenever the instrument comes to rest within  $0.5e$  of zero (in the case of multi-interval configurations  $e$  in this sentence refers to  $e_1$ ).

If the instrument comes to rest outside that range but within the zero setting range, zero may be set by pressing the zero button.

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 (to set the instrument to within  $\pm 0.25e$  of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

#### 1.2 Tare

A semi-automatic subtractive taring device and/or a pre-set tare device, each of up to the -5.998 kg, may be fitted.

#### 1.3 Display Check

A display check is initiated whenever power is applied.

#### 1.4 Power Supply

The instrument operates from the mains AC power supply and/or rechargeable battery (6 volt, 1.2Ah).

## 1.5 Additional Features

The instrument also has certain additional functions (e.g. set point controls). The additional functions (other than the indications of measured mass, i.e. gross, tare net displayed either on the indicator or an auxiliary or peripheral device) are not approved for trade use.

## 1.6 Interfaces

The indicator may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 5.3.6 of document NMI R76 (the basic intent of which is that it shall not be possible to alter weighing results via the interfaces).

Any measurement data output from the instrument or its interfaces shall only be used for trade in compliance with Supplementary Certificate No S1/0/A (in particular in regard to the data and its format).

Instruments may be fitted with RS-232C serial data interfaces.

## 1.7 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

## 1.8 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Teraoka
Name or mark of manufacturer's agent	WEDDERBURN
Indication of accuracy class	Ⓜ
Maximum capacity	<i>Max</i> ..... g or kg #1
Minimum capacity	<i>Min</i> ..... g or kg #1
Verification scale interval	<i>e</i> = .... .. g or kg #1
Maximum subtractive tare	<i>T</i> = - . . . . g or kg #2
Serial number of the instrument	.....
Pattern approval mark for the instrument	NMI 6/4C/259
Pattern approval mark for other components	..... #3

#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*.

#3 May be located separately from the other markings.

Instruments shall be marked 'NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

Note: For multi-interval instruments the markings shall be as above, with the exception that the 'Maximum capacity' and 'Verification scale interval' shall be marked for both interval ranges, e.g. as follows:

Maximum capacity	<i>Max</i> .... / .... g/kg
Verification scale interval	<i>e</i> = .... / .... g/kg

## 1.9 Sealing Provision

The switch for span calibration is located inside the DI-162SS indicator housing. It can be checked whether the span switch has been set in the correct 'locked' state (to prevent adjustment without breaking the seals) by the following:

- Press and hold the REZERO button, whilst holding the REZERO button press the buttons T, then ←, then ←. If the display shows "S-off" then this indicates that the adjustment switch is not in the 'locked' state. The instrument shall not be used for trade when the calibration adjustment switch is not in the 'locked' state.

Provision is made for sealing of the instrument by preventing access to the span calibration switch within the indicator housing. This may be achieved by use of wire pass through the sealing screws as shown in Figure 2a; or by use of destructible adhesive labels, one at each side of indicator (over the join in the indicator housing) as shown in Figure 2b.

## 2 Description of Variants

### 2.1 Variant 1

The model DS-162SS as multi-interval instruments of certain capacities as listed below:

- (i) 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) 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 -14.995 kg.

### 2.2 Variant 2

The model DS-162SS as single interval instruments of certain capacities as listed below:

- (i) With a maximum capacity of 6 kg and a verification scale interval of 0.002 kg, and with a maximum semi-automatic and pre-set tare capacity of -2.998 kg;
- (ii) With a maximum capacity of 15 kg and a verification scale interval of 0.005 kg, and with a maximum semi-automatic and pre-set tare capacity of -7.495 kg; and
- (iii) With a maximum capacity of 30 kg and a verification scale interval of 0.01 kg, and with a maximum semi-automatic and pre-set tare capacity of -14.995 kg.

### 2.3 Variant 3

Certain baseworks of this approval used with a compatible approved (by Supplementary Certificate) indicator provided the conditions set out below are met. In this case instruments may be known according to the basework model number.

In addition to the markings specified in clause **1.8 Descriptive Markings and Notices**, instruments are marked with the NMI approval number for the indicator used, together in the same location.

The baseworks approved in this certificate and their limiting characteristics are given in following table.

TABLE 1

Instrument model	### S-GE (*)	### S-GE (*)	### S-GE (*)
Basework model	S-GE	S-GE	S-GE
Platform size,	340 mm × 285 mm	340 mm × 285 mm	340 mm × 285 mm
Maximum capacity	3/6 kg, or 6 kg	6/15 kg, or 15 kg	15/30 kg, or 30 kg
Typical verification scale interval	0.001/0.002 kg, or 0.002 kg	0.002/0.005 kg, or 0.005 kg	0.005/0.01 kg, or 0.01 kg
Max. number of verification scale intervals ( $n_{max}$ ), per range	3000	3000	3000
Load cell model used	JW(G)	JW(G)	JW(G)
Load cell classification	C3	C3	C3
Load cell max. capacity, $E_{max}$	9 kg	23 kg	45 kg
Number of load cells	1	1	1
Min. value of verification scale interval for basework, ( $V_{min}$ of load cell)	0.001 kg	0.002 kg	0.005 kg
Load cell sensitivity at $E_{max}$	1.5 mV/V	1.5 mV/V	1.5 mV/V
Input impedance	1050 ohm	1050 ohm	1050 ohm
Excitation voltage (max.)	20 Vdc	20 Vdc	20 Vdc
Cable length ( $\pm 0.1m$ )	1300 mm	1300 mm	1300 mm
Number of leads (plus shield)	4	4	4

(\*) "S-GE" in the model number is optional.

The conditions to be met are given below, and include calculations using the following terms:

Ex = Excitation from indicator (V)

LC\_Sens = Load cell sensitivity (mV/V)

$E_{max}$  = Load cell maximum capacity (kg)

Indicator Sensitivity = Minimum sensitivity value per verification scale interval for the indicator ( $\mu V$ )

e = verification scale interval of the instrument (kg). ***In the case of multiple range instruments, any reference to 'e' refers to the smallest verification scale interval (i.e.  $e_1$ ).***

$e_1, e_2, \dots$  = verification scale interval of each range for multiple range instruments,  $e_1$  refers to the smallest verification interval.

**Max** = the maximum capacity of the instrument. This refers to the maximum capacity of the highest range (i.e.  $Max_r$  for multiple range instruments).

**Max<sub>r</sub>** = the maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.

**Max<sub>1</sub> Max<sub>2</sub> ...** = the maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.

**n<sub>LC</sub>** = the maximum number of verification intervals for which the load cell or basework is approved (e.g. 3000 for a 'class C3' load cell).

**DR** = dead load return value for the load cell. Note: Many load cells do not have a specified DR value.

The conditions are:

- The excitation voltage used is within the range approved for the baseworks.
- The maximum load applied to the basework (live load plus any dead load) does not exceed the load cell maximum capacity.
- The verification scale interval is not less than the minimum value specified. **In the case of multiple range instruments, the verification scale interval refers to the smallest verification scale interval (i.e.  $e_1$ ).**
- The number of verification scale intervals is less than or equal to the nmax value specified. **In the case of multiple range instruments, the number of verification scale intervals refers to the largest number in any weighing range or partial weighing range (i.e. the largest of  $Max_1/e_1$ ,  $Max_2/e_2$  etc).**
- The signal voltage per verification scale interval is not less than the minimum sensitivity value per verification scale interval for the indicator (as specified in the approval documentation for the indicator), i.e.  
Indicator Sensitivity  $\leq 1000 \times Ex \times LC\_Sens \times e / E_{max}$

**Additional requirement for multiple range operation:**

**In the case of indicators which are configured to form a multiple range weighing instrument the instrument shall comply with one of the following conditions:**

**(i) The smallest verification scale interval ( $e_1$ ) shall satisfy the following:**

$$e_1 \geq 0.4 Max_r/n_{LC}$$

**(ii) Or, the smallest verification scale interval ( $e_1$ ) shall satisfy the following:**

$$e_1 \geq DR. Max_r/E_{max}$$

**Of course (ii) cannot apply where a value of 'Deadload return' DR is not given.**



## TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Uniform Test Procedures.

### **Maximum Permissible Errors**

The maximum permissible errors are specified in Schedule 12 of the *National Measurement Regulations 1999*.

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.



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# **Notification of Change**

## **Certificate of Approval No 6/4C/259**

### **Change No 1**

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

The following changes are made to the approval documentation for the

Teraoka Model DS-162SS Weighing Instrument

submitted by W W Wedderburn Pty Ltd  
90 Parramatta Road  
Summer Hill NSW 2130.

- A. In Certificate of Approval 6/4C/259 dated 20 April 2009, the FILING ADVICE should be amended by adding the following:
- B. In Technical Schedule No 6/4C/259 dated 20 April 2009, in clause **2.3 Variant 3**, the explanation of the term '**Max<sub>1</sub> Max<sub>2</sub>**' should be replaced by:

***"Max<sub>1</sub> Max<sub>2</sub> ... = the maximum capacity of the various ranges for a multiple range instrument. Max<sub>1</sub> refers to the maximum capacity of the smallest range."***

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A handwritten signature in black ink, appearing to be 'M. J. ...', written over a horizontal line.

FIGURE 6/4C/259 – 1



Teraoka Model DS-162SS Weighing Instrument

FIGURE 6/4C/259 – 2

Figure 2a



Figure 2b

