



Australian Government  
Department of Industry,  
Innovation and Science

**National  
Measurement  
Institute**

**Certificate of Approval**

**NMI 6/9C/316**

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.

BISON Model Bison C-jacks Weighing Instrument

submitted by National Weighing & Instruments  
1 / 88 Magowar Road,  
Girraween NSW 2145

**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 1/11/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 approved – certificate issued	20/10/17

## CONDITIONS OF APPROVAL

### **General**

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/9C/316' 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*.



**Darryl Hines**

## TECHNICAL SCHEDULE No 6/9C/316

### **1. Description of Pattern** **approved on 20/10/17**

The BISON C-Jacks weighing instrument model K02-001 (Figure 1) is a class 4 single interval self-indicating non-automatic weighing instrument (system) of 35 000 kg maximum capacity with a verification scale interval of 50 kg, intended for the weighing of shipping containers or similarly constructed objects.

The instrument comprises four C-Jacks weighing modules (Figure 1) which use Bluetooth protocol to communicate with a handheld BISON Master Display device (Figure 2) that calculates the total container weight.

Each C-Jacks weighing module is intended for attachment to the corner of the container being weighed.

The instrument is intended for the weighing of containers in a 'single lift' (i.e. the container is lifted and weighed) – it is not approved for weighing whilst the container load is increased or decreased.

### **2. Load Receptor**

The shipping container itself forms the load receptor. The attachment of the C-Jacks weighing module to the container is by way of the standard container securing holes.

### **3. Weighing Module**

Each C-Jacks weighing module has a 10 000 kg maximum capacity, and incorporates an Ascell Sensor, S.L. CRI load cell of 10 000 kg maximum capacity, a communication module (utilising the Bluetooth protocol) and batteries.

The scale interval of each individual C-Jacks weighing module is 50 kg. It is only the total container weight value provided by the handheld BISON Master Display device which is approved for trade use.

The display of each individual C-Jacks weighing module is not intended for trade use and is marked "THIS READING NOT FOR TRADE USE" or similar.

### **4. Indicator**

The sum of 4 C-Jacks weighing modules can be displayed

- on a handheld BISON Master Display device, and/or
- on BISON Scale App that is installed in an Android based smart mobile device (e.g. smart mobile phone or tablet).

The handheld BISON Master Display device or mobile device communicate with C-Jacks weighing modules via Bluetooth protocol.

The BISON Master Display device has the LCD display for displaying gross container weight. It has the memory function for saving and viewing weight records, and data transfer function to BISON Scale App which is installed on a smart mobile device.

The Scale App may be installed in a smart mobile device which is compatible with Android 4.4 and have Bluetooth interface. It may collect the weight data from each C-Jacks weighing module or gross weight from BISON Master Display. It may be used for gross weight calculation based on weight data collected from each C-Jacks weighing module.

## **5. Levelling**

Each C-Jacks weighing module incorporates a tilt sensor which may provide arrows as a message when excessive tilt is detected. The instrument is to be used only with the modules level.

The system is used with the foot of each C-Jacks weighing module resting on a metal pad (also supplied by BISON) – the use of additional packing pieces beneath this pad may provide additional height adjustment.

It is the operator's responsibility to ensure that the C-jacks weighing modules are level when in operation to ensure accurate weighing.

### **5.1 Stability of Ground**

The site chosen for weighing should be firm and within the limits of the level sensing device. The stability of the ground surface should also be considered as subsidence or compaction may affect accuracy.

## **6. Software**

The software is designated version 4.07.xx (where xx refers to the identification of non-legally relevant software and is a number between 00 and 99).

The software version and number can be seen in the switch-on display sequence (when the power is first applied to each individual C-Jacks weighing module and the handheld BISON Master Display device).

The software installed in smart mobile device is BISON Scale App version 2.1.xx. (Where xx refers to the identification of non-legally relevant software and is a number between 00 and 99) The software version number of the BISON Scale App is accessible via the "Settings" (i.e. lower right icon), from the "About" menu option.

The operating system of the mobile device is Android version 4.4 or later. The handheld BISON Master Display device or the smart mobile device communicate with the C-jack weighing modules via the Bluetooth protocol (which is designed to ensure error free communications).

Note: A pre-defined set of 4 C-jacks weighing modules may operate with different smart mobile devices – the BISON Scale App is considered the significant module rather than the mobile device itself.

## **7. Interface**

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 Bluetooth 4.0 or later for communication with a smart mobile device.

## **8. Operation**

The operation of the BISON C-Jacks instrument is as follows:

- (a) Turn on the BISON Master Display device.

- (b) Attach a C-Jacks weighing module to a corner casting of the container and rotate to vertical.
- (c) Turn on the C-Jacks weighing module and initiate zeroing by giving the power button a short press.
- (d) Lift the scale and place hydraulic jack and ground plate underneath.
- (e) Repeat step (a) to (c) to other three C-Jacks weighing modules.
- (f) Pump each C-Jacks weighing module to lift the container clear of the ground.
- (g) Collect weight data with the handheld BISON Master Display device
- (h) The instrument may send the results of the weighing process to BISON Scale App on a smart mobile device.

Note: The above is a general outline, additional steps may be involved. In addition administrative information may need to be recorded.

## 9. Zero

Each C-jacks weighing module has a semi-automatic zero-setting device with a nominal range of not more than 4% of its maximum capacity.

Prior to commencing weighing operations, the C-Jacks weighing modules shall be reset to zero as described in clause **8 Operation** (c) above.

## 10. Display Check

A display check of each individual C-Jacks weighing module and BISON Master Display device is initiated whenever power is applied.

## 11. Power Supply

The BISON Master Display device and C-Jacks weighing modules operate from 4 x 1.5 V AA batteries.

Note: The submitter should be consulted regarding the acceptability of alternative power supply arrangements.

## 12. 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 Importer	BISON National Weighing & Instruments
Indication of accuracy class	4
Pattern approval number for the instrument	NMI 6/9C/316
Maximum capacity	Max ..... kg #
Minimum capacity	Min ..... kg #
Verification scale interval	e = ..... kg #
Serial number (of the instrument – i.e. the set)	Equipment Set SN: ...
Serial number of each C-Jacks module	A:..... B:..... C:..... D:.....

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

For each C-Jacks weighing module, markings are provided as shown below:

Manufacturer's mark, or name written in full Importer	BISON National Weighing & Instrument
Pattern approval number for the instrument	NMI 6/9C/316
Maximum capacity	Max ..... kg
Scale interval	$d =$ ..... kg
Serial number (of the module):	.....

In addition a notice stating "THIS READING NOT FOR TRADE USE" or similar is provided.

### 13. Verification Provision

Provision is made for the application of a verification mark.

### 14. Sealing Provision

Provision is made for access to the calibration switch within each individual C-Jacks weighing module to be sealed by using destructible adhesive labels over opposite sides of join in the module housing as shown in Figure 3.

### 15. Description of Variant 1

**approved on 20/10/17**

BISON model C-Legs (Figure 4) has the same specifications as the pattern, except it is used to lift the container from the truck.

## TEST PROCEDURE No 6/9C/316

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:

Testing of the system comprises two elements:

#### A. **Handheld BISON Master Display device / BISON Scale App / BISON C-Jacks Weighing Module compatibility checks**

- (i) Check to ensure unaltered values from the C-Jacks weighing modules are transferred to the handheld Master display device and BISON Scale App, and that the calculation of container weight is correct and rounded to the approved verification scale interval.
- (ii) Check markings on the handheld BISON Master Display device and BISON Scale App on the particular mobile device, for example considering different screen size/configuration.

#### B. **Weighing Performance Testing**

In which performance testing of the instrument using a pre-defined set of four C-Jacks modules is carried out to verify that performance is with maximum permissible errors.

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

- (i) The tests may be applied to the instrument in-situ using a platform of known weight, provided to represent a container and able to be loaded by standard weights.

Testing shall be carried out with the weighing/display modules arranged to be level (vertical), and set to zero prior to loading. For testing purposes a platform of known (calibrated) weight representing a container may need to be provided.

- (ii) As indicated in **1. Description of Pattern** the instrument is intended for single lift weighing. This approach should be utilised in testing, and testing with decreasing load values is not required.
- (iii) Testing should be carried out with the foot of each weighing/display module tilted close to the limiting value of tilt sensor provided.

## **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: NMI's 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.



FIGURE 6/9C/316 – 1



BISON C-Jacks Weighing Modules

FIGURE 6/9C/316 – 2



BISON Master Display Device

FIGURE 6/9C/316 - 3



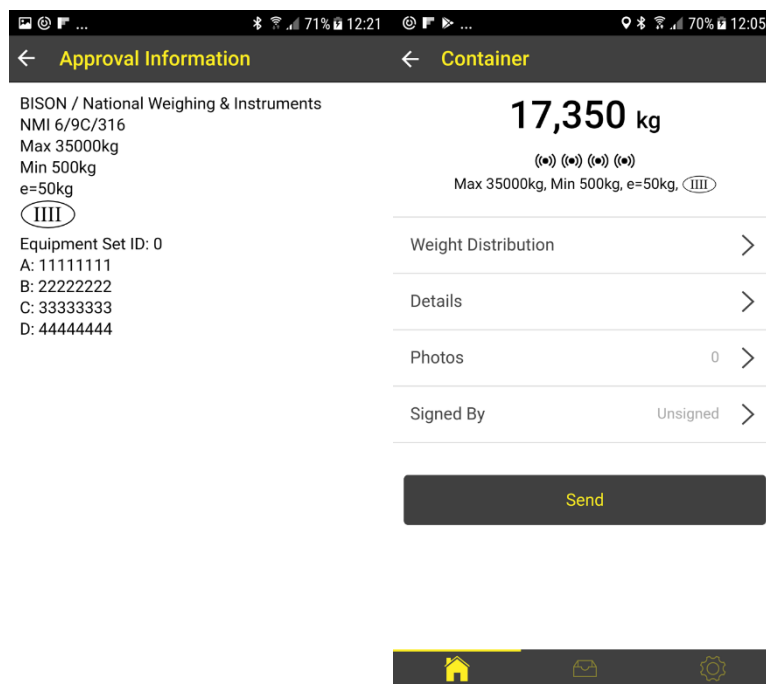
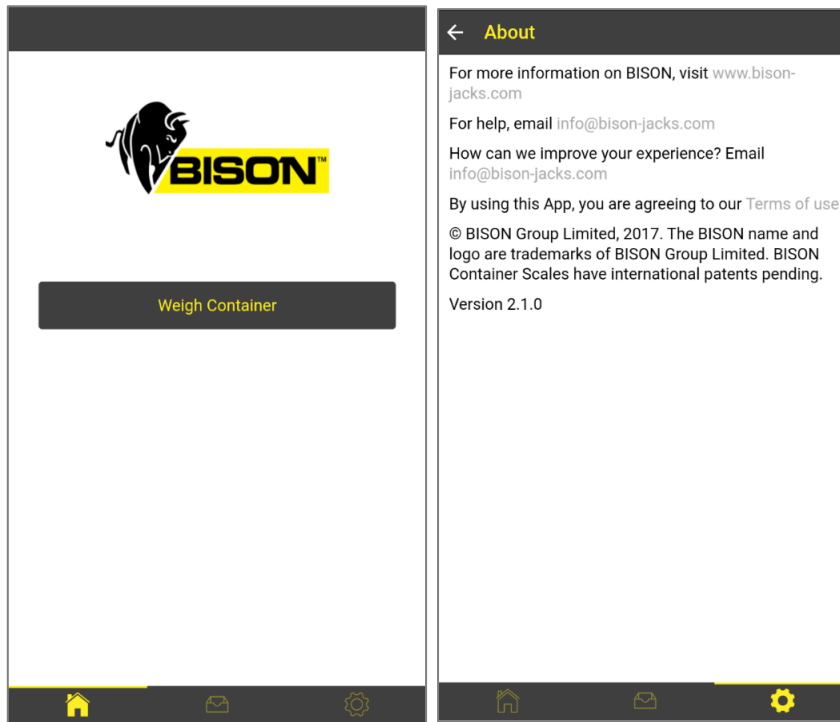
Sealing of BISON C-Jacks Weighing Module

FIGURE 6/9C/316 - 4



BISON C-Legs Module

FIGURE 6/9C/316 - 5



BISON Scale APP

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