



The ultimate filtration & drying technology

Filter Performance Validation

Validated to ISO 12500-1:2007

Filters for Compressed Air – Test Methods – Part 1: Oil Aerosols

Independent test report for the Alpha Series
compressed air and gas filters

Introduction

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Market leadership

Walker Filtration is a world leader in the manufacture of filtration products for use across a wide range of industries. The Company has a truly enviable and technically advanced product range including compressed air dryers, filter housing and elements, medical air dryers and bespoke filtration products.

Walker Filtration continues to lead this competitive sector through its ability to provide high quality products, exceptional technical expertise, innovation and an excellent standard of customer service.

Walker Filtration is a pioneer within the filtration industry, introducing many new technologies, thanks to its passion for driving research forward.

Walker Filtration has remained true to its goal of delivering a market leading product range that provides the customer with reliable and efficient solutions to their filtration needs.



Choosing the right filter

Deciding on the correct filter and element combination to use within each application can have huge implications. Quality must be the number one priority. Inferior elements can cause corrosion, contamination and add unnecessary operating costs to your compressed air system.

Ongoing investment into research and development has resulted in the manufacture of elements using only the highest quality engineered components.

Filters from Walker Filtration ensure continuous high filtration efficiency with reduced power loss due to the selection of new and improved filter media. Custom made borosilicate microfibre glass filter media and chemically treated anti re-entrainment layer ensure optimum performance. The elements are engineered to provide continued operation at elevated temperatures with both mineral and synthetic oils.

Flexibility and reliability

A wide range of high performance filtration equipment, elements and spares coupled with reliable technical service makes Walker Filtration the natural choice for many industry leaders. The Walker Filtration brand name, known for providing consistent quality and innovation has become synonymous with providing the highest possible standards.

The Company's products have been adopted by a diverse range of market sectors including electronics, oil and gas, automotive and clean room environments.

Specialist in-house manufacturing capabilities ensure the Company's ability to deliver the right solution including exacting 'LABSfrei' for automotive standards.

The customer is at the forefront, their demands are quickly met, however complex. Pro-active research continues to push the accepted boundaries of filtration technology.



Construction

Filter Element Design and Materials

A dynamic approach to design, material selection and construction means that Walker Filtration is at the forefront of filtration technology. The Company's Research and Development team constantly identify, evaluate and implement enhancements to improve the ease of use and performance of their market leading product range.

Drop-Fit Design for ease of installation, servicing and maintenance. Eliminates the need for troublesome tie rods.

Durable, Chemical Resistant End Caps injection moulded from nylon then bonded to the filter core with a high strength two part polyurethane potting resin for maximum strength.

Colour Coded End Caps provide easy and accurate filtration grade indication.

Stainless Steel perforated support cylinders are corrosion resistant, twice as strong as expanded and galvanised steel, with the ability to withstand pressure in either direction.

Extra Stainless Steel inner support on the larger flow elements is provided by an additional coil spring spot welded to the inner cylinder. This ensures the element meets the particular demands of 'outside to in' flow and does not rupture causing downstream contamination.

Element End Cap label on base indicates product part number for easy model identification and re-ordering.

Air Distribution Duct for uniform airflow distribution through the media providing improved element utilisation and low operating differential pressure.

Double O-ring Seal provides additional security against contaminant bypass. The double O-ring ensures perfect sealing within the filter housing whilst withstanding temperatures of 120°C.



This feature is a standard requirement for filter products installed within pharmaceutical environments where O-ring bypass has been identified as a significant risk for contamination for many years.

Annular Location Ring on lower end cap prevents element vibration and improves stability in reverse flow dust removal applications. In addition, its design also improves oil drainage.

Support Media offers protection with air flow in either direction. This non-woven glass fibre also enhances the strength of the filter pack and increases filter life.

Anti Re-Entrainment Layer is chemically treated and custom engineered. It collects coalesced oil from the media pack allowing swift drainage to the quiet zone of the filter bowl, preventing oil carry-over.



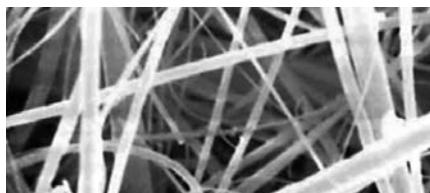
Unlike reticulated foams which degrade causing downstream contamination, this polyester material has a high tensile strength and withstands temperatures up to 120°C. All elements are suitable for use with mineral and synthetic oils.

New improved ultrasonic weld process which, combined with the improvement in tensile strength offered by the anti re-entrainment layer, gives a truly robust and homogenous bonded seam.



Deep Bed Spiral Wrapped technology is used to form the media pack. This offers low differential pressure, extremely high oil removal efficiencies and proven continuous performance with long service life.

Borosilicate Microfibre Glass Media has been specifically developed for Walker Filtration. This high quality, custom engineered material is able to



withstand high temperatures due to its immobilised structure. It is also completely inert and is immune to degradation. With high gamma factor capabilities this filter media is specially treated to be oleophobic and hydrophobic with sub-micron fibre diameters and an extremely high voids volume.

Quality Control. Full traceability is provided by ink jet marking specific manufacturing codes on every filter element. This complies with the Company's ISO 9001-2008 manufacturing procedures. All elements are supplied with a Certificate of Conformity.



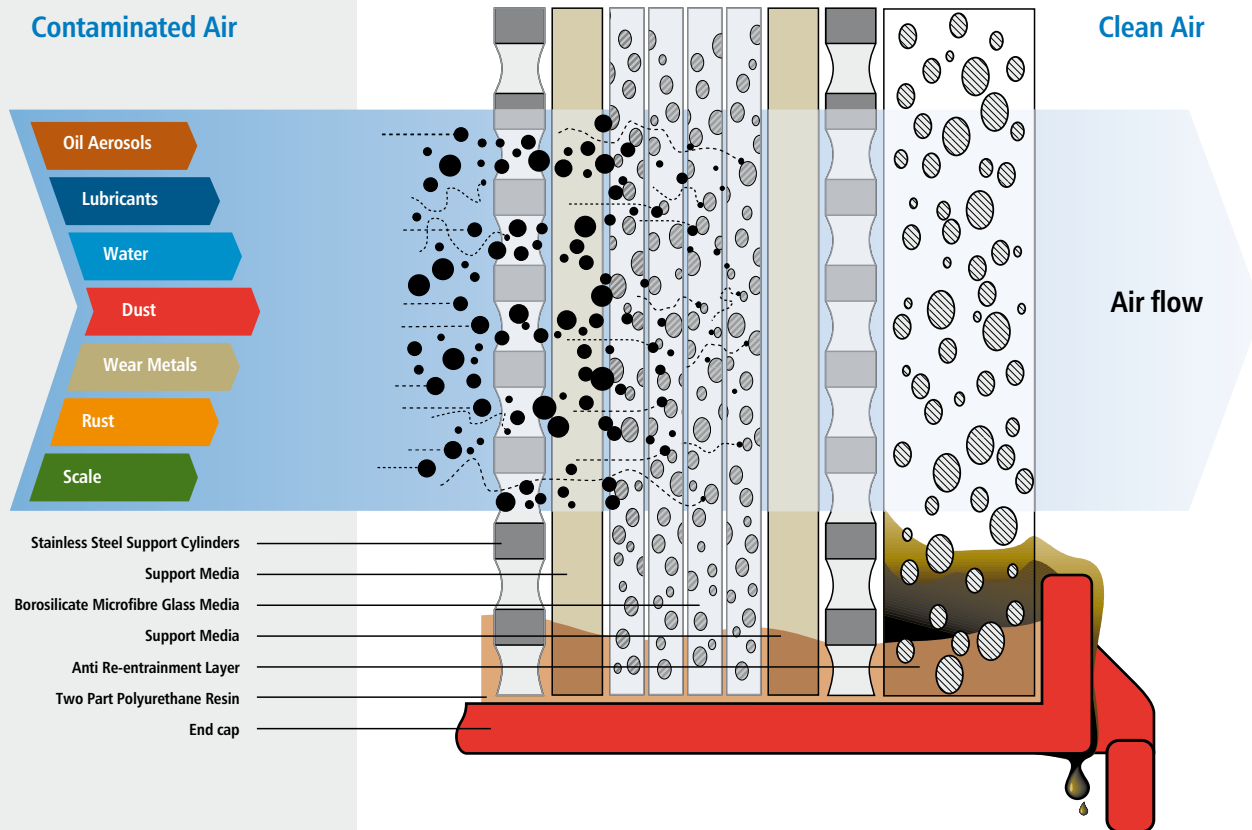
Performance

Filter Collection Mechanisms

Effective filtration takes place in five main stages facilitated by the single fibre collection mechanisms illustrated below and explained on the page opposite.

Each mechanism is effective in eliminating certain contaminants at varying particle sizes collected on individual fibres in the filter media.

These particles are captured and coalesce into larger droplets, migrating through the media to be drained away.



Five Physical Methods of Filtration

1. Gravimetric Sedimentation

Gravimetric sedimentation generally affects only larger particles of approximately 2 microns or larger, and is usually a contributor to capture efficiency only at low flow rates. Particles in this scenario are of a significant magnitude as to be affected by gravity and therefore cross the flow streamlines to be captured by the fibres.

2. Inertial Impaction

Inertial impaction occurs when small particles (usually less than 2 microns) penetrate through the surface of the filter media but cannot negotiate the tortuous path within the media and are eventually captured by the fibres.

3. Direct Interception

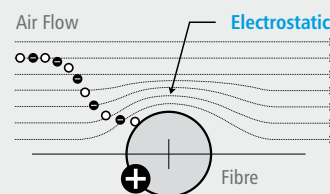
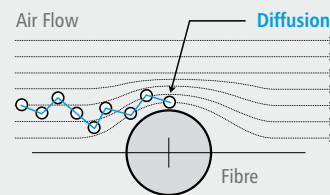
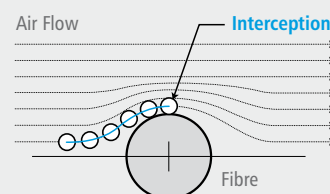
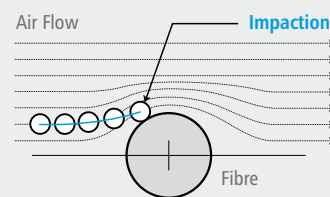
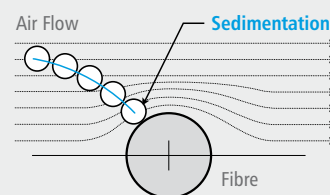
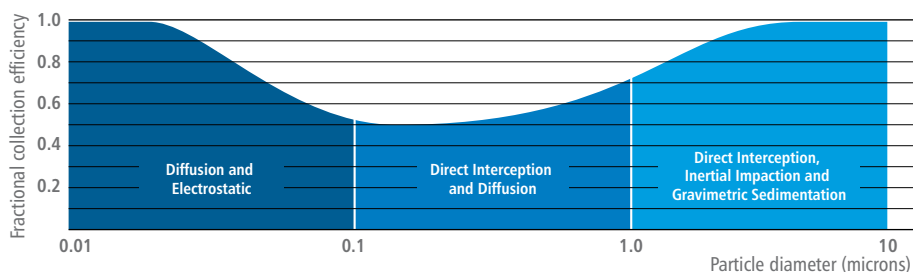
Particles larger than the mean pore size of the filter media (approximately 0.1 microns) will simply impact directly onto the surface of the fibre matrix. Walker Filtration utilises glass micro-fibre filter media with a mean fibre diameter of 0.5 micron.

4. Diffusion (Brownian Motion)

It has been established that very small particles (less than 0.1 to 0.2 microns) move in a very random and erratic manner within the airstream. When particles are so small their motion is often violent and collisions with the fibre matrix are therefore increased.

5. Electrostatic

Particles can be deposited (captured) via electrostatic deposition if electrical charges on either the particle or the filter, or both, create attractive electrostatic forces of sufficient magnitude to attract the particle to the filter surface. The electrostatic capture mechanism can aid the other capture mechanisms, especially interception and diffusion.

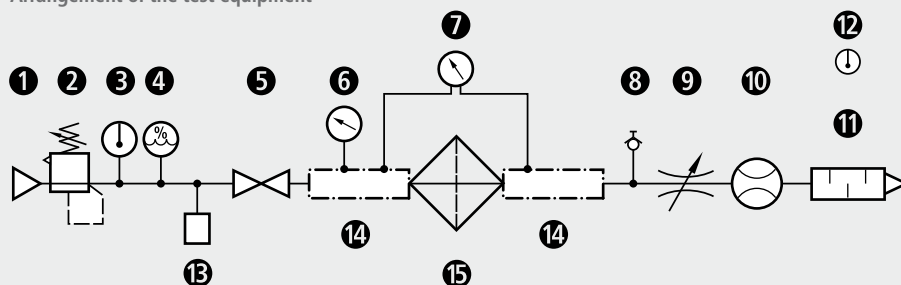


Test Report

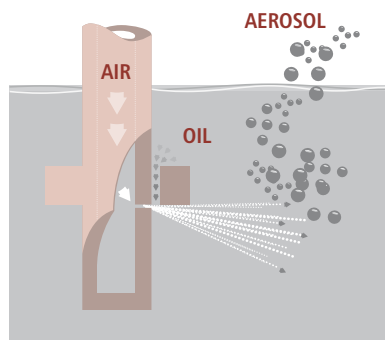
Introduction

This document details the testing methodology and performance characteristics for a series of oil aerosol removal experiments performed on Walker Filtration Grade XA and X1 Alpha Series coalescing filter elements. Target downstream oil aerosol concentrations are 0.01 mg/m³ and 0.1 mg/m³ respectively in order to meet class 1 and 2 of ISO 8573-1:2007 (Compressed Air - Contaminants and Purity Classes).

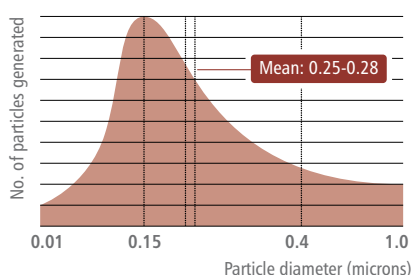
Figure 1.
Arrangement of the test equipment



Aerosol generation by Laskin nozzle



Polydispersed aerosol distribution



- | | | |
|----------------------------------|----------------------------------|---|
| 1. Compressor air supply | 6. Pressure sensing/measuring | 11. Silencer |
| 2. Pressure regulator | 7. Differential pressure gauge | 12. Ambient temperature sensing/measuring |
| 3. Temperature sensing/measuring | 8. Sample test point | 13. Aerosol generator |
| 4. Dew point sensing/measuring | 9. Multi-turn flow control valve | 14. Pressure measuring tube |
| 5. Full-flow ball valve | 10. Flow sensing/measuring | 15. Filter under test |

Method

Filter testing was carried out in accordance with the protocols of ISO 12500-1:2007 (Filters for Compressed Air – Test Methods – Part 1 : Oil Aerosols). The general principle is to generate a known challenge concentration of oil aerosol which is introduced to the filter. The aerosol content is measured downstream thereby quantifying the efficiency and removal performance. The test layout, equipment and measurement points are shown in figure 1 above. In order to characterise worst case, all filter elements selected for testing were determined on the basis of having the highest gas flow velocities (media face velocity) within the range.

Filter testing was carried out using compressed air at the rated inlet flow and pressure (7 barg) of the unit(s) under test. Hydrosafe Grade VG46 (ISO 3448) oil was aerosolised to challenge concentrations of 10 mg/m³ in the case of Grade XA filters and 40 mg/m³ for grade X1 filters.

Aerosol generation was by means of a Laskin nozzle which produced a polydispersed aerosol distribution with an average particle size of between 0.15 microns and 0.4 microns by particle count. Care was taken to ensure that all of the oil challenge concentration was delivered to the filter in aerosol form and within the range detailed above, and not as wall flow.

Test Report

Pressure and Flow Measurements

The following measurements were taken and recorded for each filter under test:

- Flow rate, Pressure, Temperature and Humidity
- Differential Pressure – Empty Housing
- Differential Pressure – Complete Housing (Dry Conditions)
- Differential Pressure – Complete Housing (Saturated Conditions)
- Oil Aerosol Challenge
- Downstream Oil Aerosol (Filter Performance)

Before taking measurements in the saturated condition, the filter element was allowed to reach a state of equilibrium by conditioning the filter under test using the challenge aerosol concentration. Equilibrium was considered to have been achieved when liquid oil is observed in the bottom of the filter housing in which the filter under test is contained and the rate of change in pressure drop was less than 1% per hour of the measured pressure drop.

At this point the pressure drop across the test filter was recorded and the oil aerosol carry-over measured.

Determination of Oil Aerosol Concentration

The determination of oil aerosol concentration both upstream (challenge) and downstream was carried out using a calibrated light-scattering aerosol photometer as specified in ISO 12500-1 using compressed-air sampling methods detailed by ISO 8573-2, i.e. iso-kinetic sampling.

Results

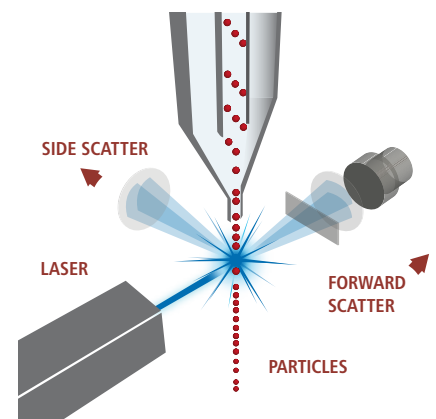
Oil Removal Performance

Filter Grade	ISO 8573-1:2001 Quality Class	Specification	Test Results
Grade XA	1	0.01 mg/m ³	0.007 mg/m ³
Grade X1	2	0.10 mg/m ³	0.050 mg/m ³

Conclusion

In terms of oil aerosol removal performance, Alpha Series grade XA and X1 filter elements, when tested in accordance with ISO 12500-1 challenge conditions at their rated flow, exceed target performance and allow users to meet the relevant compressed air quality classes stated in ISO 8573-1:2001.

Principles of particle detection



Quality

Compressed Air Purity Standards

The ISO 8573 group of International Standards is used for the classification of compressed air. It also provides the test methods and analytical techniques for each type of contaminant.

The table below summarises the maximum contaminant levels specified in ISO 8573 Part 1 (2001) for the various compressed air quality classes.

Each compressed air classification can be achieved by installing a specific filter grade or a combination of filter grades, depending upon required performance (ISO 8573-1 is currently under review and values are expected to be redefined in 2010).

	Solid Particles					Water		Oil
Purity Class	maximum number of particles per m ³			particle size	concentration	vapour	liquid	total oil (aerosol, liquid and vapour)
	0.1-0.5 micron	0.5-1 micron	1-5 micron	micron	mg/m ³	pressure dewpoint	g/m ³	mg/m ³
0	As specified by the equipment user or supplier							
1	100	1	0	-	-	≤ -70°C	-	≤ 0.01
2	100000	1000	10	-	-	≤ -40°C	-	≤ 0.1
3	-	10000	500	-	-	≤ -20°C	-	≤ 1
4	-	-	1000	-	-	≤ +3°C	-	≤ 5
5	-	-	20000	-	-	≤ +7°C	-	-
6	-	-	-	≤ 5	≤ 5	≤ +10°C	-	-
7	-	-	-	≤ 40	≤ 10		≤ 0.5	-
8	-	-	-	-	-	-	0.5 < C _w ≤ 5	-
9	-	-	-	-	-	-	5 < C _w ≤ 10	-

The ISO 8573 standard

ISO 8573-1	Contaminants and Purity classes
ISO 8573-2	Test Methods for Oil Aerosol Content
ISO 8573-3	Test Methods for the Measurement of Humidity
ISO 8573-4	Test Methods for the Solid Particle Content
ISO 8573-5	Test Methods for Oil Vapour and Organic Solvent Content
ISO 8573-6	Test Methods for Gaseous Contaminant Content
ISO 8573-7	Test Methods for Viable Microbiological Contaminant Content
ISO 8573-8	Test Methods for Solid Particle Content by Mass Concentration
ISO 8573-9	Test Methods for Liquid Water Content

The ISO 8573 standard is being re-drafted by the working group of the ISO Technical Committee (ISO TC118/SC4/WG1) of which Walker Filtration are active members.

The ISO 12500 standard

ISO 12500 is a new series of standards for compressed air filter testing and has been introduced to complement the existing ISO 8573 series, and consists of four parts:

ISO 12500-1	Oil Aerosols	ISO 12500-2	Oil Vapours
ISO 12500-3	Particles	ISO 12500-4	Water

Parts 3 and 4 are currently being formulated by the working group of the ISO Technical Committee (ISO TC118/SC4/WG1) of which Walker Filtration are active members.



Accreditation

Walker Filtration's continued commitment to improvement and business excellence is reflected by their commitment to work with notified bodies and to industry standards to ensure the highest levels of quality in all that they do.

Filter Element Validation

Filter element performance has been tested to international standard ISO 12500, to provide filtered compressed air to ISO 8573-1 (the international standard for compressed air quality). The result has been verified by IBR, an accredited independent laboratory.

✓ **ISO 8573-1**
Compressed air purity standard

✓ **ISO 12500 Series**
International standard for compressed air filter testing

Filter Housing Validation

Walker Filtration's filter housings are manufactured and tested to meet the requirements of the Pressure Equipment Directive (97/23/EC). This has been independently verified and validated for performance by Lloyds Register.

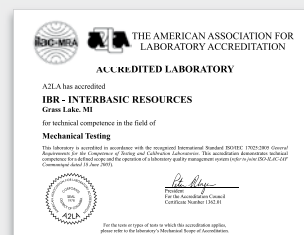
✓ **Notified Body (97/23/EC)**
Lloyd's Register EMEA – Notified Body No 0038.
71 Fenchurch Street, London, EC3M 4BS. England

ISO 9001 Quality Management Systems

Walker Filtration is accredited to ISO 9001-2008. This certification is focused on providing a framework for consistent manufacturing quality with performance objectives set at executive level and arrived at through adherence to predefined business procedures.

Walker Filtration measure and review quality on a daily basis from goods inwards, through a vendor rating system evaluating core suppliers, to detailed inspection of all manufactured products produced for despatch to customers.

✓ **Notified Body (Quality Systems): ISO 9001 – LRQ0930553**
Lloyd's Register EMEA – Notified Body No 0038.
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The ultimate filtration & drying technology

OXYGEN FILTERS

Guaranteed safe and reliable filtration.



Oxygen Generation & The Need For Specialist Filtration



Oxygen is one of the basic and abundant chemical elements, making up 21% of the earth's atmosphere, and is vital for most life forms on earth. At standard pressure and temperature, oxygen is a colorless, odorless, and tasteless gas with the molecular formula O_2 .

Over one hundred million ton of O_2 is extracted from the air every year for use in medical and industrial applications; Oxygen is an essential medicine required at all levels of the health care system for resuscitation, surgery and for various therapies. Only high quality medical grade oxygen should be given to patients, and international standards for the production of medical oxygen should be followed for patient protection.

On-site Oxygen Generation

Oxygen generators offer a cost-effective, reliable, and safe method of producing gaseous oxygen from compressed air on-site. There are several different methods used to produce oxygen on-site and, whether this is through Pressure Swing Absorption (PSA), Vacuum Swing Absorption (VSA), Cryogenic Distillation, or any other method, it is vital that purity standards are met.

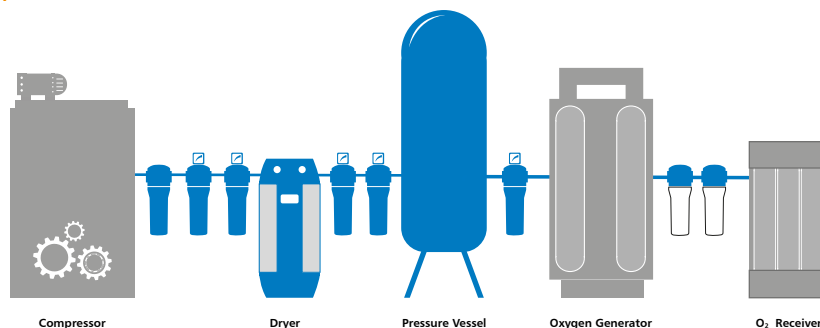
The Importance of Specialist Filtration in Oxygen Generation

High quality filtration for oxygen gas generation is essential, not only to ensure the delivery of reliable compressed air and gas in line with the purity standards required for your end application, but also to protect the integrity and safety of your gas generation systems. Walker Filtration can offer the right compressed air and gas treatment solution with coalescing, particulate, and medical sterile filters, providing high quality inlet air prior to entering an oxygen generator, as well as the required filtration after the generation process.

Hazards & Risks of Concentrated Oxygen

Oxygen enrichment of the atmosphere, even by a few percent, considerably increases the risk of combustion. Because oxygen enriched air is highly reactive, it is imperative all apparatus used in the manufacture, distribution and utilization of oxygen complies with applicable regulations, and does not contain or introduce materials that could be combustible when in contact with the gas. This includes the filtration used within an oxygen generation system. Walker Filtration's Oxygen Filters are manufactured using a state of the art environmentally clean controlled area. This ensures no contamination can be introduced into the oxygen application.

Walker Filtration provides complete a safe and reliable filtration solution, cleaned in accordance with ASTM G93/ G93M.



The above schematic represents a typical oxygen generation flow path including oxygen service/non-oxygen service filter installations, pre and post oxygen generator. Please contact Walker Filtration Sales Department to discuss your specific requirements and for guidance on recommended grades of filtration to achieve optimized air/gas purity.

Medical Oxygen



Medical oxygen is recognized as an essential medicine in the field of healthcare and has been used medically for over 100 years. It is crucial to treatments for critically ill patients, especially those with respiratory symptoms and low levels of oxygen in the bloodstream.

When generating medical oxygen onsite in Europe, it is necessary to comply with the specifications given in the European Pharmacopoeia monographs for "Oxygen 93 Percent". Oxygen 93 Percent is a medicinal gas produced from compressed air, containing no less than 90% percent, and no more than 96% percent of O₂.

Worldwide demand for medical oxygen has seen a significant and ongoing increase in recent years, with the prevalence of respiratory illnesses and diseases, and viruses that cause respiratory symptoms becoming more and more common. Because of this, the requirement to provide a reliable and limitless supply of oxygen on-site that can adjust according to requirements has also seen an increase in demand.

Medical Sterile Grade Filtration

It is essential that standards to produce medical oxygen are followed and quality components, including filtration, are used in the generation process.

When it comes to patient care, quality and reliability are paramount.

Walker Filtration Medical Sterile Oxygen Filters meet the required cleanliness, material, and filtration standards for medical oxygen, providing safe filtration to ensure that gas purity standards are met.

Delivering clean air and oxygen where it matters most.

Our Medical Sterile Filters are designed to exceed the requirements of HTM 02-01 medical gas pipeline systems and are cleaned for oxygen service in accordance with ASTM G93/G93M.



Industrial Oxygen



Oxygen generation is essential to many industrial applications where it is necessary to have consistent, dependable, secure supplies of high-purity oxygen. In most industrial applications, the level of oxygen purity required is above 95%. Industrial applications include but are not limited to:

Metallurgy

Modern steelmaking relies heavily on the use of oxygen to enrich air and increase combustion temperatures in furnaces, as well as to replace coke with other combustible materials. Used with fuel gases in gas welding and gas cutting, oxygen must be of high quality to ensure a high cutting speed and a clean cut. Large quantities of oxygen are also used to make other metals, such as copper, lead, and zinc.

Food & Beverage

The concentration of ambient air into oxygen and ozone is key to the environmental and sustainable production in the food & beverage industry, including sanitization of process equipment, food storage, and water bottling. Walker Filtration Alpha Series Oxygen Filters are produced from high quality, non-toxic, naturally inert raw materials and constituents, in accordance with FDA requirements for food contact as per Code of Federal Regulation (CFR), Title 21.

Aquaculture

High purity oxygen is crucial to modern day fish farming. Correctly dosed pure oxygen is essential to livestock yields, growth potential and their overall health.

Glass and Ceramics Production

Oxygen is used instead of air to optimize combustion and elevate flame temperatures in glass melting tanks. This results in better control of heating patterns, lower fuel consumption, and reduction in particulate and NOx emissions.

Semiconductors

Oxygen is used for the oxidation of silicon, one of the most critical processes in all of semiconductor manufacturing.

Pulp & Paper

In the manufacture of high-quality bleached pulp, oxygen is used in the bleaching process. New processes using oxygen, rather than chlorine, reduce water pollution and lowers costs.

Wastewater Treatment

In industrial and municipal wastewater treatment plants, oxygen is injected during the treatment process. Also known as the activated sludge process, pumping oxygen into the wastewater tank encourages the growth of bacteria and speeds up the bio-degradation process which breaks down organic matter.



The Solution

Walker Filtration's Oxygen Filters are cleaned for oxygen service in accordance with ASTM G93/G93M, delivering reliable filtration in line with the purity standards required for your end application.

Walker Filtration's Alpha Oxygen Filters are designed specifically for use in the oxygen generation process. They offer reliable and energy efficient filtration in accordance with the ASTM G93/G93M Standard Guide for Cleanliness Levels and Cleaning Methods for Materials and Equipment Used in Oxygen-Enriched Environments.

Providing high quality air pre and post oxygen generator, our oxygen filters are available in both Coalescing and Particulate (dust) filtration grades from 5 – 0.01 micron, as well as Medical Sterile.

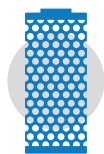
They combine market leading Alpha filtration technology to ensure energy efficiency and superior filtration performance, with a specialized manufacturing process and strict cleaning methods to guarantee they do not contain or introduce materials that could be combustible when in contact with concentrated oxygen.

With flexible pipe sizes and flow rates to suit specific customer requirements, whatever your oxygen generator setup – we have a filtration solution for you.



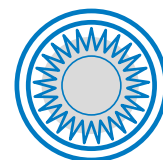
Flow-Optimized Design

- Improved air flow characteristics
- Reduced energy consumption
- Reduced cost of ownership



Increased Performance

- Significantly reduced differential pressure < 1.8 psi (125 mbar)
- Up to 300 psig (20.7 barg) maximum working pressure
- Exceptional oil aerosol and particulate removal



Filtration Technology

- Deep pleated media
- Housing design for flexible installation and simplified serviceability

Alpha Oxygen Range - Features & Benefits

Available in 1/8" to 3" threaded NPT, Rp (BSP Parallel) or Rc (BSP Taper) port sizes, with flow rates of 6 – 1500 scfm (10 – 2550 Nm³/hr), Walker Filtration Oxygen Filters are suitable for worldwide installation. With a maximum temperature of 248°F (120°C) and a maximum operating pressure of up to 300 psig (20.7 barg).

Tested and validated in accordance with ISO 12500-1 & ISO 8573-1: 2010, Walker Filtration Oxygen filter housings and elements are manufactured using only the highest quality materials that have been specifically chosen to ensure they do not contain or introduce materials that could be combustible when in contact with oxygen gas and deliver the optimum filtration performance.



Product Safety In Mind

Single-start thread and fixed thread engagement stop guarantees safe housing closure and prevents over tightening. Lock indication arrows ensure effective sealing.

Robust Design and EP Corrosion Protection

Featuring a durable and hard wearing electrophoretic coating on both internal and external faces, followed by a tough polyester powder coating, Alpha range filters offer corrosion resistance and have been salt spray tested to ISO 9227:2012.

Simplified Serviceability

Designed with servicing and maintenance in mind, the new profiled bowl design and hexagonal spanner locator coupled with the internal unique push fit element ensures a simple, quick and reliable servicing process.





Modular Filter

Low cost connecting kits and new filter head design enables easy close coupling assembly and minimizes space requirements.

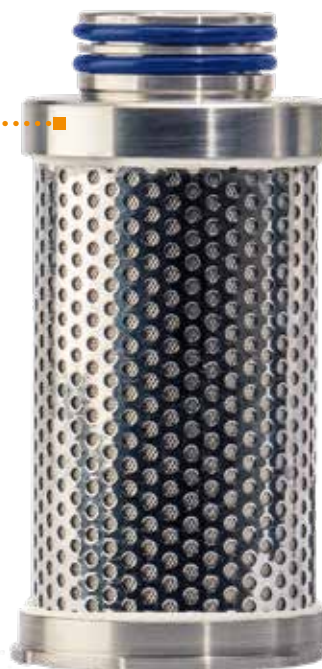
Market Leading Performance

With three coalescing and particulate filtration grades available: 5 micron, 1 micron, and 0.01 micron, Alpha elements are energy efficient and provide class leading performance. An advanced filter design, combined with deep pleated custom engineered filtration media on general purpose and high efficiency grades, and a unique anti re-entrainment layer for exceptional oil coalescence, significantly reduces differential pressure ensuring low total cost of ownership.

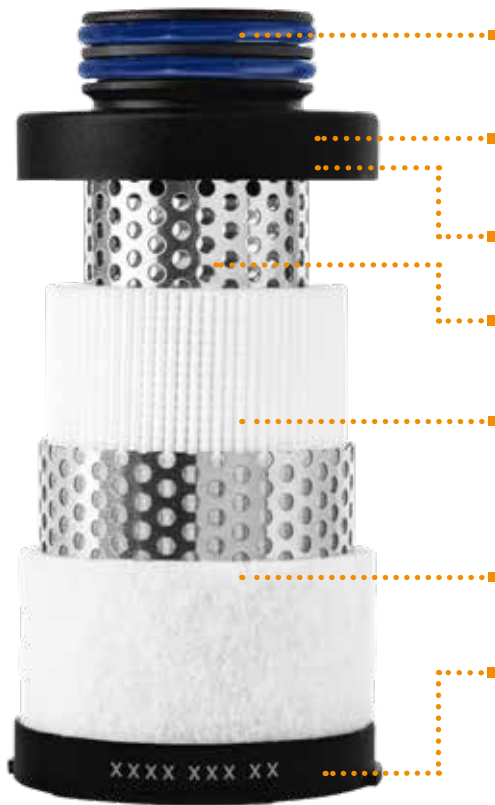


Medical Sterile Grade Filtration

Designed to exceed the requirements of HTM 02-01 medical gas pipeline systems, the Walker Filtration Oxygen range also includes Medical Sterile 0.01 micron filters. Manufactured from cast aluminum alloy for enhanced strength and protection, Medical Sterile elements are guaranteed for a minimum of 100 sterilizations at 248°F (120°C) - ensuring your oxygen pipeline is free from bacteria and other sub-micron particles.



Features & Benefits



Blue Viton O-rings, for easy identification of Oxygen Filter Elements that are suitable for use in oxygen enriched air flow

Push Fit Walker Filtration Elements ensure perfect sealing within the filter housing and assist with easy removal

Corrosion resistant end caps injection molded from glass filled nylon for added durability

High quality stainless steel cylinders provide corrosion resistance and deliver strength and stability to the element

Custom engineered Hydrophobic & Oleophobic Borosilicate media specifically developed to deliver consistently low pressure drop, pleated element construction for high dirt holding capacity and an increased surface area is used on general purpose and high efficiency filtration grades

Custom outer drainage layer prevents oil carryover and improves coalescence performance

Full traceability and easy identification Laser etched marking enables easy grade and part number identification, branding, and batch code traceability in line with our ISO9001 manufacturing process

Performance Assured

Walker Filtration is known for creating high quality, well-engineered, filtration solutions that offer market leading performance for an international marketplace. Alpha Series filter housings are approved to international standards and are available in a complete range of contaminant removal grades designed to meet the compressed air and gas purity requirements throughout industry.

Filter Housing Design

- ✓ 1000 hour neutral salt spray test for corrosion to ISO 9227: 2006
- ✓ Burst pressure tested in excess of 1450 psig (100 barg) for a 5:1 safety factor
- ✓ Housings are pressure decay tested before despatch. Fine filters are 100% aerosol integrity tested

Element Technology

- ✓ **ISO 8573-1: 2010** – Compressed air purity standard
- ✓ **ISO 12500 Series** – International standard for compressed air filter testing

Independent Validation

- ✓ **Pressure Equipment Directive – 2014/68/EU**
Lloyd's Register EMEA – Notified Body No. 0038 71 Fenchurch Street, London, EC3M 4BS
- ✓ **ISO 9001 Quality Systems – LRQ0930553**
Lloyd's Register Deutschland GmbH, Überseeallee 10, 20457 Hamburg, Germany - Notified Body No 0525.
- ✓ **CRN Approved – CRN0E22360** – For use within Canada

Make It Yours: Custom Branded Products to Fit Your Portfolio

For over 35 years the Walker Filtration team has specialized in OEM solutions.

We understand the importance of reinforcing and enhancing a customers brand, and ensuring that aftermarket sales are effectively captured.

Branding Solutions

We can customize filters so they seamlessly integrate into your gas generation systems, ensuring brand consistency and helping to capture aftermarket sales.

Every OEM solution developed by our team is unique. We take care of brand management, custom packaging, language support, unique part numbers, logistical details, and are dedicated to reducing the amount of time it takes to get your product to market.

Expert Technical And Transitional Support

Our fully trained sales and technical teams have extensive knowledge and experience in helping our customers launch new products and transition product vendors. They will work with you to create unique part numbers, provide technical and sales training, marketing support, and so much more.

We also offer an extensive aftermarket element portfolio to ensure you can still service any current filtration products you have in the field.



Walker Filtration Product Ranges

Walker Filtration offer a comprehensive range of compressed air filtration and drying products:



Water Separators



Dryers



Medical Vacuum



Duplex Filters



Flanged Filters



Alternative
Elements



Medical Sterile

For our full product range and further information please visit: www.walkerfiltration.com or contact your nearest Walker Filtration sales department.

Coalescing and Particulate Filters

Technical Specification

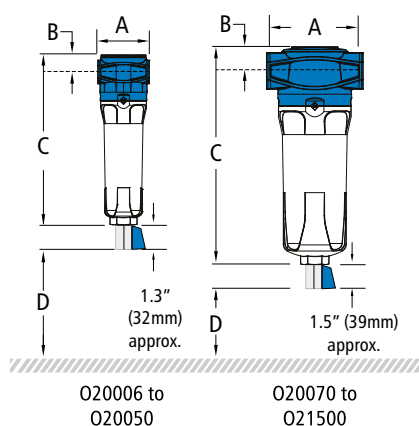
Coalescing and Particulate Filter Model	Pipe size inches	Inlet flow rate*		Dimensions inches (mm)				Weight		Element model
		SCFM	Nm³/hr	A	B	C	D	lbs	Kg	
O20006 (grade)	1/8	5.7	9.5	1.97 (50)	0.67 (17)	6.18 (157)	2.36 (60)	0.6	0.3	EO20306 (grade)
O20015 (grade)	1/4	14.3	23.8	1.97 (50)	0.67 (17)	6.18 (157)	2.36 (60)	0.6	0.3	EO20306 (grade)
O20025 (grade)	1/4	23.8	39.9	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20408 (grade)
O20032 (grade)	3/8	30.4	51.3	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20408 (grade)
O20050 (grade)	1/2	47.5	80.8	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20412 (grade)
O20070 (grade)	1/2	66.5	113.1	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612 (grade)
O20085 (grade)	3/4	80.8	136.8	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612 (grade)
O20105 (grade)	1	99.8	169.1	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612 (grade)
O20125 (grade)	3/4	118.8	201.4	5.00 (127)	1.26 (32)	14.57 (370)	3.15 (80)	4.4	2.0	EO20621 (grade)
O20175 (grade)	1	166.3	282.2	5.00 (127)	1.26 (32)	14.57 (370)	3.15 (80)	4.4	2.0	EO20621 (grade)
O20280 (grade)	1 1/4	266.0	452.2	5.51 (140)	1.61 (41)	18.74 (476)	3.35 (85)	6.6	3.0	EO20731 (grade)
O20320 (grade)	1 1/2	304.0	516.8	5.51 (140)	1.61 (41)	18.74 (476)	3.35 (85)	6.6	3.0	EO20731 (grade)
O20400 (grade)	1 1/2	380.0	646.0	6.69 (170)	2.08 (53)	20.00 (508)	3.94 (100)	10.8	4.9	EO20831 (grade)
O20450 (grade)	2	427.5	726.8	6.69 (170)	2.08 (53)	20.00 (508)	3.94 (100)	10.8	4.9	EO20831 (grade)
O20700 (grade)	2	665.0	1129.6	6.69 (170)	2.08 (53)	27.87 (708)	3.94 (100)	12.1	5.5	EO20850 (grade)
O20850 (grade)	2 1/2	807.5	1371.8	8.66 (220)	2.75 (70)	28.97 (736)	3.94 (100)	23.1	10.5	EO21140 (grade)
O20900 (grade)	3	855.0	1452.6	8.66 (220)	2.75 (70)	28.97 (736)	3.94 (100)	23.1	10.5	EO21140 (grade)
O21250 (grade)	3	1187.5	2018.8	8.66 (220)	2.75 (70)	33.74 (857)	3.94 (100)	25.4	11.5	EO21160 (grade)
O21500 (grade)	3	1425.0	2422.5	8.66 (220)	2.75 (70)	39.56 (1005)	3.94 (100)	27.6	12.5	EO21175 (grade)

*Rated flow at 100 psig (7 barg), reference conditions at 14.7 psi(a) (1.014 bar(a)) 68°F (20°C), calculated using 0.95 Gas Density Factor based on 93% oxygen saturation

Grade	X5 / RX5		X1 / RX1		XA / RXA	
Particle removal	5 micron		1 micron		0.01 micron	
Max particle size class**	4		3		1	
Max oil content**	4		3		1	
Max oil carryover at 68°F (20°C)	5ppm	5 mg/m³	0.3 ppm	0.3 mg/m³	0.01ppm	0.01 mg/m³
Pressure loss - clean & dry	0.6 psi	40 mbar	0.8 psi	55 mbar	1.2 psi	85 mbar
Pressure loss - saturated	1.1 psi	75 mbar	1.8 psi	125 mbar	1.8 psi	125 mbar
Pressure loss - element change	12 mths	8000 hrs	12 mths	8000 hrs	12 mths	8000 hrs
Max temperature	248°F	120°C	248°F	120°C	248°F	120°C
Max working pressure	300 psig	20.7 barg	300 psig	20.7 barg	300 psig	20.7 barg
Max autoclave temperature	N/A	N/A	N/A	N/A	N/A	N/A
Element end cap color	Black					

**to ISO 8573-1: 2010

Pressure correction factors	for maximum flow rate, multiply model flow rate by the correction factor corresponding to the minimum operating pressure									
Operating pressure psig (barg)	58 (4)	72 (5)	87 (6)	100 (7)	115 (8)	145 (10)	174 (12)	203 (14)	232 (16)	300 (20.7)
100 psig - correction factor	0.76	0.84	0.92	1.00	1.07	1.19	1.31	1.41	1.51	1.73



Technical Notes

- Direction of flow is inside to out through the filter element for coalescing grades (X5, X1 and XA), and outside to in for particulate grades (RX5, RX1 and RXA)
- All Oxygen Filters are fitted as standard with Manual Drain Valves, VMDV25 on models O20006 to O20050, VMDVE25B on models O20070 to O20700, and VMDVE25M on models O20850 to O21500. Standard filters can operate at 300 psig (20.7 barg) range at 248°F (120°C).
- Alpha Oxygen Filters are manufactured from cast aluminum alloy and are PED 2014/68/EU compliant for group 1 and group 2 gases.
- Threaded connections are NPT to ANSI/ASME B1.20 as standard. RP (BSP Parallel) to ISO 7-1 and RC (BSP Taper) to ISO 7-1 are also available up on request
- Filters are suitable for use with mineral and synthetic oils plus oil-free compressed air applications.
- Filter elements should be changed every 12 months / 8000 hours (whichever comes first).
- Walker Filtration genuine spare and aftermarket parts must be used, failure to do so will void product warranty. Walker Filtration shall not be held liable for damages suffered by the customer if Walker Filtration genuine oxygen rated spare and aftermarket parts are not used.
- All Walker Filtration Alpha Oxygen Filters are produced from high quality, non-toxic, naturally inert raw materials and constituents, in accordance with FDA requirements for food contact as per Code of Federal Regulation (CFR), Title 21.
- Other filtration grades are available. Please contact sales for specific requests.

Medical Sterile Filters

Technical Specification

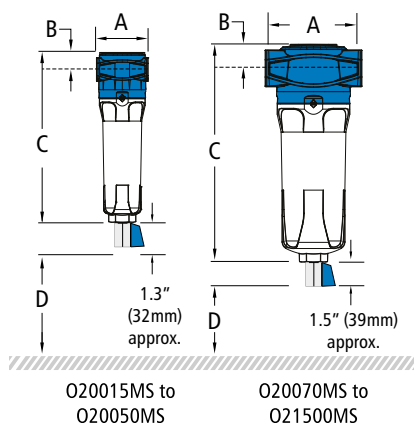
Coalescing and Particulate Filter Model	Pipe size inches	Inlet flow rate*		Dimensions inches (mm)				Weight		Element model
		SCFM	Nm ³ /hr	A	B	C	D	lbs	Kg	
O20006MS	1/8	5.7	9.5	1.97 (50)	0.67 (17)	6.18 (157)	2.36 (60)	0.6	0.3	EO20306SR
O20015MS	1/4	14.3	23.8	1.97 (50)	0.67 (17)	6.18 (157)	2.36 (60)	0.6	0.3	EO20306SR
O20025MS	1/4	23.8	39.9	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20408SR
O20032MS	3/8	30.4	51.3	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20408SR
O20050MS	1/2	47.5	80.8	2.76 (70)	0.91 (23)	9.09 (231)	2.76 (70)	1.3	0.6	EO20412SR
O20070MS	1/2	66.5	113.1	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612SR
O20085MS	3/4	80.8	136.8	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612SR
O20105MS	1	99.8	169.1	5.00 (127)	1.26 (32)	11.22 (285)	3.15 (80)	3.7	1.7	EO20612SR
O20125MS	3/4	118.8	201.4	5.00 (127)	1.26 (32)	14.57 (370)	3.15 (80)	4.4	2.0	EO20621SR
O20175MS	1	166.3	282.2	5.00 (127)	1.26 (32)	14.57 (370)	3.15 (80)	4.4	2.0	EO20621SR
O20280MS	1 1/4	266.0	452.2	5.51 (140)	1.61 (41)	18.74 (476)	3.35 (85)	6.6	3.0	EO20731SR
O20320MS	1 1/2	304.0	516.8	5.51 (140)	1.61 (41)	18.74 (476)	3.35 (85)	6.6	3.0	EO20731SR
O20400MS	1 1/2	380.0	646.0	6.69 (170)	2.08 (53)	20.00 (508)	3.94 (100)	10.8	4.9	EO20831SR
O20450MS	2	427.5	726.8	6.69 (170)	2.08 (53)	20.00 (508)	3.94 (100)	10.8	4.9	EO20831SR
O20700MS	2	665.0	1129.6	6.69 (170)	2.08 (53)	27.87 (708)	3.94 (100)	12.1	5.5	EO20850SR
O20850MS	2 1/2	807.5	1371.8	8.66 (220)	2.75 (70)	28.97 (736)	3.94 (100)	23.1	10.5	EO21140SR
O20900MS	3	855.0	1452.6	8.66 (220)	2.75 (70)	28.97 (736)	3.94 (100)	23.1	10.5	EO21140SR
O21250MS	3	1187.5	2018.8	8.66 (220)	2.75 (70)	33.74 (857)	3.94 (100)	25.4	11.5	EO21160SR
O21500MS	3	1425.0	2422.5	8.66 (220)	2.75 (70)	39.56 (1005)	3.94 (100)	27.6	12.5	EO21175SR

*Rated flow at 100 psig (7 barg), reference conditions at 14.7 psi(a) (1.014 bar(a)) 68°F (20°C), calculated using 0.95 Gas Density Factor based on 93% oxygen saturation

Grade	SR	
DOP efficiency**	>99.9999%	
Particle removal	0.01 micron	
Maximum operating temperature	248°F	120°C
Recommended operating temperature	122°F	50°C
Maximum autoclave temperature	273°F	134°C
Pressure Loss - clean & dry	1.5 psi	100 mbar
Maximum working pressure	300 psig	20.7 barg
Element end cap material	Stainless steel	

**As specified in HTM 02-01 medical gas pipeline systems

Pressure correction factors	for maximum flow rate, multiply model flow rate by the correction factor corresponding to the minimum operating pressure									
Operating pressure psig (barg)	58 (4)	72 (5)	87 (6)	100 (7)	115 (8)	145 (10)	174 (12)	203 (14)	232 (16)	300 (20.7)
100 psig - correction factor	0.76	0.84	0.92	1.00	1.07	1.19	1.31	1.41	1.51	1.73



Technical Notes

- Direction of air flow is inside to out through the filter element. Filter element end caps are stainless steel.
- All Oxygen Filters are fitted as standard with Manual Drain Valves, VMDV25 on models O20006 to O20050, VMDVE25B on models O20070 to O20700, and VMDVE25M on models O20850 to O21500. Standard filters can operate at 20.7 barg (300 psig) range at 120°C (248°F).
- Alpha Oxygen Filters are manufactured from cast aluminum alloy and are PED 2014/68/EU compliant for group 1 and group 2 gases.
- Threaded connections are NPT to ANSI/ASME B1.20.1. as standard. RP (BSP Parallel) to ISO 7-1 and RC (BSP Taper) to ISO 7-1 are also available upon request.
- Pre-filtration should be used in conjunction with 0.01 micron sterile filters.
- Medical Sterile Filter elements must not operate in water or oil saturated conditions and should be changed at least every 6 months.
- Maximum steam sterilizing autoclave temperature refers to the filter element ONLY. Oxygen grade SR filter elements can be steam sterilized 100 times. Each element must be autoclaved before commencement of duty.
- Each element is supplied with an Air Sterilization Certificate to guarantee the highest quality to our customers.
- Oxygen SR grade filters are suitable for use in dry air conditions only, as any liquids passing through the filter could carry bacteria and compromise sterility.
- Walker Filtration genuine spare and aftermarket parts must be used, failure to do so will void product warranty. Walker Filtration shall not be held liable for damages suffered by the customer if Walker Filtration genuine oxygen rated spare and aftermarket parts are not used.
- All Walker Filtration Alpha Oxygen Filters are produced from high quality, non-toxic, naturally inert raw materials and constituents, in accordance with FDA requirements for food contact as per Code of Federal Regulation (CFR), Title 21.



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