Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

Certificate of Approval
NMI 6/20A/9

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.

Transport World Solutions AB Model WT1000 Weighing Instrument

submitted by Transport and Waste Solutions Pty Ltd
10 Hill Street
Glenbrook NSW 2773

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 76, *Non-automatic weighing instruments, Parts 1 and 2*, dated July 2004.

This approval becomes subject to review on 1/02/21, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variants 1 to 5 approved – certificate issued	23/02/16

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/20A/9' 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

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 (Transport and Waste Solutions) 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*.

Dr A Rawlinson

TECHNICAL SCHEDULE No 6/20A/9

1. Description of Pattern approved on 23/02/16

The Transport World Solutions AB model WT1000 is a class (III) single interval self-indicating non-automatic weighing instrument of 300 kg maximum capacity with a verification scale interval of 0.5 kg fitted to a waste bin pick-up vehicle (Figure 1). The minimum capacity of the instrument is 2.5 kg.

Note: If used for other than the weighing of waste or determination of a transport tariff or toll, the minimum capacity is 10 kg.

The system is a non-automatic weighing instrument and requires operator intervention to accept the results of weighing.

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 instrument is only intended for use whilst the vehicle and the bin lifting mechanism are stationary (i.e. not whilst the vehicle is in motion, or whilst the load is being lifted). It is however acceptable for the vehicle, or bin lifting mechanism, to be moved between the zeroing of the instrument and the weighing of the load.

The system 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.

The system may have additional features, including a totalisation facility (accumulated net weight). Such features (other than the indications of measured net weight values – displayed either on the instrument's indicator or an auxiliary or peripheral device), are not approved for trade use.

1.1 Load Receptor

The load receptor comprises a Transport World Solutions AB weighing module incorporating a single-point type load cell (Figure 2) mounted as part of the waste bin lifting mechanism at the rear of the vehicle as shown in Figure 1.

1.2 Load Cells

A single Vishay Precision Group/Tedea-Huntleigh model 1320 class C3 load cell of 1000 kg maximum capacity is used in the weighing module.

1.3 Levelling

A Rinstrum model M4904 tilt sensor (Figure 3) [also known as HL Planar model NS-10/PL2-S] is fitted to a location that it will detect the degree to which the instrument is tilted from its reference (level) condition.

This tilt sensor is connected to a Rinstrum model M4211 tilt compensation module (Figure 4) attached to the indicator. This imposes limits on the level condition, automatically compensates for out of level conditions in longitudinal or transverse directions, and disables the weight determination if the level of tilt exceeds ±10%.

1.4 Indicator

A Transport World Solutions AB model CWOP-C400 digital indicator (Figure 2) is used, and is connected to the Rinstrum model M4211 tilt compensation module in addition to the Transport World Solutions AB weighing module. The TWS model CWP-C400 digital indicator is similar to the Rinstrum model R420-K491 digital indicator as described in approval NMI S463, however it incorporates some software changes.

1.4.1 Zero

The initial zero-setting device has a nominal range of not more than 20% of the maximum capacity of the instrument.

The instrument has a semi-automatic zero-setting device with a nominal range of not more than 4% of the maximum capacity of the instrument.

A zero-tracking device may be fitted.

1.4.2 Display Check

A display check is initiated whenever power is applied.

1.4.3 Additional Features

Instruments may be fitted with a number of additional functions including set-point facility and counting (‘pcs’). These functions and displays are not approved for trade use.

1.4.4 Power Supply

The indicator may be powered by 12 - 24 V rechargeable battery (e.g. from the vehicle battery) or other DC power source.

1.4.5 Interfaces

Instruments may be fitted with interfaces for the connection of auxiliary and/or peripheral devices. Any interfaces shall comply with clause 5.3.6 of document NMI R76 (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).

1.5 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.

1.6 Descriptive Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Manufacturer's mark, or name written in full	Transport World Solutions AB
Importer's mark or name	Transport and Waste Solutions Pty Ltd
Indication of accuracy class	(III) or (III)
Pattern approval number for the instrument	NMI 6/20A/9
Maximum capacity	Max ..... kg #
Minimum capacity	Min ..... kg #
Verification scale interval	e = ... kg #
Serial number of the instrument	……..

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

1.7 Verification Provision

Provision is made for the application of a verification mark.

1.8 Sealing Provision

The calibration and set-up modes of the indicator can be secured with a passcode. To ensure that a passcode has been set, attempt to enter full setup by pressing the POWER and FUNCTION 3 (f3) keys together. If a passcode has been set "P.CODE" will be shown on the main display and "FULL" on the top right auxiliary display. Pressing OK will return to normal operation.

In addition, a non-resettable calibration event counter increments each time that calibration or any parameter effecting calibration is changed and saved. The value of the calibration event counter is shown (as C followed by a number) in the display as part of the power-up display sequence, and the value at the time of verification shall be recorded on a destructible adhesive label attached to the instrument.

Any subsequent alteration to the calibration or parameters will be evident as the recorded value and the current calibration event counter value will differ.

2. Description of Variant 1 approved on 23/02/16

The Transport World Solutions AB model WT1000 system as described for the pattern but as a Class (III) non-automatic weighing instrument and having differing configurations, provided that:

- the verification scale interval shall be no less than 0.5 kg, and
- the maximum capacity shall be no greater than 600 kg, and
- the number of verification scale intervals (i.e. Max / e) shall be not less than 500, and no more than 1200, and
- the minimum capacity shall not be less than 5 e.

Note: If used for other than the weighing of waste or determination of a transport tariff or toll, the minimum capacity shall not be less than 20 e.

Table 1 indicates an alternative representation of the above for these Class (III) instruments.

TABLE 1

Verification scale interval, e (kg)	0.5 kg	1 kg
Maximum capacity (smallest allowable)	250 kg	500 kg
Maximum capacity (largest allowable)	600 kg	600 kg
Minimum capacity (smallest allowable) (*)	2.5 kg	5 kg
Minimum capacity (smallest allowable) (**)	10 kg	20 kg

(*) 5e for weighing waste or determination of a transport tariff or toll

(**) 20e other uses

3. Description of Variant 2 approved on 23/02/16

The Transport World Solutions AB model WT1000 system as described for the pattern but as a Class (III) non-automatic weighing instrument and having differing configurations, provided that:

- the verification scale interval shall be no less than 0.5 kg, and
- the maximum capacity shall be no greater than 500 kg, and
- the number of verification scale intervals (i.e. Max / e) shall be not less than 100, and no more than 1000, and
- the minimum capacity shall not be less than 5 e.

Note: If used for other than the weighing of waste or determination of a transport tariff or toll, the minimum capacity shall not be less than 10 e.

Table 2 indicates an alternative representation of the above for these Class (III) instruments.

TABLE 2

Verification scale interval, e (kg)	0.5 kg	1 kg	2 kg
Maximum capacity (smallest allowable)	50 kg	100 kg	200 kg
Maximum capacity (largest allowable)	500 kg	500 kg	500 kg
Minimum capacity (smallest allowable) (*)	2.5 kg	5 kg	10 kg
Minimum capacity (smallest allowable) (**)	5 kg	10 kg	20 kg

(*) 5e for weighing waste or determination of a transport tariff or toll

(**) 10e other uses

4. Description of Variant 3 approved on 23/02/16

The system with two load receptors (each with its own load cell) fitted to the same lifting mechanism, and each is connected to its own indicator. Other sensors (e.g. M4904 tilt sensor and M4211 tilt compensation module) 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).

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

5. Description of Variant 4 approved on 23/02/16

The pattern and variants 1 to 3 now using a single Vishay Precision Group/Tedea-Huntleigh model 1320 class C3 load cell of 2000 kg maximum capacity in the weighing module.

6. Description of Variant 5 approved on 23/02/16

The pattern and variants using an alternative Transport World Solutions AB model CWOP-C423 digital indicator is similar to the Rinstrum model R423 digital indicator which is also described in the documentation of approval NMI S463.

The sealing arrangements are described in the documentation of approval NMI S463.

TEST PROCEDURE No 6/20A/9

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

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

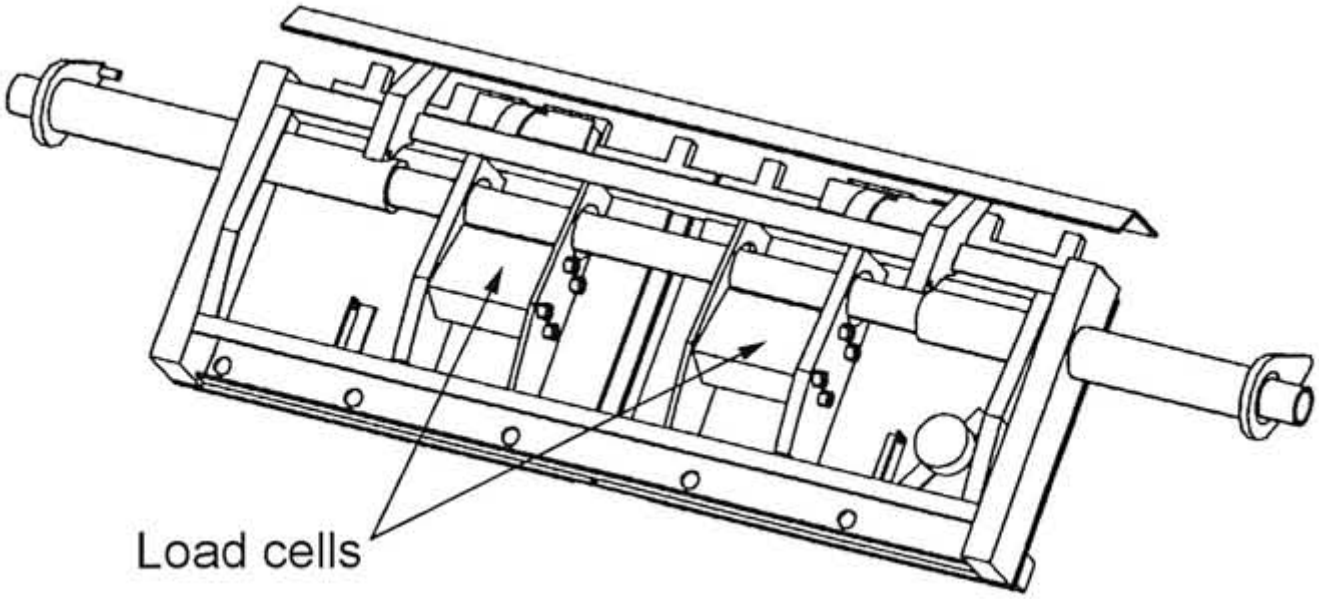
Maximum Permissible Errors

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

FIGURE 6/20A/9 – 1

Transport and Waste Solutions Model WT1000 Double Load Receptors

FIGURE 6/20A/9 – 2



Transport and Waste Solutions – Weighing Module
Two load receptors with parts of the lifting device (without protective plate)

FIGURE 6/20A/9 – 3

Transport World Solutions AB model CWP-C400 Digital Indicator
and Rinstrum Model M4904 Tilt Sensor

FIGURE 6/20A/9 – 4

Rinstrum Model M4211 Tilt Compensation Module

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