



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



# Gas and Sample Filtration

For Process Gas and On-Line Analysis



ENGINEERING YOUR SUCCESS.

## Compressed Air Treatment

Superior protection from the damaging and costly effects of oil, water and dirt...

- Filter elements that offer both market leading performance and efficiency and are environmentally friendly in their manufacture and disposal.
- Housings ranging from 1/4" to DN200" coded vessels, together with a full range of drain and differential pressure gauge options.
- A wide range of filtration efficiencies to provide the exact filtration that's required. From bulk water separation through to bacteria removal for sterile air.
- Innovative membrane air dryers that provide clean dry air with dew points down to -40°C, without any moving parts or the requirement for additional power.
- The inherent advantages of Parker filter elements are available in a range of filter elements sized to fit other manufacturers housings, offering the opportunity to upgrade to a Parker filter.

## Gas Filtration

Filtration for sampling systems, analyser applications and process gases providing protection - pure and simple...

- Remove liquids & solids from gases with up to 99.9999+% efficiency at 0.01 µm.
- Specially configured filter media for applications such as carbon dioxide purification, alternative fuels and steam filtration.
- Temperature resistance to 538°C and a maximum pressure of 345 barg.
- Low pressure drop and a long life between filter element changes.

## Process Liquid Filtration

Process liquid filtration providing purification and clarification for the beverage, chemical processing, cosmetic, food processing, metalworking, paint, ink, pharmaceutical and water treatment industries...

- Parker's line of membrane cartridges is ideal for critical applications where high performance is required.
- Parker's pleated depth filter series of cartridges provide high flow long life filtration, including absolute and nominal rated cartridges available in polypropylene, microglassfibre and cellulose.
- Wound Depth, Resin Bonded and Melt Blown filter cartridge series from Parker together with Filter Bag Media, Strainers, Metallic Media and Sorbent Media providing a range of choices to ensure the correct filtration for your application.
- Parker coded and non-coded vessels available for a broad range of applications.

## On-Site Nitrogen Generators

Nitrogen is the most widely used gas in industry since it can prevent the risk of explosion or stop product degradation. Nitrogen is being used in new and exciting applications such as tyre filling for cars, motorcycles and trucks...

- Parker's proprietary hollow fibre membrane technology simply and elegantly separates nitrogen from compressed air.
- Generators such as the NitroSource will provide a supply of nitrogen from house compressed air, whilst units such as the Micro provide a plug-and-play solution with the inclusion of an integrated compressor.

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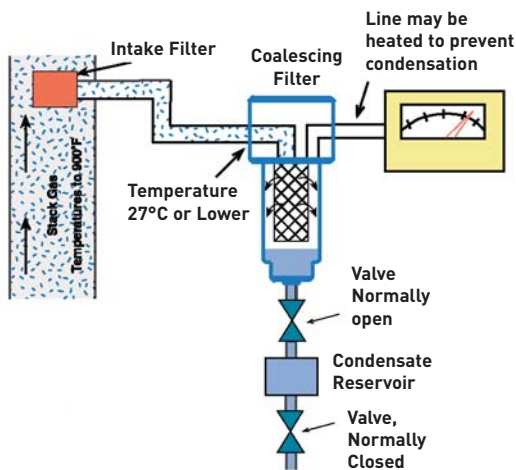


# Understanding Gas Filtration

The filtration of gases is important in a vast range of applications, yet only three main mechanisms are involved, either on their own, or in combination.

## Coalescing

### Stack Gas Sampling



Here, unwanted contaminants in the liquid phase are removed by flowing the gas through the walls of a filter tube, normally constructed as a glass fibre matrix.

Inside to outside flow causes collision between the liquid droplets and the matrix, causing them to coalesce into larger droplets which flow down the outside of the tube to be drained away. If the gas stream contains only liquid contaminants, with no solids present, then the filter tube life is theoretically infinite.

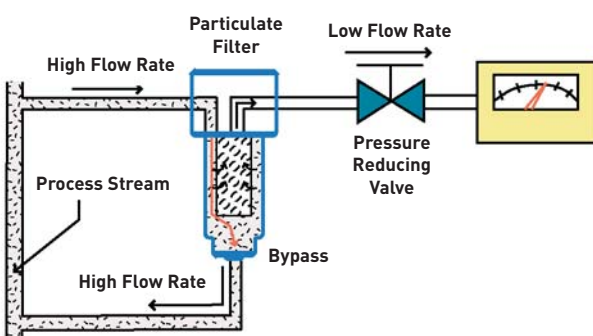
In practice, however, it is the presence of particulates which will cause the eventual increase in the pressure drop across the filter which dictates the filter element's life. It is also important to remember that although liquids are removed as droplets, further condensation can take place downstream of the filter if there is a decrease in temperature. Parker coalescing filters are designed for long life, combining high coalescing efficiency with good particulate handling capacity.

When choosing coalescing filters, it is important to size the housings correctly for the flow and pressure involved. This is to ensure that the housing material is compatible with the gas being filtered, the maximum working pressure to be encountered and the temperature of the gas.



## Intercepting - Particulate Removal

### Slipstream or Bypass Sampling



Contaminants in the solid phase are generally removed using combinations of depth or surface filters, often connected in series, starting with coarse particle removal and finishing with fine particle removal. Parker BX grade filters can remove 99.99% of 0.01 micron particles, whilst SA grades can remove 99.9999+%.

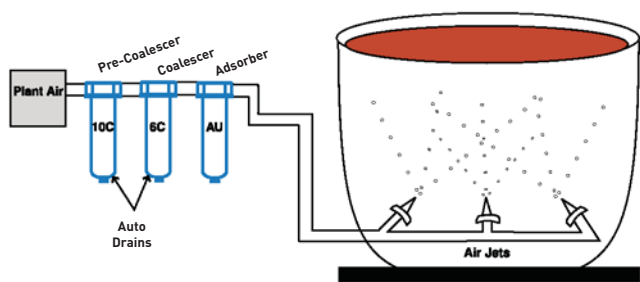
Choosing filter media and housings will depend on the anticipated particulate loading, flow, temperature, pressure and the compatibility of the gas with the housings.

For example, Parker model 97S6 model 316 stainless steel housings are rated at pressures up to 345 barg and temperatures up to 204 °C.



# Adsorption – Vapour Removal

## Air Mixing



Unwanted vapours in the gas stream can be selectively removed using Parker adsorbant cartridges.

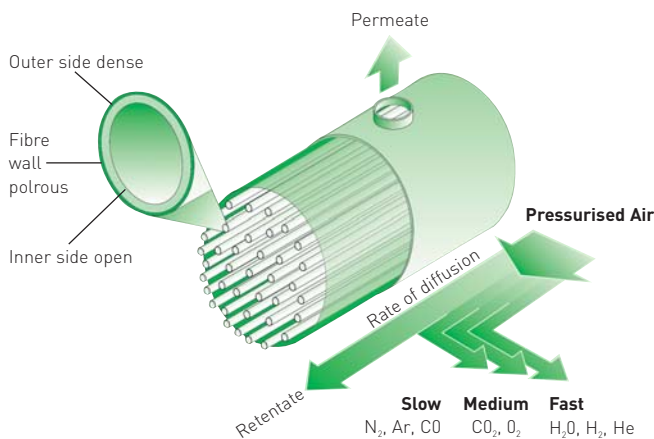
Vapours such as water, hydrocarbons, sulphur compounds and ammonia can all be removed using Parker cartridges specifically developed for the purpose.

The adsorption process can either be physical (as with water vapour removal), or chemical (sulphur compounds and ammonia). In either case, filter cartridge life is directly dependent on the level of vapour contaminants present. Often these are present in trace amounts, resulting in long cartridge life.



## Other Separation Mechanisms

### Gas Separation Membrane



Parker has other useful technologies for gas treatment – generally developed for compressed air. These include drying (dew point suppression) using membrane technology **(see catalogue S3.2.111)**, and membrane gas separation of air into nitrogen and oxygen. **(see catalogue K3.1.075)**



# Depth Filter Media

## Filter housings used with these media

9922-05; 9933-05; 9922-11; 9933-11; 8833-11; 90; 7700-12; 58P; 53/18; 53/50; 54/50; A98/11; A39/12; 105S6; 91S6; 95M; 95S6; 95A; 95T; 97S6; 30/12; 30/25; 91S6; 31G; 41G; 31S6; 41S6; 33G; 33S6; 45G; 45S6; EU27/35; EU27/35-3000; EU27/80; EU27/80-3000; 15/80S6; EU85; EU37/12; EU37/25; 58N; 38/12; 38/25; A23/75SR; A23/75R; SP3/75SR; SP4-23/75SR; SP6-23/75SR; 6000 series; A34; A33B; A45; A27/35B; A27/80B.

## Media Specifications

Microfibre Filter Cartridges	Efficiency at 0.01µm
Grades DX, DQ, DH, DS	93%
Grades BX, BQ, BH, BS	99.99%
Grades AQ, AH, AS	99.9999%
Grades AAQ, AAH, AAS	99.9999+%

## Media Models

**X-Model Elements:** This new innovation in filter media from Parker reduces the cost of filtration by significantly lowering the pressure drop across the media. Used for solids and relatively large amounts of suspended liquids in gases. Excellent chemical resistance, temperature resistance to 150°C and good mechanical handling properties. These cartridges have thick walls for improved coalescing efficiency. Fluorocarbon resin binder.

**Q-Model Elements:** Used for solids and small amounts of liquids in gases. Similar to X-Model Cartridges in chemical and temperature resistance. Fluorocarbon resin binder.

**H-Model Elements:** Recommended for oxygen service temperatures above 290°C or when X-Model or Q-Model are unsuitable. H-Model cartridges have temperature resistance to 480°C in dry gas, 38°C in liquid. Quartz construction.

**S-Model Elements:** For temperatures above 150°C and below 290°C. Similar in performance to the Q-Model. PTFE binder.

**R-Model and SR-Model Elements:** For steam filtration, the R-Model is suitable for hospital sterilisers and the SR-Model is used in food industry applications and other applications that require a higher pressure.

**GS Membrane Elements:** Final filter for low flow in critical applications where 0.01µm filtration is required.

**000-Model:** Activated carbon adsorber for most C4 and heavier hydrocarbons, ketones, alcohols, ethers, organic acids, chlorinated freons, aromatic hydrocarbons and carbon disulphide.

**101-Model:** Silica gel adsorber for water vapour

**102-Model:** 4A molecular sieve adsorber for carbon dioxide, ammonia, sulphur dioxide, hydrogen sulphide, acetylene, propylene, methane, ethane, water vapour, ethylene, ethylene oxide and carbon disulphide.

**103-Model:** 13X molecular sieve adsorber for all materials adsorbed by - 102 plus: methanol, straight chain mercaptans, freon 11, freon 12, freon 114, sulphur hexafluoride, cyclohexane, diphenyl, butene-1, isopentane, benzene, toluene, xylene, boron trifluoride, triethylamine and smaller amines, straight chain hydrocarbons to C22, alkenes to C4 and acetylene.

**105-Model:** Calgon HGR adsorber for mercury vapour.

**107-Model:** Mixed sodium and calcium hydroxides adsorber for all acidic gases, including sulphur dioxide, sulphur trioxide, nitrogen dioxide, carbon dioxide, hydrogen sulphide, sulphur hydrogen chloride, hydrogen chloride.

## Liquid Filtration

Microfibre Filter Cartridges	(98% retention)	LP Cartridges	(80% retention)
Grades DX, DQ, DH, DS	25µm	Grade 20	25µm
Grades BX, BQ, BH, BS	2µm	Grade 30	10µm
Grades AQ, AH, AS	0.9µm	Grade 50	1µm
Grades AAQ, AAH, AAS	0.3µm		

LP Elements: Designed to filter liquids with high solids content. Have an integral pre-filter and an external support structure (flow direction is inside-to-outside).

## Filter housings used with these media

Q1S; Q5S; H1S; H5S; Q15N; Q2N; ILN; IKN; P1N; ZJ series; ZA series; FFC-116; FFC-112; FFC-112SAE; FFC-110; FFC-110L; FFC-113; FFC-114; FFC-116.

## Media Specifications

Grade Designation	Coalescing Efficiency 0.3 to 0.6 Micron Particles	Coalescing Filters - C, QU, H Oil Maximum Carryover <sup>(1)</sup> PPM	Particulate Filters- G, S, T, 3PU Micron Rating	Pressure <sup>(5)</sup> Drop (bar)@Rated Flow Media Dry	Pressure <sup>(5)</sup> Drop (bar)@Rated Flow Media Wet
AU <sup>(2)</sup>	99%+	N/A	N/A	0.07	-
100WS	N/A	N/A	100N	0.02	-
4	99.995%	0.003	0.01	0.09	0.25
6	99.97%	0.008	0.01	0.07	0.2
7CVP	99.5%	0.09	0.5	0.02	0.04
10	95%	0.85	0.7	0.03	0.03
3 PU	N/A	N/A	3.0	0.02	-

### Notes:

- 1 Tested per BCAS 860900 at 40 ppm inlet.
- 2 Oil vapour removal efficiency is given for AU media.
- 3 Models C, QU and H flow is inside to out. Models G, S, T, 3PU, AU flow is outside to in.
- 4 Grades 2, 4 and 6 are 0.01 micron filters.
- 5 Add dry and Wet for total pressure drop

## Media Models

### Flow 100WS (C, QU, H, 7CVP) - Inside to Out

**100WS** Reduction of excess liquids in gas stream. Excellent prefilter for grades 10C and 6C.

- C** Coalescing element composed of an epoxy saturated, borosilicate glass micro-fibre tube with intimate interlocking contact with rigid seamless retainer. Surrounded by a coarse fibre drain layer, retained by a synthetic fabric safety layer replaces epoxy.
- QU** Coalescing element with the same configuration as "C" tube, but with "3P" model pleated cellulose prefilter built-in. Includes molded polyurethane end seals.
- H** Coalescing element similar to model "C" however no rigid retainer is used. Typically for lower pressure or higher temperature applications.
- 7CVP** High efficiency and very low pressure drop makes this pleated coalescing media an excellent choice for medium efficiency applications.

### Flow (G, T, 3PU, AU) - Outside to In

- G** Particulate removal element constructed of the same fibre matrix as model "C" but with no rigid retainer or drain layer.
- T** Particulate removal element like "G" tube, except fluorocarbon saturant replaces epoxy
- 3PU** Pleated cellulose particulate removal element. Includes molded polyurethane end seals.
- AU** Hydrocarbon vapour removal element. Ultrafine grained, highly concentrated, activated carbon sheet media. Includes molded polyurethane end seals.



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# Stainless Steel Mesh Filter Media

## Features

Long element life

Re-usable

Rugged element design

All 316 Stainless Steel construction

Temperature to 250°C

Pressure to 345 barg

Three standard efficiency ratings from 1.5 to 15 microns nominal, 5 to 25 microns absolute (others available) and three standard sizes are available. SSC cartridges are re-usable and may be cleaned using back flushing, chemical or ultrasonic methods. Therefore they are especially suited to applications



where solid contamination levels are high. Their rugged construction and resistance to corrosion can be utilised in the most demanding applications, where the filter system is subjected to extremes of pressure and temperature.

## Flow Rates

Air Flow Rates in m <sup>3</sup> /h at indicated line pressure and 0.1 barg pressure drop												
Housing	Element Grade	Air Pressure barg										
		0.1	1	2	4	7	10	16	100	200	340	
95S6 85	03	2.5	4.5	6.7	11.0	18.0	25.0	38.0	225.0	450.1	765.1	
	10	5.1	9.3	14.0	23.0	37.0	51.0	79.0	470.0	940.1	1,590.1	
	25	6.1	11.0	17.0	28.0	45.0	61.0	95.0	560.0	1,120.1	1,900.1	
33S6 37/12 33G	03	4.8	9.0	13.0	22.0	35.0	48.0	75.0	440.0	880.1		
	10	8.5	16.0	23.0	39.0	62.0	85.0	130	780.0	1,560.1		
	25	10.0	18.0	27.0	44.0	71.0	97.0	150.0	890.1	1,780.1		
45S6 37/25 45G	03	9.0	17.0	25.0	42.0	67.0	92.0	140.0	840.1	1,680.1		
	10	11.0	20.0	30.0	49.0	79.0	110.0	170.0	990.1	1,980.1		
	25	12.0	21.0	32.0	53.0	84.0	115.0	180.0	1,060.1	2,120.2		

## Principal Specifications

Cartridge Code	SSC-050-11-XX	SSC-100-12-XX	SSC-100-25-XX
Material of Construction	316 SS	316 SS	316 SS
Seals	Viton	Viton	Viton
Maximum Differential Pressure barg <sup>(2)</sup>	10	10	10
Maximum Differential Pressure barg <sup>(3)</sup>	1	1	1

## Gas Filtration Efficiency

Micron Rating Code	100% Retention µm size	98% Retention µm size
-03	5	1.5
-10	12	5
-25	25	15

## Water Filtration Efficiency

Micron Rating Code	100% Retention µm size	98% Retention µm size
-03	9	3
-10	20	10
-25	35	25

## Ordering Information

SSC Filter Cartridges are specially designed to fit Balston stainless steel housings to give an all stainless steel filter system.

Cartridge Code Fits	Housing Codes
SSC-050-11-XX	95S6; 85
SSC-100-12-XX	EU37/12; 33S6; 33G
SSC-100-25-XX	EU37/25; 45S6; 45G

### Notes:

1 Alternative seals in PTFE are available. Contact Technical Support

2 Out-to-In flow 3 In-to-Out flow e.g. when back flushing

Viton® is a registered trademark of DuPont Dow Elastomers.



# Stainless Steel Sintered Metal Filter

## Features

Remove solids and liquids from gas samples

Remove solids from liquid samples

Filtration efficiencies from 5-100 micron

316L stainless steel construction

Long life, cleanable filter cartridges

Temperature resistance to 200°C

Up to 14 barg (differential pressure)

## Advantages

The Parker stainless steel sintered metal filter is suitable for applications which require a durable, low maintenance re-usable stainless steel filter. The filter cartridge is constructed of 316 stainless steel with two molded viton gaskets. It may be installed in select Parker filter housings



that are designed to accommodate a 050-11,100-12 or 100-25 size filter cartridge. Parker stainless steel sintered metal filters may be used in liquid or gas service, to filter particulate sized from 5 micron to 100 micron - depending on the grade of the filter used. The Parker stainless steel sintered metal filter has excellent chemical resistance characteristics.

## Flow Rates (m<sup>3</sup>/h)

Filter Housing Model	Filter Size	Filter Cartridge Grade	Max Porosity (Micron)	0.3 barg	1.3 barg	2.8 barg	4.1 barg	5.5 barg	6.9 barg	8.6 barg	11.0 barg	13.8 barg	17.2 barg	20.7 barg	34.5 barg
<b>95</b> <b>85 Series</b> <b>91</b>	050-11	05M	5	1.4	2.7	4.4	6.1	7.5	9.2	11.2	13.3	17.0	20.4	25.5	40.8
		10M	10	2.0	4.1	6.6	9.2	11.2	13.8	16.8	20.4	25.5	32.3	37.4	61.2
		20M	20	1.6	3.2	5.2	7.2	8.8	11	13	16	20	25	30	48
		40M	40	4.1	8.2	13.3	18.7	22.1	27.2	34.0	39.1	52.7	62.9	74.8	124.0
		70M	70	5.8	11.6	18.7	25.5	32.3	39.1	47.6	56.1	73.1	90.0	107.0	175.0
		00M	100	7.5	15.0	23.8	34.0	40.8	51.0	61.2	73.1	95.1	115.5	137.6	226.0
<b>31S6</b> <b>33S6</b> <b>31G</b> <b>33G</b>	100-12	05M	5	4.1	8.8	13.6	18.7	23.8	28.9	35.7	40.8	54.4	66.3	79.9	129.1
		10M	10	6.1	13.3	20.4	28.9	35.7	44.2	52.7	62.9	81.6	117.2	118.9	193.7
		20M	20	8.2	17.0	27.2	37.4	47.6	57.8	70.0	83.3	108.7	132.5	158.0	258.2
		40M	40	12.2	27.2	40.8	56.1	71.4	86.6	105.3	124.0	161.4	200.5	237.9	389.1
		70M	70	17.0	37.4	57.8	79.9	101.9	122.3	149.5	176.7	229.4	283.7	336.4	550.5
		00M	100	22.1	49.3	74.8	103.6	130.8	159.7	192.0	227.7	297.3	367.0	434.9	711.9
<b>41S6</b> <b>45S6</b> <b>41G</b> <b>45G</b> <b>37/25</b>	100-25	05M	5	5.8	12.2	18.7	27.2	34.0	40.8	49.3	57.8	76.5	93.4	112.1	183.5
		10M	10	8.7	17.7	28.9	39.1	51.0	61.2	74.8	88.3	115.5	141.0	168.2	273.5
		20M	20	11.6	23.8	39.1	52.7	68.0	81.6	98.5	117.2	152.9	188.6	224.3	365.3
		40M	40	17.0	37.4	57.8	79.9	100.2	122.3	149.5	175.0	229.4	282.0	334.7	548.8
		70M	70	23.8	52.7	81.6	112.1	142.7	173.3	210.7	248.1	324.5	399.3	475.7	776.4
		00M	100	32.3	68.0	107.0	146.1	185.2	224.3	237.5	321.1	421.4	518.2	615.0,1,005.8	

## Principal Specifications

<b>Filter Efficiency</b>	5 micron to 100 micron (nominal) in gas and liquid	<b>Dimensions (including gaskets)</b>
<b>Materials of Construction</b>	316L Stainless Steel Cartridge, Viton Gasket	<b>050-11 size</b> 19 x 58 mm
<b>Maximum Temperature</b>	200°C	<b>100-12 size</b> 31 x 63 mm
<b>Maximum Pressure Drop</b>	14 barg	<b>100-25 size</b> 31 x 177 mm
		<b>Shipping Weight</b> 0.2 kg

## Ordering Information

	050-11 Size	100-12 Size	100-25 Size	
<b>Sintered Metal Filter</b>	050-11-( )	100-12-( )	100-25-( )	<b>Example:</b> 100-12-40M
<b>Replacement Viton Gaskets</b>	A05-0045	A05-0046	A05-0047	

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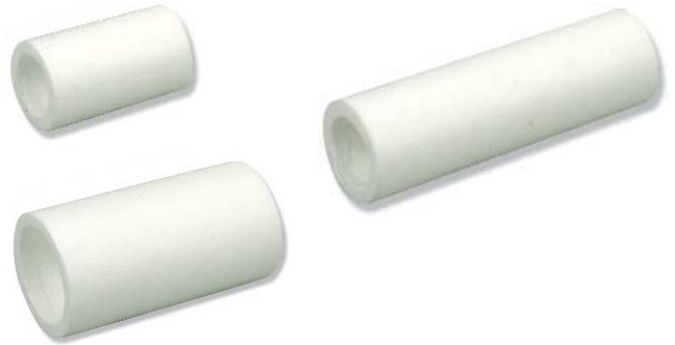
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# Membrane Filter Media

## 0.01 µm Membrane Filters

The GS Membrane Cartridges represent state-of-the-art membrane filtration technology. An integral pre-filter, bonded to a porous PTFE membrane, provides the user with extended membrane life, 0.01µm filtration rating and, most importantly, zero fibre shedding. The Balston GS Membrane filter also offers excellent chemical compatibility as a result of the inert materials of construction. All of these features combine to make the Balston GS cartridges the ideal choice for critical process gas filtration requirements.



## Retention Efficiency

A staff research scientist at M.I.T., Dr. McCarthy used a submicron particle detection and sizing device to collect and analyse the filter efficiency data. The test procedure consisted of challenging the membrane filter with a sodium chloride aerosol solution, which contained aerosol particles in a narrowly defined size range. Downstream from the filter, the effluent gas was evaluated for particulate contaminant size using a condensation nucleus counter. There was no detectable penetration of 0.01 µm particles through the membrane filters. Bulletin TI-834 details the efficiency rating procedure and experimental results of this study.

**GS Membrane cartridges physical properties, Temperature Range:** -40°C to 121°C

**Maximum pressure differential across membrane:** 1.4 bar (size code 100 and 200)

**Inside-to-outside flow:** 4.1 bar (size code 050)

**Materials of construction:** Borosilicate glass with fluorocarbon resin binder pre-filter and PTFE membrane

**Retention efficiency:** 0.01 µm

## Chemical Compatibility

**The GS Series Membrane Filter cartridges are compatible with the following gases (when installed in a stainless steel filter housing with Teflon seals).**

Ammonia	Air (Compressed)	Argon
Arsine	Boron Trichloride	Carbon Dioxide
Carbon Tetrafluoride	Chlorine (dry)	Diborane
Dichlorosilane	Fluorine (dry)	Freon
Helium	Hydrogen	Hydrogen Bromide
Methylene Chloride	Nitrogen	Nitrous Oxide
Phosphorous Oxychloride (dry)	Phosphine	Silane

## Ordering Information

Model	No. Required	Box of 3	Box of 10
97S6	1	GS-3/050-05-95	GS-050-05-95
91S6	1	GS-3/050-11-95	GS-050-11-95
95S6	1	GS-3/050-11-95	GS-050-11-95
95T	1	GS-3/050-11-95	GS-050-11-95
31S6, 33S6	1	GS-3/100-12-95	GS-100-12-95
41S6, 45S6	1	GS-3/100-25-95	GS-100-25-95

# Chemical Compatibility and Application Index

Chemical	X-Model or Q-Model with Fluorocarbon Resin Binder	H-Model with Quartz Construction	LP Cartridge with Polypropylene Support
<b>Cold Water</b>	Excellent	Fair	Excellent
<b>Hot Water (to 820°C)</b>	Excellent	Not Recommended	Not Recommended
<b>Steam (to 1-4 barg)</b>	Excellent	Not Recommended	Not Recommended
<b>Acids</b> <i>(except Hydrofluoric)</i>	<b>Dilute Concentrations</b>	Excellent	Excellent
	<b>Intermediate concentrations</b>	Excellent	Good
	<b>Concentrated</b> <i>(except Phosphoric)</i>	Good-Fair	Excellent
	<b>Concentrated Phosphoric Hydrofluoric</b>	Not Recommended	Not Recommended
<b>Caustic, below 45%</b>	Excellent	Not Recommended	Fair
<b>Caustic, above 45%</b>	Fair	Not Recommended	Not Recommended
<b>Chlorine</b> <i>(liquid or gas)</i>	Excellent	Excellent	Not Recommended
<b>Ammonia</b> <i>(liquid or gas)</i>	Not Recommended	Not Recommended	Fair
<b>Aromatic Hydrocarbons</b>	Excellent	Excellent	Good
<b>All other Hydrocarbons</b>	Excellent	Excellent	Excellent
<b>Ketones</b>	Not Recommended	Excellent	Fair
<b>Alcohols</b>	Excellent	Excellent	Excellent
<b>Freons</b>	Excellent	Excellent	Not Recommended
<b>Phenol</b>	Excellent	Excellent	Not Recommended
<b>Chlorinated Solvents</b>	Excellent	Excellent	Fair
<b>Ethylene Diamine</b>	Excellent	Excellent	Not Recommended
<b>Ethanolamine</b>	Not Recommended	Excellent	Not Recommended
<b>Other Amines</b>	Good-Fair	Excellent	Not Recommended
<b>Polar Solvents</b> <i>(including: DMF, DMAC, NMP, DMSO)</i>	Not Recommended	Excellent	Not Recommended

Operating Requirement	Filter Cartridge Model	Stainless Steel (or Monel) Housing	Plastic Housing
<b>Pressure 176 To 340 barg</b>	All	91S6, 97S6, 95M, 85, EU37/12, EU37/25, EU27/35, EU27/80, 95S6	-
<b>Temperature 150° to 290°C</b>	S, H	Any stainless steel or Monel housing with Viton seals	-
<b>Temperature 290° to 480°C</b>	H	30/12, 30/25	-
<b>Exceptional Chemical Resistance</b>	see above	95M	9922-□-□, 8822-□-□, 95T
<b>NACE Compliance</b>	All	95S6, 85, EU37/12, EU37/25, EU27/35, EU27/80	-
<b>Separate Liquids From Gases</b>	X, Q	All housings except 97S6, 30/12, 30/25	8822-11-□, 8833-11-□, 95T
<b>Remove Gas Bubbles From Liquids</b>	X, Q	All housings except 97S6, 30/12, 30/25	8822-11-□, 95T
<b>Quantitative Measurement Of Solids In Gases</b>	H, Q, S	30/12, 30/25	-
<b>Slipstream Or Bypass Filtration</b>	X, Q, LP, S	All housings except 97S6, 30/12, 30/25	8822-11-□, 95T, 53/18, 53/50
<b>Filter Liquids With High Solids Content</b>	LP	All housings	All housings
<b>Filter Gas Or Liquid Samples To Analysers</b>	X, Q, LP, S	All housings	9933-05-□, 9922-05-□, 90

# Gas Flow Rates

Filter Housing	Volume of Housing (ml)	Filter Element Grade	Flow Rates, m <sup>3</sup> /h, At 0.14 Drop At Indicated Line Pressure, barg.									
			0.14	1.4	3	4	6	7	9	10	14	17
9922-05	15	DQ	2.0	4.2	6.6	9.1	11.6	14.1	17.2			
9933-05		BQ	1.4	2.7	4.4	5.9	7.6	9.2	11.2			
		GS	0.8	1.7		2.5		3.4	3.7			
8822-11	52	DX	3.1	6.1	10.2	13.6	17.0	20.4	24.8			
8833-11												
9933-11	35	BX	1.5	3.1	5.1	6.8	8.5	10.2	12.4			
9922-11		GS	0.8	1.7		2.9		3.7	3.9			
97S6	16	DQ	5.1	11.9	17.0	23.8	30.6	37.4	45.9	54.4	69.7	86.6
		BQ	1.5	3.1	5.1	6.8	8.5	10.2	11.9	15.3	18.7	23.8
95M	25	DQ	6.6	13.6	22.1	30.6	37.4	45.9	56.1	66.3	86.6	105.3
95S6		BQ	2.6	5.1	8.5	11.9	13.6	17.0	20.4	23.8	32.3	39.1
91S6	38											
47S6		GS	0.8	1.7		3.1		4.2	4.8	5.1	5.8	
48S6	23	DQ	4.2	17.0	27.2	39.1	47.6	56.1	68.0	79.9	103.6	127.4
		BQ	3.4	8.5	13.6	15.3	17.0	18.7	22.1	27.2	34.0	42.5
85	53	DX	10.0	20.4	33.1	44.2	54.4	69.7	84.9	98.5	129.1	156.3
		BX	3.7	7.8	13.1	14.7	20.4	25.5	30.6	37.4	47.6	57.8
31S6	132	DQ / DX	17.0	37.4	59.5	81.5	103.6	125.7	152.9	181.8	237.8	292.2
31G		BQ / BX	3.4	10.2	15.3	20.4	27.2	34.0	40.8	49.3	62.9	78.1
		GS	1.7	3.6		7.8		11.9	13.1	14.3	16.3	
33S6	204	DX	20.4	44.2	68.0	93.4	118.9	144.4	175.0	207.3	270.1	333.0
33G												
EU37/12	171	BX	5.1	11.9	17.0	23.8	30.6	37.4	45.9	54.4	69.7	86.6
30/12	107	GS	1.7	3.6		7.8		11.9	13.1	14.3	16.3	
49S6	165	DQ	22.1	47.6	76.5	103.6	132.5	159.7	195.4	229.4	300.7	370.4
		BQ	10.2	22.1	35.7	47.6	59.5	73.1	90.0	105.3	137.6	169.9
41S6	285	DQ / DX	25.5	54.4	84.9	117.2	147.8	180.1	219.2	258.2	338.1	416.2
		BQ / BX	11.9	25.5	40.8	54.4	69.0	84.9	103.6	122.3	158.0	195.0
41G		GS	5.1	10.2		22.1		34.0	37.4	40.8	46.6	
30/25	260	DQ / DX	28.9	61.2	96.8	132.5	168.2	203.9	248.0	292.2	382.2	470.6
45S6	455											
45G	455	BQ / BX	13.6	28.9	44.2	61.2	76.4	93.4	113.8	134.2	175.0	215.8
EU37/25	328	GS	5.1	10.2		22.1		34.0	37.4	40.8	46.6	
EU27/35	1,867	DX	68.0	141.0	220.8	302.4	382.2	463.8	564.0	665.9	866.4	1068.6
		BX	32.3	66.3	105.3	142.7	181.8	219.2	266.7	314.3	409.4	504.6
EU27/80	3311	DX	73.1	152.9	241.2	327.9	416.2	504.6	615.0	723.7	942.9	1162.0
		BX	47.6	100.2	158.0	215.8	273.5	331.3	402.6	475.7	620.1	762.8
15/80S6	4700	DX	271.8	565.8	892.0	1218.2	1542.7	1868.9	2276.7	2684.4	3500.0	4315.5
		BX	76.5	159.7	251.5	343.2	434.9	526.7	642.2	756.1	985.4	1214.8
Q1S,Q5S,H1S,H5S	40	4	1.3	2.9	4.6	6.2	7.8	9.5	11.6	13.6	17.8	21.9
		6	1.8	3.9	6.1	8.2	10.5	12.7	15.4	18.2	23.8	29.2
		10	3.1	6.7	10.6	14.2	18.1	22.0	26.7	31.5	41.2	50.7
		AU	1.8	3.9	6.1	8.2	10.5	12.7	15.4	18.2	23.8	29.2
Q15N,Q2N		2	4	5.0	10.9	17.2	23.0	29.3	35.6	43.3		
		6	6.7	14.5	23.0	30.8	39.2	47.6	57.9			
		10	12.9	28.0	44.2	59.3	75.5	91.7	111.5			
		AU	6.7	14.5	23.0	30.8	39.2	47.6	57.9			
FFC-110	148	10	6.0	13.0	20.5	27.5	35.0	42.5	51.6	60.8	79.6	97.8
FFC-110L	207	6	12.0	25.9	41.0	55.0	70.0	85.0	103.3	121.6	159.2	195.8
FFC-112	14.8	10	3.6	7.8	12.3	16.5	21.0	25.5	30.9	36.4	47.7	58.6
FFC-112SAE	14.8	10	3.6	7.8	12.3	16.5	21.0	25.5	30.9	36.4	47.7	58.6
FFC-113	14.8	6	12.0	25.9	41.0	55.0	70.0	85.0	103.3	121.6	159.2	195.8
FFC-114	89	10	12.0	25.9	41.0	55.0	70.0	85.0	103.3	121.6	159.2	195.8
FFC-116	7.4	10	2.0	4.3	6.8	9.1	11.5	14.0	17.0	20.0	26.2	32.2
ILN/IKN	40	4	1.1	2.4	3.8							
		6	1.5	3.2	5.0							
		10	2.0	4.4	7.0							
A33B-SA		SA		13.62	18.66	27.18	35.7	42.48	52.68	61.14		
A45B-SA		SA		32.28	50.94	69.66	86.64	107.58	129.12	152.88		
A27/35B-SA		SA			39.06	62.88	84.96	108.72	130.86	159.72	188.58	
A27/80B-SA		SA			78.12	125.7	171.6	219.12	263.34	321.06	378.84	
P1N	210	2		7	10		14					
		4		10	14		19					
		6		14	19		26					
		8		17	22		29					
		10		20	26		34					

Refer to Product specification Charts For Maximum Pressure of Each Housing												Filter Housing
21	35	52	69	103	138	172	207	241	276	310	345	
												9922-05 9933-05
												8822-11 8833-11
												9933-11 9922-11
101.9	168.2	249.7	331.3	492.7	655.8	818.8	981.9	1145.0	1308.1	1505.2	1634.3	97S6
27.2	44.2	66.3	88.3	130.8	175.0	217.5	261.6	304.1	348.3	390.7	434.9	
125.7	205.6	305.8	406.0	606.5	798.5	1002.3	1206.2	1410.0	1596.9	1800.8	2004.6	95M 95S6
45.9	76.4	113.8	149.5	224.2	305.8	373.7	441.7	526.6	594.0	662.6	747.5	95T
7.0	9.0		12.6		17.8		21.9		25.1		28.0	91S6 47S6
151.2	246.4	356.8	475.7	713.6	951.4	1189.3	1427.2	1665.0	1902.9	2140.8	2378.6	48S6
49.3	78.2	118.9	152.9	220.9	305.8	373.8	441.7	509.7	577.7	645.6	713.6	
188.6	309.2	458.7	611.6	917.4	1206.2	1512.0	1809.3	2115.1	2412.4	2718.1	3006.9	85
69.7	115.5	192.0	227.6	339.8	450.2	552.1	679.5	807.0	900.4	1002.3	1121.2	
348.3												31S6 31G
91.7												
19.7												
395.3	647.3	963.2	1277.5	1906.1	2536.4	3164.9	3795.2	4417.0	5045.6			33S6 33G
101.9	168.2	249.7	331.3	494.4	657.5	820.5	983.6	1180.7	1308.1			EU37/12
19.7	25.1		35.3		49.8		61.0		70.3			30/12
440.0	718.7	1068.7	1417.0	2115.3								49S6
202.2	329.6	489.3	650.7	970.1								
494.4												41S6
236.1												41G
558.9	914.0	1359.0	1804.2	2693.0	3581.2	4469.6	5361.5	6251.7	7135.1			30/25
256.5	419.6	623.5	827.3	1235.1	1642.8	2050.5	2982.0	2871.0	3278.8			45S6
56.2	72.0		101.1		142.4		173.3		200.5			45G
1270.7	2072.6	3091.9	4094.2	6115.8	8120.5	10142.1	12163.7					EU37/25
599.7	981.9	1457.6	1936.7	2888.0	3839.4	4790.7	5747.1					
1382.9	2259.5	3363.7										EU27/35
907.2	1483.1	2208.5										EU27/80
5131.0	8393.1											15/80S6
1444.2	2361.6											Q1S, Q5S, H1S, H5S
												Q15N, Q2N
116.6	190.7											FFC-110
233.4	381.7											FFC-110L
69.9	114.3	169.6	225.0	336.0	447.0	558.1	668.8	779.8				FFC-112
69.9	114.3	169.6	225.0	336.0	447.0	558.1	668.8	779.8				FFC-112-SAE
233.4	381.7	566.6	751.4									FFC-113
233.4	381.7	566.6	751.4									FFC-114
38.4	62.9	93.3	123.8	184.8	245.9	307.0	367.9	429.0	490.0	551.1	612.0	FFC-116
												ILN/IKN
												A33B-SA
												A45B-SA
												A27/35B-SA
												A27/80B-SA
												P1N



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## Adsorbent Cartridge Flow Rates of Gas<sup>(1)</sup> (m<sup>3</sup>/h)

Housing	Grade	Flow Rates in m <sup>3</sup> /hr (A.N.R.) <sup>(2)</sup> at 0.14 barg Pressure Drop Indicated Line Pressure												
		0.14	1	2	4	6	10	15	20	30	50	70	100	150
9922-05, 9933-05	DAU	0.9	1.7	2.5	4.3	6.1	-	-	-	-	-	-	-	-
9922-11, 9933-11														
8822-11, 8833-11	DAU	1.3	2.4	3.5	5.7	7.9	-	-	-	-	-	-	-	-
33S6, 33G, EU37/12	CI	3.7	6.1	9.3	15.9	22.3	35.3	51.7	67.8	100.8	165.6	231	328.8	491.4
45S6, 45G, EU37/25	CI	10.2	17.1	25.4	42.1	58.8	92.4	133.8	175.8	259.2	426	592.8	840	1260
EU27/35	CI	20.4	36	53.2	87.6	122.4	191.4	277.2	363.6	535.8	882	-	-	-
EU27/80	CI	39.1	92.4	123.6	186.6	249.6	376.2	533.4	690	1008	1638	-	-	-

### Notes:

- 1 Please see Page 12/13 for coalescing filter flow rates.
- 2 A.N.R. = Standard reference Atmosphere (1000mbar, 20°C 65% R.H.)

**Note:** Housings should be checked for individual pressure ratings.

## Flow Rates for Liquid Filters

Filter Housing	Volume of Housing Litres	Initial Pressure Drop bar	Q or X Cartridges		Water Flow Rate, litres per minute				
			DO, DX	BO, BX	LP Cartridges				
			Grade 10	Grade 20	Grade 30	Grade 50			
<b>Stainless Steel, Monel and Teflon Housings</b>									
105S6	-	0.07	0.44	0.13	-	-	-	-	-
	-	0.34	1.51	0.63	-	-	-	-	-
48S6	-	0.07	0.88	0.25	-	-	-	-	-
	-	0.34	3.22	1.32	-	-	-	-	-
95M, 95S6, 95T, 95A	0.02	0.07	1.14	0.32	-	-	-	-	-
91S6, 47S6	0.04	-	-	-	-	-	-	-	-
85	0.06	0.34	4.04	1.64	-	-	-	-	-
31S6, 31G	0.10	0.07	3.41	0.82	-	-	-	-	-
	0.10	0.34	8.14	3.53	-	-	-	-	-
49S6	-	0.07	3.60	0.88	-	-	-	-	-
	-	0.34	8.52	3.79	-	-	-	-	-
33S6, 33G, EU37/12	0.16	0.07	3.97	1.01	3.15	3.15	2.52	0.63	
	0.16	0.34	9.46	4.16	13.25	13.25	11.36	2.84	
41S6, 41G	0.19	0.07	5.99	1.89	-	-	-	-	
	0.19	0.34	16.40	7.63	-	-	-	-	
EU37/25, 45S6, 45G	0.42	0.07	6.88	2.21	4.73	4.73	3.79	0.95	
	0.42	0.34	18.93	8.83	18.93	18.93	16.40	4.10	
EU27/35	1.49	0.07	20.50	5.68	-	-	-	-	
	1.49	0.34	55.20	25.24	-	-	-	-	
EU27/50	-	0.07	-	-	13.25	13.25	13.25	5.05	
	-	0.34	-	-	45.42	45.42	45.42	24.61	
EU27/80	2.84	0.07	24.61	10.73	-	-	-	-	
	2.84	0.34	62.46	38.49	-	-	-	-	
EU27/95	-	0.07	-	-	26.50	26.50	26.50	10.09	
	-	0.34	-	-	90.85	90.85	90.85	49.21	
15/80S6 (2)	-	0.07	104.10	45.42	-	-	-	-	
	-	0.34	252.36	157.73	-	-	-	-	
<b>Plastic Housings</b>									
9922-05, 9933-05	0.01	0.07	0.76	0.19	-	-	-	-	
	0.01	0.34	1.89	0.95	-	-	-	-	
8822-11, 8833-11, 9922-11, 9933-11	0.02	0.07	1.14	0.32	-	-	-	-	
	0.02	0.34	2.84	1.64	-	-	-	-	
90	-	0.07	1.45	0.63	-	-	-	-	
	-	0.34	2.90	2.27	-	-	-	-	
7700-12, 58P	0.13	0.07	-	-	3.15	3.15	2.52	0.63	
	0.13	0.34	-	-	13.25	13.25	11.36	2.84	
53/18	0.70	0.07	-	-	6.31	6.31	6.31	2.52	
	0.70	0.34	-	-	22.71	22.71	22.71	11.99	
53/50, 54/50	0.70	0.07	-	-	6.31	6.31	6.31	2.52	
	0.70	0.34	-	-	22.71	22.71	22.71	11.99	
53/95	2.50	0.07	-	-	26.50	26.50	26.50	10.09	
	2.50	0.34	-	-	90.85	90.85	90.85	49.21	

### Notes:

- 1 For liquids with viscosity higher than the viscosity of water (1 centipoise), divide the flow rates in the above table by the viscosity of the liquid in centipoises.
- 2 Flow rates for Model 15/80S6 are estimated.

# Plastic Inline Filters

## Features

**Pre & fine filtration in one unit**

**Pressure ratings up to 3.4 barg**

**Temperature to 52°C**

**Twist-lock design**

The ILN/IKN in-lines are used for low flow circuit protection on sensing instruments, analysers, air-logic, and other control devices. High efficiency coalescing and particulate elements are available.

This twist-lock plastic housing is designed for 3.45 bar maximum operating pressure. The two-stage filter design allows for high efficiency element replacement and the re-use of the 75-micron prefilter.



ILN/IKN Series

## Principal Specifications

	ILN/IKN	ILND/IKND	ILNV/IKNV
<b>Port Size</b>	1/8"	1/8"	1/8"
<b>Maximum Pressure</b>	9 barg	9 barg	9 barg
<b>Materials of Construction</b>			
<b>Head</b>	ILN: Nylon IKN Clear Polyurethane	ILND: Nylon IKND Clear Polyurethane	ILNV: Nylon IKNV Clear Polyurethane
<b>Internals</b>	Neoprene	Neoprene	Neoprene
<b>Bowl</b>	ILN: Nylon IKN Clear Polyurethane	ILND: Nylon IKN Clear Polyurethane	ILNV: Nylon IKN Clear Polyurethane
<b>Seals</b>	Silicone Rubber	Silicone Rubber	Silicone Rubber
<b>Shipping Weight</b>	0.05kg	0.05kg	0.05kg
<b>Dimensions</b>	46x102mm	46x102mm	46x102mm

## Ordering Information

I		N		—			05-011
Port Size		Model of Drain			Media Grade	Media Model	Element Size
L = 1/8" NPT		blank for no drain; closed			2	G	
K = 1/8" NPT with brass inserts		D = Open; constant bleed drain			4	T	
		V = Valved; manual drain			6	F	
					8	H	
					10		

For Example: IKND-4G05-011 for complete assembly, including element. IKND x 1 for an empty housing.



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# Disposable Inline Filters

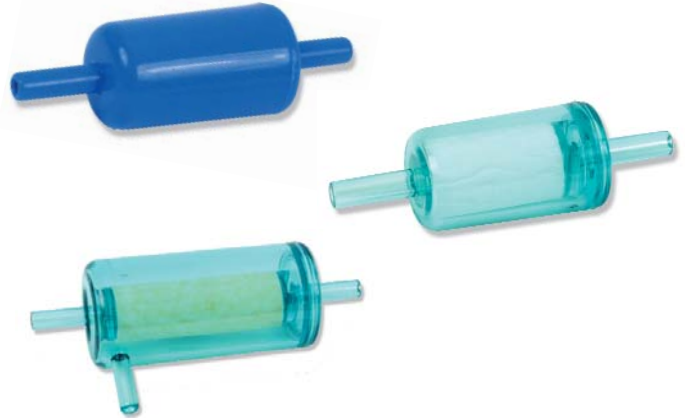
## Features

Prevent cross-contamination of samples

Pressure ratings up to 8.5 barg

Temperature to 135°C

Completely disposable, constructed of recyclable plastics



## Models 9922-05, 9933-05, and 9900-05

The 9933-03 models are the smallest disposable filter units with 6.6ml internal volume. These models are used in low flow gas or liquid sampling applications, such as liquids to specific-ion analysers or gases to personal samplers. The model 9900-05-BK has a colour indicating feature, which turns the cartridge red when saturated with oil.

## Models 9922-11 and 9933-11

Models 9922-11 and 9933-11 are used for applications similar to the smaller DFUs (Models 9922-05 and 9933-05), which require greater solids holding capacity and can tolerate the increased retention time.

## Model 8833-11

These disposable filter units are used as continuous coalescing filters with a third port serving as the drain, slipstream, or by-pass port.

## Principal Specifications

Model	8822-11	8833-11	9922-05	9933-03	9933-05	9922-11	9933-11
<b>Inlet and Outlet Ports</b>	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/4" Tubing
<b>Drain</b>	1/4" Tubing	1/4" Tubing	None	None	None	None	None
<b>Material of Construction</b>	PVDF (Blue)	Nylon (Clear)	PVDF (Blue)	Nylon (Clear)	Nylon (Clear)	PVDF (Blue)	Nylon (Clear)
<b>Filter Cartridge Length</b>	57mm	57mm	32mm	32mm	32mm	57mm	57mm
<b>Maximum Temperature<sup>(1)</sup></b>	135°C	110°C	135°C	110°C	110°C	135°C	110°C
<b>Maximum Pressure<sup>(2)</sup></b>	8.5 barg	8.5 barg	8.5 barg	8.6 barg	8.1 barg	8.5 barg	8.5 barg
<b>Dimensions</b>	36 x 120mm	36 x 120mm	25 x 80mm	25 x 44mm	25 x 80mm	36 x 120mm	36 x 120mm

## Ordering Information

Model	8822-11	8833-11	9922-05	9933-03	9933-05	9922-11	9933-11
Box 10	8822-11-□	8833-11-□	9922-05-□	9933-03-□	9933-05-□	9922-11-□	9933-11-□
Available only in	X-grades	X-grades	Q-grades	Q-grades	Q-grades	Q-grades	Q-grades
Box 10 DAU'S <sup>(3)</sup>		N/A	9922-05-□	9933-03-□	9933-05-□	9922-11-□	9933-11-□
0.01 membrane filters				9933-05-95	9922-11-95		

### Notes:

1 At 0 barg

2 At 43°C

3 To designate adsorbent in the DAU, insert adsorbent numbers after DAU designation. For example, to obtain a miniature clear nylon DAU with carbon adsorbent, order 9933-05-000. Adsorbent numbers are listed on page 6



# Hydrophobic Membrane Filters

## Features

**Ideal for protecting all models of on-line analyser**

**Removes entrained water, submicron sulphuric acid aerosol and ultra fine particulate**

**Provides an absolute barrier to liquids**



MODEL 39

## Series 39 & 98 Membrane Filters

The series 39 & 98 membrane filters consist of a housing with a porous PTFE membrane filter, which is supported by a sintered porous disk located on the "outlet" side of the housing. Gas enters through the "inlet" port on the upstream side of the membrane and exits from the "outlet" port on the downstream side. Entrained liquid will not flow through the membrane and will exit through the "bypass" port on the upstream side of the membrane, completely protecting sensitive instrumentation from moisture.

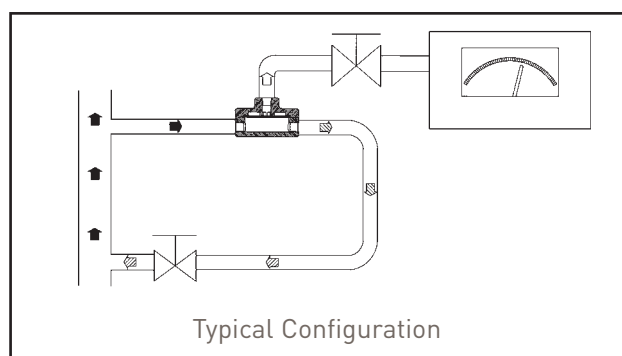
For the membrane to operate correctly there must be by-pass flow.



MODEL 98

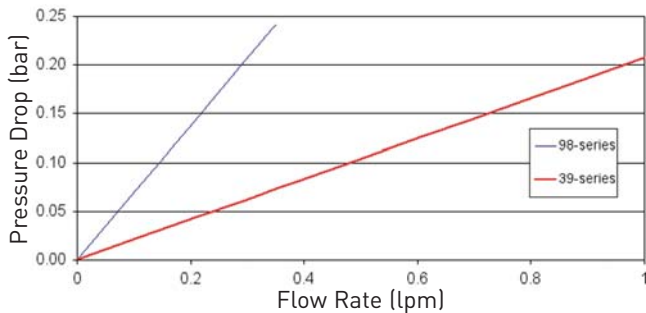
## The Membrane

Microscopic pores contained within the membrane permit molecules of gas or vapour to flow through easily, allowing the composition of the sample gas to remain unchanged. Conversely, even the smallest liquid molecules remain trapped and are unable to flow through the membrane's small passages under normal operating conditions. This is due to the high surface tension, which causes liquid molecules to bind tightly together, to form a group of molecules, which is too large to fit through the pores of the membrane. The membrane is extremely inert and is recommended for most process applications, with the exception of hydrofluoric acid. It is also recommended for use in systems designed for ppb, ppm and "percent level" component concentrations, as a result of its very low absorption characteristics. The membrane is strong and durable, but also very soft and pliable.

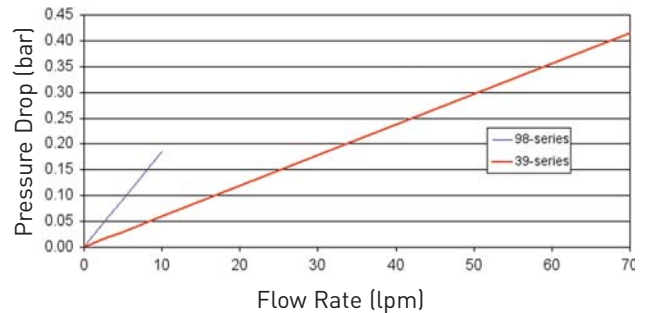


# Hydrophobic Membrane Filters

**Flow Rate Vs Pressure Drop  
Standard Membrane**



**Flow Rate Vs Pressure Drop  
High Flow Membrane**



## Housing and Membrane Selection Guide

Model	39-0	39-2	98-0	98-2
Membrane Model	Standard <sup>(1)</sup>	High Flow <sup>(2)</sup>	Standard <sup>(1)</sup>	High Flow <sup>(2)</sup>
Maximum Recommended Flow Rate in l/min <sup>(3)</sup>	1.0	70	0.6	10
Normal Amount of Liquid Present in Gas <sup>(4)</sup>	Low	Low to Medium	Low to Medium	Low to Medium

- Notes:**
- Standard membrane is suitable for most liquids.
  - High flow membrane is suitable for water, solutions consisting primarily of water, sulphuric acid, caustic, glycols, oily liquids and other high surface-tension model liquids.
  - Maximum recommended flow rate of gas through the membrane. Does not include the "by-pass" flow rate.
  - Amount of liquid normally expected to be present in the sample gas: Low: aerosol or occasional droplets. Medium: continuous droplets. High: continuous flowing liquid.

## Principal Specifications

Model	39 Series	98 Series
Bypass Ports	1/2" NPT	1/4" NPT
Sample Port	1/4" NPT	1/4" NPT
Materials of Construction		
Housing	316 Stainless Steel	316 Stainless Steel
O-rings	Viton (standard) Kalrez, Buna, EPDM (optional)	Viton (standard) Kalrez, Buna, EPDM (optional)
Maximum Operating Pressure	29 barg @ 93°C	69 barg
Maximum Temperature	100°C	100°C
Maximum Recommended Flow Rate		
Standard Membrane	1 l/min	0.6 l/min
High Flow Membrane	70 l/min	10 l/min
Typical Membrane Pressure Drop <sup>(1)</sup>		
Standard Membrane	0.07 barg per 250 cc/min flow through membrane	0.07 barg per 100 cc/min flow through membrane
High Flow Membrane	0.07 barg per 20 litres/min flow through membrane	0.07 barg per 3.8 litres/min flow through membrane
Outside Dimensions	84 x 51mm	50 x 50mm
Shipping Weight	1 kg	0.7kg

## Ordering Information

Filter Assembly	39-0 (Standard)	39-2 (High Flow)	98-0 (Standard)	98-2 (High Flow)
Maintenance Kits				
5 each Membranes & Viton O-Rings	39014	39015	98014	98015
5 each Membranes	39002	39020	98002	98020

- Notes:**
- Pressure Drops are for temperatures to 100°C. Viton® is a registered trademark of DuPont Dow Elastomers.

# Combination Coalescer Membrane Filters

## Features

**Continuous coalescing of all liquid and the security of hydrophobic membrane protection in one unit**

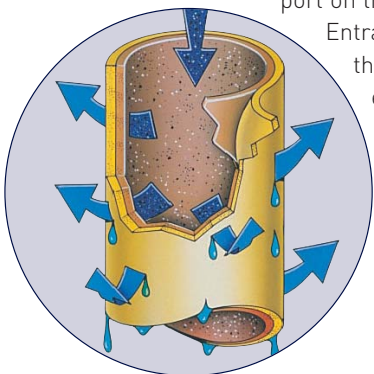
**Less maintenance and downtime as the membrane is fully protected from solids and liquids**

**Fewer fittings required — reducing risk of leaks**

**More compact — no need for separate coalescers**

## A39/12 & A98 Series Coalescer Membrane Combination Filters

The Balston Coalescer Membrane Combination Filter is designed to remove entrained liquid and particulate in gas samples for a wide variety of applications and thereby prevents contamination or damage to the analysers and sample system components. Typically located upstream of the analyser or component it is protecting; the Coalescer Membrane Combination provides protection even if other sample system components fail. The Coalescer Membrane combination offers the performance and protection of the Balston Membrane Filters, with the additional benefits of liquid coalescing and fine particle capture. There is no need for prefiltration, which places more volume in the sample system, requires more space for installation and has the potential for more areas to leak. The A98 Series and A39/12 Series consists of a housing with a porous membrane filter that is supported by a sintered porous disc located on the "outlet" side of the housing. Gas enters through the "inlet" port and is directed down through the coalescing filter. The coalescer traps all particulates and continuously drains liquid contaminants. The sample gas then flows upward to the upstream side of the membrane and exits from the "outlet" port on the downstream side.



Parker's Coalescing Action

Entrained liquid will not flow through the membrane and exits through the drain port on the downstream side of the coalescer.

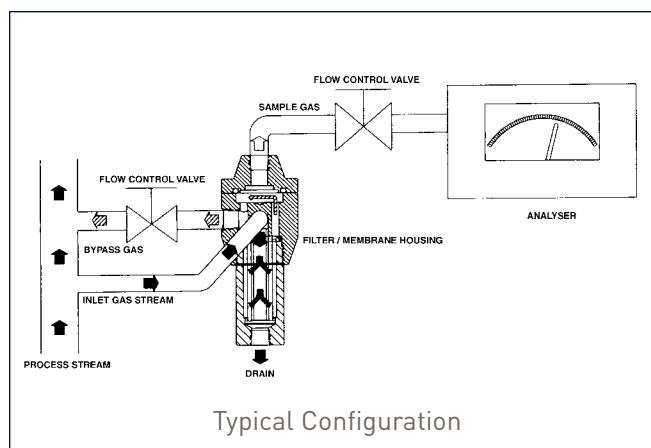
For the membrane to operate correctly there must be by-pass flow.



MODEL A39/12



MODEL A98

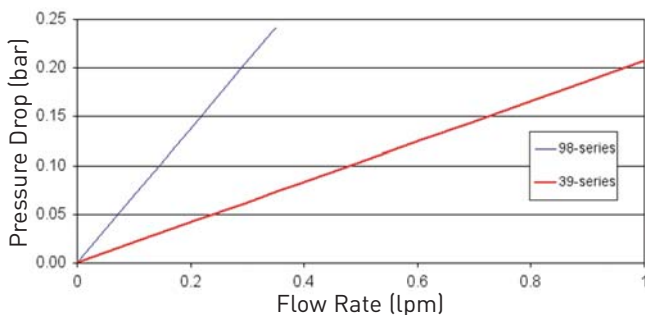


## The Membrane

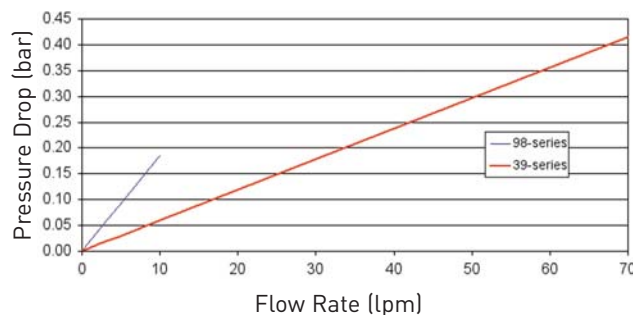
Microscopic pores contained within the PTFE membrane permit molecules of gas or vapour to flow through easily, allowing the composition of the sample gas to remain unchanged. Conversely, even the smallest liquid molecules remain trapped and are unable to flow through the membrane's small passages under normal operating conditions. This is due to the high surface tension, which causes liquid molecules to bind tightly together, to form a group of molecules, moving together, which is too large to fit through the pores of the membrane. The membrane is extremely inert and is recommended for most process liquid applications, with the exception of hydrofluoric acid. It is also recommended for use in systems designed for ppb, ppm and "percent level" component concentrations, as a result of its very low absorption characteristics. The membrane is strong and durable, but also very soft and pliable.

# Combination Coalescer Membrane Filters

**Flow Rate Vs Pressure Drop  
Standard Membrane**



**Flow Rate Vs Pressure Drop  
High Flow Membrane**



## Housing and Membrane Selection Guide

Model	A39-0	A39-2	A98-0	A98-2
<b>Membrane Model</b>	Standard <sup>(1)</sup>	High Flow <sup>(2)</sup>	Standard <sup>(1)</sup>	High Flow <sup>(2)</sup>
<b>Maximum Recommended Flow Rate in l/min <sup>(3)</sup></b>	1.0	70	0.6	10
<b>Normal Amount of Liquid Present in Gas <sup>(4)</sup></b>	Low	Low to Medium	Low to Medium	Low to Medium

- Notes:**
- Standard membrane is suitable for most liquids.
  - High flow membrane is suitable for water, solutions consisting primarily of water, sulphuric acid, caustic, glycols, oily liquids and other high surface-tension model liquids.
  - Maximum recommended flow rate of gas through the membrane. Does not include the "bypass" flow rate.
  - Amount of liquid normally expected to be present in the sample gas: Low: aerosol or occasional droplets. Medium: continuous droplets. High: continuous flowing liquid.

## Principal Specifications

Model	A39/12 Series	A98 Series
<b>Bypass Ports</b>	1/2" NPT	1/4" NPT
<b>Sample Ports</b>	1/4" NPT	1/4" NPT
<b>Materials of Construction</b>		
<b>Housing</b>	316 Stainless Steel	316 Stainless Steel
<b>O-rings</b>	Viton (standard) Kalrez, Buna, EPDM (optional)	Viton (standard) Kalrez, Buna, EPDM (optional)
<b>Maximum Temperature</b>	100°C	100°C
<b>Maximum Pressure</b>	29 barg	69 barg
<b>Maximum Flow Rate</b>	Standard Membrane 1 l/min High Flow Membrane 70 l/min	Standard Membrane 0.60 l/min High Flow Membrane 10 l/min
<b>Typical Membrane Pressure Drop <sup>(1)</sup></b>	Standard Membrane 0.07 barg per 250 cc/min flow through membrane High Flow Membrane 0.07 barg per 20 litres/min flow through the membrane	Standard Membrane 0.07 barg per 100 cc/min flow through membrane High Flow Membrane 0.07 barg per 3.8 l/min flow through the membrane
<b>Outline Dimensions</b>	84 x 185mm	50 x 100mm
<b>Shipping Weight</b>	1.1 kg	1.8kg

## Ordering Information

Filter Assembly A98/11-__Q-0 A98/11-__Q-2	Filter Assembly A39/12-__X-0, A39/12-__X-2
98011 5 ea. DQ Filters, Viton O-Rings and Membranes for A98-0	39014 5 ea. Viton O-Rings and Membranes for A39/12-0
98012 5 ea. BQ Filters, Viton O-Rings and Membranes for A98-2	39015 5 ea. Viton O-Rings and Membranes for A39/12-2
98013 5 ea. DQ Filters, Viton O-Rings and Membranes for A98-2	39002 5 ea. Membranes for A39/12-0
98010 5 ea. BQ Filters, Viton O-Rings and Membranes for A98-0	39020 5 ea. Membranes for A39/12-2
98002 5 ea. Membranes for A98-0	150-12-□ X 10 ea. Coalescing Filter Cartridges
98020 5 ea. Membranes for A98-2	
050-11-□ Q 10 ea. Coalescing Filter Cartridges	

- Notes:**
- For Glass Bowl version order: A39/12G-Q-[0]-[2]
- Viton® is a registered trademark of DuPont Dow Elastomers.

# Filters with Aluminium Heads and Various Bowls

## Features

**Lightweight and economical**

**Pressure up to 9 barg**

**Aluminium heads**

The Q series is an excellent point-of-use filter where element visibility is required. Coalescing, particulate and adsorption elements are available.

The Q series consists of aluminium head and clear bowl design. Porting in NPT and BSPF is standard with an operating pressure to 9 barg.



QN15N/Q2N Series

## Principal Specifications

	Q_1N	Q_15N	Q_2N
<b>Port Size</b>	1/4"	3/8"	1/2"
<b>Maximum Pressure</b>	9 barg	9 barg	9 barg
<b>Maximum Temperature</b>	52°C	52°C	52°C
<b>Materials of Construction</b>			
<b>Head</b>	Aluminium	Aluminium	Aluminium
<b>Internals</b>	Stainless Steel Acetal Plastic	Stainless Steel Acetal Plastic	Stainless Steel Acetal Plastic
<b>Bowl</b>	Clear Polyurethane	Clear Polyurethane	Clear Polyurethane
<b>Seals</b>	Buna-N	Buna-N	Buna-N
<b>Shipping Weight</b>	0.39 kg	0.39 kg	0.39 kg

## Ordering Information

QN					
Port Size	Port Model	Media Grade	Media Model	Accessories	
1 = 1/4"	N NPT	blank for 3PU, AU	G	N = None	
15 = 3/8"	F BSPF	2	T	D = Differential Pressure Indicator	
2 = 1/2"		4	F	G = Differential Pressure Gauge	
		6	H		
		8	C		
		10	CU		
			QU		
			3PU		
			AU		

**Note:** Although the element size is not included in the part number construction for this filter, the size, 10-025, is needed to order replacement elements. For example, 6C10-025 x 8.

**For Example:** QN15N-10QUN for complete assembly, including element. QN15NN x 1 for an empty housing.



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# Filters with Aluminium Heads and Various Bowls

## Features

**Lightweight and economical**

**Pressure up to 17 barg**

**Aluminium & plastic heads**

The H5S/Q5S series filters are an excellent choice for instrumentation and point-of-use general air system filtration. They also provide coalescing and adsorption filtration for robotic and OEM machine manufacturers.

The P1N offers economical high efficiency filtration for point of use. Instrument systems, or CEM machine circuit protection. The P1N is also used when sump and element visibility are required.

The P1N series consists of acetal plastic head and clear polyurethane bowl design. Porting in NPT with an operating pressure to 7 barg / 100 psi.



H5S/H1S/Q5S/Q1S Series

## Principal Specifications

Model	Q5S	Q1S	H5S	H1S	P1N
<b>Port Size (NPT)</b>	1/8"	1/4"	1/8"	1/4"	1/4"
<b>Maximum Pressure</b>	10 barg	10 barg	17 barg	17 barg	7 barg
<b>Maximum Temperature</b>	52°C	52°C	79°C	79°C	52°C
<b>Materials of Construction</b>					
<b>Head</b>	Aluminium	Aluminium	Aluminium	Aluminium	Acetal Plastic
<b>Bowl</b>	Polycarbonate	Polycarbonate	Zinc	Zinc	Clear Polyurethane
<b>Internals</b>	N/A	N/A	N/A	N/A	Acetal Plastic, Stainless Steel
<b>Seals</b>	Buna N	Buna N	Buna N	Buna N	Buna N
<b>Shipping Weight</b>	0.1kg	0.1kg	0.14kg	0.14kg	0.22kg

## Ordering Information

Drain Option	Port Size	Media Grade	Media Model	Element Size
blank for manual twist drain	5 = 1/8" NPT 1 = 1/4" NPT	Blank for AM	HM AM	
<b>A</b> =Auto Drain		<b>4</b>		
<b>F</b> =1/8" ID Hose Barb		<b>6</b>		
<b>V</b> =Needle Valve		<b>10</b>		

**For Example:** H5S-6HM06-013 for complete assembly, including element. H5S x 1 for an empty housing.

Media Grade	Media Model	Element Size
Blank for 3PU and AU	G T F H C CU QU 3PU AU	
<b>4</b>		
<b>6</b>		
<b>10</b>		

**For Example:** P1N-4QU10-025 for complete assembly, including element. P1N x 1 for an empty housing.

Drain Option	Port Size	Media Grade	Media Model	Element Size
Blank for manual twist drain	5 = 1/8" NPT 1 = 1/4" NPT	Blank for AM	HM AM	
<b>A</b> = Auto Drain		<b>4</b>		
<b>F</b> = 1/8" ID Hose Barb		<b>6</b>		
<b>V</b> = Needle Valve		<b>10</b>		

**For Example:** Q1S-AM06-013 for complete assembly, including element. Q1S x 1 for an empty housing.

# Miniature T-Model Filter Housings

## Features

**Stainless steel, Teflon® or Monel construction**

**Pressure to 345 barg**

**T-Model construction allows for non-disruptive maintenance**

**Ideal sample filters for on-line analysers**

## Models 105S6, 91S6, 95M, 95S6 and 95T

These miniature T-model filters are constructed of 316 stainless steel, Teflon® and Monel. With only 19ml internal volume and the opportunity for by-pass or slipstream filtration using the drain port as an exit port, the model 95 filters are ideal sample filters for on-line analysers. The model 105S6 has a smaller internal volume of 15ml.



MODEL 105S6



MODEL 95S6  
& 91S6

## Principal Specifications

Model	105S6	91S6	95M	95S6	95T	95A
<b>Inlet and Outlet Ports</b>	1/8" NPT	1/8" NPT	1/8" NPT <sup>(1)</sup>	1/8" NPT <sup>(1)</sup>	1/8" NPT <sup>(1)</sup>	1/8" NPT <sup>(1)</sup>
<b>Drain Port</b>	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT
<b>Materials of Construction</b>						
<b>Head</b>	316SS <sup>(2)</sup>	316SS <sup>(2)</sup>	Monel	316SS <sup>(2)</sup>	Teflon	Aluminium
<b>Bowl</b>	316SS <sup>(2)</sup>	316SS <sup>(2)</sup>	Monel	316SS <sup>(2)</sup>	Teflon	Aluminium
<b>Internals</b>	316SS <sup>(2)</sup>	316SS <sup>(2)</sup>	Teflon	316SS <sup>(2)</sup>	Teflon	Aluminium
<b>Seals</b>	Viton	Viton	Viton	Viton	Viton	Viton
<b>Maximum Temperature</b>	204°C	204°C	204°C	204°C	149°C	93°C
<b>Maximum Pressure</b>	345 barg <sup>(3)</sup>	103 barg <sup>(3)</sup>	345 barg <sup>(3)</sup>	345 barg <sup>(3)</sup>	10.3 barg <sup>(3)</sup>	172 barg <sup>(3)</sup>
<b>Shipping Weight</b>	0.4kg	0.4kg	0.4kg	0.4kg	0.2kg	0.2kg
<b>Dimensions</b>	40 x 80mm	40 x 90mm	40 x 100mm	40 x 100mm	40 x 100mm	40 x 100mm

## Ordering Information

Filter Housing Model	105S6	91S6	95M	95S6	95T	95A
<b>Support Core, Required for Liquid Filtration</b>	Included	Included	Included	Included	Included	Included
<b>Filter Cartridges</b>	050-07-□	050-11-□	050-11-□	050-11-□	050-11-□	050-11-□
<b>Use Only These Filter Models</b>	Q,H,S	Q,H,S	Q,H,S, SSC	Q,H,S, SSC	Q,H,S, SSC	Q,H,S, SSC
<b>Mounting Bracket</b>	11038-UK	11038-UK	11038-UK	11038-UK	11038-UK	11038-UK

### Notes:

- <sup>1</sup> Also available with 1/4" NPT ports. To order with 1/4" NPT ports, use designation Model 95S6-1/4
- <sup>2</sup> Constructed of materials, which comply with NACE Specification MR-01-75. Request certificate of compliance.
- <sup>3</sup> Maximum pressure ratings are for temperatures to 93°C. Please consult factory for maximum pressure ratings at elevated temperatures.

Teflon®, is a registered trademark of E.I. du Pont de Nemours and Company.  
Viton®, is a registered trademark of DuPont Dow Elastomers.

# Stainless Steel Inline Filter Housings

## Features

All stainless steel construction

Pressure to 345 barg

Temperature to 538°C

## Model 97S6, 30/12 and 30/25

The model 97S6 is a miniature 316 stainless steel filter with 1/4" NPT in-line ports and 345 barg rating. Since the filter does not have a drain port, the model 97S6 is used as an end-of-the-line compressed gas filter when little or no liquid is expected, for example as a cylinder gas filter.

## Models 30/12 and 30/25

Designed specifically for quantitative measurement of solids in gases to 538°C, the filter cartridge and element retainer disk in the model 30 housings may be weighed as a single unit.



MODEL 97S6

## Principal Specifications

Model	97S6	30/12	30/25
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/2" NPT	1/2" NPT
<b>Drain Port</b>	None	None	None
<b>Materials of Construction</b>			
Head	316SS	303SS	303SS
Bowl	316SS	304SS	304SS
Internals	316SS	303SS	303SS
Seals	Viton	Carbon Fibre	Carbon Fibre
<b>Maximum Temperature</b>	204°C	538°C	538°C
<b>Maximum Pressure</b>	345 barg <sup>(1)</sup>	7 barg <sup>(2)</sup>	7 barg <sup>(2)</sup>
<b>Shipping Weight</b>	0.3kg	0.9kg	1.4kg
<b>Dimensions</b>	32 x 79mm	48 x 112mm	48 x 220mm

## Ordering Information

Filter Housing Model	97S6	30/12	30/25
<b>Support Core, Required for Liquid Filtration</b>	Included	N/A	N/A
<b>Filter Cartridges</b>	050-05-□	100-12-□	100-25-□
<b>Important Note: X-model cartridges are not available for the Model 97S6</b>			

### Notes:

<sup>1</sup> Maximum pressure ratings are for temperatures to 93°C. Please consult factory for maximum pressure ratings at elevated temperatures.

<sup>2</sup> Maximum pressure rating is for temperatures to 538°C.

Viton®, is a registered trademark of DuPont Dow Elastomers.



# Low Internal Volume Filter Housings

## Features

**Stainless steel construction**

**Pressure to 103 barg**

**Temperature to 204°C**

**Compact design**



MODEL 47S6



MODEL 91S6

## Models 31S6, 31G, 41S6, 91S6 and 41G

These models offer compact designs and half the dead volume of other sample filters, resulting in faster sampling times. They are constructed of stainless steel and available with a variety of seals for easy adaptation to demanding applications.

If larger amounts of condensate are expected, specify 33 or 45 series.



MODEL 31G



MODEL 31S6

## Principal Specifications

Model	91S6	31G	41G	31S6	41S6	47S6
<b>Inlet and Outlet Ports</b>	1/8" NPT <sup>(1)</sup>	1/2" NPT <sup>(1)</sup>	1/2" NPT <sup>(1)</sup>	1/2" NPT <sup>(1)</sup>	1/2" NPT <sup>(1)</sup>	1/4" NPT
<b>Drain Port</b>	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT	1/4" NPT
<b>Materials of Construction</b>						
<b>Head</b>	316SS <sup>(2)</sup>	316SS	316SS	316SS	316SS	316SS <sup>(2)</sup>
<b>Bowl</b>	316SS <sup>(2)</sup>	Pyrex	Pyrex	316SS	316SS	316SS <sup>(2)</sup>
<b>Internals</b>	316SS <sup>(2)</sup>	316SS	316SS	316SS	316SS	316SS <sup>(2)</sup>
<b>Seals</b>	Viton	Viton	Viton	Viton	Viton	Viton
<b>Maximum Temperature</b>	204°C <sup>(3)</sup>	71°C <sup>(3)</sup>	71°C <sup>(3)</sup>	204°C <sup>(3)</sup>	204°C <sup>(3)</sup>	204°C <sup>(3)</sup>
<b>Maximum Pressure</b>	103 barg	7 barg	7 barg	29 barg	17 barg	103 barg
<b>Shipping Weight</b>	0.4kg	0.9kg	1.8kg	1.4kg	2.3kg	0.4kg
<b>Dimensions</b>	38 x 94mm	57mm x 140mm	57 x 260mm	57 x 146mm	57 x 260mm	38 x 94mm

## Ordering Information

Filter Housing Model	91S6	31G	41G	31S6	41S6	47S6
<b>Support Core, Required for Liquid Filtration</b>	Included	SS-100-12	SS-100-25	SS-100-12	SS-100-25	Included
<b>Filter Cartridges</b>	050-11-□	100-12-□	100-25-□	100-12-□	100-25-□	050-11-□
<b>Use Only These</b>						
<b>Filter Cartridge Models</b>	Q, H, S	X, H, Q, S	X, H, Q, S	X, H, Q, S	X, H, Q, S	Q, H, S
<b>Mounting Bracket</b>	11038-UK	11038-UK	11038-UK	11038-UK	11038-UK	Included

### Notes:

- <sup>1</sup> Also available with 1/4" NPT ports. To order with 1/4" NPT ports, use designation Model 31G-1/4 etc.
- <sup>2</sup> Constructed of materials which comply with NACE Specification MR-01-75. Request certificate of compliance.
- <sup>3</sup> Maximum pressure ratings are for temperatures to 104°C. Please consult factory for maximum pressure ratings at elevated temperatures. Viton<sup>®</sup>, is a registered trademark of DuPont Dow Elastomers. Pyrex<sup>®</sup>, is a registered trademarks of Corning Incorporated.



**Parker Hannifin (UK) Ltd**

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# High Internal Volume Filter Housings

## Features

All 316 stainless steel construction

Pressure to 29 barg

Temperature to 204°C

Ideal when a large volume of condensed liquid is expected

## Models 33S6, 33G, 45S6, 45G

Higher flow rate filters, all available with 1/4" or 1/2" NPT ports. The 33G and 45G are supplied with a Pyrex glass bowl complete with external plastic shield. These housings are especially useful for gas sampling when a large volume of condensed liquid is expected.



MODEL 33G



MODEL 33S6

## Principal Specifications

Model	33G	33S6	45G	45S6
Inlet and Outlet Ports <sup>(1)</sup>	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT
Drain Port	1/8" NPT	1/8" NPT	1/8" NPT	1/8" NPT
<b>Materials of Construction</b>				
Head	316SS	316SS	316SS	316SS
Bowl	Pyrex	316SS	Pyrex	316SS
Internals	316SS	316SS	316SS	316SS
Seals	Viton	Viton	Viton	Viton
Maximum Temperature	71°C <sup>(2)</sup>	204°C	71°C <sup>(2)</sup>	204°C
Maximum Pressure <sup>(2)</sup>	8.6 barg	29 barg	8.6 barg	17 barg
Shipping Weight	1.4kg	1.4kg	2.3kg	2.3kg
Dimensions	70 x 110mm	70 x 120mm	70 x 230mm	70 x 240mm

## Ordering Information

Model	33G	33S6	45G	45S6
Support Core, Required for Liquid Filtration <sup>(3)</sup>	SS-100-12	SS-100-12	SS-100-25	SS-100-25
Filter Cartridges	100-12-□	100-12-□	100-25-□	100-25-□
Mounting Bracket	11038-UK	11038-UK	11038-UK	11038-UK

### Notes:

- <sup>1</sup> Also available with 1/4" NPT ports. To order with 1/4" NPT ports, use designation Model 33G-1/4 etc
- <sup>2</sup> Maximum pressure ratings are for temperatures to 93°C. Please consult factory for maximum pressure ratings at elevated temperatures.
- <sup>3</sup> Support core is not required with LP grade cartridges.

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Pyrex® is a registered trademark of Corning Incorporated.

# High Flow Housings for Medium to High Pressure Applications

## Features

**Stainless steel construction**

**Pressure to 206 barg**

**Temperature to 204°C**

**Ideal for high-pressure applications**

## Models EU27/35, EU27/80 and 15/80S6

The model EU27 and 15/80S6 housings are among the largest 316 stainless steel filters available with high-pressure capability.

The EU27/35 and EU27/80 housings are used when 55 barg rating is required. The EU27/35-3000 and EU27/80-3000 models are suitable for service up to 206 barg. The model 15/80S6 is designed for 2" pipe systems and pressures to 17 barg.



MODEL EU27/35 & EU27/80

MODEL 15/80S6

## Principal Specifications

Model	EU27/35	EU27/35-3000	EU27/80	EU27/80-3000	15/80S6
<b>Inlet and Outlet Ports</b>	1" NPT	1" NPT	1" NPT	1" NPT	2" NPT
<b>Drain Port</b>	1/4" NPT	1/4" NPT	1/4" NPT	1/4" NPT	1/4" NPT
<b>Materials of Construction</b>					
<b>Head</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Bowl</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Internals</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Seals</b>	Viton	Viton	Viton	Viton	Viton
<b>Maximum Temperature</b>	204°C	204°C	204°C	204°C	204°C
<b>Maximum Pressure</b>	55 barg <sup>(2)</sup>	206 barg <sup>(2)</sup>	55 barg <sup>(2)</sup>	206 barg <sup>(2)</sup>	35 barg <sup>(2)</sup>
<b>Shipping Weight</b>	7.3kg	11.4kg	9.1kg	11.4kg	14.5kg
<b>Dimensions</b>	100mm x 410mm	110mm x 410mm	100mm x 690mm	110mm x 690mm	60mm x 710mm

## Ordering Information

Model	EU27/35	EU27/35-3000	EU27/80	EU27/80-3000	15/80S6 <sup>(3)</sup>
<b>Support Core, Required for Liquid Filtration</b>	SS-200-35	SS-200-35	SS-200-80	SS-200-80	SS-200-80
<b>Filter Cartridges</b>	200-35-□	200-35-□	200-80-□	200-80-□	200-80-□
<b>Use Only These</b>					
<b>Filter Cartridge Models</b>	Q, X, H	Q, X, H	Q, X, H	Q, X, H	Q, X, H
<b>Mounting Bracket</b>	11027	11027	11027	11027	

### Notes:

- <sup>1</sup> Constructed of materials which comply with NACE Specification MR-01-75. Certificate of compliance available on request.
- <sup>2</sup> Maximum pressure ratings are for temperatures to 93°C. Please consult factory for maximum pressure ratings at elevated temperatures.
- <sup>3</sup> Requires element retainer part # 27900  
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# High Pressure Filter Housings

## Features

**Stainless steel construction**

**Pressure to 345 barg**

**Temperature to 204°C**

**Ideal for removing solids and large quantities of liquid from gases**

## Model 85

The model 85 filter housing is constructed of 316 stainless steel and has a pressure rating of 345 barg. This model can accommodate X-model filter cartridges and is used when a larger quantity of liquid is expected.

## Models EU37/12 and EU37/25

These T-model filter housings are also constructed of 316 stainless steel and have a 276 barg rating. These models are used as sample filters for on-line sample analysers when a larger line size, higher flow rate or larger bowl reservoir capacity is required.



MODEL 85



MODEL EU37/12



MODEL EU37/25

## Principal Specifications

Model	85	EU37/12	EU37/25
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/2" NPT	1/2" NPT
<b>Drain Port</b>	1/4" NPT	1/8" NPT	1/8" NPT
<b>Materials of Construction</b>			
<b>Head</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Bowl</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Internals</b>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>	316SS <sup>(1)</sup>
<b>Seals</b>	Viton	Viton	Viton
<b>Maximum Temperature</b>	204°C	204°C <sup>(2)</sup>	204°C <sup>(2)</sup>
<b>Maximum Pressure</b>	345 barg <sup>(2)</sup>	276 barg <sup>(2)</sup>	276 barg
<b>Shipping Weight</b>	1.8kg	2.7kg	4.5kg
<b>Dimensions</b>	60 x 130mm	70 x 150mm	70 x 250mm

## Ordering Information

Model	85	EU37/12	EU37/25
<b>Support Core, Required for Liquid Filtration</b>	Included	SS-100-12	SS-100-25
<b>Filter Cartridges</b>	050-11-□	100-12-□	100-25-□
<b>Use Only These</b>			
<b>Filter Cartridge Models</b>	X, H, Q, S	X, H, Q, S	X, H, Q, S
<b>Mounting Bracket</b>	11085	11038-UK	11038-UK

### Notes:

- 1 Constructed of materials which comply with NACE Specification MR-01-75. Certificate of compliance available on request.
- 2 Maximum pressure ratings are for temperatures to 93°C. Please consult factory for maximum pressure ratings at elevated temperatures.  
Viton<sup>®</sup>, is a registered trademark of DuPont Dow Elastomers.

# Fast Loop Filters

## Features

All 316 Stainless steel construction

Accept Balston disposable microfibre filter cartridges and stainless steel cartridges

Compact design for fast response time

Process stream inlet/outlet ports and sample flow ports are identical, eliminating backup pressure in the system



Model 41GCFL-1/4  
Low Pressure



Model 48S6



Model 49S6

## Description

Parker fast loop filters are constructed of 316 stainless steel with an optional stainless steel or pyrex bowl. This flow through design continuously flushes the filter cartridge carrying the contaminants back out to the process stream, thus maximizing the filter cartridge life.

Two designs are available. The T-model is suitable for high flow, high volume applications and the In-line is ideal for heavily contaminated applications.

## Operation

Axial velocity flushes the bulk contaminants through the filter housing back to the process stream. The sample stream passes through the filter cartridge wall with low flow and radial velocity. The clean side of the sample filter system has very low volume which minimizes lag time. This continuous flushing will typically extend filter life by a factor of 4.

## Principal Specifications

Model	31GCFL-1/4	41GCFL-1/4	48S6	49S6
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/4" NPT	1/4" NPT	1/2" NPT
<b>Drain Port</b>	1/4" NPT	1/4" NPT	---	---
<b>Materials of Construction</b>				
<b>Head</b>	316 SS	316 SS	316 SS	316 SS
<b>Bowl <sup>(1)</sup></b>	Pyrex	Pyrex	316SS	316SS
<b>Internals</b>	316SS	316SS	316 SS	316 SS
<b>Seals</b>	Viton	Viton	Viton	Viton
<b>Maximum Temperature</b>	71°C	71°C	204°C	204°C
<b>Maximum Pressure <sup>(2)</sup></b>	7 barg <sup>(3)</sup>	7 barg <sup>(3)</sup>	345 barg	103 barg
<b>Shipping Weight</b>	0.9kg	1.8kg	0.17kg	0.39kg
<b>Dimensions</b>	57mm x 140mm	57mm x 250mm	32mm x 100mm	48mm x 178mm

## Ordering Information

Filter Housing Model	31GCFL-1/4	41GCFL-1/4	48S6	49S6
<b>Support Core, Required for Liquid Filtration</b>	SS-100-12	SS-100-25	Included	Included
<b>Filter Cartridges</b>	100-12-□	100-25-□	050-11-□	100-185-□
<b>Use only these Filter models</b>	X,H,Q,S,SSC	X,H,Q,S,SSC	X,H,Q	X,H,Q
<b>Mounting Bracket</b>	11038-UK	11038-UK		

### Notes:

- Available in all stainless steel construction. Order 31S6CFL-1/4 or 41S6CFL-1/4.
- Maximum pressure ratings are for temperatures to 104°C. Please contact Parker for maximum pressure ratings at elevated temperatures.
- Maximum pressure for stainless steel version is 29 barg.



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# High Pressure Compressed Gas Filters

## ZJ-Series

ZJ-Series filters are used in a number of applications, ranging from breathing air for scuba divers, to high-pressure hydraulic circuit testing, to a variety of uses in the alternative fuel industry.

Parker's ZJ-Series is designed to filter contaminants such as rust and pipe scale, compressor lube oil and water from compressed gases. These filters are often used in high pressure compressed gas (CNG) systems, not only as inter-stage filters in the multiple stage compression of the gas to CNG powered vehicles.

Finite's varied media choices remove up to 99.995% of both solid and liquid aerosols and contaminants as small as 0.2 microns in size.

The filter housings and the replaceable elements used in this product line have an extremely robust construction, specially designed for use in system pressures up to 350 barg. Four housing sizes are available with connections ranging from 1/2" to 2"; temperatures up to 120°C, and flows up to 66,000 m<sup>3</sup>/hr at 350 barg.

- 1/2" - 2 Line Size
- Pressure Rating 350 bar
- ATEX approved option
- CE, PED stamped



## ZJ-Series (350 barg) Flow Rates (Nm<sup>3</sup>/hr) of air at 20°C

Filter Housing Model	Media Grade	7 barg	69 barg	103 barg	138 barg	172 barg	207 barg	241 barg	275 barg	310 barg	345 barg
<b>ZJA07</b>	4C	48	420	624	834	1038	1248	1452	1656	1866	2076
	10C/3P/100WS	96	840	1248	1668	2076	2496	2904	3312	3732	4152
	A	64	560	832	1112	1384	1664	1936	2208	2488	2768
<b>ZJS11</b>	4C	211	1846	2743	3666	4563	5486	6383	7280	8203	9126
	10C/3P/100WS	383	3351	4979	6655	8282	9958	11586	13214	14889	16565
	A	278	2433	3614	4830	6012	7228	8410	9591	10807	12024
<b>ZJS12</b>	4C	318	2783	4134	5525	6877	8268	9620	10971	12362	13754
	10C/3P/100WS	699	6116	9087	12145	15116	18174	21145	24116	27174	30232
	A	419	3666	5447	7280	9061	10894	12675	14456	16289	18122
<b>ZJS14</b>	4C	694	6073	9022	12058	15008	18044	20994	23943	26979	30016
	10C/3P/100WS	1526	13353	19838	26514	33000	39676	46162	52647	59323	66000
	A	915	8006	11895	15898	19787	23790	27679	31568	35571	39574

## Flow rate conversion factors for other gases

The flow rates in the table are stated for compressed air, for flow rates of other gases please divide the entries in the table by the conversion factors given below.

Gas	Natural Gas	Hydrogen	Carbon Dioxide	Ammonia
Conversion factor	0.8158	0.2638	1.2324	0.772

Notes: For filtration of different gases please contact Parker.

## Principal Specifications:

Model Number	Port Size	Max Pressure	Max. Temp for each Element	Materials of Construction			Seals	Connection inlet/outlet	Connection drain	Weight	Dimensions	
				Head	Internals	Bowl					Length	Width
<b>ZJA07</b>	1/2"	350 bar 250 bar 100 bar	60°C (C, 3P, 100WS) 79°C (A)	Aluminium	Aluminium	Aluminium	FEPM	1/2" BSP	1/4" BSP	3.9	395mm	85mm
<b>ZJS07</b>	1/2"	350 bar 250 bar 100 bar	120°C (C, 3P, 100WS) 79°C (A)	Carbon Steel	Carbon Steel	Carbon Steel	FEPM	1/2" BSP	1/4" BSP	3.9	395mm	85mm
<b>ZJS11</b>	1"	350 bar 250 bar 100 bar	120°C (C, 3P, 100WS) 79°C (A)	Carbon Steel	Carbon Steel	Carbon Steel	FEPM	1" BSP	1/4" BSP	21.6	530mm	116mm
<b>ZJS12</b>	1 1/2"	350 bar 250 bar 100 bar	120°C (C, 3P, 100WS) 79°C (A)	Carbon Steel	Carbon Steel	Carbon Steel	FEPM	1 1/2" BSP	1/4" BSP	28.0	640mm	125mm
<b>ZJS14</b>	2"	350 bar 250 bar 100 bar	120°C (C, 3P, 100WS) 79°C (A)	Carbon Steel	Carbon Steel	Carbon Steel	FEPM	2" BSP	1/4" BSP	62.0	925mm	155mm

## Ordering Information

Series Name	Material	Port size	Pressure rating	Element Grade	Options	ATEX
<b>ZJ</b>	A - aluminium S - carbon steel	1/2" = 07 1" = 11 1 1/2" = 12 2" = 14	350	4C 10C 3P A 100WS	G = DP gauge N = No gauge	A = ATEX approved  blank = No ATEX approval

### Examples:

ZJA07-350-10C-G-A      ZJS14-350-3P

Housing	Element Grade and Model	Element size	Number Elements
<b>ZJA07/ZJS07</b>	4C, 10C, 3P, A, 100WS	Z12-056	1
<b>ZJS11</b>	4C, 10C, 3P, A, 100WS	Z20-086	1
<b>ZJS12</b>	4C, 10C, 3P, A, 100WS	Z20-126	1
<b>ZJS14</b>	4C, 10C, 3P, A, 100WS	Z27-200	1

### Examples:

ZJA07 housing with grade 10C element: replacement = 10CZ12-056  
ZJS14 housing with grade 3P element: replacement = 3PZ27-200



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# High Flow Compressed Gas Filters

## Parker Compressed Gas Filters

Parker high flow rate compressed gas filters offer exceptionally high efficiency coalescing filtration of compressed gas at high flow rates. Specifically designed to remove suspended liquids and dirt from pipeline natural gas, the housings are CE PED stamped to 100 barg. Equipped with Parker Finite Filter Cartridges, the filters are rated up to 99.99% retention of 0.01 micron and essentially 100% retention of 1 micron liquid droplets and particles. Since the coalesced liquid drains continuously from the filter cartridges as rapidly as it is collected, the filters have an unlimited capacity for liquid removal.

Series ZA are available with inlet and outlet ports covering the range from DN50 to DN200 pipe sizes. The standard carbon steel units have pressure ratings from 16 - 100 barg.

Each ZA assembly is equipped with a manual needle valve, differential pressure indicator (optional), and a set of filter cartridges.

- Pressure rating 16 or 100 barg
- Flanges to DN200
- 100% retention of 1 micron droplets and liquids



## ZA-Series (100 barg) Flow Rates (Nm<sup>3</sup>/hr) of air at 20°C

Filter Housing Model	Media Grade	2.75 barg	7 barg	14 barg	28 barg	41 barg	69 barg	100 barg
ZA*14	6C/A	429	915	1716	3317	4804	8006	11552
	10C/3P/100WS/7CVP	715	1526	2861	5532	8012	13353	19266
ZA*17	6C/A	642	1370	2569	4966	7193	11988	17296
	10C/3P/100WS/7CVP	837	1785	3347	6471	9371	15619	22536
ZA*18	6C/A	900	1920	3600	6960	10080	16800	24240
	10C/3P/100WS/7CVP	1122	2394	4489	8678	12569	20948	30224
ZA*19	6C/A	1133	2416	4530	8758	12684	21140	30502
	10C/3P/100WS/7CVP	1614	3444	6458	12485	18081	30135	43481
ZA*20	6C/A	1284	2739	5136	9929	14380	23966	34580
	10C/3P/100WS/7CVP	2140	4566	8561	16552	23972	39953	57646
ZA*30	6C/A	1926	4109	7704	14895	21572	35954	51876
	10C/3P/100WS/7CVP	2783	5936	11130	21518	31164	51940	74942
ZA*40	6C/A	2568	5479	10273	19861	28765	47941	69172
	10C/3P/100WS/7CVP	4280	9131	17121	33100	47938	79896	115279
ZA*60	6C/A	3852	8218	15409	29790	43145	71908	103752
	10C/3P/100WS/7CVP	6420	13697	25682	49652	71909	119849	172925
ZA*80	6C/A	5136	10957	20544	39719	57524	95874	138332
	10C/3P/100WS/7CVP	7004	14942	28016	54165	78446	130743	188643
ZA*100	6C/A	6420	13697	25682	49652	71909	119849	172925
	10C/3P/100WS/7CVP	10701	22828	42803	82752	119847	199745	288204



## Principal Specifications:

Model Number	Port Size	Max Pressure	Max. Temp for each Element	Materials of Construction			Seals	Dimensions	
				Head	Internals	Bowl		Length	Width
ZAS14	DN50	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	931mm	380mm
ZAE14	DN50	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS17	DN65	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1180mm	380mm
ZAE17	DN65	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS18	DN80	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1180mm	420mm
ZAE18	DN80	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS19	DN80	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1320mm	440mm
ZAE19	DN80	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS20	DN100	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1440mm	500mm
ZAE20	DN100	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS30	DN100	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1440mm	500mm
ZAE30	DN100	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS40	DN150	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1590mm	640mm
ZAE40	DN150	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS60	DN150	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1650mm	790mm
ZAE60	DN150	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS80	DN200	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1730mm	790mm
ZAE80	DN200	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*
ZAS100	DN200	16/100 bar	120°C (C, 3P, 100WS)	Carbon Steel	Carbon Steel	Carbon Steel	Metal-Graphite	1780mm	840mm
ZAE100	DN200	16/100 bar	79°C (A)	Stainless Steel	Stainless Steel	Stainless Steel	Metal-Graphite	*	*

\* = Contact Parker

## Ordering Information

Series Name	Material	Port size	Pressure rating	Element Grade	Options	ATEX
ZA	S - carbon steel	DN50 = 14	016 (bar)	6C	G = DP gauge	A = ATEX approved
	E - stainless steel	DN65 = 17	025 (bar)	10C	N = No gauge	blank = No ATEX approval
		DN80 = 18	040 (bar)	3P		
		DN80 = 19	064 (bar)	A		
		DN100 = 20	100 (bar)	100WS		
		DN100 = 30		7CVP		
		DN150 = 40				
		DN150 = 60				
		DN200 = 80				
		DN200 = 100				

Examples: ZAS30-100-6C-G ZAE14-100-100WS ZAS18-016-3P-G ZAE14-016-10C-G-A

Housing	Element Grade and Model	Element size	Number Elements
ZA*14	6C, 10C, 3P, A, 100WS, 7CVP	Z27-200	1
ZA*17	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	1
ZA*18	6C, 10C, 3P, A, 100WS, 7CVP	Z46-239	1
ZA*19	6C, 10C, 3P, A, 100WS, 7CVP	Z50-298	1
ZA*20	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	2
ZA*30	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	3
ZA*40	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	4
ZA*60	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	6
ZA*80	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	8
ZA*100	6C, 10C, 3P, A, 100WS, 7CVP	Z27-298	10

Examples: ZAS18 housing with grade 10C element: replacement part number = 10CZ46-239

## Flow rate conversion factors for other gases

The flow rates in the table are stated for compressed air, for flow rates of other gases please divide the entries in the table by the conversion factors given below.

Gas	Natural Gas	Hydrogen	Carbon Dioxide	Ammonia
Conversion factor	0.8158	0.2638	1.2324	0.772

Notes: For filtration of different gases please contact Parker.



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# Petrol Vehicle Emission Analysers

## Features

**Complete removal of solid particles,  
condensed water and oils**

**Long filter life even in high use conditions**

**No effect by the filter on the composition of  
the sample gas**

**Complete analyser protection**

## Disposable Filter Units (DFU) (see page 16)

These plastic in-line disposable filters provide the same high standard of filtration associated with the Balston and Finite brands from Parker.

You can choose fine solids removal, liquid removal by coalescing element and vapour removal by the use of our activated carbon media.

Different grades of filter are available to suit your particular needs for protection and life. The Twist-Lok design (see page 15) is a plastic in-line filter with two stage replaceable filters.

## Model 58N

The Model 58N housing is a rugged, economical housing. The materials are resistant and non-absorbent to all components of the sample stream. The Grade 404 microfibre filter cartridges were developed specifically for use in sample lines to petrol engine analysers.

## Principal Specifications

Model	Model 58N	Model ETF
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/4" NPT
<b>Drain Port</b>	1/8" NPT	8mm
<b>Materials of Construction</b>		
<b>Head</b>	Nylon	Glass filled polypropylene
<b>Bowl</b>	Polycarbonate	Polypropylene
<b>Internals</b>	Nylon	
<b>Seals</b>	Buna	Buna
<b>Maximum Temperature</b>	66°C	52°C
<b>Maximum Pressure</b>	0.7 barg	0.7barg
<b>Shipping Weight</b>	0.5kg	0.5kg
<b>Dimensions</b>	70mm x 160mm	70mm x 122mm

**Notes:** Filter cartridge not included - must be ordered separately for 58N.

## Ordering Information

Model 58N	Model ETF
<b>Replacement Filter Cartridges (box of 10)</b>	<b>Complete Assembly</b>
100-12-404	ETF-8G
	<b>Replacement Bowl complete with cartridge</b>
	RBA-8G
	<b>Replacement Head</b>
	ETF x 1



DFU

MODEL 58N

MODEL ETF

When installed with inside-to-outside flow direction, the filter cartridges are efficient, fast-draining coalescing filters. When installed with outside-to-inside flow direction, the pure white surface of the filter tube permits quick visual estimation of life.

## Model ETF

The Model ETF housing is a low-pressure filter designed for vehicle emissions, analyser protection. The all plastic body is in two parts; the head is fixed in the line and the bowl complete with fitted cartridge is self contained and replaceable. Typically a grade 8G element is fitted which can be used as a coalescer to remove liquids or for fine particulate removal. For other grades contact Parker.

# Diesel Vehicle Emission Analysers

## Features

- Long filter life with internal pre-filter**
- Totally inorganic filter cartridge is inert and contains no extractables**
- Temperature capability to 315°C**
- Filter housing designed for convenient external heating**

## The Problem

Diesel exhaust has a high concentration of suspended solid particles and non-volatile liquid droplets. It also has high dewpoint and therefore must be kept hot to prevent liquid condensing and affecting the accuracy of the analysis. To avoid contamination of sample lines with dirt and oil, most diesel engine analysis systems are designed with the primary filter close to the inlet of the sample system. The filter is externally heated to prevent liquid condensation when the system is started up. However, during prolonged operation the filter is subjected to engine exhaust gas temperatures which are normally between 176°C and 232°C and occasionally get as high as 315°C.

## The Solution

Model 38 filters, designed specifically for diesel engine exhaust, are all stainless steel housings with silicone seals (maximum temperature 315°C). The 1/4" NPT inlet and outlet ports are located at one end of the cylindrical body and the bayonet closure for changing the filter cartridge is located at the opposite end. To maintain constant temperature, the body may be wrapped in heating tape or enclosed in an oven. The



MODEL 38/12

novel closure design permits an operator wearing gloves to replace a filter element rapidly, without disturbing the heating provisions or gas flow connections.

The filter housing may be oriented horizontally, vertically or at any other convenient attitude. The standard size Model 38/25 housing has a 25cm long body. Where the installation requires a smaller size housing, the Model 38/12 with 14cm long body is available. The Grade DH21 filter cartridge, composed of borosilicate glass microfibrils and inorganic binder, is inert to all components in the gas and stable to 482°C. The retention efficiency is 93% of 0.1 micron particles and 100% of 2 micron and larger particles. With flow direction through the filter tube inside-to-outside, the internal prefilter in the Grade DH21 cartridge provides satisfactory life in a relatively dirty environment. Since the dirt is trapped on the inside of the cartridge, the external surface of the cartridge and the filter housing remain free of contaminants.

## Principal Specifications

Model	38/12	38/25
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/4" NPT
<b>Materials of Construction</b>		
<b>Head</b>	Stainless Steel	Stainless Steel
<b>Bowl</b>	Stainless Steel	Stainless Steel
<b>Internals</b>	Stainless Steel	Stainless Steel
<b>Seals</b>	Silicone	Silicone
<b>Maximum Temperature</b>	315°C	315°C
<b>Maximum Pressure</b>	1.5 barg	1.5 barg
<b>Shipping Weight</b>	2.3kg	1.8kg
<b>Overall Dimensions</b>	60mm X 240mm	60mm X 360mm

## Ordering Information

Model		
<b>Standard Length</b>	38/25	100-25-DH21 <sup>(1)</sup> (box of 10)
<b>Short Length</b>	38/12	100-12-DH21 <sup>(1)</sup> (box of 10)

### Notes:

Filter cartridge not included. Must be ordered separately

### Ordering Information

1. If an H-Model filter element is being used order a modified element retainer kit, P/N 30205.



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# Alternative Fuel

## Features

**Complete removal of solid particles, condensed water and oils**

**Protection of Fuel Injectors and other precision components**

**Reduced maintenance**

**Extend equipment life**



High Pressure



Low Pressure

## Alternative Fuel Filters

Protecting the fuel injectors and precision components of an alternative fuel system is vital to efficient vehicle operation. Parker is now offering the most complete line of fuel filter/coalescers and prefilter/strainers for on-vehicle applications. These filters ensure removal of damaging aerosol contamination as small as 0.3 to 0.6 microns, and exceeding 95% efficiency, depending on the grade of element specified. Units are available in a range of pressure ratings and are constructed of aluminium, stainless steel or painted steel.

The fuel filter/coalescer elements are produced by a patented process of arranging microglass fibres into a tubular form. During operation, fuel is forced through the coalescing media from the inside of the cartridge through the tubular wall to the outside, where the large droplets fall to the bottom of the

housing. Oily water emulsion accumulates until drained while the dirt particles remain trapped on the surface of the fibres. Fuel system engineers and NGV converters agree that a high quality filtration system is an essential alternative engine component. Installed upstream of the high-pressure regulator, the fuel filter/coalescer contributes to maximum uptime, reducing maintenance costs and extending the equipment's life cycle. In addition, some engineers favour the installation of a downstream filter/coalescer to protect the low-pressure regulator and other injection system components.

**For pressure equipment (PED) compliance contact Parker for further details**

## Principal Specifications

Model	FFC-116	FFC-112 FFC-112SAE	FFC-110	FFC-110L	FFC-113	FFC-114
Model	Coalescer	Coalescer	Coalescer	Coalescer	Coalescer	Coalescer
Port	1/4" NPT	1/4" or 9/16"SAE	1/4" NPT	1/4" NPT	1/2" NPT	1/2" NPT
Bar (Max.)	345	248	34	34	248	240
Rated Flow m <sup>3</sup> /h at 7barg	14	25	42	84	84	84
Length mm	98	120	182	264	205	178
Diameter mm	45	57	80	80	75	75
Drain Port Size	1/4"	3/8" SAE	1/8"	1/8"	9/16	9/16
Weight Kg.	0.8	0.68	0.68	0.82	SAE -6 2.5	SAE-6 2.4
Element Number	CLS116-10	CLS112-10	CLS110-10	CLS110-10L	CLS113-6	CLS113-6
Sump Capacity ml	7.4	14.8	148	207	148	89
Material	316SS	Anodised Aluminium	Powder Painted Chromated Aluminium	Powder Painted Chromated Aluminium	303SS	303SS

# Steam Filters - Food Industry

## Features

**Remove 98+% of 0.01 micron particles and 100% of all visible particles**

**Remove liquid condensate at the same efficiency as for solid particles**

**Remove essentially all non-volatile boiler feedwater additives**

**Stop carryover of boiler feedwater chemicals**

## Benefits

Balston Steam Filters eliminate particulate contamination of food products caused by direct contact with dirty steam. Other benefits include: reduction in steam condensate mixing with food products when steam is used for agitating, mixing or cooking; elimination of taste and odour problems by reducing boiler feedwater carryover; reduction of maintenance requirements.

## Balston Steam Filters

There are numerous steam sterilisation standards, Parker meets all necessary European design regulations and is also in full compliance with the requirements of the US Food, Drug and Cosmetic Act. They also meet the regulations for Indirect Food Additives used as Basic Components for Repeated Use Food Contact Surfaces as specified in 21 CFR Part 177 and Current Good Manufacturing Practices, 21 CFR Part 110. These filters have been accepted by the USDA for use in federally inspected meat and poultry plants. Balston Steam Filters are in full compliance with the 3A Accepted Practices (Number 609-00) for producing steam of culinary quality. They are also in full compliance with the requirements of the Canadian Health Protection Branch.



MODEL SP6-23/75SR

## Recommended Steam Filters

### For 3/4" and 1" Steam Lines

Model 23/75SR is recommended in smaller lines with a steam flow of up to 227kg per hour. The filter is complete with filter cartridge, steam trap and bleeder valve.

### For 1-1/2" Steam Lines

Model SP3-23/75SR is recommended. It will filter up to 680kg of steam per hour. Each of the three filters has its own steam trap. A master trap disposes of most condensate before it reaches the filters. Manifolds can be connected to flow from left to right or right to left.

### For 2" Steam Lines

Model SP4-23/75SR is recommended. It will filter up to 907kg of steam per hour. The Model SP6-23/75SR will filter up to 1361kg of steam per hour. Steam trap and manifold features are the same as the Model SP3-3/75.

## Principal Specifications

Model	A23/75SR	SP3-23/75SR	SP4-23/75SR	SP6-23/75SR
Port Size	1" BSPT	1 1/2" NPT	2" NPT	2" NPT
Maximum Pressure	8.6 barg	8.6 barg	8.6 barg	8.6 barg
Flow Rate	227kg/hr	680kg/hr	907kg/hr	1361kg/hr
Materials of Construction	304 SS	304 SS	304 SS	304 SS
Seals <sup>(2)</sup>	EPR	EPR	EPR	EPR
Shipping Weight	12kg	86kg	100kg	127kg
Dimensions	180 x 880mm	740 x 1220 x 530mm <sup>(1)</sup>	910 x 1220 x 530mm <sup>(1)</sup>	1270 x 1220 x 530mm <sup>(1)</sup>

## Ordering Information

Model	A23/75SR	SP3/75SR	SP4-23/75SR	SP6-23/75SR
Model <sup>(2)</sup>	23/75SR	SP3-23/75SR	SP4-23/75SR	SP6-23/75SR
Replacement Filter Cartridges (Box of 10) <sup>(3)</sup>	200-75-SR	200-75-SR	200-75-SR	200-75-SR
Filter Cartridges per housing	1	3	4	6

Notes: 1 Each SP3, SP4, SP6 filter is supplied mounted on a stand. 2 Constructed of food grade EPR. 3 Each Steam Filter Assembly is supplied with filter cartridges installed.



# Steam Filters - Sterilisers

## Features

**Eliminates instrument staining, spotting and rusting caused by wet or dirty steam**

**Wrapped articles emerge from the steriliser cycle drier and cleaner**

**Reduced contamination of steriliser interiors. Expensive and time-consuming cleaning is significantly reduced or eliminated**

**Reduced maintenance of steriliser steam control valves, door seals, and other rubber materials in the steriliser**



MODEL A23/75R

## How the Balston Steam Filter works

The A23/75R Steam Filter contains a patented Microfibre filter cartridge in a rugged stainless steel housing designed especially for steam service. Included as standard items with the 23R Steam Filter are a stainless steel condensate drain and a high quality bleeder valve. Steam enters the housing and moves into an expansion chamber, where much of the condensate is removed from the steam by the abrupt change in flow direction and velocity. The steam then flows through the Grade R Microfibre filter cartridge. Water draining from the filter cartridges and expansion chamber is removed from the housing by the automatic condensate drain. The Grade R Microfibre filter cartridge combines sturdy construction with remarkably efficient filtration of solid particles and liquid droplets.

The cartridge is rated at 98+% at 0.1 micron. Solid particles remain trapped in the depth of the filter cartridge and water drips from the filter cartridge to the automatic drain. The Microfibre filter cartridge is constructed from chemically inert borosilicate glass fibres and fluorocarbon resin binder. The filter cartridge is completely free of impurities, which could extract into the steam. The Balston A23/75R Steam Filter is recommended for use on 3/4" and 1" steam lines (line sizes for the vast majority of hospital sterilisers). Please consult our technical support department for recommendations on filters for larger steam lines. Use only products designed specifically for steam filtration in steam installations.

## Principal Specifications

Model	A23/75R
Size	1" BSPP <sup>(1)</sup>
Designation	200-75-R <sup>(2)</sup>
Head	304SS
Bowl	304SS
Internals	304SS
Seals	EPR
Pressure	5.5 barg
Weight	11kg
Flow Rate	160kg/hr (5.5 barg working pressure)

## Ordering Information

Model	A23/75R
Automatic Drain	Included
No. Filter Cartridges Required	1
Replacement Filter Cartridges (box of 15)	200-75-R

### Notes:

- The 1" port size can be installed in a 3/4" line by using the appropriate reducing bushings.
- Each filter is supplied with one filter cartridge installed. Replacement filter cartridges are sold in boxes of 15. To order, use complete size and grade designation; for example 200-75-R.

# Liquid Filters - Filter Cartridge and Housing Selection

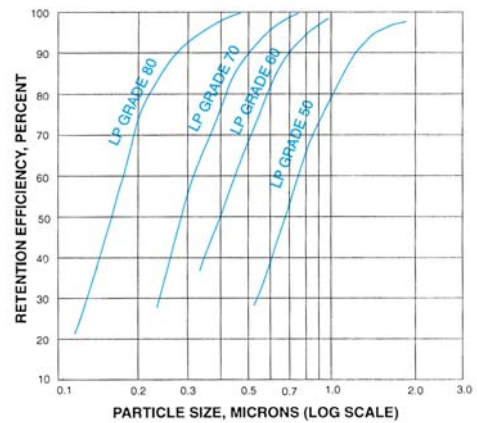
## Features

**Filtration to 0.22 micron with exceptional filter life, even for the dirtiest liquids**

**Excellent chemical and solvent resistance**

**Compliance with FDA regulations for food contact surfaces**

**Seven retention efficiency grades cover the range from 75 micron to 0.22 micron**



LP Depth Filters

## LP Depth Filters

The LP-Grades 10, 20 and 30 depth filter cartridges are constructed entirely of polypropylene, and the LP-Grades 50, 60, 70 and 80 depth filter cartridges are constructed of polypropylene, borosilicate glass and polyethylene binder. Both models of cartridges provide excellent chemical and solvent resistance. All LP cartridges have a graded efficiency construction: the filtration efficiency increases from the inside surface to the outside surface, in the direction of flow. This construction provides exceptionally high solids holding

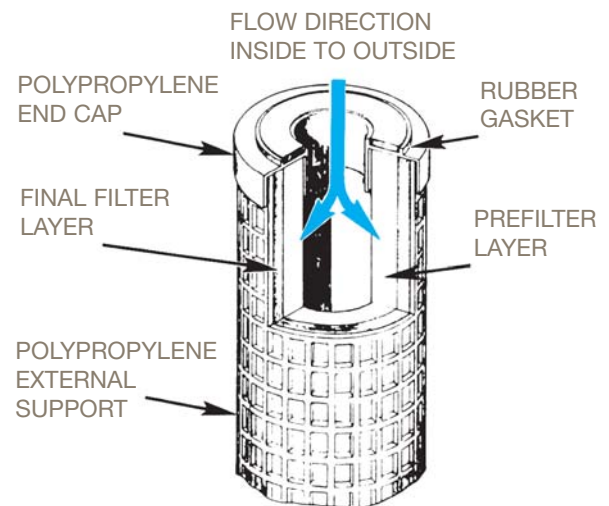
capacity, which translates into a longer life of the filter cartridge. The seven retention efficiency grades offered cover the ranges from 75 micron to 0.22 micron (see table, below).

The Balston LP depth filter cartridges may be used for fine filtration of liquids with heavy dirt loading, when chemical or solvent resistance is required, or as prefilters to ultra-high efficiency or membrane filtration applications.

## Retention Efficiency Ratings

### LP Depth Filter Cartridges

Grade	80% Capture Rating
10	75 micron
20	25 micron
30	10 micron
50	1 micron



# Liquid Filters - Plastic Housings

## Model 90

The Model 90 filter holder is designed to accept grade X or Q model filter cartridges. This model is used as the inlet filter on air, gas or liquid sample analysers. It can also be used as a vent/breather filter on storage vessels. The disposable filter cartridge is easily replaced in the field, requiring no tools.

## Model 7700-12 Housing

Made of transparent nylon with 1/2" NPT in-line ports. The economical, completely disposable 7700-12 can be ordered with any grade of LP cartridge installed.

## Miniature Model 58P Housing

Has a nylon head, nylon internals and a clear nylon bowl. The Model 58P Housing accepts a single LP cartridge and may be used to filter mildly acidic or caustic solutions.

## Model 53 Housings

Are all polypropylene, designed for a single LP-200 filter cartridge. Polypropylene construction provides excellent resistance to non-oxidising acids, such as HCL in any concentration, sulphuric to 70% concentration, brines, hydrocarbon liquids, alcohols and concentrated caustic.

The Model 53 Housings may be used with certain ketones and chlorinated solvents. Please contact Parker for specific recommendations.



Model 58P



Model 7700-12



Model 53/18, 53/50 and 53/95



Model 54/50

## Principal Specifications

Model	90	7700-12	58P	53/18	53/50	53/95	54/50
<b>Inlet and Outlet Ports</b>	1/4" tubing	1/2" NPT <sup>(1)</sup>	1/4" NPT	3/8" NPT	3/4" NPT	3/4" NPT	3/4" NPT
<b>Materials of Construction</b>							
<b>Head</b>	Polypropylene	Nylon	Nylon	Polypropylene	Polypropylene	Polypropylene	Polypropylene
<b>Bowl</b>	Polypropylene	Nylon	Nylon	Polypropylene	Polypropylene	Polypropylene	SAN
<b>Internals</b>	-	-	Nylon	-	-	-	-
<b>Seals</b>	-	-	EPR	EPR	EPR	EPR	EPR
<b>Maximum Temperature</b>	110°C	66°C	66°C	52°C	52°C	52°C	38°C
<b>Maximum Pressure<sup>(2)</sup></b>	4.1 bar	8.6 bar	8.6 bar	8.6 bar	8.6 bar	8.6 bar	8.6 bar
<b>Maximum Differential Pressure<sup>(3)</sup></b>		4 bar	4 bar	4 bar	4 bar	4 bar	4 bar
<b>Shipping Weight</b>	0.1kg	0.5kg	0.5kg	1.4kg	1.8kg	2.7kg	1.8kg
<b>Dimensions</b>	40 x 100mm	66 x 120mm	70 x 160mm	110 x 170mm	130 x 300mm	130 x 560mm	130 x 300mm

## Ordering Information

Model	90	7700-12	58P	53/18	53/50	53/95	54/50
<b>LP Filter Cartridges, Depth Filters<sup>(4)</sup></b>	100-12-□	7700-12-□ <sup>(5)</sup>	LP-100-12-□	LP-200-18-□	LP-200-50-□	LP-200-95-□	LP-200-50-□
<b>Mounting Bracket</b>	-	-	-	11039	11039	11039	11039
<b>Number of Cartridges Required</b>	-	-	1	1	1	1	1

### Notes:

- 1 Plastic barbs are available to connect the 7700-12 to plastic rubber tubing. 7700-12 to 1/4" ID tubing Part No. 12415 (bag of 2). 7700-12 to 1/2" tubing, Part No. 12416 (bag of 2).
- 2 Maximum pressure ratings are for temperatures to 125°F (52°C). Please consult the Technical Services Dept. for maximum pressure ratings at elevated temperatures.
- 3 Inside-out flow, LP filter cartridges.
- 4 To order filter cartridges, indicate grade number after size designation. For example, to obtain 0.22 micron depth filter cartridges for the model 53/18, order LP-200-18-80.
- 5 7700-12 is supplied with any grade LP cartridge. To order, put appropriate grade number after 7700-12 designation. For example, to order with LP grade 20 cartridge, order part number 7700-12-20. 7700-12-□ filters are sold one per box.



# Liquid Filters - Stainless Steel Housings

## Features

**316 stainless steel construction**

**Pressures to 276 bar**

**Temperature to 82°C (limited by LP cartridge)**

**Ideal for high-pressure applications**

## Models EU37/12 and EU37/25

These T-model filter housings are also constructed of 316 stainless steel, and have a 276 bar rating. These models are used as sample filters for on-line sample analysers when a larger line size, higher flow rate or larger bowl reservoir capacity is required.

## Model 27 Housings

Model 27 housings are constructed of 316 stainless steel. These models have 1" NPT ports and are rated to 55 bar. The model 27 housings hold a single LP-200 filter cartridge, available in 10" or 20" length.



MODEL EU37/12



MODEL EU37/25



MODEL EU27/50  
& EU27/95

## Principal Specifications

Model <sup>(1)</sup>	EU37/12	EU37/25	EU27/50	EU27/95
<b>Inlet and Outlet Ports</b>	1/2" NPT	1/2" NPT	1" NPT	1" NPT
<b>Drain Port</b>	1/8" NPT	1/8" NPT	-	-
<b>Materials of Construction</b>				
<b>Head</b>	316SS (1)	316SS (1)	316SS	316SS
<b>Bowl</b>	316SS (1)	316SS (1)	316SS	316SS
<b>Internals</b>	316SS (1)	316SS (1)		
<b>Seals</b>	Viton	Viton	Viton	Viton
<b>Maximum Temperature<sup>(2)</sup></b>	82°C	82°C	82°C	82°C
<b>Maximum Pressure</b>	276 bar	276 bar	55 bar	55 bar
<b>Maximum Differential Pressure</b>	4 bar	4 bar	4 bar	4 bar
<b>Shipping Weight</b>	2.7kg	4.5kg	7.3kg	9.0kg
<b>Dimensions</b>	70 x 150mm	70 x 260mm	100 x 410mm	100 x 690mm

## Ordering Information

Housing ModelModel	EU37/12	EU37/25	EU27/50	EU27/95
<b>Filter Cartridge<sup>(3)</sup></b>	LP-100-12-□	LP-100-25-□	LP-200-50-□	LP-200-95-□

### Notes:

- 1 Constructed of materials which comply with NACE specification MR-01-75. Request certificate of compliance.
- 2 Limited by maximum temperature of LP filter cartridges.
- 3 To order filter cartridges, indicate grade by putting appropriate grade number after size designation. For example, to obtain 0.22 micron depth filter cartridges for the model 27/50, order LP-200-50-80.



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# Liquid Filters - Disposable Filter Units for Liquids

## Features

Filter samples to on-line liquid analysers

Prevent cross-contamination of samples

Pressure ratings up to 8.6 bar

Temperature to 135°C

Completely disposable, constructed of recyclable plastics

## Disposable Filter Units

Balston Microfibre® Disposable Filter Unit (DFU) consists of a Microfibre Filter Cartridge permanently bonded into a sealed plastic holder with 8.6 bar pressure rating. The economical DFU offers all the advantages of Microfibre Filter Cartridges for high efficiency liquid filtrations, combined with the convenience of complete disposability. The 1/4" O.D. ports permit pressure-tight connections using standard compression fittings. Slip-on 1/4" tubing or plastic barbs may be used for low-pressure applications.

The housings are available in two different materials of construction: clear nylon or corrosion-resistant (opaque) PVDF. The nylon DFU's are designated with the prefix 9933, and the PVDF DFU's are designated with the prefix 9922.

### Model 9922-05

The Model 9922-05 DFU's are the smallest DFU's available. They have an internal volume of less than 12ml. The DFU's may be used in low flow liquid applications or sampling systems which require short retention times.

### Model 9933-11

The Model 9933-11 DFU's are similar in construction to the Model 9922-05 DFU's, but they have approximately twice the solids holding capacity. The 9933-11 DFU's may be used in higher flow liquid applications or in sampling applications where longer retention times are acceptable.

## Retention Efficiency Ratings

DFU Grade	98% Retention Particle Size
DQ	25 micron
CQ	8 micron
BQ	2 micron
AQ	0.9 micron
AAQ	0.3 micron



9922-XX



9933-XX

DFU Model	Volume of Housing Litres	Initial Pressure Drop bar	Water Flow Rate, litres per minute				
			Grade DQ	Grade CQ	Grade BQ	Grade AQ	Grade AAQ
9922-05	0.1	0.07	0.76	0.63	0.19	0.09	0.03
4433-05	0.1	-	-	-	-	-	-
9933-05	0.1	0.34	1.90	1.58	0.95	0.46	0.12
9922-11	0.02	0.07	1.14	0.95	0.34	0.16	0.04
9933-11	0.02	0.34	2.84	2.33	1.64	0.76	0.20

## Principal Specifications

Model	9922-05	9933-05	4433-05	9922-11	9933-11
<b>Inlet and Outlet Ports</b>	1/4" Tubing	1/4" Tubing	1 <sup>st</sup> Tier/Barb 1/4" Tubing 2 <sup>nd</sup> Tier/Barb 3/8" Tubing	1/4" Tubing	1/4" Tubing
<b>Materials of Construction</b>	PVDF	Nylon	Nylon	PVDF	Nylon
<b>Maximum Temperature<sup>(1)</sup></b>	135°C	110°C	110°C	135°C	110°C
<b>Maximum Pressure<sup>(2)</sup></b>	8.6 bar	8.6 bar	8.6 bar	8.6 bar	8.6 bar
<b>Dimensions</b>	25 x 60mm	25 x 60mm	25 x 87.2mm	36 x 120mm	36 x 120mm

## Ordering Information

Model	9922-05	9933-05	4433-05	9922-11	9933-11
<b>Box of 10 DFU's</b>	9922-05-□	9933-05-□	4433-05-□	9922-11-□	9933-05-□
<b>Grades Supplied</b>	DQ, CQ, BQ AQ, AAQ	DQ, CQ, BQ AQ, AAQ	DQ, CQ, BQ AQ, AAQ	DQ, CQ, BQ AQ, AAQ	DQ, CQ, BQ AQ, AAQ

### Notes:

1 At 0 barg.

2 At 43°C

3 Installation Information: Please contact the Technical Services Department for manufacturers of compression and brass fittings.

To Pressure Pipe or Tubing:

Connector 1/4" tubing to 1/4" NPT female P/N 11970 (1 per kg).

Connector 1/4" tubing to 1/4" tubing P/N 11971 (1 per kg).

To Low Pressure Plastic Tubing:

Tubing with 1/4" ID may be slipped over the DFU and fittings and held with tubing clamps. Parker supplies plastic barbs to connect the DFU to smaller diameter tubing. The connection is suitable for pressures up to 3.5 bar.

DFU to 1/16" tubing P/N 1400 (bag of 20 barbs).

DFU to 1/8" tubing P/N 14001 (bag of 20 barbs).

## Chemical Compatibility

### Models 9922-05, 9922-11

**Suitable:** Water or steam to 135°C; concentrated nitric, sulfuric and hypochloric acids; chlorine (gas or liquid); sodium hypochlorite, ethylene oxide (gas or liquid); Ferons; ammonia (gas, liquid, or aqueous solutions); hydrogen peroxide (all concentrations); bromine (dry and aqueous solutions); all chlorinated solvents except methylene chloride; all aromatic and aliphatic solvents; all alcohols and glycols; aniline; phenol.

**Limited Use:** Acetone, MEK, dioxane, furfural, methylene chloride.

**Unsuitable:** Water above 135°C, THF, DMF, ethylene diamine, chlorosulphonic acid, ethanolamine, pyridine, sulphur trioxide.

### Models 9933-05, 9933-11, 4433-05

**Suitable:** Water to 70°C; benzene, toluene, other aromatic hydrocarbons; hydrocarbon solvents and fuels, perchloroethylene; trichloroethylene, nitric acid (to 10%); sulphuric acid (to 40%); hydrochloric acid (to 10%) most salt solutions; sodium and potassium hydroxide (to 50%).

**Limited Use:** Water at 80°C; acetone; MEK, acetaldehyde; ammonia (to 25%)

**Unsuitable:** Water above 70°C, alcohols; glycols, phenol; aniline; DMF; concentrated acids; chlorine.



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# Stainless Steel Filters for Food Processing and Packaging

Ideal for all processing and packaging areas that are frequently washed down

## Features

All 304 stainless steel construction, ideal standing up to aggressive washroom chemicals

Remove 99.99% of 0.01 micron particles of oil, water and dirt from compressed air and other gases

For sterile air requirements

Remove all viable organisms

USDA accepted for use in federally inspected meat and poultry plants

Low pressure drop

Continuously trap and drain liquids

Remove trace oil vapour with adsorbent cartridges

## Benefits

Balston Stainless Steel Filters protect your equipment and delicate instruments from the dirt, water and oil usually found in compressed air and other gases. These filters will remove contaminants at a very high efficiency - up to 99.99% for 0.01 micron particles and droplets. Liquid releases from the filter cartridge to an automatic drain as rapidly as it enters the filter. This allows the filter to continue removing liquids for an unlimited time without loss of efficiency or flow capacity. Select 1/4" to 1" line filters are constructed of 304 stainless steel and are designed to hold up to the harshest environments.

## Model 6002

The 6002 series models are 1/4" line size filters designed for lower flow systems and installations with space limitations. It is offered with two drain options, a manual drain or an auto float drain for maintenance free operation.

## Model 6004

The 6004 series models are 1/2" line size filters designed for moderate flow rate systems. This series has increased liquid holding capacity which safeguards sensitive end use points from system upsets and morning start ups.

## Model 6006 and 6008

The 6006 and 6008 series models are 3/4" and 1" line size filters respectively. These are designed for high flow rate systems servicing multiple end use points. These are also offered with a high capacity auto float drain option.



## Sterile Air Filters

Balston grade SA filter cartridges, rated at 99.9999+% efficiency for 0.01 micron particles, is at least 30 times better than the accepted standard for sterile air filters developed by independent research organisations in the U.S. and U.K. (request bulletin T1-105A for a detailed discussion on Balston filter efficiency rating procedure, and Bulletin T1-935 for an independent test report on Balston Sterile Air Filters). Balston Sterile Air Filters are in full compliance with the requirements of the FDA.

## Steam Sterilisation Procedure

In installations where the sterile air filter requires steam sterilisation, we recommend the following procedures:

The steam sterilisation pressure should not exceed 4 barg. Preferably, it should be held to 3 barg or less. A typical sterilisation cycle is 2 barg steam for 30 minutes. Steaming time can be increased as desired without harm to the filter cartridges. The steam flow should not exceed the normal air flow for the unit. To ensure no build-up of condensate in the housing, condensate should be drained from the filter by a condensate drain valve during the steaming process. The cleanliness of the steam is an important factor influencing the life of the Sterile Air Filter cartridges. Parker strongly recommends using Model 23 Steam Filters to ensure optimum operating life (see page 37). When autoclaving, the Grade SA filter cartridges will tolerate temperatures to 149°C in dry gas. Viton® or other heat resistant seals should be used in the housing.

Viton® is a registered trademark of Dupont Dow Elastomers.

## Principal Specifications

Model	6002N	6004N	6006N	6008N
Port Size	1/4"	1/2"	3/4"	1"
<b>Materials of Construction</b>				
Head	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Bowl	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel	304 Stainless Steel
Internals	Nylon	Nylon	Stainless Steel	Stainless Steel
Seals	Buna-N Food Grade	Buna-N Food Grade	Buna-N Food Grade	Buna-N Food Grade
Maximum Temperature <sup>(1)</sup>	49°C	49°C	49°C	49°C
Maximum Pressure <sup>(2)</sup>	12 barg	12 barg	12 barg	12 barg
Minimum Pressure <sup>(3)</sup>	1 barg	1 barg	1 barg	1 barg
Shipping Weight	1.6 kg	1.8 kg	5 kg	5.5 kg
Dimensions	70x 180mm	70 x 250mm	100 x 250mm	100 x 300mm

**Notes:**






- 1 Max. temperature with auto drain. Max. temperature with manual drain is 135°C.
- 2 Max. pressure with auto drain. Max. pressure with manual drain is 17 barg
- 3 Required for proper operation of auto drain.

## Replacement Filter Cartridge Ordering Information

Model	6002N	6004N	6006N	6008N
<b>Replacement Filter Cartridges</b>				
Number required	1	1	1	1
Box of 5	5/100-12-[*X]	5/100-18-[*X]	5/200-176-[*X]	5/200-185-[*X]
Box of 10	100-12-[*X]	100-18-[*X]	200-176-[*X]	200-185-[*X]
Box of 10	100-12-SA	100-18-SA	200-176-SA	200-185-SA
CI Cartridges (box of 1)	CI100-12-000	CI100-18-000	CI200-176-000	CI200-185-000

(\*replace with B or D)

## Ordering Information

				
<b>6002</b> 1/4" Ports	<b>N</b> = NPT Thread		<b>OA2</b> Manual Drain	<b>Filter Grade</b>
<b>6004</b> 1/2" Ports	Inlet & Outlet Ports		<b>OA1</b> Auto Drain	<b>000</b>
<b>6006</b> 3/4" Ports	<b>G</b> = BSPT Thread			<b>SA</b>
<b>6008</b> 1" Ports	Inlet & Outlet Ports			<b>DX</b>
				<b>BX</b>
				Leave blank for no filter cartridge

**How to order the Filter Assembly**  
Build your own custom filter assembly using the guideline matrix (left) and specify your model number.  
Example:  
1/2" filter and Auto Drain with Grade DX Filter = 6004N-OA1-DX.

## Flow Rates m<sup>3</sup>/hr at 0.14 barg drop at indicated line pressure.

Filter Housing Model	Port Size	Filter Cartridge Grade	Barg									
			0.1	1.4	3	6	7	9	10	14	17	
<b>6002</b>	1/4"	DX	15	32	66	87	107	129	153	199	246	
		BX	5	14	19	36	42	53	61	80	99	
		CI	3	8	12	20	25	31	37	48	59	
		SA	-	14	19	36	42	53	61	-	-	
<b>6004</b>	1/2"	DX	32	70	110	192	233	282	333	437	537	
		BX	15	32	51	87	107	129	153	199	246	
		CI	10	20	32	54	66	82	95	124	153	
		SA	-	32	51	87	107	129	153	-	-	
<b>6006</b>	3/4"	DX	63	133	209	364	440	535	630	822	1013	
		BX	17	36	58	95	119	144	172	223	275	
		CI	14	27	44	75	90	110	129	168	207	
		SA	-	36	58	95	119	144	172	-	-	
<b>6008</b>	1"	DX	93	195	308	533	646	787	928	1208	1490	
		BX	19	39	63	109	131	160	189	245	302	
		CI	17	34	54	95	114	139	163	212	262	
		SA	-	34	70	116	144	177	209	-	-	

# Sterile Gas

## Features

**1/4" to 1" Steam Sterilisable Air Filters**

**Remove all viable organisms**

**In-line steam sterilization**

**Low pressure drop**

**Full compliance with FDA requirements**

**USDA accepted for use in federally inspected meat and poultry plants**



## Balston Sterile Air Filters

Balston grade SA filter cartridges, rated at 99.9999+% efficiency for 0.01 micron particles, is at least 30 times better than the accepted standard for sterile air filters developed by independent research organizations in the U.S. and U.K. (request Bulletin TI-105A for a detailed discussion on Balston filter efficiency rating procedure, and Bulletin TI-935 for an independent test report on Balston Sterile Air Filters). Balston Sterile Air Filters are in full compliance with the requirements of the FDA.

Here's what one of your colleagues found: A Balston sterile air filter assembly, University of Massachusetts, Department of Food Science and Nutrition, under the direction of Professor David A. Evans, Ph.D.

"This sterile air system produced commercially sterile air and, to the limits of detection, no viable colonies of microorganisms were found". - Professor David A. Evans, Ph.D.

## Principal Specifications

Model	A33B	A45B	A27/35B	A27/80B
<b>Inlet and Outlet Ports</b>	1/4" NPT	1/2" NPT	1" NPT	1" NPT
<b>Drain Port</b>	1/8" NPT	1/8" NPT	1/4" NPT	1/4" NPT
<b>Materials of Construction</b>				
<b>Head</b>	316SS	316SS	316SS	316SS
<b>Bowl</b>	316SS	316SS	316SS	316SS
<b>Internals</b>	316SS	316SS	316SS	316SS
<b>Seals <sup>(1)</sup></b>	Viton	Viton	Viton	Viton
<b>Maximum Temperature</b>	204 °C	204 °C	204 °C	204 °C
<b>Maximum Pressure <sup>(2)</sup></b>	29 barg	17 barg	55 barg	55 barg
<b>Maximum Steam Pressure for Sterilization</b>	4 barg	4 barg	4 barg	4 barg
<b>Shipping Weight</b>	1 kg	2 kg	7 kg	9 kg
<b>Dimensions</b>	70 x 120mm	70 x 210mm	100 x 400mm	100 x 690mm

## Ordering Information

Model	A33B	A45B	A27/35B	A27/80B
<b>Assembly with Grade SA Filter Cartridge</b>	A33B-SA	A45B-SA	A27/35B-SA	A27/80B-SA
<b>Filter Cartridges:</b>				
<b>Number Required</b>	1	1	1	1
<b>Box of 3</b>	3/100-12-SA	3/100-25-SA	3/200-35-SA	3/200-80-SA
<b>Box of 10</b>	100-12-SA	100-25-SA	200-35-SA	200-80-SA
<b>Mounting Bracket</b>	11038-UK	11038-UK	11027	11027

### Notes:

- 1 Constructed of food grade Viton®. Viton® is a registered trademark of DuPont Dow Elastomers.
- 2 Maximum pressure ratings are for temperatures to 54°C. Please contact Parker for maximum pressure ratings at elevated temperatures.

# Stainless Steel Regulators & Filter Regulators



FR364-02CSS



FB548-02DGCSS



FR10-04CSS



FB11-04DGCSS

## Principal Specifications

Model	FR364-02CSS	FR10-04CSS	FB548-02DGCSS	FB11-04DGCSS
<b>Flow</b>	27 m <sup>3</sup> /h	135 m <sup>3</sup> /h	34 m <sup>3</sup> /h	122 m <sup>3</sup> /h
<b>Port Size</b>	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT
<b>Gauge Port</b>	1/4" NPT	1/4" NPT	1/4" NPT	1/4" NPT
<b>Drain</b>	-	-	Manual	Manual (automatic optional)
<b>Filter Rating</b>	-	-	5 micron	5 micron
<b>Outlet Pressure Range</b>	0-8.5 barg	0-8.5 barg	0-8.5 barg	0-8.5 barg
<b>Max Inlet Pressure</b>	20.7 bar	20 bar	20.7 bar	20.7 bar
<b>Temperature Range</b>	4.4-65.6°C	4.4°C - 65.6°C	4.4°C -65.6°C	4.4°C -65.6°C
<b>Weight</b>	0.2 Kg	0.81 Kg	0.28 Kg	1.1 Kg
<b>Operation</b>	Fluorocarbon Diaphragm	Fluorocarbon Diaphragm	Fluorocarbon Diaphragm	Fluorocarbon Diaphragm
<b>Relieving</b>	Standard (non-relieving optional)	Standard (non-relieving optional)	Standard (non-relieving optional)	Standard (non-relieving optional)
<b>Bowl Capacity</b>	-	-	30 ml	118 ml
<b>Materials of Construction:</b>				
<b>Body</b>	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
<b>Bowl</b>	-	-	316 Stainless Steel	316 Stainless Steel
<b>Spring Cage</b>	Celcon	Glass-filled Celcon	Celcon	Glass-filled Celcon
<b>Inner Valve</b>	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
<b>Bottom Plug</b>	316 Stainless Steel	316 Stainless Steel	-	-
<b>Seals</b>	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
<b>Adjustment Mechanism</b>	316 Stainless Steel Spring & 316 Stainless Steel Adjusting Screw	316 Stainless Steel Spring & 316 Stainless Steel Adjusting Screw	316 Stainless Steel Spring & 316 Stainless Steel Adjusting Screw	316 Stainless Steel Spring & 316 Stainless Steel Adjusting Screw

# High Pressure Drain Kits

## Product Overview

High pressure compressed gas systems often contain excessive amounts of liquid aerosols. This liquid can best be removed by utilising Parker coalescing filters. A Grade (DX) filter followed by a Grade (BX) filter will remove greater than 99.995% of liquid water and/or oil carryover from the compressed gas system. This liquid can now be safely removed with Parker's NEW High Pressure Drains (JDK). These drains are fully-assembled and are constructed of 316 Stainless Steel. They include two needle valves, fittings, and a pipe reservoir.

The JDK Series is rated for 345 bar and connects to the bottom of the appropriate Parker vessel<sup>(1)</sup>. These High Pressure Drains are offered in both vertical and horizontal orientations. The vertical orientation is ideal for applications in which there is adequate bowl removal clearance, while the horizontal orientation is ideal for applications with limited bowl removal clearance.

## Operation

Parker's new High Pressure Drains will allow the user to safely remove condensate from a high pressure compressed gas system. Accurate operation of the drain involves keeping the first needle valve open and the second needle valve closed. The liquid that is coalesced from the filter will empty into the drain's high pressure reservoir and fill the internal volume with liquid.

When it is time to expel the liquid from the drain kit (usually on a preventative maintenance schedule), the top needle valve should be closed to shut off the system pressure. The bottom needle valve should then be opened slowly since the liquid will discharge rapidly from the drain. This procedure should be repeated until all of the liquid has been removed from the filter bowl and drain reservoir.

All liquid should be collected and disposed of in accordance with local regulations.



## Principal Specifications

Model	JDK5000V	JDK5000H
<b>Description</b>	Vertical ZJ-Series Drain	Horizontal ZJ-Series Drain
<b>Inlet</b>	SAE-6	SAE-6
<b>Outlet</b>	1/4" NPT	1/4" NPT
<b>Maximum Pressure</b>	345 bar	345 bar
<b>Maximum Temperature</b>	38°C	38°C

### Notes:

<sup>1</sup> Check the size and thread of the drain port on the vessel as an adapter may be required.



# Application Notes

## Coalescing Filtration: Separating Liquids From Gases

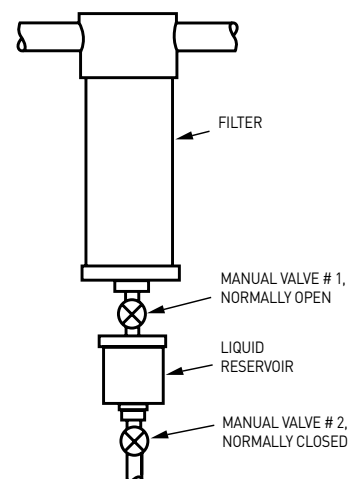
Microfibre Filter Cartridges efficiently separate suspended liquids from gases. The microfibrils capture the fine liquid droplets suspended in the gas and cause the droplets to run together to form large drops within the depth of the filter cartridge. The large drops, forced by the gas, flow to the downstream surface of the filter cartridge, from which the liquid drains by gravity. This process is called "coalescing". Since the coalesced liquid drains from the cartridge at the same rate that liquid droplets enter the cartridge, the cartridge has an unlimited life when coalescing liquids from relatively clean gases, and the filters operate at their initial retention efficiency even when wet with liquid. Note that the flow direction is inside-to-outside, to permit the liquid to drip from the outside of the filter to the housing drain. Since the coalesced liquid drips from the downstream surface of the filter cartridge in the presence of filtered gas, it is important to avoid carryover, or entrainment, of liquid droplets by the gas leaving the filter housing. The possibility of entraining coalesced liquid is minimised by using an DX-Model filter cartridge. The X-Model filter cartridges are constructed of two layers, an inner high-efficiency coalescing layer and an outer layer of coarse glass fibers. The coarse, rapidly-draining outer layer ensures that the liquid drips continuously from the bottom of the filter cartridge and minimises the chance of liquid carryover. (The small internal volume of some filter housings does not permit use of the thick-wall X-Model cartridges, and therefore Q-Model cartridges must be used.) Re-entrainment of coalesced liquid is also avoided by ensuring that the gas flow rate through the housing is safely below the maximum shown in the flow charts on. For most requirements for removing liquid from gas samples, Grade DX or DQ filter cartridges should be used.

## Draining Collected Liquid

If liquid is carried into the filter in slugs rather than dispersed as droplets in the gas, a filter which is properly sized for steady-state conditions can be flooded and permit liquid carryover. If slugging of liquid is expected, a filter with a relatively large bowl should be selected to provide adequate liquid holding capacity and provisions should be made to drain the liquid automatically from the bowl of the housing as fast as it accumulates. An automatic float drain can be used if the pressure is in the 0.7-28 barg (10-400 psig) range. Above 28 barg (400 psig), the possibilities are: a constant bleed drain, a valve with automatic timed actuator (supplied by customer), or an external reservoir with manual valves. The external reservoir can be constructed of pipe or tubing with sufficient volume to hold all the liquid which is expected to be collected during any period of unattended operation. If the filter is under vacuum, the external reservoir is a practical method of collecting coalesced liquid for manual draining from time to time. If an external vacuum source, such as an aspirator, is available, the liquid may be drained continuously from the housing drain port.

## Coalescing Filtration: Separating Two Liquid Phases

In principle, Microfibre Filter Cartridges separate suspended droplets of a liquid which is immiscible in another liquid by the same process as they separate droplets of liquid from a gas. The liquid droplets suspended in the continuous liquid phase are trapped on the fibres and run together to form large drops, which are then forced through the filter to the downstream surface. The large drops separate from the continuous liquid phase by gravity difference, settling if heavier than the continuous phase and rising if lighter. The coalescing action of Parker filters is effective with aqueous droplets suspended in oil or other hydrocarbons, and also with oil in water suspensions. In practice, liquid-liquid separations are much more difficult than liquid-gas separations. The specific gravity difference between two liquids is always less than between a liquid and a gas, and therefore a longer phase separation time is needed. Either the filter housing must be oversized or the flow rate greatly reduced to avoid carryover of the coalesced phase. As a rule of thumb, flow rate for liquid-liquid separation should be no more than one-fifth the



flow rate for solid-liquid separation shown in the chart. Even at low flow rates, if the specific gravity difference between the two liquids is less than 0.1 units (for example, if an oil suspended in water has a specific gravity between 0.9 and 1.1), the separation time for the coalesced phase may be impracticably long. In that case, if there is only a small quantity of suspended liquid, the filter tube can be used until saturated with the suspended liquid and then changed. Another practical problem with liquid-liquid separations is that small quantities of impurities can act as surface-active agents and interfere with the coalescing action. For that reason it is not possible to predict accurately the performance of a liquid-liquid coalescing filter, and each system must be tested on-site. The general guidelines for the system to start testing are to use Grade DX filter cartridges, and flow inside-to-outside at very low flow rates. If the suspended liquid is lighter than the continuous phase, the housing should be oriented so that the drain port is up. In general, Microfibre Filter Cartridges should be used for liquid-liquid coalescing in slipstream sampling applications only.

## Membrane Separation of Sample Streams

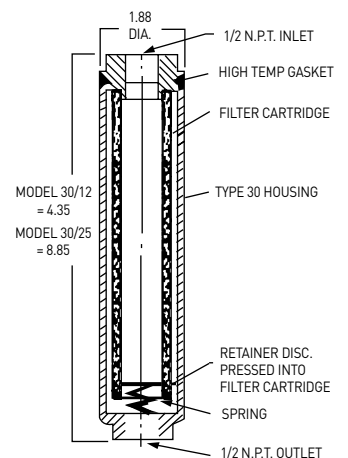
A Coalescer Membrane Combination Filter is designed to remove entrained liquid and particulate in gas samples for a wide variety of applications, and to prevent contamination or damage to the analysers and sample system components. Microscopic pores contained within the membrane permit molecules of gas or vapor to flow through easily, allowing the composition of the sample gas to remain unchanged. However, even the smallest liquid molecules remain trapped and are unable to flow through the membrane's small passages under normal operating conditions. This is due to the high surface tension which causes liquid molecules to bind tightly together to form a group of molecules, moving together, which is too large to fit through the pores of the membrane. The membrane is extremely inert, and is recommended for most process liquid applications, with the exception of hydrofluoric acid. It is also recommended for use in systems designed for PPB, PPM, and "percent level" component concentrations, as a result of its very low absorption characteristics. The membrane is strong and durable, but also very soft and pliable. Typically located upstream from the analyser or component it is protecting, the Coalescer Membrane Combination provides protection even if other sample system components fail.

## Removing Gas Bubbles from Liquids

Microfibre Filter Cartridges readily remove suspended gas bubbles from liquid, eliminating the need for deaeration tanks, baffles, or other separation devices. Flow direction through the filter is outside-to-inside. The separated gas bubbles rise to the top of the housing and are vented through the drain port. If slipstream sampling is used, the separated bubbles are swept out of the housing with the by-passed liquid. Grade DX or Grade DQ is a good choice for gas bubble separation.

## Quantitative Measurement of Solids in Gas

Quantitative determination of solids in gas, often a requirement in stack gas or other exhaust gas sampling, is readily accomplished using a Balston Model 30 filter housing. In the Model 30 housing, the filter cartridge is sealed in place by a stainless steel spring acting on a lightweight stainless retainer disc. The retainer disc is pressed firmly into the end of the filter cartridge. When the housing is disassembled, the filter cartridge and retainer disc may be easily removed as a unit. At the beginning of the run, a tare weight is obtained on the filter cartridge-retainer disc assembly. When the filter is in service, flow through the filter cartridge is inside-to-outside so that even large solid particles which fall off the filter cartridge are held in the cartridge-disc assembly. At the conclusion of the run with a known volume of gas, the cartridge-disc assembly is reweighed, and the increase in weight can be expressed as solids concentration in the gas. Grade DH Filter Cartridges are recommended for high temperature sampling up to 482°C (900°F). If the sampling or oven-drying temperatures do not exceed 149°C (300°F), Grade DQ may be used.

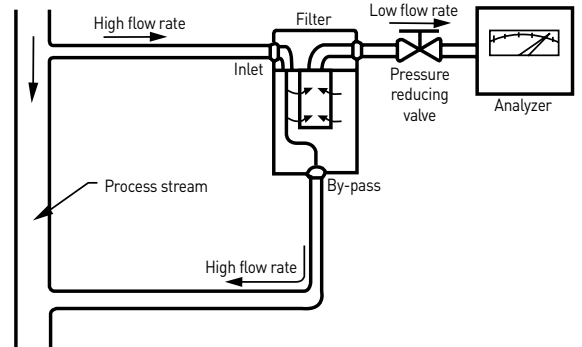


## Slipstream or By-pass Sampling

Instrument sample use rates are invariably quite low, yet it is essential to minimise lag time in the sample system. Since analysers often are located some distance from the sampling point, samples are usually transported to the analyser at a relatively high flow rate to minimise lag time. The sample is divided at the analyser, with the analyser using the portion it requires (usually a very small fraction of the total sample), and the balance recycled to the process, or vented. If the sample filter is located in the low flow line to the analyser, it will have good life between filter element changes because the solids loading rate is very low; however, the filter must be carefully selected to avoid introducing unacceptable lag time. If the filter is located in the high flow portion of the sample system, its effect on sample lag time can be relatively low, but the life between filter changes may be inconveniently short because the element is filtering a much greater volume of material than the analyser is using.

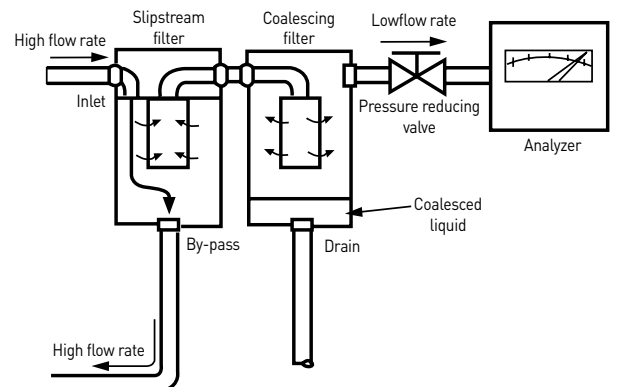
Ideally, a filter should be located at the point where the low flow stream is withdrawn to the analyser. This arrangement permits the main volume of the filter to be swept continuously by the high flow rate stream, thus minimising lag time; at the same time, only the low flow stream to the analyser is filtered, thus maximising filter life.

A slipstream filter requires inlet and outlet ports at opposite ends of the filter element to allow the high flow rate of the by-passed material to sweep the surface of the filter element and the filter reservoir, and a third port connected to the low flow rate line to the analyser, which allows filtered samples to be withdrawn from the filter reservoir. The Model 95 housings, 31GCFL, 41GCFL, 48S6, 49S6, DFU 8822-11, and DFU 8833-11 are ideal designs for slipstream sampling, since the inlet and the by-pass ports are located at opposite ends of the housing, and the by-pass port is as large as the inlet port. Larger housings, such as the Model 33S6, Model 45S6, and Model 27/35, can also be used for slipstream sampling, but the relatively small size of the drain port may limit the slipstream rate in some applications. If bubble removal from a liquid is a requirement, this function may be combined with slipstream filtration since the recommended flow direction for bubble removal is outside-to-inside, and the separated bubbles will be swept out of the housing by the by-pass stream. In this case, the liquid feed should enter at the bottom of the housing and the by-pass liquid exit at the top of the housing.



## Slipstream Sampling Plus Coalescing Filtration

A special problem arises in slipstream sampling if the filter is to coalesce and continuously drain suspended liquid from a gas stream or to coalesce liquid droplets from a liquid stream. As noted earlier, the coalesced liquid is removed in the form of large drops from the downstream side of the filter. Therefore, the coalescing filter requires two outlet ports, one for the dry gas and one for the liquid drain. To combine coalescing and slipstream filtration, a filter housing would need four ports - two for inlet and by-pass and two for filtered gas and coalesced liquid - which is not a practical design. Therefore, slipstreaming plus coalescing requires two stages of filtration. The second (coalescing) stage must be located in the sample line to the analyser, and should be as small as possible to minimise lag time. If the quantity of suspended liquid is not large, an in-line Disposable Filter Unit (9933-05 or 9922-05) may be considered as a trap for the suspended liquid, to be replaced when saturated.



## Quantitative Measurement of Liquids in Gas

Quantitative determination of non-volatile liquids suspended in a gas may be accomplished by a procedure similar to the solids determination. In the case of liquids, the test is designed so that all the liquid entering the filter cartridge during the test period remains trapped on the fibres; i.e., the sample period is short enough that the filter cartridge does not become saturated and begin to drain liquid. Any convenient filter housing may be used. The filter cartridge should be Grade BQ, to assure quantitative retention of aerosols, no matter what droplet size. With a known gas flow rate and test duration, the increase in weight of the filter cartridge will be a measure of the weight concentration of aerosol in the gas. Considerable care must be taken to obtain a representative sample of aerosol in gas. If sampling from a large line, the sample probe should enter the pipe from above and if possible, extend into the pipe to avoid picking up liquid clinging to the wall of the pipe. There should be no valves, reducers, or sharp elbows in the sample line upstream from the filter.

## Acid Plant Stack Gas

A frequently encountered sampling requirement is to analyse the gas composition in the exhaust from absorbers or scrubbers in acid manufacturing plants. The exhaust gas invariably contains droplets of dilute acid, which must be removed from the sample before it enters the analyser. The recommendations are similar to those for natural gas sample filtration: Grade DQ or DX filter tube, inside-to-outside flow, and two stages of filtration if slipstream sampling is required. Depending upon the composition of the suspended liquid, housings may be stainless steel, Teflon (Model 95T), Monel (Model 95M), or PVDF (DFU 8822-11).

## Sampling Ambient Air or Other Atmospheric Pressure Gas

The filtration requirement for ambient air samplers is usually to remove solid particles or liquid droplets which could deposit on analyser optical surfaces or cause other calibration problems. Grade DX or DQ filter cartridges are recommended. For low flow rate personal samplers, the compact and lightweight DFU 9933-05-DQ is often used. For higher flow rates, the Model 90 filter holder with Grade DX or DQ filters is recommended. Ambient air sampling systems are often under negative pressure, induced by the sampling pump. If it is necessary to drain coalesced liquid from the system, the external reservoir is often the most convenient method.

## Sampling Water

Most water analysers are well protected against the damage or calibration drift caused by solid contamination if a 10 micron (LP Grade 30) filter cartridge is used. If long filter life is desired in a system with high solids loading (including most tap water, well water, and cooling water), a two stage LP cartridge system is recommended: LP Grade 10 followed by LP Grade 30.

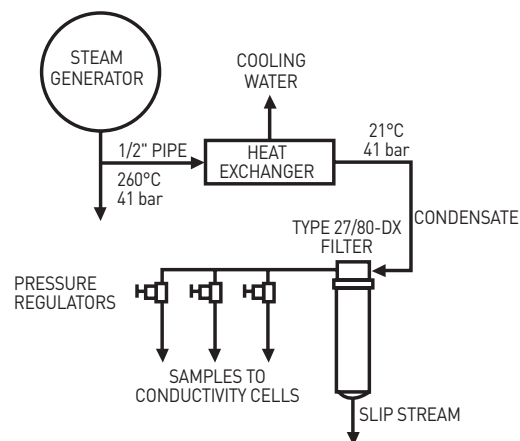
## Sampling Liquid Effluent Streams

Liquid effluent analysers usually deal with aqueous streams having a high solids content. In addition, the analysers are often located in remote areas of the plant and are infrequently serviced. Therefore, the sample filter system must have long life between filter cartridge changes, even in a high solids situation. The general recommendation for this requirement is a two stage filter system, LP Grade 10 filter cartridge followed by LP Grade 30 filter cartridge. The filters should be oversized as much as possible without causing excessive lag time. Plastic filter housings are usually a good choice.

Measurements of steam and condensate conductivity, specific ion concentrations, and feedwater additive concentrations are often required in high-pressure boiler systems. In a continuous sampling system, the high pressure steam or condensate is cooled to below 38°C (100°F) and then the pressure is reduced to near atmospheric pressure for metering to the analysers. Filtration is required upstream from the pressure reducing valves, to prevent pitting of the valve seats by suspended particles and to eliminate variations in flow rate to the analysers. A stainless steel filter housing with the appropriate pressure rating and Grade DX or DQ filter cartridge is recommended. Since the analyser system is often located some distance from the sampling point, slipstream filtration is usually required.

## On-Line Process Analysers

The variety of filtration requirements for on-line process analysers precludes making general recommendations above for the required filtration functions. The filter housings most frequently used for process analyser applications are the Model 95S6 and Model 91S6, which provide the corrosion resistance of Model 316 stainless steel (complies with NACE specification MR-01-75), a pressure rating of 345 barg (5000 psig), have full slipstream sampling capability, and minimum internal volume.

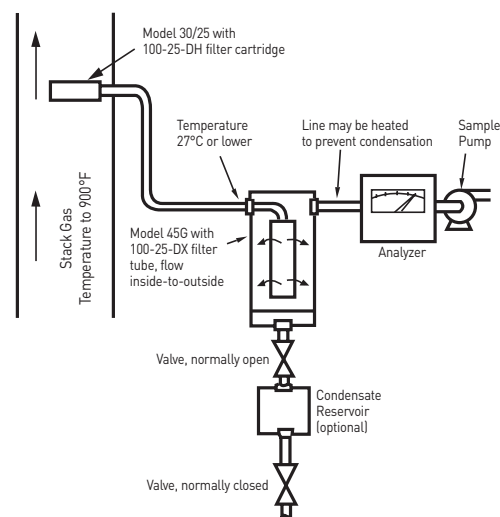


## Natural Gas Analysers

To protect gas composition analysers from liquids and solids, Grade DX or DQ filter tubes are recommended, with inside-out flow direction. If both slipstream sampling and coalescing are required, a two stage system must be used, as described on page 48. The Model 85 (345 barg (5000 psig) rating) and Model 37 (276 barg (4000 psig) rating) housings comply with NACE specification MR-01-75. For lower pressure applications, any stainless steel housing of appropriate flow capacity may be used.

## Stack Gas Sampling

The Model 30 housing with Grade DH filter cartridge is used for quantitative determination of solids in stack gas, as described on page 34. The Model 30 may also be used as a beginning-of-the-line filter at stack gas temperature (up to 538°C (1,000°F)), to prevent solids from entering the gas sample line. Grade DH is used for this purpose. After the sample is cooled, a coalescing filter with Grade DX tube is used to remove suspended liquids before the sample goes to the analyser. Flow direction is inside-to-outside. Model 33G or 45G housings are often used in this application to permit a visual check on the liquid level in the filter housing. Since there often is a considerable amount of liquid present at this point, positive steps must be taken to drain the housing to ensure that liquid does not build up and carry downstream to the analyser. The coalescing filter should be located as close to the analyser as possible to minimise the chance of condensation between the filter and the analyser. Additional precautions which can be taken to avoid downstream condensation are to cool the sample below ambient temperature upstream from the coalescing filter, and to heat the line.



# Parker Nitrogen Generation Membrane Technology

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**Simplicity and elegance describes the working principle of Parker's hollow fibre membrane technology.**

**Nitrogen is produced from hollow fibres which have selective diffusion rates. As compressed air is passed through the membrane modules consisting of thousands of hollow fibres, nitrogen is separated. Compressed air consists mainly of nitrogen, oxygen and other trace gases such as helium, together with water vapour. Water vapour, helium and oxygen diffuse quickly through the membrane wall, leaving nitrogen as the product.**

## NitroFlow®

Parker nitrogen generators are based on Parker hollow fibre membrane technology, which makes it possible to separate air into nitrogen and an oxygen-enriched stream.

NitroFlow® is available in both low pressure (LP) and high pressure (HP) ranges. Using NitroFlow® LP when low pressure is needed and opting for NitroFlow® HP when the application requires high pressure or when nitrogen storage is needed.

The NitroFlow® LP range has built-in compressors to produce nitrogen from ambient air simply by connecting to a mains voltage power source. A unique process and system design eliminates the need for condensed water removal and draining, ensuring the longest compressor and membrane life.

The NitroFlow® HP range requires compressed air either from a central system, or from a dedicated compressor. An optional additional storage vessel enables variable or peak consumption to be handled.

NitroFlow® will automatically switch on and off, depending on the nitrogen demand. With low running costs, NitroFlow® offers an unlimited, virtually maintenance-free and reliable source of nitrogen.

## TyreSaver®

Specially designed for filling motorcycle, car and truck tyres.

Filling tyres with nitrogen can bring benefits of longer tyre life, better fuel consumption and increased safety.

## NitroSource®

A modular design, which accommodates increased requirements through easy expansion.

Digital data management means intuitive commands with advanced features such as data logging and remote control.



# Global Company

## Local Support

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Parker is the leader in motion and control, partnering with its customers to increase their productivity and profitability.

With an annual turnover of over \$10 billion and 57,000 employees Parker measures its success by what it does for you. Guided by a relentless drive to improve your products and processes, we bring our engineering know-how to your application, wherever it may be.

From 60 sales offices in 44 countries around the world Parker services 12,000 distributors and 427,000 customers.



### Quality manufacturing

With over 270 manufacturing plants Parker's manufacturing experience spans more than half a century. Our Global reputation as a reliable supplier of superior products results from a focused and integrated development and manufacturing system. This begins with the customer – identifying needs, exploring opportunities and meeting the challenge of change.

Quality permeates through the entire corporation so that every employee thinks about our customers expectations.

Parker makes the technology investments needed to assure the highest quality products. Each of our divisions has ISO certification.

### Premier Customer Service

We are doing more for our customers than ever before. Globally, we have localized service to provide fast, hassle free response and on-site support. We're staying close to our customers and integrating systems to help them become more profitable. We are committed to delivering our highly engineered products on-time, on-promise. Parker's global customer service centers respond to more than 20,000 enquiries each month, helping callers quickly find the products and solutions they need.



### Innovation

We are leveraging our engineering expertise and breadth of product to create breakthrough innovations, processes and services that anticipate, rather than react, to customer needs. We're adapting our technology platforms across the markets we serve, combining what we know in new ways to better serve our customers. And we're creating smarter products by blending our expertise in electronic controls with our mechanical devices.



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