
**Tools for pressing — Ball-lock punch
retainers —**

**Part 3:
Type E, reduced for heavy duty**

*Outillage de presse — Porte-poinçons pour poinçons à bille —
Partie 3: Type E, réduits pour tôles épaisses*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11900-3 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

ISO 11900 consists of the following parts, under the general title *Tools for pressing — Ball-lock punch retainers*:

- Part 1: *Types A and B, rectangular and square for light duty*
- Part 2: *Types C and D, reduced for light duty*
- Part 3: *Type E, reduced for heavy duty*

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Tools for pressing — Ball-lock punch retainers —

Part 3: Type E, reduced for heavy duty

1 Scope

This part of ISO 11900 specifies the dimensions and tolerances, in millimetres, of reduced ball-lock punch retainers, type E, for heavy duty, and of their backing plug, the main use being retention of ball-lock punches in accordance with ISO 10071-2, when punching holes in steel sheets.

It also gives material guidelines and hardness requirements, and specifies the designation of ball-lock punch retainers in accordance with this part of ISO 11900.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 273, *Fasteners — Clearance holes for bolts and screws*

ISO 3290:2001, *Rolling bearings — Balls — Dimensions and tolerances*

ISO 4762, *Hexagon socket head cap screws*

ISO 8735, *Parallel pins with internal thread, of hardened steel and martensitic stainless steel*

ISO 10071-2¹⁾, *Tools for pressing — Ball-lock punches — Part 2: Ball-lock punches for heavy duty*

3 Dimensions

3.1 General tolerance

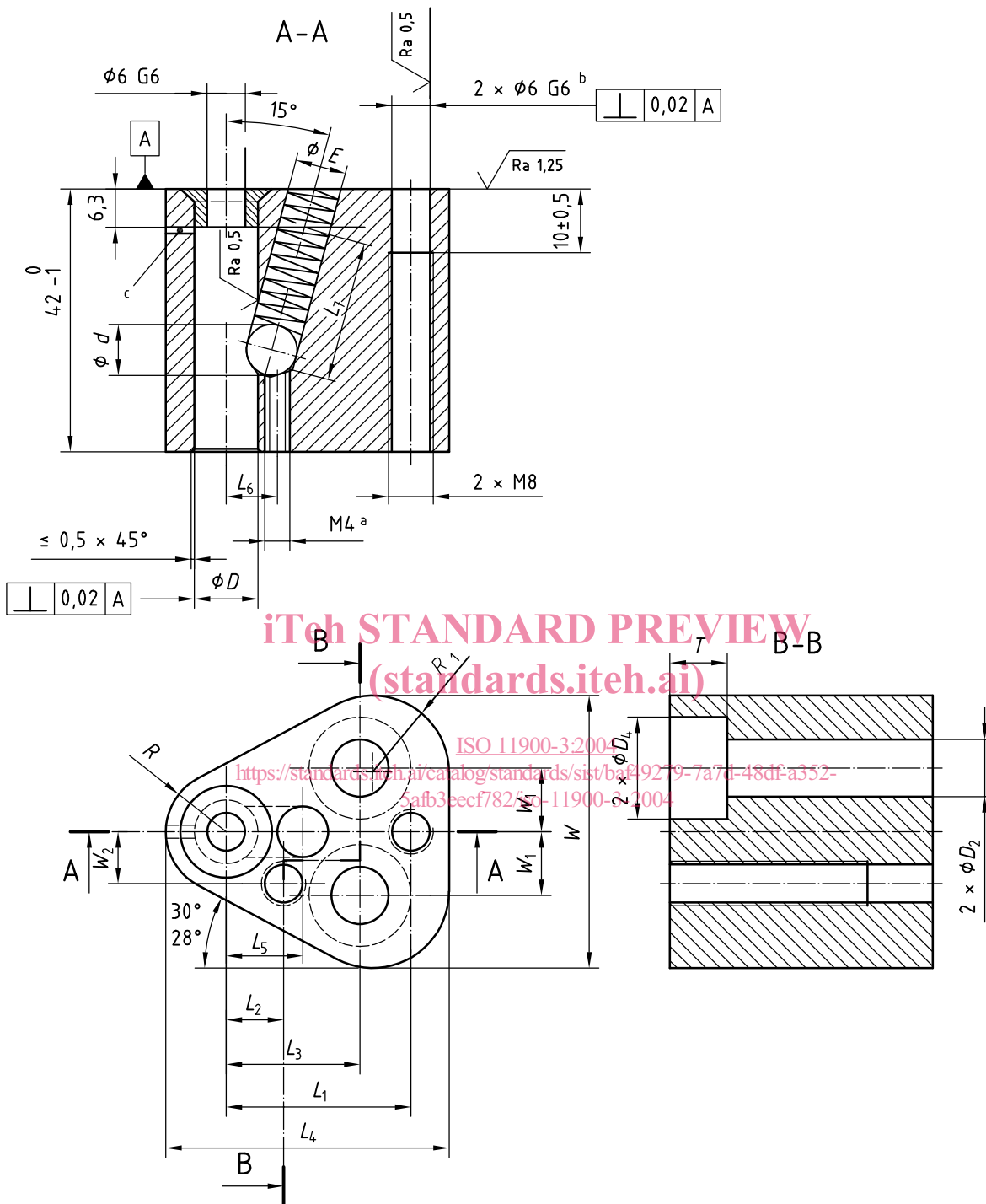
The general tolerance for all dimensions not individually toleranced is $\pm 0,25$ mm.

3.2 Type E reduced ball-lock punch retainer

See Figure 1 and Table 1.

1) To be published.

Surface roughness values in micrometres



Key

- a Optional.
- b Hole for parallel hardened pins (dowels pins) in accordance with ISO 8735.
- c Venting hole.

Figure 1 — Type E reduced ball-lock punch retainer

Table 1 — Dimensions of type E reduced ball-lock punch retainers

D	W	D_2^a	D_4	L_1	L_2	L_3	L_4	L_5	L_6	L_7	W_1	W_2	T	d^b	E	R	R_1	Screw
H6	max.	H14	H14	$\pm 0,01$	$\pm 0,01$	$\pm 0,13$	max.	$\pm 0,05$	$\pm 0,1$	$\pm 0,2$	$\pm 0,13$	$\pm 0,01$	$\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$		$\pm 0,02$	min.	min.	
10	45	9	15	26,92	7,5	19	46	13	9,75	25,6	11,1	9	9	10	10,05	9	12	M8
13	51	9	15	29,97	6,5	19	52	15,62	11,25	29,8	14,3	12	9	12	12,05	12	15	M8
16	54	9	15	31,75	6	19	55	17,12	12,75	29,8	15,9	13,5	9	12	12,05	14	16	M8
20	61	11	18	33,53	5	19	61	19,12	14,75	29,8	17,5	16,5	11	12	12,05	17	20	M10
25	70	13,5	20	40,64	7	23,8	71	21,62	17,25	29,8	19,8	22	13	12	12,05	22	24	M12
32	70	13,5	20	40,64	7	23,8	71	25,12	20,75	29,8	19,8	22	13	12	12,05	22	24	M12
40	78	13,5	20	43,99	10	27	79	29,12	24,75	29,8	24	26	13	12	12,05	26	28	M12

^a Counterbore in accordance with ISO 273 and M8, M10 and M12 head cap screws in accordance with ISO 4762.

^b Ball in accordance with ISO 3290:2001, grade G 200.

4 Material and hardness

The material is left to the manufacturer's discretion. The hardness shall be (55 ± 5) HRC for ball-lock punch retainers and for backing plugs.

5 Designation

Ball-lock punch retainers in accordance with this part of ISO 11900 shall be designated by:

- "Ball-lock retainer";
- reference to this part of ISO 11900, i.e. ISO 11900-3;
- its type;
- its diameter, D , in millimetres.

EXAMPLE A ball-lock punch retainer of type E with a diameter $D = 10$ mm is designated as follows:

Ball-lock retainer ISO 11900-3-E-10

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