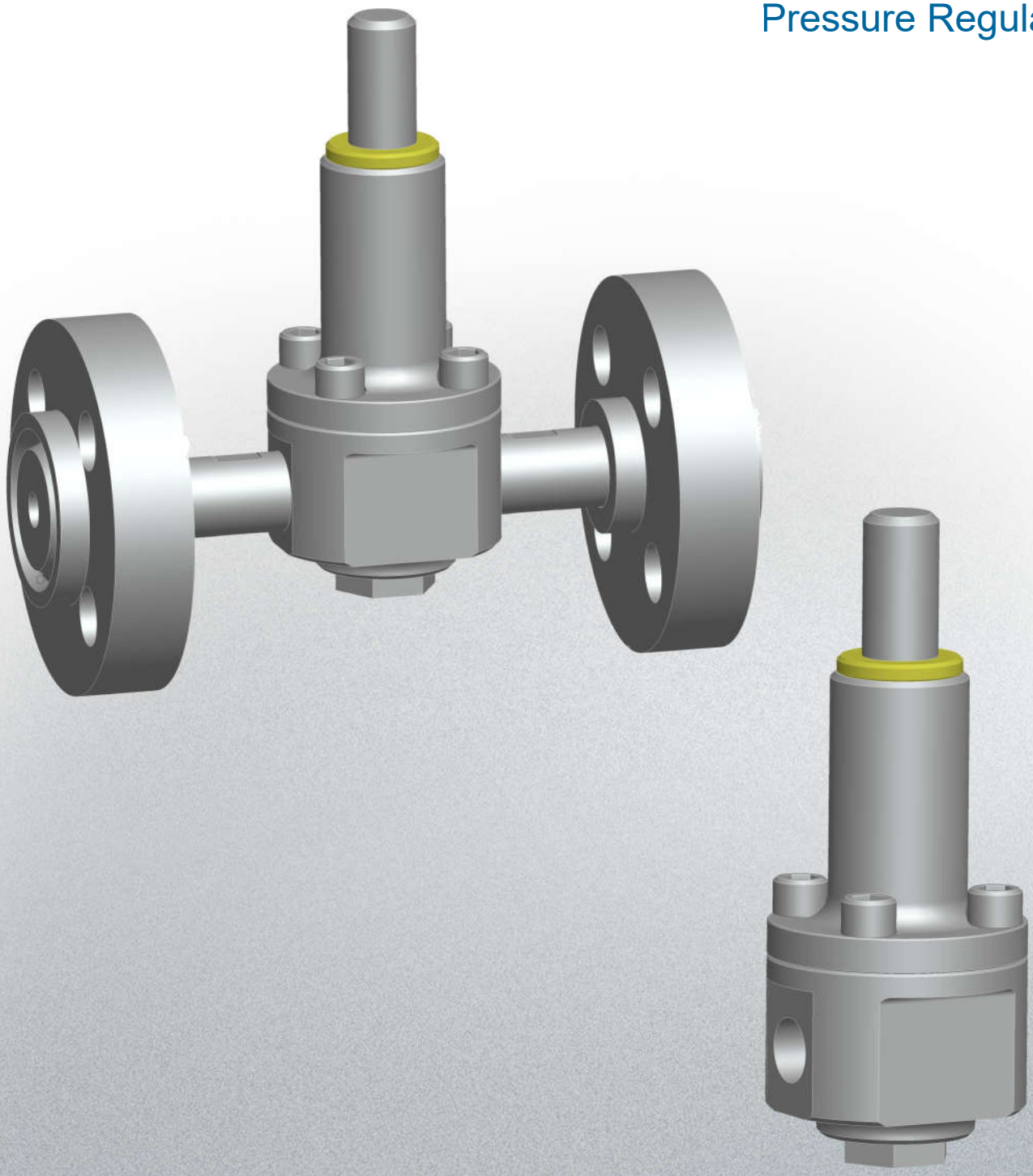
MINIDOME

Pressure Regulator



GASCAT

INTRODUCTION

The MINIDOME is a springloaded high-pressure reducing regulator designed to reduces the supply pressure up to 250 barg on the upstream to a controlled pressure on the downstream.

APPLICATION:

- CNG stations
- Cylinder bank pressure reduction
- High-pressure gas test benches
- Gas instrumentation skids
- Industrial gases (H_2, N_2, He, Ar, Co_2)

FLUIDS

This pressure regulator is suitable for gases ans liquids.

GAUGEPORTS

The regulator has standard one 1/4" NPT gaugeport to measure the controlled setpressure.

A pressure gauge (manometer) is avaliable upon request.

TECHNICAL DETAILS

- All parts cleaned and degreased
- Leak-tight seat design (hydrogen tested)
- According to PED 2014/68/EU - SEP (article 4, paragraph 3)

TECHNICAL CHARACTERISTICS

OPERATION LIMITS	
Maximum Inlet Operating Pressure	250 barg / 3625 psig
Outlet Pressure Range	2 - 220 barg / 29 - 3190 psig
Temperature Range	-20°C ~ +60ºC
Strength Type (EN 334)	IS (Integral Strength)
AC - Regulator Accuracy Class	Up to ± 5%
SG - Lock up Pressure Class	Up to 10%
Sensing Element	Diaphragm - 2 to 40 barg Piston - 38 to 220 barg

DN	CONNECTIONS	CLASS
3/4" and 1"	Flange ANSI B16.5	600#, 1500# and 2500#
1/2" and 3/4"	BSP (ISO 228) or NPT (ANSI 20.1)	-

Note: To other option connections, GASCAT should be consulted.

TECHNICAL CHARACTERISTICS

Component	Material
Body	Stainless Steel 316
Springhousing	
Internals	
Shutter	SS 316 / PCTFE
O-rings / Diaphragm	Buna N, or FKM EPDM

Note: The materials listed above refer to the standard models. Different materials may be supplied according to the technical specification.

ADJUSTING RANGE		
barg	psig	SPRING COLOR
2 - 15	29 - 217.5	RED
12 - 28	174 - 406	BROWN
25 - 40	362.5 - 580	BLACK
38 - 70	551 - 1015	RED
65 - 110	942.5 - 1595	BROWN
105 - 160	1522.5 - 2320	BLACK
150 - 220	2175 - 3190	WHITE

SIZING

The sizing of MINIDOME regulator is done based in the considerations as follow:
•Definition according to inlet and outlet pressure fi it is a critic or
sub-critic flow;
• Convertion based on correction factor the flow value found if the process fluid is different of natural gas;
• Limitation of use of pressure regulator when the flow capacity is approximately 90%;
• For working / monitor configuration size the set considering the two stages of pressure reduction and single stage when the upstream regulator assumes the total pressure reduction control.

And is calculated utilizing the short equations from Standard DIN EN 334 , where:

Q = Flow in Nm^3/h;
P1 = Inlet pressure in bar absolute;
P2 = Outlet pressure in bar absolute;
KG = Regulator flow coefficient.

CRITICAL FLOW
P2 / P1 < 0.53
Q = (KG x P1) / 2

SUB-CRITICAL FLOW
P2 / P1 ≥ 0.53
$Q = KG \times \sqrt{P_2 \times (P_1 - P_2)}$

KG
30

KG values in Nm^3/h of natural gas (specific weight = 0.78 kg/m^3). For gases other than those listed in the table below, the correction factor can be obtained using the following equation:

Gas	Relative Density (Kg/m^3)	Correction Factor
Hydrogen	0.09	2.94
Nitrogen	1.25	0.79
Air	1.29	0.77
Oxygen	1.43	0.74
Propane	2.02	0.62
Butane	2.70	0.53

$$\text{Correction Factor} = \sqrt{\frac{0.78}{\text{Relative Density}}}$$

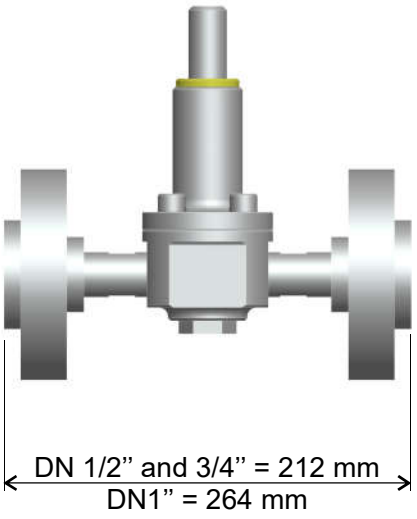
Gas Velocity on Downstream Flange

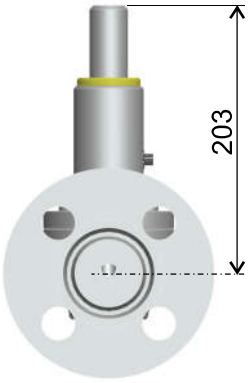
To ensure optimal performance, prevent premature erosion, and limit noise emissions, it is recommended to verify that the gas velocity at the outlet flange does not exceed 150 m/s. The gas velocity at the outlet flange can be calculated using the following formula:

V = Gas Velocity [m/s]
Q = Flow [Nm³/h]
DN = Nominal Diameter [mm]
P_d = Downstream Pressure [bara]

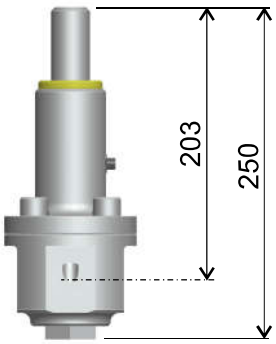
$$V = \frac{Q \times 10^4}{28{,}26 \times DN^2 \times P_d}$$

DIMENSIONS AND WEIGHTS





WEIGHTS (kg)			
Thread	Flange		
	600#	1500#	2500#
5.4	11.5	13.5	14.5
	13	14	15
	14	15	16.8



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