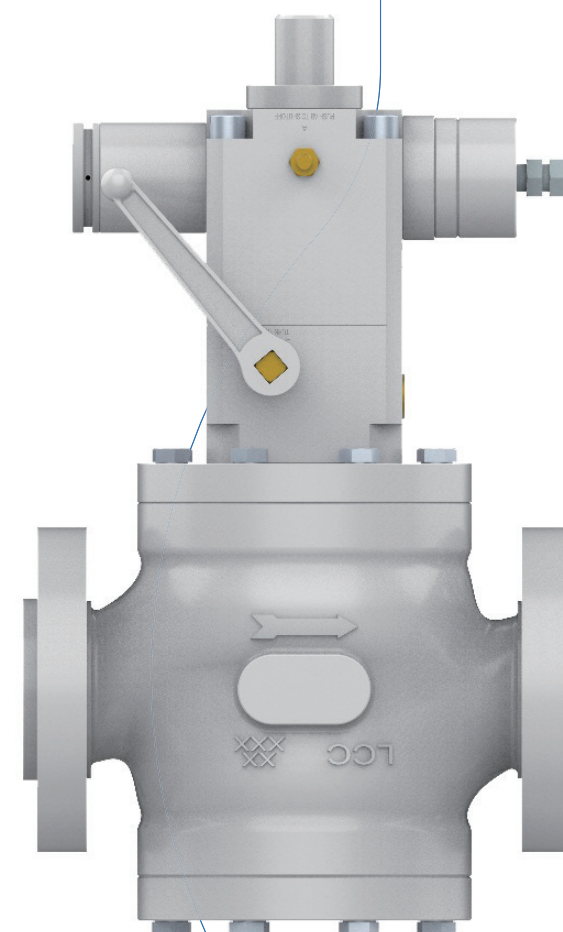




Shut-off valve **GSV Series**



Address: Unit 133, 7121-104 Avenue SE, Calgary, Alberta, Canada

Website: www.dgreg.com

Tel: +1 5878920168

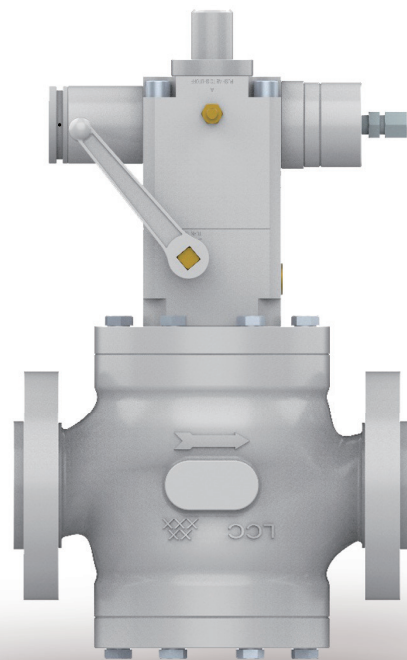
Email: sales@dgreg.com / info@dgreg.com

GSV Series

DESCRIPTION

The GSV series shut-off valve, a gas safety device , is suitable for high, medium and low 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 accuracy, fast response
- Floating valve seat, Close tightly
- Modular design, high reliability, easy disassembly
- Equipped with a manual shut-off function for emergency shut-off
- Worm gear reset mechanism, allowing for effortless 360° reset without blind spots.
- Optional shut-off remote transmission device
- Optional DGP300 series pilot

PARAMETERS

Operating Parameters

- Maximum inlet pressure: 100 bar
- Overpressure setting range: 15mbar-90 bar
- Underpressure setting range: 6mbar-51 bar
- Accuracy group AG: Up to 1
- Response time: ≤ 1s
- Working temperature: -20℃ to +60℃

Flow Coefficient (Cg)

GSV100	GSV200	GSV300	GSV400	GSV600	GSV800
575	2200	4930	8000	16600	25900

Connecting Parameters

Model	GSV100	GSV200	GSV300	GSV400	GSV600	GSV800
Connecting size	DN25	DN50	DN80	DN100	DN150	DN200
Pressure rating	PN16/PN25 & Class150/Class300/Class600					
Flange standards*	PN according to EN 1092-2 / Class according to ASME B16.5					

* Other connection standards can be provided upon request

Materials

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

MODEL INTRODUCTION

Model	Description
GSV	GSV Series Shut-off Valve
1	Indicates different nominal diameters, such as “1” representing the nominal diameter of NPS1" (DN 25)
2	
3	
4	
6	
8*	
1	With overpressure shutoff and underpressure shut-off
2	With overpressure shut-off
1	15mbar ≤ OPSO ≤ 360mbar, 6mbar ≤ UPSO ≤ 200mbar**
2	190mbar ≤ OPSO ≤ 760mbar, 60mbar ≤ UPSO ≤ 340mbar
3	700mbar ≤ OPSO ≤ 5000mbar, 300mbar ≤ UPSO ≤ 2400mbar
4	4.8bar ≤ OPSO ≤ 24bar, 2.3bar ≤ UPSO ≤ 6.1bar
5	20.5bar ≤ OPSO ≤ 90bar, 10bar ≤ UPSO ≤ 51bar

* Larger diameter pressure regulators are available upon request

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

Model	Description
SD	SD Series Shut-off Sensor
7	Type 7000 Shut-off Sensor
1	For use with DN25 valve
2	For use with DN50 valve
3	For use with DN80 valve
4	For use with DN100 valve
6	For use with DN150 valve
8	For use with DN200 valve
1	With overpressure shut-off and underpressure shut-off
2	With overpressure shut-off
1	15mbar ≤ OPSO ≤ 360mbar, 6mbar ≤ UPSO ≤ 200mbar*
2	190mbar ≤ OPSO ≤ 760mbar, 60mbar ≤ UPSO ≤ 340mbar
3	700mbar ≤ OPSO ≤ 5000mbar, 300mbar ≤ UPSO ≤ 2400mbar
4	4.8bar ≤ OPSO ≤ 24bar, 2.3bar ≤ UPSO ≤ 12bar
5	20.5bar ≤ OPSO ≤ 90bar, 10bar ≤ UPSO ≤ 51bar

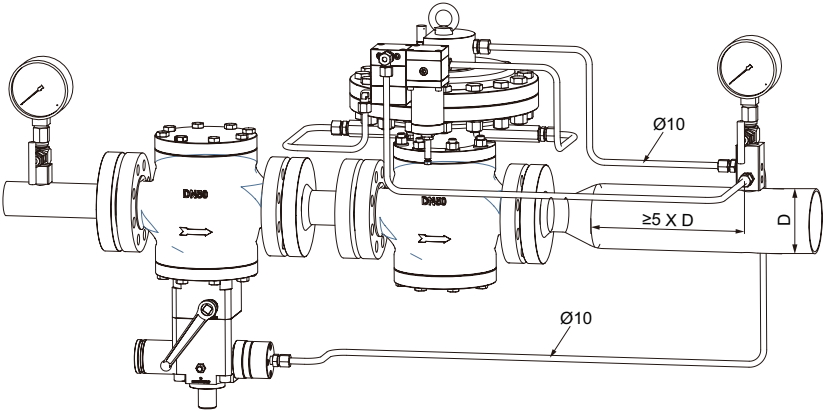
*OPSO: Over pressure shut-off value / UPSO: Under pressure shut-off value

SPRING

Pressure range of the shut-off spring

Model	Shut-off pressure range(mbar)	Part number	Color
Over pressure shut-off	15-46	19010801651	White
	36-100	19010801652	Yellow
	90-200	19010801653	Green
	190-360	19010801654	Blue
	190-360	19010801654	Blue
	310-760	19010801655	Red
	700-1260	19010801654	Blue
	1080-2050	19010801655	Red
	1900-5000	19010801657	Black
	4800-10000	19010801655	Red
	9000-24000	19010801657	White
	21000-43000	19010801655	Red
	38000-90000	19010801657	White
	6-20	19010700311	White
	12-40	19010700312	Yellow
Under pressure shut-off	30-90	19010700313	Green
	60-200	19010700314	Blue
	60-200	19010700314	Blue
	130-340	19010700315	Red
	300-700	19010700314	Blue
	460-1260	19010700315	Red
	900-2400	19010700317	White
	2300-6000	19010700315	Red
	4000-12000	19010700316	Black
	10000-26000	19010700315	Red
	18000-51000	19010700316	Black

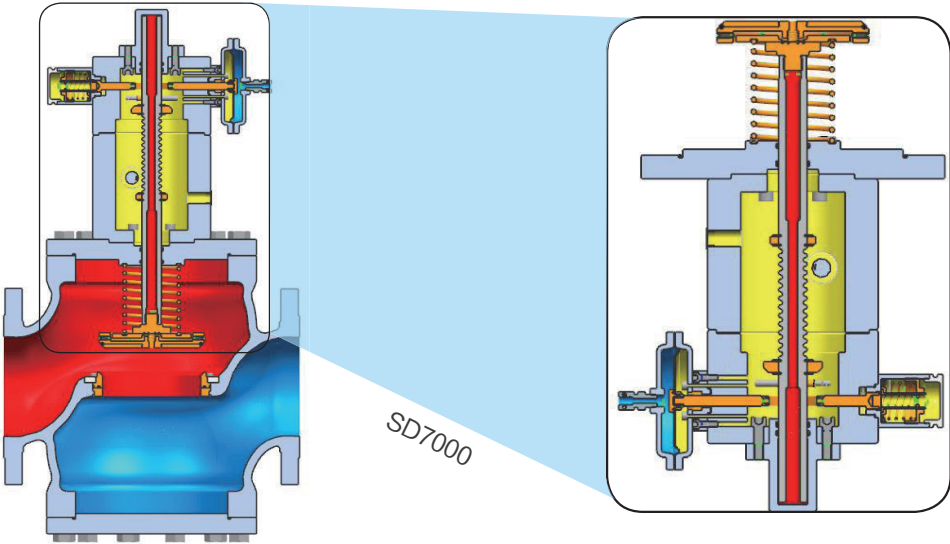
INSTALLATION



OPERATING PRINCIPLE

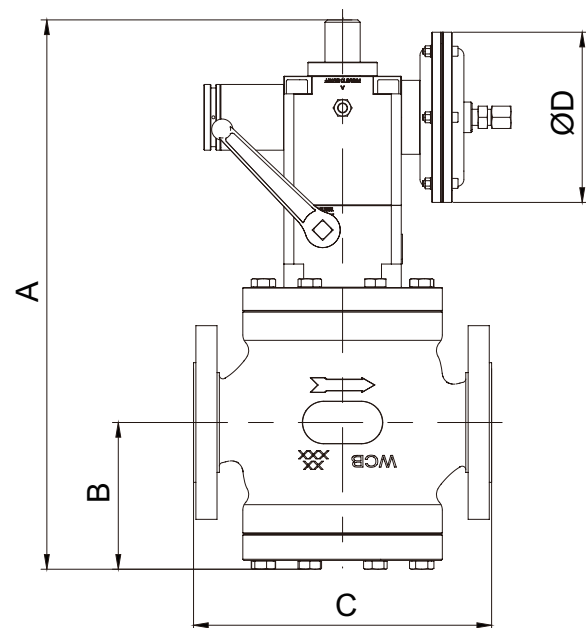
The GSV series shut-off valve is a direct-acting shut-off valve that utilizes an integrated external shut-off sensor for pressure feedback. When combined with the DGP300 series pilot, it can also operate as an indirect-acting shutoff valve.

When abnormal downstream pressure is detected, the feedback is transmitted to the valve sensor. The interaction between this pressure and the shut-off spring induces diaphragm displacement, which actuates the linkage mechanism. This action releases the shut-off valve stem from its locked position, allowing the valve seat to disengage from its restraint. Under the force of the shut-off actuation spring, the valve seat rapidly and tightly seals against the valve orifice, blocking the inlet flow to achieve shut-off functionality.



Atmospheric pressure Inlet pressure Outlet pressure

DIMENSIONS



Unit: mm

Model	Pressure rating	A	B	C	D	Weight(Kg)
GSV100	Class300	440	101.5	197	95	20
	Class600			210	61	21.5
GSV200	PN16/PN25/Class150	527	125	254	145	38
	Class300			267	95	40.5
	Class600			286	61	42.5
GSV300	PN16/PN25/Class50	574	148.5	298	145	53.5
	Class300			317	95	58.5
	Class600			336	61	61.5
GSV400	PN16/PN25/Class150	649	186.5	352	145	77
	Class300			368	95	92
	Class600			394	61	101
GSV600	PN16/PN25/Class150	915	248.5	451	145	188.8
	Class300			473	95	229.5
	Class600			508	61	244.5
GSV800	PN16/PN25/Class150	1015	298.5	543	145	280
	Class300			568	95	358.5
	Class600			609	61	385.6

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:

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

ΔP — Pressure loss (bar);
 Q — Flow rate (m³/h) ;
 t — Gas temperature (℃) ;
 Cg — Flow coefficient;
 d — Gas relative density;
 P₁— 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:

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

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);
 P₂— 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.