Australian Government
National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 13/1/20

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.

Teraoka Model SPK-1000 Dimensional Measuring Instrument

submitted by W W Wedderburn Pty Ltd
101 Williamson Road
Ingleburn NSW 2565.

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 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

This approval becomes subject to review on 1/03/16, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variant 1 provisionally approved – certificate issued	9/02/11
1	Pattern & variant 1 approved – certificate issued	28/03/12

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI 13/1/20’ and only by persons authorised by the submittor.

Instruments purporting to comply with this approval and currently marked ‘NMI P13/1/20’ may be re-marked ‘NMI 13/1/20’ 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 Certificates No S1/0/A or No S1/0B.

Special

Instruments are only approved for use for determination of the dimensions of a rectangular box having smooth, flat surfaces with a uniform and non-black colour.

The dimensions determined may also be used for the calculation (by peripheral equipment) of a volume and/or ‘dimensional weight’ (*) value of the object, also for the purposes of determining freight or postal charges.

(*) A ‘dimensional weight’ value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object’s volume.

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

TECHNICAL SCHEDULE No 13/1/20

1. Description of Pattern approved on 9/02/11

A Teraoka model SPK-1000 dimensional measuring instrument (Figure 1) which is approved for use for the determination of the linear dimensions of certain stationary objects. May also be known as a Digi instrument of the same model.

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

Instruments are approved for use over a temperature range of 5°C to +40°C and must be so marked.

1.1 Details

The pattern is approved for use for the determination of the linear dimensions of rectangular box-shaped (parallelepiped (#), cuboidal) objects only, having maximum dimensions (i.e. length × width × height) of 54 × 94 × 64 cm and minimum dimensions 15 × 20 × 3 cm.

The scale interval of measurement (*d*) for length and width dimensions is 0.5 cm. The scale interval of measurement (*d*) for height dimension from 3 to 10 cm is 0.2 cm and from 10 to 64 cm is 0.5 cm

The pattern is approved for use in measuring the linear dimensions of opaque objects only; the dimensions determined may also be used for the calculation of volume and/or 'dimensional weight' value (*) of the item (refer to the Special Conditions of Approval).

Note: This instrument is NOT suitable for:

- transparent objects and objects packed in thick, transparent wrapping material, e.g. 'bubble wrap'; or
- Objects with a black or non-uniform colour.

Objects are measured statically by being positioned manually in the defined measurement area. The panel at the back of measurement area is used to locate the object to be measured.

(#) A rectangular box (parallelepiped) is a polyhedron having six faces that are parallel in pairs; each face is a parallelogram and adjacent edges are perpendicular.

(*) A **'dimensional weight'** value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume as calculated from the measured dimensions.

1.2 Operation

The pattern includes four Keyence model PZ-M31 optical sensors which are mounted on linear tracks which extend out from the basework and detect the edges of the object to be measured. Four Vexta model PK264-02A-C51 stepper motors extend each linear track and the displacement data is processed by the instrument and then the measurement results are displayed on the indicator.

1.3 Indicator Unit

The model SPK-1000 indicator (Figure 2) provides a 2 line alphanumeric LCD display for indication of measurement results. The indicator is also used to operate and configure the instrument and displays any error messages that occur during a measurement operation.

1.4 Indications

The pattern is fitted with an indicator however measurement data from the SPK-1000 is made available to other systems for indication and/or printing.

Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R129, *Multidimensional Measuring Instruments*, in particular as per the extract below.

> 7.9.1 Any printed ticket or displayed indication shall include sufficient information to identify the transaction, for example:
>
> (a) dimensions: length (*L*), width (*W*) and height (*H*);
> (b) volume (vol);
> (c) weight (Wt) if the instrument includes a weighing instrument;
> (d) dimensional weight (Dim Wt ... kg or DW ... kg);
> (e) dimensional tare (DT ... kg);
> (f) conversion factor (F);
> (g) quantity for charging, for example dimensions, vol or DW ... kg;
> (h) price rate and price; and
> (i) date, transaction number or other identification of the object.
>
> *Note 1:* Icons may be used to identify indications.
> *Note 2:* When the customer is not present during the measurement process the above information need not be displayed or printed out at the time but shall be available on request.
> *Note 3:* The price interval and the price rate shall comply with the national regulations applicable for trade.
>
> 7.9.2 A printed ticket shall also contain the following printed or preprinted information:
> (a) that the dimensions and/or volume shown are those of the smallest rectangular box that fully encloses the object; and
> (b) that the dimensional weight is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume or dimensions.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

Provision is made for sealing access to the calibration adjustments by means of a sealing screws or labels (Figure 3).

1.7 Descriptive Markings and Notices

(a) Instruments carry the following markings (in the vicinity of the indicating device):

Manufacturer's mark, or name written in full	Teraoka
Importer's mark, or name written in full	WEDDERBURN
Model designation	.....
Serial number of the instrument	.....
Year of manufacture	.....
Pattern approval mark	13/1/20
Maximum dimensions for each axis	*Max* ..... cm
Minimum dimensions for each axis	*Min* ..... cm
Scale interval for each axis	*d* = ... cm
Special temperature limits	5°C to +40°C

(b) Instruments carry one or more notices stating:

"Instruments may only be used to measure objects which:

- are square or rectangular shaped
- have smooth and flat surfaces with non-rounded edges
- are non-transparent
- do not have black surface colour
- do not have black colouring on their perimeters

Use with any other objects is not approved."

2. Description of Variant 1 **approved on 9/02/11**

With the model SPK-1000 instrument now configured to have maximum dimensions (i.e. length × width × height) of 49 × 84 × 64 cm and minimum dimensions of 10 × 10 × 3 cm.

TEST PROCEDURE No 13/1/20

Note: Refer to clause **1.4 Indications** – Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

Maximum Permissible Error at Verification

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

The maximum permissible error at verification is:

±1.0 cm for lengths from the minimum length to any value up to and including the maximum length capacity of the instrument.

Tests

Ensure that instruments are only being used within the special temperature limits stated elsewhere in this Technical Schedule.

Instruments shall be tested as follows:

(a) Test objects shall be used of known lengths such that each axis (i.e. length × width × height) is tested for at least five dimensions between and including the minimum and maximum lengths specified on the instrument nameplate. Each test object shall be rigid and with well-defined edges to simulate the edges of a rectangular box. The lengths shall be known to an uncertainty equal to or better than ±1/5 of the maximum permissible error, which is equal to the scale interval (*d*).

(b) Carry out at least three test runs for each length, varying position and orientation across the receptor. Each measurement shall be within the maximum permissible error.

(c) Check that instruments are marked and carry one or more notices in accordance with clause **1.7 Descriptive Markings and Notices**.

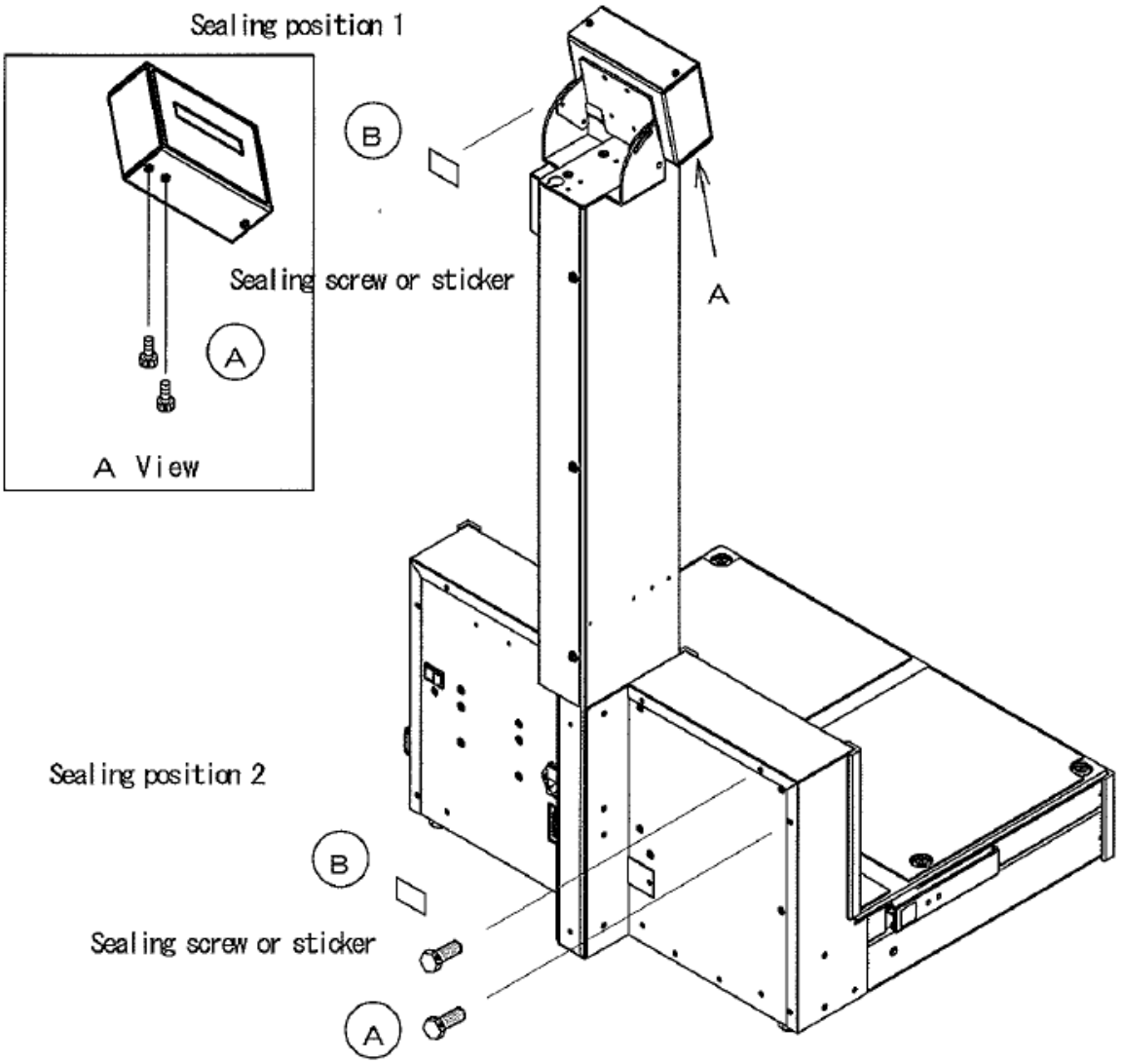
FIGURE 13/1/20 – 1

Teraoka (aka Digi) Model SPK-1000 Dimensional Measuring Instrument
(Instruments are marked differently to the instrument shown – refer to the Technical Schedule)

FIGURE 13/1/20 – 2

Teraoka (aka Digi) Model SPK-1000 Indicator

FIGURE 13/1/20 – 3



Showing Typical Sealing of Model SPK-1000 Instrument

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