SOCLEMA

Advanced Industrial Sampling

CATALOG

PRODUCTS AND SOLUTIONS

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SAMPLING AND ODORISATION SYSTEMS

SOCLEMA
Advanced Industrial Sampling

FROM COLLECTION OF GAS OR LIQUID SAMPLES TO ANALYSIS

SOCLEMA HAS SKILLS AND SERVICES TO GUIDE YOU!

01 Custom sampling solutions

Is your sample **loaded** or has **special features**?

Is your sampling system not working **adequately**?

Do you need a **robust and sustainable solution**?

Are you looking for **quality solutions**?

Do you need **sampling expertise**?

02 Our assets

Expertise
30 years of experience in sampling

Innovation
Innovative solutions for renewable gas markets.

Quality
High-value products

Engineering
Technical support with study and 3D design

Multiple skills
A team with skills in fluid, mechanics, chemistry, automation

Flexibility
An agile and responsive business structure

03 Our services

Study and advice

3D design

Integration in our workshops

Installation and commissioning
Maintenance
On-site training
Training seminars

Recognized partners

PAS

A+ Corporation

O'BRIEN

ZEGAZ instruments

SOCLEMA HAS THE SOLUTION FOR YOU !

TAR PROTOCOL trolley

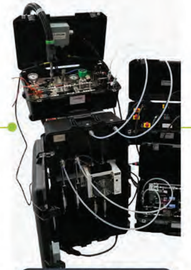

Syngas sampling


Dew point analyzer


Traced tubing

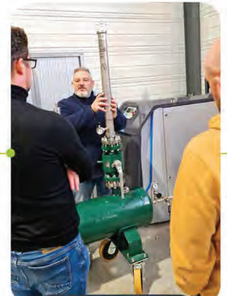
H2 measurement cabinet


Conditioning enclosure


Sampling cases


TAR PROTOCOL 3D drawing


Sampling probe installation


Training

Solutions for injection

Patented odorization system for natural gas and biomethane OdoZEN®

04

- **High precision**
- **Covers a wide range of injection**
- **Reactive to sudden changes in pressure and flowrate**

Specifications

Operating ambient temperature	0 - 55°C
Injection maximum pressure	90 bars
Flow of gas to be odorized	5 - 8000 Nm3/h
Odorant concentration setting	25mg/Nm3 (Other configurable values)
Wetted materials	316 stainless steel
Sealing	Perfluorocarbon, Teflon and Viton
Power supply	230 volts AC single phase (Rated power = 2000W)
Communication protocol	Modbus Ethernet TCP/IP (communication module provided)
Input/Output	4-20 mA, TOR
Footprint (Approx.)	2000 x 1200 x 600 mm

SOCLEMA 1992 - 2022

30 ans

SERVING INDUSTRIAL ANALYSIS

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SOLUTIONS

Odorisation and injection
Tar Protocol sampling
Syngas sampling

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Odorisation et injection

ODORIZATION SYSTEM

for NATURAL GAS and BIOMETHANE

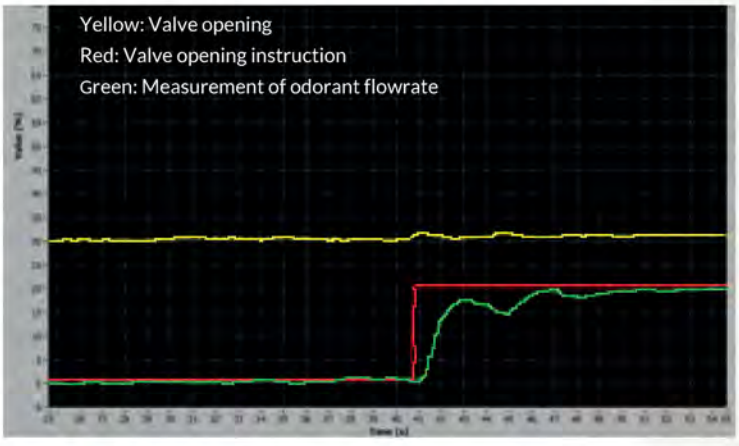
OdoZEN®

OdoZEN® is a patented natural gas odorization system. It is particularly suited for use with renewable gases such as biomethane.

A highly accurate system able to react to any sudden changes in pressure and flowrate, and able to dose over a wide range of concentrations.

Features

- Odorant injection regulating valve controlled via mass flowrate measurement.
- "Closed loop" odorant circulation.
- Stainless steel piston pump with Teflon double membrane.
- Automatic or manual operation via controller.
- Digital touchscreen interface.
- System-specific injection probe connected to the skid.
- ATEX zone 1 compliant.



Injection, setpoint and regulation curves

Benefits

- Immediate response to variations in flowrate and/or pressure.
- No under or over dosing of odorant.
- Steady and accurate control of the odorant injection.
- No risk of pudding at injection point.
- Turnkey, self-contained and compact unit.
- Mobile system available on request.

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1 3D drawing of the skid and injection probe assembly

1 Mass flow meter

2 Flow control valve

3 Pressure regulation stages

4 High pressure circulating pump

5 Injection probe

Technical specifications

Operating ambient temperature	0 - 55°C
Injection maximum pressure	70 barg
Flow of gas to be odorized	5 - 1000 Nm3/h
Odorant concentration setting	25mg/Nm3 (Other configurable values)
Wetted materials	316 stainless steel
Sealing	Perfluorocarbon, Teflon and Viton
Power supply	230 volts AC single phase (Rated power = 2000W)
Communication protocol	Modbus Ethernet TCP/IP (communication module provided)
Input/Output	4-20mA, TOR
Footprint (Approx.)	2000 x 1200 x 600 mm

Applications

Biomethane injection station

Start-up phase of a new installation or network extension.

Odorization correction (storage, reverse flow stations ...)

Datasheet_ODOZEN HF_V4 -January 2025

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ODORIZATION SYSTEM

for BIOMETHANE and BIOGNV

OdoZEN® (Low-Flow Serie)

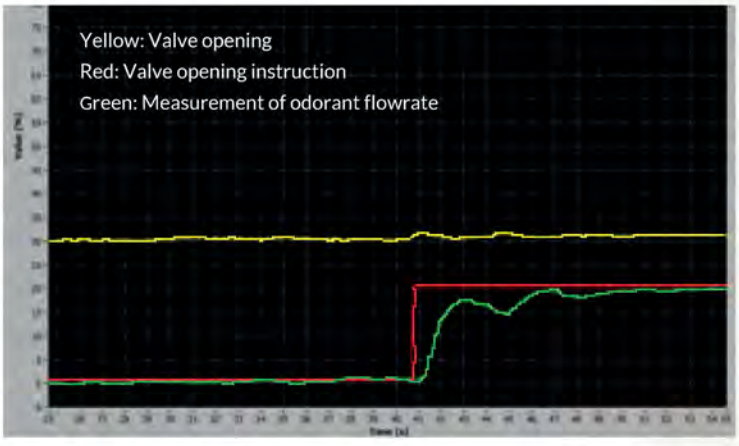
OdoZEN® - LF is a patented natural gas odorization system.

It is particularly suited for use with renewable gases such as biomethane. It allows to odorise **very low gas flows,** from **5Nm3/h**.

A highly accurate system **able to react** to any sudden changes in pressure and flowrate, and able to dose over a **wide range of concentrations.**

Features

- Odorant injection regulating valve controlled via mass flowrate measurement.
- Automatic or manual operation via controller.
- Digital touchscreen interface.
- System-specific injection probe connected to the skid.
- Mercaptan injection by differential pressure.
- ATEX zone 1 or zone 2 compliant.



Injection, setpoint and regulation curves

Benefits

- Immediate response to variations in flowrate and/or pressure.
- Stable and accurate dosing of the injected odorant.
- Regulation can be coupled with a mercaptan analyser.
- No risk of pudding at injection point.
- Turnkey, self-contained and compact unit.
- Custom system on request.

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3D drawing of odorization panel

1. Mass flow meter
2. Flow control valve
3. Cylinder of mercaptan reserve
4. Pressure transmitter
5. Junction box

Technical specifications

Operating ambient temperature	0 - 45 °C
Injection maximum pressure	15 barg
Flow of gas to be odorized	5 - 200 Nm3/h
Odorant concentration setting	25mg/Nm3 (Other configurable values)
Wetted materials	316 stainless steel
Sealing	Perfluorocarbon, Teflon and Viton
Power supply	230 volts AC single phase (Rated power = 2000W
Communication protocol	Modbus Ethernet TCP/IP (communication module provided)
Input/Output	4-20 mA, TOR
Footprint (Approx.)	Panel: 1000 x 1000 x 200 mm Enclosure: 530 x 430 x 200 mm

Applications

BioGNV station	Grid injection
Wastewater treatment plant	Industrial boiler feed

Datasheet_ODOZEN-LF_V1 - January 2025

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69280 Sainte-Consorce - France
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PROBE OUTLET ENCLOSURE FOR INJECTION CONTROL OF ODORANT

For natural gas

The probe outlet enclosure* for the injection of odorising product** is a system that provides **pressure and flow measurement at the exact injection point**.

This measurement is operated **in redundancy** of those realised by instruments located closed to the pump.

As the system is installed directly at the injection point, the user can **check final data are correct** and **do comply with odorisation legal stipulations.** The pressure and flow data comparison between the outlet of the pump and the injection point allows real-time correction.

Compact and lightweight, it is easy to install on a flange or a valve and avoid having a well or realising a huge assembly on site.

This enclosure can be used with a retractable probe together with a sprayer or a spray nozzle. **GENIE 760-IJ and GENIE 702-IJ injection probes** are well-suited for such installations on an underground or above ground pipelines.

This system is custom-made as it is designed depending on odorising product and pressure / flow data.

* This cabinet has been rewarded by the internal GRTgaz Challenge Initiatives Program.

** THT, TBM or other sulphur products

GENIE 702 probe outlet enclosure with sprayer

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From a traditional installation

To an installation with SOCLEMA enclosure

Features and benefits

- Measurement redundancy at injection point.
- Ultra-compact system (530 x 590 x 670 mm) with enclosure on site.
- Coriolis flow measurement high accuracy.
- Compliance with regulatory and security aspects of natural gas odorisation: enclosure removable and replaceable very quickly.
- Low THT volume in injection system (4/6 tubing).
- Automation of the supply valve with a disengaging electric actuator.
- Reliability of ¼ turn valve for complete stop.
- Check valve to eliminate gas flow up from pipeline.
- Possible purge of the system with nitrogen.
- Possible recirculation of odorising product.
- Equipment compliant with ATEX II 2G or out of scope.

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Tar Protocol sampling system

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TAR PROTOCOL

SAMPLING SYSTEM

SOCLEMA provides a turnkey solution for sampling of synthetic gases (syngas) produced by pyrolysis gasification.

This solution allows the identification of tar-type organic contaminants (BTX, PAH, phenol and derivatives, thiophene, etc...) produced during this process.

This is a laboratory protocol that has been industrialized for process measurements.

The successive passage between warmed and cooled bottles allows the isolation of these contaminants for analysis.

Achievement example: mobile trolley for ATEX area

Caracteristics

- Automated sampling system.
- Peltier module for cooling to - 20°C (depending on outside t°).
- Possible temperature regulation (hot and cold).
- Circulation pump for pressure <0.5 bar.
- Reinforced tank insulation to limit the influence of ambient temperature.
- Quick Connect In/Out connections.

Applications

- Characterization of tar in syngas according to TAR PROTOCOL.
- Removal of tar in syngas.

Advantages

- Easy use without dry ice.
- Accurate flow rate adjustment and volume transfer calculation using the mass flow meter.
- Improved thermal conductivity due to tanks machined from single aluminum block.
- Smart bubbling and gas exchange in isopropanol optimized due to elongated shape of bottle.
- Sample bottles integrated into cover for easy transport to the measurement unit.
- Different size and assembly available depending on installation requirements.

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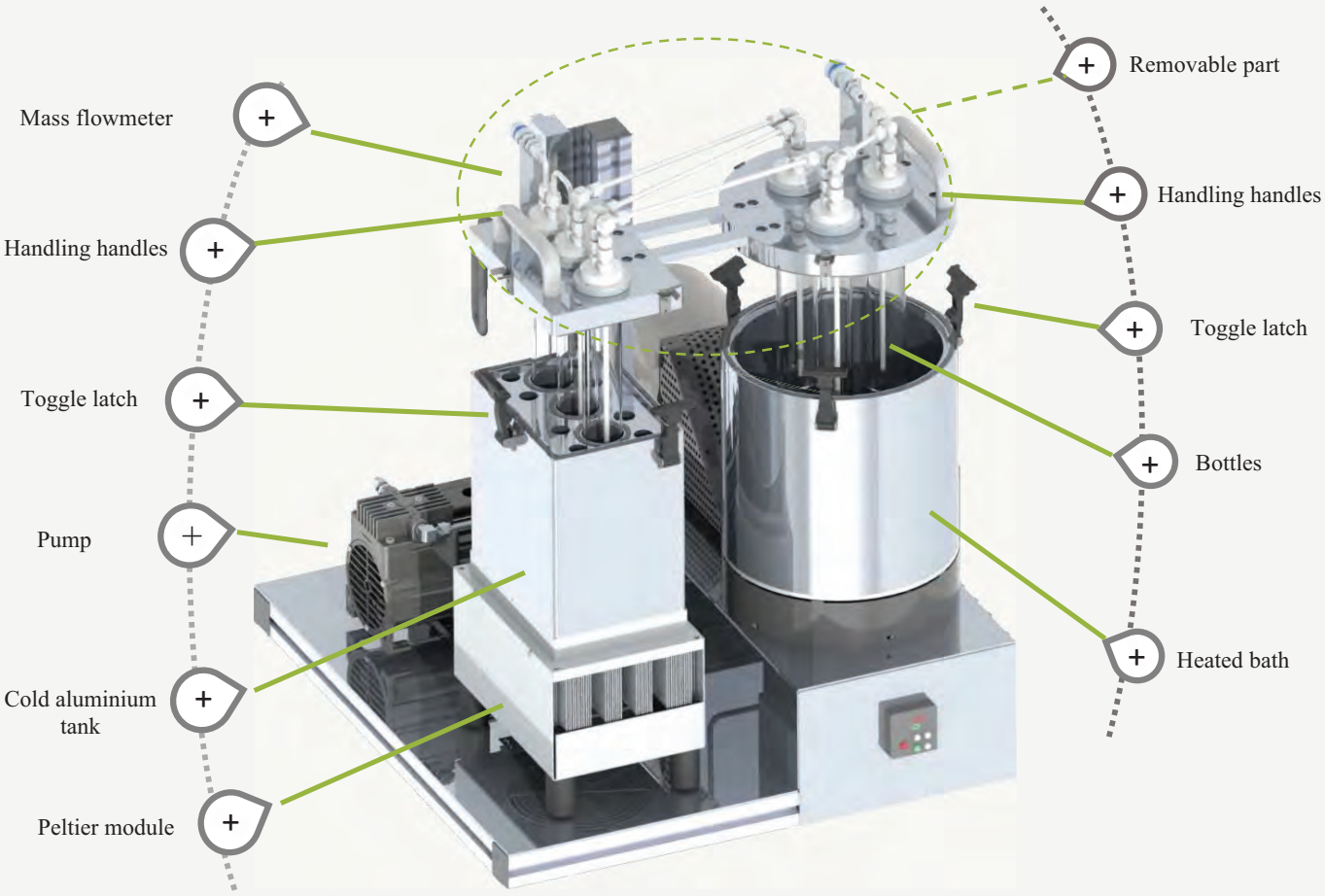
Laboratory model drawing



Technical specifications

Ambient operating temperature	0°C to 40°C
Service temperature	-25°C to 180°C
Maximum service pressure	1,5 barg
Power supply	220 V
Power comsumption	± 1000 W
Cold bath temperature regulation	-20°C at ambient t°
Heated bath temperature regulation	+40°C at ambient t°
Sampling flow rate	0,5 - 5 Nl / min
Bottle capacity	240 ml

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Syngas sampling

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SyngasClean SAMPLING SYSTEM

The main difficulty of the analysis of synthetic gas "Syngas" is the presence of **tars**. Indeed, aerosols and tar deposits generate significant maintenance and can damage analysers or make them less reliable.

The **SyngasClean** system provides a turnkey solution for **sampling syngas from pyrolysis gasification.**

It allows the sample to be conditioned before passing through the analyzers, by cooling it to **condense the tars** or **oily residues**, and **separating** them from the gas phase using a cyclonic separator. The system also separates the **particles**.

Several formats are possible for indoor or outdoor use.

Example of realisation: syngas conditioning panel

Caracteristics

- Turnkey sampling system.
- Thermoelectric Peltier heat exchanger.
- Adjustable exchanger temperature and sampling flow rate.
- Cyclonic filtration for separation of liquids and gas particles.
- Second filtration level for analyser protection (2 µm).
- Sample suction and circulation pump.
- 316L stainless steel valves, fittings and tubing.
- Condensate recovery pot with optional level detection.

Applications

- Gas analysis resulting from pyrolysis and/or pyrogasification (performance monitoring).
- Mass balance of syngas produced.
- Crude syngas analysis.
- Wet gas analysis.

Benefits

- Processing of highly loaded samples.
- Modular for different types of analyzers.
- Few maintenance: no filter element in cyclonic filter.
- Available in fixed and mobile versions.

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Overall plan of an industrial model installed on site

Technical specifications

Maximum operating pressure	1.5 barg
Operating ambient temperature	From 5 to 40°C
Sample maximum temperature	180°C
Sample flow rate range	From 0 to 5 L/min
Exchanger temperature range	From 0°C to -20°C
Wetted materials	316L stainless steel
Particle filtration level	< 2 µm
Power supply	230 V and 16A max

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Sampling of synthesis gas "Syngas"

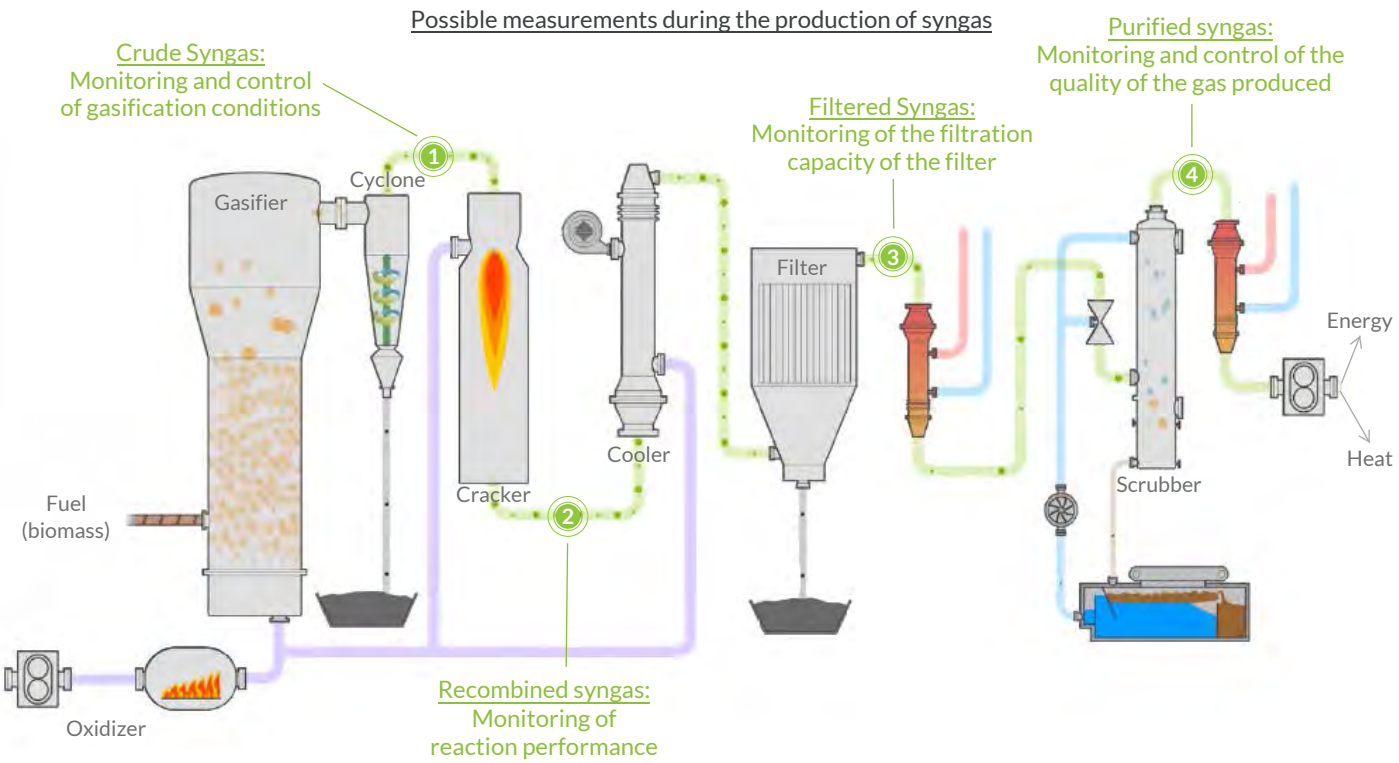
1- Context

The **Syngas,** or **synthesis gas** is an energy resulting from a process of **waste recovery** produced from local resources and which allows the reduction of CO_2 emissions in our industries.

This synthesis gas, which can be produced from biomass, is created by the pyrogasification of different carbon-containing materials to give a mixture consisting mainly of hydrogen (H_2), carbon monoxide (CO), methane (CH_4), oxygen (O_2), carbon dioxide (CO_2) and nitrogen (N_2).

This gas can be used directly after purification for the combined production of **electricity** and **heat** in cogeneration, or be burned directly in a conventional boiler to produce heat. The production of **biofuels** by Fischer-Tropsch or methanation processes, as well as the production of **bio-hydrogen** are also possible using syngas.

The control and monitoring of this production process are essential regardless of the final application.



Schematic of pyrogaeification processes (source : Pyrogaseification Club ATEE)

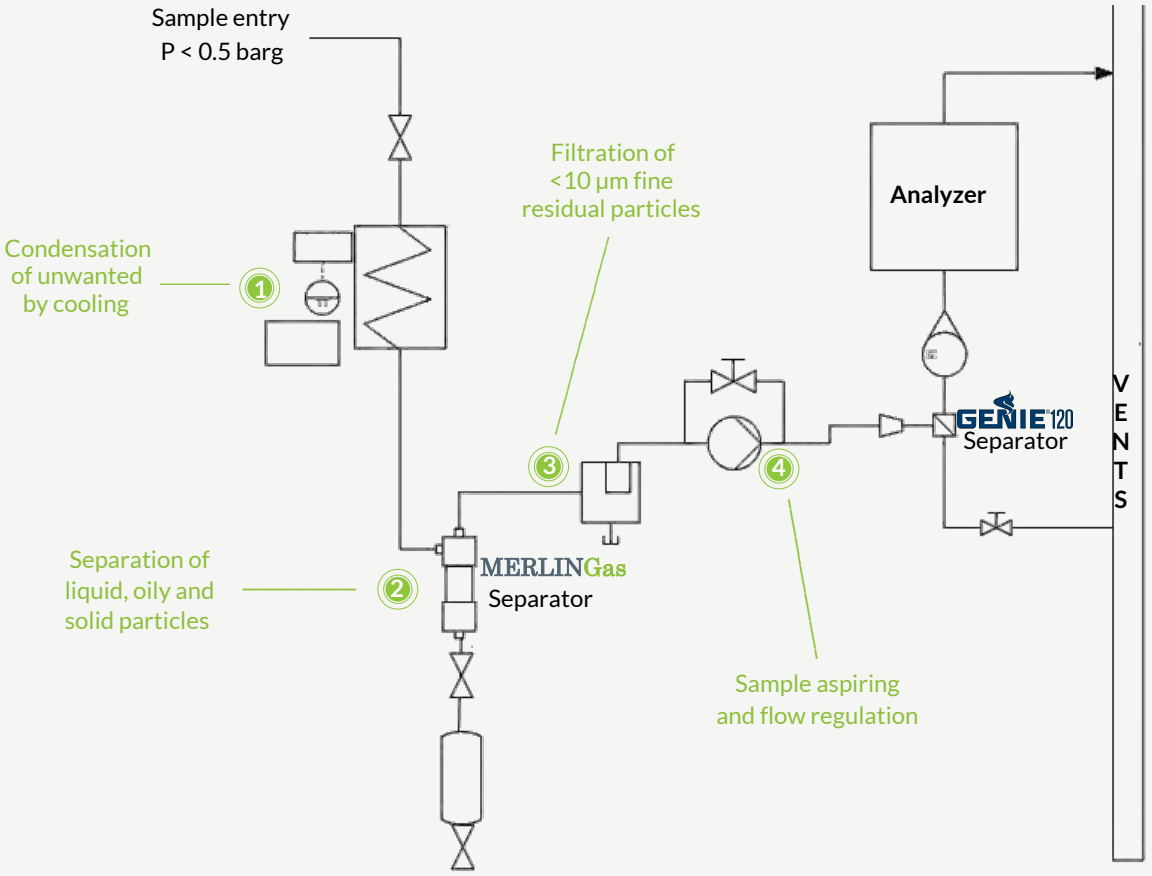
2- Problematics

During the production of Syngas, due to the high temperatures and in an uncontrolled manner, several **heavy organic compounds** are generated by thermal decomposition. These compounds, called **tars,** easily condense on cold spots, which causes fouling of the pipes and a loss of efficiency of heat exchanges.

Although tars are not the only source of poisoning (particles, metallic salts, inorganic sulfur, chlorine and nitrogen compounds), they nevertheless remain the most difficult pollutant to eliminate and cause premature wear and corrosion problems.
These pollutants present in the manufacturing process are found in the sample when measurements are made. Whatever the type of measurement (gas chromatograph, infrared spectrometer, calorimeter, etc.) and its objective (process optimisation, control and/or validation of the characteristics of the gas produced), it is necessary to **eliminate these pollutants** while maintaining the **sample integrity**.

3- The SOCLEMA solution

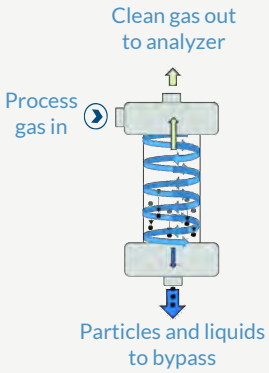
SOCLEMA, as an expert in sampling solutions, offers a turnkey system to eliminate tars and oily residues from this manufacturing process, while preserving the integrity of the sample and with reduced maintenance for any type of continuous gas analysis. This is our **SyngasClean** system. Through upstream sample cooling and cyclonic separation, liquid, oily and solid particles are removed from the sample.



MERLINGas separator

Centrifugal force and cyclone separate liquid and/or solid particles and pull them downwards by gravity.

The aspiring circulation of the sample on this separator (as shown in the diagram opposite) also helps to protect the pump.



Example of **SyngasClean** realisation

4- Benefits

- Processing of heavily loaded samples
- Modular for different types of analyzers
- Low maintenance: no filter element in the cyclone filter
- Available in fixed and mobile versions

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PRODUCTS

Sampling probes

Separators and filters

Pressure regulators

Tubes and traced tubing

Thermostatic valves

Dewpoint analysers

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Sampling probes

SOCLEMA

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Probes with integrated pressure regulation

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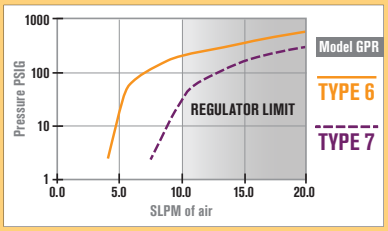
GENIE® GPR™ Probe Regulator

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.

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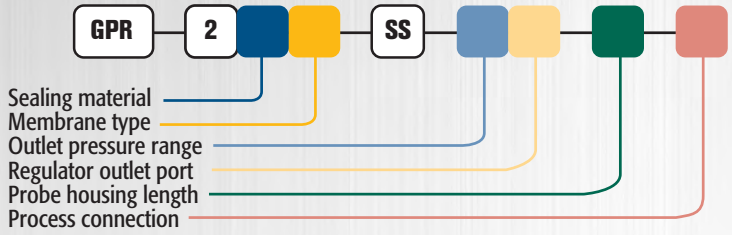
The Sampling Experts™ | geniefilters.com

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)*				

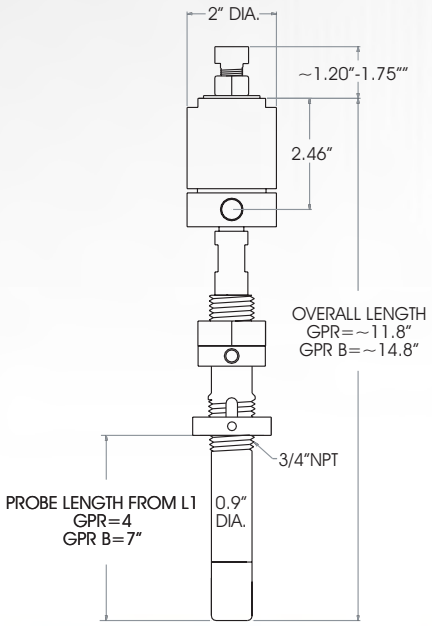
How to build the model number (probe and housing):



Dimensions

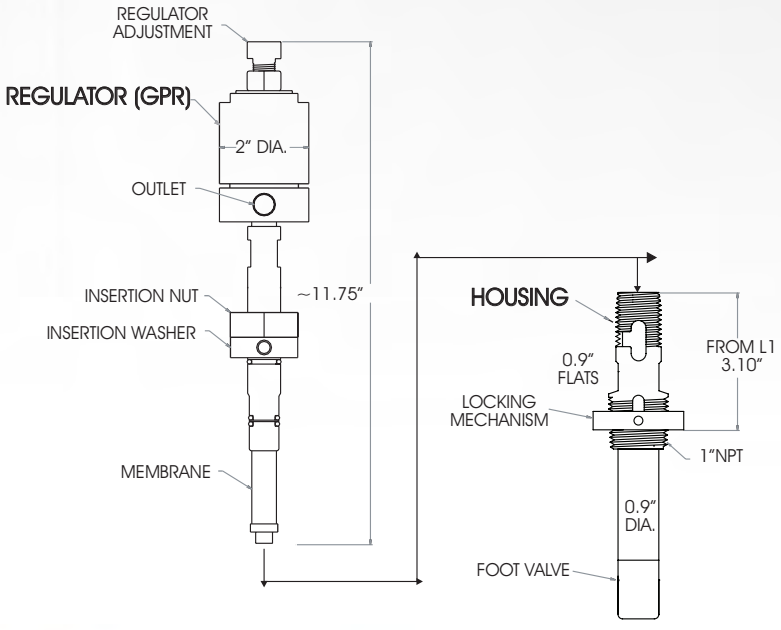
Inserted

3/4" NPT x 0.9" DIAMETER HOUSING SHOWN



Extracted

1" NPT x 0.9" DIAMETER HOUSING SHOWN



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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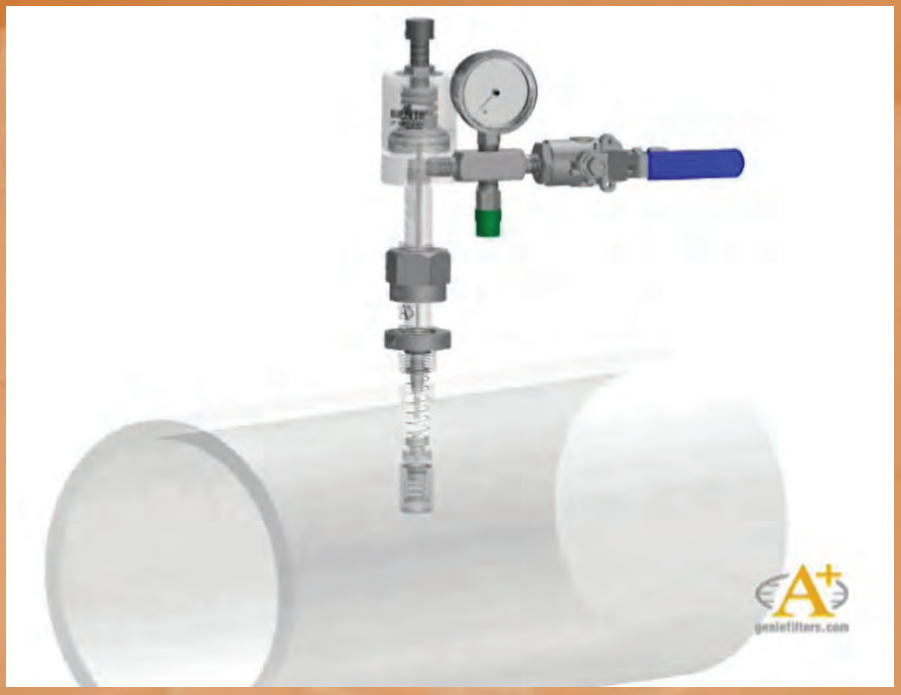
Video showing GENIE GPR probe operating



GENIE® 755
Direct Drive Probe™

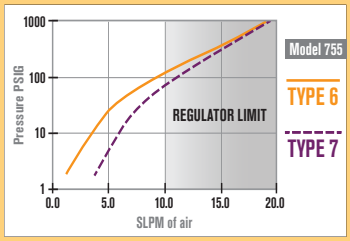
The safest and most versatile membrane tip probe regulator available on the market

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

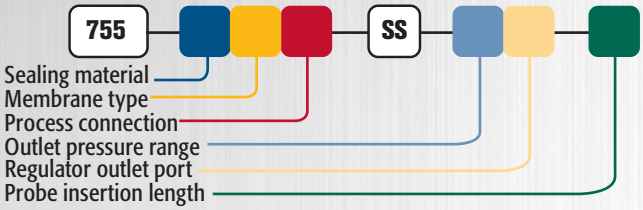
A+ Corporation

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:

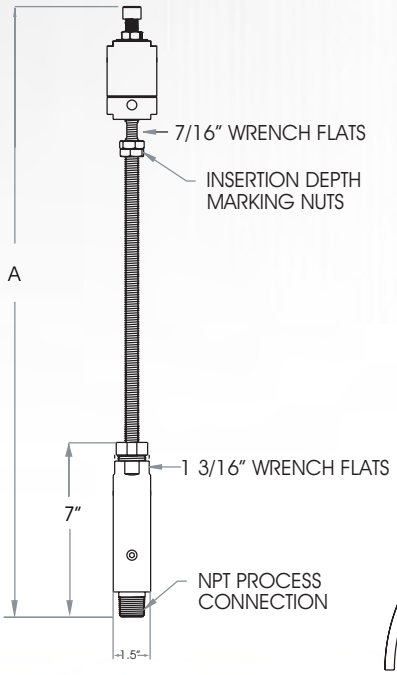


Spare Parts & Accessories (sold separately)

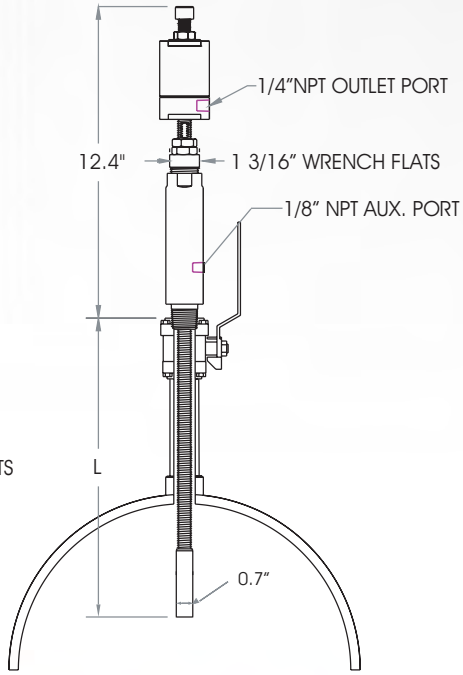
- Sealing material replacement (packing gland)
  Part # 75X-570 for PTFE/Neoprene rubber
  Part # 75X-5J0 for RGD resistant HNBR
- Complete membrane assembly replacement
  Part # 75X-CMA-506 (contains 1 complete assembly)
- Regulator seat cartridge assembly replacement- Part # 755-7_1SS
  (Use for serial #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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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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Video showing GENIE 755 probe operating

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Probes without integrated pressure regulation

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) shorter lengths available **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

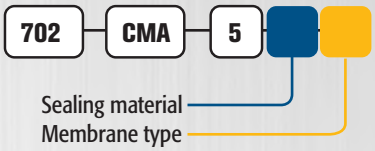
Your model number is determined by your specific needs. Choose options below.

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 length (specified in inches): up to a maximum 120 inches.	
Regulator coupling	ACC-SS-702-1 (recommended when attaching external regulator)	

How to build the model number:

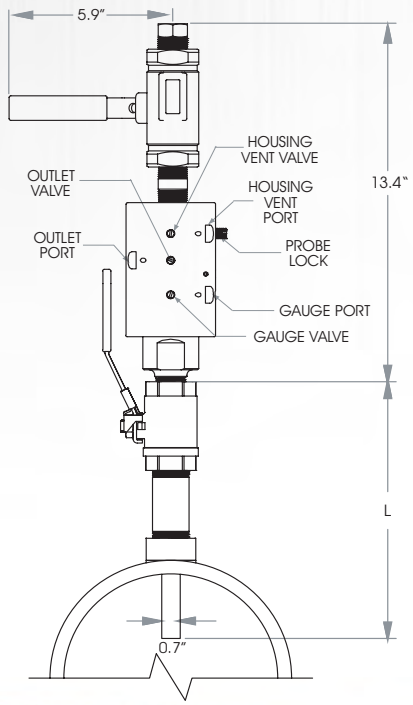
How to build the replacement membrane number:

(Contains 1 complete assembly)

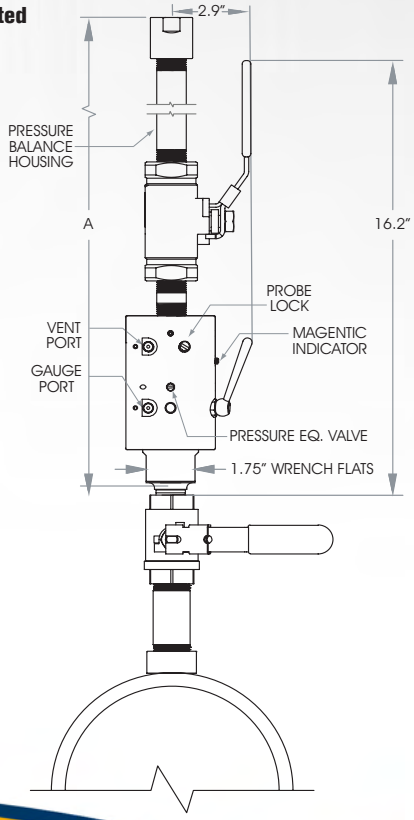


Dimensions

Inserted



Extracted



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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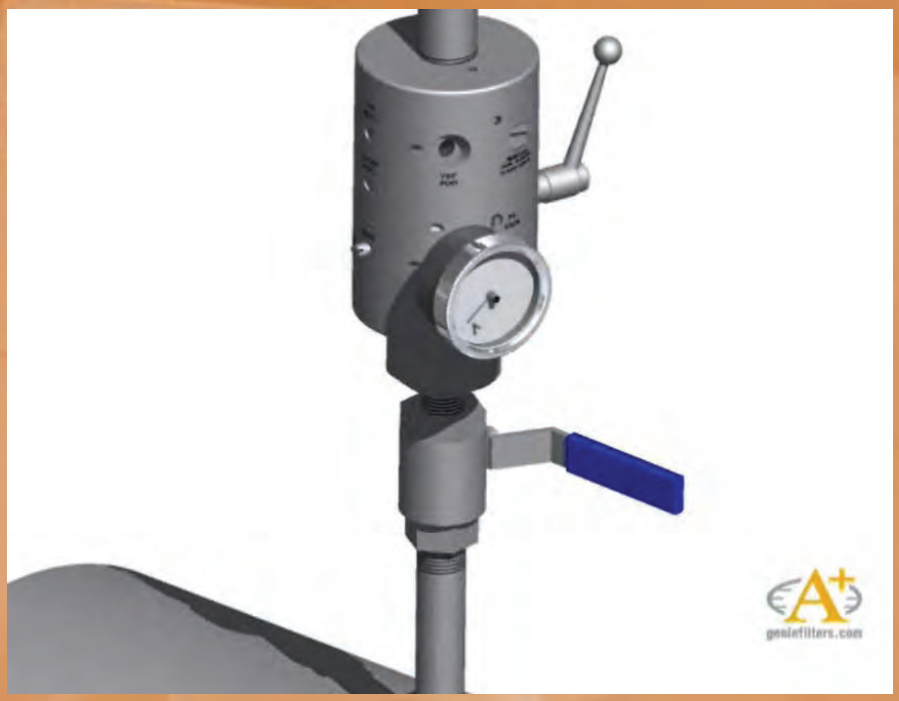
Video showing GENIE 702 probe operating



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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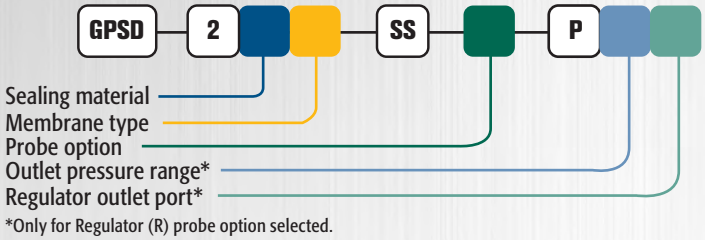
Model Numbering & Additional Part Numbers

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)*				

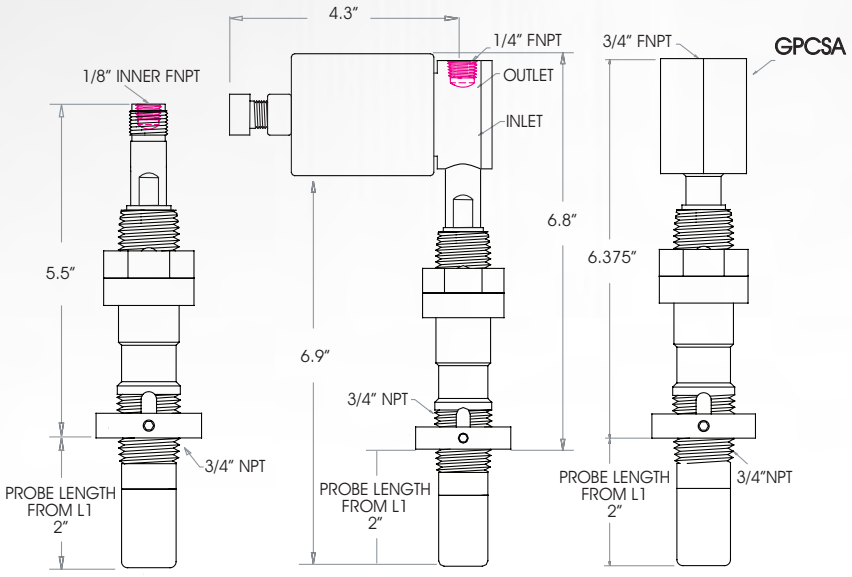
How to build the model number (probe and housing):



*Only for Regulator (R) probe option selected.

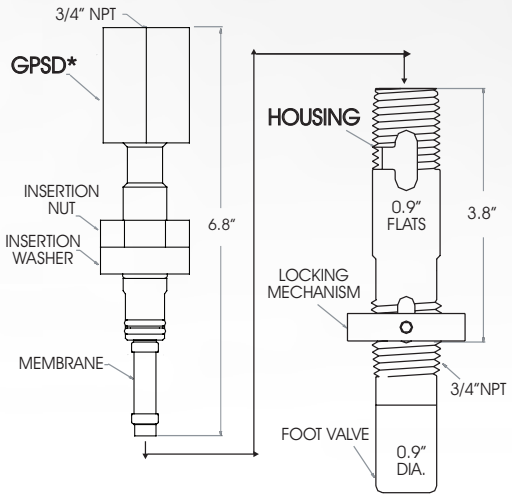
Dimensions

Inserted



Regulator option **CSA option**

Extracted



***GPSD with CSA option shown**

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

A+ Corporation

Model Numbering & Additional Part Numbers

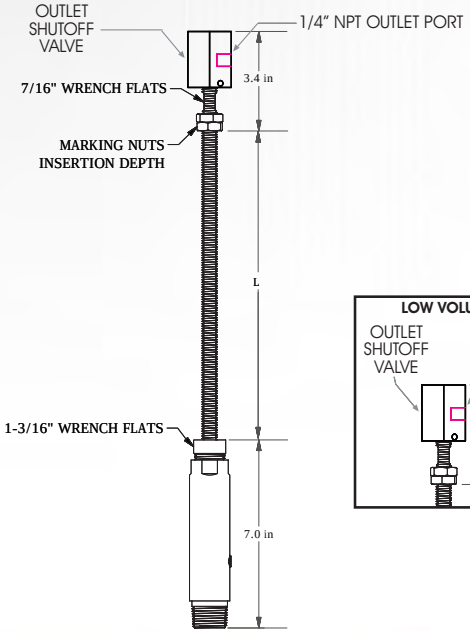
Your model number is determined by your specific needs. Choose options below.

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 = 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)	

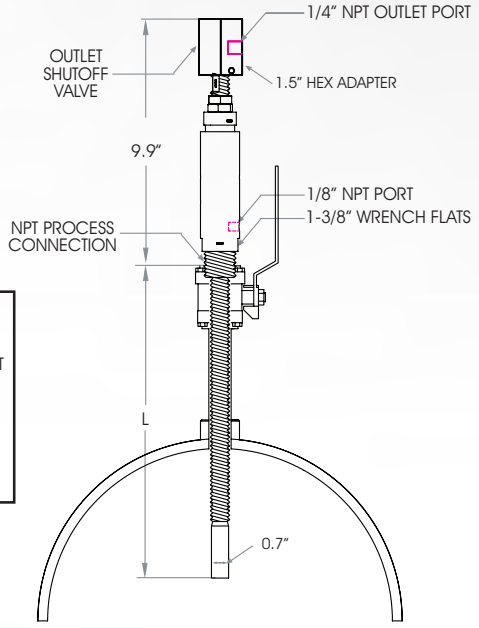
How to build the model number:

Dimensions

Uninstalled



Installed



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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

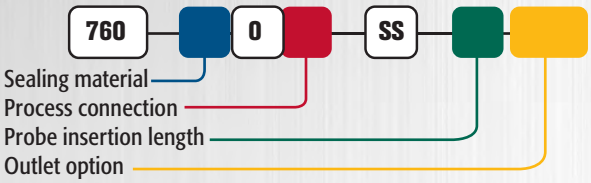
A+ Corporation

Model Numbering & Additional Part Numbers

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

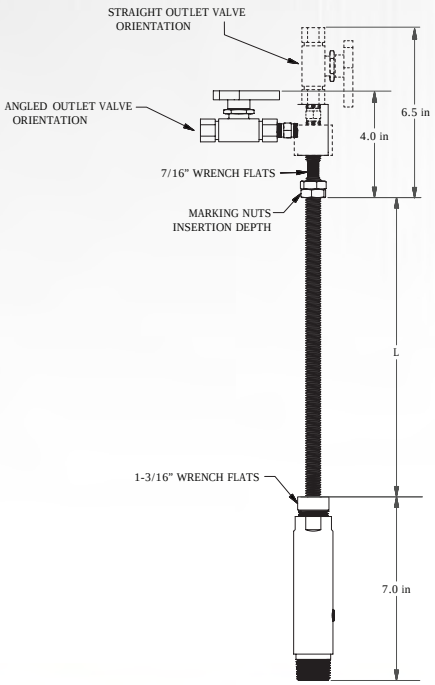
Sealing material	J9 = RGD resistant HNBR (Typically used with liquefied gases) 0 = Neoprene rubber	(other materials available upon request)
Process connection	3 = 3/4" NPT	4 = 1" NPT 6 = 1.5" NPT
Probe insertion length	8, 12, 18, 24, 36, 48 inches	
Outlet option	Blank = Angled, with valve V = Straight, 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:

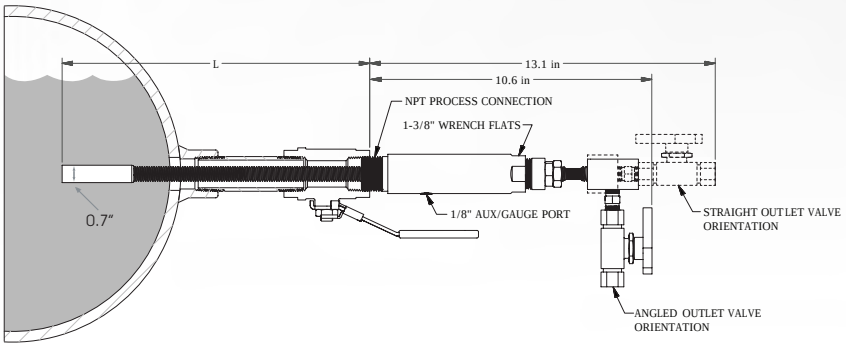


Dimensions

Uninstalled



Installed



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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

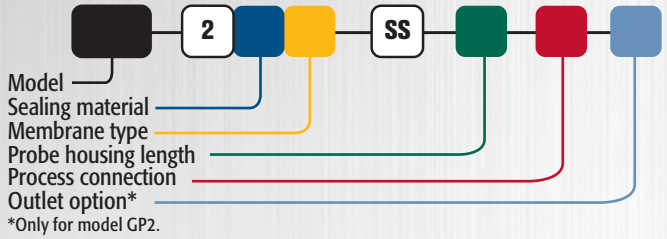
A+ Corporation

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):

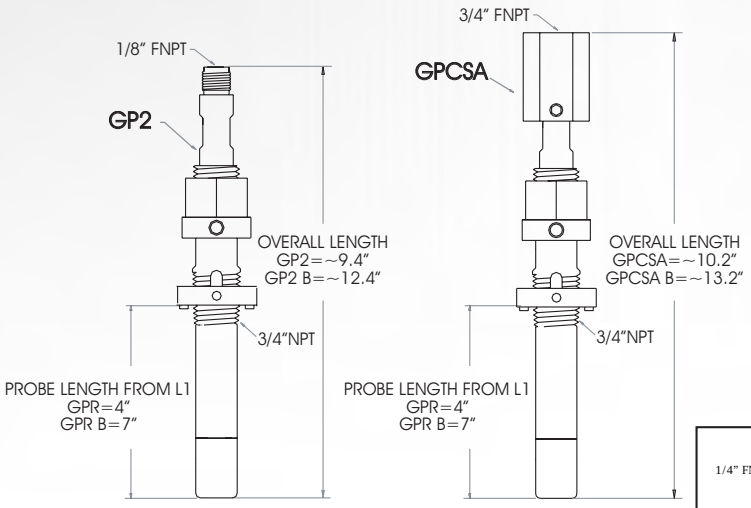


*Only for model GP2.

Dimensions

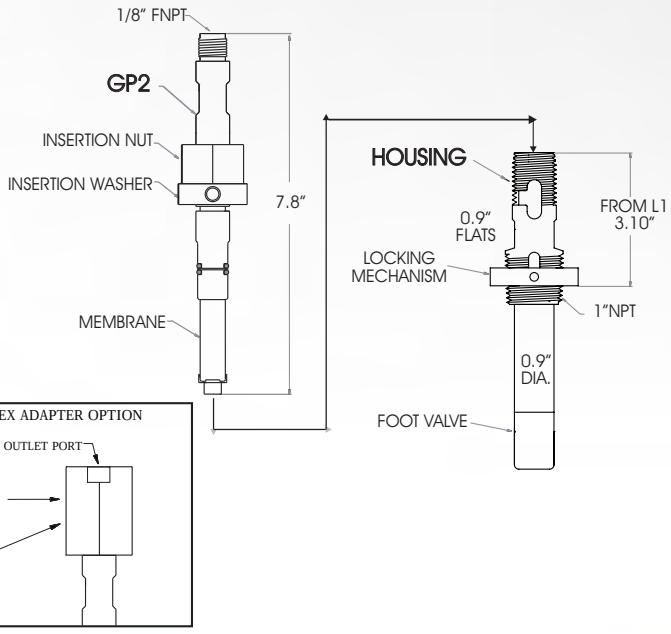
Inserted

3/4" NPT x 0.9" DIAMETER HOUSING SHOWN



Extracted

1" NPT x 0.9" DIAMETER HOUSING SHOWN



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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Advanced Industrial Sampling

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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" (279 mm)
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

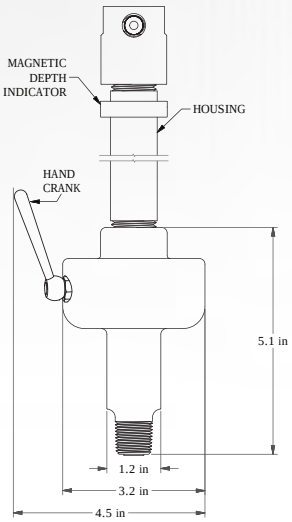
Your model number is determined by your specific needs. Choose options below.

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)		

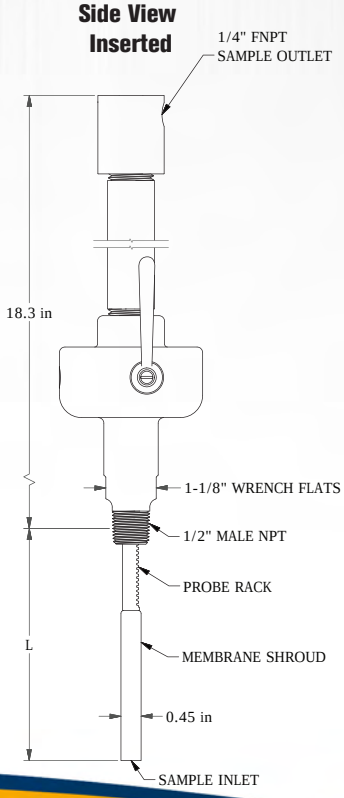
How to build the model number:

Dimensions

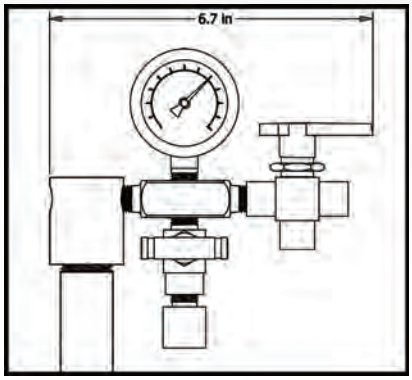
Front View Extracted



Side View Inserted



701 Spot Sampling Manifold Option



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Video showing GENIE 701 probe operating

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Probe accessories

PROBE OUTLET MANIFOLD
SOCMS

The probe outlet manifold SOCMS is specifically designed for gas sampling.

Its consists of a pressure gauge, a ball valve and a relief valve. It is designed to thread directly into sampling probes with integrated pressure regulation or regulators. It provides a means to monitor regulator outlet pressure and block flow. This manifold complies with analysis standards wih a straight-through sample flow path, a minimal dead volume and a low volume.

Security manifold SOCMS

Caracteristics

- Minimal low volume and surface area
- Compact
- Compliant with analysis standard
- Pressure gauge with double scale (optional)
- Special setting of relief valve (possible)
- 3.1 & NACE certificates (optional)

Benefits

- Monitors regulator outlet pressure
- Protects pressure gauge from overpressure
- Collectable relief valve
- Preserves sample integrity
- Improves safety of personnel

Technical specifications

Maximum pressure rating	Dependant upon pressure gauge selected
Temperature range	From -20°C to 190°C
Outlet port size	Male NPT, 1/4" Female NPT, 1/8" O.D, 1/4" O.D or 6 mm O.D
Machined part material	Stainless steel
Ball valve seal material	PTFE
Relief valve seal material	Fluoroelastomer

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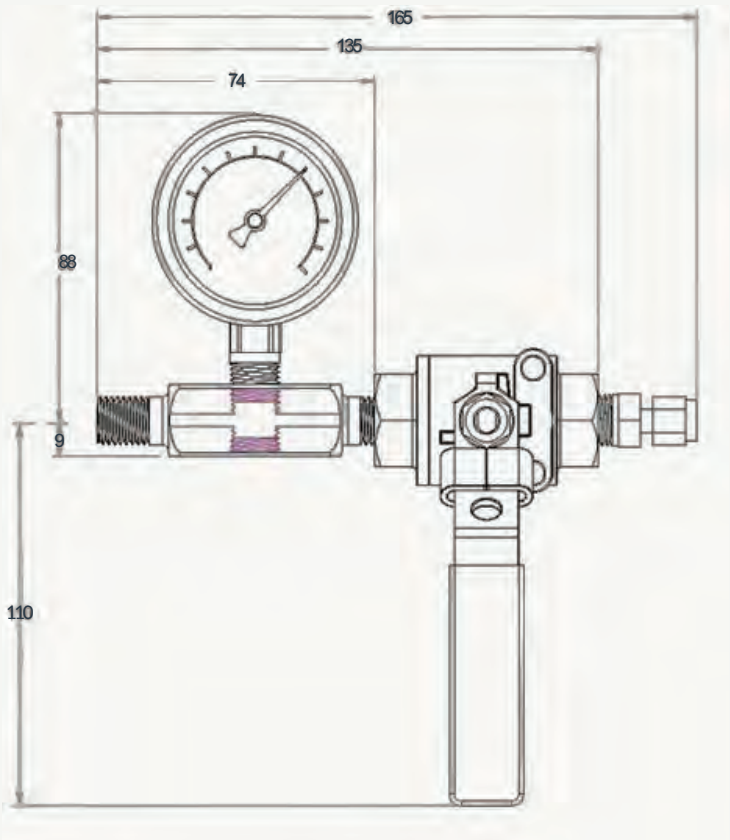
Dimensions



To order

SOCMS	-	BG6	-	60	-	0	-	SS

Security manifold

Gauge scale range

BG0 : No gauge
BG6 : From 0 to 6 barg
BG10 : From 0 to 10 barg
BG25 : From 0 to 25 barg

SS : Acier inoxydable 316

Relief valve setting

0 : No relief valve
25 : 25 psig (1,72 barg)
60 : 60 psig (4.14 Barg)
100 : 100 psig (6,89 barg)
TAR3 : 3 to 50 psig (0.21 to 3.50 Barg)
TAR50 : 50 to 150 psig (3.50 to 10.40 Barg)
TAR150 : 150 to 350 psig (10.40 to 24.20 Barg)

Material

SS : Stainless steel
SN : Sulfinert treated stainless steel

Outlet port

0 – Male NPT (no ball valve)
1 – 1/4"Female NPT
2 – 1/8" O.D
4 – 1/4" O.D
6M – 6mm O.D

Plaquette_SOCMS_V1_09/11/2023-EN

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ZA Clapeloup - 4, rue des Roses,
69280 Sainte-Consorce - France

+33 (0)4 78 87 89 45
www.soclema.com

INSULATED JACKETS
SOCPROTHERM

SOCPROTHERM insulated jackets are designed for **insulation** and **thermal protection** of **sampling equipment** and accessories.

Ambient temperature changes, especially between daytime and nightime, can create numerous problems for your sampling system. Low ambient temperatures can cool a sample below its dew point, causing condensation. This condensation can result in regulator freeze up, inaccurate sample analysis and analyser damage.

Insulating the pipeline and other components of the sample system will help to maintain the sample at a consistent temperature. It will help to minimise the effects of these temperature changes and prevent sample condensation.

SOCPROTHERM jackets are designed to insulate the area around the sample tap, as well as sample probes, pressure regulators and valves.

SOCPROTHERM range

Caracteristics and benefits

- Prevent condensation
- Preserve sample integrity
- More economical option than a rigid enclosure
- Antistatic envelope (loaded with carbon fiber)
- Waterproof

Technical specifications

Envelope material	ATEX anti-static PTFE fabric
Insulation material	Elastomeric foam EPDM, 13 mm thickness
Maximum temperature	150°C for insulating foam et 200°C for envelope
Minimum temperature	-25°C
Fluid maximum temperature	120°C

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Advanced Industrial Sampling

Dimensions

SOCPROTHERM-TYPE-1
Sample probe jacket

SOCPROTHERM-TYPE-9
Cover for probe and external regulator

SOCPROTHERM-TYPE-5
Valve cover extension assembly

SOCPROHERM-TYPE-4
30 cm extension for probe

SOCPROTHERM-TYPE-2
Pipeline blanket

SOCPROTHERM-TYPE-2-RALL
Extension straps for TYPE-2
(Ø pipe > DN700)

SOCPROTHERM-TYPE-3
30 cm extension for probe

SOCPROTHERM-TYPE-10
Regulator cover

Configuration examples

TYPE-1+TYPE-2

TYPE-1+TYPE-3+TYPE-2

TYPE-9+TYPE-4+TYPE-2

TYPE-1+TYPE-5+TYPE-2

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SOCLEMA

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Separators and filters

SOCLEMA
Advanced Industrial Sampling

Separators and filters for gas applications

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CYCLONE SEPARATOR
for GAS ANALYSIS SYSTEMS
MerlinGas

The MERLINGas cyclone separator is an innovative and patented separation technology that protects on-line analyzers from liquids, solid particulates and oily mists in the sample.

The MERLINGas design offers optimal separation even at a very low gas flow rate (from 30 l/h).

Without using any filter element (sintered stainless steel, micro-fibre or fabric), the MERLINGas effectively separates liquid and solid particulates (up to 10 microns) from the gas stream by a vortex effect and centrifugal force. Indeed, the difference of density between gas and solid particulates / liquids provides separation.

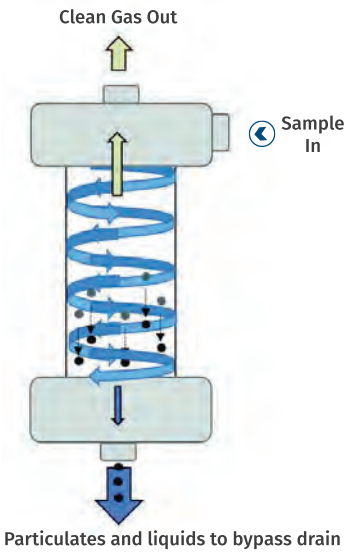
These separated particulates flow axially downwards out of the separator. The dry and clean gas sample exits from the top side of the separator to the analyzer.

MERLINGas separator

Applications

- Measurement in Syngas.
- Measurement after scrubbing.
- Sample pre-conditioning with fast loop.
- Mass balance with condensate recovery pots.
- Separation of fine particulates such as powder.
- Measurement in corrosive environments.

Operation



Advantages

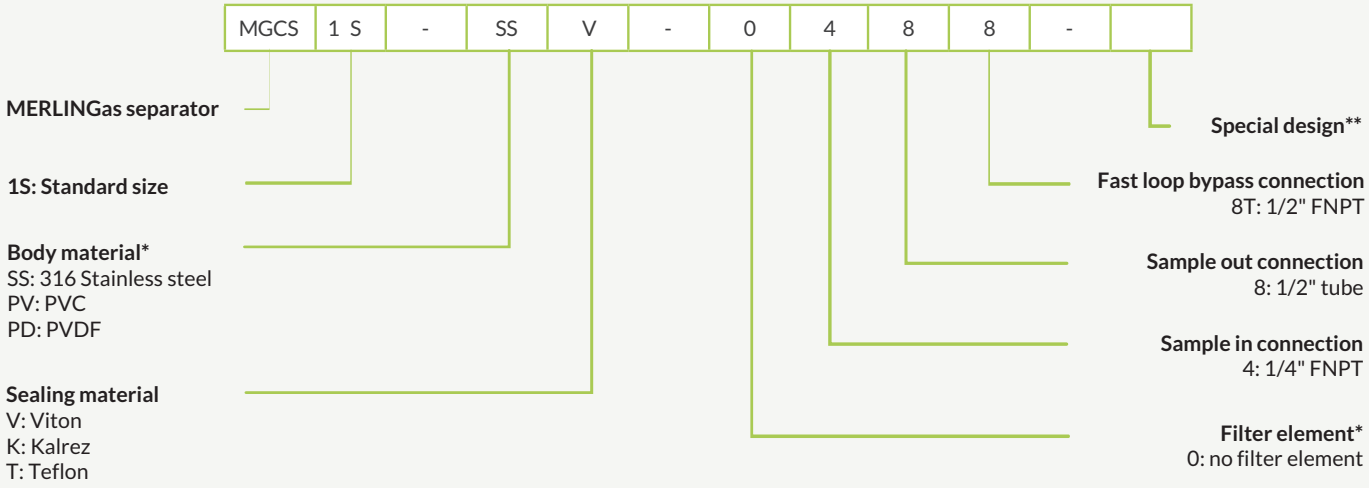
- Keeps sample integrity.
- Operates from an inlet flow of 30 l/h.
- Removes particulates up to 7750 kg/m3 and greater than 10 microns.
- Eliminates oily mists to protect measurement devices.
- No filter element means no risk of clogging or early fouling .
- No maintenance.
- Use in pressure on fast loop and in vacuum with condensate collector.
- Can be used in series for very dirty samples.
- Stress testing carried out by TUV.

SOCLEMA
Advanced Industrial Sampling

Technical specifications

Maximum service pressure	100 barg
Maximum temperature	200°C
Recommended flow rate	30-350 Nl/h
Maximum flow rate	2000 Nl/h
Differential pressure	0,5 bar
Body material	316 Stainless steel (other on request)
Sealing material	Viton, Kalrez or Teflon
Internal volume	160 cc
Sample in connection	1/4" FNPT
Fast loop bypass connection	1/2" FNPT
Sample out connection	1/2" tube
Dimensions	H 267 mm x ø 65 mm

To order



* Other: on request
** Contact us for any specific request

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Video showing MERLINgaz separator operating

Video showing SOCLEMA sparger with MERLIN separator

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 recommended membrane flow rate	**Type 6 membrane:** 300 cc/min Results in approx. 2 PSI pressure differential. For higher flow rates, contact the factory.
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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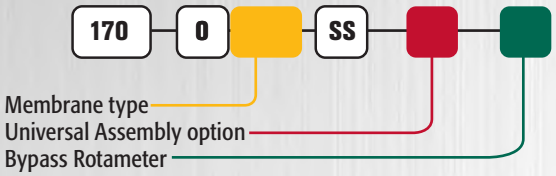
Model Numbering & Additional Part Numbers

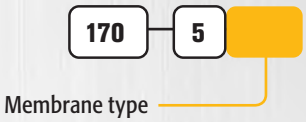
Your model number is determined by your specific needs. Choose options below.

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:

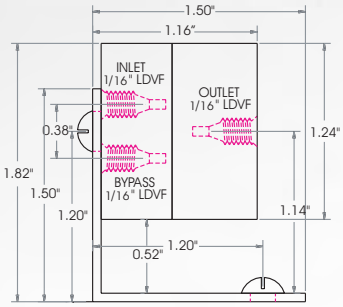


How to build the replacement membrane kit number:

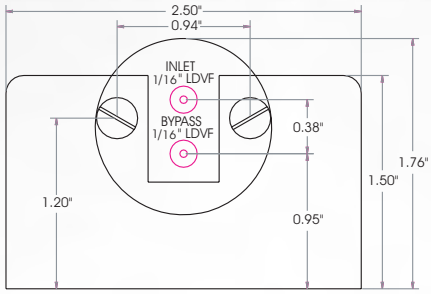


Dimensions

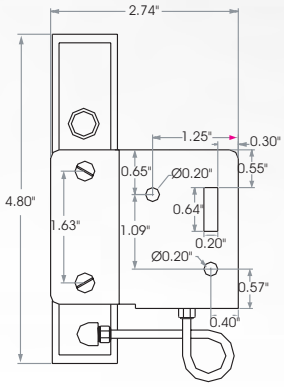
Side View



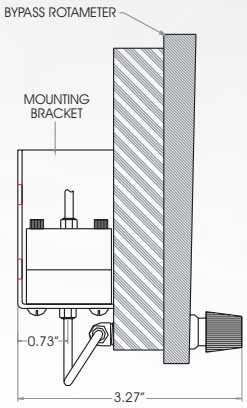
Back View



Assembly Back View



Assembly Side View



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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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 Recommended 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 rates	Requirement varies with application
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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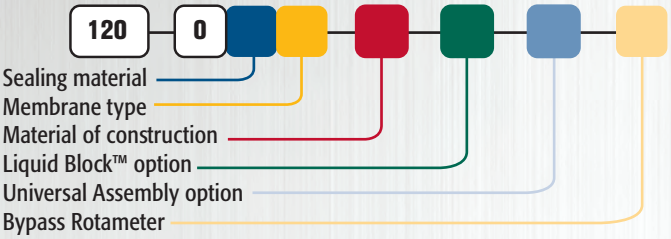
Model Numbering & Additional Part Numbers

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

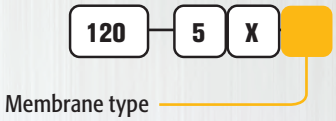
Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	*(others available upon request)*
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Material of construction	SS = Stainless Steel	K = Kynar	
Liquid Block™ 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:



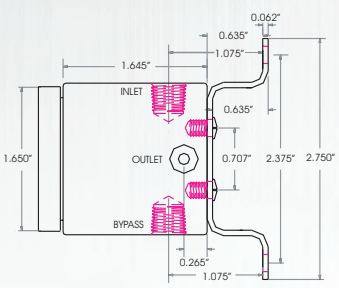
How to build the replacement membrane kit number:

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

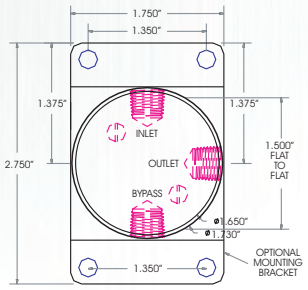


Dimensions

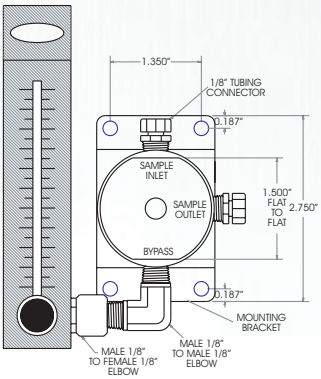
Side View



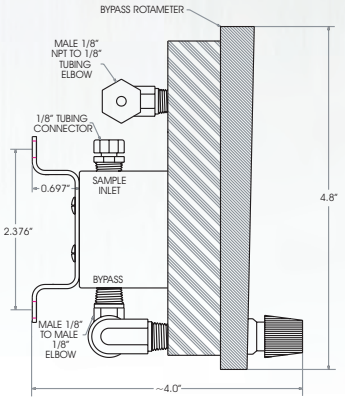
Front View



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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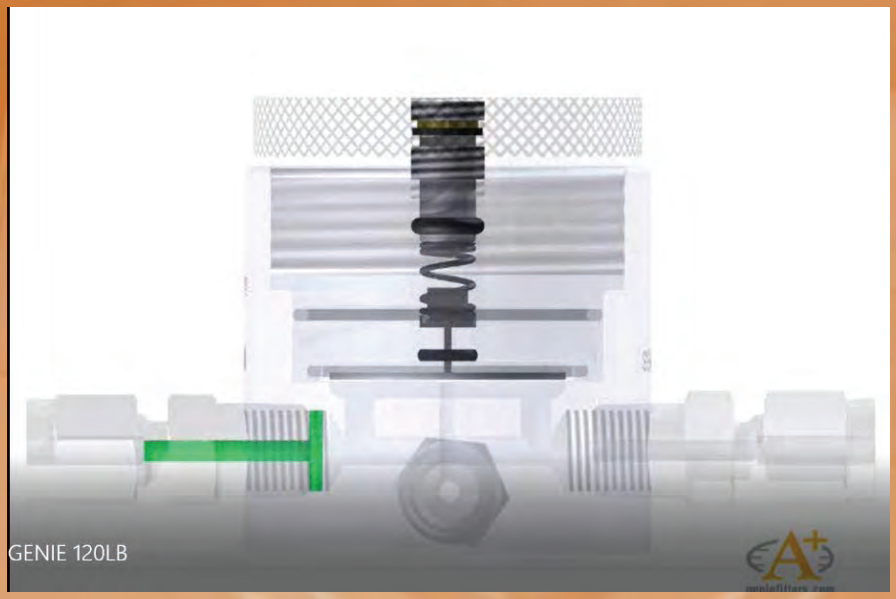
Video showing GENIE 120 separator with Liquid Block



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 Recommended 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 rates	Requirement varies with application
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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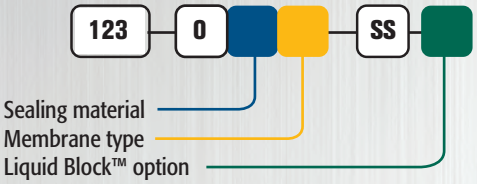
Model Numbering & Additional Part Numbers

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

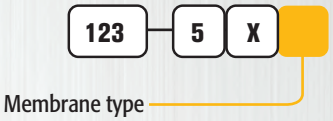
Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	J = RGD resistant HNBR	(other materials available)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids			
Liquid Block™ option	Blank = No Liquid Block™ option	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:



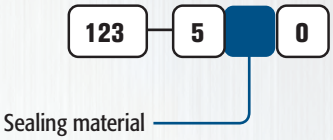
How to build the replacement membrane kit number:

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



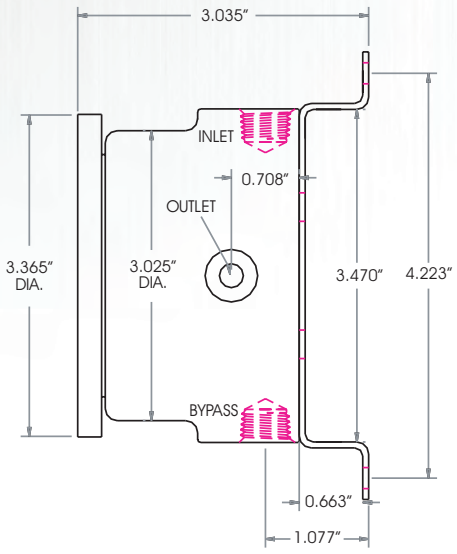
How to build the replacement sealing material number:

(One o-ring per kit.)

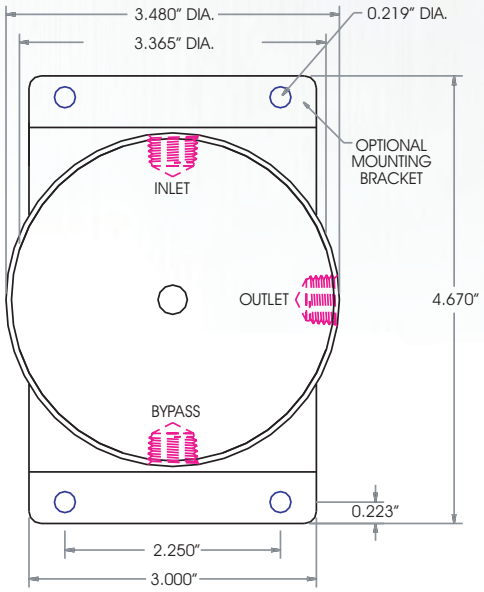


Dimensions

Side View



Front View



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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 Recommended 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 rates	Requirement varies with application
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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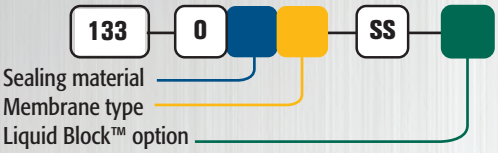
Model Numbering & Additional Part Numbers

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

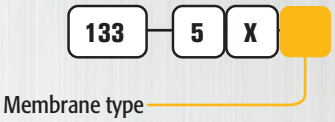
Sealing material	0 = fluoroelastomer	1 = perfluoroelastomer	(others available upon request)
Membrane type	6 = Better Rejection; Rejects ALL types of liquids from vapor 7 = Highest Temps; Rejects ONLY high surface tension liquids		
Liquid Block™ option	Blank = No Liquid Block™	LB = Liquid Block™ *	*May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

Model number:



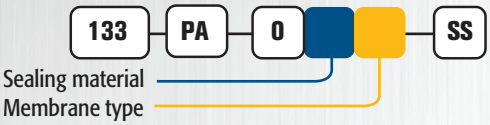
Replacement membrane kit number:

Five membranes per kit. O-rings sold separately



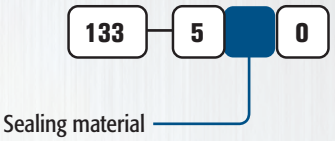
Assembly for probe mounting:

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:

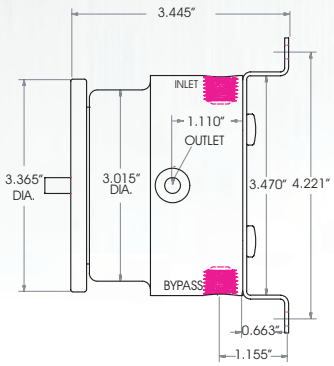
One o-ring per kit.



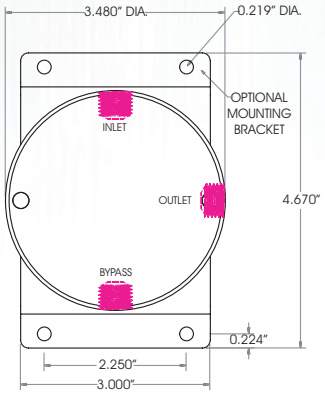
Dimensions

Individual product

Side View



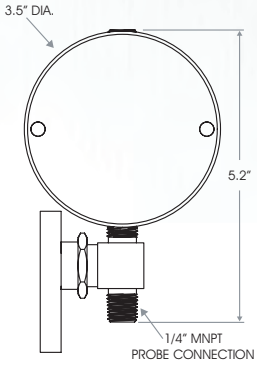
Front View



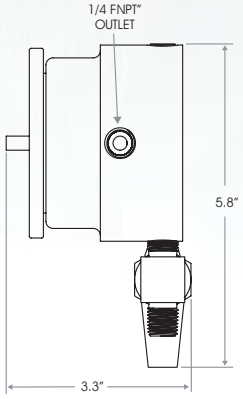
If left outlet required, invert Genie and use port labeled "BYPASS" as inlet, because sample must enter upper port.

Probe mounted assembly

Front View



Side View



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

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GENIE®
Membrane Technology™

Comparison Chart

Genie® Membrane Separator Comparison Chart

Model		Maximum Recommended Outlet Flow Rate		Pressure psig (barg)	Ports	Liquid Block Option Auto Reset Maximum Pressure psig (barg)	Internal Volume cc
		Better Protection **Type 6** LPM	Higher Flow **Type 7** LPM				
Separate Liquid from a Gas Sample							
	**170**	0.3		500 (34.5)	1/16" zero dead volume		0.16
	**120**	0.7	2.5	2,000 (137.9)	1/8" FNPT	35 (2.4)	<2.5
	**123**	5.4	7.1		1/4" FNPT	2,000 (137.9)	<10.4
	**133**			3,000 (206.8)			<45.0
Separate Liquid Water from Hydrocarbon Liquid Sample							
	**225**	**Type 8** cc/mm		2,000 (137.9)	1/4" FNPT		<0.74
		Diesel	150				
		Kerosene	200				
		Gasoline	450				

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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

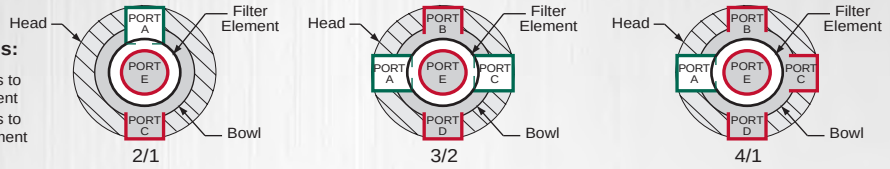
How to build the model number:

**% of 0.1 micron particles retained

How to build the replacement filter element number:

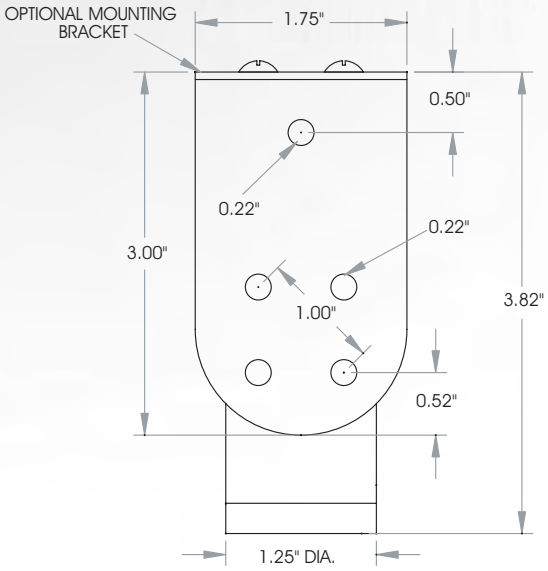
*Port Configurations:

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

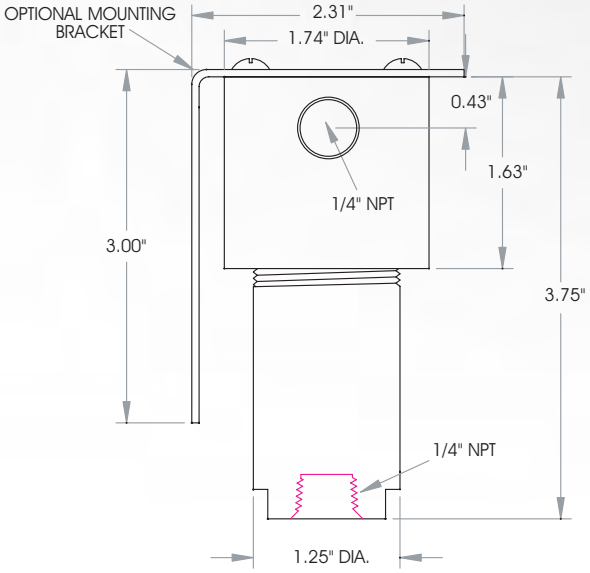


Dimensions

Back View



Side View



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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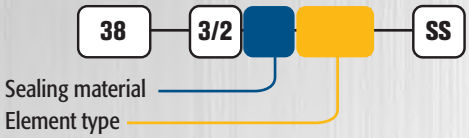
Model Numbering & Additional Part Numbers

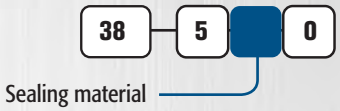
Your model number is determined by your specific needs. Choose options below.

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:

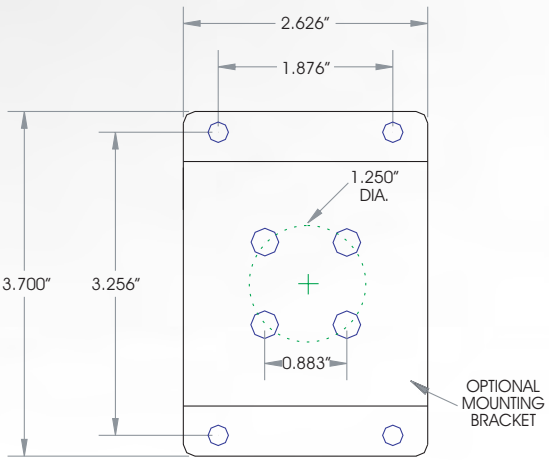


How to build the replacement filter element number:

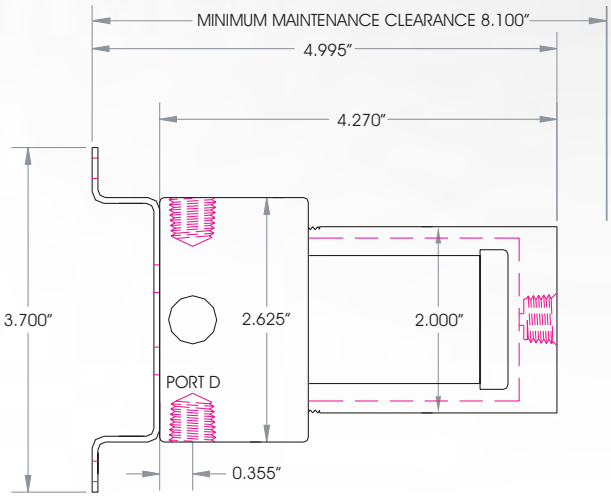
Replacement filter kit contains 5 total. O-ring replacement kit contains all assembly o-rings.

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

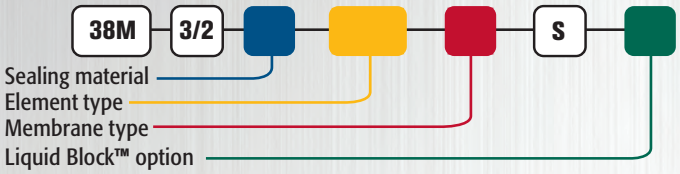
A+ Corporation

Model Numbering & Additional Part Numbers

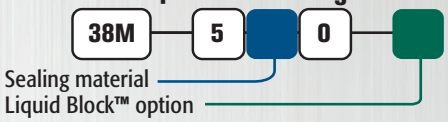
Your model number is determined by your specific needs. Choose options below.

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:

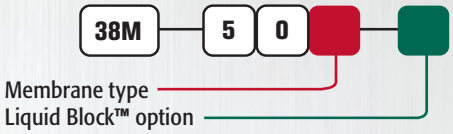


How to build the replacement o-ring kit number:



How to build the replacement filter element number:

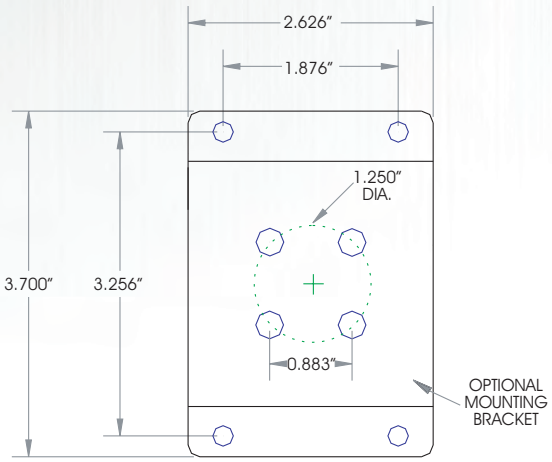
How to build the replacement membrane kit number:



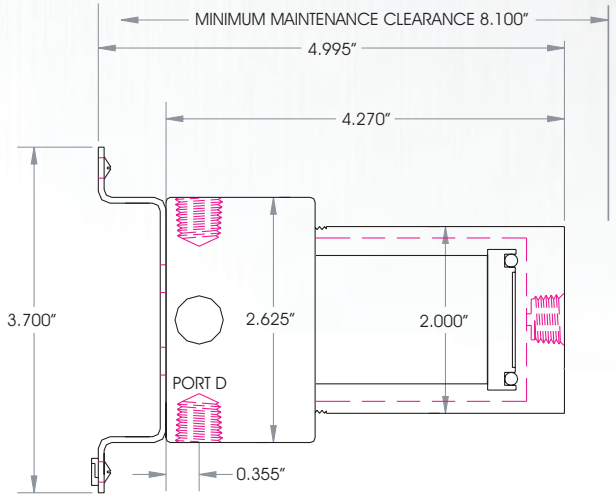
Replacement filter and membrane kits contain 5 each. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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Video showing AVENGER 38M filter operating

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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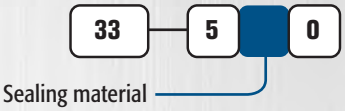
Model Numbering & Additional Part Numbers

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:

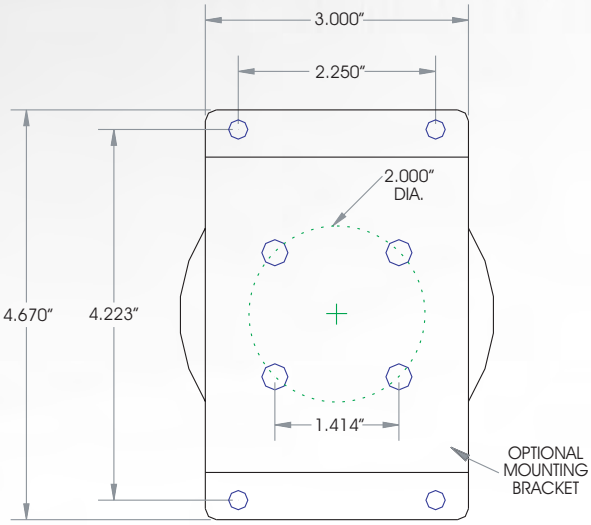


How to build the replacement filter element number:

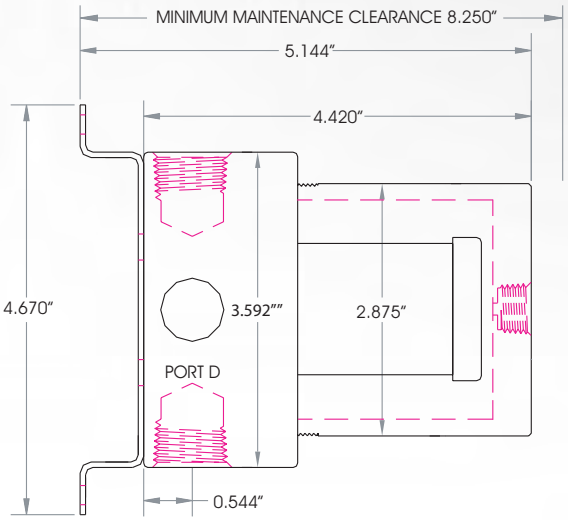
Replacement filter kit contains 5 total. O-ring replacement kit contains all assembly o-rings.

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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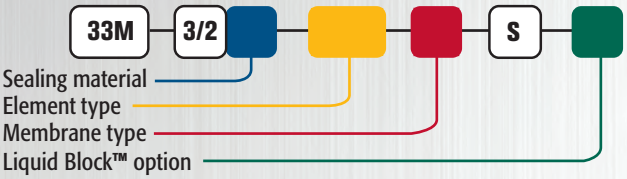
Model Numbering & Additional Part Numbers

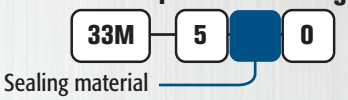
Your model number is determined by your specific needs. Choose options below.

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:

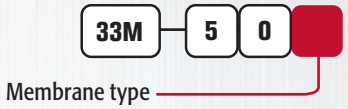


How to build the replacement o-ring kit number:



How to build the replacement filter element number:

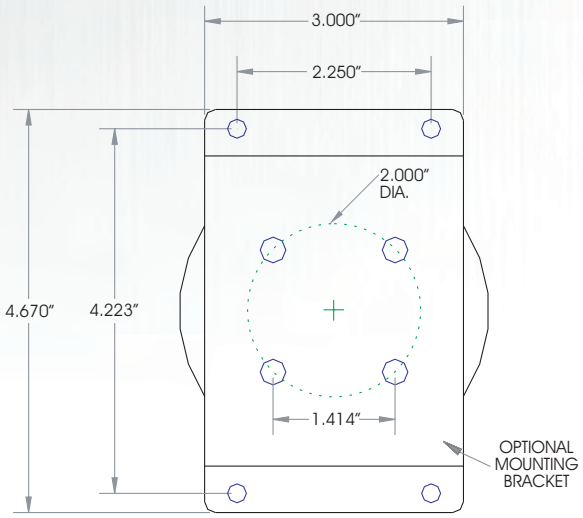
How to build the replacement membrane kit number:



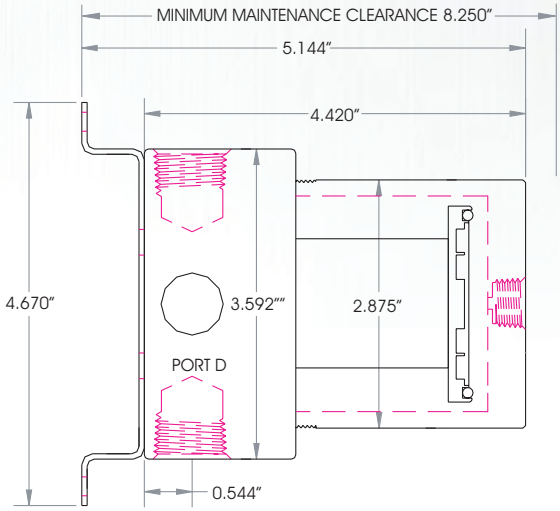
Replacement filter and membrane kits contain 5 each. O-ring replacement kit contains all assembly o-rings.

Dimensions

Back View



Side View



AVENGER™
Particulate & Coalescing Filters

Comparison Chart

Avenger Products

Avenger 33	Avenger 33M	Avenger 38	Avenger 38M	Avenger 91
				

Product Line Comparison

- P = Particulate Filtration of Gas & Liquid Streams, C = Coalescing Filtration for Gas Streams, M = Removal of Aerosol Mist from Gas Streams, L = Liquid Block Technology™
- Temperature ratings will be dependant upon element/membrane type. Please refer to individual product sheets for temperature ratings.

Model	Maximum Pressure psig (barg)	Number of Ports	Function	Mounting Orientaion
Avenger 33	1,000 (68.9)	5	P , C	Horizontal
Avenger 33M*			P , C , M , L	
Avenger 38	2,000 (137.9)		P , C	
Avenger 38M*			P , C , M , L	
Avenger 91	3,750 (258.6)	3 or 5	P , C	Vertical or Horizontal

* These models contain Genie Gas/Liquid Separation Membrane & optional Liquid Block Technology™ in addition to a coalesing/particulate filter element, and are for use in gas streams only.

Filter Element Flow Rates for Liquid Applications

Model	Housing Volume CC	Water Flow Rate gallons per hour (liters per hour)					
		Initial Pressure Drop psi (bar)	Elements		Initial Pressure Drop psi (bar)	Elements	
Avenger 33	200	4 (0.3)	**07CFS**	100 (378.5)	1 (0.1)	**SS10**	62
Avenger 38	50	7 (0.5)					
Avenger 91	27	1 (0.1)	**07PI** **07PF** **07CFS**	5 (18.9)	1 (0.1)	**SS10a**	26
						SS100a	38

Flow Rates with Filter Element & Membrane for Gas Applications

- Maximum flow results in an approximate 2 PSI pressure drop through the filter.

Maximum Recommended Outlet Flow Rate SLPM (SCFH)		
Model	**Type 6 Membrane**	**Type 7 Membrane**
Avenger 33M	4.7 (10)	13 (27)
Avenger 38M	0.76 (1.6)	4.7 (10)

AVENGER™
Particulate & Coalescing Filters

Comparison Chart

Avenger Products

Avenger 33	Avenger 33M	Avenger 38	Avenger 38M	Avenger 91
				

Filter Element Flow Rates for Gas Applications

- Flow rates result in a 2 PSI pressure drop through the filter element.

Model	Housing Volume CC	Filter Element Type	Flow Rates at indicated line pressure SCFM								
			2 psig	20 psig	40 psig	60 psig	80 psig	100 psig	160 psig	200 psig	250 psig
33	200	07CFS	3	7	10	14	18	22	---	41	51
		SS10	3.6	7.8	12	17	21	26	37	48	69
38	50	07CFS	3	7	10	14	18	22	---	41	51
		SS10	3.6	7.8	12	17	21	26	37	48	69
91	27	07PI 07PF 07CFS	.03	3	5	7	8	10	---	19	23
		SS10A	1.2	2.4	3.9	5.4	6.6	8.1	12	15	19
		SS100A	4.4	8.8	14	20	24	30	43	56	68

Model	Housing Volume CC	Filter Element Type	Flow Rates at indicated line pressure SCFM								
			300 psig	500 psig	750 psig	1000 psig	1500 psig	2000 psig	2500 psig	3000 psig	3750 psig
33	200	07CFS	60	99	147	195	---	---	---	---	---
		SS10	70	114	---	---	---	---	---	---	---
38	50	07CFS	60	99	147	195	291	387	---	---	---
		SS10	70	114	---	---	---	---	---	---	---
91	27	07PI 07PF 07CFS	27	45	67	88	132	180	220	260	330
		SS10A	22	36	---	---	---	---	---	---	---
		SS100A	81	133	---	---	---	---	---	---	---

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Separators and filters for liquid applications

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CYCLONE SEPARATOR
for LIQUID ANALYSIS SYSTEMS
MerlinLiquid

The MERLINLiquid cyclone separator is an innovative and patented separation technology that protects liquid analyzers by separating biphasic and particulate-loaded mixtures.

The MERLINLiquid design offers optimal separation.

Without using filter element (sintered stainless steel or fabric), the MERLINLiquid effectively separates 2 phases of liquids or solid particulates by a vortex effect and centrifugal force.

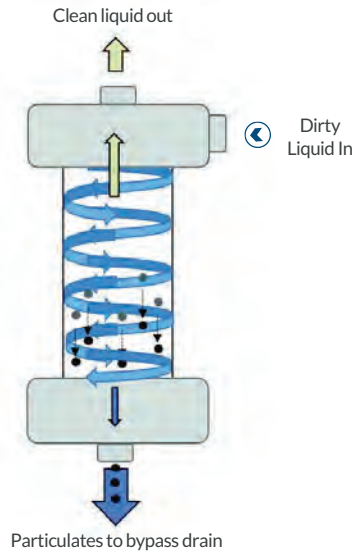
Indeed, the difference of density between 2 liquids provides separation. The heavy phase is entrained along the wall of the separator and the light phase exits from the top side of the separator to the analyzer.

MERLINLiquid separator

Applications

- Separation of free water in liquid hydrocarbons.
- Separation of algae and sludge in waste water.
- Separation of rust and carbon particulates in cracked fuel products.
- Protection of pH-meters.

Operating



Advantages

- Keeps sample integrity .

- Removes particulates up to 7750 kg/m3 and greater than 10 microns.

- Operates very dirty samples with a single equipement.

- No filter element means no risk of clogging or early fouling.

- No maintenance.

- Possibility to add a sintered stainless steel to refine the filtration level (with backflush).

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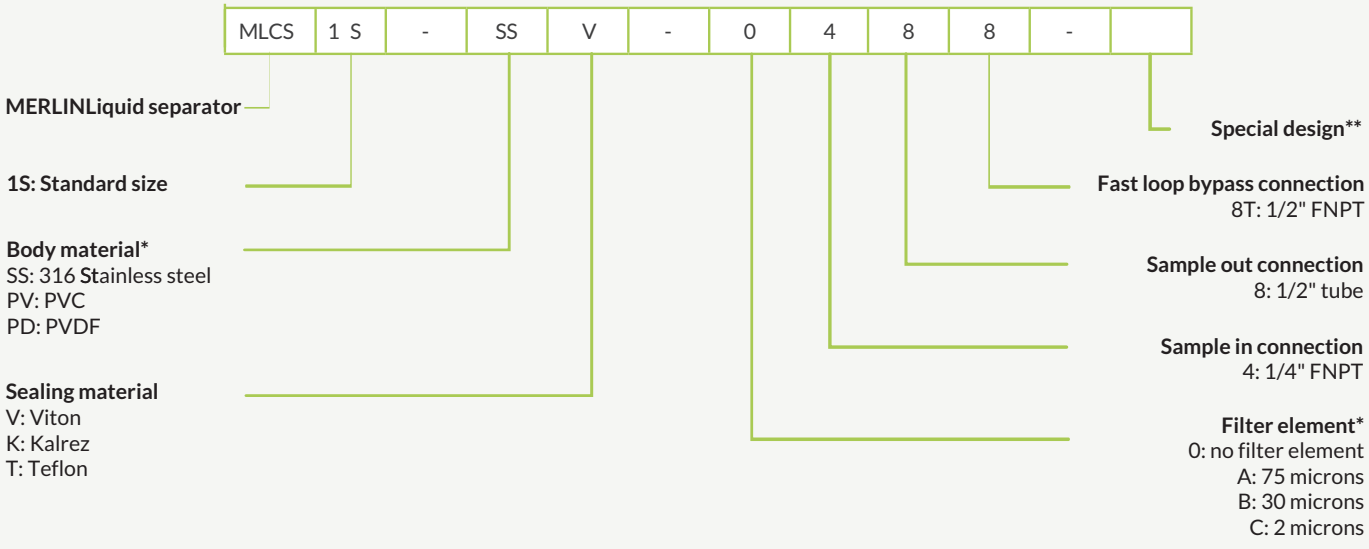
Technical specifications

Maximum service pressure	100 barg
Maximum temperature	200°C
Recommended flow rate	300-500 l/h
Maximum flow rate	1000 l/h
Differential pressure	3-5 bars
Body material	316 Stainless steel (other on request)
Sealing material	Viton, Kalrez or Teflon
Internal volume	160 cc
Sample in connection	1/4" FNPT
Fast loop bypass connection	1/2" FNPT
Sample out connection	1/2" tube
Dimensions	H 200 mm x ø 65 mm

To order



* Other: on request
** Contact us for any specific request

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ZA Clapeloup - 4, rue des Roses,
69280 Sainte-Consorce - France
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Vidéo showing MERLINLiquid filter

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.)

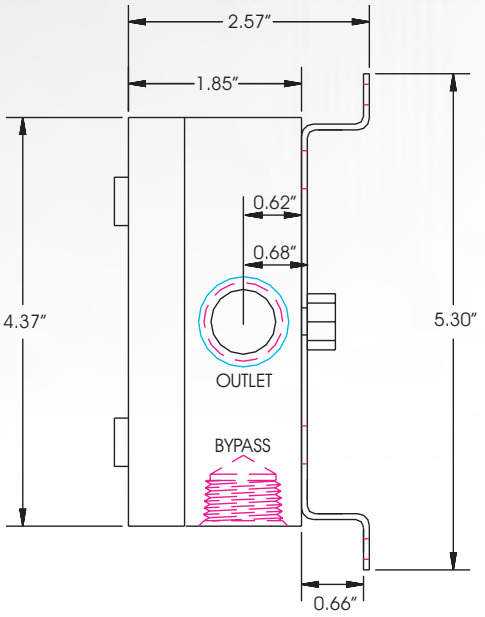
How to build the replacement filter element assembly and seal kit part number:

602 — 5 — T — [ ] — [ ]

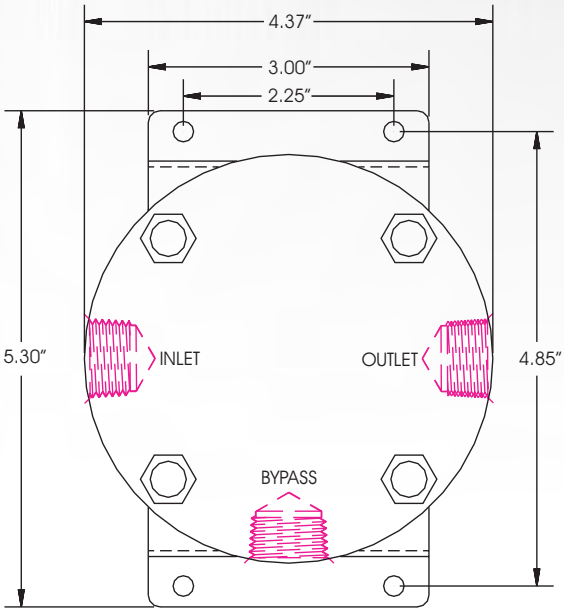
Element rating
(0.5 is porous metal. All others are screens.)
Kit quantity

Dimensions

Side View



Front View



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Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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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 ºF (149 ºC)* * Actual limit depends on sealing material chosen. Refer to Temperature Range Comparison Chart.
Maximum recommended membrane flow rate For higher flow rates contact the factory	150 cc/min in Diesel* 200 cc/min in Kerosene* 450 cc/min in Gasoline* *Maximum flow results in approximately 10 psi membrane differential pressure
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

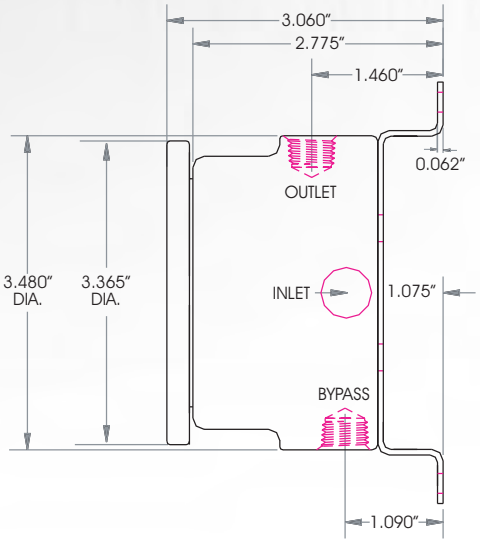
Your model number is determined by your specific needs. Choose options below.

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)*

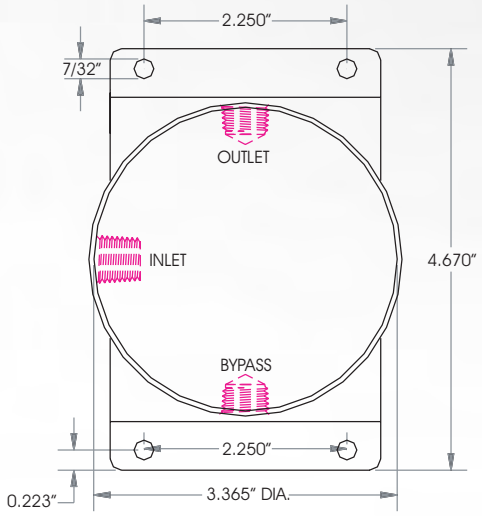
How to build the model number:

Dimensions

Side View



Front View



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DOUBLE STAGE COALESCER
for FUEL CLARIFICATION
MiniSingaGalaxy

The Mini Singa Galaxy coalescer enables fuel clarification when measuring critical properties for which traces of water disturb or damage the measurement devices.

Its innovative technology removes particulates and water emulsions up to ppm.

Maintenance costs are significantly reduced thanks to the multi-layer filter element which is proven for a continuous period of 3 to 6 months.

The two coalescing stages allow removal of up to 30% of water in fuel, without saturating the filter.

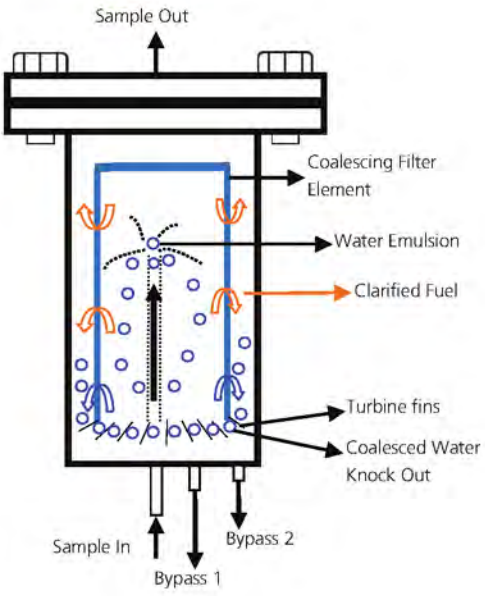
MiniSingaGalaxy

Applications

Measurements of critical properties, such as:
- freeze point,
- distillation point,
- octane and cetane numbers,
- reid vapor pressure,

in diesel, kerosene, gasoline...

Operating



Advantages

- Removes a large amount of water up to 30%.
- Operating rates adjustable according to application.
- Maximum pressure at 10 barg.
- Optimized response time despite large volume.
- Separation of water in 2 steps:
  - Separation of the aqueous phase.
  - Coalescence of the water emulsion.
- Double drain which avoids filter saturation.
- Filter element life of 3 to 6 months depending on operation.
- Low maintenance.
- The metal fins in the filter bottom prevent the carry-over of droplets into the sample outlet.
- Safe for installation in hazardous area.

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Technical specifications

Maximum pressure service	10 barg
Maximum temperature	60°C
Recommanded flow	60-350 Nl/h
Differential pressure	0,5 barg
Separation capacity	20 - 40 l/h
Body material	316 stainless steel (others on request)
Sealing material	NBR or Teflon
Filter element material	Fibre Glass Media at 0.2 micron
Internal volume	1,9 l
Sample inlet connection	1/2" tube
Bypass 1 outlet connection	1/4" FNPT
Bypass 1 outlet connection	1/4" FNPT
Sample oulet connection	1/2" FNPT
Dimensions	H 215 mm x ø 220 mm

To order

SG	1S	-	SS	N	-	8	8	8	8	A

Model

Size
1S: Standard

Body material
SS: Stainless steel 316

Sealing material
N: NBR (standard)
T: Teflon

Pressure rating A:
150#

Sample inlet
8: 1/2" tube

Sample outlet
8: 1/2" FNPT

Bypass1
8: 1/4" FNPT

Bypass 2
8: 1/4" FNPT

SOCLEMA
ZA Clapeloup - 4, rue des Roses,
69280 Sainte-Consorce - France
+33 (0)4 78 87 89 45
www.soclema.com

Video showing mini Singa Galaxy coalescer operating

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Pressure regulators

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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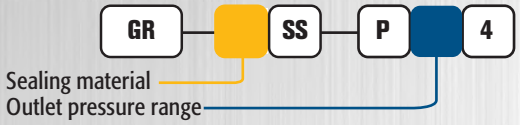
Model Numbering & Additional Part Numbers

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:

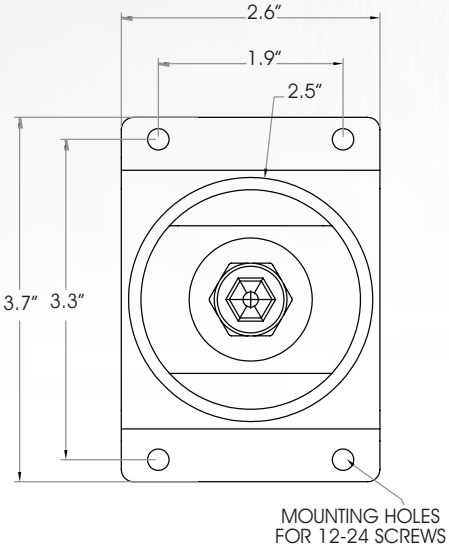


Spare Parts & Accessories (sold separately)

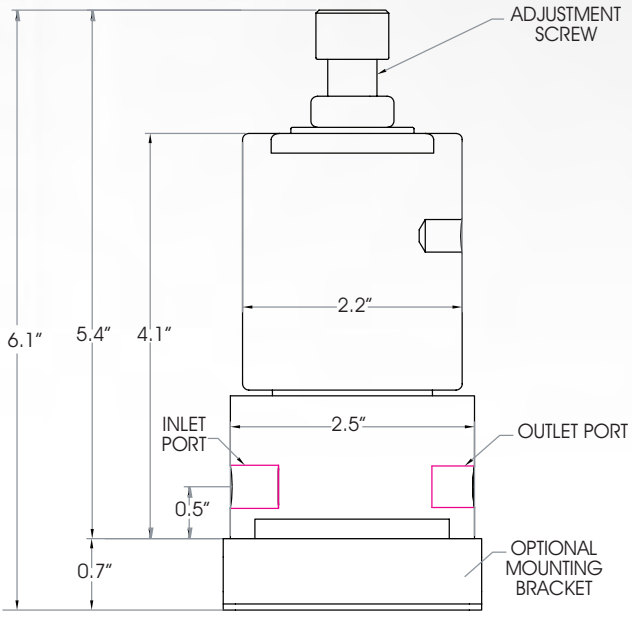
- Model GR Mounting Bracket - Part # GR-509-SS
- Kozy Insulated Cover - Part # KZ-10-L
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet
- Inlet filter replacement - Part # GR-5FSS
- Seat & Seal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

Dimensions

Top View



Side View



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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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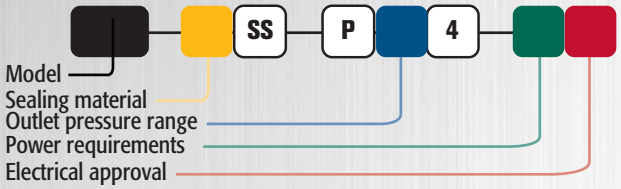
Model Numbering & Additional Part Numbers

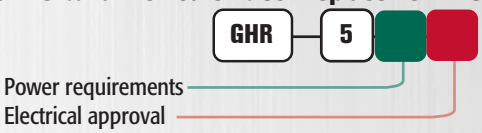
Your model number is determined by your specific needs. Materials of construction must be compatible with process fluid.

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:



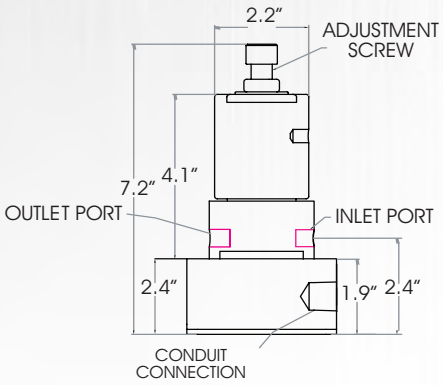
Spare Parts & Accessories (sold separately)

- 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

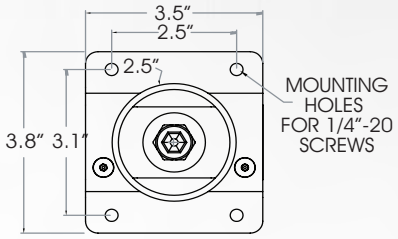
Dimensions

GHR

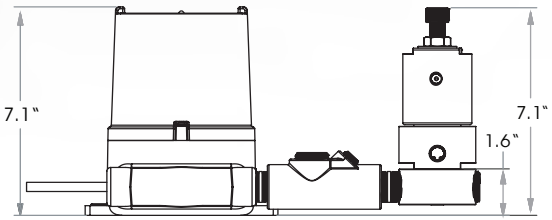
Side View

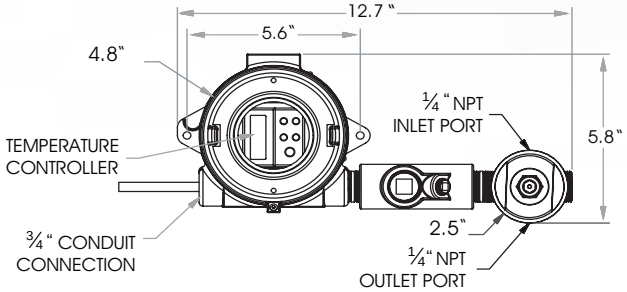


Top View



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:

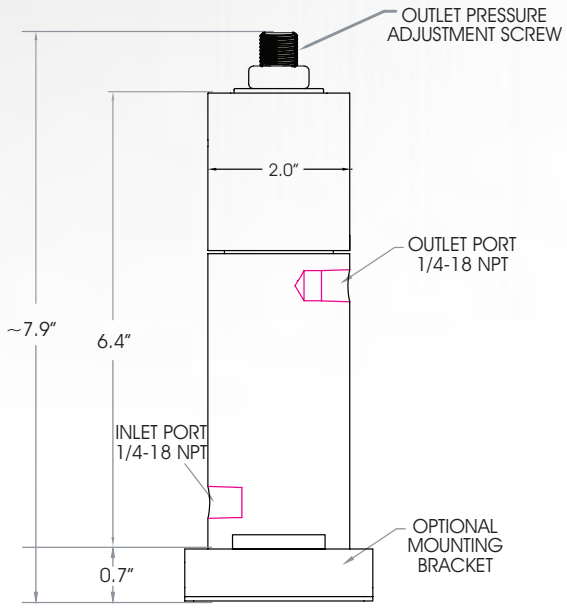
How to build the seal replacement model number:

Spare Parts & Accessories (sold separately)

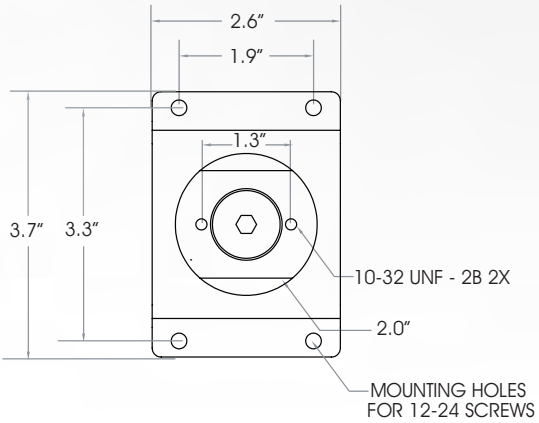
- Optional Mounting Bracket - Part # JTR-509SS
- Kozy Insulated Cover - Part # KZ-10-L
- Inlet filter replacement - Part # JTR-5FSS
- Manifold with pressure gauge, ball valve, & relief valve - for ordering information, refer to the Genie® Probe Regulator Accessory Manifold product sheet

Dimensions

Side View



Top View



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GENIE® JTR-H

Joule-Thomson Heated Regulator

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

Controller Option

Heater Block Option

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

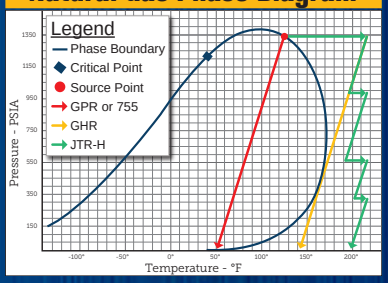
Benefits

- 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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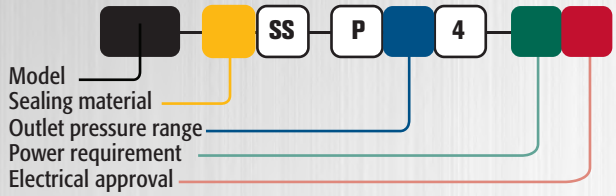
Model Numbering & Additional Part Numbers

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

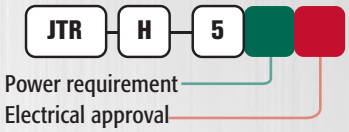
Model	JTR-H = JTR with self-limiting block heater	901-JTR = JTR with temperature controller
Sealing material	0 = Fluoroelastomer	JW = RGD resistant HNBR *(other materials available upon request)*
Outlet pressure range (psig)	0 = 0-25	1 = 0-50 2 = 0-100 3 = 0-250 4 = 0-500 9 = 0-10
Power requirement	1 = 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:



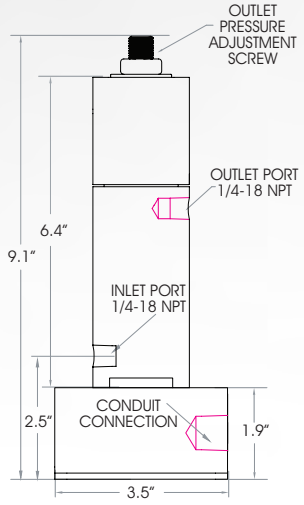
Spare Parts & Accessories (sold separately)

- 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

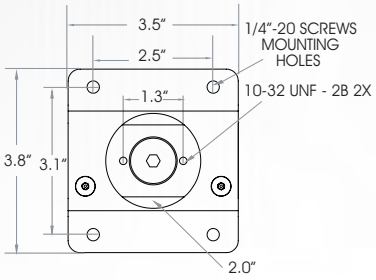
Dimensions

JTR-H

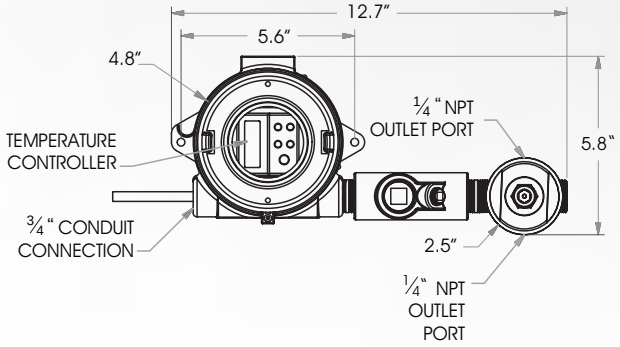
Side View

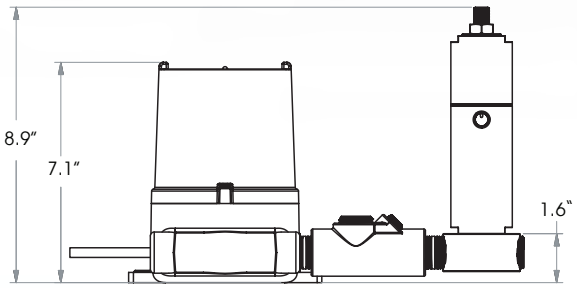


Top View



901-JTR





A+ Corporation

Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

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Advanced Industrial Sampling

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SOCLEMA
Advanced Industrial Sampling

Tubes and traced tubing

O'BRIEN / AMETEK®

Complete Freeze Protection for Process Instrumentation

为过程仪表提供全面的防冻保护

Totaal pakket voor de vorstbeveiliging van uw proces instrumentatie

Protection-basse température complète pour l'instrumentation

Kompletter Frostschutz fur Prozess-Instrumentierung

Completa protezione antigelo per strumentazione di processo

Komplett frostsikring av prosess instrumenter

Completa Proteccion Contra Congelacion Para Instrumentacion de Proceso

TRACEPAK®

Design | Enclosures | Supports | **Tubing Bundle** | Installation

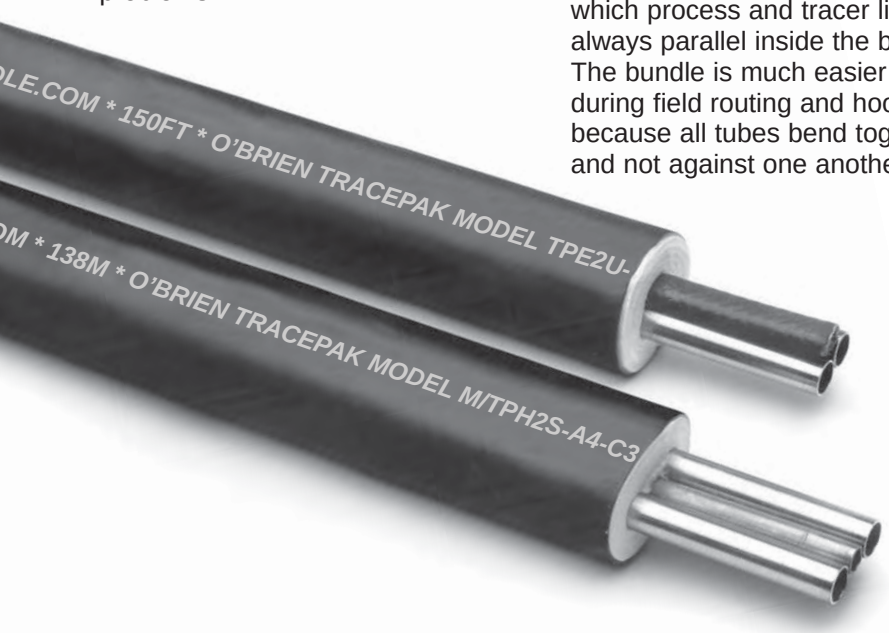
An engineered, preinsulated tubing bundle system

The content of this brochure covers our standardized Tracepak tubing bundle typically used for Instrument impulse lines or mechanical and utility process lines. For more information on sample analyzer or continuous emission monitoring (CEMS) applications please visit our STACKPAK brochure.

TRACEPAK solves problems for analytical, instrumentation and mechanical plant utility applications:

- Freezing,
- Dew point Component drop-out,
- Viscosity,
- Personnel protection

Freezing, dew point, component drop-out and viscosity control are major considerations in instrument impulse connections, small diameter process lines and analyzer sample transport. A properly designed and selected pretraced tubing bundle offers an effective solution to these problems.



The economical choice to field fabrication

Maintenance free TRACEPAK not only saves money and time during the installation process, but it ensures consistent, repeatable performance. Field fabrication requires a pipe fitter to lay out, measure, cut, dress, bend and install the tubing. Next the tracer (steam or electric) has to be installed and insulation put on the tubing. Finally, a weatherproof covering needs to be applied over the insulation. Clearly the economics of the TRACEPAK system versus field fabrication are significant.

Provides predictable and repeatable performance

O'Brien, long recognized as the leader in providing reliable instrumentation protection, has simplified installation while offering predictable operation. TRACEPAK tube bundles are prefabricated, pre-engineered and preinsulated assemblies.

Installation is simplified by the unique parallel configuration, in which process and tracer lines are always parallel inside the bundle. The bundle is much easier to bend during field routing and hookup because all tubes bend together and not against one another.

Connections are easy because tubing stays round and is not work hardened

TRACEPAK's configuration allows the tubing to stay round and malleable when used in conjunction with compression and flare fittings. The installation of process and instrument connections requires only a simple, one-plane offset bend to engage tubing and fittings.

Can be installed at temperatures as low as -40°

O'Brien Corporation utilizes the highest quality materials. Our TPU jacket contains no halogens, eliminating the possibility of chlorides from the jacket causing stress corrosion in stainless steel tubing. This jacket has excellent abrasion and chemical resistance along with a wide, usable temperature range. TRACEPAK can be installed in temperatures as low as -40°.

Common types of pretraced lines:

- Electric traced lines, TPE, for freeze protection and maintenance of temperature.
- Steam traced lines, TPL & TPH, for freeze protection and temperature maintenance.
- Single preinsulated line, S-LINE, primarily for steam supply and condensate return.

Specifications subject to change without notice.

Systems Approach

Protecting instrumentation and tubing from freezing or maintaining process fluids at elevated temperatures involves many components, designs and engineering skills. Instead of specifying and purchasing individual components, have O'Brien provide an integrated solution with one source responsibility.

DESIGN and SUPPORT for impulse lines and instrument freeze protection combined with field support services sets the O'Brien solution apart from all others.

TRACEPAK® engineered, preinsulated tubing bundle for instrument impulse, sample transport, and small diameter process lines.

VIPAK® engineered enclosure system designed for process instrumentation. TRAKMOUNT® and factory installation of instrumentation makes field work easy.

The Typical Way

The O'Brien Solution

Typical applications for the TRACEPAK system:

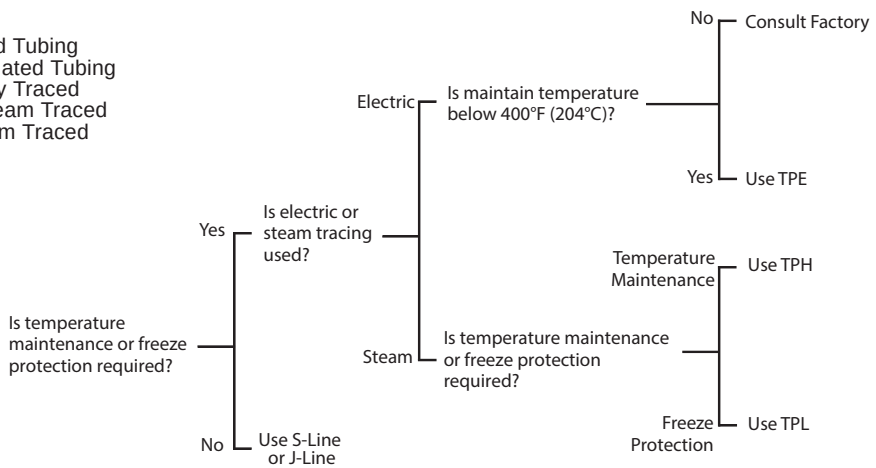
INSTRUMENT IMPULSE LINES
flow transmitters
pressure transmitters
level transmitters
pressure switches
controllers

ANALYZER SAMPLE LINES
STACKPAK is a special subset of TRACEPAK for process analyzers chromatographs and emissions monitoring. See STACKPAK brochure for info

MECHANICAL AND PLANT UTILITY PROCESS LINES
steam supply
condensate return
water purge
chemical feed
air lines

TRACEPAK Product Selection

J-Line = Jacketed Tubing
S-Line = Preinsulated Tubing
TPE = Electrically Traced
TPH = Heavy Steam Traced
TPL = Light Steam Traced



TUBE LIST

Code	OD	Wall	Material
A1	1/8"	0.035"	316/316L SS AVG WALL WELDED
A2	1/4"	0.035"	316/316L SS AVG WALL WELDED
A3	3/8"	0.035"	316/316L SS AVG WALL WELDED
A4	1/2"	0.035"	316/316L SS AVG WALL WELDED
A6	3/4"	0.035"	316/316L SS AVG WALL WELDED
E2	1/4"	0.035"	316/316L SS AVG WALL WELDED
E3	3/8"	0.049"	316/316L SS AVG WALL WELDED
E4	1/2"	0.049"	316/316L SS AVG WALL WELDED
E6	3/4"	0.049"	316/316L SS AVG WALL WELDED
U4	1/2"	0.065"	316/316L SS AVG WALL WELDED
U6	3/4"	0.065"	316/316L SS AVG WALL WELDED
FA1	1/8"	0.020"	316/316L SS AVG WALL SEAMLESS
FL1	1/8"	0.028"	316/316L SS AVG WALL SEAMLESS
F1	1/8"	0.035"	316/316L SS AVG WALL SEAMLESS
F2	1/4"	0.035"	316/316L SS AVG WALL SEAMLESS
F25	5/16"	0.035"	316/316L SS AVG WALL SEAMLESS
F3	3/8"	0.035"	316/316L SS AVG WALL SEAMLESS
F4	1/2"	0.035"	316/316L SS AVG WALL SEAMLESS
B2	1/4"	0.049"	316/316L SS AVG WALL SEAMLESS
B3	3/8"	0.049"	316/316L SS AVG WALL SEAMLESS
B4	1/2"	0.049"	316/316L SS AVG WALL SEAMLESS
B6	3/4"	0.049"	316/316L SS AVG WALL SEAMLESS
K2	1/4"	0.065"	316/316L SS AVG WALL SEAMLESS
K3	3/8"	0.065"	316/316L SS AVG WALL SEAMLESS
K4	1/2"	0.065"	316/316L SS AVG WALL SEAMLESS
K6	3/4"	0.065"	316/316L SS AVG WALL SEAMLESS
K8	1"	0.065"	316/316L SS AVG WALL SEAMLESS
W2	1/4"	0.083"	316/316L SS AVG WALL SEAMLESS
W3	3/8"	0.083"	316/316L SS AVG WALL SEAMLESS
W4	1/2"	0.083"	316/316L SS AVG WALL SEAMLESS
W6	3/4"	0.083"	316/316L SS AVG WALL SEAMLESS
FW2	1/4"	0.035"	316/316L SS MIN WALL SEAMLESS
FW3	3/8"	0.035"	316/316L SS MIN WALL SEAMLESS
FW4	1/2"	0.035"	316/316L SS MIN WALL SEAMLESS
BW2	1/4"	0.049"	316/316L SS MIN WALL SEAMLESS
BW3	3/8"	0.049"	316/316L SS MIN WALL SEAMLESS
BW4	1/2"	0.049"	316/316L SS MIN WALL SEAMLESS
BW6	3/4"	0.049"	316/316L SS MIN WALL SEAMLESS
KW2	1/4"	0.065"	316/316L SS MIN WALL SEAMLESS
KW3	3/8"	0.065"	316/316L SS MIN WALL SEAMLESS
KW4	1/2"	0.065"	316/316L SS MIN WALL SEAMLESS
KA2	1/4"	0.065"	316H SS AVG WALL SEAMLESS
KA3	3/8"	0.065"	316H SS AVG WALL SEAMLESS
KA4	1/2"	0.065"	316H SS AVG WALL SEAMLESS
WA3	3/8"	0.083"	316H SS AVG WALL SEAMLESS
WA4	1/2"	0.083"	316H SS AVG WALL SEAMLESS
BH2	1/4"	0.049"	316H SS MIN WALL SEAMLESS
BH3	3/8"	0.049"	316H SS MIN WALL SEAMLESS
BH4	1/2"	0.049"	316H SS MIN WALL SEAMLESS
KH2	1/4"	0.065"	316H SS MIN WALL SEAMLESS
KH3	3/8"	0.065"	316H SS MIN WALL SEAMLESS
KH4	1/2"	0.065"	316H SS MIN WALL SEAMLESS
AE2	1/4"	0.035"	304L SS AVG WALL WELDED
AE3	3/8"	0.035"	304L SS AVG WALL WELDED
AE4	1/2"	0.035"	304L SS AVG WALL WELDED
UA4	1/2"	0.065"	304L SS AVG WALL WELDED
UA6	3/4"	0.065"	304L SS AVG WALL WELDED
UB4	1/2"	0.049"	304L SS AVG WALL WELDED
UB6	3/4"	0.049"	304L SS AVG WALL WELDED

Code	OD	Wall	Material
J2	1/4"	0.030"	B68/B75 COPPER SEAMLESS
C3	3/8"	0.032"	B68/B75 COPPER SEAMLESS
D3	3/8"	0.035"	B68/B75 COPPER SEAMLESS
D4	1/2"	0.035"	B68/B75 COPPER SEAMLESS
M3	3/8"	0.049"	B68/B75 COPPER SEAMLESS
M4	1/2"	0.049"	B68/B75 COPPER SEAMLESS
M6	3/4"	0.049"	B68/B75 COPPER SEAMLESS
G2S	1/4"	0.030"	PFA EXTRUDED BLACK SENSORTUBE
G3S	3/8"	0.030"	PFA EXTRUDED BLACK SENSORTUBE
H3S	3/8"	0.062"	PFA EXTRUDED BLACK SENSORTUBE
G1	1/8"	0.030"	PFA EXTRUDED
G2	1/4"	0.030"	PFA EXTRUDED
G3	3/8"	0.030"	PFA EXTRUDED
G4	1/2"	0.030"	PFA EXTRUDED
S2	1/4"	0.040"	PFA EXTRUDED
S3	3/8"	0.040"	PFA EXTRUDED
S4	1/2"	0.040"	PFA EXTRUDED
V2	1/4"	0.047"	PFA EXTRUDED
V3	3/8"	0.047"	PFA EXTRUDED
V4	1/2"	0.047"	PFA EXTRUDED
H2	1/4"	0.062"	PFA EXTRUDED
H3	3/8"	0.062"	PFA EXTRUDED
H4	1/2"	0.062"	PFA EXTRUDED
H5	5/8"	0.062"	PFA EXTRUDED
H6	3/4"	0.062"	PFA EXTRUDED
L2	1/4"	0.047"	FEP EXTRUDED
L3	3/8"	0.047"	FEP EXTRUDED
LA2	1/4"	0.040"	PTFE EXTRUDED
LB3	3/8"	0.062"	PTFE EXTRUDED
LB4	1/2"	0.062"	PTFE EXTRUDED
RH3	3/8"	0.0625"	HDPE EXTRUDED
RH4	1/2"	0.0625"	HDPE EXTRUDED
RS2	1/4"	0.040"	HDPE EXTRUDED
AA1	1/8"	0.020"	ALLOY 825 AVG WALL SEAMLESS
AB2	1/4"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AB3	3/8"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AB4	1/2"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AC4	1/2"	0.065"	ALLOY 825 AVG WALL SEAMLESS
AY2	1/4"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY3	3/8"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY4	1/2"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY6	3/4"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AP2	1/4"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AP3	3/8"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AP4	1/2"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AQ2	1/4"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AQ3	3/8"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AQ4	1/2"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AR2	1/4"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
AR3	3/8"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
AR4	1/2"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
N2	1/4"	0.035"	ALLOY 400 AVG WALL SEAMLESS
N3	3/8"	0.035"	ALLOY 400 AVG WALL SEAMLESS
N4	1/2"	0.035"	ALLOY 400 AVG WALL SEAMLESS
P2	1/4"	0.049"	ALLOY 400 AVG WALL SEAMLESS
P4	1/2"	0.049"	ALLOY 400 AVG WALL SEAMLESS
FB2	1/4"	0.035"	ALLOY C276 AVG WALL SEAMLESS
FB3	3/8"	0.035"	ALLOY C276 AVG WALL SEAMLESS
FB4	1/2"	0.035"	ALLOY C276 AVG WALL SEAMLESS
BB4	1/2"	0.049"	ALLOY C276 AVG WALL SEAMLESS

Code	OD	Wall	Material
MA6	6mm	1mm	316/316L SS AVG WALL WELDED
MA8	8mm	1mm	316/316L SS AVG WALL WELDED
MA10	10mm	1mm	316/316L SS AVG WALL WELDED
MA12	12mm	1mm	316/316L SS AVG WALL WELDED
MF6	6mm	1mm	316/316L SS AVG WALL SEAMLESS
MF8	8mm	1mm	316/316L SS AVG WALL SEAMLESS
MF10	10mm	1mm	316/316L SS AVG WALL SEAMLESS
MF12	12mm	1mm	316/316L SS AVG WALL SEAMLESS
MB10	10mm	1.5mm	316/316L SS AVG WALL SEAMLESS
MB12	12mm	1.5mm	316/316L SS AVG WALL SEAMLESS
MR14	14mm	1.6mm	316/316L SS AVG WALL SEAMLESS
MH6	6mm	1mm	316L SS 6% MOLY SEAMLESS
ML10	10mm	2mm	316L SS 6% MOLY SEAMLESS
ML12	12mm	2mm	316L SS 6% MOLY SEAMLESS
MD6	6mm	1mm	B68/B75 COPPER SEAMLESS
MD8	8mm	1mm	B68/B75 COPPER SEAMLESS
MD10	10mm	1mm	B68/B75 COPPER SEAMLESS
MD12	12mm	1mm	B68/B75 COPPER SEAMLESS
MG10	10mm	1mm	PFA EXTRUDED
MG12	12mm	1mm	PFA EXTRUDED
MG6	6mm	1mm	PFA EXTRUDED
MG8	8mm	1mm	PFA EXTRUDED
MP6	12mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MP10	10mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MP12	12mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MQ12	12mm	1.5mm	ALLOY 825 AVG WALL SEAMLESS
MC6	6mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
MC10	10mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
MC12	12mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
ME6	6mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
ME10	10mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
ME12	12mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
MT12	12mm	1mm	316Ti SS AVG WALL WELDED
MV6	6mm	1mm	317L SS AVG WALL SEAMLESS
*** TrueTube ***			
Code	OD	Wall	Material
TE1	1/8"	0.020"	316/316L EP 20µin Ra max ID
TE2	1/4"	0.035"	316/316L EP 20µin Ra max ID
TE3	3/8"	0.035"	316/316L EP 20µin Ra max ID
TE4	1/2"	0.049"	316/316L EP 20µin Ra max ID
MTE6	6mm	1mm	316/316L EP 20µin Ra max ID

JACKET INFO

Jacket Material

SV47 is a proprietary thermoplastic formulation that exceeds the requirements of 105C PVC and outperforms other PVC jacket materials in UV resistance as well as providing low temperature flexibility.

TPU is a thermoplastic polyurethane jacket that offers excellent abrasion resistance and extreme cold temperature workability. TPU also contains no chlorides so it should be selected for applications where chloride stress cracking is a problem.

	Standard 105C PVC	O'Brien SV47	TPU
Abrasion Resistance	G	G	E
Tensile Strength PSI	18-1900	2200	6000
Elongation %	250	350	700
Hardness, Shore A	85-90	80	80
Minimum Service Temperature	None Stated	-30°F/-35°C*	-67°F/-58°C
Minimum Installation Temperature	15°F/-9°C	-10°F/-23°C*	-40°F/-40°C
UL94 Flame	V2	V2	V0 to V2
Halogenated (Chlorides)	YES	YES	NO
Maximum Temperature	220°F/105°C	220°F/105°C	250°F/120°C
Water Absorption %	0.1%	0.1%	1.2-1.4%
Aromatic Hydrocarbons	F	F	G
Weathering	G	G	E
UV Resistance	F	G	E

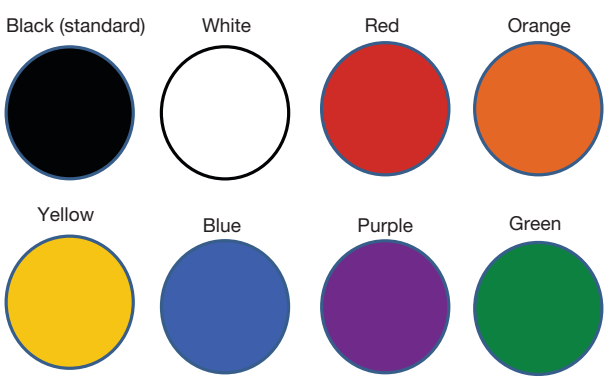
E = Excellent **G = Good** **F = Fair** **P = Poor**

* Minimum service and installation temperature for SV47 have been determined by test on tubing bundles. The base material is rated at –40° by the manufacture when used as jacket for wire and cable. However, this is a false indication of performance when used as a weatherproof jacket on a tubing bundle. Tubing bundles are typically much larger in diameter, more flexible and have a softer 'core' than wire and cable. Consequently the advertised temperatures for what are termed Arctic PVC overstate the useful temperature range on tubing bundles.

Jacket Colors

O'Brien TPU Colors – 14 available

O'Brien PVC Colors – 8 available
Only Available On Large Projects



TPE ELECTRIC TRACED

Preinsulated Tubing Bundle With Electric Heat Tracing

TPE is designed to maintain freeze protection, close temperature tolerances or viscosity control.

It provides an excellent means of maintaining very long, continuous lengths of impulse lines and piping at consistent temperatures end-to-end. TPE should be chosen when electric tracing is preferred, steam is not available or when the steam supply could be interrupted such as during shutdowns.

Our extensive tracer offering allows TPE to be designed according to your specific application and temp requirements. When close temperature control is necessary, TPE can be utilized with an optional line sensing temperature controller.

Buffered Bundle Designs

Special high exposure temp designs available for impulse lines or other applications where steam blowdown is required. Consult factory for these designs.

Specifications

Maintain Temp Range: 50F to 400F (10C to 204C)

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature:
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature: See Tracer List*
*High exposure temp up to 1100F (593C) available, consult factory.

TPE Part Number Decoder

TPE2U-B4-J5

Bundle Type
TPE = Electric Traced

Process Tube Qty
1
2

Jacket Type
S = SV47
U = TPU

Process Tube Code
See Page 4 for Tube Codes

Tracer Code
See Page 7 for Tracer Codes

TRACER LIST

O'Brien Tracer Designator	Type	Wattage Per foot @ 50F/10C	Voltage Range vac	Maximum Maintain/ Continuous Exposure F/C	Maximum Intermittent Exposure F/C
J3	Self Regulating	3	100-130	150/65	185/85
J5	Self Regulating	5	100-130	150/65	185/85
J8	Self Regulating	8	100-130	150/65	185/85
J10	Self Regulating	10	100-130	150/65	185/85
P3	Self Regulating	3	200-277	150/65	185/85
P5	Self Regulating	5	200-277	150/65	185/85
P8	Self Regulating	8	200-277	150/65	185/85
P10	Self Regulating	10	200-277	150/65	185/85
BR5	Self Regulating	5	100-130	302/150	482/250
BR10	Self Regulating	10	100-130	302/150	482/250
BR15	Self Regulating	15	100-130	302/150	482/250
BR20	Self Regulating	20	100-130	302/150	482/250
NR3	Self Regulating	3	200-277	302/150	482/250
NR5	Self Regulating	5	200-277	302/150	482/250
NR8	Self Regulating	8	200-277	302/150	482/250
NR10	Self Regulating	10	200-277	302/150	482/250
NR12	Self Regulating	12	200-277	302/150	482/250
NR15	Self Regulating	15	200-277	302/150	482/250
NR20	Self Regulating	20	200-277	302/150	482/250
VT5	Self Regulating	5	100-130	400/205	500/260
VT10	Self Regulating	10	100-130	400/205	500/260
VT15	Self Regulating	15	100-130	400/205	500/260
VT20	Self Regulating	20	100-130	400/205	500/260
VH3	Self Regulating	3	200-277	400/205	500/260
VH5	Self Regulating	5	200-277	400/205	500/260
VH8	Self Regulating	8	200-277	400/205	500/260
VH10	Self Regulating	10	200-277	400/205	500/260
VH12	Self Regulating	2	200-277	400/205	500/260
VH15	Self Regulating	15	200-277	400/205	500/260
VH20	Self Regulating	20	200-277	400/205	500/260
VH28	Self Regulating	28	200-277	400/205	500/260
JV5	Power Limiting/Zone style	5	100-120	445/230	n/a
JV10	Power Limiting/Zone style	10	100-120	400/205	n/a
JV15	Power Limiting/Zone style	15	100-120	335/170	n/a
JV20	Power Limiting/Zone style	20	100-120	300/150	n/a
JN5	Power Limiting/Zone style	5	208	455/235	n/a
	Power Limiting/Zone style	5	230	445/230	n/a
	Power Limiting/Zone style	5	240	445/230	n/a
	Power Limiting/Zone style	5	277	435/225	n/a
JN10	Power Limiting/Zone style	10	208	425/220	n/a
	Power Limiting/Zone style	10	230	410/210	n/a
	Power Limiting/Zone style	10	240	400/205	n/a
	Power Limiting/Zone style	10	277	383/195	n/a
JN15	Power Limiting/Zone style	15	208	390/200	n/a
	Power Limiting/Zone style	15	230	356/180	n/a
	Power Limiting/Zone style	15	240	335/170	n/a
	Power Limiting/Zone style	15	277	221/105	n/a
JN20	Power Limiting/Zone style	20	208	300/150	n/a
	Power Limiting/Zone style	20	230	300/150	n/a
	Power Limiting/Zone style	20	240	300/150	n/a

Preinsulated Tubing Bundle With Steam Tracing

TPL - Light Steam Tracing

The tracer tube is wrapped with insulation to purposely reduce heat transfer to process tubes.

It is suited for small diameter process lines such as those used for instrumentation, sampling and additives.

TPL is recommended for freeze protection of instrument impulse lines as well as the process lines for analyzers.

TPH - Heavy Steam Tracing

Heavy tracing keeps the process tubing in direct contact with the tracer and maintains higher process temperatures.

TPH is recommended for use on analyzer sample transport and instrumentation impulse lines. It is also recommended for additives and other small diameter process lines where higher temperature maintenance or viscosity control is necessary.

Specifications

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature:
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature: 400°F (204°C)*
*High exposure temp up to 1100F (593C) available, consult factory.

TPL / TPH Part Number Decoder

TPH2U-B4-C3

Bundle Type
TPL = Light Steam Traced
TPH = Heavy Steam Traced

Process Tube Qty
1
2

Jacket Type
S = SV47
U = TPU

Process Tube Code
See Page 4 for Tube Codes

Steam Tube Code
See Page 4 for Tube Codes

S-LINE® & J-LINE®

S-LINE: A Weather-Proofed, Preinsulated Single Tubing Line

S-Line is suggested for 1" (25mm) and smaller steam, condensate, liquid and gas transport lines where personnel protection and heat loss are important. S-LINE offers an inexpensive alternative to field insulation and weatherproofing of small diameter lines. High exposure temperature designs up to 1100F (593C) available, consult factory.

J-LINE: A Weather-Proofed, Single Tubing Line

J-Line tubing is designed for pneumatic and hydraulic applications in corrosive atmospheres. Industry standard tubing coated with O'Brien SV47 (PVC) polymer provides increased protection against galvanic and atmospheric corrosion as well as cushioning the tube against wear from vibration.

Specifications

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature (S-Line ONLY):
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature (S-Line ONLY):
400°F (204°C)*

*High exposure temp up to 1100F (593C) available, consult factory.

S-Line / J-Line Part Number Decoder

S-Line

SF4

Tube Code
See Page 4 for Tube Codes

S-Line Designator
SV47 Jacket (Standard)
*Consult Factory for TPU

J-Line

JC3

Tube Code
See Page 4 for Tube Codes

J-Line Designator
SV47 Jacket (Standard)
*Consult Factory for TPU

TRACEPAK CUSTOM DESIGNS

Solutions For Unique Applications

In addition to conventional TRACEPAK designs, O'Brien can satisfy your needs with custom solutions. Modeling for these designs is verified in our environmental chamber under conditions insuring a tubing bundle that meets your exact requirements, with reliability and accuracy you can depend on.

Custom Capabilities

- Indoor & Outdoor Jackets
- Maintenance Temperatures to 400°F (204°C)
- Custom Lengths
- Factory Finished and Sealed Ends
- Factory Installed Power and Termination Kits
- Factory Installed Temperature Sensors
- Communication, Monitor and Power Wires
- Alternate Jacket Colors
- Cryogenic Applications

Unusual Tube Material & Nonstandard Sizes

TRACEPAK can be manufactured with a wide range of uncommon materials and sizes to conform to your unique material requirements, including but not limited to:

- Fluoropolymer variations such as PTFE, PFA, and TFE.
- Hastelloy
- Incoloy
- Duplex and Super Duplex
- 6% Moly
- Oxygen Cleaned Tubes
- Passivated Stainless Steel with or without SilcoNert 2000
- Electropolished Stainless Steel with or without SilcoNert 2000

Multi-Component Bundles

Complex designs incorporate factory installed temperature sensors such as RTD's, or thermocouples along with multiple process tubes, calibration gas supply tubes, communication wires, power wiring, and heat tracing.

High Temperature Tracers

Specialty tracers such as CPD, MI and resistance wires can be used to provide temperature maintenance up to 400°F (204°C) and to withstand a high temperature blowdown of 1100°F (593°C).

Jacket Materials for Diverse Applications

Jacket materials are available to withstand high operating temperatures, permit installation at low ambients or stand up to constant flexing. Materials include Thermoplastic Polyurethane (TPU), or PVC for indoor or outdoor applications.

Performance Enhancing Designs

Special insulated or buffered designs are available for applications with high intermittent process temperatures. These designs insulate the tracer from the process tube to allow higher maximum exposure temperatures while still providing freeze protection.

Typical Applications

Sampling Systems
Emissions Gas Sampling, Automotive Emissions Testing

Viscosity Control
Petroleum products, Asphalt, Tar, Paint Systems, Printing Ink, Coatings, Spray Foam Insulation

Product Transfer
Polymers, Oils, Urethanes, Waxes, Chemicals, Food Products, Hot Melt Adhesives, Sanitary and High Purity Applications

Corrosion Protection
Jacketed tubing for harsh environments such as Marine and Offshore.

ACCESSORIES Sealing the Bundle

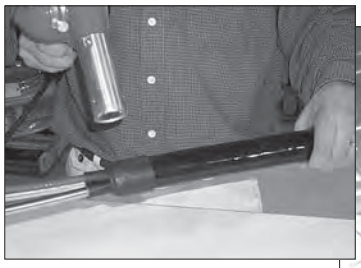
Although TRACEPAK products use a non-hygroscopic, non-wicking insulation, all bundle ends must be sealed to prevent any possible moisture contamination.

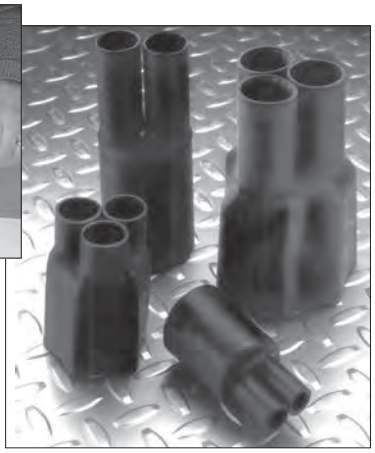
Heat Shrink Boots

The heat-shrinkable boots provide a weatherproof end seal for TRACEPAK tubing bundles. They are made of thermally stabilized, modified polyolefin. Using a heat shrink end seal boot is recommended for all exposed ends. This installation will provide the best weather seal protection. Heat shrink boots have 400F maximum exposure rating.

To Order:

Refer to Heat Shrink Boot Index or Consult Factory





Silicone Sealant

This option is used to seal both ends of the tubing bundle from moisture. It is a black silicone RTV sealant. Cure time is approximately 24 hours at 77°F (25°C). Service temperature ranges from -62°F (-52°C) to 650°F (345°C). TPKSK offers excellent resistance to weather, oil and many chemicals.

To Order:

TPKSK-10 400F continuous / 450F intermittent RTV Sealant, 10 oz. will seal approximately 10 ends

TPKSK-10H 500F continuous / 650F intermittent RTV Sealant, 10 oz. will seal approximately 10 ends

Self Bonding Silicone Tape

This option is used to seal both ends of the tubing bundle from moisture. It is a black silicone, self bonding.

To Order:

TPKJP-SR-B Self Bonding Tape, 36 yd (33m)

TPKJP-SR-B10 Self Bonding Tape, 10ft (3m)

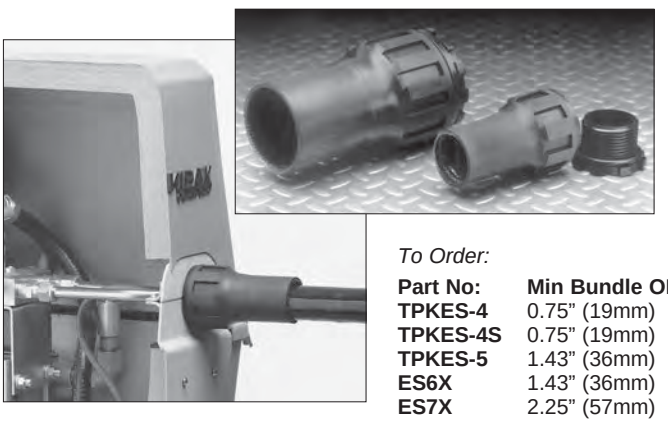
TPKSK-SRT-10 Cold applied end seal kit. 10oz RTV sealant and one 36 yard roll of black self-fusing silicone tape

TPKSK-SRT-10H High temp cold applied end seal kit. 10oz HT-RTV sealant and one 36 yard roll of black self-fusing silicone tape. Rated 500F continuous / 600F intermittent.

High Temperature End Seals

The new and improved O'Brien High Temp End Seal (HTES) is used primarily for TRACEPAK isolated tracer tubing bundle designs, MI cable, or high temperature exposure TRACEPAK bundles above our standard 400ºF exposure temperature. The modular design allows for many configurations with or without electric tracer, and up to 3 process tubes. The integrated heat shrink flange allows for quicker and consistent installation and further guarantees weather protection.

To Order: Refer to HTES Datasheet or Consult Factory



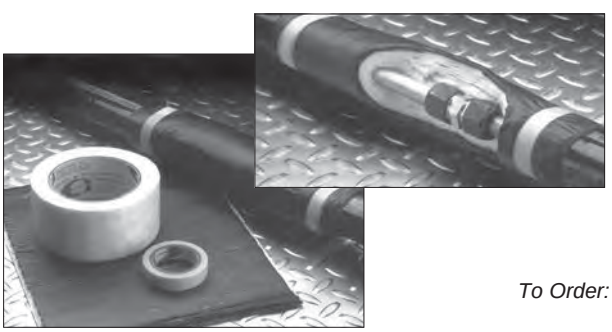
Heat Shrink Entry Seal

The heat-shrinkable entry seal provides a waterproof fitting where TRACEPAK enters an enclosure. They can be added to parting line or surface mounted plates on VIPAK enclosures. The thermally stabilized, modified polyolefin entry seal consists of a threaded assembly that seals at the enclosure and a heat-shrinkable nose that seals to the TRACEPAK bundle.

To Order:

Part No:	Min Bundle OD	Max Bundle OD	Max Panel Thickness	Drill Hole Size
TPKES-4	0.75” (19mm)	1.60” (40mm)	0.50” (12mm)	2.00” (51mm)
TPKES-4S	0.75” (19mm)	2.10” (53mm)	0.50” (19mm)	2.375” (60mm)
TPKES-5	1.43” (36mm)	2.90” (74mm)	0.75” (19mm)	3.50” (90mm)
ES6X	1.43” (36mm)	3.50” (90mm)	1.75” (25mm)	4.50” (114mm)
ES7X	2.25” (57mm)	4.00” (102mm)	1.25” (25mm)	5.50” (140mm)

NOTE: Consult Vipak brochure for entry seals to be used with Vipak instrument enclosures



Jacket Patch Kits

The jacket patch kits are used to seal a splice in a bundle or to extend the insulation and weatherproof jacket should the bundle be cut back too far during installation. They are used as a repair patch for any incidental field damage to bundles. The jacket patch kit is required with the optional line temperature sensing thermostat. Each kit contains thermal insulation, fiberglass tape and a self-sealing patch.

To Order:

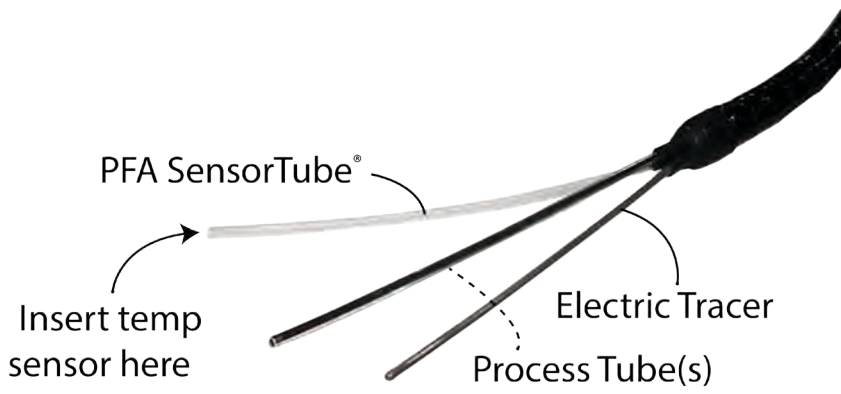
	Bundles up to 400ºF (204ºC)	Bundles up to 1100ºF(593ºC)
Small 8” x 12”	**TPKJP-1**	**TPKJP-3**
Large 8” x 96”	**TPKJP-2**	**TPKJP-4**

Temperature Control

Design Option: SensorTube™

G2S - 1/4” x 0.030 PFA
H3S - 3/8” x 0.062 PFA

SensorTube is a design option that **must be requested at time of quote.** An additional PFA tube in the heated core creates a pathway for a temp sensor to be inserted up to 20’ (6m) from the control end without any special tools. This eliminates cutting into the bundle with field installed sensors. The sensor can be inserted through more than five ninety degree bends without problems.



RTD Kit

RTD Kits include a 100 Ohm PT100, 3 wire sensor with 30ft leads and an entry seal. Use single RTD with G2S and dual RTDs with H3S SensorTube.

RTDKIT30 - NEC/CEC standards with 30’ fluoropolymer jacketed leads.
RTDKIT30-EX - ATEX Ex II 2 G Ex e IIC T6..T1 Gb and IECEx Ex IIIC T6..T1 Gb standards with 9 meter Kapton jacketed leads.

10380 Series Controllers

The 10380 Series controller is a compact, full-featured, touch screen based, single-point heat-tracing controller. It provides control and monitoring of Electric Heat Tracing (EHT) circuits for both freeze protection and process temperature maintenance. This controller can monitor and alarm on high and low temperature, high and low current, ground-fault levels, voltage. RTD input or thermocouple with the use of signal converter with junction box. Up to 4 signal converters can be housed in each junction box. This controller holds global approvals for use in hazardous areas.

To Order: **10380-002** 10380 series controller with FRP Enclosure
10380-004 10380 series controller with Stainless Steel Enclosure
10380-JB Junction box for thermocouple signal converters
10380-TYPE-K Type K Signal Converter
10380-TYPE-J Type J Signal Converter

Elexant 5010i Controller

The Elexant 5010i is an electronic heat-tracing control unit featuring the benefits of local control and the capability for central monitoring. It can be used for single phase circuits up to 25 A and is approved for use in hazardous areas. It provides tight temperature control and has optional IEC 61508-SIL 2 classified safety temperature limiter. It measures the temperature with up to two RTD (s) connected to the unit.

To Order: **2000002132** Elexant 5010i series controller without limiter
2000002133 Elexant 5010i series controller with limiter

Thermostats

When used with electrically traced tubing bundles, optional thermostats are used to control the temperature of the process tube or to turn on the heater circuit at a specified ambient temperature. They are approved and certified for use in hazardous areas.

Note:
Models shown are typical of thermostats supplied.
Units received may differ depending on approvals.

Ambient Sensing

The ambient sensing thermostat has an adjustable set point of 15°F to 140°F(-9°C to 60°C) and can withstand ambient temperatures of -40°F to 160°F (-40°C to 71°C). It has a fluid filled stainless steel probe and the SPDT switch is rated for 22A at 125/250/480 VAC.

To Order: **TPKTS-A-7** Ambient Sensing Thermostat, NEMA 7 Housing, 22 amp 125/250 VAC

Line Sensing

The line sensing thermostat controls the temperature of the process tubes.

To Order: **TPKTS-B-7** 9ft Capillary Style, 25-325F Setpoint, NEMA 7 Housing, 22 Amp
EX-02 3mt Capilary Style, Zone 1 & 2, -4 to 163C Setpoint, IP65 Rated, 22 Amp
ETS-05-XX-X* RTD Style Line Sensing, IP66 Rated, 24 Amp
Ambient sensing capabilities on European version only.

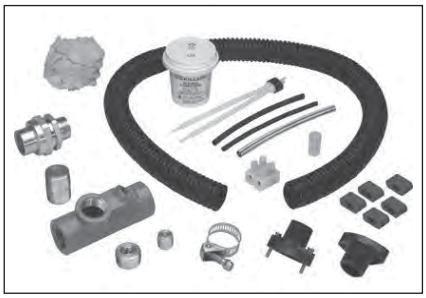
*The "X's" are placholders to be filled in depending on approvals, voltage and setpoint range. Consult factory for the right configuration

Power Connection Kits

Single Entry Power Connection Kit

Power connection kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer. Includes junction box and bundle mounting bracket with adjustable straps. Junction box also includes surface mounting feet.

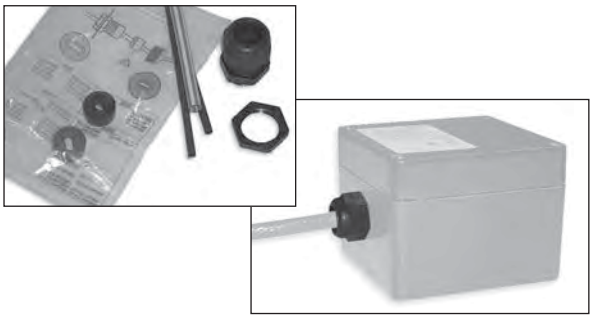
To Order: ***T210-PC*** CSA/FM C1D2 Approved Power Connection
JBS-100-E Zone 1 and 2 Approved Power Connection



Class 1 Div 1 Power Connection Kit

CSA and FM Certified Class I Div. 1 power connection or end termination kit for use with any wattage J, P, BR, NR, VT, VH, JV, or JN tracer. Installs in separately supplied junction box with 3/4" npt hub.

To Order: ***HAK-C-100*** CSA/FM C1D1 Approved Power Connection kit
HAK-JB3-100 CSA/FM C1D1 Approved Junction Box
263757-000 Universal Pipe Mounting Bracket



Cold Applied Power Connection Kit

ATEX standards approved power connection kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer. For use with customer supplied junction box.

To Order: ***T9355-PC*** Zone 1 and 2 Approved Power Connection

End Termination Kits

Low Profile Termination Kit

FM Approved and CSA Certified Class I Div. 2, and ATEX EEx eII listed electric tracer termination kit for use with any wattage J, P, BR, or NR, tracer.

To Order: ***T210-ET*** CSA/FM C1D2 Approved Termination Kit

High Temp Termination Kit

A re-entrable and accessable electric tracer termination kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer.

To Order: ***T250-ET*** CSA/FM C1D2 Approved, without light
E-100-L-A CSA/FM C1D2 Approved, with light
T355-ET Zone 1 and 2 Approved, without light
E-100-L-E Zone 1 and 2 Approved, with light

Heat Shrink Termination Kit

These kits employ easy to use heat-shrinkable tubing with an adhesive, that when heated forms a semi-flexible moisture proof encapsulation. These are typically used for under-insulation applications and cannot be re-used.

To Order: ***E-20*** FM-CUS, EAC, and ATEX approved for use with J and P tracers.
E-40 FM-CUS, EAC, and ATEX approved for use with BR, NR, VT, VH, JV, JN tracers.

Installation Tools

TRACEPAK is designed to be installed using standard bending tools. We offer two specialized tools that make installation of TRACEPAK tube bundles easier and more compact.

Bundle Bending Tool

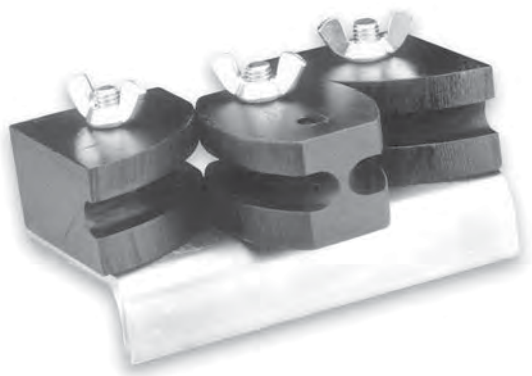
Similar to a common electrical conduit bender, this tool is compact and easy to use. It eliminates the need for larger and heavier benders.

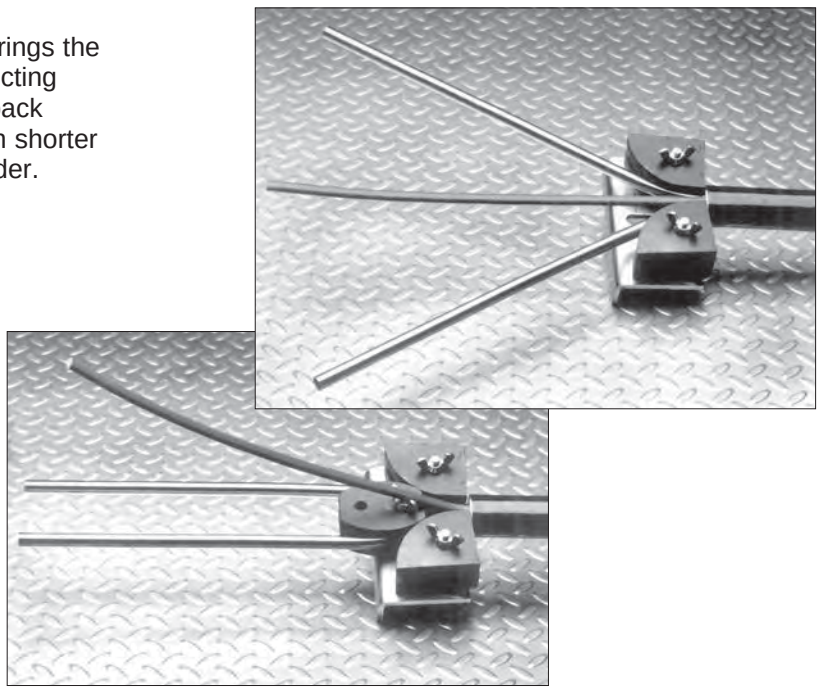
To Order:
BB8 Bending Tool with 8" (203mm) Radius. Max bundle OD of 1.8"
BB12 Bending Tool with 12" (305mm) Radius. Max Bundle OD of 2.75"
BB14 Bending Tool with 14" (355mm) Radius. Max Bundle OD of 4"

2 1/8" (54mm) Centerline Tool

A replacement for the standard tube bender, it brings the process tubes to the correct centerline for connecting to typical transmitters. This tool makes back-to-back bends easier accomplishing the bends in a much shorter distance than possible with a standard tube bender.

To Order: **Centerline-Tool**





DESIGN REQUEST

O'BRIEN

TRACEPAK™ Design Request

When completing this form, please indicate units of measurement whenever they are applicable.

°F or °C | ft or m | in or mm | Psig or Barg

Name: _____
Email: _____
Date Required: _____
Company: _____
Bundle Needed on Site by: _____

Site Conditions

Outdoor ◯ Indoor ◯

Low Ambient _____
High Ambient _____

Application

Instrument Impulse Line ☐ Sample Line ☐
Other _____

Quantity

Quantity Required _____
Continuous Lengths _____
_____

Heating Conditions

Desired Maintenance Temperature _____
Maximum Tube Exposure Temperature _____

If Electric Tracing

Available Voltage(s) _____ VAC
Required Approvals _____

Temperature Sensor?
Type (if requested) _____ Sensor Location(s) _____

If Steam Tracing

Steam Pressure _____
Steam Temperature _____

Process Tube(s)

Tube 1	**Tube 2**	**Steam Tube** (if applicable)
Outside Diameter _____	Outside Diameter _____	Outside Diameter _____
Wall Thickness _____	Wall Thickness _____	Wall Thickness _____
Material _____	Material _____	Material _____

Special Notes

Accessories

☐ Power Connection Kit	☐ Heat Shrink Boot	☐ Thermostat/Controller	☐ Jacket Patch Kit
☐ End Termination Kit	☐ Entry Seal	☐ Tracer Splice Kit	☐ Silicone End Sealant

Customer Service

O'Brien's reputation as a customer oriented problem solver has been long recognized.

Our customer-oriented approach offers:

- Responsive, knowledgeable personnel.
- Unparalleled delivery service.
- Dependable, tested results of all product lines.

ISO 9001:2015

Unparalleled quality system to current ISO 9001:2015 standards.

O'Brien's adherence to recognized international standards is your strongest assurance of our quality.

Total Solution

O'Brien products and solutions improve instrument accuracy. Our total engineering package will reduce field installation costs and provide a dependable solution for your needs.

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www.obcorp.com

SOCLEMA
Advanced Industrial Sampling

4, rue des Roses - 69280 SAINTE-CONSORCE - France
Tel: +33 478 878 945 - info@soclema.com - www.soclema.com

O'BRIEN / AMETEK

sales.obrien@ametek.com

Certified System ISO 9001

STACKPAK®

PRODUCT OVERVIEW

O'Brien's STACKPAK® is a sample transport bundle system used for stack gas, environmental and process monitoring. STACKPAK transport lines maintain uniform temperatures for gas samples such as NOx, SOx and CO_2 as well as providing temperature maintenance and freeze protection of liquid samples.

In addition to its superior temperature maintenance capabilities, STACKPAK is highly configurable. You can choose from a wide variety of process tubes. Single or multiple process lines can be combined for the heated core and other pneumatic and calibration gas tubes can be provided unheated. Power and signal wiring can be added to the design along with factory installed thermocouple and RTD temperature sensors for accurate temperature control. Standard STACKPAK can be easily configured for the exact requirement of your application.

Choose our flexible TPU urethane or proprietary SV47 blend of PVC to provide a weatherproof jacket. O'Brien Analytical makes STACKPAK easy to install by providing factory finished and weatherproofed probe or power ends. With factory finished ends a three-foot (one meter) power and temperature sensor lead connection is supplied as standard in a choice of materials from EPDM to armored flex.

O'Brien Analytical STACKPAK sample transport bundles utilize FEA analysis tools to ensure performance that has been verified in our environmental chamber at temperatures down to –60°F (-50°C). STACKPAK is an engineered industrial product that is suitable for permanent and temporary applications in general purpose or hazardous areas.

**Max water soluble chloride 30ppm.*

JACKET MATERIALS

O'Brien offers a variety of jacket materials ensuring reliable operation in a variety of environments, including in high operating temperatures, low ambient temperatures. Materials include polyurethane or PVC for outdoor applications.

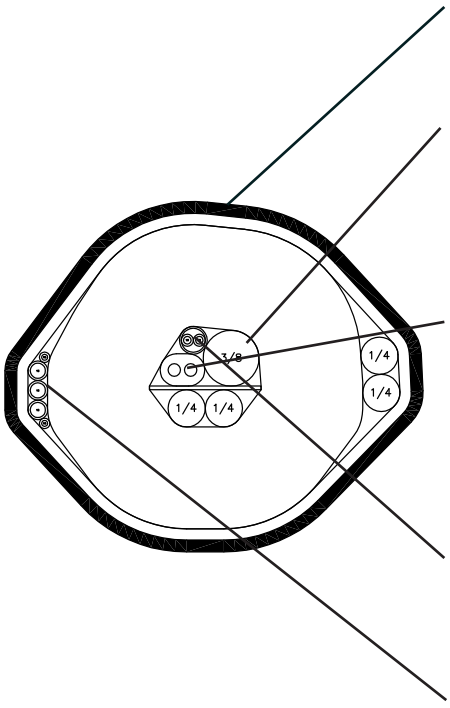
APPLICATIONS

- Sampling Systems
- Emissions Gas Sampling
- Process and Portable Analyzers
- Automotive Emissions Testing
- Viscosity Control
- Petroleum products
- Asphalt
- Tar
- Paint Systems
- Printing Ink
- Coatings
- Polymers
- Oils
- Chemicals
- Food Products
- Hot Melt Adhesives
- Sanitary and High Purity Applications
- Corrosion Protection
- Harsh environments such as marine and offshore

STACKPAK MODEL NUMBER EXAMPLE

Model SU-H3S2(2)/S2(2)-TN18/200/K50/5M-XXXXX

S	STACKPAK
U	TPU Jacket
—	Separator
H3S2(2)	Three heated tubes One H3 3/8” x 0.062 PFA Two S2 1/4” x 0.040 PFA
/	Separator between heated and unheated tubes
S2(2)	Two unheated tubes, two S2 1/4” x 0.040 PFA
—	Separator
TN18	240V 18W/ft zone heater for non-hazardous areas
/200	200’ overall length
/K50	Type K thermocouple w/ sensor located 50’ from power end
/5M	5 Messenger wires Size and configuration is defined during quotation and purchase order.
-XXXXX	Unique identification



IF YOU HAVE A ‘Z’ IN THE MODEL NUMBER

Some designs may contain tubes, tracers and other components not listed. These components will be designated by a “Z” in the model number and are defined in the packing list accompanying the shipment.

ELECTRIC CONNECTIONS AND TERMINATIONS

Electric tracers must be connected and terminated using approved power connection and termination kits. See instructions provided with the power connection kit.

X - Alpha # Numeric	Description
X/	Unit of measure - only used for bundle sold and marked in Meters. No prefix designates product is sold and marked in feet M/ = meters
S	STACKPAK Product Designation
X	Jacket Material S = SV47 O’Brien PVC U = TPU Jacket Material
—	Separator
X#	Heated tube material, construction and diameter. For tube designations see page 3. Multiple like tubes are designated by multiple number codes: (e.g. H33S2 designates two H3 tubes and one S2 tube. Tube diameter is in 1/8” increments or millimeters if metric
/	Separator only if unheated tubes are present.
X#	Unheated tube(s) use the same designation method as heated tubes described above.
—	Separator
X#	Electric tracer type and wattage output. See pages 4 - 5. X = unheated
Special Options	
/	Separator between each option
X	Exact and continuous length (Default is in feet. If M/ prefix selected then length is in meters.)
X##	Temperature Sensor J = Type J thermocouple K = Type K thermocouple R = 100Ω / 100PT 3 wire RTD XX = distance from power end in chosen units (maximum 50’ / 15m)
#M	Messenger wires (e.g. /3M indicates 3 messenger wires required. Specify type, size and color as notes.)
X	Jacket Color - default is black A = Gray L = LightBlue P = Purple N = Orange B = Blue N = Orange R = Red Y = Yellow G = Green W = White U = Brown
LC	Large Crosshead (internal designation for manufacturing)
	Specials Identifier

TUBE LIST

Designation	Material	Construction	OD	Wall	Max. Pressure*	Max. Continuous Length Possible**	Specifications
A2	316/316L SS	Welded	1/4"	0.035"	4,080 psig	2,500 ft	A269, A1016, EN 10204-3.1
A3	316/316L SS	Welded	3/8"	0.035"	2,640	2,500	A269, A1016, EN 10204-3.1
A4	316/316L SS	Welded	1/2"	0.035"	2,080	2,000	A269, A1016, EN 10204-3.1
B2	316/316L SS	Seamless	1/4"	0.049"	7,500	1,300	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
B3	316/316L SS	Seamless	3/8"	0.049"	4,800	1,000	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
B4	316/316L SS	Seamless	1/2"	0.049"	3,700	750	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
C3	Copper	Seamless	3/8"	0.032"	900	2,000	B68, B75, EN 10204-3.1
D4	Copper	Seamless	1/2"	0.035"	800	1,000	B68, B75, EN 10204-3.1
E4	316/316L SS	Welded	1/2"	0.049"	2,975	1,000	A269, A1016, EN 10204-3.1
F1	316/316L SS	Seamless	1/8"	0.035"	10,900	900	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F2	316/316L SS	Seamless	1/4"	0.035"	5,100	2,200	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F3	316/316L SS	Seamless	3/8"	0.035"	3,300	1,300	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F4	316/316L SS	Seamless	1/2"	0.035"	2,600	1,000	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
G2	PFA	Extruded	1/4"	0.030"	155	1,000	
G2S	PFA	Extruded	1/4"	0.030"			SensorTube™ Color: BLACK
G3	PFA	Extruded	3/8"	0.030"	95	1,000	
G4	PFA	Extruded	1/2"	0.030"			
H2	PFA	Extruded	1/4"	0.062"			
H3	PFA	Extruded	3/8"	0.062"			
H3S	PFA	Extruded	3/8"	0.062"			SensorTube™ Color: BLACK
H4	PFA	Extruded	1/2"	0.062"	155	1,000	
J2	Copper	Seamless	1/4"	0.030"	1,400	2,600	B68, B75, EN 10204-3.1
K4	316/316L SS	Seamless	1/2"	0.065"	5,100	250	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
M4	Copper	Seamless	1/2"	0.049"	1,100	1000	B68, B75, EN 10204-3.1
MA12	316/316L SS	Welded	12mm	1mm	170	300	A269, A1016, EN 10204-3.1
MB10	316/316L SS	Seamless	10mm	1.5mm	410	150	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MB12	316/316L SS	Seamless	12mm	1.5mm	330	120	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MD6	Copper	Seamless	6mm	1mm	95	600	B68, B75, EN 10204-3.1
MD8	Copper	Seamless	8mm	1mm	60	455	B68, B75, EN 10204-3.1
MD12	Copper	Seamless	12mm	1mm	55	300	B68, B75, EN 10204-3.1
MF6	316/316L SS	Seamless	6mm	1mm	460 Bar	300M	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF8	316/316L SS	Seamless	8mm	1mm	330	210	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF10	316/316L SS	Seamless	10mm	1mm	260	165	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF12	316/316L SS	Seamless	12mm	1mm	210	150	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MG6	PFA	Extruded	6mm	1mm	10	300	
MG8	PFA	Extruded	8mm	1mm			
MG10	PFA	Extruded	10mm	1mm			
MG12	PFA	Extruded	12mm	1mm			
N2	Monel	Seamless	1/4"	0.035"	4,800	1,000	B163, B165
N3	Monel	Seamless	3/8"	0.035"	3,100	600	B163, B165
P4	Monel	Seamless	1/2"	0.049"	3,210	600	B163, B165
S2	PFA	Extruded	1/4"	0.040"	180	745	
TrueTube® EP: *Electropolished, A269, A213-EAW, A1016, EN 10204 3.1 (GREEN identification in bundle)*							
TE1	316/316L SS	Seamless	1/8"	0.020"	10,900	100	
TE2	316/316L SS	Seamless	1/4"	0.035"	5,100	660	

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T Rating	Connection Kits Power	Termination	Approvals
Zone Tracers	JV5	120	5	16	445F (235C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV10	120	10	32	400F (200C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV15	120	15	49	335F (170C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV20	120	20	65	300F (150C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JN5	240	5	16	445F (230C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC/T9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN10	240	10	30	400F (205C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC/T9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN15	240	15	49	335F (170C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PCT9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN20	240	20	60	300F (150C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PCT9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	T18	120	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas
	TN18	240	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas
	TY18	208	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T-Rating	Connection Kits Power	Termination	Approvals
Low Temperature Tracers	J5	120	5	16	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	J8	120	8	25	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	J10	120	10	32	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	P5	240	5	16	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6
	P8	240	8	25	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6
	P10	240	10	32	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T-Rating	Connection Kits Power	Termination	Approvals
High Temperature Tracers with Fluoropolymer Overjacket	B5	120	5	15	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B10	120	10	37	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B15	120	15	47	250F (120C)	482F (250C)	T2D	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B20	120	20	63	250F (120C)	482F (250C)	T2C	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	MN4	240	4	12	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N5	240	5	15	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	MN8	240	8	24	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N10	240	10	30	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	MN12	240	12	36	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N15	240	15	47	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N20	240	20	63	250F (120C)	482F (250C)	T2C	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET FM T210-ET or TPC1 T310-ET13	Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II 240°C (T2)

+1-314-236-2020 • sales.obrien@ametek.com

STACKPAK®

PRODUCT OVERVIEW

O'Brien's STACKPAK® is a sample transport bundle system used for stack gas, environmental and process monitoring. STACKPAK transport lines maintain uniform temperatures for gas samples such as NOx, SOx and CO_2 as well as providing temperature maintenance and freeze protection of liquid samples.

In addition to its superior temperature maintenance capabilities, STACKPAK is highly configurable. You can choose from a wide variety of process tubes. Single or multiple process lines can be combined for the heated core and other pneumatic and calibration gas tubes can be provided unheated. Power and signal wiring can be added to the design along with factory installed thermocouple and RTD temperature sensors for accurate temperature control. Standard STACKPAK can be easily configured for the exact requirement of your application.

Choose our flexible TPU urethane or proprietary SV47 blend of PVC to provide a weatherproof jacket. O'Brien Analytical makes STACKPAK easy to install by providing factory finished and weatherproofed probe or power ends. With factory finished ends a three-foot (one meter) power and temperature sensor lead connection is supplied as standard in a choice of materials from EPDM to armored flex.

O'Brien Analytical STACKPAK sample transport bundles utilize FEA analysis tools to ensure performance that has been verified in our environmental chamber at temperatures down to –60°F (-50°C). STACKPAK is an engineered industrial product that is suitable for permanent and temporary applications in general purpose or hazardous areas.

**Max water soluble chloride 30ppm.*

JACKET MATERIALS

O'Brien offers a variety of jacket materials ensuring reliable operation in a variety of environments, including in high operating temperatures, low ambient temperatures. Materials include polyurethane or PVC for outdoor applications.

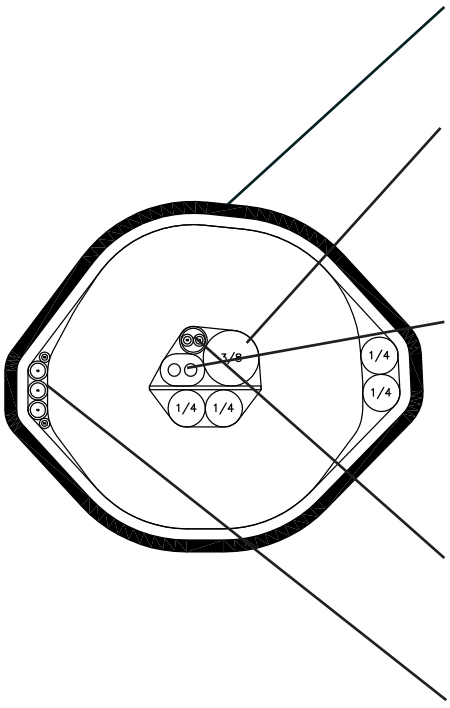
APPLICATIONS

- Sampling Systems
- Emissions Gas Sampling
- Process and Portable Analyzers
- Automotive Emissions Testing
- Viscosity Control
- Petroleum products
- Asphalt
- Tar
- Paint Systems
- Printing Ink
- Coatings
- Polymers
- Oils
- Chemicals
- Food Products
- Hot Melt Adhesives
- Sanitary and High Purity Applications
- Corrosion Protection
- Harsh environments such as marine and offshore

STACKPAK MODEL NUMBER EXAMPLE

Model SU-H3S2(2)/S2(2)-TN18/200/K50/5M-XXXXX

S	STACKPAK
U	TPU Jacket
—	Separator
H3S2(2)	Three heated tubes One H3 3/8” x 0.062 PFA Two S2 1/4” x 0.040 PFA
/	Separator between heated and unheated tubes
S2(2)	Two unheated tubes, two S2 1/4” x 0.040 PFA
—	Separator
TN18	240V 18W/ft zone heater for non-hazardous areas
/200	200’ overall length
/K50	Type K thermocouple w/ sensor located 50’ from power end
/5M	5 Messenger wires Size and configuration is defined during quotation and purchase order.
-XXXXX	Unique identification



IF YOU HAVE A ‘Z’ IN THE MODEL NUMBER

Some designs may contain tubes, tracers and other components not listed. These components will be designated by a “Z” in the model number and are defined in the packing list accompanying the shipment.

ELECTRIC CONNECTIONS AND TERMINATIONS

Electric tracers must be connected and terminated using approved power connection and termination kits. See instructions provided with the power connection kit.

X - Alpha # Numeric	Description
X/	Unit of measure - only used for bundle sold and marked in Meters. No prefix designates product is sold and marked in feet M/ = meters
S	STACKPAK Product Designation
X	Jacket Material S = SV47 O’Brien PVC U = TPU Jacket Material
—	Separator
X#	Heated tube material, construction and diameter. For tube designations see page 3. Multiple like tubes are designated by multiple number codes: (e.g. H33S2 designates two H3 tubes and one S2 tube. Tube diameter is in 1/8” increments or millimeters if metric
/	Separator only if unheated tubes are present.
X#	Unheated tube(s) use the same designation method as heated tubes described above.
—	Separator
X#	Electric tracer type and wattage output. See pages 4 - 5. X = unheated
Special Options	
/	Separator between each option
X	Exact and continuous length (Default is in feet. If M/ prefix selected then length is in meters.)
X##	Temperature Sensor J = Type J thermocouple K = Type K thermocouple R = 100Ω / 100PT 3 wire RTD XX = distance from power end in chosen units (maximum 50’ / 15m)
#M	Messenger wires (e.g. /3M indicates 3 messenger wires required. Specify type, size and color as notes.)
X	Jacket Color - default is black A = Gray L = LightBlue P = Purple N = Orange B = Blue N = Orange R = Red Y = Yellow G = Green W = White U = Brown
LC	Large Crosshead (internal designation for manufacturing)
	Specials Identifier

TUBE LIST

Designation	Material	Construction	OD	Wall	Max. Pressure*	Max. Continuous Length Possible**	Specifications
A2	316/316L SS	Welded	1/4"	0.035"	4,080 psig	2,500 ft	A269, A1016, EN 10204-3.1
A3	316/316L SS	Welded	3/8"	0.035"	2,640	2,500	A269, A1016, EN 10204-3.1
A4	316/316L SS	Welded	1/2"	0.035"	2,080	2,000	A269, A1016, EN 10204-3.1
B2	316/316L SS	Seamless	1/4"	0.049"	7,500	1,300	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
B3	316/316L SS	Seamless	3/8"	0.049"	4,800	1,000	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
B4	316/316L SS	Seamless	1/2"	0.049"	3,700	750	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
C3	Copper	Seamless	3/8"	0.032"	900	2,000	B68, B75, EN 10204-3.1
D4	Copper	Seamless	1/2"	0.035"	800	1,000	B68, B75, EN 10204-3.1
E4	316/316L SS	Welded	1/2"	0.049"	2,975	1,000	A269, A1016, EN 10204-3.1
F1	316/316L SS	Seamless	1/8"	0.035"	10,900	900	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F2	316/316L SS	Seamless	1/4"	0.035"	5,100	2,200	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F3	316/316L SS	Seamless	3/8"	0.035"	3,300	1,300	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
F4	316/316L SS	Seamless	1/2"	0.035"	2,600	1,000	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
G2	PFA	Extruded	1/4"	0.030"	155	1,000	
G2S	PFA	Extruded	1/4"	0.030"			SensorTube™ Color: BLACK
G3	PFA	Extruded	3/8"	0.030"	95	1,000	
G4	PFA	Extruded	1/2"	0.030"			
H2	PFA	Extruded	1/4"	0.062"			
H3	PFA	Extruded	3/8"	0.062"			
H3S	PFA	Extruded	3/8"	0.062"			SensorTube™ Color: BLACK
H4	PFA	Extruded	1/2"	0.062"	155	1,000	
J2	Copper	Seamless	1/4"	0.030"	1,400	2,600	B68, B75, EN 10204-3.1
K4	316/316L SS	Seamless	1/2"	0.065"	5,100	250	A269, A213-EAW, A1016, MR0175, EN 10204-3.1
M4	Copper	Seamless	1/2"	0.049"	1,100	1000	B68, B75, EN 10204-3.1
MA12	316/316L SS	Welded	12mm	1mm	170	300	A269, A1016, EN 10204-3.1
MB10	316/316L SS	Seamless	10mm	1.5mm	410	150	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MB12	316/316L SS	Seamless	12mm	1.5mm	330	120	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MD6	Copper	Seamless	6mm	1mm	95	600	B68, B75, EN 10204-3.1
MD8	Copper	Seamless	8mm	1mm	60	455	B68, B75, EN 10204-3.1
MD12	Copper	Seamless	12mm	1mm	55	300	B68, B75, EN 10204-3.1
MF6	316/316L SS	Seamless	6mm	1mm	460 Bar	300M	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF8	316/316L SS	Seamless	8mm	1mm	330	210	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF10	316/316L SS	Seamless	10mm	1mm	260	165	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MF12	316/316L SS	Seamless	12mm	1mm	210	150	A269, A213-EAW, A1016, MR0175, DIN 17458 1.4401/1.4404, EN 10204-3.1
MG6	PFA	Extruded	6mm	1mm	10	300	
MG8	PFA	Extruded	8mm	1mm			
MG10	PFA	Extruded	10mm	1mm			
MG12	PFA	Extruded	12mm	1mm			
N2	Monel	Seamless	1/4"	0.035"	4,800	1,000	B163, B165
N3	Monel	Seamless	3/8"	0.035"	3,100	600	B163, B165
P4	Monel	Seamless	1/2"	0.049"	3,210	600	B163, B165
S2	PFA	Extruded	1/4"	0.040"	180	745	
TrueTube® EP: *Electropolished, A269, A213-EAW, A1016, EN 10204 3.1 (GREEN identification in bundle)*							
TE1	316/316L SS	Seamless	1/8"	0.020"	10,900	100	
TE2	316/316L SS	Seamless	1/4"	0.035"	5,100	660	

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T Rating	Connection Kits Power	Termination	Approvals
Zone Tracers	JV5	120	5	16	445F (235C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV10	120	10	32	400F (200C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV15	120	15	49	335F (170C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JV20	120	20	65	300F (150C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC	T250-ET T250-ET	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G
	JN5	240	5	16	445F (230C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC/T9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN10	240	10	30	400F (205C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PC/T9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN15	240	15	49	335F (170C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PCT9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	JN20	240	20	60	300F (150C)	500F (260C)	T*	T210-PC or T9255-PC T210-PC or T9255-PCT9355-PC	T250-ET T250-ET T355-ET T350-ET14	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 2, Gr. A, B, C, D, E, F, G CENELEC EEx es II T*
	T18	120	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas
	TN18	240	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas
	TY18	208	18	-	400F (200C)	450F (230C)	T*	T9G90-UC		Non-Hazardous Areas

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T-Rating	Connection Kits Power	Termination	Approvals
Low Temperature Tracers	J5	120	5	16	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	J8	120	8	25	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	J10	120	10	32	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G
	P5	240	5	16	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6
	P8	240	8	25	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6
	P10	240	10	32	150F (65C)	185F (85C)	T6	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET10	FM Appvd. Cl I, II, III Div. 2, Gr. B, C, D, F, G CSA Cert. Cl I, II Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T6

	Tracer	Votage	W/ft	W/m	Max. Maintain and Exposure	Max. Intermittent Exposure	T-Rating	Connection Kits Power	Termination	Approvals
High Temperature Tracers with Fluoropolymer Overjacket	B5	120	5	15	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B10	120	10	37	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B15	120	15	47	250F (120C)	482F (250C)	T2D	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	B20	120	20	63	250F (120C)	482F (250C)	T2C	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1	T210-ET T210-ET or TPC1	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G
	MN4	240	4	12	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N5	240	5	15	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	MN8	240	8	24	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N10	240	10	30	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	MN12	240	12	36	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N15	240	15	47	250F (120C)	482F (250C)	T3	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET T210-ET or TPC1 T310-ET13	FM Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II T3
	N20	240	20	63	250F (120C)	482F (250C)	T2C	T210-PC or T9255-PC T210-PC or T9255-PC or TPC1 T9355-PC	T210-ET FM T210-ET or TPC1 T310-ET13	Appvd. Cl I, II, III Div. 2, Gr. A, B, C, D, F, G CSA Cert.. Cl I, II, III Div. 1, 2, Gr. A, B, C, D, E, F, G CENELEC EEx e II 240°C (T2)

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Therm-Omega-Tech recommends these valves for your instrument temperature controlling applications

TV/HAT *(Tube Valve/Heat Actuated Trap)* valves are ideal for use in conjunction with tubing and tracing systems using pre-traced tubing bundles. These versatile valves are ideal for replacing conventional steam traps on winterization tracing, instrument tracing, condensate return system freeze protection, process tracing and other applications requiring in-line flow control based on temperature. Reverse-acting valves (open on temperature rise) are also available. **TV/HAT-RA** valves are available with 1/4”, 3/8” or 1/2” tube compression fittings and setpoints from 55°F to 240°F (13°C to 116°C).

Dimensions: **TV/HAT**: 3-1/2” x 1”. These valves save space, eliminate the use of extra, expensive, and time consuming piping. They install in seconds. The unique ram-type plug & seat provide reliable, tight shut off longer than any other design available. Since **TV/HAT** valves discharge condensate well below steam temperature, live steam losses are eliminated. For heating of temperature sensitive instruments or process fluids,the reduced temperature available for tracing simplifies operations and eliminates overheating problems.

US/S-X & US/S-XR: *(Surface or Fluid-Sensing Control)* valves can affect very close temperature control of any number of control loops using steam, liquid phase heat transfer media such as Dowtherm®, hot water, hot oil, etc. The reverse acting model (US/S-XR) can be used to control cooling media to economically remove heat from equipment or a process. The sensor/controller element may be placed against the process line or pipe with the optional weld-o-let or band-o-let or in the line with the integral 3/4” NPT bushing offering unlimited piping variations. This allows the temperature element to be in contact with the process, regulating the in flow of heating media (or cooling media with the US/S-XR).

Input temperatures or steam supply can vary widely, and yet the control temperature is maintained within desired limits. Available standard set points from 30°F to 240°F (-1°C to 116°C).

HST *(High Sample Temperature safety shutoff)* The HST valve is used to sense the sample temperature after the sample cooler. The sample passes through this normally open valve whenever the sample temperature is below the valve setpoint. If the sample temperature exceeds the valve setpoint, the **HST** valve closes to protect expensive and delicate analyzers and other instruments from overtemperature damage. When the **HST** cools about 10°F below the setpoint, it will reset open again. Low flow or total loss of sample cooling water or unusually high inlet sample temperatures into the sample cooler are typical reasons why this self-operating protective device should be considered.

The standard **HST** valve body has 1/2" NPT female threaded ends and is rated for 3000 psig @ 600°F. The **HST's** internal valve mechanism (valve engine) is rated up to 3000 psig and 150°F above the specified shutoff temperature. Therm-Omega-Tech offers many setpoints for the **HST**.

TV/SC-A: *(Tube Valve/Steam Control-Ambient Sensing)*

There are literally hundreds of applications for these compact, self-contained, automatic control valves.

Tubing connections allow quick installation at low cost. Ambient sensing valves can be used to turn on steam, air, gas or liquids compatible with Teflon® and stainless steel in response to ambient temperature change. Applications include automation of steam trace lines, operation of pneumatically operated pumps for injection of anti-freeze liquids, etc. Available with 3/8" or 1/2" tube compression fittings.

At the designated set point, a thermostatic element located at one end of the valve (and thermally isolated from the body of the valve), will open or close within a 10°F (5.6°C) differential (e.g. 35-45°F, etc.) and control the flow of steam, gas, or fluid through the valve based on ambient temperature. The **TV/SC-A** opens on falling temperature; the **TV/SC-AR** opens on rising temperature. An optional solar shield (when used) allows the device to be installed where solar heating may affect the set point of the device. **TV/SC-A** may also be used to control instrument enclosure temperatures (see **TV/SC-I** and **ITCH** product fact sheets).

TV/SC-I: *(Instrument Enclosure or Analyzer Housing Temperature Controller)*

The **TV/SC-I** assures extremely accurate temperature control in an instrument or analyzer enclosure. This self-contained unit provides a reliable, economical alternative to costly hazardous electric heating. The compact thermostatic control valve senses enclosure temperature and automatically regulates the flow of steam to maintain the desired temperature.

At the designated control point, a thermostatic element located at one end of the **TV/SC-I** (inside the enclosure) regulates the steam supply to the heater to accurately maintain the desired temperature, operating like the thermostat in an oven. Heat radiating from the steam coil heater reaches the actuator causing it to quickly shut off the steam supply when the desired temperature is reached, regardless of outside ambient. In cooling applications, the **TV/SC-IR** opens on rising temperature to regulate the flow of cooling media to the enclosure.

The **TV/SC-I** comes complete with a weather-tight bulkhead fitting for the valve body; optional bulkhead fittings for 3/8 tubing connections are available. Also available is a short configuration for installations with the valve and all connections completely within the enclosure (see **TV/SC-IA** and **ITCH** product fact sheets). These economical valves are available with set points from 40°F to 210°F (4.4°C to 98.9°C) and available with 3/8" and 1/2" tube compression fittings, single or double outlets.

ITCH Assembly: *(Instrument Temperature Control Heater)*

assures accurate temperature control in an instrument enclosure. The assembly comes complete with steam coil, mounting bracket and **TV/SC-A** valve assembly, two **TV/HAT** valves and two weather-tight bulkhead fittings for 3/8" or 1/2" tubing connection. The compact thermostatic control valve senses enclosure temperature and automatically regulates the flow of steam to the coil to maintain the desired temperature. In applications where the enclosure needs to be cooled, a reverse-acting **ITCH/RA** can be used to regulate the flow of glycol, water or other cooling media.

ITCH Assemblies will maintain enclosure temperature accurately over a wide range of ambient temperatures with steam supply pressures from 15 psig to 200 psig (1.0 to 13.8 BAR) without danger of overheating delicate instruments. No special NEMA-7 or -9 housings are required even in potentially explosive environments. Enclosure temperatures can be maintained within 2°F (1.1°C) for pennies a day.

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4, rue des Roses - 69280 SAINTE-CONSORCE - France
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ThermOmegaTech®

HST

IN-LINE HIGH SAMPLE TEMPERATURE VALVE

BENEFITS

- Automatically controls flow based on fluid temperature
- Protects expensive and delicate sample analyzers
- Automatically resets when sample cools
- Self-operating, no power or signal required
- Superior value vs. more expensive electric valves
- Easy installation

DESIGN FEATURES

- Exclusive **Thermoloid**® thermal actuator
- All stainless steel construction - corrosion resistant
- Ram-type plug provides tight shutoff
- Operating temperatures unaffected by variable inlet pressures
- Wide choice of set-points available

OPERATION

The **HST** (High Sample Temperature) safety shutoff valve is used to sense the sample temperature after the sample cooler. The sample passes through this normally open valve whenever the sample temperature is below the valve set-point.

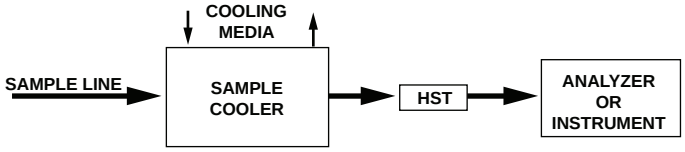
If the sample temperature exceeds the valve set-point, the **HST** closes to protect expensive and delicate analyzers and other instruments from over-temperature damage. When the **HST** cools below the set-point, it will automatically reset open again.

Low coolant flow or total loss of cooling water or unusually high sample temperatures are typical reasons why the **HST** self-operating protective device should be considered.

APPLICATION

Excessively hot samples can cause damage to expensive and sensitive hardware and electronics. For process analyzers and similar instrumentation, it is important to assure that the process samples fluids are always below the maximum allowable temperature for such instruments.

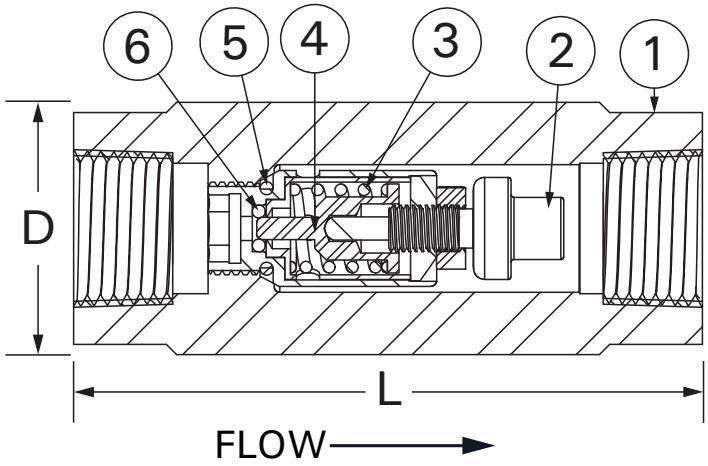
Sample coolers are commonly used to reduce sample temperatures to the acceptable limits. In the event of a loss of cooling fluid to the sample cooler, or if the desired sample temperature is exceeded for any reason, the **HST** valve will close to prevent equipment damage.



HST

IN-LINE HIGH SAMPLE TEMPERATURE VALVE

PARTS & MATERIALS



ITEM	DESCRIPTION	MATERIAL
1	VALVE BODY	300 Series SS
2	THERMAL ACTUATOR	300 Series SS
3	OPERATING SPRING	300 Series SS
4	RAM-TYPE PLUG	300 Series SS
5	ENGINE SEAL	EPDM or Viton[3]
6	SEAT RING SEAL	PTFE

DIMENSIONS & CAPACITIES

SIZE (NPT)	D		L		Weight		C_V	Maximum Operating Pressure[1]	Maximum Temperature
	in	mm	in	mm	Lb	Kg			
1/2"	1.38	35	3.4	86	1.14	0.52	0.075	3000 PSIG (207 BAR)	300°F (149°C)

ORDERING

Part Number[2]	Description[3,4]
254-000000-XXX	½ HST-XXX-SS-E
254-001000-XXX	½ HST-XXX-SS-V
254-002000-XXX	½ HST-XXX-SS-K
254-110000-XXX	½ HST-XXX-S6-E
254-111000-XXX	½ HST-XXX-S6-V
254-112000-XXX	½ HST-XXX-S6-K

NOTES

1. Body rating: 3000 PSIG at 600°F
2. Full open temperatures "XXX" available: 100°F, 105°F, 115°F, 120°F, 125°F, 130°F, 140°F, 170°F, 185°F. Other temperatures are available.
3. Seal material compatibility:
   E - EPDM - air, water, steam, ketones and synthetic hydraulic oils.
   V - Viton® - air, fuel, oil, gas and petroleum based hydraulic oils.
   K - Kalrez® - Special order option.
4. Valve material:
   SS - 303 stainless steel
   S6 - Dual Grade 316/316L stainless steel
5. Warranty information disclosed at www.thermomegatech.com/terms-conditions/

ThermOmegaTech®, Inc.
353 Ivyland Road
Warminster, PA 18974
1-877-379-8258
www.ThermOmegaTech.com

ThermOmegaTech®

ITCH ASSEMBLY

INSTRUMENT TEMPERATURE CONTROL HEATER ASSEMBLY

BENEFITS

- Maintain enclosure temperature accurately over a wide range of ambient temperatures
- Economically controls steam flow
- Eliminates danger of overheating
- Self-operating - no outside power or signal required, eliminating explosion hazard
- Complete kit with standard tube connections for quick and easy installation

DESIGN FEATURES

- Exclusive **Thermoloid**® thermal actuator
- All stainless steel construction
- Compact, low mass - fast response
- Corrosion resistant - long service life
- Ram-type plug for tight reliable shutoff
- Operates in narrow temperature band
- Operating temperatures unaffected by variable inlet pressures
- Wide choice of set-points

OPERATION

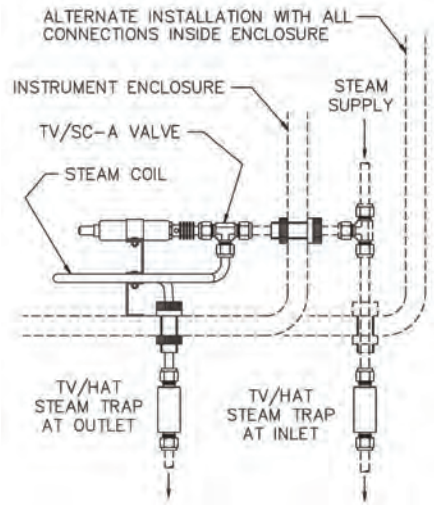
The thermal actuator on the TV/SC-A valve senses internal enclosure temperature and regulates steam flow to the heating coil accordingly. The TV/HAT at the steam inlet keeps the steam supply hot to prevent freezing even when the TV/SC-A valve is closed. The TV/HAT at the coil outlet regulates condensate discharge temperature for maximum economy with minimized overheating potential.

The **ITCH Assembly** comes complete with steam coil, mounting bracket, and TV/SC-A valve assembly, two TV/HAT valves, and two weather-tight bulkhead fittings for 3/8 tubing connections. TV/SC-A and TV/SC-I valves (with external connections) are also available separately.

APPLICATIONS

The **ITCH Assembly** assures accurate temperature control in an instrument or analyzer enclosure. This self-contained unit provides a reliable, economical alternative to costly, hazardous electric heating. The compact thermostatic control valve senses enclosure temperature and automatically regulates the flow of steam to the steam coil to maintain the desired temperature.

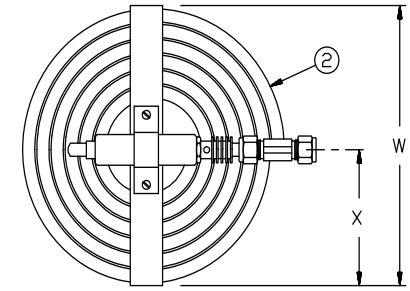
TYPICAL INSTALLATION

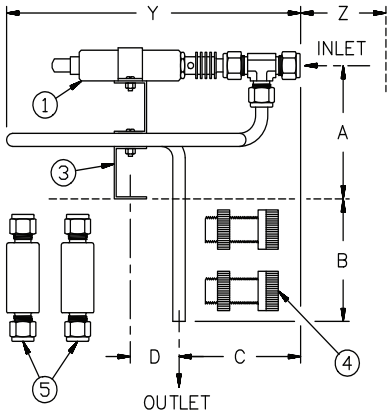


ITCH ASSEMBLY

INSTRUMENT TEMPERATURE CONTROL HEATER ASSEMBLY

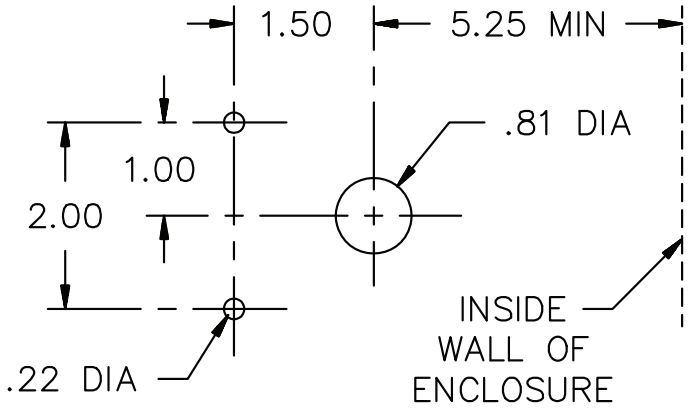
PARTS & MATERIALS





ITEM	DESCRIPTION	MATERIAL
1	TV/SC-A	SEE CATALOG PAGE
2	STEAM COIL	300 SERIES SS
3	MOUNTING BRACKET	300 SERIES SS
4	BULKHEAD FITTING	ACETAL COPOLYMER
5	TV/HAT	SEE CATALOG PAGE

MOUNTING DIMENSIONS



DIMENSIONS & CAPACITIES

TUBE OD	A		B		C		D		W		X		Y		Z		Cv	MAX PRESSURE PSIG (BAR)	MAXIMUM TEMPERATURE
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM			
3/ 8"	3.8	97	3.5	89	3.8	97	1.5	38	8.0	203	4.0	102	9.0	229	1.5	38	0.5	200 (13.8 BAR)	250°F (121°C)

ORDERING

PART NUMBER[1]	DESCRIPTION[2]
753-000000-XXX	3/8" ITCH ASSEMBLY

NOTES

1. Full open temperatures "XXX" available: 35°F, 40°F, 50°F, 55°F, 60°F, 65°F, 75°F, 85°F, 90°F, 95°F, 100°F, 105°F, 110°F, 125°F, 130°F, 140°F, 150°F, 155°F, 160°F, 170°F, 180°F, 190°F and 200°F.
   a. Note: Closing temperature is typically 10°F above opening temperature.
2. A #20 mesh strainer is recommended for use with all port sizes.
3. Warranty information disclosed at www.thermomegatech.com/terms-conditions/

ThermOmegaTech®, Inc.
353 Ivyland Road
Warminster, PA 18974
1-877-379-8258
www.ThermOmegaTech.com

SOCLEMA
Advanced Industrial Sampling

Dewpoint analysers

HCD5000™ Hydrocarbon Dewpoint Analyzer

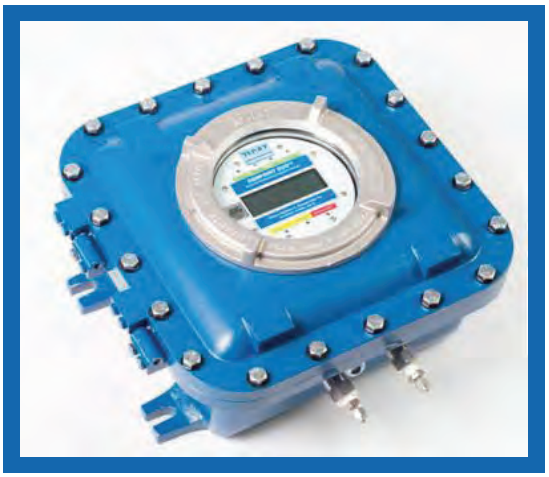
ZEGAZ instruments

KEY FEATURES

- ✓ Direct, First Principle Measurement
- ✓ Highly Reliable
- ✓ No Consumables
- ✓ Self Cleaning
- ✓ Immune to Most Contaminants
- ✓ Accurate and Unambiguous
- ✓ No Calculation or Model Errors
- ✓ Distinguishes Between Hydrocarbon and Water
- ✓ Fully Automated
- ✓ Works at Line Pressure
- ✓ No Moving Parts
- ✓ No Carrier Gas or Replacement Parts
- ✓ Sensor Not Damaged by Contaminants, Slugs or Aerosols

ZEGAZ Instruments HCD5000™ hydrocarbon dewpoint analyzer is the most advanced dewpoint measurement system available.

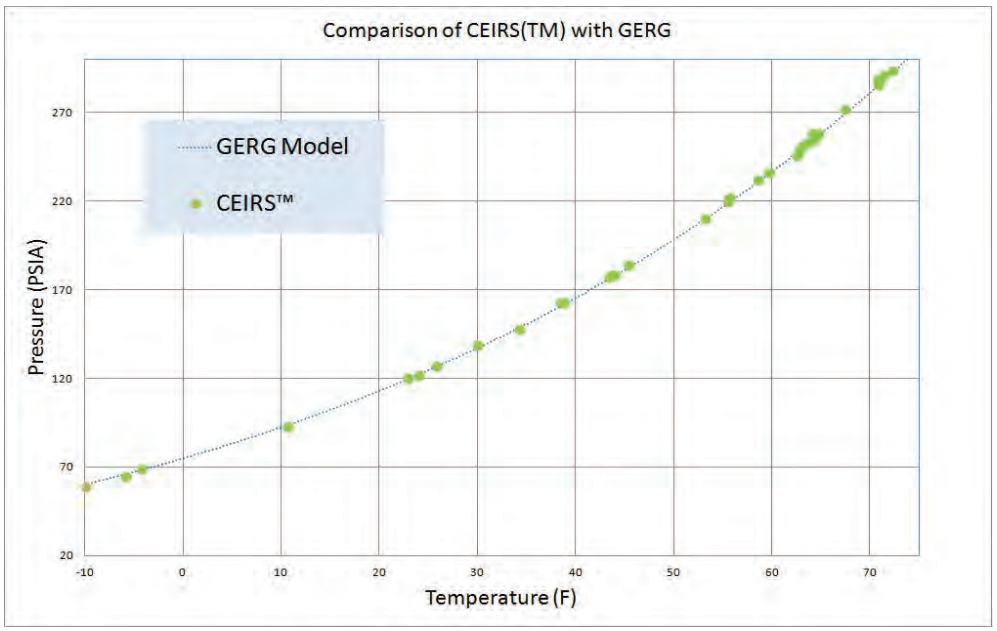
It has an accuracy of ±0.5 ºC (±0.9 º F), distinguishes between hydrocarbon and water dewpoints and provides highly accurate, measurements. It is based on CEIRS™ (Chilled-Evanescent Infrared Spectroscopy), a patented method.



ZEGAZ Instruments products are the only analyzers in the world that use CEIRS™, a spectroscopic approach that determines the dewpoint, while unambiguously determining whether it was water or hydrocarbon dewpoint.

The CEIRS™ method uses advanced IR technology. It is immune to contaminations. It is designed for remote operation at line pressure up to 2000psi. It provides 4 analog outputs as well as 3 digital alarms, and serial communications.

HCD5000™ has unprecedented accuracy and repeatability. The graph below shows the correlation between theoretical and HCD5000™ measured values.



HCD5000™ Hydrocarbon Dewpoint Analyzer

ZEGAZ instruments

SPECIFICATIONS

Performance

Dewpoint Measurement Range†	126°F (70 °C) below ambient temp.
Lowest Detectable Dewpoint	-40 °F (-40 °C)
Highest Detectable Dewpoint	+131°F (+55°C) 9 °F (5°C) below ambient temp.
Measurement Time	2-12 Minutes
Dewpoint Accuracy	±0.9 °F (±0.5 °C)
Dewpoint Repeatability	±0.4 °F (±0.2 °C)
Dewpoint Resolution	±0.1 °F (±0.1 °C)

Application Condition

Operating Temperature	-4 to 122°F (-20 to +60°C)
Storage Temperature	-22 to 140°F (-30 to +60°C)
Process Pressure	Up to 2000psi (135bar)
Flow Rate	0.3-1.5 SLM

Electrical and Communication

Input Voltage	100-264 VAC, DC Optional
Power Usage	120W Peak, <30W Average
Signal Outputs	4x4-20mA, 3xDO, RS-232, RS-485, Ethernet
Protocol	Modbus Gould RTU, Daniel RTU

Physical

Size (not including sample system)	14”x14”x6” (355x355x150mm)
Weight (not including sample system)	40lbs (18Kg)

Certification

Hazardous Location	CSA Class I, Div. 1, Group B,C&D, T6 ATEX/IECEX II 2 G Ex db IIB+H2 T6 Gb
Other	IP66, CE, ISO 9001

† The cooling range is a function of several different factors, including ambient temperature, flow rate, etc. and may be different

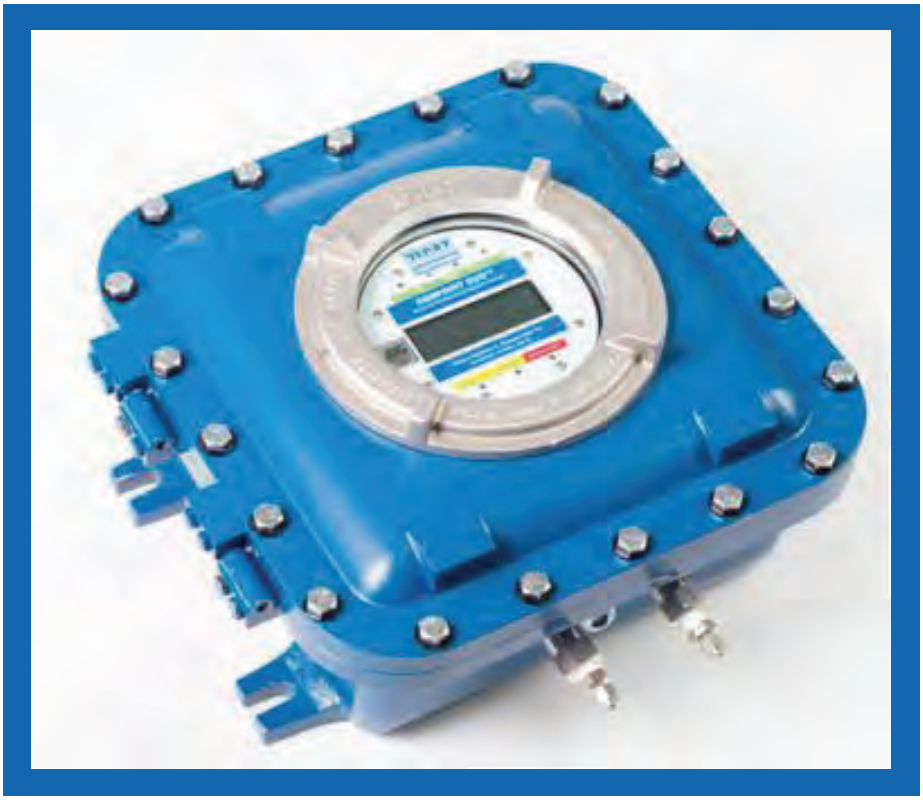
WDP5000™ Water Dewpoint Analyzer

ZEGAZ instruments

KEY FEATURES

- ✓ True DewPoint Measurement
- ✓ Works at Line Pressure
- ✓ First Principle
- ✓ Self Cleaning
- ✓ Immune to Most Contaminants
- ✓ Accurate and Unambiguous
- ✓ No Calculation Errors
- ✓ Fully Automated
- ✓ No Moving Parts
- ✓ No Carrier Gas or Replacement Parts
- ✓ Sensor Not Damaged by Contaminants, Slugs or Aerosols

ZEGAZ Instruments WDP5000™ water dewpoint analyzer is the most advanced water dewpoint measurement system available. While most water analyzers measure water content and then calculate dewpoint, WDP5000™ measures the actual dewpoint at the supplied pressure.



ZEGAZ Instruments products are the only analyzers in the world that use CEIRS™, a spectroscopic approach that determines the dewpoint, while unambiguously determining whether it was water or hydrocarbon dewpoint.

The CEIRS™ method uses advanced IR technology. It is immune to contaminations. It is designed for remote operation at line pressure up to 2000psi. It provides 4 analog outputs as well as 3 digital alarms, and serial communications.

CEIRS™ technology has unprecedented accuracy and repeatability. It has been tested at NIST. The dewpoint temperature measurements are NIST traceable.

WDP5000™ Water Dewpoint Analyzer

ZEGAZ instruments

SPECIFICATIONS

Performance

Dewpoint Measurement Range†	126°F (70 °C) below ambient temp.
Lowest Detectable Dewpoint	-40 °F (-40 °C)
Highest Detectable Dewpoint	+131°F (+55°C) 9 °F (5°C) below ambient temp.
Measurement Time	2-12 Minutes
Dewpoint Accuracy	±0.9 °F (±0.5 °C)
Dewpoint Repeatability	±0.4 °F (±0.2 °C)
Dewpoint Resolution	±0.1 °F (±0.1 °C)

Application Condition

Operating Temperature	-4 to 122°F (-20 to +60°C)
Storage Temperature	-22 to 140°F (-30 to +60°C)
Process Pressure	Up to 2000psi (135bar)
Flow Rate	0.3-1.5 SLM

Electrical and Communication

Input Voltage	100-264 VAC, DC Optional
Power Usage	120W Peak, <30W Average
Signal Outputs	4x4-20mA, 3xDO, RS-232, RS-485, Ethernet
Protocol	Modbus Gould RTU, Daniel RTU

Physical

Size (not including sample system)	14”x14”x6” (355x355x150mm)
Weight (not including sample system)	40lbs (18Kg)

Certification

Hazardous Location	CSA Class I, Div. 1, Group B,C&D, T6 ATEX/IECEX II 2 G Ex db IIB+H2 T6 Gb
Other	IP66, CE, ISO 9001

† The cooling range is a function of several different factors, including ambient temperature, flow rate, etc. and may be different

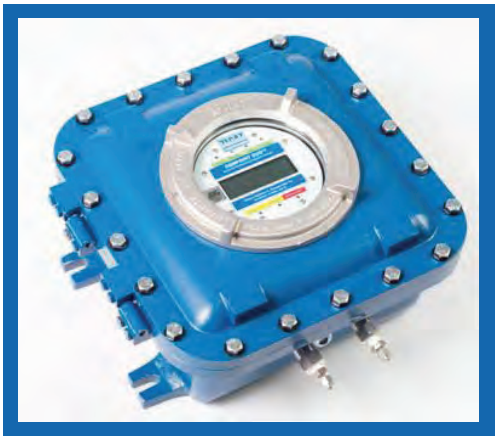
DewPoint Duo™ Water and Hydrocarbon Dewpoint Analyzer

ZEGAZ instruments

KEY FEATURES

- ✓ Direct, First Principle Measurement
- ✓ NIST Tested
- ✓ No Consumables
- ✓ Self Cleaning
- ✓ Immune to Most Contaminants
- ✓ Accurate and Unambiguous
- ✓ No Calculation or Model Errors
- ✓ Distinguishes Between Hydrocarbon and Water
- ✓ Fully Automated
- ✓ Works at Line Pressure
- ✓ No Moving Parts
- ✓ No Carrier Gas or Replacement Parts
- ✓ Sensor Not Damaged by Contaminants, Slugs or Aerosols

ZEGAZ Instruments DewPoint Duo™ water and hydrocarbon dewpoint analyzer is the most advanced dewpoint measurement system available, capable of measuring both dewpoints simultaneously.

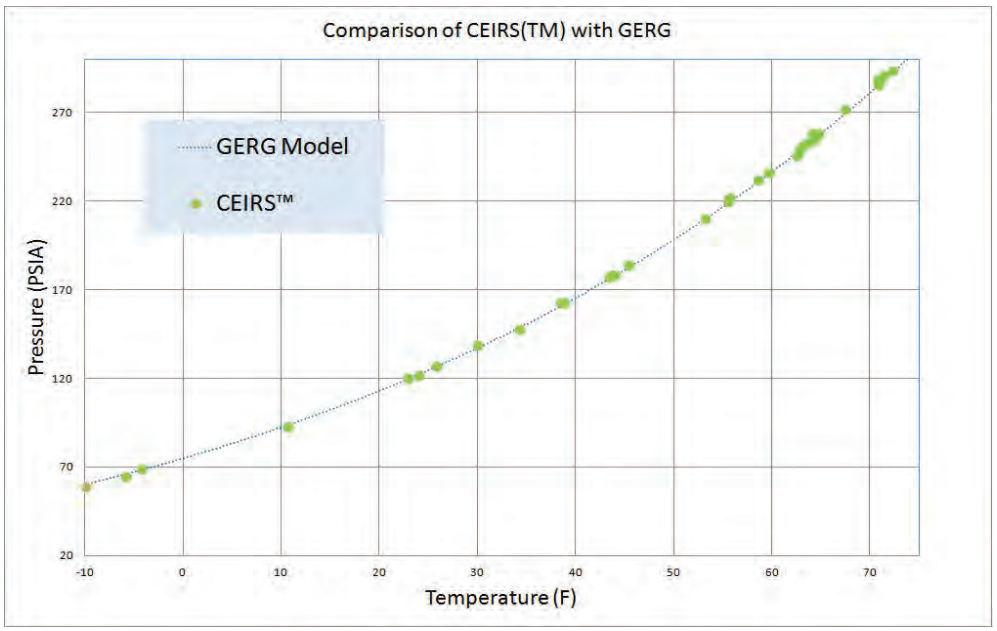


It has an accuracy of ±0.5 ºC (±0.9 º F), distinguishes between hydrocarbon and water dewpoints and provides highly accurate, measurements. It is based on CEIRS™ (Chilled-Evanescent Infrared Spectroscopy), a patented method.

ZEGAZ Instruments products are the only analyzers in the world that use CEIRS™, a spectroscopic approach that determines the dewpoint, while unambiguously determining whether it was water or hydrocarbon dewpoint.

The CEIRS™ method uses advanced IR technology. It is immune to contaminations. It is designed for remote operation at line pressure up to 2000psi. It provides 4 analog outputs as well as 3 digital alarms, and serial communications.

DewPoint Duo™ has unprecedented accuracy and repeatability. The graph below shows the correlation between theoretical and DewPoint Duo™ measured values.



DewPoint Duo™ Water and Hydrocarbon Dewpoint Analyzer

ZEGAZ instruments

SPECIFICATIONS

Performance

Dewpoint Measurement Range†	126°F (70 °C) below ambient temp.
Lowest Detectable Dewpoint	-40 °F (-40 °C)
Highest Detectable Dewpoint	+131°F (+55°C) 9 °F (5°C) below ambient temp.
Measurement Time	2-12 Minutes
Dewpoint Accuracy	±0.9 °F (±0.5 °C)
Dewpoint Repeatability	±0.4 °F (±0.2 °C)
Dewpoint Resolution	±0.1 °F (±0.1 °C)

Application Condition

Operating Temperature	-4 to 122°F (-20 to +60°C)
Storage Temperature	-22 to 140°F (-30 to +60°C)
Process Pressure	Up to 2000psi (135bar)
Flow Rate	0.3-1.5 SLM

Electrical and Communication

Input Voltage	100-264 VAC, DC Optional
Power Usage	120W Peak, <30W Average
Signal Outputs	4x4-20mA, 3xDO, RS-232, RS-485, Ethernet
Protocol	Modbus Gould RTU, Daniel RTU

Physical

Size (not including sample system)	14”x14”x6” (355x355x150mm)
Weight (not including sample system)	40lbs (18Kg)

Certification

Hazardous Location	CSA Class I, Div. 1, Group B,C&D, T6 ATEX/IECEX II 2 G Ex db IIB+H2 T6 Gb
Other	IP66, CE, ISO 9001

† The cooling range is a function of several different factors, including ambient temperature, flow rate, etc. and may be different

DewPort™ Portable Water and Hydrocarbon Dewpoint Analyzer

ZEGAZ instruments

KEY FEATURES

- ✓ First Principle Chilled-mirror measurement
- ✓ Highly Reliable
- ✓ Distinguishes Between Hydrocarbon and Water
- ✓ No Consumables
- ✓ Self cleaning
- ✓ Immune to Most Contaminants
- ✓ No Calculation Errors
- ✓ Fully Automated

World's Only Automated, Portable, Water and Hydrocarbon Dewpoint Analyzer

- Simultaneous Determination of Moisture and Hydrocarbon Dewpoints within 1 °F/ (±0.5 °C)
- Inert Nature of the CEIRS™ Sensor Crystal Means Virtual Immunity to Contamination by Entrained Fluids
- Direct, First Principal Measurement Means Modeling and Calculations are a Thing of the Past
- NIST Traceable Dewpoint Temperature Sensor
- No Carrier Gas

DewPort™ Portable Water and Hydrocarbon Dewpoint Analyzer

ZEGAZ instruments

SPECIFICATIONS

Performance

Dewpoint Measurement Range†	Up to 126°F (70 °C) below ambient temp.
Lowest Detectable Dewpoint	-40 °F (-40 °C)
Highest Detectable Dewpoint	19°F (10 °C) below ambient temp.
Dewpoint Accuracy	±0.9 °F (±0.5 °C)
User Interface	Integrated Touch-Screen Control
Measurement Time	2-15 Minutes

Application Condition

Operating Temperature	-4 to 131°F (-20 to +55°C)
Storage Temperature	-22 to 149°F (-30 to +65°C)
Input Pressure	Up to 1500psi (103bar)
Output Pressure	25 psi
Flow Rate	2 SLM

Electrical and Communication

Input Voltage	12-15 VDC, AC/DC Adapter Available
Power Usage	120W Peak, <30W Average
Battery Pack	Optional
USB Port Data Logging	Last 1000 Measurements

Physical

Size (without sample system)	14.8”x18.7”x7” (375x475x180mm)
Weight	15lbs (7Kg)

Certification

Hazardous Location	II 3 G Ex e IIC T6 Gc

† The cooling range is a function of several different factors, including ambient temperature, flow rate, etc. and may be different

SOCLEMA
Advanced Industrial Sampling

Moisture and corrosion control packets

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.

Humidisorb
humidisorb.com

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

A+ Corporation

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.

A+ Corporation

Analytically Correct™ sample systems, sample conditioning components, and revolutionary gas and liquid sampling technology.

SOCLEMA
Advanced Industrial Sampling

4, rue des Roses - 69280 SAINTE-CONSORCE - France
Tel: +33 478 878 945 - info@soclema.com - www.soclema.com

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.

humidisorb.com

Humidisorb+ X-Corrode

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

A+ Corporation

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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