



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

Certificate of Approval NMI 6/20A/8

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 WT3000 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 1/01/21, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variant 1 approved – certificate issued	17/12/15

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 6/20A/8' and only by persons authorised by the submitter.

It is the submitter'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 submitter (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/8

1. Description of Pattern

approved on 17/12/15

The Transport World Solutions AB model WT3000 is a class III single interval self-indicating non-automatic weighing instrument of 2500 kg maximum capacity with a verification scale interval of 5 kg fitted to a waste bin pick-up vehicle (Figure 1). The minimum capacity of the instrument is 25 kg.

Note: If used for other than the weighing of waste or determination of a transport tariff or toll, the minimum capacity is 100 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 consists of two Transport World Solutions AB weighing modules (Figure 2) fitted to the lifting beam of a waste bin pick-up vehicle, and on which are mounted two lifting forks as shown in Figure 1. The system may be fitted with actuators which allow the spacing between the lifting forks to be altered.

Each Transport World Solutions AB weighing module contains one S-type load cell loaded in compression within a flexure linkage mechanism. The weighing modules are intended to be located on the forklift carriage, with the lifting forks (tines) being supported by the weighing modules.

1.2 Load Cells

A single Vishay Precision Group model 620 class C3 load cell of 5000 kg maximum capacity is used in each 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 the lifting beam of the WT3000 system, in a location such that it will reflect tilting of the lifting forks, and 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 acceptable levels of tilt are exceeded.

1.4 Indicator

A Transport World Solutions AB model 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 modules. The TWS model 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 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
Indication of accuracy class	
Pattern approval number for the instrument	NMI 6/20A/8
Maximum capacity	Max kg #1
Minimum capacity	Min kg #1
Verification scale interval	e = kg #1
Serial number of the instrument

#1 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 17/12/15

The Transport World Solutions AB model WT3000 system as described for the pattern but as a Class  non-automatic weighing instrument and having differing configurations, provided that:

- the verification scale interval shall be no less than 5 kg,
- the maximum capacity shall be no greater than 4500 kg,

- the number of verification scale intervals (i.e. Max / e) shall be not less than 100, and no more than 500, 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 20e.


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

TABLE 1

Verification scale interval, e (kg)	5 kg	10 kg	20 kg
Maximum capacity (smallest allowable)	500 kg	1000 kg	2000 kg
Maximum capacity (largest allowable)	2500 kg	4500 kg	4500 kg
Minimum capacity (smallest allowable) (*)	25 kg	50 kg	100 kg
Minimum capacity (smallest allowable) (**)	100 kg	200 kg	400 kg

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

(**) 20e - other uses

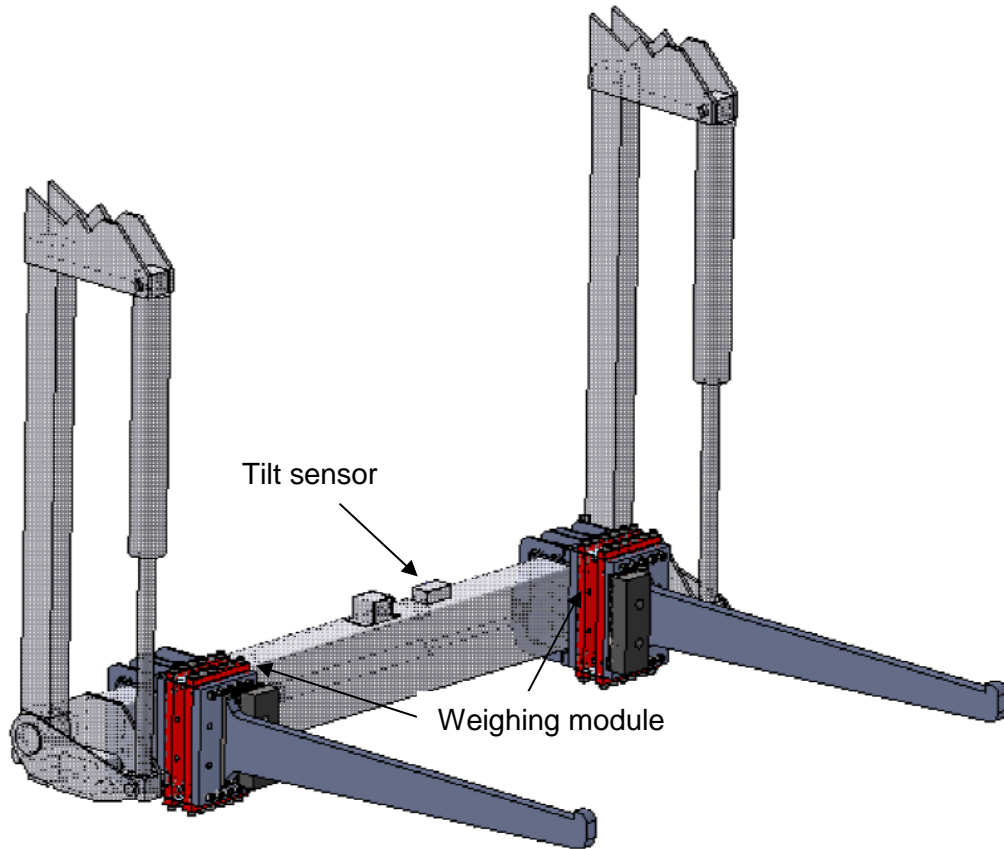
TEST PROCEDURE No 6/20A/8

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

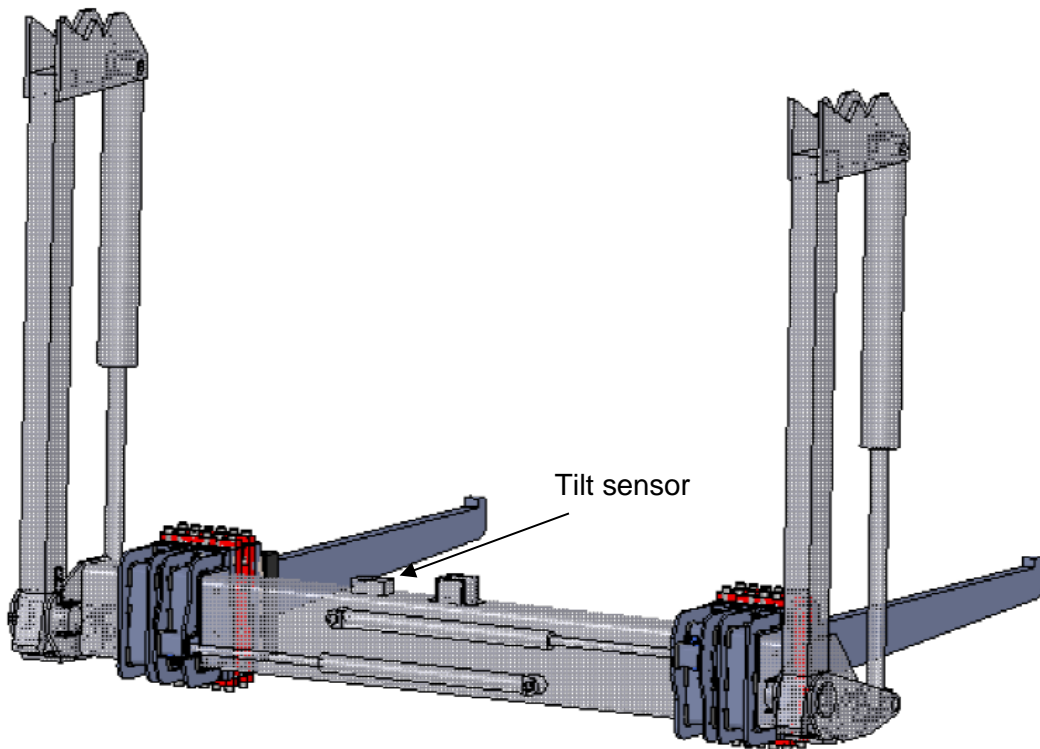
Maximum Permissible Errors

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

FIGURE 6/20A/8 – 1

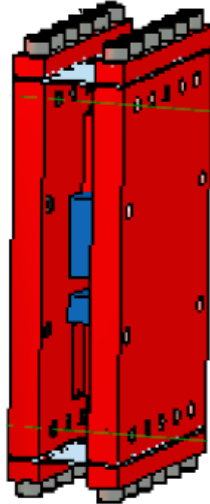


(a) Front view



(b) Rear view

FIGURE 6/20A/8 – 2



Transport and Waste Solutions – Weighing Module

FIGURE 6/20A/8 – 3



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

FIGURE 6/20A/8 – 4



Rinstrum Model M4211 Tilt Compensation Module

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