Ekoflux PI系列

压力独立控制阀PICV

Pressure independent control valve PICV

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压力独立控制阀PICV / *Pressure independent control valve PICV*

EKOFLUX.PI平衡阀控制和调节流向制冷和供暖设备的部分流量。适用于集成在楼宇自动化管理系统中。

在负载变化的情况下，补偿压力变化并保持系统性能恒定，可确保改善环境舒适度并降低泵送成本。

该阀门可配备用于比例((0)2-10V；4-20mA可根据要求提供)或三点控制的执行器；也可以配备手动操作装置。

调节特性是线性的；可根据要求提供等百分比特性版本。

阀门设计包括避免在水锤情况下损坏内部组件和执行器翅片外壳的特殊功能。阀门还执行：

- 隔断（可能存在残留泄露）
- 流量、温度和压力测量（通过可用测试点的平均值）

Balancing valve EKOFLUX.PI controls and regulates the flow to appliances or sections of cooling and heating plants. It is suitable to be integrated in automated building management system.

Compensating the pressure variations and keeping constant the system performace in case of load changes, assures an improvement of enviromantal comfort as well as a pumping cost reduction.

The valve could be equipped with an actuator for proportional ((0)2-10V, 4-20mA available on request) or 3-points control; manually operated version can be supplied as well.

The regulation characteristic is linear; avaialble on request the equipercentage characterized version.

Valve design includes specific features to avoid damages to the internal component and the actuator fin case of water hammers. Valve performs also:

- *Shut-off (residual leakage possible)*
- *Flow rate, temperature and pressure measurement (by the mean of the available test points)*

认证 / *Certifications*

符合2014-68-EU PED (ex 97/23/CE) 标准

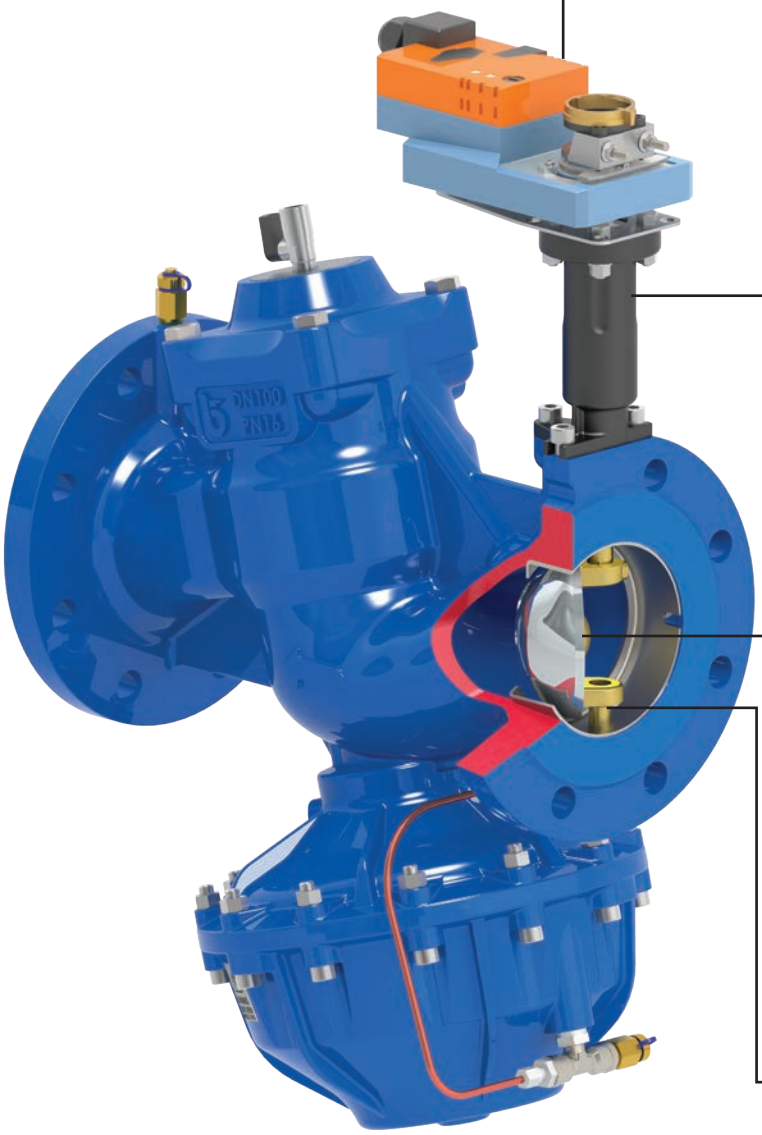
结构及检测标准：

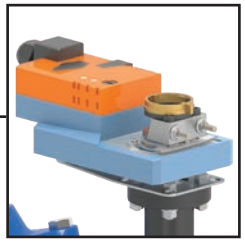
结构长标准：EN 558-1 ISO 5752
法兰标准：EN 1092 ISO 7005
设计标准：EN12516
标识标准：EN19
检测标准：100%检测

In conformity with directive 2014/68/EU PED (ex 97/23/CE)

***Design and testing standards** (correspondences):*

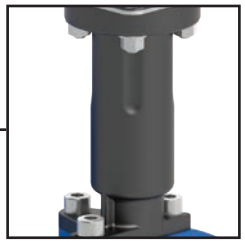
Face-to-face: EN 558-1 ISO 5752
Flanges: EN 1092 ISO 7005
Design: EN12516
Marking: EN19
Testing: 100% testing





电动执行器或手动操作式齿轮箱，具有可调节的流量读数和位置锁。

Electric actuator or gear box for manual actuation, with regulated flow rate reading and position lock

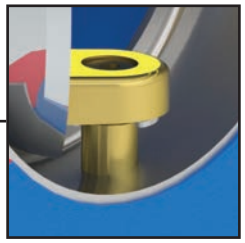


设计包括避免在水锤情况下损坏内部部件和执行器的特殊功能。

Design includes specific features to avoid damages to the internal component and the actuator in case of water hammers.

阀瓣形状决定了调节特性：线性（标准）或等百分比（根据要求）。

The disc shape determines the regulation characteristic: linear (standard) or equipercentage (on request).



该阀门的流量调节范围较宽。流量调节是通过一个可确保低工作扭矩和精确调节的三偏心蝶阀来实现的。

Valve can regulate a wide flow rate range. The flow regulation is done by the mean of a triple offset butterfly valve that assure low operating torque and accurate regulation.

压力独立控制阀PICV / *Pressure independent control valve PICV*

带执行器 / *With actuator*

EKOFLUX.PI

阀体：EN GJL 250
密封：EPDM
工作温度：-10 + 120°C

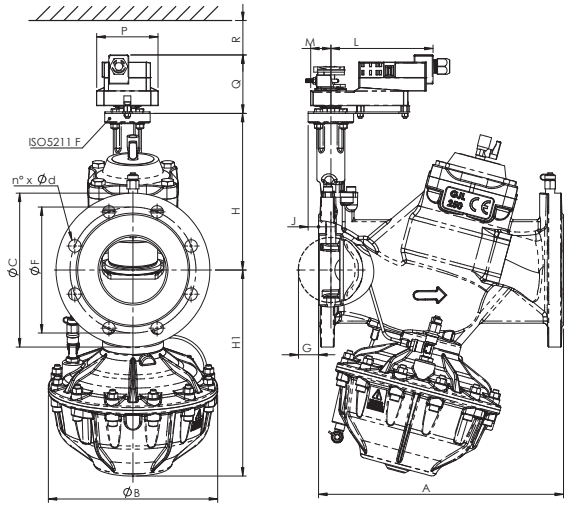
Body: cast iron
Seal: EPDM
Temp: -10 +120°C

带齿轮箱 / *With gear box*

EKOFLUX.PI

阀体：EN GJL 250
密封：EPDM
工作温度：-10 + 120°C

Body: cast iron
Seal: EPDM
Temp: -10 +120°C

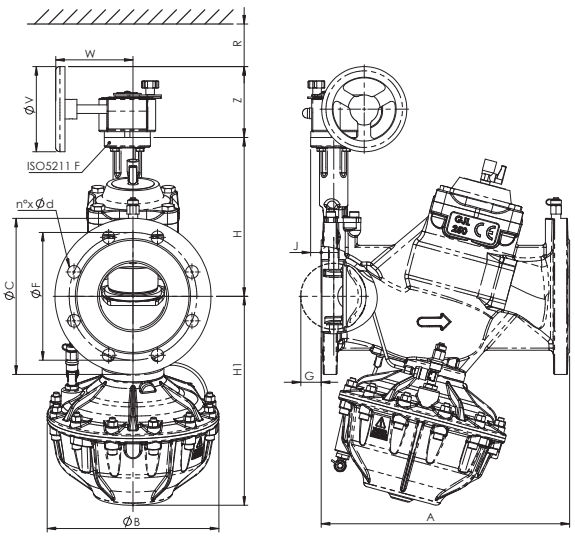


带执行器的阀门尺寸 (mm) / *Dimension with actuator (mm)*

DN		65	80	100	125	150
A	EN 558-1/1	290	310	350	400	480
H		205	214	224	272	301
H1		217	281	295	317	341
B		200	242	242	242	242
S		14,8	14,8	14,8	14,8	14,8
J		15	15	15	28	28
G		17	25	30	46	56
法兰 Flanges	EN 1092	PN10/16	PN10/16	PN10/16	PN10/16	PN10/16
C		185	200	220	250	285
F		145	160	180	210	240
n x D		4 x 18	8 x 18	8 x 18	8 x 18	8 x 22
L		160	160	160	160	160
M		35	35	35	35	35
P		100	100	100	100	100
Q		84	84	84	84	84
R		>100	>100	>100	>100	>100
ISO 5211		F05	F05	F05	F07	F07

重量 (kg) / *Weight (kg)*

kg	带执行器 / *with actuator*	23,3	29,8	35,3	48,1	77,1

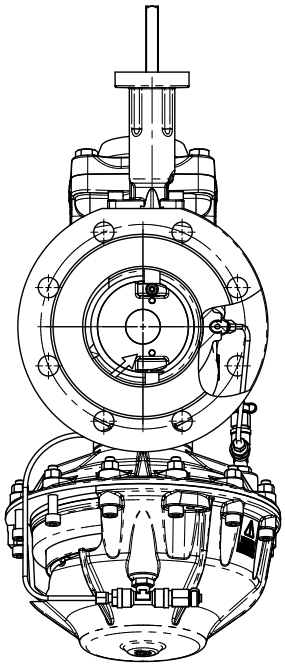


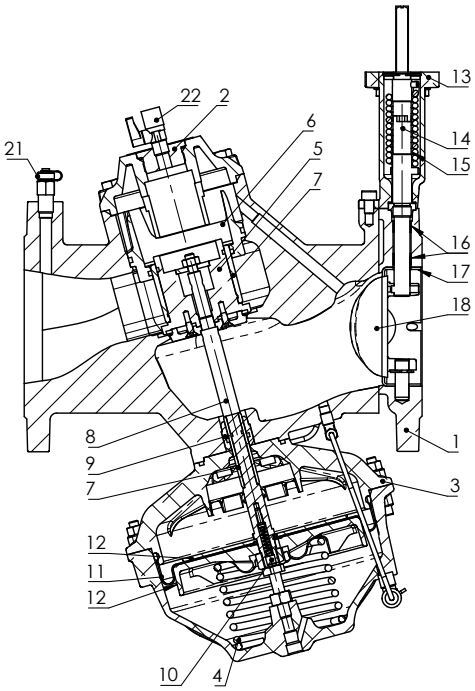
带齿轮箱的阀门尺寸 (mm) / *Dimension with gear box (mm)*

DN		65	80	100	125	150
A	EN 558-1/1	290	310	350	400	480
H		205	214	224	272	301
H1		217	281	295	317	341
B		200	242	242	242	242
S		14,8	14,8	14,8	14,8	14,8
J		15	15	15	28	28
G		17	25	30	46	56
法兰 Flanges	EN 1092	PN10/16	PN10/16	PN10/16	PN10/16	PN10/16
C		185	200	220	250	285
F		145	160	180	210	240
n x D		4 x 18	8 x 18	8 x 18	8 x 18	8 x 22
W		98	99	101	103	105
Z		100	100	100	100	100
V		120	120	120	120	120
R		>100	>100	>100	>100	>100
ISO 5211		F05	F05	F05	F07	F07

重量 (kg) / *Weight (kg)*

kg	带齿轮箱 / *with gear box*	23,0	29,5	35	47,8	76,8





材质 / *Material*

	组件 / *Component*	材质 / Material
1	阀体 / *Body*	铸铁 / Cast iron EN GJL 250
2	环形螺母 / *Ring nut*	黄铜 / Brass CW617N
3	弹簧座 / *Spring housing*	铝 /Aluminum G-AlSi4.5MnMg*
4	弹簧 / *Spring*	不锈钢A2 / Stainless steel A2
5	阀板 / *Shutter*	黄铜 / Brass CW617N
6	阀板滑轨 / *Shutter guide*	铝 /Aluminum G-AlSi4.5MnMg*
7	轴套 / *Bushing*	*R-PTFE*
8	阀杆 / *Stem*	黄铜 / Brass CW617N
9	阀杆滑轨 / *Stem guide*	黄铜 / Brass CW617N
10	超压释放 / *Overpressure relief*	黄铜 / Brass CW617N
11	隔膜 / *Membrane*	EPDM
12	隔膜支承板 / *Membrane bearing plates*	铝 /Aluminum G-AlSi4.5MnMg*+不锈钢AISI 304 / Alluminio /Aluminum G-AlSi4.5MnMg*+ Stainless seel AISI 304
13	驱动装置支架 / *Drive device stand*	铝 /Aluminum G-AlSi4.5MnMg*
14	阀杆 / *Stem*	黄铜 / Brass CW617N
15	转矩弹簧 / *Overtorque preventing spring*	弹簧钢 / Spring steel 2FD
16	轴套 / *Bushing*	不锈钢 + PTFE / Stainles steel + PTFE
17	阀板座 / *Disc seat*	不锈钢 / Stainles steel AISI 304
18	调整型阀瓣 / *Regulating disc DN100* 调整型阀瓣 / *Regulating disc*	黄铜CW617N + PRFV聚酯 / Brass CW617N + GRP polyester 黄铜CW617N / Brass CW617N
19	O型圈和密封 / *O-ring and seals*	EPDM
20	螺栓和螺母 / *Bolts and nuts*	不锈钢 / Stainless steel A2
21	测试堵头 / *Test plug*	镀镍黄铜 / Brass, Nickel plated
22	排气阀 / *Air purge valve*	镀镍黄铜 / Brass, Nickel plated
23	接头 / *Fittings*	镀镍黄铜 / *Brass, Nickel plated*
24	铜管 / *Capillary pipe*	铜 / Copper

*内外环氧树脂喷涂 / Epoxy coated inside-outside

压力独立控制阀PICV / *Pressure independent control valve PICV*

最大工作压力 / *Maximum pressure*

介质 / *Fluids*		
符合VDI 2035的水，水-乙二醇混合液（最多50%乙醇） *Water, water-glycol mix (MAX 50% glycol) according to VDI 2035*	静压力16 bar *Static pressure 16 bar*	压差 4bar *Differential Pressure 4bar*

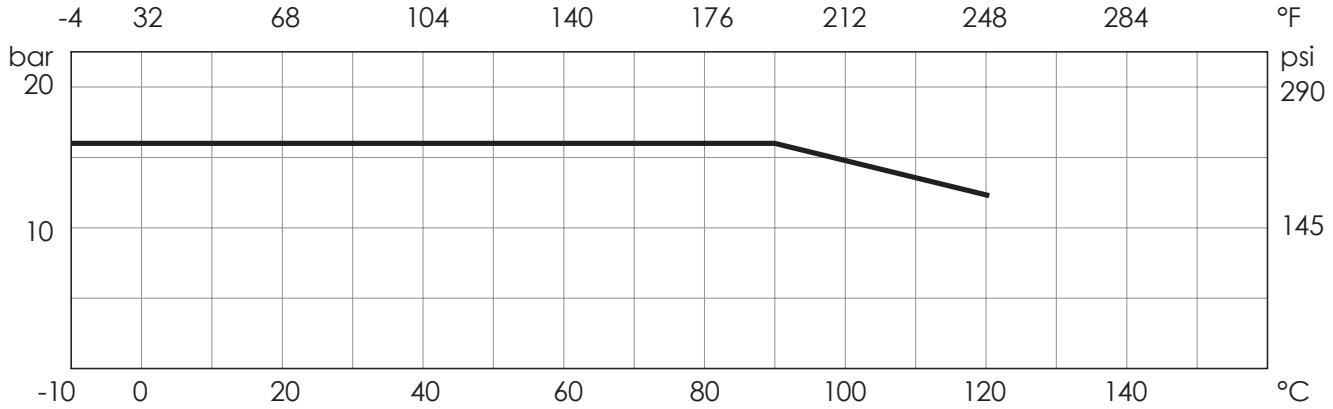
不适用于气体：请勿与油和碳氢化合物以及危险、腐蚀性和磨蚀性流体一起使用。
Not suitable for gas. Do not use with oils and hydrocarbons and with hazardous, corrosive and abrasive fluids.

工作温度 / *Temperature (°C)*

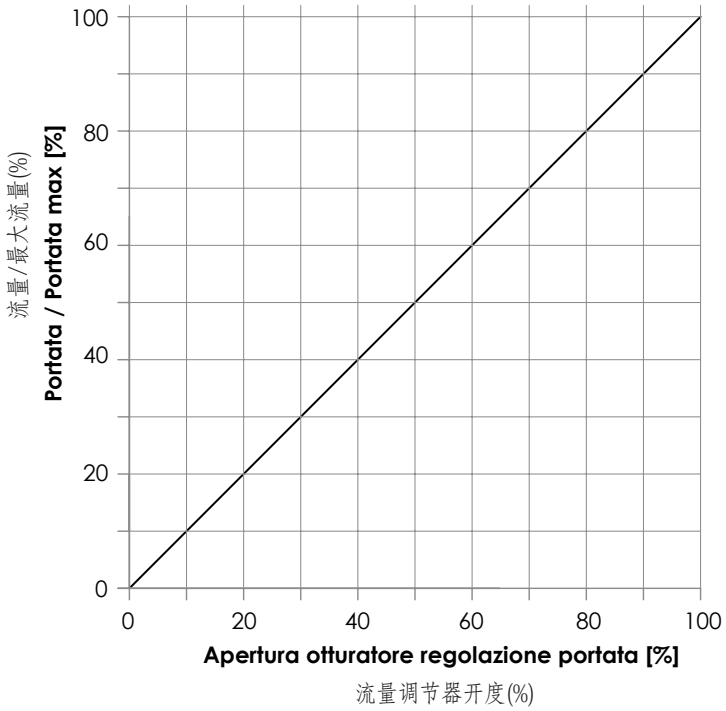
温度 / Temperature	最低 / Min	最高 / Min
	-10	120

注意：温度上升时最大工作压力会有所下降；详情请参考压力温度曲线。
NB: the maximum working pressure decreases while temperature increases, please refer to "pressure/temperature" chart

压力温度曲线 - *Pressure/temperature chart*



控制特性（线性）/ *Control characteristic (linear)*



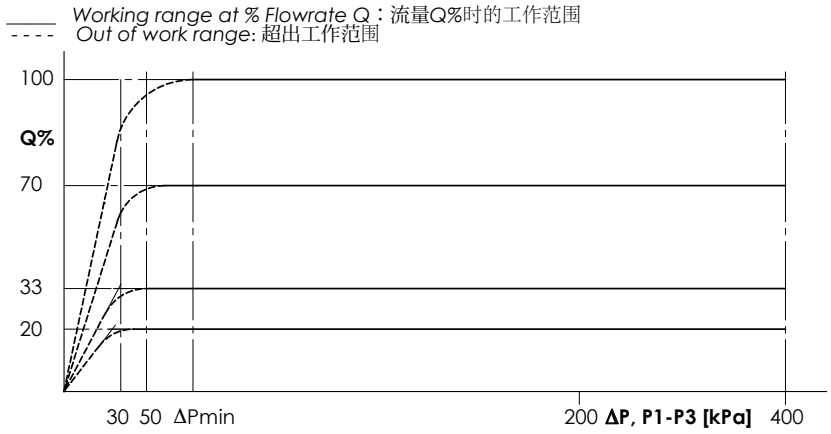
工作范围 / *Working range*

型号 / CODE	DN	建议流量范围 *Suggested flow rate range*	Δp max kPa	Kvs	(1) (2)	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
						1.5	2	3	4	5	6	7	8	9	10
EKOLFUX.PI06516	DN 65	6.2-26 m3/h	400	66,3	Portate m3/h Δp min kPa	4,4 30	6.2 30	8,6 30	11,6 30	14.9 30	17,4 30	20.2 50	22,3 50	24 50	26 50
EKOLFUX.PI08016	DN 80	7,6-36 m3/h	400	96,6	Portate m3/h Δp min kPa	4.7 30	7,6 30	11,4 30	15,2 30	19 30	23 30	26,6 30	30,4 50	32,7 50	36 50
EKOLFUX.PI10016	DN 100	15,8-82,5 m3/h	400	278	Portate m3/h Δp min kPa	11,4 30	15.8 30	23.2 30	30.7 30	38,2 30	47.9 30	58.3 50	68.3 50	75,2 70	82.5 70
EKOLFUX.PI12516	DN 125	20-125 m3/h	400	332,1	Portate m3/h Δp min kPa	13,1 30	19.9 30	31.7 30	43.3 30	55 30	70.6 50	83,3 50	100 60	112,5 70	125 70
EKOLFUX.PI15016	DN 150	27-160 m3/h	400	427,5	Portate m3/h Δp min kPa	19 30	26.8 30	44.7 30	63.9 30	78.6 30	94.2 30	113.3 50	132.1 60	148.9 70	160 70

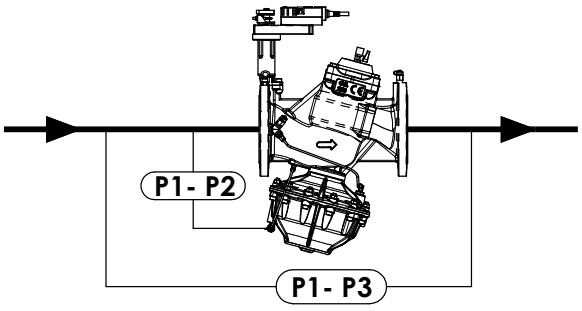
(1): Δpmin平均值 / *Δpmax - Average value within the Δpmin-Δpmax range*
(2):对于中间流量值，可以通过最接近列出值的线性插值计算开度% / *For intermediate flow values the % position can be calcualted by linear interpolation from the closest listed values.*

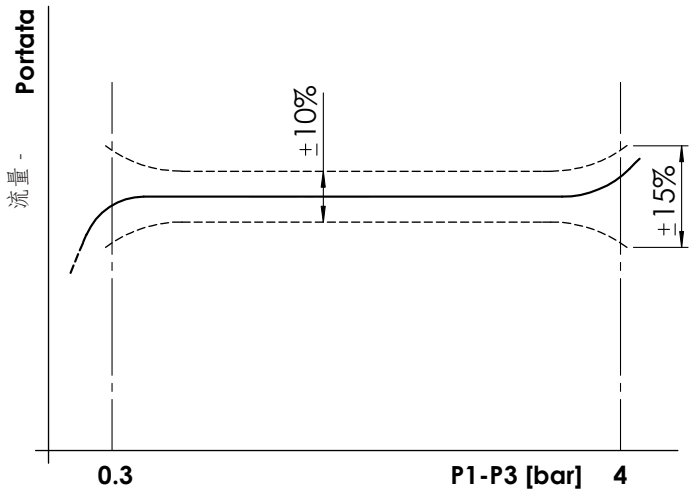
流量表 / *Flowrate chart*

阀门可确保设定流量在差压范围P1-P3内保持恒定（见下图）：正常运行所需的差压最小值ΔPmin随着流量的增加而增大，如表和下图所示。对于取决于阀门尺寸和流量的ΔPmin，请参见“工作范围”表。
The valve ensures that the set flowrate is kept constat within the differential pressure range P1-P3 (see diagram below): the minimum value ΔPmin of this differential, required for proper operation, grows as the flow rate increases as shown in the table and in the following figure. For Δp min valves according to valve to valve size and flow see "working range" table.



P1-P3时标称流量的误差百分比 / *Percentage error on nominal flow rate at P1-P3*





Ekoflux PI系列使用说明及建议

Instructions and Recommendations for series Ekoflux PI

建议

阀门进行任何维修或拆卸前，请确保：管道中的流体已冷却，管路中的压力已卸去，有毒、易燃、有腐蚀性的流体已排净。50°C以上及0°C以下的流体可能会对人体造成伤害。
调试、停运及维护工作必须由受过培训的员工按照说明及当地安全法规操作。

RECOMMENDATIONS

Before carrying out maintenance or dismantling the valve: ensure that the pipes, valves and fluids have cooled down, that the pressure has decreased and that the lines and pipes have been drained in case of toxic, corrosive, inflammable and caustic liquids. Temperatures above 50°C and below 0°C might cause damage to people.
Commissioning, decommissioning and maintenance interventions must be carried out by trained staff, taking account of instructions and local safety regulations.

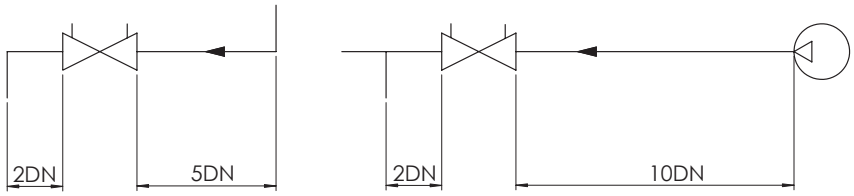
警告。下阀体内装有压缩弹簧。不得打开。

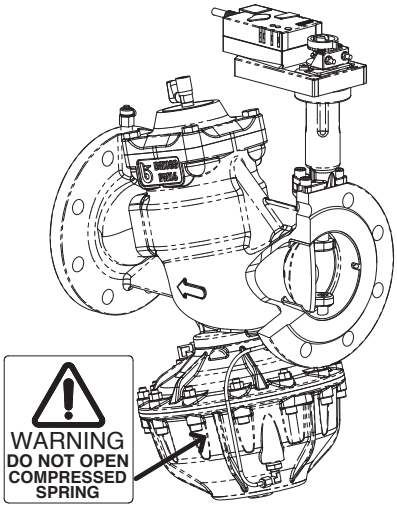
WARNING. The lower valve's body contains compressed spings. DO NOT OPEN.

注意。阀门在未配备电动执行器或手动操作装置时，请勿启动系统。如果没有这些设备，阀门就不能正常工作。系统运行时，请勿卸下电动执行器或手动操作装置。如果需要拆卸和更换电动执行器或手动操作装置，必须在将阀门设置为完全关闭位置后才能进行。**不遵守该规定可能导致阀门损坏。**

Attention. Do not start up the system with valve not equipped with electric actuator or manual operation device. *Valve is not designet to work properly without these devices. Do not remove electric actuator or manual operation device when system is working. If required, removing and replacement of electric actuator or manual operation device* ***is allowed only after valve has been set in fully closed position. Failure to comply with this prescription can lead to valve damage.***

距离以下组件 / *DISTANCE FROM*	上游 / *UPSTREAM*	下游 / *DOWNSTREAM*
泵 / *Pump*	10 x DN	-
弯头等 / *Bends, T-joints*	5 x DN	2 x DN





储存

- 放置于干燥无尘的环境中，防止其被损伤。
- 小心装卸，避免磕碰和地面潮湿，尤其是脆弱的部件（如手轮、测试堵头）。
- 运输时要有坚实的包装。

STORING

- Keep in a dry place, protect form damages and dust.
- Handle with care, avoid hit and floor dampness, especially on the weaker part (handwheel, test plugs).
- Use suitable, sturdy packing for transport.

安装

- 请勿用手轮提起阀门。
- 在安装前请检查：
- 管路已排空
- 阀门清洁且无损坏
- 法兰密封面清洁且无损坏
- 此类阀门为单向阀，请按阀体上箭头提示的介质流向安装。
- 使用合适的垫圈，安装时确保其位置对正。

INSTALLATION

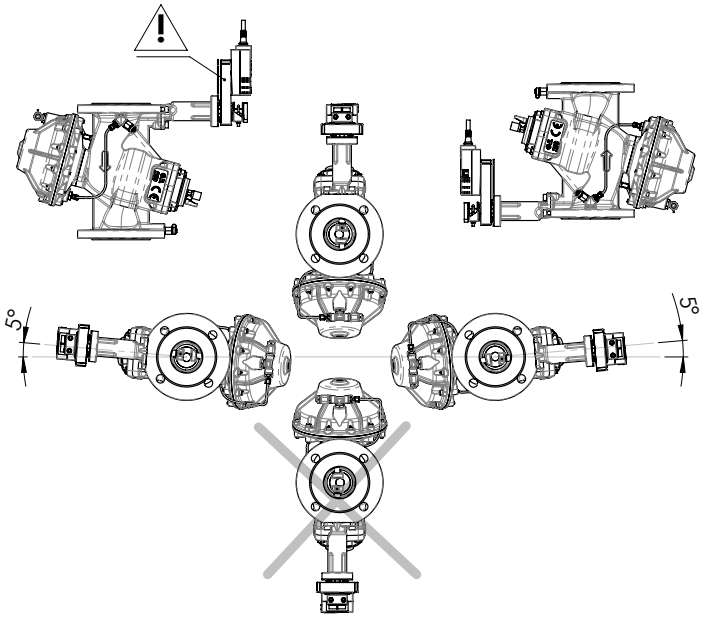
- Do not lift the valve by the hand wheel. - Before installation, check that:
- The piping is clean
- The valve is clean and undamaged
- The flange sealing surfaces are clean and undamaged
- The valve is unidirectional. Respect the flow direction indicated by the arrow on the body.
- Use suitable gaskets and check that they are correctly centred.

- 不能将法兰与阀门安装好之后，再去将法兰与管路进行焊接。
- 水锤作用可能会导致管路损坏和破裂。倾斜、扭转或阀门管路中心线与管路未对准会使阀门受力。建议安装弹性接头等来尽量减少管路的震荡。
- 交叉拧紧螺栓。

- Do not weld the flanges to the piping after installing the valve.
- Water hammers might cause damage and ruptures. Avoid inclination, twisting and misalignments of the piping which may subject the installed valve to excessive stresses. It is recommended that elastic joints be used in order to reduce such effects as much as possible.
- Tighten screws crosswise

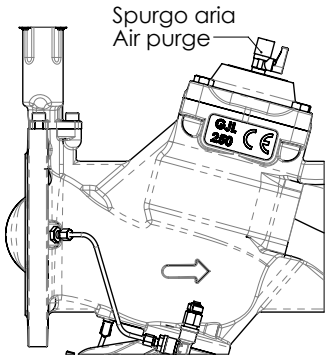
- 安装位置

- Installation position



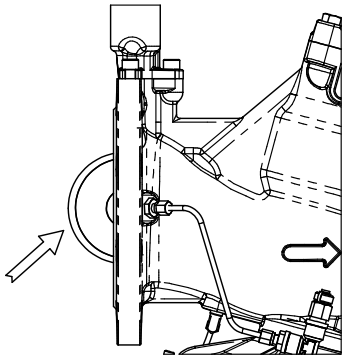
- 使用释放旋塞排出阀盖中的空气。

- Use drain cock to purge air from valve bonnet.



使用适合阀门DN、PN和工况的垫片。我们建议使用符合以下标准的垫片：EN DIN 1514-1 (ex DIN 2690)，适用于符合以下标准的凸面PN16法兰标准：EN 1092-ISO 7005-DIN2526 form C-UNI 2229。
注意垫片的放置：垫片不得干扰介质流动。

Use gasket suitable for valve dn, pn, and working conditions. We recommend to use gasket conforming to standards: EN DIN 1514-1 (former DIN 2690), suitable for raised face PN16 flanges according to: EN 1092 - ISO 7005 - DIN 2526 form C - UNI 2229.
Pay attention to gasket placement: gasket must not disturb the flow.

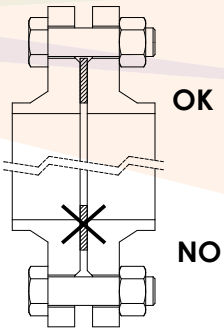


在打开位置时，阀瓣从法兰面伸出：在阀门安装和拆卸过程中，确保阀瓣处于完全关闭位置。

In open position, the disc stick out from the flange plane: during valve installation and disassembly make sure that the the disc is in the COMPLETE CLOSING position.

流量测量 / *FLOW RATE MEASUREMENT*

开度 [%] *Opening position [%]*	Kv_{1-2} [mc/h]				
	DN 65	DN 80	DN 100	DN 125	DN 150
15	9.7	10,7	26,4	26,5	38,1
20	13,7	17,3	37.4	41,1	55,2
30	19,2	26,6	57,9	67,3	96,7
40	25.9	36,7	79,3	94,5	142,6
50	34,7	45,9	102,4	127,1	189,2
60	42,6	57,8	136,1	166,0	231,3
70	48,8	68,6	171,8	203,8	275,1
80	54,7	78,8	215,6	259,6	335,6
90	61,2	89,2	244,1	300,2	386,7
100	66,3	96,6	278,0	332,1	427,5

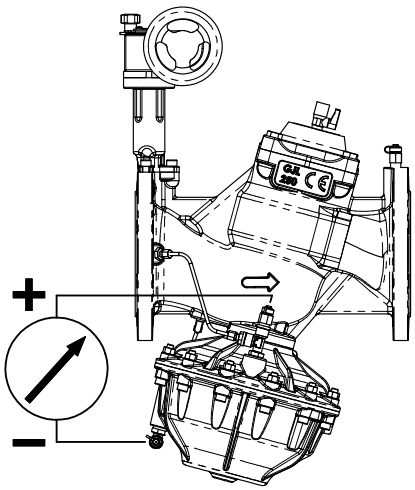


将压差计连接到所示测试点，并测量压差DP_{1-2}.
通过以下公式计算流量：

Connect a differential pressur gauge to the test point shown, and measure the differential pressure DP_{1-2}.

Calculate the flow rate by the mean of the formula:

$$Q = Kv_{1-2} * \sqrt{DP_{1-2}}$$



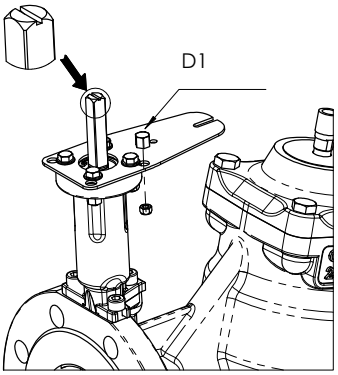
电动执行器装配

使用随附的螺钉和螺母装配连接板P。将垫片D1固定在连接板P上。阀门必须处于关闭位置（如图1A所示，阀杆顶部的切口）

ELECTRIC ACTUATOR ASSEMBLY

Assemble plate P with provided screw and nuts. Fix spacer D1 on plate P. Valve MUST be in close position (notch on the stem top as in picture 1A)

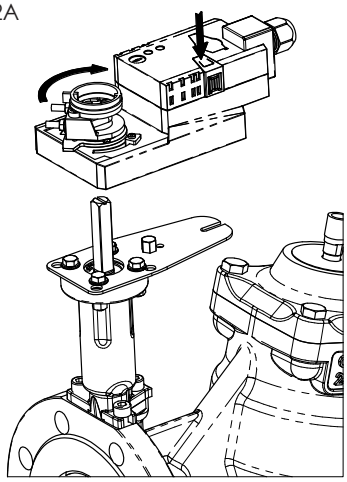
图1A/FIG. 1A

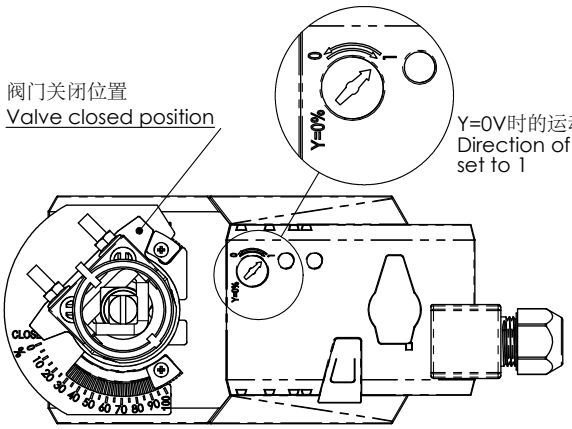


按下按钮并手动顺时针旋转直至停止。
检查运动方向开关的设置。

Push the button and rotate manually clockwise till stop.
Check the setting of motion direction switch.

图2A/FIG. 2A

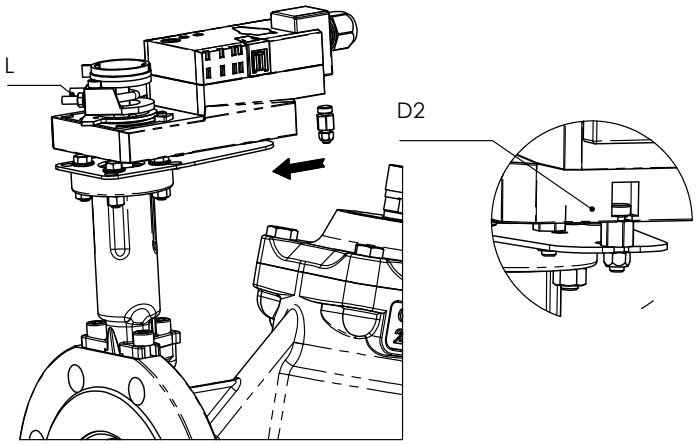




将执行器倾斜到垫片D1上。将垫片D2插入连接板的凹槽和执行器的凹槽中；先不要拧紧螺母。
交替拧紧锁定装置L的螺母，将执行器锁定在阀杆上。
拧紧螺母并将垫片D2固定到连接板上。

Lean the actuator onto spacer D1. Insert spacer D2 in plate slot and in the actuator slot; do not tighten the nut yet.
Lock the actuator onto the stem by acting alternatively on nuts of locking device L.
Tighten nut and fix spacer D2 to the plate.

图3A/FIG. 3A



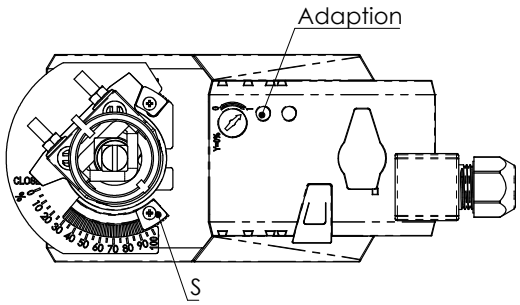
预设表

通过操作电动执行器的机械止动块，可以进行阀门预设。流量与开度%的对应关系请参见“工作范围”表。
松开螺钉S并将机械止动块移动到所需位置，请参考刻度尺。
按“自适应”按钮启动自动行程检测（执行器执行打开/关闭行程）。然后，(0)2-10V信号沿规定行程按比例重新分配。
注：预设从行程的30%开始。

PRESET

Valve preset is possible by acting the mechanical stop of the electric actuator. See “Working range” table for the correspondence between flow rate and % opening position.
Lose the screw S and move the mechanical stop to required position, refer to the graduate scale.
Press the “Adaption” button to start the auto stroke detection (actuator performs an open/close stroke). The (0)2-10V signal is then redistributed proportionally along the limited stroke.
NB: preset starts from the 30% of the stroke.

图4A/FIG. 4A



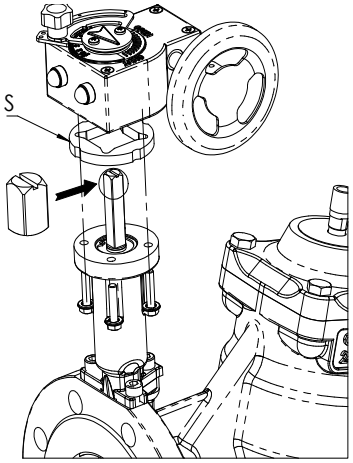
手动执行（齿轮箱）装配

阀门必须处于关闭位置（如图所示，阀杆顶部的切口）。确保齿轮箱也处于关闭位置（关闭）。用所附的螺钉装配齿轮箱和垫片S。如果齿轮箱位置需要调整，请参见图3B。

MANUAL ACTUATION (GEAR BOX) ASSEMBLY

Valve must in close position (notch on the stem top as in picture). Assure gear box is in close position too (SHUT). Assemble gear box and spacer S with provided screw. If the gear box position requires adjustment see fig. 3B.

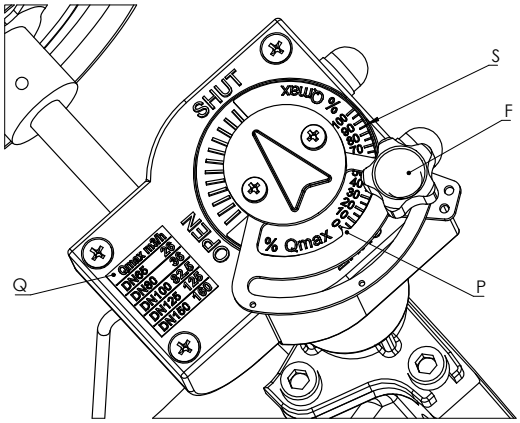
图1B/FIG. 1B



预设。计算所需流量占表Qmax中所示最大流量的百分比。松开停止旋钮F，转动手轮并移动指示器P以达到计算出的%值。锁定停止旋钮F。

Preset. Calculate the percentage of the desired flow rate on maximum flowrate shown in table Qmax. Unlock the stop knob F, turn the handwheel and move the indicator P to meet the calculated % value. Lock the stop knob F.

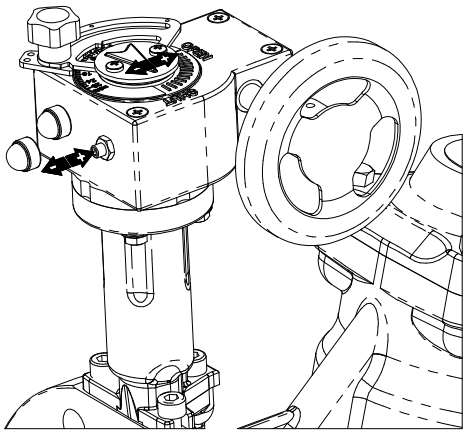
图2B/FIG. 2B



齿轮箱关闭位置调整（关闭）。取下阀盖，松开六角螺母。拧紧/松开内六角螺钉以调整关闭位置。完成后拧紧六角螺母并将阀盖放回原位。

Gear box adjustement for closing position (SHUT). Take out the cap, loosen the hex nut. Screw/unscrew the socket head screw to adjust the closing position. Tighten the hex nut once done and set the cap back.

图3B/FIG. 3B



处置

对于输送危险介质（有毒、腐蚀性……）的阀门，如果阀门中可能残留残余物，请采取适当的安全预防措施并进行必要的清洁。负责人员必须经过培训并配备适当的防护装置。
在处置之前，请按照不同材料拆卸阀门并分离组件。请参考产品资料获取更多信息。根据当地和现行有效的法规并在考虑环境的情况下，将分类的物料送交回收利用（例如金属材料）或进行处置。

DISPOSAL

For valve operating with hazardous media (toxic, corrosive…) , if there is a possibility of residue remaining in the valve, take due safety precaution and carry out required cleaning operation. Personnel in charge must be trained and equipped with appropriate protection devices.
Prior to disposal, disassemble the valve and separate the component according to various materials. Please refer to product literature for more information. Forward sorted material to recycling (e.g. metallic materials) or disposal, according to local and currently valid legislation and under consideration of the environment.

耐腐蚀性

即使经过喷漆或镀锌保护，钢制零部件和配件也不同于不锈钢，如果在室外环境、高湿度/冷凝条件或腐蚀性环境中使用，则抗氧化保护持续时间是有限的。

CORROSION RESISTANCE

Components and accessories made in steel different from stainless steel, even if protected by painting or galvanizing, if used in outdoor environments, in conditions of high humidity / condensation or in aggressive environments, may exhibit a limited protection span against oxidation.