SAES Pure Gas

The Technology of Pure Gas

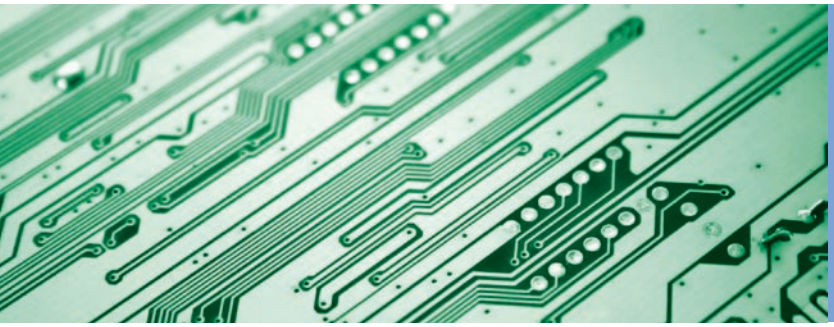
MicroTorr: Ambient Inline Purifiers

MicroTorr Features

MicroTorr Purifiers are the most complete and reliable solution for Point-of-Use (POU) gas purification. Combining A model size with a selection of gas-specific purification materials, MicroTorr purifiers can be tailored to many different customer applications, while maintaining impurity removal to part-per-Trillion (ppt) levels. Optional valves and a 0.003µm particle filter are available as well as custom subsystem configurations.

Product Highlights

- **Reliability:** Delivery of Ultra-High-Purity (UHP) gas for uncompromised process consistency and yield improvement. Inorganic active purification media means protection from hydrocarbon release.
- **Performance:** State of the art purification technology, low pressure drop, and long lifetimes.
- **Environmentally Friendly:** Most MicroTorr media are factory regenerable, minimizing potentially hazardous waste generation.
- **Quality:** Hardware assembly made of 316L stainless steel. All units are Helium leak checked, pressure tested, and analytically tested to part-per-trillion (ppt) levels.
- **Certified:** CE certification according to Pressure Equipment Directive (PED)
- **Support:** Lifetime estimation and regeneration service available through the SAES Pure Gas Global Support Network.



CLEAN, RELIABLE GAS

To select a Purifier

Choose:

- Purifier Size
- Purification Media
- Optional 0.003µm Particle Filter (F)
- Optional Inlet and Outlet Isolation Valves (V)

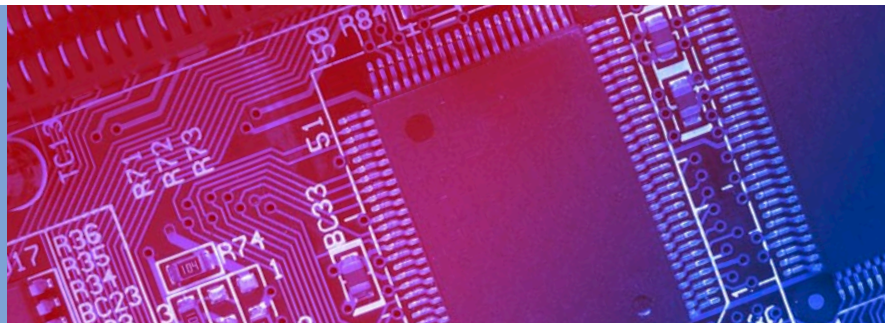
Part Number Example

Size	Media	Particle Filter	Isolation Valves	Final Part Number
MC1-	302	F	V	MC1-302FV
MC3000-	902	F		MC3000-902F

Purifier Sizes

Model	Maximum Flow (slpm)	Average Flow (slpm)	Maximum Pressure (psig)	Connection Type	Diameter (inches [mm])	Face-to-Face (inches [mm])	Face-to-Face with valves (inches [mm])
MC1	5	0.5	1,000	1/4" VCR	1.5 [38.1]	3.31 [84.1]	8.91 [226.3]
MC45	10	1.5	1,000	1/4" VCR	1.5 [38.1]	4.5 [114.3]	10.10 [256.5]
MC50	10	1.5	1,000	1/4" VCR	1.5 [38.1]	5.0 [127]	10.60 [269.2]
MC190	50	5	250	1/4" VCR	2.0 [50.8]	8.2 [208.3]	13.80 [350.5]
MC200	50	5	250	1/4" VCR	2.0 [50.8]	6.3 [160]	11.90 [302.3]
MC400	60	9	250	1/4" VCR	3.0 [76.2]	8.2 [208.3]	13.80 [350.5]
MC450 / FT400	75	10	250	1/4" VCR	3.0 [76.2]	7.94 [201.7]	13.54 [343.9]
MC500	100	12	250	1/4" VCR	2.0 [50.8]	12.5 [317.5]	18.10 [459.7]
MC700	120	25	250	1/4" VCR	3.0 [76.2]	10.0 [254.0]	15.6 [396.2]
MC2525	300	80	250	1/4" VCR	4.0 [101.6]	17.3 [439]	23.2 [589]
MC1500	250	40	250	1/2" VCR	3.0 [76.2]	18.2 [462.3]	28.84 [732.5]
MC2550	500	80	250	1/2" VCR	4.0 [101.6]	17.6 [447]	28.2 [716]
MC3000	500	80	250	1/2" VCR	4.0 [101.6]	20.0 [508.0]	30.64 [778.3]
MC4500	1,000	200	250	1/2" VCR	6.0 [152.4]	27.64 [702.6]	38.3 [972.8]
MC9000	1,000	300	250	1/2" VCR	6.0 [152.4]	39.34 [999.7]	50.00 [1270.0]
MC14K	2,000	1,000	250	3/4" VCR	6.0 [152.4]	50.8 [1290]	67.1 [1705]
High Pressure Purifiers							
HP190	50	5	1,000	1/4" VCR	2.0 [50.8]	8.2 [208.3]	13.80 [350.5]
HP400	60	9	1,000	1/4" VCR	3.0 [76.2]	8.2 [208.3]	13.80 [350.5]
HP700	120	25	1,000	1/4" VCR	3.0 [50.8]	10.0 [254.0]	15.6 [396.2]
HP3000	500	80	1,000	1/2" VCR	3.9[100.1]	20.0 [508.0]	28.9 [756]
SP70	40	1.5	3,000	1/4" VCR	2.0 [50.8]	5.00 [127.0]	10.60 [270.0]
SP300	200	10	3,000	1/4" VCR	2.0 [50.8]	15.00 [381.0]	20.60 [524.0]
SP600	400	15	3,000	1/4" VCR	2.0 [50.8]	25.00 [635.0]	30.60 [778.0]

LEADING EDGE MATERIALS FOR LEADING EDGE APPLICATIONS



Purification Media

Common Gases	Media	All Gases Purified	Impurities Removed	Regenerable
N_2 Ar, He, Kr, Ne, Xe	902	N_2, Ar, He, Kr, Ne, Xe, CH_4, C_2H_6, C_3H_8, SF_6, Fluorocarbons	H_2O, H_2, CO_2, O_2, CO to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppbV	Yes
H_2	904	H_2, D_2, H_2/Inert Mixtures	H_2O, CO_2, O_2, CO to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppbV	Yes
O_2, CDA (Clean Dry Air or Compressed Dry Air)	203	N_2, Ar, He, Kr, Ne, Xe, H_2, D_2, CDA, O_2, N_2O	H_2O, CO_2 to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppb	Yes
	906	CDA, O_2, N_2O	H_2O, CO, CO_2, NMHC to < 1 ppb, Metals < 1 ppbV	Yes
NH_3	702	NH_3, C_2H_7N, $C_2H_8N_2$, C_2H_4, C_3H_6, CH_3SiH_3, GeH_4, SF_6, H_2/SiH_4 mixtures	H_2O, O_2, CO_2, NMHCs, Metals to < 1 ppb	Yes
CO_2	804	CO_2	H_2O, H_2, O_2, CO to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppbV	Yes
	805	CO_2	H_2O < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppbV	Yes
O_2	203	N_2, Ar, He, Kr, Ne, Xe, H_2, D_2, CDA, O_2, N_2O	H_2O, CO_2 to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppb	Yes
	906	CDA, O_2, N_2O	H_2O, CO, CO_2, NMHC to < 1 ppb, Metals < 1 ppbV	Yes
Application Specific Media	**Media**	**All Gases Purified**	**Impurities Removed**	**Regenerable**
Dryer Only	202	N_2, Ar, He, Kr, Ne, Xe, H_2, D_2, CDA, O_2, CO_2, N_2O	H_2O to < 1 ppb	Yes
Dryer and AMC Removal	203	N_2, Ar, He, Kr, Ne, Xe, H_2, D_2, CDA, O_2, N_2O	H_2O, CO_2 to < 100 ppt; Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppb	Yes
AMC Removal Only	403	N_2, Ar, He, Kr, Ne, Xe, H_2, CDA, O_2, CO_2	Organics, Acids, Refractory Compounds to < 1 ppt; Bases < 5 ppt, Metals < 1 ppb	No
Organic Removal Only	404	N_2, Ar, He, Kr, Ne, Xe, H_2, CDA, O_2, CO_2, C_2H_2, C_3H_8, C_2H_4, NH_3	Organics < 1 pptV	Yes
Corrosive Gases	302	HCl, Cl_2, B_2H_6, BCl_3, $CClH_3$, CO_2, $GeCl_4$, GeH_4, H_2S, H_2Se, HBr, N_2O, NF_3, NO, $SiCl_4$, SiF_4, SiH_2Cl_2, $SiHCl_3$, SO_2, $CHClF_2$, BF_3, N_2O, NF_3, NO, $SiCl_4$, SiF_4, SiH_2Cl_2, $SiHCl_3$, SO_2	H_2O, Metals to < 1 ppb	No
Arsine and Phosphine	502	AsH_3, PH_3	H_2O, O_2 to < 1 ppb, Metals < 1 ppbV	No
Oxygen Conversion (De-Oxo)	503	H_2, Ar, He, N_2, CO_2 with 1% O_2	O_2 to < 1 ppm	N/A
Carbon Monoxide (CO)	602	CO	H_2O, O_2, CO_2, Acids, Bases, Organics, Refractories, Metals < 1 ppbV	No
Silane (SiH_4)	802	SiH_4	H_2O, O_2, CO, CO_2, Sulphur compounds, Metals removal < 1 ppb	No

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ENVIRONMENTALLY FRIENDLY SOLUTIONS

MicroTorr Options

Regeneration

Many MicroTorr purifiers can be sent back to the SAES Pure Gas factory for regeneration. Regeneration minimizes hazardous waste and is an environmentally friendly solution. All specified impurities are removed during the regeneration process. After regeneration the purifier will have the same lifetime as a new purifier.

How long is the lifetime?

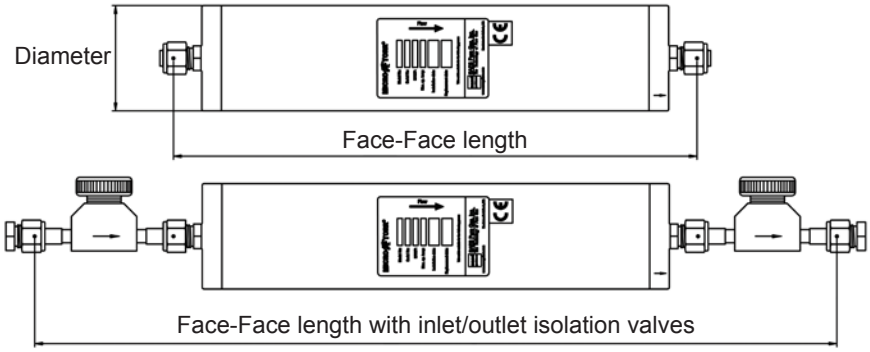
MicroTorr Purifiers are designed for the maximum lifetime to reduce the frequency of purifier change-out and provide customers with the highest cost of ownership possible. In general the lifetime is 1 year with standard 5N (99.999%) quality gas, at the average flow rating of the purifier. To attain an application specific lifetime calculation please consult SAES Pure Gas, with your flow rate and inlet impurity information.

0.003µm Particle Filter (F)

This sintered metal particle filter is located inside the purifier at the outlet. The particle filter is optimized for a low pressure drop.

Inlet and Outlet Isolation Valves (V)

The isolation valves provides for a simple installation and minimizes the risk of exposing the purifier to atmosphere during installation. See the 'Purifier Sizes' table for the length of each model with or without the isolation valves.



Dual Purifier Manifold

The purifiers can flow individually or in parallel. Each purifier can be isolated so it can be replaced or sent to the SAES Pure Gas factory for regeneration. The Manifold includes a backing plate to easily mount the assembly. Inlet and outlet connections are both on top for a simple installation.

3 Valve Bypass Piping

Allows the user to bypass and isolate the purifier for replacement or regeneration. Purifier is removed without any valves attached.

5 Valve Bypass Piping

Allows the user to bypass and isolate the purifier for replacement or regeneration. Purifier is removed with inlet and outlet valves attached.

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SAES Pure Gas is ISO9001 certified

ISO 9001:2008