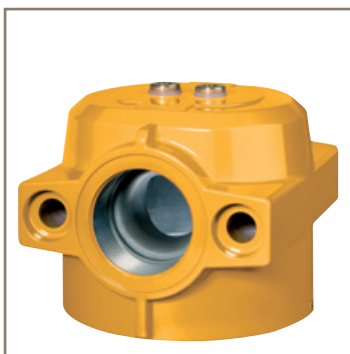




aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



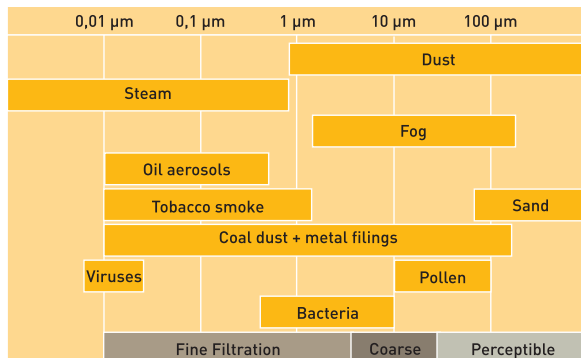
GL *Plus* Filter Series

High-performance filter



Attention: Contamination!

Compressed air is widely used throughout industry and recognised as a safe and reliable energy source. Unfortunately after being produced it contains a large amount of unwanted contamination in the form of particulate, water and oil which gets carried into downstream piping without restraint.



Much of the contamination is less than 40 millionth of a meter in size ($40\ \mu\text{m}$) and thus remains hidden from the human eye.



Water

Water in a compressed air system is present in the form of water vapour, water droplets and water aerosol.

Large amounts of atmospheric humidity are taken in via the compressor intake. During the process of compression these contaminants are multiplied many times whilst the air temperature is increased considerably, leading to complete saturation of the compressed air with humidity. When the temperature eventually starts to fall, water starts to condense out of the saturated air, resulting in the corrosion of downstream equipment and the consequential costs of maintenance and downtime. In order to guarantee faultless operation and efficient performance this surplus water must be entirely removed from the system.

Total amount of humidity entering the compressed air system in liters per day, based on inlet flow conditions of $250\ \text{m}^3/\text{h}$ ($20\ ^\circ\text{C}$, $1\ \text{bar}_a$) at a compressor end-pressure of $8\ \text{bar}_a$.

Temperature $^\circ\text{C}$	Humidity content (saturated) g/m^3	Relative humidity		
		50 %	60 %	70 %
15	12.8	38.4 L	46.1 L	53.8 L
20	17.3	51.9 L	62.3 L	72.7 L
25	23.1	69.3 L	83.2 L	97.0 L
30	30.4	91.2 L	109.4 L	127.7 L
35	39.6	118.8 L	142.6 L	166.3 L
40	51.1	153.3 L	184.0 L	214.6 L
45	65.4	196.2 L	235.4 L	274.7 L

Particulate

Particle contamination in a compressed air system comprises atmospheric dirt, micro-organisms, rust and condensate deposits.

Atmospheric air in an industrial or urban environment can contain up to 150 million dirt-particles per cubic meter. 80 % of all dirt particles are less than 2 microns in size and are not held back by the coarse intake filter on the compressor. They therefore enter the compressed air system in an unrestrained manner. In the presence of water-condensate, particulate often acts even

more corrosive, forming sludge and leading to the irreparable blockage of instrumentation and control systems. Furthermore the final product itself can be rendered unusable.

Total amount of particulate entering the compressed air system based on inlet flow conditions of $250\ \text{m}^3/\text{h}$ ($20\ ^\circ\text{C}$, $1\ \text{bar}_a$) at a compressor end-pressure of $8\ \text{bar}_a$.

Size	Approx. qty. per m^3	Approx. qty. per day
$< 2\ \mu\text{m}$	120 Million	720 Billion
$> 2\ \mu\text{m}$	30 Million	180 Billion



Oil

Oil is used in the majority of compressor types as a means of sealing, lubricating and cooling. However, on completion of the compression process this same oil can work its way into the compressed air system. The amount is dependent on the age of the compressor in question. Even so-called oil-free compressors can contribute to compressed air oil-contamination. The source, in this case, being atmospheric air containing un-burnt hydrocarbons which enter the compression chamber via the compressor inlet.



Once present in the compressed air system oil combines with water already there to form a corrosive acidic substance. This leads to damage in air receivers, pipe-work, instrumentation and the final product. Furthermore oil-vapour escaping into the atmosphere can contribute to an unhealthy working environment.

Total amount of remaining oil from different compressor types at an inlet flow of 250 m³/h (20 °C, 1 bar_a) at a compressor end-pressure of 8 bar_a

Remaining oil content after compression				
Compressor Type	condition	mg per m³	g per day	L per year
Piston compressor, oil-lubricated	new	10-30	60-180	26-77
	old	60 - 180	360 - 1080	155 - 464
Rotary-vane compressor, oil-lubricated	new	< 6	< 35	15
	old	60 - 180	360 - 1080	155 - 464
screw-compressor, oil-lubricated	stationary	2.4 - 12	14.4 - 72	6 - 31
	mobile	18 - 30	108 - 180	46 - 77
Turbo-compressor, oil-free	dependent upon operation	0.06 - 3	0.36 - 18	0.15 - 7,5

Oil-density 0,85 kg/L

In short:

Where compressed air contamination is not reduced or removed, many problems can arise in the compressed air system:

- **Corrosion in the air-receiver and in pipe-work**
- **Blocked or damaged valves, cylinders, air-motors or compressed air tools**
- **Damage to plant and equipment**
- **Product contamination**

Leading to:

- **Unusable or damaged final products**
- **Reduced production efficiency**
- **Increased costs of manufacture**



Compressed air must not only be clean, but also efficient

As well as the removal of contamination, the economics of using compressed air filters play an important role. Here, the requirement is one of minimising costs and achieving a balance between the compressed air quality being sought and the amount of energy necessary to achieve it.

Compressed air quality in accordance with ISO 8573-1:2010

The required compressed air quality in a customary compressed air system is dependent on the application. When manufacturing pharmaceutical products or foodstuffs, the demands placed on compressed air quality are far greater for example, than the operation of pneumatic tools on a production line. The international standard for compressed air quality provides a simple and clear system which classifies the three main sources of contamination

present in all compressed air systems: Water, Oil and Particulate. Albeit ISO 8573-1 remains completely exposed when it comes to stipulating the inlet concentrations at which these purity classes are to be achieved. For a few years now, compulsory standards have existed which stipulate the inlet concentration and the test equipment to be met and referred to, when such performance levels are required and quoted.

Classification	Solid particulate Maximum number of particles per m³ Particle size			Water (vapour state) Pressure dewpoint in °C	Oil (vapour, aerosols, liquids) Content in mg/m³
	0,1 - 0,5	0,5 - 1	1 - 5		
0	As specified between the supplier and equipment user (better than class 1)				
1	≤ 20.000	≤ 400	≤ 10	≤ -70	≤ 0,01
2	< 400.000	≤ 6.000	≤ 100	≤ -40	≤ 0,1
3	n. v.	≤ 90.000	≤ 1.000	≤ -20	≤ 1
4	n. v.	n. v.	≤ 10.000	≤ +3	≤ 5
5	n. v.	n. v.	≤ 100.000	≤ +7	not agreed
6	not applicable			≤ +10	not agreed

Reference conditions 1 bar_a, 20 °C, 0 % relative humidity; Pressure dewpoint at compressor end-pressure of 8 bar_a.

Proof of performance: The bar is high – but we`re raising it higher.

Test methods in accordance with ISO 12500 – finally, clear basic principles

Air purity classes in accordance with ISO 8573-1 have been around for many years. Standardisation however on the establishment of inlet-concentrations has only existed since 2007. After a period of uncertainty, these basic principles were finally established and now govern how measurements are to be taken and how validation is to be carried out.

ISO 12500	Part 3	Part 2	Part 1
	Solid particulate	Oil-vapours	Oil-aerosols
	0.01 - 5 µm Inlet number ^{a)} per m ³	Inlet concentration mg n-Hexane/ kg Air	0.15 - 0.4 µm Inlet concentration in mg/m ³
	10 ⁻⁹ to 10 ⁻¹²	1.000	or 40
	–	–	10

^{a)} Reference to EN 182-1

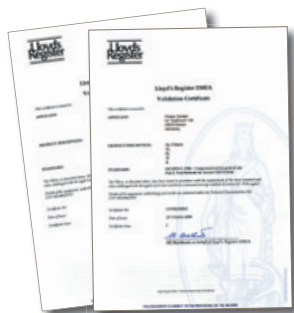
Reference conditions 1 bar_a, 20 °C, 0 % relative humidity

Taking a high-performance filter for oil-aerosol removal as an example, the effects can be observed:

Oil-aerosols	ISO 12 500-1	Parker domnick hunter	Competitor	Customary remaining oil content of compressors	
standardised inlet-loading	40 mg/m ³	40 mg/m ³	—	30 mg/m ³	Piston and mobile screw-compressors
	10 mg/m ³	10 mg/m ³	10 mg/m ³	12 mg/m ³	Stationary screw-compressors
other inlet-loading	—	—	5/3/2 mg/m ³	< 6 mg/m ³	Rotary-vane compressors

Reference conditions 1 bar_a, 20 °C, 0 % relative humidity.

It all now becomes clear: Stated remaining oil-content values, following a high-performance filter are in actual fact limited in their meaningfulness. However, where account is taken of the validated inlet-loading in accordance with ISO 12500-1, it becomes clear in what range high-performance filters really do perform.

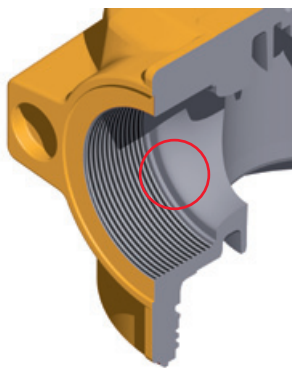


New GL Plus-Filtration technology delivers what it states and offers you an independent, validated statement of performance in accordance with ISO 12500.



New GL Plus-Technology: lowest energy re

The perfect combination of innovative construction features illustrated in the form of cost-saving Air-Flow-Management and the choice of high-performance filtration materials. The Result: best compressed air treatment at the lowest pressure drop.



Do away with energy-killers: Conical „full-flow” Filter-housing inlet

Free-flow, turbulence-free transition of the air on entering the filter element - Inlet & outlet connections harmonised to meet those of the various compressor types.



„Going around the bend”: smooth 90°- curve

No dead-areas, no turbulence - Almost zero pressure drop, thanks to optimum air distribution.



No impact: Conical air disperser

Soft air-dispersion at the base of the element prevents turbulence.



„No wet feet“

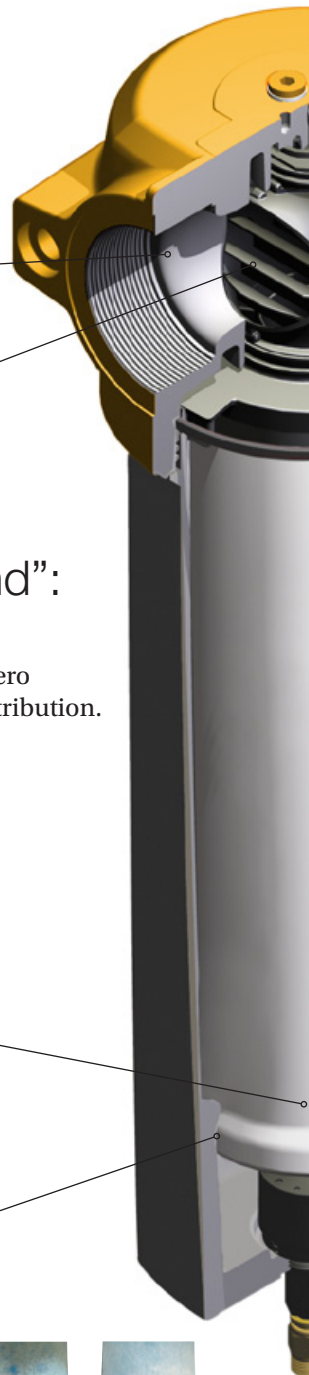
No wet-band, no extra turbulent-free zone. Optimum drainage, shrouds the bottom end-cap with drainage material and utilises cast ribs in the filter housing bowl to compress the lower part of the filter element and encourage liquid coalescence via capillary forces.



Old technology



New technology



Requirement at highest, validated performance



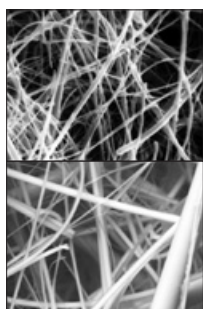
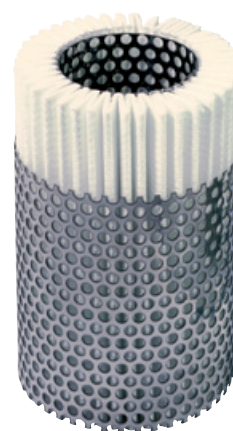
„Its plain sailing“:
Aerospace deflector-vanes
Unrestricted, air-flow guidance

„Go with the flow“:
Flow-distribution
Optimum air distribution throughout
the entire element



Successful „escape“
External air-stabilisers located on the
filter element top end-cap ensure the
even-flow of compressed air exhaus-
ting the filter housing.

Large area – greater outcome
Deep-bed pleating techniques result in 4.5 times more
effective filtration area than conventional filter elements
– resulting in lower operating costs, increased particulate
retention and reduced space.



Performance at the highest
level: High-performance filters
Utilising high-efficiency filter element media, manufac-
tured from borosilicate nano-fibres with a voids-volume
of 96% and external drainage layer: ZLP - coalescing
fine-filter elements (1 μm) and XLP - high-performance
filter elements (0.01 μm) for droplet and aerosol remo-
val. AP - adsorption elements for high-efficiency surface
adsorption of oil-vapours and odours.

Putting on the pressure – but not at all cost!

Basically, filter media can be manufactured to be so impenetrable that it is capable of removing all contamination: This is however only possible at the expense of operating pressure. In order to maintain the operating pressure required for the application, any resistance to pressure in the system must be compensated for by increased compressor performance.

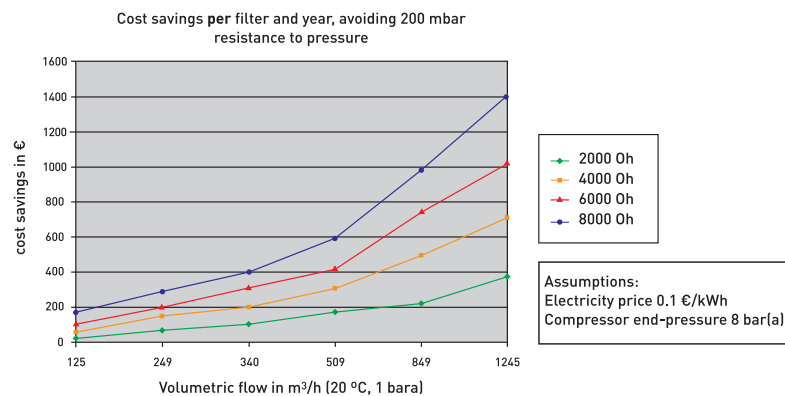
The result is a high energy requirement, premature compressor wear and increasing costs. The optimum balance between filtration performance and the lowest possible energy requirement is the key.



Resistance to pressure, otherwise known as Differential pressure (pre- and post equipment)

Out-dated technology costs money – every day!

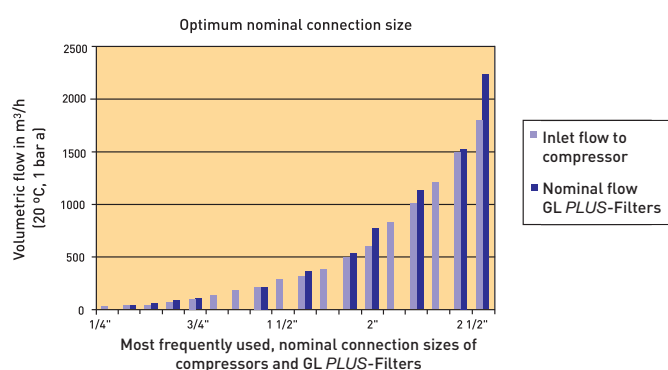
Conventional filters cause an average increase in differential pressure within the first year of operation up to 200 mbar and more: Depending upon the operating parameters – 5-day week, with one shift (2000 working hours), two shifts (4000 working hours), three shifts (6000 working hours) or continuous, 365 days per annum (8000 working hours), the increase in compressor inlet performance results in a considerable increase in the energy requirement.



The solution is simple: Avoid experiencing unnecessary pressure drop in the first place by refraining from the use of old filters and trust in modern GL *Plus*-technology from the outset!

Optimum fit – no “bottle-necks”

GL *Plus*-series filters have nominal inlet & outlet connections which have been matched to meet those of the most popular compressor flow rates:

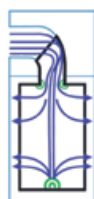


A well-rounded package: Air-Flow-Management

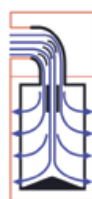
Where air flows over a sharp edge, turbulence occurs. This leads to increased resistance to flow and insufficient distribution of the air-stream. Air-Flow-Management, incorporated into the GL *Plus*-Series, avoids this problem by guiding the air through a smooth bend with the aid of aerospace deflector-vanes into the heart of the filter element in a turbulence-free manner.



To date: The in-coming air is forced to change direction through 90°. The result is turbulence, pressure drop and insufficient distribution of the air throughout the filter media.



An improvement: Rounded corners reduce turbulence however do not allow the air-stream to penetrate the filter media in optimum fashion.



The optimum solution: By incorporating deflector-vanes into the inlet of the filter element and an air dispenser in the base, turbulence is prevented, flow distribution is optimised and pressure drops are kept to an absolute minimum. Hard to believe, but just compare a conventional 90° angle and the savings of up to 75 % to be gained from turbulence-free flow management:

Resistance to flow	Nominal pipe-size based on identical pipe-length		
	3/8"	1/2"	3/4"
90°- Angle	100 %	100 %	100 %
90°- Bend	25 %	30 %	30 %

In short: As much as necessary, as little as possible.

- Different applications call for different compressed air quality.
- The more filter media, the higher the resistance to pressure – the so-called differential pressure.
- The higher the differential pressure, the higher the energy requirement and wear on the compressor.

The result:

- The grade of filtration must be matched to the application in question.
- Filter media, meeting current technology standards serve to keep differential pressure low.
- Regular replacement of filter elements keeps operating costs under control.
- Only the combination of removal rate and the efficient utilisation of energy renders compressed air economical for use.

This is of value to you:

A summary of the benefits

Investing in compressed air filters to save money can turn out to be a costly mistake. After all, they should serve to enable the stringent regulations for compressed air quality to be met, without creating high pressure drop in the system. The resulting additional expenditure spent on energy considerably increases operating costs. Rely on the merits of the new coalescence filter series *GL Plus* – a decision you will not regret.

- Compressed air quality independently validated in accordance with ISO 12500-1:2007 and ISO 8573-1:2010
- Reliable removal of particulate, oil and water aerosols as well as oil-vapours
- Guaranteed compressed air quality where maintenance recommendations are adhered to
- Increase in machinery capacity and productivity with minimum down-time and low maintenance costs
- Constantly low differential pressure guaranteed throughout the entire lifetime of the filter element - high dirt-holding capacity
- Low differential pressure reduces operating costs and guarantees economic operation
- Optimum price/performance ratio in terms of operating costs and costs of wear & tear
- 10 year filter housing guarantee
- Durable high energy savings with corresponding improvements in CO₂- reduction for your organisation



Simple and reliable maintenance

Clear marking removes the danger of confusion

The compressed air inlet to the filter housing is clearly recognisable and marked by a slightly raised metal step above the inlet port of the filter head. In this way, confusion regarding the correct direction of flow when installing or re-installing the filter is avoided. The replacement of

filter elements requires no time-consuming checking to ascertain the clean and dirty side of the filter: Filter elements are simply placed into the housing bowl and during the process of housing closure, the correct direction of flow is automatically achieved.



Light and compact construction – a minimum of space required below the housing

Ease of opening and the avoidance of incorrect element replacement, by simply placing the filter element into the housing bowl, serve to limit maintenance to a minimum.

Safe housing closure, recognisable by the external mating of a mark on

the filter head and bowl, prevent the housing from being incorrectly screwed together. The efficient sealing of the filter element at the inlet to the filter housing avoids any unwanted by-pass of flow (i.e. short-circuiting between the dirty and the clean side).



Regular maintenance – avoids unexpected events

A compressed air filter in operation is subject to a great deal of stress. A high frequency of pressure and temperature variation, bombardment with dirt, oil and water particulate, not to mention general wear, leads to element blinding and reduces the retention capacity during the period of use. For this reason, filter elements should be replaced in accordance with the manufacturers' recommendations.

Even though a filter is fitted with a differential pressure gauge and the needle remains in the green area, this does not necessarily mean that filter element replacement is avoidable. Even the smallest of holes can result in penetration of the filter media. This renders the differential pressure gauge useless – the needle continually remaining in the green area. Applications downstream, even after

element replacement, can remain contaminated for a long period of time. The consequences of such an event would be far more serious and costly than any timely replacement of a filter element.

The GL *Plus*-coalescence filter series offers you a one year lifetime performance guarantee in accordance with ISO 12500-1 and ISO 8573-1:2001.

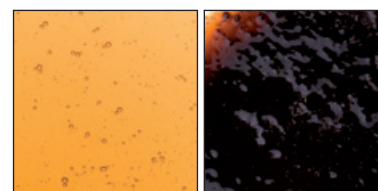
Effective oil removal - even with critical synthetic oils

Metal filings and dust, corrosion, (arising from flash-temperatures in the compression stages) corrosive air/oxygen contact (e.g. oil-lubricated screw-compressors) and water condensate forming during periods of off-load, lead to premature ageing of the oil – in conjunction with corrosive acidic deposits. Owing to their long-life characteristics and extended maintenance periods, the use of synthetic oil as compressor oil is on the increase.

This increases the necessity for improved materials of construction, above necessary all for material-critical synthetic oils.

The GL *Plus*-filter series is perfectly suited to meet all of these challenges. Notwithstanding its excellent oil removal efficiency and outstanding chemical compatibility with popular mineral-oil based compressor oils and comparable European synthetic Poly- α -Olefines (PAO), but also with material sensitive synthetic oils

such as Poly-alkylene-glycols (PAG) as they are known in the English-speaking World, to polyether and high-temperature synthetic oils of ester basis.



New fresh oil

Old used oil

Complete corrosion protection - guaranteed

In comparison with ordinary filter housings, the GL *Plus*-series is alocromed and externally protected with a tough, durable dry powder epoxy-coating against corrosion. We

are so confident of this protection treatment that our housings carry a 10 year guarantee, where recommended operating parameters are maintained.



We have thought of everything: Technical data and filtration grades

Filter selection and correction factors for GL *Plus* filter series

Stated flows are for an assumed compression of 7 bar(g) resp. 100 psi(g).

For flows at other minimum pressures the corresponding correction factors should be used.

Model	Nominal pipe size ¹⁾	Flow rate ²⁾ m³/h	Flow rate ²⁾ cfm	Replacement kit
GL2_ ³⁾	¼"	36	21	CP1008_ ³⁾
GL3_ ³⁾	⅜"	55	32	CP2010_ ³⁾
GL5_ ³⁾	½"	72	42	CP2010_ ³⁾
GL7_ ³⁾	¾"	108	64	CP2020_ ³⁾
GL9_ ³⁾	1"	216	127	CP3025_ ³⁾
GL11_ ³⁾	1 ½"	396	233	CP3040_ ³⁾
GL12_ ³⁾	1 ½"	576	339	CP4040_ ³⁾
GL13_ ³⁾	2"	792	466	CP4050_ ³⁾
GL14_ ³⁾	2 ½"	1188	699	CP4065_ ³⁾
GL17_ ³⁾	2 ½"	1548	911	CP5065_ ³⁾
GL19_ ³⁾	3"	2232	1314	CP5080_ ³⁾

¹⁾ in accordance with DIN ISO 228 (BSP-P) or ANSI B 1.20.1 (NPT-F), ²⁾ with reference to 20 °C, 1 bar, 0 % relative humidity. ³⁾ _replace underscore with filtration grade ZLP, XLP or AP.

Example – Product selection

The correct sizing of a filter is dependent on the following:

- the minimum operating pressure of the system and
- the maximum volumetric flow of the system

Procedure:

1. Choose the correction factor in accordance with the minimum operating pressure (if necessary choose the next level down).
2. Multiply the correction factor by the maximum volumetric flow to arrive at a nominal comparative value.
3. Using the table, take the nominal comparative value and compare this with the size of the filter in the table and choose the same or larger flow.

Example calculation:

Maximum inlet volumetric flow of the system: 285 m³/h

Minimum operating pressure of the system: 4.3 bar(g)

285 m³/h x 1.32 = 376.2 m³/h, corresponds to filter size GL11.

Filtration grades

Filtration Grade	ZLP	XLP	AP
Filtration grade suitability	Solid particulate, Aerosols (Oil, Water)	Solid particulate, Aerosols (Oil, Water)	Vapours
Recommended pre-filter	WS (wall flow)	ZLP	ZLP+XLP
Recommended after-filter	–	–	ZLP
Suitability in accordance with ISO 8573-1:2010	[2:–:3]	[1:–:2]	[1:–:1]
Particulate retention down to	≥ 1 µm	≥ 0.01 µm	n. a.
Aerosol content acc. to ISO 12500-1	40 mg/m³	10 mg/m³	n.a.
Remaining oil content	0,5 mg/m³	0,01 mg/m³	0,003 mg/m³
Filtration efficiency	99,925 %	99,9999 %	n. a.
Differential pressure (dry)	< 70 mbar	< 70 mbar	< 70 mbar
Differential pressure (saturated)	< 125 mbar _e	< 125 mbar _e	n. a.
Element replacement	12 month	12 month	50-650 Oh

n. a. - not applicable; n.d. - no details; Oh - Operating hours

Operating pressure bar(g)	Operating pressure psi(g)	Correction factor
1	15	2,65
1,5	22	2,16
2	29	1,87
2,5	37	1,67
3	44	1,53
3,5	51	1,41
4	58	1,32
4,5	66	1,25
5	73	1,18
5,5	89	1,13
6	87	1,08
6,5	95	1,04
7	100	1,00
7,5	110	0,97
8	116	0,94
8,5	124	0,91
9	131	0,88
9,5	139	0,86
10	145	0,84
10,5	153	0,82
11	160	0,80
11,5	168	0,78
12	174	0,76
12,5	183	0,75
13	189	0,73
13,5	197	0,72
14	203	0,71
14,5	212	0,69
15	218	0,68
15,5	226	0,67
16	232	0,66
16,5	241	0,65
17	248	0,64
17,5	256	0,63
18	263	0,62
18,5	270	0,62
19	277	0,61
19,5	285	0,60
20	290	0,59

Available standard pressure vessel approvals

- European approval in accordance with the pressure vessel directive 97/23/EC
- Strength calculation according to ASME VIII Div. 1, no obligation for approval
- Canadian approval in accordance with CRN
- Australian approval in accordance with AS1210
- Russian approval in accordance with TR

Technical data

Operating parameters for GL Plus filter series

Filter size from/to	Filtration element grade	Differential pressure gauge	Drain	Min. operating temperature		Max. operating temperature		Max. operating pressure	
				°C	°F	°C	°F	bar(g)	psi(g)
GL3 - GL19	ZLP	D	+	1.5	35	80	176	16	232
GL3 - GL19	ZLP	D	H	1.5	35	80	176	16	232
GL2 - GL19	ZLP	D	OA	1.5	35	80	212	16	290
GL3 - GL19	XLP	D	+	1.5	35	80	176	16	232
GL3 - GL19	XLP	D	H	1.5	35	80	176	16	232
GL2 - GL19	XLP	D	OA	1.5	35	80	212	16	290
GL2 - GL19	AP	-	+	1.5	35	50	122	20	290

Explanation of terms

D = optional differential pressure gauge ZD90GL fully-installed; + = Standard drain installed: Float drain ZK15NO/2013 with filtration grades ZLP or XLP, manual drain for filter grade AP;

H = Manual drain HV15, optionally installed on filter grades ZLP or XLP;

OA = Optional - no drain installed: Drain outlet open.

Product key

Series	Size	Filtration element grade	Options (if deviating from standard)	Connection (only for NPT-F)
↓	↓	↓	↓	↓
GL Plus	2 to 19	ZLP, XLP, AP	D, H or OA	-N

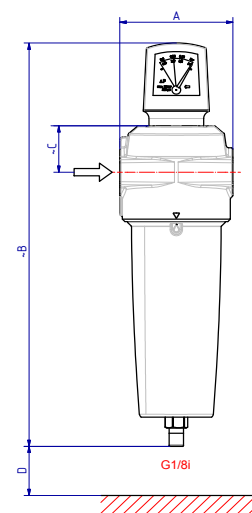
Examples:

GL9XLPDH -> Filter 1" (BSP-P), 0,01 µm high-performance filter element XLP, with differential pressure gauge installed ZD90GL and manual drain HV15
 GL5ZLPDOA -> Filter ½" (BSP-P), 1 µm fine-filter element ZLP, with differential pressure gauge installed ZD90GL, drain outlet open

Weights and dimensions

Model	Nominal pipe size ¹⁾	A Width		B Height		C Installation height		D Space required to remove element		Depth		Weight	
		mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	kg	lbs
GL2_	¼"	67	2.6	268	10,6	23	0.9	≥ 40	≥ 1.6	65	2.6	0.55	1.3
GL3_	⅜"	89	3.5	331	13,1	38	1.5	≥ 50	≥ 2.0	85	3.3	1.3	2.9
GL5_	½"	89	3.5	331	13,1	38	1.5	≥ 50	≥ 2.0	85	3.3	1.3	2.9
GL7_	¾"	89	3.5	331	13,1	38	1.5	≥ 50	≥ 2.0	85	3.3	1.3	2.9
GL9_	1"	130	5.1	368	14,5	46	1.8	≥ 70	≥ 2.8	116	4.6	3	6.6
GL11_	1 ½"	130	5.1	458	18,1	46	1.8	≥ 70	≥ 2.8	116	4.6	3.2	7.1
GL12_	1 ½"	164	6.5	531	20,9	57	2.2	≥ 100	≥ 3.9	156	6.1	6.9	15.2
GL13_	2"	164	6.5	623	24,6	57	2.2	≥ 100	≥ 3.9	156	6.1	7.3	16.1
GL14_	2 ½"	164	6.5	623	24,6	57	2.2	≥ 100	≥ 3.9	156	6.1	7.1	15.7
GL17_	2 ½"	192	7.6	745	29,4	72	2.8	≥ 120	≥ 4.7	182	7.2	10.3	22.7
GL19_	3"	192	7.6	935	36,7	72	2.8	≥ 120	≥ 4.7	182	7.2	15.3	33.7

¹⁾ In accordance with DIN ISO 228 (BSP-P) or ANSI B 1.20.1 (NPT-F)



You have the choice:

further accessories

Drain fitted			
Model	Function	Suitable for filter	Product key
ZK15NO/2013	Internal float drain	GL2 up to GL19	–
HV15	Manual drain	GL2 up to GL19	H
Open	Without drain	GL2 up to GL19	OA

Other drains available as loose accessories.

Mounting kits for drains				
Model	Connection Filter Drain		Suitable for filter	Suitable for drain type
MK-G15-G10	G½ a	G¾ a	GL2 to GL19	Trap 22
MK-G15-G10I	G½ a	G¾ i	GL2 to GL19	ED3002
MK-G15-G15	G½ a	G½ a	GL2 to GL19	ED2010, ED3004 - 3100
MK-G15-G20	G½ a	G¾ a	GL2 to GL19	ED2020 - 2060

No mounting kit required for float drain ZB1D since G1/2a fitting is integrated.

Wall mounting brackets for filters, if necessary incl. combination accessories	
Model	Suitable for
BF/GL2	GL2, single stage
BF/GL2/2	GL2, dual stage
BF/GL2/3	GL2, triple stage
BF/GL3 - GL7	GL3 - GL7, single stage
BF/GL3 - GL7/2	GL3 - GL7, dual stage
BF/GL3 - GL7/3	GL3 - GL7, triple stage
BF/GL9-GL11	GL9 - GL11, single stage
BF/GL9-GL11/2	GL9 - GL11, dual stage
BF/GL9-GL11/3	GL9 - GL11, triple stage
BF/GL12-GL14	GL12 - GL14, single stage
BF/GL12-GL14/2	GL12 - GL14, dual stage
BF/GL12-GL14/3	GL12 - GL14, triple stage
BF/GL17-GL19	GL17 - GL19, single stage
BF/GL17-GL19/2	GL17 - GL19, dual stage
BF/GL17-GL19/3	GL17 - GL19, triple stage

Mounting kits for filter combinations	
Model	Suitable for
BFS/GL2/2	GL2, dual stage
BFS/GL2/3	GL2, triple stage
BFS/GL3 - GL7/2	GL3 - GL7, dual stage
BFS/GL3 - GL7/3	GL3 - GL7, triple stage
BFS/GL9 - GL11/2	GL9 - GL11, dual stage
BFS/GL9 - GL11/3	GL9 - GL11, triple stage
BFS/GL12 - GL14/2	GL12 - GL14, dual stage
BFS/GL12 - GL14/3	GL12 - GL14, triple stage
BFS/GL17 - GL19/2	GL17 - GL19, dual stage
BFS/GL17 - GL19/3	GL17 - GL19, triple stage

Differential pressure gauges for all filter sizes GL3 - GL19	
Model	Type
ZDE90GL	Analogue with reed contact
ZDE120G	Electronic

Electronic differential pressure gauge ZDE120G – see individual product brochure

Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374.



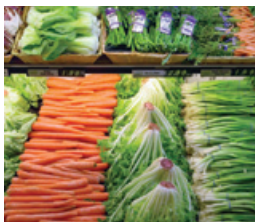
AEROSPACE

Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products

- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes



CLIMATE CONTROL

Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products

- CO₂ controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



ELECTROMECHANICAL

Key Markets

- Aerospace
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products

- AC/DC drives & systems
- Electric actuators
- Controllers
- Gantry robots
- Gearheads
- Human machine interfaces
- Industrial PCs
- Inverters
- Linear motors, slides and stages
- Precision stages
- Stepper motors
- Servo motors, drives & controls
- Structural extrusions



FILTRATION

Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators



FLUID & GAS HANDLING

Key Markets

- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

Key Products

- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



HYDRAULICS

Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products

- Diagnostic equipment
- Hydraulic cylinders
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



PNEUMATICS

Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products

- Air preparation
- Compact cylinders
- Field bus valve systems
- Grippers
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves and controls
- Rodless cylinders
- Rotary actuators
- Tie rod cylinders
- Vacuum generators, cups & sensors



PROCESS CONTROL

Key Markets

- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

Key Products

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds



SEALING & SHIELDING

Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management



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