Process Gas Filtration

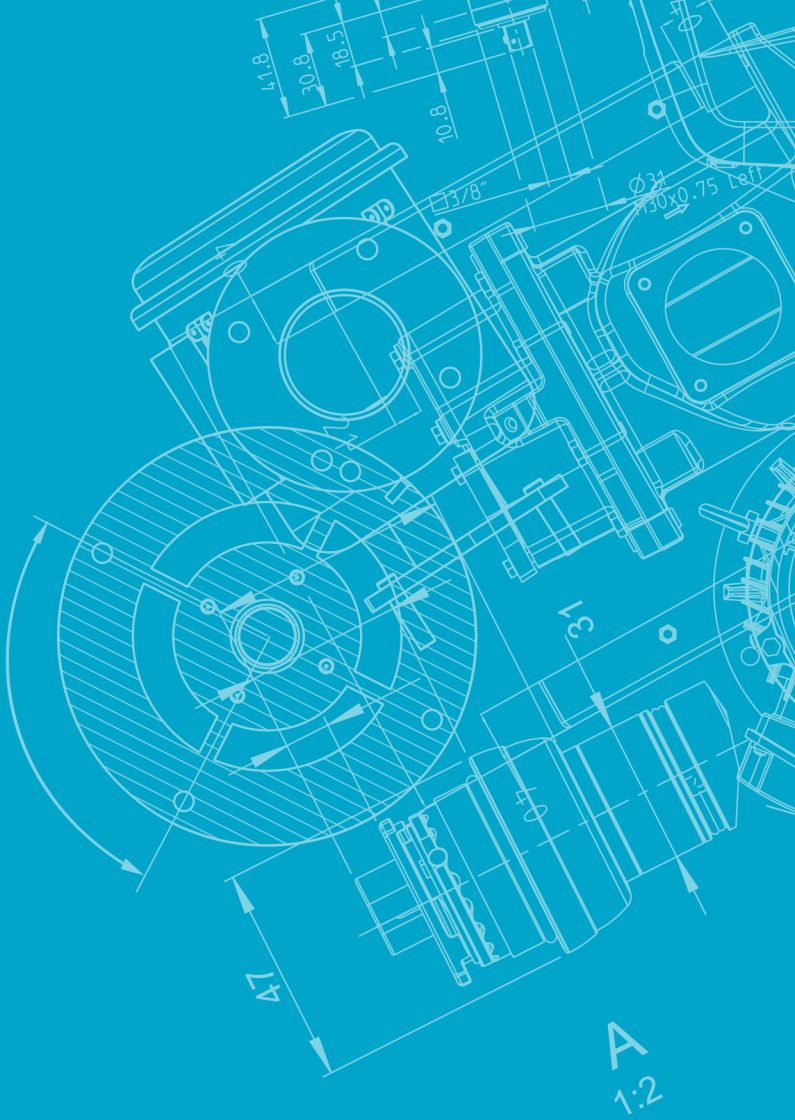


Table of content

1 Cover page

3 Highest Standards for Filtration

5 Air Filtration for Your Needs

7 DF+ Coalescing Particle Removal Filter

8 QF+ Activated Carbon Filter

9 DFp+ and PFp+ Dry Particle Removal Filter

10 PFs+ Sterile Grade Filter

12 MFs+ Sterile Grade Membrane Filter

13 Process Filtration Housing

17 Product specifications

Highest Standards for Filtration

The Atlas Copco stainless steel process filters range support food grade compliant, sterilizing grade and can meet ISO 8573 Class 0 air purity. These filters comply with CFR Title 21 published by FDA and EU Regulation No. 1935/2004, providing sterile grade air filtration for demanding segments like food and beverage, pharmaceuticals, electronics and batteries.

Atlas Copco – Your Reliable Partner in Air Treatment

For more than 25 years, we are developing in-house air treatment products to offer you quality air with performance, reliability and efficiency. Why compromise using third party add-ons when you can extend the Atlas Copco to your entire compressed air system?

With the process filters this means an extensive compliance with a great variety of legislation requirements and compatibility including batch traceability, FDA compliant materials, material certification.

Certified Peace of Mind

Atlas Copco's filters are certified to meet the following ISO standards:

	Standard	Specification
✔	ISO 9001:2015	Quality Management System (QMS)
✔	ISO 8573	Compressed Air – Contaminants, air quality test methods and quality classses
✔	ISO 12500	Filters for Compressed Air – Filter test methods
✔	EU Regulation No. 1935/2004	Food Contact Compliance EU
✔	FDA CFR Title 21	Food Contact Compliance US
✔	ASTM F838	Internal Aerosol Bacterial Challange Standard
✔	EU No 65/2011	Use of Hazardous Substances (RoHS)
✔	EG VO 1907/2006	Human Health & Environment (Reach)
✔	EU No 3190/2024	Use of Bisphenol and Bisophenol Derivates (Bisphenol / BPA Ban)
✔	USP-NF (88)	Biological Safety (USP class VI)

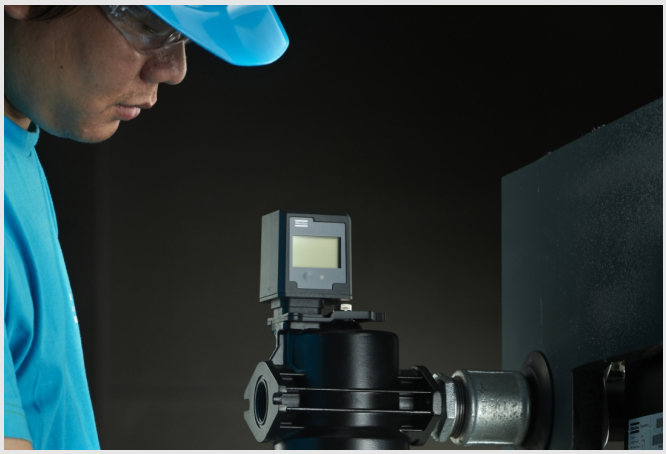
Highest Air Quality

Because filtration is so important, Atlas Copco's dedicated engineering team works in close collaboration with universities, regulatory authorities and premium filter material suppliers. Our scientists and engineers are therefore knowledgeable on the latest developments and innovations in the industry. Every step of the engineering process is meticulously executed, from basic research to prototype designs and end-of-life analysis.

Rigorous Quality Control

To ensure top performance and reliability, all Atlas Copco filters are subjected to thorough quality control. Thanks to our testing facility, we conduct certification in-house, including testing witnessed by independent parties. Capable of testing filters according to all relevant standards, our competence continues to grow with every new development in the filtration business.

Our Class 0 filters are double packed to ensure no contamination when moving into a sterile environment and their integrity tested before being distributed.



Best in Class Energy Efficiency

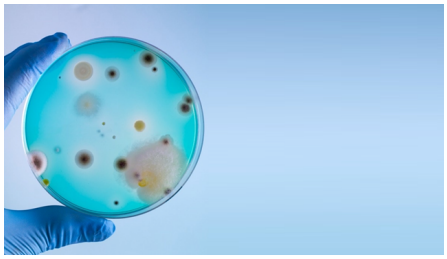
Besides having the right air quality Atlas Copco designs it's products as well for a best in class energy efficiency by having a reliable low pressure drop and long lasting service intervals – giving you the best solution with the lowest operating cost.

Air Filtration for Your Needs

Explore several typical installations of our stainless-steel filter range, which caters to food-grade, sterile-grade, and Class 0 particle filtration requirements.

Food Grade Compliant Filters

Whenever filter elements and filter housings are used in the Food and Beverage industry, they become subject to specific regulations regarding the selection of materials allowed. The principle underlying these regulations ((EC) No 1935/2004 for Europe and CFR Title 21 for Americas) is that any material or article intended to come into contact directly or indirectly with food must be sufficiently inert to preclude substances from being transferred to food. All our process filter elements and housings have been tested by independent and accredited third parties to comply with both the CFR Title 21 and the (EC) No 1935/2004 and all subsequent amendments.



Sterile Grade Filtration

For highly sensitive applications where the compressed air is in direct contact with the product itself or aseptic packaging materials it is recommended to utilize final filters that are clearly marked as “sterile grade” (VDMA 15390-2:2018-04). According to the FDA* a sterile grade filter element is required to retain 10^7 organisms per cm^2 of filter surface. Our filter elements PFs+ and MFs+ fulfil this requirement as shown in an Aerosol Bacterial Challenge Test using Brevundimonas diminuta as experimental microorganism. The retention efficiency for both PFs+ and MFs+ filter element types is higher than 99,99999% or LRV > 7/cm^2.

Class 0 Particle Filtration

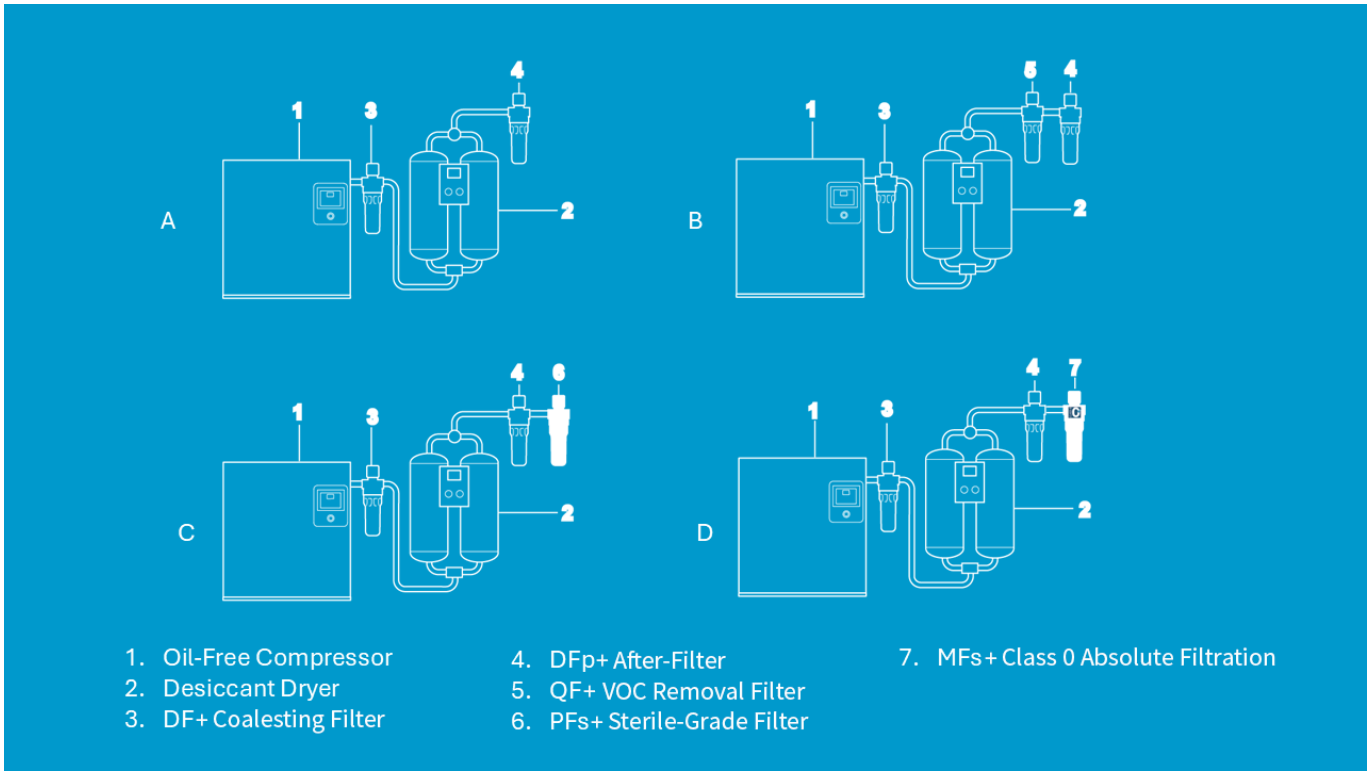
When working with the most demanding applications like electronics and battery we recommend using absolute Class 0 filtration for which we need to step up the technology ladder. The MFs+ range relies on a PTFE membrane assimilated in a propylene structure to stop practically all particles of relevant size – guaranteeing the highest air quality.

CLASS ZERO Particle Free Air

*FDA Guideline on Sterile Drug Products Produced by Aseptic Processing – Current Good Manufacturing Practice September 2004

Installation Proposal

	Category	Components	Air purity class ISO 8573-1:2010	Sterile Grade
A	Food grade compliant filters	Oil-Free compressor – DF+ – desiccant dryer – DFp+	[2:2:0]	No
B	Activated carbon filtration	Oil-Free compressor – DF+ – desiccant dryer – QF+ – DFp+	[2:2:0]	No
C	Sterile grade filtration	Oil-Free compressor – DF+ – desiccant dryer – DFp+ – PFs+	[1:2:0]	Yes
D	Class 0 absolute filtration	Oil-Free compressor – DF+ – desiccant dryer – DFp+ – MFs+	[0:2:0]	Yes



*Class 0 particle filtration [0;-;-] applies to the MFs+ with electro polished housing.

DF+ Coalescing Particle Removal Filter

Highly Efficient Prefiltration of Compressed Air and Gasses in Food & Beverage, Pharmaceutical and Industrial Applications

DF+ filters provide reliable, efficient and safe filtration of compressed air and nitrogen before entering the air dryer. The cartridges feature several layers of glass microfiber pleated with a coarse layer down to more fine layers downstream in the filter. This gets integrated in polypropylene support layers and a robust cage with reinforced end cap– making it suitable for demanding operating conditions and sterilization cycles.

DF+ filters are used in critical applications in Food & Beverage, Pharmaceutical, Microelectronics and chemical industry.

Key Features
- High flow and low pressure drop
- High contamination holding capacity
- Silicone and BPA free
- Reinforced end cap

Applications
- Compressed air and nitrogen
- Water droplets and wet particle removal
- Pre filtration
- Tank venting

Quality First
- Manufacturing acc. ISO9001 in a controlled environment
- Comply with EU Regulation No. 1935/2004
- Materials used meet FDA Title 21
- Batch traceability

Regulatory compliance

Quality assurance
For each filter cartridge an electronic Certificate of Conformity is available, detailing relevant test data, biological safety information and product approvals against the specific batch number and part number for the filter. The filter cartridges are manufactured in a controlled clean room environment that generally meets the requirements for ISO 14644-1 Class 8 Cleanrooms.

QF+ Activated Carbon Filter

Removal of VOCs, Hydrocarbons and Odours

QF+ filter is a reliable solution to remove VOC's and odour from compressed air and nitrogen in industrial and semi critical applications. The filter media consist of several layers of polyester impregnated with activated carbon to absorb hydrocarbon particles. The filter media gets integrated in polypropylene support layers and a robust polypropylene cage – making it suitable for demanding operating conditions and sterilization cycles. QF+ filters are typically used in Food & Beverage applications.

Key Features
- Large carbon surface area
- Low pressure drop
- No channeling or bypass effect
- Reduce VOC content

Applications
- Compressed air and nitrogen
- VOC removal after a coalescing prefilter
- Filtration prior to hydrocarbon sensitive applications

Quality First
- Manufacturing acc. ISO9001 in a controlled environment
- Comply with EU Regulation No. 1935/2004
- Materials used meet CFR Title 21
- Batch traceability

Regulatory compliance

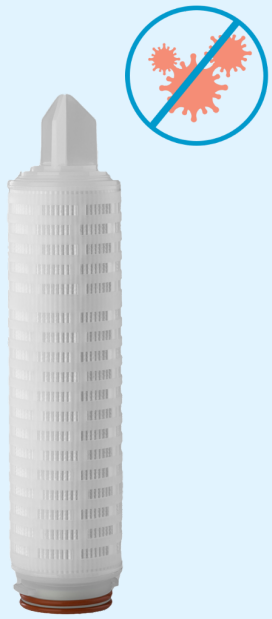
Quality assurance
For each filter cartridge an electronic Certificate of Conformity is available, detailing relevant information and product approvals against the specific batch number and part number for the filter. The filter cartridges are manufactured in a controlled environment.

DFp+ and PFp+ Dry Particle Removal Filter

Highly Efficient After and Final Filtration of Compressed Air and Gasses in Food & Beverage, Pharmaceutical and Industrial Applications

DFp+ and PFp+ filters provide reliable, efficient and safe particle filtration of compressed air and nitrogen over an extended service lifetime. The cartridges feature several layers of polypropylene pleated with a coarse layer down to more fine layers downstream in the filter. This gets integrated in polypropylene support layers and a robust cage with reinforced end cap – making it suitable for demanding operating conditions and sterilization cycles.

DFp+ and PFp+ filters are used in critical applications in Food & Beverage, Pharmaceutical, Micro electronics and chemical industry.



Key Features
- High flow and low pressure drop
- High contamination holding capacity
- Silicone and BPA free
- No fiber migration*
- Reinforced end cap
- No surfactants or binders
- HEPA filtration

Applications
- Compressed air and nitrogen
- Filtration after the dryer – DFp+
- Non sterile final filtration – PFp+
- Tank venting

Quality First
- Manufacturing acc. ISO9001 in a controlled environment
- Materials used meet CFR Title 21
- Batch traceability

Regulatory Compliance

Quality assurance
For each filter cartridge an electronic Certificate of Conformity is available, detailing relevant test data, biological safety information and product approvals against the specific batch number and part number for the filter. The filter cartridges are manufactured in a controlled clean room environment that generally meets the requirements for ISO 14644-1 Class 8 Cleanrooms.

*Component materials meet the criteria for a “non-fiber-releasing filter” as defined in FDA Title 21 CFR 210.3 (b)(6)

PFs+ Sterile Grade Filter

Highly Efficient Sterile-Grade Final Filtration of Compressed Air and Gasses in Food & Beverage, Pharmaceutical and Industrial Applications

PFs+ filters provide reliable, efficient and safe filtration of compressed air and nitrogen over an extended service lifetime. The cartridge consists of layers of hydrophobic impregnated borosilicate glass microfiber filter media. It comes with a robust cage, SS core and reinforced end cap – making it suitable for demanding operation conditions and sterilization cycles.

PFs+ filters are typically used in the final filter stage of critical applications in Food & Beverage and Pharmaceutical industry.

Key Features
- Hydrophobic filter media
- Validated bacteria retention
- High flow and low pressure drop
- Silicone and BPA free
- Reinforced end cap
- HEPA filtration

Applications
- Final filter
- Sterile-grade compressed air and nitrogen
- Sterile tank venting
- In and outlet of fermentation tanks

Quality First
- Manufacturing acc. ISO9001 in a controlled environment
- Comply with EU Regulation No. 1935/2004
- Materials used meet CFR Title 21
- Batch traceability

Regulatory compliance

Quality assurance
For each filter cartridge an electronic Certificate of Conformity is available, detailing relevant test data, biological safety information and product approvals against the specific batch number and part number for the filter. The filter cartridges are manufactured in a controlled clean room environment that generally meets the requirements for ISO 14644-1 Class 8 Cleanrooms.

MFs+ Sterile Grade Membrane Filter

Absolute Class 0 Final Filtration of Gases in Food & Beverage, Pharmaceutical, Microelectronics and Chemical Industrial Applications

MFs+ filters provide the highest grade of reliable, efficient and safe filtration of compressed air and nitrogen over an extended service lifetime. The filter cartridge consists of a single layer of hydrophobic PTFE membrane integrated in polypropylene support layers. It comes with a robust cage, SS core and reinforced end cap – making it suitable for demanding operating conditions and sterilization cycles.

MFs+ filters are used in the final filter stage in critical applications in Food & Beverage, Pharmaceutical, Micro-electronics and chemical industry.

Key Features
- Hydrophobic PTFE membrane
- Absolute removal of particles ≥0.01µm
- Validated bacteria retention
- No surfactants or binders
- Silicone and BPA free
- No fiber migration*
- Reinforced end cap
- ULPA filtration

Applications
- Final absolute Class 0 filter
- Sterilization of compressed air and nitrogen
- Sterile tank venting
- In and outlet of fermentation tanks

Quality First
- Manufacturing acc. ISO9001 in a controlled environment
- Comply with EU Regulation No. 1935/2004
- Materials used meet CFR Title 21 and USP Class VI
- Batch traceability
- Integrity testable

Regulatory compliance

Quality assurance
For each filter cartridge an electronic Certificate of Conformity is available, detailing relevant test data, biological safety information and product approvals against the specific batch number and part number for the filter. The filter cartridges are manufactured in a controlled clean room environment that generally meets the requirements for ISO 14644-1 Class 8 Cleanrooms.

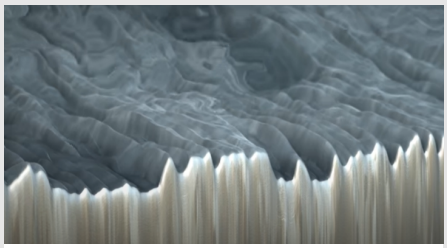
*Component materials meet the criteria for a “non-fiber-releasing filter” as defined in FDA Title 21 CFR 210.3 (b)(6).

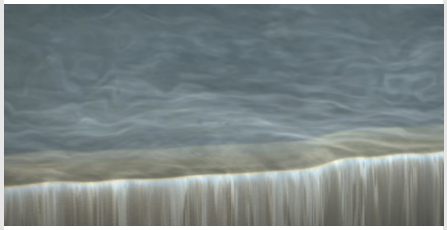
Process Filtration Housing

As part of our comprehensive range of process filtration solutions, we offer a selection of high-quality filter housings designed to meet diverse application needs.

Process Filtration Housing Options

Our filter housings are designed for both small and large applications. Smaller housings, ideal for point of use, can support flow capacities from 25 to 230 liters and are made of SS316 stainless steel, known for its excellent corrosion resistance. For larger operations, our bigger housings can handle flow capacities of 270 to 14,630 liters and are primarily made of SS304 stainless steel. For more challenging environments, such as those involving exposure to corrosive substances or extreme conditions, we recommend an upgrade to the more corrosion-resistant SS316 stainless steel option.



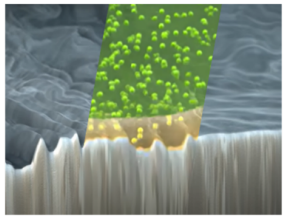


Optimized Surface Roughness for Hygienic Applications

Most housings have a standard roughness range from Ra 3µm down to 0.8µm, which is suitable for general applications. Lower roughness values mean the surface is more even, which helps prevent residue or particles from adhering, making it easier to maintain clean environment. To meet stricter hygiene requirements, our electropolished housing option is the right choice. This advanced process lowers the surface roughness to Ra 0.4µm, reducing contamination risks and enhancing hygiene standards in industries such as food and pharmaceuticals.

Electropolished Housings for Sterilization Processes

Electropolished single cartridge housings are designed with a sanitary surface finishing and come with sanitary flanged connections like TC (TriClamp), which include drain and vent ports. If the filter will undergo sterilization cycles, we strongly recommend choosing the electropolishing option as it reduces bacteria or microorganism buildup on the housing surface.



Connection Range for Housing Units

The connections range from G, NPT, and TC (TriClamp) for smaller units, which are suited for more localized or compact setups. For larger units, DIN and ANSI flanges are suitable for handling higher capacities. To ensure reliability in sensitive applications, all housings are equipped with EPDM sealings, specifically designed to prevent contamination, and are silicone-free to meet strict hygiene requirements.

C7 Cartridge: Safe and Reliable Assembly

The C7 cartridge is engineered with precision to maximize safety and reliability in housing systems. Its double O-ring design provides an additional layer of defense against leakage, ensuring the integrity of the connection under varying operational conditions. At the bottom of the cartridge, a double bayonet mechanism offers safe and reliable assembly, preventing misalignment during installation. The fin located at the top is designed to firmly anchor the cartridge into the housing's pressure plate, providing consistent performance even under pressure fluctuations. Together, these carefully integrated features guarantee a leak-free and reliable fit, supporting optimal system functionality.

Pressure Gauge Options for Optimized Performance

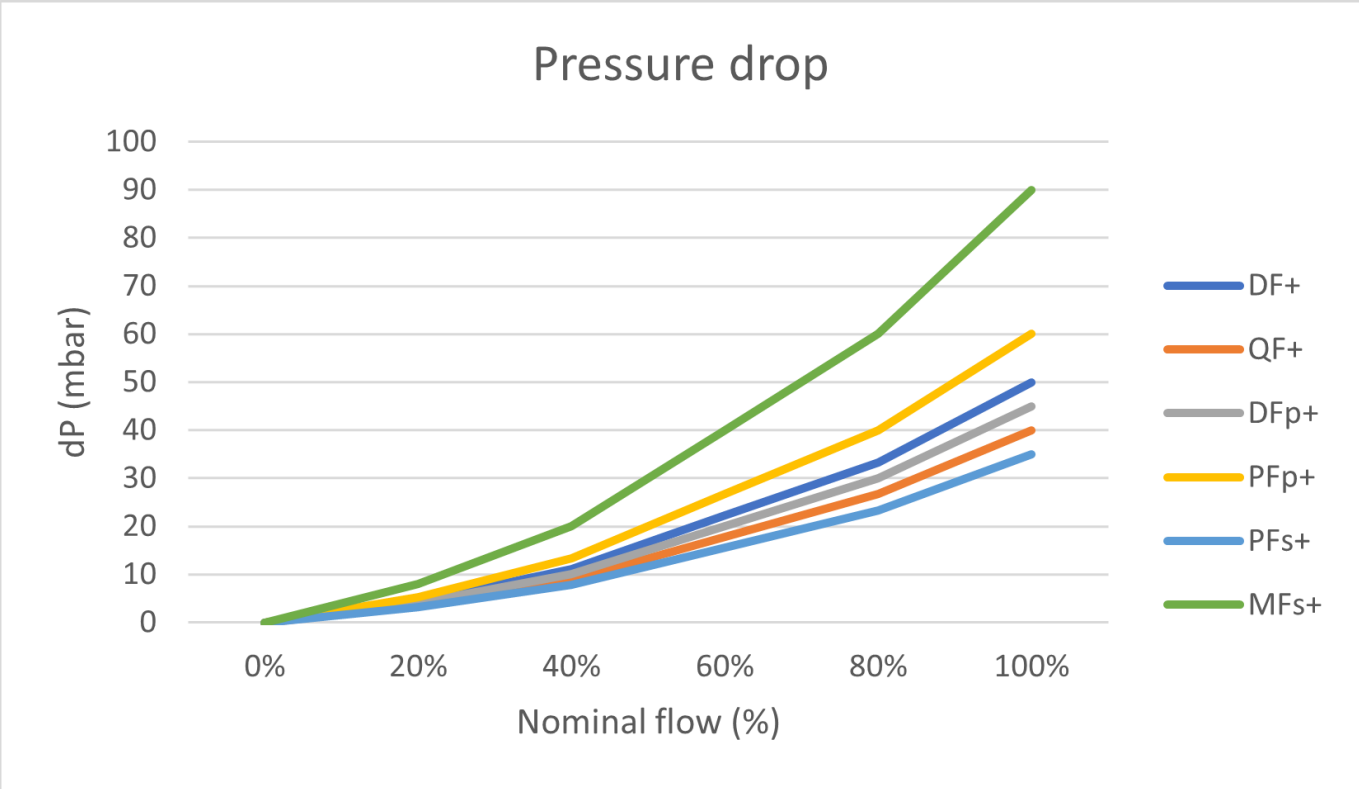
An optional pressure gauge with Smartlink functionality is available, allowing users to monitor and optimize system performance through connected designs. For environments that demand higher durability, the SS316 option is recommended, as it provides enhanced corrosion resistance and reliability under extreme conditions. These features ensure the gauge is designed to meet specific operational needs.

Housing Specifications

Standard scope				Extended scope			
Name	Size	Connection	Cartridge size	Name	Size	Connection	Cartridge size
l/s	cfm			l/s	cfm		
IH25	53	G / NPT / TC 3/4”	5”				30”
IH90	191	G / NPT / TC 1”	10”				
IH170	360	G / NPT / TC 1 ½”	20”	IH230	487	G / NPT / TC 2”	
IH270	572	G / NPT 2”	10”				
IH520	1102	G / NPT 2 ½”	20”	IH730	1547	DN 80 / ANSI 3”	
IH880	1865	DN100 / ANSI 4”	20”	IH1230	2606	DN100 / ANSI 4”	
IH1200	2543	DN100 / ANSI 4”	20”	IH1630	3454	DN100 / ANSI 4”	
IH1600	3390	DN 150 / ANSI 6”	20”	IH1830	3877	DN 150 / ANSI 6”	
IH1800	3814	DN 150 / ANSI 6”	20”	IH2930	6208	DN 150 / ANSI 6”	
IH3000	6356	DN200 / ANSI 8”	20”	IH4030	8539	DN200 / ANSI 8”	
IH3800	8051	DN200 / ANSI 8”	20”	IH5230	11081	DN200 / ANSI 8”	
IH4700	9958	DN200 / ANSI 8”	20”	IH6330	13412	DN200 / ANSI 8”	
IH5800	12289	DN250 / ANSI 10”	20”	IH8230	17438	DN250 / ANSI 10”	
IH7000	14832	DN250 / ANSI 10”	20”	IH9430	19980	DN250 / ANSI 10”	
IH8400	17798	DN300 / ANSI 12”	20”	IH11730	24854	DN300 / ANSI 12”	
IH10000	21188	DN300 / ANSI 12”	20”	IH13230	28032	DN300 / ANSI 12”	
IH11200	23731	DN300 / ANSI 12”	20”	IH14630	30998	DN300 / ANSI 12”	

Product specifications

Pressure Drop



Pressure connection factor

Working pressure in bar (g)	1	2	3	4	5	6	7	8	10	12	14	16
Correction factor	0.38	0.53	0.65	0.75	0.83	0.92	1	1.06	1.2	1.31	1.41	1.5

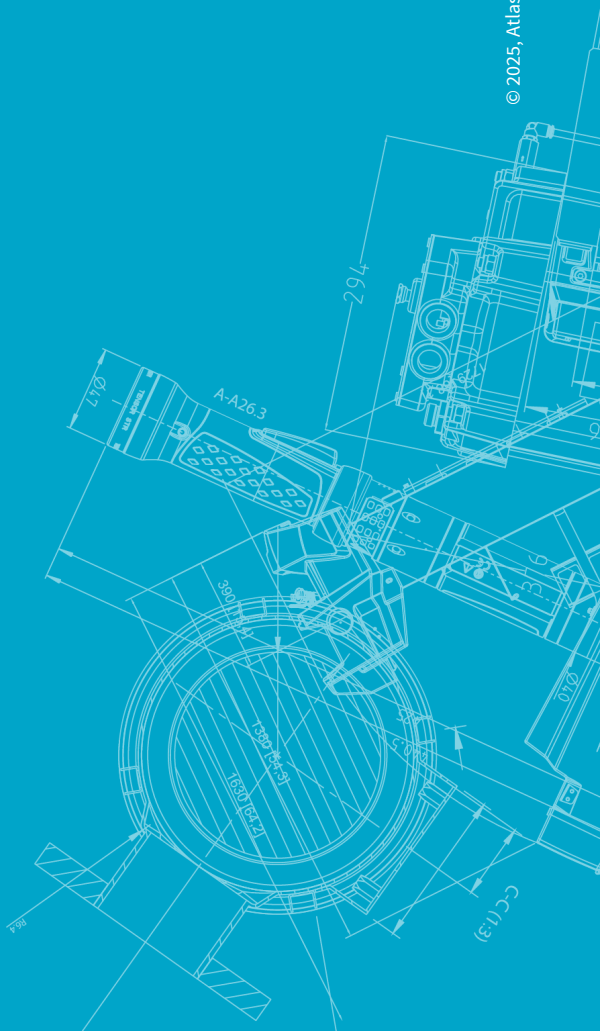
Specification table

	DF+	QF+	DFp+	PFp+	PFs+	MFs+
Materials of construction						
Filter media	Glass microfiber	Activated carbon impregnated polyester	Polypropylene	Polypropylene	Impregnated Borosilicate matrix	Hydrophobic PTFE membrane
Core/Cage	Polypropylene	Polypropylene	Polypropylene	Polypropylene	SS core	SS core
End caps	Polypropylene					
O-rings	EPDM					
Operating conditions						
Max operating temperature	80°C	80°C	80°C	60°C	80°C	80°C
Change out differential pressure	350mbar					
Advised element lifetime	8000hrs/1 year	1000hrs/1 year	8000hrs/1 year	8000hrs/1 year	8000hrs/1 year	8000hrs/1 year
Filter particle rating	1 µm	NA	1µm	0.1µm	0.02µm	0.01µm
Performance						
Particle rated efficiency	>99,999%	NA	>99.999%	99,987%	>99.999%	>99.999%
Nominal Clean Pressure drop	50mbar	40mbar	45mbar	60mbar	35mbar	90mbar
HEPA rating	E11	NA	E11	H13	H14	U16
Dimensions						
Diameter	68,5mm	66,5mm	68,5mm	68,5mm	68,5mm	68,5mm
Typical surface area (10" cartridge)	0.23 m2	0,24 m2	0,77 m2	0,77 m2	0,42 m2	0,85 m2
Available cartridge sizes	5 – 10 – 20 – 30"					

Expected sterilization cycles

	DF+	QF+	DFp+	PFp+	PFs+	MFs+
Autoclave sterilization	40 cycles @ 121°C/15min		20 cycles @ 125°C/30min (dP<0.3bar)	20 cycles @ 125°C/30min (dP<0.3bar)	100 cycles @ 140°C/20min	400 cycles @ 130°C/30min
Inline steam (SIP) sterilization	40 cycles @ 121°C/15min		20 cycles @ 125°C/30min (dP<0.3bar)	20 cycles @ 125°C/30min (dP<0.3bar)	100 cycles @ 140°C/20min	100 cycles @ 145°C/30min

WWW.ATLASCOPCO.COM



Atlas Copco AB
(publ) SE-105 23 Stockholm, Sweden
Phone: +46 8 743 80 00
Reg. no: 556014-2720