

# GateKeeper® GPU MC400 and HP400 Gas Purifiers

*Superior purity control*

GateKeeper® GPU purifiers are the most complete and reliable solution for point-of-use (POU) gas purification. Combining model size with a selection of gas-specific purification materials, GateKeeper GPU purifiers can be tailored to many different customer applications, while maintaining impurity removal to part-per-billion (ppbv) levels or better. Optional valves and a 0.003 micron particle filter are available as well as custom subsystem configurations.



## Competitive advantages and benefits

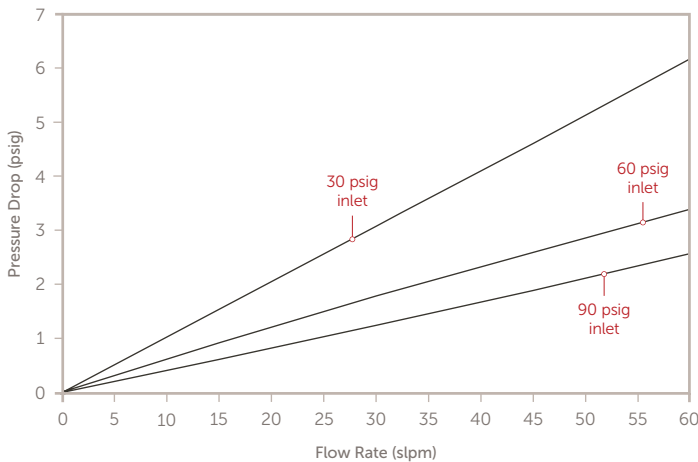
<b>Reliability</b>	Uncompromised process consistency and yield improvement
<b>Performance</b>	State-of-the-art purification technology, low pressure drop, and long lifetimes
<b>Regenerability</b>	Most GateKeeper GPU media are factory regenerable, minimizing potentially hazardous waste
<b>Quality</b>	316L stainless steel, helium leak checked, pressure tested, and analytical testing to part-per-trillion (pptv) levels
<b>Support</b>	Lifetime estimation and regeneration service available through the Entegris, Inc.

## SPECIFICATIONS

<b>Lifetime</b>	Consult factory for specific lifetimes
<b>Maximum flow</b>	60 slpm <sup>†</sup>
<b>Nominal flow</b>	9 slpm <sup>†</sup>
<b>Maximum pressure</b>	0 – 250 psig (MC400), 0 – 1000 psig

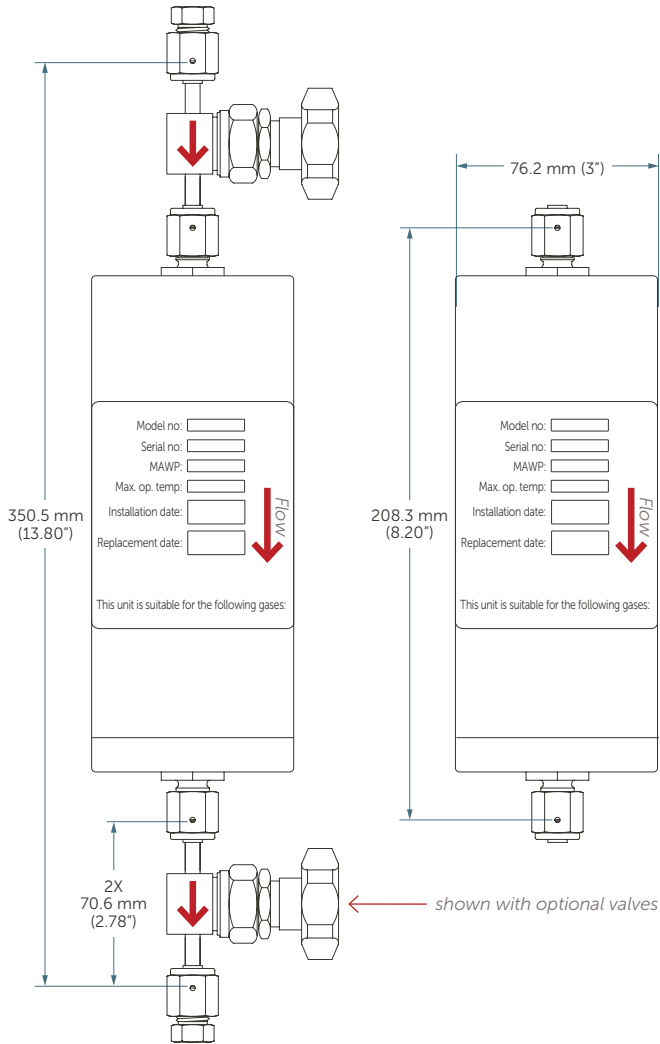
<sup>†</sup>See next page for arsine and phosphine flowrates.

Pressure Drop Vs. Flow Rate  
MC400, FT400 and MC450, 0.003 µm Particle Filter, Tested in N<sub>2</sub>



## DIMENSIONS

Install vertically with flow downward in direction of arrow.  
Consult factory for other mounting options.



## MECHANICAL SPECIFICATIONS

Model	MC400-*F	MC400-*FV	HP400-*F	HP400-*FV
Maximum flow	60 slpm <sup>†</sup>	60 slpm <sup>†</sup>	60 slpm <sup>†</sup>	60 slpm <sup>†</sup>
Nominal flow	9 slpm <sup>†</sup>	9 slpm <sup>†</sup>	9 slpm <sup>†</sup>	9 slpm <sup>†</sup>
Material	Body-316L stainless steel			
Filter (outlet)	Integrated 0.003 micron, metal			
Valves	N/A	¼" manual	N/A	¼" manual
Maximum operating pressure	0 – 17.3 barg (0 – 250 psig)		0 – 69 barg (0 – 1000 psig)	
Maximum temperature rating	-20° – 65°C (-4° – 149°F)			
Inlet	¼" MVCR	¼" FVCR	¼" MVCR	¼" FVCR
Outlet	¼" MVCR	¼" FVCR	¼" MVCR	¼" FVCR
Length (face-to-face)	208.3 ±0.8 mm (8.20 ±0.03")	350.5 ±2.0 mm (13.80 ±0.08")	208.3 ±0.8 mm (8.20 ±0.03")	350.5 ±2.0 mm (13.80 ±0.08")
Outside diameter	76.2 mm (3.0")	76.2 mm (3.0")	76.2 mm (3.0")	76.2 mm (3.0")
Electropolish	Yes	Yes	Yes	Yes
Leak rating	1×10 <sup>-9</sup> atm cc/sec of He	1×10 <sup>-9</sup> atm cc/sec of He	1×10 <sup>-9</sup> atm cc/sec of He	1×10 <sup>-9</sup> atm cc/sec of He
Weight	2.2 kg (4.9 lbs)	3.1 kg (6.8 lbs)	2.2 kg (4.9 lbs)	3.1 kg (6.8 lbs)

\*The three digit number found in the model number equates to the "Media" row in the table below.

†Flowrates with 502 media: arsine/phosphene max = 32.0 slpm, nominal = 15.0 slpm.

## PURIFICATION AND REMOVAL CAPABILITIES

Media	Gases Purified	Impurities Removed	Outlet Performance	Regenerable	Dangerous Goods (DG) Classification
202	CDA, O <sub>2</sub> , N <sub>2</sub> , Ar, He, Kr, Ne, Xe, H <sub>2</sub> , D <sub>2</sub> , CO <sub>2</sub> , N <sub>2</sub> O, NO, CF <sub>4</sub>	H <sub>2</sub> O	<1 ppb	Yes	Non-DG
203	CDA, O <sub>2</sub> , N <sub>2</sub> , Ar, He, Kr, Ne, Xe, H <sub>2</sub> , D <sub>2</sub> , N <sub>2</sub> O, NO, CF <sub>4</sub>	H <sub>2</sub> O, CO <sub>2</sub>	<100 ppt	Yes	Non-DG
		Volatile acids, organics, refractory compounds	<1 ppt		
		Metals	<1 ppb		
302	HCl, Cl <sub>2</sub> , B <sub>2</sub> H <sub>6</sub> , BCl <sub>3</sub> , CClH <sub>3</sub> , GeCl <sub>4</sub> , GeH <sub>4</sub> , H <sub>2</sub> S, H <sub>2</sub> Se, HBr, NF <sub>3</sub> , SiCl <sub>4</sub> , SiF <sub>4</sub> , SiH <sub>2</sub> Cl <sub>2</sub> , SiHCl <sub>3</sub> , SO <sub>2</sub> , CHClF <sub>2</sub> , BF <sub>3</sub>	H <sub>2</sub> O	<1 ppb	No	Non-DG
		Metals	<1 ppb		
403	N <sub>2</sub> , Ar, He, Kr, Ne, Xe, H <sub>2</sub> , CDA, O <sub>2</sub>	Volatile acids, organics, refractory compounds	<1 ppt	No	Non-DG
		Volatile bases	<5 ppt		
		Metals	<1 ppb		
404	N <sub>2</sub> , Ar, He, Kr, Ne, Xe, H <sub>2</sub> , CDA, O <sub>2</sub> , CO <sub>2</sub> , C <sub>2</sub> H <sub>2</sub> , C <sub>3</sub> H <sub>6</sub> , C <sub>2</sub> H <sub>4</sub> , NH <sub>3</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> H <sub>8</sub> , C <sub>4</sub> H <sub>10</sub>	Organics	<1 pptv	Yes	Non-DG
		Metals	<1 ppbv		
502	AsH <sub>3</sub> , PH <sub>3</sub>	H <sub>2</sub> O, O <sub>2</sub>	<1 ppb	No	Non-DG
		Metals	<1 ppbv		
503	H <sub>2</sub> with up to 1% O <sub>2</sub> ; O <sub>2</sub> with up to 2% H <sub>2</sub>	H <sub>2</sub> in O <sub>2</sub> , or O <sub>2</sub> in H <sub>2</sub>	<1 ppmv	No	Non-DG
602	CO	H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , acids, bases, organics, refractories, compounds, metals	<1 ppbv	No	DG – UN3089 Class 4.1
702	NH <sub>3</sub> , C <sub>2</sub> H <sub>7</sub> N, C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> , C <sub>2</sub> H <sub>4</sub> , C <sub>3</sub> H <sub>6</sub> , CH <sub>3</sub> SiH <sub>3</sub> , GeH <sub>4</sub> , SF <sub>6</sub> , SiH <sub>4</sub> , H <sub>2</sub> /SiH <sub>4</sub> mixtures	H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , NMHCs, metals	<1 ppb	Yes	DG – UN3089 Class 4.1
804	CO <sub>2</sub>	H <sub>2</sub> O, O <sub>2</sub> , CO, H <sub>2</sub>	<100 ppt	Yes	DG – UN2881 Class 4.2
		Volatile acids, organics, refractory compounds	<1 ppt		
		Volatile bases	<5 ppt		
		Metals	<1 ppbv		

Media	Gases Purified	Impurities Removed	Outlet Performance	Regenerable	Dangerous Goods (DG) Classification
805	CO <sub>2</sub>	H <sub>2</sub> O	<100 ppt	Yes	Non-DG
		Volatile acids, organics, refractory compounds	<1 ppt		
		Volatile bases	<5 ppt		
		Metals	<1 ppbv		
902	N <sub>2</sub> , Ar, He, Kr, Ne, Xe, CH <sub>4</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> H <sub>8</sub> , C <sub>4</sub> H <sub>10</sub> , SF <sub>6</sub> , fluorocarbons	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub>	<100 ppt	Yes	DG – UN2881 Class 4.2
		Volatile acids, organics, refractory compounds	<1 ppt		
		Volatile bases	<5 ppt		
		Metals	<1 ppbv		
904	H <sub>2</sub> , D <sub>2</sub> , H <sub>2</sub> -Inerts mix	H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub>	<100 ppt	Yes	DG – UN2881 Class 4.2
		Volatile acids, organics, refractory compounds	<1 ppt		
		Volatile bases	<5 ppt		
		Metals	<1 ppbv		
906	CDA, O <sub>2</sub> , N <sub>2</sub> O	H <sub>2</sub> O, CO, CO <sub>2</sub> , NMHC	<1 ppb	Yes	Non-DG
		Metals	<1 ppbv		

\*NMHCs = organics (C>4); volatile acids are compounds including SO<sub>2</sub>, Nox, HCl, H<sub>2</sub>S, etc; volatile bases are basic compounds including NH<sub>3</sub> and amines; refractory compounds are hydrocarbons with etheroatoms such as Si, Halogens, P, B, S, or metals.

## OTHER SIZES AVAILABLE

Model number	Maximum flow	Average flow
MC1	5 slpm	0.5 slpm
MC50	10 slpm	1.5 slpm
MC190	50 slpm	5 slpm
MC200	50 slpm	5 slpm
MC400	60 slpm	9 slpm
MC450	75 slpm	10 slpm
MC500	100 slpm	12 slpm
MC700	120 slpm	25 slpm
MC1500	250 slpm	40 slpm
MC2525	300 slpm	80 slpm
MC2550	500 slpm	80 slpm
MC3000	500 slpm	80 slpm
MC4500	1000 slpm	200 slpm
MC9000	1000 slpm	300 slpm

Piping options available: 3 valve bypass.

## ORDERING INFORMATION

MC400		Options
Media	202, 203, 302, 403, 404, 502, 503, 602, 702, 804, 805, 902, 904, 906	
Model	MC400, FT400, MC450	= No options F = 0.003 µm particle filter V = Inlet/outlet valves FV = Filter and valves

Example: MC400-902F

Model: MC400  
Media: 902  
Options: 0.003 µm particle filter

## FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [entegris.com](http://entegris.com) and select the [Contact Us](#) link to find the customer service center nearest you.

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