Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation

Certificate of Approval

No 13/1/6

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

This is to certify that the approval for use for trade granted in respect of the

Mettler Toledo Model Cargoscan CS5400 Dimensional Measuring Instrument

submitted by Mettler Toledo Limited
220 Turner Street
Port Melbourne VIC 3207

has been cancelled in respect of new instruments as from 1 May 2011.

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

13/1/6
2 December 2002

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Certificate of Approval

No 13/1/6

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National Measurement Regulations 1999

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

Mettler Toledo Model Cargoscan CS5400 Dimensional Measuring Instrument

submitted by Mettler Toledo Limited
220 Turner Street
Port Melbourne VIC 3207.

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.

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CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 August 2007, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 13/1/6 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 Commission 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 the Commission's Document NSC P 106.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

Special:

Instruments are only approved for use for determination of the dimensions of a rectangular box for the purposes of determining freight or postal charges.

The dimensions determined may also be used for the calculation of volume and/or 'dimensional weight' value of the item, also for the purposes of determining freight or postal charges.

This approval does not include any barcode reading equipment used for reading the object dimensions.

DESCRIPTIVE ADVICE

Pattern: approved 19 July 2002

- A Mettler Toledo model Cargoscan CS5400 dimensional measuring instrument.

Technical Schedule No 13/1/6 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 13/1/6 dated 2 December 2002
Technical Schedule No 13/1/6 dated 2 December 2002 (incl. Test Procedure)
Figures 1 to 4 dated 2 December 2002

Signed by a person authorised under Regulation 60 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

TECHNICAL SCHEDULE No 13/1/6

Pattern: Mettler Toledo Model Cargoscan CS5400 Dimensional Measuring Instrument

Submittor: Mettler Toledo Limited
220 Turner Street
Port Melbourne VIC 3207

1. Description of Pattern

A Mettler Toledo model Cargoscan CS5400 dimensional measuring instrument (Figure 1) which is approved for use in measuring the linear dimensions of a rectangular box (parallelepiped - #).

(#) 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.

1.1 Details

The pattern is approved to measure the linear dimensions of rectangular-box (parallelepiped - #) shaped objects only, having maximum dimensions (i.e. length × width × height) of 63 × 63 × 61 cm and minimum dimensions of 10 × 10 × 10 cm, with a scale interval (d) of 1 cm.

The pattern comprises a platform with graduated length scales on two sides, and a height scale protruding from the corner of the platform (Figures 1 and 2). The height scale bracket and one of the sides form a corner which locates the object when it is placed into the corner prior to measurement.

The scale marks are numbered (with the exception of some values for which these markings are obscured by the scale support). In addition the scale is marked with barcodes corresponding to each 1 cm scale interval. The scales are shown in Figure 2.

1.2 Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Mettler Toledo Limited
Model designation	Cargoscan CS5400
Serial number	.....
Year of manufacture	.....
Pattern approval mark	NSC No 13/1/6
Maximum object length	Max L .... cm
Maximum object width	Max W .... cm
Maximum object height	Max H .... cm
Minimum object length	Min L ..... cm
Minimum object width	Min W ..... cm
Minimum object height	Min H ..... cm
Scale interval	d = ... cm

In addition, instruments carry a notice stating "For measuring rectangular boxes for postal/freight use only."

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1.3 Verification/Certification and Sealing Provisions

Provision is made for a verification/certification mark to be applied.

Provision is made for the vertical (height) scale to be sealed to the platform and for each barcode scale to be sealed to its supporting axis. Figure 3 shows typical sealing.

1.4 Barcode Scanner and Calculation, Storage or Printing Devices

As indicated in the Special Conditions of Approval, this approval does not include any barcode reading equipment used for reading the object dimensions, nor any calculating, storage or printing devices used to calculate, store or print volume, 'dimensional weight' (*), postal or freight 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.

Nevertheless, it is understood that the approved equipment (the Cargoscan CS5400) will be used with various barcode scanning equipment the output of which will be used by other equipment to calculate, store or print volume, 'dimensional weight' value, postal or freight charges.

Operation

A barcode scanner is used to read the barcode corresponding to each dimension of the object. This is achieved in the following manner:

- Place the object on the platform and slide it until it is positioned against the locating corner and side.
- Direct the barcode scanner at the object adjacent to the scale for the required axis.
- Activate the barcode scanner, and move the barcode scanner so that the scan line slowly approaches the scale (adjusting so that the scan line is aligned with the barcode).
- When the applicable barcode (the first fully visible beyond the object edge) is reached, cease moving the scanner, and wait for acknowledgement from the scanner that the barcode has been read.

Note: It is important that care is taken in reading the barcode, otherwise incorrect readings (e.g. of barcodes further along the axis than the correct dimension) may result.

At verification and/or certification of systems it will be necessary for the correct operation of this additional equipment to be determined.

In particular checks will need to be carried out to ensure that:

(a) Means are available for the correction of any incorrect scanning of a barcode.

(b) The equipment distinguishes between readings taken in each of the three axes (the barcodes provide for this, however it is necessary to ensure that the additional equipment utilizes this provision). This may be checked by attempting to read the same axis three times for one object – an error message should occur.

(c) The check digit in the barcodes is utilised. This may be checked by printing the barcodes shown in Figure 4 and scanning them. One of the barcodes intentionally has an incorrect check digit – an error message should occur for this (no dimension reading shall be recorded).

(d) Where volume is calculated, the volume is calculated correctly.

Volume is calculated as:

Volume = Length × Width × Height.

The volume shall either be shown in m^3 with six digits after the decimal place (e.g. 11 cm × 11 cm × 13 cm = 0.001573 m^3) or a lesser number of digits may be shown, in which case the value shall be rounded to the nearest digit (e.g. 0.001573 m^3 would round to 0.00157 m^3, or 0.0016 m^3 or 0.002 m^3).

(e) Where 'dimensional weight' is calculated, the calculation is correct.

'Dimensional weight' is calculated as:

'Dimensional weight' = Conversion factor × Volume.

Note: the conversion factor shall be displayed or printed by the additional equipment.

The 'dimensional weight' value shall be rounded to the last significant digit shown. (e.g. 0.001573 m^3 × conversion factor of 167 kg/m^3 = 0.262691 kg; this may be shown rounded to 0.26269 kg, 0.2627 kg, 0.263 kg, 0.26 kg, 0.3 kg, or 0 kg – but should not be represented as, for example, 0.0 kg).

(f) The content and format of any printed information is acceptable. The printed information shall include the date and transaction number or other identification of the object and:

- At least the three dimensions in whole centimetres and including the cm symbol (e.g. 23 × 13 × 51 cm would be acceptable, however 23.0 × 13.0 × 51.0 cm is not).
- The calculated volume (if used) shall also be printed, rounded according to (d) above. The applicable units (m^3) shall also be printed.

- The calculated 'dimensional weight' (if used) shall also be printed, rounded according to (e) above. Where 'dimensional weight' is used, the calculated volume and conversion factor shall also be printed. Units for the 'dimensional weight' (kg), volume (m^3), and conversion factor (kg/m^3) shall also be printed.
- Other pertinent information (e.g. price rate and price) shall also be printed. This may include information regarding weight (Wt) derived from an approved weighing instrument.
- A note advising that "Dimensions/Volume shown are those of the smallest rectangular box that fully encloses the object. 'Dimensional weight' is a calculated value obtained by applying a conversion factor to the volume of the object".

  The following abbreviations may be used in the presentation of this information:

  Length (L), width (W), height (H), volume (vol), conversion factor (F), dimensional weight (DW), and weight (Wt).

(g) When the information is displayed (e.g. on computer equipment) rather than printed, the information required and format is similar to that required above for printing.

NOTE: Instruments shall only be used as specified in the Special Condition of Approval.

TEST PROCEDURE

The maximum permissible error at verification/certification is:

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

Instruments shall be tested as follows:

(a) Test objects shall be used of known lengths such that each axis (i.e. length x width x 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 that +3 mm.

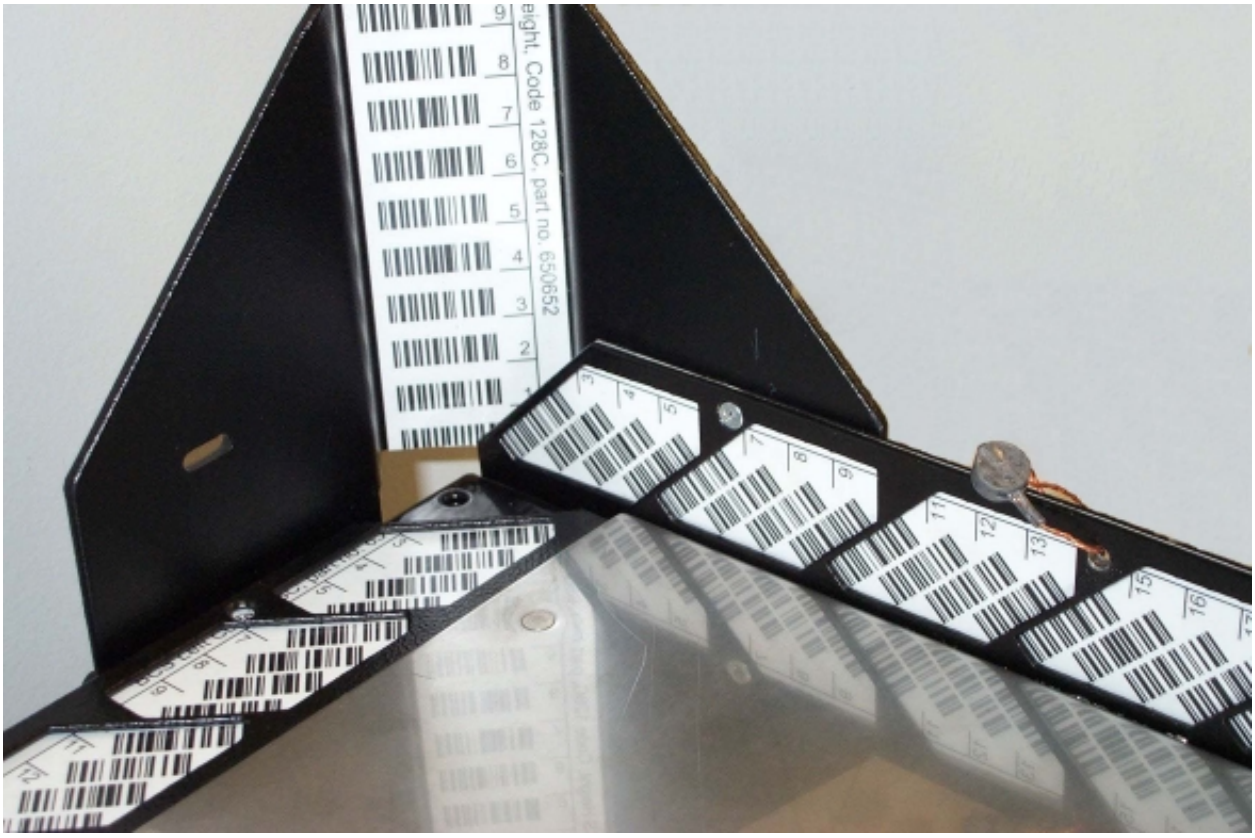
(b) Using the instrument in the manner described in clause **1.4 Barcode Scanner** of the Technical Schedule (together with any instructions specific to any additional equipment – barcode scanner etc), carry out at least three test runs for each length. Each measurement shall be within the maximum permissible error.

(c) See clause **1.4 Barcode Scanner** (etc.) of the Technical Schedule regarding determining the correct operation of any additional equipment.

FIGURE 13/1/6 - 1

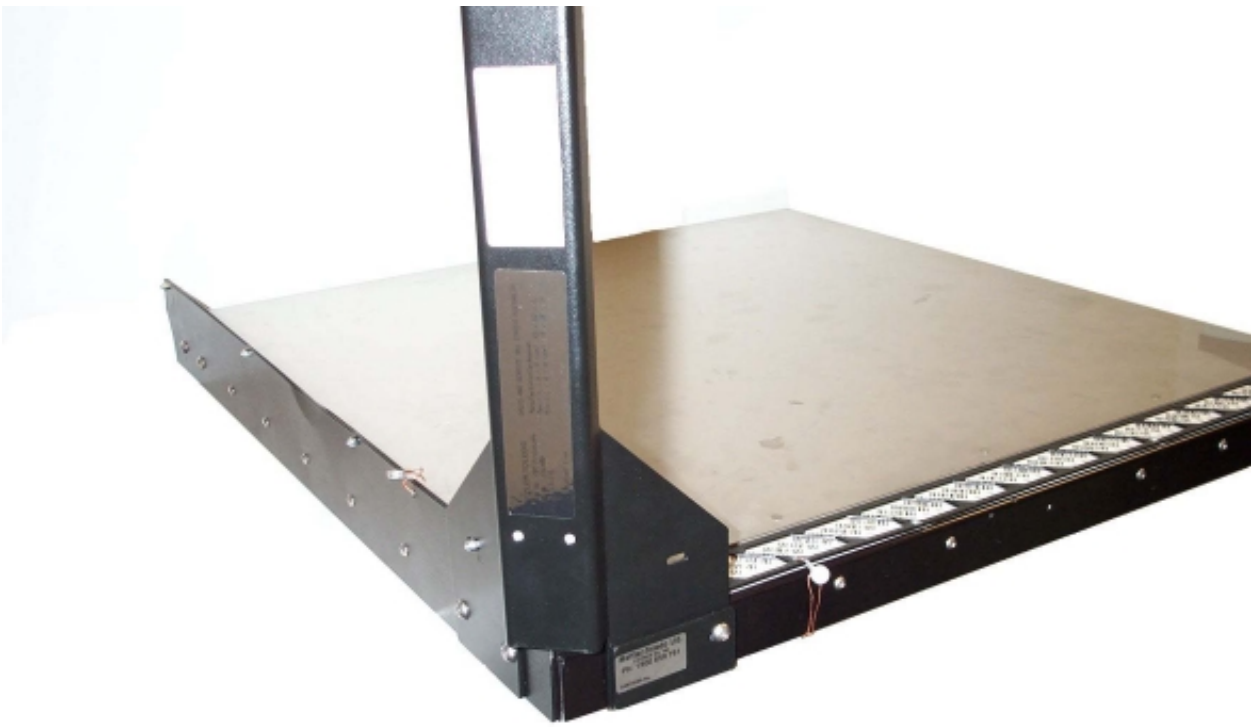
Mettler Toledo Model Cargoscan CS5400 Dimensional Measuring Instrument

FIGURE 13/1/6 - 2



Mettler Toledo Model Cargoscan CS5400 Dimensional Measuring Instrument

FIGURE 13/1/6 - 3

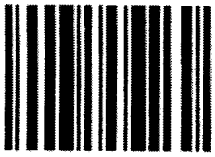


Typical Sealing

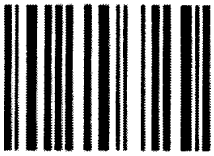
FIGURE 13/1/6 - 4

Codes with correct check digit

Left = 1cm
Code = 601 + Check digit = 9
Bar code value = 6019

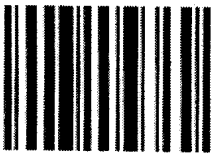


Right = 1cm
Code = 301 + Check digit = 8
Bar code value = 3018

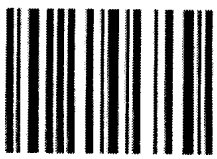


Codes with wrong check digit

Code = 601 + Check digit = 8
(correct check digit = 9 (see above))
Bar code value = 6018



Code = 301 + Check digit = 9
(correct check digit = 8 (see above))
Bar code value = 3019



Sample Barcodes Including With Incorrect Check Digit