

# EXPANDING PLUG VALVES

Forced seal plug valves

## 撑开式旋塞阀

(强制密封旋塞阀)



**CCFV<sup>®</sup>**

成都乘风阀门有限责任公司  
Chengdu Chengfeng Valve Co., Ltd

## 部分资质 Partial qualifications



特种设备制造许可证  
(压力管道元件制造)

职业健康安全管理体系

质量管理体系认证证书

环境管理体系认证证书



API 6D证书



API 600证书



API 602证书

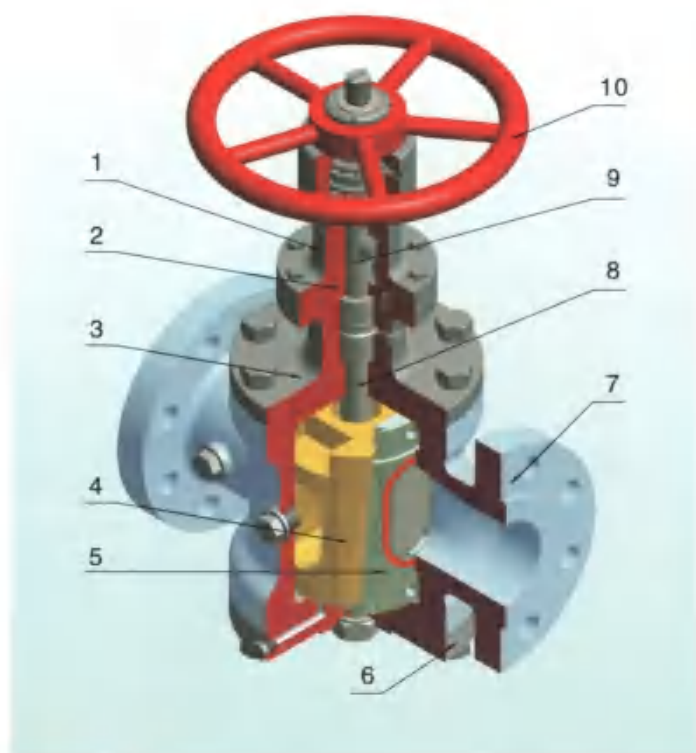




## 撑开式旋塞阀 Expanding Plug Valve

**撑开式旋塞阀**（又叫将军阀、双关双断阀、双密封导轨阀）是一种对密封面具有保护作用的双面强制密封阀门，其阀芯由带有斜面的燕尾导轨的楔塞与两阀瓣组成。本旋塞阀采用特殊的轨道控制技术，阀瓣旋转时密封面间不接触，在密封面接触或脱离过程中，阀瓣只撑开而不旋转，密封面采用软硬双重密封，无摩擦、无磨损，双向关断零泄漏，使用寿命长。广泛地应用于：航空煤油、轻质油、天然气、液化气、管道煤气、化工介质等管道上，是作为严格截断介质的理想装置，同时安装在管道上时可实现在两阀中间进行泄漏检查。

The **Expanding Plug Valve** (also known as General Valve, double closing and double cutting -off valve and dual-sealing guideway valve) is a kind of double-side positive sealing valve with the protection effect on the sealing faces. Its valve core is composed of a wedge plug with dovetail guideway and two discs. With special orbit control technology provided, the valve discs can rotate without the sealing faces contacting with each other. During the process of the sealing faces contacting with each other or separating from each other, the valve discs only expand but not rotates. With hard and soft double seal provided, the sealing faces are protected from friction or abrasion, thus ensuring long service life. This kind of valve can cut off the medium from both sides ensuring zero leakage. The expanding plug valves are widely applied to the pipelines for transmitting aviation kerosene, light oil, natural gas, liquefied gas, coal gas, chemical medium and the like, serving as an ideal device for cutting off the medium. The leakage can be checked two valve when the valves are installed on pipelines.



### 结构简图 Structure Sketch

- |        |                 |
|--------|-----------------|
| 1、支架   | Yoke            |
| 2、导轨套  | Guideway Sleeve |
| 3、阀盖   | Bonnet          |
| 4、楔塞   | Wedge Plug      |
| 5、阀瓣   | Disc            |
| 6、端盖   | End Cover       |
| 7、阀体   | Body            |
| 8、阀杆   | Stem            |
| 9、传动丝杆 | Driving Screw   |
| 10、手轮  | Handwheel       |

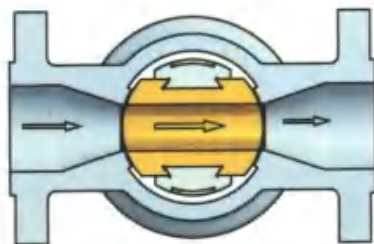
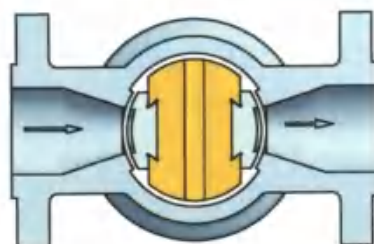
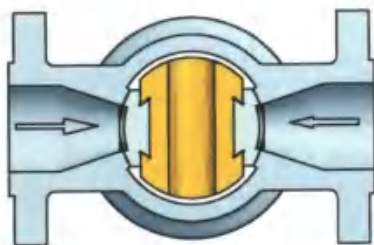
## 工作原理 Operating Principles

### 全闭状态:

楔塞下撑，阀瓣密封面与阀体密封面紧密贴合，介质被完全截断。

### Fully Closed Position:

The discs shall be expanded by the wedge plug when the wedge plug moves downwards, making the sealing faces of the discs and the sealing faces of the body contact with each other tightly. At this stage, the medium is completely cut off.



逆时针旋转手轮，楔塞上升并带动阀瓣缩回，阀瓣密封面与阀体密封面逐渐脱离。

Rotate the valve handwheel anti-clockwise so that the wedge plug rises and lifts the discs up, sequentially, the sealing faces of the discs gradually separate from the sealing faces of the valve body.



继续旋转手轮，楔塞通过燕尾槽连接带动阀瓣向开启方向旋转。

Continue to rotate the handwheel so that the wedge plug drives the discs to rotate in the opening direction by the dovetail shaped groove.



### 全开状态:

楔塞旋转到90°，阀体通道与楔塞通道重合，阀门全开，介质无阻碍流通。

### Fully Open Position:

When the wedge plug is rotated by 90 degrees, the passage of the valve body shall coincide with the passage of the wedge plug. At this stage the valve is fully opened and the medium flows freely.

继续旋转手轮，楔塞旋转到90°，阀瓣密封面与阀体密封面对正。楔塞开始下降，逐步撑开阀瓣。

Continue to rotate the handwheel till the wedge plug is rotated by 90°. The sealing faces of the discs shall face the sealing face of the body directly, and the wedge plug shall start to move downwards and gradually expand the discs.



顺时针旋转手轮，楔塞与阀瓣向关闭方向旋转。

Rotate the handwheel clockwise so that the wedge plug and the discs rotate in the closing direction.





## 结构简图 Structure Sketch

### 1)DBB功能阀

DBB function

2)密封面无摩擦启闭、阀门的使用寿命长，开关力矩小。

No friction between the sealing faces while opening and closing, long service life and small operating torque.

3)软、硬双重密封，具备防火功能。

Soft and hard double seals, fire-proof design

4)上、下两种装配方式，维修十分方便。

Assembly from the top and bottom are both available, and it is easy to be maintained and repaired.

5)阀瓣上的弹性密封采用特殊工艺成型在阀瓣表面沟槽中，镶嵌牢固，永不脱落。

Elastic seal is molded into the surface groove of the disc by means of special molding procedure, and is firmly inlaid without falling.

6)特殊的轨道设计，有效的保证了开关过程中密封面的分离与贴合。

Special orbit design effectively guarantees the separation and contacting of the sealing faces during the opening and closing processes.

7)具有自动泄放装置（备选），防止阀腔异常升压并检验阀门的效果。

Automatic relief device (alternative) is provided for preventing abnormal pressure rise in the valve chamber.

8)阀体的内腔、阀瓣加工后可进行各种硬化、防腐、减摩等处理。

The inner valve chamber and the disc can be subject to treatments such as hardening, corrosion-prevention, and friction-reduction after finished machining.

9)双向零泄漏，防止在储油罐里的燃料污染或损失的现象，避免窜流。

Zero leakage at both sides, avoiding fuel pollution or loss in the oil storage tank and preventing the fluid from channeling.

10)防静电设计

Anti-static design.



## 型号说明 Model Description

☐ X ☐ ☐ ☐ ☐ ☐ — ☐ ☐ ☐  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①温度：D:低温，G:高温，省略时：常温

②“X”表示旋塞阀；

③传动方式：4:正齿轮，5:锥齿轮，6:气动，7:液动，9:电动，省略时：手动；

④连接形式：4:法兰；6:焊接端；

⑤结构形式：3:直通撑开式；

⑥密封面材料：F:氟橡胶，Y:硬质合金；

⑦压力级;

⑧壳体材料: C:碳钢, PN $\geq$ 2MPa时省略, P:铬镍不锈钢, V:铬钼钒钢, R:铬镍钼不锈钢, I:铬钼钢

⑨尺寸

例: 尺寸为10", 压力级为CL600, 电动, 法兰连接, 密封面为氟橡胶, 壳体材料为ZG1Cr18Ni9Ti的直通撑开式旋塞阀表示为: X943F-CL600P 10"

①Temperature: D: Low-temperature; G: High-temperature; omission of D or G: normal temperature

②"X" refers to plug valve;

③Mode of drive: 4: spur gear; 5: bevel gear; 6: pneumatic actuated; 7:hydraulic operated; 9: electric actuated;omission of 4, 5, 6, 7 or 9:manual operated;

④Connection: 4: flange end; 6:welding end;

⑤Type of structure 3: straightway expanding type;

⑥Material of sealing face : F: fluorine rubber; Y: hard alloy;

⑦Pressure class;

⑧Material of shell: C: carbon steel, omitted as PN  $\geq$  2 MPa; P: chromium nickel stainless steel; V: chromium molybdenum vanadium steel; R:nickel chromium molybdenum stainless steel; I: chrome molybdenum steel

⑨Size

E.g. : the expanding plug valve with size of 10", pressure class of CL600, electric actuator, flange ends, sealing face of fluorine rubber and shell material of ZG1Cr18Ni9Ti is expressed as: X943F-CL600P 10"

## 性能规范 Performance Standard

压力级 Pressure class	Class150 ~ 1500 ( PN20 ~ 250 )
尺寸 Size	NPS2" ~ 24" ( DN50 ~ 600 )
适用温度 Applicable temperature	-29 ~ 121℃, -29 ~ 200℃ -46 ~ 121℃
适用介质 Applicable medium	石油、天然气及其制品、化工介质 Petroleum, natural gas, petroleum/natural gas products and chemical medium

材料表    Material List

序号 Sl. No.	零件名称 Part	材料名称 Material description	序号 Sl. No.	零件名称 Part	材料名称 Material description
1	阀体 Body	碳钢 Carbon steel	2	阀盖 Bonnet	碳钢+表面处理 Carbon steel + Surface treatment
3	端盖 End Cover	碳钢+表面处理 Carbon steel + Surface treatment	4	阀瓣 Disc	碳钢+表面处理 Carbon steel + Surface treatment
5	楔塞 Wedge plug	碳钢+表面处理 Carbon steel + Surface treatment	6	阀杆 Stem	合金钢 Alloy steel
7	导轨套 Guideway sleeve	合金钢+表面处理 Alloy steel + Surface treatment	8	填料 Packing	组合件 Combination

注：具体材料选择根据实际工况和用户要求进行。  
Note: Material can be selected as per actual service conditions and the requirements of the users.

采用标准    Applicable Standards

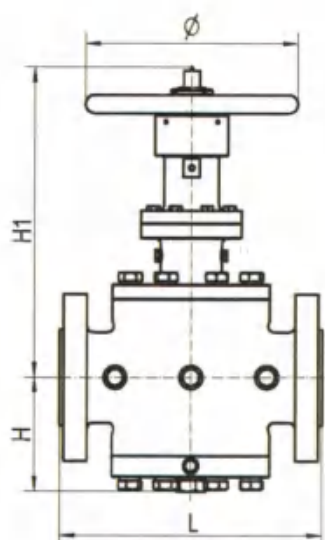
设计制造 Design and manufacturing	API6D, API599 GB/T22130
结构长度 Face to face or end to end dimension	ASME B16.10 GB/T12221
连接法兰 Flange connection	ASME B16.5 GB/T9113, JB/T79 HG/T20592
验收 Acceptance	API6D, API598 GB/T13927, JB/T9092

注：以上标准可根据用户要求执行。  
Note: The design standard can be applied upon the requirements of the users.

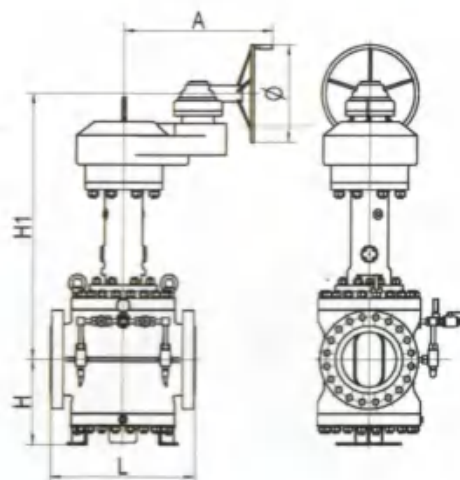
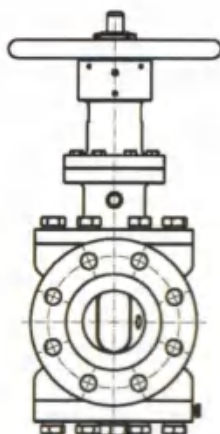


## 撑开式旋塞阀主要尺寸数据表

### Data Sheet of Main Dimensions of the Expanding Plug Valve



**X43**

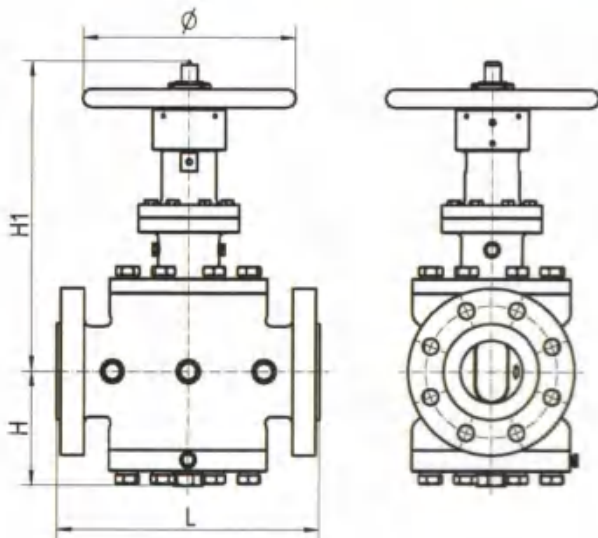


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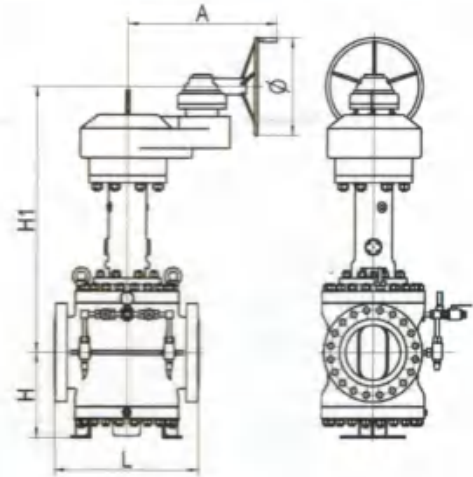
NPS	DN	Class150/PN20					Class300/PN50				
		L	H	H1	A	φ	L	H	H1	A	φ
2	50	178	130	430	/	250	216	130	430	/	250
2 1/2	65	190	140	450	/	250	241	140	450	/	250
3	80	203	160	480	/	250	283	160	480	/	250
4	100	305	180	500	/	350	305	180	500	/	350
6	150	394	240	600	/	350	403	240	600	/	350
8	200	457	270	700	/	450	502	270	700	/	450
10	250	533	300	650	264	500	568	320	750	264	500
12	300	610	350	800	264	500	711	380	850	264	500
14	350	686	400	900	264	500	762	450	930	313	600
16	400	762	450	1000	313	600	838	500	1050	313	600
18	450	864	470	1100	313	600	914	560	1200	326	700
20	500	914	500	1200	326	700	991	650	1320	326	700
24	600	1067	600	1300	326	700	1143	750	1450	384	800



**撑开式旋塞阀主要尺寸数据表**  
**Data Sheet of Main Dimensions of the Expanding Plug Valve**



**X43**

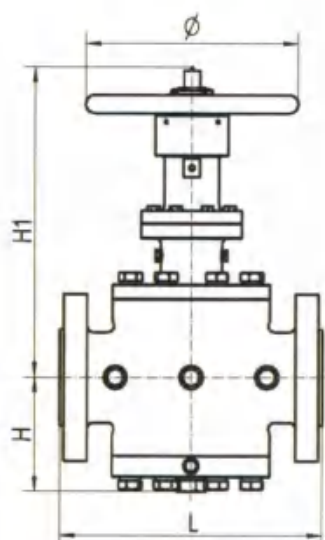


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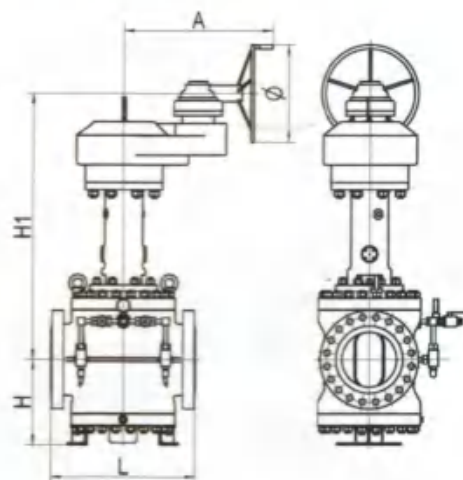
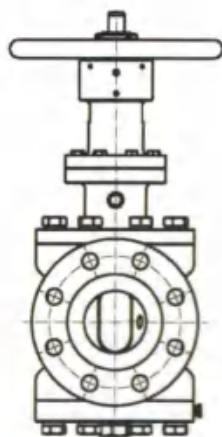
NPS	DN	Class400/PN64					Class600/PN100				
		L	H	H1	A	φ	L	H	H1	A	φ
2	50	292	150	550	/	250	292	150	550	/	250
2 1/2	65	330	170	580	/	250	330	170	580	/	250
3	80	356	200	600	/	350	356	200	600	/	350
4	100	406	220	700	/	350	432	220	700	/	350
6	150	495	260	660	326	500	559	260	660	326	500
8	200	597	300	800	384	600	660	300	800	384	600
10	250	673	380	1200	770	600	787	380	1200	770	600
12	300	762	450	1400	800	600	838	450	1400	800	600
14	350	826	530	1600	915	600	889	530	1600	915	600
16	400	902	580	1700	915	700	991	580	1700	915	600
18	450	978	650	1800	960	700	1092	650	1800	960	700
20	500	1054	720	1950	1115	800	1194	720	1950	1115	800
24	600	1232	800	2100	1115	800	1397	800	2100	1115	800

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### Data Sheet of Main Dimensions of the Expanding Plug Valve



**X43**



**X543**

NPS	DN	Class150/PN20					Class300/PN50				
		L	H	H1	A	φ	L	H	H1	A	φ
2	50	178	130	430	/	250	216	130	430	/	250
2 1/2	65	190	140	450	/	250	241	140	450	/	250
3	80	203	160	480	/	250	283	160	480	/	250
4	100	305	180	500	/	350	305	180	500	/	350
6	150	394	240	600	/	350	403	240	600	/	350
8	200	457	270	700	/	450	502	270	700	/	450
10	250	533	300	650	264	500	568	320	750	264	500
12	300	610	350	800	264	500	711	380	850	264	500
14	350	686	400	900	264	500	762	450	930	313	600
16	400	762	450	1000	313	600	838	500	1050	313	600
18	450	864	470	1100	313	600	914	560	1200	326	700
20	500	914	500	1200	326	700	991	650	1320	326	700
24	600	1067	600	1300	326	700	1143	750	1450	384	800

注：法兰连接尺寸根据用户要求（GB/HG/JB/ASME . . . . .）

Note: the dimension of the flange shall be subject to the user's requirements (GB/HG/JB/ASME . . . . .)



# 公司部分主导产品

PART OF OUR PRIMARY VALVES

