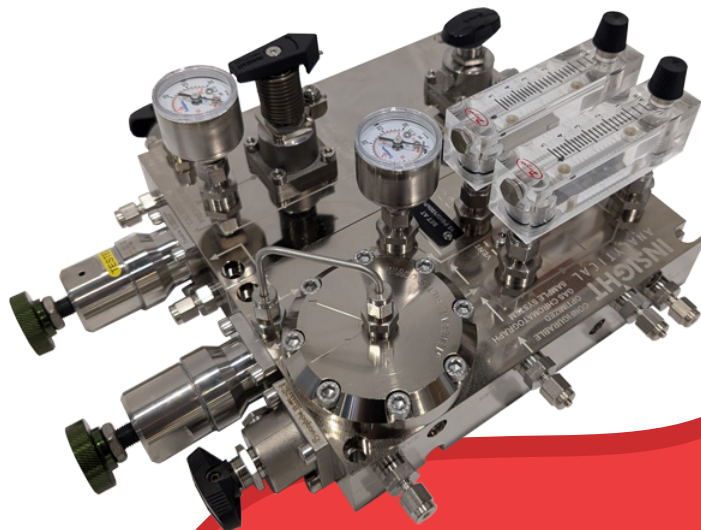


Product Overview

The Insight Analytical COGS (Configurable Optimized Gas Chromatograph Sample System – Patent Pending) is a modular, self-contained, expandable conditioning system for gas chromatographs (GCs). Built from nickel-plated aluminum blocks, it offers three configurations (Types 3, 4, and 5) for varying sample and gas control needs. Designed for demanding GC applications such as natural gas custody transfer, it delivers clean, dry, stable samples with integrated filtration, pressure regulation, flow control, and purge functions while minimizing delay and contamination. Combining traditional and SP76/NeSSI strengths, COGS uses o-ring Swagelok fittings to reduce leaks and simplify maintenance. Low internal volume, optimized flow paths, and proprietary membrane filter geometry provide faster response, better filtering, and lower flow needs. Its modular design allows easy installation, maintenance, and full swaps to minimize downtime. Optional accessories such as the Regulator Panel, Mounting Bracket, and Vent Block enhance flexibility and integration with pipe-mounted GCs like the ABB NGC8206.



Field of Application

Gas chromatographs are precision instruments that separate and quantify chemical composition in applications such as natural gas custody transfer. These require high accuracy and reliability, and disruptions like contamination, phase changes, or pressure fluctuations can compromise results and create costly errors.

GCs need clean, dry, non-corrosive samples within strict temperature, pressure, and flow limits while minimizing delay. To protect sensitive parts such as injection valves and columns, a robust conditioning system is essential.

Typical systems provide filtration, pressure regulation, flow control (sample or bypass/drains), and relief in case of regulator failure. Advanced designs may also manage calibration and carrier gas pressure, cylinder changeover, stream switching, and vent gas handling.

Well-designed systems balance speed and accuracy with cost-efficiency in installation, operation, and maintenance.

Maximum Pressure Rating:

100 psig (690 kPag) for sample and calibration gas inlets, and 200 psig (1379 kPag) for carrier gas inlets.

Temperature Range:

-6°C to 65°C, temperature-controlled location recommended.

Delivery Pressure Range:

0 to 25 psig (0 to 172 kPag) for sample and calibration gases, and 0-100 psig (0-690 kPag) for carrier gases.

Flow Rate Range:

Sample Flow Rate: Typically less than 250 sccm (50 to 100 sccm on each of the two rotameters plus any additional flow required by the Gas Chromatograph)

Filter Drain/Fast Loop: Acrylic rotameter bodies, 0 to 0.5 NLPM Air Calibration with stainless steel metering valve.

Inlet and Outlet Connection Size:

1/8" Tube Swagelok Compression Fitting for sample, calibration, carrier gas inlets and analyzer connections, but these may optionally be 1/16".

Vent Connection Size: 1/4" Tube Swagelok fittings.

Wetted Materials:

Electroless Nickel Plated Aluminum and 316 Stainless Steel, FKM o-rings. Other o-ring material options available.

NACE Compliance: NACE MR0175/ISO 15156 and MR0103 Compliant.



✉ sales@insight-analytical.com

📞 1(403)910-6280 / 1(866)910-6280

📍 3202 12th Ave. NE, Calgary, Alberta

Scan the QR Code to Learn More!

See more details on our website, or feel free to contact us with any questions!



Principle of Operation

The COGS Sample System combines features of traditional and SP76/NeSSI-style systems, using o-ring Swagelok fittings to minimize leaks. It comes in three configurations with the following included modules. All modules mount to strut, backpan, or an optional bracket that can also support pipe-mounted GCs like ABB NGC8206.

| Type | Included Modules |
|------|--|
| 3 | Sample Gas Conditioning, Carrier Gas Changeover/Control, Calibration Gas Control |
| 4 | Sample Gas Conditioning, Calibration Gas Control |
| 5 | Sample Gas Conditioning |

The Sample Gas Conditioning Module includes an integrated 2"/50mm membrane filter with proprietary internal geometry for superior contamination removal and faster response time compared to competing filters,

as well as an inlet isolation ball valve, rotameter with metering valve for filter drain/bypass, 0–25 psig regulator with 0–30 psig gauge, second rotameter for fast loop flow, ensuring fresh sample delivery before injection, and combined flow vents via bottom fitting.

The Carrier Gas Module (Type 3 COGS sample system block only) includes auto switch-over between two carrier gas cylinders with offset pressure regulator settings, isolation ball valves and spring-return purge valves, 0–100 psig carrier gas regulator with 0–200 psig gauge, and a pressure relief valve set at 110 psig.

The Calibration Gas Module (Type 3 and 4 COGS sample system blocks only) includes an isolation valve, 0–25 psig regulator with 0–30 psig gauge, 3-way valve for calibration/validation selection, downstream spring-return purge valve, and the Type 3 includes calibration gas relief valve set at 33 psig.

Available Options

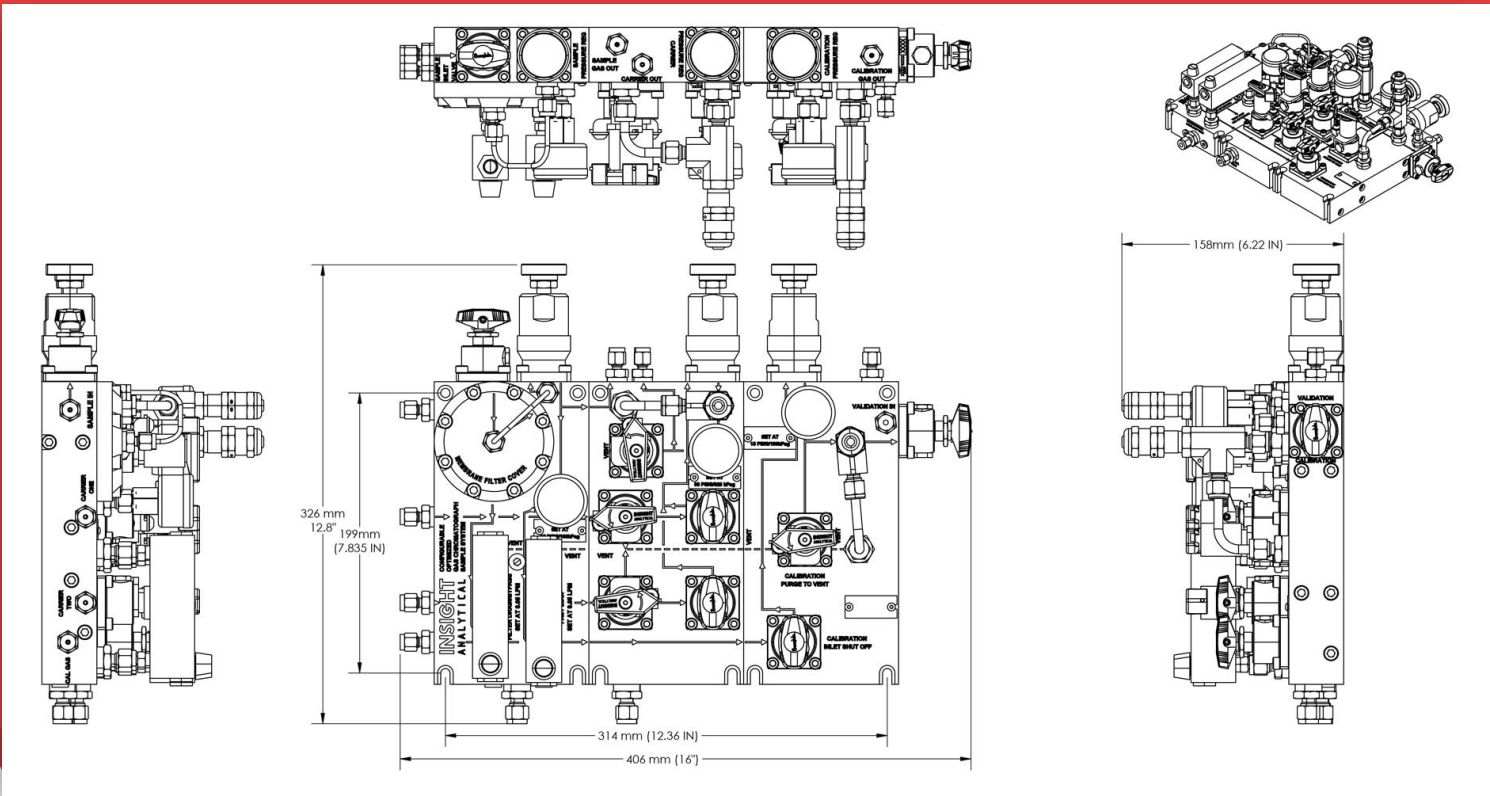
Optional Regulator Panel available for the Type 3 COGS system for carrier gas cylinder changeover/pressure regulation and calibration gas pressure regulation.

Optional Mounting Bracket available for mounting any of the three system types and also pipe-mountable GCs such as the ABB NGC8206.

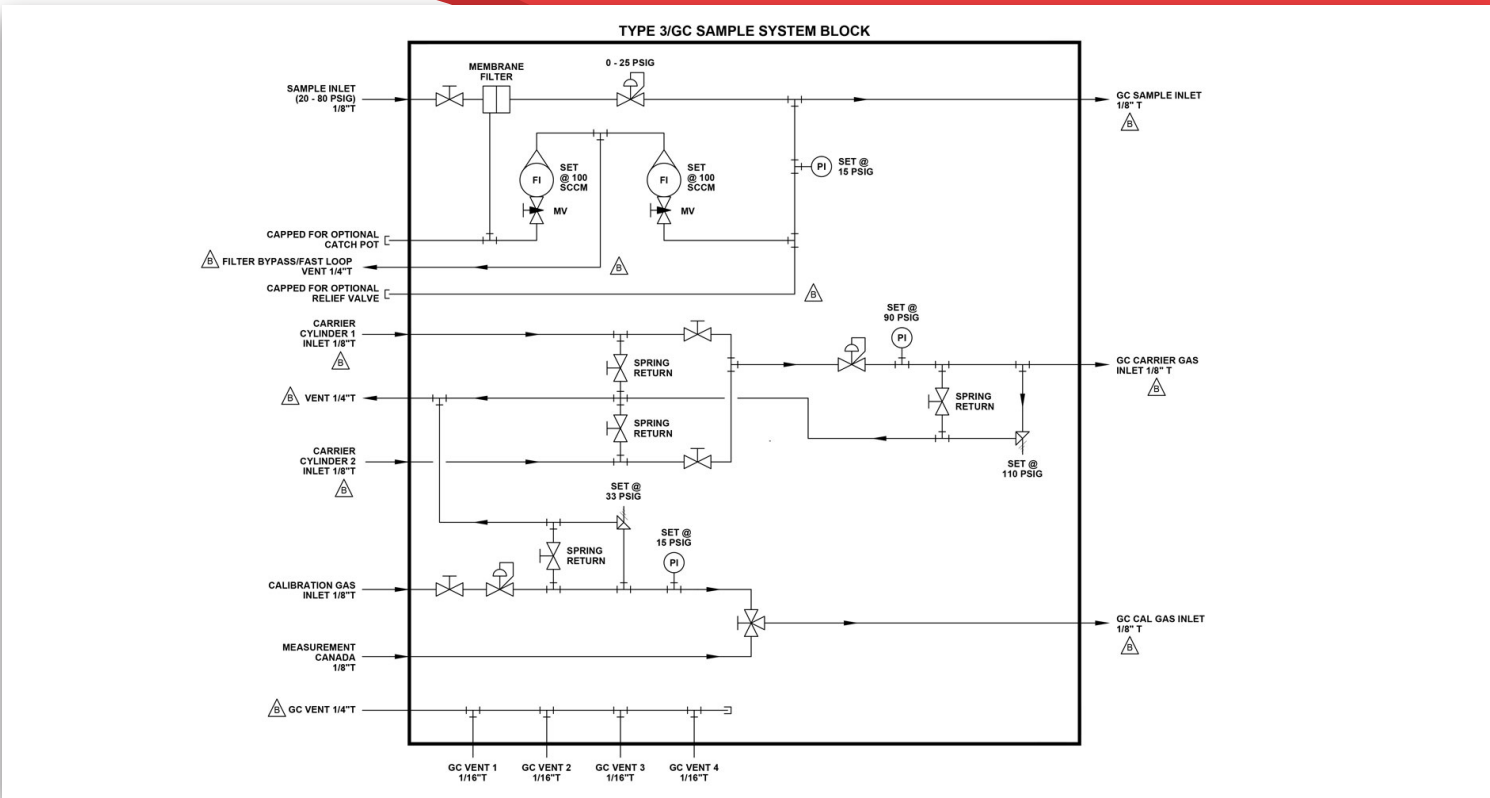
Optional Vent Block combines up to 4 GC vents into a single manifold connection.

Advantages

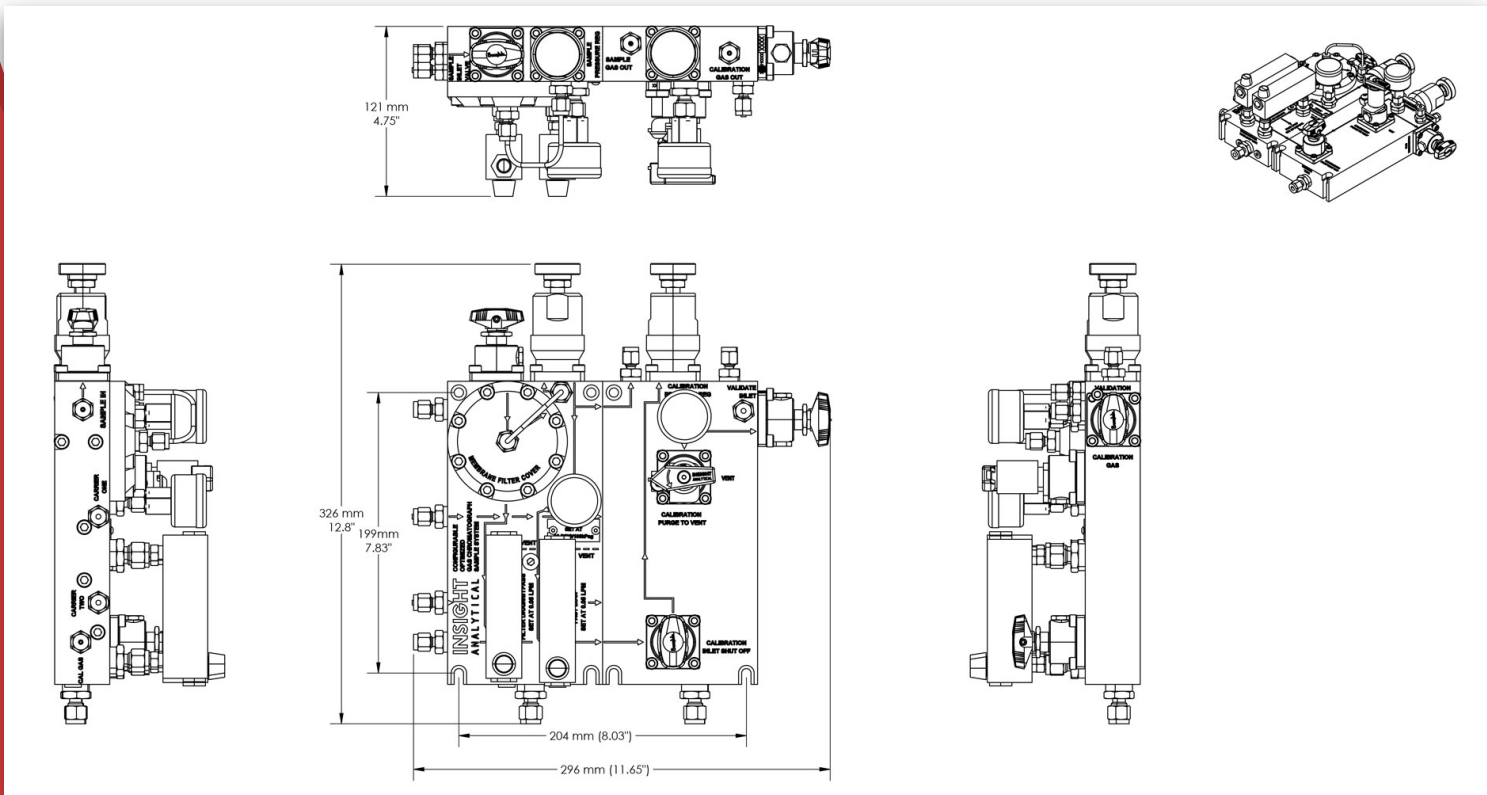
- More cost-effective, faster response time, and easier to understand than SP76/NeSSI style sample systems.
- Smaller footprint than conventional sample systems using discrete components connected with tubing.
- Larger diameter membrane filter for better filtering efficiency and optimized internal geometry for faster response time.
- Fewer connections and o-ring seals reduce gas leak risk.
- Eliminates contamination from liquid thread sealants.
- Elimination of NPT threads minimizes thread galling, extending component life.
- Low internal volume and seamless connections between components on the machined blocks improve response time.
- Nickel-plated machined aluminum blocks increase heat transfer to the pressure regulators, mitigating Joule-Thomson cooling effects.
- Faster response time for a given sample flow rate reduces fast loop flow rate requirements, resulting in lower fugitive/engineered emissions.
- Modular design makes full system swaps possible for reduced downtime.
- Spring-return purge valves eliminate the possibility of the valves being accidentally left open, preventing waste of carrier and calibration gases.



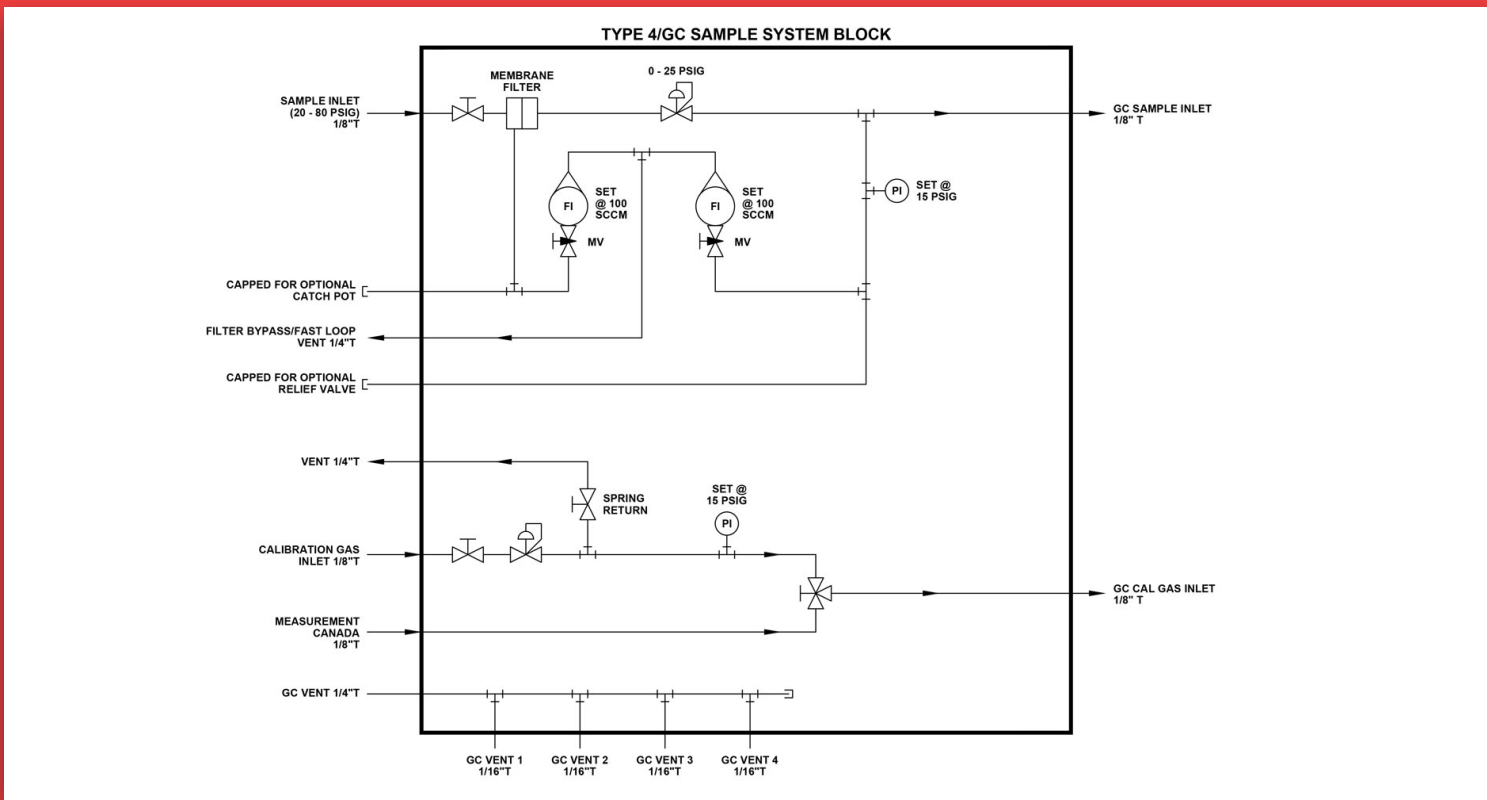
Type 3 Sample System Block General Arrangement Drawing



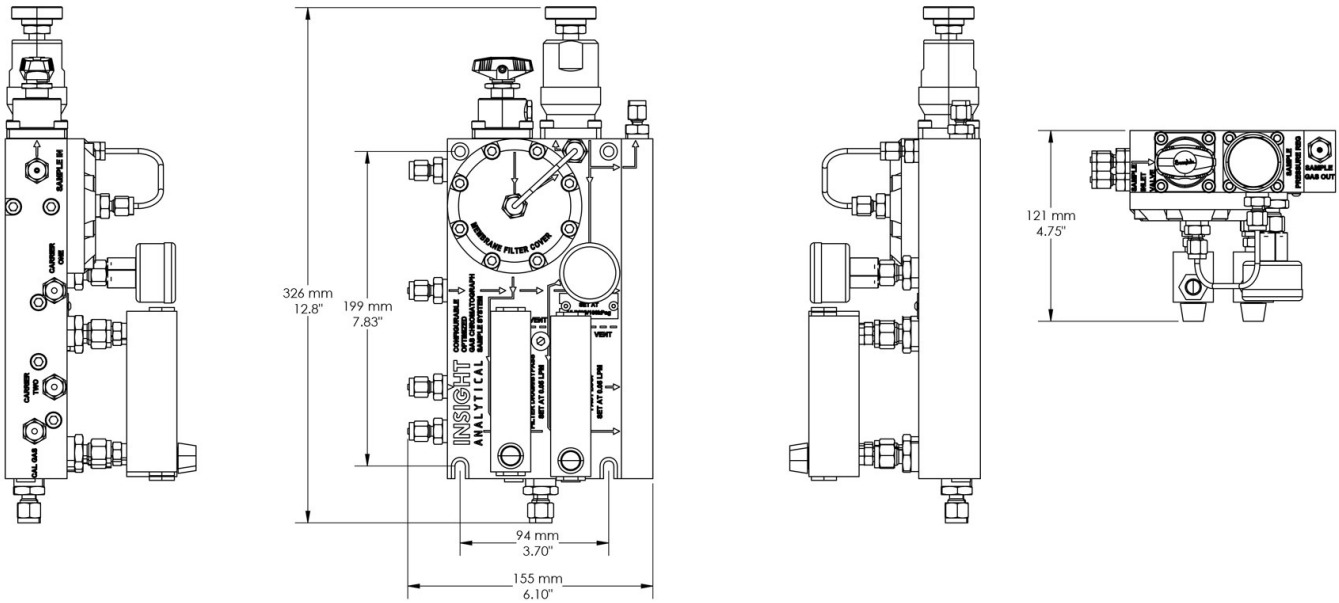
Flow Schematic for Type 3 GC Sample System Block



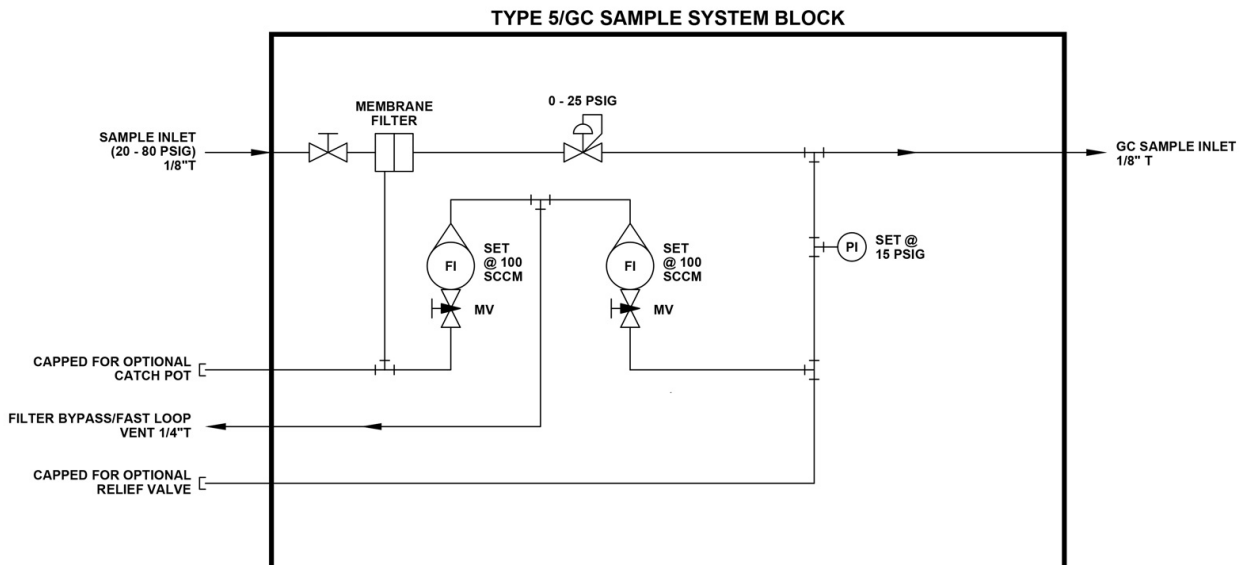
Type 4 Sample System General Arrangement Drawing



Flow Schematic for Type 4 GC Sample System Block



Type 5 Sample System General Arrangement Drawing



Flow Schematic for Type 5 GC Sample System Block