SEALING

REFERENCE


GENERAL

Electronic weighing devices must have provisions that ensure a security seal must be broken before any adjustment affecting the performance of the device can be made. Alternately, an audit trail may be provided that indicates when such an adjustment has been made. Not all parameters need be sealed. Metrological parameters that can affect measurement, features which may introduce a significant potential for fraud and adjustments that may allow use of the device beyond that appropriate for its design and intended use, shall be sealed.

Usually, adjustment and configuration parameters that require sealing are located in, or accessed through, the electronic indicator of a device. In some cases, other external transducers may also affect the accuracy of the final weight determination. In these cases, access to these components must be sealed. The suitability of the sealing means for electronic indicators, components parts and complete devices, is evaluated by the Approval Services Laboratory (ASL), which ensures that devices have adequate provision for the application of security seals. Instructions and the method of sealing devices can be found in the Notice of Approval (NOA).

Field inspectors must ensure that devices are sealed in the proper manner. For instance, junction boxes that contain means (e.g. potentiometers, rheostats, resistors, etc.) for balancing load cells or adjusting other measured values must be sealed. Some device types are not sealable using physical seals. These devices are provided with event counters or electronic audit trails that record access to the calibration mode and changes to the configuration or calibration parameters. In such instances, the inspector records the numbers indicated by the event counters and obtains a print out of the events recorded by the electronic audit trail for further reference.
SEALING

EXTRACTS FROM THE APPROVAL EVALUATION MANUAL - NON-AUTOMATIC WEIGHING DEVICES

Detailed requirements extracted from the Approval Evaluation Manual - Non Automatic Weighing Devices are provided below to ensure uniform and consistent application of the sealing requirements in the field. Note that for consistency, the numbering of the following sections corresponds to the numbering used in the Approval Evaluation Manual - Non Automatic Weighing Devices.

4.1 PHILOSOPHY FOR SEALING

The decision as to whether or not a method of access represents a "significant potential for fraud" and an access point requires sealing, is based on the following philosophies.

4.1.1 The need to seal specific features depends upon:

(a) The ease with which the feature or the selection of the feature can be used to facilitate fraud; and

(b) The likelihood that the use of the feature will result in fraud not being detected.

4.1.2 Features or functions that are routinely used by the operator as part of device operation, such as the setting and maintaining of unit prices in price look-up codes, are not sealable parameters.

4.1.3 If the selection of a parameter (or a set of parameters) would result in performance that would obviously be in error, such as the selection of parameters for different languages/countries, then it is not necessary to seal the selection of these features.

4.1.4 If individual device characteristics are selectable from a "menu" or a series of programming steps, then access to the "programming mode" must be sealable.

4.1.5 If a device must undergo a physical act, such as cutting a wire and physically repairing the cut to reactivate the parameter, it would be considered an acceptable way to select parameters without requiring a physical seal or an audit trail.

4.2 SEALABLE PARAMETERS ON NON-AUTOMATIC WEIGHING DEVICES

The following examples of adjustments, parameters and features to be sealed are to be considered "typical" or "normal". The list is not intended to be all inclusive and any other parameters that may affect the metrological functions of a device must be sealed.

If listed parameters or other parameters which may affect the metrological function of a device are not to be sealed, the manufacturer must demonstrate that the parameter will not affect the metrological performance of the device.
SEALING

SCALE FEATURES AND PARAMETERS

Typical Sealable Parameters

Coarse zero
Span
Linearity correction points
Motion detection (on/off bandwidth)
Scale interval d (or location of the decimal point)
Number of scale intervals
Range of overcapacity
Manual weight entries (on/off)
AZTM (on/off and range of a single step)
Zero and AZTM total range (if the range can be set for more than 4% and if this increases the weighing capacity)
Filter (number of samples averaged for weight readings)
Filter (averaging time for weight indications)
Units of measurement (if not displayed or printed on the primary register)
Speed transducers on integrating devices

Typical Features or Parameters Not Required to Be Sealed

Product codes
Commodity unit prices
Zero and AZTM total range (if the range can be set for more than 4% but this does not increase the weighing capacity)
Display update rate
Selection of tare feature operation (keyboard push button or automatic tare (on/off))
Weigh-in/weigh-out operation (on/off)

4.3 OTHER MECHANISMS REQUIRING SEALING

4.3.1 Junction boxes that have adjustment parameters (potentiometers, rheostats, resistors or software configuration, etc.) must have provisions for applying security seals.

4.3.2 In the case of a complete scale consisting of an electronic indicator and a load receiving element incorporating a junction box or load cells that have built-in calibration/configuration capabilities, and for which the parameters can be changed "remotely" through the indicator keyboard, there must be provisions to seal load cell cables to the indicator and junction box.

4.3.3 If the device is equipped with an automatic or semi-automatic calibration mechanism, the mechanism must be inside the device and there must be provisions to apply security seals so that neither the mechanism nor the calibration process can be altered.
Sealing

Note - Automatic and Semi-Automatic Calibration Mechanism

An automatic or semi-automatic calibration mechanism is allowed provided the calibration mechanism is internal to the device and neither the mechanism nor the process can be manipulated in a fraudulent manner.

Procedure

Using the calibration mechanism, attempt to calibrate the device when the device is off level, when there is a load on the platter and when the weight indication is in motion. Also attempt to put a small load on the platter while the internal mechanism performs a calibration.

Interpretation of Results

No erroneous calibration may result from such manipulation.

4.4 Physical Seals

Physical seals comprise “lead and wire” seals, pressure sensitive seals, etc. They may be used to seal certain device categories, features and mechanisms (see section 4.3).

4.4.1 Seals must be readily accessible and observable. Devices must be sealable in a manner that does not require disassembly or moving of the device to gain access to the adjustments. However, removing a protective cover plate to access a junction box is acceptable. The removal of a cover plate must be simple and not require excessive effort or the use of special tools.

4.4.2 On small devices the means of sealing may be under the platter, if the platter can be lifted easily, under the scale or at the back of the scale if the scale is designed so that it can be turned upside down without damage to remove or apply security seals. When a “lead and wire” seal is located under the platform, there must be ample clearance to eliminate the possibility of interference between the seal and the platform.

4.4.3 When two bolts are used for a “lead and wire” seal, it must be impossible to remove either bolt without breaking the seal. A free standing bolt (a bolt which passes through a panel and is fixed in place with a nut on the opposite side of the panel) is not acceptable.

4.4.4 Pressure sensitive seals are acceptable under certain conditions. If they cover a hole (e.g., through which a “calibration enable” switch would be activated) the hole must be covered with a suitable rigid plug. The seal must be fully supported and not so as to leave cavities or air pockets under the seal. Cavities and air pockets are weak points that could cause the seal to be easily damaged (see the illustration below).
**SEALING**

(1) Pressure sensitive (paper) seal
(2) Keylock
(3) Air pocket (void space)
(4) Casing

4.4.5 A pressure sensitive security seal is not suitable in an adverse environment (rain, cold, washdown, etc.).

4.5 **SEALING ELECTRONIC DEVICES**

Electronic devices may be "sealed" by means of an audit trail. The audit trail must comply with the minimum requirements contained in the *Terms and Conditions for the Approval of Metrological Software*. For devices sealed by means of an audit trail, the inspector should refer to the Notice of Approval (NOA) for the device in question.

The terms used in the Notice of Approval are defined in the *Terms and Conditions for the Approval of Metrological Audit Trail*. 
SEALING

REVISIONS

The purpose of revision 2 is to:

- add sealing requirements for speed transducers and other similar ancillary equipment.

- make several grammatical changes to the "General" section to clarify requirements.

The purpose of revision 1 was to:

- change "Draft Specifications" to "Terms and Conditions", as appropriate.
