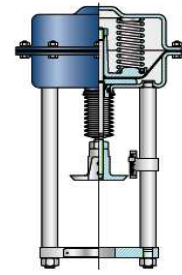


Technical data sheet; actuator series MA

General data

Series	MA16	MA21	MA31	MA41	MA60
Stroke max.	28 mm	35 mm	59 mm	118 mm	136 mm
Diaphragm surface area	85–110 cm ²	150–240 cm ²	355–550 cm ²	600–1135 cm ²	1500–2185 cm ²
Number of springs max.	1–7	1–7	1–7	1–14	1–16
Spring forces max.	2.6 kN	4.3 kN	8.4 kN	25.2 kN	45 kN
Air pressure forces max.	4.6 kN	8.5 kN	22.4 kN	40.5 kN	87 kN
Actuating signal max.	6 bar	6 bar	6 bar	6 bar	6 bar
Ambient temperature	-20°C to +80°C (option -40°C to +80°C)				
Optional	Spring chamber with blanketing, stroke limit and manual adjustment				



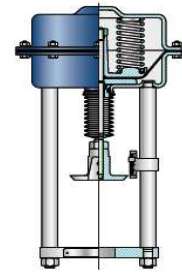
Technical data sheet; actuator series MA

Spring table Po function (at air failure, stem extended)

Type	Spring	Stroke (mm)	Air pressure		Initial value Spring force kN	Terminal value Spring force kN
			from (bar)	to (bar)		
MA16 A6	3R	20	0.20	1.00	0.18	0.86
MA16 A6	3S		0.93	1.99	1.12	1.66
MA16 A6	4S		1.32	2.69	1.51	2.21
MA16 A6	5S		1.53	3.25	1.81	2.69
MA16 A6	6S		1.95	4.05	2.26	3.32
MA16 A6	7S		2.13	4.58	2.57	3.80

Type	Spring	Stroke (mm)	Air pressure		Initial value Spring force kN	Terminal value Spring force kN
			from (bar)	to (bar)		
MA21 A6	3R	25	0.13	1.18	0.35	1.89
MA21 A6	3S		0.96	2.04	1.87	3.19
MA21 A6	4S		1.29	2.74	2.53	4.29
MA21 A6	5S		1.56	3.34	3.07	5.31
MA21 A6	6S		1.91	4.08	3.88	6.56
MA21 A6	7S		2.23	4.75	4.33	7.44

Type	Spring	Stroke (mm)	Air pressure		Initial value Spring force kN	Terminal value Spring force kN
			from (bar)	to (bar)		
MA31 A6	3R	39	0.22	1.08	1.24	4.00
MA31 A6	3S		0.72	2.24	3.74	8.10
MA31 A6	4S		0.98	3.01	5.04	11.14
MA31 A6	5S		1.23	3.68	5.95	13.42
MA31 A6	6S		1.52	4.53	7.42	16.22
MA31 A6	7S		1.77	5.17	8.34	18.8



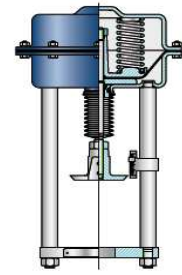
Technical data sheet; actuator series MA

Type	Spring	Stroke (mm)	Air pressure		Initial value Spring force kN	Terminal value Spring force kN
			from (bar)	to (bar)		
MA41 A6	4R	39	0.22	1.08	2.05	8.06
MA41 A6	2S		0.33	0.78	3.59	5.92
MA41 A6	4S		0.66	1.56	7.20	11.85
MA41 A6	5S		0.83	1.95	8.99	14.81
MA41 A6	6S		1.02	2.34	10.80	17.77
MA41 A6	7S		1.19	2.75	12.56	20.73
MA41 A6	8S		1.35	3.12	14.37	23.71
MA41 A6	9S		1.56	3.50	16.18	26.66
MA41 A6	10S		1.73	3.89	18.00	29.62
MA41 A6	12S		2.07	4.67	21.60	35.55
MA41 A6	14S		2.41	5.44	25.22	41.47

Type	Spring	Stroke (mm)	Air pressure		Initial value Spring force kN	Terminal value Spring force kN
			from (bar)	to (bar)		
MA41 C6	2R	90	0.18	1.11	1.87	7.22
MA41 C6	2S		0.95	2.66	9.43	18.89
MA41 C6	4S		2.05	5.25	18.88	37.78

Further actuating forces for **Po function** (at air failure, stem extended), **Ps function** (at air failure, stem retracted) as well as **Pos function** (double effect) are available on request.

When using a stroke limitation, the total stroke is shortened by 5mm for MA21 and MA31.

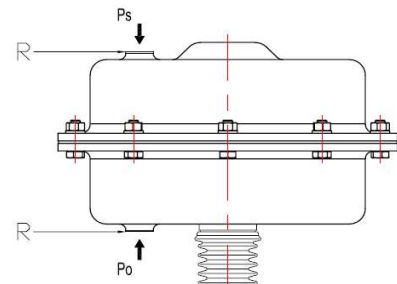
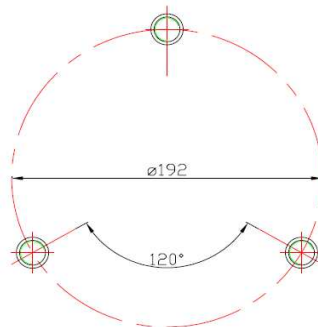
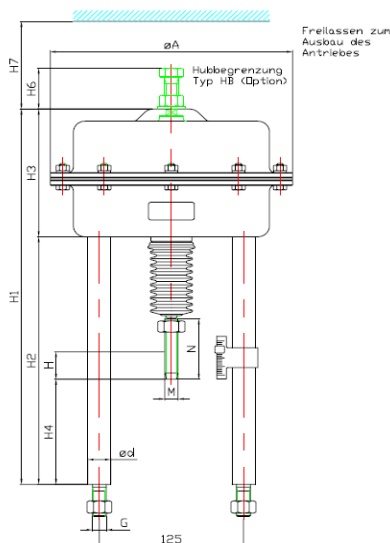


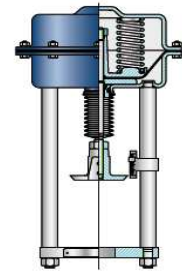
Technical data sheet; actuator series MA

Dimensions and weights (in mm and kg)

Type	Actuator													
	Stroke max. H	A	H1	H2	H3	H4	H6	H7 o. HB	M	N	d	G	R	Weight ca. kg
3.16 A6...	20	162	266	166	100	96	30	40	M12	37	20	M16	R1/4"	4
1.16 B6	28	162	284	176	108	96	30	40						4
2.21 A6...	25	210	343	226	117	96	42	40						7
3.21 B6...	35	210	352	226	126	96	42	40		7				
3.31 A6...	39	310	372	208	164	96	42	40		16				
3.1.31 B6...	20	310	372	208	164	96	42	40		16				
3.31 C6...	59	310	414	230	184	96	42	40	M16	60	28	M16	R1/4"	18
3.41 A6...*	39	415	436	206	230	95	38	40						51
3.41 B6...*	57	415	472	224	248	95	38	40						58
3.41 C6...*	90	415	644	287	357	95	38	45						76
3.41 D6...*	118	415	784	312	472	95	38	45	91					
2.60 A6...	85	598	822	288	534	96	38	55	M24x2	80	35	M24	R3/4"	192
3.60 C6...	136	598	1217	360	857	96	38	65						295
3.60 D6...	125	598	864	330	534	96	38	55						192
3.60 G6...	60	598	643	260	383	96	42	55						160
3.1.16 A6...	44	162	303	199	100	93	52	40	M12	37	20	M16	R1/4"	4
3.21 A6...	64	210	396	271	117	97	70	40		55				7
3.1.31 A6...	72	310	425	252	164	97	62	40	M16	55				16
3.1.41 A6...	107	415	504	274	230	93	50	40	M18x1,5	60				28
2.60 A6...	140	598	750	367	383	98	90	55	M24x2	80	35	M24	R3/4"	174

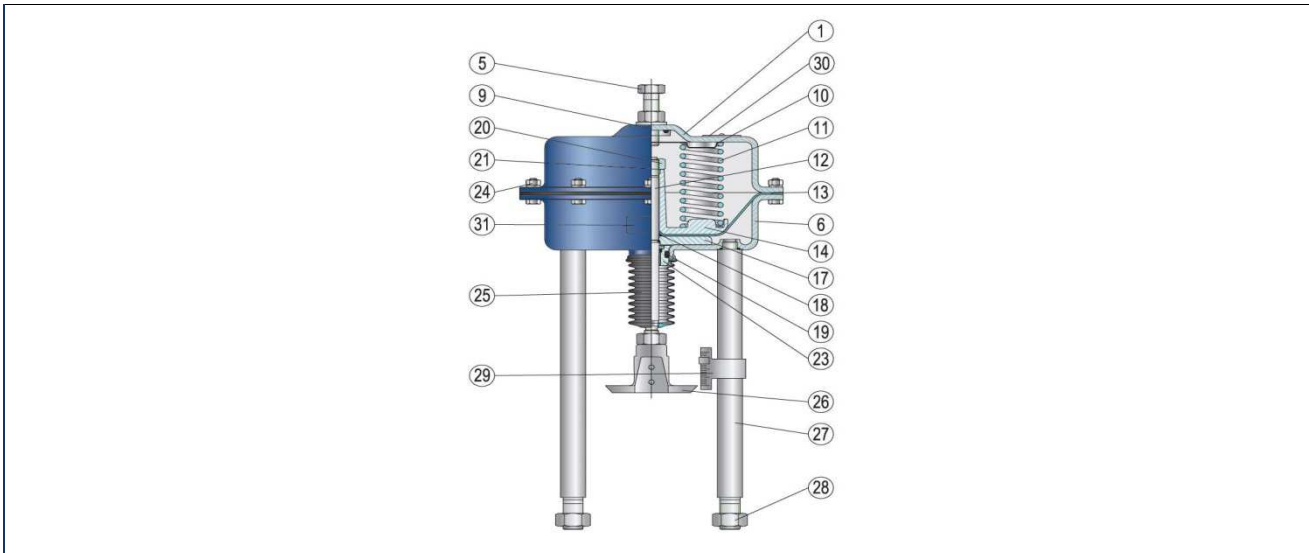
* 3-pillars – see drawing





Technical data sheet; actuator series MA

Spare parts



Pos		Image	Standard	Stainless steel
		1		
1	Upper case		1.0332	1.4301
5	Stroke limitation		A2-70 / galvanized steel / NBR / 1.4305	
6	Lower case		1.0332	1.4301
9	Vent screw		PVC	
10	Spring centering plate		1.4016	
11	Spring		Spring steel corrosion protected	
12	Stem		1.4305	
13	Diaphragm		NBR	
14	Diaphragm plate		EN- JS 1030	EN- JS 1030
17	Pressure plate		1.0038	1.0038
18	O-Ring seal		NBR	
19	Stem rings (kit of 2 half rings)		1.4300	
20	Stem nut		A2-70	A2-70
21	Washer		A2-70	A2-70
23	Slide bearing		1.4301	
24	Perimeter fastening kit		A2-70	A2-70
25	Protection bellows		CR	
26	Coupling		1.4308	
27	Pillar		1.0718	1.4305
28	Pillar nut		A2-70	A2-70
29	Stroke scale		1.4301	
30	Type plate		1.4301	