

Staflux 185

High Medium Pressure Gas Regulator



TECHNICAL BROCHURE

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staflux185_technicalbrochure_ENG_revB

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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



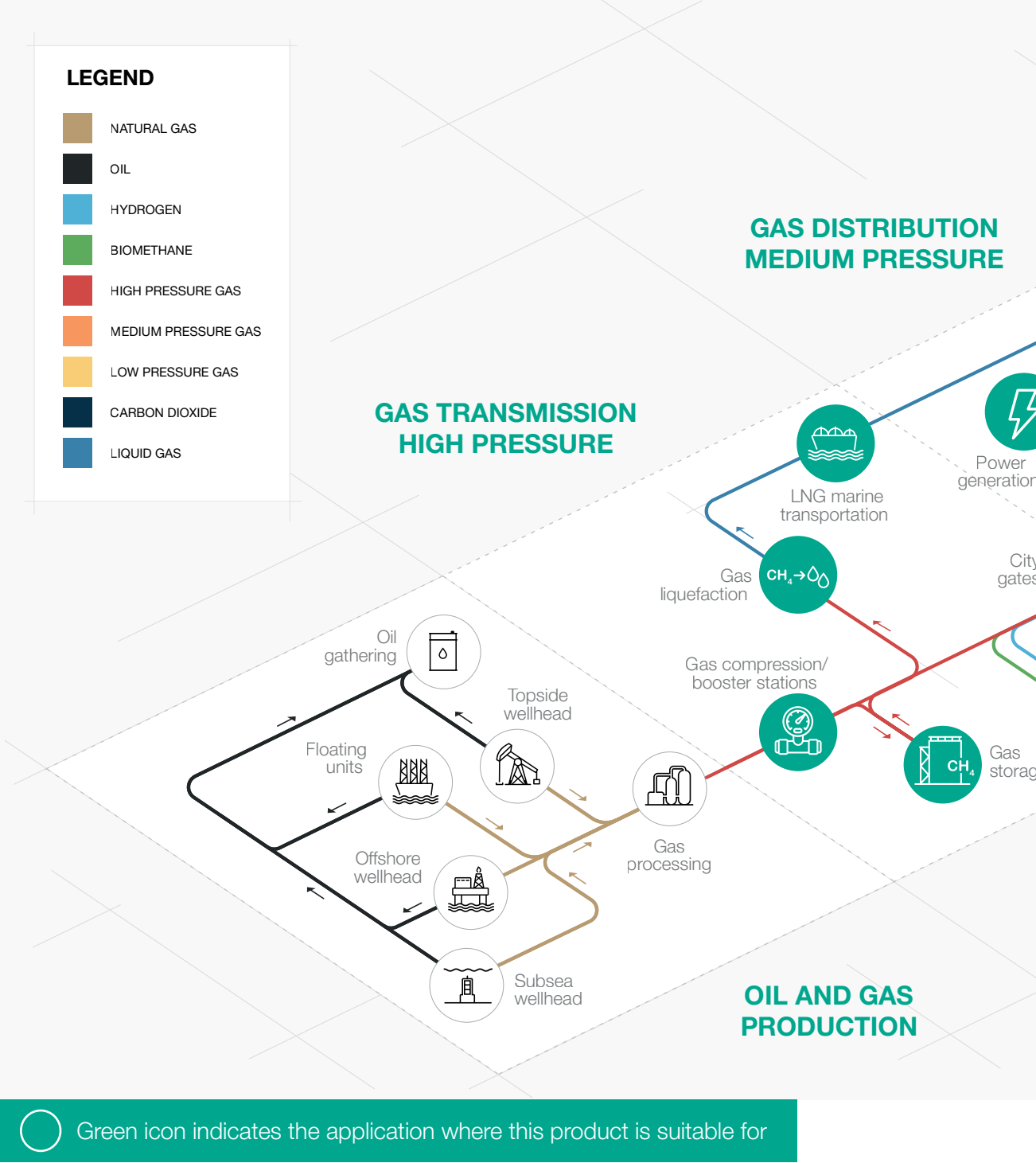
Experience since 1940



We operate in over 100 countries



Area of Application



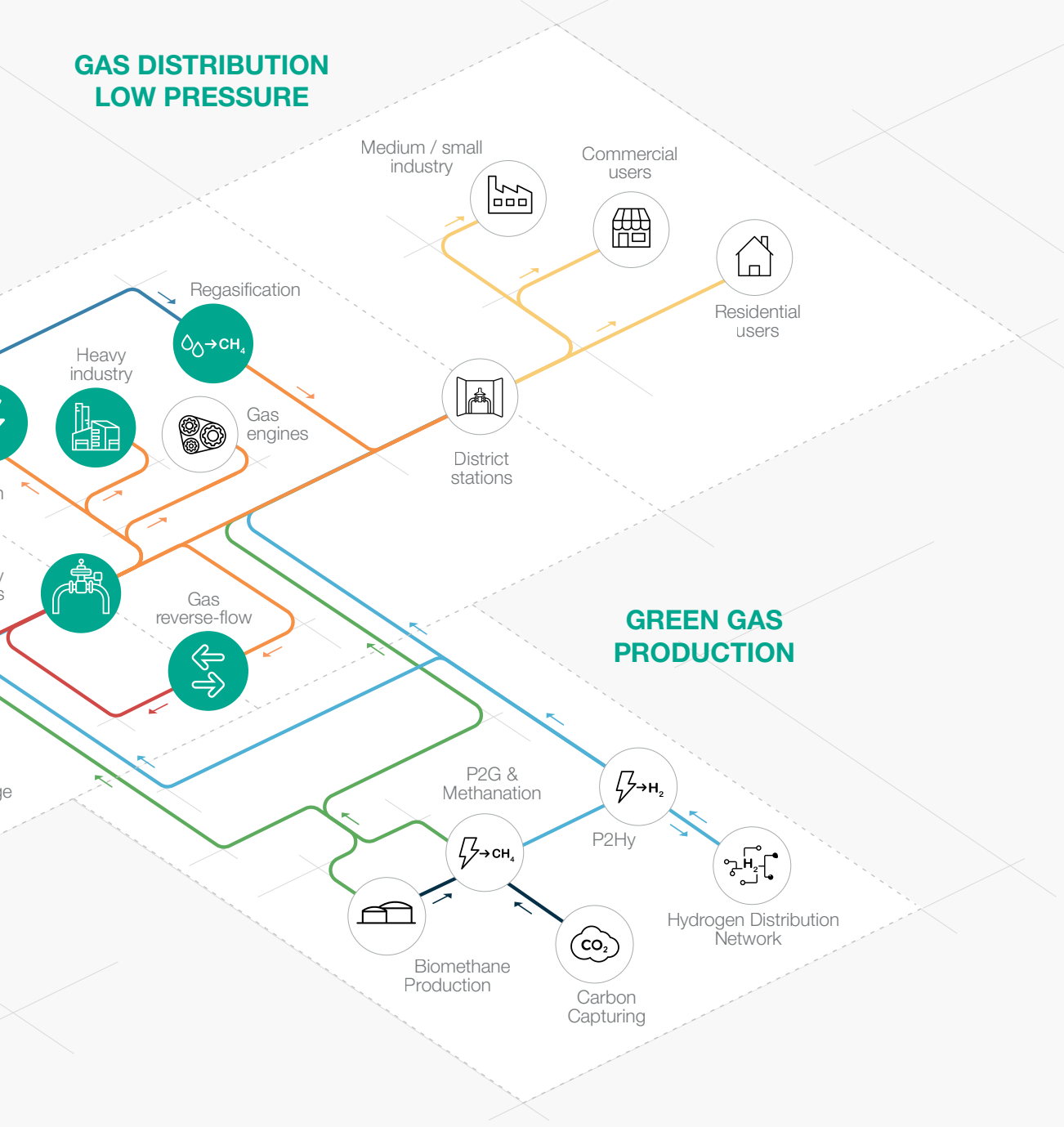


Figure 1 Area of Application Map



Introduction

Staflux 185 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**.

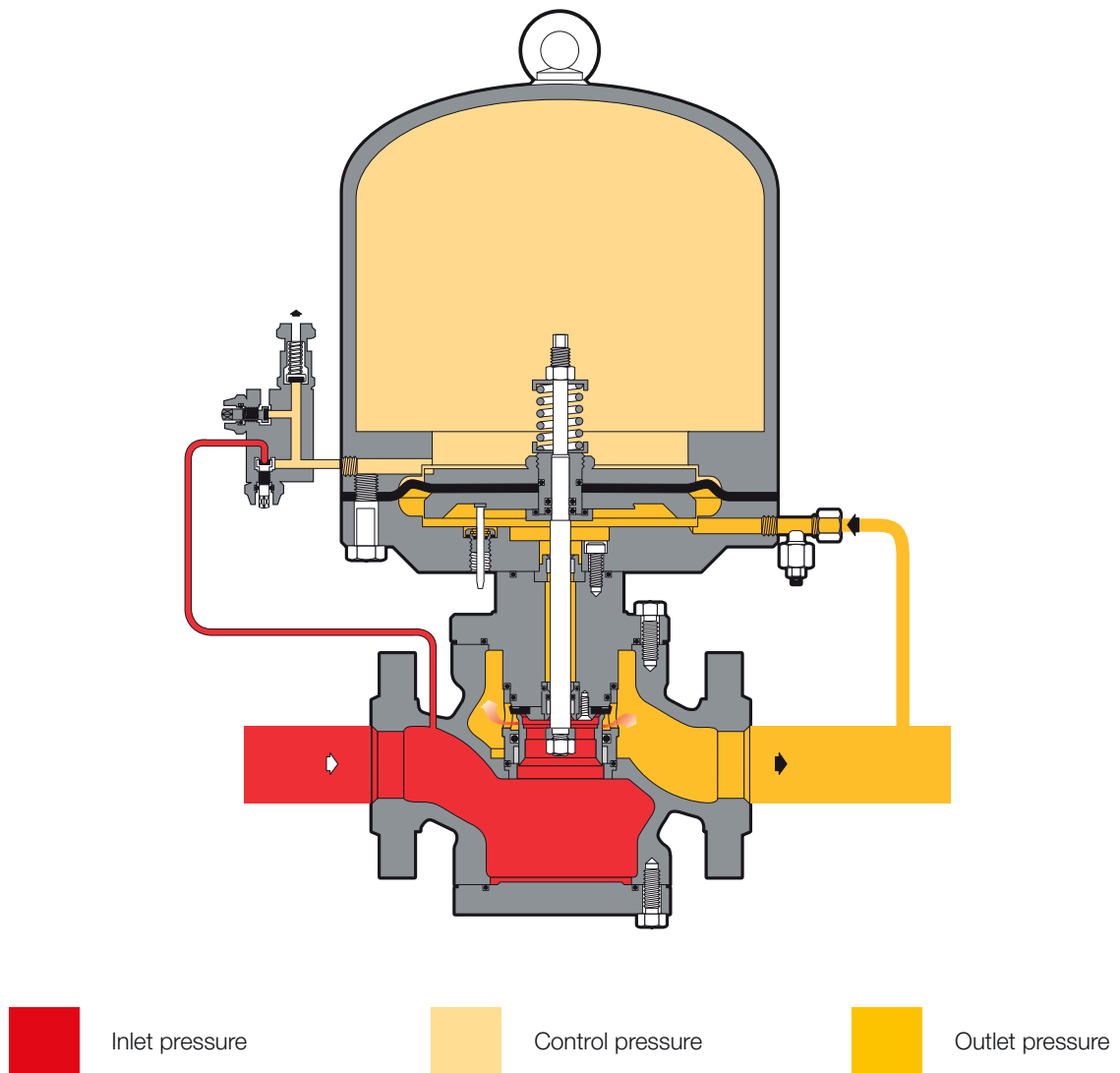


Figure 2 Staflux 185

Features and Calibration ranges

Staflux 185 is a direct action device for high pressure, controlled by a diaphragm and contrasting regulated counter pressure action.

Staflux 185 is a balanced pressure regulator. This means that the controlled outlet pressure is not affected by variations in the inlet pressure and flow during its operation. Therefore a balanced regulator can have a single-size orifice for all pressure and flow conditions.

This regulator is also suitable for use with previously filtered, non corrosive gases. It is a **truly top entry design** which allows an **easy maintenance** of parts directly in the field **without removing the body from the pipework**.

Set point adjustment of the regulator is achieved via a three way / two valve unit, loading and unloading the pressure in the top chamber.

A small capacity relief valve prevents set pressures at values beyond limits and, at the same time, protects the pressurised chamber from overpressure subsequent to high ambient temperatures.

Pressure in the top chamber creates the counter action similar to the one of a spring in more conventional regulators.

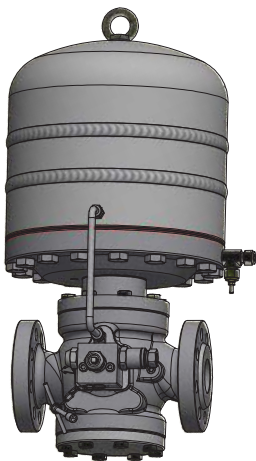


Figure 3 Staflux 185

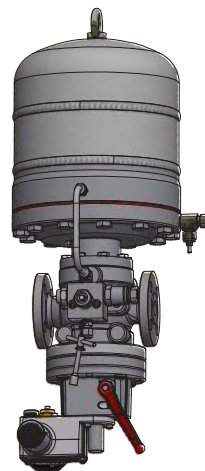


Figure 4 Staflux 185 with SB/185



Staflux 185 competitive advantages



Compact and simple design



Easy maintenance



Operates with high differential pressure



Balanced type



Does not require gas pre-heating



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



Top Entry

Features

| Features | Values |
|---|---|
| Design pressure* | up to 10.0 MPa up to 100 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 8.5 MPa from 2 to 85 barg |
| Range of downstream pressure Wd | from 0.1 to 7.5 MPa from 1 to 75 barg |
| Available Accessories | SB/185 Slam shut |
| Minimum differential pressure | 0.1 MPa 1 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 | DN 25 / 1"; DN 50 / 2"; DN 80 / 3" |
| Connections* | Class 300/600 RF / RTJ according to ASME B 16.5 |
| <p>(*) 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.</p> | |

Table 1 Features

Materials and Approvals

| Part | Material |
|----------------------|--------------------------|
| Body | Cast steel ASTM A352 LCC |
| Cover | ASTM A 350 LF2 steel |
| Seat | Stainless steel |
| Diaphragm | Vulcanized rubber |
| Sealing ring | Nitrile rubber |
| Compression fittings | Zinc-plated carbon steel |

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

Staflux 185 regulator is designed according to European standard EN 334. The regulator reacts in opening (Fail Open) according to EN 334.

The product is certified according to European Directive 2014/68/EU (PED). Leakage class: bubble tight, better than VIII according to ANSI/FCI 70-3.



EN 334



PED-CE



Springs ranges and control heads

| Type | Model | Operation | Range Wh | | Spring Table web link |
|--------------|-------|-----------|-----------|--------|------------------------|
| | | | MPa | barg | |
| Relief Valve | VS/FI | Manual | 0.4 - 7.5 | 4 - 75 | TT 673 |

Table 3 Settings table

General link to the calibration tables: [PRESS HERE](#) or use the QR code:



Accessories

In-line Monitor

The in-line monitor is generally installed upstream of the worker regulator.

Although the function of the monitor regulator is different, the two regulators are virtually identical from the point of view of their mechanical components.

The only difference is that monitor is set at a higher pressure than active regulator.

The Cg coefficient of the active regulator is the same, however during the sizing process, the differential pressure drop generated by the fully open in-line monitor shall be considered. As a general practise to incorporate this effect, a 20% reduction of the Active regulator's Cg value can be applied.

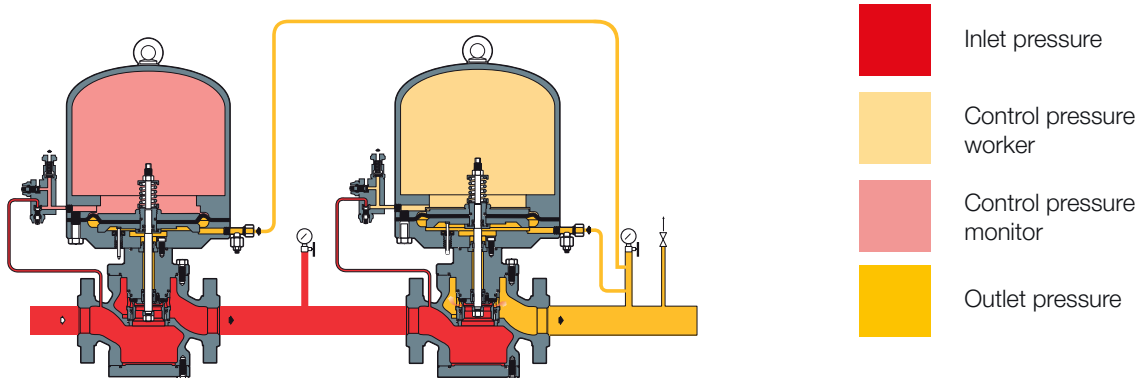


Figure 5 Staflux 185 with In-line monitor setup









SB/185 slam shut valve

Staflux 185 pressure regulator offers the possibility of installing an **SB/185 incorporated slam shut valve** and this can be done either during the manufacturing process or be retrofitted in the field.

Retrofitting can be done without modifying the pressure regulator assembly.

With the built-in slam shut, the Cg valve coefficient is 5% lower than the corresponding version without.

The main characteristics of this device are:

- | | | | |
|--|-------------------------------|---|------------------------|
|  OPSO | Over Pressure Shut-Off |  | Compact dimensions |
|  UPSO | Under Pressure Shut-Off |  | Easy maintenance |
|  | Internal by-pass |  | Remote tripping option |
|  | Push button for tripping test |  | Limit switch option |

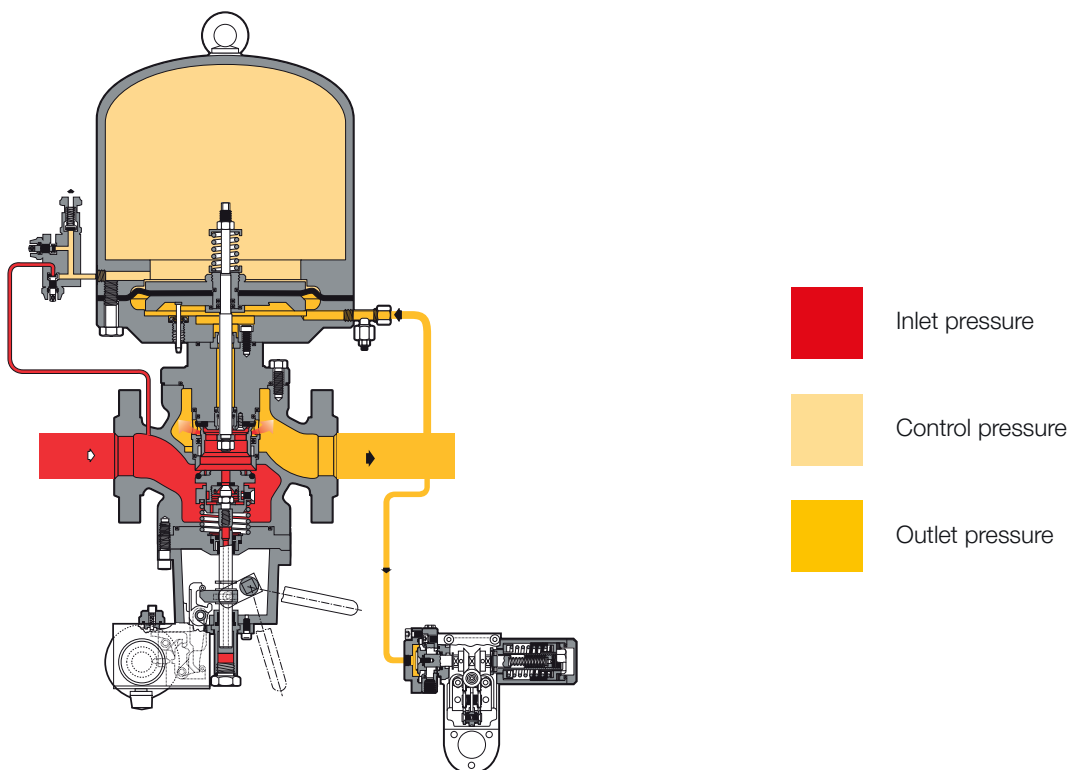


Figure 6 Staflux 185 with SB/185



| Pressure switch types and ranges | | | | | |
|----------------------------------|-------|-----------|-------------|-----------|-------------------------|
| SSV Type | Model | Operation | Range Wh | | Spring Table web link |
| | | | MPa | barg | |
| SB/185 | 102M | OPSO | 0.02 - 0.55 | 0.2 - 5.5 | TT 1331 |
| | | UPSO | 0.02 - 0.28 | 0.2 - 2.8 | |
| SB/185 | 102MH | OPSO | 0.02 - 0.55 | 0.2 - 5.5 | TT 1331 |
| | | UPSO | 0.28 - 0.55 | 2.8 - 5.5 | |
| SB/185 | 103M | OPSO | 0.2 - 2.2 | 2 - 22 | TT 1331 |
| | | UPSO | 0.02 - 0.8 | 0.2 - 8 | |
| SB/185 | 103MH | OPSO | 0.2 - 2.2 | 2 - 22 | TT 1331 |
| | | UPSO | 0.02 - 0.8 | 0.2 - 8 | |
| SB/185 | 104M | OPSO | 1.5 - 4.5 | 15 - 45 | TT 1331 |
| | | UPSO | 0.16 - 1.8 | 1.6 - 18 | |
| SB/185 | 104MH | OPSO | 1.5 - 4.5 | 15 - 45 | TT 1331 |
| | | UPSO | 1.8 - 4.1 | 18 - 41 | |
| SB/185 | 105M | OPSO | 3 - 9 | 30 - 90 | TT 1331 |
| | | UPSO | 0.3 - 4.4 | 3 - 44 | |
| SB/185 | 105MH | OPSO | 3 - 9 | 30 - 90 | TT 1331 |
| | | UPSO | 4.4 - 9 | 44 - 90 | |

Table 4 Setting table

Weights and Dimensions

Staflux 185

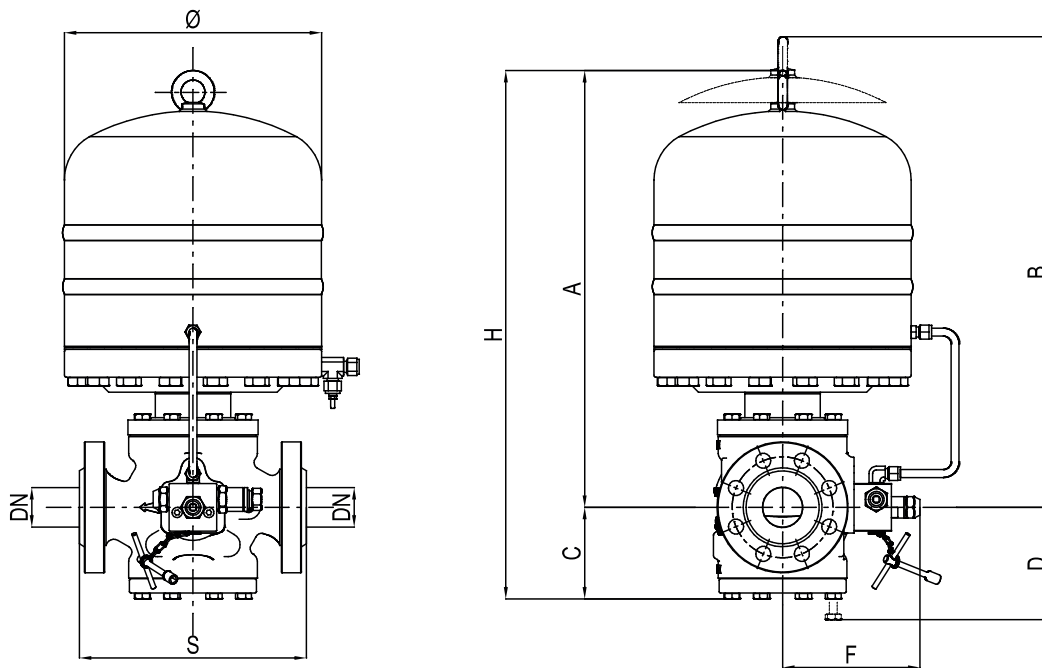


Figure 7 Staflux 185 dimensions

| Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative) | | | |
|---|---|---------------|---------------|
| | [mm] inches | [mm] inches | [mm] inches |
| Size (DN) | 25 1" | 50 2" | 80 3" |
| S - ANSI 300 | 197 7.75" | 267 10.51" | 317 12.48" |
| S - ANSI 600 | 210 8.26" | 286 11.25" | 336 13.22" |
| Ø | 280 11" | 324 12.75" | 324 12.75" |
| A | 500 19.68" | 544 21.41" | 573 22.55" |
| B | 610 24.01" | 650 25.59" | 670 26.37" |
| C | 95 3.74" | 125 4.92" | 145 5.70" |
| D | 110 4.33" | 160 6.29" | 190 7.48" |
| F | 170 6.69" | 190 7.48" | 220 8.66" |
| H | 595 23.42" | 669 26.33" | 718 28.26" |
| Tubing connections | Øe 10 x Øi 8 (on request imperial sizing) | | |
| Weight | Kg lbs | Kg lbs | Kg lbs |
| ANSI 300 | 65 143 | 98 216 | 115 253 |
| ANSI 600 | 67 147 | 101 223 | 120 265 |

Table 5 Weights and dimensions

Staflux 185 + SB/185

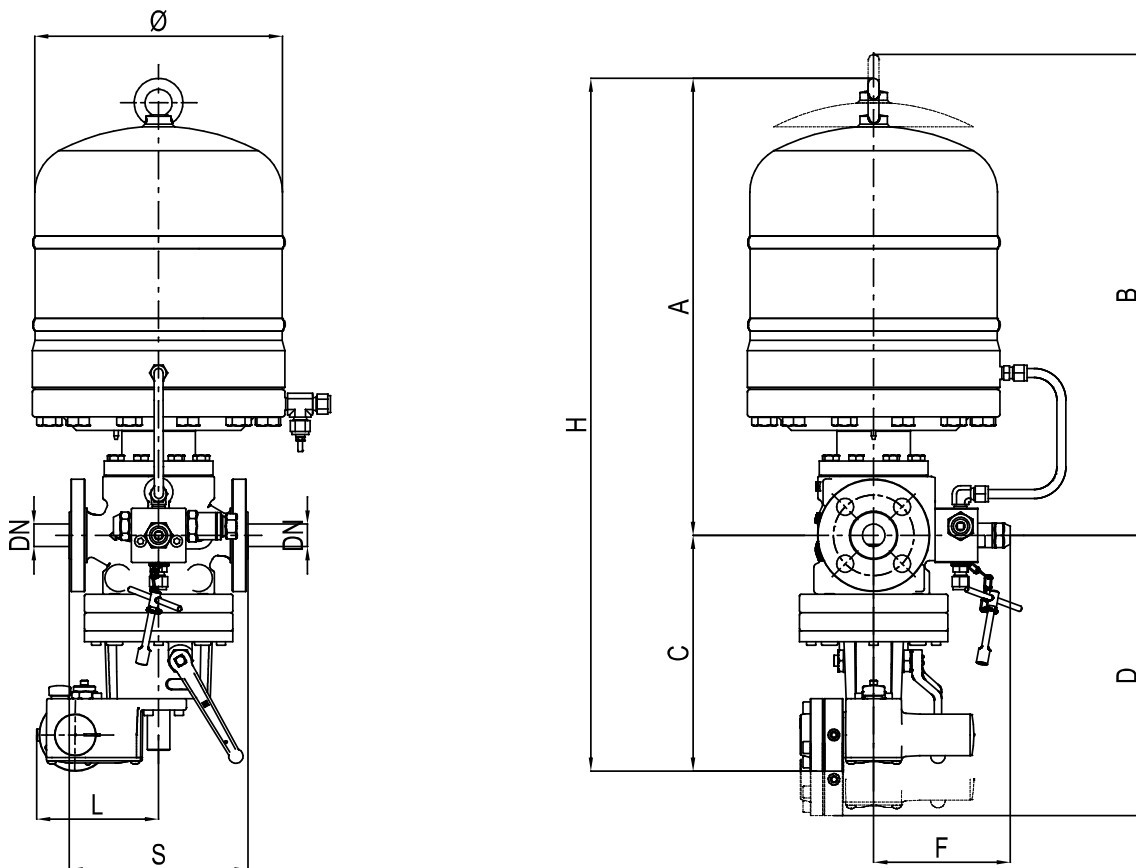


Figure 8 Staflux 185 + SB/185 dimensions

| Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative) | | | |
|---|---|---------------|---------------|
| | [mm] inches | [mm] inches | [mm] inches |
| Size (DN) | 25 1" | 50 2" | 80 3" |
| S - ANSI 300 | 197 7.75" | 267 10.51" | 317 12.48" |
| S - ANSI 600 | 210 8.26" | 286 11.25" | 336 13.22" |
| Ø | 280 11" | 324 12.75" | 324 12.75" |
| A | 500 19.68" | 544 21.41" | 573 22.55" |
| B | 610 24.01" | 650 25.59" | 670 26.37" |
| C | 325 12.79" | 355 13.97" | 400 15.74" |
| D | 110 4.33" | 160 6.29" | 190 7.48" |
| F | 170 6.69" | 190 7.48" | 220 8.66" |
| H | 825 32.48" | 899 35.39" | 973 38.30" |
| L | 130 5.11" | 130 5.11" | 130 5.11" |
| Tube connections | Øe 10 x Øi 8 (on request imperial sizing) | | |

| Weight | Kg lbs | Kg lbs | Kg lbs |
|----------|----------|-----------|-----------|
| ANSI 300 | 75 165 | 111 245 | 137 302 |
| ANSI 600 | 77 169 | 114 251 | 142 313 |

Table 6 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 | | | |
|-----------------------|--------|--------|--------|
| Nominal size | 25 | 50 | 80 |
| Inches | 1" | 2" | 3" |
| Cg | 439 | 1861 | 3764 |
| K1 | 106.78 | 106.78 | 106.78 |

Table 7 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 8)
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 8 Correction factor Fc

| Flow rate conversion |
|--|
| Stm ³ /h x 0.94795 = Nm ³ /h |

Nm³/h reference conditions T= 0 °C; P= 1 barg
 Stm³/h reference conditions T= 15 °C; P= 1 barg

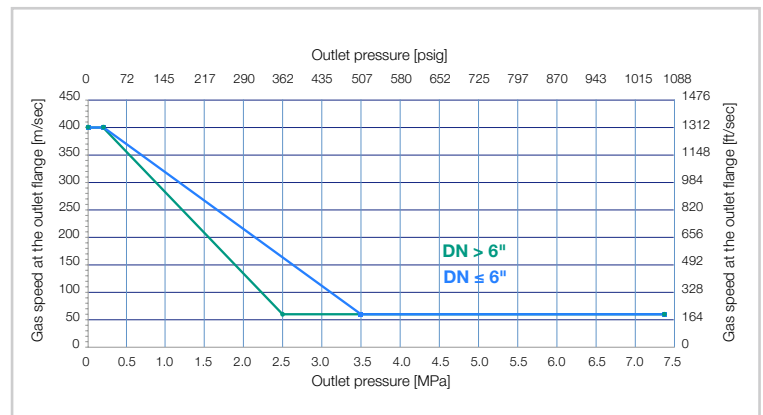
Table 9 Flow rate conversion

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 Stm³/h
 DN = nominal size of regular in mm
 Pd = outlet pressure in barg



Customer Centricity

Pietro Fiorentini is one of the main Italian international companies with high focus on product and service quality.

The main strategy is to create a stable long-term oriented relationship, putting the customer's needs first. Lean management and thinking and customer centricity are used to improve and maintain the highest level of customer experience.



Support

One of Pietro Fiorentini's top priorities is to provide support to the client in all phases of project development, during installation, commissioning and operation. Pietro Fiorentini has developed a highly standardized intervention management system, which helps to facilitate the entire process and effectively archive all the interventions carried out, drawing on valuable information to improve the product and service. Many services are available remotely, avoiding long waiting times or expensive interventions.



Training

Pietro Fiorentini offers training services available for both experienced operators and new users. The training is composed of the theoretical and the practical parts, and is designed, selected and prepared according to the level of use and the customer's need.



Customer Relation Management (CRM)

The centrality of customer is one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enables to track every opportunity and request from Customer in one single point and make free the information flow.



Sustainability

Here at Pietro Fiorentini, we believe in a world capable of improvement through technologies and solutions that can shape a more sustainable future. That is why respect for people, society and the environment form the cornerstones of our strategy.



Our commitment to the world of tomorrow

While in the past we limited ourselves to providing products, systems and services for the oil & gas sector, today we want to broaden our horizons and create technologies and solutions for a digital and sustainable world, with a particular focus on renewable energy projects to help make the most of our planet's resources and create a future in which the younger generations can grow and prosper.

The time has come to put the why we operate before the what and how we do it.





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