

EC type-examination certificate UK/0126/0121

Issued by:

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

In accordance with the requirements of the Measuring Instruments (Automatic Gravimetric Filling Instruments) Regulations 2006 (SI 2006/1258) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this EC type-examination certificate has been issued to:

**Autopak Machinery Limited
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NG17 8AP**

in respect of an automatic gravimetric filling instrument using the SWA2000 weighing controller and AT25 display unit, and having the following characteristics:

Reference accuracy class: Ref (0.2)
Maximum capacity: Dependant upon load cell(s) specification
Minimum load: Dependant upon operating accuracy class X(x)
Scale interval: ≥ 1 g
Number of scale intervals $\leq 6,000$

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.

Issue Date: 06 August 2012
Valid Until: 05 August 2022
Reference No: TS0104/0003



**Signatory: G Stones
for Chief Executive**

Descriptive Annex

1 INTRODUCTION

This pattern of an automatic gravimetric filling instrument for dispensing predetermined loads of powdered, granular or liquid materials consists of a feeding device, a weighing unit, and a B+L Industrial Measurements GmbH SWA2000 weighing controller.

The operator selects the required target weight (predetermined load) and enters the required number of weighments via the keyboard on the front of the controller. The microprocessor operates the weigher in response to signals received from the controller, the load cells and plant sensors.

The alphanumeric display on the front of the controller continuously shows the weigh hopper contents when the machine is operating. During operation the display may also indicate error codes. In the data entry mode the display is used to indicate messages prompting the input of operating parameters and entered values.

The type designation for the complete instrument may vary according to the construction (examples of designations: Turbo Weigher, Turbo Packer...).

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

The instrument comprises material handling facilities (feeding device and weighing unit) which shall enable it to respect the MPEs during normal operation.

2.1.1 Material feeding device

The feeding device may be any one of the following:

- Gravity feeder
- Gravity feeder with agitator
- Single screw or double screw feeder
- Belt feeder
- Vibratory feeder
- Fluidisation bed impellor

2.1.2 Weighing unit

The weighing unit is either a load receptor incorporating a weigh hopper and associated discharge device for weighing of target weights in the weigh hopper (net weighing), or a load receptor without a discharge device for weighing directly into containers (gross weighing).

2.1.3 Load cell(s)

Any compatible load cell(s) may be used providing 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.
- The load transmission conforms to one of the examples detailed in WELMEC 2.4 Guide for Load Cells.

2.1.4 Control cabinet

The control cabinet houses the controller, power supplies, relays and devices used to operate the instrument.

2.2 Pneumatic

Air supply may be used to operate the feeding device.

2.3 Electrical

Various power supplies may be used to provide power to the controller and peripheral devices.

2.4 SWA2000 controller

The controller comprises a SWA2000C analogue data processing unit (Figure 1) and an AT25 display unit (Figure 2).

The SWA2000C houses the electronics and provides the interface for the excitation for the strain gauge load cells, galvanically isolated switch mode power supply, analogue circuitry, A-D converter, microcontroller, EPROM, battery buffered RAM, EEPROM for storage of calibration data and system configuration parameters, battery buffered real time clock, display and keyboard interface.

The AT25 has a sealed membrane keyboard. The keyboard consists of numeric and function keys (Figure 3). Keys that have a function in the filling mode have integral LED indicators.

The AT25 display area is a multiplexed seven digital vacuum fluorescent display with comma and status indicator for each display digit.

A supplementary display may be used for status and error messages, and for user guidance (4x16 digits LCD display).

2.5 Printer

Any printer meeting the requirements in section 4.2 may be used. The printer shall be connected to the instrument via an interface listed in section 4.1, and shall bear the legend "FOR MANAGEMENT PURPOSES ONLY".

2.6 Devices

- Initial zero setting device ($\leq 20\%$ of Max)
- Semi-automatic zero setting device ($\leq 4\%$ of Max)
- Zero tracking device ($\leq 4\%$ of Max)
- Semi-automatic subtractive tare balancing device
- Preset tare
- Multi-range operation with indication of selected weighing range (1 or 2)
- Indicators (Net, Stability, Range, Print, Automatic mode)
- Accumulation memory for summation of net weights
- Automatic material in-flight correction
- Automatic batching optimisation, adaptation of the coarse feed cut off

2.7 Operation

2.7.1 The SWA2000 controller can be controlled and operated in the following ways:

- Directly via the AT25 control panel using the digital display and function keys
- Remotely via the SWA2000C parallel I/O interface using control input and output signals

2.7.2 Sequence of operation

The ON switch is pressed, the controller goes through a self-test routine, illuminating all segments of the display and illuminating the LED annunciators. The weight display will auto zero, provided that the zero is within the zero capture range. The push buttons now become active.

The target weight is selected using the set point entry button. Alternatively, if a remote switch is connected to the I/O connector, this can be used to select the correct weightment.

The operator ensures that a bag is placed over the neck of the delivery chute, and operates the bag clamp switch.

The start button on the controller can be used to start the filling sequence, or alternatively a remote start button mounted on the control cabinet, or a convenient location, near to the operator.

The weigh hopper is filled to the target weight. The coarse and fine feeds are controlled by signals from the controller. At the end of the filling cycle, the bag clamp switch is operated. The bag is released and removed from the neck of the delivery chute. The first bag will fill at a slower rate whilst the controller stabilises the flow rate of the material.

2.7.3 Interlocks

- The nominal weight can only be set when in the 'Set point mode'
- All keys are disabled when in filling mode except:
 - Zero key
 - Start filling
 - Set point key
- If any weightment is found to be outside the upper and lower tolerances, the weightment cannot be discharged automatically and an alarm is given.
- Weighing cannot start unless the weigh scale reading is within 0.25d of zero.
- Zeroing cannot be done automatically outside the limits of +3% or -1% of zero.

3 TECHNICAL DATA

3.1 The system has the following technical characteristics:

Reference accuracy class Ref(x)	0.2
Power supply	240 VAC -50/60 Hz
Maximum subtractive tare (T)	≤ - Max
Maximum capacity (Max)	Dependent upon load cell(s) specification
Minimum load (Min)	See section 3.2
Scale interval (d)	≥ 1 g
Maximum number of scale intervals (n)	6,000
Load cell excitation voltage	10 V dc
Minimum input impedance	35 Ω
Load cell connection	4 or 6-wire system
Max cable length (indicator to junction of cell cable(s))	400 m/mm ²
Minimum input voltage per scale interval	1.0 μV/div
Modules	p _i = 0.5 for the indicator p _i = 0.7 for the load cell
Operating temperature range	-10 °C to + 40 °C
Climatic environment	Closed, non-condensing
EM Classification	E2

3.2 Minimum load (MinFill)

d (g)	X(0.2)	X(0.5)	X(1)	X(2)
1	≥ 1.6 kg	≥ 320 g	≥ 107 g	≥ 27 g
2	≥ 3.2 kg	≥ 1280 g	≥ 320 g	≥ 106 g
5	≥ 8 kg	≥ 3.2 kg	≥ 1.6 kg	≥ 400 g
10	≥ 24 kg	≥ 6.4 kg	≥ 3.2 kg	≥ 1.6 kg
20	≥ 48 kg	≥ 19.2 kg	≥ 6.4 kg	≥ 3.2 kg
50	≥ 120 kg	≥ 48 kg	≥ 19.2 kg	≥ 8 kg
100	≥ 240 kg	≥ 96 kg	≥ 48 kg	≥ 24 kg
200	≥ 480 kg	≥ 192 kg	≥ 96 kg	≥ 48 kg
500	≥ 1200 kg	≥ 480 kg	≥ 240 kg	≥ 120 kg

3.3 Documentation and drawings

SWA2000C-OPM-060602E	SWA2000 Operation manual
SWA2000C-THB-060601E	SWA2000 Technical manual

3.4 Software

3.4.1 Verification information

The software version for the SWA2000C unit can be checked via the software menu and shall be C060602.

3.4.2 Securing

The calibration and setup parameters can only be accessed via the jumper designated X1A Lock.

4 **PERIPHERAL DEVICES AND INTERFACES**

4.1 **Interfaces**

The instrument may have the following interfaces:

- Load cell connection (4 or 6-wire)
- RS422 / RS485
- AT25 display connection
- Profibus
- Control I/Os

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-006) 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
Reference accuracy class, Ref(x)
Accuracy class X(x)
Maximum capacity (Max)
Minimum capacity (Min)
Rated minimum fill (MinFill)
Scale interval (d)

Maximum tare (T)
Type designation
Serial number
Manufacturers mark or name
Certificate number
Information in respect of the conditions of use (climatic environment, EM classification, power supply, pressure, rate of operation, number of fills when applicable)

5.2 The instrument shall be permanently installed or shall be provided with a level indicator.

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 The 'CE' mark shall be impossible to remove without damaging it. The rating plate shall be impossible to remove without it being destroyed.

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

6.2 Components that may not be dismantled or adjusted by the user (load cell connection, calibration jumper) must be secured by either a wire and seal or a 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

There are currently no authorised alternatives.

8 ILLUSTRATIONS

Figure 1 SWA2000C analogue data processing unit
Figure 2 AT25 display unit
Figure 3 Numeric keyboard with function keys

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0121	06 August 2012	Type examination certificate first issued.

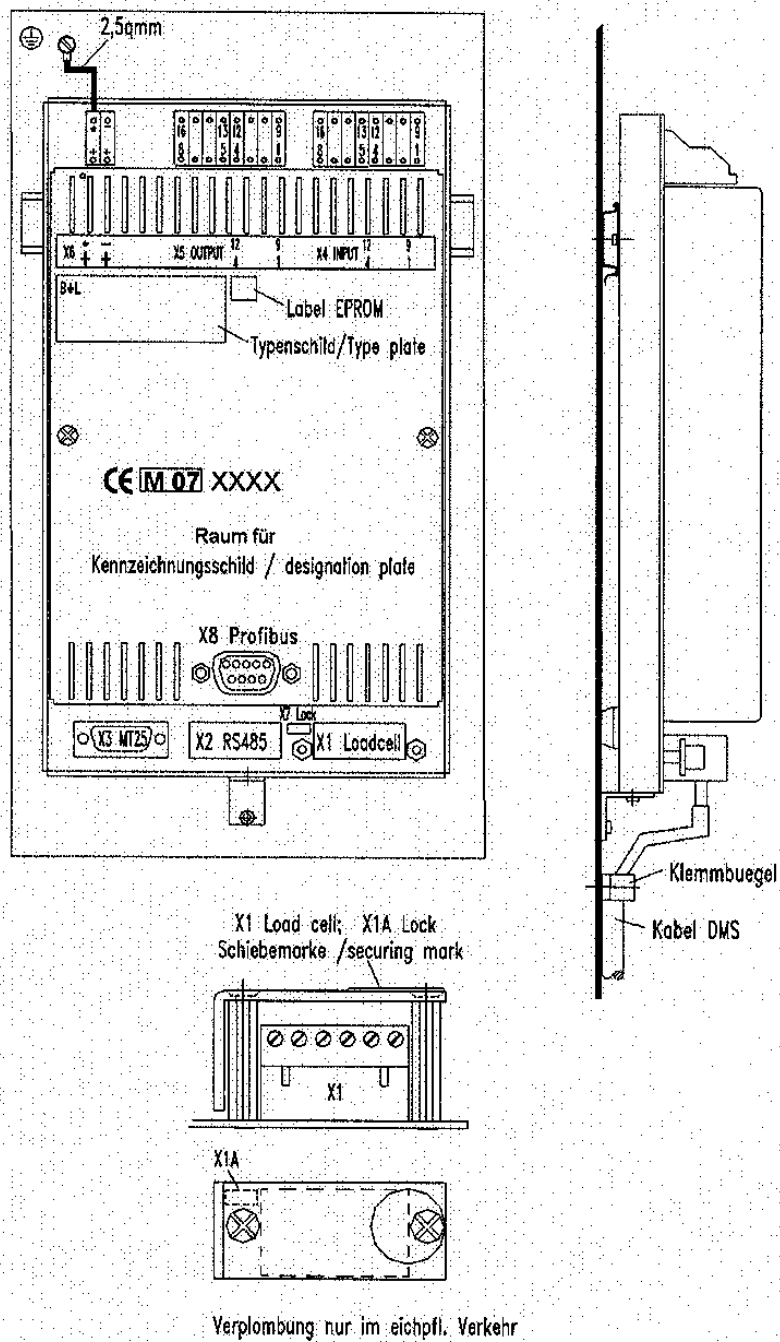


Figure 1 SWA2000C analogue data processing unit

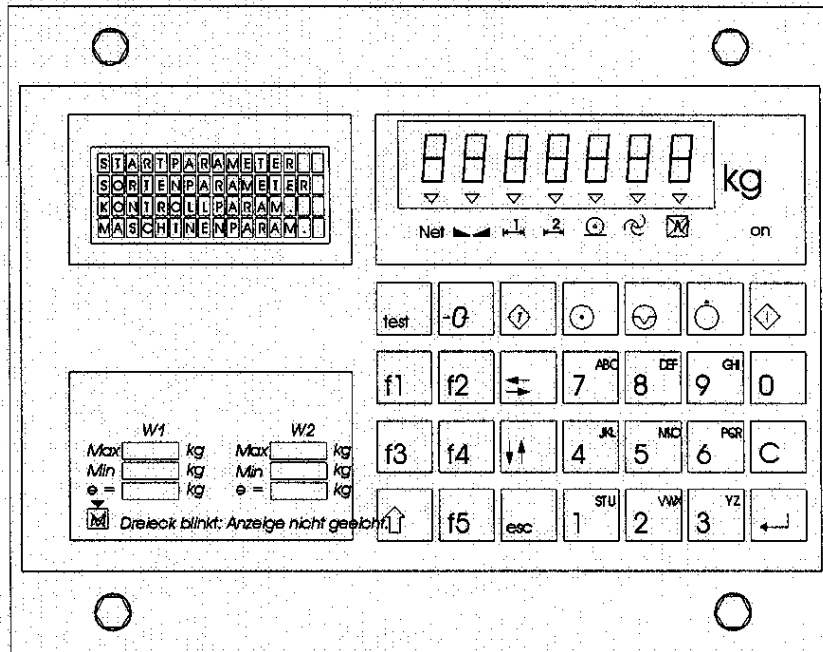


Figure 2 AT25 display unit

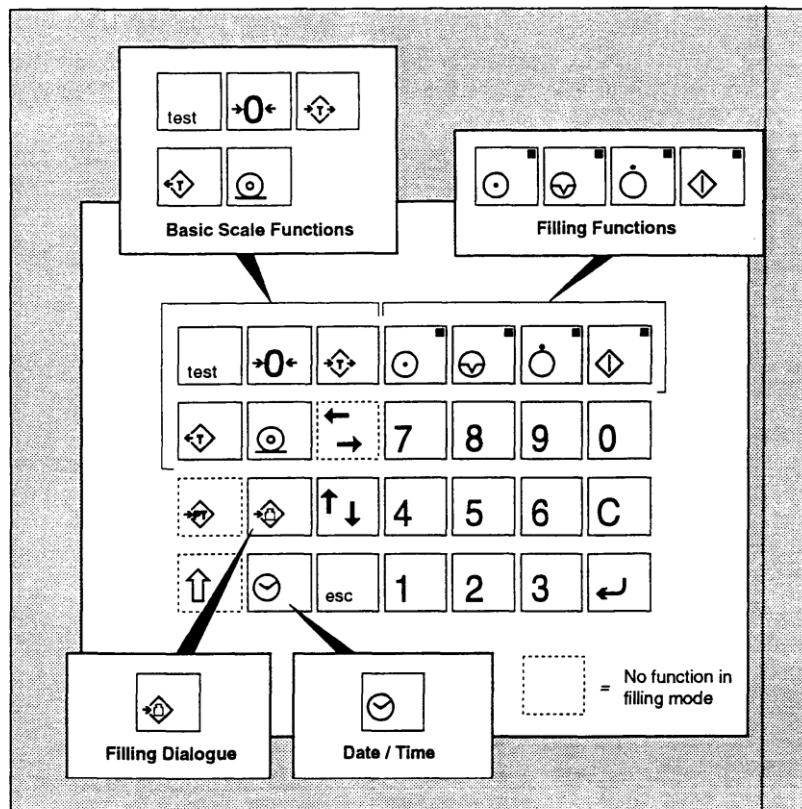


Figure 3 Numeric keyboard with function keys