

① 指示器 Indicator

NAMUR 标准指示器便于安装位置开关、定位器等附件。
Position indicator with NAMUR is convenient for mounting accessories such as Limit Switch box, Positioner and so on.

② 输出轴 Pinion

镀镍合金钢、高精度一体式输出轴同时符合NAMUR、ISO5211、DIN3337标准。可根据客户要求定制尺寸和不锈钢材料。

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

③ 缸体 Actuator Body

ASTM6005挤压铝合金缸体可以采用硬质氧化、环氧树脂喷涂（根据要求喷涂蓝色、橙色、黄色等）、PTFE涂层或镀镍满足不同要求。

According to the different requirements, the extruded aluminum alloy ASTM6005 Body can be treated with hard anodized, powder polyester painted (different colours is available such as blue, orange, yellow etc.), PTFE or Nickel plated.

④ 端盖 End caps

压铸铝合金表面金属粉末喷涂各种颜色、PTFE涂层。

Die-casting aluminum powder polyester painted in different colours, PTFE.

⑤ 活塞 Pistons

双活塞齿条、采用铸铝硬质氧化或者铸钢镀锌处理，安装位置对称、运作迅速、使用寿命长，简单的颠倒活塞可以改变旋转方向。

The twin rack pistons are made from Die-casting aluminum treated with Hard anodized or made from Cast steel with galvanization. Symmetric mounting position, long cycle life and fast operation, reversing rotation by simply inverting the pistons.

⑥ 行程调节 Travel adjustment

两个独立的行程调节螺钉可以进行方便、精确 $\pm 5^\circ$ 的调节开、关位置。

The two independent external travel stop adjustment bolts can adjust $\pm 5^\circ$ at both open and close directions easily and precisely.

⑦ 高性能弹簧 High performance springs

采用优质材料、涂层处理，预压装配。具有较强的抗腐蚀性和使用寿命。能够安全、简单的拆卸单作用执行器，通过改变弹簧数量满足不同的力矩输出范围。

Preloaded coating springs are made from the high quality material for resistant to corrosion and longer service life, which can be demounted safely and conveniently to satisfy different requirements of torque by changing quantity of springs.

⑧ 轴承、导板 Bearings & Guides

采用低摩擦、长寿命复合材料，避免了金属与金属的直接接触，维修更换简单方便。

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

⑨ O-rings 密封

在常温工作条件下使用丁腈橡胶，在高温或低温时采用氟橡胶或硅橡胶。

NBR rubber O-rings provide trouble-free operation at standard temperature ranges. For high and low temperature applications Viton or Silicone.

工作温度

标准：-20°C~+80°C

低温：-40°C~+80°C

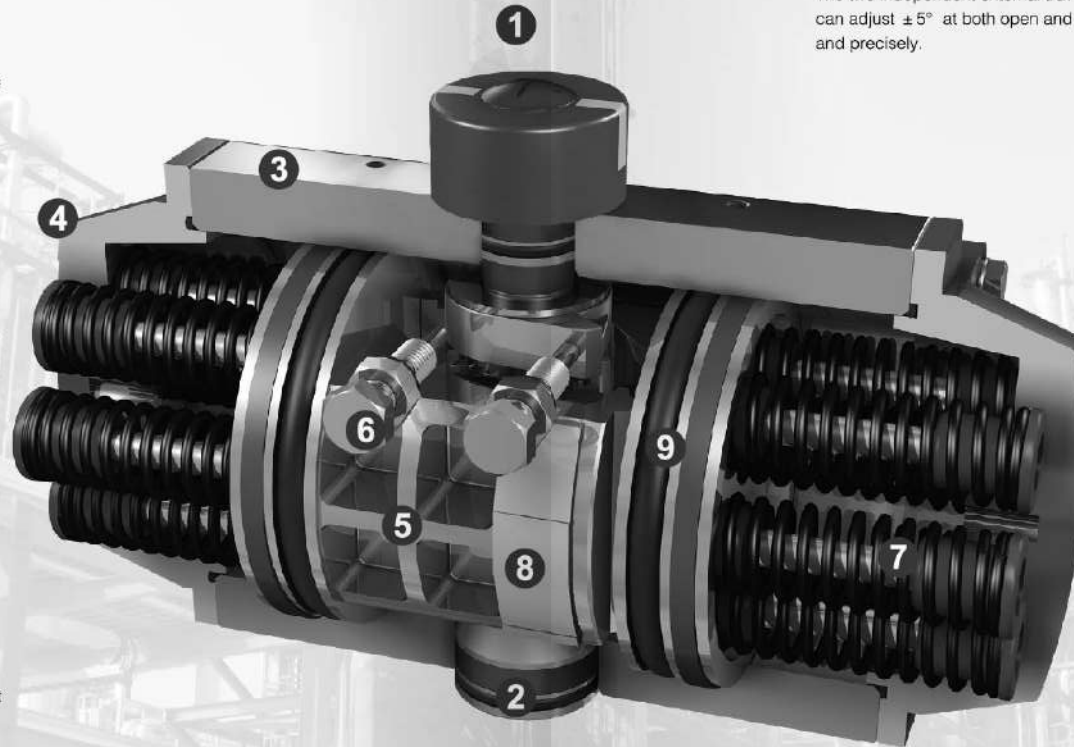
高温：-15°C~+120°C

Operating temperatures:

Standard: -20°C~+80°C

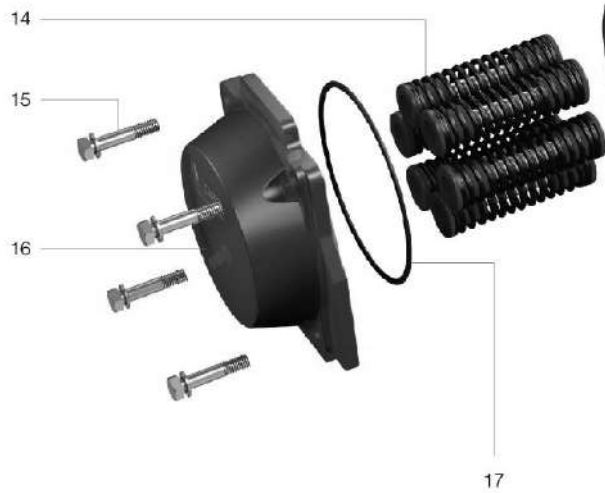
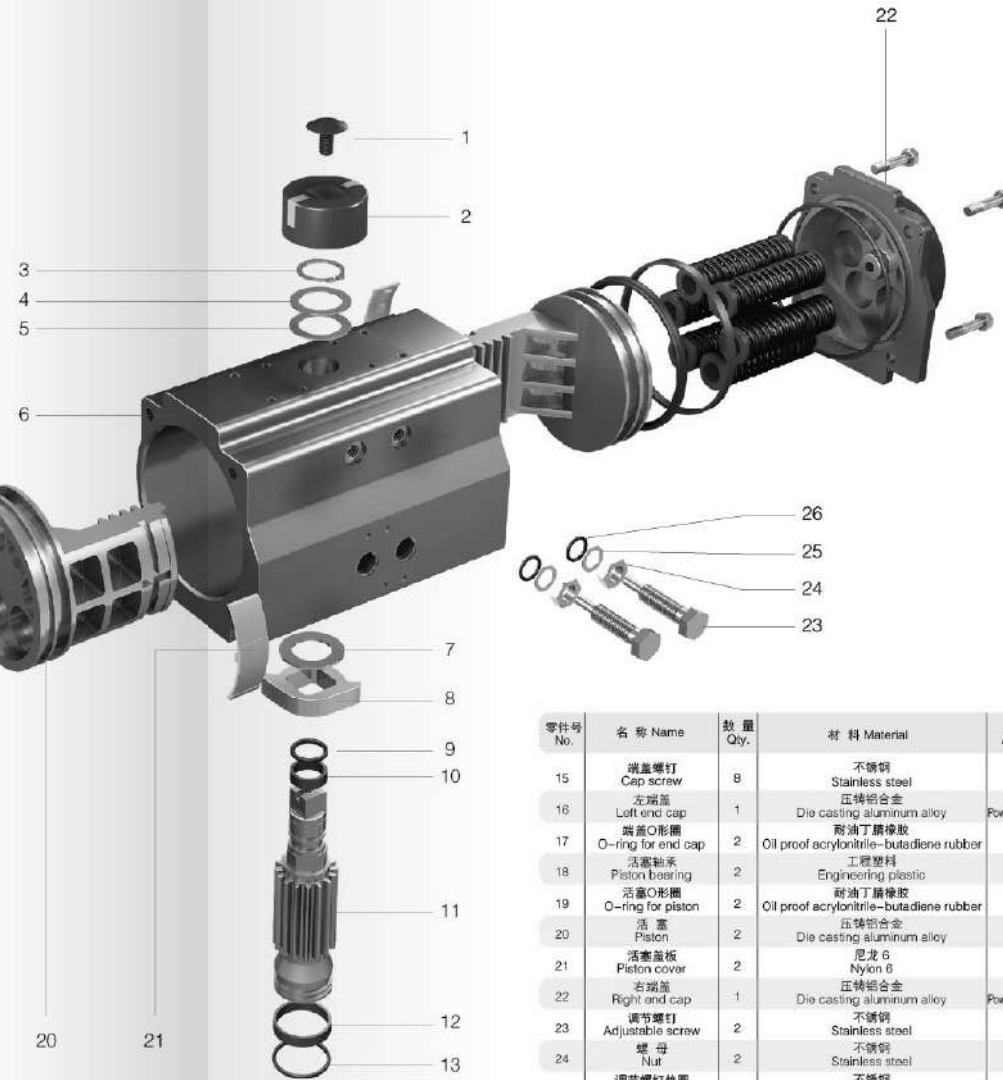
Low temperature: -40°C~+80°C

High temperature: -15°C~+120°C



零部件及材料 Parts and Materials

零件号 No.	名称 Name	数量 Qty.	材料 Material	防腐处理 Anti-corrosion	可选用材料 Optional
1	盖帽螺钉 Cap screw	1	工程塑料 Engineering plastic		
2	指示器 Indicator	1	工程塑料 Engineering plastic		
3	弹性挡圈 Elastic closing ring	1	合金弹簧钢 Alloy spring steel	镀镍	
4	垫圈 Sealing ring	1	不锈钢 Stainless steel		
5	外垫片 External gasket	1	工程塑料 Engineering plastic		
6	缸体 Body	1	铝合金 aluminum alloy	阳极氧化 Hard anodizing	
7	内垫片 Internal gasket	1	工程塑料 Engineering plastic		
8	调节挡块 Adjustable stopper	1	合金钢 Alloy steel		
9	上O形圈 Upper O-ring	1	耐油丁腈橡胶 Oil proof acrylonitrile-butadiene rubber		氟橡胶/Silicone rubber
10	上轴承 Upper bearing	1	工程塑料 Engineering plastic		
11	输出轴 Output shaft	1	合金钢 Alloy steel	镀镍	不锈钢 Stainless steel
12	下轴承 Lower bearing	1	工程塑料 Engineering plastic		
13	下O形圈 Lower O-ring	1	耐油丁腈橡胶 Oil proof acrylonitrile-butadiene rubber		氟橡胶/Silicone rubber
14	弹簧(单动作) Spring (single-action)	4-12	合金弹簧钢 Alloy spring steel	浸漆 Dip coating	



零件号 No.	名称 Name	数量 Qty.	材料 Material	防腐处理 Anti-corrosion	可选用材料 Optional
15	端盖螺钉 Cap screw	8	不锈钢 Stainless steel		
16	左端盖 Left end cap	1	压铸铝合金 Die casting aluminum alloy	粉末喷涂 Powder polyester painted	
17	端盖O形圈 O-ring for end cap	2	耐油丁腈橡胶 Oil proof acrylonitrile-butadiene rubber		氟橡胶/Silicone rubber
18	活塞轴承 Piston bearing	2	工程塑料 Engineering plastic		
19	活塞O形圈 O-ring for piston	2	耐油丁腈橡胶 Oil proof acrylonitrile-butadiene rubber		氟橡胶/Silicone rubber
20	活塞 Piston	2	压铸铝合金 Die casting aluminum alloy		
21	活塞盖板 Piston cover	2	尼龙6 Nylon 6		氟橡胶/Silicone rubber
22	右端盖 Right end cap	1	压铸铝合金 Die casting aluminum alloy	粉末喷涂 Powder polyester painted	
23	调节螺钉 Adjustable screw	2	不锈钢 Stainless steel		
24	螺母 Nut	2	不锈钢 Stainless steel		
25	调节螺钉垫圈 Sealing ring	2	不锈钢 Stainless steel		
26	调节螺钉O形圈 O-ring	2	耐油丁腈橡胶 Oil proof acrylonitrile-butadiene rubber		氟橡胶/Silicone rubber

单动作输出扭矩(N.m) Output Torque of Spring Return Actuator

规格 Size	弹簧 总数 Spring Qty.	弹簧复位 Spring return	气流压力 Air Pressure(MPa)																	
			0.3		0.35		0.4		0.45		0.5		0.55		0.6		0.7		0.8	
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
50	5	3.6	5.4	7.4	5.7	9.3	7.5	11.1	9.4	13.0	11.2									
	6	4.4	6.5	6.7	4.6	8.5	6.4	10.4	8.3	12.2	10.1	14.1	12.0							
	7	5.1	7.6	6.0	3.5	7.8	5.3	9.7	7.2	11.5	9.0	13.3	11.0	15.2	12.7					
	8	5.8	8.6			7.1	4.3	8.9	6.1	10.8	8.0	12.6	9.8	14.5	11.6	16.3	13.5	20.0	17.2	
	9	6.6	9.7			6.3	3.2	8.2	5.0	10.0	6.9	11.9	8.7	13.7	10.6	15.6	12.4	19.3	16.1	
	10	7.3	10.1					7.5	4.0	9.3	5.8	11.2	7.6	13.0	9.5	14.9	11.3	18.5	15.0	
	11	8.0	11.9					8.2	5.0	10.0	6.9	11.9	8.7	13.7	10.6	15.6	12.4	23.0	19.8	
	12	8.7	13.0					8.7	2.9	8.6	4.7	10.4	6.6	12.3	8.4	14.1	10.3	17.8	13.9	
	65	5	7.4	11.0	15.1	11.5	18.8	15.2	22.5	19.0	26.3	22.7								
		6	8.9	13.2	13.6	9.3	17.3	13.0	21.1	16.8	24.8	20.5	28.5	24.3						
		7	10.3	15.3	12.1	7.1	15.8	10.9	19.6	14.6	23.3	18.3	27.1	22.1	30.8	25.8				
		8	11.8	17.5			14.4	8.7	18.1	12.4	21.8	16.1	25.6	19.9	29.3	23.6	33.1	27.4	40.6	34.8
9		13.3	19.7			12.9	6.5	16.6	10.2	20.4	14.0	24.1	17.7	27.8	21.4	31.6	25.2	39.1	32.7	
10		14.8	21.9					15.2	8.0	18.9	11.8	22.6	15.5	26.4	19.2	30.1	23.0	37.6	30.5	
11		16.3	24.1					13.7	5.8	17.4	9.6	21.2	13.3	24.9	17.0	28.6	20.8	36.1	28.3	
12		17.7	26.3					15.9	7.4	19.7	11.1	23.4	14.9	27.2	18.6	34.6	26.1	42.1	33.6	
75		5	12.0	17.5	22.8	17.4	28.7	23.2	34.5	29.0	40.3	34.8								
		6	14.4	21.0	20.4	13.8	26.2	19.7	32.1	25.5	37.9	31.3	43.7	37.1						
		7	16.8	24.5	18.0	10.3	23.8	16.2	29.6	22.0	35.5	27.8	41.3	33.8	47.1	39.4				
		8	19.2	28.0			21.4	12.7	27.2	18.5	33.0	24.3	38.9	30.1	44.7	35.9	50.5	41.7	66.2	53.3
	9	21.6	31.5			19.0	9.2	24.8	15.0	30.6	20.8	36.4	26.6	42.3	32.4	48.1	38.2	63.8	49.8	
	10	24.0	35.0					22.4	11.5	28.2	17.3	34.0	23.1	39.9	28.9	45.7	34.7	61.4	46.3	
	11	26.5	38.5					20.0	8.0	25.8	13.8	31.6	19.6	37.4	25.4	43.3	31.2	59.0	42.8	
	12	28.9	42.0					23.4	10.3	29.2	16.1	35.0	21.9	40.9	27.7	46.5	39.3	64.1	50.9	
	85	5	15.8	23.4	32.2	24.6	40.2	32.6	48.2	40.6	56.2	48.6								
		6	19.0	28.1	29.0	19.9	37.0	27.9	45.0	35.9	53.0	43.9	61.2	51.9						
		7	22.1	32.8	25.9	15.2	33.9	23.2	41.9	31.2	49.9	39.2	58.0	47.2	65.9	55.2				
		8	25.3	37.5			30.7	18.5	38.7	26.5	46.7	34.5	54.9	42.5	62.7	50.5	70.7	58.5	66.7	74.5
9		28.4	42.2			27.5	13.8	35.5	21.8	43.5	29.8	51.7	37.8	59.5	45.8	67.5	53.8	83.5	69.8	
10		31.6	46.9			32.4	17.1	40.4	25.1	48.5	33.1	56.4	41.1	64.4	49.1	80.4	65.1	96.4	81.1	
11		34.7	51.5					29.2	12.4	37.2	20.4	45.4	28.4	53.2	36.4	61.2	44.4	77.2	60.4	
12		37.9	56.2					34.1	15.8	42.2	23.7	50.1	31.7	58.1	39.7	74.1	55.7	90.1	71.7	
95		5	24.8	36.1	47.1	35.8	59.1	47.8	71.1	59.8	83.1	71.1								
		6	29.8	43.4	42.2	28.6	54.1	40.5	66.1	52.5	78.1	64.5	90.1	78.5						
		7	34.7	50.6	37.2	21.3	49.2	33.3	61.2	45.3	73.1	57.3	85.1	69.3	97.1	81.3				
		8	39.7	57.8			44.2	26.1	56.2	38.1	66.2	50.0	80.2	62.0	92.1	74.0	102.1	86.0	128.1	110.0
	9	44.7	65.0			39.3	18.8	51.2	30.8	63.2	42.8	75.2	54.8	87.2	66.8	97.2	78.8	123.1	102.7	
	10	49.6	72.3					46.3	23.6	58.3	35.6	70.2	47.6	82.2	59.6	92.2	71.6	118.2	95.5	
	11	54.6	79.5					38.3	16.4	53.3	28.4	65.3	40.3	77.3	52.3	87.2	64.3	113.2	88.3	
	12	59.5	86.7					48.3	21.1	60.3	33.1	72.3	45.1	82.9	57.1	108.2	81.1	132.2	105.0	
	110	5	34	50	69	53	86	70	104	87	121	104								
		6	41	60	62	43	80	60	97	77	114	94	131	112						
		7	48	71	56	33	73	50	90	67	107	84	124	101	142	119				
		8	54	81			66	40	83	57	100	74	118	91	136	109	152	126	186	160
9		61	91			59	30	76	47	94	64	111	81	128	98	145	116	180	150	
10		68	101					70	37	87	54	104	71	121	88	138	106	173	140	
11		75	111					63	27	80	44	97	61	114	78	132	96	166	130	
12		82	121					73	34	90	51	108	68	125	86	159	120	194	154	
125		5	55	81	111	85	139	113	167	140	194	168								
		6	66	97	100	69	128	96	156	124	183	152	211	179						
		7	76	113	89	52	117	80	145	108	172	136	200	163	226	191				
		8	87	130			106	64	134	92	162	119	189	147	217	175	245	202	300	258
	9	98	146			95	48	123	75	151	103	178	131	206	159	234	186	289	242	
	10	109	162					112	59	140	87	167	115	195	142	223	170	278	225	
	11	120	178					101	43	129	71	156	98	184	126	212	154	267	209	
	12	131	195					118	55	145	82	173	110	201	138	256	193	311	248	
	140	5	69	102	140	107	174	141	209	176	244	211								
		6	82	122	126	86	161	121	195	156	230	190	265	225						
		7	96	142	112	66	147	101	182	135	216	170	251	205	286	240				
		8	110	163			133	80	168	115	203	150	237	184	272	219	307	254	376	323
9		123	183			120	60	154	95	189	129	224	164	258	199	293	234	363	303	
10		137	203					141	74	175	109	210	144	245	179	280	213	349	283	
11		151	224					127	54	162	89	196	123	231	158	266	193	335	262	
12		165	244					148	68	183	103	217	138	252	173	322	242	391	311	

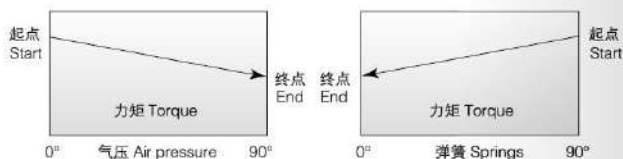
单动作输出扭矩(N.m) Output Torque of Spring Return Actuator

规格 Size	弹簧 总数 Spring Qty.	弹簧复位 Spring return	气流压力 Air Pressure(MPa)																	
			0.3		0.35		0.4		0.45		0.5		0.55		0.6		0.7		0.8	
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
160	5	111	165	229	175	307	264	342	288	399	345									
	6	134	199	206	141	285	231	320	256	377	312	432	367							
	7	156	232	184	108	263	198	298	222	355	279	410	334	467	391					
	8	178	265			241	165	276	189	333	246	388	301	445	358	502	415			
	9	201	298			219	132	254	156	311	213	366	288	423	325	480	382	592	495	
	10	223	331					232	123	289	180	344	235	401	292	458	349	570	462	
	11	246	364					210	90	267	147	322	202	379	255	436	316	548	429	
	12	268	398					245	114	300	169	357	226	414	283	526	396	639	509	
	190	5	184	273	375	286	469	390	562	473	655	566								
		6	221	328	339	231	432	325	525	418	618	511	711	605						
		7	258	382	302	177	395	270	488	364	581	457	675	565	768	643				
		8	295	437			358	216	451	309	545	402	638	495	731	589	824	682	1010	868
9		331	492			321	161	415	254	508	348	601	441	694	534	787	627	973	814	
10		368	546					378	200	471	293	564	386	657	479	751	573	936	759	
11		405	601					341	145	434	238	527	332	621	425	714				

双作用输出扭矩(N.m) Output Torque of Double Acting Actuator

规格 Size	气源压力 Air Pressure(MPa)								
	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.7	0.8
32	3.6	4.2	4.8	5.4	6.0	6.6	7.2	8.4	9.6
50	11.1	12.9	14.8	16.6	18.4	20.3	22.1	25.8	29.5
65	22.4	26.2	29.9	33.7	37.4	41.1	44.9	52.4	59.9
75	34.9	40.7	46.5	52.3	58.1	63.9	69.7	81.3	93.0
85	48.0	56.0	64.0	72.0	80.0	88.0	96.0	112.0	127.9
95	71.9	83.9	95.9	107.9	119.9	131.8	143.8	167.8	191.8
110	103.2	120.4	137.6	154.8	172.0	189.2	206.4	240.8	275.2
125	166	194	221	249	277	304	332	387	443
140	208	243	278	312	347	382	417	486	555
160	340	396	453	510	566	623	680	793	906
190	559	653	746	839	932	1026	1119	1305	1492
210	703	820	937	1054	1171	1289	1406	1640	1874
240	1148	1339	1530	1721	1913	2104	2295	2678	3060
270	1734	2033	2324	2614	2905	3195	3486	4067	4648
300	2191	2556	2922	3287	3652	4017	4383	5113	5844
350	3254	3796	4338	4881	5423	5968	6508	7592	8677
400	4675	5454	6233	7012	7791	8570	9350	10908	12466

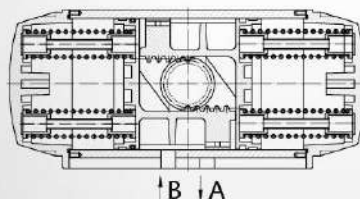
单动作执行机构力矩输出图
Drawing of output torque of Spring return actuator



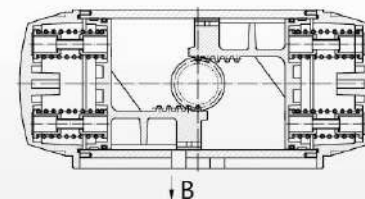
双动作执行机构力矩输出图
Drawing of output torque of Double acting actuator



操作原理和旋转方向 Operating principles and rotation direction



单作用
Single-action



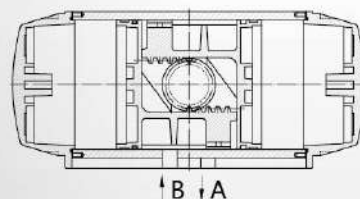
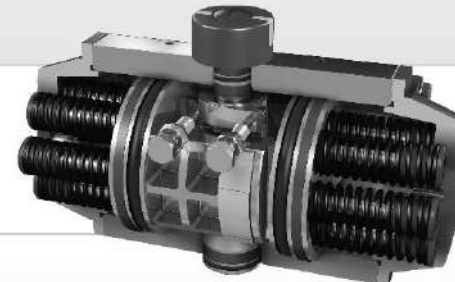
单作用的操作原理(标准转向)俯视

B口进气, A口失气, 推动两活塞分开, 向两端移动, 输出轴逆时针方向转动。

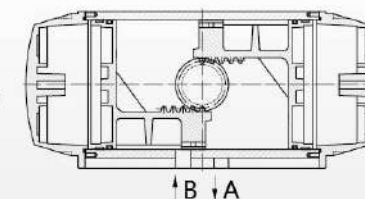
失气或失电时, 弹簧使活塞合拢, 空气从2口排出, 从而获得顺时针方向旋转。

Air inlet in port B and air loss in port A will push the two pistons apart and makes them move towards two ends. The output shaft will rotate in counterclockwise direction.

Air loss in port B will push the two pistons folding and makes them move towards the center. The output shaft will rotate in clockwise direction.



双作用
Double-action



双作用的操作原理(标准转向)俯视

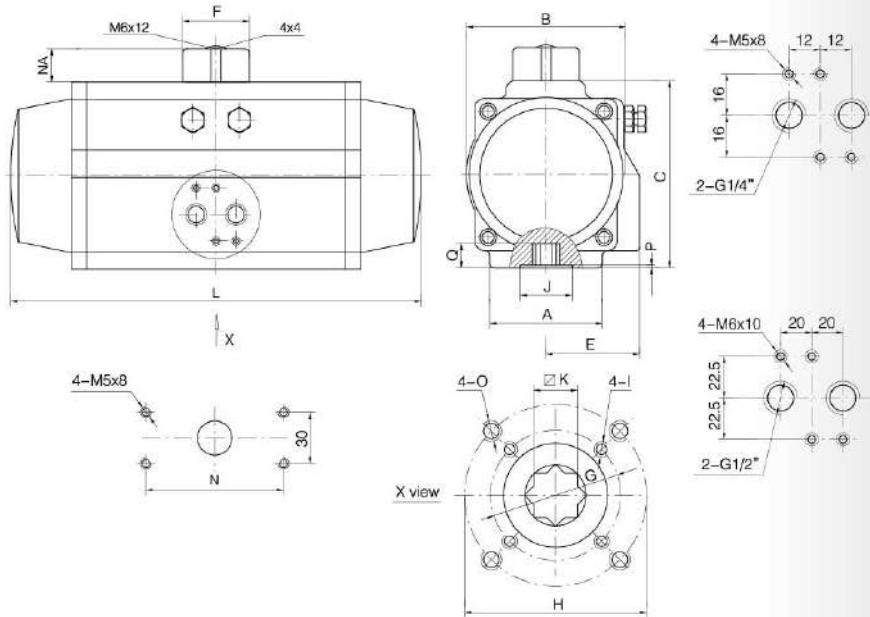
B口进气, A口失气, 推动两活塞分开向两边移动, 输出轴顺时针方向转动。

A口进气, B口失气, 推动两活塞合拢向中心移动, 输出轴逆时针方向转动。

Air supply in port B and air loss in port A will push the two pistons apart and makes them move towards two sides. The output shaft will rotate in clockwise direction.

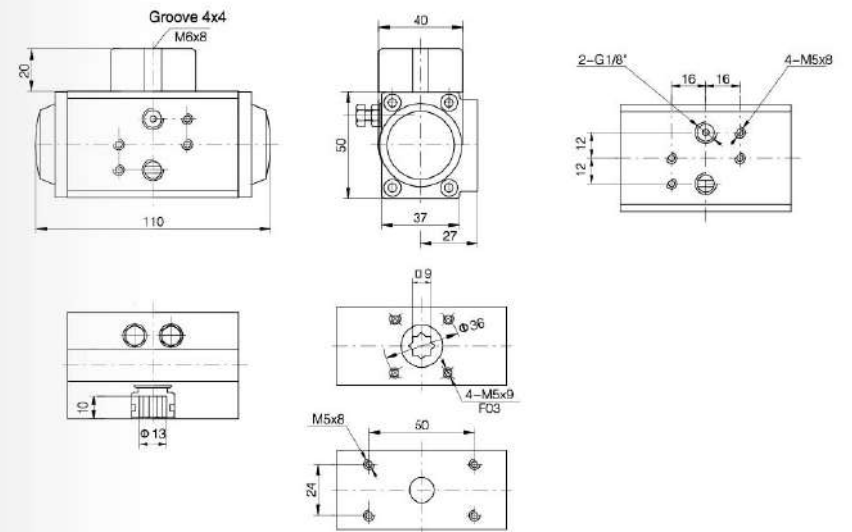
Air supply in port A and air loss in port B will push the two pistons folding and makes them move towards the center. The output shaft will rotate in counterclockwise direction.

CTN-A 外形尺寸 Dimension

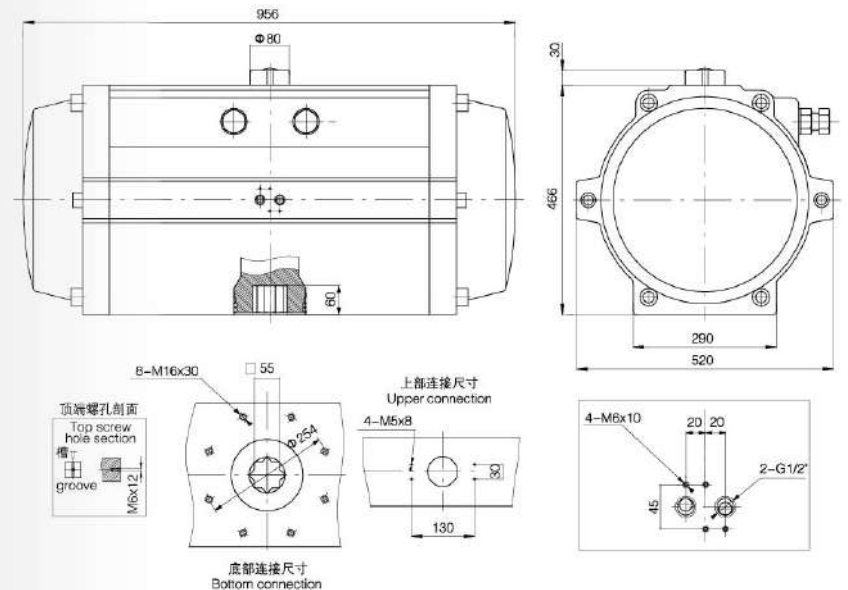


规格 Size 气缸直径	A	B	C	E	NA	ΦF	ΦG	ΦH	I	J	□K	L	N	O	P	Q	气源接口 Air Connection			
DA SR 50	52	58	70	41	20	40	ISO F05Φ50	ISO F06Φ50	M6X10	25	11	158	80	M8X10	1	12	G1/4"			
DA SR 65	68	74	89	50			ISO F05Φ50	ISO F07Φ70		28	14	192								
DA SR 75	68	85	100	52			ISO F05Φ50	ISO F07Φ70		32	14	216								
DA SR 85	68	96	113	56			ISO F05Φ50	ISO F07Φ70		36	17	232								
DA SR 95	95	107	123	65			ISO F07Φ70	ISO F10Φ102		40	17	268								
DA SR 110	96	120	136	70			ISO F07Φ70	ISO F10Φ102		40	17	274								
DA SR 125	96	135	157	74		ISO F07Φ70	ISO F10Φ102	53	22	332	M8X13	19	19							
DA SR 140	114	152	178	81		ISO F10Φ102	ISO F12Φ125	53	27	352										
DA SR 160	118	174	200	92		ISO F10Φ102	ISO F12Φ125	66	27	422				M10X16	1.5	24				
DA SR 180	134	206	232	109		ISO F10Φ102	ISO F14Φ140	78	36	490										
DA SR 210	140	228	255	115		ISO F14Φ140		88	36	550								M12X20	29	29
DA SR 240	160	260	292	130		ISO F16Φ165		100	46	600										
DA SR 270	160	295	330	148	ISO F16Φ165		117	46	720	M16X25	38	38								
DA SR 300	180	323	354	170	ISO F16Φ165		125	46	784											
DA SR 350	270	380	410	195	ISO F16Φ165	ISO F25Φ254	134	46	846				M20X28	50	50					

DA32 外形尺寸 Dimension



DA/SR 400 外形尺寸 Dimension



CTN-C不锈钢气动执行器系列
CTN-C stainless steel actuators



结构特点
Designing features

执行器整体采用316.304不锈钢材质，外表电解抛光，光洁美观，抗腐蚀性强，适合于抗腐蚀性要求极高的工程环境。双活塞齿轮齿条式设计，结构紧凑、安装位置对称、改变输出轴转向方便，使用寿命长、动作迅速。

活塞齿条背面装有复合轴承及导向环，动作精确、摩擦系数小、使用寿命延长。

组合式预负荷镀层弹簧，工作寿命长、抗腐蚀性强。

高精度齿轮和齿条，间隙小，精度高，输出功率大。

两个独立的行程调节螺钉可以进行方便、精确±5度调节开、关位置。

不锈钢紧固件，安全美观，抗腐蚀性强。

采用国际规范尺寸：输出轴槽、螺孔；顶部安装孔尺寸符合NAMUR标准；气源接口尺寸符合NAMUR标准；底部安装孔尺寸符合ISO5211、DIN3337标准，方便安装电磁阀限位开关等附件。

ASTM316L.316.304.303stainless steel pneumatic actuator with electro-polish finish offer excellent resistance to most corrosive chemicals as industrial atmospheres.

Dual piston rack and pinion design for compact construction, symmetric mounting position, high-cycle life and fast operation, reverse rotation can be accomplished in the field by simply inverting the pistons.

Multiple bearings and guides on racks and pistons, low friction, high cycle life and prevent shaft blowout.

Modular preloaded spring cartridge design, with coated spring for simple versatile range, greater safety and corrosion resistance, longer cycle life.

Fully machined teeth on piston and pinion for accurate low backlash rack and pinion engagement, maximum efficiency.

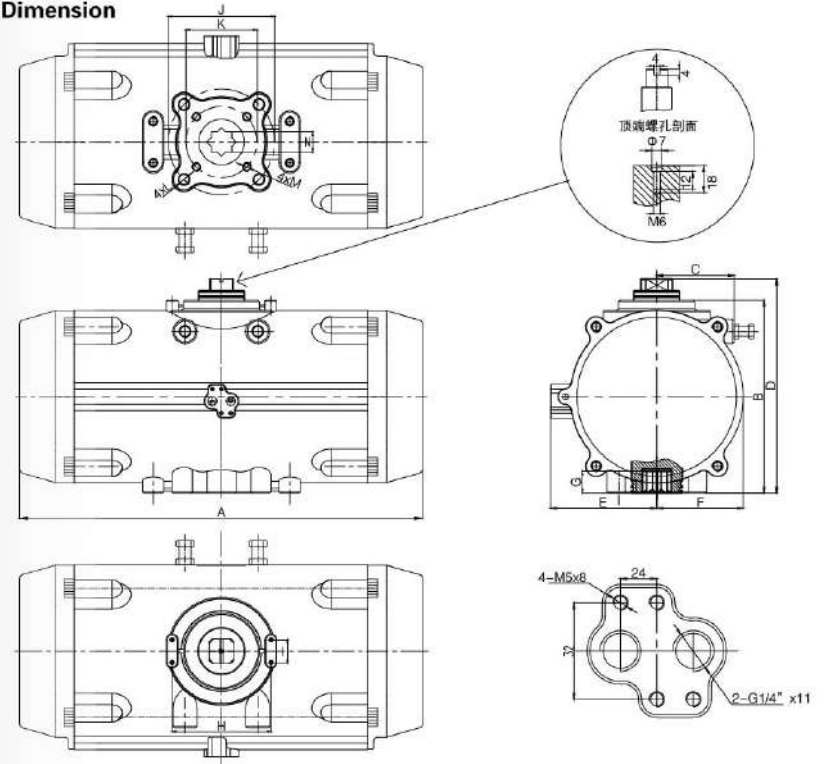
The two independent external travel stop adjustment bolts can adjust±5° at both open and close directions easily and precisely.

Stainless steel fasteners for long term corrosion resistance.

Full conformance to the latest specifications:ISO5211,DIN3337 and NAMUR or product interchangeability and easy mounting of solenoids, limit switches and other accessories.



外形尺寸 Dimension



型号 Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	气源接口 Air Connrecuon
40	133	64	28	84	46	25	14	80	30	Φ50	Φ36	M6x10	M5x7.5	11	G1/4"
50	146	72	30	92	47	32	14	80	30	Φ50	Φ36	M6x10	M5x7.5	11	G1/4"
65	173	88	36	108	54	38	18	80	30	Φ70	Φ50	M8x13	M6x10	14	G1/4"
85	204	108	48	128	65.5	48	21	80	30	Φ70	Φ50	M8x13	M6x10	17	G1/4"
110	270	133	50	153	77	60	26	80	30	Φ102	Φ70	M10x16	M8x13	22	G1/4"
125	302	155	58	175	87	69.5	27.5	80	30	Φ102	Φ70	M10x16	M8x13	22	G1/4"
140	394	172	69	192	95.5	77	32	80	30	Φ125	Φ102	M12x20	M10x16	27	G1/4"
160	456	198	75	218	106	87	34	80	30	Φ125	Φ102	M12x20	M10x16	27	G1/4"
210	568	257	90	287	133	113	40	130	30	Φ140		M16x24		36	G1/4"
300	782	354	144	384	194	160	50	130	30	Φ165		M20x28		46	G1/2"

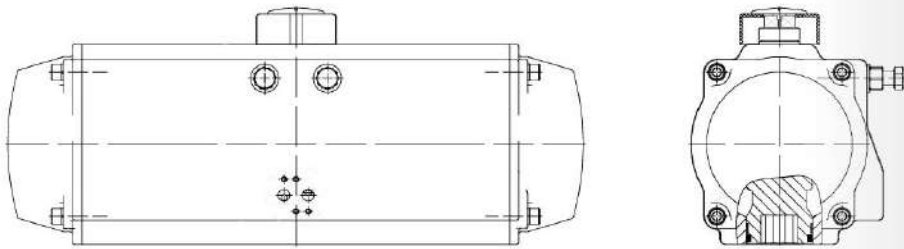
120° , 135° , 180° 双作用与单作用

120° , 135° , 180° Double Acting and Spring Return

为满足不同类型阀门及机械自动化的驱动要求，我司可根据客户要求定制不同行程(例120°、135°、180°等)的气动执行器。
In order to meet the special requirements of control valve we produced special strokes actuators on customer request (e.g. 120° ,135° ,180° etc.).

输出扭矩 Output Torque

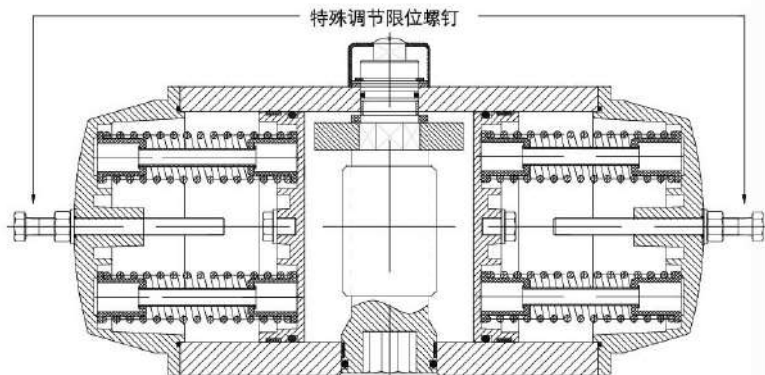
输出扭矩请参考90°行程气动执行器扭矩表。
Output torque of double acting actuators please refer to the torque of 90° actuators.



如需详细资料，请联系本公司技术部。
If you enquire any further information of spring return actuators, please do not hesitate to contact us.

全行程调节限位执行器 All Limit Actuator Travel Adjustment

新型气动执行器在两端提供特殊调节螺钉，客户可根据需要调节0° -90°、0° -120°或0° -180°范围内任意角度，在所有系列执行器上都可进行全行程调节。
New type of pneumatic actuators in two cap provide adjustment screw, It can adjust range in 0° -90° , 0° -120° or 0° -180°.



三位式气动执行器

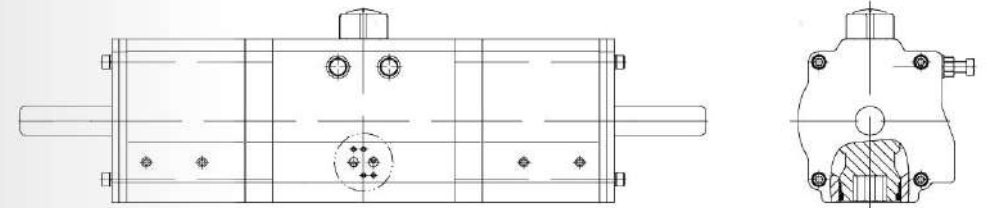
Three Position Pneumatic Actuator

三位式气动执行器是一种特殊规格的执行机构，提供了0°、45°、90°或0°、90°、180°的三位式操作方式。中间位置是依靠两个辅助活塞的移动产生的机械制动来实现的。中间位置是可调的。如90°行程的执行器能提供20°、30°、50°、70°等的中间位置。

Three position actuator provide an operation of 0° , 45° , 90° or 0° , 90° , 180° . The midway position is achieved by a mechanical stop of movement on the 2 auxilliary pistons. This midway stop positions adjustable. Example: 90° actuator can provide 20° , 30° , 40° , 50° , 70° etc.

输出扭矩 Output Torque

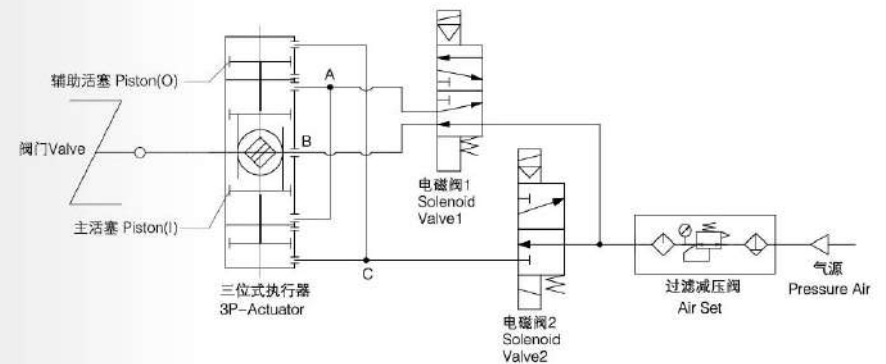
输出扭矩请参考90°行程气动执行器扭矩表。
Output torque of double acting actuators please refer to the torque of 90° actuators.



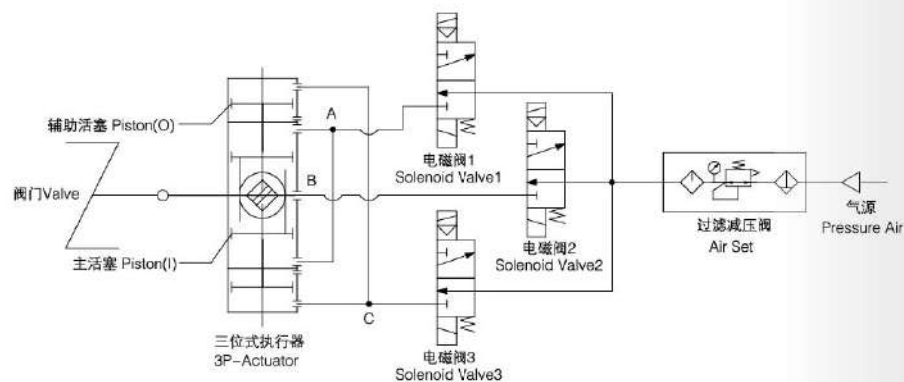
如需详细资料，请联系本公司技术部。
If you enquire any further information of spring return actuators, please do not hesitate to contact us.

三位式气动执行器工作原理图

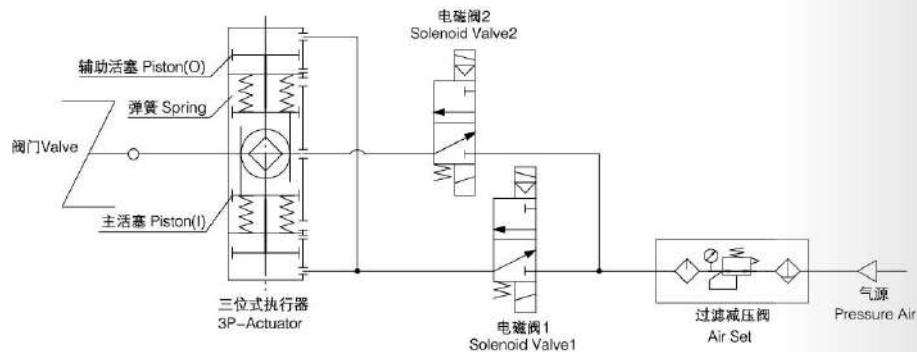
Schematic Diagram



	0°	90°	30°	0°
电磁阀1 SOLENOID VALVE1	OFF	ON	OFF	OFF
电磁阀2 SOLENOID VALVE2	OFF	OFF	ON	OFF



	0°	30°	90°	30°	0°
电磁阀1 SOLENOID VALVE1	OFF	OFF	ON	OFF	OFF
电磁阀2 SOLENOID VALVE2	ON	OFF	OFF	ON	ON
电磁阀3 SOLENOID VALVE3	OFF	ON	ON	ON	OFF



	0°	30°	90°	30°	0°
电磁阀1 SOLENOID VALVE1	OFF	ON	OFF	ON	OFF
电磁阀2 SOLENOID VALVE2	OFF	ON	ON	ON	OFF

工作时间 Operation Time

双作用 Double Acting	气源压力 Air Pressure: 5 bar															
规格 SIZE	50	65	75	85	95	110	125	140	160	190	210	240	270	300	350	400
0° -90°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.7	1.2	0.5	0.6	1.3	1.7	2.9
90° -0°	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.6	1	0.4	0.5	1.3	1.5	2.3
气源接口 Air connection	G1/4" 8mm										G1/2" 12mm					

单作用 Spring Return	气源压力 Air Pressure: 5 bar															
规格 SIZE	50	65	75	85	95	110	125	140	160	190	210	240	270	300	350	400
0° -90°	0.1	0.1	0.2	0.2	0.2	0.4	0.5	0.9	1	1.4	2	2.9	3.9	5.2	9	9.6
90° -0°	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.8	0.8	1.3	1.9	1.2	1.5	2	3.6	4
气源接口 Air connection	G1/4" 8mm										G1/2" 12mm					

重量表 Weight Table

Model 型号	50	65	75	85	95	110	125	140
重量(DA)	1.6	2	2.8	3.6	5.3	6	9.3	13.6
重量(SR)	1.4	2.2	3.2	4.1	6	7.1	11	15.8
Model 型号	160	190	210	240	270	300	350	400
重量(DA)	19.5	27.7	38.8	55	84	103	159	256
重量(SR)	23.3	33.1	46.6	67	104.7	130	199	311

注：1、SR为12根弹簧；2、重量为净重量。

耗气量 Air Consumption

开向体积和关向体积 Air Volume Opening & Closing

Model 型号	Air volume opening 开向体积(升)	Air volume closing 关向体积(升)	Model 型号	Air volume opening 开向体积(升)	Air volume closing 关向体积(升)
50	0.11	0.15	160	3.5	3
65	0.22	0.24	190	5.9	5.9
75	0.3	0.35	210	7.6	7.5
85	0.45	0.48	240	11	9
95	0.5	0.55	270	17	14
110	0.7	0.7	300	23.5	28
125	1.6	1.6	350	34	40
140	2.3	2.1	400	58	58

耗气量取决于供气压力、开关行程、体积及动作次数，计算如下：

$$\text{升/分} = \text{气缸体积} (\text{开向体积} + \text{关向体积}) \times \left[\frac{\text{供气压力 (Kpa)} + 101.3}{101.3} \right] \times \text{次数/分钟}$$

Air consumption rest with Air Supply. Air volume and Action cycle times, expressions:

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

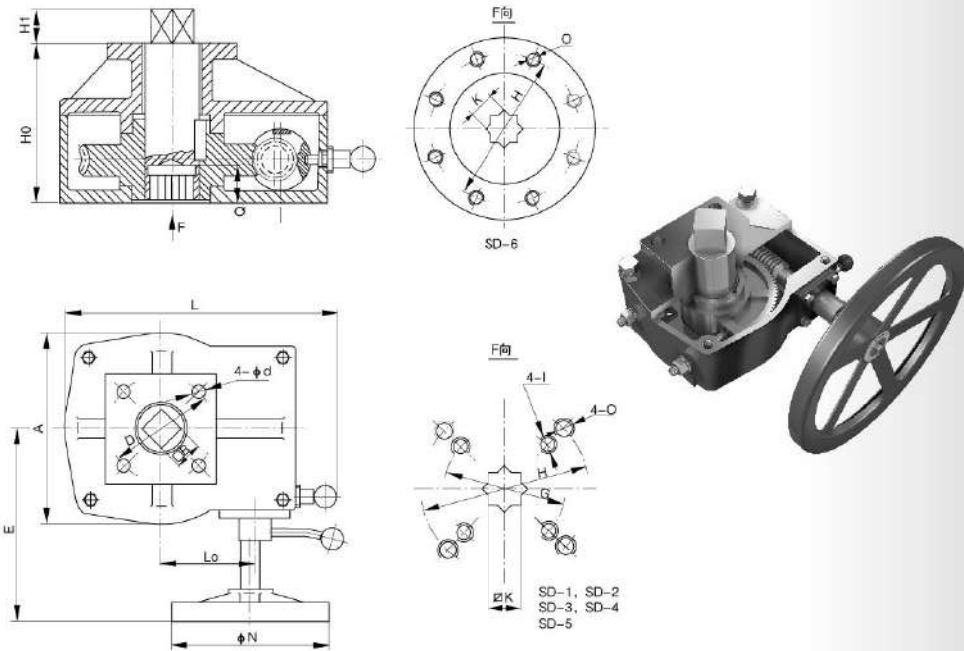
单级蜗杆传动手动机构

Single worm driven manual organization

带有手动机构的气动蝶阀，气动球阀，只要通过简单的切换，即能实现阀门的手动操作。手动机构安装在气动执行装置与阀门中间，操作极其方便。

For pneumatic butterfly valve, pneumatic ball valve, manual operation of valve can be realized only by simple switching. The manual actuator is installed between pneumatic device and valve, which featuring in simple operation.

外形尺寸 Dimension



规格 Model	H ₀	H ₁	□B	□K	Q	A	L	N	L ₀	D	d	E	G	lx深度 lxdepth	H	Ox深度 Oxdepth	适用范围 Application Range
SD-1	93	15	14	14	16	98	147	140	42	50	7	130	50	M8x8	70	M8x10	DA 50 65 75 SR
SD-2	108	17	17	17	19	106	170	180	53	70	9	145	70	M8x10	102	4-M10x14	DA 85 95 110 SR
SD-3	128	23	22	22	25	136	210	250	74	102	12	180	102	M10x14	125	4-M12x16	DA 140 160 SR
SD-4	184	35	38	38	40	200	254	350	97	140	18	220			140	4-M16x22	DA 190 210 SR
SD-5	181	48	46	46	50	256	348	500	126	165	22	292			165	4-M20x28	DA 240 270 DA300 SR
SD-6	228	50	46	46	50	372	438	500	186	165	22				165	4-M20x28	DA 350 SR300 SR
SD-7	324	55	55	55	60	505	610	650	250	254	8-18	400			254	8-M16x22	DA 400 450 SR

结构特征及使用方法

Structure characteristics and operation method

序号 No.	名称 Name	材质 Materials
1	螺丝 Screw	不锈钢 Stainless steel
2	上盖 Upper cap	铝合金/灰铁 Aluminium alloy / Gray iron
3	输出轴 Shaft	合金钢 Alloy steel
4	涡轮 Turbine	锌合金/球墨铸铁 Zinc alloy / Ductile cast iron
5	调节螺栓 Adjusting Bolt	不锈钢 Stainless steel
6	箱体 Case	铝合金/灰铁 Aluminium alloy / Gray iron
7	拉杆 Rod	钢 Steel
8	偏心轮 Eccentric wheel	合金钢 Alloy steel
9	轴承 Bearing	合金钢 Alloy steel
10	蜗杆 Worm	合金钢 Alloy steel
11	拨杆 Lever	钢 Steel
12	小盖板 Little cap	铝合金 Aluminium alloy
13	手轮 Handwheel	合金钢 Alloy steel



传动型式 Driven type	SD1-6	蜗杆蜗轮传动 Worm Driven	
行程 Stoke	90° ± 5°		
特殊设计 Special design	蜗杆的轴承为两个偏心体，专用连接杆使之成为一体，能同时转动180°实现蜗杆与蜗轮的啮合与脱开，啮合为手动，脱开为气动。The bearing of worm is two centrifugal bodies, which are connected together with special connection rod and it can rotate 180° at the same time. Jogging and taking of worm and wheel can be released, the jogging is manual while taking off is pneumatic.		
安装 Installation	上端 Upper	标准尺寸的孔与气动执行机构连接。中间为一伸出体外的方身，直接与气动执行机构内八角相连。Standard dimension hole is connected with pneumatic organization. The central part is directly connected with internal octagon of pneumatic actuator.	
	下端 Lower	壳体上有标准的螺孔与阀门或支架相连。中间输出轴为一个标准的内八角。Standard screw hole on shell is connected with valve or frame. The internal output shaft is a standard internal octagon.	
使用 Operation	手动 Manual	扳手位置	<p>拉出侧面的球形手柄，方可转动扳手。扳手到位，球形手柄自动复位固定偏心轴承。Pull the side ball shaped handle to rotate the spanner. If the spanner is on location, the ball handle will recover to be the fixed centrifugal bearing.</p>
	气动 Pneumatic	Spanner Position	<p>警告：手动位置时，不可进行气动操作，否则将损坏零件。Warning: When at manual position, do not carry out pneumatic operation, otherwise, the spare parts will be damaged.</p>

气动执行机构的选用 Selection of pneumatic actuator

双作用：在正常操作条件下，双作用执行机构的推荐可靠系数为20%
例：阀门所需的力矩 = 180N.m
可靠系数 (20%)
执行机构力矩 = 180x1.2 = 216N.m
气源压力 = 0.5MPa
查表，在0.5MPa压力下，双作用执行机构产生至少216N.m的是DA125。

Double action: under the condition of normal operation, the recommended confidence coefficient of double action actuator is 20%
eg: Required torque of valve = 180N.m
Confidence coefficient (20%)
Actuator torque = 180x1.2 = 216N.m
Air supply pressure = 0.5MPa
Refer to the table, under the pressure of 0.5MPa, the double action actuator that generates 216N.m at least is DA125.

单作用输出力矩有两种：

第一、压缩空气压缩弹簧后所得。在这种情况下，气源压力推动活塞所产生的力减去弹簧被压缩后产生的反作用力，输出力矩则从起点的最大值，逐渐递减直至90°为最小值。

第二、当失气时弹簧的恢复力所得。在这种情况下，由于弹簧的逐渐伸长，输出力矩从90°时的最大值，递减到0°时的最小值。

Single action There are two types of output torque:
First, it is gained after spring is compressed by compressed air. In this case, the force generated when air supply pressure pushes piston minus the reactive force generated after the spring is compressed, the output torque decreases by degrees to 90° which is the minimum value from maximum value of initial point.

Second, it is gained by restoring force of spring when air exhausts. In this case, due to gradual extension of spring, the output torque decreases to the minimum value at 0° from the maximum value at 90°.

密封型蝶阀有着鲜明的特征：启闭力矩大；而开启后、关闭前的力矩很小。

气开型气动蝶阀，气动时输出力矩的最大值和弹簧复位时输出力矩的最小值，都大于蝶阀所需力矩即可。

气闭型气动蝶阀，气动时输出力矩的最小值和弹簧复位时输出力矩的最大值，都大于蝶阀所需力矩即可。

The sealed butterfly valve has obvious characteristic: open-close torque is large; however, the torque after open and before close is very small.
FC (fail to close) pneumatic butterfly valve, both maximum value of output torque under pneumatic and minimum valve of output torque when returning of spring should be more than the required torque of butterfly valve.
FP (fail to open) pneumatic butterfly valve, both minimum value of output torque under pneumatic and maximum valve of output torque when returning of spring should be more than the required torque of butterfly valve.

例：阀门所需的力矩 = 180N.m

可靠系数：(20%)

气源压力0.5MPa

执行机构力矩 = 180x1.2 = 216N.m

查表，在0.5MPa压力下，被选用的单作用执行机构是SR160 K10在气源压力作用下，最小扭矩235 N.m

弹簧复位时，最小扭矩：223N.m

两者都大于216N.m

eg: Required torque of valve = 180N.m

Confidence coefficient (20%)

Air supply pressure 0.5MPa

Actuator torque = 180x1.2 = 216N.m

Refer to the table, under the pressure of 0.5MPa, the selected single action actuator is SR160 K10.

Under the effect of air supply pressure, minimum torque is 235 N.m. When spring returns, min. torque: 223N.m

Both are more than 216N.m.

气动执行机构与阀门匹配表 Pneumatic actuator and valve matching table

气动执行机构与“O”型球阀匹配表(执行机构气压0.4-0.5Mpa)

Pneumatic actuator and "O" ball valve matching table (actuator air pressure 0.4-0.5Mpa)

球阀 Ball Valve	压力 Pressure 规格 Model	1.6Mpa														
		10	15	20	25	32	40	50	65	80	100	125	150	200	250	300
执行机构 Pneumatic actuator	DA	32	50	50	65	65	85	85	110	110	125	160	210	240	270	350
	SR		65	85	85	110	110	125	125	140	160	210	270	350	400	450

气动执行机构与金属密封蝶阀/衬胶蝶阀匹配表(执行机构气压0.4-0.5Mpa)

Pneumatic actuator and metal sealed butterfly valve/rubber-lined butterfly valve matching table (actuator air pressure 0.4-0.5Mpa)

蝶阀 Butterfly Valve	压力 Pressure 规格 Model	1.6Mpa																
		50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	1000
执行机构 Pneumatic actuator	DA	50	50	65	85	110	110	125	140	190	190	210	240	240	270	300	350	400
	SR	85	85	110	125	140	140	160	190	210	240	270	350	400	450	530	600	650

空气过滤器、油雾器、减压阀

Air filter, Lubricator, Reducing valve

电磁阀

Solenoid valve



阀位反馈装置

Limit switch

电气阀门定位器

Valve positioner

订购信息

How to order

UNIT 单元	1	2	3	4	5	6	7	8	9	10
CONTENT	Series	Model	Cylinder	Acting Type	Spring Number	Failure Position	Customization	Manual Model	Specific Requirements	Product Code
内容	系列	型号	气缸	动作形式	弹簧数量	故障位置	客户定制	手轮型号	特殊要求	产品型号
CODE 代号	CTN	A	50	SR	8	FC	None	SD-1	HT	
EXAMPLE 示例	CTN	A	50	SR	8	FC	None	SD-1	HT	CTN-A50SR8FC+SD-1+HT

