

FLIR

Griffin™ Sampling Tools

Accessories for use with Griffin 400 Series GC/MS



Griffin 410



Griffin 460

Environmental contaminant analysis
Forensic investigation
Emergency response
Building air monitoring

The World's **Sixth Sense™**

Griffin GC/MS

Easy Matters

Lab quality, mobile GC/MS that anyone can use

The FLIR Griffin 400-series GC/MS (Gas Chromatograph / Mass Spectrometer) products provide lab-quality chemical identification in a field-ready package that anyone can use. Hassle-free, interchangeable sampling tools differentiate each GC/MS model and are available for air, liquid, and solid samples. The Griffin 410 model, like the other 400-series products, contains an integrated split/splitless injector port. It is the same injector found on standard laboratory-based GC/MS systems and accepts revolutionary sample introduction tools like the PSI-Probe™, without sacrificing the ability to perform more traditional techniques. The Griffin 460 model includes an additional integrated universal sampling port, providing direct air sampling capability, while also accepting plug-and-play samplers. Within 15 minutes, the systems accurately detect and identify explosives, drugs, CWAs, TICs, environmental pollutants, and other chemicals.



Split/Splitless Injector Port



Universal Sampling Port

Split/Splitless Injector Port

Every Griffin 400-series model contains an integrated split/splitless injector port. It is the same injector found on standard laboratory-based GC/MS systems. It accepts revolutionary sampling tools like the PSI-Probe, without sacrificing the ability to perform more traditional sample introduction techniques commonly found in a lab. Standard test methods are provided with the system, but can be customized to fit the required application.

Universal Sampling Port

The Universal Sampling Port (USP) is an integrated docking station found on the Griffin 460 model and provides a direct interface to the analytical system for sample identification. Our unique plug-and-play samplers quickly connect with the USP. Once docked with the USP, the system detects the sampler and provides a list of available tests via the GSS user interface. Alternatively, operators can utilize the wizard for assistance in selecting the appropriate sample test. Standard test methods are provided with the system, but can be customized to fit the required application.

	Griffin 410	Griffin 460
Standard Injector Port	X	X
PSI-Probe™ with TAG™	X	X
PSI-Probe™ with GERSTEL-Twister®	X	X
Syringe	X	X
Autosampler	X	X
Manual Headspace Sampler	X	X
SPME Fiber	X	X
Universal Sampling Port		X
Griffin™ X-Sorber		X
Griffin™ Purge & Trap		X
Direct Sampling Line		X

Flexible Sampling Technologies

Multi-Modal Sample Ports

Traditional and modern tools for the field-user

We equip our instruments with application-specific sampling technologies to address specific customer needs. FLIR is the leader in field-based sampling, offering the largest selection of sampling tools. Our modern plug-and-play samplers are **lightweight**, simplify in-field sampling, and eliminate the need for time-consuming sample preparation steps, thus expediting the sample identification process. These samplers are interchangeable and can be easily swapped. The plug-and-play samplers do not interfere with the ability to use more traditional sampling techniques via the integrated injector port. Our in-field solution features flexible sampling options that provide lab-quality chemical identification in a simple to use package.



Griffin X-Sorber

- No sample prep required
- Portable downrange air sampling
- Reusable, battery operated
- Dual-tube sampling
- Records chain of custody information



Griffin Air Adapter

- No sample prep required
- 24/7, continuous air sampling
- Early warning for building protection
- Network capable solution



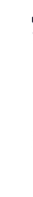
Griffin Purge & Trap

- No sample prep required
- Batch water sampling
- Smaller and more cost effective than traditional systems
- Installs within a few minutes



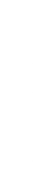
PSI-Probe

- No sample prep required
- Collect solid, liquid, and ultra-trace residues in native form
- Twister technology up to 1000x more sensitive than SPME



Syringe

- Precise quantitative determinations
- Lab-standard technique
- Available from many vendors
- Benchtop performance for mobile applications



SPME Fiber

- No sample prep required
- Direct liquid or vapor headspace sample collection
- Fast and simple
- Available from many vendors



Autosampler

- Automated and precise liquid injection
- Rapid sample processing
- Up to 120 sample vials
- Integration kit for Griffin GC/MS



Headspace Sampler

- Collect vapor headspace from solid or liquid samples
- Small footprint

Plug-and-Play Samplers



Griffin X-Sorber

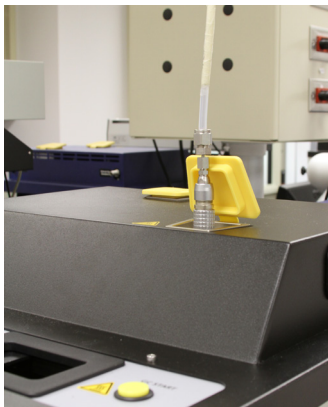
Collecting and analyzing air samples is easy with the Griffin X-Sorber. Sample collection starts via a single button command. Users can hand-carry the X-Sorber while sampling, utilize the clip accessory for hands-free operation in the field, or employ the “leave and retrieve” technique. The X-Sorber is extremely portable allowing users to expand their operational area to remote locations where the terrain proves too difficult for navigation with a vehicle or impossible to reach on foot when transporting heavier equipment.

Because the X-Sorber provides a plug and play connection with the USP, no special sample preparation steps are required. The X-Sorber plugs directly into any Griffin 460 GC/MS for chemical identification. A second port on the Griffin 460 serves as a charging station and offers the ability to condition the X-Sorber for re-use. The X-Sorber provides a dual-tube sample collection system, where one tube can be archived as evidence, while the other is analyzed via GC/MS. Chain of custody is supported through the use of the integrated GPS receiver, the time/date stamp feature, and unique tube IDs.



Griffin Purge and Trap

Batch water samples can be analyzed quickly using the integrated Griffin Purge and Trap. It is smaller and more cost effective than traditional systems. It provides a simple plug and play connection with the USP, allowing users to attach the accessory in only a few minutes. When utilizing the accessory, no sample preparation is required. Water samples are added directly to the sample vial, which is then attached to the Purge and Trap. It is fully automated through Griffin System Software. At the press of a button, the Purge and Trap extracts volatile organic compounds from water and transfers them to the GC/MS for chemical identification. The addition of this accessory does not stop the user from utilizing the injection port. Both the power and carrier gas are supplied through the Griffin 460.



Griffin Air Sampling Adaptor

Every Griffin 460 is supplied with a sampling adaptor that provides a plug and play connection with the USP. The other end of the adaptor accommodates a sampling line that can be extended to the operational area of interest. Direct air samples are pulled through this line into the Griffin 460, which contains a dual sorbent tube sampling system. While one tube is sampling, the other is being analyzed so that assets are protected 24/7. During continuous air monitoring applications, the Griffin 460 can be programmed to alarm at the presence of selected chemicals for near real-time detection and confirmation. Utilization of multiple Griffin 460 systems throughout a facility provides a networked early warning protection system.

Specifications

Use Profile	Compatible with Griffin 460; used for downrange reconnaissance, forensic and environmental analysis, incident response, events, and research
Size / Weight	8.5 x 6.5 x 3 in (21.6 x 16.5 x 7.6 cm) / 3 lbs (1.4 kg)
Collection Phase	Vapor
Power	Battery operated; up to 12 hours sample time; dock with Griffin 460 to recharge or via provided wall adapter
Communications	Onboard software and display for operation and commands
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software™; programmable sample collection methods includes time-based (i.e. sample for specified amount of time, option for time delay), volume-based (i.e. collect specific sample volume and auto shut-off), and manual
Operation	5-40 °C; designed for operation in Class 1, Div. II atmospheres; decontaminable
Sorbent Tubes	Two reusable stainless steel tubes; compatible with other COTS thermal desorbers
Chain of Custody	Records and automatically transfers data to Griffin 460 including: operator IDs (up to 10 users), sorbent tube ID, sample acquisition time/date stamp, and stationary GPS coordinates (integrated GPS receiver)

Use Profile	Compatible with Griffin 460; used for forensic and environmental analysis and incident response
Size / Weight	4.0 x 5.1 x 10.7 in (10.2 x 12.9 x 27.2 cm) / 2.5 lbs. (1.1 kg)
Collection Phase	Liquid (water)
Power	Provided through Griffin 460
Communications	Controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	5-40 °C

Use Profile	Compatible with Griffin 460; used for building air monitoring, event monitoring, and incident response
Size / Weight	4.3 x 0.8 in (11.0 x 2.0 cm) / <0.5 lbs. (<0.2 kg)
Collection Phase	Vapor
Power	Provided through Griffin 460
Communications	Controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	5-40 °C

Injector-Compatible Samplers



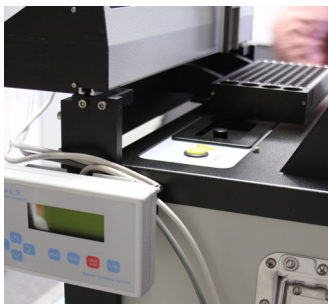
Syringe

For applications that require precise quantitative determinations, classic sample preparation and dilution techniques may be employed. Utilizing a syringe, prepared liquid samples can be extracted and injected to the Griffin GC/MS for identification and quantitation. Each Griffin GC/MS starter kit contains one syringe. Additional syringes can be purchased from a number of commercial vendors.



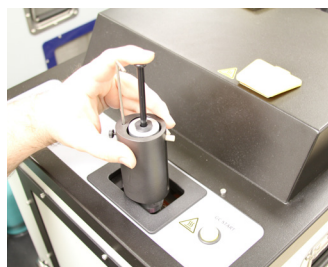
SPME Fiber

Solid-phase microextraction (SPME) is a prepress sampling technique that allows for the extraction of volatile and non-volatile organic chemicals from samples via a specially coated fiber. The SPME fiber is placed directly into a water sample or exposed to air to collect samples. After sampling extraction is complete, the SPME fiber is placed into the injector on the Griffin GC/MS. No solvents, dilutions, or wet chemistry are needed when using SPME. The technique is fast and simple, offering a unique sampling option for on-site applications. SPME holders and fibers can be purchased from a number of commercial vendors.



Autosampler

For applications that require traditional syringe injections, the autosampler accessory can provide automation and precision to the liquid analysis process. Prepared liquid samples are placed into the autosampler tray, which holds up to 120 sample vials. Based on the selected sampling test, the arm will move to the desired vial, extract a precise sample amount, and inject it into the GC/MS. The autosampler syringe integrates seamlessly with the standard injector. Once the sample is injected, the Griffin GC/MS will complete a full analysis. The autosampler accessory is a proven solution for expedited sample processing, while the Griffin GC/MS offers gold standard chemical identification.



Manual Headspace Sampler

The manual headspace sampling accessory provides the ability to prepare water or soil samples and then inject them into the Griffin GC/MS for analysis. Users can place up to six vials containing water or soil samples into the vial tray. The sampler then heats the vials, which sends any volatile organic compounds into the vapor headspace. Using the syringe holder, the user manually draws an air sample from the headspace into the gas tight syringe and then injects the air sample into the injector. The Griffin GC/MS analyzes the sample according to previously determined method parameters and performs full identification of any VOCs found in the sample.

Specifications

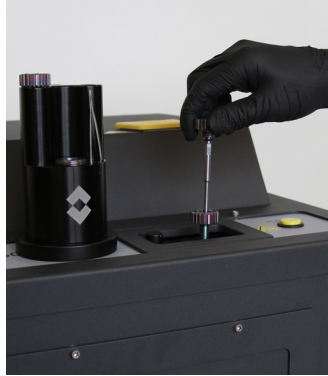
Use Profile	Compatible with all Griffin GC/MS models; used for SSE, forensic and environmental analysis, incident response, and events
Size / Weight	N/A
Collection Phase	Solid or liquid mixed in organic solvent
Power	N/A
Communications	Controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	5-40 °C

Use Profile	Compatible with all Griffin GC/MS models; used for environmental analysis and incident response
Size / Weight	N/A
Collection Phase	Direct liquid or vapor headspace
Power	N/A
Communications	Controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	5-40 °C

Use Profile	Compatible with all Griffin GC/MS models; used for SSE, general chemical analysis, research, and rapid sample processing
Size / Weight	EST Analytical Cobra L/S: 25 x 10 x 17 in (63.5 x 35.5 x 43.2 cm) / 17.3 lbs (7.8 kg)
Collection Phase	Solid or liquid mixed in organic solvent
Power	100-240 VAC; 50-60 Hz
Communications	RS 232 for direct communication; controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	5-40 °C; holds up to 120 sample vials — 2 ml, 12 mm x 32 mm vials; 2 Solvent, 1 or 2 Waste, 10 ml vials

Use Profile	Compatible with all Griffin GC/MS models; used for environmental analysis and incident response
Size / Weight	Atlas AH-600™ Static Headspace Sampler: 10 x 12 x 6 in (25.4 x 30.5 x 15.2 cm) / 15 lbs (6.8 kg)
Collection Phase	Solid or liquid mixed in organic solvent
Power	100-240 VAC; 50-60 Hz
Communications	Controlled through Griffin System Software™ on supplied external laptop
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software
Operation	10-40 °C; heating temp range up to 120 °C, accuracy +/- 0.5 °C; holds up to 6 vials size 2, 4, 6, 9, 10, 12, 20, 22 and 27 ml

Injector-Compatible Samplers



FLIR offers a revolutionary solution to the complicated challenge of field sampling with the PSI-Probe accessory. The PSI-Probe is directly compatible with the robust Griffin 400-series GC/MS systems. The strengths of this analytical platform include the ability to transfer ultra-trace residues to the GC/MS system and perform field characterizations and positive identification of chemicals within 2-8 minutes, all without the use of conventional sample preparation.

The PSI-Probe is supplied in a ruggedized transport case, complete with a staging base, vial of TAGs, Twister Kit, Reverse Action Tweezers, spares kit, and an operator manual. The analytical platform contains pre-loaded methods and an updated mass spectral library presented in a unique, simplified user interface. This allows both advanced users and beginners to utilize the system to their expertise level.

PSI-Probe with Touch-and-Go (TAG)

Traditional sample preparation techniques are eliminated with the simple-to use Touch-and-Go (TAG) technology, which allows users to quickly collect solid or liquid samples. No solvents, dilutions, or wet chemistry are needed when using TAG. Simply touch or tap the TAG to your sample. After collecting the sample, the sampling end is broken into the microvial, which is then placed directly into the PSI-Probe. The PSI-Probe is inserted into the adapter on the GC/MS injector. The injector thermally extracts chemical components from the sample, while the GC/MS performs subsequent chemical identification.

PSI-Probe with GERSTEL-Twister

The GERSTEL-Twister is a unique sampling tool. It is fast, eliminates the need for solvents, and is up to 1000 times more sensitive than SPME. It uses SBSE (stir bar sorptive extraction) to collect organic compounds directly from liquid samples, like drinking or waste water, body fluids, or beverages. The Twister adsorbs and concentrates the organic contents onto its sorbent coating. Solid and vapor headspace samples can also be tested via Twister. Simply drop the Twister in a sample vial containing the liquid or solid and seal the vial. Then place the Twister vial on a stir plate. Remove, rinse, dry, and drop the SBSE into the PSI-Probe for thermal extraction and subsequent GC/MS analysis.



Collect sample with TAG

Break TAG into vial

Drop vial into PSI-Probe

Insert PSI-Probe into injector port

Specifications

Use Profile	Compatible with all Griffin GC/MS models; used for forensic and environmental analysis and incident response
Size / Weight	3 x 6 in (7.6 x 15.2 cm) / 3 lbs (1.4 kg)
Collection Phase	Direct sampling of liquid, solid, and trace residues
Power	N/A
Communications	Onboard software and display for operation and commands
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software™
TAG	Pre-scored glass capillary that collects ultra-trace residues for direct analysis

Use Profile	Compatible with all Griffin GC/MS models; used for forensic, food, and environmental analysis
Size / Weight	3 x 6 in (7.6 x 15.2 cm) / 3 lbs (1.4 kg)
Collection Phase	Direct sampling of liquids and headspace sampling of solids
Power	N/A
Communications	Onboard software and display for operation and commands
Sampling	Standard test methods provided or additional methods can be developed using Griffin System Software™
Twister	Reusable Polydimethylsiloxane (PDMS)-coated stir bar (other options available)

Contact:
detection@flir.com
US: +1.877.692.2120
EMEA: +32 366 55 106
AP: + +65 6822 1598

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FLIR Systems
27700 SW Parkway Ave
Wilsonville, OR 97070 USA
www.flir.com/threatdetection