

# GS Series Membrane Filters

## Balston GS Series Membrane Filters

The Balston GS Series Membrane Filter Cartridges combine absolute membrane filtration down to 0.01  $\mu\text{m}$ , with an integral pre-filter to protect the membrane.

Ideally suited for high purity compressed air and gas requirements, these membrane cartridges are available in several housing configurations shown above.

### Use as a Final Filter for:

Ultra-high purity gases  
Corrosive or toxic gases  
Cylinder gases  
Doping gases



## Product Features:

- Filtration to 0.01 micron
- No particle shedding
- Integral prefilter protects the membrane
- Corrosion resistant housings
- Pressure to 5,000 psig
- No particle shedding
- PTFE membrane with glass and fluorocarbon prefilter
- Chemically inert to most gases
- Easy to install

Specialty Gas Filtration



Analytical Gas Filtration



Process Gas Filtration



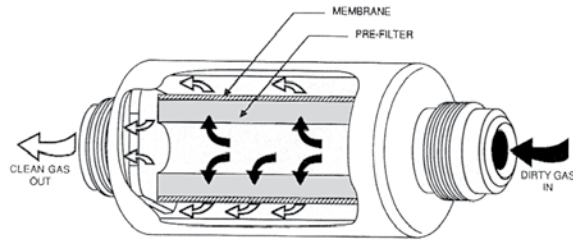
Critical Blow Off Applications



# 0.01 Micron Membrane Filters

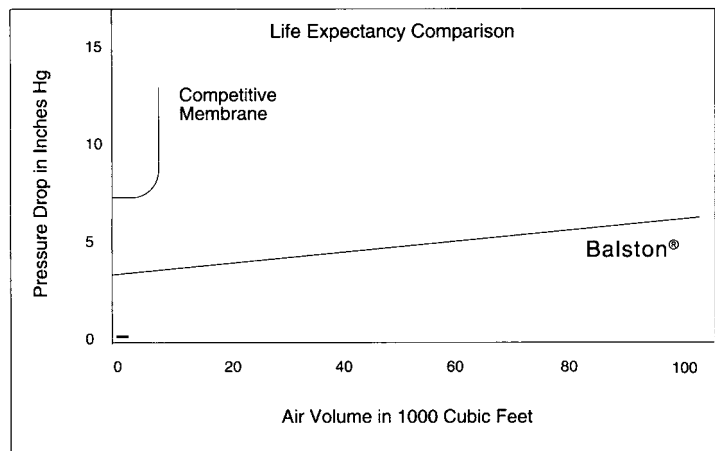
## 0.01 μm Membrane Filters

The GS Membrane Cartridges represent state-of-the-art membrane filtration technology. An integral prefilter, bonded to a porous PTFE membrane, provides the user with extended membrane life, 0.01 μm filtration rating, and, most importantly, zero fiber 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.



## Membrane Life Expectancy Comparison

Balston GS Membrane Cartridges, with their unique integral prefilter, offer up to 18 times the operating life of conventional membrane cartridges (as indicated in the life expectancy comparison below).



### Physical Properties, GS Membrane Cartridges

Temperature Range	-40°F to 250°F (-40°C to 121°C)
Maximum pressure differential across membrane, <b>Inside-to-outside flow:</b>	20 psi (size code 100 and 200) 60 psi (size code 050)
<b>Materials of Construction:</b>	Borosilicate glass with fluorocarbon resin binder prefilter and PTFE membrane
<b>Retention Efficiency:</b>	0.01 μm

# 0.01 Micron Membrane Filters

## Retention Efficiency Rating

The retention efficiencies of the Balston GS Series membrane cartridges were derived by John McCarthy, a staff research scientist at M.I.T. Dr. McCarthy used a submicron particle detection and sizing device to collect and analyze 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  $\mu\text{m}$  particles through the membrane filters. Bulletin TI-834 details the efficiency rating procedure and experimental results of this study.

Chemical Compatibility		
<b>The GS Series Membrane Filter cartridges are compatible with the following gases (when installed in a stainless steel filter housing with PTFE seals).</b>		
Ammonia	Chlorine (dry)	Hydrogen Bromide
Air (Compressed)	Diborane	Methylene Chloride
Argon	Dichlorosilane	Nitrogen
Arsine	Fluorine (dry)	Nitrous Oxide
Boron Trichloride	Freon	Phosphorous Oxychloride (dry)
Carbon Dioxide	Helium	Phosphine
Carbon Tetrafluoride	Hydrogen	Silane

# 0.01 Micron Membrane Filters

## Disposable Membrane Assemblies

### Disposable Filter Units (DFU's)

Consist of a membrane filter and an integral prefilter, permanently bonded into a plastic housing. DFU's have pressure ratings to 125 psig, and may be installed using a variety of fitting systems.

#### 9933-05-95

Available in a transparent nylon housing, this DFU is an ideal choice for an economical membrane filter for use where its chemical compatibility is suitable.

#### 9922-11-95

This opaque PVDF DFU, with approximately double the membrane area of the 9933-05-95, is used where exceptional chemical compatibility is required.



Model 9933-05-95



Model 9922-11-95

### Principal Specifications

Model	9933-05-95	9922-11-95
Inlet and Outlet Ports	1" Tube	1" Tube
Materials of Construction		
Housing	Nylon	PVDF
Cartridge	PTFE/Glass	PTFE/Glass
Seals	None	None
Maximum Temperature	230°F(110°C)	250°F(121°C)
Maximum Pressure	125 psig	125 psig
Maximum Δ Pressure	60 psi	60 psi
Shipping Weight	0.1 lb (45 g)	0.2 lb (90 g)
Dimensions	3.25"H X 1.0"W (8cm X 2.5cm)	4.6"H X 1.43"W (12cm X 3.6cm)

### Ordering Information

For assistance, call toll-free at 1-800-343-4048

#### Filter Assembly (1) Complete with Membrane Filter Cartridge

	Description
9933-05-95	In-line Nylon disposable filter with GS Membrane Cartridge
9922-11-95	In-Line disposable PVDF filter with GS Membrane Cartridge

#### Notes:

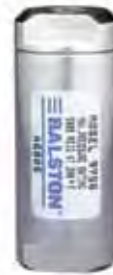
1 Disposable Filter Units are sold in boxes of 3 or 10. For example, a box of 3 DFU's in nylon housings, order: 3/9933-05-95. For a box of 10, order: 9933-05-95.

# 0.01 Micron Membrane Filters

## Stainless Steel or PTFE Filter Housings - 1/8" to 1/2" Line Size

### 97S6

Miniature 316 stainless steel filter, with 1/4" NPT in-line ports, 5000 psig rating. The 97S6 has a replaceable membrane cartridge and is an economical alternative when a disposable product is not required.



Model 97S6



Model 91S6, 95S6, 95T  
(95S6 Shown)

### 91S6, 95S6, 95T

Miniature T-Type filters in 316 stainless steel. The 91S6 is rated for 650 psig, the 95S6 is rated for 5000 psig. The 95T is constructed of PTFE, and is rated at 150 psig. The membrane cartridge is changed without breaking the inlet or outlet connections.

### 31S6, 33S6

Have 1/4" or 1/2" ports, 425 psig rating, can handle a higher gas flow rate, and have greater solids holding capacity than the Type 95 filters.



Model 31S6, 41S6  
(31S6 Shown)

### 41S6, 45S6

Are higher flow rate stainless steel filters with 1/4" or 1/2" NPT ports. The Type 45, with stainless steel bowl, has a 250 psig rating.



Model 33S6, 45S6  
(45S6 Shown)

Membrane  
Filters

# 0.01 Micron Membrane Filters

## Stainless Steel or PTFE Filter Housings - 1/8" to 1/2" Line Size

Principal Specifications						
Model	97S6	91S6	95S6	95T	31S6, 33S6	41S6, 45S6
Inlet and Outlet Ports	1/4" NPT (3)	1/8" NPT (2,3)	1/8" NPT (2,3)	1/8" NPT (2,3)	1/2" NPT (2,3)	1/2" NPT (2,3)
Drain Port	None	1/8" NPT	1/8" NPT	1/8" NPT	1/4", 1/8" NPT (7)	1/4", 1/8" NPT (7)
Materials of Construction						
Head	316SS	316SS	316SS (5)	PTFE (5)	316SS	316SS
Bowl	316SS	316SS	316SS (5)	PTFE (5)	316SS	316SS
Internals	316SS	316SS	316SS (5)	PTFE (5)	316SS	316SS
Seals	Viton (6)	PTFE (4)	PTFE (4)	Viton (4,6)	Viton (6)	Viton (6)
Maximum Temperature	400°F(204°C)	400°F(204°C)	400°F(204°C)	300°F(149°C)	400°F(204°C)	400°F(204°C)
Maximum Pressure	5000 psig (1)	650 psig (1)	5000 psig (1)	150 psig (1)	425 psig (1)	250 psig (1)
Shipping Weight	0.8 lbs (0.4 kg)	1.2 lbs. (0.5 kg)	1.3 lbs. (0.6 kg)	0.5 lbs. (0.2 kg)	5 lbs. (2.3 kg)	5.5 lbs. (2.5 kg)
Dimensions	1.25"D X 3.1"L (3.2cm X 7.9cm)	1.5"D X 3.7"L (3.8cm X 9.4cm)	1.8"D X 4"L (4.6cm X 10.2cm)	1.8"D X 4"L (4.6cm X 10.2cm)	2.25"D X 5.5"L (31S6)	2.25"D X 10"L (41S6)
					2.6"D X 4.5"L (33S6)	2.6"D X 9"L (45S6)
					(5.7cm X 14cm) (31S6)	(5.7cm X 25.4cm)(41S6)
					(2.6cm X 4.5cm) (33S6)	(6.6cm X 22.9cm) (45S6)

### Ordering Information

For assistance, call toll-free at 1-800-343-4048 8AM to 6PM Eastern Time

Housing Only Model	Membrane Cartridge No. Required	Membrane Cartridges (Order Separately)	
		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

#### Notes

1 Maximum pressure ratings are for temperatures to 200°F (93°C). Please consult factory for maximum pressure ratings at elevated temperatures.

2 Also available with 1/4" NPT ports, use designation Type 33S6-1/4 or 45S6-1/4.

3 Available with 1/4" socket weld for tubing size OD ports, use designation 97SW, 95SW, 33SW, 45SW, etc. Please consult factory for special pricing.

4 PTFE encapsulated Viton seals are standard.

5 Constructed of materials which comply with NACE Specification MR-01-75. Request Certificate of Compliance.

6 PTFE encapsulated Viton and other seals are available upon request. Please consult factory.

7 Drain port for types 31S6 & 41S6 is 1/4".

# 0.01 Micron Membrane Filters

## High Pressure Membrane Filters - 1/2" Line Size

### 37/12, 37/25

316 stainless steel T-Type filters, 4000 psig rating. The Model 37 filters are also used when a larger line size or higher flow rate is required.



Model 37/12, 37/25  
(37/25 Shown)

Principal Specifications		
Model	37/12	37/25
Inlet and Outlet Ports	1/2" NPT (5)	1/2" NPT (5)
Drain Port	1/8" NPT	1/8" NPT
Materials of Construction		
Head	316SS (2)	316SS (2)
Bowl	316SS (2)	316SS (2)
Internals	316SS (2)	316SS (2)
Seals	Viton (4)	Viton (4)
Maximum Temperature	400°F(204°C)(1)	400°F(204°C)(1)
Maximum Pressure	4000 psig	4000 psig
Shipping Weight	6 lb (2.7 kg)	10 lb (4.5 g)
Dimensions	2.75"Dia X 5.75"L (7cm X 14.6cm)	2.75"Dia X 10.25"L (7cm X 26cm)

Ordering Information		
For assistance, call toll-free at 1-800-343-4048		
	Membrane Cartridges (Order Separately)	
Housing Only Model	Box of 3	Box of 10
37/12	GS-3/100-12-95	GS-100-12-95
37/25	GS-3/100-25-95	GS-100-25-95

#### Notes

1 Maximum pressure ratings are for temperatures to 200°F (93°C). Please consult factory for maximum pressure ratings at elevated temperatures.

2 Constructed of materials which comply with NACE Specification MR-01-75. Request Certificate of Compliance.

3 Available with 1/2" socket weld for tubing size OD ports, use designation 37/12SW, 37/25SW.

4 PTFE encapsulated Viton and other seals are available upon request. Please consult factory.

5 For 1" line sizes up to 800 psig, consult factory.

# 0.01 Micron Membrane Filters

Flow Rates														
Filter Housing	Flow Rates, SCFM, at 2 psi Drop at Indicated Line Pressure (psig)													
	2	20	60	100	125	150	200	300	500	1000	2000	3000	4000	5000
9933-05-95	0.5	1.0	1.5	2.0	2.2	—	—	—	—	—	—	—	—	—
9922-11-95	0.5	1.0	1.7	2.2	2.3	—	—	—	—	—	—	—	—	—
91S6	0.5	1.0	1.8	2.5	2.8	3.0	3.4	4.1	5.3	—	—	—	—	—
95S6	0.5	1.0	1.8	2.5	2.8	3.0	3.4	4.1	5.3	7.4	10.5	12.9	14.8	16.5
95T	0.5	1.0	1.8	2.5	2.8	3.0	—	—	—	—	—	—	—	—
97S6	0.5	1.0	1.7	2.3	2.5	2.7	3.1	3.7	4.8	6.7	9.4	11.5	13.3	14.9
31S6, 33S6	1.0	2.1	4.6	7.0	7.7	8.4	9.6	11.6	—	—	—	—	—	—
37/12									14.8	20.8	29.3	35.9	41.4	—
41S6, 45S6	3.0	6.0	13.0	20.0	22.0	24.0	27.4	—	—	—	—	—	—	—
37/25								33.1	42.4	59.5	83.8	102.0	118.0	—

