BRITISH STANDARD

BS ISO
11901-1:2003

Tools for pressing — Gas springs —

Part 1: General specifications

ICS 25.120.10

BSI
British Standards

National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to v, a blank page, pages 1 to 11 and a back cover.

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INTERNATIONAL STANDARD

ISO 11901-1

Second edition
2003-12-01

Tools for pressing — Gas springs —

Part 1: General specifications

Outillage de presse — Ressorts à gaz —

Partie 1: Spécifications générales

Reference number
ISO 11901-1:2003(E)

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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.

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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.

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ISO 11901-1 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 11901-1:1995), Clauses 4 and 5 of which have been technically revised.

ISO 11901 consists of the following parts, under the general title *Tools for pressing — Gas springs*:

Part 1: General specifications

Part 2: Specification of accessories

Introduction

The attention of the user of ISO 11901 is drawn to the fact that gas springs will have to conform to the national regulations of the user country.

Tools for pressing — Gas springs —

Part 1: General specifications

1 Scope

This part of ISO 11901 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 N ± 5 % and 100 600 N ± 5 %, for use in press tools.

It 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

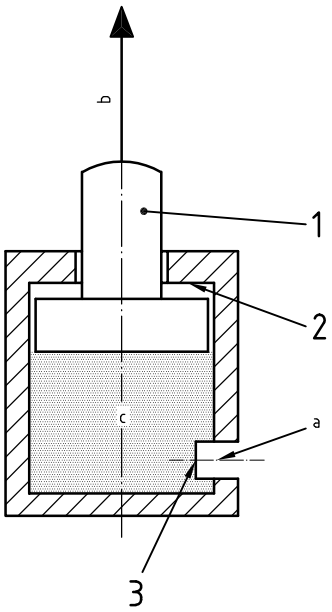
The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 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 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.

For gas spring of type 1 500 and 2 500, the pressure filling inlet may be located at the end of the rod. In this case, the rod end is not spherical.

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

4 Interchangeability dimensions and characteristics

4.1 General nominal specifications

See Table 1

Table 1 — General nominal specifications

Type	Nominal 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	15 000			
30 000	30 000			
50 000	50 000			
75 000	75 000			
100 000	100 600			

4.2 Gas springs of type 900 and 2 000

See Figure 2 and Table 2

4.3 Gas springs of type 1 500 and 2 500

See Figure 3 and Table 3.

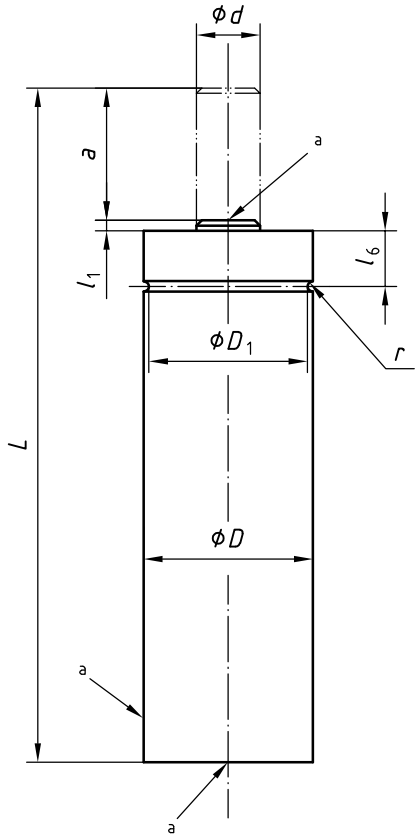
4.4 Gas springs of type 5 000 to 7 500

See Figure 4 and Table 3.

4.5 Gas springs of type 15 000 to 100 000

See Figure 5 and Table 3.

General tolerance: ISO 2768-m



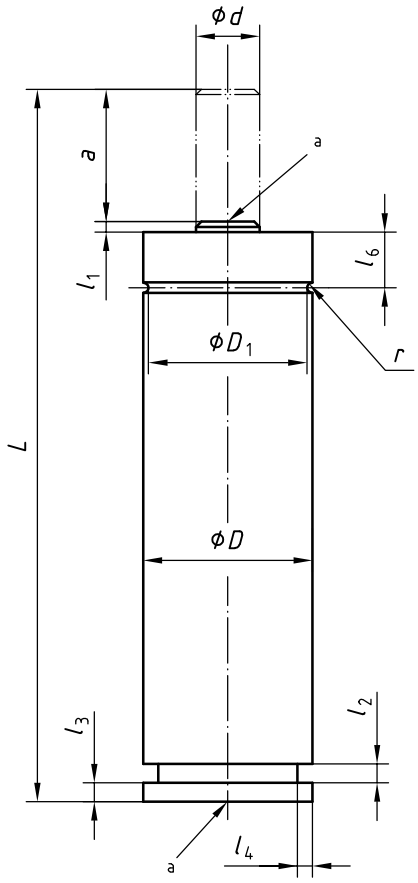
[a] Pressure filling inlet (F = located on the bottom, C = located on the casing).

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 a	L ± 0,25	l_1 $^{+1}_{0}$	l_6 $^{+1}_{0}$	r	d	D ± 0,3	D_1 $^{0}_{-0,1}$
900	15	72	1	16	1	8	19	17
	25	92						
	38	118						
	50	142						
	63	172						
	80	205						
2 000	15	72	1			12	25	23
	25	92						
	38	118						
	50	142						
	63	172						
	80	205						
	100	245						
	125	295						

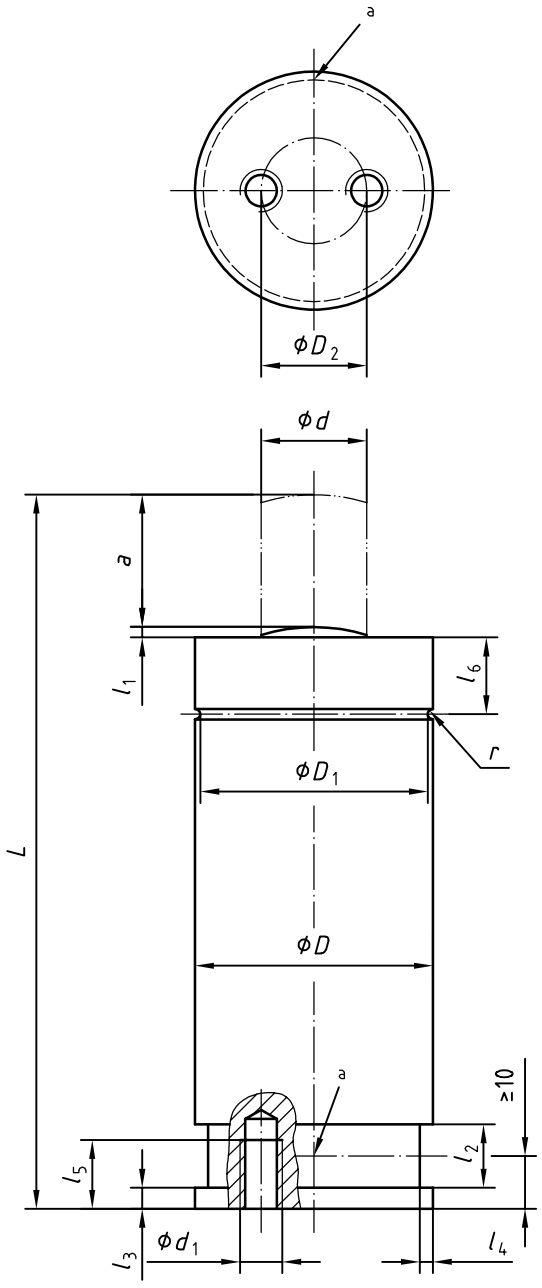
General tolerance: ISO 2768-m



[a] Pressure filling inlet (F = located on the bottom, B = located at rod end).

Figure 3 — Gas springs of type 1 500 and 2 500

General tolerance: ISO 2768-m

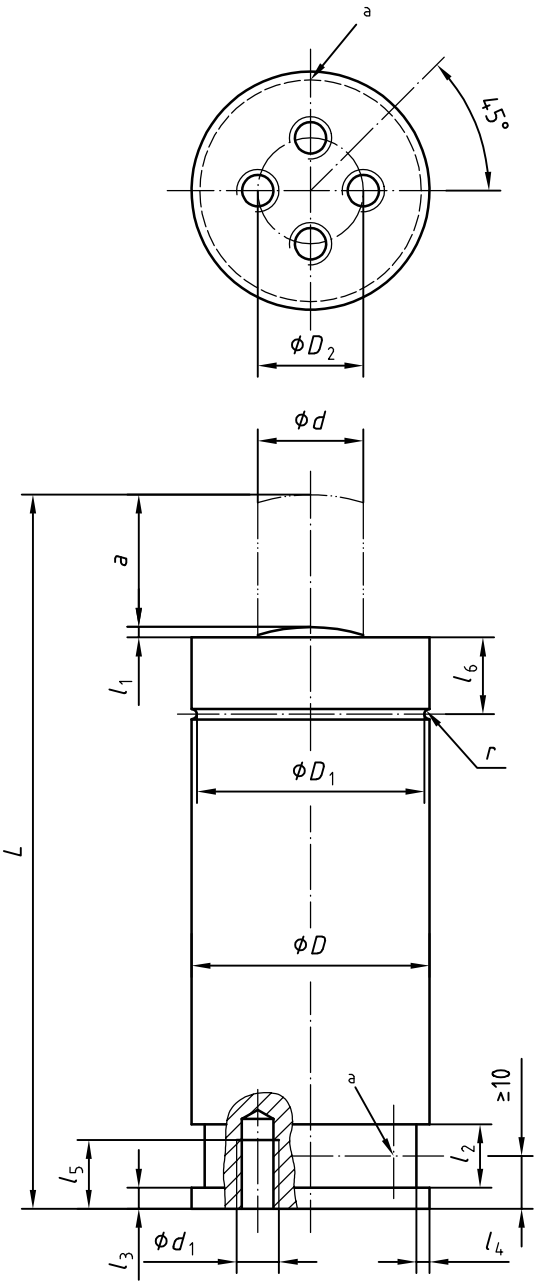


[a] Pressure filling inlet.

NOTE As an alternative, the rod end may be flat.

Figure 4 — Gas springs of type 5 000 to 7 500

General tolerance: ISO 2768-m



[a] Pressure filling inlet.

NOTE As an alternative, the rod end may be flat.

Figure 5 — Gas springs of type 15 000 to 100 000

Table 3 — Dimensions of gas springs of type 1 500 and of type 2 500 to 100 000 — Maximum filling pressure15 MPa

Type	Nominal stroke a	L ± 0,25	l_1	l_2 min	l_3 +0,15 0	l_4 min	l_5 min	l_6	r	d	D ± 0,3	D_1 0 −0,1	d_1	D_2	Number of holes
1 500	10	70	2	3,5	4	2,5	—	10,5	1	12	32	30	—	—	—
	16	82													
	25	100													
	50	150													
	80	210													
2 500	10	70	2	3,5	4	2,5	—	10,5	1	15	38	36	—	—	—
	16	82													
	25	100													
	50	150													
	80	210													
5 000	25	135	2	3,5	4	2,5	13	14,5	1	20	45	43	M8	20	2
	50	185													
	80	245													
7 500	25	145	3	5	8	3,5	13	14,5	2	25	50	46	M8	20	2
	50	195													
	80	255													
	100	295													
	125	345													
	160	415													
15 000	25	160	3	5	8	4	13	18	2,5	36	75	70	M8	40	4
	50	210													
	80	270													
	100	310													
	125	360													
	160	430													
30 000	25	170	3	5	8	4	13	21	2,5	50	95	90	M8	60	4
	50	220													
	80	280													
	100	320													
	125	370													
	160	440													
50 000	25	190	3	5	8	4	16	22,5	2,5	65	120	115	M10	80	4
	50	240													
	80	300													
	100	340													
	125	390													
	160	460													

Table 2 (*continued*)

Type	Nominal stroke a	L ± 0,25	l_1	l_2 min	l_3 +0,15 0	l_4 min	l_5 min	l_6	r	d	D ± 0,3	D_1 0 −0,1	d_1	D_2	Number of holes
75 000	25	205	3	5	8	4	16	24,5	2,5	80	150	145	M10	100	4
	50	255													
	80	315													
	100	355													
	125	405													
	160	475													
100 000	50	260	3	8	8	4	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													

5 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;

c) the date of manufacture;

d) the maximum filling pressure;

e) the type.

6 Technical delivery conditions

Gas springs shall be supplied at the nominal pressure at a reference temperature of 20 °C.

NOTE Increase in temperature increases pressure at constant volume according to the following formulae:

$$p_t = p_0 (1 + 0{,}003\,6\,\Delta t)$$

where

p_t is the nitrogen pressure, in megapascals, at temperature t;

p_0 is the nitrogen pressure, in megapascals, at reference temperature;

Δt is the temperature variation.

The rod shall be slightly oiled and protected against shocks.

7 Designation

A gas spring in accordance with this part of ISO 11901 shall be designated by:

a) “Gas spring”;

b) reference to this part of ISO 11901, i.e. ISO 11901-1;

c) the type;

d) the nominal stroke, in millimetres;

e) the location of the pressure filling inlet for gas spring of type 900 to 2 500;

EXAMPLE A gas spring of type 1 500, nominal stroke of 25 mm and with a pressure filling inlet located on the bottom (F) is designated as follows:

Gas spring ISO 11901-1 - 1 500 × 25 - F

Bibliography

[1] ISO 11901-2[1)], *Tools for pressing — Gas springs — Part 2: Specification of accessories*

[2] Council directive 97/23/CE “Pressure equipment”

1) To be published.

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