

Australian Government

Department of Industry, Innovation and Science

National Measurement Institute

Certificate of Approval

NMI 6/4C/305

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.

Wedderburn Model WS210 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 1/08/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 3 approved – certificate issued	17/07/17

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 6/4C/305' 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 S1/0B.

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*.

Mr Stephen Horrocks

TECHNICAL SCHEDULE No 6/4C/305

1. Description of Pattern

approved on 17/07/17

A Wedderburn model WS210 class single range self-indicating non-automatic weighing instrument (Figure 1) of 60 kg maximum capacity with a verification scale interval of 0.02 kg.

Instruments are NOT FOR TRADING DIRECT WITH THE PUBLIC and shall be so marked.

Instruments are approved for use over a temperature range of 0 $^{\circ}$ C to +40 $^{\circ}$ C, and are so marked.

The instrument model number may also contain additional trailing alpha numeric code to identify base work size and capacity.

1.1 Basework

The Wedderburn Model WSSP-A basework (Figure 3a) has the load receptor directly supported by a single load cell. The load receptor has a nominal dimension of 400 mm x 400 mm, uses a stainless steel construction.

1.2 Load Cell

Zemic model B6N load cell of 100 kg maximum capacity is used.

1.3 Indicator

A Teraoka model DI-166 SS digital indicator is used. The indicator is described in the documentation of approval NMI S679.

The indicator may be mounted on a column (Figure 1) or similarly mounted without the supporting column, in a location adjacent to the platform.

1.4 Zero

A zero-tracking device may be fitted.

The initial zero-setting device of the pattern 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.

1.5 Tare

A semi-automatic subtractive tare device of up to 59.98 kg may be fitted.

1.6 Display Check

A display check is initiated whenever power is applied.

1.7 Levelling

The instrument has adjustable feet and a level indicator.

The instrument is to be used in a level condition as indicated by the level indicator.

1.8 Verification Provision

Provision is made for the application of a verification mark.

1.9 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 R 76 (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 NMI General Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

Indications other than the indications of measured mass (i.e. gross, tare, net, totals) displayed either on the indicator or on an auxiliary or peripheral device, are not for trade use.

Instruments may be fitted with one RS-232 serial data interface.

1.10 Sealing Provision

Provision is made for the calibration to be sealed by setting a switch on the main board within the instrument to a LOCK position, and then preventing access within the instrument housing (Figure 4).

It is possible to determine that the switch status is in the 'LOCK' position as follows:

• Hold down the $\rightarrow 0 \leftarrow$ key, and press the $\rightarrow T \leftarrow$ key once and then the \leftarrow key twice in weighing mode.

• If the switch is in the 'LOCK' position, the instrument will display '**S off**'. In this case the instrument may be verified.

• Otherwise the instrument will display '**S** on' in which case the instrument should not be verified until the switch has been correctly located in the 'LOCK' position.

Sealing to prevent access within the instrument housing may be achieved by using a 'lead and wire' type seal or similar with drilled screws or using destructible labels placed over the opposite sides of a join in the instrument housing as shown in Figure 4.

1.11 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	WEDDERBURN
Indication of accuracy class	
Pattern approval mark for the instrument	NMI 6/4C/305
Maximum capacity	<i>Max</i> / g or kg #1
Minimum capacity	<i>Min</i> g or kg #1
Verification scale interval	e =/ g or kg #1
Maximum subtractive tare	T = g or kg #2
Special temperature limits	0 °C to +40 °C
Serial number of the instrument	

- #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*.

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 17/07/17

The pattern or variants as single interval instruments of certain other capacities as listed in Table 1 (the pattern is shown in **bold**).

Maximum	Verification	Maximum	Maximum	Zemic B6N C3
Capacity	Scale Interval	Platform Size	Subtractive	Load Cell
			Tare Capacity	Maximum Capacity
(Max)	(<i>e</i>)		(<i>T</i> =)	(E _{max})
6 kg	0.002 kg	400 x 400 mm	5.998 kg	10, 15 kg
15 kg	0.005 kg	400 x 400 mm	14.995 kg	20, 30 kg
30 kg	0.01 kg	400 x 400 mm	29.99 kg	50 kg
60 kg	0.02 kg	400 x 400 mm	59.98 kg	75, 100 kg
150 kg	0.05 kg	400 x 400 mm	149.95 kg	200 kg

Table 1

3. Description of Variant 2

approved on 17/07/17

Instruments which are similar to the pattern but having a model WSSP-B basework (Figure 2 & 3b) in certain capacities as listed in Table 2.

3.1 Levelling

Instruments are provided with a level indicator (bubble), located on basework frame underneath the weighing receptor. A notice indicating the location of the level indicator (e.g. "Level bubble provided under platform", or similar) shall be provided in a location clearly visible to the operator.

Maximum	Verification	Maximum	Maximum	Zemic B6N C3
Capacity	Scale Interval	Platform Size	Subtractive	Load Cell
			Tare Capacity	Maximum Capacity
(Max)	(<i>e</i>)		(T =)	(E _{max})
6 kg	0.002 ka	400 x 400 mm	5 998 ka	10 15 kg
0 Kg	0.002 Kg	400 X 400 mm	0.000 Kg	10, 10 kg
15 ka	0.005 kg	400 x 400 mm	14.995 ka	20. 30 ka
				9
30 kg	0.01 kg	400 x 400 mm	29.99 ka	50 kg
oong	0.01 Kg		20.00 Ng	oo ng

Table 2

4. Description of Variant 3

approved on 17/07/17

Any model base work of this approval, used with a compatible approved (by Supplementary Certificate) indicator provided the conditions set out below are met. The limiting characteristics of the load cell used in these base works are given in Tables 3.

The resulting instrument may be single range, multi-interval or multi range (according to the indicator used), provided that the conditions and any additional requirements given in this variant are met.

In addition to the markings specified in clause **1.11 Descriptive Markings and Notices**, instruments are marked with the NMI approval number for the indicator used, together in the same location. Where the resulting instrument is a multiple range instrument, appropriate markings regarding the ranges and scale intervals shall be provided in accordance with the Supplementary Certificate for the indicator.

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 (μ V)

- e = verification scale interval of the instrument (kg). In the case of multiinterval or multiple range instruments, any reference to 'e' refers to the smallest verification scale interval (i.e. e₁).
- e1, e2, ... = verification scale interval of each range for multiple range instruments (or partial weighing ranges for multi-interval instruments), e1 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_r = the maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.
- Max₁ Max₂ ... = the maximum capacity of the various ranges for a multiple range instrument. Max₁ refers to the maximum capacity of the smallest range.
- **n**_{Lc} = 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 of the load cell used in the approved 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 multi-interval or multiple range instruments, the verification scale interval refers to the smallest verification scale interval (i.e. e₁).
- The number of verification scale intervals is less than or equal to the n_{max} value specified for the load cell and also for the approved indicator. In the case of multi-interval 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 Max₁/e₁, Max₂/e₂, 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 × Ex × LC_Sens × e / Emax

Additional requirements for multi-interval operation:

In the case of indicators which are configured to form a multi-interval weighing instrument the instrument shall comply with one of the following conditions:

(i) The smallest verification scale interval (e₁) shall satisfy the following:

 $e_1 \ge Max/n_{LC}$

(ii) Or, the smallest verification scale interval (e₁) shall satisfy the following:

 $e_1 \ge 2$. DR. Max/Emax

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

Additional requirements 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 (e1) shall satisfy the following:

 $e_1 \ge 0.4 \text{ Max}_r/n_{LC}$

(ii) Or, the smallest verification scale interval (e1) shall satisfy the following:

 $e_1 \ge DR. Max_r/Emax$

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

Load cell used	B6N							
Load cell max capacity, Emax (kg)	10	15	20	30	50	75	100	200
Max number of verification scale intervals (NLc)	3000							
Min value of verification scale interval (Vmin of load cell) (kg)	0.001	0.0015	0.002	0.003	0.0056	0.0083	0.0111	0.0222

TABLE 3 – Zemic B6N Load Cell Data

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								ILEV U
Dead load								
return (DR of	0.0013	0.0019	0.0025	0.0038	0.0042	0.0063	0.0083	0.0167
load cell) (kg)								
Load cell								
sensitivity at	2 mV/V							
Emax	Emax							
Input		420.0						
impedance	1Ce 430 12							
Excitation	18 \/ (max)							
voltage	10 v (IIIax.)							
Load cell cable								
length	i m (approx.) (")							
Number of	per of							
leads (plus	6							
shield)								

* Cable length attached to load cell supplied with basework shall not be lengthened or shortened.

TEST PROCEDURE No 6/4C/305

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 ..., apply e_1 for zero adjustment, and maximum permissible errors apply e_1 , e_2 ..., as applicable for the load.

Tests

Ensure that instruments are only being used within the special temperature limits stated elsewhere in this Technical Schedule.

FIGURE 6/4C/305 - 1



Wedderburn Model WS210 Weighing Instrument with WSSP-A basework (Pattern)

FIGURE 6/4C/305-2



Wedderburn Model WS210 with WSSP-B basework (variant 2)

FIGURE 6/4C/305-3



(a) Model WSSP-A basework



(b) Model WSSP-B basework

FIGURE 6/4C/305-4



Wedderburn Model WS210 with DI-166SS indicator sealing points

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