SRI LANKA STANDARD 753 : 1986

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SPECIFICATION FOR

AXES

SRI LANKA STANDARDS INSTITUTION

SPECIFICATION FOR AXES

SLS 753 : 1986

Gr. 6

SRI LANKA STANDARDS INSTITUTION
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

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Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR AXES

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 86-09-02, after the draft, finalized by the Drafting Committee on Axes, had been approved by the Mechanical Engineering Divisional Committee.

All standard values given in this specification are in SI units.

Axes are not necessarily supplied with handles. However, this may be agreed between the manufacturer and the purchaser.

In the preparation of this standard, note has been taken of the specifications of axes presently being manufactured by leading local manufacturers.

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 an analysis, shall be rounded off in accordance with SLS 102. The number of significant figures to be retained in the rounded off value shall be the same as that of the specified value in this standard.

The assistance derived from the publications of the British Standards Institution and the Bureau of Indian Standards in the preparation of this standard is gratefully acknowledged.

1 SCOPE

This standard covers the requirements and test methods for axes of the types specified in 3, used for cleaving or chopping trees, wood etc.

2 REFERENCES

SLS	102	Presentation of numerical values
SLS	122	Vickers hardness test
SLS	145	Rockwell hardness test
SLS	146	Brinell hrdness test
SLS	263	Building timber Part 2 Specification for permissible defects
SLS	428	Random sampling methods

3 TYPES OF AXES

The axes shall be either of felling type or hand type.

3.1 Felling axes shall be of the following shapes :

a) Straight edged axe (see Figure 1)
b) Wedge type axe (see Figure 2)

3.2 Hand axes shall be of the following shapes :

a) Straight edged axe (see Figure 1)
b) Wedge type axe (see Figure 2)

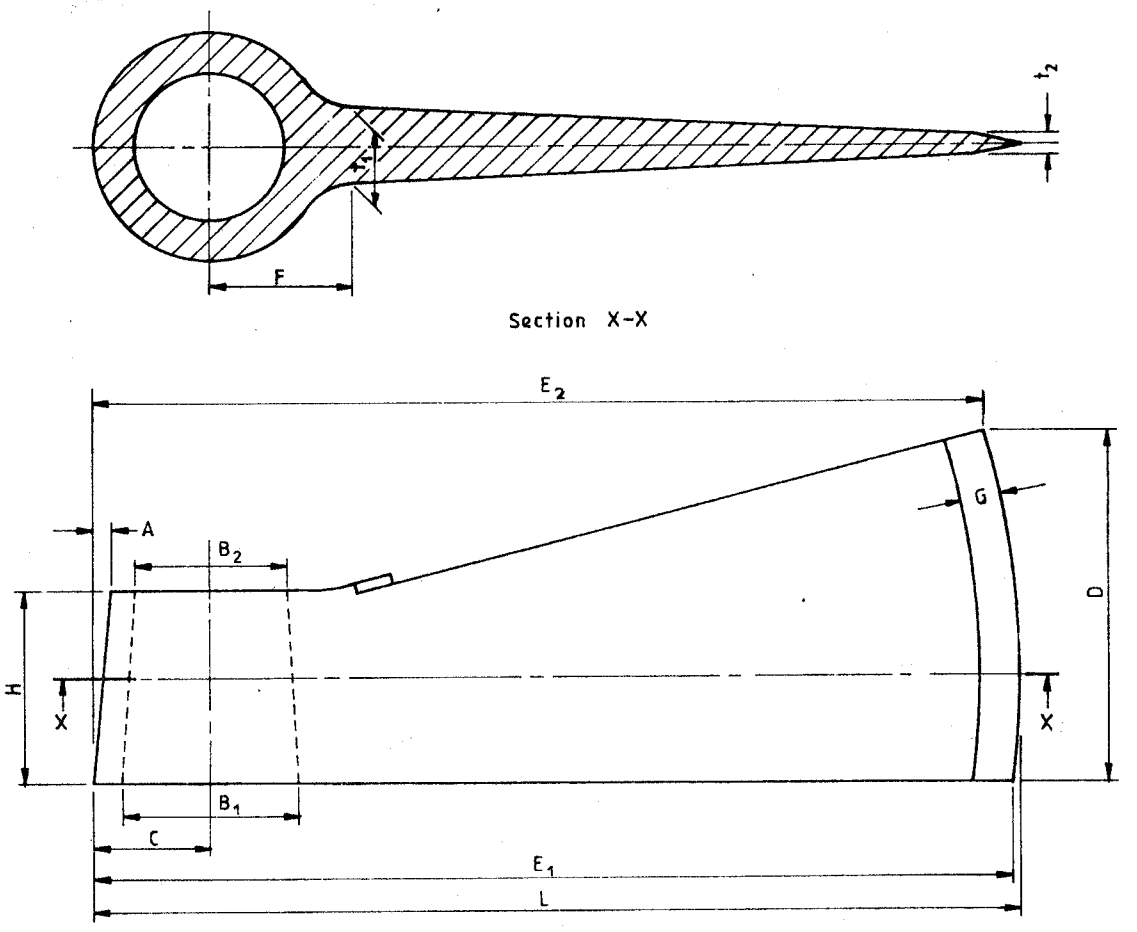

Figure 1 - Dimensions of straight edged axe

TABLE 1 - Weight and dimensions of straight edged axe

All dimensions in millimetres

Type	Weight kg	A	B_1	B_2	C	D	E_1	E_2	F	G	H	L	t_1	t_2
	± 6 %	+ 0 − 1.5	± 3	± 3	+ 3 − 0	± 4					± 3	± 6	+ 2 − 0	+ 2 − 0
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Straight edge felling axe	1.5	3	45	39	30	95	239	232	36	10	52	241	20	5.5*
	1.6	3	48	41	30.5	105	207	191	29	38	54	210	22	6.4
	1.8	3	48	41	30.5	114	217	203	29	38	54	222	22	9.5
	2.0	3	51	44	32	114	235	222	30	44	57	241	22	9.5
	2.25	3	57	51	35	121	262	248	34	51	57	267	22	9.5
Straight edge hand axe	1.1	2	31	27	21.5	65	154	148	30	10	40	155	15	5

* *See Foreword*

NOTE

Tolerances on B_1 & B_2 are subject to the maintenance of a taper of 6.0 mm for felling axes and 3 mm for hand axes.

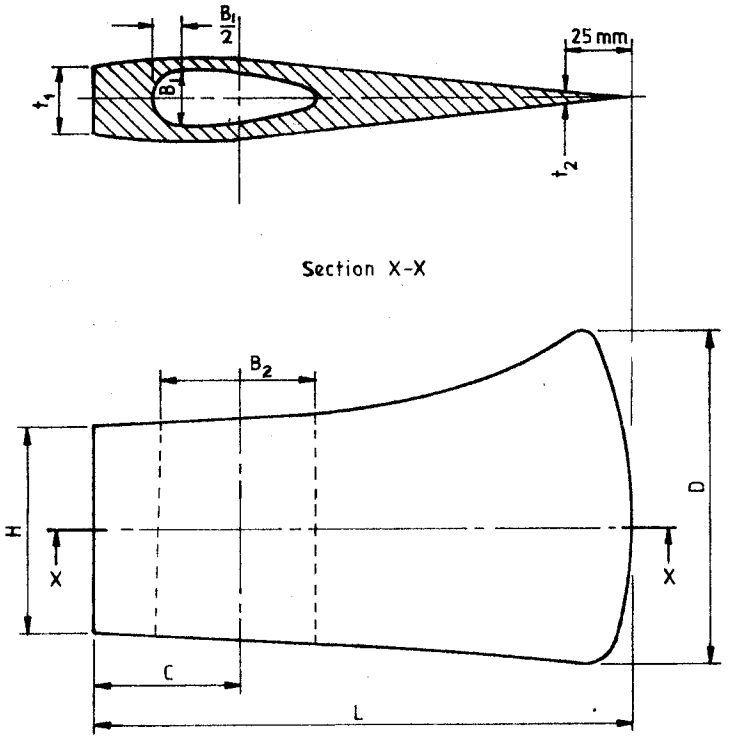

Figure 2 - Dimensions of wedge type axe

TABLE 2 - Weight and dimensions of wedge type axe

All dimensions in millimetres

Type	Weight kg ± 6 %	B_1 ± 2.0	B_2 ± 3.0	C ± 6.0	D ±6.0	H ±4.5	L ±6.0	t_1 ± 1.5	t_2 + 0 − 1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Wedge type felling axe	1.25	17	55	48	105	70	171	24	6
	1.6	21	64	57	111	79	187	26	6
	2.0	21	64	58	127	86	203	27	6
	2.75	21	64	58	143	92	222	29	6
Wedge type hand axe	0.6	15	45	38	86	57	140	20	6
	0.8	16	48	38	92	57	148	20	6
	1.0	17	55	48	98	63	162	24	6

NOTE

Dimensions B_1 and B_2 apply at the rear of the eye. The dimensions at the front of the eye shall be greater than B_1 and B_2 in all cases.

4 REQUIREMENTS

4.1 Materials

4.1.1 Axe head

Steel used in the manufacture of axe heads shall conform to the following composition :

Constituent	Per cent
Carbon	0.55 - 0.80
Silicon	0.25 max.
Manganese	0.3 - 0.8
Phosphorous	0.060 max.
Sulphur	0.060 max.

NOTE

If the raw materials are obtained from a source where the composition is not specified, the manufacturer should verify that the composition meets the specifications.

4.1.2 *Handle*

The handle shall be manufactured from any hardwood agreed between the manufacturer and the purchaser.

The timber shall be seasoned, tough and free from knots, shakes, or other defects except to the extent permitted for structural timber under 7 of SLS 263 : Part 2 : 1974.

4.2 Manufacture

4.2.1 Axe heads shall be soundly forged from one piece to the required shape and design.

4.2.2 The blade portion shall be evenly hardened and tempered to the hardness specified in 4.5 except the material immediately adjacent to the eye which shall be left unhardened. The cutting edge shall be properly ground.

4.2.3 The eye shall be central in the width of the head. The head shall be in correct alignment with the handle and the cutting edge shall be in the same plane as the axis of the head.

4.2.4 The handle shall be shaped before fitting to suit the eye of the respective axe heads.

4.3 Finish

4.3.1 Axe heads shall be free of flaws, scars, scales, cracks, pits, burrs and other defects.

4.3.2 All sharp edges other than the cutting edge shall be removed. The cutting edge shall be sharpened ready for immediate use

4.3.3 Axe heads shall be coated with a suitable anti-corrosive paint except cutting edge which shall be clear lacquered

4.4 Dimensions and weight

4.4.1 Tolerance on dimensions shall be those given in the respective tables, and where not specified, shall be in accordance with the best forging practice.

4.4.2 Tolerance on weight shall be $\pm$ 6 per cent.

4.5 Mechanical properties

When tested within 30 mm of the cutting edge, the blade shall have a hardness range be of 485 HV to 610 HV or 48 HRC to 56 HRC or 455 HB to 560 HB. (see 7.1)

5 MARKING

5.1 Each axe head shall be legibly and indelibly stamped with the weight and manufacturer's trade mark.

NOTE

Attention is drawn to certification facilities offered by SLSI, see inside back cover of this specification.

6 PACKING

Axe heads shall be securely packed in suitable packing cases or crates or size convenient for handling in transit.

They shall be packed separately according to weight and type.

7 TESTING

7.1 Hardness test

Hardness testing shall be in accordance with CS 122 or CS 145 or CS 146 and when tested hardness shall conform to requirements of 4.5.

7.2 Impact test

The head of the axe shall be rigidly clamped with entire blade over hanging and the broad surface horizontal.

A 4 kg steel striker with a hardened hemispherical face of radius 25 mm (approx.) shall be dropped form a measured vertical height on to the blade at a position approximately 20 mm from the cutting edge. This shall be repeated three times, following which the head of the blade shall have suffered no damage of any kind. The vertical height should be 4 m in the case of felling axes and 3 m in the case of hand axes.

7.3 Cutting test

Cutting test shall be made on defect free satin log by means of series of true square blows across the grain. After the blows the cutting edge shall show no signs of damage or defect, the head shall remain securely fixed to the handle and the handle undamaged.

8 SAMPLING

8.1 Lot

All axes of same type and dimensions manufacture under same conditions shall constitute a lot.

8.2 Scale of sampling

8.2.1 Samples shall be selected from each lot for ascertaining conformity of the lot to the requirements of this specification.

8.2.2 The number of axes to be selected from the lot shall be in accordance with Columns 1 and 2 of Table 3.

TABLE 3 - Scale of sampling

Number of axes in the lot (1)	Number of axes to be selected (2)	Acceptance number (see 9.2) (3)	Sub-sample size (4)
Up to 50	5	0	2
51 to 150	8	0	3
151 to 300	13	1	5
301 and above	20	2	8

8.2.3 The axes shall be selected at random. In order to ensure randomness of selection random number tables as given in SLS 428 shall be used.

8.3 Number of tests

8.3.1 Each axe selected as in 8.2.2 shall be examined for marking requirement given in 5.

8.3.2 Each axe selected as in 8.2.2, shall be inspected for requirements given in 4.2, 4.3 and 4.4.

8.3.3 If the lot has been found satisfactory in respect of requirements when examined under 8.3.2 , a sub sample of size given in Column 4 of Table 3 shall be selected and tested for the following requirements:

a) Hardness (see 7.1)
b) Impact (see 7.2)
c) Cutting (see 7.3)

9 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied.

9.1 Each axe examined as in 8.3.1 satisfies the marking requirements.

9.2 The number of axes not conforming to one or more requirements when inspected as in 8.3.2 is less than or equal to the corresponding acceptance number given in column 3 of Table 3.

9.3 Each axe of the sub sample, when tested as in 8.3.3 satisfies the relevant test requirements.

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the national standards organization of Sri Lanka established by the Sri Lanka Standards Institution Act No.6 of 1984 which repeals the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Industries and Scientific Affairs.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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The detailed preparation of standard specifications is done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Institution. These Committees are appointed by the Divisional Committees, which in turn are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the standard specifications, the Institution endeavours to ensure adequate representation of all view points.

In the international field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 53, Dharmapala Mawatha, Colombo 3, Sri Lanka.

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The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 53, Dharmapala Mawatha, Colombo 03.

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