

以人为舟，以严肃为舵，以智慧为帆

Consinder People As Boat,  
Consider Seriousenss As Her Helm  
And Consider Wisdom As Her Sail.



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TBN II 系列气动执行机构  
TBN II Series Pneumatic Actuator



浙江博恩自控阀门有限公司  
Zhejiang Theoborn Auto-control Valves Co.,Ltd



# THEOBORN

## TBN II Series Pneumatic Actuator

TBN II系列气动执行机构



### 企业概况

浙江博恩自控阀门有限公司专业制造气动执行器、电动执行器及各类阀门，公司生产的自动化装置从根本上改变了传统上繁琐、复杂的阀门使用方法，将高科技融入阀门控制过程中，大大提高了阀门的使用效益，节省了大量的控制成本，给企业带来客观的效益。

博恩自控阀门有限公司坐落在国内最具悠久泵阀业制造历史的温州，公司借助当地悠久的泵阀业制造经验，结合精湛的生产工艺，加上博恩人独特的创新意识和严肃精神，努力将智慧发挥至极点，立志制造最好的产品，以之造福人类。

博恩人坚持以人为舟，以严肃为舵，以智慧为帆。博恩人相信，凭借自己的专业技术，加上真诚的服务会征服客户，赢得客户，感动客户。



### Company Profile

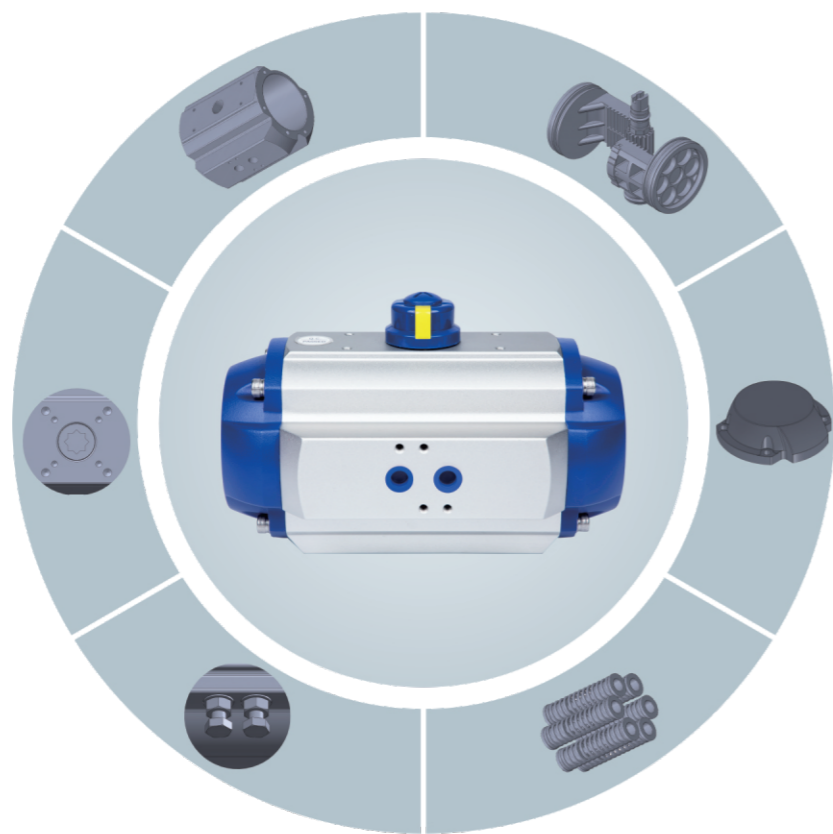
Zhejiang Theoborn Auto-Control Valves Co., Ltd. is dedicated to manufacturing pneumatic actuators and electric actuators.

Our products fundamentally transform the complex traditional usage of valves, incorporating high technology with the control process of valves, greatly improving the efficient usage of valves, largely diminishing the controlling cost, and obtaining considerable profits for enterprises. Our company is located in Wenzhou City which possesses a long history of manufacturing valves and actuators. Inspired by our experience of manufacturing valves and actuators, supported by exquisite manufacturing technique, and enveloped with the special innovative consciousness and serious spirit, Theoborn endeavors to culminate the wisdom, aspires to make the best products, and desires to benefit human beings.

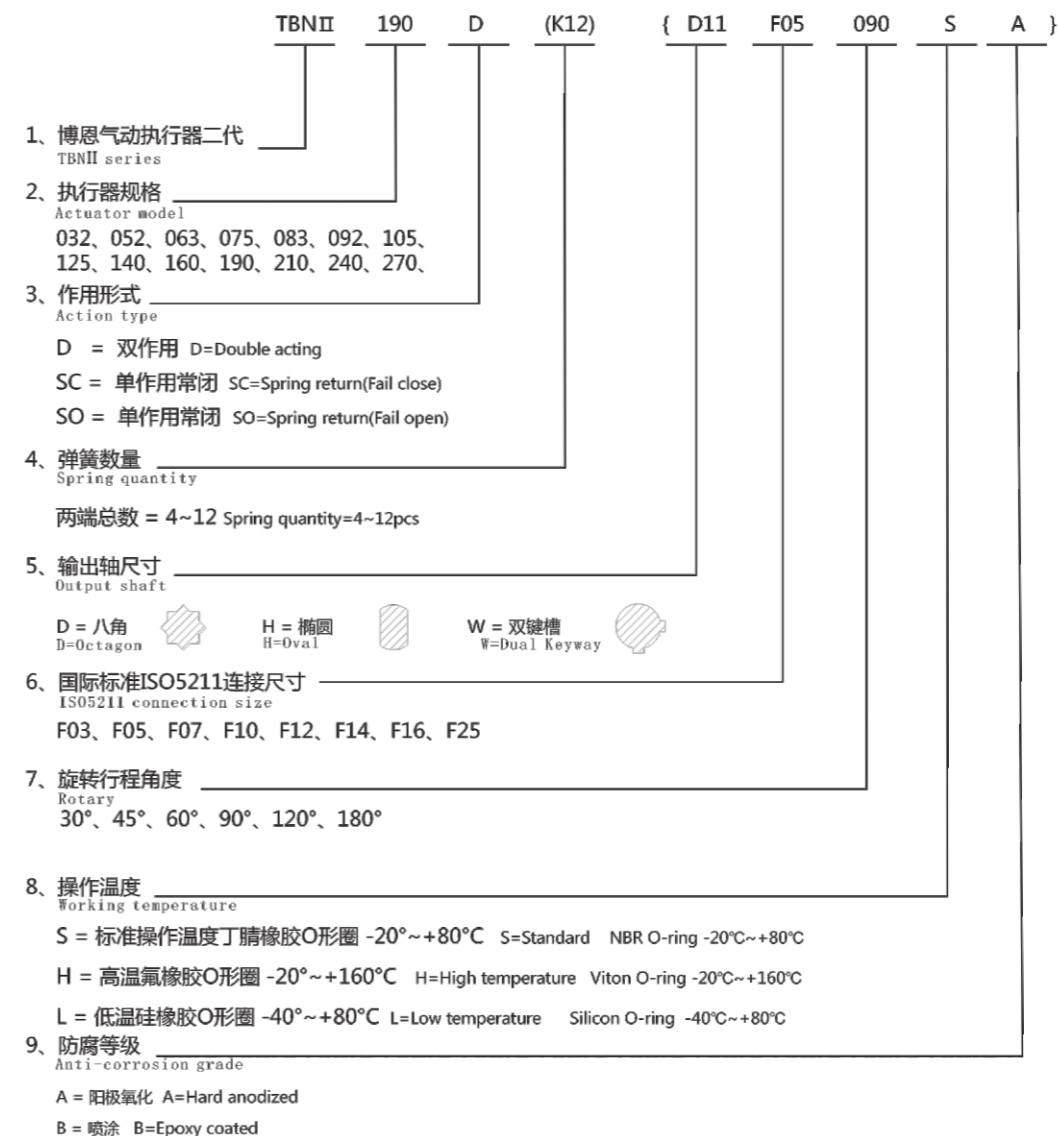
Theoborn people believe that we should consider people as boat, consider wisdom as helm and consider seriousness as sail. Theoborn believes that professional technology, along with sincere service, will obtain customers' hearts, win customers' credits, and move customers.

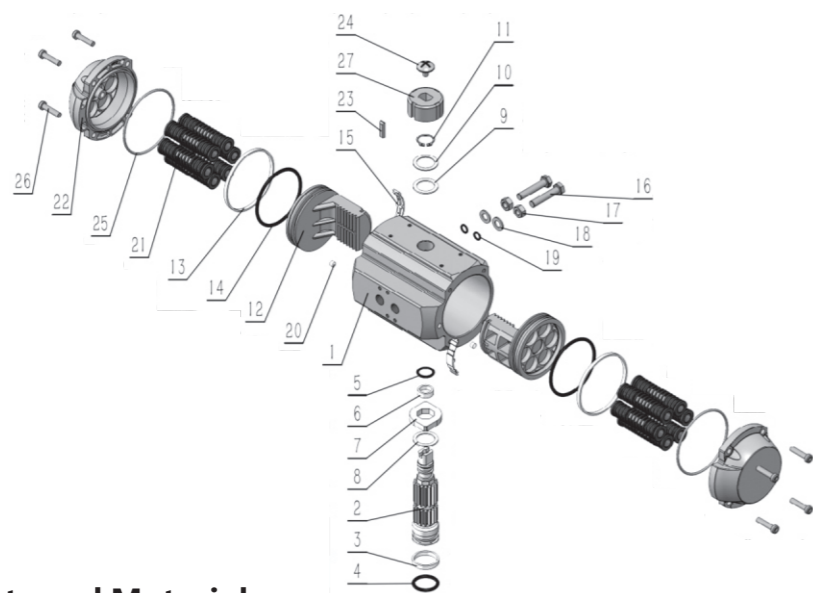
[以人为舟，以严肃为舵，以智慧为帆]

Consider people as a boat, consider seriousness as her helm, and consider wisdom as her sail.



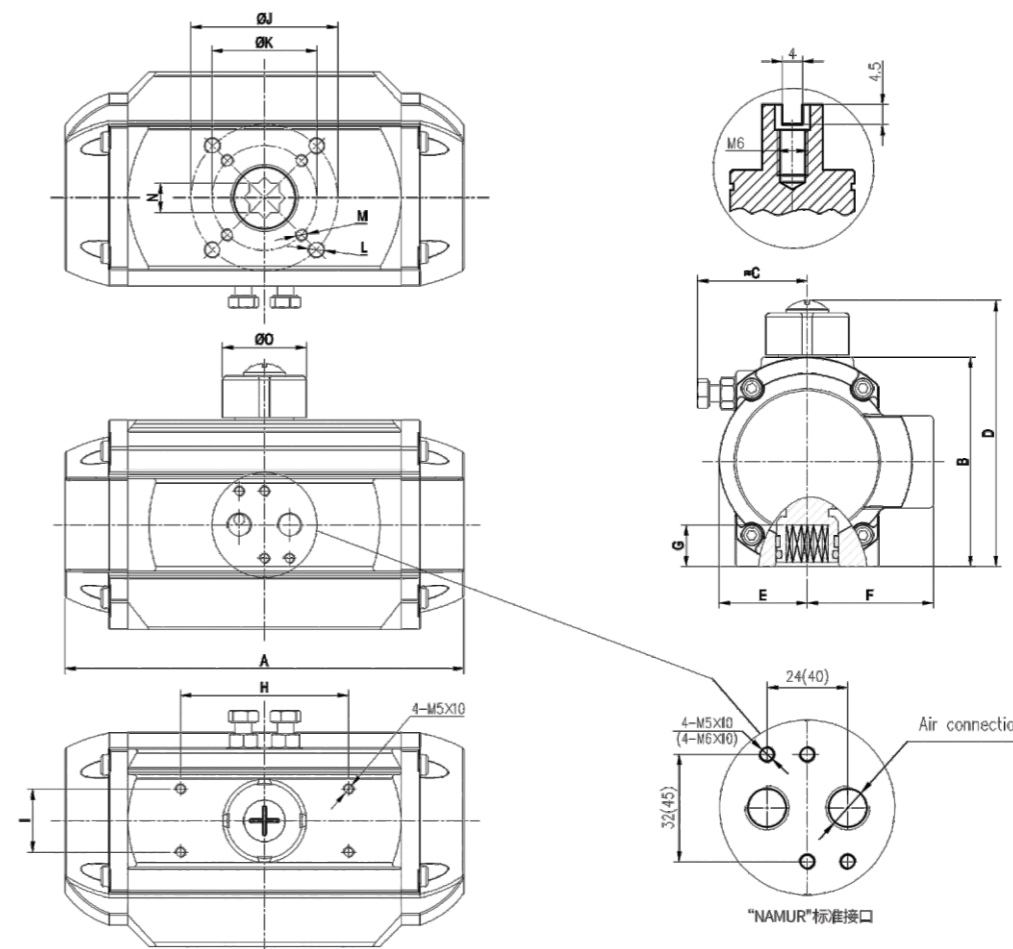
1. 挤压铝缸体采用阳极氧化等防腐工艺处理，使用寿命长，摩擦系数低。
  2. 双活塞齿条采用铸铝硬质氧化工艺处理，结构紧凑、运行迅速、使用寿命长，简单的对调活塞可以改变气缸旋转方向。
  3. 一体式齿轮输出轴，表面采用镀镍工艺处理，使用寿命长，同时可定制尺寸和不锈钢材料。
  4. 压铸铝合金端盖表面喷塑处理，防腐性能好，可定制各种喷涂颜色或PTFE涂层。
  5. 两个独立的外部行程调节螺栓，在开启和关闭位置上可以精确地调整 $\pm 5^\circ$ 。
  6. 齿条和活塞上采用低摩擦力的导向环，避免金属与金属的直接接触，低摩擦力长寿命，维修更换简单方便。
  7. 组合式预压弹簧采用防腐涂层处理，具有较强的抗腐蚀性和使用寿命，拆装安全可靠，通过改变弹簧数量实现不同的力矩输出。
  8. 执行器全部采用优质的不锈钢紧固件，具有良好的抗腐蚀能力。
  9. 符合最新国际标准ISO 5211, DIN 3337和VDI/VDE 3845 NAMUR，产品互换性高，便于限位开关和其他附件的安装连接。
1. Extruded aluminium body, with both internal and external hard anodized corrosion protection having honed cylinder surface for longer life and lower coefficient of friction.
  2. 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.
  3. One-piece gear output shaft, with nickel plated, long service life. And can be customized size and stainless steel material as option.
  4. Die-cast aluminum alloy end caps, epoxy coated with high anti-corrosion performance. Can be customized various colors or PTFE coating.
  5. Two independent external travel stop adjustments. Permits an easy and precise adjustment of  $\pm 5^\circ$  in both directions, in the open and close positions for an accurate valve alignment
  6. Selected high quality bearings and seal for low friction, high cycle life and a wide operating temperature range.
  7. Modular preloaded spring cartridge design. With coated spring for simple versatile range, greater safety and corrosion resistance.
  8. Internal and external stainless steel fasteners for long term corrosion resistance.
  9. ISO 5211, DIN 3337 and VDI/VDE 3845 NAMUR : Full conformance to the latest specifications: ISO 5211, DIN 3337 and VDI/VDE 3845 NAMUR for product interchangeability and easy mounting of solenoids, limit switches and other accessories.





零件和材料 Parts and Materials

NO.	名称	Description	数量 Qty	材料	Material	防腐处理 Material
1	缸体	Body	1	铝合金	Aluminium Alloy	硬质氧化 Anodized Oxygenation
2	转轴	Pinion	1	合金钢	Alloy Steel	镀镍 Nickel Plated
3	下轴支承环	Bearing(Lower Pinion)	1	聚甲醛	POM	
4	下轴O形圈	O-Ring(Lower Pinion)	1	丁腈橡胶	NBR	
5	上轴O形圈	O-Ring(Top Pinion)	1	丁腈橡胶	NBR	
6	上轴支承环	Bearing(Top Pinion)	1	聚甲醛	POM	
7	定位片	Spacer	1	合金钢	Alloy Steel	
8	内垫圈	Thrust Bearing Pinion	1	聚甲醛	POM	
9	外垫圈	Thrust Bearing Pinion	1	聚甲醛	POM	
10	垫圈	Thrust Washer(Pinion)	1	不锈钢	Stainless Steel	
11	卡簧	Spring Clip	1	不锈钢	Stainless Steel	
12	活塞	Piston	2	铝合金	Alloy Steel	硬质氧化 Hard Anodized
13	活塞导向环	Guide Ring(Piston)	2	聚甲醛	POM	
14	活塞O形圈	O-Ring(Piston)	2	丁腈橡胶	NBR	
15	活塞支承环	Bearing Ring(Piston)	2	聚甲醛	POM	
16	调节螺钉	Adjusting Screw	2	不锈钢	Stainless Steel	
17	调节螺母	Adjusting Nut	2	不锈钢	Stainless Steel	
18	调节螺钉垫圈	Washer(Adjusting Screw)	2	不锈钢	Stainless Steel	
19	调节螺钉O形圈	O-Ring(Adjusting Screw)	2	丁腈橡胶	NBR	
20	堵头	Plug	2	丁腈橡胶	NBR	
21	弹簧	Spring	4~12	弹簧钢	Spring steel	浸漆 Zinc Phosphate Coated
22	端盖	End Cap	2	铝合金	Alloy Steel	喷塑 Epoxy Coated
23	端盖调节螺钉	Adjusting Screw(End Cap)	2	不锈钢	Stainless Steel	
24	端盖调节螺母	Adjusting Nut(End Cap)	2	不锈钢	Stainless Steel	
25	端盖O形圈	O-Ring(End Cap)	2	丁腈橡胶	NBR	
26	端盖螺栓	Bolts(End Cap)	8	不锈钢	Stainless Steel	
27	指示器	Indicator	1	工程塑料	Engineering Plastics	
28	指示器螺钉	Nut(Indicator)	1	工程塑料	Engineering Plastics	



型号Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Air
TBNII032	111	46	52	66	21	31	14	50	25	/	F03Φ36	/	M5X8	9	40	G1/8
TBNII052	154	74	45	99	30	47	14	80	30	F05Φ50	F03Φ36	M6X11	M5X10	11	40	G1/4
TBNII063	173	88	50	113	36	54	18	80	30	F07Φ70	F05Φ50	M8X14	M6X11	14	40	G1/4
TBNII075	190	100	55	125	42	60	20	80	30	F07Φ70	F05Φ50	M8X14	M6X11	14	40	G1/4
TBNII083	208	109	60	134	46	65	20	80	30	F07Φ70	F05Φ50	M8X14	M6X11	17	40	G1/4
TBNII092	254	120	70	145	51	70	22	80	30	F07Φ70	F05Φ50	M8X14	M6X11	17	40	G1/4
TBNII105	282	135	70	160	58	76	24	80	30	F10Φ102	F07Φ70	M10X18	M8X14	22	40	G1/4
TBNII125	312	155	80	182	68	87	28	80	30	F10Φ102	F07Φ70	M10X18	M8X14	22	65	G1/4
TBNII140	380	178	95	205	76	96	32	80	30	F12Φ125	F10Φ102	M12X22	M10X18	27	65	G1/4
TBNII160	426	197	100	224	87	107	34	80	30	F12Φ125	F10Φ102	M12X22	M10X18	27	65	G1/4
TBNII190	484	235	125	275	103	126	40	130	30	F14Φ140	/	M16X23	/	36	78	G1/4
TBNII210	532	260	130	300	113	137	40	130	30	F14Φ140	/	M16X25	/	36	78	G1/4
TBNII240	610	292	145	330	146	158	50	130	30	F16Φ165	/	M20X28	/	46	78	G1/2(1/4)
TBNII270	704	330	170	370	165	175	57	130	30	F16Φ165	/	M20X28	/	46	78	G1/2
TBNII300	782	352	308	385	160	170	50	130	30	F16Φ165	/	M20X25	/	46	80	G1/2
TBNII350	920	410	362	440	190	195	50	130	30	F25Φ254	F16Φ165	M16X24	M20X25	55	80	G1/2
TBNII400	935	460	446	494	260	260	60	130	30	F25Φ254	F16Φ165	M16X24	M20X25	55	80	G1/2

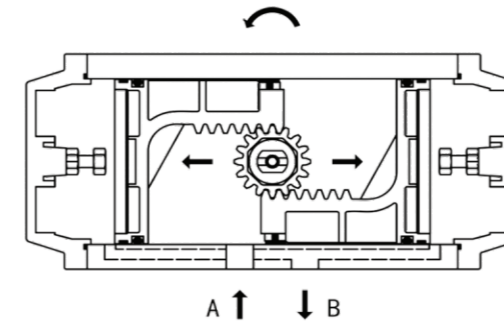


Unit:Nm

型号Model	输入气源压力 ( Bar ) Air Pressure						
	2	3	4	5	6	7	8
TBNII032D	2.7	4.2	5.8	7.4	9.0	10.5	11.8
TBNII052D	7.9	11.9	15.9	19.9	23.8	27.8	31.7
TBNII063D	14.0	21.0	28.0	35.0	42.0	49.0	55.9
TBNII075D	19.8	29.7	39.6	49.5	59.4	69.2	79.1
TBNII083D	28.3	42.5	56.6	70.7	84.9	99.0	113.2
TBNII092D	44.7	67.1	89.5	118.9	134.2	156.6	179.0
TBNII105D	64.8	97.1	129.5	161.9	194.3	226.7	259.0
TBNII125D	101.0	151.4	201.9	252.4	302.9	353.4	403.8
TBNII140D	158.3	237.5	316.6	395.8	474.9	554.1	633.2
TBNII160D	225	338	451	564	677	790	902
TBNII190D	361	541	721	901	1082	1262	1442
TBNII210D	518	777	1036	1295	1554	1813	2072
TBNII240D	761	1142	1523	1903	2284	2665	3045
TBNII270D	1156	1734	2312	2891	3469	4047	4625
TBNII300D	1526	2289	3052	3815	4578	5341	6104
TBNII350D	2285	3427	4570	5712	6854	7997	9139
TBNII400D	3256	4884	6512	8140	9768	11396	13024

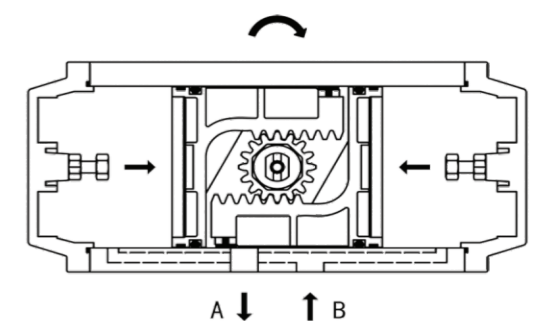


■ 双作用式 Dual action



1、压缩空气由A口输入，使左右活塞向相反方向运动，输出轴逆时针方向转动，打开阀门，两活塞侧面的空气由B口排出。

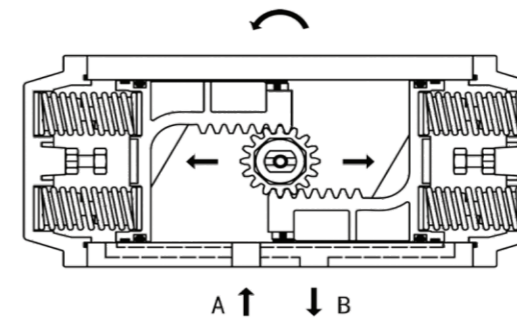
Air from Port A forces the pistons outwards, causing the springs to compress, the pinion turns counter-clockwise to open the valve while air is being exhausted from Port B.



2、压缩空气由B口输入，使左右活塞向中心移动，输出轴顺时针方向转动，关闭阀门，两活塞侧面的空气由A口排出。

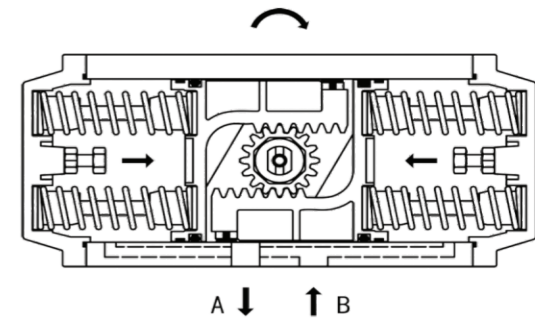
Air from Port B forces the pistons inwards, causing the springs to compress, the pinion turns clockwise to close the valve while air is being exhausted from Port A.

■ 单作用式 (常闭式) Spring return (FC)



1、压缩空气由A口输入，使左右活塞向相反方向运动，输出轴逆时针方向转动，打开阀门，两活塞侧面的空气由B口排出。

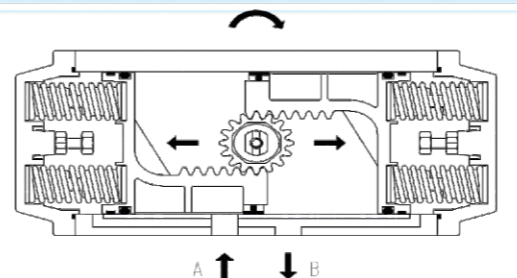
Air from Port A forces the pistons outwards, causing the springs to compress, the pinion turns counter-clockwise to open the valve while air is being exhausted from Port B.



2、失气或失电时，由于弹簧的作用使两活塞向中心移动，输出轴顺时针方向转动，关闭阀门，空气由A口排出，B口进气可加速关闭阀门。

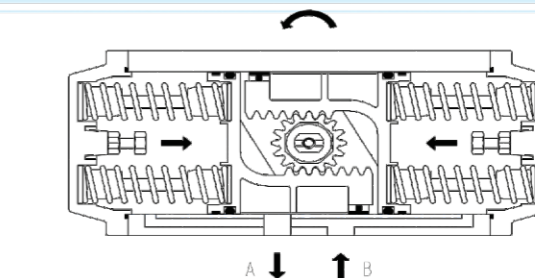
In case of air or power disruption, the rebound of springs forces the pistons inwards, the pinion turns clockwise to close the valve while air is being exhausted from Port A. Air from Port B can accelerate the close of the valve.

■ 单作用式 (常开式) Spring return (FO)



1、压缩空气由A口输入，使左右活塞向相反方向运动，输出轴顺时针方向转动，关闭阀门，两活塞侧面的空气由B口排出。

Air from Port A forces the pistons outwards, causing the springs to compress, the pinion turns clockwise to close the valve while air is being exhausted from Port B.



2、失气或失电时，由于弹簧的作用使两活塞向中心移动，输出轴逆时针方向转动，打开阀门，空气由A口排出，B口进气可加速打开阀门。

In case of air or power disruption, the rebound of springs forces the pistons inwards, the pinion turns counter-clockwise to open the valve while air is being exhausted from Port A. Air from Port B can accelerate the open of the valve.