INTERNATIONAL STANDARD

ISO 20928

First edition
2018-10

Tools for pressing — Spring plungers with helicoidal compression steel spring or gas spring

Outillage de presse — Poussoirs à ressort compressés par ressort hélicoïdal en acier ou par ressort à gaz

Reference number
ISO 20928:2018(E)

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Published in Switzerland

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Foreword

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document was developed on the basis of VDI/Guideline 3004 "Spring plungers with helical compression steel spring or nitrogen gas spring".

Tools for pressing — Spring plungers with helicoidal compression steel spring or gas spring

1 Scope

This document specifies dimensions, stroke and forces of spring plungers with steel spring or gas spring.

This document applies to spring plungers which are used in tool manufacture for separating the tool and the sheet-metal part after stamping or forming operations.

It also gives information concerning their use and installation example of spring plungers steel spring or gas spring.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definition are listed in this document

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Basic principles

In the case of spring plungers with steel springs or gas springs, lateral forces are to be kept as low as possible. In the gas spring version, the filler opening is located vertically in the cylinder bottom (no filling through the piston rod).

5 Calculation basics

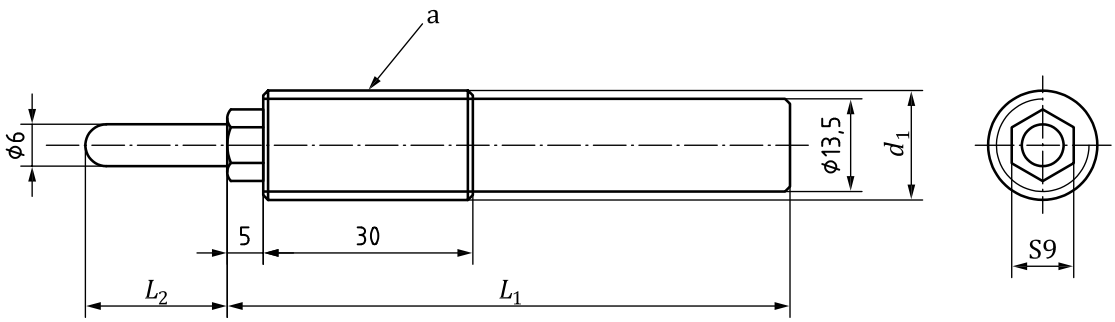
The calculation basics for spring plungers with gas springs are identical to those in the ISO 11901 series, except that the maximum impact velocity of 0,8 m/s shall not be exceeded.

Maximum recommended working stroke is 90 % of L_2 (see Table 2).

6 Dimensions

6.1 Spring plunger with steel spring

The dimensions of spring plungers with steel spring shall be in accordance with the indications of Figure 1 and Table 1.



Key

S width across flat (see ISO 272)

a The thread shall be locally fixed by any locking device.

Figure 1 — Spring plunger with steel spring – Version with maintenance-free guide bush for absorbing axial forces and bending compressive stress

Table 1 — Dimension for spring plunger with steel spring

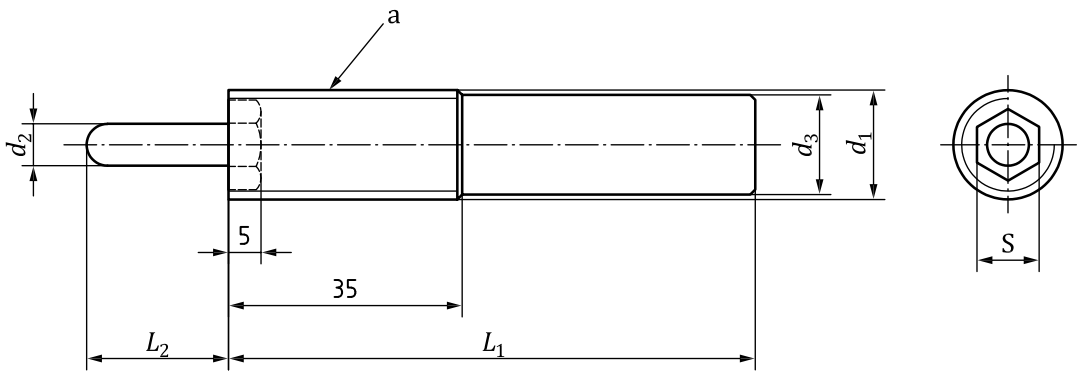
d_1	L_1 mm	L_2 max. stroke mm	Initial force approximately N	Final force approximately N	Comment
M16 × 1,5	60	15	15	56	—
	80	20	15	75	—
	150	50	13	47	version with maintenance-free guide bush for absorbing axial forces and bending compressive stress

6.2 Spring plunger with gas spring

The dimensions of spring plungers with gas spring shall be in accordance with the indications of Figure 2, Figure 5 and Table 2.

The dimensions of the fitting tool for spring plungers with gas spring shall be in accordance with the indications of Figure 3.

CAUTION — It is not allowed for safety reasons to remove forward sealing set.



Key

S width across flat (see ISO 272)

[a] The thread shall be locally fixed by any locking device.

Figure 2 — Spring plunger with gas spring

Table 2 — Dimensions for spring plunger with gas spring

d_1	d_2	d_3 max.	d_4	L_1 max.	L_2 max. stroke	S	Initial force[a] (at 20 bar)	Initial force[a] (at 150 bar)
	mm	mm	mm	mm	mm	mm	N	N
M16 × 1,5	6	13,5	20	80	20	10	56	425
				110	50			
				140	80			
M24 × 1,5	12	21,5	28	80	20	17	226	1696
				110	50			
				140	80			

[a] The filling pressure is measured at 20 °C.

CAUTION — Lateral forces shall not be applied if spring plungers with gas spring are used.