BS ISO 11901-3:2014

BSI Standards Publication

Tools for pressing — Gas springs

Part 3: Gas spring with increased spring force and compact built height

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee MTE/12, Tools for pressing and moulding.

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 79401 8

ICS 25.120.10

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2014.

Amendments issued since publication

Date	Text affected

BS ISO 11901-3:2014

INTERNATIONAL STANDARD

ISO 11901-3

First edition
2014-03-01

Tools for pressing — Gas springs —

Part 3: Gas spring with increased spring force and compact built height

Outillage de presse — Ressorts à gaz —

Partie 3: Ressorts à gaz à force accrue à faible encombrement en hauteur

Reference number
ISO 11901-3:2014(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

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Foreword

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

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*

— *Part 3: Gas spring with increased spring force and compact built height*

— *Part 4: Gas springs with increased spring force and same built height*

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.

INTERNATIONAL STANDARD **ISO 11901-3:2014(E)**

Tools for pressing — Gas springs —

Part 3: Gas spring with increased spring force and compact built height

1 Scope

This part of ISO 11901 specifies the dimensions (in millimetres), nominal initial forces and types of gas springs.

It is applicable to gas springs with increased spring force and compact built height of type 1 700 to 200 000, pressurized with nitrogen with a nominal initial force of between 1 700 N ± 5 % and 200 000 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

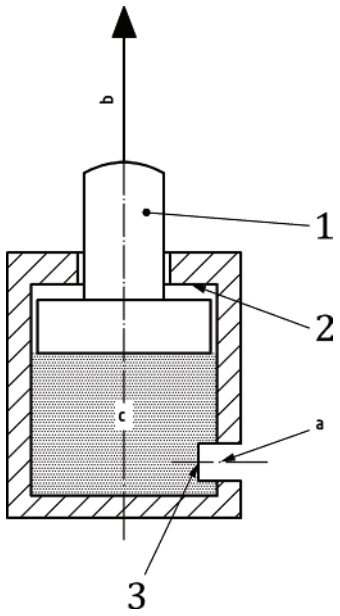
The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

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.

The pressure filling inlet of gas springs of type of at least 42 000 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 less than 42 000 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
1 700	1 700	±5 %	18	1,6
3 200	3 200			1,6
3 500	3 500			1,5
5 000	5 000		15	1,5
7 500	7 500			1,6
10 000	10 000			1,6
15 000	15 000			1,6
24 000	24 000			1,6
42 000	42 000			1,6
66 000	66 000			1,5
95 000	95 000			1,5
200 000	200 000			1,5

4.2 Gas springs of type 1 700 and 3 200

See Figure 2 and Table 2.

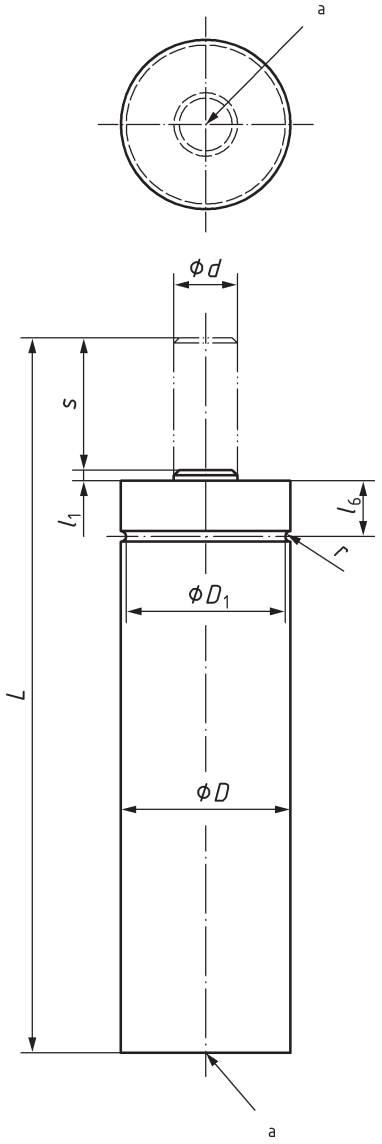
4.3 Gas springs of type 3 500 and 15 000

See Figures 3 and 5 and Tables 3 and 4.

4.4 Gas springs of type 24 000 to 200 000

See Figures 4 and 5 and Tables 3 and 4.

General tolerance: ISO 2768-m



a Pressure filling inlet.

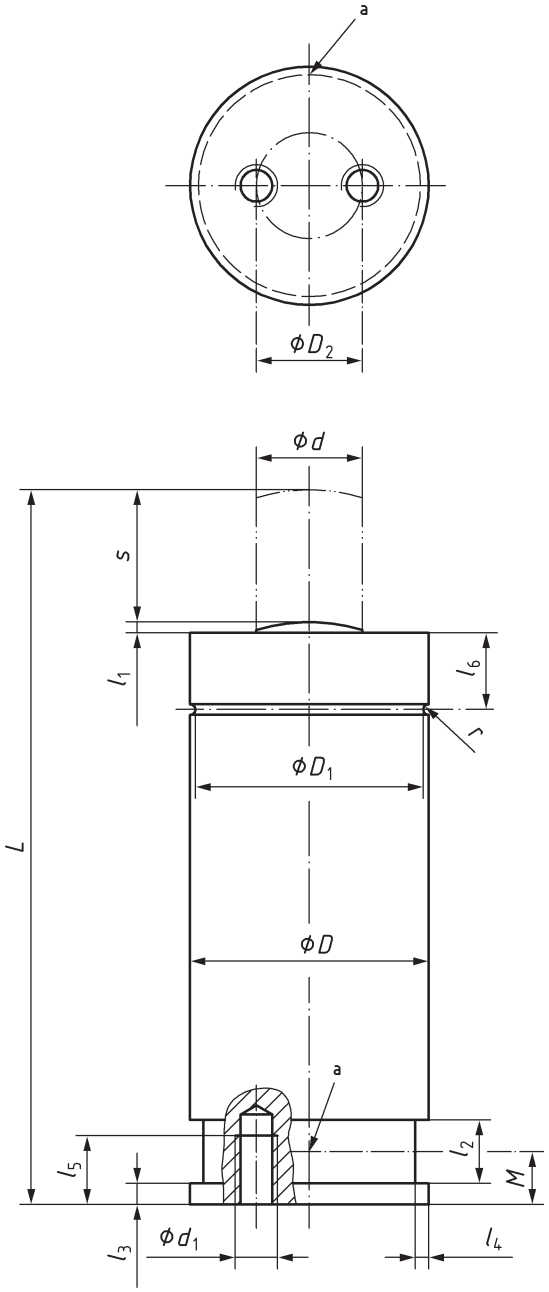
Figure 2 — Gas springs of type 1 700 and 3 200

Table 2 — Dimensions of gas springs of type 1 700 and 3 200 — Maximum filling pressure 18 MPa

Dimensions in millimetres

Type	**Nominal stroke** s	L ±0,25	l_1 $^{+1}_{0}$	l_6 $^{+1}_{0}$	r	d	D ±0,3	D_1 $^{0}_{-0,1}$
1 700	10	50	1	16	1	11	19	17
	15	60						
	25	80						
	38	106						
	50	130						
	63	156						
	80	195						
	100	235						
	125	285						
3 200	10	50				15	25	23
	15	60						
	25	80						
	38	106						
	50	130						
	63	156						
	80	195						
	100	235						
	125	285						

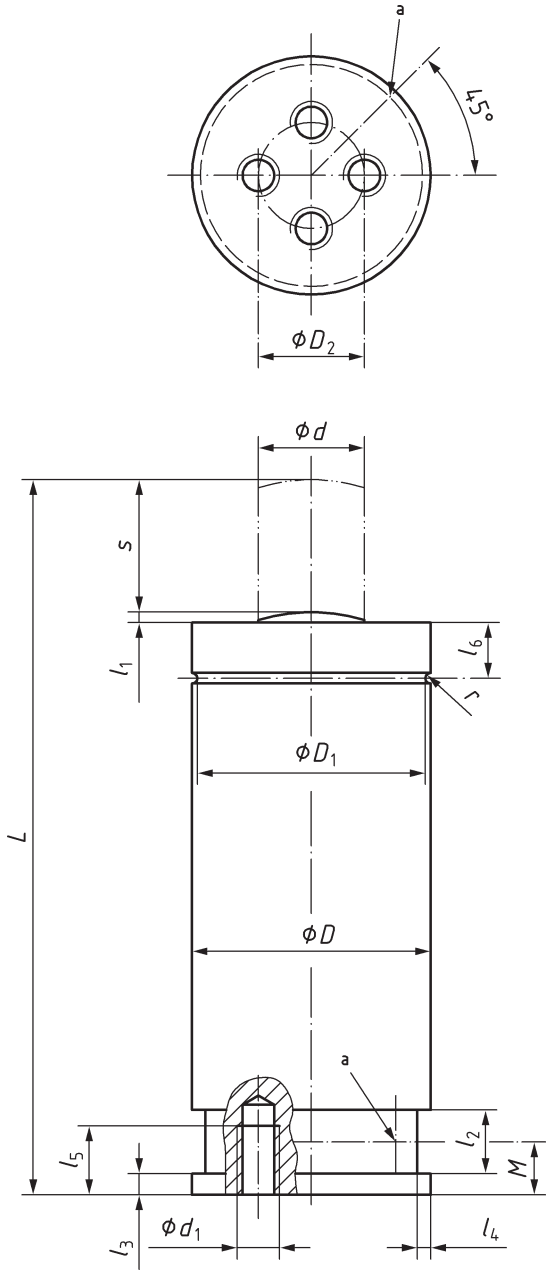
General tolerance: ISO 2768-m



a Pressure filling inlet.

Figure 3 — Gas springs of type 3 500 to 15 000

General tolerance: ISO 2768-m



a Pressure filling inlet.

Figure 4 — Gas springs of type 24 000 to 200 000

Table 3 — Dimensions of gas springs of type 3 500 to 200 000 — Maximum filling pressure 18 MPa for type 3 500 and 15 MPa for type 5 000 to 200 000

Dimensions in millimetres

Type	Nominal stroke s	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
3 500	10	50	2	3,5	4	2,5	6	10,5	1	16	32	30	M6	20	2
	13	56													
	16	62													
	25	80													
	38	106													
	50	130													
	63	156													
	80	190													
	100	230													
	125	280													
5 000	10	50	2	3,5	4	2,5	6	10,5	1	20	38	36	M6	20	2
	13	56													
	16	62													
	25	80													
	38	106													
	50	130													
	63	156													
	80	190													
	100	230													
	125	280													
7 500	13	58	2	3,5	4	2,5	6	14,5	1	25	45	43	M8	20	2
	25	82													
	38	108													
	50	132													
	63	158													
	80	192													
	100	232													
	125	282													
10 000	13	64	3	5	8	3,5	6	14,5	2	28	50	46	M8	20	2
	25	88													
	38	114													
	50	138													
	63	164													
	80	198													
	100	238													
	125	288													

Table 3 *(continued)*

Type	Nominal stroke s	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
15 000	13	70	3	5	8	3,5	6	16	2	36	63	59	M8	20	2
	25	94													
	38	120													
	50	144													
	63	170													
	80	204													
	100	244													
	125	294													
24 000	25	95	3	5	8	4	6	18	2,5	45	75	70	M8	40	4
	38	121													
	50	145													
	63	171													
	80	205													
	100	245													
	125	295													
42 000	25	108	3	5	8	4	12	21	2,5	60	95	90	M8	60	4
	38	134													
	50	158													
	63	184													
	80	218													
	100	258													
	125	308													
66 000	25	118	3	5	8	4	12	22,5	2,5	75	120	115	M10	80	4
	38	144													
	50	168													
	63	194													
	80	228													
	100	268													
	125	318													
95 000	25	128	3	5	8	4	13	24,5	2,5	90	150	145	M10	100	4
	38	154													
	50	178													
	63	204													
	80	238													
	100	278													
	125	328													

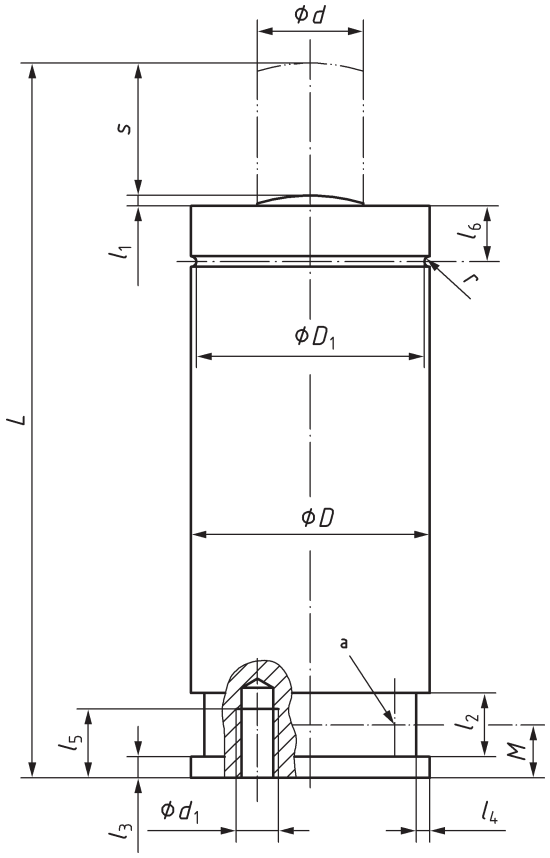
Table 3 *(continued)*

Type	Nominal stroke s	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
200 000	25	160	3	8	8	4	16	30,5	2,5	130	195	190	M12	120	4
	38	186													
	50	210													
	63	236													
	80	270													
	100	310													
	125	360													

5 Filling pressure

Pressure filling inlet, a, is M6 for gas springs of type 1 700 to 24 000 and ISO 7 - Rp 1/8 in accordance with ISO 7-1 for gas springs of type 42 000 to 200 000 (see Figure 5 and Table 4).

For gas springs of type 1 700 and 3 200 the pressure filling inlet is located on the bottom.



a Pressure filling inlet.

Figure 5 — Filling pressure inlet

Table 4 — Location of pressure filling inlet

Type	Distance to inlet, *M* mm
3 500	6
5 000	6
7 500	6
10 000	6
15 000	6
24 000	6
42 000	10,5
66 000	10,5
95 000	10,5
200 000	15

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;

c) the date of manufacture;

d) the maximum filling pressure;

e) the type.

7 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.

8 Designation

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

— "Gas spring";

— reference to this part of ISO 11901, i.e. ISO 11901-3;

— the type;

— the nominal stroke, in millimetres;

— the location of the pressure filling inlet for gas spring of type 1 700 to 3 200.

EXAMPLE A gas spring of type 15 000, nominal stroke of 25 mm is designated as follows:

Gas spring ISO 11901-3 - 15 000 × 25

Bibliography

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

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

ICS 25.120.10
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