(2490) V(6)g

BIS
Department for Business Innovation & Skills

Certificate
Pursuant to section 12 of the Weights and Measures Act 1985

Certification No 2490 Revision 2

Valid Until 25 May 2018

In accordance with the provisions of section 12 of the Weights and Measures Act 1985, the Secretary of State for Business, Innovation and Skills hereby certifies as suitable for use for trade a pattern of an automatic road-weighbridge, for measuring the gross weight of road vehicles in-motion as described in the descriptive annex to this Certificate, and having the following characteristics:-

A weighbridge, fitted with four strain gauge load cells, connected to an indicating device. The manufacturer's designation for the system is "Supaweigh 3000, Supaweigh 4000 and Supaweigh 5000c".

Maximum capacity	*Max*	=	*30 t*
Minimum load	*Min*	=	*1.5 t*
Verification scale interval	*e*	=	*0.01 t*

Note: This certificate relates to the suitability of the equipment for use for trade only in respect of its metrological characteristics. It does not constitute or imply any guarantee as to the safety of the equipment in use for trade or otherwise.

This revision replaces previous versions of the certificate.

Submitted by:

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Reference No: T1145/0003
Date: 26 November 2010

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Descriptive Annex

1 INTRODUCTION

This pattern of an automatic (in-motion) road-weighbridge comprises a Supaweigh (model 3000, 4000 or 5000c) indicating device, a printer, a remote display and 4-load cell weighbridge having aprons on both sides. The system is for gross vehicle weighing only for vehicles having a maximum of 6 axles. The system has a Maximum capacity of up to 30 t with a scale interval (e) of 0.01 t. A schematic diagram is shown in Figure 1. This instrument is a mains powered 240 V / 50 Hz digital weight-indicating device

2 CONSTRUCTION

2.1 Mechanical

2.1.1 Weigh zone

The weigh zone comprises a load receptor with aprons on both sides.

2.1.2 Load receptor

The load receptor, comprising a flush mounted weigh platform fitted with four load cells, is situated within a pit.

2.1.3 Aprons

Aprons extend 4 m either side of the load receptor and are level to within +/- 3 mm. Irregularities of up to +/- 9 mm may be tolerated provided they are confined in areas of less than 150 mm in diameter and do not lie at right angles to the direction of travel. A line or marker is used to indicate the start of the approach apron.

2.1.4 Vehicle guide device

Traffic Management (for instance barriers, kerbing, signage or traffic lights) shall be put in place to ensure the axles pass completely over the platform and to restrict the direction if the instrument is for single direction use.

2.2 Electrical/electronic

2.2.1 Weight indicator

2.2.1.1 3000 and 4000 models

The 3000 and 4000 Supaweigh digital indicators (Figures 2 and 3) are fully described in Test Cert. No. GB-1038.

The integral 6-digit electro-mechanical display (3000 and 4000 models) is used to display error codes and the weight data, in the form "XXX.XX" t. The Liquid Crystal Display (LCD) is used for data entry and menu driven prompts. The alphanumeric QWERTY keypad allows entry of a vehicle identification number, which is printed on a ticket after completion of a weighing cycle. The Zero and Clock buttons are mounted at the side of the units.

2.2.1.2 5000c model (Figures 6 and 7)

The 5000c indicator comprises a Plug &Weigh weighing module, as described in EC Test Certificate TC5789, main board and power supply unit, enclosed in a plastic case. A remote display may be connected to the indicator via the RS232 port. A PC running the application software shall be connected to the indicator via the Ethernet port, which provides the vehicle weight indication. The PC may also be used as Data Storage Device if no printer is connected.

The technical data for the 5000c model is as follows:

Description	Characteristics
Model	5000c
Power supply	220-240 V 50/60 Hz
Load cell excitation	5 V DC
Minimum load cell impedance	87 Ω
Maximum load cell impedance	450 Ω
Minimum input voltage per verification scale interval (vsi)	3.3 μV
Maximum signal voltage for dead load	12 mV
Measuring range minimum voltage	4 mV
Measuring range maximum voltage	30 mV
Sense system available	6-wire
Operating temperature	-10°C to +40°C
Indicator to junction box cable Cable maximum length : 350 Ω 87 Ω	8-core with braided outer screen 2710 m/mm^2 2688 m/mm^2

2.2.2 Devices

Devices	Models
Initial zero setting ≤ 20% of Max	3000, 4000 & 5000c
Semi-auto zero setting device with zero tracking range ≤ 4% of Max	3000, 4000 & 5000c
Display checking at switch-on	3000, 4000 & 5000c
Devices that act on significant faults	3000, 4000 & 5000c
Calibration/set-up mode via 10 digit password entered on the keypad	3000 & 4000
Calibration/set-up mode via password protected Engineering Program	5000c
Real Time Clock	3000, 4000 & 5000c
Memory storage	3000, 4000 & 5000c
Units: kg	3000, 4000 & 5000c
External 5-digit electro-mechanical display	5000c
LSD Display checking at switch-on	5000c

2.3 Load cell

2.3.1 Any load cell(s) may be used for instruments under this Type-approval certificate, provided the following conditions are met:

- There is a respective OIML Certificate of Conformity (R60) or a test certificate (EN45501) issued for the load cell by a Notified Body responsible for type examination under Directive 2009/23/EC.
- The certificate contains the load cell types and the necessary load cell data required for the manufacturer's declaration of compatibility of modules (WELMEC 2, Issue 5, 2009, section 11), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to EN45501 has been conducted on this load cell.
- The compatibility of load cells and indicator is established by the manufacturer by means of the compatibility of modules form, contained in the above WELMEC 2 document, at the time of verification.
- The load transmission must conform to one of the examples shown in WELMEC Guide 2.4, "Guide for load cells".

2.3.2 The load transmission may conform to one of the following load cell mounting assemblies:

Type	Drawing No	Issue date
ShearbeamBall & cup	M405A	20 June 1991
5102	M411A	October 1993
T95	M412A	December 1993
Double Shearbeam	M1101A	15 June 1991
Compression	M603A, M604A	20 June 1991, 20 June 1991

2.4 Printer

2.4.1 Any simple recipient printer may be used if:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the indicator other than to release a printout, checking for correct data transmission;
- it prints weighing results and other data as received from the indicator without any modification or further processing; and
- it complies with the applicable requirements of EN45501, ie 4.2, 4.4, 4.6 and 4.7.

The printer is connected to the indicator via a protected interface. Upon completion of a weighing cycle, information is sent from the Supaweigh weight processor via a serial link to the printer. An example printout is shown in Figure 5.

The printout shall include the following information:

- Total vehicle mass with unit
- Date and time
- Operating speed or warning message if applicable (FAST)
- "Axle Weights and Wheel Weights Not Permitted to be used for Trade Purposes" or similar wording if these weight values are printed

2.4.2 The printer may be used as a tally roll printer when the indicator is connected to a computer, conforming to Section 4.8. It shall not be possible to initiate a second printout for the same weighing operation, except where the second ticket is clearly a duplicate of the first ticket e.g. multileaf with different colours / headings, or marked duplicate. One copy shall be retained as a tally record for not less than 90 days.

2.4.3 The measurement data may be automatically stored on the PC as an alternative, and shall include the information listed in section 2.4.1.

2.5 Remote display

2.5.1 A model 1054, 5 digit electro-mechanical or 1054A LCD remote display with 100 mm high characters may be fitted to the indicator unit via a protected interface listed in Section 2.8.2.

2.6 Legends and markings

The manufacturer's name is located on the front cover of the indicating device. The following inscriptions are on a data plate which cannot be removed without being destroyed:

Manufacturer	Central Weighing Ltd
Certificate number:	2490
Accuracy Class:	
Serial number:	
Minimum capacity:	1.5 t
Maximum capacity:	XX t (up to 30 t)
Maximum operating speed:	X km/h
Maximum number of axles:	X axles (up to 6 axles)
Scale interval (e):	0.01 t

The maximum operating speed may depend on the accuracy class:

Speed / Model	3000/4000	5000c
0-5 km/h	Class 1	Class 1
5-10 km/h	N/A	Class 5

2.7 Sealing and stamping

The front cover of the indicating device is secured by four screws. A nylon monofilament is passed through one of the screws securing the front cover to the indicating device. The two ends of the monofilament are joined using a lead seal which will accept stamping. In both cases, the seal has to be broken in order to gain access to the internal components. The seal securing the front cover of the indicating device shall bear the mark of the inspector, or the manufacturer, which shall be readily identifiable.

2.7.1 A stamping plug is provided, securely fixed to the cabinet of the indicating device, which may also secure the data plate (2.6) onto the cabinet to prevent unauthorised removal.

2.8 Peripheral devices and interfaces

2.8.1 Peripherals

2.8.1.1 The weighing system may be connected to any non-intelligent recipient peripheral which is technically compatible; has a test certificate issued by a notified body for EC Type Examination to the directive 2009/23/EC in any member state; and which bears the CE marking of conformity to the relevant directives, via a protected interface listed in Section 2.8.2.

2.8.1.2 A Securitag 2000 or SIRIT automatic identification system may be connected to the Supaweigh via a protected interface listed in Section 2.8.2. A transponder, fitted to the vehicle, sends a unique vehicle identification code to the automatic identification system. The code is then transmitted to the Supaweigh unit. The code contains vehicle identification information only.

2.8.1.3 An Access 2000 magnetic stripe / proximity card reader system may be connected to the Supaweigh via a protected interface listed in Section 2.8.2. A card with a magnetic stripe or a proximity card is passed through / across the reader system. The card contains a unique vehicle identification code which is read by the system and then transmitted to the Supaweigh unit. The code contains vehicle identification information only.

2.8.2 Interfaces

2.8.2.1 The instrument may be fitted with the following protected interfaces:

- 1 x RS232C
- 2 x 20 mA
- 1 x configurable to RS232C or 20 mA
- 1 x 8 bit Bi-directional expansion port
- 5 x 12 V dc open collector switching outputs
- 2 x 5 V contact closure inputs
  - USB 2.0 (5000c only)
  - Ethernet (5000c only)

3 OPERATION

3.1 All weighing operations shall be started with the vehicle stationary at a minimum distance of 4 m in front of the load receptor. A suitable forward gear shall be selected to ensure the vehicle crosses the load receptor in a smooth manner. Weighing operations are not permitted in reverse gear.

3.2 If the bridge has no weight on it and any previous weigh cycle has been completed, the display will read zero. Automatic zero-tracking will occur if selected. This means that any weight which appears on the weighbridge below 1 scale interval will be zeroed out. The "zero" button may be operated to balance the bridge for loads over 1 scale interval.

3.3 The vehicle identification number can be entered, by the Securitag 2000, SIRIT system, the Access 2000 system or via the keyboard, either before or after the vehicle has crossed the weighbridge.

3.4 When the first axle is driven over the weighbridge, the display will indicate the axle weight and an internal timer (internally adjustable) will be started. If another axle is detected before the timer has elapsed, the timer will reset and the weight of the new axle displayed. This sequence continues for up to a maximum of 6 axles.

3.5 As an axle passes over the bridge a number of weighings are taken to find out the axle weight. If an insufficient number of weighings have been made (internally adjustable) "FAST" will be displayed and recordings discontinued. "Overspeed" will be printed in red characters on the ticket. The maximum speed is 5 km/h (300 and 4000) or 10 km/h (5000c).

3.6 If a weight greater than the maximum capacity + 9e is recorded, a fault code is displayed and recordings discontinued. "Overrange" will be printed in red characters on the ticket. If a weight less than the minimum capacity (1.5 t) is recorded, a fault code is displayed and a printout of the gross vehicle weight is inhibited. "Underrange" will be printed in red characters on the ticket.

3.7 When no further axles have been detected and the timer has elapsed, a data entry timer is started. The vehicle identification number must be entered if not done at the start of the weighing operation. The number is entered followed by an "E". If an incorrect number is entered, "C" is pressed and the number then re-entered. The indicator will show the gross vehicle weight ("total") if below 99.99 t. The printout will display the gross vehicle weight up to a maximum of 999.99 t. A new weighing cycle may be started when the printer has printed the ticket. Failure to enter the vehicle identification number within a specified time will automatically terminate the weigh cycle and the vehicle identification number will be printed as "None".

The same requirement applies to data storage on the PC when no printer is connected to the instrument.

4 AUTHORISED ALTERNATIVES

4.1 Having a Maximum capacity of up to 60 t with a scale interval (e) of 0.02 t. The rating plate referred to in Section 2.6 is amended accordingly.

4.2 Having the indicating device, auxiliary display and printer configured to display/print the weight result in kilograms. Mixed units of measurement (kg and t) are not permitted.

4.3 Having the system configured for gross weighing of 2 axle rigid vehicles only.

4.3.1 The system is configured for the gross weighing of 2 axle rigid vehicles only. The dataplate is amended to read: "maximum number of axles 2". The weight ticket carries the additional statement: "Installation verified for 2 axle rigid vehicles only". A sign with the statement: "For trade weighing of 2 axle rigid vehicles only" is located within viewing distance of the vehicle driver.

4.4 Having the system configured for gross weighing of 2, 3 and 4 axle rigid vehicles only.

4.4.1 The system is configured for the gross weighing of 2 axle, 3 axle and 4 axle rigid vehicles only. The dataplate is amended to read: "maximum number of axles 4". The weight ticket carries the additional statement: "Installation verified for 2, 3 and 4 axle rigid vehicles only". A sign with the statement: "For trade weighing of 2, 3 and 4 axle rigid vehicles only" is located within viewing distance of the vehicle driver.

4.5 Having the system configured for gross weighing of 2-axle rigid vehicles, and 3-axle; 4-axle; 5-axle and 6-axle articulated vehicles only.

4.5.1 The system is configured for the gross weighing of 2-axle rigid vehicles, and 3-axle; 4-axle; 5-axle and 6-axle articulated vehicles only. A sign with the statement: "For trade weighing of 2-axle rigid vehicles; and 3-axle; 4-axle; 5-axle and 6-axle articulated vehicles only" is located within the viewing distance of the vehicle driver.

4.6 Having the system configured for gross weighing of 5-axle articulated vehicles and 6-axle articulated vehicles only.

4.6.1 The system is configured for the gross weighing of 5-axle articulated vehicles and 6-axle articulated vehicles only. The data plate is amended to read: "minimum number of axles 5" "maximum number of axles 6. The weight ticket carries the additional statement: "Installation verified for 5-axle articulated vehicles and 6-axle articulated vehicles only". A sign with the statement: "For trade weighing of 5-axle articulated vehicles and 6-axle articulated vehicles only" is located within the viewing distance of the vehicle driver.

4.7 Having the system configured for bi-directional use.

4.7.1 Where the installation can be used bi-directionally it shall be tested in both directions of travel. A suitable method shall be used to inhibit the use of the system in any direction of travel that fails to meet the initial verification allowance.

4.8 Having the indicator configured for transmission of data from the weighing system to a computer, which is connected to a protective interface listed in Section 2.8.2, and associated ticket printer. The computer, which may incorporate a VDU and associated keyboard, may be connected to the protective interface via a Central Weighing Ltd interface controller containing a configurable RS422/485 interface. The VDU may be in the form of a CRT, Dot Matrix, LCD or similar form of display as appropriate to the system.

4.8.1 There shall be a unique consecutive number generated by the indicator associated with each weight sent to the computer. Unique in this context means that it shall not be repeated within one year. The consecutive number, including where relevant the date, shall not be capable of readily being reset.

4.8.2 Data sent from the computer or associated keyboard to the indicator shall not allow the metrological functions of the indicator and its measurement data to be inadmissibly influenced.

4.8.3 Any weight related data produced by, or from a printer, connected to the computer shall carry a clear statement, "A tallyroll record of this weight is retained for 90 days and may be found by reference to the unique consecutive number", or appropriate equivalent wording which shall be clear and unambiguous.

4.8.4 Where a stored "weighed tare or first weight" is used then the consecutive number of that weight and the date of weighment must be shown on the relevant documents. Stored weighed tares shall be checked regularly.

4.8.5 Disconnection of the tallyroll power supply, data line or shortage of paper shall inhibit data transmission to the computer.

4.8.6 The computer shall not be used to control functions affecting the operation of the weighing system eg, zero setting devices, barriers to control the position of a vehicle on a weighbridge etc.

4.9 Having the Securitag 2000 system, SIRIT or the Access 2000 system connected to a Central Weighing Ltd interface controller which contains a configurable RS422/485 interface. The interface controller is in turn connected to the Supaweigh via a protected interface listed in Section 2.8.2.

4.10 Having a keyswitch fitted to the side of the indicator panel, to enable the instrument to be put into a static mode of operation, which is subject to the following conditions and notes.

4.10.1 Conditions and Notes.

4.10.1.1 Static weighing mode is not authorised for trade use under this certificate.

4.10.1.2 The key is to be removed by authorised personnel only.

4.10.1.3 The keyswitch is only authorised to be fitted to the instrument installed at:

(i) Eurotunnel UK
HGV Height check facility
Folkestone
Kent

4.11 Having a Telematic LC30 surge protection device fitted to the excitation, sense and signal lines of cable, between the load cell and the indicator, provided the system has the following characteristics:

Minimum load cell impedance of 55 Ω;
Maximum excitation voltage of: 20 V AC, or 28 V DC;
The excitation voltage is symmetrical to ground;
For the indicator: $e \geq 1$ μV.

4.12 Having the instrument provided with a lateral guide system (Figure 6) to ensure that the vehicle passes fully over the load receptor.

4.13 Having an alternative value for the minimum load (Min) as follows:

$Min \geq 50\ d$

5 SECURITY

5.1 Supaweigh 3000 and 4000

A checksum is generated by the indicator software every time the instrument is calibrated. The checksum can be displayed on the indicator when the Clock button is pressed 4 times in quick succession. The checksum will also be printed when a printer is connected. The checksum is displayed on a tamperproof label which is mounted adjacent to the data plate.

5.2 Supaweigh 5000

The Supaweigh 5000c is secured by four screws with a nylon monofilament passing through one of the screws securing the front cover to the indicating device. The two ends of the monofilament are joined using a lead seal which will accept stamping. The software is protected by an 8 digital engineering password.

A checksum is generated by the indicator software every time the instrument is calibrated. The checksum can be retrieved by requesting the parameters from the instrument using the Engineering program. This parameter will be read only and cannot be altered using the Engineering program unless a recalibration is performed. The checksum is displayed on a tamperproof label which is mounted adjacent to the data plate.

The system will only run with the Central Weighing Limited software designed for use with this system, as described below. The CWL software is the also only version that has access to the calibration of the system and the calibration checksum value.

The software designations and version numbers are shown in the top of the engineering software and in the Download Manager Tool, and should be as follows:

DLM Configuration Tool Version 05670801.BIN
Engineering CPC program Version 20.2

6 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
2490	26 May 1998	Certificate first issued.
2490 Revision 1	26 May 2008	Amendments 1 to 5 consolidated in to certificate. Validity extended for a period of 10 years
2490 Revision 2	26 November 2010	Supaweigh 5000c indicator added to this certificate.

TYPICAL WEIGHBRIDGE LAYOUT

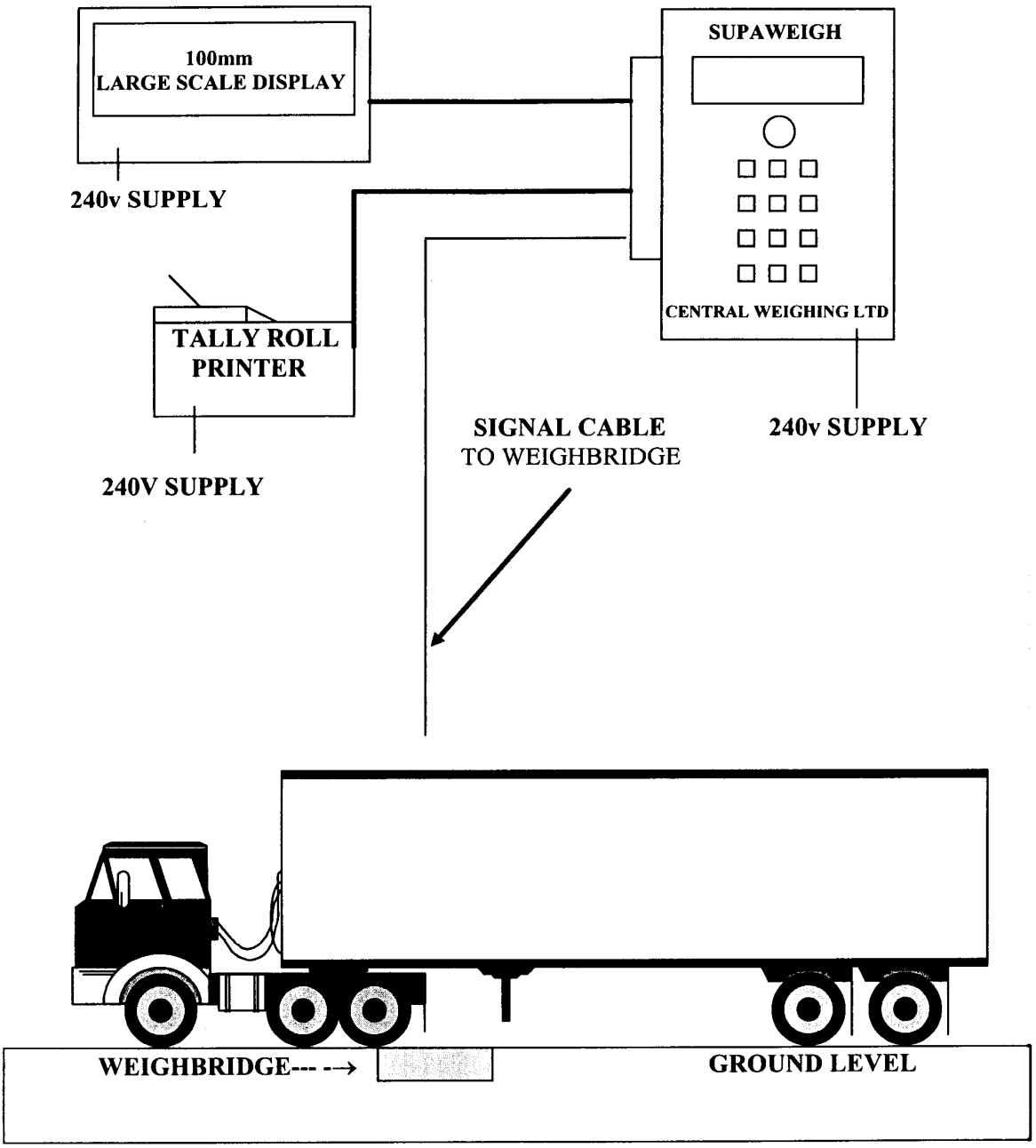

Figure 1 Schematic diagram

INDICATOR PANEL DESCRIPTION

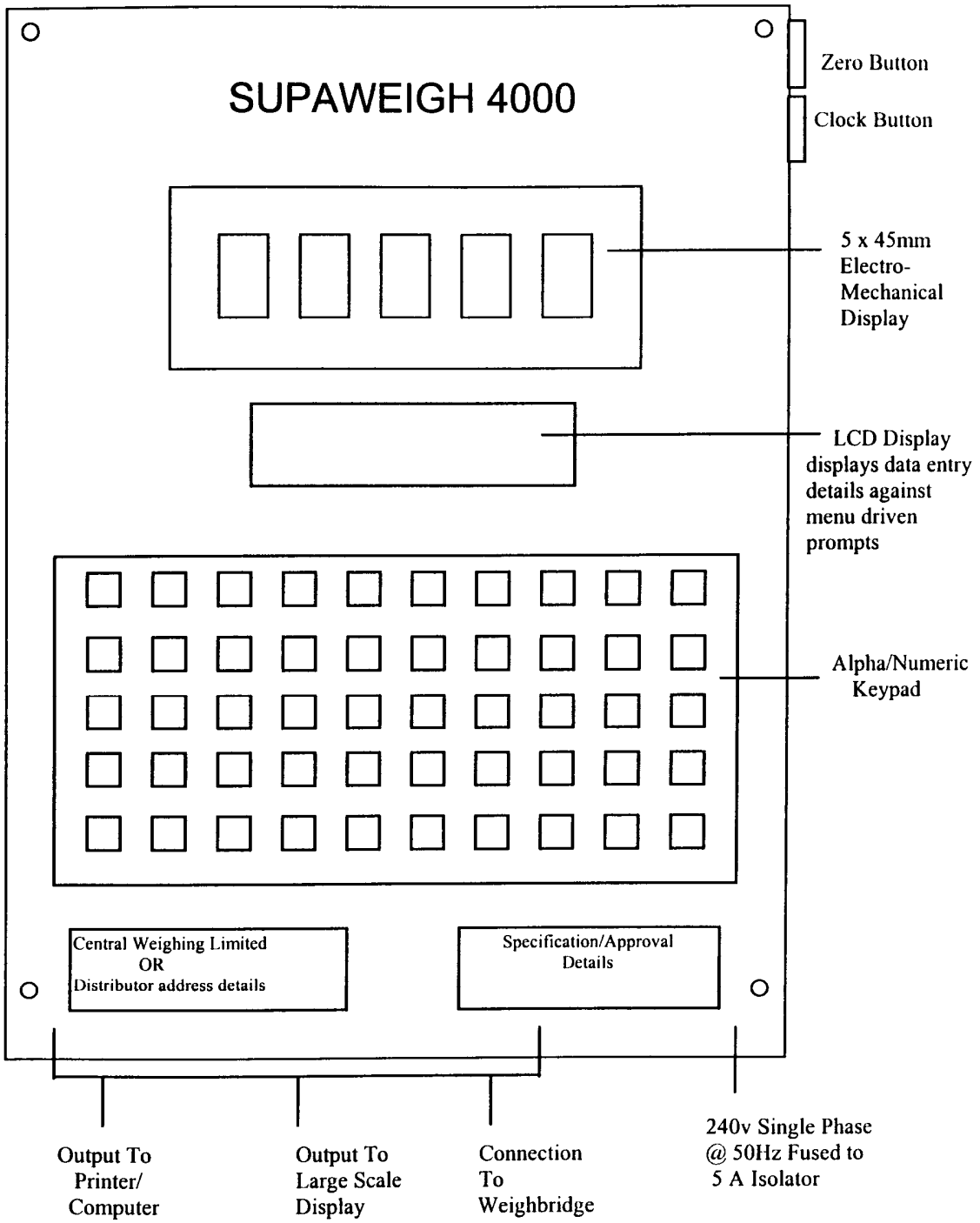

Figure 2 The Supaweigh 4000 indicator

INDICATOR PANEL DESCRIPTION

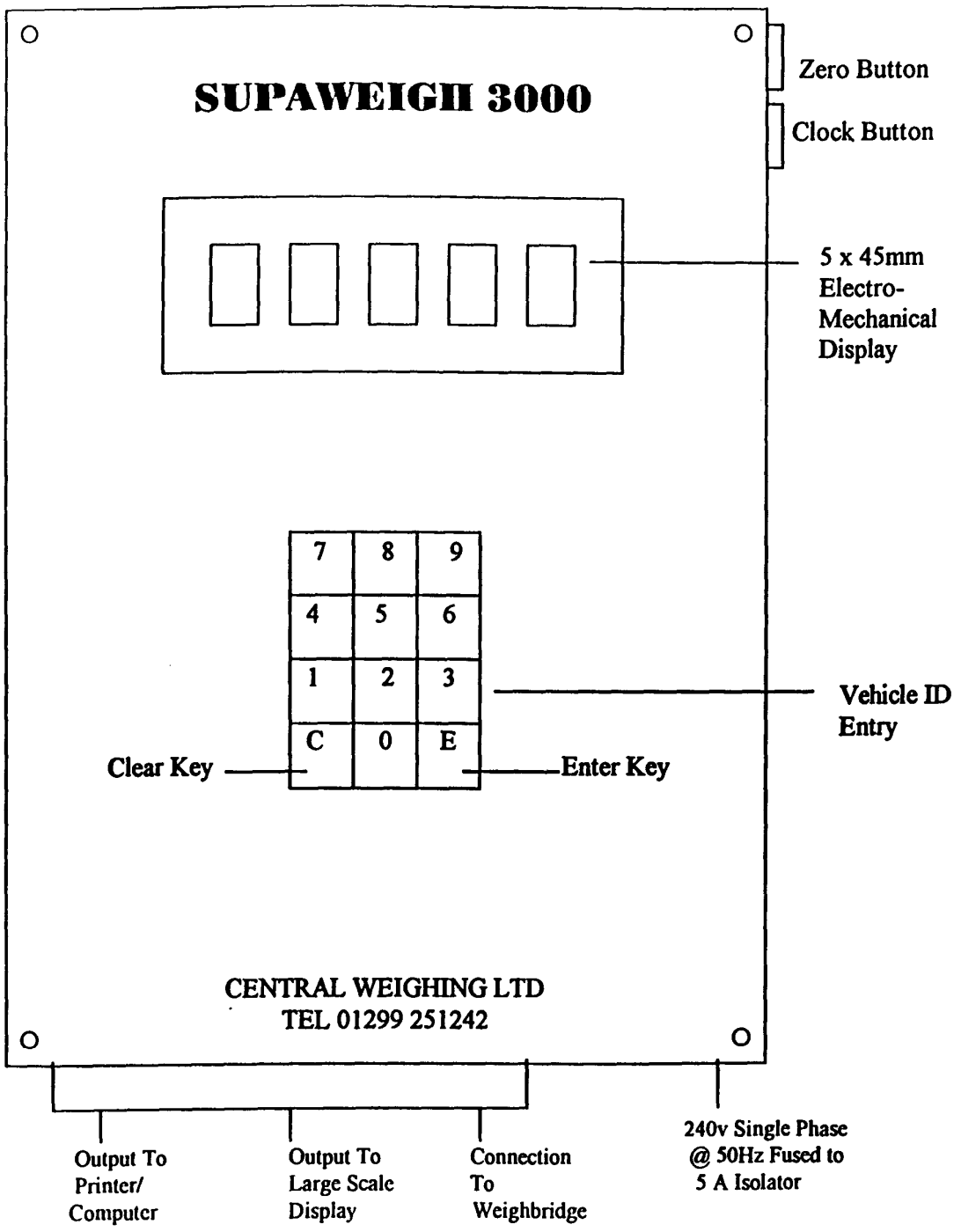

Figure 3 The Supaweigh 3000 indicator

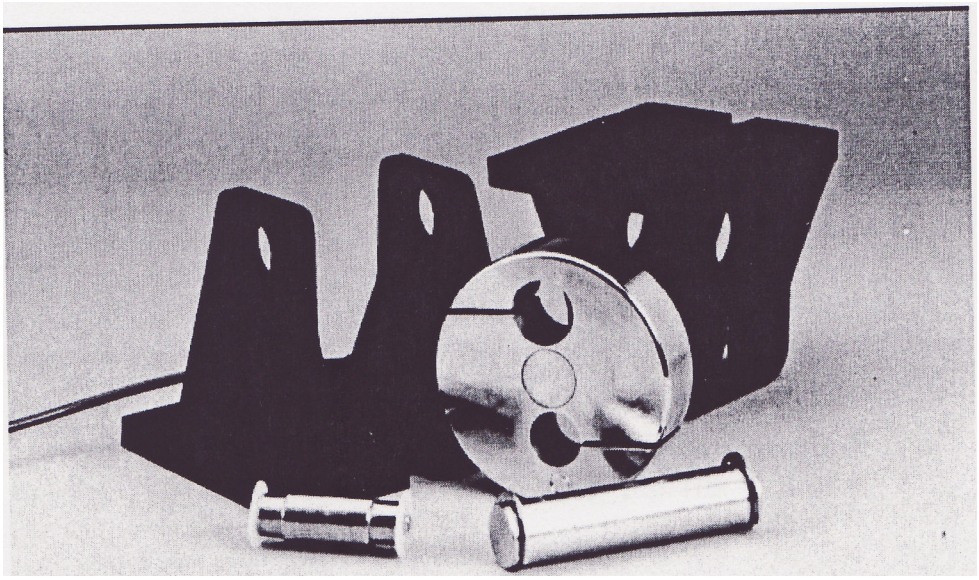

Figure 4 The load cell mounting

Central Weighing Limited

Unit 142 Elm Road

Hartlebury

Kidderminster

DY10 4JB

ID No: 33

Date/Time: Wed 02/06/2010 15:58

Registration: VK07OCE

Axle	Weight (kg)	Permitted (kg)	Over %	ESA
1	5300	8000		0.0
2	9360	11000		0.0
3	6140	8000		0.0
4	6390	8000		0.0

Gross (kg) 27 190

Speed: 2.2 kph

Driver's Signature

Scaleman's Signature

Operator: Administrator

Axle Weights and Wheel Weights are not Permitted to be used for Trade Purposes

Figure 5 Typical ticket printout

Figure 6 **The Supaweigh 5000c indicator**

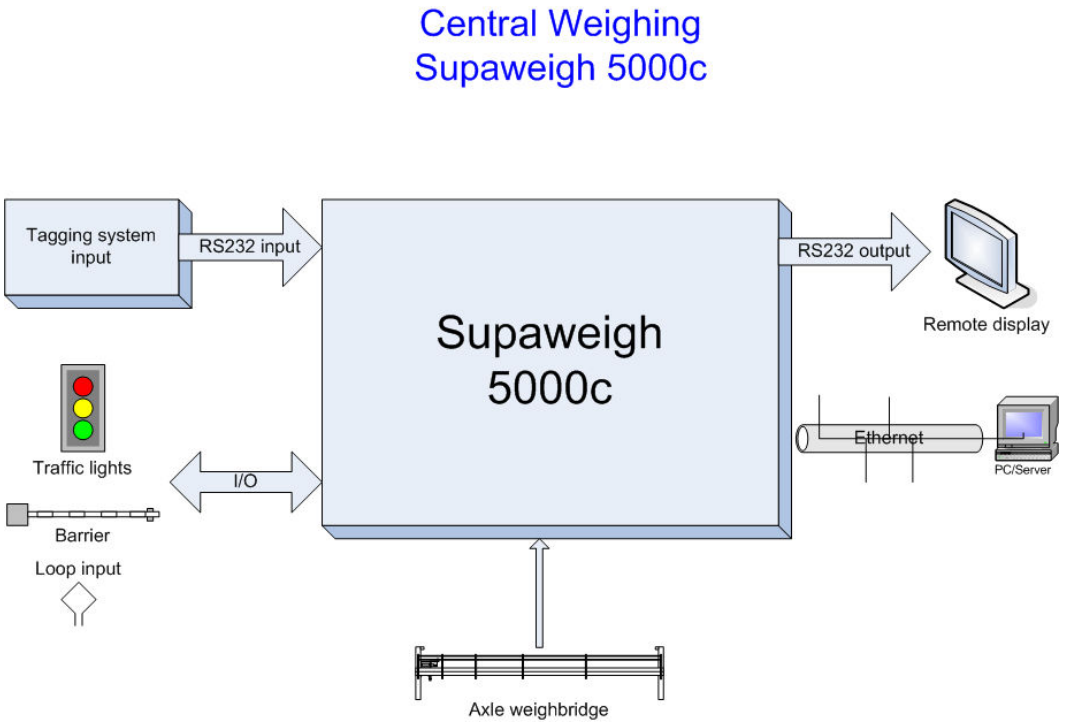

Figure 7 **Schematic diagram of the Supaweigh 5000c**