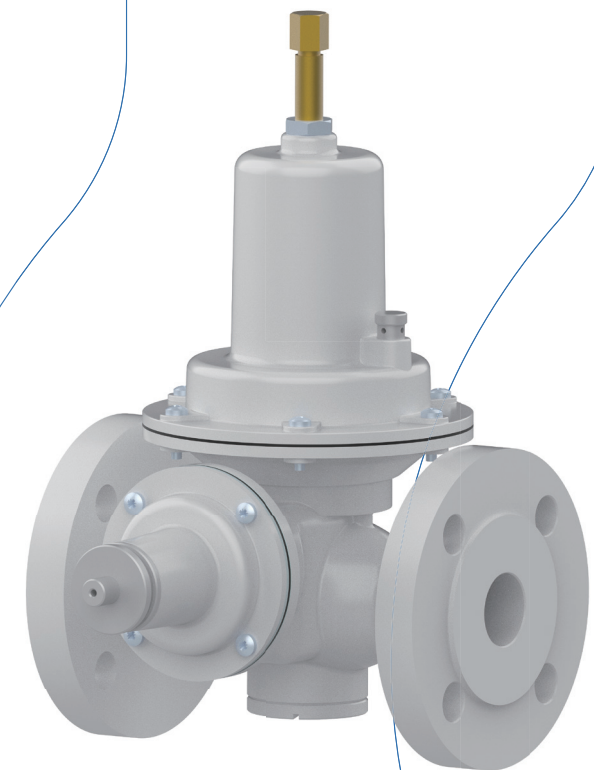
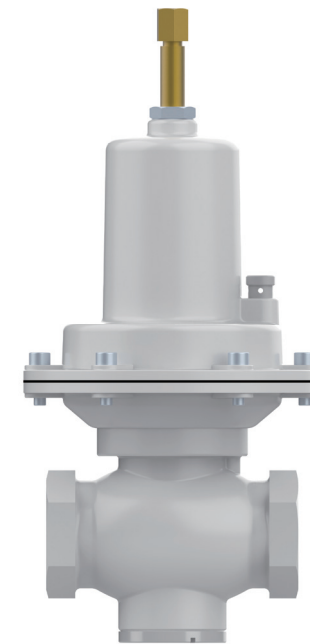




Regulator **V100 Series**



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V100 Series

DESCRIPTION

The V100 series pressure regulator, equipped with loaded spring, controlling diaphragm and balanced valve, is suitable for low and medium pressure.

The regulators are widely used in both commercial and industrial installations using Natural Gas, LPG and other non-corrosive gases.



FEATURES

- High accuracy, fast response
- Vertical straight-rod structure, zero leakage
- Standard balanced valve, unaffected by inlet pressure fluctuations
- Fail to open
- Optional built-in relief valve
- Equipped with two valve body structures: one with a shut-off function and one without.

PARAMETERS

Operating Parameters

- Maximum inlet pressure:
 - 5 bar for diaphragm balanced valve
 - 20 bar for piston balanced valve
- Outlet pressure regulation range: from 300 to 4000 mbar
- Accuracy class AC: up to 5
- Lock-up pressure class SG: up to 10
- Working temperature: -20°C – +60°C
- Flow Coefficient Cg: 130

Connection Parameters

Model	V120	V110
Connection size	1"	DN25
Pressure rating	PN16	PN16 / 25 Class150
Thread / Flange standards *	Internal thread in line with ISO 7-1 / PN according to EN 1092-2 Class according to ASME B16.5	

* Other flange connection standards available upon request

Materials

Valve Body	Covers	Diaphragm	Seat	O-ring
Ductile cast iron (GJS 400-18-LT EN1563) Optional: Cast steel (ASTM A216 WCB)	Aluminum alloy ASTM A380	Reinforced fiber rubber	Stainless steel	Nitrile rubber

MODEL INTRODUCTION

Model		Description
V	1	V100 series regulator
	1	With shutoff valve
	2	Without shutoff valve
	3	P1 ≤ 5bar, 0.3bar ≤ P2 ≤ 4bar, With diaphragm balanced valve*
	4	P1 ≤ 20bar, 0.5bar ≤ P2 ≤ 4bar, With piston balanced valve
-R		Equipped with built-in relief, omitted if not equipped

*P1: Inlet pressure, P2: Outlet pressure

Model		Description
SD		SD Series Shut-off sensor
	6	Type 600 Shut-off sensor
	1	With over pressure and under pressure shut-off
	2	With over pressure shut-off
	1	0.3bar ≤ OPSO ≤ 5bar, 0.1bar ≤ UPSO ≤ 2bar*

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

SPRING

Pressure range of the regulator spring

Model	Version	Outlet pressure range (mbar)	Part number	Color
V100	V103 V104	280-700	19010812141	White
		600-1150	19010812142	Yellow
		800-2000	19010812143	Green
		1400-2800	19010812144	Blue
		2200-4500	19010812145	Red

Pressure range of the shut-off spring

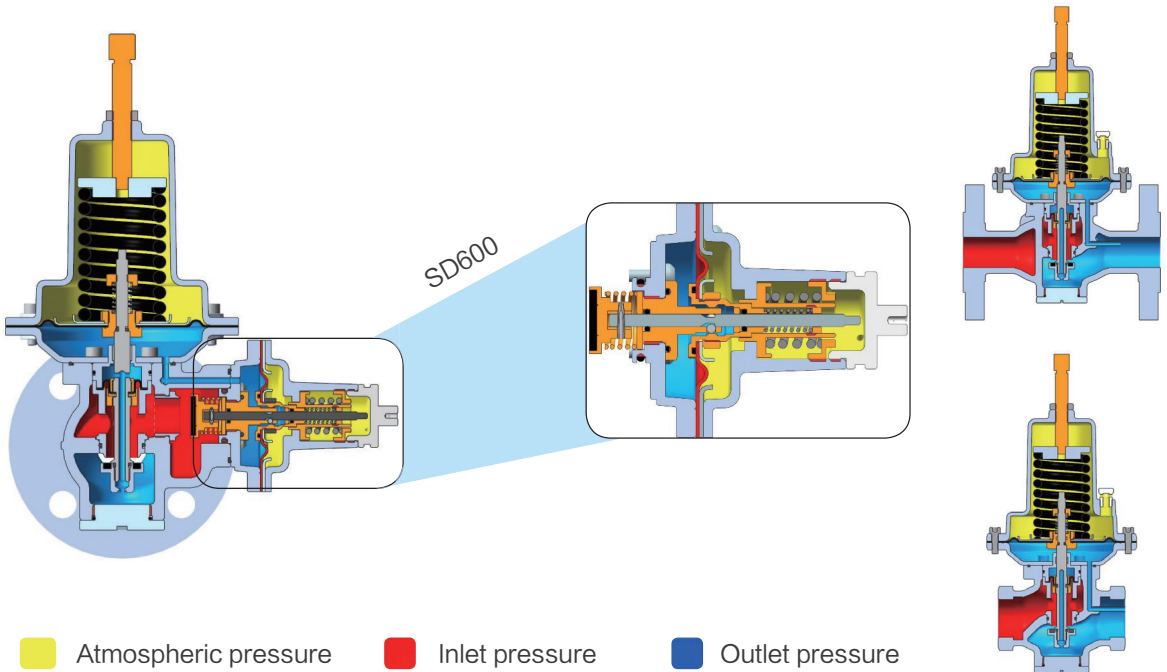
	Model	Shut-off pressure range (mbar)	Part number	Color
Over pressure shut-off	SD601	300-950	19010201186	Black
		900-2100	19010201188	Yellow
		1900-3400	19010201189	Green
		3200-4200	190102011810	Blue
		3700-5000	190102011811	Red
Under pressure shut-off	SD601	100-250	19010201194	Blue
		300-700	19010201195	Red
		600-1300	19010201196	Black
		1000-2000	19010201197	White

OPERATING PRINCIPLE

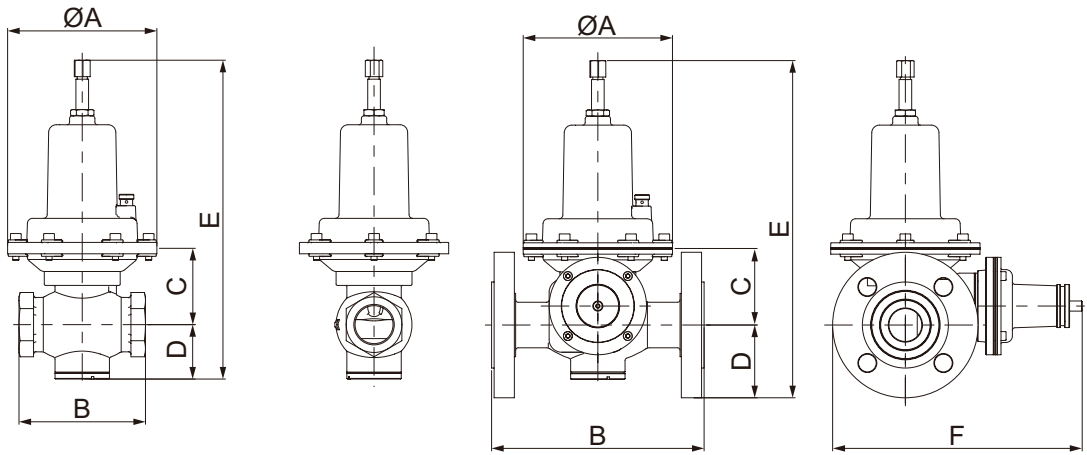
The V100 series regulator is a direct-acting regulator that provides pressure feedback through internal sensing.

When the downstream flow demand decreases, the pressure under the diaphragm increases, which overcomes the load of the loaded spring and causes the diaphragm to move upward. The movement of the diaphragm is transmitted to the valve seat through the main valve stem system, and the valve seat approaches the valve orifice. The valve seat is vulcanized on the seat.

When the downstream flow demand increases, the pressure under the diaphragm decreases, which is less than the load of the loaded spring, causing the diaphragm to move downward and the valve seat to move away from the valve orifice until the flow demand decreases.



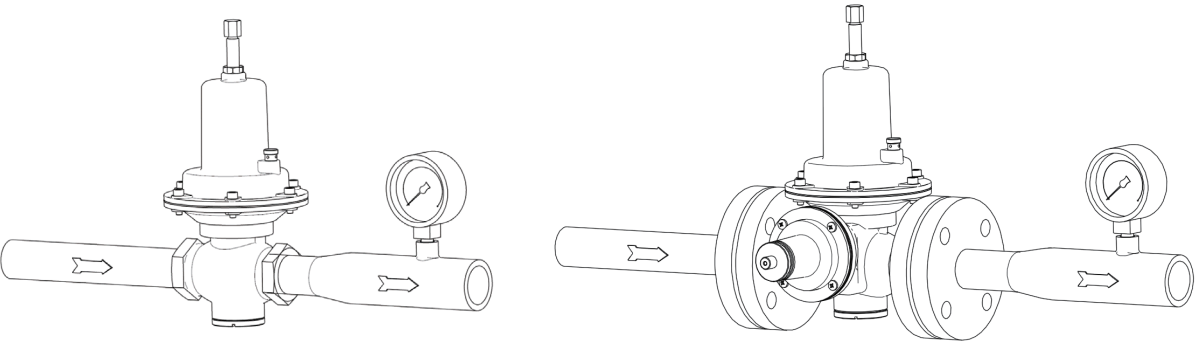
DIMENSIONS



Unit: mm

Model	A	B	C	D	E	F	Weight(Kg)
V110	118	168	60	57.5	266	197	5.15
V120	118	100	60	43	251	/	1.85

INSTALLATION



FLOW CAPACITY

The size of the regulator is usually selected based on the flow coefficient Cg. Under the reference condition (15°C), the maximum flow rate of a natural gas regulator when fully open is calculated using the following formula:

1) Sub-critical state [When (P₁- P₂) ≤ 0.5 (P₁+P_a)]

Q=0.526*C_g*(P₁+P_a)*Sin [K₁*√(P₁-P₂/P₁+P_a)] deg

2) Critical state [When (P₁- P₂) > 0.5 (P₁+P_a)]

Q=0.526*C_g* (P₁+P_a)

- Q — Flow rate (m³/h) ;
- C_g — Flow coefficient;
- P₁ — Inlet pressure (bar) ;
- P₂ — Outlet pressure (bar) ;
- P_a — Atmospheric pressure (bar) ;
- K₁ — valve shape coefficient, 93.4 in this formula;

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

F= √(0.61*288/d*(t+273))

- F — Correction factor;
- d — Relative density d of the gas;
- t — Gas temperature (°C) ;
- The following is the gas relative density d and correction factor F of commonly used gases at the gas temperature of 15 °C :

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

AC10, Capacity in Nm³/h, Natural gas

Inlet pressure(bar)		Outlet pressure (bar)							
		0.5	0.7	1	1.5	2	2.5	3	4
V110	1	100	90	—	—	—	—	—	—
	1.5	130	130	120	—	—	—	—	—
	2	160	170	160	120	—	—	—	—
	3	240	260	220	240	220	200	—	—
	4	300	340	320	340	320	260	240	—
	5	380	440	460	400	420	420	380	330
	6	520	500	500	520	500	520	460	430
	8	620	650	650	700	650	650	650	600
	10	670	700	800	850	850	900	800	800
	12	650	750	850	950	1000	1000	1000	1000
	14	680	750	900	1100	1200	1200	1200	1200
	16	650	750	900	1100	1200	1400	1300	1400

AC10, Capacity in Nm³/h, Natural gas

Inlet pressure(bar)		Outlet pressure (bar)							
		0.5	0.7	1	1.5	2	2.5	3	4
V120	1	120	90	—	—	—	—	—	—
	1.5	130	130	150	—	—	—	—	—
	2	190	200	200	180	—	—	—	—
	3	340	300	280	260	260	210	—	—
	4	440	400	420	400	380	340	280	—
	5	560	560	580	460	480	480	420	370
	6	700	700	700	700	650	650	600	550
	8	750	800	900	750	900	900	850	800
	10	750	800	1000	1100	1100	1100	1100	950
	12	700	800	1000	1200	1300	1300	1300	1300
	14	700	850	950	1200	1400	1500	1500	1500
	16	750	850	1000	1300	1500	1700	1700	1800