

Australian Government

Department of Industry, Innovation and Science

National Measurement Institute

Certificate of Approval

NMI 6/9C/297

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.

Ohaus Model D31XW30VR Weighing Instrument

submitted by	Ohaus Corporation	on	
-	220 Turner Stree	t	
	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 1/01/22, and then every 5 years thereafter.

Rev	Reason/Details	Date
0	Pattern & variants 1 to 4 approved – interim certificate issued	12/08/08
1	Pattern & variants 1 to 4 approved – certificate issued	1/09/08
2	Pattern & variants 1 to 4 updated – variant 5 approved –	19/03/12
	certificate issued	
3	Pattern & variants 1 to 5 reviewed & updated – certificate	16/12/16
	issued	

DOCUMENT HISTORY

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 6/9C/297' 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.

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.

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*.

Mario Zamora

TECHNICAL SCHEDULE No 6/9C/297

1. Description of Pattern

approved on 12/08/08

An Ohaus model D31XW30VR class ID non-automatic self-indicating singleinterval weighing instrument (Table 1 and Figure 1) with a maximum capacity of 30 kg and a verification scale interval of 0.01 kg. Instruments are NOT FOR TRADING DIRECT WITH THE PUBLIC and shall be so marked.

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

Notes: The pattern may also be known as a model Defender 3000.

The model numbers for instruments, indicators and baseworks are generally also followed by an AU suffix to indicate items intended for the Australian market.

1.1 Basework

The Ohaus model D30VR basework has the load receptor directly supported by a single load cell. The load receptor has maximum nominal dimensions of 305 × 355 mm, and typically uses a stainless steel frame and stainless steel platform.

1.2 Load Cell

A Mettler Toledo model SSP1241 load cell of 50 kg maximum capacity is used.

1.3 Indicator

An Ohaus model T31XWAU digital indicator is used (Figure 1) which is also described in the documentation of approval NMI S517. The indicator may be attached directly to the base, located separately from the base, or mounted on a column attached to the base.

1.3.1 Zero Setting

A zero-tracking device may be fitted.

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.

1.3.2 Tare

A semi-automatic subtractive taring device of up to the maximum capacity of the instrument may be fitted.

1.3.3 Display Check

A display check is initiated whenever power is applied.

1.3.4 Power Supply

The indicator operates from mains AC power (110–240 V AC, nominal).

1.3.5 Interfaces

The indicator may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. The interfaces shall comply with clause 5.3.6 of 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 NMI General Supplementary Certificates No S1/0/A or 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.

Serial interface options (e.g. RS 232) may be fitted.

1.3.6 Additional Features

The indicator may have additional 'counting' and or 'units' functions (the 'units' function may select indication in 'g' rather than 'kg' – selection of other units, e.g. 'lb', 'oz' shall not be possible). The additional functions (other than the indications of measured mass, i.e. gross, tare, net, displayed either on the indicator or on an auxiliary or peripheral device) are not approved for trade use.

1.4 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.

1.5 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full Indication of accuracy class	Ohaus Corporation	
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	<i>T</i> = g or kg	#2
Serial number of the instrument		
Pattern approval mark for the indicator	NMI 6/9C/297	
Pattern approval mark for other components		#3

- #1 These markings shall also be 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.

In addition, instruments not greater than 100 kg capacity carry a notice stating NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

- Press 'ON/ZERO/OFF' button to turn on the indicator.
- Press and hold the 'Tare/Menu' button until the display of the indicator change from '0.00' to either 'S.E.t.U.P' or 'C.A.L'.
- If the indicator displays 'C.A.L.', then the 'LFT' switch is set to OFF and calibration parameters are not protected. This should be corrected before the instrument is verified/certified and sealed.
- If the indicator displays 'S.E.t.U.P', then the LFT switch is set to ON and calibration parameters are protected. In this case the indicator may be sealed by preventing access within the indicator housing. This may be achieved by applying seal wire through sealing screws as shown in Figure 2a or by applying two destructible adhesive labels over the joints in the indicator housing (one at each side of the indicator as shown in Figure 2b.

2. Description of Variant 1

Certain Ohaus Defender 3000 series instruments, as listed in Table 1, which are similar to the pattern but having other capacities, using various Defender 3000 series baseworks, some of which use Mettler Toledo model SSP1241 or model SSP1260 load cells.

3. Description of Variant 2

Certain Ohaus Defender 3000 series instruments of various capacities, as listed in Table 2, which are similar to the pattern but the baseworks of which use Mettler Toledo model MT1241 or model MT1260 load cells. Typically these models have a painted steel frame with a stainless steel platform.

4. Description of Variant 3

Certain Ohaus Defender 3000 series instruments as listed in Tables 1 or 2, using an Ohaus model T31PAU digital indicator (Figure 3) which is also described in the documentation of approval NMI S517.

5. Description of Variant 4

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 (e.g. model D30VR).

In addition to the markings specified in clause **1.5 Descriptive Markings and Notices**, instruments are marked with the NMI approval number for the indicator used, together in the same location.

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

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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).
- e_1 , e_2 , ... = verification scale interval of each range for multiple range instruments (or partial weighing ranges for multi-interval 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_r = the maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest range.
- $Max_1 Max_2 \dots$ = the maximum capacity of the instrument for a multiple range instrument, i.e. the maximum capacity of the highest 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 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 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 nmax value specified. In the case of multi-interval or 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 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 ≤ 1000 × Ex × LC_Sens × e / E_{max}

Additional requirement 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:

 $e_1 \geq Max/n_{LC}$

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

 $e_1 \ge 2$. DR . Max/E_{max}

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

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 (e₁) shall satisfy the following:

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

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

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

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

6. Description of Variant 5

approved on 19/03/12

Certain Ohaus Defender 3000 series instruments as listed in Tables 1 or 2, using an Ohaus model T32XWAU digital indicator (Figure 5) which is also described in the documentation of approval NMI S517.

Note: ### in the instrument model shown in the Tables 1 and 2 represents 32XW if the model T32XWAU indicator is used.

TEST PROCEDURE No 6/9C/297

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

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4
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Instrument model		1111130/R	D###60VR	D###60VL	D###150VL	D###150VX	D###300VX
Basework model		D30VR	D60VR	D60VL	D150VL	D150VX	D300VX
Platform size (mm × mm)	ლ 	305 × 355	305 × 355	420 × 550	420 × 550	500 × 650	500 × 650
Maximum capacity	Ø	30	60	60	150	150	300
Typical verification scale interval k	D	0.01	0.02	0.02	0.05	0.05	0.1
Maximum number of verification		3000	3000	3000	3000	3000	3000
scale intervals (n _{max})							
Load cell model	SS	SP1241-50	SSP1241-100	SSP1241-100	SSP1260-300	SSP1260-300	SSP1260-500
Load cell classification		C3.5	C3.5	C3.5	CS	S	S
Load cell maximum capacity k (E _{max})	ß	50	100	100	300	300	500
Number of load cells		~	Ţ	Ļ	Ļ	5	•
Minimum value of verification k	Ð	0.0083	0.0167	0.0167	0.0500	0.0500	0.0833
scale interval for basework							
(v _{min} of load cell)							
Load cell sensitivity (at E _{max}) m/	V/V	2	2	2	2	2	2
Input impedance of	m	387	387	387	387	387	387
Excitation voltage (maximum)	V	20	20	20	20	20	20
Cable length (±0.1m)	L	2	2	2.3	2.3	2.3	2.3
Number of leads (plus shield)		9	9	9	9	9	9

Certain Approved Defender 3000 Series Instruments

in the instrument model number shown above is determined according to the indicator used, for example: Note:

- ### represents 31XW if the model T31XW indicator is used; or
 ### represents 31P if the model T31P indicator is used (variant 3); or
- ### represents 32XW if the model T32XWAU indicator is used (variant 5); etc., or
- Where an alternative compatible approved indicator is used, ### may be omitted, i.e. instruments may be known according to the basework model (variant 4).

Instrument model		D###30BR	D###60BR	D###60BL	D###150BL	D###150BX	
Basework model		D30BR	D60BR	D60BL	D150BL	D150BX	
Platform size (mm × mm)		305 × 355	305 × 355	420 × 550	420 × 550	500×650	· · · · ·
Maximum capacity (kg)	kg	30	60	60	150	150	
Typical verification scale interval	kg	0.01	0.02	0.02	0.05	0.05	
Maximum number of verification		3000	000E	3000	3000	3000	
scale intervals n _{max}							
Load cell model		MT1241-50	MT1241-100	MT1260-100	MT1260-300	MT1260-300	
Load cell classification		C3.5	C3.5	C3	S	C3	
Load cell maximum capacity	kg	50	001	100	300	300	2
(Lmax)							_
Number of load cells		1	-	r-	F	~	2
Minimum value of verification	fg	0.0083	0.0167	0.0167	0.0500	0.0500	
scale interval for basework							
(v _{min} of load cell)							
Load cell sensitivity (at E _{max})	mV/V	2	2	2	2	2	
Input impedance	ohm	410	410	410	410	410	
Excitation voltage (maximum)	Λ	20	20	20	20	20	
Cable length (±0.1m)	ш	2	2	2.3	2.3	2.3	J
Number of leads (plus shield)		6	9	6	6	9	67

Certain Other Approved Defender 3000 Series Instruments

in the instrument model number shown above is determined according to the indicator used, for example: Note:

represents 31XW if the model T31XW indicator is used; or

represents 31P if the model T31P indicator is used (variant 3); or

represents 32XW if the model T32XWAU indicator is used (variant 5); etc., or

Where an alternative compatible approved indicator is used, ### may be omitted, i.e. instruments may be known according to the basework model (variant 4).

TABLE 2

0.0833

410

N

20 6 2.3

MT1260-500

500

g

3000

D###300B)

TABLE 2

D300BX 500 × 650

300



Ohaus Model D31XW30VR Weighing Instrument Using an Ohaus Model T31XW Indicator



(a) Sealing of Ohaus T31XW (lead and wire type seal)



(b) Sealing of Ohaus T31XW (destructible adhesive labels)



Ohaus Model D31P30BR Weighing Instrument Using an Ohaus Model T31P Indicator



Typical Sealing of Ohaus T31P (lead and wire type seal, or labels)

3000	SERIES			
→0← CO ON/ZERO Off Yes	CALIBRATION MODE PRINT Units No	PCS NET FUNCTION Mode Back	TARE Menu Exit	
		-		

Ohaus Model T32XWAU Digital Indicator

~ End of Document ~