Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 6/14B/34

Issued by the Chief Metrologist under Regulation 60 of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Systeco Fabrication Model STDEQ-BAT01-00 Discontinuous Totalising Automatic Weighing Instrument

submitted by Systeco Australia Pty Ltd
3a/20 Lillian Crescent
Kensington QLD 4670

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 107, *Discontinuous Totalising Automatic Weighing Instruments (Totalising Hopper Weighers)*, dated July 2004.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	05/03/25
1	Validity extended & variant 1 provisionally approved – certificate issued	04/07/25
2	Pattern & variant 1 approved – certificate issued	04/08/25

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/14B/34' and only by persons authorised by the submittor.

Instruments purporting to comply with this approval and currently marked 'NMI P6/14B/34' may be re-marked 'NMI 6/14B/34' but only by persons authorised by the submittor.

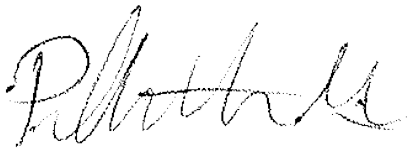
It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0B.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to the instrument shall be within the limits specified herein and in any approval documentation for the components where they are approved separately.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.



Phillip Mitchell
A/g Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 6/14B/34

1. Description of Pattern provisionally approved on 05/03/25 approved on 04/08/25

A Systeco Fabrication model STDEQ-BAT01-00 Class 0.5 discontinuous totalising automatic weighing instrument (DTAWI) (Figure 1) having a weigh hopper of 200 kg maximum capacity.

The instrument is installed in a permanently fixed location.

Note: This approval has been granted with reference to document NMI R 107, *Discontinuous Totalising Automatic Weighing Instruments (Totalising Hopper Weighers)*, dated July 2004. The following description is intended to introduce terms used in this Certificate and Technical Schedule which may be additional to those in that document but which are consistent with the terminology in the document.

The system aims to provide a *bulk load delivery* using a particular automatic *delivery sequence* (the term 'delivery' may also be taken to refer to 'receipt').

This sequence involves the totalisation of the results of a number of *discrete load deliveries* or *weighing cycles*, each of which involves the division of the bulk product into *discrete loads*, according to a *target discrete load* the mass of which is then determined by weighing to give the *discrete load delivered* following which the product is discharged to the bulk output. Note that the *target discrete load* may be achieved by stopping or slowing the bulk product delivery prior to the *target discrete load* value being reached according to *discrete load target shutoff adjustments* (such as inflight adjustments or slow flow pre-sets).

Each *discrete load delivered* is totalised (at any time this may be termed the *cumulative totalisation*).

The *target discrete load* is generally a pre-selected value that is the same for most of the *discrete load deliveries* (this may be termed the *pre-selected target discrete load*). However for the final one delivery in the *bulk load delivery* the *target discrete load* may differ. In addition, arrangements for stopping or slowing the bulk product delivery prior to the *target discrete load* value being reached may vary for the final discrete delivery in the delivery sequence according to *target totalised load shutoff adjustments* (such as inflight adjustments or slow flow pre-sets).

The *totalised bulk load delivered* may be the quantity measured without a particular target totalised load.

The *totalised bulk load delivered* is the cumulative totalisation (sum of all discrete loads delivered), in the complete *bulk load delivery*. The transaction is based on the *totalised bulk load delivered* (not the *target totalised load*).

1.1 Details

The STDEQ-BAT01-00 instrument is a Class 0.5 discontinuous totalising automatic weighing instrument having a weigh hopper with a maximum capacity of 200 kg.

The instrument is approved for use with a minimum totalised load (Σ_{min}) of not less than 100 kg and a totalisation scale interval of 0.1 kg. The instrument has a minimum capacity of 100 kg, and is set to have a *target discrete load* of from 100 kg to 180 kg.

The STDEQ-BAT01-00 instrument permanently records the *totalised bulk load delivered* and the net value of each discrete load delivered. This information can be sent to a printer if required.

Note: The discrete load values are NOT approved for trade use. The totalised bulk load delivered (a total of the discrete load delivered values) is the value approved for trade use.

1.2 Weighing System

The pattern comprises components as described below.

(a) A weigh hopper with out-feed gate, using four (4) Zemic model H8C-C3-200kg shear beam load cells (Figure 2) of 200 kg maximum capacity. The load cells are also described in the documentation of approval NMI S752. The load cells are located symmetrically around the weigh hopper.

(b) A SysTec model IT8000E digital indicator (Figure 3) for the weighing system (the digital indicator is also described in the documentation of approval NMI S556). The indicator is fitted with associated networking and input/output modules as necessary to control gates of the hoppers, interface with relevant sensors (e.g. upper garner fill level), and communicate with any plant control system, computer, printer etc.

(c) The SysTec model IT8000E mentioned in (b) above operates with Systeco BW Program software (Version V2) which utilises the weight readings provided by the indicator to determine the discrete load values and totalises them to determine the *totalised bulk load delivered*, and stores the weighing data.

(e) The SysTec model IT8000E mentioned in (b) above incorporates an operator interface by which the operator can control the system, and access the weighing data.

(f) Actuators and associated position sensors to control the product in-feed and the out-feed gates for the weigh hopper. (*)

(*) For items marked (*) above, ‘Compatible and Equivalent’ equipment may be used. ‘Compatible and Equivalent’ refers to equipment of the same or better specifications, requiring no changes to software for satisfactory operation of the complete system.

1.3 Indicator and Weighing Control Arrangements

The SysTec model IT8000E indicator running Systeco BW Program software is self-sufficient for operating the bulk weigher and recording the weight data from the digital indicator. The unit controls the weighing sequence; including checking of various aspects of the system operation (blocked chutes, gates open or closed as appropriate).

The IT8000E may interface with equipment which controls other aspect of plant operation, provides a red banner to the operator if any issues are detected in the weighing process.

The Systeco BW Program software uses inputs from the system to determine when no further product delivery is required (e.g. when the no further product is available, the discharge receptacle is full, or sufficient product has been supplied).

Weight data from the IT8000E is used by the Systeco BW Program software to determine the discrete load values, totalise them to determine the *totalised bulk load delivered*, and store this weight data.

Where sufficient product has been delivered, the Systeco BW Program software finalises the delivery and totalises the discrete load deliveries to form the *total bulk load delivered* value.

The weight data, together with information regarding the weighing sequence status, may also be provided to the plant system, which may retrieve weight data for printing if required. In addition the Systeco BW Program software maintains a record of every completed weighing cycle. The record consists of the weight value, date, time and an identification number, which cannot be deleted or changed on the indicator.

The system has provision for a number of additional modes:

Feed through mode

In which the system simply feeds product, the product delivery is not totalised. This mode is not for trade use (no transaction record is generated).

Manual operation

In which the gates of the system may be manually operated, outside the normal operation sequence, the product delivery is not totalised.

These modes are not approved for trade use.

1.4 Operation

An overview of the sequence of operation of the system is shown in Figure 5.

The system is considered to be a discontinuous totalising automatic weighing instrument as it follows a predetermined program of automatic processes characteristic of the instrument. The product is weighed by individual discrete loads, which are totalised to determine the bulk product weighed. Where all the product has been delivered, the operator presses the 'Register' button on the IT8000E indicator. The last batch is then added to the totalised load. The Systeco BW Program software finalises and totalises the discrete load deliveries to form the total bulk load delivered value.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

Provision is made for the calibration adjustments to be sealed by the use of at least two destructible adhesive labels one at each side of the back cover plate of the indicator (Figure 4a).

The calibration parameters are stored within the ADM module for each platform. The ability to change these parameters is inhibited when the jumper 'W1' on each ADM module is in the protected location (connecting pins 1 and 2, as shown in Figure 4b).

1.7 Descriptive Markings and Notices

(a) Instruments carry the following markings, grouped together in a clearly visible place on the instrument, either on a descriptive plate fixed near the indicating device or on the indicating device itself:

Manufacturer's mark or name written in full	Systeco Fabrication
Importer's mark or name written in full	Systeco Australia
Indication of accuracy class	0.5

Pattern approval mark for the instrument	NMI 6/14B/34
Model number	STDEQ-BAT01-00
Serial number of the instrument	.....
Maximum capacity	*Max* = 200 kg (#)
Minimum capacity	*Min* = 100 kg (#)
Totalisation scale interval	d_t = ... kg (#)
Minimum totalised load (not less than)	Σ_{min} = 100 kg
Material to be measured	.....

(#) These markings shall also be shown near the display of the result if they are not already located there.

(b) Instruments carry a notice visible to the operator stating TARGET DISCRETE LOAD SHALL BE xxx kg to yyy kg ONLY, or similar wording (where xxx and yyy are in the range of 100 kg to 180 kg).

Note: Markings for variants vary according to particular characteristics.

1.8 Software

Instruments are fitted with Systeco BW Program software and SysTec weighing software.

1) The Systeco BW Program software is designated V2.

   The Systeco BW Program software version can be seen by selecting the 'Settings' function from the main menu/home screen. The Systeco BW Program software version number will be displayed (Figure 7).

2) The SysTec weighing software is identified by a checksum number 15487782 and designated version V4.x.y, where 'x.y' refers to the identification of non-legally relevant software.

   The software checksum and version can be seen by pressing and holding weight display for minimum 2 seconds (the identification is displayed momentarily), and then pressing the right arrow button, the software checksum and version are displayed.

2. Description of Variant 1 — provisionally approved on 04/07/25, approved on 04/08/25

The pattern (STDEQ-BAT01-00) as a class 0.5 discontinuous totalising automatic weighing (DTAWI) instrument having a weigh hopper of 200 kg maximum capacity, a totalisation scale interval (d_t) of 0.2 kg. The instrument is set to have a *target discrete load* in the range of 100 kg to 180 kg, and shall have a minimum totalised load value (Σ_{min}) of no less than 100 kg.

TEST PROCEDURE No 6/14B/34

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

Where a specific National Instrument Test Procedure for DTAWI does not exist, an appropriate test procedure (e.g., Inspectors Handbook Test Procedure No 22) shall be used and a copy of Test Procedure No 22 should be requested from NMI.

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

Application of Inspectors Handbook Test Procedure No 22 Clause 5.2

Weighing Performance Tests

The following test procedure assesses the weighing performance of the DTAWI with the type of material that it is intended to weigh. The performance tests shall be carried out in accordance with *separate verification method* only.

A minimum of 3 material weighing tests is required as specified below.

Maximum Target Discrete Load

This test procedure assesses the weighing performance operating with maximum target discrete loads.

1. Determine the number of weighing cycles required to deliver the minimum totalised load (Σ_{min}) when operating with maximum target discrete loads (Max_T) as follows:

$$N_{Max} = \frac{\Sigma_{min}}{Max_T}$$

where N_{Max} is rounded up to the next integer.

2. Perform a weighing test with a target discrete load of Max_T and a target totalised load of Σ_{min}.
3. If N_{Max} is less than 5, perform an additional material weighing test with a target discrete load of Max_T and a target totalised load of $5 \times Max_T$.

Minimum Target Discrete Load

This test procedure assesses the weighing performance operating with minimum target discrete loads.

1. Determine the number of weighing cycles required to deliver the minimum totalised load when operating with minimum target discrete loads (Min_T) as follows:

$$N_{Min} = \frac{\Sigma_{min}}{Min_T}$$

where N_{Min} is rounded up to the next integer.

2. Perform a weighing test with a target discrete load of Min_T and a target totalised load of Σ_{min}.

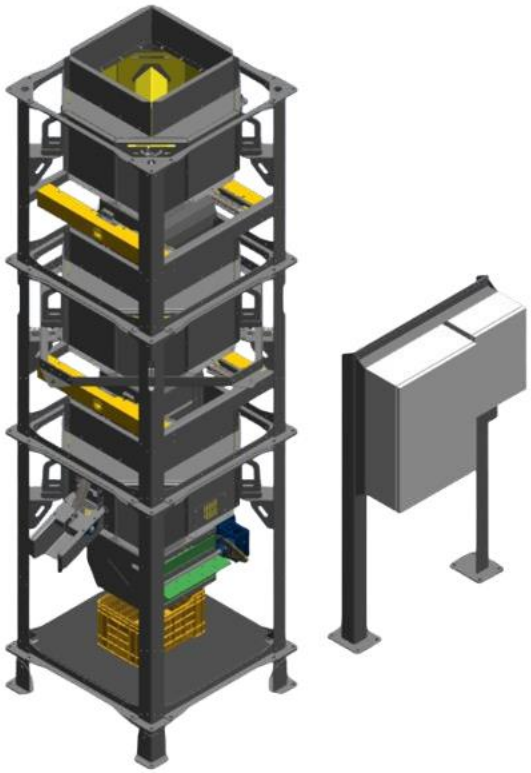
3. If N_{Min} is less than 5, perform an additional weighing test with a target discrete load of Min_T and a target totalised load of $5 \times Min_T$.

Additional Test

In some cases the above procedure may indicate only two tests to be performed. To achieve three material tests in total, perform an additional weighing test with target totalised load of Σ_{min} and a target discrete load value which is standard or typical for the installation. If it is difficult to arrive at a standard value then use Min_T.

Note: For some types of instruments the quantity delivered (target totalised load) must be an integer multiple of the discrete load. In this case unless the minimum totalised load is an integer multiple of the discrete load, it may be necessary to use the next larger possible test load (which is an integer multiple of the discrete load).

FIGURE 6/14B/34 – 1



Systeco Fabrication Model STDEQ-BAT01-00 Discontinuous Totalising Automatic Weighing Instrument

Typical Integration Installation With Sampling Crate Conveyor

FIGURE 6/14B/34 – 2

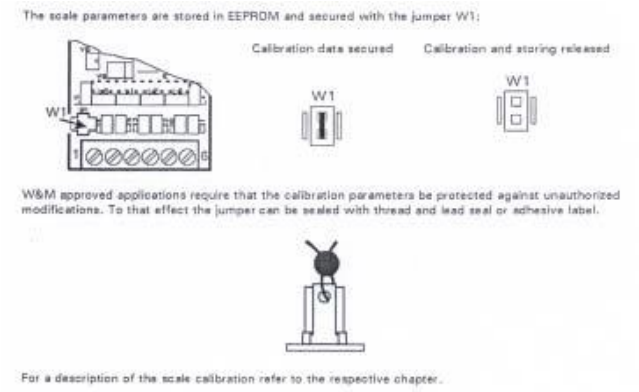
Load Cell & Load Cell Mounting

FIGURE 6/14B/34 – 3

SysTec Model IT8000E Digital Indicator

FIGURE 6/14B/34 – 4

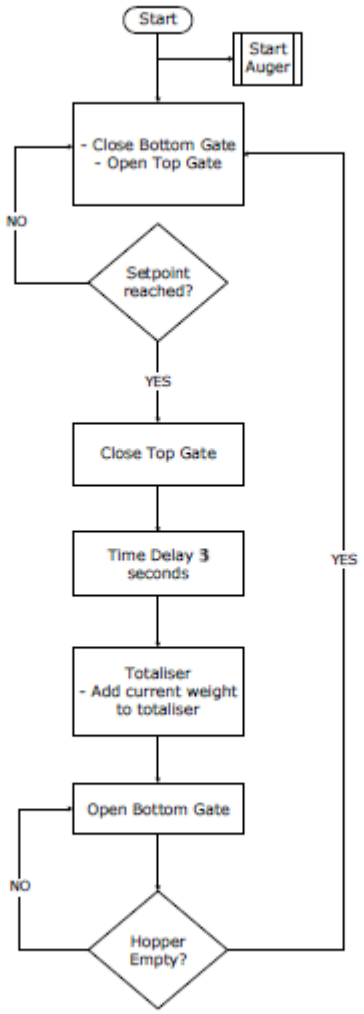
(a) Typical Sealing of SysTec Model IT8000E Digital Indicator



(b) Showing Jumper W1 Sealing – Model IT8000E

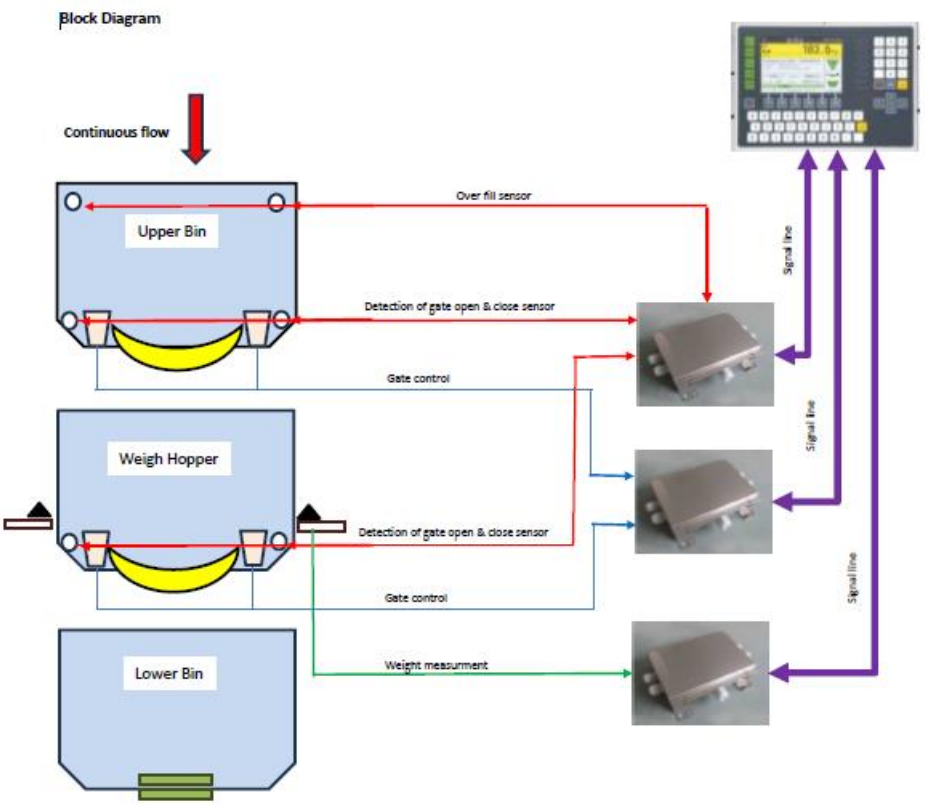
Typical Sealing Methods

FIGURE 6/14B/34 – 5



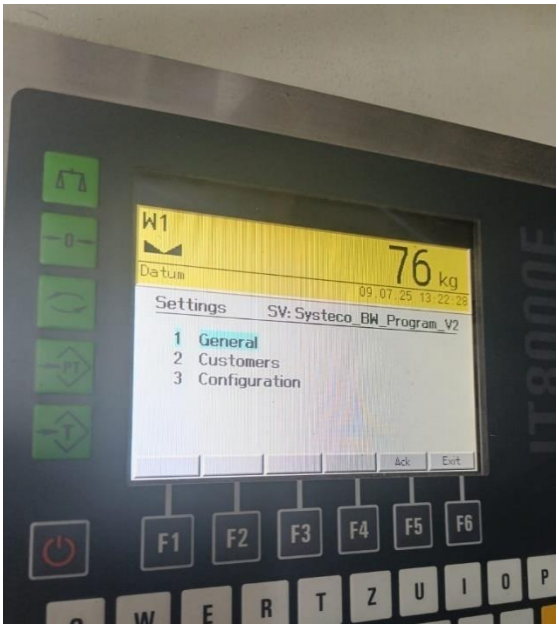
System Operation Flowchart (Overview)

FIGURE 6/14B/34 – 6



Model STDEQ-BAT01-00 Weighing Instrument - System Overview

FIGURE 6/14B/34 – 7



Systeco BW Program Software Version

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