

Linear/swivel clamp CLR

FESTO



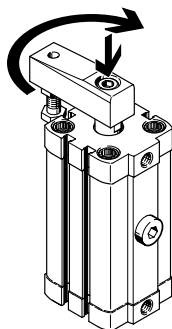
Characteristics

At a glance

- The linear/swivel clamp is used for all types of clamping.
- Simple mechanical and sturdy design
- Swivelling and clamping in one step
- Can be swivelled to the right or left. Swivel direction can be adjusted at a later date
- Adjustable swivel direction
- Available with dust and weld spatter protection
- Clamping finger including plug-on rubber cap to protect sensitive surfaces available as accessory

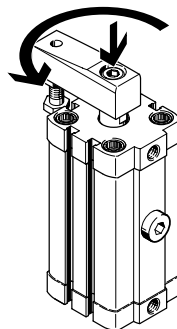
Swivel direction

[R] Right



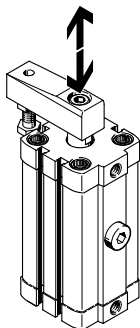
View from above of the piston rod side with the piston rod retracted. Clockwise swivelling direction.

[L] Left



View from above of the piston rod side with the piston rod retracted. Anticlockwise swivelling direction.

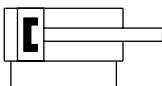
[G] Straight



Only with piston Ø 40 ... 63 mm

Cushioning

[P] Elastic cushioning rings/plates on both sides



The drive is fitted with elastic polymer end-position cushioning.

Benefits:

- No adjustment required
- Saves time

Position sensing

[A] For proximity sensor

By using proximity switches, any position can be detected.

Characteristics

Piston rod characteristics

[K11] Welding immune

- Particularly suited for use in areas in close proximity to flying sparks or welding spatter
- Only with piston Ø 25 ... 63 mm

Scraper

[R8] Dust protection

- Use in dusty environments
- Only with piston Ø 25 ... 63 mm

Type code

001	Series	
CLR	Linear swivel clamp, double-acting	

002	Piston diameter [mm]	
12	12	
16	16	
20	20	
25	25	
32	32	
40	40	
50	50	
63	63	

003	Stroke [mm]	
10	10	
20	20	
50	50	

004	Swivel direction	
G	Straight	
R	Right	
L	Left	

005	Cushioning	
P	Elastic cushioning rings/plates on both sides	

006	Position sensing	
A	For proximity sensor	

007	Piston rod characteristics	
	Standard	
K11	Welding immune	

008	Scraper	
	Standard	
R8	Dust protection	

009	Generation	
B	Series B	

Datasheet

General technical data

Piston diameter	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
Design	Piston Piston rod Cylinder barrel							
Mode of operation	Double-acting							
Pneumatic connection	M5				G1/8			
Piston rod thread	M3	M4	M6		M8		M10	
Total stroke ¹⁾	19 mm, 29 mm	20 mm, 30 mm	22 mm, 32 mm	23 mm, 33 mm	28 mm, 38 mm		41 mm, 71 mm	43 mm, 73 mm
Clamping stroke ²⁾	10 mm, 20 mm						20 mm, 50 mm	
Swivel angle	90 deg +/-4 deg		90 deg +/-3 deg		90 deg +/-2 deg			
Swivel direction	Right, Left					Right, Left, Straight		
Type of mounting	Either: With through-hole Via female thread With accessories							
Cushioning	Elastic cushioning rings/plates at both ends							
Position detection	Via proximity switch							
Mounting position	optional							

1) The total stroke is made up of the clamping stroke and the swivelling stroke

2) The clamping stroke corresponds to the linear stroke that is used for clamping

Operating and environmental conditions

Operating pressure	2 ... 10 bar
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature ¹⁾	-10 ... 80°C
Corrosion resistance class CRC ²⁾	2 - Moderate corrosion stress

1) Observe the application range of the proximity switches

2) More information www.festo.com/x/topic/kbk

Forces without clamping finger

Piston diameter	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
Theoretical clamping force at 0.6 MPa (6 bar, 87 psi)	51 N	90 N	121 N	227 N	362 N	633 N	990 N	1,682 N

Forces with clamping finger (5 mm before end of stroke)

Piston diameter	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	63 mm
Effective clamping force at 0.2 MPa (2 bar, 29 psi)	12 N	17 N	35 N	63 N	111 N	176 N	271 N	441 N
Effective clamping force at 0.4 MPa (4 bar, 58 psi)	23 N	36 N	73 N	127 N	216 N	355 N	508 N	823 N
Effective clamping force at 0.6 MPa (6 bar, 87 psi)	34 N	53 N	109 N	188 N	313 N	536 N	716 N	1,386 N

Weights CLR-12 ... 25, basic type

Piston diameter	12 mm	16 mm	20 mm	25 mm
Clamping stroke	10 mm	20 mm	10 mm	20 mm
Product weight	135 g	160 g	190 g	335 g

Weights CLR-32 ... 63, basic type

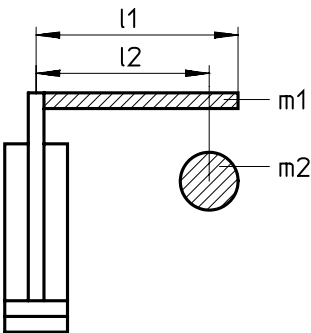
Piston diameter	32 mm	40 mm	50 mm	63 mm
Clamping stroke	10 mm	20 mm	10 mm	20 mm
Product weight	685 g	765 g	880 g	985 g

Datasheet

Weights, variant K11-R8										
Piston diameter	25 mm		32 mm		40 mm		50 mm		63 mm	
Clamping stroke	10 mm	20 mm	10 mm	20 mm	10 mm	20 mm		50 mm	20 mm	50 mm
Product weight	410 g	470 g	700 g	785 g	895 g	1,010 g	1,690 g	2,155 g	2,100 g	2,625 g

Materials	
Material piston rod	Coated, High-alloy stainless steel
Material cylinder barrel	Wrought aluminium alloy, Smooth anodised
Material collar screws	Steel, Galvanised
Material seals	NBR, TPE-U(PU)
LABS (PWIS) conformity	VDMA24364-B2-L

Maximum permissible mass moment of inertia Jo



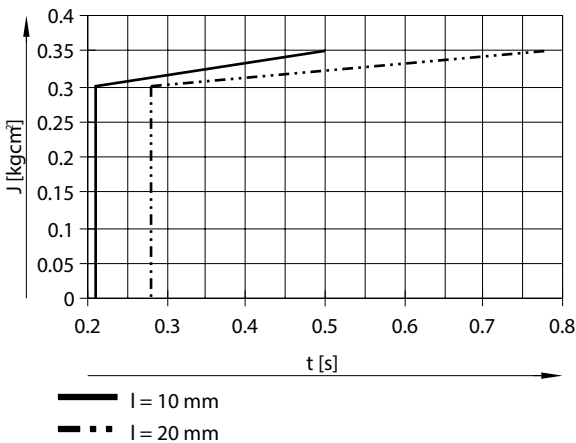
The permissible mass moment of inertia at the piston rod depends on the cylinder speed. The moment can easily be calculated using this formula. The software program „Mass moments of inertia“, available on the electronic catalogue, can also be used for calculation purposes.

Formula for calculating the mass moment of inertia Jo

$$J_0 = \frac{m_1 \cdot l_1^2}{3} + m_2 \cdot l_2^2$$

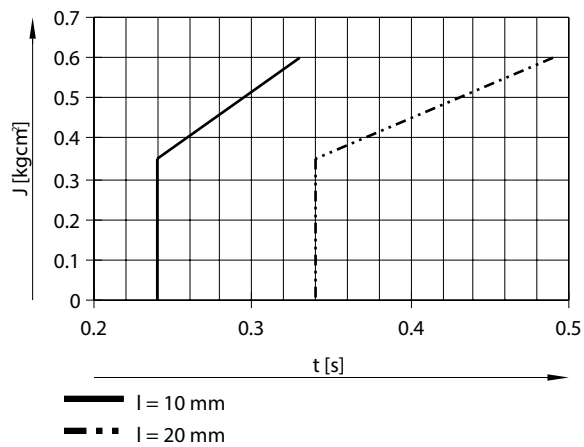
- m1 = clamping finger mass
- l1 = clamping finger length
- m2 = screw mass
- l2 = centre distance between screw and piston rod

Mass moment of inertia j as a function of stroke l and time t for CLR-12

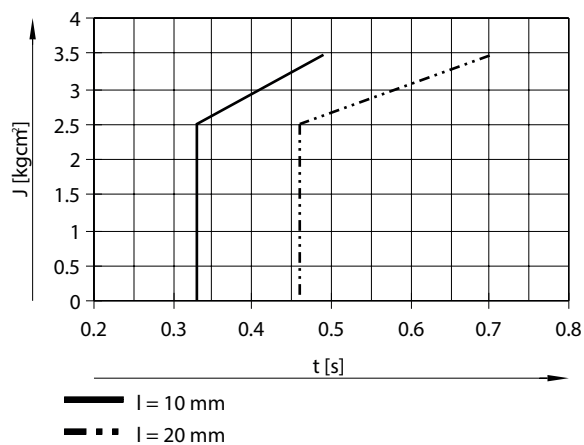


Datasheet

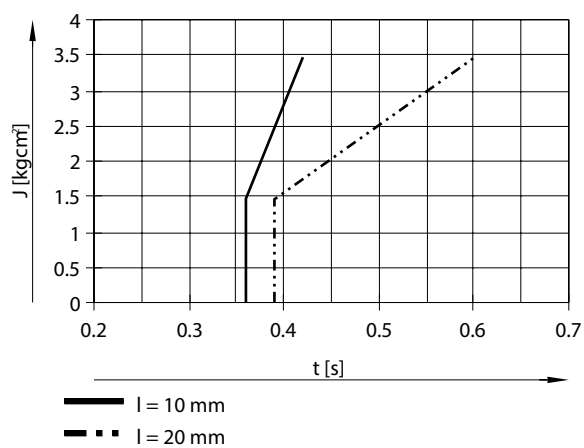
Mass moment of inertia J as a function of stroke l and time t for CLR-16



Mass moment of inertia J as a function of stroke l and time t for CLR-20

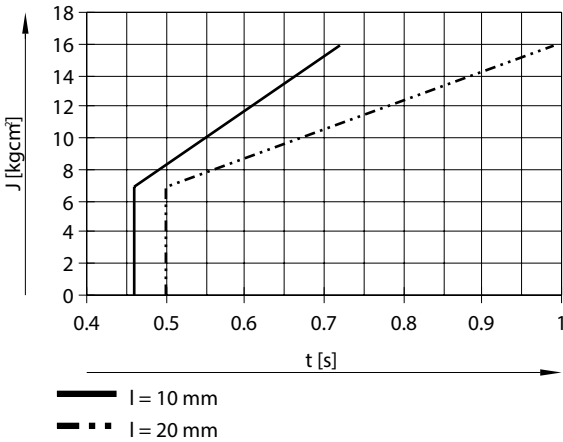


Mass moment of inertia J as a function of stroke l and time t for CLR-25

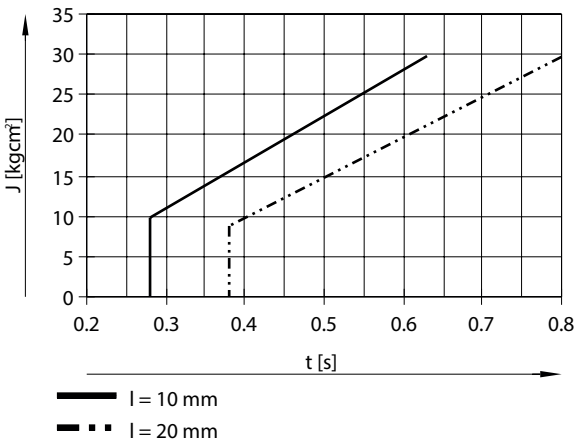


Datasheet

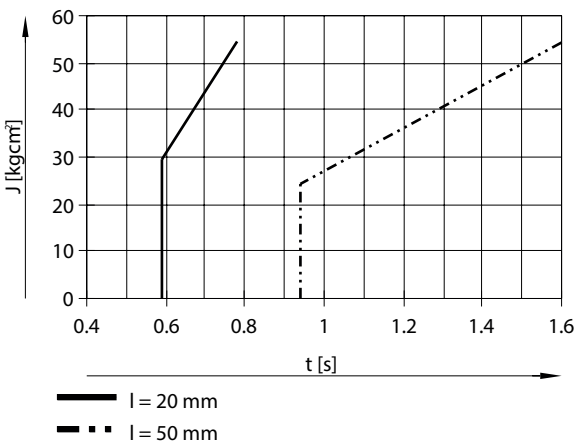
Mass moment of inertia J as a function of stroke l and time t for CLR-32



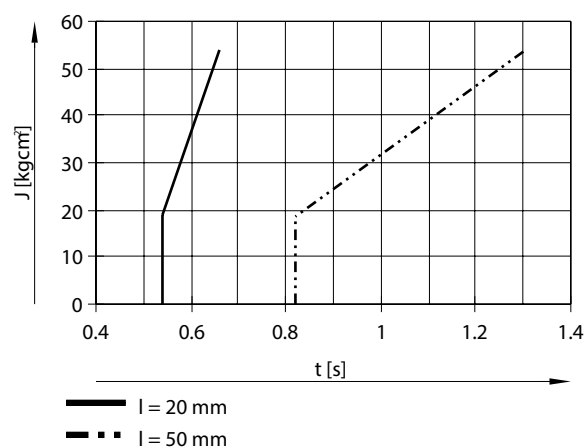
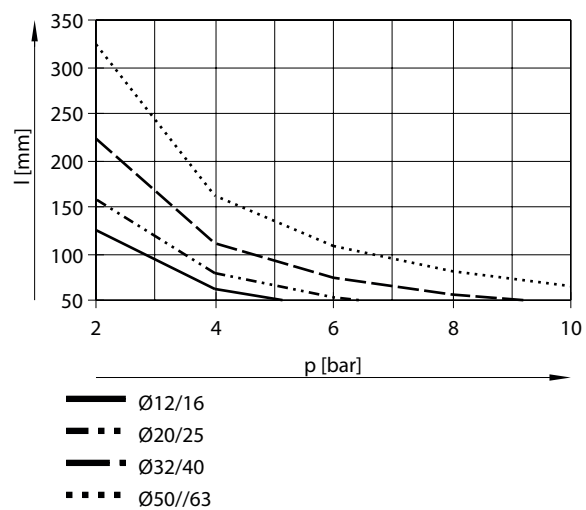
Mass moment of inertia J as a function of stroke l and time t for CLR-40



Mass moment of inertia J as a function of stroke l and time t for CLR-50

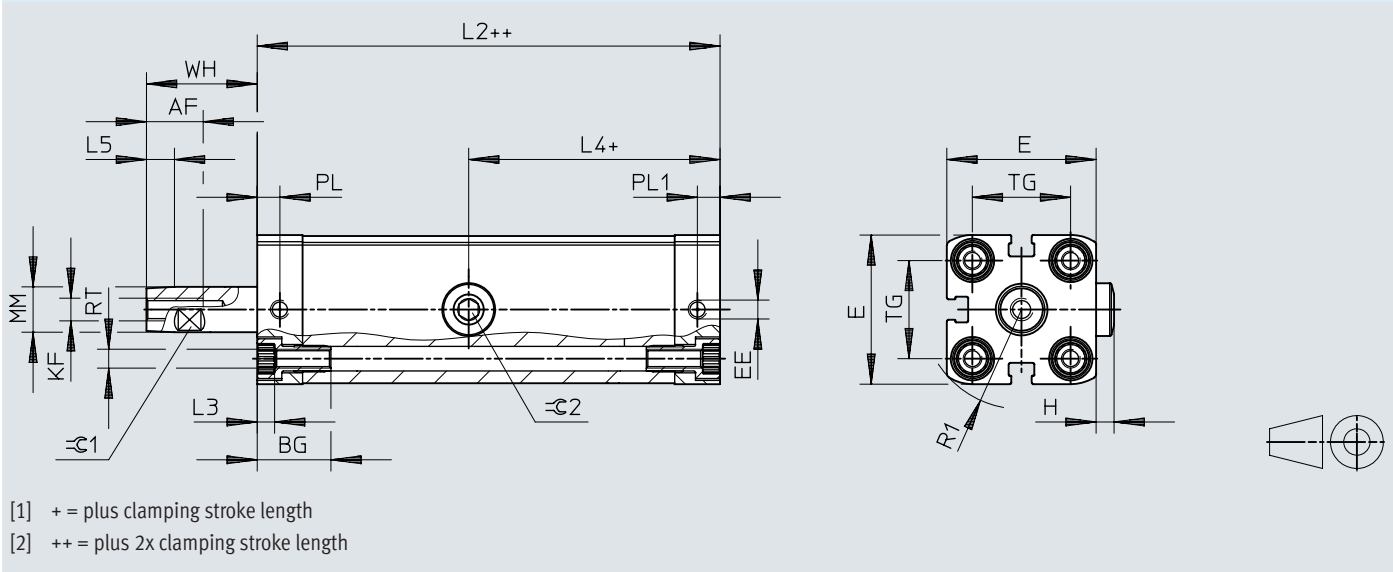


Datasheet

Mass moment of inertia J as a function of stroke l and time t for CLR-63Maximum permissible clamping arm length l as a function of operating pressure p 

Dimensions

Dimensions – CLR-12 ... 25, basic type Download CAD data www.festo.com



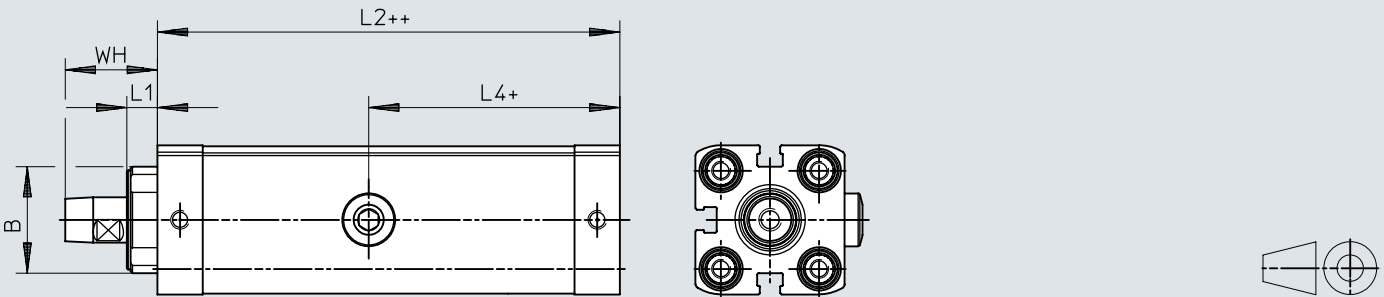
	AF	BG	E	EE	H	KF	L2	L3	L4
CLR-12	10	17	27,5	M5	3,25	M3	60,6	3,5	21,8
CLR-16	12		29			M4	62,5		23,5
CLR-20	15	19,5	35,5		4,75	M6	79,5	4,6	43,8
CLR-25			39,5				82,5		46,55

	L5	MM Ø	PL	PL1	R	RT	TG	WH	⌀C1	⌀C2
CLR-12	4,9	6	6	15,1	18,2	M4	16	10,9	5	3
CLR-16		8	6,5	15	19,3		18		7	
CLR-20	7,4	12	6	6	23,7	M5	22	16,4	10	5
CLR-25					26,3		26			

Dimensions

Dimensions – CLR-25, variant K11-R8

Download CAD data www.festo.com

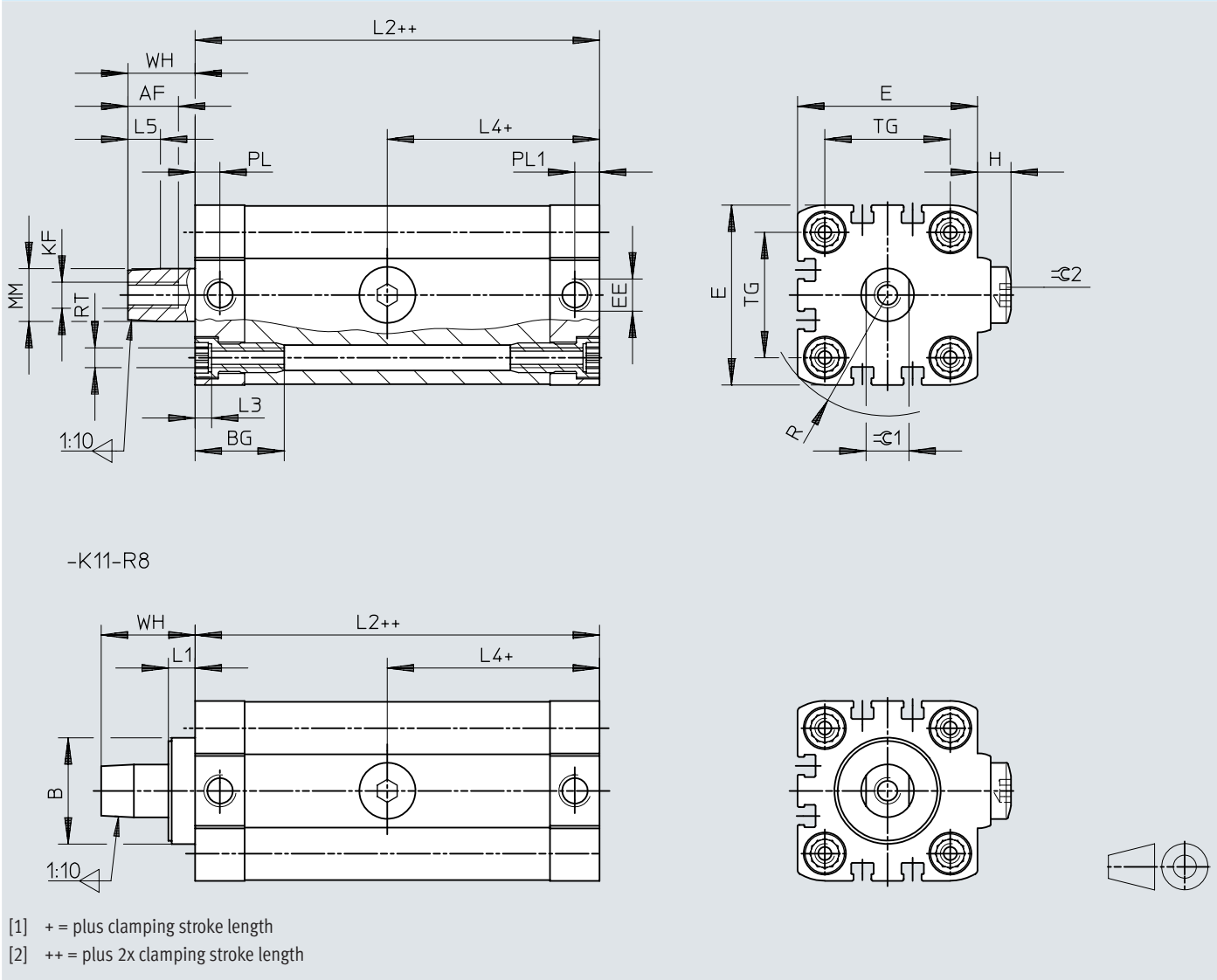


- [1] + = plus clamping stroke length
- [2] ++ = plus 2x clamping stroke length

	B	L1	L2	L4	WH
					K11-R8
CLR-25	28,4	8,1	82,5	46,55	24,5

Dimensions

Dimensions – CLR-32 ... 63, basic type Download CAD data www.festo.com

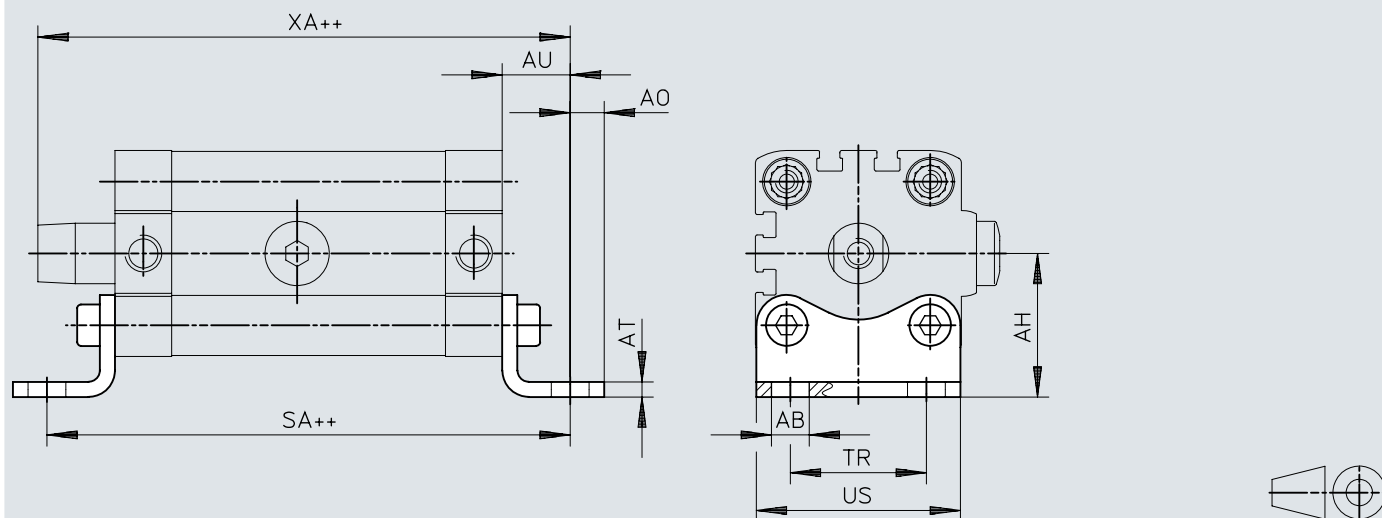


	AF	BG	B	E	EE	H	KF	L1	L2	L3	L4
CLR-32	15	26	32,2	47	G1/8	8,9	M8	8,1	101	4,6	53,05
CLR-40				54,5		10,15			102,5		54,3
CLR-50		27	38,2	65,5		M10	7,65	117,9	58,8		
CLR-63				75,5				14,2	124,9		62,75

	L5	MM Ø	PL	PL1	R	RT	TG	WH		≙C1	≙C2
									K11-R8		
CLR-32	9,9	16	7,5	7,5	31,5	M6	32,5	20,4	28,5	13	6
CLR-40					36,7		38				
CLR-50	10,3	20			44,3	M8	46,5	20,8		17	8
CLR-63					51,5		56,5				

Dimensions

Dimensions – Foot mounting HNA

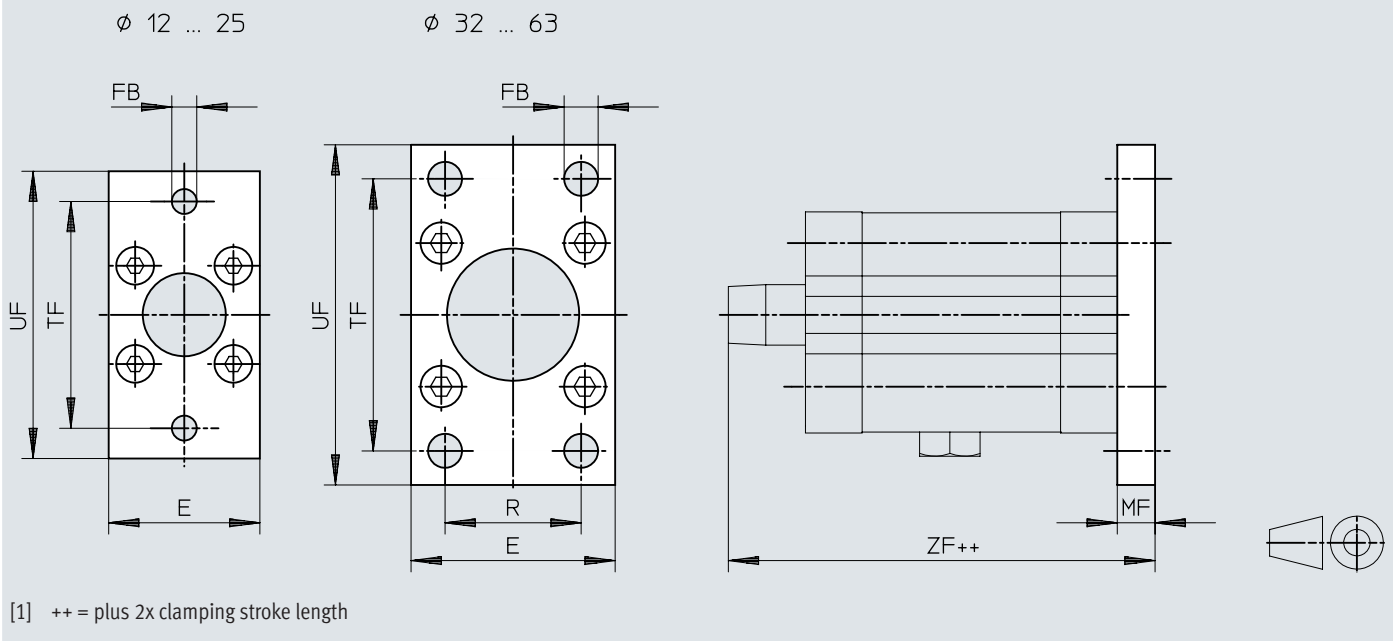
[Download CAD data](http://www.festo.com) www.festo.com


[1] ++ = plus 2x clamping stroke length

	AB Ø H14	AH	AO	AT	AU	SA	TR	US	XA	
HNA-12	5,8	21	5	3	13	86,6	16	26	84,5	
HNA-16		22	4,75			88,5	18	27,5	86,4	
HNA-20	7	27	6,25	4	16	111,5	22	34,5	111,9	
HNA-25		29				114,5	26	38,5	114,9	
HNA-32		33,5	7			133	32	46	137,4	
HNA-40	10	38	9	5	18	138,5	36	54	140,9	
HNA-50		45	8		21	159,5	45	64	159,7	
HNA-63		50				166,9	50	75	166,7	

Dimensions

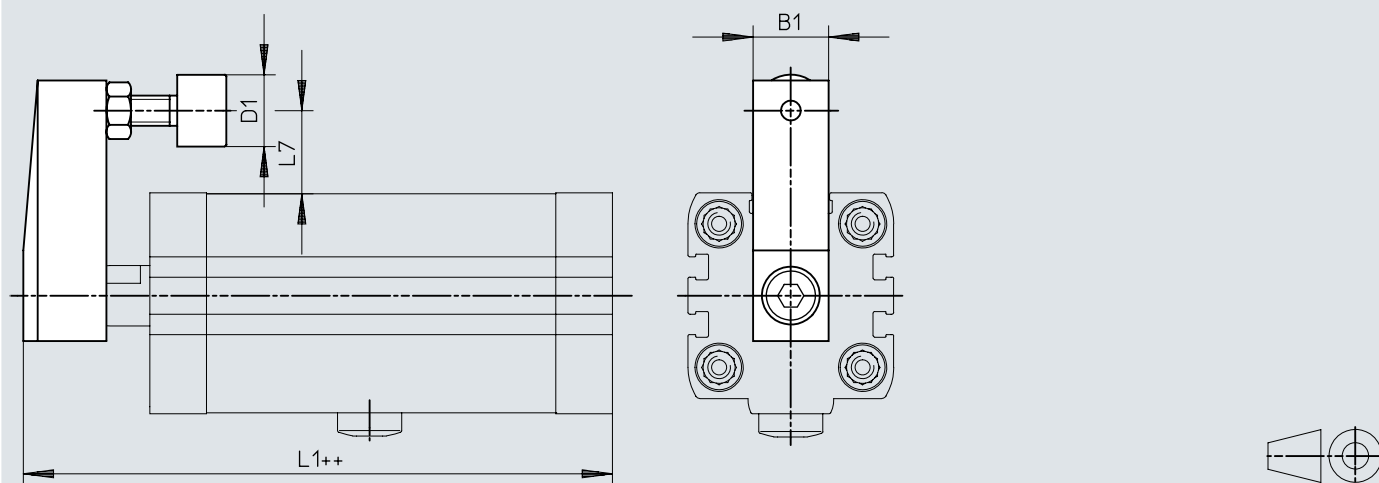
Dimensions – Flange mounting FNC Download CAD data www.festo.com



	E	FB Ø H13	MF	R	TF	UF	ZF
FNC-12	28	5,5	8	-	40	50	79,5
FNC-16	29				43	55	81,4
FNC-20	36	6,6			55	70	103,9
FNC-25	40				60	76	106,9
FNC-32	45	7	10	32	64	80	131,4
FNC-40	54	9		36	72	90	132,9
FNC-50	65		12	45	90	110	150,7
FNC-63	75			50	100	120	157,7

Dimensions

Dimensions – Clamping finger CLR-...-FS

Download CAD data www.festo.com

[1] ++ = plus 2x clamping stroke length

		B1	D1 Ø	L1 +1,1/-1,2		L7
				CRL-...	CRL-...-K11-R8	
CLR-12-FS	12	10	11	76,5	-	11,8
CLR-16-FS	16	11		79,4		12,25
CLR-20/25-FS	20	16	15	104,4	115,5	17,5
	25			107,4		15,5
CLR-32/40-FS	32	20	19	133,3	141,4	25,75
	40			134,8	142,9	22
CLR-50/63-FS	50	25	24	153,2	160,85	32,5
	63			160,2	167,85	27,5

Ordering data

With swivelling direction to the right				
	Piston diameter	Clamping stroke	Part no.	Type
	12 mm	10 mm	535431	CLR-12-10-R-P-A
		20 mm	535433	CLR-12-20-R-P-A
	16 mm	10 mm	535435	CLR-16-10-R-P-A
		20 mm	535437	CLR-16-20-R-P-A
	20 mm	10 mm	535439	CLR-20-10-R-P-A
		20 mm	535441	CLR-20-20-R-P-A
	25 mm	10 mm	535443	CLR-25-10-R-P-A
		20 mm	535445	CLR-25-20-R-P-A
	32 mm	10 mm	543177	CLR-32-10-R-P-A-B
		20 mm	543179	CLR-32-20-R-P-A-B
	40 mm	10 mm	535453	CLR-40-10-R-P-A
		20 mm	535456	CLR-40-20-R-P-A
	50 mm	20 mm	535459	CLR-50-20-R-P-A
		50 mm	535462	CLR-50-50-R-P-A
	63 mm	20 mm	535465	CLR-63-20-R-P-A
		50 mm	535468	CLR-63-50-R-P-A

With swivelling direction to the right and dust and weld spatter protection				
	Piston diameter	Clamping stroke	Part no.	Type
	25 mm	10 mm	535483	CLR-25-10-R-P-A-K11-R8
		20 mm	535485	CLR-25-20-R-P-A-K11-R8
	32 mm	10 mm	535487	CLR-32-10-R-P-A-B-K11-R8
		20 mm	535490	CLR-32-20-R-P-A-B-K11-R8
	40 mm	10 mm	535493	CLR-40-10-R-P-A-K11-R8
		20 mm	535496	CLR-40-20-R-P-A-K11-R8
	50 mm	20 mm	535499	CLR-50-20-R-P-A-K11-R8
		50 mm	535502	CLR-50-50-R-P-A-K11-R8
	63 mm	20 mm	535505	CLR-63-20-R-P-A-K11-R8
		50 mm	535508	CLR-63-50-R-P-A-K11-R8

With swivelling direction to the left				
	Piston diameter	Clamping stroke	Part no.	Type
	12 mm	10 mm	535432	CLR-12-10-L-P-A
		20 mm	535434	CLR-12-20-L-P-A
	16 mm	10 mm	535436	CLR-16-10-L-P-A
		20 mm	535438	CLR-16-20-L-P-A
	20 mm	10 mm	535440	CLR-20-10-L-P-A
		20 mm	535442	CLR-20-20-L-P-A
	25 mm	10 mm	535444	CLR-25-10-L-P-A
		20 mm	535446	CLR-25-20-L-P-A
	32 mm	10 mm	543178	CLR-32-10-L-P-A-B
		20 mm	543180	CLR-32-20-L-P-A-B
	40 mm	10 mm	535454	CLR-40-10-L-P-A
		20 mm	535457	CLR-40-20-L-P-A
	50 mm	20 mm	535460	CLR-50-20-L-P-A
		50 mm	535463	CLR-50-50-L-P-A
	63 mm	20 mm	535466	CLR-63-20-L-P-A
		50 mm	535469	CLR-63-50-L-P-A

With swivelling direction to the left and dust and weld spatter protection				
	Piston diameter	Clamping stroke	Part no.	Type
	25 mm	10 mm	535484	CLR-25-10-L-P-A-K11-R8

Ordering data

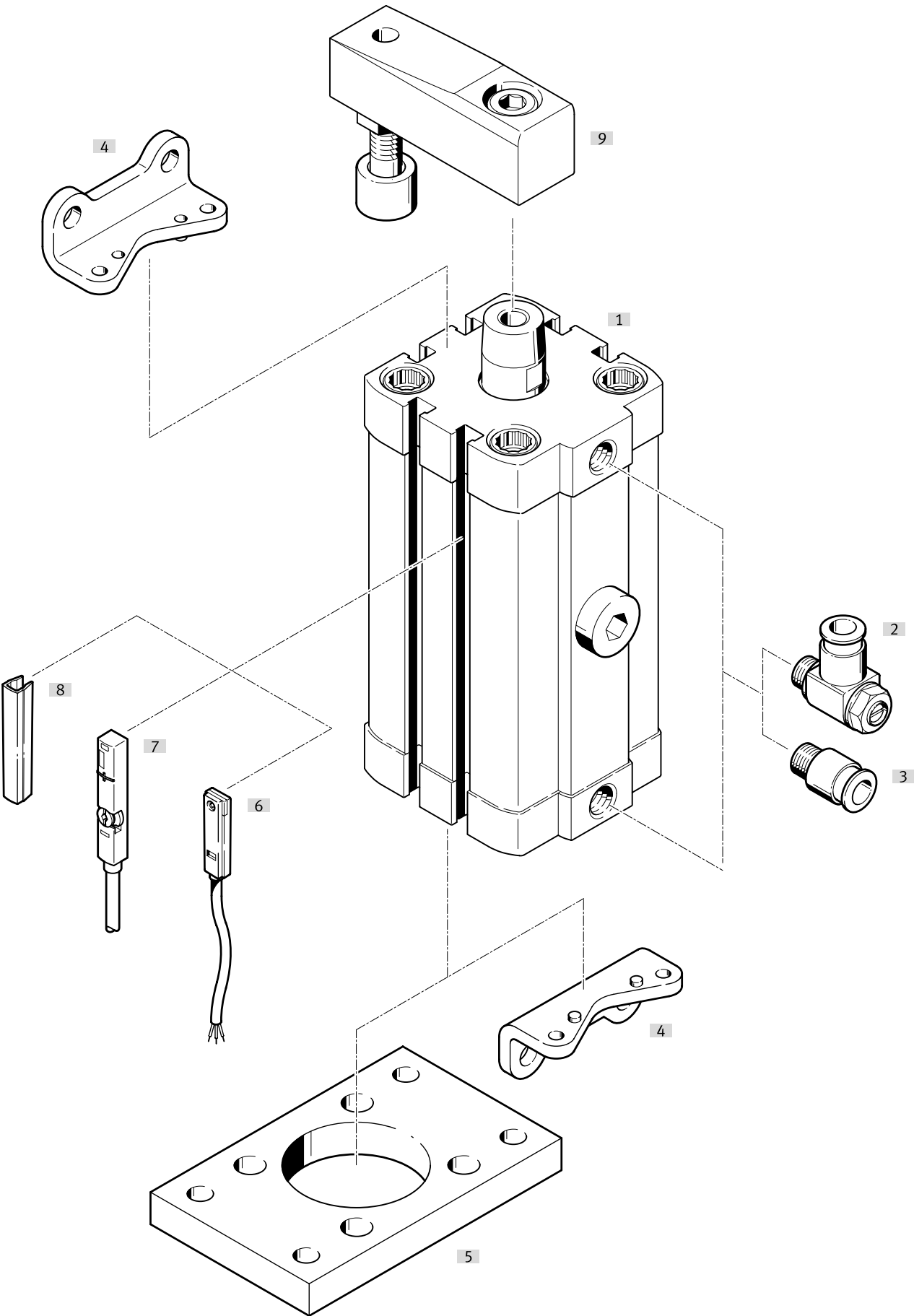
With swivelling direction to the left and dust and weld spatter protection				
	Piston diameter	Clamping stroke	Part no.	Type
	25 mm	20 mm	535486	CLR-25-20-L-P-A-K11-R8
	32 mm	10 mm	535488	CLR-32-10-L-P-A-B-K11-R8
		20 mm	535491	CLR-32-20-L-P-A-B-K11-R8
	40 mm	10 mm	535494	CLR-40-10-L-P-A-K11-R8
		20 mm	535497	CLR-40-20-L-P-A-K11-R8
	50 mm	20 mm	535500	CLR-50-20-L-P-A-K11-R8
		50 mm	535503	CLR-50-50-L-P-A-K11-R8
	63 mm	20 mm	535506	CLR-63-20-L-P-A-K11-R8
		50 mm	535509	CLR-63-50-L-P-A-K11-R8

With straight swivelling direction				
	Piston diameter	Clamping stroke	Part no.	Type
	40 mm	10 mm	535455	CLR-40-10-G-P-A
		20 mm	535458	CLR-40-20-G-P-A
	50 mm	20 mm	535461	CLR-50-20-G-P-A
		50 mm	535464	CLR-50-50-G-P-A
	63 mm	20 mm	535467	CLR-63-20-G-P-A
		50 mm	535470	CLR-63-50-G-P-A

With straight swivelling direction and dust and weld spatter protection				
	Piston diameter	Clamping stroke	Part no.	Type
	40 mm	10 mm	535495	CLR-40-10-G-P-A-K11-R8
		20 mm	535498	CLR-40-20-G-P-A-K11-R8
	50 mm	20 mm	535501	CLR-50-20-G-P-A-K11-R8
		50 mm	535504	CLR-50-50-G-P-A-K11-R8
	63 mm	20 mm	535507	CLR-63-20-G-P-A-K11-R8
		50 mm	535510	CLR-63-50-G-P-A-K11-R8

Peripherals

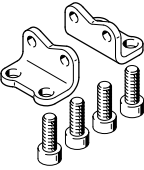
Peripherals overview



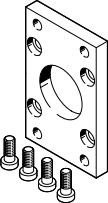
Peripherals

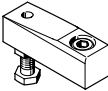
Accessories		→ Link
Type/order code	Description	
[1] Linear/swivel clamp CLR	Pneumatic drive	↗ clr
[2] One-way flow control valve GRLA	For regulating speed	20
[3] Push-in fitting QS		↗ qs
[4] Foot mounting HNA	For bearing or end caps	20
[5] Flange mounting FNC	For end caps	20
[6] Proximity switch SME	Can be integrated in the cylinder profile barrel	21
[7] Proximity switch SMT	Can be integrated in the cylinder profile barrel	20
[8] Slot cover ABP-5-S	For protecting the sensor cables and the sensor slots from contamination	21
[9] Clamping finger CLR-...-FS	Consisting of clamping finger, retaining screw, clamp screw, lock nut and protective cap	20

Accessories

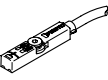
Foot mounting HNA					
	Description	Material bracket ¹⁾	Product weight	Part no.	Type
	For Ø 12	Steel, Galvanised	39 g	537237	HNA-12
	For Ø 16		42 g	537238	HNA-16
	For Ø 20		84 g	537239	HNA-20
	For Ø 25		90 g	537240	HNA-25
	For Ø 32		123 g	537241	HNA-32
	For Ø 40		157 g	537242	HNA-40
	For Ø 50		278 g	537243	HNA-50
	For Ø 63		328 g	537244	HNA-63

1) Foot mounting HNA can only be used for the K11-R8 variant from CLR-40.

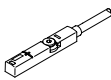
Flange mounting FNC					
	Description	Material mounting	Product weight	Part no.	Type
	For Ø 12	Steel, Galvanised	79 g	537245	FNC-12
	For Ø 16		88 g	537246	FNC-16
	For Ø 20		141 g	537247	FNC-20
	For Ø 25		165 g	537248	FNC-25
	For Ø 32		221 g	174376	FNC-32
	For Ø 40		291 g	174377	FNC-40
	For Ø 50		536 g	174378	FNC-50
	For Ø 63		679 g	174379	FNC-63

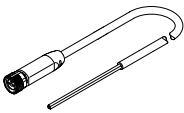
Clamping finger CLR-...-FS				
	Description	Material clamping finger	Part no.	Type
	For Ø 12	Wrought aluminium alloy, Colourless anodised	535551	CLR-12-FS
	For Ø 16		535552	CLR-16-FS
	for Ø 20, 25		535553	CLR-20/25-FS
	For Ø 32, 40		535554	CLR-32/40-FS
	For Ø 50, 63	High-alloy steel	535555	CLR-50/63-FS

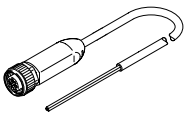
One-way flow control valve GRLA					
	Pneumatic connection, port 2	Pneumatic connection, port 1	Product weight	Part no.	Type
	M5	QS-3	13 g	193137	GRLA-M5-QS-3-D
		QS-4		★ 193138	GRLA-M5-QS-4-D
		QS-6		★ 193139	GRLA-M5-QS-6-D
	G1/8	QS-3	22 g	193142	GRLA-1/8-QS-3-D
		QS-4		193143	GRLA-1/8-QS-4-D
		QS-6		★ 193144	GRLA-1/8-QS-6-D
		QS-8		★ 193145	GRLA-1/8-QS-8-D

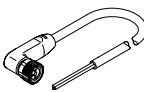
Proximity switch SMT for T-slot, magneto-resistive						Link 
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type
	Screw-clamped, Insertable in the slot from above	3-wire NPN N/O contact	Open end	2.5 m	★ 574338	SMT-8M-A-NS-24V-E-2,5-OE
			Plug M8, A-coded	0.3 m	574339	SMT-8M-A-NS-24V-E-0,3-M8D
		3-wire PNP N/C contact	Open end	7.5 m	574340	SMT-8M-A-PO-24V-E-7,5-OE
				2.5 m	★ 574335	SMT-8M-A-PS-24V-E-2,5-OE
		3-wire PNP N/O contact	Plug M8, A-coded	0.3 m	★ 574334	SMT-8M-A-PS-24V-E-0,3-M8D
			Plug M12, A-coded		★ 574337	SMT-8M-A-PS-24V-E-0,3-M12

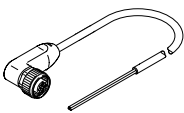
Accessories

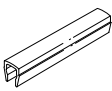
Proximity switch SME for T-slot, magnetic, reed							Link 
	Type of mounting	Switching output	Electrical connection	Cable length	Part no.	Type	
	Screw-clamped, Insertable in the slot from above	3-wire N/C contact	Open end	7.5 m	546799	SME-8M-DO-24V-K-7,5-OE	
		3-wire N/O contact		2.5 m	543862	SME-8M-DS-24V-K-2,5-OE	
				5 m	543863	SME-8M-DS-24V-K-5,0-OE	
		Plug M8, A-coded	0.3 m	543861	SME-8M-DS-24V-K-0,3-M8D		
		2-wire PNP N/O contact	Open end	2.5 m	543872	SME-8M-ZS-24V-K-2,5-OE	

Connecting cables NEBA, straight, M8 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	★ 8078223	NEBA-M8G3-U-2.5-N-LE3
				5 m	★ 8078224	NEBA-M8G3-U-5-N-LE3

Connecting cables NEBA, straight, M12 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	8078236	NEBA-M12G5-U-2.5-N-LE3
				5 m	8078237	NEBA-M12G5-U-5-N-LE3

Connecting cables NEBA, angled, M8 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M8x1, A-coded, to EN 61076-2-104	Open end	3	2.5 m	★ 8078230	NEBA-M8W3-U-2.5-N-LE3
				5 m	★ 8078231	NEBA-M8W3-U-5-N-LE3

Connecting cables NEBA, angled, M12 connection						
	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	3	2.5 m	8078245	NEBA-M12W5-U-2.5-N-LE3
				5 m	8078246	NEBA-M12W5-U-5-N-LE3

Slot cover ABP for T-slot				
	Description	Packaging quantity [pieces]	Part no.	Type
	Length 0.5 m, Inserted from above	2	151680	ABP-5-S