



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 6/9C/311

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.

Ravas Model iForks 2000 Weighing Instrument

submitted by Australian Flameproof Services Pty Ltd
1-3 Ventura Place
Dandenong South VIC 3175

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 1/11/18, and then every 5 years thereafter.

DOCUMENT HISTORY

| Rev | Reason/Details | Date |
|------------|--|-------------|
| 0 | Pattern approved – interim certificate issued | 18/10/13 |
| 1 | Pattern amended (validity date) – interim certificate issued | 17/01/14 |
| 2 | Pattern approved – certificate issued | 18/08/14 |
| | | |

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/9C/311' 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 Certificate No S1/0B.

Special

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*.

A handwritten signature in black ink, appearing to read 'A Rawlinson', with a horizontal line underneath.

Dr A Rawlinson

TECHNICAL SCHEDULE No 6/9C/311

1. Description of Pattern

approved on 18/10/13

The Ravas model iForks 2000 is a class (III) single interval self-indicating non-automatic weighing instrument of 2000 kg maximum capacity with a verification scale interval of 2 kg fitted to a forklift truck.

Instruments are fitted with a liquid crystal display for displaying weight values.

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

1.1 Load Receptor

The load receptor consists of two lifting forks (iForks) fitted to a forklift truck as shown in Figure 1.

The iFork has a nominal blade length of 1250 mm.

Each iFork has one Fork PCB which contains two analogue to digital convertors. The digital weighing signal is transmitted to the indicator by using Bluetooth protocol.

1.2 Load Cells

Two Mettler Toledo model SBC\1R C3 load cells of 1000 kg capacity are used in each iFork (Figure 1b).

1.3 Levelling

A Ravas model EP-LEVELSENSOR CS-001 level correction sensor is fitted to the truck carriage of an iFork, and detects the degree to which the folk lift vehicle is tilted from its reference (level) condition. The level sensing device imposes limits on the level condition and disables the weight determination if acceptable levels of tilt are exceeded.

1.4 Indicator

A Ravas model 3100N digital indicator (Figure 2) is used.

1.4.1 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.

A zero-tracking device may be fitted.

1.4.2 Display Check

A display check is initiated whenever power is applied.

1.4.3 Additional Features

Instruments may be fitted with a number of additional functions including set-point facility and counting ('pcs'). These functions and displays are not approved for trade use.

1.4.4 Power Supply

The indicator may be powered by 12 V rechargeable battery (e.g. from the forklift truck battery) or other DC power source.

Each fork may be powered by a 4 × 1.2 V rechargeable battery pack as shown in Figure 3.

1.4.5 Interfaces


Instruments 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 S1/0B (in particular in regard to the data and its format).

Instruments may be fitted with a Parani SD1000 Bluetooth module interface and RS232 serial interface.

1.5 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 | Ravas |
| Name or mark of manufacturer's agent | Australian Flameproof Services Pty Ltd |
| Indication of accuracy class |  |
| Pattern approval number for the instrument | NMI 6/9C/311 |
| Maximum capacity | Max kg #1 |
| Minimum capacity | Min kg #1 |
| Verification scale interval | e = kg #1 |
| Serial number of the instrument | |

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

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

Provision is made for access to the calibration link within the instrument to be sealed by applying a destructible adhesive label over one of the indicator housing mounting bolts as shown in Figure 4a.

Change of configuration parameters is sealed by recording the event counter on verification as shown in Figure 4b.

The instrument automatically increments a configuration value each time the indicator is re-configured. The value of the counter can be seen in the switch-on display sequence (when power is first applied to the indicator).

The value of the counter may be recorded on a destructible adhesive label attached to the instrument (e.g. as CA xx).

Any subsequent alteration to the configuration will be evident as the recorded values and the current counter value will differ.

TEST PROCEDURE No 6/9C/311

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures, taking into account the following notes.

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*.

Notes:

Levelling Arrangements and Stability of Ground

The site chosen for weighing should be firm and within 3 degrees of level – the level sensing device imposes limits on the level condition, however the stability of the ground surface should also be considered as well as safety concerns.

Gravity Variation

Where the instrument is verified in one location and subsequently moved to another location, the effects of differences in the acceleration of gravity at each location may need to be considered.

Note: The Trade Measurement Section should be consulted regarding any special arrangements which may be necessary in regard to operation of a mobile weighing instrument of this type.

The following tests may be applied to the instrument in-situ (fit the iForks to a forklift truck, place an empty standard size (1200 × 1200 mm, nominal) hardwood/plastic pallet on the iForks and raise above the ground).

Testing shall be carried out with the instrument having zero set using an initial zero-setting or semi-auto zero-setting device with a pallet on the iForks and having the iForks tilted to its reference (level) condition.

Tests (in addition to those in the NITP)

1) Eccentricity

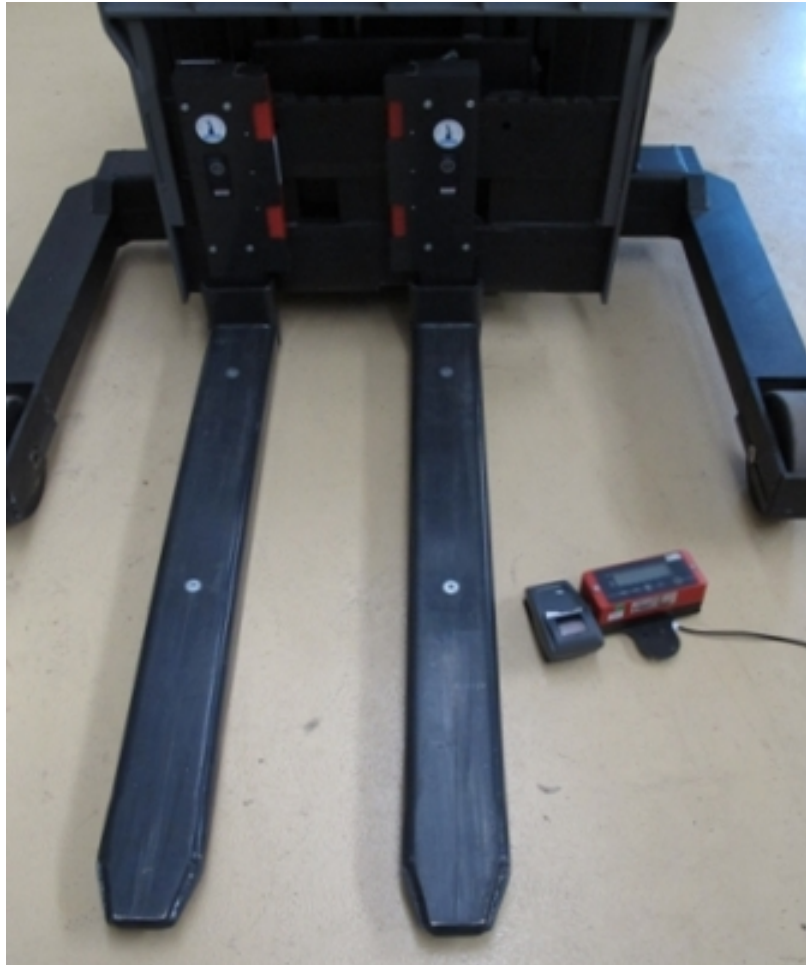
Using a known load of approximately $1/3$ *Max* and carry out test with this load at the left, right, front and rear of the pallet in clockwise direction.

2) Tilting

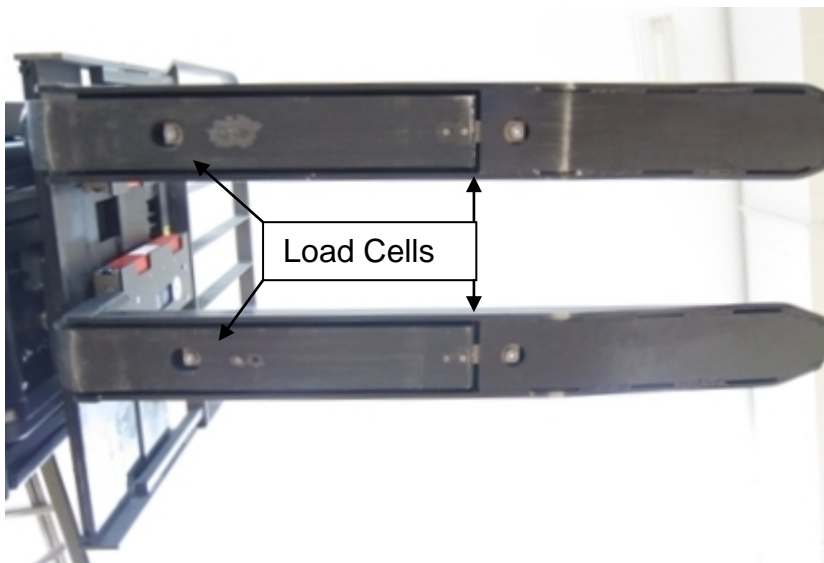
Carry out with the loads of $1/2$ *Max* and close to *Max* by having the iForks tilted to its reference (level) condition and then having the iForks tilted forward until the instrument is disabled (weighing display showing '- - -') and gradually reducing the degree of tilt until a weight value is reacquired.

Repeat the test with iForks tilted backward.

FIGURE 6/9C/311 – 1



(a) From Above



(b) From Underneath

Ravas Model iForks 2000 Weighing Instrument

FIGURE 6/9C/311 – 2



Ravas Model 3100N Digital Indicator

FIGURE 6/9C/311 – 3



Ravas iFork Truck Carriage and Rechargeable Battery Pack

FIGURE 6/9C/311 – 4



(a) Sealing of Indicator Using Destructible Adhesive Label/s



(b) Sealing Using an Event Counter

Typical Sealing Methods

~ End of Document ~