International Standard 8020

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Punches with cylindrical head and reduced shank

Poinçons à tête cylindrique et à corps épaulé

First edition — 1986-09-15

UDC 621.961 **Ref. No. ISO 8020-1986 (E)**

Descriptors : tools, punches, dimensions, designation, hardness.

Price based on 6 pages

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8020 was prepared by Technical Committee ISO/TC 29, *Small tools*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Printed in Switzerland

Punches with cylindrical head and reduced shank

1 Scope and field of application

This International Standard lays down the dimensions and tolerances in millimetres for basic cylindrical head punches with reduced shank; it also includes shapes.

It gives materials and hardness as examples, and specifies the designation of punches according to this International Standard.

Cylindrical head punches with reduced shank are standardized in round, oblong, square and rectangular shapes.

They are available in 5 to 32 mm shank diameter sizes.

The main use of punches defined in this International Standard is for punching holes in steel sheet. They may also be used for punching holes in other materials.

2 References

ISO 4957, *Tool steels.*

ISO 6508, *Metallic materials — Hardness test — Rockwell test (scales A — B — C — D — E — F — G — H — K).*[1)]

ISO 8695, *Punches — Nomenclature and terminology.*[2)]

3 Definitions

For the purposes of this International Standard, the definitions in ISO 8695 apply.

1) At present at the stage of draft. (Revision of ISO/R 80-1968 and ISO 2713-1973.)

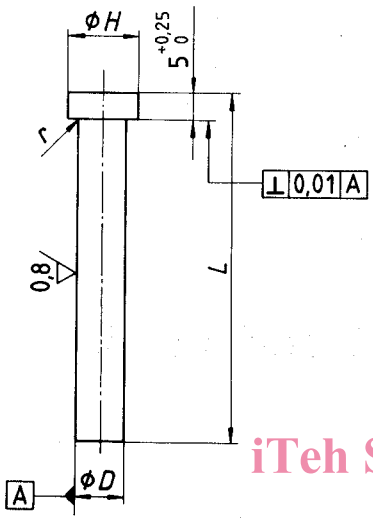
2) At present at the stage of draft.

4 Dimensions

4.1 Perforating punches

4.1.1 Blanks — Type A

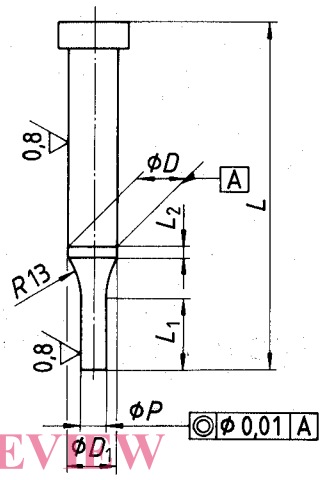
Surface roughness values in micrometres



Shank diameter D m5	Head diameter H 0 −0,25	r ±0,1	Overall length L +1 0					
			56	63	71	80	90	100
5	8	0,25	x	x	x	x	x	
6	9		x	x	x	x	x	x
8	11		x	x	x	x	x	x
10	13		x	x	x	x	x	x
13	16	0,4	x	x	x	x	x	x
16	19		x	x	x	x	x	x
20	24		x	x	x	x	x	x
25	29		x	x	x	x	x	x
32	36		x	x	x	x	x	x

4.1.2 Perforating punch, round — Type B

Surface roughness values in micrometres



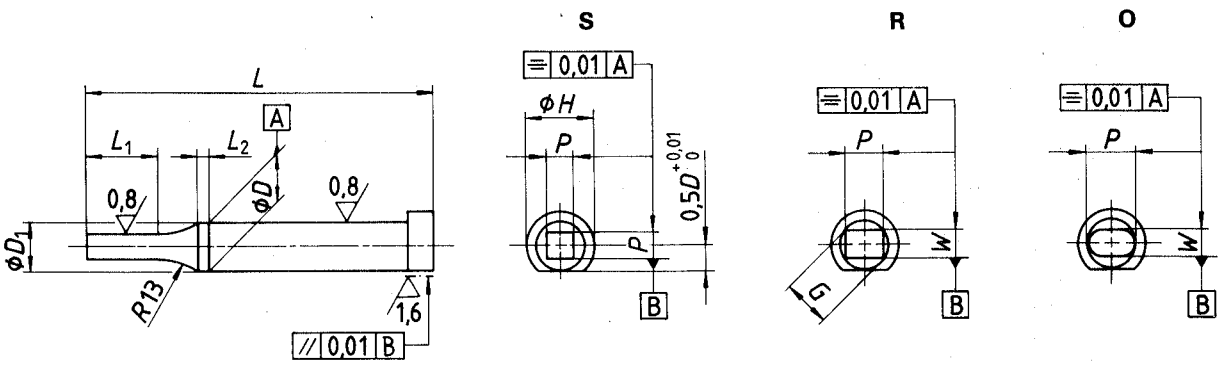
Shank diameter D m5	Range of point diameter P +0,01 0		Overall length L					
	lower	upper	56	63	71	80	90	100
5	1	4,9	x	x	x	x	x	
6	1,6	5,9	x	x	x	x	x	x
8	2,5	7,9	x	x	x	x	x	x
10	4	9,9	x	x	x	x	x	x
13	5	12,9	x	x	x	x	x	x
16	8	15,9	x	x	x	x	x	x
20	12	19,9	x	x	x	x	x	x
25	16,5	24,9	x	x	x	x	x	x
32	20	31,9	x	x	x	x	x	x

NOTE — The point length L_1, diameter D_1 and length L_2 are left to the manufacturer's discretion. See 4.1.1 for dimensions and tolerances of the head and tolerances of D and L.

4.1.3 Perforating punches, square (S), rectangular (R) and oblong (O) shapes — Type C

Surface roughness values in micrometres

Shapes of point

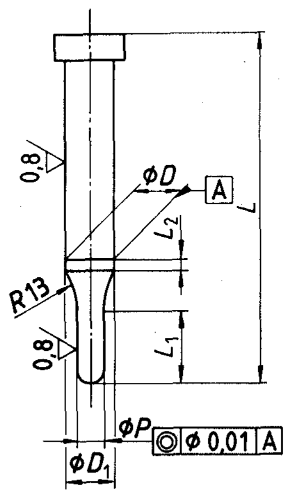


Shank diameter D m5	Range of point diameter S P +0,01 0 lower	S P +0,01 0 upper	R or O W, P and G +0,01 0 lower	R or O W, P and G +0,01 0 upper	Overall length L 56	63	71	80	90	100
5	1	3,5	1	4,9	x	x	x	x	x	
6	1,6	4,2	1,6	5,9	x	x	x	x	x	x
8	2	5,6	2	7,9	x	x	x	x	x	x
10	3,5	7,0	3,5	9,9	x	x	x	x	x	x
13	4,5	9,1	4,5	12,9	x	x	x	x	x	x
16	6	11,3	6	15,9	x	x	x	x	x	x
20	8	14,1	8	19,9	x	x	x	x	x	x
25	10	17,6	10	24,9	x	x	x	x	x	x
32	10	22,6	10	31,9	x	x	x	x	x	x

NOTE — The point length L_1, diameter D_1 and length L_2 are left to the manufacturer's discretion. See 4.1.1 for dimensions and tolerances of the head and tolerances of D and L.

4.2 Pilot punch — Type D

Surface roughness values in micrometres



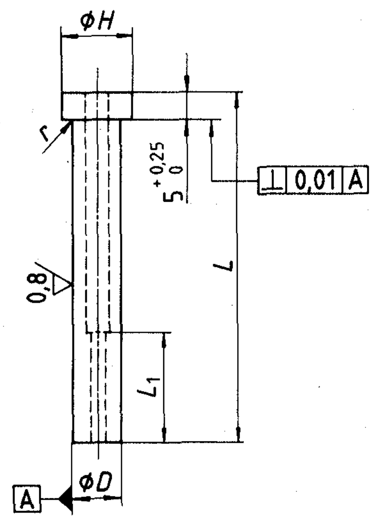
Shank diameter D m5	Range of point diameter P $+0,01$ 0		Overall length L					
	lower	upper	56	63	71	80	90	100
5	0,99	4,9	x	x	x	x	x	
6	1,9	5,9	x	x	x	x	x	x
8	2,4	7,9	x	x	x	x	x	x
10	3,9	9,9	x	x	x	x	x	x
13	4,9	12,9	x	x	x	x	x	x
16	7,9	15,9	x	x	x	x	x	x
20	11,9	19,9	x	x	x	x	x	x
25	15	24,9	x	x	x	x	x	x
32	19,9	31,9	x	x	x	x	x	x

NOTE — The point length L_1 and the point shape and diameter D_1 and length L_2 are left to the manufacturer's discretion. See 4.1.1 for dimensions and tolerances of the head and tolerances of D and L.

4.3 Perforating ejector punch

4.3.1 Ejector punch-blank — Type E

Surface roughness values in micrometres

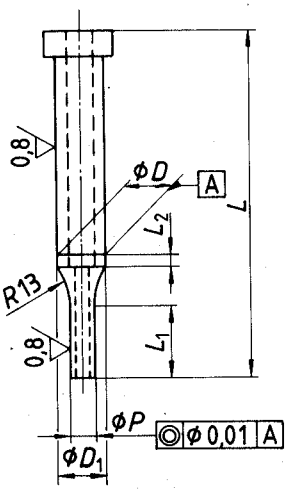


Shank diameter D m5	Head diameter H 0 $-0,25$	r $\pm 0,1$	Overall length L $+1$ 0					
			56	63	71	80	90	100
5	8	0,25	x	x	x	x	x	
6	9	0,25	x	x	x	x	x	x
8	11	0,25	x	x	x	x	x	x
10	13	0,25	x	x	x	x	x	x
13	16	0,4	x	x	x	x	x	x
16	19	0,4	x	x	x	x	x	x
20	24	0,4	x	x	x	x	x	x
25	29	0,4	x	x	x	x	x	x
32	36	0,4	x	x	x	x	x	x

NOTE — The point length L_1 and the ejector components are left to the manufacturer's discretion.

4.3.2 Perforating ejector punch, round — Type F

Surface roughness values in micrometres



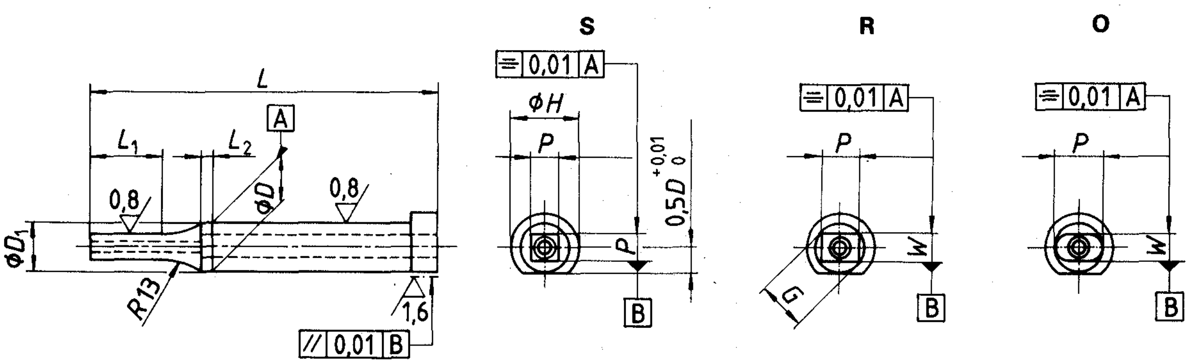
Shank diameter D m5	Range of point diameter P $^{+0,01}_{0}$		Overall length L					
	lower	upper	56	63	71	80	90	100
5	1,6	4,9	x	x	x	x	x	
6	2,5	5,9	x	x	x	x	x	x
8	3	7,9	x	x	x	x	x	x
10	4	9,9	x	x	x	x	x	x
13	5	12,9	x	x	x	x	x	x
16	8	15,9	x	x	x	x	x	x
20	12	19,9	x	x	x	x	x	x
25	16,5	24,9	x	x	x	x	x	x
32	20	31,9	x	x	x	x	x	x

NOTE — The point length L_1, diameter D_1, length L_2 and the ejector components are left to the manufacturer's discretion. See 4.3.1 for dimensions and tolerances of the head and tolerances of D and L.

4.3.3 Ejector punch, square (S), rectangular (R) and oblong (O) shapes — Type G

Surface roughness values in micrometres

Shapes of point



Shank diameter *D* m5	Range of point diameter S *P* + 0,01 0		R or O *W*, *P* and *G* + 0,01 0	+ 0,01 0	Overall length *L*					
	lower	upper	lower	upper	56	63	71	80	90	100
5	1,6	3,5	1	4,9	x	x	x	x	x	
6	1,6	4,2	1,6	5,9	x	x	x	x	x	x
8	2	5,6	2	7,9	x	x	x	x	x	x
10	3,5	7,0	3,5	9,9	x	x	x	x	x	x
13	4,5	9,1	4,5	12,9	x	x	x	x	x	x
16	6	11,3	6	15,9	x	x	x	x	x	x
20	8	14,1	8	19,9	x	x	x	x	x	x
25	10	17,6	10	24,9	x	x	x	x	x	x
32	10	22,6	10	31	x	x	x	x	x	x

NOTE — The point length L_1, diameter D_1 and length L_2 are left to the manufacturer's discretion. See 4.1.1 for dimensions and tolerances of the head and tolerances of D and L.

5 Material and hardness

The material is left to the manufacturer's discretion. The following hardness values are given as examples :

a) tool steel with 5 % to 12 % Cr

— point : 62 ± 2 HRC

— head : 45 ± 5 HRC

b) high-speed steel

— point : 64 ± 2 HRC

— head : 52 ± 5 HRC

Various shapes of the point are shown in 4.1.2 to 4.3.3.

6 Designation

A punch in accordance with this International Standard shall be designated by

a) reference to this International Standard;

b) type of punch (A, B, C, D, E, F or G) and shape (S, R, O) if necessary;

c) its shank diameter, D;

d) for type C and G, its point dimensions (P or $P \times W$);

e) its length, L.

Examples :

Perforating punch ISO 8020-B 5 × 2 × 56

Perforating punch ISO 8020-CR 5 × 2 × 3 × 56