



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval NMI 6/20A/10

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.

Botek Systems Model B6-KV Wheeled Loader Weighing Instrument

submitted by E-max (Aust) Pty Ltd
Factory 1, 69 Acacia Road
Ferntree Gully VIC 3165

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 51, *Automatic Catchweighing Instruments*, dated August 2009.

This approval becomes subject to review on 1/03/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 2 approved – certificate issued	7/02/17

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/20A/10' and 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.

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

Special Conditions of Approval

For this type of instrument, the ability to perform within the specified maximum permissible errors may be influenced by characteristics of the vehicle or lifting system to which it is fitted.

It is the responsibility of the submittor (E-max) to exercise control over any installation to ensure compliance with this approval and to ensure performance within the appropriate maximum permissible errors.

In the event of unsatisfactory performance this approval may be withdrawn.

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



Mario Zamora

TECHNICAL SCHEDULE No 6/20A/10

1. Description of Pattern **approved on 7/02/17**

The Botek Systems model B6-KV class Y(b) automatic catchweighing instrument (Figure 1) of 150 kg maximum capacity with a verification scale interval of 1 kg. The minimum capacity is 10 kg.

The system is intended for the determination of the net weight of the contents of a waste bin picked up by (emptied into) a waste bin pick up vehicle, to which the instrument has been fitted. A transaction will generally be the result of a weighing of the full waste bin, with the result of the weighing of the empty waste bin subtracted from this. The system may also be suitable for other similar applications.

The system operates in dynamic mode and is intended to only weigh whilst the vehicle is not moving, and a sensor/interlock to ensure this is provided.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

1.1. Weighing Mechanism

The Botek Systems model B6-KV comprises a weighing module incorporating a Flintec model PC2H single point load cell (Figure 2a) of 2000 kg maximum capacity, mounted as part of the waste bin lifting mechanism at the rear of the vehicle (Figure 3a).

The system also includes one GEMAC Type AS1A accelerometer sensor (Figure 2b) to compensate weight values for out-of-level conditions, and one POSITAL FRABA Type MCD angle sensor (Figure 2c) to sense the location of the lifting mechanism and hence determine an appropriate 'weighing window' for the weight determination.

1.2 Weighing Indication

The weighing indication comprises Botek Systems model B6000 analogue data processing unit (Figure 4a) and a VGA LCD touchscreen display (Figure 4b) which provides the operator interface of the system and weight values.

The load cell and other sensors are connected to a Botek Systems model B6000 analogue data processing unit, which utilises data from the sensors to determine the weight value.

1.3 Power Supply

The system is powered from the power supply of the vehicle (24 V DC).

1.4 Data Storage/Printout

The system may incorporate a data storage device. For each weighing request weighing results together with identification including date and time are stored into the storage device. Alternatively (or in addition) a printer may be provided for printout of a receipt/transaction record.

Any printout shall comply with the requirements of NMI General Supplementary Certificate S1/0B.

1.5 Interfaces

Instruments may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 4.2.4 of document NMI R51 (the basic intent of which is that it shall not be possible to alter weighing results via the interfaces).

Any measurement data output from the instrument or its interfaces shall only be used for trade in compliance with Supplementary Certificate No S1/0B (in particular in regard to the data and its format).

Indications other than the indications of measured mass (i.e. gross, tare, net, totals) displayed either on the instrument or on an auxiliary or peripheral device, are not for trade use.

Instruments may be fitted with RS-232/485 serial data interfaces, USB and Ethernet.

1.6 Display Check

A display check is initiated whenever power is applied.

1.7 Sealing Provision

Provision is made for the calibration adjustments to be sealed.

- The acceleration sensor shall be sealed (using lead & wire or similar type seals) to restrict any change in position (Figure 5a).
- The angle sensor shall be sealed (using lead & wire or similar type seals) to seal against adjustment.
- The load cells shall be sealed (using lead & wire or similar type seals) to seal against replacement.
- The calibration switch within the B6000 unit shall be sealed by means of destructible adhesive labels placed over an access hole to the calibration switch and the opposite sides of a join in the B6000 housing (Figure 5b).

1.8 Verification Provision

Provision is made for the application of a verification mark.

1.9 Descriptive Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Botek Systems AB Sweden
Name or mark of manufacturer's agent	E-max (Aust)
Indication of accuracy class	Class Y(b)
Pattern approval number for the instrument	NMI 6/20A/10
Maximum capacity	Max kg *
Minimum capacity	Min kg *
Verification scale interval	e = kg *
Serial number of the instrument

- * These markings shall also be shown near the display of the result if they are not already located there.

1.10 Software

The software is designated version 2.0.12.

The instructions for accessing the software id are as follows (starting from the normal weighing mode):

- Press the 'Upward Pointing Arrow ↑' key.
- Press the '?' key and then the software ID information is displayed.

2. Description of Variant 1

approved on 7/02/17

The system with two weighing modules (each with its own load cell) fitted to the same lifting mechanism, and both operating through the same B6000 unit. Other sensors (e.g. accelerometer and angle sensors) may be shared between the two modules.

In this arrangement the system may operate in either weighing smaller bins individually (two may be weighed during the same lift), or weighing a single larger bin utilising both load receptors (Figure 1) where an additional sensor (Figure 3c) is provided which is intended to determine when a single larger bin is in use.

3. Description of Variant 2

approved on 7/02/17

With the system mounted to the side of the waste transport vehicle (Figure 6), in which case the system has 100 kg maximum capacity with a verification scale interval of 1 kg. The minimum capacity is 10 kg.

TEST PROCEDURE No 6/20A/10

Instruments shall be tested in accordance with any relevant tests for this category of instrument.

Maximum Permissible Errors

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

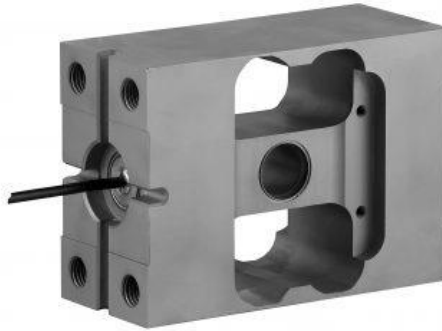
FIGURE 6/20A/10 – 1



Load Cell (Installed Behind The Load Receiver Frame)

Botek Systems Model B6-KV Wheeled Loader Weighing Instrument

FIGURE 6/20A/10 – 2



(a) Flintec Model PC2H Load Cell



(b) GEMAC Type AS1A Accelerometer Sensor



(c) POSITAL FRABA Type MCD Angle Sensor

FIGURE 6/20A/10 – 3



(a) Load Cell (Installed Behind The Load Receiver Frame)



(b) Sensors Located to Define Measuring Window



(c) Sensor for Identification of Weighing Single Large Bin

FIGURE 6/20A/10 – 4



(a) Botek Systems Model B6000 Processing Unit



(b) Botek Systems VGA Touchscreen Display

FIGURE 6/20A/10 – 5



(a) Lead and Wire Type Seal



(b) Seal of Botek Systems Model B6000 Processing Unit

Sealing Arrangements

FIGURE 6/20A/10 – 6



Example of Side-lift Configuration

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