INTERNATIONAL STANDARD

ISO 10069-1

Second edition
2008-08-15

Tools for pressing — Elastomer pressure springs —

Part 1: General specification

Outillage de presse — Ressorts de compression en élastomère —

Partie 1: Spécifications générales

Reference number
ISO 10069-1:2008(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 10069-1 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

This second edition cancels and replaces the first edition (ISO 10069-1:1991), of which it constitutes a minor revision. In particular, the indication of surface textures has been updated in accordance with ISO 1302:2002.

ISO 10069 consists of the following parts, under the general title *Tools for pressing — Elastomer pressure springs*:

— *Part 1: General specification*

— *Part 2: Specification of accessories*

Tools for pressing — Elastomer pressure springs —

Part 1: General specification

1 Scope

This part of ISO 10069 specifies the dimensions, in millimetres, of elastomer pressure springs intended for use in press tools, and the diameters, in millimetres, of counterbores for these pressure springs. It also gives information concerning materials and their hardness, and specifies the designation of springs that are in accordance with its requirements, together with the marking of their packages.

Examples of suitable applications are given in Annex A.

Dimensions of accessories (spring collars and pilot pins) are specified in ISO 10069-2.

2 Normative references

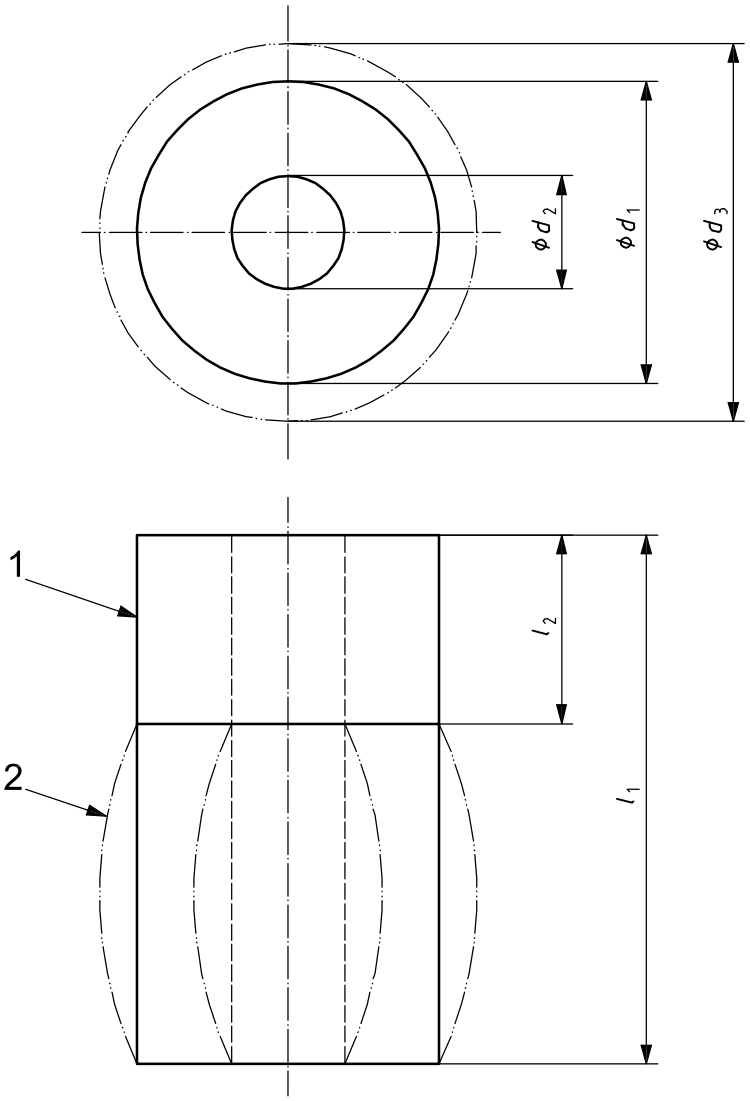
The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10069-2, *Tools for pressing — Elastomer pressure springs — Part 2: Specification of accessories*

3 Dimensions

3.1 Elastomer pressure springs

The dimensions of elastomer pressure springs shall be in accordance with Figure 1 and Tables 1 and 2.



Key

1 contour of free pressure spring
2 contour of pressure spring in compression

d_1 diameter of the free pressure spring
d_2 internal diameter of the pressure spring
d_3 diameter of the pressure spring in compression
l_1 length of the free pressure spring
l_2 difference between the free and fully compressed lengths

Figure 1 — Pressure spring

Table 1 — General dimensions of elastomer pressure springs

Dimensions in millimetres

d_1	d_2	$d_{3,\,max}$ for $l_{2,\,max}$		l_1										
		CR [a]	PUR [a]	16	20	25	32	40	50	63	80	100	125	160
16	6,5	21,6	20	×	×	×								
20	8,5	27	25	×	×	×	×							
25	10,5	33,8	31,3		×	×	×	×						
32	13,5	43,2	40				×	×	×	×				
40		54	50				×	×	×	×	×			
50	17	67,5	62,5				×	×	×	×	×	×		
63		85	78,8				×	×	×	×	×	×	×	
80	21	108	100				×	×	×	×	×	×	×	
100		135	125				×	×	×	×	×	×	×	
125	27	168,8	156,3				×	×	×	×	×	×	×	×

[a] See Clause 4 for an explanation of these abbreviated terms.

Table 2 — Values of the load, F, and the difference between the free and fully compressed lengths, l_2, for elastomer springs in accordance with this part of ISO 10069

Dimensions in millimetres

d_1	l_1	CR		PUR		d_1	l_1	CR		PUR	
		F max. kN	l_2 [a] max.	F max. kN	l_2 [b] max.			F max. kN	l_2 [a] max.	F max. kN	l_2 [b] max.
16	16	0,3	5,6	1,2	4	63	32	10	11,2	21	8
	20		7		5		40		14		10
	25		8,75		6,25		50		17,5		12,5
20	16	0,5	5,6	2	4		63		22,05		15,75
	20		7		5		80		28		20
	25		8,75		6,25		100		35		25
	32		11,2		8		125		43,75		31,25
25	20	0,8	7	3,5	5	80	32	18	11,2	38	8
	25		8,75		6,25		40		14		10
	32		11,2		8		50		17,5		12,5
	40		14		10		63		22,05		15,75
32	32	2,3	11,2	4,5	8		80		28		20
	40		14		10		100		35		25
	50		17,5		12,5		125		43,75		31,75
	63		22,05		15,75	100	32	27	11,2	65	8
40	32	3,6	11,2	8,5	8		40		14		10
	40		14		10		50		17,5		12,5
	50		17,5		12,5		63		22,05		15,75
	63		22,05		15,75		80		28		20
	80		28		20		100		35		25
50	32	5,5	11,2	13	8		125		43,75		31,75
	40		14		10	125	32	42	11,2	100	8
	50		17,5		12,5		40		14		10
	63		22,05		15,75		50		17,5		12,5
	80		28		20		63		22,05		15,75
	100		35		25		80		28		20
							100		35		25
							125		43,75		31,75
							160		56		40

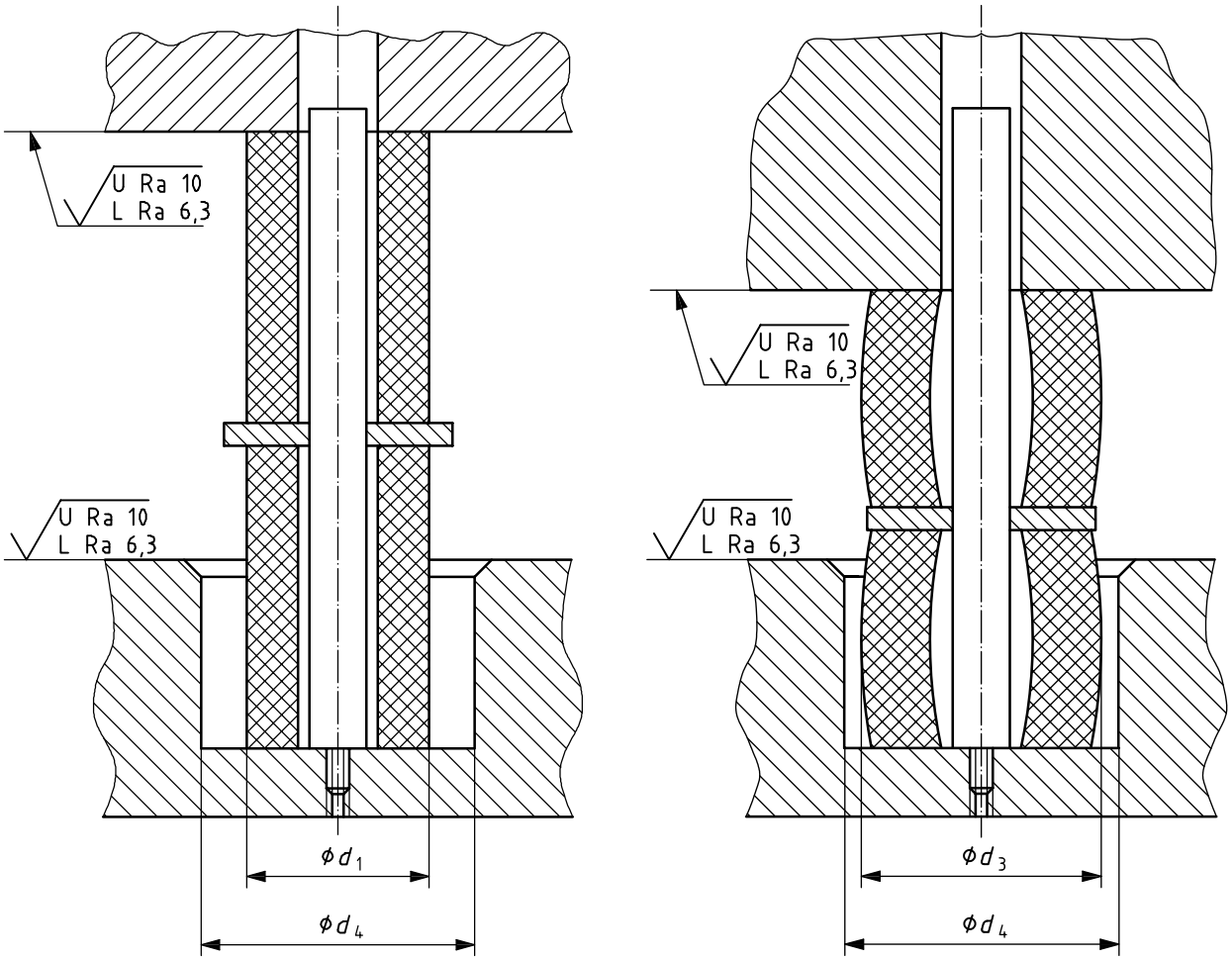
[a] $l_{2,\,max} = 0{,}35 l_1$.

[b] $l_{2,\,max} = 0{,}25 l_1$.

3.2 Counterbores for elastomer pressure springs

The dimensions of counterbores for elastomer pressure springs shall be in accordance with Figures 2 a) and 2 b) and Table 3.

Surface roughness values in micrometres



a) **b)**

Key

d_1 diameter of the free pressure spring

d_3 diameter of the pressure spring in compression

d_4 diameter of the counterbore

Figure 2 — Elastomer pressure spring

Table 3 — Dimensions of the counterbores, d_4, as a function of the diameters d_1 and d_3

Dimensions in millimetres

	d_4									
	24	30	38	48	61	75	94	118	150	188
d_1	16	20	25	32	40	50	63	80	100	125
d_3	22	27	34	43	54	68	85	108	135	169

4 Materials and their hardness

The material may be either an elastomer based on chloroprene rubber (CR) with a nominal hardness of 70 Shore A or an elastomer based on polyurethane rubber (PUR) with a nominal hardness of 90 Shore A. Both these materials shall have a temperature resistance of up to approximately 80 °C.

5 Designation

An elastomer pressure spring in accordance with this part of ISO 10069 shall be designated as follows:

a) “Elastomer pressure spring”;

b) reference to this part of ISO 10069 (i.e. ISO 10069-1);

c) its diameter, d_1;

d) its length, l_1;

e) the material (CR or PUR).

EXAMPLE An elastomer pressure spring made of an elastomer based on chloroprene rubber (CR), with a diameter, d_1, of 16 mm and length, l_1, of 20 mm, is designated as follows:

Elastomer pressure spring ISO 10069-1 - 16 × 20 - CR

6 Marking

Elastomer pressure springs in accordance with this part of ISO 10069 shall be marked on the smallest packing unit with the following information:

a) their diameter, d_1;

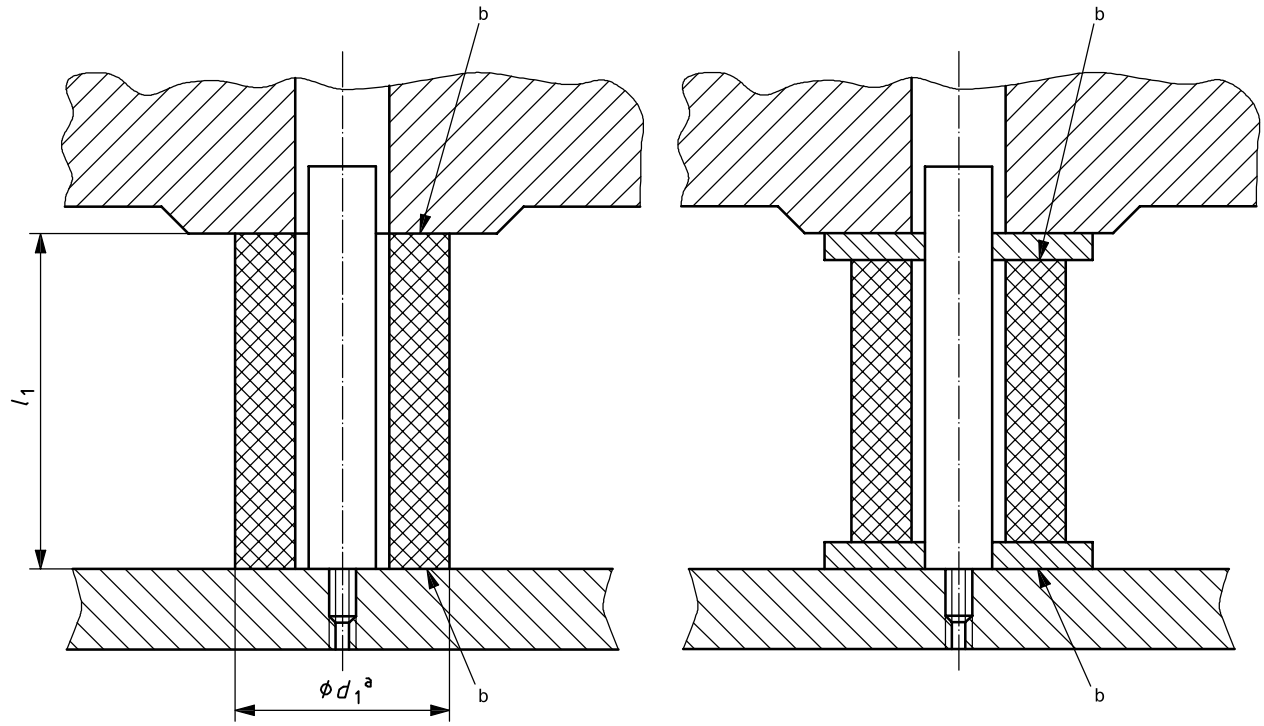
b) their length, l_1;

c) the material (CR or PUR).

Annex A
(informative)

Examples of suitable applications

Examples of suitable applications are shown in Figures A.1 to A.3.

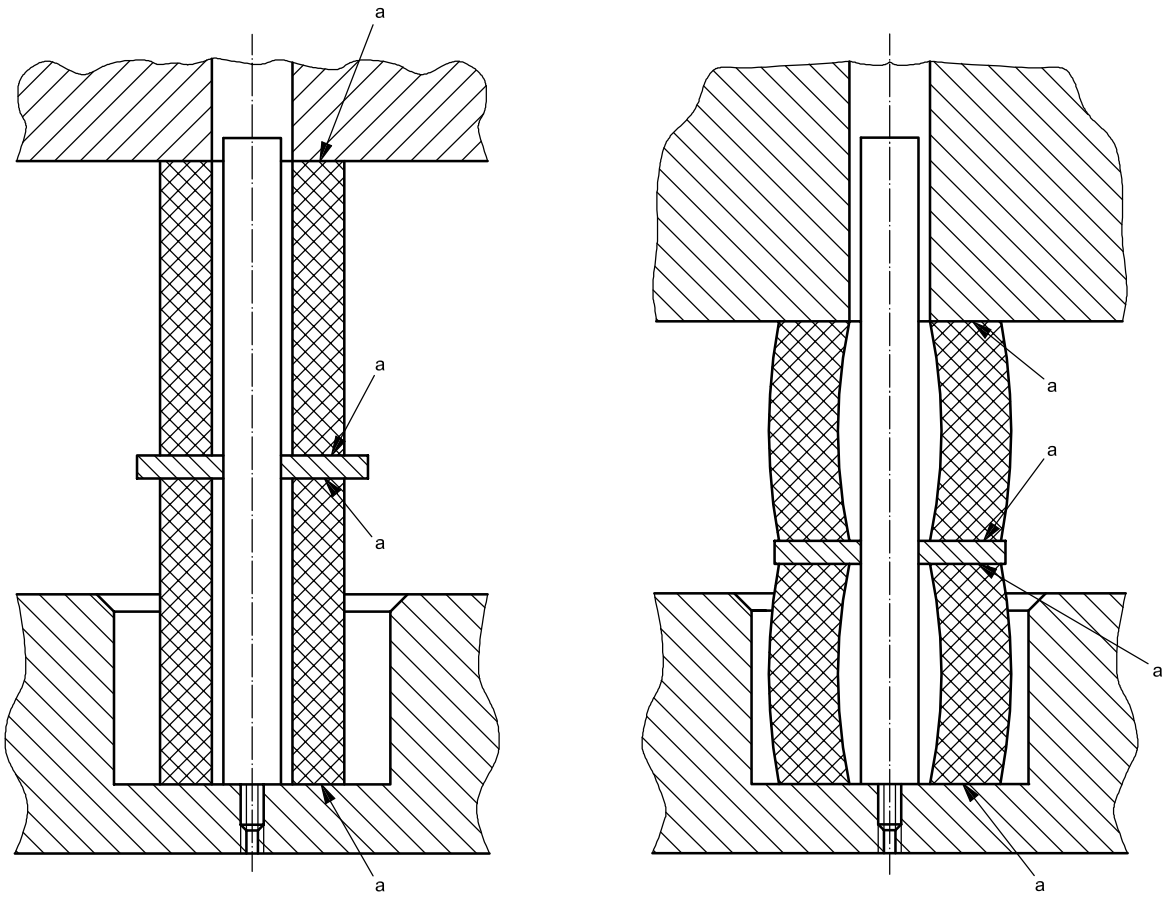


a) Without spring collar **b) With spring collar**

a $\varnothing d_1 \leqslant l_1$.

b The contact surface should be lubricated before mounting. It is recommended that only mineral oils or grease be used for elastomer pressure springs made of polyurethane rubber (PUR).

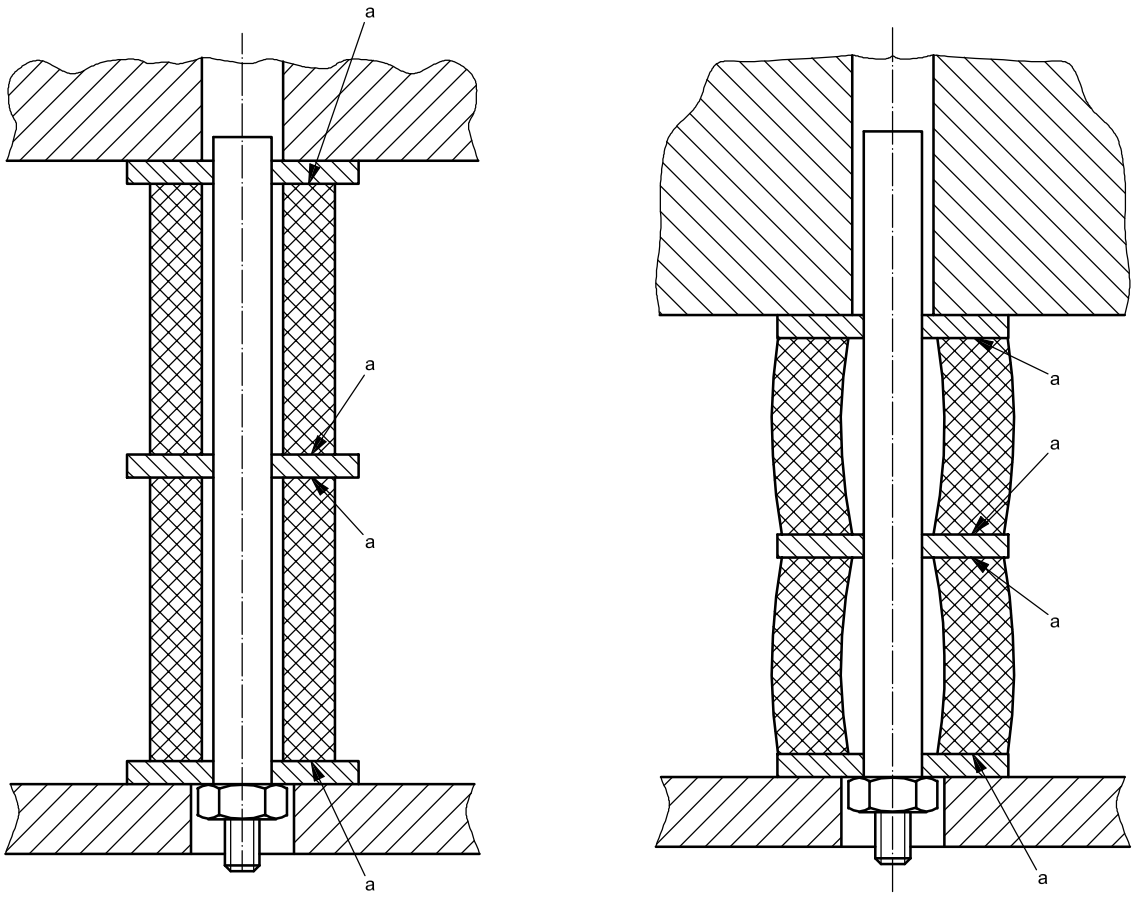
Figure A.1 — Single elastomer pressure spring



a) Free **b) In compression**

[a] The contact surface should be lubricated before mounting. It is recommended that only mineral oils or grease be used for elastomer pressure springs made of PUR.

Figure A.2 — Double elastomer pressure spring with one spring collar



a) Free **b) In compression**

[a] The contact surface should be lubricated before mounting. It is recommended that only mineral oils or grease be used for elastomer pressure springs made of PUR.

Figure A.3 — Double elastomer pressure spring with three spring collars

Bibliography

[1] ISO 1302:2002, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ICS 25.120.10

Price based on 10 pages