



**International  
Standard**

**ISO 11901-1**

**Tools for pressing — Gas springs —  
Part 1:  
General specifications**

*Outillage de presse — Ressorts à gaz —  
Partie 1: Spécifications générales*

**Third edition  
2025-02**

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

This third edition cancels and replaces the second edition (ISO 11901-1:2003), which has been technically revised.

The main changes are as follows:

- deletion in the description of the location of the pressure filling inlet for gas spring of type 1 500 and 2 500;
- modification of the initial force of gas spring of type 15 000, 30 000, 50 000, 75 000 and 100 000;
- modification of the length of gas spring type 900 with a nominal stroke of 38;
- modification of the design of gas spring type 1 500 and 2 500;
- addition of new strokes for of gas spring type 900, 1 500, 2 500, 5 000, 7 500, 15 000, 30 000, 50 000 and 75 000;
- replacement of length  $l_4$  with diameter  $D_4$  in [Table 3](#) and in [Figure 3](#), [Figure 4](#) and [Figure 5](#).

A list of all parts in the ISO 11901 series can be found on the ISO website.

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](http://www.iso.org/members.html).

## Introduction

The attention of the user of this document is drawn to the fact that national regulations in regard to gas springs apply.

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# Tools for pressing — Gas springs —

## Part 1: General specifications

### 1 Scope

This document specifies the dimensions, in millimetres, nominal initial forces and type of gas springs.

It applies to gas springs of type 900 to 100 000, pressurized with nitrogen with a nominal initial force of between  $900\text{ N} \pm 5\%$  and  $100\ 600\text{ N} \pm 5\%$ , for use in press tools.

This document also specifies marking, technical delivery conditions and designation.

NOTE Specifications of mounting accessories for gas springs are given in ISO 11901-2.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

### 3 Terms and definitions

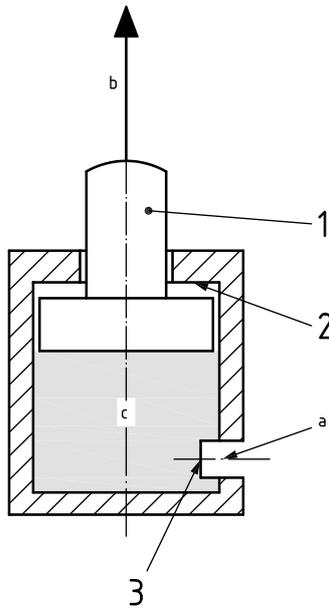
No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 4 Description and terminology

See [Figure 1](#).



**Key**

- 1 rod
- 2 positive stop
- 3 valve
- a Pressure filling inlet.
- b Force.
- c Nitrogen.

**Figure 1 — Terminology**

The gas spring is an autonomous spring pressurized with nitrogen.

At rest position, the rod is pushed out.

This gas spring feature has a gas inlet for pressurization or depressurization. The inlet is located on the casing or on the bottom and is capped.

The pressure filling inlet of gas springs of type of at least 2 500 includes a pipe thread ISO 7 - Rp 1/8 which shall be in accordance with ISO 7-1 and the pressure filling inlet of gas springs of type equal or less than 2 500 shall include an M6 thread.

## 5 Interchangeability dimensions and characteristics

### 5.1 General nominal specifications

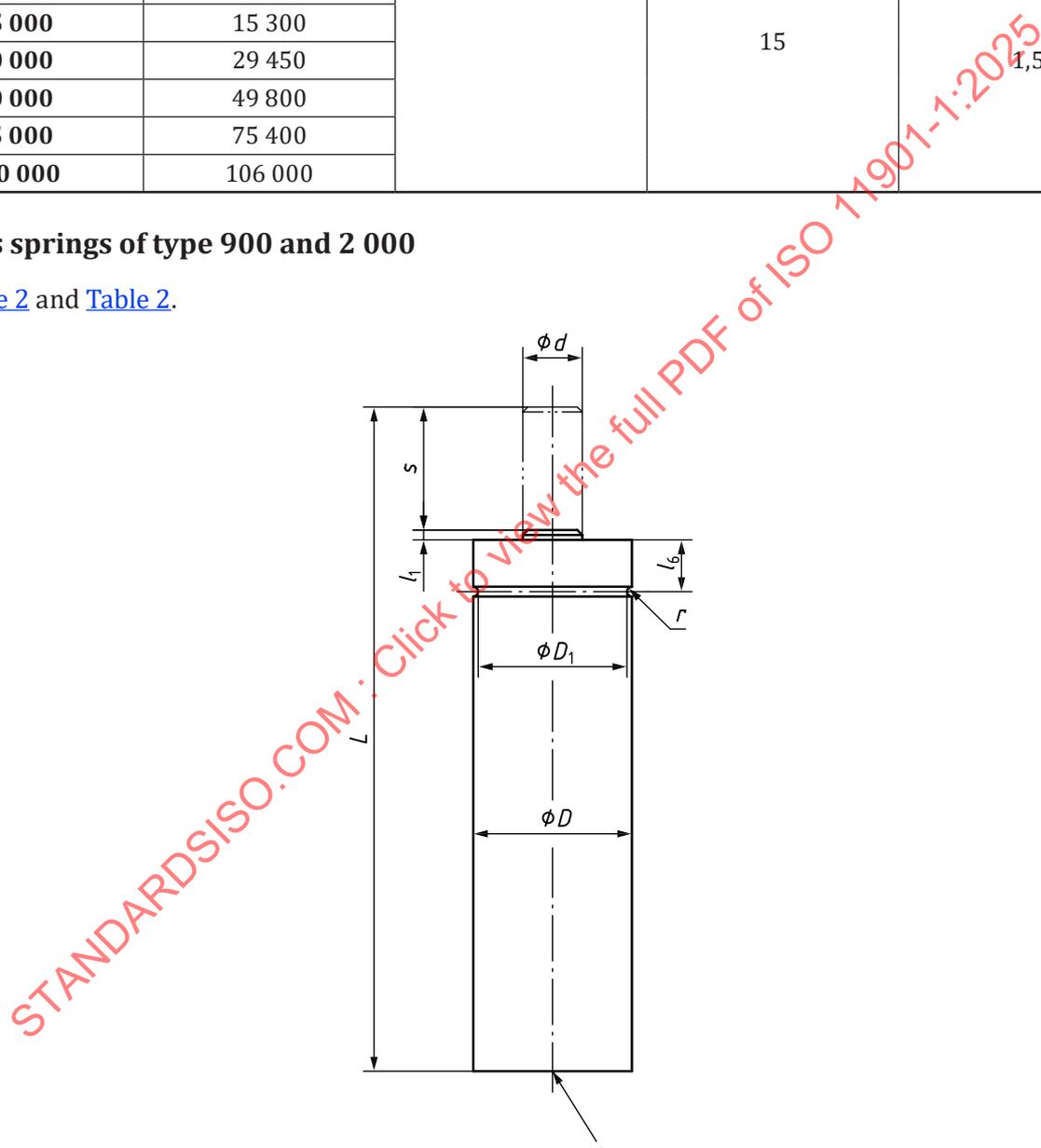
See [Table 1](#).

Table 1 — General nominal specifications

Type	Initial force N		Maximum filling pressure MPa	End of stroke nominal force increase coefficient
900	900	±5 %	18	1,5
1 500	1 700		15	1,3
2 000	2 000		18	1,5
2 500	2 600		15	1,3
5 000	4 700			1,5
7 500	7 400			
15 000	15 300			
30 000	29 450			
50 000	49 800			
75 000	75 400			
100 000	106 000			

5.2 Gas springs of type 900 and 2 000

See [Figure 2](#) and [Table 2](#).



The general tolerance shall be ISO 2768-m according to ISO 2768-1.

<sup>a</sup> Pressure filling inlet.

Figure 2 — Gas springs of type 900 and 2 000

Table 2 — Dimensions of gas springs of type 900 and 2 000 —  
Maximum filling pressure 18 MPa

Type	Nominal stroke <i>s</i>	<i>L</i> ±0,25	<i>l</i> <sub>1</sub> +1 0	<i>l</i> <sub>6</sub> +1 0	<i>r</i>	<i>d</i>	<i>D</i> ±0,3	<i>D</i> <sub>1</sub> 0 -0,1
900	15	72	1	16	1	8	19	17
	25	92						
	38	118,2						
	50	142						
	63	172						
	80	205						
	100	245						
	125	295						
2 000	15	72	1	16	1	12	25	23
	25	92						
	38	118,2						
	50	142						
	63	172						
	80	205						
	100	245						
	125	295						

### 5.3 Gas springs of type 1 500

See [Figure 3](#) and [Table 3](#).

### 5.4 Gas springs of type 2 500

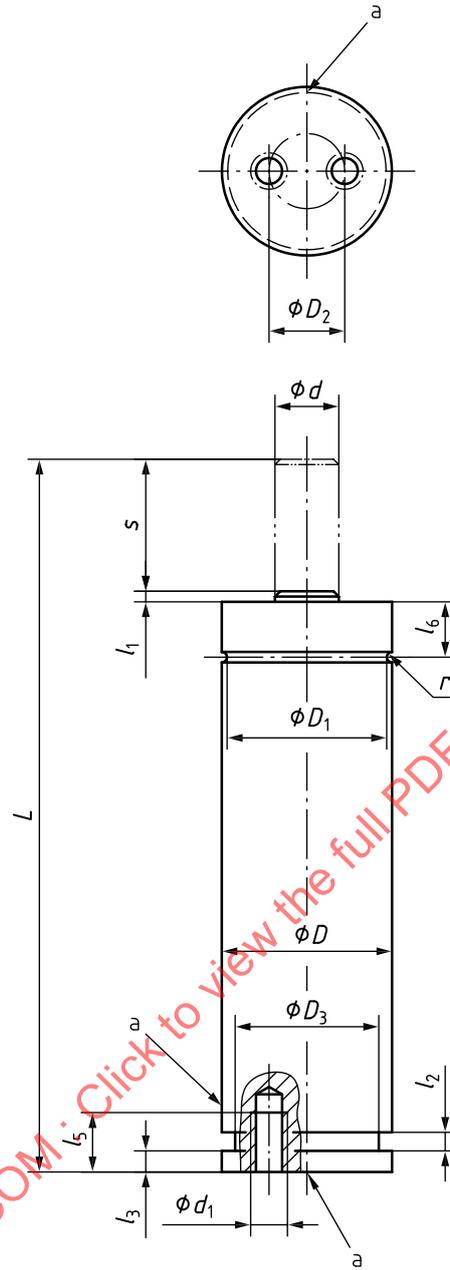
See [Figure 4](#) and [Table 3](#).

### 5.5 Gas springs of type 5 000 to 7 500

See [Figure 5](#) and [Table 3](#).

### 5.6 Gas springs of type 15 000 to 100 000

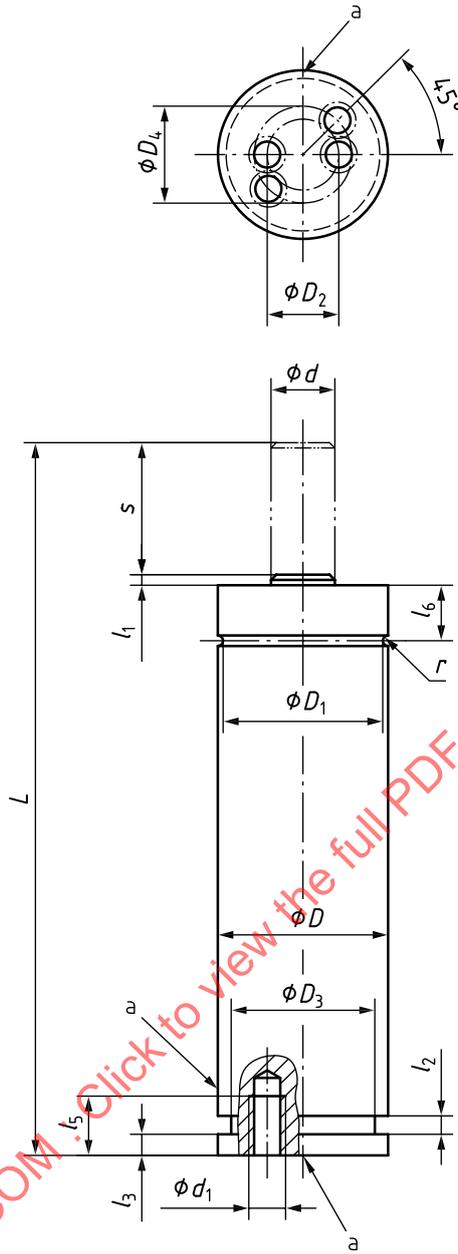
See [Figure 6](#) and [Table 3](#).



The general tolerance shall be ISO 2768-m according to ISO 2768-1.

<sup>a</sup> Pressure filling inlet (located either on the bottom or on the casing).

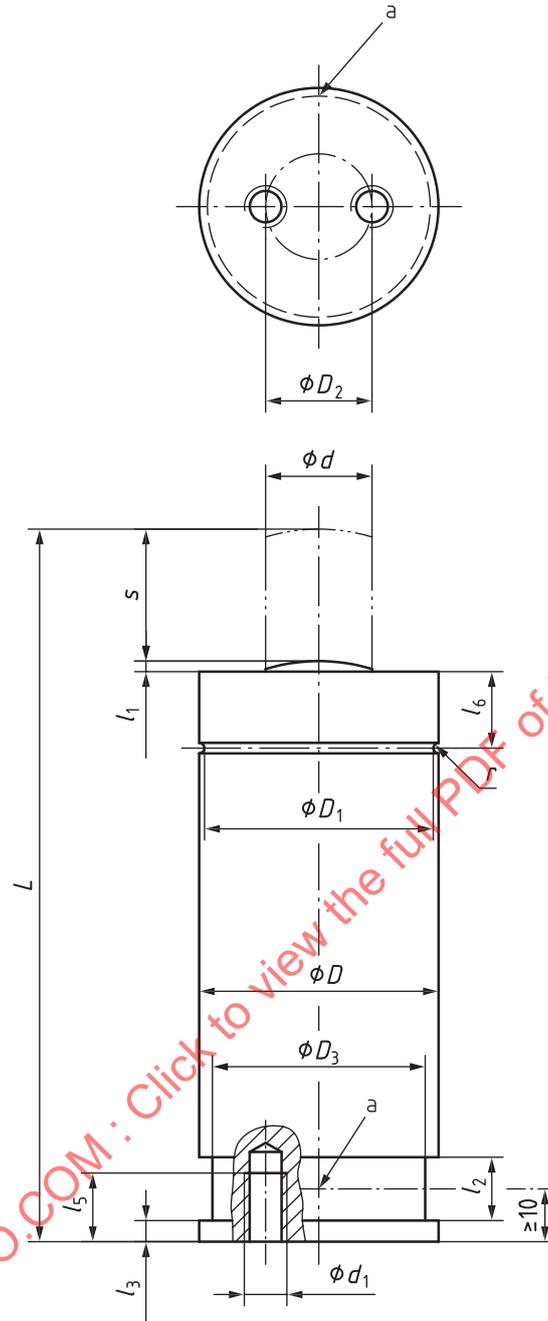
**Figure 3 — Gas springs of type 1 500**



The general tolerance shall be ISO 2768-m according to ISO 2768-1.

a Pressure filling inlet (located either on the bottom or on the casing).

Figure 4 — Gas springs of type 2 500

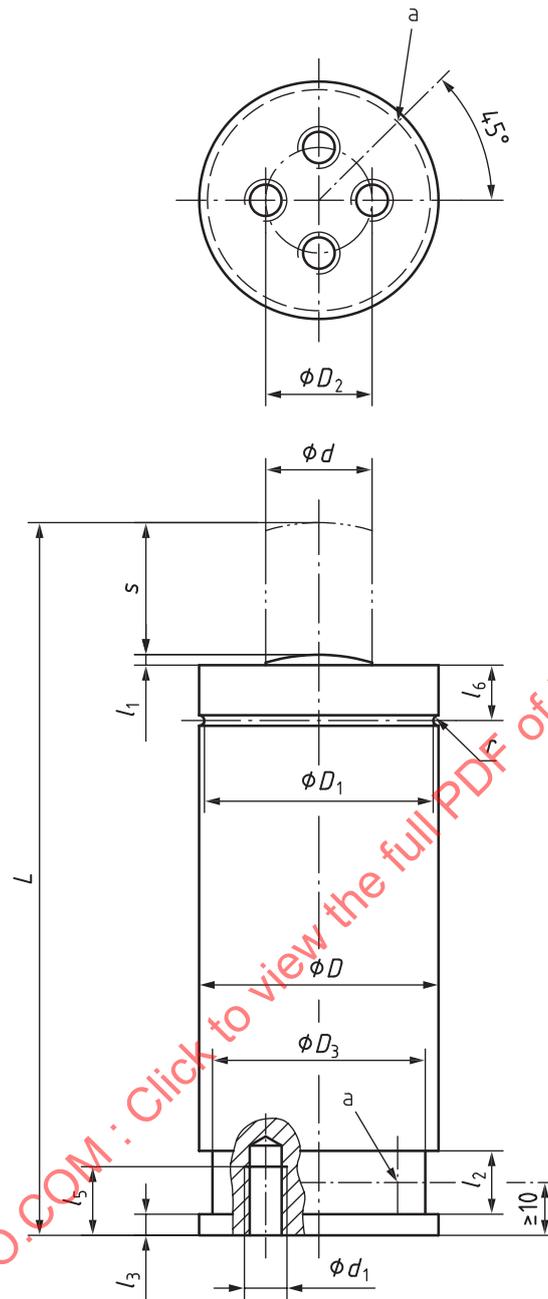


The general tolerance shall be ISO 2768-m according to ISO 2768-1.

<sup>a</sup> Pressure filling inlet.

As an alternative, the rod end can be flat.

**Figure 5 — Gas springs of type 5 000 to 7 500**



The general tolerance shall be ISO 2768-m according to ISO 2768-1.

<sup>a</sup> Pressure filling inlet.

As an alternative, the rod end can be flat.

Figure 6 — Gas springs of type 15 000 to 100 000

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Table 3 — Dimensions of gas springs of type 1 500 and of type 2 500 to 100 000 — Maximum filling pressure 15 MPa

Type	Nominal stroke s	L ±0,25	l <sub>1</sub>	l <sub>2</sub> min	l <sub>3</sub> +0,15 0	D <sub>3</sub> max	l <sub>5</sub> min	l <sub>6</sub>	r	d	D ±0,3	D <sub>1</sub> 0 -0,1	d <sub>1</sub>	D <sub>2</sub>	D <sub>4</sub>	Number of holes
1 500	10	70	2	3,5	4	27	8	10,5	1	12	32	30	M6	18	—	2
	16	82														
	25	100														
	50	150														
	80	210														
	100	250														
2 500	10	70	2	3,5	4	33	8	10,5	1	15	38	36	M6	18	25	4
	16	82														
	25	100														
	50	150														
	80	210														
	100	250														
5 000	25	135	2	3,5	4	40	13	14,5	1	20	45	43	M8	20	—	2
	50	185														
	80	245														
	100	285														
	125	335														
	160	405														
7 500	25	145	3	5	8	43	13	14,5	2	25	50	46	M8	20	—	2
	50	195														
	80	255														
	100	295														
	125	345														
	160	415														
	200	495														
	250	595														
300	695															
15 000	25	160	3	5	8	67	13	18	2,5	36	75	70	M8	40	—	4
	50	210														
	80	270														
	100	310														
	125	360														
	160	430														
	200	510														
	250	610														
300	710															

Table 3 (continued)

Type	Nominal stroke s	L ±0,25	$l_1$	$l_2$ min	$l_3$ +0,15 0	$D_3$ max	$l_5$ min	$l_6$	r	d	D ±0,3	$D_1$ 0 -0,1	$d_1$	$D_2$	$D_4$	Number of holes
30 000	25	170	3	5	8	87	13	21	2,5	50	95	90	M8	60	—	4
	50	220														
	80	280														
	100	320														
	125	370														
	160	440														
	200	520														
	250	620														
	300	720														
50 000	25	190	3	5	8	112	16	22,5	2,5	65	120	115	M10	80	—	4
	50	240														
	80	300														
	100	340														
	125	390														
	160	460														
	200	540														
	250	640														
300	740															
75 000	25	205	3	5	8	142	16	24,5	2,5	80	150	145	M10	100	—	4
	50	255														
	80	315														
	100	355														
	125	405														
	160	475														
	200	555														
	250	655														
	300	755														
100 000	50	260	3	8	8	187	16	30,5	2,5	95	195	190	M12	120	—	4
	80	320														
	100	360														
	125	410														
	160	480														
	200	560														
	250	660														
	300	760														

## 6 Marking

Gas springs shall be labelled in an indelible way, with at least the following information:

- a) the manufacturer's name;
- b) the gas used;