

Biogas and Biomethane Filters

G-CNG, F-CNG, TGE



Biomethane is biogas which has been 'upgraded' to Natural Gas quality for injection into a gas-grid or for use as a vehicle fuel. There are several biogas upgrading technologies on the market such as Water Scrubbers, Chemical Scrubbers, PSAs and Membranes which essentially remove CO₂ from the raw biogas to achieve the highest possible methane content.

Depending on the upgrade process, varying degrees of filtration are necessary. Membranes and PSAs for example, often use oil-lubricated compressors to increase the gas pressure and thus need coalescing filters to protect the upgrading media from oil carryover. There can also be residues in the gas after the upgrade process which can be removed with particulate filters.

Parker can offer a range of high-performance coalescing and particulate filters specifically designed for operation with both raw biogas and biomethane with full compliance to ATEX and PED regulations.

Applications

Biogas and biomethane classified in fluid group 1 as per PED (DGRL) 97/23/EC Zone 1 and Zone 2 as per ATEX 94/9/EC



Specification

Ready-for-operation filter with nominal pressure 16 bar (up to 120 °C / 248 °F), Includes filter element/insert/cartridge, Coalescing Filters in Grades ZP (1 mμ) XP (0,01 mμ), Particle Filters in Grades V (3 mμ) and Demister VPL12 (12 mμ)

G-Series – Biomethane Filtration

- Housing: high-grade aluminium, refined by complete chromating. Additional coat of paint on the outside surface with an impact- and abrasion-resistant powder coating or a synthetic-resin varnish.
- Connection Type: Threaded

F-Series – Biomethane Filtration

- *Housing*: High-grade carbon steel, inside and outside protected by a coat of a corrosion-inhibiting compound.
- *Connection Type*: Flanged

TGE-Series – Raw Biogas Filtration

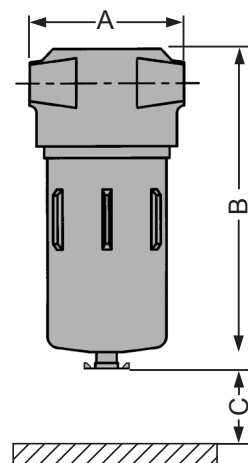
- *Housing*: High-grade stainless steel 1.4301. No additional corrosion protection required. Other higher grade stainless steels on request.
- *Connection Types*: Threaded or flanged

Biomethane Filters

G/CNG & F/CNG

Threaded Filters PN16*

Model	Flow** (m³/h)	Element	Number	Connection (DIN ISO 228)	Dimensions		
					A	B	C
G2_H/CNG	30	1030_/CNG	1	G 1/4	61	150	80
G3_H/CNG	50	1050_/CNG	1	G 1/4	87	200	75
G5_H/CNG	70	1070_/CNG	1	G 3/8	87	200	80
G7_H/CNG	100	1140_/CNG	1	G 1/2	87	270	160
G9_H/CNG	180	2010_/CNG	1	G 3/4	130	310	135
G11_H/CNG	300	2020_/CNG	1	G 1	130	406	235
G12_H/CNG	470	2030_/CNG	1	G 1 1/2	130	511	335
G13_H/CNG	700	2050_/CNG	1	G 1 1/2	130	711	525
G14_H/CNG	940	3050_/CNG	1	G 2	164	748	520
G17_H/CNG	1450	3075_/CNG	1	G 2	164	998	770
G19_H/CNG	2400	5075_/CNG	1	G 3	250	1125	750



* Threaded filters for higher operating pressures (maximum 350 bar_g) are available on request.

** calculated at 1 bar (abs.) and 20 °C at 7 bar_g working pressure.

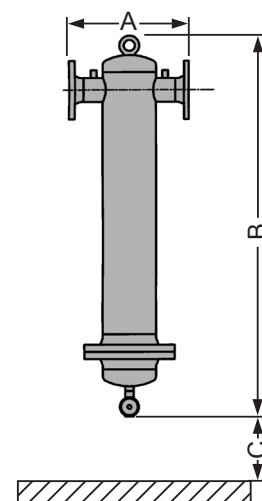
Conversion Factors

Operating Pressure bar _g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conversion Factor	0,25	0,38	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

Design example: CNG shall be filtered
 flow rate: 550 m³/h Filter capacity: 550/1,25 = 440 m³/h
 operating pressure: 9 bar_g selected: **G12_H/CNG**

Flanged Filters PN16

Model	Flow* (m³/h)	Element	Number	Connection (EN 1092-1)	Dimensions		
					A	B	C
F14_H/CNG	1050	3050_/CNG	1	DN50	380	931	530
F17_H/CNG	1850	3075_/CNG	1	DN65	380	1181	530
F19_H/CNG	2920	5075_/CNG	1	DN80	440	1193	530
F20_H/CNG	3700	3075_/CNG	2	DN100	500	1344	550
F30_H/CNG	5550	3075_/CNG	3	DN100	500	1344	550
F40_H/CNG	7400	3075_/CNG	4	DN150	640	1455	550
F60_H/CNG	11100	3075_/CNG	6	DN150	790	1521	550
F80_H/CNG	14800	3075_/CNG	8	DN200	790	1614	550
F100_H/CNG	18500	3075_/CNG	10	DN200	840	1667	550
F120_H/CNG	22200	3075_/CNG	12	DN250	940	1840	600
F160_H/CNG	29600	3075_/CNG	16	DN250	940	1788	600
F200_H/CNG	37000	3075_/CNG	20	DN300	940	1870	600



* calculated at 1 bar (abs.) and 20 °C at 7 bar_g working pressure.

Conversion Factors

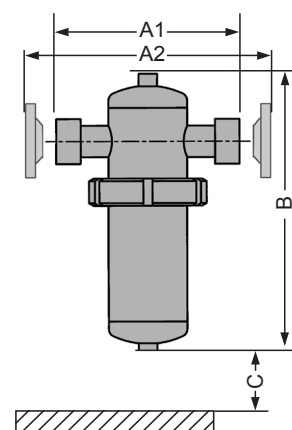
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Conversion Factor	0,25	0,38	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

Biogas Filters

TGE

Threaded or flanged filters stainless steel PN12/16

Model	Flow* (m ³ /h)	Element	Number	Connection		PN	Dimensions			
				threaded	flanged		A1	A2	B	C
TGE302/16_-B/A	90	TE09_	1	G 1/4	10	16	147	177	220	85
TGE304/16_-B/A	110	TE09_	1	G 3/8	10	16	147	177	220	85
TGE306/16_-B/A	150	TE09_	1	G 1/2	15	16	151	177	220	85
TGE308/16_-B/A	220	TE09_	1	G 3/4	20	16	151	183	220	85
TGE310/16_-B/A	290	TE13_	1	G 1	25	16	188	210	312	140
TGE312/16_-B/A	380	TE13_	1	G 1 1/4	32	16	198	214	312	140
TGE314/16_-B/A	500	TE13_	1	G 1 1/2	40	16	198	218	312	140
TGE316/16_-B/A	780	TE14_	1	G 2	50	16	233	259	486	280
TGE318/16_-B/A	1150	TE18_	1	G 2	50	16	233	259	792	530
TGE320/12_-B/A	1470	TE18_	1	G 2 1/2	65	12	275	289	792	530
TGE322/12_-B/A	1950	TE19_	1	G 3	80	12	289	299	1056	780



* calculated at 1 bar (abs.) and 20 °C at 7 bar_g working pressure.

Conversion factors

Operating pressure bar _g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conversion factor	0,25	0,38	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13

Specification of elements for G-CNG filters and F-CNG filters

Filter element	Filtration efficiency	Residual oil contents	Description
VPL12NX	99,99 % (12 µm)	—	General purpose filter with built in demister
V	99,99 % (3 µm)	—	Particulate filter (dry gas only)
XP	99,99999 % (0,01 µm)	≤ 0,01 mg/m ³	Coalescing high efficiency filter
ZP	99,9999 % (1 µm)	≤ 0,5 mg/m ³	Coalescing pre-filter

Specification of elements for TGE filter series

Filter element	Filtration efficiency	Residual oil contents	Description
PL12NX/CNG	99,99 % (12 µm)	—	General purpose filter with built in demister
P	99,99 % (3 µm)	—	Particulate filter (dry gas only)
CF	99,99999 % (0,01 µm)	≤ 0,01 mg/m ³	Coalescing high efficiency filter
C	99,9999 % (1 µm)	≤ 0,5 mg/m ³	Coalescing pre-filter

Biogas and Biomethane Filters

Accessories

Optional Accessoires

for Filter Model	Accessoires	Model	
GCNG	Differential pressure gauge series HZDTG	HZD80/50RTGG	PN50, Display area in bar _g : 0 to 1,6,
		HZDE80/50RTGG	PN50, Display area in bar _g : 0 to 1,6, with switching contact
	Float drains series LDTG	11LD/28TG ¹⁾	PN28, Connection inlet/outlet: G3/4i;G1/2i
		11LD/18TG38 ²⁾	PN18, Connection inlet/outlet: G3/4i;G1/2i
FCNG	Differential pressure gauge series HZDTG	HZD80/100RTGF	PN100, Display area in bar _g : 0 to 1,6,
		HZDE80/100RTGF	PN100, Display area in bar _g : 0 to 1,6, with switching contact
	Float drains series LDTG	11LD/28TG ¹⁾	PN28, Connection inlet/outlet: G3/4i;G1/2i
		11LD/18TG38 ²⁾	PN18, Connection inlet/outlet: G3/4i;G1/2i
TGE	Differential pressure gauge series HZDTG	HZD80/50RTGS	PN50, Display area in bar _g : 0 to 1,6,
		HZDE80/50RTGS	PN50, Display area in bar _g : 0 to 1,6, with switching contact
	Float drains series LDTG	11LD/28TG ¹⁾	PN28, Connection inlet/outlet: G3/4i;G1/2i
		11LD/18TG38 ²⁾	PN18, Connection inlet/outlet: G3/4i;G1/2i

¹⁾ Suitable for filters to PN28

²⁾ Suitable for filters to PN16 at higher condensation

Differential pressure gauge series HZDTG

For monitoring differential pressure levels of the filter.

with stainless steel mounting kit, FKM sealing, also available with limit switch (reed-contact) .

Parts in contact with measured media: stainless steel 1.4571, Magnet hard-ferrit. ATEX compliant.

Temperature range: Measured media 1 to 100 °C; Environment 1 to 60 °C.

Float drain series LDTG

For efficient drainage of aggressive condensate (zero gas loss)

Stainless steel version (1.4301), valve in chrome steel. ATEX compliant.

Temperature range: 1 to 260 °C.