



P-GS

STEAM FILTER ELEMENTS

fits Donaldson P-EG & PG-EG housings

Process Filtration

Donaldson® P-GS elements are designed for filtering steam and gases.

Filtered steam is required whenever steam comes in direct contact with food product or product contact surfaces. It is also necessary to protect sterile filter integrity when using steam to sterilize filter elements. Filtered steam is recommended for the protection of precision modulating system components like pressure reducing valves, and to maintain efficiency of any heat transfer equipment.

P-GS elements offer drop-in replacements for:

- Parker Domnick Hunter
- Pall
- RP Adams



P-GS

FEATURES	BENEFITS
Thirteen lengths, three micron ratings and connection options.	These meet virtually all purification requirements in steam, gas, and liquid filtration applications.
High-quality continuous 316L sintered stainless steel filter media construction.	Ensures excellent material resistance to steam and aggressive medias.
Heavy-duty design.	Withstands a maximum differential pressure up to 5 bar (72 psi) and an operating temperature range of -51° C to 204° C (-60° F to 400° F) (with optional Fluoraz®* O-rings).
P-GS 5 micron element exceeds 3-A guidelines for the production of Culinary Steam under Accepted Practice 609-03	
50+% porosity level.	Ensures high dirt holding capacity at low differential pressure and high flow rate.
Multiple regenerative methods are possible, including back-flushing, ultrasonic cleaning, and solvent cleaning with hydrogen peroxide and other chemicals.	Allows for longer filter life and reduced operating costs.
The filter element is manufactured according to ISO 9001.	All components meet FDA requirements for contact with food in accordance with the Code of Federal Regulations (CFR), Title 21.

*Fluoraz is a registered trademark of Greene, Tweed & Co.

APPLICATIONS

There are several terms used for steam. Process steam is used in process applications as a source of energy for process heating, pressure control and mechanical drives. Culinary steam can be direct injected during food processing. Culinary steam needs to meet 3-A Culinary Standards for the dairy industry. Process steam does not generally come in contact with the final product whereas culinary steam can, and often does, come in direct contact with the final product.

STEAM FILTRATION

- Direct injection cooking
- Sterilize-in-Place (SIP)
- Peeling
- Pasteurization
- Sanitizing
- Heat exchangers
- PRV/valve protection
- Humidity control
- Rust capture

SPECIFICATIONS

Continuous Operating Temperature Range	Up to 180° C (356° F) EPDM O-Rings Up to 204° C (400° F) Fluoraz O-Rings
Filtration Surface	502 cm ² (0.54 ft ²) per 254 mm (10") element (10/30) (For other element sizes see correction factors filtration surface)
Configurations	UF 51 mm (2") plug connection and flat end cap Code 7: 2 x 226 O-rings, 2 bayonet locking tabs and locating fin
Maximum Differential Pressure	5 bar (72 psid), regardless of the system pressure or temperature
Typical Service Life	Total filter element life dependent on cleaning cycle frequency. Element replacement recommended after a maximum of 6 cleanings to prevent loss of integrity.

MAXIMUM RECOMMENDED FLOW RATES FOR 254 MM (10") ELEMENT (10/30)

Element Pore Size (µm)	Saturated Steam kg/hr per 254 mm			Gases/Air	Element Pore Size (µm)	Saturated Steam lbs/hr per 10"			Gases/Air
	1.0 bar	3.5 bar	7.0 bar	m ³ /hr per 254 mm		15 psig	50 psig	100 psig	ACFM per 10"
1	136	295	454	22.7	1	300	650	1000	50
5	181	363	680	27.2	5	400	800	1500	60
25	227	454	907	31.8	25	500	1000	2000	70

RETENTION RATES

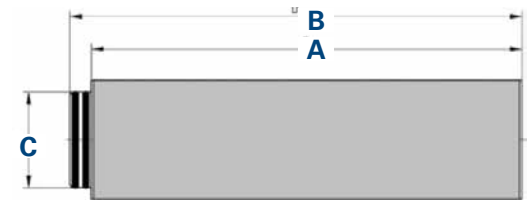
Steam & Air		
Element Pore Size (µm)	98% (µm)	100% (µm)
1	0.5	1
5	1	2
25	5	15

MATERIALS	CFR TITLE 21
Filter Media	316L sintered stainless steel 211.65
End Caps	304 SS 211.65
O-Rings Standard	EPDM 177.2600
O-Rings Optional	Fluoraz (high temp) 177.2600 Silicone 177.2600 Buna N 177.2600 PTFE over silicone 177.1550 PTFE over Viton®* 177.1550

* Viton is a registered trademark of DuPont Performance Elastomers L.L.C.

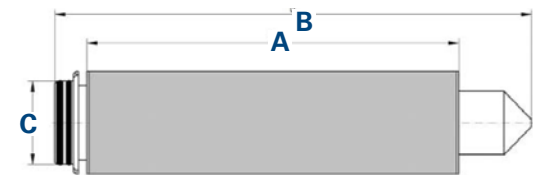
UF PLUG CONNECTION

Element Size	Dimensions										Correction Factors**
	A		B		C (I.D.)*		C (O.D.)*		D		
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	
03/10	76	3.0	86	3.4	20	0.8	30	1.2	42	1.65	0.12
04/10	104	4.1	117	4.6	20	0.8	30	1.2	42	1.65	0.17
04/20	104	4.1	117	4.6	25	1	38	1.5	52	2.05	0.19
05/20	127	5.0	142	5.6	25	1	38	1.5	52	2.05	0.25
05/25	127	5.0	142	5.6	25	1	38	1.5	62	2.44	0.32
07/25	180	7.1	193	7.6	25	1	38	1.5	62	2.44	0.47
05/30	127	5.0	145	5.7	51	2	61	2.4	86	3.39	0.46
07/30	180	7.1	196	7.7	51	2	61	2.4	86	3.39	0.68
10/30	254	10.0	269	10.6	51	2	61	2.4	86	3.39	1.00
15/30	381	15.0	396	15.6	51	2	61	2.4	86	3.39	1.55
20/30	508	20.0	523	20.6	51	2	61	2.4	86	3.39	2.10
30/30	762	30.0	777	30.6	51	2	61	2.4	86	3.39	3.28
30/50	762	30.0	777	30.6	81	3.2	89	3.5	140	5.50	5.89



CODE 7 (226) CONNECTION

Size	Dimensions						
	A		B		C		
	mm	in.	mm	in.	mm	in.	
127	5	125	4.92	190	7.48	56	2.22
254	10	250	9.84	315	12.40	56	2.22
508	20	500	19.68	565	22.24	56	2.22
762	30	750	29.53	815	32.08	56	2.22



* Plug-type connection with double o-ring. ** Correction factors filtration surface area

QUALITY ASSURANCE

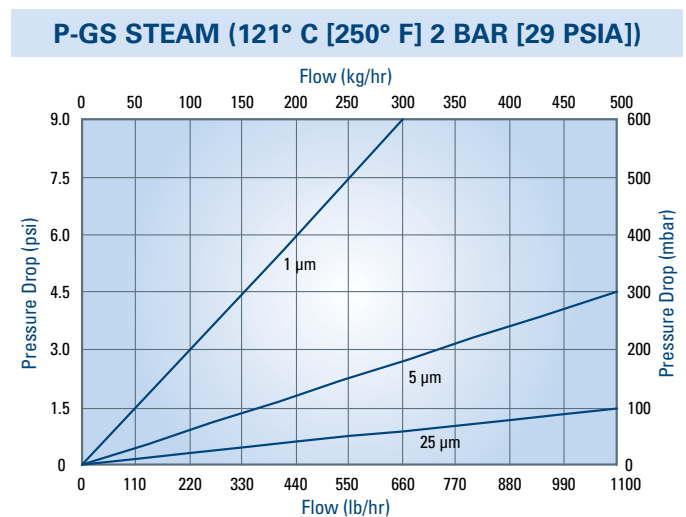
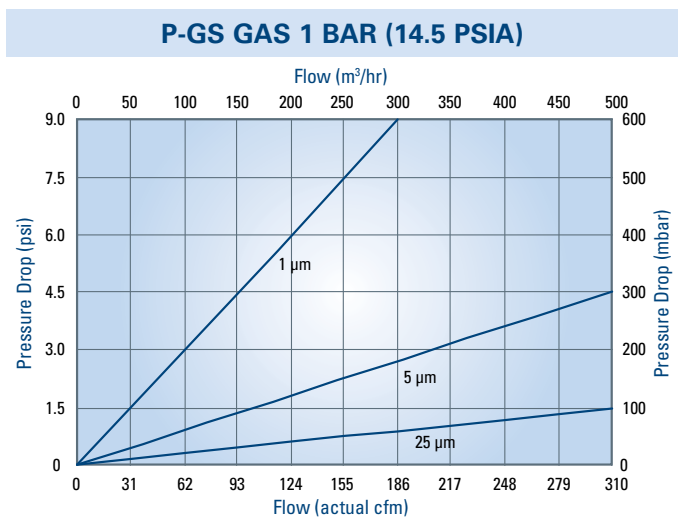
All components of the P-GS filter element with welded and caps are FDA listed for food contact use in the Code of Federal Regulations (CFR), Title 21.

All products have been inspected and released by Quality Assurance for meeting the following requirements:

- All filter elements are fabricated without the use of binders, adhesives, additives or surface-active agents.
- All filter elements are staged, assembled, tested, and packaged according to ISO 9001.

FLOW CHARACTERISTICS FOR 254 MM (10") ELEMENT (10/30)

Properly sizing a steam filter system will depend on a number of variables, including: flow rate (pounds per hour), pressure, element micron rating, and acceptable pressure drop across the filtration system.



REGENERATION

Steam filter elements are commonly regenerated to reduce differential pressure drop, remove settled contaminants, and prevent permanent contamination buildup. The Donaldson P-GS Filter elements can be regenerated using a number of different techniques. In general, the more frequently an element is cleaned, the better the regeneration. It is recommended that all cleaners are in compliance with CFR, Title 21. The following is some general background in methods of steam filter element regeneration.*

COUNTER-FLOW

The filter media can be washed with either clean liquid or clean gas in a reverse, or counterflow, cycle. Pulsing the flow to loosen attached particles can enhance cleaning. This method is excellent where retained particles are on the surface of the media. Use of a soft nylon brush can also enhance this method of cleaning.

SOLVENT CLEANING FORWARD FLOW

In some cases, oil and other contaminants in the steam cause particles to be retained on or within the filter media. Detergents and/or solvents might be required in these instances, not only to remove the oil or oil-like contaminants, but also to allow particles to be released. The chemical resistance of o-rings should be checked prior to solvent cleaning. After cleaning with solvents, it is essential to flush with cold water thoroughly and let all liquid evaporate.

ULTRASONIC CLEANING

The most thorough regeneration can be achieved using ultrasonic cleaning. In this method, filter elements are immersed in a non-flammable solvent or water bath in which ultrasonic waves lead to a loosening and removal of particles embedded in the media. Regeneration is nearly total, leaving elements close to their original state.

CLEAN STEAM

In many applications steam comes in contact with the product itself. For example, direct injection of steam into large vats of processed foods is one method used to cook those foods. In other cases, steam is used to clean or sterilize surfaces, tools and containers used in processing and packaging of various products such as pharmaceuticals. In all cases, steam is being generated and distributed in piping systems, and these often end in small orifices or nozzles that can be easily fouled by contaminants in the steam.

Filtration of steam is essential to avoid product contamination and equipment downtime. Particulate contaminants found in steam can include rust, scale, dirt and sediments carried over from the water source.

* Contact a Donaldson representative for more details on P-GS steam filter element regeneration and sanitation guidelines.



Important Notice:

Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, specifications, availability and data are subject to change without notice, and may vary by region or country.



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