KLINGER Schöneberg

MIG-KS ACTUATORS

With passion for exceptional quality.

This innovative actuator concept sets new standards in energy efficiency and performance.

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ADVANTAGE FEATURES

Pneumatic Rack & Pinion actuators – Type MIG-KS

The actuator concept for the challenges of tomorrow!

This totally new actuator concept sets new standards in performance and energy management. Up to 40% higher torque with same or smaller construction size and from 40% up to 60% less air consumption compared with the contention. The pneumatic Rack & Pinion actuators, type MIG-KS, revolutionise the control of butterfly valves, ball valves and plug valves.

Advantage features:

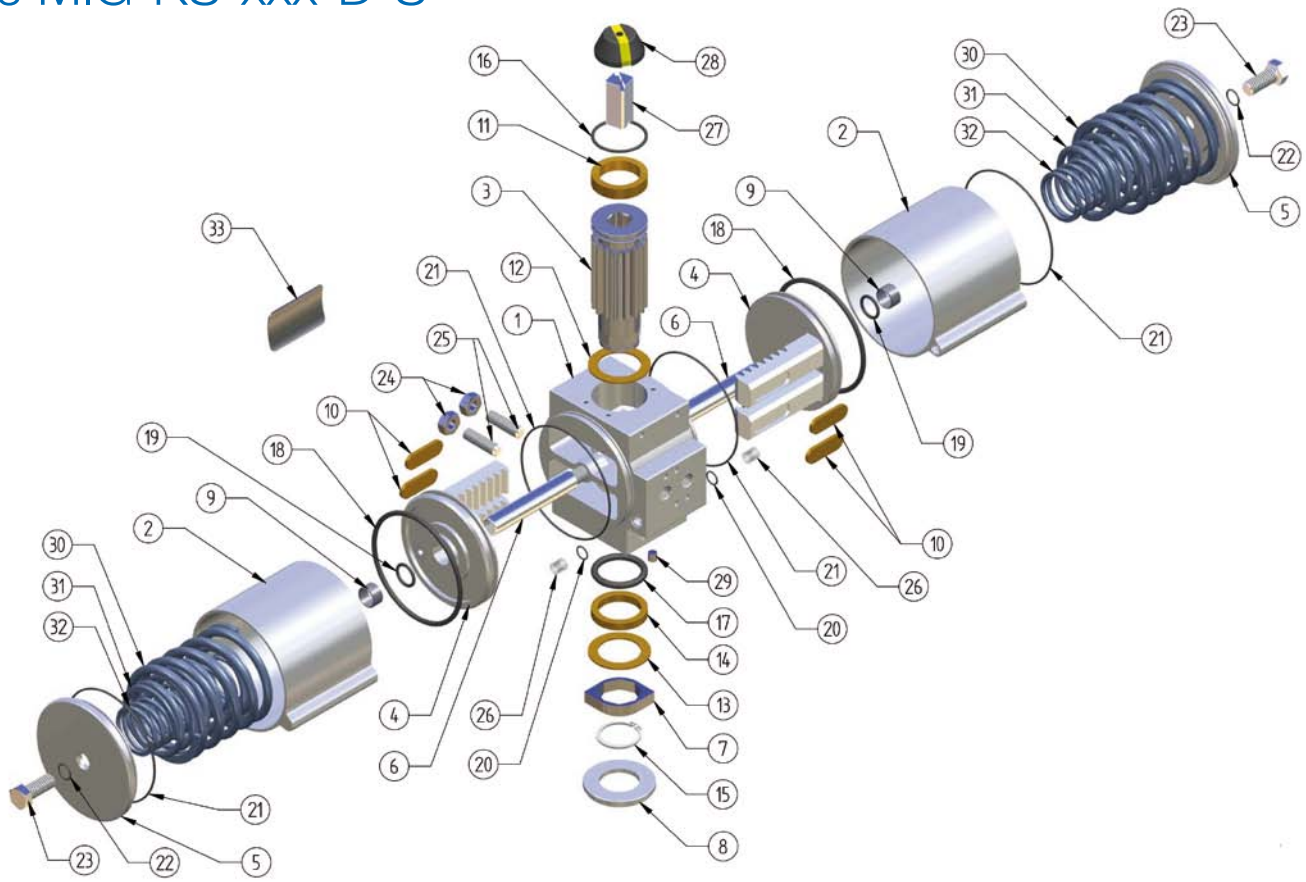
- Pistons are guided with rods
- Additional piston guide belts
- Consistent torque process
- Suitable for high operation cycles
- Integral and exterior air supply with very large diameter
- No slip-stick effect
- Optimum piston area to pressure ratio
- Significant increase of performance and torque
- Considerably improved efficiency
- Significantly shorter actuation / reaction times
- 40% to 60% less air consumption
- No specialised version is needed for quick acting requirement
- Anti blow out stop screws
- Rotation angle with +/- 5° adjustable in every end position
- Less wear and tear while longer life span
- Complete assembly/disassembly only with two hexagon bolts
- Maintenance free and easy to assemble

Optional:

- Double stroke adjustment
- Mechanical partial-stroke test
- Safety block for end positions
- 90° standard actuators with extended rotation to 100°
- Reversal of rotation direction
- Direct assembly of positioning and control units acc. to VDI/VDE 3847
- All types of contactless limit switches can be directly integrated in the body as an additional option or as a replacement for a typical limit switch box.

SPECIFICATION AND PARTS LIST

Type MIG-KS-xxx-D-S

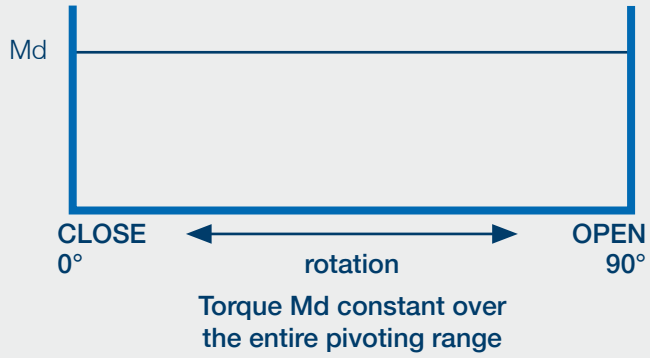


Pos.	Part	Material	Surface protection	Norm	Qty.
1	Body	EN AW 6060 F22 T6	anodized		1
2D	Cylinder pipe (double acting)	EN AW 6063 T6	anodized		2
2S	Cylinder pipe (single acting)	EN AW 6063 T6	anodized		2
3	Shaft	EN AW 7075	hart anodized		1
4	Piston	AL 6061-T6	hart anodized		1
5	End cap	AL 6061-T6	powder-coated, 40-60 µm		2
6	Guide bar	1.4305			2
7	Stopper	1.4301			1
8	Centring disc	PA6-G natur			1
9	Sliding bearing	GSM-1618-10			2
10	Guide bearing	PA6.6			4
11	Sliding bearing shell (shaft at top)	PA6-G natur			2
12	Start-up disc	PA6.6			1
13	Start-up disc	PA6.6			1
14	Sliding bearing (shaft at bottom)	PA6-G natur			1
15	Retainer ring	1.4122		DIN 471	1
16	O-ring	NBR 70 Sh			1
17	O-ring	NBR 70 Sh			1
18	O-ring	NBR 70 Sh			2
19	O-ring	NBR 70 Sh			2
20	O-ring	NBR 70 Sh			2
21	O-ring	NBR 70 Sh			4
22	O-ring	NBR 70 Sh			2
23D	Hexagonal bolt	A2		DIN 933	2
23S	Hexagonal bolt	A2		DIN 933	2
24	Counter nut	A2		DIN 934	2
25	Threaded pin	A2		DIN 915	2
26	Fixing sleeve	PE			2
27	VDI-VDE tappet	EN AW-6082 T6	anodized		1
28	Visual display	PA6.6+GF			1
29	Expander MB600-60	hull 1.4305 / ball 1.4301			1
30S	Pressure spring (outside)	Spring steel FDSiCr high-strength	zinc phosphated, KTL/EPS-coated		2
31S	Pressure spring (central)	Spring steel FDSiCr high-strength	zinc phosphated, KTL/EPS-coated		2
32S	Pressure spring (inside)	Spring steel FDSiCr high-strength	zinc phosphated, KTL/EPS-coated		2
33	Type plate	Aluminium foil			1

Pos. with “D” = double acting actuator
Pos. with “S” = single acting actuator

TORQUE

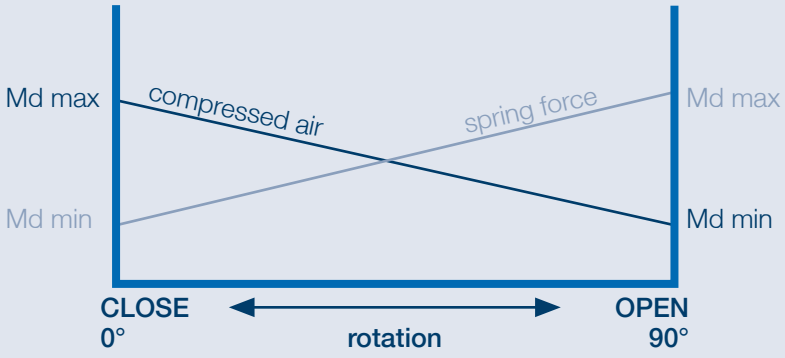
Double acting actuators
Type MIG-KS-xxx-D



Torque Md constant over the entire pivoting range

Actuator Type	Md (Nm) at pressure (bar)														
	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar	4.2 bar	4.5 bar	5 bar	5.5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
MIG-KS-30-D	8	11	14	17	19	22	23	24	27	31	34	39	44	49	55
MIG-KS-40-D	10	14	17	21	24	28	29	30	34	38	42	49	56	63	70
MIG-KS-60-D	15	22	27	33	39	44	46	49	55	60	66	77	88	99	110
MIG-KS-80-D	23	30	37	45	53	60	62	66	74	81	89	103	117	131	146
MIG-KS-120-D	33	44	55	66	77	88	92	99	110	126	138	161	184	207	230
MIG-KS-150-D	41	55	69	83	97	111	115	124	138	157	172	200	228	256	285
MIG-KS-200-D	64	86	107	129	151	172	180	193	215	236	258	301	344	387	430
MIG-KS-270-D	76	103	129	155	181	207	216	232	258	284	310	361	412	463	515
MIG-KS-380-D	111	148	185	222	259	296	310	333	370	403	440	513	586	659	732
MIG-KS-510-D	148	198	246	297	346	396	414	444	494	542	592	690	788	886	985
MIG-KS-740-D	212	283	354	425	497	567	595	638	709	780	851	992	1133	1274	1416
MIG-KS-920-D	266	355	444	533	621	710	745	798	887	975	1064	1241	1418	1595	1772
MIG-KS-1300-D	397	529	661	794	926	1058	1110	1189	1322	1454	1587	1851	2115	2379	2643
MIG-KS-1600-D	476	635	794	953	1111	1270	1333	1428	1587	1746	1905	2222	2539	2856	3173

Single acting actuators
Type MIG-KS-xxx-S



Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																					
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-30-S*	1	4	3	11	10	14	13	17	16	20	18	21	20	22	21	25	24	28	27	31	30	36	35	42	41
	2	6	5	10	8	12	11	15	13	18	16	19	17	21	19	24	22	26	25	29	28	35	33	41	39
	3	8	6	8	6	11	9	14	11	17	14	18	15	19	17	22	20	25	23	28	25	33	31	39	37
	4	10	8	7	4	9	6	12	9	15	12	16	13	18	15	21	18	23	21	26	23	32	29	38	35
	5	13	9	5	2	8	4	11	7	14	10	15	11	16	13	19	16	22	18	25	21	30	27	36	33
	6	15	11			6	2	9	5	12	8	13	9	15	11	18	14	20	16	23	19	29	25	35	30
	7	17	12					8	3	11	6	12	7	13	9	16	11	19	14	22	17	27	23	33	28
	8	19	14							9	4	10	5	12	7	15	9	17	12	20	15	26	21	32	26
	9	21	15									9	3	10	4	13	7	16	10	19	13	24	19	30	24
	10	23	17													12	5	14	8	17	11	23	16	29	22
	11	25	18															13	6	16	9	21	14	27	20
MIG-KS-40-S*	1	5	4	13	12	17	15	20	18	23	22	25	23	27	25	30	28	34	32	37	35	44	42	50	49
	2	8	5	11	9	15	12	18	16	22	19	23	20	25	22	28	26	32	29	35	33	42	39	49	46
	3	11	7	10	6	13	10	16	13	20	16	21	18	23	20	27	23	30	26	33	30	40	37	47	43
	4	13	9	8	4	11	7	15	10	18	14	19	15	21	17	25	20	28	24	32	27	38	34	45	41
	5	16	11			9	4	13	8	16	11	18	12	20	14	23	18	26	21	30	25	36	31	43	38
	6	19	13					11	5	14	8	16	10	18	12	21	15	25	19	28	22	35	29	41	35
	7	21	14							13	6	14	7	16	9	19	12	23	16	26	19	33	26	40	33
	8	24	16									12	4	14	6	18	10	21	13	24	17	31	23	38	30
	9	27	18											12	4	16	7	19	11	23	14	29	21	36	27
	10	29	20													14	4	17	8	21	11	27	18	34	25
	11	32	22															16	5	19	9	26	15	32	22

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																					
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-60-S*	1	8	6	22	19	27	25	33	30	38	36	40	38	44	41	49	47	55	52	60	58	71	69	82	80
	2	12	9	19	15	24	21	30	26	35	32	38	34	41	37	46	43	52	48	57	54	68	65	79	76
	3	16	12	16	11	21	17	27	22	32	28	35	30	38	33	43	39	49	44	54	50	65	61	76	72
	4	20	15	13	7	18	13	24	18	29	24	32	26	35	29	40	35	46	40	51	46	62	57	73	68
	5	24	17			16	9	21	14	27	20	29	22	32	25	38	31	43	36	49	42	60	53	71	64
	6	28	20					18	10	24	16	26	18	29	21	35	27	40	32	46	38	57	49	68	60
	7	32	23					15	6	21	12	23	14	26	17	32	23	37	28	43	34	54	45	65	56
	8	36	26							18	8	20	10	23	13	29	19	34	24	40	30	51	41	62	52
	9	40	29									17	6	20	9	26	15	31	20	37	26	48	37	59	48
	10	44	32											18	5	23	11	29	16	34	22	45	33	56	44
	11	49	35													20	6	26	12	31	17	42	28	53	39
MIG-KS-80-S*	1	11	8	29	25	36	33	44	40	51	47	54	50	58	55	66	62	73	69	80	77	95	92	110	106
	2	17	12	25	20	32	27	40	35	47	42	50	45	54	49	62	57	69	64	76	71	91	86	106	101
	3	22	16	21	14	28	22	36	29	43	36	46	39	50	44	58	51	65	58	72	66	87	80	102	95
	4	28	19	17	9	25	16	32	23	39	31	42	34	47	38	54	45	61	53	69	60	83	75	98	89
	5	33	23			21	11	28	18	35	25	38	28	43	33	50	40	57	47	65	55	79	69	94	84
	6	39	27					24	12	32	20	35	23	39	27	46	34	54	42	61	49	76	64	90	78
	7	45	31							28	14	31	17	35	21	42	29	50	36	57	43	72	58	86	73
	8	50	35									27	12	31	16	39	23	46	31	53	38	68	53	83	67
	9	56	39											27	10	35	18	42	25	49	32	64	47	79	62
	10	61	43													31	12	38	19	45	27	60	41	75	56
	11	67	46															34	14	42	21	56	36	71	51

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																					
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-120-S*	1	17	12	46	41	57	53	69	64	81	76	85	81	92	88	104	99	116	111	127	123	151	146	174	169
	2	25	18	40	33	51	44	63	56	75	68	79	72	86	79	98	91	110	103	121	114	144	137	168	161
	3	34	24	34	24	45	36	57	48	69	59	73	64	80	71	92	82	103	94	115	106	138	129	162	152
	4	42	31	28	16	39	27	51	39	62	51	67	55	74	62	86	74	97	86	109	97	132	120	155	144
	5	51	37	21	7	33	19	45	31	56	42	61	47	68	54	80	65	91	77	103	89	126	112	149	135
	6	59	43			27	10	38	22	50	34	55	38	62	45	73	57	85	69	97	80	120	103	143	127
	7	68	49					32	14	44	25	49	30	56	37	67	48	79	60	90	72	114	95	137	118
	8	76	55					26	5	38	17	43	21	49	28	61	40	73	52	84	63	108	87	131	110
	9	85	61							32	8	36	13	43	20	55	32	67	43	78	55	102	78	125	101
	10	93	67											37	11	49	23	61	35	72	46	95	70	119	93
	11	102	74													43	15	54	26	66	38	89	61	113	84
MIG-KS-150-S*	1	22	15	57	51	72	65	86	80	101	94	107	100	115	109	130	124	145	138	159	153	188	182	217	211
	2	33	23	50	40	64	55	79	69	93	84	99	89	108	98	122	113	137	127	151	142	181	171	210	200
	3	44	31	42	29	57	44	71	58	86	73	92	79	100	87	115	102	129	116	144	131	173	160	202	189
	4	55	38	34	18	49	33	63	47	78	62	84	68	93	76	107	91	122	105	136	120	165	149	194	178
	5	65	46	27	7	41	22	56	36	70	51	76	57	85	65	99	80	114	94	128	109	158	138	187	167
	6	76	54			34	11	48	25	63	40	68	46	77	54	92	69	106	84	121	98	150	127	179	156
	7	87	61					40	14	55	29	61	35	69	43	84	58	99	73	113	87	142	116	171	145
	8	98	69					33	4	47	18	53	24	62	33	76	47	91	62	105	76	135	105	164	134
	9	109	77							40	7	46	13	54	22	69	36	83	51	98	65	127	95	156	124
	10	120	84											47	11	61	25	76	40	90	55	119	84	148	113
	11	131	92													53	14	68	29	82	44	112	73	141	102

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																					
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-200-S*	1	34	24	90	80	112	102	135	125	158	148	167	157	180	171	203	193	226	216	249	239	294	284	340	330
	2	51	36	78	63	100	86	123	108	146	131	155	140	168	154	191	177	214	199	237	222	282	267	328	313
	3	67	48	66	46	88	69	111	92	134	114	143	124	156	137	179	160	202	183	225	205	270	251	316	296
	4	84	60	54	29	76	52	99	75	122	98	131	107	144	120	167	143	190	166	213	188	258	234	304	279
	5	101	72	42	13	64	35	87	58	110	81	119	90	132	103	155	126	178	149	201	172	246	217	291	263
	6	118	84			52	18	75	41	98	64	107	73	120	87	143	109	166	132	189	155	234	200	279	246
	7	135	96					63	24	86	47	95	56	108	70	131	92	154	115	177	138	222	183	267	229
	8	152	108							74	30	83	39	96	53	119	76	142	98	165	121	210	166	255	212
	9	168	120							62	13	71	23	84	36	107	59	130	82	153	104	198	150	243	195
	10	185	132											72	19	95	42	118	65	141	87	186	133	231	178
	11	202	144													83	25	106	48	129	70	174	116	219	161
MIG-KS-270-S*	1	41	29	108	96	135	123	162	150	189	177	200	188	217	205	244	232	271	259	298	287	353	341	407	396
	2	61	43	93	76	120	103	148	130	175	157	186	168	202	185	229	212	257	239	284	266	338	321	393	375
	3	81	58	79	55	106	83	133	110	161	137	171	148	188	164	215	192	242	219	270	246	324	301	379	355
	4	101	72	64	35	92	62	119	90	146	117	157	128	173	144	201	171	228	199	255	226	310	280	364	335
	5	121	86	50	15	77	42	104	70	132	97	143	108	159	124	186	151	213	179	241	206	295	260	350	315
	6	142	101			63	22	90	49	117	76	128	87	145	104	172	131	199	158	226	185	281	240	335	295
	7	162	115					76	29	103	56	114	67	130	83	157	111	185	138	212	165	266	220	321	274
	8	182	130							89	36	99	47	116	63	143	91	170	118	198	145	252	200	307	254
	9	202	144							74	16	85	27	101	43	129	70	156	98	183	125	238	179	292	234
	10	223	158											87	23	114	50	141	77	169	105	223	159	278	214
	11	243	173													100	30	127	57	154	84	209	139	263	193

* Spring set number

Recommended layout for the relevant spring set number

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																			
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-380-S*	1	58	41	154	138	193	177	232	216	271	255	287	271	310	294	350	333	389	372	428	411	506	490	584	568
	2	86	62	133	109	173	148	212	187	251	226	266	242	290	265	329	304	368	344	407	383	485	461	563	539
	3	115	83	113	80	152	119	191	158	230	197	246	213	269	237	308	276	347	315	386	354	465	432	543	510
	4	144	103	92	51	131	91	170	130	209	169	225	184	249	208	288	247	327	286	366	325	444	403	522	481
	5	173	124	72	23	111	62	150	101	189	140	205	155	228	179	267	218	306	257	345	296	424	374	502	452
	6	202	144			90	33	129	72	168	111	184	127	207	150	247	189	286	228	325	267	403	346	481	424
	7	230	165					109	43	148	82	163	98	187	121	226	160	265	199	304	239	382	317	460	395
	8	259	186					88	14	127	53	143	69	166	93	205	132	244	171	283	210	362	288	440	366
	9	288	206							106	25	122	40	146	64	185	103	224	142	263	181	341	259	419	337
	10	317	227									101	12	125	35	164	74	203	113	242	152	320	230	398	309
	11	346	247													143	45	182	84	222	123	300	202	378	280
MIG-KS-510-S*	1	78	55	205	183	258	235	310	287	362	339	383	360	414	391	466	443	518	495	570	547	674	652	779	756
	2	116	83	178	144	230	196	282	248	334	300	355	321	386	353	439	405	491	457	543	509	647	613	751	717
	3	155	110	150	106	203	158	255	210	307	262	328	283	359	314	411	366	463	418	515	470	619	574	724	679
	4	194	138	123	67	175	119	227	171	279	223	300	244	331	275	383	327	436	379	488	431	592	536	696	640
	5	232	165	96	29	148	81	200	133	252	185	273	206	304	237	356	289	408	341	460	393	565	498	669	602
	6	271	192			120	42	172	94	225	146	245	167	277	198	329	250	381	302	433	354	537	459	641	563
	7	310	220					145	55	197	107	218	128	249	159	301	211	353	263	405	315	510	420	614	524
	8	348	247					117	16	169	68	190	89	222	121	274	173	326	225	378	277	482	381	586	485
	9	387	275							142	30	163	51	194	82	246	134	298	186	350	238	455	342	559	447
	10	426	302											167	43	219	95	271	147	323	199	427	304	531	408
	11	465	330													191	56	243	108	295	160	400	265	504	369

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																			
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-740-S*	1	112	79	296	263	370	338	445	412	520	487	550	517	595	562	670	637	745	712	820	787	970	937	1120	1087
	2	168	119	256	206	331	281	406	356	481	431	511	461	556	506	631	581	705	656	780	731	930	881	1080	1030
	3	224	158	216	150	291	225	366	300	441	375	471	405	516	450	591	525	666	600	741	675	891	824	1041	974
	4	280	198	177	94	252	169	327	244	402	319	432	349	477	394	552	469	626	544	701	619	851	768	1001	918
	5	336	237	138	38	213	113	288	188	363	263	392	293	437	338	512	413	587	488	662	563	812	713	962	862
	6	392	276			173	57	248	132	323	207	353	237	398	282	473	357	548	432	623	507	772	657	922	806
	7	448	316					209	76	283	151	313	181	358	226	433	301	508	376	583	451	733	601	883	750
	8	504	355					169	20	244	95	274	125	319	170	394	245	469	320	544	395	693	544	843	694
	9	561	395							204	39	234	69	279	114	354	188	429	263	504	338	654	488	804	638
	10	617	434									195	13	240	58	315	133	390	207	465	282	614	432	764	582
	11	673	474													275	77	350	151	425	226	575	376	725	526
MIG-KS-920-S*	1	142	99	369	326	463	419	557	513	650	607	688	644	744	700	838	794	931	888	1025	981	1212	1169	1399	1356
	2	226	157	311	242	404	336	498	429	592	523	629	560	685	617	779	710	873	804	966	898	1154	1085	1341	1272
	3	310	216	252	158	346	252	439	346	533	439	571	477	627	533	720	627	814	720	908	814	1095	1001	1282	1189
	4	381	265	203	87	296	181	390	274	484	368	521	406	577	462	671	555	765	649	858	743	1046	930	1233	1117
	5	424	296	172	44	266	137	359	231	453	325	491	362	547	418	640	512	734	606	828	699	1015	887	1202	1074
	6	496	345			216	66	310	160	404	253	441	291	497	347	591	441	685	534	778	628	966	815	1153	1003
	7	567	395					261	89	354	182	392	220	448	276	542	370	635	463	729	557	916	744	1103	931
	8	651	453							296	99	333	136	389	192	483	286	577	380	670	473	858	660	1045	848
	9	734	512									275	52	331	109	424	202	518	296	612	390	799	577	986	764
	10	805	561											281	37	375	131	469	225	562	318	750	506	937	693
	11	877	611													326	60	419	153	513	247	700	434	887	622

Actuator Type	Spring set No.	Spring force Md (Nm)		Md (Nm) at pressure (bar)																			
				2.5 bar		3 bar		3.5 bar		4 bar		4.2 bar		4.5 bar		5 bar		5.5 bar		6 bar		7 bar		8 bar	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
MIG-KS-1300-S*	1	214	147	551	485	691	624	831	764	970	904	1026	960	1110	1043	1250	1183	1389	1323	1529	1463	1808	1742	2088	2021
	2	317	221	478	381	617	521	757	660	897	800	953	856	1036	940	1176	1079	1316	1219	1456	1359	1735	1638	2014	1917
	3	421	294	404	277	544	417	684	557	823	696	879	752	963	836	1103	976	1242	1115	1382	1255	1661	1534	1941	1814
	4	528	368	331	170	470	310	610	450	750	589	806	645	889	729	1029	869	1169	1009	1309	1148	1588	1428	1867	1707
	5	632	441			397	206	537	346	676	486	732	541	816	625	956	765	1095	905	1235	1044	1514	1324	1794	1603
	6	739	515					463	239	603	379	659	435	742	518	882	658	1022	798	1161	937	1441	1217	1720	1496
	7	845	588							529	272	585	328	669	412	808	551	948	691	1088	831	1367	1110	1646	1389
	8	949	662									512	224	595	308	735	448	875	587	1014	727	1294	1006	1573	1286
	9	1053	735											522	204	662	344	801	483	941	623	1220	902	1500	1182
	10	1160	809													588	237	728	377	867	516	1147	796	1426	1075
	11	1267	882															654	270	794	410	1073	689	1352	968
MIG-KS-1600-S*	1	256	177	661	582	829	750	997	918	1164	1085	1231	1152	1332	1253	1499	1420	1667	1588	1835	1756	2170	2091	2505	2426
	2	382	265	573	456	741	624	909	792	1076	959	1143	1026	1244	1127	1411	1294	1579	1462	1747	1630	2082	1965	2417	2300
	3	508	353	485	330	653	498	820	665	988	833	1055	900	1156	1001	1323	1168	1491	1336	1659	1503	1994	1839	2329	2174
	4	636	441	397	202	565	370	732	538	900	705	967	772	1067	873	1235	1040	1403	1208	1570	1376	1905	1711	2241	2046
	5	762	529			476	244	644	411	811	579	878	646	979	746	1147	914	1314	1082	1482	1249	1817	1584	2152	1920
	6	890	618					556	283	723	451	790	518	891	619	1058	786	1226	954	1394	1121	1729	1457	2064	1792
	7	1018	706							635	323	702	390	802	491	970	658	1138	826	1305	994	1640	1329	1976	1664
	8	1144	794									614	264	714	365	882	532	1050	700	1217	868	1552	1203	1888	1538
	9	1270	882											626	239	794	406	961	574	1129	741	1464	1077	1800	1412
	10	1398	971													706	278	873	446	1041	614	1376	949	1711	1284
	11	1526	1059															785	318	952	486	1288	821	1623	1156

* Spring set number

Recommended layout for the relevant spring set number

CLASSIFICATION OF SPRING SETS

Single acting actuators, Type MIG-KS-xxx-S

Spring set No. 11
2 x Spring external
2 x Spring middle
2 x Spring inner

Spring set No. 10
2 x Spring external
2 x Spring middle
1 x Spring inner

Spring set No. 9
2 x Spring external
2 x Spring middle

Spring set No. 8
2 x Spring external
1 x Spring middle
1 x Spring inner

Spring set No. 7
2 x Spring external
2 x Spring inner

Spring set No. 6
2 x Spring external
1 x Spring inner

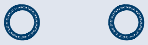
Spring set No. 5
2 x Spring external

Spring set No. 4
2 x Spring middle
1 x Spring inner

Spring set No. 3
2 x Spring middle

Spring set No. 2
1 x Spring middle
1 x Spring inner

Spring set No. 1
2 x Spring inner

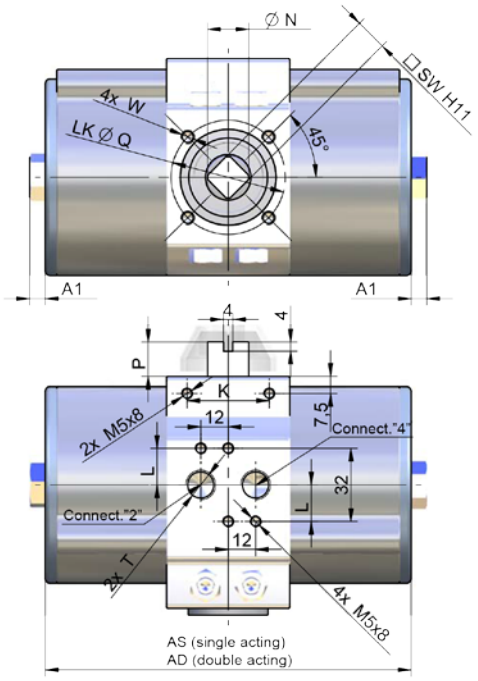


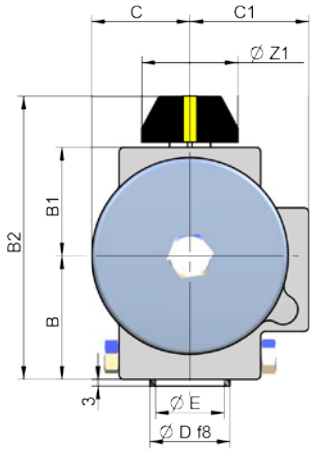
WEIGHTS, REGULATING TIME, AIR VOLUME

Actuator Type	Weights [kg]			Regulating time [sec.]				Air volume [L]	
	Double acting actuators	Single acting actuators *)		Double acting actuators		Single acting actuators		Double acting actuators	Single acting actuators
		from	to	CLOSE → OPEN	OPEN → CLOSE	CLOSE → OPEN	OPEN → CLOSE		
MIG-KS-30	1.0	1.3	1.8	0.10	0.11	0.20	0.10	0.17	0.08
MIG-KS-40	1.2	1.7	2.2	0.11	0.12	0.20	0.10	0.26	0.12
MIG-KS-60	1.4	1.8	2.3	0.14	0.16	0.20	0.10	0.43	0.20
MIG-KS-80	1.7	1.9	2.8	0.18	0.20	0.30	0.10	0.52	0.25
MIG-KS-120	2.8	3.4	4.8	0.19	0.22	0.40	0.15	0.85	0.41
MIG-KS-150	3.1	4.0	5.4	0.20	0.25	0.45	0.20	1.01	0.49
MIG-KS-200	5.3	6.2	9.8	0.35	0.50	0.50	0.30	1.55	0.75
MIG-KS-270	6.0	7.4	10.5	0.50	0.65	0.70	0.40	2.05	0.90
MIG-KS-380	8.6	11.9	17.4	0.70	0.85	0.90	0.65	2.85	1.30
MIG-KS-510	10.7	13.0	21.0	0.85	1.10	1.40	0.80	4.15	1.90
MIG-KS-740	13.2	16.8	26.5	1.30	1.75	1.90	0.95	5.45	2.60
MIG-KS-920	18.9	25.1	33.5	1.70	1.85	2.40	1.00	6.90	3.25
MIG-KS-1300	28.9	32.1	47.0	2.50	2.70	3.80	1.80	11.70	5.20
MIG-KS-1600	33.0	36.8	56.0	3.00	3.50	4.50	2.80	12.40	6.50
Remark:	*) Weight depending on spring set (from = Set 1 / to = Set 11)			Indication of travel times with a control pressure of 5 bar, room temperature and unloaded drive.				Indication of the air volume for one switching cycle respectively.	

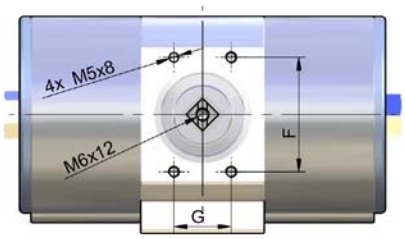
DIMENSIONS

For all types

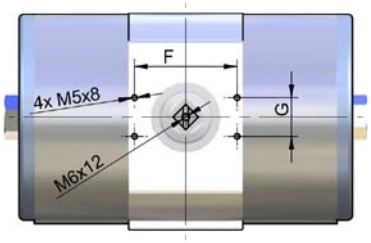




MIG-KS-30 up to MIG-KS-120



MIG-KS-150 up to MIG-KS-1600



Dimensions (mm)

Actuator Type	MIG-KS-30	MIG-KS-40	MIG-KS-60	MIG-KS-80	MIG-KS-120	MIG-KS-150	MIG-KS-200	MIG-KS-270	MIG-KS-380	MIG-KS-510	MIG-KS-740	MIG-KS-920	MIG-KS-1300	MIG-KS-1600
AS	162	175	182	216	240	290	304	328	344	436	446	530	560	645
AD	132	145	145	160	176	198	228	244	260	312	329	388	396	464
A1	6	6	7	7	7	7	9	9	13	12	14	14	14	18
B	45	45	54	54	63.5	63.5	80	80	102	102	116	116	137	137
B1	38	38	47.5	47.5	54.5	54.5	71	71	82	82	101	101	119	119
B2	106	106	124	124	142	142	176	176	210	215	242	248	288	288
C	30	30	43	43	53	53	66	66	80.5	80	95	95	116	116
C1	45	45	52	52	64	64	75	75	87.5	87.5	101.5	101.5	122.5	122.5
Ø D f8	30	35	35	35	55	55	70	70	70	85	85	100	100	130
Ø E	26	30	30	30	49	49	62	62	62	76	76	90	90	120
F	50	50	50	50	50	50	80	80	80	80	80	130	130	130
G	25	25	25	25	25	25	30	30	30	30	30	30	30	30
I	8	8	8	7,5	6	6	8	8	8	8	10	10	10	10
K	36	36	36	36	40	40	40	40	50	50	60	60	100	100
L	13	13	16	16	16	16	16	16	16	16	16	16	16	16
Ø N	14.1	18.1	18.1	18.1	22.2	22.2	28.2	28.2	28.2	36.2	36.2	48.2	48.2	60.2
P	12	15	15	15	15	15	20	20	20	20	20	30	30	30
T	G 1/8"	G 1/8"	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"
Ø Z1	42	42	42	42	42	42	40	40	42	60	60	90	90	90
ISO Flange	F04	F05	F05	F05	F07	F07	F10	F10	F10	F12	F12	F14	F14	F16
Ø Q	42	50	50	50	70	70	102	102	102	125	125	140	140	165
W	M5	M6	M6	M6	M8	M8	M10	M10	M10	M12	M12	M16	M16	M20
□ SW H11	11	14	14	14	17	17	22	22	22	27	27	36	36	46
x I min.	15	18	18	18	22	22	28	28	28	36	36	42	42	55

TECHNICAL DATA

Design:

» Pneumatic Rack & Pinion actuators in double action and single action (spring-return mechanism) executions

Construction features:

» Rack and pinion principle, piston drive via guide rods and slip bands

Rotation angle:

» 90° and +/-5° per end position

Operating pressure:

» min. 1.5 bar up to max. 10 bar

Control medium:

» Compressed air acc. to ISO 8573-1 7-5-4, pressure dew point min. 10°C under operating temperature as well as all non-aggressive gaseous media (oily and dry).

Lubrication:

» Factory set constant lubrication for normal working life of the actuator

Operating temperature:

» -25°C to + 80°C standard

» -50°C to + 80°C optional low temperature design

» -20°C to +140°C optional high temperature design

Torque range:

» 14 models for optimum torque gradation. Torque from 10 Nm to 2,000 Nm.

Mounting position:

» Any as required

IP-Protection:

» min. IP-67

Resistance to corrosion:

» Industrial atmosphere

» Commercial fuels, brake fluid, oils and solvents

» Salt water

» Acids > pH 4

» Alkalinity < pH 9

» Resistant when mechanically stressed

Applied norms:

» DIN EN ISO 5211

» DIN 3337

» DIN EN 15714-3:2010

» VDI/VDE 3845

» VDI/VDE 3847

» NAMUR NE 95

» MR 2006/42/EG

» 94/9/EG - ATEX 100a

» DIN EN ISO 9227

» ISO 8573-1:2012

» EN13463-1:2009

» EN 13463-5:2011

» DIN EN 1127-1

» EN ISO 12100:2010

Maintenance and inspection:

» The MIG-KS actuators are maintenance free

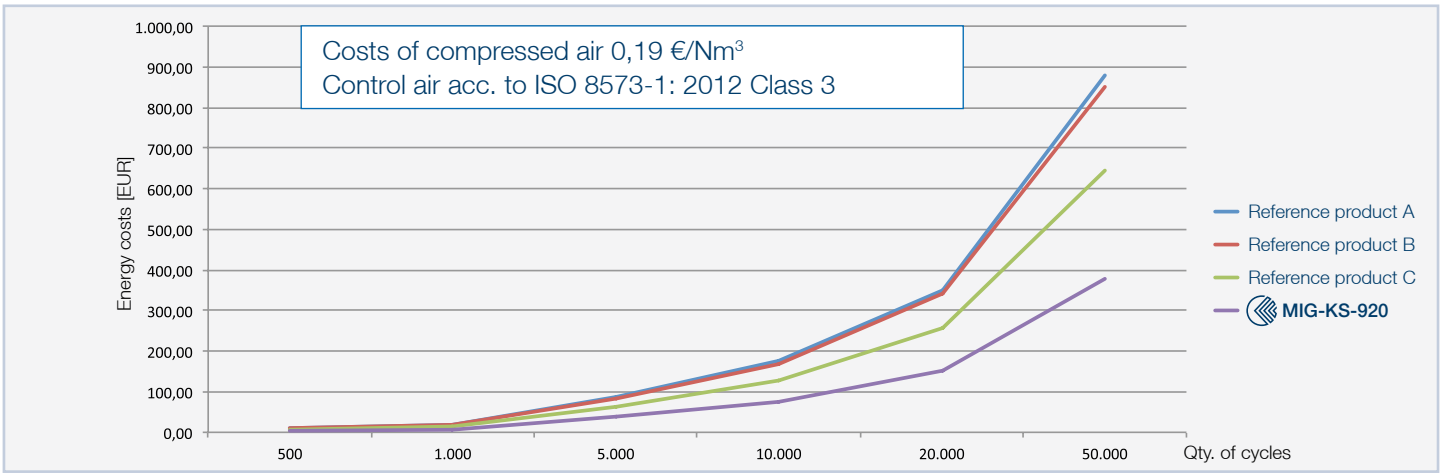
» Prerequisites for this are:
- Professional actuator construction
- Appropriate control medium
- Normal environmental conditions
- Proper use

CERTIFICATES AND APPROVALS

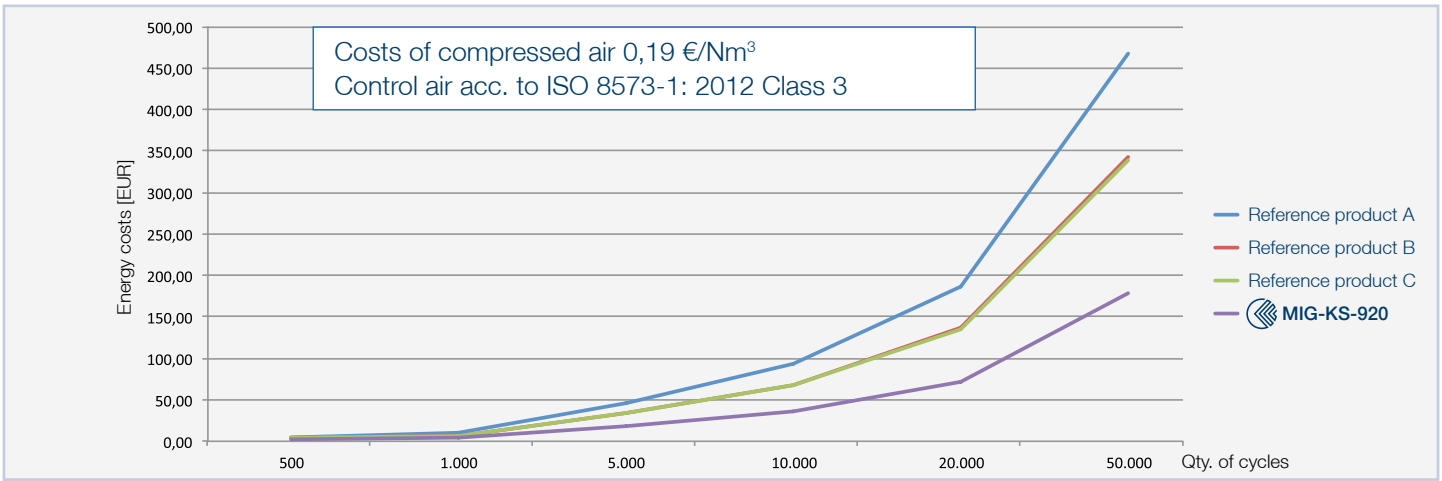
» Certified acc. to DIN EN ISO 9001:2008
» Certified acc. to DGRL 97/23/EC, Module H and H1
» Installation declaration of an incomplete machine as per MR 2006/42/EC
» EC declaration of conformity as per ATEX guideline 94/9/EC Protection type EX II 2GD Tmax. = 95°C
» Manufacturer's declaration of conformity as per IEC 61508 / IEC 61511 Minimum requirement SIL 2
» Type test as per NAMUR NE95 carried out by Bilfinger Maintenance Süd GmbH.
The endurance test was carried out with 500,000 switching cycles against load and at -20°C to +80°C and durability was thus verified.

COSTS OF COMPRESSED AIR

Double acting actuators, Type MIG-KS-xxx-D



Single acting actuators, Type MIG-KS-xxx-S



A comparison of manufacturer's specifications on average air consumption shows very clearly even with the single acting actuators and increasingly with the double acting actuators that the life cycle costs are already significantly lower at almost 1,000 cycles.

COMPACT DIMENSIONS, LESS ENERGY CONSUMPTION, HIGHER PERFORMANCE

Apart from the revised classic design and the optimum utilisation of the physical features, its pioneering technology, which is contained within this actuator concept. The idea does not only rest on technological innovation, it also grows from the consistent combination of design and functionality as well as suitability for use and efficiency. Technically this means an optimum relationship between piston area and a significant benefit in performance and torque, as well as a clear reduction in air consumption. The result is, when compared with previous technology, considerably more capacity with greater comfort and reduced air consumption.

The previously unexploited potential of the tried and tested function principle was utilised by constructing the classic pneumatic Rack & Pinion actuator. Above all, the optimised relationship between piston areas and pressure ensures significantly better energy efficiency. With reduced air and energy consumption as well as compact dimensions these pneumatic Rack & Pinion actuator offer higher performance than previous conventional actuators. The result is significant technical processing, commercial and ecological benefit for a great number of applications in process engineering and technology as well as in automation.

AUTOMATED BALL VALVES

As renowned manufacturer of ball valves we also offer our customers the complete set of control elements consisting of:

» Ball valve
» Stem extension
» Bracket
» Coupling
» MIG-KS actuator
» Solenoid valve
» Switch box

as appropriate to your application and specification. To ensure fast and secure automation of our ball valves we can offer you standardised automation packages (as listed above). We keep the necessary components for this in stock.

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