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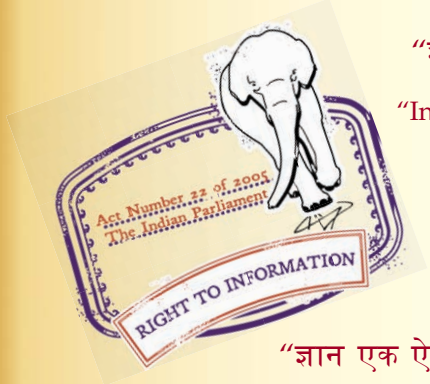

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IS 1930 : 2003
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काष्ठकारी औजार—छैनी और प्रकर्तन यंत्र

(तीसरा पुनरीक्षण)

Indian Standard

WOODWORKING TOOLS—CHISELS AND GOUGES

(Third Revision)

ICS 79.120.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 2003

Price Group 6

NATIONAL FOREWORD

This Indian Standard (Third Revision) which is identical with ISO 2729 : 1995 'Woodworking tools — Chisels and gouges' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendations of the Woodworking Hand Tools Sectional Committee and approval of the Basic and Production Engineering Division Council.

This Standard was first published in 1961 and since then it had undergone two revisions, the last (second revision) being in 1995. The above revisions were carried out by deriving necessary assistance from ISO 2729:1973.

ISO 2729 has been since then revised. In order to align with the work done at the international level, the Sectional Committee dealing with the subject decided for this third revision by adopting ISO 2729:1995 as an Indian Standard.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

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

WOODWORKING TOOLS—CHISELS AND GOUGES

(Third Revision)

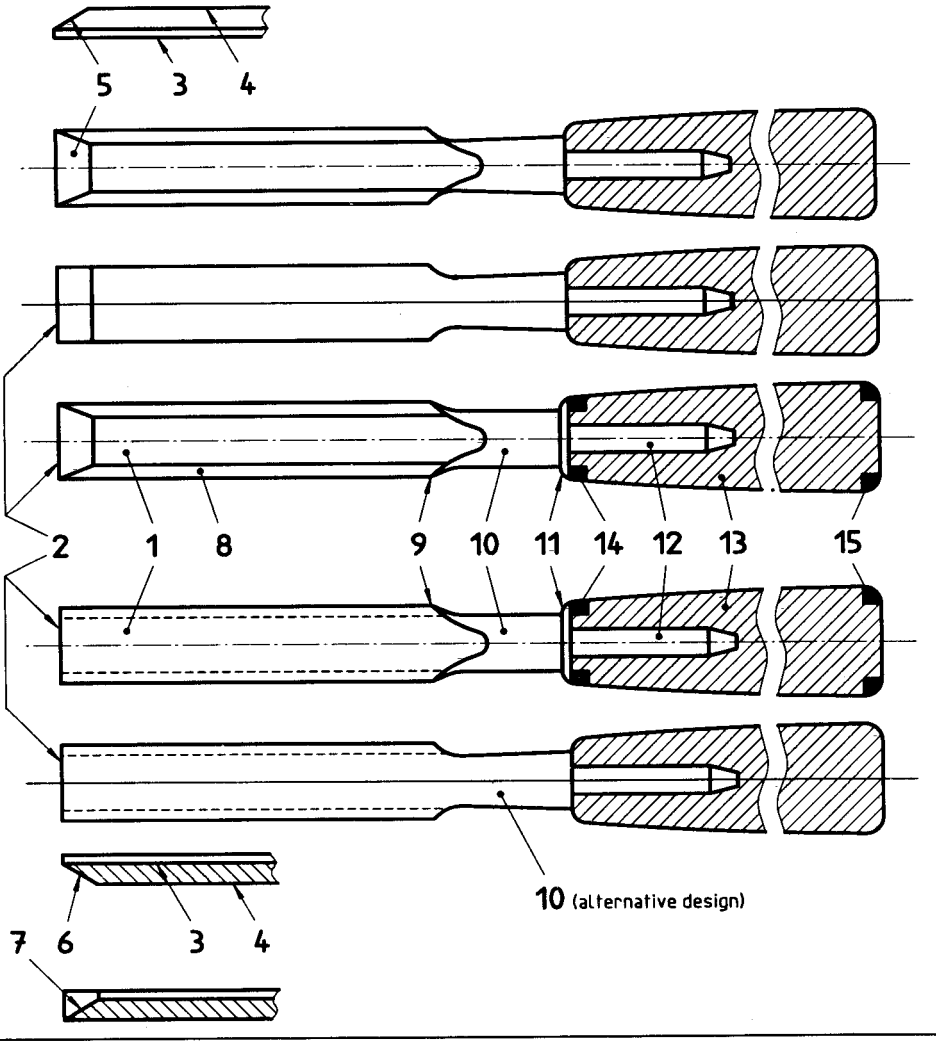
1 Scope

This International Standard specifies the characteristics of chisels and gouges for woodworking.

2 Nomenclature

See table 1.

Table 1

Type	Illustration
Firmer and butt chisels, bevel edged and plain	
Firmer gouges (half curved)	

Key

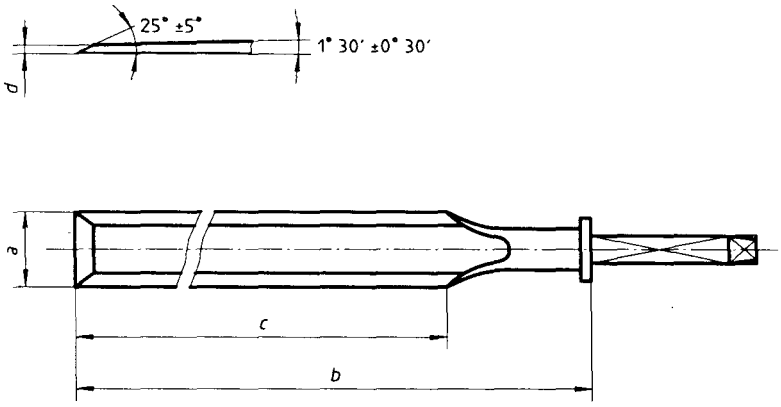
1	Blade	6	Out-Cannel	11	Bolster
2	Cutting edge	7	In-Cannel	12	Tang
3	Face	8	Bevel	13	Handle
4	Back	9	Shoulder	14	Reinforcing ferrule
5	Cannel	10	Neck	15	Reinforcing hoop

NOTE — The illustrations are given as examples and shall neither limit nor influence the design of the tool.

3 Dimensions

3.1 Firmer chisels with tang, bevelled and plain (long type)

See figure 1 and table 2.



NOTE — The design of the tang is left to the manufacturer's decision. It shall allow the tool to withstand the tests of clause 5 without failure.

Figure 1

Table 2

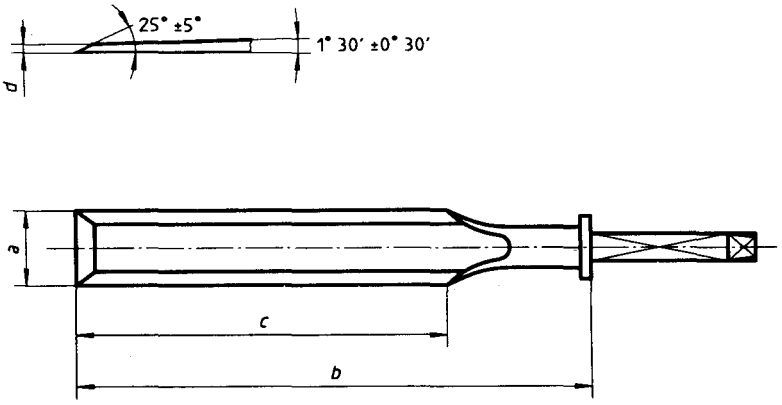
a js 15		*b* [1] min.	*c* min.	*d* min.
mm	in	mm		
(2)	—	109	78	3,5
3	1/8	110	79	3,5
4	—	112	80	2,1
(5)	3/16	113	81	2,1
6	1/4	115	82	2,1
8	5/16	118	84	2,1
10	3/8	121	86	2,1
12	—	124	88	2,1
(13)	1/2	125	89	2,3
14	9/16	127	90	2,3
(15)	—	128	91	2,4
16	5/8	130	92	2,4
18	—	133	94	2,6
(19)	3/4	134	95	2,6
20	—	136	96	2,6
(22)	7/8	139	98	2,8
25	1	143	101	2,9
(28)	1 1/8	148	104	2,9
(30)	—	150	106	3,1
32	1 1/4	154	108	3,1
(35)	1 3/8	158	111	3,3
(38)	1 1/2	160	114	3,3
40	—	166	116	3,5

NOTE — Secondary series given in parentheses.

1) *b* min. = 106 + 1,5*a* (rounded to lower millimetre).

3.2 Butt chisels with tang, bevelled and plain (short type)

See figure 2 and table 3.



NOTE — The design of the tang is left to the manufacturer's decision. It shall allow the tool to withstand the tests of clause 5 without failure.

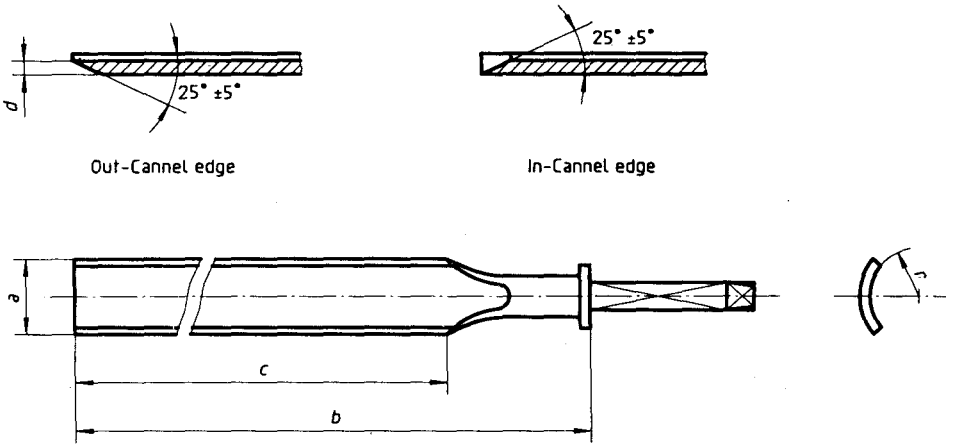
Figure 2

Table 3

a js 15		*b* min.	*c* min.	*d* min.
mm	in	mm		
6	1/4	104	76	2,1
10	3/8	107	76	2,1
(13)	1/2	109	76	2,3
16	5/8	111	76	2,4
(19)	3/4	113	76	2,6
25	1	118	76	2,9
32	1 1/4	122	76	3,1
(38)	1 1/2	127	76	3,1
50	2	135	76	3,5
NOTE — Secondary series is given in parentheses.				

3.3 Firmer gouges

See figure 3 and table 4.



NOTES

1 The design of the tang is left to the manufacturer's decision. It shall allow the tool to withstand the tests of clause 5 without failure.

2 There are many shapes of gouge section. The gouge shown above is a half curved shape section gouge.

Figure 3

Table 4

a js 15		*b* [1] min.	*c* [2] min.	*d* min.	*r* nom.	*r* tol.
mm	in	mm				
(3)	1/8	110	79	3,5	3	± 0,45
6	1/4	115	82	2,1	4	± 0,6
8	5/16	118	84	2,1	5	± 0,6
10	3/8	121	86	2,1	6	± 0,6
12	1/2	124	88	2,1	7	± 0,6
(13)	—	125	89	2,3	7	± 0,75
15	—	128	91	2,4	8	± 0,75
(16)	5/8	130	92	2,4	9	± 0,75
18	—	133	94	2,6	10	± 0,75
(19)	—	134	95	2,6	11	± 0,9
20	3/4	136	96	2,6	12	± 0,9
(22)	7/8	139	98	2,8	13	± 0,9
25	1	143	101	2,9	14	± 0,9
(30)	—	150	106	3,1	16	± 0,9
(32)	1 1/4	154	108	3,1	18	± 0,9

NOTE — Secondary series is given in parentheses.

1) *b* min. = 106 + 1,5*a* (rounded to lower millimetre).

2) *c* min. = 76 + 1,1*a* (rounded to lower millimetre).

4 Technical specifications

4.1 Blade

The chisels and gouges shall have dimensions in conformity with those shown in 3.1 to 3.3. The non-specified shapes and dimensions shall be such that the tools can withstand loads to which they will be subjected during normal use.

4.1.1 Material

The blades of chisels and gouges specified in this International Standard shall be manufactured from a material which, taking into account the stated hardness, gives a cutting edge quality the same as, or greater than tool steel with an analysis given in table 5 (for guidance only).

Table 5

Limit	C	Si	Mn	P	S
min.	0,90 %	0,15 %	0,25 %	—	—
max.	1,25 %	0,25 %	0,40 %	0,035 %	0,035 %

After heat treatment, the blades shall have a hardness of 55 HRC to 61 HRC for $a \leqslant 8$ mm and 58 HRC to 61 HRC for $a > 8$ mm. This hardness is valid at a minimum distance equal to 2/3 of length c measured from the cutting edge.

4.1.2 Cutting edge

The cutting edge shall be ground sharp and ready for final honing. The edge shall be at 90° to the centre line of the blade.

4.1.3 Bolster and neck

The bolster and neck shall be concentric with the centre line of the blade, and shall have such a form and size that they give good support to the handle. It shall not have sharp corners that can damage the handle.

4.1.4 Tang

The tang shall have a shape which provides a good fit in the handle. It shall be of such a design as to withstand loading in normal use, without failure. It shall be concentric with the axis of the blade.

4.1.5 Finish

For chisels and gouges, the face, back and sides of the blade shall be finely ground or have an equivalent finish.

a) For the out-cannel edge gouges, the face shall be finely ground or have an equivalent finish.

b) For the in-cannel edge gouges, the back shall be finely ground or have an equivalent finish.

After finishing, a suitable protection shall be applied to prevent rusting.

4.2 Handle

4.2.1 Shape

The handle shall be designed to give a good grip. It shall not have sharp corners or irregularities which might be hazardous during use. The dimensions of the handle shall be in proportion to those of the blade in order that the tool be well balanced.

4.2.2 Material

The handle shall be made from a material having the necessary strength to withstand impact and bending loads during normal use. Wooden handles for tanged tools may have a reinforcing hoop.

4.2.3 Handle fixing to blade

The handle shall be securely attached to the blade and shall withstand the tests specified in clause 5.

5 Test methods

5.1 Blade

5.1.1 Test for soundness

Every blade shall be capable of passing the following test for soundness, at the completion of which it shall show no sign of fracture or flaw.

A suitable block of lead shall be placed on a bench or table. The blade shall be held by tang or neck, between the thumb and fingers; the hand shall then be raised and brought down quickly, using the force of wrist and elbow to strike the flat of the blade a sharp blow against the top face of the lead block. This manually applied sharp blow shall be repeated six times consecutively.

5.1.2 **Bending test** (chisels, see figure 4)

To determine the permanent deflection of the chisel blade, the distance between the fixture base and two points A and B on the chisel are measured before and after applying the load in accordance with tables 6 and 7.

The deflection is measured by using an indicator clock or other suitable measuring intrument. The permanent deflection is calculated as the difference between the two readings. The maximum permanent deflection allowed is 1 mm at point A and 3 mm at point B.

The measuring points shall be located as follows:

A, at the highest point of the bolster;

B, 75 mm from the front end of the handle.

The bending load, P, shall be applied at 75 mm from the front end of the handle with the chisel held in the fixture as shown in figure 4. Bending load, P, for firmer chisels is given in table 6 and for butt chisels in table 7. Values for load P can also be calculated from the following formula:

$$P = \frac{ad'^2\sigma}{6L}$$

where

P is the load in decanewtons;

L is as shown in figure 4, i.e.:

$L = b - (21 + 5) + 75 = b + 49$, in millimetres;

σ is the tensile strength = 120 daN/mm^2;

a is the width of the blade, in millimetres;

d' is the corrected value of the thickness of the blade, in millimetres, i.e..

$d' = d$ min. $\times f$

where d min. values are taken from tables 2, 3 or 4, and where f is a correction factor equal to 0,88.

Dimensions in millimetres

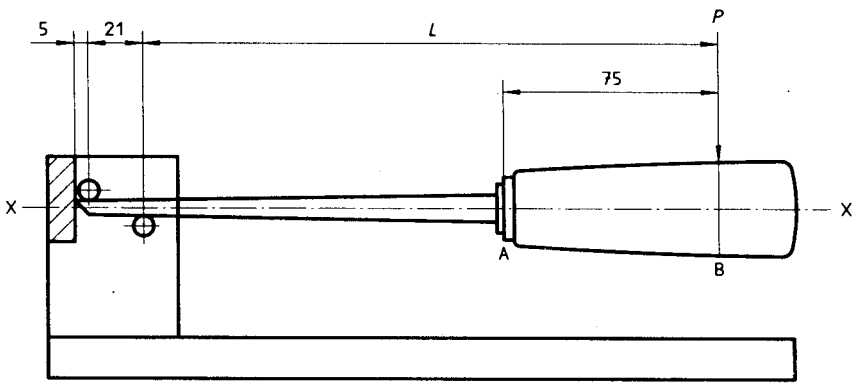


Figure 4

Table 6 — Bending load for firmer chisels

Width of blade *a*	Bending load *P*
mm	daN
2 3 4	2,36 3,58 1,69
5 6 8	2,1 2,49 3,27
10 12 13	4,01 4,73 6,12
14 15 16	6,51 7,56 7,97
18 19 20	10,35 10,87 11,31
22 25 28	14,2 16,96 18,51
30 32 35	22,43 23,46 28,51
38 40	30,66 35,7

Table 7 — Bending load for butt chisels

Width of blade *a*	Bending load *P*
mm	daN
6 10 13	2,67 4,37 6,12
16 19 25	8,92 12,27 17,72
32 38 50	25,32 36,97 51,55

5.2 Test for strength of handle

This test is applicable to both chisels and gouges.

The chisel or gouge with handle, with its cutting edge completely removed, shall be placed vertically in a sleeve. It must be laid on a base treated to 60 HRC minimum.

A metal weight of 5 kg with a flat face shall fall freely on to the handle from a height. Values for the height drop H, according to the width of blade, are given in table 8.

The weight shall be guided during the drop.

The chisel (gouge) handle, although it may show deformation in the shape of a mushroom on its end, shall still be perfectly usable after the required number of blows given in table 8; that is to say, the handle shall neither split nor break and the reinforcing hoop, if fitted, shall still be in place.

For guidance, the sleeve may be manufactured as indicated in figure 5.

NOTE 1 When testing a plastic handle, the frequency of blows from the machine may be reduced so has to cause no more heating of the handle than would be caused by normal use in practice.

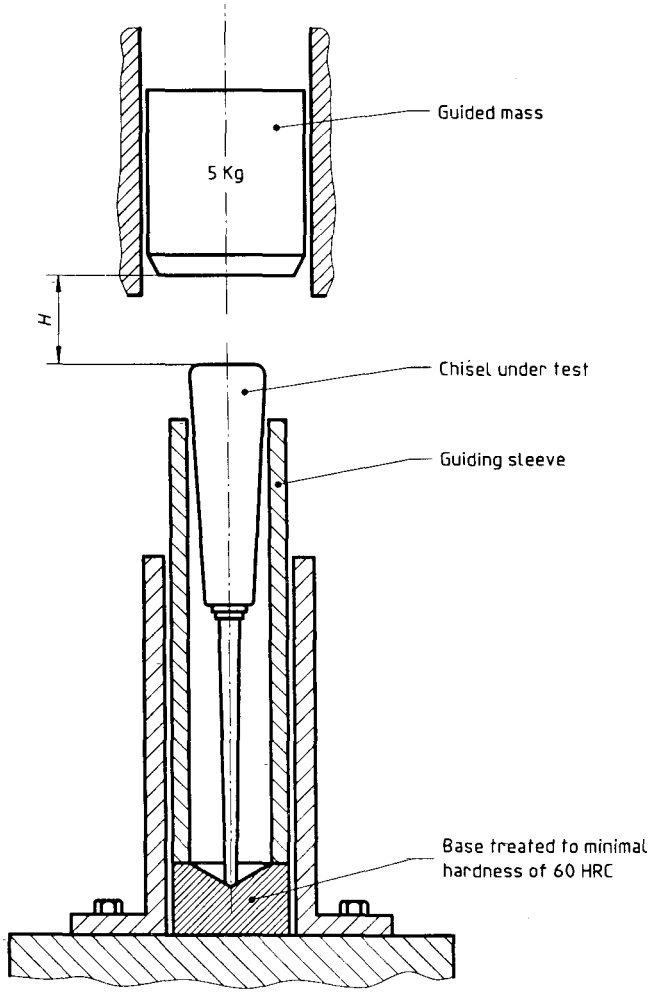


Figure 5

After the impact test, the chisels and gouges shall be subjected to an axial pull-off test and a torsional test and shall withstand the loads given in table 8. There shall be no indication of any looseness of the handle after these tests.

Table 8

Width of the blade a	**Height of drop** H	**Number of blows**	**Corresponding energy**	**Proof load for handle/blade pull-apart**	**Handle/blade proof torque**
mm	m		J	N	N·m
$a \leq 10$	0,2	12	120	800	10
$10 < a \leq 20$	0,3	12	180	1 000	10
$a > 20$	0,4	12	240	1 200	10

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