



Thermo Scientific

# TRACE 1300 and TRACE 1310

Gas Chromatographs

## Spare Parts Guide

PN 31715004 Revision F January 2016

**Thermo**  
SCIENTIFIC

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## Declaration

Manufacturer: **Thermo Fisher Scientific**

Thermo Fisher Scientific is the manufacturer of the instrument described in this manual and, as such, is responsible for the instrument safety, reliability and performance only if:

- installation
- re-calibration
- changes and repairs

have been carried out by authorized personnel and if:

- the local installation complies with local law regulations
- the instrument is used according to the instructions provided and if its operation is only entrusted to qualified trained personnel

Thermo Fisher Scientific is not liable for any damages derived from the non-compliance with the aforementioned recommendations.

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## Regulatory Compliance

Thermo Fisher Scientific performs complete testing and evaluation of its products to ensure full compliance with applicable domestic and international regulations.

When the system is delivered to you, it meets all pertinent electromagnetic compatibility (EMC) and safety standards.

### Safety

This device complies with the following safety standards according to Machinery Directive 2006/42/EC and Low Voltage Directive 2006/95/EC.

- International Electrotechnical Commission (IEC): 61010-1:2001 (2nd edition) - 61010-2-010:2003 (2nd edition) - 61010-2-081:2001 (1st edition) + A1:(2003)
- National differences: CAN/CSA C22.2 No. 61010-1 (2nd Edition) - UL 61010-1 (2nd Edition)
- EuroNorm (EN): 61010-1:2001 (2nd Edition) – 61010-2-010:2004 (2nd Edition) - 61010-2-081:2002 (1st Edition)

### Electromagnetic Compatibility

This device complies with the following regulations on Electromagnetic Compatibility (EMC) and Radio Frequency Interference (RFI) according to directive 2004/108/EC:

- CISPR 11/EN 55011: Group 1 Class A
- IEC/EN 61326-1:2012 (



**IMPORTANT:** Class A equipment is intended for use in an industrial environment. In others environments there may be potential difficulties in ensuring electromagnetic compatibility, due to the conducted as well as radiated disturbances.

## FCC Compliance Statement

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.



**CAUTION** Read and understand the various precautionary notes, signs, and symbols contained inside this manual pertaining to the safe use and operation of this product before using the device.

## Notice on Lifting and Handling of Thermo Scientific Instruments

For your safety, and in compliance with international regulations, the physical handling of this Thermo Fisher Scientific instrument *requires a team effort* to lift and/or move the instrument. This instrument is too heavy and/or bulky for one person alone to handle safely.

## Notice on the Proper Use of Thermo Scientific Instruments

In compliance with international regulations: Use of this instrument in a manner not specified by Thermo Fisher Scientific could impair any protection provided by the instrument.

## Notice on the Susceptibility to Electromagnetic Transmissions

Do not use radio frequency transmitters, such as mobile phones, in close proximity to the instrument.

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This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EU . It is marked with the following symbol:



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## Conformité DEEE

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## Preface

This guide contains detailed information about ordering spare parts for the TRACE 1300 and TRACE 1310 GC.

## About Your System

Thermo Scientific systems provide high-caliber gas chromatography (GC) instrumentation. Your TRACE 1300/TRACE 1310 GC system can be a stand-alone unit or coupled with other instruments.

GC represents a powerful analytical separation technique. Complex mixtures of individual compounds can be injected into the GC, either manually or by using an autosampler, and then separated the eluate for presentation to the detector. The detector generates signals of the GC eluate and its components. These signals are then processed by a Thermo Scientific Chromatography Data System for qualitative identification, as well as accurate and precise quantification of the individual compounds present in the sample.

**IMPORTANT** Thermo Scientific systems optimize the separation and detection capabilities of GC by providing high performance analytical capabilities for both research, and routine applications. More information about the use of this system can be found in related documentation sources, and by using the provided contact information.



**WARNING** Thermo Scientific systems operate safely and reliably under carefully controlled environmental conditions. If the equipment is used in a manner not specified by the manufacturer, the protections provided by the equipment might be impaired. If you maintain a system outside the specifications listed in this guide, failures of many types, including personal injury or death, might occur. The repair of instrument failures caused by operation in a manner not specified by the manufacturer is specifically excluded from the standard warranty and service contract coverage.



**WARNING** Operation of this system requires the use of chemical substances with different hazard specifications. Before using any chemicals, read the hazard indications and information reported in the Safety Sheet supplied by the manufacturer, referring to the relevant CAS (Chemical Abstract Service) number.

## Power Rating

TRACE 1300/TRACE 1310 gas chromatograph

- 120 Vac  $\pm$ 10%, 50/60 Hz, 2000 VA
- 230 Vac  $\pm$ 10%, 50/60 Hz, 2000 VA

Detailed instrument specifications are in the Product Specifications or Product Brochure.

## Contacting Us

Thermo Fisher Scientific provides comprehensive technical assistance worldwide and is dedicated to the quality of our customer relationships and services.

Use <http://www.thermoscientific.com> address for products information.

Use <http://www.gc-gcms-customersupport.com/WebPage/Share/Default.aspx> address to contact your local Thermo Fisher Scientific office or affiliate GC-GC/MS Customer Support.

## Related Documentation

In addition to this guide, Thermo Scientific provides the following documents for the TRACE 1300 and TRACE 1310.

*TRACE 1300 and TRACE 1310 Document Set*, PN 31715000

- *TRACE 1300 and TRACE 1310 Preinstallation Requirements Guide*, PN 31715001
- *TRACE 1300 and TRACE 1310 Hardware Manual*, PN 31715002
- *TRACE 1300 and TRACE 1310 User Guide*, PN 31715003
- *TRACE 1300 and TRACE 1310 Spare Parts Guide*, PN 31715004

## Safety Alerts and Important Information

Make sure you follow the precautionary notices presented in this manual. The safety and other special notices appear in boxes.

## Special Notices

Notices includes the following:

**IMPORTANT** Highlights information necessary to prevent damage to software, loss of data, or invalid test results; or might contain information that is critical for optimal performance of the system.

**Note** Emphasizes important information about a task.

**Tip** Helpful information that can make a task easier.

## Safety Symbols and Signal Words

All safety symbols are followed by **WARNING** or **CAUTION**, which indicates the degree of risk for personal injury, instrument damage, or both. Cautions and warnings are following by a descriptor, such as **BURN HAZARD**. A **WARNING** is intended to prevent improper actions that could cause personal injury. Whereas, a **CAUTION** is intended to prevent improper actions that might cause personal injury, instrument damage, or both. You can find the following safety symbols on your instrument or in this manual:

| Symbol  | Descriptor  |
|---|---|
|    | <b>BIOHAZARD:</b> Indicates that a biohazard <i>will, could, or might</i> occur.  |
|    | <b>BURN HAZARD:</b> Alerts you to the presence of a hot surface that <i>could or might</i> cause burn injuries.   |
|  | <b>ELECTRICAL SHOCK HAZARD:</b> Indicates that an electrical shock <i>could or might</i> occur.   |
|  | <b>FIRE HAZARD:</b> Indicates a risk of fire or flammability <i>could or might</i> occur.   |
|  | <b>EXPLOSION HAZARD.</b> Indicates an explosion hazard. This symbol indicates this risk <i>could or might</i> cause physical injury.  |
|  | <b>FLAMMABLE GAS HAZARD.</b> Alerts you to gases that are compressed, liquefied or dissolved under pressure and can ignite on contact with an ignition source. This symbol indicates this risk <i>could or might</i> cause physical injury. |
|  | <b>GLOVES REQUIRED:</b> Indicates that you must wear gloves when performing a task or physical injury <i>could or might</i> occur.  |
|  | <b>CLOTHING REQUIRED.</b> Indicates that you should wear a work clothing when performing a task or else physical injury <i>could or might</i> occur.  |
|  | <b>BOOTS REQUIRED.</b> Indicates that you must wear boots when performing a task or else physical injury <i>could or might</i> occur.   |
|  | <b>MATERIAL AND EYE HAZARD.</b> Indicates you must wear eye protection when performing a task.  |
|  | <b>HAND AND CHEMICAL HAZARD:</b> Indicates that chemical damage or physical injury <i>could or might</i> occur.   |

|   |   |
|---|---|
|    | <b>HARMFUL.</b> Indicates that the presence of harmful material <i>will, could, or might</i> occur.   |
|    | <b>INSTRUMENT DAMAGE:</b> Indicates that damage to the instrument or component <i>might</i> occur. This damage might not be covered under the standard warranty.  |
|    | <b>LIFTING HAZARD.</b> Indicates that a physical injury <i>could</i> or <i>might</i> occur if two or more people do not lift an object.   |
|    | <b>MATERIAL AND EYE HAZARD:</b> Indicates that eye damage <i>could</i> or <i>might</i> occur.   |
|    | <b>READ MANUAL:</b> Alerts you to carefully read your instrument's documentation to ensure your safety and the instrument's operational ability. Failing to carefully read the documentation <i>could</i> or <i>might</i> put you at risk for a physical injury.  |
|    | <b>TOXIC SUBSTANCES HAZARD:</b> Indicates that exposure to a toxic substance could occur and that exposure <i>could</i> or <i>might</i> cause personal injury or death.   |
|    | <b>LASER HAZARD.</b> Indicates that exposure to a laser beam <i>will, could, or might</i> cause personal injury.  |
|  | <b>RADIOACTIVE HAZARD.</b> Indicates that the presence of radioactive material <i>could</i> or <i>might</i> occur.  |
|  | For the prevention of personal injury, this general warning symbol precedes the <b>WARNING</b> safety alert word and meets the ISO 3864-2 standard. In the vocabulary of ANSI Z535 signs, this symbol indicates a possible personal injury hazard exists if the instrument is improperly used or if unsafe actions occur. This symbol and another appropriate safety symbol alerts you to an imminent or potential hazard that <i>could cause personal injury</i> . |

## Instrument Markings and Symbols

Table 1 explains the symbols used on Thermo Scientific instruments. Only a few of them are used on the TRACE 1300/1310. See the asterisk.

**Table 1.** Instrument Marking and Symbols (Sheet 1 of 2)

| Symbol | Description                         |
|--------|-------------------------------------|
| ===    | Direct Current                      |
| * ~    | Alternating Current                 |
| ≈      | Both direct and alternating current |
| 3 ~    | Three-phase alternating current     |

**Table 1.** Instrument Marking and Symbols (Sheet 2 of 2)

| Symbol  | Description  |   |
|---|--|---|
|    | Earth (ground) terminal  |   |
|    | Protective conductor terminal  |   |
|    | Frame or chassis terminal  |   |
|    | Equipotentiality   |   |
| *   |  | On (Supply)   |
| *   | ○  | Off (Supply)  |
|    | Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION (Equivalent to Class II of IEC 536) |   |
| *   |                                 | Instruction manual symbol affixed to product. Indicates that the user must refer to the manual for specific <b>WARNING</b> or <b>CAUTION</b> information to avoid personal injury or damage to the product. |
|  | Caution, risk of electric shock  |   |
| *   |                               | Caution, hot surface  |
| *   |                               | Caution, biohazard  |
|  | In-position of a bistable push control   |   |
|  | Out-position of a bistable push control  |   |
| *   |                               | Jack socket   |
| *   |                               | Symbol in compliance to the Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) placed on the European market after August, 13, 2005.  |

## Hydrogen Safety Precautions

Hydrogen is a colorless, odorless, highly flammable gas with the molecular formula H<sub>2</sub> and an atomic weight of 1.00794, making it the lightest element. Hydrogen gas presents a hazard, as it is combustible over a wide range of concentrations; at ambient temperature and pressure, the range is from about 4 to 74.2% by volume.

Hydrogen has a flash point of - 423 °F (- 253 °C) and an auto-ignition temperature of 1040 °F (560 °C). It has a very low ignition energy and the highest burning velocity of any gas. If hydrogen is allowed to expand rapidly from high pressure, it can self-ignite. Hydrogen burns with a flame that can be invisible in bright light.



**WARNING - EXPLOSION HAZARD** The use of hydrogen as a carrier gas is dangerous. Hydrogen is potentially explosive and must be used with extreme care. Any use of hydrogen gas must be reviewed by appropriate health and safety staff, and all installations of hydrogen systems must be performed to applicable codes and standards. Thermo Fisher Scientific assumes no liability for the improper use of hydrogen as a carrier gas.

Before you begin using hydrogen, conduct a risk assessment based on the quantity of hydrogen to be used and the conditions of your laboratory. Ask yourself:

“What hydrogen hazards associated with this project are most likely to occur?”

“What hydrogen hazards associated with this project have the potential to result in the worst consequences?”

- Try to reduce or eliminate the higher risks by using the proper ventilation to remove hydrogen gas before an ignitable concentration can accumulate. Also consider purging the hydrogen to further reduce hazards and ensure that anyone working with hydrogen has basic hydrogen safety training.
- As with laboratory safety in general, be sure to wear safety glasses, laboratory coats, gloves, and so on. Typically there are no specific requirements for gaseous hydrogen, other than eye protection when working with a compressed gas. If working with liquid (cryogenic) hydrogen, wear insulated gloves and protective shoes in addition to eye protection.
- Post “No Smoking” and “No Open Flames” signs to identify hydrogen sources and cylinders. Maintain, inspect, and leak-test all hydrogen sources regularly.
- Clearly mark all hydrogen shutoff valves and label permanent hydrogen piping as such at the supply or discharge point and at regular intervals along its length. Where hydrogen gas piping passes through a wall, be sure to label both sides of the wall.
- Have contingency plans in place should an incident occur.
- Ensure that site emergency response team, as well as the local fire department, knows the location of all hydrogen storage tanks.

## Using Hydrogen with TRACE 1300/TRACE 1310

The use of hydrogen as a carrier gas, or as fuel gas for certain flame detectors, requires strict attention and compliance with special precautions due to the hazards involved.

**WARNING - EXPLOSION HAZARD** Hydrogen is a dangerous gas that, when mixed with air, could create an explosive mixture. The use of hydrogen as a carrier gas requires extreme caution. Special precautions must be taken because of the risk of explosion. When hydrogen is used as carrier gas the gas chromatograph must be equipped with a hydrogen sensor.



Never use hydrogen as carrier gas in your TRACE 1300/TRACE 1310 system unless your oven has a hydrogen sensor installed. Thermo Fisher Scientific FSEs are not authorized to install or repair any instrument using hydrogen as a carrier gas unless the instrument is equipped with the appropriate sensor.

If your oven does not have a hydrogen sensor already installed, contact your Thermo Fisher Scientific sales representative. To comply with instrument safety requirements, a Thermo Fisher Scientific FSE or authorized service personnel should install the sensor into your TRACE 1300/TRACE 1310.

Hydrogen is a dangerous gas, particularly in an enclosed area when it reaches a concentration corresponding to its lower explosion level (4% in volume). An explosion hazard could develop in the oven when hydrogen is used as a carrier gas in the case oven elements are not perfectly connected to each other, or when the connection materials are worn out, broken, or otherwise faulty.

Use the following safety precautions when using hydrogen:

- Ensure that all hydrogen cylinders comply with the safety requirements for proper use and storage. Hydrogen cylinders and delivery systems must comply with local regulations.
- Make sure the gas supply is turned completely off when connecting hydrogen lines.
- Perform a leak test to ensure that the hydrogen lines are leak-tight before using the instrument. Repeat this test to eliminate all leaks.
- Ensure your TRACE 1300/TRACE 1310 has a Thermo Scientific hydrogen sensor installed for continuously monitoring the hydrogen level in the oven.

## Hydrogen Connection Guidelines

Use the following guidelines to safely connect hydrogen to your system:

- **Piping**—Hydrogen must be delivered to equipment using appropriate piping and be done in such a way as to pose essentially no hazard to end-users. Piping systems for the delivery of hydrogen should be designed and installed by a person qualified by specific training and experience with hydrogen piping systems.

Stainless steel is usually recommended because it is a safe, cost-effective material. Piping of *black iron* or copper must not be used, as the pipe can become brittle with age. Elastomeric/plastic tubing of various plastics and polymers should not be used, unless the

tubing is approved for use with hydrogen. If elastomeric/plastic tubing is used for hydrogen gas delivery, the tubing should be tested for hydrogen permeability to minimize leakage.

The hydrogen piping system must be flexible enough to endure routine thermal expansion and contraction. The system should also include considerations for the most severe condition of temperature and pressure expected during service. Piping and supports must be able to withstand static loading introduced by such things as ice and snow; and dynamic loading from high wind and earthquake.

Caution should be used if burying hydrogen piping. Proper controls should be used to protect against damage and corrosion, and also to prevent Hydrogen from entering a building if there is any leakage.

- **Fittings**—All fittings must be of the proper type approved or designed for use with hydrogen gas. Use as few fittings as possible to minimize the potential for leaks. After installation, ensure that leak testing is carried out prior to system use, and on a regular basis.

There must be no PTFE tape or other things like *plumber's putty* used to enhance a seal, as this actually is a detriment to a good seal. Ideally the best installation would use stainless steel tubing with appropriate gas-tight fittings.

Welding is usually preferred for joints in hydrogen piping systems since welding provides a better connection and reduces the potential for leaks compared to mechanical fittings. Soft solder joints are not permitted for hydrogen systems (due to the low melting point of soft solder and its potential for brittle failure at cryogenic temperatures). Braze joints are permitted, but such joints should be protected against the possibility of external fire.

Tubing connections should be clamped to barbed or press-fit type connections. Hose clamps or *jubilee clamps* must not be used.

- **Valves**—All valves must be suitable for hydrogen service and for the specific operating conditions. Valves, including regulators, must not be used for hydrogen, unless they are designed and identified for such a use. Ball valves are often chosen because of their superior leak tightness through the valve seat. Pneumatic operators are usually chosen for remotely operated valves so that potential ignition sources (electricity) are remote from the valve.

Manual shutoff valves should be provided near each point of use, within immediate reach. If a hydrogen cylinder or hydrogen generation system is located within immediate reach, a separate point-of-use shutoff valve is usually not necessary.

Line regulators that have their source away from the point of use should have a manual shutoff valve near the point of use.

An emergency gas shutoff device in an accessible location outside the use area should be provided in addition to the manual point-of-use valve in each educational and instructional laboratory space that has a piped gas supply system.

If necessary, the piping system should have uninterrupted pressure relief. The pressure relief system should be designed to provide a discharge rate sufficient to avoid further pressure increase and should vent to a safe location outside or to a ventilation system exhaust.

## Purchasing Hydrogen

Use the following guidelines when purchasing hydrogen:

- **Hydrogen Generator**—Because it minimizes the amount of hydrogen present and reduces the degree of hazard, a hydrogen generator (also called an electrolyzer) is the safest way to purchase hydrogen in the quantity used in gas chromatography/mass spectroscopy systems.

However, to minimize the degree of hazard, operate the hydrogen generator only in a non-explosive environment because hydrogen buildup can be ignitable. Thus, your ventilation system for the room or lab hood where the hydrogen generator operates must maintain an air exchange rate at least two orders of magnitude greater than the maximum hydrogen production rate of the hydrogen generator. Follow the manufacturers' directions about proper use and maintenance of the regulator.

To prevent the possibility of releasing hydrogen, set the hydrogen generator to shut down if:

- There is a loss of flow to the ventilation system
- A hydrogen detector alarms at 25% of the lower flammable limit of hydrogen in air.

Vent the oxygen exhausted by the electrolyzer to the outside as well.

- **Hydrogen Cylinder**—Hydrogen can be delivered in standard laboratory gas bottles or cylinders. These cylinders have a limited amount of hydrogen in them and are a safe way to transport and store hydrogen. Always secure, compressed hydrogen gas cylinders, like all compressed gas cylinders, in an upright position, ideally with a non-combustible chain or cable. If the cylinder falls over, the valve can fall off, causing the pressurized cylinder to take off like a rocket, leading to the release of hydrogen and possibly an explosion, severe injury, or death. Never crack a hydrogen cylinder valve to remove dust or dirt from fittings prior to attaching a regulator, as there is a risk of self-ignition.

## Properly Storing Hydrogen

Storing and handling compressed hydrogen gas and cryogenic liquid hydrogen present potential health and safety hazards. Using proper storage and handling techniques is essential to maintaining a safe work environment.

Use the following guidelines when storing hydrogen:

- Store spare hydrogen gas cylinders outside and away from doors, windows, building air intake vents, structures, and vehicle routes. This precaution applies when the hydrogen is or is not in use. Indoor storage of spare hydrogen cylinders has special requirements, which are beyond the scope of this document. Documentation for each vessel should include a description of the vessel, a list of available drawings or other documents, the most recent inspection results, and the responsible person's name.
- Prevent spare cylinders from toppling by wrapping them with chains. The chains should also be protected against corrosion and excessive heat.
- Separate spare hydrogen cylinders from oxidizing gases (such as oxygen) with a 5 ft. (1.5 m) tall fire barrier with a half-hour fire rating or place the cylinders at least 20 ft. (6 m) apart.
- When moving hydrogen cylinders:
  - Remove the regulator and replace the cylinder valve cap before moving.
  - Move cylinders on cylinder carts or with other appropriate transport devices.
  - Never roll or drop a cylinder and never lift a cylinder by its protective cap.
- Bulk hydrogen systems include either gaseous or liquid hydrogen in fixed installations; in some gas systems a semi-permanent trailer (tube trailer) can be used. Storage vessels for compressed hydrogen gas or liquid hydrogen should be designed, constructed, tested, and maintained in accordance with applicable codes and standards. Bulk hydrogen systems represent a level of complexity again which is beyond the scope of this document; however some general guidelines are provided.
- The bulk hydrogen storage system should not be located beneath electric power lines, close to other flammable gases/liquids, or close to public areas. It should be readily accessible to authorized personnel and delivery equipment, but protected from physical damage or tampering.
- As liquid hydrogen systems also have a cryogenic hazard, additional safety considerations for the use of cryogenic liquids might be necessary.

## Hydrogen Safety Codes, Standards and References

The following list of safety codes, standards, and references is in no way an exhaustive list. In fact, there may be federal, state, or local codes that apply to your specific location. Check with all appropriate agencies with jurisdiction before installing or using a hydrogen system.

- Air Products Safetygram #4 Gaseous Hydrogen
- ANSI/AIAA standard for hydrogen safety guidelines is AIAA G-095-2004, Guide to Safety of Hydrogen and Hydrogen Systems
- ASME B31.1, Power Piping Code
- ASME B31.3, Process Piping Code

- ASME B31.8, Gas Transmission and Distribution Systems
- BCGA Code Of Practice CP4 Industrial Gas Cylinder Manifolds and Gas Distribution Pipework
- BCGA Code Of Practice CP33 The Bulk Storage of Gaseous Hydrogen at Users' Premises
- CGA G-5, Hydrogen
- CGA G-5.4, Standard for Hydrogen Piping Systems at Consumer Locations
- CGA G-5.5, Hydrogen Vent Systems
- CGA G-5.6, Hydrogen Pipeline Systems
- CGA G-5.8, High Pressure Hydrogen Piping Systems at Consumer Locations.
- FM Global Property Loss Prevention Data Sheets 7-50: Compressed Gases in Cylinders
- FM Global Property Loss Prevention Data Sheets 7-91: Hydrogen
- IGC Doc 121/04/E, Hydrogen Transportation Pipelines System Design Features
- NASA
- NSS 1740.16 Safety Standard For Hydrogen And Hydrogen Systems Guidelines for Hydrogen System Design, Materials Selection, Operations, Storage, and Transportation
- NFPA 52, Vehicular Fuel Systems Code
- NFPA 55, Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks, 2005 Edition
- NFPA 68, Standard on Explosion Protection by Deflagration Venting
- NFPA 70, National Electrical Code
- NFPA 497, Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 45, Standard on Fire Protection for Laboratories Using Chemicals
- NFPA 55, Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks
- NFPA 68, 2007 Standard on Explosion Protection by Deflagration Venting
- NFPA 69, Standard on Explosion Prevention Systems
- NFPA 91, Standard for Exhaust Systems for Air Conveying of Vapors

## Preface

### Liquid Nitrogen Safety Precautions

- NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials
- OSHA 29CFR1910.103 1910.103 Hydrogen

## Hazardous Substances Precautions



**WARNING** Before using hazardous substances (toxic, harmful, and so on), read the hazard indications and information reported in the applicable Material Safety Data Sheet (MSDS.) Use Personal protection according to the safety requirements.

## Venting Toxic Gases

When analyzing toxic compounds be aware that during the normal operation of the GC some of the sample might be vented outside the instrument through the inlet and detector exits; therefore, make sure to vent the exhaust gases to a fume hood. Consult local Environmental and Safety Regulations for instructions in exhausting fumes from your system.

## Liquid Nitrogen Safety Precautions

Liquid nitrogen is a colorless, odorless, extremely cold liquid and gas under pressure. It can cause rapid suffocation when concentrations are sufficient to reduce oxygen levels below 19.5%. A Self Contained Breathing Apparatus (SCBA) might be required. Contact with liquid or cold vapors can cause severe frostbite. Cold vapors in the air will appear as a white fog due to condensation of moisture. Oxygen concentrations must be monitored in the release area. All cryogenic liquids produce large volumes of gas when they vaporize.

**WARNING** Before using Liquid Nitrogen, read the hazard indications and the instructions reported in the Safety sheet supplied by the manufacturer, with reference to the CAS number (Chemical Abstract Service) 7727-37-9.



Use personal protection:

- **Protective gloves:** Loose fitting thermal-insulated or leather gloves.
- **Eye protection:** Full face shield and safety glasses are recommended.
- **Other protective equipment:** Safety shoes when handling containers. Long sleeved shirts and trousers without cuffs. Work clothing that sufficiently prevents skin contact should be worn.

## Carbon Dioxide Safety Precautions

Carbon dioxide is a colorless, cryogenic liquid. At low concentrations, is odorless. At higher concentrations carbon dioxide will have a sharp, acidic odor. At concentrations between 2 and 10%, Carbon dioxide can cause nausea, dizziness, headache, mental confusion, increased blood pressure, and increased respiratory rate. If the gas concentration reaches 10% or more, suffocation and death can occur within minutes. Contact with the cold gas can cause freezing of exposed tissue. Moisture in the air could lead to the formation of carbonic acid that can be irritating to the eyes. All forms of carbon dioxide are noncombustible. Carbon dioxide is heavier than air and should not be allowed to accumulate in low lying areas.

**WARNING** Before using carbon dioxide, read the indications of hazard and the instructions reported in the Safety sheet supplied by the manufacturer with reference to the CAS number (Chemical Abstract Service) 124-38-9.



Use personal protection:

- **Protective gloves:** Loose fitting thermal insulated or leather gloves.
- **Eye protection:** Full face shield and safety glasses are recommended.
- **Other protective equipment:** Safety shoes when handling containers. Long sleeved shirts and trousers without cuffs. Work clothing that sufficiently prevents skin contact should be worn.



# Ordering Spare Part

This chapter contains illustrations and part numbers for all of the replaceable components in the TRACE 1300/TRACE 1310. Refer to the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components in your instrument.

Throughout the TRACE 1300/TRACE 1310 documentation, any component with a part number can be ordered from us. Components without a part number are not available.

## Contents

- [Abbreviations](#)
- [Identifying A Part](#)
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- [Injector Modules Components](#)
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- [Upgrade Modules](#)
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- [Cryo Components](#)
- [Kits & Miscellanea](#)
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## Abbreviations

Table 1 details the abbreviations used in this guide.

**Table 1.** List of Abbreviation

| Abbreviation | Description   |
|--------------|---|
| AOI          | Analog Output Interface   |
| ECD          | Electron Capture Detector   |
| FID          | Flame Ionization Detector   |
| FPD          | Flame Photometric Detector  |
| GC           | Gas Chromatograph   |
| GC-MS        | Gas Chromatograph and Mass Spectrometer                                 |
| GDI          | Generic Detector Interface  |
| GSV          | Gas Sampling Valve  |
| HeS-S/SL     | Instant Connect Helium Saver Injector                                   |
| NPD          | Nitrogen Phosphorus Detector  |
| PDD          | Pulsed Discharge Detector   |
| SSL          | Split/Splitless Injector  |
| SSLBKF       | Split/Splitless Injector for Backflush applications                     |
| Pkg          | Package   |
| PTV          | Programmable Temperature Vaporizing Injector                            |
| PTVBKF       | Programmable Temperature Vaporizing Injector for Backflush applications |
| TCD          | Thermal Conductivity Detector   |

## Identifying A Part

To identify a part, you need to know where it was located in the TRACE 1300/TRACE 1310 or the part's relationship to a particular functionality of the TRACE 1300/TRACE 1310. Use the categories in the table below to find a location or functionality that relates to the component you need. For example, if you know the part is related to the **SSL injector** look in the **Injector Component** category. Then refer to the illustrations in that category to visually identify that particular part.



**IMPORTANT** Only components with a part number are available for purchase. The part you are looking for may be shown in an illustration, but if it does not list a part number, it is not available.

**Table 2.** Parts That Can Be Reordered (Sheet 1 of 9)

| Component   | Uses                                      | Thermo Scientific Parts Number | Category          |
|---|---|--------------------------------|-------------------|
| Graphite Ferrule for 0.1 - 0.32 mm ID Columns (Pkg of 10)                 | SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD | 290GA139                       | Column Components |
| Graphite Ferrule for 0.45 - 0.53 mm ID Columns (Pkg of 10)                |   | 290GA140                       |                   |
| Graphite Vespel® Ferrule for 0.1- 0.25 mm ID Columns (Pkg of 10)          |   | 290VA191                       |                   |
| Graphite Vespel® Ferrule for 0.32 mm ID Columns (Pkg of 10)               |   | 290VA192                       |                   |
| Graphite Vespel® Ferrule for 0.53 mm ID Columns (Pkg of 10)               |   | 290VA193                       |                   |
| Polyimide-Valcon® Reducing Ferrule for 0.36 ≤ 0.4 mm OD Tubing (Pkg of 5) | PDD                                       | 29003426                       |                   |
| Polyimide-Valcon® Reducing Ferrule for 0.4 ≤ 0.5 mm OD tubing (Pkg of 5)  |   | 29003427                       |                   |
| Blind Ferrule   | SSL, SSLBKF, FID, ECD, NPD, TCD, FPD      | 29003421                       |                   |
|   | PTV, PTVBKF                               | 29003419                       |                   |
| Encapsulated Graphite Ferrule for 0.25 mm ID Columns (Pkg of 10)          | PTV, PTVBKF, SSLBKF, GSV (Tee connector)  | 29053488                       |                   |
| Encapsulated Graphite Ferrule for 0.32 mm ID Columns (Pkg of 10)          |   | 29053487                       |                   |
| Encapsulated Graphite Ferrule for 0.53 mm ID Columns (Pkg of 10)          |   | 29053486                       |                   |
| SilFlow™ Fingertight Ferrule for 0.35 mm ID Columns (Pkg of 10)           | No Vent, HeS-S/SL                         | 29063465                       |                   |
| SilFlow™ Fingertight Ferrule for 0.4 mm ID Columns (Pkg of 10)            | No Vent, HeS-S/SL                         | 29063466                       |                   |
| SilFlow™ Fingertight Ferrule for 0.5 mm ID Columns (Pkg of 10)            | HeS-S/SL                                  | 29063467                       |                   |
| SilFlow™ Blanking Ferrule (Pkg of 5)                                      | No Vent, HeS-S/SL                         | 290ST414                       |                   |
| SilFlow™ Nut (Pkg of 10)  | No Vent, HeS-S/SL                         | 290SF302                       |                   |
| SilFlow Fingertight Tool  | No Vent, HeS-S/SL                         | 60201-401                      |                   |
| Reducing Graphite Vespel® Ferrule 1/8-1/16-in.                            | HeS-S/SL                                  | 29003422                       |                   |
| Retaining Nut, Hexagonal, 1/4-in. (Pkg of 5)                              | SSL, FID, NPD, TCD, ECD, FPD              | 35050458                       |                   |
| Split Retaining Nut, M4   | SSLBKF, GSV, PTV, PTVBKF                  | 35053221                       |                   |
| Nut 1/16-in. SS ZN1 (Pkg of 10)   | HeS-S/SL                                  | 35023099                       |                   |
| Ferrule 1/16-in. SSZF1 (Pkg of 10)  | HeS-S/SL                                  | 29024283                       |                   |
| Spring Loaded Nut (see kit P/N 19050251)                                  | SSLBKF, PTVBKF                            | 1R120434-0010                  |                   |
| Column Support (Rack)   | GC, GC-MS                                 | 36814159                       |                   |
| Column-Flow Meter Connector   | GC, GC-MS                                 | 24507000                       |                   |
| Tubing pre-cleaned, Pre-cut 316 SS; 1/16-in., 1 m long; 0.25 mm ID        | HeS-S/SL                                  | 39104801                       |                   |
| Precolumn, 0.53 mm ID, 2 m long   | SSLBKF, PTVBKF                            | 26050-0253                     |                   |

## 1 Ordering Spare Part

Identifying A Part

**Table 2.** Parts That Can Be Reordered (Sheet 2 of 9)

| Component                                       | Uses      | Thermo Scientific Parts Number | Category            |                               |
|---|-----------|--------------------------------|---------------------|-------------------------------|
| Oven Heater Baffle Assemble                     | GC, GC-MS | 26600800                       | Oven Components     |                               |
| Oven Heater Temperature Sensor                  | GC, GC-MS | 40303530                       |                     |                               |
| Oven Motor                                      | GC, GC-MS | 31807047                       |                     |                               |
| Oven Blower Fan                                 | GC, GC-MS | 41003510                       |                     |                               |
| Flaps Stepper Motor                             | GC, GC-MS | 23043678                       |                     |                               |
| Oven Multiple                                   | GC, GC-MS | 39305418                       |                     |                               |
| Duct for ISQ/TSQ 8000 Mass Spectrometer         | GC-MS     | 25907025                       |                     |                               |
| Duct for ITQ Mass Spectrometer                  | GC-MS     | 25907015                       |                     |                               |
| Duct for TSQ Quantum Mass Spectrometer          | GC-MS     |                                |                     |                               |
| Duct for DSQ II Mass Spectrometer               | GC-MS     | 25907020                       |                     |                               |
| Duct Insulator, Small Size                      | GC-MS     | 30200115                       |                     |                               |
| Hydrogen Sensor                                 | GC, GC-MS | 27605006                       |                     |                               |
| Fan, Cooling                                    | GC, GC-MS | 23043702                       | GC/GC-MS Components |                               |
| Filter, High Current Line, 16 A: 250 V          | GC, GC-MS | 23850005                       |                     |                               |
| Touch Display Assy TRACE 1310                   | GC, GC-MS | 33322000                       |                     |                               |
| Status Panel TRACE 1300                         | GC, GC-MS | 23719540                       |                     |                               |
| Top Cover Assemble                              | GC, GC-MS | 24104386                       |                     |                               |
| Right Panel Assemble                            | GC, GC-MS | 33311010                       |                     |                               |
| Left Panel Assemble                             | GC, GC-MS | 33311015                       |                     |                               |
| Left Panel Assemble for ISQ/ITQ MS              | GC, GC-MS | 33312000                       |                     |                               |
| Rear Cover Assemble                             | GC, GC-MS | 33311025                       |                     |                               |
| Cover Door Assemble for TRACE 1300              | GC, GC-MS | 30200128                       |                     |                               |
| Cover Door Assemble for TRACE 1310              | GC, GC-MS | 33311000                       |                     |                               |
| Door Assy Internal (with insulating)            | GC, GC-MS | 33315353                       |                     |                               |
| Cables Holder-Handle                            | GC, GC-MS | 28502213                       |                     |                               |
| Gas Block Plug Kit                              | GC, GC-MS | 19050773                       |                     |                               |
| Syringe 10 $\mu$ L, 50 mm needle length         | GC, GC-MS | 36500525                       |                     |                               |
| Test Column, 7 m, 0.32 mm ID, 0.25 $\mu$ m F.T. | GC, GC-MS | 26080001                       |                     |                               |
| Transformer, Toroidal 500 VA                    | GC, GC-MS | 41325072                       |                     |                               |
| O-ring, Injector/Detector Mating Block          | GC, GC-MS | 29031303                       |                     |                               |
| Gas Inlet Manifold Components Kit               | GC, GC-MS | 19050751                       |                     | Gas Inlet Manifold Components |
| Gas Inlet Fitting 1/8-in. for Toggle Valve      | GC, GC-MS | 35008438                       |                     |                               |

**Table 2.** Parts That Can Be Reordered (Sheet 3 of 9)

| Component  | Uses                                    | Thermo Scientific Parts Number | Category                    |
|--|---|--------------------------------|-----------------------------|
| Filter, Split Line   | SSL, SSLBKF, GSV, HeS-S/SL, PTV, PTVBKF | 28113197                       | Injector Modules Components |
| Filter, Carrier Line   | SSL, SSLBKF, GSV, HeS-S/SL, PTV, PTVBKF | 28113196                       |                             |
| Fitting Cap, Backflush Line                                  | SSLBKF, PTVBKF, GSV                     | 35003036                       |                             |
| Injector Body, SSL   | SSL, SSLBKF                             | 24705240                       |                             |
| Injector Body, HeS-S/SL                                      | HeS-S/SL                                | 24705255                       |                             |
| He Saver Potted Box Assembly                                 | HeS-S/SL                                | 27609926                       |                             |
| Injector Head Assemble                                       | PTV, PTVBKF                             | 36812739                       |                             |
| Liner Cap/Septum Holder                                      | SSL, SSLBKF, HeS-S/SL                   | 40203005                       |                             |
| Liner Cap  | PTV, PTVBKF                             | 29004012                       |                             |
| Liner Seal   | SSL, SSLBKF, HeS-S/SL                   | 29001320                       |                             |
| Liner Seal   | PTV, PTVBKF                             | 29001325                       |                             |
| O-Ring External, Body Head                                   | SSL, SSLBKF, HeS-S/SL                   | 29001316                       |                             |
| O-Ring, Internal, Body Head                                  | SSL, SSLBKF, HeS-S/SL                   | 29001313                       |                             |
| O-Ring (Parafluor 2--6) Manifold                             | SSL, SSLBKF, PTV, PTVBKF, HeS-S/SL      | 29011310                       |                             |
| Retaining Nut (for Column Adapter)                           | SSL, SSLBKF                             | 35001126                       |                             |
| Ring Nut   | SSL, SSLBKF, HeS-S/SL                   | 35001821                       |                             |
| Septum, BTO 11 mm OD with center guide                       | SSL, SSLBKF, HeS-S/SL, PTV, PTVBKF      | 31303233                       |                             |
| Septum Cap   | SSL, SSLBKF, HeS-S/SL, PTV, PTVBKF      | 35001820                       |                             |
| Septum Cap for AI 1310 Autosampler and for HS (TriPlus Only) | SSL, SSLBKF, HeS-S/SL, PTV, PTVBKF      | 35001819                       |                             |
| Silver Seal  | PTV, PTVBKF                             | 29013820                       |                             |
| Base Seal and washer   | SSL, SSLBKF                             | 290GA081                       |                             |
| Precolumn, 2 m length, 0,5 mm                                | SSLBKF, PTVBKF                          | 26050-0253                     |                             |
| High Temperature Tee Connection                              | SSLBKF, PTVBKF                          | 34708447                       |                             |
| Tee Connector Low Volume                                     | SSLBKF, PTVBKF                          | 34708449                       |                             |
| Terminal Bottom Fitting 1 mm ID                              | PTV, PTVBKF                             | 35008429                       |                             |
| Terminal Bottom Fitting 0.5 mm ID                            | PTV, PTVBKF                             | 35008428                       |                             |
| Six-ports Diaphragm Valve                                    | GSV                                     | 40516165                       |                             |
| Kit Sample Loop 20 µL  | GSV                                     | 19071405                       |                             |
| Kit Sample Loop 50 µL  | GSV                                     | 19071404                       |                             |
| Kit Sample Loop 100 µL                                       | GSV                                     | 19071403                       |                             |
| Kit Sample Loop 250 µL                                       | GSV                                     | 19071402                       |                             |
| Kit Sample Loop 500 µL                                       | GSV                                     | 19071401                       |                             |
| Kit Sample Loop 1000 µL                                      | GSV                                     | 19071400                       |                             |
| Bottom Insulator   | HeS-S/SL                                | 29004408                       |                             |

## 1 Ordering Spare Part

Identifying A Part

**Table 2.** Parts That Can Be Reordered (Sheet 4 of 9)

| Component   | Uses                  | Thermo Scientific Parts Number | Category                    |
|---|-----------------------|--------------------------------|-----------------------------|
| Adapter TRACE 1300 to 1/16-in.  | HeS-S/SL              | 35002123                       | Injector Modules Components |
| O-ring, Gas Delivery Block  | HeS-S/SL              | 29031303                       |                             |
|   |                       |                                | (Continued)                 |
| SSL Split Straight Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5mm Length, Quartz Wool                 | SSL, SSLBKF, HeS-S/SL | 453A2265                       | Injection Port Liners       |
| SSL Splitless Liner, single Taper, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length, Quartz Wool       | SSL, SSLBKF, HeS-S/SL | 453A1925                       |                             |
| SSL Split Straight Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length                             | SSL, SSLBKF, HeS-S/SL | 453A1295                       |                             |
| SSL Splitless Liner, Single Taper, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length                    | SSL, SSLBKF, HeS-S/SL | 453A1345                       |                             |
| SSL Direct Straight Liner for HS/SPME, Deactivated, 1.2 mm ID x 6.3 mm OD x 78.5 mm Length              | SSL, SSLBKF, HeS-S/SL | 453A1335                       |                             |
| SSL Mini-LAM Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length                                   | SSL, SSLBKF, HeS-S/SL | 453A2009                       |                             |
| PTV Liner, Deactivated, 2 mm ID x 2.75 mm OD x 120 mm Length, Quartz Wool                               | PTV                   | 45352070                       |                             |
| PTV Siltek Metal Liner, 2 mm ID x 2.75 mm OD x 120 mm Length  | PTV, PTVBKF           | 45322044                       |                             |
| PTV Liner, Non-Deactivated, 2 mm ID x 2.75 mm OD x 120 mm Length  | PTV, PTVBKF           | 45322045                       |                             |
| PTV Siltek Metal Liner, 1 mm ID x 2.75 mm OD x 120 mm Length  | PTV, PTVBKF           | 45322046                       |                             |
| PTV Straight Liner, Deactivated, 1 mm ID x 2.75 mm OD x 120 mm Length                                   | PTV, PTVBKF           | 45352054                       |                             |
| PTV Straight Liner, Deactivated, 2 mm ID x 2.75 mm OD x 120 mm Length                                   | PTV, PTVBKF           | 45352057                       |                             |
| PTV Siltek Metal Liner, 2 mm ID x 2.75 mm OD x 120 mm Length  | PTV, PTVBKF           | 45322056                       |                             |
| PTV Liner with Sintered Lining, 1 mm ID x 2.75 mm OD x 120 mm Length                                    | PTV, PTVBKF           | 45352060                       |                             |
| PTV Liner with Three Baffles, Deactivated, 1 mm ID x 2.75 mm OD x 120 mm Length                         | PTV, PTVBKF           | 45352062                       |                             |
| PTV Baffle Liner (Siltek), Deactivated, 2 mm ID x 2.75 mm OD x 120 mm Length                            | PTV, PTVBKF           | 453T2120                       |                             |
| PTV Silcosteel Liner Simile On-Column, 1 mm ID x 2.75 mm OD x 120 mm Length, with 0.6 mm ID Restriction | PTV                   | 45322052                       |                             |

**Table 2.** Parts That Can Be Reordered (Sheet 5 of 9)

| Component  | Uses                    | Thermo Scientific Parts Number | Category                    |
|--|-------------------------|--------------------------------|-----------------------------|
| Retaining Nut (for Column Adapter)                             | FID, NPD, ECD, TCD, FPD | 35001126                       | Detector Modules Components |
| Cell Top Cover Assemble (Top Body)                             | FID                     | 24705245                       |                             |
| Collecting Electrode   | FID                     | 27700900                       |                             |
| Collecting Electrode (Anode)                                   | ECD                     | 21600210                       |                             |
| Collecting Electrode for Thermionic Source                     | NPD                     | 27701600                       |                             |
| Collecting Electrode Pin                                       | FID                     | 20601604                       |                             |
|  | NPD, ECD                | 20604305                       |                             |
| Collecting Electrode (Anode) Seal                              | ECD                     | 29032608                       |                             |
| Collecting Electrode (Anode) Screw                             | ECD                     | 35006118                       |                             |
| Collector Insulator  | FID                     | 30202400                       |                             |
| Detector Cap (Ring Nut)  | FID                     | 35001124                       |                             |
| Measuring Tool Flowmeter Adapter                               | FID                     | 34709348                       |                             |
|  | NPD                     | 34709610                       |                             |
|  | FPD                     | 34709630                       |                             |
| Glow-Plug (Igniter)  | FID, FPD                | 40303535                       |                             |
| Glow-Plug Cable  | FID                     | 23043717                       |                             |
| Insulator Ring   | FID                     | 29004612                       |                             |
| Collector Insulator  | NPD                     | 30202405                       |                             |
| Jet; Ceramic Flame   | FID                     | 40402200                       |                             |
| Jet; Stainless Steel   | NPD                     | 40404516                       |                             |
| Jet, Deactivated Silcosteel                                    | FPD                     | 40404518                       |                             |
| Polarizing Electrode   | FID                     | 27702330                       |                             |
| Thermionic Source TID 2 (standard) for both N and P detections | NPD                     | 46500256                       |                             |
| Thermionic Source TID 4 (optional) for enhanced N response     | NPD                     | 46500257                       |                             |
| FPD Detector Assembly  | FPD                     | 29903110                       |                             |
| Aluminium O-ring   | FPD                     | 29032630                       |                             |
| Kit Interferential Filter for Sulphur (28107101 + Spacer)      | FPD                     | 19050785                       |                             |
| Kit Interferential Filter for Phosphorus (28107102 + Spacer)   | FPD                     | 19050786                       |                             |
| Interferential Filter for Sulphur                              | FPD                     | 28107000                       |                             |
| Interferential Filter for Phosphorus                           | FPD                     | 28107100                       |                             |
| Interferential Filter for Tin                                  | FPD                     | 28107001                       |                             |
| Photomultiplier Tube   | FPD                     | 28600460                       |                             |
| Fixing Tool, FPD Detector Assembly                             | FPD                     | 20501608                       |                             |
| PDD Pulse Generator (Pulser)                                   | PDD                     | 43210075                       |                             |

## 1 Ordering Spare Part

Identifying A Part

**Table 2.** Parts That Can Be Reordered (Sheet 6 of 9)

| Component  | Uses        | Thermo Scientific Parts Number | Category   |
|--|-------------|--------------------------------|--|
| PDD Purifier Assy  | PDD         | 43210076                       | <b>Detector Modules Components</b><br><i>(Continued)</i> |
| PDD Mini Helium Purifier Kit                               | PDD         | 19071500                       |  |
| PDD Cell   | PDD         | 41910716                       |  |
| PDD Flow restriction                                       | PDD         | 24505908                       |  |
| PDD Packed Column Adapter                                  | PDD         | 26060521                       |  |
| GDI Low Flow Restrictor                                    | GDI         | 24503330                       |  |
| GDI Medium Flow Restrictor                                 | GDI         | 24503333                       |  |
| GDI High Flow Restrictor                                   | GDI         | 24503334                       |  |
| Test Mixture   | FID         | 33819020                       |  |
|  | NPD, FPD    | 33819006                       |  |
|  | TCD         | 33819016                       |  |
|  | ECD         | 33819011                       |  |
|  | PDD         | 33819032                       |  |
| Detector Module, ECD for China market                      | ECD         | 19070029                       | <b>Upgrade Modules</b>                                   |
| Detector Module, ECD for International market              | ECD         | 19070030                       |  |
| Detector Module, ECD for USA market (General License)      | ECD         | 19070031                       |  |
| Detector Module, ECD for USA market (Special License)      | ECD         | 19070032                       |  |
| Detector Module, ECD for Canada market                     | ECD         | 19070033                       |  |
| Detector Module, FID                                       | FID         | 19070001                       |  |
| Detector Module, NPD                                       | NPD         | 19070060                       |  |
| Detector Module, TCD Nickel-Iron (Ni-Fe) filament cell     | TCD         | 19070040                       |  |
| Detector Module, TCD Tungsten-Rhenium (W-Re) filament cell | TCD         | 19070041                       |  |
| Detector Module TCD In-Series Connection                   | TCD         | 19070045                       |  |
| Detector Module, FPD                                       | FPD         | 19070096                       |  |
| Dummy Module   | All Modules | 19070097                       |  |
| Electronic Module 120 Vac                                  | GC, GC-MS   | 43210168                       |  |
| Electronic Module 230 Vac                                  | GC, GC-MS   | 43210167                       |  |
| Injector Module, SSL                                       | SSL         | 19070010                       |  |
| Injector Module, SSLBKF                                    | SSLBKF      | 19070011                       |  |
| Injector Module, Gas Sampling Valve                        | GSV         | 19070095                       |  |
| Injector Module, Helium Saver S/SL                         | HeS-S/SL    | 19070013                       |  |
| Injector Module, PTV                                       | PTV         | 19070020                       |  |
| Injector Module, PTVBKF                                    | PTVBKF      | 19070021                       |  |
| FTIR Make-up Module  | GC-FTIR     | 19070050                       |  |

**Table 2.** Parts That Can Be Reordered (Sheet 7 of 9)

| Component  | Uses                               | Thermo Scientific Parts Number | Category                 |                  |
|--|------------------------------------|--------------------------------|--------------------------|------------------|
| No Vent Microfluidics Module                             | GC-MS                              | 19070090                       | Upgrade Modules          |                  |
| Detector Module, PDD                                     | PDD                                | 19070014                       |                          |                  |
| Analog Output Interface                                  | GC, GCMS                           | 19070022                       |                          |                  |
| Rear Backplane Board (BKP-HRM; PC1256)                   | GC, GC-MS                          | 23661000                       | Electronic Module Boards |                  |
| Oven CPU-Power Control Board (OVN-HRM; 230 V; PC1257)    | GC, GC-MS                          | 23661010                       |                          |                  |
| Oven CPU-Power Control Board (OVN-HRM; 120 V; PC1257-01) | GC, GC-MS                          | 23661011                       |                          |                  |
| Main CPU Board (CPU-HRM; PC1258)                         | GC, GC-MS                          | 23661015                       |                          |                  |
| Memory Board (MEM-HRM; PC1259)                           | GC, GC-MS                          | 23661020                       |                          |                  |
| External Interface Board (EXT-HRM; PC1263)               | GC, GC-MS                          | 23661025                       |                          |                  |
| Power Supply Board                                       | GC, GC-MS                          | 20806090                       |                          |                  |
| Aux Temperature/Cryo Module                              | GC, GC-MS                          | 19070070                       |                          | External Modules |
| Auxiliary Gases Module                                   | GC, GC-MS                          | 19070080                       |                          |                  |
| NPD Thermionic Source Power Module                       | GC, GC-MS                          | 43215010                       |                          |                  |
| Oven Cryo CO <sub>2</sub> Assemble                       | GC, GC-MS                          | 19050753                       | Cryo Components          |                  |
| Oven Cryo N <sub>2</sub> Assemble                        | GC, GC-MS                          | 19050752                       |                          |                  |
| PTV Cryo CO <sub>2</sub> Assemble                        | GC, GC-MS                          | 19050755                       |                          |                  |
| PTV Cryo N <sub>2</sub> Assemble                         | GC, GC-MS                          | 19050754                       |                          |                  |
| Merlin Valve Kit   | SSL, SSLBKF, PTV, PTVBKF, HeS-S/SL | 19050735                       | Kits & Miscellaneous+    |                  |
| Clamp Bracket for Backflush                              | SSLBKF, PTVBKF, GSV                | 19050757                       |                          |                  |
| Packed Column Adapters Kit                               | SSL, FID, NPD, TCD, ECD            | 19050758                       |                          |                  |
| Graph-pack (Encapsulated Graphite) Ferrules Adapters     | SSL, FID, NPD, TCD, ECD            | 19050759                       |                          |                  |
| Oven Exhaust Kit   | GC, GC-MS                          | 19050760                       |                          |                  |
| SSL Maintenance Kit                                      | SSL, SSLBKF, HeS-S/SL              | 19050770                       |                          |                  |
| SSL O-Ring Kit   | SSL, SSLBKF, HeS-S/SL              | 19050771                       |                          |                  |
| FID Igniter Kit  | FID                                | 19050775                       |                          |                  |
| FID Maintenance Kit                                      | FID                                | 19050776                       |                          |                  |
| NPD Maintenance Kit                                      | NPD                                | 19050777                       |                          |                  |
| ECD Anode Replacement Kit                                | ECD                                | 19050779                       |                          |                  |
| FPD Maintenance Kit                                      | FPD                                | 19004589                       |                          |                  |
| FPD Dual PMT FPD Kit                                     | FPD                                | 19050783                       |                          |                  |
| PTV Maintenance Kit                                      | PTV, PTVBKF                        | 19050780                       |                          |                  |
| TriPlus Leg Support for TRACE 1300/1310                  | GC, GC-MS                          | 19050489                       |                          |                  |
| TriPlus RSH Mounting Leg                                 | GC, GC-MS                          | 1R77010-1066                   |                          |                  |
| TriPlus RSH Mounting Kit                                 | GC, GC-MS                          | 1R77010-1005                   |                          |                  |

## 1 Ordering Spare Part

Identifying A Part

**Table 2.** Parts That Can Be Reordered (Sheet 8 of 9)

| Component  | Uses   | Thermo Scientific Parts Number | Category                                 |
|--|--|--------------------------------|--|
| Power Cable, 16 A, 230 V                         | GC, GC-MS  | 23033025                       | Kits & Miscellanea<br><i>(Continued)</i> |
| Power Cable, 20 A, 120 V                         | GC, GC-MS  | 23033030                       |  |
| LAN Communication Pin-to-Pin Cable               | GC, GC-MS  | 23043592                       |  |
| EV Helium Saver Connection Cable                 | HeS-S/SL   | 23043731                       |  |
| LAN Communication Cross Cable                    | GC, GC-MS, SSL, SSLBKF, PTV, PTVBKF, FID, NPD, TCD, ECD, FPD | 23043593                       |  |
| MS Start Cable                                   | GC/MS  | 23043546                       |  |
| Screw TORX M3 x 6 mm                             | GC, GC-MS  | 40921705                       |  |
| Screw TORX M3 x 8 mm                             | GC, GC-MS  | 40901608                       |  |
| Screw TORX M4 x 6 mm                             | GC, GC-MS  | 40921800                       |  |
| Screw TORX M4 x 8mm                              | GC, GC-MS  | 40921700                       |  |
| Screw TORX M3 x 12 mm                            | GC, GC-MS  | 40901609                       |  |
| Screw TCZ Plastic Sir 4 x 10 mm                  | GC, GC-MS  | 40939002                       |  |
| Tee Connector for Holder Kit                     | SSLBKF, PTVBKF   | 19050251                       |  |
| Tee Connector Kit for High Temperature           | SSLBKF, PTVBKF   | 19050254                       |  |
| No Vent Microfluidics Installation Kit           | GCMS   | 19098025                       |  |
| Dual Detector Microfluidics Kit                  | GCMS   | 19071030                       |  |
| UHP Helium & N2 GPK Gas Purification Kit         | HeS-S/SL   | 1R120577-0001                  |  |
| Oxygen Trap High Capacity                        | HeS-S/SL   | 1R77607-0001                   |  |
| Helium Regulator Kit                             | HeS-S/SL   | 1R77607-0001                   |  |
| Hot Injection Adapter                            | SSL, SSLBKF  | 19050733                       |  |
| Packed Column Adapter Kit for Gas Sampling Valve | GSV  | 19050762                       |  |
| Pressure Regulator Kit for Gas Sampling Valve    | GSV  | 19050763                       |  |
| Backflush Kit for Gas Sampling Valve             | GSV  | 19050764                       |  |
| Manual Injection Kit for Gas Sampling Valve      | GSV  | 19050784                       |  |
| Generic Detector Interface (GDI)                 | GC, GC-MS  | 19070015                       |  |
| Deans Switch Microfluidics Kit                   | GC, GC-MS  | 19005580                       |  |
| Purge & Trap Adapter Kit                         | SSL, SSLBKF  | 19050730                       |  |
| Thermospray SSL Injector Module Kit              | GC/GC-MS   | 19070016                       |  |
| SSL Adapter Head for PerkinElmer TurboMatrix™ HS | SSL  | 34709361                       |  |
| Packed columns Support Kit                       | GC-GC-MS   | 19070124                       |  |

**Table 2.** Parts That Can Be Reordered (Sheet 9 of 9)

| <b>Component</b>                    | <b>Uses</b> | <b>Thermo Scientific Parts Number</b> | <b>Category</b> |
|-------------------------------------|-------------|---------------------------------------|-----------------|
| Ceramic Column Cutter               | GC-GC-MS    | 60201-318                             | <b>Tools</b>    |
| Screwdriver, Flat Head, 4x0.8x25 mm | PTV, PTVBKF | 20502605                              |                 |
| Tweezers, Bent Tip                  | GC, GC-MS   | 20500510                              |                 |
| T6 Torxhead Screwdriver             | FID, NPD    | 20502620                              |                 |
| T10 Torxhead Screwdriver            | NPD         | 20502622                              |                 |
| T20 Torxhead Screwdriver            | GC, GC-MS   | 20502621                              |                 |
| Wrench, Single Open-Ended, 5-mm     | PTV, PTVBKF | 20501621                              |                 |
| Wrench, Single Open-Ended, 6-mm     | FID, NPD    | 20501622                              |                 |
| Wrench, Open-Ended, 1/4-5/16-in.    | GC-GC-MS    | 20501623                              |                 |
| Wrench, Elbowed Box, 8-mm           | FID, NPD    | 20501630                              |                 |
| Wrench, Single Open-Ended, 7/16-in. | GC, GC-MS   | 20503015                              |                 |
| Wrench, Socket, 1/2-in.             | GC-GC-MS    | 20503022                              |                 |

## Column Components

You can purchase the following column components for the TRACE 1300/TRACE 1310 gas chromatograph. See [Table 3](#).

Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

**Note** Visit [www.thermo.com/columns](http://www.thermo.com/columns) for information about ordering a column.

The images are not in scale.

**Table 3.** Column Components (Sheet 1 of 3)

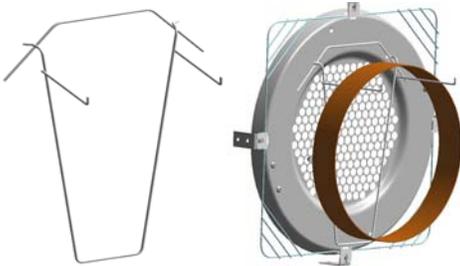
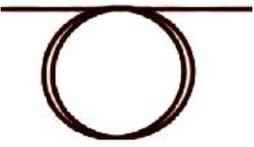
| Description   | Quantity   | Part Number |
|---|--|-------------|
| Graphite Ferrule for 0.1 mm - 0.32 mm Column for SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD              |  Pkg of 10    | 290GA139    |
| Graphite Ferrule for 0.45 mm - 0.53 mm Column for SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD             |  Pkg of 10   | 290GA140    |
| Graphite Vespel® Ferrule for 0.1 mm - 0.25 mm Column for SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD      |  Pkg of 10  | 290VA191    |
| Graphite Vespel® Ferrule for 0.32 mm Column for SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD               |  Pkg of 10  | 290VA192    |
| Graphite Vespel® Ferrule for 0.53 mm Column for SSL, SSLBKF, GSV, FID, NPD, TCD, ECD, FPD               |  Pkg of 10  | 290VA193    |
| Polyimide Valcon Reducing Ferrule for 0.36 ≤ 0.4 mm OD Tubing for PDD                                   |  (Pkg of 5) | 29003426    |
| Polyimide Valcon Reducing Ferrule for 0.4 ≤ 0.5 mm OD tubing for PDD                                    |  (Pkg of 5) | 29003427    |
| Encapsulated Graphite Ferrule for 0.1 - 0.25 mm Column for PTV, PTVBKF, SSLBKF, and GSV (Tee connector) |  Pkg of 10  | 29053488    |
| Encapsulated Graphite Ferrule for 0.32 mm Column for PTV, PTVBKF, SSLBKF, and GSV (Tee connector)       |  Pkg of 10  | 29053487    |
| Encapsulated Graphite Ferrule for 0.53 mm Column for PTV, PTVBKF, SSLBKF, and GSV (Tee connector)       |  Pkg of 10  | 29053486    |

**Table 3.** Column Components (Sheet 2 of 3)

| Description   |   | Quantity  | Part Number   |
|---|---|-----------|---------------|
| SilFlow™ Fingertight Ferrule for 0.35 mm ID Column for HeS-S/SL                         |    | Pkg of 10 | 29063465      |
| SilFlow™ Fingertight Ferrule for 0.4 mm ID Column for HeS-S/SL and NoVent Microfluidics |    | Pkg of 10 | 29063466      |
| SilFlow™ Fingertight Ferrule for 0.5 mm ID Column for HeS-S/SL and NoVent Microfluidics |    | Pkg of 10 | 29063467      |
| SilFlow™ Blanking Ferrule for HeS-S/SL and NoVent Microfluidic                          |    | Pkg of 5  | 290ST414      |
| SilFlow™ Nut for HeS-S/SL and NoVent Microfluidics                                      |    | Pkg of 10 | 290SF302      |
| SilFlow™ Fingertight Tool for HeS-S/SL and NoVent Microfluidics                         |     | Each      | 60201-401     |
| Reducing Graphite Vespel® Ferrule 1/8-1/16-in. for HeS-S/SL                             |   | Each      | 29003422      |
| Nut 1/16-in. SS ZN1 for HeS-S/SL  |  | Pkg of 10 | 35023099      |
| Ferrule 1/16-in. SSZF1 for HeS-S/SL   |  | Pkg of 10 | 29024283      |
| Blind Ferrule for SSL, SSLBKF, FID, ECD, NPD, TCD, and FPD                              |  | Each      | 29003421      |
| Blind Ferrule for PTV, and PTVBKF   |   | Each      | 29003419      |
| Retaining Nut, Hexagonal, 1/4-in. (M6)  |  | Pkg of 5  | 35050458      |
| Split Retaining Nut (M4)  |  | Pkg of 5  | 35053221      |
| Spring Loaded Nut (see kit P/N 19050251)  |  | Each      | 1R120434-0010 |

**1 Ordering Spare Part**  
Column Components

**Table 3.** Column Components (Sheet 3 of 3)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| Column Support (Rack)   | Each     | 36814159    |
|           |          |             |
| Column-Flow Meter Connector   | Each     | 24507000    |
|           |          |             |
| Tubing pre-cleaned, Pre-cut 316 SS; 1/16-in., 1 m long; 0.25 mm ID for Helium Saver and SSL | Each     | 39104801    |
|           |          |             |
| Precolumn 0.53 mm ID, 2 m Long  | Each     | 26050-0253  |
|         |          |             |

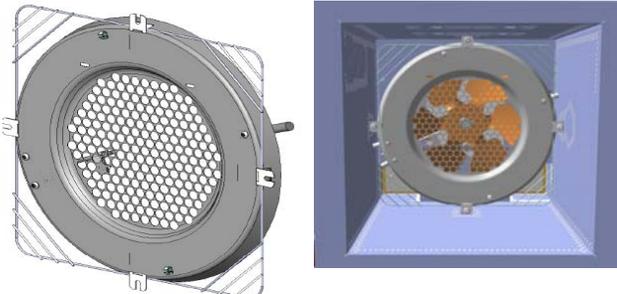
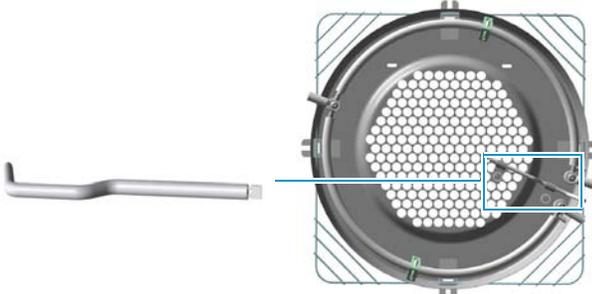
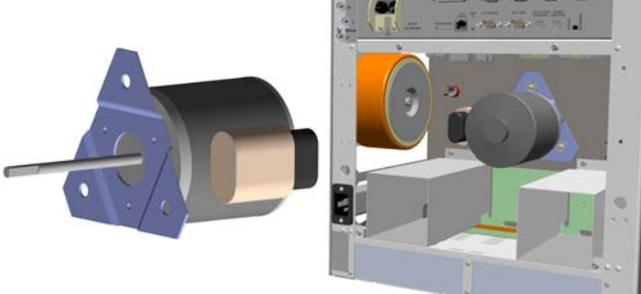
## Oven Components

You can purchase the following Oven components for the TRACE 1300/TRACE 1310 gas chromatograph. See [Table 4](#).

Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

**Note** The images are not in scale.

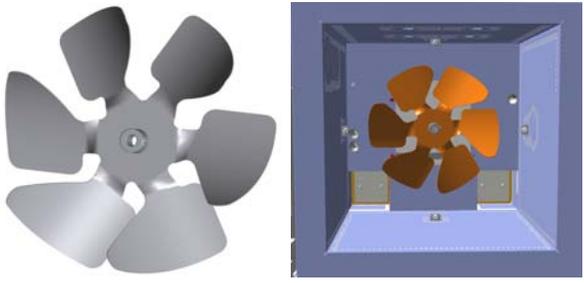
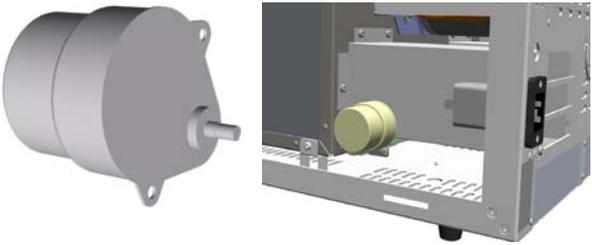
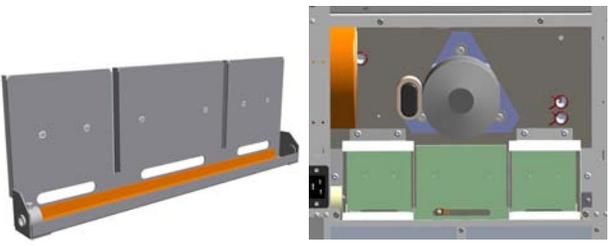
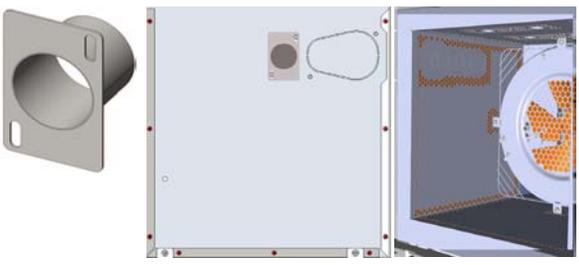
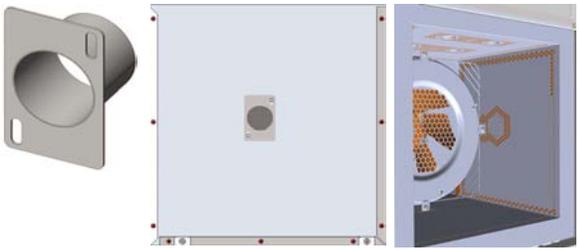
**Table 4.** Oven Components (Sheet 1 of 3)

| Description  | Quantity | Part Number |
|--|----------|-------------|
| Oven Heater Baffle Assemble<br>(120/230 V)  | Each     | 26600800    |
| Oven Heater Temperature Sensor             | Each     | 40303530    |
| Oven Motor                                 | Each     | 31807047    |

# 1 Ordering Spare Part

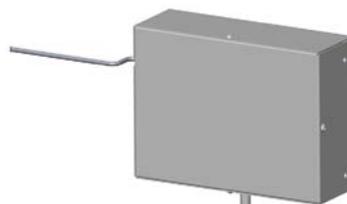
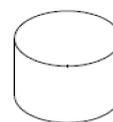
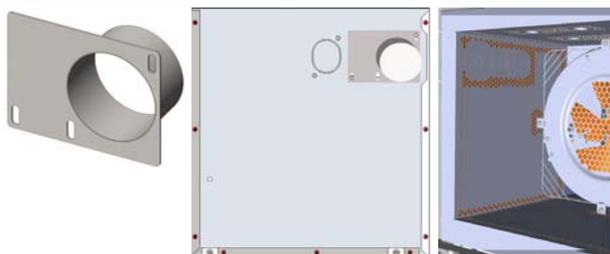
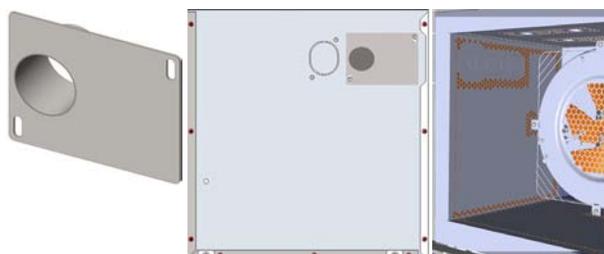
Oven Components

**Table 4.** Oven Components (Sheet 2 of 3)

| Description  | Quantity | Part Number |
|--|----------|-------------|
| <p>Oven Blower Fan</p>                           | Each     | 41003510    |
| <p>Flaps Stepper Motor</p>                       | Each     | 23043678    |
| <p>Oven Multiple</p>                            | Each     | 39305418    |
| <p>Duct for ITQ Mass Spectrometer</p>          | Each     | 25907015    |
| <p>Duct for TSQ Quantum Mass Spectrometer</p>  | Each     | 25907015    |

**Table 4.** Oven Components (Sheet 3 of 3)

| Description                             | Quantity | Part Number |
|---|----------|-------------|
| Duct for DSQ Mass Spectrometer          | Each     | 25907020    |
| Duct for ISQ/TSQ 8000 Mass Spectrometer | Each     | 25907025    |
| Duct Insulator                          | Each     | 30200115    |
| Hydrogen Sensor                         | Each     | 27605006    |



## GC/GC-MS Components

You can purchase the following components for the TRACE 1300/TRACE 1310 gas chromatograph stand-alone and MS versions (GC/GC-MS). See [Table 5](#).

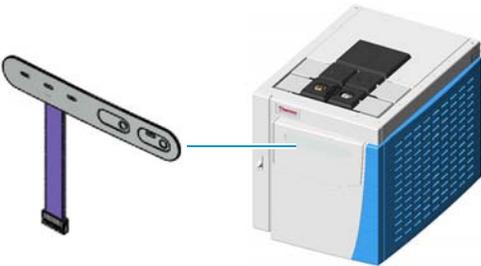
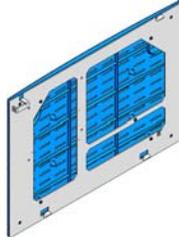
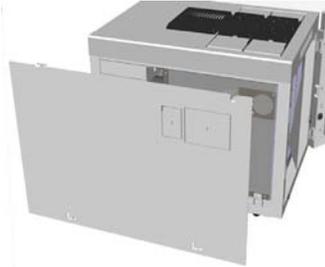
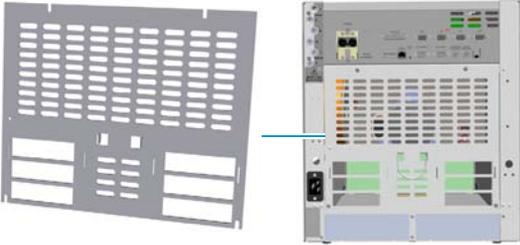
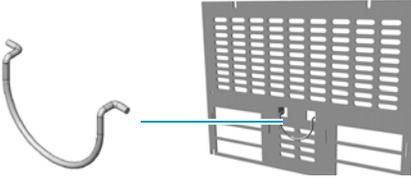
Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

**Note** The images are not in scale.

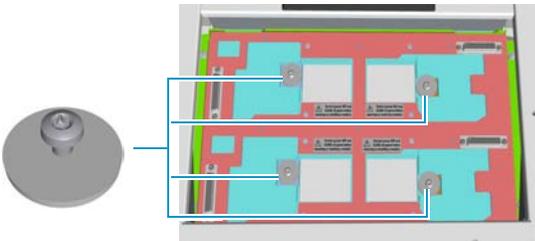
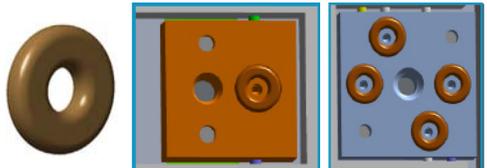
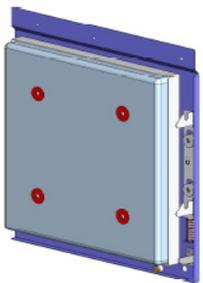
**Table 5.** GC/GC-MS Components (Sheet 1 of 4)

| Description                          | Quantity | Part Number |
|--------------------------------------|----------|-------------|
| Top Cover Assemble                   | Each     | 24104386    |
| Cooling Fan                          | Each     | 23043702    |
| High Current Line Filter 16 A; 250 V | Each     | 23850005    |
| Touch Display Assy TRACE 1300        | Each     | 33322000    |

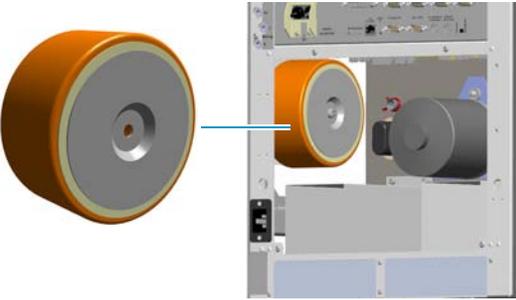
**Table 5.** GC/GC-MS Components (Sheet 2 of 4)

| Description  | Quantity | Part Number |
|--|----------|-------------|
| Status Panel TRACE 1300  | Each     | 23719540    |
|    |          |             |
| Right Panel Assemble   | Each     | 33311010    |
|    |          |             |
| Left Panel Assemble  | Each     | 33311015    |
|   |          |             |
| Left Panel for ISQ/ITQ MS Assemble   | Each     | 33312000    |
|  |          |             |
| Rear Cover Assemble  | Each     | 33311025    |
|  |          |             |
| Cables Holder-Handle   | Each     | 28502213    |
|  |          |             |

**Table 5.** GC/GC-MS Components (Sheet 3 of 4)

| Description   | Quantity  | Part Number |
|---|-----------|-------------|
| Gas Block Plug Kit<br>                      | Each      | 19050773    |
| Injector/Detector Metering Block O-ring<br> | Pkg of 10 | 29031303    |
| Door Cover Assemble for TRACE 1300<br>     | Each      | 30200128    |
| Door Cover Assemble for TRACE 1310<br>    | Each      | 33311000    |
| Door Assy Internal (with insulating)<br>  | Each      | 33315353    |

**Table 5.** GC/GC-MS Components (Sheet 4 of 4)

| Description  | Quantity | Part Number |
|--|----------|-------------|
| Toroidal Transformer 500 VA  | Each     | 41325072    |
|  |          |             |
| Syringe 10 $\mu$ L, 50 mm Needle Valve   | Each     | 36500525    |
|  |          |             |
| Test Column, 7 m, 0.32 mm ID, 0.25 $\mu$ m F.T.                                    | Each     | 26080001    |
|  |          |             |

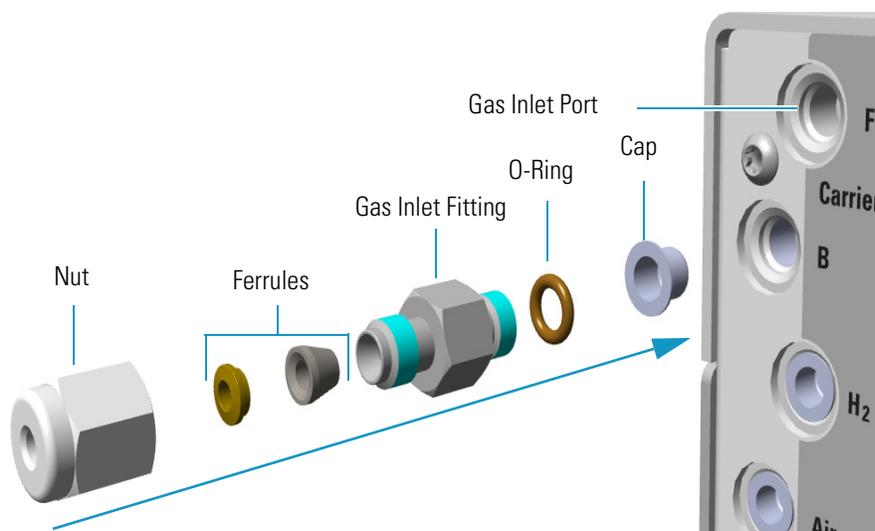
## Gas Inlet Manifold Components

You can purchase the following manifold components for the TRACE 1300/TRACE 1310 gas chromatograph. See [Figure 1](#) and [Table 6](#).

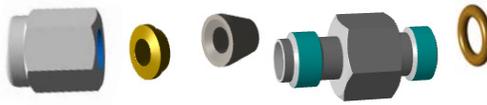
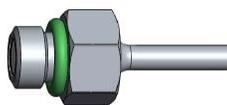
Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

**Note** The images are not in scale.

**Figure 1.** Fittings for Gas Inlet Connection



**Table 6.** Gas Inlet Manifold Components

| Description                                  |  | Quantity | Part Number |
|--|--|----------|-------------|
| Gas Inlet Fittings Kit                       |  | Each     | 19050751    |
| Gas Inlet Fitting 1/8-in. (for Toggle Valve) |  | Each     | 35008438    |

## Injector Modules Components

You can purchase the following components for the injector modules. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

The following injector modules components can be replaced on the TRACE 1300/TRACE 1310.

- [SSL Injector Module Components](#)
- [SSLBKF Injector Module Components](#)
- [PTV Injector Module Components](#)
- [PTVBKF Injector Module Components](#)
- [GSV Module Components](#)
- [Instant Connect Helium Saver Injector Module \(HeS-S/SL\) Components](#)
- [SSL Injector Ports Liner](#)
- [PTV Injector Ports Liner](#)

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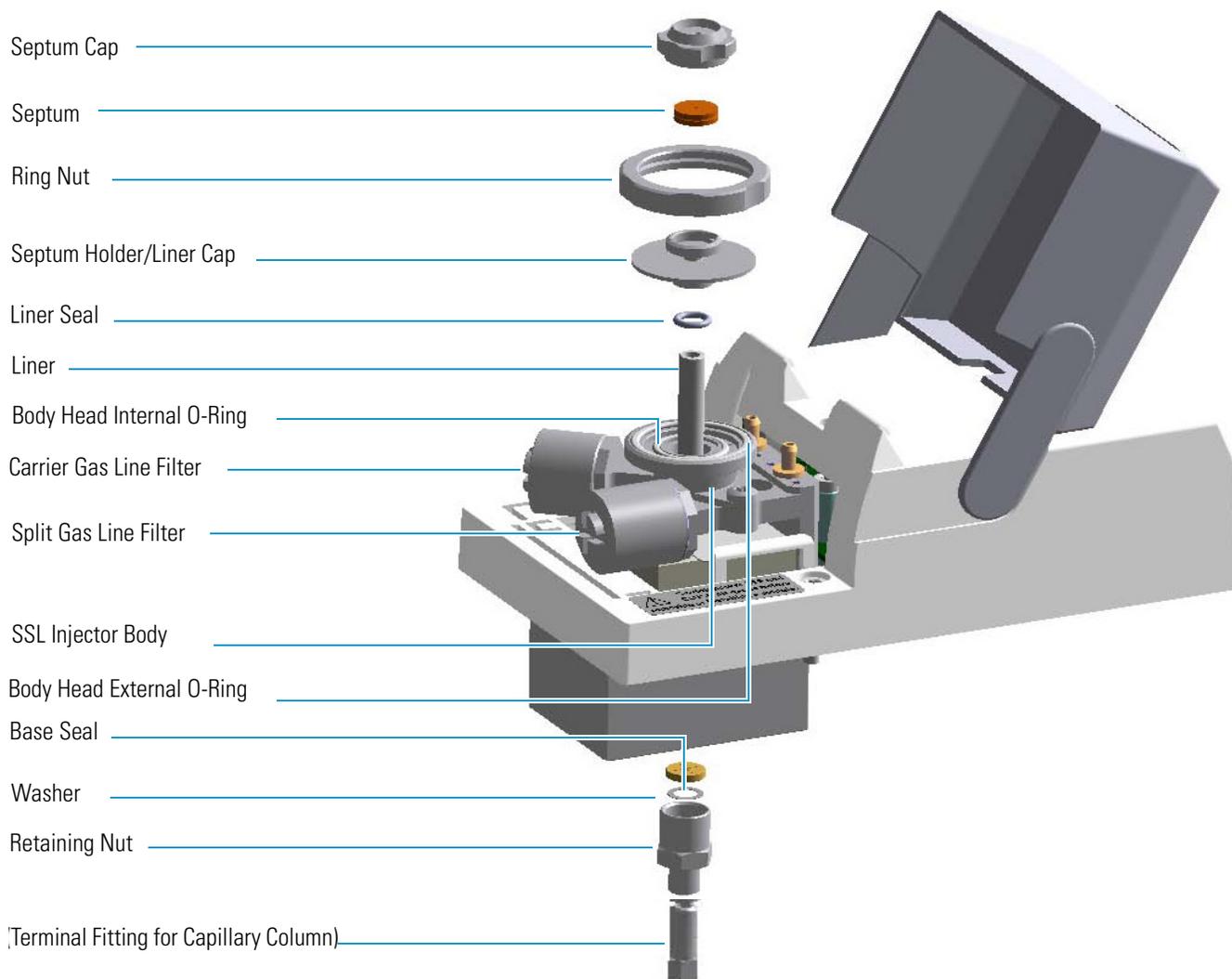
**Note** The images are not in scale.

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## SSL Injector Module Components

The following SSL injector components can be replaced. See [Figure 2](#) and [Table 7](#).

**Figure 2.** Split Splitless Injector Components



**Table 7.** SSL Injector Components (Sheet 1 of 3)

| Description  | Quantity | Part Number |
|--|----------|-------------|
| Septum Cap   | Each     | 35001820    |
| Septum Cap for AI/AS1310 Autosampler and for HS applications with the TriPlus Autosampler. | Each     | 35001819    |

**Table 7.** SSL Injector Components (Sheet 2 of 3)

| Description  | Quantity  | Part Number |
|--|-----------|-------------|
| Septum with Center Guide   | Pkg of 50 | 31303233    |
| Ring Nut   | Each      | 35001821    |
| Liner Cap/Septum Holder  | Each      | 40203005    |
| Liner Seal for SSL   | Pkg of 5  | 29001320    |
| Liner<br>See <a href="#">SSL Injector Ports Liner</a> on page 41 | Each      |             |
| Body Head Internal O-Ring  | Each      | 29001313    |
| Body Head External O-Ring  | Each      | 29001316    |
| Carrier Line Filter  | Each      | 28113196    |
| Split Line Filter  | Each      | 28113197    |
| Base Seal and Washer   | Pkg of 10 | 290GA081    |
| Retaining Nut (for Column Adapter)                               | Each      | 35001126    |
| SSL Injector Body  | Each      | 2470524     |

**1 Ordering Spare Part**  
Injector Modules Components

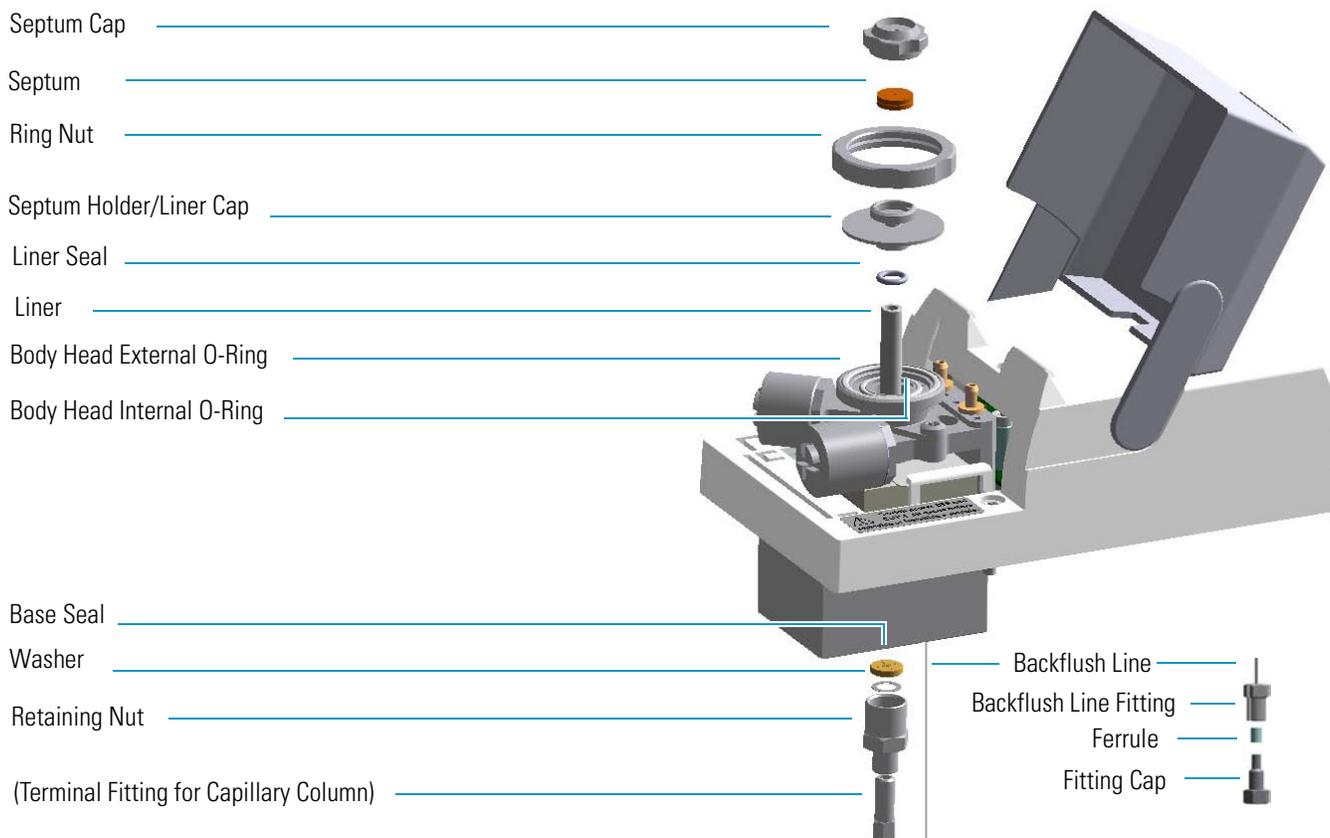
**Table 7.** SSL Injector Components (Sheet 3 of 3)

| Description                             | Quantity   | Part Number |
|---|--|-------------|
| O-ring Parafluor 2-006 for SSL manifold |  Pkg of 3 | 29011310    |

## SSLBKF Injector Module Components

The following SSLBKF injector components can be replaced. See [Figure 3](#) and [Table 8](#).

**Figure 3.** Split Splitless Injector for Backflush Components



**Table 8.** SSLBKF Injector Components (Sheet 1 of 3)

| Description  | Quantity  | Part Number |
|--|-----------|-------------|
| Septum Cap   | Each      | 35001820    |
| Septum Cap for AI/AS1310 Autosampler and for HS applications with the TriPlus Autosampler. | Each      | 35001819    |
| Septum with Center Guide   | Pkg of 50 | 31303233    |
| Ring Nut   | Each      | 35001821    |

**Table 8.** SSLBKF Injector Components (Sheet 2 of 3)

| Description  | Quantity  | Part Number |
|--|-----------|-------------|
| Liner Cap/Septum Holder  | Each      | 40203005    |
| Liner Seal for SSL   | Pkg of 5  | 29001320    |
| Liner<br>See <a href="#">SSL Injector Ports Liner</a> on <a href="#">page 41</a> | Each      |             |
| Body Head Internal O-Ring  | Each      | 29001313    |
| Body Head External O-Ring  | Each      | 29001316    |
| Carrier Line Filter  | Each      | 28113196    |
| Split Line Filter  | Each      | 28113197    |
| Base Seal and Washer   | Pkg of 10 | 290GA081    |
| Retaining Nut (for Column Adapter)   | Each      | 35001126    |
| SSL Injector Body  | Each      | 24705240    |
| Tee Connector Low Volume   | Each      | 34708449    |

**Table 8.** SSLBKF Injector Components (Sheet 3 of 3)

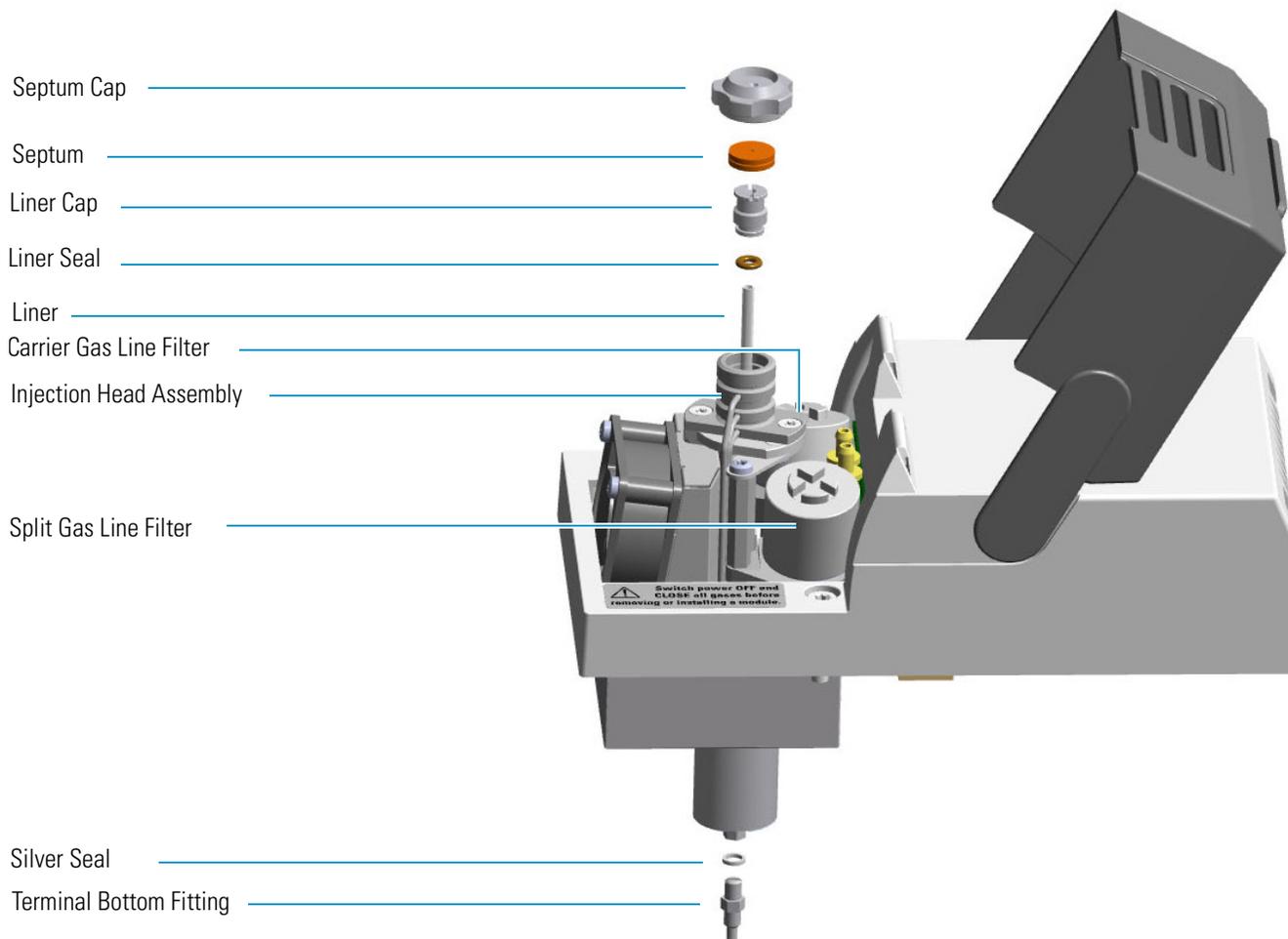
| Description                             | Quantity | Part Number |
|---|----------|-------------|
| High Temperature Tee Connector          | Each     | 34708447    |
| Fitting Cap                             | Each     | 35003036    |
| O-ring Parafluor 2-006 for SSL manifold | Pkg of 3 | 29011310    |



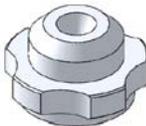
## PTV Injector Module Components

The following PTV injector components can be replaced. See [Figure 4](#) and [Table 9](#).

**Figure 4.** Programmable Temperature Vaporizing Injector Components

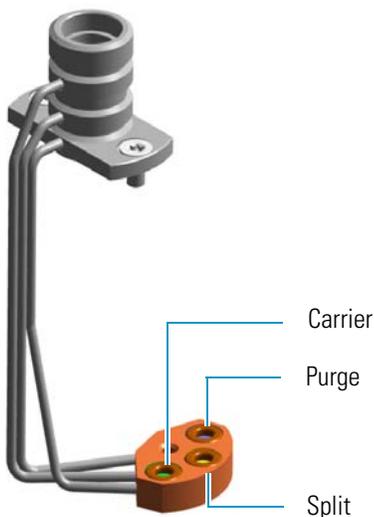


**Table 9.** PTV Injector Components (Sheet 1 of 2)

| Description   |   | Quantity  | Part Number |
|---|---|-----------|-------------|
| Septum Cap  |   | Each      | 35001820    |
| Septum Cap for AI/AS 1310 Autosampler and for HS applications with the TriPlus Autosampler. |   | Each      | 35001819    |
| Septum with Center Guide  |  | Pkg of 50 | 31303233    |

**Table 9.** PTV Injector Components (Sheet 2 of 2)

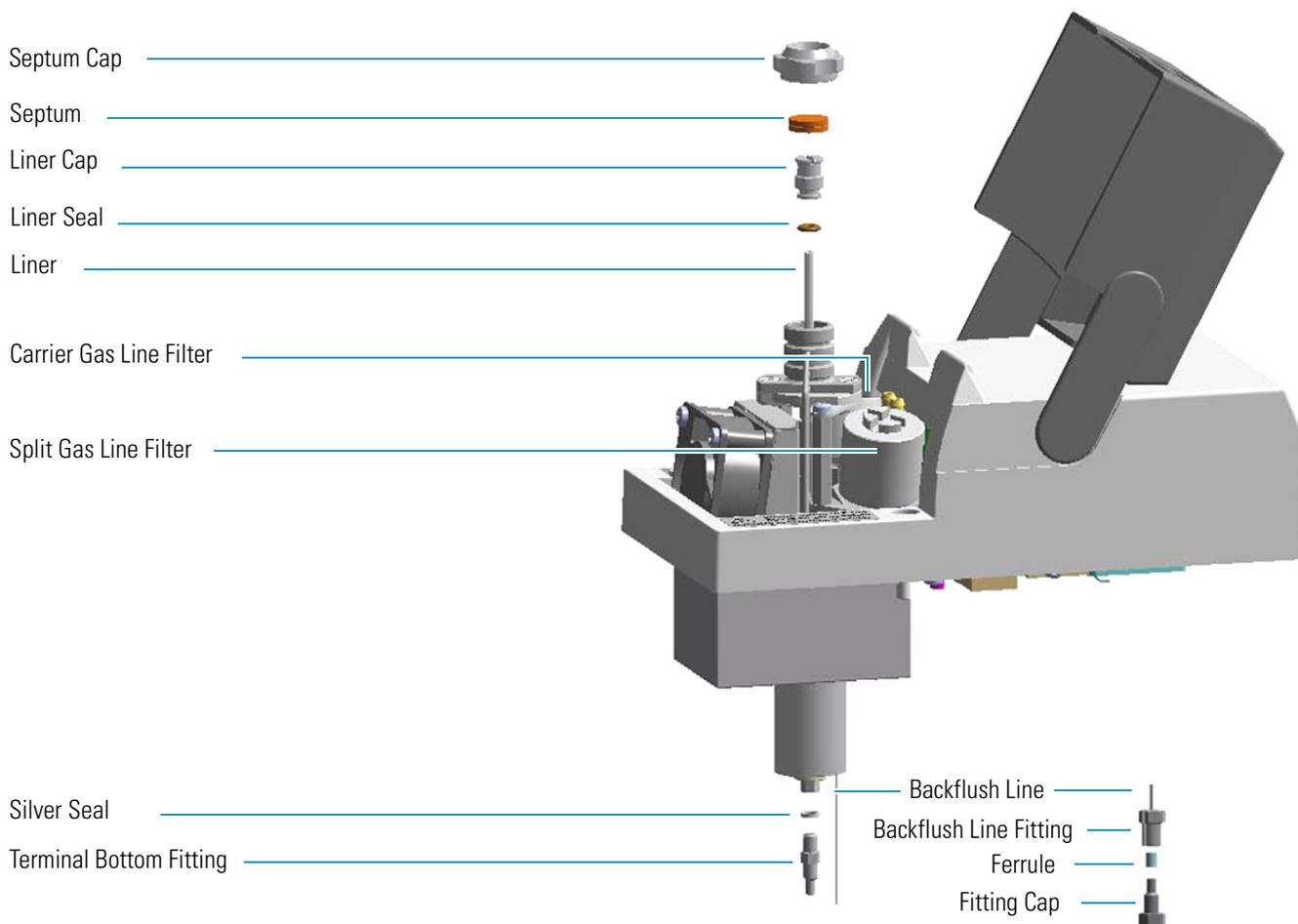
| Description  | Quantity | Part Number |
|--|----------|-------------|
| Liner Cap  | Each     | 29004012    |
| Liner Seal for PTV   | Pkg of 5 | 29001325    |
| Liner<br>See <a href="#">PTV Injector Ports Liner</a> on page 42 | Each     |             |
| Carrier Line Filter  | Each     | 28113196    |
| Split Line Filter  | Each     | 28113197    |
| Silver Seal  | Pkg of 2 | 29013820    |
| Terminal Bottom Fitting 1.0 mm ID                                | Each     | 35008429    |
| Terminal Bottom Fitting 0.5 mm ID                                | Each     | 35008428    |
| O-ring Parafluor 2-006 for PTV manifold                          | Pkg of 3 | 29011310    |
| PTV Injector Head Assembly                                       | Each     | 36812739    |



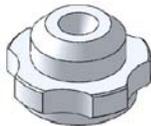
## PTVBKF Injector Module Components

The following PTVBKF injector components can be replaced. See [Figure 5](#) and [Table 10](#).

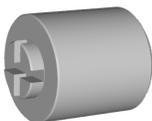
**Figure 5.** Programmable Temperature Vaporizing Injector for Backflush Components



**Table 10.** PTVBKF Injector Components (Sheet 1 of 3)

| Description   |   | Quantity  | Part Number |
|---|---|-----------|-------------|
| Septum Cap  |   | Each      | 35001820    |
| Septum Cap for AI/AS 1310 Autosampler and for HS applications with the TriPlus Autosampler. |   | Each      | 35001819    |
| Septum with Center Guide  |  | Pkg of 50 | 31303233    |

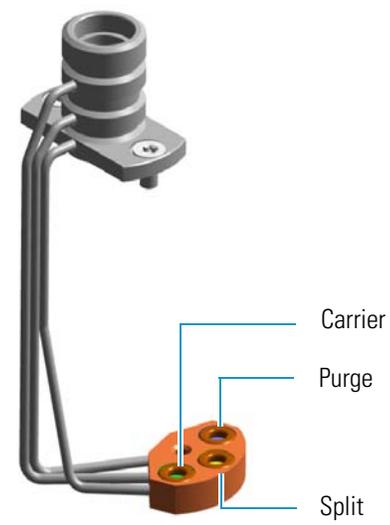
**Table 10.** PTVBKF Injector Components (Sheet 2 of 3)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| Liner Cap   | Each     | 29004012    |
|    |          |             |
| Liner Seal for PTV  | Pkg of 5 | 29001325    |
|    |          |             |
| Liner<br>See <a href="#">PTV Injector Ports Liner</a> on <a href="#">page 42</a>      | Each     |             |
|     |          |             |
| Carrier Line Filter   | Each     | 28113196    |
|     |          |             |
| Split Line Filter   | Each     | 28113197    |
|     |          |             |
| Silver Seal   | Pkg of 2 | 29013820    |
|   |          |             |
| Terminal Bottom Fitting 1.0 mm ID   | Each     | 35008429    |
|   |          |             |
| Terminal Bottom Fitting 0.5 mm ID   | Each     | 35008428    |
|   |          |             |
| Tee Connector Low Volume  | Each     | 34708449    |
|   |          |             |
| High Temperature Tee Connector  | Each     | 34708447    |
|   |          |             |
| Fitting Cap   | Each     | 35003036    |
|   |          |             |
| O-ring Parafluor 2-006 for PTV manifold   | Pkg of 3 | 29011310    |
|  |          |             |

**1 Ordering Spare Part**  
Injector Modules Components

**Table 10.** PTVBKF Injector Components (Sheet 3 of 3)

| Description                | Quantity | Part Number |
|----------------------------|----------|-------------|
| PTV Injector Head Assembly | Each     | 36812739    |

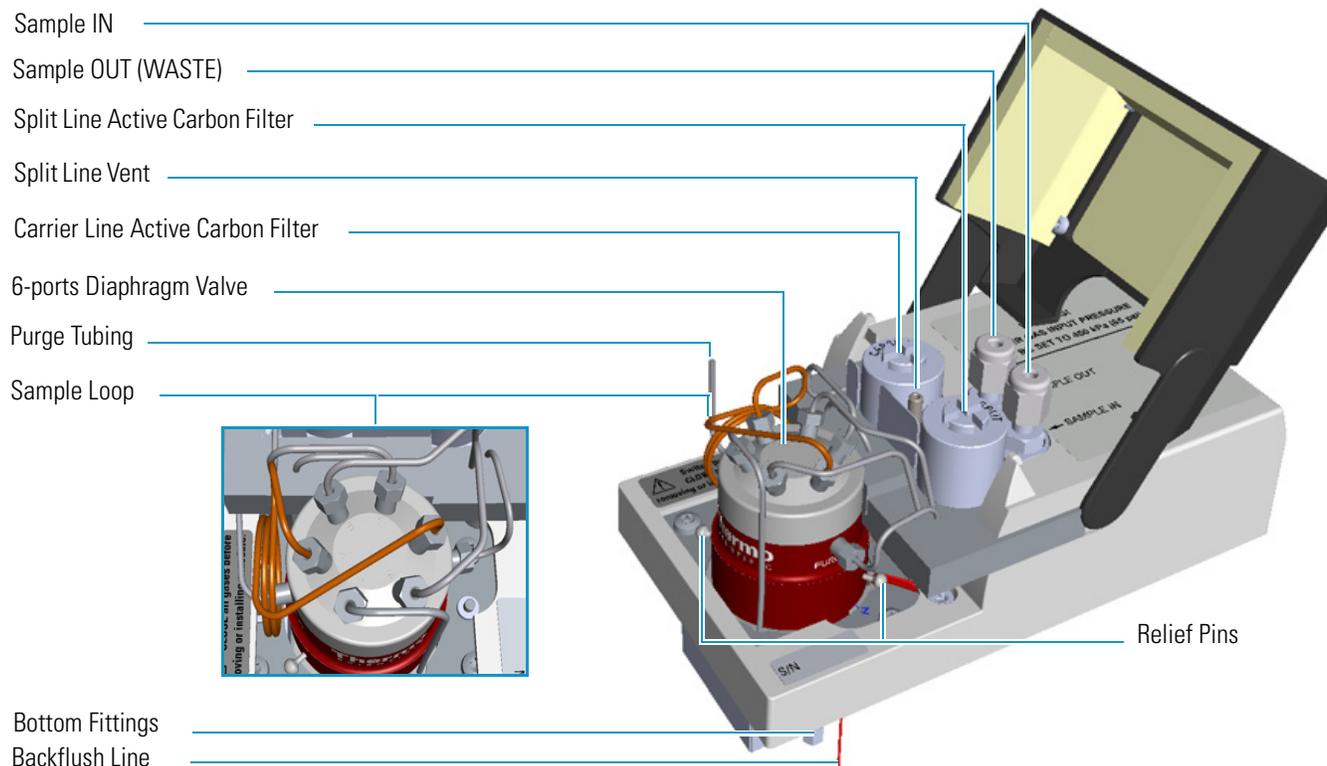


The image shows a 3D CAD model of a PTV Injector Head Assembly. It consists of a grey metal head with a large cylindrical inlet at the top, connected to a vertical tube that leads to a brown, cylindrical split block at the bottom. The split block has three ports: a top port labeled 'Carrier', a middle port labeled 'Purge', and a bottom port labeled 'Split'. Blue leader lines connect the labels to their respective ports.

## GSV Module Components

The following GSV injector components can be replaced. See [Figure 6](#) and [Table 11](#).

**Figure 6.** Gas Sampling Valve Module Components



**Table 11.** Gas Sampling Valve Components (Sheet 1 of 2)

| Description              | Quantity | Part Number |
|--------------------------|----------|-------------|
| Carrier Line Filter      | Each     | 28113196    |
| Split Line Filter        | Each     | 28113197    |
| Six-port Diaphragm Valve | Each     | 40516165    |

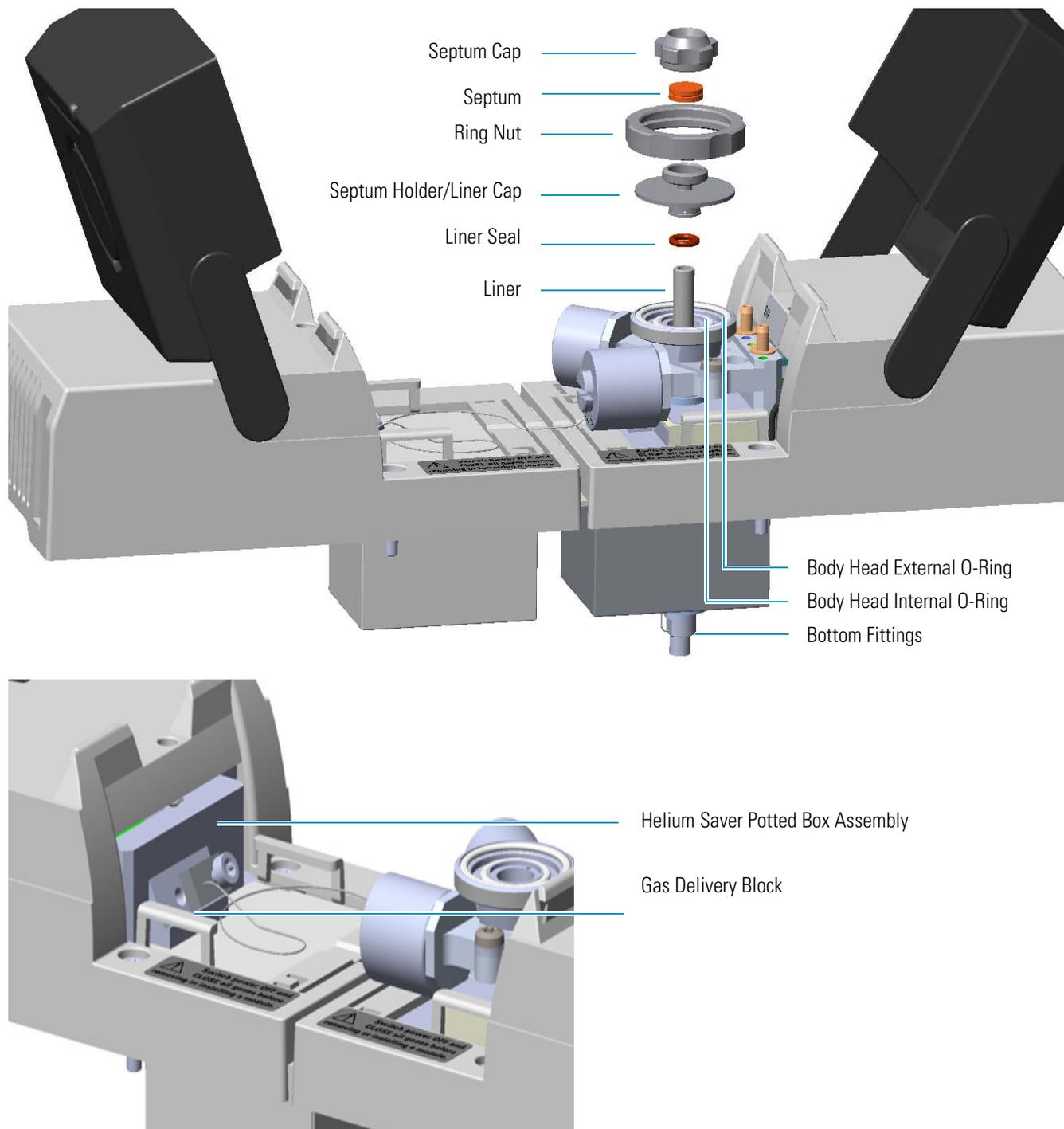
**Table 11.** Gas Sampling Valve Components (Sheet 2 of 2)

| Description                  |   | Quantity | Part Number |
|------------------------------|---|----------|-------------|
| Kit Sample Loop 20 $\mu$ L   |  | Each     | 19071405    |
| Kit Sample Loop 50 $\mu$ L   |   | Each     | 19071404    |
| Kit Sample Loop 100 $\mu$ L  |   | Each     | 19071403    |
| Kit Sample Loop 250 $\mu$ L  |   | Each     | 19071402    |
| Kit Sample Loop 500 $\mu$ L  |   | Each     | 19071401    |
| Kit Sample Loop 1000 $\mu$ L |  | Each     | 19071400    |

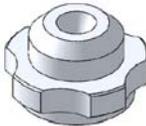
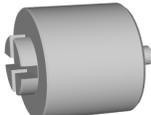
## Instant Connect Helium Saver Injector Module (HeS-S/SL) Components

The following Instant Connect Helium Saver Injector module (HeS-S/SL) components can be replaced. See [Figure 7](#) and [Table 12](#).

**Figure 7.** Instant Connect Helium Saver Module: Injector Components

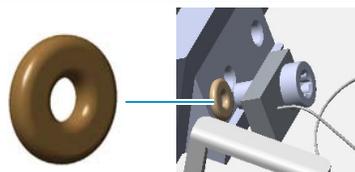
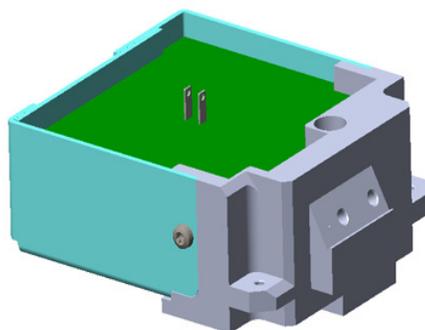


**Table 12.** Helium Saver S/SL Injector Components (Sheet 1 of 2)

| Description   |   | Quantity  | Part Number |
|---|---|-----------|-------------|
| Septum Cap  |     | Each      | 35001820    |
| Septum Cap for AI/AS 1310 Autosampler and for HS applications with the TriPlus Autosampler. |     | Each      | 35001819    |
| Septum with Center Guide  |    | Pkg of 50 | 31303233    |
| Ring Nut  |     | Each      | 35001821    |
| Liner Cap/Septum Holder   |     | Each      | 40203005    |
| Liner Seal for SSL  |   | Pkg of 5  | 29001320    |
| Liner<br>See <a href="#">SSL Injector Ports Liner</a> on <a href="#">page 41</a>            |   | Each      |             |
| Body Head Internal O-Ring   |  | Each      | 29001313    |
| Body Head External O-Ring   |   | Each      | 29001316    |
| Carrier Line Filter   |   | Each      | 28113196    |
| Split Line Filter   |   | Each      | 28113197    |
| Bottom Insulator  |   | Each      | 290004408   |
| O-ring Parafluor 2-006 for SSL manifold   |  | Pkg of 3  | 29011310    |

**Table 12.** Helium Saver S/SL Injector Components (Sheet 2 of 2)

| Description                    | Quantity  | Part Number |
|--------------------------------|-----------|-------------|
| TRACE 1300 to 1/16-in. Adapter | Each      | 35002123    |
| HeS-S/SL Injector Body         | Each      | 24705255    |
| He Saver Potted Box Assembly   | Each      | 27609926    |
| Gas Delivery Block O-ring      | Pkg of 10 | 29031303    |



## Injection Port Liners

You can purchase the following injection port liners for the TRACE 1300/TRACE 1310 gas chromatograph. Be sure to reference the part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300/TRACE 1310 User Guide* for information about these liners or [Table 2](#) for a comprehensive list of available components.

- [SSL Injector Ports Liner](#)
- [PTV Injector Ports Liner](#)

**Note** Visit [www.thermo.com/injection\\_port\\_liners](http://www.thermo.com/injection_port_liners) for information about ordering a liner.

The images are not in scale.

### SSL Injector Ports Liner

The following SSL injector ports liner can be replaced. See [Table 13](#).

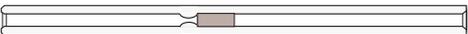
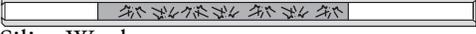
**Table 13.** SSL Injection Port Liners

| Description   |  | Quantity | Part Number |
|---|--|----------|-------------|
| SSL Split Straight Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length, Quartz Wool          |  | Pkg of 5 | 453A2265    |
| SSL Split Straight Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length                       |  | Pkg of 5 | 453A1295    |
| SSL Splitless Liner, Single Taper, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length, Quartz Wool |  | Pkg of 5 | 453A1925    |
| SSL Splitless Liner, Single Taper, 4 mm ID x 6.3 mm OD x 78.5 mm Length                           |  | Pkg of 5 | 453A1345    |
| SSL Direct Straight Liner for HS/SPME, Deactivated, 1.2 mm ID x 6.3 mm OD x 78.5 mm Length        |  | Pkg of 5 | 453A1335    |
| SSL Mini-LAM Liner, Deactivated, 4 mm ID x 6.3 mm OD x 78.5 mm Length                             |  | Pkg of 5 | 453A2009    |

## PTV Injector Ports Liner

The following PTV injector port liner can be replace. See [Table 14](#).

**Table 14.** PTV Injection Port Liners

| Description  |  | Quantity | Part Number |
|--|--|----------|-------------|
| PTV Siltek Metal Liner,<br>2 mm ID x 2.75 mm OD x 120 mm Length                                      |    | Pkg of 2 | 45322044    |
| PTV Liner, Non-Deactivated,<br>2 mm ID x 2.75 mm OD x 120 mm Length                                  |    | Pkg of 5 | 45322045    |
| PTV Straight Liner, Deactivated,<br>2 mm ID x 2.75 mm OD x 120 mm Length                             |    | Pkg of 5 | 45352057    |
| PTV Liner, Deactivated,<br>2 mm ID x 2.75 mm OD x 120 mm Length,<br>Quartz Wool                      |    | Pkg of 5 | 45352070    |
| PTV Siltek Metal Liner,<br>1.3 mm ID x 2.75 mm OD x 120 mm<br>Length                                 |    | Each     | 45322046    |
| PTV Straight Liner, Deactivated,<br>1 mm ID x 2.75 mm OD x 120 mm Length                             |   | Pkg of 5 | 45352054    |
| PTV Siltek Metal Liner,<br>2 mm ID x 2.75 mm OD x 120 mm Length,<br>Silica Wool                      |  | Each     | 45322056    |
| PTV Liner with Sintered Lining,<br>1 mm ID x 2.75 mm OD x 120 mm Length                              |  | Pkg of 5 | 45352060    |
| PTV Liner with Three Baffles, Deactivated,<br>1 mm ID x 2.75 mm OD x 120 mm Length                   |  | Pkg of 5 | 45352062    |
| PTV Baffle Liner (Siltek), Deactivated,<br>2 mm ID x 2.75 mm OD x 120 mm Length                      |  | Pkg of 5 | 453T2120    |
| PTV Silcosteel Liner Simile OC,<br>1 mm ID x 2.75 mm OD x 120mm Length<br>with 0.6 mm ID Restriction |  | Each     | 45322052    |

## Detector Modules Components

You can purchase the following components for the detector modules. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *TRACE 1300 and TRACE 1310 Hardware Manual* for information about installing these components or [Table 2](#) for a comprehensive list of available components.

The following Detector modules components can be replaced on the TRACE 1300/TRACE 1310.

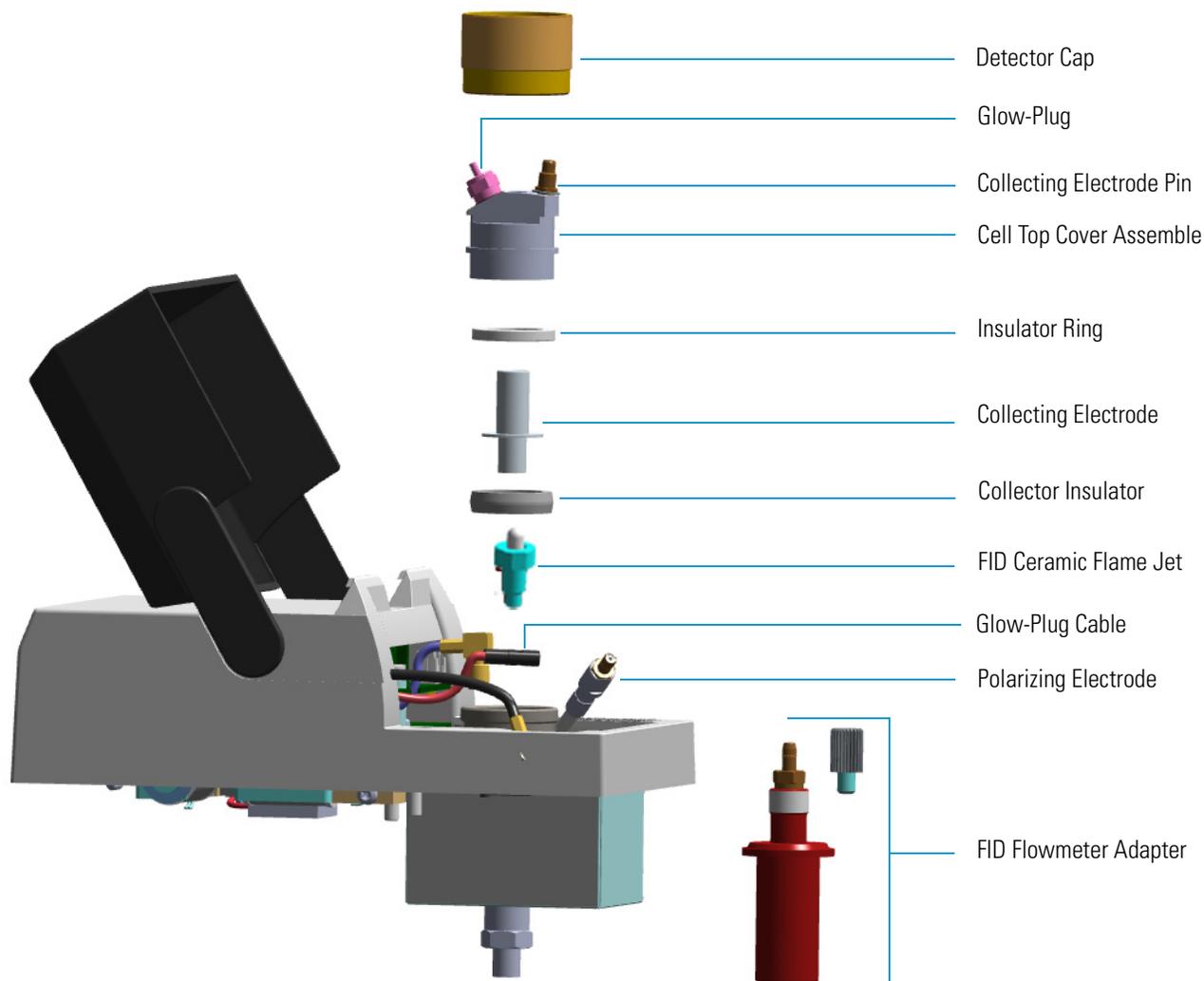
- [FID Detector Module Components](#)
- [NPD Detector Module Components](#)
- [ECD Detector Module Components](#)
- [TCD Detector Modules Components](#)
- [FPD Detector Module Components](#)
- [PDD Detector Module Components](#)
- [GDI Generic Detector Interface Components](#)

**Note** The images are not in scale.

## FID Detector Module Components

The following FID detector components can be replaced. See [Figure 8](#) and [Table 15](#).

**Figure 8.** Flame Ionization Detector Components



**Table 15.** FID Detector Components (Sheet 1 of 2)

| Description      | Quantity | Part Number |
|------------------|----------|-------------|
| FID Detector Cap | Each     | 35001124    |



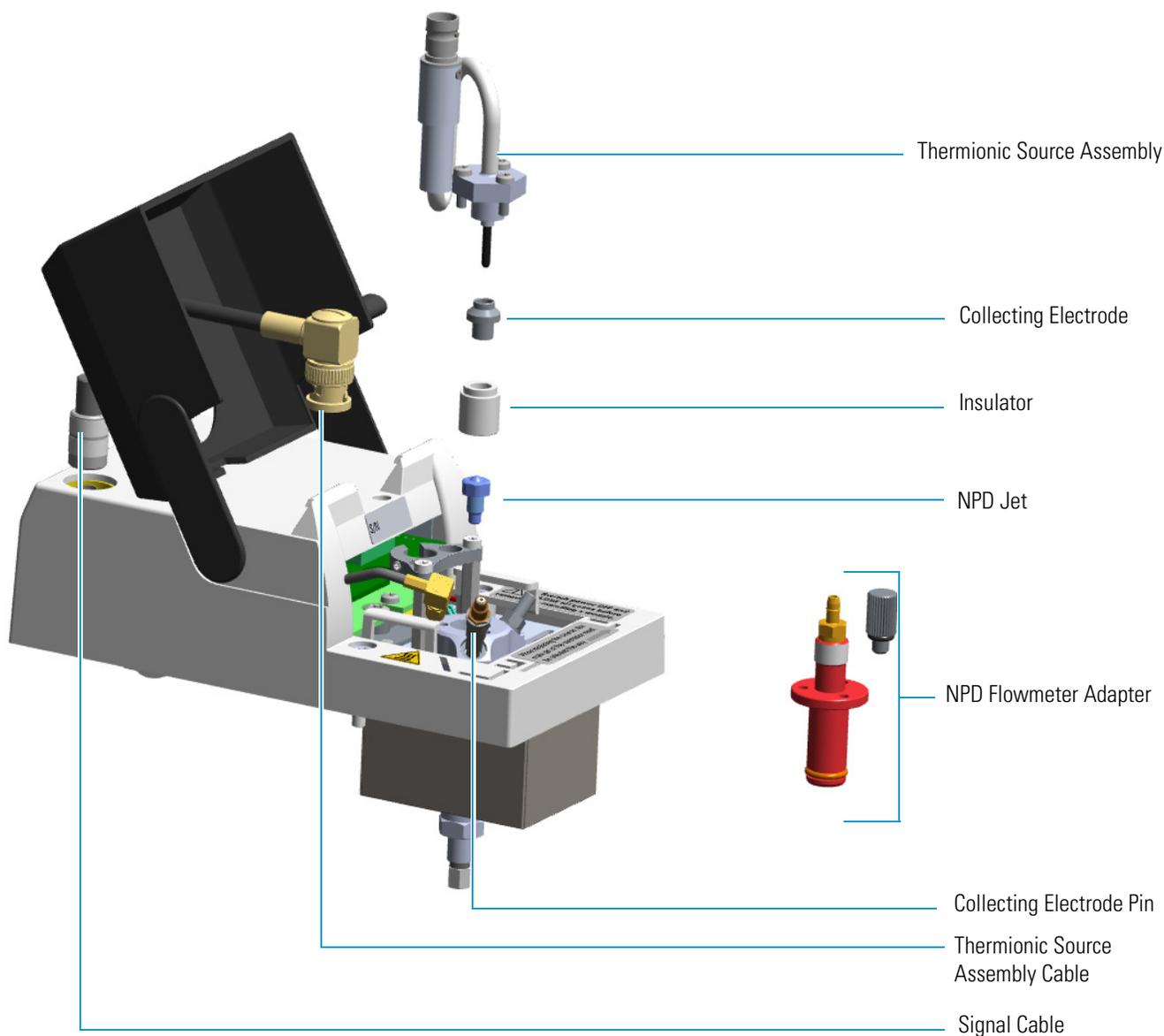
**Table 15.** FID Detector Components (Sheet 2 of 2)

| Description                          |  | Quantity | Part Number |
|--------------------------------------|--|----------|-------------|
| FID Cell Top Cover (Top Body)        |  | Each     | 24705245    |
| FID Insulator Ring                   |  | Each     | 29004612    |
| FID Collecting Electrode             |  | Each     | 27700900    |
| FID Collecting Electrode Pin         |  | Each     | 20601604    |
| FID Collector Insulator              |  | Each     | 30202400    |
| FID Polarizing Electrode             |  | Each     | 27702330    |
| FID/FPD Glow-Plug (Igniter)          |  | Each     | 40303535    |
| FID Glow-Plug Cable                  |  | Each     | 23043717    |
| FID Ceramic Flame Jet                |  | Each     | 40402200    |
| FID Measuring Tool Flowmeter Adapter |  | Each     | 34709348    |
| Retaining Nut (for Column Adapter)   |  | Each     | 35001126    |
| FID Test Mixture                     |  | Each     | 33819020    |

## NPD Detector Module Components

The following NPD detector components can be replaced. See [Figure 9](#) and [Table 16](#).

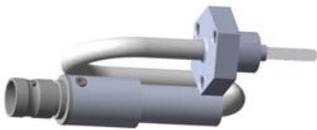
**Figure 9.** Nitrogen Phosphorus Detector Components



**Table 16.** NPD Detector Components (Sheet 1 of 2)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| NPD Thermionic Source TID 2 (Black ceramic) for both Nitrogen and Phosphorous detections.   | Each     | 46500256    |
| <p><b>Note</b> This thermionic source is provided as standards with the NPD detector module.</p>  |          |             |

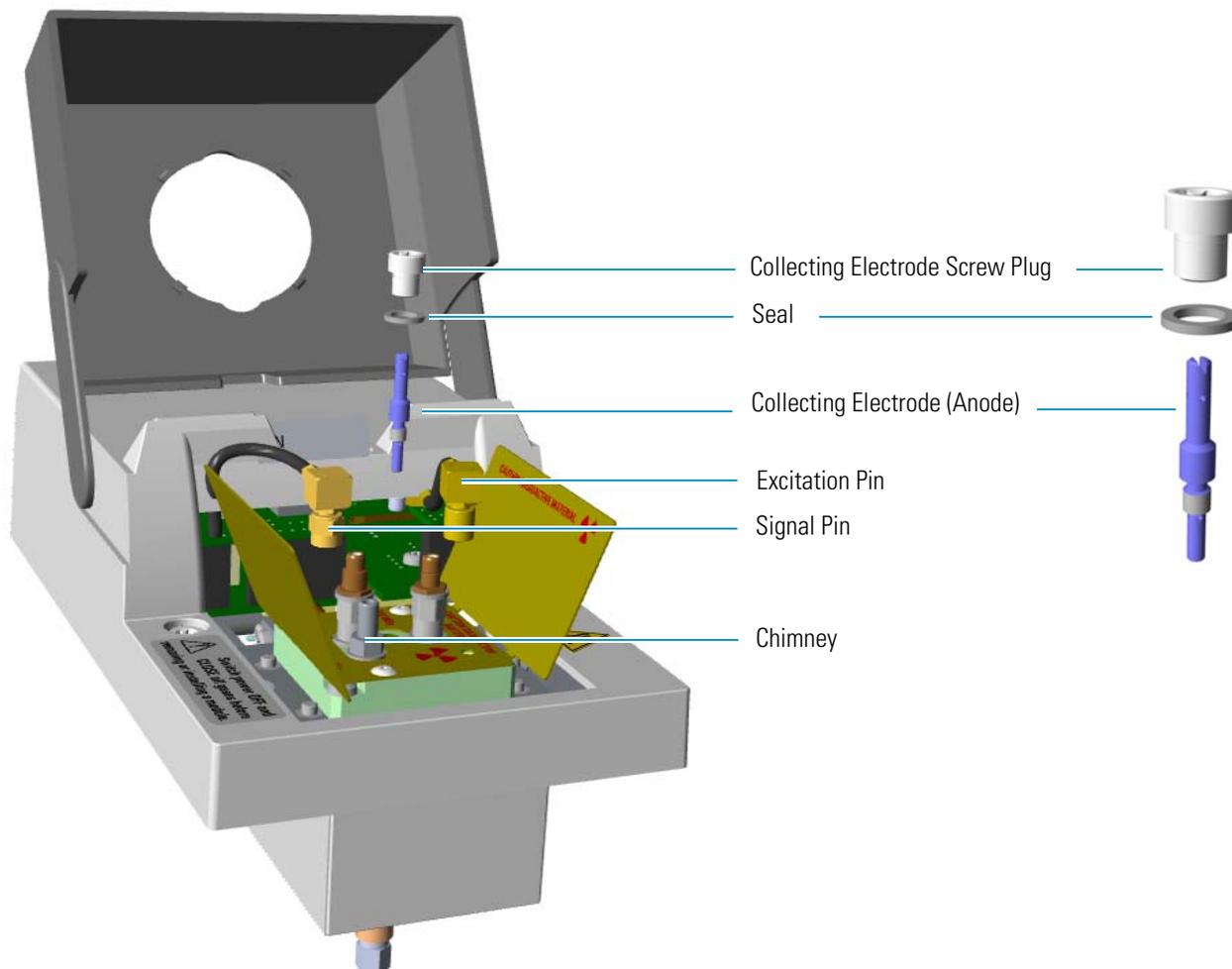
**Table 16.** NPD Detector Components (Sheet 2 of 2)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| NPD Thermionic Source TID 4 (White ceramic) for enhanced Nitrogen response.           | Each     | 46500257    |
|     |          |             |
| NPD Thermionic Source Fixing Screw  | Pkg of 5 | 40921705    |
|    |          |             |
| NPD Collecting Electrode  | Each     | 27701600    |
|    |          |             |
| NPD Collecting Electrode (for BLOS Type Thermionic Source)                            | Each     | 27701605    |
|    |          |             |
| NPD Collecting Electrode Pin  | Each     | 20604305    |
|     |          |             |
| NPD Collecting Insulator (for DET Type Thermionic Source)                             | Each     | 30202405    |
|  |          |             |
| NPD Jet   | Each     | 40404516    |
|  |          |             |
| NPD Measuring Tool Flowmeter Adapter  | Each     | 34709610    |
|   |          |             |
| Retaining Nut (for Column Adapter)  | Each     | 35001126    |
|   |          |             |
| NPD Test Mixture  | Each     | 33819006    |
|  |          |             |

## ECD Detector Module Components

The following ECD detector components can be replaced. See [Figure 10](#) and [Table 17](#).

**Figure 10.** Electron Capture Detector Components



**Table 17.** ECD Detector Components (Sheet 1 of 2)

| Description                            | Quantity | Part Number |
|--|----------|-------------|
| ECD Collecting Electrode (Anode)       | Each     | 21600210    |
| ECD Collecting Electrode (Anode) Screw | Each     | 35006118    |

**Table 17.** ECD Detector Components (Sheet 2 of 2)

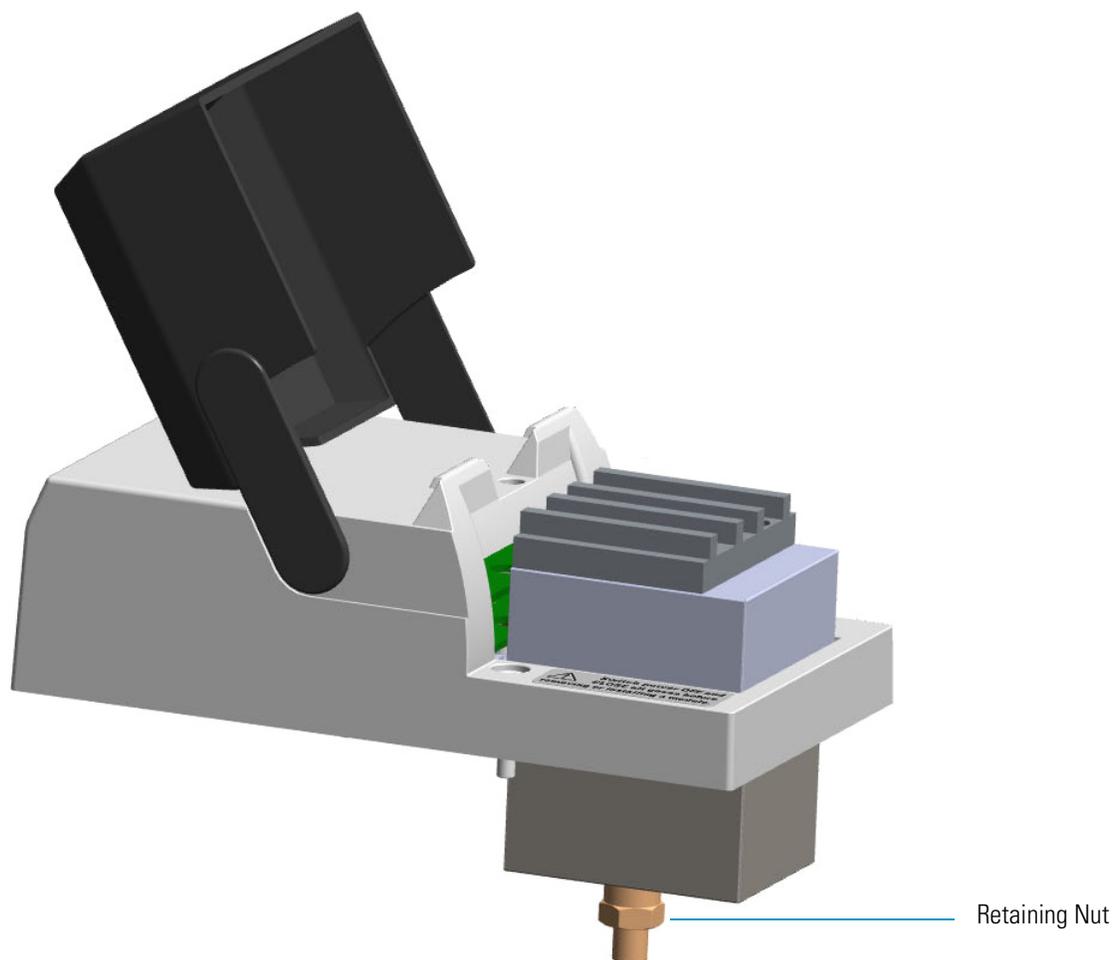
| Description                        | Quantity  | Part Number |
|------------------------------------|-----------|-------------|
| ECD Collecting Electrode Seal      | Pkg of 10 | 29032608    |
| ECD Collecting Electrode Pin       | Each      | 20604305    |
| Retaining Nut (for Column Adapter) | Each      | 35001126    |
| ECD Test Mixture                   | Each      | 33819011    |



## TCD Detector Modules Components

The following TCD detector components can be replaced. See [Figure 11](#) and [Table 18](#).

**Figure 11.** Thermal Conductivity Detector Components



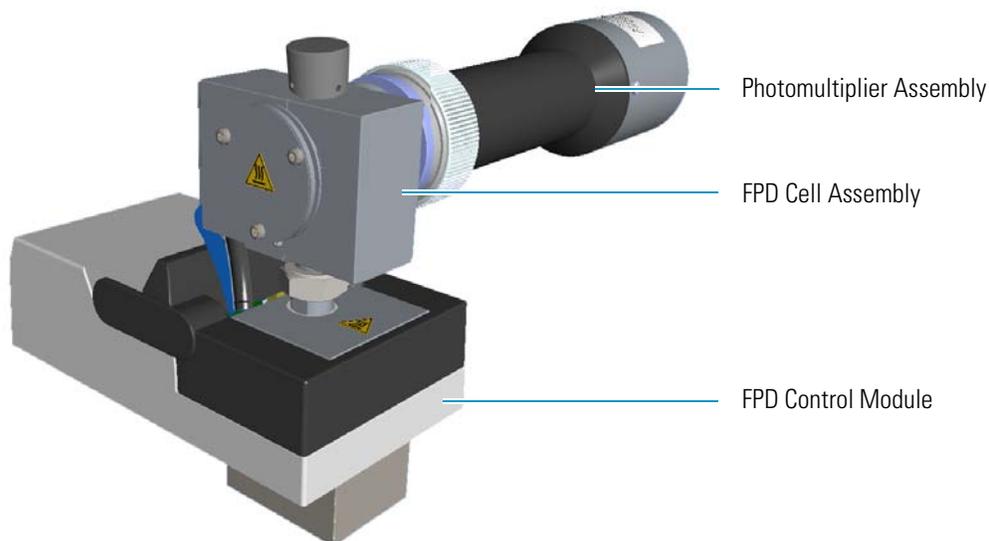
**Table 18.** TCD Detector Components

| Description                        | Quantity | Part Number |
|------------------------------------|----------|-------------|
| Retaining Nut (for Column Adapter) | Each     | 35001126    |
| TCD Test Mixture                   | Each     | 33819016    |

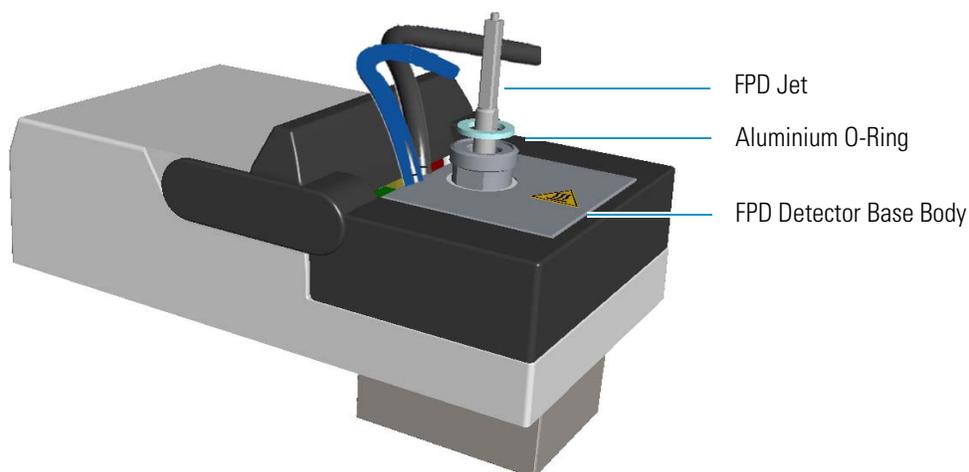
## FPD Detector Module Components

The following FPD detector components can be replaced. See [Figure 12](#), [Figure 13](#), [Figure 14](#), and [Table 19](#).

**Figure 12.** Flame Photometric Detector Module

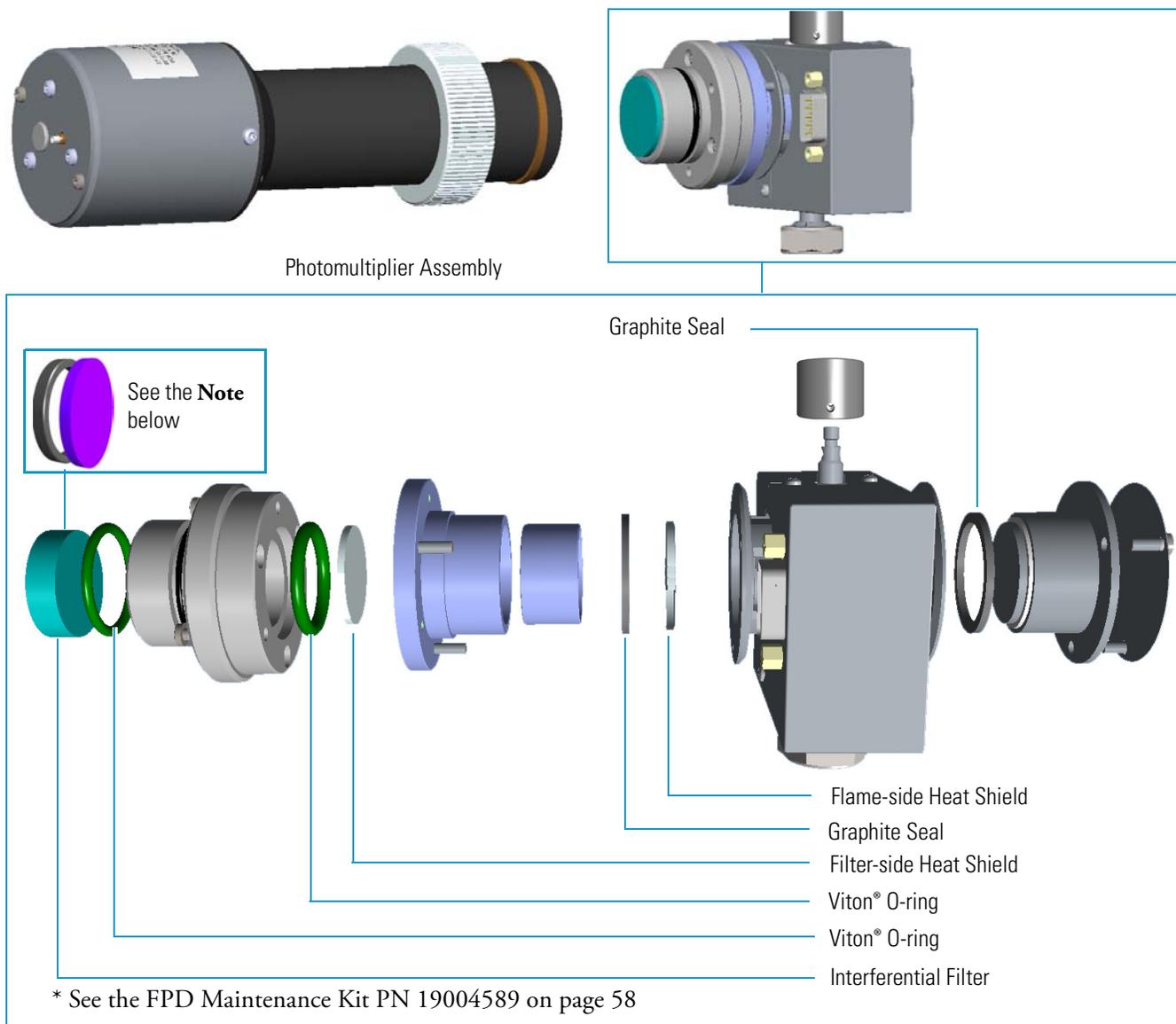


**Figure 13.** FPD Control Module Components



**Note** The signal, excitation voltage, and ignition/heating cables will not be shown in the next illustrations for graphic convenience.

**Figure 14.** FPD Cell Assembly Components



**Note** Instead of the filters PN 28107000 and PN 28107100, a new type of interferential filters for sulphur and phosphorous are available as kit:

- PN 19050785 includes an interferential filter for sulphur (PN 28107101) and a spacer.
- PN 19050786 includes an interferential filter for phosphorous (PN 28107102) and a spacer.



**Table 19.** FPD Detector Components (Sheet 1 of 2)

| Description   | Quantity  | Part Number |
|---|-----------|-------------|
| FPD Detector Assembly   | Each      | 29903110    |
|     |           |             |
| Kit FPD Interferential Filter for Sulphur (28107101 + Spacer)                         | Each      | 19050785    |
|    |           |             |
| Kit FPD Interferential Filter for Phosphorus (28107102 + Spacer)                      | Each      | 19050786    |
|    |           |             |
| FPD Interferential Filter for Sulphur   | Each      | 28107000    |
|    |           |             |
| FPD Interferential Filter for Phosphorus  | Each      | 28107100    |
|    |           |             |
| FPD Interferential Filter for Tin   | Each      | 28107001    |
|    |           |             |
| FPD Jet Deactivated Silcosteel  | Each      | 40404518    |
|   |           |             |
| FPD Aluminium O-ring  | Pkg of 10 | 29032630    |
|   |           |             |
| FPD Photomultiplier Tube  | Each      | 28600460    |
|   |           |             |
| FID/FPD Glow-Plug (Igniter)   | Each      | 40303535    |
|  |           |             |
| Retaining Nut (for Column Adapter)  | Each      | 35001126    |
|   |           |             |
| FPD Measuring Tool Flowmeter Adapter  | Each      | 34709630    |
|   |           |             |
| FPD Detector Fixing Tool (20-22 mm wrench)  | Each      | 20501608    |
|   |           |             |

**Table 19.** FPD Detector Components (Sheet 2 of 2)

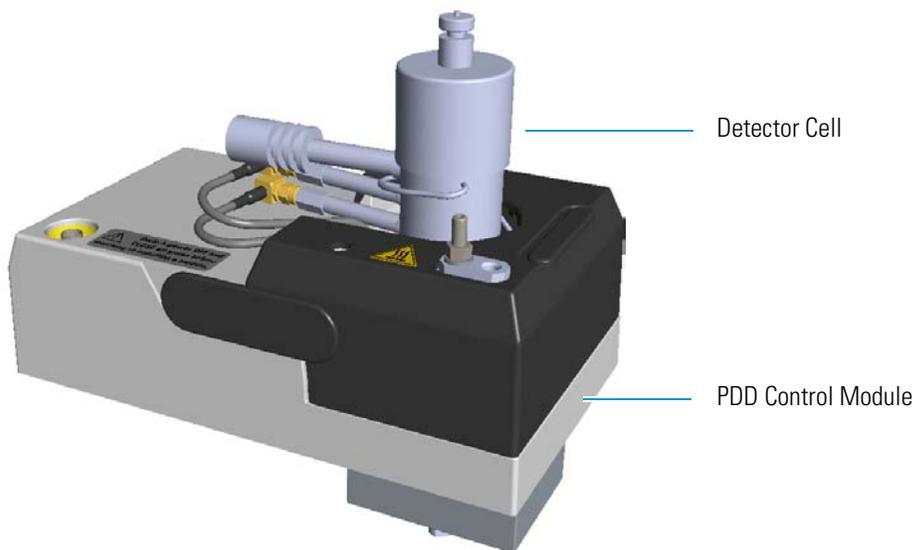
| Description      |   | Quantity | Part Number |
|------------------|---|----------|-------------|
| FPD Test Mixture |  | Each     | 33819006    |

---

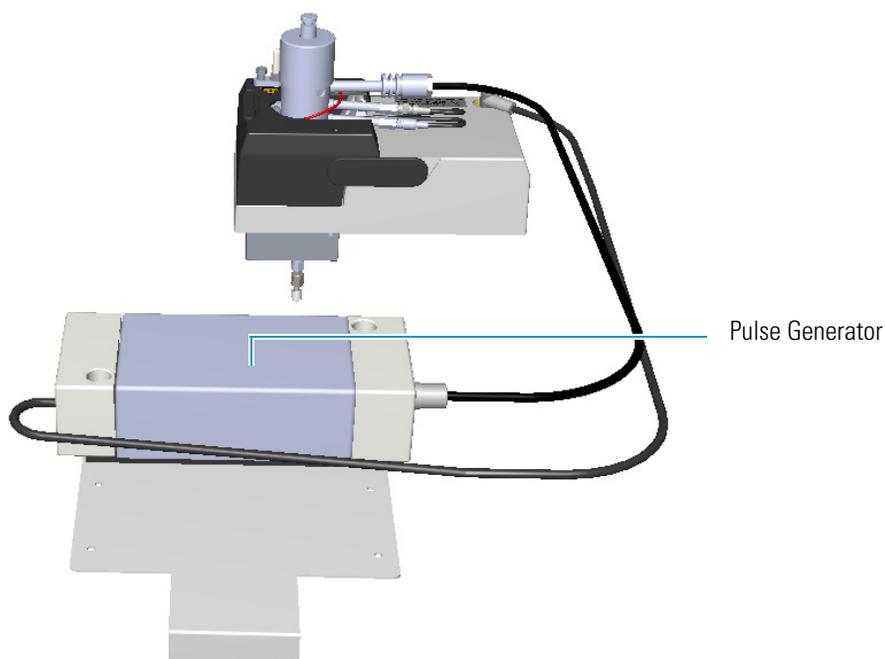
## PDD Detector Module Components

The following PDD detector components can be replaced. See [Figure 15](#), [Figure 16](#), and [Table 20](#).

**Figure 15.** Pulsed Discharge Detector Module



**Figure 16.** PDD Pulse Generator



**Table 20.** PDD Detector Components

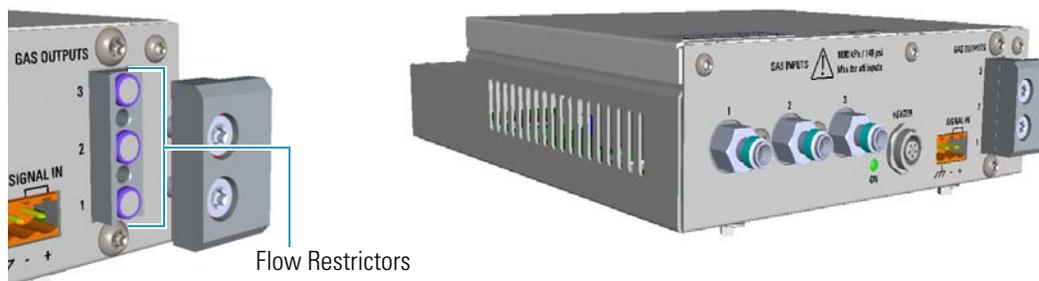
| Description                  | Quantity | Part Number |
|------------------------------|----------|-------------|
| PDD Cell                     | Each     | 41910716    |
| PDD Pulse Generator (Pulser) | Each     | 43210075    |
| PDD Purifier Assy            | Each     | 43210076    |
| PDD Mini Helium Purifier Kit | Each     | 19071500    |
| PDD Flow Restrictor          | Each     | 24505908    |
| PDD Packed Column Adapter    | Each     | 26060521    |
| PDD Test Mixture             | Each     | 33819032    |



## GDI Generic Detector Interface Components

The following GDI Generic Detector Interface components present into the GDI electrical interface can be replaced. See [Figure 17](#), and [Table 21](#).

**Figure 17.** GDI Electrical Interface



**Table 21.** GDI Generic Detector Interface Components

| Description            |   | Quantity | Part Number |
|------------------------|---|----------|-------------|
| Low Flow Restrictor    |    | Each     | 24503330    |
| Medium Flow Restrictor |   | Each     | 24503333    |
| High Flow Restrictor   |  | Each     | 24503334    |

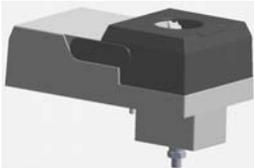
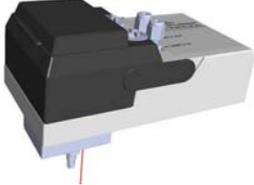
## Upgrade Modules

The following upgrade modules are available for the TRACE 1300/TRACE 1310.  
See [Table 22](#).

Contact your local Sales/Service Representative to place an order. Once you receive the module, refer to the *TRACE 1300 and TRACE 1310 Hardware Manual* for installation information or Table1 for a comprehensive list of available components.

**Note** The images are not in scale.

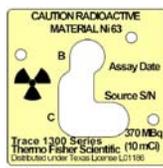
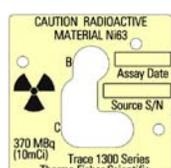
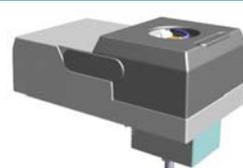
**Table 22.** Module (Sheet 1 of 4)

| Description               |  | Quantity | Part Number |
|---------------------------|--|----------|-------------|
| Dummy Module              |    | Each     | 19070097    |
| SSL Injector Module       |   | Each     | 19070010    |
| SSLBKF Injector Module    |  | Each     | 19070011    |
| Gas Sampling Valve Module |  | Each     | 19070095    |
| Helium Saver S/SL Module  |  | Each     | 19070013    |

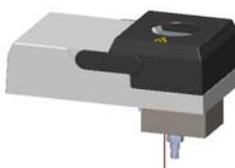
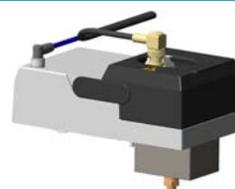
**1 Ordering Spare Part**  
Upgrade Modules

**Table 22.** Module (Sheet 2 of 4)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| PTV Injector Module                                   | Each     | 19070020    |
| PTVBKF Injector Module                                | Each     | 19070021    |
| FID Detector Module                                   | Each     | 19070001    |
| ECD Detector Module for China Market                  | Each     | 19070029    |
| ECD Detector Module for International Market          | Each     | 19070030    |
| ECD Detector Module for USA Market (General License)  | Each     | 19070031    |
| ECD Detector Module for USA Market (Specific License) | Each     | 19070032    |



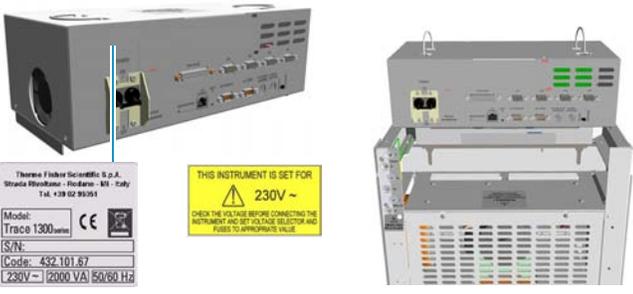
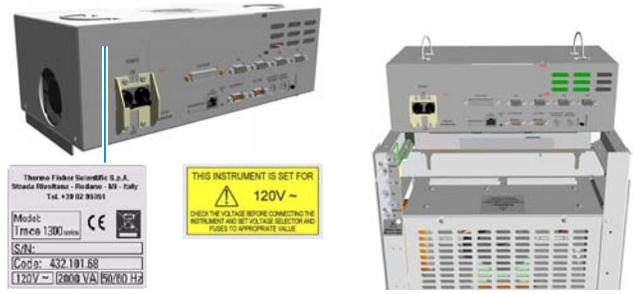
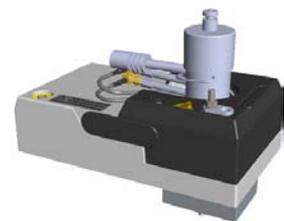
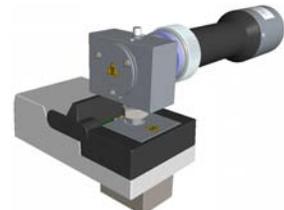
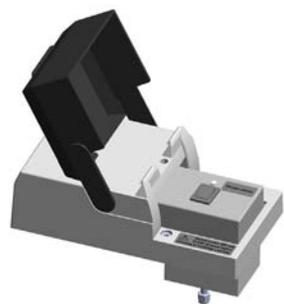
**Table 22.** Module (Sheet 3 of 4)

| Description  | Quantity   | Part Number |  |
|--|--|-------------|--|
| ECD Detector Module for Canada Market  |  | 19070033    |  |
|     |  |             |  |
| TCD Detector Module with Nickel-Iron (Ni-Fe) filament cell                           | Each   | 19070040    |  |
|    |  |             |  |
| TCD Detector Module with Tungsten-Rhenium (W-Re) filament cell                       | Each   | 19070041    |  |
|    |  |             |  |
| In-Series Connection TCD Detector Module   | Each   | 19070045    |  |
|   |  |             |  |
| FTIR Make-up Module  | Each   | 19070050    |  |
|  |  |             |  |
| NPD Detector Module  | Each   | 19070060    |  |
|  |  |             |  |

**1 Ordering Spare Part**  
Upgrade Modules

**Table 22.** Module (Sheet 4 of 4)

| Description                        | Quantity | Part Number |
|------------------------------------|----------|-------------|
| No Vent Microfluidics Module       | Each     | 19070090    |
| FPD Detector Module                | Each     | 19070096    |
| PDD Detector Module                | Each     | 19070014    |
| AOI Analog Output Interface Module | Each     | 19070022    |
| Electronic Module 120 Vac          | Each     | 43210168    |
| Electronic Module 230 Vac          | Each     | 43210167    |



## Electronic Module Boards

You can purchase the following boards for the electronic module of the TRACE 1300/TRACE 1310 gas chromatograph. See [Table 23](#).

Be sure to reference the component's part number when placing an order with your local Sales/Service Representative.

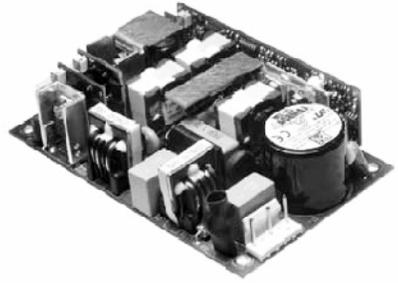
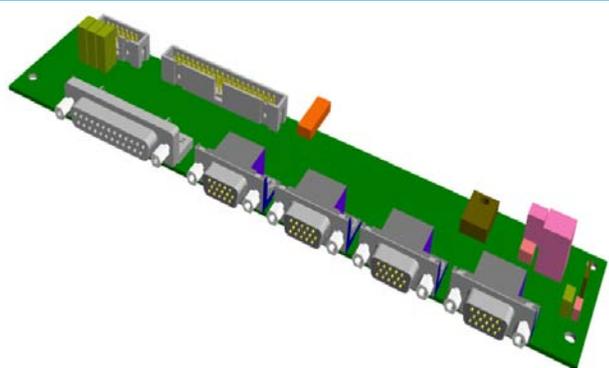
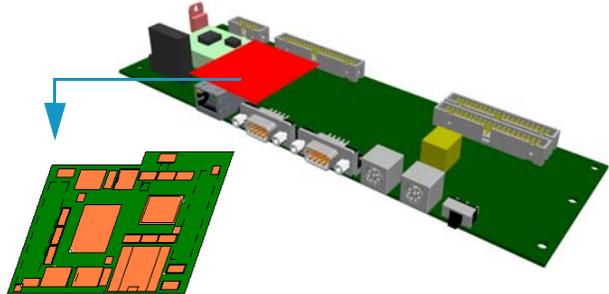
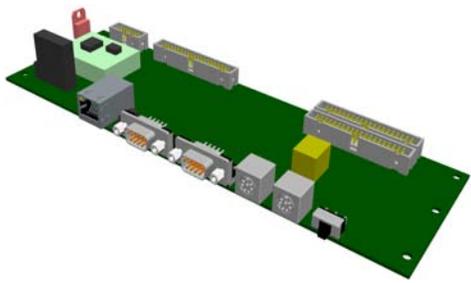
**Note** The images are not in scale.

**Table 23.** Electronic Board (Sheet 1 of 2)

| Description   | Quantity | Part Number |
|---|----------|-------------|
| Rear Backplane Board (BKP-HRM; PC1256)                      | Each     | 23661000    |
| Oven CPU and Power Control Board (OVN-HRM; 230 V; PC1257)   | Each     | 23661010    |
| Oven CPU and Power Control Board (OVN-HRM; 120V; PC1257-01) | Each     | 23661011    |

**Table 23.** Electronic Board (Sheet 2 of 2)

| Description                                | Quantity | Part Number |
|--|----------|-------------|
| Main CPU Board (CPU-HRM; PC1258)           | Each     | 23661015    |
| Memory Board (MEM-HRM; PC1259)             | Each     | 23661020    |
| External Interface Board (EXT-HRM; PC1263) | Each     | 23661025    |
| Power Supply Board                         | Each     | 20806090    |



## External Modules

The following external modules are available for the TRACE 1300/TRACE 1310.  
See [Table 24](#).

Contact your local Sales/Service Representative to place an order. Once you receive the module, refer to the *TRACE 1300 and TRACE 1310 Hardware Manual* for installation information.

**Note** The images are not in scale.

**Table 24.** External Module

| Description                        | Quantity | Part Number |
|------------------------------------|----------|-------------|
| Aux Temperature/Cryo Module        | Each     | 19070070    |
| Auxiliary Gases Module             | Each     | 19070080    |
| NPD Thermionic Source Power Module | Each     | 43215010    |



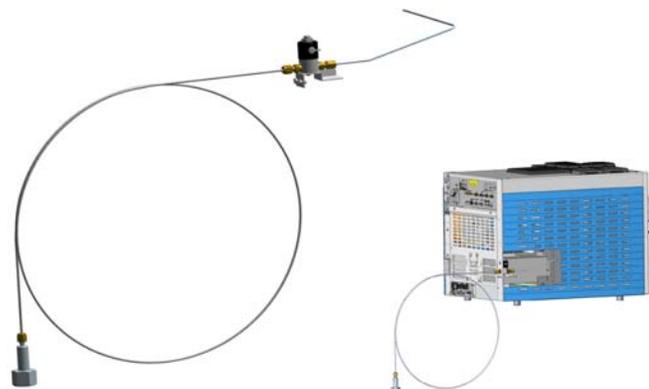
## Cryo Components

The following cryogenic components are available for the TRACE 1300/TRACE 1310. See [Table 25](#).

Contact your local Sales/Service Representative to place an order. Once you receive the module, refer to the *TRACE 1300 and TRACE 1310 Hardware Manual* for installation information.

**Note** The images are not in scale.

**Table 25.** Cryo Components

| Description   | Quantity | Part Number |
|---|----------|-------------|
| Oven Cryo CO <sub>2</sub> Assemble<br> | Each     | 19050753    |
| Oven Cryo N <sub>2</sub> Assemble<br> | Each     | 19050752    |
| PTV Cryo CO <sub>2</sub> Assemble<br> | Each     | 19050755    |

**Table 25.** Cryo Components

| Description          | Quantity | Part Number |
|----------------------|----------|-------------|
| PTV Cryo N2 Assemble | Each     | 19050754    |



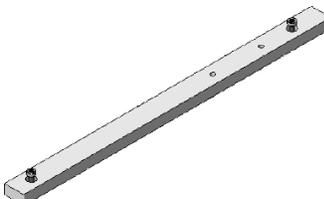
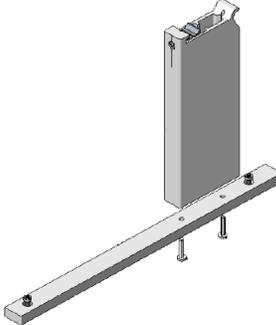
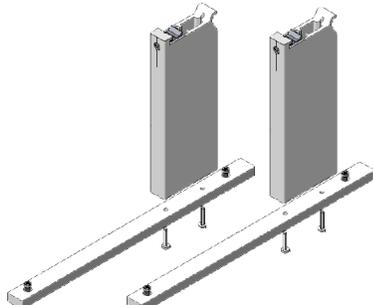
# Kits & Miscellanea

The following kits, cables, and miscellanea are available for the TRACE 1300/TRACE 1310. See [Figure 9](#) and [Table 16](#).

Contact your local Sales/Service Representative to place an order. Once you receive the kit, refer to the *TRACE 1300 and TRACE 1310 Hardware Manual* for installation information.

**Note** The images are not in scale.

**Table 26.** Kits and Miscellanea

| Description   | Quantity | Part Number  |
|---|----------|--------------|
| TriPlus Leg Support for TRACE 1300/1310<br>   | Pkg of 2 | 19050489     |
| TriPlus RSH Mounting Leg<br>   | Pkg of 1 | 1R77010-1066 |
| TriPlus RSH Mounting Kit<br>  | Pkg of 2 | 1R77010-1005 |
| Merlin Valve Kit<br>The Kit includes:<br>Merlin Microseal High Pressure Valve<br>Septum Cap<br> | Each     | 19050735     |

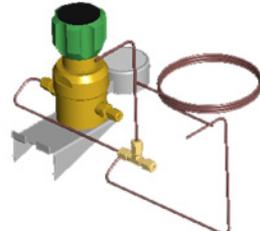
**Table 26.** Kits and Miscellanea

| Description                                     | Quantity   | Part Number |
|---|--|-------------|
| Clamp Bracket for Backflush Kit                 | Each   | 19050757    |
|   |  |             |
| Packed Column Adapters Kit                      | Each   | 19050758    |
| The Kit includes:                               |  |             |
|   | Adapter for the connection of the 1/8-inch OD packed column to the SSL injector.                         |             |
|   | Adapter for the connection of the 1/16-inch OD packed column to the SSL injector.                        |             |
|   | Adapter for the connection of the 1/8-inch OD packed column to the FID, NPD, ECD, TCD, or FPD detector.  |             |
|   | Adapter for the connection of the 1/16-inch OD packed column to the FID, NPD, ECD, TCD, or FPD detector. |             |
|   | 1/2-inch wrench  |             |
| Graph-pack (Encapsulated Graphite) Ferrules Kit | Each   | 19050759    |
| The Kit includes:                               |  |             |
|   | Adapter for the connection to the SSL injector   |             |
|   | Adapter for the connection to the FID, NPD, ECD, TCD, or FPD detector                                    |             |
|   | 1/2-inch wrench  |             |
| Oven Exhaust Kit                                | Each   | 19050760    |
|   |  |             |
| Tee Connector for Holder Kit                    | Each   | 19050251    |
|   |  |             |
| Tee Connector Kit for High Temperature          | Each   | 19050254    |
|   |  |             |

## 1 Ordering Spare Part

Kits & Miscellaneous

**Table 26.** Kits and Miscellaneous

| Description   | Quantity   | Part Number      |
|---|--|------------------|
| Packed Column Adapters Kit for Gas Sampling Valve                                     | Each   | 19050762         |
| The Kit includes:   |  |                  |
|      | Adapter for the connection of the 1/8-inch OD packed column to the GSV injector.   |                  |
|      | Adapter for the connection of the 1/16-inch OD packed column to the GSV injector.  |                  |
|      | Adapter for the connection of the 1/8-inch OD packed column to the FID, NPD, ECD, TCD, or FPD detector.  |                  |
|      | Adapter for the connection of the 1/16-inch OD packed column to the FID, NPD, ECD, TCD, or FPD detector.   |                  |
|      | 1/2-inch wrench  |                  |
|      | Open ended wrench 1/4-5/16-inch  |                  |
| Pressure Regulator Kit for Gas Sampling Valve   | Each   | 19050763         |
|    |  |                  |
| Kit Backflush for Gas Sampling Valve  | Each   | 19050764         |
|   |  |                  |
| Manual Injection Kit for Gas Sampling Valve   | Each   | 19050784         |
|  |  |                  |
| SSL/SSLBKF/HeS-S/SL Maintenance Kit   | <div style="border: 1px solid black; padding: 5px;"> <p>The Kit includes:</p> <p>19050771 SSL O-Ring Kit</p> <p>28113197 Split Line Filter</p> <p>290GA082 Base Seal</p> <p>31303246 Septum BTO with Center Guide (Pkg of 5)</p> <p>453A1925 SSL Splitless Liner (Pkg of 1)</p> </div> | Each<br>19050770 |

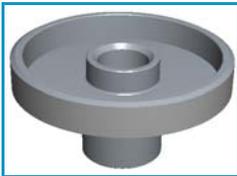
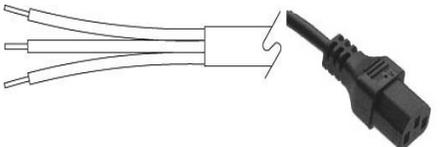
**Table 26.** Kits and Miscellaneous

| Description                                      |   | Quantity | Part Number |
|--|---|----------|-------------|
| SSL/SSLBKF/HeS-S/SL O-Ring Kit                   | The Kit includes:<br>29001312 Liner Seal<br>29001313 Body Head Internal O-ring<br>29001316 Body Head External O-ring<br>29011310 Manifold O-rings (Pkg of 3)  | Each     | 19050771    |
| FID Igniter Kit                                  | The Kit includes:<br>40303535 FID/FPD Glow-Plug (Igniter)<br>20601604 FID Collecting Electrode Pin<br>24705245 FID Cell Top Cover Assemble  | Each     | 19050775    |
| FID Maintenance Kit                              | The Kit includes:<br>40402200 FID Ceramic Flame Jet<br>29004612 FID Insulator Ring (Top)<br>30202400 FID Collector Insulator (Bottom)   | Each     | 19050776    |
| NPD Maintenance Kit                              | The Kit includes:<br>40404516 NPD Jet<br>30202405 NPD Collector Insulator<br>27701600 NPD Collecting Electrode  | Each     | 19050777    |
| ECD Collecting Electrode (Anode) Replacement Kit | The Kit includes:<br>29002608 ECD Collecting Electrode (Anode) Seal (Pkg of 1)<br>21600210 ECD Collecting Electrode (Anode)   | Each     | 19050779    |
| FPD Maintenance Kit                              | The Kit includes:<br>29003414 Graphite Seal (Pkg of 2)<br>45101750 Heat Shield (Pkg of 1)<br>29000050 Viton O-ring<br>29000381 Viton O-ring   | Each     | 19004589    |
| PTV/PTVBKF Maintenance Kit                       | The Kit includes:<br>31303246 Septum BTO with Center Guide (Pkg of 5)<br>45302044 Splitless, Silcosteel Deactivated, 2 mm ID (Pkg of 1)<br>29001318 Liner Seal<br>28113197 Split Line Filter<br>29011310 Head O-Ring (Pkg of 3) | Each     | 19050780    |

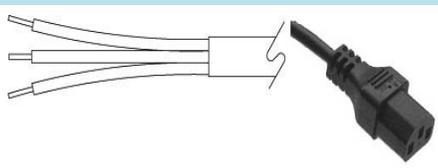
## 1 Ordering Spare Part

Kits & Miscellanea

**Table 26.** Kits and Miscellanea

| Description                                      |   | Quantity | Part Number |
|--|---|----------|-------------|
| Dual Detector Microfluidics Kit                  | <p>The Kit includes:</p> <ul style="list-style-type: none"> <li>19098026 Microfluidics Kit</li> <li>19050757 Clamp Bracket for Backflush Kit</li> <li>31608055 Clamp Assembly</li> </ul>  | Each     | 19071030    |
| SSL/SSLBKF Hot Injection Adapter                 |   | Each     | 19050733    |
| Generic Detector Interface Kit                   | <p>The Kit includes:</p> <ul style="list-style-type: none"> <li>29903130 GDI Detector Module</li> <li>29903131 GDI Control Module</li> </ul>  | Each     | 19070015    |
| Purge & Trap Adapter Kit                         |   | Each     | 19050730    |
| SSL Adapter Head for PerkinElmer TurboMatrix™ HS |   | Each     | 34709361    |
| Packed Columns Support Kit                       |   | Each     | 19070124    |
| Power Cable 16 A, 230 V                          |   | Each     | 23033025    |

**Table 26.** Kits and Miscellanea

| Description                        |   | Quantity | Part Number |
|------------------------------------|---|----------|-------------|
| Power Cable 20A, 120 V             |     | Each     | 23033030    |
| LAN Communication Pin-to pin Cable |     | Each     | 23043592    |
| LAN Communication Cross Cable      |     | Each     | 23043593    |
| EV Helium Saver Connection Cable   |     | Each     | 23043731    |
| MS Start Cable                     |    | Each     | 23043546    |
| Screw TORX M3 x 6 mm               |  | Pkg of 5 | 40921705    |
| Screw TORX M3 x 8 mm               |  | Each     | 40901608    |
| Screw TORX M3 x 12 mm              |   | Each     | 40901609    |
| Screw TORX M4 x 6 mm               |  | Pkg of 5 | 40921800    |
| Screw TORX M4 x 8 mm               |  | Pkg of 5 | 40921700    |
| Screw Plastic 4 x 10 mm            |   | Pkg of 5 | 40939002    |

# Tools

The TRACE 1300/TRACE 1310 ships with the tools you will need to perform maintenance on the instrument. See [Table 27](#).

Contact your local Sales/Service Representative to place an order.

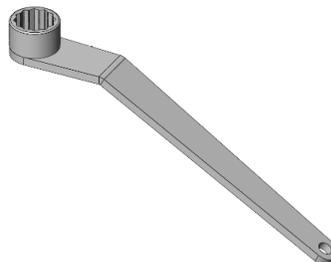
**Note** The images are not in scale.

**Table 27.** Tools

| Description                              |  | Quantity | Part Number |
|--|--|----------|-------------|
| Ceramic Column Cutter                    |    | Each     | 60201-318   |
| Flat Head Screwdriver for PTV and PTVBKF |    | Each     | 20502605    |
| Tweezers                                 |   | Each     | 2050510     |
| T6 Torxhead Screwdriver                  |  | Each     | 20502620    |
| T10 Torxhead Screwdriver                 |  | Each     | 20502622    |
| T20 Torxhead Screwdriver                 |  | Each     | 20502621    |
| Wrench, Single Open-Ended, 5-mm          |  | Each     | 20501621    |
| Wrench, Single Open-Ended, 6-mm          |  | Each     | 20501622    |
| Wrench, Open-Ended, 1/4-5/16-in.         |  | Each     | 20501623    |
| Wrench, Elbowed Box, 8-mm                |  | Each     | 20501630    |
| Wrench, Single Open-Ended, 7/16-in       |  | Each     | 20503015    |

**Table 27.** Tools

| Description                        | Quantity | Part Number |
|------------------------------------|----------|-------------|
| Wrench, Single Open-Ended, 1/2-in. | Each     | 20503022    |



## **1 Ordering Spare Part**

Tools