SRI LANKA STANDARD 725 : 1985

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SPECIFICATION FOR
CHISELS

SRI LANKA STANDARDS INSTITUTION

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SLS 725:1985

Gr. 7

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SRI LANKA STANDARD
SPECIFICATION FOR CHISELS

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of Sri Lanka Standards Institution on 85-11-20 after the draft finalised by the Drafting Committee on chisels has been approved by the Mechanical Engineering Divisional Committee.

This standard is intended chiefly to cover the technical provisions relating to chisels.

All values in this standard are in SI units.

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

1 SCOPE

This Sri Lanka Standard specifies the requirements for the following types of chisels intended for cold cutting of metals.

a) Flat chisels;

b) Cross cut chisels;

c) Half round nose chisels; and

d) Diamond point chisels.

2 REFERENCES

The titles of Sri Lanka Standards referred to in this standard are as follows:

CS 122 Vickers Hardness Test

SLS 428 Random Sampling Methods

3 DEFINITIONS

For the purpose of this specification, the following definitions shall apply.

3.1 flat chisels : Chisels used for cutting and chipping cold metals.

3.2 cross cut chisels : Chisels used for cutting keyways and grooves.

3.3 half round nose chisels : Chisels used for cutting oil grooves

3.4 diamond point chisels : Chisels used for finishing out corners of keyways and grooves.

4 DESIGNATION

The chisels shall be designated by the designating size and the length of the chisel (see Fig. 1, 2, 3 and 4).

Example : Flat cold chisel having a designating size of 6 mm and a length of 100 mm shall be designated as 6.0 x 100.

5 REQUIREMENTS

5.1 Materials

Chisels shall be manufactured from carbon or alloy steels, complying with the composition requirements given in Table 1.

Table 1 - Chemical composition of carbon steel and alloy steel

Elements	Percentage	
	Carbon steel	Alloy steel
Carbon	0.50 - 0.75	0.36 - 0.44
Manganese	0.50 - 0.90	0.45 - 0.70
Silicon	0.40 max.	0.25 max.
Chromium	Nil	1.00 - 1.00
Molybdenum	Nil	0.20 - 0.35
Nickel	Nil	1.30 - 1.70
Sulphur	0.05 max.	0.030 max.
Phosphurous	0.05 max.	0.040 max.

5.2 Manufacture

5.2.1 The chisels shall be forged to shape in one piece from hexagonal or octagonal bars.

5.2.2 The heads of the chisels shall be heat treated and chamfered as shown in Figures 1, 2, 3 and 4.

5.2.3 The cutting edges shall be suitably hardened, tempered and ground ready for use.

5.3 Finish

5.3.1 The chisels shall be free from flaws, seams, cracks or any other deleterious defects, that may impair its functions.

5.3.2 The cutting edge shall be ground and free from burrs.

5.4 Shape and dimension

5.4.1 The shape and dimension of chisels shall be as specified in Figures 1, 2, 3 and 4.

5.4.2 *Flat chisels*

Body size of flat chisels (width across flat surfaces) shall be less than the designating size of the cutting edge, by at least 3 mm.

5.4.3 *Cutting angle*

The cutting angle for different types of chisels denoted by β in the Figures 1, 2, 3 and 4 shall be as given in Table 2.

TABLE 2 - Cutting angle of chisels

Type of chisel	Material to be cut			
	steel	cast iron	copper and brass	zinc and aluminium
Flat	75°	60°	45°	35°
Cross cut	75°	60°	45°	35°
Half round nose	40°	45°	50°	50°
Diamond point	25°	25°	35°	35°

5.5 Mechanical properties

5.5.1 *Hardness*

When tested as specified in 8.1 the chisels shall have the following hardness values in the Vickers Hardness Scale.

a) For carbon steel chisels

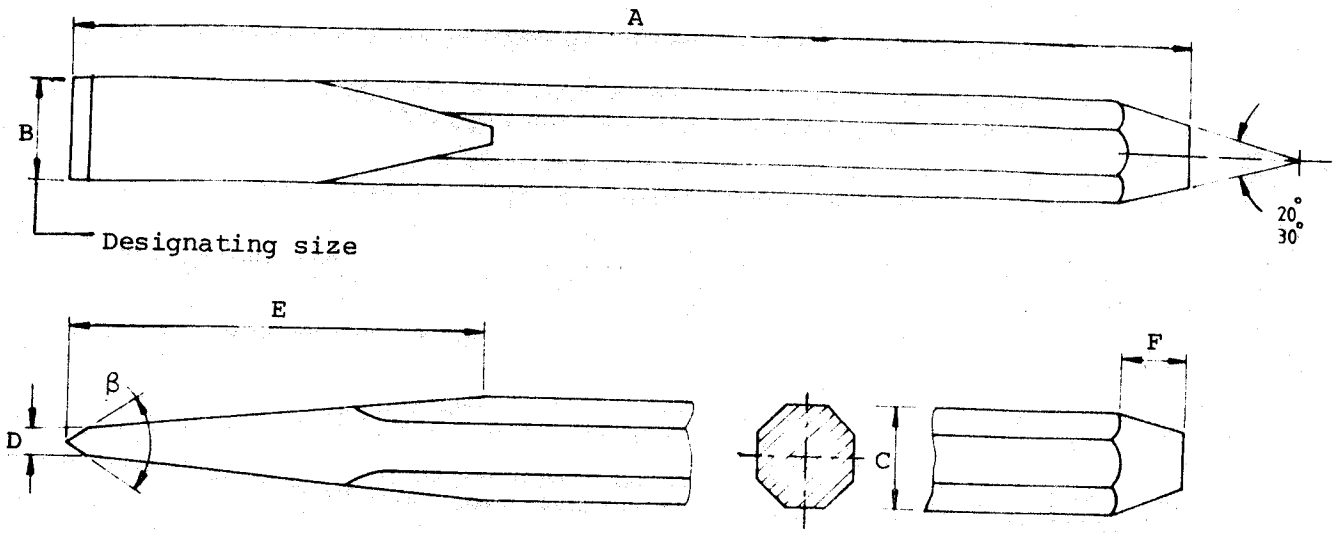
i) blade hardness 560 HV - 620 HV

ii) head hardness 250 HV - 340 HV

b) For alloy steel chisels

i) blade hardness 560 HV - 650 HV

ii) head hardness 300 HV - 400 HV



Dimensions in millimetres

A (1)	B (2)	C max. (3)	D (4)	E min. (5)	E max. (6)	F (7)
100, 150	6.0	6	1.3	20	24	Chamfered
100, 150, 200	10.0	10	1.5	30	34	"
125, 150, 200, 150,	12.0	12	2.4	40	46	"
150, 200, 250, 300, 450	16.0	16	2.8	50	58	10 - 12
200, 250, 300, 450, 600	18.0	18	3.0	60	68	10 - 12
225, 300, 400, 500, 600	22.0	22	3.4	70	78	12 - 16
250, 300, 400, 500, 600	25.0	25	4.0	80	90	14 - 20
300, 350, 400, 500, 600	32.0	32	4.3	90	100	14 - 20

Note

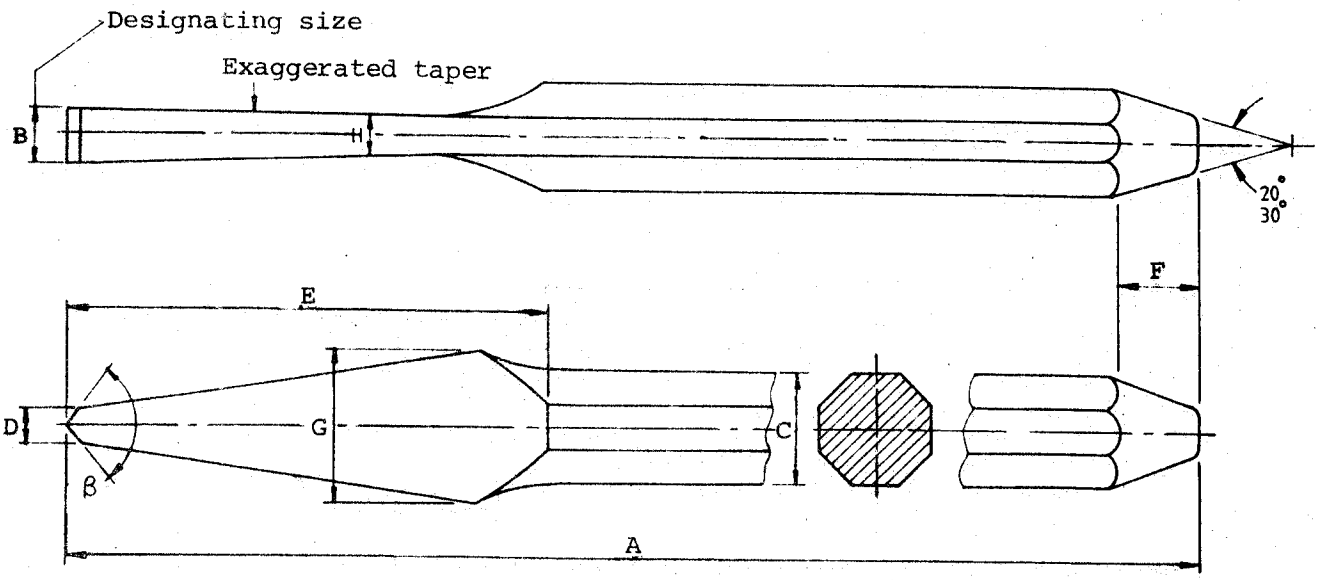
Tolerance for overall length (A)

$\pm$ *1.5* mm *on lengths for 6* mm *to 10* mm *width across flat surface (c); and*

$\pm$ *3.0* mm *on lengths for 12* mm to *32* mm *width across flat surfaces (c).*

Tolerance for blade width (B) = 1 $\pm$ *0.5* mm

Fig.1 - Dimensions for flat cold chisels



Dimensions in millimetres

A (1)	B (2)	C (3)	D (4)	E min (5)	E max. (6)	F (7)	G (8)
100	3.0	6	1.3	28	30	Chamfered	10
125	4.5	10	1.5	40	44	"	14
150	6.0	12	2.4	60	64	"	16
175	8.0	16	3.0	65	68	10 - 12	22
200	10.0	18	4.0	70	74	10 - 12	24
225	12.0	22	4.5	76	80	10 - 14	26
250	16.0	25	5.0	80	90	10 - 14	31

Note

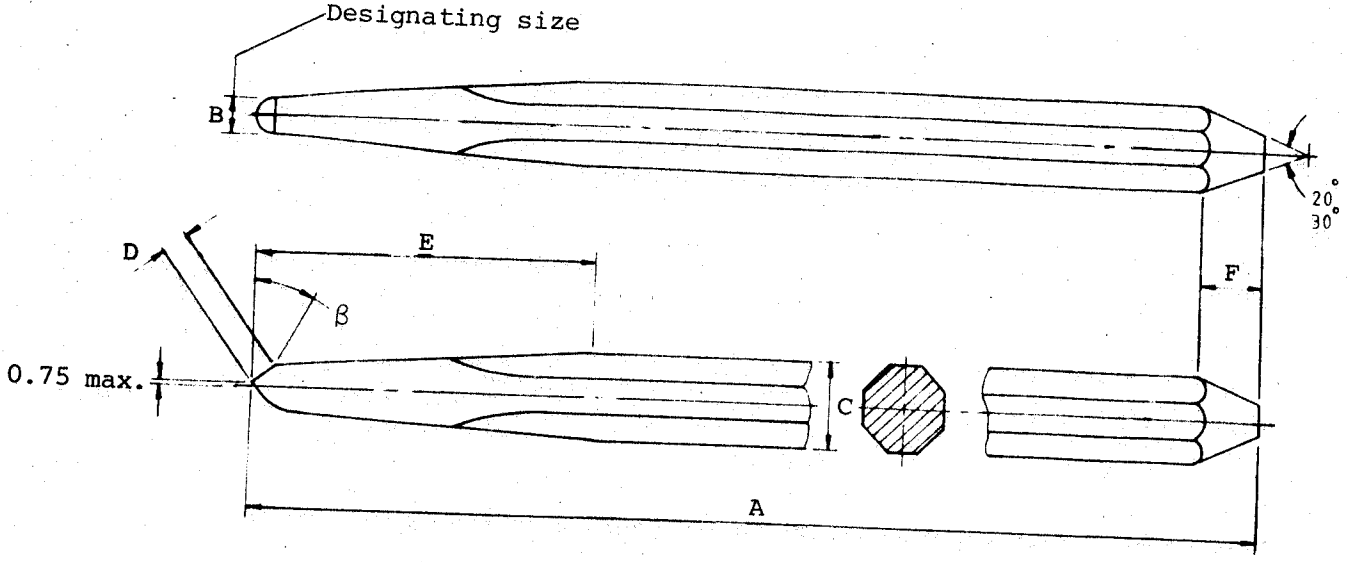
Tolerances for overall length (A)

$\pm$ *1.5* mm *on length of 100 - 125* mm *; and*

$\pm$ *2.5* mm *on length of 150 - 250* mm

Tolerance for blade width (B) = $\pm$ *0.5* mm

Fig. 2 - Dimensions for cross-cut cold chisels



Dimensions in millimetres

A (1)	B (2)	C (3)	D (4)	E min. (5)	E max. (6)	F (7)
100	2.5	6	3.5	25	28	Chamfered
125	4.0	10	5.0	35	38	"
150	6.0	12	7.0	45	48	"
175	8.0	16	9.5	48	52	10 - 12
200	10.0	18	11.0	52	56	10 - 12
225	12.0	22	14.0	56	60	10 - 14
250	14.0	25	16.0	60	64	10 - 14

Note

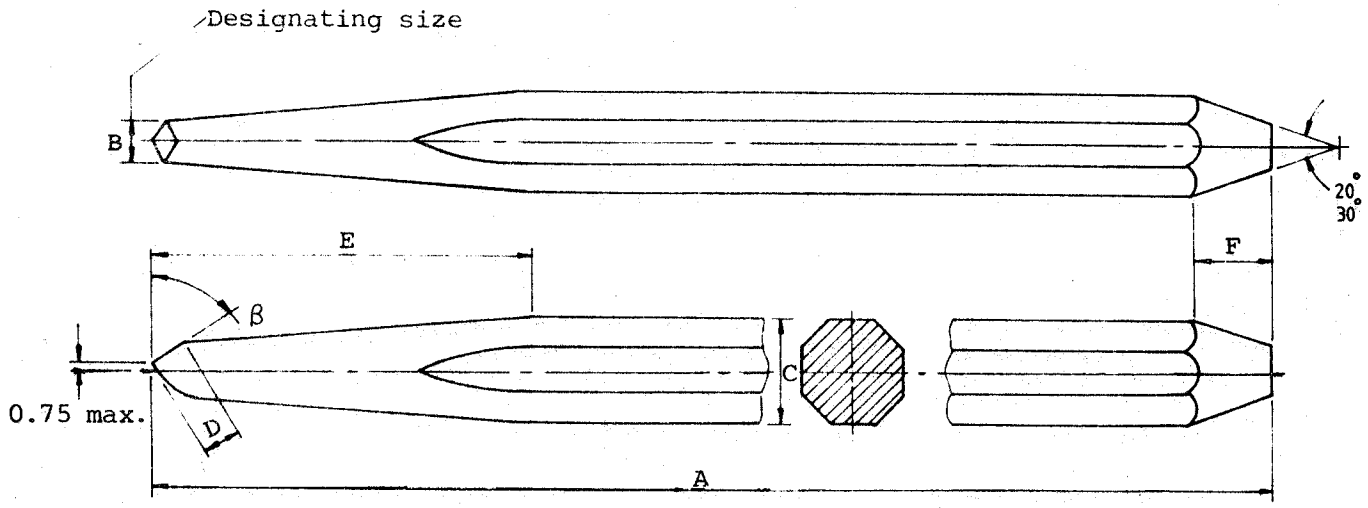
Tolerances for overall length (A)

± 1.5 mm on length of 100 - 125 mm ; and

± 2.5 mm on length of 150 - 250 mm

Tolerance for blade width (B) = ± 0.5 mm

Fig. 3 - Dimensions for half round-nose cold chisels



Dimensions in millimetres

A (1)	B (2)	C (3)	D (4)	E min. (5)	E max. (6)	F (7)
100	2.5	6	3.5	25	28	Chamfered
125	4.0	10	5.0	35	38	"
150	6.0	12	7.0	45	48	"
175	8.0	16	9.5	48	52	10 - 12
200	10.0	18	11.0	52	56	10 - 12
225	12.0	22	14.0	56	60	12 - 14
250	14.0	25	16.0	60	64	12 - 14

Note

Tolerances for overall length (A)

$\pm$ *1.5* mm *on length of 100 - 125* mm ; *and*

$\pm$ *2.5* mm *on length of 150 - 250* mm

Tolerance for blade width (B) = $\pm$ *0.5* mm

Fig. 4 - Dimensions for diamond point cold chisels

5.5.2 *Hardness zone at the cutting edge*

The blades of chisels shall be heat treated to give readings within the hardness range in **5.5.1** over a minimum distance from the extreme cutting edge as given in Table 3.

TABLE 3 - Hardness zone at the cutting edge

Size of cutting edge	Hardness zone - minimum distance from cutting edge
mm	mm
6	13
10	16
12	16
16	18
18	18
22	25
25	25

5.5.3 *Hardness zone at the head*

The head of the chisel shall be heat treated to give readings within the the hardness range specified in **5.5.1** over a minimum distance of 25 mm from the extreme end of the head.

6 PACKING

6.1 The body of each chisel shall be coated with an anticorrosive paint and the ground portion of cutting edge shall be coated with grease or varnish.

6.2 The chisels shall be securely packed in suitable packing cases of a size convenient for handling in transit.

6.3 Each type and size of chisels shall be separately packed.

7 MARKING

7.1 The following shall be legibly and clearly stamped or embossed on the body of the chisel.

a) Manufacturer's name or trade mark

b) Designation (4)

7.2 Each chisel may also be marked with Certification Mark of the Sri Lanka Standards Institution illustrated below on permission being granted for such marking by the Sri Lanka Standards Institution.

Note - The use of the Sri Lanka Standards Institution Certification Mark (SLS Mark) is governed by the provisions of the Sri Lanka Standards Institution Act, and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by the Institution and operated by the producer. SLS marked products are also continuously checked by the Institution for conformity to that standard as further safeguard. Details of conditions under which a permit for the use of the Certification Mark may be granted to manufacturers or processors may be obtained from the Sri Lanka Standards Institution.

8 METHODS OF TEST

8.1 Hardness

The hardness test shall be conducted in accordance with CS 122 to verify compliance with the requirements specified in 5.5.1.

8.2 Flaw test

The working end of each chisel while resting on a lead block shall withstand without fracture or damage, 20 light blows with a 0.25 kg. hammer if the width of the blade of chisel is 13 mm or less and with a 0.5 kg hammer for chisels having a blade width exceeding 13 mm.

8.3 Performance test

8.3.1 The chisels, held firmly and vertically with the cutting edge downwards on a mild steel block, shall be given 20 full blows on the head with a 0.5 kg hammer, in the case of chisels of up to and including 13 mm blade width and with a 1 kg hammer, for chisels having a blade width exceeding 13 mm.

8.3.2 On completing of this test, the head shall not become mushroomed. The cutting edge shall not show any signs of damage or loss of cutting efficiency and the shank shall not show any deformation.

9 SAMPLING

9.1 Lot

All chisels of the same type, size, manufactured from the same material and manufactured by one manufacturer, under the same conditions of manufacture shall constitute a lot.

9.2 Scale of sampling

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

9.2.2 The number of chisels to be selected from a lot shall be in accordance with Column 1 and 2 of Table 4.

TABLE 4 - Scale of sampling

Number of chisels in a lot	No.of chisels to be selected	Acceptance number	Sub-sample size
Up to 280	13	1	3
281 to 500	20	2	5
501 to 1200	32	3	5
1201 and above	50	5	8

9.2.3 Chisels shall be selected at random. In order to ensure randomness of selection any one of the methods given in SLS 428 shall be used.

9.3 Number of tests

9.3.1 Each chisel selected as in 9.2.2 shall be examined for the requirements of manufacture (5.2), finish (5.3) shape and dimensions (5.4) and marking (7).

9.3.2 If the lot has been found satisfactory, when examined as in 9.3.1 a sub sample of size as given in column 4 of Table 4 shall be selected and tested for hardness (8.1), flaws (8.2), and performance (8.3).

10 CONFORMITY TO STANDARD

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

10.1 Each chisel examined as in 9.3.1 satisfies the marking requirements.

10.2 The number of chisels not conforming to shape, dimension, manufacture and finish, when examined as in 9.3.1 is less than or equal to the corresponding acceptance number given in Column 3 of Table 4.

10.3 Chisels of the sub sample when tested as in 9.3.2 satisfy the relevant test requirements.

SLS CERTIFICATION MARK

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.*

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SRI LANKA STANDARDS INSTITUTION

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