NMO

2947

V(6)d

Pursuant to section 12 of the Weights and Measures Act 1985

Certificate No 2947 Revision 2

Issued by:

NMO

In accordance with the provisions of section 12 of the Weights and Measures Act 1985, the Secretary of State for Business, Innovation & Skills has issued this UK national type-approval certificate to:

URENCO UK Ltd
Capenhurst
Chester
CH1 6ER
United Kingdom

And hereby certifies as suitable for use for trade the following pattern of a non-automatic weighing machine, and having the following characteristics:

Maximum capacity	Max	=	16,000 kg
Minimum load	Min	=	25 kg
Verification scale interval	e	=	0.5 kg

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.

Under the provisions of Section 12(5) of the said Act, this certificate is granted subject to the conditions at Section 6 herein.

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.

Issue Date: 15 May 2018
Valid Until: 07 February 2023

Grégory Glas
Lead Technical Manager
For and on behalf of the Head of Technical Services

CONTENTS

CERTIFICATION NO 2947 Revision 2

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1 INTRODUCTION

This pattern is of a non-automatic, Class II, weighing machine comprising a load collecting platform and lever system of conventional design coupled to a WÖHWA gyroscopic force measurement transducer unit and a display/control unit type GCU 64.

2 CONSTRUCTION

2.1 The platform

The weighing platform and lever works (Figure 1) are of all steel construction and are securely located and levelled in a permanent operating position. The ratios are calculated to provide an operating span up to 15 kg for the measuring transducer. A schematic of the lever system is shown in Figure 2.

The platform and lever system incorporates a floating frame between the load collecting plate and the lever system. The purpose of this intermediate frame is to eliminate any accidental side forces affecting or bearing on the main levers. The loading plate, floating frame and levers are separated by ball loaders.

In addition to the moment-free ball loaders above the levers, the final connecting shackle between the last transfer lever and the gyro is also floating on a twin ball and cup assembly together with a knife and bearing.

The system is used to weigh type 48Y or type 30B cylinders containing uranium hexafluoride (UF_6), and has a sub-frame attached onto the platform to ensure correct location of either cylinder type.

2.2 The gyro transducer unit

2.2.1 Principle of operation of gyro unit

A revolving motor unit spinning in a frame hinged on a central axis acts as a gyroscope. When a force is applied to the frame (via the pull rod through the base of the housing) the gyroscopic effect pulls at right angles to the force applied. This creates a turning moment about the central axis which then processes at a speed directly proportional to the pull or force.

Any variation in pull results in an immediate increase or decrease in the precession speed as the gyro counters the attempt to misalign its carrying frame.

The speed of precession is optically monitored by the processor together with the speed of the main rotor. From these two speeds, the weight is calculated.

2.2.2 Construction of gyro unit (Figure 3)

The gyro force measuring unit is assembled in a heavy duty cast aluminium housing which is divided into two main compartments.

The lower compartment houses the free running main gyro motor mounted in a pivoting frame hinged to the central axis.

The upper compartment, which is accessible under the top lid, contains the main power supplies and line fuses, control drive board, brushes and slip rings for voltage supply to the gyro motor and level control auxiliary motor.

For a floor mounted weigh-scale (such as that shown in Figure 1) the gyro is mounted on a pedestal immediately adjacent to the weigh-scale platform and is protected by a metal box similar to the one shown in Figure 4.

2.2.3 Electronics in gyro unit

The drive board in the upper section controls the start up sequence, monitors the speed of precession and motor via the optical sensors, checks for overload and if detected controls the safety cut-out, auto resample and restart procedures. In addition it responds to the output from the differential transformer to control the auxiliary torque motor.

The output signals from the gyro drive board to the GCU64 consist of two pulse trains representative of motor and precession speeds and within the GCU64 there are two counters (one for each of the two pulse trains). A given pulse train triggers its associated counter to count the output of a 4MHz crystal oscillator for the time period of that pulse train. The resultant count divided by four million is the time period of the associated pulse train and the weight of the load is determined from these two time periods.

2.3 GCU 64 display/control unit

2.3.1 Construction

The display unit (Figure 5) is enclosed in a plastic housing and includes a membrane keyboard and an LED display. The keyboard comprises alphanumerical and function keys (Figure 6).

The GCU 64 unit is fitted with a mains filter (250 V, 6 A, 50/60 Hz).

2.3.2 Devices

The GCU 64 unit has the following devices:

- Semi-automatic zero-setting (≤ 4% Max)
- Zero-tracking (≤ 4% Max)
- Initial zero-setting (≤ 20% Max)
- Zero indicator
- Stability of equilibrium indicator
- Semi-automatic tare weighing device (T = - Max) *
- Preset Tare *
- Gross/Net indication
- Printing *
- Data storage *
- Delivery note (entry / exit weighing) *

* These devices shall not be used for legal purposes.

2.3.2 Software identification

The software version number can be displayed in the Info Menu (accessed by pressing the F1 key twice - see Figure 7), and shall be as follows:

V4.x.x where x.x reflect minor, non-legally relevant modifications

2.4 Peripheral devices and interfaces

2.4.1 Peripherals

The following peripheral devices may be connected to the interfaces provided that:

- 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;

A printing device may print additional information such as date or number to identify the printed weighing result(s) or sets of weighing results.

2.4.2 Interfaces

The instrument may have the following interface types:

- Digital signal connection to the gyro unit
- Digital I/O
- RS232/422/485
- Parallel
- PS2

3 OPERATION

The machine is connected to a PC running the “Container Weighing” data processing device approved under EC Test Certificate GB-1355. The weighing process and subsequent data processing are described in GB-1355.

A barcode scanner and keyboard may be connected to the GCU 64 unit via the COM2 (RS232) and PS2 ports respectively to facilitate the input of ancillary data (cylinder identifier, FROM location, TO location, Operator initials and Comments (up to 32 characters)).

4 LEGENDS

The following inscriptions shall be shown on a data plate affixed on the GCU 64 unit, which cannot be removed without being destroyed:

Manufacturer	WÖHWA
Certificate number:	2947
Accuracy Class:	II
GCU 64 serial number:	xxxx
Maximum capacity (Max):	16,000 kg
Minimum capacity (Min):	25 kg
Scale interval (e =):	0.5 kg
Gyro serial number:	xxxx

The Gyro serial number shall be affixed on its casting so that it is clearly visible and cannot be removed without being destroyed.

5 SECURITY SEALS AND STAMPING

5.1 Gyro transducer unit

The Gyro main casting shall be sealed using a wire-and-seal solution or tamper-evident stickers.

Access to the lever works between the platform and Gyro shall be prevented by sealing the enclosure housing the lever works with a wire-and-seal solution or tamper-evident stickers.

The digital signal connection between gyro unit and GCU 64 is protected via common serial numbers (Gyro serial number repeated on the data plate affixed on the GCU 64 unit).

5.2 GCU 64 display unit

The legally relevant parameters (calibration, metrological characteristics) are password protected, and a non-editable counter increments whenever they are changed.

The counter is designated “Event counter” and can be displayed in the Info Menu (accessed by pressing the F1 key twice, see Figure 7).

The counter’s designation and value shall be written on a tamper-evident sticker on or near the data plate.

6 CONDITIONS

In accordance with the provisions of section 12(5) of the Weights and Measures Act 1985, this Certificate is subject to the following conditions:

6.1 That it applies to machines installed at the following site:
URENCO UK Ltd
Capenhurst
Chester
CH1 6ER
United Kingdom

6.2 The machines shall be permanently installed.

6.3 That the machines shall be tested by an Inspector of Weights and Measures at intervals of not more than 6 months.

7 AUTHORISED ALTERNATIVES

7.1 Having an alternative construction of platform, as described below, for weighing box shaped containers.

7.1.1 The platform and lever system are as described in section 2.1 but do not incorporate a floating frame between the load collecting plate and the lever system incorporating a EDK41 model Gyro unit (as described in section 2.2) and a GCU 64 model Display/control unit (as described in section 2.3). The design of weighing system now consists purely of a weighing platform and lever system. The loading plate and levers are separated by ball loaders.

7.1.2 The installation has the following characteristics. The legends in section 4 are amended accordingly:

- Maximum capacity: 13,000 kg
- Minimum capacity: 50 kg
- Scale interval (e=): 1.0 kg

8 ILLUSTRATIONS

Figure 1 Platform
Figure 2 Lever system schematic
Figure 3 Gyro unit
Figure 4 Gyro unit protection
Figure 5 GCU 64 display unit
Figure 6 GCU 64 keyboard
Figure 7 Software information
Figure 8 Alternative platform construction
Figure 9 Schematic

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
2947	07 February 2013	Certificate first issued.
2947 Revision 1	05 February 2014	2nd paragraph in section 2.1 modified to reflect the actual construction (platform and lever system with incorporated floating frame). Figures 1 and 7 updated.
2947 Revision 2	15 May 2018	Addition of: • Section 7 (Authorised Alternatives) and section 7.1 Subsequent sections are re-numbered accordingly. • Figures 8 & 9.

Figure 1 Platform

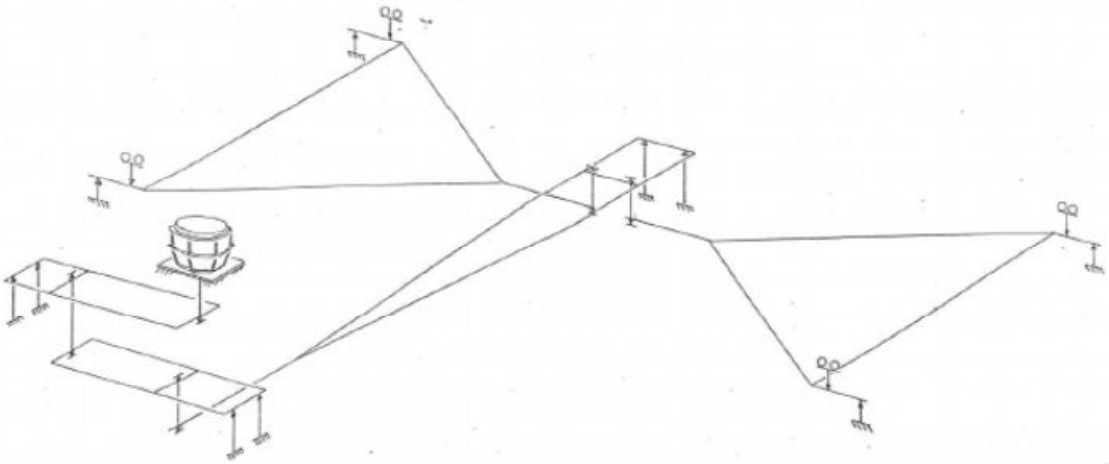

Figure 2 Lever system schematic

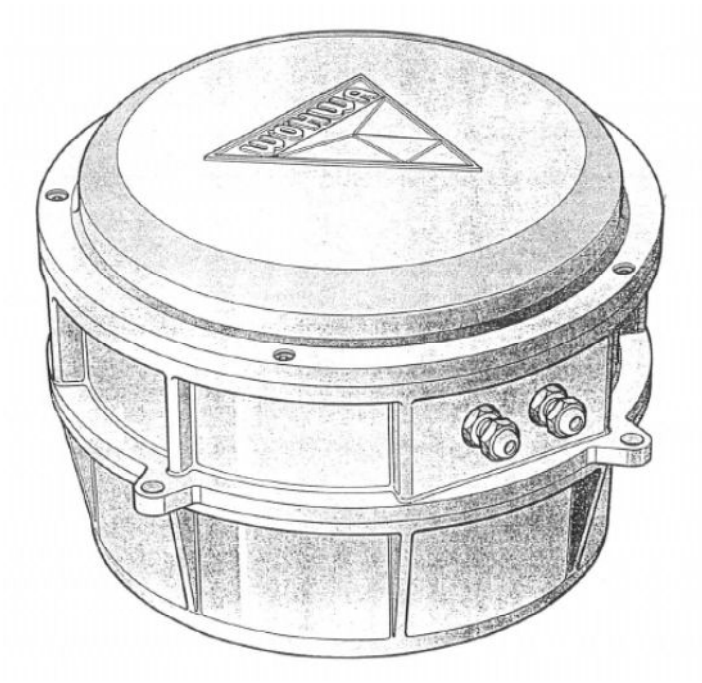

Figure 3 Gyro unit

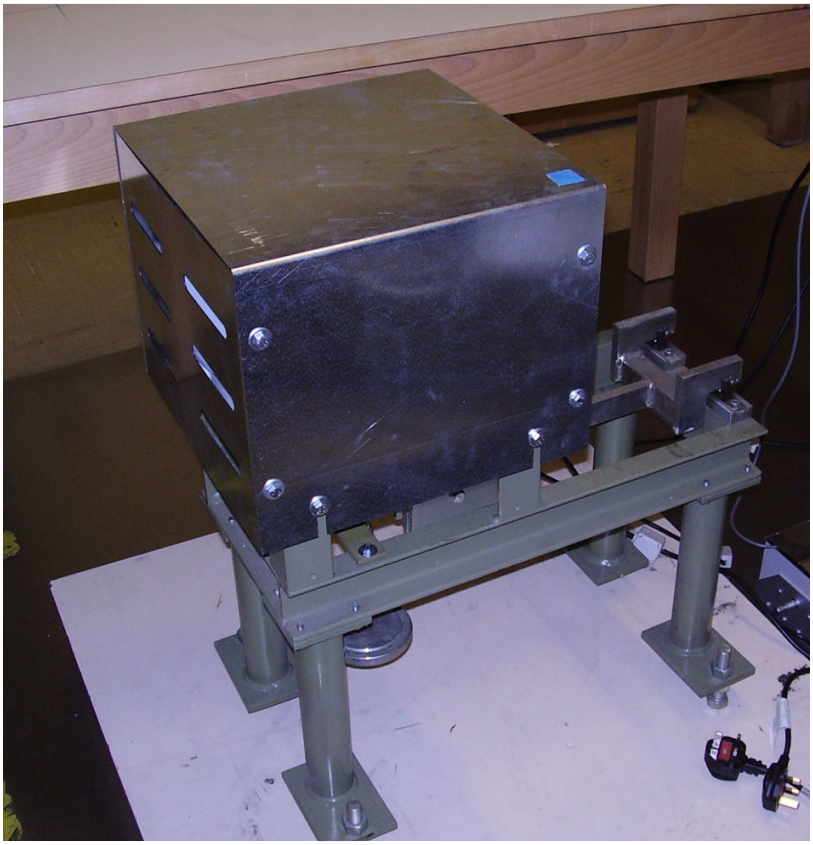

Figure 4 Gyro unit protection

Figure 5 GCU 64 display unit

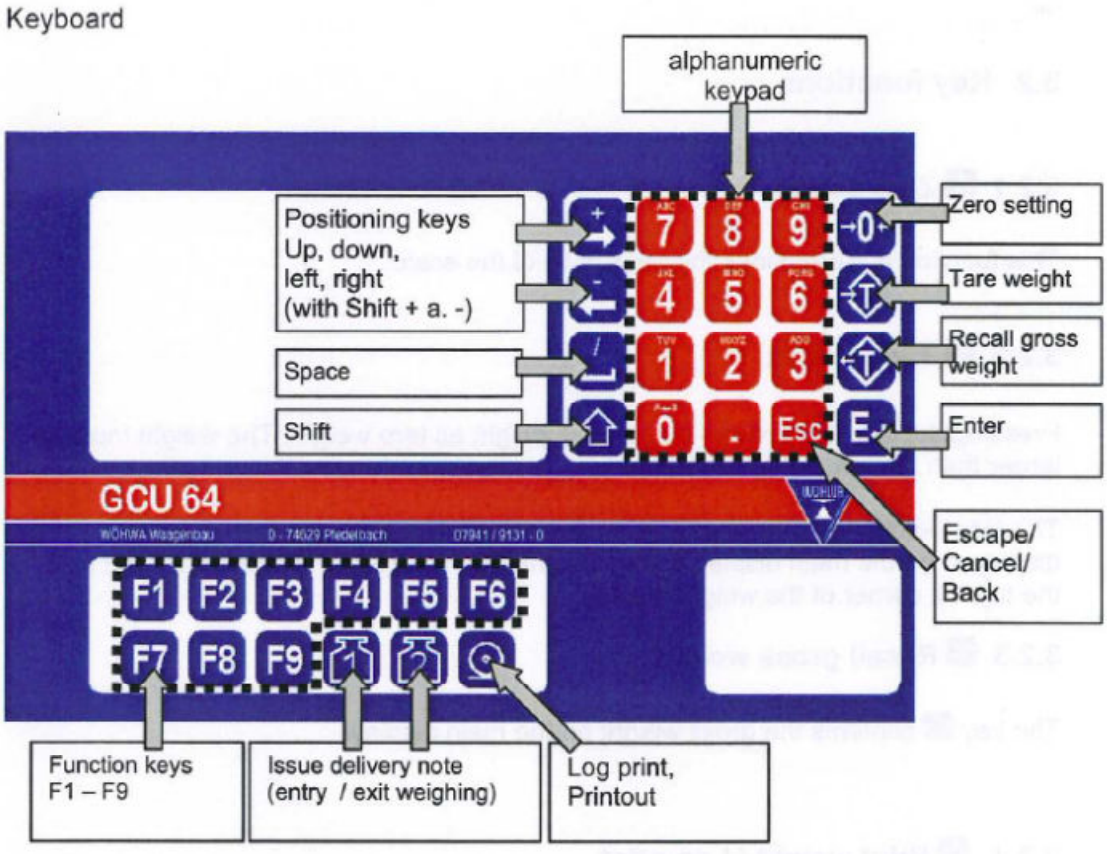

Figure 6 GCU 64 keyboard

Figure 7 Software information

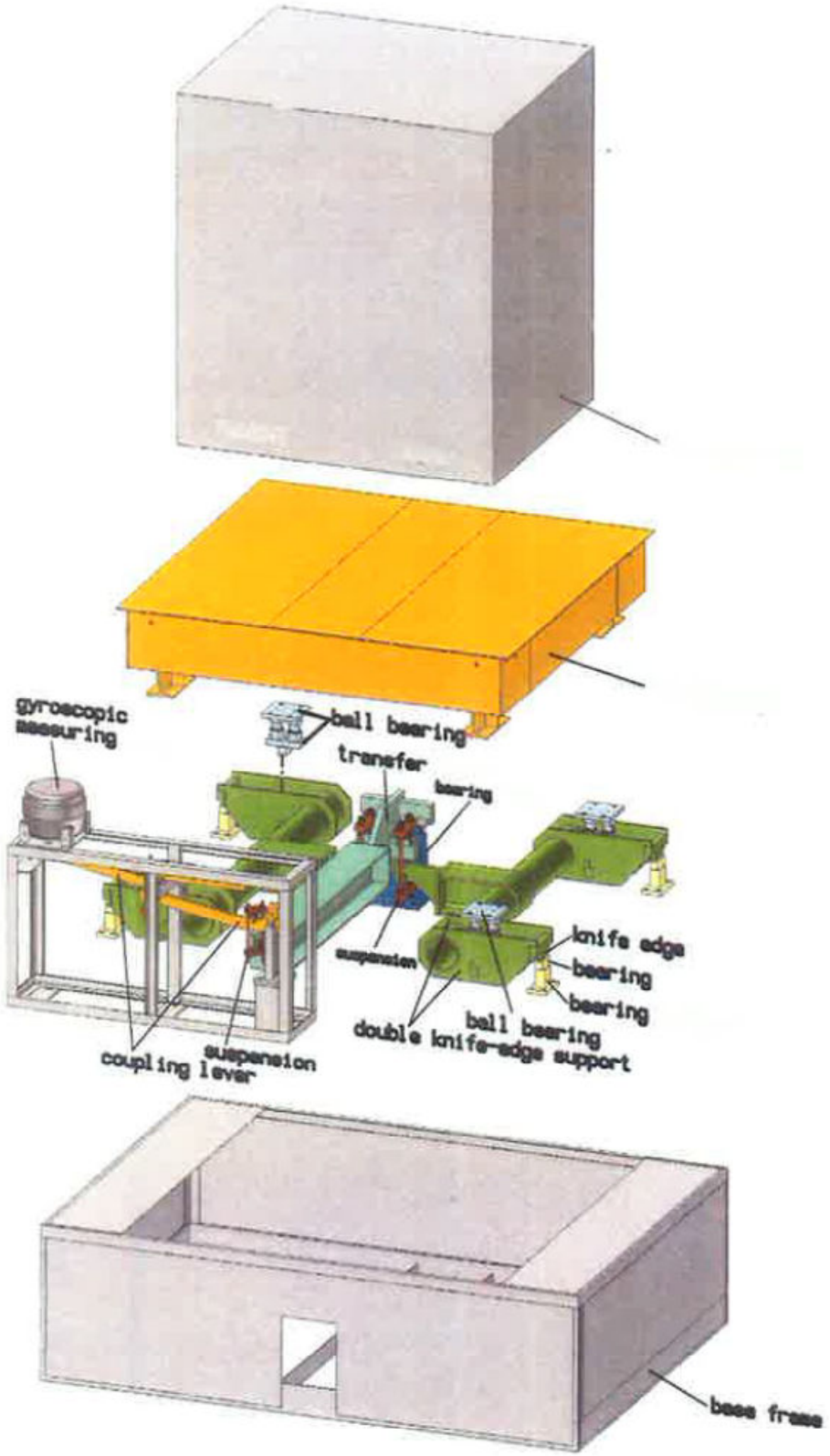

Figure 8 Alternative platform construction

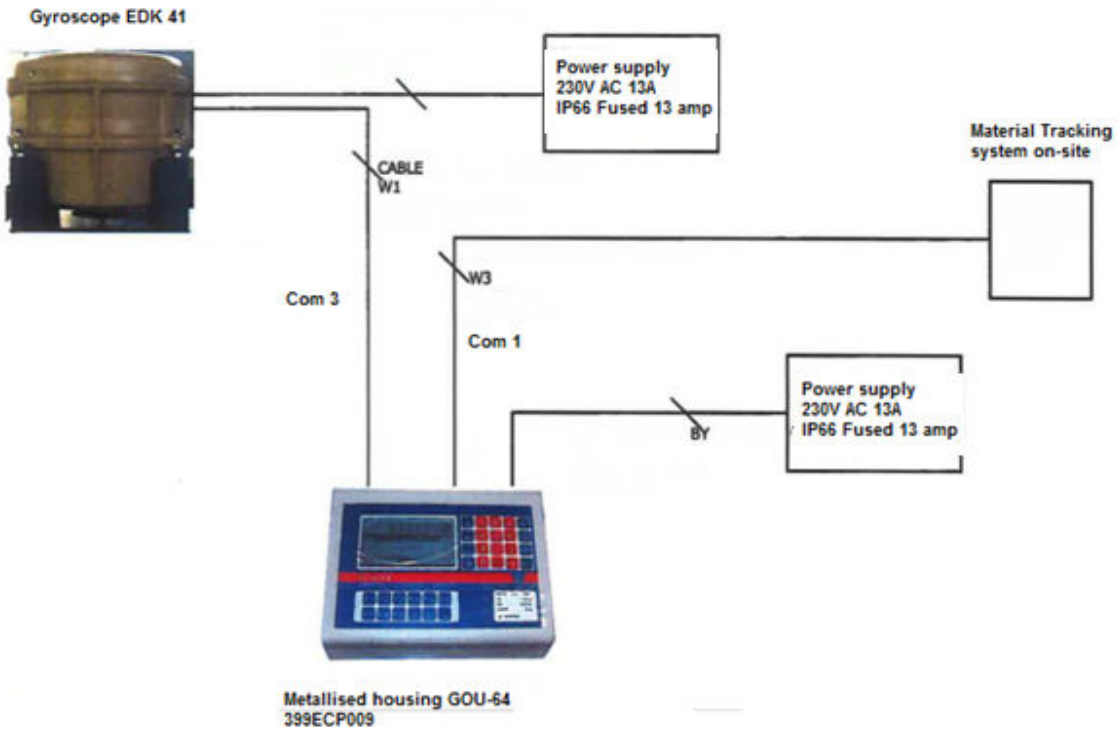

Figure 9 Schematic

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