GEMÜ®

Quarter turn actuator, pneumatically operated

Construction

This pneumatic quarter turn actuator works according to the double piston rack and pinion principle, and is available as a double acting (ADA) or single acting (ASR) version. It is ideal for mounting on butterfly valves and ball valves with standardised interfaces in accordance with ISO 5211 or DIN 3337 (F03-F25). To attach accessories, defined mounting facilities are also available in accordance with VDI/VDE 3845 and NAMUR (control air connector).

Features

Housing

- **Version A**: The aluminium housing is hard-anodised on both the inside and the outside. This treatment means that the surface will be extremely abrasion-resistant (which leads to reduced wear of the adjacent, dynamic components). In addition, this means that a good level of resistance against external environmental influences (e.g. industrial atmosphere) can be achieved. The end caps are provided with an epoxy coating (80-90 µm).
- **Version F**: The aluminium housing and the end caps are provided with a high-quality epoxy coating (80-90 µm). Shaft and screws are made of stainless steel. This achieves an excellent level of corrosion protection. This type of coating has been tried and tested in the offshore sector and in buildings that have permanent condensation and severe air pollution, among others.

Optical position indicator

The multifunction indicator is used as an optical position indicator. It can also be used to operate mechanical or inductive switches for the electronic position feedback.

Setting end positions

The setting range is ±5° (85° to 95°). This adjustment facility has been designed to be extremely easy to operate and is implemented using a precise cam system. The settings can be implemented without removing the actuator. By using a stroke limiter (optional), the end positions can be set variably between 0° and 90°.

Advantages

- Robust design
- Low-wear
- High cycle duties
- Reliable and proven actuator design
- Flexible and versatile
- Simple installation
- Easy setting of switch points
- ATEX version Ⓔx II 2G/D c LCIE 05 AR 022 (optional)
- SIL 3 certified
- Actuator in accordance with EN ISO 15714-3

GEMÜ ADA
with electrical position indicator GEMÜ LSF

GEMÜ®

ADA / ASR

Technical data

Control medium

Filtered, dry compressed air, non-corrosive medium

Control pressure

6 - 8 bar

Temperature range

-30 to +100 °C, other temperatures on request

Angle of rotation

(± 5° adjustable), (85°- 95°) 90°

Weight [kg]														
Typ	**00010**	**0020U**	**0040U**	**0080U**	**0130U**	**0200U**	**0300U**	**0500U**	**0850U**	**1200U**	**1750U**	**2100U**	**2500U**	**4000U**
ADA	0.6	1.4	2.1	3.0	3.8	5.6	8.5	11.2	16.9	25.8	32.5	49.7	69.6	129.4
ASR	-	1.5	2.3	3.7	4.8	7.3	10.8	15.4	22.2	34.3	46.0	68.0	99.9	182.9

Single acting actuators		Double acting actuators				
Order code	**Actuator code**	**Order code**	**Actuator code**	**EN ISO 5211**		
				Flange type	**Hub**	**SW**
-	-	ADA00010 F03Y S09A	BO01AT0	F03	S	9
-	-	ADA00010 F04Y S09A	BO01AZ0	F04	S	9
ASR0020U S08 F03F05Y S09A	AU02FN0	ADA0020U F03F05Y S09A	BU02AN0	F03/F05	S	9
ASR0020U S08 F04Y S14A	AU02FA0	ADA0020U F04Y S14A	BU02AA0	F04	S	14
ASR0020U S08 F05Y S14A	AU02FB0	ADA0020U F05Y S14A	BU02AB0	F05	S	14
ASR0040U S14 F04Y S14/S11A	AU04KA0	ADA0040U F04Y S14/S11A	BU04AA0	F04	S	14
ASR0040U S14 F05Y S14/S11A	AU04KB0	ADA0040U F05Y S14/S11A	BU04AB0	F05	S	14
ASR0080U S14 F05F07Y S17/S14A	AU08KC0	ADA0080U F05F07Y S17/S14A	BU08AC0	F05/F07	S	17
ASR0130U S14 F05F07Y S17/S14A	AU13KC0	ADA0130U F05F07Y S17/S14A	BU13AC0	F05/F07	S	17
ASR0200U S14 F07F10Y S17/S14A	AU20KE0	ADA0130U F05F07Y S17/S14A	BU13AC0	F07/F10	S	17
ASR0300U S14 F07F10Y S 22A	AU30KD0	ADA0300U F07F10Y S22A	BU30AD0	F07/F10	S	22
ASR0500U S14 F10Y S22A	AU50KF0	ADA0500U F10Y S22A	BU50AF0	F10	S	22
ASR0850U S14 F10F12Y S27A	AU85KG0	ADA0850U F10F12Y S27A	BU85AG0	F10/F12	S	27
ASR1200U S14 F10F12Y S27A	A12UKG0	ADA1200U F10F12Y S27A	B12UAG0	F10/F12	S	27
ASR1200U S14 F10F14Y S36A	A12UKH0	ADA1200U F10F14Y S36A	B12UAH0	F10/F14	S	36
ASR1750U S14 F14Y S36A	A17UKK0	ADA1750U F14Y S36A	B17UKK0	F14	S	36
ASR2100U S14 F14Y S36A	A21UKK0	ADA2100U F14Y S36A	B21UAK0	F14	S	36
ASR2100U S14 F16Y S46A	A21UKL0	ADA2100U F16Y S46A	B21UAL0	F16	S	46
ASR2500U S14 F14Y S36A	A25UKK0	ADA2500U F14Y S36A	B25UAK0	F14	S	36
ASR2500U S14 F16 Y S46 A	A25UKL0	ADA2500U F16 Y S46 A	B25UAL0	F16	S	46
ASR4000U S14 F16F25 Y S55 A	A40UKM0	ADA4000U F16F25 Y S55 A	B40UAM0	F16/F25	S	55

	Air volume [L]		Switching time* [Sec.]			
Type	**opening**	**closing**	**ADA opening**	**ADA closing**	**ASR opening**	**ASR closing**
00010	0.04	0.03	0.03	0.07	-	-
0020U	0.13	0.09	0.04	0.09	0.12	0.18
0040U	0.27	0.23	0.08	0.08	0.20	0.29
0080U	0.64	0.47	0.11	0.10	0.27	0.40
0130U	0.77	0.76	0.15	0.15	0.32	0.50
0200U	1.19	1.20	0.15	0.22	0.50	0.60
0300U	1.96	1.73	0.30	0.40	0.70	0.85
0500U	2.95	2.74	0.40	0.50	0.90	1.10
0850U	4.70	3.86	0.80	0.90	2.20	2.60
1200U	6.95	4.64	1.20	1.50	2.30	2.80
1750U	9.80	9.30	1.80	2.00	2.80	3.20
2100U	11.60	10.20	2.30	2.60	3.30	3.70
2500U	15.60	14.40	2.80	3.10	3.80	4.20
4000U	24.00	22.50	3.00	3.50	4.30	5.00

*** Note: (A)** The above switching times of the actuator were determined under the following test conditions:
(1) room temperature, (2) travel range 90°, (3) solenoid valve with ø 4 mm and flow Qn 400L/min., (4) internal ø 8 mm.
(5) Medium: lubricated air, (6) air pressure 5.5 bar (79.95 Psi), (7) actuator without external stress.
Attention : The switching times may be different under different conditions of use.

Technical data

Torques for single acting actuators - ASR [Nm]

Type	Number of springs	3 bar		3.5 bar		4 bar		4.5 bar		5 bar		5.5 bar		6 bar (A)		6.5 bar		7 bar		8 bar		Spring torque	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
0020U	S04			8	5	9	7	11	8	13	10	14	12	16	13	17	15	19	17	22	20	4	7
	S06									11	7	12	9	14	10	15	12	17	13	20	17	7	11
	S08 (A)											10	5	12	7	14	9	15	10	18	14	9	15
0040U	S04	16	14	20	17	23	20	26	24	30	27	33	30	37	34	40	37	43	41	50	47	5	8
	S06	14	10	18	14	21	17	24	20	28	24	31	27	34	30	38	34	41	37	48	44	7	12
	S08			15	10	19	14	22	17	26	20	29	24	32	27	36	30	39	34	46	41	10	16
	S10							20	14	24	17	27	20	30	24	34	27	37	30	44	37	12	20
	S12									21	13	25	17	28	20	32	24	35	27	42	34	15	24
	S14 (A)											23	13	26	17	30	20	33	24	40	30	17	28
0080U	S04	31	27	38	34	44	40	50	46	57	53	63	59	70	66	76	72	82	78	95	91	9	13
	S06	27	21	34	28	40	34	47	41	53	47	59	53	66	60	72	66	79	73	92	86	13	20
	S08					37	29	43	35	49	41	56	48	62	54	69	61	75	67	88	80	17	27
	S10							39	29	46	36	52	42	59	49	65	55	71	61	84	74	22	33
	S12									42	30	48	36	55	43	61	49	68	56	81	69	26	40
	S14 (A)											45	31	51	37	58	44	64	50	77	63	30	47
0130U	S06	43	36	52	46	62	56	72	65	82	75	92	85	102	95	111	105	121	115	141	134	19	27
	S08			47	38	57	48	67	58	76	68	86	77	96	87	106	97	116	107	135	127	26	36
	S10					51	40	61	50	71	60	81	70	91	80	100	89	110	99	130	119	32	45
	S12							56	42	65	52	75	62	85	72	95	82	105	92	124	111	39	54
	S14 (A)											70	54	80	64	89	74	99	84	119	103	45	64
0200U	S06	61	49	76	63	90	78	105	92	119	107	134	122	149	136	163	151	178	166	207	195	31	46
	S08			67	50	81	65	96	79	111	94	125	109	140	123	154	138	169	152	198	182	42	61
	S10					72	52	87	66	102	81	116	96	131	110	146	125	160	139	189	169	52	77
	S12							78	53	93	68	107	83	122	97	137	112	151	128	180	156	63	92
	S14 (A)											99	70	113	84	128	99	142	113	172	143	73	107
0300U	S06	102	75	126	99	151	123	175	148	199	172	223	196	247	220	272	245	296	269	344	317	51	83
	S08			112	76	136	100	160	124	185	148	209	173	233	197	257	221	281	245	330	294	68	111
	S10					122	76	146	101	170	125	194	149	219	173	243	198	267	222	315	270	85	138
	S12							131	77	156	101	180	126	204	150	228	174	253	198	301	247	102	166
	S14 (A)											165	102	190	126	214	151	238	175	287	223	119	193
0500U	S06	152	119	188	155	224	191	260	227	296	263	333	299	369	335	405	371	441	407	513	480	76	115
	S08	131	86	167	122	203	158	239	194	275	231	311	267	347	303	383	339	419	375	492	447	101	153
	S10					181	126	217	162	254	198	290	234	326	270	362	306	398	342	470	414	126	192
	S12							196	129	232	165	268	201	304	238	340	374	376	310	449	382	152	230
	S14 (A)											247	169	283	205	319	241	355	277	427	349	177	268
0850U	S06	260	209	320	269	380	328	440	388	500	448	559	508	619	568	679	627	739	687	858	807	116	177
	S08	227	159	287	218	347	278	407	338	467	398	526	458	586	518	646	577	706	637	826	757	155	236
	S10			254	168	314	228	374	288	434	348	494	408	553	467	613	527	673	587	793	707	193	295
	S12							341	328	401	298	461	358	521	417	580	477	640	537	760	657	232	353
	S14 (A)											428	307	488	367	547	427	607	487	727	607	271	412
1200U	S06	373	289	460	376	546	462	633	549	720	635	806	722	893	808	979	895	1066	981	1239	1154	171	271
	S08	325	213	411	299	498	386	584	472	671	559	758	645	844	732	931	818	1017	905	1190	1078	229	361
	S10	276	136	363	222	449	309	536	395	622	482	709	569	795	655	882	742	969	828	1142	1001	286	451
	S12					401	232	487	319	574	405	660	492	747	578	833	665	920	751	1093	924	343	541
	S14 (A)									525	329	612	415	698	502	785	588	871	675	1044	848	400	631
1750U	S06	477	349	595	466	712	584	830	702	948	820	1066	937	1183	1055	1301	1173	1419	1291	1654	1526	270	421
	S08	400	229	518	347	636	465	754	582	871	700	989	818	1107	936	1225	1053	1342	1171	1578	1407	360	562
	S10			441	228	559	345	677	463	795	581	912	699	1030	816	1148	934	1266	1052	1501	1287	451	702
	S12							600	344	718	461	836	579	954	697	1071	815	1189	933	1425	1168	541	843
	S14 (A)									642	342	759	460	877	578	995	695	1113	813	1348	1049	631	983
2100U	S06	702	509	883	690	1064	871	1245	1052	1426	1233	1607	1414	1788	1595	1969	1776	2150	1957	2512	2319	384	577
	S08	574	316	755	497	936	678	1117	859	1298	1040	1479	1221	1660	1402	1841	1583	2022	1764	2384	2126	512	770
	S10			627	305	808	486	989	667	1170	848	1351	1029	1532	1210	1713	1391	1894	1572	2256	1934	640	962
	S12							861	474	1042	655	1223	836	1404	1017	1585	1198	1766	1379	2128	1741	768	1154
	S14 (A)									914	463	1095	644	1276	825	1457	1006	1638	1187	2000	1549	896	1347
2500U	S06	1299	1045	1587	1333	1876	1622	2164	1910	2453	2199	2741	2487	3029	2775	3318	3064	3606	3352	4183	3929	508	806
	S08	1155	816	1444	1105	1732	1393	2020	1682	2309	1970	2597	2258	2886	2547	3174	2835	3462	3124	4039	3700	677	1075
	S10			1300	876	1588	1165	1877	1453	2165	1742	2453	2030	2742	2318	3030	2607	3319	2895	3895	3472	846	1344
	S12					1444	936	1733	1225	2021	1513	2310	1802	2598	2090	2886	2378	3175	2667	3752	3243	1015	1613
	S14 (A)							1589	996	1877	1285	2166	1573	2454	1861	2742	2150	3031	2438	3608	3015	1184	1882
4000U	S06	1763	1262	2165	1663	2566	2065	2967	2466	3369	2867	3770	3269									758	1348
	S08	1549	880	1950	1282	2351	1683	2752	2084	3154	2485	3555	2887	3956	3288	4358	3689	4759	4091	5068	4399	1011	1797
	S10					2136	1301	2538	1702	2939	2104	3340	2505	3742	2906	4143	3307	4544	3709	4853	4017	1264	2246
	S12							2323	1320	2724	1722	3125	2123	3527	2524	3928	2926	4329	3327	4638	3638	1516	2696
	S14 (A)											2911	1741	3312	2142	3713	2544	4115	2945	4423	3254	1769	3145

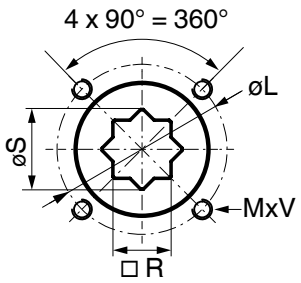
(A) = Standard

Technical data

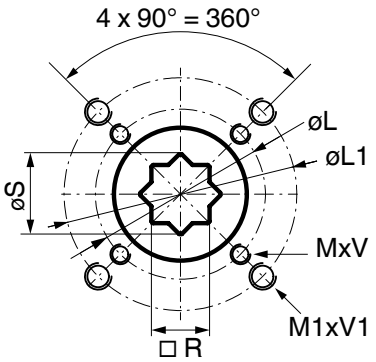
Torques for double acting actuators - ADA [Nm]											
Type	**3 bar**	**3.5 bar**	**4 bar**	**4.5 bar**	**5 bar**	**5.5 bar**	**6 bar**	**6.5 bar**	**7 bar**	**8 bar**	**Weight [kg]**
00010	6.0	8.0	9.0	10.0	11.0	11.5	12.0	12.0	13.0	14.0	0.6
0020U	9.7	11.4	13.0	14.6	16.2	17.8	19.5	21.1	23.0	26.0	1.4
0040U	20.3	23.7	27.1	30.5	33.9	37.3	41.0	44.0	47.0	54.0	2.1
0080U	38.5	44.9	51.3	57.7	64.1	70.5	77.0	83.0	90.0	103.0	3.0
0130U	59.1	68.9	78.7	88.6	98.4	108.3	118.0	128.0	138.0	157.0	3.8
0200U	88.0	102.0	117.0	131.0	146.0	161.0	175.0	190.0	205.0	234.0	5.6
0300U	145.0	170.0	194.0	218.0	242.0	267.0	291.0	315.0	339.0	388.0	8.5
0500U	217.0	253.0	289.0	325.0	361.0	397.0	433.0	469.0	505.0	577.0	11.2
0850U	359.0	419.0	479.0	538.0	598.0	658.0	718.0	778.0	837.0	957.0	16.9
1200U	519.0	606.0	692.0	779.0	865.0	952.0	1038.0	1125.0	1211.0	1384.0	25.8
1750U	707.0	824.0	942.0	1060.0	1178.0	1295.0	1413.0	1531.0	1649.0	1884.0	32.5
2100U	1086.0	1267.0	1448.0	1629.0	1810.0	1991.0	2172.0	2353.0	2534.0	2869.0	49.0
2500U	1730.0	2019.0	2307.0	2596.0	2884.0	3172.0	3461.0	3749.0	4038.0	4614.0	69.6
4000U	2408.0	2809.0	3210.0	3612.0	4013.0	4414.0	4816.0	5217.0	5618.0	6421.0	129.4

Connection dimensions [mm]

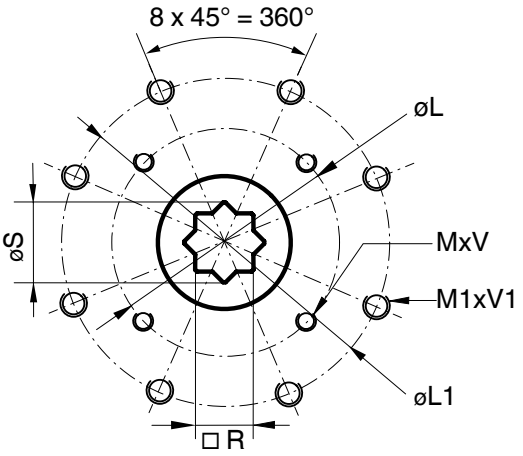
ADA/ASR 00010, 0020U, 0040U, 0500U,1750U, 2100U, 2500U



ADA/ASR 0020U, 0080U, 0130U, 0300U, 0850U, 1200U



ADA/ASR 4000U

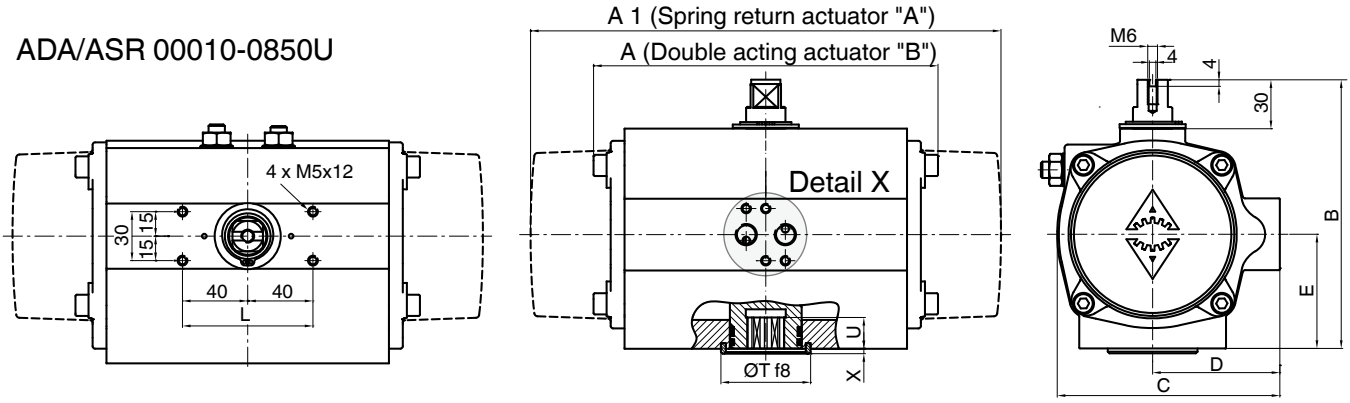


Connection ISO 5211

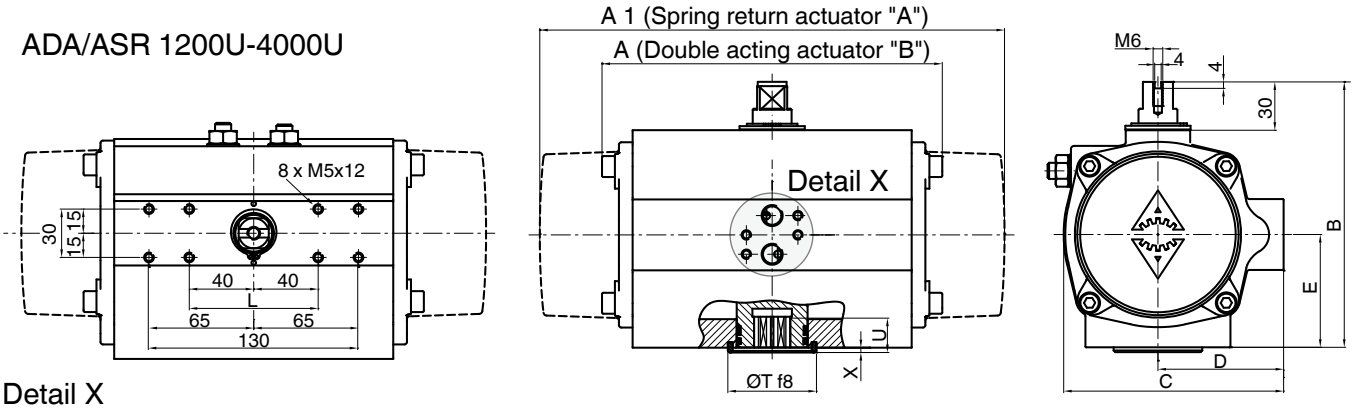
ADA/ASR	□ R	Ø S	ISO 5211	Ø L	M x V	ISO 5211	Ø L1	M1 x V1
00010	9	12.1	F03	36	M5x8	-	-	-
00010	9	12.1	F04	42	M5x8	-	-	-
0020U	9	12.5	F03	36	M5x8	F05	50	M6x10
0020U	14	18.1	F04	42	M5x8	-	-	-
0020U	14	18.1	F05	50	M6x10	-	-	-
0040U	14	18.1	F04	42	M5x10	-	-	-
0040U	14	18.1	F05	50	M6x10	-	-	-
0080U	17	22.5	F05	50	M6x10	F07	70	M8x16
0130U	17	22.5	F05	50	M6x10	F07	70	M8x16
0200U	17	22.5	F07	70	M8x16	F10	102	M10x16
0300U	22	28.5	F07	70	M8x16	F10	102	M10x16
0500U	22	28.5	F10	102	M10x16	-	-	-
0850U	27	36.5	F10	102	M10x17	F12	125	M12x20
1200U	27	36.5	F10	102	M10x17	F12	125	M12x20
1200U	36	48.5	F10	102	M10x17	F14	140	M16x20
1750U	36	48.5	F14	140	M16x26	-	-	-
2100U	36	48.5	F14	140	M16x26	-	-	-
2100U	46	60.2	F16	165	M20x29	-	-	-
2500U	36	48.5	F14	140	M16x26	-	-	-
2500U	46	60.2	F16	165	M20x29	-	-	-
4000U	55	72.5	F16	165	M20x30	F25	254	M16x30

Actuator dimensions ADA/ASR [mm]

ADA/ASR 00010-0850U

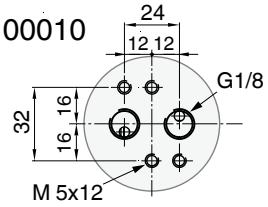


ADA/ASR 1200U-4000U

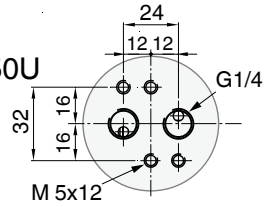


Detail X

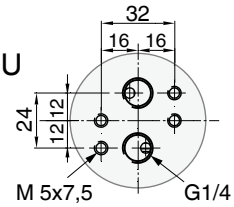
ADA 00010

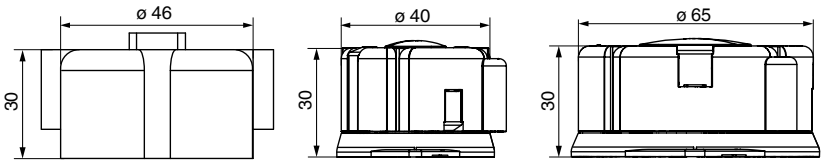


ADA/ASR 0020U-1750U



ADA/ASR 2100U-4000U

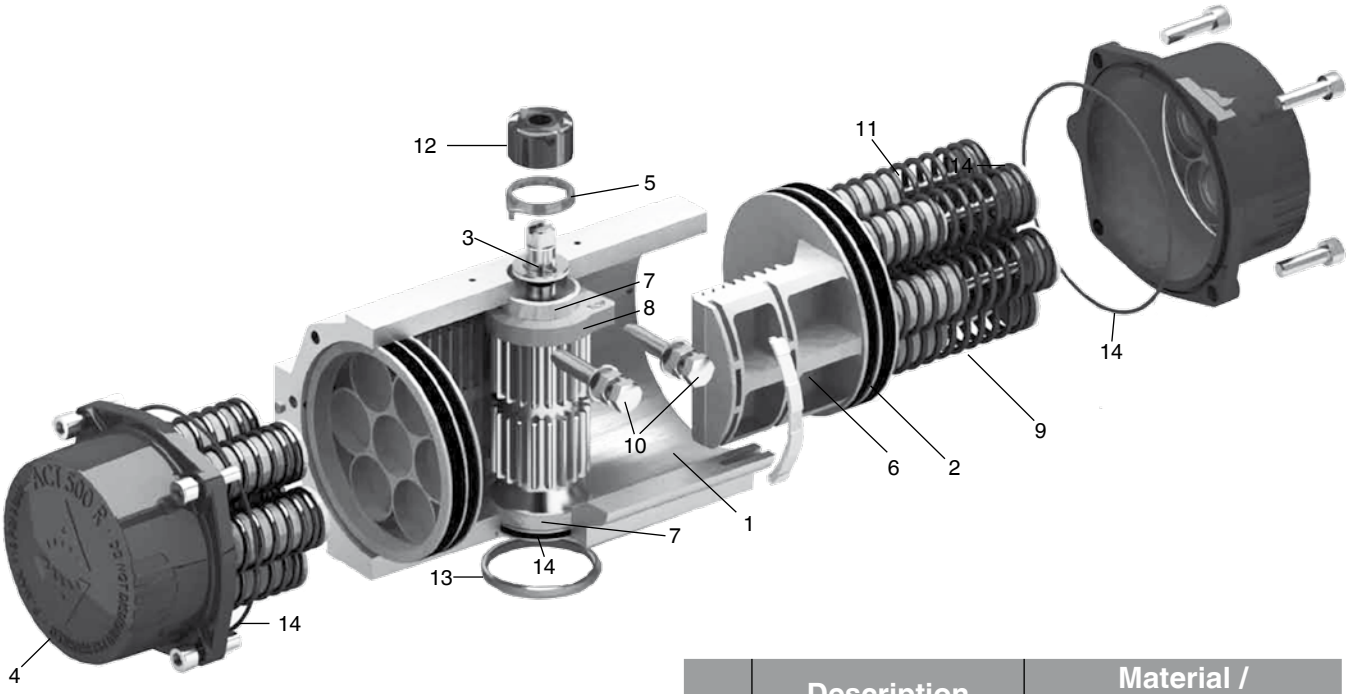


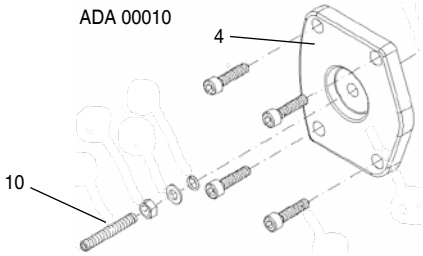


ADA/ASR	00010	0020U			0040U		0080U	0130U	0200U	0300U	0500U	0850U	1200U		1750U	2100U	2500U		4000U
ISO 5211	F03	F04	F03 / F05	F04	F05	F04	F05	F05 / F07	F05 / F07	F07 / F10	F07 / F10	F10	F10 / F12	F10 / F12	F10 / F14	F14	F16	F14	F16	F16 / F25
Octagonal	9		9	14		14		17 (14)	17 (14)	17 (14)	22	22	27	27	36	36	46	36	46	55
Air connector	G 1/8		G 1/4			G 1/4		G 1/4	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4		G 1/4	G 1/4	G 1/4	G 1/4		G 1/4
A	-		145			158		177	196	225	273	304	372		439	461	510	518		630
A1	100		163			195		217	258	299	348.5	397	473		560	601	702	738		940
B	76		96			115		137	147	165	182	199	221		249	280	313	383		434
C	56		76			91		111	122	135.5	152.5	173	191.5		212.5	242.5	276.5	356		415
D	33		48			56		66	71	78	86	96	106		116	131	148	177.5		213
E	23		34			45		55	60	70	80	85	98		114	130	147	176.5		201
L	50		80			80		80	80	80	80	80	80		80	80	80	80		80
ØT	-	25		35		35		55	55	55	70	70	85		100	100	130	130		200
U	12	10		12		12		19	22	23	24	32	39		48	50	50	58		60
X	2	2	3		3	3		3	3	3	3	3	3		4	4	4	4		4

(14) with adapter sleeve

Standard actuator

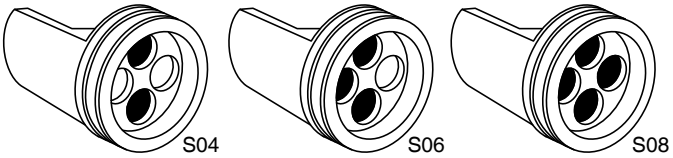




	Description	Material / Specification
1	Housing	Aluminium
2	Piston	Aluminium
3	Shaft	C-steel, nickel coated
4	End caps	Aluminium, epoxy coated
5	Thrust washer	Polyamide PA 6.6
6	Sliding piston	Polyamide PA 6.6, 30% glass reinforced
7	Bearing	Polyamide PA 6.6
8	Setting of end positions	ASTM A 105
9	Spring sets	Polyamide PA 6.6
10	Adjusting screws	Stainless steel
11	Springs	DIN 2076 D-5.6
12	Position indicator	Polypropylene
13	Centring ring	Cast steel, nickel-plated
14	O-rings	NBR

Spring configuration

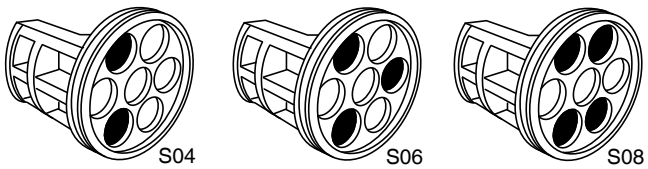
ASR 0020U



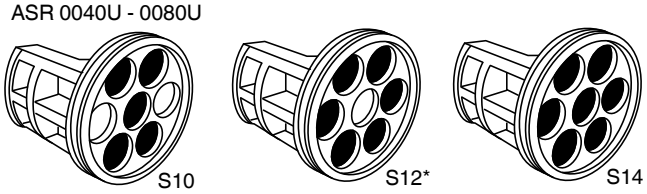
● with spring

○ without spring

ASR 0040U - 4000U

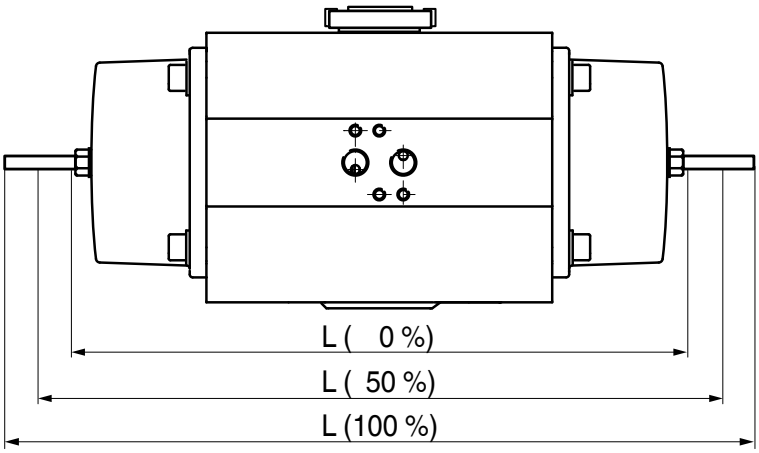


ASR 0040U - 0080U



*S12 - max. spring configuration of single acting actuators with stroke limiter

Actuator with stroke limiter



Actuator with end position setting possibility (100%) dependent on angle of rotation

Length	ADA (double acting)													
[mm]	00010	0020U	0040U	0080U	0130U	0200U	0300U	0500U	0850U	1200U	1750U	2100U	2500U	4000U
L (0 %)	NL	77	180	208	220	254	313	324	398	459	487	550	570	678
L (50 %)	NL	96	202	232	248	285	352	367	453	522	550	626	645	725
L (100 %)	NL	115	224	255	277	317	392	410	508	585	613	701	721	772
	ASR* (single acting)													
L (0 %)	-	194	220	250	300	334	393	436	500	599	647	751	796	998
L (50 %)	-	213	242	274	328	365	432	479	555	662	710	827	871	1045
L (100 %)	-	232	264	297	357	397	472	522	610	725	773	902	947	1092

* ASR with stroke limiter: max. number of springs S12

Order data

1 Type	Code
Double acting	ADA
Single acting	ASR

2 Actuator size (standard torques [Nm] at 6 bar control pressure)					Code
ADA [Nm]	ASR [Nm] Spring Stroke				
	0°	90°	0°	90°	
12	-	-	-	-	00010
19.5	12	7	9	15	0020U
41	26	17	17	28	0040U
77	51	37	30	47	0080U
118	80	64	45	64	0130U
175	113	84	73	107	0200U
291	190	126	119	193	0300U
433	283	205	177	268	0500U
718	488	367	271	412	0850U
1038	698	502	400	631	1200U
1413	877	578	631	983	1750U
2172	1276	825	896	1347	2100U
3461	2454	1861	1184	1882	2500U
4816	3312	2142	1769	3145	4000U
Please refer to tables on pages 3 - 5					

3 Springs per side (F/S)	Code
Double acting	-
Single acting - for correlation see table on pages 3/4	1 - 12

4 Connection size	Code
Flange type F03/F05	F03/F05
Flange type F04	F04
Flange type F05	F05
Flange type F05/F07	F05/F07
Flange type F07/F10	F07/F10
Flange type F10	F10
Flange type F10/F12	F10/F12
Flange type F10/F14	F10/F14
Flange type F14	F14
Flange type F16	F16
Flange type F16/F25	F16/F25
See table page 2	

5 Location spigot	Code
With	Y

6 Hub	Code
Star (double-square) - Standard	S

7 Wrench size	Code
Wrench size SW	9 - 55
See table page 2	

8 Coating	Code
Housing anodized / end caps epoxy coated (80 - 90 µm)	A
Housing / end caps, epoxy coated (80 - 90 µm), shaft stainless steel A 316	F

9 Stroke limiter (optional)	Code
Stroke limiter	H

10 Special function	Code
ATEX	X

Order example	1	2	3	4	5	6	7	8	9	10
Code	ADA	0080U	-	F05/F07	Y	S	17	A	-	-

For further actuators, accessories and other products, please see our Product Range catalogue and Price List. Contact GEMÜ.

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GEMÜ® VALVES, MEASUREMENT AND CONTROL SYSTEMS

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