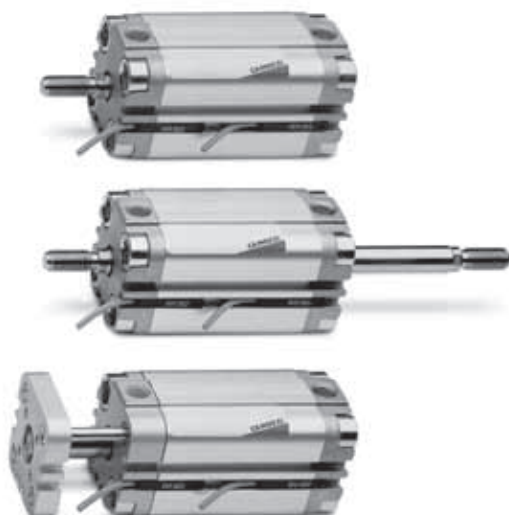


# Compact cylinders Series 31

Double and single-acting, double-acting non-rotating, magnetic  
 ø12, 16, 20, 25 mm  
 ø 32, 40, 50, 63, 80, 100 mm UNITOP



- » Compact design
- » Wide range of models available
- » Standard magnetic
- » High temperature (double-acting and non magnetic)

The compact dimensions allow the cylinders to be installed within confined spaces. These cylinders are suitable for use with feet, flange and trunnion.

The compact single and double-acting cylinders Series 31 are available in 10 different bore sizes from ø 12 to ø 100. The guides are inserted in the external profile parallel to the sliding axis on three sides. These guides are used to locate the switches that sense the piston position. The construction design of these cylinders provides excellent axis stability. They are available either with a male or female thread. These cylinders can be supplied in W version for high temperatures (140°C). This version is not magnetic.

## GENERAL DATA

<b>Type of construction</b>	compact profile
<b>Operation</b>	single and double-acting
<b>Materials</b>	AL body and end-blocks - rolled stainless steel AISI 303 rod - AL piston rod PU seals or FKM seals for high temperatures (140°C)
<b>Brackets</b>	flange, feet, trunnion
<b>Stroke min - max</b>	Series 31R, 31M and 31F: ø12÷25 = 1÷200mm, ø32 ÷ 63 = 1÷300 mm, ø80÷100 = 1÷400mm The min. stroke for the use of sensors is 10 mm.
<b>Operating temperature</b>	0°C ÷ 80°C (with dry air - 20°C)
<b>Operating pressure</b>	1 ÷ 10 bar (double-acting); 2 ÷ 10 bar (single-acting)
<b>Fluid</b>	filtered air, without lubrication. If lubricated air is used, it is recommended to use oil ISOVG32. Once applied the lubrication should never be interrupted.
<b>Speed</b>	10 ÷ 1000 mm/sec (without load)

### STANDARD STROKE FOR COMPACT MAGNETIC CYLINDERS SERIES 31

■ = Double-acting female, male      ✕ = Non-rotating      ● = Single-acting female, male

STANDARD STROKES										
∅	5	10	15	20	25	30	40	50	60	80
12	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕			
16	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕			
20	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕		
25	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕		
32	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕		
40	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕
50		■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕
63		■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕
80		■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕
100		■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕ ●	■ ✕	■ ✕	■ ✕	■ ✕	■ ✕

### CODING EXAMPLE

<b>31</b>	<b>M</b>	<b>2</b>	<b>A</b>	<b>032</b>	<b>A</b>	<b>050</b>	
<b>31</b>	SERIES 31 = compact magnetic						
<b>M</b>	VERSION M = male rod thread F = female rod thread R = non-rotating with flange only double-acting						
<b>2</b>	OPERATION 1 = single-acting, front spring 2 = double-acting 3 = double-acting, through-rod 4 = single-acting, rear spring				PNEUMATIC SYMBOLS CS06 CD08 CD12 CS08		
<b>A</b>	MATERIALS A = rolled stainless steel AISI 303 rod - AL tube profile						
<b>032</b>	BORE 012 = 12 mm 016 = 16 mm 020 = 20 mm 025 = 25 mm 032 = 32 mm 040 = 40 mm 050 = 50 mm 063 = 63 mm 080 = 80 mm 100 = 100 mm						
<b>A</b>	DESIGN TYPE A = standard						
<b>050</b>	STROKE (see the table)  = standard S = special V = rod seal FKM W = seals in FKM for high temperatures (140°C), only available in the double-acting, non magnetic version						

### PNEUMATIC SYMBOLS

The pneumatic symbols which have been indicated in the CODING EXAMPLE are shown below.



**ACCESSORIES FOR COMPACT MAGNETIC CYLINDERS SERIES 31**
**1**

MOVEMENT


 Swivel ball joint Mod. GA  
(cyl. Mod. 31M)

 90° swivel combination  
for trunnion Mod. I


Rear trunnion Mod. C


 Rod fork end Mod. G  
(cyl. Mod. 31M)

 Piston rod lock nut  
Mod. U (cyl. Mod. 31M)

 90° swivel combin. for  
fem. trunnion Mod. ZC


Rear trunnion Mod. L


 Rear and front flange  
Mod. D


Foot mount Mod. B

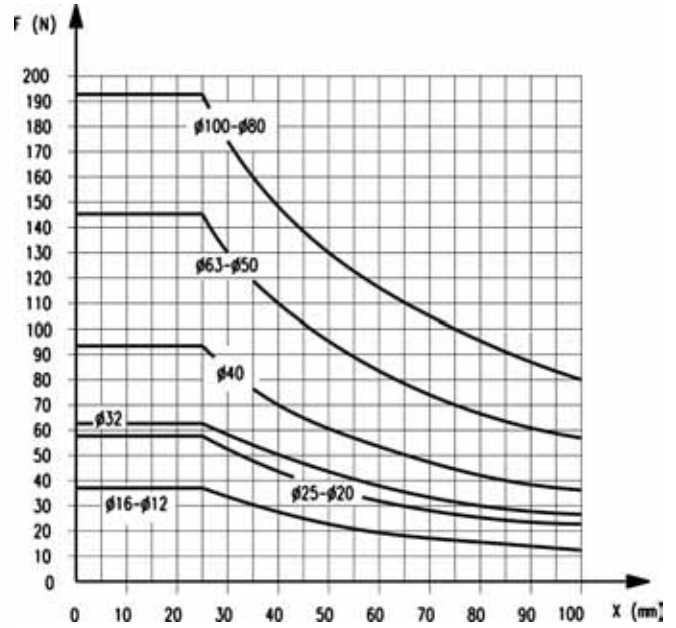
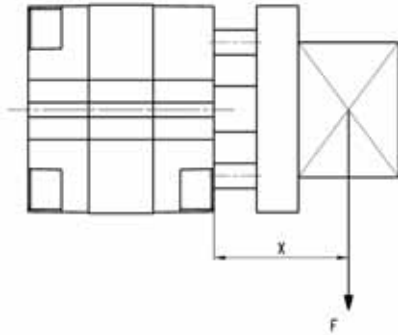

 Coupling piece  
Mod. GKF

 Self aligning rod  
Mod. GK

 Piston rod socket joint  
Mod. GY (cyl. Mod. 31M)

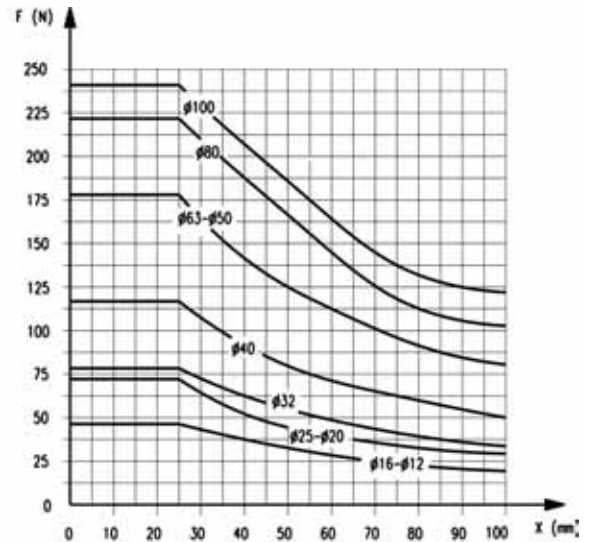
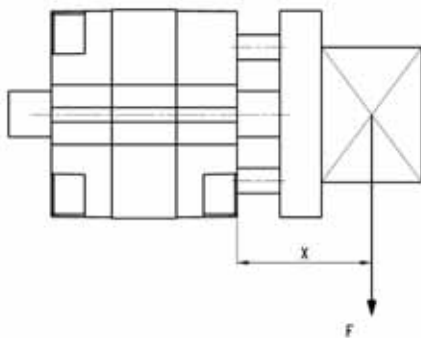

All accessories are supplied separately.

ANTI-ROTATION - Transversal load dependant on projection

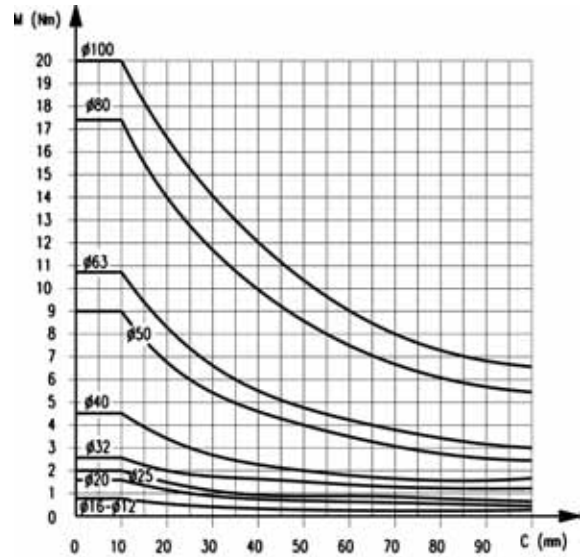
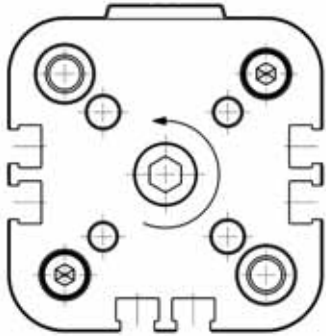


It is possible to determine the strokes required as shown in the general data in the absence of radial loads and torque moments. When imposing radial loads on the cylinder it is important to respect the maximum projection of the baricenter. In the presence of torque moments, it is recommended to respect the maximum stroke as shown in the diagrams.

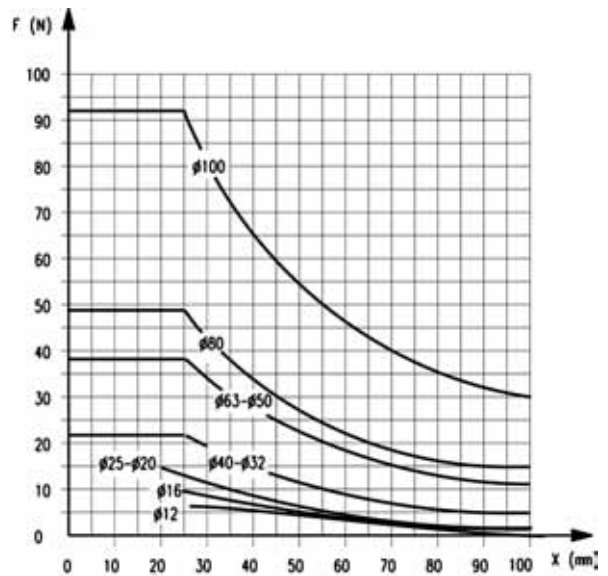
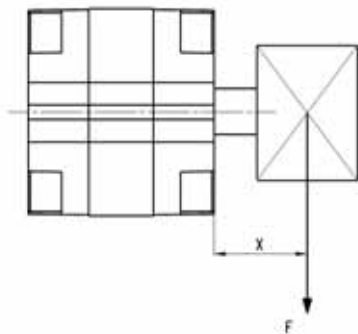
ANTI-ROTATION THROUGH-ROD - Transversal load dependant on projection



It is possible to determine the strokes required as shown in the general data in the absence of radial loads and torque moments. When imposing radial loads on the cylinder it is important to respect the maximum projection of the baricenter. In the presence of torque moments, it is recommended to respect the maximum stroke as shown in the diagrams.

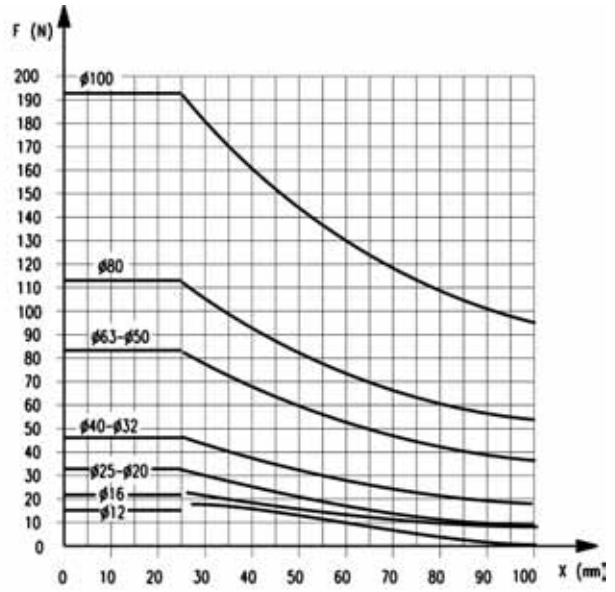
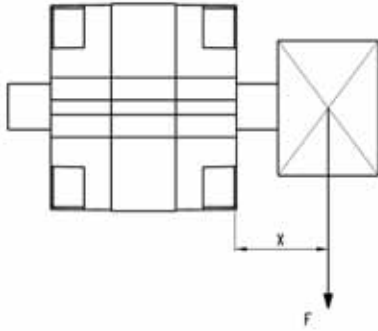
**TORQUE MOMENT - dependant on stroke C**


It is possible to determine the strokes required as shown in the general data in the absence of radial loads and torque moments. When imposing radial loads on the cylinder it is important to respect the maximum projection of the baricenter. In the presence of torque moments, it is recommended to respect the maximum stroke as shown in the diagrams.

**TRANSVERSAL LOAD - dependant on projection**


It is possible to determine the strokes required as shown in the general data in the absence of radial loads and torque moments. When imposing radial loads on the cylinder it is important to respect the maximum projection of the baricenter. In the presence of torque moments, it is recommended to respect the maximum stroke as shown in the diagrams.

TRANSVERSAL LOAD THROUGH-ROD - dependant on projection

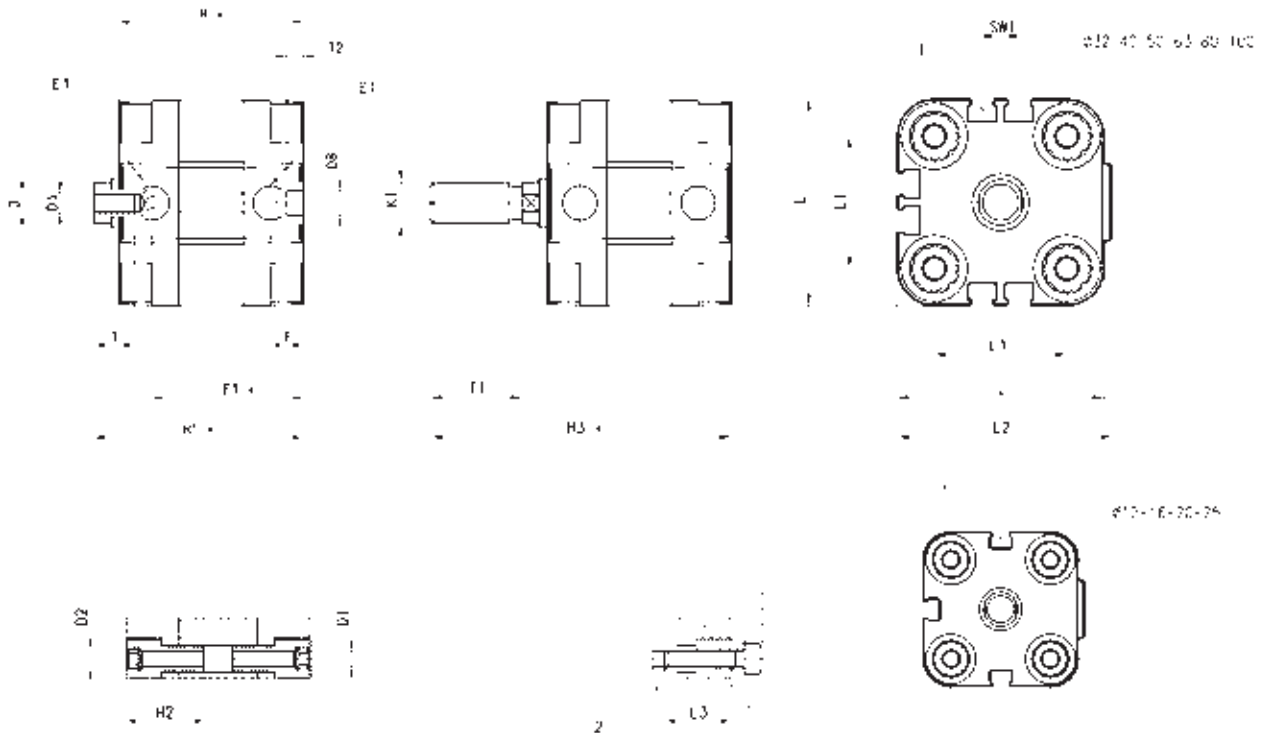


It is possible to determine the strokes required as shown in the general data in the absence of radial loads and torque moments. When imposing radial loads on the cylinder it is important to respect the maximum projection of the baricenter. In the presence of torque moments, it is recommended to respect the maximum stroke as shown in the diagrams.

## Compact magnetic cylinders Mod. 31F and 31M



1 = Groove for sensor CST  
 2 = Keep to the minimum screwing depth.  
 + = add the stroke

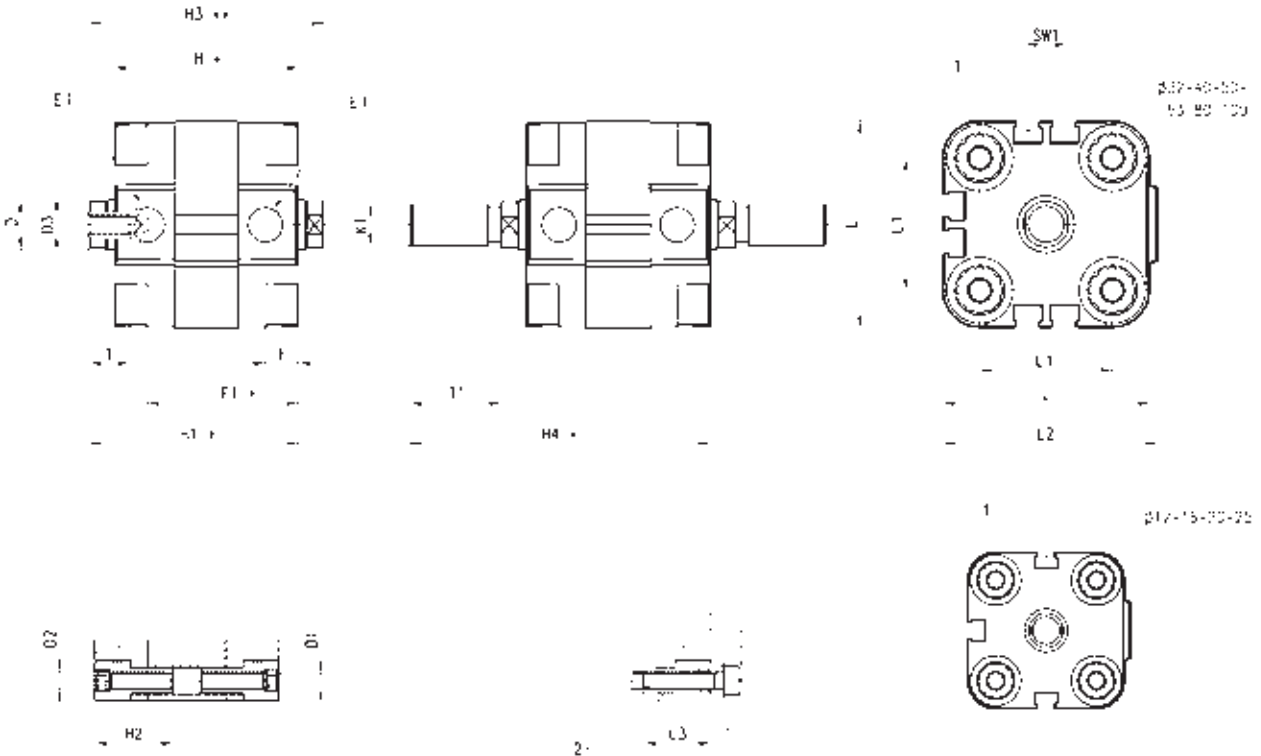


DIMENSIONS																					
Ø	ØD	ØD1	D2	D3	ØD8 <sup>(H9)</sup>	E1	F	F1+	H+	H1+	H2	H3+	K1	L	L1	L2	L3	T	T1	T2	SW1
12	6	3,5	M4	M3	6	M5	8	30	38	42,5	18,5	58,5	M6	29	18	30	16	6	16	4	5
16	8	3,5	M4	M4	6	M5	8	30	38	42,5	18,5	62,5	M8	29	18	30	16	8	20	4	7
20	10	4,5	M5	M5	6	M5	8	30	38	42,5	18,5	64,5	M10x1,25	36	22	37,5	18	10	22	4	8
25	10	4,5	M5	M5	6	M5	8	31,5	39,5	45	18,5	67	M10x1,25	40	26	41,5	18	10	22	4	8
32	12	5,5	M6	M6	6	G1/8	8	36,5	44,5	50,5	21,5	72,5	M10x1,25	50	32	52	20	12	22	4	10
40	12	5,5	M6	M6	6	G1/8	8	37,5	45,5	52	21,5	74	M10x1,25	60	42	62,5	20	12	22	4	10
50	16	6,5	M8	M8	6	G1/8	8	37,5	45,5	53	22,5	77	M12x1,25	68	50	71	20	12	24	4	13
63	16	8,5	M10	M8	8	G1/8	8	42	50	57,5	24,5	81,5	M12x1,25	87	62	91	25	12	24	4	13
80	20	8,5	M10	M10	8	G1/8	8,5	47,5	56	64	24,5	96	M16x1,5	107	82	111	25	16	32	4	17
100	25	8,5	M10	M12	8	G1/4	10,5	56	66,5	76,5	31,5	116,5	M20x1,5	128	103	133	25	20	40	4	22

Compact magnetic cylinders Mod. 31F and 31M - through-rod



1 = Groove for sensor CST  
 2 = Keep to the minimum screwing depth.  
 + = add the stroke once  
 ++ = add the stroke twice



DIMENSIONS

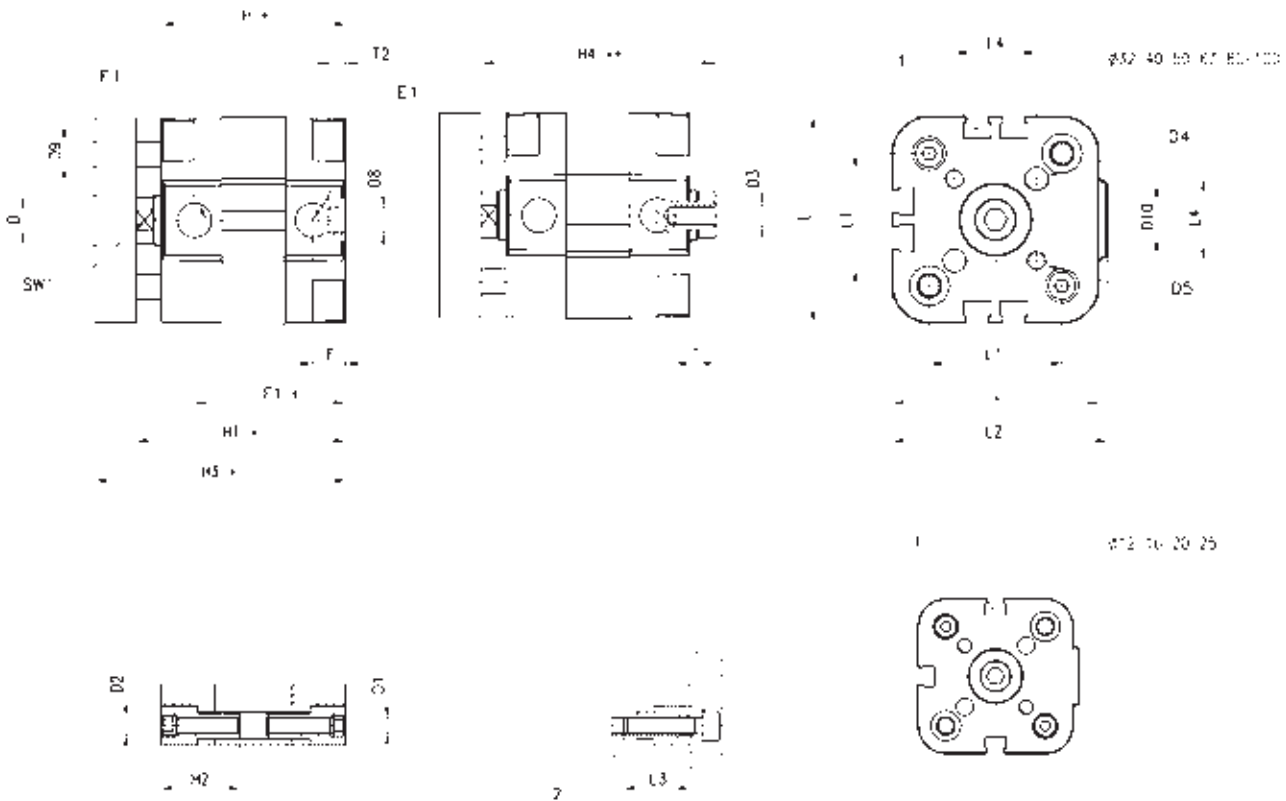
Ø	°D	°D1	D2	D3	E1	F	F1+	H+	H1+	H2	H3++	H4+	K1	L	L1	L2	L3	T	T1	SW1
12	6	3,5	M4	M3	M5	8	30	38	42,5	18,5	47	58,5	M6	29	18	30	16	6	16	5
16	8	3,5	M4	M4	M5	8	30	38	42,5	18,5	47	62,5	M8	29	18	30	16	8	20	7
20	10	4,5	M5	M5	M5	8	30	38	42,5	18,5	47	64,5	M10x1,25	36	22	37,5	18	10	22	8
25	10	4,5	M5	M5	M5	8	31,5	39,5	45	18,5	50,5	67	M10x1,25	40	26	41,5	18	10	22	8
32	12	5,5	M6	M6	G1/8	8	36,5	44,5	50,5	21,5	56,5	72,5	M10x1,25	50	32	52	20	12	22	10
40	12	5,5	M6	M6	G1/8	8	37,5	45,5	52	21,5	58,5	74	M10x1,25	60	42	62,5	20	12	22	10
50	16	6,5	M8	M8	G1/8	8	37,5	45,5	53	22,5	60,5	77	M12x1,25	68	50	71	20	12	24	13
63	16	8,5	M10	M8	G1/8	8	42	50	57,5	24,5	65	81,5	M12x1,25	87	62	91	25	12	24	13
80	20	8,5	M10	M10	G1/8	8,5	47,5	56	64	24,5	72	96	M16x1,5	107	82	111	25	16	32	17
100	25	8,5	M10	M12	G1/4	10,5	56	66,5	76,5	31,5	86,5	116,5	M20x1,5	128	103	133	25	20	40	22



## Compact magnetic cylinders Mod. 31R



1 = Groove for sensor CST  
 2 = Keep to the minimum screwing depth.  
 + = add the stroke once  
 ++ = add the stroke twice



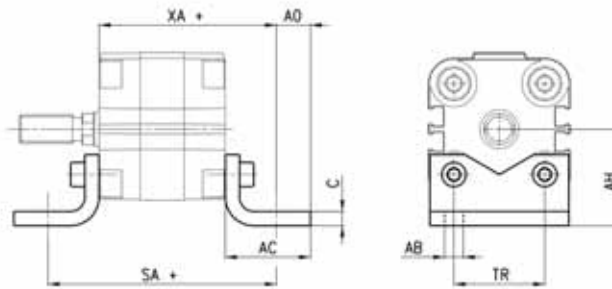
DIMENSIONS																									
Ø	oD	oD1	D2	D3	oD4 <sup>(H9)</sup>	D5	D8 <sup>(H9)</sup>	oD9	D10	E1	F	F1+	H+	H1+	H2	H3+	H4++	L	L1	L2	L3	L4	T	T2	SW1
12	6	3,5	M4	M3	3	M3	6	5	6	M5	8	30	38	42,5	18,5	48,5	47	29	18	30	16	9,9	6	4	5
16	8	3,5	M4	M4	3	M3	6	5	8	M5	8	30	38	42,5	18,5	48,5	47	29	18	30	16	9,9	8	4	7
20	10	4,5	M5	M5	4	M4	6	6	10	M5	8	30	38	42,5	18,5	50,5	47	36	22	37,5	18	12	10	4	8
25	10	4,5	M5	M5	5	M5	6	6	14	M5	8	31,5	39,5	45	18,5	53	50,5	40	26	41,5	18	15,6	10	4	8
32	12	5,5	M6	M6	5	M5	6	6	17	G1/8	8	36,5	44,5	50,5	21,5	60,5	56,5	50	32	52	20	19,8	12	4	10
40	12	5,5	M6	M6	5	M5	6	6	17	G1/8	8	37,5	45,5	52	21,5	62	58,5	60	42	62,5	20	23,3	12	4	10
50	16	6,5	M8	M8	6	M6	6	10	22	G1/8	8	37,5	45,5	53	22,5	65	60,5	68	50	71	20	29,7	12	4	13
63	16	8,5	M10	M8	6	M6	8	10	22	G1/8	8	42	50	57,5	24,5	69,5	65	87	62	91	25	35,4	12	4	13
80	20	8,5	M10	M10	8	M8	8	12	28	G1/8	8,5	47,5	56	64	24,5	78	72	107	82	111	25	46	16	4	17
100	25	8,5	M10	M12	10	M10	8	12	30	G1/4	10,5	56	66,5	76,5	31,5	90,5	86,5	128	103	133	25	56,6	20	4	22

Foot mount Mod. B

Material: zinc-plated steel



Supplied with:  
2x feet  
4x screws  
+ = add the stroke



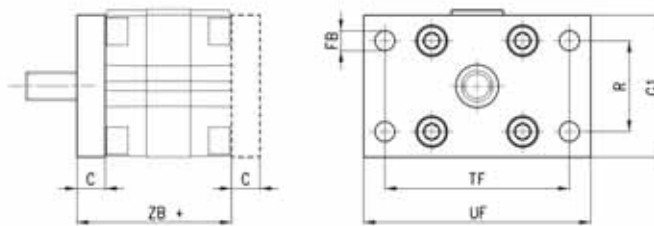
DIMENSIONS									
Mod.	∅	C	SA+	XA+	TR	∅AB	AH	AO	AC
<b>B-31-12-16</b>	12 - 16	3	64	51	18	5,5	22	7	20
<b>B-32-20</b>	20	4	70	54	22	6,6	27	9	25
<b>B-31-25</b>	25	4	71,5	55,5	26	6,6	29	9	25
<b>B-31-32</b>	32	5	80,5	62,5	32	6,6	34	12	30
<b>B-31-40</b>	40	5	85,5	65,5	42	9	40,5	10	30
<b>B-31-50</b>	50	5,5	93,5	69,5	50	9	47	11	35
<b>B-31-63</b>	63	5,5	104	77	62	11	56,5	13	40
<b>B-31-80</b>	80	7,5	116	86	82	11	68,5	15	45
<b>B-31-100</b>	100	7,5	132,5	99,5	103	13,5	81	12	45

Rear and front flange Mod. D-E

Material: zinc-plated steel



Supplied with:  
1x flange  
4x screws  
+ = add the stroke



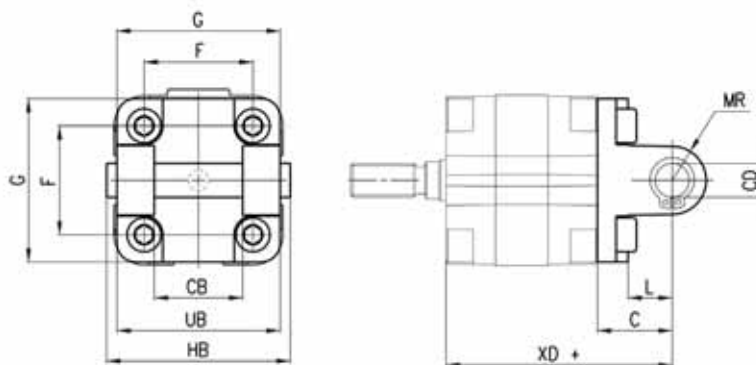
DIMENSIONS									
Mod.	∅	C	ZB+	TF	R	UF	G1	∅FB	
<b>D-E-31-12-16</b>	12 - 16	10	48	43	-	55	29	5,5	
<b>D-E-32-20</b>	20	10	48	55	-	70	36	6,6	
<b>D-E-32-25</b>	25	10	49,5	60	-	76	40	6,6	
<b>D-E-31-32</b>	32	10	54,5	65	32	80	50	7	
<b>D-E-31-40</b>	40	10	55,5	82	36	102	60	9	
<b>D-E-31-50</b>	50	12	57,5	90	45	110	68	9	
<b>D-E-31-63</b>	63	15	65	110	50	130	87	9	
<b>D-E-31-80</b>	80	15	71	135	63	160	107	12	
<b>D-E-31-100</b>	100	15	81,5	163	75	190	128	14	

**Female rear trunnion Mod. C**

Material: Aluminium



Supplied with:  
 4x screws  
 1x clevis pin  
 1x centering pin  
 1x trunnion  
 + = add the stroke


**DIMENSIONS**

Mod.	∅	∅CD	L	C	XD+	MR	F	G	CB	UB	HB
<b>C-31-32</b>	32	10	13	21	66,5	11	32	50	26	45	54
<b>C-31-40</b>	40	12	16	25	70,5	13	42	60	28	52	62
<b>C-31-50</b>	50	12	16	27	72,5	13	50	68	32	60	70
<b>C-31-63</b>	63	16	21	32	82	17	62	87	40	70	82
<b>C-31-80</b>	80	16	23	36	92	17	82	102	50	90	102
<b>C-31-100</b>	100	20	26	41	107,5	21	103	128	60	110	126

**Intermediate bracket Mod. DC**

Flange in aluminium



Supplied with:  
 1x flange  
 1x centering pin  
 4x screws  
 + = add the stroke


**DIMENSIONS**

Mod.	∅	B	H+
<b>DC-31-12-16</b>	12-16	12,5	38
<b>DC-31-20</b>	20	12,5	38
<b>DC-31-25</b>	25	13	39,5
<b>DC-31-32</b>	32	14,5	44,5
<b>DC-31-40</b>	40	14,5	45,5
<b>DC-31-50</b>	50	14,5	45,5
<b>DC-31-63</b>	63	14,5	50
<b>DC-31-80</b>	80	16,5	56
<b>DC-31-100</b>	100	19,5	66,5

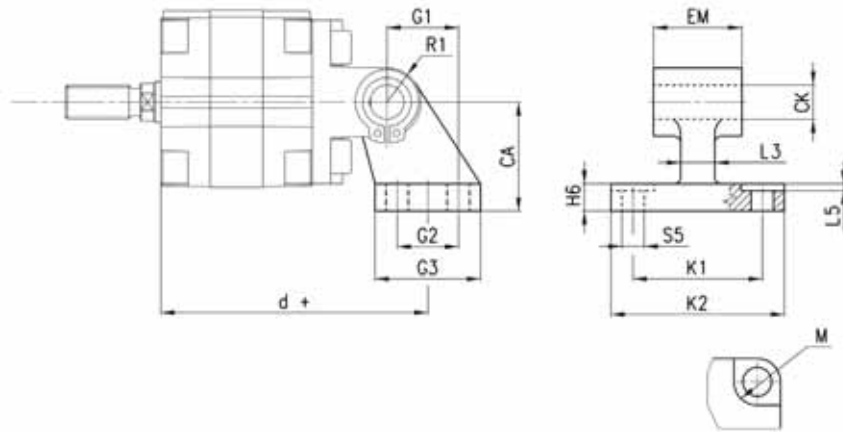
90° Swivel combination for female trunnion Mod. ZC

Male rear  
Material: aluminium



Supplied with:  
1x male support

+ = add the stroke



DIMENSIONS

Mod.	∅	M	∅CK	∅S5	d+	K1	K2	L3	G1	L5	G2	EM	G3	CA	H6	R1
<b>ZC-32</b>	32	11	10	6,6	78,5	38	51	10	21	1,6	18	26	31	32	8	10
<b>ZC-40</b>	40	11	12	6,6	83,5	41	54	15	24	1,6	22	28	35	36	10	11
<b>ZC-50</b>	50	15	12	9	90,5	50	65	16	33	1,6	30	32	45	45	12	13
<b>ZC-63</b>	63	15	16	9	101,5	52	67	16	37	1,6	35	40	50	50	14	15
<b>ZC-80</b>	80	18	16	11	119	66	86	20	47	2,5	40	50	60	63	14	15
<b>ZC-100</b>	100	18	20	11	137,5	76	96	20	55	3,2	50	60	70	71	17	19

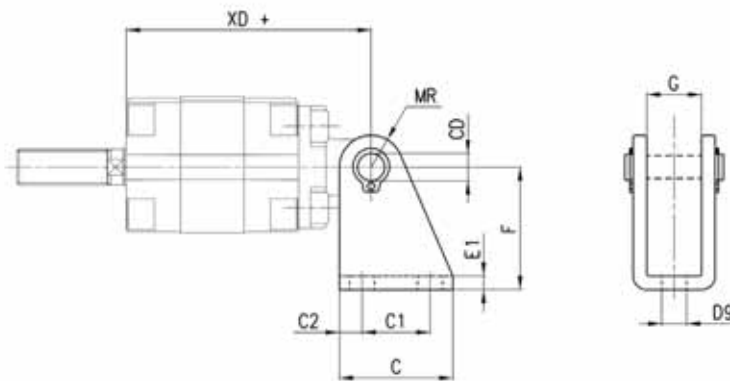
90° swivel combination for trunnion Mod. I

Material: zinc-plated steel



Supplied with:  
2x Seeger  
1x female support  
1x piston pin

+ = add the stroke

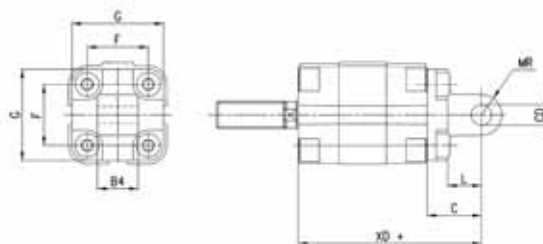


DIMENSIONS

Mod.	∅	∅CD	C	C1	∅C2	XD+	MR	∅D9	E1	F	G
<b>I-12-16</b>	12	6	25	15	5	54	7	5,5	3	27	12,1
<b>I-12-16</b>	16	6	25	15	5	54	7	5,5	3	27	12,1
<b>I-20-25</b>	20	8	32	20	6	58	10	6	4	30	16,1
<b>I-20-25</b>	25	8	32	20	6	59,5	10	6	4	30	16,1

**Rear male trunnion Mod. L**

Material: aluminium  
 Supplied with:  
 4x screws  
 1x male trunnion  
 1x centering pin


**DIMENSIONS**

	Ø	ø <sub>CD</sub>	L	C	XD+	MR	F	G	B4
<b>L-31-12-16</b>	12	6	10	16	54	6	18	30	12
<b>L-31-12-16</b>	16	6	10	16	54	6	18	30	12
<b>L-31-20</b>	20	8	14	20	58	8	22	37,5	16
<b>L-31-25</b>	25	8	14	20	59,5	8	26	41,5	16

+ = add the stroke

**Piston rod lock nut Mod. U**

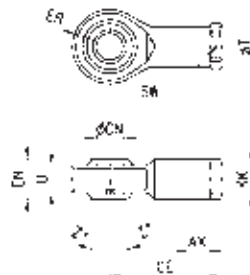
Material: zinc-plated steel  
 ISO 4035


**DIMENSIONS**

Mod.	Ø cylinder	D	m	SW
<b>U-12-16</b>	12	M6X1	4	10
<b>U-20</b>	16	M8X1,25	5	13
<b>U-25-32</b>	20-40	M10X1,25	6	17
<b>U-40</b>	50-63	M12X1,25	7	19
<b>U-50-63</b>	80	M16X1,5	8	24
<b>U-80-100</b>	100	M20X1,5	9	30

**Swivel ball joint Mod. GA**

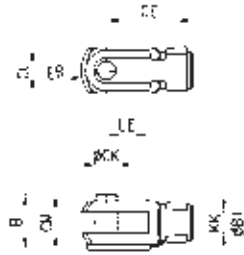
Material: zinc-plated steel  
 ISO 8139


**DIMENSIONS**

Mod.	Ø	ø <sub>CN</sub>	U	EN	ER	AX	CE	KK	T	Z	SW
<b>GA-12-16</b>	12	6	7	9	10	12	30	M6X1	10	6,5	11
<b>GA-20</b>	16	8	9	12	16	36	M8X1,25	12,5	6,5	14	
<b>GA-32</b>	20÷40	10	10,5	14	14	20	43	M10X1,25	15	6,5	17
<b>GA-40</b>	50÷63	12	12	16	16	22	50	M12X1,25	17,5	6,5	19
<b>GA-50-63</b>	80	16	15	21	21	28	64	M16X1,5	22	7,5	22
<b>GA-80-100</b>	100	20	18	25	25	33	77	M20X1,5	27,5	7	30

Rod fork end Mod. G

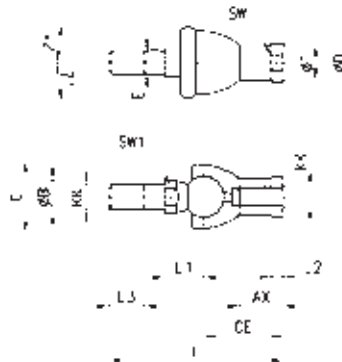
ISO 8140  
Material: zinc-plated steel



DIMENSIONS										
Mod.	Ø	B	ØB1	ØCK	LE	CM	CL	ER	CE	KK
<b>G-12-16</b>	12	16	10	6	12	6	12	7	24	M6X1
<b>G-20</b>	16	22	14	8	16	8	16	42	32	M8X1,25
<b>G-25-32</b>	20 ÷ 40	26	18	10	20	10	20	12	40	M10X1,25
<b>G-40</b>	50 ÷ 63	32	20	12	24	12	24	14	48	M12X1,25
<b>G-50-63</b>	80	40	26	16	32	16	32	19	64	M16X1,5
<b>G-80-100</b>	100	48	34	20	40	20	40	25	80	M20X1,5

Piston rod socket joint Mod. GY

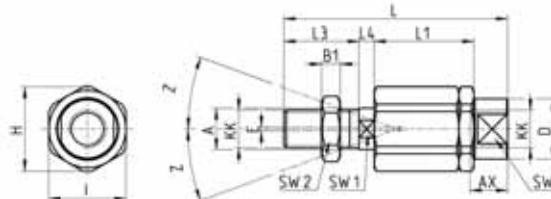
Material: zama and zinc-plated steel



DIMENSIONS																
Mod.	Ø	KK	L	CE	L2	AX	E	ØB	ØC	ØT	ØD	L1	L3	SW1	SW	Z
<b>GY-12-16</b>	12	M6X1	55	28	5	15	6	10	20	10	13	12,2	11	8	11	15
<b>GY-20</b>	16	M8X1,25	65	32	5	16	8	12	24	12,5	16	16	12	10	14	15
<b>GY-32</b>	20÷40	M10X1,25	74	35	6,5	18	10	14	28	15	19	19,5	15	11	17	15
<b>GY-40</b>	50÷63	M12X1,25	84	40	6,5	20	12	19	32	17,5	22	21	17	17	19	15
<b>GY-50-63</b>	80	M16X1,5	112	50	8	27	16	22	40	22	27	27,5	23	19	22	11
<b>GY-80-100</b>	100	M20X1,5	133	63	10	38	20	27	45	27,5	34	31,5	25	24	30	7,5

### Self aligning rod Mod. GK

For cylinders with male rod only.  
Material: zinc-plated steel

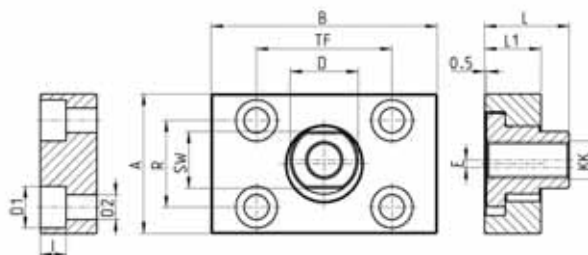


#### DIMENSIONS

Mod.	∅	KK	L	L1	L3	L4	∅ A	∅ D	H	I	SW	SW1	SW2	B1	AX	Z	E
<b>GK-20</b>	16	M8x1,25	57	26	21	5	8	12,5	19	17	11	7	13	4	16	4	2
<b>GK-25-32</b>	20-25-32-40	M10x1,25	71,5	35	20	7,5	14	22	32	30	19	12	17	5	22	4	2
<b>GK-40</b>	50-63	M12x1,25	75,5	35	24	7,5	14	22	32	30	19	12	19	6	22	4	2
<b>GK-50-63</b>	80	M16x1,5	104	53	32	10	22	32	45	41	27	20	24	8	30	3	2
<b>GK-80-100</b>	100	M20x1,5	119	53	40	10	22	32	45	41	27	20	30	10	37	3	2

### Coupling piece Mod. GKF

Material: zinc-plated steel



#### DIMENSIONS

Mod.	∅	KK	A	B	R	TF	L	L1	I	∅ D	∅ D1	∅ D2	SW	E
<b>GKF-20</b>	16	M8x1,25	30	35	20	25	22,5	10	-	14	5,5	-	13	1,5
<b>GKF-25-32</b>	20-25-32-40	M10x1,25	37	60	23	36	22,5	15	6,8	18	11	6,6	15	2
<b>GKF-40</b>	50-63	M12x1,25	56	60	38	42	22,5	15	9	20	15	9	15	2,5
<b>GKF-50-63</b>	80	M16x1,5	80	80	58	58	26,5	15	10,5	25	18	11	22	2,5
<b>GKF-80-100</b>	100	M20x1,5	90	90	65	65	32,5	20	13	30,5	20	14	27	2,5