



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval NMI 6/9C/301

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.

PM Onboard Model PM 1800/LFT1500 Weighing Instrument

submitted by Accuweigh Pty Ltd
 19 Yampi Way
 Willetton WA 6155

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 **1/6/21**, and then every 5 years thereafter.

DOCUMENT HISTORY

| Rev | Reason/Details | Date |
|-----|--|----------|
| 0 | Pattern & variants 1 to 3 approved – interim certificate issued | 11/05/09 |
| 1 | Pattern & variants 1 to 3 approved – certificate issued | 31/05/10 |
| 2 | Pattern & variants 1 to 3 reviewed & updated – certificate issued | 27/04/17 |
| | | |

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/9C/301' 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.

The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates No S1/0/A or No S1/0B.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

Special Condition of Approval:

The use of this instrument is limited to measurement of the net quantity of product loaded onto or delivered from the weighing platform. It is NOT to be used for the determination of gross weight values.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.




Dr A Rawlinson

TECHNICAL SCHEDULE No 6/9C/301

1. Description of Pattern

approved on 11/05/09

A PM Onboard model PM 1800/LFT1500 class  single interval self-indicating vehicle-mounted weighing instrument of 10 000 kg maximum capacity and with a verification scale interval of 20 kg. The instrument is intended for the determination of the net quantity of product loaded onto or delivered from the weighing platform – see Special Condition of Approval.

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

1.1 Weighing Modules/Basework

The pattern consists of six (6) double shear beam load cells mounted on a vehicle frame/chassis (Figure 1a). The load receptor (for example the vehicle deck or a bulk commodity container or tank) is then mounted on the load cells (Figure 2).

1.2 Load Cells

The load cells used are Revere Transducers Inc model 5103 C3-50K-9B load cells of 22 500 kg capacity (Figure 2). Only this make, model and capacity of load cell shall be used.

1.3 Control Unit/Indicator

The system is operated from a control unit which contains a PM model 1800 digital indicator (Figure 1b). The control unit also contains a printer, controls for operating the system, and a level sensing device to indicate a level condition.

1.4 Special Features – PM Onboard Weighing System

The level sensing device and PM Onboard model PM1800 indicator indicate whenever the system is level within approximately $\pm 6\%$ in the longitudinal and transverse directions. When this allowable degree of tilt is exceeded, the indicator and printer are disabled so that operation cannot continue in an out-of-level condition.

The system may be powered by rechargeable battery (e.g. from the vehicle battery) or 12 – 24 V DC supplied by an AC/DC mains adaptor or other DC power source.

Note: The mains adaptor supplied was a Franmar model DSA-0151F-12 (Rinstrum Instruments adaptor; output 12 V DC, 1.5 A) switch mode power supply unit – the submittor should be consulted regarding the acceptability of alternative power supply units.

A typical operating method of the system is:

- (a) The vehicle arrives at a suitable delivery location.
- (b) The weighing system is turned on when the vehicle ignition is turned on (the level indicator will indicate if the system is in a sufficiently level condition) and the system is engaged into the weighing mode.
- (c) The start button is pressed – the instrument is tared and an initial printout (indicating a delivery identification, date & time and 0 kg Net) is produced.
- (d) A quantity of material is delivered to or dispatched from the instrument.

- (e) The stop button is pressed – the final indication (indicating ‘Amount loaded or unloaded’ is added to the printout).
- (f) Transaction data may be downloaded to a third party computer system for processing in accordance with the requirements of General Supplementary Certificates No S1/0/A or No S1/0B.

Note:

(i) Levelling Arrangements and Stability of Ground


The site chosen for weighing should be firm and within 6 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 subsidence or compaction may affect accuracy (as well as introducing safety concerns).

(ii) 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.

1.5 Descriptive Markings and Notices

Instruments carry the following markings, in the form shown at right:

| | |
|--|--|
| Manufacturer's mark, or name written in full | PM Onboard, UK |
| Name or mark of manufacturer's agent | |
| Indication of accuracy class |  |
| Maximum capacity | <i>Max</i> kg (#) |
| Minimum capacity | <i>Min</i> kg (#) |
| Verification scale interval | <i>e</i> = kg (#) |
| Serial number of the instrument | |
| Pattern approval number for the instrument | NMI 6/9C/301 |

- (#) These markings shall also be shown near the display of the result if they are not already located there.

1.6 Verification Provision

Suitable means shall be provided for application of test masses. See additional notes in the Test Procedure.

Provision is made for the application of a verification mark.

1.7 Sealing Provision


The calibration and set-up modes of the indicator can be secured with a passcode. To ensure that a passcode has been set, press the POWER and FUNCTION keys together until the word SETUP appears (about 2 seconds); following display of the software version and the calibration event value, the words ENTER and CODE will appear. This indicates that a passcode has been set (the display will then show 000000 and pressing the tare key will exit this sequence).

In addition, a non-resettable calibration event counter increments each time that any parameter or calibration is changed and saved. The value of the calibration event counter is shown (as C followed by a number) in the display as part of the power-up display sequence, and the value at the time of verification/certification shall be recorded on a destructible adhesive label attached to the instrument.

Any subsequent alteration to the calibration or parameters will be evident as the recorded value and the current calibration event counter value will differ.


2. Description of Variant 1

approved on 11/05/09

Class  instruments having a verification scale interval of 20 kg, with a minimum capacity of 200 kg and a maximum capacity of from 2000 kg to 15 000 kg.

3. Description of Variant 2

approved on 11/05/09

Class  instruments having a verification scale interval of 50 kg, with a minimum capacity of 500 kg and a maximum capacity of from 5000 kg to 30 000 kg.

4. Description of Variant 3

approved on 11/05/09

The pattern or variants 1 or 2, using four (4) Revere Transducers Inc model 5103 C3-50K-9B load cells of 22 500 kg capacity, rather than six (6) as described for the pattern, and known as the model PM 1800/LFT100 or PM LFT100.

TEST PROCEDURE

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

Notes: The following aspects may need to be considered:

- (i) Safety requirements should be a major consideration in testing.
- (ii) In situations where the instrument is used for delivery from the weighing platform, the weight determination will involve the taking of measurements with a decreasing load. The testing carried out should likewise involve decreasing loads.
- (iii) Special provisions may need to be made, and equipment supplied to facilitate loading of test masses to the instrument. Lugs for attaching test masses are provided adjacent to each load cell location, however the suitability of these may need to be assessed for each installation, and may depend on the form of the load receptor.
- (iv) Where the vehicle has a vessel (e.g. tank/hopper) which forms the load receptor, it may be appropriate for testing to be carried out using substitution loads. The use of substitution loads may also be appropriate for platform type load receptors.
- (v) Where the material to be weighed is fluid, the tilting of the system may result in increased loading at the ends or sides of the load receptor – this may result in a need for eccentricity testing with loads greater than the 1/10 Max generally applied in the case of tanks/hoppers. However it may be appropriate that eccentricity testing be carried out with less than the 1/3 Max generally applied for platform type load receptors.
- (vi) It may be appropriate for any tank/hopper to be removed and for testing to be carried out with loads applied to a platform type load receptor (with the dead load of the tank/hopper replaced by equivalent masses).

- (vii) A test may be carried out to check that operation of the special features is in accordance with clause **1.4 Special Features – ONBOARD Weighing System** of the Technical Schedule (in particular regarding operation of the level sensing device and operation where the allowable degree of tilt is exceeded).

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

Note

As the use of this instrument is limited to measurement of the net quantity of product loaded onto or delivered from the weighing platform (i.e. it is not to be used for the determination of gross weight values), the maximum permissible errors should be applied to the net values – for example if a load of 15 000 kg is removed from the instrument the maximum permissible error should apply to the net value (i.e. difference between loaded and unloaded value). One approach to application of this in practice could be to tare the instrument with the instrument fully loaded and apply the maximum permissible errors to the net loads as loads are removed from the load receptor.

FIGURE 6/9C/301 – 1

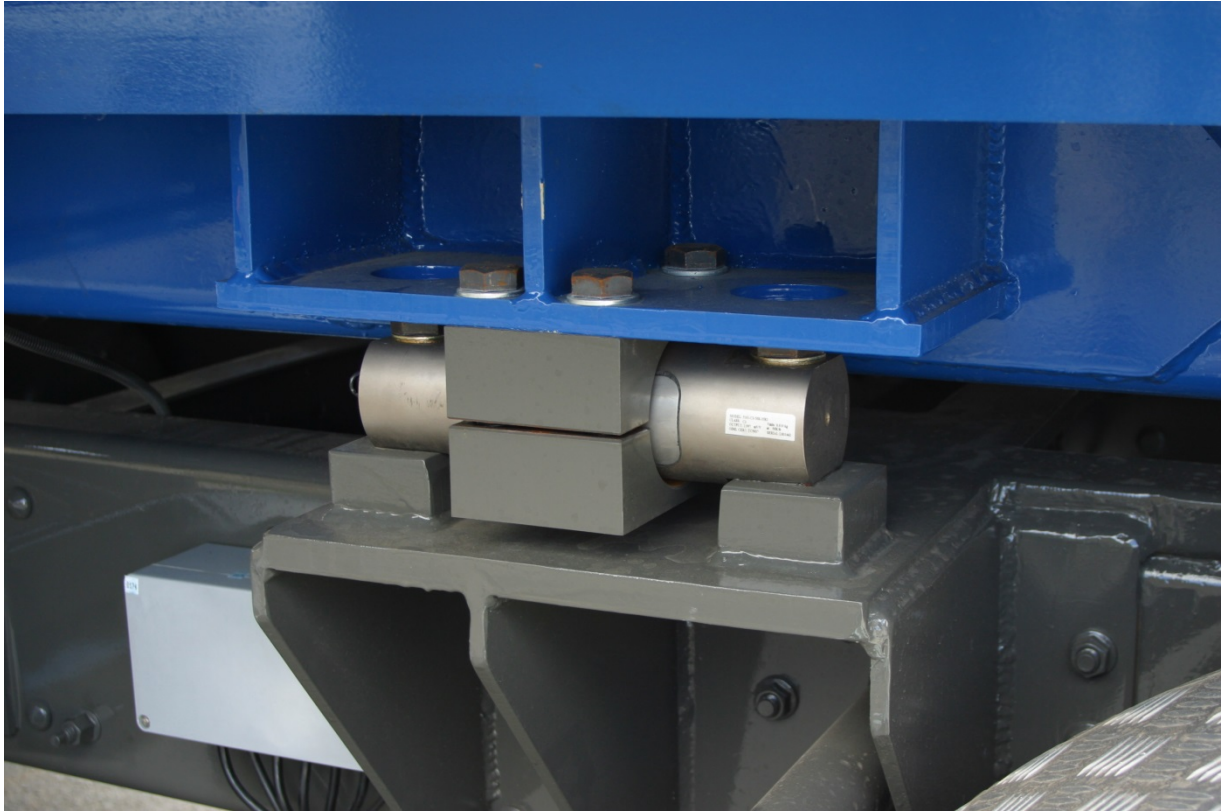


(a) PM Onboard Model PM 1800/LFT1500 Weighing Instrument
Installation on a Typical Vehicle



(b) PM Onboard Model PM1800 Indicator including
Installation on a Typical Vehicle

FIGURE 6/9C/301 – 2



Revere Transducers Inc Model 5103 C3-50K-9B Load Cell with
Typical Mounting Arrangements

~ End of Document ~