

Hydraulic cylinder mill type

CDL2 type



- ▶ Series L2
- ▶ Component series 2X
- ▶ 2 pressure ranges:
 - Nominal pressure 160 bar
 - Nominal pressure 250 bar

Features

- ▶ 4 types of mounting
- ▶ Piston Ø (ØAL): 25 ... 200 mm
- ▶ Piston rod Ø (ØMM): 14 ... 125 mm
- ▶ Stroke length up to 3000 mm
- ▶ Short length of assembly

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Ordering codes

01	02	03		04		05		06	07	08		09	10	11	12	13	14	15	16
CD	L2		/		/		/			2X	/	B	1	1	C		U		W

01	Differential cylinder	CD
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02	Series	L2
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Types of mounting

03	Without	M00 ¹⁾
	Self-aligning clevis at base	MP5
	Round flange at head	MF3 ²⁾
	Trunnion mounting	MT4 ^{2; 3)}

04	Piston Ø (ØAL): 25 ... 200 mm, see page 6	
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05	Piston rod Ø (ØMM) at a nominal pressure of 160 bar: 14, 18, 22, 28, 36, 45, 56 and 70 mm, see page 6	
	Piston rod Ø (ØMM) at a nominal pressure of 250 bar: 25, 32, 40, 50, 63, 80, 100 and 125 mm, see page 6	

06	Stroke length in mm (for admissible stroke lengths, see page 26 ... 28)	
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Design principle

07	Head and base screwed in	C ¹⁾
	Head screwed in, base welded	D ⁴⁾

08	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	2X
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Line connection – version

09	According to ISO 1179-1 (pipe thread ISO 228-1)	B
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Line connection – position at head

10	View to piston rod		1
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Line connection – position at base

11	View to piston rod		1
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Piston rod design

12	Hard chromium-plated	C
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Piston rod end

13	Thread	H ⁴⁾
	Piston rod end "H" with mounted swivel head CGKD	K ⁴⁾
	With swivel head, cannot be disassembled	F ^{4; 5)}
	Internal thread	E ¹⁾
	Piston rod end "E" with mounted swivel head CGKL	L ¹⁾

End position damping

14	Without	U
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Ordering codes

01	02	03	04		05		06		07	08	09		10	11	12	13	14	15	16
CD	L2		/		/		/			2X	/	B	1	1	C		U		W

Seal design (selection criteria for seals, see page 29)

15	For mineral oil HL, HLP and HFA	
	Standard seal system	M
	For HDEF phosphate ester and HFDE polyol ester	
	Standard seal system FKM	V

Additional options (see page 4)

16	Without													W	
	With (complete type key on page 4)													Z	

Order example:

CDL2MT4/100/56/200D2X/B11CHUMWWWWYWWW

LY=20 XV=245

CDL2MF3/80/45/100D2X/B11CHUMWWWWWWWW

- 1) Only piston Ø 25 ... 32 mm
- 2) Only piston Ø 25 ... 125 mm
- 3) Trunnion mounting position freely selectable. Always specify the dimension "XV/XU" in mm in the plain text when ordering (see order example)
- 4) Only piston Ø 40 ... 200 mm
- 5) Only "MP5" / "MT4"

Ordering codes

	01	02	03	04	05	06	07	08
$\begin{bmatrix} \text{I} & \text{z} \end{bmatrix}$	W	W	W	W				

01	Without	W
02	Without	W
03	Without	W
04	Standard conical grease nipples, DIN 71412 form A	W
05	Without piston rod extension	W
	Specify the piston rod extension dimension "LY" in the plain text in mm	Y
06	Priming class CP3	W
	Painting class CP4	B ¹⁾
	Painting class CP5	L ¹⁾
	Painting class CP6	U ¹⁾
	Painting class CP7	E ¹⁾
07	Without oil filling	W
	With corrosion protection oil VG68	F
08	Without test certificate	W
	With certificate of compliance 2.1 based on EN 10204	B
	With acceptance test certificate 3.1 based on EN 10204	C

6) Specify RAL color in the plain text

Technical data

(For applications outside these values, please consult us!)

General			
Installation position		Any	
Ambient temperature range		See page 29	
Priming		See page 33	
Hydraulic			
Nominal pressure ¹⁾	► ØMM: 14, 18, 22, 28, 36, 45, 65 and 70 mm	bar	160
	► ØMM: 25, 32, 40, 50, 63, 80, 100 and 125 mm	bar	250
Minimum operating pressure ²⁾ (without load)		bar	10
Static test pressure	► 160 bar	bar	240
	► 250 bar	bar	375
Hydraulic fluid		See table below	
Hydraulic fluid temperature range		°C	See page 29
Viscosity range		mm²/s	12 ... 380
Viscosity at operating temperature (recommended)		mm²/s	20 ... 100
Stroke velocity		m/s	0.5
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)		Class 20/18/15	
Hydraulic fluid		Classification	Data sheet
Mineral oils		HL, HLP	90220
Flame-resistant - Water-free		HFDR	90222

¹⁾ The cylinders of this series have been designed for 2 million load cycles at a nominal pressure of 160/250 bar. Higher operating pressures upon request. If there are extreme loads, such as high sequence cycles, the suitability of mounting elements and threaded piston rod connections for the application must be checked due to standardized geometries.

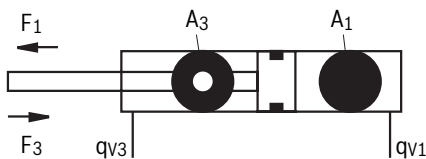
²⁾ Depending on the application, a certain minimum pressure is required in order to guarantee good functioning of the hydraulic cylinder. Without load, a minimum pressure of 10 bar is recommended for differential cylinders; for lower pressures, please contact us.

Technical data

(For applications outside these values, please consult us!)

Diameters, areas, forces, flow

Piston ØAL	Piston rod ØMM in mm		Area ratio φ A ₁ /A ₃	Areas		Force generated by pressure ¹⁾ F ₁ kN		Traction force ¹⁾ F ₃ kN		Volumetric flow at 0.1 m/s ²⁾ OFF q _{V1} ON q _{V3}		Available stroke length in mm
	at a nominal pressure of			Piston A ₁	Ring A ₃	at a nominal pressure of		at a nominal pressure of				
	in mm	160 bar		250 bar	in cm ²	in cm ²	160 bar	250 bar	160 bar	250 bar	l/min	
25	14	–	1.46	4.91	3.37	7.85	–	5.39	–	2.94	2.02	600
32	18	–	1.46	8.04	5.50	12.86	–	8.79	–	4.82	3.30	800
40	22	–	1.43	12.56	8.76	20.10	–	14.02	–	7.54	5.26	2000
	–	25	1.64		7.65	–	31.40	–	19.13		4.59	
50	28	–	1.46	19.63	13.47	31.40	–	21.55	–	11.78	8.08	2000
	–	32	1.69		11.59	–	49.06	–	28.97		6.95	
63	36	–	1.49	31.16	20.98	49.85	–	33.57	–	18.69	12.59	2000
	–	40	1.68		18.60	–	77.89	–	46.49		11.16	
80	45	–	1.46	50.24	34.34	80.38	–	54.95	–	30.14	20.61	2000
	–	50	1.64		30.62	–	125.60	–	76.54		18.37	
100	56	–	1.46	78.50	53.88	125.60	–	86.21	–	47.10	32.33	3000
	–	63	1.66		47.34	–	196.25	–	118.36		28.41	
125	70	–	1.46	122.66	84.19	196.25	–	134.71	–	73.59	50.51	3000
	–	80	1.69		72.42	–	306.64	–	181.04		43.45	
160	–	100	1.64	200.96	122.46	–	502.40	–	306.15	120.58	73.48	3000
200	–	125	1.64	314.00	191.34	–	785.00	–	478.36	188.40	114.81	3000

**Tolerances according to ISO 6020-1**

Installation dimensions	WC	XO/XF ³⁾	XV/XU	Stroke tolerances in mm
Type of mounting	MF3	MP5	MT4	
Stroke length in mm	Tolerances in mm			
≤ 1250	± 2	± 1.5	± 2	
> 1250 ... ≤ 3000	± 4	± 3	± 4	+ 5

¹⁾ Theoretical static cylinder force
(without consideration of the efficiency and admissible load for
attachment parts such as swivel heads, plates, or valves, etc.)

²⁾ Stroke velocity

³⁾ Including stroke length

Technical data

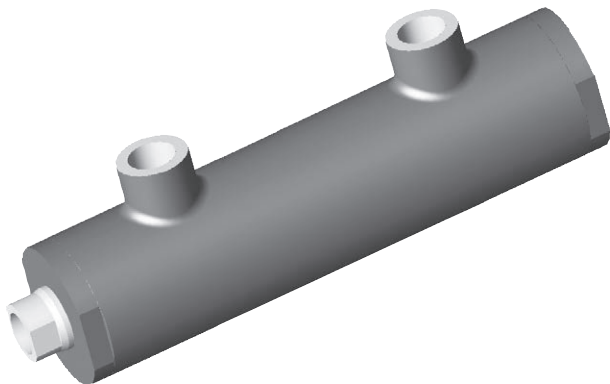
(For applications outside these values, please consult us!)

Weight for cylinder (in kg)

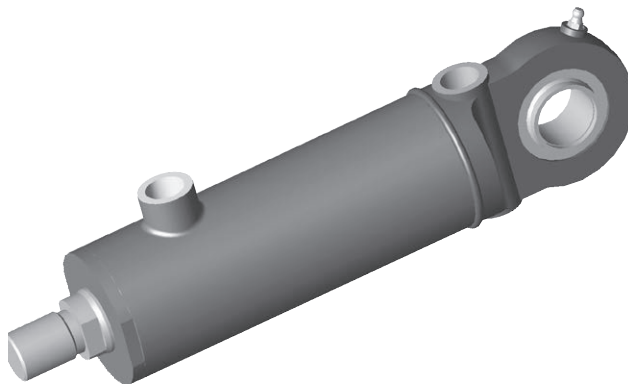
Piston ØAL in mm	Piston rod ØMM in mm	at 1 mm stroke length				per 100 mm stroke length in kg
		"M00" in kg	"MP5" in kg	"MF3" in kg	"MT4" in kg	
25	14	1	1	1	1	0.4
32	18	2	2	2	2	0.6
40	22	–	2	3	3	0.9
	25	–	2	4	4	1.1
50	28	–	3	4	5	1.2
	32	–	4	5	7	1.5
63	36	–	5	7	9	1.8
	40	–	6	9	12	2.3
80	45	–	9	13	15	2.9
	50	–	11	15	20	3.8
100	56	–	15	20	26	4.6
	63	–	19	26	36	6
125	70	–	29	35	46	7.2
	80	–	38	43	67	10.1
160	100	–	67	–	–	15.1
200	125	–	110	–	–	22

Overview of types of mounting

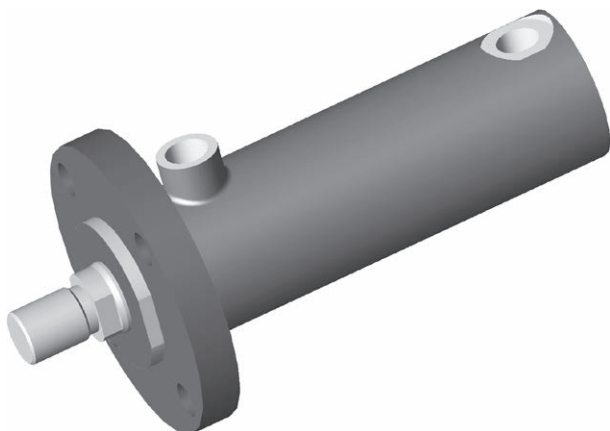
"M00" (see page 9)



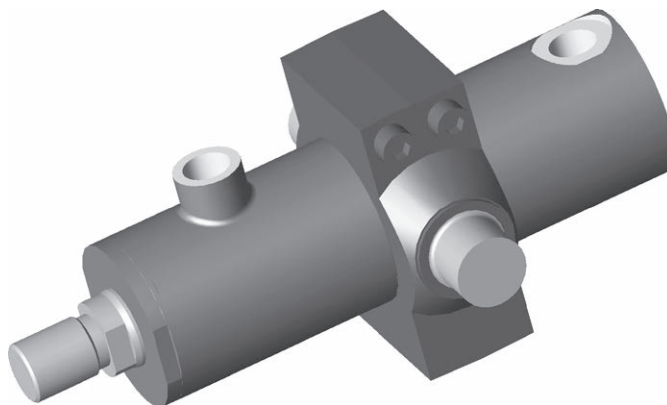
"MP5" (see page 10, 11)



"MF3" (see page 12, 13)



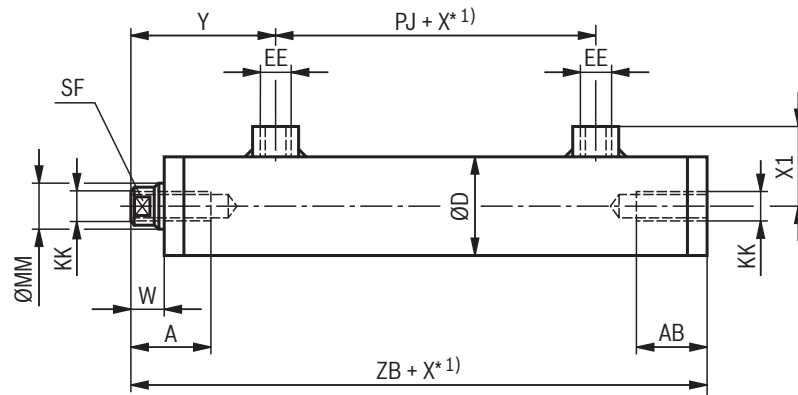
"MT4" (see page 14, 15)



Dimensions: "M00"
(dimensions in mm)

ØAL 25 ... 32 mm

Piston rod end "E"



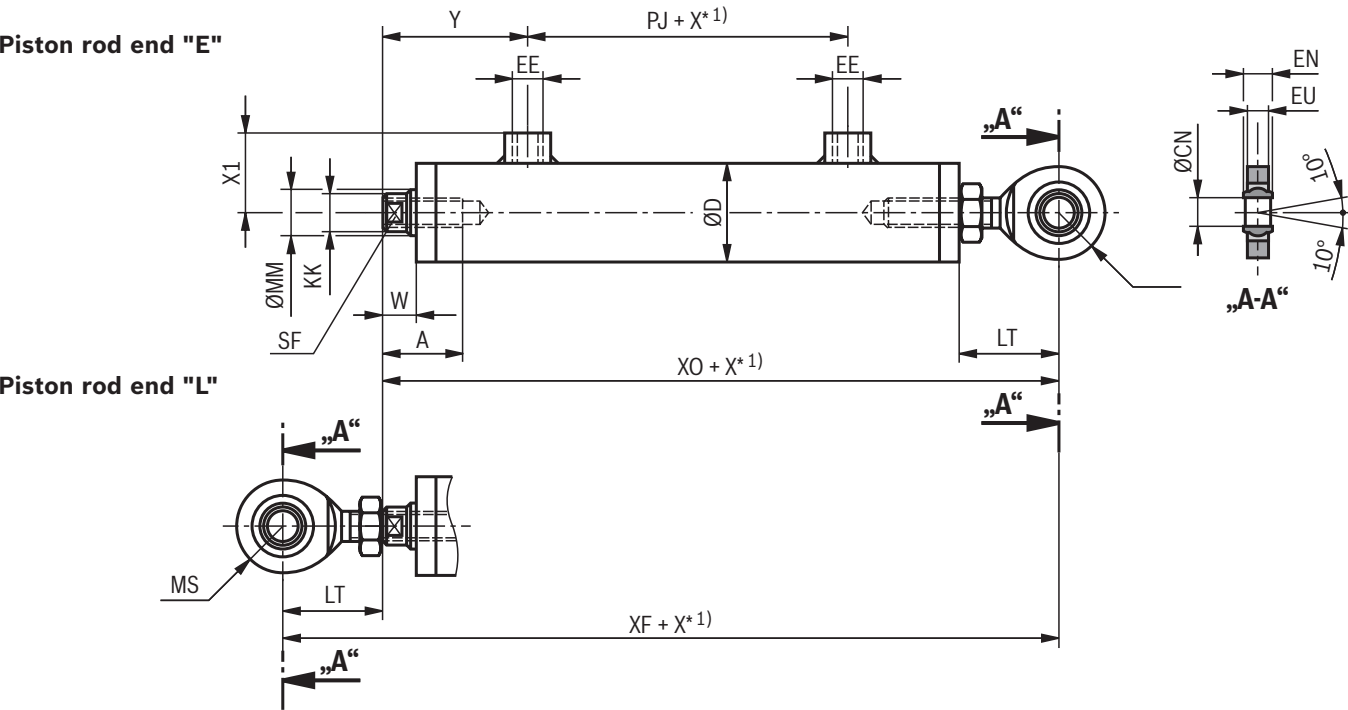
ØAL	ØMM at a nominal pressure of		KK	A	AB	SF	W	ØD	Y	PJ +3/-1	EE	X1 ±1	ZB
	160 bar	250 bar											
25	14	-	M10	26	21	12	10	31	44	27	G1/8	24.5	105
32	18	-	M12	28	25	15	11	40	48	32	G1/4	33.5	117

¹⁾ X* = stroke length

Dimensions: "MP5"
(dimensions in mm)

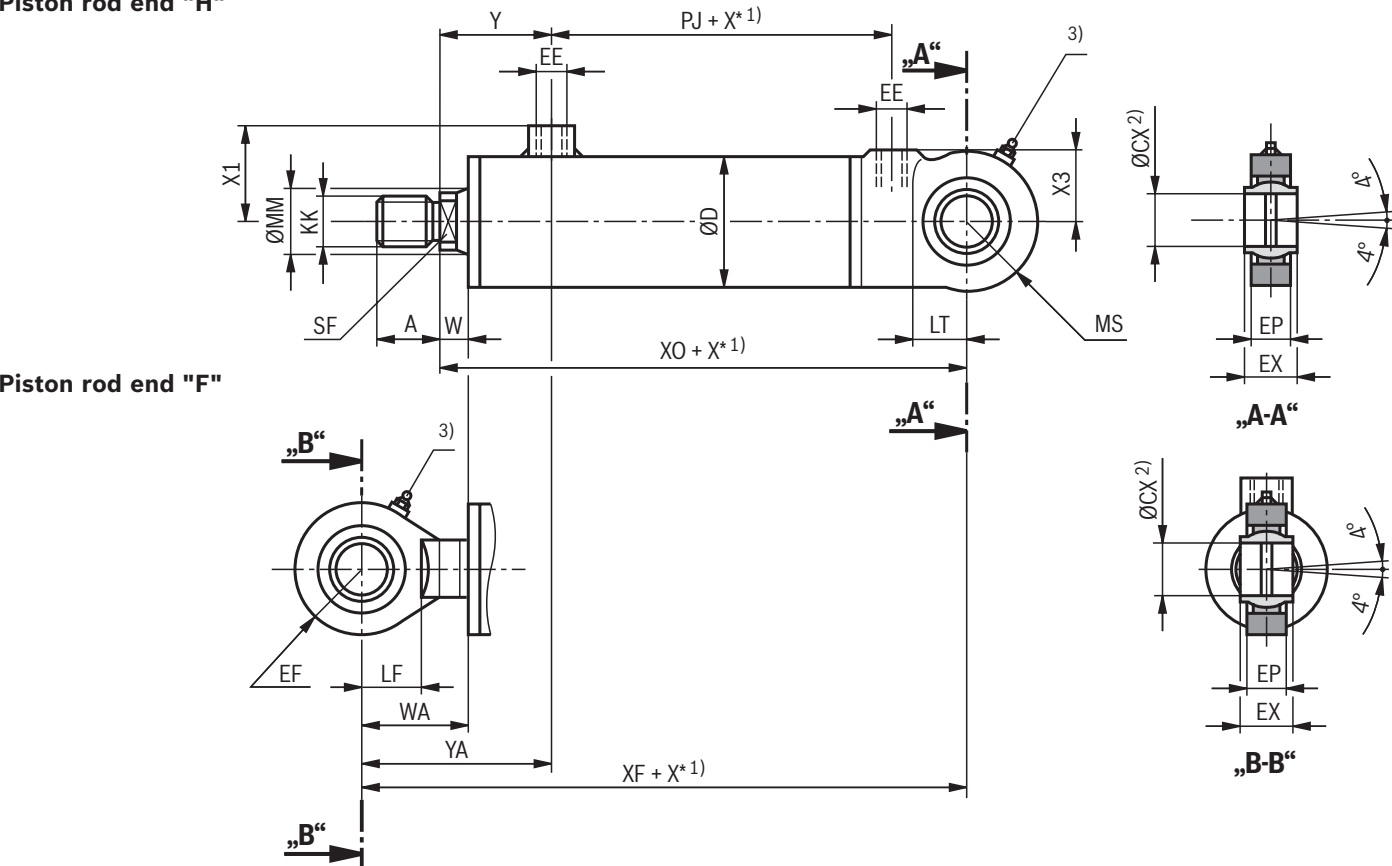
ØAL 25 ... 32 mm

Piston rod end "E"



ØAL 40 ... 200 mm

Piston rod end "H"



Dimensions: "MP5"
(dimensions in mm)

ØAL	ØMM at a nominal pressure of		KK	A	SF	W	WA	ØD	Y	YA	PJ	XO	XF
	160 bar	250 bar											
25	14	–	M10	26	12	10	–	31	44	–	27	132	158
32	18	–	M12	28	15	11	–	40	48	–	32	149	180
40	22	–	M16x1.5	22	17	13	43	50	60	90	51	141	170
	–	25	M20x1.5	28	19	15	41	52	62	88	54	147	173
50	28	–	M20x1.5	28	22	13	50	60	62	99	58	158	195
	–	32	M27x2	36	27	15	52	62	64	101	65	167	204
63	36	–	M27x2	36	28	14	62	75	68	116	70	183	230
	–	40	M33x2	45	32	17	64	78	71	118	72	192	239
80	45	–	M33x2	45	36	16	76	95	84	144	77	209	269
	–	50	M42x2	56	41	19	74	100	84	139	81	222	277
100	56	–	M42x2	56	46	18	88	120	90	160	85	228	298
	–	63	M48x2	63	50	19	90	125	91	162	93	256	327
125	70	–	M48x2	63	60	20	106	150	99	185	94	260	346
	–	80	M64x3	85	65	22	112	160	105	195	113	307	397
160	–	100	M80x3	95	85	30	118	200	124	212	120	390	478
200	–	125	M100x3	112	110	35	143	245	139	247	124	434	542

ØAL	ØMM at a nominal pressure of		EE	X1 ±1	X3 ±1	LT	LF	MS ±2	ØCX H7	EX h12	EP max.	EF ±2	ØCN -0.008	EN h12	EU max.
	160 bar	250 bar													
25	14	–	G1/8	24.5	–	27 ⁴⁾	–	14.5	–	–	–	–	10	9	7.5
32	18	–	G1/4	34	–	32 ⁴⁾	–	17	–	–	–	–	12	10	8.5
40	22	–	G1/4	39	29	25	24	28	20	20	16	28	–	–	–
	–	25	G1/4	46	30	29	30	31	25	25	20	33	–	–	–
50	28	–	G3/8	45	33	34	30	33	25	25	20	33	–	–	–
	–	32	G3/8	52	37	37	35	39	32	32	22	42	–	–	–
63	36	–	G1/2	55	40	46	35	42	32	32	22	42	–	–	–
	–	40	G1/2	65	44	48	45	48	40	40	26	51	–	–	–
80	45	–	G1/2	65	53	49	45	51	40	40	26	51	–	–	–
	–	50	G1/2	76	57	58	52	60	50	50	34	61	–	–	–
100	56	–	G3/4	80	63	59	52	61	50	50	34	61	–	–	–
	–	63	G3/4	91	70	73	65	73	63	63	42	76	–	–	–
125	70	–	G3/4	95	78	69	65	76	63	63	42	76	–	–	–
	–	80	G3/4	109	88	91	80	92	80	80	52	92	–	–	–
160	–	100	G1	136	97	120	–	110	100	100	72	110	–	–	–
200	–	125	G1	158	120	145	–	130	125	125	92	130	–	–	–

1) X* = stroke length

2) Related bolt Ø j6

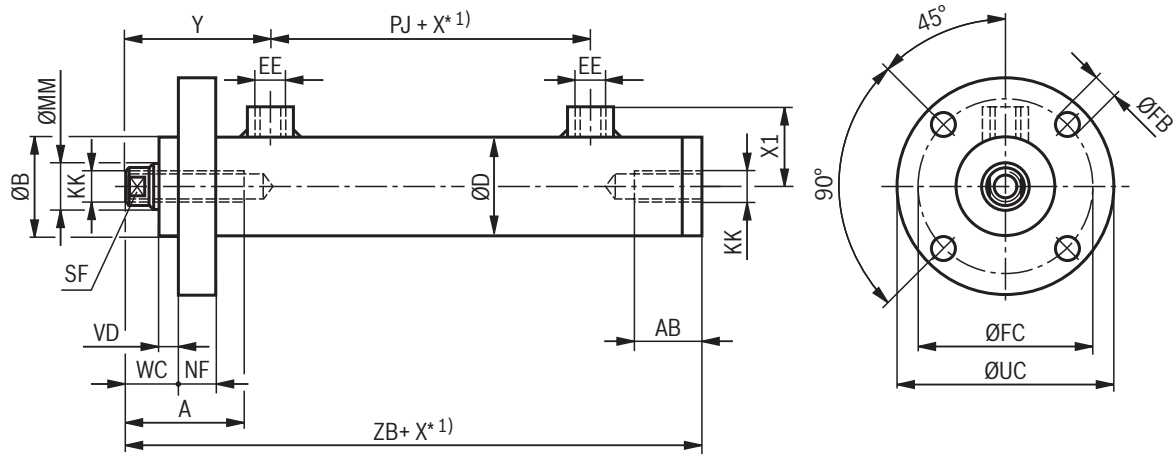
3) Grease nipple, cone head form A according to DIN 71412

4) min.

Dimensions: "MF3"
(dimensions in mm)

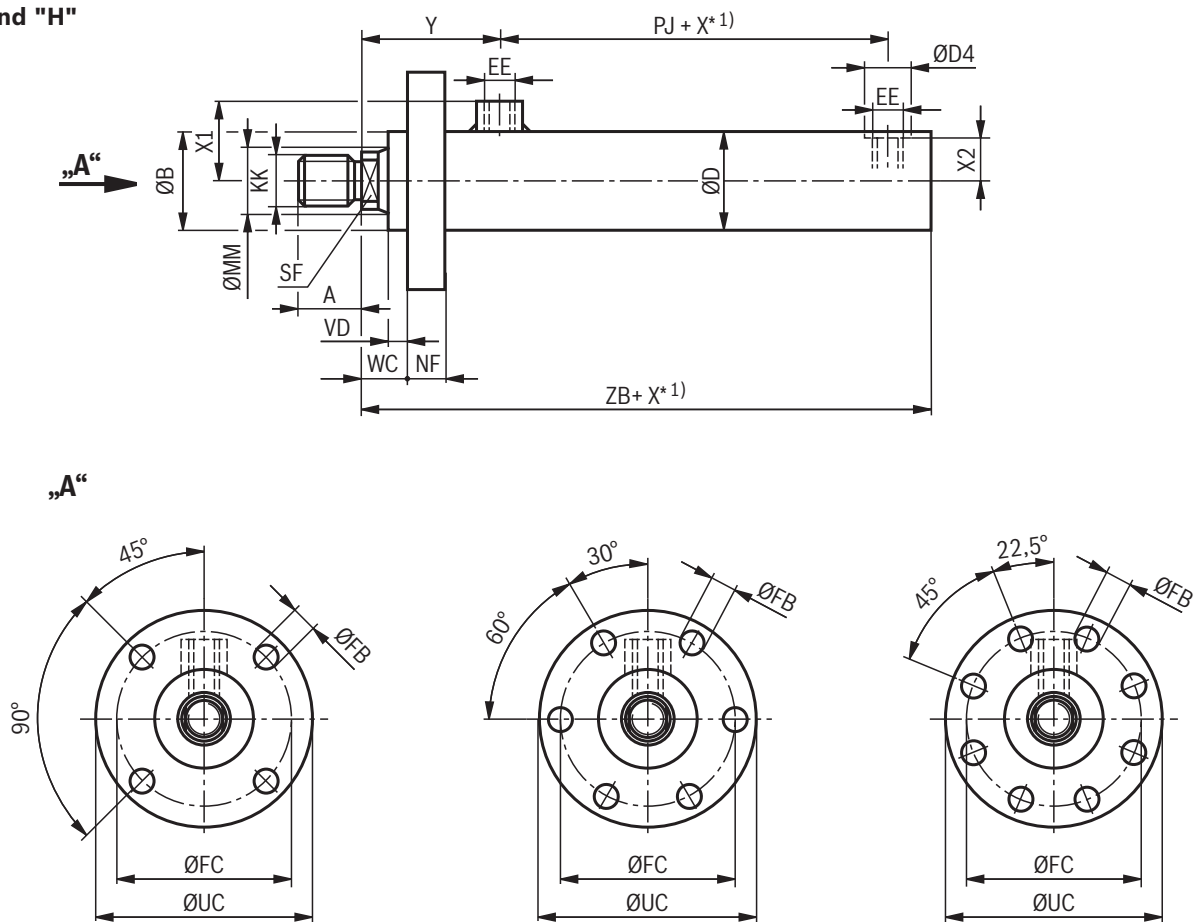
ØAL 25 ... 32 mm

Piston rod end "E"



ØAL 40 ... 125 mm

Piston rod end "H"



Dimensions: "MF3"
(dimensions in mm)

ØAL	ØMM at a nominal pressure of		KK	A	AB	SF	ØB ±0.3	VD	WC	NF	ØD	Y	PJ
	160 bar	250 bar											
25	14	–	M10	26	21	12	32	6	16	12	31	44	27
32	18	–	M12	28	25	15	40	6	17	12	40	48	32
40	22	–	M16x1.5	22	–	17	50	7	20	14	50	60	51
	–	25	M20x1.5	28	–	19	52	7	22	17	52	72	53
50	28	–	M20x1.5	28	–	22	60	7	20	16	60	62	58
	–	32	M27x2	36	–	27	62	7	22	19	62	77	59
63	36	–	M27x2	36	–	28	75	7	21	20	75	68	72
	–	40	M33x2	45	–	32	78	7	24	22	78	86	71
80	45	–	M33x2	45	–	36	93	7	23	25	95	84	81
	–	50	M42x2	56	–	41	100	10	29	28	100	97	75
100	56	–	M42x2	56	–	46	120	8	26	25	120	90	88
	–	63	M48x2	63	–	50	125 ²⁾	11	30	32	125	106	89
125	70	–	M48x2	63	–	60	150 ²⁾	9	29	32	150	99	98
	–	80	M64x3	85	–	65	160 ²⁾	17	39	35	160	119	102

ØAL	ØMM at a nominal pressure of		EE	ØD4	X1 ±1	X2 ±1	ZB	ØFB H13	ØFC	ØUC max.	Quantity mounting bores
	160 bar	250 bar									
25	14	–	G1/8	–	24.5	–	105	6.6	55	68	4
32	18	–	G1/4	–	34.1	–	117	9	65	78	4
40	22	–	G1/4	23	39	22	125	11	85	108	4
	–	25	G1/4	23	46	23	139	11	92	114	6
50	28	–	G3/8	27	45	27	136	13.5	100	128	4
	–	32	G3/8	27	52	28	151	13.5	106	132	6
63	36	–	G1/2	36	55	33.5	160	17.5	120	148	4
	–	40	G1/2	36	65	35	177	17.5	132	164	6
80	45	–	G1/2	36	65	44.5	186	22	150	188	4
	–	50	G1/2	36	76	47	192	17.5	160	193	8
100	56	–	G3/4	43	80	57	203	22	180	218	4
	–	63	G3/4	43	91	60	218	22	190	230	6
125	70	–	G3/4	43	95	72	222	17.5	200	238	8
	–	80	G3/4	43	109	77	244	22	230	270	8

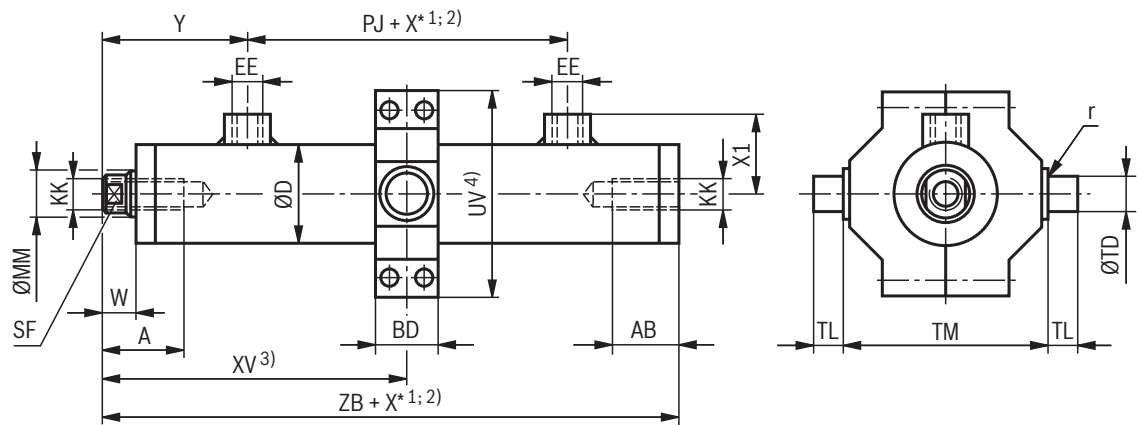
¹⁾ X* = stroke length

²⁾ Tolerance: ±0.5

Dimensions: "MT4"
(dimensions in mm)

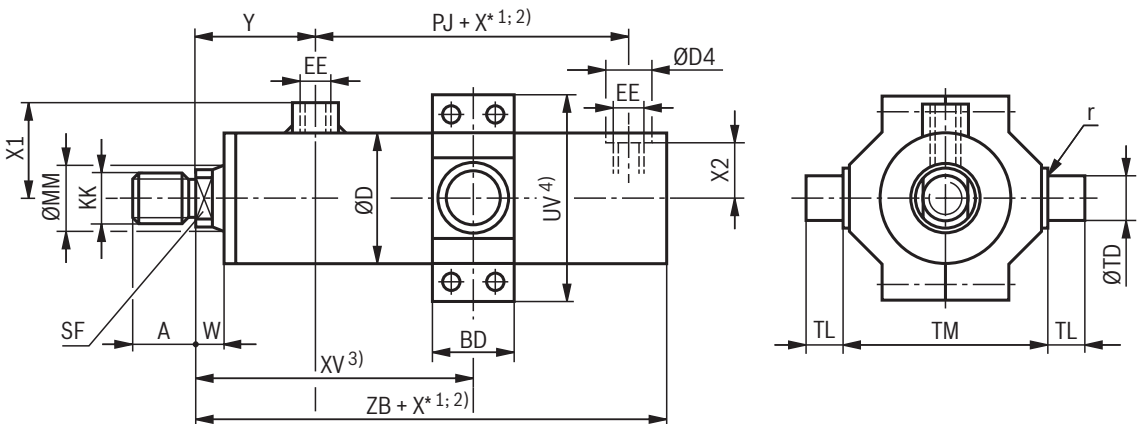
ØAL 25 ... 32 mm

Piston rod end "E"

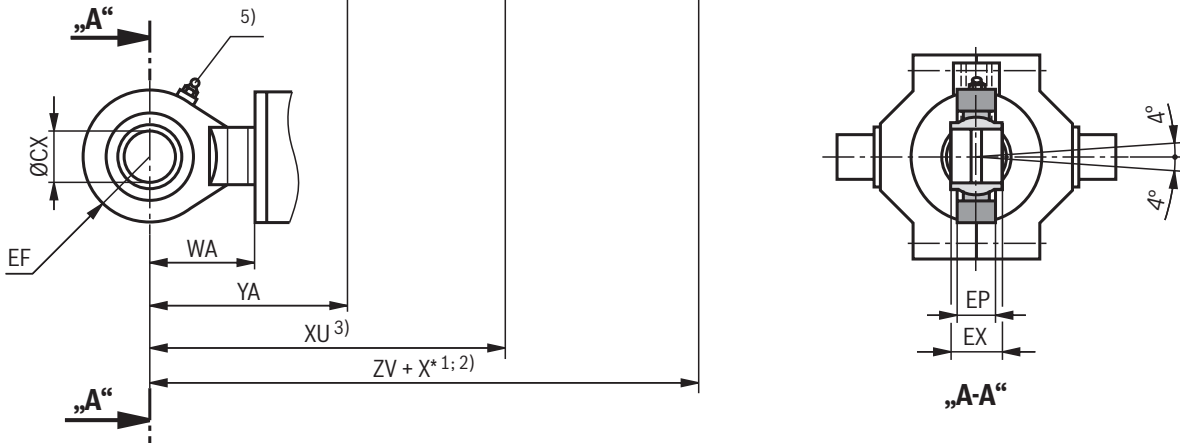


ØAL 40 ... 125 mm

Piston rod end "H"



Piston rod end "F"



Dimensions: "MT4"
(dimensions in mm)

ØAL	ØMM at a nominal pressure of		KK	A	AB	SF	W	WA	ØD	Y	YA	PJ	X* 2)	XV		XU	
	160 bar	250 bar											min.	min.	max.	min.	max.
25	14	–	M10	26	21	12	10	–	33	44	–	27	21	68	47+X*	–	–
32	18	–	M12	28	25	15	11	–	40	48	–	32	28	78	50+X*	–	–
40	22	–	M16x1.5	22	–	17	13	43	50	60	90	51	23	94	71+X*	124	101+X*
	–	25	M20x1.5	28	–	19	15	41	52	62	88	53	60	112	52+X*	138	78+X*
50	28	–	M20x1.5	28	–	22	13	50	60	62	99	58	32	104	72+X*	141	109+X*
	–	32	M27x2	36	–	27	15	52	62	64	101	62	66	121	55+X*	158	92+X*
63	36	–	M27x2	36	–	28	14	62	75	68	116	72	37	119	82+X*	167	130+X*
	–	40	M33x2	45	–	32	17	64	78	71	118	71	78	135	57+X*	182	104+X*
80	45	–	M33x2	45	–	36	16	76	95	84	144	81	51	144	93+X*	204	153+X*
	–	50	M42x2	56	–	41	19	74	100	84	139	78	91	157	66+X*	212	121+X*
100	56	–	M42x2	56	–	46	18	88	120	90	160	88	69	162	93+X*	232	163+X*
	–	63	M48x2	63	–	50	19	90	125	91	162	90	115	180	65+X*	251	136+X*
125	70	–	M48x2	63	–	60	20	106	150	99	185	98	85	183	98+X*	269	184+X*
	–	80	M64x3	85	–	65	22	112	160	105	195	102	135	208	73+X*	298	163+X*

ØAL	ØMM at a nominal pressure of		EE	ØD4	X1 ±1	X2 ±1	ZB	ZV	BD	UV max.	TD f8	TL	TM h12	r	ØCX H7	EX h12	EP max.	EF ±2
	160 bar	250 bar																
25	14	–	G1/8	–	24.5	–	105	–	20	64	12	10	63	0.8	–	–	–	–
32	18	–	G1/4	–	34.1	–	117	–	25	75	16	12	75	0.8	–	–	–	–
40	22	–	G1/4	23	39	22	125	155	35	86	20	16	90	1.2	20	20	16	28
	–	25	G1/4	23	46	23	129	155	40	96	25	20	95	1.5	25	25	20	33
50	28	–	G3/8	27	45	27	136	173	40	102	25	20	105	1.2	25	25	20	33
	–	32	G3/8	27	52	28	141	178	50	112	32	25	112	1.5	32	32	22	42
63	36	–	G1/2	36	55	33.5	160	208	50	129	32	25	120	1.5	32	32	22	42
	–	40	G1/2	36	65	35	162	209	60	134	40	32	125	1.5	40	40	26	51
80	45	–	G1/2	36	65	44.5	186	246	65	148	40	32	135	2	40	40	26	51
	–	50	G1/2	36	76	47	182	237	75	164	50	40	150	2	50	50	34	61
100	56	–	G3/4	43	80	57	203	273	80	180	50	40	160	2	50	50	34	61
	–	63	G3/4	43	91	60	204	275	100	198	63	50	180	2.5	63	63	42	76
125	70	–	G3/4	43	95	72	222	308	100	216	63	50	195	2.5	63	63	42	76
	–	80	G3/4	43	109	77	230	320	120	253	80	63	224	2.5	80	80	52	92

1) X* = stroke length

2) Observe the min. stroke length "X* min"!

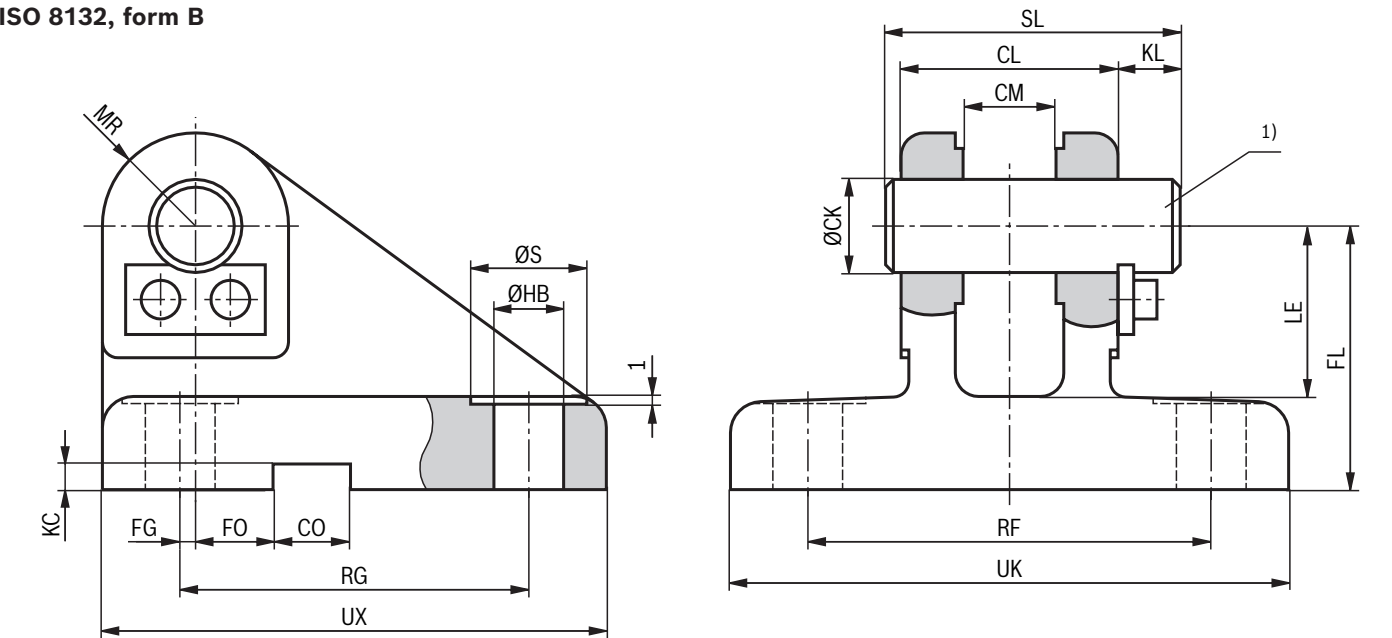
3) Long trunnion mounting freely selectable. Always specify the dimensions "XV" / "XU" in mm in the plain text when ordering.

4) The specified dimensions are maximum values

5) Grease nipple, cone head form A according to DIN 71412

Clevis bracket CLCA (clampable)
(dimensions in mm)

ISO 8132, form B



ØAL	ØMM	Type	Material no.	Nominal force kN	ØCK H9 1)	CL h16	CM A13	CO N9	FG JS14	FL js13	FO JS14	ØHB H13
25	14	CLCA 10 2)	3)	5	10	24	10	8	2	32	10	6.6
32	18	CLCA 12 2)	R900542861	8	12	28	12	10	2	34	10	9
40	22	CLCA 20	R900542863	20	20	45	20	16	7.5	45	10	11
	25	CLCA 25	R900542864	32	25	56	25	25	10	55	10	13.5
50	28	CLCA 25	R900542864	32	25	56	25	25	10	55	10	13.5
	32	CLCA 32	R900542865	50	32	70	32	25	14.5	65	6	17.5
63	36	CLCA 32	R900542865	50	32	70	32	25	14.5	65	6	17.5
	40	CLCA 40	R900542866	80	40	90	40	36	17.5	76	6	22
80	45	CLCA 40	R900542866	80	40	90	40	36	17.5	76	6	22
	50	CLCA 50	R900542867	125	50	110	50	36	25	95	0	26
100	56	CLCA 50	R900542867	125	50	110	50	36	25	95	0	26
	63	CLCA 63	R900542868	200	63	140	63	50	33	112	0	33
125	70	CLCA 63	R900542868	200	63	140	63	50	33	112	0	33
	80	CLCA 80	R900542869	320	80	170	80	50	45	140	0	39
160	100	CLCA 100	R901261098	500	100	210	100	63	52.5	180	0	52
200	125	CLCA 125	R901373011	800	125	270	125	80	75	230	0	52

Clevis bracket **CLCA** (clampable) (dimensions in mm)

ØAL	ØMM	Type	KC +0.3	KL	LE min.	MR max.	RF js13	RG js13	ØS	SL	UK max.	UX max.	<i>m</i> ⁴⁾ kg
25	14	CLCA 10 ²⁾	3.3	8	22	10	39	44	11	34	56	60	0.33
32	18	CLCA 12 ²⁾	3.3	8	22	12	52	45	15	38	72	65	0.45
40	22	CLCA 20	4.3	10	30	20	75	70	18	58	100	95	1.5
	25	CLCA 25	5.4	10	37	25	90	85	20	69	120	115	3
50	28	CLCA 25	5.4	10	37	25	90	85	20	69	120	115	3
	32	CLCA 32	5.4	13	43	32	110	110	26	87	145	145	4.5
63	36	CLCA 32	5.4	13	43	32	110	110	26	87	145	145	4.5
	40	CLCA 40	8.4	16	52	40	140	125	33	110	185	170	8.5
80	45	CLCA 40	8.4	16	52	40	140	125	33	110	185	170	8.5
	50	CLCA 50	8.4	19	65	50	165	150	40	133	215	200	13.5
100	56	CLCA 50	8.4	19	65	50	165	150	40	133	215	200	13.5
	63	CLCA 63	11.4	20	75	63	210	170	48	164	270	230	23.4
125	70	CLCA 63	11.4	20	75	63	210	170	48	164	270	230	23.4
	80	CLCA 80	11.4	26	95	80	250	210	57	202	320	280	38.5
160	100	CLCA 100	12.4	30	120	100	315	250	76	246	405	345	99.2
200	125	CLCA 125	15.4	32	170	125	365	350	76	310	455	450	174.1

ØAL = piston Ø

ØMM = piston rod Ø

1) Related bolt Ø m6
(bolt and bolt lock are included in the scope of delivery and not mounted upon delivery)

2) 2 washers for mounting required
▶ for CLCA 10: Washer DIN 988 10x16x0.5
Material no. R900061310
▶ for CLCA 12: Washer DIN 988 12x18x1
Material no. R900006948

3) On request

4) **m** = mass of clevis bracket in kg



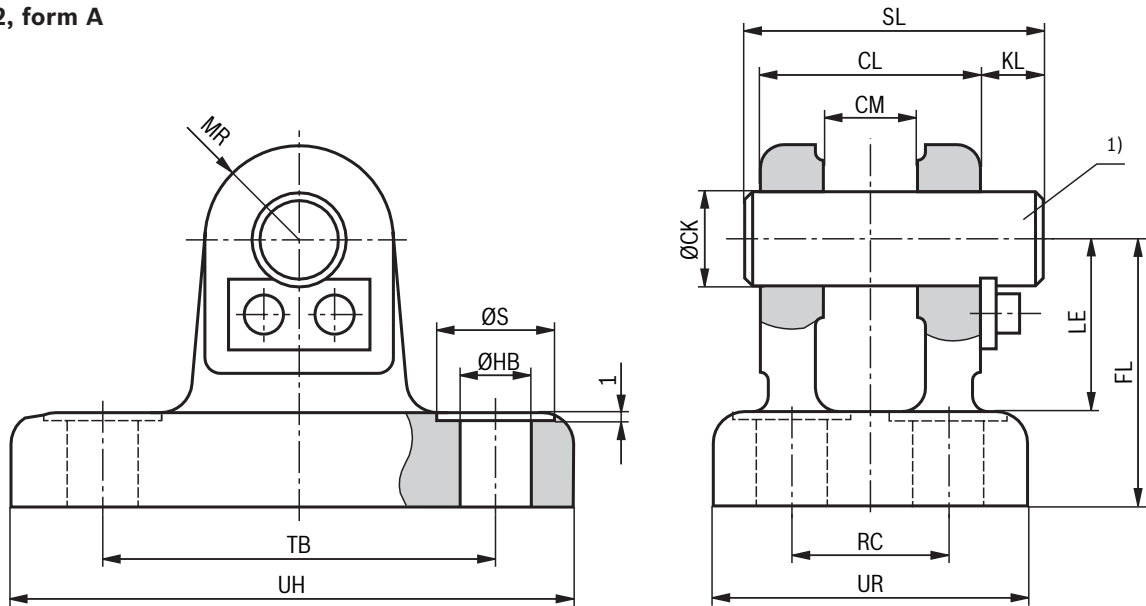
Notice:

Geometry and dimensions may differ depending on the manufacturer. In case of combination with other mounting elements, the usability must be checked.

The clevis brackets are suitable for attachment in case of type of mounting "MP5" and at the swivel head.

Clevis bracket CLCD (clampable)
(dimensions in mm)

ISO 8132, form A



ØAL	ØMM	Type	Material no.	Nominal force kN	ØCK H9 1)	CL h16	CM A13	FL JS12	ØHB H13	KL	LE min.
25	14	CLCD 10 2)	3)	5	10	24	10	32	6.6	8	22
32	18	CLCD 12 2)	R900542879	8	12	28	12	34	9	8	22
40	22	CLCD 20	R900542881	20	20	45	20	45	11	10	30
	25	CLCD 25	R900542882	32	25	56	25	55	13.5	10	37
50	28	CLCD 25	R900542882	32	25	56	25	55	13.5	10	37
	32	CLCD 32	R900542883	50	32	70	32	65	17.5	13	43
63	36	CLCD 32	R900542883	50	32	70	32	65	17.5	13	43
	40	CLCD 40	R900542884	80	40	90	40	76	22	16	52
80	45	CLCD 40	R900542884	80	40	90	40	76	22	16	52
	50	CLCD 50	R900542885	125	50	110	50	95	26	19	65
100	56	CLCD 50	R900542885	125	50	110	50	95	26	19	65
	63	CLCD 63	R900542886	200	63	140	63	112	33	20	75
125	70	CLCD 63	R900542886	200	63	140	63	112	33	20	75
	80	CLCD 80	R900542887	320	80	170	80	140	39	26	95
160	100	CLCD 100	3)	500	100	210	100	180	45	30	120
200	125	CLCD 125	3)	800	125	270	125	230	52	32	170

Clevis bracket **CLCD** (clampable) (dimensions in mm)

ØAL	ØMM	Type	MR max.	RC JS14	ØS	SL	TB JS14	UR max.	UH max.	<i>m</i> ³⁾ kg
25	14	CLCD 10 ²⁾	10	17	11	34	42	33	60	0.27
32	18	CLCD 12 ²⁾	12	20	15	38	50	40	70	0.35
40	22	CLCD 20	20	32	18	58	75	58	98	0.95
	25	CLCD 25	25	40	20	69	85	70	113	1.9
50	28	CLCD 25	25	40	20	69	85	70	113	1.9
	32	CLCD 32	32	50	26	87	110	85	143	3
63	36	CLCD 32	32	50	26	87	110	85	143	3
	40	CLCD 40	40	65	33	110	130	108	170	5.5
80	45	CLCD 40	40	65	33	110	130	108	170	5.5
	50	CLCD 50	50	80	40	133	170	130	220	10.6
100	56	CLCD 50	50	80	40	133	170	130	220	10.6
	63	CLCD 63	63	100	48	164	210	160	270	17
125	70	CLCD 63	63	100	48	164	210	160	270	17
	80	CLCD 80	80	125	57	202	250	210	320	32
160	100	CLCD 100	100	160	66	246	315	260	400	74
200	125	CLCD 125	125	200	76	310	385	320	470	129

ØAL = piston Ø

ØMM = piston rod Ø

¹⁾ Related bolt Ø m6

(bolt and bolt lock are included in the scope of delivery and not mounted upon delivery)

²⁾ 2 washers for mounting required

► for CLCD 10: Washer DIN 988 10x16x0.5

Material no. R900061310

► for CLCD 12: Washer DIN 988 12x18x1

Material no. R900006948

³⁾ On request

⁴⁾ *m* = mass of clevis bracket in kg



Notice:

Geometry and dimensions may differ depending on the manufacturer. In case of combination with other mounting elements, the usability must be checked.

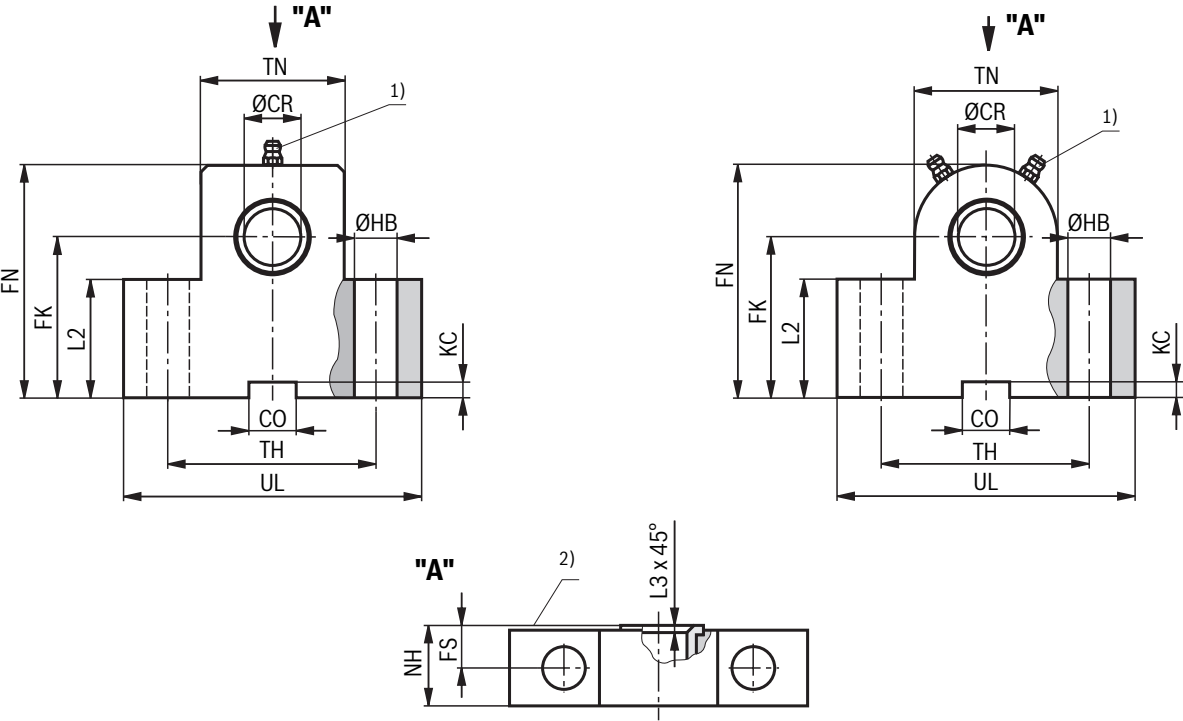
The clevis brackets are suitable for attachment in case of type of mounting "MP5" and at the swivel head.

Trunnion mounting bearing block CLTB
 (dimensions in mm)

ISO 8132, form A

CLTB 12 ... 20

CLTB 25 ... 110



ØAL	ØMM	Type ³⁾	Material no.	Nominal force kN ⁴⁾	ØCR H7	CO N9	FK JS12	FN max.	FS js13	ØHB H13
25	14	CLTB 12	R900772607	8	12	10	34	50	8	9
32	18	CLTB 16	R900772608	12.5	16	16	40	60	10	11
40	22	CLTB 20	R900772609	20	20	16	45	70	10	11
	25	CLTB 25	R900772610	32	25	25	55	80	12	13.5
50	28	CLTB 25	R900772610	32	25	25	55	80	12	13.5
	32	CLTB 32	R900772611	50	32	25	65	100	15	17.5
63	36	CLTB 32	R900772611	50	32	25	65	100	15	17.5
	40	CLTB 40	R900772612	80	40	36	76	120	16	22
80	45	CLTB 40	R900772612	80	40	36	76	120	16	22
	50	CLTB 50	R900772613	125	50	36	95	140	20	26
100	56	CLTB 50	R900772613	125	50	36	95	140	20	26
	63	CLTB 63	R900772614	200	63	50	112	180	25	33
125	70	CLTB 63	R900772614	200	63	50	112	180	25	33
	80	CLTB 80	R900772615	320	80	50	140	220	31	39

Trunnion mounting bearing block CLTB

(dimensions in mm)

ØAL	ØMM	Type ³⁾	KC +0.3	TN max.	I2	I3	NH max.	TH js13	UL max.	m ⁵⁾ kg
25	14	CLTB 12	3.3	25	25	1	17	40	63	0.4
32	18	CLTB 16	4.3	30	30	1	21	50	80	0.85
40	22	CLTB 20	4.3	40	38	1.5	21	60	90	1.2
	25	CLTB 25	5.4	56	45	1.5	26	80	110	2.1
50	28	CLTB 25	5.4	56	45	1.5	26	80	110	2.1
	32	CLTB 32	5.4	70	52	2	33	110	150	4.55
63	36	CLTB 32	5.4	70	52	2	33	110	150	4.55
	40	CLTB 40	8.4	88	60	2.5	41	125	170	7.3
80	45	CLTB 40	8.4	88	60	2.5	41	125	170	7.3
	50	CLTB 50	8.4	100	75	2.5	51	160	210	14.5
100	56	CLTB 50	8.4	100	75	2.5	51	160	210	14.5
	63	CLTB 63	11.4	130	85	3	61	200	265	23.1
125	70	CLTB 63	11.4	130	85	3	61	200	265	23.1
	80	CLTB 80	11.4	160	112	3.5	81	250	325	52.3

ØAL = piston Ø

- 1) Grease nipple, cone head form A according to DIN 71412
- 2) Trunnion mounting contact surface (inside)
- 3) Bearing blocks are always supplied in pairs
- 4) Nominal force applies to applications in pairs
- 5) **m** = mass of trunnion mounting bearing block in kg (specified per pair)

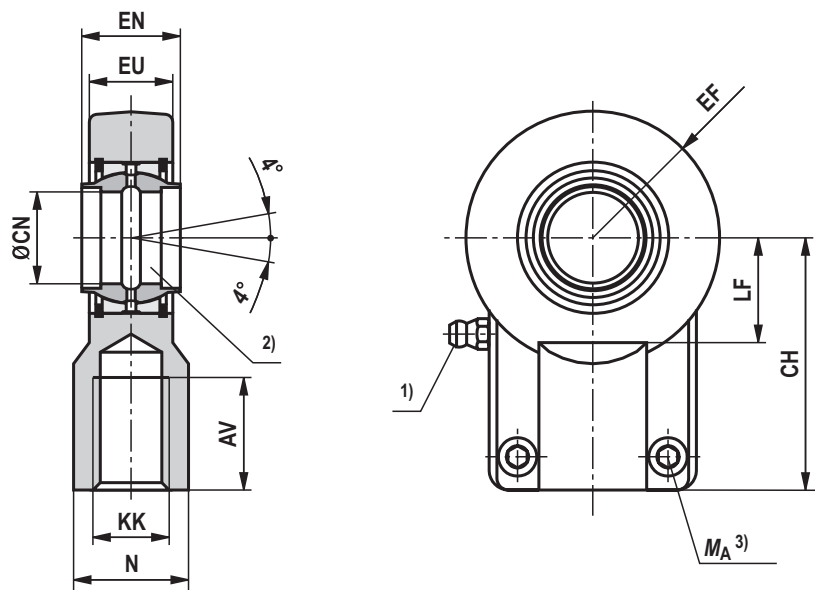


Notice:

Geometry and dimensions may differ depending on the manufacturer. In case of combination with other mounting elements, the usability must be checked.
The trunnion mounting bearing blocks are suitable for attachment in case of type of mounting "MT4".
All graphical representations are examples.

Swivel head CGKD (clampable)
(dimensions in mm)

ISO 8132



ØAL	ØMM	Type	Material no.	Nominal force kN	AV min.	N max.	CH js13	EF max.	ØCN H7 2)	EN h12	EU max.
40	22	CGKD 20	R900308576	20	23	28	52	25	20	20	17.5
	25	CGKD 25	R900323332	32	29	31	65	32	25	25	22
50	28	CGKD 25	R900323332	32	29	31	65	32	25	25	22
	32	CGKD 32	R900322049	50	37	38	80	40	32	32	28
63	36	CGKD 32	R900322049	50	37	38	80	40	32	32	28
	40	CGKD 40	R900322029	80	46	47	97	50	40	40	34
80	45	CGKD 40	R900322029	80	46	47	97	50	40	40	34
	50	CGKD 50	R900322719	125	57	58	120	63	50	50	42
100	56	CGKD 50	R900322719	125	57	58	120	63	50	50	42
	63	CGKD 63	R900322028	200	64	70	140	72.5	63	63	53.5
125	70	CGKD 63	R900322028	200	64	70	140	72.5	63	63	53.5
	80	CGKD 80	R900322700	320	86	91	180	92	80	80	68
160	100	CGKD 100	R900322030	500	96	110	210	114	100	100	85.5
200	125	CGKD 125	R900322026	800	113	135	260	160	125	125	105

Swivel head **CGKD** (clampable) (dimensions in mm)

ØAL	ØMM	Type	KK 6H	LF min.	Clamping screw ISO 4762-10.9	M_A ³⁾ Nm	m ⁴⁾ kg	C_0 ⁵⁾ kN	F_{adm} ⁶⁾ kN
40	22	CGKD 20	M16x1.5	20.5	M8x20	25	0.35	48	17.7
	25	CGKD 25	M20x1.5	25.5	M8x20	30	0.65	78	28.8
50	28	CGKD 25	M20x1.5	25.5	M8x20	30	0.65	78	28.8
	32	CGKD 32	M27x2	30	M10x25	59	1.15	114	42.1
63	36	CGKD 32	M27x2	30	M10x25	59	1.15	114	42.1
	40	CGKD 40	M33x2	39	M10x30	59	2.1	204	75.3
80	45	CGKD 40	M33x2	39	M10x30	59	2.1	204	75.3
	50	CGKD 50	M42x2	47	M12x35	100	4	310	114.4
100	56	CGKD 50	M42x2	47	M12x35	100	4	310	114.4
	63	CGKD 63	M48x2	58	M16x40	250	7.2	430	158.7
125	70	CGKD 63	M48x2	58	M16x40	250	7.2	430	158.7
	80	CGKD 80	M64x3	74	M20x50	490	15	695	265.5
160	100	CGKD 100	M80x3	94	M24x60	840	25.5	1060	391.1
200	125	CGKD 125	M100x3	116	M24x70	840	52.5	1430	527.7

ØAL = piston Ø

ØMM = piston rod Ø

1) Grease nipple, cone head form A according to DIN 71412

2) Related bolt Ø m6

3) M_A = tightening torque

The swivel head must always be screwed against the shoulder of the piston rod. Afterwards, the clamping screws must be tightened with the specified tightening torque.

4) m = mass of swivel head in kg

5) C_0 = static load rating of the swivel head

6) F_{adm} = maximum admissible load on the swivel head during oscillatory or alternating loads

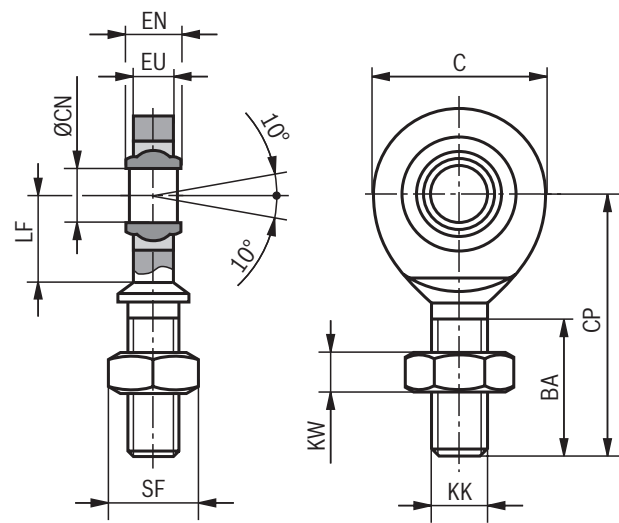


Notice:

Geometry and dimensions may differ depending on the manufacturer. In case of combination with other mounting elements, the usability must be checked.

Swivel head CGKL
(dimensions in mm)

ISO 12240-4



ØAL	ØMM	Type	Material no.	KK	BA min.	C	ØCN -0.008	CP max.	EN h12	EU max.	KW	LF min.	SF	<i>m</i> ¹⁾ kg	<i>C</i> ₀ ²⁾ kN	<i>F</i> _{adm} ³⁾ kN
25	14	CGKL 10	R901150690	M10	26	29	10	48	9	7.5	5	15	16	0.1	18	8.1
32	18	CGKL 12	R901150695	M12	28	34	12	54	10	8.5	6	18	18	0.1	30	11.2

ØAL = piston Ø
ØMM = piston rod Ø
1) *m* = mass of swivel head in kg
2) *C*₀ = static load rating of the swivel head in kN
3) *F*_{adm} = maximum admissible load on the swivel head during oscillatory or alternating loads

 **Notice:**
Geometry and dimensions may differ depending on the manufacturer. In case of combination with other mounting elements, the usability must be checked.

Buckling

For the admissible stroke length with flexibly guided load and a factor of 3.5 for safety against buckling, please refer to the relevant table. For other installation positions of the cylinder, the admissible stroke length must be interpolated. Admissible stroke length for non-guided load on request.

Buckling calculations are carried out according to the following formulas:

1. Calculation according to Euler

$$F = \frac{\pi^2 \cdot E \cdot I}{v \cdot L_K^2} \quad \text{if } \lambda > \lambda_g$$

2. Calculation according to Tetmajer

$$F = \frac{d^2 \cdot \pi (335 - 0,62 \cdot \lambda)}{4 \cdot v} \quad \text{if } \lambda > \lambda_g$$

E Module of elasticity in N/mm²

= 2.1 x 10⁵ for steel

I Geometrical moment of inertia in mm⁴ for circular cross-section

$$= \frac{d^4 \cdot \pi}{64} = 0,0491 \cdot d^4$$

v 3.5 (safety factor)

L_K Free buckling length in mm (depending on the type of mounting see sketches A, B, C)

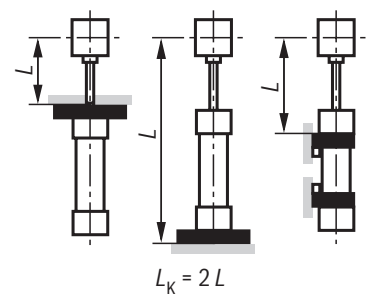
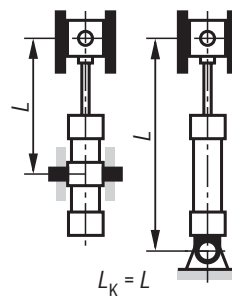
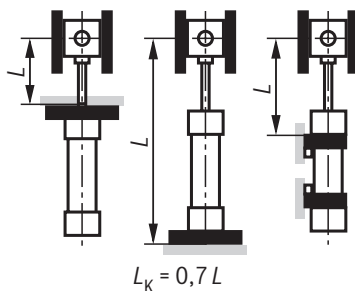
d Piston rod Ø in mm

λ Slenderness ratio

$$= \frac{4 \cdot L_K}{d} \quad \lambda_g = \pi \cdot \sqrt{\frac{E}{0,8 \cdot R_e}}$$

R_e Yield strength of the piston rod material

Influence of the type of mounting on the buckling length:

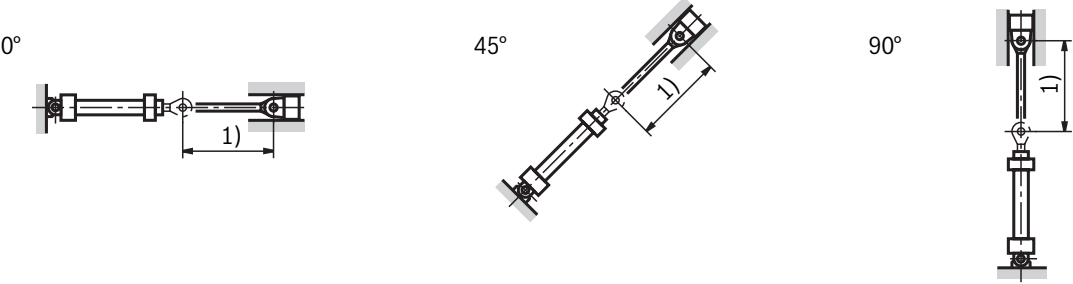


Buckling
(dimensions in mm)

Admissible stroke length for type of mounting "MP5"

ØAL	ØMM	Admissible stroke length with								
		80 bar			160 bar			250 bar		
		0°	45°	90°	0°	45°	90°	0°	45°	90°
25	14	170	175	185	105	105	110	–	–	–
32	18	230	230	250	145	145	150	–	–	–
40	22	285	290	315	185	190	195	–	–	–
	25	370	380	425	255	260	270	190	190	195
50	28	380	390	420	255	260	265	–	–	–
	32	490	505	570	345	350	365	260	265	270
63	36	500	515	565	345	350	360	–	–	–
	40	600	625	715	435	440	465	330	335	340
80	45	610	630	705	430	440	455	–	–	–
	50	725	755	890	535	545	580	410	415	430
100	56	755	780	890	545	555	580	–	–	–
	63	910	950	1145	685	700	755	540	545	565
125	70	935	975	1125	690	705	740	–	–	–
	80	1125	1180	1485	870	895	985	695	705	740
160	90	1350	1420	1810	1050	1085	1200	840	855	900
200	110	1645	1735	2250	1300	1340	1500	1045	1065	1130

Installation position



1) Admissible stroke length

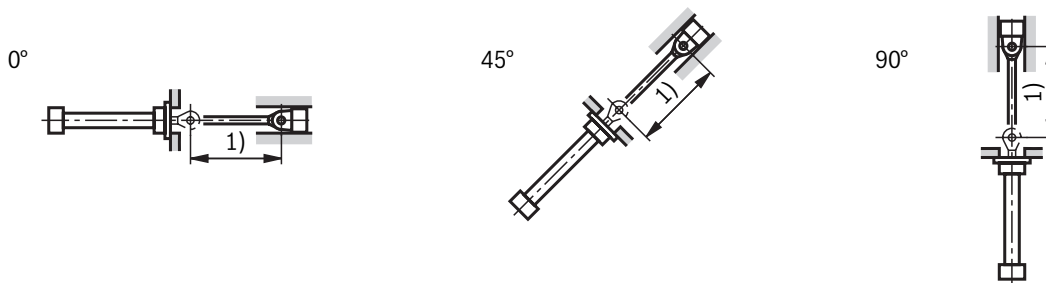
Buckling

(dimensions in mm)

Admissible stroke length for type of mounting "MF3"

ØAL	ØMM	Admissible stroke length with								
		80 bar			160 bar			250 bar		
		0°	45°	90°	0°	45°	90°	0°	45°	90°
25	14	600	600	600	485	485	495	–	–	–
32	18	800	800	800	630	635	645	–	–	–
40	22	1000	1000	1000	735	740	755	–	–	–
	25	1000	1000	1000	935	950	985	755	760	770
50	28	1200	1200	1200	955	965	990	–	–	–
	32	1200	1200	1200	1200	1200	1200	990	1000	1025
63	36	1400	1400	1400	1250	1260	1310	–	–	–
	40	1400	1400	1400	1400	1400	1400	1230	1240	1275
80	45	1700	1700	1700	1530	1550	1620	–	–	–
	50	1700	1700	1700	1700	1700	1700	1505	1520	1570
100	56	2000	2000	2000	1875	1910	2000	–	–	–
	63	2000	2000	2000	2000	2000	2000	1910	1935	2000
125	70	2300	2300	2300	2300	2300	2300	–	–	–
	80	2300	2300	2300	2300	2300	2300	2300	2300	2300

Installation position



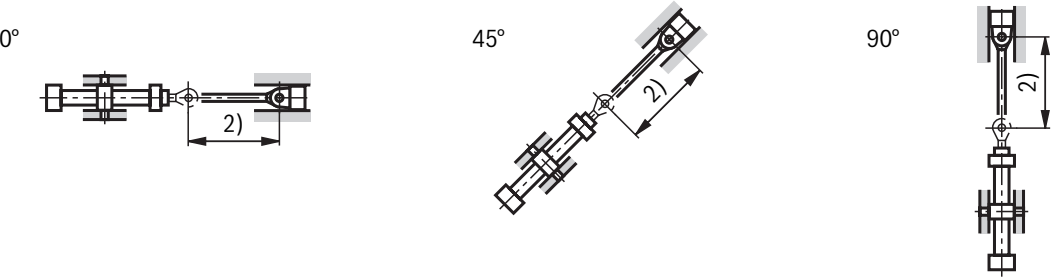
1) Admissible stroke length

Buckling
(dimensions in mm)

Admissible stroke length for type of mounting "MT4" 1)

ØAL	ØMM	Admissible stroke length with								
		80 bar			160 bar			250 bar		
		0°	45°	90°	0°	45°	90°	0°	45°	90°
25	14	270	275	290	180	180	185	–	–	–
32	18	355	360	385	245	245	250	–	–	–
40	22	410	420	450	280	285	290	–	–	–
	25	515	530	590	365	370	380	275	275	280
50	28	540	555	595	375	380	390	–	–	–
	32	680	705	790	495	500	520	380	380	390
63	36	710	730	800	505	510	525	–	–	–
	40	840	870	995	620	630	660	480	485	495
80	45	860	885	985	620	625	650	–	–	–
	50	1010	1055	1225	755	770	815	595	600	615
100	56	1050	1090	1230	770	780	815	–	–	–
	63	1265	1320	1580	965	990	1055	770	780	800
125	70	1300	1350	1555	970	990	1040	–	–	–
	80	1565	1645	2050	1230	1260	1380	995	1010	1050

Installation position



- 1) Trunnion mounting in cylinder center
- 2) Admissible stroke length

Selection criteria for seals

Working conditions

Hydraulic fluid	Hydraulic fluid temperature range	Seal versions	
		"M"	"V"
HL, HLP	–20 °C ... +80 °C	++	++
HFDR	–15 °C ... +80 °C	–	++

Environmental conditions

Ambient and rod temperature in the area of the piston rod		Seal versions	
		"M"	"V"
Standard	–20 °C ... +80 °C ¹⁾	++	+ ²⁾
Extended	+80 °C ... +120 °C ¹⁾	–	++

- ++ = very good
 + = good
 – = inappropriate

- ¹⁾ Moreover, observe the corresponding hydraulic fluid temperature range
²⁾ Lower temperature limit –15 °C

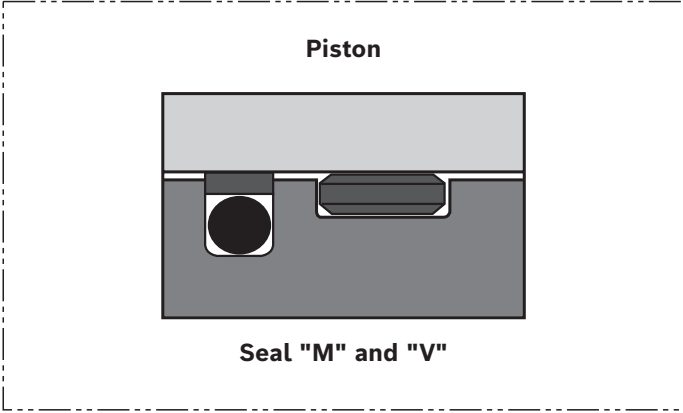
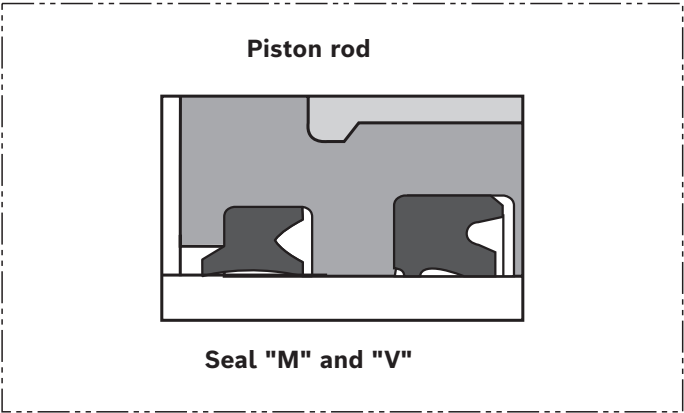
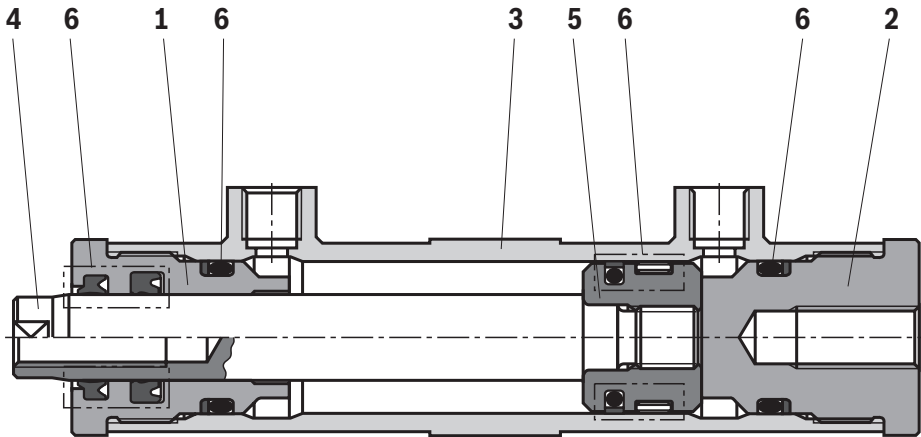


Notice:

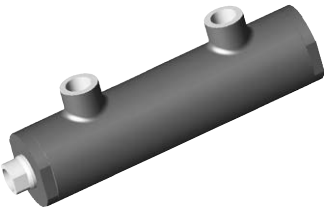
- General technical data in corresponding data sheets will remain valid, see page 5.
- Generally, a hydraulic fluid temperature of approx. 40 °C is recommended. The specified values are to be regarded as guidelines; depending on the case of application, it may be necessary to check the suitability of the seal system.

Components

AL 25 ... 32 mm



Type of mounting "M00"



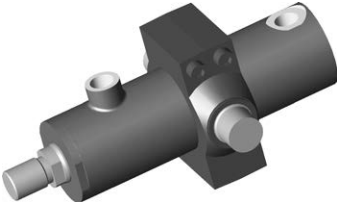
Type of mounting "MP5"



Type of mounting "MF3"



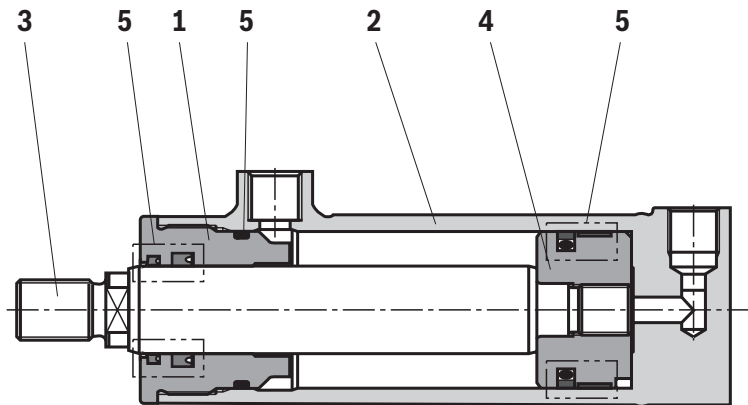
Type of mounting "MT4"



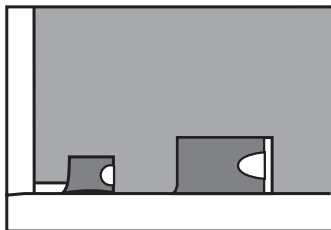
- 1 Head
- 2 Base
- 3 Pipe
- 4 Piston rod
- 5 Piston
- 6 Seal kit: Scraper, rod seal, piston seal, O-ring, guide ring

Components

AL 40 ... 200 mm

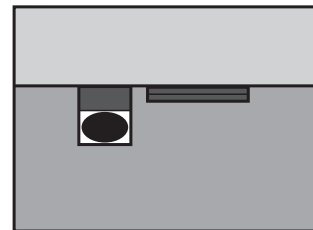


Piston rod



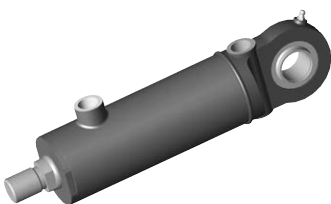
Seal "M" and "V"

Piston



Seal "M" and "V"

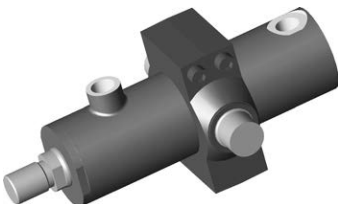
Type of mounting "MP5"



Type of mounting "MF3"



Type of mounting "MT4"



- 1 Head
- 2 Pipe
- 3 Piston rod
- 4 Piston
- 5 Seal kit: Scraper, rod seal, piston seal, O-ring, guide ring

Seal kits ¹⁾

ØAL	ØMM	Material no. for seal design	
		"M"	"V"
25	14	R961014721	R961014737
32	18	R961014722	R961014738
40	22	R961014723	R961014739
	25	R961014724	R961014740
50	28	R961014725	R961014741
	32	R961014726	R961014742
63	36	R961014727	R961014743
	40	R961014728	R961014744
80	45	R961014729	R961014745
	50	R961014730	R961014746
100	56	R961014731	R961014747
	63	R961014732	R961014748
125	70	R961014733	R961014749
	80	R961014734	R961014750
160	100	R961014735	R961014751
200	125	R961014736	R961014752

ØAL = piston Ø
ØMM = piston rod Ø

Priming / painting

Priming | By default, hydraulic cylinders are primed with a coating (color gentian blue RAL 5010) of min. 40 µm. Other colors on request.

Following surfaces of cylinders and attachment parts are not primed:

- ▶ All fit diameters to the customer side
- ▶ Sealing surfaces for line connection
- ▶ Sealing surfaces for flange connection
- ▶ Spherical- / plain bearing
- ▶ Grease nipples

Painting | By default, hydraulic cylinders can be ordered in the CP4 to CP7 corrosivity category in the RAL colors. Following surfaces of cylinders and attachment parts are not painted:

- ▶ All fit diameters and connection surfaces to the customer side
- ▶ Sealing surfaces for line connection
- ▶ Sealing surfaces for flange connection
- ▶ Spherical- / plain bearing
- ▶ Grease nipples

Notice:

Surfaces not primed or painted are protected with solvent-free corrosion protection agent. Accessories ordered as a separate order item are not primed or painted by default. Corresponding priming and/or painting on request.

Corrosivity categories

Corrosivity categories

		Requirements	Applications	
			Inside	Outside
Priming	CP3	240 h salt spray test SST (DIN EN ISO 9227) 240 h condensation water test KKT (DIN EN ISO 6270-2) Layer thickness: min. 40 µm	Field of application, e.g. Hall atmosphere, Air humidity ≤ 60%, no thermal load.	Not suitable for outdoor exposure.
	CP4	480 h salt spray test SST. (DIN EN ISO 9227) 480 h condensation water test KKT (DIN EN ISO 6270-2) Nominal layer thickness: 120 µm	Unheated buildings in which there may be condensation (production rooms, storage and sport halls).	Urban and industrial atmosphere with little salt or sulfur dioxide load.
Painting	CP5	720 h salt spray test SST. (DIN EN ISO 9227) 480 h condensation water test KKT (DIN EN ISO 6270-2) Nominal layer thickness: 140 µm	Silo and debris facilities, chemical plants, boathouses above sea water, laundries, breweries with high humidity and medium contamination.	Industrial and coastal areas with medium salt load.
	CP6	1000 h salt spray test SST. (DIN EN ISO 9227) 480 h condensation water test KKT (DIN EN ISO 6270-2) Nominal layer thickness: 220 µm	Buildings or areas with almost permanent condensation and serious contamination.	Industrial areas with large humidity and aggressive atmosphere.
	CP7	1440 h salt spray test SST. (DIN EN ISO 9227) 480 h condensation water test KKT (DIN EN ISO 6270-2) Nominal layer thickness: 320 µm	Buildings or areas with almost permanent condensation and serious contamination.	Coastal and offshore areas with high salt load.

The specified resistances of the individual Rexroth classes only refer to the primed and painted cylinder areas, not, for example, to piston rods, trunnion mounting, etc. In this connection, special measures may be necessary.

Project planning / maintenance instructions

Boundary and application conditions:

- ▶ The mechanical alignment of the movement axis and thus the mounting points of hydraulic cylinder and piston rod must be ensured. Lateral forces on the guides of piston rod and piston are to be avoided. It may be necessary to consider the own weight of the hydraulic cylinder ("MP3" / "MP5" or "MT4") or the piston rod.
- ▶ The buckling length / buckling load of the piston rod and / or the hydraulic cylinder must be observed (see page 29).
- ▶ The maximum admissible operating pressure must be complied with in any operating state of the hydraulic cylinder.
Possible pressure intensification resulting from the area ratio of annulus area and piston area and possible throttling points are to be observed.
- ▶ Detrimental environmental influences, like e.g. aggressive finest particles, vapors, high temperatures, etc. as well as contaminations and deterioration of the hydraulic fluid are to be avoided.

Standards

Rexroth standard; main dimensions such as piston $\varnothing$ and piston rod $\varnothing$ correspond to ISO 3320.



Notice:

This list does not claim to be complete. In case of questions regarding the compatibility with the medium or exceedance of the boundary or application conditions, please contact us.

All graphical representations in the data sheet are examples.
The product supplied may therefore differ from the figure shown.

Acceptance

Every hydraulic cylinder is tested according to Rexroth standards and following ISO 10100: 2020 with module L.

Safety instructions

For assembly, commissioning and maintenance of hydraulic cylinders, observe the operating instructions 07100-B. Service and repair work has to be performed by Bosch Rexroth AG or by personnel especially trained for this purpose. No warranty is accepted for damage as a consequence of assembly, maintenance or repair work not performed by Bosch Rexroth AG.

Check lists for hydraulic cylinders

Hydraulic cylinders the characteristics and/or application parameters of which deviate from the values specified in the data sheet can only be offered as a special version upon request. For offers, the deviations of the characteristics and / or application parameters must be described in the check lists for hydraulic cylinders (07200).