

EC type-examination certificate UK/0126/0060 Revision 3

issued by:

**The National Measurement Office
Notified Body Number 0126**

In accordance with the requirements of the Measuring Instruments (Automatic Catchweighers) Regulations 2006 (SI 2006/1257) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 (SI 2006/1270) which implement, in the United Kingdom, Council Directive 2004/22/EC, this EC type-examination certificate has been issued to:

**Actronic Ltd
45 Patiki Road
Avondale, Auckland
New Zealand**

in respect of a vehicle-mounted automatic catchweighing instrument designated the Loadrite L-Series 2180 and having the following characteristics:

Maximum capacity	Max	≤	350 e
Minimum capacity	Min	≥	10 e
Scale interval	1 kg	≤ e ≤	200 kg
Accuracy class	Y(b)		

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

This revision replaces previous versions of the certificate.

Issue Date: 15 August 2011
Valid Until: 27 September 2019
Reference No: T1109/0026


Signatory: P R Dixon
for Chief Executive

Descriptive Annex

1 INTRODUCTION

This pattern of a battery-operated automatic catchweighing instrument, designated the L-Series 2180, comprises an electronic indicator, pressure transducer and sensors mounted on a wheeled loader. This pattern automatically determines the load in the bucket during the lifting process, the hydraulic pressure in the loader's arms is converted by a pressure transducer, the output being used by the indicator to display the corresponding weight.

The indicator may be connected to a printer and/or a data storage device.

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

Figure 1 shows a typical installation.

2.1.1 Pressure transducer(s)

One or two Loadrite model LC965C pressure transducers can be used, depending on the type of lifting system involved (Figure 2).

2.1.2 Position reference / Lift speed / Direction sensor

The system has either a Loadrite Model LM960 optical arm-location sensor (Figure 3) or a Loadrite Model LR908 spring-loaded rotary encoder type arm-location sensor (Figure 4). The sensor is programmed for a number of trigger points and can provide alarms if the lift is outside acceptable limits. In addition, the sequence of operation of the trigger points establishes the direction of travel of the arm (ascending or descending).

2.1.3 Load receptor ("Bucket") location sensors (Figure 5)

Loadrite AAA-20710 sensors may be fitted to detect when the load receptor (bucket) is in the fully rotated "crowded back" (Bucket Full) position and when the bucket is in the "crowded forward" (Bucket Empty) position. When fitted, the sensors will inhibit weighing if the load receptor is not in the appropriate position for the weighing operation.

2.1.4 Inclinator (Figure 6)

The Loadrite LR966 angle sensor is either bolted or glued onto a flat surface, which can be under the control lever console or any vertical surface perpendicular to the front edge of the bucket. It is set to inhibit weighing for a tilt greater than 5°.

2.1.5 Indicator

The Loadrite L2180 weighing indicator console (Figure 7) is located inside the cabin and is mounted to the loader's inner frame by means of two sets of nuts/bolts. A similar arrangement is required for any printer connected.

2.2 Electrical

The system operates from 11-32 V DC, supplied from the vehicle battery (12 or 24V DC). The indicator console (Figure 8) is fitted with a non-volatile static RAM with integrated

Lithium battery to maintain the basic functions such as clock etc, a warning message is displayed when it needs replacing.

2.3 Devices

The instrument is provided with a semi-automatic zero-setting device. The indicator displays a request for a zero-setting every 15 min, which must be carried out by the operator via the “Zero” button on the indicator.

3 TECHNICAL DATA

3.1 The system has the following technical characteristics:

Maximum capacity (Max)	$\leq 350 \text{ e}$
Scale interval	$1 \text{ kg} \leq \text{e} \leq 200 \text{ kg}$
Minimum capacity (Min)	10 e
Pressure transducer	Loadrite Model LC965C
Transducer measuring range	0...350 bar
Transducer output signal	4...20 mA
Climatic environment	-20 °C to +50 °C, open, condensing
Electromagnetic environment	E3
Mechanical environment	Vehicle mounted
Power supply	11-32 V DC
Display/keyboard location	Indicator console in cabin
Accuracy class	Y(b)

3.2 Documentation and drawings

Set-up and calibration Manual	MAN-80992-00 (April 09)
Installation Manual	MAN-80879-02 (September 09)
LR wiring diagram	81005-00.MS1
LR2180 Indicator Main Board	20739-05B.SCH
Indicator Assembly drawing	L2180-00.AS2
LC965C technical characteristics	LC965C-00.SPC

3.3 Software

3.3.1 The embedded software on the indicator controls the weighing process and the determination of the weight value. The software designation is 60364 and its version number is 1.xx, where xx changes when non-legally relevant modifications are added to the software. This information is displayed at start-up and can be obtained from the main Menu by entering access code 321 to Diagnose | Property, and can be printed by entering access code 2214 for calibration printout.

3.3.2 Upon start-up the system will initiate a full self test to check hardware / software and system integrity. It includes an internal memory test for software code integrity, configuration data integrity and calibration data integrity. The system regularly checks the operation of all components. Any errors that are detected are displayed on the indicator console screen.

3.3.3 The system is access code-protected, all internal weighing setup parameters and calibration data are audit counter protected (non resettable setup and calibration counter). The setup and calibration counter is displayed by the indicator at start up and any

changes to any parameters will increment the counter on power up of the instrument. The number displayed must be written on the tamper-evident label located on the instrument.

3.3.4 There is no provision for the end user to install new software and only authorised Loadrite dealers can install new software using proprietary hardware and software tools. Software installation does not alter any setup or calibration parameters.

3.3.5 There are a number of internal operating parameters that can be configured for the end user site operations. Data fields that can display customer / truck / site details can be printed on delivery dockets. Product data fields can also be configured and printed on dockets. All these parameters are access code protected and can only be configured by authorised Loadrite dealers. Docket printouts must bear date and time, individual and total weights with unit, consoled ID, loader ID, product number.

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

The indicator may be fitted with the following interfaces (Figure 9):

- TXDR: Amphenol 7 way interface for pressure transducers
- PRINTER: JST 12 way interface for printer and data module
- PWR/CTRL: JST 15 way interface for power supply inputs as well as trigger, location sensors and inclinometer.

4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with a test certificate or parts certificate by a Notified Body responsible for Annex B (MI-###) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a test certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;
- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Paragraph 8.1 of Annex I.

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

5.1.1 The instrument bears the following legends:

- 'CE' marking
- Supplementary metrology marking
- Notified body identification number
- Accuracy class
- Serial number
- Manufacturers mark or name
- Certificate number
- Power supply
- Pressure range
- Temperature range

5.1.2 All components are identified by individual serial numbers.

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 The CE mark shall be impossible to remove without damaging it. The labels shall be impossible to remove without them being destroyed.

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2004/22/EC.

6.2 Each time the set-up and calibration audit counter changes, the updated number must be recorded on the tamper-evident label located on the front face of the indicator.

6.3 Components that may not be dismantled or adjusted by the user will be secured by either a wire and seal or tamper evident label and securing mark. The securing mark may be either:

- a mark of the manufacturer and/or manufacturer's representative, or
- an official mark of a verification officer.

7 ALTERNATIVES

7.1 Having a modified software. The software designation is 60364 and its version number is 2.xx, where xx changes when non-legally relevant modifications are made to the software.

This software provides facilities to use MMS reporting software using data module and wireless communication, which shall not be used for legal purposes under this certificate.

7.2 Having a modified instrument, designated the Express (Figure 10) and Force (Figure 11), with reduced (Express) and no (Force) data handling functionality, and reduced keypads.

The software designation for the Express is 60395 and its version is 2.xx, where xx changes when non-legally relevant modifications are made to the software.

The software designation for the Force is 60408 and its version is 2.xx, where xx changes when non-legally relevant modifications are made to the software.

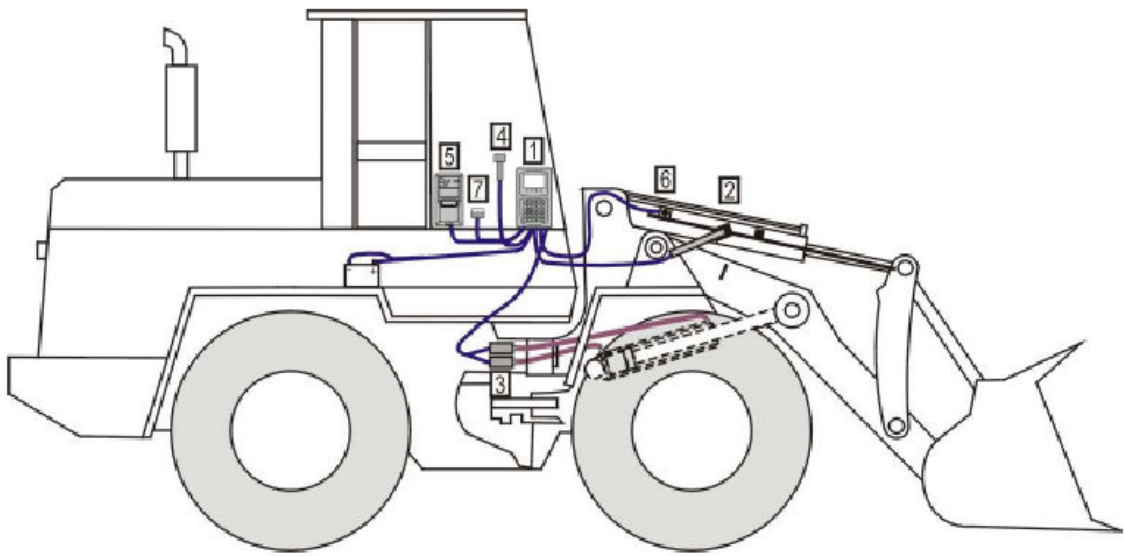
These models may be used with the Loadrite AAA-20709 inclinometer instead of the LR966 inclinometer described in section 2.1.4. The inclinometer is either bolted or glued onto a flat surface, which can be under the control lever console or any flat surface that affords minimum protection against the switch being accidentally activated. It is set to activate for a tilt greater than 6°.

8 ILLUSTRATIONS

- Figure 1 Typical installation
- Figure 2 Typical pressure transducers installation
- Figure 3 Typical LM960 sensor installation
- Figure 4 Typical LR908 sensor installation
- Figure 5 Typical AAA-20710 “crowded back/forward” location sensors
- Figure 6 Typical LR966 inclinometer installation
- Figure 7 Loadrite L2180 indicator console
- Figure 8 Side label
- Figure 9 Interfaces
- Figure 10 Express indicator console
- Figure 11 Force indicator console

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0060	28 September 2009	Type examination certificate first issued.
UK/0126/0060 rev 1	04 May 2010	Max capacity changed from 100 e to 350 e (n ≤ 350).
UK/0126/0060 rev 2	07 July 2010	Section 2.1.3 modified.
UK/0126/0060 rev 3	15 August 2011	Alternatives 7.1 and 7.2 added.



1. Indicator
2. Arm-location sensor
3. Pressure transducer(s)
4. Add button
5. Printer
6. "Crowded back/forward" sensors
7. Inclinometer

Figure 1 Typical installation



Figure 2 Typical pressure transducers installation



Figure 3 Typical LM960 sensor installation



Figure 4 Typical LR908 sensor installation



Figure 5 Typical AAA-20710 “crowded back/forward” location sensors



Figure 6 Typical LR966 inclinometer installation



Figure 7 Loadrite L2180 indicator console



Figure 8 Side label

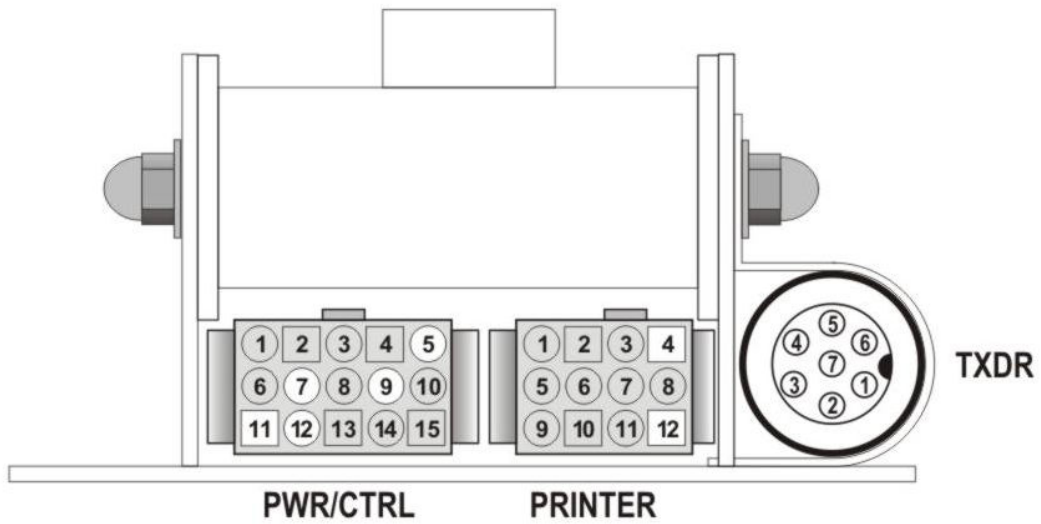


Figure 9 Interfaces



Figure 10 Express indicator console



Figure 11 Force indicator console