



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 6/9C/313

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.

Atlas Weighing Model Compuload LCFS 420 Weighing Instrument

submitted by Atlas Weighing Pty Ltd
11/322 Annangrove Rd
Rouse Hill NSW 2155

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 1/03/20, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variants 1 & 2 approved – certificate issued	18/02/15

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/9C/313' and only by persons authorised by the submitter.

It is the submitter'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 'Dr A Rawlinson', with a horizontal line underneath.

Dr A Rawlinson

TECHNICAL SCHEDULE No 6/9C/313

1. Description of Pattern **approved on 18/02/15**

The Atlas Weighing model Compuload LCFS 420 is a class **III** single interval self-indicating non-automatic weighing instrument of 1500 kg maximum capacity with a verification scale interval of 1 kg fitted to a forklift truck (Figure 1 and Table 1).

The instrument is intended to operate only whilst the forklift and its carriage are stationary (i.e. not whilst the forklift is in motion, or whilst the load is being moved). It is however acceptable for the forklift or load to be moved between the zeroing of the instrument and the weighing of the load.

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 SEKO weighing modules (Figure 1b) fitted to a forklift truck, and on which are mounted two lifting forks as shown in Figure 1a.

Each SEKO weighing module contains one tension type load cell within a linkage mechanism. The weighing modules are intended to be located on the forklift carriage, with the lifting forks (tines) being supported by the weighing modules.

1.2 Load Cells

A single Zhonghang Electronic Measuring Instruments Co., Ltd. (ZEMIC) model B3G-C3-5000kg load cell is used in each weighing module.

1.3 Levelling

A Rinstrum model M4904 tilt sensor (Figure 2) is fitted to the truck carriage of the Compuload LCFS 420 system, in a location such that it will reflect tilting of the lifting forks, and will detect the degree to which the instrument is tilted from its reference (level) condition.

This tilt sensor is connected to a Rinstrum model M4211 tilt compensation module (Figure 3) attached to the indicator. This imposes limits on the level condition, automatically compensates for out of level conditions in longitudinal or transverse directions, and disables the weight determination if acceptable levels of tilt are exceeded.

1.4 Indicator

A Rinstrum model R420-K491 digital indicator (Figure 2) is used, and is connected to the model M4211 tilt compensation module in addition to the SEKO weighing modules. The indicator is also described in approval NMI S463.

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.


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).

1.5 Descriptive Markings

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	Atlas Weighing
Indication of accuracy class	
Pattern approval number for the instrument	NMI 6/9C/313
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 as described in the approval documentation of the indicator.

2. Description of Variant 1

approved on 18/02/15

The Atlas Weighing model Compuload LCFS 420 system as described for the pattern but of different models of differing capacities which use weighing modules which may use alternative load cells as indicated in Table 1 below.

TABLE 1

Model	Maximum capacity (kg)	Verification Scale Interval (kg)	Carriage height (mm)	Load cell
SK16 (*)	1500	1	406 (Fork II)	B3G-C3-5000kg
SK16	2500	2	406 (Fork II)	B3G-C3-5000kg
SK20	4500	5	508 (Fork III)	B3G-C3-5000kg
SK25	9000	10	635 (Fork IV)	B3G-C3-10000kg

(*) Indicates the model described as the pattern.


Note: Forklift carriage sizes are also allocated 'classes'. Care shall be taken to distinguish these classes from the non-automatic weighing instrument class (which is represented within an oval).

These models may be configured to have a maximum capacity less than shown above, and/or to have a verification scale interval greater than that shown in the table above, provided that:

- the number of verification scale intervals (i.e. Max / e) shall be not less than 500, and no more than 1500.
- the minimum capacity shall not be less than 20 e.

3. Description of Variant 2

approved on 18/02/15

The Atlas Weighing model Compuload LCFS 420 as a class  non-automatic weighing instrument similar to the pattern and variant 1, however:

- the number of verification scale intervals (i.e. Max / e) shall be not less than 100, and no more than 1000.
- the minimum capacity shall not be less than 10 e.

TEST PROCEDURE No 6/9C/313

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

Testing shall be carried out with the forks with which the instrument is to be used in normal operation, and also with the load applied in a manner similar to normal operation (e.g. for an instrument used for weighing pallets, fit the weighing instrument to a forklift truck, place an empty standard size (1200 x 1200 mm, nominal) hardwood/plastic pallet on the forks 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 forks and having the forks tilted to their reference (level) condition.

Tests (in addition to those in the NITP)

1) Eccentricity

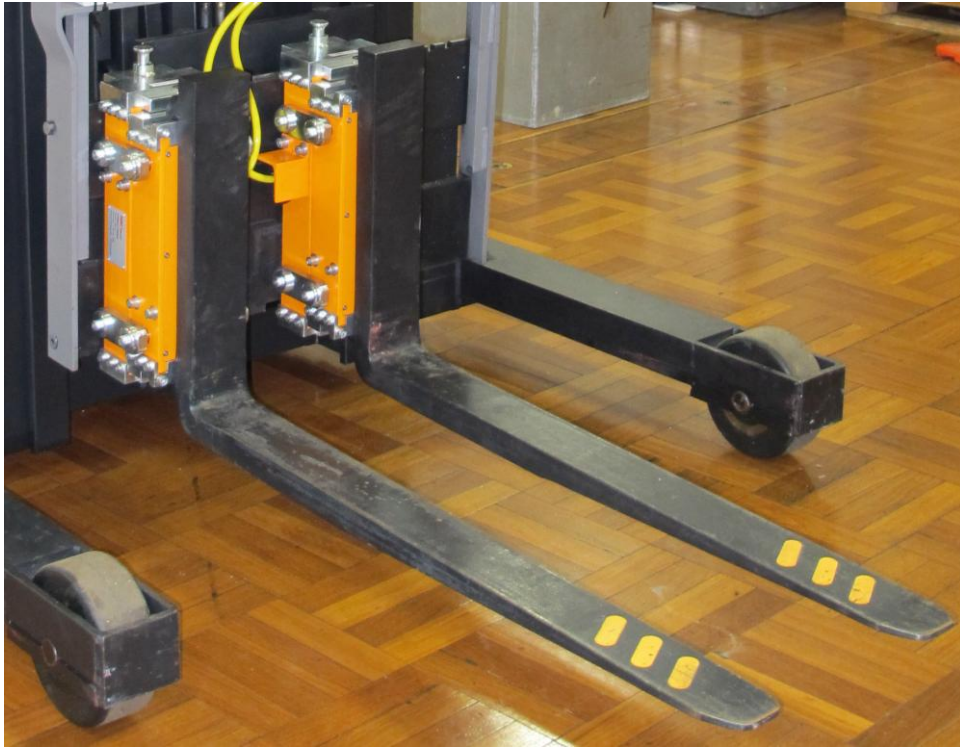
Using a known load of approximately $1/3$ *Max*, carry out tests to determine whether operation is within the maximum permissible errors with this load at the left, right, front and rear of the pallet.

2) Tilting

Carry out tests to determine whether operation is within the maximum permissible errors, with loads of $1/2$ *Max* and close to *Max* by having the forks tilted to their reference (level) condition and then having the forks tilted forward until the instrument is disabled (weighing display showing 'Tilt.Hi') and gradually reducing the degree of tilt until a weight value is reacquired.

Repeat the test with the forks tilted backward.

FIGURE 6/9C/313 – 1



(a) Typical Mounting to a Forklift Truck



(b) Weighing Module

Atlas Weighing Model Compuload LCFS 420 Weighing Instrument

FIGURE 6/9C/313 – 2



Rinstrum Model 420 Digital Indicator with M4904 Tilt Sensor

FIGURE 6/9C/313 – 3



Rinstrum Model M4211 Tilt Compensation Module

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