
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



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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.

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”.

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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:

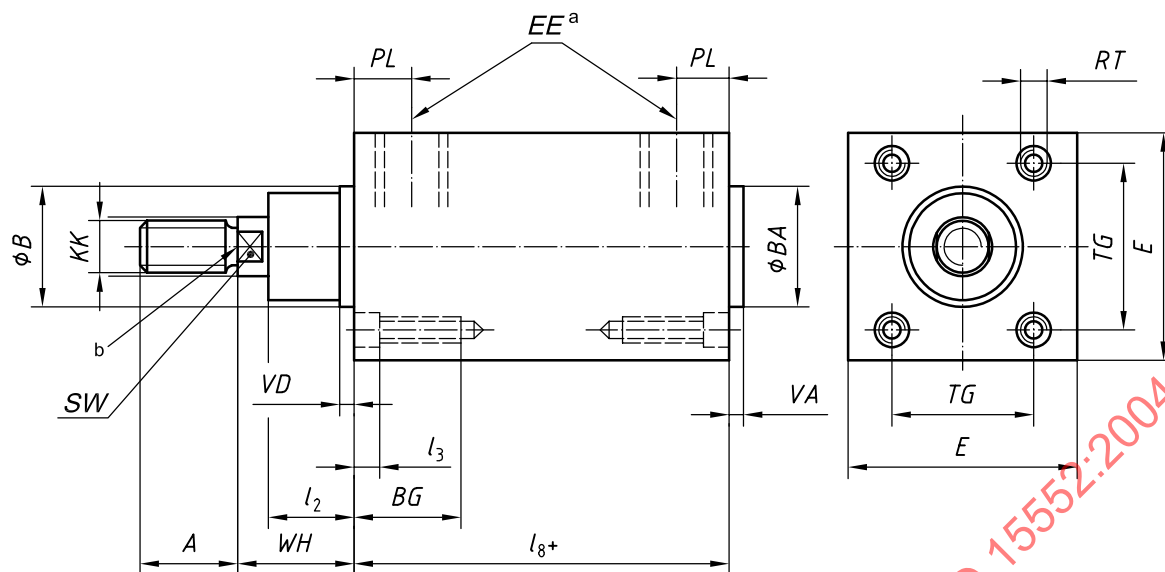
- AA4 Pivot pin, plain (see Table 9, Figure 9);
- AA6 Pivot pin, spherical bearing (see Table 10, Figure 10);

- 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).

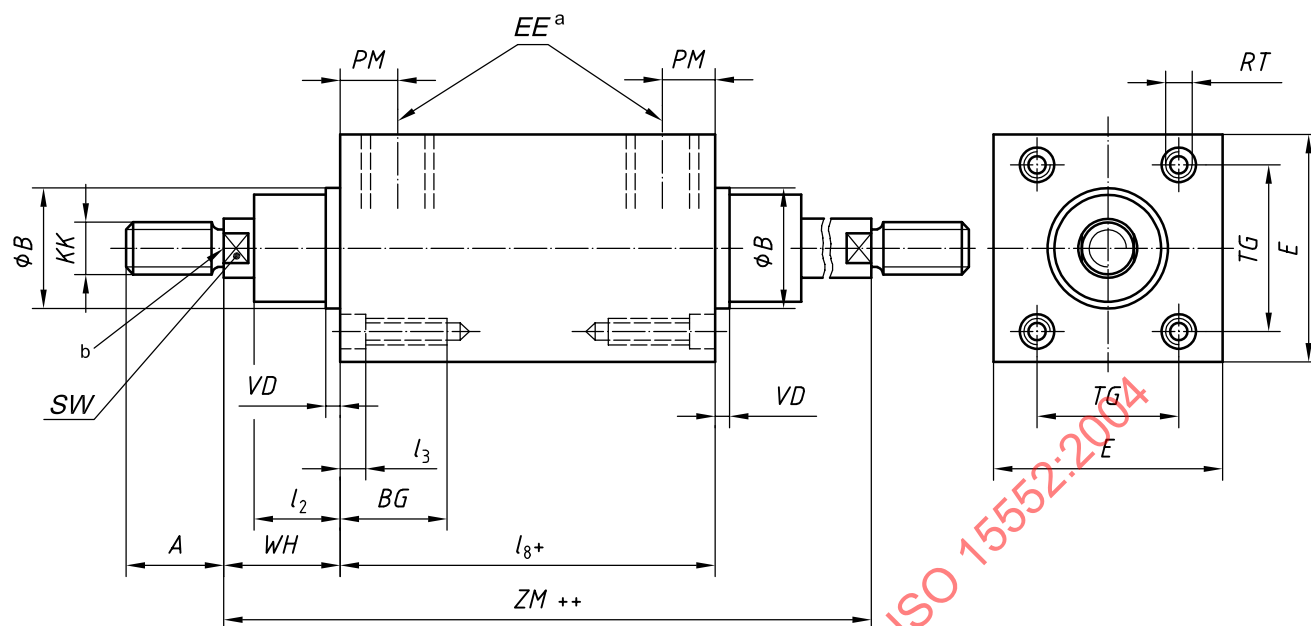
Figure 1 — Basic dimensions — Single rod cylinder

Table 1 — Basic dimensions — Single rod cylinder

Dimensions in millimetres

AL	A	B BA	BG	E	KK^a	l_2		l_3	l_8		PL	RT	SW	TG		VA	VD	WH	
	$\begin{smallmatrix} 0 \\ -2 \end{smallmatrix}$	d11	min.	max.		nom.	tol.	max.	nom.	tol.	min.			nom.	tol.	$\begin{smallmatrix} 0 \\ -1 \end{smallmatrix}$	min.	nom.	tol.
32	22	30	16	50	M10 × 1,25	20	$\begin{smallmatrix} 0 \\ -5 \end{smallmatrix}$	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	$\begin{smallmatrix} 0 \\ -10 \end{smallmatrix}$	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	$\begin{smallmatrix} 0 \\ -15 \end{smallmatrix}$	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).

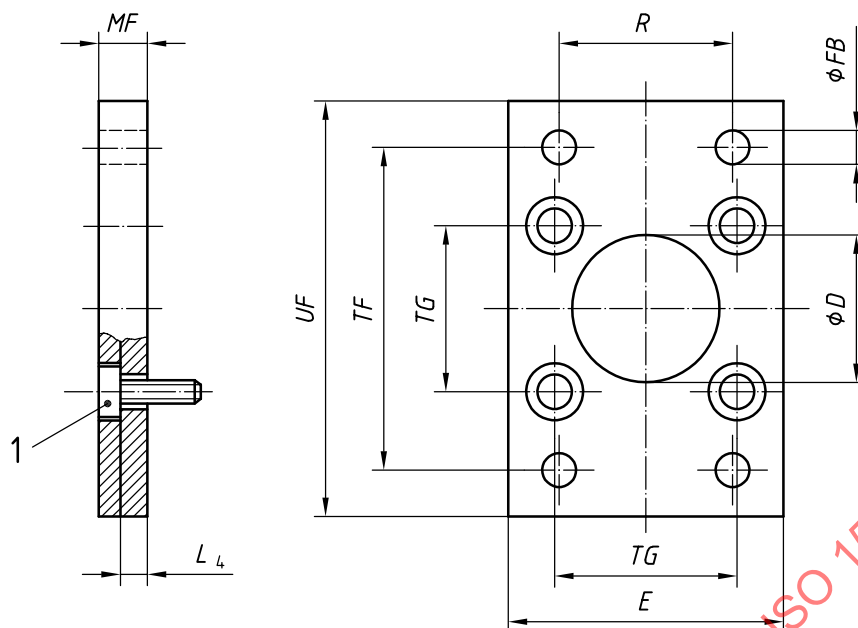
Figure 2 — Basic dimensions — Double-rod cylinder

Table 2 — Basic dimensions — Double-rod cylinder

Dimensions in millimetres

AL	A 0 -2	B d11	BG min.	E max.	KK ^b	l_2		l_3 max.	l_8		PM min.	RT	SW	TG		VD min.	WH		ZM	
						nom.	tol.		nom.	tol.				nom.	tol.		nom.	tol.	nom.	tol.
32	22	30	16	50	M10 × 1,25	20		5	94	± 0,4	13	M6	10	32,5	± 0,5	4	26	± 1,4	146	
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	+3,0 -1,5
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	
125	54	60	20	157	M27 × 2	50		0	160	± 1	18	M12	27	110	± 1,1	6	65	± 2,2	290	+3,5 -2,0
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	180	± 1,6	25	M16	36	175	± 1,1	6	95	± 2,2	370	
250	84	90	25	290	M42 × 2	80		0	200	± 1,6	31	M20	46	220	± 1,5	10	105	± 2,2	410	+4,0 -2,5
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

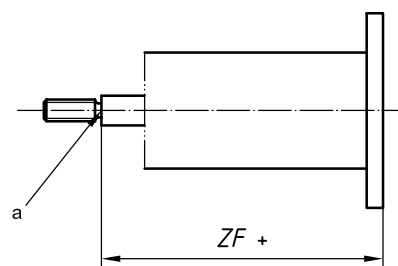
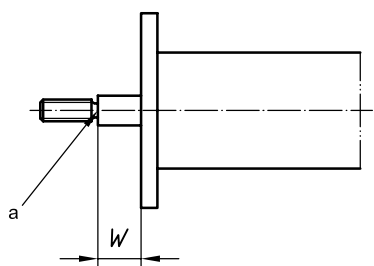
1 cap screw

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

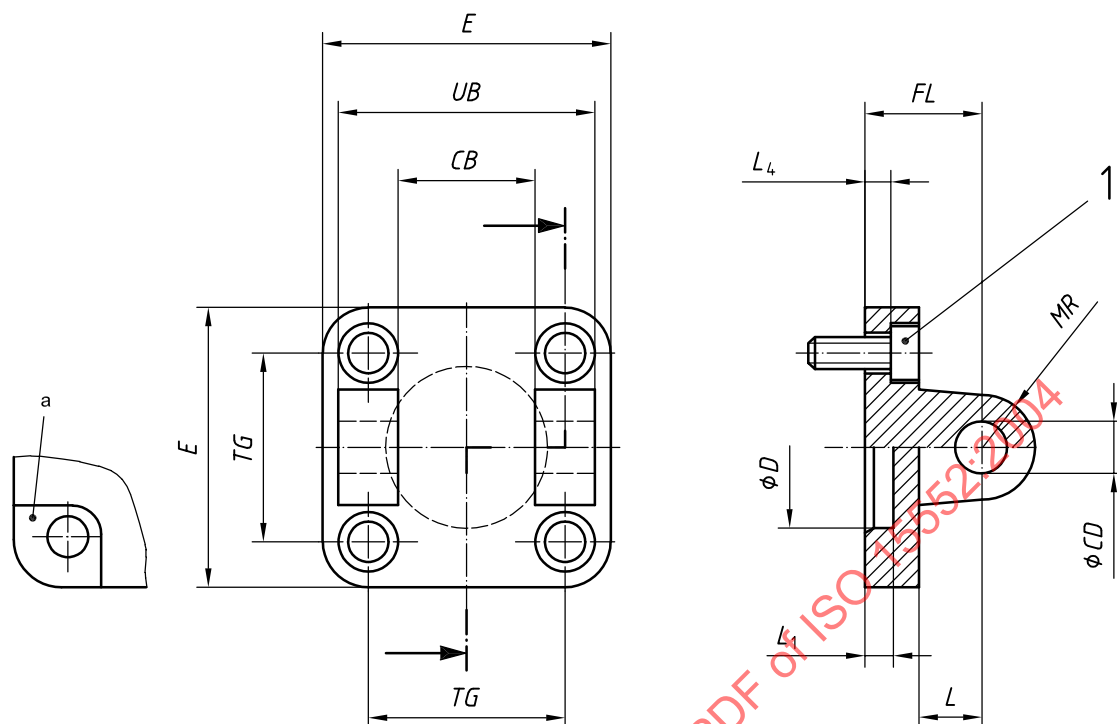
Table 3 — Dimensions of head and cap, rectangular flange (MF1 – MF2)

Dimensions in millimetres

AL	D H11	FB H13	TG		E max.	R JS14	MF JS14	TF JS14	UF max.	L ₄ 0 -0,5	Cap screw size	W		ZF	
			nom.	tol.								nom.	tol.	nom.	tol.
32	30	7	32,5	± 0,2	50	32	10	64	86	5	M6 × 20	16	± 1,6	130	± 1,25
40	35	9	38	± 0,2	58	36	10	72	96	5	M6 × 20	20		145	
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	± 2	170	± 1,6
80	45	12	72	± 0,2	105	63	16	126	165	9	M10 × 25	30		190	
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	± 2,5	245	± 2
160	65	18	140	± 0,3	195	115	20	230	280	9,5	M16 × 30	60		280	
200	75	22	175	± 0,3	238	135	25	270	320	12,5	M16 × 30	70		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**

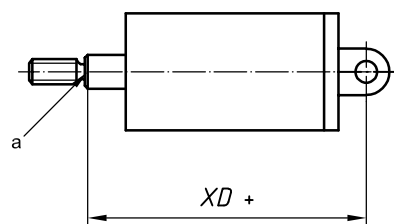
1 cap screw

a Optional open counterbore.

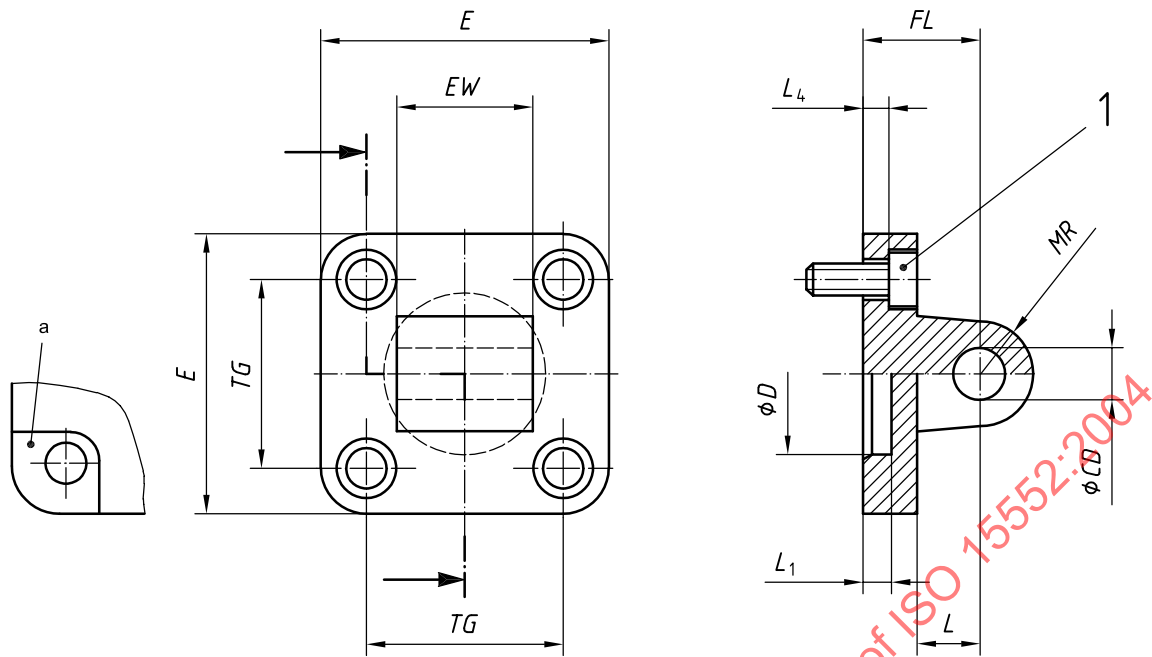
Figure 4 — Cap, detachable clevis (MP2)**Table 4 — Dimensions of cap, detachable clevis (MP2)**

Dimensions in millimetres

<i>AL</i>	<i>E</i> max.	<i>UB</i> h14	<i>CB</i> H14	<i>TG</i> nom.	<i>TG</i> tol.	<i>FL</i> ± 0,2	<i>L</i> ₁ min.	<i>L</i> min.	<i>L</i> ₄ ± 0,5	<i>D</i> H11	<i>CD</i> H9	<i>MR</i> max.	Cap screw size	<i>XD</i> nom	<i>XD</i> 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	± 0,3	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		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	± 2,5
320	353	220	120	270		80	11	50	15	110	45	46	M24 × 40	420	



a TRP.



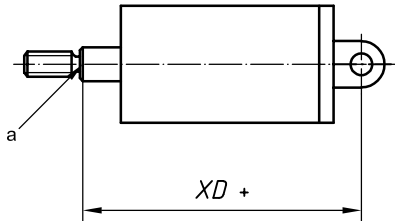
- Key**
- 1 cap screw
 - a Optional open counterbore.

Figure 5 — Cap, detachable eye (MP4)

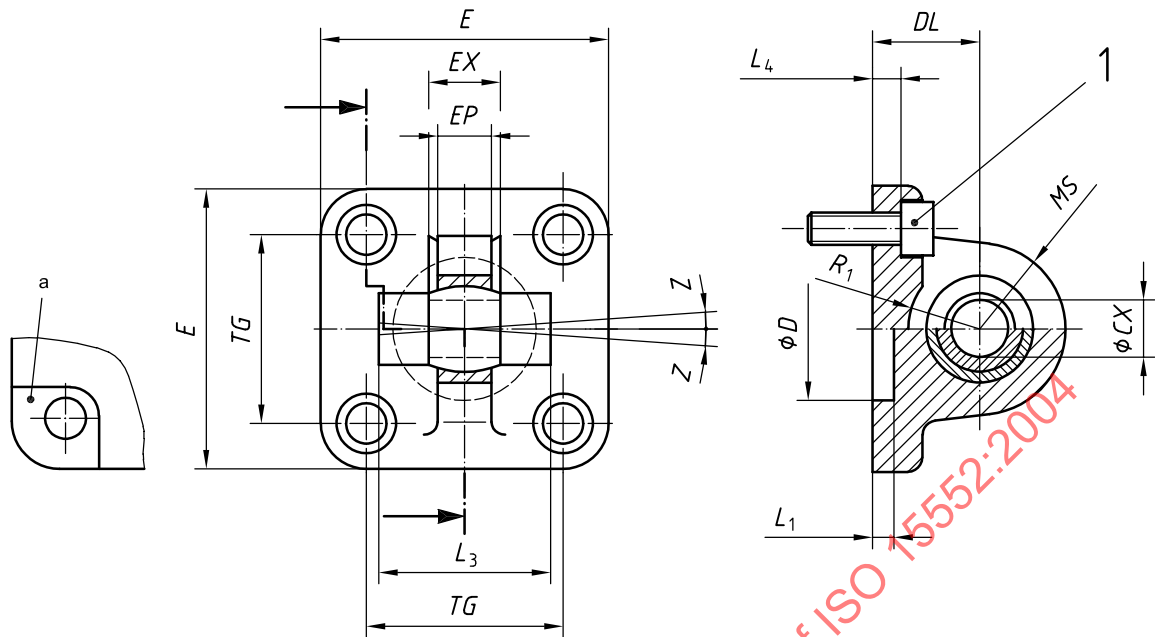
Table 5 — Dimensions of cap, detachable eye (MP4)

Dimensions in millimetres

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



a TRP.

**Key**

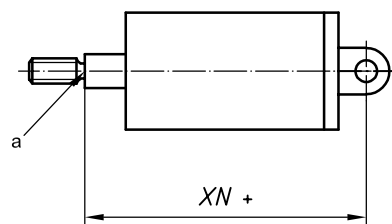
1 cap screw

a Optional open counterbore.

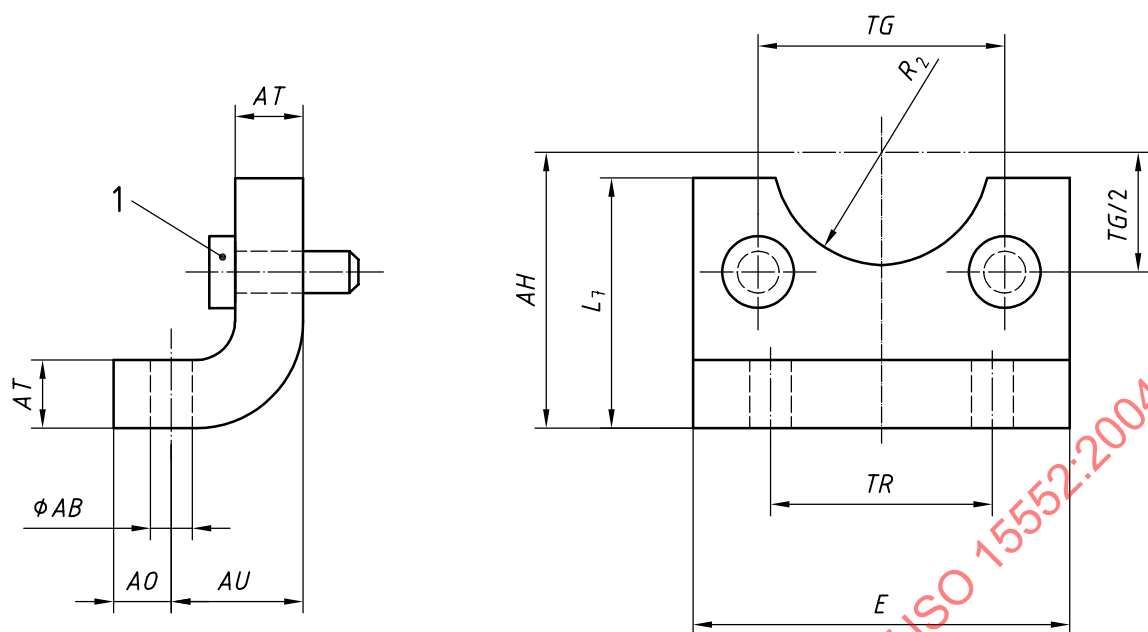
Figure 6 — Cap, detachable eye with spherical bearing (MP6)**Table 6 — Dimensions of cap, detachable eye with spherical bearing (MP6)**

Dimensions in millimetres

<i>AL</i>	<i>CX</i> H7	<i>E</i> max.	<i>EX</i> ± 0,1	<i>MS</i> max.	<i>EP</i> max.	<i>DL</i> ± 0,2	<i>R</i> ₁ min.	<i>TG</i> nom. tol.	<i>D</i> H11	<i>L</i> ₁ min.	<i>L</i> ₃ min.	<i>L</i> ₄ ± 0,5	Cap screw size	<i>XN</i> nom. tol.	<i>Z</i> min.
32	10	50	14	18	10,5	22	12	32,5 ± 0,2	30	4,5	36	5,5	M6 × 20	142	4°
40	12	58	16	18	12	25	14	38 ± 0,2	35	4,5	42	5,5	M6 × 20	160	
50	16	70	21	21	15	27	19	46,5 ± 0,2	40	4,5	48	6,5	M8 × 20	170	
63	16	85	21	23	15	32	19	56,5 ± 0,2	45	4,5	55	6,5	M8 × 20	190	
80	20	105	25	28	18	36	24	72 ± 0,2	45	4,5	70	10	M10 × 25	210	
100	20	130	25	30	18	41	24	89 ± 0,2	55	4,5	80	10	M10 × 25	230	
125	30	157	37	40	25	50	32	110 ± 0,3	60	7	100	10	M12 × 25	275	
160	35	195	43	44	30	55	38	140 ± 0,3	65	7	125	10	M16 × 30	315	
200	35	238	43	47	30	60	40	175 ± 0,3	75	7	125	11	M16 × 30	335	
250	40	290	49	53	35	70	44	220 ± 0,3	90	11	130	11	M20 × 35	375	
320	50	353	60	63	45	80	54	270 ± 0,3	110	11	160	15	M24 × 40	420	



a TRP.



Key

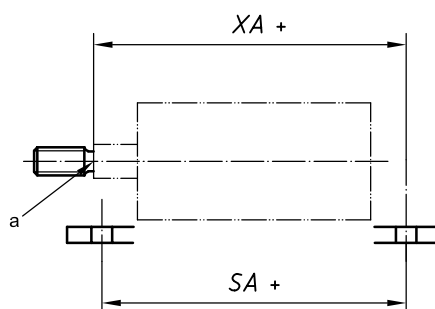
1 cap screw

Figure 7 — End angles (MS1)

Table 7 — Dimensions of end angles (MS1)

Dimensions in millimetres

AL	AB	TG		E	TR	AO	AU	AH	L ₇		AT		R ₂	Cap screw size	SA		XA	
	H14	nom.	tol.	max.	JS14	max.	± 0,2	JS16	nom.	tol.	nom.	tol.	H15		nom.	tol.	nom.	tol.
32	7	32,5	± 0,2	50	32	11	24	32	32	⁰ ₋₁₂	4	± 0,3	15	M6 × 16	142	± 1,25	144	± 1,25
40	10	38		58	36	15	28	36	36	⁰ ₋₁₂	4		17,5	M6 × 16	161		163	
50	10	46,5		70	45	15	32	45	45	⁰ ₋₁₄	5		20	M8 × 20	170		175	
63	10	56,5		85	50	15	32	50	50	⁰ ₋₁₆	5		22,5	M8 × 20	185	± 1,6	190	± 1,6
80	12	72		105	63	20	41	63	63	⁰ ₋₁₉	6	± 0,5	22,5	M10 × 20	210		215	
100	14,5	89	± 0,3	130	75	25	41	71	71	⁰ ₋₂₁	6		27,5	M10 × 20	220	± 2	230	± 2
125	16,5	110		157	90	25	45	90	90	⁰ ₋₂₃	8	± 1	30	M12 × 25	250		270	
160	18,5	140		195	115	25	60	115	115	⁰ ₋₂₆	10		32,5	M16 × 30	300		320	
200	24	175		238	135	35	70	135	135	⁰ ₋₃₁	12		37,5	M16 × 30	320		345	
250	28	220		290	165	40	75	165	165	⁰ ₋₃₈	20		45	M20 × 40	350	± 2,5	380	± 2,5
320	35	270		353	200	45	85	200	200		23		55	M24 × 45	390		425	



a TRP.

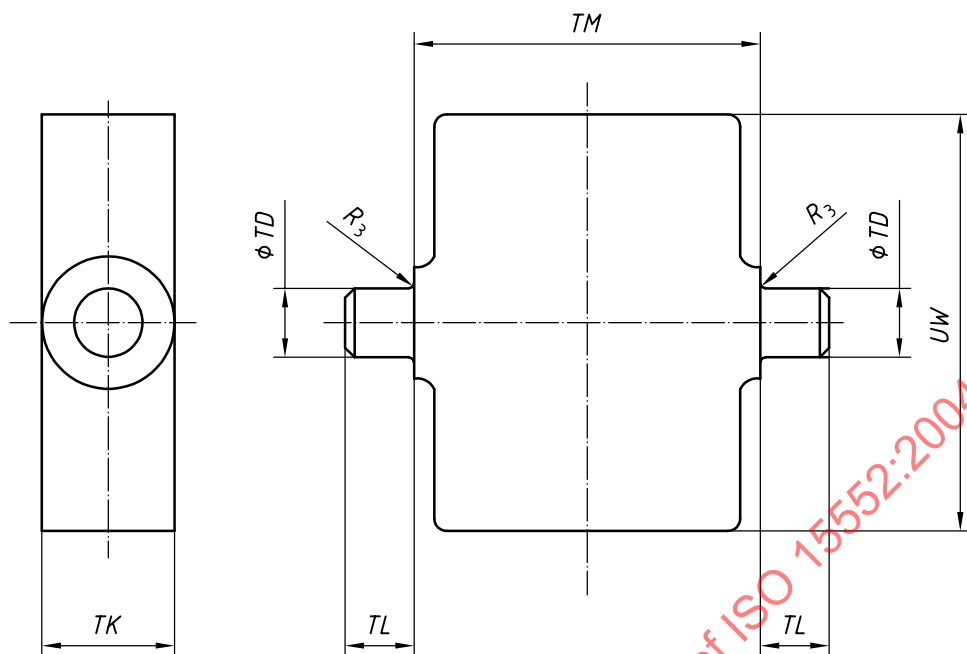
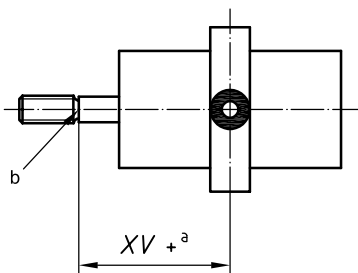


Figure 8 — Intermediate fixed or movable trunnions (male) (MT4)

Table 8 — Dimensions of intermediate fixed or movable trunnions (male) (MT4)

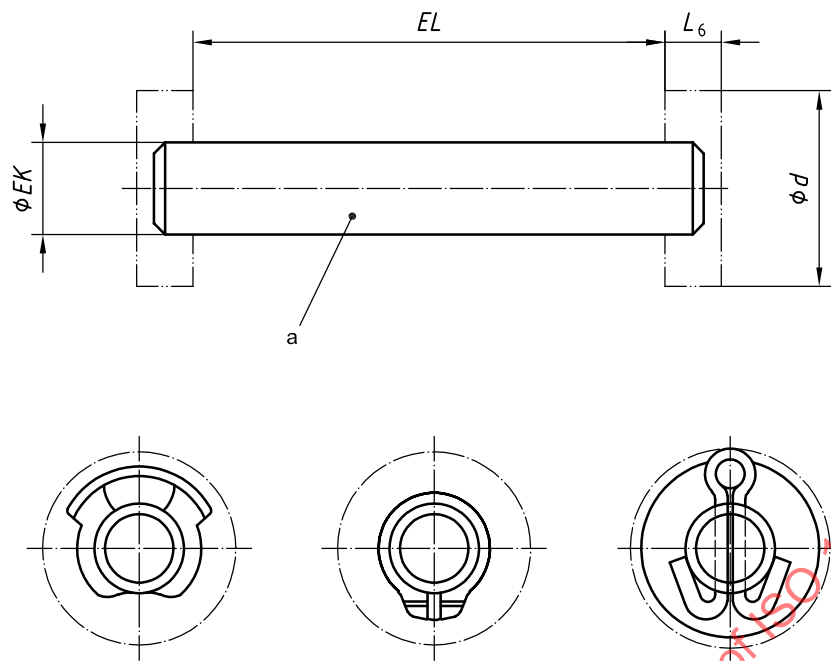
Dimensions in millimetres

<i>AL</i>	<i>TM</i> h14	<i>UW</i> max.	<i>TL</i> h14	<i>TK</i> max.	<i>TD</i> e9	<i>R₃</i> max.	<i>XV</i> min.
32	50	65	12	25	12	1	73
40	63	75	16	28	16	1,6	82,5
50	75	95	16	28	16	1,6	90
63	90	105	20	36	20	1,6	97,5
80	110	130	20	36	20	1,6	110
100	132	145	25	48	25	2	120
125	160	175	25	50	25	2	145
160	200	220	32	50	32	2,5	170
200	250	260	32	50	32	2,5	185
250	320	320	40	60	40	3,2	205
320	400	400	50	70	50	3,2	230



a XV max. = XV min. + stroke

b TRP.



Examples of retaining methods (both ends)

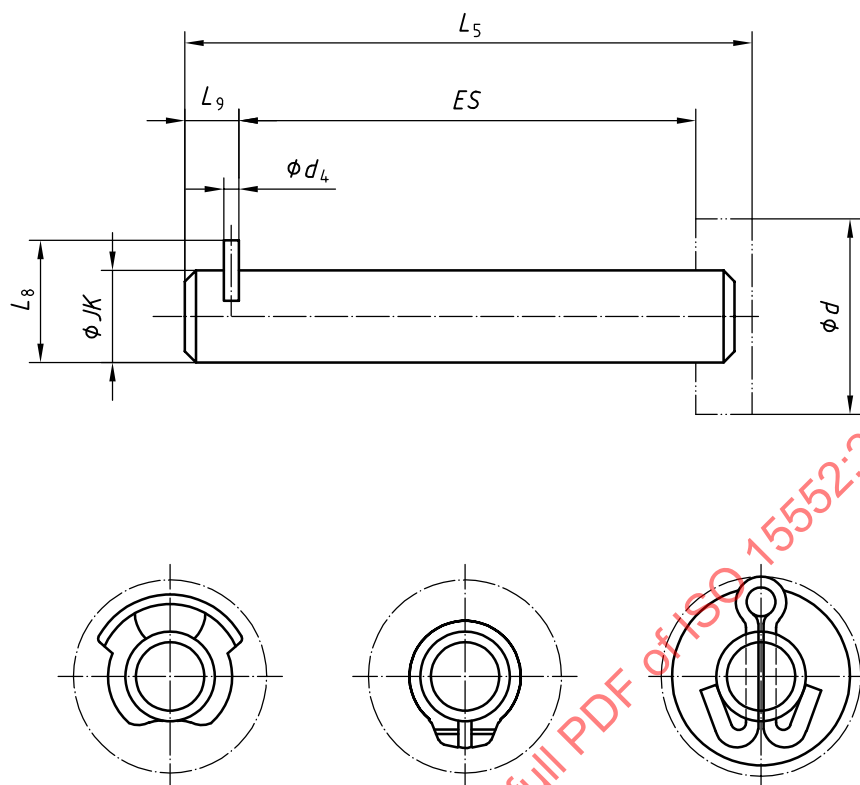
^a This pin is used with MP2, MP4 and AB7 mountings.

Figure 9 — Pivot pin, plain (AA4)

Table 9 — Dimensions of pivot pin, plain (AA4)

Dimensions in millimetres

<i>AL</i>	<i>d</i> max.	<i>EK</i> e8	<i>EL</i>		<i>L₆</i> max.
			nom.	tol.	
32	23	10	46	+2 0	9
40	25	12	53		9
50	25	12	61		9
63	32	16	71		11
80	32	16	91		11
100	40	20	111	+3 0	11
125	50	25	132		11
160	62	30	172		17
200	62	30	172		17
250	72	40	202		22
320	85	45	222		22



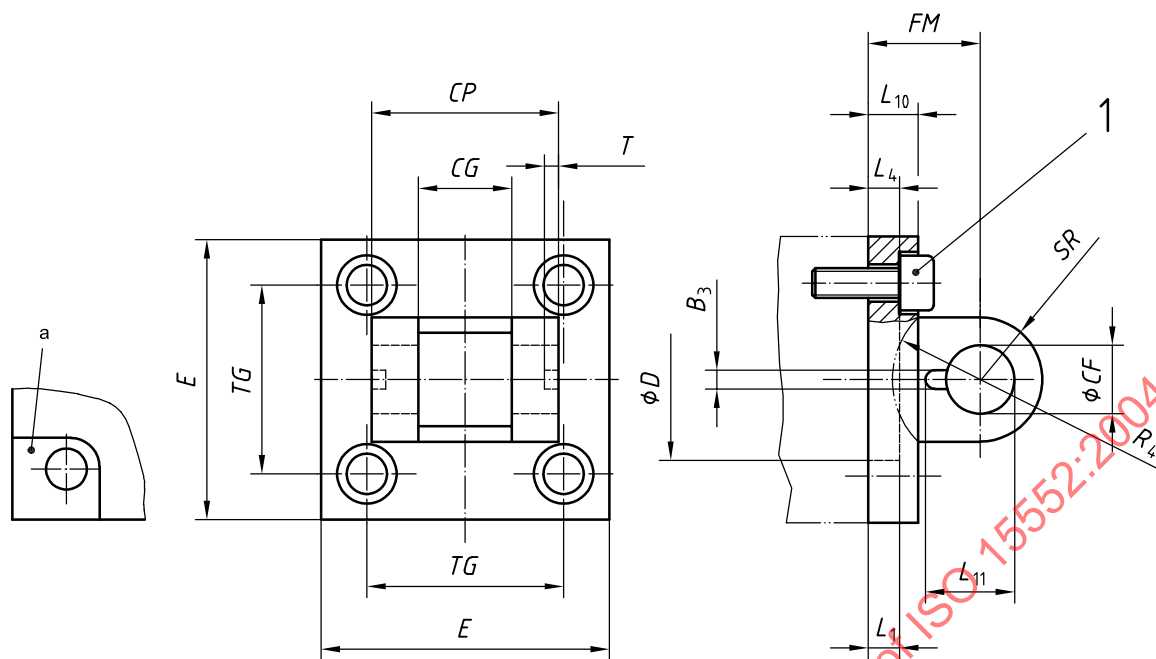
Examples of retaining methods (only for the right-hand side)

Figure 10 — Pivot pin, spherical bearing (AA6)

Table 10 — Dimensions of pivot pin, spherical bearing (AA6)

Dimensions in millimetres

AL	d max.	JK h9	ES nom.	ES tol.	L_5 max.	L_8 JS13	L_9 JS13	d_4 h12
32	23	10	31	+0,2 0	46	14	4,5	3
40	25	12	36		53	16	6	4
50	25	16	41		58	20	6	4
63	32	16	47		66	20	6	4
80	32	20	61		80	24	6	4
100	40	20	71		90	24	6	4
125	50	30	91	+0,3 0	114	36	9	6
160	62	35	116		145	41	9	6
200	62	35	116		145	41	9	6
250	72	40	117		155	48	12	8
320	85	50	142		180	58	12	8



Key

1 cap screw

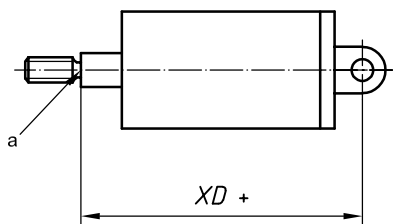
a Optional open counterbore.

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

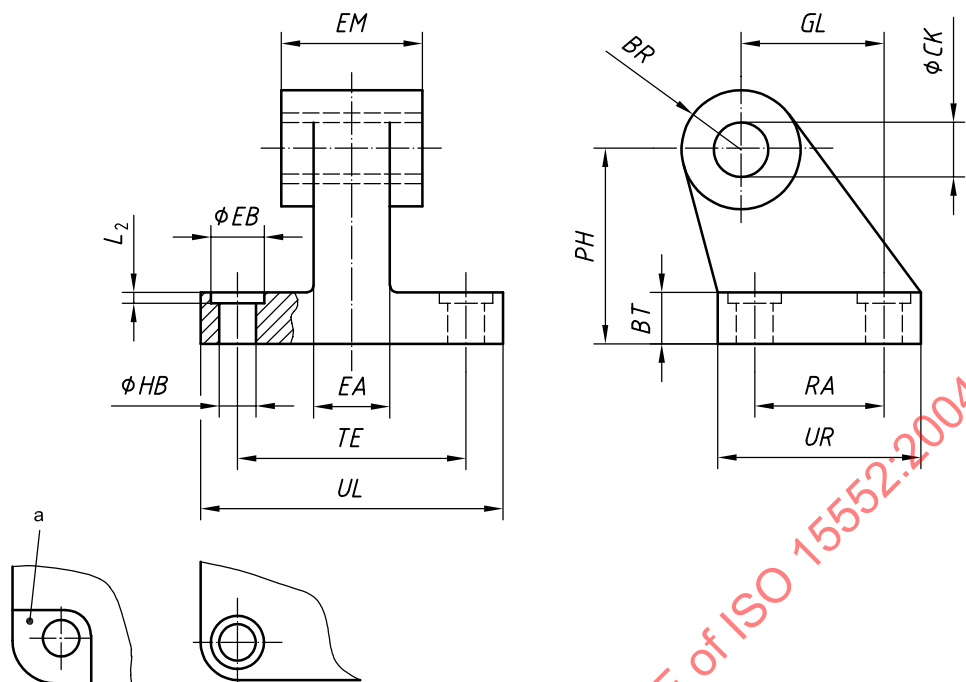
Table 11 — Dimensions of clevis bracket, spherical eye (AB6)

Dimensions in millimetres

AL	B_3 $\pm 0,2$	CF F7	CG D10	CP d12	E max.	FM $\pm 0,2$	SR max.	T $\pm 0,2$	TG nom.	D tol.	H11	L_1 min.	L_4 $\pm 0,5$	L_{10} max.	L_{11} $\begin{smallmatrix} 0 \\ -0,5 \end{smallmatrix}$	R_4	Cap screw size	XD nom.	tol.
32	3,3	10	14	34	50	22	11	3	32,5	$\pm 0,2$	30	4,5	5,5	10	16,5	17	M6 $\times$ 20	142	$\pm 1,25$
40	4,3	12	16	40	58	25	13	4	38	$\pm 0,2$	35	4,5	5,5	10	18	20	M6 $\times$ 20	160	
50	4,3	16	21	45	70	27	18	4	46,5	$\pm 0,2$	40	4,5	6,5	12	23	22	M8 $\times$ 20	170	
63	4,3	16	21	51	85	32	18	4	56,5	$\pm 0,2$	45	4,5	6,5	12	23	25	M8 $\times$ 20	190	$\pm 1,6$
80	4,3	20	25	65	105	36	22	4	72	$\pm 0,2$	45	4,5	10	16	27	30	M10 $\times$ 25	210	
100	4,3	20	25	75	130	41	22	4	89	$\pm 0,2$	55	4,5	10	16	27	32	M10 $\times$ 25	230	
125	6,3	30	37	97	157	50	30	6	110	$\pm 0,3$	60	7	10	20	40	42	M12 $\times$ 25	275	± 2
160	6,3	35	43	122	195	55	36	6	140	$\pm 0,3$	65	7	10	20	45	46	M16 $\times$ 30	315	
200	6,3	35	43	122	238	60	38	6	175	$\pm 0,3$	75	7	11	25	45	49	M16 $\times$ 30	335	
250	8,3	40	49	125	290	70	42	8	220	$\pm 0,3$	90	11	11	25	53	55	M 20 $\times$ 35	375	
320	8,3	50	60	150	353	80	52	8	270	$\pm 0,3$	110	11	15	30	63	65	M 24 $\times$ 40	420	$\pm 2,5$



a TRP.



a Optional open counterbore.

Figure 12 — Eye bracket, in angle (AB7)

Table 12 — Dimensions of eye bracket, in angle (AB7)

Dimensions in millimetres

<i>AL</i>	<i>EB</i> min.	<i>CK</i> H9	<i>HB</i> H13	<i>TE</i> JS14	<i>UL</i> max.	<i>EA</i> max.	<i>GL</i> JS14	<i>L₂</i> max.	<i>RA</i> JS14	<i>EM</i>		<i>UR</i> max.	<i>PH</i> JS15	<i>BT</i>	<i>BR</i> max.
										nom.	tol.				
32	11	10	6,6	38	51	10	21	1,6	18	26	-0,2 -0,6	31	32	8	10
40	11	12	6,6	41	54	12	24	1,6	22	28		35	36	10	11
50	15	12	9	50	65	16	33	1,6	30	32		45	45	12	13
63	15	16	9	52	67	16	37	1,6	35	40		50	50	12	15
80	18	16	11	66	86	20	47	2,5	40	50		60	63	14	15
100	18	20	11	76	96	20	55	2,5	50	60		70	71	15	19
125	20	25	14	94	124	30	70	3,2	60	70	-0,5 -1,5	90	90	20	22,5
160	20	30	14	118	156	36	97	4	88	90		126	115	25	31,5
200	26	30	18	122	162	40	105	4	90	90		130	135	30	31,5
250	33	40	22	150	200	45	128	4,5	110	110		160	165	35	40
320	40	45	26	170	234	55	150	4,5	122	120		186	200	40	45