



FG

Filter for Gas

1/2" ... 6"

FG

Filter for Gas

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Description

The FG is a filter for gas lines, with a high capacity for blocking debris, used to protect downstream components.

Features

The filter housings are made of aluminum alloy die-cast, with a wide range of inlet/outlet connections.

Suitable for natural gas, town gas, LPG (gaseous), and air. On request the filters can be provided with special seals suitable for biologically produced methane and aggressive gases (COG)

The incorporated filtering cartridge is a steel support frame covered with a double-layer of high performance, self-extinguishing, nonwoven polyolefin fibers.

FG models are provided with a plugged pressure test port for the inlet and outlet chambers.

All components are designed to withstand any mechanical, chemical, or thermal condition occurring during typical service. Effective impregnation and surface treatments have been used to improve mechanical sturdiness, sealing, and resistance to corrosion of the components.

Filters are 100% machine tested and are fully warranted.



WARNING

This appliance must be installed in compliance with the rules in force

Functioning and Application

The FG is a filter for gas lines, with a high capacity for blocking debris, used to protect downstream components.

The filter media is made of nonwoven polyolefin fibers with a metal support frame and is suitable to filter debris $\geq 30\mu\text{m}$ ($5\mu\text{m}$ available on request).

As filter media becomes full, the pressure differential will increase, and the media must be replaced. See page 9 for spare parts.

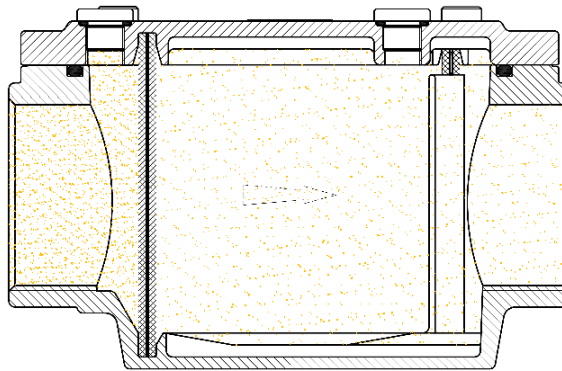
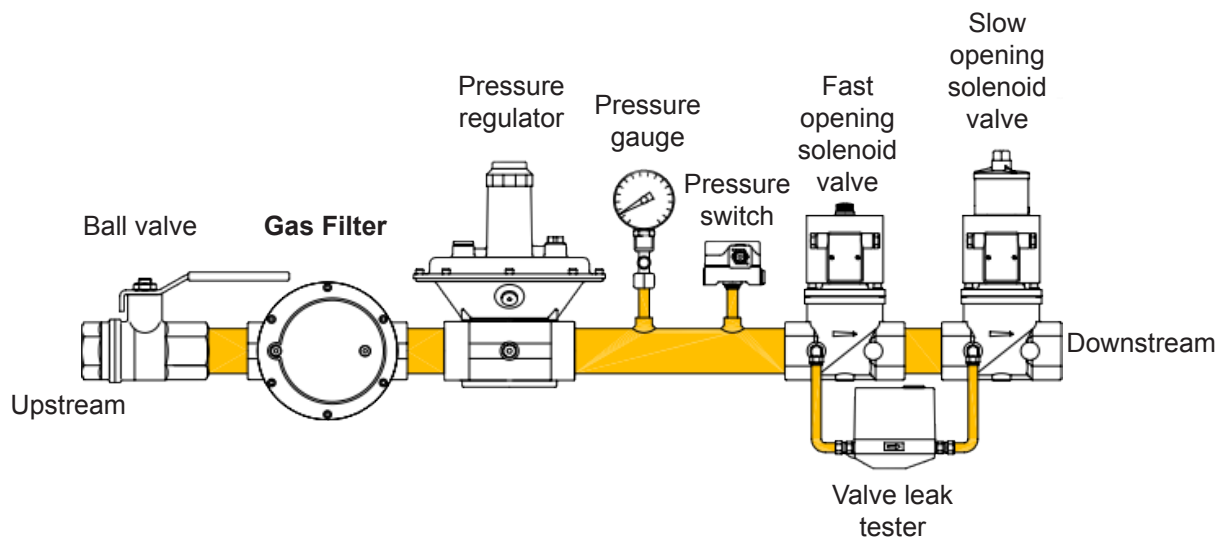


Fig. 1

Figure 2 shows an example of an installation.



WARNING

This appliance must be installed in compliance with the rules in force

Accessories and Optional Items

The standard filter uses a 30µm media element. A 5µm media element is available as an option.

Pictured (below) is TPN025 1/4" NPT test fitting. This accessory is sold separately and ships loose.

TPN0125, 1/8" NPT test fittings are also available.



Technical Specifications

Tab. 1

Connections	Internal threaded ANSI-ASME B1.20 from 1/2" NPT to 2" NPT Flanged ANSI-ASA-ASME B16.5 class 150 from 2.5" to 6"
Max. Operating Pressure	90 PSI (6 bar)
Ambient Temperature	-104°F / +176°F (-40°C / +80°C)
Flow Capacity	See charts
Pore Width of Filter Element	≤ 30µm ≤ 5µm (optional)
Filtration Class	G4 according to EN 779
Pressure Test Ports	Inlet and outlet chambers 1/8" NPT for threaded models 1/4" NPT for flanged models
Installation	For horizontal or vertical pipeline
Gas Type	Natural gas, LPG (gaseous), biologically produced Methane, Air, COG and biogas version available upon request
Materials in Contact With Gas	Aluminum alloy Plated steel Polypropylene fibers Nitrile rubber (NBR) Fluoroelastomer (FPM) (optional)

**Dimensions
FG**

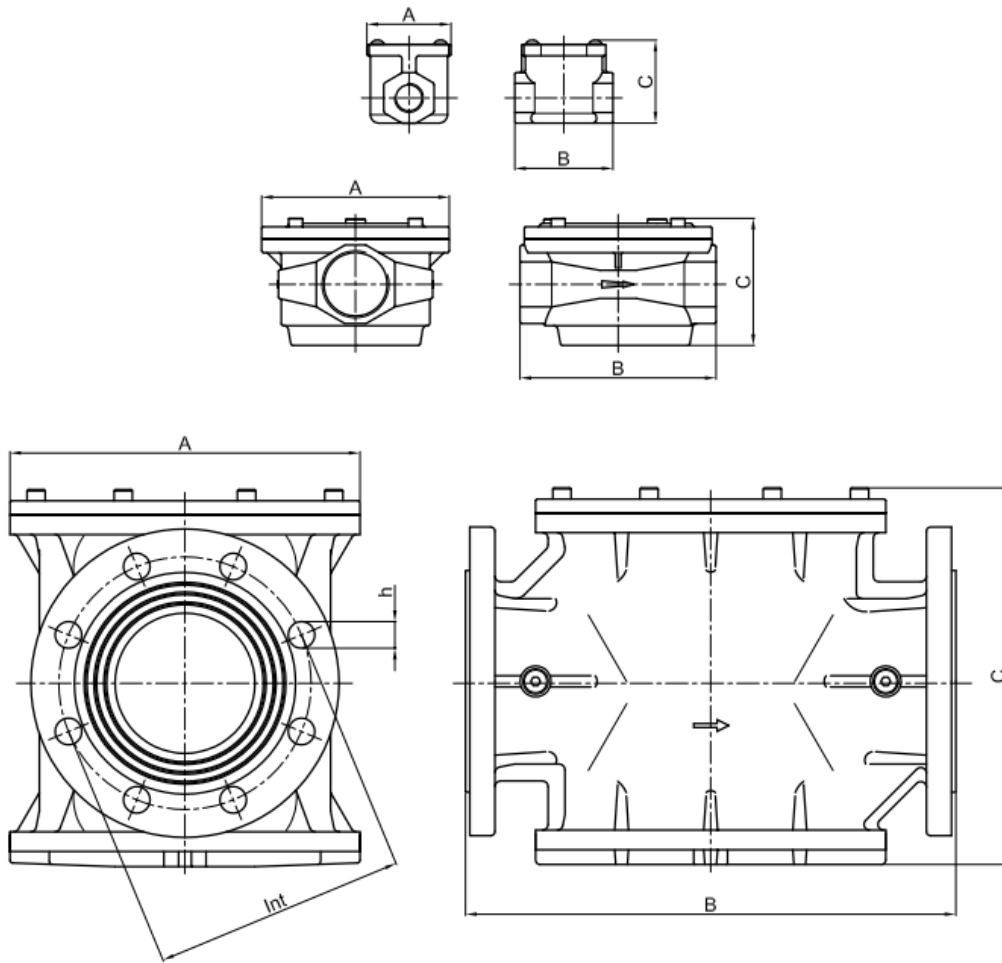


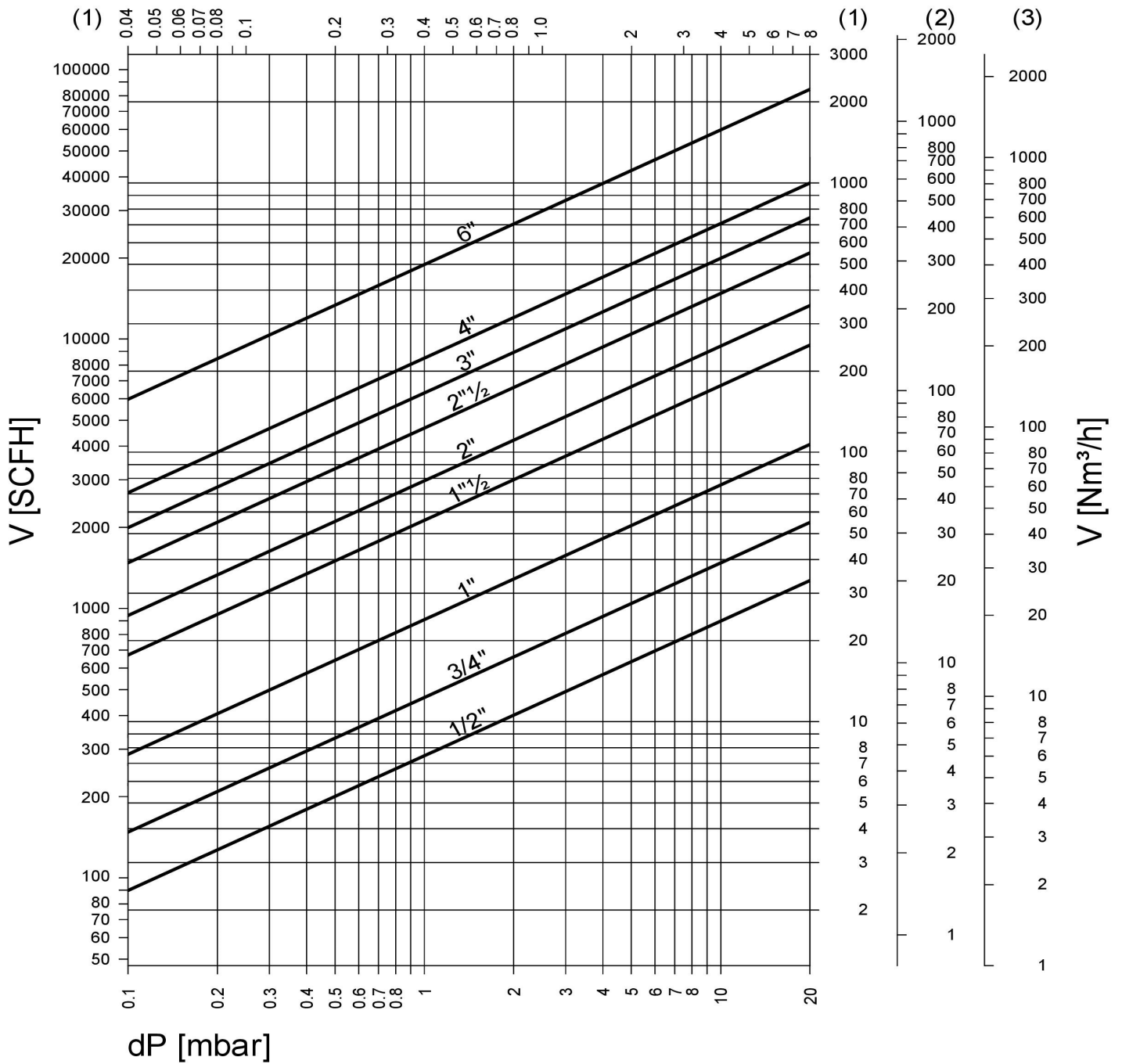
Fig. 3

Tab. 2

Model	Connection	Flow factor Kvs Ft ³ /h	Overall dimensions inches					Weight lbs	Filtering area in ²
			A	B	C	Int	h		
FG1-6N.A	½ inch NPT	240.1	3.5	3.8	3.3			0.85	8.5
FG2-6N.A	¾ inch NPT	388.5	3.5	3.8	3.3			0.84	8.5
FG3-6N.A	1 inch NPT	776.9	5.3	5.5	3.6			2.1	22.5
FG4-6N.A	1½ inch NPT	1765.7	7.2	8.9	5.0			4.9	51.2
FG6-6N.A	2 inch NPT	2472	7.2	8.9	5.0			4.4	51.2
FG78-6N.A	2½, 3 inch ANSI	5297	7.9	12.1	8.3	6.3	0.3x0.7	18.5	82.9
FG9-6N.A	4 inch ANSI	7062.9	9.8	13.8	10.4	7.1	0.3x0.7	29.8	133.3
FG95-6N.A	6 inch ANSI	15891.6	12.4	18.1	13.7	9.4	0.3x0.9	54	238.7

Gas Flow Chart

dP [inch WC]



Formula of conversion from air to other gases

$$V_{GAS} = k \cdot V_{AIR}$$

Tab. 4

Gas Type	Density ρ [lb/ft ³]	$k = \sqrt{\frac{1.25}{\rho_{GAS}}}$
(1) Natural gas	0.05	1.25
(2) LPG	0.13	0.77
(3) Air	0.08	1.00

The flow diagram on the previous page uses standard conditions. When reading the flow diagram using operating pressure (instead of standard conditions), the pressure drop Δp read on the diagram must be multiplied for the factor $(1 + \text{relative pressure in bar})$.

Example:

In the 2" filter with an air flow of 100 Nm³/h there is a pressure drop $\Delta p = 4$ mbar. If we consider that 100 m³/h is the flow at 2 bar of inlet pressure, then the pressure drop to be considered is:

$$\Delta p = 4 \times (1 + 2) = 12 \text{ mbar}$$



Filter must be selected considering the following:

- **Pressure drops $\Delta p \leq 10$ mbar**
- **Flow velocities $w \leq 20$ m/s**

The gas flow diagram on the previous page is normally used to read the pressure drop and flow rate for FG models, but filters can also be selected using the Kvs value, shown in Table 2. Using this method requires the calculation of Kv using the operating conditions.

Considering only subcritical pressure drops:

$$\Delta p < \frac{p_1}{2}$$

Kv can be calculated with the formula:

$$Kv = \frac{V}{514} \sqrt{\frac{\rho(t + 273)}{\Delta p \cdot p_2}}$$

where

V	= flow rate [Nm ³ /h]
Kv	= flow factor [m ³ /h]
ρ	= density [Kg/m ³]
p_1	= absolute inlet pressure [bar]
p_2	= absolute outlet pressure [bar]
Δp	= differential pressure $p_1 - p_2$ [bar]
t	= media temperature [°C]

To the Kv value calculated from operating conditions we add an allowance of 20%, to obtain the minimum Kvs value which the filter should have:

Kvs > 1.2 Kv

Example:

We need a filter with a capacity of 100 Nm³/h of air at 15°C, with an inlet pressure $p_1 = 2$ bar. Considering a pressure drop $\Delta p_{max} = 10$ mbar, we obtain:

$$Kv = \frac{100}{514} \sqrt{\frac{1.25(15 + 273)}{0.010 \cdot (1 + 2)}} = 21.3 \text{ m}^3 / \text{h}$$

The filter with Kvs > $(1.2 \times 21.3) = 25.5$ m³/h is the DN40, which has Kvs=40 m³/h (table 2). The diagram shows that in a DN40 filter with 100 Nm³/h of air there is a pressure drop:

$$\Delta p = 7.8 \text{ mbar}$$

Ordering Information

Tab. 4

Item	Connections	Max. Pressure	Test Port Size	Filter Cartridge
FG1-6N.A	1/2" NPT	90 PSI (6 bar)	1/8" NPT	30 µm
FG2-6N.A	3/4" NPT	90 PSI (6 bar)	1/8" NPT	30 µm
FG3-6N.A	1" NPT	90 PSI (6 bar)	1/8" NPT	30 µm
FG4-6N.A	1-1/2" NPT	90 PSI (6 bar)	1/8" NPT	30 µm
FG6-6N.A	2" NPT	90 PSI (6 bar)	1/8" NPT	30 µm
FG78-6N.A	2-1/2, 3" ANSI	90 PSI (6 bar)	1/4" NPT	30 µm
FG9-6N.A	4" ANSI	90 PSI (6 bar)	1/4" NPT	30 µm
FG95-6N.A	6" ANSI	90 PSI (6 bar)	1/4" NPT	30 µm



Manufacturer reserves the right to update or make technical changes without prior notice.

Spare filter media (30 µm) and 5 µm filter media is available for all models.

Contact us for pricing and availability.



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Spare Parts and Accessories

Model	Function
FG1-FC	Replacement filter media for 1/2" and 3/4"
FG3-FC	Replacement filter media for 1"
FG4-6-FC	Replacement filter media for 1-1/2" and 2"
FG78-FC	Replacement filter media for 2-1/2", 3"
FG9-FC	Replacement filter media for 4"
FG95-FC	Replacement filter media for 6"
TPN025	1/4" NPT test fitting
TPN0125	1/8" NPT test fitting



(TPN025)

Standards and Approvals

The product complies with the essential requirements of the following European Directives and their amendments:



2014/68/EU (Pressure Equipment Directive)
2011/65/EU (RoHS II)

CE-Reg.-No. PED/0497/2875/14

The product complies with the Technical Regulation TP TC 004/2011-016/2011-020/2011-032/2013 of Russia, Belarus and Kazakhstan.



Certificate No.: TC № RU Д-IT.PA01.B.21942



Elektrogas is represented in the USA, Canada, and Mexico by Olsträd Engineering Corporation.

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The information in this document contains general descriptions of technical options available and based on current specifications.

The company reserves the right to make changes in specifications and models as design improvements are introduced, without prior notice.



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