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मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9802 (1987): Adjustable Crampons for Mountaineering [PGD 27: Mountaineering Equipment]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR
ADJUSTABLE CRAMPONS FOR MOUNTAINEERING

(First Revision)

1. **Scope** — Covers requirements for 12-point adjustable crampons for mountaineering.

2. **Dimensions**

2.1 *Adjustable Crampons, Type A (Right)* — See Fig. 1.

2.2 *Adjustable Crampons, Type A (Left)* — See Fig. 2.

2.3 *Components for Adjustable Crampons, Type A* — See Fig. 3.

2.4 *Adjustable Crampons, Type B (Right)* — See Fig. 4.

2.5 *Adjustable Crampons, Type B (Left)* — See Fig. 5.

2.6 *Components for Adjustable Crampons, Type B* — See Fig. 6.

3. **Material**

3.1 The crampons shall be manufactured from steel having following chemical composition and physical properties:

Chemical Composition Constituent	Percentage Composition	
	Min	Max
C	0.25	0.40
Si	0.10	0.30
Mn	0.20	0.70
S	—	0.15
P	—	0.15
Cr	0.50	1.0
Ni	2.7	3.3
Mo	0.4	0.7
V	—	0.2

Mechanical Properties

Ultimate Tensile Strength	1041 N/mm ² Min
0.2% Proof Stress	867 N/mm ² Min
Elongation	10% Min
Reduction	28% Min
Charpy 'V' Notch Value at —40°C	= 28 Nm

3.2 *Rings* — Shall be manufactured from stainless steel 04 Cr18Ni10 conforming to IS : 6911-1972 'Specification for stainless steel plate sheet and strip'.

3.3 The physical properties of manufacturing material shall be such as to give the satisfactory performance at temperatures of +20 to —50°C encountered in mountaineering.

3.4 Zinc coating conforming to IS : 1573-1970 'Specification for electroplated coatings of zinc on iron and steel (first revision)' shall be applied on parts of adjustable crampons.

4. **Heat Treatment and Hardness**

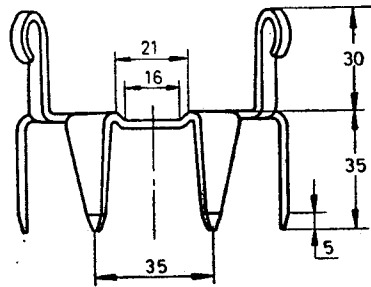
4.1 The entire structure shall be suitably hardened, specially at the centre and spikes, with sufficient tensile strength to enable making proper bend for the spikes and hooks.

4.2 *Hardness* — The main body, spikes and centre shall have a hardness of 350 to 450 HV and rings shall have a hardness of 130 to 150 HV.

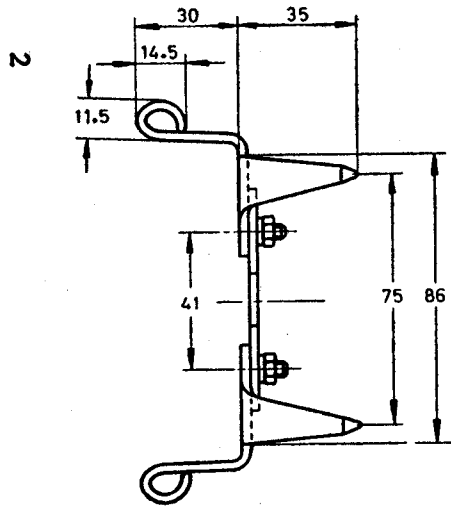
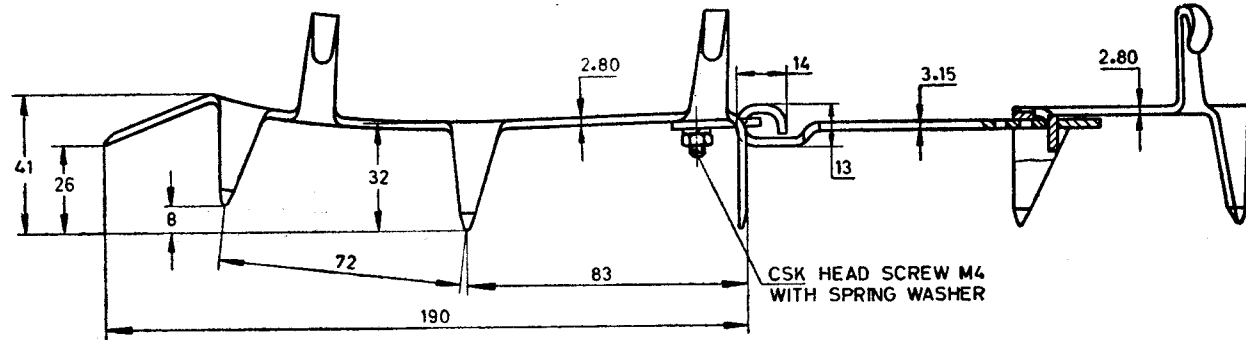
Adopted 20 October 1987

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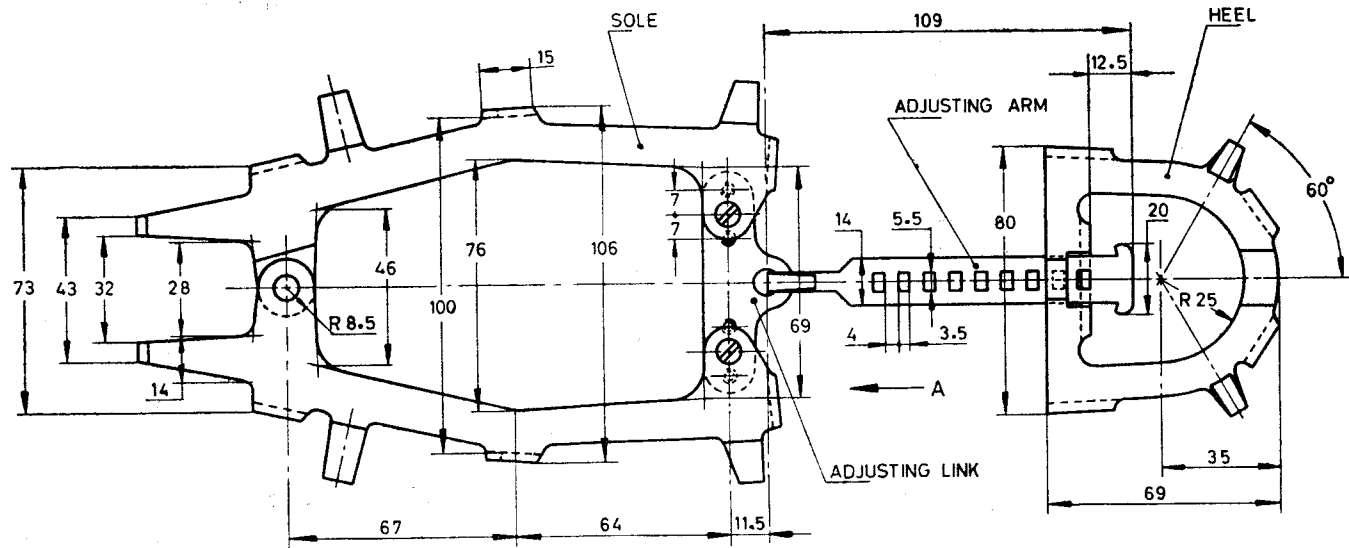
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SIDE VIEW OF HEEL

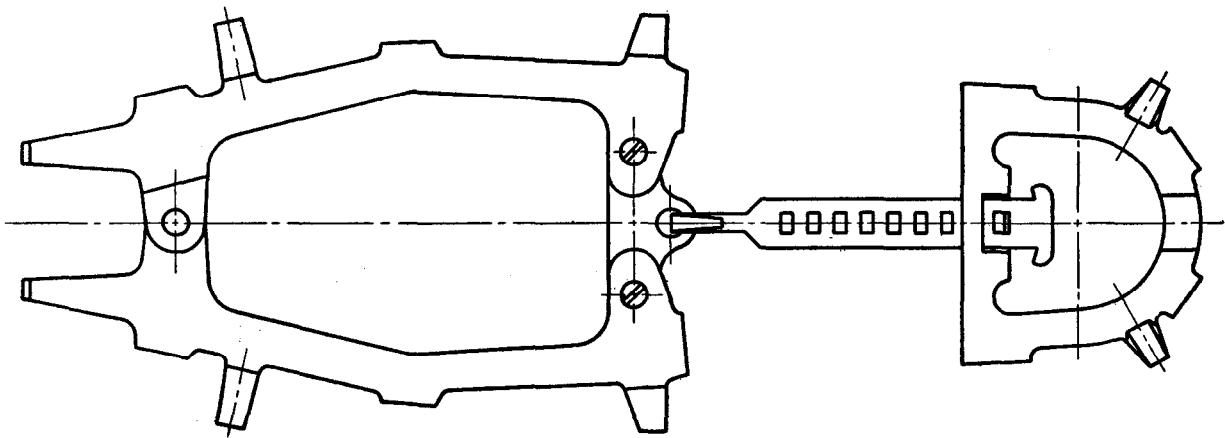


VIEW A



All dimensions in millimetres.

FIG. 1 DIMENSIONS FOR ADJUSTABLE CRAMPONS, TYPE A (RIGHT)



Note — Dimensions according to Fig. 1.

FIG. 2 ADJUSTABLE CRAMPONS, TYPE A (LEFT)

5. General Requirements

5.1 The design of adjustable crampons shall be suitable for excellent performance during descending and ascending over steep slopes of hard snow and ice. The crampons shall consist of two component parts, namely, 'sole' and 'heel'. The two halves shall be linked together by an adjusting link provided with adequate number of holes as shown in relevant figures.

5.1.1 *Sole half* — Shall consist of 6 spikes and 4 hooks with rings.

5.1.2 *Heel half* — Shall consist of 4 spikes and 2 hooks with rings.

5.1.3 *Spikes* — For all types of crampons for general use, the spikes should not be less than 31 mm long as they shall need to bite through loose snow or ice chippings lying on ice steps. However, where there is great deal of iced rock, shorter points are preferable. The edges of the spikes should be of 'Vee' shape to facilitate penetration in ice.

5.1.4 *Hooks* — Two hooks in the back at heel shall be perpendicular at top but slightly curved at the base of hook so as to afford tight grip and fitting to the boot. Top of hook shall be bent outwards into a loop for linking of rings.

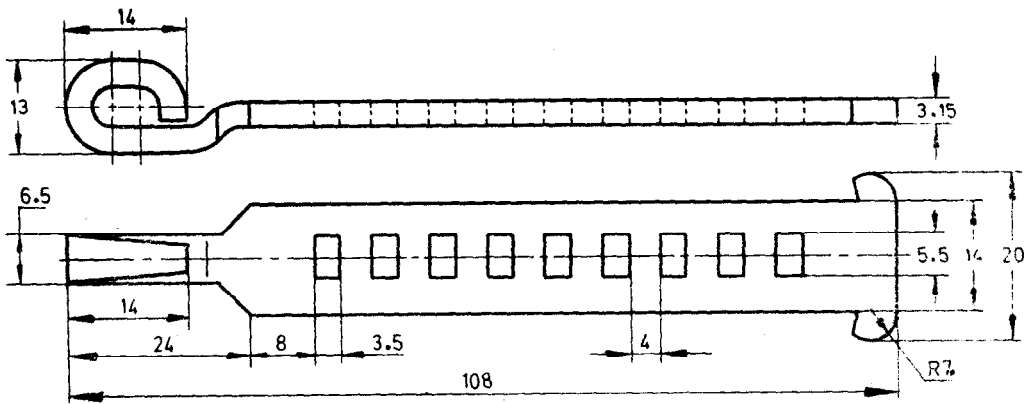
5.1.5 *Rings* — Provision shall be made to ensure that the rings do not hand inside the crampon and shall remain slightly handing outside the crampon. The ring shall ensure quick manipulation of bindings to save time and energy.

5.1.6 *Bindings* — Bindings shall be made of nylon strap of minimum breaking strength of 2 kN and 12 mm width with round smooth end for better fastening of straps or leather buffalow curried.

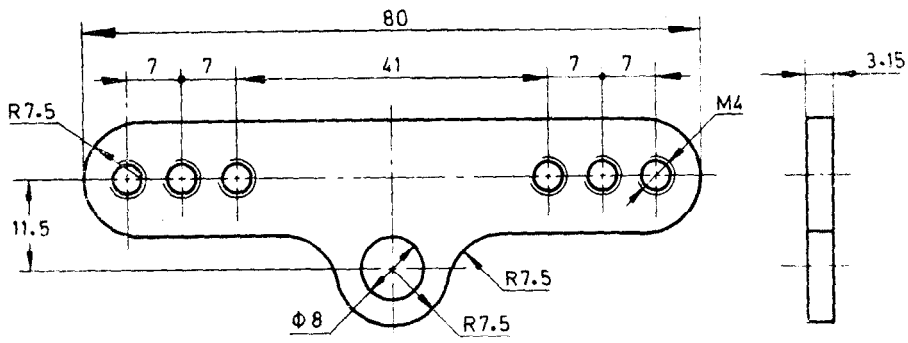
There shall be a single nylon or leather strap about 1.6 m long and one end shall be provided with a buckle in the ring at the outside of the heel. This shall not only facilitate in tightening the boot equally on the crampon but make fittings of the boot in crampon even.

5.1.7 Fitting crampons shall be made of the same size as the boot but it shall be so tempered that they fit perfectly and need not require cold hammering while fitting for minor adjustment. The test of a correct fit is that the boot to be picked up when lightly shaken, the unstrapped crampon shall not drop off.

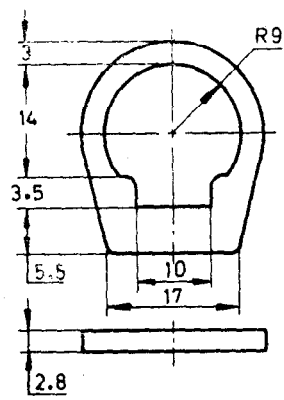
5.1.8 *Rubber tube* — For carrying crampons, rubber tubing is put on the spikes.



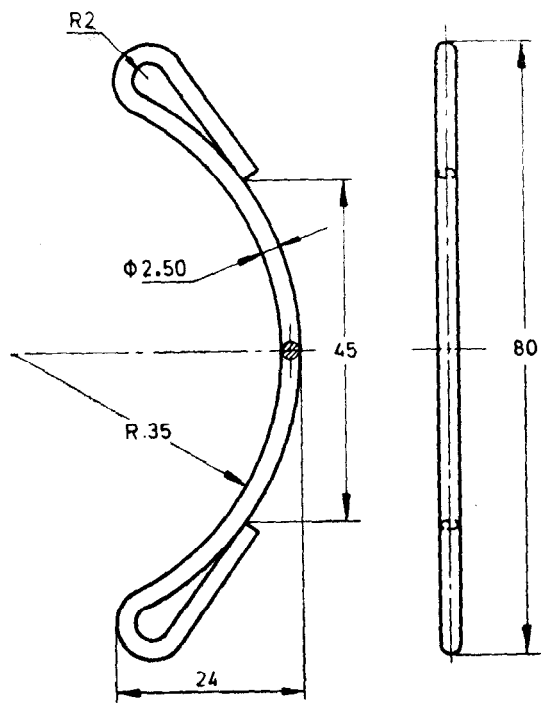
ADJUSTING ARM



ADJUSTING LINK



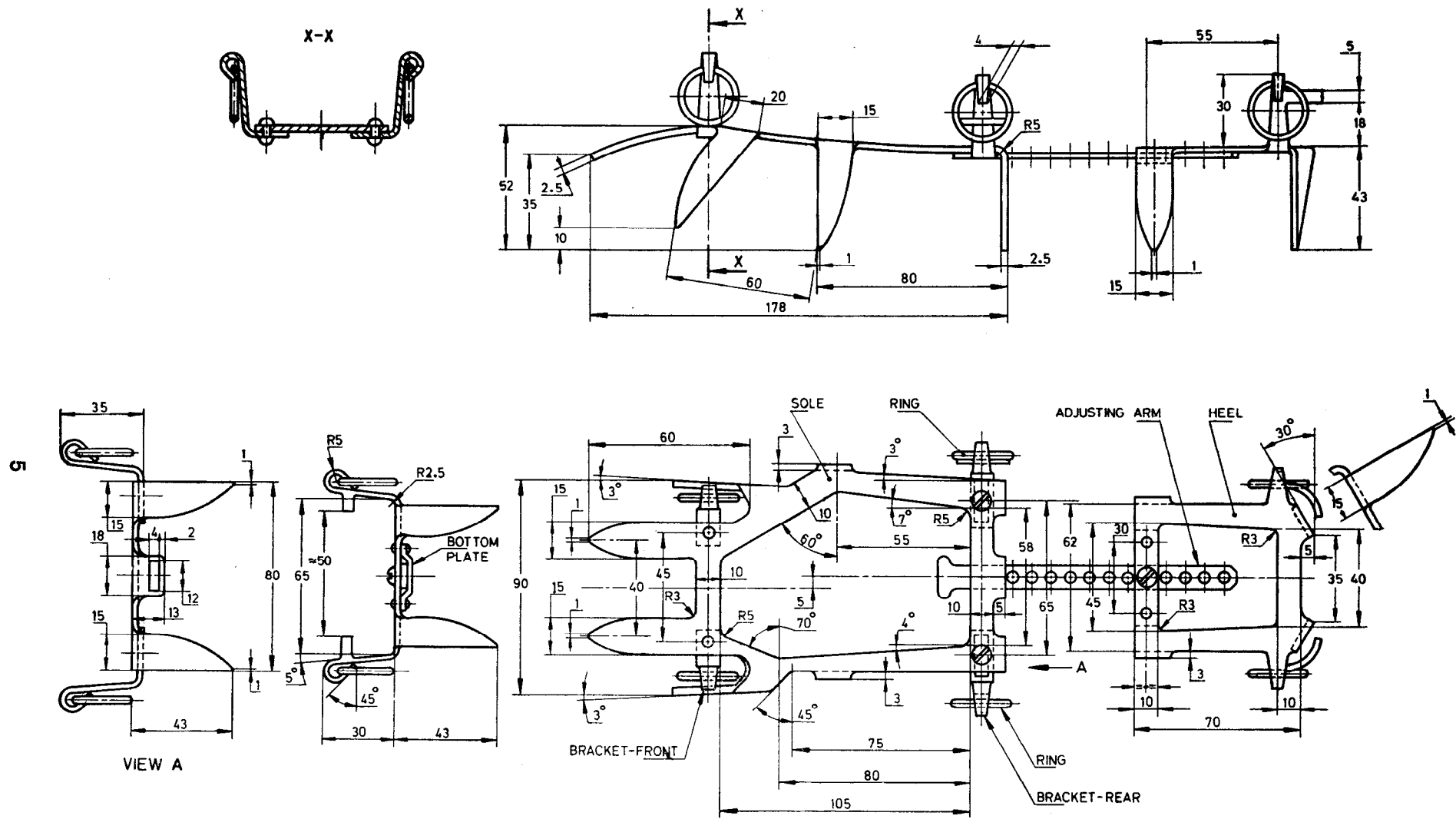
RING



HEEL STOP

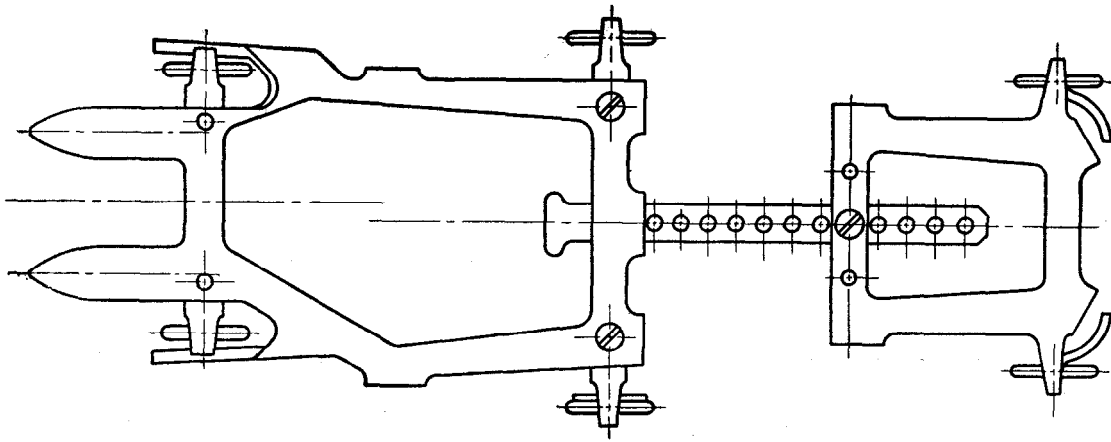
All dimensions in millimetres.

FIG. 3 DIMENSIONS FOR COMPONENTS FOR ADJUSTABLE CRAMPONS, TYPE A



All dimensions in millimetres.

FIG. 4 DIMENSIONS FOR ADJUSTABLE CRAMPONS, TYPE B (RIGHT)



Note — Dimensions according to Fig. 4.

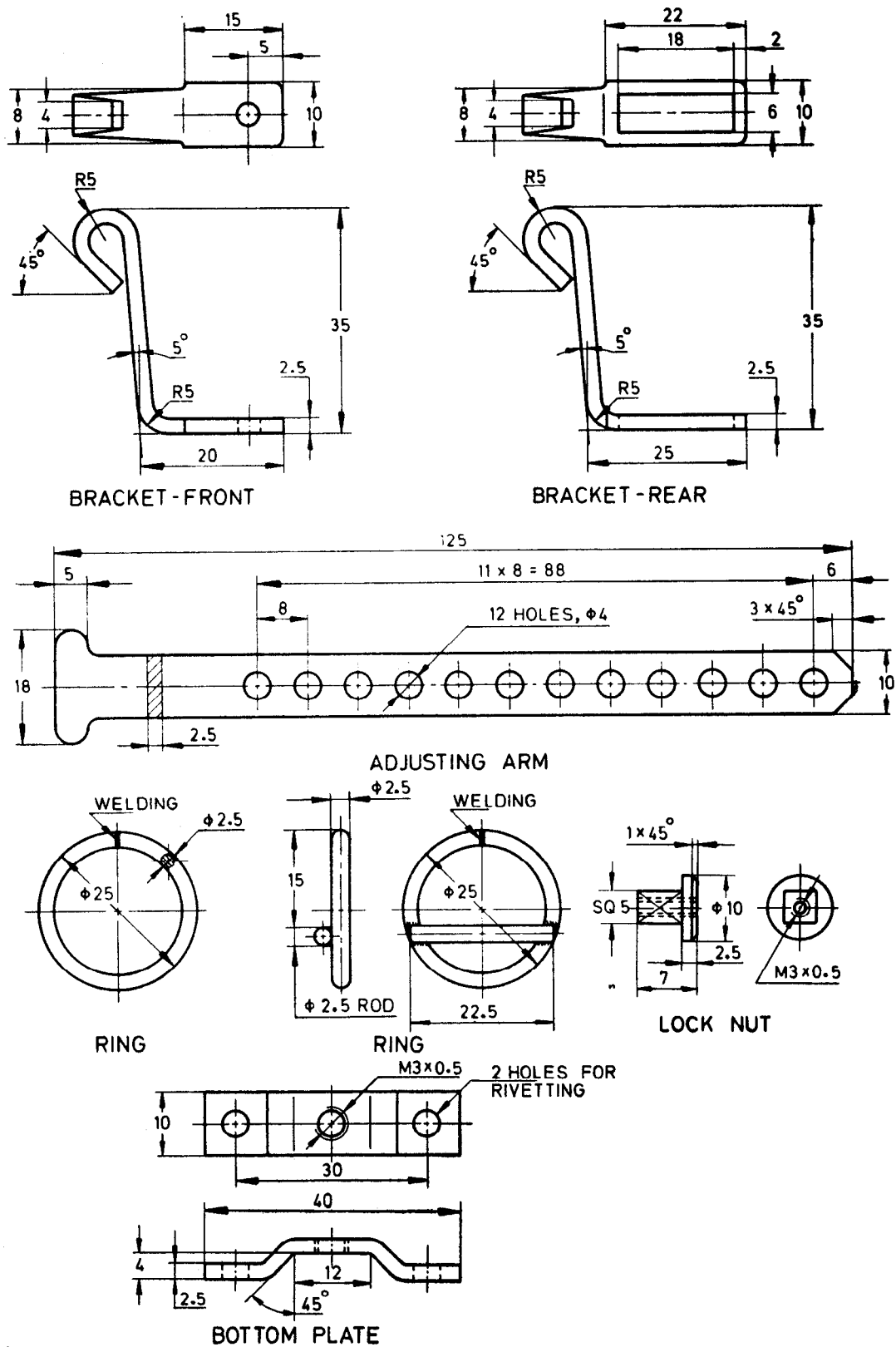
FIG. 5 ADJUSTABLE CRAMPONS, TYPE B (LEFT)

6. Workmanship and Finish — The crampons and its components shall be free from any hair line cracks, pits, burrs, sharp edges and other formation likely to damage vibrant sole of boots and other forging or manufacturing defects. Crampons shall be resistant to corrosion in use and storage.

6.1 The crampons except rings shall be suitably galvanized. The rings shall be nickel-chrome plated with an adequate copper under coat.

7. Marking — Each crampon shall be legibly and indelibly stamped or marked with the manufacturer's name, initials or trade-mark, and year of manufacture.

7.1 Certification Marking — Details available with the Bureau of Indian Standards.



All dimensions in millimetres.

FIG. 6 DIMENSIONS FOR COMPONENTS FOR ADJUSTABLE CRAMPONS, TYPE B

EXPLANATORY NOTE

This standard lays down the requirements for adjustable 12-point crampons for mountaineering. This standard was first published in 1981. In this revision, the major change is that of material received from R & D Establishment, Ministry of Defence. The requirements of mass has been deleted. Non-adjustable crampons are covered in IS : 11854-1986 'Specification for non-adjustable crampons for mountaineering'.