



Thermo Scientific

Dionex Aquion RFIC Ion Chromatography System

Installation Instructions

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Thermo
SCIENTIFIC

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Software version: Chromeleon 7.2.9 DUa and later

For Research Use Only. Not for use in diagnostic procedures.

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Preface

This manual provides instructions for the initial installation of the Thermo Scientific™ Dionex™ Aquion™ RFIC™ Ion Chromatography System. Follow the installation instructions in the order presented. These instructions have been carefully developed to ensure that the system installation is successful.

Contents

- [Related Documentation](#)
- [Safety Information](#)
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Related Documentation

In addition to this manual, the following documents are available on the Thermo Fisher Scientific website or from your local office:

- *Dionex Aquion RFIC Ion Chromatography System Operator's Manual* (Document No. 22176-97006)
- Manuals for consumable products (including columns, suppressors, and eluent generator cartridges)
- *Chromeleon 7 Installation Guide* (Document No. 7229.0003); also provided on the Thermo Scientific™ Dionex™ Chromeleon™ 7 Chromatography Data System DVD
- *Dionex AS-AP Autosampler Operator's Manual* (Document No. 065361)
- *Dionex AS-DV Autosampler Operator's Manual* (Document No. 065259)

Safety Information

The Dionex Aquion RFIC is manufactured for Thermo Fisher Scientific at the following location:

Jabil Circuit de Chihuahua S. de R.L. de C.V.
Complejo Industrial Chihuahua
Av. Alejandro Dumas No. 11341
31109 Chihuahua, Chihuahua
Mexico

The Dionex Aquion RFIC is designed for IC (ion chromatography) applications and should not be used for any other purpose. Operation of a Dionex Aquion RFIC in a manner not specified by Thermo Fisher Scientific may result in personal injury.

If there is a question regarding appropriate usage, contact Technical Support for Dionex products. In the U.S. and Canada, call 1-800-532-4752. Outside the U.S. and Canada, call the nearest Thermo Fisher Scientific office.

Safety and Special Notices

Make sure you follow the precautionary statements presented in this manual. Safety notices and special notices appear in boxes. These notices include the following:



DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Each DANGER notice is accompanied by an appropriate DANGER symbol.



CAUTION Highlights hazards to humans, property, or the environment. Each CAUTION notice is accompanied by an appropriate CAUTION symbol.







IMPORTANT Highlights information necessary to prevent damage to the system or 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

These symbols appear on the Dionex Aquion RFIC or on labels affixed to the system:

	Alternating current
	Primary protective conductor terminal
	Secondary protective conductor terminal
	Power supply is on
	Power supply is off
	Indicates a potential hazard. Refer to this manual for an explanation of the hazard and how to proceed.

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 this section.

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.

The regulatory symbols on the Dionex Aquion RFIC model/data label indicate that the system is in compliance with the following EMC and safety standards:

- EN 61010-1:2010
- UL 61010-1:2012
- CAN/CSA-C22.2 No. 61010-1-12
- EN 61326-1:2013

The CE mark on the model/data label of the Dionex Aquion RFIC indicates that the system is in compliance with the following European Community Directives as is evidenced by compliance to the associated standard where appropriate:

- Low Voltage/Safety Directive: 2014/35/EU by conforming to EN61010-1:2013

- EMC Directive: 2014/30/EU by conforming to EN61326-1:2013

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: This instrument must be used in the manner specified by Thermo Fisher Scientific to ensure protections provided by the instrument are not impaired. Deviations from specified instructions on the proper use of the instrument include changes to the system and parts replacement. Accordingly, order replacement parts from Thermo Fisher Scientific or one of its authorized representatives.

Notice on the Susceptibility to Electromagnetic Transmission

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



Thermo Fisher Scientific is registered with B2B Compliance ([B2Bcompliance.org.uk](https://www.b2bcompliance.org.uk)) in the UK and with the European Recycling Platform ([ERP-recycling.org](https://www.erp-recycling.org)) in all other countries of the European Union and in Norway.

If this product is located in Europe and you want to participate in the Thermo Fisher Scientific B2B (Business-to-Business) Recycling Program, send an e-mail request to wEEE.recycle@thermofisher.com with the following information:

- WEEE product class
- Name of the manufacturer or distributor (where you purchased the product)
- Number of product pieces, and the estimated total weight and volume

- Pick-up address and contact person (including contact information)
- Appropriate pick-up time
- Declaration of decontamination, stating that all hazardous fluids or material have been removed from the product

For additional information about the Restriction on Hazardous Substances (RoHS) Directive for the European Union, search for RoHS on the Thermo Fisher Scientific European language websites.

Conformité DEEE

Ce produit est conforme avec 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 sociétés de recyclage dans chaque état membre de l'Union Européenne et ce produit devrait être collecté ou recyclé par celle(s)-ci. Pour davantage d'informations, rendez-vous sur la page www.thermoscientific.fr/rohs.

WEEE Konformität

Dieses Produkt entspricht der EU Waste Electrical & Electronic Equipment (WEEE) Richtlinie 2002/96/EC. Es ist mit dem folgenden 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. Weitere Informationen finden Sie unter www.thermoscientific.de/rohs.

Deionized Water Requirements for IC

For electrolytic eluent generation, or when manually preparing eluent and regenerant, use ASTM Type I (18 megohm-cm) filtered and deionized water that meets the specifications listed in Table 1.

Table 1. ASTM filtered, Type I deionized water specifications for ion chromatography

Contaminant	Specification
Ions–Resistivity	>18.0 (megohm-cm)
Organics–TOC	<10 ppb
Iron/Transition Metals*	<1 ppb
Pyrogens	<0.03 (Eu/mL)
Particulates > 0.2 µm	<1 (units/mL)
Colloids–Silica	<10 ppb
Bacteria	<1 (cfu/mL)
* Iron/transition metal content not specified for ASTM Type I water	

Contacting Us


❖ For Technical Support for Dionex products







In the U.S. and Canada, call 1-800-532-4752.







Outside the U.S. and Canada, call the nearest Thermo Fisher Scientific office.

❖ For additional contact information

Go to www.thermofisher.com/us/en/home/technical-resources/contact-us.html.

CAUTION Symbol	CAUTION	VORSICHT	PRECAUCIÓN	MISE EN GARDE
	<p>Risk electric shock: This instrument uses voltages that can cause electric shock and/or personal injury. Before servicing, shut down the instrument and disconnect it from line power. While operating the instrument, keep covers on. Do not remove the protective covers from the printed circuit board assemblies (PCBAs).</p>	<p>Stromschlaggefahr: Dieses Gerät arbeitet mit Spannungen, die Stromschläge und/oder Personenverletzungen verursachen können. Vor Wartungsarbeiten muss das Gerät abgeschaltet und vom Netz getrennt werden. Betreiben Sie das Gerät nicht mit abgenommenen Abdeckungen. Nehmen Sie die Schutzabdeckungen von Leiterplatten nicht ab.</p>	<p>Riesgo de descargas eléctricas: Este instrumento utiliza voltajes que pueden causar descargas eléctricas y/o lesiones personales. Antes de revisar o reparar el instrumento, apáguelo y desconéctelo de la red eléctrica. Mantenga colocadas las cubiertas mientras se utiliza el instrumento. No retire las cubiertas protectoras del circuito impreso completo (PCBA).</p>	<p>Risque de choc électrique : l'instrument utilise des tensions susceptibles de provoquer une électrocution et/ou des blessures corporelles. Il doit être arrêté et débranché de la source de courant avant toute intervention. Ne pas utiliser l'instrument sans ses couvercles. Ne pas enlever les capots de protection des cartes à circuit imprimé (PCBA).</p>
	<p>Chemical hazard: Wear gloves and other protective equipment, as appropriate, when handling toxic, carcinogenic, mutagenic, corrosive, or irritant chemicals. Use approved containers and proper procedures to dispose of waste oil and when handling wetted parts of the instrument.</p>	<p>Gefahr durch Chemikalien: Tragen Sie beim Umgang mit toxischen, karzinogenen, mutagenen, ätzenden oder reizenden Chemikalien Schutzhandschuhe und weitere geeignete Schutzausrüstung. Verwenden Sie bei der Entsorgung von verbrauchtem Öl und beim Umgang mit medienberührenden Komponenten die vorgeschriebenen Behälter, und wenden Sie ordnungsgemäße Verfahren an.</p>	<p>Peligro por sustancias químicas: Cuando manipule sustancias químicas, tóxicas, carcinogénicas, mutágenas, corrosivas o irritantes, utilice guantes y otro equipo de protección. Utilice siempre recipientes homologados y siga los procedimientos adecuados cuando deseché aceite residual o manipule partes mojadas del instrumento.</p>	<p>Danger lié aux produits chimiques : porter des gants et d'autres équipements de protection appropriés pour manipuler les produits chimiques toxiques, cancérogènes, mutagènes, corrosifs ou irritants. Utiliser des récipients homologués et des procédures adéquates pour la mise au rebut des huiles usagées et lors de la manipulation des pièces de l'instrument en contact avec l'eau.</p>
	<p>Hot surface: Before touching, allow any heated components to cool.</p>	<p>Heiße Oberflächen: Lassen Sie heiße Komponenten vor der Berührung abkühlen.</p>	<p>Superficies calientes: Antes de tocar los componentes calientes, espere a que se enfrien.</p>	<p>Surface chaude : laisser refroidir les composants chauffés avant toute manipulation.</p>
	<p>Flammable substances hazard: Use care when operating the system in the presence of flammable substances.</p>	<p>Gefahr durch entzündbare Substanzen: Beachten Sie die einschlägigen Vorsichtsmaßnahmen, wenn Sie das System in Gegenwart von entzündbaren Substanzen betreiben.</p>	<p>Peligro por sustancias inflamables: Tenga mucho cuidado cuando utilice el sistema cerca de sustancias inflamables.</p>	<p>Danger lié aux substances inflammables : agir avec précaution lors de l'utilisation du système en présence de substances inflammables.</p>
	<p>Risk of eye injury: Eye injury could occur from splattered chemicals, airborne particles, or sharp objects. (Sharp objects that customers might install in the instrument include fused-silica tubing, the autosampler needle, and so on.) Wear safety glasses when handling chemicals or servicing the instrument.</p>	<p>Augenverletzungsrisiko: Verspritzte Chemikalien, Schwebstoffpartikel oder scharfe Objekte können Augenverletzungen verursachen. (Scharfe Objekte, die Kunden möglicherweise im Gerät installieren, sind z. B. Quarzglas-Kapillaren, die Nadel des Autosamplers, usw.) Tragen Sie beim Umgang mit Chemikalien oder bei der Wartung des Gerätes eine Schutzbrille.</p>	<p>Riesgo de lesiones oculares: Las salpicaduras de sustancias químicas, las partículas flotantes en el aire y los objetos afilados pueden causar lesiones oculares. (Entre los objetos afilados que los clientes pueden instalar en el instrumento se encuentran tubos de sílice fundida, agujas del muestreador automático, etc.). Para manipular sustancias químicas o realizar tareas de mantenimiento, utilice gafas de seguridad.</p>	<p>Risque de lésion oculaire : les projections chimiques, les particules en suspension dans l'air et les objets tranchants peuvent entraîner des lésions oculaires. (Les objets tranchants pouvant être installés par les clients dans l'instrument comprennent les tubes en silice fondue, les aiguilles du passeur automatique, etc.). Porter des lunettes de protection lors de toute manipulation de produit chimique ou intervention sur l'instrument.</p>
	<p>General hazard: A hazard is present that is not included in the other categories. This symbol also appears on the instrument. For details about the hazard, refer to the instrument manual. When the safety of a procedure is questionable, contact Technical Support for Thermo Scientific Sunnyvale products.</p>	<p>Allgemeine Gefahr: Es besteht eine weitere Gefahr, die nicht in den vorstehenden Kategorien beschrieben ist. Dieses Symbol wird auch auf dem Gerät angebracht. Einzelheiten zu dieser Gefahr finden Sie in den Gerätehandbüchern. Wenn Sie sich über die Sicherheit eines Verfahrens im Unklaren sind, setzen Sie sich, bevor Sie fortfahren, mit dem technischen Support für Thermo Scientific Sunnyvale Produkte in Verbindung.</p>	<p>Peligro general: Existen peligros que no se incluyen en las otras categorías. Este símbolo también aparece en el instrumento. Si desea obtener más información sobre estos peligros, consulte el manual del instrumento. En caso de duda sobre la seguridad de un procedimiento, póngase en contacto con el personal de servicio técnico de los productos Thermo Scientific Sunnyvale.</p>	<p>Danger d'ordre général : indique la présence d'un risque n'appartenant pas aux catégories citées plus haut. Ce symbole figure également sur l'instrument. Pour plus de détails sur ce danger potentiel, se reporter au manuel de l'instrument. Si la sûreté d'une procédure est incertaine, contacter l'assistance technique pour les produits Thermo Scientific Sunnyvale.</p>

CAUTION Symbol	CAUTION	VORSICHT	PRECAUCIÓN	MISE EN GARDE
	Laser hazard: This instrument uses a laser that is capable of causing personal injury. This symbol also appears on the instrument. For details about the hazard, refer to the instrument manual.	Gefahr durch Laserstrahlen: Der in diesem Gerät verwendete Laser kann zu Verletzungen führen. Dieses Symbol wird auch auf dem Gerät angebracht. Einzelheiten zu dieser Gefahr finden Sie in den Gerätehandbüchern.	Peligro por láser: Este instrumento utiliza un láser que puede producir lesiones personales. Este símbolo también aparece en el instrumento. Si desea obtener más información sobre el peligro, consulte el manual del instrumento.	Danger lié au laser : l'instrument utilise un laser susceptible de provoquer des blessures corporelles. Ce symbole figure également sur l'instrument. Pour plus de détails sur ce danger potentiel, se reporter au manuel de l'instrument.
	Ultra violet light hazard: Do not look directly at the ultra-violet (UV) light or into the UV source. Exposure can cause eye damage. Wear UV eye protection.	Gefahr durch UV-Licht: Richten Sie Ihren Blick nicht direkt auf ultraviolettes Licht (UV-Licht) oder in die UV-Quelle. Dies kann zu Augenschäden führen. Tragen Sie eine UV-Schutzbrille.	Peligro por luz ultravioleta: No mire directamente a una luz ultravioleta (UV) ni a una fuente UV. La exposición puede causar daños oculares. Lleve protección ocular para UV.	Danger lié aux rayons ultraviolets : ne jamais regarder directement la lumière ultraviolette (UV) ou la source d'UV. Une exposition peut entraîner des lésions oculaires. Porter des protections oculaires anti-UV.
	Sharp object: Avoid physical contact with the object.	Scharfes Objekt: Vermeiden Sie den physischen Kontakt mit dem Objekt.	Objeto puntiagudo: Evite el contacto físico con el objeto.	Objet tranchant : éviter tout contact physique avec l'objet.
	Pinch point: Keep hands away from this area.	Quetschgefahr: Halten Sie Ihre Hände von diesem Bereich fern.	Puntos de pinzamiento: Mantenga las manos apartadas de esta área.	Risque de pincement : éloigner les mains de cette zone.
	Heavy objects: Never lift or move the instrument by yourself; you can suffer personal injury or damage the equipment. For specific lifting instructions, refer to the instrument manual.	Schweres Objekt: Bewegen und heben Sie das Gerät niemals allein an; dies kann zu Verletzungen oder zur Beschädigung des Geräts führen. Spezifische Anweisungen zum Anheben finden Sie im Gerätehandbuch.	Objeto pesado: Nunca levante ni mueva el instrumento por su cuenta, podría sufrir lesiones personales o dañar el equipo. Para obtener instrucciones específicas sobre levantamiento, consulte el manual del instrumento.	Objet lourd : ne jamais soulever ou déplacer l'instrument seul sous peine de blessure corporelle ou d'endommagement de l'instrument. Pour obtenir des instructions de levage spécifiques, se reporter au manuel de l'instrument.
	Trip obstacle: Be aware of cords, hoses, or other objects located on the floor.	Stolpergefahr: Achten Sie auf Kabel, Schläuche und andere Objekte auf dem Fußboden.	Tropiezo con obstáculos: Tenga en cuenta los cables, mangueras u otros objetos colocados en el suelo.	Risque de trébuchement : faire attention aux câbles, tuyaux et autres objets situés sur le sol.
	When the safety of a procedure is questionable, contact Technical Support for Thermo Scientific Sunnyvale products.	Wenn Sie sich über die Sicherheit eines Verfahrens im unklaren sind, setzen Sie sich, bevor Sie fortfahren, mit Ihrer lokalen technischen Unterstützungsorganisation für Thermo Scientific Sunnyvale Produkte in Verbindung.	En caso de duda sobre la seguridad de un procedimiento, póngase en contacto con el personal de servicio técnico de los productos Thermo Scientific Sunnyvale.	Si la sûreté d'une procédure est incertaine, contacter l'assistance technique pour les produits Thermo Scientific Sunnyvale.

CAUTION Symbol	CAUTION	警告	危険警告
	<p>Risk electric shock: This instrument uses voltages that can cause electric shock and/or personal injury. Before servicing, shut down the instrument and disconnect it from line power. While operating the instrument, keep covers on. Do not remove the protective covers from the printed circuit board assemblies (PCBAs).</p>	<p>感電の危険性: この機器では、感電および/または身体傷害を引き起こすおそれのある電圧を使用しています。整備点検の前には、機器の電源を切り、電源コードを抜いてください。機器の作動中は、カバーを付けたままにしてください。プリント基板アセンブリ (PCBA) から保護カバーを取り外さないでください。</p>	<p>触电危险: 本仪器所用电压可能导致电击或人身伤害。进行维修服务前, 务必关闭仪器电源并断开其电源连接。操作此仪器时, 不要卸下顶盖。勿卸下印刷电路板组件 (PCBA) 的保护盖。</p>
	<p>Chemical hazard: Wear gloves and other protective equipment, as appropriate, when handling toxic, carcinogenic, mutagenic, corrosive, or irritant chemicals. Use approved containers and proper procedures to dispose of waste oil and when handling wetted parts of the instrument.</p>	<p>化学的危険性: 毒性、発癌性、変異原性、腐食性、または刺激性のある化学薬品を取り扱うときは、必要に応じて手袋などの保護具を着用します。廃油を処分したり、機器の廃液部品を取り扱うときは、認可された容器を使用し、適切な手順に従います。</p>	<p>化学品危险: 当处理毒性、致癌性、致突变性、腐蚀性或者刺激性化学品时, 佩戴手套和其他保护性设备。当处理浸湿的仪器部件以及废油时, 使用认可的容器和合适的步骤。</p>
	<p>Hot surface: Before touching, allow any heated components to cool.</p>	<p>高温: 触れる前に、加熱した部品を冷ましてください。</p>	<p>热表面: 待高温部件冷却之后再行维修。</p>
	<p>Flammable substances hazard: Use care when operating the system in the presence of flammable substances.</p>	<p>可燃性物質の危険性: 可燃性物質があるところでシステムを作動させる場合は十分注意してください。</p>	<p>易燃物危险: 在有易燃物质的场地操作该系统时, 务必小心谨慎。</p>
	<p>Risk of eye injury: Eye injury could occur from splattered chemicals, airborne particles, or sharp objects. (Sharp objects that customers might install in the instrument include fused-silica tubing, the autosampler needle, and so on.) Wear safety glasses when handling chemicals or servicing the instrument.</p>	<p>眼外傷の危険性: 飛散した化学薬品、浮遊粒子、または鋭利な物体によつて眼外傷を負うおそれがあります(機器に取り付けられる可能性のある鋭利な物体は、ヒューズドリルカ、オートサンブラーニードルなどです)。化学薬品を取り扱ったり、機器を整備点検するときは、保護メガネを着用します。</p>	<p>眼睛伤害风险: 眼睛受伤可能源自飞溅的化学品、空气中的颗粒, 或者锋利的物体。(安装在仪器内的锋利物体包括熔融石英管、自动进样器的进样针等。) 处理化学品或对仪器进行维修服务时, 务必戴上防护眼镜。</p>
	<p>General hazard: A hazard is present that is not included in the other categories. This symbol also appears on the instrument. For details about the hazard, refer to the instrument manual. When the safety of a procedure is questionable, contact Technical Support for Thermo Scientific Sunnyvale products.</p>	<p>一般的な危険性: それぞれのカテゴリに当てはまらない危険があります。この標識記号は機器にも表示されています。この危険の詳細については、機器のマニュアルを参照してください。手順の安全性にご不明な点がある場合は、Thermo Scientific Sunnyvale 製品のテクニカルサポートまでお問い合わせください。</p>	<p>普通危险: 未归入其他类别的危险。此符号也会在仪器上出现。有关此危险的详细信息, 参阅适当的仪器手册。若对任何步骤的安全事项有疑问, 联系 Thermo Scientific Sunnyvale 产品的技术支持中心。</p>

CAUTION Symbol	CAUTION	警告	危険警告
	Laser hazard: This instrument uses a laser that is capable of causing personal injury. This symbol also appears on the instrument. For details about the hazard, refer to the instrument manual.	レーザー光線の危険性: この機器では、身体傷害を引き起こすおそれのあるレーザーを使用しています。この標識記号は機器にも表示されています。この危険の詳細については、機器のマニュアルを参照してください。	激光危险: 本仪器所用激光会导致人身伤害。此符号也会在仪器上出现。有关此危险的详细信息, 参阅适当的仪器手册。
	Ultra violet light hazard: Do not look directly at the ultra-violet (UV) light or into the UV source. Exposure can cause eye damage. Wear UV eye protection.	紫外光の危険性: 紫外 (UV) 光または UV 光源を直接見ないでください。照射によって眼損傷を引き起こすおそれがあります。UV 保護メガネを着用します。	紫外光危险: 不要直视紫外 (UV) 光或者紫外光源。直视可能导致眼睛伤害。佩戴紫外线防护眼镜。
	Sharp object: Avoid physical contact with the object.	鋭利な物体: 物体との身体的接触を避けてください。	鋒利物体: 避免直接接触锋利的物体。
	Pinch point: Keep hands away from this area.	ピンチポイント: この部分には手を挟まれないようにしてください。	夹点: 勿将手放在此部位。
	Heavy objects: Never lift or move the instrument by yourself; you can suffer personal injury or damage the equipment. For specific lifting instructions, refer to the instrument manual.	重量物: 1 人で機器を持ち上げたり移動しないでください。身体傷害を負ったり、機器を損傷するおそれがあります。具体的な持ち上げ方法については、機器のマニュアルを参照してください。	重物: 切勿独自提起或移动本仪器; 可能遭受人身伤害或损坏仪器。有关具体的提起说明, 参阅仪器手册。
	Trip obstacle: Be aware of cords, hoses, or other objects located on the floor.	作業の障害物: 床にあるコード、ホース、その他の物体に注意してください。	绊倒危险: 注意地面上的线、管或其他物品。
	When the safety of a procedure is questionable, contact Technical Support for Thermo Scientific Sunnyvale products.	手順の安全性にご不明な点がある場合は、Thermo Scientific Sunnyvale 製品のテクニカルサポートまでお問い合わせください。	如安全程序有疑问, 联系 Thermo Scientific Sunnyvale 产品的技术支持中心。

Unpacking Instructions

This section provides instructions for unpacking the Dionex Aquion RFIC, the autosampler (if included), and the computer.



CAUTION Two or more persons must lift the Dionex Aquion RFIC, which weighs more than 23 kg (50 lb). Lift the Dionex Aquion RFIC only from each side of the cabinet bottom. Lifting from the front door will damage the door hinges.



MISE EN GARDE Au moins deux personnes doivent soulever le Dionex Aquion RFIC, qui pèse plus de 23 kg (50 lb). Ne soulevez le Dionex Aquion RFIC que par chaque côté du fond de l'appareil. Son soulèvement par la porte du panneau avant endommagera les charnières de la porte.



VORSICHT Der Dionex Aquion RFIC wiegt über 23 kg. Daher darf das Gerät nur von zwei oder mehr Personen angehoben werden. Greifen Sie dazu an beiden Seiten unter das Gerät. Wenn Sie den Dionex Aquion RFIC der Vordertür anheben, werden die Scharniere der Tür beschädigt.

Note Check the Dionex Aquion RFIC shipping container for external signs of damage. If the container shows signs of damage, contact Thermo Fisher Scientific immediately.

❖ To unpack the Dionex Aquion RFIC

1. Open the shipping container and remove the top layer of foam.
2. Open the plastic bag that covers the system.
3. Set the eluent reservoir on top of the system.
4. Turn over the Thermo Scientific™ Dionex™ Eluent Generator Cartridge (Dionex EGC) holder and set it on top of the system.
5. Remove the next layer of foam.
6. With two or more persons, lift the system from the seating (or cavity) of the foam to the top of the foam. Reach down to the bottom of the system, lift it out of the container, and set it on the workbench.

7. Inspect the system for any shipping damage. Save the shipping container and all packing material. You will need them in the future if the system is shipped.

❖ To unpack the autosampler

1. Follow the unpacking instructions in the autosampler manual.
2. Place the autosampler to the left of the Dionex Aquion RFIC on the workbench.

❖ To unpack the computer

IMPORTANT Chromeleon 7.2.9 DUa (or later) is required for support of the Dionex Aquion RFIC. Chromeleon runs under the Microsoft® Windows® 10, Windows 8.1, or Windows 7 operating system. When you purchase Chromeleon and a computer from Thermo Fisher Scientific, the chromatography software and computer hardware are installed at the factory.

When you purchase the computer from a third-party vendor, you are responsible for ensuring that it meets current system specifications. For details, go to <https://www.thermofisher.com/us/en/home/technical-resources/contact-us.html>.

1. Remove the computer and all documentation from the computer box and place them on the workbench.
2. Follow the instructions in the computer installation guide to hook up the computer components.

System Setup

This chapter provides instructions for setting up the Dionex Aquion RFIC and Chromeleon software. These instructions apply to systems configured with a conductivity detector. After completing the setup procedure, refer to the plumbing instructions.

Contents

- [Facility Requirements](#)
- [Connecting the Autosampler \(Optional\)](#)
- [Connecting to the Computer](#)
- [Connecting the Dionex Aquion RFIC Power Cord](#)
- [Setting Up the Chromatography Software](#)

Facility Requirements

- Verify that the installation site meets the following environmental specifications:
 - **Main Power:** 100 to 240 Vac, 50 to 60 Hz (auto-sensing power supply; no manual voltage or frequency adjustment required)
 - **Operating Temperature:** 4 to 40 °C (40 to 104 °F)
 - **Operating Humidity:** 5% to 95% relative humidity, noncondensing
- Provide a sturdy workbench for the system. The workbench should be high enough to allow convenient access to the interior of the Dionex Aquion RFIC.
- Allow at least 15 cm (6 in) behind the system for power connections and ventilation. For optimal performance, install the system in a draft-free location, out of the path of air conditioning and heating vents.
- Use ASTM filtered, Type I (18 megohm-cm) deionized water when preparing eluent and regenerant (see [“Deionized Water Requirements for IC”](#) on [page viii](#)).
- (Optional) For pressurization of the eluent reservoir, provide a clean gas source regulated to between 0.55 and 0.83 MPa (80 and 120 psi). An air regulator accessory (P/N 060054) is required to regulate the pressure to between 0.03 and 0.04 MPa (5 and 6 psi).

2 System Setup

Connecting the Autosampler (Optional)



CAUTION Do not pressurize the eluent reservoir above 0.07 MPa (10 psi).



MISE EN GARDE Ne mettez jamais les réservoirs d'éluants sous une pression supérieure à 0,07 MPa (10 lb/po²).



VORSICHT Setzen Sie den Eluentbehälter auf keinen Fall einem Druck über 0,07 MPa aus.

Connecting the Autosampler (Optional)

The Dionex Aquion RFIC injection valve can be connected to either a Thermo Scientific™ Dionex™ AS-DV Autosampler or Thermo Scientific™ Dionex™ AS-AP Autosampler. For instructions, see the relevant section below.

Note

- Thermo Fisher Scientific offers a high-pressure Rheodyne™ valve as an auxiliary valve for the Dionex Aquion RFIC. When installed, the auxiliary valve can be used as the injection valve instead of the standard valve configured with the system. This enables sample preparation activities such as online filtration and matrix elimination.
- The electrically-activated, 2-position PEEK™ auxiliary valve is available in 6-port and 10-port models. The valve must be installed on-site by Thermo Fisher Scientific field service personnel.

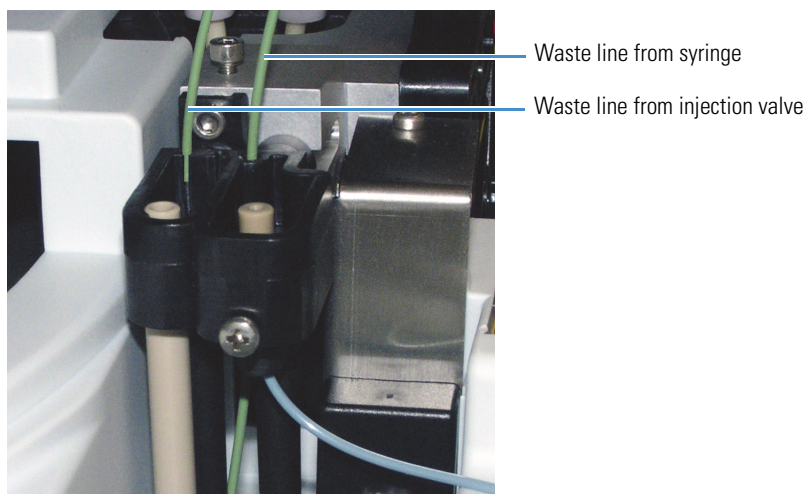
Connecting a Dionex AS-AP Autosampler

1. Locate the system tubing package provided with the Dionex Aquion RFIC injection valve. One tubing package with precut and labeled tubing (microbore or standard bore) is provided for each valve installed in the system.
2. In the system tubing assembly bag, locate the 0.75-mm (0.030-in) ID green PEEK tubing assembly labeled **TO INJ VALVE-W**. This is the waste line.

Note To improve sample loading precision in the system, add a 51-cm (20-in) piece of black PEEK tubing to the waste line.

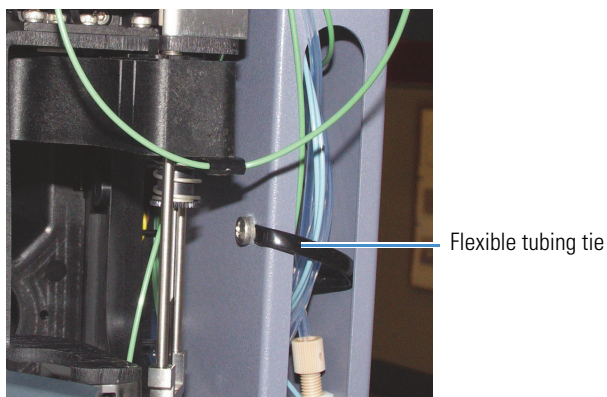
3. Connect one end of the waste line to port **W (6)** on the injection valve (or auxiliary valve).
4. Route the other end of the waste line to the Dionex AS-AP waste port and insert the line into one of the round openings in the waste port (see [Figure 1](#)).

Figure 1. Injection valve waste line installed in Dionex AS-AP waste port



5. To ensure that the waste lines do not interfere with the movement of the Dionex AS-AP needle arm, secure the excess tubing with the flexible tubing tie in the slotted compartment next to the needle (see [Figure 2](#)).

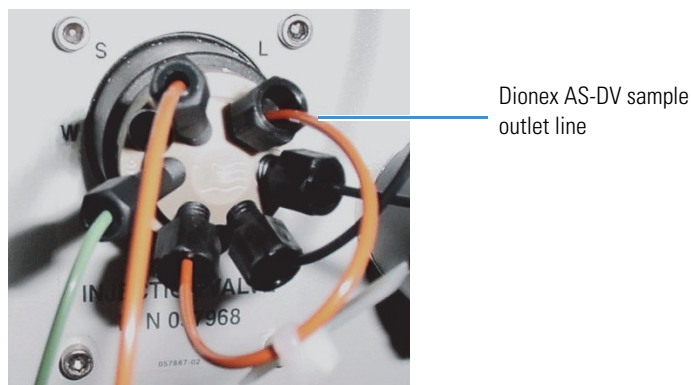
Figure 2. Securing Dionex AS-AP waste lines with the tubing tie



Connecting a Dionex AS-DV Autosampler

1. Open the doors of the Dionex Aquion RFIC and the autosampler.
2. Route the sample outlet line from the Dionex AS-DV through the left side slot at the front of the Dionex Aquion RFIC.
3. Connect the sample outlet line to port **S (5)** on the Dionex Aquion RFIC injection valve (or auxiliary valve) (see [Figure 3](#)).

Figure 3. Dionex AS-DV sample outline line connection to injection valve

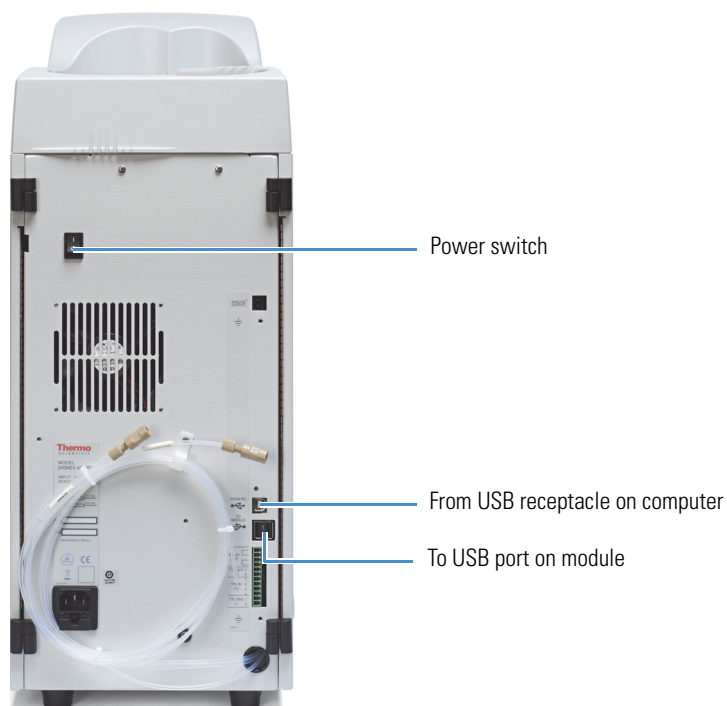


Connecting to the Computer

The Dionex Aquion RFIC rear panel (see [Figure 4](#)) includes:

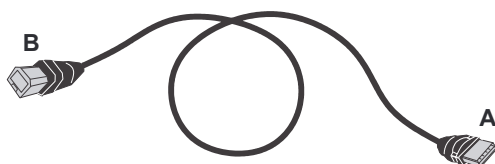
- A USB receptacle for connecting the system to a USB port on the computer on which Chromeleon is installed.
- Two USB ports for connecting the system to other Dionex USB-compliant modules.

Figure 4. Dionex Aquion RFIC rear panel



All USB connections described here require standard A-to-B cables (see [Figure 5](#)).

Figure 5. USB A-to-B cable



IMPORTANT

- The USB standard limits the USB cable length to 5 m (5.5 yds). Each USB device can be separated from the computer by no more than five hubs. Thus, each USB device can be located no more than 30 m (32 yds) from the computer.
- Before connecting the USB cables, verify that Chromeleon was installed on the computer and that the license code was entered. Unless Chromeleon is already installed, Windows will be unable to identify the new USB device when the power is turned on.
- Do not turn on the power to the Dionex Aquion RFIC or other USB modules until you connect the USB cable.

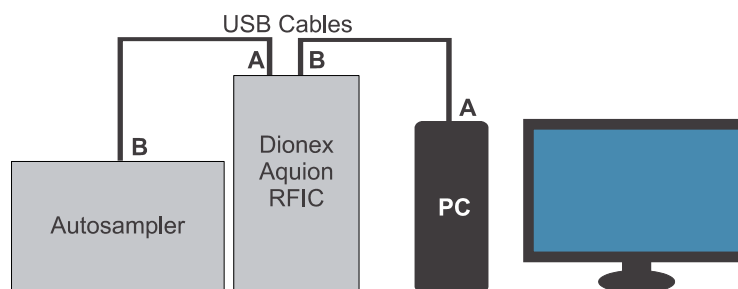
You can connect the Dionex Aquion RFIC directly to a USB port on the Chromeleon computer, or else connect the system to a USB 2.0 external hub that is connected to the computer. An external hub is required when:

- The number of USB devices in the system exceeds the number of available USB ports.
- The Dionex Aquion RFIC is more than 5 m (5.5 yds) from the computer.

❖ To connect the Dionex Aquion RFIC to the computer

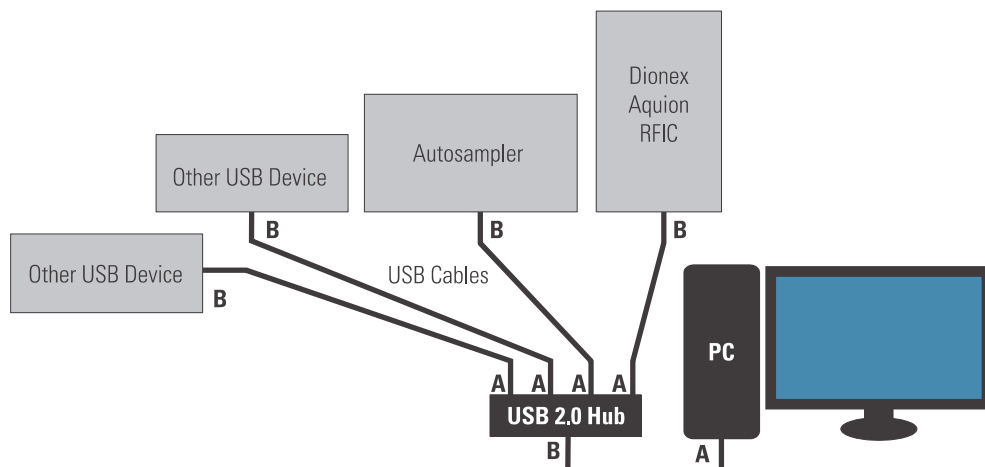
1. Locate the USB cable (P/N 960777) provided in the Dionex Aquion RFIC Ship Kit (P/N 064375).
2. To connect directly to the computer: Connect the USB cable between the USB connector on the Dionex Aquion RFIC rear panel (see [Figure 6](#)) and a USB port on the computer.

Figure 6. Example USB connections: Dionex Aquion RFIC connected directly to computer



To connect to the computer via an external hub: Connect the USB cable to the hub, and then connect the hub to the computer. For installation details, refer to the manual provided by the hub vendor.

Figure 7. Example USB connections: Dionex Aquion RFIC connected to external hub



3. If you are installing an autosampler, locate the USB cable provided in the autosampler Ship Kit. Connect the cable between the USB connector on the autosampler and a USB port on either the Dionex Aquion RFIC rear panel or the external hub.

IMPORTANT Carefully secure all USB cables, the external hub (if installed), and the hub power cable so that they cannot be accidentally disconnected.

❖ **To correct a USB configuration error**

If you connect the USB cable to the Chromeleon computer before the software is installed, Windows may display a message box asking for a USB configuration file (cmwdmusb.inf).

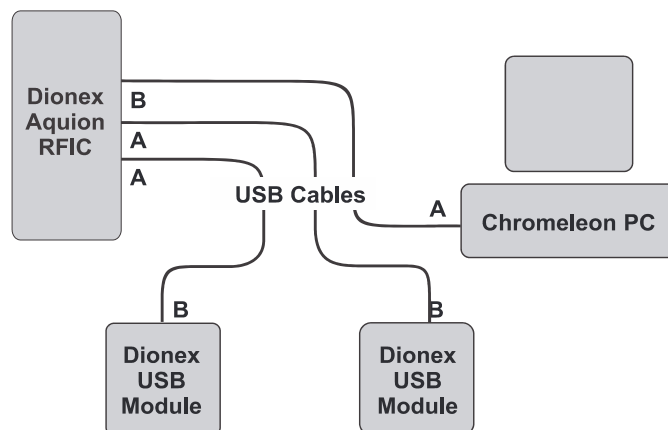
1. Click **Cancel** in the Windows message box.
2. Turn off the power to the USB device and unplug the USB cable from the computer.
3. Install Chromeleon (see “[Setting Up the Chromatography Software](#)” on [page 10](#)).
4. Reconnect the USB cable to the computer and turn on the power to the device. Windows will now automatically recognize the USB device.

❖ **To connect additional USB devices**

Up to two additional Dionex USB-compliant modules can be connected to USB ports on the Dionex Aquion RFIC rear panel (see [Figure 4](#)).

1. Plug the “A” connector on a USB cable into the “A” port (labeled **TO MODULE**) on the Dionex Aquion RFIC rear panel.
2. Plug the “B” connector into the USB receptacle on the other USB module (see [Figure 8](#)).

Figure 8. Example USB connections: Dionex Aquion RFIC connected to two USB modules



Connecting the Dionex Aquion RFIC Power Cord

1. Verify that the main power switch on the Dionex Aquion RFIC rear panel (see [Figure 4](#)) is turned off. (The main power switch may have been turned on accidentally when the system was unpacked.)
2. Connect the power cord (IEC 320 C13) (ordered separately from the system) from the main power receptacle on the Dionex Aquion RFIC rear panel to a grounded power source. The system power supply is auto-sensing; therefore, no adjustment is required to select the line voltage.



WARNING SHOCK HAZARD—To avoid electrical shock, use a grounded receptacle. Do not operate the IC system or connect it to AC power mains without an earthed ground connection.



CAUTION The power supply cord is used as the main disconnect device. Verify that the socket-outlet is near the IC system and is easily accessible.



CAUTION Operation at AC input levels outside of the specified operating voltage range may damage the IC system.



AVERTISSEMENT DANGER D'ÉLECTROCUTION—Pour éviter toute électrocution, il faut utiliser une prise de courant avec prise de terre. Ne l'utilisez pas et ne le branchez pas au secteur C.A. sans utiliser de branchement mis à la terre.



MISE EN GARDE Le cordon d'alimentation principal est utilisé comme dispositif principal de débranchement. Veillez à ce que la prise de base soit située/installée près du module et facilement accessible.



WARNUNG STROMSCHLAGGEFAHR—Zur Vermeidung von elektrischen Schlägen ist eine geerdete Steckdose zu verwenden. Das Gerät darf nicht ohne Erdung betrieben bzw. an Wechselstrom angeschlossen werden.



VORSICHT Das Netzkabel ist das wichtigste Mittel zur Stromunterbrechung. Stellen Sie sicher, daß sich die Steckdose nahe am Gerät befindet und leicht zugänglich ist.




Setting Up the Chromatography Software

The software setup procedure consists of installing Chromeleon software and the software license on the computer, starting the Chromeleon Instrument Controller Service, installing the USB device driver, and then configuring the Dionex Aquion RFIC in the Chromeleon Instrument Configuration Manager.

❖ To install the Chromeleon software and license

For instructions on how to install the Chromeleon software and license (if they were not installed at the factory), refer to *Chromeleon 7 Installation Guide*.

❖ To start the Instrument Controller Service

1. If you have not already done so, turn on the computer power and log on to Windows as a user with local computer administrator privileges.
2. Right-click the Chromeleon tray icon  in the notification area of the Windows taskbar, and then click **Start Chromeleon Instrument Controller**. The icon changes to gold  to indicate that the Instrument Controller Service is starting. When the Instrument Controller Service is running (idle), the icon changes to gray .

—or—

If the Chromeleon tray icon is not on the Windows taskbar, click **Start > All Programs > Thermo Chromeleon 7 > Services Manager** and click **Start Instrument Controller**.

❖ To automatically start the Instrument Controller Service

Note To enhance system performance, Thermo Fisher Scientific recommends having Chromeleon automatically start the Instrument Controller Service each time the computer is turned on.

1. Right-click the Chromeleon tray icon, and then click **Show Chromeleon Services Manager**. The Chromeleon Services Manager dialog box appears.

2. Select the **Start service on system start** check box.

❖ **To install the USB device driver**

1. Before installing the driver, complete the following tasks:
 - a. Verify that Chromeleon was installed on the computer and that the software license code was entered.
 - b. Verify that all accessory devices equipped with electrical connections (for example, the suppressor, Dionex EGC, and Thermo Scientific™ Dionex™ CR-TC) are plugged in.
2. Turn on the main power switch on the Dionex Aquion RFIC rear panel.
3. If an autosampler is installed, turn on the autosampler power.
4. Windows automatically detects the new USB devices. A message is displayed briefly to inform you that new hardware was found.

❖ **To select USB controller properties**

1. On the Windows taskbar, click **Start > Control Panel > Device Manager**.
2. Click the right arrow beside **Universal Serial bus controllers** to expand the view. For each controller listed, complete the following steps:
 - a. Right-click the controller name, and then click **Properties**. The USB Root Hub Properties dialog box appears.
 - b. Click the **Power Management** tab. (If the dialog box does not include a **Power Management** tab, click **Cancel** and go on to the next controller in the list.)
 - c. Clear the **Allow the computer to turn off this device to save power** check box.
 - d. Click **OK**.

Configuring the Dionex Aquion RFIC in Chromeleon

When you add the Dionex Aquion RFIC to a Chromeleon instrument, Chromeleon assigns default configuration properties to the system. Follow the instructions here to review the default properties and to edit them, if necessary. For complete instructions, refer to the Chromeleon Help or *Chromeleon 7 Installation Guide*.

❖ **To create a new Chromeleon instrument**

1. Right-click the Chromeleon tray icon, and then click **Configure instruments**. This launches the Instrument Configuration Manager.

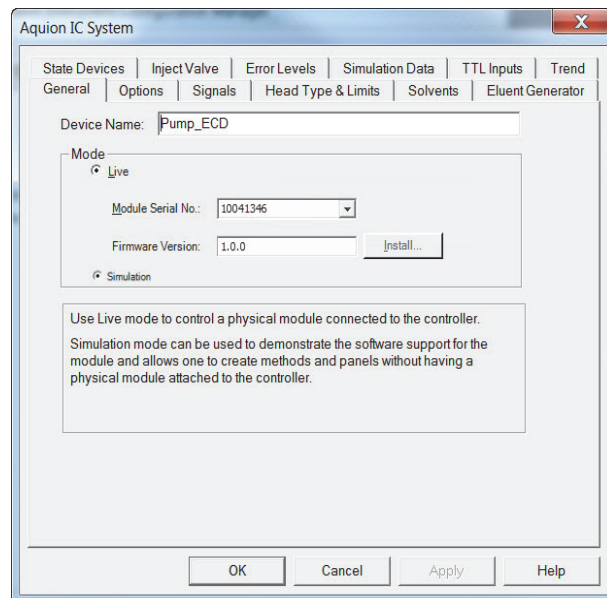
Note If you accidentally stop the Instrument Controller, you must restart it before the Instrument Configuration Manager can be launched. For details, see [“To start the Instrument Controller Service”](#) on page 10.

2. In the left pane of the Instrument Configuration Manager, right-click the name of the computer on which Chromeleon is installed, and then click **Add Instrument**. The New Instrument dialog box appears.
3. (Optional) Edit the default instrument name.

❖ To select Dionex Aquion RFIC configuration properties

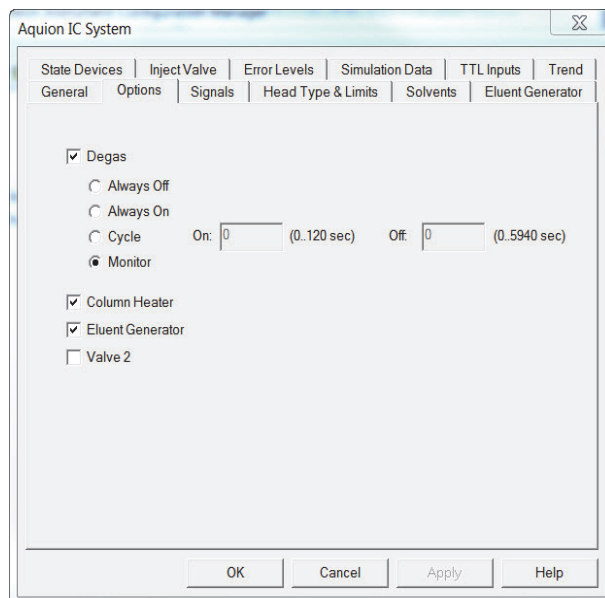
1. In the left pane of the Instrument Configuration Manager, right-click the name of the new Chromeleon instrument, and then click **Add Module**.
2. In the **Manufacturers** list, select **IC: Dionex Integrated Systems**.
3. In the **Modules** list, select **Aquion IC System** and click **OK**.
4. Double-click the Aquion IC System icon under the instrument. The Properties dialog box appears.
5. On the **General** tab page, click **Live** and select the serial number of your Dionex Aquion RFIC in the list (see [Figure 9](#)).

Figure 9. Properties dialog box: General tab page



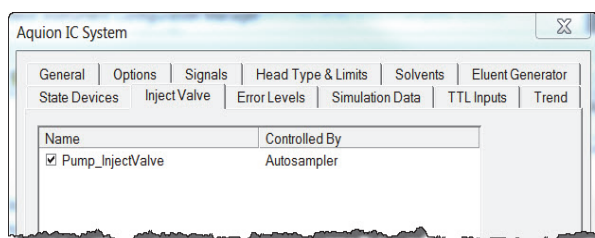
6. Click the **Options** tab (see [Figure 10](#)).

Figure 10. Properties dialog box: Options tab page



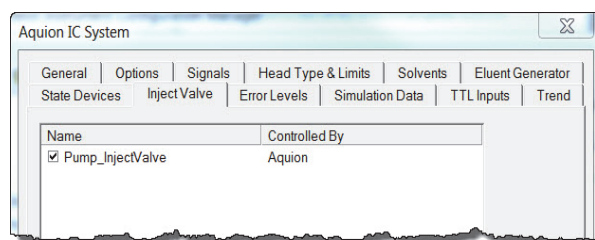
7. For each option installed in the system, verify that the corresponding check box is selected.
8. Click the **Inject Valve** tab.
9. Verify that the correct device is assigned to control the injection valve (or auxiliary valve) in the Dionex Aquion RFIC.
 - If the instrument will include an autosampler, the **Controlled By** setting for **Pump_InjectValve** must be **Autosampler** (see [Figure 11](#)).

Figure 11. Properties dialog box: Inject Valve tab page with injection valve controlled by Dionex AS-DV



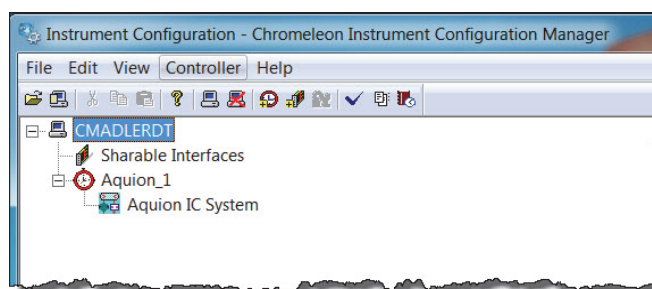
- If the instrument will not include an autosampler, the **Controlled By** setting must be **Aquion** (see [Figure 12](#)).

Figure 12. Properties dialog box: Inject Valve tab page with injection valve controlled by Dionex Aquion RFIC



- To change a **Controlled By** setting, select the **Pump_InjectValve** name, press F2, and select the device.
10. When you finish selecting the device properties, click **OK** to close the dialog box. The instrument now includes the Aquion IC System (see [Figure 13](#)).

Figure 13. Instrument Configuration Manager: example instrument configuration



11. If an autosampler is installed, add the autosampler to the instrument as described for the Dionex Aquion RFIC.
12. When the instrument configuration is complete, click **File > Save Installation**.

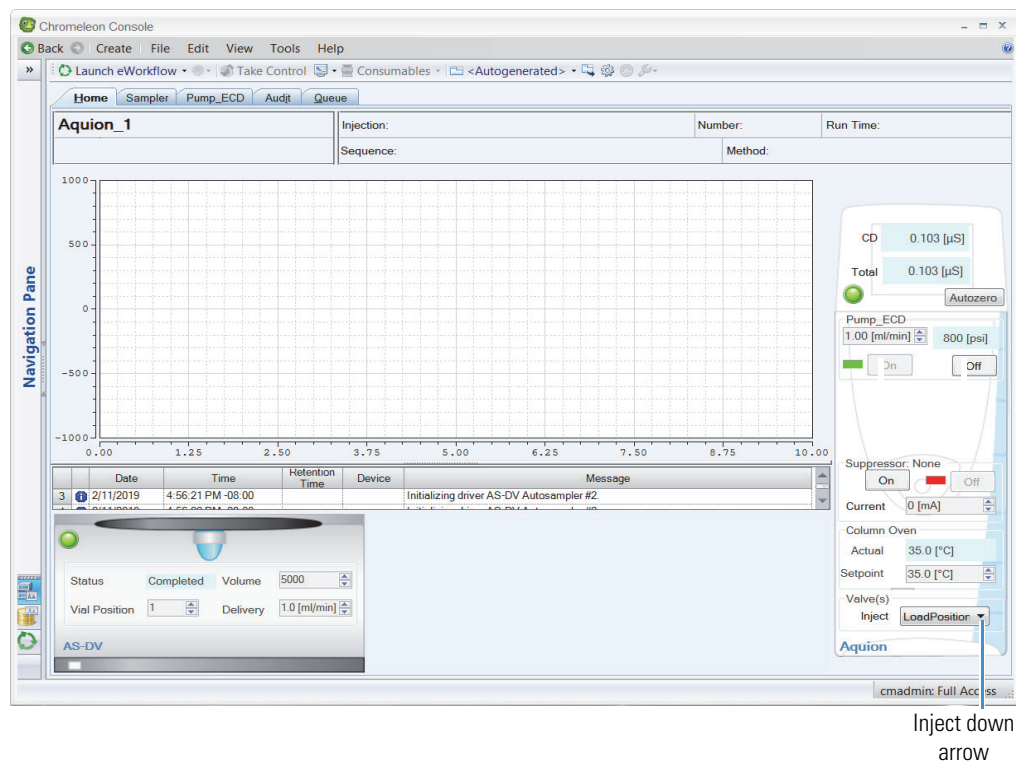
Note If the “No inject device installed” warning message appears, ignore it. This message may appear when you are doing manual injections and the instrument does not include an autosampler.

13. Close the Instrument Configuration Manager.

❖ To display the Chromeleon ePanel Set

1. On the Windows taskbar, click **Start > All Programs > Thermo Chromeleon 7 > Chromeleon 7** to start the Chromeleon client.
2. In the Console, click the **Instruments** Category Bar.
3. On the Navigation Pane, select the name of the instrument in which the Dionex Aquion RFIC is configured. After connecting to the instrument, Chromeleon displays the ePanel Set (see [Figure 14](#)).

Figure 14. Example Chromeleon ePanel Set



❖ **To verify communication with Chromeleon**

1. On the Home ePanel, under **Valve(s)**, click the down arrow next to **Inject** (see [Figure 14](#)).
2. Click **LoadPosition** and listen for the sound of the injection valve actuating as it changes position. This sound confirms communication between Chromeleon and the Dionex Aquion RFIC.

2 System Setup

Setting Up the Chromatography Software

Plumbing

This chapter provides instructions for plumbing the Dionex Aquion RFIC. These instructions apply to systems configured with a conductivity detector.

Contents

- Installing and Plumbing the Columns and Suppressor
- Connecting the Waste Lines
- Setting Up the Eluent Reservoir
- Priming the Pump
- Setting Up the Eluent Generator
- Equilibrating the System
- Verifying Operational Readiness
- Connecting the Analog Output (Optional)
- Pressurizing the Eluent Reservoir (Optional)
- Connecting the Pump Continuous Seal Wash (Optional)

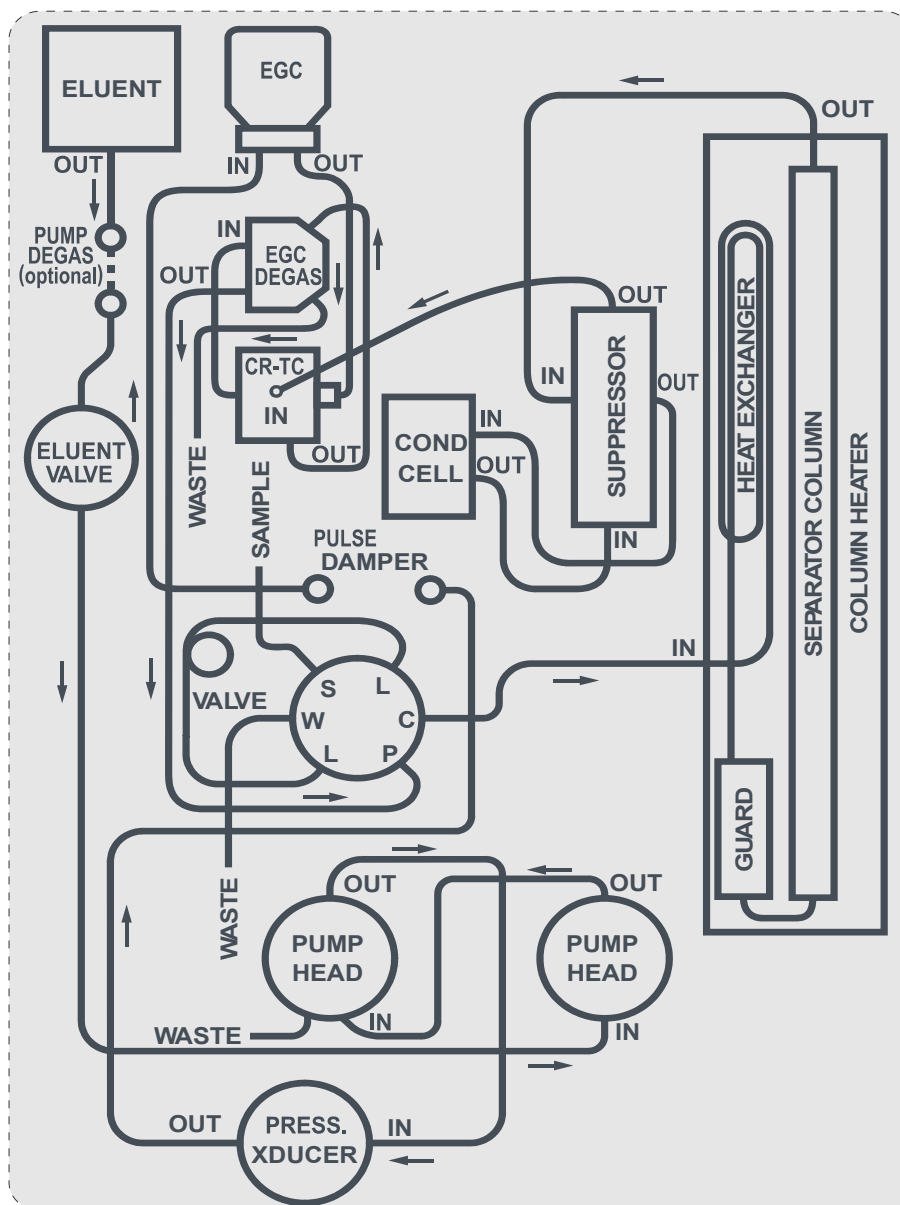
Installing and Plumbing the Columns and Suppressor

This section provides brief installation and plumbing instructions for the columns and suppressor. For detailed startup and installation instructions, refer to the column and suppressor manuals.

For reference, [Figure 15](#) shows the system flow schematic after all plumbing is completed.

Installing and Plumbing the Columns and Suppressor

Figure 15. Dionex Aquion RFIC plumbing schematic



❖ **To set up the column heater (optional)**

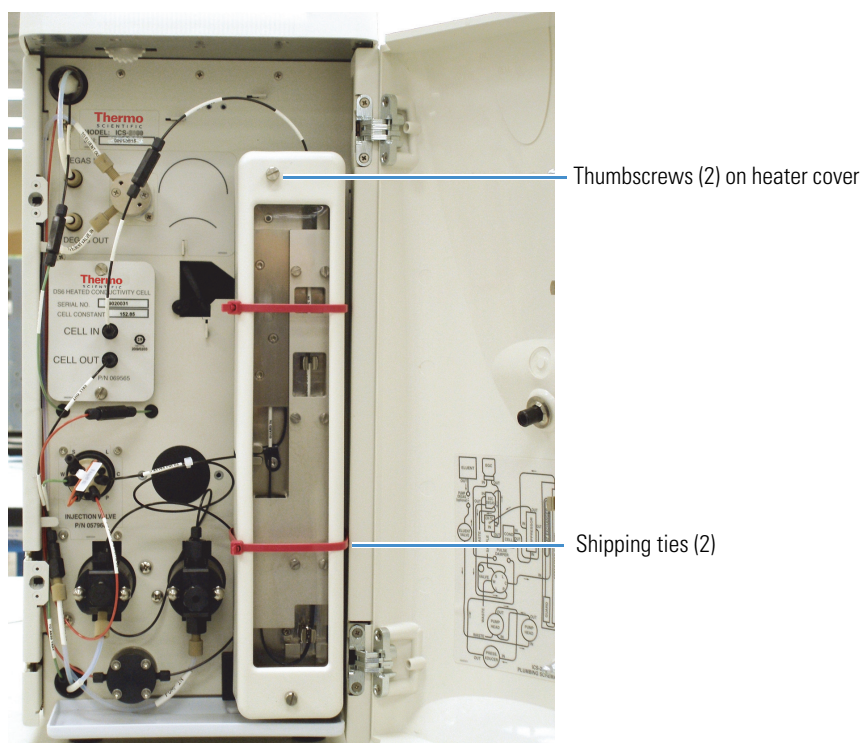
Note For best results with 2-mm columns, follow these guidelines:

- Install a microbore heat exchanger in the column heater.
- Use red 0.125-mm (0.005-in) ID PEEK tubing, not the standard black PEEK tubing, for tubing connections between the following components:
 - Injection valve and column heater heat exchanger
 - Guard column and separator column
 - Separator column and detector cell

The column heater heat exchanger cannot be installed by the user. Contact Technical Support for Dionex products for assistance.

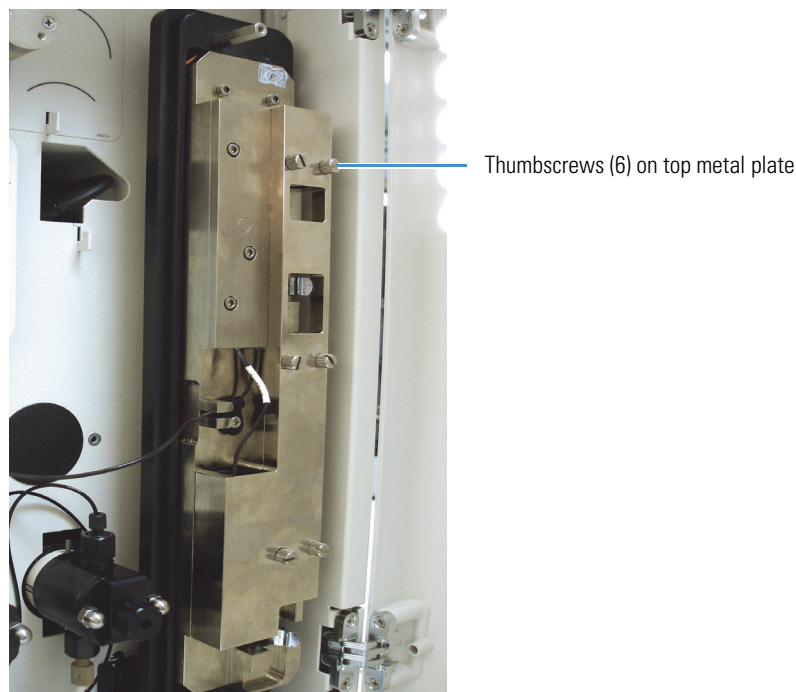
1. Cut off the two shipping ties from the column heater and remove them (see [Figure 16](#)).

Figure 16. Column heater with shipping ties



2. Loosen the two thumbscrews on the heater cover. The screws should remain attached to the cover.
3. Pull the heater cover straight out to remove it from the system.
4. Unscrew the six thumbscrews on the top metal plate and remove the plate (see [Figure 17](#)).

Figure 17. Column heater with cover removed



❖ **To prepare the columns**

All new columns require hydration or other preparation steps before initial use. For instructions, refer to the column manual.

❖ **To install the columns**

1. Remove the separator column and guard column from their boxes.
2. Remove the fitting plugs from the ends of each column.
3. To install the guard column:
 - a. Remove the coupler connecting the **GUARD IN** and **GUARD OUT** lines.
 - b. Connect the **GUARD IN** line to the guard column inlet.
 - c. Verify that the arrow on the guard column label points down (flow away from the injection valve).
 - d. Connect the **GUARD OUT** line to the guard column outlet.
 - e. Push the guard column onto the rear column clip.
4. To install the separator column:
 - a. Remove the coupler connecting the **COL IN** and **COL OUT** lines.
 - b. Connect the **COL IN** line to the separator column inlet.
 - c. Connect the **COL OUT** line to the separator column outlet.

- d. Verify that the arrow on the separator column label points up (flow toward the detector cell).
 - e. Push the separator column onto the front column clips.
5. Replace the top metal plate on the column heater.

❖ **To prepare the suppressor**

All new suppressors require hydration or other preparation steps before initial use. For instructions, refer to the suppressor manual and suppressor installation check list.

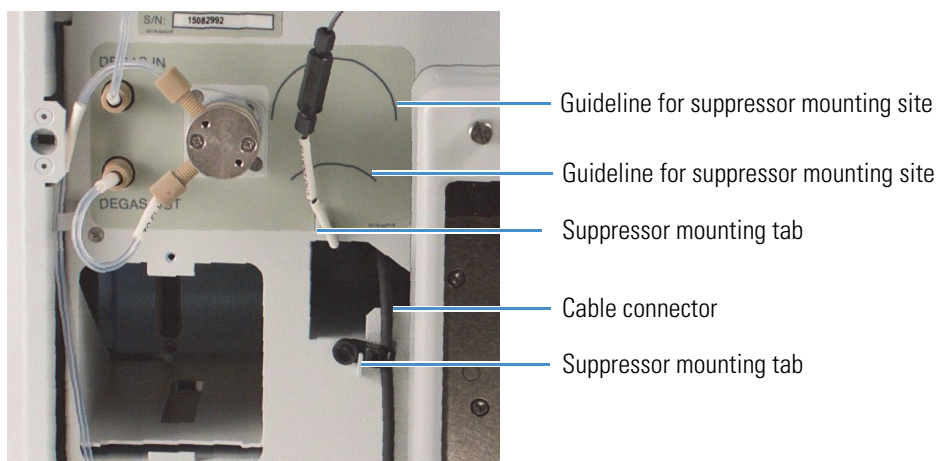
❖ **To install the suppressor**

1. Remove the suppressor from its box.
2. Remove the fitting plugs from all ports on the suppressor. Discard any tubing temporarily connecting the suppressor ports.
3. Verify that the main power switch on the Dionex Aquion RFIC rear panel is turned off.

IMPORTANT Always turn off the system power before installing or removing a suppressor.

4. Locate the suppressor mounting tabs on the component panel (see [Figure 18](#)). Reach into the opening between the tabs and pull the connector and attached cable slightly out of the opening.
5. To connect the cable from the new suppressor to the cable inside the system, align the pins on the two connectors and push them together.

Figure 18. Suppressor mounting tabs and guidelines



6. Orient the new suppressor with the **REGEN OUT** port on the top.
7. Mount the new suppressor on the component panel:
 - a. Align the top of the suppressor with the appropriate installation guidelines on the component panel (see [Figure 18](#)).

- b. Align the slots on the rear of the suppressor with the mounting tabs on the panel.
- c. Press the suppressor onto the tabs and then slide it down until it locks into place. Pull slightly on the center of the suppressor to verify that it is securely fastened.

Note Some suppressors require more force to secure them onto the tabs.

8. Connect the two eluent and two regenerant lines to the suppressor and the conductivity cell.

For reference, [Figure 19](#) shows a Thermo Scientific™ Dionex™ ERS™ 500 Electrolytically Regenerated Suppressor installed on the component panel.

Figure 19. Dionex ERS 500 Suppressor installed

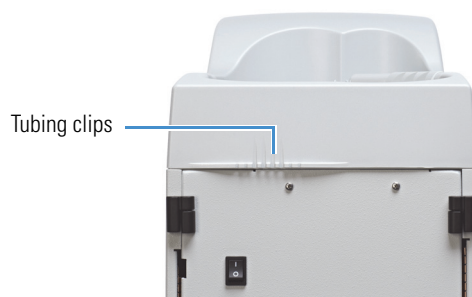


Connecting the Waste Lines

❖ To connect the waste lines

1. Untape the coiled waste lines from the Dionex Aquion RFIIC rear panel.
2. Place the ends of the **PUMP WASTE** and **TO WASTE OUT** lines into a waste container.
3. Direct the **WASTE, GAS SEPARATOR** line from the top of the system to the rear panel. Snap the line onto one of the tubing clips on the rear panel (see [Figure 20](#)).

Figure 20. Tubing clips on the Dionex Aquion RFIC rear panel



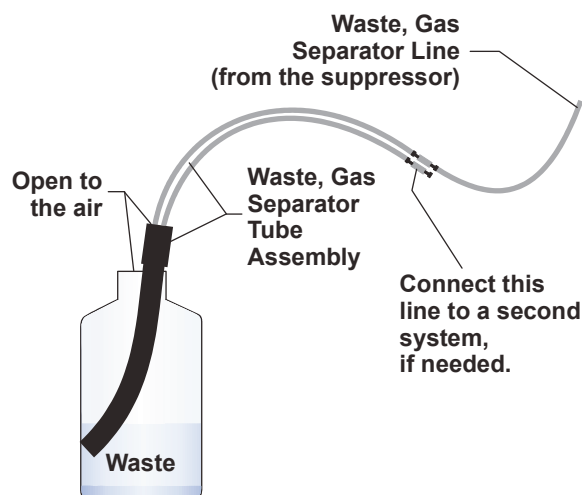
Note To prevent waste from siphoning back into the system, periodically verify that the waste lines are not bent, pinched, or elevated at any point during operation.

❖ **To install the waste, gas separator tube**

The waste, gas separator tube separates any electrolysis gases (such as hydrogen or oxygen gas) generated in the suppressor during electrolysis. This prevents the concentration of gas (particularly hydrogen gas) in the waste container.

1. Locate the waste, gas separator tube assembly provided in the Dionex Aquion RFIC Ship Kit (P/N 064375).
2. Connect the **WASTE, GAS SEPARATOR** line from the suppressor to one of the 3-mm (1/8-in) ID white PTFE lines on the waste, gas separator tube assembly (see [Figure 21](#)).

Figure 21. Installing the waste, gas separator tube assembly



3. Place the waste, gas separator tube assembly into the waste container. Verify that the tubing junction (where the white PTFE tubing meets the black polyethylene tubing) is above the top of the container and that the waste, gas separator tube and the waste container are open to the atmosphere.



CAUTION DO NOT CAP THE WASTE RESERVOIR. Minimal hydrogen gas generated by the Dionex DRS or Dionex ERS 500 is not dangerous unless the gas is trapped in a closed container and allowed to concentrate. The waste, gas separator tube must be open to the atmosphere, and not in a confined space, to operate properly.



MISE EN GARDE ATTENTION NE PAS COUVRIR LE BAC DE DÉCHETS. Une quantité minimale de gaz d'hydrogène produite par le Dionex DRS ou Dionex ERS 500 n'est pas dangereuse à moins que le gaz d'hydrogène est occlus dans un bac fermée où le gaz peut se concentrer. Afin d'assurer un fonctionnement correct, le tuyau de décharge du séparateur de gaz doit être conduit dans une atmosphère ouverte et ne doit pas être guidé dans un bac fermé.



VORSICHT DECKEN SIE DEN ABFALLBEHAELTER NICHT AB. Weniges, vom Dionex DRS oder Dionex ERS 500 erzeugtes Wasserstoffgas ist ungefährlich, außer es ist in einem geschlossenen Behälter eingeschlossen und kann sich dort verdichten. Für eine ordnungsgemäße Funktion muss der Abfallschlauch des Gasabscheiders in eine offene Atmosphäre geführt werden und darf sich in keinem geschlossenen Behälter befinden.

Setting Up the Eluent Reservoir

The Dionex Aquion RFIC can accommodate the following:

- Up to three 2-L plastic reservoirs (P/N 046548)
- or—
- One 4-L plastic reservoir (P/N 039164)

IMPORTANT Always use ASTM filtered, Type I (18 megohm-cm) deionized water that meets the specifications in [Table 1](#) on [page xv](#) to rinse reservoirs, fill reservoirs used for eluent generation or seal washing, or manually prepare eluent.

❖ To fill the eluent reservoir

1. Rinse the eluent reservoir with deionized water.
2. Fill the reservoir with deionized water.
3. Place the reservoir in the top cover of the Dionex Aquion RFIC.
4. Install the reservoir cap and hand-tighten.
5. Connect the liquid lines from the system to the corresponding lines exiting the reservoir.

❖ To enter the eluent level in Chromeleon

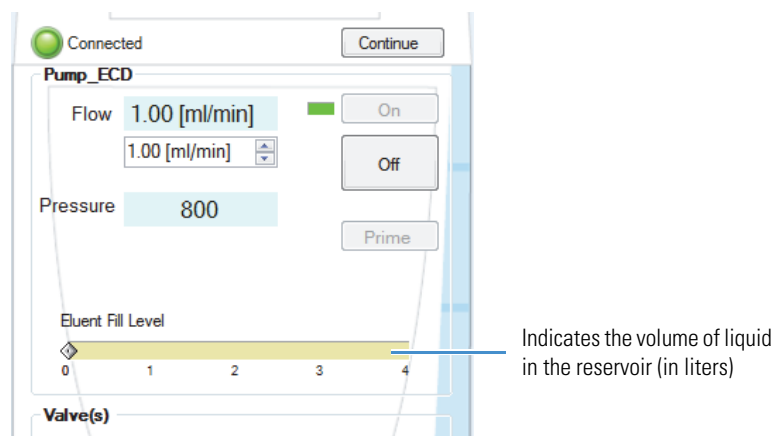
During operation, Chromeleon determines eluent usage by monitoring the flow rate and the length of time the pump is on. As the eluent is depleted, Chromeleon updates the **Eluent Fill Level** display on the ePanel (see [Figure 22](#)).

IMPORTANT To ensure the accuracy of the **Eluent Fill Level** display, you must enter the eluent level immediately after filling the reservoir. Chromeleon does not automatically detect when the reservoir is filled, or when it is empty.

❖ To enter the eluent level

1. On the Chromeleon ePanel Set, click the **Pump_ECD** tab.
2. Under **Pump_ECD**, drag the **Eluent Fill Level** slider to the location that corresponds to the current eluent level (see [Figure 22](#)).

Figure 22. Entering the eluent level in Chromeleon



Pressurizing the Eluent Reservoir

The Dionex Aquion RFIC does not require a pressurized eluent reservoir. However, if eluent is manually degassed or is sensitive to contamination, Thermo Fisher Scientific recommends pressurizing the reservoir with helium or nitrogen. This requires installation of an air regulator accessory (P/N 060054). For details, see “[Pressurizing the Eluent Reservoir \(Optional\)](#)” on [page 59](#).

Setting Up the Piston Seal Wash System

The Dionex Aquion RFIC pump includes a seal wash assembly that can be set up to continuously rinse the back of the piston seals. Rinsing the seals removes salt crystals and prolongs the life of the seals. For details, see “[Connecting the Pump Continuous Seal Wash \(Optional\)](#)” on [page 60](#).

Priming the Pump

Preliminary Steps

Before priming the pump, verify that the following tasks have been completed:

- The eluent reservoir is filled.
- The eluent reservoir cap is installed and hand-tightened.
- The liquid line from the pump to the eluent reservoir cap is connected.
- All waste lines are directed to a waste container.
- (Optional) The eluent reservoir is pressurized.
- (Optional) The piston seal wash system is set up.

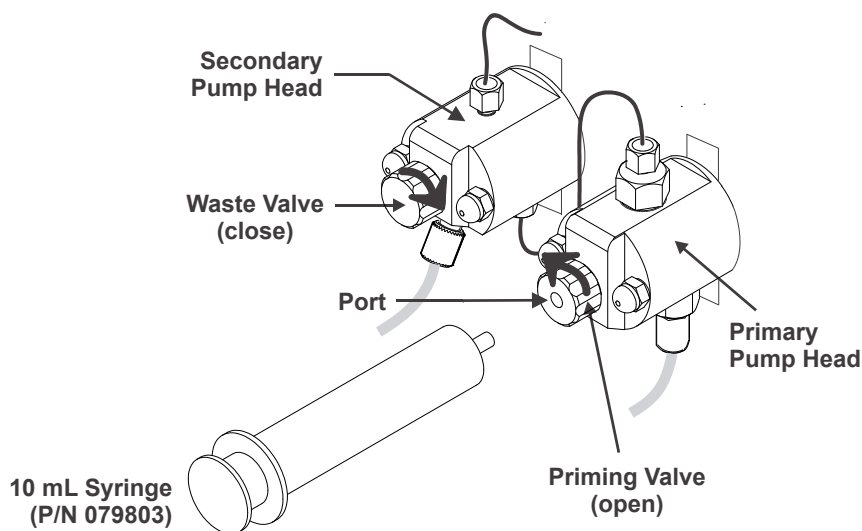
The priming procedure consists of two parts:

- Priming the eluent lines with a syringe
- Priming the pump heads with the **Prime** button in Chromeleon

❖ To prime the eluent lines with a syringe

1. Verify that the pump is turned off.
2. Connect a 10 mL syringe (P/N 079803) to the priming valve port on the primary pump head (see [Figure 23](#)).

Figure 23. Priming the eluent lines



3. Open the priming valve by turning it one-quarter to one-half turn counterclockwise.

4. Draw the syringe back to begin pulling eluent through the flow path. (It may take several syringe draws to remove all air or previous eluent from the tubing.)

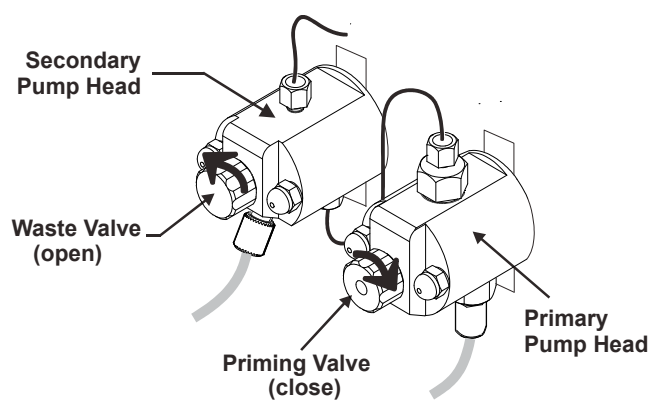
Note If the optional vacuum degas assembly is installed, draw out an additional 20 mL of eluent.

5. After priming the lines thoroughly, close the priming valve. **Do not overtighten the valve.**

❖ **To prime the pump heads with the Prime button**

1. Verify that the priming valve on the primary pump head is closed (see [Figure 24](#)).

Figure 24. Priming the pump heads



2. Open the waste valve on the secondary pump head by turning the knob one-quarter to one-half turn counterclockwise (see [Figure 24](#)). (Opening the valve directs the eluent flow path to waste and eliminates backpressure.)
3. On the Chromeleon ePanel Set, click the **Pump_ECD** tab.
4. Under **Pump_ECD**, click the **Prime** button.
5. When Chromeleon displays a reminder message that the waste valve is open, click **OK**. The pump will begin pumping at about 3 mL/min.
6. Monitor the pump waste line for air bubbles. When air bubbles are no longer visible in the waste line, close the waste valve. **Do not overtighten the valve.**

Note If the priming procedure described here is unsuccessful, prime the pump with isopropyl alcohol. For instructions, refer to the Dionex Aquion RFIC operator's manual.

Setting Up the Eluent Generator



CAUTION The Dionex EGC contains one of the following: a corrosive base (KOH, LiOH, or NaOH), a corrosive acid (MSA), or a concentrated K_2CO_3 solution. Wear protective eyewear and gloves when handling the cartridge.



MISE EN GARDE Le Dionex EGC contient un de ce qui suit: une base corrosive (KOH, LiOH, ou NaOH), un acide corrosif (MSA), ou une solution concentrée de K_2CO_3 . Porter des lunettes et des gants protectives en manipulant la cartouche.



VORSICHT Die Dionex EGC enthält eine korrodierende Base (KOH, LiOH oder NaOH), eine korrodierende Säure (MSA) oder eine konzentrierte K_2CO_3 -Lösung. Tragen Sie daher beim Umgang mit Kartusche eine Schutzbrille und Handschuhe.

Preliminary Steps

- Remove the Dionex EGC from the shipping container. Save the shipping container; it may be required for storage or disposal of the cartridge.
- Remove the other items to be installed from their shipping containers. These items depend on the type of eluent to be generated.
- Refer to the consumable manuals for the optimal operating conditions for your application.

The Dionex EGC setup procedure varies, depending on the cartridge type. Go on to the appropriate section:

- “[Eluent Generator Setup for KOH, LiOH, NaOH, and MSA Eluents](#)” on [page 28](#)
- “[Eluent Generator Setup for Carbonate Eluent](#)” on [page 41](#)

Eluent Generator Setup for KOH, LiOH, NaOH, and MSA Eluents

Follow the instructions in this section to install a Dionex KOH, LiOH, NaOH, or MSA cartridge and a Dionex CR-TC. The main steps in the setup procedure include:

- Installing the Dionex CR-TC (see [page 31](#))
- Installing the Dionex EGC (see [page 33](#))
- Connecting the Dionex EGC vent line (see [page 35](#))
- Recording the Dionex EGC serial number in Chromeleon (see [page 37](#))
- Conditioning the Dionex EGC (see [page 38](#))
- Hydrating the Dionex CR-TC (see [page 40](#))

- Completing the setup procedure (see [page 41](#))

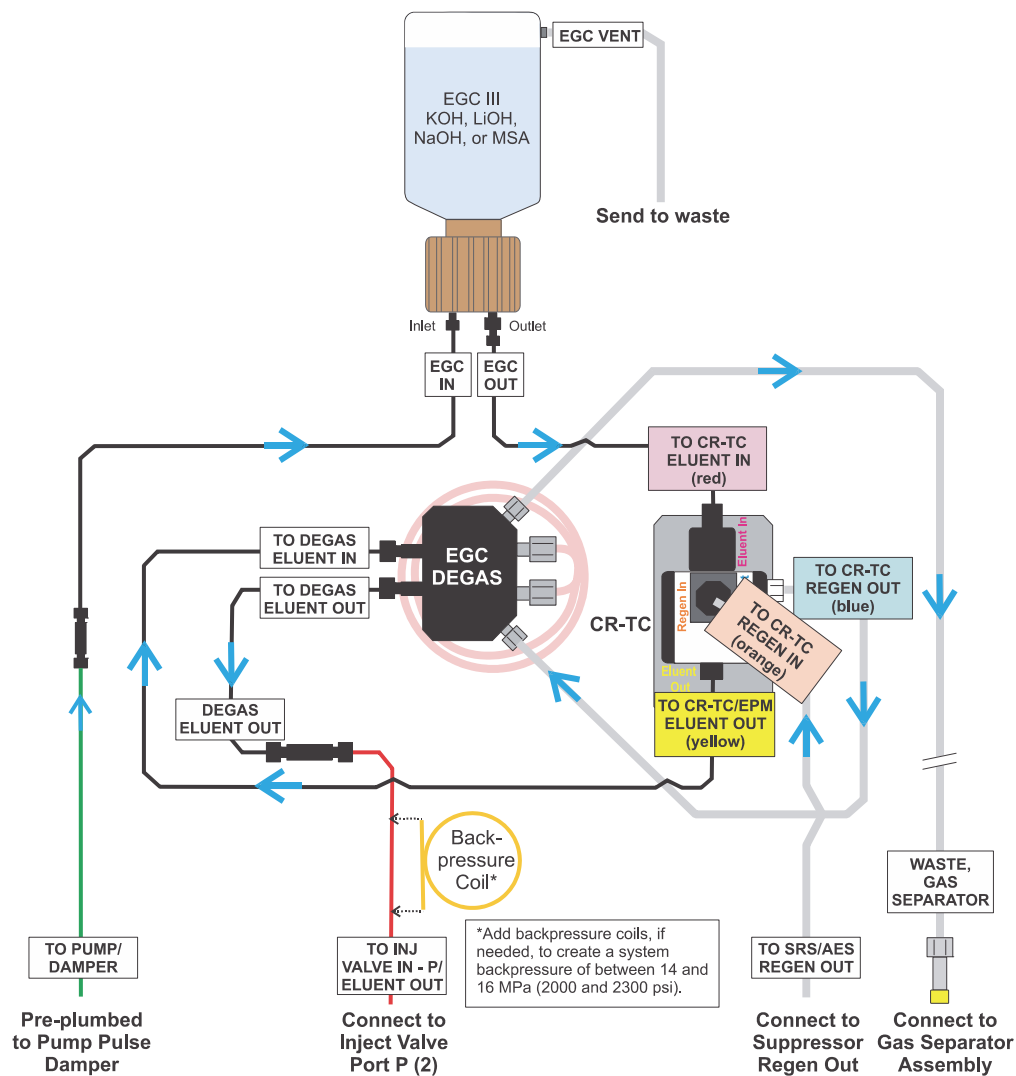
Items Needed

- One of the following cartridges:
 - Thermo Scientific™ Dionex™ EGC III KOH (P/N 074532); generates potassium hydroxide eluent for anion exchange separations
 - Thermo Scientific™ Dionex™ EGC III LiOH (P/N 074534); generates lithium hydroxide eluent for anion exchange separations
 - Thermo Scientific™ Dionex™ EGC III NaOH (P/N 074533); generates sodium hydroxide eluent for anion exchange separations
 - Thermo Scientific™ Dionex™ EGC III MSA (P/N 074535); generates methanesulfonic acid eluent for cation exchange separations
- One of the following trap columns:
 - Thermo Scientific™ Dionex™ CR-ATC Continuously Regenerated Anion Trap Column (P/N 060477)
 - Thermo Scientific™ Dionex™ CR-CTC II Continuously Regenerated Cation Trap Column (P/N 060262)
- The items in the table below.

Item	P/N	Provided in...	Purpose
Yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil	053765	Dionex Aquion RFIC Ship Kit	Provides backpressure during setup procedure
Dionex EGC Vent Line Tubing Kit	063092	Dionex EGC Ship Kit	Vents Dionex EGC during operation
Temporary waste container (beaker, bottle, etc.)	N/A	Provided by user	Collects waste during setup procedure
10-32 to 1/4-28 coupler	042806	Dionex Aquion RFIC Ship Kit	Provides temporary plumbing connection during setup procedure
10-32 fittings	043275	Dionex Aquion RFIC Ship Kit	Completes plumbing connections
10-32 ferrules	043276		
1/8-in fittings	052267	Dionex Aquion RFIC Ship Kit	Completes plumbing connections
1/8-in ferrules	048949		

Figure 25 illustrates the liquid flow path through the system after all setup steps are complete and the eluent generator is ready for operation.

Figure 25. Eluent generator flow schematic for generation of KOH, LiOH, NaOH, or MSA eluent



❖ **To install the Dionex CR-TC**

1. Tilt the Dionex EGC holder so as to view the bottom of the holder. While maintaining the holder at this angle, brace it against the rear corner of the Dionex Aquion RFIC (see [Figure 26](#)).

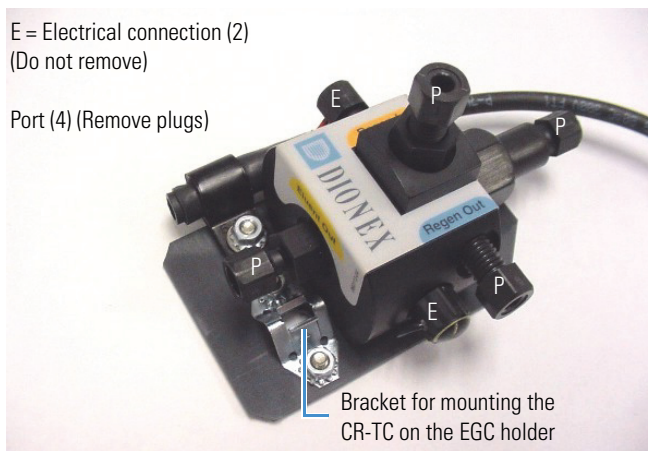
Figure 26. Dionex EGC holder (tilted to view the bottom)



Ball stud for mounting the CR-TC

2. Note the ball stud inside the bottom of the Dionex EGC holder (see [Figure 26](#)) and the bracket on the Dionex CR-TC mounting plate (see [Figure 27](#)). These are required to install the Dionex CR-TC inside the holder (after it has been plumbed).

Figure 27. Dionex CR-TC mounting bracket and ports



E = Electrical connection (2)
(Do not remove)

Port (4) (Remove plugs)

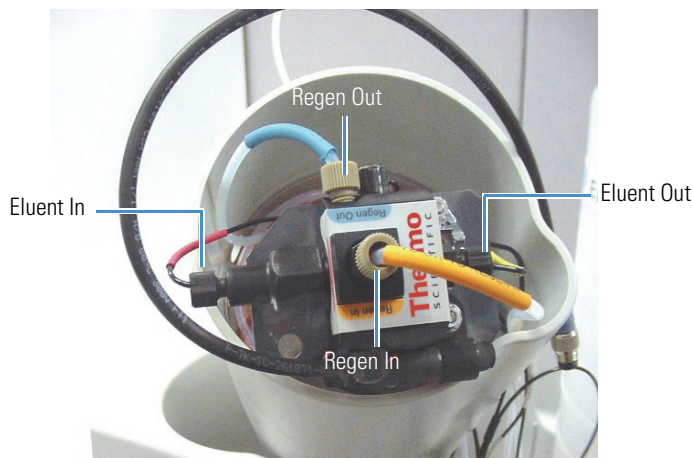
Bracket for mounting the CR-TC on the EGC holder

3. Remove the plugs from the four ports labeled “P” on the Dionex CR-TC (see [Figure 27](#)). Do not remove the two electrical connections (labeled “E”).

4. Orient the Dionex CR-TC as shown in [Figure 28](#). Connect each liquid line to the corresponding port on the Dionex CR-TC.

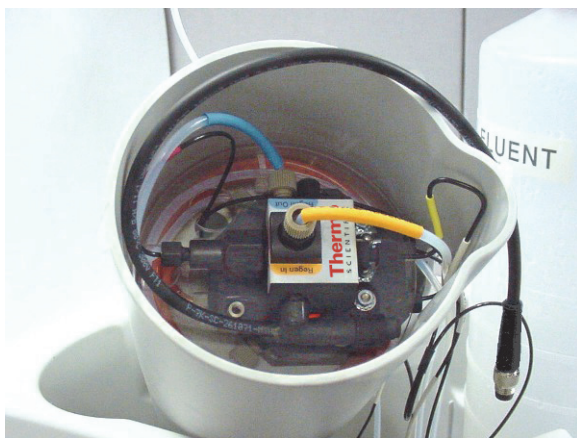
Tip To help retain the fittings and ferrules on the lines, do not remove the coupler from each line until just before you connect the line to the Dionex CR-TC port.

Figure 28. Dionex CR-TC plumbing connections



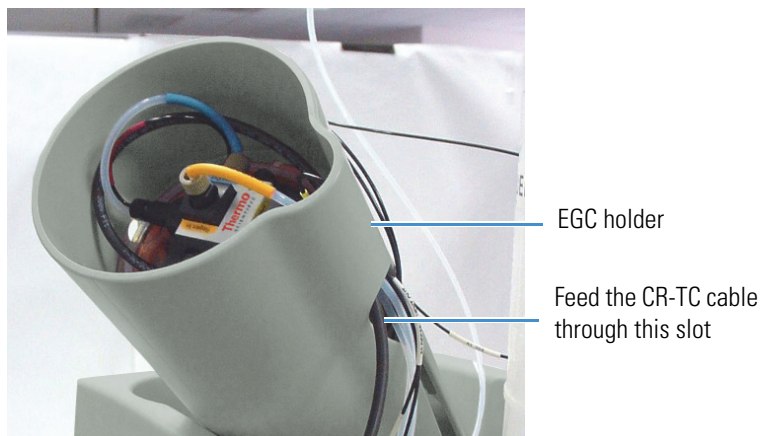
5. After checking that no liquid lines are caught under the Dionex CR-TC, begin pushing the Dionex CR-TC onto the ball stud inside the Dionex EGC holder. Continue pushing down until the Dionex CR-TC snaps into place (see [Figure 29](#)).

Figure 29. Installing the Dionex CR-TC in the Dionex EGC holder



6. Feed the Dionex CR-TC electrical cable through the slot on the side of the Dionex EGC holder (see [Figure 30](#)).

Figure 30. Dionex CR-TC electrical cable exiting the Dionex EGC holder

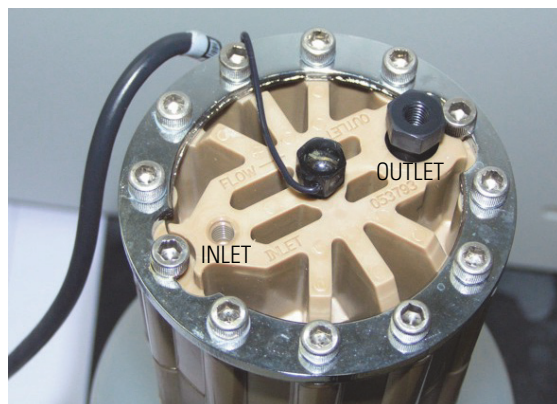


7. Turn the Dionex EGC holder right-side up and set it back into position.

❖ **To install the Dionex EGC (KOH, LiOH, NaOH, or MSA)**

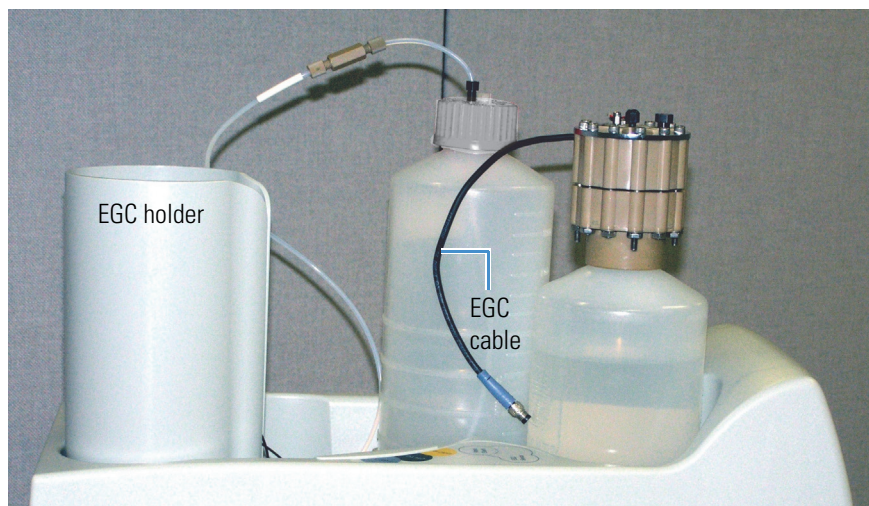
1. Orient the Dionex EGC with the fittings facing up and remove the plugs from the **INLET** and **OUTLET** ports (see [Figure 31](#)).

Figure 31. Dionex EGC inlet and outlet ports



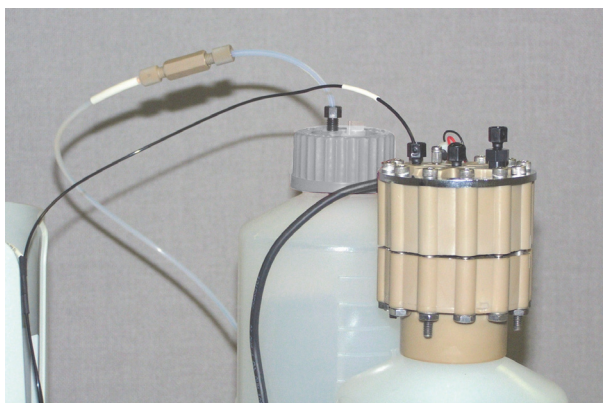
2. Set the Dionex EGC in the service area on top of the Dionex Aquion RFIC. Orient the cartridge with the electrical cable toward the Dionex EGC holder (see [Figure 32](#)).

Figure 32. Dionex EGC in the service area



3. Pull the coiled black **EGC IN** and **EGC OUT** lines out slightly from inside the Dionex EGC holder.
4. Disconnect the **EGC IN** line from the union connecting it to the **EGC OUT** line.
5. Connect the **EGC IN** line to the **INLET** port on the Dionex EGC (see [Figure 33](#)).

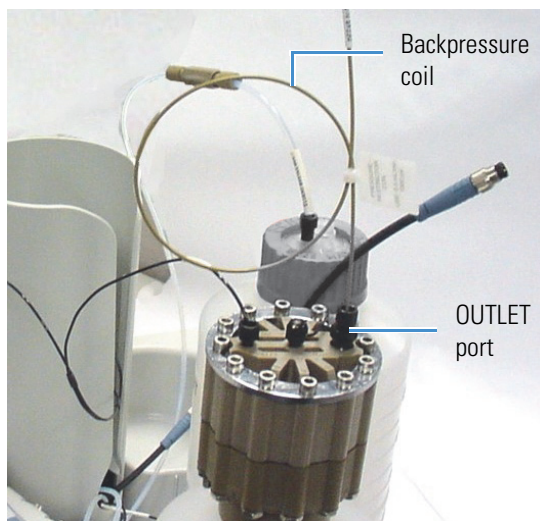
Figure 33. Dionex EGC inlet port connections



6. Connect one end of the yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil (P/N 053765) to the **OUTLET** port on the Dionex EGC (see [Figure 34](#)). Leave the other end of the coil unconnected.

Note This backpressure coil connection is temporary; it is used only during the cartridge conditioning procedure (see [“To condition the Dionex EGC \(KOH, LiOH, NaOH, or MSA\)”](#) on [page 38](#)).

Figure 34. Dionex EGC outlet connection for cartridge conditioning



- Turn the Dionex EGC over (fittings facing down). **Shake the cartridge vigorously and tap it with the palm of your hand 10 to 15 times.** Check that all bubbles trapped in the eluent generation chamber are dislodged.



CAUTION The Dionex EGC contains one of the following: a corrosive base (KOH, LiOH, or NaOH), a corrosive acid (MSA), or a concentrated K_2CO_3 solution. Wear protective eyewear and gloves when handling the cartridge.



MISE EN GARDE Le Dionex EGC contient un de ce qui suit: une base corrosive (KOH, LiOH, ou NaOH), un acide corrosif (MSA), ou une solution concentrée de K_2CO_3 . Porter des lunettes et des gants protectives en manipulant la cartouche.



VORSICHT Die Dionex EGC enthält eine korrodierende Base (KOH, LiOH oder NaOH), eine korrodierende Säure (MSA) oder eine konzentrierte K_2CO_3 -Lösung. Tragen Sie daher beim Umgang mit Kartusche eine Schutzbrille und Handschuhe.

- Slide the Dionex EGC **straight down** into the holder until it stops. Make sure the electrical cable and backpressure coil remain outside the holder.

Note To avoid crimping the lines inside the holder, do not twist the cartridge when sliding it into the holder. The lines are designed to coil neatly inside the holder.

❖ **To connect the Dionex EGC (KOH, LiOH, NaOH, or MSA) vent line**

The parts required to install the vent line are provided in the Dionex EGC Vent Line Tubing Kit (P/N 063092).

- Slide the **EGC VENT** label onto one end of the tubing.
- Push the barbed luer lock onto the tubing.

- Note the vent opening on the side of the Dionex EGC (see [Figure 35](#)). Unscrew and remove the plug from the vent opening. **Do not remove the chain that connects the plug to the Dionex EGC electrical cable.**

Figure 35. Removing the Dionex EGC vent plug



CAUTION Failure to remove the vent plug before beginning operation with the Dionex EGC will allow an excessive buildup of electrolysis gas, which can result in an explosion.



MISE EN GARDE Si vous ne retirez pas le bouchon d'évent avant de commencer à utiliser le Dionex EGC, vous risquez une accumulation excessive de gaz d'électrolyse, pouvant entraîner une explosion.



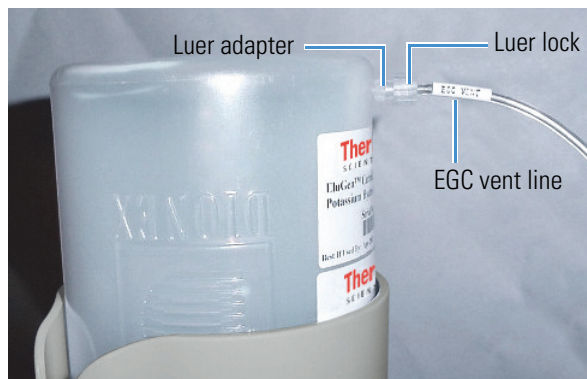
VORSICHT Wenn der Entlüftungsstopfen nicht entfernt wird, bevor der Dionex EGC in Betrieb genommen wird, kann sich übermäßiges Elektrolysegas bilden, was zu einer Explosion führen kann.

- Screw the luer adapter onto the vent opening. Remove the cap on the luer adapter by twisting. **Save the cap.**

Note To prevent leaks from the Dionex EGC, always replace the luer adapter cap before moving the cartridge.

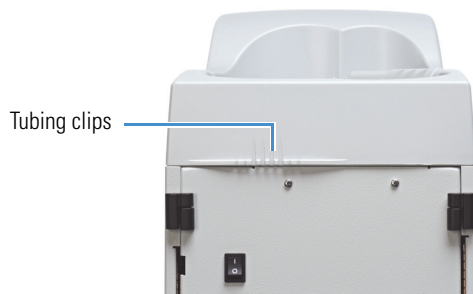
- Twist the barbed luer lock and the vent line into the luer adapter (see [Figure 36](#)).

Figure 36. Installing the Dionex EGC vent line



6. Direct the vent line to the rear of the Dionex Aquion RFIC. Snap the vent line into one of the tubing clips on the rear panel (see [Figure 37](#)).

Figure 37. Tubing clips on the Dionex Aquion RFIC rear panel



7. Direct the vent line to the waste container. Insert the vent line about 10 to 15 cm (4 to 6 in) into the waste, gas separator tube.

❖ **To connect the Dionex EGC electrical cable**

1. Remove the plug from the **EGC** connector on the Dionex Aquion RFIC top cover.
2. Orient the blue 4-pin electrical cable connector for the Dionex EGC as shown in [Figure 38](#), and then push it onto the **EGC** connector. Twist the ring on the cable connector finger-tight to secure it.

Figure 38. Connecting the Dionex EGC electrical cable



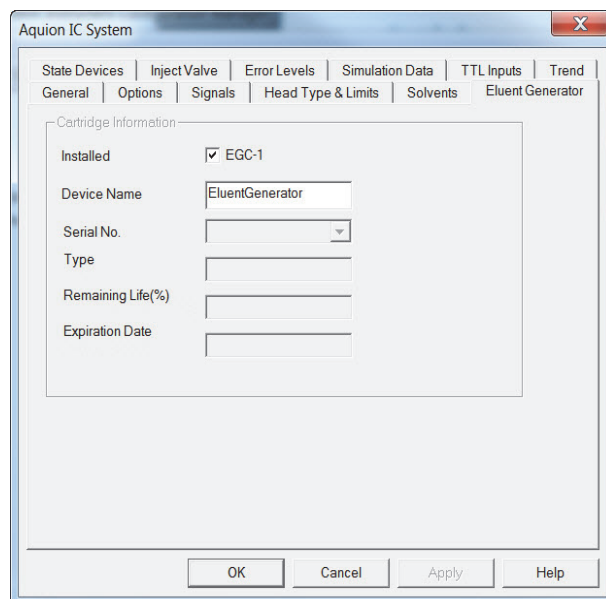
❖ **To record the Dionex EGC (KOH, LiOH, NaOH, or MSA) serial number in Chromeleon**

The cartridge serial number is printed on the Dionex EGC label.

1. Open the Instrument Configuration Manager.
2. Double-click the Aquion IC System icon under the instrument.

3. In the Properties dialog box, click the **Eluent Generator** tab (see [Figure 39](#)).

Figure 39. Properties dialog box: Eluent Generator tab page



4. Select the **EGC-1** check box.
5. Enter the Dionex EGC serial number.
6. Verify that the cartridge **Type** is **OH**. If the cartridge type is wrong, check that you entered the serial number correctly.
7. Click **OK**.

❖ **To condition the Dionex EGC (KOH, LiOH, NaOH, or MSA)**

Always condition a new Dionex EGC for 30 minutes before initial use.

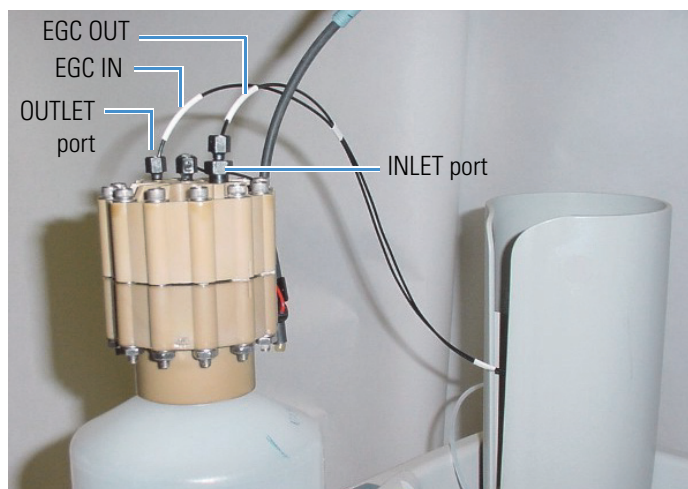
1. Set a temporary waste container on top of the Dionex Aquion RFIC.
2. Direct the yellow backpressure coil from the Dionex EGC **OUTLET** port to the temporary waste container.
3. Verify that the eluent reservoir is filled with ASTM filtered, Type I (18 megohm-cm) deionized water that meets the specifications listed in "[Deionized Water Requirements for IC](#)" on [page vi](#).
4. Select the following operating conditions on the Chromeleon ePanel:
 - a. Set the pump flow rate to 1.00 mL/min.
 - b. Set the Dionex EGC concentration to 50 mM.

- c. Verify that both the suppressor and Dionex CR-TC are off.

IMPORTANT To avoid damaging the suppressor and Dionex CR-TC, always turn off these devices before conditioning the Dionex EGC. Although the pump flow remains on during the conditioning procedure, no flow will reach the suppressor or Dionex CR-TC.

- d. Turn on the pump.
- e. Turn on the Dionex EGC.
5. Run at the selected settings for 30 minutes.
6. After 30 minutes, turn off the Dionex EGC and the pump.
7. Disconnect the Dionex EGC electrical cable.
8. Remove the backpressure tubing from the temporary waste container and remove the waste container.
9. Lift the Dionex EGC out of the holder, turn it over, and set it in the service area.
10. Disconnect the backpressure coil from the Dionex EGC **OUTLET** port.
11. Connect the **EGC OUT** line to the Dionex EGC **OUTLET** port (see [Figure 40](#)).

Figure 40. Dionex EGC inlet and outlet connections



12. Turn over the Dionex EGC (fittings facing down) and check for bubbles. If necessary, shake and tap the cartridge to remove bubbles.
13. Reinstall the Dionex EGC in the holder.

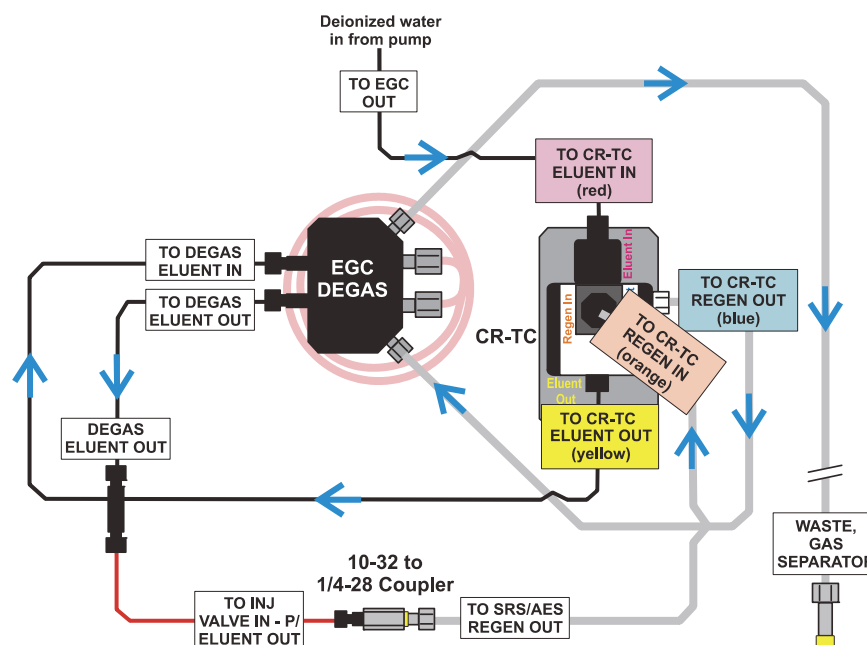
Note Do not reconnect the Dionex EGC electrical cable yet.

❖ **To hydrate the Dionex CR-TC**

Always hydrate a new Dionex CR-TC for at least 10 minutes before initial use.

Figure 41 illustrates the liquid flow path through the Dionex CR-TC during the hydration procedure.

Figure 41. Dionex CR-TC plumbing for hydration



1. Disconnect the **TO INJ VALVE IN - P/ELUENT OUT** line from port **(P) 2** on the injection valve.
2. Disconnect the **SRS/AES REGEN OUT** line from the suppressor.
3. Using a 10-32 to 1/4-28 coupler (P/N 042806), connect the **TO INJ VALVE IN - P/ELUENT OUT** line to the **SRS/AES REGEN OUT** line.
4. Verify that the current to the suppressor is off.

IMPORTANT To avoid damaging the suppressor, always turn it off before hydrating the Dionex CR-TC. Although the pump flow remains on during the hydration procedure, no flow will reach the suppressor.

5. Turn on the pump and select the flow rate recommended for your application.
6. Pump ASTM filtered, Type 1 (18 megohm-cm) deionized water that meets the specifications listed in [“Deionized Water Requirements for IC”](#) on [page vi](#) through the Dionex CR-TC for at least 10 minutes.
7. Turn off the pump.

8. Remove the 10-32 to 1/4-28 coupler connecting the **TO INJ VALVE IN - P/ELUENT OUT** and **SRS/AES REGEN OUT** lines.

❖ **To complete the Dionex EGC (KOH, LiOH, NaOH, or MSA) setup procedure**

1. Reconnect the **TO SRS/AES REGEN OUT** line to the **REGEN OUT** port on the suppressor.
2. Reconnect the **TO INJ VALVE IN - P/ELUENT OUT** line to port **(P) 2** on the injection valve.
3. Reconnect the Dionex EGC electrical cable to the **EGC** connector on the Dionex Aquion RFIC top cover.
4. Remove the plug from the **CR-TC** connector on the Dionex Aquion RFIC top cover.
5. Orient the black 3-pin electrical cable connector for the Dionex CR-TC as shown in [Figure 42](#), and then push the cable connector onto the **CR-TC** connector. Twist the ring on the cable connector finger-tight to secure it.

Figure 42. Connecting the Dionex CR-TC electrical cable



This completes the setup procedure for generation of KOH, LiOH, NaOH, and MSA eluents. Go on to [“Equilibrating the System”](#) on [page 56](#).

Eluent Generator Setup for Carbonate Eluent

Follow the instructions in this section to install a Dionex K_2CO_3 cartridge and a Thermo Scientific™ Dionex™ EGC 500 Carbonate Mixer. The main steps in the setup procedure include:

- Installing the Dionex EGC and preparing it for conditioning (see [page 44](#))
- Connecting the Dionex EGC vent line (see [page 47](#))
- Recording the Dionex EGC serial number in Chromeleon (see [page 50](#))
- Conditioning the Dionex EGC (see [page 51](#))

- Installing the Dionex EGC 500 Carbonate Mixer (see [page 51](#))
- Filling the Dionex EGC 500 Carbonate Mixer with the eluent concentration required for the application (see [page 52](#))
- Completing the setup procedure (see [page 54](#))

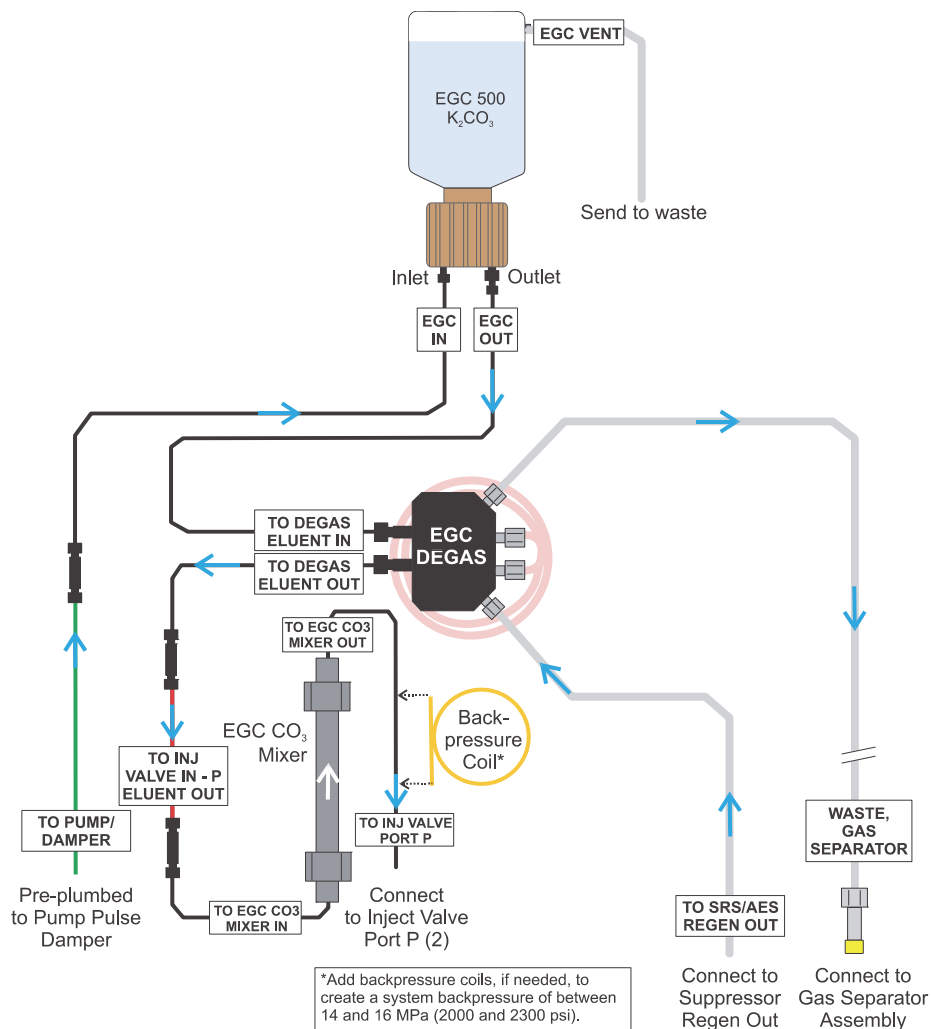
Items Needed

- Dionex EGC 500 K₂CO₃ (P/N 088453); generates potassium carbonate eluent for anion exchange separations
- Dionex EGC 500 Carbonate Mixer Kit, 2 mm (P/N 088467)
—or—
Dionex EGC 500 Carbonate Mixer Kit, 4 mm (P/N 088468)
- The items in the table below.

Item	P/N	Provided in...	Purpose
Yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil	053765	Dionex Aquion RFIC Ship Kit	Provides backpressure during setup procedure
Dionex EGC Vent Line Tubing Kit	063092	Dionex EGC Ship Kit	Vents Dionex EGC during operation
Double-sided tape <i>or</i> two U style mounting clips, 3/4-in, with adhesive backing	N/A	Provided by user	Carbonate mixer installation
35 cm (14 in) of black 0.25-mm (0.010-in) ID PEEK tubing	064346	Dionex Aquion RFIC Ship Kit	Connects Dionex EGC degas eluent outlet to carbonate mixer inlet
60 cm (24 in) of black 0.25-mm (0.010-in) ID PEEK tubing	064343	Dionex Aquion RFIC Ship Kit	Connects carbonate mixer outlet to injection valve port P (2)
Temporary waste container (beaker, bottle, etc.)	N/A	Provided by user	Collects waste during the setup procedure
10-32 to 10-32 couplers	042627	Dionex Aquion RFIC Ship Kit	Completes plumbing connections
10-32 fittings 10-32 ferrules	043275 043276	Dionex Aquion RFIC Ship Kit	Completes plumbing connections
1/8-in fittings 1/8-in ferrules	052267 048949	Dionex Aquion RFIC Ship Kit	Completes plumbing connections

Figure 43 illustrates the liquid flow path through the eluent generator components after all setup steps are complete and the eluent generator is ready for operation.

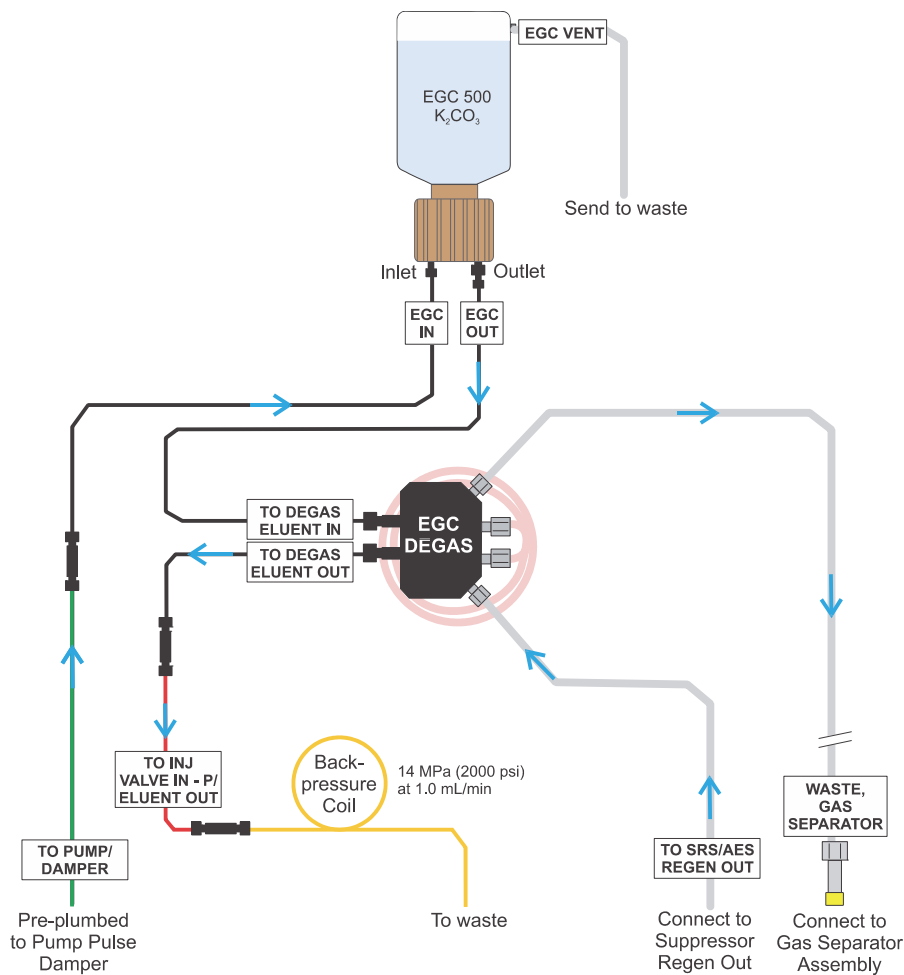
Figure 43. Eluent generator flow schematic for generation of carbonate eluent)



❖ **To install the Dionex Carbonate EGC**

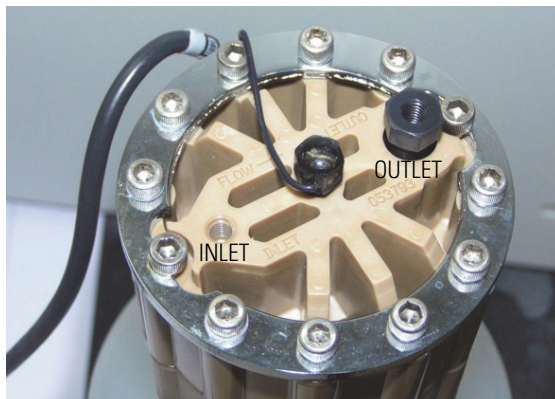
Follow the steps in this section to install the Dionex EGC and prepare it for conditioning with carbonate eluent before initial use. [Figure 44](#) illustrates the liquid flow path during the conditioning procedure.

Figure 44. Dionex Carbonate EGC plumbing for conditioning



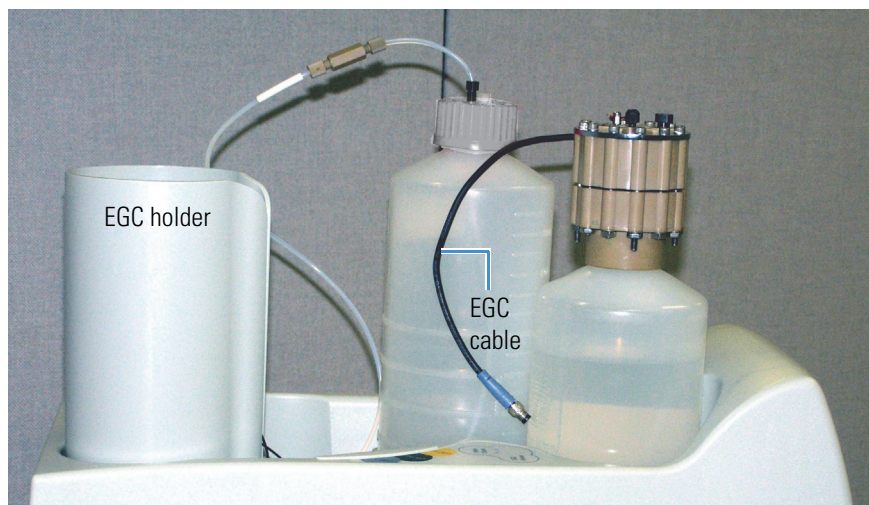
1. Orient the Dionex EGC with the fittings facing up and remove the plugs from the **INLET** and **OUTLET** ports (see [Figure 45](#)).

Figure 45. Dionex EGC inlet and outlet ports



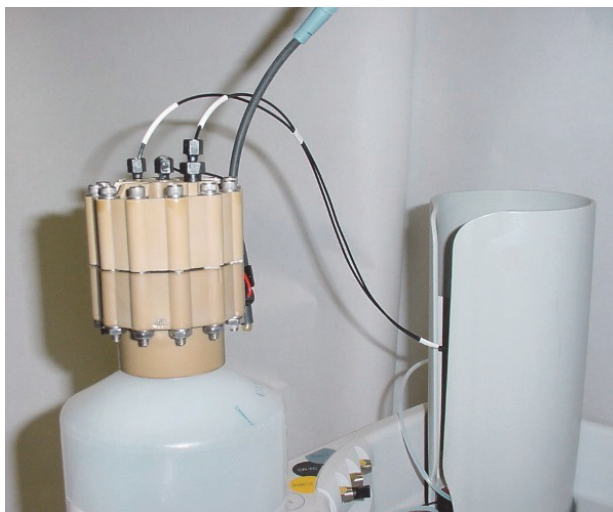
2. Set the Dionex EGC in the service area on top of the Dionex Aquion RFIC. Orient the cartridge with the electrical cable toward the Dionex EGC holder (see [Figure 46](#)).

Figure 46. Dionex EGC in the service area



3. Pull the coiled black **EGC IN** and **EGC OUT** lines out slightly from inside the Dionex EGC holder.
4. Disconnect the **EGC IN** line from the coupler connecting it to the **EGC OUT** line.
5. Connect the **EGC IN** line to the **INLET** port on the Dionex EGC (see [Figure 47](#)).

Figure 47. Dionex EGC port connections



6. Remove the coupler and connect the **EGC OUT** line to the Dionex EGC **OUTLET** port.
7. Turn the Dionex EGC over (fittings facing down). **Shake the cartridge vigorously and tap it with the palm of your hand 10 to 15 times. Check that all bubbles trapped in the eluent generation chamber are dislodged.**



CAUTION The Dionex EGC contains one of the following: a corrosive base (KOH, LiOH, or NaOH), a corrosive acid (MSA), or a concentrated K_2CO_3 solution. Wear protective eyewear and gloves when handling the cartridge.



MISE EN GARDE Le Dionex EGC contient un de ce qui suit: une base corrosive (KOH, LiOH, ou NaOH), un acide corrosif (MSA), ou une solution concentrée de K_2CO_3 . Porter des lunettes et des gants protectives en manipulant la cartouche.



VORSICHT Die Dionex EGC enthält eine korrodierende Base (KOH, LiOH oder NaOH), eine korrodierende Säure (MSA) oder eine konzentrierte K_2CO_3 -Lösung. Tragen Sie daher beim Umgang mit Kartusche eine Schutzbrille und Handschuhe.

8. Slide the Dionex EGC **straight down** into the holder until it stops (see [Figure 48](#)). Make sure the electrical cable remains outside the holder.

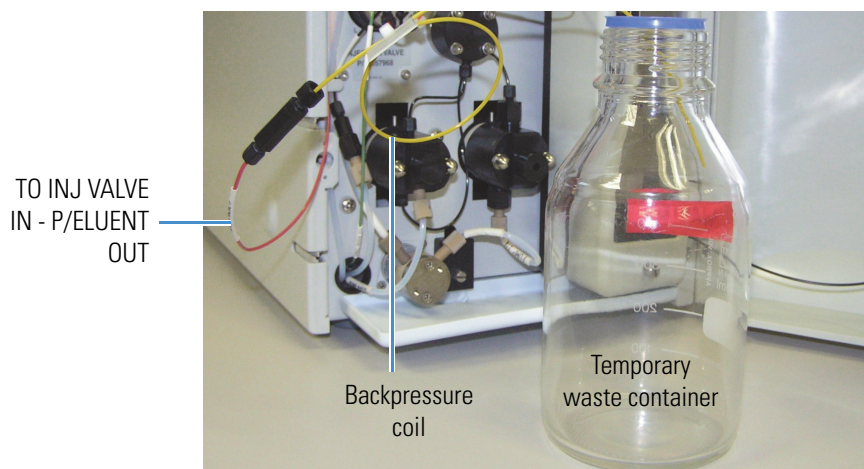
Note To avoid crimping the lines inside the Dionex EGC holder, do not twist the cartridge when sliding it into the holder. The lines are designed to coil neatly inside the holder.

Figure 48. Dionex EGC installed in the holder



9. Disconnect the **TO INJ VALVE IN - P/ELUENT OUT** line from port **(P) 2** on the injection valve.
10. Use a 10-32 to 10-32 coupler (P/N 042627) to connect one end of the yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil (P/N 053765) to the **TO INJ VALVE IN - P/ELUENT OUT** line (see Figure 49).

Figure 49. Plumbing connections for Dionex Carbonate EGC conditioning with carbonate eluent



11. Direct the free end of the backpressure coil to a temporary waste container.

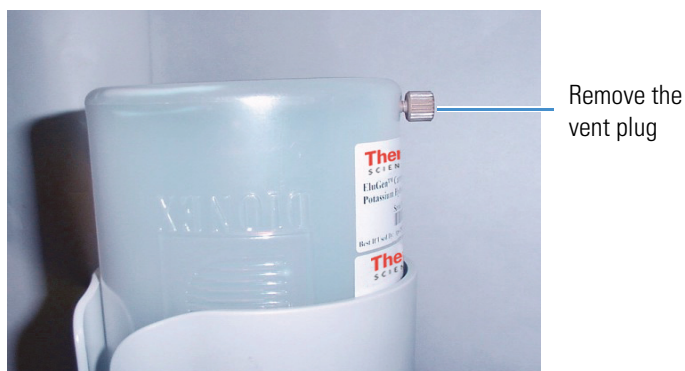
❖ **To connect the Dionex Carbonate EGC vent line**

The parts required to install the vent line are provided in the Dionex EGC Vent Line Tubing Kit (P/N 063092).

1. Slide the **EGC VENT** label onto one end of the tubing.
2. Push the barbed luer lock onto the tubing.

3. Note the vent opening on the side of the Dionex EGC (see [Figure 50](#)). Unscrew and remove the plug from the vent opening. **Do not remove the chain that connects the plug to the Dionex EGC electrical cable.**

Figure 50. Removing the Dionex EGC vent plug



CAUTION Failure to remove the vent plug before beginning operation will allow electrolysis gas to build up. This will cause excessive pressure and an explosion.



MISE EN GARDE Si vous ne retirez pas le bouchon d'évent avant de commencer l'opération, le gaz d'électrolyse pourra s'accumuler. Cela provoquerait une pression excessive et une explosion.



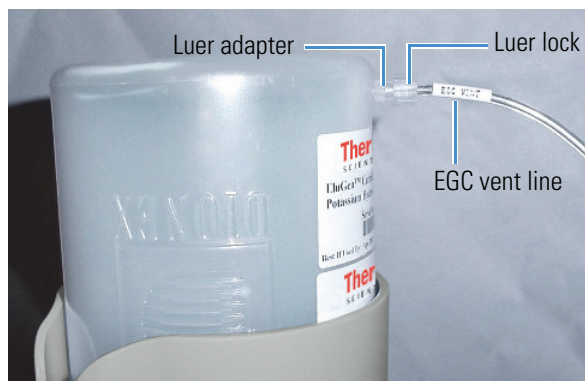
VORSICHT Wenn der Entlüftungsstopfen vor dem Betrieb nicht entfernt wird, kann sich Elektrolysegas aufbauen. Dies führt zu übermäßigem Druck und einer Explosion.

4. Screw the luer adapter onto the vent opening. Remove the cap on the luer adapter by twisting. **Save the cap.**

Note To prevent leaks from the Dionex EGC, always replace the luer adapter cap before moving the cartridge.

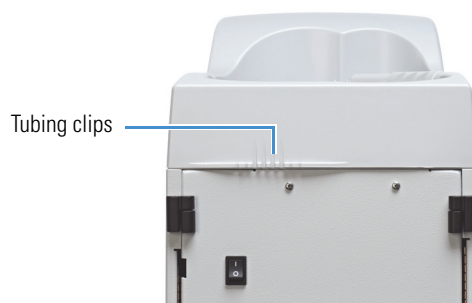
5. Twist the barbed luer lock and the Dionex EGC vent line into the luer adapter (see [Figure 51](#)).

Figure 51. Installing the Dionex EGC vent line



6. Direct the vent line to the rear of the Dionex Aquion RFIC and snap it into one of the tubing clips on the rear panel (see [Figure 52](#)).

Figure 52. Tubing clips on the Dionex Aquion RFIC rear panel

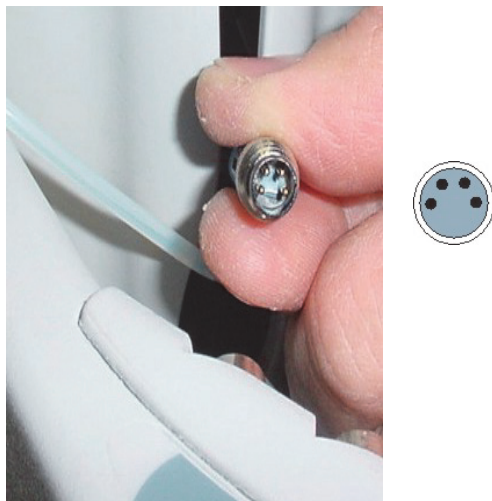


7. Direct the vent line to the waste container. Insert the vent line about 10 to 15 cm (4 to 6 in) into the waste, gas separator tube.

❖ **To connect the Dionex EGC electrical cable**

1. Remove the plug from the **EGC** connector on the Dionex Aquion RFIC top cover.
2. Orient the blue 4-pin electrical cable connector for the Dionex EGC as shown in [Figure 53](#), and then push it onto the **EGC** connector. Twist the ring on the cable connector finger-tight to secure it.

Figure 53. Connecting the Dionex EGC electrical cable

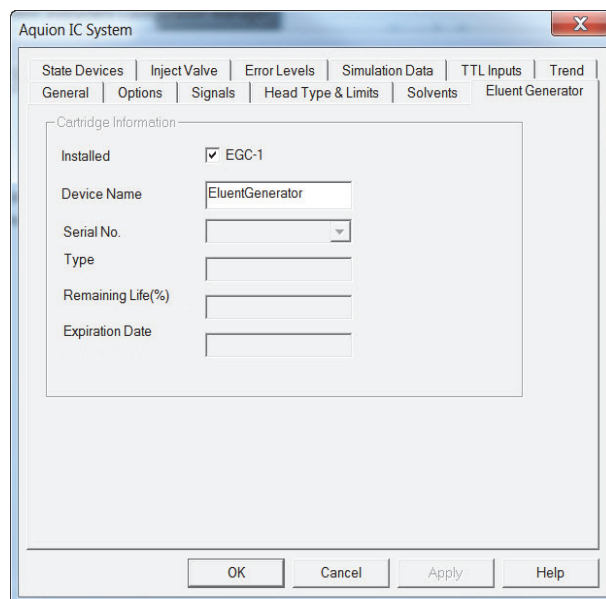


❖ **To record the Dionex Carbonate EGC serial number in Chromeleon**

The cartridge serial number is printed on the Dionex EGC label.

1. Open the Instrument Configuration Manager.
2. Double-click the Aquion IC System icon under the instrument.
3. In the Properties dialog box, click the **Eluent Generator** tab (see [Figure 54](#)).

Figure 54. Properties dialog box: Eluent Generator tab page



4. Select the **EGC-1** check box.
5. Enter the Dionex EGC serial number.

6. Verify that the cartridge **Type** is **Carb**. If the cartridge type is wrong, check that you entered the serial number correctly.
7. Click **OK**.

❖ **To condition the Dionex Carbonate EGC**

Always condition a new Dionex Carbonate EGC for 30 minutes before initial use.

1. Verify that the eluent reservoir is filled with ASTM filtered, Type I (18 megohm-cm) deionized water that meets the specifications listed in “[Deionized Water Requirements for IC](#)” on [page vi](#).
2. Select the following operating conditions on the Chromeleon ePanel:
 - a. Set the pump flow rate to 1.00 mL/min.
 - b. Set the Dionex EGC concentration to 9 mM.
 - c. Verify that the suppressor is off.

IMPORTANT To avoid damaging the suppressor, always turn it off before conditioning the Dionex EGC. Although the pump flow remains on during the conditioning procedure, no flow will reach the suppressor.

- d. Turn on the pump.
 - e. Turn on the Dionex EGC.
3. Run at the selected settings for 30 minutes.
4. After 30 minutes, turn off the Dionex EGC and the pump.

❖ **To install the carbonate mixer**

Mount the Dionex EGC 500 Carbonate Mixer on the inside of the Dionex Aquion RFIC door, to the right of the fluid schematic (see [Figure 55](#)). There are two installation options:

- Attach the carbonate mixer directly to the door, using double-sided tape.
 - Attach two U style 3/4-in mounting clips to the door, and then install the mixer in the clips.
1. To attach the mixer directly to the door, remove the paper backing from two pieces of double-sided tape. Press each piece of tape into place.

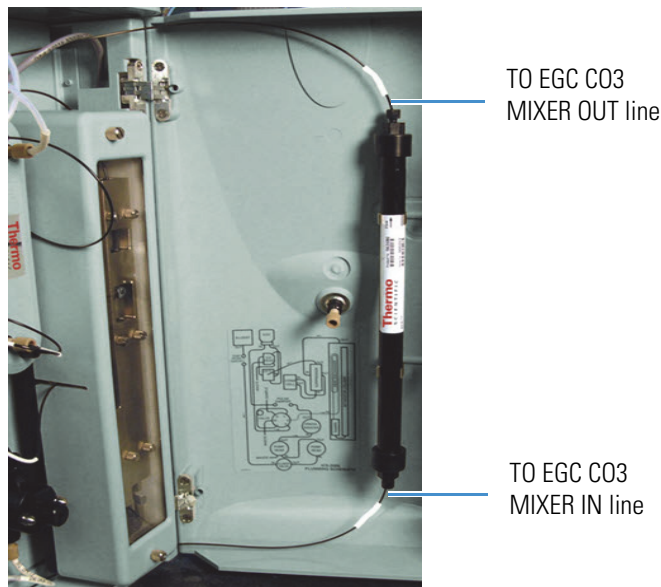
—or—

To use mounting clips:

- a. Remove the paper backing from the double-sided tape on one of the clips.
 - b. Press the clip firmly into place on the door.
 - c. Repeat the steps above to install the second clip.

2. Orient the carbonate mixer with the outlet pointing upward and push it onto the tape or into the mounting clips. This orientation ensures thorough mixing of the eluent.

Figure 55. Dionex EGC 500 Carbonate Mixer installed

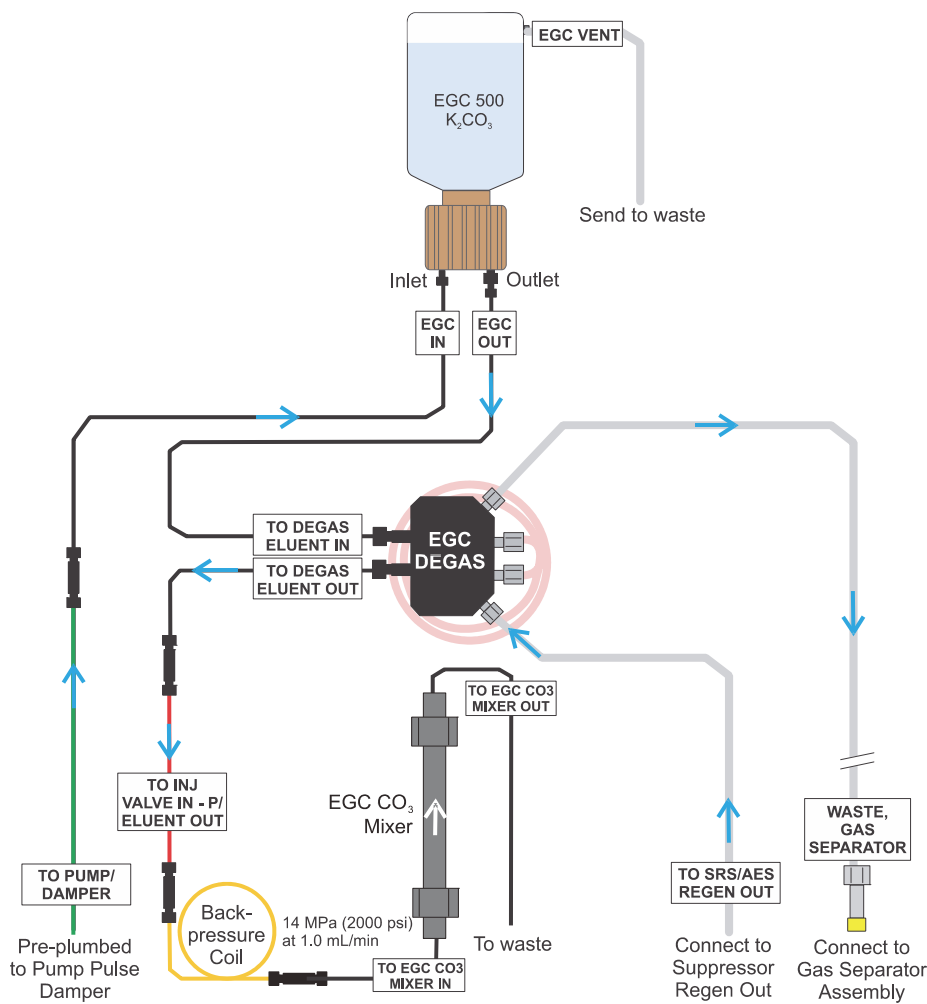


3. Note the **TO EGC C03 MIXER IN** label on one end of the 35-cm (14-in) length of black PEEK tubing (P/N 064346) with white labels. Connect this end of the tubing to the carbonate mixer inlet.
4. Note the **TO EGC C03 MIXER OUT** label on one end of the 60-cm (24-in) length of black PEEK tubing (P/N 064343) with white labels. Connect this end of the tubing to the carbonate mixer outlet.

❖ **To fill the carbonate mixer with eluent**

Always fill a new Dionex EGC 500 Carbonate Mixer with carbonate eluent before initial use. [Figure 56](#) illustrates the liquid flow path through the eluent generator components during the initial filling procedure.

Figure 56. Plumbing for initial filling of the Dionex EGC 500 Carbonate Mixer with carbonate eluent



1. Connect a 10-32 to 10-32 coupler (P/N 042627) to the carbonate mixer inlet.
2. Connect the outlet of the yellow 0.5 mL/min, 7 MPa (1000 psi) backpressure coil (P/N 053765) to the coupler.

Note This backpressure coil connection is temporary; it is used only during the initial filling of the carbonate mixer with eluent.

3. Direct the carbonate mixer outlet to a temporary waste container.
4. Select the following operating conditions on the Chromeleon ePanel:
 - a. Verify that the suppressor is off.

IMPORTANT To avoid damaging the suppressor, always turn it off before filling the carbonate mixer. Although the pump flow remains on during this procedure, no flow will reach the suppressor.

- b. Set the pump flow rate to the value required for your application.
- c. Turn on the pump.
5. Verify that the system backpressure is between 14 and 16 MPa (2000 and 2300 psi). If necessary, adjust the pressure by adding or removing backpressure tubing.
6. Set the Dionex EGC concentration to the value required for your application.
7. Turn on the Dionex EGC.
8. Begin running at the selected settings. When you observe a consistent flow of eluent exiting the carbonate mixer outlet, turn off the Dionex EGC current and the pump.

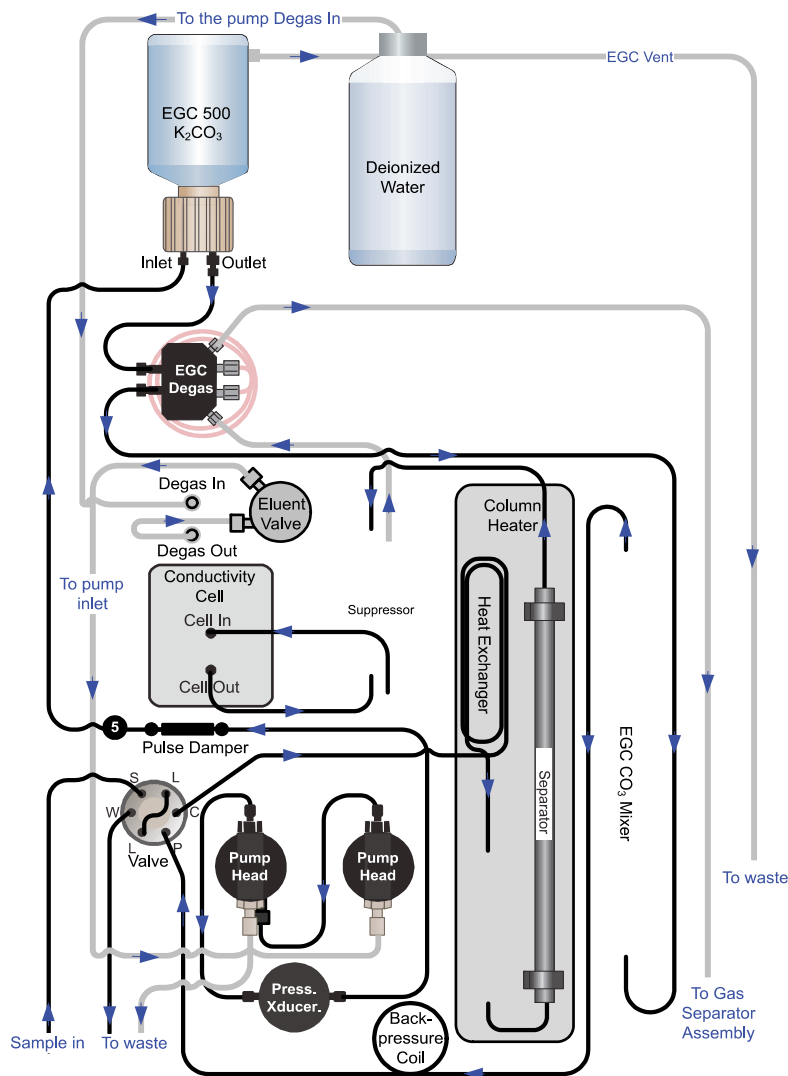
For reference:

- The carbonate mixer for 2-mm columns has a void volume of about 5 mL. At a flow rate of 1.0 mL/min, it takes about 5 minutes to fill the mixer.
 - The carbonate mixer for 4-mm columns has a void volume of about 16 mL. At a flow rate of 1.0 mL/min, it takes about 16 minutes to fill the mixer.
9. Remove the yellow PEEK backpressure coil from the **TO INJ VALVE IN - P/ELUENT OUT** line and the carbonate mixer inlet. **Save the coupler on the carbonate mixer inlet.**

❖ **To complete the Dionex Carbonate EGC setup procedure**

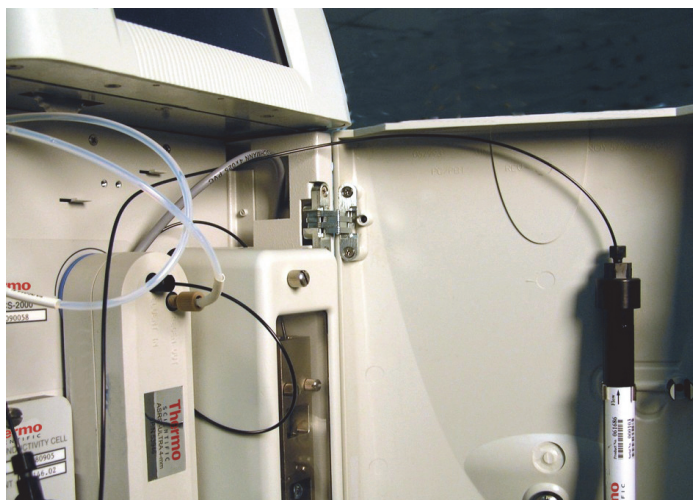
Figure 57 illustrates the liquid flow path through the system after all setup steps are complete and the Dionex Carbonate EGC is ready for operation.

Figure 57. Eluent generator flow schematic for generation of carbonate eluent



1. Connect the **TO INJ VALVE IN - P/ELUENT OUT** line to the coupler attached to the Dionex EGC 500 Carbonate Mixer inlet line. Route this line along the back of the drip tray to prevent it from being pinched when the Dionex Aquion RFIC door is opened and closed.
2. Route the carbonate mixer outlet line to the back of the component panel (see [Figure 58](#)).

Figure 58. Routing the Dionex EGC 500 Carbonate Mixer outlet line behind the component panel



3. Connect the carbonate mixer outlet line to port **P (2)** on the injection valve.

This completes the setup procedure for generation of carbonate eluent. Go on to [“Equilibrating the System”](#) on [page 56](#).

Equilibrating the System

❖ To equilibrate the system

1. Select the flow rate specified in the Quality Assurance Report (QAR) shipped with the column and turn on the pump.
2. Flush the system for about 5 minutes to equilibrate.
3. Monitor the system pressure reading on the Chromeleon ePanel.

The Dionex EGC requires at least 14 MPa (2000 psi) of system backpressure for removal of electrolysis gas from the eluent produced by the cartridge. A system backpressure of 16 MPa (2300 psi) is ideal. If the pressure is too low, install a backpressure coil (see [page 57](#)).

IMPORTANT The recommended maximum operating pressure for the Dionex EGC is 21 MPa (3000 psi). Excessive backpressure may rupture the tubing in the Dionex EGC degas tubing assembly.

4. Verify that liquid is flowing out of the suppressor **REGEN OUT** waste line and that the pressure is stable.
5. Monitor the baseline conductivity. In general, this should be <30 μS for a system set up for anion analyses and <2 μS for a system set up for cation analyses. Equilibration time varies, and it may take some time to reach the expected values.

❖ **To install a backpressure coil (if required)**

If the system backpressure during system equilibration is too low, install a backpressure coil. See [Table 2](#) for a list of backpressure coils provided in the Dionex Aquion RFIC Ship Kit (P/N 064375).

1. Connect one end of the backpressure coil to port **P (2)** on the injection valve.
2. Connect the other end of the backpressure coil to the outlet of the Dionex EGC 500 Carbonate Mixer.

—or—


If a carbonate mixer is not installed, connect the backpressure coil to the **TO INJ VALVE IN - P/ELUENT OUT** line.

Table 2. Backpressure coils for use with the Dionex Aquion RFIC

Description	Part number	Flow rate	Approximate backpressure added
Backpressure coil, 2 mm (yellow)	053764	0.25 mL/min	1.75 MPa (250 psi)
		0.50 mL/min	3.5 MPa (500 psi)
Backpressure coil, 2 mm (yellow)	053765	0.25 mL/min	3.5 MPa (500 psi)
		0.50 mL/min	7 MPa (1000 psi)
Backpressure coil, 4 mm (red)	AAA-053762	1.00 mL/min	1.75 MPa (250 psi)
		2.00 mL/min	3.5 MPa (500 psi)
Backpressure coil, 4 mm (red)	AAA-053763	0.25 mL/min	3.5 MPa (500 psi)
		0.50 mL/min	7 MPa (1000 psi)

Verifying Operational Readiness

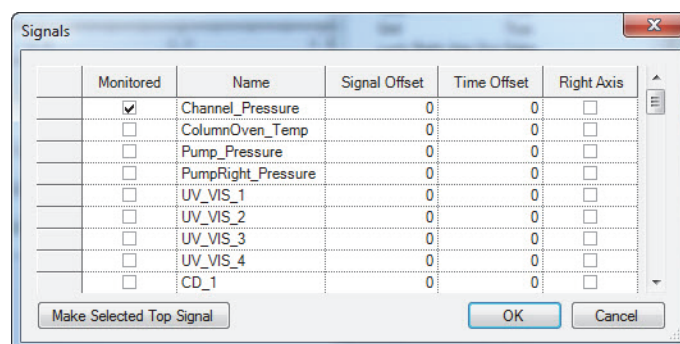
After the system has equilibrated, verify that the pump pressure signal is enabled and monitor the pump pressure reading to verify the actual pump pressure and stability.

1. On the Chromeleon ePanel, right-click anywhere on the signal plot, and then click **Properties**. The Plot Properties dialog box appears.
2. Under **Appearance**, click **Signals**, and then click . The Signals dialog box appears.
3. Verify that the **Channel_Pressure** check box is selected and click **OK** (see [Figure 59](#)).

3 Plumbing

Connecting the Analog Output (Optional)

Figure 59. Enabling the pump pressure channel



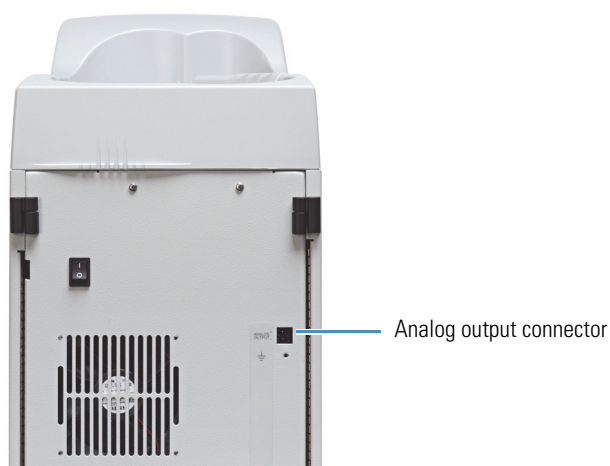
4. Chromeleon will plot pump pressure readings as a separate signal during data acquisition (along with the detector signals) and plot the readings on the ePanel. Write down the short-term pressure fluctuations; they should be less than 0.13 MPa (20 psi).

Connecting the Analog Output (Optional)

The analog output connector on the Dionex Aquion RFIC rear panel (see [Figure 60](#)) outputs an analog voltage signal proportional to the conductivity measured by the cell. The selected data rise time filters the output. The analog output can be connected to an analog-to-digital converter, such as an integrator or other recording device. Refer to the device documentation for connection instructions.

Analog output is 0 to 1V, scaled to the selected range.

Figure 60. Dionex Aquion RFIC analog output connector



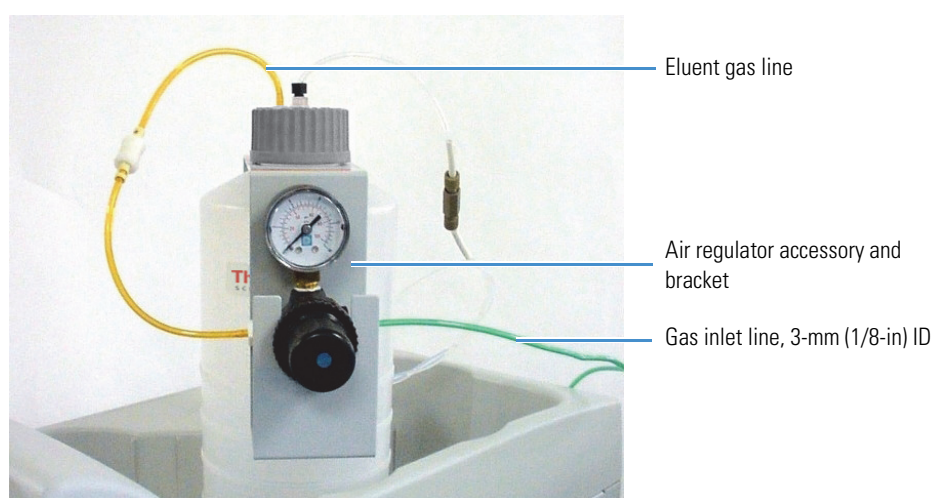
Pressurizing the Eluent Reservoir (Optional)

The Dionex Aquion RFIC does not require pressurized reservoirs. However, if eluent is manually degassed or is sensitive to contamination, Thermo Fisher Scientific recommends pressurizing the reservoir with helium or nitrogen. The air regulator accessory (P/N 060054) needed for pressurizing the eluent reservoir must be ordered separately from the system.

Connecting the Gas Source

Figure 61 illustrates the eluent reservoir after all gas connections are complete.

Figure 61. Dionex Aquion RFIC pressurized eluent reservoir connections



1. Use the barbed fitting and pipe thread reducer to connect the 3-mm (1/8-in) ID tubing to a clean gas source regulated to between 0.55 and 0.83 MPa (80 and 120 psi).
2. Push the other end of the tubing onto the inlet of the air regulator.
3. Remove the eluent reservoir cap.
4. Connect the gas line from the eluent reservoir cap to the gas line on the air regulator outlet.
5. Slip the air regulator accessory bracket over the neck of the eluent reservoir (see [Figure 60](#)).

Applying Pressure to the Eluent Reservoir

1. Before pressurizing the eluent reservoir, verify that the reservoir is filled and is connected to the system (see [“Setting Up the Eluent Reservoir”](#) on [page 24](#)).
2. Pull out the air regulator knob and turn it fully counterclockwise. This ensures that no pressure goes to the reservoir when the gas source is turned on.
3. Turn on the gas source.

3 Plumbing

Connecting the Pump Continuous Seal Wash (Optional)

4. Pull out the air regulator knob and turn it clockwise. This pressurizes the eluent reservoir.
5. Adjust the pressure to between 0.03 and 0.04 MPa (5 and 6 psi).
6. Push the air regulator knob in again.



CAUTION Do not pressurize the eluent reservoir above 0.07 MPa (10 psi).



MISE EN GARDE Ne mettez jamais les réservoirs d'éluants sous une pression supérieure à 0,07 MPa (10 lb/po²).



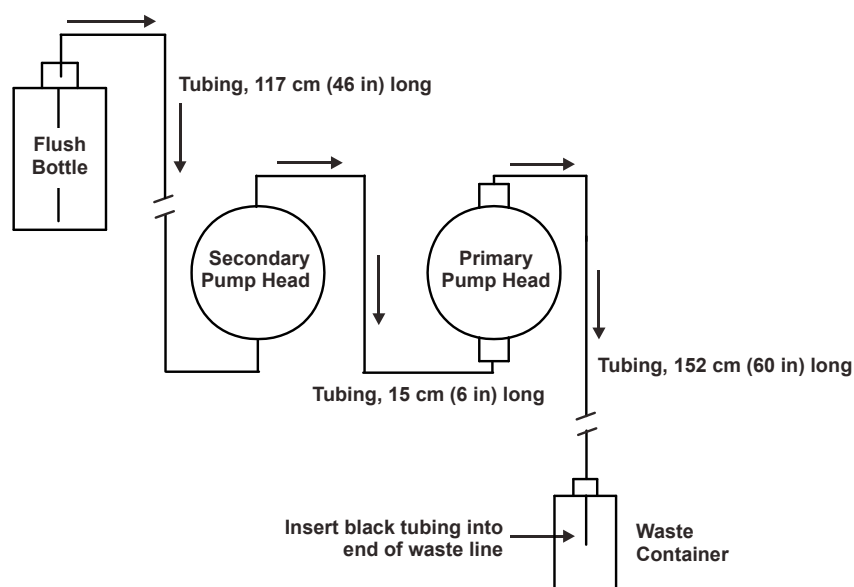
VORSICHT Setzen Sie den Eluentbehälter auf keinen Fall einem Druck über 0,07 MPa aus.

Connecting the Pump Continuous Seal Wash (Optional)

The Dionex Aquion RFIC pump includes a seal wash assembly that can be set up to continuously rinse the back of the piston seals. This process removes salt crystals and will prolong the life of the seals.

Figure 62 shows the seal wash plumbing after all connections are complete.

Figure 62. Piston seal wash flow schematic



1. Fill a flush bottle with one of the following:
 - ASTM filtered, Type I (18 megohm-cm) deionized water
 - or—
 - A combination of ASTM filtered, Type I (18 megohm-cm) deionized water and 10% or 20% isopropyl alcohol (the addition of isopropyl alcohol inhibits bacterial growth in the water)

IMPORTANT Always use ASTM filtered, Type I (18 megohm-cm) deionized water that meets the specifications in [Table 1](#) on [page xv](#) to rinse reservoirs, fill reservoirs used for eluent generation or seal washing, or manually prepare eluent.

2. Place the flush bottle on top of the Dionex Aquion RFIC. During operation, gravity maintains flow through the pump heads.
3. Locate the 1.5-mm (0.06-in) ID clear tubing (P/N 055847) tubing provided in the Dionex Aquion RFIC Ship Kit (P/N 064375). Flush solution will be delivered to the piston seal wash assembly and out to waste via this tubing.
4. Cut the clear tubing into three pieces of the following lengths:
 - 117 cm (46 in)
 - 152 cm (60 in)
 - 15 cm (6 in)
5. Install the clear tubing as follows (see [Figure 63](#)):
 - a. Push the 117-cm (46-in) piece of tubing onto the drain tube on the bottom of the *secondary* pump head. Place the free end of this tubing in the flush bottle. Verify that the end of the tubing is near the bottom of the bottle.

Figure 63. Primary and secondary pump heads with drain tubes



3 Plumbing

Connecting the Pump Continuous Seal Wash (Optional)

- b. Push the 152-cm (60-in) piece of tubing onto the drain tube on the top of the *primary* pump head. This is the waste line. Route this waste line through the lower tubing chase and out the back of the Dionex Aquion RFIC.
- c. Push the 15-cm (6-in) piece of tubing over the drain tube on the top of the *secondary* pump head. Push the other end of the tubing over the drain tube on the bottom of the *primary* pump head.
- d. Place a 10 mL syringe (P/N 079803) at the end of the waste line, press the syringe against the line to form a seal, and draw out all of the air.
- e. Push about 5 cm (2 in) of black 0.25-mm (0.01-in) ID tubing (P/N 60-057057) into the end of the waste line.

Note The black tubing creates a flow restriction. Assuming a height difference of about 76 cm (30 in) between the flush bottle and the waste container, this setup provides a flow of one drop of flush solution every 5 to 30 seconds.

- f. Place the end of the waste line in a waste container.
- g. This completes the piston seal wash installation. Periodically refill the flush bottle and empty the waste container as required.

This completes the installation procedure for the Dionex Aquion RFIC. You can begin processing samples using Chromeleon. For operating instructions, refer to the Dionex Aquion RFIC operator's manual.