

Staflux Mini

High Medium Pressure Gas Regulator



TECHNICAL BROCHURE

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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



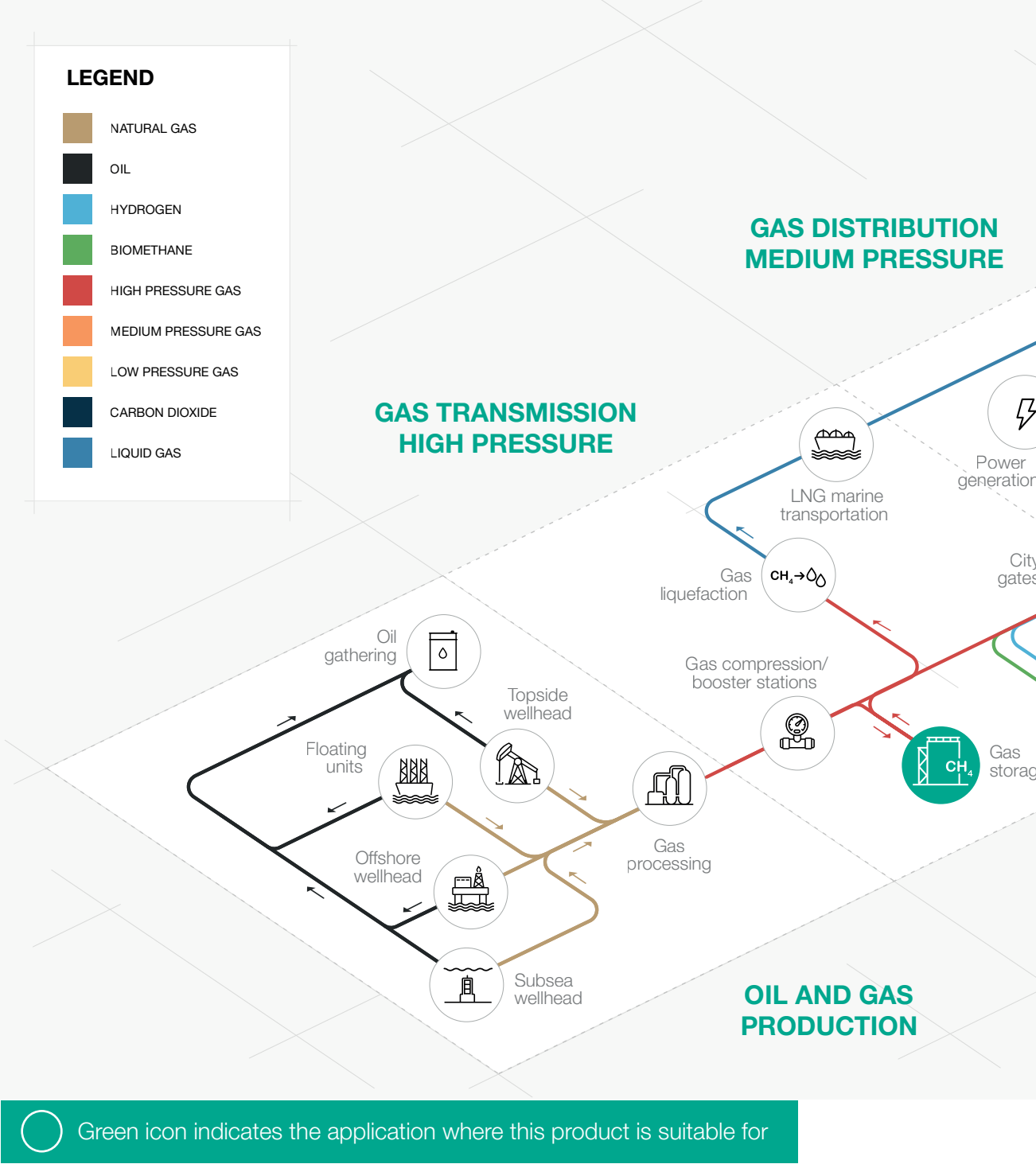
Experience since 1940



We operate in over 100 countries



Area of Application



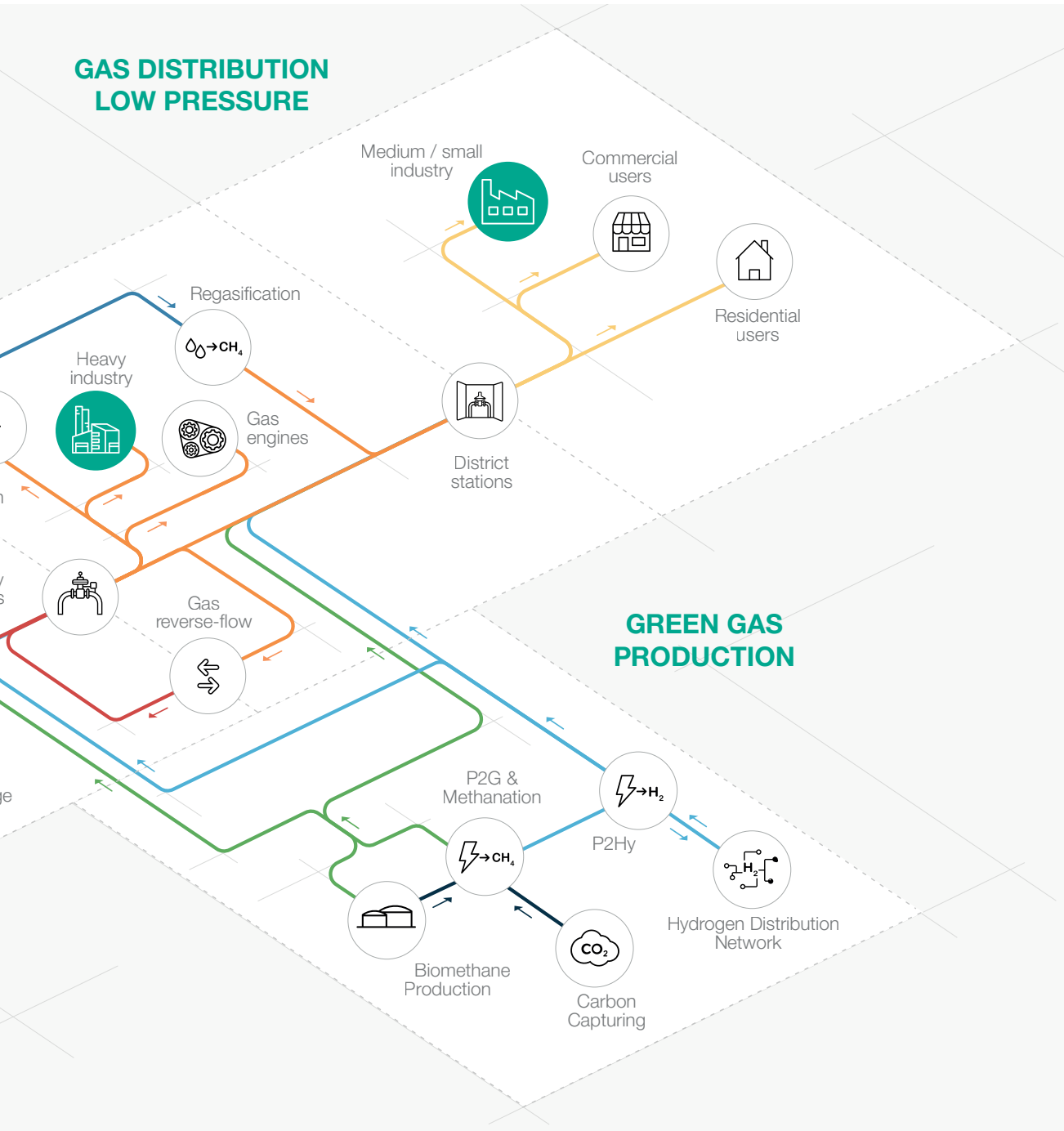


Figure 1 Area of Application Map



Introduction

Staflux Mini is a **direct-operated pressure regulator** controlled by a diaphragm and contrasting regulated counter pressure action.

Mainly used for CNG trailers, high-pressure transmission systems and for medium pressure natural gas distribution networks, it can be used with previously filtered non-corrosive gases. According to the European Standard EN 334, it is classified as **Fail Close**.

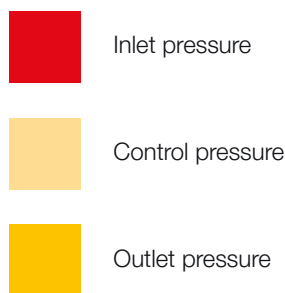
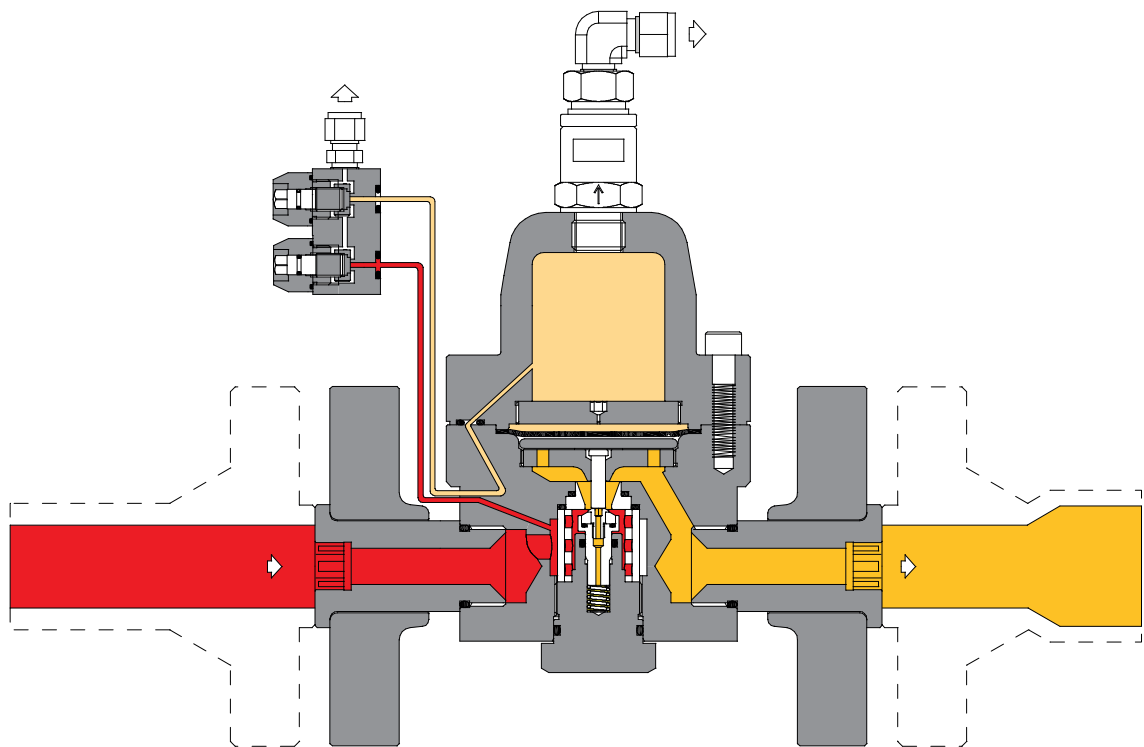


Figure 2 Staflux Mini

Features and Calibration ranges

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

Staflux Mini 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 a **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 used to load and unload 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 Threaded Staflux Mini



Figure 4 Flanged Staflux Mini



Staflux Mini competitive advantages



Compact and simple design



Top Entry



Operates with high differential pressure



Easy maintenance



Does not require gas pre-heating



Built-in filter



Balanced type



Available with specific versions for full Hydrogen or blending

Features

Features	Values
Design pressure*	up to 25 MPa up to 250 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 0.5 to 25 MPa from 5 to 250 barg
Range of downstream pressure Wd	from 0.4 to 7.5 MPa from 4 to 75 barg
Available Accessories	built-in filter
Minimum differential pressure	0.1 MPa 1 barg
Accuracy class AC	up to 10 (depending on working conditions)
Lock-up pressure class SG	10 (depending on working conditions)
Nominal dimensions DN	DN 25 / 1"
Connections*	Class 1500 RF according to ANSI B16.5 or threaded NPT

(*) 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
Body	ASTM A350 LF2 – Carbon Steel
Cover	ASTM A350 LF2 – Carbon Steel
Plug	Stainless steel AISI 416
Seat	Stainless steel AISI 416
Diaphragm	Rubber : NBR/PVC
Sealing ring	Nitrile rubber
Stem	AISI 416

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 Mini regulator is designed according to the European standard EN 334.

The regulator reacts in closure (Fail Close) according to EN 334.

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



EN 334



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:



Weights and Dimensions

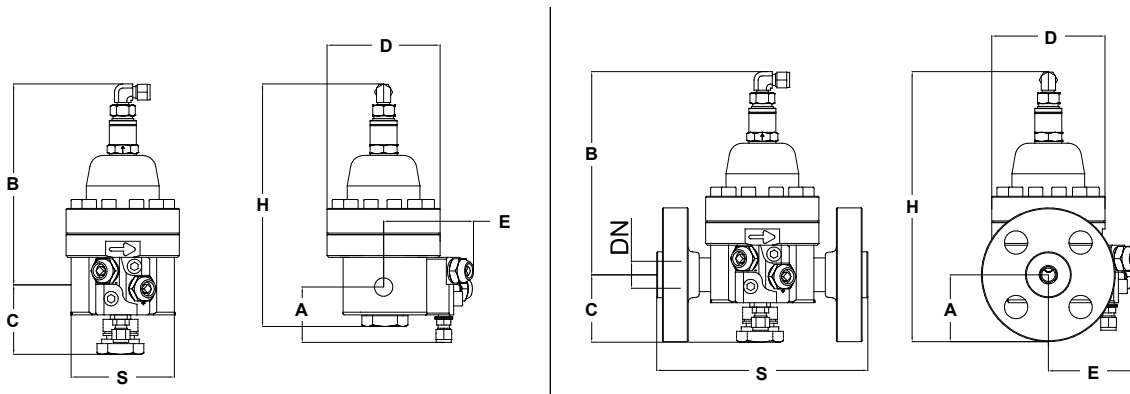


Figure 5 Staflex Mini dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)		
	Threaded Connections [mm] inches	Flanged Connections [mm] inches
Size (DN)	25 1"	25 1"
S	115 4.53"	235 9.25"
A	62 2.44"	75 2.95"
B	226 8.90"	226 8.90"
C	77 3.03"	77 3.03"
D	126 4.96"	126 4.96"
E	100 3.94"	100 3.94"
H	270 10.63"	300 11.81"
Weight	kg lbs	kg lbs
	12 26	20 44

Table 4 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
Inches	1"
Cg	59
K1	95,2

Table 5 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 (refere to table 6)
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 6 Correction factor Fc

Flow rate conversion

$$\text{Stm}^3/\text{h} \times 0.94795 = \text{Nm}^3/\text{h}$$

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

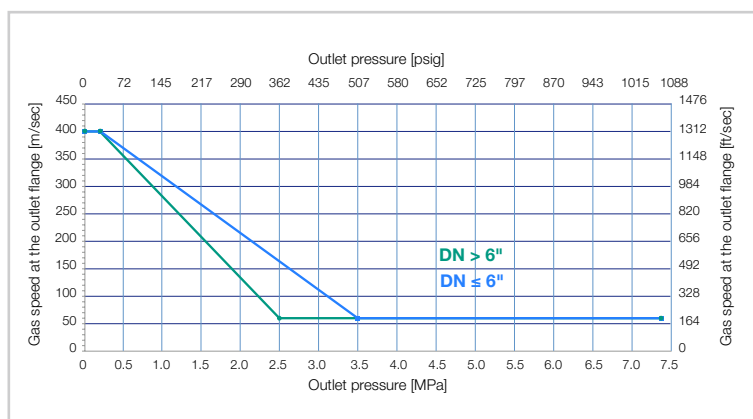
Table 7 Flow rate conversion

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:

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

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





Staflex Mini flow rate (Accuracy 10% ; AC10 according to EN334)											
Inlet pressure		Outlet pressure									
		0.4 MPa 4 barg		0.5 MPa 5 barg		1 MPa 10 barg		1.5 MPa 15 barg		2 MPa 20 barg	
MPa	barg	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh
0.5	5	120	4 238	-	-	-	-	-	-	-	-
1.0	10	270	9 535	300	10 594	-	-	-	-	-	-
2.0	20	270	9 535	320	11 301	570	20 129	460	16 245	-	-
4.0	40	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
6.0	60	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
8.0	80	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
10.0	100	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
12.0	120	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
14.0	140	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
16.0	160	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
20.0	200	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
22.0	220	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378
25.0	250	270	9 535	320	11 301	590	20 836	850	30 017	1 200	42 378

CG = 59 K1=95,2

Table 8 Staflex Mini flow rate with outlet pressure from 0.4 MPa | 4 barg up to 2.0 MPa | 20 barg

Staflex Mini flow rate (Accuracy 10% ; AC10 according to EN334)											
Inlet pressure		Outlet pressure									
		3 MPa 30 barg		4 MPa 40 barg		5 MPa 50 barg		6 MPa 60 barg		7 MPa 70 barg	
MPa	barg	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh	Stm ³ /h	Scfh
0.5	5	-	-	-	-	-	-	-	-	-	-
1.0	10	-	-	-	-	-	-	-	-	-	-
2.0	20	-	-	-	-	-	-	-	-	-	-
4.0	40	900	31 783	-	-	-	-	-	-	-	-
6.0	60	1 650	58 269	1 480	52 266	1 130	39 906	-	-	-	-
8.0	80	1 650	58 269	2 180	76 986	2 040	72 042	1 770	62 507	1 330	46 969
10.0	100	1 650	58 269	2 180	76 986	2 710	95 703	2 600	91 818	2 360	83 343
12.0	120	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 150	111 241
14.0	140	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 770	133 136
16.0	160	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 770	133 136
20.0	200	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 770	133 136
22.0	220	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 770	133 136
25.0	250	1 650	58 269	2 180	76 986	2 710	95 703	3 240	114 420	3 770	133 136

CG = 59 K1=95,2

Table 9 Staflex Mini flow rate with outlet pressure from 3.0 MPa | 30 barg up to 7.0 MPa | 70 barg



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