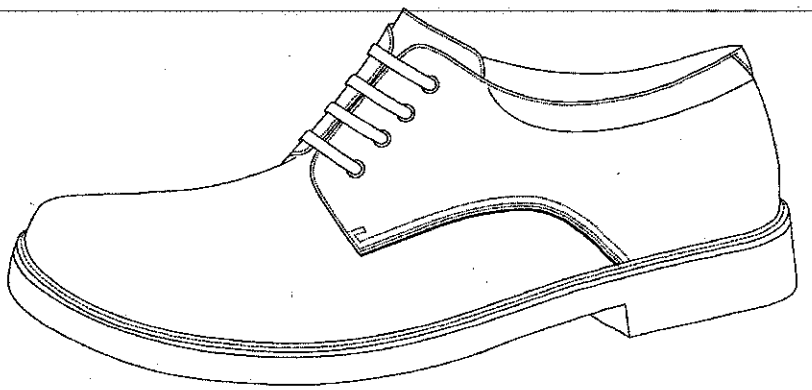
PRODUCT SPECIFICATION

Prepared for the

SOUTH AFRICAN ARMY

Shoes, Men, Service Dress



Document Number: 05741-100-241

Issue 001

May 2013

APPROVAL PAGE

Compiled by: Dick Whittington Shoes

DWS Representative — Date: 25. 09. 2013

Accepted by:

Armscor IT and Quality Department
General Commodities — Date: 2013/09/30

Recommended by:

Project Manager Clothing Systems
Soldier Support
Armscor — Date: 27/09/2013

Approved by:

Technical Adviser: SAAU System
SA Army — Date: 27/09/2013

Approved by:

SSO: General Commodities
SA Army — Date: 27/09/2013

Approved by:

User System Representative
SA Army — Date: 27/09/2013

AMENDMENT HISTORY

DOC ISSUE	DATE	AMENDMENTS	DOC CHANGE PROPOSAL NO.	CHECKED	
				NAME	INIT.
001	May 2013	First Release	N/A	H Bosua	

1. Scope

This specification covers the performance, design, manufacture, test and acceptance requirements of Service Dress, Gibson type shoes for use by male personnel of the South African Army.

The following requirements will be specified in tender invitations and in each order or contract:

- The size(s) and fitting(s) see 8.2 and table 10
- The packing, if other than a specified (see 11.1)

Special conditions of tender (that cover the conditions of acceptance of the shoes) are given in Annex A. Annex A forms an integral part of this specification

2. Definitions and Abbreviations

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

acceptable: acceptable to the SA Army and/or the Procurement Authority
batch: A quantity of shoes manufactured at one time, covered by one work ticket and recorded on the product for traceability
defective: A pair of shoes that an inspection is judged to have a major fault that is likely to cause shoes to fail in wear, or a pair of shoes that is unsightly to the extent that it is unsuitable for issue.
FIFO: first in, first out (stock issuing approach)
lot: A consignment of finished shoes presented for inspection at one time, intended despatch to one destination
nominal: subject to the tolerances normal to good manufacturing practice
NSN: National Stock Number
product: Service Dress are hard wearing general purpose footwear for use by personnel on base and off duty. They offer protection to the feet from normal surfaces and have a ribbed sole for improved grip on most surfaces. Shoes are available in three fittings narrow, medium and wide, and in the size range 232 to 322. They give a comfortable fit to 95% of the population providing the feet have been correctly measured.
roughened: Descriptive of a material that has had its original surface removed using a sharp wire brush or an abrasive paper with a grit that avoids burning the surface of the material, and in the case of leather, has had its entire grain surface (when relevant) removed and the fibres raised without impairing the strength of the leather.
SANS: South African National Standard

3. 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 the South African Bureau of Standards*.
BS 5131-1-1.2, *Methods of test for footwear and footwear materials – Part 1: Adhesives – Section 1.2: Resistance of adhesive joints to peeling.*

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

BS 5131-3-3.1, *Methods of test for footwear and footwear materials – Part 3: Uppers, textiles and threads – Section 3.1: Strength of upper materials and lining materials at right angles to stitch perforations.*
ISO 4674, *Fabrics covered with rubber or plastics – Determination of tear resistance.*
DIN 5035, *Testing of rubber – Shore A and Shore D Hardness Test.*
05181-100-209, *Corrugated Board Boxes for Clothing and Footwear.*
SANS 770, *Footwear Laces.*
SANS 1091, *National Colour Standard.*
SANS 1362, *Sewing Threads.*
SANS 1437, *Footwear soling material and footwear sole and heel components of rubber and plastics.*
SANS 572, *Linear density of textile yarns (other than stretch type yarns) on packages.*
SANS 577, *Breaking strength, extension at break and tenacity of textile yarns (other than stretch-type yarns).*
SANS 579, *Textiles, Mass per unit area of conditioned textile fabric.*
SANS 5272, *Non-fibrous material content of textiles: Hydrochloric acid method (Applicable to textile materials treated with resins such as amino-type resins)*
SANS 5468, *Breaking strength and extension at break of textile fabrics: narrow strip method using constant rate of traverse.*
SANS 5616, *Preparation of samples (leather, elastomeric material and other footwear materials).*
SANS 5626, *Leather or footwear components – pH value and difference figure of an aqueous extract.*
SANS 5640, *Determination of flex resistance (leather fibreboard and cellulose fibreboard inner soles).*
SANS 5642, *Determination of water absorption of inner soles an inner sole.*
SANS 5646, *Determination of bond strength of rib attachment (stuck-on rib inner soles)*
SANS 5962, *Determination of wet split tear strength of inner sole and runner materials (other than leather).*
SANS 6080, *Footwear materials – Resistance to to-and-fro rubbing.*
SANS 6134, *Fatigue bending of granulated cork bottom filler for footwear.*
SANS 6135, *Heat insulation of granulated cork bottom filler for footwear.*
SANS 6214, *Footwear materials - Collapsing load of domed shapes.*
SANS 6215, *Abrasion resistance of footwear components (Martindale).*
SANS 6228, *Footwear materials - Water vapour coefficient.*
SANS 6229, *Footwear materials - Water vapour absorption.*
SANS 6231, *Footwear materials – Absorption and desorption of water.*
SANS 6233, *Footwear – Toe-puff Stiffener material – shape retention.*

4. Style

The style of the mens service dress shoes is as follows:

- gibson type,
- with plain vamps,
- full grain uppers,
- padded quarter topline,
- leather quarter linings,
- fabric vamp linings,
- padded insole with leather forepart cover and sock,
- outer soles and moulded solid heels of rubber.

The shoes shall be available in three fittings, narrow, medium and wide and in the size range 4 English to 14, 232 Mondo to 322.

5. Illustrations

Illustrations are not to scale and are for guidance only.

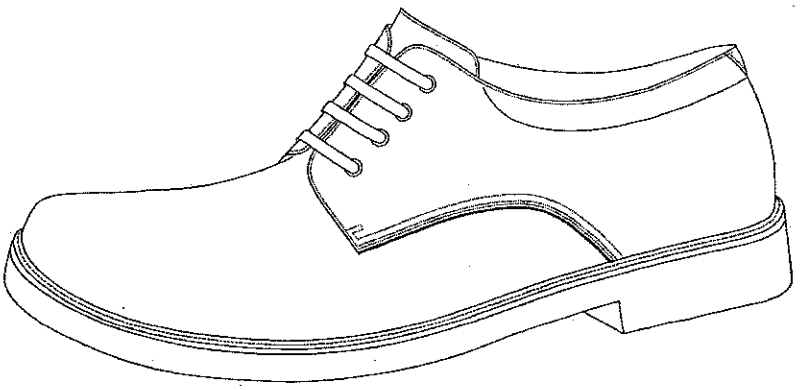


Figure 1 - Shoe

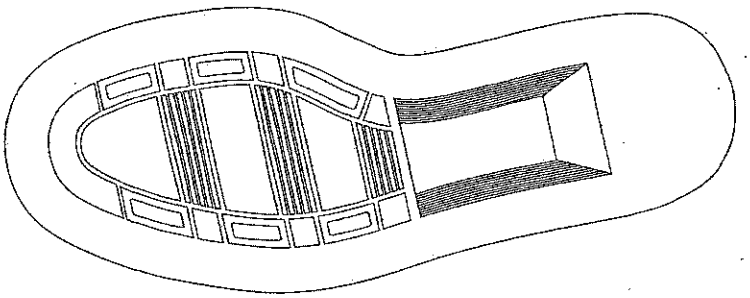


Figure 2 - Tread pattern of outer sole

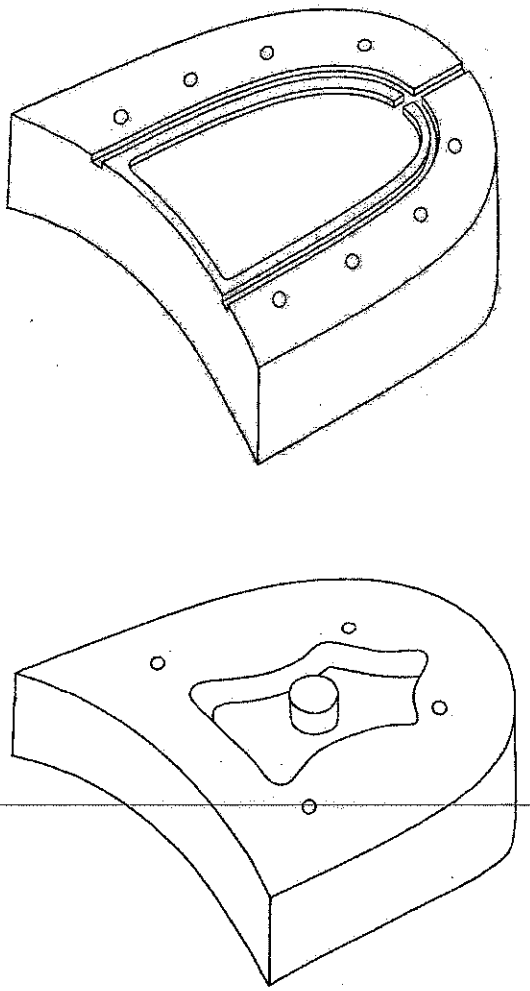


Figure 3 – Heel pattern

6. Client Furnished Materials

No materials will be supplied by the South African Army.

7. Component Materials

7.1 Upper material and components

7.1.1 Upper Leather

The leather used for the uppers shall:

- be of smooth, full grain, slightly buffed, chrome-tanned side leather that complies with the physical and chemical requirements of CKS 623.
- be dyed to at least the depth of the grain layer and shall have a pigmented finish.
- not be embossed but shall have a smooth finish.
- have been so treated as to produce a soft, mellow feel.
- not contain any leather that is pipy, loose grained, hard or bony.

When leather or components conditioned as in SABS method 616 are tested using a British Leather Confederation ST 300 Softness Tester[1)] with the 35 mm ring in position, the displacement of the plunger shall be at least 4,5 mm.

[1)] Details of the ST 300 Softness Tester are available from the British Leather Confederation, Leather Trade House, Kings Park Road, Moulton Park, Northampton NN3 6JD, UK.

7.1.1.1 Colour

The colour of the leather shall be an acceptable match to colour No: 340c "Jet Black" of CKS 129 "Colours for textiles".

7.1.1.2 Thickness

The thickness of the leather for the uppers shall be 1,6 mm to 1,8 mm

The thickness of the various upper components shall be within the appropriate range given in columns 2 and 3 of table 1.

Table 1 – Thickness of upper components

1	2		3
Components	Thickness, mm		
	Min.	Max.	
Vamps	1,6	1,8	
Quarters	1,6	1,8	
Back straps	1,4	1,6	
Tongues	1,4	1,6	
Quarter Lining	0,9	1,5	

7.1.2 Lining Material

7.1.2.1 Vamp lining material

Vamp linings shall be of a non-woven fabric that is a needle felt, or a laminate of stitch-bonded fabrics or heat-bonded fabrics or similar materials that, when tested in accordance with the relevant methods given in 3, complies with the requirements given in table 2.

Table 2 – Requirements for fabric for vamp linings

1	2	3
Property	Requirement	Test method
Thickness, mm. min	1,3	Use a calibrated spring-loaded leather thickness measuring calliper gauge graduated in 0,1 mm.
Tearing strength, N, min	15	ISO 4674
Bond strength, when laminated, N/25 mm of width, min	10	SANS method 5670
Water vapour permeability, mg/cm^2, min	2,0	SANS method 6228
Water vapour coefficient, mg/cm^2, min	30	SABS method 6229
Strength at right angles to stitch perforations, N/cm of width, min	30	BS 5131-3-3.1
Abrasion resistance: After 25 600 cycles dry After 12 800 cycles wet	The wearing surface shall not develop any holes	SANS method 6215

7.1.2.2 Tongue lining material

The tongue linings shall be of felt that, when tested in accordance with 4.2.3.3, complies with the relevant requirements given in table 3.

Table 3 - Requirements for felt for tongue linings

1	2	3
Property	Requirement	Test method
Fibre composition, % Wool..... Other fibres.....	 50 ± 5 50 ± 5	
Mass per unit area (free from non-fibrous materials), g/m², min.	190	SANS method 579
Non-fibrous material content, %, max.	2,0	SANS method 6113
Thickness (mean), mm.....	1,1 ± 0,2	SANS method 585

7.1.2.3 Quarter linings

Quarter linings shall be of a natural colour, chrome-tanned syntan re-tanned grain side leather that complies with the requirements of CKS 189, with the exception of the requirement for perspiration resistance.

7.1.3 Toe Puffs and Stiffeners

When tested in accordance with the relevant methods given in Column 4 of table 4, toe puffs and stiffeners shall comply with the requirements given in columns 2 and 3 of table 4 respectively.

Toe puffs shall be thin enough to avoid a print-through effect on the finished side of the shoe.

Table 4 - Requirements for toe-puffs and stiffeners

1	2	3	4
Property	Requirement		Test method
	Toe-puffs	Stiffeners	
First collapsing load, N, min.....	30-80	130	SANS 6213[1)]
Resilience, %, min.....	50	40	
Moisture resistance, %, min.....	65	60	SANS 6214[1)]
Area shape retention Initial, %..... After 10 collapses, %, min	 60 50	 70 60	SANS 6233
Peel strength, N/cm, min Dry..... Wet.....	 5,0 3,0	 6,0 -	BS 5131-1-1-2

[1)] Report the first collapsing load and the percentage resilience. Calculate the percentage resistance using formula.

7.1.4 Eyelets

The eyelets shall:

- be visible-setting brass eyelets that have japanned or cellulose painted rims
- have a diameter, measured across the inside of the barrels, in the range 3 mm to 4 mm.
  - the barrels shall be of sufficient length to ensure proper clinching on the facings.
- the number of eyelets used shall be as follows:
  - Sizes 232 to 255: four pairs on each shoe; and
  - Sizes 262 to 322: five pairs on each shoe

7.1.5 Threads

The threads used for attaching the various upper components shall:

- be polyester and cotton core-spun threads that comply with the relevant requirements of SABS 1362. (See also table 9)
- be of a colour that is a match to the surrounding material

7.1.6 Forepart Covers and Seat socks

The forepart inner sole cover shall:

- ~~be of a natural colour chrome-tanned syntan-retanned side leather~~
- have a nominal thickness of 1,2 mm and shall comply with the requirements of CKS 189
- be laminated to a 2,5 mm ± 0,5 mm closed cell foam.

7.1.7 Laces

The laces shall:

- be nylon laces of length at least 660 mm.
- have fused ends and shall comply with the relevant requirements for type L2 of SABS 770.
- be of a colour that is a match to the upper leather.

7.2 Bottom Materials and Components

7.2.1 Inner soles

The innersoles shall:

- be of the stuck-on rib type,
- be of cellulose fibreboard insole material
  - of thickness not less than 2,6 mm and not more than 2,9 mm, when tested in accordance with the relevant methods given in column 3 of table 5, and shall comply with the requirements given in column 2 of table 5

Table 5 - Requirements of cellulose fibreboard inner sole and foam

1	2	3
Property	**Requirement**	**Test method**
PH value, min.....	3,5	SANS 5626[1)]
Difference between pH values, max	0,7	
Flex endurance, cycles, min,		SANS 5640
In machine direction.....	10 000	
At 90° to machine direction	7 000	
Wet stitch tear strength, N/mm of width, min.	0,30	SANS 5962
Water absorption, %, min	35	SANS 5642
Water desorption, % of water absorbed, min	40	SANS 6231
Abrasion resistance after 400 cycles wet	There shall be no surface tearing	SANS 6080
Bond strength of rib attachment per 25 mm of width, N	440	SANS 5646
Foam		
Insole Thickness, mm	2,5±0,5	
Collar Thickness, mm.....	24±0,5	
Tongue Thickness, mm	12±0,5	

[1)] Record the first pH value and also the difference between the two measured pH values

7.2.2 Stuck-on Rib

The stuck-on rib shall comprise of the following

- a fibreboard, leather or fabric filler-piece of such thickness as to provide a total lip thickness of at least 2,0 mm when the filler-piece is enclosed in the outer cover: and
- an outer cover of a fabric that, when tested in accordance with relevant methods given the column 3 of table 6, complies with the requirements given in column 2 of table 6, and
  - the cover shall extend over the filler-piece to form a raised lip and shall have a base of width (measured from the bottom of the lip to the edge of the fabric) at least 3 mm on the outside and at least 8 mm on the inside of the raised lip

Table 6 - Requirements for rib cover fabric

1 Property	2 Requirement	3 Test method
Composition	Polyester or an intimate blend of polyester and cotton with a maximum cotton content of 50%	Use microscopical And chemical methods.
Breaking Strength Dry, N, min..... Wet, % of dry value, min.....	300 80	SANS 5468
Mass per unit area (free from non-fibrous material), g/m^2, min.....	260	SANS 579
Non-fibrous material content %, max	5	SANS 5272

7.2.3 Welting

The welting shall:

- be of a vegetable-tanned leather that complies with the relevant requirements of CKS 226,
- have a thickness of at least 3 mm and shall be of the flat type
- be firm but flexible and shall be free from:
  - excess flesh,
  - soft, spongy or loose-fibred leather,
  - mechanical and hide defects
  - any imperfections and blemishes that affect its appearance or can affect its serviceability (or both)

7.2.4 Outer soles

The outer soles shall:

- be of a moulded rubber that complies with the requirements of type R4 of SANS 1437
- have the pattern as shown in figure 2
- have an abrasion resistance such that the relative volume loss shall not exceed $150mm^3$
- have a thickness of at least 5mm between the cleats, and at least 8mm including the cleats from the forepart to the seat area
  - the seat area shall have a thickness of at least 5mm*

7.2.5 Heels

The heels shall:

- be of a moulded rubber that complies with the requirement of type R4 of SANS 1437
- have the pattern as shown in figure 3 and the same abrasion resistance as the soles
- have two semi horse shoe metal holders embedded in the compound of the heel,
  - with at least four nail receptacles in each,
  - fixed at 13.0 mm ± 0.5 mm (un-finished) 10.0 mm ± 0.5 mm (finished) from the edge of the heel
- have a support pillar of diameter at least 15,0mm in the centre of the cavity
- have a height in accordance with the pitch of the last used

7.2.6 Seat lifts

The seat lifts shall:

- be of firm vegetable-tanned leather and shall not contain loose-fibred leather
- have a thickness that shall conform to the thickness of the welt

No skeleton seat lifts shall be used.

7.2.7 Shanks

The shanks shall:

- extend from the joint line to a distance of at least 25 mm under the heel, measured from the breast line towards the rear of the heel
- conform to the bottom contour of the last
- be of a combination of steel and fibreboard

The steel portion of a shank shall be fluted and shall be of steel of at least 1,0 mm thick.

The width of the steel shanks shall be at least 9,5 mm and the width of the fibreboard shall be such that the backer fits between the raised lips of the inside and outside of the waist

7.2.8 Bottom filler

The bottom filler shall be a granulated cork filler, that complies with the requirements given in column 2 of table 7 when tested in accordance with the relevant methods given in column 3 of table 7.

Table 7 – Requirements for Granulated Cork for Bottom filler

1	2	3
Property	**Requirement**	**Test method**
Fatigue bending, after 3 000 cycles	The specimen shall not break	SANS 6134
Heat insulation,°C, min.	50	SANS 6135
Apparent density, g/m^3	0,45 – 0,60	SANS 5629

7.2.9 Threads

The threads used for welt sewing and for outer sole stitching shall be polyester and cotton core-spun threads that complies with the requirements of SANS 1362 and with the additional requirement when tested according to the relevant methods given in column 3 of table 8 complies with the requirements given in column 2 of table 8.

Table 8 – Additional Requirements for Welt Sewing and Outer sole Stitching Thread

1	2	3
Property	Requirement	Test method
Composition	20% cotton 80% Polyester	
Welt sewing thread		
Result linear density	R890 Tex	SANS 572
Breaking strength	400	SANS 577
Outer sole stitching thread		
Resultant linear density	R800 Tex	SANS 572
Breaking strength	350	SANS 577

7.2.10 Forepart and Seat Socks

Seat socks shall be a of the material specified in 7.1.6

8. Construction

8.1 General

The general construction requirements are the following:

- the method of construction shall be in accordance with the Goodyear welted principle and shall be such that an inner sole, a welt and an outer sole are used.
- the outer sole shall be secured to the welt by a lock-stitch seam.
- the stitching shall not extend around the seat.
- the seat lift shall be stuck to the lasted seat, and the outer sole shall be stuck to the welt and seat lift (before stitching).

8.2 Lasts

The last for all sizes shall be the 91522 last.

The size(s) and fitting(s) (Narrow, Medium or Wide) shall be as specified in the order or contract.

8.3 Upper Construction

The upper construction shall be of the Gibson type with:

- plain vamp (see figure 1)
- the vamp a fabric-lined plain vamp
- the quarters folded at the ankle and at the tab edge
- the base of the tongue correctly fitted into the recessed facings of the quarter linings
- the back straps folded over at the top edges
- Quarter linings which do not have a seam at the centre of the back.
  - the quarter linings shall be so recessed at the front as to allow for proper tongue and vamp fitting
- tongue linings sewn to the flesh side of the tongues in such a manner as to leave a margin at the sides and the top, in the range 2 mm to 4 mm, between the edges of the tongue and of the tongue lining
- the top of the quarters padded with a 4,5mm ± 0.5mm foam

8.4 Closing

8.4.1 Skiving

Skiving shall be done in a manner that will prevent the formation of ridges inside the shoe.

8.4.2 Folding

Folding shall be wide enough to allow the edge stitching to pass through the folded edge. Slashes shall not extend further than the stitching line.

8.4.3 Seams

The seams shall comply with the following requirements:

- all upper seams shall be free from ridges and roughness.
- there shall be no loose, ragged or uneven seams and all loose thread ends shall have been removed.
- all seams shall be lock-stitch seams.
- thread tensions shall be so balanced that the lock is located in the centre of the materials being stitched.
- the back seam shall be a zig-zag seam. The minimum requirements for the attachment of the various upper components shall be as given in table 9.

Table 9 – Requirements for attachment of upper components

1	2	3	4
Seam	Number of rows of stitches, min	Type of Thread	Number of Stitches per 25 mm
Back Seam	1 row, zig-zagged	Ticket No. 36	10 - 14
Back strap	1 row along edge	Ticket No. 50	10 – 14
Side seam	2 close rows along edge and 1 row 3mm away from nearer edge row	Ticket No. 36	10 – 14
Tongue to vamp	1 row along edge and 1 row 3mm away from edge row	Ticket No. 50	9 - 14
Stay rows	2 close rows not less than 3mm and not more than 8mm above and parallel to top row of side stitching and not shorter than 16mm. The stay rows shall run through to the corner of the quarters	Ticket No. 36	10 – 14
Quarter linings	1 row along edge and 1 row 3mm away from edge row	Ticket No. 50	9 – 14
Tongue lining	1 row along edge of lining	Ticket No. 50	9 – 14

8.4.4 Eyeletting

The eyelets shall be securely fastened on the facings of the shoes and shall be evenly spaced and shall have a smooth roll clinch setting.

8.4.5 Lacing of closed uppers

After eyeletting has been completed, the machine lacing shall provide for a 6 mm opening before lasting, with a tolerance not exceeding +3 mm after lasting.

8.5 Preparation of bottom stock

8.5.1 Inner soles

The inner soles shall comply with the following requirements:

- the inner soles shall be accurately cut to the correct shape of the last
- the stuck-on rib shall be attached to the inner sole in a manner that provides an even, firm base for welt sewing
- the seats of the inner soles shall be reinforced on the top side with firm vegetable – tanned leather of thickness at least 2,1 mm
- the reinforcing leather shall be roughened and the front edge shall be so skived that the reinforcement does not produce a ridge inside the shoe
- the roughened reinforcing leather and the seats of the inner soles shall be stuck together with an adhesive
- the inner soles shall be fully gemmed with gemming duck (of mass per unit area at least 270 g/m^2) that has been coated with adhesive
- the gemming duck shall be firmly and smoothly fitted to the base of the lip

- the latex foam (see table 5) shall be accurately located and securely laminated on the wearing surface of the innersole ¾ forepart of the insole
- the forepart shall be covered with a syntan re-tan lining material see 8.1.8
- the innersoles shall then be moulded to conform to the bottom contour of the last

8.5.2 Outer soles and Heels

8.5.2.1 Outer soles

The outer soles shall comply with the following requirements:

- the portion of the outer soles to be stuck to the welt and seat lift shall be roughened.
- the seat lift both the grain side and the flesh sides of the seat shall be roughened before application of the adhesive

8.5.2.2 Heels

The inner side of the full rubber heel shall be roughened by utilizing a wire brush.

8.6 Making

8.6.1 Back-part moulding

The stiffeners of the correct size, properly activated, shall be:

- correctly positioned in the uppers which shall be back-part moulded
- well stuck to both the lining and the upper

8.6.2 Lasting

Toe-puffs of the correct size and properly activated shall be correctly positioned in the uppers.

The quarter linings shall be properly drafted and the seats of the uppers shall be assembled in such a manner as to provide for a lasted seat that has an overlay of 13mm to 16 mm.

The shoe shall remain on the last long enough to allow the toe-puff and stiffener to dry and set thoroughly

The seat shall be tack lasted

8.6.3 Welt Sewing

The thread used for welt sewing shall:

- have a linear density of at least R 890 tex (See Table 8)
- be properly waxed, and there shall be an average of 3,5 stitches per 25 mm

The welt shall be sewn in such a manner that the seam, after inseam trimming and welt beating, is tight and even

8.6.4 Shank fitting and bottom filling

The shank fitting and bottom shall be done as follows:

- the forward end of the shank shall be flush with the inner sole at the joint line
- the shank shall be inserted with the fibreboard section against the inner sole and shall fit the contour of the shoe bottom properly
- the bottom filler shall be so applied and pressed into the inner sole cavity that there are no gaps between the inner edge of the inner sole rib and the filler material
- the filled bottom shall extend with a uniform even surface tot the shank portion
- cavities at the heel and in the waist shall be filled with bottom filler

8.6.5 Seat lift attaching

The seat-lift shall be attached as follows:

- the lasted overlay of the seat of the shoe shall be roughened.
- the grain side of the seat lift and the lasted overlay of the seat of the shoe shall be coated with an adhesive
- the seat lift shall be properly stuck to the lasted overlay of the seat of the shoe and shall show no gaps or unevenness

8.6.6 Sole laying

The sole laying shall be as follows:

- the inner side of the welt shall be roughened
- the adjoining surfaces of the welt, outer sole and seat lift shall be coated with an adhesive
- the outer sole shall be correctly positioned on the welted shoe bottom and so attached that there are no gaps between the welt and the outer sole edges or between the seat lift and the outer sole edges

8.6.7 Rough rounding

The welts and soles shall be so rough rounded as to provide for an edge extension (on the finished shoes) of 5,0 mm ± 0,5 mm at the inner joint and at the toe and of 6,5 mm ± 0,5 mm at the outer joint

8.6.8 Outer sole stitching

The requirements for the outer sole stitching are as follows:

- the thread used for the outer sole stitching shall have a linear density of at least R 800 tex.
- there shall be an average of not less that 5 stitches and not more than 6 stitches per 25 mm
- the shuttle thread shall be well waxed (with hot wax) and the lock of the stitching shall be approximately two-thirds down the thickness of the outer sole
- the stitching on the welt shall be not less than 1,5 mm and not more than 2,5 mm away from the finished sole edge

8.6.9 Seat fastening

The requirements for the seat fastening are as follows:

- the seat of the outer sole shall be fastened with iron rivets of the correct length to ensure proper attachment of the seat of the outer sole to the inner sole.
- the spacing of the rivets shall be in the range 10 mm to 12 mm from centre to centre of rivet heads
- the rivets shall be well clinched on the seat of the inner soles inside the shoes with the rivet heads indented below the surface of the rubber

8.6.10 Heel attaching

The heel shall be attached as follows:

- the outer side of the seat of the outer sole shall be roughened.
- the roughened portions of the seat of the outer sole and the inner side of the rubber heel shall be coated with an adhesive
- the heel shall be so stuck to the seat of the outer sole that there are no gaps between the heel and sole edges
- the heel shall be nailed down with heel nails of sufficient length to pass through the heel and penetrate the full thickness of the outer sole, the seat lift and the insole
- heel nails shall be so driven home that the nail heads bear on the nail-holders embedded in the rubber heel

8.6.11 Heel pull – off strength

When a pair of shoes is tested the initial peak load shall be at least 600N and the average force required to pull off the first 40 mm from the back of the heel shall be 300N.

9. Workmanship and finish

9.1 General

Workmanship and finish shall be of a standard at least equal to that of the pre-production samples. (See annex A.2)

9.2 Heel trimming

Heels shall be trimmed square to the heel seat. The extension at the seat shall be not less than 1,5 mm and not more than 2,5 mm.

9.3 Edge trimming

Edges shall be trimmed square.

9.4 Burnishing

The welt and seat lift shall be stained to match the upper material and their edges shall be well waxed and burnished.

9.5 Seat socks

Shoes shall be provided with seat socks (see 7.2.10).

9.6 Laces

Each pair of shoes shall be provided with one pair of laces.

9.7 Cleaning

The shoes (both uppers and soles) shall be properly cleaned, using a clean cloth or brush. The upper leather shall be polished with a high-grade wax polish or dressing.

9.8 Freedom from defects

The upper leather shall be properly cleaned and polished.

9.9 Freedom from defects

Inner soles shall be free from protruding grindery. The inside of the shoe shall be free from roughness and pleats. The entire bottom shall be free from cracks, bubbles, blisters, mould marks, flow marks and foreign matter.

10. National Stock Numbers

The shoes shall be available in two fittings, medium and wide and in the size range 232 to 322

The National Stock Numbers for the different sizes are listed in Table 10 below.

Table 10 – National Stock Numbers

1 National Stock Number	2 Size

11. Packaging and marking

11.1 Packing

The packaging shall comply with the following requirements:

- the shoes shall be delivered in commercially clean and dry condition.
- each pair of shoes shall be packed in an individual shoe box that will protect it from damage during normal transportation, handling and storage.
- the boxes shall be packed in a corrugated board bulk container that complies with the requirements of specification 05181-100-209, "Corrugated Board Boxes for Clothing and Footwear", which is then labelled and sealed.
- only shoes of the same size shall be packed together in a bulk container. Shoes of different sizes may be packed together to accommodate the last part of an order or contract.
- the number of pairs in each bulk container shall be as follows:

  - Sizes 232(4)–255(7): 15 per box and
  - Sizes 262(8)-and larger: 12 per box.

11.2. Marking

11.2.1 Shoes

Each shoe shall bear the following information, neatly and legibly impressed on the waist of the inner sole by means of steel stamps

- the manufacturer's name or trade mark;
- the size and fitting (N, M or W) of the shoe;
- the year of manufacture; and
- the National Stock number (NSN).

In addition the production batch number, the size and fitting of the shoe shall be permanently impressed on the quarter lining.

11.2.2 Shoe Boxes

Shoe boxes shall bear the following information written in black, clearly and indelibly marked on the short end of the shoe box:

- the description; the size of the shoe;
- the fitting number;
- the manufacturer's name, trade name or trade mark;
- the relevant NSN number; ticket/batch number; and
- any further information specified by the purchaser.

11.2.3 Bulk containers

In addition to the address for delivery, each bulk container shall be labelled with additional information on the four sides of the lids (outer component). The information shall be written or printed in legible and indelible block letters and the label shall be of minimum A4-paper size, and shall contain the following:

- the manufacturer's name or trade mark or both;
- the description;
- the size and fitting (N, M, or W) of the shoes;
- the National Stock Number (NSN);
- the quantity;
- the order number;
- the year of manufacture;

11.3 Care-labelling

A swing label with care and use instructions that shall contain the substance of the wording listed below and shall be attached through the eyelet of one shoe of each pair of shoes:

- Be sure your shoes fit properly.
- Clean your shoes daily.
- Remove all dust and dirt using a brush or wet newspaper.
- Do not leave near heat as this will make the leather hard and brittle.
- Do not use any form of heat on your shoes.

12. Test Methods

12.1 Conditioning of test specimens and test conditions

Use SANS method 5616 to condition samples and prepare them for testing. All physical tests and measurements shall be carried out under these conditions unless otherwise specified in the relevant test method.

12.2 Test Methods

Use the test methods as prescribed in tables 2 to 8.

12.3 Test Method for Heel "pull - off strength"

12.3.1 Apparatus

The apparatus to be used is a suitable power driven tensile testing machine that has a constant rate of traverse, fitted with jaws of width at least 25 mm and that is equipped with a means for graphically registering the forces applied during a test.

12.3.2 Test specimen

The test specimen is one pair of shoes prepared as follows:
Cut away the heel using a band saw or similar equipment capable of making a horizontal cut from the heel breast to a point 13 mm from the back of the heel to meet a vertical cut across the heel at that point. The horizontal cut is made at a depth such that the heel nail holders remain in the shoe.

12.3.3 Procedure

Clamp the quarter of the first shoe in the uppers jaws of the tensile testing machine *20 mm from the top edge. Clamp the back of the prepared heel in the lower jaws of the machine. Operate the machine at a speed of 60 mm/min *6 mm/min and record the initial peak load and the load fluctuations over the length of the heel using a graph speed of 20 cm/min. Repeat the test on the second shoe.

12.3.4 Assessment

Report the initial peak load of heel pull-off and calculate the arithmetic mean of the force required to pull off the first 40 mm from the back of each shoe.

ANNEXURE A

(Normative)

SPECIAL CONDITIONS OF TENDER

A-1 GENERAL

A-1.1 Unless otherwise stated, the South African Army (or an organization appointed by it), shall be the inspecting authority.

A-1.2 Three pre-production sample shoes shall have been inspected, tested and approved by the inspecting authority before bulk production is commenced. Each one of these samples shall be accompanied by a trim chart containing a sample of each component material and the relevant certificates. It shall be the duty of the manufacturer to give adequate notice to the inspecting authority of the availability of these samples.

A-1.3 The shoes shall be subject to inspection during the course of manufacture. The inspector shall, during normal working hours, be given all reasonable facilities for carrying out his duties and shall have the right of entry into the contractor's factory and the factory or works of any subcontractor where work on shoes supplied to this specification may be in progress.

A-1.4 The contractor shall inspect the finished shoes for compliance with the specification before submitting them to the inspecting authority for final inspection.

A-1.5 Before acceptance, the shoes shall have been inspected and tested by the inspecting authority and found to comply with the requirements of the specification.

A-2 DOCUMENTATION

One container of each consignment shall be marked "DOCUMENTS" and in addition to the shoes, shall contain the following:

a) The packaging slip or delivery note;
b) Where applicable the inspection certificate(s); and
c) A copy of the invoice containing the following information:

- the order number;
- the financial authority number; and
- a full description of the consignment, i.e. national stock number, quantity, etc.