भारतीय मानक
Indian Standard

IS 17219 (Part 3) : 2022
ISO 11901-3 : 2021

दाबन के औज़ार — गैस स्प्रिंग

भाग 3 वर्धित स्प्रिंग बल और सहत निर्मित ऊँचाई के साथ गैस स्प्रिंग

(पहला पुनरीक्षण)

Tools for Pressing — Gas Springs

Part 3 Gas Spring with Increased Spring Force and Compact Built Height

(First Revision)

ICS 25.120.10

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August 2022 **Price Group 7**

Metal Forming Machines Sectional Committee, PGD 04

NATIONAL FOREWORD

This Indian Standard (Part 3) (First Revision) which is identical with ISO 11901-3 : 2021 'Tools for pressing — Gas springs — Part 3 : Gas spring with increased spring force and compact built height' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Metal Forming Machines Sectional Committee and approval of the Production and General Engineering Division Council

This standard was originally published in 2019 identical with ISO 11901-3 : 2014. The first revision of this standard has been undertaken to align it with the latest version of the International Standard.
The major changes in this revision are as follows:

a) Modification of the nominal initial force of gas springs type 7 500 and 10 000, from 7 500 to 7 400 and from 10 000 to 9 200;

b) Modification of the end of stroke nominal force increase coefficient to have a range from 1.5 to 1.8 for all gas springs;

c) Deletion of tolerance on l6 in Table 2; and

d) Replacement of length l4 with diameter d3 in Table 3 and in Fig. 3, Fig. 4 and Fig. 5.

Other parts in this series are:
Part 1 General specifications
Part 2 Specification of accessories
Part 4 Gas springs with increased spring force and same built height

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 7-1 Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation	IS 554 : 1999 Pipe threads where pressure-tight joints are made on the threads — Dimensions, tolerances and designation (*fourth revision*)	Identical
ISO 2768-1 General tolerance — Part 1: Tolerance for linear and angular dimensions without individual tolerance indications	IS 2102 (Part 1) : 1993 General tolerance: Part 1 Tolerance for linear and angular dimensions without individual tolerance indications (*third revision*)	Identical

This standard also makes a reference to the BIS Certification Marking of the product, details of which are given in National Annex A

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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.

This document 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 11901-3:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

— modification of the nominal initial force of gas springs type 7 500 and 10 000, from 7 500 to 7 400 and from 10 000 to 9 200;

— modification of the end of stroke nominal force increase coefficient to have a range from 1,5 to 1,8 for all gas springs;

— deletion of tolerance on l_6 in Table 2;

— replacement of length l_4 with diameter D_3 in Table 3 and in Figure 3, Figure 4 et 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.

Indian Standard

TOOLS FOR PRESSING — GAS SPRINGS

PART 3 GAS SPRING WITH INCREASED SPRING FORCE AND COMPACT BUILT HEIGHT

(First Revision)

1 Scope

This document 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 (with a tolerance of ±5 %) and 200 000 N (with a tolerance of ±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 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.

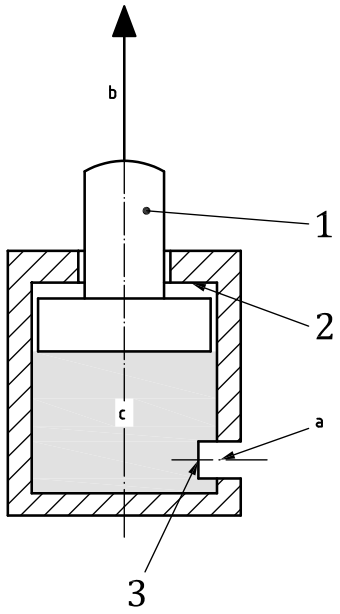
ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://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 42 000 shall include 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 shall include an M6 thread.

5 Interchangeability dimensions and characteristics

5.1 General nominal specifications

See Table 1.

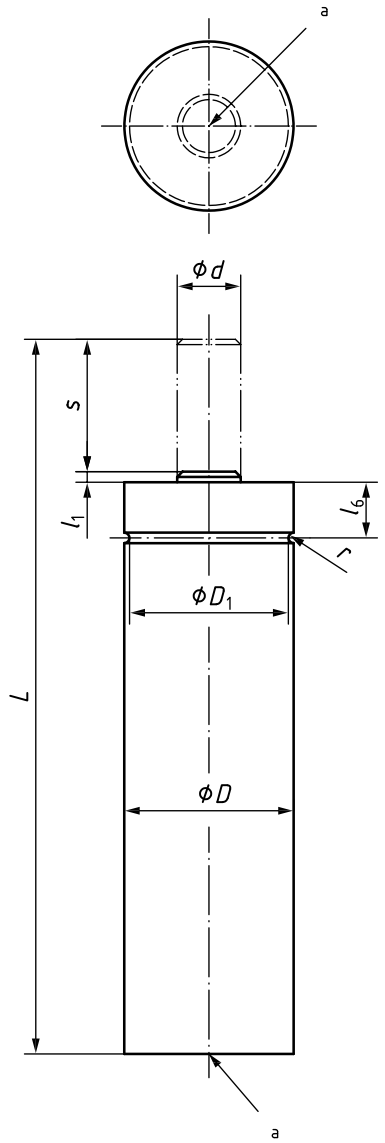
Table 1 — General nominal specifications

Type	Nominal initial force N		Maximum filling pressure MPa	End of stroke nominal force increase coefficient
1 700	1 700	±5 %	18	1,5 to 1,8[a]
3 200	3 200			
3 500	3 600			
5 000	4 700		15	
7 500	7 400			
10 000	9 200			
15 000	15 000			
24 000	24 000			
42 000	42 000			
66 000	66 000			
95 000	95 000			
200 000	200 000			

[a] Depending on the stroke.

5.2 Gas springs of type 1 700 and 3 200

See Figure 2 and Table 2.



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

[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

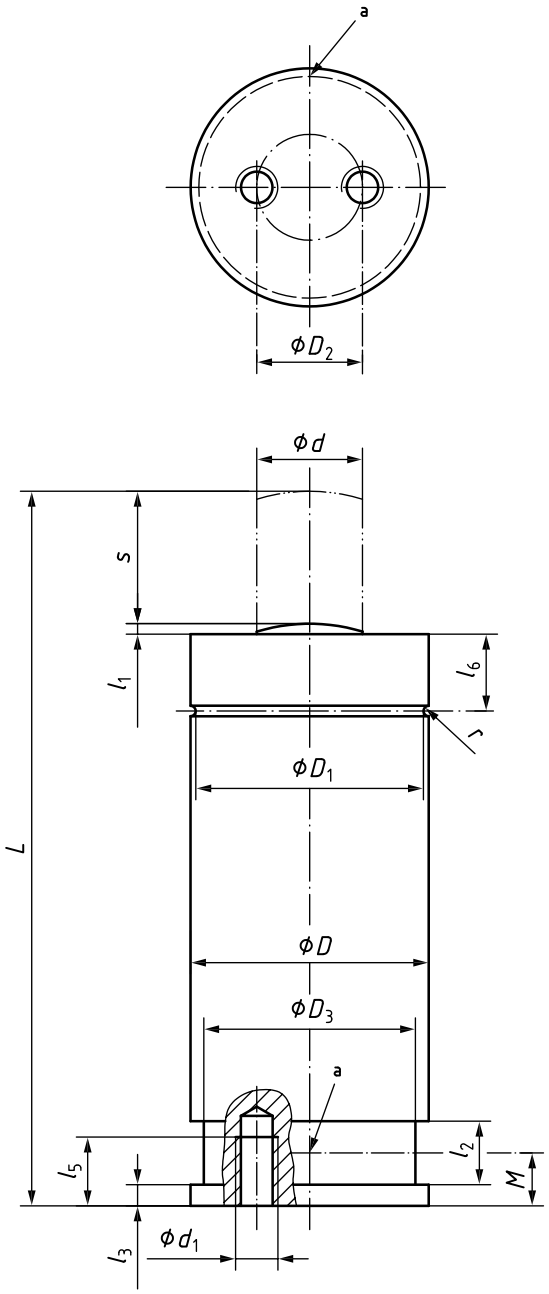
Type	Nominal stroke s	L ±0,25	l_1 $^{+1}_{0}$	l_6	r	d	D ±0,3	D_1 $^{0}_{-0,1}$
1 700	10	50	1	16	1	11	19	17
	15	60						
	25	80						
	38	106						
	50	130						
	63	156						
	80	195						
	100	235						
	125	285						
3 200	10	50				15	25	23
	15	60						
	25	80						
	38	106						
	50	130						
	63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

5.3 Gas springs of type 3 500 to 15 000

See Figures 3 and 5 and Tables 3 and 4.

5.4 Gas springs of type 24 000 to 200 000

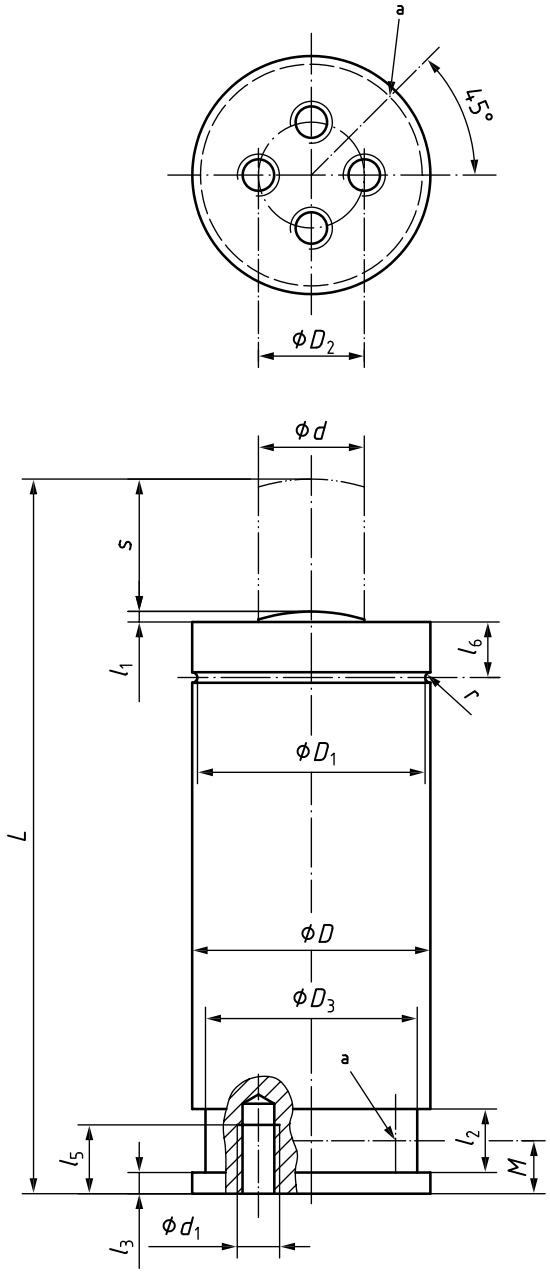
See Figures 4 and 5 and Tables 3 and 4.



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

[a] Pressure filling inlet.

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



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

[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 $^{+0,15}_{0}$	D_3 max.	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	27	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	33	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	40	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 00	13	64	3	5	8	43	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 $^{+0,15}_{0}$	D_3 max.	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	56	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	67	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	87	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	112	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	142	13	24,5	2,5	90	150	145	M10	100	4
	38	154													
	50	178													
	63	204													
	80	238													
	100	278													
	125	328													

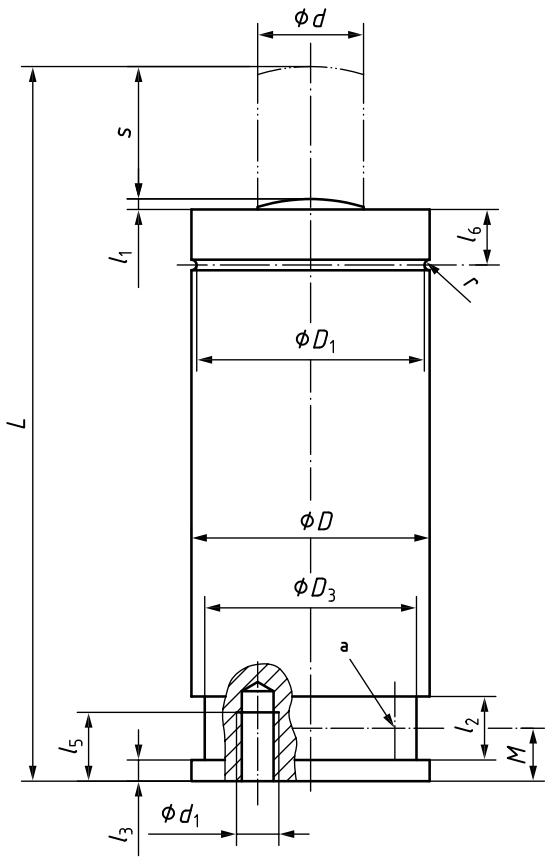
Table 3 *(continued)*

Type	Nominal stroke s	L ±0,25	l_1	l_2 min.	l_3 $^{+0,15}_{0}$	D_3 max.	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	187	16	30,5	2,5	130	195	190	M12	120	4
	38	186													
	50	210													
	63	236													
	80	270													
	100	310													
	125	360													

6 Pressure filling inlet

The pressure filling inlet shall be 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

7 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.

8 Technical delivery conditions

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

NOTE An increase in temperature increases pressure at constant volume according to the following formula:

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

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.

9 Designation

A gas spring in accordance with this document shall be designated by:

— “Gas spring”;

— reference to this document, 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 2014/68/EU “Pressure equipment”

NATIONAL ANNEX A

(*National Foreword*)

A-1 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked withthe Standard Mark.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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