

meets
OEM
standards

made
in
Germany



Universal spare parts

Gas springs

gas springs in door and window
universal applications

NB PARTS GmbH

Höchstader Straße 34, D-91325 Adelsdorf, Germany

Tel. +49 (0) 9195 92 19 50, Fax +49 (0) 9195 92 19 520

E-Mail at info@nb-parts.de, www.nb-parts.de

Managing Director: Ulf Magaschütz, VAT reg. no.: DE 263 015 356

Register number: HRB 6248, Register court: Amtsgericht Bamberg

© 2012 NB PARTS GmbH

Gas springs and end fittings 04

- 04 Al-ko Gas springs GF 6/15 M5
- 05 Al-ko End fittings GF 6/15 M5
- 06 Al-ko Gas springs GF 8/19 M6
- 07 Al-ko End fittings GF 8/19 M6
- 08 Al-ko Gas springs GF 10/22 M8
- 09 Al-ko End fittings GF 10/22 M8
- 10 Al-ko Gas springs GF 10/28 M8
- 11 Al-ko End fittings GF 10/28 M8
- 12 Al-ko Gas springs GF 14/28 M10
- 13 Al-ko End fittings GF 14/28 M10
- 14 Al-ko Gas springs GF 20/40 M14
- 15 Al-ko End fittings GF 20/40 M14
- 16 Gas springs GF 10/22 (with welded eyelets)
- 17 Gas springs GF 3/10 and end fittings
- 18 Hahn Gas springs GF 20/40 and end fittings
- 19 Hahn Gas springs GF 25/55 and end fittings
- 20 Hahn Gas springs GF 30/65 and end fittings

Technical Questionnaire 21

- 21 Shock absorbers and gas springs

Gas springs

AL-KO Gas springs GF 6/15	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
			50	75	100	125	150	175	200	225	250

50	134	280.396	280.403	280.410	280.417	280.424	280.431	280.438	280.445	280.452
75	184	280.397	280.404	280.411	280.418	280.425	280.432	280.439	280.446	280.453
100	234	280.398	280.405	280.412	280.419	280.426	280.433	280.440	280.447	280.454
125	284	280.399	280.406	280.413	280.420	280.427	280.434	280.441	280.448	280.455
150	334	280.400	280.407	280.414	280.421	280.428	280.435	280.442	280.449	280.456
175	384	280.401	280.408	280.415	280.422	280.429	280.436	280.443	280.450	280.457
200	434	280.402	280.409	280.416	280.423	280.430	280.437	280.444	280.451	280.458

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

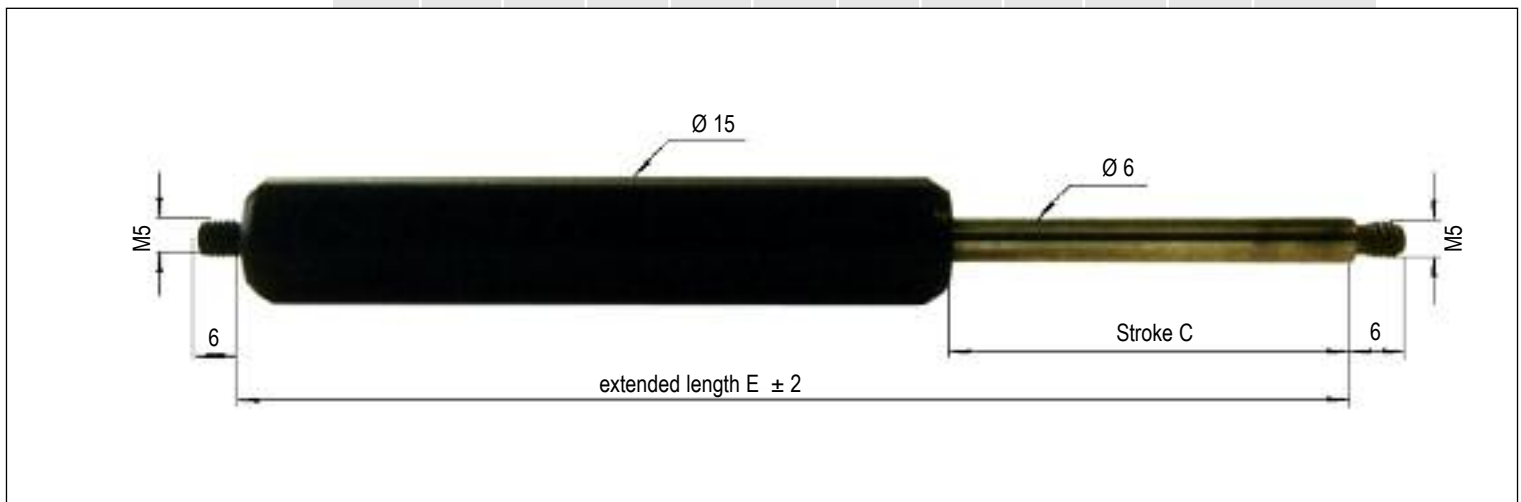
Length of end position cushioning: (20 ± 10) mm

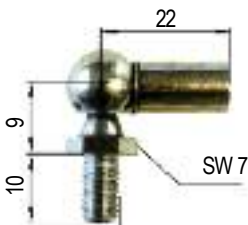
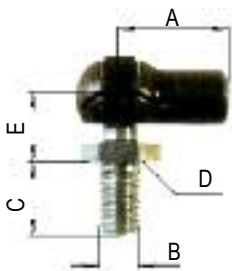
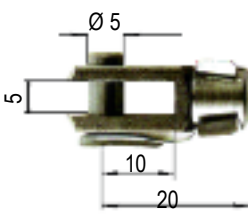
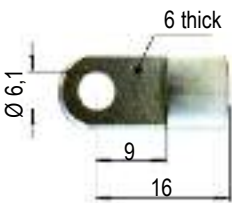
Extension speed: 0,1 ... 0,4 ms⁻¹

Operating temperature range: -30°C ... + 80°C

Extension force F1: (50 ± 20) N ... (250 ± 20) N

Permitted load: < 2000 N (in traction direction)



Order No.	Designation	Measurement					Type / Material	End fittings GF 6/15 thread M5
		A	B	C	D	E		
212.774							Angle ball and socket joint CS8 (x22-M5/M5) DIN 81802	
							steel, zinc-coated, blue chromated	
280.996	WG S 10x19-M5/M6	19	M6	12	SW 8	11	Angle ball and socket joint (WG) /	
280.985	WG S 10x19-M5/M8	19	M8	13	SW13	13,5	Ball socket (KP), keeps itself embedded / Ball stud (KUZA)	
280.995	KP 10x19-M5	19	-	-	-	-		
588.203	KUZA 10-M6x12	-	M6	12	SW 8	11		
1772558008	KUZA 10-M8x13	-	M8	13	SW13	11	Ball socket: steel, zinc-iron-coated	
							Ball stud: steel, zinc-coated, blue chromated	
212.762							Fork G5 x 10 - M5 with ES-pin DIN 71752 (simply clipping)	
							steel, zinc-coated, blue chromated	
280.835							Eyelet 6,1 - 6 x 16 - M5	
							steel, zinc-coated, blue chromated	

Gas springs

AL-KO Gas springs GF 8/19	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
			100	150	200	250	300	350	400	450	500

75	203	280287	280294	280301	280308	280315	280322	280329	280336	280000
100	253	280288	280295	280302	280309	280316	280323	280330	280337	280001
125	303	280289	280296	280303	280310	280317	280324	280331	280338	280002
150	353	280290	280297	280304	280311	280318	280325	280332	280339	280003
175	403	1214195	1214196	1214197	1214198	283684	283685	283686	1214199	283683
200	453	280291	280298	280305	280312	280319	280326	280333	280340	280004
225	503	285932	282933	282396	282397	282398	282399	282907	282901	282823
250	553	280292	280299	280306	280313	280320	280327	280334	280341	280005
300	653	280293	280300	280307	380314	280321	280328	280335	280342	280006

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning: (20 ± 10)mm

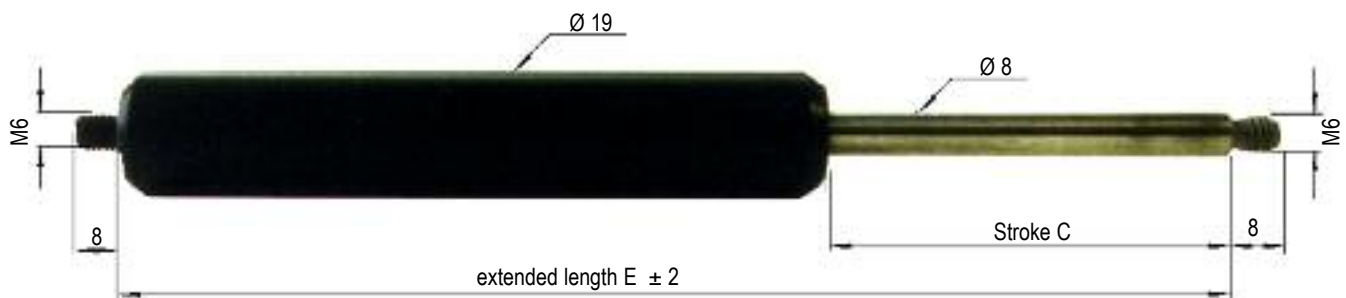
Operating temperature range: -30°C ... + 80°C

Extension speed: 0,1 ... 0,3 ms⁻¹

Extension force F1: (100+40/-20)N ... (500+40/-20)N

Permitted load: <3000 N (in traction direction)

<1500 N (by plastic ball socket)



Order No.	Designation	Measurement					Type / Material	End fittings GF 8/19 thread M6
		A	B	C	D	E		
212.775	WG CS 10 (x25 -M6/M6)	25	M6	12	SW8	11	Angle ball and socket joint (WG) /	
280.838	WG CS 10 x 25 -M6/M8	25	M8	13	SW13	13,5	Ball socket (KP) /	
280.880	WG CS 10 x 19 -M6/M6	19	M6	12	SW8	11	Ball stud (KUZA)	
280.881	WG CS 10 x 19 -M6/M8	19	M8	13	SW13	13,5		
280.869	KP B 10 x 19 -M6	19	-	-	-	-	steel, zinc-coated,	
9904029004	KP B 10 (x25 -M6)	25	-	-	-	-	blue chromated	
588.203	KUZA 10 -M6 x 12	-	M6	12	SW8	11		
1772558008	KUZA 10 -M8 x 13	-	M8	13	SW13	11		
280.910	WG S 10 x 19 -M6/M6	19	M6	12	SW8	11	Angle ball and socket joint (WG) /	
280.911	WG S 10 x 19 -M6/M8	19	M8	13	SW13	13,5	Ball socket (KP), keeps itself	
280.998	WG S 10 x 19 -M6/M8	19	M8	13	SW13	13,5	embedded / Ball stud (KUZA)	
280.922	WG S 10 x 25 -M6/M6	25	M6	12	SW8	11		
280.923	WG S 10 x 25 -M6/M8	25	M8	13	SW13	13,5		
280.908	KP 10 x 19 -M6	19	-	-	-	-	Ball socket: steel, zinc-iron-	
280.920	KP 10 x 25 -M6	25	-	-	-	-	coated	
588.203	KUZA 10 -M6 x 12	-	M6	12	SW8	11	Ball stud: steel, zinc-coated,	
1772558008	KUZA 10 -M8 x 13	-	M8	13	SW13	11	blue chromated	
283.638	WG S 10 x 18 -M6/M6		M6	12	SW8	11	Angle ball and socket joint (WG) /	
283.637	WG S 10 x 18 -M6/M8		M8	13	SW13	13,5	Plastic ball socket (PKP), keeps	
280.961	PKP 10 x 18 -M6		-	-	-	-	itself embedded / Ball stud	
1772558008	KUZA 10 -M8 x 13		M8	13	SW13	11	(KUZA)	
588.203	KUZA 10 -M6 x 12 DIN 71803		M6	12	SW8	11	Ball socket: glass-fibered	
							reinforced polyamide	
							Ball stud: steel, zinc-coated,	
							blue chromated	
212.764							Fork G 6 x 12 - M6 with ES-pin	
							DIN 71752 (simply clipping)	
							steel, zinc-coated,	
							blue chromated	
280.828	8,1 - 5 x 28 -M6	28	8,1				Eyelet	
280.999	10,1 - 5 x 28 -M6	28	10,1				steel, zinc-coated,	
							blue chromated	
280.827	8,1 - 10 x 16 -M6	16	8,1				Eyelet	
280.872	8,1 - 10 x 23,5 -M6	23,5	8,1				zinc, zinc-coated,	
							blue chromated	

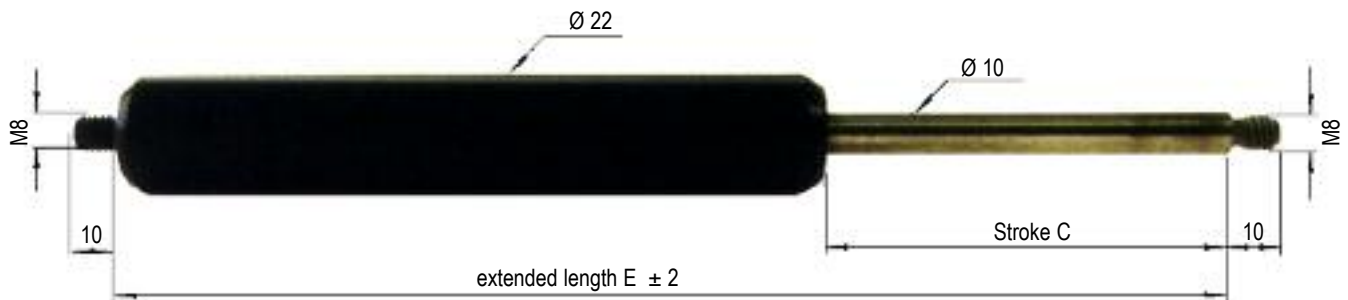
Gas springs

AL-KO Gas springs GF 10/22	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)									
			100	150	200	250	300	350	400	450	500	
	75	210	280175	280182	280189	280196	280203	280210	280217	280224	280231	
	100	260	280176	280183	280190	280197	280204	280211	280218	280225	280232	
	125	310	280177	280184	280191	280198	280205	280212	280219	280226	280233	
	150	360	280178	280185	280192	280199	280206	280213	280220	280227	280234	
	175	410	283598	283599	283600	283601	283602	283603	283604	283605	283606	
	200	460	280179	280186	280193	280200	280207	280214	280221	280228	280235	
	250	560	280180	280187	280194	280201	280208	280215	280222	280229	280236	
	250	610	282934	282935	282936	282937	282938	282939	282940	282941	282942	
	300	660	280181	280188	280195	280202	280209	280216	280232	280230	280237	
	350	760	281099	281100	281101	281102	281103	281104	281105	281106	281107	
	400	860	281115	281116	281117	281118	281119	281120	281121	281122	281123	

Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)									
		550	600	650	700	750	800	850	900		
	75	210	280238	280245	280252	280259	280266	280273	280280	280007	
	100	260	280239	280246	280253	280260	280267	280274	280281	280008	
	125	310	280240	280247	280254	280261	280268	280275	280282	280009	
	150	360	280241	280248	280255	280262	280269	280276	280283	280010	
	175	410	283607	283608	283609	283610	283611	283612	283613	283595	
	200	460	280242	280249	280256	280263	280270	280277	280284	280011	
	250	560	280243	280250	280257	280264	280271	280278	280285	280012	
	250	610	282943	282944	282945	282946	282947	282948	282949	282950	
	300	660	280244	280251	280258	280265	280272	280279	280286	280013	
	350	760	281108	281109	281110	281111	281112	280113	281114	280775	
	400	860	281124	281125	281126	281127	281128	281129	281130	280778	

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning: (20 ± 10)mm	Extension speed: 0,1 ... 0,3 ms-1
Operating temperature range: -30°C ... + 80°C	Extension force F1: (100 ± 50)N ... (900 ± 50)N
	Permitted load: <3000 N (in traction direction)



Order No.	Designation	Measurement					Type / Material	End fittings GF 10/22 thread M8
		A	B	C	D	E		
212776	WG CS 13 (x30 -M8/M8)	30	M8	16	SW 11			
280883	WG CS 13 x 25 -M8/M8	25	M8	16	SW 11			
280929	WG CS 13 x 20 -M8/M8	20	M8	16	SW 11			
588202	KP B 13 (x30 -M8)	30	-	-	-			
280870	KP B 13 x 25 -M8	25	-	-	-			
280877	KP B 13 x 20 -M8	20	-	-	-			
9904025000	KUZA 13 -M8 x 16	-	M8	16	SW 11			
280912	WG S 10 x 19 -M8/M6		M6	12	SW 8	11		
280913	WG S 10 x 19 -M8/M8		M8	13	SW 13	13,5		
280909	KP 10 x 19 -M8		-	-	-	-		
588203	KUZA 10 -M6 x 12		M6	12	SW 8	11		
1772558008	KUZA 10 -M8 x 13		M8	13	SW 13	11		
							Ball socket: steel, zinc-iron-coated Ball stud: steel, zinc-coated, blue chromated	
212.766	G 8 x 16 -M8 DIN 71752	32	16	8				
280.876	G 6 x 16 -M8	32	16	6				
212.767	G 8 x 32 -M8	48	32	8				
							steel, zinc-coated, blue chromated	
280.829	A8,1 - 5 x 28 - M8						Eyelet 8,1 - 5 x 28 - M8 steel, zinc-coated, blue chromated	
212.781	8,1 - 10 x 16 -M8	16	8,1	10				
280.873	8,1 - 10 x 23,5 -M8	23,5	8,1	10				
280.933	10,1 - 10 x 16 -M8	16	10,1	10				
280.973	8,1 - 18 x 22 -M8	22	8,1	18				
665.755	10,1 - 18 x 22 -M8	22	10,1	18				
588.655	M8 x 34	34						
588.856	M8 x 58	58						

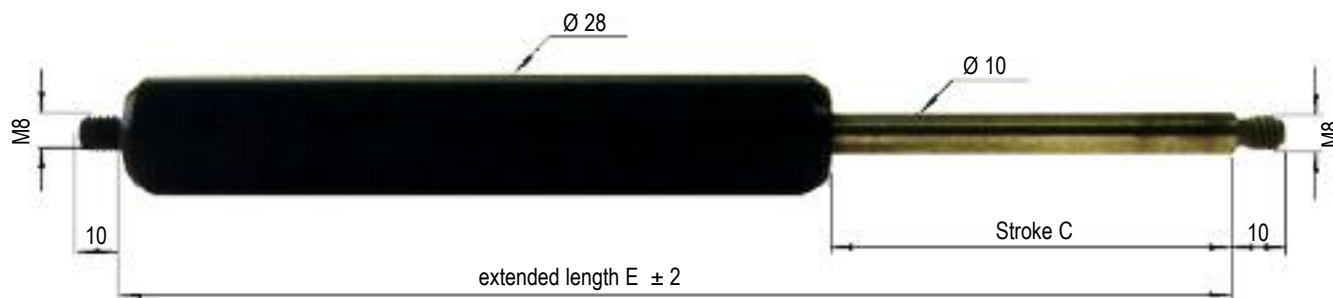
Gas springs

AL-KO Gas springs GF 10/28	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
			100	150	200	250	300	350	400	450	500
75	210	281.741	281.750	281.759	281.768	281.777	281.786	281.795	281.804	281.813	
100	260	281.742	281.751	281.760	281.769	281.778	281.787	281.796	281.805	281.814	
125	310	281.743	281.752	281.761	281.770	281.779	281.788	281.797	281.806	281.815	
150	360	281.744	281.753	281.762	281.771	281.780	281.789	281.798	281.807	281.816	
200	460	281.745	281.754	281.763	281.772	281.781	281.790	281.799	281.808	281.817	
250	560	281.746	281.755	281.764	281.773	281.782	281.791	281.800	281.809	281.818	
300	660	281.747	281.756	281.765	281.774	281.783	281.792	281.801	281.810	281.819	
350	760	281.748	281.757	281.766	281.775	281.784	281.793	281.802	281.811	281.820	
400	860	281.749	281.758	281.767	281.776	281.785	281.794	281.803	281.812	281.821	

Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)							
		550	600	650	700	750	800	850	900
75	210	281.822	281.831	281.840	281.849	281.858	281.867	281.876	280.728
100	260	281.823	281.832	281.841	281.850	281.859	281.868	281.877	280.729
125	310	281.824	281.833	281.842	281.851	281.860	281.869	281.878	280.730
150	360	281.825	281.834	281.843	281.852	281.861	281.870	281.879	280.731
200	460	281.826	281.835	281.844	281.853	281.862	281.871	281.880	280.732
250	560	281.827	281.836	281.845	281.854	281.863	281.872	281.881	280.727
300	660	281.828	281.837	281.846	281.855	281.864	281.873	281.882	280.733
350	760	281.829	281.838	281.847	281.856	281.865	281.874	281.883	281.739
400	860	281.830	281.839	281.848	281.857	281.866	281.875	281.884	281.740

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning: (20 ± 10) mm Extension speed: 0,1 ... 0,3 ms-1
 Operating temperature range: -30°C ... + 80°C Extension force F1: (100 ± 50)N ... (900 ± 50)N
 Permitted load: < 3000 N (in traction direction)



Order No.	Designation	Measurement					Type / Material	End fittings GF 10/28 thread M8
		A	B	C	D	E		
212776	WG CS 13 (x 30 -M8/M8)	30	M8	16	SW 11			
280883	WG CS 13 x 25 -M8/M8	25	M8	16	SW 11			
280929	WG CS 13 x 20 -M8/M8	20	M8	16	SW 11			
588202	KP B 13 (x 30 -M8)	30	-	-	-			
280870	KP B 13 x 25 -M8	25	-	-	-			
280877	KP B 13 x 20 -M8	20	-	-	-			
9904025000	KUZA 13 -M8 x 16	-	M8	16	SW 11			
280912	WG S 10 x 19 -M8/M6		M6	12	SW 8	11		
280913	WG S 10 x 19 -M8/M8		M8	13	SW 13	13,5		
280909	KP 10 x 19 -M8		-	-	-	-		
588203	KUZA 10 -M6 x 12		M6	12	SW 8	11		
1772558008	KUZA 10 -M8 x 13		M8	13	SW 13	11		
212.766	G 8 x 16 -M8 DIN 71752	32	16	8				
280.879	G 6 x 16 -M8	32	16	6				
212.767	G 8 x 32 -M8	48	32	8				
280.829	A 8,1 - 5 x 28 - M8							
212.781	8,1 - 10 x 16 -M8	16	8,1	10				
280.873	8,1 - 10 x 23,5 -M8	23,5	8,1	10				
280.933	10,1 - 10 x 16 -M8	16	10,1	10				
280.973	8,1 - 18 x 22 -M8	22	8,1	18				
665.755	10,1 - 18 x 22 -M8	22	10,1	18				
588.655	M8 x 34	34						
588.656	M8 x 58	58						

Gas springs


AL-KO Gas springs GF 14/28	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
			200	500	600	700	800	900	1000	1100	1200
	100	268	280.678	280.679	280.680	280.681	280.682	280.683	280.684	280.685	280.686
	150	368	280.695	280.696	280.697	280.698	280.699	280.700	280.701	280.702	280.703
	200	468	280.526	280.527	280.528	280.529	280.530	280.531	280.532	280.533	280.534
	250	568	280.542	280.543	280.544	280.545	280.546	280.547	280.548	280.549	280.550
	275	618	281.910	281.911	281.912	281.913	281.914	281.915	281.916	281.917	281.918
	300	668	280.558	280.559	280.560	280.561	280.562	280.563	280.564	280.565	280.566
	300	718	282.951	282.952	282.953	282.954	282.955	282.956	282.957	282.958	282.959
	350	768	280.574	280.575	280.576	280.577	280.578	280.579	280.580	280.581	280.582
	400	868	280.590	280.591	280.592	280.593	280.594	280.595	280.596	280.597	280.598
	400	918	283.614	283.615	283.616	283.617	283.618	283.619	283.620	283.621	283.622
	450	968	280.606	280.607	280.608	280.609	280.610	280.611	280.612	280.613	280.614
	500	1068	280.622	280.623	280.624	280.625	280.626	280.627	280.628	280.629	280.630

Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
		1300	1400	1500	1600	1700	1800	1900	2000	
	100	268	280.687	280.688	280.689	280.690	280.691	280.692	280.693	280.694
	150	368	280.704	280.705	280.706	280.707	280.708	280.709	280.710	280.711
	200	468	280.535	280.536	280.537	280.538	280.539	280.540	280.541	280.493
	250	568	280.551	280.552	280.553	280.554	280.555	280.556	280.557	280.494
	275	618	281.919	281.920	281.921	281.922	281.923	281.924	281.925	280.749
	300	668	280.567	280.568	280.569	280.570	280.571	280.572	280.573	280.495
	300	718	282.960	282.961	282.962	282.963	282.964	282.965	282.966	282.967
	350	768	280.583	280.584	280.585	280.586	280.587	280.588	280.589	280.496
	400	868	280.599	280.600	280.601	280.602	280.603	280.604	280.605	280.497
	400	918	283.623	283.624	283.625	283.626	283.627	283.628	283.629	283.577
	450	968	280.615	280.616	280.617	280.618	280.619	280.620	280.621	280.498
	500	1068	280.631	280.632	280.633	280.634	280.635	280.636	280.637	280.499

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning: (20 ± 10) mm	Extension speed: 0,1 ... 0,3 ms-1
Operating temperature range: -30°C ... + 80°C	Extension force F1: (200±50)N ... (2000±100)N
	Permitted load: <5000 N (in traction direction)



Order No.	Designation	Measurement					Type / Material	End fittings GF 14 / 28 thread M10
		A	B	C	D	E		
212.772	WG CS 16 x 35 -M10/M10	35					Angle ball and socket joint (WG) / Ball socket (KP)	
280.928	WG CS 16 x 30 -M10/M10	30						
280.907	KP B 16 x 30 -M10	30						
212.758	G 10 x 20 -M10 DIN 71752	40	20	10			Fork with ES-pin for simply clipping	
212.759	G 10 x 40 -M10 DIN 71752	60	40	10				
280.885	G 8 x 16 -M10	32	16	8				
212.787	8,1 - 10 x 30 -M10	30	8,1				Eyelet	
280.878	10,1 - 10 x 30 -M10	30	10,1					
280.867	10,1 - 10 x 36 -M10	36	10,1					
280.841	8,1 - 12 x 16 -M10 Zink		8,1				Eyelet	
280.874	10,1 - 12 x 16 -M10 Zink		10,1					
280.839	12,1 - 12 x 16 -M10 Zink		12,1					
280.976	8,1 - 12 x 16 -M10 Stahl		8,1					
280.977	10,1 - 12 x 16 -M10 Stahl		10,1					
280.978	12,1 - 12 x 16 -M10 Stahl		12,1					
588.657	M10 x 22	22					Spacer	
588.658	M10 x 50	50						

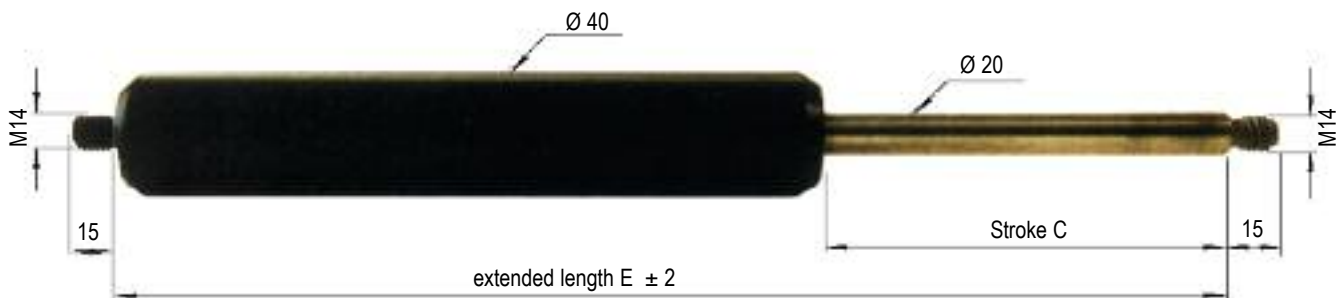
Gas springs

AL-KO Gas springs GF 20/40	Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)								
			500	700	900	1100	1300	1500	1700	1900	2100
	50	185	671408-05	671408-07	671408-09	671408-11	671408-13	671408-15	671408-17	671408-19	671408-21
	100	285	671409-05	671409-07	671409-09	671409-11	671409-13	671409-15	671409-17	671409-19	671409-21
	150	385	671410-05	671410-07	671410-09	671410-11	671410-13	671410-15	671410-17	671410-19	671410-21
	200	485	671411-05	671411-07	671411-09	671411-11	671411-13	671411-15	671411-17	671411-19	671411-21
	250	585	671412-05	671412-07	671412-09	671412-11	671412-13	671412-15	671412-17	671412-19	671412-21
	300	685	671413-05	671413-07	671413-09	671413-11	671413-13	671413-15	671413-17	671413-19	671413-21
	400	885	671415-05	671415-07	671415-09	671415-11	671415-13	671415-15	671415-17	671415-19	671415-21
	500	1085	671417-05	671417-07	671417-09	671417-11	671417-13	671417-15	671417-17	671417-19	671417-21
	600	1285	671419-05	671419-07	671419-09	671419-11	671419-13	671419-15	671419-17	671419-19	671419-21

Stroke C (mm)	Length E (mm)	Order No. by Extension force F1(N)									
		2300	2500	2800	3100	3400	3700	4000	4400	4800	
	50	185	671408-23	671408-25	671408-28	671408-31	671408-34	671408-37	671408-40	671408-44	671408-48
	100	285	671409-23	671409-25	671409-28	671409-31	671409-34	671409-37	671409-40	671409-44	671409-48
	150	385	671410-23	671410-25	671410-28	671410-31	671410-34	671410-37	671410-40	671410-44	671410-48
	200	485	671411-23	671411-25	671411-28	671411-31	671411-34	671411-37	671411-40	671411-44	671411-48
	250	585	671412-23	671412-25	671412-28	671412-31	671412-34	671412-37	671412-40	671412-44	671412-48
	300	685	671413-23	671413-25	671413-28	671413-31	671413-34	671413-37	671413-40	671413-44	671413-48
	400	885	671415-23	671415-25	671415-28	671415-31	671415-34	671415-37	671415-40	671415-44	671415-48
	500	1085	671417-23	671417-25	671417-28	671417-31	671417-34	671417-37	671417-40	671417-44	671417-48
	600	1285	671419-23	671419-25	671419-28	671419-31	671419-34	671419-37	671419-40	671419-44	671419-48

Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning:	(20 ± 10) mm	Extension force F1:	500 - 2500 N (± 100 N)
Operating temperature range:	-30°C ... +80°C		2500 - 4000 N (± 200 N)
Extension speed:	0,1 ... 0,3 ms ⁻¹		4000 - 5000 N (± 300 N)
		Permitted load:	≤ 20.000 N (in traction direction)



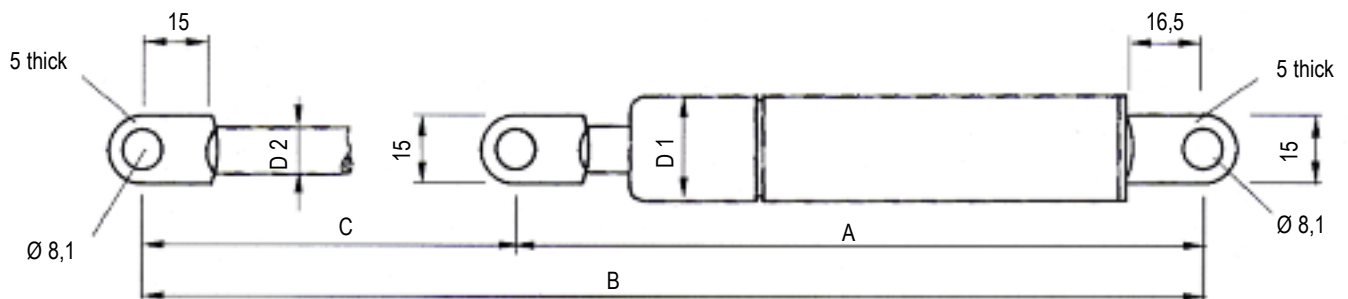
Gas springs

Gas springs GF 10/22 with welded eyelets	Order no.	Stroke C (mm)	Length A (mm)	Stroke B (mm)	Tube D1 (mm)	Piston rod (mm)	Force (N)	Additional
--	-----------	---------------	---------------	---------------	--------------	-----------------	-----------	------------

T11763	100	185	285	22	10	250	Eyelet on both sides welded
T11764	100	185	285	22	10	500	Thickness 5 mm
T11765	150	235	385	22	10	250	Hole 8,1 mm
T11766	150	235	385	22	10	500	
T11767	150	235	385	22	10	750	
T11768	150	235	385	22	10	1000	
T11769	150	235	385	22	10	1150	
T11770	200	285	485	22	10	250	
T11771	200	285	485	22	10	500	
T11772	200	285	485	22	10	750	
T11773	200	285	485	22	10	1000	
T11774	200	285	485	22	10	1150	
T11775	250	335	585	22	10	250	
T11776	250	335	585	22	10	500	
T11777	250	335	585	22	10	750	
T11778	250	335	585	22	10	1000	
T11779	250	335	585	22	10	1150	
T11780	300	385	685	22	10	500	
T11781	300	385	685	22	10	750	
T11782	300	385	685	22	10	1000	
T11783	300	385	685	22	10	1150	
T11784	400	490	890	22	10	500	
T11785	400	490	890	22	10	750	
T11786	400	490	890	22	10	950	

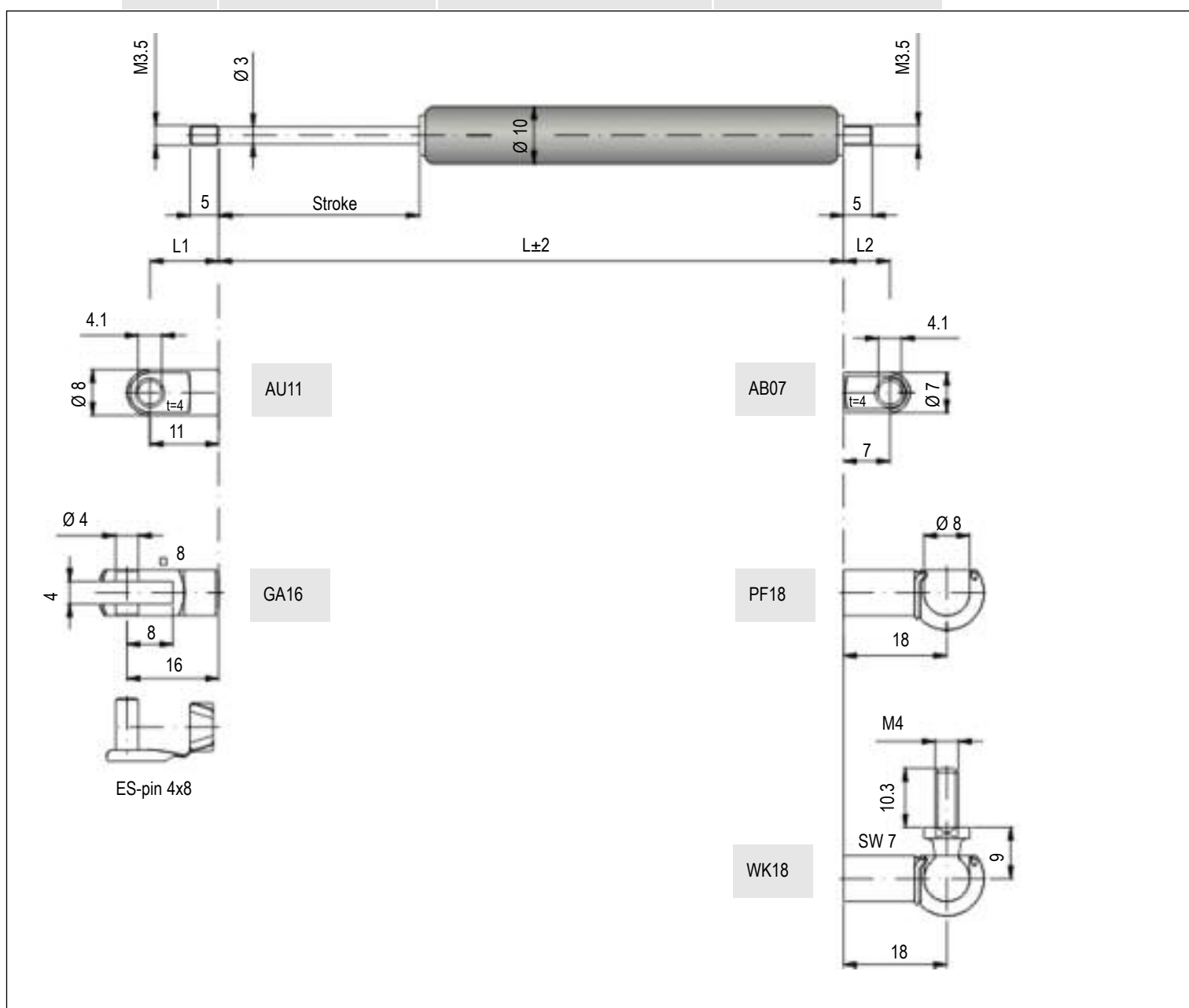
Please note: The mentioned above values F1 apply to gas spring temperature 20°C. Guaranty of 50000 strokes in accordance with assembling instruction/storage (vertical, piston rod to bottom, angle of inclination up to 60° permitted).

Length of end position cushioning: (20 ± 10) mm Extension speed: 0,1 ... 0,3 ms-1
 Operating temperature range: $-30^{\circ}\text{C} \dots +80^{\circ}\text{C}$ Extension force F1: $(100 \pm 50)\text{N} \dots (900 \pm 50)\text{N}$
 Permitted load: <3000 N (in traction direction)



Order No.	Strokes H (mm)	Length GL (mm)	Additional	Gas springs GF 3/10 and end fittings
-----------	----------------	----------------	------------	--------------------------------------

	10	$L = 2 \times H + 32$	5 - 100 Newtons	
	20	$GL = L + L1 + L2$		
	30			
	40			
	50			
	60			
	70			
	80			



Gas springs

Hahn Gas springs GF 20/40
and end fittings

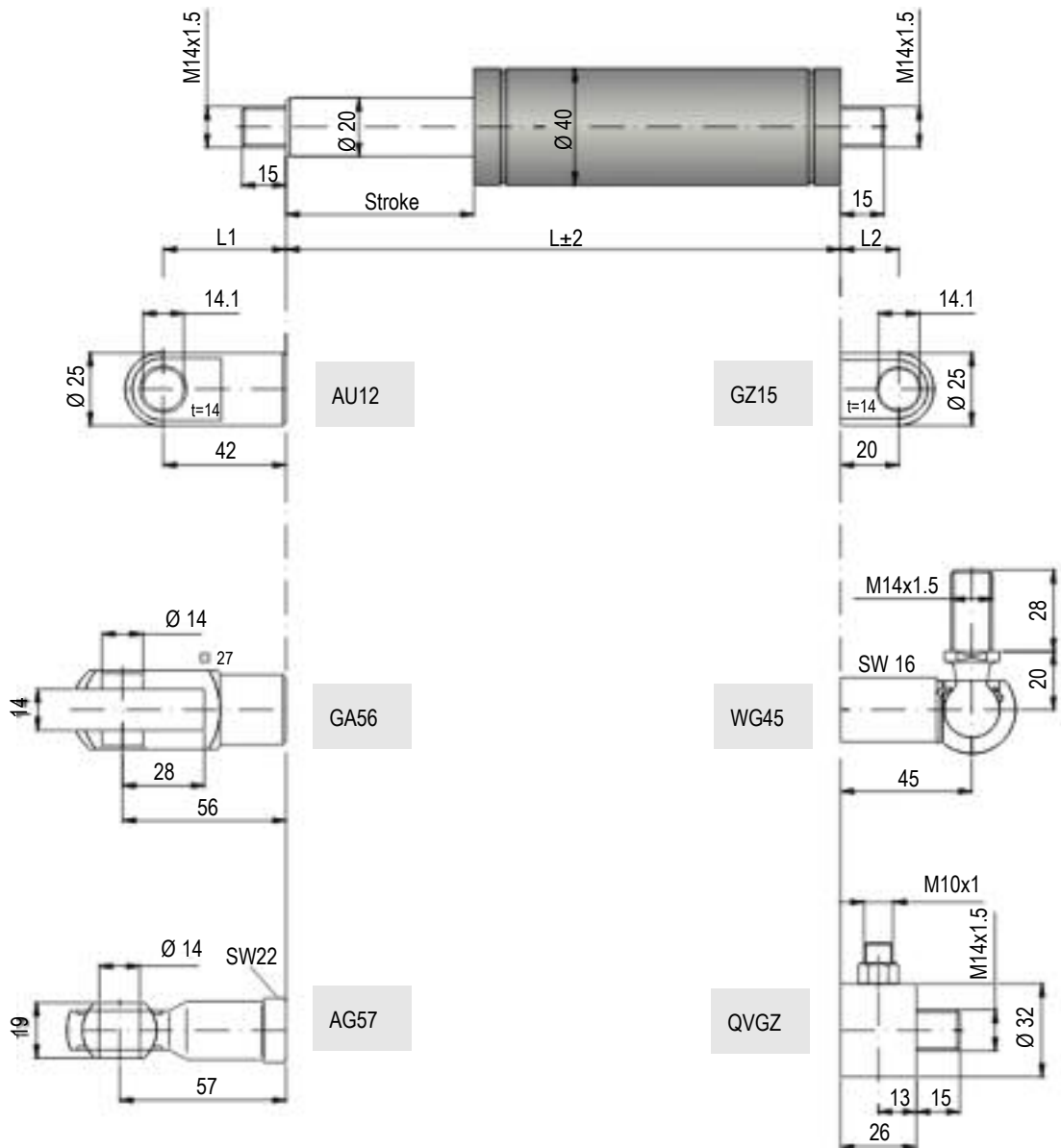
Order No.

Strokes H (mm)

Length GL (mm)

Additional

100	$L = 2 \times H + 32$	Standard package, Valve on bottom part, wiper seal, 300 - 5000 Newton
200	$GL = L + L1 + L2$	
300		
400		
500		
600		
700		

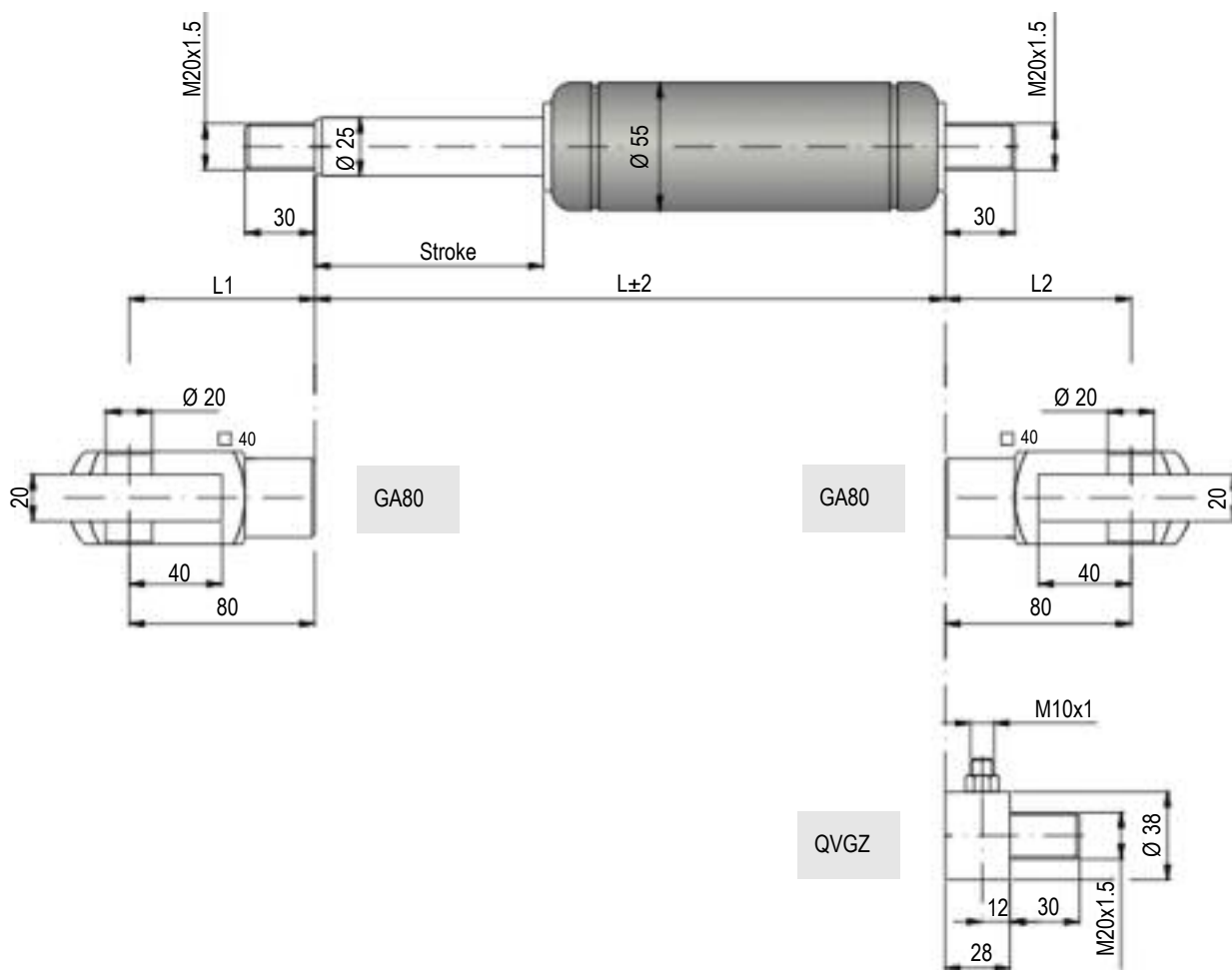


Gas springs

Gas springs

Order No.	Strokes H (mm)	Length GL (mm)	Additional	Hahn Gas springs GF 25/55 and end fittings
-----------	----------------	----------------	------------	--

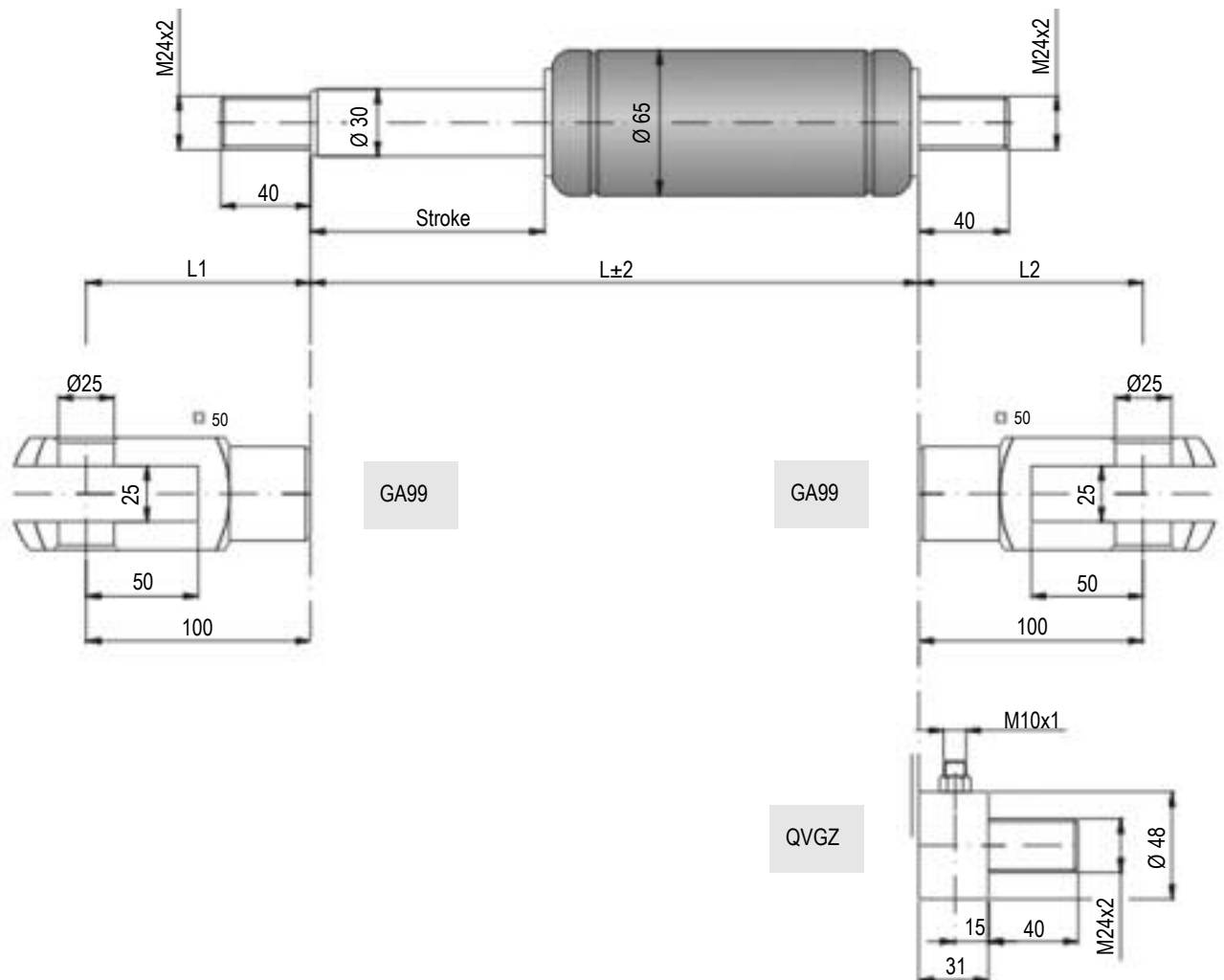
	100	$L = 2 \times H + 32$	Standard package,
	200	$GL = L + L1 + L2$	Valve on bottom part, wiper seal,
	300		500 - 7500 Newtons
	400		
	500		
	600		
	700		



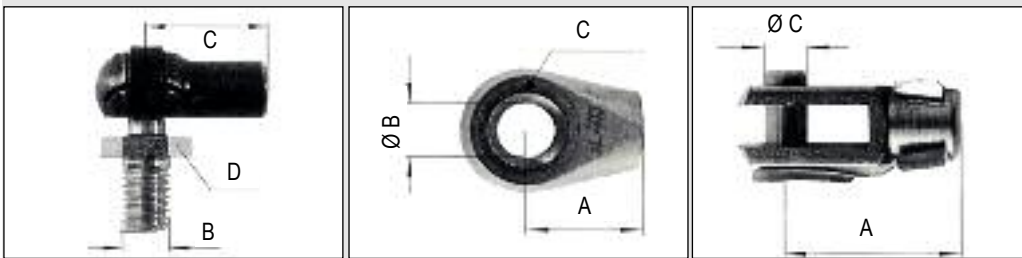
Gas springs

Gas springs

Hahn Gas springs GF 30/65 and end fittings	Order No.	Strokes H (mm)	Length GL (mm)	Additional
		100	$L = 2 \times H + 32$	Standard package,
		200	$GL = L + L1 + L2$	Valve on bottom part, wiper seal,
		300		300 - 5000 Newton
		400		
		500		
		600		
		700		



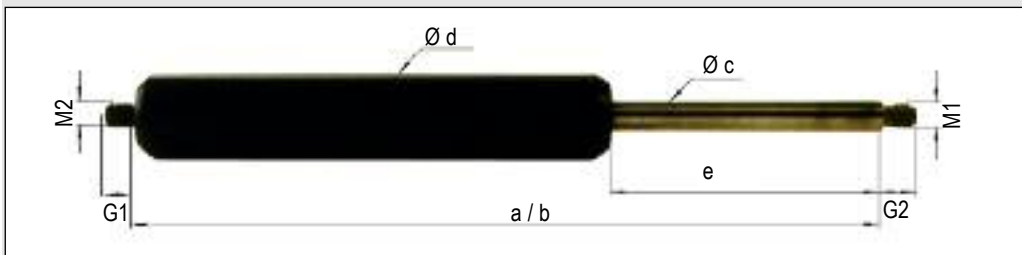
Please fill in the blank and send it to us per fax, email or post. We will respond as immediately as possible.



B = mm
 C = mm
 D = mm

A = mm
 B = mm
 C = mm

A = mm
 C = mm



M1 =
 M2 =
 G1 =
 G2 =

a = mm
 b = mm
 c = mm
 d = mm
 e = mm

No. on housing
 Thickness NM

Company
 Customer no.
 Contact person
 Telephone

General Sales Conditions of Trade by company NB PARTS GmbH
Höchstader Str. 34, D-91325 Adelsdorf, Germany, date 01.01.2008

§ 1 General

- (1) All supplies and services are governed exclusively by the following terms and conditions of sale and supply; these are applicable only in respect of business entities pursuant to § 310 Para. 1 and § 14 of the German Civil Code.
These terms and conditions shall also apply to all future business relationships without the need for express reiteration.
(2) Conditions of the customer divergent from our terms and conditions and not expressly recognised by us are non-binding, even if we do not expressly contest them.
(3) These terms and conditions of trade are included and should be interpreted exclusively in accordance with the law of the Federal Republic of Germany, as should the conclusion and interpretation of any legal transactions with the customer.

§ 2 Offers, scope of services and contract conclusion

- (1) Our contract offers are non-binding and subject to change.
(2) Any services owed under the contract shall be determined solely by our order confirmation. The qualities specified therein comprehensively and conclusively determine the features of the delivery item. Public statements made by our suppliers, the manufacturers and their subsidiaries or third parties shall contain no delivery item features that change or supplement this specification of qualities.
(3) Modifications to the style, design and colour as well as the scope of supply on the part of the manufacturer during the period of supply are permitted, provided these changes take reasonable account of the interests of the customer.
(4) Partial deliveries are permissible, provided this is reasonable for the customer.
(5) Documents on which the offer or order confirmation is based, such as illustrations, drawings, indications of dimensions and weight, are as a rule only to be seen as approximate values, unless they are expressly declared as binding.

§ 3 Prices and payment terms

- (1) Our prices are ex-works and exclude any applicable VAT, package and posting and other transport costs.
(2) Should more than 4 months elapse between contract conclusion and delivery, whereby we are not accountable for any delay in delivery, we are entitled to increase the price to reflect any material costs, wage expenditure and other additional expenses incurred for our account. Should the purchase price be increased by more than 40%, the customer is entitled to withdraw from the contract.
(3) Payment of the invoice amount is due upon handover of the delivery item or upon transmission of invoice, at the latest, however, within 30 days from receipt of invoice. For goods deliveries, we offer a 2% discount if payment is made within 14 days from delivery and date of issue of invoice.
(4) If the payment term is intentionally exceeded, we will calculate late payment interest at 8% above the base interest rate valid at the time whilst reserving the right to raise further claims. The same shall apply in the event we defer payment.
(5) Offsetting and retention are excluded unless the request to offset is undisputed or legally established.

§ 4 Delivery and performance period, liability upon default

- (1) Delivery deadlines or periods that have not been expressly deemed binding in writing are solely for information purposes and are not binding. The delivery period commences upon contract conclusion and starts to run at the earliest, however, once the customer has duly fulfilled its duties to cooperate. Should contract amendments be agreed after contract conclusion, then the delivery period must also be rearranged accordingly.
(2) Should business disruptions arise due to industrial action (in particular strikes and lock-outs) or due to unforeseen impediments beyond our control, e.g. delayed delivery from our supplier, traffic or business disruptions, lack of materials or power, etc., then the agreed delivery period shall be extended by the duration of the performance default caused by these circumstances.
(3) Deliveries are subject to correct and prompt supplies being made to us. We shall inform the customer immediately in the case of non-availability of the delivery item and in the event of withdrawal from contract, we will immediately refund any advance payments received.
(4) Should any non-binding delivery period/deadline be exceeded, the customer may, after allowing a 3-week period of grace, provide us with a written demand for delivery. We may be deemed in delay only after this period has expired. Should any binding delivery period/deadline be exceeded, we will be deemed in delay as soon as this delivery period/deadline is exceeded, unless we are not responsible for the delay. The customer's rights in the event of such delay are conclusively regulated in (5).
(5) Claims for compensation as a result of lateness are excluded if there is only minor fault on our part and if there is no breach of essential contractual obligations. In all other respects, we are liable towards the customer in the event of delivery delays in accordance with the legal regulations. If the delay results from gross negligence whereby a fault of our legal representative or vicarious agent is attributable to us, our liability is limited to typical, foreseeable damages. In all other respects, where we are liable due to delay, our liability for compensation in addition to performance is limited to 5% and for compensation instead of performance to 20% of the value of the delivery/service. These limits are not applicable in the event of liability due to injury to life, body or health.

§ 5 Transfer of risk

Risk is transferred to the customer as soon as we have made the goods available for the customer and have notified the customer to this effect. The customer is obliged to accept the goods within a period of 8 days, unless the customer is entitled to decline to accept the goods due to significant defect.

§ 6 Retention of title

- (1) We retain title to the goods supplied until payment has been made in full. This retention of title also applies until all claims, including future and conditional claims, arising from the business relationship with the customer have been fulfilled.
(2) The customer is not authorised to transfer the goods by way of security or to pledge the goods as collateral, although the customer is entitled to resell the reserved goods in the normal course of business. The customer hereby assigns to us all claims arising from any such resale.
(3) If the customer processes the goods, the retention of title also extends to the entire new item. The customer acquires a co-ownership share corresponding to the ratio of the value of its goods to the value of the goods supplied by us.
(4) If the value of all existing securities assigned to us exceeds our existing claims by more than 10% in the long term, then we shall release the securities at our discretion upon the customer's request.
(5) We are entitled to exercise our rights to retention of title without withdrawing from the contract. This applies in particular if the customer is in delay with payment, whereby we are entitled to reclaim the reserved goods without setting a deadline.

§ 7 Claims for defects

- (1) If a commercial transaction exists for both parties, then the customer is obliged to inspect the goods immediately upon receipt, to the extent that this is feasible in the normal course of business, and if a defect is discovered, the customer is obliged to notify us without delay. If the customer omits to give such notification, then it shall be deemed that the goods have been accepted, unless the defect were such that it could not be detected upon inspection. In all other respects, §§ 377 ff. of the German Commercial Code apply.
(2) Claims for defects are excluded in the case of only slight deviation from the agreed quality and in the case of only slight impairment of serviceability.
(3) Customer claims for defects are limited to subsequent performance. The customer must allow us an appropriate amount of time to effect the subsequent performance. We may elect to effect subsequent performance through rectification of defect or substitute delivery. Should subsequent performance be unsuccessful, the customer has the right to either a reduced price or withdrawal from the contract. In any case, subsequent performance is not deemed unsuccessful until after the second failed attempt.
(4) Further claims by the customer are excluded, unless they result from acceptance of a guarantee. This does not apply in the case of malice, gross negligence or breach of fundamental contractual obligations by us.
(5) The customer's recourse claims in accordance with § 478 of the German Civil Code exist only insofar as the customer has not made any agreements with its subpurchaser beyond the legal claims for defects.

§ 8 Liability

- (1) If, according to legal provisions, we are liable for damage caused by minor negligence, then our liability is limited, unless caused by injury to life, body or health. Liability exists only in the case of breach of fundamental contractual obligations and is limited to typical damages foreseeable at the time of contract conclusion.
(2) If we or our representatives or vicarious agents are responsible for malice or gross negligence, we will be liable in accordance with the legal provisions. In cases of gross negligence, however, our liability is limited to typical damages foreseeable at the time of contract conclusion, except in the case of injury to life, body or health.
(3) In all other respects, our liability is limited to damages due to impossibility of performance and to reimbursement of wasted expenses up to a total of 20% of the value of the delivery/service. Further claims are excluded.
(4) This does not affect our liability in the case of fraudulent concealment of a defect resulting from acceptance of a guarantee or exercise risk and in accordance with product liability law.
(5) The above exclusions and restrictions on our liability also apply to the personal liability of our legal representatives and vicarious agents.

§ 9 Statute of limitations

- (1) The period of limitation for claims and entitlements due to defects, on whatever legal grounds, is 1 year. The also applies to recourse actions in accordance with § 479 of the German Civil Code.
(2) The period of limitation specified in (1) also applies to all customer claims for damages related to a defect, whatever the legal basis of the claim.
(3) The period of limitation specified in (1) and (2) does not generally apply in cases of malice, fraudulent concealment of a defect, acceptance of guarantee, injury to life, body or health, claims made in accordance with the product liability law, gross negligence or breach of fundamental contractual obligations.

§ 10 Obligation, place of performance, place of jurisdiction

- (1) Should any individual provision of this contract, or any of its components, be ineffective, this shall not affect the effectiveness of the remaining

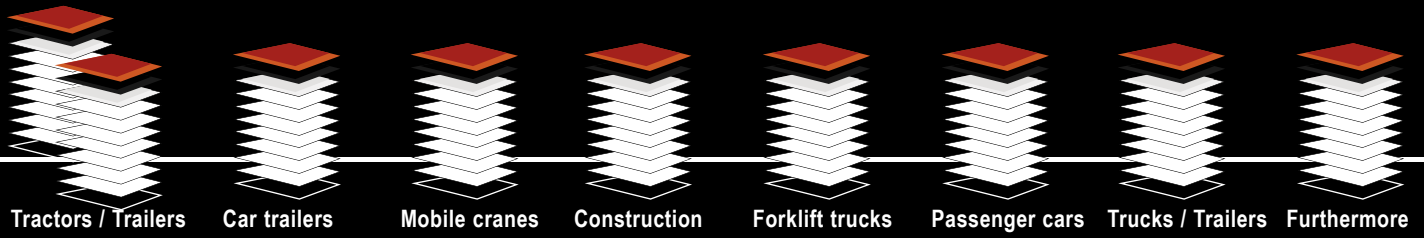
provisions. The contract partners have a duty, in the context of being reasonable and acting in good faith, to replace the ineffective provision with an effective provision that best approximates the economic purpose of the ineffective provision, provided this does not cause any substantial change to the subject terms of the contract; the same applies where a circumstance that requires legal regulation has not been expressly regulated.

- (2) The place of performance for all obligations arising directly or indirectly from this contractual relationship, including duty of payment, is our company headquarters. The place of jurisdiction is likewise our company headquarters. We are, however, also entitled to bring a claim before a court that has jurisdiction for the headquarters or a subsidiary of the customer.

Register number: HRB 6248
Register court: Bamberg District Court in Germany
VAT reg. no.: DE 263 015 356

Misprint, errors and subject to change without notice excepted. Edition: 06/2012
NB PARTS GmbH do not grant full accuracy in product description and arrangement of the information. This catalogue was compiled in collaboration with our manufacturers and suppliers. The visual presentation of articles offers a better understanding and does not warrant liability. The listed products are original replacement parts in first OEM quality. As authorized AL-KO dealer, we distribute trademark merchandise developed and manufactured by AL-KO Dämpfungstechnik GmbH in Germany. We provide as well trademark products in first party quality that are not identical to original part. In that case original spare part-numbers (OEM) serve only to comparing purposes.
Terms of delivery by GSC, dated 01.01.2008. All rights reserved. © 2012 NB PARTS GmbH

Delivery of vehicle spare parts
Production upon request and sample
Reconditioning of used parts



**NB
PARTS**


Universal spare parts

Automotive

**gas springs and shock absorbers
accessories end fittings**

NB PARTS GmbH

Höchstadter Straße 34, D-91325 Adelsdorf, Germany
Tel. +49 (0) 9195 92 19 50, Fax +49 (0) 9195 92 19 520
E-Mail at info@nb-parts.de, www.nb-parts.de

Managing Director: Ulf Magaschütz, VAT reg. no.: DE 263 015 356
Register number: HRB 6248, Register court: Amtsgericht Bamberg
© 2012 NB PARTS GmbH