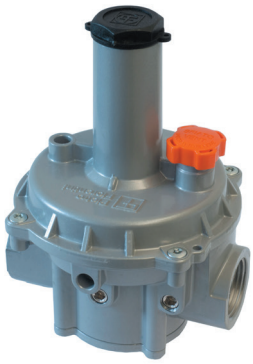
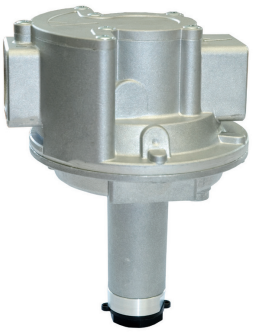
Pietro Fiorentini

Governors

Low-pressure gas regulator





TECHNICAL BROCHURE

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Who we are

We are an international company specialising in the design and manufacture of cutting-edge devices and solutions for natural gas processing, transport and distribution systems. We are the ideal partner for operators in the Oil & Gas sector, with a business offer that goes across the whole natural gas chain.

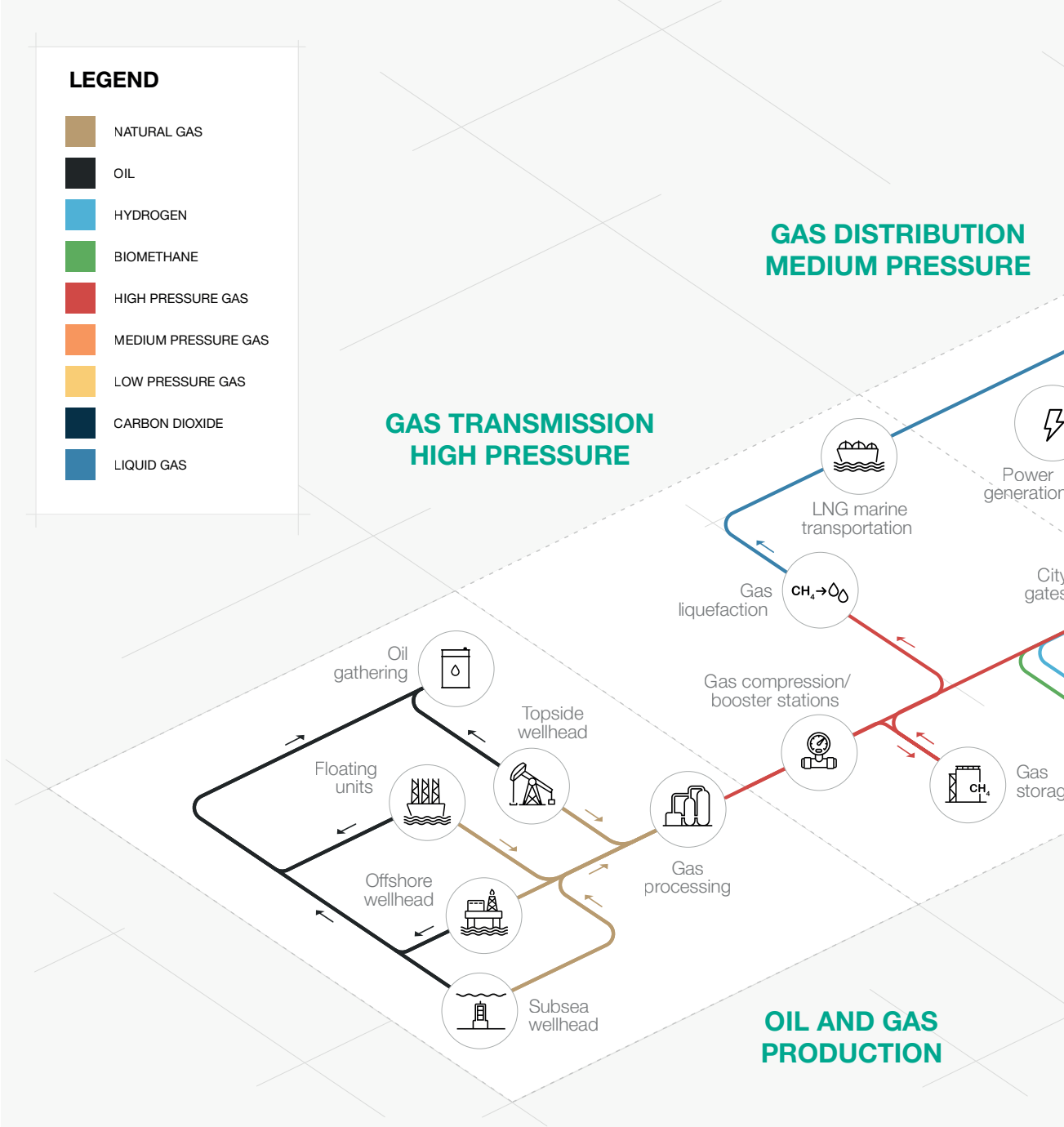
We are in constant evolution to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customised technologies and an after-sale service program undertaken with the highest grade of professionalism.

Pietro Fiorentini advantages

- Localised technical support
- Experience since 1940
- We operate in over 100 countries

Application area



Green icon indicates the field of application in which the product can be used

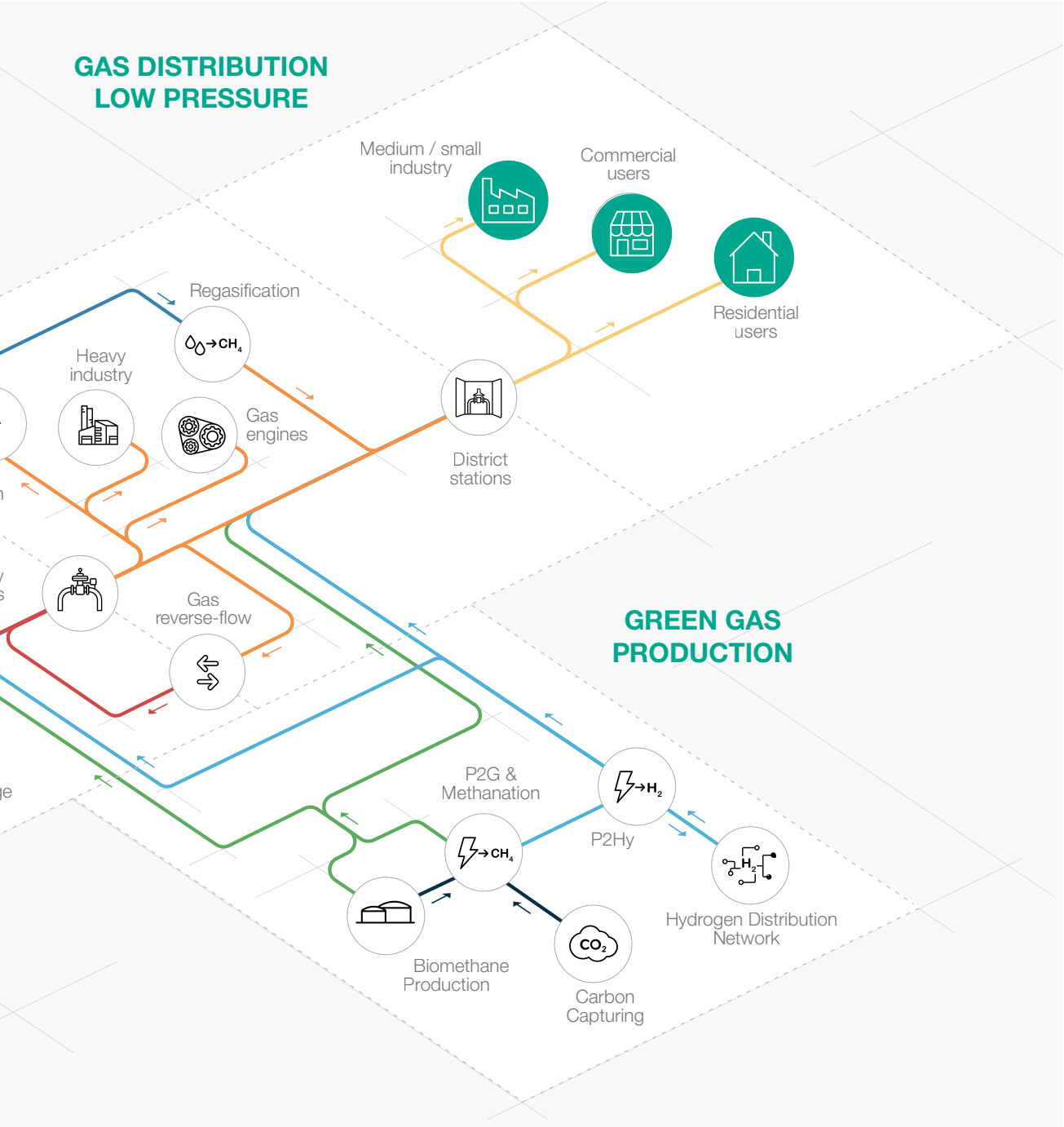


Figure 1 Map of application areas

Introduction

The gas pressure governors with and without safety double diaphragm filter in the Pietro Fiorentini range are equipped with a balanced plug. They are the ideal solution for feeding burners.

They can be used with pre-filtered non-corrosive gases and are widely used in low-pressure natural gas distribution networks to industrial, commercial and residential users.

These devices comply with EN 88-1.

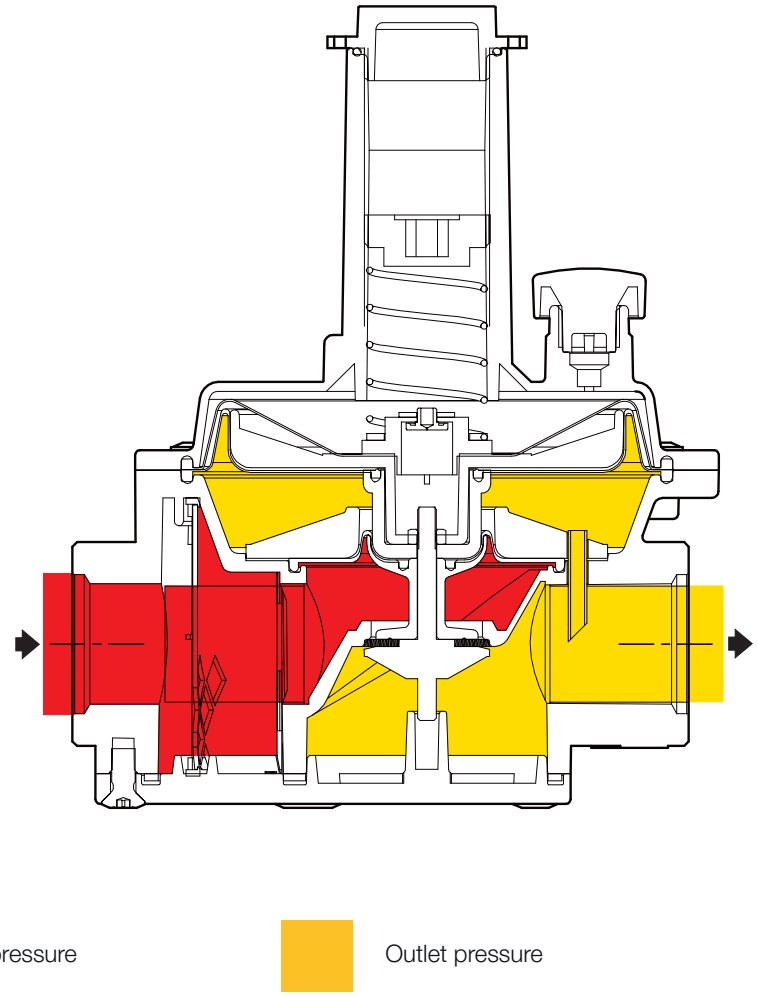


Figure 2 Governor

Description and Calibration interval

The governor is a **direct-acting pressure regulator** that ensures extremely precise control of the outlet pressure and enables correct operation even with low pressure differentials between inlet and rated setting.

The balanced plug system guarantees a constant downstream pressure value as the inlet pressure and required flow rate vary.

This device is suitable for use with previously filtered, non-corrosive gases, in natural gas distribution networks as well as low load residential application.

The design of the governor allows for easy installation in all the inlet and outlet pipe positions that the field conditions may have.

The governor is also set up for customisation in terms of calibration, compression fittings, etc.

There are **four main versions** in the governor family:
- **STD** version with and without inlet filter element to protect the plugs;
- zero version (**Zero Governor**);
- gas/air ratio version (**Ratio Governor**);
- version with extended inlet pressure range (**Goval**).

Governors competitive advantages

- Operation starting with 2.5 mbar of ΔP
- Double safety diaphragm
- Balanced shutter
- Wide output pressure range
- Integrated filter option
- Suitable for outdoor installations
- Compatible with biomethane and blended hydrogen up to 20%. Higher mixtures available on request

Features

Features	Values	
Design pressure (DP)	STD	0.05 MPa 0.5 bar
	Ratio / Zero	0.035 MPa 0.35 bar
	Goval	0.1 MPa 1 bar
Operating ambient temperature*	STD / Goval	from -15°C to + 60°C from -5°F to +140°F
	Ratio / Zero	from -10°C to + 60°C from 14°F to +140°F
Input pressure range	STD	Wd+0.25 kPa to 50 kPa Wd+2.5 mbar to 500 mbar
	Ratio / Zero	Wd +2 kPa to 35 kPa Wd+20 mbar to 350 mbar
	Goval	Wd+0.75 kPa to 100 kPa Wd+7.5 mbar to 1000 mbar
Adjustment range of downstream pressure	STD / Goval	from 0.5 KPa to 30 MPa from 5 mbar to 300 mbar
	Ratio	from 0.2 kPa to 15 kPa 2 mbar to 150 mbar
	Zero	from -0.5 KPa to 0.5 MPa from -5 mbar to 5 mbar
	Compact version	from 0.5 KPa to 15 MPa from 5 mbar to 150 mbar
Accessories*	Integrated inlet filter, inlet and outlet pressure ports	
Accuracy class (AC)	up to 15	
Shut-off overpressure (SG)	up to 30, minimum 0.75 KPa | 7.5 mbar	
Nominal dimensions DN • also available NPT (ASME B1.20.1) • flanges (ASME B16.5)	DN 15 | 1/2"; DN 20 | 3/4"; DN 25 | 1"; DN 32 | 1-1/4"; DN 40 | 1-1/2"; DN 50 | 2"; DN 65 | 2-1/2"; DN 80 | 3"; DN 100 | 4"	
Connections*	• Gas (as per UNI EN ISO 228-1:2003); • Flat swivel joint (as per NF E29-533: 2014 and NF E29-536: 2017);	

(*) REMARK: Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the maximum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.

Table 1 Features

Materials and Approvals

Part	Material
• Diaphragm • O-rings	Nitrile rubber*
• Caps	Plastic
• Springs	Steel
• Equipment body • Lids	Aluminium alloy
(*) REMARK: Different materials can be provided according to specific needs.	

Table 2 Materials

Construction Standards and Approvals

The device is designed in compliance with European standard EN 88-1.
The regulator is in accordance with:

EN 88-1

CSA 6.22

Spring ranges

Tables only valid for STD and Goval versions.

		Spring codes				
Range (mbar)	Spring (colour)	V. compact DN 15-20-25	V. high flow rate DN 15-20-25	DN 32-40	DN 50	DN 65-80-100
5-13	Green	64470219	64470228	64470246	64470255	64470320
7-20	Red	64470220	64470229	64470247	64470256	64470324
10-30	White	64470221	64470230	64470248	64470257	64470325
15-35	Black	64470397	64470380	64470381	64470382	64470383
25-70	Yellow	64470295	64470297	64470299	64470301	64470321
60-150	Purple	64470296	64470298	64470300	64470302	64470322
140-300	Orange	-	64470235	64470253	64470262	64470323

Table 3 Spring codes

The following tables refer to the compact version only.
ATTENTION: slam shut only available for the compact version up to 1".

Minimum pressure slam shut springs (UPSO)		
range (mbar)	spring (colour)	spring code
8-21	Blue	64470120
21-35	Yellow	64470121
35-55	Green	64470122
55-80	-	64470202

Table 4 UPSO spring codes - compact version

Maximum pressure slam shut springs (OPSO)		
range (mbar)	spring (colour)	spring code
35-50	White	64470197
50-70	White	64470198
70-100	White	64470199
100-160	White	64470200
160-220	Sky blue	64470113
220-300	White	64470201

Table 5 OPSO spring codes - compact version

General link to the calibration tables: **CLICK HERE** or use the QR code:

Versions

		Image	Description
Models	**Standard STD**		This version can be supplied with: • internal filter element to protect the plugs • slam shut valve for maximum and minimum downstream pressure (versions available page 13).
	Ratio		This version can be used as a gas/air ratio device while maintaining constant mixing gas/air, as the flow rate varies. The device can be calibrated to achieve a 1:1 gas/air mixture.
	Zero		This version can be used as a zero device, keeping the downstream pressure at zero when the flow demand changes.
	Goval		This version has a maximum inlet pressure of 1 bar (STD version 0.5 bar).

Table 6 Available versions of governors

Weights and dimensions

Governor

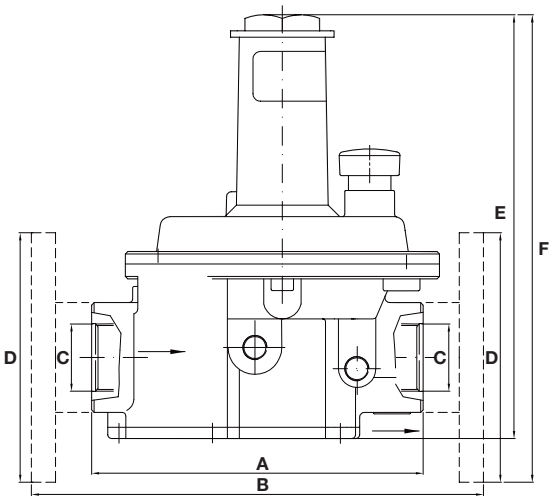


Figure 3 Governor dimensions

			A		B		C		D		E		F	
Version	**Size DN - [mm]**	**Size DN - inches**	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches
Compact	15	1/2"	104	4.1”	-	-	15	1/2"	-	-	140	5.5”	-	-
	20	3/4"	104	4.1”	-	-	20	3/4"	-	-	140	5.5”	-	-
	25	1"	104	4.1”	-	-	25	1"	-	-	140	5.5”	-	-
High flow rate	15	1/2"	120	4.7”	-	-	15	1/2"	-	-	171	6.7”	-	-
	20	3/4"	120	4.7”	-	-	20	3/4"	-	-	171	6.7”	-	-
	25	1"	120	4.7”	-	-	25	1"	-	-	171	6.7”	-	-
	32	1" 1/4	196	7.7”	-	-	32	1" 1/4	-	-	241	9.5”	-	-
	40	1" 1/2	196	7.7”	-	-	40	1" 1/2	-	-	241	9.5”	-	-
	50	2"	234	9.2”	-	-	50	2"	-	-	303	11.9”	-	-
	65	2" 1/2	-	-	430	16.9”	-	-	65	2” 1/2	-	-	428	16.8”
	80	3"	-	-	430	16.9”	-	-	80	3”	-	-	428	16.8”
	100	4"	-	-	430	16.9”	-	-	100	4”	-	-	428	16.8”

Weight			Kg	pounds
Compact	15	1/2"	0.3	0.7
	20	3/4"		
	25	1"		
High flow rate	15	1/2"	0.4	0.9
	20	3/4"		
	25	1"		
	32	1" 1/4	3.2	7.1
	40	1" 1/2		
	50	2"	4.9	10.8
	65	2" 1/2	13.8	30.4
	80	3"		
	100	4"		

Table 7 Weights and dimensions

Governor with slam shut
(only compact version DN15-20-25)

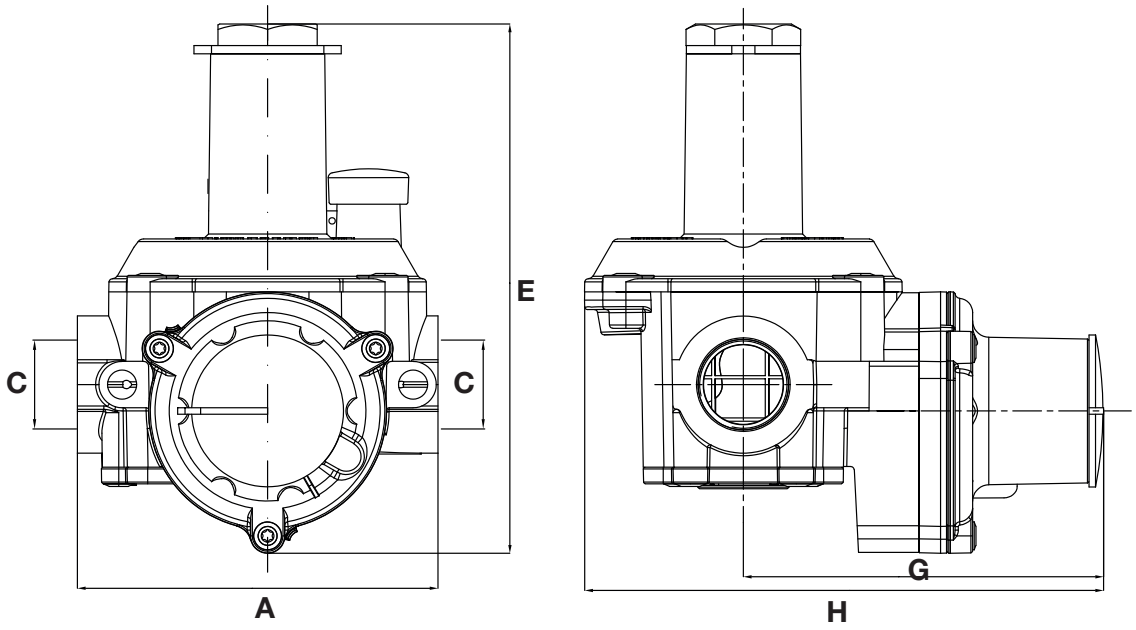


Figure 4 Dimensions of governor with slam shut

			A		C		E		G		H	
			[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches
Compact	15	1/2"	109	4.3”	15	1/2"	160	6.3”	109	4.3”	157	6.2”
	20	3/4"	109	4.3”	20	3/4"	160	6.3”	109	4.3”	157	6.2”
	25	1"	109	4.3”	25	1"	160	6.3”	109	4.3”	157	6.2”

Weight			Kg	pounds
Compact	15	1/2"	0.3	0.7
	20	3/4"		
	25	1"		

Table 8 Weights and dimensions

Cg

The choice of a regulator is made based on the calculation of the flow rate determined by the use of formulae using the flow rate coefficients (Cg) as indicated by the EN 334 standard.

Governors without filter												
Version	compact			high flow rate								
Diameter	15	20	25	15	20	25	32	40	50	65	80	100
Inches	1/2”	3/4”	1”	1/2”	3/4”	1”	1” 1/4	1” 1/2	2”	2” 1/2	3”	4”
Cg (STD)	80	100	130	190	240	285	680	710	1300	1650	2000	3500
Cg (Zero/Ratio)	-	-	-	160	205	240	580	610	1100	1400	1700	2850
Cg (Goval) Pu<=350 bar Pd 35 mBar	56	70	90	135	170	200	545	570	1200	1480	1800	3150

Table 9 Flow coefficients - governors without filter

Governors with filter												
Version	compact			high flow rate								
Diameter	15	20	25	15	20	25	32	40	50	65	80	100
Inches	1/2”	3/4”	1”	1/2”	3/4”	1”	1” 1/4	1” 1/2	2”	2” 1/2	3”	4”
Cg (STD)	68	82	110	135	158	200	460	570	1150	1450	1600	2850
Cg (Zero/Ratio)	-	-	-	116	135	170	390	485	980	1250	1380	2430
Cg (Goval) Pu<=350 bar Pd 35 mBar	56	70	90	108	140	162	440	550	1100	1380	1500	2700

Table 10 Flow coefficients - governors with filter

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