DATASHEET

Precision pressure regulators for lowest pressures, up to 28000 l/min

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1. Contents

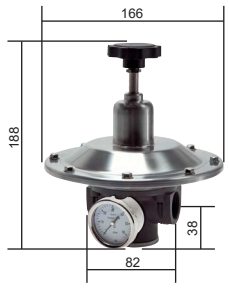
2. Item number and data

Precision pressure regulator for lowest pressures up to 28 000 l/min

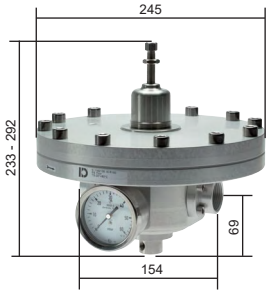
Design: precision pressure reducing valve, non-reversible (without secondary venting).
Material: Housing and spring cap: aluminum (type G 1/2": spring cap stainless steel), Diaphragm: NBR (PTFE-coated), Internal parts: Brass, Seals: NBR
Temperature range: -20°C to max. +80°C
Inlet pressure: 1 - 6 bar (G 1": 1 - 7 bar)
Gauge connection: G 1/4
Mediums: lubricated and unlubricated compressed air, neutral gases
Scope of delivery: precision pressure regulator including 63 mm manometer
*Optional: for CO2 (EPDM seals and membrane) -CO

Item number	Thread	Pressure control range	Flow rate**	Manometer-display
PRLD1245	G 1/2"*	5 - 45 mbar	1000 l/min	0 - 60 mbar
PRLD12400	G 1/2"*	10 - 400 mbar	1000 l/min	0 - 600 mbar
PRLD121000	G 1/2"*	20 - 1000 mbar	1000 l/min	0 - 1.6 bar
PRLD1045	G 1"	5 - 45 mbar	3000 l/min	0 - 60 mbar
PRLD10120	G 1"	10 - 120 mbar	3000 l/min	0 - 250 mbar
PRLD10700	G 1"	15 - 700 mbar	9600 l/min	0 - 1 bar
PRLD11250	G 1 1/2"	20 - 50 mbar	7000 l/min	0 - 60 mbar
PRLD112150	G 1 1/2"	50 - 150 mbar	7000 l/min	0 - 250 mbar
PRLD112300	G 1 1/2"	150 - 300 mbar	7000 l/min	0 - 600 mbar
PRLD1121000	G 1 1/2"	100 - 1000 mbar	28000 l/min	0 - 1,6 bar
PRLD2050	G 2"	20 - 50 mbar	7000 l/min	0 - 60 mbar
PRLD20150	G 2"	50 - 150 mbar	7000 l/min	0 - 250 mbar
PRLD201000	G 2"	150 - 300 mbar	7000 l/min	0 - 600 mbar
PRLD20300	G 2"	100 - 1000 mbar	28000 l/min	0 - 1,6 bar

** thread outlet G 3/4", ** measured at 6 bar inlet pressure and max. outlet pressure*

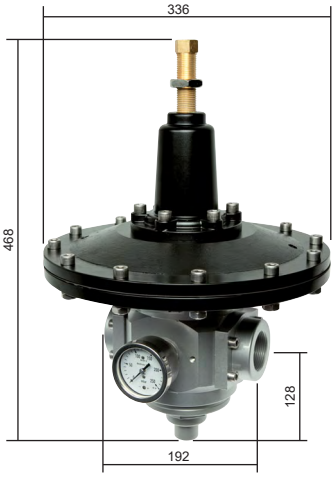


G 1/2"



G 1"

Ordering example: PRLD 12 45



G 1 1/2" - G 2"

3. Discription

Why does compressed air need to be regulated?
The compressor supplies compressed air in the pressure range of 10 to 16 bar. This pressure is too high for most pneumatic devices and pneumatic tools. It must therefore be reduced and maintained at the same pressure level. Too high a pressure is costly and wears out consumers extremely quickly; too low a pressure does not produce the desired performance in terms of force or speed. Unregulated compressed air produces fluctuations in the quality of the parts produced and, especially in the case of control and measuring equipment, erroneous results. It is the task of the pressure reducer or pressure regulator to produce a certain operating pressure (secondary pressure) and to keep this constant regardless of the air flow rate (primary pressure).

How does a compressed air regulator work?
Unregulated compressed air flows from the regulator's inlet bore at the inlet pressure (primary pressure) to the valve seat of the tappet valve. As it flows through the valve, it is regulated to the desired pressure and then reaches the outlet bore as the outlet pressure (secondary pressure). The desired outlet pressure is produced by turning the adjusting screw and corresponding action of the adjusting spring on the upper side of the diaphragm. The lower side of the diaphragm is pressurized by the secondary pressure. According to the force balance of the spring and the secondary pressure, the diaphragm moves up or down. This actuates the valve tappet, which releases the valve seat and opens the valve bore to a greater or lesser extent. If the secondary pressure drops, the spring force on the diaphragm is greater than the counteracting outlet pressure. As a result, the valve tappet is pressed further down against the return spring. The valve opening increases and the secondary pressure rises again.

What is reversible, secondary venting or overpressure protection?
If no consumer is switched on, the secondary pressure can rise higher than desired by means of the spring force by turning back the adjusting spring, increasing the temperature or mechanical actuation of an air cylinder. The diaphragm then lifts from the valve tappet and exposes the vent hole. The secondary side then vents until the spring force pushes the diaphragm back onto the tappet and closes the secondary vent hole. The set spring pressure then matches the desired secondary pressure. Non-reversible means that when the secondary pressure is increased, it does not vent to the desired pressure. The diaphragm does not have a secondary vent hole. Non-reversing regulators are used with liquids or hazardous gases which, by their nature, must not be vented to the atmosphere.

Intrinsic air consumption
To improve accuracy, especially in precision pressure regulators, a permanent air consumption is generated. This inherent air consumption reduces the hysteresis and response of the regulator. In the case of gases, liquids and other aggressive media, internal air consumption should be dispensed with.

4. Pressure setting

Before commissioning the pressure control line, the pressure reducer must be relieved by unscrewing the adjusting knob / spindle (turn counterclockwise). Turning the adjusting knob / spindle clockwise produces an increase in the output pressure. Turning the adjustment knob / spindle counterclockwise, produces a reduction in output pressure. For pilot operated regulators, the outlet pressure follows the setting of the adjustment knob / spindle; the regulator vents. For non-reversing regulators, the outlet pressure must be relieved via the flow rate, or the system is vented elsewhere. Non-reverse controllers cannot independently relieve excess pressure on the outlet side.

5. Installation

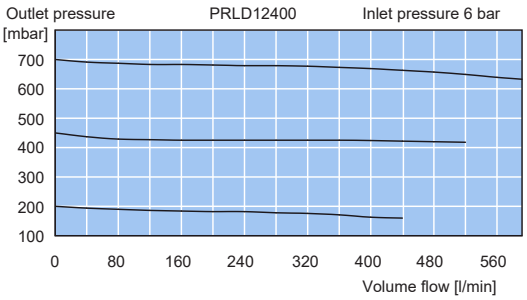
To ensure proper functioning of the regulator, all lines must be blown out before installing the regulator. Deposits and other foreign objects may damage the valve seat and thus impair the control behavior. The regulator must be installed in the line so that the air flows in the direction of the arrows (IN to Out) embossed on the body. To ensure proper operation of the regulator, a filter should be installed upstream.

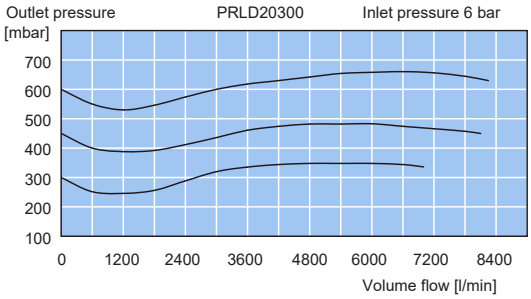
6. Maintenance and cleaning

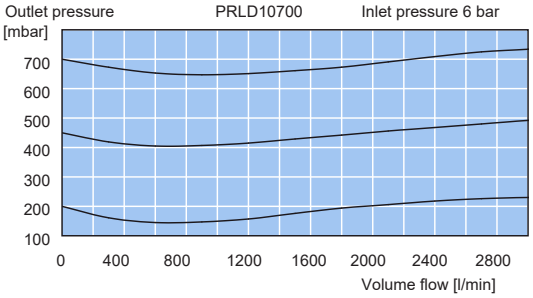
It is not necessary to remove the regulator from the line for cleaning. If the regulator operates unevenly or the outlet pressure increases permanently, this is usually a sign of contamination in the area of the valve seat. To be able to work on the regulator without danger, the air supply must be switched off and the lines must be vented. The sealing cap / knurled screw must be removed - the valve seat must be taken out, cleaned and the O-rings greased. After that, the regulator can be assembled and the plant can be put back into operation.

Attention: For special media, e.g. oxygen, only approved grease may be used.

7. Volume flow diagrams

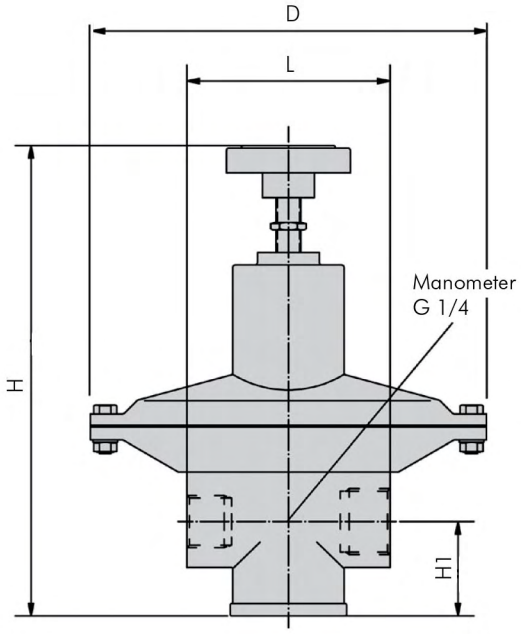


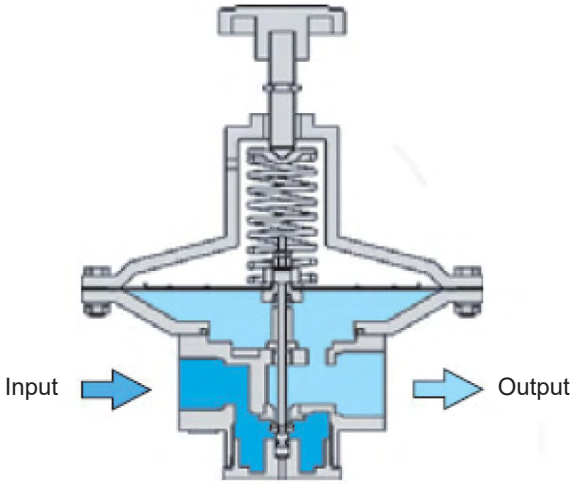


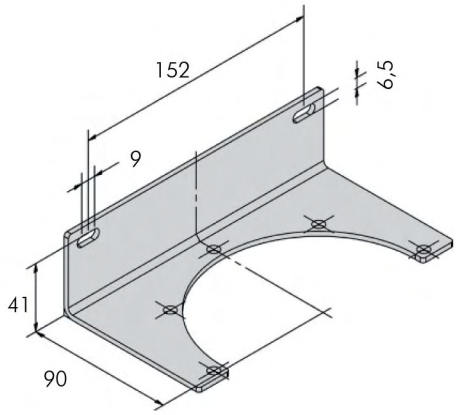


8. dimensions

Precision pressure regulator PRLD...

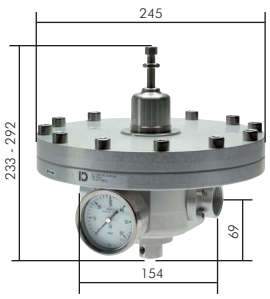






Type	Thread	D	L	H	H1
PRLD1245	G 1/2"*	166	82	188	38
PRLD12400	G 1/2"*	166	82	188	38
PRLD121000	G 1/2"*	166	82	188	38
PRLD1045	G 1"	245	154	233-292	69
PRLD10120	G 1"	245	154	233-292	69
PRLD10700	G 1"	245	154	233-292	69
PRLD11250	G 1 1/2"	336	192	468	128
PRLD112150	G 1 1/2"	336	192	468	128
PRLD112300	G 1 1/2"	336	192	468	128
PRLD1121000	G 1 1/2"	336	192	468	128
PRLD2050	G 2"	336	192	468	128
PRLD20150	G 2"	336	192	468	128
PRLD20300	G 2"	336	192	468	128
PRLD201000	G 2"	336	192	468	128

* Thread output 3/4"



Type G 1"