SIINPRO
AMERICAN VALVE

PNEUMATIC ACTUATOR

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SIINPRO
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The pursuit of quality excellence, filling the essence of the enterprise. We are trying our best to creat a safe world.

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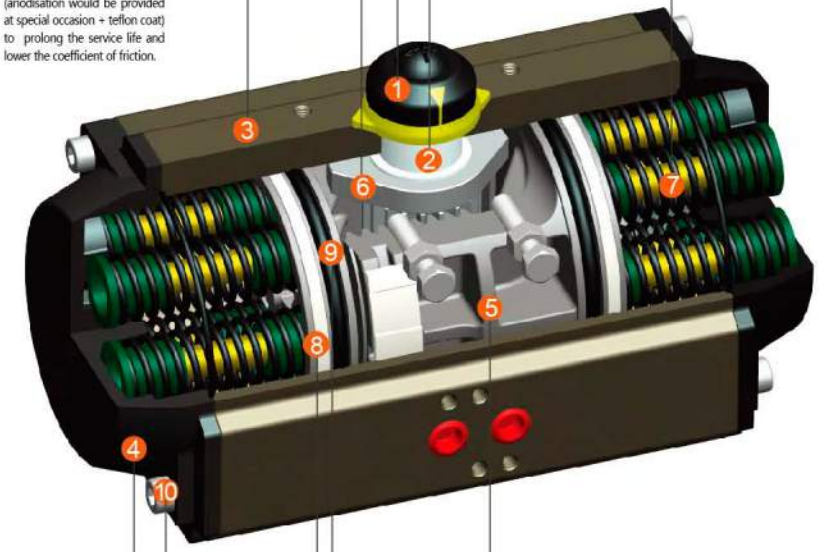
Product



Travel adjustment

The two independent external travel stop adjustment bolts can adjust ±5°at both open and close directions easily and precisely.

Indicator

Field visual standard indicator

High performance springs

It has a strong corrosion resistance and service life by use high-quality imported materials, coating processing, pre-pressure assembly, which can be demounted single acting actuator safely and conveniently to satisfy different requirements of torque by changing quantity of springs.

Actuator Body

The extruded cylinder body is made of high quality aluminum alloy with fine machined socket and hard anodized outer surface (anodisation would be provided at special occasion + teflon coat) to prolong the service life and lower the coefficient of friction.

Pinion

The pinion is high-precision and integrative, made from nickelled-alloy steel, full conform to the latest standards of ISO5211, DIN3337, the dimensions can be customized and the stainless steel material is available.

End caps

Die-casting aluminum surface with metal powder painted in different colours,or sprayed in PTFE or nickel plated.

Fasteners

All the fasteners are made of stainless steel for long-term anti-corrosion.

Bearings & Guides

Made from low friction, long-life compound material to avoid the direct contact between metals.The maintenance and replacement are easy and convenient.

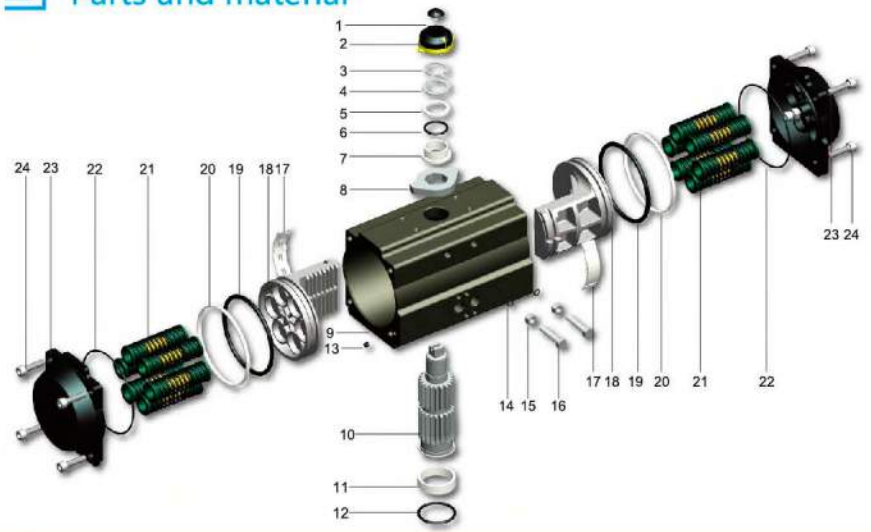
Seals

NBR for standard temperature ,for high and low temperature applications use Viton or Silicone.

Pistons

The twin rack pistons are made from high quality die-casting aluminum treated with hard anodized, symmetrical mounting position, rapid operation, impact resistance, wear resistance, long cycle life, simply reverse the piston can change the rotation direction of pinion.

Parts and material



No	Description	Qty	Standard Material	Surface Treatment		Optional Material
				Surface standard	Optional surface treatment	
1	Indicator Screw	1	Engineering Plastics			
2	Indicator	1	Engineering Plastics			
3	Circlip	1	Stainless Steel			
4	Thrust Washer	1	Stainless Steel			
5	Outside Washer	1	Engineering Plastics			
6	O-ring(pinion top)	1	NBR			Viton\Silicone
7	Inside Washer	1	Engineering Plastics			
8	Positioning cam	1	S45C	Nickel plated		
9	Body	1	6005-T5	Hard anodized	Hard anodized +Epoxy polyester or PTFE\Nickel plated	
10	Pinion	1	S45C	Nickel plated		Stainless Steel
11	Bearing(pinion bottom)	1	Engineering Plastics			
12	O-ring (pinion bottom)	1	NBR			Viton\Silicone
13	Plug	2	NBR			Viton\Silicone
14	O-ring(Adjust screw)	2	NBR			Viton\Silicone
15	Nut(Adjust screw)	2	SUS304			
16	Adjust screw	2	SUS304			
17	Guide(piston)	2	Engineering Plastics			
18	Piston	2	Aluminum alloy		Anodized	
19	O-ring(piston)	2	NBR			Viton\Silicone
20	Bearing(piston)	2	Wear-resistant composite materials			
21	Spring	0-12	High quality spring steel	Dip coating		
22	O-ring(End cap)	2	NBR			
23	End cap	2	Aluminum alloy	Powder paint	PTFE\Nickel plated	
24	Cap screw	8	SUS304			

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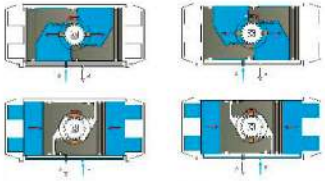
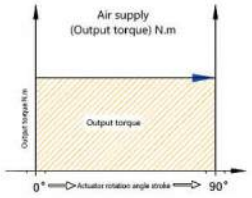
Operating principle of DA double acting type



CW type double acting operating principle

CCW type double acting operating principle

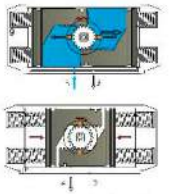


When the air source pressure comes into the cylinder body between the two pistons from air entrance(A)and pushes the pistons toward the ends of the cylinder body,the air between the pistons and the ends of the cylinder body is released from air entrance(B), meanwhile the piston drive the output shaft anticlockwise rotate (0°-90°) .

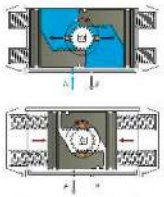
The same,when the air source pressure comes into the ends of the cylinder body from air entrance (B)and pushes the pistons toward each other with the air between two pistons released from air entrance(A),the output shaft(gear wheel)would be driven by the racks of the pistons simultaneously to rotate clockwise (90°-0 °) .

(if the pistons are assembled in different directions from each other,the output shaft would turn out to rotate inverse direction,namely the double acting reverse "CCW" type).

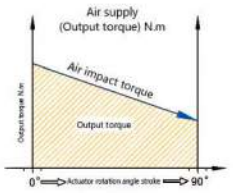
Operating principle of SR single acting type

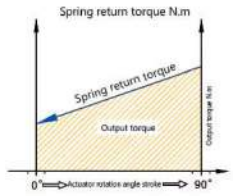


CW type single acting operating principle



CCW type single acting operating principle





When the air source pressure comes into the cylinder body between the two pistons from air entrance (A)and pushes the pistons toward the end of the cylinder body while the springs at each end inside the cylinder body is forced to shrink with the air between the pistons and the ends of the cylinder body released from air entrance(B),in the meantime,the racks of pistons drive the output shaft(gear wheel) simultaneously to rotate anticlockwise (0°-90°) .

When Actuator is in loss of air , the two pistons of cylinder moved to the middle direction by elasticity of the spring ,then the air in the middle space outed from port (A) make the two pistons rack synchronized driving the two output shaft clockwise rotate (90°-0°) .

(If the pistons are assembled in different direction from each other ,the output shaft would turn out to rotate inverse direction,namely the single acting reverse "CCW" type).

Technology and characteristics

JHA series rack and pinion type pneumatic actuator with high quality , low friction , long use life, the open and close time can reach more than 1 million times,high stability.

JUHANG pneumatic actuator combines with numbers of advanced technology to face different harsh environmental challenges, the excellent reliability and safety can meet your strict requirements of automatic control .

- Output torque: 8Nm-10000Nm.
- Control air source: Through filtered compressed air, no need lubricate oil, the oil must suit for NBR when in lubricated condition.
- Air supply pressure: The minmum air supply pressure is 3 bar (40 psi), the maximum air supply pressure is 8 bar(120 psi).

- Operating temperature:

Standard: -20℃~+80℃

Low temperature: -40℃~+80℃

High temperature:-15℃~+150℃

- Rotate stroke:90°、120°、135°、180 °double direction ±5 adjustment
- Mounting flange standard:DIN/ISO5211、DIN3337
- The max air supply pressure less than 10bar(145psi)
- Standard type:Aluminum shell hard anodized treatment,Nickel plated,Hard anodized +Epoxy polyester,Hard anodized +PTFE coating etc available according to the different environment
- The whole series in line with IEC61508 ,and passed safe level certification SIL 3.
- Passed ATEX,CE authentications which issued by Germany rheinland TUV authentication body.

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Mounting standard

Air source connection is designed in accordance with NAMUR Standard to install solenoid valves simply.

The top mounting in line with VDI/VDE3845 standard, convenient for assembly of accessories such as positioner, limit switch and so on.

Bottom mounting face (valve connection face) is designed in accordance with ISO5211, DIN3337 standards for direct mounting with clutch type manual override or valve.

Spring mounting standard for spring return actuators

K2 K3 K4 K5 K6

The qty of spring return pneumatic actuator can choose economic qty according to the valve torque,the assembly position of different springs' qty according to the above table (red part is position for putting springs')

Output torque of double acting actuators

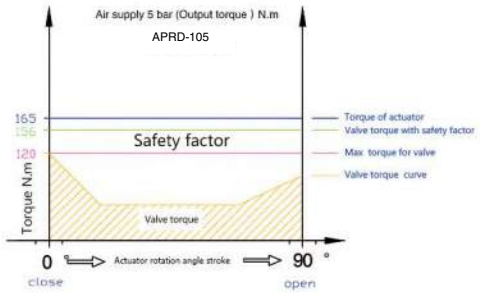
Model	Air Supply Pressure(Unit: bar) Unit:N.m									
	2bar	2.5bar	3bar	4bar	4.5bar	5bar	5.5bar	6bar	7bar	8bar
APRD-40	5	6	7	10	11	12	13	14	17	19
APRD-52	8	10	12	16	18	20	22	24	28	32
APRD-63	14	18	22	29	32	36	40	43	50	57
APRD-75	20	25	31	41	46	51	56	61	71	81
APRD-83	31	39	47	62	70	78	86	94	109	125
APRD-92	46	57	69	92	103	115	126	138	161	184
APRD-105	67	83	100	133	150	166	183	200	233	266
APRD-125	101	126	151	201	226	251	276	302	352	402
APRD-140	172	215	258	344	387	430	473	516	602	688
APRD-160	268	334	401	535	602	669	736	803	937	1070
APRD-190	427	533	640	854	960	1067	1174	1280	1494	1707
APRD-210	532	665	798	1064	1198	1331	1464	1597	1863	2129
APRD-240	774	968	1161	1548	1742	1935	2129	2322	2709	3096
APRD-270	1176	1470	1763	2351	2645	2939	3233	3527	4115	4703
APRD-300	1545	1932	2318	3091	3477	3863	4250	4636	5409	6181
APRD-350	2314	2892	3471	4628	5206	5784	6363	6941	8098	9255
APRD-400	3297	4121	4945	6594	7418	8242	9066	9890	11539	13187

Selection chart of double acting actuator

Under normal operating conditions, opening valve need to consider the safety torque of the valve, the safety factor is increased by 30% -50%.

Example:
Valve torque =120Nm
The safety torque of valve =120x (1+30%)=156Nm
Air supply =5Bar

As figure, the minumum model for sizing double acting pneumatic actuator is APRD-105 ,torque is 166Nm at 5 BAR.



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Output torque of single acting actuator

Model	Spring	2.5Bar		3Bar		4Bar		5Bar		5.5Bar		6Bar		7Bar		8Bar		Springs Output	
	Qty	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
APRS-40	2					4.6	2.5	6.9	4.9	8.1	6.1	9.3	7.3	11.7	9.7	14.1	12.1	7.0	5.0
APRS-52	5	5.8	3.8	7.9	5.9													6.2	4.2
	6	5.0	2.6	7.0	4.6	11.1	8.7											7.5	5.1
	7	4.1	1.3	6.2	3.4	10.2	7.4	14.2	11.4	16.3	13.5							8.7	5.9
	8			5.3	2.1	9.4	6.2	13.4	10.2	15.4	12.2	17.4	14.2					10.0	6.8
	9			4.5	0.9	8.5	4.9	12.5	8.9	14.6	11.0	16.6	13.0	20.6	17.0			11.2	7.6
	10					7.7	3.7	11.7	7.7	13.7	9.7	15.7	11.7	19.8	15.8			12.5	8.5
	11					6.8	2.4	10.8	6.4	12.9	8.5	14.9	10.5	18.9	14.5	23.0	18.6	13.7	9.3
	12							10.0	5.2	12.0	7.2	14.0	9.2	18.1	13.3	22.1	17.3	15.0	10.2
APRS-63	5	10.9	7.2	14.5	10.7	21.6	17.9											10.6	6.9
	6	9.6	5.1	13.1	8.6	20.2	15.7	27.3	22.8									12.7	8.2
	7	8.2	3.0	11.7	6.5	18.9	13.6	26.0	20.7	29.5	24.3							14.8	9.6
	8			10.4	4.4	17.5	11.5	24.6	18.6	28.2	22.2	31.7	25.7	38.8	32.8			16.9	11.0
	9			9.0	2.3	16.1	9.4	23.2	16.5	26.8	20.0	30.3	23.6	37.5	30.7			19.1	12.3
	10					14.7	7.3	21.9	14.4	25.4	17.9	29.0	21.5	36.1	28.6	43.2	35.7	21.2	13.7
	11					13.4	5.1	20.5	12.3	24.0	15.8	27.6	19.4	34.7	26.5	41.8	33.6	23.3	15.1
	12							19.1	10.1	22.7	13.7	26.2	17.3	33.3	24.4	40.5	31.5	25.4	16.4
APRS-75	5	14.6	10.6	19.7	15.6	29.8	25.7											14.6	10.5
	6	12.5	7.6	17.6	12.7	27.7	22.8	37.7	32.8									17.6	12.7
	7	10.4	4.7	15.5	9.7	25.5	19.8	35.6	29.9	40.7	34.9							20.5	14.8
	8			13.4	6.8	23.4	16.9	33.5	27.0	38.6	32.0	43.6	37.1	53.7	47.1			23.4	16.9
	9			11.2	3.9	21.3	14.0	31.4	24.1	36.4	29.1	41.5	34.1	51.6	44.2			26.3	19.0
	10					19.2	11.0	29.3	21.1	34.3	26.2	39.4	31.2	49.5	41.3	59.5	51.4	29.3	21.2
	11					17.1	8.1	27.2	18.2	32.2	23.2	37.3	28.3	47.3	38.4	57.4	48.4	32.2	23.2
	12							25.1	15.3	30.1	20.3	35.2	25.4	45.2	35.4	55.3	45.5	35.1	25.3
APRS-83	5	22.8	15.3	30.5	23.0	45.9	38.4											23.3	15.8
	6	19.6	10.6	27.3	18.3	42.8	33.8	58.2	49.2									28.0	19.0
	7	16.5	6.0	24.2	13.7	39.6	29.1	55.0	44.5	62.7	52.3							32.6	22.1
	8			21.0	9.0	36.4	24.4	51.9	39.9	59.6	47.6	67.3	55.3	82.7	70.7			37.3	25.3
	9			17.8	4.4	33.3	19.8	48.7	35.2	56.4	42.9	64.1	50.6	79.6	66.1			41.9	28.4
	10					30.1	15.1	45.5	30.6	53.3	38.3	61.0	46.0	76.4	61.4	91.8	76.8	46.6	31.6
	11					27.0	10.5	42.4	25.9	50.1	33.6	57.8	41.3	73.2	56.8	88.7	72.2	51.2	34.8
	12							39.2	21.2	46.9	29.0	54.7	36.7	70.1	52.1	85.5	67.5	55.9	37.9
APRS-92	5	33.5	22.1	44.9	33.5	67.7	56.2											34.8	23.3
	6	28.9	15.1	40.2	26.5	63.0	49.3	85.7	72.0									41.7	28.0
	7	24.2	8.2	35.6	19.6	58.3	42.3	81.1	65.1	92.4	76.4							48.7	32.7
	8			30.9	12.6	53.6	35.4	76.4	58.1	87.8	69.5	99.1	80.9	121.9	103.6			55.6	37.4
	9			26.2	5.7	49.0	28.4	71.7	51.2	83.1	62.5	94.5	73.9	117.2	96.7			62.6	42.0
	10					44.3	21.5	67.1	44.2	78.4	55.6	89.8	67.0	112.6	89.7	135.3	112.5	69.5	46.7
	11					39.6	14.5	62.4	37.3	73.8	48.6	85.1	60.0	107.9	82.8	130.6	105.5	76.5	51.4
	12							57.7	30.3	69.1	41.7	80.5	53.0	103.2	75.8	126.0	98.5	83.4	56.0
APRS-105	5	51	33	67	49	100	82											50	32
	6	44	23	61	39	94	72	127	105									60	38
	7	38	13	54	29	87	62	120	95	137	111	153	128					70	44
	8			48	19	81	52	114	85	130	101	147	118	180	151			80	51
	9			42	9	75	42	108	75	124	91	141	108	173	141			90	57
	10					68	32	101	65	118	81	134	98	167	131	200	164	100	63
	11					62	22	95	55	111	72	128	88	161	121	194	154	110	70
	12							89	45	105	62	122	78	155	111	187	144	120	76
APRS-125	5	75	48	101	74	152	125											80	52
	6	63	30	88	55	138	106	188	156									95	63
	7	52	14	77	39	128	90	178	140	203	165	228	190					111	73
	8			67	24	117	74	167	124	192	149	218	174	268	225			127	84
	9			56	8	107	58	157	108	182	133	207	158	257	209			143	94
	10					96	42	146	92	171	117	197	143	247	193	297	243	159	105
	11					86	26	136	76	161	101	186	127	236	177	287	227	175	115
	12							125	60	150	86	176	111	226	161	276	211	191	126

Output torque of single acting actuator

Model	Spring	2.5Bar		3Bar		4Bar		5Bar		5.5Bar		6Bar		7Bar		8Bar		Springs Output	
	Qty	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
APRS-140	5	129	85	172	128	258	214											130	86
	6	112	59	155	102	241	188	327	274									156	103
	7	95	33	138	76	224	162	310	248	353	291	396	334					182	120
	8			120	50	206	136	292	222	335	265	378	308	464	394			208	138
	9			103	24	189	109	275	195	318	238	361	281	447	367			234	155
	10					172	83	258	169	301	212	344	255	430	341	516	427	261	172
	11					155	57	241	143	284	186	327	229	413	315	499	401	287	189
	12							224	117	267	160	310	203	396	289	482	375	313	206
APRS-160	5	193	121	260	188	393	321											211	139
	6	165	79	232	146	365	279	498	412									254	167
	7	137	37	204	103	337	236	470	369	537	436							296	195
	8			176	61	309	194	442	327	509	394	575	460	709	593			338	223
	9			148	19	281	152	414	285	481	351	548	418	681	551			381	251
	10					253	109	387	243	453	309	520	376	653	509	786	642	423	279
	11					226	67	359	200	425	267	492	333	625	466	758	600	465	307
	12							331	158	397	225	464	291	597	424	730	557	508	335
APRS-190	5	333	221	440	328	654	541											312	200
	6	293	159	400	265	614	479	827	692									375	240
	7	253	96	360	203	574	416	787	630	894	736							437	280
	8			320	140	534	354	747	567	854	674	960	781	1174	994			500	320
	9			280	78	494	291	707	505	814	611	920	718	1134	931			562	360
	10					454	229	667	442	774	549	880	656	1094	869	1307	1082	625	400
	11					414	166	627	380	734	486	840	593	1054	806	1267	1020	687	440
	12							587	317	694	424	800	531	1014	744	1227	957	750	480
APRS-210	5	390	281	523	414	789	680											385	275
	6	335	204	468	337	734	603	1001	869									462	330
	7	280	127	413	260	679	526	946	792	1079	925							539	385
	8			358	183	624	449	891	715	1024	848	1157	981	1423	1247			616	440
	9			303	106	569	372	836	638	969	771	1102	904	1368	1170			693	495
	10					514	295	781	561	914	694	1047	827	1313	1093	1579	1359	770	550
	11					459	218	726	484	859	617	992	750	1258	1016	1524	1282	846	605
	12							671	407	804	540	937	673	1203	939	1469	1206	923	660
APRS-240	5	552	390	745	583	1130	968											572	411
	6	470	276	663	469	1048	854	1433	1239									687	493
	7	388	162	580	354	965	739	1351	1124	1543	1317							801	575
	8			498	240	883	625	1268	1010	1461	1202	1653	1395	2038	1780			915	657
	9			416	125	801	510	1186	895	1379	1088	1571	1280	1956	1665			1030	739
	10					719	396	1104	781	1297	973	1489	1166	1874	1551	2259	1936	1144	821
	11					637	281	1022	666	1215	859	1407	1051	1792	1437	2177	1822	1259	903
	12							940	552	1133	745	1325	937	1710	1322	2095	1707	1373	985
APRS-270	5	859	602	1152	894	1737	1479											860	602
	6	739	430	1031	722	1616	1307	2201	1892									1032	723
	7	618	258	911	550	1496	1135	2080	1720	2373	2012							1204	843
	8			790	378	1375	963	1960	1548	2252	1840	2545	2133	3129	2717			1376	964
	9			670	206	1255	791	1839	1376	2132	1668	2424	1961	3009	2545			1548	1084
	10					1134	619	1719	1204	2011	1496	2304	1789	2888	2373	3473	2958	1720	1205
	11					1014	447	1598	1032	1891	1324	2183	1617	2768	2201	3353	2786	1892	1325
	12							1478	860	1770	1152	2063	1445	2647	2029	3232	2614	2064	1446
APRS-300	5	1145	788	1531	1175	2304	1947											1143	787
	6	987	560	1374	946	2147	1719	2919	2491									1372	944
	7			1216	717	1989	1490	2762	2263									1601	1102
	8			1059	489	1832	1261	2604	2034	2991	2420	3377	2807	4150	3579			1829	1259
	9					1674	1033	2447	1805	2833	2192	3220	2578	3992	3351			2058	1416
	10					1517	804	2290	1577	2676	1963	3062	2349	3835	3122	4608	3895	2287	1574
	11					1360	575	2132	1348	2519	1734	2905	2121	3678	2893	4450	3666	2515	1731
	12							1975	1119	2361	1506	2748	1892	3520	2665	4293	3437	2744	1888
APRS-350	5	1654	1095	2232	1674	3389	2831											1797	1238
	6	1406	736	1985	1314	3142	2471	4298	3628									2156	1486
	7			1737	955	2894	2112	4051	3269									2516	1734
	8			1489	595	2646	1752	3803	2909	4382	3488	4960	4066	6117	5223			2875	1981
	9					2399	1393	3555	2550	4134	3128	4712	3707	5869	4864			3235	2229
	10					2151	1034	3308	2190	3886	2769	4465	3347	5622	4504	6778	5661	3594	2477
	11							3060	1831	3639	2409	4217	2988	5374	4145	6531	5302	3953	2724
	12							2812	1472	3391	2050	3969	2629	5126	3785	6283	4942	4313	2972
APRS-400	7	2190	1249	3014	2073	4662	3721											2872	1931
	8	1914	838	2738	1662	4387	3311	6035	4959	6859	5783							3283	2207
	9			2462	1252	4111	2901	5759	4549	6583	5373							3693	2483
	10			2186	842	3835	2490	5483	4139	6307	4963	7132	5787	8780	7435			4103	2759
	11					3559	2080	5207	3728	6032	4552	6856	5377	8504	7025			4514	3035
	12					3283	1669	4931	3318	5756	4142	6580	4966	8228	6615	9877	8263	4924	3311

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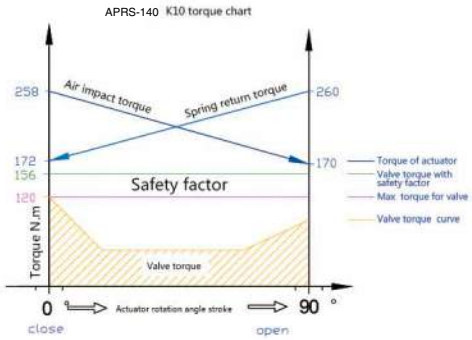
Selection chart of single acting actuator



Under normal operating conditions, opening valve need to consider the safety torque of the valve, the safety factor is increased by 30% -50%.

Example:

▲ Spring to close(fail close ,air to open=FC)
▲ Valve torque=120Nm
▲ The safety torque of valve =120x(1+30%)=156Nm
▲ Air supply =5Bar

According to the table of spring return actuators'output torque, the torque of APRS-140 K10 as follows:

Output torque of Air stroke 0°=258Nm
Output torque of Air stroke 90°=170Nm
Output torque of Spring stroke 0°=172Nm
Output torque of Spring stroke 90°=260Nm

Attention:During the restoration,the spring return actuators'output torque will not be affected by the inputing air from the port B. On the contrary, it will help the restoration of springs.

Output torque chart of single acting actuator

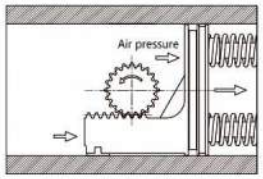
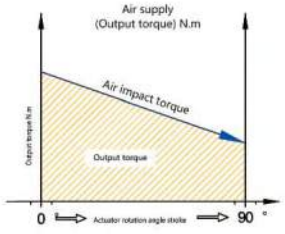


Figure1



FigureA

(As figure 1, figure A)Output torque of Air stroke: When the air comes into the cylinder body between the two pistons, the piston is urged against both sides to force the spring to compress, in this case, forces by the air supply pressure push the piston minus the reaction force by the spring compression, so the output torque gradually decreasing from 0° maximum value to 90 ° minimum value.

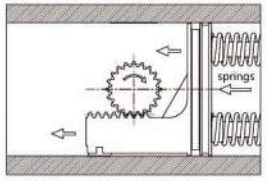
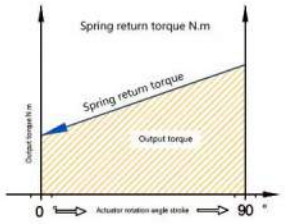


Figure2



FigureB

(As figure 2, figure B)Output torque of Spring stroke: When Actuator is in loss of air, the output torque by restoring force of both sides springs push the pistons.Because of the increase of springs, the output torque gradually decreasing from 0° maximum value to 90 ° minimum value.

Selection reference data for pneumatic actuator

The purpose of this data is to help customers select APR actuators properly before assembling actuators to valves, the following factors must be taking into account:

- Air supply rated pressure
- Actuator type double acting or single acting(spring return) and output torque under related air supply.
- The rotation of actuator and fail mode(fail close or fail open).
- It is very important to choose the actuator correctly. If the actuator is too large, the stem may be overstressed and on the contrary the actuator is small and can not produce enough torque to open the valve. We believe that the torque required to operate the valve normally comes from the friction between the valve metal parts (such as the core, the valve disk) and the seal (seat) . According to the valve working occasion , operating temperature, operating frequency, management and pressure difference, the transmission medium (lubrication, drying, mud) and many other factors will affect the torque.

- Safety value should be added to the basis of valve torque when selecting the pneumatic actuator.

Cleaning low frictional lubricant medium	Add 20 % safety value
Vapor or non-lubricant liquor medium	Add 25 % safety value
Non-lubricant pasting liquor medium	Add 30 % safety value
Non-lubricant dry air medium	Add 40 % safety value
Non-lubricant particle medium delivered by air	Add more than 50 % safety value

Attention: The above safety value is recommend by our company 's theory , for reference only.

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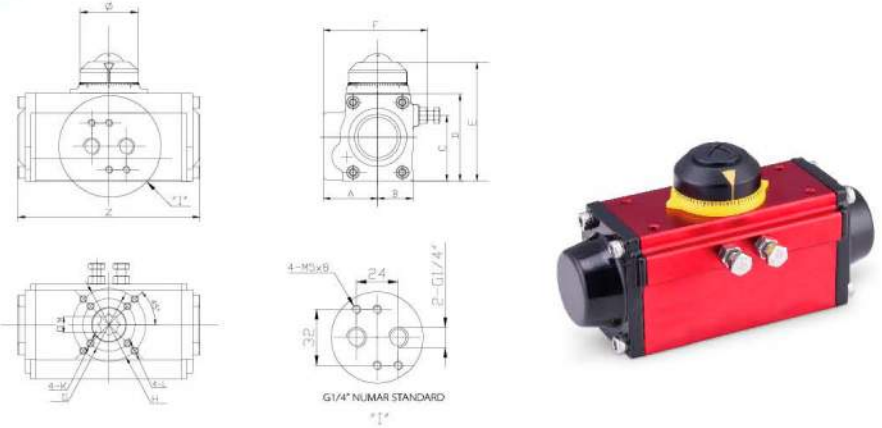
Dimension for APR-40



Model	A	B	C	D	E	F	ΦG	ΦH	K	L	□M	Z	Φ	Air Connection
APRD-40	37	24	45	60	81.5	65.5	Φ36	Φ50	M5	M6	11	125	40	NAMUR G1/4"
APRS-40	37	24	45	60	81.5	65.5	Φ36	Φ50	M5	M6	11	150	40	NAMUR G1/4"

Output torque of double acting actuator

Model	Air pressure (Unit:bar) Unit:N.m							
	2	3	4	5	5.5	6	7	8
APRD-40	5	7	10	12	13	14	17	19

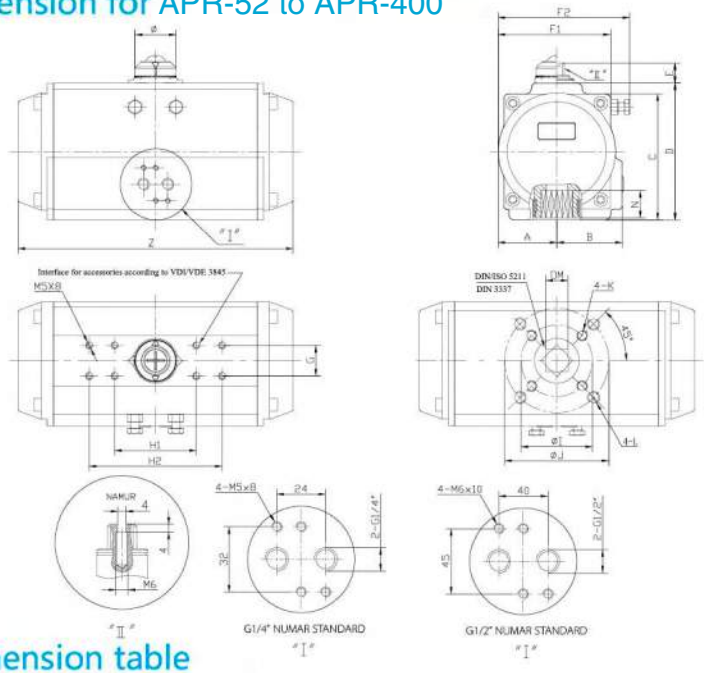
Output torque of single acting actuator

Model	Air pressure (Unit:bar) Unit:N.m													Output torque of spring	
		4 Bar		5 Bar		5.5 Bar		6 Bar		7 Bar		8 Bar			
	Spring	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
	Qty	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
APRS-40	K2	4.6	2.5	6.9	4.9	8.1	6.1	9.3	7.3	11.7	9.7	14.1	12.1	7.0	5.0

Weight and air consumption

Model	Weight(kg)	Air volume opening(L)	Air volume closing(L)
APRD-40	1.0kg	0.072	0.078
APRS-40	1.1kg	0.072	0.072

Dimension for APR-52 to APR-400



Dimension table

Model	A	B	C	D	E	F1	F2	G	H1	H2	ΦI	ΦJ	K	L	M□	N	Z	Φ	Air Connection
APR-52	30.50	41.50	65.50	72.00	20	65.50	80.50	30	80		Φ36	Φ50	M5×8	M6×10	11□	14	150	Φ40	NAMUR G1/4"
APR-63	36.00	47.00	81.00	88.00	20	72.50	88.20	30	80		Φ50	Φ70	M6×10	M8×13	14□	19	172	Φ40	NAMUR G1/4"
APR-75	42.50	53.00	94.00	100.00	20	81.50	94.40	30	80		Φ50	Φ70	M6×10	M8×13	14□	19	188	Φ40	NAMUR G1/4"
APR-83	46.00	57.00	98.50	109.00	20	92.00	116.70	30	80		Φ50	Φ70	M6×10	M8×13	17□	23	221	Φ40	NAMUR G1/4"
APR-92	50.00	58.50	111.00	117.00	20	98.00	124.00	30	80		Φ50	Φ70	M6×10	M8×13	17□	23	268	Φ40	NAMUR G1/4"
APR-105	58.00	64.00	123.50	134.50	20	110.00	131.00	30	80		Φ70	Φ102	M8×13	M10×16	22□	31	279	Φ40	NAMUR G1/4"
APR-125	68.00	75.00	146.00	156.50	30	128.00	149.00	30	80	130	Φ70	Φ102	M8×13	M10×16	22□	31	322	Φ55	NAMUR G1/4"
APR-140	76.00	77.00	161.50	173.50	30	138.50	163.50	30	80	130	Φ102	Φ125	M10×16	M12×20	27□	35	406	Φ55	NAMUR G1/4"
APR-160	87.50	87.50	185.50	198.50	30	159.00	184.50	30	80	130	Φ102	Φ125	M10×16	M12×20	27□	35	475	Φ55	NAMUR G1/4"
APR-190	103.50	103.50	216.50	231.00	30	189.50	223.50	30	130			Φ140		M16×25	36□	40	544	Φ80	NAMUR G1/4"
APR-210	113.50	113.50	236.00	256.00	30	211.00	245.00	30	130			Φ140		M16×25	36□	40	562	Φ80	NAMUR G1/4"
APR-240	130.50	130.50	266.50	292.00	30	246.50	288.00	30	130			Φ165		M20×25	46□	58	642	Φ80	NAMUR G1/4"
APR-270	147.50	147.50	302.00	331.00	30	274.00	315.50	30	130			Φ165		M20×25	46□	58	740	Φ80	NAMUR G1/2"
APR-300	162.00	173.00	329.00	352.00	30	312.00	361.00	30	130			Φ165		M20×25	46□	55	774	Φ80	NAMUR G1/2"
APR-350	190.00	195.00	382.00	408.00	30	362.00	426.00	30	130		Φ165	Φ254	M20×25	M16×25	46□	55	912	Φ80	NAMUR G1/2"
APR-400	260.00	260.00	440.00	464.00	30	450.00	514.00	30	130		Φ165	Φ254	M20×25	M16×25	55□	60	945	Φ80	NAMUR G1/2"

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Weight table

Model	Cylinder size	Double acting (DA) Weight	Single acting (SR) Weight
APR-52	ϕ52	1.35	1.45
APR-63	ϕ63	2.15	2.30
APR-75	ϕ75	2.60	2.80
APR-83	ϕ83	3.40	3.70
APR-92	ϕ92	4.55	5.15
APR-105	ϕ105	5.90	6.60
APR-125	ϕ125	9.20	10.35
APR-140	ϕ140	12.00	14.10

Model	Cylinder size	Double acting (DA) Weight	Single acting (SR) Weight
APR-160	ϕ160	20.25	23.50
APR-190	ϕ190	31.35	36.00
APR-210	ϕ210	45.70	53.65
APR-240	ϕ240	54.50	65.60
APR-270	ϕ270	79.00	98.40
APR-300	ϕ300	99.00	122.00
APR-350	ϕ350	156.00	197.00
APR-400	ϕ400	212.00	255.00

Volume

NO	Model	Double acting (DA) Air volume opening (L)	Double acting (DA) Air volume closing (L)	Single acting (SR) Air volume opening (L)	Single acting (SR) Air volume closing (L)
1	APR-40	0.07	0.08	0.07	0.07
2	APR-52	0.12	0.17	0.12	0.14
3	APR-63	0.21	0.29	0.21	0.24
4	APR-75	0.29	0.43	0.29	0.37
5	APR-83	0.42	0.65	0.42	0.55
6	APR-92	0.68	0.97	0.68	0.81
7	APR-105	0.92	1.35	0.92	1.14
8	APR-125	1.47	2.13	1.47	1.84
9	APR-140	2.37	3.57	2.37	2.83
10	APR-160	3.77	5.42	3.77	4.49
11	APR-190	5.90	8.36	5.90	7.47
12	APR-210	7.26	11.52	7.26	10.56
13	APR-240	10.70	17.44	10.70	16.07
14	APR-270	15.90	25.60	15.90	23.86
15	APR-300	23.50	28.00	23.50	26.50
16	APR-350	34.50	45.20	34.50	42.40
17	APR-400	52.20	56.00	52.20	54.00

Air consumption rest with air Supply. open and close stoke ,air volume and action cycle times,expressions:

$$L/Min = \text{Air volume(Air volume Opening + Air volume closing)} \times \left[\frac{\text{Air supply (Kpa)} + 101.3}{101.3} \times \text{Action cycle}\right] \times \text{times /min}$$

Note for order

- Pneumatic actuators: Double action or spring return(fail close ,fail open)
- Valve working environment: The operating temperature ,Standard (-20 ° C to +80 ° C), Low temperature (-40 ℃ to +80 ℃) High temperature (-15 ° C to +150 ° C)
- Valve operating torque: Medium and the required torque for opening and closing.
- Solenoid valve: Dual control or single control,operating voltage, exploding or not.
- Signal feedback: Mechanical or approachable switch, operating voltage, current-output and exploding or not.
- Positioner: Pneumatic positioner or electric positioner, current signal, voltage signal, electric-pneumaticity switch, exploding or not.
- FRL Combination(air Filter+pressure regulator+lubricator).
- Clutch type manual valve actuator.
- Special customization.
- The accessories should be advised domestic or import.

Model	APR-40	APR-52	APR-63	APR-75	APR-83	APR-92	APR-105	APR-125	APR-140
Cylinder size	ϕ40	ϕ52	ϕ63	ϕ75	ϕ83	ϕ92	ϕ105	ϕ125	ϕ140

Model	APR-160	APR-190	APR-210	APR-240	APR-270	APR-300	APR-350	APR-400	
Cylinder size	ϕ160	ϕ190	ϕ210	ϕ240	ϕ270	ϕ300	ϕ350	ϕ400	