Donaldson
FILTRATION SOLUTIONS

P-SRF N

PROCESS STERILE AIR FILTER ELEMENTS

Compressed Air & Process Filtration

When Purity Counts...Count on Donaldson

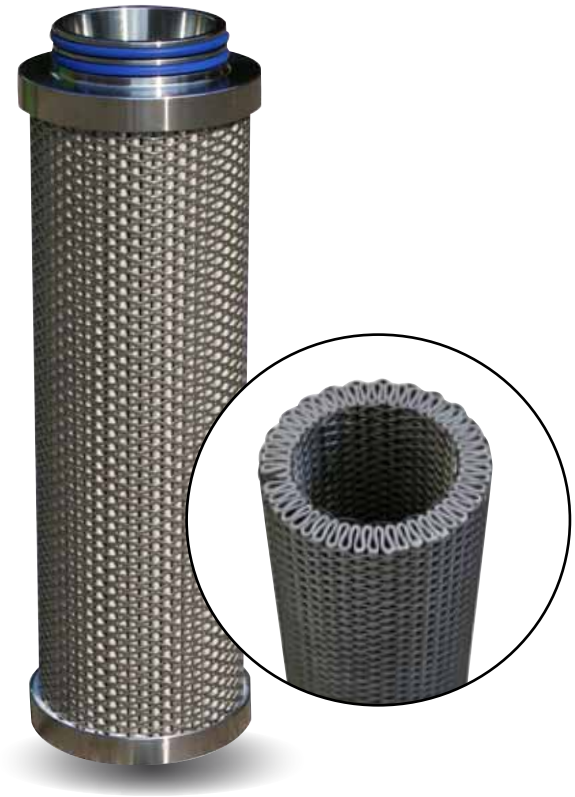
As one of the world's leading manufacturers of compressed air purification equipment and process filters, and with over 35 years of expertise, Donaldson has built a comprehensive engineering, manufacturing, and customer support network providing filters that meet the most demanding application requirements.

Donaldson innovative designs focus on energy-efficient operation and reliable performance to minimize operating expenses and reduce downtime. Donaldson provides industrial air, sterile air, culinary steam, and liquid filtration products from prefiltration to final, and from low to high capacity, so when purity counts, count on Donaldson.

The Donaldson P-SRF N sterile pleated depth filter element is used for sterile filtration of compressed air, process air, technical gases and vent applications. The retention rate is >99.99998% related to 0.2 µm and >99.9999998% related to 0.02 µm ensuring safe and sterile filtration of process gases. The P-SRF N provides low pressure drop, high dirt-holding capacity, great strength, and long service life to dramatically reduce your operating costs.

FEATURES & BENEFITS

- Thirteen sizes and available connection options meet virtually all air purification application requirements.
- High-quality stainless steel construction ensures excellent mechanical stability, thermal resistance up to 392°F, more than 150 sterilization cycles possible at specific conditions, and is suited for Vapor Phase Hydrogen Peroxide (VPHP) sterilization.
- Three-dimensional borosilicate depth filter media has large void volume of 95%, is chemically inert and developed specifically for the removal of contaminating bacteria and viruses.
- This inherently hydrophobic media ensures high flow rates, an extremely low pressure drop, and excellent dewetting characteristics.
- The validated retention of bacteria and viruses provides high safety for aseptic applications in all industries.
- The depth filter medium is non-fiber releasing and all components meet the FDA requirements for contact with food in accordance with the Code of Federal Regulations (CFR), title 21. The filter element is manufactured according to DIN EN ISO 9001.



APPLICATIONS

In process filtration applications, “sterile” means “free from live bacteria or other microorganisms.” The Donaldson P-SRF N sterile filter element is designed and developed for use in the following:

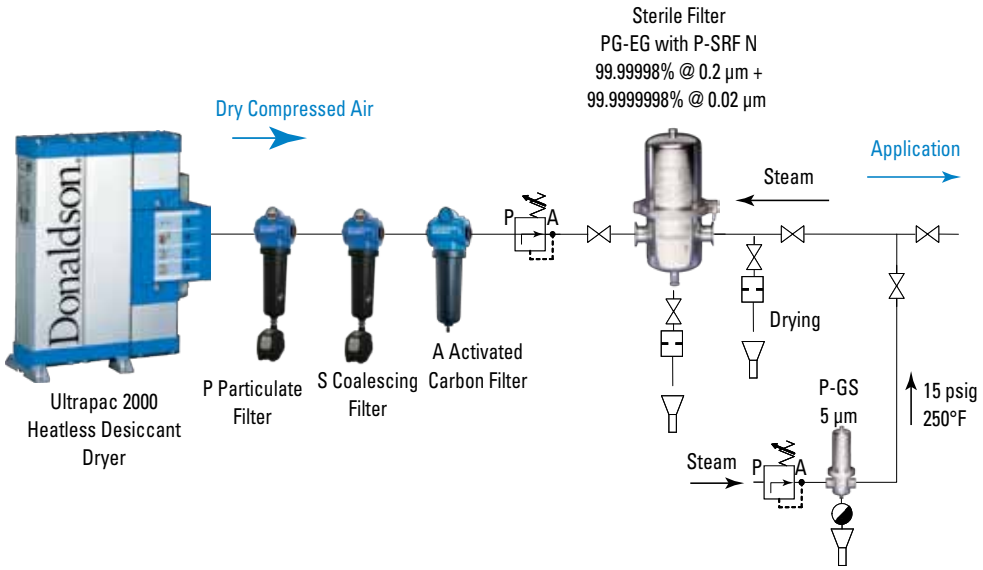
Industries

- Food & Beverage
- Pharmaceutical
- Health Care & Biotech
- Aseptic Packaging
- Chemical
- Dairies
- Breweries

Applications

- Compressed Air
- Carbon Dioxide
- Fermentation Air
- Tank Ventilation
- Technical Gases

RECOMMENDED STERILE AIR INSTALLATION



RETENTION OF MICROORGANISMS

The procedure for microbiological evaluation is outlined by HIMA*. The P-SRF N filter element was challenged with a minimum of 10^7 viable Brevundimonas Diminuta microorganisms to each square centimeter of effective filtration area. The bacterial challenge is quantified by expressing the filter element efficiency to remove the challenge organism from the challenge suspension as a Log Reduction Value (LRV).

LRV = Log 10 (quantity of organisms in the challenge) / (quantity of organisms after filtration)

Brevundimonas Diminutas (≥ 0.2 µm) LRV > 7/cm²

MS2 Coliphagae (≥ 0.02 µm) LRV > 9/cm²

* HIMA = Health Industry Manufacturers Association, known as AdvaMed.

PRODUCT SPECIFICATIONS

Temperature Range	-4°F to 392°F (≥302°F only for dry compressed air)
Effective Filtration Area (nominal)	9 ft^2 per 10 inch element (For other element sizes see Correction Factors Filtration Surface Area)
Absolute Retention Rate	99.99998% at 0.2 µm & >99.9999998% at 0.02 µm
Bacterial/Viral Retention	Scientifically validated by an independent institute via: Brevundimonas diminutas aerosol challenge and MS2 Coliphagae aerosol challenge
Integrity Test Values	DOP Test according to HIMA > 99.99998%
Configurations	UF: 2" plug connection and flat end cap P7: 2 x 226 o-rings, 2 bayonet locking tabs and locating fin Other connections available upon request
Maximum Differential Pressure	75 psid (-4°F to 302°F), regardless of the system pressure or flow direction
Typical Continuous Air Service Life	12 months recommended changeout cycle
Typical Vent Service Life	6 months recommended changeout cycle

MATERIALS

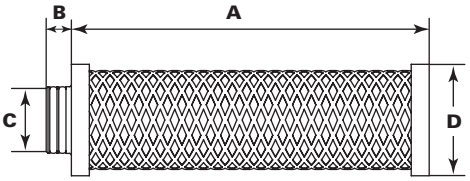
Filter Media	Borosilicate glass fiber	CFR Title: 177.2660
Coating	Polydimethylsiloxane (PDMS)	CFR Title: 177.1520
Upstream Support	Stainless Steel 1.4301 (304 SS)	CFR Title: 211.65
Downstream Support	Stainless Steel 1.4301 (304 SS)	CFR Title: 211.65
Outer Guard	Stainless Steel 1.4301 (304 SS)	CFR Title: 211.65
Inner Guard	Stainless Steel 1.4301 (304 SS)	CFR Title: 211.65
End Caps	Stainless Steel 1.4301 (304 SS)	CFR Title: 211.65
Potting Compound	Silicone	CFR Tile 177.2600
O-Rings Standard	Silicone	CFR Title: 177.2600
O-Rings Optional	Buna EPR PTFE over silicone PTFE over Viton®*	CFR Title: 177.2600 CFR Title: 177.2600 CFR Title: 177.1550 CFR Title: 177.1550

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

UF PLUG CONNECTION

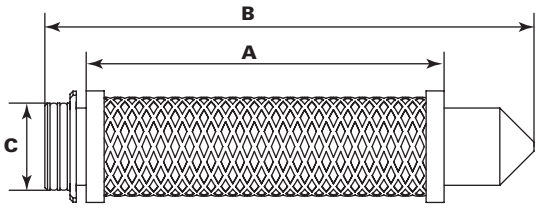
Element Size	Dimensions (inches) A	B	C (I.D.)*	C (O.D)*	D	Correction Factors**
03/10	3.0	0.43	0.79	1.20	1.65	0.12
04/10	4.1	0.43	0.79	1.20	1.65	0.17
04/20	4.1	0.55	0.98	1.46	2.05	0.19
05/20	5.0	0.55	0.98	1.46	2.05	0.21
05/25	5.0	0.55	0.98	1.46	2.44	0.29
07/25	7.1	0.55	0.98	1.46	2.44	0.42
05/30	5.0	0.55	0.98	1.46	3.39	0.40
07/30	7.1	0.63	2.09	2.40	3.39	0.70
10/30	10.0	0.63	2.09	2.40	3.39	1.00
15/30	15.0	0.63	2.09	2.40	3.39	1.28
20/30	20.0	0.63	2.09	2.40	3.39	2.00
30/30	30.0	0.63	2.09	2.40	3.39	2.56

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



P7 CONNECTION

Size	Dimensions (inches) A	B	C
5"	4.92	7.48	2.22
10"	9.84	12.40	2.22
20"	19.68	22.24	2.22
30"	29.53	32.08	2.22



QUALITY ASSURANCE

All products have been inspected and released by Quality Assurance as having met the following requirements:

- All filters are fabricated without the use of binders, adhesives, additives or surface active agents.
- All sterile filters are integrity tested according to ASTM D 2986-91 and DIN EN 1822 to verify compliance with established quality and design specifications and to assure consistent and reliable performance.
- A Factory Test Certification according to DIN EN 10204 is available upon request.

Proper sizing and component selection of sterile air filtration system is essential to assuring that your application is operating as effectively and efficiently as possible.

NOMINAL AIRFLOW RATES

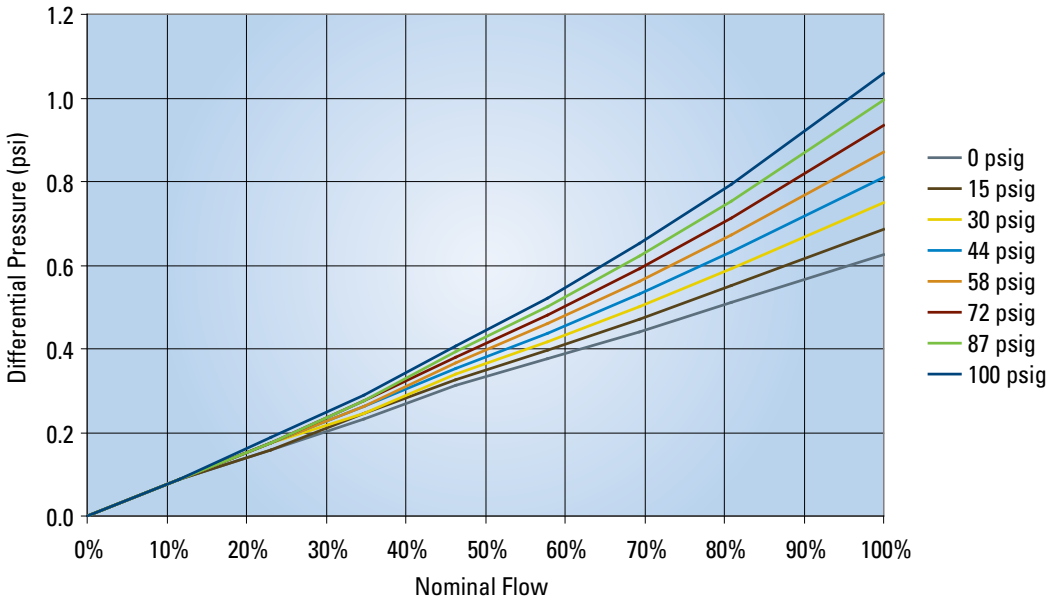
The numbers in the table represent 100% nominal airflow in the diagram below at 100 psig.

Type SRF N		Flow at 100 psig [scfm]*	
Housing	Element	Nominal	Maximum
0006	03/10	40	60
0009	04/10	60	80
0012	04/20	80	110
0018	05/20	110	135
0027	05/25	135	180
0036	07/25	180	270
0048	07/30	270	425
0072	10/30	425	630
0108	15/30	630	810
0144	20/30	810	1130
0192	30/30	1130	1340

* scfm related to 0 psig and 68°F

DIFFERENTIAL PRESSURE P-SRF N FILTER ELEMENT

Measured differential pressure for P-SRF N element, air, 68°F, 0 psig to 100 psig.
The actual differential pressure may vary depending on the on-site conditions.



PRESSURE CORRECTION FACTORS

Nominal and maximum flow for other pressures can be calculated with the correction factors below.

Pressure (psig)	15	29	58	87	100	116	145	174	203	232
Correction Factor	0.25	0.36	0.6	0.9	1.0	1.1	1.4	1.6	1.9	2.1

AUTOCLAVING/STEAMING/STERILIZATION

Cumulative Steaming Time	250°F, Saturated Steam: 180 cycles (30 minutes) 270°F, Saturated Steam: 150 cycles (20 minutes) 290°F, Saturated Steam: 150 cycles (10 minutes) Independent of flow direction; forward and reverse steam flow possible
Vapor Phase Hydrogen Peroxide (VPHP) Suitable	266°F @ > 1,000 ppm H_2O_2, > 50 hours

Note: Figures are based on steam resistance lab test. Filter elements need to be checked in actual use. Contact Donaldson for recommend autoclaving/steaming/sterilization procedures.

For more information on sterile air, please refer to the Sterile Air brochure.

STERILIZE-IN-PLACE (SIP) PROCEDURE

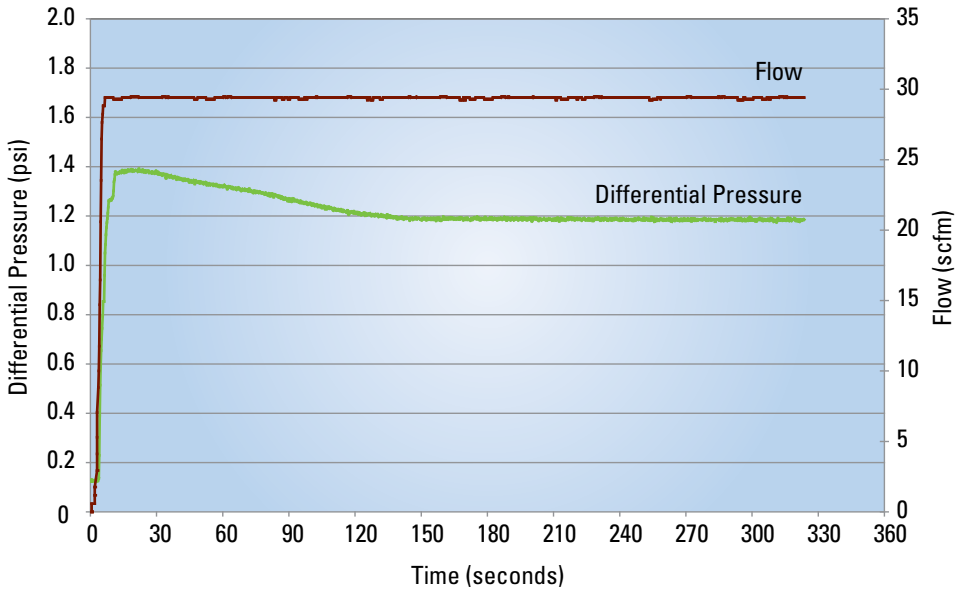
- With SIP, the filter element and housing remain in place and steam is used to sterilize the filtration system without the need for disassembly.
- The steam used for SIP must be free of rust and other particles.
- Steam pressure must not be allowed to fall below 15 psig throughout the SIP process.
- Condensate must be drained from the system during sterilization.
- Any air trapped in the housing must be vented.
- Upstream and downstream pressure gauges must be used to ensure differential pressure across the filter does not exceed 5 psid during SIP.
- After sterilization, pressurize the system with process air or gas up to the steam pressure used and allow the system to cool until ready for use.
- Always use the lowest possible sterilization temperature to avoid excess stress on the filter element.

AUTOCLAVE

- Generally, only the filter element is sterilized in an autoclave, but both the housing and element can be sterilized if removed from the process, disassembled and put in the autoclave.
- In addition to the cycle times given above, follow the specific procedures provided with the autoclave in use.

DEWETTING CHARACTERISTICS/AIR DRYING OF ELEMENTS AFTER STEAMING

Dewetting characteristics of a P-SRF N 05/25 after steaming at 14.5 psi for 30 minutes. Flow is 29.4 scfm at 17.4 psi absolute. Normal conditions are reached after ~ 150 seconds.

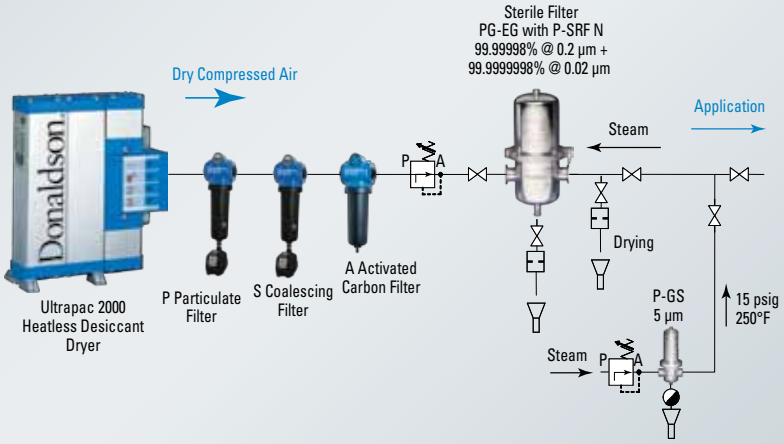


when
PURITYCOUNTS...
count on Donaldson®

LEADING TECHNOLOGY

- Over 1,000 engineers and scientists worldwide
- Over 1,500 issued, active and pending patents

FILTRATION SOLUTIONS



- Energy saving, reliable filters and dryers
- Industrial air, sterile air, culinary steam and liquid filtration

KNOWLEDGEABLE SERVICE

- Ready-to-ship filters and POU dryers within 48 hours
- Technical expertise and support

Donaldson
FILTRATION SOLUTIONS

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PRO-300 (06/09)