



DG Series

Direct-Operated Regulators Manual

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DG Series Regulators

1. Introduction

DG Series are multipurpose direct-operated regulators that use fluid pressure to drive the actuator and automatically maintains the outlet pressure or inlet pressure constant. They are available in Pressure Reducing (PRV) and Backpressure (BPV) configurations to control outlet pressure or inlet pressure respectively. They have high-capacity, fast response, tight-shutoff, superior control and stability and can be used in a variety of gas and liquid industrial applications such as: Nitrogen, Carbon Dioxide, Natural Gas, Oil, Water, Methanol, Alcohol, Naphtha and similar media.

2. Specification

		DG SERIES PRESSURE REDUCING	DG SERIES BACKPRESSURE
Body Size		DN 25, 50, 80, 100 / NPS 1, 2, 3, 4	
End Connection		CL150 RF, CL300 RF, GB PN 16/25/40	
Inlet Pressure Range		2 to 30 bar / 29 to 435 psig (See Page 7, Table 1 for details)	
Spring Range		See Table 2 (Page 8)	See Table 3 (Page 8)
Flow Coefficients C _v		DN 25 / NPS 1–C _v : 16; DN 50 / NPS 2–C _v :59; DN 80 / NPS 3–C _v : 148; DN 100 / NPS 4–C _v :240	
Flow Characteristic		Quick Open	
Shutoff Classification		ANSI Class VI	
Accuracy		±5 ~ ±10%	
Temperature Capabilities		Nitrile (NBR): -29 to 80°C / -20 to 176°F	
		Fluorocarbon (FKM): -7 to 120°C ⁽¹⁾ / 19 to 248°F ⁽¹⁾	
Material	Body	WCB, CF8M	
	Diaphragm, Seals	Nitrile (NBR), Fluorocarbon (FKM)	
	Trim Parts	316 SST	
1. Fluorocarbon (FKM) is limited to 93°C / 199°F in hot water.			

3. Features

- Modular construction design
- Balanced orifice for high accuracy
- Fast speed of response
- High Capacity
- Tight Shutoff
- Wide pressure range, multipurpose
- Simple Construction for easy maintenance

DG Series Regulators

4. Dimensions

Product dimensions are referred below, all the dimension A in charts are measured with the adjusting screw extended at maximum lengths. DOA330 and DOA180 are actuator codes.

Figure 1. DG Series PRV Dimensions

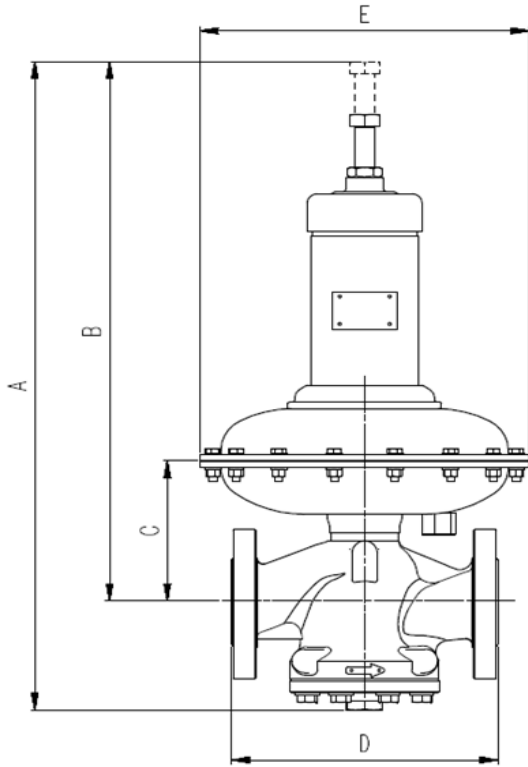
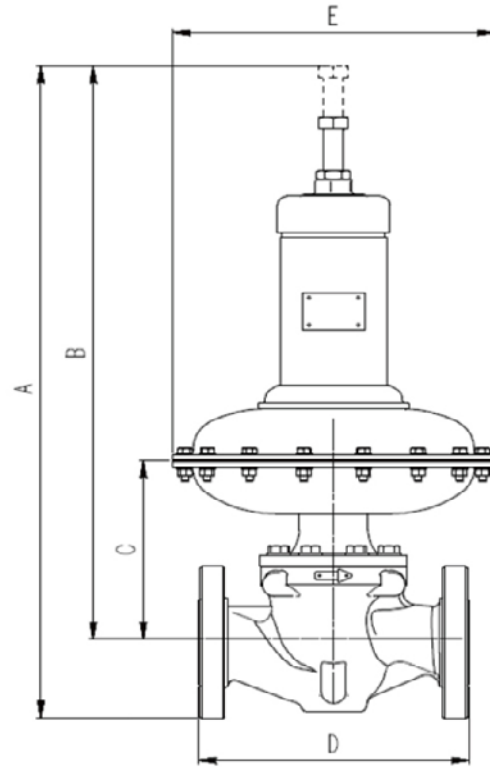


Figure 2. DG Series BPV Dimensions



DG SERIES PRV															
Body Size		Dimension, mm/ Inch												Weight, kg / lbs	
		A		B		C		D				E			
DN	NPS	DOA 180	DOA 330	DOA 180	DOA 330	DOA 180	DOA 330	PN 16	PN 25/ PN 40	CL150	CL300	DOA 180	DOA 330	DOA 180	DOA 330
25	1	680 / 26.8	685 / 27.0	580 / 22.8	585 / 23.0	115 / 4.53	120 / 4.72	184 / 7.24	197 / 7.76	184 / 7.24	197 / 7.76	180 / 7.09	330 / 13.0	29 / 63.9	38 / 83.8
50	2	707 / 27.8	712 / 28.0	591 / 23.3	596 / 23.5	127 / 5.00	132 / 5.20	254 / 10.0	267 / 10.5	254 / 10.0	267 / 10.5	180 / 7.09	330 / 13.0	39 / 86.0	48 / 105.8
80	3	753 / 29.6	758 / 29.8	609 / 24.0	614 / 24.2	145 / 5.71	150 / 5.91	298 / 11.7	317 / 12.5	298 / 11.7	317 / 12.5	180 / 7.09	330 / 13.0	59 / 130	68 / 150
100	4	816 / 32.1	801 / 31.5	639 / 25.2	624 / 24.6	175 / 6.89	180 / 7.09	352 / 13.9	368 / 14.5	352 / 13.9	368 / 14.5	180 / 7.09	330 / 13.0	83 / 183	91.5 / 202

DG SERIES BPV															
Body Size		Dimension, mm/ Inch												Weight, kg / lbs	
		A		B		C		D				E			
DN	NPS	DOA 180	DOA 330	DOA 180	DOA 330	DOA 180	DOA 330	PN 16	PN 25/ PN 40	CL150	CL300	DOA 180	DOA 330	DOA 180	DOA 330
25	1	700 / 27.6	684 / 26.9	638 / 25.1	622 / 24.5	172 / 6.77	177 / 6.97	184 / 7.24	197 / 7.76	184 / 7.24	197 / 7.76	180 / 7.09	330 / 13.0	29.5 / 65.0	38 / 83.8
50	2	739 / 29.1	725 / 28.5	656 / 25.8	642 / 25.3	192 / 7.56	197 / 7.76	254 / 10.0	267 / 10.5	254 / 10.0	267 / 10.5	180 / 7.09	330 / 13.0	40.5 / 89.3	49 / 108
80	3	796 / 31.3	780 / 30.7	691 / 27.2	675 / 26.6	225 / 8.86	230 / 9.10	298 / 11.7	317 / 12.5	298 / 11.7	317 / 12.5	180 / 7.09	330 / 13.0	59.5 / 131	68 / 150
100	4	855 / 33.7	846 / 33.3	727 / 28.6	718 / 28.3	262 / 10.3	267 / 10.5	352 / 13.9	368 / 14.5	352 / 13.9	368 / 14.5	180 / 7.09	330 / 13.0	83.5 / 184	92 / 203

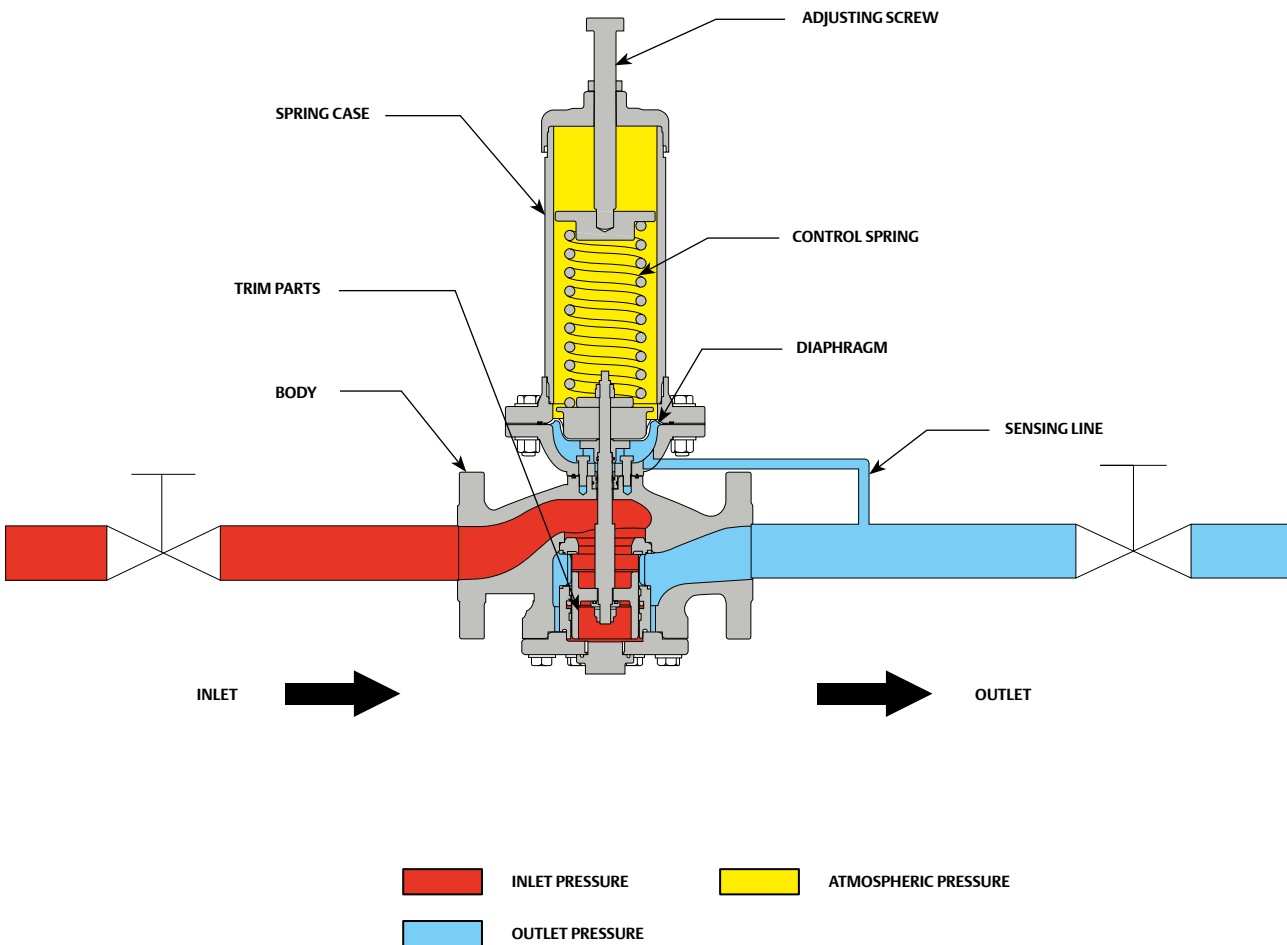
5. Principle of Operation

DG Series PRV is a direct-operated pressure reducing regulator. When operating, fluid flows from the inlet chamber, up through the seat ring and cage, and exits the outlet chamber. Downstream pressure is registered at the underside of the diaphragm through an external sensing line that is connected to the lower diaphragm casing. The pressure under the actuator diaphragm is balanced by the spring force acting at the topside of the diaphragm, through the action of the actuator stem, the valve plug moves to or away from the seat ring to achieve pressure reducing and retaining. Downstream pressure is set by turning the adjusting screw.

When downstream flow demand decreases, downstream pressure increases, and the pressure registered under the actuator diaphragm also increases. Spring force moves the diaphragm upward and the valve stem together with the valve plug move towards the seat ring, decreasing fluid flow, and downstream pressure is maintained at a new equilibrium state.

When downstream flow demand increases, downstream pressure decreases, and the pressure registered under the actuator diaphragm also decreases. Spring force now moves the diaphragm downward and the valve stem together with the valve plug move away from seat ring, increasing fluid flow, and downstream pressure is maintained at a new equilibrium state.

Figure 3. DG Series PRV Operational Schematic



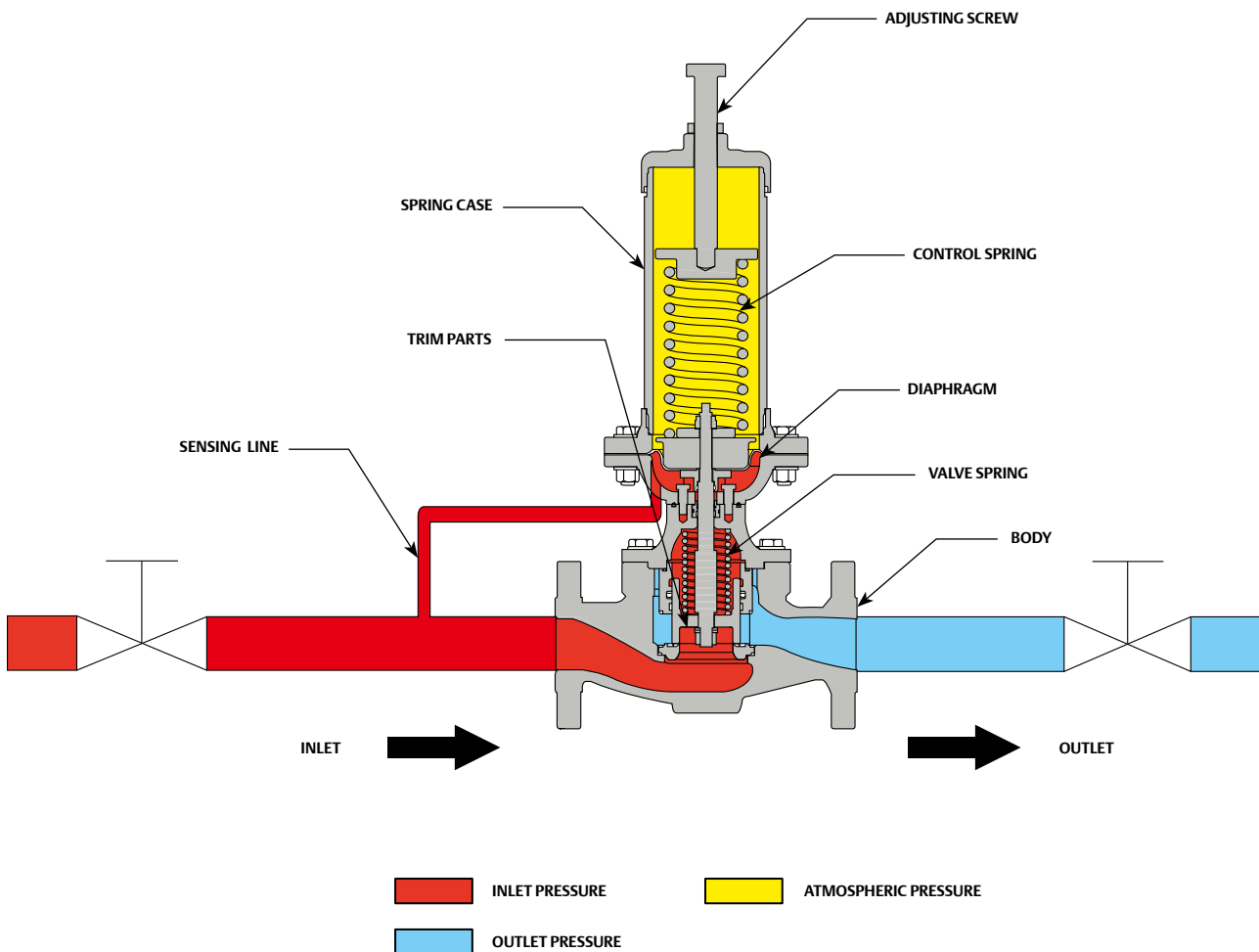
DG Series Regulators

DG Series BPV is a direct-operated backpressure regulator. When operating, fluid flows from the inlet chamber through the seat ring and cage and exits on the outlet chamber. Inlet pressure is registered at the underside of the diaphragm through an external sensing line that is connected to the lower diaphragm casing. The pressure under the actuator diaphragm is balanced by the spring force acting at the topside of the diaphragm. Through the action of the actuator stem, the valve plug moves to or away from the seat ring to achieve pressure retaining. Upstream pressure is set by turning the adjusting screw.

When the inlet pressure is above the set pressure, the pressure registered at the actuator diaphragm increases. Spring force moves the diaphragm upward and the valve stem together with the valve plug move away from seat ring, increasing fluid flow, and then it opens the backpressure regulator. Inlet pressure is maintained at a new equilibrium state.

When the inlet pressure is below the set pressure, the pressure registered at the actuator diaphragm decreases. Spring force now moves the diaphragm downward and the valve stem together with the valve plug move towards the seat ring, decreasing fluid flow, and then it closes the backpressure regulator. Inlet pressure is maintained at a new equilibrium state.

Figure 4. DG Series BPV Operational Schematic



DG Series Regulators

Table 1. Pressure Ranges⁽¹⁾

BODY MATERIAL	END CONNECTION	PRV ⁽²⁾								BPV							
		DOA330 Actuator Pressure Ranges				DOA180 Actuator Pressure Ranges				DOA330 Actuator Pressure Ranges				DOA180 Actuator Pressure Ranges			
		Inlet Pressure		Set Pressure ⁽³⁾		Inlet Pressure		Set Pressure ⁽⁴⁾		Set Pressure ⁽³⁾		Inlet Pressure ⁽⁶⁾		Set Pressure		Inlet Pressure ⁽⁶⁾	
		bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar	psig
WCB	CL150 RF	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 16.9	29 to 245	0.75 to 14	10.9 to 203	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 13	30.5 to 188	2.1 to 16.9	30.5 to 245
	CL300 RF	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 30	29 to 435	0.75 to 25	10.9 to 363	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 25	30.5 to 363	2.1 to 30	30.5 to 435
	PN 16	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 15.8	29 to 229	0.75 to 13.1	10.9 to 190	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 12.1	30.5 to 176.2	2.1 to 15.8	30.5 to 229
	PN 25	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 24.7	29 to 358	0.75 to 20.6	10.9 to 298	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 19	30.5 to 275	2.1 to 24.7	30.5 to 358
	PN 40	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 30	29 to 435	0.75 to 25	10.9 to 363	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 25	30.5 to 363	2.1 to 30	30.5 to 435
CF8M SST	CL150 RF	2 to 14.8	29 to 215	0.15 to 3	2.18 to 43.5	2 to 15.6	29 to 226	0.75 to 13	10.9 to 188	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 12	30.5 to 174	2.1 to 15.6	30.5 to 226
	CL300 RF	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 30	29 to 435	0.75 to 25	10.9 to 363	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 25	30.5 to 363	2.1 to 30	30.5 to 435
	PN 16	2 to 11.4	29 to 165	0.15 to 3	2.18 to 43.5	2 to 12	29 to 174	0.75 to 10	10.9 to 145	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 9.2	30.5 to 133	2.1 to 12	30.5 to 174
	PN 25	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 18.8	29 to 272	0.75 to 15.6	10.9 to 226	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 14.4	30.5 to 209	2.1 to 18.8	30.5 to 272
	PN 40	2 to 15	29 to 218	0.15 to 3	2.18 to 43.5	2 to 30	29 to 435	0.75 to 25	10.9 to 363	0.15 to 2.3	2.18 to 33.4	0.15 to 3	2.18 to 43.5	2.1 to 25	30.5 to 363	2.1 to 30	30.5 to 435

Note:

- Based on the maximum temperature of 120°C / 248°F (Or refer to steel flange standard GB/T20592 and GB/T20615).
- Inlet pressure and Set pressure rating range: Gas application: 1.2:1 ~ 20:1, Liquid application: 1.2:1 ~ 10:1. In the meantime, differential pressure should be no more than (inlet pressure + atmospheric pressure) x Km (Km=0.7).
- The minimum set pressure for DOA330 PRV and BPV in liquid application is 0.3 bar/4.35 psig.
- When the body size is DN 80 / NPS 3 or DN 100 / NPS 4, the minimum set pressure for PRV DOA180 actuator is 2.5 bar / 36.3 psig.
- In addition to meeting the above table, the maximum inlet pressure for PRV DOA180 actuator with Fluorocarbon (FKM) diaphragm is 15 bar / 218 psig or body rating limit, whichever is lower. The maximum relief pressure for BPV DOA180 actuator with Fluorocarbon (FKM) diaphragm is 13 bar / 189 psig or body rating limit, whichever is lower. The maximum set pressure for PRV/BPV DOA180 actuator with Fluorocarbon (FKM) diaphragm is 10 bar / 145 psig.
- Inlet pressure in BPV equals set pressure plus build-up.

DG Series Regulators

Table 2. DG Series PRV Spring Ranges

MEDIUM TYPE	ACTUATOR TYPE	SPRING RANGE		SPRING COLOR	SPRING PART NUMBER
		bar	psig		
Gas	DOA330-1	0.15 to 0.3	2.18 to 4.35	White	ERSA01273A0
		0.27 to 0.83	3.92 to 12.0	Blue	ERSA01286A0
		0.75 to 1.77	10.9 to 25.7	Yellow	ERSA01288A0
		1.6 to 3	23.2 to 43.5	Red	ERSA01290A0
	DOA180-1	0.75 to 2.35 ⁽¹⁾	10.9 to 34.1 ⁽¹⁾	White	ERSA01273A0
		2.2 to 6 ⁽¹⁾	31.9 to 87.0 ⁽¹⁾	Blue	ERSA01286A0
		5.5 to 14.5	79.8 to 210	Yellow	ERSA01288A0
		13.5 to 25	196 to 363	Red	ERSA01290A0
Liquid	DOA330-2	0.3 to 0.83	4.35 to 12.0	Blue	ERSA01286A0
		0.75 to 1.77	10.9 to 25.7	Yellow	ERSA01288A0
		1.6 to 3	23.2 to 43.5	Red	ERSA01290A0
	DOA180-2	2.5 to 6	36.3 to 87.0	Blue	ERSA01286A0
		5.5 to 14.5	79.8 to 210	Yellow	ERSA01288A0
		13.5 to 25	196 to 363	Red	ERSA01290A0

1. No white spring option is available when the PRV body size is DN 80 / NPS 3 or DN 100 / NPS 4, the blue spring range is 2.5 to 6 bar / 36.3 to 87.0 psig.

Table 3. DG Series BPV Spring Ranges

Medium Type	Actuator Type	Spring Range		Spring Color	Spring Part Number
		bar	psig		
Gas	DOA330-1	0.15 to 0.32	2.18 to 4.64	White	ERSA01273A0
		0.3 to 0.7	4.35 to 10.2	Blue	ERSA01286A0
		0.6 to 1.4	8.7 to 20.3	Yellow	ERSA01288A0
		1.3 to 2.3	18.9 to 33.4	Red	ERSA01290A0
	DOA180-1	2.1 to 5	30.5 to 72.5	Blue	ERSA01286A0
		4.5 to 10	65.3 to 145	Yellow	ERSA01288A0
		9.5 to 25	138 to 363	Red	ERSA01290A0
Liquid	DOA330-2	0.3 to 0.7	4.35 to 10.2	Blue	ERSA01286A0
		0.6 to 1.4	8.7 to 20.3	Yellow	ERSA01288A0
		1.3 to 2.3	18.9 to 33.4	Red	ERSA01290A0
	DOA180-2	2.1 to 5	30.5 to 72.5	Blue	ERSA01286A0
		4.5 to 10	65.3 to 145	Yellow	ERSA01288A0
		9.5 to 25	138 to 363	Red	ERSA01290A0

6. Performance Curves

DG Series have high accuracy, proven stability and flow capacity. The performance curves below are the most representative demonstrations of PRV and BPV.

Figure 5. DG Series PRV Performance Curve

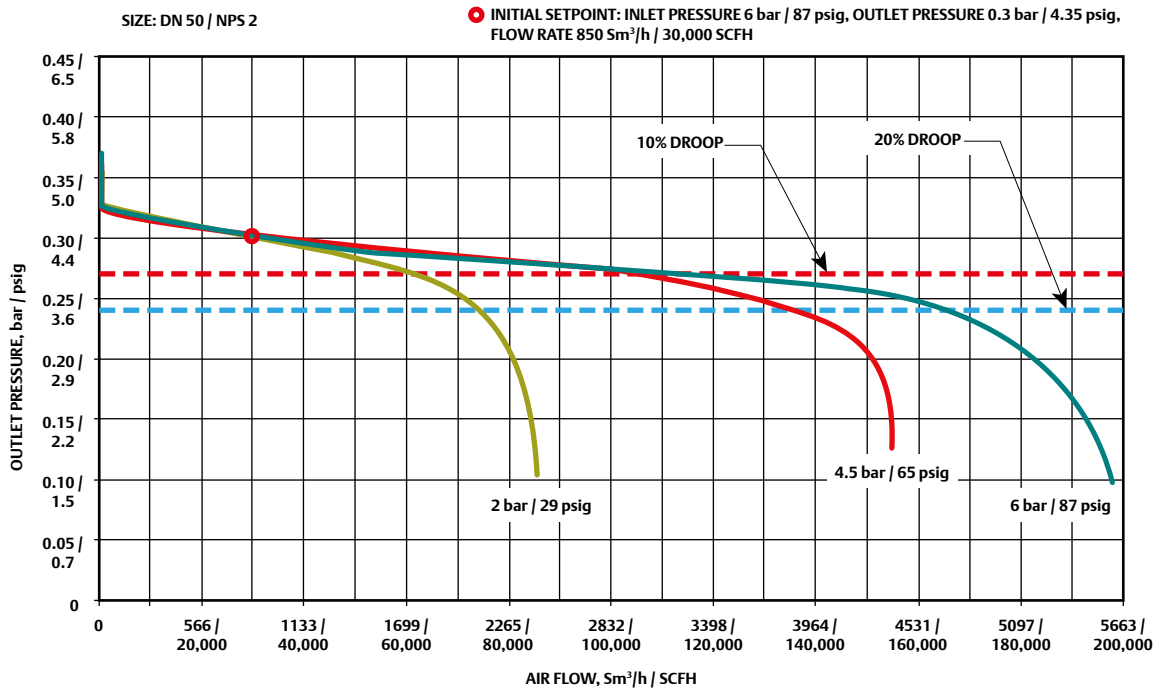
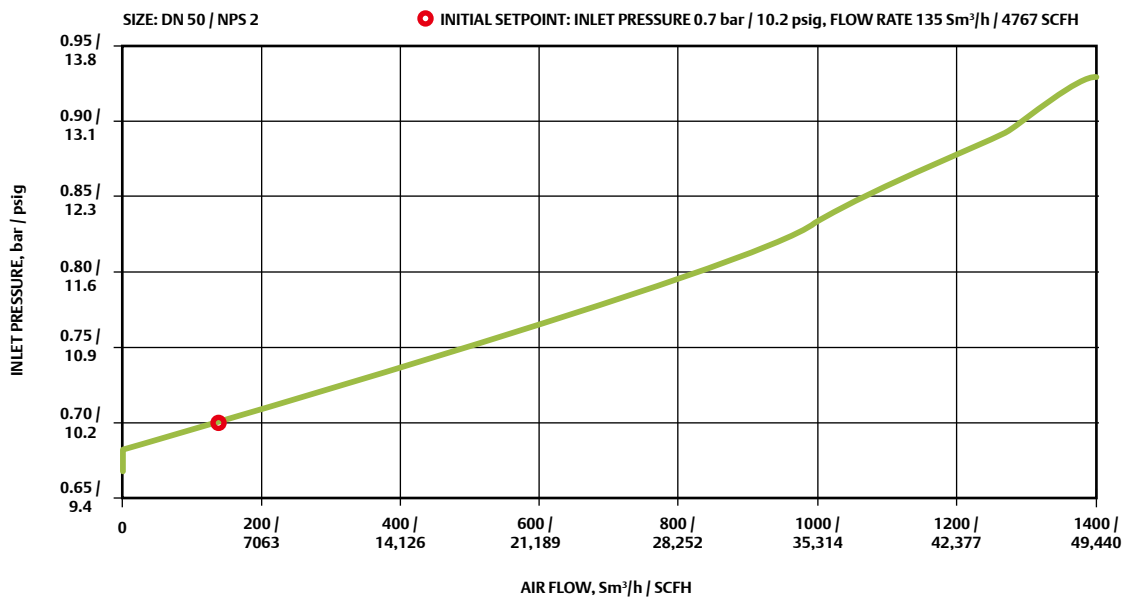


Figure 6. DG Series BPV Performance Curve



DG Series Regulators

7. Installation and Startup

⚠ WARNING

Protection device should be installed to release pressure and protect the system during regulator failure or set pressure increase.

PRV Installation

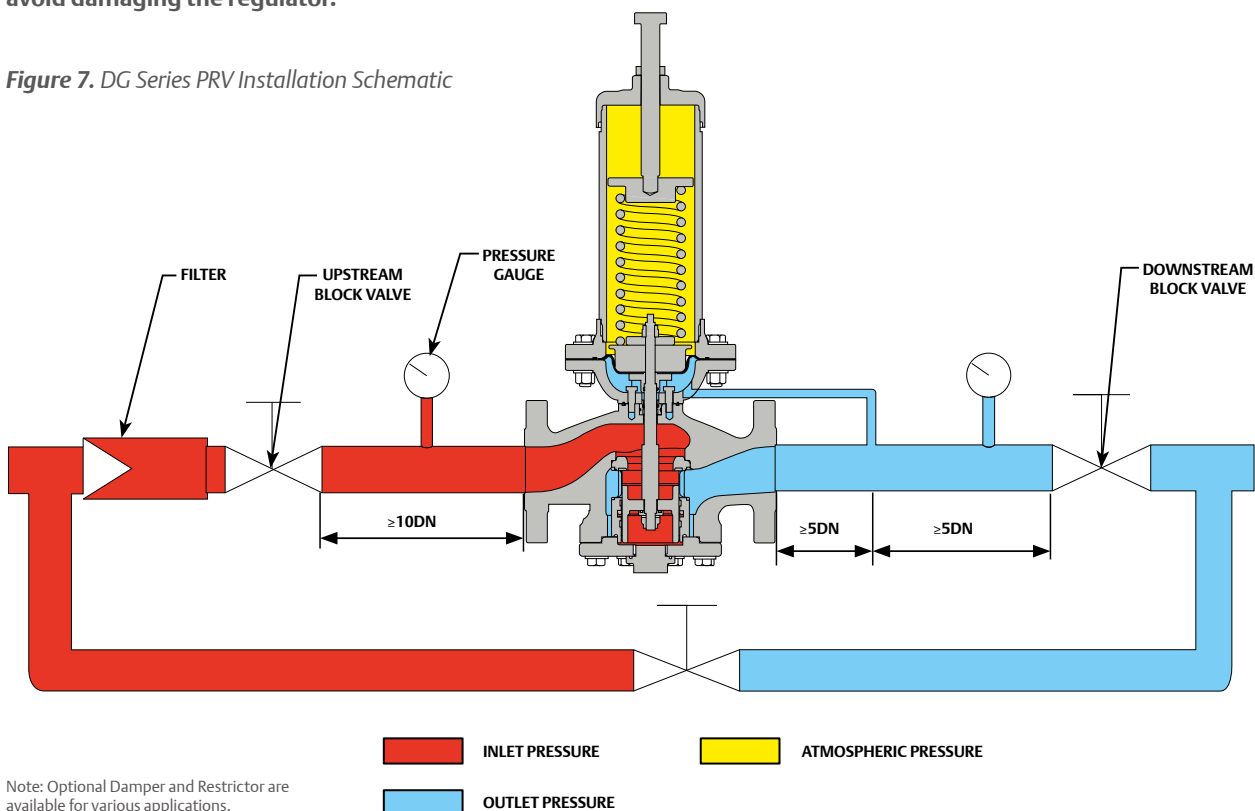
Installing, operating and maintaining PRV and BPV should be performed by qualified personnel.

1. Before installing PRV :
 - Check for damage which might have occurred during shipment.
 - Inspect regulator body inlet and outlet ports and remove any dirt or foreign material that may be present.
 - Blow out any debris or dirt in the tubing and the pipeline.
 - Check if the pressure in the pipeline is within the pressure range stated on the regulator nameplate.
 - Make sure fluid flow through the regulator is in the same direction as the arrow on the body.
2. Install PRV away from fire source, vibration, water accumulation and ice formation areas, and the environment temperature should comply with the requirements. In low temperature areas, heat tracing measures may be considered to heat the pipelines of the PRV in winter. At special occasions, such as installations in areas with heavy snow, may require a hood or enclosure to protect the PRV from snow load and vent freeze over.
3. Body installed vertically with the actuator spring case pointing upward is required.
4. Do not forcefully install the regulator when connecting the inlet and outlet pipelines.
5. If a quick exhausting device or valve is to be installed downstream of the PRV, make sure to leave enough gas piping volume between the PRV and the device to avoid sharp pressure drop due to rapid changing flow rates.
6. The filter should be installed on the upstream of the PRV and leave enough straight run of pipe downstream. Attach a 14 mm OD sensing line with a 1/4 NPT fitting no less than 5 x DN (the nominal diameter of the pipework) away from the PRV outlet port and at a point away from any source of turbulence and no less than 5 x DN (the nominal diameter of the pipework) away from downstream block valve. When outlet pressure is at or above 0.5 bar / 7.25 psig, gas velocity should not exceed 50 m/s. When outlet pressure is below 0.5 bar / 7.25 psig, gas velocity should not exceed 25 m/s. The nominal diameter of the pipework connecting the regulator shall not be smaller than the nominal diameter of the regulator.

⚠ WARNING

Remove or isolate (utilizing blind flange) the regulator when the pipeline is undergoing pressure test or purging to avoid damaging the regulator.

Figure 7. DG Series PRV Installation Schematic



WARNING

All vents should be kept open to permit free flow of gas to the atmosphere. Protect openings against entrance of snow, insects or any other foreign material that may plug the vent. Under enclosed conditions or indoors, escaping gas may accumulate and be an explosion hazard.

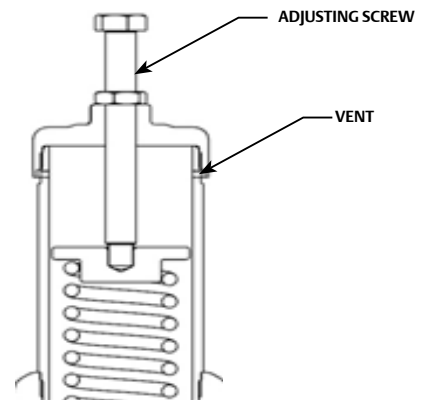
PRV Startup Procedures

1. Make sure bypass valve is closed. Open the system Shutoff Valve.
2. Slowly open the inlet block valve in front of the PRV.
3. Slightly open the outlet block valve behind the PRV.
4. When used in liquid service, the PRV has bleed design to exhaust the air trapped under the actuator diaphragm depending on medium type. Slowly unscrew the bleed plug to exhaust the air. Then, screw and tighten the plug. Exercise caution at all times.
5. Keep in this position until pressure is stabilized.
6. Fully open the outlet block valve.

PRV Outlet Pressure Settings

To change the outlet pressure, unscrew the jam nut and slowly turn the adjusting screw and set the outlet pressure to the desired setting, screw the jam nut. Clockwise to increase. Counterclockwise to decrease.

Figure 8. Spring Case



PRV Shutdown procedures

1. Close the inlet block valve.
2. Close the outlet block valve.
3. Unload the adjusting spring.
4. Slowly open the outlet block valve to release downstream pressure.
5. Keep the outlet block valve open, release inlet pressure and all remaining pressure in PRV.

WARNING

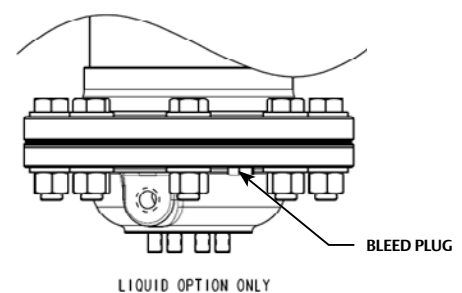
Protective device should be installed to release pressure and protect the system during regulator failure or set pressure increase.

BPV Installation

Installing, operating, and maintaining BPV should be performed by qualified personnel.

1. Before installing BPV:
 - Check for damage which might have occurred during shipment.
 - Inspect regulator body inlet and outlet ports and remove any dirt or foreign material that may be present.
 - Blow out any debris or dirt in the tubing and the pipeline.
 - Check if the pressure in the pipeline is within the pressure range stated on the regulator nameplate.
 - Make sure fluid flow through the regulator is in the same direction as the arrow on the body.
2. Install BPV away from fire source, vibration, water accumulation and ice formation areas, and the environment temperature should comply with the requirements. In low temperature areas, heat tracing measures may be considered to heat the pipelines of the BPV in winter. At special occasions, such as installations in areas with heavy snow, may require a hood or enclosure to protect the BPV from snow load and vent freeze over.
3. Body installed horizontally with the actuator spring case pointing upward is required.
4. Do not forcefully install the regulator when connecting the inlet and outlet pipelines.
5. If a quick exhausting device or valve is to be installed downstream of the BPV, make sure to leave enough gas piping volume between the BPV and the device to avoid sharp pressure drop due to rapid changing flow rates.
6. The filter should be installed on the upstream of the BPV and leave enough straight run of pipe upstream. Attach a 14 mm OD sensing line with a 1/4 NPT fitting no less than 5 x DN (the nominal diameter of the pipework) away from the BPV on the upstream and at a point away from any source of turbulence and no less than 5 x DN (the nominal diameter of the pipework) away from the upstream block valve.

Figure 9. Diaphragm Case

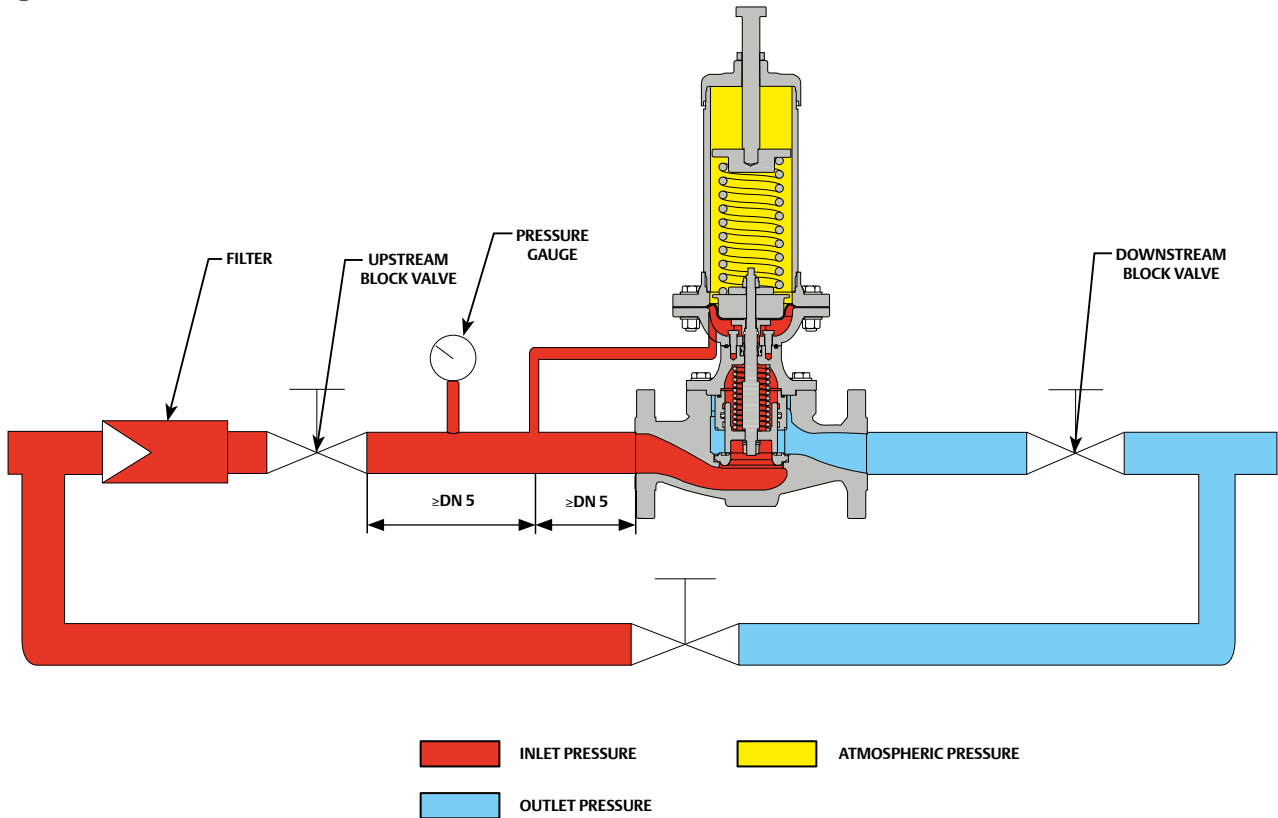


DG Series Regulators

⚠ WARNING

Remove or isolate (utilizing blind flange) the regulator when the pipeline is undergoing pressure test or purging to avoid damaging the regulator.

Figure 10. DG Series BPV Installation Schematic



Note: Optional Damper and Restrictor are available for various applications.

⚠ WARNING

Before startup, the regulator must be tested in accordance with the procedure specified in the Maintenance section.

BPV Startup Procedures

1. Make sure bypass valve is closed, open the system shutoff valve.
2. Slowly open the outlet block valve behind the BPV.
3. Slowly open the inlet block valve in front of the BPV.
4. When used in liquid service, the BPV has bleed design to exhaust the air trapped under the actuator diaphragm depending on medium type. Slowly unscrew the bleed plug to exhaust the air. Then, screw and tighten the plug. Exercise caution at all times.

BPV Inlet Pressure Settings

To change the inlet pressure, unscrew the jam nut and slowly turn the adjusting screw and set the inlet pressure to the desired setting, screw the jam nut. Clockwise to increase. Counterclockwise to decrease.

BPV Shutdown procedures

1. Close the upstream BPV inlet block valve.
2. Close the downstream BPV outlet block valve.
3. Unload the adjusting spring.
4. Slowly open the outlet block valve to release downstream pressure.
5. Keep the outlet block valve open, release inlet pressure and the remaining pressure in BPV.

⚠ WARNING

Handle with care during maintenance, carefully vent the pressure in the actuator and other pressured parts, use recommended torques for assembly.

8. Maintenance

Before maintenance, close the inlet and outlet block valves and exhaust the gas pressure in the valve body and piping. When removing or replacing parts such as the orifice or diaphragm, be careful not to damage them. Ensure movable parts can move freely after reassembly. Recommission according to the Installation and Startup procedures. Ensure all connections are tight and check for leaks. Emerson Process Management Regulator Technologies, Inc. (Regulator Technologies) provides training for your maintenance personnel. For other information, consult your local sales office.

Routine Maintenance

The frequency of routine maintenance depend on the medium type and service condition to keep safety:

1. Make sure that there is no leakage on the regulator.
2. Observe the gauges to make sure that the pressure being controlled is stable and at the correct set point.
3. Clean the outside of the regulator.

Periodic Check

The frequency of periodic check depend on the medium type and service condition to make sure the proper functioning of the regulator. Apart from monitoring the set pressure:

1. Check DG Series PRV lock up pressure every 1 to 3 months: Open the upstream valve, using the downstream pressure gauge to monitor the pressure, slowly close the downstream valve, ensure that the downstream pressure does not increase.
2. Check DG BPV lock up pressure every 1 to 3 months: Slowly increase the inlet pressure until the relieving pressure starts to rise, then slowly decrease the inlet pressure until the valve closed, ensure the downstream pressure does not increase.
3. Clean internal parts every 3 to 6 months like the Disk, Diaphragm, O-rings and Seat Ring. Give due diligence to check and replace deformed and worn out seals upon necessary.
4. Check wear parts every 3to 6 months for damage and replace upon necessary, replace crush installed O-rings after disassembly.

Must use Regulator Technologies parts for replacements.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTIONS
Regulator is not working	Regulator is undersized or oversized	Review sizing
	Damaged diaphragm	Replace diaphragm
	Control spring is working at solid height	Select the next heavier spring
	Restrictor is blocked (If applicable)	Check restrictor, clean debris
PRV outlet pressure decreases	Inlet pressure too low	Increase inlet pressure
	Actual flow capacity surpass designed capacity	Review sizing
	Damaged disk assembly O-ring	Replace O-ring
	Debris caught in between Disk and Seat Ring	Remove debris
BPV inlet pressure increases	Actual flow capacity surpass designed capacity	Replace parts
	O-ring in disk assembly damaged	Replace O-ring
	Debris caught in between Disk and Seat Ring	Remove debris
PRV lock-up pressure increases BPV lock-up pressure decreases	Damaged, deformed or worn out diaphragm	Replace diaphragm
	Deformed or worn out disk or seat ring	Replace disk or seat ring
	Damaged disk assembly O-ring	Replace O-ring
	Debris caught in between disk and seat ring	Clean or replace disk
PRV outlet pressure fluctuates BPV inlet pressure fluctuates	PRV upstream pressure fluctuates	Check upstream valve when upstream pressure fluctuates
	Actual flow capacity much lower than normal	

DG Series Regulators

9. Spare Parts Kits

Includes: Diaphragm, O-rings, Stem Guide, Ring Sliding, Seat, etc.

Table 4. DG Series PRV Spare Parts Kits

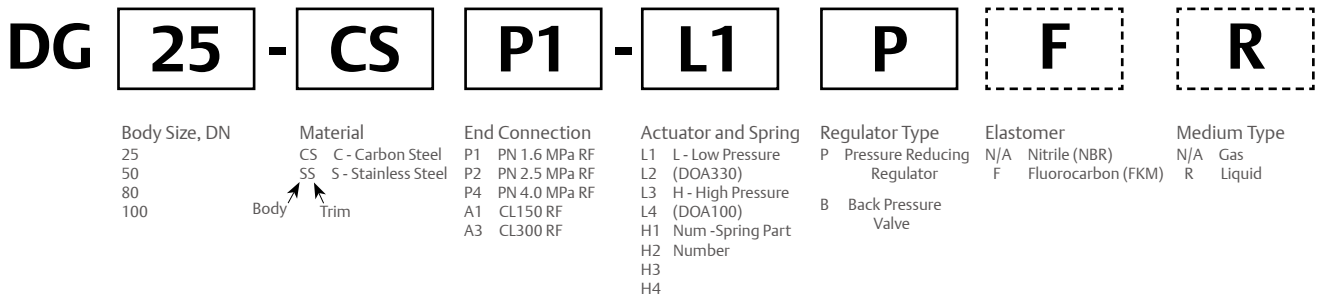
ELASTOMER TYPE	ACTUATOR TYPE	BODY SIZE		SPARE PARTS NUMBERS
		DN	NPS	
Nitrile (NBR)	DOA330-1 (Low pressure)	25	1	RDGP1X00NA0
		50	2	RDGP2X00NA0
		80	3	RDGP3X00NA0
		100	4	RDGP4X00NA0
	DOA330-2 (Low pressure)	25	1	RDGP1X01NA0
		50	2	RDGP2X01NA0
		80	3	RDGP3X00NA0
		100	4	RDGP4X00NA0
	DOA180-1/DOA180-2 (High pressure)	25	1	RDGP1X00NA1
		50	2	RDGP2X00NA1
		80	3	RDGP3X00NA1
		100	4	RDGP4X00NA1
Fluorocarbon (FKM)	DOA330-1 (Low pressure)	25	1	RDGP1X00FA0
		50	2	RDGP2X00FA0
		80	3	RDGP3X00FA0
		100	4	RDGP4X00FA0
	DOA330-2 (Low pressure)	25	1	RDGP1X01FA0
		50	2	RDGP2X01FA0
		80	3	RDGP3X00FA0
		100	4	RDGP4X00FA0
	DOA180-1/DOA180-2 (High pressure)	25	1	RDGP1X00FA1
		50	2	RDGP2X00FA1
		80	3	RDGP3X00FA1
		100	4	RDGP4X00FA1

Table 5. DG Series BPV Spare Parts Kits

ELASTOMER TYPE	ACTUATOR TYPE	BODY SIZE		SPARE PARTS NUMBERS
		DN	NPS	
Nitrile (NBR)	DOA330-1/DOA330-2 (Low pressure)	25	1	RDGB1X00NA0
		50	2	RDGB2X00NA0
		80	3	RDGB3X00NA0
		100	4	RDGB4X00NA0
	DOA180-1/DOA180-2 (High pressure)	25	1	RDGB1X00NA1
		50	2	RDGB2X00NA1
		80	3	RDGB3X00NA1
		100	4	RDGB4X00NA1
Fluorocarbon (FKM)	DOA330-1/DOA330-2 (Low pressure)	25	1	RDGB1X00FA0
		50	2	RDGB2X00FA0
		80	3	RDGB3X00FA0
		100	4	RDGB4X00FA0
	DOA180-1/DOA180-2 (High pressure)	25	1	RDGB1X00FA1
		50	2	RDGB2X00FA1
		80	3	RDGB3X00FA1
		100	4	RDGB4X00FA1

DG Series Regulators

10. Model Description



The product description is **DG25-CSP1-L1PF**

DG25-CSP1-L1PF indicates that this is a direct-operated pressure reducing valve. Medium type is gas. Nominal diameter is 25 mm / 0.98 inches. Body material is WCB. Trim material is 316 SST. End connection type is GB PN1.6 Mpa Flange RF. Actuator type is low pressure. Spring code is 1. Elastomer type is Fluorocarbon (FKM).

Table 6. Sizing Charts

ACTUATOR AND SPRING	SPRING RANGE							
	PRV				BPV			
	Gas		Liquid		Gas		Liquid	
	bar	psig	bar	psig	bar	psig	bar	psig
L1	0.15 to 0.3	2.18 to 4.35	----	----	0.15 to 0.32	2.18 to 4.64	----	----
L2	0.27 to 0.83	3.92 to 12.0	0.3 to 0.83	4.35 to 12.0	0.3 to 0.7	4.35 to 10.2	0.3 to 0.7	4.35 to 10.2
L3	0.75 to 1.77	10.9 to 25.7	0.75 to 1.77	10.9 to 25.7	0.6 to 1.4	8.70 to 20.3	0.6 to 1.4	8.70 to 20.3
L4	1.6 to 3	23.2 to 43.5	1.6 to 3	23.2 to 43.5	1.3 to 2.3	18.9 to 33.4	1.3 to 2.3	18.9 to 33.4
H1	0.75 to 2.35 ⁽¹⁾	10.9 to 34.1	----	----	----	----	----	----
H2	2.2 to 6 ⁽¹⁾	31.9 to 87.0	2.5 to 6	36.3 to 87.0	2.1 to 5	30.5 to 72.5	2.1 to 5	30.5 to 72.5
H3	5.5 to 14.5	79.8 to 210	5.5 to 14.5	79.8 to 210	4.5 to 10	65.3 to 145	4.5 to 10	65.3 to 145
H4	13.5 to 25	196 to 363	13.5 to 25	196 to 363	9.5 to 25	138 to 363	9.5 to 25	138 to 363

1. H1 is unavailable when the body size is DN 80 / NPS 3 or DN 100 / NPS 4, and the new range for H2 is 2.5 to 6 bar / 36.3 to 87.0 psig instead.

11. Ordering Information

Please provide information below when ordering.

1. Regulator nominal pressure, nominal size.
2. Inlet pressure, outlet pressure, flow capacity and characteristics.
3. Fluid type and operating temperature.
4. Body and Trim parts Material.
5. Accessories and other special requirements.

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