



## The National Weights & Measures Laboratory

# TEST CERTIFICATE NUMBER GB-1303

**Issued by:** National Weights and Measures Laboratory  
Stanton Avenue  
Teddington  
Middlesex TW11 0JZ  
United Kingdom

Notified Body Number 0126

**In accordance With** Paragraph 8.1 of the European Standard on Metrological Aspects of Non-automatic Weighing Instruments EN45501:1992. The applied error fraction  $p_i$  with reference to paragraph 3.5.4 of this standard is 0.5.


**Applicant:** Avery Weigh-Tronix Ltd  
Foundry Lane  
Smethwick  
West Midlands B66 2LP  
United Kingdom

**In respect of:** The model of an **Indicating Device** tested as a part of a weighing instrument.  
Manufacturer: See applicant  
Type: GSE 350-Series

**Characteristics:** Suitable for a non-automatic weighing instrument with the following characteristics:  
 $n \leq 6000$  for Class III or IIII instruments

**Description and documentation:** The Indicating device is described in the Descriptive Annex. Documents appertaining to this test certificate are held by the National Weights and Measures Laboratory.

**Remarks:** The Indicator has been tested and found to conform to the relevant parts of EN45501 and WELMEC Guide 2.1. A summary of the tests performed in support of this Test Certificate is provided in the Appendix to the Descriptive Annex.

**Signature:**   
P R Dixon  
for Chief Executive  
National Weights and Measures Laboratory

**Date:** 19 March 2009  
**Reference:** T1127/0026

# Descriptive Annex

## 1 INTRODUCTION

This indicating device is designated the GSE 350-Series. It is designed to be used as part of a single range, Class III or IIII, non-automatic weighing instrument. The indicator is self-indicating and DC or mains-powered.

## 2 FUNCTIONAL DESCRIPTION

### 2.1 Construction

The GSE 350-Series family of controllers comprises the GSE 350 Stainless Steel, 355 Stainless Steel, 350 Zinc Die Cast models (Figure 1), and the 350IS and 355IS models. The IS suffix denotes the intrinsically safe versions designed for hazardous area applications which are only available in stainless steel enclosures.

The front panel has an LED, LCD or backlit LCD display and a keypad. The front panel displays the weight and user information. The GSE 355 SS enclosure is larger than the GSE 350 SS enclosure to accommodate a larger keypad.

The standard SS versions have an integrated power circuit to enable them to be powered via mains or dc input whereas the Zinc Die Cast version has an external mains adaptor and can only operate off low ac or dc voltage. The IS models have external power supplies; either rechargeable batteries or mains adaptors.

### 2.2 Devices

This indicator has the following devices:

- Semi-automatic zero setting
- Zero tracking
- Semi-automatic subtractive tare weighing/balancing
- Preset tare (GSE 355 SS only)
- Indication of stability of equilibrium
- Zero indicator
- Printing key
- Counting mode

### 2.3 Functions

#### 2.3.1 Power up

At switch on, the system goes through a standard check, making any defect obvious.

#### 2.3.2 Display

The indicator displays a weight up to a value not exceeding Max +9 e. Any weight above this results in an error message being displayed.

Negative weight values are indicated with a minus sign.

### 2.3.3 Semi-automatic zero-setting device

The “ZERO” key on the keypad sets zero. A successful zero can only be set if the weight value is stable. A zero weight is then displayed and the zero indicator is ON.

The zero-setting range must be set to 4 % of maximum capacity or less (audit trail-protected parameter).

### 2.3.4 Zero tracking device

Zero tracking operates when the indication is at zero, or at a negative Net value equivalent to Gross zero, when the weight display is stable. The range of zero-tracking must be set to 4 % of maximum capacity or less (audit trail-protected parameter).

### 2.3.5 Semi-automatic tare weighing/balancing device

The Tare key on the keypad initiates the semi-automatic subtractive tare device. The indicator displays the net weight with a “Net” indication. It is possible to temporarily display the tare value by selecting parameter P2.

### 2.3.6 Pre-set tare device

The pre-set tare value must be keyed in and the tare key pressed. The tare value should be designated “PTare” if a print-out is produced.

### 2.3.7 Stability of equilibrium

The “Motion” indicator is ON whenever the weight is unstable, all devices are inoperable until the weight is stable. Data output to printers or other devices recording static weight should be inhibited until stability is achieved (audit trail-protected parameter).

### 2.3.8 Out of level indication

When a tilt switch is connected to the remote input and the instrument is configured appropriately at parameter P800 then the display will show “Out of level” if the switch contacts are not made.

## 2.4 Documentation/Drawings

Technical Reference Manual

Version 1.0

## 3 TECHNICAL CHARACTERISTICS

### 3.1 Technical data

Power supply (std stainless steel models)	10-36 VDC or 90-250 VAC
Power supply (zinc die-cast models)	12-36 VDC or 12-26 VAC
Power supply (IS models)	5.2-12 VDC (external battery or mains adaptor)
Maximum tare (gross weigher only)	-100% Max

Maximum number of scale intervals	6000
Load cell excitation voltage - std models	$\pm 5$ VDC (10 VDC)
- IS 5V	$\pm 2.5$ VDC (5 VDC)
- IS 8V	$\pm 4$ VDC (8 VDC)
Minimum load cell impedance	43 $\Omega$
Maximum load cell impedance	1100 $\Omega$
Minimum input voltage per scale interval - std models	0.83 $\mu$ V
- IS 5V	1.66 $\mu$ V
- IS 8V	1.04 $\mu$ V
Measuring range minimum voltage	0 mV
Measuring range maximum voltage	200 mV
Fraction of maximum permissible error	$P_{ind} = 0.5$
Operating temperature range	-10°C to +40°C
Load cell connection	4-wire or 6-wire shielded

### 3.2 Power supply

Stainless Steel versions have an integrated power circuit to enable them to be powered via mains or dc input whereas the Zinc Die Cast version has an external mains adaptor and can only operate off low ac or dc voltage. IS versions have an external battery or external mains adaptor.

## 4 INTERFACES

The instrument may be fitted with the following protected interfaces:

- RS232/RS485
- Ethernet (as a module connected to above port)
- Fibre optic module
- Digital inputs and outputs for interfacing with external equipment as follows:
  - 1 control input for initiating zero, print, tare, or out of level indication from a remote switch
  - Additional 3-channel output module
  - 1 additional analogue output (0/4-20mA or 0-10V)

## 5 SOFTWARE

**5.1** The GSE 350-Series controller comprises a firmware program including built-in functions which can be set up for particular application. All legally relevant weighing programs are included in the firmware and are not modified. The firmware program is a self-contained system that stores the NAWI mode of operation, all legally relevant parameters are protected by an audit trail counter.

**5.2** The firmware stores the NAWI mode of operation, the version number for this NAWI element is displayed by keying in 60101 and pressing the Select/Mode key; the last three digits must show the current version of 168.

**5.3** Calibration and configuration of the indicator is password protected to prevent unauthorised access to these facilities. An “audit trail” number is updated each time the instrument is calibrated or configured (whenever legally relevant data is changed), which can be accessed by keying in 60201 and pressing the Select/Mode key, this number is then written on a “tamper-evident” label located on the instrument at every change.

## **6 LOCATION OF CE MARK AND INSCRIPTIONS**

**6.1** The instrument shall bear the following legends near the display of the weighing result:

Max  
Min  
e =  
T (if ≠ - Max)

**6.2** The instrument shall bear the following legends:

CE mark  
Green M  
Accuracy class  
Serial number  
Manufacturer’s mark or name

## **7 LOCATION OF SEALS AND VERIFICATION MARKS**

**7.1** The rating plate should be located on the indicator so that it is easily accessible and clearly visible in its regular operating position. The CE mark shall be impossible to remove without damaging it. The data plate shall be impossible to remove without it being destroyed.

The markings and inscriptions shall fulfil the requirements of Paragraph 1 of Annex IV of the Directive 90/384/EEC.

**7.2** There are two methods of securing the instrument on verification, either by recording the audit trail counter or by setting the “PROG” switch on the main board to “NO” and applying a wire and seal as described in the technical manual. If the audit trail counter on the instrument increases above that recorded or if the recorded value is removed then this has to be considered as a broken seal. The two methods of securing are equivalent in the context of this approval.

**7.3** Components that may not be dismantled or adjusted by the user (load cell connection, junction box) are secured by either a wire and seal, or by a tamper evident label and securing mark. The securing mark consists of a mark of the manufacturer and/or manufacturer’s representative.

## **8 ALTERNATIVES**

There are currently no alternatives.

## 9 ILLUSTRATIONS

Figure 1 GSE 350-Series controllers

## 10 TEST CERTIFICATE HISTORY

<b>ISSUE NO.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
GB-1303	19 March 2009	Test Certificate first issued.
-	-	No revisions have been issued.

## APPENDIX TO DESCRIPTIVE ANNEX

### TESTS CARRIED OUT

The following tests were performed with the indicators connected to a weighing platform.

#### GSE 355 Stainless Steel model:

EN45501 Ref	Test	Report number
B.3.1	Short time power reductions	SN 1077 (NWML)
B.3.2	Bursts	SN 1077 (NWML)
B.3.3	Electrostatic discharges	SN 1077 (NWML)
B.3.4	Immunity to radiated electromagnetic fields	SN 1077 (NWML)

#### GSE 350 Zinc Die Cast model:

EN45501 Ref	Test	Report number
B.3.1	Short time power reductions	SN 1078 (NWML)
B.3.2	Bursts	SN 1078 (NWML)
B.3.3	Electrostatic discharges	SN 1078 (NWML)
B.3.4	Immunity to radiated electromagnetic fields	SN 1078 (NWML)



**Figure 1 GSE 350-Series controllers**