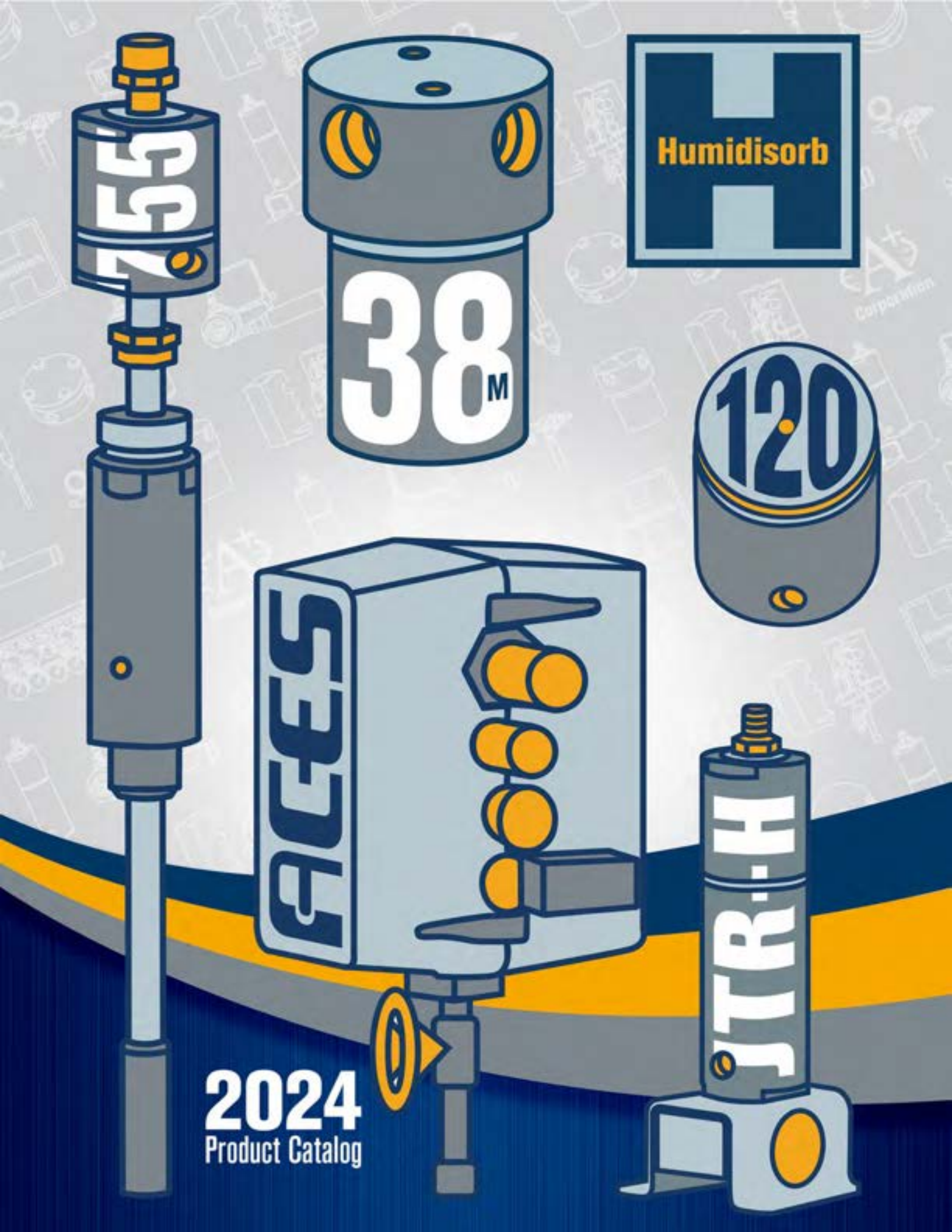


2024
Product Catalog

TABLE OF CONTENTS

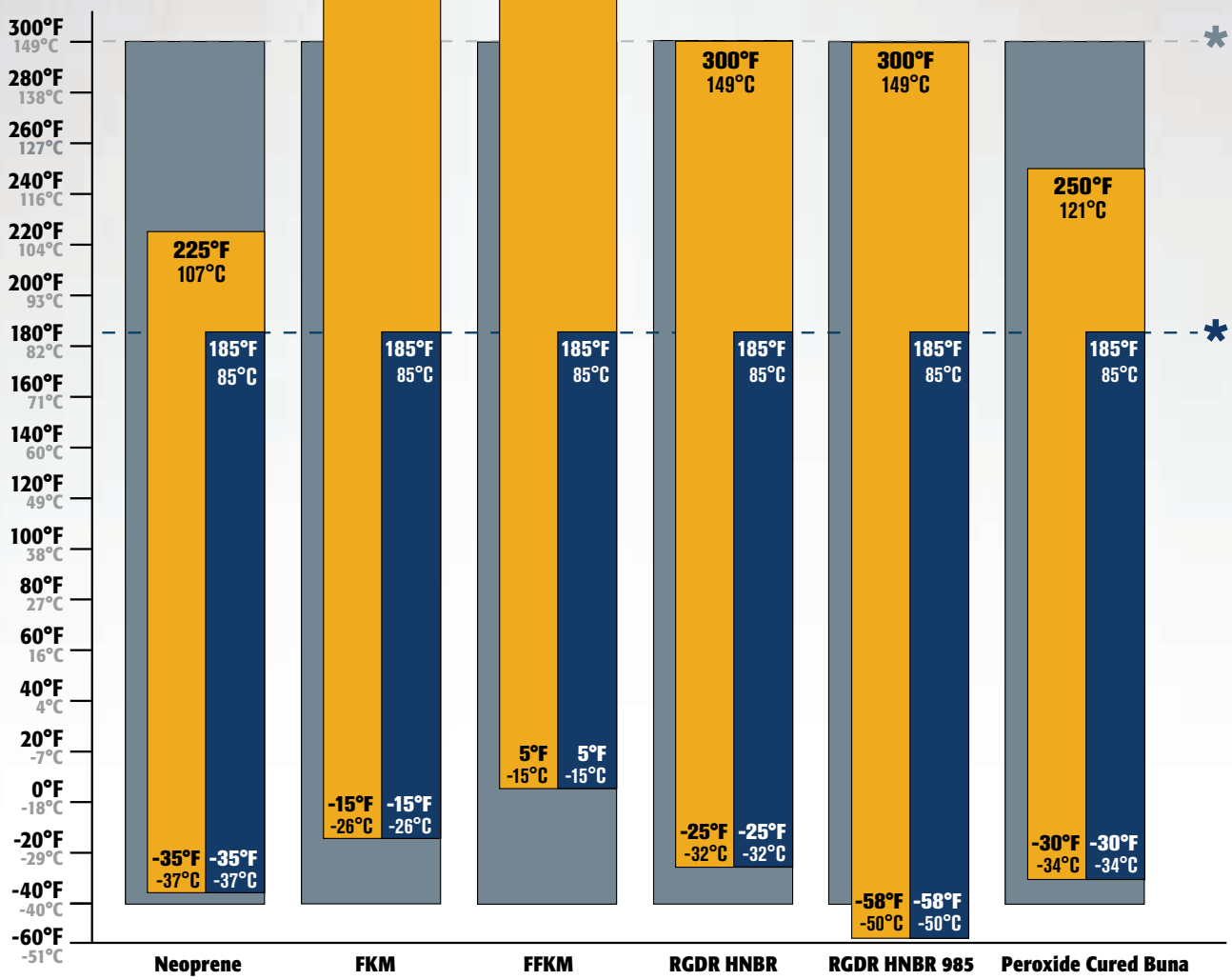
For more information on a custom sample system specific to your application, visit our SYSTEMS web page.

Temperature Range Comparison Chart

Comparison Chart

KEY:

- Temperature Range WITHOUT Membrane
- Temperature Range WITH Type 6 Membrane
- Steel Range
- * Max Steel (Kevlar) & Type 7, 8 Membrane Limit 300°F (149°C)
- * Max Steel & Type 6 Membrane Limit 185°F (85°C)



Refer to Product Sheet for model specific temperature limits.

GENIE®
Membrane Technology™

Comparison Chart

Notes

- Membrane type should be selected based on the type of liquid protection required.
- The membrane is NOT rated in micron size, however the effective pore size is less than 1 micron.
- All membrane types are extremely inert.
- The membrane composition is proprietary. However, it will not be easily attacked by any components in your system, nor will it preferentially absorb any components in your system. The membrane does not influence the gas composition, which flows through it.
- Consult product sheets for product specific flow rates.

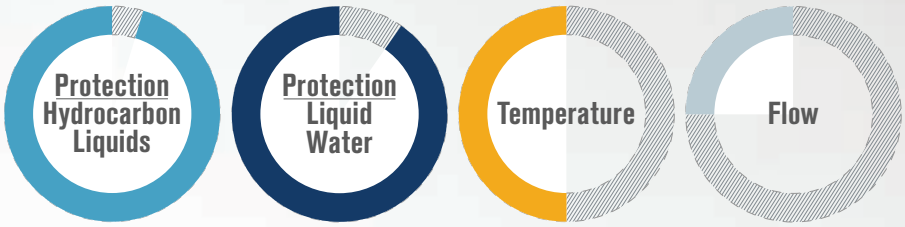
Phase Separation Membranes - separate liquids from vapor samples

Membranes used in Series 100 Genie® Membrane Separators™, Membrane Probes & Probe Regulators, and Avengers with Membrane.

BEST REJECTION

TYPE 6

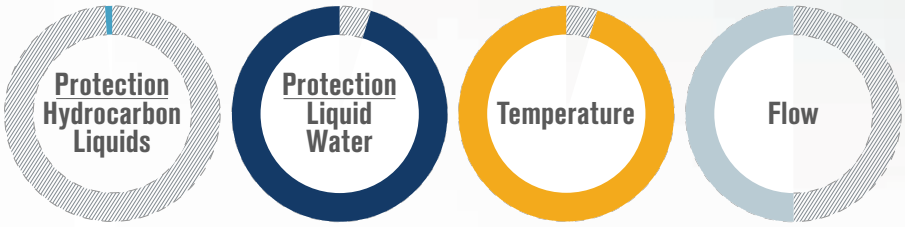
- Maximum temperature: 185°F (85°C).
- Commonly used in natural gas applications.
- Rejects ALL types of liquid from vapor.
- Best overall protection.



HIGHEST TEMPS

TYPE 7

- Maximum temperature: 300°F (149°C).
- Polypropylene backing for easy handling (check process compatibility).
- Rejects ONLY high surface tension liquids, such as water & glycol from vapor.



FOR LIQUID SAMPLING

TYPE 8

- Used exclusively in Series 200 Genies.
- Maximum temperature: 300°F (149°C).
- Polypropylene backing for easy handling (check process compatibility).
- Rejects immiscible liquids from hydrocarbon liquid, such as water from Diesel, Kerosene, Gasoline.

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GENIE®170
Membrane Separator

The original brand known for sample conditioning and analyzer protection!

The Series 100 Genie® Membrane Separators™ remove 100% of entrained liquid and particulate in gas samples, which allows only gas sample to flow to analyzers. This action protects analyzers and sample system components against liquid damage. The original Genie® Series 100 models are available in several body styles with different membrane types to accommodate a wide variety of applications. The Genie® Supreme Series™ 100 models accommodate the same applications, yet they offer an improved housing design for easy maintenance and the innovative Liquid Block Technology™ that prevents liquid from being forced across the membrane should sample line pressure conditions become upset.

The Model 170 protects gas systems requiring very low sample flow rates on a continuous or intermittent basis. Its small internal volume and low dead volume 1/16" ports allow the Genie® Model 170 to purge quickly, which is ideal for the removal liquid aerosol droplets from gas samples; it is also perfect for protecting components such as laboratory gas chromatographs. Please note that special low volume fittings must be ordered to use a Genie® Model 170 properly. Other special assemblies may be ordered such as a Universal Assembly™.

Technical Specifications

Maximum pressure rating *Due to rotameter limitations.	**170:** 500 psig (34.5 barg) ***170UA:** 100 psig (6.9 barg)
Maximum recommended supply pressure	Lowest possible pressure consistent with application. Must not exceed pressure rating listed above.
Maximum temperature *Due to rotameter limitations.	**Type 6 membrane:** 185 ***170UA:** 130°F (54°C)
Maximum outlet flow rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 membrane:** 300 cc/min
Port sizes	**Inlet, Outlet & Bypass:** 1/16" low volume fittings
Internal volume	0.16 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Membrane:** Inert

Product Brief

Applications
- Protection against liquids
- On-line and portable analyzers
- GC's, Mass Specs, O_2, H_2S, Moisture, and others
- Spot, composite, or continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining

Benefits
- Superior analyzer protection
- Helps preserve sample integrity
- Improves analyzer reliability
- Reduces analyzer maintenance

Features
- Genie® Membrane Technology™
- Low internal volume
- Simple design
- No elastomers required for sealing
- Universal Assembly™ option

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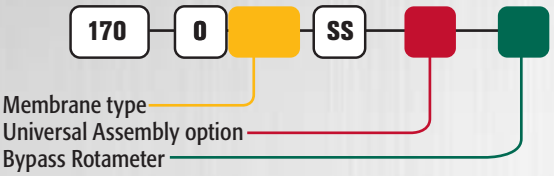
Model Numbering & Additional Part Numbers

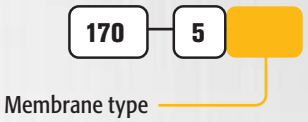
Your model number is determined by your specific needs. Choose options below.

Membrane type	06 = Rejects ALL types of liquids from vapor	*(other membranes available upon request)*	
Universal Assembly option	Blank = No universal assembly option	U = Universal assembly option	
Bypass Rotameter (only if option U is selected) *Dwyer Rotameter with integral valve	0 = Without rotameter	1 = 10-100 cc/min*	2 = 100-1000 cc/min*
Mounting bracket accessory	Part # 170-509-SS *(sold separately)*		
Fitting kit accessory	Part # 170-Ferrule-SS *(sold separately - 3 sets per kit)*		

How to build the model number:

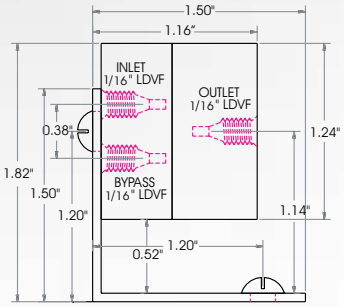


How to build the replacement membrane kit number:

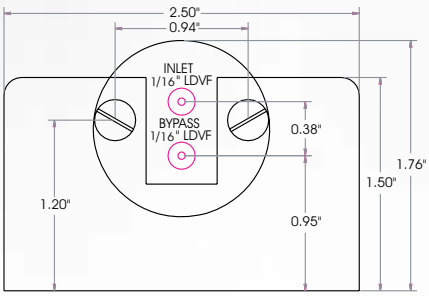


Dimensions

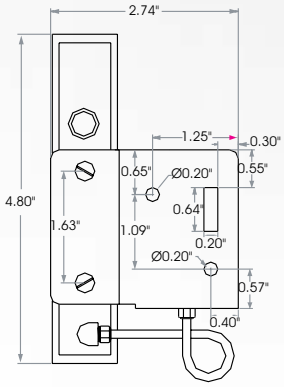
Side View



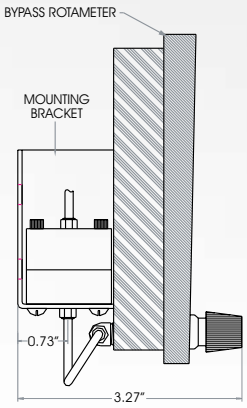
Back View



Assembly Back View



Assembly Side View



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MADE IN USA

GENIE®120
Supreme Membrane Separator

The original brand known for sample conditioning and analyzer protection!

The Supreme 100 Series™ remove 100% of entrained liquid and particulate in gas samples, which allow only gas sample to flow to analyzers. This action protects analyzers and other sampling components against liquid damage. The Genie® Supreme Series™ 100 models can accommodate a wide range of applications just as the original Genie® Series 100 Membrane Separators™, yet they offer an improved housing design for easy maintenance and the innovative Liquid Block Technology™ that prevents liquid from being forced across the membrane should sample line pressure conditions become upset. Genie® Supreme Series Membrane Separators™ are safe and easy to install and maintain, especially in heated, densely populated cabinets.

The Model 120 is ideal for low flow applications and can withstand high pressure in the housing. This high pressure model has a 1" cross sectional membrane area, the same as the original Genie® Model 101, and it is ideal for the removal of relatively small amounts of liquid present on a continuous basis; it is also perfect for protecting gas chromatographs, mass spectrometers, O_2 analyzers, moisture analyzers, and other analyzers with relatively small flow requirements. Please note that special fittings may be ordered, such as a Universal Assembly™. Additional information such as FAQs is available.

Technical Specifications

Maximum pressure rating *Due to rotameter limitations	**Stainless Steel:** 2,000 psig (137.9 barg) **Kynar:** 350 psig (24.1 barg) ***120UA:** 100 psig (6.9 barg)
Maximum Liquid Block® valve auto-reset pressure	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.
Maximum temperature *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart. **Due to rotameter limitations.	**Type 6 membrane:** 185˚F (85˚C) ***Type 7 membrane in a Kynar Housing:** 212˚F (100˚C) ***Type 7 membrane:** 300˚F (149˚C) ****120UA:** 130°F (54°C)
Maximum outlet flow rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 0.72 SLPM (1.5 SCFH) **Type 7 Highest Temps:** 2.5 SLPM (5.4 SCFH)
Bypass flow	Required, accommodating wide flow range.
Port sizes	**Inlet, Outlet, & Bypass:** 1/8" female NPT
Internal volume	**Total with Liquid Block:** 2.4 cc **Upstream of membrane:** 1.3 cc **Downstream of membrane:** 1.1 cc **Total without Liquid Block:** 2.1 cc **Upstream of membrane:** 1.1 cc **Downstream of membrane:** 1.0 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications
- Protection against liquids
  - On-line and portable analyzers
  - GC's, Mass Specs, O_2, H_2S, Moisture, and others
- Spot, composite, or continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining
- Gas sample conditioning

Benefits
- Helps preserve sample integrity
- Superior analyzer protection
- Quick and easy to install and maintain
- Quick and easy membrane inspection
- Economical

Features
- Genie® Membrane Technology™
- Liquid Block™ option
- Low internal volume
- Straight through Bypass
- Built-in membrane retention
- Threaded housing cover
- All connection ports on the housing
- Back mounting
- Universal Assembly™ option

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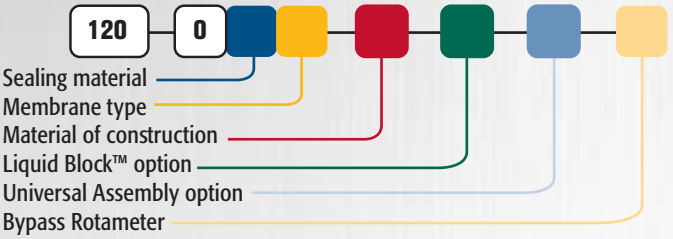
Model Numbering & Additional Part Numbers

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

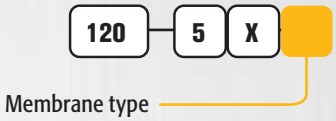
Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	*(others available upon request)*
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Material of construction	SS = Stainless Steel	K = Kynar	
Liquid Block™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

How to build the model number:



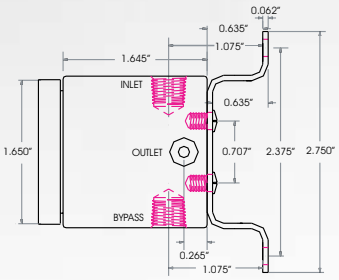
How to build the replacement membrane kit number:

(Five membranes per kit. O-rings sold separately)

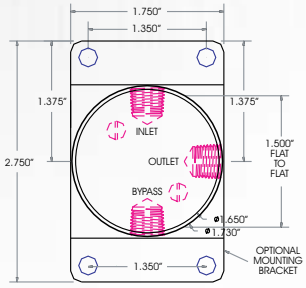


Dimensions

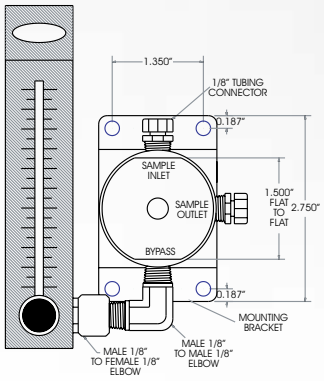
Side View



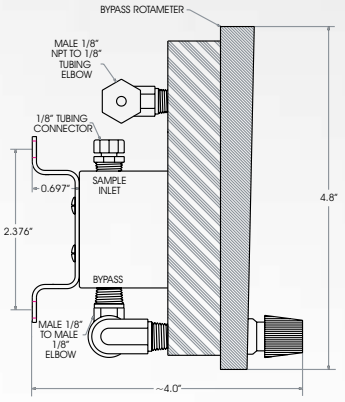
Front View



Assembly Front View



Assembly Side View



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

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MADE IN USA

GENIE®123
Supreme Membrane Separator

The original brand known for sample conditioning and analyzer protection!

The Supreme 100 Series™ remove 100% of entrained liquid and particulate in gas samples, which allow only gas sample to flow to analyzers. This action protects analyzers and other sampling components against liquid damage. The Genie® Supreme Series™ 100 models can accommodate a wide range of applications just as the original Genie® Series 100 Membrane Separators™, yet they offer an improved housing design for easy maintenance and the innovative Liquid Block Technology™ that prevents liquid from being forced across the membrane should sample line pressure conditions become upset. Genie® Supreme Series Membrane Separators™ are safe and easy to install and maintain, especially in densely populated cabinets.

The Model 123 is ideal for applications requiring higher flow rates or larger quantities of liquid than the Genie® Supreme Model 120 can withstand. It offers a 2" diameter membrane, the same membrane cross sectional area as the original Genie® Model 130 or Genie® Model 130M, and is ideal for removing unintermitted liquid flow from gas samples. It is also perfect for protecting components such as on-line analyzers, gas chromatographs, or mass spectrometers. Additional information such as FAQs is available.

Technical Specifications

Maximum pressure rating	2,000 psig (137.9 barg)
Maximum Liquid Block™ valve auto-reset pressure	2,000 psig (137.9 barg) Slowly open the supply pressure so that the minimum differential pressure required to shut off the Liquid Block™ is not met or exceeded.
Maximum temperature *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	**Type 6 membrane:** 185°F (85°C) ***Type 7 membrane:** 300°F (149°C)
Maximum outlet flow rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 5.4 SLPM (11.4 SCFH) **Type 7 Highest Temps:** 7.1 SLPM (15.0 SCFH)
Bypass flow	Required, accommodating wide flow range.
Port sizes	**Inlet, Outlet, & Bypass:** 1/4" female NPT
Internal volume Listed with and without Liquid Block™ respectively	**Total:** 9.1 cc , 10.3 cc **Upstream of membrane:** 5.4 cc , 5.4 cc **Downstream of membrane:** 3.7 cc , 4.9 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications
- Protection against liquids
  - On-line and portable analyzers
  - GC's, Mass Specs, O_2, H_2S, Moisture, and others
- Spot, composite, or continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining
- Gas sample conditioning

Benefits
- Helps preserve sample integrity
- Superior analyzer protection
- Quick and easy to install and maintain
- Quick and easy membrane inspection
- Economical

Features
- Genie® Membrane Technology™
- Liquid Block™ option
- Low internal volume
- Straight through Bypass
- Built-in membrane retention
- Threaded housing cover
- All connection ports on the housing
- Back mounting

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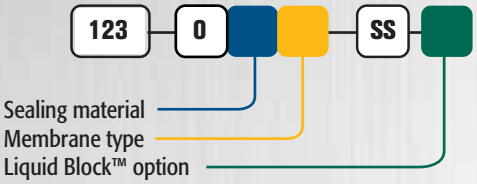
Model Numbering & Additional Part Numbers

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

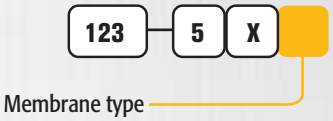
Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	J = RGD resistant HNBR	(other materials available)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids			
Liquid Block™ option	Blank = No Liquid Block™ option	LB = Liquid Block™ option *		*May be restrictive for vacuum service
Mounting bracket accessory	Part # 123-509-SS *(sold separately)*			

How to build the model number:



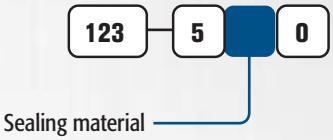
How to build the replacement membrane kit number:

(Five membranes per kit. O-rings sold separately)



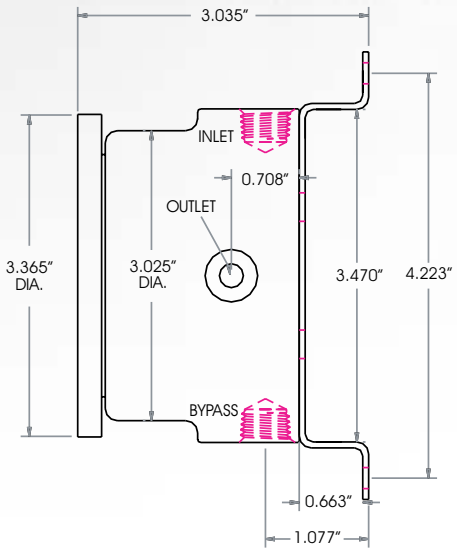
How to build the replacement sealing material number:

(One o-ring per kit.)

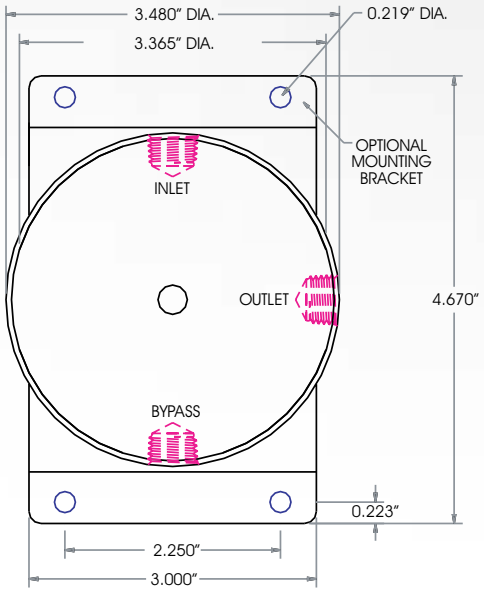


Dimensions

Side View



Front View



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MADE IN USA

GENIE®133
Supreme Membrane Separator

Your best choice when high liquid handling capability is required!

The Genie® Supreme 100 Series™ can remove 100% of entrained liquid and particulates in gas samples, including aerosols. Unlike coalescing filters that may allow aerosols to pass through the filter element and become re-entrained, Genie® Membrane Separators™ reject aerosols on the surface of their membrane where they are removed through a drain/bypass. Only the gas sample will flow through the membrane to the analyzers, protecting them and other sampling components against liquid damage.

The Genie® Supreme Model 133 Membrane Separator™ combines your favorite features of the legacy Genie® Model 130 with the improved features of the Supreme Series™, including a threaded cover for easy maintenance and the option of Liquid Block Technology™ that prevents liquid from being forced across the membrane. The Model 133 has the same flow rate capacity as the Genie® Supreme Model 123 with a larger inlet cavity making it better suited for use in sampling applications where there is a significant amount of liquid present in the sample gas.

The Genie® Supreme Model 133 Membrane Separator™ can be mounted before a sample pump or analyzer to protect them from damage caused by liquids. It can also be probe mounted at the sample extraction point to prevent liquid from entering the sample system at locations where there is too much liquid entrained in the source to use a membrane tip probe.

Technical Specifications

Maximum pressure rating	3,000 psig (206.8 barg) **Probe Assembly:** 2,500 psig (172.4 barg)
Maximum Liquid Block™ valve auto-reset pressure	2,000 psig (137.9 barg) Slowly open the supply pressure so that the minimum differential pressure required to shut off the Liquid Block™ is not met or exceeded.
Temperature range	**Type 6 membrane:** -15°F (-26.1°C) to 185°F (85°C) ***Type 7 membrane:** -15°F (-26.1°C) to 300°F (149°C) *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum outlet flow rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 5.4 SLPM (11.4 SCFH) **Type 7 Highest Temps:** 7.1 SLPM (15.0 SCFH)
Bypass flow	Required, accommodating wide flow range.
Port sizes	**Inlet, Outlet, & Bypass:** 1/4" female NPT
Internal volume Listed with and without Liquid Block™ respectively	**Total:** 43.7 cc , 44.9 cc **Upstream of membrane:** 40 cc **Downstream of membrane:** 3.7 cc , 4.9 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications
- Continuous sampling from gas sources when large quantities of free liquids are continuously present
  - Natural gas gathering & processing
  - Continuous Emission Monitoring Systems (CEMS)
  - Some refinery & petrochemical gases

Benefits
- Probe mounting:
  - Prevents sample system contamination
  - Eliminates the need for a bypass or drain
- Mounting upstream of analyzer or pump:
  - Protects the analyzer from damage
  - Improves reliability
  - Decreases maintenance time and cost

Features
- Proven Genie® Membrane Technology™
- Optional Liquid Block Technology™
- Unique housing design
- Large internal volume for increased liquid tolerance

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Model Numbering & Additional Part Numbers

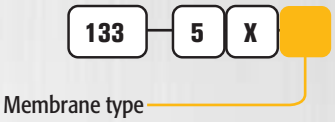
Your model number is determined by your specific needs. Choose options below.

Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	(others available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Liquid Block™ option	Blank = No Liquid Block™	LB = Liquid Block™ *	*May be restrictive for vacuum service
Mounting bracket	Part # 133-509-SS (sold separately)		

Model number:

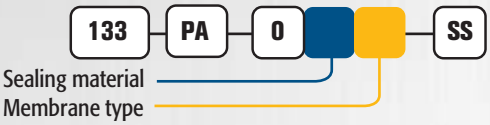
Replacement membrane kit number:

Five membranes per kit. O-rings sold separately



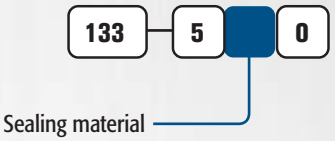
Assembly for probe mounting:

Refer to 760 or GPHV product sheet for probe dimensions and technical information.
Not recommended for custody transfer BTU analysis.



Membrane replacement sealing material number:

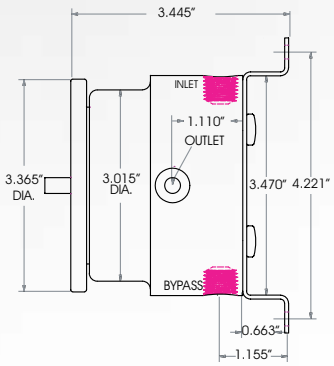
One o-ring per kit.



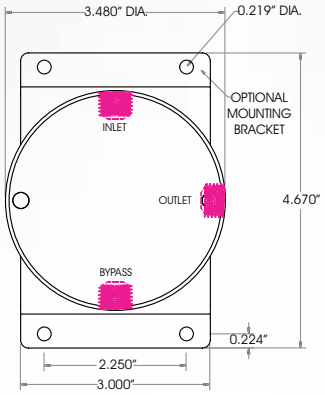
Dimensions

Individual product

Side View



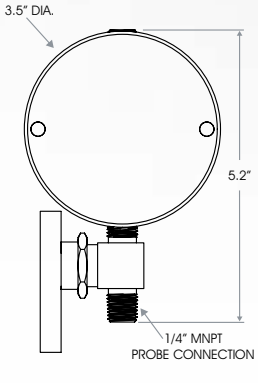
Front View



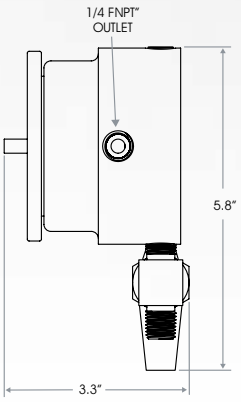
If left outlet required, invert Genie and use port labeled "BYPASS" as inlet, because sample must enter upper port.

Probe mounted assembly

Front View



Side View



Refer to 760 or GPHV product sheet for probe dimensions and technical information.

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MADE IN USA

GENIE®225
Membrane Separator

The original brand known for sample conditioning and analyzer protection!

The Supreme 200 Series™ remove 100% of suspended, immiscible liquids in liquid hydrocarbon samples, which allow only hydrocarbon liquid sample to flow to an analyzer. This action protects analyzers against damage to analyzers and sample system components. The Genie® Supreme Series 200 models can accommodate a wide range of applications just as the original Genie® Series 200 membrane separators, yet they offer an improved housing design for easy maintenance. Genie® Supreme Series Membrane Separators™ are safe and easy to install and maintain, especially in heated, densely populated cabinets.

The Model 225 protects liquid hydrocarbon systems from water, caustic, sulfuric acid or other immiscible liquids where the operating pressure does not exceed 2000 psig. Ideal for high-pressure applications, it also removes absorbed gases, gas bubbles, or volatile organic carbon (VOC) compounds from water sample at the same pressure rating. This model has the same design as both the original Genie® Model 205 and Model 205HP, except it includes a standard screw off cover to allow easier membrane maintenance.

Technical Specifications

Maximum pressure rating	2,000 psig (137.9 barg)
Maximum temperature	300 °F (149 °C)* * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum outlet flow rate Results in approx. 10 PSI pressure differential. For higher flow rates, contact the factory.	150 cc/min in Diesel 200 cc/min in Kerosene 450 cc/min in Gasoline
Port sizes	**Inlet, Outlet, & Bypass:** 1/4" female NPT
Internal volume	**Total:** 12 cc **Upstream of membrane:** 7.7 cc **Downstream of membrane:** 4.3 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications
- Allows for continuous liquid sampling in any process industry including natural gas, petrochemical, and oil refining.
- Analyzer protection against immiscible liquids
- Liquid sample conditioning

Benefits
- Superior analyzer protection
- Helps preserve sample integrity
- Safe and easy to install and maintain, especially in heated, densely populated cabinets
- Extended membrane service life
- Quick and easy membrane inspection
- Economical

Features
- Genie® Membrane Technology™
- Low internal volume
- Straight through Bypass
- Threaded housing cover
- All connection ports on the housing
- Back mounting

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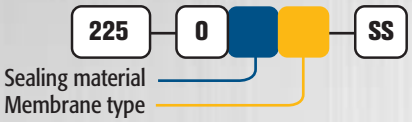
Model Numbering & Additional Part Numbers

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

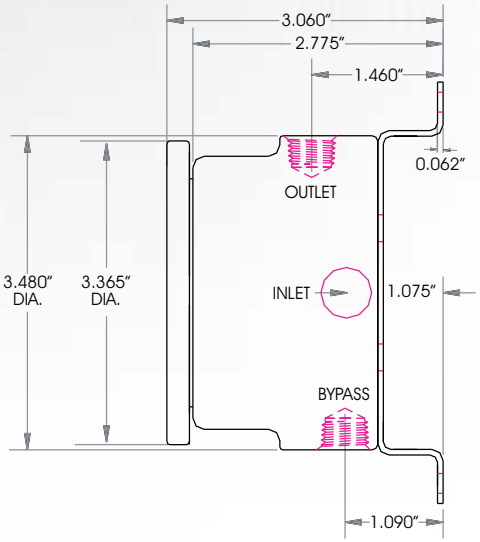
Sealing material	0 = fluoroelastomer	*(other materials available upon request)*
Membrane type	8 = Liquid/Liquid Backed membrane	*(consult the factory if composition contains Xylene.)*
Mounting bracket accessory	Part # 225-509-SS *(sold separately)*	
O-ring replacement	Part # 225-500 *(sold separately)*	
Membrane replacement	Part # 225-5X8 *(contains 5 membranes per kit)(sold separately)*	

How to build the model number:

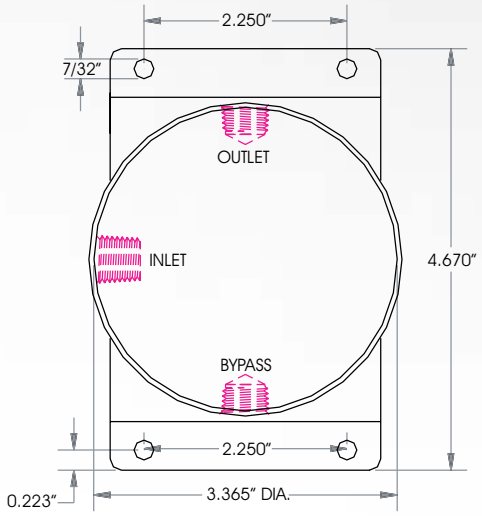


Dimensions

Side View



Front View



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MADE IN USA

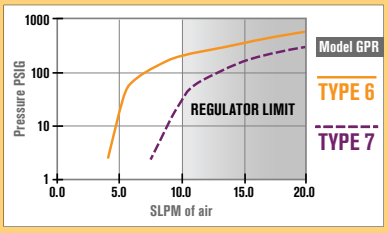
GENIE® GPR™
Probe Regulator

The safest and most versatile probes available on the market

Liquid carry over from the pipeline into the sample conditioning system should be prevented when sampling natural gas as it can directly impact the accuracy of the compositional analysis and also damage the analyzer. Genie® Probes™ provide a means to insert Genie® Membrane Technology™ directly into a pipeline for the purpose of separating unwanted liquid and particulate from the gas sample at flowing temperature and pressure conditions, in compliance with industry standards.

The two-piece GPR™ consists of a housing containing a foot valve on its lower end, and a membrane tip probe regulator. The probe housing is installed in a depressurized pipeline through a vertically mounted thread-o-let or flange. Once the probe is inserted into the housing, the foot valve opens to allow pipeline gas to flow freely through the membrane. Sample pressure is then reduced immediately downstream of the membrane, inside of the pipeline. The heat then transfers from the pipeline to the regulator to prevent excessive Joule-Thomson cooling during pressure regulation. Retracting the probe from the housing closes the foot valve, making it possible to perform probe maintenance without depressurizing the pipeline. This insertion/retraction method is less expensive and complex than pneumatic or hydraulic methods.

Technical Specifications

Maximum pressure rating	3,500 psig (241.3 barg)
Temperature ranges * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	**Type 6 membrane:** -35°F (-37°C) to 185°F (85°C) ***Type 7 membrane:** Up to 300°F (149°C)
Internal volume	13.758 cc
Outlet port sizes	1/4" female NPT
Minimum pipeline size	4"
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg), 0-250 psig (0-17.2 barg), 0-500 psig (0-35.4 barg)
Process connection	3/4" or 1" male NPT
Thread-o-let requirement	The inner diameter of all openings in pipe wall and thread-o-let must not be less than 0.910".
Mounting orientation	Vertical (preferred), or 45° maximum angle relative to vertical
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Foot Valve sealing material:** Perfluoroelastomer **Probe sealing material:** User defined **Regulator seat material:** PFA **Membrane:** inert
Maximum Recommended Flow Rate Dependant on source pressure. See chart.	

Product Brief

Applications
- Extract representative sample from a multi-phase gas source
- Pressure regulation
- Protection against liquids
  - Online and portable analyzers
  - BTU, H_2S, Moisture, and others
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- API 14.1, GPA 2166 and ISO 10715 probe compliance
- Flowing pipeline gas helps to offset temperature changes at regulation point
- Helps to preserve sample integrity
- Helps to improve safety of personnel and equipment
- Does not require hydraulic fluid
- Probe maintenance without line depressurization

Features
- Genie® Membrane Technology™
- Pressure regulation at probe tip inside of pipeline
- Vibration resistant
- No dead volume
- Low internal volume
- J-slot safety
- Optional regulator manifold available with pressure gauge, ball valve, and relief valve attached.

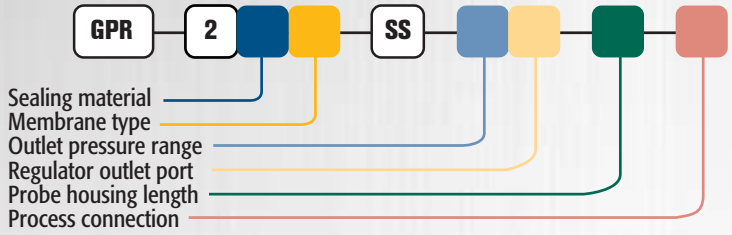
A+ Corporation

Model Numbering & Additional Part Numbers

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

Sealing material	0 = Neoprene		J = RGD resistant HNBR				*(other materials available)*
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids						
Outlet pressure range (psig)	00 = 0-25	01 = 0-50	02 = 0-100	03 = 0-250	P4 = 0-500	09 = 0-10	
Regulator outlet port	1 = 1/4" MNPT to 1/8" tube connector				4 = 1/4" FNPT		
Probe housing length	Blank = 4"		B = 7"				
Process connection	Blank = 3/4" NPT x 0.9 dia.		1 = 1" NPT x 0.9 dia.				
Spare parts	Part # GP-771-SS Part # GP-CMA-5_6		*(contains one (1) complete regulator seat cartridge assembly)* *(contains two (2) Type 6 complete assemblies)*				

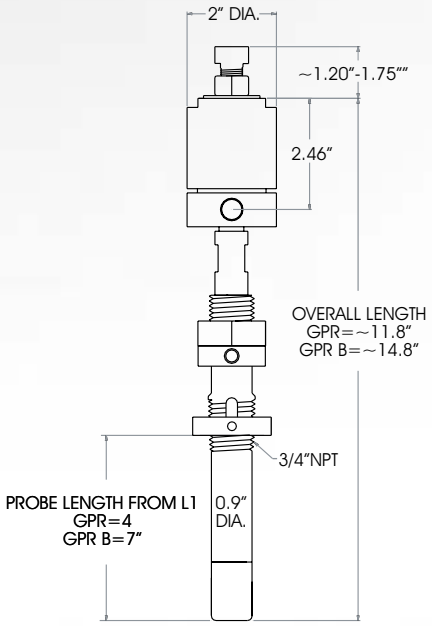
How to build the model number (probe and housing):



Dimensions

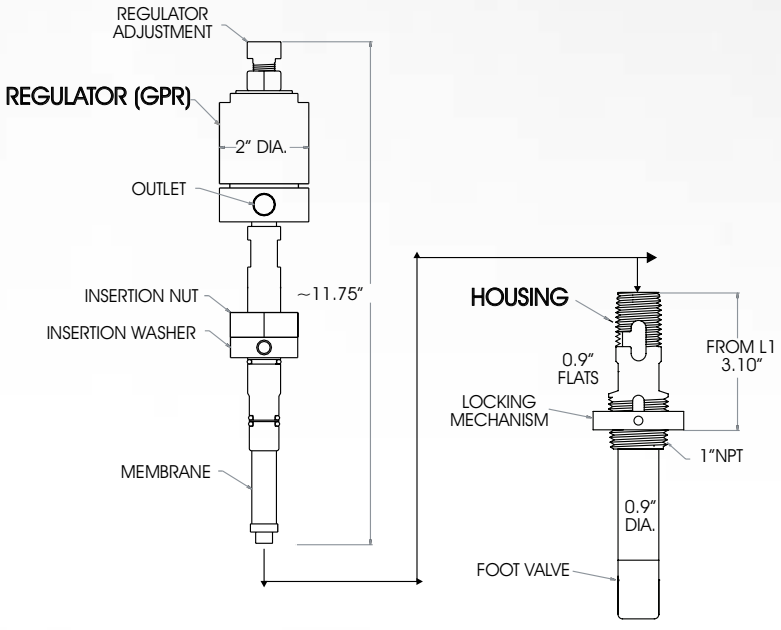
Inserted

3/4" NPT x 0.9" DIAMETER HOUSING SHOWN



Extracted

1" NPT x 0.9" DIAMETER HOUSING SHOWN



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MADE IN USA

GENIE® GP2™
Membrane Probe

The safest and most versatile probes available on the market!

Liquid carry over from the pipeline into the sample conditioning system should be prevented when sampling natural gas as it can directly impact the accuracy of the compositional analysis and also damage the analyzer. Industry standards state that equipment used to remove liquid from the sample must be operated at flowing temperature and pressure conditions. Genie® Probes™ provide a means to insert Genie® Membrane Technology™ directly into a pipeline for the purpose of separating unwanted liquid and particulate from the gas sample at flowing temperature and pressure conditions, in compliance with industry standards.

The GP2™ probe consists of a housing and a membrane tip probe. The housing is installed in a depressurized pipeline through a vertically mounted thread-o-let or flange, and contains a "foot valve" in its lower end. Inserting the probe into the housing opens the "foot valve", allowing pipeline gas to flow freely through the membrane. Retracting the probe from the housing closes the foot valve, making it possible to perform probe maintenance without depressurizing the pipeline. This insertion/retraction method is considerably less expensive and complex than pneumatic or hydraulic methods.

An optional hex adapter is available to prevent liquids from being forced through the membrane, and should be selected when the probe is being used in spot and composite sampling applications.

Technical Specifications

Maximum Pressure Rating	3,500 psig (241.3 barg)
Temperature Ranges * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	**Type 6 membranes:** -35°F (-37°C) to 185°F (85°C) ***Type 7 membrane:** -35°F (-37°C) to 300°F (149°C)
Maximum Recommended Flow Rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 4.1 LPM (8.7 CFH) *(actual conditions)* **Type 7 Highest Temps:** 7.6 LPM (16.1 CFH) *(actual conditions)*
Internal Volume	13.758 cc
Outlet Port Size	**GP2 with Hex:** 1/4" FNPT **GPCSA:** 3/4" FNPT **GP2 without Hex:** 1/8" FNPT
Process Connection	3/4" or 1" male NPT
Thread-o-let Requirement	The inner diameter of all openings in pipe wall and thread-o-let must not be less than 0.910".
Mounting Orientation	Vertical (Preferred), or 45° maximun angle relative to vertical required
Wetted Materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Foot Valve sealing material:** Perfluoroelastomer **Probe sealing material:** User defined **Membrane:** inert

Product Brief

Applications
- Extract a representative sample from a multi-phase gas source
- Spot, composite or continuous gas sampling
- Protection against liquids
- Online and portable analyzers
- BTU, H2S, Moisture, and others
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- API 14.1, GPA 2166 and ISO 10715 probe compliance
- Helps to preserve sample integrity
- Protects analyzers
- Helps to improve safety of personnel and equipment
- Does not require hydraulic fluid
- Probe maintenance without line depressurization

Features
- Genie® Membrane Technology™
- Vibration resistant
- No dead volume
- Low internal volume
- J-slot safety
- Optional hex adapter with ¼" female NPT outlet and integrated outlet shut-off valve

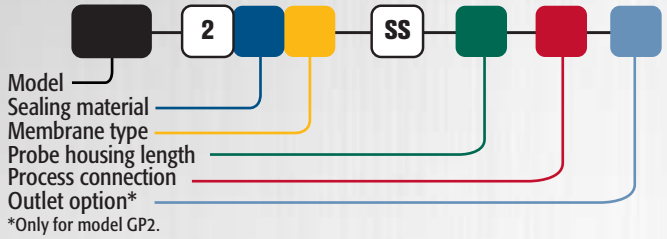
A+ Corporation

Model Numbering & Additional Part Numbers

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

Model	GP2 = Probe w/ 1/8" FNPT outlet	GPCSA = Probe w/ adapter for YZ, PGI, & Welker Sampler	
Sealing material	0 = Neoprene	J = RGD resistant HNBR	(other materials available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Probe housing length	Blank = 4"	B = 7"	
Process connection	Blank = 3/4" NPT x 0.9 dia.	1 = 1" NPT x 0.9 dia.	
Outlet option	H= Hex adapter with ¼" NPT Outlet Port	Blank= No option	
Membrane replacement	Part # GP-CMA-5_6	(contains 2 complete assemblies - sold separately)	

How to build the model number (probe and housing):

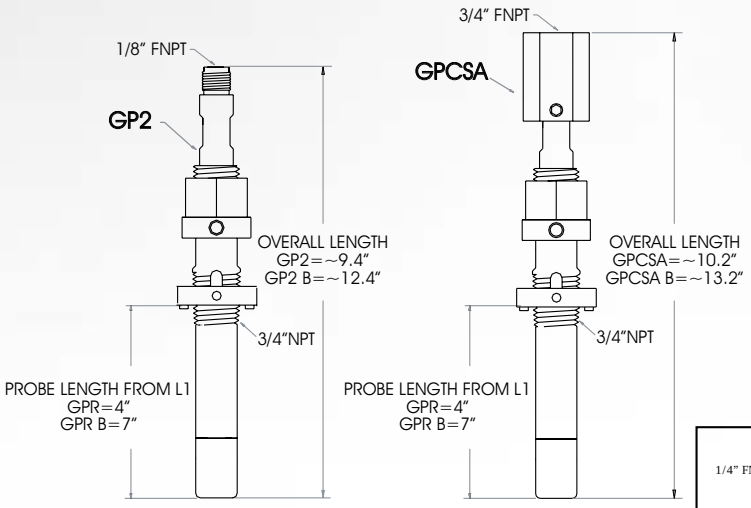


*Only for model GP2.

Dimensions

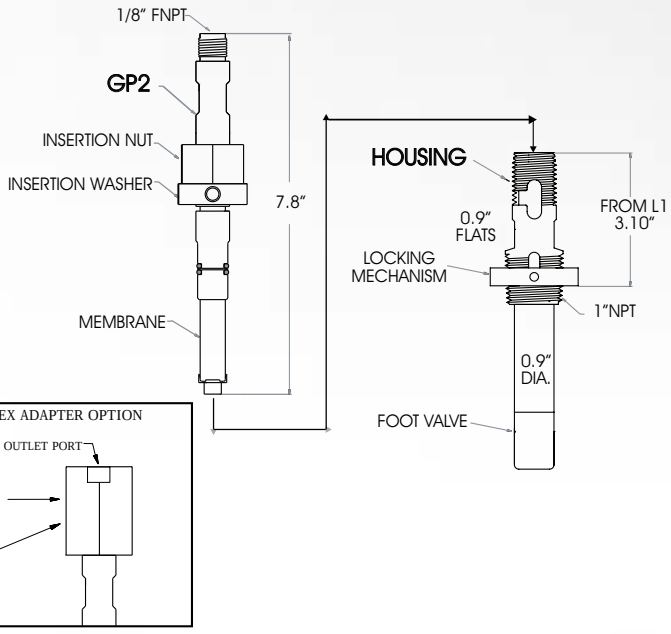
Inserted

3/4" NPT x 0.9" DIAMETER HOUSING SHOWN



Extracted

1" NPT x 0.9" DIAMETER HOUSING SHOWN



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MADE IN USA

GENIE® GPSD™
Membrane Probe

The safest and most versatile probes available on the market!

Liquid is the root of many problems when sampling natural gas, either by its condensing out of the sample gas after entering the sample system or carrying over from the pipeline into the probe. Entrained liquid is not always easy to locate. Sometimes it cannot be detected by sight, but, instead, by its impact on analysis or damage to an analyzer. With Genie® Probes & Probe Regulators, a Genie® membrane is inserted directly into a pipeline or vessel which allows for separation of entrained liquids at the prevailing line pressure and temperature conditions. By separating entrained liquids at line pressure and temperature, sample integrity is maintained. Genie® Probes™ also remove all entrained liquids in a gas sample, making them the most effective filters on the market for protection against liquid damage during upset conditions.

The GPSD™ is designed specifically for small diameter 2" or 3" pipelines. The GPSD™ uses proven Genie® Membrane Technology™ to extract a representative gas sample and provide a safety net for protecting gas analyzers against liquid damage. This model's housing is designed to install in a depressurized line. Once installed, the housing includes a foot valve in its base, so the probe can be inserted or retracted with a pressurized line or vessel. The GPSD™ replaces the threaded foot valve (-T) housing option of the GPR™.

Liquid can be forced through any phase separation membrane when the flow rate through the membrane is too high resulting in excessive differential pressure across the membrane. Opening a ball valve downstream of the membrane to purge a sample cylinder during spot or composite sampling can cause this condition to occur. To safeguard against this excessive differential pressure, we offer an optional flow restrictor that limits the flow through the membrane so as not to exceed a 2 psig drop thus preventing liquids from being forced through the membrane. The flow restrictor should be selected when a Genie® Membrane Probe™ is used in spot and composite sampling applications. It is not necessary to use a flow restrictor when sampling from lines that have a very low pressure or when there will be a constant flow through the probe.

Technical Specifications

Maximum Pressure Rating	3,000 psig (206.8 barg)
Temperature Ranges * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	**Type 6 membrane:** -35°F (-37°C) to 185°F (85°C) ***Type 7 membrane:** Up to 300°F (149°C)
Internal Volume	8.4 cc
Outlet Port Size	**GPSD:** 1/8" female NPT **GPSD-R:** 1/4" female NPT **GPSD-CSA:** 3/4" female NPT
Process Connection	3/4" male NPT
Thread-o-let Requirement	The inner diameter of all openings in pipe wall and thread-o-let must not be less than 0.910".
Mounting Orientation	Vertical (preferred), or 45° maximun angle relative to vertical required
Wetted Materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Foot Valve sealing material:** Perfluoroelastomer **Probe sealing material:** User defined **Membrane:** inert

Product Brief

Applications
- Protection against liquids
  - On-line and portable analyzers
  - GC's, Mass Specs, O_2, H_2S, Moisture, and others
- Spot, composite, or continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining.
- Extract a representative gas sample
- Gas sample conditioning inside the small diameter pipe or vessel
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- Helps preserve sample integrity
- Helps improve safety of personnel and equipment
- Protects analyzers
- Reliable
- Economical

Features
- Genie® Membrane Technology™
- Vibration resistant
- No dead volume
- Low internal volume
- J-Slot safety

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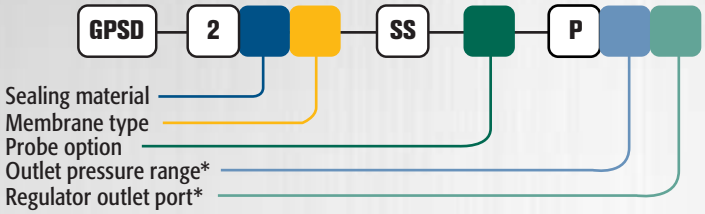
Model Numbering & Additional Part Numbers

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

Sealing material	0 = Neoprene	J = RGD resistant HNBR	*(other materials available)*			
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids					
Probe option	Blank = No option	CSA = Probe w/ adapter for YZ, PGI & Welker Sampler R = Probe w/ regulator option				
Outlet pressure range (psig)*	0 = 0-25	1 = 0-50	2 = 0-100	3 = 0-250	4 = 0-500	9 = 0-10
Regulator outlet port*	1 = 1/4" MNPT to 1/8" tube connector			4 = 1/4" FNPT		
Bypass flow restrictor (recommended)	Part # ACC-SS-4-SRA2EA	1/8" MNPT x 1/4" FNPT *(sold separately)*				
	Part # GPSD-CMA-5_6	*(contains 1 complete assembly - sold separately)*				

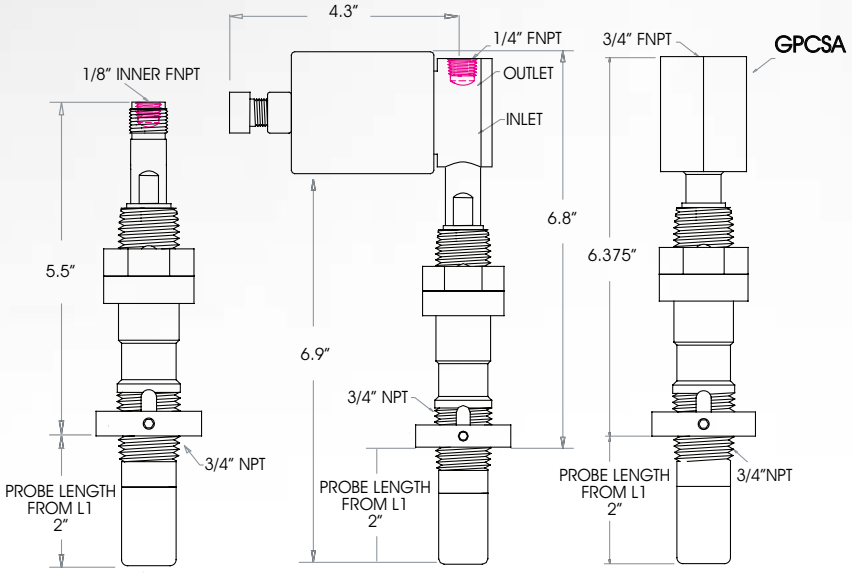
How to build the model number (probe and housing):



*Only for Regulator (R) probe option selected.

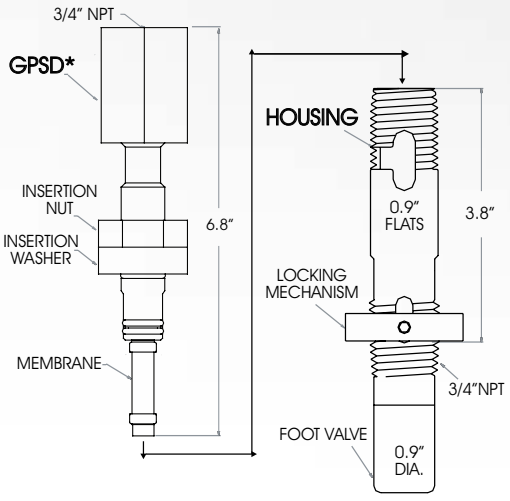
Dimensions

Inserted



Regulator option **CSA option**

Extracted



***GPSD with CSA option shown**

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MADE IN USA

GENIE® GPHV
General Purpose Probe

The safest and most versatile probes available on the market!

The GPHV™ was designed sampling from high velocity gas streams. The probe is machined with thick walls and from a single piece of stainless steel. By design, the probe possesses a high natural resonant frequency and can withstand the destructive force of fluids flowing at high velocity. This model must be installed in a depressurized line. A Genie® 133 Probe Assembly option is available for gas sampling applications where a membrane tipped probe cannot be used. This simple assembly includes a Genie® Supreme Model 133 Membrane Separator™ mounted onto the outlet of a Genie® Model GPHV General Purpose Probe.

See Genie® 133 literature for details.

Technical Specifications

Maximum Pressure Rating	4,500 psig (310.3 barg)
Maximum Temperature	300 ºF (149 ºC)
Maximum Gas Velocity	**4" probe:** >100 ft/sec **10" probe:** 56 ft/sec
Internal Volume	**4" probe:** 3.62 cc **10" probe:** 8.44 cc
Port Size	**Outlet:** 1/4" female NPT
Process Connection	1/2" male NPT
Thread-o-let Requirement	The inner diameter of all openings in pipe wall and thread-o-let must not be less than 0.690".
Wetted Material	**Machined part:** 316/316L stainless steel / ISO 15156-3 compliant

Product Brief

Applications

- Extract a gas sample from a pipeline for use in an analyzer
  - On-line and portable analyzers
  - GC's, Mass Specs, O_2, H_2S, Moisture, and others
- Continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining
- High velocity gas streams

Benefits

- Helps preserve sample integrity
- Helps improve safety of personnel and equipment
- Reliable
- Durable
- Economical

Features

- Simple design
- Single-piece, machined housing
  - no welding
- Vibration resistant

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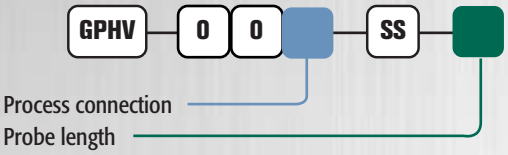
Model Numbering & Additional Part Numbers

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

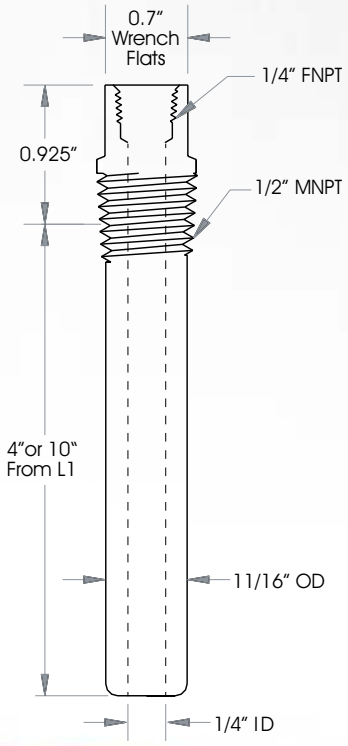
Process connection	0 = 1/2" NPT	
Probe length	Blank = 4"	10 = 10"

How to build the model number:



Dimensions

Side View



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MADE IN USA

GENIE®701
Portable Insertion Probe™

Extremely lightweight yet surprisingly rugged

Liquid in a sample conditioning system can damage analyzers and lead to inaccurate sample analysis; directly affecting the bottom line. Applying our Analytically Correct™ designs to your sampling system can prevent these occurrences.

Our Genie® Model 701 Portable Insertion Probe is a simple, safe and economical solution to extract a representative vapor phase sample from a gas source. Our exclusive Pressure Balance™ technique allows for effortless insertion of the probe without the need for additional tools or pneumatic and hydraulic methods. Inserting the probe is easily accomplished by simply turning the handle with fingertips. This probe's lightweight design makes it ideal for use as a spot or portable analyzer sample probe.

When using the Model 701 for spot sampling, our flow restrictor and Spot Sampling Manifold are recommended. The flow restrictor prevents liquid from being forced through the membrane as a result of excessive flow while the Spot Sampling Manifold provides an easy means to connect the cylinder to the probe and purge the sample path from probe tip to cylinder inlet valve.

We are the only manufacturer that provides Analytically Correct™ membrane tipped sample probes for insertion inside a pipeline or vessel. Using a membrane tip conforms to API 14.1 and GPA 2166 standards. Our patented Genie® Membrane Probes™ are the most efficient means for separating entrained liquid from the sample at source conditions.

Technical Specifications

Maximum Pressure Rating	3,000 psig (206.8 barg)
Temperature Ranges	**Type 6 membranes:** -35°F (-37°C) to 185°F (85°C) Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port Size	**Outlet:** 1/4" female NPT
Insertion Depth	**L:** Adjustable up to 11" (25.4mm)
Process Connection Requirement	1/2" NPT full opening threaded valve Ball, gate and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 1/2".
Wetted Materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications

- Spot sampling with a portable analyzer or manual collection in a sample container in any process industry including natural gas, petrochemical, and oil refining
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits

- Rejects entrained liquid in the source
  - Preserves sample integrity
  - Protects sample system from liquid and particulates
  - Achieves natural gas standards compliance
- Eliminates the need for:
  - Line depressurization
  - Multiple probes (spot or portable sampling)

Features

- Field proven and patented:
  - Genie® Membrane Tip Technology™
  - Pressure Balance™ Technique
  - Harmonic resonance during dampening
- Lightweight and portable with fingertip insertion
- Insertion depth scale and magnetic indicator ring
- Flow restrictor and mainifold for spot sampling
- Analytically Correct™ design

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Model Numbering & Additional Part Numbers

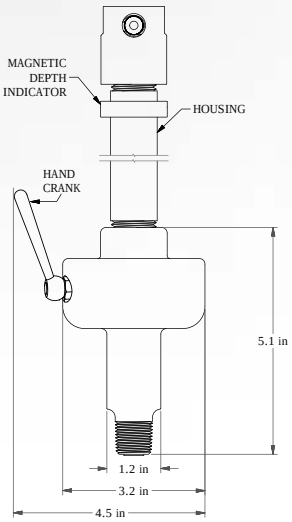
Your model number is determined by your specific needs. Choose options below.

Sealing material	7 = Neoprene rubber	J = RGD resistant HNBR	*(other materials available upon request)*
Membrane type	6 = Rejects ALL types of liquids from vapor		*(other membrane types available upon request)*
Flow restrictor	Part # ACC-SS-4-SA-EA	(1/4" MNPT x 1/4" FNPT)	
Spot sampling manifold	Part # 701-ACC-8111		
Complete membrane assembly	Part # 701-CMA-576(square body) or Part # 701-2CMA-576 (current round body)		

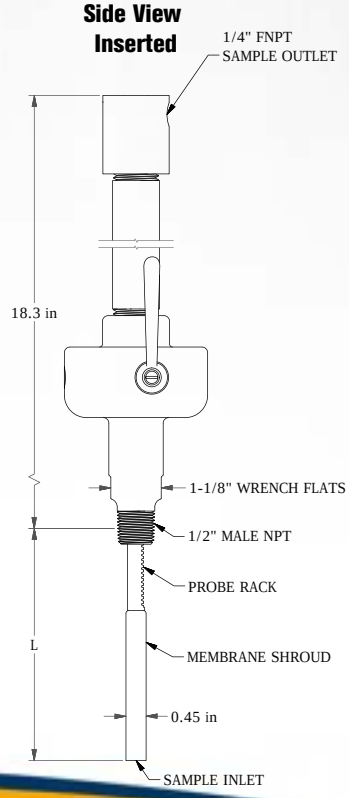
How to build the model number:

Dimensions

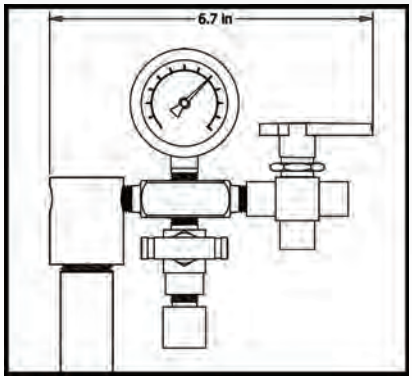
Front View Extracted



Side View Inserted



701 Spot Sampling Manifold Option



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MADE IN USA

GENIE® 702
Permanent Insertion Probe™

Large enough for a 10' install yet small enough to fit in an enclosure!

Liquid in a sample conditioning system can damage analyzers and lead to inaccurate sample analysis; directly affecting the bottom line. Applying our Analytically Correct™ designs to your sampling system can prevent these occurrences.

Our Genie® Model 702 Permanent Insertion Probe is a simple, safe and economical solution to extract a representative vapor phase sample from a gas source. The 702 is designed for sampling at a specific depth in a pressurized pipeline; each length is customized up to 10 feet to fit your application. Our exclusive Pressure Balance™ technique allows you to effortlessly insert the probe without the need for additional tools or pneumatic and hydraulic methods. Once inserted, the installation housing can be replaced with a shorter one to accommodate partial retraction of the probe during pigging operations or placement into heated enclosures.

We are the only manufacturer that provides Analytically Correct™ membrane tipped sample probes for insertion inside a pipeline or vessel. Using a membrane tip conforms to API 14.1 and GPA 2166 standards. Our patented Genie® Membrane Probes™ are the most efficient means for separating entrained liquid from the sample at source conditions.

Technical Specifications

Maximum Pressure Rating	3,500 psig (241.3 barg)
Temperature Ranges	**Type 6 membranes:** -35°F (-37.2°C) to 185°F (85°C) ***Type 7 membrane:** -35°F (-37.2°C) to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum Recommended Flow Rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 2.0 LPM (4.2 CFH) *(actual conditions)* **Type 7 Highest Temps:** 2.5 LPM (5.3 CFH) *(actual conditions)*
Port Sizes	**Outlet, vent, and gauge:** 1/8" female NPT
Process Connection Requirement	3/4" NPT full opening threaded or flanged valve Ball, gate and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 3/4".
Valve Requirement customer provided	Straight-through path with minimum bore of 0.75" (1.91 cm)
Probe Lengths	**L:** 4 ft (1.2 m) to 10 ft (3.0 m) **A:** (L) + 13.4 in (340.4 mm)
Wetted Materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert

Product Brief

Applications
- Continuous sampling from underground natural gas transmission lines and certain hazardous gas sources
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- Protects sample system from liquid and particulates
- Insertion and retraction without pneumatic or hydraulic methods
- Source conditions monitored while sampling
- API 14.1 and GPA 2166 standards compliance
- Installation and maintenance without depressurizing line
- Helps preserve sample integrity
- Increases safety of personnel

Features
- Genie® Membrane Technology™
- Pressure Balance™ installation
- Partial retraction housing accommodates pigging operations or placement into enclosures
- Built-in ports and valves for purging vented gas
- Low profile above pipe

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Model Numbering & Additional Part Numbers

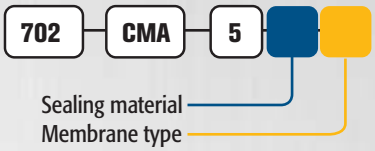
Your model number is determined by your specific needs. Choose options below.

Sealing material	7 = Neoprene rubber J = RGD resistant HNBR	(other materials available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids	
Probe length (L)	Custom Lengths from 12 inches to 120 inches	
Regulator coupling	ACC-SS-702-1 (recommended when attaching external regulator)	

How to build the model number:

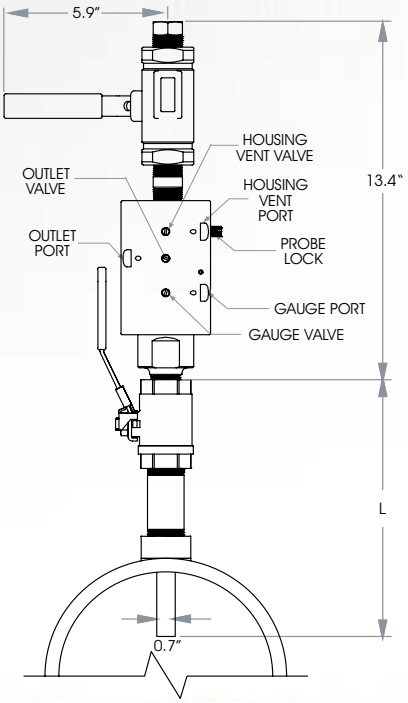
How to build the replacement membrane number:

(Contains 1 complete assembly)



Dimensions

Inserted



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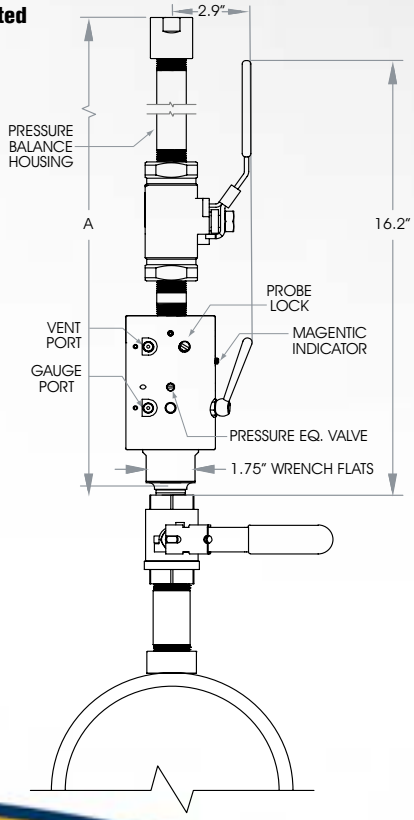

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MADE IN USA

GENIE® 750
Direct Drive Probe™

The safest and most versatile membrane tip probes available on the market

Liquid carryover from the pipeline into the sample system should be prevented when sampling natural gas as it can directly impact the analysis and damage the analyzer. Industry standards state that the equipment used to remove the liquid from the sample must be operated at flowing temperature and pressure conditions. Genie® Probes™ provide a means to insert Genie® Membrane Technology™ directly into a pipeline for the purpose of separating unwanted liquid and particulate from the gas sample at flowing conditions.

The Model 750 is an adjustable length, membrane tip probe designed to sample transmission quality natural gas. It can be inserted and extracted from a pressurized line through a full opening valve without the use of a special insertion device. This probe is offered with optional coatings from Silcotek™. The Model 750 installation process is simple and straight forward. A low internal volume option is available for trace measurement applications or low sample flow rates.

A+ Corporation also offers a complete line of upstream and midstream gas and liquid sampling products. Contact the factory for more information.

Technical Specifications

Maximum Pressure Rating	**NPT:** 3,750 psig (258.6 barg)
Temperature Ranges	**Type 6 membranes:** -35°F (-37°C) to 185°F (85°C) ***Type 7 membrane:** Up to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum Recommended Flow Rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 1.6 LPM (3.4 CFH) (actual conditions) **Type 7 Highest Temps:** 3.4 LPM (7.1 CFH) (actual conditions)
Port Sizes	**Outlet:** 1/4" female NPT **Low Volume Outlet:** 1/16" female NPT **Auxiliary:** 1/8" female NPT (plugged from factory)
Probe Lengths For other lengths contact the factory.	**L:** 8", 12", 18", 24", 36", 48" Refer to dimensions on back.
Process Connection Requirements	3/4", 1" or 1.5" NPT full opening threaded or flanged valve Ball, gate and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 3/4". 1" NPT or larger process connection required for seal welding.
Wetted Materials For Silcotek™ coatings, contact the factory.	***Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant and Kevlar® threaded bushing **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** Inert *Other materials available on request.

Product Brief

Applications

- Continuous and composite gas sampling of transmission quality natural gas
- Sampling of various types of gases in the refinery & petrochemical industries
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits

- Genie Membrane Technology
- Easy, quick, and safe insertion and extraction from pressurized systems without a special insertion device
- Velocity tested by CEESI flow lab up to 200 ft/sec
- API, GPA & ISO standard compliance

Features

- Unique, one piece body with Genie Membrane Technology
- Analytically Correct™ design
- Adjustable length
- Antifriction internal thread die
- Optional speed wrench for faster installation
- Hex adapter with ¼" female NPT outlet and integrated outlet shut-off valve

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Model Numbering & Additional Part Numbers

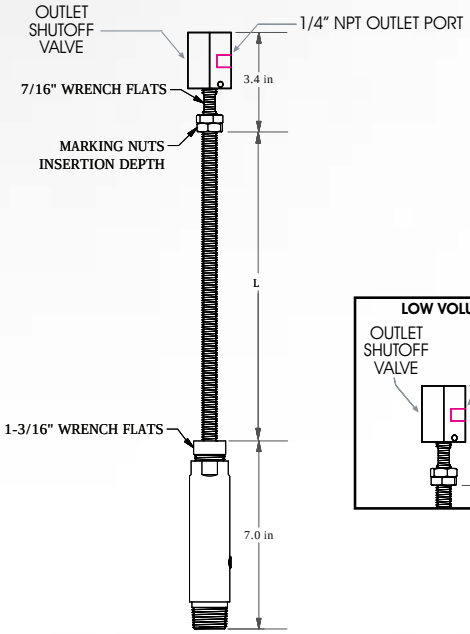
Your model number is determined by your specific needs. Choose options below.

Sealing material	0 = Neoprene rubber	J = RGD resistant HNBR (other materials available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids	
Process connection	3 = ¾" NPT	4 = 1" NPT 6 = 1.5" NPT
Probe insertion length	8, 12, 18, 24, 36, 48 inches	
Sealing material replacement (Packing Gland)	Part # 75X-570 for PTFE/Neoprene rubber	Part # 75X-5J0 for RGD resistant HNBR (sold separately)
Membrane replacement	Part # 75X-CMA-50_ (contains 1 complete assembly - sold separately)	
Speed wrench	Part # ACC-SW (sold separately)	
Optional gauge	Part # ACC-Q14KC (0-4,000 psig, sold separately)	

How to build the model number:

Dimensions

Uninstalled



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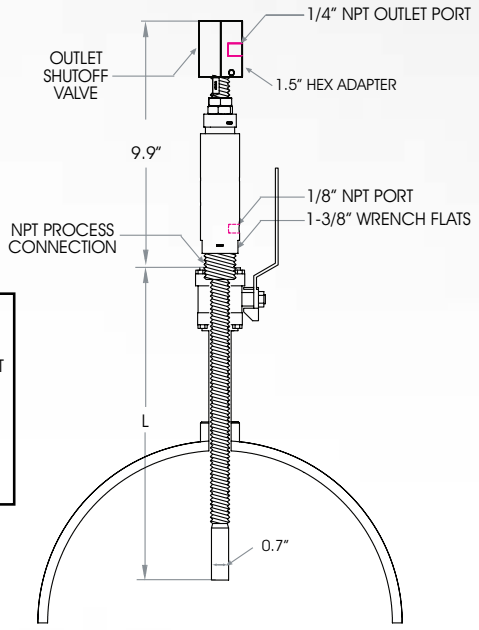

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MADE IN USA

GENIE® 752
Direct Drive Probe™

Thermowell insertion without source depressurization!

The Direct Drive Model 752™ thermowell probe can be inserted and retracted from a pressurized source through a full port valve without a special insertion device or the force and bulky equipment associated with pneumatic or hydraulic methods. Its adjustable insertion depth up to the maximum specified probe length allows precise positioning of the probe tip within the pipeline or process.

Included with the Model 752 is a 3 wire configuration RTD probe. The temperature probe is spring loaded to ensure proper contact with the thermowell and its conduit connection head contains the wiring.

Technical Specifications

Maximum Pressure Rating	NPT: 3,750 psig (258.6 barg) Unibody flanged: ANSI classification specific
Temperature Range	-40°F (-40°C) to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port Size	Auxiliary: 1/8" female NPT with vent valve installed from factory
Probe Lengths For other lengths contact the factory.	L: 12", 18", 24" A: ~ 27", 33", 39" Refer to L & A dimensions on back
Process Connection Requirement	3/4", 1" or 1.5" NPT full opening threaded or flanged valve Ball and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 3/4". 1" NPT or larger process connection required for seal welding.
Valve Requirement customer provided	Straight-through path with minimum bore of 0.75" (1.91 cm)
RTD Specifications	1/8" diameter stainless steel sheath ½" NPT conduit connection 100 Ω Class "A"
Wetted Materials	*Machined parts: 316/316L stainless steel / ISO 15156-3 compliant and Kevlar® threaded bushing All other metal parts: stainless steel / ISO 15156-3 compliant Sealing material: User defined * Other materials available on request.

Product Brief

Applications
- Retractable thermowell probe for measuring gas temperature

Benefits
- Easy, quick, and safe insertion and extraction from a pressurized source without a special insertion device
- RTD included
- Field serviceable packing gland seal
- Velocity tested at CEESI flow lab up to 200ft/sec

Features
- Patented insertion method
- Patented harmonic resonance dampening design
- Adjustable length with threaded or flanged process connection
- Optional speed wrench for faster installation

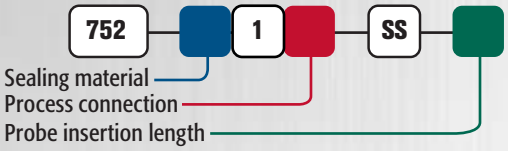
A+ Corporation

Model Numbering & Additional Part Numbers

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

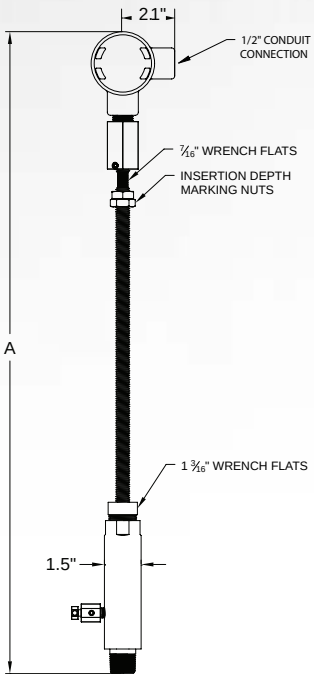
Sealing material	0 = Neoprene rubber	J = RGD resistant HNBR	(other materials available upon request)	
Process connection	3 = 3/4" NPT	4 = 1" NPT	6= 1.5" NPT	
Probe insertion length (L)	12, 18, 24 inches	(24" maximum for exotic materials)		
Sealing material replacement (Packing Gland)	Part # 75X-570 for PTFE/Neoprene rubber	Part # 75X-5J0 for RGD resistant HNBR	(sold separately)	
Speed wrench	Part # ACC-SW	(sold separately)		

How to build the model number:



Dimensions

Uninstalled



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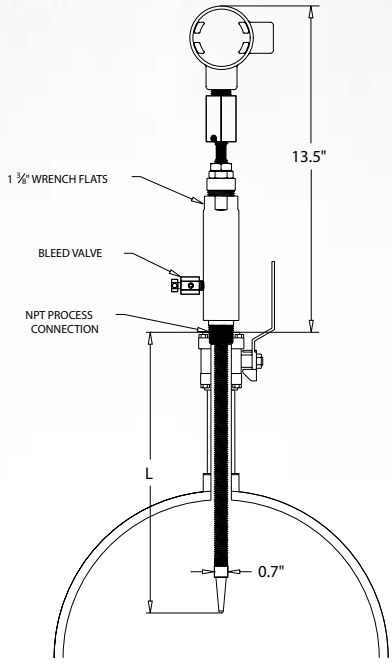

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MADE IN USA

GENIE® 755
Direct Drive Probe™

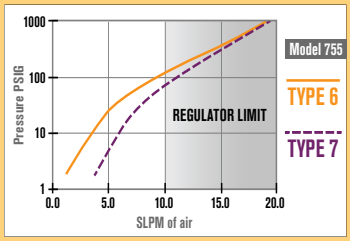
The safest and most versatile membrane tip probe regulator available on the market

Liquid carryover from the pipeline into the sample system should be prevented when sampling natural gas as it can directly impact the analysis and damage the analyzer. Genie® Probes™ provide a means to insert Genie® Membrane Technology™ directly into a pipeline for the purpose of separating unwanted liquid and particulate from the gas sample at flowing conditions; in compliance with industry standards.

The Model 755™ is an adjustable length, membrane tip probe regulator designed to sample transmission quality natural gas. The pressure regulator is built into the probe immediately downstream of the membrane, inside of the pipeline. Heat is transferred from the flowing pipeline gas to the regulator to prevent excessive Joule-Thomson cooling, helping to prevent condensation during pressure letdown.

This model can be inserted and extracted from a pressurized line through a full opening valve without the use of a special insertion device. It is important to note that some applications will require additional heat to be applied before pressure regulation, and possibly multiple stages of pressure reduction. Contact us for assistance in determining heating and pressure regulation requirements.

Technical Specifications

Maximum Pressure Rating	**NPT:** 3,750 psig (258.6 barg)
Temperature Ranges	**Type 6 membranes:** -35°F (-37°C) to 185°F (85°C) ***Type 7 membrane:** Up to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port Sizes	**Outlet:** 1/4" female NPT **Auxillary:** 1/8" female NPT (plugged from factory)
Probe Lengths	**L:** 8", 12", 18", 24", 36", 48" **A:** ~ 20", 24", 30", 36", 48", 60" (refer to L & A dimensions on back)
Outlet Pressure Range psig (barg)	0-10 (0-0.7), 0-25 (0-1.7), 0-50 (0-3.4), 0-100 (0-6.9), 0-250 (0-17.2), 0-500 (0-35.4)
Process Connection Requirement	3/4", 1" or 1.5" NPT full opening threaded or flanged valve Ball, gate and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 3/4". 1" NPT or larger process connection required for seal welding.
Wetted Materials For Silcotek™ coatings, contact the factory.	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant and Kevlar® threaded bushing **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Regulator seat material:** PFA **Membrane:** inert
Maximum Recommended Flow Rate Dependant on source pressure. See chart.	

Product Brief

Applications
- Continuous gas sampling and pressure regulation of transmission quality natural gas and various types of refinery and petrochemical gases
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- Protection of the sample system from liquid and particulate contaminants while maintaining sample integrity
- Flowing pipeline gas helps to offset temperature changes at regulation point
- Easy, quick, and safe insertion and extraction from pressurized systems without a special insertion device
- Velocity tested by CEESI flow lab up to 200 ft/sec
- API, GPA & ISO standard compliance

Features
- Unique, one piece body with Genie® Membrane Technology™
- Analytically Correct™ design
- Adjustable length
- Antifriction internal thread die
- Optional speed wrench for faster installation

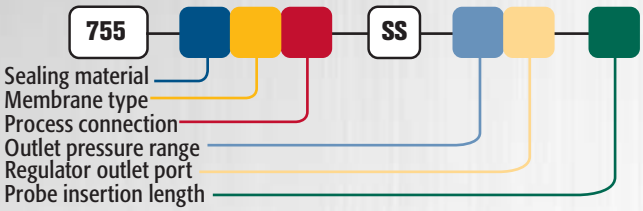
A+ Corporation

Model Numbering & Additional Part Numbers

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

Sealing material	0 = Neoprene rubber	J = RGD resistant HNBR (other materials available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids	
Process connection	3 = 3/4" NPT	4 = 1" NPT 6 = 1.5" NPT
Outlet pressure range (psig)	00 = 0-25	01 = 0-50 02 = 0-100 03 = 0-250 P4 = 0-500 09 = 0-10
Regulator outlet port	1 = 1/4" MNPT to 1/8" tube connector	4 = 1/4"FNPT
Probe insertion length (L)	8, 12, 18, 24, 36, 48 inches	

How to build the model number:

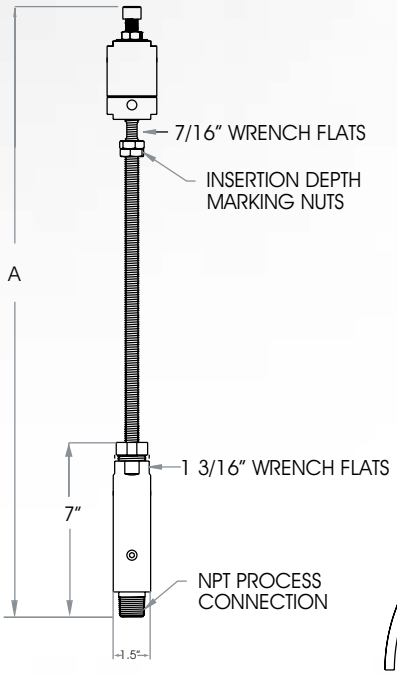


Spare Parts & Accessories (sold separately)

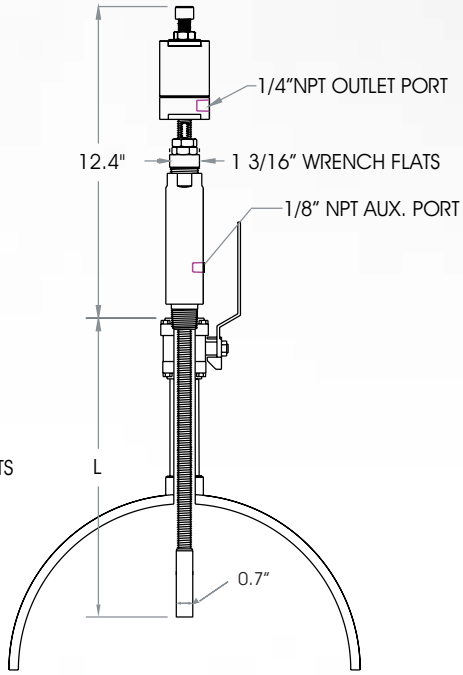
- Sealing material replacement (packing gland)
  Part # 75X-570 for PTFE/Neoprene rubber
  Part # 75X-5J0 for RGD resistant HNBR
- Complete membrane assembly replacement
  Part # 75X-CMA-506 (contains 1 complete assembly)
- Regulator seat cartridge assembly replacement- Part # 755-7_1SS
  (Use for serial #48766 and greater. Contact factory for others.)
- Speed Wrench for faster installation- Part # ACC-SW
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie Probe Regulator Accessory Manifold product sheet
- KOZY insulated probe and valve covers- for ordering information, refer to the KOZY Assemblies product sheet

Dimensions

Uninstalled



Installed



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MADE IN USA

GENIE® 760
Direct Drive Probe™

The safest and most versatile non-membrane tip probes available on the market!

The Direct Drive™ Model 760 is an adjustable length probe without a membrane tip. It can be used to sample liquids, gases that do not require a membrane or contain more entrained liquid than a membrane can handle, or high temperature gases. The 760 can be safely inserted into pressurized sources up to 3750 PSIG. Unlike other competitive insertion probes that require brute physical force or hydraulics applied to the backside of the probe for insertion, this probe is easily installed through a full port valve using either an open end or speed wrench.

The 760 probe is offered with optional coatings from Silcotek™. The Model 760 can be mounted vertically or horizontally, and its installation process is simple and straight forward. Many features of the 760 combine to make it the safest, most durable probe available on the market. It's unique, one-piece body design with double mechanical safety interlocks to prevent the probe from self-retracting under any failure scenario. A thread die cleans the probe's threads to ensure proper engagement with mating parts, providing for a smooth retraction even after extended periods of service. A Genie® 133 Probe Assembly option is available for gas sampling applications where a membrane tipped probe cannot be used. This simple assembly includes a Genie® Supreme Model 133 Membrane Separator™ mounted onto the outlet of a Direct Drive™ Model 760. See Genie® 133 literature for details.

Technical Specifications

Maximum Pressure Rating	**NPT:** 3,750 psig (258.6 barg)
Temperature Range	-40 °F (-40 °C) to 300 °F (149 °C) Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port Sizes	**Outlet:** 1/4" FNPT **Auxiliary:** 1/8" female NPT (plugged from factory)
Probe Lengths For other lengths contact the factory.	**L:** 8", 12", 18", 24", 36", 48" Refer to dimensions on back.
Process Connection Requirements	3/4", 1" or 1.5" NPT full opening threaded or flanged valve Ball, gate and double block and bleed valves are all suitable for use as long as their inner diameter is not less than 3/4". 1" NPT or larger process connection required for seal welding.
Wetted Materials For Silcotek™ coatings, contact the factory.	***Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant and Kevlar® threaded bushing **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined * Other materials available on request.

Product Brief

Applications
- Spot, composite, or continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining
- Gas sampling of mixtures containing less than 30% hydrogen

Benefits
- Easy, quick, and safe insertion and extraction from pressurized systems without a special insertion device
- Horizontal or vertical mounting
- Probe design prevents harmonic oscillations from occurring
- Long service life
- Easy maintenance in the field

Features
- Unique, one piece body design
- Adjustable length
- Antifriction internal thread die
- Non-rigid probe connection/seal provides mechanical dampering between probe and probe base
- Speed wrench for faster installation

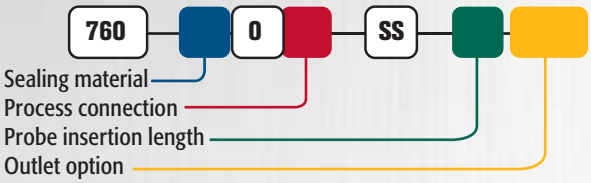
A+ Corporation

Model Numbering & Additional Part Numbers

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

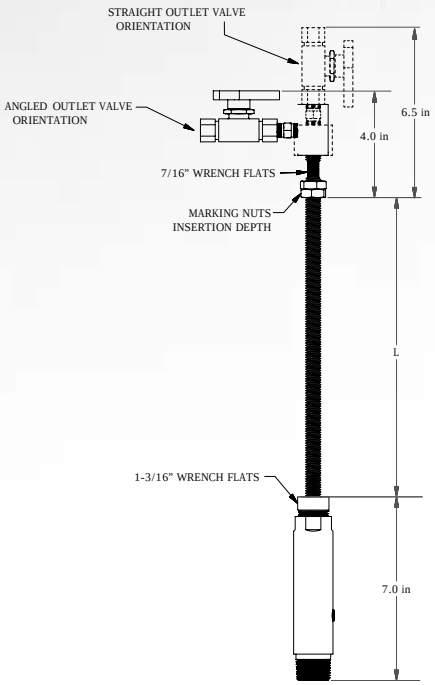
Sealing material	J9 = RGD resistant HNBR (Typically used with liquefied gases) 0 = Neoprene rubber	(other materials available upon request)
Process connection	3 = 3/4" NPT	4 = 1" NPT 6 = 1.5" NPT
Probe insertion length	8, 12, 18, 24, 36, 48 inches	
Outlet option	Blank = Angled, with valve V = Straight, with valve	NV = Angled, no valve VNV = Straight, no valve (133PA option)
Sealing material replacement (Packing Gland)	Part # 760-5J90 for RGD resistant HNBR	Part # 760-570 for PTFE/Neoprene rubber (sold separately)
Speed wrench	Part # ACC-SW (sold separately)	
Optional gauge	Part # ACC- Q14KC (0-4,000 psig, sold separately)	

How to build the model number:

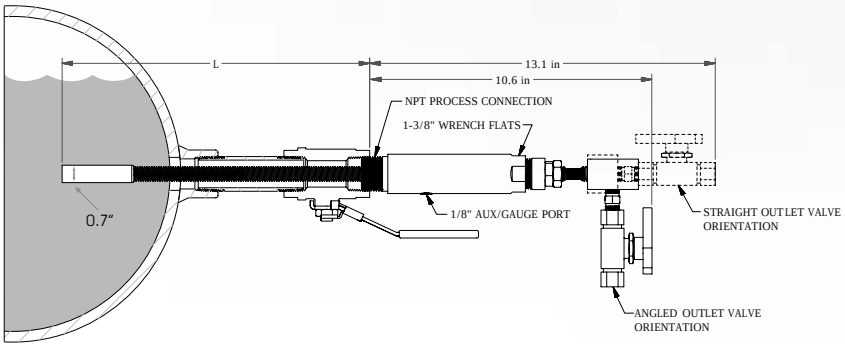


Dimensions

Uninstalled



Installed



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MADE IN USA

GENIE®
Pressure Regulator

An Analytically Correct™ single stage pressure regulator specifically designed for gas sampling applications!

The Model GR™ Genie® Pressure Regulator is a single stage pressure regulator designed specifically for use in gas analyzer sample conditioning systems. Its stainless steel housing contains a piston style sensing element, increasing reliability and eliminating the chance for diaphragm rupture. Additionally, the low internal volume and unique interior design allow it to purge quickly.

It is important to note that some applications will require additional heat to be applied before pressure regulation, and possibly multiple stages of pressure reduction. For assistance in determining heating and pressure regulation requirements, please contact A+ Corporation or your local A+ distributor.

Note: A retrofit heater upgrade kit is available for the GR if it is determined that heat needs to be applied to a standard GR regulator after it has been installed in the field. If you know that your application needs heat when your order is placed, then you should order the Model GHR.

Technical Specifications

Maximum pressure rating	6000 psig (413.7 barg)
Temperature range	-40°F (-40°C) to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port sizes	1/4" female NPT
C_v coefficient	0.023
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg), 0-250 psig (0-17.2 barg), 0-500 psig (34.5 barg)
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Regulator seat material:** PFA **Sealing material:** User defined

Product Brief

Applications
- Gas analyzer sample systems in any process industry requiring pressure regulation
- Second stage for probe regulator

Benefits
- No chance of diaphragm rupture
- Easy to mount in small enclosures or tightly spaced cabinets
- Economical

Features
- Small, compact stainless steel housing
- Piston style sensing element
- CRN approved
- Heater upgrade retrofit kit available

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Model Numbering & Additional Part Numbers

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

Sealing material	0 = Fluoroelastomer			JW = RGD resistant HNBR	*(other materials available upon request)*		
Outlet pressure range (psig)	0 = 0-25	1 = 0-50	2 = 0-100	3 = 0-250	4 = 0-500	9 = 0-10	

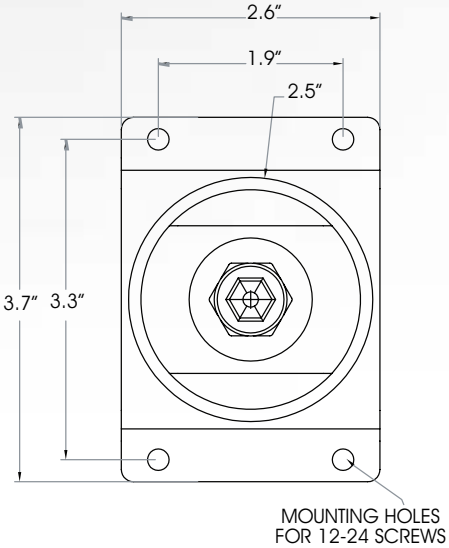
How to build the model number:

Spare Parts & Accessories (sold separately)

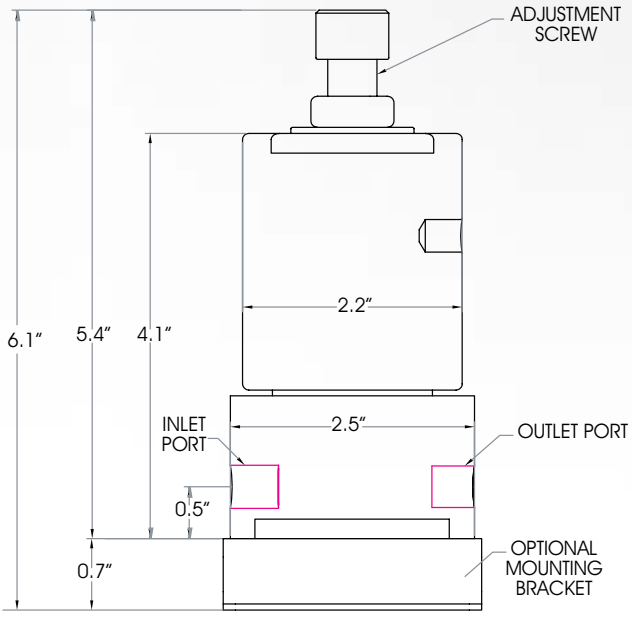
- Model GR Mounting Bracket - Part # GR-509-SS
- Kozy Insulated Cover - Part # KZ-10-L
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet
- Inlet filter replacement - Part # GR-5FSS
- Seat & Seal replacement kit - Seat, Valve Stem, Bias Spring & O-Rings

Dimensions

Top View



Side View



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MADE IN USA

GENIE® GHR
Heated Regulator

Controller Option

Heater Block Option

A single-stage heated regulator with robust heat transfer technology!

The Model GHR™ is a single stage heated pressure regulator designed specifically for use in gas analytical systems. The GHR™ prevents condensation of the sample gas from occurring as a result of Joule-Thomson (JT) cooling during the pressure reduction process of high pressure and high dew point gases or due to low operating or ambient temperature conditions.

The GHR™ is designed with a long, spiral flow path including pre and post regulation heat exchangers that provide efficient heat transfer which preserves sample integrity. The first heat exchanger preheats the gas sample above its dew point temperature; preventing condensation during pressure reduction. The second heat exchanger warms the gas sample after pressure reduction; preventing condensation as the gas enters the sample transport system.

The GHR™ can be heated using either an electrical cartridge heater with proportional temperature controller or a self-limiting block heater. Both have specific benefits and require a direct power connection. The proportional temperature controller allows for precise temperature control using a digital temperature readout and is protected with a backup thermal cutoff. The self-limiting block heater provides a simple and reliable option that prevents temperature overload and is designed to be mounted in small enclosures or densely populated cabinets.

Technical Specifications

Maximum pressure rating	6000 psig (413.7 barg) per criteria of ANSI/ASME B31.3
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg), 0-250 psig (0-17.2 barg), 0-500 psig (34.5 barg)
Temperature range * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	***Ambient:** GHR (CSA): -40 to 300°F (-40 to 149°C) 901-GR: 0 to 145°F (-18 to 63°C) GHR (ATEX): -40 to 140°F (-40 to 60°C)
	***Process (all models):** -40°F to 300°F (-40°F to 149°C)
	901-GR controller: 95 to 300°F (35 to 149°C) set at 300°F (149°C); backup thermal cutoff opens at 338°F (170°C)
Port sizes	1/4" FNPT
Cv Coefficient	0.023
Maximum flow rate	~10 SLM - Standard Liters per Minute (consider heat transfer limitations)
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Regulator seat material:** PFA **Seals:** User defined
Electrical connection	**Conduit (CSA):** GHR: 1/2" FNPT 901-GR: 3/4" FNPT **Cable OD (ATEX/IECEx):** 3/8" (10mm)
Power requirements	GHR: 80W @110/220 VAC or 25W @ 24 VDC 901-GR: 200 W @ 110 VAC or 700 W @ 240 VAC
Electrical approval	**CSA:** Class 1, Division 1, Groups B, C, & D; T3 **ATEX/IECEx (Model GHR only):** II2G Ex db IIC T3

Product Brief

Applications

- Continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining

Not for use with Hydrogen, Helium or Neon

Benefits

- Presents condensation
  - Preserves sample integrity
  - Reduces regulator freeze-ups
- Low internal volume assists with faster response time

Features

- Quick purging, low volume design
- Piston pressure sensing element
- Pre and post regulation heat exchangers
- 20 micron inlet filter
- Two heating method options:
  - Cartridge heater with proportional temperature controller
  - Self-limiting block heater

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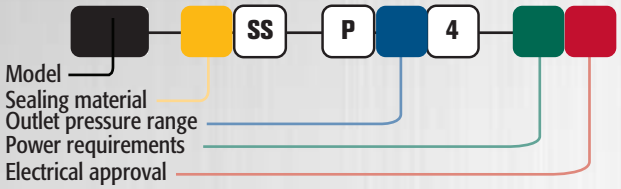
Model Numbering & Additional Part Numbers

Your model number is determined by your specific needs. Materials of construction must be compatible with process fluid.

Model	GHR = GR with self-limiting block heater					901-GR = GR with temperature controller	
Sealing material	0 = Fluoroelastomer				JW = RGD resistant HNBR		(other materials available upon request)
Outlet pressure range (psig)	0 = 0-25	1 = 0-50	2 = 0-100	3 = 0-250	4 = 0-500	9 = 0-10	
Power requirements	1= AC power		2 = DC power (not available in Model 901-GR)				
Electrical approval	C = CSA			A = ATEX/IECEx (not available in Model 901-GR)			

How to build the model number:



How to build the heater block replacement model number:

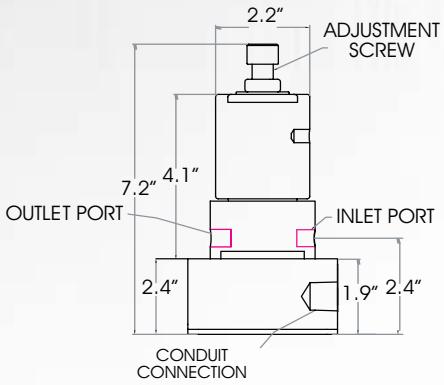
Spare Parts & Accessories (sold separately)

- Kozy™ Insulated Cover - Part # KZ-10-L (not for enclosures)
- 901 Heater Base & Controller Replacement - Part # 901-00-SS
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet
- Inlet filter replacement - Part # GHR-5FSS
- Seat & Seal replacement kit - Seat, Valve Stem, Bias Spring & O-Rings

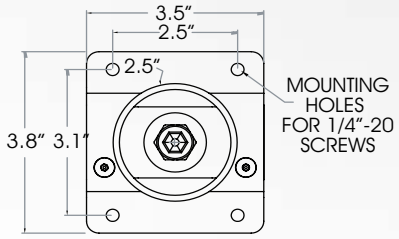
Dimensions

GHR

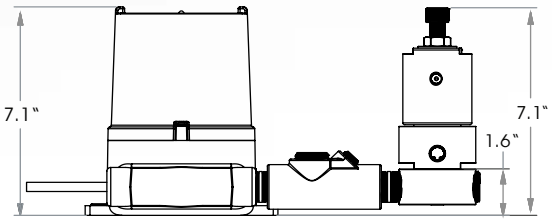
Side View

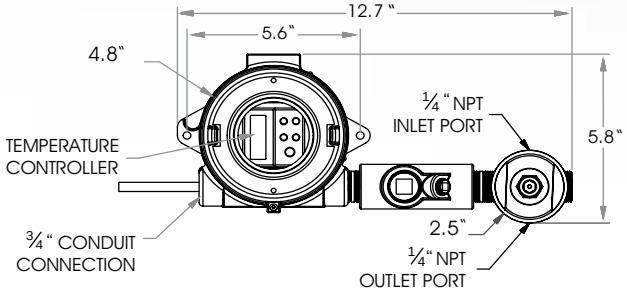


Top View



901-GR





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GENIE® JTR
Joule-Thomson Regulator

A four stage pressure regulator designed to provide a stable outlet pressure, even through large swings in inlet pressure!

The Genie® Model JTR™ is a revolutionary product containing four stages of pressure regulation in one stainless steel housing, specifically designed for gas analytical systems. Gone are the days of having to purchase multiple pressure regulators and manifold them together in series!

The pressure regulation stages of the JTR™ employ a multi-piston design. The first three stages are ratio controlled and the fourth stage is user adjustable. The advantage of the ratio controlled piston design is that it ensures the first three stages are always functional, even when the inlet supply pressure fluctuates. No more headaches of having to constantly readjust the set pressure of each stage.

Having multiple stages of pressure regulation helps to prevent condensation of the sample gas by compensating for the large amount of Joule-Thomson cooling that is experienced with a single stage regulator. Preventing condensation of the sample gas has many benefits such as reducing regulator freeze-ups, preserving sample integrity, and minimizing analyzer down time and maintenance cost.

Unlike traditional single stage regulators, the JTR™ has the ability to autocorrect the outlet pressure during inlet pressure swings up to 5700 PSI. Inlet pressure swings commonly occur at natural gas storage facilities and during the use of calibration gas cylinders, making the JTR™ the regulator of choice for these applications.

It is important to note that some applications will require additional heat to be applied before pressure regulation. For assistance in determining heating and pressure regulation requirements, please contact A+ Corporation or your local A+ distributor.

Note: A retrofit heater upgrade kit is available for the JTR if it is determined that heat needs to applied to a standard JTR regulator after it has been installed in the field. If you know that your application needs heat when your order is placed, then you should order the Model JTR-H.

Technical Specifications

Operating pressure range	300 psig (20.7 barg) to 6,000 psig (413.7 barg)
Temperature range	-40°F (-40°C) to 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Port sizes	1/4" female NPT
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg), 0-250 psig (0-17.2 barg), 0-500 psig (34.5 barg)
C_v coefficient	0.009
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Regulator Seat material:** PFA **Seals:** User defined

Product Brief

Applications
- Multi-stage pressure regulation for gas analytical systems in any process industry
  - High pressure sources
  - Natural gas storage facilities
  - Calibration gas cylinders

Benefits
- Eliminates the need for multiple regulators in series - reducing cost, space, and set up time
- No need to constantly adjust the set pressure of each stage
- Minimizes the chance of condensation thereby reducing regulator freeze-ups, preserving sample integrity, and minimizing analyzer down time and maintenance cost
- Auto-corrects outlet pressure during inlet pressure swings of up to 5700 PSI

Features
- Four stages of pressure regulation in one stainless steel housing
  - First three pressure stages are ratio controlled
  - User adjustable fourth stage
- Piston pressure sensing elements
- Heater upgrade retrofit kit available

A+ Corporation

Model Numbering & Additional Part Numbers

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

Sealing material	0 = Fluoroelastomer		JW = RGD Resistant HNBR				*(other materials available upon request)*
Outlet pressure range (psig)	0 = 0-25	1 = 0-50	2 = 0-100	3 = 0-250	4 = 0-500	9 = 0-10	

How to build the model number:

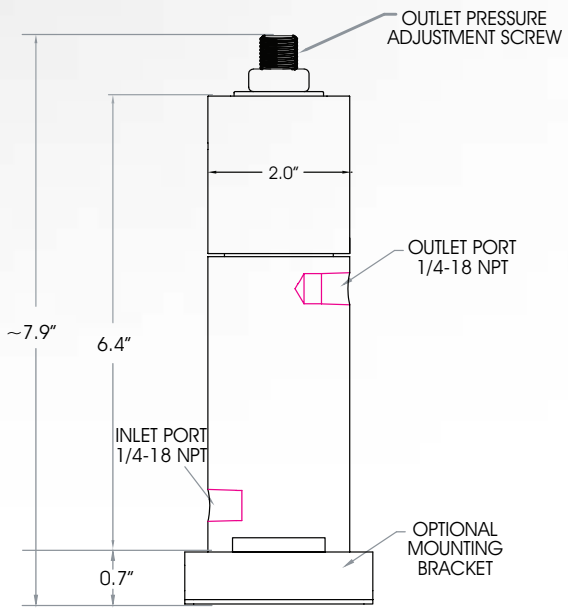
How to build the seal replacement model number:

Spare Parts & Accessories (sold separately)

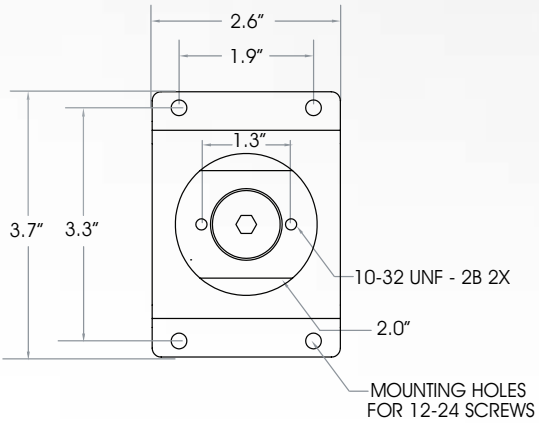
- Optional Mounting Bracket - Part # JTR-509SS
- Kozy Insulated Cover - Part # KZ-10-L
- Inlet filter replacement - Part # JTR-5FSS
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet

Dimensions

Side View



Top View



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MADE IN USA

GENIE® JTR-H

Joule-Thomson Heated Regulator

Controller Option

Heater Block Option

The four-stage regulator not effected by supply pressure changes!

The Model JTR-H™ is a revolutionary product containing four stages of heated pressure regulation in one 316 stainless steel housing. The design of the JTR-H™ separates it from current multi-stage heated regulators that are typically limited to two stages. Specifically designed for gas analytical systems, the JTR-H™ prevents condensation of the sample gas from occurring as a result of Joule-Thomson (JT) cooling during the pressure reduction process of high pressure and high dew point gases or due to low operating or ambient temperatures.

The first three stages of the JTR-H™ reduce pressure by a set ratio and the fourth stage is user adjustable. This ensures that all stages remain functional and give the JTR-H™ the ability to auto correct and maintain its outlet pressure during inlet pressure swings up to 5700 PSI. Inlet pressure swings commonly occur at natural gas storage facilities, making the JTR-H™ the regulator of choice for these applications.

The need for the JTR-H™ is best illustrated by referencing the natural gas phase diagram below. For this particular gas composition, the only regulator capable of preventing condensation and complying with the API 14.1 requirement of maintaining the sample 30°F above the hydrocarbon dew point is the JTR-H™.

The JTR-H™ can be heated using either an electrical cartridge heater with proportional temperature controller or a self-limiting block heater; both of which require a direct power connection. The proportional temperature controller allows for precise temperature control using a digital temperature readout and is protected with a backup thermal cutoff. The self-limiting block heater provides a simple and reliable option that prevents temperature overload and is designed to be mounted in small enclosures or densely populated cabinets.

Technical Specifications

Maximum pressure rating	300 - 6000 psig (20.7 - 413.7 barg) per criteria of ANSI/ASME B31.3
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg), 0-250 psig (0-17.2 barg), 0-500 psig (34.5 barg)
Temperature range * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.	***Ambient:** JTR-H (CSA): -40 to 302°F (-40 to 150°C) 901-JTR: 0 to 145°F (-18 to 63°C) JTR-H (ATEX): -40 to 140°F (-40 to 60°C) ***Process (all models):** -40°F (-40°C) to 300°F (149°C) **901-JTR controller:** 95 to 300°F (35 to 149°C) set at 300°F (149°C); backup thermal cutoff opens at 338°F (170°C)
Port sizes	1/4" female NPT
Cv Coefficient	0.009
Maximum flow rate	~10 SLM (consider heat transfer limitations)
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Regulator seat material:** PFA **Seals:** User Defined
Electrical connection	**Conduit (CSA):** JTR-H: 1/2" female NPT 901-JTR: 3/4" female NPT **Cable OD (ATEX/IECEx):** 3/8" (10mm)
Power requirements	JTR-H: 110/220 VAC, 80W or 24 VDC, 25W 901-JTR: 200 W @ 110 VAC or 700 W @ 240 VAC
Electrical approval	**CSA:** Class 1, Division 1, Groups B, C, & D; T3 **ATEX/IECEx (Model JTR-H only):** II2G Ex db IIC T3

Product Brief

Applications

- Continuous gas sampling in any process industry including natural gas, petrochemical, and oil refining

Not for use with Hydrogen, Helium or Neon

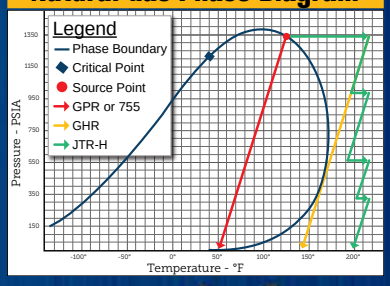
Benefits

- Prevents condensation:
  - Preserves sample integrity
  - Reduces regulator freeze-ups
- Eliminates the need for multiple regulators in series
- Maintains outlet pressure during large inlet pressure swings

Features

- Patented multi-stage design
- Preset, ratio controlled stages with user adjusted final stage
- Two heating method options
  - Cartridge heater with proportional temperature controller
  - Self-limiting block heater

Natural Gas Phase Diagram



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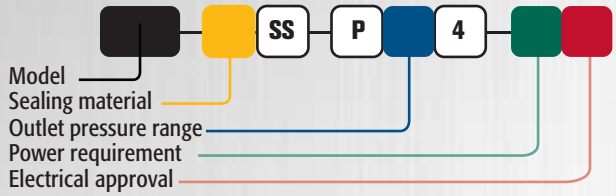
Model Numbering & Additional Part Numbers

Your model number is determined by your specific needs. Materials of construction must be compatible with process fluid.

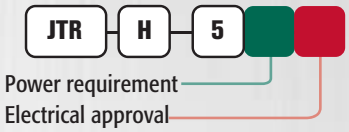
Model	JTR-H = JTR with self-limiting block heater	901-JTR = JTR with temperature controller
Sealing material	0 = Fluoroelastomer	JW = RGD resistant HNBR *(other materials available upon request)*
Outlet pressure range (psig)	0 = 0-25	1 = 0-50 2 = 0-100 3 = 0-250 4 = 0-500 9 = 0-10
Power requirement	1 = AC power	2 = DC power (not available in Model 901-JTR)
Electrical approval	C = CSA	A = ATEX/IECEx (not available in Model 901-JTR)

How to build the model number:



How to build the seal replacement kit model number:

How to build the heater replacement kit part number:



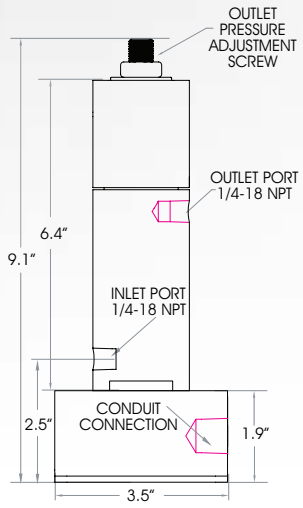
Spare Parts & Accessories (sold separately)

- Kozy Insulated Cover - Part # KZ-10-L (not for enclosures)
- 901 Heater Base & Controller Replacement - Part # 901-00-SS
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet
- Inlet filter replacement - Part # JTR-5FSS
- Seat & Seal replacement kit - Seat, Valve Stem, Bias Spring & O-Rings

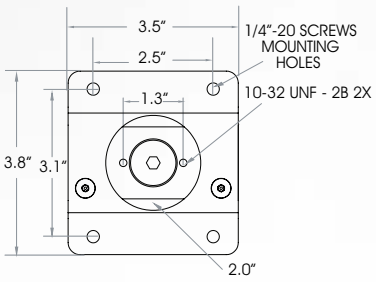
Dimensions

JTR-H

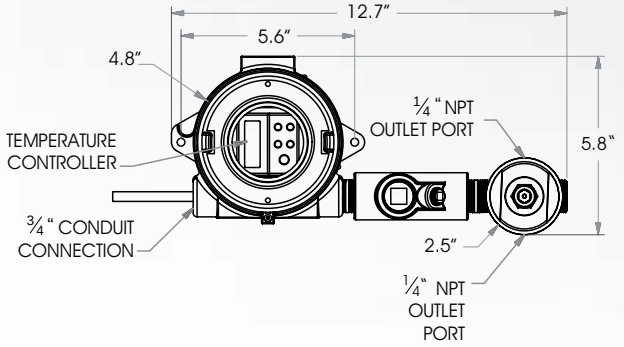
Side View

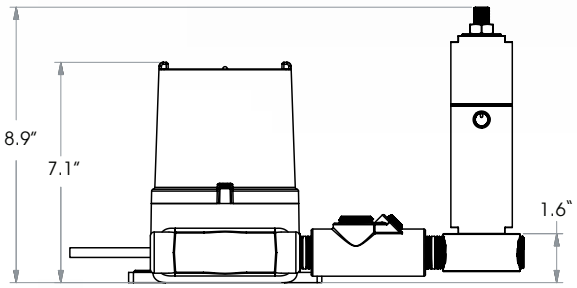


Top View



901-JTR





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AVENGER™ 33

Particulate & Coalescing Filter

High performance filters providing the utmost flexibility for coalescing/particulate filtration needs!

The Avenger™ 30 Series Filters provide sample conditioning and analyzer protection by using a disposable filter element to remove solids and liquid droplets from gas sample streams. Genie® Membrane Technology™ with Liquid Block™ can be added as an option to the 30 Series filters, in addition to the disposable filter element. The use of Genie® Membrane Technology™ in these filters will remove 100% of entrained liquid, including aerosols, from the sample stream. The Liquid Block™ will completely valve off flow through the membrane to prevent liquid break-through from occurring in the presence of excess liquid. The Avenger™ 30 Series sample filters are easy to install and maintain, especially in heated, densely populated cabinets. The uniquely designed filter housing allows service to the filter element/membrane by simply removing the bowl without disassembly of the fittings.

The Avenger™ Model 33 is the same size as the Model 33M. Unlike the Model 33M, the Model 33 does not include Genie® Membrane Technology™ or Liquid Block™. If either of these features are desired, the Model 33M should be selected. When compared to the Models 38 and 38M, the Model 33 is larger in size and internal volume, making it better suited for applications requiring higher flow rates or containing larger amounts of contaminants than the Models 38 and 38M can handle. In addition to gas sampling applications, the Model 33 can also be used as a particulate filter in liquid sampling applications.

Technical Specifications

Maximum pressure rating	1,000 psig (68.9 barg)
Maximum temperature	300˚F (149˚C) *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Flow coefficients, Liquid C_v	Without element 1.9
Element size	**Outside Diameter:** ~ 1.4" **Inside Diameter:** ~ 1.0" **Length:** ~ 2.5"
Port sizes	**Inlet, Outlet, & Bypass:** 1/2" female NPT **Gauge:** 1/4" female NPT
Number of ports	5
Internal volume	200 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined

Product Brief

Applications

- Continuous sampling in any process industry including natural gas, petrochemical, and oil refining
- Coalescing liquid droplets
- Particulate removal from gas and liquid sample streams

Benefits

- Analyzer protection against liquid droplets and micron/submicron size particles
- Quick and easy installation and maintenance
- Multiple porting configurations

Features

- 5 ports
- Horizontal mounting
- All primary connection ports on filter head

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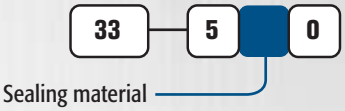
Model Numbering & Additional Part Numbers

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

Sealing material	0 = Fluoroelastomer	1 = Perfluoroelastomer	(other materials available upon request)
Element type	07CFS = 0.1 micron coalescer fluorocarbon	SS10 = 10 micron stainless steel	
Mounting bracket accessory	Part # 33-509SS (sold separately)		

How to build the model number:

How to build the replacement o-ring kit number:

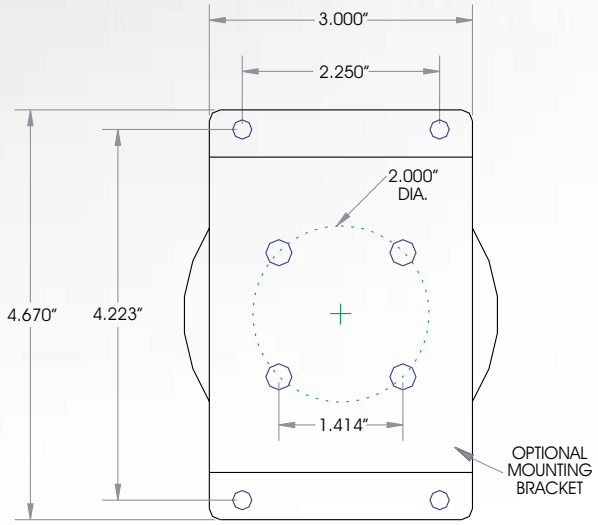


How to build the replacement filter element number:

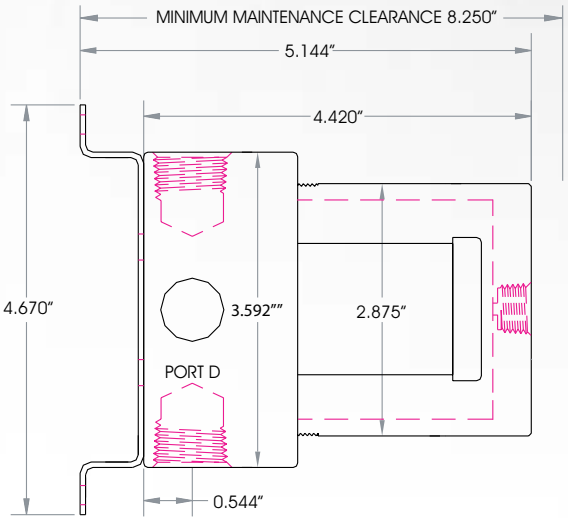
Replacement filter kit contains 5 total. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



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AVENGER™ 33M

Particulate & Coalescing Filter

High performance filters providing the utmost flexibility for coalescing/particulate filtration needs!

The Avenger™ 30M Series Filters provide sample conditioning and analyzer protection by using a disposable filter element to remove solids and liquid droplets from gas sample streams. Genie® Membrane Technology™ with Liquid Block™ can be added as an option to the 30 Series filters, in addition to the disposable filter element. The use of Genie® Membrane Technology™ in these filters will remove 100% of entrained liquid, including aerosols, from the sample stream. The Liquid Block™ will completely valve off flow through the membrane to prevent liquid break-through from occurring in the presence of excess liquid. The Avenger™ 30 Series sample filters are easy to install and maintain, especially in heated, densely populated cabinets. The uniquely designed filter housing allows service to the filter element/membrane by simply removing the bowl without disassembly of the fittings.

The Avenger™ Model 33M is the same size as the Model 33, and contains Genie® Membrane Technology™. The Liquid Block™ is on option for this model. When compared to the Models 38 and 38M, the Model 33M is larger in size and internal volume, making it better suited for applications requiring higher flow rates or containing larger amounts of contaminants than the Models 38 and 38M can handle.

Technical Specifications

Maximum pressure rating	1,000 psig (68.9 barg)
Maximum Liquid Block™ valve auto-reset pressure	85 psig (5.8 barg) Slowly open the supply pressure so that the minimum differential pressure required to shut off the Liquid Block™ is not met or exceeded
Maximum temperatures	**Type 6 membrane:** 185°F (85°C) ***Type 7 membrane:** 300°F (149°C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum Recommended Flow Rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 4.7 SLPM (10 SCFH) **Type 7 Highest Temps:** 13 SLPM (27 SCFH)
Element size	**Outside Diameter:** ~ 1.4" **Inside Diameter:** ~ 1.0" **Length:** ~ 2.5"
Port sizes	**Inlet, Outlet, & Bypass:** 1/2" female NPT **Gauge:** 1/4" female NPT
Number of ports	5
Internal volume	200 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** inert

Product Brief

Applications

- Continuous sampling in any process industry including natural gas, petrochemical, and oil refining
- Coalescing liquid droplets
- Particulate removal from gas sample streams

Benefits

- Analyzer protection against liquid droplets and micron/submicron size particles
- Quick and easy installation and maintenance
- Multiple porting configurations

Features

- Genie® Membrane Technology™
- Liquid Block™
- 5 ports
- Horizontal mounting
- All primary connection ports on filter head

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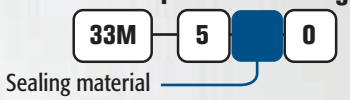
Model Numbering & Additional Part Numbers

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

Sealing material	0 = Fluoroelastomer	1 = Perfluoroelastomer	(other materials available upon request)
Element type	07CFS = 0.1 micron coalescer fluorocarbon	SS10 = 10 micron stainless steel	
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Liquid Block™	Blank = No Liquid Block™	L = Liquid Block™	
Mounting bracket accessory	Part # 33-509SS (sold separately)		

How to build the model number:

How to build the replacement o-ring kit number:



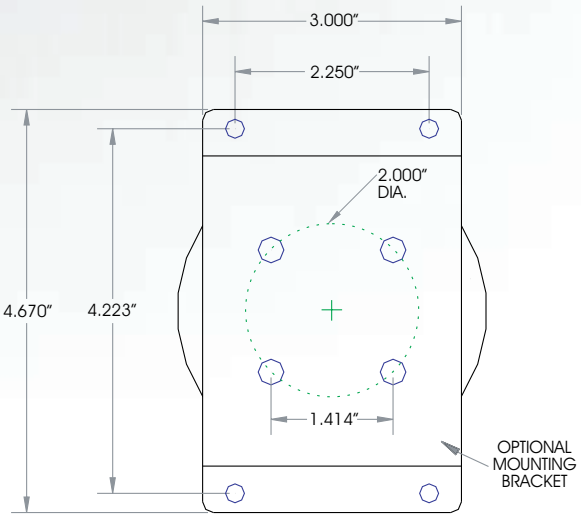
How to build the replacement filter element number:

How to build the replacement membrane kit number:

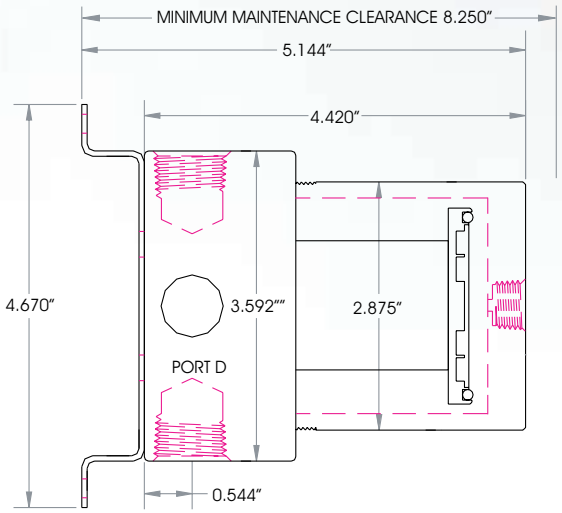
Replacement filter and membrane kits contain 5 each. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



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AVENGER™ 38

Particulate & Coalescing Filter

High performance filters providing the utmost flexibility for coalescing/particulate filtration needs!

The Avenger™ 30 Series Filters provide sample conditioning and analyzer protection by using a disposable filter element to remove solids and liquid droplets from gas sample streams. Genie® Membrane Technology™ with Liquid Block™ can be added as an option to the 30 Series filters, in addition to the disposable filter element. The use of Genie® Membrane Technology™ in these filters will remove 100% of entrained liquid, including aerosols, from the sample stream. The Liquid Block™ will completely valve off flow through the membrane to prevent liquid break-through from occurring in the presence of excess liquid. The Avenger™ 30 Series sample filters are easy to install and maintain, especially in heated, densely populated cabinets. The uniquely designed filter housing allows service to the filter element/ membrane by simply removing the bowl without disassembly of the fittings.

The Avenger™ Model 38 is the same size as the Model 38M. Unlike the Model 38M, the Model 38 does not include Genie® Membrane Technology™ or Liquid Block™. If either of these features are desired, the Model 38M should be selected. When compared to the Models 33 and 33M, the Model 38 is smaller in size and internal volume making it better suited for lower flow applications.

Technical Specifications

Maximum pressure rating	2,000 psig (137.9 barg)
Maximum temperature	300˚F (149˚C) *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Flow coefficients, Liquid C_v	**Without element:** 0.8
Element size	**Outside Diameter:** ~ 1.4″ **Inside Diameter:** ~ 1.0″ **Length:** ~ 2.5″
Port sizes	1/4″ female NPT
Number of ports	5
Internal volume	50 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined

Product Brief

Applications

- Continuous sampling in any process industry including natural gas, petrochemical, and oil refining
- Coalescing liquid droplets
- Particulate removal from gas & liquid sample streams

Benefits

- Analyzer protection against liquid droplets and micron/ submicron size particles
- Quick and easy installation and maintenance
- Multiple porting configurations

Features

- 5 ports
- Horizontal mounting
- All primary connection ports on filter head

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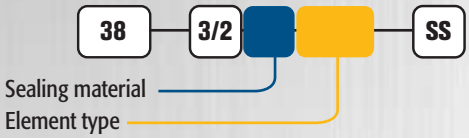
Model Numbering & Additional Part Numbers

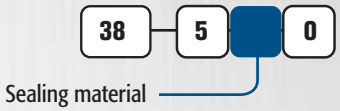
Your model number is determined by your specific needs. Choose options below.

Sealing material	0 = Fluoroelastomer	1 = Perfluoroelastomer	(other materials available upon request)
Element type	07CFS = 0.1 micron coalescer fluorocarbon	SS10 = 10 micron stainless steel	
Mounting bracket accessory	Part # 38-509SS (sold separately)		

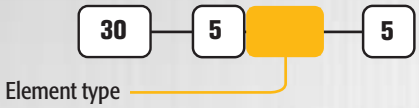
How to build the model number:



How to build the replacement o-ring kit number:



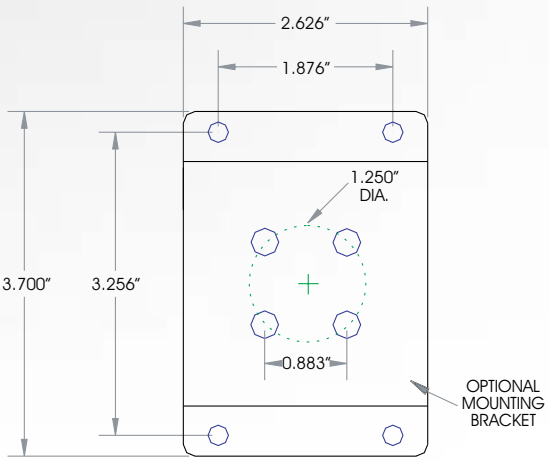
How to build the replacement filter element number:



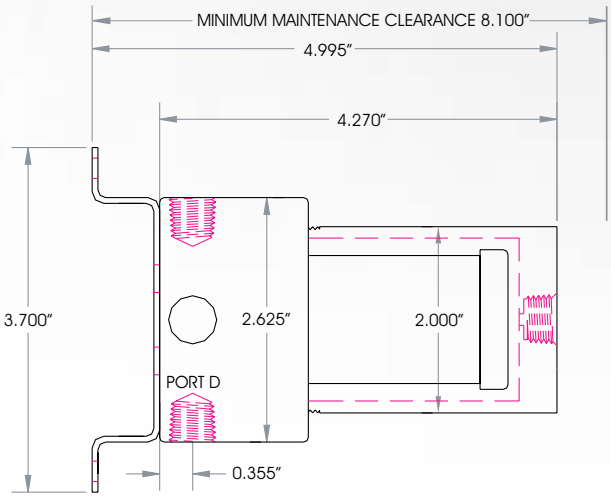
Replacement filter kit contains 5 total. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



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AVENGER™ 38M

Particulate & Coalescing Filter

High performance filters providing the utmost flexibility for coalescing/particulate filtration needs!

The Avenger™ 30M Series Filters provide sample conditioning and analyzer protection by using a disposable filter element to remove solids and liquid droplets from gas sample streams. Genie® Membrane Technology™ with Liquid Block™ can be added as an option to the 30 Series filters, in addition to the disposable filter element. The use of Genie® Membrane Technology™ in these filters will remove 100% of entrained liquid, including aerosols, from the sample stream. The Liquid Block™ will completely valve off flow through the membrane to prevent liquid break-through from occurring in the presence of excess liquid. The Avenger™ 30 Series sample filters are easy to install and maintain, especially in heated, densely populated cabinets. The uniquely designed filter housing allows service to the filter element/membrane by simply removing the bowl without disassembly of the fittings.

The Avenger™ Model 38M is the same size as the Model 38, and contains Genie® Membrane Technology™. The Liquid Block™ is on option for this model. When compared to the Models 33 and 33M, the Model 38M is smaller in size and internal volume making it better suited for lower flow applications.

Technical Specifications

Maximum pressure rating	2,000 psig (137.9 barg)
Maximum Liquid Block™ valve auto-reset pressure	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.
Maximum temperatures	**Type 6 membrane:** 185°F (85°C) ***Type 7 membrane:** 300°F (149°C) *Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum Recommended Flow Rate Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.	**Type 6 Best Rejection:** 0.76 SLPM (1.6 SCFH) **Type 7 Highest Temps:** 4.7 SLPM (10 SCFH)
Element size	**Outside Diameter:** ~ 1.4" **Inside Diameter:** ~ 1.0" **Length:** ~ 2.5"
Port sizes	1/4" female NPT
Number of ports	5
Internal volume	50 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User defined **Membrane:** inert

Product Brief

Applications

- Continuous sampling in any process industry including natural gas, petrochemical, and oil refining
- Coalescing liquid droplets
- Particulate removal from gas sample streams

Benefits

- Analyzer protection against liquid droplets and micron/submicron size particles
- Quick and easy installation and maintenance
- Multiple porting configurations

Features

- Genie® Membrane Technology™
- Liquid Block™
- 5 ports
- Horizontal mounting
- All primary connection ports on filter head

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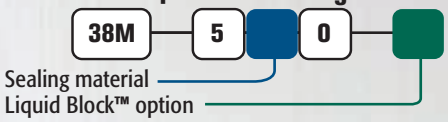
Model Numbering & Additional Part Numbers

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

Sealing material	0 = Fluoroelastomer	1 = Perfluoroelastomer	(other materials available upon request)
Element type	07CFS = 0.1 micron coalescer fluorocarbon	SS10 = 10 micron stainless steel	
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Liquid Block™	Blank = No Liquid Block™	L = Liquid Block™	
Mounting bracket accessory	Part # 38-509SS (sold separately)		

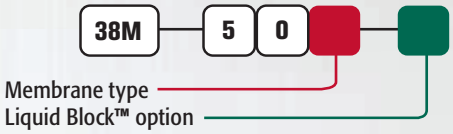
How to build the model number:

How to build the replacement o-ring kit number:



How to build the replacement filter element number:

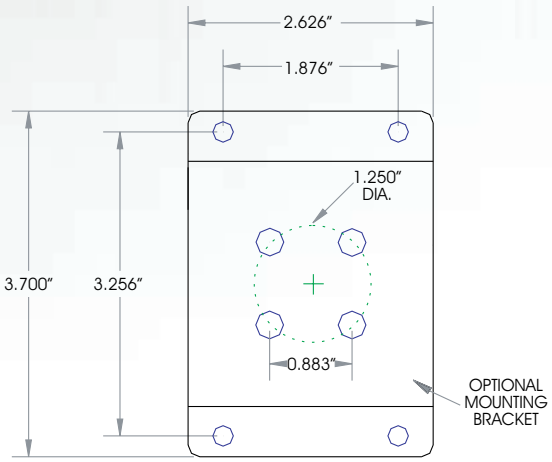
How to build the replacement membrane kit number:



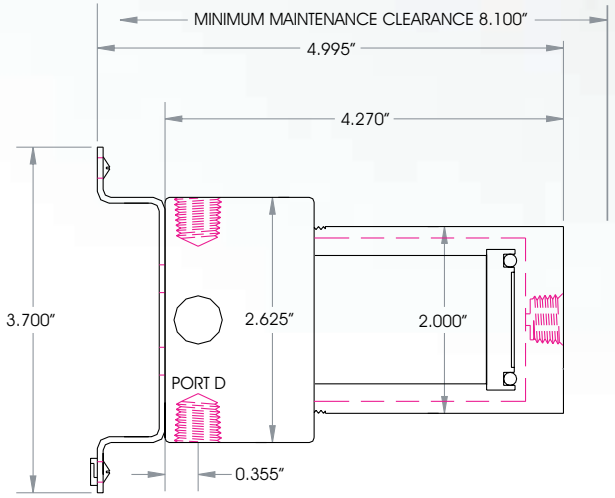
Replacement filter and membrane kits contain 5 each. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



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AVENGER™ 91

Particulate & Coalescing Filter

High performance filters providing the utmost flexibility for coalescing/particulate filtration needs!

The Avenger™ 91 Filters provide the utmost in flexibility for your coalescing and particulate filtration needs. The conventional 3-port model is a direct replacement for competitive vertically mounted sample filters. However, the 5-port model, with its two different porting configurations allows for greater mounting and application flexibility. These filters were specifically designed for analyzer sample conditioning applications by analyzer sample conditioning specialists.

Technical Specifications

Maximum pressure rating	3,750 psig (258.6 barg)
Maximum temperature	300˚F (149˚C) * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Element size	**Outside Diameter:** ~ 0.85" **Inside Diameter:** ~ 0.5" **Length:** ~ 2.3"
Element types	07CFS = coalescer fluorocarbon (99.97%*) 07PI = particulate inorganic (99.97%*) 07PF = particulate fluorocarbon (99.97%*) SS10A = sintered stainless steel (10 micron) SS100A = sintered stainless steel (100 micron) *% of 0.1 micron particles retained
Port sizes	1/4" female NPT
Number of ports	3 or 5
Internal volume	27 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** User Defined

Product Brief

Applications

- Continuous sampling in any process industry including natural gas, petrochemical, and oil refining.
- Analyzer protection against micron and sub-micron particles

Benefits

- Helps preserve sample integrity
- Analyzer protection
- Quick and easy to install and maintain
- Quick and easy element inspection
- Economical
- Flexible installation configuration

Features

- 3 or 5 port configuration
- Can be mounted horizontally or vertically
- All primary connection ports on the head

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Model Numbering & Additional Part Numbers

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

Port configuration*	2/1 = 3 port (2 outer, 1 center) 4/1 = 5 port (4 outer, 1 center) 3/2 = 5 port (3 outer, 2 center)	
Sealing material	0 = Fluoroelastomer 1 = Perfluoroelastomer	*(other materials available upon request)*
Element type**	07CFS = coalescer fluorocarbon (99.97%**) 07PI = particulate inorganic (99.97%**) 07PF = particulate fluorocarbon (99.97%**)	SS10A = sintered stainless steel (10 micron) SS100A = sintered stainless steel (100 micron) XX = no element
Mounting bracket accessory	Vertical part # = 90-509-SS-V	Horizontal part # = 90-509-SS-H

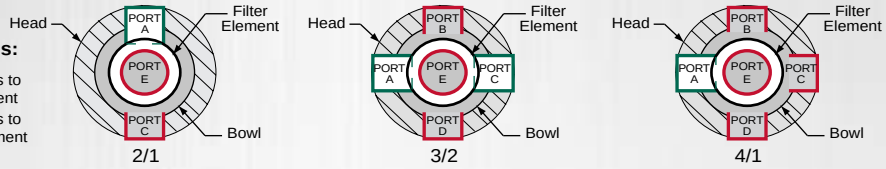
How to build the model number:

**% of 0.1 micron particles retained

How to build the replacement filter element number:

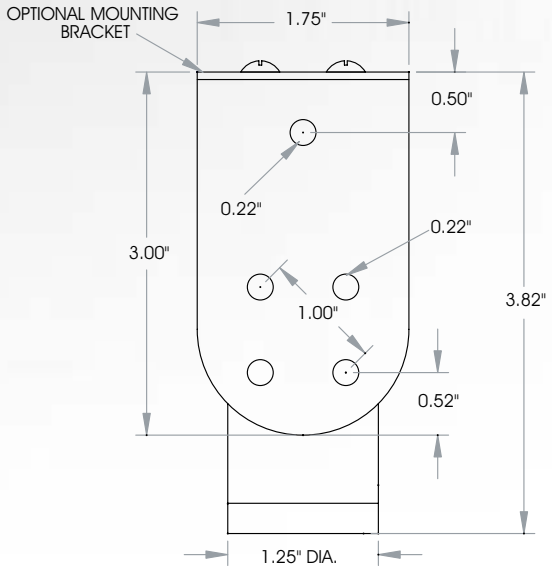
**Port Configurations:*

- Communicates to inside of element
- Communicates to outside of element

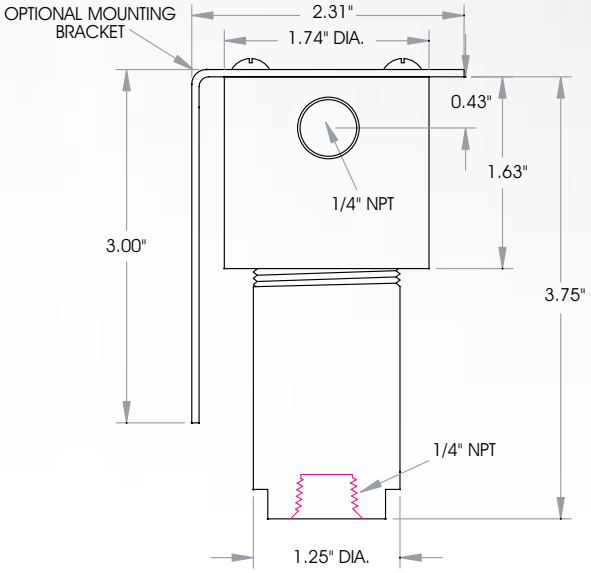


Dimensions

Back View



Side View



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Humidisorb

Providing superior protection for enclosures and equipment against damage from relative humidity!

Moisture and Corrosion Control Packets provide the best protection against damage from relative humidity and corrosion for any enclosure or piece of equipment that is operating, in transit, or in storage. The contents of each packet will not affect or damage non-metal material and can withstand maximum temperatures of 176°F (80°C) and exposure to high humidity without impacting their effectiveness. All packets come with self-adhesive mounting tape, which allows for easy installation into any enclosure, even if the enclosure is frequently opened. They are constructed of a heat-sealed, semi-permeable membrane material filled with Humidisorb, X-Corrode, or Humidisorb Plus X-Corrode, depending on your application needs.

Humidisorb Packets are filled with a self-regenerating desiccant that can absorb and release enormous quantities of moisture from surrounding air without becoming saturated. When first placed in service, a packet of granules will begin rapid absorption of moisture. The packet will absorb at least five to ten times more moisture than the conventional desiccant before coming to equilibrium with the relative humidity (RH) of surrounding air. This will usually take several weeks to occur, even in very humid environments. During periods when the enclosure RH is lower than its long-term average the packet releases moisture in vapor form. The moisture desorption process cannot wet the air above its average RH level. When enclosure RH tends to rise above its average level, the packet absorbs moisture. By absorbing moisture when the RH rises, and releasing some of the vapor phase moisture (regenerating) when the RH drops, the packet maintains a constant RH within the enclosure that is equal to the long-term average humidity.

Normally, these packets do not require replacement. During cycles of absorption and desorption the packet may change back and forth between putty-like and hard states. The packet may become putty-like as the granules absorb moisture and stick together. The granules, having once been putty-like, continue to stick together during periods of desorption; therefore, the packet may feel hard. This is a normal occurrence and will not alter the product's effectiveness.

Humidisorb packets are perfect for use in a typical electrical/electronic enclosure because with the ambient temperature changes inside each enclosure throughout the day, very large swings of RH can occur. Enclosure RH can spike to very high levels for short periods, especially early in the morning when temperatures are generally at their minimum. As the air inside the enclosure cools and contracts, moist external air is drawn into the enclosure. Moisture adsorbs on the cooler surfaces inside the enclosure. When the ambient temperature rises, air within the enclosure expands and is forced out, leaving behind some of the adsorbed moisture. Most of the corrosion and stray electrical currents that occur in enclosures result from daily RH spikes. Humidisorb packets are designed to control the spikes by maintaining a constant, low level of humidity in an enclosure over long periods of time.

Product Brief

Applications

- Electronic and mechanical enclosures
- Transmitter housings
- Equipment cases
- Field mounted equipment
- Stored equipment
- Goods during shipment
- Moisture sensitive products
- Computers
- Paper goods

Benefits

- Economical
- Easy installation
- Helps improve safety of personnel and equipment

Features

- Self-regenerating
- Five to ten times greater moisture absorbing capacity than ordinary desiccants such as silica gel
- Effective in frequently opened enclosures
- Self-adhesive tape included in bag for optional use
- High dielectric strength
- Non-toxic

Model Numbering & Additional Part Numbers

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

Part number	Packet size	Volume protected
HST 2x2[1]	2″ x 2″	200 cubic inches
HST 4x4[1]	4″ x 4″	2 cubic feet
HST 7x13[2]	7″ x 13″	25 cubic feet

1. 2" x 2" and 4" x 4" packets are shipped standard in quantities of 10 units (packets) per poly-zip shipping bag.
2. These are available in multiples of 5 units (packets) only. Prices reflect cost per individual unit (packet).

Packets are supplied with self-adhesive tape unless specified otherwise.

Choosing the Correct Packet

When choosing the correct packet for your particular application, the volume of the enclosure for which you intend to protect must first be calculated by multiplying it's length, width, and height (LxWxH). Different sized packets have a direct relationship to the size of the intended enclosure; thus, the bigger the enclosure, the bigger the packet is needed to protect it.

Once the volume of the enclosure is calculated, use the part number chart above to determine what size packet is needed. Multiple packets may be necessary to properly protect your enclosure.

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sales@geniefilters.com

geniefilters.com
41041 Black Bayou Road, Gonzales, Louisiana 70737

MADE IN USA

Humidisorb+ X-Corrode

Providing protection for enclosures and equipment against damage from relative humidity and corrosion!

Moisture and Corrosion Control Packets provide the best protection against damage from relative humidity and corrosion for any enclosure or piece of equipment that is operating, in transit, or in storage. The contents of each packet will not affect or damage non-metal material and can withstand maximum temperatures of 176°F (80°C) and exposure to high humidity without impacting their effectiveness. All packets come with self-adhesive mounting tape, which allows for easy installation into any enclosure, even if the enclosure is frequently opened. They are constructed of a heat-sealed, semi-permeable membrane material filled with Humidisorb, X-Corrode, or Humidisorb Plus X-Corrode, depending on your application needs. Humidisorb Plus X-Corrode Packets provide moisture and corrosion control in electrical and electronic enclosures.

Humidisorb is a self-regenerating desiccant that can absorb and release enormous quantities of moisture from surrounding air without becoming saturated. When first placed in service, a packet of granules will begin rapid absorption of moisture. The packet will absorb at least five to ten times more moisture than the conventional desiccant before coming to equilibrium with the relative humidity (RH) of surrounding air. This will usually take several weeks to occur, even in very humid environments. During periods when the enclosure RH is lower than its long-term average the packet releases moisture in vapor form. The moisture desorption process cannot wet the air above its average RH level. When enclosure RH tends to rise above its average level, the packet absorbs moisture. By absorbing moisture when the RH rises, and releasing some of the vapor phase moisture (regenerating) when the RH drops, the packet maintains a constant RH within the enclosure that is equal to the long-term average humidity.

X-Corrode provides protection against airborne contaminants that cause corrosion, such as Hydrogen Sulfide (H_2S), Chlorine (Cl_2), and salts. The X-Corrode formula provides a durable passivation on the surface of circuit component metals; other metals, such as aluminum and steel that may be present in an enclosure, are also passivated, but to a smaller degree. Tests have shown that once a metal surface was initially passivated by X-Corrode, the packet could be removed with corrosion protection remaining for weeks after. This means that frequently opened enclosures are also well protected by the X-Corrode packet.

The mixture of the desiccant and corrosion inhibitor has three distinct advantages over use of the individual Humidisorb and X-Corrode packets. First, it is easier to stock and install a single packet instead of two. Second, it costs less than the combined cost of a Humidisorb packet and X-Corrode packet. And third, its life span is substantially longer than that of the X-Corrode packet alone. The Humidisorb granule portion of the mixture does not need to be replaced. The life span of the X-Corrode granules is greatly extended (from typically two years to approximately 10 years) due to its encapsulation by the Humidisorb granules after the packet has been exposed to moisture.

Product Brief

Applications
- Electronic and mechanical enclosures
- Transmitter housings
- Equipment cases
- Field mounted equipment
- Stored equipment
- Goods during shipment
- Moisture sensitive products
- Computers
- Paper goods

Benefits
- Economical
- Easy installation
- Helps improve safety of personnel and equipment

Features
- Self-regenerating
- Five to ten times greater moisture absorbing capacity than ordinary desiccants such as silica gel
- Effective in frequently opened enclosures
- Self-adhesive tape included in bag for optional use
- High dielectric strength
- Non-toxic

Model Numbering & Additional Part Numbers

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

Part number	Packet size	Volume protected
HXC 2x2[1]	2″ x 2″	200 cubic inches
HXC 4x4[1]	4″ x 4″	2 cubic feet
HXC 7x13[2]	7″ x 13″	25 cubic feet

1. 2" x 2" and 4" x 4" packets are shipped standard in quantities of 10 units (packets) per poly-zip shipping bag.
2. These are available in multiples of 5 units (packets) only. Prices reflect cost per individual unit (packet).

Packets are supplied with self-adhesive tape unless specified otherwise.

Choosing the Correct Packet

When choosing the correct packet for your particular application, the volume of the enclosure for which you intend to protect must first be calculated by multiplying it's length, width, and height (LxWxH). Different sized packets have a direct relationship to the size of the intended enclosure; thus, the bigger the enclosure, the bigger the packet is needed to protect it.

Once the volume of the enclosure is calculated, use the part number chart above to determine what size packet is needed. Multiple packets may be necessary to properly protect your enclosure.

A+ Corporation

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Tornado™ 602
Self Cleaning Filters

Highly efficient, self-cleaning liquid bypass filters!

The Tornado Model 602 is a continuously self-cleaning filter that protects analyzers from particulate in liquid samples. In normal operation, components of interest flow through the Tornado's element to the analyzer. Contaminants are shed by the element and removed through the Bypass port. The G.U.T.S.™ (Genie® Ultimate Thermoplastic Seal) gasket is an excellent alternative to expensive elastomers. It withstands radical temperature cycles without leaks due to its ability to maintain a bubble-tight seal even when thermocycled repeatedly from 0-300 °F. The multi-layer filter media consists of the support screen and flow screen. This results in more efficiency and easier installation and handling. The elements are self-cleaned by the flow of sample across them. The self-cleaning action is best when the bypass flow rate is maximized, the outlet flow rate minimized, and variations in element rating are tried.

Technical Specifications

Maximum pressure rating	1,500 psig (103.4 barg)
Maximum temperature For higher temperatures, contact the factory.	300 ºF (149 ºC)
Bypass flow rate	Maximize for best performance **Minimum:** 1.5 gal/min
Port sizes	Inlet, Outlet, & Bypass 1/2" female NPT
Internal volume	70 cc
Wetted materials	**Machined parts:** 316/316L stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** Kynar®

Product Brief

Applications
- Continuous liquid sampling in any process industry including natural gas, petrochemical, and oil refining
- Analyzer protection against particulate
- Liquid sample pre-conditioning

Benefits
- Helps preserve sample integrity
- Analyzer protection
- Quick and easy to install and maintain
- Quick and easy element inspection
- Economical

Features
- Self-cleaning tornado action
- Single element, multi-layer stainless steel filter media
- All connection ports on the housing
- Sample ports located at 90º angles
- G.U.T.S.™ seal
- Back mounting

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Model Numbering & Additional Part Numbers

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

Element rating	2 = 2 micron	10 = 10 micron	25 = 25 micron	50 = 50 micron	100 = 100 micron
Kit quantity	Blank = Kit of 5	1 = Kit of 1			
Mounting bracket accessory	Part # 602-509-SS (sold separately)				

How to build the model number:

602 — T — SS

Element rating
(0.5 is porous metal. All others are screens.)

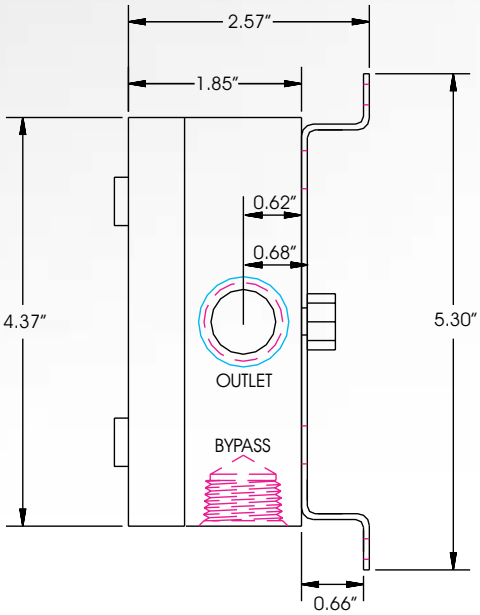
How to build the replacement filter element assembly and seal kit part number:

602 — 5 — T — ☐

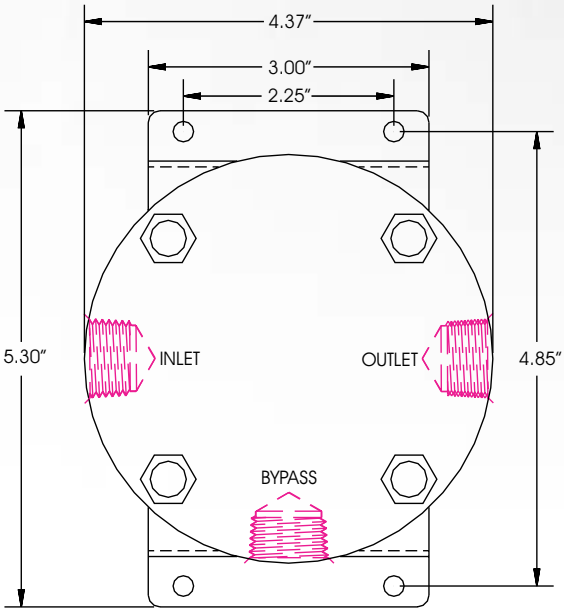
Element rating
(0.5 is porous metal. All others are screens.)
Kit quantity

Dimensions

Side View



Front View



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MADE IN USA

KOZY™ Insulators

Minimizes ambient temperature effects on your sample system!

Ambient temperature changes can create numerous problems for your sample system. Daytime and nighttime temperature cycling can cause erratic gas analysis due to adsorption/desorption effects. Low ambient temperatures can cool a sample below its dew point, causing condensation. Condensed liquid can result in unstable pressure regulation or regulator "freeze up", inaccurate sample analysis, and analyzer damage. Insulating the pipeline, associated piping/valving, and other components of the sample system will help to minimize the effects of daytime/nighttime temperature cycling on the sample system and prevent condensation of the gas sample by helping to maintain the sample at a consistent temperature.

Kozy™ Insulators are designed to insulate the area around the sample tap as well as valves, sample probes, pressure regulators and other types of sampling equipment located directly at the sample point. It is important to note that Kozy™ Insulators work best when the minimum ambient temperature does not reach below 45°F (7.2°C) for extended periods of time. A+ Corporation offers alternative heating and insulating options for colder climates.

Technical Specifications

Material construction	KZ1, KZ2, KZ3, KZ4, KZ5: Shell- 100% woven polyester with acrylic coating KZ9, KZ10: High Temperature Liner- Vermiculite coated fiberglass fabric Thread: 100% polyester #16/92 (4 ply) Straps: 1" nylon webbing with stainless steel d-rings
Maximum temperature	KZ3, KZ4, KZ5: 250˚F (121˚C) KZ1, KZ2, KZ9, KZ10: 350˚F (177˚C)
Minimum temperature	Materials of construction can withstand -58˚F (-50˚C) temperatures; however, the insulating capabilities will be greatly diminished at these extreme temperatures. Alternative insulating options are recommended when the minimum ambient temperature is below 45˚F (7°C) for extended periods of time.
Calculated R value	1.7R @ 1/2"
Enviromentally friendly	Dust, Fiber, and CFC free Ozone depletion potential of zero

Product Brief

Applications

- Insulating area of pipe around sample extraction point
- Insulating valves
- Insulating Genie® Probes and Probe Regulators
- Insulating Genie® Regulators

Benefits

- Minimize adsorption/desorption effects
- Prevent condensation
- Preserve sample integrity
- More economical option than a rigid GRP or Stainless Steel insulted enclosure

Features

- Adjustable pipe blanket strap to accommodate pipe diameters up to 36"
- Velcro ends on pipe blanket, probe and regulator jackets, and extension pieces for easy assembly
- Velcro/D-ring closure on valve extension ensures a snug fit

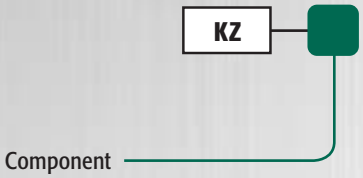
A+ Corporation

Model Numbering & Additional Part Numbers

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

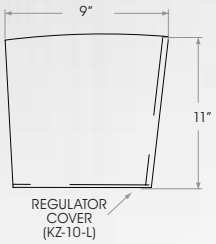
Component 1 = Probe Jacket 2 = Pipe Blanket 3 = 6″ Transition piece 4 = 12″ Transition piece
5 = Valve Cover Extension Assembly (Adjustable) 9 = System Cover 10 = Regulator cover

How to build the model number: Specify model numbers for multiple components to make a Kozy™ Assembly tailored to your equipment.

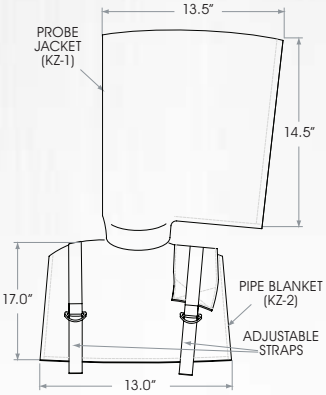


Dimensions

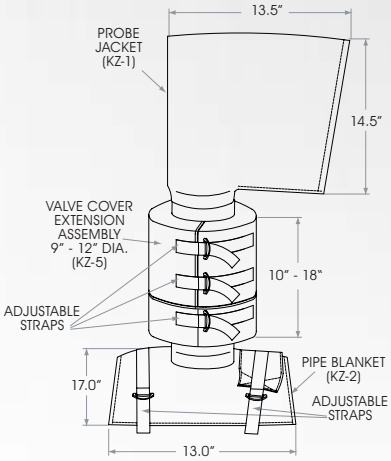
Regulator Cover
(GR, GHR, JTR, JTR-H)



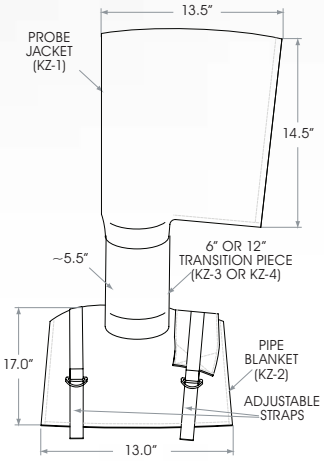
Standard Assembly
(GPR, GPSD, GP2)



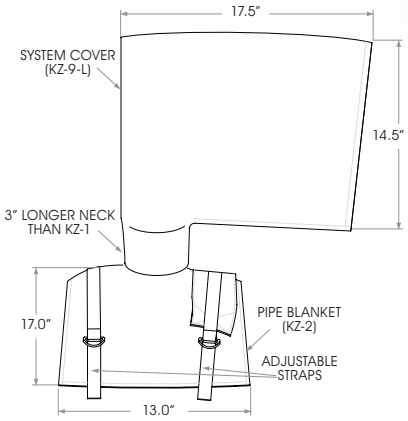
Valve Cover Assembly
(750, 755, or 760 through flanged valve)
(702 with flanged valve)



Transition Piece Assembly
(701, 702, 750, 755, 760)



SYSTEM COVER
(745 & 702/750/760/GP2 w/ External Regulator)



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DaVinci™ ADP
Analyzer Distribution Panel

One gas sample stream in and four low pressure gas streams out!

The DaVinci™ Modular Analyzer Distribution Panel (ADP) is a pre-packaged solution that makes it possible to supply up to four different analyzers with low pressure gas samples from a single source, eliminating the need to establish multiple sample points and reducing the cost of required sampling hardware.

The ADP consists of a single modular board with built in purge loop, inlet filter and gauge, integral stream isolation valves, and pressure regulators with their respective gauges. The standard ADP is supplied with one regulator and pressure gauge. Up to three additional regulators with respective gauges can be added and assembled on the board at the time of order or later in the field by the technician.

The Analytically Correct™ design of the ADP's purge loop ensures that a representative sample is always present at the inlet of each individual sample stream. The individual sample streams are independent of one another, eliminating the chance of active streams being affected by other streams coming on or off line. The compact modular design of the ADP makes it easy to install, maintain, and troubleshoot. A regulator kit is offered for easy replacement of regulators in the field.

It is important to note that when sampling gases near their dew point, it may be necessary to install the ADP in a heated area or heated insulated enclosure. For assistance in determining heating requirements, please contact A+ Corporation or your local A+ distributor.

Technical Specifications

Maximum pressure rating	200 psig (13.8 barg)
Temperature range	-35 °F (-37 °C) to 225 °F (107°C) Contact the factory regarding other temperature ratings
Port Sizes	1/8" female NPT inlet, bypass & outlet ports 1/4" female NPT gauge ports
Outlet pressure range	0-10 psig (0-0.7 barg), 0-25 psig (0-1.7 barg), 0-50 psig (0-3.4 barg), 0-100 psig (0-6.9 barg)
Wetted Material	**Machined parts:** 316 stainless steel / ISO 15156-3 compliant **All other metal parts:** stainless steel / ISO 15156-3 compliant **Sealing material:** Neoprene

Product Brief

Applications
- For use in any process industry to supply up to four different analyzers with low pressure gas samples from a single source

Benefits
- Eliminates the need to establish multiple sample points
- Reduces the cost of required sampling hardware
- Pre-packaged solution eliminates technician assembly
- Space saving , compact modular design
- Easy to add or replace regulators in the field

Features
- Analytically Correct™ purge loop
- Inlet filter & gauge
- Up to four (4) pressure regulators with respective gauges
- Integral valving
- Regulator kit

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Model Numbering & Additional Part Numbers

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

Outlet pressure range (psig) 0 = 0-25 1 = 0-50 2 = 0-100 9 = 0-10 X = No regulator & No gauge

Make sure to indicate the appropriate position for each regulator on the board by filling in the corresponding blank when completing the part number below. Each pressure regulator includes a pressure gauge. Reference the dimensional drawing for regulator positioning.

How to build the model number:

DAV — ADP — 7 — ☐ — ☐ — ☐ — ☐

- Regulator position #1 outlet pressure range
- Regulator position #2 outlet pressure range
- Regulator position #3 outlet pressure range
- Regulator position #4 outlet pressure range

Regulator kit part number
(includes regulator, mounting clips, and appropriate gauge)

MR — 7 — SS — ☐

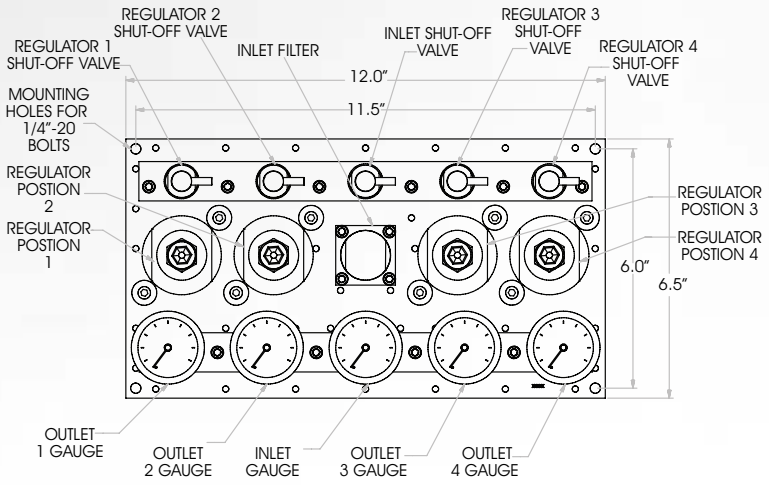
- Outlet pressure range

Spare Parts & Accessories (sold separately)

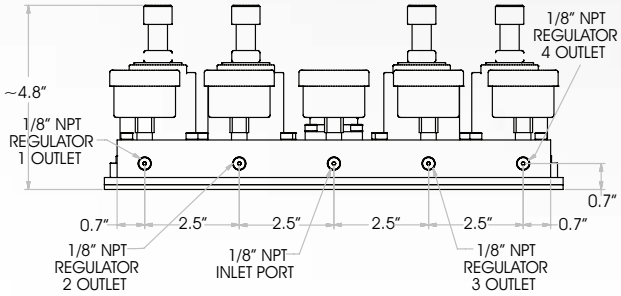
- Inlet filter replacement - Part # DAV-3920
- Seat & Seal replacement kit - Seat, Valve Stem, Bias Spring & O-Rings

Dimensions

Front View



Bottom View



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MADE IN USA

GENIE®
Regulator Accessory Manifold

A low volume manifold designed specifically for gas sampling

The Genie® Regulator Accessory Manifold consists of a Genie® Manifold with the following parts attached: pressure gauge, ball valve, and optional relief valve. It is designed to thread directly into any Genie® Membrane Probe Regulator™ or Genie® Regulator™ and provides a means to monitor regulator outlet pressure and block flow. It's straight-through sample flow path, minimal dead volume, and low internal volume make it Analytically Correct™ and help to preserve sample integrity. The optional relief valve is intended for the protection of the gauge only. The relief valve is not intended to protect any downstream equipment.

Technical Specifications

Maximum pressure rating	Dependant upon pressure gauge selected
Temperature ranges	-4°F (-20°C) to 140°F (60°C)
Outlet port size	Dependant upon ball valve selected
Wetted materials	Machined parts: 316/316L stainless steel Ball Valve Seal Material: PTFE Relief Valve Seal material: Neoprene rubber

Product Brief

Applications
- For use with any Genie® Membrane Probe Regulator™ or Genie® Regulator™

Benefits
- Monitors regulator outlet pressure
- Blocks regulator outlet flow
- Helps preserve sample integrity
- Helps improve safety of personnel and equipment
- Economical

Features
- Minimal dead volume and surface area
- 1/10th the volume of a 1/4" NPT cross fitting
- Compact, Analytically Correct™ design

A+ Corporation

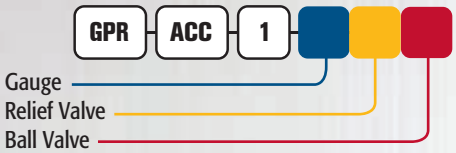
Model Numbering & Additional Part Numbers

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

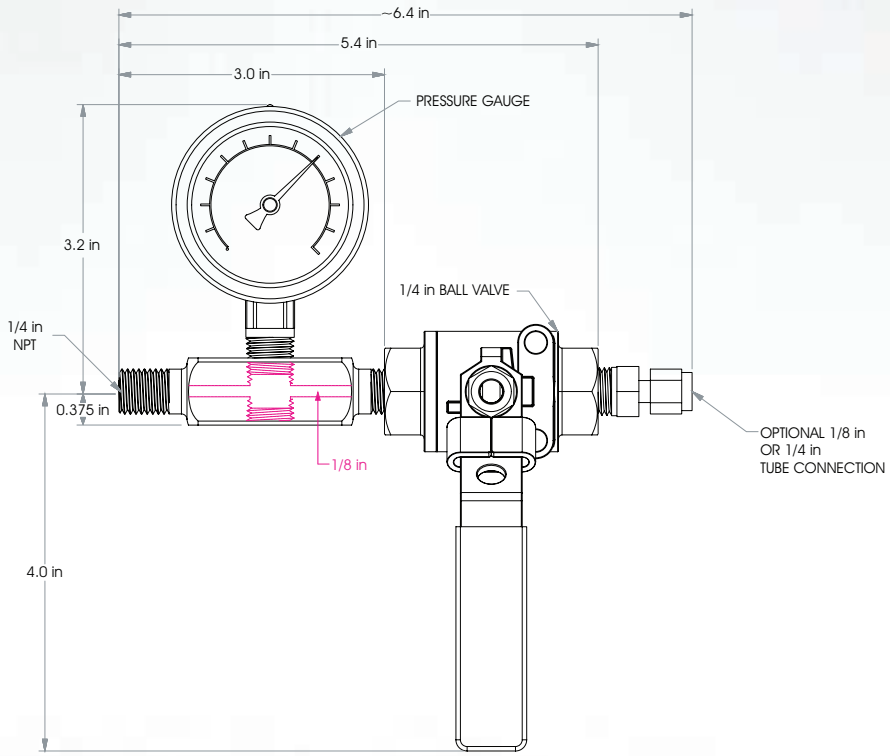
Gauge (psig)	0 = None	1 = 0-60	2 = 0-100	3 = 0-200
	4 = 0-300	5 = 0-600	6 = 0-15	9 = 0-30
Relief Valve (psig) *For protection of gauge only.*	0 = None	1 = 60	2 = 100	3 = 250
	4 = 500	6 = 25	7 = 12	
Ball Valve	0 = None		1 = with 1/4" FNPT port	
	2 = with 1/8" tube connector*		4 = with 1/4" tube connector*	

**This connector is installed into the outlet port of ball valve*

How to build the model number:



Dimensions



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ACES
Analytically Correct Engineered Systems

System Brief

Lean Gas Sample Systems

Models 520 | 530

Introduction

Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Lean Gas Sample System is an ACES™ tailored to the Natural Gas Industry. Consisting of a heated and insulated enclosure mounted on a membrane tipped Genie® Probe Regulator™. It is best suited to sampling natural gas at conditions above the hydrocarbon dew point temperature or near the hydrocarbon dew point at pressures below the cricondentherm. A typical application is the sampling of transmission quality natural gas sampling at locations where ambient temperatures could cause condensation.

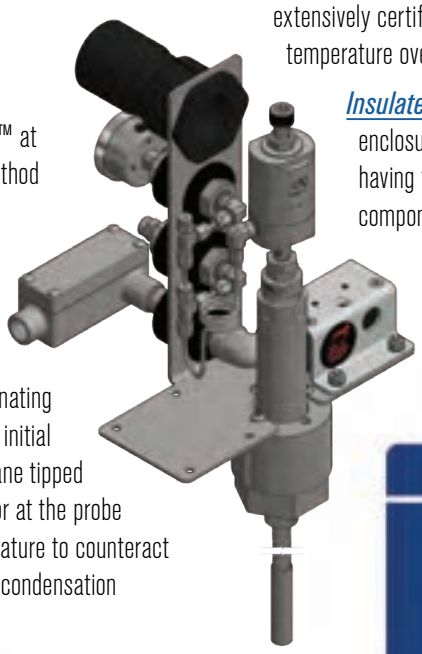
Genie® Membrane Technology™ on the tip of the Probe Regulator™ separates liquid at source conditions to ensure a representative gas sample and to protect the analyzer by excluding contaminants from the entire sample handling system. Genie® Membrane Probes™ are designed to be safely retracted from a pressurized source without any special tools, so the Genie® membrane can be easily accessed and maintained. The GP series utilizes a housing with a foot valve for process isolation. The Genie® Direct Drive™ series is inserted and retracted through a full port process isolation valve. The regulator seat in a Probe Regulator™ is near the probe tip to prevent condensation by using the gas stream flowing past the probe as a heat source to help compensate for the Joule-Thomson (JT) cooling effect and prevent condensation.

Rounding off our ACES™ systems is a removable probe mounted enclosure that is insulated and heated to prevent ambient temperature from adversely impacting the sample. The Lean Gas Sample System produces a low-pressure, liquid-free sample, that is representative of the source and ready for transport to the analyzer.

ACES Component Breakdown

Genie Probe Regulators™

Our revolutionary Genie® Membrane Probes™ featuring patented Genie® Membrane Technology™ at the probe's tip offers an Analytically Correct™ method for extracting a representative sample from a gas source near the dew point. In compliance with industry standards API 14.1, GPA 2166 and ISO 10715 entrained liquids are rejected inside of the line at the flowing pipeline temperature and pressure. By minimizing internal volume and eliminating dead volume, sample integrity is maintained from initial extraction until it leaves the probe outlet. Membrane tipped Probe Regulators™ are designed with the regulator at the probe tip, inside of the line using the flowing line temperature to counteract possible Joule-Thomson cooling that could cause condensation and distort the sample.



Model 530 shown >>

Enclosure Heater The self-limiting heater block is a small, simple, extensively certified device that provides a reliable heat source without temperature overload in small or densely populated enclosures.

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: ATEX/IECEx: II2G Ex db IIC T3
CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® Probes Regulators™: Models GPR™ or 755™

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ACES
Analytically Correct Engineered Systems

System Brief

Rich Gas Sample Systems

Models 521 | 531 | 541

Introduction

Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Rich Gas Sample System is an ACES™ tailored to the Natural Gas Industry. Consisting of a Genie® Heated Regulator™ in an insulated enclosure mounted on a Genie® membrane tipped probe, it is best suited to sampling natural gas at conditions near the hydrocarbon dew point. A typical application is the sampling of rich gas in midstream operations.

Genie® Membrane Technology™ on the tip of the probe separates liquid at source conditions to ensure a representative gas sample and to protect the analyzer by excluding contaminants from the entire sample handling system. Genie® Membrane Probes™ are designed to be safely retracted from a pressurized source without any special tools, so the Genie® membrane can be easily accessed and maintained. The GP series utilizes a housing with a foot valve for process isolation. The Genie® Direct Drive™ series is inserted and retracted through a full port process isolation valve.

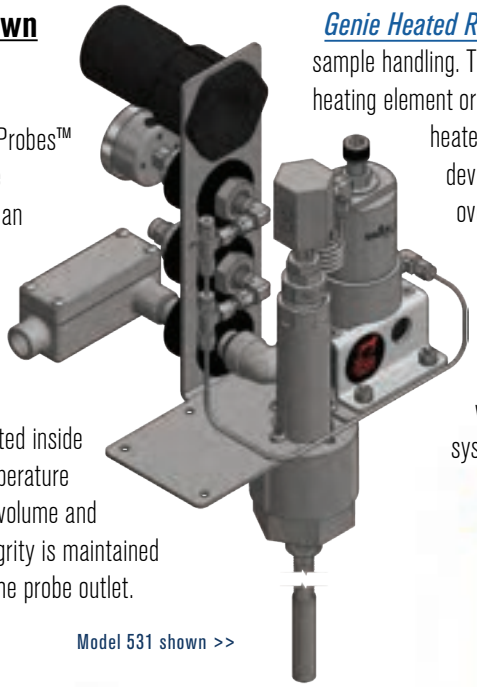
At source conditions near the hydrocarbon dew point the sample must be heated before pressure reduction for compliance with recommendations from industry standards to keep the sample temperature above the hydrocarbon dew point. This is accomplished with the pre-regulation heat exchanger in the Model GR™ pressure regulator, which also contains a post-regulation heat exchanger to help compensate for the Joule-Thomson (JT) cooling effect and prevent condensation.

Rounding off our ACES™ systems is a removable probe mounted enclosure that is insulated and heated to prevent ambient temperature from adversely impacting the sample.

ACES Component Breakdown

Genie Membrane Probes™

Our revolutionary Genie® Membrane Probes™ featuring patented Genie® Membrane Technology™ at the probe's tip offers an Analytically Correct™ method for extracting a representative sample from a gas source near the dew point. In compliance with industry standards API 14.1, GPA 2166 and ISO 10715 entrained liquids are rejected inside of the line at the flowing pipeline temperature and pressure. By minimizing internal volume and eliminating dead volume, sample integrity is maintained from initial extraction until it leaves the probe outlet.



Model 531 shown >>

Genie Heated Regulators™ A+ pressure regulators are designed specifically for sample handling. The heated pressure regulator can be heated either with a 200 watt heating element or with a self-limiting (20 or 80 watt) heater block. The self-limiting heater block on the Model GHR™ is a small, simple, extensively certified device that provides a reliable heat source without temperature overload in small or densely populated enclosures. A proportional controller is used to regulate power to the 200 watt heating element in the Model 901-GR™.

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: CSA: Class 1, Division 1, Group C&D, T3 ATEX/IECEx: II2G Ex db IIC T3
Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® Membrane Probes™: Models GP2™, 702™ or 750™
- Genie® Heated Regulators™: Models GHR™ or 901-GR

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RETRACTABLE PROBE

MAX PRESSURE:

Model 522
3500 PSI

Model 532
3750 PSI

Model 542
3500 PSI

ACES
Analytically Correct Engineered Systems

System Brief

High Pressure Sample Systems

Models 522 | 532 | 542

Introduction

Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The High Pressure Sample System is an ACES™ tailored to the Natural Gas Industry. Consisting of a Genie® JTR-H Heated Regulator™ in an insulated enclosure mounted on a Genie® Probe™. It is best suited to sampling natural gas at conditions near the hydrocarbon dew point and well above the cricondentherm. A typical application is the sampling of gas in midstream operations that is rich and at high pressure.

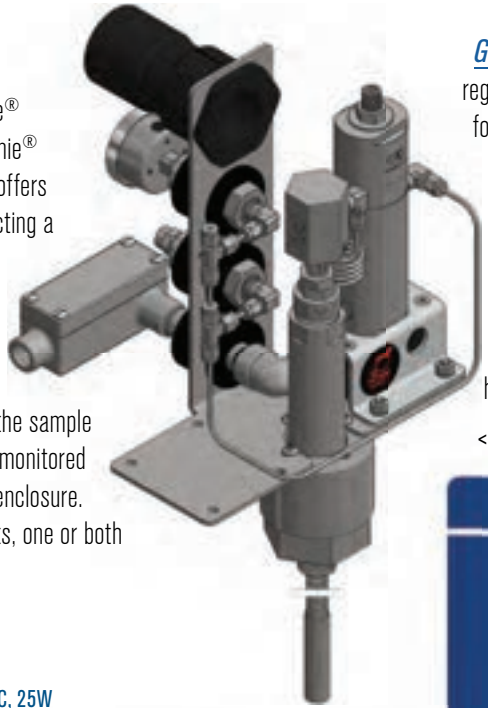
Genie® Membrane Technology™ on the tip of the probe separates liquid at source conditions to ensure a representative gas sample and to protect the analyzer by excluding contaminants from the entire sample handling system. Genie® Membrane Probes™ are designed to be safely retracted from a pressurized source without any special tools, so the Genie® membrane can be easily accessed and maintained. The GP series utilizes a housing with a foot valve for process isolation. The Genie® Direct Drive™ series and Model 702 Permanent Insertion Probe™ is inserted and retracted through a full port process isolation valve.

At source conditions near the hydrocarbon dew point the sample must be heated before pressure reduction for compliance with recommendations from industry standards to keep the sample temperature above the hydrocarbon dew point. This is accomplished by applying heat to the body of the regulator near the inlet port & by reducing the pressure in four stages to help compensate for the Joule-Thomson (JT) cooling effect & prevent condensation. Rounding off our ACES™ systems is a removable probe mounted enclosure that is insulated & heated to prevent ambient temperature from adversely impacting the sample.

ACES Component Breakdown

Genie Probes™ Our revolutionary Genie® Membrane Probes™ featuring patented Genie® Membrane Technology™ at the probe's tip offers an Analytically Correct™ method for extracting a representative sample from a gas source near the dew point, in compliance with industry standards (API 14.1, GPA 2166 and ISO 10715).

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.



Genie Four-Stage Heated Regulator™ A+ pressure regulators are designed specifically for sample handling. The four stage regulator can be heated either with a self-limiting (25 or 80 watt) heater block or 200 watt heating element. The self-limiting heater block on the Model JTR-H™ is a small, simple, extensively certified device that provides a reliable heat source without temperature overload in small or densely populated enclosures. A proportional controller is used to regulate power to the 200 watt heating element in the Model 901-JTR™.

<< Model 532 shown

THE A+ SYSTEM OF COMPONENTS

- Genie® Probes™: Models GP2™, 702 or 750™ Direct Drive
- Genie® Four-Stage Heated Regulators™: Models JTR-H™ or 901-JTR

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: CSA: Class 1, Division 1, Group C&D, T3 ATEX/IECEx: II2G Ex db IIC T3
Should you need assistance in selecting the appropriate components for your application, please consult the factory.

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FIXED CUSTOM PROBE

MAX PRESSURE:
Model 538
4500 PSI

ACES
Analytically Correct Engineered Systems

System Brief

High Pressure Sample System

Model 538

Introduction

Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. This High Pressure Sample System, is an ACES™ tailored to the Natural Gas Industry. Consisting of a Genie® four-stage Heated Regulator™ in an insulated enclosure mounted on a custom fixed probe. It is best suited to sampling natural gas at a pressure range between 3,750 - 4,500 PSI. A typical application is the sampling of compressed natural gas offloading from a truck into a pipeline.

The custom GPHV™, non-membrane probe is a fixed probe possessing a higher-pressure rating than the Direct Drive™ Series. The custom GPHV™ makes the Model 538 configuration the safest extraction system for higher pressure applications. At source conditions above 3750 PSI, there is a high likelyhood of the gas to be supercritical fluid, minimizing the need for a non-membrane tipped probe.

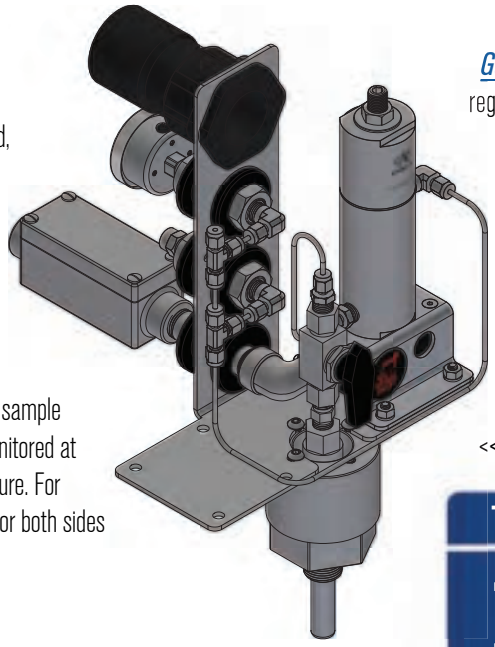
At source conditions near the hydrocarbon dew point the sample must be heated before pressure reduction to keep the sample temperature above thehydrocarbon dew point temperature, and for compliance with industry standard recommendations. This is accomplished by applying heat to the body of the regulator near the inlet port and by reducing the pressure in four stages to help compensate for the Joule-Thomson (JT) cooling effect and prevent condensation.

Rounding off our ACES™ systems is a removable probe mounted enclosure that is insulated and heated to prevent ambient temperature from adversely impacting the sample.

ACES Component Breakdown

Custom Cut Fixed Probe This thick walled, fixed non-membrane tipped probe that is machined from a single piece of stainless steel, is used soley in A+ high pressure ACES systems. The probe will be cut to the required length with a maximum insertion of 9".

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.



Genie Four-Stage Heated Regulator™ A+ pressure regulators are designed specifically for sample handling. The four stage regulator can be heated either with a self-limiting (25 or 80 watt) heater block or 200 watt heating element. The self-limiting heater block on the Model JTR-H™ is a small, simple, extensively certified device that provides a reliable heat source without temperature overload in small or densely populated enclosures. A proportional controller is used to regulate power to the 200 watt heating element in the Model 901-JTR™.

<< Model 538 shown

THE A+ SYSTEM OF COMPONENTS

- Custom Cut Fixed GPHV
- Genie® Four-Stage Heated Regulators™: Models JTR-H™ or 901-JTR

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: CSA: Class 1, Division 1, Group C&D, T3 ATEX/IECEx: II2G Ex db IIC T3
Should you need assistance in selecting the appropriate components for your application, please consult the factory.

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ACES
Analytically Correct Engineered Systems

System Brief

Trace Measurement Sample Systems

- 550 Series -

Introduction

As technology evolves to produce smaller, more capable and cost effective analyzers, it gives industry the ability to measure trace components at extremely low levels. Reducing the levels of moisture, oxygen or contaminants can improve device quality and yields.

When liquid hydrocarbons and excess water vapor combine to form a hydrate and are present in the stream; they can reduce flow, damage equipment such as valves and compressors and obstruct areas of the piping. The lifespan of process piping is determined by the effects of corrosion present once it has been oxidized with the presence of moisture. The measurement of trace moisture in gas is one example of an important parameter for processing, storage, transportation and global conformance specifications. Another example is trace measurement of sulfur and sulfer compounds like H_2S.

Increased global competition and the need to improve production efficiency while providing consistency in quality controls are driving our industry partners to enhance measurements. Requirements for results in the single digit ppm range or even the ppb range are becoming more common. Results in a matter of seconds rather than hours are in demand. The sampling experts at A+ Corporation work with industry partners to develop Analytically Correct Engineered Systems™, a complete line of sample extraction and preconditioning sample systems to reliably extract representative samples with minimal delay while protecting the analyzer.

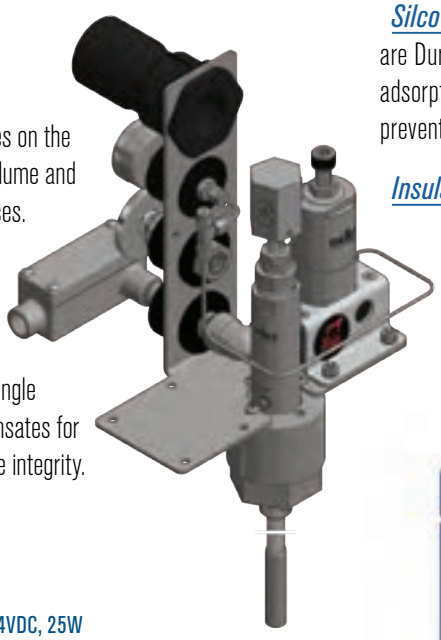
ACES Component Breakdown

Genie 750LV Direct Drive™ Probe

Known to be the safest, most versatile probes on the market, they are adjustable in length, low volume and can be easily inserted into pressurized sources.

Genie Heated Regulators™

A+ pressure regulators are designed specifically for sample handling.
The self-limiting heater block on either the single stage GHR™ or the 4 stage JTR-H™ compensates for the JT cooling effect to help preserve sample integrity.



SilcoTek® Coatings

The surfaces of the entire sample path are Dursan® coated to help minimize sample delay associated with adsorption. Treated surfaces are more inert and durable, thus preventing corrosion and fouling.

Insulated Enclosure

This case allows the sample pressure *and enclosure temperature to be monitored at a quick glance,* without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

<< Model 553 shown

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: ATEX/IECEx: II2G Ex db IIC T3
CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® 750LV Direct Drive Probe
- Genie® Heated Regulators:
  Model GHR™ or JTR-H™

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System Brief

Introduction

Wet Gas Systems - 580 Series -

The increased production of natural gas from unconventional sources, such as shale gas formations and deep-water offshore platforms, has created a need for more sampling points closer to the wellhead and gathering sites. Large quantities of free liquids are often continuously present at these sample points – hydrocarbons, water, corrosion inhibitors, methanol, and scavengers for example. This poses a challenge for traditional sampling equipment that was designed for transmission quality gas with a minimal amount of liquid entrained in the gas.

The scope of Natural Gas Sampling Standards does not include two-phase sampling. A membrane filter inserted directly in the line is an acceptable method of removing liquids by virtue of its location in the pipe, at the same temperature and pressure as the sample source. External filters may be used to eliminate liquids if operated at the same pressure and temperature of the sample source. If the membrane filter is above the sample source temperature, it may vaporize liquids and artificially enrich the sample. If it is below line temperature, it may condense components to artificially reduce heavy components in the sample. (Reference: GPA 2166 7.3.3 and 7.3.4)

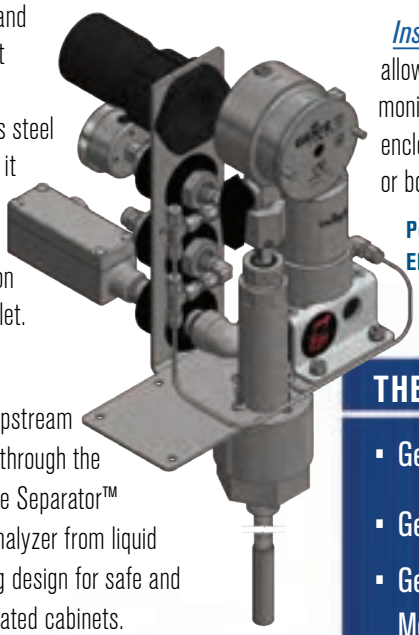
When sampling from a two-phase source is unavoidable, the Wet Gas System can reliably extract a gas sample from a source containing an excessive amount of liquid. The Wet Gas System incorporates the essential elements of Genie® Membrane Separator and a Genie® Heated Regulator into a single, probe mounted sample handling component that can easily fit in a small rigid enclosure.

Although the gas exiting this system is liquid free and at low pressure, heat trace tubing may be required depending on the dew point temperature of the gas. It is also recommended that a Genie® Membrane Separator™ with Liquid Block™ be installed as close to the analyzer as possible in case of heat trace failure or major process upsets. The Wet Gas System is not recommended for custody transfer BTU analysis.

System Component Breakdown

Genie Probes™ The Wet Gas System can be used in association with either the Genie® Direct Drive™ 760 or the Genie® General Purpose GPHV™ probe. The 760™ can be easily inserted into and retracted from a pressurized source through a full port valve up to 48". The GPHV™ is a fixed, thick walled probe that is machined from a single piece of stainless steel and has a high natural resonant frequency that allows it to withstand gases flowing at high velocities. Both probes are non-membrane tipped probes which allow for liquids to drain back into the source after separation by our Genie Membrane Technology™ at the probe outlet.

Genie Supreme 133 Membrane Separator™
This functions by separating entrained liquids on the upstream side of the media so that they can gravity drain down through the probe and back into the source. The Genie® Membrane Separator™ protects the entire sample handling system and the analyzer from liquid distortion and damage. Yet offers an improved housing design for safe and easy maintenance, especially in heated, densely populated cabinets.



Model 581 shown >>

Genie Heated Regulators™ Connecting either of our analytical regulators will prevent condensation of the sample gas due to Joule Thomson (JT) cooling during pressure reduction process of high dew point gases or due to low operating temperatures.

Insulated Enclosure This insulated sample system case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: ATEX/IECEx: II2G Ex db IIC T3
CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® Supreme 133 Membrane Separator™
- Genie® Probes™: Model 760™ or GPHV™
- Genie® Heated Regulators™: Model GHR™ or JTR-H™

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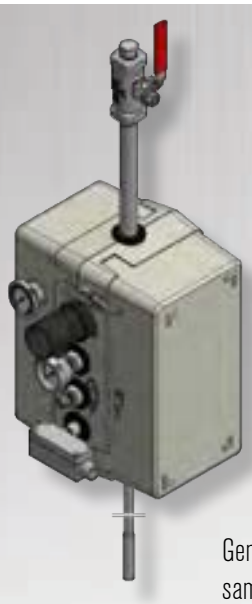


ACES
Analytically Correct Engineered Systems

System Brief

Underground Pipeline Sample Systems

- 540 Series -

Introduction

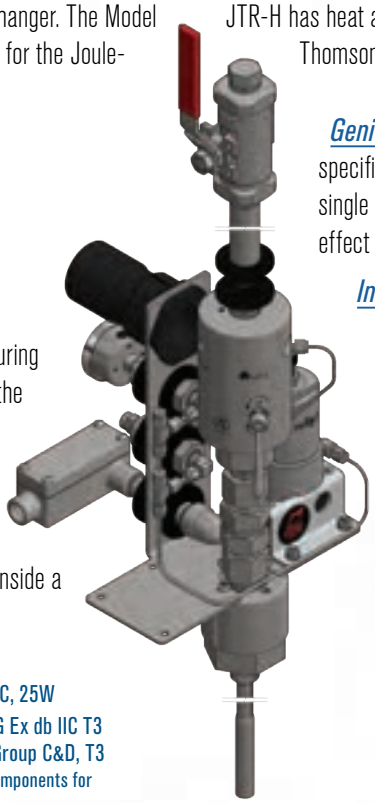
Analytically Correct Engineered Systems™ are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Underground Pipeline Sample System is an ACES™ tailored to the Natural Gas Industry. Consisting of our Genie® Model 702 Permanent Insertion Probe, close coupled to either the Genie® GHR™ Heated Regulator™ or the Genie® JTR-H™ four-stage Heated Regulator™ in an insulated enclosure. It is used primarily for sampling natural gas from buried pipelines that require insertion lengths up to 120".

Genie® Membrane Technology™ on the tip of the probe separates liquid at source conditions to ensure a representative gas sample and to protect the analyzer by excluding contaminants from the entire sample handling system. Genie® Membrane Probes™ are designed to be safely retracted from a pressurized source without any special tools, so the Genie® membrane can be easily accessed and maintained. The 702 is designed for sampling at a specific depth in a pressurized pipeline; each length is customized up to 10 feet to fit your application. Our exclusive Pressure Balance™ technique allows effortless insertion or retraction of the probe without the need for additional tools or pneumatic and hydraulic methods. The full port ball valve on top of the 12" housing allows users to partially retract the probe for pigging or to safely provide secondary process isolation.

Gas composition and source conditions of the sample will dictate the pressure reduction choice for compliance with recommendations from industry standards to keep the sample temperature above the hydrocarbon dew point. The Model GHR™ is designed with a pre-regulation heat exchanger in the pressure regulator as well as a post-regulation heat exchanger. The Model JTR-H has heat applied to the body near the inlet port and reduces the pressure in four stages. Both products help compensate for the Joule-Thomson (JT) cooling effect and prevent condensation.

ACES Component Breakdown

Genie 702 Permanent Insertion Probe™ is a simple, safe and economical solution to extract a representative vapor phase sample from a specific depth in a pressurized pipeline. Our patented Genie® Membrane Probes™ featuring patented Genie® Membrane Technology™ are the most effective means of separating entrained liquid from the sample at source conditions. A+ Corporation is the only manufacturer that provides Analytically Correct™ membrane tipped sample probes for insertion inside a pipeline or vessel.



Genie Heated Regulators™ A+ pressure regulators are designed specifically for sample handling. The self-limiting heater block on either the single stage GHR™ or the 4 stage JTR-H™ compensates for the JT cooling effect to help preserve sample integrity.

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

<< Model 541 shown

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: ATEX/IECEx: II2G Ex db IIC T3
CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® 702 Permanent Insertion Probe™
- Genie® Heated Regulators™: Models GHR™ or JTR-H™

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System Brief

Two-Phase Sample Systems

- 560 Series -

Introduction

When extracting a gas sample from a source that is a complex fluid mixture, such as Natural Gas, entrained liquid at source conditions with a membrane tipped probe eliminates changes in temperature and/or pressure that alter the VLE (Vapor Liquid Equilibrium) and distort the sample composition.

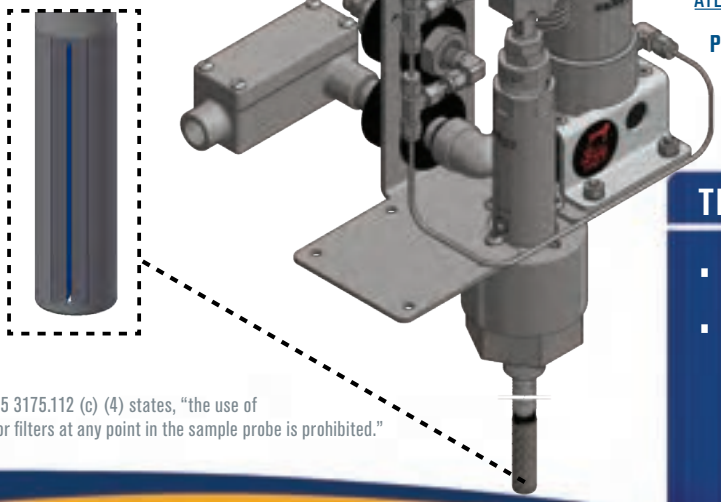
Extracting a sample from a two-phase source is beyond the scope of API 14.1 and GPA 2166 but these industry standards allow the use of membrane tipped probes. If source conditions are two-phase and near the dew point, then membrane tipped probes work very well, but for two-phase conditions that are far from the dew point, the amount of liquid could be excessive enough to overwhelm a membrane tipped probe.

The Two-Phase Sample System is used in applications where the source contains excessive liquid that would overwhelm a membrane tipped probe, and where Bureau of Land Management (BLM[1]) compliance is required. It includes a specially designed probe and passageways in conjunction with a liquid vaporizing system inside an insulated enclosure that mounts onto the sample tap.

System Component Breakdown

Genie 761 Low Volume Probe™ The patented probe has a sample extraction entry point that faces upstream instead of the downward facing sample entry point of conventional probes. This coupled with small passageways, prevents phase disassociation before the sample is vaporized. Once the sample is vaporized, it can be transported to the analyzer like a conventional Natural Gas sample. The 761 technical specifications regarding the pressure rating, temperature limitation, process connections and lengths are the same as the 760 Direct Drive.

Model 561 shown >>



Genie Heated Regulators™ Model GHR™, JTR-H and 901-GR™ heated regulators are designed specifically for analytical service. The liquid portion of a two-phase sample can typically be vaporized by pressure reduction and heat transfer with the Model GHR™, but the higher wattage and precise control of the 901-GR™ is available if necessary. The Model JTR-H would require a minimum supply pressure.

Insulated Enclosure This insulated sample system case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

Electrical Connection Approval:
CSA Certified Assembly: File #235756 Class 1, Division 1, Group B,C&D; T3
ATEX/IECEx Heater Block (GHR only): II2G Ex db IIC T3

Power Requirement: GHR: 80W @110 /220 VAC or 25W @ 24 VDC
901-GR: 200W @110 VAC or 700 W @ 240 VAC

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

BLM[1] proposed Order 5 3175.112 (c) (4) states, "the use of membranes, screens,or filters at any point in the sample probe is prohibited."

THE A+ SYSTEM OF COMPONENTS

- Genie® 761 Low Volume Direct Drive™ Probe
- Genie® Heated Regulators™: Model JTR-H, GHR™ or 901-GR™

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TAP-MOUNTED
GENIE® VAPORIZER

WITH PROBE
Model 593
Model 594

ACES
Analytically Correct Engineered Systems

System Brief

Liquid Sample Vaporization

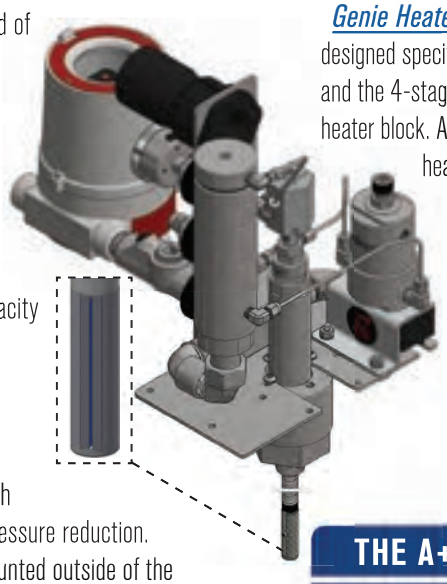
Introduction

Analytically Correct Engineered Systems are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Genie Tap-Mounted Vaporizer is for extracting and vaporizing samples and utilizes the very low internal volume of a Genie® 761 retractable probe to help minimize the sample delay associated with the liquid section of the sample path. Liquified gas mixtures that include high concentrations of components such as ethane, propane & butane must be vaporized at the sample tap for most combinations of source pressure and ambient temperature. This sytem is especially well suited to supplying gas analyzers that are field mounted near the sample tap.

In addition to the probe, this system includes the Model GV4 Genie® Vaporizer. The GV4 is a Constant Pressure Vaporizer designed to flash vaporize a liquid sample solely by heat transfer, without pressure reduction, and without disassociation of the phases or fractionation of the components. This is the most practical approach for mixtures containing a wide range of components like Natural Gas Liquids, Liquified Petroleum Gas, and Y-Grade. Only after the liquid sample has been completely vaporized by the GV4 does a regulator reduce the sample pressure. The regulator is heated primarily to compensate for the Joule Thomson (JT) cooling effect associated with reducing the pressure of a vapor, all mounted on the sample tap and within the small footprint of our patented vertical ACES™ insulated enclosure.

ACES Component Breakdown

Genie 761 Low Volume Probe™ The patented probe has a sample extraction entry point that faces upstream instead of the downward facing sample entry point of conventional probes. This coupled with small passageways, prevents phase disassociation before the sample is vaporized. The 761 technical specifications regarding the pressure rating, temperature limitation, process connections and lengths are the same as the 760 Direct Drive.



Genie GV4 Vaporizer™ has greater heat transfer capacity than most vaporizing regulators and is designed to flash vaporize wide boiler mixtures that cannot be vaporized by a heated regulator. Its design allows the liquid sample to be maintained at pressure, above the bubble point and temperature below the bubble point until it enters the flash chamber where it is instantaneously vaporized without pressure reduction. The proportional temperature controller on the GV4 is mounted outside of the enclosure where the temperature display panel can be easily viewed.

Genie Heated Regulators™ A+ pressure regulators are designed specifically for sample handling. The single stage GHR™ and the 4-stage JTR-H™ are heated with an 80-watt self-limiting heater block. A proportional controller regulates a 200-watt heater on the 901-GR &901-JTR models.

Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

<< Model 593 shown

THE A+ SYSTEM OF COMPONENTS

- Genie® 761 Low Volume Direct Drive™ Probe
- Genie® Heated Regulators™:
  Model GHR™, 901-GR, JTR-H™ or 901-JTR
- Genie® GV4 Vaporizer

Power Requirement: 250W @ 110 VAC or 1,000W @ 240 VAC
Electrical Connection Approval: CSA: Class 1, Division 1, Group C&D, T3
Should you need assistance in selecting the appropriate components for your application, please consult the factory.

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GENIE® VAPORIZER SYSTEMS

WITHOUT PROBE
Model 591
Model 592

ACES
Analytically Correct Engineered Systems

System Brief

Liquid Sample Vaporization

Introduction

Analytically Correct Engineered Systems are tailored to the specific application and designed to ensure sample integrity is maintained throughout the sample extraction and preconditioning process. The Genie® Vaporizer System without the probe is for sample handling systems that use a liquid fast loop sample transport configuration, or for mounting very near the sample tap when sample tap piping cannot accommodate mounting the system on the sample tap.

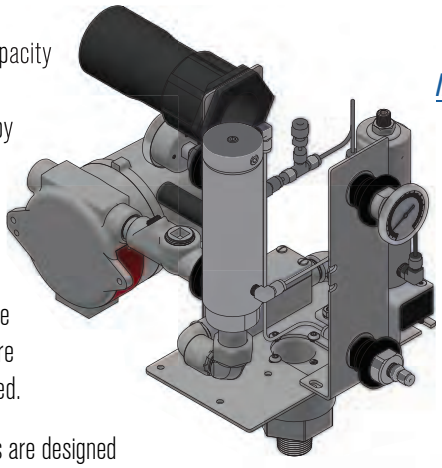
The system includes the Model GV4 Genie® Vaporizer. The GV4 is a constant pressure vaporizer designed to flash vaporize a liquid sample solely by heat transfer, without pressure reduction, and without disassociation of the phases or fractionation of the components. This is the most practical approach for mixtures containing a wide range of components like Natural Gas Liquids, Liquified Petroleum Gas, and Y-Grade. Only after the liquid sample has been completely vaporized by the GV4 does a regulator reduce the sample pressure. The heated regulator is heated primarily to compensate for the Joule Thomson (JT) cooling effect associated with reducing the pressure of a vapor.

A Vaporizing Pressure Regulator uses sudden pressure drop to vaporize the sample. Heat must be transferred to enable the phase change, but it is driven by pressure reduction. A Vaporizing Pressure Regulator works well for a relatively low flow rate of fluid that is a pure compound, or a mixture with very few and very similar components, but it alone is not sufficient for high flow rates or mixtures with a wide range of components, like Y-Grade.

This Genie® Vaporizer System typically includes the GV4 constant pressure vaporizer and one of the four models of heated regulators available mounted within the small footprint of our patented vertical ACES insulated enclosure.

ACES Component Breakdown

Genie GV4 Vaporizer™ has greater heat transfer capacity than most vaporizing regulators and is designed to flash vaporize wide boiler mixtures that cannot be vaporized by a heated regulator. Its design allows the liquid sample to be maintained at pressure, above the bubble point and temperature below the bubble point until it enters the flash chamber where it is instantaneously vaporized without pressure reduction. The proportional temperature controller on the GV4 is mounted outside of the enclosure where the temperature display panel can be easily viewed.



Insulated Enclosure This case allows the sample pressure and enclosure temperature to be monitored at a quick glance, without having to remove the enclosure. For complete access to system components, one or both sides can be completely removed.

<< Model 592 shown

Genie Heated Regulators™ A+ pressure regulators are designed specifically for sample handling. The single stage GHR™ and the 4-stage JTR-H™ are heated with an 80-watt self-limiting heater block. A proportional controller regulates a 200-watt heater on the 901-GR & 901-JTR models.

THE A+ SYSTEM OF COMPONENTS

- Genie® GV4 Vaporizer
- Genie® Heated Regulators™:
  Model GHR™, 901-GR, JTR-H™ or 901-JTR

Power Requirement: 250W @ 110 VAC or 1,000W @ 240 VAC
Electrical Connection Approval: CSA: Class 1, Division 1, Group C&D, T3
Should you need assistance in selecting the appropriate components for your application, please consult the factory.

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System Brief

Genie® 701 Portable Sample System

Your portable sampling solution.

Introduction

Using equipment specifically built for extracting natural gas samples for analysis in the field is critical in helping organizations save money and improve gas sample quality. Doing so will maximize the accuracy and speed of their data collection.

Genie® 701 Portable Sample System is the simple, safe and quick solution to provide a representative vapor phase sample from a pressurized line. This system is designed to produce an Analytically Correct™ sample to be analyzed in association with portable analyzers and GCs for quick results.

Our Analytically Correct™ components and sample systems are carefully designed in such a manner that fluid compositions will not be altered in their passage through the system. This process conforms to current API 14.1 and GPA standards. Characteristics include low internal volume, essentially no dead volume, and rapid fluid composition equilibrium.

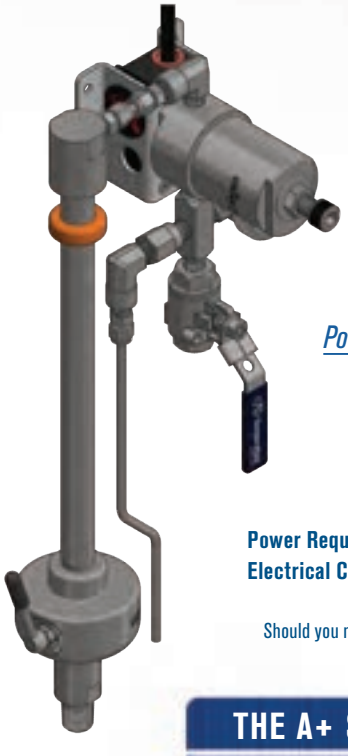
System Component Breakdown

Genie 701 Portable Membrane Probe™ We are the only manufacturer that provides an Analytically Correct™ membrane tipped sample probe for insertion inside a pipeline vessel. Our exclusive Pressure Balance™ technique allows for effortless insertion of the probe without the need for additional tools or pneumatic and hydraulic methods. The probe insertion is easily accomplished by inserting through any ½" full opening valve by simply turning the handle with your fingertips. The probe's lightweight design makes it ideal for use as a spot or portable analyzer sample probe.

Genie Heated Regulators™ Connecting either of our A+ manufactured analytical regulators will prevent condensation of the sample gas due to Joule Thomson (JT) cooling during pressure reduction.

Genie Regulator Accessory Manifold

This low volume Genie® manifold was designed specifically for the gas industry. It typically consist of a pressure gauge, ball valve, and component relief valve. It is designed to thread directly into any Genie® Regulator and provides a means to monitor regulator outlet pressure and block flow.



Kozy™ Insulator This blanket insulates the area around the sample tap, valves, probes and pressure regulators to maintain a consistent temperature for sampling.

Power Cord Sold Separately.

Power Requirement: 110 to 265 VAC, 80W or 24VDC, 25W
Electrical Connection Approval: ATEX/IECEx: II2G Ex db IIC T3
CSA: Class 1, Division 1, Group C&D, T3

Should you need assistance in selecting the appropriate components for your application, please consult the factory.

THE A+ SYSTEM OF COMPONENTS

- Genie® 701 Portable Insertion Probe
- Genie® Heated Regulator™ Model: GHR™ or JTR-H™
- Genie® Regulator Accessory Manifold
- Kozy™ Insulator

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Corporation

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KOZY™ Insulators