ISQ

Spare Parts Guide

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Part of Thermo Fisher 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,
- recalibration, and
- 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.

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 as described in the next section or sections by product name.

Changes that you make to your system may void compliance with one or more of these EMC and safety standards. Changes to your system include replacing a part or adding components, options, or peripherals not specifically authorized and qualified by Thermo Fisher Scientific. To ensure continued compliance with EMC and safety standards, replacement parts and additional components, options, and peripherals must be ordered from Thermo Fisher Scientific or one of its authorized representatives.

EMC Directive 89/336/EEC

EMC compliance has been evaluated by Professional Testing.

- ITQ and Ion Trap Series standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001, IEC 61010-2-081:2001
- Direct Probe Controller (DPC) standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001, IEC 61010-2-081:2001
- ISQ standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001, IEC 61010-2-081:2001
- TSQ 8000 standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001, IEC 61010-2-081:2001

Low Voltage Safety Compliance

This device complies with Low Voltage Directive 2006/95/EC and harmonized standard EN 61010-1:2001.

FCC Compliance Statement

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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 UNDESIRED 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 it.

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

Your instrument is designed to work in a controlled electromagnetic environment. Do not use radio frequency transmitters, such as mobile phones, in close proximity to the instrument.

For manufacturing location, see the label on the instrument.

WEEE Compliance

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the following symbol:

Thermo Fisher Scientific has contracted with one or more recycling or disposal companies in each European Union (EU) Member State, and these companies should dispose of or recycle this product. See www.thermoscientific.com/rohsweee for further information on Thermo Fisher Scientific's compliance with these Directives and the recyclers in your country.

WEEE Konformität

Dieses Produkt muss die EU Waste Electrical & Electronic Equipment (WEEE) Richtlinie 2002/96/EC erfüllen. Das Produkt ist durch folgendes Symbol gekennzeichnet:

Thermo Fisher Scientific hat Vereinbarungen mit Verwertungs-/Entsorgungsfirmen in allen EU-Mitgliedsstaaten getroffen, damit dieses Produkt durch diese Firmen wiederverwertet oder entsorgt werden kann. Mehr Information über die Einhaltung dieser Anweisungen durch Thermo Fisher Scientific, über die Verwerter, und weitere Hinweise, die nützlich sind, um die Produkte zu identifizieren, die unter diese RoHS Anweisung fallen, finden sie unter www.thermoscientific.com/rohsweee.

Conformité DEEE

Ce produit doit être conforme à la directive européenne (2002/96/EC) des Déchets d'Equipements Electriques et Electroniques (DEEE). Il est marqué par le symbole suivant:

Thermo Fisher Scientific s'est associé avec une ou plusieurs compagnies de recyclage dans chaque état membre de l'union européenne et ce produit devrait être collecté ou recyclé par celles-ci. Davantage d'informations sur la conformité de Thermo Fisher Scientific à ces directives, les recycleurs dans votre pays et les informations sur les produits Thermo Fisher Scientific qui peuvent aider la détection des substances sujettes à la directive RoHS sont disponibles sur www.thermoscientific.com/rohsweee.

Preface

This guide contains information about ordering spare parts for the Thermo Scientific ISQ™ single quadrupole mass spectrometer.

Contents

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About Your System

Gas chromatography/mass spectrometry (GC/MS) represents a combination of two powerful analytical techniques: GC, which acts as a separation technique, and MS, which acts as a detection technique. Complex mixtures of individual compounds can be injected into the GC, either manually or by an autosampler and then separated for presentation to the MS. The MS will generate a mass spectrum of the GC eluate and its components. The mass spectrum can then be used for qualitative identification as well as accurate and precise quantification of the individual compounds present in the sample.

WARNING Thermo Fisher Scientific systems operate safely and reliably under carefully controlled environmental conditions. If the equipment is used in manner not specified by the manufacturer, the protections provided by the equipment may be impaired. If you maintain a system outside the specifications listed in this guide, failures of many types, including personal injury or death, may 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.

Related Documentation

Thermo Fisher Scientific provides the following documents for the ISQ mass spectrometer:

ISQ Document Set, PN 1R120555

- *ISQ Preinstallation Requirements Guide*, PN 1R120555-0001
- *ISQ Hardware Manual*, PN 1R120555-0002
- *ISQ User Guide*, PN 1R120555-0003
- *ISQ Spare Parts Guide*, PN 1R120555-0004
- *ISQ and TSQ 8000 Direct Probe System User Guide* PN 1R120505-0006

Instrument Help is available from within the *ISQ Autotune* and *Method Editor* software.

System Requirements

Your ISQ data system must meet these minimum requirements.

System	Requirements
Hardware	• 2.4 GHz processor with 4 GB RAM • DVD/CD-ROM drive • Resolution display 1280 × 1024 (XGA) • 250 GB hard drive • NTFS format
Software	• Microsoft™ Windows™ 7 SP1 Operating System (32-bit or 64-bit) or Microsoft Windows XP™ SP3 • Microsoft Office™ 2003 or 2010 (32-bit only) • Thermo Foundation 2.0 SP1 (Thermo Scientific software) • Xcalibur™ 2.2 SP1 • TraceFinder™ 2.1

*Your system will function without TraceFinder, but earlier versions of TraceFinder will not work with the Thermo Scientific software required for this instrument.

Safety and Special Notices

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

Special Notices

Special notices include 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 Highlights information of general interest.

Tip Highlights 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. A **WARNING** is intended to prevent improper actions that *could* cause personal injury. A **CAUTION** is intended to prevent improper actions that *might* cause personal injury or instrument damage. You can find the following safety symbols on your instrument or in this guide.

Symbol	Descriptor
	**BIOHAZARD:** Indicates that a biohazard *will*, *could*, or *might* occur.
	**BURN HAZARD:** Alerts you to the presence of a hot surface that *could* or *might* cause burn injuries.
	**ELECTRICAL SHOCK HAZARD:** Indicates that an electrical shock *could* or *might* occur.
	**FIRE HAZARD:** Indicates a risk of fire or flammability *could* or *might* occur.
	**FLAMMABLE GAS HAZARD:** 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 *could* or *might* cause physical injury.

Symbol	Descriptor
	**GLOVES REQUIRED:** Indicates that you must wear gloves when performing a task or physical injury *could* or *might* occur.
	**HAND AND CHEMICAL HAZARD:** Indicates that chemical damage or physical injury *could* or *might* occur.
	**INSTRUMENT DAMAGE:** Indicates that damage to the instrument or component *might* occur. This damage might not be covered under the standard warranty.
	**LIFTING HAZARD:** Indicates that a physical injury *could* or *might* occur if two or more people do not lift an object.
	**MATERIAL AND EYE HAZARD:** Indicates that eye damage *could* or *might* occur.
	**RADIOACTIVE HAZARD:** Indicates that exposure to radioactive material *could* or *might* occur.
	**READ MANUAL:** 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 *could* or *might* put you at risk for a physical injury.
	**TOXIC SUBSTANCES HAZARD:** Indicates that exposure to a toxic substance could occur and that exposure *could* or *might* cause personal injury or death.
	For the prevention of personal injury, this general warning symbol precedes the **WARNING** 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 *could cause personal injury.*

Hydrogen Safety Precautions

Hydrogen is a colorless, odorless, highly flammable gas with the molecular formula H_2. Hydrogen gas presents a hazard as it is combustible over a wide range of concentrations: at ambient temperature and pressure, this ranges from about 4% to 74.2% by volume.

Hydrogen has a flash point of - 423 °F (- 253 °C) and an auto-ignition temperature of 1,040 °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 - FIRE 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, you should conduct a risk assessment based on the quantity of hydrogen to be used and the conditions of your laboratory. You should ask yourself:

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

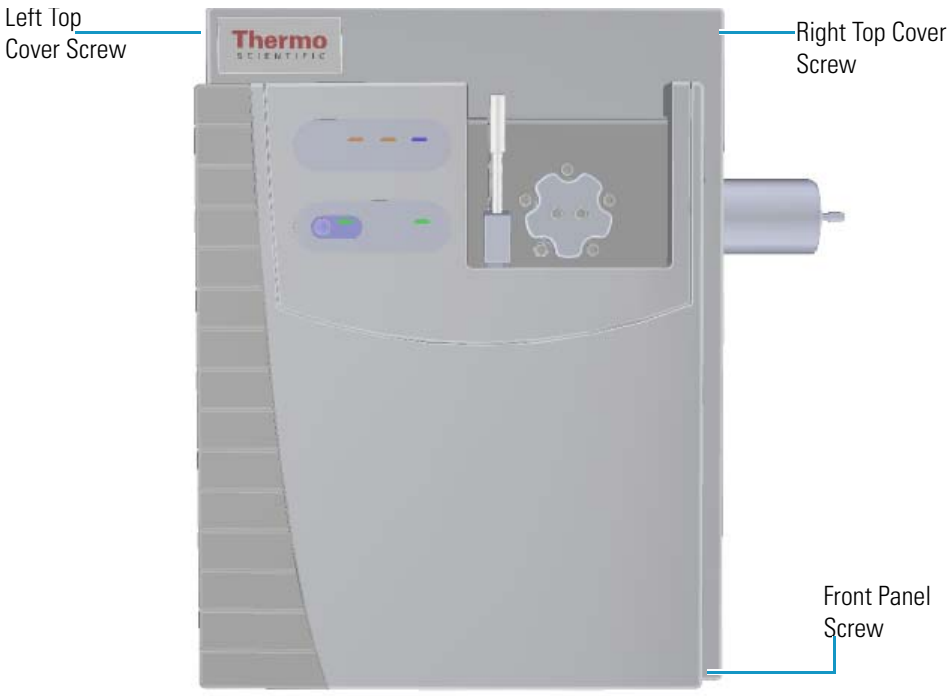
"What hydrogen hazards associated with this project have the potential to result in the worst consequences?"

- Try to reduce or eliminate the higher risks by using the proper ventilation to remove hydrogen gas before an ignitable concentration can accumulate. You should also consider purging the hydrogen to further reduce hazards and ensure anyone who will be working with hydrogen has basic hydrogen safety training.
- As with laboratory safety in general, be sure to wear safety glasses, laboratory coats, gloves, etc. 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, insulated gloves and protective shoes should be worn in addition to eye protection.
- You should post "No Smoking" and "No Open Flames" signs to identify hydrogen sources and cylinders. Maintain, inspect and leak-test all hydrogen sources regularly.
- All hydrogen shutoff valves should be clearly marked and permanent hydrogen piping should be labeled as such at the supply or discharge point and at regular intervals along its length. Where hydrogen gas piping passes through a wall, the piping should be labeled on both sides of the wall.
- There should also be contingency plans in place should an incident occur.
- The site emergency response team, as well as the local fire department, should know the location of all hydrogen storage tanks.

Using Hydrogen with ISQ

To use hydrogen with the ISQ instrument, you must always shut off the GC carrier gas before venting or turning off the ISQ instrument. There are three hydrogen safety screws on the ISQ instrument that **must** be in place. These are attached to your instrument at the factory.

Figure 1. Hydrogen Safety Screws on the ISQ Instrument



Make sure all the covers and panels of the ISQ instrument are firmly attached before powering on the ISQ instrument. If you vented the system, make sure the vent valve is tightly closed before powering on the system. Make sure all fittings, ferrules, and o-rings are sealed prior to powering on the system.

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). Brazed 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 uninterruptible 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 GC/MS.

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

  To prevent the possibility of releasing hydrogen, the hydrogen generator should be set 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.

  The oxygen exhausted by the electrolyzer should be vented 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. However, compressed hydrogen gas cylinders, like all compressed gas cylinders, must be secured in an upright position, ideally with a non-combustible chain or cable. If the cylinder falls over, the valve can be knocked off and the pressurized cylinder can take off like a rocket, which leads 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 is 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 may 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
- 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), please read the hazard indications and information reported in the applicable Material Safety Data Sheet (MSDS). Use personal protective equipment according to the safety requirements.

Biological Hazard Warning Note

In laboratories where samples with potential biological hazards are handled, the user must label any equipment or parts which might become contaminated with biohazardous material.

The appropriate warning labels are included with the shipment of the instrument. It is the user's responsibility to label the relevant parts of the equipment.

When working with biohazardous materials, you are responsible for fulfilling the following mandatory requirements:

- Providing instructions on how to safely handle biohazardous material.
- Training operators to be aware of potential hazards.

- Providing personal protective equipment.
- Providing instructions for what to do if operators are exposed to aerosols or vapors during normal operation (within the intended use of the equipment) or in case of single fault situations such as a broken vial. The protective measures must consider potential contact with the skin, mouth, nose (respiratory organs), and eyes.
- Providing instructions for decontamination and safe disposal of relevant parts.

WARNING The user or operator is responsible for the safe handling of hazardous chemicals or biological compounds including (but not limited to) bacterial or viral samples and the associated waste, according to international and local regulations.

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 split and purge flow vents; therefore, be sure to vent the exhaust gases to a fume hood. Consult local environmental and safety regulations for instructions in exhausting fumes from your system.

Contacting Us

There are several ways to contact Thermo Fisher Scientific for the information you need.

❖ **To find out more about our products**

Go to www.thermo.com/ms for information about our products.

❖ **To get local contact information for sales or service**

Go to www.thermoscientific.com/wps/portal/ts/contactus.

❖ **To suggest changes to documentation or to Help**

- Fill out a reader survey online at www.surveymonkey.com/s/PQM6P62.
- Send an e-mail message to the Technical Publications Editor at techpubs-austin@thermofisher.com.

Ordering Spare Parts

This chapter contains illustrations and part numbers for all of the replaceable components in the ISQ mass spectrometer. Refer to the *ISQ Hardware Manual* for information about installing these components in your instrument. Throughout the ISQ system's documentation, any component with a part number can be ordered from us. Components without a part number are not available.

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- Pump Components
- ISQ Tools
- Upgrade Equipment

Identifying A Part

To identify a part, you need to know where it was located in the ISQ or the part's relationship to a particular functionality of the ISQ. 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 calibration gas, look in the Calibration Gas Components 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 1. Parts That Can Be Reordered

Component	Thermo Scientific Part Number	Category
Single Level Calibration Gas Module	1R119246-0004	Calibration Gas Components
Dual Level Calibration Gas Module	1R119246-0003	
Calibrant Reservoir Kit	1R120433-0001	
Transfer Line	1R120402-0001	
O-ring for Transfer Line	1R3814-223	
Screws for Transfer Line	1R76913-0410	
Gas Mixing Chamber	1R120404-1201	
Calibration Gas Line	1R120438-0100	
Vacuum Hose (Order 10 ft)	1R76505-0625	
FC-43 Calibration Compound	50010-30059	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Graphite Vespel Ferrule for 0.25 mm Columns (pkg of 10)	1R76458-2016	Column Components
Graphite Vespel Ferrule for 0.32 mm Columns (pkg of 10)	1R76458-2019	
Graphite Vespel Ferrule for 0.53 mm Columns (pkg of 10)	1R76458-2020	
2-hole Graphite Vespel Ferrule for <0.32mm Column (pkg of 10)	1R76458-2018	
No-Hole Graphite Vespel Ferrule (pkg of 10)	1R76458-2009	
SilTite Ferrule for 0.10-0.25mm ID Column (pkg of 10)	1R76458-2000	
SilTite Ferrule for 0.32mm Columns (pkg10)	1R76458-2024	
SilTite Ferrule for 0.53mm Columns (pkg10)	1R76458-2026	
Spring-loaded Transfer Line Nut	1R120434-0010	
Nut for SilTite Ferrules (pkg of 5)	1R76458-2001	
Nickel-Coated Nut for Graphite Vespel Ferrule (pkg of 5)	1R76256-0060	
Intake Filter/RF Shield (1)	1R76475-5000	Filter Components
Triple Filter with Base	A0950-01600	
Triple Filter Replacement Cartridge	A0950-R1600	
Oil Mist Filter	1R76505-0036	
Chassis Cooling Fan	1R120443-0001	
Nylon Rivet for Cooling Fan	1R3326-5000	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Ion Source Block	1R120404-1311	Ion Source Components
Repeller Plate	1R120404-1312	
Source-Repeller Thumbscrew	1R120404-1400 or 1R120564-0004	
Thumbscrew-Repeller Spacer	1RTSLI053A	
Lens/Source Heater	1R120404-1330	
Lens Heater Block	1R120404-1321	
Lock Washer for Lens Heater Block	1R76902-0004	
Screw for Lens Heater Block	1R76913-0306	
Lens Heater Block Grounding Strap	1R120404-2010	
Screw for Grounding Strap	1R76913-0305	
Lens Plate and Springs	1R120404-1750	
Copper Washer for Lens Plate	1R76483-5003	
Screw for Lens Plate	1R76913-0306	
Source to Ion Guide Spacer	1R120404-1340	
Insulating Spacer	1RTSLI050A	
EI Ion Source Cartridge (Low Activity), which includes:	120404-4100	
• Ion Cartridge Sleeve	1R120404-1105	
• EI Ion Volume (Low Activity)	1R120404-4111	
• Ion Volume-Repeller Insulator	1R120404-1114	
• Repeller (Low Activity)	1R120404-1161	
• Ion Volume Locking Ring	1R120404-1118	
• Repeller Spring (pkg of 5)	1R76485-1000K	
• Repeller Nut	1R120404-1120	
• Lens 3/RF Lens	1R120404-1150	
• Lens 1	1R120404-1130	
• Lens 2	1R120404-1140	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Electron Multiplier Plate	1R120405-1000	Electron Multiplier Components
Electron Multiplier	1R76022-14633	
Dynode Feedthrough	1R120610-0040	
Detector Assembly (Dynode, Electron Multiplier, and Lead Set)	1R120379-0001	
O-ring for Large Feedthrough	1R3814-113	
Screw for Large Feedthrough	1R76913-0410	
Anode Feedthrough Assembly	1R120480-0012	
Detector Assembly (Dynode, Electron Multiplier, and Lead Set)	1R120379-0001	
O-ring for Anode Feedthrough	1R3814-110	
Standoff for Anode Feedthrough	1R77005-3010	
Screw for Anode Feedthrough	1R76913-0306	
Dual Filament	1R120404-1900	Dual Filament Components
Filament Retaining Spring Kit	1R120404-1405	
Screw for Filament Retaining Spring	1R76913-0306	
EI Analyzer Tray with Quad and Tested	1R120404-0003	Analyzer Components
Analyzer Tray	1R120404-2000	
Ion Guide	1R120404-3100	
Ion Guide Clamp	1R120404-3214	
Screws for Ion Guide Clamp	1R76913-0316	
Q1 Assembly with Wires and Tested	1R120542-2560	
Exit Endcap	1R120404-3230	
Entrance Endcap	1R120404-3211	
Quad Entrance Lens	1R120404-3212	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Distribution Board	1R120369-0001	Board Components
Screw for Distribution Board	1R76913-0310	
RF Board	1R120485-A060	
Rod Driver Board	1R120485-0415	
RF Board/Rod Driver Kit	1R120480-1001	
Standoff for Rod Driver Board	1R76350-5003	
Screw for Rod Driver Board	1R76913-0310	
Lens Driver Board	1R120354-A110	
Controller Interface Board	1R120354-0020	
Controller Interface Board Support Bracket	1R120373-0002	
Source Interface Board	1R120354-0210	
Electrometer Board	1R120354-0500	
Screw (6mm) for Electrometer Board	1R76913-0306	
Screw (16mm) for Electrometer Board	1R76913-0316	
Heat Shield for Source Interface Board	1R120404-2110	
Screw for Heat Shield	1R76913-0410	
15-pin Male/Female RS-232 Cable	1R76396-0500	
Electrometer Shield	1R120368-0010	
Screw for Electrometer Shield	1R76913-0306	
20-pin Feedthrough	1R120610-0020	
O-ring for 20-Pin Feedthrough	1R3814-123	
Screw for 20-Pin Feedthrough	1R76913-0410	
4-pin Feedthrough	1R120610-0030	
O-ring for 4-Pin Feedthrough	1R3814-127	
Screw for 4-Pin Feedthrough	1R76913-0410	
PC Communication Board	1R120354-0010	
Power Supply System	1R120380-0001	Power Supply Components
Dynode and Multiplier Power Supply and Cables (EI only)	1R120361-0003	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Inner Ball Seal	1R120406-1008	Vacuum Interlock Components
Valve Axle	1R120406-1003	
Axle Seal and O-ring	1R120406-2204	
Axle Bearing	1R120406-1005	
Sealing Ball	1R120406-1004	
Outer Ball Seal	1R120406-1002	
Handle	1R120406-1200	
Solenoid Valve, 24 V	1R76461-5002	
Barb Fitting, “L”	1R76256-1332	
Barb Fitting, Straight	1R76256-0040	
Valve Spring (Pkg of 5)	1R76485-1000K	
Vacuum Interlock Knob	1R120406-3000	
Vacuum Interlock Assembly	1R120403-0001	
Tubing (cm)	1R76433-0107	
Vacuum Interlock Microswitch Assembly	1R120406-1030	
Interior O-ring	1R3814-127	
Exterior O-ring	1R3815-320	
Clip (Pkg of 5)	1R76483-2102	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Manifold Door Hinge	1R120565-0001	Manifold Components
Front Manifold Plate	1R120403-0101	
O-ring for Front, Top, Detector, and Back Plate	1R3815-360	
Screw for Front Plate (M4 × 20 mm)	1R176913-0420	
Vent Valve Knob	1R120403-0104	
Source Insertion Guide	1R120564-0001	
O-ring for Vent Valve Knob	1R3814-110	
Alignment Pin	1R120403-0103	
Front Door Alignment Pin	1R120564-0003	
Back Manifold Plate	1R120403-1001	
Magnet Yoke	1R120564-0002	
Source Magnet	1R70001-98195	
Source Gas Tube	1R120404-1202	
Right Side Panel	1R120413-0001	Cover Components
Left Side Panel	1R120411-0001	
Top Cover Panel	1R120412-0001	
Top Manifold Cover (glass)	1R120401-3000	
Front Cover (with Vacuum Interlock Option)	1R120407-0100	
Front Door Hinge	1R3434-5000	
Front Door Hinge Support	1R120445-0001	
Front Door Latch	1R76483-3000	
Right Side Panel Feet	1R3666-0207	
Chassis Foot	1R3666-0206	
Standard Capacity Turbomolecular Pump	1R119268-0004	Pump Components
Rough Pump (RV3)	1R76505-3007	
Vacuum Pump Oil	A0301-15101	
Convectron Gauge	1RA0105-00501	
Foreline Adapter	1R119244-0025	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
Bushing in the Source Exchange Tool	1R120406-2203	ISQ Tools
Seal in the Source Exchange Tool	1R120406-2204	
Clip in the Source Exchange Tool	1R76483-2102	
Source Exchange Tool	1R120406-2000	
Source Holder	1R120471-0001	
ISQ Toolkit, which includes:	1R120452-0001	
Source Removal Tool (Small)	1R120406-2250	
Column Measurement Tool	1R120461-0010	
T10 Torxhead Key	1R3812-5T10	
T20 Torxhead Key	1R3812-5T20	
T30 Torxhead Key	1R3812-5T30	
Forceps, 8 in.	1R76360-0008	
Wrench, Open-Ended, 1/4-in., 5/16-in.	1R76360-0109	
Wrench, Open-Ended, 3/8 in., 7/16-in.	1R76360-0108	
CI Reagent Gas Flow Module	1R23331-0092	Upgrade Equipment
CI Ion Volume	1R120404-4112	
CI Ion Source Cartridge Assembly (Low Activity)	1R120404-4500	
CI Gas Line	1R120438-0020	
EI/CI Ion Volume	1R120404-4113	
Dynode and Multiplier Power Supply and Cables (EI/CI)	1R120361-0002	
Ion Gauge	1R120560-0020	
Ion Gauge Mount	1R120416-0002	
Ion Gauge Tube Shield	1R119605-0012	
Extended Capacity Turbomolecular Pump	1R119268-0002	
Dust Filters	1R120442-1000	
Direct Insert Probe (without case)	1R120406-4000	
Direct Exposure Probe (without case)	1R120406-5000	
Direct Insert Probe Controller Kit	1R119300-0500	
Direct Exposure Probe Controller Kit	1R119300-0600	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
ISQ Installation Kit	1R120459-0001	Other
Test Column	76317-3015	
ISQ Specification Standards	1R120150-PERF	
ISQ Final Assay	1R120400-0001	
ISQ Software (2.0)	1R120479-0020	
Fuse Kit, which includes:	1R120458-0001	
• Fuse, Fast Acting 500 mA, 250 V, 5 × 20 (pkg of 2)		
• Fuse, Fast Acting 1.0 A, 250 V, 5 × 20 (pkg of 2)		
• Fuse, Fast Acting 1.6 A, 250 V, 5 × 20 (pkg of 2)		
• Fuse, Fast Acting 2.5 A, 250 V, 5 × 20 (pkg of 2)		
• Fuse, Fast Acting 5.0 A, 250 V, 5 × 20 (pkg of 2)		
• Fuse, Fast Acting 6.3 A, 250 V, 5 × 20 (pkg of 2)		
Consumables Kit	1R120468-CONSUM	
Cardinal Health CP100 Nitrile Cleanroom Gloves (Recommended to avoid contaminating instrument)	Fisher Scientific Catalog Number	Gloves
Size X-Small (Case)	19-120-2947	
Size Small (Case)	19-120-2947A	
Size Medium (Case)	19-120-2947B	
Size Large (Case)	19-120-2947C	
Size X-Large (Case)	19-120-2947D	

Table 1. Parts That Can Be Reordered, continued

Component	Thermo Scientific Part Number	Category
ISQ Screw Kit, which includes:	1R120480-0014	—
• M3 x 6 mm Screw (pkg of 10)		
• M3 x 8 mm Screw (pkg of 10)		
• M3 x 10 mm Screw (pkg of 5)		
• M3 x 12 mm Screw (pkg of 5)		
• M3 x 16 mm Screw (pkg of 5)		
• M4 x 16 mm Screw (pkg of 5)		
• M4 x 20 mm Screw (pkg of 10)		
• M4 x 10 mm Screw (pkg of 10)		
• M3 x 8 mm Screw for Hinges (pkg of 5)		
• M4 x 8 mm Screw for Power Supply (pkg of 5)		
• M3 Locking Nut for Front Door Latch (pkg of 2)		
• M3 x 25mm Standoff for RF Board (pkg of 2)		

* All of the screws in this table must be cleaned before you install them inside the vacuum manifold. See *Cleaning Durable Components* in the *ISQ Hardware Manual* for details.

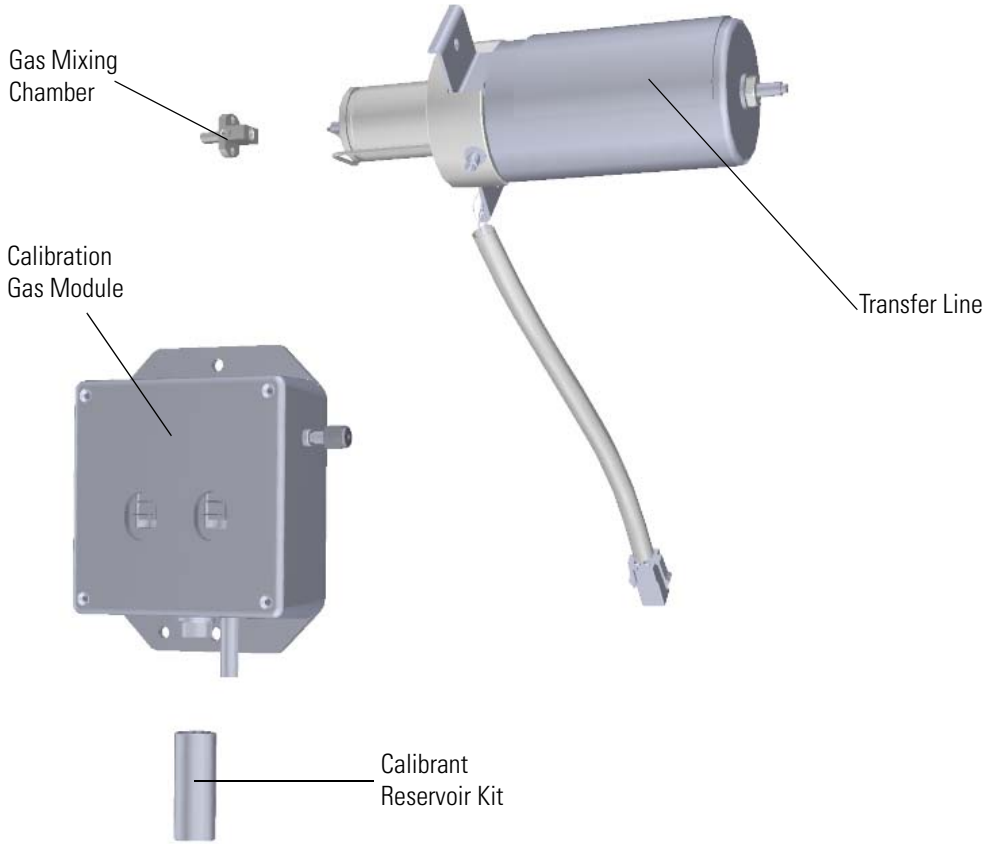
Calibration Gas Components

You can purchase the following calibration gas components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following calibration gas components can be replaced on the ISQ.

- Transfer Line
- Single-Level Calibration Gas Module
- Dual-Level Calibration Gas Module
- Calibrant Reservoir Kit
- Gas Mixing Chamber
- FC-43 Calibration Compound

Figure 1. Replaceable Calibration Gas Components



Transfer Line	Quantity: Each

Thermo Scientific Part Number	1R120402-0001

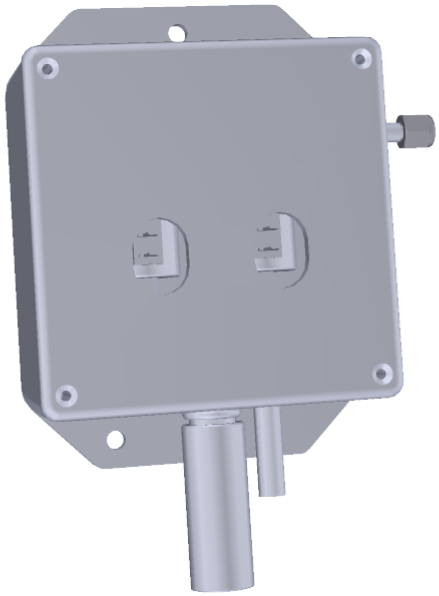
NOTE: To replace all the M4 x 10 mm screws on the transfer line, order two of PN 1R76913-0410. To replace the o-ring on the transfer line, order PN 1R3814-223. PN 1R120402-0001 includes one o-ring initially.

Single-Level Calibration Gas Module	**Quantity: Each**

Thermo Scientific Part Number	**1R119246-0004**

NOTE: To replace all the M4 x 10 mm screws on the calibration controller, order two of PN 1R76913-0410.

Dual-Level Calibration Gas Module	**Quantity: Each**



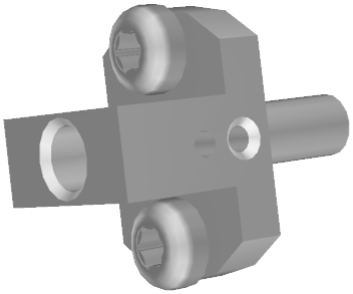
Thermo Scientific Part Number	**1R119246-0003**

NOTE: To replace all the M4 x 10 mm screws on the calibration controller, order two of PN 1R76913-0410.

Calibrant Reservoir Kit	Quantity: Each

Thermo Scientific Part Number	1R120433-0001

Gas Mixing Chamber	Quantity: Each



Thermo Scientific Part Number	1R120404-1201

NOTE: To replace all the M3 x 6 mm screws on the gas mixing chamber, order two of PN 1R76913-0306.

FC-43 Calibration Compound	Quantity: Each

Thermo Scientific Part Number	50010-30059

Column Components

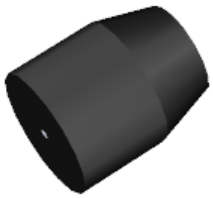
You can purchase the following column components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following column components can be replaced on the ISQ.

- Graphite Vespel Ferrule for 0.1 mm Columns
- Graphite Vespel Ferrule for 0.32 mm Columns
- Graphite Vespel Ferrule for 0.53 mm Columns
- 2-hole Graphite Vespel Ferrule for <0.32mm Columns
- No-Hole Graphite Vespel Ferrule
- SilTite Ferrule for 0.25 mm Columns
- SilTite Ferrule for 0.32mm Columns
- SilTite Ferrule for 0.53mm Columns
- Nut for SilTite Ferrules
- Nickel-Coated Nut for Graphite Vespel Ferrules
- Spring-loaded Transfer Line Nut

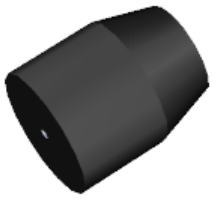
Note Visit www.thermo.com/columns for information about ordering a column.

Graphite Vespel Ferrule for 0.1 mm Columns	**Quantity: Pkg of 10**



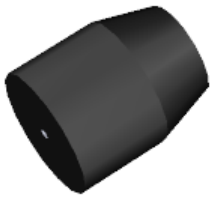
Thermo Scientific Part Number	**1R76458-2016**

Graphite Vespel Ferrule for 0.25 mm Columns	Quantity: Pkg of 10



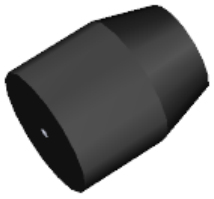
Thermo Scientific Part Number	29033496

Graphite Vespel Ferrule for 0.32 mm Columns	Quantity: Pkg of 10



Thermo Scientific Part Number	1R76458-2019

Graphite Vespel Ferrule for 0.53 mm Columns	Quantity: Pkg of 10



Thermo Scientific Part Number	1R76458-2020

2-hole Graphite Vespel Ferrule for <0.32mm Columns	Quantity: Pkg of 10

Thermo Scientific Part Number	1R76458-2018

No-Hole Graphite Vespel Ferrule	Quantity: Pkg of 10

Thermo Scientific Part Number	1R76458-2009

SilTite Ferrule for 0.25 mm Columns	Quantity: Pkg of 10

Thermo Scientific Part Number	1R76458-2000

SilTite Ferrule for 0.32mm Columns	Quantity: Pkg of 10

Thermo Scientific Part Number	1R76458-2024

SilTite Ferrule for 0.53mm Columns	Quantity: Pkg of 10

Thermo Scientific Part Number	1R76458-2026

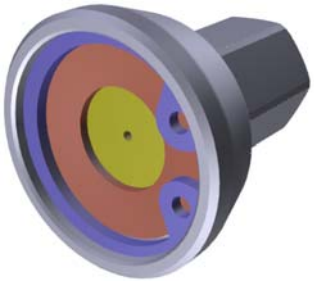
Nut for SilTite Ferrules	Quantity: Pkg of 5

Thermo Scientific Part Number	1R76458-2001

Nickel-Coated Nut for Graphite Vespel Ferrules	Quantity: Pkg of 5

Thermo Scientific Part Number	1R76256-0060

Spring-loaded Transfer Line Nut	Quantity: Each



Thermo Scientific Part Number	1R120434-0010

Filter Components

You can purchase the following filter components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following filter components can be replaced on the ISQ.

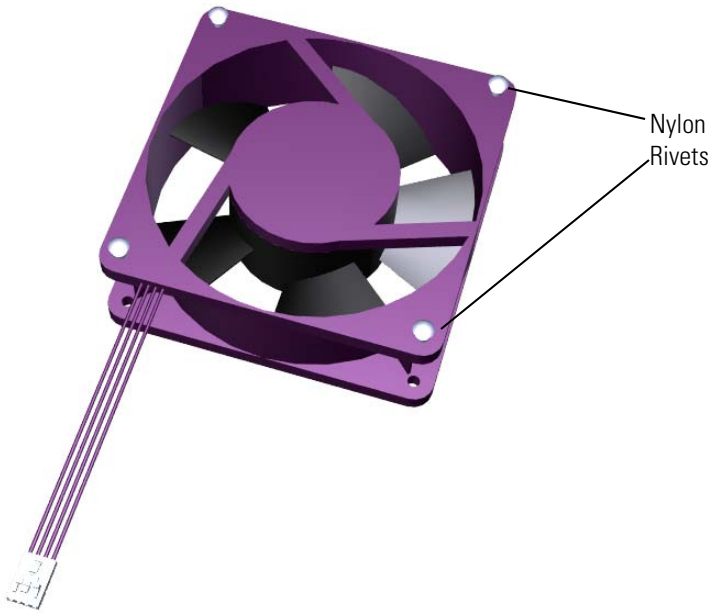
- Intake Filters/RF Shields
- Chassis Cooling Fan
- Oil Mist Filter

Intake Filters/RF Shields	**Quantity: Each**

Thermo Scientific Part Number	**1R76475-5000**

NOTE: The ISQ has two intake filters, so to replace them, order two of PN 1R76475-5000. To replace all the M3 x 8 mm screws on the filters, order eight of PN 1R76913-0308.

Chassis Cooling Fan	**Quantity: Each**



Thermo Scientific Part Number	**1R120443-0001**

NOTE: To replace all of the nylon rivets on the chassis cooling fan, order four of PN 1R3326-5000.

Oil Mist Filter	**Quantity: Each**

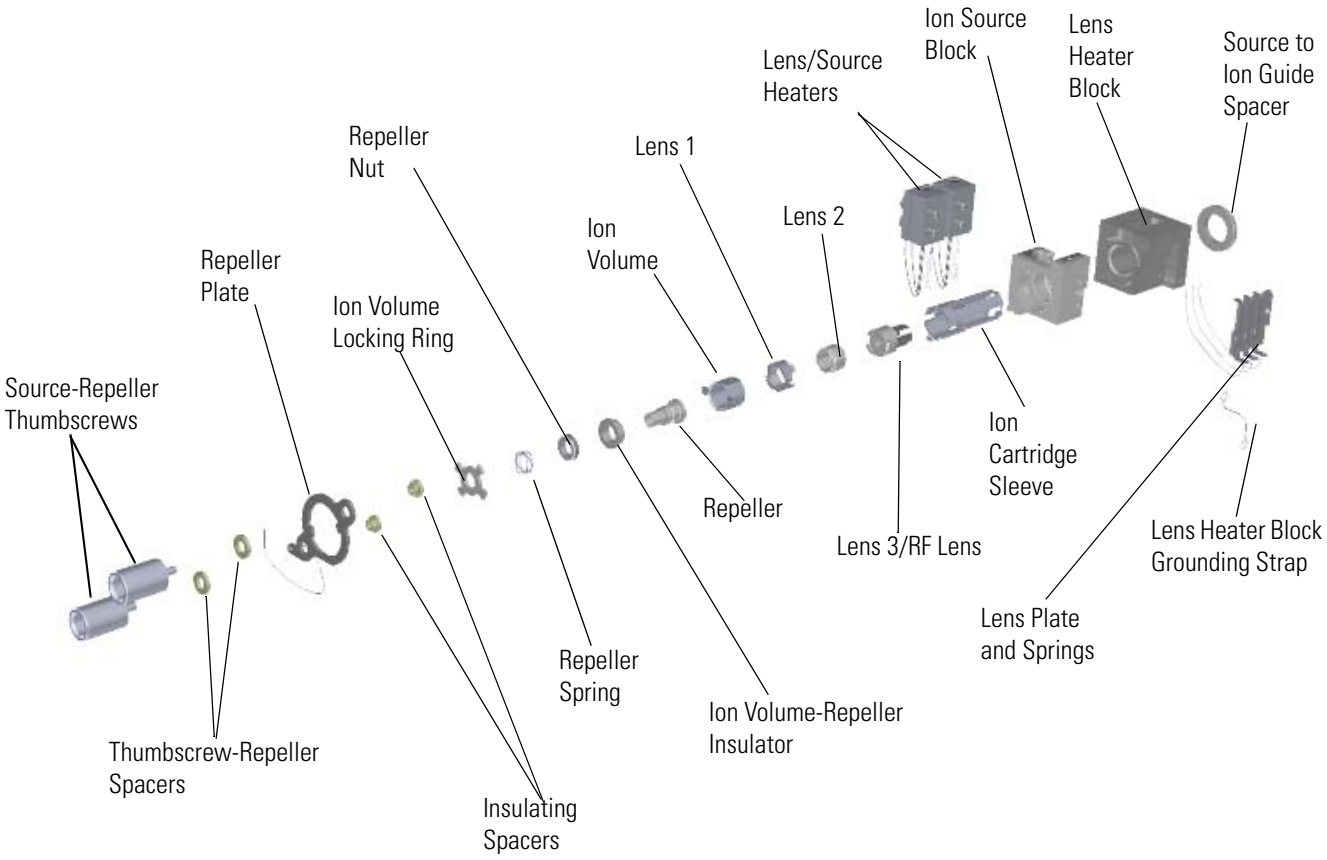
Thermo Scientific Part Number	**1R76505-0036**

Ion Source Components

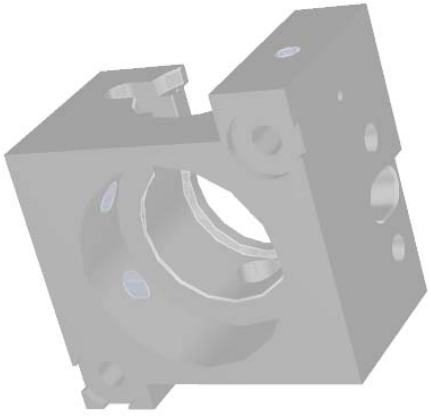
The following ion source components can be replaced on the ISQ mass spectrometer. Be sure to reference the component's part number when placing your order. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

- Ion Source Block
- Repeller Plate
- Source-Repeller Thumbscrew
- Thumbscrew-Repeller Spacer
- Insulating Spacer
- Lens/Source Heater
- Lens Heater Block
- Lens Heater Block Grounding Strap
- Lens Plate and Springs
- Source to Ion Guide Spacer
- Ion Source Cartridge (Low Activity)
  - Ion Cartridge Sleeve
  - EI Ion Volume (Low Activity)
  - Ion Volume-Repeller Insulator
  - Repeller (Low Activity)
  - Ion Volume Locking Ring
  - Repeller Spring
  - Repeller Nut
  - Lens 3/RF Lens
  - Lens 1
  - Lens 2

Table 2. Replaceable Components of the Ion Source



Ion Source Block	**Quantity: Each**



Thermo Scientific Part Number	**1R120404-1311**

Repeller Plate	Quantity: Each

Thermo Scientific Part Number	1R120404-1312

Source-Repeller Thumbscrew	Quantity: Each

Thermo Scientific Part Number	1R120404-1400

Source-Repeller Thumbscrew	Quantity: Each

Thermo Scientific Part Number	1R120564-0004

Note If your instrument has a source insertion guide, order two of PN 1R120564-0003. If your instrument was not manufactured with a source insertion guide, order two of PN 1R120404-1400. See Manifold Components to determine if your instrument was manufactured with a source insertion guide.

Thumbscrew-Repeller Spacer	Quantity: Each

Thermo Scientific Part Number	1RTSLI053A

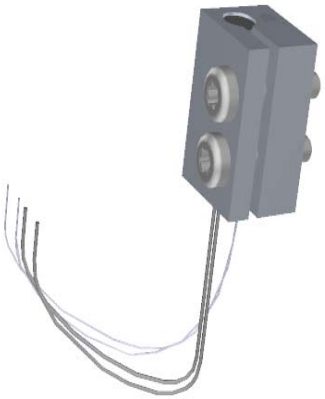
NOTE: There are two thumbscrew-repeller spacers on the ion source, so to replace them, order two of PN 1RTSLI053A.

Insulating Spacer	Quantity: Each

Thermo Scientific Part Number	1RTSLI050A

NOTE: There are two insulating spacers on the ion source, so to replace them, order two of PN 1RTSLI050A.

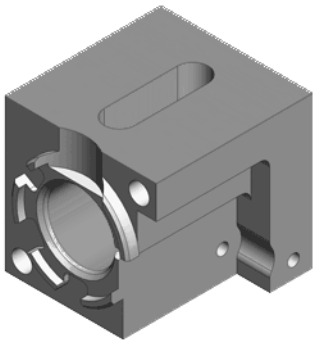
Lens/Source Heater	Quantity: Each



Thermo Scientific Part Number	1R120404-1330

NOTE: There are two lens/source heaters on the ion source, so to replace them, order two of PN 1R120404-1330. To replace the M4 x 20 mm screws on each lens/source heater, order two of PN 1R76913-0420.

Lens Heater Block	Quantity: Each



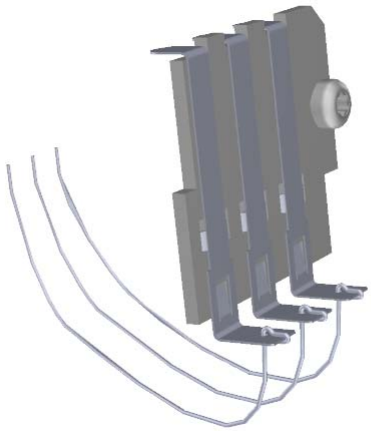
Thermo Scientific Part Number	1R120404-1321

Lens Heater Block Grounding Strap	Quantity: Each

Thermo Scientific Part Number	1R120404-2010

NOTE: To replace all the M3 x 6 mm screws on the grounding strap, order two of PN 1R76913-0305.

Lens Plate and Springs	Quantity: Each



Thermo Scientific Part Number	1R120404-1750

NOTE: To replace the M3 x 6 mm screw on the lens plate and springs, order PN 1R76913-0306. To replace the copper washer, order PN 1R76483-5003.

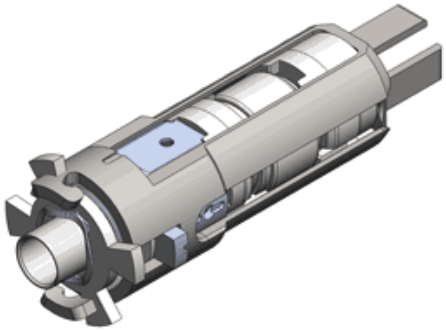
Source to Ion Guide Spacer	Quantity: Each

Thermo Scientific Part Number	1R120404-1340

Ion Source Cartridge Components

The ion source cartridge consists of the following components. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

- Ion Source Cartridge (Low Activity)
- Ion Cartridge Sleeve
- EI Ion Volume (Low Activity)
- Ion Volume-Repeller Insulator
- Repeller (Low Activity)
- Ion Volume Locking Ring
- Repeller Spring
- Repeller Nut
- Lens 3/RF Lens
- Lens 1
- Lens 2

Ion Source Cartridge (Low Activity)	**Quantity: Each**
	
Thermo Scientific Part Number	**1R120404-4100**

Ion Cartridge Sleeve	**Quantity: Each**
	
Thermo Scientific Part Number	**1R120404-1105**

EI Ion Volume (Low Activity)	Quantity: Each

Thermo Scientific Part Number	1R120404-4111

Ion Volume-Repeller Insulator	Quantity: Each

Thermo Scientific Part Number	1R120404-1114

Repeller (Low Activity)	Quantity: Each

Thermo Scientific Part Number	1R120404-1161

Ion Volume Locking Ring	Quantity: Each

Thermo Scientific Part Number	1R120404-1118

Repeller Spring	Quantity: Pkg of 5

Thermo Scientific Part Number	1R76485-1000K

NOTE: Although the ion source only contains one repeller spring, you will receive a package of five when you order PN 1R76485-1000K.

Repeller Nut	Quantity: Each

Thermo Scientific Part Number	1R120404-1120

Lens 3/RF Lens	Quantity: Each

Thermo Scientific Part Number	1R120404-1150

Lens 1	Quantity: Each

Thermo Scientific Part Number	1R120404-1130

Lens 2	Quantity: Each

Thermo Scientific Part Number	1R120404-1140

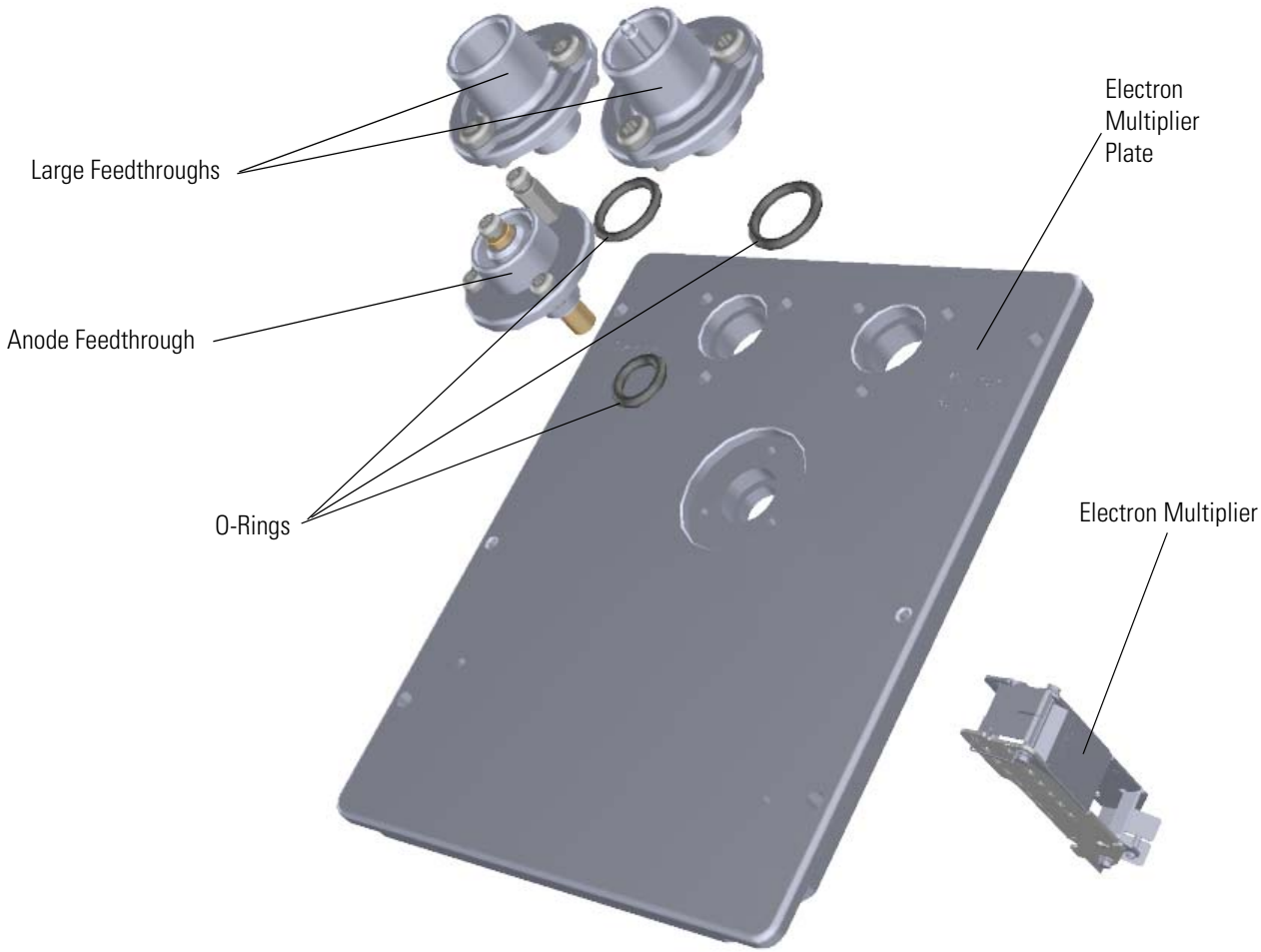
Electron Multiplier Components

You can purchase the following electron multiplier components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

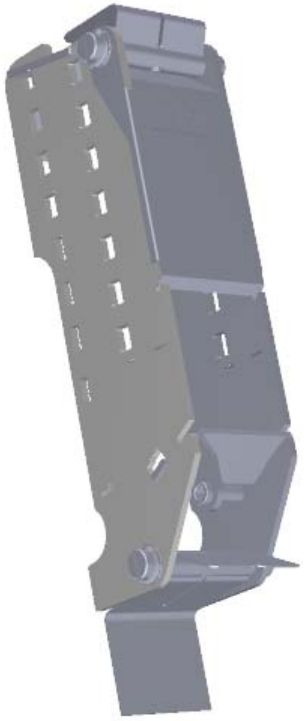
The following electron multiplier components can be replaced on the ISQ.

- Electron Multiplier
- Electron Multiplier Plate
- Dynode Feedthrough
- Anode Feedthrough Assembly
- Detector Assembly (Dynode, Electron Multiplier, and Lead Set)

Table 3. Replaceable Components of the Electron Multiplier

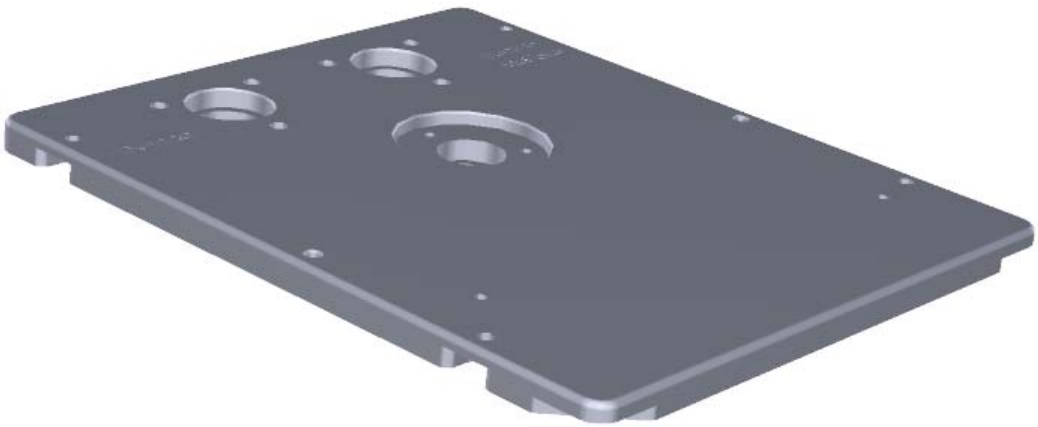


Electron Multiplier	**Quantity: Each**



Thermo Scientific Part Number	**1R76022-14633**

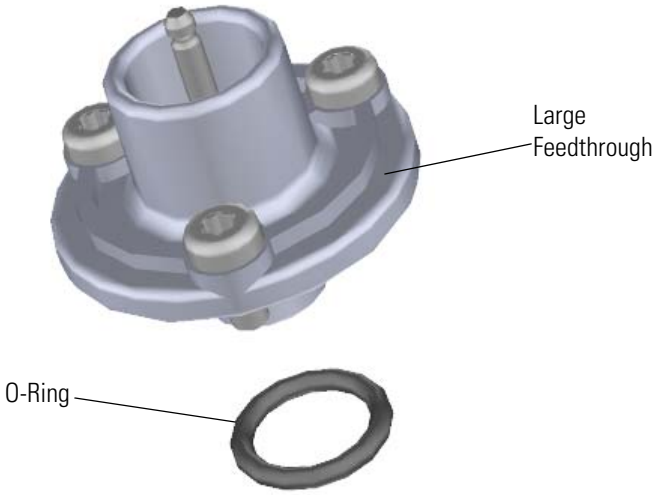
Electron Multiplier Plate	**Quantity: Each**



Thermo Scientific Part Number	**1R120405-1000**

NOTE: To replace the M4 x 10 mm screws, which secure the electron multiplier plate to the manifold, order four of PN 1R76913-0306.

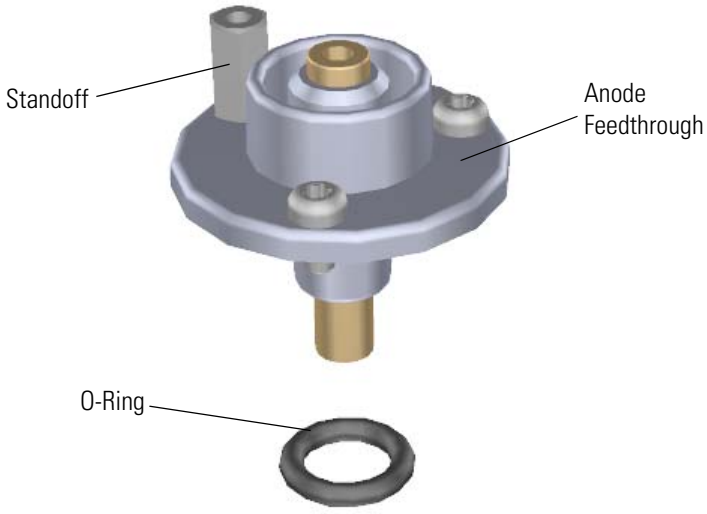
Dynode Feedthrough	Quantity: Each



Thermo Scientific Part Number	1R120610-0040

NOTE: There are two large feedthroughs on the ISQ, so to replace them, order two of PN 1R120610-0040. To replace all the M4 x 10 mm screws on each large feedthrough, order three of PN 1R76913-0410. To replace the o-ring, order PN 1R3814-113.

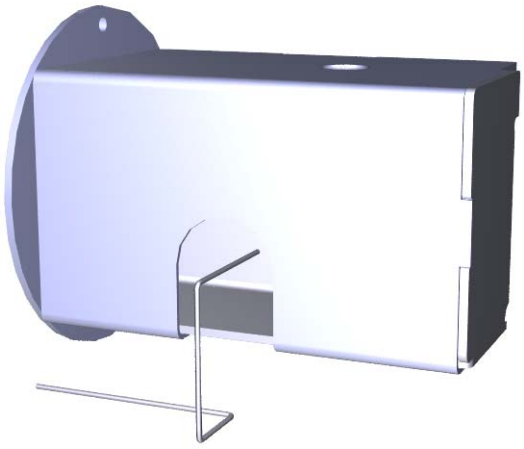
Anode Feedthrough Assembly	Quantity: Each



Thermo Scientific Part Number	1R120480-0012

NOTE: To replace all the M3 x 6 mm screws on the anode feedthrough, order two of PN 1R76913-0306. To replace the o-ring, order PN 1R3814-110. To replace the standoff, order PN 1R77005-3010. To replace the anode feedthrough, order PN 1R120610-0050.

Detector Assembly (Dynode, Electron Multiplier, and Lead Set)	Quantity: Each



Thermo Scientific Part Number	1R120379-0001

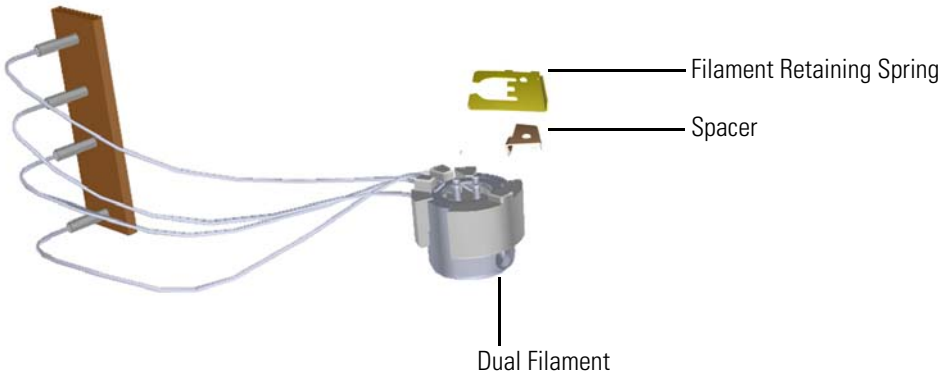
Dual Filament Components

You can purchase the following dual filament components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

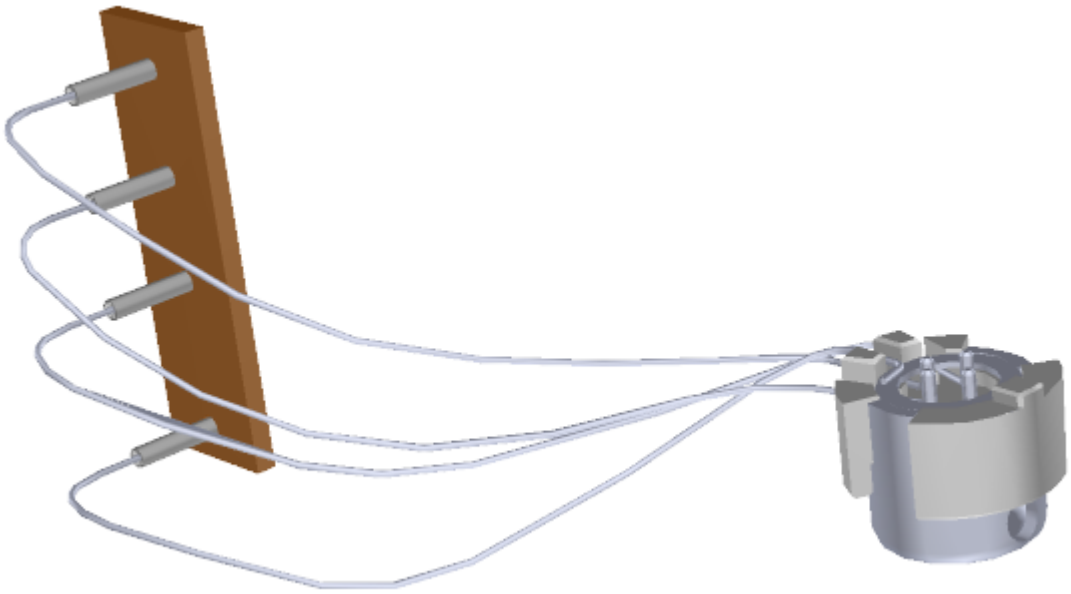
The following dual filament components can be replaced on the ISQ.

- Dual Filament
- Filament Retaining Spring and Spacer

Figure 2. Replaceable Components of the Dual Filament



Dual Filament	Quantity: Each



Thermo Scientific Part Number	1R120404-1900

Filament Retaining Spring and Spacer	Quantity: Each

Thermo Scientific Part Number	1R120404-1405

NOTE: PN 1R120404-1405 contains the filament retaining spring, spacer, and screw. To replace only the M3 x 6 mm screw on the filament retaining spring, order PN 1R76913-0306.

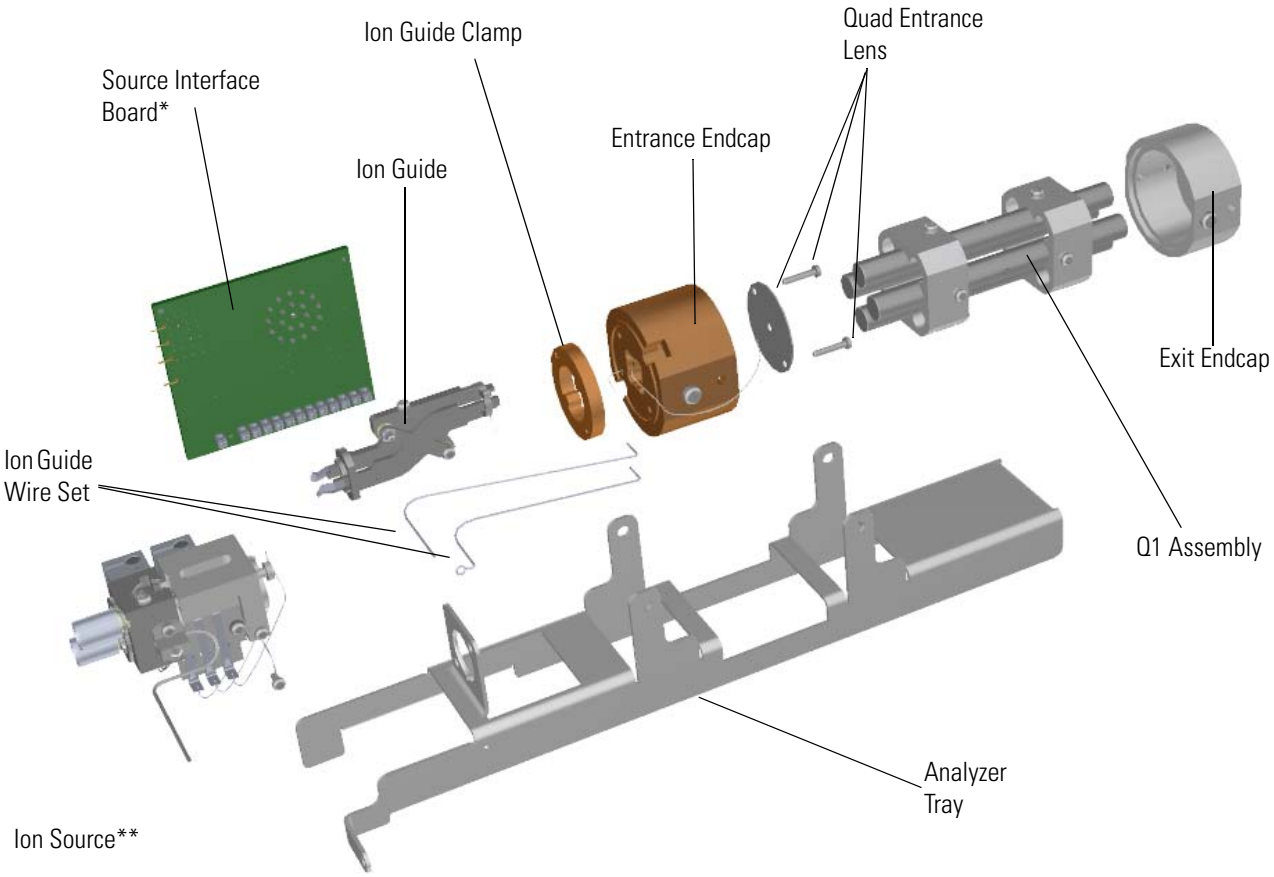
Analyzer Components

You can purchase the following analyzer components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following analyzer components can be replaced on the ISQ.

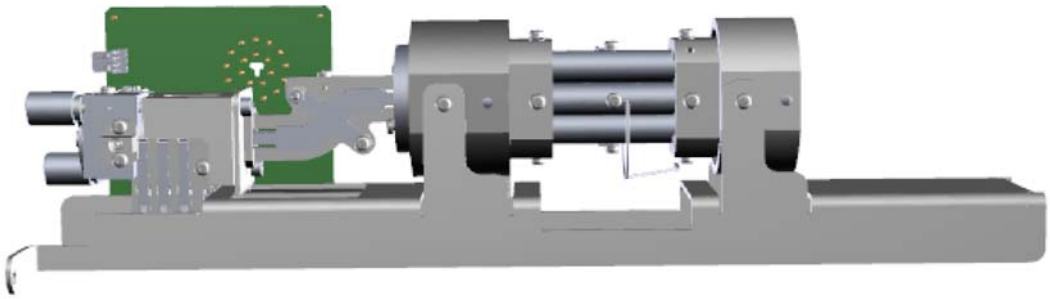
- EI Analyzer Tray with Quad and Tested
- EI Analyzer Tray with Quad and Tested
- Ion Guide
- Ion Guide Clamp
- Q1 Assembly with Wires and Tested
- Exit Endcap
- Entrance Endcap
- Quad Entrance Lens

Figure 3. Replaceable Components of the Analyzer



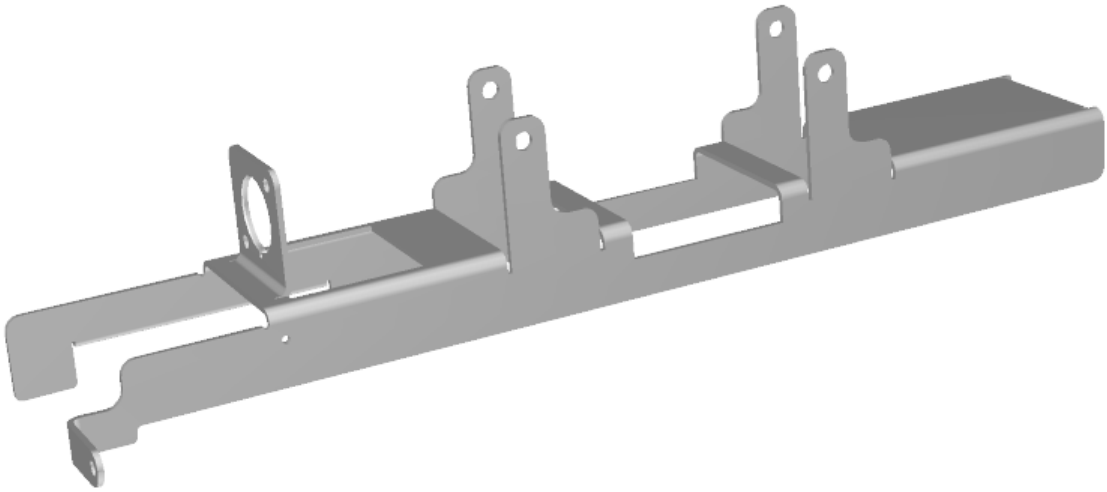
* See Board Components for information about ordering the source interface board.
** See for information about ordering the ion source.

EI Analyzer Tray with Quad and Tested	Quantity: Each



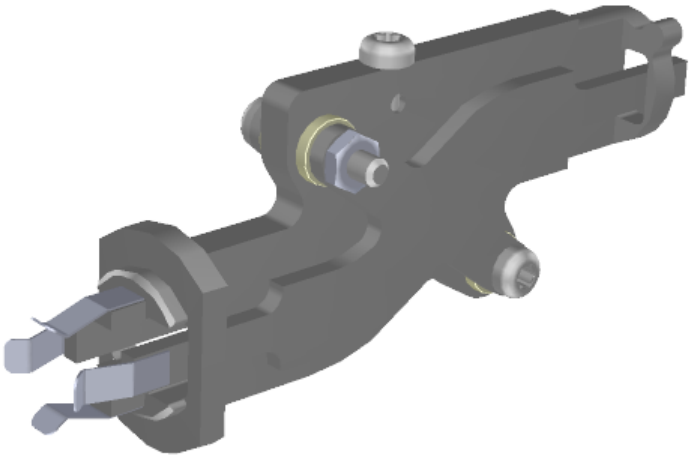
Thermo Scientific Part Number	1R120404-0003

Analyzer Tray	Quantity: Each



Thermo Scientific Part Number	1R120404-2000

Ion Guide	Quantity: Each



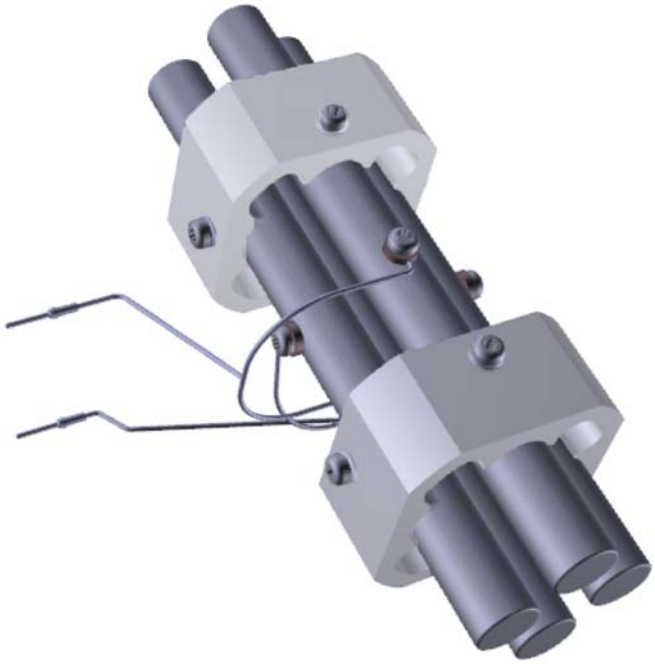
Thermo Scientific Part Number	1R120404-3100

Ion Guide Clamp	Quantity: Each

Thermo Scientific Part Number	1R120404-3214

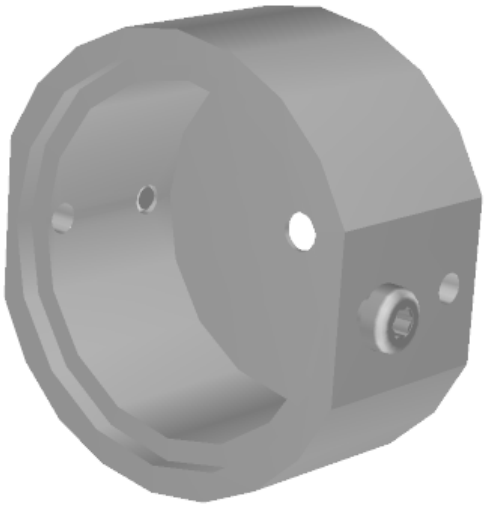
NOTE: To replace all the M3 x 16 mm screws on the ion guide clamp, order two of PN 1R76913-0316.

Q1 Assembly with Wires and Tested	Quantity: Each



Thermo Scientific Part Number	1R120542-2560

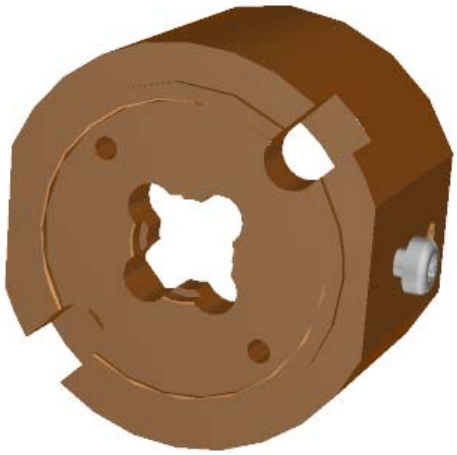
Exit Endcap	Quantity: Each



Exit Endcap	**Quantity: Each**
Thermo Scientific Part Number	**1R120404-3230**

NOTE: To replace all the M4 x 6 mm screws on the exit endcap, order two of PN 1R76913-0406.

Entrance Endcap	**Quantity: Each**



Thermo Scientific Part Number	**1R120404-3211**

NOTE: To replace all the M4 x 6 mm screws on the entrance endcap, order two of PN 1R76913-0406.

Quad Entrance Lens	**Quantity: Each**

Thermo Scientific Part Number	**1R120404-3212**

NOTE: To replace all the M3 x 16 mm screws on the quad entrance lens, order two of PN 1R76913-0316.

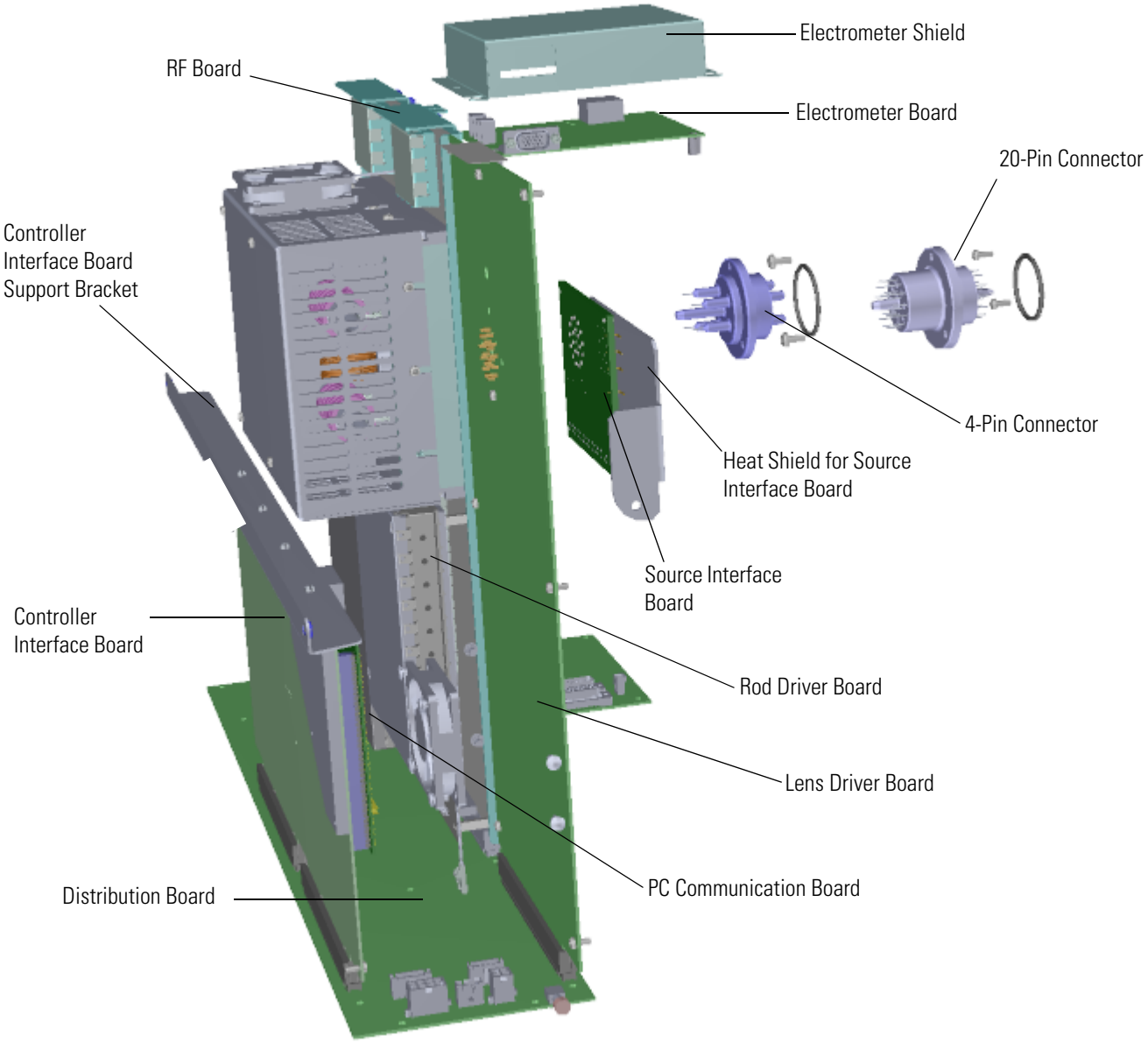
Board Components

You can purchase the following board components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following board components can be replaced on the ISQ.

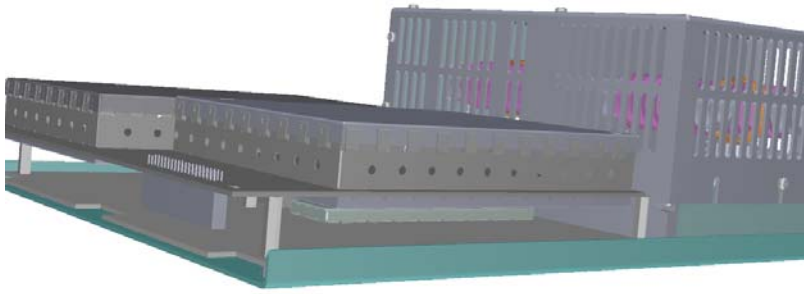
- RF Board
- RF Board/Rod Driver Board Kit
- Rod Driver Board
- Rod Driver Board
- Source Interface Board
- Heat Shield for the Source Interface Board
- Electrometer Board
- Electrometer Shield
- Controller Interface Board
- Controller Interface Board Support Bracket
- PC Communication Board
- Distribution Board
- 20-Pin Feedthrough
- 4-Pin Feedthrough

Figure 4. Replaceable Board Components



WARNING ELECTRICAL SHOCK HAZARD: For safety reasons, the fuses on the lens driver board can only be replaced by Field Service Engineers.

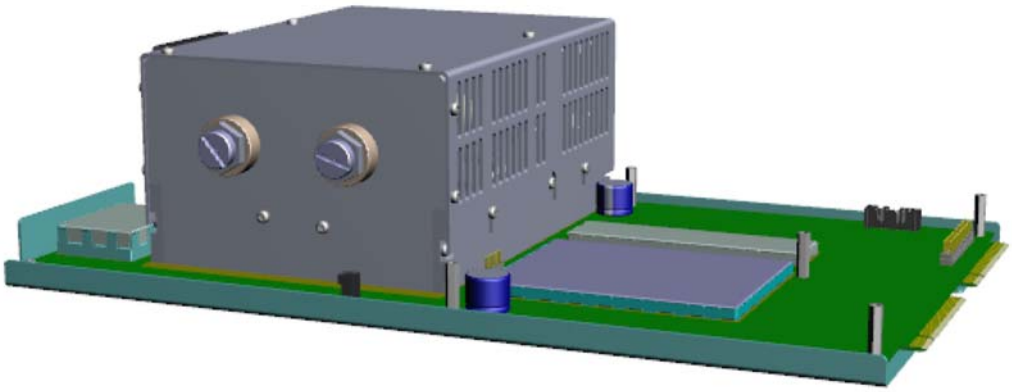
RF Board/Rod Driver Board Kit	Quantity: Each



Thermo Scientific Part Number	1R120480-1001

NOTE: To replace all the M3 x 10 mm screws in the RF board/rod driver board kit, order five of PN 1R76913-0310. To replace all the standoffs, order two of PN 1R76350-5003.

RF Board	Quantity: Each

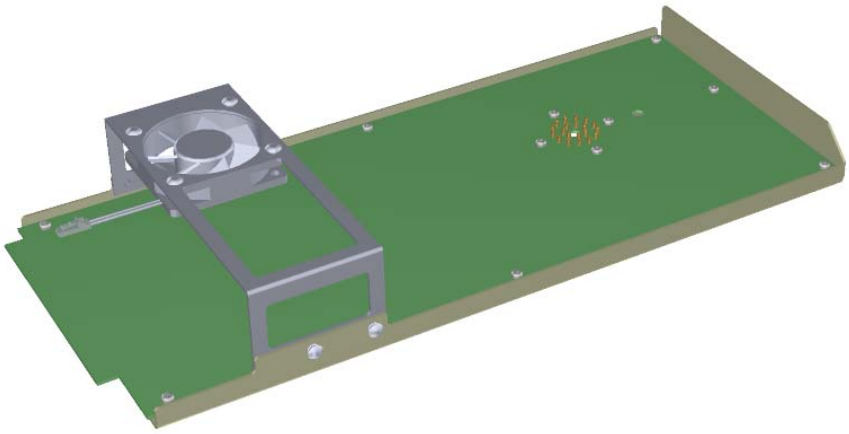


Thermo Scientific Part Number	1R120485-A060

Rod Driver Board	Quantity: Each

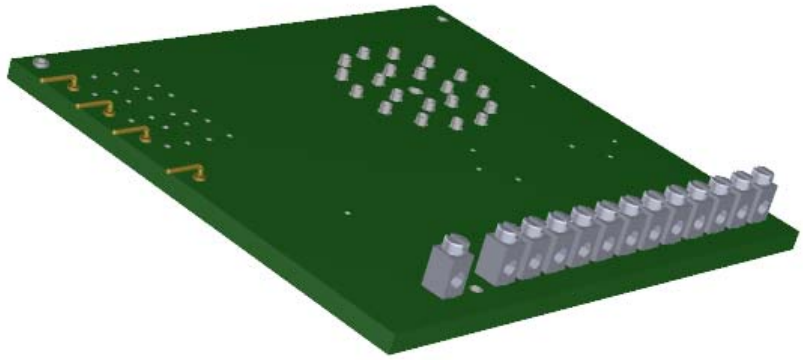
Thermo Scientific Part Number	1R120485-0415

Lens Driver Board	Quantity: Each



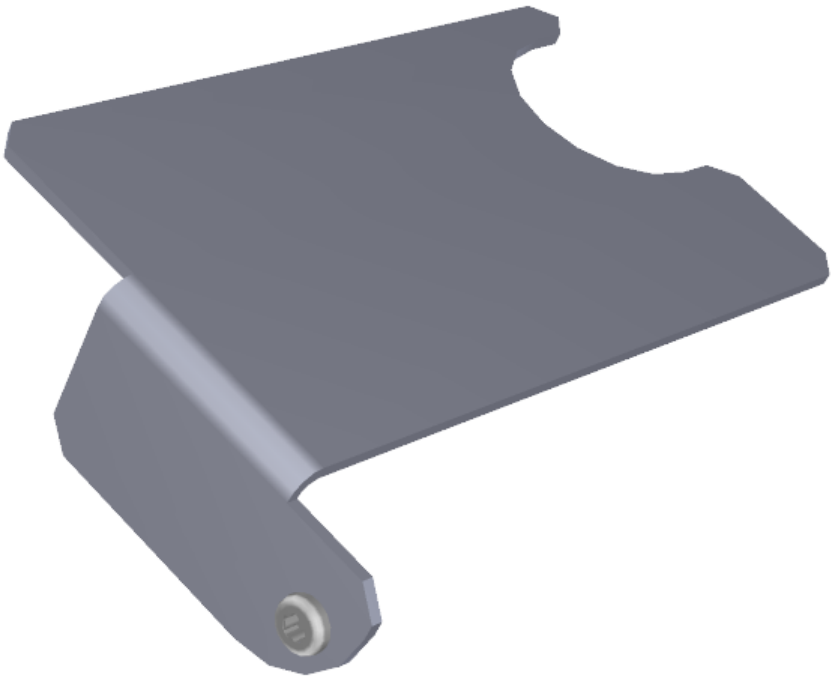
Thermo Scientific Part Number	1R120354-A110

Source Interface Board	Quantity: Each



Thermo Scientific Part Number	1R120354-0210

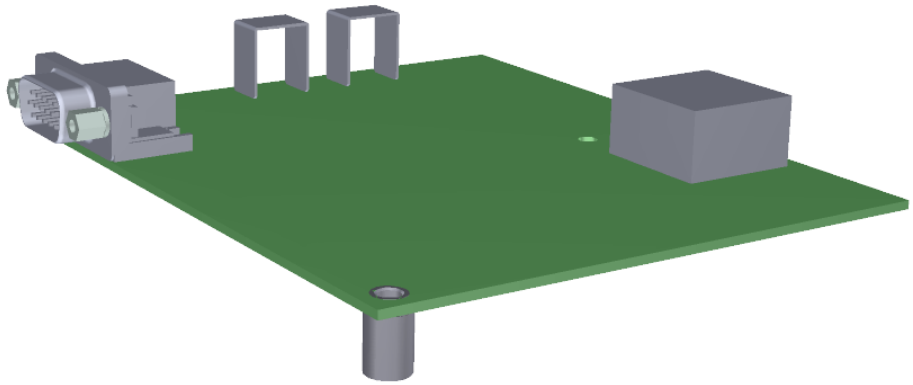
Heat Shield for the Source Interface Board	Quantity: Each



Thermo Scientific Part Number	1R120404-2110

NOTE: To replace the M4 x 10 mm screw on the heat shield, order PN 1R76913-0410.

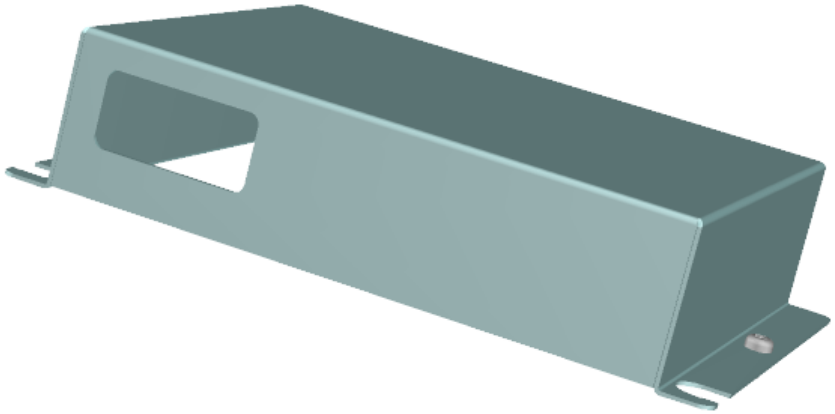
Electrometer Board	Quantity: Each



Thermo Scientific Part Number	1R120354-0500

NOTE: To replace all the M3 x 6 mm screws on the electrometer board, order two of PN 1R76913-0306. To replace all the M3 x 16 mm screws, order two of PN 1R76913-0316.

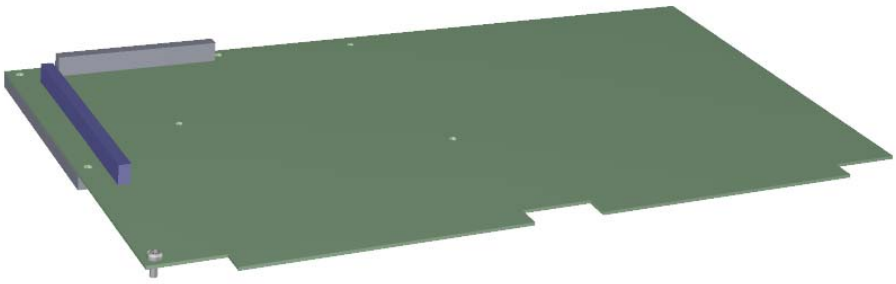
Electrometer Shield	Quantity: Each



Thermo Scientific Part Number	1R120368-0010

NOTE: To replace all the M3 x 6 mm screws on the electrometer shield, order two of PN 1R76913-0306.

Controller Interface Board	Quantity: Each

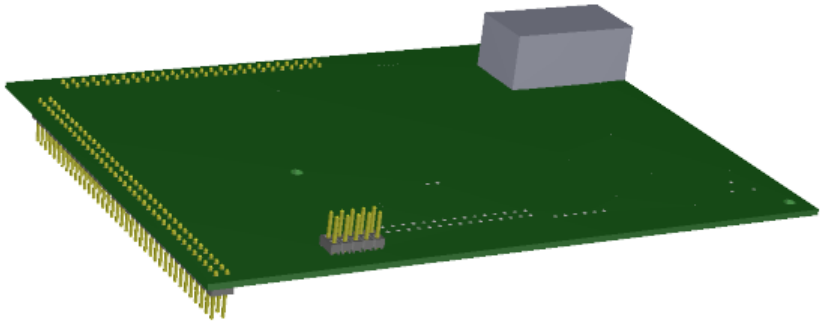


Thermo Scientific Part Number	1R120354-0020

Controller Interface Board Support Bracket	Quantity: Each

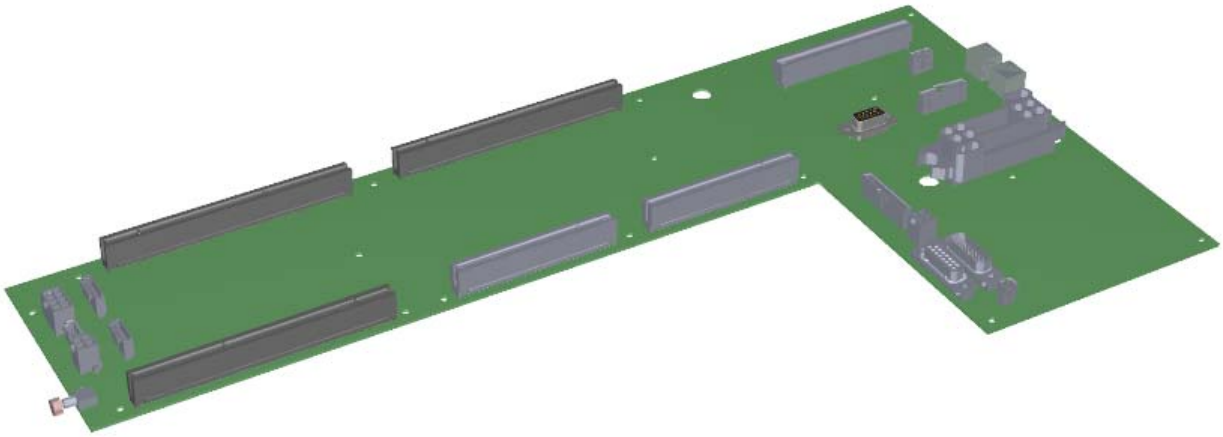
Thermo Scientific Part Number	1R120373-0002

PC Communication Board	Quantity: Each



Thermo Scientific Part Number	1R120354-0010

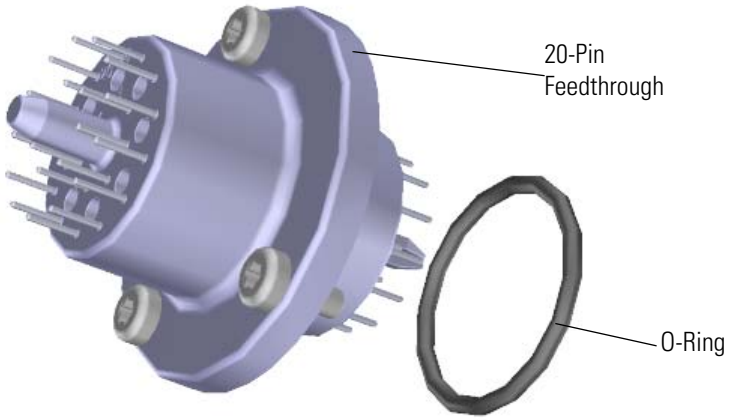
Distribution Board	Quantity: Each



Thermo Scientific Part Number	1R120369-0001

NOTE: To replace all the M3 x 10 mm screws on the distribution board, order nineteen of PN 1R76913-0310.

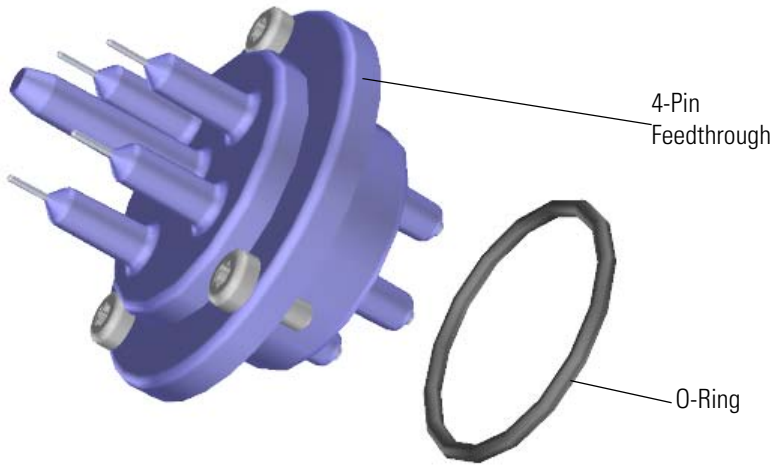
20-Pin Feedthrough	Quantity: Each



Thermo Scientific Part Number	1R120610-0020

NOTE: To replace all the M4 x 10 mm screws on the 20-pin feedthrough, order three of PN 1R76913-0410. To replace the o-ring, order PN 1R3814-123.

4-Pin Feedthrough	Quantity: Each



Thermo Scientific Part Number	1R120610-0030

NOTE: To replace all the M4 x 10 mm screws on the 4-pin feedthrough, order three of PN 1R76913-0410. To replace the o-ring, order PN 1R3814-127.

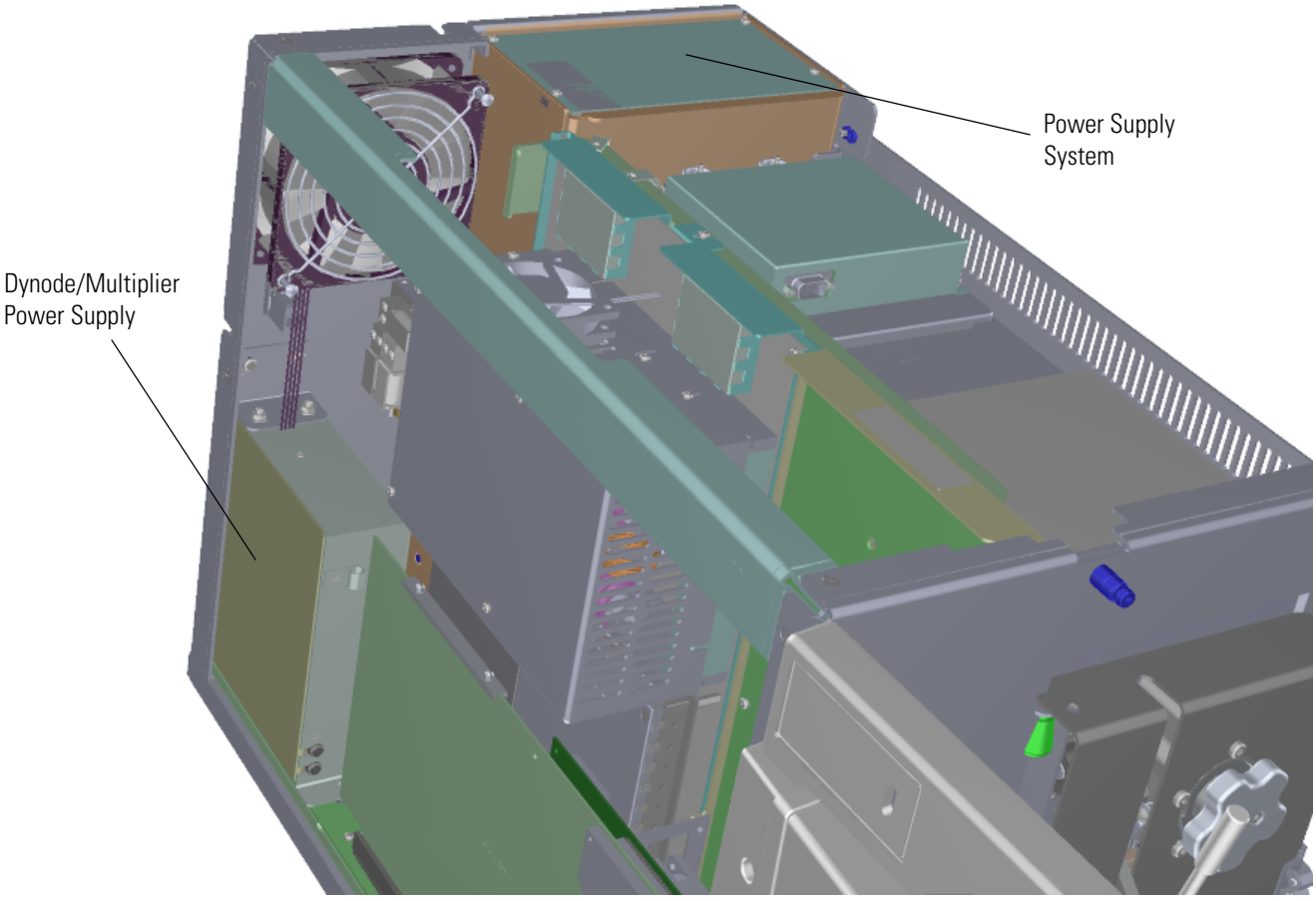
Power Supply Components

You can purchase the following power supply components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

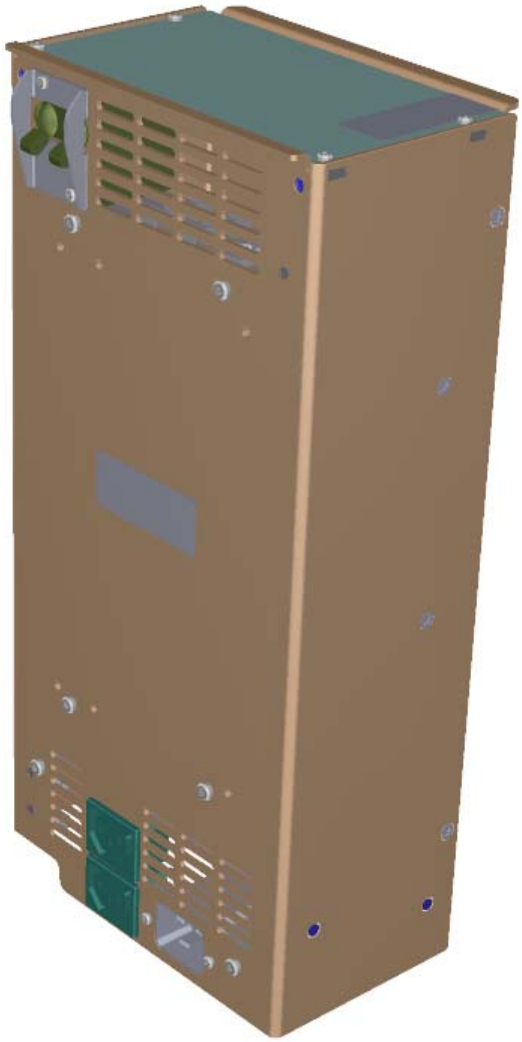
The following power supply components can be replaced on the ISQ.

- Power Supply System
- Dynode and Multiplier Power Supply and Cables (EI only)

Figure 5. Replaceable Power Supply Components



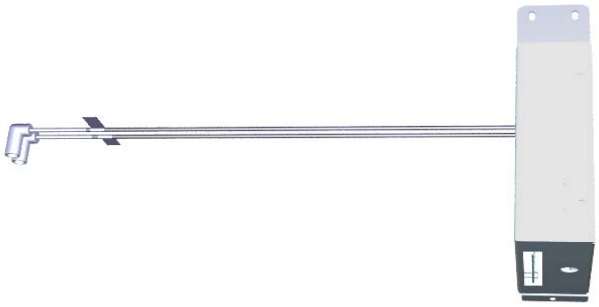
Power Supply System	Quantity: Each



Thermo Scientific Part Number	1R120380-0001

NOTE: To replace all the M4 x 8 mm screws on the power supply, order two of PN 1R76937-0408.

Dynode and Multiplier Power Supply and Cables (EI only)	**Quantity: Each**



Thermo Scientific Part Number	**1R120361-0003**

NOTE: To replace all the M4 x 10 mm screws on the dynode and multiplier power supply, order two of PN 1R76913-0410. To replace the M4 x 16 mm screw, order PN 1R76913-0416.

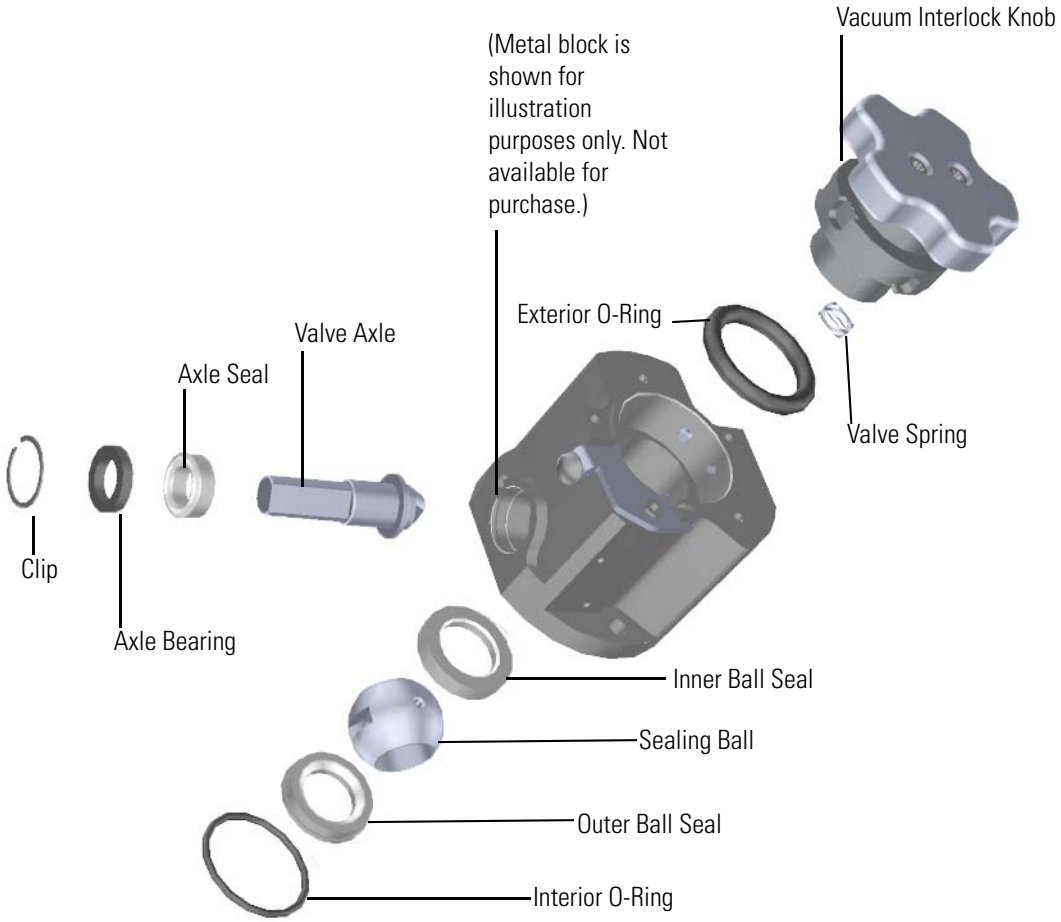
Vacuum Interlock Components

You can purchase the following vacuum interlock components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

The following vacuum interlock components can be replaced on the ISQ.

- Inner Ball Seal
- Valve Axle
- Axle Seal
- Axle Bearing
- Sealing Ball
- Outer Ball Seal
- Valve Spring
- Vacuum Interlock Knob
- Clip
- Interior O-Ring
- Exterior O-Ring

Table 4. Replaceable Components of the Vacuum Interlock



Inner Ball Seal	**Quantity: Each**

Thermo Scientific Part Number	**1R120406-1008**

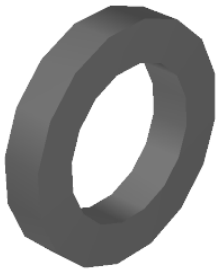
Valve Axle	Quantity: Each

Thermo Scientific Part Number	1R120406-1003

Axle Seal	Quantity: Each

Thermo Scientific Part Number	1R120406-2204

Axle Bearing	Quantity: Each

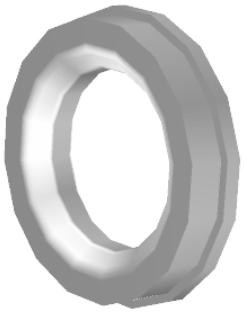


Thermo Scientific Part Number	1R120406-1005

Sealing Ball	Quantity: Each

Thermo Scientific Part Number	1R120406-1004

Outer Ball Seal	Quantity: Each



Thermo Scientific Part Number	1R120406-1002

Valve Spring	Quantity: Pkg of 5

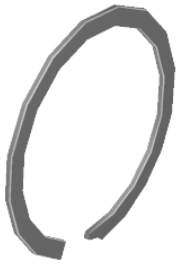
Thermo Scientific Part Number	1R76485-1000K

NOTE: Although there is only one valve spring in the vacuum interlock, you will receive a package of five when you order PN 1R76485-1000K.

Vacuum Interlock Knob	Quantity: Each

Thermo Scientific Part Number	1R120406-3000

Clip	Quantity: Pkg of 5



Thermo Scientific Part Number	1R76483-2102

Interior O-Ring	Quantity: 1

Thermo Scientific Part Number	1R3814-127

Exterior O-Ring	Quantity: 1

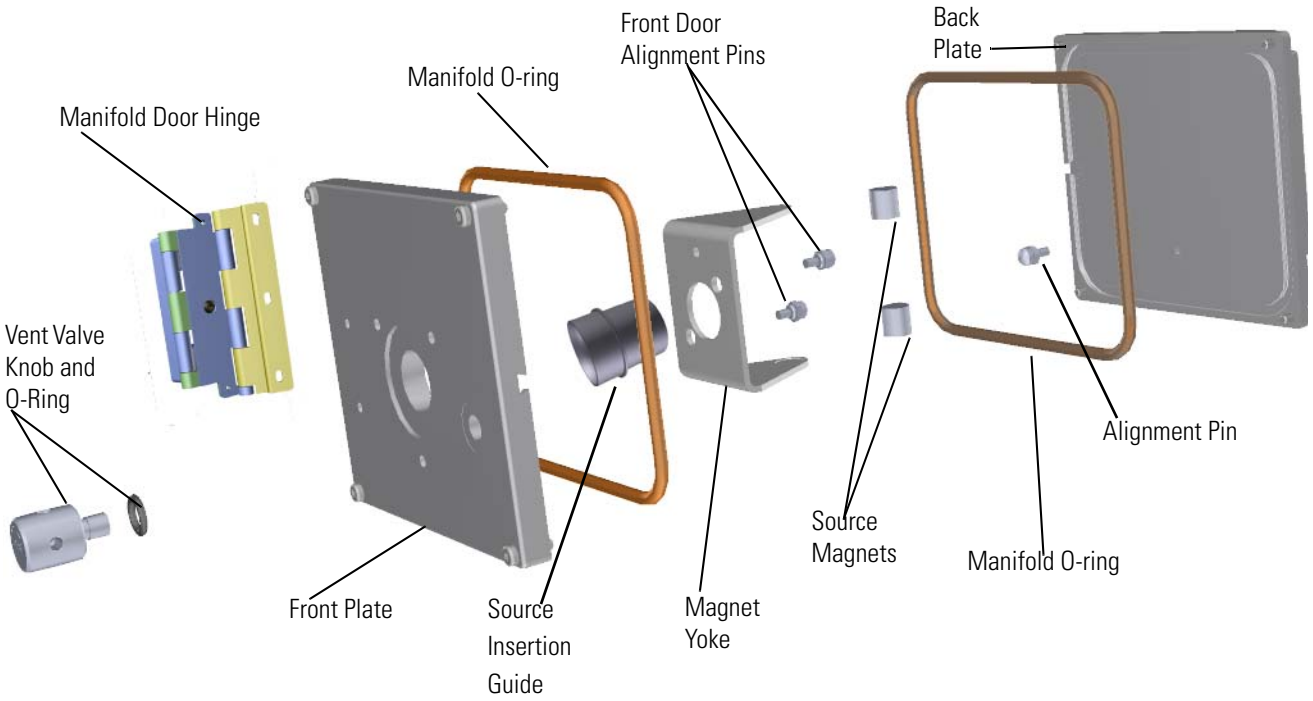
Thermo Scientific Part Number	1R3815-320

Manifold Components

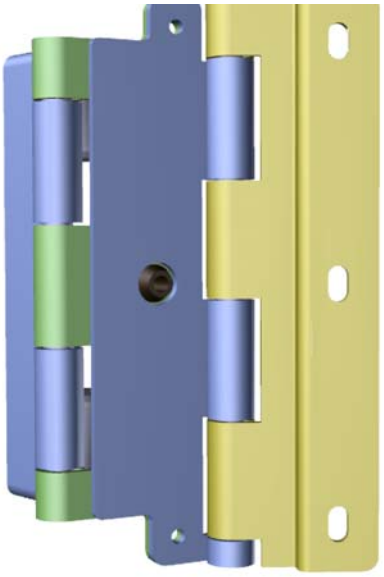
You can purchase the following manifold components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

- Manifold Door Hinge
- Front Manifold Plate
- Manifold O-Ring
- Vent Valve Knob
- Source Insertion Guide
- Alignment Pin
- Front Door Alignment Pin
- Magnet Yoke
- Source Magnets
- Source Gas Tube
- Back Manifold Plate

Table 5. Replaceable Components of the Manifold



Manifold Door Hinge	Quantity: Each



Thermo Scientific Part Number	1R120565-0001

NOTE: To replace all the M4 x 10 mm screws on the manifold door hinge, order three of PN 1R76913-0410.

Front Manifold Plate	Quantity: Each

Thermo Scientific Part Number	1R120403-0101

NOTE: To replace all the M4 x 16 mm screws on the front manifold plate, order four of PN 1R76913-0416.

Manifold O-Ring	Quantity: Each

Thermo Scientific Part Number	**1R3815-360**

NOTE: There are four large manifold o-rings in the ISQ: two on the top of the vacuum manifold, one at the front and one at the back. To replace all of the manifold o-rings, order four of PN 1R3815-360.

Vent Valve Knob	**Quantity: Each**

Thermo Scientific Part Number	**1R120403-0104**

NOTE: To replace the o-ring on the vent valve knob, order PN 1R3814-110.

Source Insertion Guide	**Quantity: Each**

Thermo Scientific Part Number	**1R120564-0001**

Alignment Pin	**Quantity: Each**

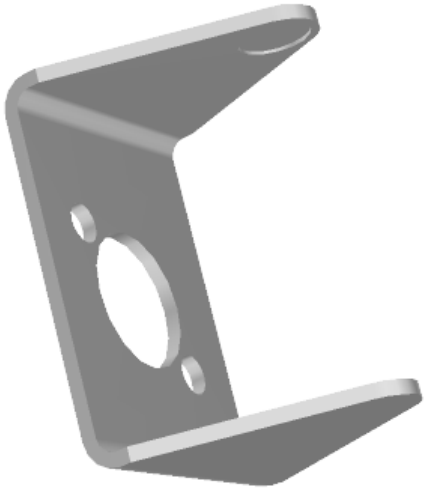
Thermo Scientific Part Number	**1R120403-0103**

Front Door Alignment Pin	**Quantity: Each**

Thermo Scientific Part Number	**1R120564-0003**

Note If your instrument has a source insertion guide, two front door alignment pins (PN 1R120564-0003) are used on the front door plate to hold the magnet yoke in place and align the door to the ion source. If your instrument was not manufactured with a source insertion guide, two alignment pins (PN 1R120403-0103) are used on the front door plate. See Replaceable Components of the Manifold to locate the source insertion guide on your instrument.

Magnet Yoke	**Quantity: Each**



Thermo Scientific Part Number	**1R120564-0002**

Source Magnets	Quantity: Each

Thermo Scientific Part Number	1R70001-98195

NOTE: There are two source magnets in the ISQ, so to replace them, order two of PN 1R70001-98195.

Source Gas Tube	Quantity: Each

Thermo Scientific Part Number	1R120404-1202

NOTE: If you are using CI, you need to order two of PN 1R120404-1202.

Back Manifold Plate	Quantity: Each

Thermo Scientific Part Number	1R120403-1001

NOTE: This PN includes the plate, alignment pin (1R120403-0103) and O-ring (1R3815-360). To replace all the M4 x 16 mm screws on the back manifold plate, order four of PN 1R76913-0416.

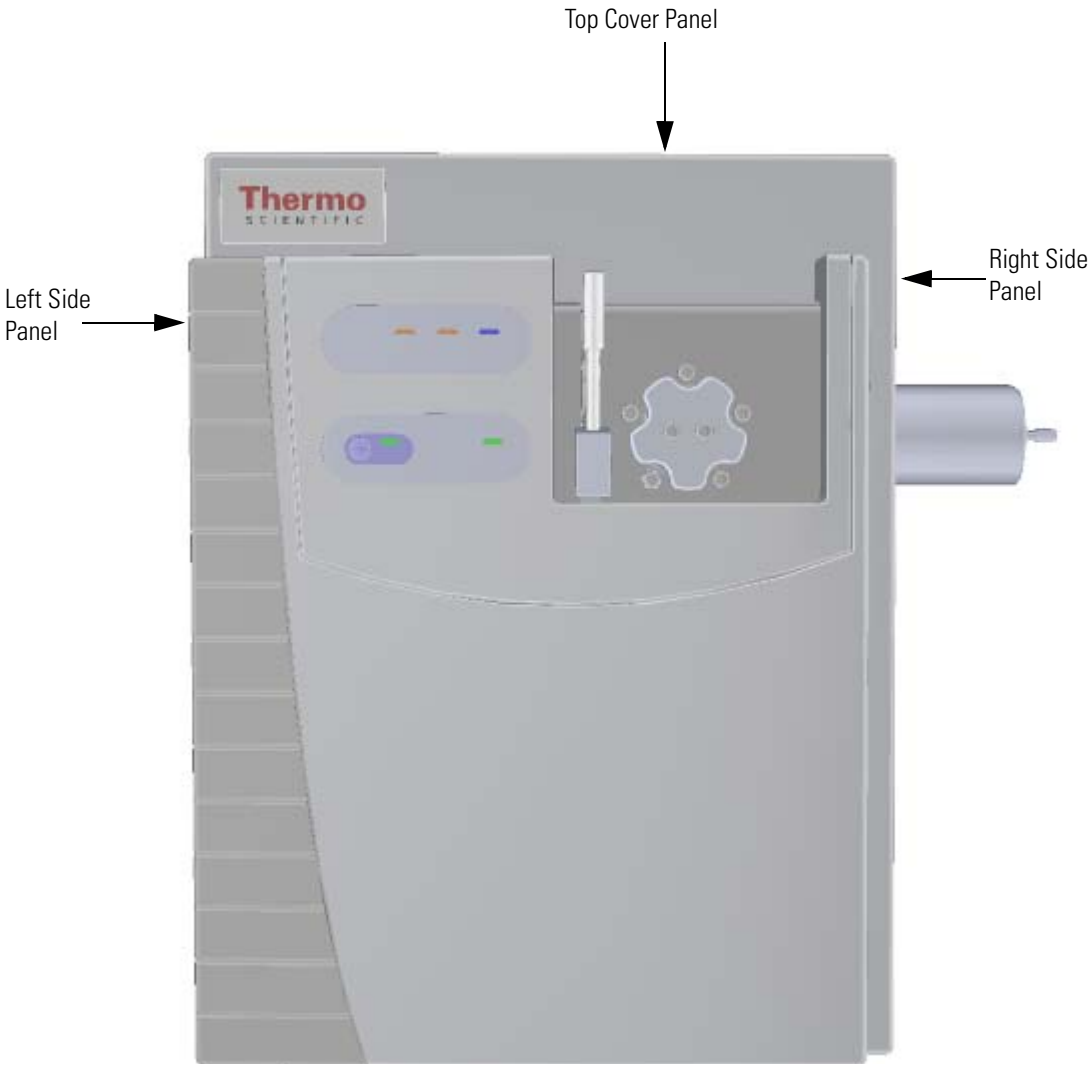
Cover Components

You can purchase the following cover components for the ISQ mass spectrometer. Be sure to reference the component's part number when placing an order with your local Sales/Service Representative. See the *ISQ Hardware Manual* for information about installing these components or Table 1 for a comprehensive list of available components.

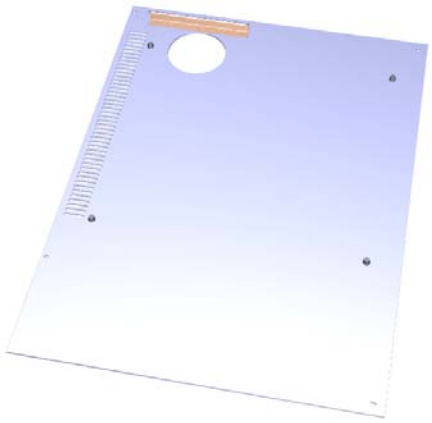
The following cover components can be replaced on the ISQ.

- Right Side Panel
- Left Side Panel
- Top Cover Panel
- Top Manifold Cover (glass)
- Front Door Hinge
- Front Door Hinge Support
- Front Door Latch
- Chassis Foot

Figure 6. Replaceable Covers



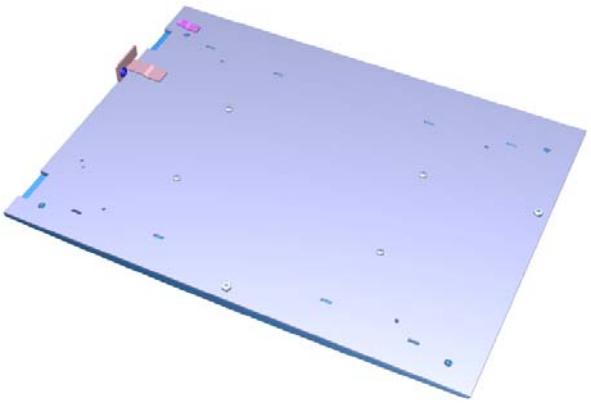
Right Side Panel	Quantity: Each



Thermo Scientific Part Number	1R120413-0001

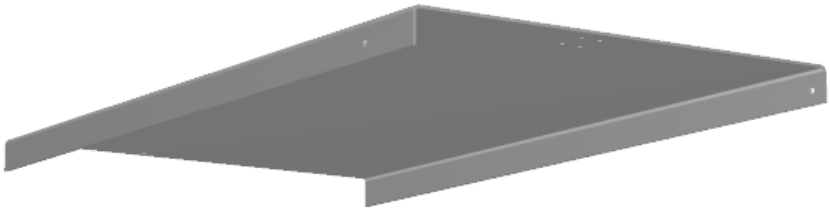
NOTE: To replace all the M4 x 10 mm screws on the right side panel, order four of PN 1R76913-0410. To replace the right side panel feet, order PN 1R3666-0207.

Left Side Panel	Quantity: Each



Thermo Scientific Part Number	1R120411-0001

Top Cover Panel	Quantity: Each



Thermo Scientific Part Number	1R120412-0001

NOTE: To replace all the M4 x 10 mm screws on the top cover panel, order two of PN 1R76913-0410.

Top Manifold Cover (glass)	Quantity: Each

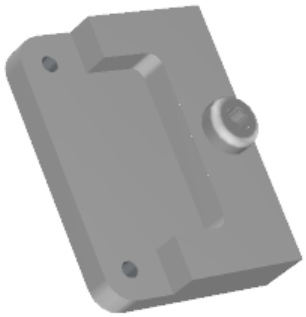
Thermo Scientific Part Number	1R120401-3000

Front Door Hinge	Quantity: Each

Thermo Scientific Part Number	1R3434-5000

NOTE: To replace all the M3 x 8 mm (flathead) screws on a front door hinge, order two of PN 1R76937-0308. There are two hinges on the front door.

Front Door Hinge Support	Quantity: Each



Thermo Scientific Part Number	1R120445-0001

NOTE: To replace the M4 x 10 mm screw on the front door hinge supports, order PN 1R76913-0410.

Front Door Latch	Quantity: Each

Thermo Scientific Part Number	1R76483-3000

NOTE: To replace all the screws on the front door latch, order two of PN 1R120414-0010. To replace all the M3 locking nuts, order two of PN 1R76944-0100.

Chassis Foot	Quantity: Each

Thermo Scientific Part Number	1R3666-0206

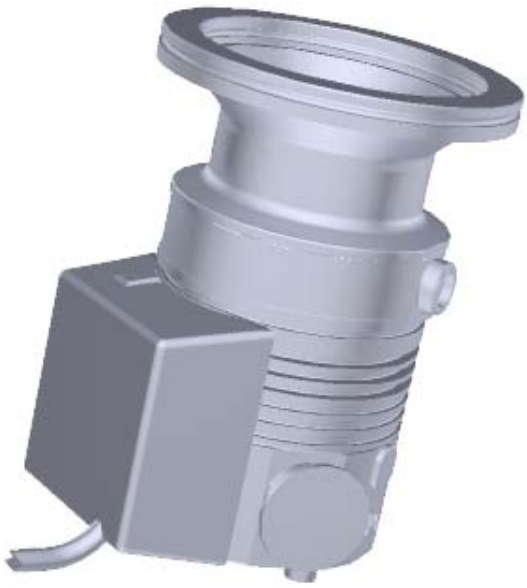
NOTE: There are four feet on the bottom of the ISQ, so to replace them, order four of PN 1R3666-0206. To replace the M4 x 12 mm screw on each chassis foot, order 1R76913-0412.

Pump Components

The following pump is available for the ISQ mass spectrometer. Refer to the *ISQ Hardware Manual* for installation instructions and to Table 1 for a complete list of pump components.

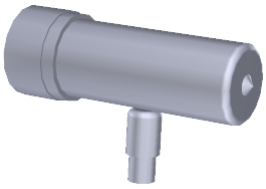
- Standard Capacity Turbomolecular Pump
- Convectron Gauge
- Rough Pump (RV3)
- Foreline Adapter

Standard Capacity Turbomolecular Pump	Quantity: Each



Thermo Scientific Part Number	1R119268-0004

Convectron Gauge	Quantity: Each

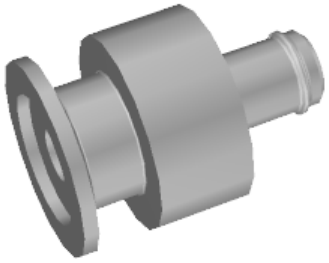


Thermo Scientific Part Number	1RA0105-00501

Rough Pump (RV3)	Quantity: Each

Thermo Scientific Part Number	1R76505-3007

Foreline Adapter	Quantity: Each



Thermo Scientific Part Number	1R119244-0025

ISQ Tools

The ISQ ships with a toolkit that contains all the tools you will need to perform maintenance on the instrument. It does not contain any consumable items or cleaning supplies. You can purchase any item in the toolkit individually or you can order a complete kit. Contact your local Sales/Service Representative to place an order. See Table 1 for a comprehensive list of available components.

The following ISQ toolkit components can be replaced.

- ISQ Toolkit
- Source Exchange Tool
- Small Source Removal Tool
- Bushing in the Source Exchange Tool
- Seal in the Source Exchange Tool
- Clip in the Source Exchange Tool
- Column Measuring Tool
- Source Holder
- T10 Torxhead Key
- T20 Torxhead Key
- T30 Torxhead Key
- Forceps, 8 in.
- Wrench, open-ended, 1/4-in., 5/16-in.
- Wrench, open-ended, 3/8 in., 7/16-in.

ISQ Toolkit	Quantity: Each

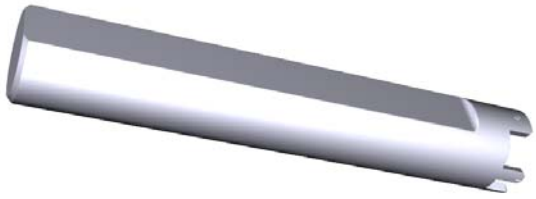
Thermo Scientific Part Number	1R120452-0001

Source Exchange Tool	Quantity: Each

Thermo Scientific Part Number	1R120406-2000

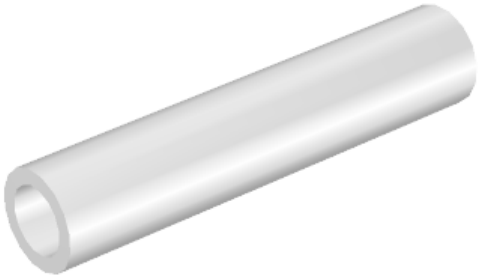
NOTE: The source exchange tool is not part of the ISQ Toolkit. You must order it separately.

Small Source Removal Tool	Quantity: Each



Thermo Scientific Part Number	1R120406-2250

Bushing in the Source Exchange Tool	Quantity: Each



Thermo Scientific Part Number	1R120406-2203

Seal in the Source Exchange Tool	Quantity: Each

Thermo Scientific Part Number	1R120406-2204

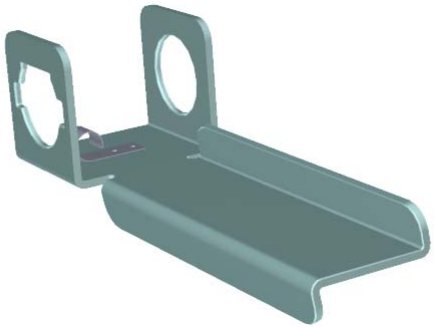
Clip in the Source Exchange Tool	Quantity: Pkg of 5

Thermo Scientific Part Number	1R76483-2102

Column Measuring Tool	Quantity: Each

Thermo Scientific Part Number	1R120461-0010

Source Holder	Quantity: Each



Thermo Scientific Part Number	1R120471-0001

T10 Torxhead Key	Quantity: Each

Thermo Scientific Part Number	1R3812-5T10

T20 Torxhead Key	Quantity: Each

Thermo Scientific Part Number	1R3812-5T20

T30 Torxhead Key	Quantity: Each

Thermo Scientific Part Number	1R3812-5T30

Forceps, 8 in.	Quantity: Each

Thermo Scientific Part Number	1R76360-0008

Wrench, open-ended, 1/4-in., 5/16-in.	Quantity: Each

Thermo Scientific Part Number	1R76360-0109

Wrench, open-ended, 3/8 in., 7/16-in.	Quantity: Each

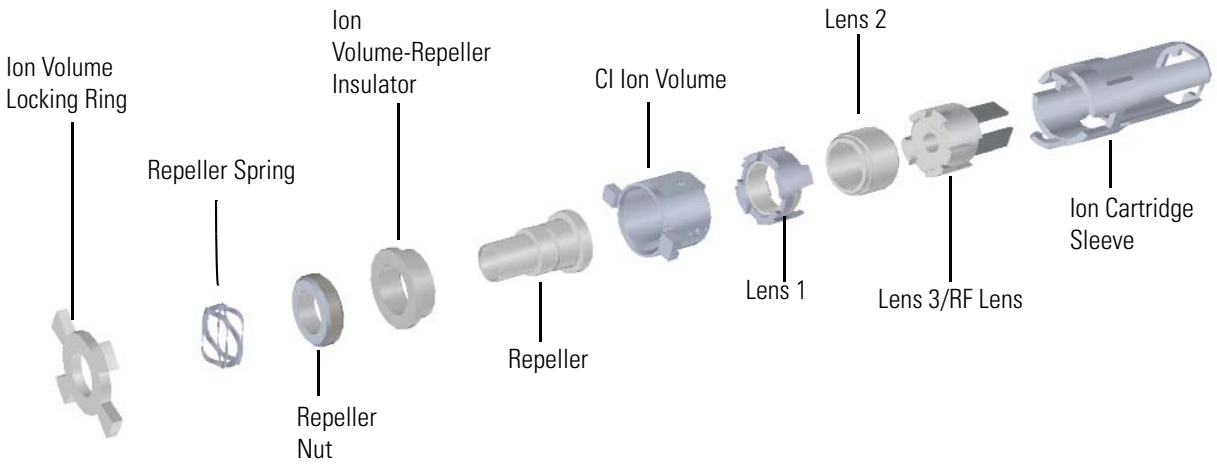
Thermo Scientific Part Number	1R76360-0108

Upgrade Equipment

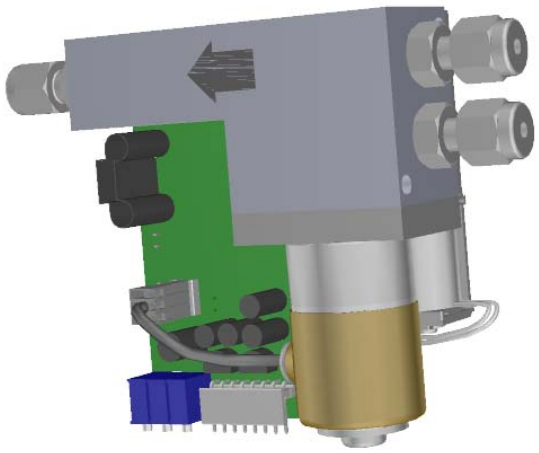
The following upgrade equipment is available for the ISQ. Contact your local Sales/Service Representative to place an order. Once you receive the equipment, refer to the *ISQ Hardware Manual* for installation information or Table 1 for a comprehensive list of available components.

- CI Reagent Gas Flow Module
- CI Ion Volume
- EI/CI Ion Volume
- Dynode and Multiplier Power Supply and Cables (EI/CI)
- Ion Gauge
- Ion Gauge Mount
- Ion Gauge Tube Shield
- Extended Capacity Turbomolecular Pump
- Dust Filters
- Direct Insert Probe
- Direct Exposure Probe

Figure 7. CI Ion Source Cartridge Components



CI Reagent Gas Flow Module	Quantity: Each

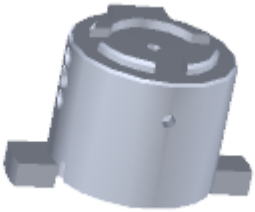


Thermo Scientific Part Number	1R23331-0092

CI Ion Volume	Quantity: Each

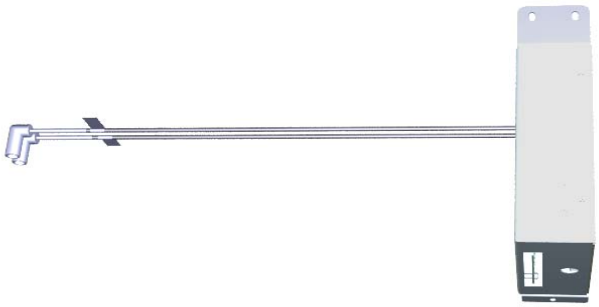
Thermo Scientific Part Number	1R120404-4112

EI/CI Ion Volume	Quantity: Each



Thermo Scientific Part Number	1R120404-4113

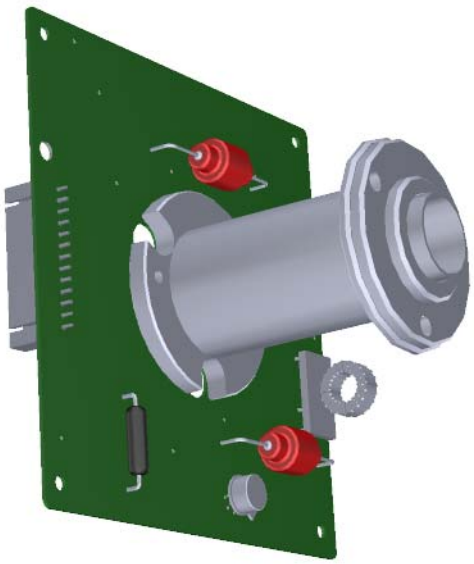
Dynode and Multiplier Power Supply and Cables (EI/CI)	**Quantity: Each**



Thermo Scientific Part Number	**1R120361-0002**

NOTE: To replace all the M4 x 10 mm screws on the dynode and multiplier power supply, order two of PN 1R76913-0410. To replace the M4 x 16 mm screw, order PN 1R76913-0416.

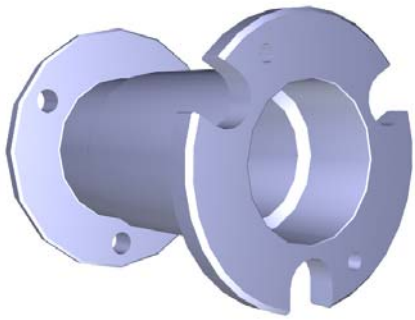
Ion Gauge	**Quantity: Each**



Thermo Scientific Part Number	**1R120560-0020**

NOTE: To replace the o-ring on the ion gauge, order PN 1R3814-116. To replace the ion gauge tube, order PN A0105-06003.

Ion Gauge Mount	Quantity: Each



Thermo Scientific Part Number	1R120416-0002

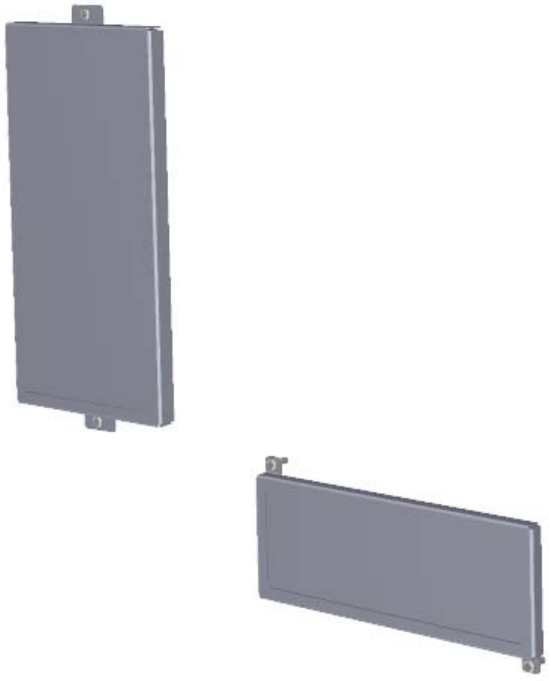
Ion Gauge Tube Shield	Quantity: Each

Thermo Scientific Part Number	1R119605-0012

Extended Capacity Turbomolecular Pump	Quantity: Each

Thermo Scientific Part Number	1R119268-0002

Dust Filters	Quantity: Each



Thermo Scientific Part Number	1R120442-1000

Direct Insert Probe	Quantity: Each

Thermo Scientific Part Number	1R120406-4000

Direct Exposure Probe	Quantity: Each

Thermo Scientific Part Number	1R120406-5000

Note For information about ordering parts for the probes, see the *ISQ and TSQ 8000 Direct Probe System User Guide*.