No. IV-21011/41/2009-Prov-I
Government of India
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,
New Delhi, 16.11.2009

To

The DGs:Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D

Subject:- Up- gradation of specifications for the CTS items-regarding

The specifications, up-graded/framed by the DGS&D, for the following CTS items, have been accepted by the Competent Authority in MHA:-

(1) Jersey Woolen 'V' Neck Dyed –Annex-'A'
(2) Vest Full Sleeve -Annex-'B'
(3) Ankle Boot Rubber Sole (Jungle Boot)- Annex-'C'
(4) Boot High Ankle DVS (Improved version)- Annex-'D'

2. Henceforth, all the CPMFs should procure the above items required by them strictly as per the laid down up-graded specifications of the said CTS items..

17/11/09

(R.S.Sharma)
Director (Prov)

Copy to:-

DD(Procurement),MHA

Copy for information to:-

PS to JS(PM),MHA

GOVERNMENT OF INDIA
MINISTRY OF DEFENCE
DGQA ORGANISATION

SPECIFICATION

FOR

BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)

PROVISIONAL SPECIFICATION No. IND/TC/3844(a)
DRAWING PLATE ATTACHED: SIX SHEETS

Cat Part No. NIV

All clauses in this specification shall be complied with in every respect irrespective of the source of supply of the materials and / or components. Should any discrepancy be found between this specification and any sample or pattern, loaned for any purpose, this specification and/or other connected specification / or drawings shall be taken as correct.

ISSUED BY

CONTROLLER
CONTROLLERATE OF QUALITY ASSURANCE
TEXTILES AND CLOTHING
POST BOX No 294
KANPUR- 208004

RECORD OF AMENDMENTS

AMENDMENT Sl. No.	DATE	DETAILS OF AMENDMENTS	AMENDMENT CARRIED OUT BY & DATE

-3-

CONTENTS

0.0 FOREWORD

0.1 This specification has been prepared by Controller, Controllerate of Quality Assurance (Textiles and Clothing), Post Box No. 294, Kanpur to lay down the constructional details, method of testing, performance and Quality Assurance (QA) requirement.

0.2 This specification is based on the technical data & samples provided by OEFy. Kanpur as well as trial evaluated samples by CQA(T&C) test laboratory and approval received from Army HQ.

0.3 This specification shall be used for tender enquiry, procurement, manufacture and QA of the item covered by this specification.

0.4 QA Authority for this store is CQA(T&C), Kanpur. Enquiries regarding this specification relating to technical or any other contractual conditions shall be referred to QA authority mentioned above/name in the tender or contract.

0.5 Copies of any other reference documents such as specification/Drawing/Instruction/Guides, can be obtained on payment from AHSP or from respective agencies as shown in next page.

Specification	Sources	
I.S. Series		Director General Bureau of Indian Standard, Manak Bhawan 9, Bahadur Shah Zafar Marg NEW DELHI-110 002
IND/GS/Series JSS & Supplementary Schedule CQA (GS)/SS	The Controller, Controllerate of Quality Assurance (GS) P.B. No. 127 KANPUR-208001	Or his Regional Offices at Mumbai, Kolkata, Chennai and Kanpur Branch or their Regional Establishments. 1. Sr Quality Assurance Officer, SQAE (GS) Hastings, Kolkata-700 022 2. Sr Quality Assurance Officer, SQAE (GS) DGQA, Complex, L.B.S. MARG, Vikhroli, Mumbai -400 083 3. Sr Quality Assurance Officer, SQAE (GS) P.B. NO. 307, KANPUR-208001 4. Sr Quality Assurance Officer, SQAE (GS), DGQA Complex, Pazhavanthangal CHENNAI-600114 5. Sr Quality Assurance Officer, SQAE (GS), Anand Parbat, NEW DELHI-110005. 6. Sr Quality Assurance Officer, SQAE (GS) SHAHJAHANPUR-242001
IND/SL Series	The Controller, Controllerate of Quality Assurance (M) P.B. NO. 229, KANPUR-208001	
IND/TC Series	The Controller, Controllerate of Quality Assurance (T&C) P.B. NO. 294, KANPUR-208001	
IND/SL series for Petroleum products (if required)	The Controller, Controllerate of Quality Assurance (Petroleum Products) P.B. NO. 244, KANPUR-208001	
DMSRDE Series (If required)	The Director DMSRDE, G.T. ROAD, KANPUR –208013	

1.0 SCOPE

1.1 This specification covers the requirements of Boots High Ankle DVS in size 5 to 12 with Medium and Large in each of the size. These are meant for use by army personnel.

1.2 The boots described in this specification are made from Chrome tanned leather in conjunction with nylon black cloth with suitable padding for comfortable use. This boot is also lined at vamp, quarter and counter area with combination tanned lining leather to absorb perspiration. These boots are manufactured with cleated rubber soles and heels by Direct Vulcanizing Process.

1.3 The boots are supplied with 'Laces Nylon Black 160cm long'.

2.0 RELATED SPECIFICATIONS/REFERENCES

2.1 Reference is made in this specification to: -

(i)	IS: 539	Naphthalene
(ii)	IS: 579: 1996	Sole leather Veg. Tanned
(iii)	IS: 1398-1994	Packing Paper, Waterproof, bitumen Laminated
(iv)	IS: 2500 Pt II-2001	Inspection table Inspection by variables for percent defect
(v)	IS: 2508-2003	Low Density Polythene Film
(vi)	CQA (GS)/ US/460	Boxes fibre board rigid corrugated triple Wall 7 ply.
(vii)	IS: 3400 (Pt I) 2003	Method of test for Vulcanised Rubber Tensile Stress/Strain Properties
(viii)	IS: 3400 (Pt II) 2003	Method of test for Vulcanised Rubber Hardness
(ix)	IS: 3400 (Pt IV) 2003	Method of test for Vulcanised Rubber Accelerated ageing
(x)	IS: 3400 (Pt IX) 2003	Method of test for Vulcanised Rubber Density
(xi)	IS: 3400 (Pt 22) 2003	Method of test for Vulcanised Rubber Chemical Analysis
(xii)	IS: 3840-1996 Type I	Lining Leather
(xiii)	JSS:8046-6 & SSM.CIGS/SS/126(a)	Tapes Adhesive Brown 50 cm wide.
(xiv)	IS: 4229-2003 (First Revision Amdt No.	Nylon Sewing Threads Black

	1) Variety No. H-5	
(xv)	IS: 4905-2001	Method for random sampling
(xvi)	IS: 5041-2001	Footwear and Stationery Eyelets/Hooks
(xvii)	IS: 5677-2003	Shoes Upper Leather for Direct Moulding Process
(xviii)	IS: 6110-2001	As per Appendix 'A' for determination of Rubber Hydrocarbon %
(xix)	IS: 8085 (Pt I) 2003	Footwear Method of test Dimensions, fitting, adhesion test etc.
(xx)	IS: 10945-2002	Shanks for Footwear
(xxi)	IS: 12734-2002	Polypropylene Twine
(xxii)	DMSRDE/T&GS/92/403	Tape Nylon Thick 25 & 51 mm width.
(xxiii)	IND/TC/0155	Fabric Nylon black PU Coated 250g except Threads/ cm (as per Appen. G)
(xxiv)	CIGS/US/50	Lasting tacks (Rustproof) Mild Steel
(xxv)	JSS:8135-10-2004	Polypropylene Strapping
(xxvi)	IND/TC/0304(a)	Laces Nylon Black for Boots & Shoes (except for length)
(xxviii)	IS:2771-1990 Reaffirmed 1995	Corrugated box 3 ply size 385x335x125mm (Drg No. OEFC/SK-1175)
(xxix)	IND/TC/3838(k)	Non-woven Thermoplastic Toe-puff & Stiffener
(xxx)	Drg No. OEFC/SK-1162	Upper lifter insert for Boot High Ankle leather DVS.
(xxxi)	IS:8460-1995	Tissue paper Size 47x 76 cm
(xxxii)	IS: 7888:1976	Polyurethane Foam
(xxxiii)	IS:1741-1960	Latex foam rubber Product

3.0 TERMINOLOGY, DEFINITIONS AND SYMBOLS

3.1 For the purpose of this standard the definitions and terminology given in the relevant specification are applicable.

4.0 STANDARD PATTERN

4.1 The standard pattern of the Boots High Ankle DVS held in the custody of The Controller, Controllerate of Quality Assurance (Textile & Clothing), Kanpur

shall constitute the standard with regard any particular or properties not noted/defined in this specification.

5.0 MATERIAL

5.1 The boots shall be manufactured from the following materials: -

S.No	MATERIAL	SPECIFICATION
(i)	Leather Chrome Tanned, black Zug-grain (full hide/side) for direct molding process for vamp, eyelet piece, quarter strengthening piece and counter.	IS: 5677-2003 with 4% Chromium content
(ii)	Full Chrome Tanned Plain Leather (full hide/side) black for toe cap	IS:5677-2003 with 4% Chromium content
(iii)	Leather Lining black Combination Tanned printed dry milled for quarter, eyelet piece & counter lining	IS: 3840-1996 (Type 1)
(iv)	Leather Lining natural colour Combination Tanned (without pigment finish) for vamp lining & socks	IS: 3840-1996 (Type 1)
(v)	Sole Leather Vegetable Tanned (Compressed)	IS: 579: 1996
(vi)	Nylon Sewing Thread Black	*IS: 4229-2003.
(vii)	Tacks Lasting, mild steel 9mm, 10mm and 12mm long (Rust proof)	CIGS/US/50
(viii)	Eyelets Aluminum Enameled Black/ hooks brass for boots.	IS: 5041-1978
(ix)	Shanks Steel Ribbed (Rust proof)	IS: 10945-1984
(x)	Laces Nylon Black 160 cm long for boots	IND/TC/0304(a) except for length of laces which will be 160cm

(xi)	Rubber compound for sole and heel	As per Appendix "A"
(xii)	Tape Nylon Thick Black 25mm & 51mm for reinforcement at quarters	*DMSRDE/T&GS/92/403
(xiii)	Fabric Nylon Black PU Coated 250g	*IND/TC/0155 except Threads/ cm (as per Appendix "G" of this specification)
(xiv)	Non-woven Thermoplastic Toe-puff & Stiffener.	IND/TC/3838(k)
(xv)	Reinforcing material	*As per Appendix "E" of this specification.
(xvi)	Foam Black 8 mm	*As per Appendix "G" of this specification
(xvii)	Foam white 10 mm	*As per Appendix "G" of this specification.
(xviii)	EVA Foam 2mm	Best trade quality.

Note: - Besides the above materials, a suitable rubber compound/adhesive and pulp fibre board/ light wood (as heel filler) will be required to be used so as to provide the functional requirements. Specification with asterisks (*) marks are for guidance purpose only.

6. PROCESSING

6.1 Construction

6.1.1 The boots shall be made by Direct Vulcanised Process (DVP) of construction using wooden or plastic last model No. 9150 conforming to the dimensions given in Appendix 'B' to this specification.

6.2 Design

6.2.1 The boot shall conform to the design and shape as illustrated in the relevant plate attached to this specification. The quarter should be fabricated from PU coated fabric, color black, duly lined with leather lining black combination tanned dry milled. A layer of foam to be placed in between fabric & leather. Upper components consists of eyelet facing, quarter strengthening piece, collar and out-side counter should be of Zug-Grain printed chrome tanned leather. The top of the quarter should be padded with foam in between the upper and lining. The joint at vamp should be strengthened with one rivet in each side. The fabric portion of the quarters should be strengthened with tape nylon thick 51mm at middle of facing to counter diagonally. Each facing of boots should have 04 Nos of hooks from top of quarter and thereafter five eyelets on lower side at equidistance. The center of first hook should be at 16-18 mm from the top and the center of lowest eyelet at 14-15mm from bottom end of facing. The full bellow tongue is made of PU coated

fabric black duly lined with same fabric nylon black and a thin layer of the foam (approximately 3-4 mm thick) is to be pasted in between the two layers. Tongue is joined with vamp (vamp as underlay) by double row stitching. The top of the full bellow tongue should be secured by "U" binding with tape nylon 16-18mm all along and stitched with thread nylon (TKT No.40, 3 ply) The vamp should be lined with leather lining natural color, combination tanned (without pigment finish). Upper components consist of Toe-cap should be of plain full chrome tanned leather and provided with extended jug loop made of tape nylon 25mm. A full sock made of leather lining natural color combination tanned (without pigment finish) lined with EVA foam 2mm to be placed on the insole to provide cushioning effect to the user.

6.2.2 Quarter lining is divided into three components - inside and outside quarter lining and inside counter lining. Inside and outside quarter lining joined at the center of the back portion by stitch and turn method. Counter lining is joined over the quarter lining. Point must be noted here that counter lining has to be joined in such a way that the flesh side of the counter lining should be in contact with foot of the wearer. Counter lining should have no finish in the flesh side.

6.3 **Shape of Components**

6.3.1 The patterns of the quarters, outside counter, vamp lining and toe puff shall be so designed that these do not form pleats at 'Toe' and 'Counter' regions during lasting. It is recommended that cleats of about 5 mm depth to be provided in Toe cap, Counter Stiffener and Toe-puff to eliminate the pleats formation at toe and counter. Number of cleats may vary from component to component.

6.4 **Cutting of Components**

6.4.1 The various upper and bottom components shall be cut from the materials and to the thickness as prescribed in Appendix 'C'. All components shall be free from serious grain damages, flay cuts and other visual defects. Care shall be taken that all parts, forming the upper are cut so that the lines of tightness of the leather lie in the direction from heel to toe.

Note:- For the guidance of manufacturers, the correct locations for cutting of components are given in col. 3 of Appendix 'C'.

6.4.2 All the upper components of leather shall be skived adequately and properly. All the leather components having underlay allowance needs to be skived. The width of the skiving is about 9 mm and angle of the skiving is about 45^0. Leather components having raw edge, also needs to be skived. The width of this skiving will be 2-3 mm and final thickness of the skived area should be about 70-80% of the original thickness. This skiving is done to give uniform look to the components

(a) Thermo-plastic material for Eyelet reinforcing.
(b) Top line reinforcing tape &
(c) Thermo-plastic material for Trade line reinforcing.

The requirement of each type of reinforcing material has been given in appendix "E".

6.6 **Lasting**

6.6.1 The stiffener having cleats (3-5 in number) shall be of the correct shape to fill the counter pocket of the boots. It has to be skived properly on the edge. It will then be activated properly by pre-heating at required temperature and pressed on flesh side of the upper for 15-20 seconds at requisite pressure so that it sticks properly to the upper. After activation the back part must be molded while the stiffener is still soft and moldable. Back part molding machine with hot & refrigerated mould must be used to achieve better back part shape retention. All layers of the upper shall be carefully pulled over the last with a uniform tension to prevent formation of air pockets in between the layers.

6.6.2 The upper shall be properly laced up to the fourth eyelet before lasting so that the quarters remain in proper alignment on the instep.

6.6.3 In the lasting operation the upper and the insole shall not be wetted or damped too much to show any water spotting or to make the grain pattern of upper leather disappear.

6.6.4 The boots shall be lasted either by adhesive (cement) lasting using appropriate adhesive or by the tack lasting method. It shall be ensured that the upper gets properly embedded to the last and that no separation of the lasted portion is visible after buffing. In case of tack lasting, lasting tacks 12mm shall be used at the toe and seat portions and lasting tacks 10mm at the remaining portion. Seven to eight numbers of lasting tacks shall be used per 5cm.

6.6.5 The pleats/wrinkles formed during lasting in the lasting margin shall be properly set or removed by pounding, trimming or heal seat crowning or combination of all these.

6.6.6 The excess material of the upper stretched beyond the lasting allowance of about 13mm shall be neatly removed by cutting so as to avoid the probable interference in the direct and adequate adhesion between the rubber sole and leather insole. Proper bottom filler is added to avoid any hindrance in sole bonding.

6.6.7 The boot shall remain on the last long enough to ensure proper shape of the upper and adequate hardening of the toe puff and the stiffener.

6.7 **Buffing**

at the raw edge area. Raw edge then needs to be edge colored so that no white tinge is appearing.

6.4.3 The collar component made of Zug-grain leather needs to be splitted. The final thickness of the component should not be more than 1 mm. The lining component, which is stitched and turned to form collar also need to be lightly skived. However the width of the skiving should be around 15 mm.

6.4.4. The insole shall be of uniform thickness throughout. The sharp edges of the insole shall be rounded off properly. The flesh side of the insole shall be buffed properly so as to ensure proper bonding between insole and rubber sole and heel.

6.4.5 The stiffener shall be of the correct shape to fill the counter pocket of the boots.

6.5 **Upper Closing**

6.5.1 The uppers shall be stitched/closed on lock stitch machine using thread nylon (tkt no 15/20 for upper thread, tex value of upper thread is around 250-260. thread used in Bobbin has tkt no 30/40). Number of stitches shall be 3-5 per centimeter. Care shall be taken to maintain the space and uniform tension of the stitching at all places. 134 LR120/130 needle are used for component joining. For stitch and turn stitching, 134 PCL 100 or 134-35 PCL 100 should be used. For textile with textile joint, round point needle of suitable thickness must be used.

6.5.2 Counter component is joined with quarter fabric component by two rows of double row stitching. Each double row stitching is 3 mm apart from one another. Eyelet Piece is joined with quarter fabric component and quarter strengthening piece by double row stitching. Toe-cap and vamp is joined by three row stitching. Lining is attached with eyelet piece at the top by single row stitching. Tape nylon black thick 51 mm used for strengthening quarter fabric is stitched with the quarter fabric through the middle of the tape starting from counter till eyelet piece.

6.5.3 Five aluminum eyelets (colored black) and four brass hooks of proper hardness shall be fitted in each quarter facing. The eyelets shall be clenched without distortion.

6.5.4 The thermo-plastic toe puff having cleats (1or3 in number) at the edge of toe side shall be properly skived. Width of skiving is about 15 mm and angle of skiving is about 45 degree so that the final thickness of the material at the edge, after skiving, is almost zero. Skiving is done on toe-puff only on the edge towards vamp. Toe puff pre-heated at required temperature then to be placed on the flesh side of the upper. Lining is then pasted neatly on the toe-puff. Care should be taken that no wrinkle is formed. Entire assembly then pressed for 15-20 seconds at requisite pressure so that it sticks properly to the upper & lining.

6.5.5 **Reinforcing the upper:** Suitable reinforcement materials must be used to reinforce upper. They are:-

7.2 The thickness of rubber sole and heel from outside for all sizes in the finished boots shall be as under: -

S. No.	Components (Sole)	Thickness (mm)	Remarks
1	At Forepart (at toe area)	15.5 ± 1	Ref Appendix "F"
2	At tread line area	(14.5-15.5) ±1	
3	At waist	(8.5-9.5) ±1	
4	At Heel (at back portion)	32 ± 1	
5	Depth of cleat of sole (at tread line area) & heel	5±0.5 at middle & 5.2±0.5 at the edges	

Note: Thickness of sole or cleat height should be measured as indicated in fig 1 of Appendix 'F' using a graduated eyepiece with 0.1 mm scale graduations after cutting through the sole in the region of the tread.

7.3 Dimensions of last should be as per appendix 'B'.

7.4 Thickness of Leather components should be as per appendix 'C'.

8. WORKMANSHIP AND FINISH

8.1 The general workmanship and finish shall be of a high standard and similar to sealed sample/standard pattern held by CQA(T&C) Kanpur. Each boot should be offered in neat, clean and dry condition.

9. PRE-INSPECTION BY PRODUCER

9.1 ADVANCE SAMPLES: Manufacturers have to submit two pairs (same size & fitting) of the store as advance samples manufactured from approved materials for inspection, testing, and trial/clearance by AHSP prior to commencement of bulk production.

9.2 Manufacturers/Contractors must satisfy themselves first by carrying out thorough pre-inspection of each lot/batch, that the stores manufactured are in accordance with the contract and fully conform to the specification, before tendering to QA officer nominated under the terms of contract.

9.3 A declaration by the Contractor that necessary pre-inspection/tests have been carried out on the stores tendered and the same are fit for inspection and test shall be rendered along with the challan. The declaration shall include the method followed in pre-inspection showing features checked/tested and the test reports be submitted along with challan.

6.7.1 The lasted edge of the upper leather shall be properly buffed, Care shall be taken to ensure then any lasting tacks, if found loosened after pounding or buffing operation, shall be replaced with fresh tacks. Dust, that will generate because of buffing must be removed completely with brush.

6.8 **Shank Fitting**

6.8.1 The steel shank of specified quality shall be fitted at the waist of the insole so that it shall support the waist. The ends of the shank shall be secured by 9mm, lasting tacks one at each end.

6.9 **Heel Filling**

6.9.1 Heel filler of pulp board or lightwood, filling the gap at the seat region of the insole, shall be properly attached with the insole by means of a heel pin.

6.9.2 The heel filler shall be dipped in adhesive prior to attachment with the insole so that adhesive coating is ensured at all the portions of the filler.

6.10 **Direct Vulcanising**

6.10.1 Before processing, the dust or any foreign material shall be properly removed from the surface of the bottom to be adhered in each boot. The bottom surface shall be coated properly with the adhesive. Preferably double layer coating is applied on upper. The rubber sole and heel shall then be assembled with lasted boot by direct vulcanisation process on a high pressure moulding machines. Care shall be taken to see that no air bubbles are entrapped in the boot and all parts are properly and adequately vulcanised.

6.10.2 The moulding flesh at the sole and heel shall be neatly trimmed. Care shall be taken that the upper is in no way cut or damaged during the trimming.

6.11 **Full Sock Fixing**

6.11.1 Full sock made of leather lining natural Combination Tanned (without finish) duly lined with EVA foam 2mm shall be stuck to the insole.

6.12 **Lacing**

6.12.1 Each pair of boot shall be provided with a pair of Nylon flat Laces 160cm of specified quality conforming to IND/TC/304(a).

7. DIMENSIONS & TOLERANCES

7.1 The height of Boot after sole being attached shall be at 240mm ±5mm for size 8 and weight of one pair of boots shall be 1.5kg ±50g for the same size and shall decrease or increase for each size proportionately.

10. **QUALITY ASSURANCE**

10.1 On examination of samples taken from any portion of the consignment or during surveillance inspection shall conform to the requirement when tested in accordance with the methods mentioned against each in the specification.

10.2 ACCEPTANCE MARK : Each boot shall be legibly stamped with indelible ink/paint on the waist near manufacturer's marking using steel stamp of size 6mm or 12mm.

11. **SAMPLING PROCEDURE**

11.1 The Sampling plan & sampling procedure should be as per Appendix 'D' attached.

12. **CRITERIA FOR CONFORMITY**

12.1 The lot shall be considered to be in conformity with the required standard, if the samples drawn for lab test; static and dynamic inspection and on visual examination is found satisfactory.

12.2 The rejected stores shall be marked in such a way that the same can't be re-offered/mixed with accepted stores.

13. **TEST METHOD**

13.1 The material used in the manufacture of boots shall be tested to the specifications/requirements given in clause 5.1 of this specification.

13.2 The material of the rubber sole and heel shall conform to the requirements prescribed in Appendix 'A'. The rubber shall not show any signs of distortion or deterioration like brittleness or crackiness after the accelerated ageing test as given in IS: 3400 Pt IV-2003.

13.3 The vulcanised bottom shall be subjected to adhesion test.

13.4 The testing of rubber sole and heel shall be made at least 24 hours after vulcanisation, allowing the best cool down at room temperature. For accurate results it is recommended to test the sample after 48 hours instead of 24 hours.

13.5 Precision of results: For all the tests, the precision of repeated measurements on the same specimens should be around 7%.

13.6 Reproducibility: In an inter-laboratory trial using same specimens, the average standard deviation must be within the pre-decided accepted limit.

14. **MARKING**

14.1 Prior to be offered for quality assurance, each boot shall be suitably marked using indelible ink/paint on the fixed insoles and socks at the seat with the following details: -

(a) Manufacturer's name or trademark
(b) Month and year of manufacture
(c) Size / fitting
(d) Cat / Part No.

14.2 Alternatively instead of marking on insole, a label (Black background with white/color alphabets) containing the above information shall be stitched at the out side of the boot (both odd) just below the rivet. Size of the visible portion of the label should be approximately 15mm x 5 mm.

14.3 The size and fitting of the boot shall also be legibly and indelibly marked/ engraved on the waist of outer sole.

15. PRESERVATION AND PACKING

15.1 Adequate No. of Naphthalene balls must be put before packing of the boots.

15.2 The following materials shall be used for packaging of Boots High Ankle DVS (improved Version).

15.3 Materials

15.3.1 The following materials shall be used for packaging of stores:

Materials	Conforming to Specification
(a) Boxes Fibre Board Rigid, corrugated, Triple Wall, 7 ply of 650mm x 690 mm x 390 mm	CQA (GS)/US/460
(b) Polypropylene strapping 15mm x 0.50 mm	JSS: 8135-10-2004
(c) Paper packing Waterproof bitumen laminated (Using Kraft paper having substance 60 gm/m^2)	IS: 1398 - 1994
(d) Tape Adhesive Brown 50mm wide.	JSS: 8046-6 & SS No. CIGS/SS/126(a)
(e) Low Density Polythene Film	IS: 2508- 2003
(f) Corrugated Box 3 Ply size 385 X 335 X 125 mm.	IS 2771(Pt 1) 1990 Reaffirmed 1995
(g) Tissue Paper size 47x76cm	IS: 8460: 1995
(h) Upper Lifter insert for Boot Ankle DVS	As per drg No. OEFC/SK 1162

(i) Pouch Silica Gel 1 Gram.	Best Trade quality
(j) SM Galvanised Seal for 12mm wide Polypropylene Strapping.	Best Trade quality
(k) Naphthalene Ball	IS:593

15.4 **Method of Packing**

15.4.1 The stores shall be delivered in new, dry & clean condition.

15.5 **Unit Pack**

Adequate No of Naphthalene balls must be put inside of each pair of the boots. Upper lifter will then be inserted in each individual boots for proper shape maintenance. Individual boot then wrapped with tissue paper. Each pair of the boots then placed heel & toe alternatively i.e. horizontal position in 3 ply-corrugated boxes. One pouch of silica gel then be placed in each box. Each box shall be printed with the following information:

(a) Nomenclature and D.S. Cat Part No.
(b) Manufacturer's name or trademark.
(c) Month & year of manufacture,
(d) Size/ Fitting.

15.6 **Multiple Pack (Boxes fibre board rigid corrugated triple wall 7 ply)**

15.6.1 Ten unit packs (already sealed in unit box) shall be placed in upright position in the Corrugated box packing of 650mm x 690 mm x 390 mm duly lined in inside of the carton with low density polythene film. Each box shall contain boots of one size and fitting only. The flaps on either side of the Corrugated box shall be sealed by means of 50mm wide self- adhesive tape. The box shall be bound by means of polypropylene strapping 15 mm wide and securely sealed by SM Galvanised Seal for 15 mm wide Polypropylene Strapping. Proper precautions shall be exercised so that the strapping is not stressed/ strained during handling. The stores shall be laid suitably in such a way that there is no chance of damage/ shape distortion of the stores. Empty space, if any, inside the carton shall be properly filled with suitable cushioning material (not affecting the preservation of the store) to prevent movement of the contents during transportation. No undue pressure shall be exerted on the contents during packing. The gross weight of each box shall not exceed 40 kg.

15.6.2 The boxes shall be strapped at two places each on lengthwise and width wise with polypropylene straps of 15mm wide and 0.50mm thick conforming to JSS: 8135-10-2004 with strapping machine.

15.7. **Marking of Packing**

15.7.1 Before dispatch, each package shall be legibly marked / printed by water-proof label using preferably black indelible ink/paint distinctly visible, showing the following details: -

(a) Cat No. and nomenclature of the store.
(b) Quantity packed in the box.
(c) Lot and serial No. of the box and gross Wt. in Kg.
(d) Month and Year of packing.
(e) Name and address of the consignee.
(f) AT/Extract No. and date.
(g) Name and trade mark of the supplier.
(h) Inspection Note No. and date.
(j) Acceptance mark.

15.7.2 Above information from (a) to (d) should also be given by bar code label suitably.

16. **WARRANTY**

16.1 "Except as otherwise provided in the invitation to the tender, the Contractor/seller hereby declare that the goods, stores, articles sold/supplied to the purchaser under this Contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specifications and particulars contained/mentioned in the Contract.

16.2 The Contractor/seller hereby guarantees that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 12 months from the date of delivery of the said goods/stores/articles to the purchaser or 15 months from the date of shipment/dispatch from the contractor's work, whichever is earlier and that not withstanding the fact that the purchaser (Inspector) may have inspected and/or approved the said goods/stores, articles, if during the aforesaid period of 12/15 months the said goods/stores/articles, be discovered not to be conform to the description and quality aforesaid or not having satisfactory performance or have deteriorated and the decision of the purchaser in that behalf shall be final and binding on the Contractor/seller to rectify replace by acceptable goods/stores/articles or such portion or portions thereof as is found to be defective by the purchaser within a reasonable period not exceeding three months or as may be allowed by the purchaser in his discretions on the application made thereof by the Contractor/seller and in such an event the above mentioned warranty period shall supply to goods/stores/articles rectified/replaced from the date of rectification/replacement thereof, otherwise the Contractor/seller shall pay

to the purchaser such compensation as determined by the purchaser as may arise by reason of the break of the Warranty herein contained".

17.0 **DEFENCE STORE CATALOGUE No.**

17.1 The store covered by this specification shall bear the following DS Cat. No.: -

Boots High Ankle DVS - NIV

18.0. **DRAWINGS/SKETCHES/PHOTOGRAPHS**

18.1 As per plate attached.

19.0 **SUGGESTIONS FOR IMPROVEMENT**

19.1 This specification is a live document and subject to change/up dating. Any suggestions for improvement of this document may be sent to: -

CONTROLLER
CONTROLLERATE OF QUALITY ASSURANCE
TEXTILES AND CLOTHING
MINISTRY OF DEFENCE
POST BOX No. 294
KANPUR 208 001

DATE:	**CONTROLLER**
Date of resealing:	CONTROLLERATE OF QUALITY ASSURANCE
Date of sealing:	TEXTILES AND CLOTHING
Date of issue:	POST BOX No. 294
	KANPUR 208 001

-20-

APPENDIX "A"
(Ref para 5.1)

CHEMICAL/PHYSICAL REQUIREMENTS OF RUBBER SOLE AND HEEL OF BOOTS

Sl. No.	Characteristics	Requirements	Method of test
1.	Total polymer	50% Minimum	IS:3400 pt 22-2003
2.	Rubber Hydrocarbon	35% Minimum	IS : 6110-2001
3.	Carbon Black	23% Minimum	IS:3400 pt 22-2003
4.	Apparent Density (g/cm^3)	1.2 Max	IS:3400 pt IX – 2003
5.	Tensile Strength (mN/m^2) (a) Original (b) Change after accelerated ageing at 70 ± 2^0 C for 168 hrs in air oven at atmospheric pressure	10.5 Min. +10% of original (max) -20% of original (max)	IS:3400 pt I- 2003
6.	Elongation at break (a) Original (b) Change after accelerated ageing at 70 ± 2^0 C for 168 hrs in air oven atmospheric pressure	250% (min) +5% of original (max) -25% of original (max)	IS:3400 pt I- 2003
7.	Hardness (a) Original (b) Change after accelerated ageing at 70 ± 2^0 C for 168 hrs in air oven at atmospheric pressure	65± 5 IRHD +7 IRHD of original -0 IRHD of original	IS:3400 pt II- 2003
8.	There shall be no visible parting of bottom from the upper at a pressure of 265 Newton at the toe and 314 Newton at the seat when tested for adhesion in accordance with relevant clause of IS: 8085 (Pt I)- 2003.		

NOTE :

1. The rubber materials shall reasonably be free from vulcanised waste/reclaimed rubber and deleterious ingredients like copper manganese and their compounds.

2. The rubber shall be vulcanised adequately. The vulcanised rubber shall be homogenous and free from sulphur bloom. The surface shall be free from blemishes and defects.

3. The contractor shall supply along with the boots two test slabs (one 15 x 15 cm and 6mm thick and the other 30 x 30cm and 1.5mm thick) of the same composition and cured to the same degree of vulcanisation as the sole and heel to facilitate testing of the physical parameters.

APPENDIX "B"
(Ref. Para 7.3)

DIMENSIONS OF WOODEN LAST MODEL NO. 9150 FOLLOWING SIZES AND FITTINGS

Size & Fittings mm	Joint girth in mm	Instep girth in mm	Length of last on size stick mm
5 M	229	232	259
5L	235	238	
6 M	235	238	267
6L	241	244	
7 M	241	244	276
7L	248	251	
8M	248	251	284
8L	254	257	
9 M	254	260	293
9L	260	264	
10M	260	264	301
10L	267	270	
11M	267	270	310
11L	273	276	
12M	273	276	318
12L	279	283	

- 23 -

APPENDIX "C"
(Ref para 7.4)

THICKNESS OF LEATHER COMPONENTS

Sl. No	Components	Materials	Thickness (mm) Min.	Max.
1	2	3	4	5
1.	**Upper (Leather):**			
	(a) Vamp (b) Eyelet piece & Collar (c)Quarter Strengthening piece (d) Counter	Leather Chrome Tanned Black, Zug-grain	1.5	1.8
	(e) Toe Cap	Full Chrome Tanned Leather Black	1.2	1.8
2.	**Upper & Lining (Fabric):**			
	(a) Quarter (b) Full bellow tongue-Upper & lining	PU Coated Black cloth		
3.	**Lining (leather):**			
	(a) Vamp (b) Socks	Leather Lining plain natural Combination tanned (without pigment finish)	0.8	1.0
	(c) Quarter (d)Counter (e) eyelet piece	Leather Lining Black Combination tanned printed dry-milled	0.8	1.0
4.	Insole	Vegetable tanned leather	3.5	4.5
5.	Stiffener a) Original b) Extracted from Boot	Non woven thermo plastic material	1.8 1.7	2.0 1.9
6.	Toe puff a) Original b) Extracted from Boot	Non woven thermo plastic material	1.8 1.7	2.0 1.9

APPENDIX "D"
(Ref para 11.1)

SAMPLING PLAN AND GENERAL SCHEME OF TESTING INCLUSIVE OF COMPREHENSIVE CHECKING/ EXAMINATION FOR BOOTS HIGH ANKLE DVS (IMPROVED VERSION)

Lots Size defined in terms of samples unit like No. of bolts, bales, bundles & boxes.	**Sampling Plan for Boots High Ankle DVS (Improved Version)** **Based on AQL of 4%** **Authy: ISO : 2859**					
Box Fibre Board Containing 10 pairs of boots/16 pairs of shoes.	Visual Parameters		Physical Parameters (for laboratory tests)		Chemical Parameters and other physical parameters requiring long testing time (for laboratory tests)	
	Sample Size	Acceptance No.	Sample Size	Acceptance No	Sample Size	Acceptance No
1	2	3	4	5	6	7
Below 150	13	1	13	1	3	0
151 – 280	13	1	13	1	5	0
281 – 500	20	2	13	1	5	0
501 – 1200	32	5	20	2	5	0
1201 – 3200	50	5	32	3	13	1

NOTE:-

i) Lot – The footwear pairs of the same description/design/nomenclature and of the same batch belonging to one size and fitting or a set of sizes and fittings offered against one challan shall constitute a lot.

ii) Lot Size – The lot size shall preferably not exceed 5 (five) thousand pairs.

1. DRAWING OF SAMPLES

1.1 In all cases samples shall be drawn using technique of random sampling as per IS:4905. The sampling officer shall draw samples for visual examinations as per column No. 2 from the lot offered. The sample so drawn shall represent proportionately all the sizes and fitting of the lot.

1.2 The samples, so drawn, shall be visually examined by the sampling officer and Quality Assurance Report (QAR) prepared. If found satisfactory the sampling officer shall draw (out of it) samples for lab testing and comprehensive checking as per column 4 represent proportionately all the sizes and fittings. The samples so drawn shall be sent to labs for test and checking.

1.3 It shall be ensured that while drawing samples as per column 2, 4 or 6, at least two pair samples of each size and fitting are included. If necessary some more sample pairs may be drawn suitably.

2. TESTING OF SAMPLES

2.1 The samples so received in the labs shall be subject to size/fitting tests, bond strength tests, cross sectional and dimensional check for general get up, workmanship and finish and chemical.

2.1.1 The samples proposed for chemical tests and for time consuming physical parameters shall be of the size as given in col. 6 drawn suitably from the above samples (i.e. from the samples already drawn as per col. 4), comprising all sizes & fittings involved proportionately.

2.1.2 The chemical testing of leather portion shall be done on composite sampling basis (comprising samples of one size/fitting only) for each size and fitting and results in duplicate reported.

2.1.3 The samples size as per col. 6 shall be used for checking and testing of the following parameters: -

(a) Thickness of components
(b) Dimensional details viz height, heel height and depth of toecap.
(c) Ash content in Bottom Leather
(d) Total polymer in rubber sole & heel
(e) R H content in rubber sole & heel
(f) Carbon black content in rubber sole & heel
(g) BS, Mass/10 pair and nature of fibre in laces.
(h) Nature of fibre in stitching thread.
(i) Chemical parameters in upper & bottom leathers.
(j) Physical Parameters of Toe-puff & Stiffeners.
(k) Test related to PU Coated fabric & Tape

APPENDIX "E"
(Ref para 5.1)

MATERIAL DETAILS

a) THERMO-PLASTIC MATERIAL FOR EYELET REINFORCING

Thermo coated non-woven material normally polyester or polypropylene conforming to the requirement below are to be used as materials for this application.

Material	Total Thickness (mils)	Tensile strength (lbs/in)	Backing	Remarks
Non-woven, true stay mat	14	40	Non-woven	Low tensile strength

Thermo coated materials require a special heat press to achieve consistent results. Care should be taken to see that there is no bulky-ness appear in the component.

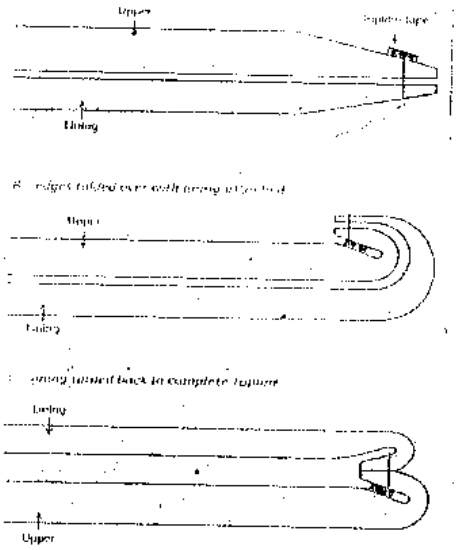
Testing of Eyelet reinforcement material:

The eyelet reinforcement material should conform to SATRA TM149.

b) TOPLINE REINFORCING TAPING

A top-line should be constructed so that strain is distributed as evenly as possible throughout its entire length.

Fig. 1



Top-line tape conforming to the requirement below is to be used as materials for this application. Top-line construction in the present boot should be similar to Fig.1, the width of top-line tape should be minimum 5 mm.

The top-line is pre-taped and the lining stitched in as shown. Pre-taping is again recommended, as any stretching of this first seam can also cause creases. The top-line is then folded and the lining turned back and stuck down all around the top-line.

Sl.No	Material	Total Thickness (mils)	Tensile strength (lbs/in)	Backing	Remarks
1	Nylon/cotton leightweight topline tape	13.0	84	Nylon/ cotton cloth	(Top-line tape for hard leather
		IS:7702	IS:1969		

c) Thermo-plastic material for Trade line reinforcing:

The boot should be reinforced at the trade-line area. Thermoplastic reinforcement material similar to that used for reinforcement of the eyelet be used here. This material is placed between the area of toe-cap and quarter. It will be placed at-least 5 mm below the Quarter and vamp joint and should be at least 10-15 mm below the toe cap. This material should be fused in the flesh side of the upper. Non-woven thermo plastic material sheet similar to eyelet reinforcement material available in wide width sheets or rolls, so that specific shapes can be die-cut for greater accuracy are generally used for this application. Tape should not be applied here. Plain reinforcing material can also be used if the same is coated with adhesive at the time of application-either by hand or machine.

-28

APPENDIX "F"
(Ref para 5.1)

1. Outsole

1.1 Cleated outsoles

1.1.1 Cleated Area

With the exception of the region under the flange of the toecap, at least the shaded area, as shown in the fig 1, shall have cleats, which are open to the side.

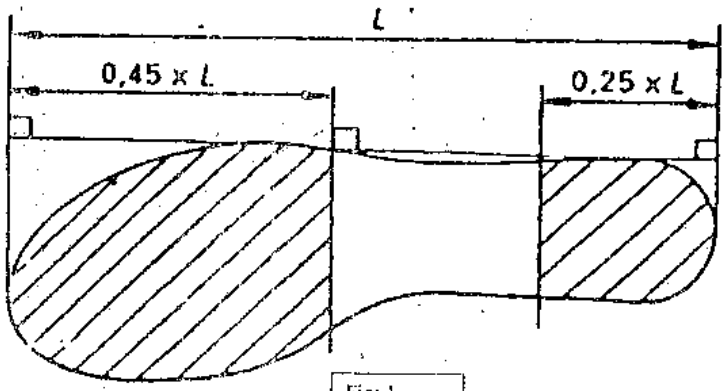
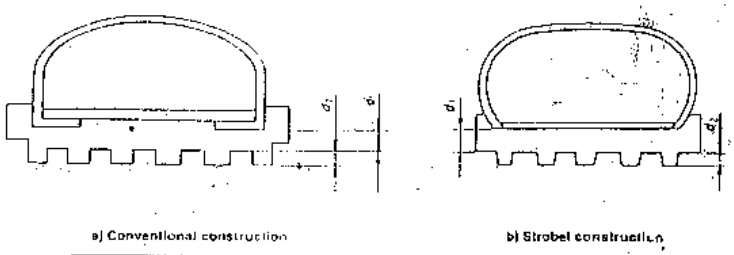


Fig: 1

1.1.2 Thickness

For direct injected, vulcanised or cemented outsoles, the thickness d_1 as shown in fig. 2 shall be as per the thickness given in clause no 7.2. For multilayered outsoles



a) Conventional construction b) Strobel construction

Fig 2 Direct injected, vulcanised and cemented outsoles

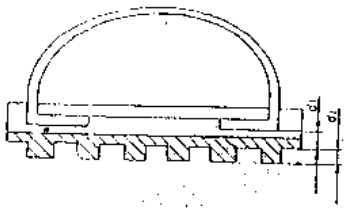


Fig:3 Multilayered outsoles

The thickness d_1 as shown in fig. 3 shall not be less than 4 mm. However dimension given in fig.3 is not applicable for this specification.

Note: Dimension for sole & cleat as referred in clause no 7.2 for all the sizes should be same

APPENDIX "G"
(Ref para 5.1)

1. Foam black 8 mm (Used as padding between Quarter lining and quarter fabric.)

Sl.No	Parameters	Requirements	Test Method	Remarks
1.	Density (Kg/m^3)	24 minimum	IS:7888-1976	These tests are not to be carried out from extracted material.
2	Thickness	8 mm minimum		
3	Compression set (50% deflection for 2 hrs at 70 ± 2^0C)	28±2		
4.	Nature of material	Polyurethane foam		

1. Fabric Nylon Black PU Coated 250g

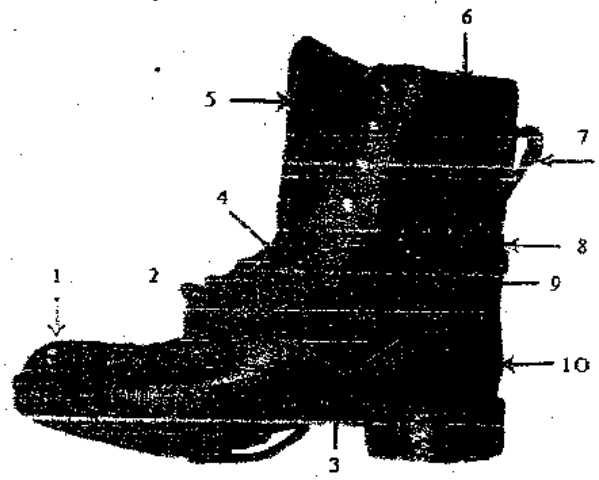
Sl.No	Parameters	Requirements	Test Method	Remarks
1	Threads/ cm (in deprooled fabric)	Warp: 23±2 Weft: 13±2	----	
2	Nature of material (Basic Fabric)	Nylon	IS:667	
3.	Coating	PU (Polyurethane)	Appendix: A of Prov. Specification DMSRDE/T&GS/89/377©	

1. Foam black 10 mm (Used as collar foam)

Sl.No	Parameters	Requirements	Test Method	Remarks
1	Thickness	10 mm minimum	IS:1741-1960	These tests are not to be carried out from extracted material.
2	Compression set (50% deflection for 2 hrs at 70 ± 2^0C)	28±2		
3.	Nature of material	Latex foam		

PROV. SPECN. No. IND/TC/3844
DRAWING PLATE No. 1

BOOT HIGH ANKLE DVS (IMPROVED VERSION)

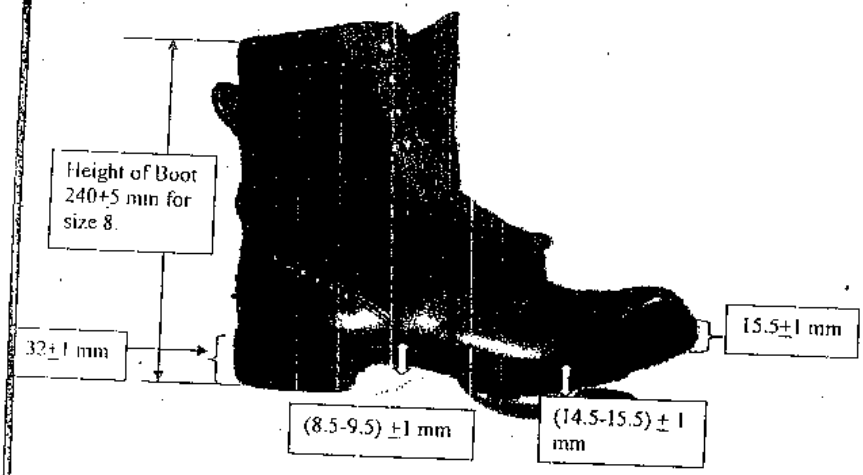


1 Toe Cap	6 Collar
2 Vamp	7 Zug Loop
3 Qtr Re-inforcement piece	8 Quarter (Fabric)
4 Eyelet Piece	9 Qtr Re-inforcement Tape
5 Tongue	10 Counter

DATE:	DIMENSIONS IN mm.	DRAWING PLATE No. P1
Cat Part No. NIV	BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)	PROVISIONAL SPECIFICATION No. IND/TC/3844( )

PROV. SPECN. No. IND/TC/3844
DRAWING PLATE No. 3

BOOT HIGH ANKLE DVS (IMPROVED VERSION)

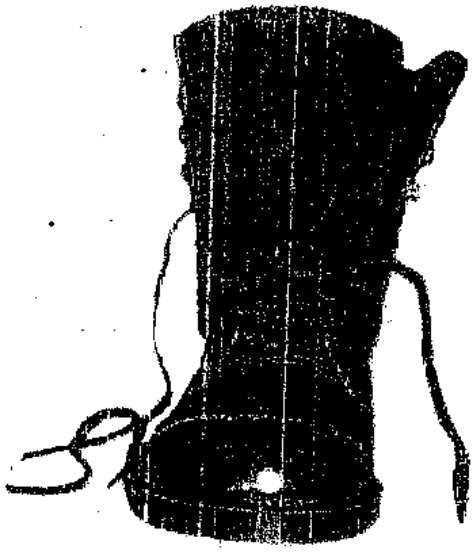


SIDE VIEW

DATE:	DIMENSIONS IN mm.	DRAWING PLATE No. P3
Cat Part No. NIV	BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)	PROVISIONAL SPECIFICATION No. IND/TC/3844(a)

PROV. SPECN. No. IND/TC/3844
DRAWING PLATE No. 2

BOOT HIGH ANKLE DVS (IMPROVED VERSION)



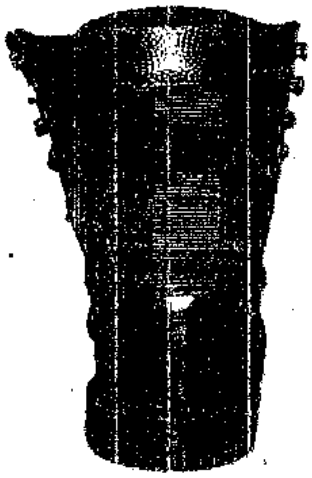
FRONT VIEW

DATE:	DIMENSIONS IN mm.	DRAWING PLATE No. P2
Cat Part No. NIV	BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)	PROVISIONAL SPECIFICATION No. IND/TC/3844(a)

BOOT HIGH ANKLE DVS (IMPROVED VERSION)

PROV. SPEC. NO IND/TC/3844(a)

DRAWING PLATE No.4



BACK VIEW

DATE:	DIMENSIONS IN mm.	DRAWING PLATE No. P4
Cat Part No. NIV	**BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)**	
		PROVISIONAL SPECIFICATION No. IND/TC/3844(a)

BOOT HIGH ANKLE DVS (IMPROVED VERSION)

PROV.SPEC.IND/TC/ 14

DRAWING PLATE No.5

BOTTOM VIEW

DATE:	DIMENSIONS IN mm.	DRAWING PLATE No. P5
Cat Part No. NIV	BOOTS HIGH ANKLE DIRECT VULCANISED SOLE (DVS) (IMPROVED VERSION)	PROVISIONAL SPECIFICATION No. IND/TC/3844(a)