



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval NMI 6/9C/256

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 DS-516 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 **1/12/21**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	11/11/97
1	Variant 1 approved - certificate issued	2/11/98
2	Variant 2 approved – interim certificate issued	5/09/00
3	Pattern & variant 1 & 2 amended – certificate issued	22/09/00
4	Pattern & variant 1 & 2 reviewed – notification of change issued	20/10/04
5	Pattern & variant 1 & 2 amended (address, test procedure) & reviewed – notification of change issued	19/11/10
6	Pattern & variant 1 & 2 reviewed & updated – certificate issued	26/04/17

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI (or NSC) 6/9C/256' 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.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

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 6/9C/256

1. Description of Pattern **approved on 11/11/97**

A Teraoka model DS-516 class III self-indicating multi-interval non-automatic weighing instrument (Figure 1) with a verification scale interval (e_1) of 0.05 kg up to 150 kg and a verification scale interval (e_2) of 0.1 kg from 150 kg up to the maximum capacity of 300 kg.

1.1 Basework

The model S-Type basework (Figure 2) has the load receptor directly supported by a single load cell.

The load receptor has maximum nominal dimensions of 600 x 700 mm.

1.2 Load Cell

A Teraoka model M-Type load cell of 300 kg capacity is used, mounted as shown in Figure 2.

1.3 Indicator

A Teraoka Seiko model DI-516 digital indicator (Figure 1) is used.

1.4 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.

1.5 Tare

Instruments may be fitted with either;

- a semi-automatic subtractive taring device of up to the maximum capacity of the instrument (Max_2); or
- semi-automatic and keyboard-entered pre-set subtractive taring devices, each of up to Max_1 capacity.

1.6 Display Check

A display check is initiated whenever the ON/OFF button is pressed.

1.7 Verification Provision

Provision is made for the application of a verification mark.

1.8 Sealing Provision


Provision is made for the calibration adjustments in the indicator to be sealed by means of a destructible label across the join of the casing halves.

1.9 Levelling

The instrument is provided with adjustable feet and a level indicator.

1.10 Descriptive Markings and Notices

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
Name or mark of manufacturer's agent
Indication of accuracy class	
Pattern approval number for the instrument	NMI 6/9C/256
Maximum capacity	<i>Max</i>/..... kg *
Minimum capacity	<i>Min</i> kg *
Verification scale interval	<i>e</i> =/..... kg *
Maximum subtractive tare	<i>T</i> = - kg #
Serial number of the instrument

For single interval instruments (see variants) there is only one range therefore only one value of maximum capacity and verification scale interval to be marked.

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

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

In addition, instruments shall carry a notice stating NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

2. Description of Variant 1 approved on 2/11/98

With baseworks as listed in Tables 1, 2 and 3 which are approved for single interval operation only. The baseworks may also be used with a compatible NMI approved (by Supplementary Certificate) indicator provided the conditions set out below are met.

Instruments may be known according to their basework or their indicator model number, e.g. an instrument comprising a model S-SK60 basework and a model DI-170 indicator, may be known as either a model S-SK60 or as a model DI-170.

The approved baseworks and their limiting characteristics are given in Tables 1, 2 and 3.

The conditions to be met 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.
- The number of verification scale intervals is less than or equal to the n_{max} value specified.
- The signal voltage per verification scale interval is no less than the minimum sensitivity value per verification scale interval for the indicator (as specified in the approval documentation for the indicator), i.e.

$$\text{Indicator Sensitivity} < 1000 \times E_x \times LC_Sens \times e / E_{max}$$

where E_x = Excitation from indicator (V)

LC_Sens = Load cell sensitivity (mV/V)

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

e = verification scale interval of the instrument (kg)
Indicator Sensitivity = Minimum sensitivity value per
verification scale interval for the indicator (μV)

2.1 Descriptive Markings and Notices

If the indicator used is not the model DI-516 indicator as described for the pattern in clause **1.3 Indicator** in Technical Schedule No 6/9C/256, then:

- (a) The indicator is marked and carries notices in accordance with its NMI approval documentation; and
- (b) The basework is marked with the following, in the form shown at right:

Manufacturer's mark, or name written in full	Teraoka
Indication of accuracy class	Ⓜ
Maximum capacity	Max kg
Model number
Serial number of the instrument
Pattern approval mark for the instrument	NMI 6/9C/256

3. Description of Variant 2 approved on 5/09/00

Certain baseworks of the Teraoka Seiko S-YA and S-YB series (Tables 4 and 5) which are approved for single-interval operation only. These baseworks may also be used with a compatible NMI approved (by Supplementary Certificate) indicator provided the conditions set out below are met.

The approved baseworks and their limiting characteristics are given in Tables 4 and 5:

The conditions to be met 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.
- The number of verification scale intervals in each range is less than or equal to the n_{max} value specified.
- The signal voltage per verification scale interval is no less than the minimum sensitivity value per verification scale interval for the indicator (as specified in the approval documentation for the indicator), i.e.

$$\text{Indicator Sensitivity} < 1000 \times E_x \times \text{LC_Sens} \times e / E_{\text{max}}$$

where E_x = Excitation from indicator (V)

LC_Sens = Load cell sensitivity (mV/V)

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

e = verification scale interval of the instrument (kg)

Indicator Sensitivity = Minimum sensitivity value per verification scale interval for the indicator (μV)

3.1 Descriptive Markings and Notices

If the indicator used is not the model DI-516 indicator as described for the pattern then refer to clause **2.1 Descriptive Markings and Notices** in Technical Schedule No 6/9C/256.

		TABLE 1		
Baseworks		30 kg	60 kg	
		S-SK30 S-SSK30	S-SK60 (S-TK60 [S-UK60	S-SSK60 S-TSK60) S-USK60]
Basework Maximum Capacity	(kg)	30	60	
Maximum Platform Sizes	(mm)	318 x 420	318 x 420 (415 x 520) [598 x 700]	
Load Cell Used		MA30 MA30-P	MA60 (MB60 MB60-P) [MC60 MC60-P]	MA60-P
Load Cell Maximum Capacity	Emax (kg)	45	90	
nmax		3000	3000	
Minimum Verification Scale Interval Value for single interval use	(kg)	0.01	0.02	
Output Rating at Emax	(mV/V)	1.5	1.5	
Input Impedance	(ohms)	430	430	
Excitation Voltage	(V)	5 - 20	5 - 20	
Cable Lengths (+0.1m)	(m)	0.5 to 3.0 (#)	0.5 to 3.0 (#)	
Number of Leads (plus shield)		4	4	

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

Approved 30 and 60 kg Baseworks and Their Limiting Characteristics

TABLE 2

Baseworks	150 kg	300 kg
	S-SK150 S-SSK150 (S-TK150 S-TSK150) [S-UK150 S-USK150]	S-TK300 S-TSK300 (S-UK300 S-USK300)
Basework Maximum Capacity (kg)	150	300
Maximum Platform Sizes (mm)	318 x 420 (415 x 520) [598 x 700]	415 x 520 (598 x 700)
Load Cell Used	MA150 MA150-P (MB150 MB150-P) [MC150 MC150-P]	MB300 MB300-P (MC300 MC300-P)
Load Cell Maximum Capacity Emax (kg)	225	450
nmax	3000	3000
Minimum Verification Scale Interval Value for single interval use (kg)	0.05	0.1
Output Rating at Emax (mV/V)	1.5	1.5
Input Impedance (ohms)	430	430
Excitation Voltage (V)	5 - 20	5 - 20
Cable Lengths (+0.1m) (m)	0.5 to 3.0 (#)	0.5 to 3.0 (#)
Number of Leads (plus shield)	4	4

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

Approved 150 and 300 kg Baseworks and Their Limiting Characteristics

TABLE 3

Basework		600 kg S-VK600
Basework Maximum Capacity	(kg)	600
Maximum Platform Sizes	(mm)	598 x 700
Load Cell Used		MD600
Load Cell Maximum Capacity Emax	(kg)	900
nmax		3000
Minimum Verification Scale Interval Value for single interval use	(kg)	0.2
Output Rating at Emax	(mV/V)	1.5
Input Impedance	(ohms)	430
Excitation Voltage	(V)	5 - 20
Cable Lengths (+0.1m)	(m)	0.5 to 3.0 (#)
Number of Leads (plus shield)		4

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

Approved 600 kg Basework and Its Limiting Characteristics

TABLE 4

Baseworks	30 kg S-YAK30	60 kg S-YAK60	150 kg S-YAK150
Basework Maximum Capacity (kg)	30	60	150
Maximum Platform Sizes (mm)	380 x 380	380 x 380	380 x 380
Load Cell Used	P30	P60	P150
Load Cell Maximum Capacity Emax (kg)	45	90	225
nmax	3000	3000	3000
Minimum Verification Scale Interval Value for single interval use (kg)	0.01	0.02	0.05
Output Rating at Emax (mV/V)	1.5	1.5	1.5
Input Impedance (ohms)	1100	1100	1100
Excitation Voltage (V)	5 - 12	5 - 12	5 - 12
Cable Lengths (+0.1m) (m)	0.5 to 3.0 (#)	0.5 to 3.0 (#)	0.5 to 3.0 (#)
Number of Leads (plus shield)	4	4	4

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

Approved S-YA Baseworks and Their Limiting Characteristics

TABLE 5

Baseworks	60 kg	150 kg	300 kg
	S-YBK60	S-YBK150	S-YBK300
Basework Maximum Capacity (kg)	60	150	300
Maximum Platform Sizes (mm)	480 x 480	480 x 480	480 x 480
Load Cell Used	MB60	MB150	MB300
Load Cell Maximum Capacity Emax (kg)	90	225	450
nmax	3000	3000	3000
Minimum Verification Scale Interval Value for single interval use (kg)	0.02	0.05	0.1
Output Rating at Emax (mV/V)	1.5	1.5	1.5
Input Impedance (ohms)	430	430	430
Excitation Voltage (V)	5 - 20	5 - 20	5 - 20
Cable Lengths (+0.1m) (m)	0.5 to 3.0 (#)	0.5 to 3.0 (#)	0.5 to 3.0 (#)
Number of Leads (plus shield)	4	4	4

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

Approved S-YB Baseworks and Their Limiting Characteristics

TEST PROCEDURE

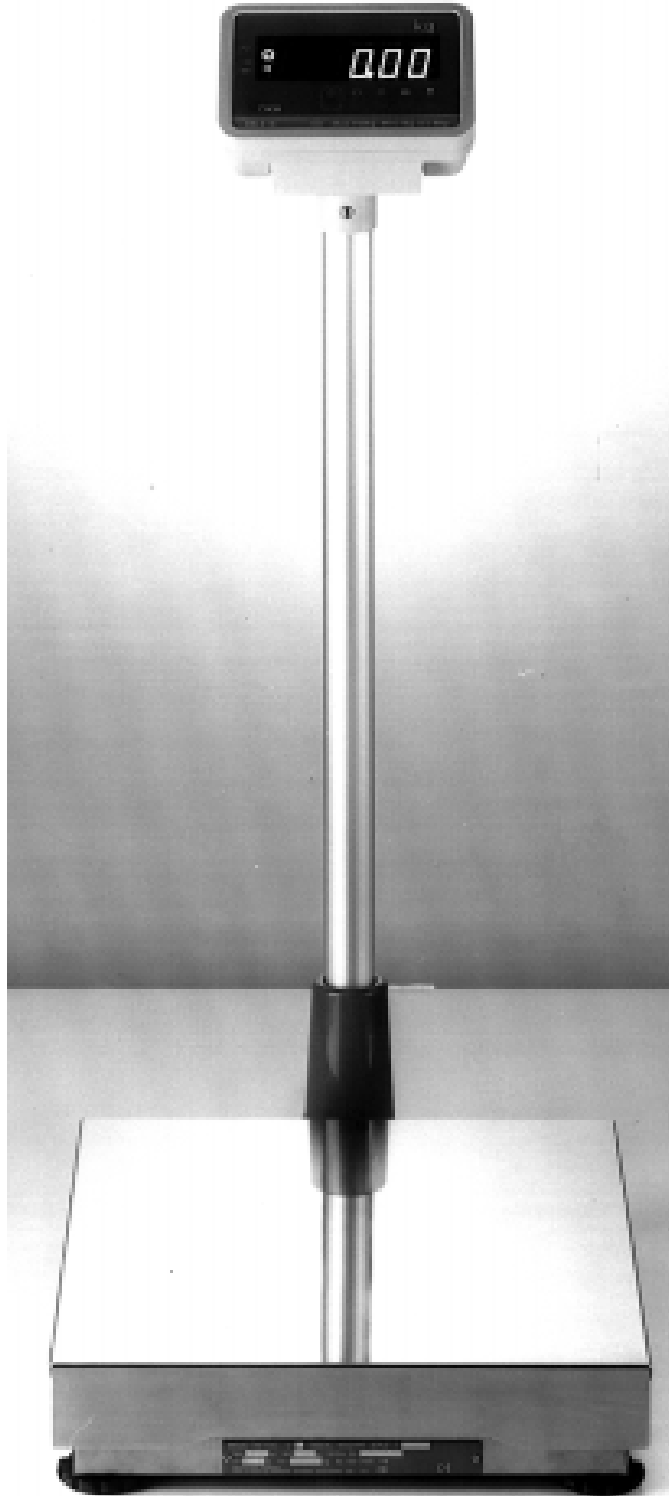
Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

Maximum Permissible Errors

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

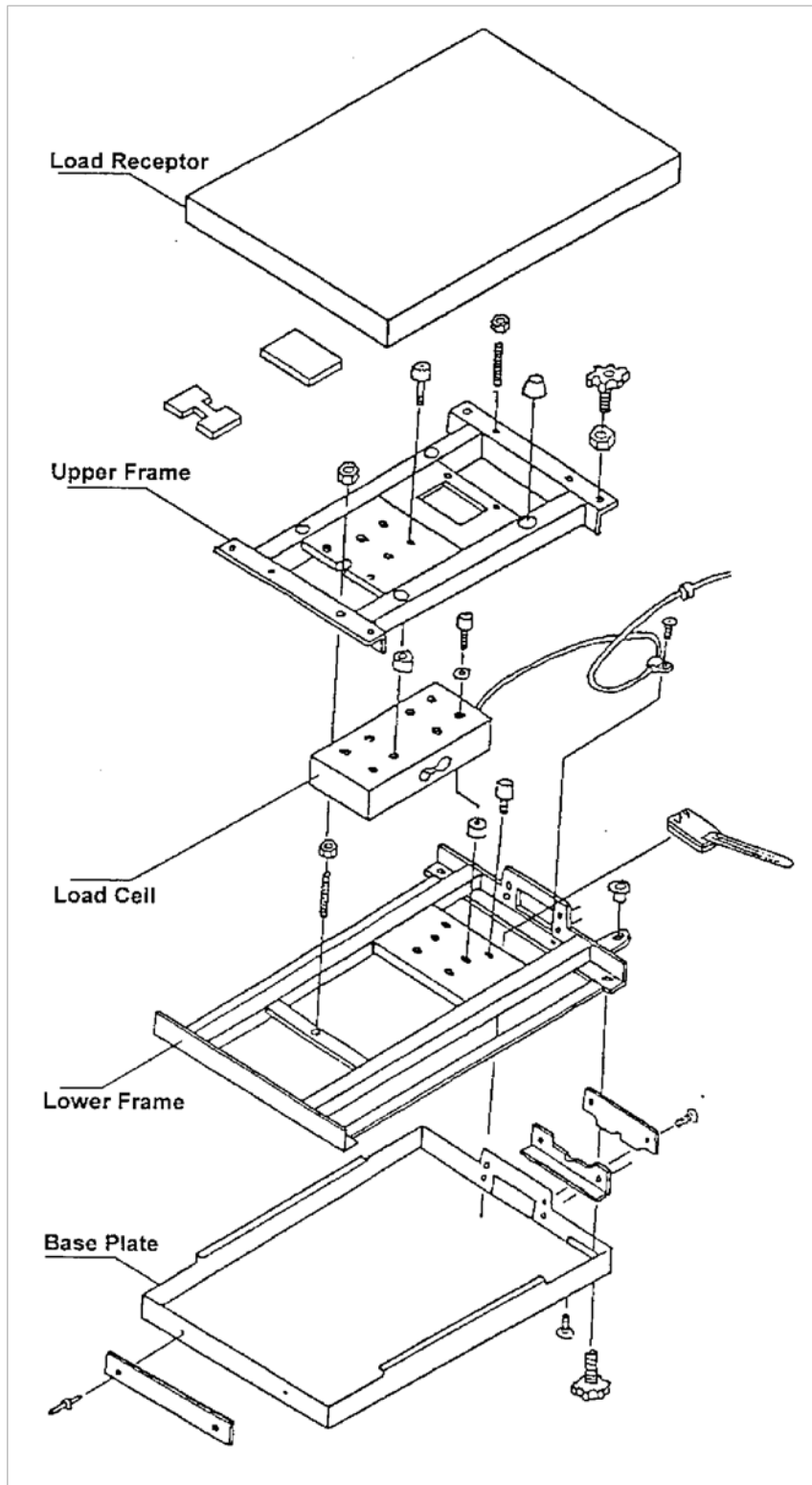
For multi-interval and multiple range instruments with verification scale intervals of $e_1, e_2 \dots$, apply e_1 for zero adjustment, and maximum permissible errors apply $e_1, e_2 \dots$, as applicable for the load.

FIGURE 6/9C/256 – 1



Teraoka Model DS-516 Weighing Instrument

FIGURE 6/9C/256 – 2



Teraoka Model S-Type Basework

~ End of Document ~