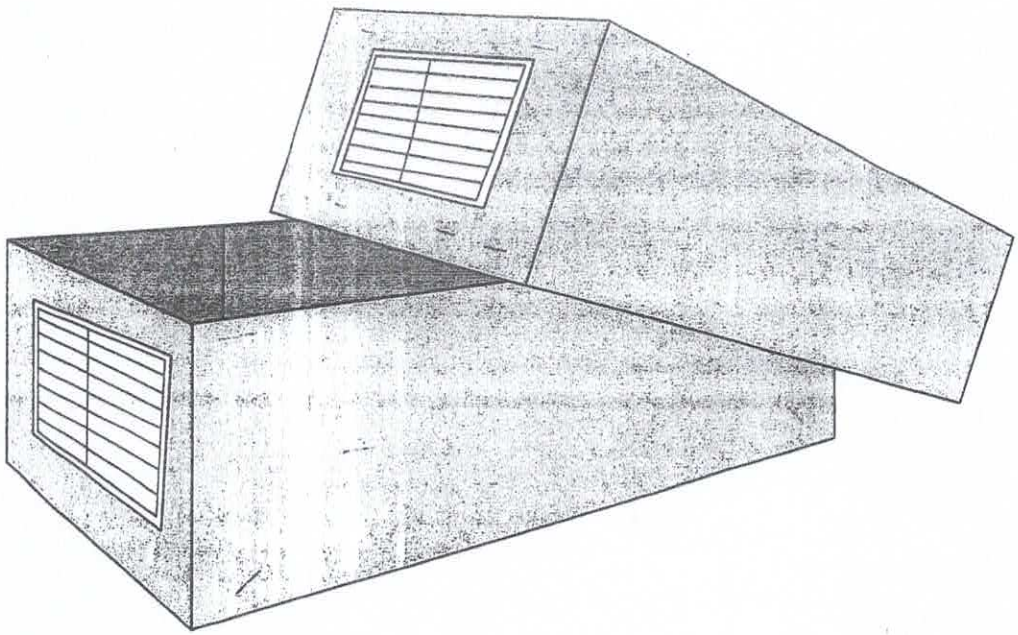
PRIVATE SPECIFICATION

Prepared for the

SOUTH AFRICAN AIR FORCE

CORRUGATED BOARD BOXES FOR CLOTHING (TELESCOPIC TYPE)



SALM 108
Version 06.0/August 2018

1. Scope

This specification covers the requirements for the material, design, dimensions, and physical properties of corrugated board components (inner and outer) of telescopic type corrugated board boxes used for packing clothing and footwear for personnel of the South African Air Force.

2. Definitions and Abbreviations

For the purpose of this specification the following definitions shall apply:

where relevant: the definitions given in SANS 431 and SANS 456

acceptable: acceptable to the South African Air Force

FIFO: First in, First out

nominal: subject to the tolerances normal to good manufacturing practice

IFCC: International Fibreboard Case Code

inner component: a component that has sides, ends, and a bottom but no top

outer component: a component that has sides, ends and top but no bottom and that fits telescopically over the inner component

SANS: South African National Standard

3. Style

The style is as follows:

- IFCC style No. 0301
- telescopic type
- having an inner and an outer container

4. Illustrations

Illustrations are not to scale and are for guidance only.

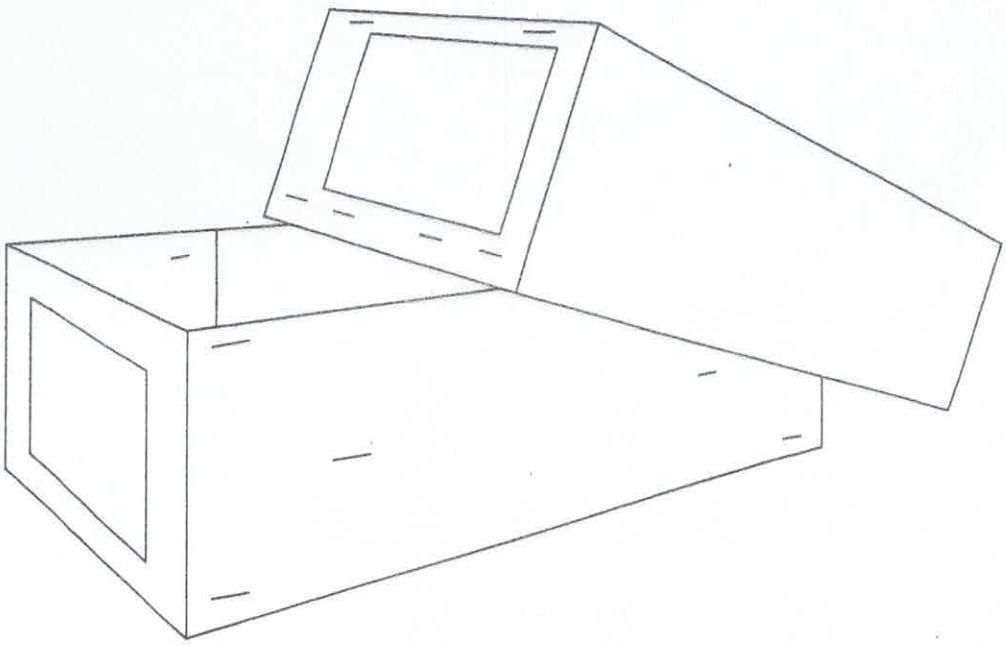


Figure 1 – Base and lid components of telescopic cardboard box (assembled and ready to serve as a container for storage of finished goods)

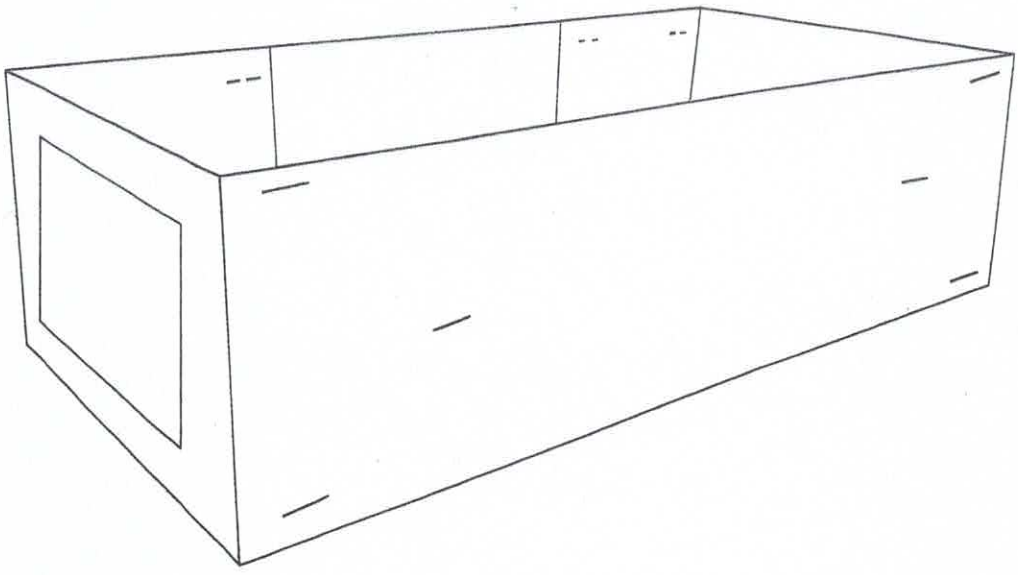


Figure 2 – Base component of telescopic cardboard box (assembled and ready to serve as the base of a container for storage of finished goods)

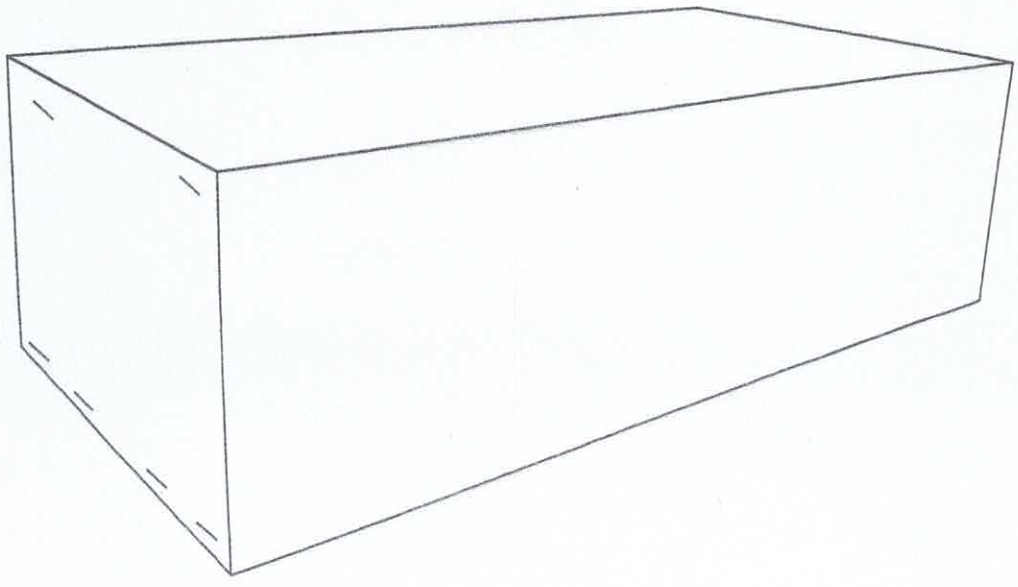


Figure 3 – Lid component of telescopic cardboard box
(assembled and ready to serve as the lid of a container for storage of finished goods, without the label to show the staples on the short end)

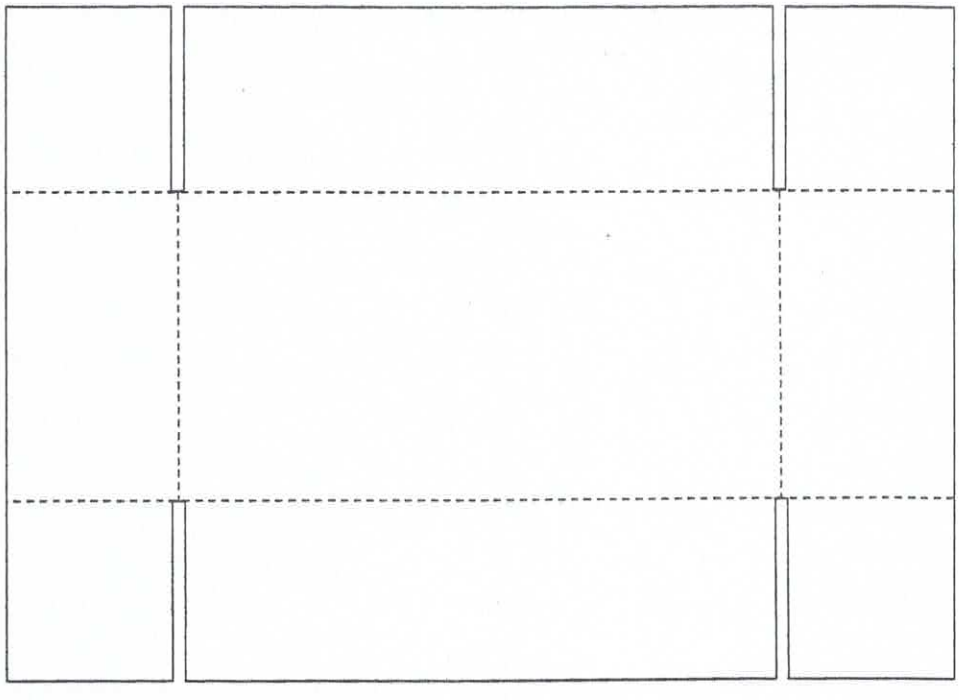


Figure 4(a) – Design of telescopic cardboard box when unassembled (Base component)

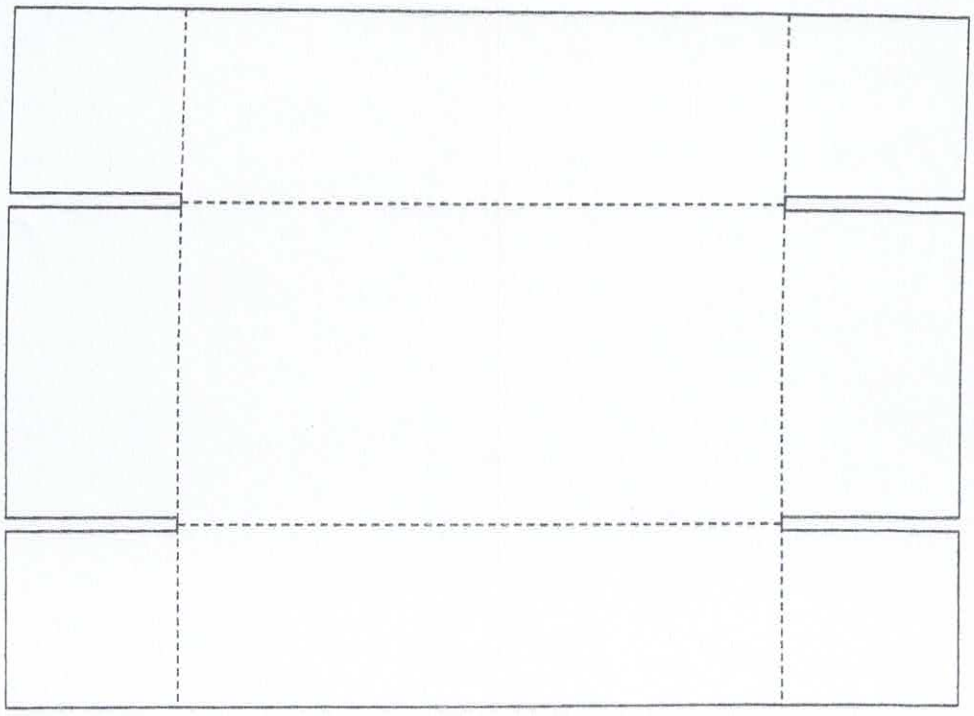


Figure 4(b) – Design of telescopic cardboard box when unassembled (Lid components)

5. Client Furnished Materials

No materials will be supplied by the South African Air Force.

6. Physical and Performance Requirements

The corrugated board boxes shall comply with the following physical characteristics.

6.1 Paper

- paper shall be manufactured from processed cellulose fibre and shall be reasonably free from defects as listed in section 7
- the relevant surfaces of the paper shall be such as to accept the adhesives commonly used in the manufacture of corrugated board

6.1.1 Fluting and liners

- to comply with the requirements of SANS 431 "Liners and fluting for corrugated board" for the relevant types (grammage) as specified in table 1
- grammage of the fluting and liners of the inner and outer component parts to comply with the requirements as given in table 1
  - the nominal grammage values given in table 1 are subject to a tolerance of ± 5%

Table 1 – Grammage of fluiting and liners

1	2	3
Property	**Requirement**	**Test Method** [a]
Grammage, g/m², min.	935 [b]	ISO 536
Damp-ply adhesion (B and C flute), N/m.	400 [c]	See 10.2
Water absorption of facing g/m² after 30 min. max (outer and inner) .	120 [b]	See 10.3
Thickness, mm, min.	6,0 [c]	See 10.4
Bursting strength, kPa, min.	1700 [c]	ISO 2758

[a] *Condition all specimens and test pieces in accordance with ISO 187, using the conditioning atmosphere 23/50. See also 10.1.*

[b] *The average of two determinations (one specimen from each of two components) to be reported .*

[c] *The average of six determinations (two specimens from each of three components) to be reported.*

6.1.2 Corrugated board

- to be wet-strength double wall simplex corrugated board of C and B fluting construction
- to comply with the requirements as given in table 2
- the direction of the corrugations in the sides of the inner and outer components shall be parallel to the direction of the stacking load (refers to closed and assembled boxes)

Table 2 - Physical Properties of Corrugated Board

1	2	3	4	5	6
Component	**Nominal grammage, g/m²**				**Test Method**
	Liners			**Fluting B and C**	
	Inner	**Centre**	**Outer**		
Inner	230	160	230	125	ISO 536 [a]
Outer	230	160	230	125	

[a] Condition all specimens and test pieces in accordance with ISO 187, using the conditioning atmosphere 23/50.Determine the average actual grammage, but use 20 test pieces.

6.2 Adhesives

- the adhesives used in making corrugated board and in the construction of the box shall not have any deleterious effect on the intended contents of the container

6.3 Dimensions and design

- IFCC style No. 0301 as given in Annex B of SANS 456:2009 "Corrugated board containers"
- dimensions to comply with the requirements as given in section 8

6.4 Creasing

- the creasing of the board shall be such that when a box is tested in accordance with paragraph 10. 5, there is no splitting of any liner
- the creasing of the board shall be such that when a component is assembled, there shall be no splitting of any liner
- there shall be no overlap of the flaps when each component is assembled

6.5 Staples

- staples shall be of a steel wire
- the wire shall have a coating (such as zinc, tin, copper, or enamel) that is not readily removable by the stapling process
- the staples shall have a nominal crown length of 30 mm, and each leg shall be long enough to be clinched on the inside of the board for a length of at least 7 mm

6.6 Storage requirements

- dry storage for a period not exceeding 15 months under the following conditions:
  - Temperature range: - 10° to 50°
  - Humidity: Maximum 50% relative humidity; Minimum 25 % relative humidity
- the components shall, before delivery, be stored in such a manner that they are reasonably protected from adverse atmospheric conditions and from fungal and insect attack

6.7 Transport requirements

- suitable for rail, road and air transport

6.8 Durability requirements

- single journey use

6.9 Strapping

- acceptable polypropylene strapping of nominal width 10 – 12 mm
- manufactured in accordance with high grade commercial practice

7. Workmanship

The box component parts to be:

- cut and made with first-class workmanship throughout
- of uniform and acceptable make and finish

To be free from:

- defects, such as listed below or any other imperfection that affect their serviceability
  - fibre bundles, holes, splinters, specs and breaks

8. Dimensions

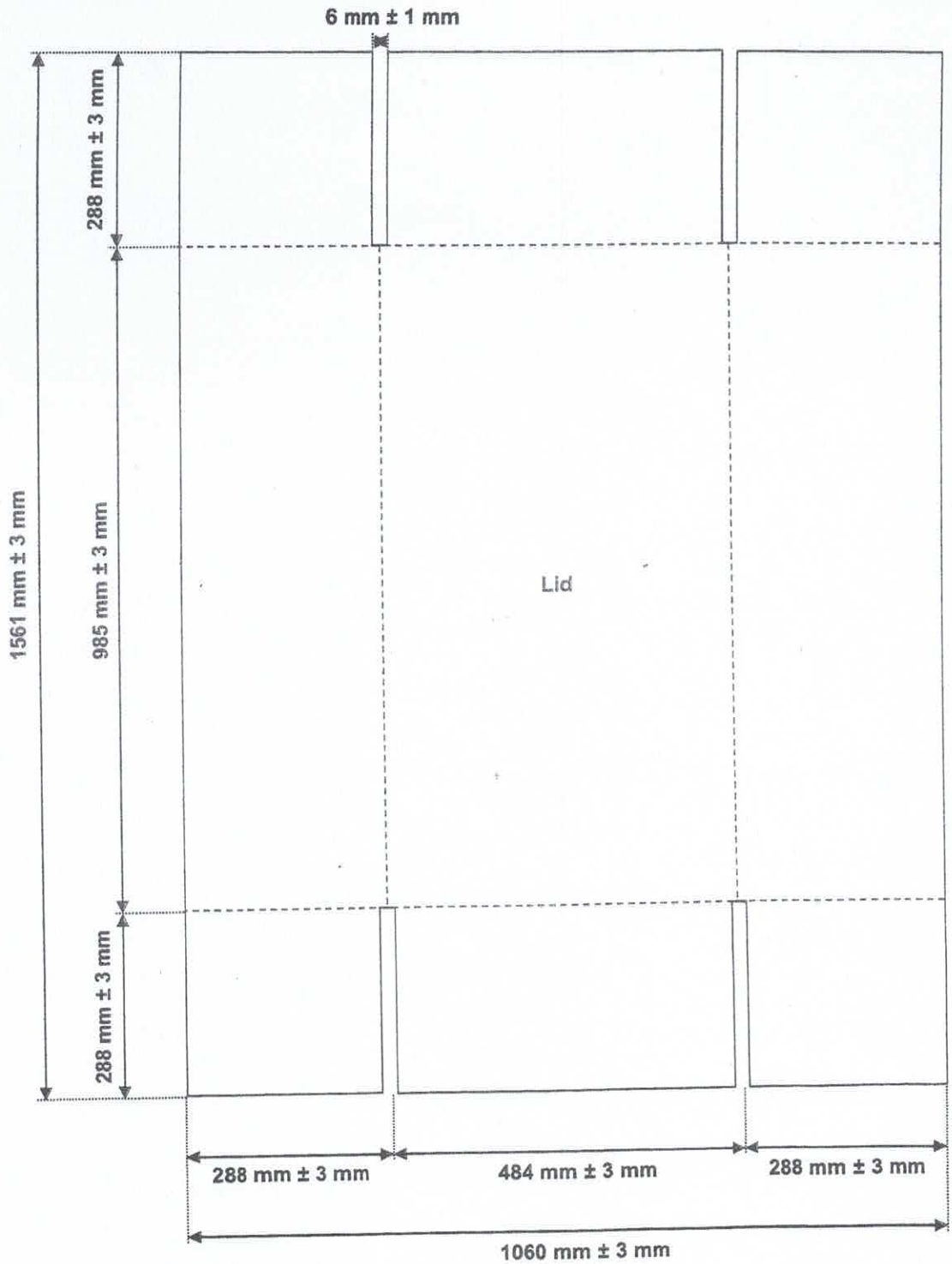


Figure 5 – Dimensions of the lid component of the telescopic board box (flat measurements)

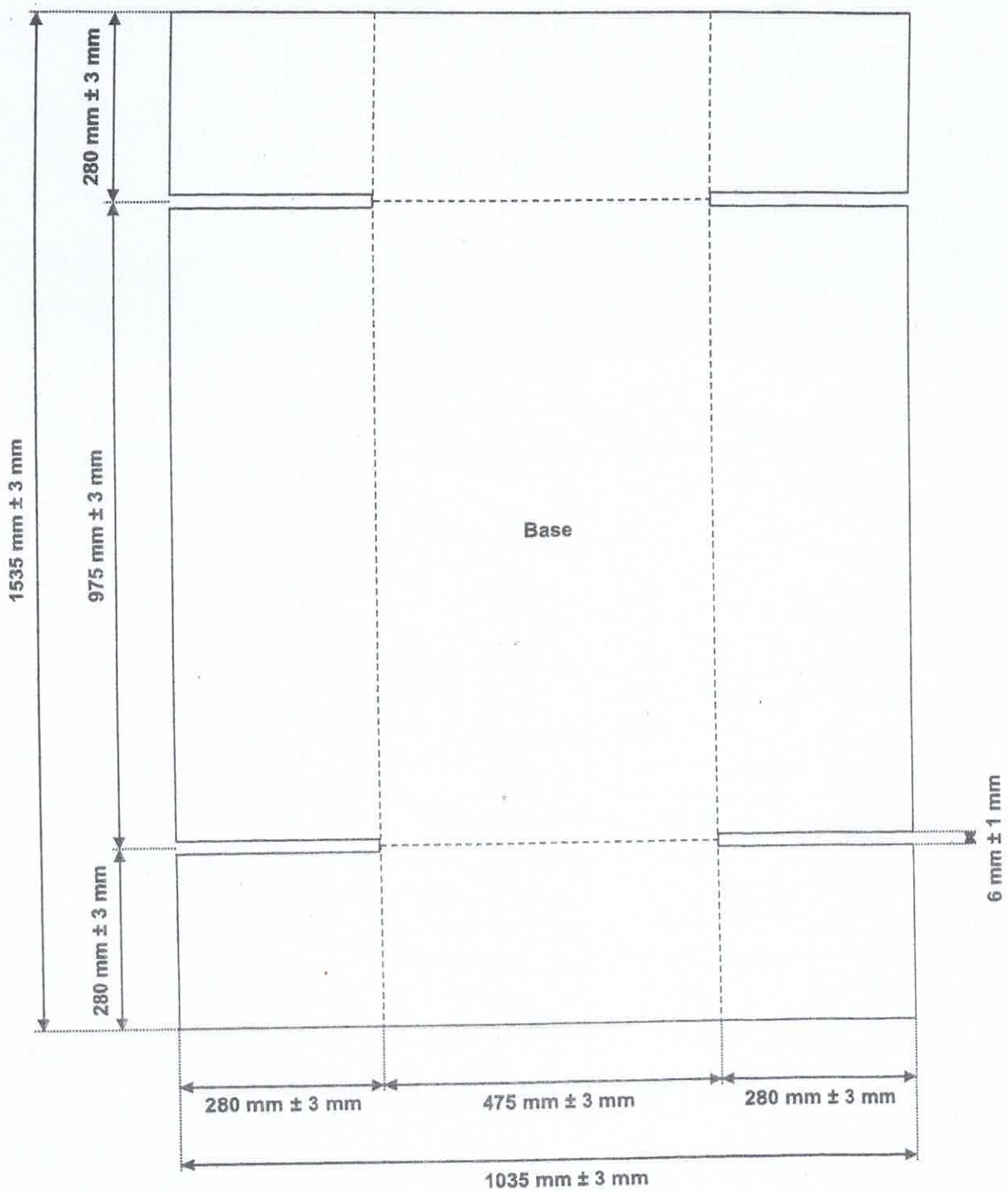


Figure 6 – Dimensions of the base component of the telescopic board box (flat measurements)

9. Assembly/Securing of boxes

Unless inconsistent with the text, all measurements are nominal.

9.1 Stapling

- each joint shall be stapled (see 6.5) with a minimum of three staples if the crown length is 30 mm (min).
  - in instances where the crown lengths of the staples are less than 25 mm, a minimum of five staples shall be required to secure the joints
- staples shall not commence more than 25 mm away from each end of a joint, and shall be adequately clinched

9.2 Strapping of boxes

- once packed, each corrugated box (base and lid unit) shall be secured with at least three lengths of strapping, i.e. two in the width and one in the length
- secured by means of metal clasps or a fusing technique (as relevant) in such a way that it shall not come undone by itself (to withstand transportation, stacking, handling and storage)
- tensioning to be such that after it is permanently secured, the strapping shall not cause any damage to the contents of the container

10. Test methods

10.1 General

10.1.1 Test specimens

- unless otherwise stated, take test specimens from areas of the board that are uncreased and undamaged and, where possible, from different units in the sample

10.1.2 Conditioning

- unless otherwise stated, condition, inspect, and test all specimens in a controlled atmosphere that, has a relative humidity of 50 % ± 2 % and a temperature of 23 °C ± 2 °C
- during conditioning, position each specimen so that all surfaces are freely exposed to the conditioning atmosphere
- ensure that the air of the conditioning and testing laboratories is so circulated that the humidity and temperature are uniform throughout the laboratory
- allow sufficient conditioning time for the moisture content of the specimens to attain equilibrium with the conditioning atmosphere

NOTE - In cases of doubt determine the mass of each specimen at hourly intervals until the results of the last two determinations do not differ by more than 0,25 % of the final mass. For preference, approach equilibrium from the dryer condition.

10.2 Test method for damp-ply adhesion

- test in accordance with paragraph 6.13 of SANS 456:2009 "Corrugated board containers"

10.3 Test method for water absorption of outer facing of board

- determine the average water absorption of the top side of a liner in accordance with ISO 535, "Paper and board -- Determination of water absorption – Cobb method ", but use 6 test pieces, a testing time of 30 minutes and water at a temperature of 23°C ± 1°C
- omit the rejection of test pieces that have been saturated with water
- in cases where the test result exceeds 150 g/m², report the result at 150 + g/m²

10.4 Test method for determining thickness (calliper) of corrugated board

- test in accordance with paragraph 6.8 of SANS 456:2009 "Corrugated board containers"

10.5 Accuracy and degree of creasing of corrugated board

- test in accordance with paragraph 6.14 of SANS 456:2009 "Corrugated board containers"

11. Packing, Labelling and Documentation of Goods

NOTE: This section covers the packaging, labelling and documentation of <u>manufactured goods</u> that are to be packed into containers as specified in this specification.

11.1 Packing

- items to be packed in containers made in accordance with this specification
- stapling and strapping to comply with the requirements as given in section 9
- containers to be sealed with 50 mm broad tape
- quantities as given in Annex A to serve as a guideline

11.2 Labelling

Each bulk container shall have a label securely attached to the outside of all four short sides (both upper and lower components). The labels shall be visible when the containers are stacked and shall provide the following information in legible and indelible block letters:

- to be a A4 paper size (landscape layout) and markings to be in the following sequence (see fig 7):
  - the order number
  - the National Stock Number (NSN)
  - the item description
  - the size designation
  - the year of manufacture
  - the colour (only if product is supplied in more than one colour)
  - the gross mass of the packed container
  - FIFO colour coded system
- minimum letter height of 45 pt. ARIAL

- left column: all CAPITAL LETTERS
- right column: Capitalize first letter of each word

11.3 Documentation

One container per consignment marked "DOCUMENTS" is to accompany each consignment with the following:

- the packaging slip/delivery note
- the inspection certificate (where applicable)
- the copy of the invoice containing the following information:
  - order number
  - financial authority number
  - full description of consignment, i.e. National Stock Numbers, quantities, etc.

11.4 Additional marking

When so required by the South African Air Force, containers to bear information additional to that specified above.

12. Packing and Delivery of Containers

NOTE: This section covers the delivery requirements of the containers when delivered to the clothing and/or footwear supplier.

12.1 General

- the relevant requirements of SANS 456 to apply

12.2 Packing

The component parts of the box to be:

- packed flat in bundles of 25
- delivered in a commercially dry condition
- so packed that they will not be damaged in transit or in storage

12.3 Marking

- each component part to bear the date of manufacture (month and year); e.g. 08/2008

Figure 7 – Example of bulk container labelling

ORDER NR	2D142199
NSN	18-180-1234
DESCRIPTION	Shoes, Service Dress
SIZE	9W
QUANTITY	100
YEAR	2013
COLOUR*	Black
GROSS MASS	22.6KG

**Include only if product is supplied in more than one colour.*

13. Applicable Documents

The following documents contain provisions which, through reference in this text, constitute provisions of this specification. All documents are subject to revision and, since any reference to a document is deemed to be a reference to the latest edition of that document, parties to agreements based on this specification are encouraged to take steps to ensure the use of the most recent editions of the documents indicated below. Information on currently valid national, international and CKS documents may be obtained from Standards South Africa*.

IFCC, *International fibreboard case code.*
ISO 187, *Paper and board – Conditioning of samples.*
ISO 535, *Paper and board -- Determination of water absorption – Cobb method.*
ISO 536, *Paper and board -- Determination of grammage.*
ISO 2758, *Paper - Determination of bursting strength.*
SANS 431, *Liners and fluting for corrugated board.*
SANS 456:2009, *Corrugated board containers.*

* ***Standards South Africa: Tel. +27 (0) 12 4287911***

ANNEX A

(Informative)

Guideline packing quantities

Series No.		Item	Qty per carton
1	1.	Towels bath blue	40
	2.	Towels hand blue	60
	3.	Face cloth blue	150

Series No.		Item	Qty per carton
2	1.	Caps Garrison	200
	2.	Cap service	18
	3.	Drawers multi colour	400
	4.	Hat service blue/grey	200
	5.	Jackets F/D, x/small, small	50
	6.	Jackets F/D, med, large, x/large	45
	7.	Jackets SD Blue Grey	30
	8.	Shirt L/S	60
	9.	Shirt S/S	100
	10.	Shirt F/D L/S	80
	11.	Shirt F/D S/S	100
	12.	Shirt mess dress	50
	13.	Short Gym Blue	200
	14.	T-shirt blue/grey	100
	15.	Trousers F/D blue/grey	60
	16.	Trousers Blue Grey	70
	17.	Vest white	150

Series No.		Item	Qty per carton
3	1.	Aprons foodhandlers bib blue/grey	200
	2.	Apron foodhandlers bib type white	200
	3.	Bags duffel blue/grey canvas	40
	4.	Belts individual web 57mm	200
	5.	Cap foodhandlers white	200
	6.	Coats cold weather 3/4 duffel	15
	7.	Coats foodhandlers white	50
	8.	Coveralls two-piece	30
	9.	Gloves black	100 prs
	10.	Raincoats nylon blue/grey	50
	11.	Shirts foodhandlers	60
	12.	Sleeping bag nylon outers	7
	13.	Tracksuits	30
	14.	Trousers foodhandlers, blue check	80

Series No.		Item	Qty per carton
4	1.	Belts waist (all sizes)	400
	2.	Boots combat black size 5-9	15
	3.	Boots combat black size 10-12	12
	4.	Boots combat black size 13-15	10
	5.	Boots fireman size 6-12	10
	6.	Boots gum size 5-10	10
	7.	Boots safety black size 5-10	12
	8.	Boots safety black size 11-14	10
	9.	Shoes canvas blue/grey size 5-11	20
	10.	Shoes canvas blue/grey size 12-14	12
	11.	Shoes gunfloor black size 5-11	15
	12.	Shoes gunfloor black size 12-13	12
	13.	Shoes gym leather size 5-14	20
	14.	Shoes mens black evening wear size 6-10	15
	15.	Shoes mens black evening wear sizes 11-13	12
	16.	Shoes safety black size 5-10	12
	17.	Shoes safety black size 11-14	10
	18.	Shoes service black size 5-11	15
	19.	Shoes service black size 12-14	12
	20.	Socks mens cushion sole	200
	21.	Socks mens Black	200
	22.	Socks mens size 9-12	200
	23.	Ties, men	1 000
	24.	Pantihose	900
	25.	Uniform men's S/D	20
	26.	Uniform men's E/W	20
	27.	Skirts ladies	60
	28.	Slacks ladies	60
	29.	TRS men's	60
	30.	Jackets, ladies E/W	20
	31.	Skirts, ladies E/W	50
	32.	Waistcoat, ladies	100
	33.	Jersey, unisex	60

For office use only	

HISTORY SHEET

DOC ISSUE	DATE	AMENDMENTS/HISTORY
1	September 1984	First release
2	January 1996	
3	June 2008	Updated format, references and layout of specification. Add annex B. Refer to two separate labels on the short sides of the containers: Label A & Label B
4	April 2011	Amended height of box
5	July 2014	Amend label requirements of bulk container. Add specific size of wording.
05.2	March 2018	Add illustrations Dimensions to reflect flat measurements of box Add information and layout of specification Add Normative references
05.3	April 2018	Delete Annex A Amend dimensions Change numbering to ensure paragraph 11.2 refers to the same information as in version 5
06.0	August 2018	6th Release