

# 冲模 球锁紧凸模固定板 第3部分：E型 重载简易型 **Tools for pressing — Ball-lock punch retainers — Part 3: Type E, reduced for heavy duty**

## 1 范围 **Scope**

本文件规定了E型重载简易球锁紧凸模固定板及其垫板的尺寸和公差，单位为毫米。该类型固定板及其垫板主要用于钢板冲孔过程中，对符合ISO 10071-2规定的球锁紧凸模起固定作用。

本文件还规定了E型球锁紧凸模固定板的材料、硬度和标记。

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 规范性引用文件 **Normative references**

下列文件中的内容通过文中的规范性引用而构成本文件必不可少的条款。其中，注日期的引用文件，仅该日期对应的版本适用于本文件；不注日期的引用文件，其最新版本（包括所有的修改单）适用于本文件。

ISO 273 紧固件 螺栓和螺钉通孔 (*Fasteners — Clearance holes for bolts and screws*)

注：GB/T 5277—1985 紧固件 螺栓和螺钉通孔 (ISO 273:1979, EQV)

ISO 3290:2001 滚珠轴承 滚珠 尺寸和公差 (*Rolling bearings — Balls — Dimensions and tolerances*)

注：GB/T 308.1—2013 滚珠轴承 球 第1部分：钢球 (ISO 3290-1:2008, NEQ)

GB/T 308.2—2010 滚珠轴承 球 第2部分：陶瓷球 (ISO 3290-2:2008, IDT)

ISO 4762 内六角圆柱头螺钉 (*Hexagon socket head cap screws*)

注：GB/T 70.1—2008 内六角圆柱头螺钉 (ISO 4762:2004, MOD)

ISO 8735 内螺纹圆柱销 淬硬钢和马氏体不锈钢 (*Parallel pins with internal thread, of hardened steel and martensitic stainless steel*)

注：GB/T 120.2—2000 内螺纹圆柱销 淬硬钢和马氏体不锈钢 (ISO 8735:1997, EQV)

ISO 10071-2 冲模 球锁紧凸模 第2部分：重载球锁紧凸模 (*Tools for pressing — Ball-lock punches — Part 2: Ball-lock punches for heavy duty*)

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 术语和定义

本文件没有需要界定的术语和定义。

### 4 尺寸 **Dimensions**

#### 4.1 一般公差 **General tolerance**

所有未注公差尺寸的极限偏差值为 $\pm 0.25$  mm。The general tolerance for all dimensions not individually toleranced is  $\pm 0.25$  mm.

#### 4.2 E型球锁紧凸模固定板 **Type E reduced ball-lock punch retainer**

见图1和表1。See Figure 1 and Table 1.

<sup>b</sup> 淬硬内螺纹圆柱销应符合 ISO 8735 的要求。Hole for parallel hardened pins (dowels pins) in accordance with ISO 8735.

<sup>c</sup> 排气孔。Venting hole.

图1 E 型简易型球锁紧凸模固定板 Figure 1 — Type E reduced ball-lock punch retainer

表1 E型简易型球锁紧凸模固定板尺寸 Table 1 — Dimensions of type E reduced ball-lock punch retainers

$D$	$W$	$D_2^a$	$D_4$	$L_1$	$L_2$	$L_3$	$L_4$	$L_5$	$L_6$	$L_7$	$W_1$	$W_2$	$T$	$d^b$	$E$	$R$	$R_1$	螺纹
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

<sup>a</sup> M8、M10和M12内六角圆柱头螺钉符合ISO 4762的要求，其对应的沉孔符合ISO 273的要求。

<sup>b</sup> 滚珠符合ISO 3290: 2001中G 200级的要求。

<sup>a</sup> Counterbore in accordance with ISO 273 and M8, M10 and M12 head cap screws in accordance with ISO 4762.

<sup>b</sup> Ball in accordance with ISO 3290:2001, grade G 200.

## 5 材料及硬度 Material and hardness

材料由制造者选定。球锁紧凸模固定板和垫板的硬度应为  $(55 \pm 5)$  HRC。The material is left to the manufacturer's discretion. The hardness shall be  $(55 \pm 5)$  HRC for ball-lock punch retainers and for backing plugs.

## 6 标记 Designation

符合本文件的球锁紧凸模固定板应做下列标记：

- “球锁紧固定板”；
- 本文件编号，即 GB/T XXXX-3；
- 类型（E）；
- 直径  $D$ ，单位为毫米。

示例：

直径  $D = 10$  mm 的E型球锁紧凸模固定板

标记：球锁紧凸模固定板 GB/T XXXX-3-E-10

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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