

# GENIE<sup>®</sup> 120

Supreme Membrane Separator



U.S. Patents 7,555,964

## Genie<sup>®</sup> Supreme™ Model 120 Installation & Operation Instructions

### Manufacturing Contact Information

**A+ Corporation, LLC** *Call for expert product application assistance:*  
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### Safety Warnings

- ⚠ Failure to abide by any of the safety warnings below may result in equipment failure and serious injury or death.
  - ▶ For models containing Liquid Block™: Slowly open the supply pressure so that the minimum differential pressure required to shut-off the Liquid Block™ is not met or exceeded..
  - ▶ Valve off the sample flow before installation.
  - ▶ Do not exceed any equipment pressure ratings.

### Tools Required

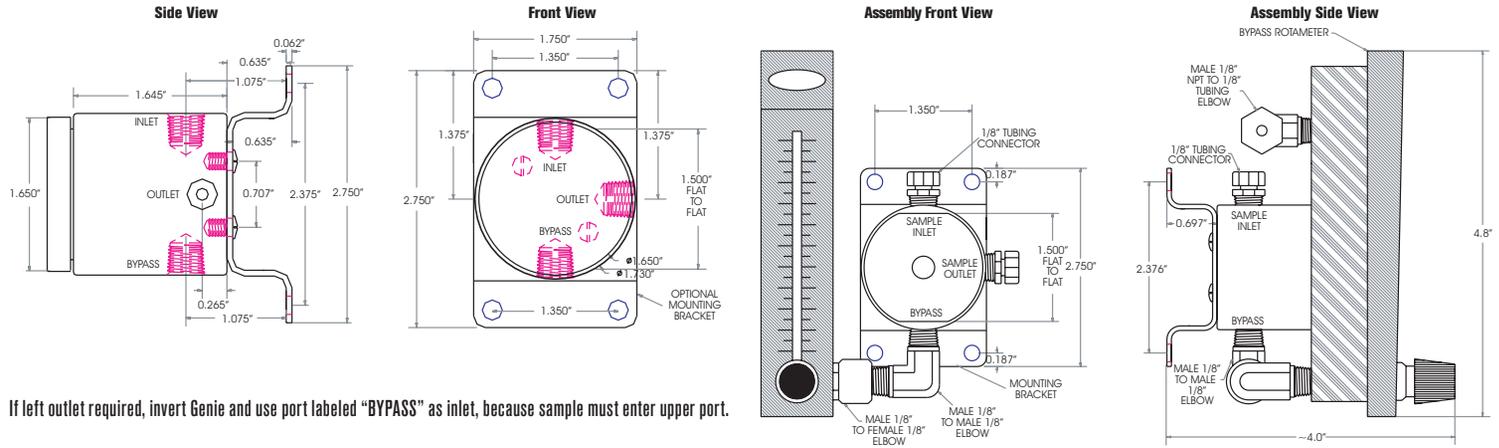
- ▶ Four #10 screws for mounting bracket to panel.
- ▶ Screwdriver for mounting bracket to panel.

## Technical Specifications

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<b>Maximum pressure rating</b> *Due to rotameter limitations	<b>Stainless Steel:</b> 2,000 psig (137.9 barg) <b>Kynar:</b> 350 psig (24.1 barg) <b>*120UA:</b> 100 psig (6.9 barg)
<b>Maximum Liquid Block<sup>®</sup> valve auto-reset pressure</b>	35 psig (2.4 barg) Slowly open the supply pressure so that the minimum differential pressure required to shut off the Liquid Block™ is not met or exceeded.
<b>Maximum temperature</b> *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart. **Due to rotameter limitations.	<b>Type 6 membrane:</b> 185°F (85°C) <b>*Type 7 membrane in a Kynar Housing:</b> 212°F (100°C) <b>*Type 7 membrane:</b> 300°F (149°C) <b>**120UA:</b> 130°F (54°C)
<b>Maximum Recommended Flow Rate</b> Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	<b>Type 6 Best Rejection:</b> 0.72 SLPM (1.5 SCFH) <b>Type 7 Highest Temps:</b> 2.5 SLPM (5.4 SCFH)
<b>Bypass flow rates</b>	Requirement varies with application
<b>Port sizes</b>	<b>Inlet, Outlet, &amp; Bypass:</b> 1/8" female NPT
<b>Internal volume</b>	<b>Total with Liquid Block:</b> 2.4 cc <b>Upstream of membrane:</b> 1.3 cc <b>Downstream of membrane:</b> 1.1 cc <b>Total without Liquid Block:</b> 2.1 cc <b>Upstream of membrane:</b> 1.1 cc <b>Downstream of membrane:</b> 1.0 cc
<b>Wetted materials</b>	<b>Machined parts:</b> 316/316L stainless steel / ISO 15156-3 compliant <b>All other metal parts:</b> stainless steel / ISO 15156-3 compliant <b>Sealing material:</b> User defined <b>Membrane:</b> Inert

**Dimensions**



If left outlet required, invert Genie and use port labeled "BYPASS" as inlet, because sample must enter upper port.

## Mounting Instructions Without Optional Bracket

Note: Separate instructions for mounting using the optional bracket will be included with bracket. The **Genie<sup>®</sup> Supreme<sup>™</sup>** is designed to be back mounted to hold it stationary for quick and easy servicing. The optional bracket makes installation easier. The **bypass port** must face downward for the **Genie<sup>®</sup>** to function properly.

- ▶ Step 1. Position the **Genie<sup>®</sup>** on the panel
- ▶ Position the **Genie<sup>®</sup>** so that the final position of the **bypass port** will be facing downward. **Bypass port** positioning is important for draining the rejected liquids.

### Step 2. Mount

- ▶ Affix the **Genie<sup>®</sup>** to the panel surface.
- ▶ Fasten the **Genie<sup>®</sup>** to the panel using two #10 screws.

## Installation Instructions

### Step 1. Depressurize the system

- ▶ Valve off the sample flow prior to installation of the **Genie<sup>®</sup> Supreme Membrane Separator<sup>™</sup>**
- ▶ If the supply pressure is above the **Genie<sup>®</sup> maximum recommended supply pressure** or above the pressure rating of any component in the sample system, then a pressure regulator should be installed upstream of that component before the sample flow is started.

### Step 2. Connect the Genie<sup>®</sup>

- ▶ The **Genie<sup>®</sup>** ports are labeled **inlet**, **outlet**, and **bypass**. Connect tubing from the sample stream to the **Genie<sup>®</sup> inlet port**. The **bypass port** must be facing downward for the **Genie<sup>®</sup>** to function properly (Figure 1).
- ▶ Connect tubing from the **Genie<sup>®</sup> outlet port** to the analyzer or next device in the sample system. The **Genie<sup>®</sup>** should be located as close to the analyzer as possible to prevent the sample gas temperature from decreasing; otherwise, condensation could occur downstream of the **Genie<sup>®</sup>** and the sample integrity would be affected.
- ▶ A means of indicating and adjusting outlet flow, such as a rotameter with a throttling valve (e.g., V2 in Figure 1), is usually required and is typically part of the analyzer package.
- ▶ A flow restrictor, typically a throttling valve (e.g., V1 in Figure 1), is usually required downstream of the bypass port to force flow through the membrane and outlet port, except in negative gauge pressure applications where gravity is the only motive for draining liquid from the Genie. A rotameter containing a valve may be installed at the **bypass port**, but only if the **inlet port** pressure is below the pressure rating. Do not plug the **bypass port** or leave it open to the atmosphere.

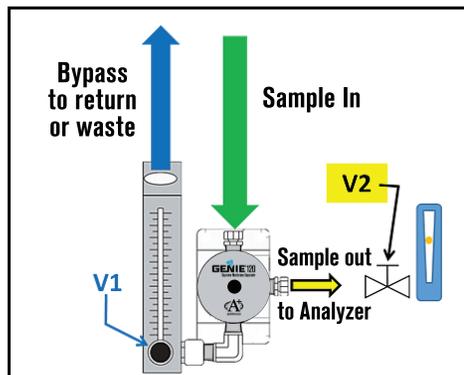


Figure 1

## Startup Procedure

- ▶ First prevent flow through the Genie outlet port, usually by completely closing a downstream valve (V2 in Figure 1).
- ▶ Next minimize flow restriction downstream of the Genie bypass port, usually by fully opening the throttling valve downstream of the bypass port (V1 in Figure 1).
- ▶ Next slowly introduce flow into the Genie inlet port to establish flow out of the bypass port. This is usually accomplished with a valve or regulator somewhere upstream of the inlet port.
- ▶ Once flow has been established through the bypass port, slowly open the valve downstream of the outlet port (V2 in Figure 1) to establish the minimum required outlet flow. If the outlet flow is inadequate with V2 fully open, then gradually close V1 to force more flow through the outlet port.
- ▶ For a Genie 120 with the Liquid Block™ option, it's important to understand that if a minimum differential pressure of 2 psig is exceeded across the membrane, the Liquid Block™ will close. No flow will be allowed across the membrane through the outlet of the 120 filter to the analyzer. If this occurs, <35 psig on the inlet side of the 120 is required to reset or reopen the Liquid Block™.

## Maintenance Note

Note: **Genie® Supreme Membrane Separators™** are virtually maintenance free. On occasion, the membrane and o-rings will need replacing. Replacement instructions are shipped with replacement membrane and o-ring parts.

## Operating Instructions

Note: The distance between the **Genie®** and the analyzer should always be minimized. If the sample dewpoint is typically above ambient temperature, then heat tracing may also be required in order to maintain sample integrity.

### Step 1. Getting started

- ▶ Establish the minimal **bypass** port flow that will bring fresh sample quickly yet allow for continuous removal of separated liquids.

### Step 2. Points to consider during operation

- ▶ Avoid “blowing down” the sample from the **bypass port**; otherwise, the **inlet** port pressure may drop below the **outlet** port pressure resulting in internal reverse flow.
- ▶ Maintain the lowest possible **inlet port** sample pressure consistent with good overall system operation in order to prevent excessive membrane differential pressure.
- ▶ Maintain the sample flow rate through the **Genie® outlet port** below the **maximum recommended flow rate**. When the flow rate is below the maximum recommended, then the **membrane differential pressure** will typically be below 2 psi, providing that all of the membrane area is available for flow. Accumulation of liquid or particulate on the membrane surface could decrease the membrane area available for gas flow, which would result in an increase of **membrane differential pressure**. Very few liquid components will flow through the membrane when the **membrane differential pressure** is below 2 psi. Some applications allow for a much higher **membrane differential pressure**.

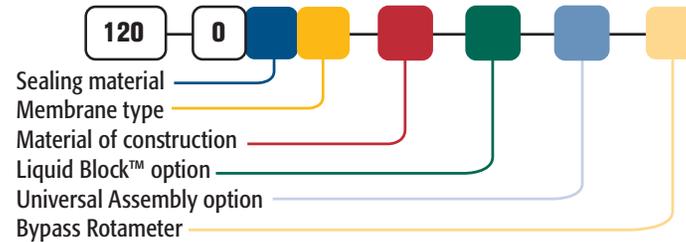
## Model Numbering & Additional Part Numbers

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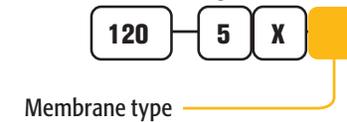
Your model number is determined by your specific needs. Choose options below.

<b>Sealing material</b>	0 = fluoroelastomer	1 = perfluoroelastomer	<i>(others available upon request)</i>
<b>Membrane type</b>	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
<b>Material of construction</b>	SS = Stainless Steel	K = Kynar	
<b>Liquid Block™ option</b>	Blank = No Liquid Block™	LB = Liquid Block™	<i>(not available in Kynar)</i>
<b>Universal Assembly option</b>	Blank = No Universal Assembly	U = Universal Assembly	<i>(not available in Kynar)</i>
<b>Bypass Rotameter*</b> (only if option U is selected) <small>*Dwyer Rotameter with Integral Valve</small>	0 = Without Rotameter	1 = 10-100 cc/min*	2 = 100-1000 cc/min*
<b>Mounting bracket</b>	Part # 120-509-SS (sold separately)		
<b>O-ring replacement</b>	Part # 120-5_0 (sold separately)		

#### How to build the model number:



#### How to build the replacement membrane kit number: (Five membranes per kit. O-rings sold separately)



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