PRESSURE REGULATORS

Type RLC/20

EMERSON™
Process Management

RLC/20 Regulators

Type RLC/20 Pressure Loaded Regulators

RLC/20 regulators are pneumatic-loaded and feature counterbalanced valve. They are normally employed in gas distributing stations for automotive use.

They can also be employed in installations for industrial use using high pressure gas compressed in cylinders and cylinder-truck installations normally fed through the pipeline.

The main features are as follows:

- ***Counterbalanced Shutter***
- ***Welding or Threaded Flanges Configurations***
- ***Version With Relief Valve***
- ***Built-in Filter***

Operation

The stem S is controlled by the piston P on the opposite surfaces of which are balanced in one side the downstream pressure and on the other side the setting static pressure.

The causes that can intervene to modify this state of balance are:

1. increase of the request of gas
2. reduction of the request of gas
3. increase of the inlet pressure
4. reduction of the inlet pressure

An Increase of the request of gas causes a reduction of the downstream pressure in the chamber C1.

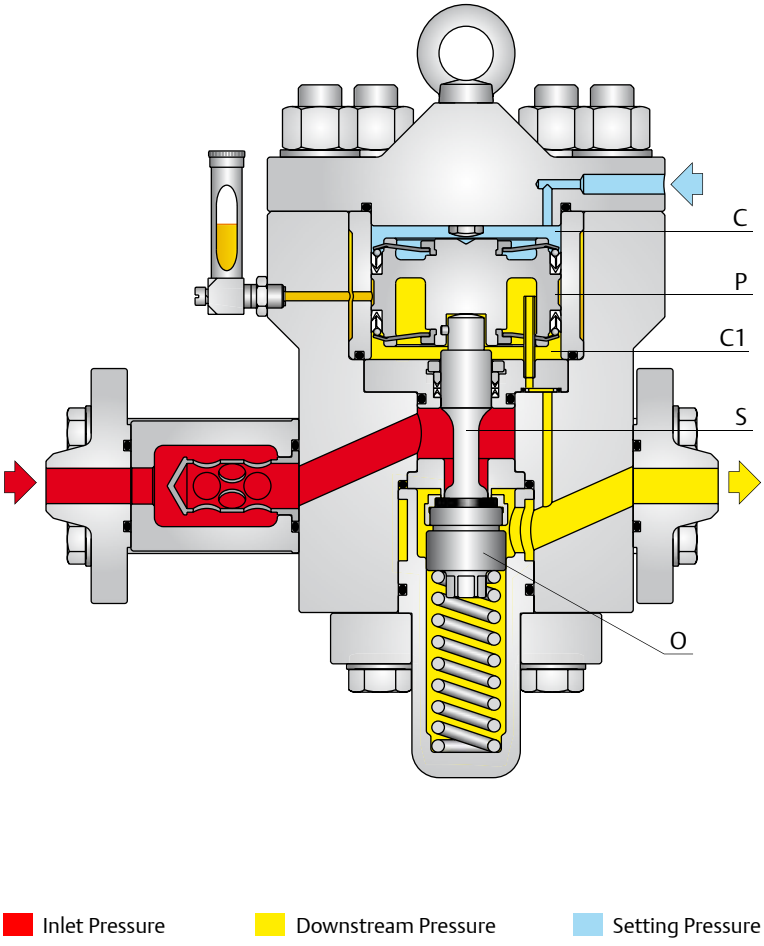
The difference of pressure which is thus formed between the chambers C and C1 operating on the piston P causes the opening of the shutter O until the balance of the setting and downstream pressure is obtained again.

In the case 2 a reduction of the request of gas causes an increase of the downstream pressure.

The downstream pressure prevailing on the setting pressure causes a rising of the piston P and therefore of the shutter O.

The reduction of useful section for the passage which is the con sequence of this, reduces the downstream pressure to its initial value.

The cases 3 and 4 are similar to the previous ones because, to the effects of the operation, an Increase or a reduction of the absorption correspond respectively to a reduction or to an increase of the inlet pressure.



Features

Technical Features

Body allowable pressure	PS	: 320 bar
Inlet pressure range	bpu	: 30 to 320 bar
Outlet Set Pressure Ranges	Wd	: 20 to 250 bar
Min. operating differential pres.	Δp_{min}	: 10 bar

Functional Features

Accuracy class	AC	: up to ± 2,5%
Lock-up pressure class	SG	: up to +5%
Class of lock-up pressure zone	Sz	: up to 10%

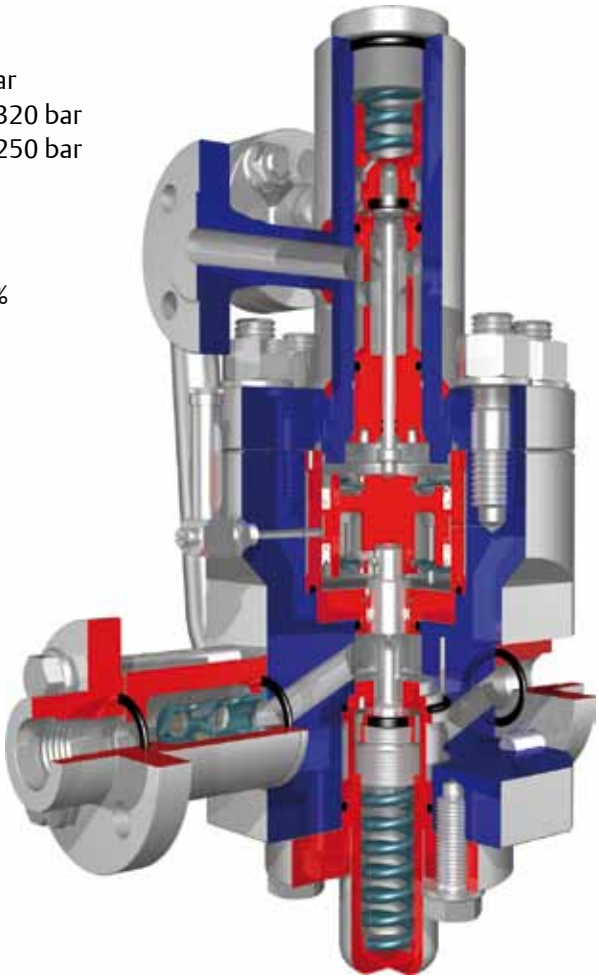
Built-in relief valve
Setting at +5% of the regulator setting value

Orifice
3/4"

Connections
Threaded 1" NPT
Flanged DN 20 PN 350

Temperature

Standard version	: Working -10° to 60 °C
Low temp. version	: Working -20° to 60 °C



Materials

Body and Covers	Steel
Seat	Stainless Steel
Pad	Nitrile (NBR) Rubber

Calculation Procedures

Symbols

Q	=	Natural gas flow rate in Stm^3/h
P1	=	Absolute inlet pressure in bar
P2	=	Absolute outlet pressure in bar
C_g	=	Flow rate coefficient = 150
C1	=	Body shape factor = 34
d	=	Relative density of the gas

Flow Rate Q

Sub-critical state with: $P2 > \frac{P1}{2}$

$$Q = 0.525 \cdot C_g \cdot P1 \cdot \sin\left(\frac{3417}{C1} \cdot \sqrt{\frac{P1-P2}{P1}}\right)^{\circ}$$

Note: The sine argument is expressed in sexagesimal degree

Critical state with: $P2 \leq \frac{P1}{2}$

$$Q = 0.525 \cdot C_g \cdot P1$$

For other gases with different densities, the flow rate calculated with the above formulas must be multiplied by the following correction factors: Air 0.78 - City gas 1.17 - Butane 0.55 - Propane 0.63 Nitrogen 0.79 - Carbon dioxide 0.63 - Hydrogen 2.93

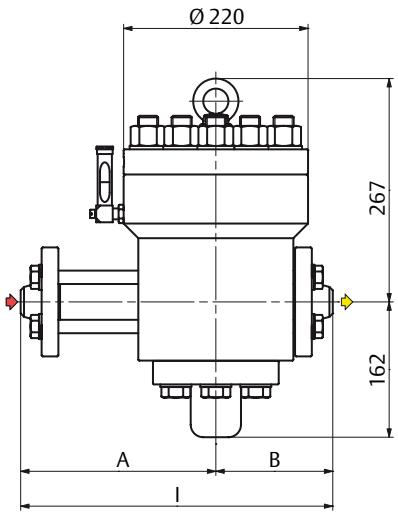
Verify that the velocity of the gas at the outlet flange of the regulator does not exceed 25 m/s, using the following formula:

$$V = 345.92 \cdot \frac{Q}{DN^2} \cdot \frac{1 - 0.002 \cdot Pu}{1 + Pu}$$

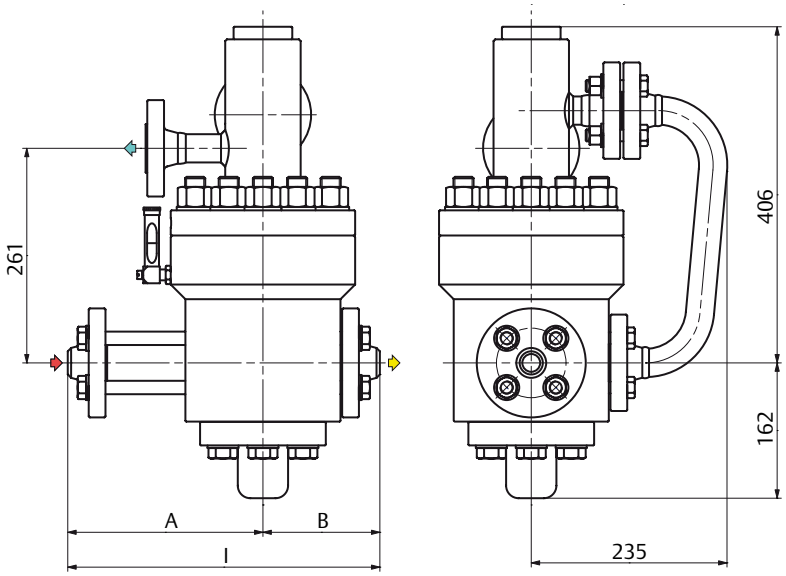
V	=	Velocity in m/s
345,92	=	Numerical constant
Q	=	Flow rate under standard conditions in Stm^3/h
DN	=	Regulator nominal diameter in mm
Pu	=	Inlet pressure in relative value in bar

Dimensions (mm) and Weights (kg)

Version Without Relief Valve



Version With Relief Valve



Version	Welding Flanges			Threaded Flanges			Weight With Relief Valve	Weight Without Relief Valve
	A	B	I	A	B	I		
With filter	232	140	372	239	147	386	100	85
Without filter	140	140	280	147	147	294		

Industrial Regulators

Emerson Process Management
Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75069-1872 USA
Tel: +1 800 558 5853
Outside US: +1 972 548 3574

Europe
Bologna 40013, Italy
Tel: +39 051 419 0611

Asia-Pacific
Shanghai 201206, China
Tel: +86 21 2892 9000

Middle East and Africa
Dubai, United Arab Emirates
Tel: +971 4811 8100

Natural Gas Technologies

Emerson Process Management
Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75069-1872 USA
Tel: +1 800 558 5853
Outside US: +1 972 548 3574

Europe
Bologna 40013, Italy
Tel: +39 051 419 0611
Chartres 28008, France
Tel: +33 2 37 33 47 00

Asia-Pacific
Singapore 128461, Singapore
Tel: +65 6770 8337

LP-Gas Equipment

Emerson Process Management
Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75069-1872 USA
Tel: +1 800 558 5853
Outside US: +1 972 548 3574

TESCOM

Emerson Process Management
Tescom Corporation

USA - Headquarters
Elk River, Minnesota 55330-2445 USA
Tel: +1 763 241 3238
+1 800 447 1250

Europe
Selmsdorf 23923, Germany
Tel: +49 38823 31 287

Asia-Pacific
Shanghai 201206, China
Tel: +86 21 2892 9499

For further information visit www.emersonprocess.com/regulators

Our Global Product Brands:

FISHER FRANCEL TARTARINI JEON TESCOM

EMERSON
Process Management

0060EN - 10/2012 - ©Emerson Process Management Regulator Technologies, Inc., 2012; All Rights Reserved