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बूट — विशिष्ट

( तीसरा पुनरीक्षण )

*Indian Standard*

**ANKLE BOOTS FOR HEAVY DUTY PURPOSES —  
SPECIFICATION**

*( Third Revision )*

UDC 685.312.24

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**BUREAU OF INDIAN STANDARDS**  
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NEW DELHI 110002

## FOREWORD

This standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Footwear Sectional Committee had been approved by the Chemical Division Council.

Ankle boots for heavy duty purposes are intended for use mainly by defence personnel. These boots are made by riveting, stitching and screwing method of construction.

This standard was originally published in 1954 and subsequently revised in 1969 and 1981. In the light of latest developments in manufacturing technology, the experience gained during these years and the suggestion of Ministry of Defence [ CQA ( T & C ) ], this standard is being revised again. This revised standard is confined to only essential details of material, manufacturing operations and method of test.

In this revision, the option of fittings of the shoes have been withdrawn since the Ministry of Defence felt that the same is not used by them and the fittings are always specified by them in their purchase orders. Option of using nylon laces and continuous filament nylon threads for stitching of upper of the boots have been included in this revision. For black laces the requirement of freedom from sulphur dyes has been introduced in this revised standard in order to ensure that no damage to the wearer's skin is caused from the same. In addition to the above the limits/values prescribed for the following requirements have been suitably modified in this revision:

- a) number of eyelets;
- b) collar diameter of the eyelets;
- c) length of lasting tacks;
- d) length of heelpins; and
- e) thickness of steel shanks.

A new requirement of number of lasting tacks per decimetre has also been introduced in this revision.

The composition of the committee responsible for formulation of the standard is given at Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## *Indian Standard*

# ANKLE BOOTS FOR HEAVY DUTY PURPOSES — SPECIFICATION

( *Third Revision* )

### 1 SCOPE

This standard prescribes the requirements, methods of sampling and test for ankle boots for heavy duty purposes, such as for use by defence service personnel and border security force.

### 2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

### 3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 2050 : 1991 shall apply.

### 4 GENERAL REQUIREMENTS

**4.1** Ankle boots shall comply with the requirements for design, material, manufacture and finish as given in **4.2, 4.3, 5, 6** and **7** of this standard.

### 4.2 Fittings

The purchaser may specify the fittings of the boots while placing the order.

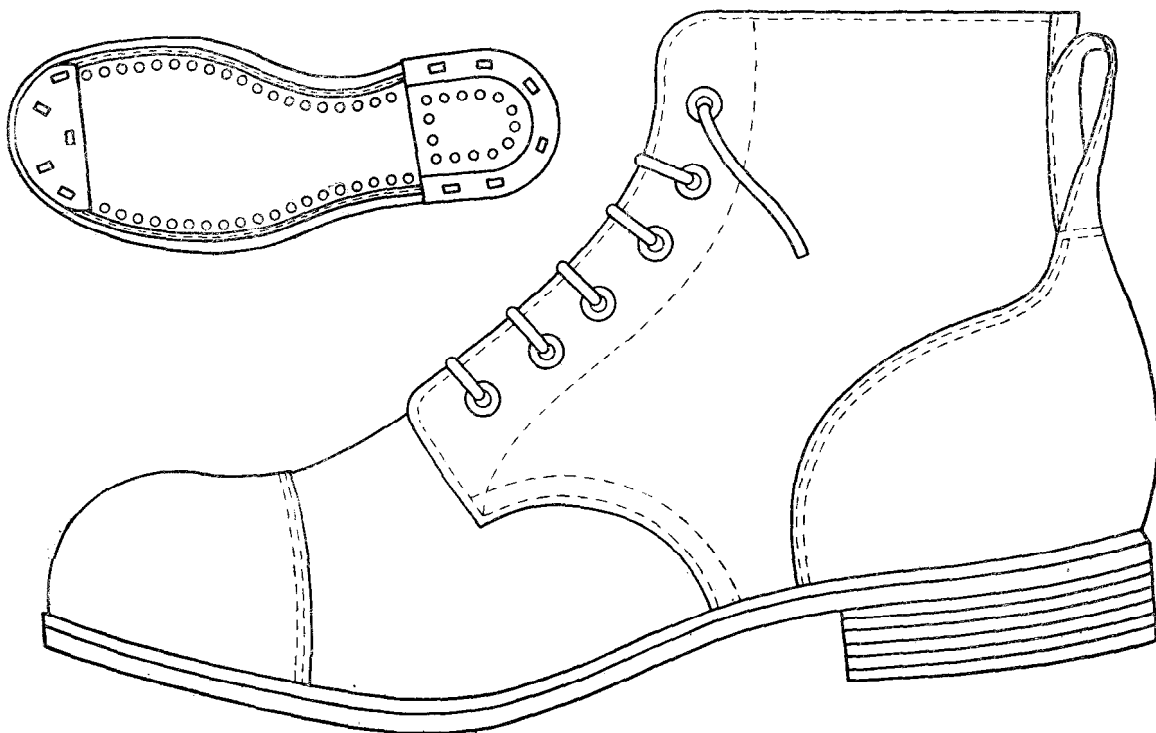
### 4.3 Shape and Design

The boots shall be ankle high with five eyelets and with full vamp or with half vamp (if lined). It shall conform to the shape and design as shown in Fig. 1. The boot shall be provided with full-bellow tongue and made by riveting, stitching and screwing methods of construction.

### 5 MATERIALS

#### 5.1 Upper Leather

Full chrome leather conforming to IS 578 : 1985 shall be used. The colour of the upper leather shall be as specified by the purchaser. Further, if specified by the purchaser, the leather shall be printed with zuggrain.



NOTE — This illustration is diagrammatic only and is not intended to illustrate all details of design.

FIG. 1 ANKLE BOOTS FOR HEAVY DUTY PURPOSES

## 5.2 Lining Leather

The boots shall be either lined or unlined. In case the boots are provided with lining the lining leather shall be vegetable tanned/combination tanned and shall conform to IS 3840 : 1979. Any other type of lining leather as agreed to between the purchaser and the supplier may also be used.

## 5.3 Bottom Material

For sole and heel, vegetable tanned compressed sole leather conforming to IS 579 (Part 1) : 1973, shall be used. For the purpose of this standard the total ash content shall be within 3.0 to 3.5 percent by mass.

NOTE — While checking the conformity of upper, lining and sole leather to the relevant standards mentioned under 5.1, 5.2 and 5.3 the sampling shall be done in accordance with IS 5868 : 1983.

## 5.4 Threads

### 5.4.1 For Upper Closing

Rot-proofed linen threads 92 tex × 5 (or 18s/5 linen count) matching the colour of the upper leather, having minimum breaking load 11 kg and 92 tex × 3 (or 18s/3 linen count) having minimum breaking load 8 kg, when tested on 50 cm length, shall be used. Alternatively continuous filament nylon thread or spun polyester thread conforming to IS 9543 : 1980 of equivalent grade shall be used.

### 5.4.2 For Bottom Closing

Depending upon whether stitching is done by hand or by machine, the types of rot-proof natural colour linen thread shall be used as given in Table 1.

## 5.5 Grinders

### 5.5.1 Eyelets

Brass coated steel or aluminium eyelets of size 10 mm (collar dia) conforming to IS 5041 : 1978, of colour matching that of the upper leather, shall be used.

### 5.5.2 Rivets

Spear pointed brass rivets of 14 ± 1 mm, 16 ± 1 mm and 19 ± 1 mm length shall be used.

## 5.5.3 Screw Wire

Brass screw wire conforming to IS 8606 : 1977 shall be used.

## 5.5.4 Heel Tip and Toe Tip with Nails

Rust-proof mild steel heel tips and toe tips with nails conforming to IS 8060 : 1976 shall be used.

## 5.5.5 Lasting Tacks

Mild steel, rust-proof 12 ± 1 mm long tacks shall be used.

## 5.5.6 Heel Pins

Rust-proof iron grooved or spiral heel pins of 32 ± 1 mm length shall be used.

## 5.5.7 Shanks

Rust-proof galvanized steel shanks, ribbed, 1.0 to 1.5 mm thick and not less than 12 mm in width, shall be used.

## 5.6 Accessories

### 5.6.1 Tape

19 ± 1 mm wide tape with herring bone weave conforming to Variety No. 8 of IS 1895 : 1982 shall be used.

### 5.6.2 Laces

Leather or fabric lace 85 ± 5 cm in length, with a minimum breaking load of 20 kg when tested between 18 cm grips, the rate of traverse of power actuated grip being 30 cm/min, shall be used. The lace shall be of thickness and width so as to easily pass through the eyelets. Nylon laces of above quality may also be used. Laces if coloured black, shall be free from sulphur dyes, when tested in accordance with the method prescribed in Annex B.

### 5.6.3 Toe Compound

A hard setting cement toe compound shall be used.

### 5.6.4 Bottom Filling

Bituminized felt shall be used as bottom filling material.

## 5.7 Leather Components

Each leather component of ankle boot shall comply with the requirements prescribed in Table 2.

**Table 1 Specification for Linen Thread**  
( Clause 5.4.2 )

Sl No.	Method of Stitching	Material	Tex (Linen Count)	Construction	Minimum Breaking Strength in kg on 5 cm Length Rate of Power Actuated Grips Being 30 cm/min
(1)	(2)	(3)	(4)	(5)	(6)
i)	Stitching by machine:				
	a) Shuttle and welt	Linen	92 (or 18s)	12	34
	b) Top	Linen	92 (or 18s)	10	30
ii)	Stitching by hand	Linen	92 (or 18s)	8	23

NOTE — Silk or synthetic for linen thread of suitable quality may be used, as agreed between the purchaser and the supplier.

**Table 2 Requirements of Leather Components for Ankle Boots for Heavy Duty Purposes**  
(Clauses 5.7 and 6.2)

Sl No.	Component	Requirement	
		Material and Recommended Location	Thickness in mm. Min
(1)	(2)	(3)	(4)
i)	Vamp (if lined)	Prime part of full-chrome upper leather	1.3
ii)	Full vamp (if unlined)	do	2.0
iii)	Quarters	Next prime part of full-chrome upper leather	1.8
iv)	Top cap	do	1.3
v)	Counter with extended wing to form jug-loop	Shoulder of full-chrome upper leather	1.3
vi)	Back strengthening piece	do	1.2
vii)	Full-bellow tongue	Belly of full-chrome upper leather	1.0
viii)	Full sock	Belly of upper leather or vegetable tanned/combination tanned lining leather	0.8
ix)	Full vamp lining (if lined)	Vegetable tanned lining leather	0.8
x)	Insole	Well struck shoulder belly portion of sole leather	.
xi)	Middle sole	do	3.5
xii)	Outer sole or pieced outer sole	Prime part of sole leather	4.5
xiii)	Tip filling	do	3.5
xiv)	Lifts and split lifts	Shoulder/belly of sole leather	3.0
xv)	Stiffener and toepuff	do	2.0

NOTE — The thickness of components (except full sock) shall not be measured at the skived portion and shall be measured before lasting.

## 6 MANUFACTURE

### 6.1 Last

The boots shall be made on lasts conforming to IS 5520 : 1969.

6.2 Various upper and bottom components shall be cut to the thickness, design and shape as required (see Fig. 1 and Table 2).

6.2.1 All the upper components, including toe puff and stiffeners, shall be skived properly.

6.2.2 The bottom components shall be of uniform thickness. The insole shall be feathered and the outer sole shall be open channelled. The heel shall consist of one whole lift, one or more split lifts, one top piece and a metal heel tip filled with tip filling.

6.3 The upper shall be closed on lock stitch machine. Toe cap, sides, toping and facing shall be stitched with 92 tex  $\times$  5 linen thread and counter, back and tongue with 92 tex  $\times$  3 linen

thread as specified in 5.4.1, the number of stitches being 20-25 per dm. Two rows of stitching, 3 mm apart, shall be used at the toe cap and counter and two rows 5 mm apart or three rows, 3 mm apart at the sides. The distance between two rows of stitching at the facing of the quarter shall not exceed 2 cm, the first row of stitching being 3 mm from the edge of the quarter.

6.4 The back seam of the quarters shall be reinforced by stitching a tape as specified in 5.6.1. The joined top of the quarter shall be strengthened by stitching  $25 \pm 1$  mm wide strip of leather at the back. The central extended wing of counter shall be turned over to within 15 mm at the top of the quarter, so as to form a jug loop as shown in Fig. 1. The vamp may be lined, if required, and full-bellow tongue shall be so fitted with the vamp that no wrinkle occurs.

6.5 Eyelets shall be fitted with equal spacing each quarter facing and clenched without distortion. The top eyelet shall be at a distance of  $25 \pm 1$  mm from the top line of the quarter.

6.6 A hard setting cement toe compound shall be applied evenly on both sides of the toe puff and stiffener.

6.7 The boots shall be well lasted, so that the uppers get properly embedded to the last;  $12 \pm 1$  mm lasting tacks shall be used at toe and seat and 9 mm tacks shall be used at the remaining portion. 14 tacks per decimetre shall be used during lasting. The lasting edge of the puff and stiffeners shall come under the grip of lasting tacks and a clear lasting allowance of about 12 mm shall be provided all round. After lasting, any excess upper material or wrinkles along the feather line shall be removed.

6.8 The shank specified in 5.5.7 shall be fitted at the waist of the insole. The ends of the shank shall be secured by lasting tacks. The gap in the sole shall be evenly filled by the bottom filling material specified in 5.6.4.

6.9 The middle sole shall be riveted with rivets of 14 mm length at the toe and seat and 12 mm length at the remaining portion, using 11 to 14 rivets per decimetre. The outer sole shall be securely stitched aloft in an open channel with middle sole using thread specified in 5.4.2; the number of stitches shall be 16 to 22 per decimetre. The outer sole shall also be screwed, all round, with the wire specified in 5.5.3 and the distance between the screws shall not be more than 25 mm. All screws shall penetrate through the outer sole, middle sole, upper and the insole without protruding. The heel shall be attached from inside with 12 to 14 heel pins specified in 5.5.6.

## 7 FINISH

7.1 The sole and heel edges shall be neatly trimmed and finished to match the colour of the boot. The edge setting shall be uniformly done

by using matching colour heel ball. The fore part of the sole shall be reinforced with metal toe tip (see 5.5.4). The tip nails shall fit flush in the holes of the respective tips. Each pair of boots shall be provided with a pair of full socks, stuck down to the insole. The upper shall be finished bright by polishing and a pair of leather laces (see 5.6.2) shall be provided with each pair of boots.

7.2 The height of the leg when lasted shall be  $150 \pm 3$  mm (both odds of a pair shall be equal in height) for size 8 and shall increase or decrease by 3 mm from size to size. The length of the toe cap when lasted shall be  $76 \pm 2$  mm for size 8 and shall increase or decrease by 2 mm from size to size. The height of the heel shall be  $30 \pm 2$  for all sizes of the boots.

## 8 PACKING AND MARKING

### 8.1 Packing

The boots shall be delivered in a new, dry and clean polished condition with laces in pairs, tied together by twine. Twelve pairs of boots shall be placed heel on toe alternately in an upright position. The total number of laces shall be folded in two and tied in a bundle with twine. The boots shall be packed in wooden cases of suitable size, lined with waterproof paper (see IS 1398 : 1982). Each case shall contain boots of one size and fitting only.

8.1.1 The material used for wooden packing cases shall be as agreed to between the purchaser and the supplier.

### 8.2 Marking

Grade, sizes and fittings together with trade-mark, if any shall be marked legibly on the waist of the inner and outer soles of each boot.

8.2.1 The boots shall also be marked with the following details:

- The name of manufacturer or its recognized trade-mark if any on the insole and on the full sock;
- Batch/Code No. on the insole; and
- The year of manufacture on the insole.

8.2.2 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 9 SAMPLING

9.1 The method of drawing representative samples of the boots and the criteria for conformity shall be as prescribed in IS 2051 : 1976.

## ANNEX A

( Clause 2 )

### LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
578 : 1985	Full chrome upper leather ( <i>third revision</i> )	3840 : 1979	Specification for lining leathers ( <i>first revision</i> )
579 ( Part 1 ) : 1973	Sole leather : Part 1 Vegetable tanned sole leather ( <i>first revision</i> )	5041 : 1978	Footwear and stationary eyelets ( <i>first revision</i> )
1398 : 1968	Packing paper water proof bitumen laminated ( <i>second revision</i> )	5520 : 1969	Lasts, wooden, for heavy duty boots
1895 : 1982	Specification for cotton NEWAR ( <i>second revision</i> )	5868 : 1983	Method of sampling for leather ( <i>first revision</i> )
2050 : 1991	Glossary of terms relating to footwear ( <i>first revision</i> )	8060 : 1976	Heel tip and toe tip with nails for footwear
2051 : 1976	Leather footwear, methods of sampling ( <i>first revision</i> )	8606 : 1977	Brass screw wire for footwear
		9543 : 1980	Spun polyester sewing threads

## ANNEX B

( Clause 5.6.2 )

### METHOD FOR DETECTION OF SULPHUR DYES IN BLACK COLOURED LACES

#### B-1 PROCEDURE

B-1.1 Boil the laces in alkaline hydrosulphite solution for one minute. If the shade is reduced to pale brown or yellow colour and on oxidation restored to the original colour, sulphur dyes shall be suspected to be present.

B-1.2 For confirmation, boil the laces in acid stannous chloride solution in a test tube covered with a piece of filter paper moistened with lead acetate. A blakish/brown stain with metallic lustre confirms the presence of dyes.

## ANNEX C

### ( Foreword )

#### COMMITTEE COMPOSITION

Footwear Sectional Committee, CHD 019

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SHRI S. K. BHADRA  
Bata India Limited, Calcutta

##### *Members*

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##### *Member Secretary*

SHRI P. MUKHOPADHYAY  
Joint Director ( Chem ), BIS

( Continued on page 6 )

(Continued from page 5)

Composition of Leather Footwear Subcommittee, CHD 019 : 03

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Doc : CHD 019 ( 0414 )

### Amendments Issued Since Publication

Amend No.	Date of Issue}	Text Affected

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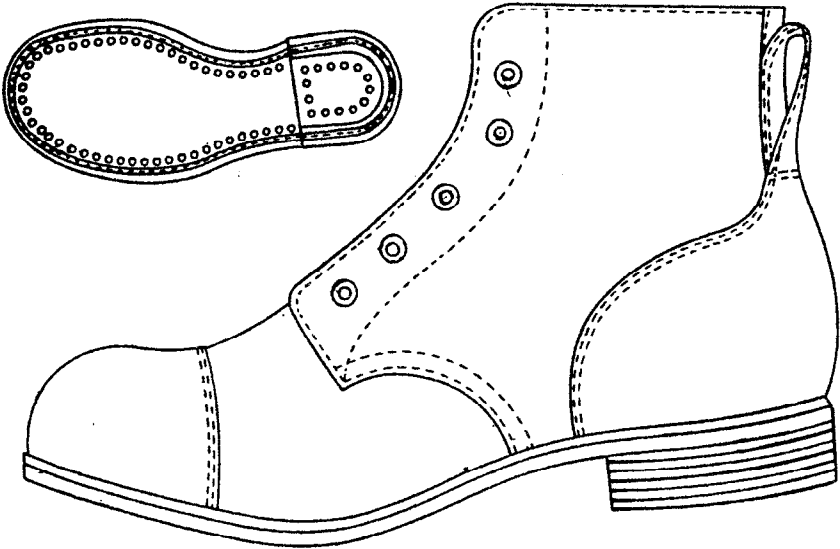
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**AMENDMENT NO. 1 AUGUST 1995**  
**TO**  
**IS 583 : 1994 ANKLE BOOTS FOR HEAVY DUTY**  
**PURPOSE — SPECIFICATION**

*( Third Revision )*

*( Page 1, Fig. 1 )* — Substitute the following for the existing figure:



**NOTE** — This illustration is diagrammatic only and is not intended to illustrate all details of design.

**FIG. 1 ANKLE BOOTS FOR HEAVY DUTY PURPOSES**

*( Page 2, clause 5.3, line 4 )* — Substitute the words ‘not more than 3.5’ for ‘within 3.0 to 3.5’

*( Page 2, Table 1, Note )* — Substitute the following for the existing Note:

‘NOTE —Silk synthetic or linen thread of suitable quality may also be used as agreed to between the purchaser and the supplier.’

*( Page 2, clause 5.5.3 )* — Substitute the following for the existing matter:  
‘Brass screw wire ( see IS 8606 : 1977 ) shall be used.’

**Amend No. 1 to IS 583 : 1994**

( Page 2, clause 5.5.4 ) — Substitute the following for the existing matter:

'Rust proof mild steel heel tips and toe tips with nails ( see IS 8060 : 1976 ) may also be used if required by the purchaser.'

( Page 2, clause 5.5.5, line 1 ) — Insert '10 ± 1 mm and' between 'rust proof' and '12 ± 1'.

( Page 2, clause 5.6.1, line 2 ) — Substitute the following for the existing line:

'( see variety No. 8 of IS 1895 : 1982 )'.

( Page 2, clause 5.6.2, last sentence ) — Add the following sentence after the last sentence:

'The laces shall be fitted with plastic tips at both the ends.'

[ Page 3, Table 2, SI No. (x), col 4 ] — Substitute '3.5' for '3'.

( Page 3, clause 6, Title ) — Substitute 'CONSTRUCTION' for 'MANUFACTURE'.

( Page 3, clause 6.4, line 6 ) — Delete 'to'.

( Page 3, clause 6.4, line 7 ) — Substitute 'from' for 'at'.

( Page 3, clause 6.7, line 4 ) — Substitute '10 ± 1' for '9'.

( Page 3, clause 6.9, line 2 ) — Substitute '16' for '14'.

( Page 3, clause 6.9, line 3 ) — Substitute '14' for '12'.

( Page 4, clause 7.1, line 1 ) — Substitute the following for 'The fore part of the sole shall be reinforced with metal toe tip ( see 5.5.4 )':

'The fore part of the sole and the heel may be reinforced with metal toe tip and heel tip ( see 5.5.4 ) respectively if required by the purchaser.'