INTERNATIONAL STANDARD 2729

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Woodworking tools — Chisels and gouges

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2729 was drawn up by Technical Committee ISO/TC 29, *Small tools*, and circulated to the Member Bodies in March 1972.

It has been approved by the Member Bodies of the following countries :

Austria	Hungary	South Africa, Rep. of
Belgium	India	Spain
Canada	Ireland	Sweden
Czechoslovakia	Israel	Thailand
Egypt, Arab Rep. of	Italy	Turkey
France	Romania	United Kingdom

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Germany
Netherlands

Printed in Switzerland

Woodworking tools — Chisels and gouges

1 SCOPE AND FIELD OF APPLICATION

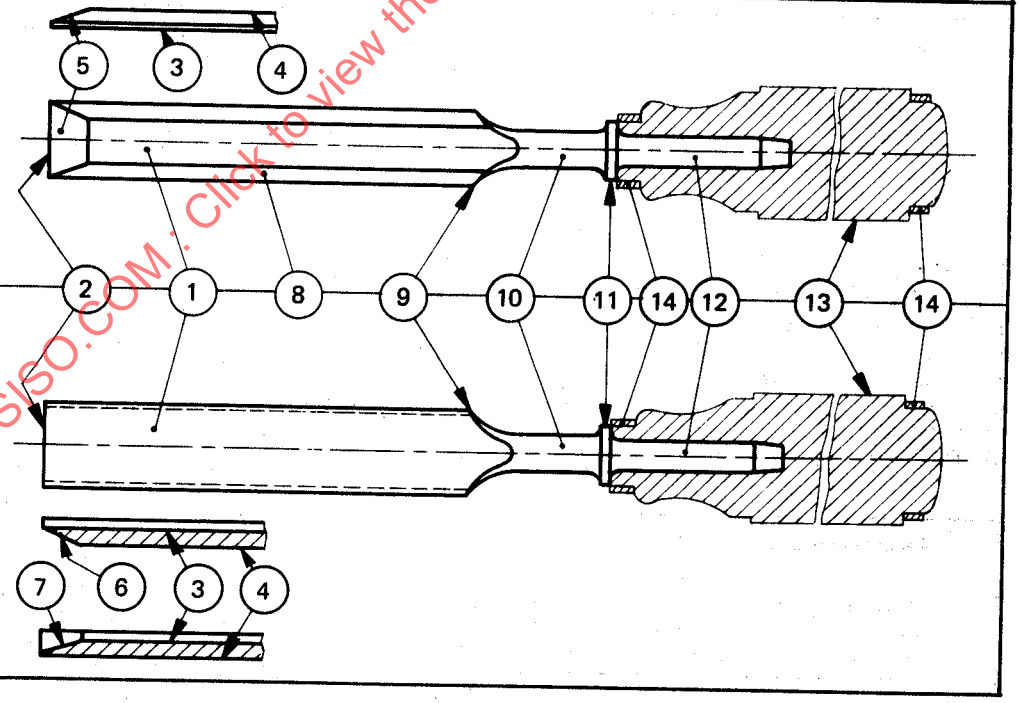
This International Standard specifies the characteristics of chisels and gouges for woodworking.

2 REFERENCES

ISO/R 80, *Rockwell hardness test (B and C scales) for steel.*

ISO/R 1024, *Rockwell superficial hardness test (N and T scales) for steel.*

3 NOMENCLATURE

Type	Figures
Firmer chisel	
Firmer gouge (half curved)	

Number	Denomination
1	Blade
2	Cutting edge
3	Face
4	Back
5	Cannel
6	Cannel (External)
7	Incannel

Number	Denomination
8	Bevel
9	Shoulder
10	Neck
11	Bolster
12	Tang
13	Handle
14	Reinforcing ring (hoop or ferrule)

4 DIMENSIONS

4.1 Firmer chisels with tang, bevelled and plain

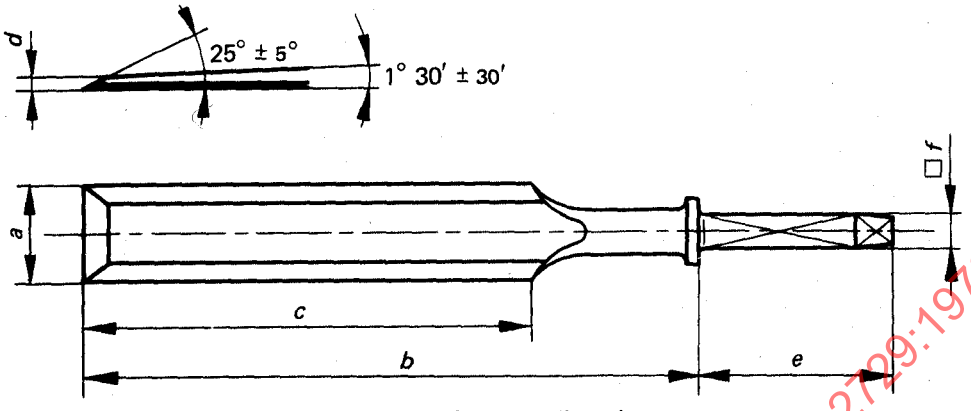


FIGURE 1 — **Shape and dimensions**

TABLE 1 — **Principal series**

Nominal dimension *a* (Tolerance j_s 15)		*b*		*c*		*d*	*e*	*f*
			tol.[1]		tol.[1]	j_s 15	min.	min.
mm	in	mm	mm	mm	mm	mm	mm	mm
3	1/8	118	± 1,75	90	± 1,75	3,75	35	4
4	—	125	± 2,00	95	± 1,75	2,35	35	4
6	1/4	125	± 2,00	95	± 1,75	2,35	35	4
8	5/16	132	± 2,00	100	± 1,75	2,35	40	5
10	3/8	132	± 2,00	100	± 1,75	2,35	40	5
12	—	132	± 2,00	100	± 1,75	2,35	40	5
14	9/16	140	± 2,00	106	± 1,75	2,50	40	5
16	5/8	140	± 2,00	106	± 1,75	2,65	45	6
18	—	150	± 2,00	112	± 1,75	2,80	45	6
20	—	150	± 2,00	112	± 1,75	2,80	45	6
25	1	160	± 2,00	118	± 1,75	3,15	50	7
32	1 1/4	160	± 2,00	118	± 1,75	3,35	50	7
40	—	170	± 2,00	125	± 2,00	3,75	55	8

1) Tol. $\pm \frac{IT\ 17}{2}$

TABLE 2 — **Secondary series**

Nominal dimension *a* (Tolerance j_s 15)		*b*		*c*		*d*	*e*	*f*
			tol.[1]		tol.[1]	j_s 15	min.	min.
mm	in	mm	mm	mm	mm	mm	mm	mm
2	—	118	± 1,75	90	± 1,75	3,75	35	4
5	3/16	125	± 2,00	95	± 1,75	2,35	35	4
13	1/2	140	± 2,00	106	± 1,75	2,50	40	5
15	—	140	± 2,00	106	± 1,75	2,65	45	6
19	3/4	150	± 2,00	112	± 1,75	2,80	45	6
22	7/8	150	± 2,00	112	± 1,75	3,00	50	7
28	1 1/8	160	± 2,00	118	± 1,75	3,15	50	7
30	—	160	± 2,00	118	± 1,75	3,35	50	7
35	1 3/8	170	± 2,00	125	± 2,00	3,55	55	8
38	1 1/2	170	± 2,00	125	± 2,00	3,55	55	8

1) Tol. $\pm \frac{IT\ 17}{2}$

4.2 Firmer gouges (half curved)

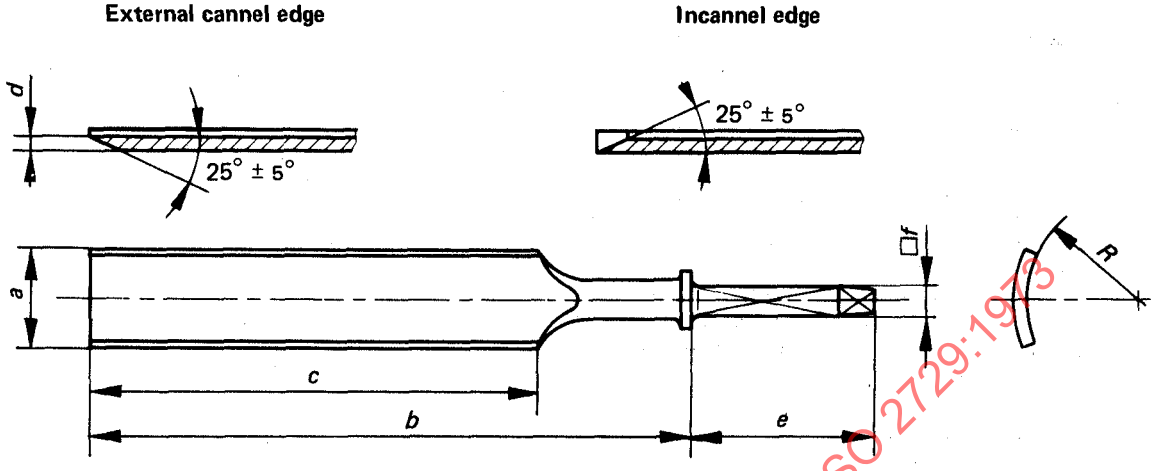


FIGURE 2 — **Shape and dimensions**

TABLE 3 — **Principal series**

Nominal dimension *a*		*b*	*b* tol.[1]	*c* ± 1,75[1]	*d* j_s 15	*e* min.	*f* min.	*R*	*R* tol.[1]
mm	in	mm	mm	mm	mm	mm	mm	mm	mm
6	1/4	125	± 2,00	95	2,00	35	4	4	± 0,60
8	5/16	132	± 2,00	100	2,00	40	5	4,5	± 0,60
10	3/8	132	± 2,00	100	2,00	40	5	5	± 0,60
12	1/2	132	± 2,00	100	2,00	40	5	6	± 0,60
15	—	140	± 2,00	106	2,25	45	6	8	± 0,75
18	—	150	± 2,00	112	2,50	45	6	10	± 0,75
20	3/4	150	± 2,00	112	2,50	45	6	12	± 0,90
25	1	160	± 2,00	118	2,80	50	7	14	± 0,90

1) Tol. $\pm \frac{IT\ 17}{2}$

TABLE 4 — **Secondary series**

Nominal dimension *a*		*b*	*b* tol.[1]	*c* ± 1,75[1]	*d* j_s 15	*e* min.	*f* min.	*R*	*R* tol.[1]
mm	in	mm	mm	mm	mm	mm	mm	mm	mm
3	1/8	118	± 1,75	90	2,40	35	4	2,5	± 0,45
13	—	140	± 2,00	106	2,25	40	5	7	± 0,75
16	5/8	140	± 2,00	106	2,25	45	6	9	± 0,75
19	—	150	± 2,00	112	2,50	45	6	11	± 0,90
22	7/8	160	± 2,00	112	2,50	50	7	13	± 0,90
30	—	160	± 2,00	118	2,80	50	7	16	± 0,90
32	1 1/4	160	± 2,00	118	2,80	50	7	18	± 0,90

1) Tol. $\pm \frac{IT\ 17}{2}$

5 TECHNICAL SPECIFICATIONS

5.1 Blade

The chisels and gouges shall have dimensions in conformity with those shown in 4.1 and 4.2. The non-specified shapes and dimensions shall be such that the tools can withstand loads to which they will be subjected during normal use.

5.1.1 *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 higher than, that of tool steel with an analysis as below, given for guidance only :

Limit	C	Si	Mn	P	S
min.	1,05 %	0,15 %	0,25 %	–	–
max.	1,25 %	0,25 %	0,4 %	0,035 %	0,035 %

After heat treatment, the hardness of the blade shall be at least 59 HRC, in accordance with ISO/R 80, or 76,5 HR 30 N in accordance with ISO/R 1024. This hardness is valid at a minimum distance equal to 2/3 of length *C* measured from the cutting edge.

5.1.2 *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.

5.1.3 *Bolster and neck*

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

5.1.4 *Tang*

The tang shall have a shape which is a good fit in the handle. It shall have the correct dimensions to withstand bending loads during normal use. It shall be concentric with the axis of the blade.

5.1.5 *Finish*

The face, back and sides of the blade shall be polished or have an equivalent finish. After finishing, a suitable protection shall be applied to prevent rusting.

5.2 Handle

5.2.1 *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 is well balanced.

5.2.2 *Material*

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

6 TEST METHODS

6.1 Blade

6.1.1 *Test for soundness*

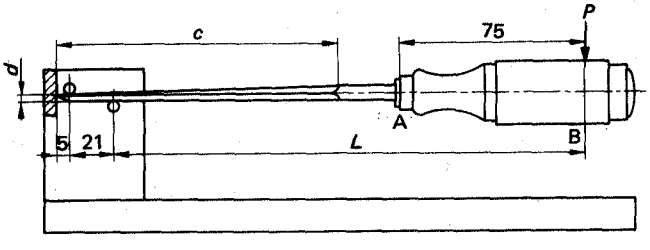
Every blade shall be capable of passing the following test for soundness, at the completion of which it shall show no sign of fracture or flaw.

A suitable block of lead shall be placed on a bench or table. The tool shall be held by the 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.

6.1.2 *Bending test* (chisels, Figure 3)

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. The deflection is measured by using an indicator clock or another suitable measuring instrument. 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.

Dimensions in millimetres



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.

FIGURE 3 – **Bending test**

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 3. For different widths of blade, the load P to be used is calculated using the diagram (Figure 4) and the formula

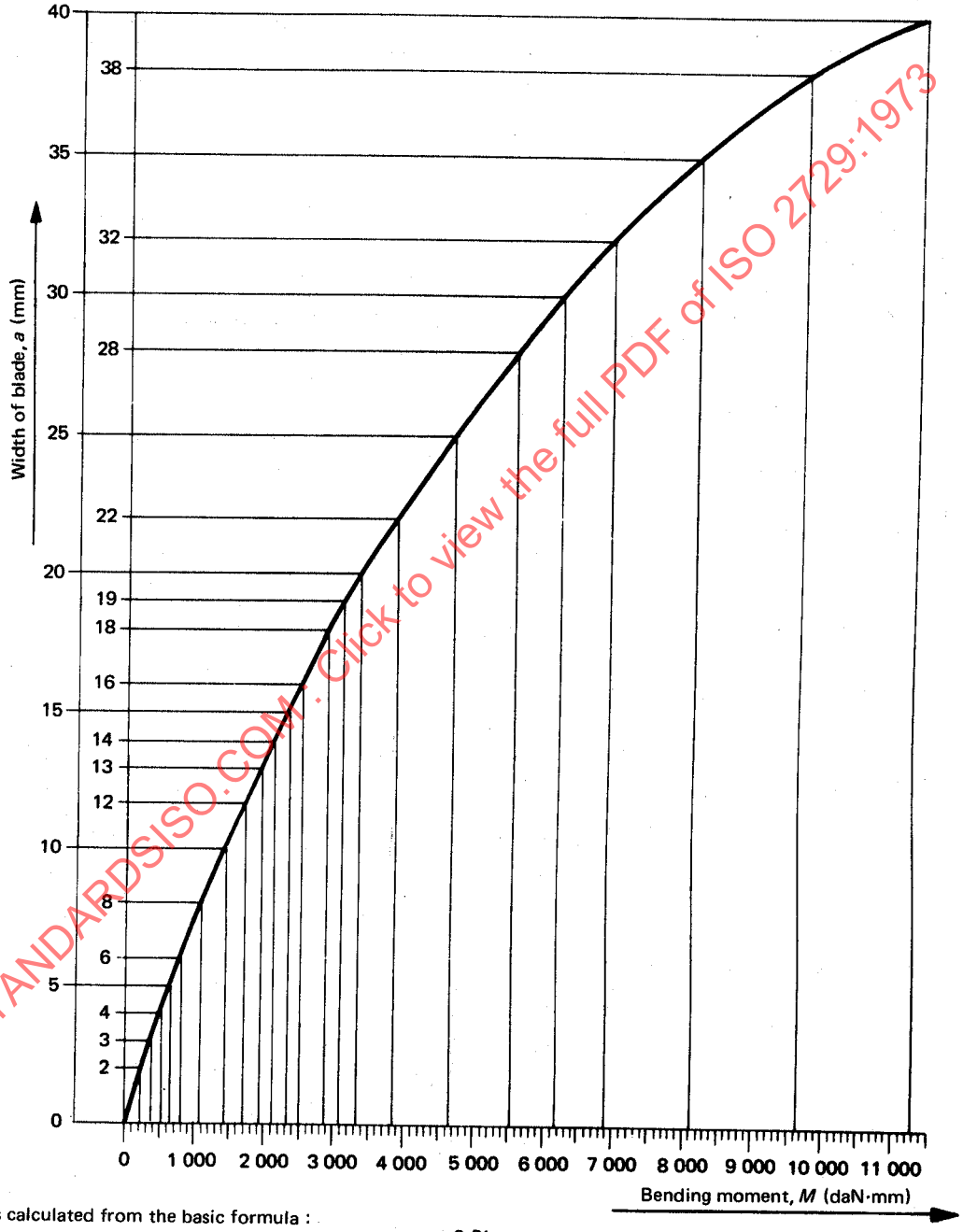
$$P = \frac{M}{L}$$

where

P is the load in decanewtons;

M is the bending moment in decanewton millimetres (found from Figure 4);

L is as shown in Figure 3.



The load diagram is calculated from the basic formula :

$$\sigma = \frac{6PL}{ad^2}$$

where

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

P and L are as defined above;

a is the width of the blade, in millimetres;

d is the thickness of the blade, in millimetres.

FIGURE 4 — **Calculation of bending load**

6.2 Test for strength of handle

The chisel with handle, with its cutting edge completely removed, shall be placed vertically in a sleeve allowing it to rotate while being struck, and to oscillate at an angle of $4^{\circ}\ ^{+1}_{0}$ from the vertical, as would occur in practical use.

A metal weight of 0,7 kg with a flat face shall fall freely onto the handle from a height calculated, according to the size of the chisel, from the diagram of Figure 6. This height shall take account of the possible grinding of the blade.

The chisel handle, although it may show deformation in the shape of a mushroom on the top part, shall still be perfectly usable after the required number of blows calculated from the diagram of Figure 7; that is to say, the handle shall be neither split nor broken and the reinforcing rings shall still be in place.

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

NOTE – When testing a plastic handle, the frequency of the blows from the machine shall be reduced sufficiently to cause no more heating of the handle than would be caused by normal use in practice, say 40 °C.

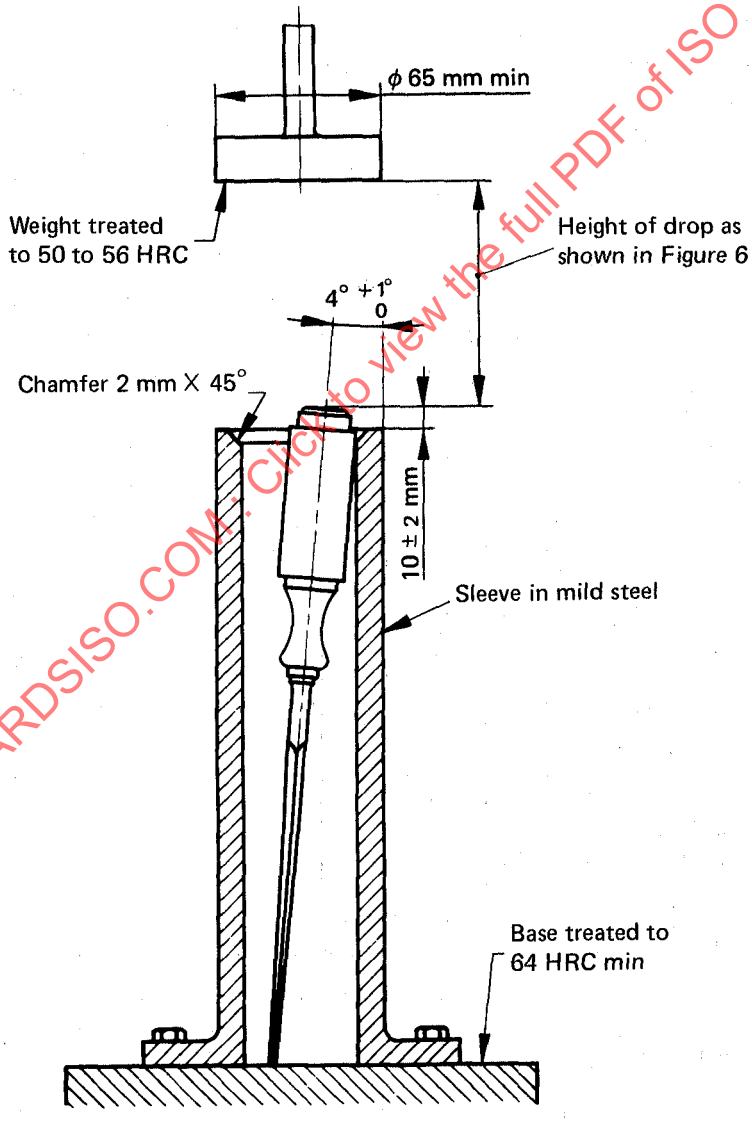


FIGURE 5 – **Layout for test for strength of handle**

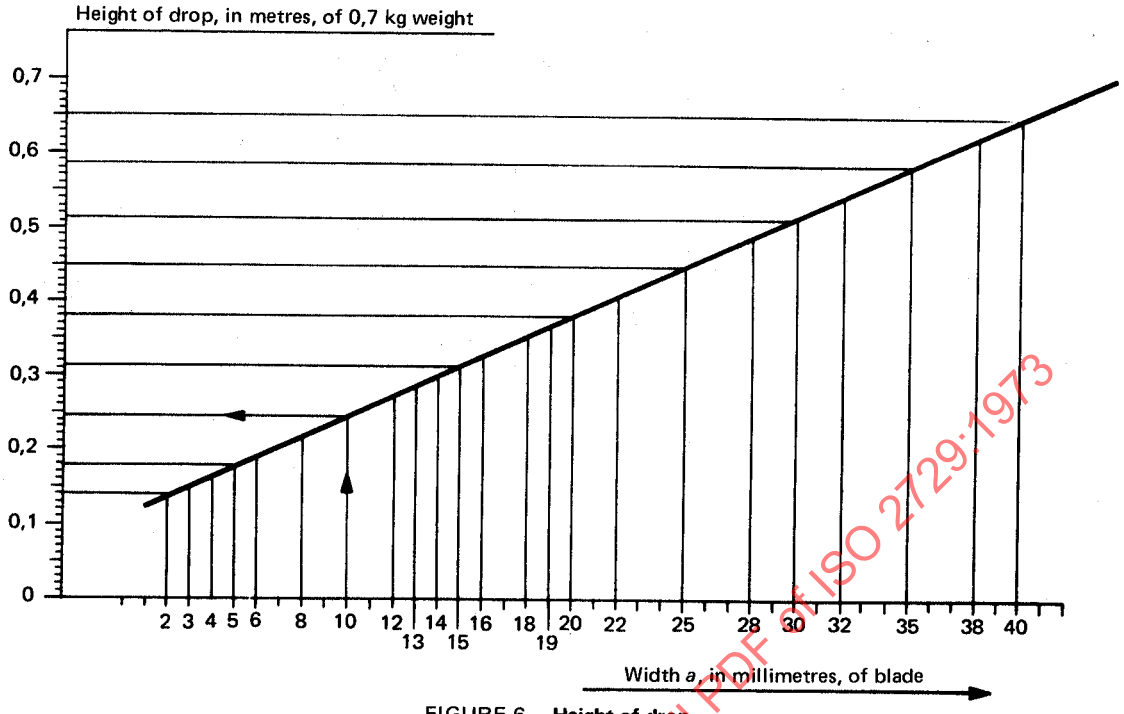


FIGURE 6 — **Height of drop**

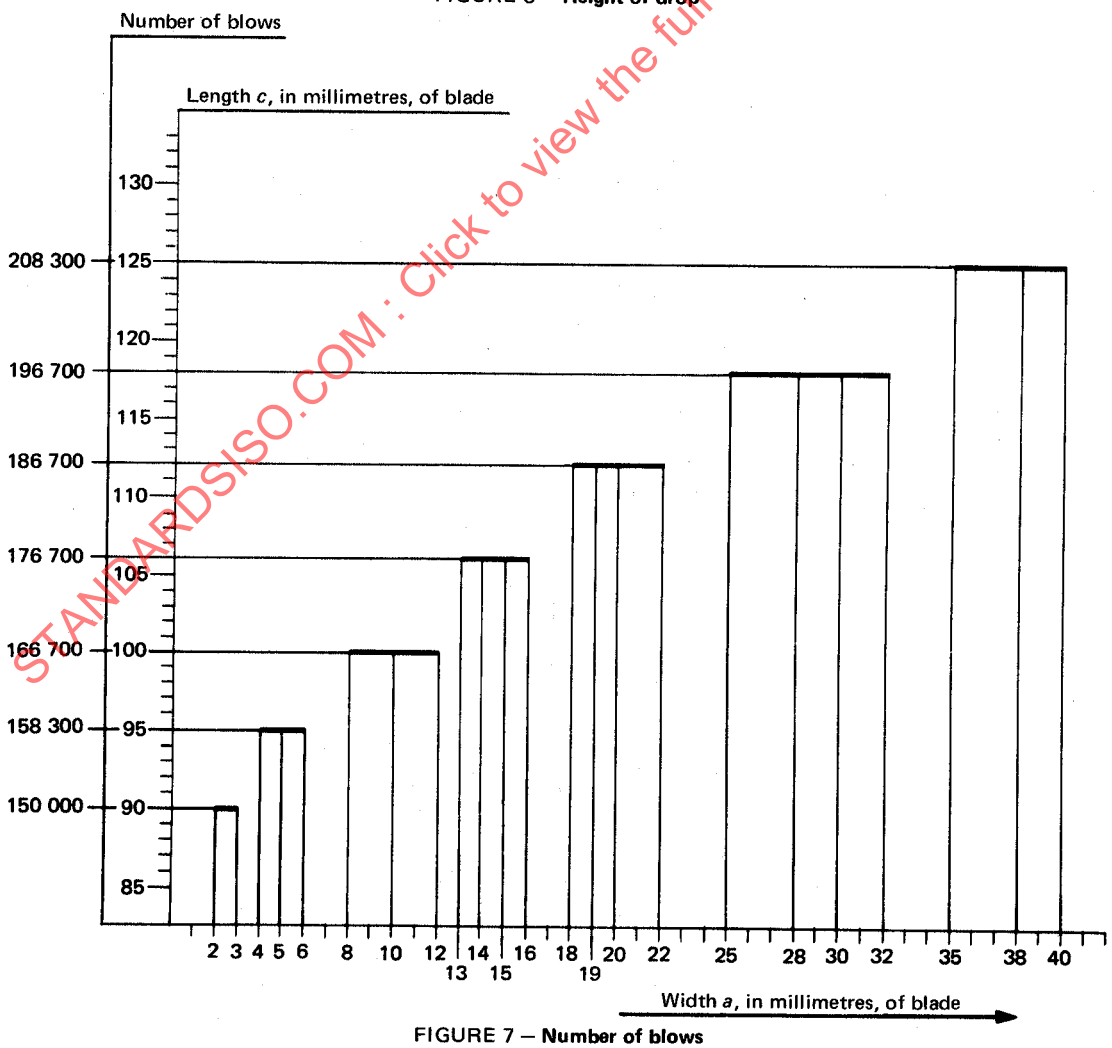


FIGURE 7 — **Number of blows**