

# FB™-Series Inertial Bypass Filter

## Filters High Particulate Load and Reduces Response Time

- Inertial particle filtration
- Cleanable filter element
- Stainless steel construction
- High pressure rating
- Low dead volume
- Low pressure drop
- Sintered or mesh filter element
- Heated filters available

Perma Pure FB™-Series bypass filters are inertial separation filters for high particulate load applications. Used upstream of fine particulate filters, FB-Series filters will greatly increase the life and performance of particulate and coalescing filters.

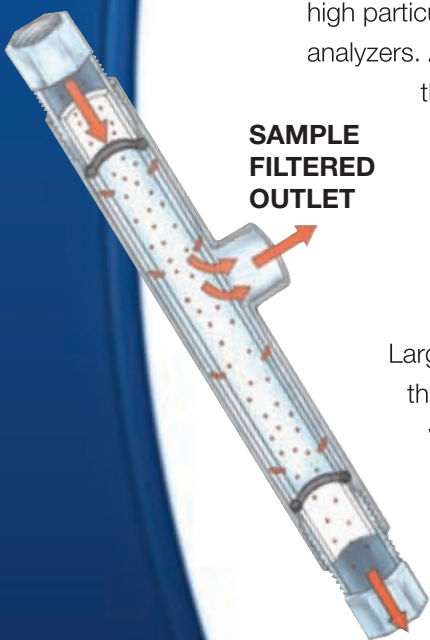
### Principle of Operation

Perma Pure FB-Series bypass filters can be found in both CEMS and process monitoring applications. The bypass filter, which is sometimes called an inertial filter, eliminates large amounts of particulate and is self cleaning. In addition to reducing high particulate, these filters can be installed to reduce the response time of analyzers. A pump or vacuum eductor is used to pull a fast bypass sample through the filter, thus reducing the response time when the sampling system is located some distance from the sample point. Since analyzers generally only require a sample flow of 1-2 lpm, the time required to pull the gas from the sample point to the analyzer would be excessively long without this fast bypass loop. This increases the life of conditioning systems.

Large volumes of high-velocity, particulate-laden gas pass straight through the filter element. Sample is drawn from the bypass flow through a port which is perpendicular to the main flow. Pulled off the bypass stream, the sample is filtered by the mesh or porous filter element. The bulk of the particulate passes directly through the length of the filter element due to its high velocity and inertia, which prevents particulate from being diverted by the pull of the sample outlet port. Any particles that are pulled to the sample outlet are filtered by the element. The high velocity flow also continuously flushes the surface of the filter element, reducing pore clogging.

For applications involving a high temperature, wet sample, Perma Pure offers bypass filter heating systems. This involves a simple electrical resistance strip heater mounted in an aluminum block that surrounds the filter. The temperature is controlled with a factory pre-set mechanical thermostat which switches electrical power on and off to maintain the desired setting.

SAMPLE INLET



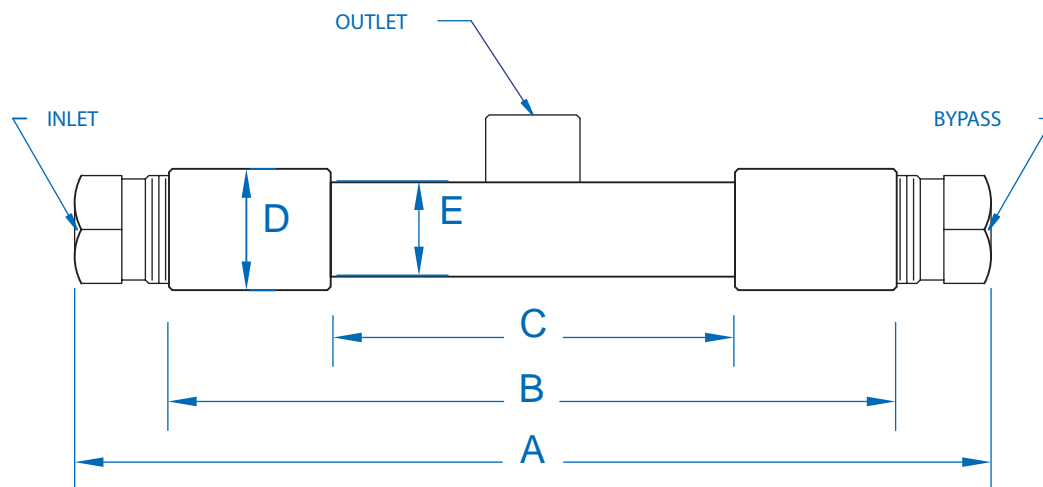
SAMPLE  
FILTERED  
OUTLET

BYPASS  
OUTLET



PERMA PURE

FB-Series filters are available in two models: FB-625 and FB-1000. Flow rating for the filters is dependent on the particulate level of the sample. In general the FB-625 Series filters are suitable for sample flows of up to 10 liters per minute while the FB-1000 Series filters can handle higher flows.



Filter Model	Inlet or Bypass	Outlet	Maximum Pressure	A	B	C	D	E	Hex	Shell Volume
FB-625-SS-6	1/4"	1/8"	1000 psig	8-1/8"	6.625"	4.625"	7/8"	7/8"	3/4"	40 mL
FB-625-SS-12	1/4"	1/8"	1000 psig	14"	12-1/2"	9-1/2"	7/8"	7/8"	3/4"	80mL
FB-1000-SS-6	1/4 or 1/2"	1/4 or 3/8"	750 psig	8-1/8"	6-5/8"	3-5/8"	1-1/8"	7/8"	1"	45mL
FB-1000-SS-12	1/4 or 1/2"	3/8"	750 psig	14-1/4"	12-3/4"	9-3/4"	1-1/8"	7/8"	1"	90 mL

All connections are female NPT  
All seals are Viton

Various filter elements are available. The part numbers are listed below. To order, add the element part number to the filter model listed above. For example FB-625-SS-6M100

Element	Description	Porosity	Maximum Temperature
S	Sintered stainless steel	10 microns	150°C
M40 (1000 series only)	Wire mesh stainless steel element, 40 mesh	400 microns	150°C
M100	Wire mesh stainless steel element, 100 mesh	150 microns	150°C
M200	Wire mesh stainless steel element, 200 mesh	74 microns	150°C

An eductor or aspirator may be used to draw bypass flow through the filter. Eductors utilize a venturi which expands compressed air, creating a low pressure point to drive the bypass flow. Perma Pure offers two venturi orifice sizes, 0.040" (ED-040-FF) for use with the FB-625 and 0.062" (ED-062-FF) diameter for use with the FB-1000.



## ETA Associates

119 Foster Street, Bldg #6 • Peabody, MA 01960

Tel: (978) 532-1330 • Fax: (978) 532 7325 • [www.ETAassociates.com](http://www.ETAassociates.com) • [eta@ETAAssociates.com](mailto:eta@ETAAssociates.com)