

# Sample Filters

## Miniature Disposable Filter Units Constructed of Nylon and PVDF

Prevent cross-contamination of samples

Pressure ratings up to 125 psig

Temperature to 275°F (135°C)

Completely disposable, constructed of recyclable plastics

### Models 9922-05, 9933-05, 4433-05 and 9900-05

The 99XX-05 models are the smallest Disposable Filter Units with 11.7 ml internal volume. These models are used in low flow gas or liquid sampling applications, such as liquids to specific-ion analyzers or gases to personal samplers. The model 9900-05-BK has a color indicating feature, which turns the cartridge red when saturated with oil. The model 4433-05 has 1/4" and 3/8" Barb Connections molded into the inlet/outlet ports.

### Models 9922-11, 9933-11, and 8800-12

Models 9922-11, 9933-11, and 8800-12 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, slip-stream, or by-pass port.

### Model 9953-11

This model snaps together for easy filter cartridge changeouts. It is designed primarily for low pressure or mild vacuum applications. It is ideal for capturing samples and perform analysis or record weights over time. If used with a X-tube, it is a very effective silencer to compress inlet noise to small pumps.

Parker Hannifin offers a manual drain valve for removal of coalesced liquids from the Type 8833-11-DX.

Drain Valve: 1/8" NPT (male) x 1/8" ID Tubing.  
(Requires elbow part No. 11977). Part No. 20-120.



#### Chemical Compatibility Models 9922-05, 9922-11,

**Suitable:** Water or steam to 200°F (135°C); concentrated nitric, sulfuric, and hydrochloric acids; chlorine (gas or liquid); sodium hypochlorite, ethylene oxide (gas or liquid); Freons; 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 200°F (135°C), THF, DMF, ethylene diamine, chlorosulfonic acid, ethanolamine, pyridine, sulfur trioxide.

#### Chemical Compatibility Model 9933-11, 8833-11, and 8800-12

**Suitable:** Water to 158°F (70°C); benzene, toluene, other aromatic hydrocarbons; hydrocarbon solvents and fuels, perchloroethylene; trichloroethylene, nitric acid (to 10%); sulfuric acid (to 40%); hydrochloric acid (to 10%); most salt solutions; sodium and potassium hydroxide (to 50%).

**Limited Use:** Water at 176°F (80°C); acetone; MEK, acetaldehyde; ammonia (to 25%).

**Unsuitable:** Water above 158°F (70°C); alcohols; glycols, phenol; aniline; DMF; concentrated acids; chlorine.



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## Miniature Disposable Filter Units Constructed of Nylon and PVDF

Flow Rates		Water Flow Rate, Gallons per Hour						
DFU Model	Volume of Housing Gallons	Liters	Initial Pressure Drop	Grade DQ, DX	Grade CQ, CX	Grade BQ, BX	Grade AQ	Grade AAQ
9922-05 4433-05 9933-05	0.003	0.01	1 psi	12	10	3	1.5	0.4
5 psi			30	25	15	7.3	1.9	
9922-11 9933-11	0.0005	0.02	1 psi	18	15	5	2.5	0.6
5 psi			45	37	26	12	3.1	
8800-12	.003	.014	1 psi	54	44	13	6	1.4
			5 psi	129	106	56	26	6.5

Flow Rates		Air Flow at 2 psi drop, standard, cu. ft. per min. (SCFM) at indicated line pressure.						
Model	2 psig	20 psig	40 psig	60 psig	80 psig	100 psig	125 psig	
9953-11-DX, 8833-11-DX (7)	1.8	3.6	5.8	8.0	10.0	12.0	14.6	
9953-11-BX, 8833-11-BX	0.9	1.8	2.9	4.0	5.0	6.0	7.3	
9900-05-BK, 4433-05-BX	0.4	0.8	1.3	1.8	2.2	2.7	3.3	

Principal Specifications									
Model	9922-05	9900-05	4433-05	9933-05	9922-11	9933-11	8833-11	8800-12	9953-11
Inlet and Outlet Ports	1/4" Tubing	1/4" Tubing	1st Tier/Barb 1/4" Tube 2nd Tier/Barb 3/8" Tube	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/4" Tubing	1/2" Tubing	0.32" OD
Drain	None	None	None	None	None	None	1/4" Tubing	None	None
Material of Construction	PVDF	Nylon	Nylon	Nylon	PVDF	Nylon	Nylon	Nylon	Polypropylene
Filter Cartridge Length	1.25" (3.2 cm)	1.25" (3.2 cm)	1.25" (3.2 cm)	1.25" (3.2 cm)	2.25" (5.7 cm)	2.25" (5.7 cm)	2.25" (5.7 cm)	2.5" (5.71 cm)	2.28" 6.35 cm)
Maximum Temperature (1)	275°F (135°C)	230°F (110°C)	230°F (110°C)	230°F (110°C)	275°F (135°C)	230°F (110°C)	230°F (110°C)	150°F (66°C)	125°F (52°C)
Maximum Pressure (2)	125 psig	125 psig	125 psig	125 psig	125 psig	125 psig	125 psig	50 psi (8)	2 psi
Dimensions	1.0"D X 3.25"L (2.5 cm X 8 cm)	1.0"D X 3.25"L (2.5 cm X 8 cm)	1.0"D X 3.43"L (2.5 cm X 8.72 cm)	1.0"D X 3.25"L (2.5 cm X 8 cm)	1.4"D X 4.6"L (3.6 cm X 12 cm)	1.4"D X 4.6"L (3.6 cm X 12 cm)	1.4"D X 4.6"L (3.6 cm X 12 cm)	2.24"D X 6.24"L (5.69 cm X 15.85 cm)	1.22"D X 3.57"L (3.1 cm X 9.07 cm)

Ordering Information		For assistance, call toll-free at 1-800-343-4048 8AM to 5PM Eastern Time							
Model	9922-05	9900-05	4433-05	9933-05	9922-11	9933-11	8833-11	8800-12	9953-11
Box of 10 DFUs Available only in Q-grades	9922-05-□	9900-05-□ (4)	4433-05-□ (4)	9933-05-□	9922-11-□	9933-11-□	8833-11-□ (6)	8800-12-□ box of 1	9953-11-□ (5)
Box 10 DAU'S (3)	9922-05-□	N/A	N/A	9933-05-□	9922-11-□	9933-11-□	N/A	N/A	N/A

### Notes:

1 At 0 psig  
2 At 110°F (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 33.  
4 Available only in Q grades.

5 Available in Q or X media.  
6 Available only in X media.  
7 9953-11 is designed for maximum pressure of 2 psig.

8 Pressure rating in liquid service is 70 PSIG maximum.

### Installation Information

**To pressure pipe or tubing:** Compression fittings for 1/4" O.D. tubing may be obtained from the following manufacturers. Hoke, Inc. ("Gyrolok"); Crawford Fitting Co. ("Swagelok"); Parker-Hannifin Corp. ("CPI"); Legris, Inc. (push-on fittings); Jaco Mfg. Co. (plastic fittings). The following brass fittings which seal by O-ring compression and which may be completely recovered and reused when changing filters may be purchased from Parker/Balston:

Connector: 1/4" tubing to 1/4" NPT female - Part No. 11970 (1 per pkg.)

Connector: 1/4" tubing to 1/4" tubing - Part No. 11971 (1 per pkg.)

**To low pressure plastic tubing:** Tubing with 1/4" ID may be slipped over the DFU and fittings and held with tubing clamps. Parker Hannifin supplies plastic barbs to connect the DFU to smaller diameter plastic tubing. The connection is suitable for pressures to 50 psig.

DFU to 1/16" ID tubing: Part No. 14000 (bag of 20 barbs)

DFU to 1/8" ID tubing: Part No. 14001 (bag of 20 barbs)

# Sample Filters

## Filter Cartridge and Housing Selection



Sample  
Filters

Disposable Adsorption Units (DAUs) contain a bed of adsorbent granules. Utilizing a wide choice of adsorbents, the DAUs selectively remove vapors from air and other gases.

Because the adsorbed vapor remains trapped in the solid bed, the DAU has a fixed upper limit of total weight of vapor which can be captured. It is usually not feasible to regenerate the filter when it has reached its adsorption limit. DAUs should be used only when small quantities of vapor are to be removed.

### Considerations in Using Adsorbent Cartridges

The following factors should be considered when selecting a DAU:

- 1 Solid adsorbents are effective only for vapors. Since liquids will damage or inactivate most solid adsorbents, the DAU must be preceded by an efficient coalescing filter.
- 2 In contrast with Microfibre Filters, which operate at their initial efficiency throughout their life, adsorbent cartridges have a limited holding capacity. When the adsorption capacity is reached, no further adsorption occurs. The limiting capacity, or “breakthrough” point, is not sharply defined, and the exit vapor concentration will increase rapidly as saturation is approached. To avoid unwanted vapor contaminants downstream, it is necessary to change the adsorbent cartridge well before it has reached its ultimate adsorption capacity.
- 3 Adsorption is reversible, if operating conditions change, a vapor may desorb rather than adsorb. For example, if a temporary surge in vapor impurity concentration causes a relatively high concentration to be adsorbed on the solid, a subsequent decrease in inlet vapor composition will result in desorption of vapor from the solid to the gas stream.
- 4 The efficiency of a given adsorbent for a given vapor depends upon the specific operating conditions. Therefore, again in contrast to filtration, it is not possible to assign a single efficiency rating to an adsorbent. While it is not possible to predict or guarantee an adsorption efficiency for any specific set of conditions, it is possible to enhance the conditions beneficial to adsorption and avoid conditions which interfere with adsorption. Conditions which aid adsorption are: low temperature, high pressure, low flow rate, and absence of competing vapors (particularly water vapor).

Adsorbent	Grade	Use For
Carbon	000	Compressor oil vapors, C <sub>5</sub> and heavier hydrocarbons, aromatics, oxygenated hydrocarbons, chlorinated organics, freons, carbon disulfide.
Silica Gel	101	Recommended only for water vapor.
Molecular Sieve Type 13X	103	Most C <sub>4</sub> and lighter hydrocarbons, ethylene, propylene, acetylene, ethylene oxide, ammonia, mercaptans, sulfur hexafluoride, triethylamine, and smaller amines.
Mixed Sodium & Calcium Hydroxides	107	All acidic gases, including sulfur trioxide, sulfur dioxide, nitrogen dioxide, carbon dioxide, hydrogen sulfide, hydrogen chloride, phosphorus trichloride, boron trifluoride.

**Notes:**

- 1 Please refer to Ordering Information for complete explanation of nomenclature.
- 2 In DAU 9933-05-107 and DAU 9933-11-107, color indicator turns violet when adsorbent is spent.
- 3 In DAU 9933-05-101 and 9933-11-101, adsorbent turns pink when vapor capacity is reached.
- 4 Maximum operating temperature is 180°F.

# Sample Filters

## Balston OEM Disposable Filter Solutions



Balston Disposable Filter Units

### Ideal for the following gas filtration applications:

- Final filter for air logic devices
- Protection of pneumatic components
- Filtration of portable environmental sampling devices
- Filtration of samples to on-line analyzers
- Protection of Pneumatic temperature controls

### Ideal for the following liquid filtration applications:

- Filtration of liquid with minimum holdup volume
- Filtration of liquid samples to analyzers

### Additional applications in the following industries:

- Instrument & Controls
- HVAC
- Dental
- Automotive
- Food Packaging

Parker Hannifin Corporation, the leader in separation and filtration technologies, is pleased to present a brochure designed to help customers choose the best Balston disposable filter product for industrial, commercial, measurement and control applications.

Balston brand disposable filter units (DFU) consist of a microfibre filter cartridge permanently bonded into a sealed plastic holder with 125 psig pressure ratings, temperatures to 275°F, and available in low and high flow models. The economical DFU offers all of the advantages of microfibre filter cartridges for high efficiency liquid and gas filtration, combined with the economics and convenience of complete disposability.

Our years of experience in fitting products to individual applications has led to the creation of a variety of standard products that can be ordered off the shelf for general purpose filtration requirements or can be custom designed for all types of specialty applications.

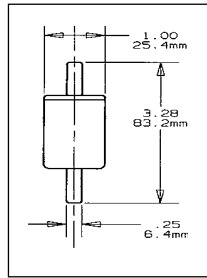
If you do not see the specific configuration, size or material that you are looking for, our OEM engineering team will be happy to review your requirements and design product to your exact specifications.

If you have questions, or would like to place an order, please call 1-800-343-4048.

# Sample Filters

## OEM Disposable Filter Solutions

### General Purpose DFU - Low Flow Gas



Model 9933-05

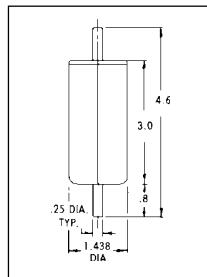
#### Specifications

Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	230°F (110°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	None
Housing Material of Construction:	Nylon
Internal Volume:	.01L

#### Ordering Information

9933-05-□ Box of 10  
Available in Type Q and in the following grades: A, B, C, and D. Also available with adsorbents 000, 101, 103, and 107.

### General Purpose DFU - Higher Flow



Model 9933-11

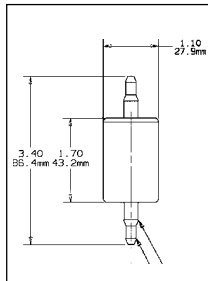
#### Specifications

Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	230°F (110°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	None
Housing Material of Construction:	Nylon
Internal Volume:	.02L

#### Ordering Information

9933-11-□ Box of 10  
Available in Type Q and in the following grades: A, B, C, and D. Also available with adsorbents 000, 101, 103, and 107.

### General Purpose with Integral Barb Fittings



Model 4433-05

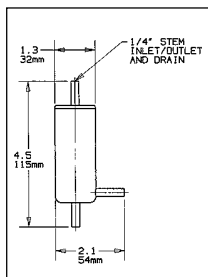
#### Specifications

Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	230°F (110°C)
Inlet / Outlet Ports:	1st Tier: 1/4" Tube 2nd Tier: 3/8" Tube
Drain:	None
Material of Construction:	Nylon
Internal Volume:	.01L

#### Ordering Information

4433-05-□ Box of 10  
Available in Type Q and in grades: A, B, C and D.

### General Purpose with Drain Port



Model 8833-11

#### Specifications

Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	230°F (110°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	1/4" Tube
Housing Material of Construction:	Nylon
Internal Volume:	.02L

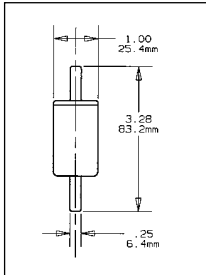
#### Ordering Information

8833-11-□ Box of 10  
Available in Types Q and X and in the following grades: A, B, C, D, and S.

# Sample Filters

## OEM Disposable Filter Solutions

### High Chemical Resistance - Low Flow



#### Specifications

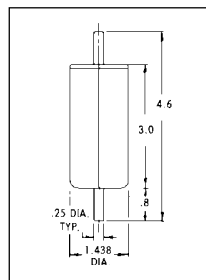
Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	275°F (135°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	None
Housing Material of Construction:	PVDF
Internal Volume:	.01L

#### Ordering Information

9922-05-□ Box of 10  
Available in Type Q and in the following grades: A, B, C, D. Also available with adsorbents 000, 101, 103, and 107.

Model 9922-05

### High Chemical Resistance DFU -Higher Flow



#### Specifications

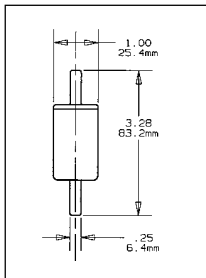
Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	275°F (135°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	None
Housing Material of Construction:	PVDF
Internal Volume:	.02L

#### Ordering Information

9922-11-□ Box of 10  
Available in Types Q and in the following grades: A, B, C, and D. Also available with adsorbents 000, 101, 103, and 107.

Model 9922-11

### Oil Indicating DFU



#### Specifications

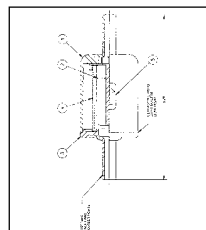
Max. Pressure at 110°F:	125 psig
Max. Temp. at 0 psig:	230°F (110°C)
Inlet / Outlet Ports:	1/4" Tube
Drain:	None
Housing Material of Construction:	Nylon
Internal Volume:	.01L

#### Ordering Information

9900-05-□ Box of 10  
Available in Type K and in grade B.

Model 9900-05

### Large Capacity High Flow DFU



#### Specifications

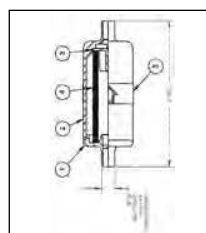
Max. Pressure at 110°F:	50 psig
Max. Temp. at 0 psig:	150°F
Inlet / Outlet Ports:	1/2" Tube
Drain:	None
Housing Material of Construction:	Nylon
Internal Volume:	.0138L

#### Ordering Information

8800-12-□ Box of 1  
Available in Types Q and X and in the following grades: A, B, C, and D. Also available with adsorbents 000, 101, 103, and 107.

Model 8800-12

### Large Capacity High Flow DFU Intake Filter



#### Specifications

Max. Pressure at 110°F:	2 psig
Max. Temp. at 0 psig:	125°F
Inlet / Outlet Ports:	.032" OD
Drain:	None
Housing Material of Construction:	Polypropylene
Internal Volume:	0.033L

#### Ordering Information

9953-11-□ Box of 10  
Available in Types Q and X and in the following grades: A, B, C, and D.

Model 9953-11