

➤ 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 laden 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 (450°C). 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

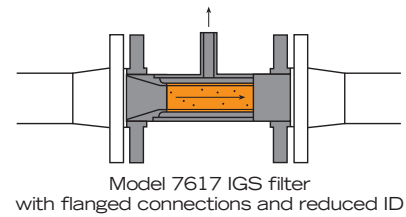
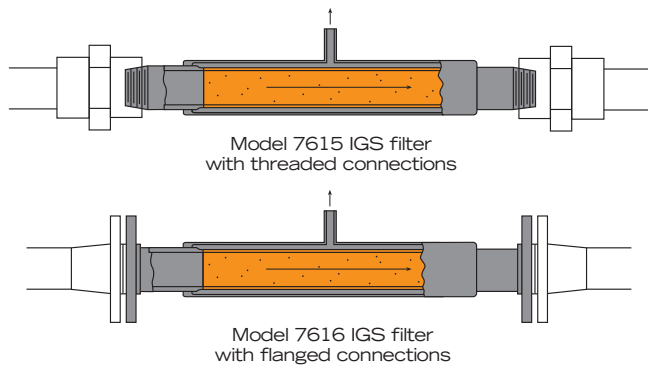
Tested at flux of 6 acfm/ft²

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



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 through the ID of the porous element. For additional information, see Mott literature PMIGSYS.

Series 7615, 7616 & 7617 Custom-Designed Pipeline Filter

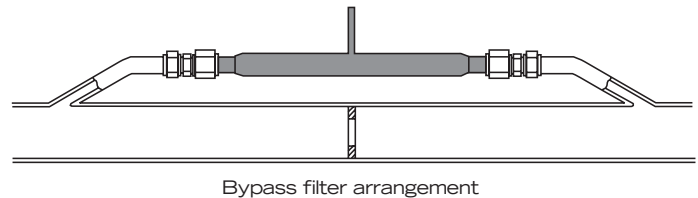
These custom engineered pipeline filters allow installation of the IGS filter directly into pipelines eliminating the need for external mounting connections. Model 7615 is an IGS filter with male pipe thread axial flow connections. Model 7616 has flange axial flow connections. And Model 7617 has flange 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.



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 laden gas stream.

**Sample flow rates should be controlled to avoid premature plugging. Recommended sample flow rate is 30 to 60 cc/minute per in² 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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> IGS Filter Systems



Model 7611 IGS External Filter System

Model 7611 IGS External Filter System consists of the basic Mott 7610 IGS Filter connected to an inline eductor. It is designed to be used in most low pressure sampling applications. The eductor introduces air into the system to induce the required 70-100 ft/s* (21-30 m/s) linear velocity gas flow through the ID of the porous element.

The basic Mott 7610 Filter has a porous metal element 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 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).

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Particle Capture Efficiency In Gas

Media Grade	Thickness	Particle Size - μm		
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Tested at flux of 6 acfm/ft²

A = Initial efficiency is greater than 90% for all particle sizes

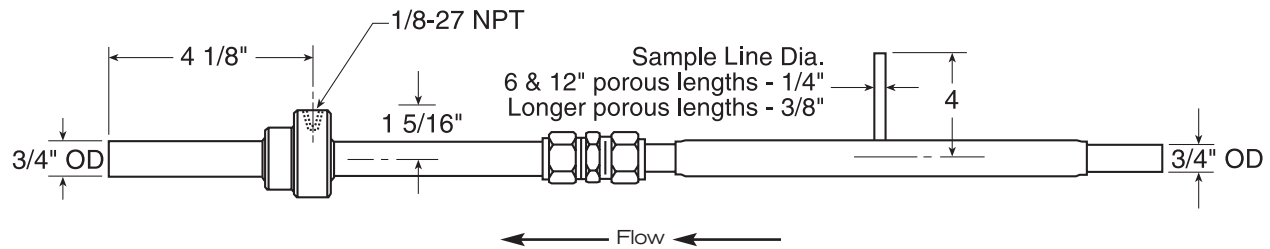
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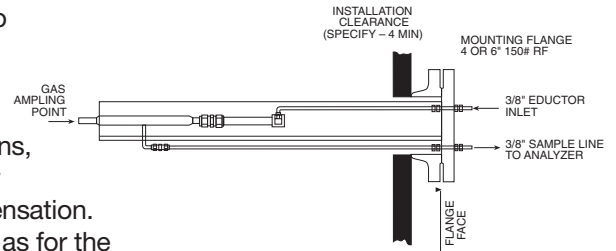
> porous metal products

Model 7611 IGS filter



Model 7612 Flange Mounted In-Stack IGS Filter System

Model 7612 Flange Mounted In-Stack IGS Filter System is designed to allow placement of the IGS filter inside a stack or pipe, without risk of fouling the filter element. It consists of the basic Mott 7611 IGS Filter System (filter and eductor) mounted on a rigid support structure. In-stack systems are often chosen because of external space limitations, or because an external system would drop the gas temperature below its dew point, requiring the addition of heat tracing*** to prevent condensation. Sampling flow rates, media grades and material choices are the same as for the Model 7610 and 7611 IGS Filter Systems.

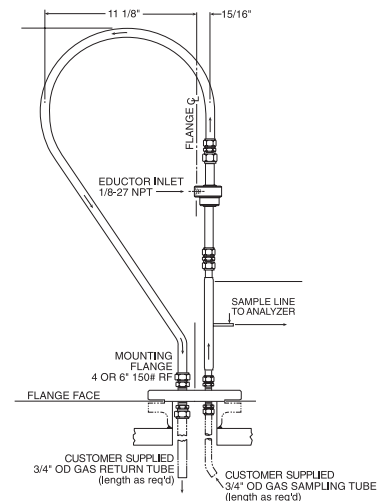


Model 7612 in-stack IGS system

Each 7612 In-Stack IGS Filter System is custom manufactured to meet the application's unique installation clearance to position the filter correctly within the stack or pipe. The eductor gas inlet and filtrate sample line connections are simple compression fittings for 3/8" lines on the external face of the flange of the support structure. Standard models are engineered to fit through a 4"-150# ANSI raised faced flanged nozzle or on the stack or pipe. Other flange configurations are available up on request.

Model 7614 Flange Mounted External IGS Filter System

When access is limited to a horizontal vessel or duct, our Model 7614 Flange Mounted External System allows installation of a complete Model 7611 External IGS Filter System (filter and eductor) by means of one flange. Sampling flow rates, media grades and material choices are the same as for the Model 7610 and 7611 IGS Filter Systems. Standard models are engineered to mount to the vessel or pipe line via a 4"-150# ANSI raised face flange. The filtrate sample line connection is made via a compression fitting to either 1/4" OD or 3/8" OD tubing depending on the filter element length. The eductor gas supply line connection is via a 1/8"-27 NPT female port. Other flanges sizes are available up on request. The total system width on our standard 7614 Flange Mounted External IGS Filter Systems is less than 12".



Model 7614 flange mounted external IGS filter system

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 laden gas stream.

**Sample flow rates should be controlled to avoid premature plugging. Recommended sample flow rate is 30 to 60 cc/minute per in² 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.

***When operating at a gas temperature near the dew point, or when the temperature could cool down to below the dew point, it becomes necessary to heat trace the system to prevent condensation. Condensation can foul the filtration system and possibly damage the filter, if acids condense out.

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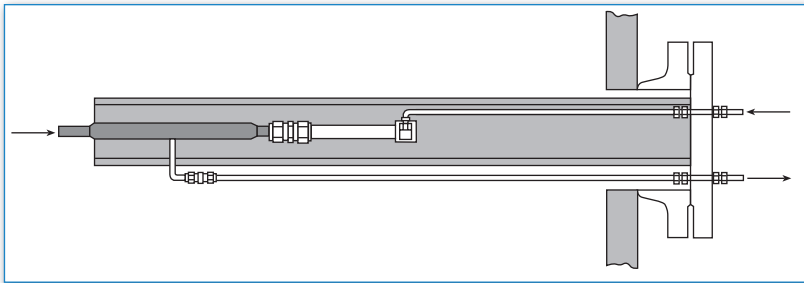
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► Model 7612 Flange Mounted In-Stack IGS Filter System



Model 7612 in-stack IGS system

Model 7612 Flange Mounted In-Stack IGS Filter System is designed to allow placement of the IGS filter inside a stack or pipe, without risk of fouling the filter element. It consists of the basic Mott 7611 IGS Filter System (filter and eductor) mounted on a rigid support structure. In-stack systems are often chosen because of external space limitations, or because an external system would drop the gas temperature below its dew point, requiring the addition of heat tracing*** to prevent condensation. Sampling flow rates, media grades and material choices are the same as for the Model 7610 and 7611 IGS Filter Systems.

Each 7612 In-Stack IGS Filter System is custom manufactured to meet the application's unique installation clearance to position the filter correctly within the stack or pipe. The eductor gas inlet and filtrate sample line connections are simple compression fittings for 3/8" lines on the external face of the flange of the support structure. Standard models are engineered to fit through a 4"-150# ANSI raised faced flanged nozzle or on the stack or pipe. Other flange configurations are available up on request.

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
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Tested at flux of 6 acfm/ft²

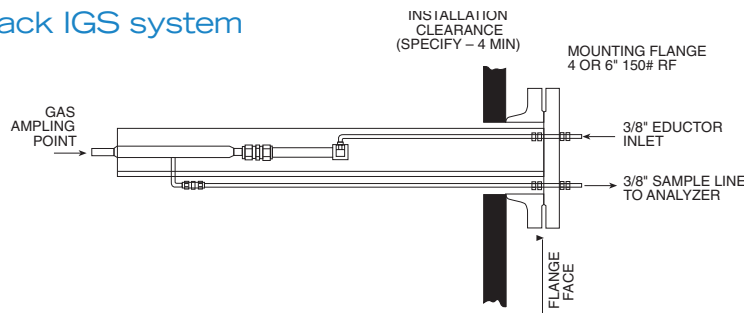
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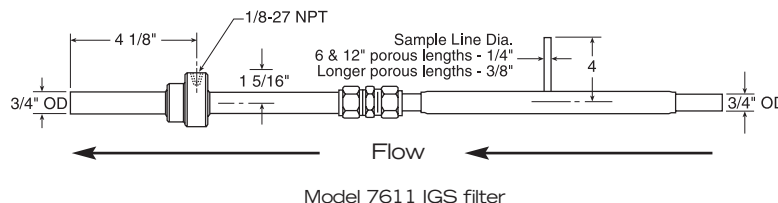
Material	Maximum Temperature	
	Oxidizing Atmosphere	Reducing Atmosphere
316L SS	750°F/399°C	900°F/482°C
Hastelloy® C-276	850°F/454°C	1000°F/538°C
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Model 7612 in-stack IGS system



Model 7611 IGS External Filter System

Model 7611 IGS Filter System consists of the basic Mott 7610 IGS Filter connected to an inline eductor. It is designed to be used in most low pressure sampling applications. The eductor introduces air into the system to induce the required 70-100 ft/s* (21-30 m/s) linear velocity gas flow through the ID of the porous element.



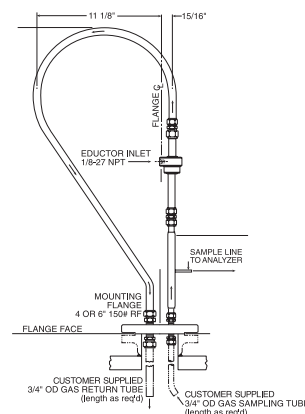
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The standard model has a 0.5 Media Grade porous element of 1/2" ID and 6", 12" or 24" length resulting in recommended sample flow rates of 0.5, 1, and 2 liters per minute**. The linear flow connections are 3/4" OD tubing. The filtrate connection can 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).

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Model 7614 Flange Mounted External IGS Filter System

When access is limited to a horizontal vessel or duct, our Model 7614 Flange Mounted External IGS Filter System allows installation of a complete Model 7611 External IGS Filter System (filter and eductor) by means of one flange. Sampling flow rates, media grades and material choices are the same as for the Model 7610 and 7611 IGS Filter Systems. Standard models are engineered to mount to the vessel or pipe line via a 4"-150# ANSI raised face flange. The filtrate sample line connection is made via a compression fitting to either 1/4" OD or 3/8" OD tubing depending on the filter element length. The eductor gas supply line connection is via a 1/8"-27 NPT female port. Other flange sizes are available up on request. The total system width on our standard 7614 Flange Mounted External IGS Filter Systems is less than 12".



Model 7614 flange mounted external IGS filter system

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 laden gas stream.

**Sample flow rates should be controlled to avoid premature plugging. Recommended sample flow rate is 30 to 60 cc/minute per in² 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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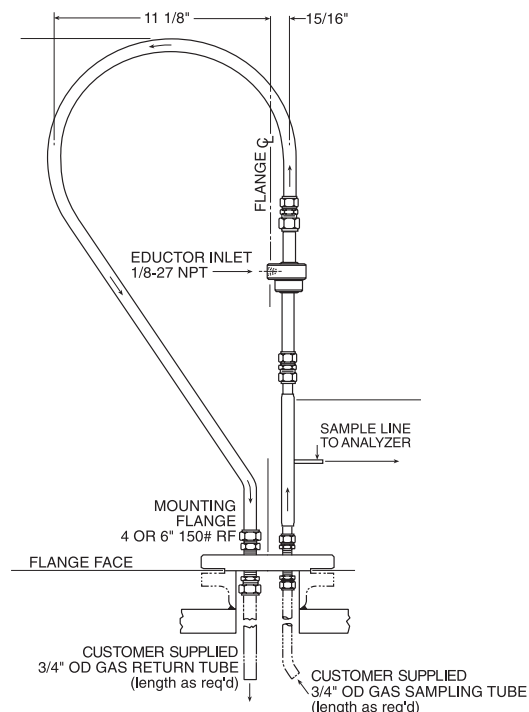
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Model 7611 IGS External Filter System

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Each 7612 In-Stack IGS Filter System is custom manufactured to meet the application's unique installation clearance to position the filter correctly within the stack or pipe. The eductor gas inlet and filtrate sample line connections are simple compression fittings for 3/8" lines on the external face of the flange of the support structure. Standard models are engineered to fit through a 4"-150# ANSI raised faced flanged nozzle or on the stack or pipe. Other flange configurations are available up on request.

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