

# ATF 15

High Medium Pressure Gas Regulator



**TECHNICAL BROCHURE**

**Pietro Fiorentini S.p.A.**

Via E.Fermi, 8/10 | 36057 Arcugnano, Italy | +39 0444 968 511  
sales@fiorentini.com

The data are not binding. We reserve the right  
to make changes without prior notice.

atf15\_technicalbrochure\_ENG\_revA

**[www.fiorentini.com](http://www.fiorentini.com)**

# Who we are

We are a global organization specialized in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission 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 customized technologies and an after-sale service program undertaken with the highest grade of professionalism.



## Pietro Fiorentini advantages



Localised technical support

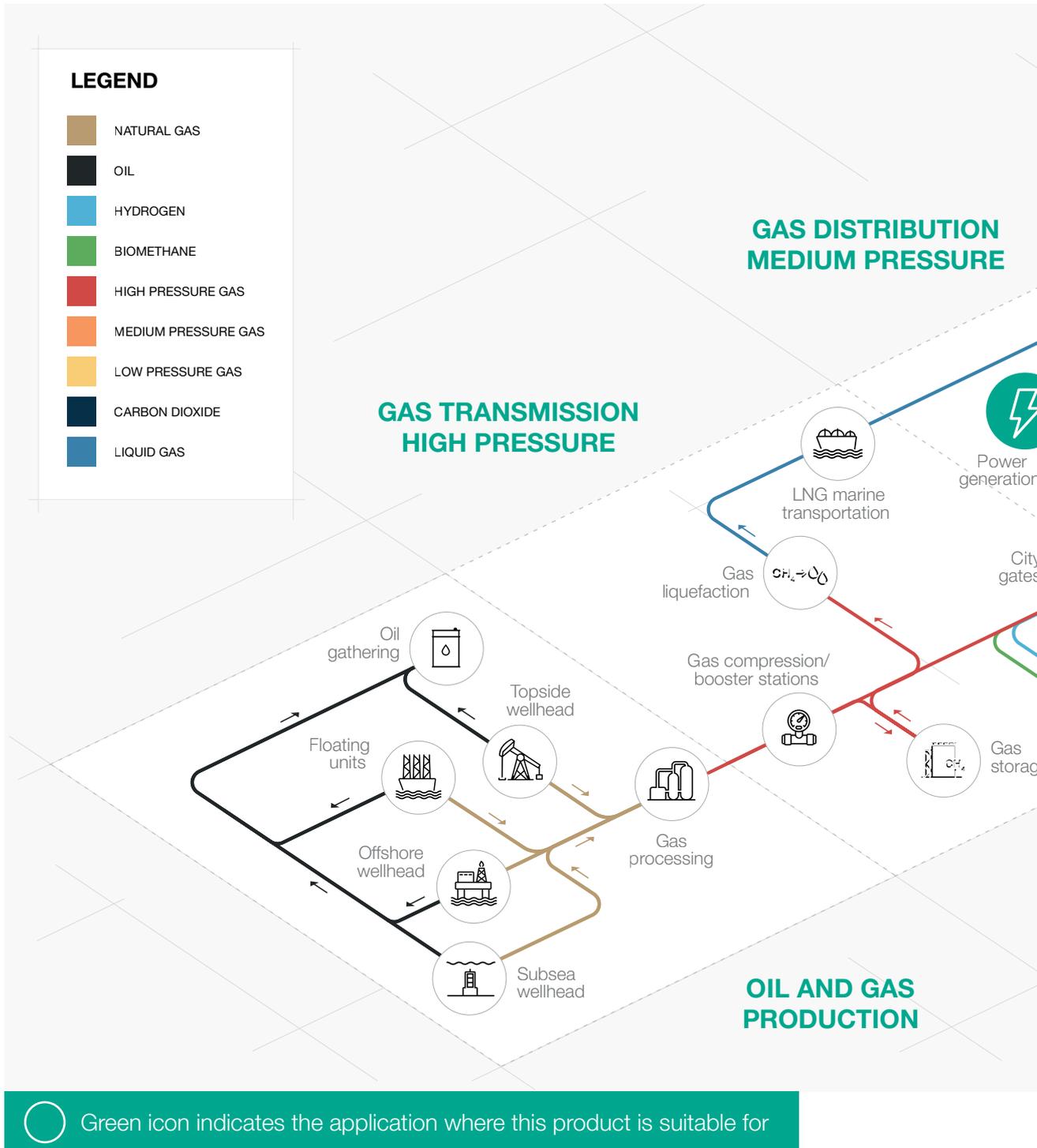


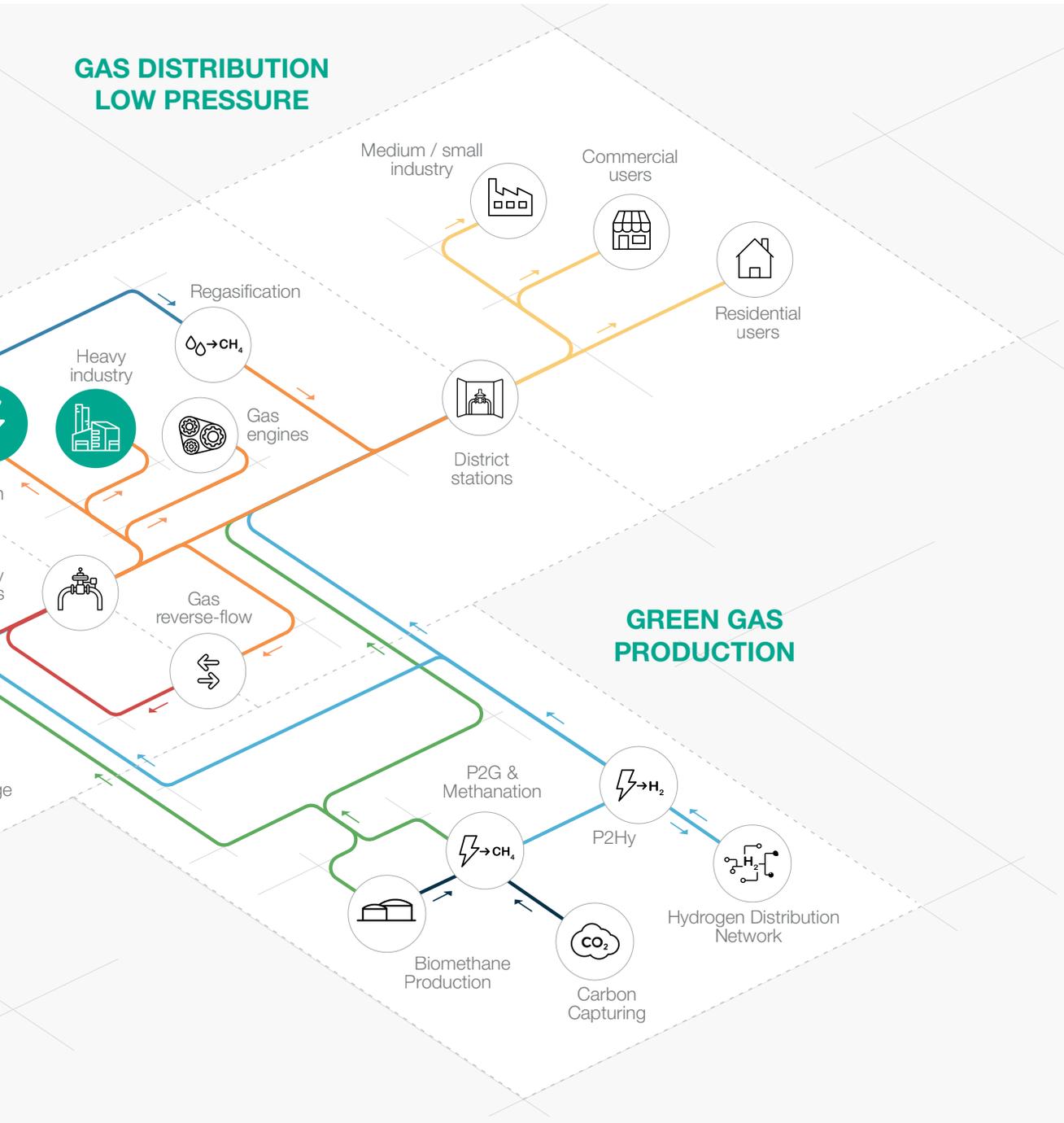
Experience since 1940



We operate in over 100 countries

# Area of Application





**Figure 1** Area of Application Map

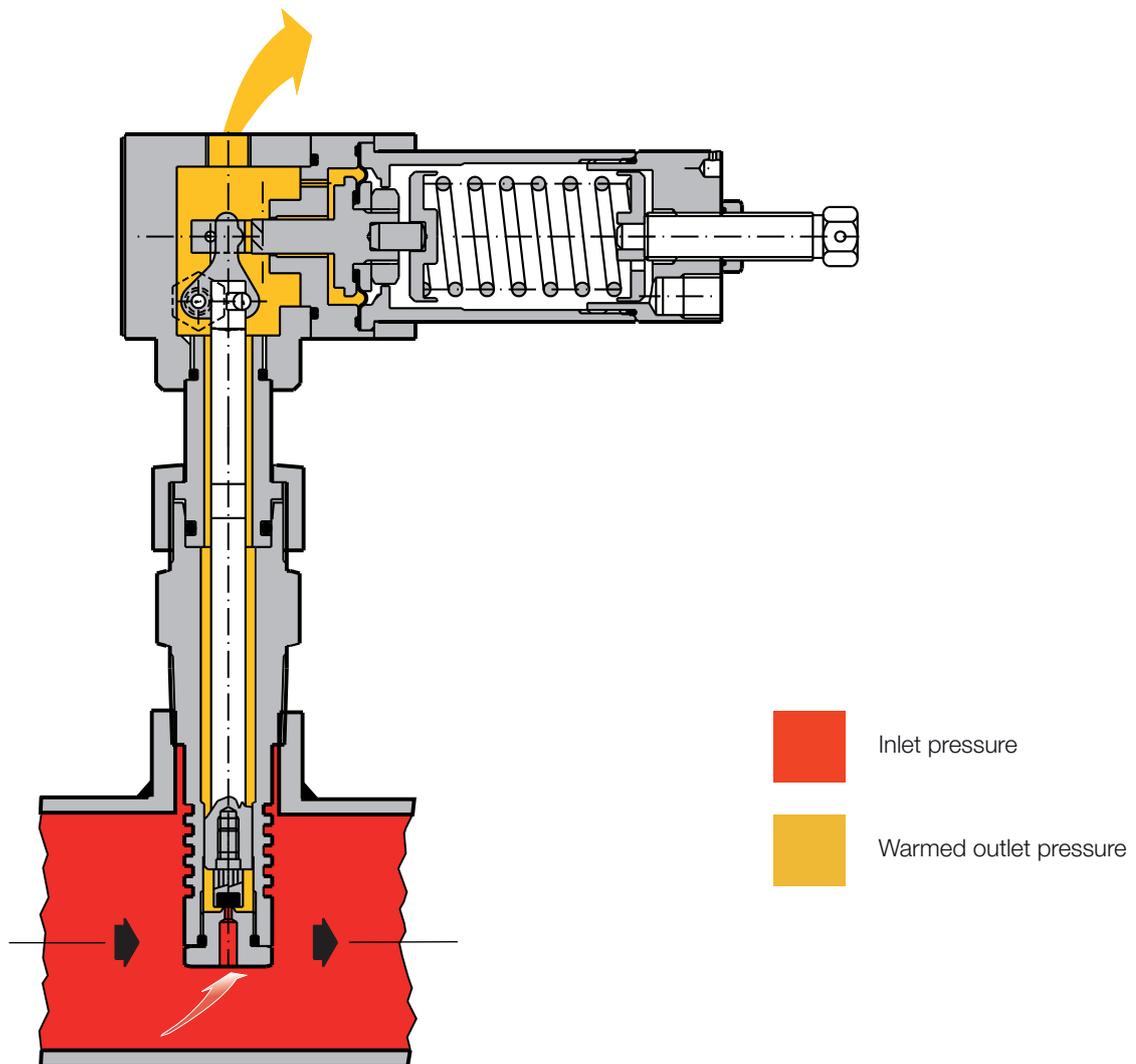


# Introduction

**ATF 15** is one of the **direct-operated gas pressure regulators** designed and manufactured by Pietro Fiorentini.

This device is suitable for use with previously filtered non-corrosive gases, and it is mainly used for high-pressure transmission systems and for medium pressure natural gas distribution networks.

According to the European Standard EN 334, it is classified as **Fail Open**.



**Figure 2** ATF 15

# Features and Calibration ranges

**ATF 15** is a spring loaded pressure regulator suitable for high and medium pressure for limited flow rate capacity, controlled by a diaphragm and contrasting regulated counter pressure action.

This regulator is also suitable for use with previously filtered, non corrosive gases.

## APPLICATIONS:

- For industrial and chemical engineering application.
- Suitable for instrument gas feeding (actuators, pneumatic instruments, positioners, etc.)
- Suitable for pressure regulators pilots feeding

Set point adjustment of the regulator is achieved via a setting nut, loading and unloading the spring in the top chamber.



**Figure 3** ATF 15



## ATF 15 competitive advantages



Compact and simple design



Easy maintenance



Operates with high differential pressure



Anti freezing



Does not require gas pre-heating



Biomethane compatible and available with specific versions for full Hydrogen or blending



Single orifice

## Features

Features	Values
Design pressure*	up to 22.0 MPa up to 220 barg
Ambient temperature*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet gas temperature range*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet pressure range bpu (MAOP)	from 0.2 to 25 MPa from 2 to 250 barg
Range of downstream pressure Wd	from 0.15 to 6.0 MPa from 1.5 to 60 barg
Available Accessories	none
Minimum differential pressure	0.05 MPa 0.5 barg
Accuracy class AC	up to 5 (depending on working conditions)
Lock-up pressure class SG	up to 10 (depending on working conditions)
Nominal dimensions DN	1/4"
Connections*	pipe connections: 1" NPT outlet connections: Rp 1/4" ISO 7/1

**(\*) 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.**

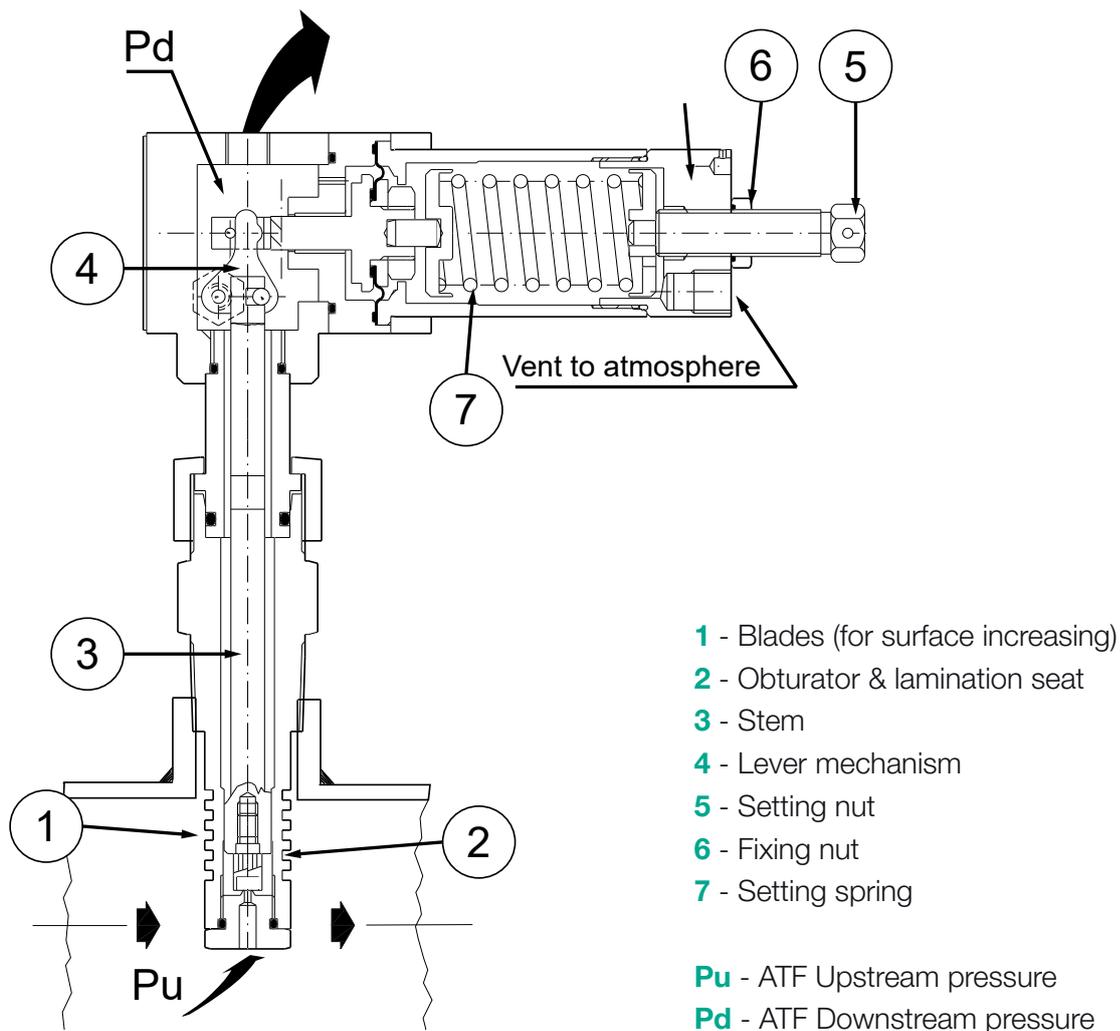
**Table 1** Features

# Working principles

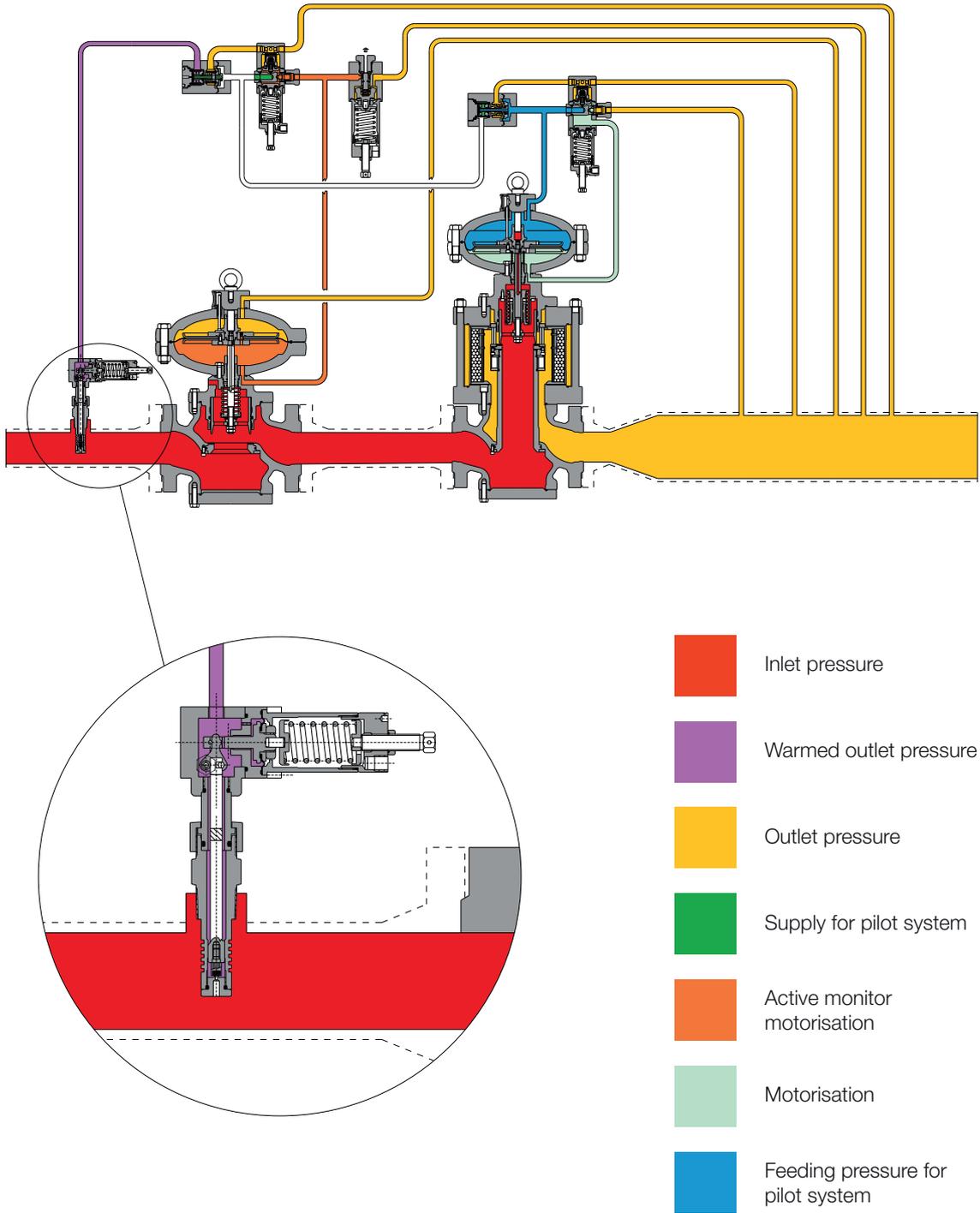
Being located the pressure reduction inside the main pipeline (2), the ATF 15 pressure regulators use the main gas flow to warm the laminating seat avoiding freezing during the pressure reduction.

The result is outlet pressure with a temperature above freezing point avoiding all the related phenomena of dropping the temperature below 0°C | 32°F after the pressure reduction (hydrates or sulphur formation which can cause pilots clogging).

For pressure regulator pilot feeding the suggested set point for the ATF 15 is 0.3 - 0.4 MPa | 3 - 4 barg on top of the pressure regulator set point.



# High Medium Pressure Gas Regulator



**Figure 4** ATF 15 typical installation

# Materials and Approvals

Part	Material
Body	Carbon steel ASTM A350 LF2
Seat	Stainless steel
Diaphragm	Rubberized canvas (performed by hot-pressing process)
Sealing ring	Nitril rubber
Compression fittings	Zinc-plated carbon steel according to DIN 2353; Stainless steel on request

**REMARK: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.**

**Table 2** Materials

## Construction Standards and Approvals

**ATF 15** regulator, is designed according to European standard EN 334.  
The regulator reacts in opening (Fail Open) according to EN 334.

Leakage class: bubble tight, better than VIII according to ANSI/FCI 70-3.



EN 334



# Weights and Dimensions

## ATF 15

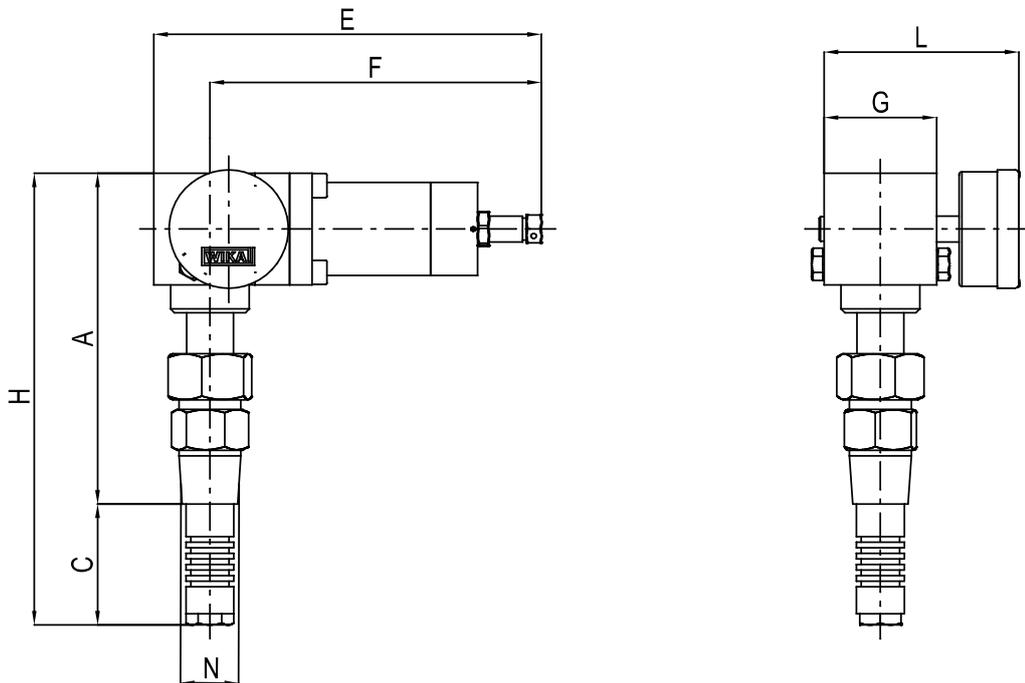


Figure 5 ATF 15 dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)		
Model	0	1
Dimensions	[mm]   inches	[mm]   inches
A	179   7.05"	179   7.05"
C	65   2.56"	65   2.56"
E	214   8.42"	214   8.42"
F	183   7.20"	183   7.20"
G	60   2.36"	60   2.36"
H	244   9.61"	244   9.61"
L	95   3.74"	95   3.74"
N	1" NPT	1" NPT
Weight	Kg   lbs	Kg   lbs
	4   9	4   9
Set point	MPa   barg	MPa   barg
	0.15 - 4.3   1.5 - 43	3.0 - 6.0   30 - 60

Table 3 Weights and dimensions

# Sizing and Cg

In general, 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) and the form factor (K1) as indicated by the EN 334 standard.

Flow rate coefficient	
Cg	3
K1	90

**Table 4** Flow rate coefficient

For sizing [PRESS HERE](#) or use the QR code:



**Note:** In case you do not have the proper credentials to access, feel free to contact your closest Pietro Fiorentini representative.

In general, the online sizing considers multiple variables as the regulator is installed in a system, enabling a better and multiperspective approach to the sizing.

For different gases, and for natural gas with a different relative density other than 0.61 (compared to air), the correction coefficients from the following formula shall be applied:

$$F_c = \sqrt{\frac{175,8}{S \times (273,16 + T)}}$$

S = relative density (refer to table 5)  
T = gas temperature ( °C )



Correction Factor Fc		
Gas Type	Relative Density S	Correction Factor Fc
Air	1.00	0.78
Propane	1.53	0.63
Butane	2.00	0.55
Nitrogen	0.97	0.79
Oxygen	1.14	0.73
Carbon Dioxide	1.52	0.63

Note: the table shows the Fc correction factors valid for Gas, calculated at a temperature of 15°C and at the declared relative density.

**Table 5** Correction factor Fc

Flow rate conversion
Stm <sup>3</sup> /h x 0.94795 = Nm <sup>3</sup> /h

Nm<sup>3</sup>/h reference conditions T= 0 °C; P= 1 barg  
 Stm<sup>3</sup>/h reference conditions T= 15 °C; P= 1 barg

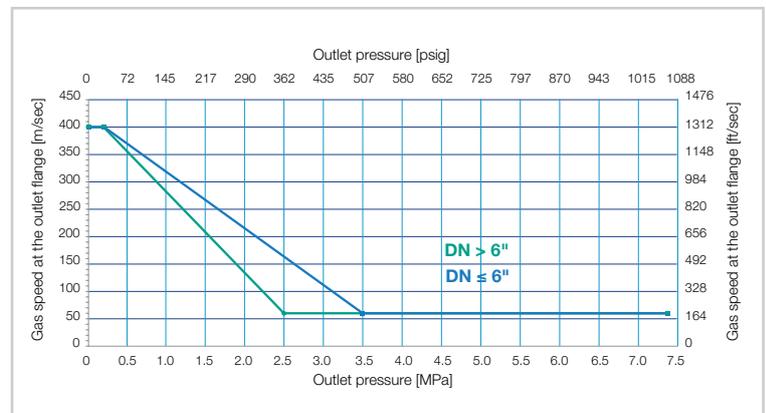
**Table 6** Flow rate conversion

**CAUTION:**

In order to get optimal performance, to avoid premature erosion phenomena and to limit noise emissions, it is recommended to check that the gas speed at the outlet flange does not exceed the values of the graph below. The gas speed at the outlet flange may be calculated by means of the following formula:

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

V = gas speed in m/s  
 Q = gas flow rate in Stm<sup>3</sup>/h  
 DN = nominal size of regular in mm  
 Pd = outlet pressure in barg



## ATF DN 1/4" [6mm] Flow Capacity table

<b>ATF Recommended max flow rate for optimal performance</b>											
<b>Inlet pressure</b>		<b>Outlet pressure</b>									
		0.4 MPa   4 barg		0.5 MPa   5 barg		0.1 MPa   1 barg		1.5 MPa   15 barg		2 MPa   20 barg	
MPa	barg	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh
2.0	20	20	800	20	800	15	600	20	800	-	-
3.0	30	30	1100	30	1100	30	1100	25	900	25	900
4.0	40	40	1500	40	1500	40	1500	40	1500	35	1300
5.0	50	50	1800	50	1800	50	1800	50	1800	50	1800
6.0	60	60	2200	60	2200	60	2200	60	2200	60	2200
7.0	70	75	2700	75	2700	75	2700	75	2700	75	2700
8.50	85	90	3200	90	3200	90	3200	90	3200	90	3200

CG = 3    K1=90

Note: Recommended max flow rate are considering multiple factors such as: extend the regulator's life, mitigate the erosion/vibrations for high velocity and to minimize the noise emission.

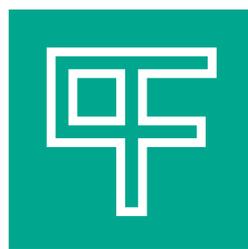
**Table 7** ATF 15 flow rate with outlet pressure from 0.4 MPa | 4 barg up to 2.0 MPa | 20 barg

<b>ATF flow rate with wide open regulator</b>											
<b>Inlet pressure</b>		<b>Outlet pressure</b>									
		0.4 MPa   4 barg		0.5 MPa   5 barg		0.1 MPa   1 barg		1.5 MPa   15 barg		2 MPa   20 barg	
MPa	barg	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh	Stm <sup>3</sup> /h	Scfh
2.0	20	32	1200	32	1200	28	1000	22	800	-	-
3.0	30	47	1700	47	1700	47	1700	42	1500	37	1300
4.0	40	62	2300	62	2300	62	2300	62	2300	56	2000
5.0	50	78	2800	78	2800	78	2800	78	2800	78	2800
6.0	60	93	3300	93	3300	93	3300	93	3300	93	3300
7.0	70	108	3900	108	3900	108	3900	108	3900	108	3900
8.50	85	131	4700	131	4700	131	4700	131	4700	131	4700

CG = 3    K1=90

Note: Recommended max flow rate are considering multiple factors such as: extend the regulator's life, mitigate the erosion/vibrations for high velocity and to minimize the noise emission.

**Table 8** ATF 15 flow rate with outlet pressure from 0.4 MPa | 4 barg up to 2.0 MPa | 20 barg



# Pietro Fiorentini

**TB0010ENG**



The data are not binding. We reserve the right  
to make changes without prior notice.

[atf15\\_technicalbrochure\\_ENG\\_revA](#)

[www.fiorentini.com](http://www.fiorentini.com)