

# 奔日阀门<sup>®</sup> 擅长化工行业

— 出口欧美16年 —

## 气动执行器





### 应用 Applications

不锈钢垂直式气动执行器, 主要应用在蝶阀, 球阀等各种角行程阀门上。安装位置传感器, 智能控制器, 即可实现阀门自动化控制。尤其对环境要求较高车间如食品加工, 饮料, 果汁, 啤酒, 制药等工业领域。

Vertical SS pneumatic actuator is used to match kinds of angle journey valves, such as butterfly valve, ball valve. Install a position sensor and C-TOP can automatically control the valves. Widely applied to the workshop that have high request on environment. Such as in food processing, beverage, pharmacy, beer industries, etc.



不锈钢气动执行器  
Stainless Steel Pneumatic Actuator

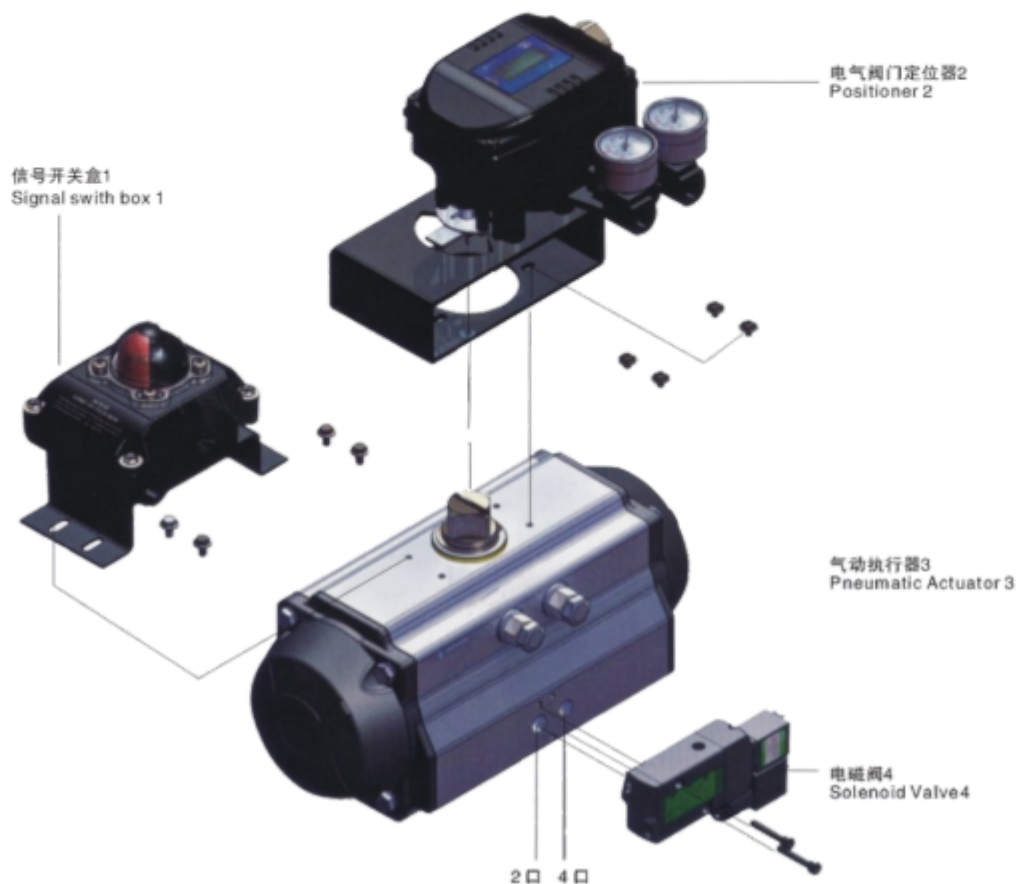
### 设计和特点 Design and features

- 1.全不锈钢材质
- 2.有三种执行常开, 常闭, 气/气
- 3.单支架, 双支架
- 4.与阀门装配简单易装
- 5.非专业人员可拆卸维修
- 6.气压4-7Bar
- 7.与阀门连接方芯口=φ11\*11, 010\*10, φ8\*8, 0φ12\*8
- 8.控制: 位置传感器DC, 24V NPN/PNP  
普通控制器电器端子连接, AS-I总线连接(详见智能控制目录)

- 1.Stainless steel
- 2.Normally open, normally close, air/air
- 3.Single support, double supports
- 4.Easy disassemble with valve.
- 5.Easy maintainance
- 6.Pressure: 4-7 bar
- 7.Connection size: □=中11\*11, 中10\*10, 中8\*8, 0中12\*8
- 8.Control: position sensor: DC 24V NPN/PNP  
Intelligent control: electro connection, AS-I bus-mastering (refer to C-TOP catalogue)

### 技术规格 Technical specifications

|                                 |   |
|---------------------------------|---|
| 重量(Kg): 气弹簧: 3.5Kg, 气: 2.8Kg    | Weight: air/spring: 3.5KG; Air/air: 2.8KG |
| 旋转角度: 90°                       | Rotate angle: 90 degree                   |
| 最大扭矩:                           | Max torque ( for 85 size ):               |
| ( 85规格) 35Nm(气弹簧), 60Nm(气/气)    | 35Nm(air/spring), 60Nm ( air/air )        |
| 最大扭矩:                           | Max torque(for 133 size):                 |
| ( 133规格) 150Nm(气弹簧), 220Nm(气/气) | 150Nm(air/spring), 220Nm ( air/air )      |
| 持续工作温度: -20°C到+50°C             | Operating temperature: -20°C to +50°C     |
| 气源连接: R1/8", G1/8"(BSP)         | Pneumatic connection: R1/8", G1/8" BSP.   |



### 附件安装 Installation Of Accessory

**电磁阀安装:**采用NAMUR标准直接安装于执行器同感转接板,可将二位三通转至二位五通,正确安装电磁阀之前要保证执行器在关的位置(见图)在气动执行器3配上电磁阀4,对准气源接口2口和4口,安上O型圈,用螺栓紧固就可,使用方便美观,如果把电磁阀从电开式改为电关式,只要送掉螺栓,旋转电磁阀180°气口2转换气口4。

Solenoid valve installation: used pin board installed on the actuator as per NAMUR standard. It can be changed 3/2 way into 5/2 way. Please be sure the actuator is power off when you fix the solenoid valve on the pneumatic actuator, (according to the following picture), aimed the gas source to port '2' and port '4', setting o-ring on it. And tightened the screw up. And rotate the solenoid 180°. Change the air hole '2' into air hole '4', then you can change the electric force open type to the electric force off type.

**信号开关盒安装:**信号开关盒是传送阀和执行器位置信号,传递给现场控制系统。安装方式(见图),气动执行器3配上信号开关盒1和支架,使用4颗螺钉紧固就可,只要符合VDI/VDE3845标准,都可以安装,通用性好,方便。

The installation of signal switch box: the signal switch is used to send the valve and actuator position signal to spot of control system. Installation (according to following picture), the pneumatic actuator 3 with the signal switch box and yoke, fixed by 4 screws. The Accessory can be used when it design as per VDI/VDE3845 standard.

**电气阀门定位器的安装:**此系列为调节型设计,应用于双作用或单作用执行器,输入,输出4-20mA信号。安装方法(见图),气动执行器3配上电气阀门定位器2和支架,通过齿轴NAMUR槽传动反馈杆,用4颗螺栓紧固,连接气源管路,即可实现调节控制。

Electric force valve localizer installation: this series is specially design for adjusting type, it used in signal action and double action, the signal input/output: 4-20mA. Installation (see following picture). Pneumatic actuator 3 with the electric force localizer '2' and yoke. Used the driving axes NAMUR groove make the feedback shaft, and fixed with 4 bolts, then, connected air source, it's regulated.

## 安装说明 Explaining Of Installation

气动执行器于阀门安装之前,请仔细阅读说明书,有关技术参数、连接尺寸、输出力矩、行程限位调节、耗气量、运行时间、旋转方向、重量、操作方式等。

气动执行器接入气源管道之前,必须清除管道内的脏污,如焊渣、铁屑等其它杂物进入气缸以免影响寿命。

气动执行器在任意角度安装而无损性能。

双作用执行器于阀门安装之前,要确认执行器和阀门开关位置一致。

单作用执行器先确定气动阀门要求气源故障时处在开或关的位置,再确定执行器的作用形式(气开或气关)

一般气动执行器与阀门装配2种类型(见图):

A、通过支架和连接套进行装配,也通过加长阀杆直接插入轴孔内。

B、直接安装,不用机架,直接通过相对应ISO5211符合国际标准连接法兰相连,阀杆直接插入轴孔内。

所有用于连接的零件配合精度要求较高,否则会影响开关角度,产生阀门泄漏量,零件的配合公差按GB/T12223-2005部分回转阀门驱动装置的连接标准。

Please read the specifications carefully before you install the pneumatic actuator ,take care of these technical data:connectsize,output torque; stroke limit adjustment.gas consumption,operation hours,rotation direction,weight and so on.

Please be sure to clean the pipe inner,before the pneumaticactuator connect the air pipes.

The actuator can be fixed in any angles.

Please confirem the switch positon of actuator is keep indentical with valve sW itch .before you install the double action actuators.

To single action actuator,please confirmed the air failure position(open or closed)first, than fixed the operation ways (air open orair closed).

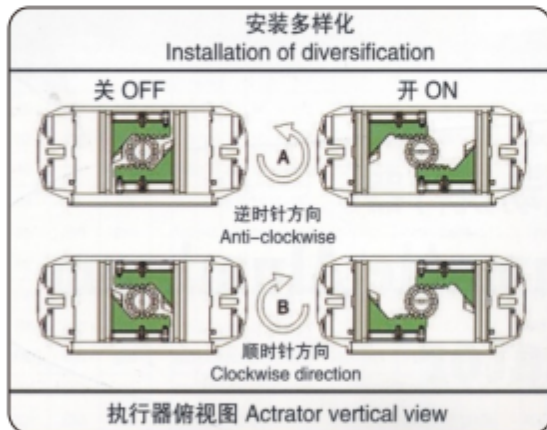
Ther are 2 ways to connect the pneumatic actuator to the valve(see following picture).

A.Installed it using yoke and connector ,and also can extended the stem through into the shaft hole.

B.fixed directly ,and connect the flange which according ISO5211intentional standard.Then the shaft inserted into the shaft hold.

All the partial precision must be suitable.If not,it will impacted the switch using angle,Then valves would be leakage.The partial design as per GR/T1123- -2005.





## 产品介绍 Production introduction

奔日系列气动执行器结合了独特的风格,先进的技术,精密的加工制造,经济实用,节省空间,模块设计,可直接安装其它附件,增加效率和经济性。

Benri series actuators having it's own style advanced technologies, economic and save spaces. And the mode design can be installed with other accessory increase efficiency and economy

## 常规数据 Normal data

最大额定气源压力为8bar, 最小气源为2.5bar

使用温度: 标准: -20°C (-4°F)至+80°C (+176°F)

高温: -15°C (+5°F)至+150°C (+302°F)

低温: -40°C (-40°F)至+80°C (+176°F)

使用气源: 经过干燥过滤或加油润滑的洁净空气, 非腐蚀性气体。

Max air pressure: 8bar, Min air pressure: 2.5bar.

Using temperature: normal temperature: -20°C (-4°F) to +80°C (+176°F)

High temperature: -15°C (+5°F) to +150°C (+302°F)

Low temperature: -40°C (-40°F) to +80°C (+176°F)

Using air supply: clean air after dry and filtration. No-corrosive gas.

A 缸体外侧面2个独立行程限位调节螺栓在2个开关方向进行上5°调节, 使执行器在全开位置或全关位置时与阀门开关位置保持一致。

B 端盖采用高压铸铝, 表面防腐热塑性涂层, 一体式紧凑设计, 所有单作用和双作用执行器都具有相同的缸体和缸盖, 通过增加或拆除弹簧来改变作用方式。

C 组合式预负荷弹簧设计适用于各种场合安装和拆卸更安全, 也不必担心弹簧弹出伤人。

D 紧固件全部采用不锈钢材料。

E 连接尺寸全部符合国际标准: ISO5211-DIN3337和VDI/VDE3845, 气源接口符合NAMUR标准。

F 轴端带有NAMUR标准槽的多功能位置现场可视指示器, 很方便安装, 符合VDE3845标准的信号开关盒、定位盒、位置感应开关等其它配件。

G 齿轴: 标准型为镀铬处理, 克服内部和外部腐蚀, 通用性强, 抗断裂、轴承导向一体人齿轮设计, 提高了安全性, 输出轴平行四方和对角四方相互转换安装, 灵活性好。

H 缸体挤压成型的新型铝合金缸体, 精密加工中心制造, 内径和外部表面硬质阳极化处理, 摩擦系数小, 使用寿命更长。

I 活塞上的复合活塞环, 齿条背面导向轴瓦, 输出齿轴的轴承耐磨环, 可实现运行精度, 降低摩擦。

J 双活塞齿轮条结构设计紧凑, 两活塞对称安装, 输出扭矩恒定, 受力均衡, 迅速平衡, 精度高。

K 内部气路, 经济并且无须连接外露管线。

A Two bolts out of cylinder do ±5° adjusting to keep the actuator on/off position with the whole open position and whole closed position

B The end covers use high pressure cast Aluminum the surface plated corrosion protection one piece body design. All the single action and double action actuator use the same cylinder and cover we can change the action ways by adding/removing springs.

C Combined preload spring design submit to any setting occasion and it will be safer When you install and dismantle it.

D Stainless steel material be used in all the fasteners.

E The connect dimension designed according to international standard: ISO5211-DIN3337 and VDI/VDE 3845, the air supply connect design as per NAMUR standard.

F There is a function position indicator with NAMUR standard groove in the shaft end. It's convenient to set the signal switch box. The position responsive switch and the other fittings are suitable with VDE3845 standard.

G Drive shaft: plated nickel, so all the inner and outside can proof-corrosion, the shaft also can anti breakout and the leading bearing integration design, so it should be more safer, and cater-corner square each installation, the flexibility is good.

H New type Aluminum alloy cylinder, delicate manufacturing, the inner wall and the surface have been hard coat anodize treated. low coefficients of friction long service life.

I Combining piston ring on the piston, the abrasion proof plastic behind the piston, the abrasion proof ring of driving shaft has an extremely low coefficient of friction.

J These two gear symmetry fixed, to keep the output torque not change. make the giving power balance, with a greater accuracy.

K Insider air channel, it needn't use to connect the open pipe line.

### 工作原理和旋转方向 Operation principle and rotation direction

标准旋转方向是顺时针关, 逆时针开

Standard rotation direction: clockwise to closed, and inverted hour to open.

双作用的操作原理(标准转向)俯视

当气源压力从2口进入迫使活塞分开朝端盖方向移动, 空气从4口排出, 从而获得逆时针方向旋转。

Operation principle of double action standard vertical view. (Standard rotation)

The air of port "2" drive the piston moving to the two end covers that the air expected from port "4" and then making the driving shaft run inverted hour.

当气源压力从4口进入迫使活塞合拢, 空气从2口排出, 从而获得顺时针方向旋转。

The air of port "4" drive the piston moving to the center. that the air exhausted from port "2", then make the shaft clockwise running.

双作用执行器的选用示例:

选用执行器时, 先确定阀门力矩再加上安全系数, 阀门安全系数跟不同的介质、温度、压力、阀芯和阀座之间的摩擦力等许多因素, 影响操作力矩。

The used selecting of double action:

Please confirm the safety factor before you install the pneumatic actuators. And the safety factor should be changed if the Medium, service temperature, pressure, friction force between spool and seat insert and Otherwise data change.

已知蝶阀的力矩=50Nm, 使用介质为水; 温度; 常温, 现场气源压力为5bar, 给安全系数为20%计算; 安全力矩:  $150+20%=180\text{Nm}$  对照双作用执行器力矩表中查压力为5bar一栏, 沿着该列查找等于或相近于180Nm的数据, 选215Nm, 向左找型号, 后选ZT115型号。

Known: the torque of butterfly valve is 50Nm, medium: water, temperature is normally, and the supply air pressure is 5 bar, safe factor is 20%. The safety torque is:  $150+20%=180\text{Nm}$ , please reference the double action actuator torque list on page 08. you may find the supply pressure is 5 bar, and then find the data about 180Nm in this row, see 215Nm the mode number. ZT115 should be used in this mode.

单作用的操作原理(标准转向)俯视

当气源压力从2口进入迫使活塞分开朝端盖方向移动, 同时压缩弹簧, 空气从4口排出, 从而获得逆时针方向旋转。

Operation principle of single action standard vertical view. (Standard rotation)

The air of port "2" drive the piston moving to the side end covers at the same time compress the spring, the air exhausted from port "4", then make driving shaft inverted hour runs.

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,

The air source of the power supply stopped, the spring drives the piston moving to the center, that the air exhausted from port "2", make the driving shaft clockwise running.

单作用执行器的选用示例:

在选型中先考虑压力作用下的力矩和弹簧伸长作用下的力矩。

The used lectotype of single action:

Please first consider the torque under the air supply action and the torque under the extension.

已知球阀力矩=200Nm, 使用介质蒸汽, 使温度16C, 现场气源压力为5.5bar, 给安全系数为25%计算; 安全力矩:  $200+25%=250\text{Nm}$  对照单作用执行器力矩表: 查气源压力为5.5bar一栏, 沿着该列(开始和结束)中查找力矩, 再向右查弹簧行程开始和结束力矩。查选结果执行器型号为ZT160, 弹簧为11根, 产生下列数值:

气源压力下 $0^\circ=377\text{Nm}$

气源压力下 $90^\circ=259\text{Nm}$

弹簧行程 $0^\circ=247\text{Nm}$

弹簧行程 $90^\circ=365\text{Nm}$

注: 查到所选力矩, 应等于或相近于安全力矩!

Known: ball valve torque is 200Nm, medium: steam, service temperature is 16C, the gas source is 5.5bar, and the safe factor is 25%; the safety torque:  $200+25%=250\text{Nm}$ . Reference the single action actuator torque list on page 07; you can find the row of source pressure 5.5bar, then find the torque this line (open and finish), and rightwards find the torque of the spring start and finish, you may find the actuator mode NO. ZT160 suitable, and the spring qty is 11, please find the following data:

The gas source pressure  $0^\circ=377\text{Nm}$  GAS PRESSURE  $90^\circ=259\text{Nm}$

Spring travel  $0^\circ=247\text{Nm}$

Spring travel  $90^\circ=365\text{Nm}$

PS: the torque you find is approximated the Safety factor.

单作用力矩输出表 Out put torque list of single acting

尺寸(毫米)  
size:mm

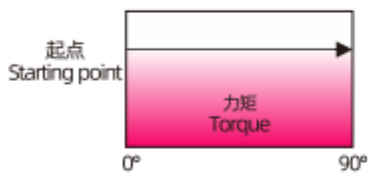
| 气源压力<br>Gas source pressure |                       | 弹簧复位力矩输出(Nm) Spring return torque output(Nm) |        |       |        |        |        |       |        |        |        |        |        | 弹簧行程<br>Spring travel |        |        |        |       |        |       |        |      |      |        |       |      |
|-----------------------------|-----------------------|--|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|--------|-----------------------|--------|--------|--------|-------|--------|-------|--------|------|------|--------|-------|------|
| 执行机构型号<br>Actuator model    | 弹簧数量<br>Spring Amount | 2.5bar                                       |        | 3bar  |        | 3.5bar |        | 4bar  |        | 4.2bar |        | 4.5bar |        | 5bar                  |        | 5.5bar |        | 6bar  |        | 7bar  |        | 8bar |      | 90° 开始 | 0° 结束 |      |
|                             |                       | 0° 开始  | 90° 结束 | 0° 开始 | 90° 结束 | 0° 开始  | 90° 结束 | 0° 开始 | 90° 结束 | 0° 开始  | 90° 结束 | 0° 开始  | 90° 结束 | 0° 开始                 | 90° 结束 | 0° 开始  | 90° 结束 | 0° 开始 | 90° 结束 | 0° 开始 | 90° 结束 |      |      |        |       |      |
| ZT200                       | S05                   | 219  | 217    | 426   | 323    | 532    | 430    | 638   | 536    | 681    | 578    | 745    | 642    | 851                   | 749    |        |        |       |        |       |        |      |      | 315    | 213   |      |
|                             | S06                   | 277  | 154    | 383   | 260    | 489    | 367    | 596   | 473    | 638    | 515    | 702    | 579    | 808                   | 686    | 915    | 792    |       |        |       |        |      |      | 378    | 255   |      |
|                             | S07                   |  |        | 341   | 197    | 447    | 304    | 553   | 410    | 596    | 453    | 660    | 516    | 766                   | 623    | 872    | 729    | 979   | 835    |       |        |      |      | 441    | 298   |      |
|                             | S08                   |  |        |       |        | 404    | 241    | 511   | 347    | 553    | 390    | 617    | 453    | 723                   | 560    | 832    | 666    | 936   | 772    | 1149  | 985    |      |      | 504    | 340   |      |
|                             | S09                   |  |        |       |        |        |        | 468   | 284    | 511    | 327    | 575    | 390    | 681                   | 497    | 787    | 603    | 894   | 709    | 1106  | 922    | 1319 | 1135 | 567    | 383   |      |
|                             | S10                   |  |        |       |        |        |        |       |        |        |        | 532    | 327    | 638                   | 434    | 745    | 540    | 851   | 646    | 1064  | 859    | 1277 | 1072 | 630    | 425   |      |
|                             | S11                   |  |        |       |        |        |        |       |        |        |        |        |        | 596                   | 371    | 700    | 477    | 809   | 583    | 1021  | 796    | 1234 | 1009 | 693    | 468   |      |
|                             | S12                   |  |        |       |        |        |        |       |        |        |        |        |        |                       |        | 660    | 414    | 766   | 520    | 979   | 733    | 1192 | 946  | 756    | 510   |      |
|                             | ZT240                 | S05  | 533    | 372   | 712    | 551    | 890    | 730   | 1069   | 908    | 1141   | 980    | 1248   | 1087                  | 1426   | 1266   |        |       |        |       |        |      |      |        | 521   | 360  |
|                             |                       | S06  | 461    | 268   | 640    | 447    | 818    | 625   | 997    | 804    | 1068   | 876    | 1176   | 983                   | 1354   | 1162   | 1533   | 1340  |        |       |        |      |      |        | 625   | 433  |
|                             |                       | S07  |        |       | 568    | 343    | 746    | 521   | 925    | 700    | 996    | 771    | 1104   | 879                   | 1282   | 1057   | 1461   | 1236  | 1640   | 1415  |        |      |      |        | 730   | 505  |
|                             |                       | S08  |        |       |        |        | 574    | 417   | 853    | 596    | 924    | 667    | 1032   | 774                   | 1210   | 953    | 1389   | 1132  | 1568   | 1310  | 1925   | 1668 |      |        | 834   | 577  |
| S09                         |                       |  |        |       |        |        |        | 781   | 491    | 852    | 563    | 959    | 670    | 1138                  | 849    | 1317   | 1028   | 1495  | 1206   | 1853  | 1564   | 2210 | 1921 | 938    | 649   |      |
| S10                         |                       |  |        |       |        |        |        |       |        |        |        | 887    | 566    | 1066                  | 745    | 1245   | 923    | 1423  | 1102   | 1781  | 1459   | 2138 | 1817 | 1042   | 721   |      |
| S11                         |                       |  |        |       |        |        |        |       |        |        |        |        |        | 994                   | 640    | 1173   | 819    | 1351  | 998    | 1709  | 1355   | 2066 | 1713 | 1146   | 793   |      |
| S12                         |                       |  |        |       |        |        |        |       |        |        |        |        |        |                       |        | 1101   | 715    | 1279  | 894    | 1637  | 1251   | 1994 | 1608 | 1251   | 865   |      |
| ZT265                       |                       | S05  | 751    | 496   | 1011   | 755    | 1270   | 1015  | 1274   | 1529   | 1633   | 1378   | 1789   | 1533                  | 2048   | 1793   |        |       |        |       |        |      |      |        | 801   | 546  |
|                             |                       | S06  | 642    | 336   | 902    | 595    | 1161   | 854   | 1114   | 1420   | 1524   | 1217   | 1680   | 1373                  | 1939   | 1632   | 2198   | 1892  |        |       |        |      |      |        | 961   | 655  |
|                             |                       | S07  |        |       | 792    | 435    | 1052   | 694   | 954    | 1311   | 1415   | 1057   | 1570   | 1213                  | 1830   | 1472   | 2089   | 1732  | 2349   | 1991  |        |      |      |        | 1121  | 764  |
|                             |                       | S08  |        |       |        |        | 943    | 534   | 793    | 1202   | 1306   | 897    | 1461   | 1053                  | 1721   | 1312   | 1980   | 1571  | 2239   | 1831  | 2758   | 2350 |      |        | 1281  | 837  |
|                             | S09                   |  |        |       |        |        |        | 633   | 1093   | 1197   | 737    | 1352   | 893    | 1612                  | 1152   | 1871   | 1411   | 2130  | 1671   | 2649  | 2189   | 3168 | 2708 | 1442   | 982   |      |
|                             | S10                   |  |        |       |        |        |        |       |        |        |        | 1243   | 732    | 1503                  | 992    | 1762   | 1251   | 2021  | 1510   | 2540  | 2029   | 3059 | 2548 | 1602   | 1091  |      |
|                             | S11                   |  |        |       |        |        |        |       |        |        |        |        |        | 1393                  | 832    | 1653   | 1091   | 1912  | 1350   | 2431  | 1869   | 2950 | 2388 | 1762   | 1200  |      |
|                             | S12                   |  |        |       |        |        |        |       |        |        |        |        |        |                       |        | 1544   | 931    | 1803  | 1190   | 2322  | 1709   | 2840 | 2228 | 1922   | 1309  |      |
|                             | ZT330                 | S05  | 1332   | 1014  | 1783   | 1465   | 2233   | 1916  | 2684   | 2365   | 2864   | 2546   | 3134   | 2816                  | 3585   | 3266   |        |       |        |       |        |      |      |        | 1238  | 920  |
|                             |                       | S06  | 1149   | 767   | 1599   | 1217   | 2049   | 1667  | 2500   | 2118   | 2680   | 2298   | 2950   | 2568                  | 3401   | 3019   | 3851   | 3469  |        |       |        |      |      |        | 1486  | 1104 |
|                             |                       | S07  |        |       | 1415   | 969    | 1865   | 1420  | 2316   | 1870   | 2496   | 2050   | 2766   | 2321                  | 3217   | 2771   | 3667   | 3222  | 4118   | 3672  |        |      |      |        | 1733  | 1288 |
|                             |                       | S08  |        |       |        |        | 1682   | 1172  | 2132   | 1623   | 2312   | 1803   | 2582   | 2073                  | 3033   | 2524   | 3483   | 2974  | 3934   | 3424  | 4837   | 3993 |      |        | 1981  | 1472 |
| S09                         |                       |  |        |       |        |        |        | 1948  | 1375   | 2128   | 1555   | 2398   | 1825   | 2849                  | 2276   | 3299   | 2726   | 3750  | 3177   | 4648  | 3698   |      |      | 2229   | 1656  |      |
| S10                         |                       |  |        |       |        |        |        |       |        |        |        | 2215   | 1578   | 2665                  | 2028   | 3115   | 2479   | 3566  | 2929   | 4458  | 3403   |      |      | 2476   | 1839  |      |
| S11                         |                       |  |        |       |        |        |        |       |        |        |        |        |        | 2481                  | 1781   | 2931   | 2231   | 3382  | 2682   | 4269  | 3107   |      |      | 2724   | 2023  |      |
| S12                         |                       |  |        |       |        |        |        |       |        |        |        |        |        |                       |        | 2748   | 1983   | 3198  | 2434   | 4079  | 2912   |      |      | 2971   | 2207  |      |

双作用力矩输出表 Out put torque list of double acting

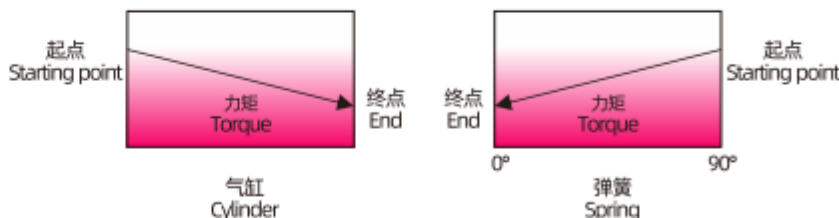
尺寸(毫米)  
size:mm

| 双作用力矩输出(Nm) Double action of torque output table(Nm) |        |      |        |      |        |        |      |        |      |      |      |
|--|--------|------|--------|------|--------|--------|------|--------|------|------|------|
| 气源压力型号<br>Gas source pressure Model                  | 2.5bar | 3bar | 3.5bar | 4bar | 4.2bar | 4.5bar | 5bar | 5.5bar | 6bar | 7bar | 8bar |
| ZT050D   | 8.3    | 10.0 | 11.6   | 13.3 | 14.0   | 15.0   | 16.6 | 18.3   | 19.9 | 23.3 | 26.6 |
| ZT063D   | 14.7   | 17.6 | 20.5   | 23.5 | 24.6   | 26.4   | 29.3 | 32.2   | 35.2 | 41.0 | 46.9 |
| ZT075D   | 29.1   | 34.9 | 40.7   | 46.5 | 48.9   | 52.4   | 58.2 | 64.0   | 69.8 | 81.4 | 93.1 |
| ZT088D   | 45.8   | 54.9 | 64.1   | 73.2 | 76.9   | 82.4   | 91.5 | 101    | 110  | 128  | 146  |
| ZT100D   | 66.5   | 79.8 | 93.1   | 106  | 112    | 120    | 133  | 146    | 160  | 186  | 213  |
| ZT115D   | 107    | 129  | 150    | 172  | 181    | 193    | 215  | 236    | 258  | 301  | 344  |
| ZT125D   | 138    | 166  | 194    | 222  | 233    | 249    | 277  | 305    | 332  | 388  | 443  |
| ZT145D   | 217    | 261  | 304    | 348  | 365    | 391    | 435  | 478    | 522  | 609  | 696  |
| ZT160D   | 284    | 340  | 397    | 454  | 477    | 511    | 567  | 624    | 681  | 794  | 908  |
| ZT180D   | 383    | 459  | 536    | 613  | 643    | 689    | 766  | 842    | 919  | 1072 | 1225 |
| ZT200D   | 532    | 638  | 745    | 851  | 893    | 957    | 1064 | 1170   | 1276 | 1489 | 1702 |
| ZT240D   | 893    | 1072 | 1251   | 1430 | 1501   | 1608   | 1787 | 1966   | 2144 | 2502 | 2859 |
| ZT265D   | 1297   | 1556 | 1815   | 2075 | 2179   | 2334   | 2594 | 2853   | 3112 | 3631 | 4150 |
| ZT330D   | 2252   | 2703 | 3153   | 3604 | 3784   | 4054   | 4504 | 4955   | 5405 | 6306 | -    |

双作用执行器力矩输出图  
Actuator double acting Torque output drawing



单作用执行器力矩输出图  
Single actuator Torque output drawing



奔日系列三段式气动执行器提供了一种0° -45° -90° 或者0° -90° -180°的操作方式。中间位置是由两个辅助活塞移动产生机械制动来实现的。这个中间位置是可调的，如90°行程的执行器能提供20° 30° 50° 75°等中间位置。为了控制松江系列三段式气动执行器的操作，必须通过一整套电磁阀来控制气路：

Benri series three pieces pneumatic actuators supply these operation Ways: 0° - 45° -90° or 0° -90° -180° . the middle position operation by running these two assistant piston and this center position is adjustable for example 90° travel actuator can supply 20° ,30° ,50° ,75° these position. In order to control the operation of ZT series three pieces actuator. We can use a whole set solenoids to control the air way.



位置1(中间位置)

位置1(中间位置):这个位置是在所供气源同时.进入2口和D口, 空气从4口和C口排出来实现的。事实上气源供到D口时迫使辅助活塞向中心移动, 推杆作为机械限位使内部活塞在设定位置停止。

Position 1(center)supply gas source into the port "2" and port "D", and the air exhausted from port "4" and port "C". Actually, when gas source arrived port "D" make the assistant piston moving into the center the machining limit make the inner piston stop on the setting position.



位置2(全开位置)

位置2(全开位置):这个位置是在所供气源分别进入2口和c口(c口可不通气), 空气从4口排出时来实现。这种情况下, 到2口的气源继续输出内部活塞至全开位置。

Position 2(full open):the supply gas moving into port "C" ("C" port also can be not outputting) exhausted from port "4" in this situation the air source sustained outputting, and the make the inner piston to fully position.



位置3(全关位置)

位置3(全关位置):这个位置是在所供气源进入4空气从2口排出来实现的。

Position 3(full closed), gas source into the port "4", and air exhausted from the port "2".

### 行程限位调节 Travel limited adjusting

全开、全关位置调节, 关位置和开位置通过2只调节螺栓, 能准确控制执行器从-5°到+5°对0° -90°行程位置进行调节, 只要左旋或右旋调节螺栓, 并在适合位置, 锁紧螺母。

Used two adjusting bolt we can operate the full open/full closed position and closed/open position, it can control the actuator from -5° to +5° and 0° -90° make the regulation in travel position you can just need to run the adjust bolt in submit position. Then locked nut.

### 全程位置调节 Whole travel limit adjusting

ZT型系列气动执行器中特殊设计0°-90°, 0°-120°, 0°-180°范围内任何角度可以调节, 通过端盖和特制螺栓来设定。

This series production owns special design, so when you use it, you can regulate any angle during range: 0° -90°, 0° -120°, 0° -180° and used end cover and special bolt to setting it.

### 型号编制说明 Explanation of the mode formulation

|                                 |   |                           |   |             |   |                            |   |                          |   |                          |   |                                  |   |                                 |
|---------------------------------|---|---------------------------|---|-------------|---|----------------------------|---|--------------------------|---|--------------------------|---|----------------------------------|---|---------------------------------|
| ZT075                           | — | D                         | — | 090         | — | F07                        | — | P22                      | — | 10                       | — | HT                               | — | A                               |
| ↓                               |   | ↓                         |   | ↓           |   | ↓                          |   | ↓                        |   | ↓                        |   | ↓                                |   | ↓                               |
| 型号规格<br>Model<br>specifications |   | 作用方式<br>Mode of<br>action |   | 角度<br>Angle |   | 连接尺寸<br>Connection<br>Size |   | 端孔尺寸<br>End pore<br>size |   | 弹簧数量<br>Spring<br>Amount |   | 操作温度<br>Operation<br>Temperature |   | 防腐等级<br>Anti-corrosion<br>level |

性能参数 performance parameter

| 型号规格<br>Model<br>specifications | 作用方式<br>Mode of action                               | 旋转角度<br>Rotation angle                      | 连接尺寸<br>Connection<br>Size | 端孔尺寸<br>End pore<br>size                         | 弹簧数量<br>Spring Amount   | 操作温度<br>Operation<br>Temperature  | 防腐等级<br>Anti-corrosion<br>Level       |   |
|---------------------------------|--|---|----------------------------|--|---|---|---------------------------------------|---|
|                                 |  |   |                            |  |   |   | A                                     | B   |
| ZT050                           |  |   | F04                        |  |   |   | A                                     | B   |
| ZT063                           |  | 三段式<br>气动执行器                                | F05                        |  |   |   |                                       |   |
| ZT075                           | D=双作用<br>顺时针关标准型                                     | 旋转角度:<br>0°-45°-90°                         | F05/F07                    |  |   |   | 缸体<br>Cylinder                        | 缸体<br>Cylinder  |
| ZT088                           | DO=双作用<br>逆时针开                                       | 0°-90°-180°                                 | F05/F07                    | P=八角<br>D=四角                                     | 仅指弹簧<br>复单作用  | DT=高温氟橡胶<br>密封圈-15°-150°<br>LT=低温硅橡胶<br>密封圈-40°-80°<br>HT=丁腈橡胶密封圈<br>为-20°-80°标准型,<br>型号中可省略  | 硬质阳<br>极氧化<br>Hard<br>coat<br>anodize | 特氟隆<br>涂层+<br>阳极氧<br>化<br>Teflon<br>coat+<br>Anode<br>Oxidation |
| ZT100                           | S=弹簧复位<br>顺时针关标准型                                    | 标准气动执行器<br>旋转角度<br>0°-90°                   | F05/F07                    | J=键槽<br>见第6页连接<br>尺寸                             | 执行器两<br>端5-12根弹簧<br>可选  |   |                                       |   |
| ZT115                           | SO=弹簧复位<br>弹簧开                                       | 0°-120°<br>0°-180°                          | F07/F10                    |  | Only spring<br>resetsigle<br>action the .                       |   |                                       |   |
| ZT125                           | D=double action<br>clockwise to close<br>(genetally) | Three pieces<br>body-pneumatic<br>actuators | F07/F10                    | P=Octagonal<br>D=Dimetric                        | action the .<br>two sides5-12<br>pieces spring<br>can be choice | DT-temperature<br>fluoroelastomers<br>Seals-15°-150°<br>LT=low<br>temperature<br>silicone rubber<br>Seals-40°-80°<br>HT=NBR seals ring<br>forthe -20°-80°<br>Thestandard mode,<br>midel can be<br>omitted | 端盖<br>End<br>cover                    | 端盖<br>End<br>cover  |
| ZT145                           | Do=Double action<br>inverter hour to open            | Rotation angle:<br>0°-45°-. 90°             | E10/E12                    | J=Key groove<br>See page6<br>connections<br>size |   |   | 聚酯<br>深层<br>Polyester<br>Deep         | 特氟隆<br>涂层<br>Teflon<br>coat                                     |
| ZT160                           | S=Spring return<br>Clockwise to close<br>(generally) | 0°-90°-180°                                 | F10/F12                    |  |   |   |                                       |   |
| ZT160                           | So=spring return<br>spring to open                   | Standard pne<br>umatic actuator             | F10/F12                    |  |   |   |                                       |   |
| ZT180                           |  | Rotation<br>angle:<br>0°-90°                | F12                        |  |   |   |                                       |   |
| ZT200                           |  | 0°-120°<br>0°-180°                          | F14                        |  |   |   |                                       |   |
| ZT240                           |  |   | F16                        |  |   |   |                                       |   |
| ZT265                           |  |   | F16                        |  |   |   | 轴<br>Shalt                            | 轴<br>Shalt  |