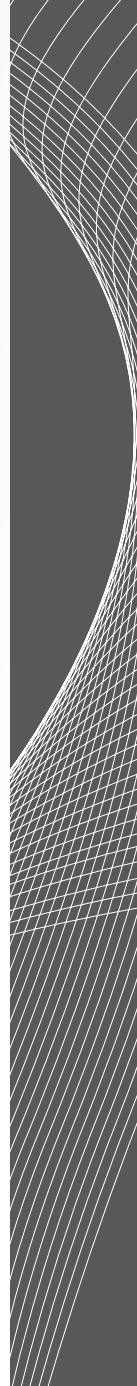
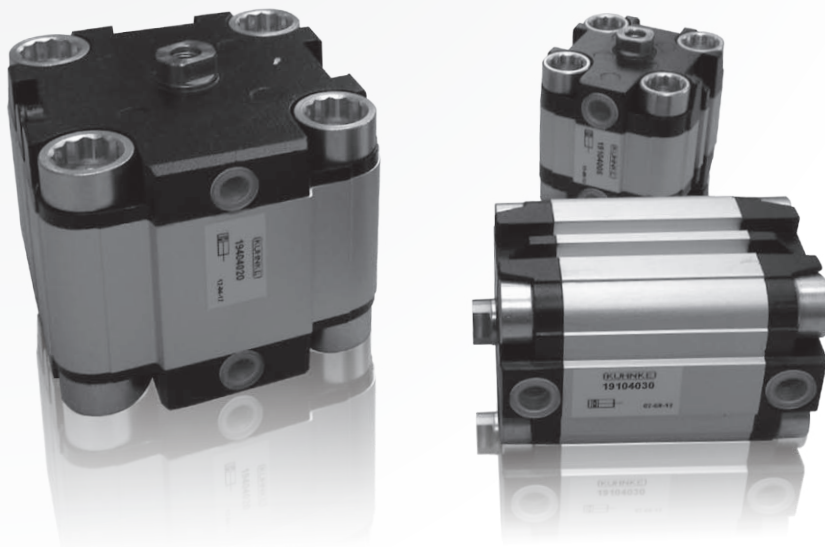


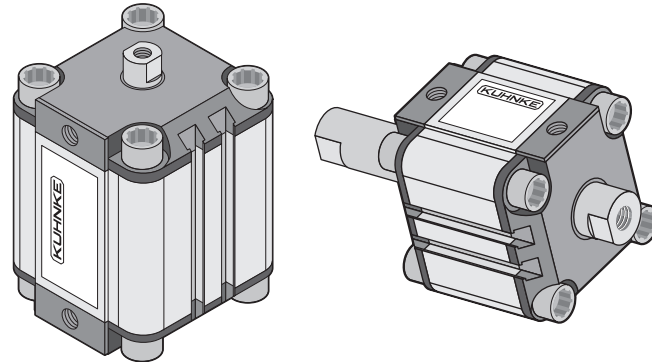
# SERIES 19 COMPACT CYLINDERS





# COMPACT CYLINDERS

## General Information



A versatile, robust and reliable design of cylinder for use where space is limited, these cylinders are suitable for a wide range of applications. Cylinder variations include: single or double acting,

through rod, torsion protected with or without magnetic piston, PUR or Viton seals, female or male threaded rod, also a full range of mounting accessories and sensors are available.

## Technical Data

Piston diameters:	Ø 12, 16, 20, 25, 32, 40, 50, 63, 80, 100 (mm)										
Connection thread:	M5, G1/8, G1/4										
Cap:	Aluminium diecasting										
Piston rod:	Stainless steel										
Housing:	Aluminium section tube										
Piston rod bushing:	Maintenance free										
Seals:	PUR, special seals upon request										
Pressure range:	1.5 - 10 bar										
Operating medium:	Compressed air, prepared, lubricant not necessary										
Cushioning:	Integrated cushioning rings										
Operating temperature:	-20 °C to +80 °C										
Stroke limitation:	Max. stroke +1.5 mm										
Mounting type:	External cylinder bolts are internally female threaded										
Force at 6 bar:	Ø [mm]	12	16	20	25	32	40	50	63	80	100
	Single Acting <i>N [push]</i>	63	114	183	279	464	738	1.140	1.820	2.933	4.570
	Single Acting <i>N [spring]</i>	5	6	6	15	18	16	37	48	81	140
	Double Acting <i>N [push]</i>	68	121	188	295	483	754	1.178	1.870	3.016	4.712
	Double Acting <i>N [pull]</i>	51	91	140	247	415	686	1.057	1.749	2.828	4.418
	Through Rod <i>N [push/pull]</i>	51	91	140	247	415	686	1.057	1.749	2.828	4.418
Mounting position:	Any position										

**Order Code**

<i>Order Code</i>		<b>19.</b>	<b>2</b>	<b>0</b>	<b>4.</b>	<b>025</b>
Series Number		19				
Piston diameter						
	Ø 12		7			
	Ø 16		8			
	Ø 20		9			
	Ø 25		0			
	Ø 32		1			
	Ø 40		2			
	Ø 50		3			
	Ø 63		4			
	Ø 80		5			
	Ø 100		6			
Application						
	standard (female threaded piston rod)			0		
	through rod (female threaded piston rod)			3		
	torsion protected			4		
	male threaded piston rod			9		
Version						
	single acting magnetic				5	
	single acting non-magnetic				7	
	double acting magnetic				4	
	double acting non-magnetic				6	
Stroke						
	mm					xxx

<i>Special versions</i>	<i>KH.</i>	<b>1</b>	<b>0</b>	<b>4.</b>	<b>050.</b>	<b>zzzz</b>
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zzzz = project number (assigned by factory)

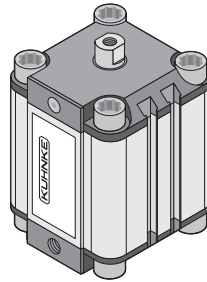
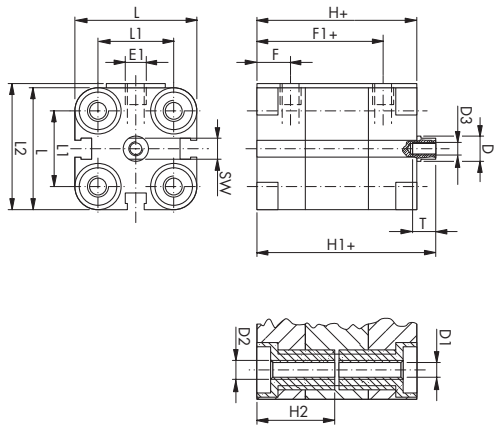
**Accessories - Order Code**

<i>Order Code</i>		<b>19.</b>	<b>2</b>	<b>08.</b>	<b>11</b>
Series Number		19			
Piston diameter					
	diameter number as previous table		d		
Type					
	accessories			08	
Application					
	complete seal kit for non-magnetic cylinder				11

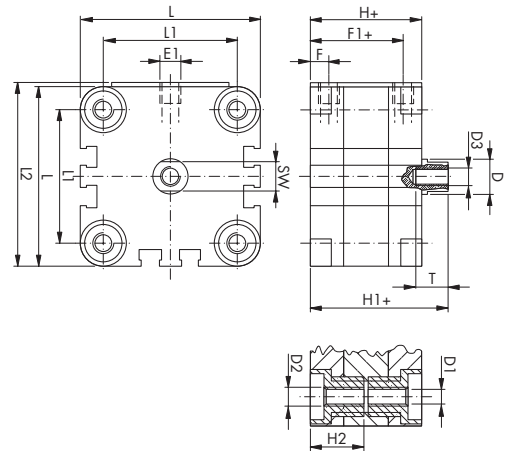
**Compact Cylinders - Single Acting Type**

**Female Threaded Piston Rod**

Piston Ø 12 - 25 mm



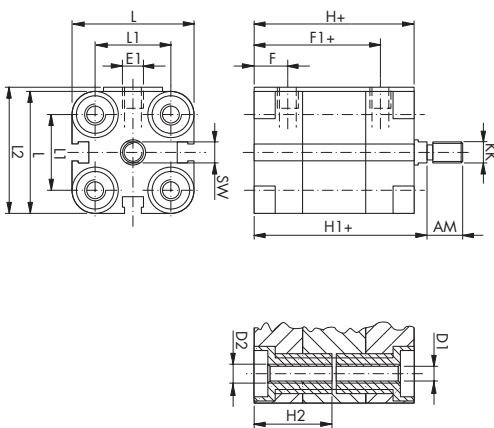
Piston Ø 32 - 100 mm



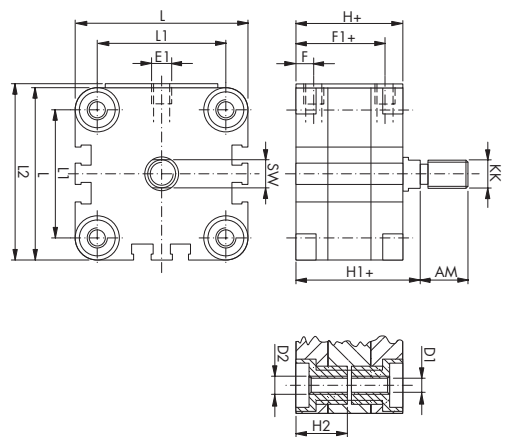
Ø	Stroke (mm)	D	D1	D2	D3	E1	F	F1	H	H1	H2	L	L1	L2	SW	T	Press. min. (bar)
12	5 - 10	6	3.5	M4	M3	M5	8	30	38	42.5	18.5	29	18	30	5	6	1.2
16	5 - 25	8	3.5	M4	M4	M5	8	30	38	42.5	18.5	29	18	30	7	8	1.2
20	5 - 25	10	4.5	M5	M5	M5	8	30	38	42.5	18.5	36	22	37.5	8	10	1
25	5 - 25	10	4.5	M5	M5	M5	8	31.5	39.5	45	18.5	40	26	41.5	8	10	1
32	5 - 25	12	5.5	M6	M6	G1/8	8	36.5	44.5	50.5	21.5	50	32	52	10	12	0.6
40	5 - 25	12	5.5	M6	M6	G1/8	8	37.5	45.5	52	21.5	60	42	62.5	10	12	0.6
50	10 - 25	16	6.5	M8	M8	G1/8	8	37.5	45.5	53	22	68	50	71	13	12	0.6
63	10 - 25	16	8.5	M10	M8	G1/8	8	42	50	57.5	24.5	87	62	91	13	12	0.6
80	10 - 25	20	8.5	M10	M10	G1/8	8.5	47.5	56	64	27.5	107	82	111	17	16	0.6
100	10 - 25	25	8.5	M10	M12	G1/4	10.5	56	66.5	76.5	32.5	128	103	133	22	20	0.6

**Male Threaded Piston Rod**

Piston Ø 12 - 25 mm



Piston Ø 32 - 100 mm

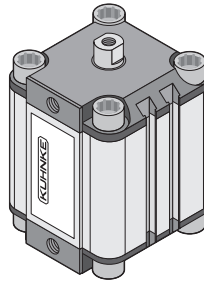
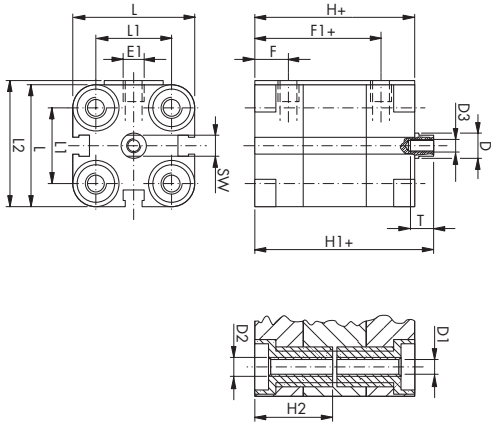


Ø	Stroke (mm)	AM	KK	AM	D1	D2	E1	F	F1	H	H1	H2	L	L1	L2	SW	Press. min. (bar)
12	5 - 10	16	M6	16	3.5	M4	M5	8	30	38	42.5	18.5	29	18	30	5	1.2
16	5 - 25	20	M8	20	3.5	M4	M5	8	30	38	42.5	18.5	29	18	30	7	1.2
20	5 - 25	22	M10x1.25	22	4.5	M5	M5	8	30	38	42.5	18.5	36	22	37.5	8	1
25	5 - 25	22	M10x1.25	22	4.5	M5	M5	8	31.5	39.5	45	18.5	40	26	41.5	8	1
32	5 - 25	22	M10x1.25	22	5.5	M6	G1/8	8	36.5	44.5	50.5	21.5	50	32	52	10	0.6
40	5 - 25	22	M10x1.25	22	5.5	M6	G1/8	8	37.5	45.5	52	21.5	60	42	62.5	10	0.6
50	10 - 25	24	M12x1.25	24	6.5	M8	G1/8	8	37.5	45.5	53	22	68	50	71	13	0.6
63	10 - 25	24	M12x1.25	24	8.5	M10	G1/8	8	42	50	57.5	24.5	87	62	91	13	0.6
80	10 - 25	32	M16x1.5	32	8.5	M10	G1/8	8.5	47.5	56	64	27.5	107	82	111	17	0.6
100	10 - 25	40	M20x1.5	40	8.5	M10	G1/4	10.5	56	66.5	76.5	32.5	128	103	133	22	0.6

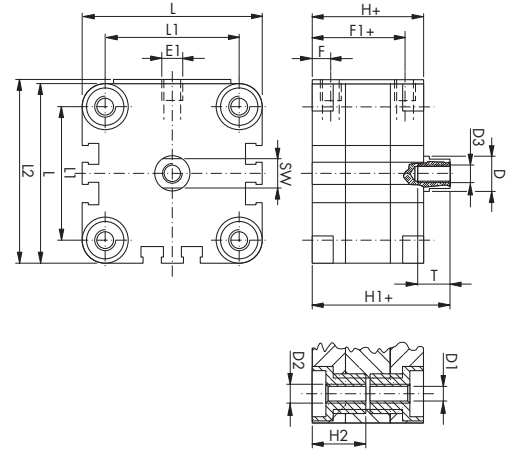
**Compact Cylinders - Double Acting Type**

**Female Threaded Piston Rod**

Piston Ø 12 - 25 mm



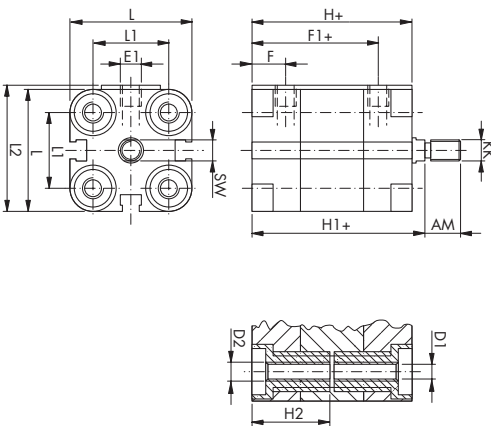
Piston Ø 32 - 100 mm



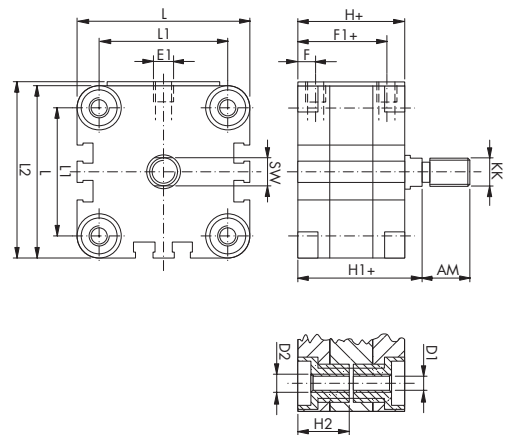
Ø	Stroke (mm)	D	D1	D2	D3	E1	F	F1	H	H1	H2	L	L1	L2	SW	T	Press. min. (bar)
12	5 - 200	6	3.5	M4	M3	M5	8	30	38	42.5	18.5	29	18	30	5	6	1
16	5 - 200	8	3.5	M4	M4	M5	8	30	38	42.5	18.5	29	18	30	7	8	1
20	5 - 200	10	4.5	M5	M5	M5	8	30	38	42.5	18.5	36	22	37.5	8	10	1
25	5 - 200	10	4.5	M5	M5	M5	8	31.5	39.5	45	18.5	40	26	41.5	8	10	1
32	5 - 300	12	5.5	M6	M6	G1/8	8	36.5	44.5	50.5	21.5	50	32	52	10	12	0.6
40	5 - 300	12	5.5	M6	M6	G1/8	8	37.5	45.5	52	21.5	60	42	62.5	10	12	0.6
50	10 - 300	16	6.5	M8	M8	G1/8	8	37.5	45.5	53	22	68	50	71	13	12	0.6
63	10 - 300	16	8.5	M10	M8	G1/8	8	42	50	57.5	24.5	87	62	91	13	12	0.6
80	10 - 400	20	8.5	M10	M10	G1/8	8.5	47.5	56	64	27.5	107	82	111	17	16	0.6
100	10 - 400	25	8.5	M10	M12	G1/4	10.5	56	66.5	76.5	32.5	128	103	133	22	20	0.6

**Male Threaded Piston Rod**

Piston Ø 12 - 25 mm



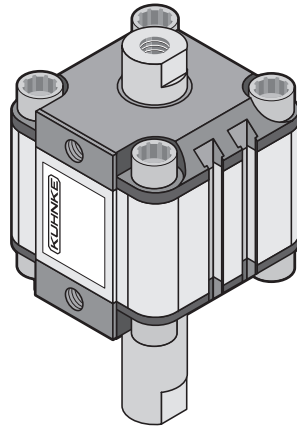
Piston Ø 32 - 100 mm



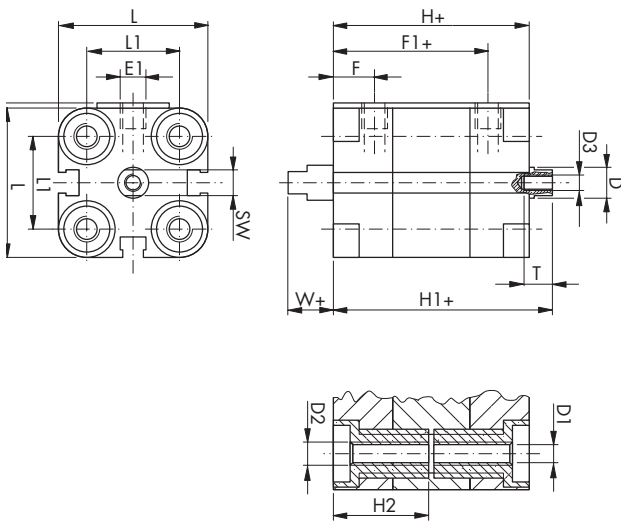
Ø	Stroke (mm)	AM	KK	AM	D1	D2	E1	F	F1	H	H1	H2	L	L1	L2	SW	Press. min. (bar)
12	5 - 200	16	M6	16	3.5	M4	M5	8	30	38	42.5	18.5	29	18	30	5	1
16	5 - 200	20	M8	20	3.5	M4	M5	8	30	38	42.5	18.5	29	18	30	7	1
20	5 - 200	22	M10x1.25	22	4.5	M5	M5	8	30	38	42.5	18.5	38	22	37.5	8	1
25	5 - 200	22	M10x1.25	22	4.5	M5	M5	8	31.5	39.5	45	18.5	40	26	41.5	8	1
32	5 - 300	22	M10x1.25	22	5.5	M6	G1/8	8	36.5	44.5	50.5	21.5	50	32	52	10	0.6
40	5 - 300	22	M10x1.25	22	5.5	M6	G1/8	8	37.5	45.5	52	21.5	60	42	62.5	10	0.6
50	10 - 300	24	M12x1.25	24	6.5	M8	G1/8	8	37.5	45.5	53	22	68	50	71	13	0.6
63	10 - 300	24	M12x1.25	24	8.5	M10	G1/8	8	42	50	57.5	24.5	87	62	91	13	0.6
80	10 - 400	32	M16x1.5	32	8.5	M10	G1/8	8.5	47.5	56	64	27.5	107	82	111	17	0.6
100	10 - 400	40	M20x1.5	40	8.5	M10	G1/4	10.5	56	66.5	76.5	32.5	128	103	133	22	0.6

**Compact Cylinders - Double Acting & Through Rod Type**

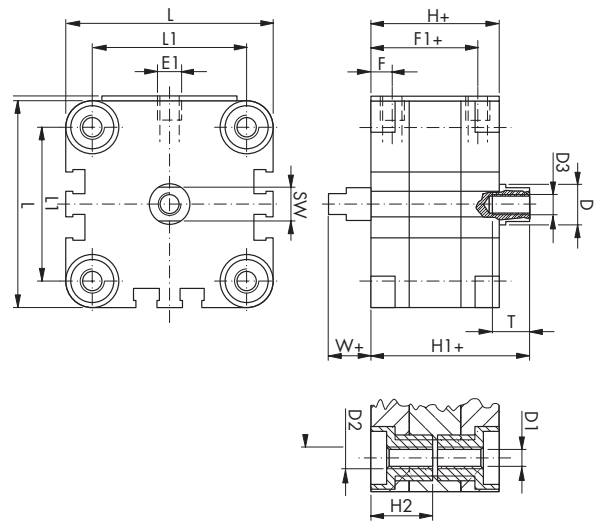
**Female Threaded Piston Rod**



Piston Ø 12 - 25 mm

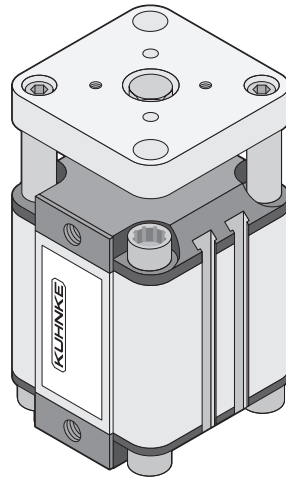


Piston Ø 32 - 100 mm



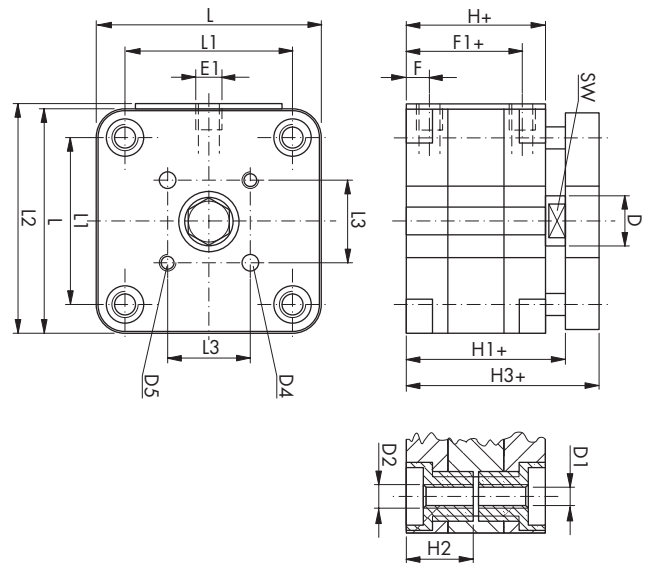
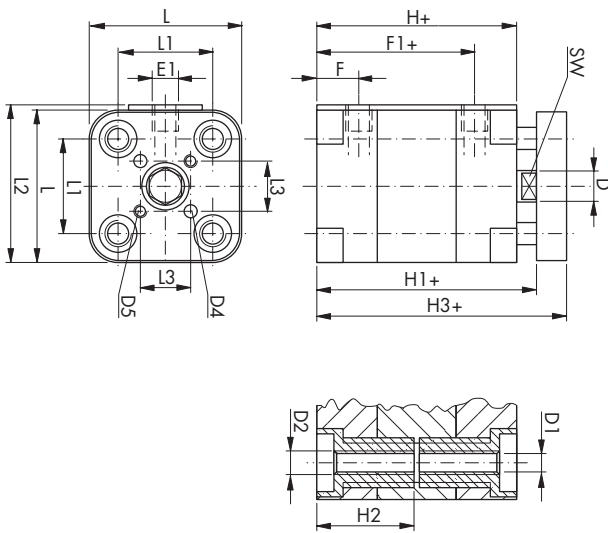
Ø	Stroke (mm)	D	D1	D2	D3	E1	F	F1	H	H1	H2	L	L1	L2	SW	T	W	Press. min. (bar)
12	5 - 200	6	3.5	M4	M3	M5	8	30	38	42.5	18.5	29	18	30	5	6	4.5	1
16	5 - 200	8	3.5	M4	M4	M5	8	30	38	42.5	18.5	29	18	30	7	8	4.5	1
20	5 - 200	10	4.5	M5	M5	M5	8	30	38	42.5	18.5	36	22	37.5	8	10	4.5	1
25	5 - 200	10	4.5	M5	M5	M5	8	31.5	39.5	45	18.5	40	26	41.5	8	10	5.5	1
32	5 - 300	12	5.5	M6	M6	G1/8	8	36.5	44.5	50.5	21.5	50	32	52	10	12	6	0.6
40	5 - 300	12	5.5	M6	M6	G1/8	8	37.5	45.5	52	21.5	60	42	62.5	10	12	6.5	0.6
50	10 - 300	16	6.5	M8	M8	G1/8	8	37.5	45.5	53	22	68	50	71	13	12	7.5	0.6
63	10 - 300	16	8.5	M10	M8	G1/8	8	42	50	57.5	24.5	87	62	91	13	12	7.5	0.6
80	10 - 400	20	8.5	M10	M10	G1/8	8.5	47.5	56	64	27.5	107	82	111	17	16	8	0.6
100	10 - 400	25	8.5	M10	M12	G1/4	10.5	56	66.5	76.5	32.5	128	103	133	22	20	10	0.6

Compact Cylinders - Double Acting & Torsion Protected Type



Piston Ø 12 - 25 mm

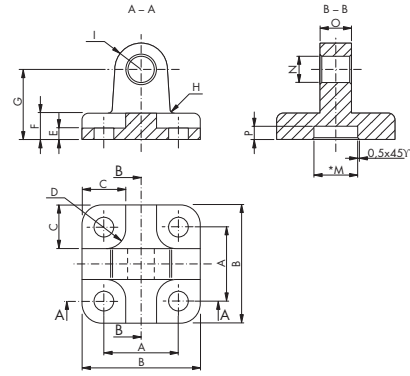
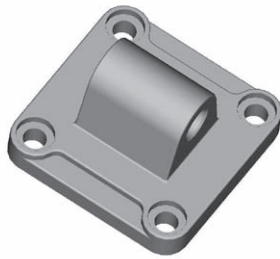
Piston Ø 32 - 100 mm



Ø	Stroke (mm)	D	D1	D2	D4	D5	E1	F	F1	H	H1	H2	H3	L	L1	L2	L3	SW	Press. min. (bar)
12	5 - 200	6	3.5	M4	3	M3	M5	8	30	38	42.5	18.5	48.5	29	18	30	9.9	5	1.5
16	5 - 200	8	3.5	M4	3	M3	M5	8	30	38	42.5	18.5	48.5	29	18	30	9.9	7	1.5
20	5 - 200	10	4.5	M5	4	M4	M5	8	30	38	42.5	18.5	50.5	36	22	37.5	12	8	1.5
25	5 - 200	10	4.5	M5	5	M5	M5	8	31.5	39.5	45	18.5	53	40	26	41.5	15.6	8	1.5
32	5 - 300	12	5.5	M6	5	M5	G1/8	8	36.5	44.5	50.5	21.5	60.5	50	32	52	19.8	10	1
40	5 - 300	12	5.5	M6	5	M5	G1/8	8	37.5	45.5	52	21.5	62	60	42	62.5	23.3	10	1
50	10 - 300	16	6.5	M8	6	M6	G1/8	8	37.5	45.5	53	22	65	68	50	71	29.7	13	1
63	10 - 300	16	8.5	M10	6	M6	G1/8	8	42	50	57.5	24.5	69.5	87	62	91	35.4	13	1
80	10 - 400	20	8.5	M10	8	M8	G1/8	8.5	47.5	56	64	27.5	78	107	82	111	46	17	0.6
100	10 - 400	25	8.5	M10	10	M10	G1/4	10.5	56	66.5	76.5	32.5	90.5	128	103	133	56.6	22	0.6



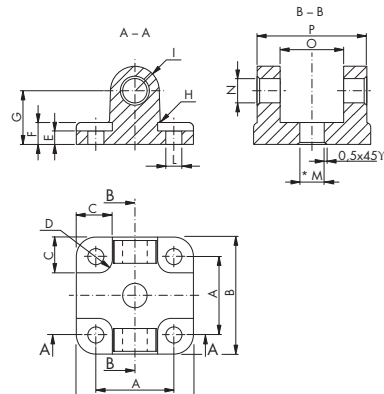
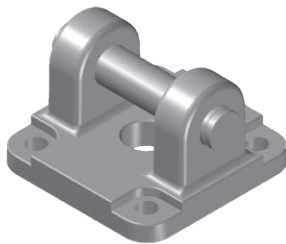
**Male Trunnion - Piston Ø 12 - 25 mm**



Code	Ø (mm)	A	B	C	D	E	F	G	H	I	L	M	N	O	P
19.002.07	12-16	18	27	10	5	3	6	16	2	6	5	10	6	12	3
19.002.09	20	22	34	11	5	3	6	20	2	8	6	12	8	16	3
19.002.00	25	26	38	11	5	3	6	20	2	8	6	12	8	16	3

Note: Fixing screws included.

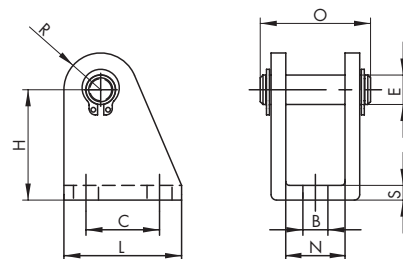
**Female Trunnion - Piston Ø 32 - 100 mm**



Code	Ø (mm)	A	B	C	D	E	F	G	H	I	L	M	N	O	P
19.001.01	32	32	48	14	6	6	9	22	3	10	7	14	10	26	45
19.001.02	40	42	58	14	6	6	9	25	3	13	7	14	12	28	52
19.001.03	50	50	66	16	8	7	11	27	3	13	9	18	12	32	60
19.001.04	63	62	83	18	9	7	11	32	4	15	11	18	16	40	70
19.001.05	80	82	102	19	9	10	13	36	4	15	11	23	16	50	90
19.001.06	100	103	123	19	9	10	15	41	4	20	11	28	20	60	110

Note: Bolt and fixing screws included.

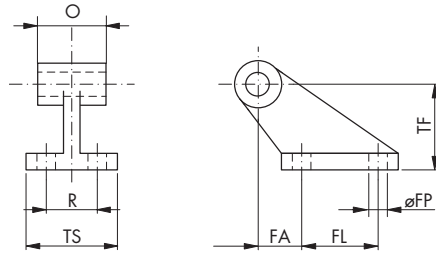
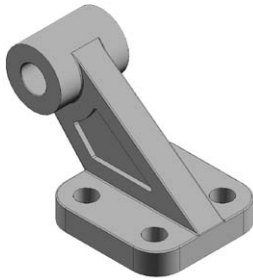
**Trunnion**



Code	Ø (mm)	B	E	C	H	L	N	O	R	S
26.313	12, 16	6	6	16	27	25	12	23	7	3
28.313	20, 25	7	8	20	30	32	16	30	10	4

Note: For use with male trunnion.

**Square Angle Trunnion Mounting Bracket - Piston Ø 32 - 100 mm**



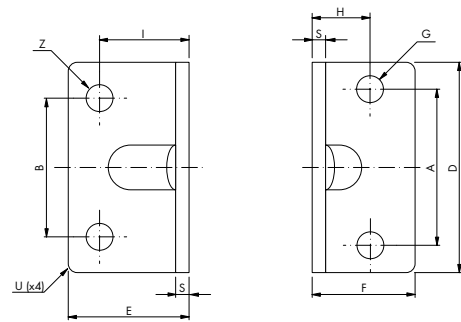
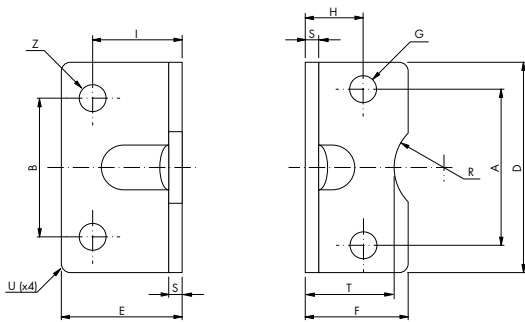
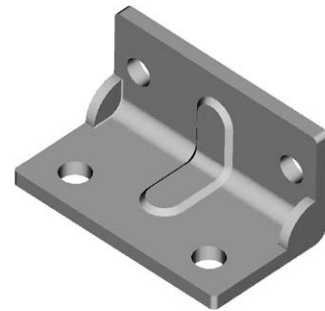
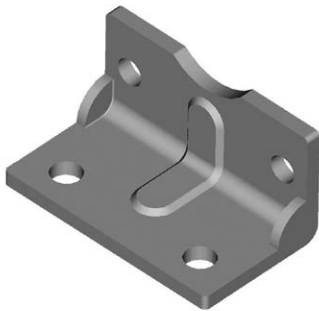
Code	Ø	R	TS	FP	FA	FL	TF	O
18.004.01	32	25	41	7	18	20	32	26
18.004.02	40	32	52	9	25	32	45	28
18.004.03	50	32	52	9	25	32	45	32
18.004.04	63	40	63	11	32	50	63	40
18.004.05	80	40	63	11	32	50	63	50
18.004.06	100	50	80	14	40	70	90	60

Note: For use with female trunnion.

**Mounting Bracket**

Piston Ø 12 - 32 mm

Piston Ø 40 - 100 mm



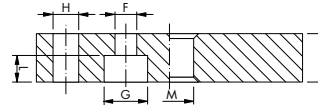
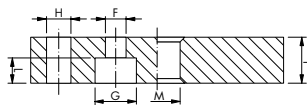
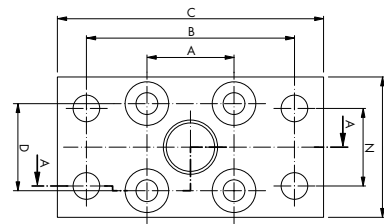
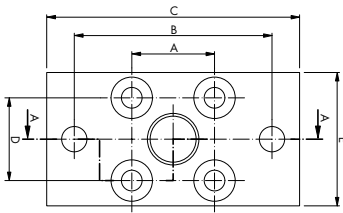
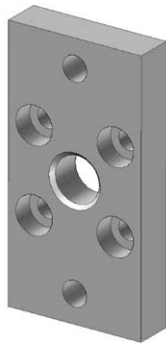
Code	Ø	B	C	D	E	F	G	H	I	S	T	R	U	Z
19.005.07	12-16	18	18	30	18	18	4	13	13	3	15	9	2	6
19.005.09	20	22	22	36	22	22	5	16	16	4	17	10	2	7
19.005.00	25	26	26	40	22	23	5	17	16	4	19	11	2	7
19.005.01	32	32	32	50	26	24	7	16	18	5	20	12	2	7
19.005.02	40	42	42	60	28	30	7	22	20	5	-	-	5	9
19.005.03	50	50	50	68	32	30	9	22	24	6	-	-	5	9
19.005.04	63	62	62	84	39	39	11	29	27	6	-	-	5	11
19.005.05	80	82	82	102	42	37	11	25	30	8	-	-	5	11
19.005.06	100	103	103	123	45	39	11	27	33	8	-	-	5	14

Note: The shipment includes 2 pcs and the fixing screws.

## Mounting Plate

Piston Ø 12 - 25 mm

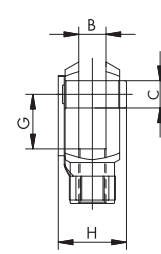
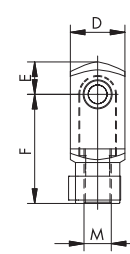
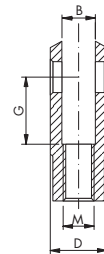
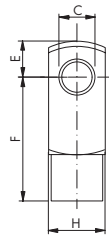
Piston Ø 32 - 100 mm



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N
19.006.07	12-16	18	43	55	18	29	5	9	6	10	5	10	-
19.006.09	20	22	55	70	22	36	6	10	7	10	5	12	-
19.006.00	25	26	60	76	26	40	6	10	7	10	5	12	-
19.006.01	32	32	65	80	32	50	7	11	7	10	6	14	32
19.006.02	40	42	82	102	42	60	7	11	9	10	6	14	36
19.006.03	50	50	90	110	50	68	9	15	9	12	9	18	45
19.006.04	63	62	110	130	62	87	11	18	9	15	11	18	50
19.006.05	80	82	135	160	82	107	11	18	12	15	11	23	63
19.006.06	100	103	163	190	103	128	11	18	14	15	11	28	75

Note: Fixing screws included.

## Clevis

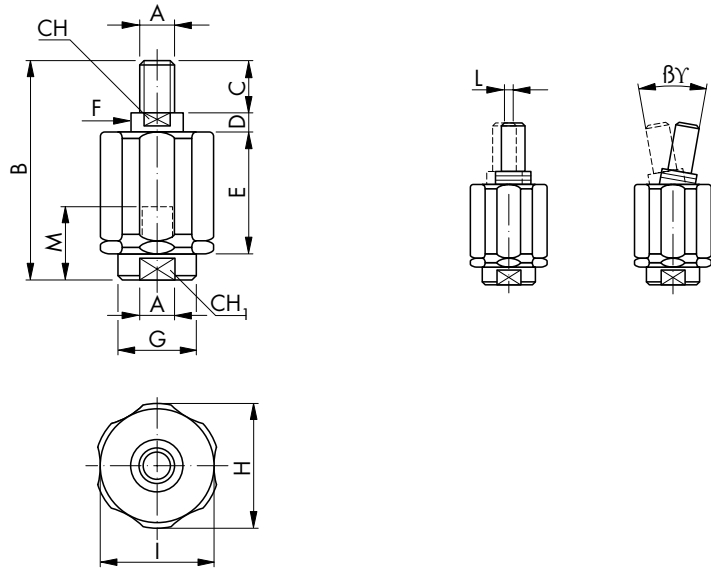


TYPE I

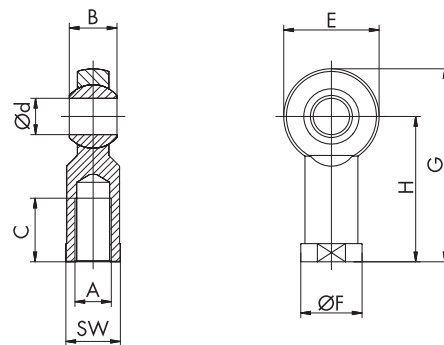
TYPE II

Code	Type	Ø	M	B	C	D	E	F	G	H
19.008.07	I	12	M6	6	6	12	7	24	12	12
19.008.08	I	16	M8	8	8	16	10	32	16	16
18.008.01	II	32	M10x1.25	10	10	20	12	40	20	26
18.008.02	II	40	M12x1.25	12	12	24	14	48	24	32
18.008.03	II	50	M16x1.5	16	16	32	19	64	32	40
18.008.03	II	63	M16x1.5	16	16	32	19	64	32	40
18.008.04	II	80	M20x1.5	20	20	40	25	80	40	48
18.008.04	II	100	M20x1.5	20	20	40	25	80	40	48

Note: Lockable pin included.

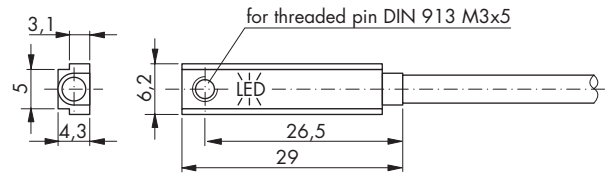
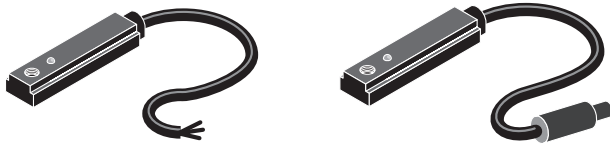
**Self Aligning Joint**


Code	∅	A	B	C	D	E	F	G	H	I	L	M	CH	β°	CH1
19.010.07	12	M6	35	10	4	18	6	9	15	13	1	10	5	10	7
19.010.08	16	M8	57	20	4	29	8	13	19	17	2	20	7	10	11
19.010.09	20 - 40	M10 x 1.25	71	20	5	35	14	22	32	30	2	20	12	10	19
19.010.03	50 - 63	M12 x 1.25	75	24	5	35	14	22	32	30	2	20	12	10	19
19.010.05	80	M16 x 1.5	103	32	8	54	22	32	45	41	2	32	20	10	30
19.010.06	100	M20 x 1.5	119	40	8	54	22	32	45	41	2	40	20	10	30

**Rod End - Spherical Bearing**


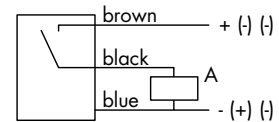
Code	∅	A	B	C	d <sup>H7</sup>	E	F	G	H	SW
19.009.07	12	M6	9	12	6	20	13	40	30	11
19.009.08	16	M8	12	16	8	24	16	48	36	14
18.009.01	32	M10x1.25	14	20	10	28	19	57	43	17
18.009.02	40	M12x1.25	16	22	12	32	22	66	50	19
18.009.03	50	M16x1.5	21	28	16	42	27	85	64	22
18.009.03	63	M16x1.5	21	28	16	42	27	85	64	22
18.009.04	80	M20x1.5	25	33	20	50	34	102	77	30
18.009.04	100	M20x1.5	25	33	20	50	34	102	77	30

## Position Transmitter



### Position Transmitter REED (3 pole)

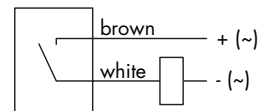
Switching output: closing contact  
 Cable: 3 x 0.14 mm<sup>2</sup>  
 Switching capacity: max 2 VA/W  
 Switching voltage: 10 - 30 V AC/DC  
 Switching current: max 100 mA  
 Internal power consumption: ON: typ. 12 mA at 30 V DC  
 Switching time: 1 ms  
 Drop-out time: 0.05 ms  
 Switching rate: max 200 Hz  
 Service life: 10<sup>6</sup> to 10<sup>7</sup> switchings, depending on the load  
 Ambient temperature range: -5°C to +70°C  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



Code	Description
33.19.100	with cable L = 2500 mm
33.19.200	plug M8, cable L = 300 mm

### Position Transmitter REED (2 pole)

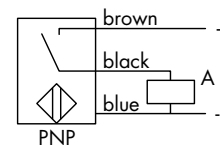
Switching output: closing contact  
 Cable: 2 x 0.14 mm<sup>2</sup>  
 Switching capacity: max 0.9 VA/W  
 Switching voltage: 10 - 30 V AC/DC  
 Switching current: max 30 mA  
 Internal power consumption: ON: typ. 12 mA at 30 V DC  
 Switching time: 1 ms  
 Drop-out time: 0.05 ms  
 Switching rate: max 200 Hz  
 Service life: 10<sup>6</sup> to 10<sup>7</sup> switchings, depending on the load  
 Ambient temperature range: -5°C to +70°C  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



Code	Description
33.19.130	with cable L = 2500 mm
33.19.140	plug M8, cable L = 300 mm

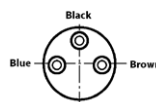
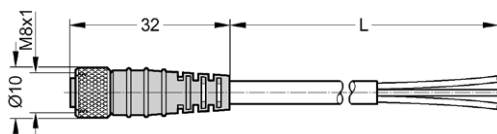
### Electronic Position Transmitter

Length of over travelling: depending on magnetic field and fitting position  
 Hysteresis: depending on magnetic field and fitting position  
 Cable: 3 x 0.14 mm<sup>2</sup>  
 Operating voltage: 10 - 30 VDC  
 Residual ripple: < 10 % of UB  
 Internal power consumption: 10 mA without load  
 Collector resistor: integrated  
 Switching current: max 130 mA (at +25°C)  
 Switchable parallel capacity: ≤ 0.01 μF  
 Voltage drop: ≤ 3 V at I<sub>a</sub> = 130 mA  
 Switching rate: 2 kHz  
 Ambient temperature range: -5°C to +70°C  
 Contact type: PNP (N.O.)  
 Cross connection protection: integrated  
 Short circuit protection: integrated  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



Code	Description
33.19.300	with cable L = 2500 mm
33.19.400	plug M8, cable L = 300 mm

### M8 Connectors (female-straight)



Code	Description
PL08B3.V250.30	cable L = 3000 mm
PL08B3.V250.50	cable L = 5000 mm



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