

# > FUNCTIONAL VALVE SERIES





# Piston Type Flow Regulating Valve

## Principle

Piston type regulating valve is mainly composed of body, seat, piston, shaft, crank, connecting rod, driving pin, taper pin, bearing and operating mechanism and other parts. The piston regulating valve converts the rotation of the shaft into the axial movement of the piston along the guide rail through the crank connecting rod. During the forward and backward movement of the piston, the flow regulation and pressure control are realized by changing the flow area between the piston and the valve seat. Water flow enters the body from the axial arc. The passageway in the piston type regulating valve is axisymmetric. The flow will not produce turbulence. Regardless of the position of the piston, the flow section in the valve chamber at any position is annular and shrinks to the shaft center at the outlet, so as to achieve the best cavitation prevention and avoid possible cavitation damage to body and pipe due to throttling.



## Features

1. Linear regulation: The valve opening and linear flow can achieve precise regulation.
2. Lower maintenance cost. Long service life: Selection of reasonable flow passage and proper material can ensure long service life of the valve.
3. Small driving force: Hydraulic balance design and the overlaid copper alloy for guidance can ensure more stable and reliable piston operation.
4. Optional installation: Valves may be installed vertically, horizontally and suspended or at either side of the pipeline.
5. Reliable sealing (common type): The special design structure of the elastomer valve makes the less possibility of jamming of the valve by the debris. The valve is equipped with a hand hole cover and a backwashing device to facilitate regular maintenance and repair. The high-performance elastomeric silicone-connected metal seat provides a bubble-level seal and prevents valve seat scratches and prolongs the service life of the seat.
6. Collision energy dissipation, anti-vibration (multi-hole type): Spiral holes are symmetrically and evenly distributed on the sleeve along the perimeter direction to make water column clashing to dissipate energy. After the collision, the energy completely disappears, effectively preventing the severe vibration caused by the energy dissipation under the high pressure difference.
7. Tapered hole design, cavitation resistance (multi-hole type): Special tapered hole design accelerates the water flow passes through the sleeve and causes cavitation occurred in the center of the valve to effectively prevent damage of valve parts caused by cavitation under high pressure difference.
8. It can be used for many purposes and can replace hydraulic diaphragm control valve and Y-type control valve function.

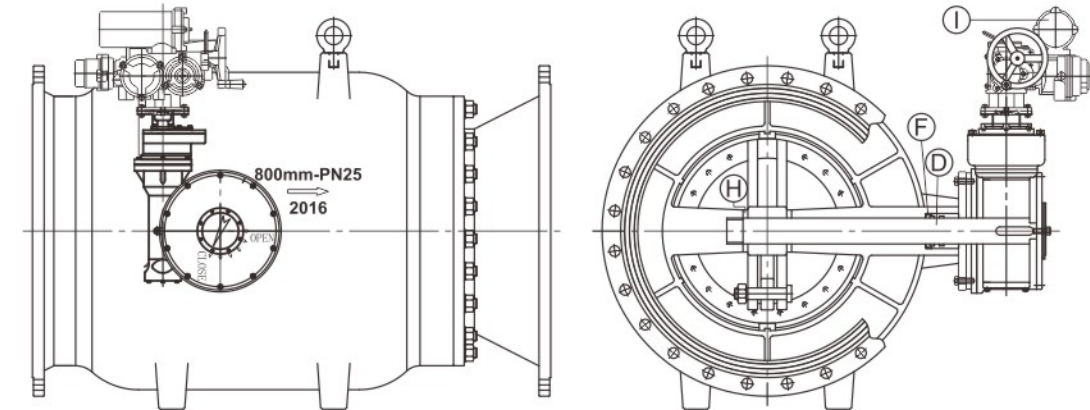
## Piston Current And Pressure Regulating Valve Model Preparation

LT	9	4	1	X	1 - 10	Q
						Q: Nodular cast iron C: Made of steel
						10 times of nominal pressure
						1: Altitude valve 2: Reducing valve 3: Check valve 4: Flow control valve
						5: Pressure release valve 6: Anti-cavitation valve
						X: Rubber + stainless steel
						0: Taper adjustment 1: Slotting adjustment 2: Fan blade adjustment 3: Valve seat ring spraying
						4: Flange connection
						3: Worm drive 9: Electric 6: Pneumatic 7: Hydraulic control
						Piston current and pressure regulating valve code

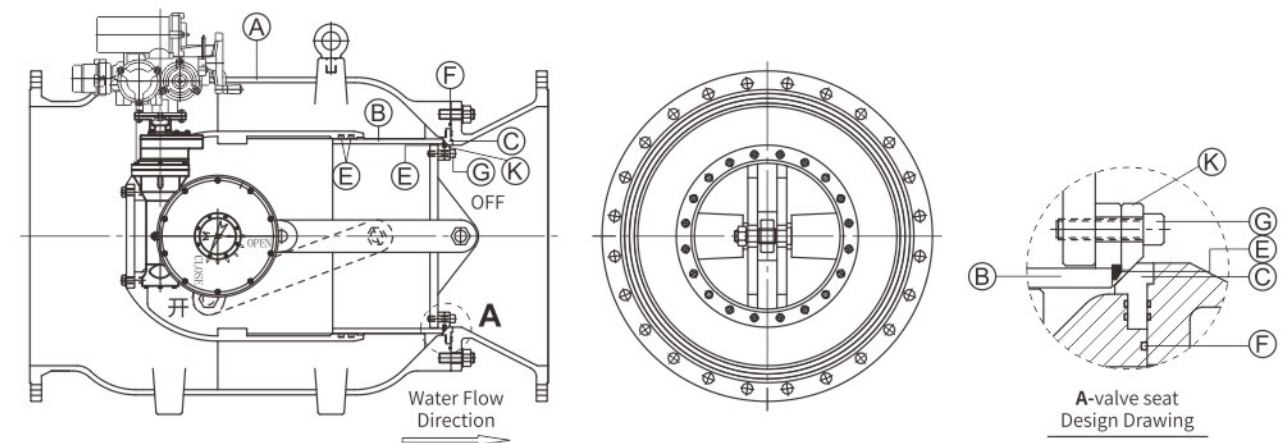
## Technical Parameters

Inside Nominal Diameter	DN300~DN2000mm
Nominal Pressure	American standard ANSI 125Lb 150Lb 250Lb / European standard EN PN10 PN16 PN25 National standard GB PN10 PN16 PN25 / JIS JIS 7.5K 10K 16K 20K / British standard BS PN10 PN16 PN25
Operation Mode	Hydraulic Cylinder Operation / Operation of Electric Manipulator / Operation of Manual Worm and Worm Gear / Remote Control Room Operation
Use Function	Flow control / pressure reduction control / pressure-holding control / pressure regulating control / pressure-holding and pressure reduction control

# Piston Type Flow Regulating Valve



Overall Appearance Diagram

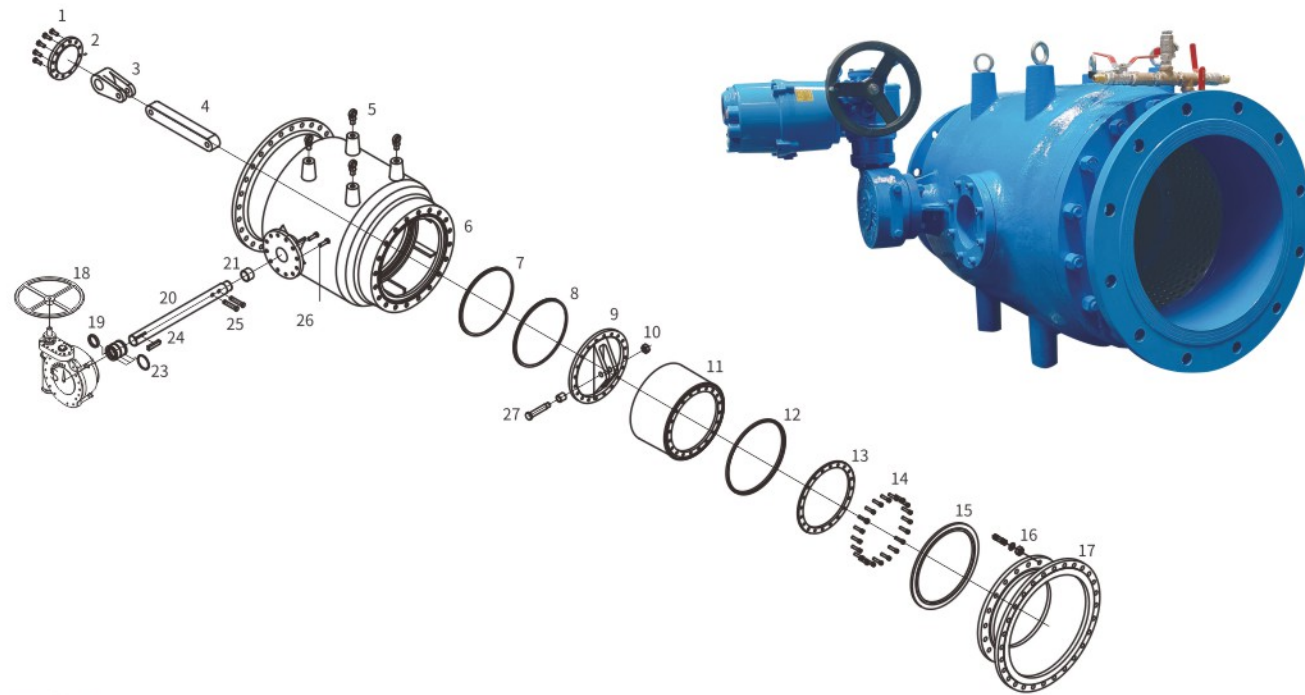


## Table of part material

Option	No.	Part name	Part material	Quantity
□	A	Valve body	Nodular cast iron FCD450 Ductile cast iron1	1
□	B	Valve	Stainless steel SUS304	1
□	C	Valve seat ring	Stainless steel SUS304	2
□	D	Valve ring	Stainless steel SUS304	2
□	E	Valve rod	Stainless steel SUS410	1 set
□	F	Water sealing rubber gasket	Synthetic rubber (NBR) (in accordance with CNS10774-K4080)	1 set
□	G	Packing	O-rubber	1 set
□	H	Bolt in valve body	Stainless steel SUS304	1 set
□	I	Thrust bearing	Stainless steel SUS304	1 set
□	J	Electric actuator		1 set



# Piston Type Flow Regulating Valve



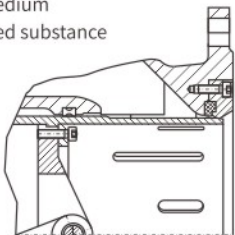
## Part list

No.	Part name	No.	Part name	No.	Part name
1	Bolt of flow guider cover	10	Connecting pin and nut of the piston sleeve	19	V-type oil seal sleeve
2	Flow guider cover	11	Piston sleeve	20	Valve rod
3	Drive rod seat	12	Seal ring	21	Bushing
4	Drive rod	13	Seal ring pressing plate	22	Gear box
5	Lifting ring	14	Seal ring pressing plate bolt	23	O-type ring
6	Valve body	15	Valve seat	24	Square key
7	Seal ring of the piston sleeve	16	Fixed bolt, nut and gasket of short pipe	25	Base pin of drive rod
8	Seal ring of the piston	17	Short pipe at the outlet	26	Fixed bolt of gear box
9	Piston sleeve base	18	Hand wheel	27	Connecting pin of the piston sleeve

## Sz slotted cylinder

### Applicable situation

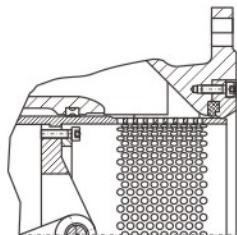
- It is more suitable as a control valve
- Under significant differential pressure condition
- Optimization and regulation of plant health condition
- Prevent cavitation
- Be used for water medium containing suspended substance



## Lh model multi-port cylinder

### Applicable situation

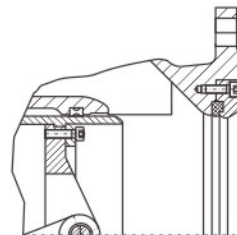
- It is the most suitable as a control valve
- Under significant differential pressure condition
- Optimization and regulation of plant health condition
- Prevent cavitation preferentially



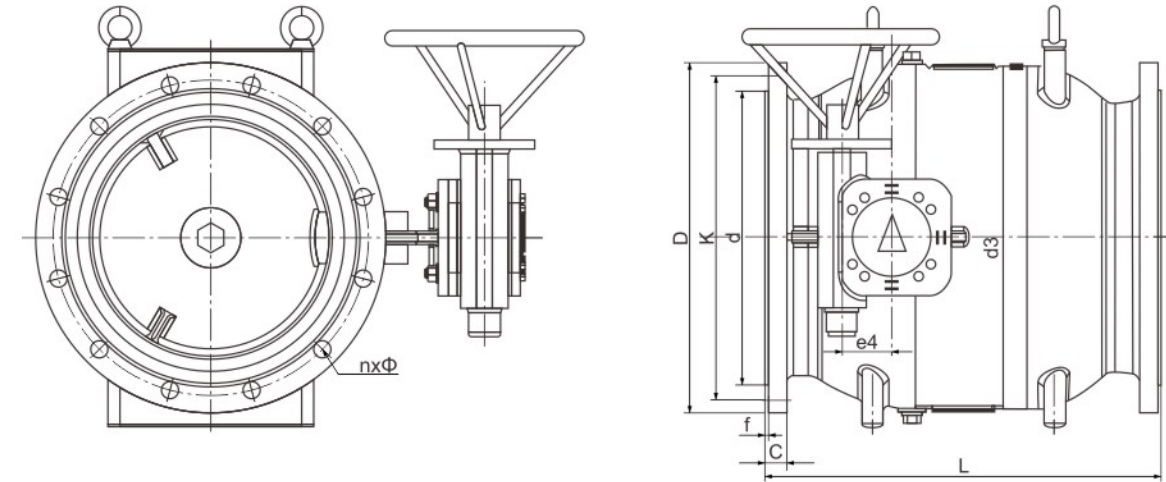
## E-shaped rim with segment

### Applicable situation

- It is the most suitable as a control valve, with enough backpressure
- As a pump starting valve



# Piston Type Flow Regulating Valve



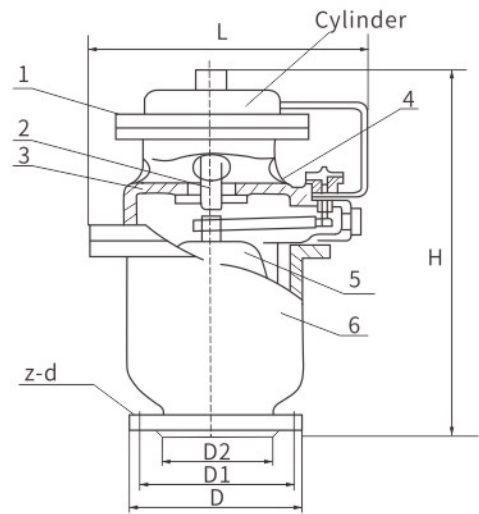
## Main boundary and connection dimensions (mm)

DN	L	D		K		d		C		f	n×Φ	
		PN10	PN16	PN10	PN16	PN10	PN16	PN10	PN16		PN10	PN16
200	400	340	340	295	295	266	266	20	20	3	8×23	12×23
250	450	395	405	350	355	319	319	22	22	3	12×23	12×28
300	500	445	460	400	410	370	370	24.5	24.5	4	12×23	12×28
400	600	565	580	515	525	480	480	24.5	28	4	16×28	16×31
450	650	615	640	565	585	530	548	25.5	30	4	20×28	20×31
500	750	670	715	620	650	582	609	26.5	31.5	4	20×28	20×34
600	900	780	840	725	770	682	720	30	36	5	20×31	20×37
700	1050	895	910	840	840	794	794	32.5	39.5	5	24×31	24×37
800	1200	1015	1025	950	950	901	901	35	43	5	24×34	24×40
900	1350	1115	1125	1050	1050	1001	1001	37.5	46.5	5	28×34	28×40
1000	1500	1230	1255	1160	1170	1112	1112	40	50	5	28×37	28×43
1200	1800	1455	1485	1380	1390	1328	1328	45	57	5	32×40	32×49
1600	2500	1915	1930	1820	1820	1750	1750	49	65	5	40×49	40×56



# Full-pressure Efficient Exhaust And Gulp Valve

GSP



- 1-Cylinder valve    3-Exhaust cover plate    5-Float bowl  
2-Piston valve    4-Exhaust port    6-Shell

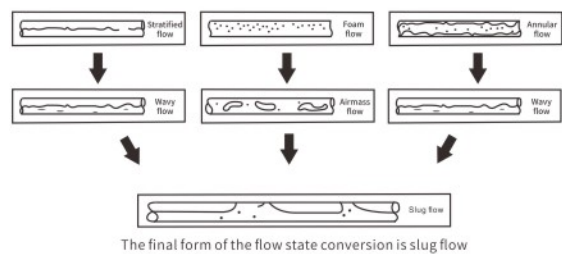
## I. Purpose

GSP1.0 (1.6, 2.5, 4.0) full-pressure efficient high-speed exhaust and gulp valve is installed on input pipelines and heat circulating water pipelines with the pressure under 1.0 (1.6, 2.5, 4.0) MPa and water temperature under 100°C, to exhaust air and partial steam in the pipelines, and eliminate increased water resistance caused by air stored in the pipelines, and pipeline breaking caused by air-burst water hammer. When vacuum is generated in the pipeline, air can be injected automatically to prevent sewage from infiltrating into the pipe and deformation of thin-wall steel pipe.

## II. Special instruction

In the test run of urban water supply network and new water supply system, it is easy to cause pipe burst or water hammer damage accident. The study shows that the main cause of the accident is blocked air exhaust of pipelines. However, the existing high-speed exhaust and gulp valve (including the double-port exhaust valve, the compound double-port exhaust valve) can only discharge the non-pressure air at high speed. On account of that it is almost inevitable that most pipelines, especially new pipelines, have multiple water columns and air columns, ordinary high-speed (double port) exhaust valve cannot meet the exhaust needs of pipelines, resulting in a lot of burst accidents of urban water supply pipelines. This full-pressure efficient high-speed exhaust and gulp valve is different from the ordinary high-speed (double-port) exhaust valve in terms of structural principle. For the air in the pipeline, whether there are multiple water columns and air columns, pressure or non-pressure, it can be discharged out of the pipeline at high speed. With this valve, you will be relieved of the risk of test run of new pipeline and difficulties in air exhausting; reduce pipe network burst accidents, reduce resistance and energy saving, reduce pressure shock, and improve the safety and reliability of the whole water supply system and various equipment.

### 1. Pipeline air storage state and conversion of six flow state



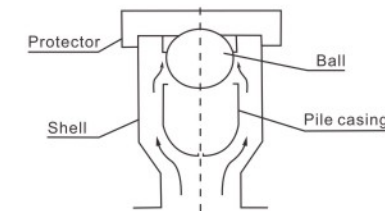
### 2. Cause of air storage in the pipeline

- (1) The first watering of the new pipeline;
- (2) Accident inspection and emptying;
- (3) The air enters the pipeline after partial pipe network stops water supply due to the shortage of water supply;
- (4) If the pipeline generates negative pressure due to pressure fluctuation caused by opening and closing of large valve by the user, the exhaust valve will inject air.
- (5) Air release during the flow of water.

# Full-pressure Efficient Exhaust And Gulp Valve

GSP

## 3. Defect of float-ball exhaust valve - loss of fast exhaust function in slug flow



The structure principle of the common float-ball exhaust valve is shown in the figure. When there is no water in the valve body, the float ball falls into the pile casing. Exhaust when the exhaust port is opened. When there is water, the float ball rises to block the exhaust port and seal the water flow. At this time, the pressure  $F$  on the float ball is the product of the valve port area and the pressure  $P$  in the pipeline, that is,  $F=PX$ , which is far greater than the gravity of the float ball. And it cannot be opened for exhaust when there is air. Therefore, it is not suitable for the pipe network exhaust of slug flow with water and air. That is, the air in the slug flow state cannot be exhausted.

## 4. Performance requirements for exhaust devices in water supply pipelines

**Grade A:** Air can be quickly exhausted under six flow states. The pressure for stopping rapid exhaust is above 1.0MPa. The valve is buffered and closed. (Representative product: cylinder type exhaust valve)

**Grade B:** Air can be quickly exhausted under two flow states. The pressure for stopping rapid exhaust (ball rising) is above 0.4MPa. (Representative product: America GA power compound exhaust valve)

**Grade C:** Air can be quickly exhausted under two flow states. The pressure for stopping rapid exhaust (ball rising) is about 0.1MPa. (old habits of some units)

## III. Working principle

This valve mainly consists of the shell, float bowl, exhaust cover plate, two exhaust ports (large and small), pneumatic cylinder, piston rod and conduit. When there is air in the valve body, the float bowl lowers down, and the small cover moves up with the action of the lever to block the vent hole on the bonnet, and open the small valve seat at the same time to make pressure air in the valve body enter the air cylinder. Because the area of the pneumatic diaphragm component in the air cylinder is much larger than that of the cover plate of the large air inlet and exhaust port, the large exhaust port opens to exhaust. Therefore, air in the pipeline can be exhausted at high speed. After the air is exhausted, the float bowl rises, make the conduit controlling the diaphragm to connect the air, and make the cover plate reset under the pressure in the valve to block the exhaust port. When there is negative pressure in the pipeline, the air inlet cover plate is opened to make air in and prevent the generation of water hammer.

## IV. Main boundary dimension

Model	DN	D	D1	D2	Z-d	L	H
GSD1.0	50	195	160	135	4-18	300	620
	80	195	160	135	8-18	300	620
	100	215	180	155	8-18	500	620
	150	280	240	210	8-23	620	640
	200	340	295	266	8-23	620	820
	250	395	350	319	12-23	620	820
	300	445	400	370	12-23	620	880
	400	565	515	480	12-23	700	910

Note: This exhaust valve is of flange connection. Its dimension is set according to relevant national standards.

For valves with nominal pressure of 1.6, 2.5 and 4.0MPa, only flange dimension of 0 and 01 is different, and the others are the same.



# Full-pressure Efficient Exhaust And Gulp Valve

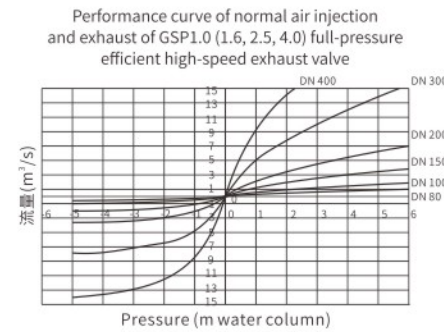
GSP

## V. Performance curve of GSP1.0 (106, 2.5, 4.0)

### special cylinder full-pressure efficient high-speed exhaust and gulp valve

#### (1) Performance curve of large amount of low-pressure suction and exhaust

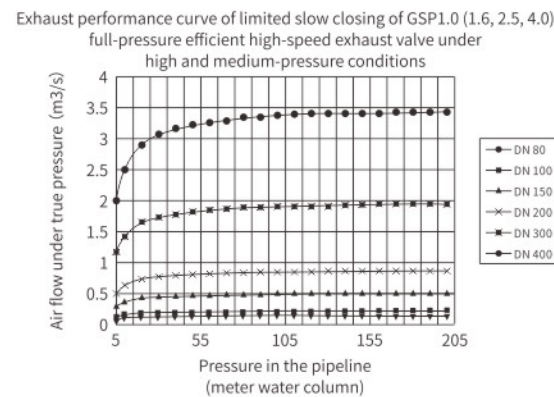
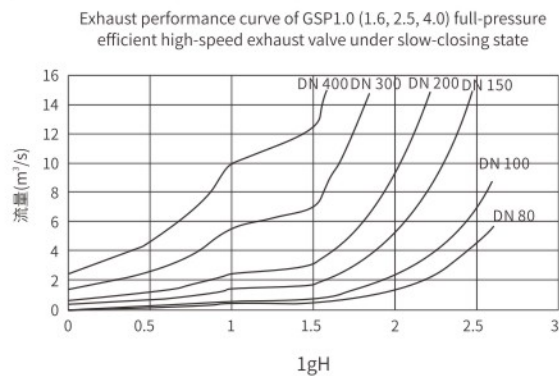
It is suitable for injecting air into the pipeline when there is negative pressure in the pipeline, and for a large number of exhaust conditions when the pipeline pressure is lower than 0.05MPa. The air phase and water phase in the pipeline are dominated by stratified flow and wavy flow, followed by slug flow and airmass flow. Most of them occur in the early stage of initial water filling in the pipeline, and in the early stage of re-opening after abnormal pump stopping. At this point, the exhaust valve is required to be opened to the largest, to rapidly exhaust. Its performance curve is as shown in the figure.



#### (2) High-pressure limited and buffered exhaust performance curve

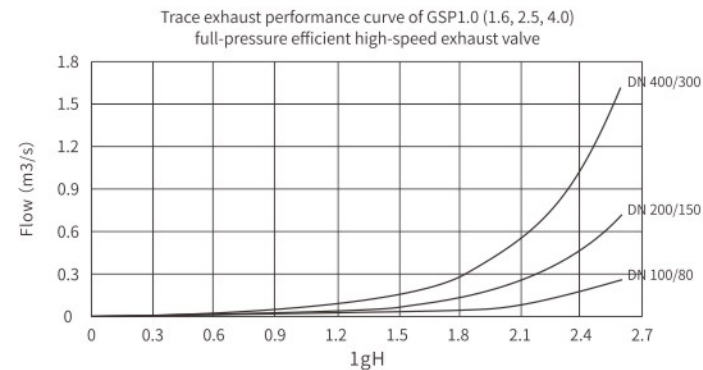
When the pipeline pressure is 0.05MPa-4.0MPa, the air phase and water phase in most pipelines are dominated by slug flow and airmass flow, followed by stratified flow and wavy flow. At this time, the pipeline exhaust velocity is the most important, and the exhaust valve is in a state of frequent opening and closing. The opening and closing of the exhaust valve with excessively fast exhaust speed will inevitably cause the excessive change of water flow velocity, which will cause the pipeline to produce too large cutoff bridge water hammer, and will cause the pipe explosion accident if it is serious. If the exhaust speed is too low or there is only trace air exhaust, the airbag will be concentrated in some parts of the pipeline, causing the "air-blocking" to burst. The water hammer accident of air-burst pipeline in engineering mostly belongs to this type. The pipeline is not smooth, and small in flow. Most large air resistance is arising therefrom. At this time, the effective exhaust opening degree of the exhaust valve changes with the pressure, so that the exhaust speed is kept in a reasonable state. The maximum pressure rise and fall caused by the opening and closing of the exhaust valve is less than 0.4MPa for metal pipe, 0.3MPa for non-metal pipe. The total pressure shall be lower than 1.3 times of the normal working pressure of the pipeline, so as to ensure the safe and reliable operation of the pipeline, exhaust air, and eliminate air blockage and other hazards.

The performance curve of limited and buffered exhaust is as shown in the following figure:



#### (3) Trace exhaust performance curve

During the normal operation of the water supply pipeline, when a small amount of air is introduced into the pipeline due to air release from the negative pressure zone of the water pump impeller and other reasons, the air can be exhausted with trace exhaust performance. The performance curve is as shown in the following figure:



# Full-pressure Efficient Exhaust And Gulp Valve

GSP

## VI. Notes of installation and use

1. This valve shall be installed vertically. Generally, an inspection shaft shall be constructed for protection and anti-freezing.
2. An underground valve with the same caliber shall be added between the valve and the connecting T-tube.
3. According to the pipe diameter, exhaust valves with different specifications can be selected with reference to the following table.

Diameter of the exhaust valve DN	Diameter of the water pipe (mm)	Diameter of the exhaust valve DN	Diameter of the water pipe (mm)
16	80以下	100	400~500
25	100~125	150	500~800
32	125~150	200	800~1200
40	150~200	250	1200~1800
50	200~300	300	1800~2400
70	300~400	400	2400~3200

#### 4. The installation method is as shown in the following figure

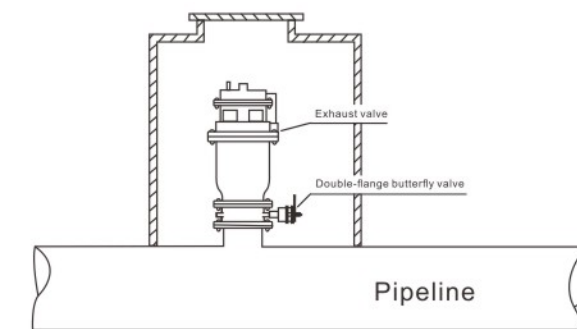
Explanation of the connection method of double-flange butterfly valve (GB12238-89 General Valve Flanges and Clamp Connection Valves):

- 1) The GSP exhaust and gulp valve is connected to the double-flange butterfly valve with the same caliber.
- 2) The double-flange butterfly valve is connected to the vertical pipe of the pipeline with the same caliber through flange.

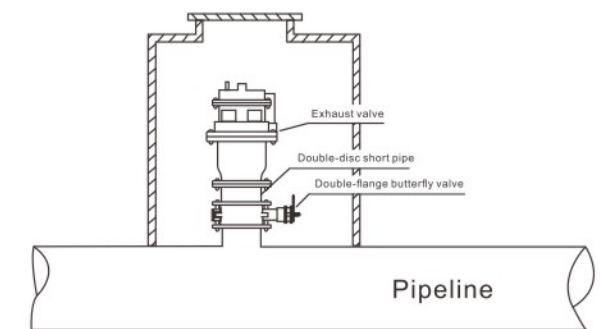
Explanation of the connection method of clamp butterfly valve

(GB12238-89 General Valve Flanges and Clamp Connection Valves):

- 1) The GSP exhaust and gulp valve is connected to the double-disc short pipe with the same caliber.
- 2) The double-disc short pipe is connected to the clamp butterfly valve with the same caliber and the vertical pipe of the pipeline with the same caliber through flange.



Installation schematic diagram of GSP exhaust and gulp valve (1)



Installation schematic diagram of GSP exhaust and gulp valve (2)

5. The product implements "three-warranty", and welcome visitors contact us through letters.



# Compound Exhaust Valve

CARX

## Overview:

This series of compound exhaust valve is suitable for installation at pumping outlet or in water distribution pipeline. It is used to remove a large amount of air accumulated in the pipeline, or discharge a small amount of air collected at higher place in the pipeline to the atmosphere to improve the use efficiency of the pipeline and the water pump. In case of negative pressure in the pipe, the valve rapidly sucks the outside air to protect the pipeline from damage caused by negative pressure.

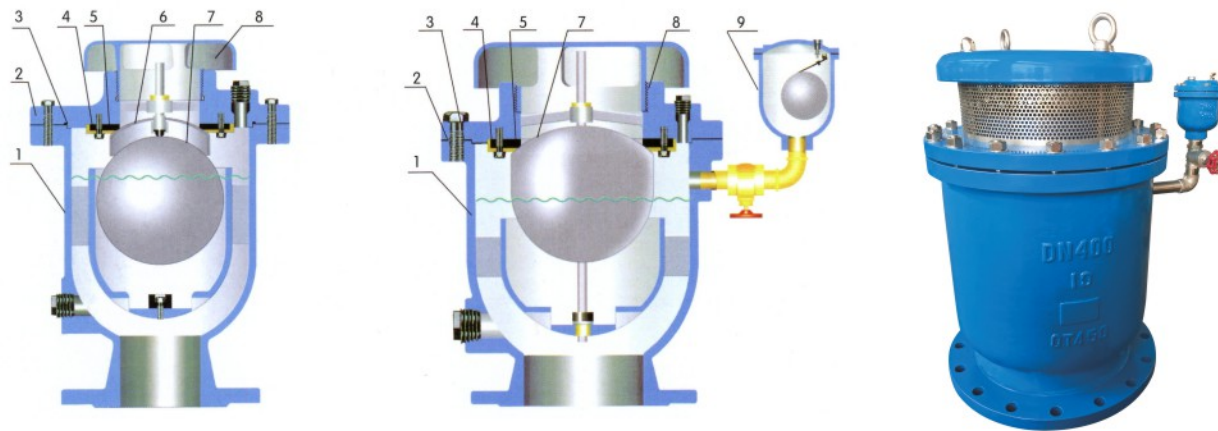
## Principle of operation:

When starting to inject water into a pipeline, the poppet will remain in the open position and exhaust a large amount of air. When the air is exhausted, there will be water in the valve and the float ball will float so as to drive the piston to the closed position, stopping exhausting a large amount of air. When the water in the pipeline is transmitted normally, if a small amount of air gathers in the valve to certain degree, the water level in the valve will drop and the float ball will drop with it, at this time, the air will be exhausted from the small hole or from the small hole of the automatic exhaust valve. When the water pump stops, in case that the water in the pipeline is empty or the negative pressure is produced in the pipeline, the piston will open rapidly and suck the air so as to ensure the safety of the pipeline.

## Technical parameters:

Air closing pressure MPa	≥0.07
Water closing pressure MPa	0.02~PN
Test pressure of valve body MPa	1.5/2.4/3.75
Sealing test pressure MPa	1.1/1.76/2.75
Pressure test standard	GB/13927-92

## Composition of compound exhaust valve



## Name and material of main parts:

No.	Name	Material
1	Valve body	Nodular cast iron
2	Bonnet	Nodular cast iron
3	O-type ring	NBR
4	Piston rack	Aluminum bronze
5	Seal ring	NBR
6	Piston	Stainless steel
7	Float ball	Stainless steel
8	Exhaust hood	Nodular cast iron
9	Automatic exhaust valve	Component

⑨-自动排气阀的说明详见本公司相关样本

# Compound Exhaust Valve

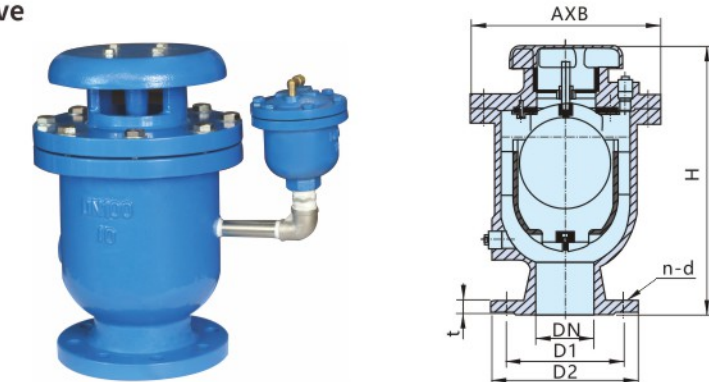
CARX

## CARX series compound exhaust valve (for clean water)

Pressure grade: PN1.0/1.6MPa

Inside nominal diameter:

(DN25 is thread type, the rest is flange type)



## Boundary dimension:

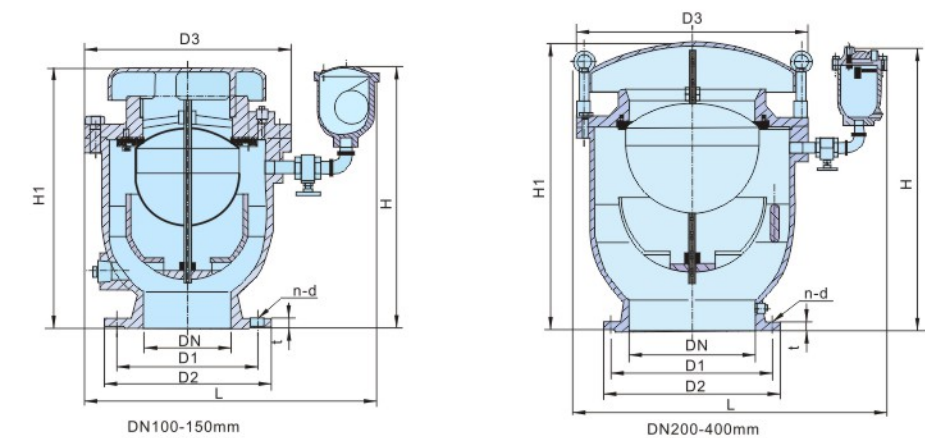
Unit: mm

DN	Product code	PN(MPa)	D1	D2	t	n-d	H	AxB
25	CARX-0025	1.0	ZG1"	/	/	/	- 260	145x145
		1.6	ZG1"	/	/	/		
50	CARX-0050	1.0	125	165	19	4-Φ19	- 320	162x162
		1.6	125	165	19	4-Φ19		
80	CARX-0080	1.0	160	200	19	8-Φ19	- 365	198x198
		1.6	160	200	19	8-Φ19		

Pressure grade: PN1.0/1.6MPa

Inside nominal diameter:

DN100~400mm



## Boundary dimension:

Unit: mm

DN	Product code	PN(MPa)	D1	D2	t	n-d	H	H1	L	D3
100	CARX-0100	1.0	180	220	19	8-Φ19	- 412.7	- 398	- 425	Φ280
		1.6	180	220	19	8-Φ19				
150	CARX-0150	1.0	240	285	19	8-Φ23	- 446.5	- 444.5	- 505	Φ356
		1.6	240	285	19	8-Φ23				
200	CARX-0200	1.0	295	340	20	8-Φ23	- 563	- 546	- 581	Φ446
		1.6	295	340	20	12-Φ23				
250	CARX-0250	1.0	350	395	22	12-Φ23	- 755	- 685	- 800	Φ500
		1.6	355	405	22	12-Φ28				
300	CARX-0300	1.0	400	445	24.5	12-Φ23	- 870	- 790	- 905	Φ605
		1.6	410	460	24.5	12-Φ28				
400	CARX-0400	1.0	515	565	24.5	16-Φ28	- 893	- 935	- 991	Φ740
		1.6	525	580	28	16-Φ31				

Note: The company can produce PN2.5MPa valves with the specifications above. If necessary, please contact our office.

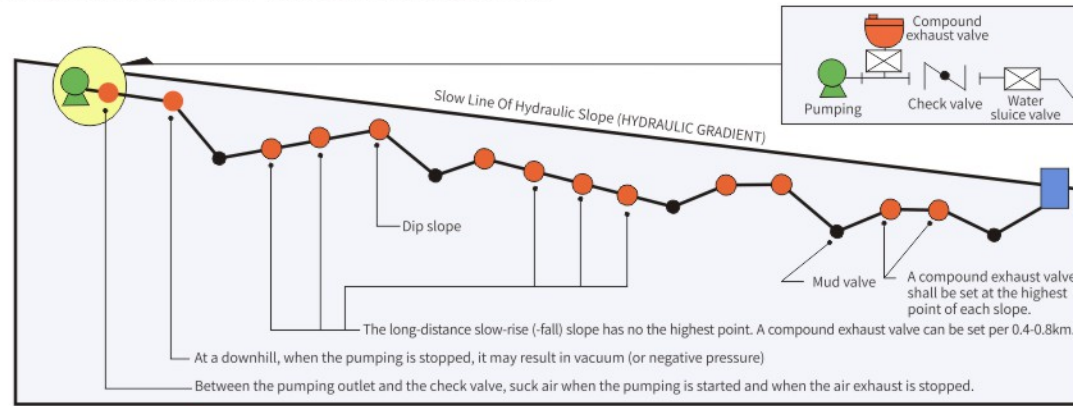


# Compound Exhaust Valve

CARX

## Selection of Installation Places of Carx Series Compound Exhaust Valve

### Where Compound Exhaust Valves are Required:



Symbol description    ● Compound exhaust valve    ● Check valve    ● Pumping    ■ Pool

### How to choose the caliber of the compound exhaust valve:

1. At several higher points in the pipeline, calculate other maximum exhaust volume or suction volume.

Calculated based on the gravity flow:  $Q = \sqrt{0.0027} \cdot S D^3$      $S = \text{Slope} = \tan(a)$  (a = the dip angle between the pipeline and the horizontal plane)

D ----- Pipeline diameter (mm)    Q ----- Exhaust or suction volume m<sup>3</sup>/h

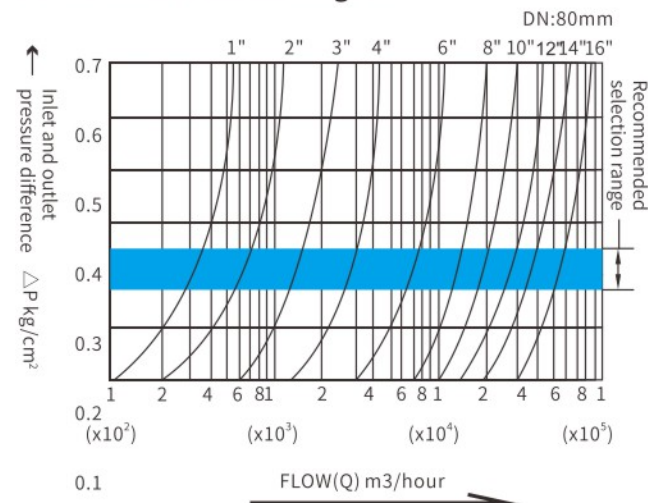
### How to consider the maximum exhaust volume:

A. Generally, when the inlet and outlet air pressure difference of the compound exhaust valve reaches 4 psi (i.e., 0.28 kg/cm<sup>2</sup>), the air in the pipeline can be exhausted before the piston is closed. Taking the value calculated based on the above formula and 4psi as the reference points, check the performance curve chart. The appropriate exhaust valve caliber can be obtained.  
B. Generally, when the negative pressure inside the pipeline exceeds 5 psi (i.e., 0.35 kg/cm<sup>2</sup>), the pipe may burst. Taking the value calculated based on the above formula and 5psi as the reference points, check the performance curve chart to get the proper exhaust valve caliber. Compare A and B, choose the larger caliber, that is, the required exhaust valve caliber.

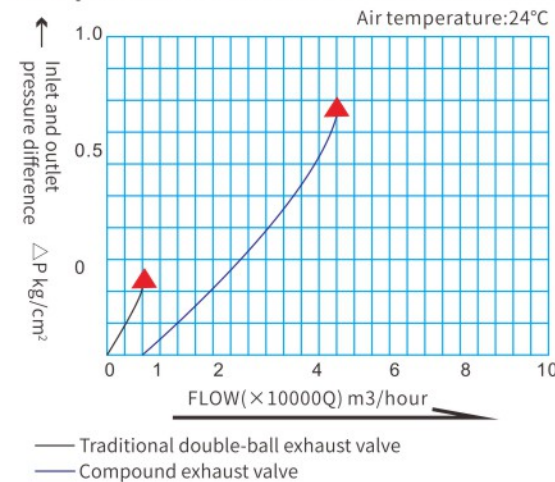
2. If the pipeline is ruptured without consideration of negative pressure, or the water flow rate in the pipeline is 1.2-2.4m/s, the appropriate vent valve caliber can be selected from the table below. (In addition, the vent valve caliber can be selected according to 1/8 of diameter of water delivery pipe based on experience).

inch	1"	2"	3"	4"	6"	8"	10"	12"	14"	16"
DN	25	50	80	100	150	200	250	300	350	400
Q(m <sup>3</sup> /h)	0~350	220~740	650~1600	1300~3100	3000~7500	7300~15000	11000~21000	14000~31000	19000~42000	27000~59000

### Performance curve diagram:



### Performance comparison table of compound and traditional exhaust valves:



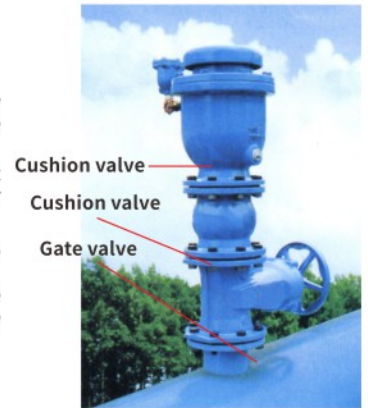
▲ It represents the pressure for closing the POPPET due to the air pressure increase in the exhaust valve. If it exceeds the pressure, the exhaust valve will lose the function of exhausting large amount of air.

# Compound Exhaust Valve

CARX SCAR

## In addition, the selection of good exhaust valve mainly depends on three factors

1. Large air exhaust volume. If the air exhaust volume is small, it will take a long time to restore the water supply capacity after the water is cut off. If the air exhaust volume is large, the normal water supply capacity can be restored in a very short time.
2. The air shut-off valve is 0.07MPa. It is the most important to consider this advantage when selecting good exhaust valve. Generally, a good exhaust valve has sufficient capacity to exhaust the air in the pipeline rapidly if its air closing pressure can reach up to 0.077MPa.
3. The range of water closing pressure is 0.02-1.0MPa. The larger the water closing range is, the better it is. Generally, this range is most common.
4. Water closing pressure: When the float ball floats on account of that there is water in the exhaust valve, if the water pressure in the valve body is lower or higher than a limit value, the float ball cannot completely close the poppet, resulting in water leakage. This limit value is referred to as the water closing pressure.



## SCAR series compound sewage exhaust valves

### Overview:

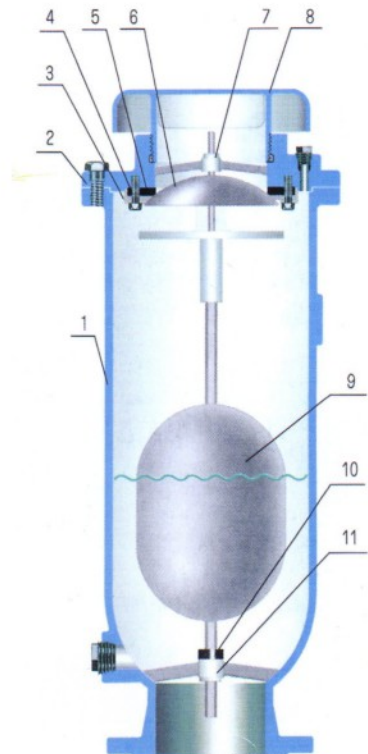
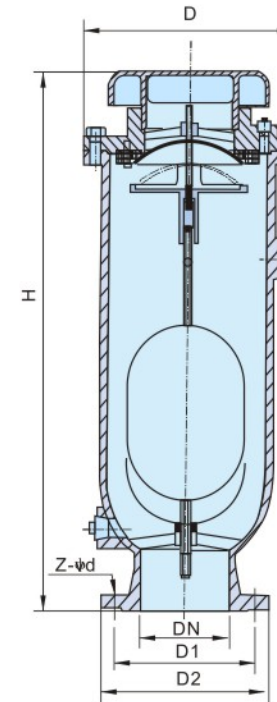
SCAR sewage exhaust valve has the same technical parameters as CAR. Considering the characteristics of sewage, it uses floating to directly act on the light spherical piston structure through the top plug, which reduces the discharge of sewage when a large amount of air is exhausted, so that the dirt does not deposit on the sealing surface of the piston. It is more resistant to water impact and not easy to damage the inner parts, so that the exhaust function operates normally. The performance will be better with the SCKV valve of our company.

Pressure grade: PN10

Inside nominal diameter: DN50~200mm

### Part name and material:

No.	Name	Material
1	Valve body	Nodular cast iron
2	Bonnet	Nodular cast iron
3	Piston rack	Cast stainless steel
4	Seal ring	Butyronitrile rubber
5	Spacing board	Stainless steel
6	Piston	Stainless steel
7	Guide sleeve A	Stainless steel
8	Exhaust hood	Nodular cast iron
9	Float ball	Assembling unit
10	Crash pad	Rubber
11	Guide sleeve B	Stainless steel



### Boundary dimension:

DN	Product code	D	D1	D2	H	Z-Φd
50	SCAR-0050	162×162	125	165	528	4-Φ19
80	SCAR-0080	198×198	160	200	613	8-Φ19
100	SCAR-0100	280	180	220	398	8-Φ19
150	SCAR-0150	356	240	285	870	8-Φ23
200	SCAR-0200	446	295	340	1095	8-Φ23

Unit: mm



# Reducing Valve

200X

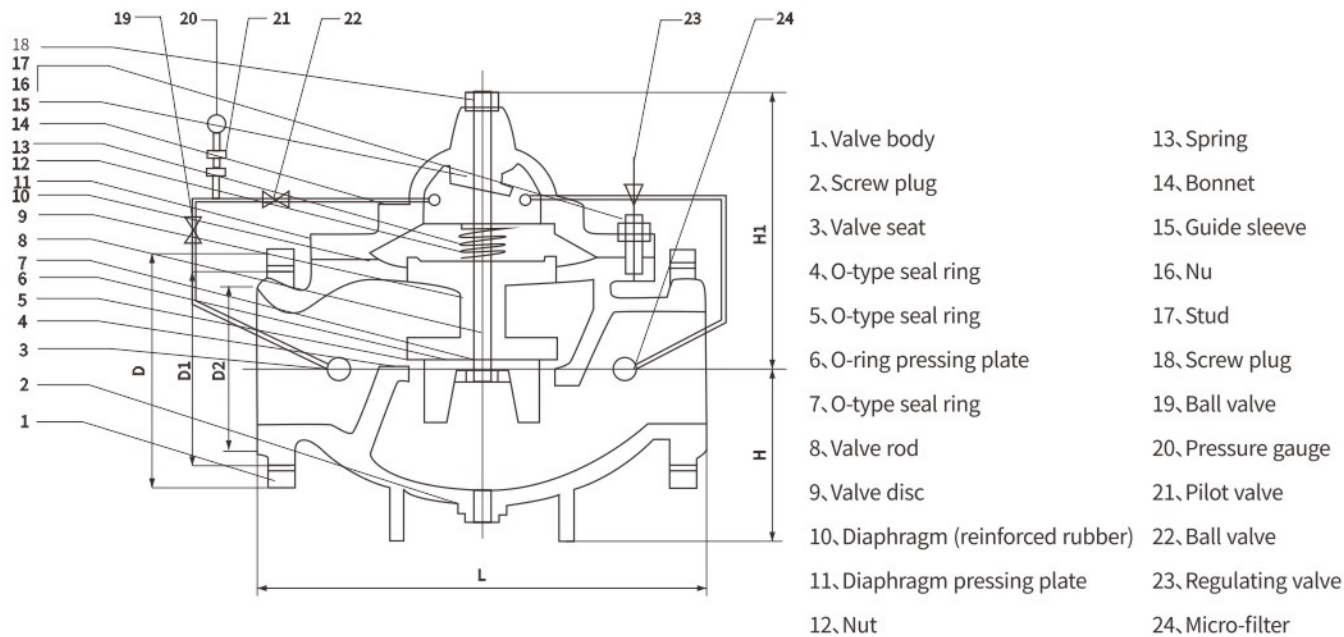
## Product introduction:

This product is designed and manufactured by the engineering and technical personnel of the company with reference to the same type of advanced products at home and abroad. The valve body adopts full-channel streamlined design, with low flow resistance and large flow. In terms of the drive mode, hydraulic operation is adopted, namely automatic operation of the up and down movement of main valve flap through utilizing the hydraulic pressure in pipeline to control the opening of valve port and to adjust the downstream pressure so as to make the downstream pressure be controlled within the range of set pressure value of the pilot valve spring. When the downstream pressure exceeds the set value, the reducing valve will automatically close, no matter how the inlet pressure P1 fluctuates, stable outlet pressure P2 can be output. Regardless of how the downstream flow changes, the outlet pressure P2 can be maintained at the set valve of the pilot valve. In short, this product is the ideal product for domestic water supply, fire protection system and industrial water supply system.



## Structural type:

This valve consists of main valve, pilot valve, needle valve, one-way valve, ball valve, micro-filter and pressure gauge. Since the pilot valve, needle valve and pressure gauge are connected with the main valve through conduit, they are collectively referred to as the conduit control system, as shown in the figure.



# Reducing Valve

200X

## Main boundary dimension

DN	L	D			D1			D2			Z-d			H1	H
		PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25		
50	203	165	165	165	125	125	125	100	100	100	4-18	4-18	4-18	210	68
65	216	185	185	185	145	145	145	120	120	120	4-18	4-18	8-18	225	75
80	240	200	200	200	160	160	160	135	135	135	8-18	8-18	8-18	230	80
100	292	220	220	235	180	180	190	155	155	160	8-18	8-18	8-23	245	85
125	350	250	250	270	210	210	220	185	185	188	8-18	8-18	8-26	260	95
150	356	285	285	300	240	240	250	210	210	218	8-23	8-23	8-26	270	105
200	457	340	340	360	295	295	310	265	265	278	8-23	12-23	12-26	280	125
250	520	395	405	425	350	355	370	320	320	332	12-23	12-25	12-30	300	135
300	620	445	460	485	400	410	430	368	375	390	12-23	12-25	16-30	350	160
350	670	500	520	550	460	470	490	428	435	448	16-23	16-25	16-34	400	190
400	750	565	580	610	515	525	550	482	482	503	16-26	16-30	16-34	480	215
450	800	615	640	660	565	585	600	532	545	555	20-26	20-30	20-34	600	250
500	850	670	705	730	620	660	660	585	608	610	20-26	20-34	20-41	630	295
600	900	780	840	840	725	770	770	685	728	718	20-30	20-41	24-41	690	315
700	1050	895	910	955	840	840	875	800	788	815	24-30	24-41	24-48		
800	1200	1015	1000	1070	950	950	990	905	898	930	24-33	24-41	24-48		

## Main technical performance

Nominal pressure	1.0MPa	1.6MPa	2.5MPa
Shell test pressure	1.6MPa	2.4MPa	3.75MPa
Sealing test pressure	1.1MPa	1.76MPa	2.75MPa
Maximum inlet pressure	1.0MPa	1.6MPa	2.5MPa
Adjustable range of outlet pressure	0.09~0.8MPa	0.1~1.2MPa	0.2~2.1MPa
Applicable temperature	0°C~80°C		
Applicable medium	Water		



# Reducing Valve

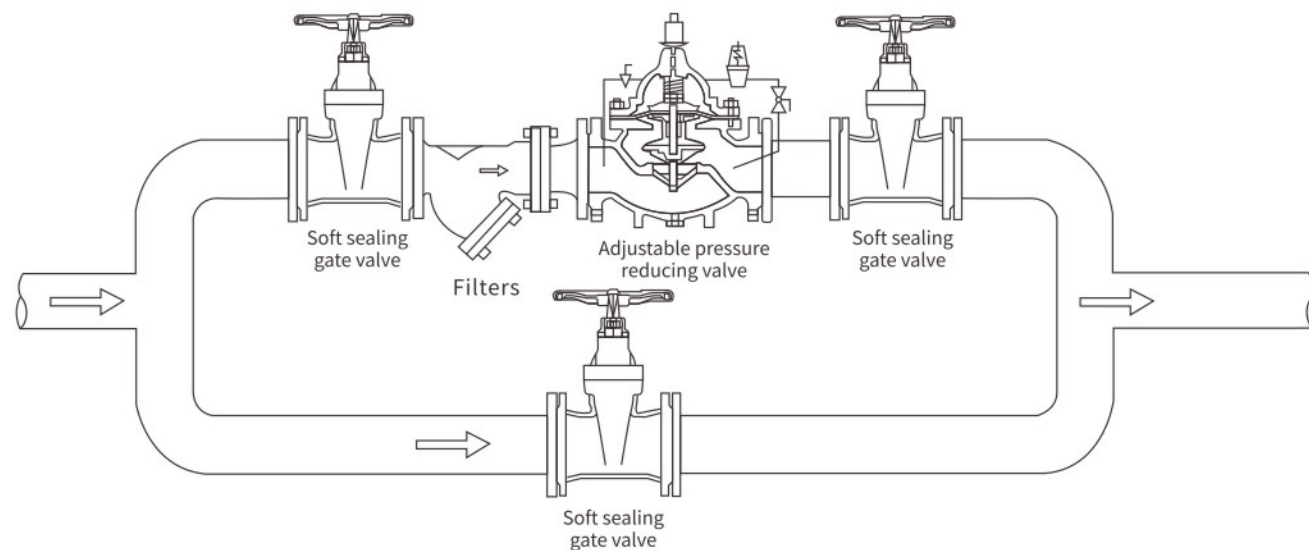
200X

## Working principle and purpose

The inlet pressure P1 enters the control chamber of the main valve through the conduit and the regulating valve 23 (see the structural drawing) and establishes a downward pressure F3. The outlet pressure P2 also acts under the diaphragm of the pilot valve 21 via the conduit and competes against the regulating spring of the pilot valve. When the downstream pressure exceeds the set value of the pilot valve spring, the pilot valve is closed, and the water discharge amount in the control chamber is 0. When the variable pressure F3 reaches the maximum value, the main valve disc presses against the valve seat, so that the reducing valve is closed. Once the downstream pressure P2 drops to the set value of the pilot valve spring, the pilot valve opens and the pressurized water in the control chamber will be drained downstream through the pilot valve 21 and the ball valve 19. On account of that the opening degree of the needle valve is small, and that the diameter of the inlet conduit is smaller than that of the outlet conduit, the discharge speed is higher than the water supply speed under the inlet pressure. Therefore, the pressure P3 in the control chamber is reduced. The inlet pressure P1 acting under the main valve disc 9 will raise the main valve disc, so as to open the reducing valve. Under the stable regulation state, the discharge amount is equal to the water supplementing flow, with unchanged main valve opening and stable downstream pressure.

## Installation and adjustment

- 1.The main valve shall be installed horizontally. Debris in the pipeline shall be cleaned thoroughly before installation. Note the arrow for the water flow outside the main valve body and follow the installation direction. After installation, it shall ensure that there is no pipeline stress applied on the valve body and internal parts.
- 2.A gate valve and a filter shall be installed in front of the main valve. Besides, a gate valve shall also be installed behind the main valve so as to be convenient for maintenance.
- 3.The pilot valve and conduit control system have been assembled and adjusted before the delivery. If the set pressure value of the pilot valve is not suitable for the site requirements, it can be adjusted by tightening or losing the screw at the upper end of the pilot valve. Screw clockwise to increase pressure, and screw counterclockwise to reduce pressure.
- 4.The micro-filter 24 on the main valve shall be cleaned regularly.
- 5.The pipeline system must be rinsed thoroughly before passing
- 6.Imported water supply pipelines shall be equipped with bypass valves.

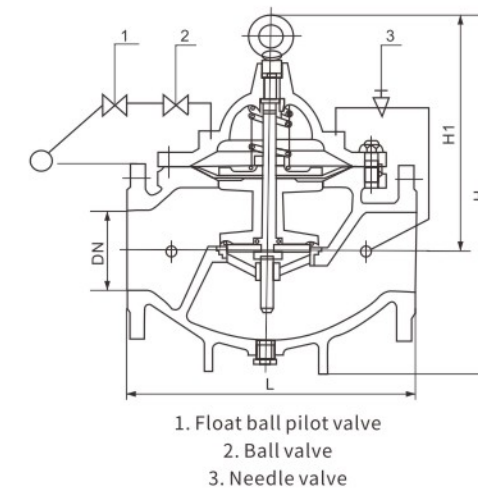


## Pressure regulation mode of the reducing valve

- 1.Close the ball valve under the pilot valve;
  - 2.Loose the pressure regulating screw
  - 3.Pressure release at the water outlet;
  - 4.Adjust the screw clockwise to the required pressure (note: half negative pressure);
  - 5.Open the ball valve under the pilot valve. The red hand wheel is used to adjust the water volume of the outlet;
- (1) The water exhaust volume is large when the opening is small.  
(2) The water exhaust volume is small when the opening is large.

# Remote Control Float Valve

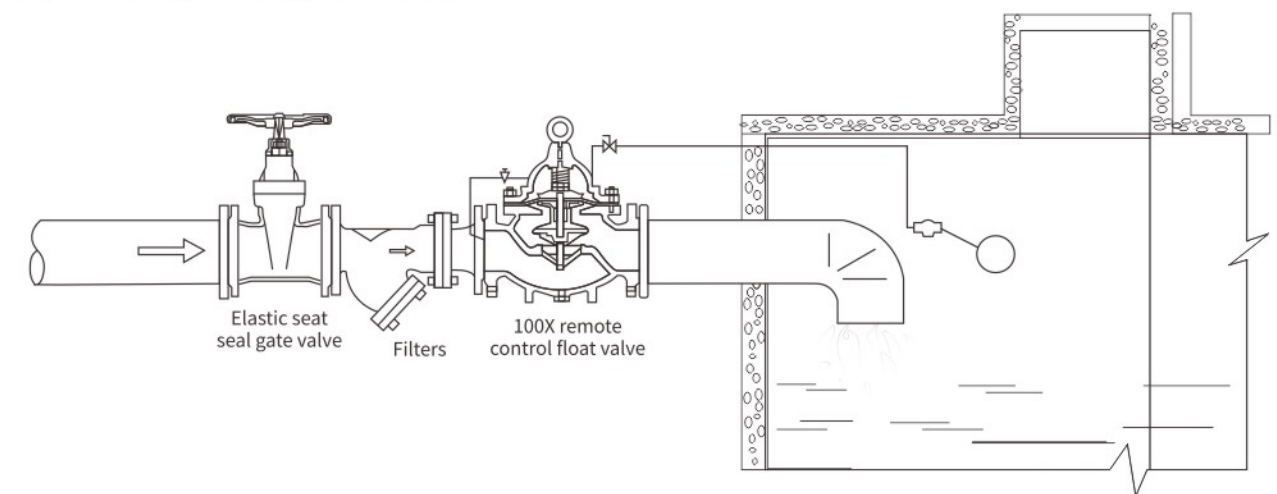
100X



## Product overview

The 100X remote control float valve is a hydraulic operated valve with multiple functions. It is mainly installed at the water inlet of the pool or elevated water tower. When the water level reaches the set height, the main valve is controlled by the float ball pilot valve to close the water inlet to stop the water supply. When the water level drops, the main valve is controlled by the float ball to open the water inlet to supply water to the pool or the water tower, achieving automatic water supplementing. Precise control of liquid level, no water pressure interference; The 100X diaphragm remote control float valve can be installed at any position according to the height of the pool and the use space. It is convenient for maintenance, debugging, inspection, reliable in sealing and has long service life. Diaphragm valve has reliable performance, high strength and moves flexible and is suitable for pipelines with the caliber below 450mm. Piston valves are recommended for pipelines with the caliber above DN500mm.

## Schematic diagram of typical installation



## Main boundary connection dimension

Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450
L	150	160	180	200	203	216	241	292	330	356	495	622	698	787	914	978
H1	179	179	179	210	210	215	245	305	365	415	510	560	658	696	735	735
H	212	212	212	265	265	310	350	460	520	570	840	890	1030	1090	1150	1150



# Diaphragm Mud Valve

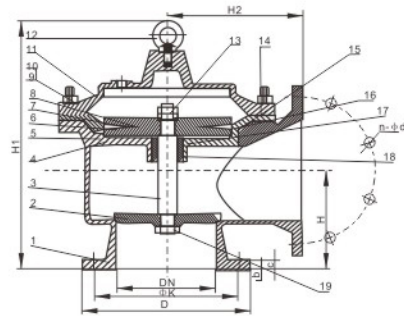
PM747X

## Overview

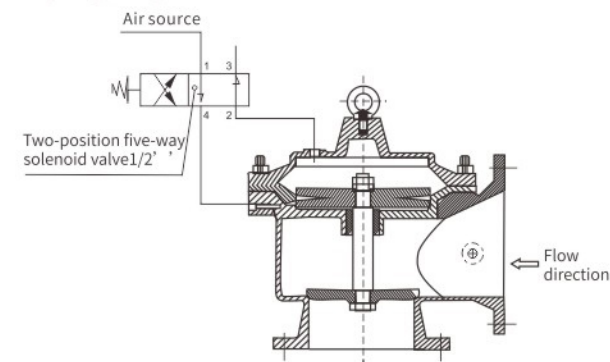
100C angle-form pneumatic mud valve is suitable for water treatment plant to discharge sludge and waste water in the pool. The valve is of angle structure. The partition plate divides the inner chamber into two parts: control chamber and channel. The control chamber is divided into upper and lower control chambers by the diaphragm. The valve seat is of flat-bottomed structure, the sealing surface is sprayed with ceramic, with strong wear resistance, corrosion resistance and long service life, which can prevent the deposition of garbage and use for a long time.

Screw holes are reserved on the top of the bonnet and the side of the valve body. The pressure source enters the upper and lower control chambers through the control pipelines. The pressure of the upper chamber and lower chamber as well as the opening or closing of the mud valve shall be controlled by the solenoid valve. In case of sudden disappearance of the control air source, the mud valve can be kept closed under the inlet water pressure. (external pressure control source is air source)

## Main valve body structure diagram and material table:



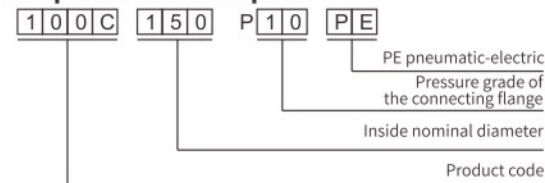
## Piping diagram



## Air source control principle description

1. Close the valve  
Two-position five-way solenoid valve 1.2 conduction, 3.4 conduction, The pressure air source enters the upper control chamber at 100C and the pressure in the lower control chamber at 100C is relieved. 100C close.
2. Open the valve  
Two-position five-way solenoid valve 1.4 conduction, 2.3 conduction, The pressure air source enters the upper control chamber at 100C and the pressure in the lower control chamber at 100C is relieved. 100C close. The solenoid valve is equipped with manual device. In case of power-losing, the mud valve can be manually controlled.

## Preparation description



## Main specification

Pressure grade: PN6  
Maximum working pressure: 0.6MPa  
Valve seat test pressure: 0.66MPa  
Valve body test pressure: 0.9MPa  
Flange pressure grade:  
PN10 or designated by customer

## Main materials

No.	Name	Material
1	Valve body	QT450-10
2	Valve	QT450-10+rubber
3	Shaft	2Cr13
4	Partition plate	QT450-10
5	O-type ring	NBR
6	Lower diaphragm pressing plate	Q235
7	Diaphragm	NBR+cord fabric
8	Upper diaphragm pressing plate	Q235
9	Double end bolt	Grade 8.8
10	Nut	Grade 8
11	Bonnet	QT450-10
12	Lifting eye bolt	20#
13	Nut	A2-70
14	Bolt	A2-70
15	O-type ring	NBR
16	Shaft sleeve	ZCuAl10Fe3
17	O-type ring	NBR
18	Seal ring	NBR
19	Thin nut	A2-70

## Main boundary and connection dimensions (mm)

DN	D	ΦK	C	F	N	Φd	ΦF	H1	H2	H
DN150	285	240	19	3	8	23	340	410	225	143
DN200	340	295	20	3	8	23	435	501	275	200
DN250	395	350	22	3	12	23	536	610	325	238
DN300	445	400	24.5	4	12	23	640	705	375	285

The pressure grade of the connecting flange is PN10. Other specifications and dimensions can be customized according to the requirements of users



# Piston Type Mud Valve

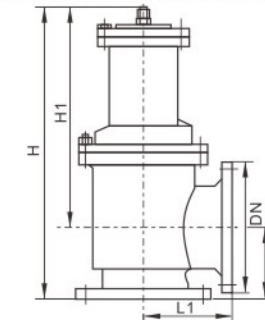
P747X

## Overview

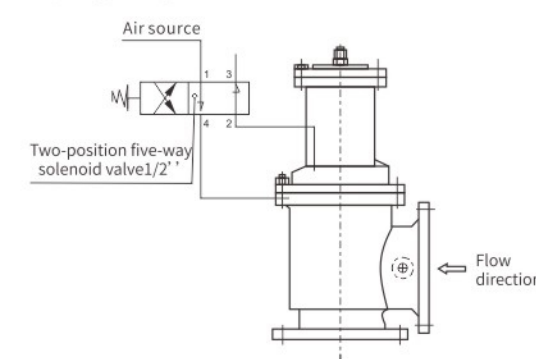
100C angle-form pneumatic mud valve is suitable for water treatment plant to discharge sludge and waste water in the pool. The valve is of angle structure. The partition plate divides the inner chamber into two parts: control chamber and channel. The control chamber is divided into upper and lower control chambers by the diaphragm. The valve seat is of flat-bottomed structure, the sealing surface is sprayed with ceramic, with strong wear resistance, corrosion resistance and long service life, which can prevent the deposition of garbage and use for a long time.

Screw holes are reserved on the top of the bonnet and the side of the valve body. The pressure source enters the upper and lower control chambers through the control pipelines. The pressure of the upper chamber and lower chamber as well as the opening or closing of the mud valve shall be controlled by the solenoid valve. In case of sudden disappearance of the control air source, the mud valve can be kept closed under the inlet water pressure. (external pressure control source is air source)

## Main valve body structure diagram and material table:



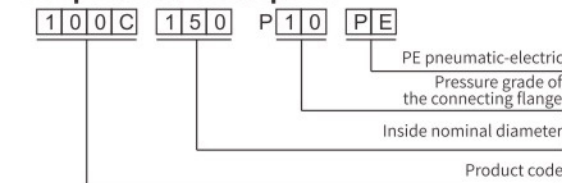
## Piping diagram



## Air source control principle description

1. Close the valve  
Two-position five-way solenoid valve 1.2 conduction, 3.4 conduction, The pressure air source enters the upper control chamber at 100C and the pressure in the lower control chamber at 100C is relieved. 100C close.
2. Open the valve  
Two-position five-way solenoid valve 1.4 conduction, 2.3 conduction, The pressure air source enters the upper control chamber at 100C and the pressure in the lower control chamber at 100C is relieved. 100C close. The solenoid valve is equipped with manual device. In case of power-losing, the mud valve can be manually controlled.

## Preparation description



## Main specification

Pressure grade: PN6  
Maximum working pressure: 0.6MPa  
Valve seat test pressure: 0.66MPa  
Valve body test pressure: 0.9MPa  
Flange pressure grade:  
PN10 or designated by customer

## Main materials

No.	Name	Material
1	Valve body	QT450-10
2	Valve	QT450-10+rubber
3	Shaft	2Cr13
4	Partition plate	QT450-10
5	O-type ring	NBR
6	Lower diaphragm pressing plate	Q235
7	Diaphragm	NBR+cord fabric
8	Upper diaphragm pressing plate	Q235
9	Double end bolt	Grade 8.8
10	Nut	Grade 8
11	Bonnet	QT450-10
12	Lifting eye bolt	20#
13	Nut	A2-70
14	Bolt	A2-70
15	O-type ring	NBR
16	Shaft sleeve	ZCuAl10Fe3
17	O-type ring	NBR
18	Seal ring	NBR
19	Thin nut	A2-70

## Main boundary and connection dimensions (mm)

公称通径	DN100	DN150	DN200	DN250	DN300	DN350	DN400
L	160	190	225	260	280	315	340
L1	120	150	190	220	260	300	340
H	370	440	530	615	785	880	970

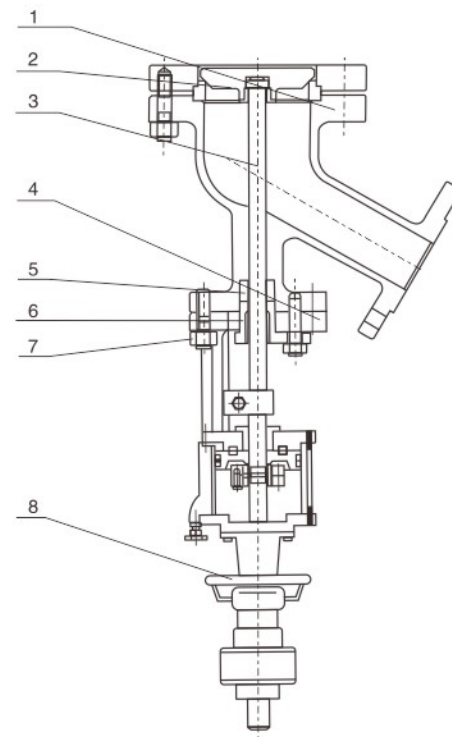


## Put Feed Valve

HG5-SZ

## Application specification

- 1.The valve is designed and manufactured according to GB/T 12235-89
- 2.The structure length shall be subject to the enterprise standard
- 3.The connecting flange shall be subject to JB/T 79-1994
- 4.The test and inspection shall be subject to JB/ T9092-1999.



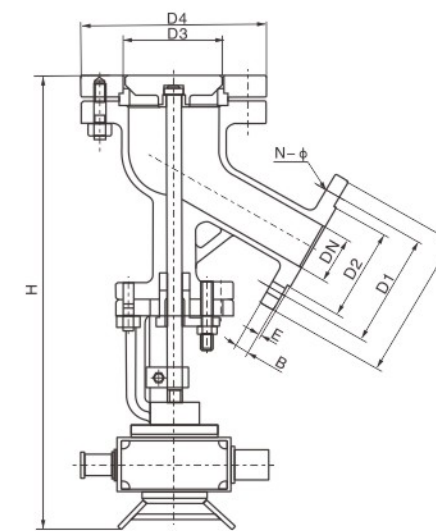
## Materials of main parts

Unit: mm

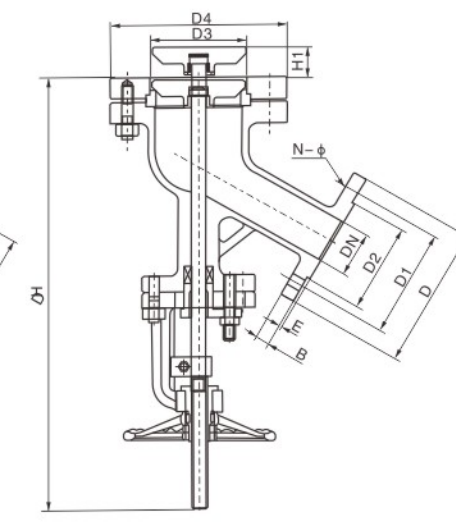
No.	Part name	Material	
		Stainless steel	Cast steel
1	Valve body	ZG0Cr18Ni9	WCB
2	Valve clack	0Cr18Ni9	2Cr13
3	Valve rod	0Cr18Ni9	2Cr13
4	Support	ZG0Cr18Ni9	WCB
5	Padding	PTFE	Graphite
6	Packing gland	ZG0Cr18Ni9	WCB
7	Bolt	0Cr18Ni9	35CrMoA
8	Hand wheel	HT200	HT200

## Put Feed Valve

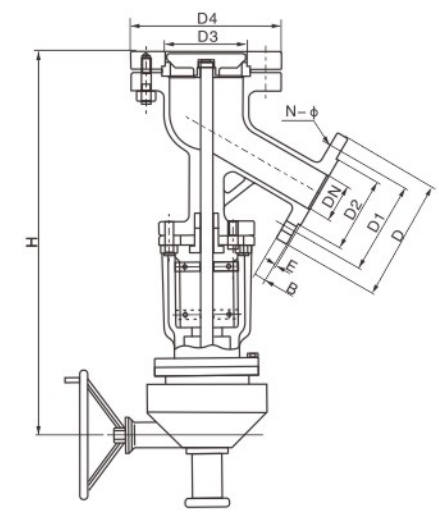
HG5-SZ



HG5-89



HG5-89



HG5-89

## Main boundary dimension and connection dimension (mm)

Unit: mm

DN(mm)	Upper flange		Lower flange		Seal seat	
	D	D1	D	D1	D5	D6
HGSS-16						
25	115	85	115	85		
32	135	100	135	100		
40	145	110	145	110	80	60
50	160	125	160	125	85	70
65	180	145	180	145	125	85
80	195	160	195	160	135	95
100	215	180	215	180	160	130
125	245	210	245	210	180	140
150	280	240	280	240	185	165
200	335	295	335	295		

Note: The height of the pneumatic valve or electric valve shall be determined according to the selected driving device.

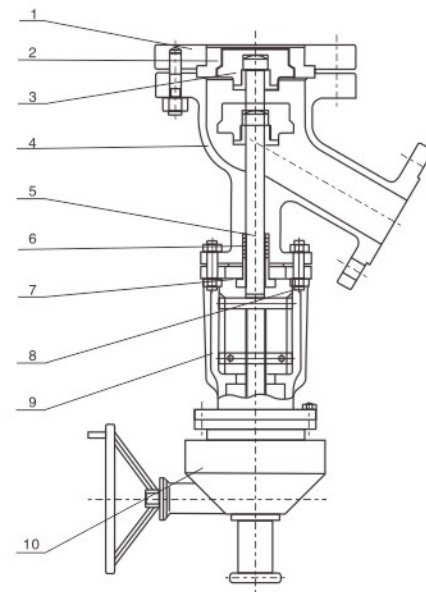


# Put-down Feed Valve

HG5-XZ

## Application specification

- 1.The valve is designed and manufactured according to GB/T 12235-89
- 2.The structure length shall be subject to the enterprise standard
- 3.The connecting flange shall be subject to JB/T 79-1994
- 4.The test and inspection shall be subject to JB/ T9092-1999.



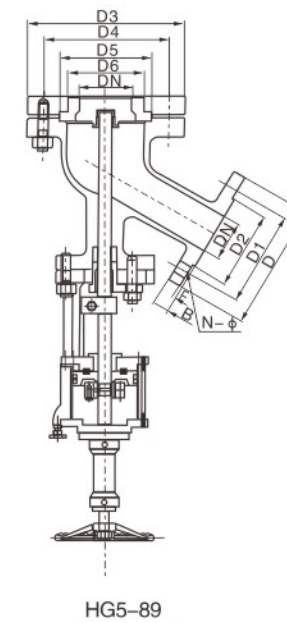
Main boundary dimension and connection dimension (mm)

Unit: mm

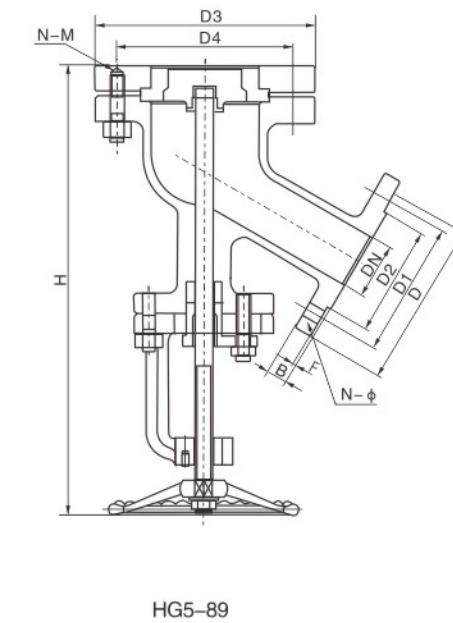
No.	Part name	Material	
		Stainless steel	Cast steel
1	Disc	ZG0Cr18Ni9	WCB
2	Valve seat	0Cr18Ni9	2Cr13
3	Valve clack	0Cr18Ni9	2Cr13
4	Valve body	ZG0Cr18Ni9	WCB
5	Valve rod	0Cr18Ni9	2Cr13
6	Padding	PTFE	PTFE
7	Gland	ZG0Cr18Ni9	WCB
8	Bolt	0Cr18Ni9	35CrMoA
9	Support	ZG0Cr18Ni9	WCB
10	Gear	HT200	HT200

# Put-down Feed Valve

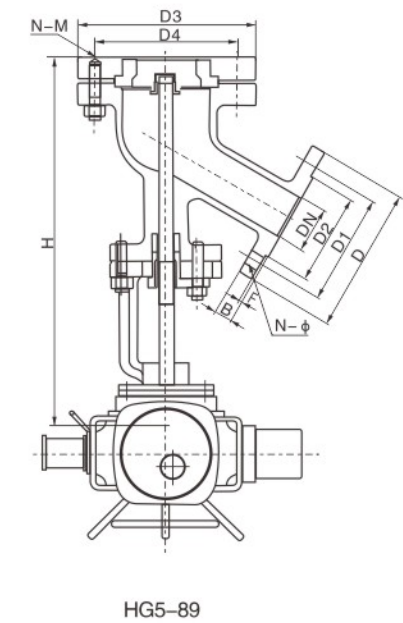
HG5-XZ



HG5-89



HG5-89



HG5-89

Main boundary dimension and connection dimension of put-down feed valve (mm)

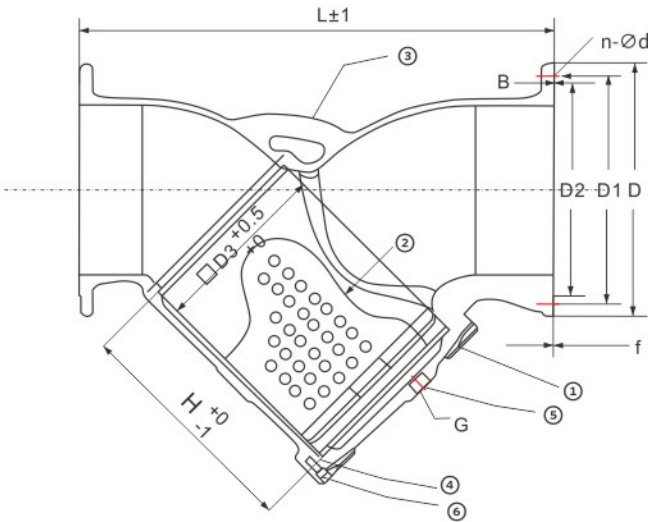
Unit: mm

DN(mm)	Upper flange		Lower flange		Seal seat	
	D	D1	D	D1	D5	D6
HGXS-16						
25	115	85	135	100	70	40
32	135	100	145	110	75	55
40	145	110	160	125	80	65
50	160	125	180	145	85	70
65	180	145	195	160	135	90
80	195	160	215	180	155	130
100	215	180	260	210	160	135
125	245	210	280	240	180	145
150	280	240	335	295	210	185
200	335	295	405	355		

Note: The height of the pneumatic valve or electric valve shall be determined according to the selected driving device.



Y-shaped Filter  
GL41W



Application specification

No.	Name	Material
1	Bonnet	GGG50
2	Filter screen	SS304
3	Valve body	GGG50
4	Middle gasket	NBR
5	Plug	Carbon steel
6	Bolt	Carbon steel

Technical requirements

- 1.:Connection dimension basis: DIN EN558-1
- 2.:Flange drilling basis: DIN EN1092-2
- 3.:Working pressure: PN10-PN16

Main boundary dimension and connection dimension of put-down feed valve (mm) Unit: mm

DN(mm)	D		D1		D2		L		B	F	Z-d		M	D3	H
	PN10	PN16	PN10	PN16	PN10	PN16	PN10	PN16			PN10	PN16			
50	φ165		φ125		φ102		230		19	3	4-φ19	4-φ19	1/2	62	100
65	φ185		φ145		φ122		290		19	3	4-φ19	4-φ19	1/2	77	110
80	φ200		φ160		φ138		310		19	3	8-φ19	8-φ19	1/2	92	130
100	φ220		φ180		φ158		350		19	3	8-φ19	8-φ19	1/2	112	150
125	φ250		φ210		φ188		400		19	3	8-φ19	8-φ19	1/2	141	180
150	φ285		φ240		φ212		480		19	3	8-φ23	8-φ23	1/2	166	226
200	φ340		φ295		φ268		600		20	3	8-φ23	12-φ23	1	216	279
250	φ405		φ350	φ355	φ320		730		22	3	12-φ23	12-φ27	1	270	346
300	φ460		φ400	φ410	φ370	φ378	850		24.5	4	12-φ23	12-φ27	1	320	406
350	φ520		φ460	φ470	φ430	φ438	980		27	4	12-φ23	12-φ27	1	370	610
400	φ580		φ515	φ525	φ480	φ487	1100		28	4	12-φ23	12-φ30	1	420	691
500	φ715		φ620	φ650	φ580	φ610	1250		32	4	20-φ28	20-φ34	1	520	850

> PIPE COMPENSATION JOINT SERIES

