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Model 7610 IGS Filter
Inertial Gas Sampling

Model 7610 is the basic Mott IGS filter. The porous metal element is mounted in a housing with all-welded construction for maximum reliability. This design allows minimal hold-up volume and provides connections suitable for compression fittings. The IGS filter can be used in gas sampling applications in positive pressure systems without an eductor (see Bypass Filter arrangement on the next page).

For proper operation the particle ladened gas stream must enter the ID of the porous element at 70-100 ft/s* (21-30 m/s) linear velocity. The standard model has a 0.5 Media Grade porous element of 1/2" ID and 6", 12" or 24" length resulting in recommended sample flow rates of 0.5, 1, and 2 liters per minute**. The linear flow connections are 3/4" OD tubing. The filtrate connection can be either 1/4" OD or 3/8" OD tubing depending on the filter element length. Standard materials of construction are 316LSS sintered porous media with 316SS housing. Designed for service up to 1000 psig (69 barg) at 200°F (93°C). (Note: Pressure rating will change depending on temperature).

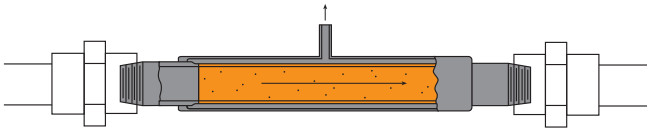
This material combination is suitable for use in most oxidizing atmospheres at temperatures up to 750°F (400°C) and in most reducing and neutral atmospheres at temperatures up to 1000°F (450C°). When greater corrosion resistance and/or use at higher temperatures are required, other porous materials are available such as Hastelloy® C-276, Hastelloy® X and Inconel® 600 to name a few (see Maximum Temperature Chart below). Other Media Grades are also available depending on the level of filtration required (see Particle Capture Efficiency Chart below).

Particle Capture Efficiency In Gas

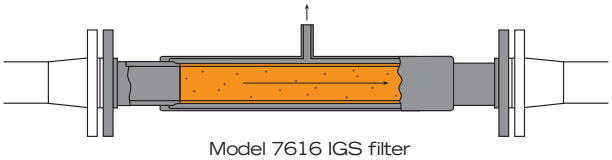
Media Grade	Thickness	Particle Size - µm Initial Collection Efficiency 90%	99%	99.9%
0.1	0.039"	C	C	C
0.2	0.039"	A	B	0.2
0.5	0.047"	A	0.25	0.3
1	0.047"	A	0.35	0.7
2	0.062"	0.3	0.6	2
5	0.062"	0.8	2	5
10	0.062"	4.5	8	13
20	0.062"	8	12	20
40	0.078"	12	25	45
100	0.093"	20	40	100

Tested at flux of 6 acfm/ft²
A = Initial efficiency is greater than 90% for all particle sizes
B = Initial efficiency is greater than 99% for all particle sizes
C = Initial efficiency is greater than 99.9% for all particle sizes

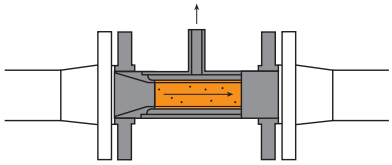
Material	Maximum Temperature Oxidizing Atmosphere	Reducing Atmosphere
316L SS	750°F/399°C	900°F/482°C
Hastelloy® C-276	850°F/454°C	1000°F/538°C
Inconel® 600	1100°F/593°C	1500°F/815°C
Hastelloy® X	1450°F/788°C	1700°F/927°C



Model 7615 IGS filter
with threaded connections



Model 7616 IGS filter
with flanged connections



Model 7617 IGS filter
with flanged connections and reduced ID

Series 7611, 7612 & 7614 IGS Filter Systems with Eductor

These filter systems consist of a Model 7610 IGS filter connected to an inline eductor that introduces air into the system to induce the required 70-100 ft/s* (21-30 m/s) linear velocity gas flow though the ID of the porous element. For additional information, see Mott literature PMIGSYS.

Series 7615, 7616 & 7617 Custom-Designed Pipeline Filter

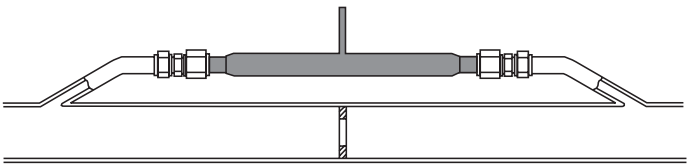
These custom engineered pipeline filters allow installation of the IGS filter directly into pipelines eliminating the need for external mounting connections. Model 7615 is an IGS filter with male pipe thread axial flow connections. Model 7616 has flange axial flow connections. And Model 7617 has flange axial flow connections with reduced ID elements that creates an increase in the linear gas velocity eliminating the use of an eductor. These models can be used on pipes from 3/4" to 6" IPS. Refer to the Flow/Velocity Table below for the gas flow required to meet the filters operating parameters of 70-100 ft/s* (21-30 m/s) linear axial velocity.

Flow/Velocity Table

Pipe Size (Sch. 40)	CFM@70FPS Axial Flow	CFM@100FPS Axial Flow
3/4	16	22
1	25	36
1 1/4	44	62
1 1/2	59	85
2	98	140
2 1/2	140	199
3	216	308
3 1/2	288	412
4	371	530
5	584	834
6	843	1204

Bypass Filter Arrangement

For sampling in positive pressure systems from large ducts or pipes, the Series 7600, 7615, 7616 or 7617 filters can be used without an eductor by using a bypass filter arrangement as shown in this illustration. With a bypass installation, an orifice plate is used in the main duct or pipe line that produces a minimum of a 2 psi differential across the filter, thus resulting in the required 70-100 ft/s* (21-30 m/s) linear velocity in the filter.



Bypass filter arrangement

For additional information or technical assistance, please feel free to contact us at Quest@mottcorp.com or visit the Resource Center on our website, www.mottcorp.com.

Notes:

Recommended linear axial velocity in the ID of the porous filter element is 70-100 ft/s (21-30 m/s) or as required to maintain proper velocity of entrained solids in the particulate ladened gas stream.

**Sample flow rates should be controlled to avoid premature plugging. Recommended sample flow rate is 30 to 60 cc/minute per in^2 of the inside surface of the filter element. Should a filter become blinded, it can be cleaned by means of a simple pulse blowback at 50-60 psi above the system pressure, with a pulse duration of about 0.5 seconds.

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