



IPH_T

An ISO 9001 Company

IPH_T Series 2

Mounting dimensions for single rod cylinders, 16 MPa (160 bar)

IPH_T

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IPH Series 2 establishes metric mounting dimensions for compact series cylinders, 16 MPa [160 bar 1]), as required for interchangeability of commonly-used hydraulic cylinders.

NOTE 1 IPH Series 2 allows manufacturers of hydraulic equipment flexibility in the design of metric cylinders and does not restrict technical development; however, it does provide basic guidelines.

NOTE 2 The compact series dimensions are most applicable to square head cylinders.

References

The following referenced documents are applicable.

Sr No	Reference	Application
1	ISO 1179-1	Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 1: Threaded ports
2	ISO 3320	Fluid power systems and components — Cylinder bores and pistons rod diameters — Metric series
3	ISO 4395	Fluid power systems and components — Cylinders — Piston rod thread dimensions and types
4	ISO 5598	Fluid power systems and components — Vocabulary
5	ISO 6099	Fluid power systems and components — Cylinders — Identification code for mounting dimensions and mounting types
6	ISO 6149-1	Connections for hydraulic fluid power and general use — Ports and stud ends with ISO 261 metric threads and O-ring sealing — Part 1: Ports with truncated housing for O-ring seal
7	ISO 6162-1	Hydraulic fluid power — Flange connectors with split or one-piece flange clamps and metric orinch screws — Part 1: Flange connectors for use at pressures of 3,5 MPa (35 bar) to 35 MPa (350 bar), DN 13 to DN 127
8	ISO 6162-2	Hydraulic fluid power — Flange connectors with split or one-piece flange clamps and metric or inch screws — Part 2: Flange connectors for use at pressures of 35 MPa (350 bar) to 40 MPa (400 bar), DN 13 to DN 51
9	ISO 6164	Hydraulic fluid power — Four-screw, one-piece square-flange connections for use at pressures of 25 MPa and 40 MPa (250 bar and 400 bar)
10	ISO 8132	Hydraulic fluid power — Single rod cylinders, 16 MPa (160 bar) medium and 25 MPa (250 bar) series — Mounting dimensions for accessories

Tolerances for Mounting Dimensions On Stroke & Stroke tolerances

Table 8 — Tolerances for mounting dimensions that are dependent on stroke

Dimensions in millimetres

Code for mounting dimension	ZJ ^a	WF	WC	ZP or ZF ^a	XC, XD, XO or XN ^a	XV	ZB ^a	W	XS	SS ^a	Y	PJ ^a
Nominal stroke	Tolerances											
≤ 1 250	± 1,5	± 2	± 2	± 1,5	± 1,5	± 2	max.	± 2	± 2	± 1,5	± 2	± 1,5
> 1 250 ≤ 3 150	± 3	± 4	± 4	± 3	± 3	± 4		± 4	± 4	± 3	± 4	± 3
> 3 150 ≤ 8 000	± 5	± 8	± 8	± 5	± 5	± 8		± 8	± 8	± 5	± 8	± 5

^a Length including stroke. Stroke tolerances from Table 9 shall not be added to the tolerances in this table.

Table 9 — Tolerances on piston strokes

Dimensions in millimetres

Nominal stroke	Tolerance
≤ 1 250	+2 0
> 1 250 ≤ 3 150	+5 0
> 3 150 ≤ 8 000	+8 0



Technical Information

Sr No	Part	Construction Details
1	Barrel	ST-52, ASTM A-106 Gr. B Flanges are welded, machined and honed to 0.4 micron finish
2	Piston Rod	Made from medium Carbon Steel, ground, hard chrome plated and super finished
3	End Covers	Made from Steel IS 2062, Machined. CNC finish available for quantities
4	Gland	As three options, PB Bush, Cast or made from Steel directly. Bush is inserted for smooth operation of piston rod and for suitable guidance
5	Mounting	Multiple mountings are available and correspond to as per ISO 6020-2
6	Self-Aligning Cushioning Boss	Enable accurate movement inside cushioning chamber at the end of stroke
7	Cushioning Screws	For free adjustment is available as an option
8	Air Bleed	Screw provided for releasing trapped air in cylinder

More Information

Standards: The installation dimensions and mounting types of the cylinders comply with standards ISO 6020-2

Nominal pressure: 160 bar (16 MPa)

Static test pressure: 240 bar (24 MPa)

Higher operating pressures up to 450 bar on request.

Minimum pressure: Depending on the application, a certain minimum pressure is required to ensure proper operation of the cylinder. If no load is applied, we recommend a minimum pressure of 10 bar for single-rod cylinders.

Installation position: Optional

Hydraulic fluid: Mineral oils DIN 51524 (HL, HLP)

Hydraulic fluid temperature range: -20 °C to +80 °C

Ambient temperature range: -20 °C to +80 °C

Viscosity range: 2.8 to 380 mm²/s

Permissible maximum degree of contamination of the hydraulic fluid to ISO 4406 (c) class 20/18/15.

Primer coating: As a standard, hydraulic cylinders are primed with one coating (colour: gentian blue, RAL 5015) in a thickness of max. 80 microns

SEALS

Sr No	Seal Type	Description
1	Piston Seal	Based on ISO 7425-1 and ISO 10766
2	Piston Seal	DAS™ variation for holding power
3	Gland Seal	Dimensions correspond generally to RU3 ISO 5597
4	Wiper	Dimensions correspond generally to ISO 6195. Metallic Wipers available for high temperature (+80C).
5	Static	Nitrile Rubber 'O' Rings

Viton based variations are available for high temperature (> 80 degrees or > 176 Fahrenheit) applications

Bore sizes

IPH Series 2 covers the following bore sizes, expressed in millimetres, in accordance with ISO 3320:1987

25 — 32 — 40 — 50 — 63 — 80 — 100 — 125 — 160 — 200 — 250 — 320 — 400 — 500

NOTE Mounting dimensions for compact hydraulic single rod cylinders with bores from 250 mm to 500 mm are specified in IPH Series 3.

Stroke tolerances

The tolerance on strokes under 1250 mm shall be $^{2}_{0}+$ mm.

Tolerances on strokes > 1250 mm shall be in accordance with the IPH specification or an agreement between the IPH and customer.

Cushioning(Optional)

Cushioned cylinders are used when the piston is required to move heavy loads or travel at high speeds. Under these conditions, the piston will collide with the head and cap causing heavy damage to the piston and the cap/head. To reduce these effects, a resisting force must be built up inside the cylinder to bring the piston to a safe and smooth stop during the last portion of its stroke. Cushions built into the cylinder perform exactly this function.

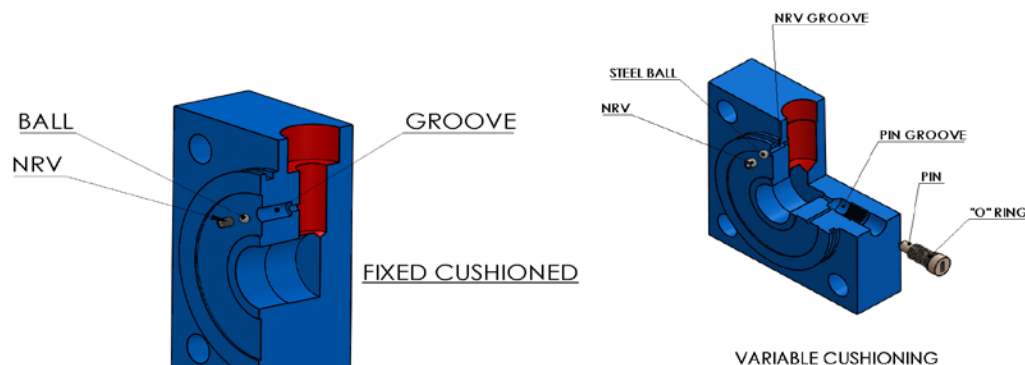
The ability of cylinder to decelerate and stop inertia loads is dependent on : (a) the volume of cushion chamber which is proportional to the length of cushion stroke for a given size of cylinder; (b) pressure developed in cushion chamber; (c) the efficiency with which the fluid is metered.

For normal applications, standard length cushions are sufficient. Where extremely fast moving loads are involved, special cushions are to be devised to bring load to a stop without bounce.

Cushions need not be specified when

1. Light loads are moving at low speeds;
2. external stops are provided thus eliminating the possibility of piston striking the cylinder head and cap;
3. for short stroke (50 mm or less) cylinders, because the short stroke does not allow piston speed to build up enough to sufficiently offset the back pressure built up by the cushion.

Cushioning is available in two variations, Variable and Fixed. Figure below shows construction of Variable Cushioning in IPH Cylinders. The Cushioning pin allows cushioning adjustment

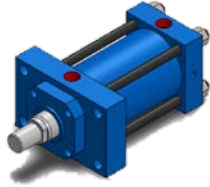
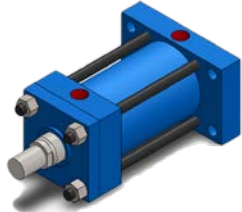
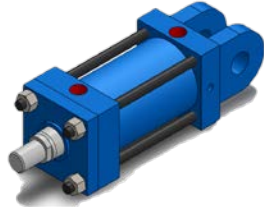
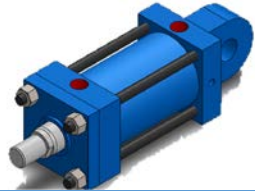
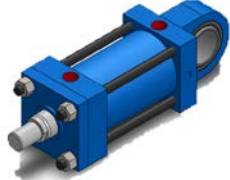
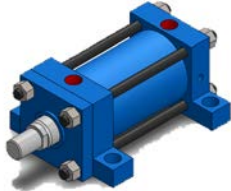


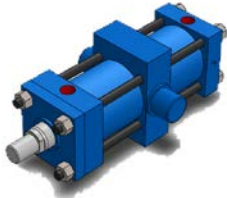

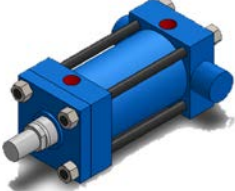

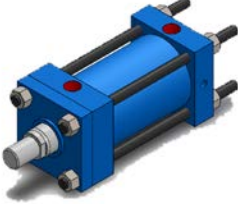
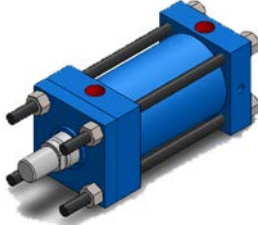
*FIXED CUSHIONING (ABOVE) & VARIABLE CUSHIONING WITH ADJUSTABLE PIN^{*1}*

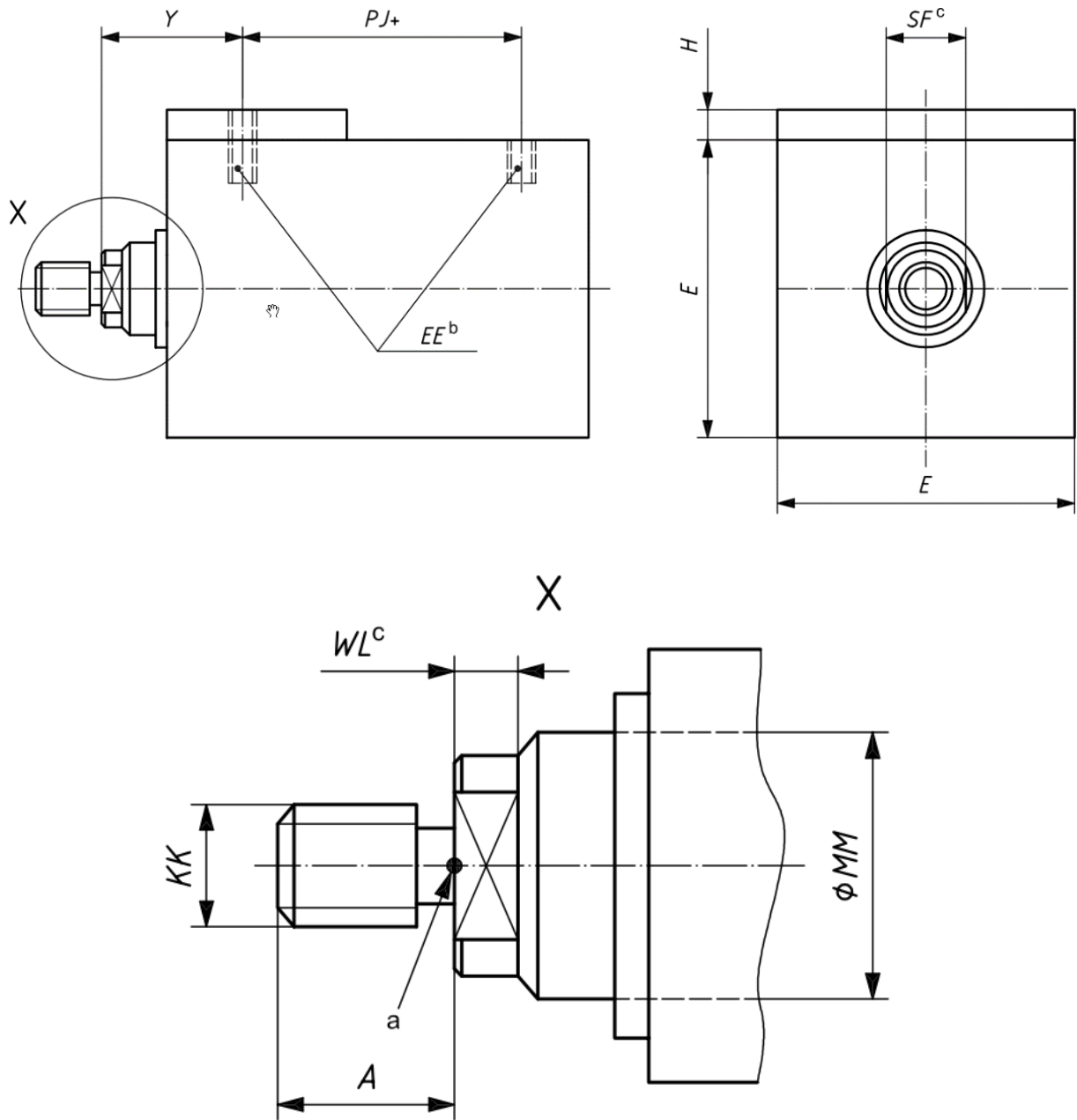
¹ IPH may change designs without notice. Please contact us directly for latest formats. Images shown above may not be part of this series but show a general idea

Available Mounting types

Mounting types are in accordance with ISO 6099

Sr No	Code	Type	
1	ME 5	Head, rectangular flange	
2	ME 6	Cap, rectangular flange	
3	MP 1	Cap, Fixed Clevis	
4	MP 3	Cap, fixed plain eye	
5	MP 5	- Cap, detachable eye with spherical bearing	
6	MS 2	Side lugs	

7	MT 4	Intermediate fixed or movable trunnion (male)	
8	MT 1	Head, integral trunnion (male)	
9	MT 2	Cap, integral trunnion (male)	
10	MX 1	Both ends studs or tie rods extended	
11	MX 2	Cap studs or tie rods extended	
12	MX 3	Head Studs or Tie Rod extended	



a Reference point.

b See Table 14 for port options.

c Dimensions SF and WL are controlled by ISO 4395

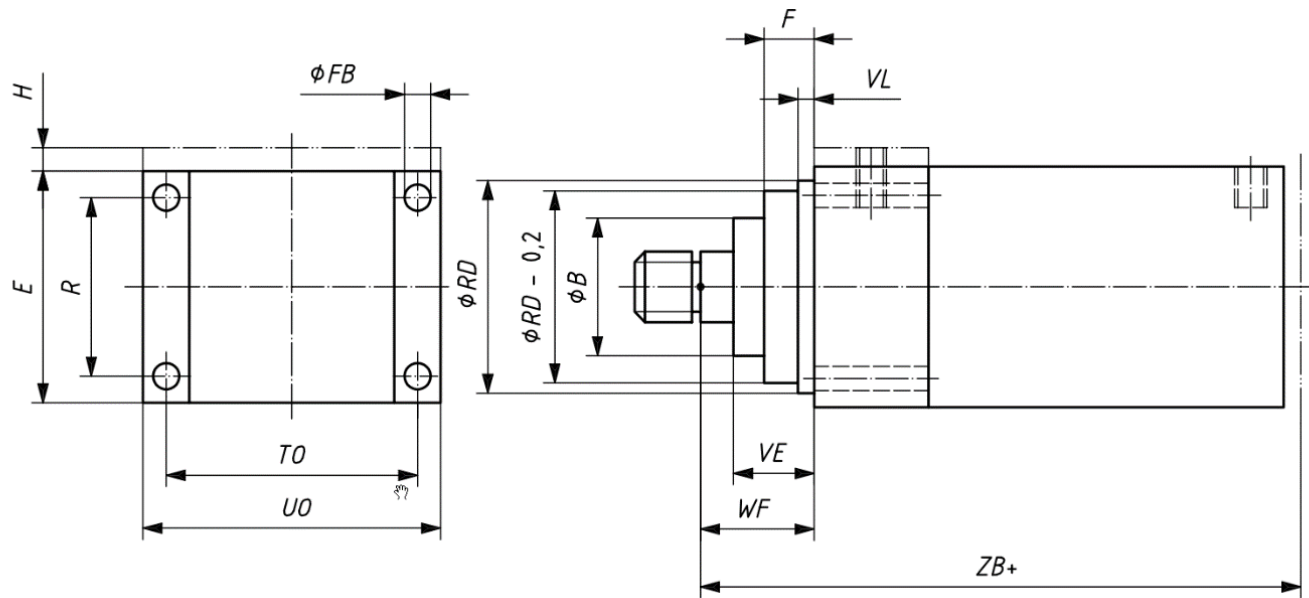
Table 1 — General dimensions

Bore	Rod MM ^a	KK ^a 6g	A max.	H max.	E	Y ^b ± 2	PJ ^c ± 1,5
25	12	M10 × 1,25	14	5	40 ± 1,5	50	53
	18	M10 × 1,25 M14 × 1,5	14 18				
32	14	M12 × 1,25	16	5	45 ± 1,5	60	56
	22	M12 × 1,25 M16 × 1,5	16 22				
40	18	M14 × 1,5	18	—	63 ± 1,5	62	73
	28	M14 × 1,5 M20 × 1,5	18 28				
50	22	M16 × 1,5	22	—	75 ± 1,5	67	74
	36	M16 × 1,5 M27 × 2	22 36				
63	28	M20 × 1,5	28	—	90 ± 1,5	71	80
	45	M20 × 1,5 M33 × 2	28 45				
80	36	M27 × 2	36	—	115 ± 1,5	77	93
	56	M27 × 2 M42 × 2	36 56				
100	45	M33 × 2	45	—	130 ± 2	82	101
	70	M33 × 2 M48 × 2	45 63				
125	56	M42 × 2	56	—	165 ± 2	86	117
	90	M42 × 2 M64 × 3	56 85				
160	70	M48 × 2	63	—	205 ± 2	86	130
	110	M48 × 2 M80 × 3	63 95				
200	90	M64 × 3	85	—	245 ± 2	98	165
	140	M64 × 3 M100 × 3	85 112				

^a If other piston rod diameters or other piston rod threads are required, use those identified in ISO 3320 and ISO 4395.

^b The tolerance on dimension Y applies to strokes ≤ 1 250 mm. Tolerances on strokes > 1 250 mm can be in accordance with the manufacturer's specification or an agreement between the manufacturer and user (see 6.2).

^c The tolerance on dimension PJ shall be added to the tolerance on the stroke.



ME5 Head Rectangular

Table 2 — Dimensions of head, rectangular

Dimensions in millimetres

Bore	Rod MM	RD f8	E	TO js13	FB ^a H13	R js13	WF ± 2	F max.	VE max.	VL min.	B max.	UO max.	ZB ^b max.	H max.
25	12	38	40 ± 1,5	51	5,5	27	25	10	16	3	24	65	121	5
	18	38									30			
32	14	42	45 ± 1,5	58	6,6	33	35	10	22	3	26	70	137	5
	22	42									34			
40	18	62	63 ± 1,5	87	11	41	35	10	22	3	30	110	166	—
	28	62									42			
50	22	74	75 ± 1,5	105	14	52	41	16	25	4	34	130	176	—
	36	74									50			
63	28	75	90 ± 1,5	117	14	65	48	16	29	4	42	145	185	—
	45	88									60			
80	36	82	115 ± 1,5	149	18	83	51	20	29	4	50	180	212	—
	56	105									72			
100	45	92	130 ± 2	162	18	97	57	22	32	5	60	200	225	—
	70	125									88			
125	56	105	165 ± 2	208	22	126	57	22	32	5	72	250	260	—
	90	150									108			
160	70	125	205 ± 2	253	26	155	57	25	32	5	88	300	279	—
	110	170									133			
200	90	150	245 ± 2	300	33	190	57	25	32	5	108	360	336	—
	140	210									163			

^a Hole in accordance with ISO 273, medium series.^b The tolerances referred to apply to strokes ≤ 1250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

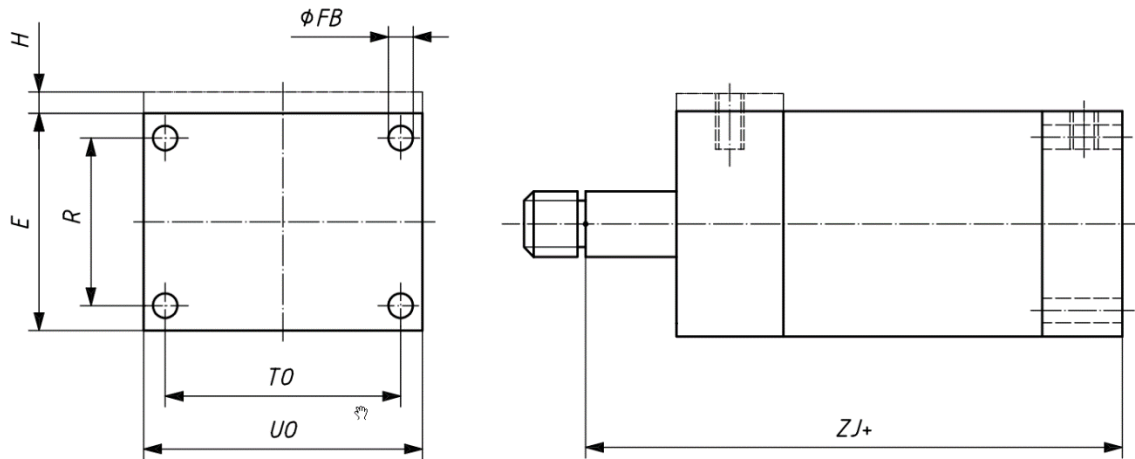


Figure 3 – ME 6 Cap, Rectangular

Table 3 — Dimensions of cap, rectangular

Dimensions in millimetres

Bore	Rod MM	E	TO js13	FB ^a H13	R js13	ZJ ^b ± 1	UO max.	H max.
25	12	40 ± 1,5	51	5,5	27	114	65	5
	18							
32	14	45 ± 1,5	58	6,6	33	128	70	5
	22							
40	18	63 ± 1,5	87	11	41	153	110	—
	28							
50	22	75 ± 1,5	105	14	52	159	130	—
	36							
63	28	90 ± 1,5	117	14	65	168	145	—
	45							
80	36	115 ± 1,5	149	18	83	190	180	—
	56							
100	45	130 ± 2	162	18	97	203	200	—
	70							
125	56	165 ± 2	208	22	126	232	250	—
	90							
160	70	205 ± 2	253	26	155	245	300	—
	110							
200	90	245 ± 2	300	33	190	299	360	—
	140							

^a Hole in accordance with ISO 273, medium series.^b The tolerance on dimension ZJ applies to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

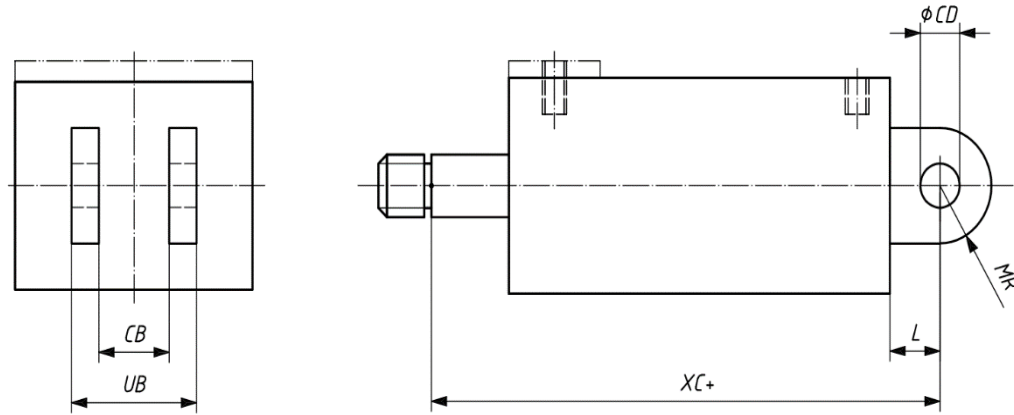


Figure 4 — MP 1 — Cap, fixed clevis

Table 4 — Dimensions of cap, fixed clevis

Dimensions in millimetres

Bore	Rod MM	CB A13	CD H9	MR max.	L min.	UB max.	XC ^a ± 1,5
25	12	12	10	12	13	25	127
	18						
32	14	16	12	17	19	34	147
	22						
40	18	20	14	17	19	42	172
	28						
50	22	30	20	29	32	62	191
	36						
63	28	30	20	29	32	62	200
	45						
80	36	40	28	34	39	83	229
	56						
100	45	50	36	50	54	103	257
	70						
125	56	60	45	53	57	123	289
	90						
160	70	70	56	59	63	143	308
	110						
200	90	80	70	78	82	163	381
	140						

^a The tolerance on dimension XC applies to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

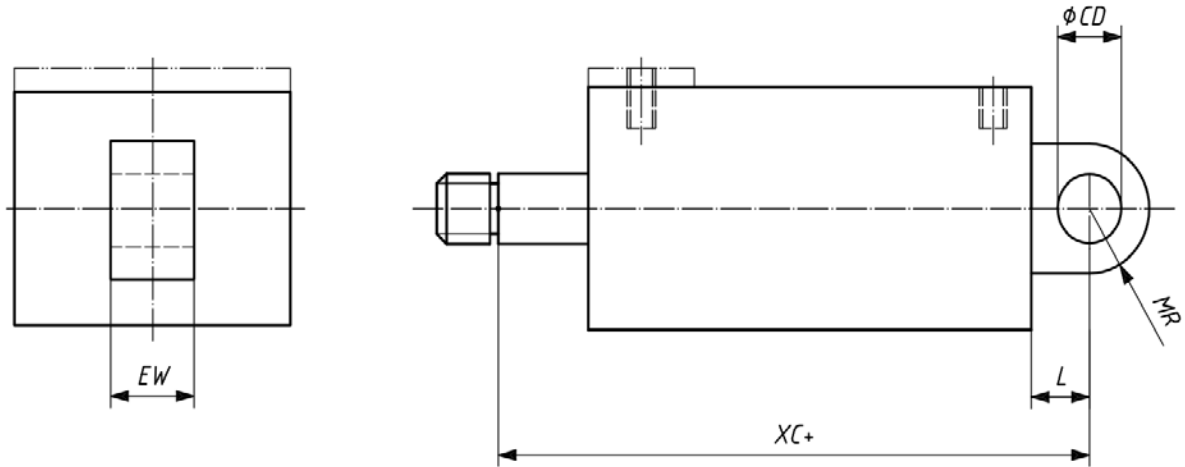


Figure 5 — MP 3 — Cap, fixed plain eye

Table 5 — Dimensions of cap, fixed plain eye

Dimensions in millimetres

Bore	Rod MM	EW h14	CD H9	MR max.	L min.	XC ^a ± 1,5
25	12	12	10	12	13	127
	18					
32	14	16	12	17	19	147
	22					
40	18	20	14	17	19	172
	28					
50	22	30	20	29	32	191
	36					
63	28	30	20	29	32	200
	45					
80	36	40	28	34	39	229
	56					
100	45	50	36	50	54	257
	70					
125	56	60	45	53	57	289
	90					
160	70	70	56	59	63	308
	110					
200	90	80	70	78	82	381
	140					

^a The tolerance on dimension XC applies to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

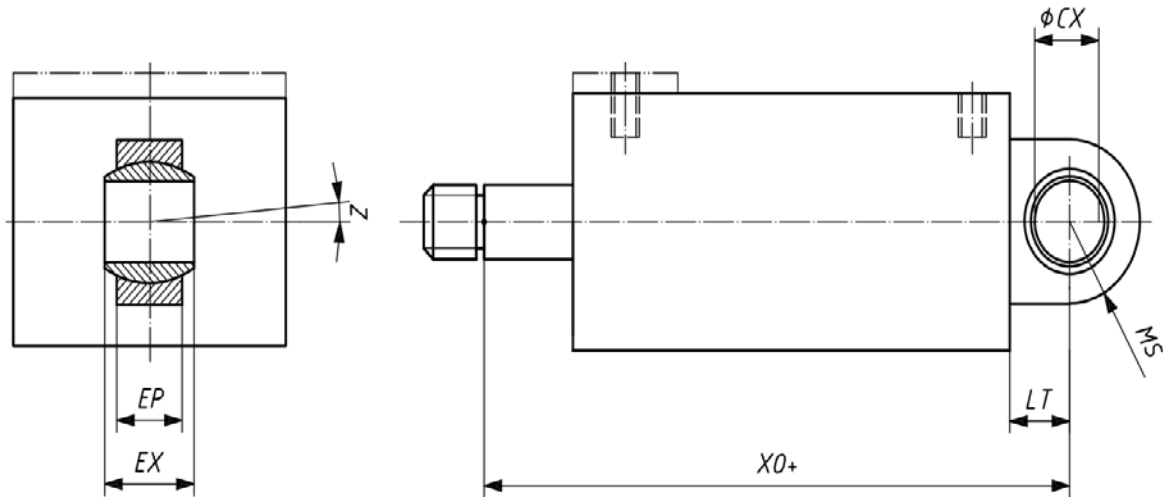


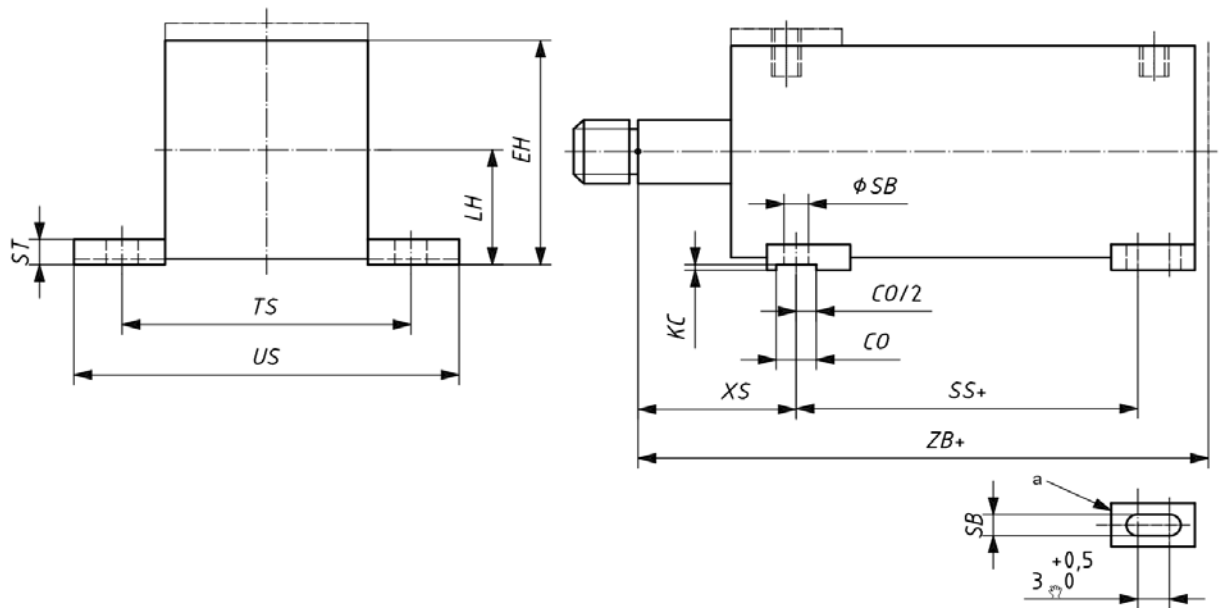
Figure 6 — MP 5 — Cap, fixed eye with spherical bearing

Table 6 — Dimensions on cap, fixed eye with spherical bearing

Dimensions in millimetres

Bore	Rod MM	EP max.	EX nom. tol.		CX nom. tol.		MS max.	LT min.	XO ^a ± 1,5	Tilting angle Z min.
25	12	8	10	0 -0,12	12	0 -0,008	20	16	130	3°
	18									
32	14	11	14	0 -0,12	16	0 -0,008	22,5	20	148	
	22									
40	18	13	16	0 -0,12	20	0 -0,012	29	25	178	
	28									
50	22	17	20	0 -0,12	25	0 -0,012	33	31	190	
	36									
63	28	19	22	0 -0,12	30	0 -0,012	40	38	206	
	45									
80	36	23	28	0 -0,12	40	0 -0,012	50	48	238	
	56									
100	45	30	35	0 -0,12	50	0 -0,012	62	58	261	
	70									
125	56	38	44	0 -0,15	60	0 -0,015	80	72	304	
	90									
160	70	47	55	0 -0,15	80	0 -0,015	100	92	337	
	110									
200	90	57	70	0 -0,20	100	0 -0,020	120	116	415	
	140									

^a The tolerance on dimension XO applies to strokes ≤ 1250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.



a Two lugs.

Figure 7 — MS 2 — Side lugs

Table 7 — Dimensions of side lugs

Dimensions in millimetres

Bore	Rod MM	TS	SB ^a	LH	XS ^b	SS ^b	ZB	ST	US	CO ^c	KC ^c	EH	
		js13	H13	h10	± 2	± 1,25	max.	js13	max.	N9	min.	nom.	tol.
25	12	54	6,6	19	33	72	121	8,5	72	—	—	39	± 1,5
	18												
32	14	63	9	22	45	72	137	12,5	84	—	—	44,5	± 1,5
	22												
40	18	83	11	31	45	97	166	12,5	103	12	4	62,5	± 1,5
	28												
50	22	102	14	37	54	91	176	19	127	12	4,5	74,5	± 1,5
	36												
63	28	124	18	44	65	85	185	26	161	16	4,5	89	± 1,5
	45												
80	36	149	18	57	68	104	212	26	186	16	5	114,5	± 1,5
	56												
100	45	172	26	63	79	101	225	32	216	16	6	128	± 2
	70												
125	56	210	26	82	79	130	260	32	254	20	6	164,5	± 2
	90												
160	70	260	33	101	86	129	279	38	318	30	8	203,5	± 2
	110												
200	90	311	39	122	92	171	336	44	381	40	8	244,5	± 2
	140												

^a Hole in accordance with ISO 273, medium series.

^b The tolerances on dimensions XS and SS+ apply to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

^c Keyway is optional.

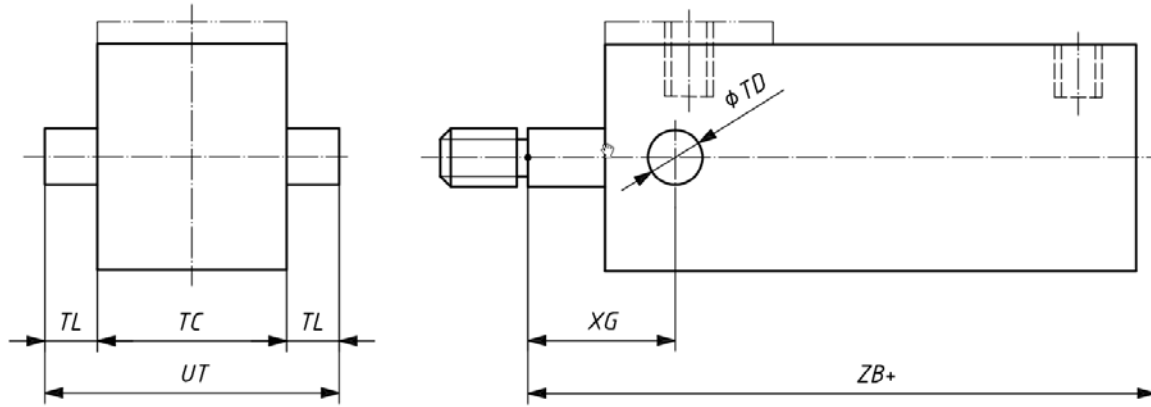



Figure 8 — MT 1 — Head, integral trunnion (male)

Table 8 — Dimensions of head, integral trunnion (male)

Dimensions in millimetres

Bore	Rod MM	TC h14	UT ref.	TD f8	TL js13	XG ^a ± 2	ZB max.
25	12	38	58	12	10	44	121
	18						
32	14	44	68	16	12	54	137
	22						
40	18	63	95	20	16	57	166
	28						
50	22	76	116	25	20	64	176
	36						
63	28	89	139	32	25	70	185
	45						
80	36 	114	178	40	32	76	212
	56						
100	45	127	207	50	40	71	225
	70						
125	56	165	265	63	50	75	260
	90						
160	70	203	329	80	63	75	279
	110						
200	90	241	401	100	80	85	336
	140						

^a The tolerance on dimension XG applies to strokes ≤ 1250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

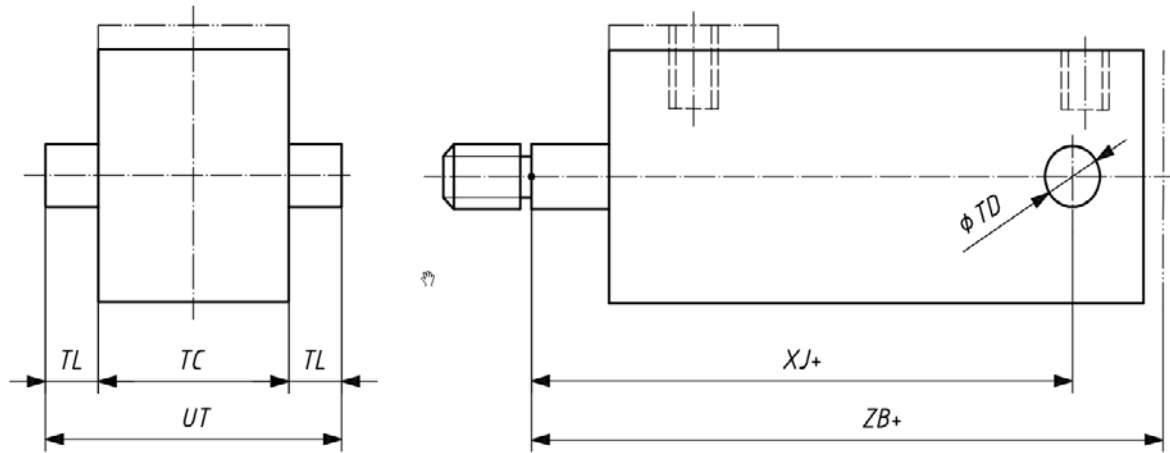


Figure 9 — MT 2 — Cap, integral trunnion (male)

Table 9 — Dimensions of cap, integral trunnion (male)

Dimensions in millimetres

Bore	Rod MM	TC h14	UT ref	TD f8	XJ ^a ± 1,5	TL js13	ZB max.
25	12	38	58	12	101	10	121
	18						
32	14	44	68	16	115	12	137
	22						
40	18	63	95	20	134	16	166
	28						
50	22	76	116	25	140	20	176
	36						
63	28	89	139	32	149	25	185
	45						
80	36	114	178	40	168	32	212
	56						
100	45	127	207	50	187	40	225
	70						
125	56	165	265	63	209	50	260
	90						
160	70	203	329	80	230	63	279
	110						
200	90	241	401	100	276	80	336
	140						

^a The tolerance on dimension XJ applies to strokes ≤ 1250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

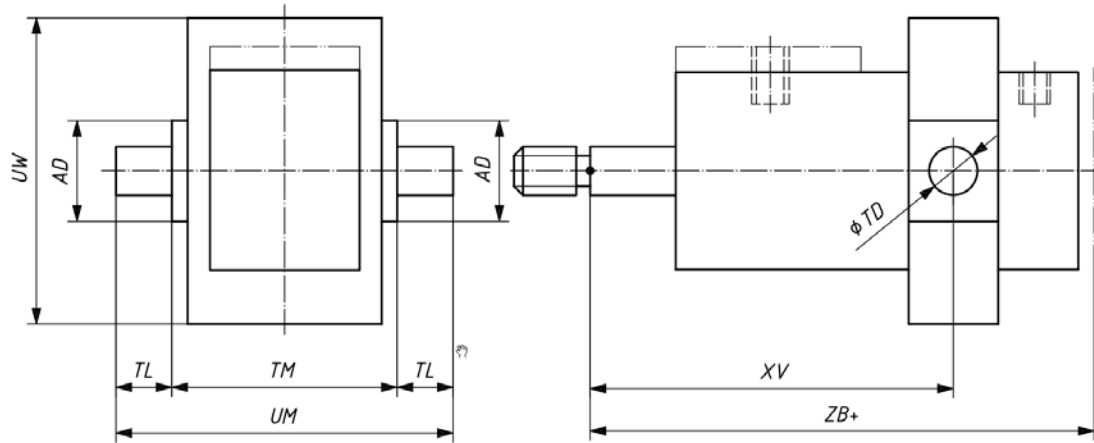


Figure 10 — MT 4 — Intermediate fixed or movable trunnion (male)

Table 10 — Dimensions of intermediate fixed or movable trunnion (male)

Dimensions in millimetres

Bore	Rod MM	AD	UW	TM	UM	TD	TL	$XV^{a, b}$ ± 2		ZB	Stroke ^b
		min.	max.	h14	ref.	f8	js13	min.	max.	max.	min.
25	12	20	63	48	68	12	10	82	72	121	10
	18								+ stroke		
32	14	25	75	55	79	16	12	96	82	137	14
	22								+ stroke		
40	18	30	92	76	108	20	16	107	88	166	19
	28								+ stroke		
50	22	40	112	89	129	25	20	117	90	176	27
	36								+ stroke		
63	28	40	126	100	150	32	25	132	91	185	41
	45								+ stroke		
80	36	50	160	127	191	40	32	147	99	212	48
	56								+ stroke		
100	45	60	180	140	220	50	40	158	107	225	51
	70								+ stroke		
125	56	73	215	178	278	63	50	180	109	260	71
	90								+ stroke		
160	70	90	260	215	341	80	63	198	104	279	94
	110								+ stroke		
200	90	110	355	279	439	100	80	226	130	336	96
	140								+ stroke		

^a The tolerance on dimension XV applies to strokes $\leq 1\,250$ mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

^b For the maximum and minimum values of XV to be valid, the cylinder shall have a minimum stroke, as listed in this table.

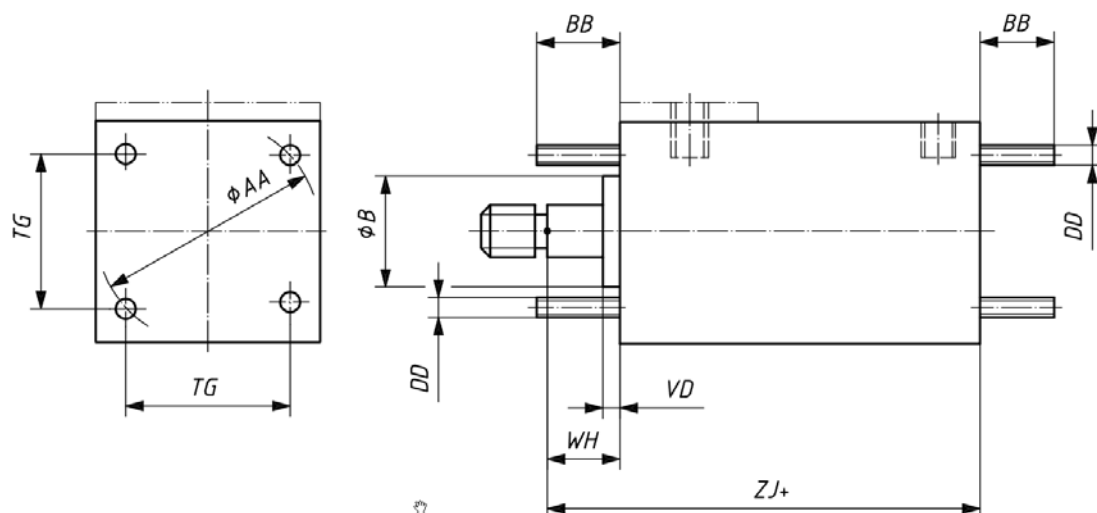


Figure 11 — MX 1 — Both ends studs or tie rods extended

Table 11 — Dimensions of both ends studs or tie rods extended

Dimensions in millimetres

Bore	Rod MM	DD 6g	BB +3 0	AA ref.	WH ± 2	ZJ ^a ± 1	B f9	VD min.	TG js13
25	12	M5 × 0,8	19	40	15	114	24	5	28,3
	18						30		
32	14	M6 × 1	24	47	25	128	26	5	33,2
	22						34		
40	18	M8 × 1	35	59	25	153	30	5	41,7
	28						42		
50	22	M12 × 1,25	46	74	25	159	34	5	52,3
	36						50		
63	28	M12 × 1,25	46	91	32	168	42	5	64,3
	45						60		
80	36	M16 × 1,5	59	117	31	190	50	5	82,7
	56						72		
100	45	M16 × 1,5	59	137	35	203	60	5	96,9
	70						88		
125	56	M22 × 1,5	81	178	35	232	72	5	125,9
	90						108		
160	70	M27 × 2	92	219	32	245	88	5	154,9
	110						133		
200	90	M30 × 2	115	269	32	299	108	5	190,2
	140						163		

^a The tolerance on dimension ZJ applies to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

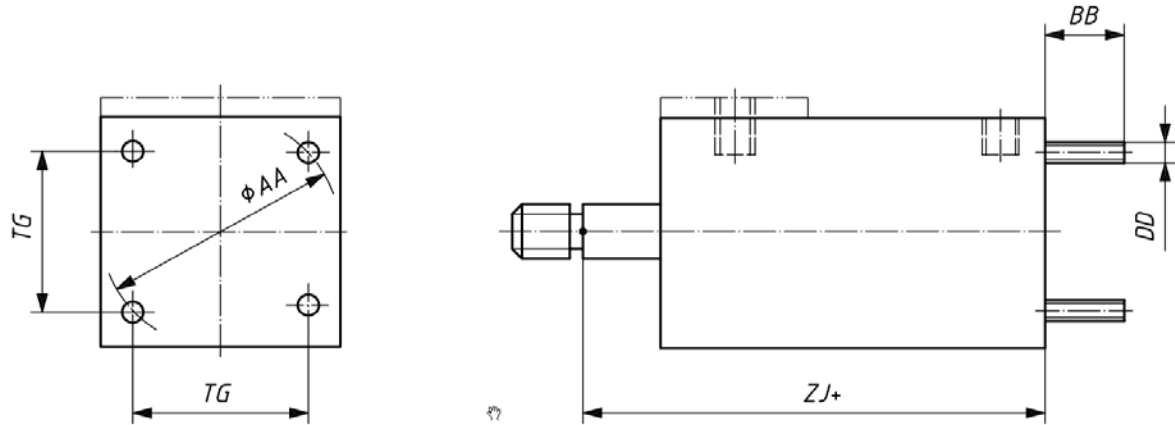


Figure 12 — MX 2 — Cap studs or tie rods extended

Table 12 — Cap studs or tie rods extended

Dimensions in millimetres

Bore	Rod MM	DD	BB	AA	ZJ ^a	TG
		g6	+3 0	ref.	± 1	js13
25	12	M5 × 0,8	19	40	114	28,3
	18					
32	14	M6 × 1	24	47	128	33,2
	22					
40	18	M8 × 1	35	59	153	41,7
	28					
50	22	M12 × 1,25	46	74	159	52,3
	36					
63	28	M12 × 1,25	46	91	168	64,3
	45					
80	36	M16 × 1,5	59	117	190	82,7
	56					
100	45	M16 × 1,5	59	137	203	96,9
	70					
125	56	M22 × 1,5	81	178	232	125,9
	90					
160	70	M27 × 2	92	219	245	154,9
	110					
200	90	M30 × 2	115	269	299	190,2
	140					

^a The tolerance on dimension ZJ applies to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.

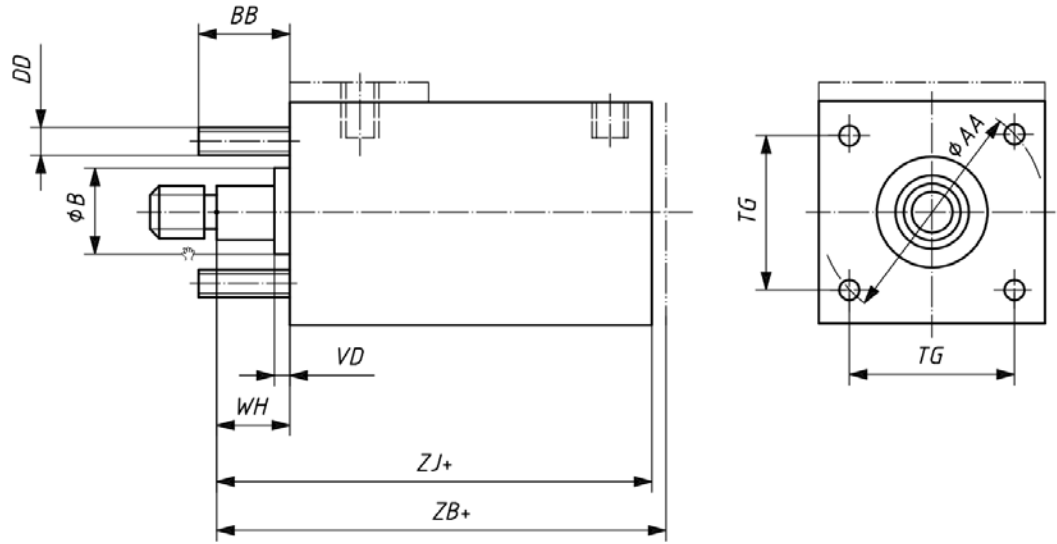


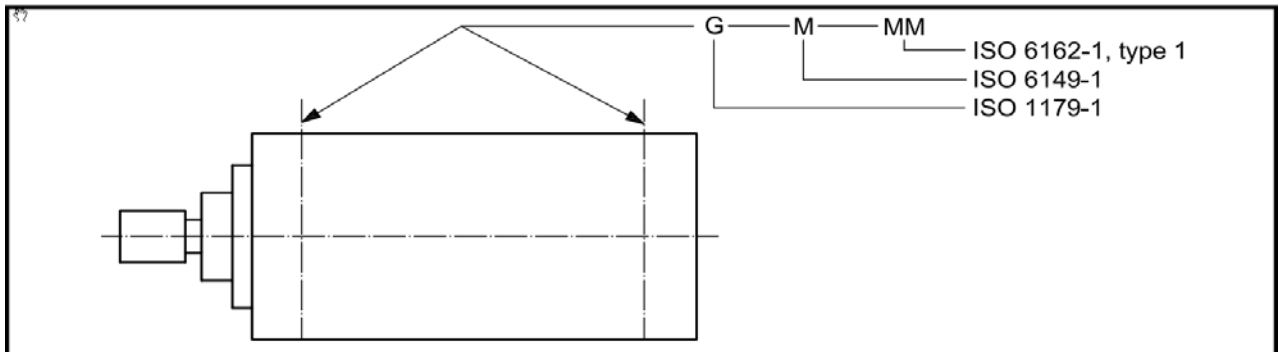
Figure 13 — MX 3 — Head studs or tie rods extended

Table 13 — Dimensions of head studs or tie rods extended

Dimensions in millimetres

Bore	Rod MM	AA ref.	DD g6	BB +3 0	WH ^a ± 2	ZJ ^a ± 1	B f9	VD min.	TG js13	ZB max.
25	12	40	M5 × 0,8	19	15	114	24	5	28,3	121
	18						30			
32	14	47	M6 × 1	24	25	128	26	5	33,2	137
	22						34			
40	18	59	M8 × 1	35	25	153	30	5	41,7	166
	28						42			
50	22	74	M12 × 1,25	46	25	159	34	5	52,3	176
	36						50			
63	28	91	M12 × 1,25	46	32	168 ^{sm?}	42	5	64,3	185
	45						60			
80	36	117	M16 × 1,5	59	31	190	50	5	82,7	212
	56						72			
100	45	137	M16 × 1,5	59	35	203	60	5	96,9	225
	70						88			
125	56	178	M22 × 1,5	81	35	232	72	5	125,9	260
	90						108			
160	70	219	M27 × 2	92	32	245	88	5	154,9	279
	110						133			
200	90	269	M30 × 2	115	32	299	108	5	190,2	336
	140						163			

^a The tolerance on dimensions WH and ZJ apply to strokes ≤ 1 250 mm. For longer strokes, tolerances can be in accordance with the manufacturer's standard or by agreement between the manufacturer and user.



Bore	ISO 1179-1 port		ISO 6149-1 port		ISO 6162-1 rectangular flange, type 1				
	G		M		MM				
	EE	EC	EE	EC	Nominal flange size DN	FF	EA	EB	ED
	6g	min.	6g	min.		max.	± 0,25	± 0,25	

25	G 1/4	7,5	M14 × 1,5	7,5	—	—	—	—	—
32	G 3/8	9	M18 × 1,5	11	—	—	—	—	—
40	G 1/2	14	M22 × 1,5	14	—	—	—	—	—
50	G 3/4	18	M27 × 2	18	—	—	—	—	—
63	G 1	23	M33 × 2	23	25	25	26,2	52,4	M10 × 1,5
80	G 1 1/4	30	M42 × 2	30	32	32	30,2	58,7	M10 × 1,5
100									
125									
160									
200									

CAUTION — When selecting the largest diameter piston rod in a given bore size in connection with hydraulic systems where pull loads and/or pressure intensification effects may be generated, the pressure in the piston rod cavity of the cylinder can be two or more times the working pressure of the hydraulic system. In these cases, flange ports in accordance with ISO 6162-1, as shown in this table, may not have sufficient pressure ratings. When flange ports with a higher pressure rating are needed, they can be selected from the higher pressure series specified in ISO 6162-2.

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