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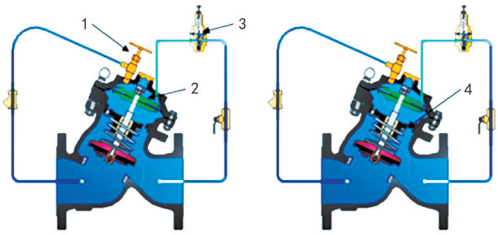
BS Flanged Pressure Reducing Valve User Manual (SK720X1)

Product Review

The SK720X1 pressure reducing valve is a diaphragm type hydraulic control valve that uses the hydraulic pressure of the pipeline as the driving source. The main function is to reduce the high pressure in front of the valve to the set low pressure state behind the valve. No matter how the flow rate or or the upstream pressure fluctuates or changes, the high pressure in front of the valve can be reduced to the low pressure behind the valve, and the pressure can be kept stable.

Working Principle



The SK720X1 pressure reducing valve is equipped with adjustable pressure reducing pilot valve, needle valve, compact strainer, ball valve, etc.

Normally water flow continuously enters the main valve upper control chamber 2 through the needle valve 1 from the inlet, and the pressure reducing pilot valve 3 is adjusted to the set pressure value; When the downstream pressure exceeds the set value, the pilot valve senses the pressure and slowly tends to close, the pressure in the upper control chamber gradually increases, and the main valve slowly tends to close and the downstream pressure decreases to the set value of the pilot valve; When the downstream pressure is lower than the set value of the pilot valve, the pilot valve gradually opens, the upper control chamber releases the accumulated pressure, and the main valve gradually opens.

The orifice hole 4 in the middle chamber of the main valve can make the valve response smoother. The ball valve behind the pilot valve can be adjusted according to different working conditions, to limit the discharge speed of the control chamber water flow, stabilizing the action of the main valve. If necessary, this ball valve can be manually closed to achieve emergency cut-off.

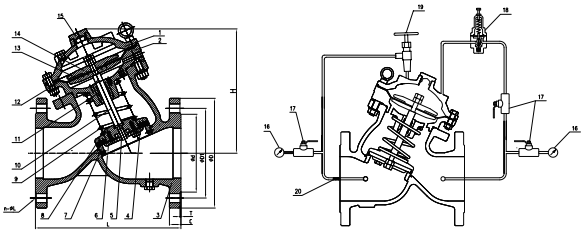
Product Feature

- The valve body is a spherical, Y-shaped structure with a full diameter design, strong flow capacity, low head loss, and reasonable flow channel design, which is not easy to generate harmful flow patterns such as turbulence and reduce cavitation hazards.
- The diaphragm is able to be assembled and disassembled as a whole, making it easy to maintain. As a soft piston, the diaphragm has the advantages of no jamming, sensitive movement, and precise control.
- The main valve adopts a dual chamber structure to avoid the impact of high-pressure water and sediment, stones, etc. on the diaphragm, and the service life of the diaphragm can reach 1 million times.
- The external connecting pipe has a built-in strainer self-cleaning design, and the valve body is free from cleaning and maintenance.
- The product can operate automatically in pipeline control without external power sources, saving energy and truly achieving unmanned operation.
- Wide range of pressure regulation, stable performance, which can reduce both dynamic and static pressure, reducing secondary adjustment when stopping and starting the pump.

Specification & Standard

Connection Standard		BS EN 1092-2		
Coating Standard		ANSI/AWWA C550		
Nominal Diameter DN		50 ~ 600mm		50-300 mm
Nominal Pressure PN		1.0 MPa	1.6 MPa	2.5 MPa
Test Pressure	Strength Test	1.5 MPa	2.4 MPa	3.75 MPa
	Sealing Test	1.1 MPa	1.76 MPa	2.75 MPa
Max inlet pressure		1.0 MPa	1.6 MPa	2.5 MPa
Adjustable range of outlet pressure		0.2-0.8 MPa	0.2-1.2 MPa	0.2-1.2 MPa
Applicable Temperature		0 ~ 80℃		
Applicable Medium		Water		

Design & Dimensions



Product Structure

Material Specifications

Part No.	Part	Standard Specification
1	Up Bonnet	EN-GJS-450-10
2	Middle Bonnet	EN-GJS-450-10
3	Valve Body	EN-GJS-450-10
4	Main Gasket	EPDM
5	Disc head	SS304
6	Gland of Main Disc	EN-GJS-450-10
7	Seat	SS304
8	Main Disc	EN-GJS-450-10
9	Spring	SS304

Address: Meide Industrial Science and Technology City, Industrial Park Pingyin, Jinan, China 250400
Phone: (86)531 87856271 87879384 87885060 Fax: (86)531 87879387
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Part No.	Part	Standard Specification
10	Stem	SS304
11	Bushing	C89833
12	Diaphragm	EPDM
13	Bottom Gland	EN-GJS-450-10
14	Up Gland	EN-GJS-450-10
15	Cap Plug	50-300/SS304, 350-600/ C89833
16	Pressure Gauge	SS304
17	Ball Valve	HPb59-1
18	Pilot Valve	SS304
19	Needle Valve	SS304
20	Built-in Strainer	SS304

Note：Due to the continuous optimization of performance, there may be discrepancies between the actual product and the structure chart. Please refer to the actual product for details.

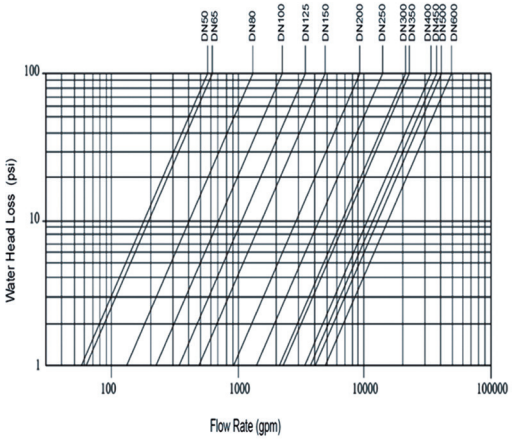
Dimensions

DN		PN	Dimensions(mm)							
Inch	DN		L	H	D	D1	d	C	T	n-ΦL
2"	50	10/16	203	170	165	125	99	19	3	4-Φ19
2.5"	65	10/16	216	195	185	145	118	19	3	4-Φ19
3"	80	10/16	241	215	200	160	132	19	3	8-Φ19
4"	100	10/16	292	255	220	180	156	19	3	8-Φ19
5"	125	10/16	330	290	250	210	184	19	3	8-Φ19
6"	150	10/16	356	360	285	240	211	19	3	8-Φ23
8"	200	10	495	450	340	295	266	20	3	8-Φ23
		16	495		340	295	266	20	3	12-Φ23
10"	250	10	622	550	405	350	319	22	3	12-Φ23
		16	622		405	355	319	22	3	12-Φ28
12"	300	10	698	645	460	400	370	24.5	4	12-Φ23
		16	698		460	410	370	24.5	4	12-Φ28
14"	350	10	787	700	505	460	429	24.5	4	16-Φ23
		16	787		520	470	429	26.5	4	16-Φ28
16"	400	10	914	790	565	515	480	24.5	4	16-Φ28
		16	914		580	525	480	28	4	16-Φ31
18"	450	10	978	850	615	565	530	25.5	4	20-Φ28
		16	978		640	585	548	30	4	20-Φ31
20"	500	10	978	900	670	620	582	26.5	4	20-Φ28
		16	978		715	650	609	31.5	4	20-Φ34
24"	600	10	1295	1030	780	725	682	30	5	20-Φ31
		16	1295		840	770	720	36	5	20-Φ37

DN		PN	Dimensions(mm)							
Inch	DN		L	H	D	D1	d	C	T	n-ØL
2"	50	25	203	170	165	125	99	19	3	4-Ø19
21/2"	65	25	216	195	185	145	118	19	3	8-Ø19
3"	80	25	241	215	200	160	132	19	3	8-Ø19
4"	100	25	292	255	235	190	156	19	3	8-Ø23
5"	125	25	330	290	270	220	184	19	3	8-Ø28
6"	150	25	356	360	300	250	211	20	3	8-Ø28
8"	200	25	495	450	360	310	274	22	3	12-Ø28
10"	250	25	622	550	425	370	330	24.5	3	12-Ø31
12"	300	25	698	645	485	430	389	27.5	4	16-Ø31

KV rates

DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Kv	41	53	105	175	285	402	730	1160	1400	1770	3010	3225	3395	4272



Key Accessories

Pilot Valve
Model：JYDFE
Material of valve body and valve bonnet：SS304
Nominal working pressure：PN16、PN25
Decompression range：0.2-1.2Mpa、0.2-1.6MPa

Pressure Gauge
Connecting thread and range
PN16：M14X0.25MPa
PN25：M14X4 MPa

Installation & Application

1. Installation instructions

1.1 Check if the nameplate, certificate and valve body casting information of the pressure reducing valve are consistent.

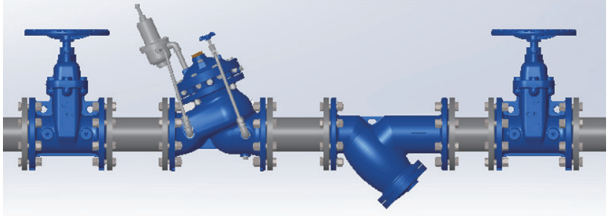
1.2 When installing the pressure reducing valve, the direction of water flow should be consistent with the arrow on the valve body. Do not install it in the opposite direction.

1.3 The best installation method for pressure reducing valves is to install horizontally on the pipeline, and when installed vertically, the direction of water flow is from bottom to top.

1.4 The pipeline should be thoroughly cleaned before installing the valve to ensure that there is no debris, welding slag, etc. in the pipeline.

1.5 The plug at both ends of the pressure reducing valve should be removed before installation to prevent impurities from entering the valve chamber.

1.6 A strainer should be installed in front of the pressure reducing valve, one maintenance gate valve should be installed before and after the valve.



Address: Meide Industrial Science and Technology City, Industrial Park Pingyin, Jinan, China 250400
Phone: (86)531 87856271 87879384 87885060 Fax: (86)531 87879387
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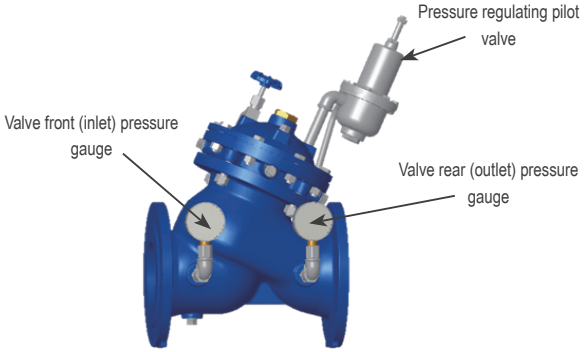
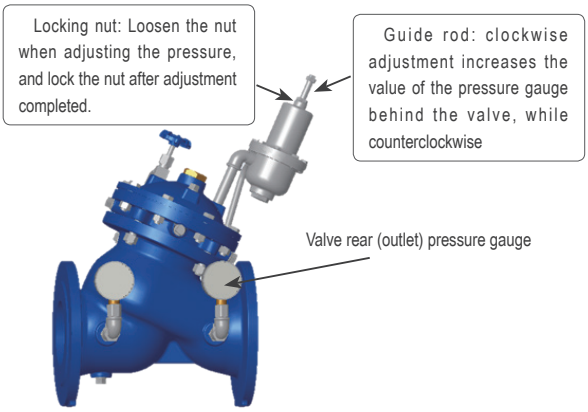
2. Precautions for installation and debugging

2.1 The valve is installed on the pipeline, and after inspection the ball valves on the pressure reducing valve are all in an open state. Before debugging, close the maintenance valve after the pressure reducing valve to avoid sudden increase in pipeline pressure and damage to the equipment in the pipeline.

2.2 The pressure reducing valve has undergone preliminary debugging before leaving the factory, with a debugging pressure of 0.45MPa. However, during system operation it still needs to be debugged again according to different working conditions; Adjust the guide rod of the pilot valve clockwise to increase the outlet pressure, and counterclockwise to decrease the outlet pressure.



2.3 The specific debugging method is as follows: after the system stabilizes, if the downstream pressure is required to be greater than 0.45MPa, directly tighten the guide rod of the pilot valve clockwise, observe the pressure gauge value behind the valve until the required pressure is reached; If the downstream pressure is required to be less than 0.45MPa, loosen the guide rod counterclockwise to the top position. At this time, the outlet pressure is 0, and the valve will not release water; Slowly tighten the guide rod clockwise, and the outlet pressure will gradually increase (observe the pressure gauge behind the valve). When the required value is reached, tighten the locking nut at the bottom of the guide rod.



2.4 If the pressure adjustment is excessive, reset and readjust. Loosen the guide rod counterclockwise to the top position, and then slowly tighten the guide rod clockwise. The outlet pressure will gradually increase (observe the pressure gauge behind the valve). When the required value is reached, tighten the locking nut at the bottom of the guide rod.

2.5 When the downstream pressure meets the requirement for the working condition, open the gate valve after the pressure reducing valve. When there is a slight fluctuation in pressure, fine tune the pilot valve to ensure that the outlet pressure reaches a stable state.

2.6 When vibration occurs during debugging, please try to exhaust the gas from the pipeline.

Transportation & Storage

1. During transportation, take care to prevent violent vibration, throwing, collision, etc., and with proper protection from rain or chemical erosion.
2. The valve should not be dragged on the ground or moved along with the ground surface to avoid damage to the surface, metal plates, and sealing surfaces.
3. The valve should be placed in a safe place and waterproof and dustproof.
4. Both ends of the inventory valve heads should be sealed.

Common Problems & Solutions

SN	Problem	Cause	Solution
1	The outlet pressure of the pressure reducing valve is almost equal to the inlet pressure, without reducing pressure	a. Needle valve opening is small (almost completely closed) or completely closed	After completely closing the needle valve, open 1.5 to 2 turns to check if the pressure reduction is normal.
		b. The valve is not set successfully	Follow the "Precautions for installation and debugging" Re debug
2	The valve vibrates severely and makes loud noise	a. Air accumulation in the valve chamber causes vibration	Attempt to exhaust the gas from the pipeline
		b. The pressure difference between the inlet and the outlet is too large, leading to cavitation and energy loss	By installing multiple pressure reducing valves in the pipeline to reduce the pressure difference, the ratio of inlet pressure to outlet pressure should not exceed 3.
3	The downstream pressure is unstable	a. The locking nut of the pilot valve is loose	Readjust the pilot valve and lock the nut
		b. The difference between the required flow rate and the actual flow rate is too large	Recalculate the flow rate and select the appropriate specification.

Maintenance

1. Regularly check whether the fasteners of each part of the valve are loose or damaged, and repair them in time if there are any problems.
2. For working conditions where temperature and pipeline pressure changes, it is recommended to tighten the bolts again after 24 hours of operation to compensate for any possible looseness.
3. During the repair and maintenance of valves, users should use accessories of the same size and material as the original. They can also be ordered as spare parts for replacement during maintenance.
4. The valve in use shall be maintained every year before winter, and the valve shall be flexibly operated and timely discharged once a month to keep clean.
5. After the maintenance is completed, the relevant operations should be filled in the 《Valve Maintenance and Repair Record》; the operator and the person in charge should sign and confirm after completion.

Cautions

Before installation please carefully check whether the product information matches the operating conditions. If there are any differences, please consult before use; Special working conditions such as seawater and corrosive media must be specified and customized.

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