INTERNATIONAL STANDARD

ISO 15552

First edition
2004-02-01

Pneumatic fluid power — Cylinders with detachable mountings, 1 000 kPa (10 bar) series, bores from 32 mm to 320 mm — Basic, mounting and accessories dimensions

Transmissions pneumatiques — Vérins avec fixations détachables, série 1 000 kPa, alésages de 32 mm à 320 mm — Dimensions de base, des fixations et des accessoires

Reference number
ISO 15552:2004(E)

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Published in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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.

ISO 15552 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 3, *Cylinders*.

This first edition of ISO 15552 cancels and replaces ISO 6431:1992.

Introduction

In pneumatic fluid power systems, power is transmitted and controlled through a gas under pressure within a circuit.

One component of such systems is the pneumatic cylinder. This is a device which converts power into linear mechanical force and motion. It consists of a movable element, i.e. a piston, and a piston rod, operating within a cylindrical bore.

To enable them to be fastened to user mechanisms, pneumatic cylinders comprise in addition some devices called “mountings”.

Pneumatic fluid power — Cylinders with detachable mountings, 1 000 kPa (10 bar) series, bores from 32 mm to 320 mm — Basic, mounting and accessories dimensions

1 Scope

This International Standard established a metric series of basic, mounting and accessories dimensions as required for interchangeability of single- or double-rod pneumatic cylinders, with or without provision for magnetic sensors for a maximum rated pressure of 1 000 kPa (10 bar).

It is applicable to pneumatic cylinders with detachable mountings.

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 273, *Fasteners — Clearance holes for bolts and screws*

ISO 3320, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series*

ISO 4393, *Fluid power systems and components — Cylinders — Basic series of piston strokes*

ISO 4395, *Fluid power systems and components — Cylinders — Piston rod thread dimensions and types*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 6099, *Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types*

ISO 16030, *Pneumatic fluid power — Connections — Ports and stud ends*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 apply.

4 Dimensions

4.1 Basic dimensions

The basic dimensions are given in Tables 1 and 2 and shown in Figures 1 and 2.

4.2 Mounting dimensions

The mounting dimensions are given in Tables 3 to 8 and shown in Figures 3 to 8.

NOTE The sign + after letters means that the stroke is to be added to the actual dimension.

4.3 Accessories dimensions

The accessories dimensions are given in Tables 9 to 13 and shown in Figures 9 to 13.

NOTE The tolerances of dimensions dependent on stroke included in the tables apply for strokes up to and including 1 250 mm. If strokes are longer than 1 250 mm, tolerances should be selected from national standards or by agreement between the manufacturer and user.

5 Nominal stroke

5.1 The nominal strokes shall be selected from the recommended values given in ISO 4393; they are shown in Figure 14.

5.2 The nominal stroke tolerances are given in Table 14.

6 Bore sizes

Included in this series are the following bore sizes AL, in millimetres, in accordance with ISO 3320:

32 – 40 – 50 – 63 – 80 – 100 – 125 – 160 – 200 – 250 – 320

7 Mounting types

This International Standard includes the following mounting types as described in ISO 6099:

— MF1 Head with rectangular flange (see Table 3, Figure 3);

— MF2 Cap with rectangular flange (see Table 3, Figure 3);

— MP2 Cap with detachable clevis (see Table 4, Figure 4);

— MP4 Cap with detachable eye (see Table 5, Figure 5);

— MP6 Cap with detachable eye with spherical bearing (see Table 6, Figure 6);

— MS1 End angles (see Table 7, Figure 7);

— MT4 Intermediate fixed or movable trunnion (see Table 8, Figure 8).

8 Accessory types

This International Standard includes the following accessory types as described in ISO 6099:

— AA4 Pivot pin, plain (see Table 9, Figure 9);

— AA6 Pivot pin, spherical bearing (see Table 10, Figure 10);

— AB6 Clevis bracket, spherical eye, straight (see Table 11, Figure 11);

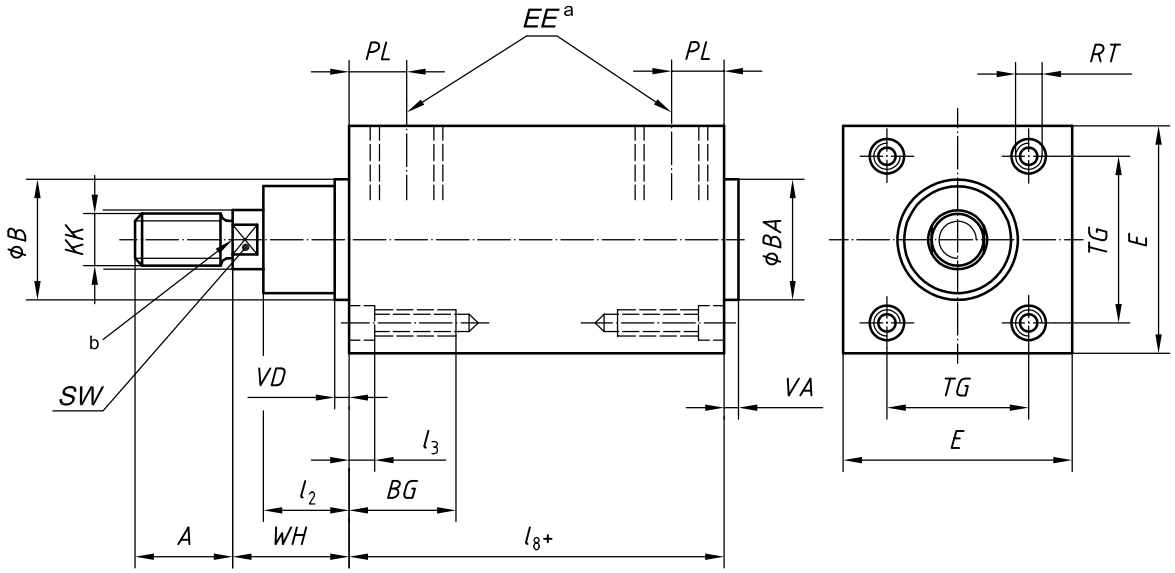
— AB7 Eye bracket, in angle (see Table 12, Figure 12);

— AT4 Trunnion bracket (see Table 13, Figure 13).

9 Identification statement (Reference to this International Standard)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this International Standard:

"Basic, mounting and accessories dimensions of pneumatic cylinders conform to ISO 15552:2004, *Pneumatic fluid power — Cylinders with detachable mountings, 1 000 kPa (10 bar) series, bores from 32 mm to 320 mm — Basic, mounting and accessories dimensions.*"



The cushion adjusting screw is placed on the same side as the port connection. The connecting port and the cushion adjusting screw shall be located within dimension *E*.

a *EE* conforms to ISO 16030.

b TRP (theoretical reference point).

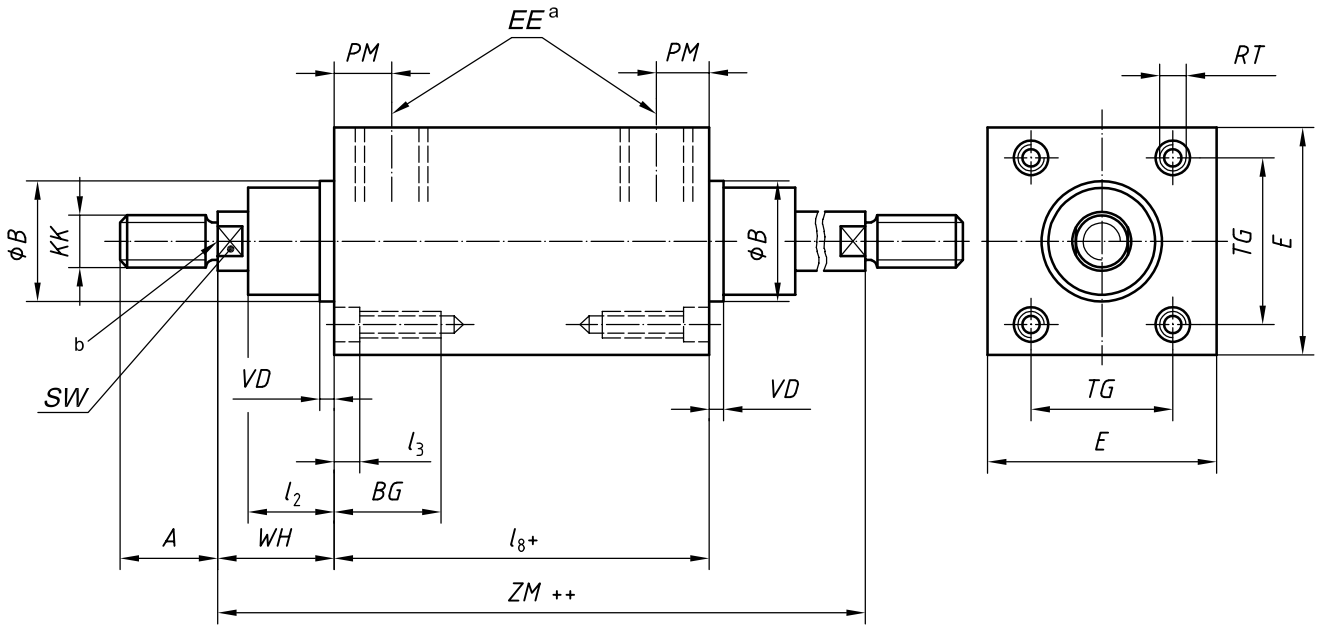
Figure 1 — Basic dimensions — Single rod cylinder

Table 1 — Basic dimensions — Single rod cylinder

Dimensions in millimetres

AL	*A* $^{0}_{-2}$	*B* *BA* d11	*BG* min.	*E* max.	*KK*[a]	l_2 nom.	l_2 tol.	l_3 max.	l_8 nom.	l_8 tol.	*PL* min.	*RT*	*SW*	*TG* nom.	*TG* tol.	*VA* $^{0}_{-1}$	*VD.* min.	*WH* nom.	*WH* tol.
32	22	30	16	50	M10 × 1,25	20	$^{0}_{-5}$	5	94	± 0,4	13	M6	10	32,5	± 0,5	4	4	26	± 1,4
40	24	35	16	58	M12 × 1,25	22		5	105	± 0,7	14	M6	13	38	± 0,5	4	4	30	± 1,4
50	32	40	16	70	M 16 × 1,5	29		5	106	± 0,7	14	M8	17	46,5	± 0,6	4	4	37	± 1,4
63	32	45	16	85	M16 × 1,5	29		5	121	± 0,8	16	M8	17	56,5	± 0,7	4	4	37	± 1,8
80	40	45	17	105	M20 × 1,5	35		0	128	± 0,8	16	M10	22	72	± 0,7	4	4	46	± 1,8
100	40	55	17	130	M20 × 1,5	38		0	138	± 1	18	M10	22	89	± 0,7	4	4	51	± 1,8
125	54	60	20	157	M27 × 2	50	$^{0}_{-10}$	0	160	± 1	18	M12	27	110	± 1,1	6	6	65	± 2,2
160	72	65	24	195	M36 × 2	60		0	180	± 1,1	25	M16	36	140	± 1,1	6	6	80	± 2,2
200	72	75	24	238	M36 × 2	70	$^{0}_{-15}$	0	180	± 1,6	25	M16	36	175	± 1,1	6	6	95	± 2,2
250	84	90	25	290	M42 × 2	80		0	200	± 1,6	31	M20	46	220	± 1,5	10	10	105	± 2,2
320	96	110	28	353	M48 × 2	90		0	220	± 2,2	31	M24	55	270	± 1,5	10	10	120	± 2,2

a According to ISO 4395.



The cushion adjusting screw is placed on the same side as the port connection. The connecting port and the cushion adjusting screw shall be located within dimension *E*.

a *EE* conforms to ISO 16030.

b TRP (theoretical reference point).

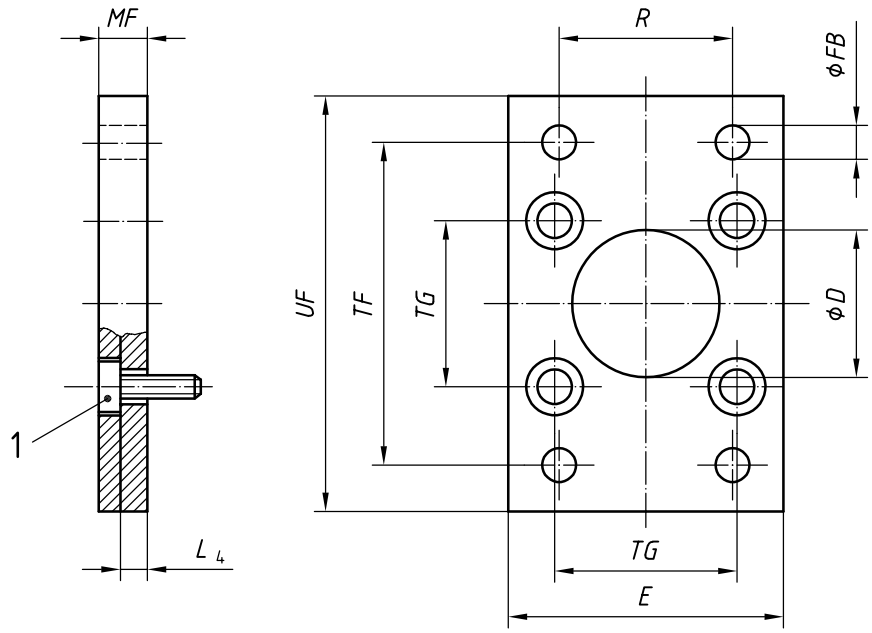
Figure 2 — Basic dimensions — Double-rod cylinder

Table 2 — Basic dimensions — Double-rod cylinder

Dimensions in millimetres

AL	*A* $^{0}_{-2}$	*B* d11	*BG* min.	*E* max.	*KK*[a]	l_2 nom.	l_2 tol.	l_3 max.	l_8 nom.	l_8 tol.	*PM* min.	*RT*	*SW*	*TG* nom.	*TG* tol.	*VD* min.	*WH* nom.	*WH* tol.	*ZM* nom.	*ZM* tol.
32	22	30	16	50	M10 × 1,25	20	$^{0}_{-5}$	5	94	± 0,4	13	M6	10	32,5	± 0,5	4	26	± 1,4	146	$^{+3,0}_{-1,5}$
40	24	35	16	58	M12 × 1,25	22		5	105	± 0,7	14	M6	13	38	± 0,5	4	30	± 1,4	165	
50	32	40	16	70	M16 × 1,5	29		5	106	± 0,7	14	M8	17	46,5	± 0,6	4	37	± 1,4	180	
63	32	45	16	85	M16 × 1,5	29		5	121	± 0,8	16	M8	17	56,5	± 0,7	4	37	± 1,8	195	
80	40	45	17	105	M20 × 1,5	35		0	128	± 0,8	16	M10	22	72	± 0,7	4	46	± 1,8	220	
100	40	55	17	130	M20 × 1,5	38		0	138	± 1	18	M10	22	89	± 0,7	4	51	± 1,8	240	$^{+3,5}_{-2,0}$
125	54	60	20	157	M27 × 2	50	$^{0}_{-10}$	0	160	± 1	18	M12	27	110	± 1,1	6	65	± 2,2	290	
160	72	65	24	195	M36 × 2	60		0	180	± 1,1	25	M16	36	140	± 1,1	6	80	± 2,2	340	
200	72	75	24	238	M36 × 2	70	$^{0}_{-15}$	0	180	± 1,6	25	M16	36	175	± 1,1	6	95	± 2,2	370	$^{+4,0}_{-2,5}$
250	84	90	25	290	M42 × 2	80		0	200	±1,6	31	M20	46	220	± 1,5	10	105	± 2,2	410	
320	96	110	28	353	M48 × 2	90		0	220	± 2,2	31	M24	55	270	± 1,5	10	120	± 2,2	460	

a According to ISO 4395.



Key

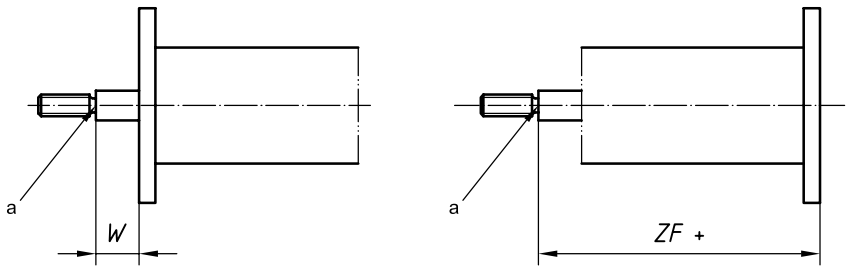
1 cap screw

Figure 3 — Head, rectangular flange (MF1) and cap, rectangular flange (MF2)

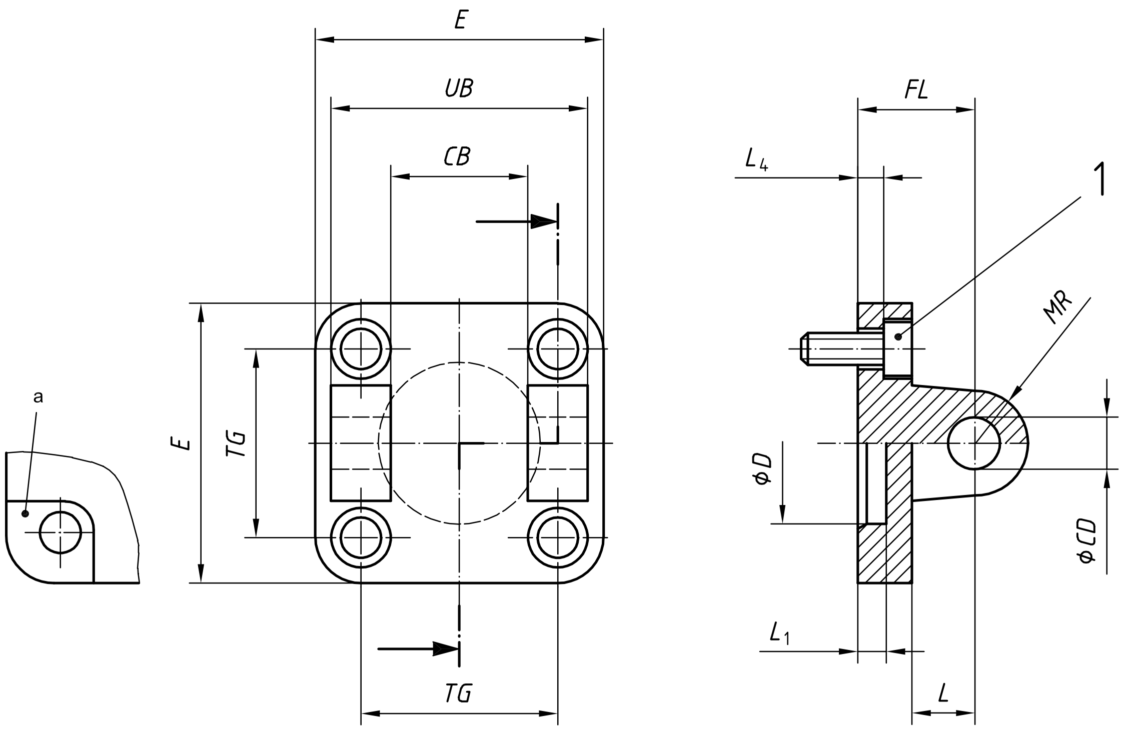
Table 3 — Dimensions of head and cap, rectangular flange (MF1 – MF2)

Dimensions in millimetres

AL	*D*	*FB*	*TG*		*E*	*R*	*MF*	*TF*	*UF*	L_4	Cap screw size	*W*		*ZF*	
	H11	H13	nom.	tol.	max.	JS14	JS14	JS14	max.	$^{0}_{-0,5}$		nom.	tol.	nom.	tol.
32	30	7	32,5	± 0,2	50	32	10	64	86	5	M6 × 20	16		130	
40	35	9	38	± 0,2	58	36	10	72	96	5	M6 × 20	20	± 1,6	145	± 1,25
50	40	9	46,5	± 0,2	70	45	12	90	115	6,5	M8 × 20	25		155	
63	45	9	56,5	± 0,2	85	50	12	100	130	6,5	M8 × 20	25		170	
80	45	12	72	± 0,2	105	63	16	126	165	9	M10 × 25	30	± 2	190	± 1,6
100	55	14	89	± 0,2	130	75	16	150	187	9	M10 × 25	35		205	
125	60	16	110	± 0,3	157	90	20	180	224	10,5	M12 × 25	45		245	
160	65	18	140	± 0,3	195	115	20	230	280	9,5	M16 × 30	60		280	± 2
200	75	22	175	± 0,3	238	135	25	270	320	12,5	M16 × 30	70	± 2,5	300	
250	90	26	220	± 0,3	290	165	25	330	395	10,5	M20 × 30	80		330	
320	110	33	270	± 0,3	353	200	30	400	475	15	M24 × 40	90		370	± 2,5



[a] TRP.



Key

1 cap screw

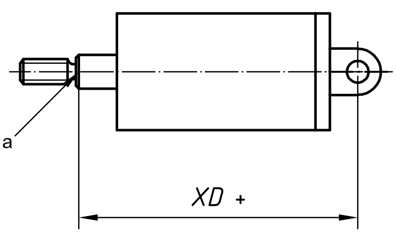
a Optional open counterbore.

Figure 4 — Cap, detachable clevis (MP2)

Table 4 — Dimensions of cap, detachable clevis (MP2)

Dimensions in millimetres

AL	*E*	*UB*	*CB*	*TG*		*FL*	L_1	*L*	L_4	*D*	*CD*	*MR*	Cap screw size	*XD*	
	max.	h14	H14	nom.	tol.	± 0,2	min.	min.	± 0,5	H11	H9	max.		nom	tol
32	50	45	26	32,5	± 0,2	22	4,5	12	5,5	30	10	11	M6 × 20	142	± 1,25
40	58	52	28	38		25	4,5	15	5,5	35	12	13	M6 × 20	160	
50	70	60	32	46,5		27	4,5	15	6,5	40	12	13	M8 × 20	170	
63	85	70	40	56,5		32	4,5	20	6,5	45	16	17	M8 × 20	190	± 1,6
80	105	90	50	72		36	4,5	20	10	45	16	17	M10 × 25	210	
100	130	110	60	89		41	4,5	25	10	55	20	21	M10 × 25	230	
125	157	130	70	110	± 0,3	50	7	30	10	60	25	26	M12 × 25	275	± 2
160	195	170	90	140		55	7	35	10	65	30	31	M16 × 30	315	
200	238	170	90	175		60	7	35	11	75	30	31	M16 × 30	335	
250	290	200	110	220		70	11	45	11	90	40	41	M20 × 35	375	
320	353	220	120	270		80	11	50	15	110	45	46	M24 × 40	420	± 2,5



a TRP.