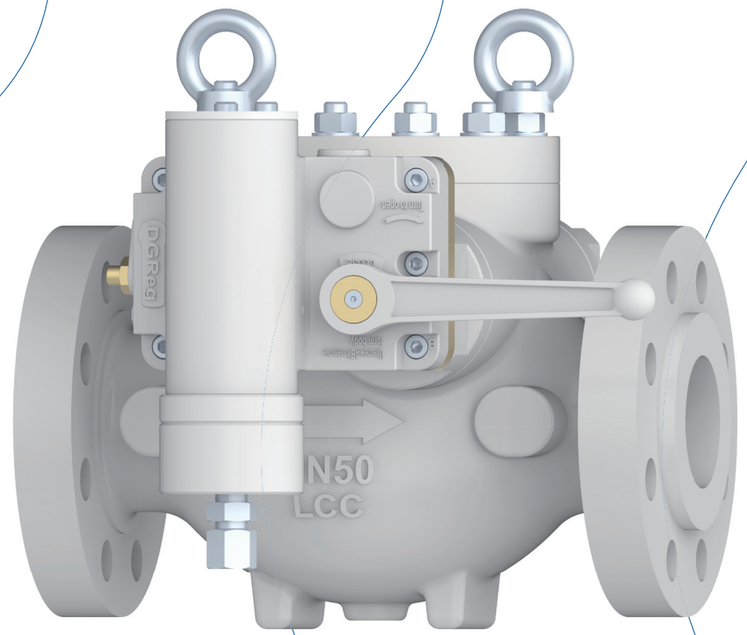
Shut-off Valve

ASV Series



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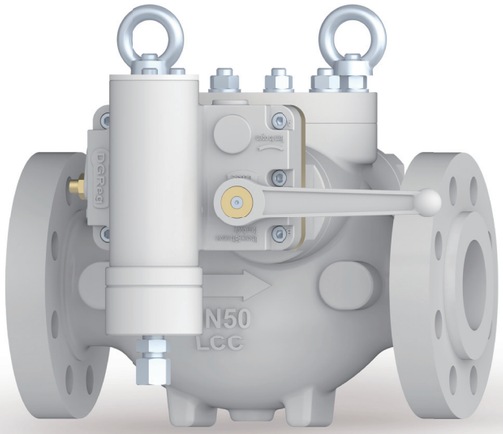
ASV Series

DESCRIPTION

The ASV series shut-off valve, a gas safety device , is suitable for medium and high pressure gas pipeline networks and gas systems in commercial and industrial users. It is widely used in both commercial and industrial installations using Natural Gas, LPG and other non-corrosive gases.

When any system abnormality causes the monitored pressure to reach a predetermined alarm threshold, the device automatically and rapidly shuts off the gas flow to ensure safety protection.



FEATURES

- High flow coefficient
- High accuracy，fast response
- Close tightly, high reliability
- Equipped with SD500 series shut-off sensor
- Low pressure loss
- Easy to operate and online maintenance
- Optional shut-off remote transmission device
- Optional DGP300 series pilot

PARAMETERS

Operating Parameters

- Maximum inlet pressure: 100 bar
- Overpressure setting range: 0.5-90 bar
- Underpressure setting range: 0.3-51 bar
- Accuracy group AG: Up to 1
- Response time: ⩽ 1s
- Working temperature: -20℃ to +60℃

Flow Coefficient (Cg)

ASV100	ASV200	ASV300	ASV400	ASV600
1100	4600	11000	19000	38000

Connecting Parameters

Model	ASV100	ASV200	ASV300	ASV400	ASV600
Connecting size	DN25	DN50	DN80	DN100	DN150
Pressure rating	Class300/600				
Flange standards*	Class according to ASME B16.5				

* Other connection standards can be provided upon request

Materials

Valve body	Covers	Diaphram	Seat	O-ring
Cast Steel (ASTM A216 WCB) Optional: Cast steel (ASTM A352 LCC)	Aluminum alloy Brass	Reinforced fiber rubber	Stainless steel	Nitrile rubber (NBR) Fluoro rubber (FKM)

MODEL INTRODUCTION

Model	Description
ASV	ASV Series Shut-off Valve
1	Indicates different nominal diameters, such as “1” representing the nominal diameter of NPS1" (DN 25)
2	
3	
4	
6	
1	With overpressure shutoff and underpressure shut-off
2	With overpressure shut-off
3	0.4bar ⩽ OPSO ⩽ 5bar, 0.3bar ⩽ UPSO ⩽ 2.4bar*
4	4.8bar ⩽ OPSO ⩽ 24bar, 2.3bar ⩽ UPSO ⩽ 12bar
5	21bar ⩽ OPSO ⩽ 90bar, 10bar ⩽ UPSO ⩽ 51bar
300	Nominal pressure rating (Class)
600	

*OPSO: Over pressure shut-off value / UPSO: Under pressure shut-off value

Model	Description
SD	SD Series Shut-off Sensor
5	Model 500 Shut-off Sensor
1	With overpressure shutoff and underpressure shut-off
2	With overpressure shut-off
3	0.4bar ⩽ OPSO ⩽ 5bar, 0.3bar ⩽ UPSO ⩽ 2.4bar*
4	4.8bar ⩽ OPSO ⩽ 24bar, 2.3bar ⩽ UPSO ⩽ 12bar
5	21bar ⩽ OPSO ⩽ 90bar, 10bar ⩽ UPSO ⩽ 51bar

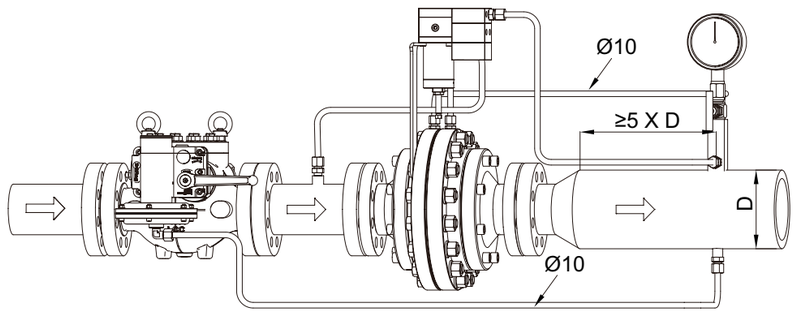
*OPSO: Over pressure shut-off value / UPSO: Under pressure shut-off value

SPRING

Pressure range of the shut-off spring

Model		Shut-off pressure range(mbar)	Part number	Color
Over pressure shut-off	ASV103 / ASV203 ASV303 / ASV403 ASV603	400-720	19010801653	Green
		750-1260	19010801654	Blue
		1080-2050	19010801655	Red
		1900-5000	19010801657	White
	ASV104 / ASV204 ASV304 / ASV404 ASV604	4800-10000	19010801655	Red
		6800-15800	19010801653	Green
		9000-24000	19010801657	White
		15000-24000	19010801654	Blue
	ASV105 / ASV205 ASV305 / ASV405 ASV605	21000-43000	19010801655	Red
		38000-90000	19010801657	White
Under pressure shut-off	ASV103 / ASV203 ASV303 / ASV403 ASV603	300-700	19010700314	Blue
		460-1260	19010700315	Red
		900-2400	19010700317	White
	ASV104 / ASV204 ASV304 / ASV404 ASV604	2300-6000	19010700315	Red
		4000-12000	19010700317	White
	ASV105 / ASV205 ASV305 / ASV405 ASV605	10000-26000	19010700315	Red
		18000-51000	19010700317	White

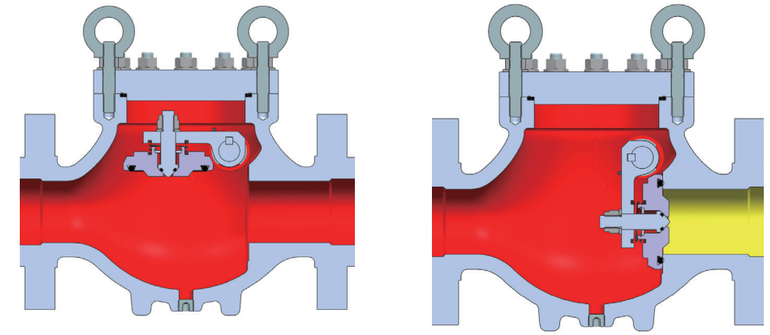
INSTALLATION

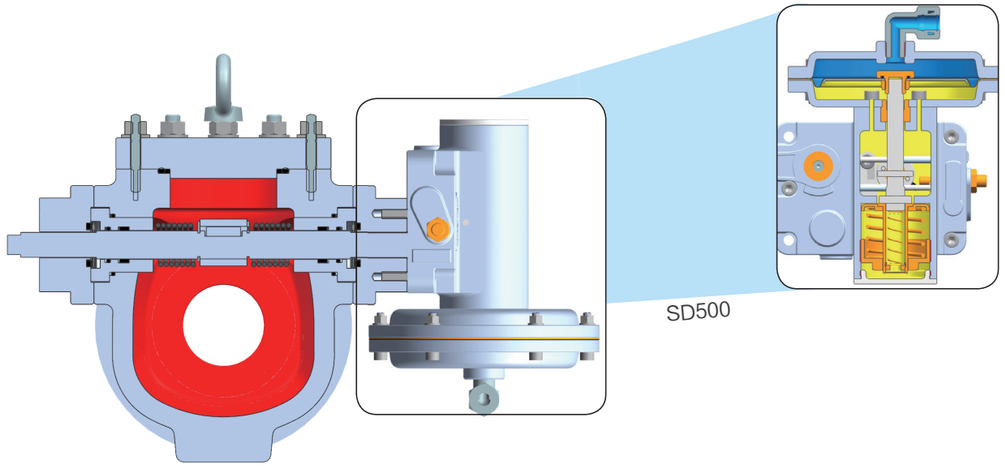


DIMENSIONS

The ASV series shut-off valve is a direct-acting shut-off valve that utilizes an integrated external shut-off sensor for pressure feedback. When combined with the DGP300 series pilot, it can also operate as an indirect-acting shut-off valve.

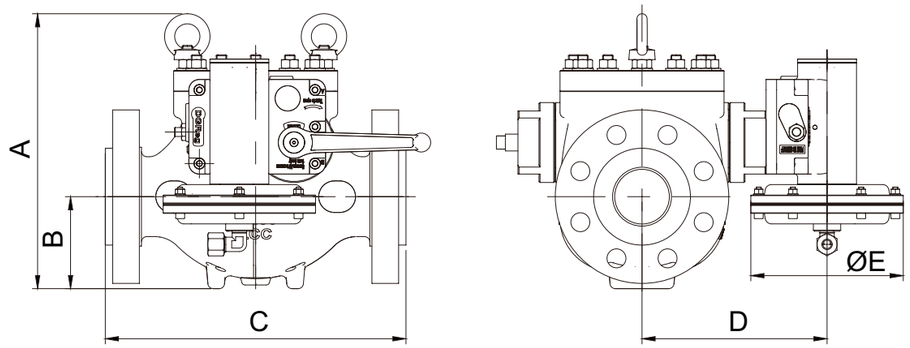
When abnormal downstream pressure is detected, the feedback is transmitted to the valve sensor. The interaction between this pressure and the shut-off spring causes diaphragm displacement, which actuates the shut-off valve stem. This action releases the shut-off valve disc from its restraint. Under the force of the torsion spring, the disc rapidly and tightly seals against the valve seat, blocking the inlet flow to achieve shut-off functionality.





Atmospheric pressure Inlet pressure Outlet pressure

DIMENSIONS



unit : mm

Model	Pressure rate	A	B	C	D	E	weight（Kg）
ASV103 ASV104/105	Class300	221.5	117	197	137	95 61	9
	Class600			210			10
ASV203 ASV204/205	Class300	261.5	87.5	264	176	95 61	29
	Class600			286			31.5
ASV303 ASV304/305	Class300	338	115	317	200	95 61	45
	Class600			337			50
ASV403 ASV404/405	Class300	433	147.5	368	235	95 61	80
	Class600			394			89
ASV603 ASV604/605	Class300	519	185	473	253	95 61	145
	Class600			508			173

PRESSURE LOSS

The selection of the shut-off valve diameter is based on the regulator's diameter. Typically, the shut-off valve diameter equals or exceeds the regulator's diameter. Using the Cg as a reference, the pressure loss for a shut-off valve operating with natural gas under standard conditions (15℃) can be calculated using the following formula:

$$\Delta P = Q^2 X \frac{d\,(t+273)}{13.58^2 \times c_g^2 \times (P_1 + P_a)}$$

ΔP — Pressure loss (bar);
Q — Flow rate （m^3/h）;
t — Gas temperature （℃）;
Cg — Flow coefficient;
d — Gas relative density;
P_1 — Inlet pressure (bar);
P_a — Atmospheric pressure (bar);

When the relative density d of the gas used differs from 0.61 (natural gas) or the gas temperature is not 15 ℃, the flow rate should be multiplied by the correction factor F obtained using the following formula:

$$F = \sqrt{\frac{0.61*288}{d*(t+273)}}$$

F —Correction factor;
The following is the gas relative density d and correction factor F of commonly used gases at the gas temperature of 15 ℃ :

Gas type	Relative density d	Factor F
Air	1	0.78
Coal gas	0.44	1.18
Methane	0.55	1.05
Ethane	1.05	0.76
Propane	1.53	0.63
Butane	2.01	0.55
Nitrogen	0.97	0.79
Carbon dioxide	1.52	0.63

After selecting the appropriate shut-off valve diameter, verify the gas flow velocity (V) at the outlet flange* using the following formula:

$$V = \frac{345.92 \times Q \times (1 - 0.002 \times P_2)}{DN^2 \times (P_2 + P_a)}$$

V — Velocity (m/s);
P_2 — Outlet pressure (bar);
DN — Valve diameter (mm);

Based on simulation results and practical application feedback, it is recommended that the gas velocity at the outlet flange V ≤ 80m/s.