

MEASUREMENTS AND DIMENSIONS

SIZE ROLL OF LAST MEASUREMENTS IN MILLIMETERS

SIZE OF FOOTWEAR	LENGTH ON SIZE STICK/ BOTTOM LENGTH
5	239 - 242
6	248 - 252
7	257 - 260
8	265 - 268
9	274 - 277
10	282 - 285
11	290 - 293
12	299 - 302
13	307 - 310
14	315 - 318

HEIGHT OF UPPER

SIZE OF FOOTWEAR	HEIGHT (mm)
5	194
6	197
7	200
8	203
9	206
10	209
11	212
12	215
13	218
14	221

Note: Tolerance of ± 05 mm.

TECHNICAL DETAILS OF ANTI SKID SHOES

<u>S.NO</u>	<u>ITEM</u>	<u>REQUIREMENT</u>
<u>UPPER LEATHER (VAMP, COUNTER & EYELET FACING PUTTEE)</u>		
1.	Identification of leather	Cow full Grain plain
2.	Finish	Semi Aniline Finish
2.	Thickness	1.8 ~ 2.0 mm
3.	Softness	7.2 ~ 7.4 mm
4.	Chromium %	3.7 ~ 6.0%
5.	Shrinkage	3.% (Max)
6.	Tensile Strength	225 kg/cm ²
7.	Tear Strength (Kg/cm Thickness)	45 kg /cm thickness
8.	Dye fastness to Rubbing a. Dry (500 revs) b. Wet (50 revs)	GS 4 or better GS 4 or better
9.	Flexibility	No crack at 50,000 cycles
10.	Para-nitro Phenol	Shall be present
11.	Oil Repellency (Resistant to Liquid hydrocarbons) (UNE-EN ISO 14419:2000)	7
12.	Water Vapor Permeability (UNE-EN ISO 14268)	20 mg/cm ² .h (Min)
13.	Impermeability Water Dynamics (UNE EN ISO 5403:2003) a. Water Absorption at 2 h (%) b. Break through Time (min) c. Amplitude (%)	20 > 120 10
14.	Harmful Materials a. Azo Dyes b. Formaldehyde Content c. Chrome VI (UNE-EN ISO 17075: 2008)	Should not present Less than 22 mg/Kg Less than 3 ppm* *Component mg/ Kg Skin
15.	Shade	Black
16.	pH	Not less than 3.2 as per clause 5.4.7
<u>CLOTH CORDURA NYLON AT TONGUE AND VAMP WINDOW</u>		
1.	Material	Nylon
2.	Wt/Sq m	245 gms

3.	Weave	Plain
4.	Shrinkage	
	a. Warp	3.0%(MAX)
	b. Weft	3.0%(MAX)
5.	Linear Density	
	a. Warp	1000+100 Den
	b. Weft	1000+100 Den
6.	Breaking Strength (7.6 x 1.8 cm BG)	
	a. Warp	390+20 kg
	b. Weft	390+20 kg
7.	Washing Test	
	a. Change in Shade	GS 4 or better
	b. Staining on Cotton	GS 4 or better
	c. Staining on Nylon	GS 4 or better
8.	Shade	Black
9.	Nature of dye	Any Dye (Sulphur free)
10.	Water repellency Standard	Grade V

LINING AT VAMP & INTERLINING OF TONGUE AND QUARTER

1.	Material	Cotton (grey fabric)
2.	Weave	Drill
3.	Wt / Sq m	310 ± 5 grams
4.	Breaking Strength (10.2 x 16.8 cm BG) a. Warp b. Weft	200 ± 10 kg 125 ± 5 kg
5.	Color	Black
6.	pH value	Not less than 3.2 as per clause 5.4.7
7.	Abrasion resistance	As per ISO 20345, clause 5.5.2
8.	Tear Strength	As per ISO 20345, clause 5.5.1

SAFETY TOE CAP

1.	Material	Steel free from burrs with anti rust coating
2.	Thickness	1.5 – 1.6 mm
3.	Internal length of toe cap	BS EN ISO 20345, 5.3.2.2

LINING AT QUARTER, COUNTER & TONGUE

1.	Material	100% Polyester
2.	Wt / Sq meter	180 ± 5 grams
3.	Thickness	4.5 – 5.0 mm
4.	Shade	Black
5.	Weave	Knitted

FOAMIC SHEET ON COLLAR, QUARTER AND TONGUE

1.	Material	Polyurethane (Open cell)
2.	Density	0.020 \pm 0.005 g/cc
3.	Cell count (per linear 25 mm)	80-90
4.	Thickness	11 – 12 mm

EYELETS WITH SHANK AND CURVED WASHER

1.	Material	Brass
2.	Composition a. Copper b. Zinc	70% \pm 5 30% \pm 5
3.	Dia a. Inner b. Outer	6 \pm 0.5 mm 10 \pm 0.5 mm
4.	Coating	Powder Coated
5.	Colour	Black

LACES

1.	Material	Nylon 100%
2.	Construction	16 thread, 4 fold each multifilament
3.	Cross-Sectional Shape	Circular
4.	Nature of Dye	Any dye (Sulphur free)
5.	Dye Fastness to Washing	GS 4 or better
6.	Dye Fastness to Light	Class IV or better
7.	Breaking Strength (7" B.G)	75 kg (Min)
8.	Length with Tip	200 cm
9.	Tip a. Material b. Length	Plastic 1.5 \pm 0.2 cm
10.	Color	Black
11.	Abrasion resistance	BS 953: 1979 clause 8, not less than 11,000 cycles

ZIPPER MATERIAL SPECIFICATION

1.	Tape	Polyester 100%
2.	Elements	POM (Polyoxymethylene) Chips
3.	Zipper parts (Top Stop)	POM (Polyoxymethylene) Chips
4.	Zipper parts (Slider & Bottom Stop)	Zinc Alloy
5.	Chain width (mm)	7.40 (\pm 0.18)
6.	Chain thickness (mm)	3.00 (\pm 0.12)
7.	Element head (mm)	2.60 (\pm 0.08)
8.	Element pitch (mm)	4.16 (\pm 0.04)

9.	Bottom stop thickness (mm)	2.98 (± 0.08)
10.	Top stop thickness (mm)	3.00 (± 0.12)
11.	Total chain width (mm)	34.0 (± 0.08)
12.	Exposed tape width (mm)	13.3 (± 0.04)

ZIPPER PERFORMANCE TESTING

1.	Operating Force (N)	MAX 6.9
2.	Crosswise (N)	MIN 400
3.	Element slippage (N)	MIN 60
4.	Element pull-off (N)	MIN 70
5.	Folder cross wise(N)	MIN 150
6.	Top stop strength (N)	MIN 120
7.	Bottom stop holding strength (N)	MIN 120
8.	Slider lock strength 90°/45° (N)	MIN 50
9.	Slider lock strength 90°/45° (N)	MIN 170
10.	Durability (cycles)	500 cycles

INSOCKS

1.	Material	Closed cell foam laminated with knitted fabric
2.	Thickness (complete)	4.5 ~ 5.0 mm
3.	Foam Density	0.3 g/cc \pm 0.01g/cc
4.	Knitted Fabric a. Material b. Wt / Sq m c. Weave d. Shade	100% Polyester 180 \pm 5 gms Knitted Black
5.	pH value	Not less than 3.2
6.	Water absorption and desorption of insole as per BS EN ISO 20345:2011	Water absorption > 70 mg/cm ² Water desorption not less than 80 %
7.	Abrasion Resistance	As per BS EN ISO 20345, clause 5.7.4
8.	Hardness of socks	35-40 IRHD

INSOLE

1.	Material	Cellulose board like Texon or equivalent
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2.	Thickness	2.5 – 3.0 mm
3.	Split Tear	30 N / cm (Min)
4.	Flex Index	3.5 (Min)
5.	pH value	Not less than 3.2
6.	Water absorption and desorption of insole as per BS EN ISO 20345:2011	Water absorption > 70 mg/cm ² Water desorption not less than 80 %
7.	Abrasion Resistance	As per BS EN ISO 20345, clause 5.7.4

STITCHING THREAD

1.	Material	Nylon
2.	Construction	3 cord each multifilament
3.	Linear density	3/ 500 ± 30 Den
4.	Shade	Black
5.	Washing – 2 a. Change in shade b. Staining on Cotton c. Staining on Wool	GS 4 or better GS 4 or better GS 4 or better
6.	Dye Fastness to Light	Class IV or better
7.	Breaking Strength	6 kg/cm ² Min
8.	Nature of dye	Acid dye

COUNTERS STIFFENER

1.	Material	Non-woven thermoplastic (TP-8) or equivalent double face adhesive coated
2.	Thickness	2.0 mm (Min)
3.	Collapsing load(Dome test)	130.160 N (min)
4.	Extension at break	15-20%
5.	Shape retention	60-80% (min)
6.	Peel Strength	6N/cm (min)

OUTER SOLE

1.	Material	Nitrile Rubber
2.	Hardness	65 – 70 IRHD
3.	Abrasion (max)	130 mm ³
4.	Density	1.20 ± 0.05 g/cc
5.	Shade	Black
6.	Design	Chevron Tread
7.	Thickness	In accordance with table 17 BS EN ISO 20345
8.	Tread design	Cleats with Chevron design suitable for Anti-Skid requirement
9.	Cleat area	In accordance with BS EN ISO 20345, 5.8.1.2

10.	Cleat Height	In accordance with table 17 BS EN ISO 20345
11.	Resistance to hot contact	BS EN ISO 20345:2011, clause 6.4.1
12.	Sole of the shoes is resistant to fuel& oil	BS EN ISO 20345:2011, clause 6.4.2.
<u>MID SOLE</u>		
1.	Material	PU Polyether Direct Injection on DESMA Machine
2.	Hardness	55 - 60 IRHD
3.	Density	0.45 ± g/cc
4.	Shade	Black
5.	Non-metallic anti-penetration insert	Kevlar
6.	Non-metallic anti-penetration insert	BS EN ISO 20344:2011,5.8.3, no nail should protrude from the sample
<u>PERFORMANCE TEST OF WHOLE SHOE</u>		
1.	Water Resistivity*	Boot should be water resistant for min 30 x minutes
2.	Identification of Leather	Cow Full Grain
3.	Flexing/ Cracking of upper & Sole	No damage less than 80,000 cycles
	a. Toe Cap (i) Impact resistance of safety footwear (ii) Compression resistance of safety footwear (iii) Corrosion resistance of metallic toe cap b. Specific ergonomic feature c. Slip resistance requirement e. Water resistance	Impact of 200 J clearance under toe cap in accordance with table 6 of BS EN ISO 20345 Compression load of 15 KN clearance under toe cap in accordance with table 6 of BS EN ISO 20345 Not more than three areas of corrosion measuring not more than 2 mm in any direction BS EN ISO 20345, clause 5.3.4 In accordance with BS EN ISO 20345, clause 5.3.5.4 And In accordance with STM 144 Steel Floor (Dry) Heel : 0.6 Toe : 0.6 Steel Floor (Water) Heel : 0.4 Toe : 0.4 As per BS EN ISO 20345, clause 6.2.5
4.	Height of Upper (Length of Leg)	Length of leg when lasted shall not be less than 203 mm (8 inches) for size – 8. Whereas; other sizes increasing or decreasing by approx. 3mm from size to size.
5.	Stitch / 25 mm	7-8
6.	Thickness of Sole for size 8	
	a. At Toe b. At Heel	30 mm (increase and decrease with increment or 49 mm decrement in size)

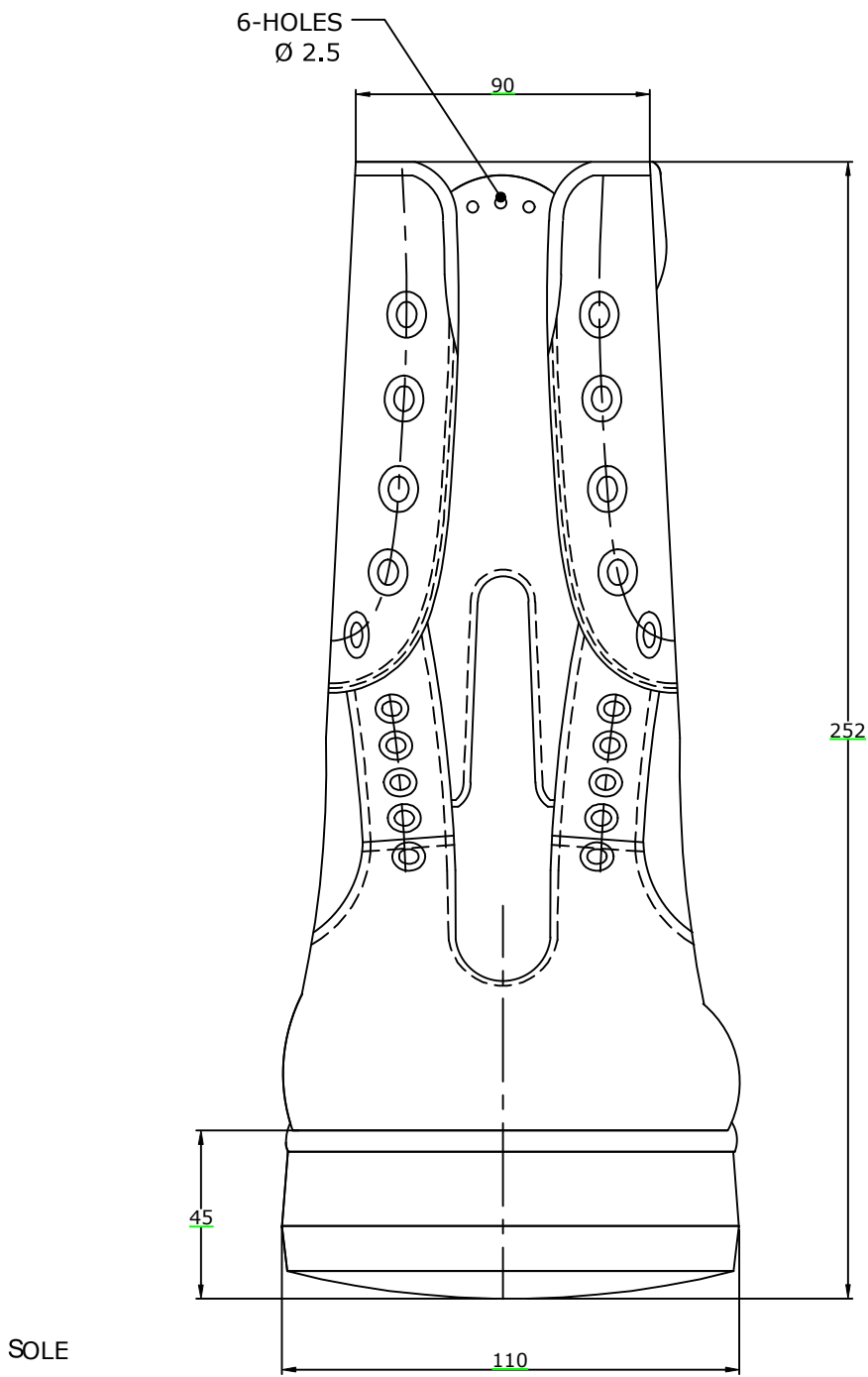
7.	Bond Test (ISO 20346:2004 (E) and ISO 20344:2004)	The bond strength shall not be less than 4.0 N/mm. Unless there is tearing of the Sole, in which case the bond shall not be less than 3.0 N/mm
8.	Seepage Test **	No staining/ seepage of water through upper seams
9.	Shade	Black
<u>SEAM FILLER</u>		
1.	Paraffin Wax	30 %
2.	Stearic Acid	30 %
3.	Solvent Oil	40 %

Note:

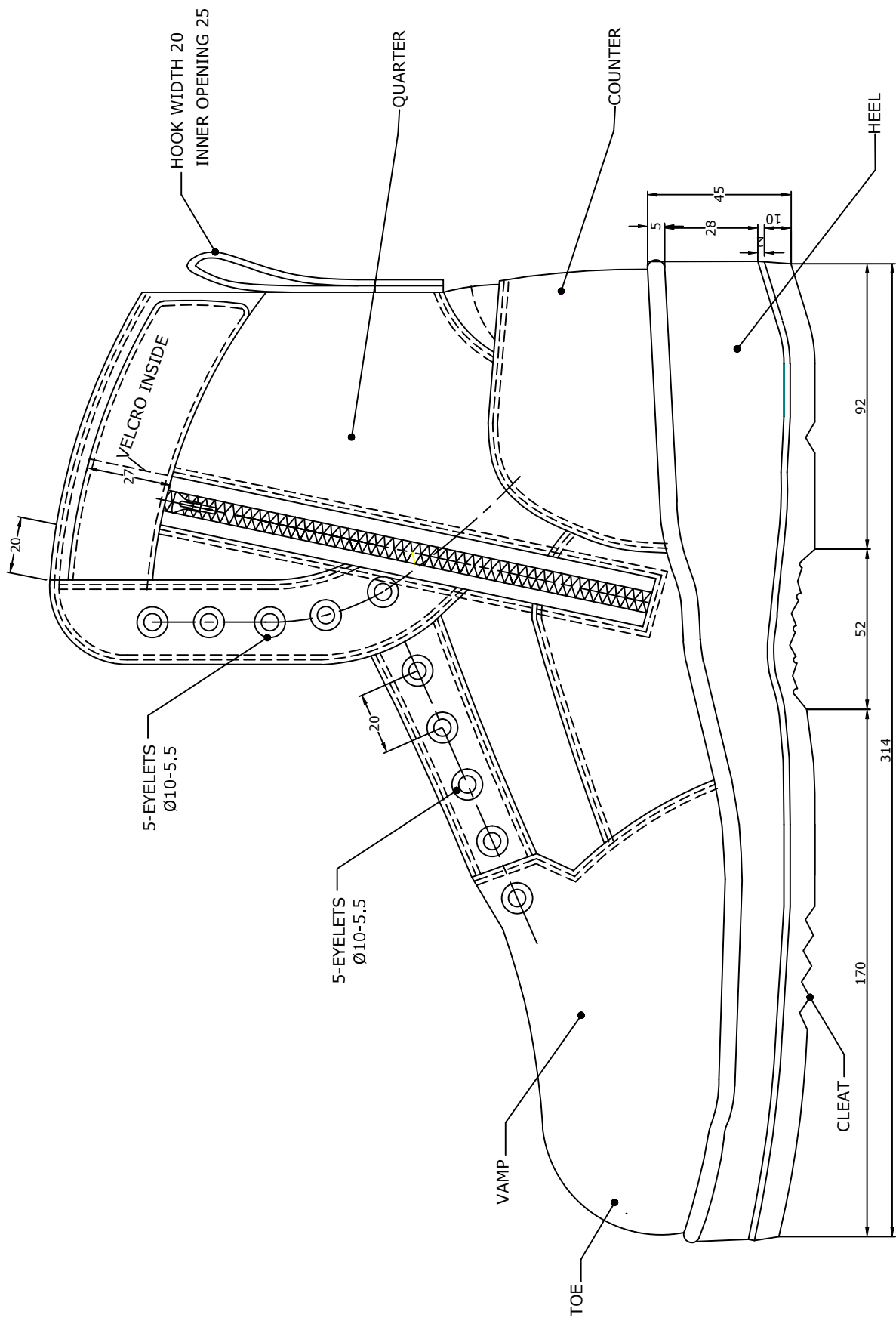
***Water resistivity**. A pair of white cotton socks of an appropriate size properly stuffed with pieces of cloth shall be inserted in the boot. The boot shall then be immersed in water containing a water level upto lower edge of third speed lacing hook from top. Boot tested should not show signs of wetting on sock/seepage of water at interval of 30min.

****Seepage Test** A pair of white cotton socks of an appropriate size properly stuffed with pieces of cloth shall be inserted in the boot. The boot shall then be immersed in water containing water soluble dye for 2 min. Boot shall be immersed above the sole / heel height and be flexed twice at interval of 30 sec. Not more than 5% of boot tested should show signs of staining on socks/ seepage of water through upper seams.

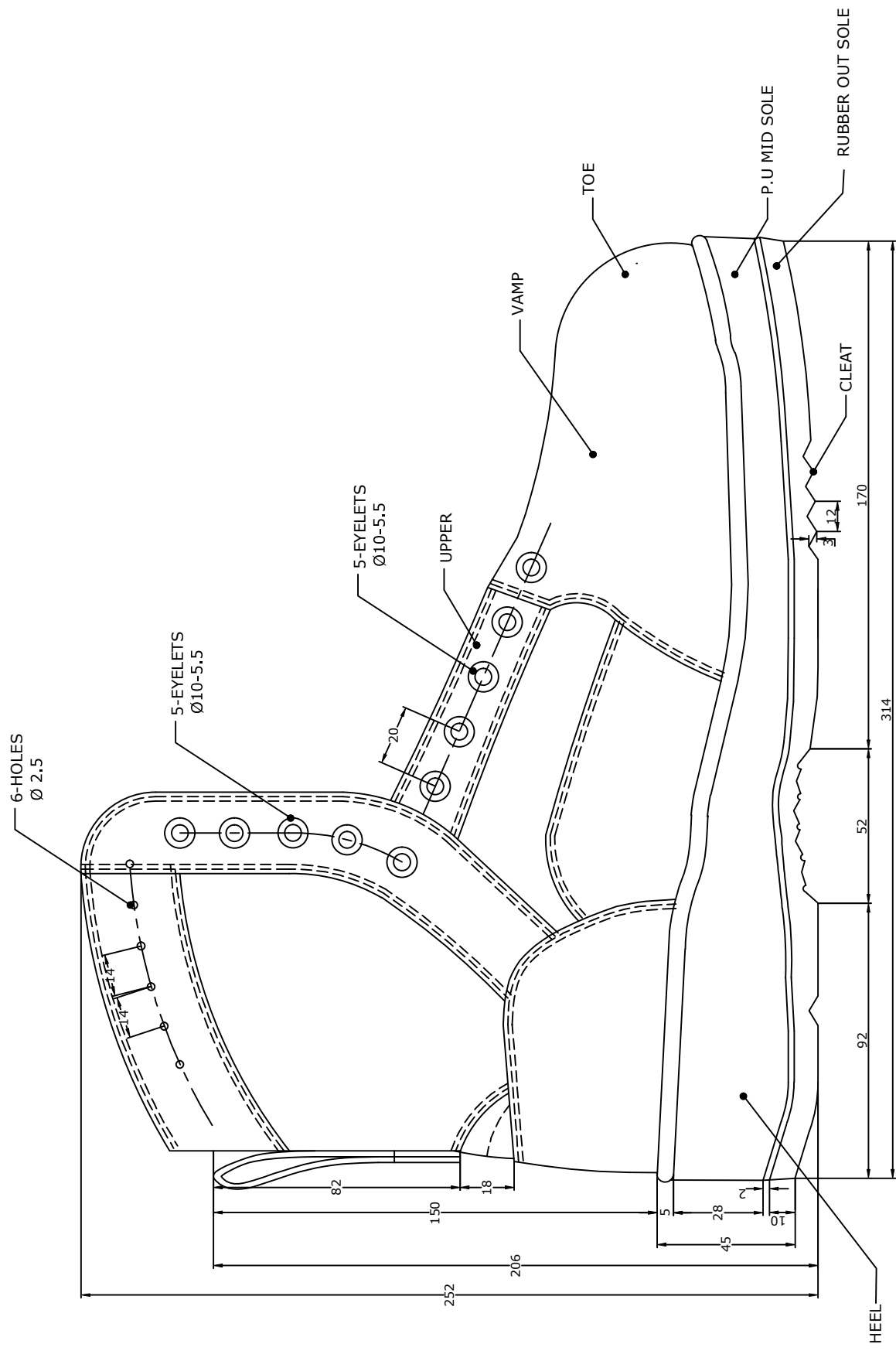
DRAWING OF ANTISKID SHOES AND PACKING



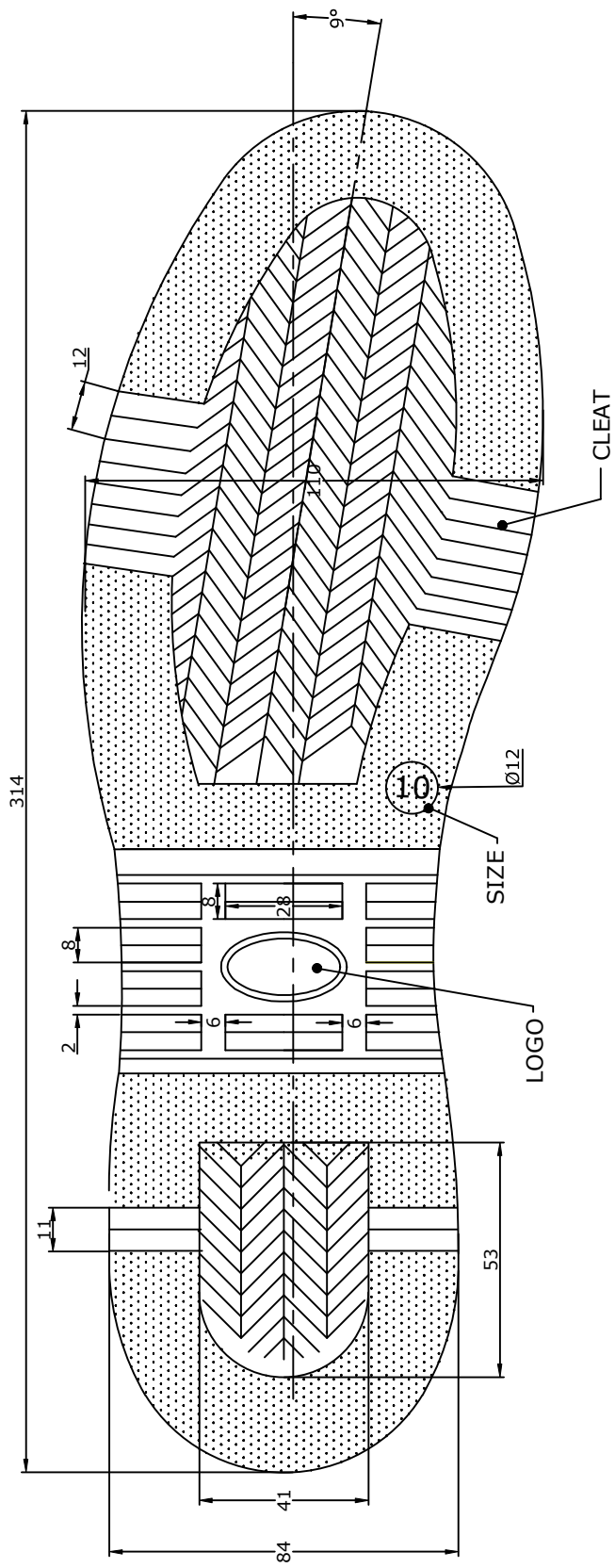
FRONT VIEW



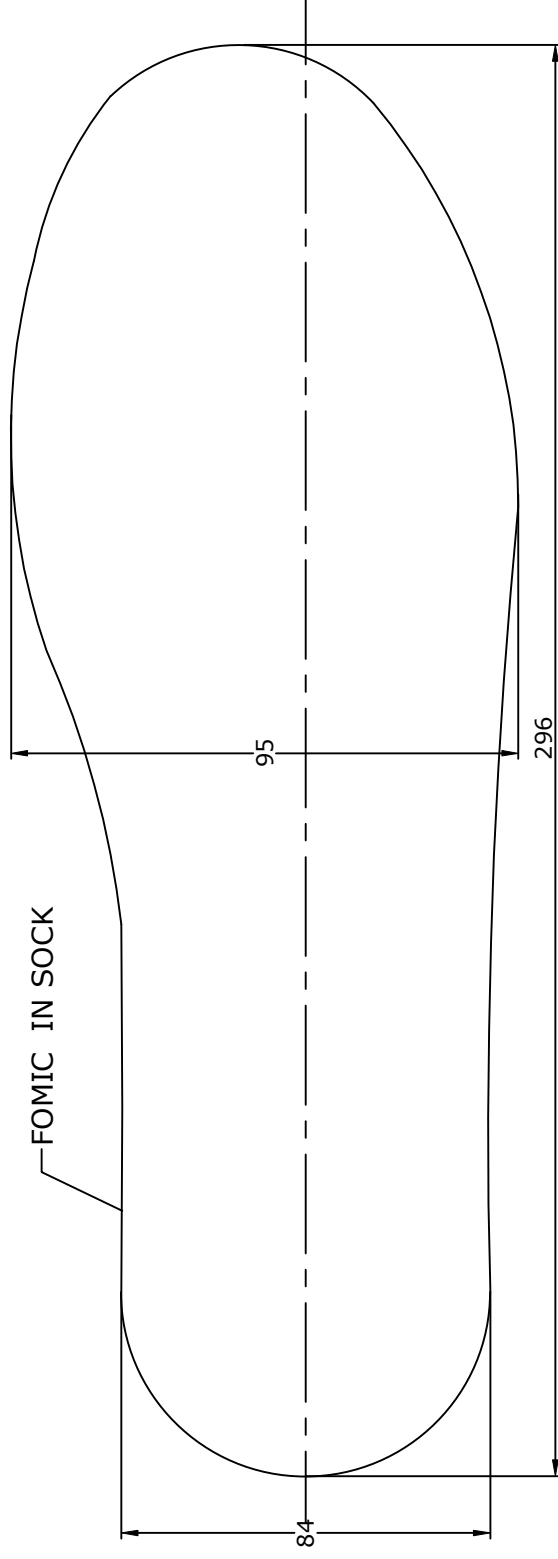
LEFT SIDE VIEW



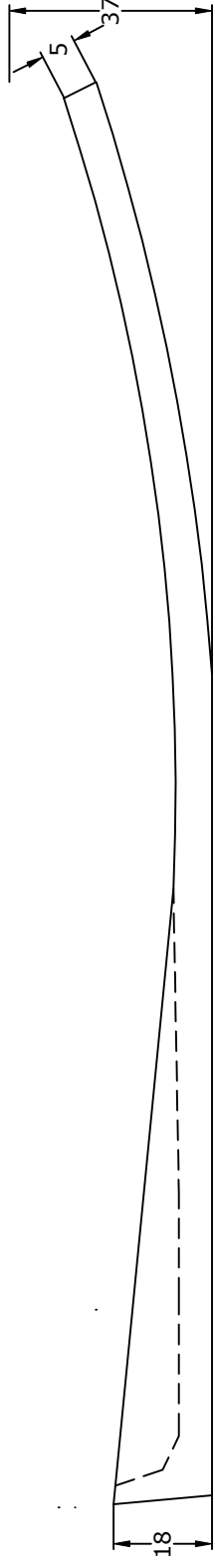
RIGHT SIDE VIEW



BOTTOM VIEW



IN SOCK BOTTOM VIEW



IN SOCK SIDE VIEW

