भारतीय मानक

Indian Standard

IS 17219 (Part 4) : 2023
ISO 11901-4 : 2021

दाबन के औज़ार — गैस स्प्रिंग्स

भाग 4 वर्धित स्प्रिंग बल और समान निर्मित ऊँचाई के साथ गैस स्प्रिंग

(पहला पुनरीक्षण)

Tools for Pressing — Gas Springs

Part 4 Gas Spring with Increased Spring Force and Same Built Height

(First Revision)

ICS 25.120.10

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March 2023 **Price Group 7**

Metal Forming Machines Sectional Committee, PGD 04

NATIONAL FOREWORD

This Indian Standard (Part 4) (First Revision) which is identical with ISO 11901-4: 2021 'Tools for pressing — Gas springs — Part 4: Gas spring with increased spring force and same 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 specifies the dimensions (in millimeters), nominal initial forces and types of gas springs. It is applicable to gas springs with increased spring force and same built height of type 7500 to 200000, pressurized with nitrogen with a nominal initial force of between 7400 N (with a tolerance of ±5 %) and 200000 N (with a tolerance of ±5 %), for use in press tools.

This standard was originally published in 2019 Which was identical with ISO 11901-4 : 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) Addition of gas spring type 7500, 15000 and 200000;

b) Modification of the nominal initial force of gas springs type 10000, from 10000 to 9200;

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

d) Replacement of length l6 with diameter D3 in Table 2 and in Figure 2 et Figure 3;

e) Modification of the symbol of nominal stroke.

Other parts in this series are:

Part 1 General specifications
Part 2 Specification of accessories
Part 3 Gas spring with increased spring force and compact 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, theyshould be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the currentpractice is to use a point (.) as the decimal marker.

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Indian Standard

TOOLS FOR PRESSING — GAS SPRINGS

PART 4 GAS SPRING WITH INCREASED SPRING FORCE AND SAME 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 same built height of type 7 500 to 200 000, pressurized with nitrogen with a nominal initial force of between 7 400 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.

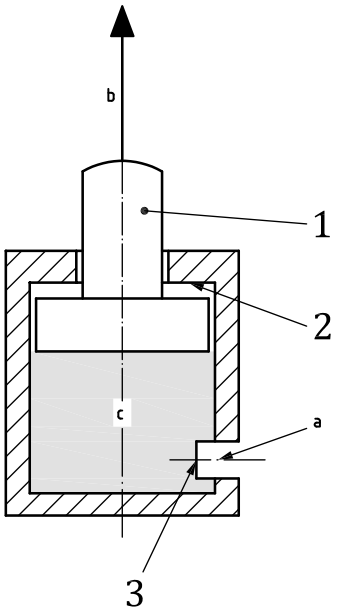
ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— 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 and is capped.

The pressure filling inlet of the gas springs shall include a pipe thread ISO 7 - Rp 1/8 in accordance with ISO 7-1.

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
7 500	7 400	±5 %	15	1,5 to 1,8[a]
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			

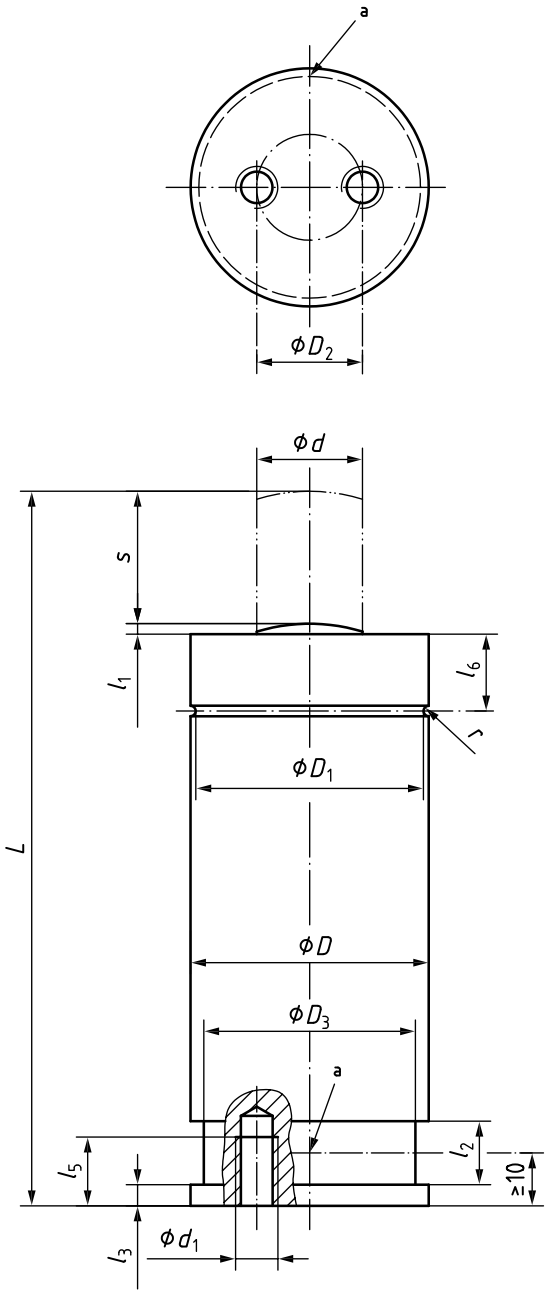
[a] Depending on the stroke.

5.2 Gas springs of type 7 500 to 15 000

See Figure 2 and Table 2.

5.3 Gas springs of type 24 000 to 200 000

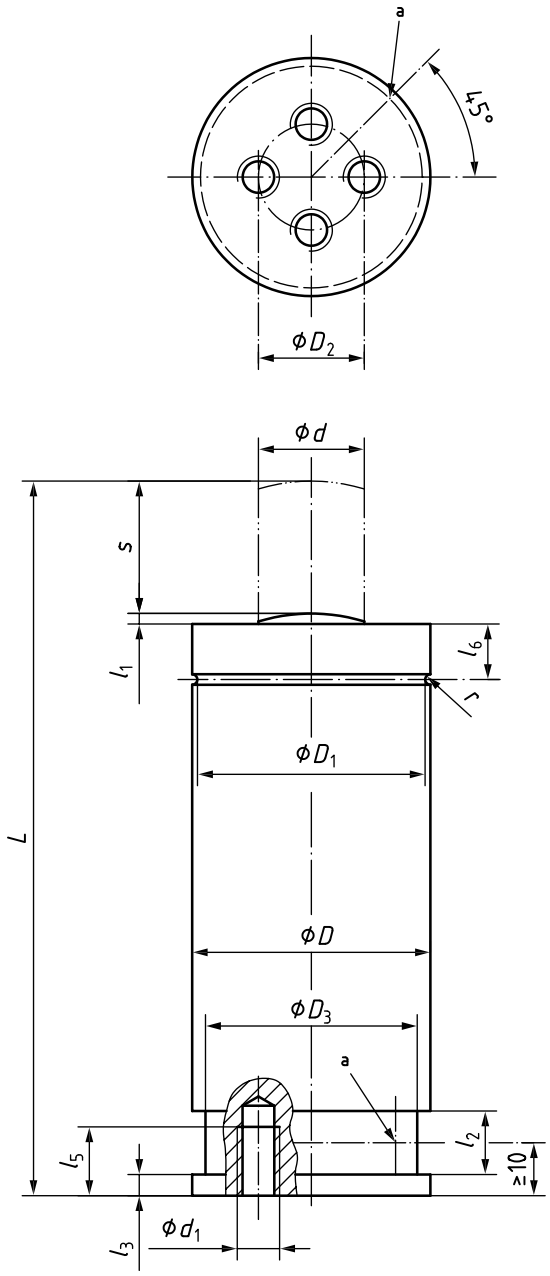
See Figure 3 and Table 2.



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

[a] Pressure filling inlet.

Figure 2 — Gas spring of type 7 500 to 15 000



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

[a] Pressure filling inlet.

Figure 3 — Gas springs of type 24 000 to 200 000

Table 2 — Dimensions of gas springs of type 7 500 to 200 000 — Maximum filling pressure 15 MPa

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
7 500	25	135	2	3,5	4	40	13	14,5	1	25	45	43	M8	20	2
	50	185													
	80	245													
	100	285													
	125	335													
	160	405													
	200	485													
10 000	25	145	3	5	8	43	13	14,5	2	28	50	46	M8	20	2
	50	195													
	80	255													
	100	295													
	125	345													
	160	415													
	200	495													
	250	595													
	300	695													
15 000	25	145	3	5	8	56	13	16	2	36	63	59	M8	20	2
	50	195													
	80	255													
	100	295													
	125	345													
	160	415													
	200	495													
	250	595													
	300	695													
24 000	25	160	3	5	8	67	13	18	2,5	45	75	70	M8	40	4
	50	210													
	80	270													
	100	310													
	125	360													
	160	430													
	200	510													
	250	610													
	300	710													

Table 2 *(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
42 000	25	170	3	5	8	87	13	21	2,5	60	95	90	M8	60	4
	50	220													
	80	280													
	100	320													
	125	370													
	160	440													
	200	520													
	250	620													
	300	720													
66 000	25	190	3	5	8	112	16	22,5	2,5	75	120	115	M10	80	4
	50	240													
	80	300													
	100	340													
	125	390													
	160	460													
	200	540													
	250	640													
	300	740													
95 000	25	205	3	5	8	142	16	24,5	2,5	90	150	145	M10	100	4
	50	255													
	80	315													
	100	355													
	125	405													
	160	475													
	200	555													
	250	655													
	300	755													
200 000	50	260	3	8	8	187	16	30,5	2,5	130	195	190	M12	120	4
	80	320													
	100	360													
	125	410													
	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;

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 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.

8 Designation

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

— “Gas spring”;

— reference to this document, i.e. ISO 11901-4;

— the type;

— the nominal stroke, in millimetres.

EXAMPLE A gas spring of type 24 000, nominal stroke of 25 mm is designated as follows:

Gas spring ISO 11901-4 - 24 000 × 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.

(*Continued from second cover*)

In this adopted standard, reference appears to certain International Standards for which IndianStandards 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 with ISO 7-l : 1994
ISO 2768-1 General tolerances Part 1: Tolerances for linear and angular dimensions without individual tolerance indications	IS 2102 (Part 1) : 1993 General tolerances: Part 1 Tolerances for linear and angular dimensions without individual tolerance indications (Third Revision)	Identical with ISO 2768-1 : 1989

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 (revised).’ The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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.

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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