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

*Outils de presse — Poussoirs à ressort comprimés par ressort
hélicoïdal en acier ou par ressort à gaz*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Basic principles.....	1
5 Calculation basics.....	1
6 Dimensions.....	1
6.1 Spring plunger with steel spring.....	1
6.2 Spring plunger with gas spring.....	2
7 Installation example.....	4
Bibliography.....	7

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.

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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".

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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

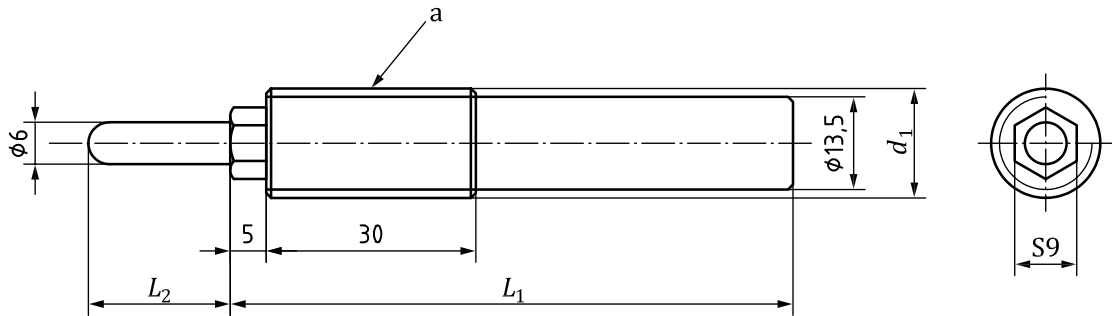
The calculation basics for spring plungers with gas springs are identical to those in the ISO 11901 series, except that the maximum impact velocity of 0,8 m/s shall not be exceeded.

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

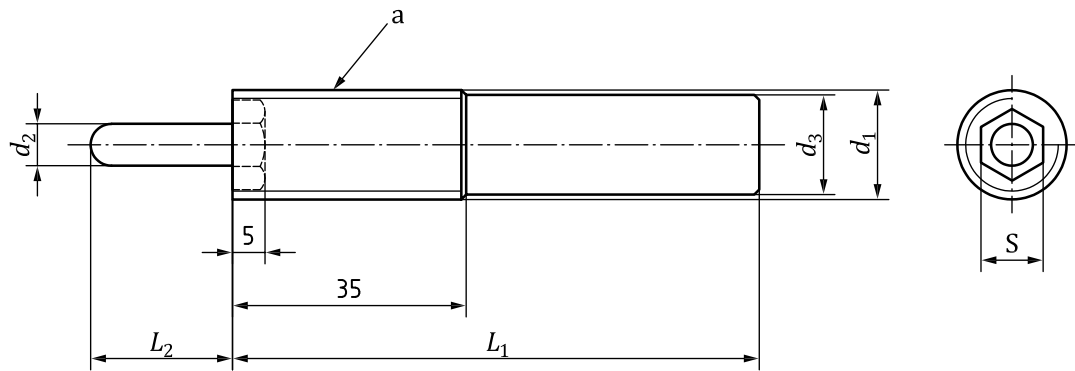
d_1	L_1 mm	L_2 max. stroke mm	Initial force approximately N	Final force approximately N	Comment
M16 × 1,5	60	15	15	56	—
	80	20	15	75	—
	150	50	13	47	version with maintenance-free guide bush for absorbing axial forces and bending compressive stress

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**

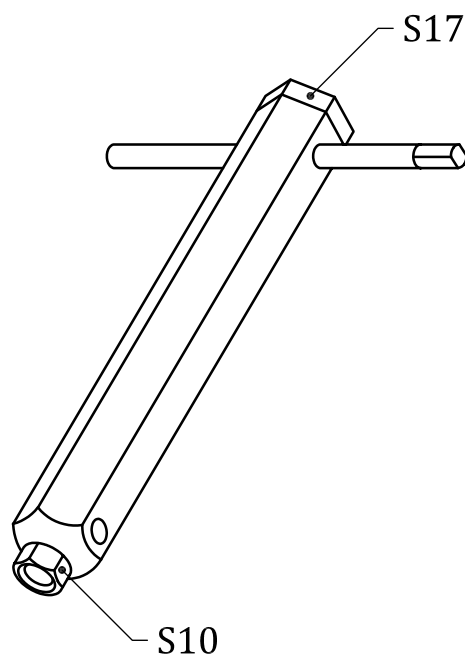
S width across flat (see ISO 272)

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 mm	d_3 max. mm	d_4 mm	L_1 max. mm	L_2 max. stroke mm	S mm	Initial force ^a	
							(at 20 bar) N	(at 150 bar) 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.**



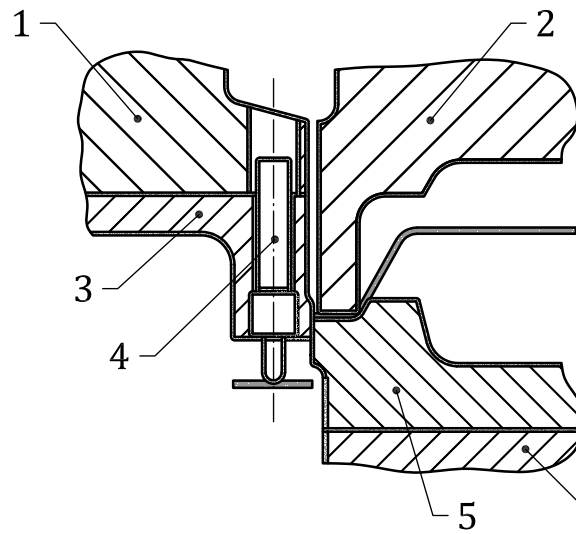
Key

S width across flat (see ISO 272)

Figure 3 — Fitting tool for spring plungers with gas spring

7 Installation example

An installation example of gas spring plunger for snipping application is given in [Figure 4](#).

**Key**

-  initial position of the sheet before snipping operation
- 1 upper die
- 2 blank holder
- 3 cutting bar
- 4 spring plunger (secure against dropping out)
- 5 cutting bar
- 6 lower die

Figure 4 — Installation example of gas spring plunger for snipping application

An installation example of plunger with steel spring and with gas spring is given in [Figure 5](#).