

# Pressure Regulator RB 3200

- ▶ **Balanced valve design eliminates inlet pressure effect**
- ▶ **Rugged construction for durability**
- ▶ **Rapid response to load changes**
- ▶ **Integral shutoff valve**
- ▶ **Internal relief**
- ▶ **Inlet strainer**

## Applications

The RB 3200 regulator is designed for commercial and small industrial applications, and all installations with continuous consumption or rapid flow rate variations, such as burners, industrial ovens, boilers...

It is suitable for installation in cabinets, as a space saving regulator.

## Description

The RB 3200 regulator is a direct-acting, spring-loaded regulator (lever type) with an integrated relief valve and optional safety shut-off device.

The balanced valve ensures constant outlet pressure when the upstream pressure varies.

This eliminates changes to the orifice size arising from different inlet pressure ranges.

The regulator is equipped with a built-in filter (filtration grade 0.5 mm).

The safety shutoff valve cuts the gas flow when the outlet pressure exceeds the set pressure (UPSO) or when it drops below the set value (UPSO). It remains closed until the valve is manually reset.

The relief valve avoids triggering the safety shutoff valve in case of thermal expansion, transient surges of pressure and creep leaks from regulator. The relief pressure is pre-set from factory.

## Technical Features

<b>Maximum inlet pressure</b>	10 bar
<b>Outlet pressure</b>	7 mbar – 160 mbar Extended range up to 350 mbar
<b>Accuracy &amp; lock-up pressure</b>	Up to AC5 / up to SG10
<b>Operating temperature</b>	-20°C to +60°C
<b>Acceptable gases</b>	Natural gas, town gas, propane, butane, air, nitrogen or any non-corrosive gas
<b>Installation</b>	Horizontal or vertical
<b>Safety devices</b>	Standard relief valve Optional built-in safety shut-off valve: – over-pressure shut-off (OPSO) – under-pressure shut-off (UPSO)
<b>Options</b>	Internal or external control line Monitor version

## Sizes and Connections



<b>Sizes</b>	1" x 1 1/2" by standard version 1" x 1" by monitor version
<b>Type</b>	Parallel internal thread according to ISO 228/1 or ISO 7/1



▶ **Pressure Regulator RB 3211**



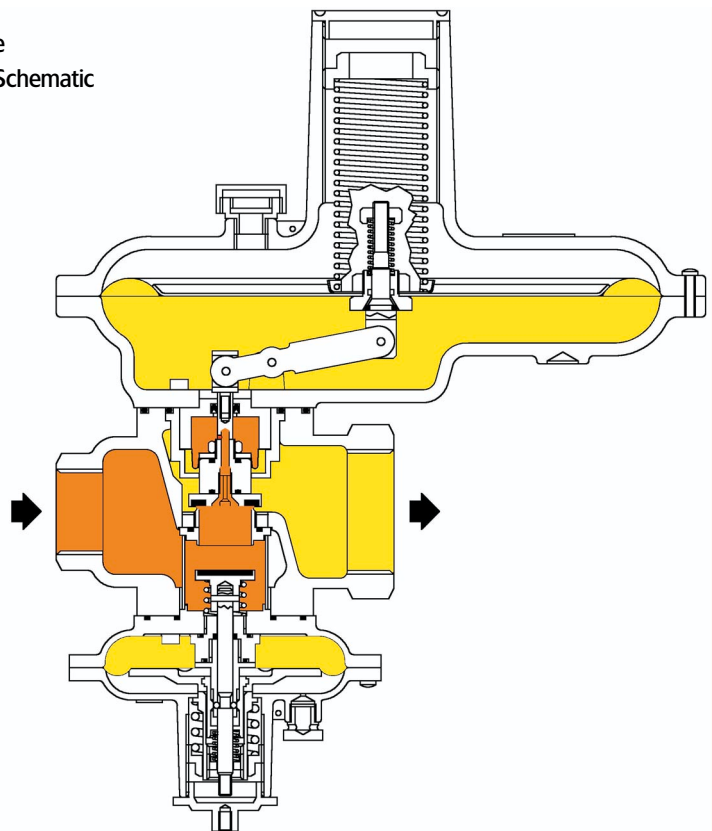
► RB 3211

 Inlet pressure  
 Outlet pressure

## Materials

Body	Spheroidal graphite iron ISO 1083 gr 500-7
Head	Die cast aluminium
Internal parts	Stainless steel and brass
Seals	Nitrile rubber
Diaphragm	Rubberized fabric

► RB 3212 type  
Operational Schematic



## Type Designation and Options

To specify the version of the RB 3200 regulator to be ordered, the options and relevant codes should be selected from the table below.

R	B	x	3	2	1	x	x	x	Options
		E							External sensing line (standard)
		I							Internal sensing line
					0				Relief valve
					1				Relief valve + over-pressure shut-off valve
					2				Relief valve + over-and under-pressure shut-off valve
						M			Monitor version
							TR		Reduced head (see spring selection tables)

Example: RBE 3212 is a 3200 regulator with an external sensing line and an OPSO / UPSO shut-off valve

## Flow Capacity

RB 3200 with built-in SSV and external sensing line

Inlet Pressure	Capacities in m³/h in standard conditions					
	Outlet pressure setting					
	20 mbar	50 mbar	100 mbar	150 mbar	200 mbar	350 mbar
	Spring 20565168	Spring 20565166	Spring 20565150	Spring 20565151	Spring 20565150	Spring 20565151
0.14 bar	70	63	38	-		
0.35 bar	120	115	95	95		
0.5 bar	145	140	120	110	62	46
0.7 bar	175	170	150	145	80	70
1 bar	230	210	180	170	105	100
1.5 bar	300	270	230	230	180	170
2 bar	380	330	280	280	260	260
4 bar	680	540	530	530	490	490
7 bar	950	870	850	850	800	800
10 bar	950	870	850	850	850	800

Maximum capacity at 20 % drop

► The values given are those for appropriately sized pipe work.

► The flow capacities of the regulator without a safety shut-off device are approximately 15 % higher.

## Fault Capacity

For a 0.6 specific gravity gas, the wide-open orifice flow (Q) may be calculated using the following equations:

- Sub-critical flow behavior, where  $P_e - P_a \leq 0.5 P_e$   $Q = 300 \sqrt{P_a (P_e - P_a)}$
- Critical flow behavior, where  $P_e - P_a > 0.5 P_e$   $Q = 300 P_e / 2$

### Standard conditions:

- Absolute pressure of 1.013 bar
- Temperature of 15°C

### where:

Q = maximum flow capacity (Sm³/h)  
 Pe = absolute inlet pressure (bar)  
 Pa = absolute outlet pressure (bar)  
 K<sub>G</sub> = flow coefficient

### Correction factor for non-natural gas applications:

The flow rates are indicated for a 0.6 specific gravity gas.

To determine the volumetric flow rate for gases other than natural gas, the values in the capacity tables should be multiplied or calculated using the sizing equations with a correction factor.

The table below lists the correction factors for some common gases:

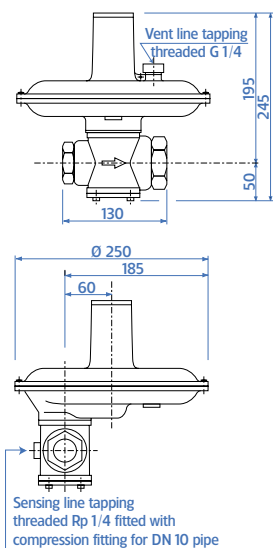
Gas type	Specific gravity	Correction factor
Air	1.00	0.77
Butane	2.01	0.55
Carbon dioxide (dry)	1.52	0.63
Carbon monoxide (dry)	0.97	0.79
Natural gas	0.60	1.00
Nitrogen	0.97	0.79
Propane	1.53	0.63
Propane-Air mix	1.20	0.71

Specific gravity or relative density  
 (air = 1, non-dimensional value)

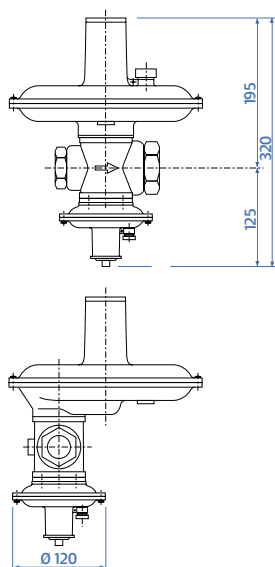
To calculate the correction factor for gases not listed above, the specific gravity (d) of the gas should be taken and used in the following formula:

$$\text{Correction factor} = \sqrt{\frac{0.6}{d}}$$

## Overall Dimensions (mm)



► Model: 3210 - Weight: 4.5 kg.



► Models: 3211 / 3212 - Weight: 4.9 kg.

### Spring characteristics:

d : wire diameter  
De : external diameter  
Lo : height  
It : number of spires

## Outlet Pressure Range

### Regulator

Spring code	Spring Characteristics				Spring Range	
	d	De	Lo	It	Head Ø 250 mbar	Head Ø 250 TR mbar
20565168	2.2	35	155	13	20 - 25	
20565155	2.7	35	120	11	25 - 50	
20565156	3	35	120	11.5	35 - 70	
20565150	3.5	35	100	9.5	55 - 110	110-200
20565151	4	35	100	10.5	80 - 160	160-350

### Shut-off Valve

#### Over-pressure shut-off springs (OPSO)

Spring code	Spring Characteristics				Spring Range	
	d	De	Lo	It	Head Ø 120 mbar	Head Ø 120TR mbar
20563022	1.5	25	35	5.5	28 - 60	50 - 100
20563023	1.7	25	35	5.5	40 - 100	70 - 150
20563014	1.9	25	35	5.5	60 - 130	110 - 220
20563124	2.2	25	35	5.5	130 - 245	230 - 420
20563121	2.5	25	35	5.5	220 - 350	390 - 600

\*When both OPSO and UPSO springs are installed, the specific set range of the OPSO spring is reduced: the minimum set point that can be obtained is increased by around 15 %.

#### Under-pressure shut-off springs (UPSO)

Spring code	Spring Characteristics				Spring Range	
	d	De	Lo	It	Head Ø 120 mbar	Head Ø 120 TR mbar
20560511	0.8	10	20	7	10 - 25	18 - 44
20560515	0.8	10	30	10	20 - 33	35 - 58
20560518	0.9	10	30	10	37 - 45	65 - 78
20560519	1.4	10	30	10	115 - 195	200 - 340

### Relief Valve

The built-in relief valve is set 10 mbar above outlet pressure setting.

Other settings on request.

### Installation

- The RB 3200 regulator can be mounted in any position, horizontal or vertical
- RB 3200 can be used as monitor regulator, upstream to an active regulator. The external sensing line shall then be connected downstream to the regulator to be controlled.

#### Information to be specified when ordering:

- Regulator type code
- Maximum inlet pressure
- Outlet pressure range
- Outlet pressure setting
- OPCO setting\*
- UPSCO setting\*
- \* if requested

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